CONNOISSEUR MODELS

North Eastern Railway
Diagram V1
Birdcage Brake Van

Prototype. The diagram V1 brake vans were built by the NER about 1890 -1898. They were a development of similar outside framed vans of much earlier origins and can be thought of as the first standard NER brake van design. They worked in traffic into LNER days and some vans were very long lived with four making it into preservation. A fully restored example is at Beamish Museum.

The North Eastern split their freight work into divisions. Vans would be branded, Central Division, Mineral Van and allocated for working mineral trains or Goods Van and allocated for general goods work, many vans also carried the name of their home depot or station such as Kirkby Stephen.

Kit. The intricate handrails and detail work plus very limited clearances and the distinctive design of the prototype, make this a pleasantly challenging kit to build. Because of clearance problems, the buffers are not sprung.

Wheels, 3'7", 8 Split Spoke (7123) or 3'7", 10 Plain Spoke (7131) are required to complete, Available from Slater's, Old Road, Darley Dale, Matlock, Derbyshire, DE4 2ER, Telephone 01629 734053.

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

GENERAL INSTRUCTIONS

Please read this section carefully, especially if this is your first etched brass kit. Many modellers fight shy of working in this medium, but the basic skills are relatively easy to acquire. Once you've learned how to form and solder brass, you'll find all kinds of modelling possibilities will open up for you.

Assembling an etched kit involves exactly the same skills that a scratchbuilder uses – the only difference is that the cutting out of the parts is already done for you. Some filing and trimming will, however, be necessary from time to time. Where this is the case, I have highlighted it in the instructions.

The main skill to master is soldering and I would recommend a Weller 40 Watt soldering iron. This has a 6mm diameter, removable copper bit. The bit is shaped like a screwdriver and has a bright coating of solder (tinned). This combination of iron and bit shape is ideal for running fillet joints and has a good reserve of heat, that is necessary for soldering small parts on to large components. Note the shape and condition of a new bit, as this won't last long and will need restoring back to this condition.

It is important to keep the bit clean and in good condition as you work. Get a soldering iron stand containing a damp sponge; old oxidized solder is wiped off on this before picking up fresh solder for each joint. If you haven't made a joint for some time you may find that a hard black crust has formed on the bit. Remove this with a brass wire brush (suede brush) and then feed some multicore solder onto each side of the bit to restore a bright surface (referred to as wetting or tinning the bit). After about 8 hours use you will find the bit is in poor condition, with holes and a ragged edge. File the bit back to its original shape using a hand bastard file and then polish the surfaces on emery cloth. Coat the bit with Fluxite Soldering Paste (traditionally used by plumbers) and this will prevent the bare copper oxidizing as the iron heats up. Then feed multicore solder onto the bit to form a generous coating and leave to bubble away for a couple of minutes before wiping excess off to give a bit almost as good as new.

A smaller Antex 25 Watt iron with a 3.2mm screwdriver bit is very useful for small assemblies and detail work such as handrails, but will have insufficient heat reserve for main assembly work. The Antex has a plated iron bit, after a little use with 145° solder a grey oxide appears on the bit that will prevent you from picking up the solder. Touch the bit to some multicore solder and it will flash over the bit, wetting it so that you can continue picking up 145° solder. I have found no problems with mixing the two solders in this way.

I use 145° solder for virtually all assembly work. I prefer it in wire form, available from Branchlines, but it is also produced in stick form by Carrs. I find that its lower working temperature helps to give a quick clean joint. Limiting the build up of heat in components, which may cause distortion. I find that I can hold parts together with my finger ends and make a joint before heat reaches my fingers or other etched parts drop off.

I use 60/40, tin/lead, fluxed multicore electrical solder (melting point about 190°) mainly to keep the iron bits in good condition. As it gives a slightly stronger joint than 145° I sometimes use it for small spot joints on handrail wire, lamp brackets etc, but still use extra liquid flux.

For all brass and nickel silver work I use Carrs green label liquid flux. You will soon get the feel for how much to use but more problems are caused by too little flux than too much.

Before soldering components together, thoroughly clean both surfaces along the join line with a glass fibre burnishing brush. Using your tweezers or a knife blade etc, hold the parts together in the correct position and, with an old paintbrush, run some flux along the area to be joined. Still keeping the parts correctly aligned, pick up a small quantity of solder on the tip of your iron and carry it to the joint (unlike electrical soldering, when you feed solder into the joint). Hold the iron against the joint just long enough for the solder to flash between the parts. Don't let go of the parts until the solder has cooled – this takes from five to ten seconds. To run a fillet of solder along a joint, wait until the solder flashes between the parts and then pull the molten solder along

the joint with the iron tip. Don't load the iron tip with a lot of extra solder, but work the joint in 1" lengths, bringing in small quantities of solder. Brass is a very forgiving material and if you get something out of alignment, use heat from the iron to desolder the joint before starting again. For complicated assemblies, it is a good idea to only tack solder parts together. You can then make adjustments by desoldering until you are happy with the location of parts and then solder solid.

When you need to laminate two or more layers of brass together, align the parts and carefully clamp them together, either in the vice or by holding them with miniature crocodile clips. Run flux around the edges, and then go around with the soldering iron. Clean up thoroughly afterwards.

To fit small parts and overlays on to a larger assembly, such as strapping to a wagon side, when you need to prevent finely detailed areas such as planking becoming clogged up with solder. Tin the back of the small component first, then hold in place on the model and apply flux. Carefully wipe the tip of your iron on a sponge to remove any solder from it (dry iron), and then touch it against the parts to be joined. After a few seconds you'll see molten solder bubbling from the edges. Remove the iron, still holding the parts in place, and allow the joint to cool. An alternative is to use solder paint (I would recommend Carrs 188 solder paste). As the name suggests, this is a flux and solder in one. Simply apply a thin coat of solder paint to the back of the component instead of tinning. Still apply a small amount of liquid flux before you solder the part into place.

Any surplus solder should be removed using a craft knife, I find No 10 curved scalpel blades ideal, then burnish clean with a glass fibre brush. With practice, you'll learn how to use the minimum amount of solder to do the job. Flux is corrosive so, after each soldering session, give your model a good scrub with washing up liquid or Jif. After a day or two, any remaining flux residues will show as a green film, which should be washed away.

To cut parts from the fret, use a sharp Stanley knife on a piece of hardboard or a pointed scalpel blade on a block of softwood. Remove tags and burrs with a fine file.

Three-dimensional parts are formed by folding. On an etched brass kit, the fold lines are normally half-etched on the inside of the fold. You'll be able to fold most parts using smooth-jawed pliers. For longer parts folding bars are desirable.

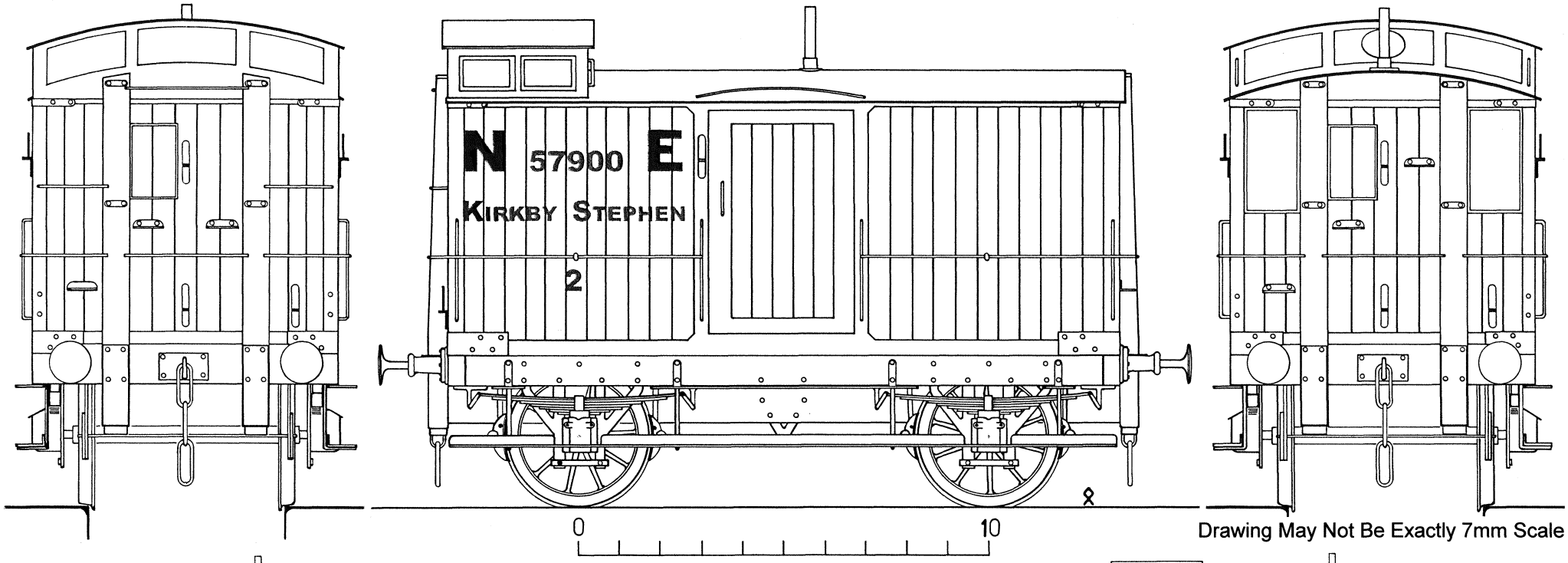
Other useful tools include a bench vice, a good pair of tweezers, a set of Swiss files (get a full set of cheap ones and then buy quality replacements for the three that you use the most), a pin vice with a selection of drills from 0.5mm to 2.1mm plus a few larger sizes that you use regularly (2.6mm for axle bearings etc), some square-nosed pliers and some very pointed-nosed ones, preferably with smooth jaws. Buy cheap tools first and duplicate the most used ones with quality.

Try to complete all high-temperature soldering before attaching any of the cast whitemetal parts. These can be attached with two-part epoxy resin such as Araldite Rapid. Ensure the surfaces to be glued are clean and free of grease.

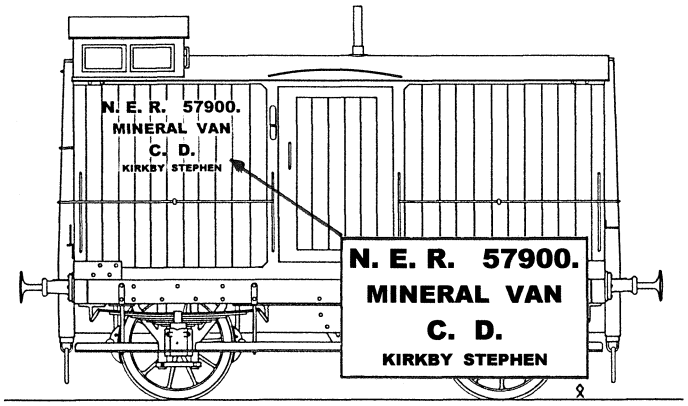
A better alternative is to solder your white metal castings using Carrs 70 degree low melt solder and Carrs red label white metal flux. The iron should be run at a much lower heat so that you do not melt the castings. I have a domestic light dimmer switch and plug socket fixed to a piece of wood, wired up with a lead and 3 amp mains plug to the input side of the dimmer switch and the output of the dimmer switch into the plug socket (remember to continue the earth). Plug your 40 Watt iron (25 Watt iron won't work) with a clean and freshly tinned bit into this and experiment with adjusting the switch until you find the range of temperature at which the solder melts, but a scrap casting does not. **Note** as the iron is running at a lower voltage it will take longer to heat up, so when you think the adjustment is correct do check a few minutes later on another scrap casting to see that it doesn't melt. Then scribe a mark on the switch knob to indicate this position.

When attaching white metal fittings to brass the surface of the brass must be tinned with 145° solder, to allow the solder to grip. The surface of the casting at the joint should be burnished bright. The casting can then be soldered into place with 70° solder and fillets of solder run into any gaps with no risk of melting the casting.

NORTH EASTERN RAILWAY, DIAGRAM V1, BIRDCAGE BRAKE VAN



Drawing May Not Be Exactly 7mm Scale

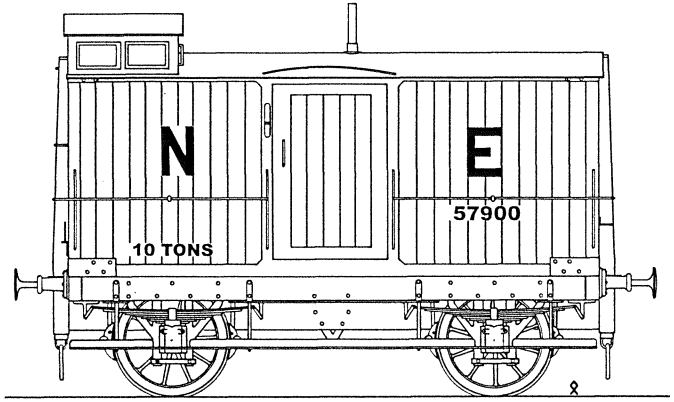


Pre 1911 Livery.
Bodysides & Solebars - Chocolate. Ends - Vermilion. Footboards & Running gear - Black, some vans may have had black handrails. Roof - White Lead (dirty grey). Lettering - Yellow (white transfers coloured with a yellow felt pen?). Some vans may have had Indian Red bodysides with white lettering post 1905.

Post 1911 Livery.
Body sides & Solebars - Indian Red. Ends - Vermilion (the preserved van at Beamish Museum is in this livery) but some vans may have had Indian Red ends. Footboards & Running gear - Black. Handrails on some vans may have been black. Roof - White Lead (dirty grey). Lettering - White.
Alternative running numbers, 4790, 7641, 57361.

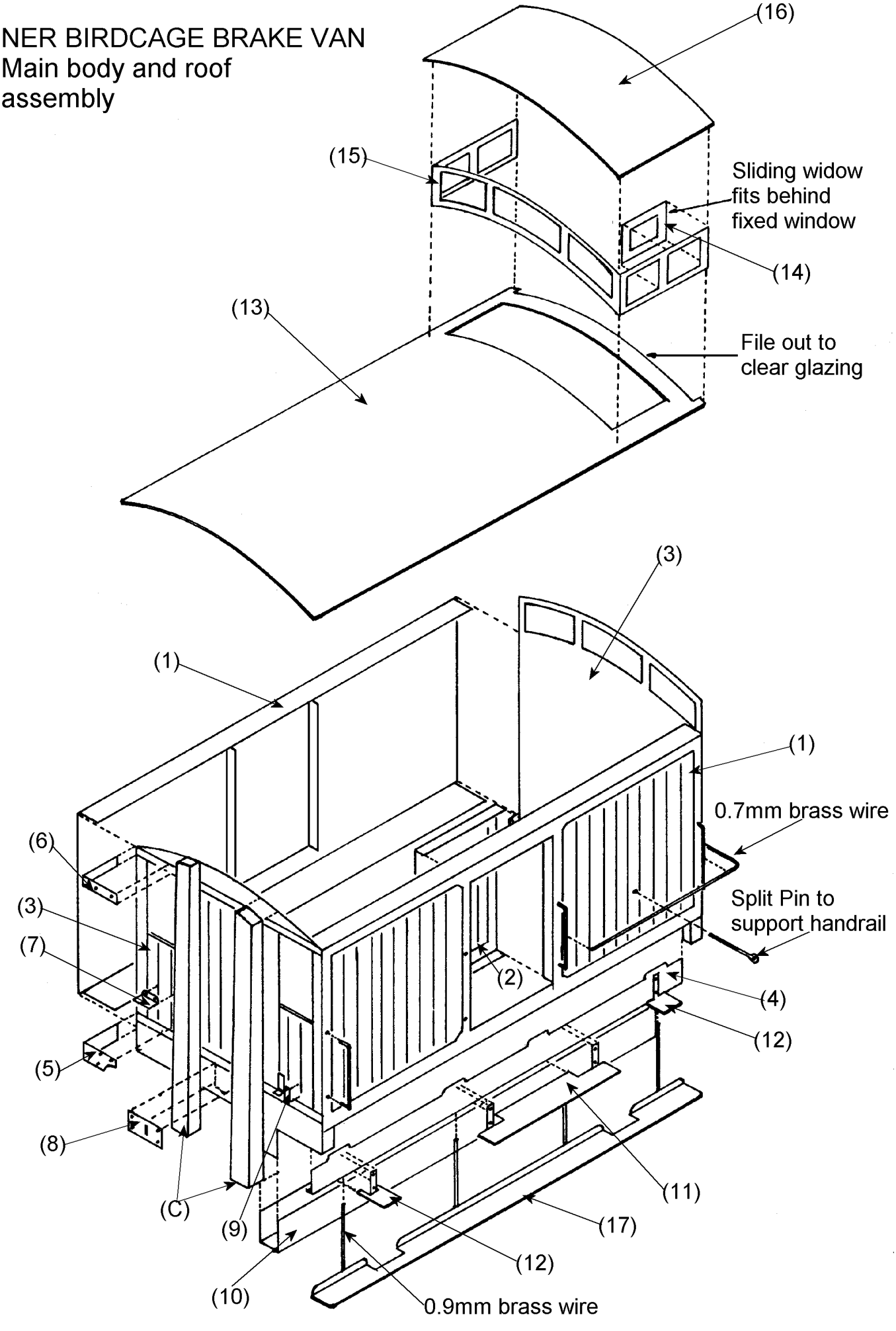
Transfers for lettering are available from the Historical Model Railway Society, Brian Webb *(volunteer sales Officer)*, 8 Gilpin Green, Harpenden, Herts AL5 5NR *(SAE for list & order form, http://www.hmrs.org.uk/transfers/list.php*. These are Pressfix type and you will require sheet 12 LNER goods vehicles for post 1923 or for NER periods the private owner Alphabets *(look at sheet P3)* are a rich source of lettering.

Also Slater's list a NER wagon sheet (Cat No 70149) which may be of use with a bit of cutting up.



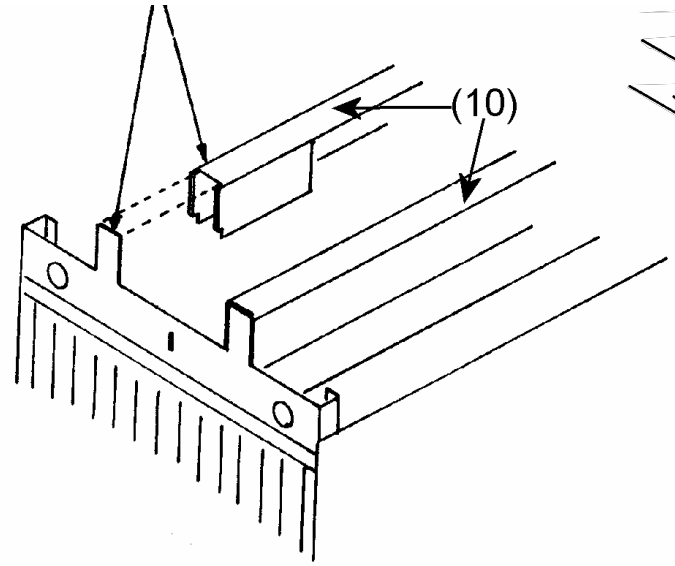
Post 1923 LNER Livery.
Bodywork and Solebars - Red Oxide.
Footboards and Running gear - Black.
Handrails - Black but some vans may have been white
Roof - White Lead (dirty grey in traffic).
Lettering - White, 18" NE, 5" number, 4" tons.

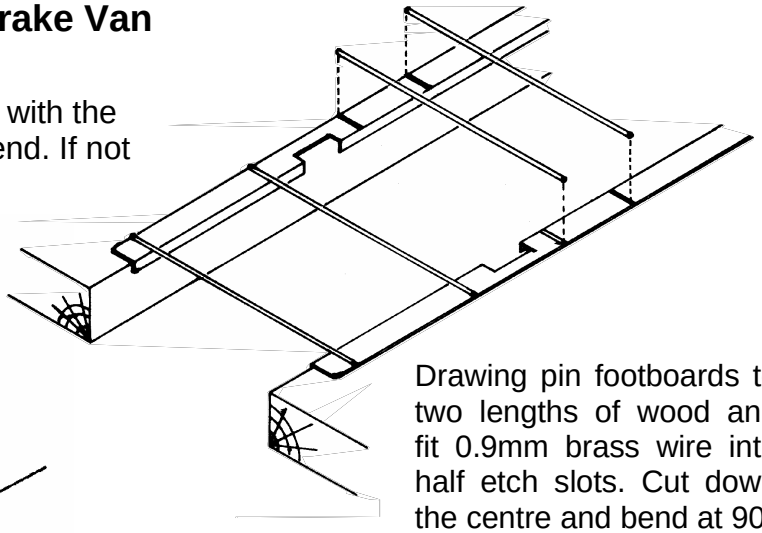
NER BIRDCAGE BRAKE VAN
Main body and roof assembly



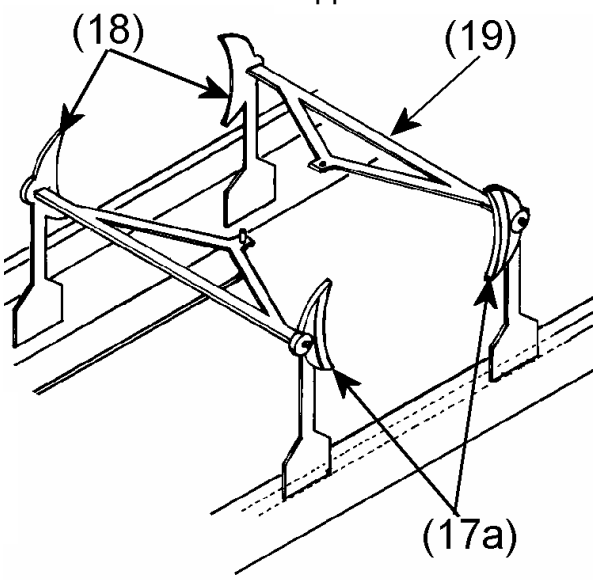
North Eastern Railway, Birdcage Brake Van

Ensure that the longitudinal timbers fit flush with the bottom of the downward extensions of the end. If not they will not clear the axles.



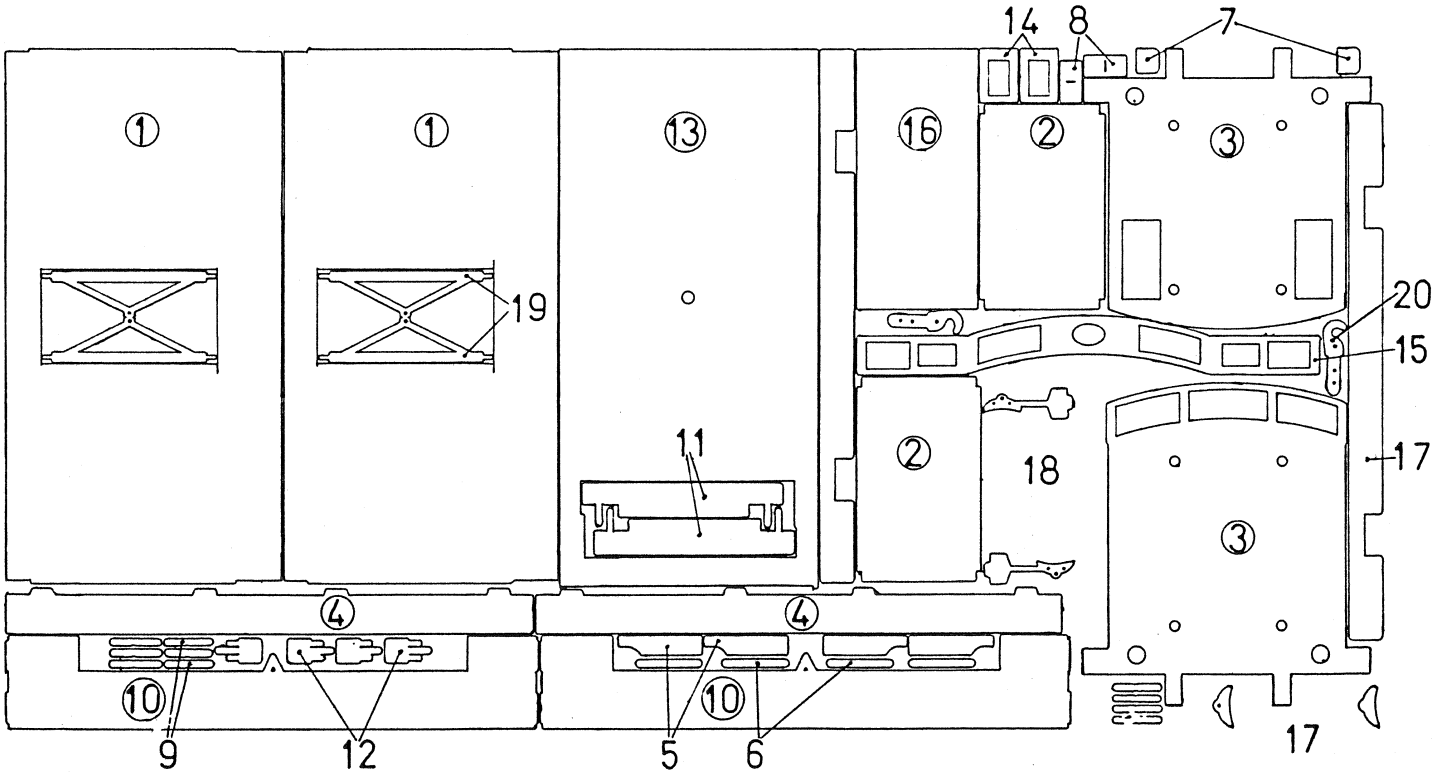


Drawing pin footboards to two lengths of wood and fit 0.9mm brass wire into half etch slots. Cut down the centre and bend at 90° to form footboard supports.



Brakegear

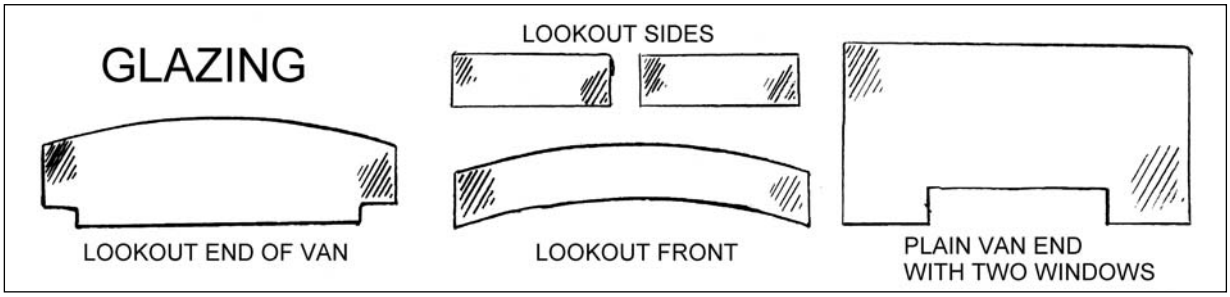
Wheels and axleguards are omited for clarity, and they are also a sod to draw.



NER BIRDCAGE BRAKE
Parts Identification and Suggested Assembly Order

1. Before starting any assembly I found it a good idea to cut out the glazing for the windows. As two pieces need to be profiled for the birdcage lookout you can lay the etched parts on top of the glazing to act as cutting templates.

You can use clear plasticard to glaze the windows but I prefer to cut flat sheets from the clear blister packs that many items are packaged in nowadays. This has a textured surface probably caused by the moulding process, which gives it a slightly opaque quality that I think represents dirty windows just right. Pop the glazing in a plastic bag and put away safely until after painting.



2. Take the sides, parts 1, and fold 90° the top, door openings and bottom. As the door opening weakens the side there is a risk of distortion when you make the folds. I deepened the bottom and door opening fold lines with a sharp triangular file, pushing it up the fold lines so that it gouged out the brass until a faint witness mark appeared on the other side. This will reduce the amount of pressure required to make the fold and therefore the risk of distortion around the door opening.

I made the top fold first by clamping the body side in my bending bars, then the door openings by clamping the body side in my vice jaws (my vice was just deep enough to take the body side up to the door opening) and pushing and flattening down the door opening strips with a block of steel (the end of my engineers square), then I clamped the bottom fold in my bending bars and using a steel rule to apply an even pressure to the body side, made the last fold (it is at this point that the greatest risk of distortion around the door opening occurs).

Fold up the sliding doors, parts 2, and solder behind the door openings, try to get the bottom edge flush with the bottom of the door opening and the door plank detail central. Fit a door grab handle made from 0.7mm brass wire, I found a sliver of 0.8mm card useful to space the handle out from the door. If you apply a generous spot of flux and then solder from the back, the solder will run through the slightly oversize holes and form a ring around the wire to represent the mounting plates.

3. Take the ends, parts 3, and emboss the four bolt heads. These are designed to be embossed using a scriber, with the point rounded off slightly on an oilstone. Place the part face down onto a block of softwood and then firmly press down into the half etched hole, this may distort the part so gently correct this by bending back with finger and thumb pressure. If you have a rivet forming tool, particularly of the drop weight type, you may find that the half etched holes are too large for this to work properly and you may be better pushing the spike into the hole with finger pressure, rather than using the drop weight.

Fold the buffer beam (headstock) ends around and then solder sides and ends together to form the box of the van. The buffer beam-ends will help locate the sides in there correct position. Tack solder the bottom fold of the sides to the ends first, do all four joints and then check that the van body is square. When happy, run a fillet of solder on the inside, up each corner joint. If you run the fillet up about 1/3 of the joint at a time and work around each of the four corners in turn, then this will reduce the build up of heat and risk of the body twisting. Then dress the outside of each joint with a flat file to blend the side into the end and form a sharp corner, don't file off the bolt heads.

Now emboss the solebar, part 4, bolt heads and then fold the solebar 90°. Run a 0.95mm drill through the four holes to clear them so that the 0.9mm brass wire footboard supports will be able to fit straight and square later. Then solder solebars into the slots in the body, a little dressing of the solebar ends (possibly also a couple of the tabs) with a file will be necessary to get a snug fit. Fill any gap between solebar and buffer beam with solder.

4. Fit the bottom corner strapping, parts 5, this is profiled to match the buffer and you may find it helpful to drop a buffer casting into the hole to fix its exact position. I tin the back of the strapping first, then hold the part into place on the van end with the end of a file, then apply plenty of flux and a dry iron to the edge of the strapping until molten solder runs from all the edges. I then fold the strapping around to the side, pressing with a flat file at the corner to form a sharp fold (watch out for any blob of solder that has run out onto the back of the strapping and may prevent the forming of a sharp corner) I then clean up around the strapping with a knife blade and fibre brush. An alternative would be to use solder paint but still apply extra flux. Fit top strapping, parts 6, in a similar way.

Emboss bolt heads, fold up and then fit the end steps, parts 7. There are etched marks to help with their positioning and an extra step so that you can drop one onto the floor. Fit the coupling plates, parts 8, in a similar way to the corner strapping. Fold up and fit lamp irons, parts 9. The centre fold is 180° and may need squeezing together with pliers. Once folded I hold the top of the lamp iron with tweezers, apply a generous blob of flux and then touch the side of the lamp iron with the tip of the soldering iron coated with 60/40 electrical solder. The flux should draw the solder off the iron tip into the fold lines to reinforce them. I then tin the back of the lamp iron with 145° solder. I can then hold the lamp iron into place with a knifepoint and solder using plenty of flux and a dry iron tip. There are etched marks to help with lamp iron positioning.

5. Emboss bolt heads and fold up the longitudinal timbers, parts 10. The cut-outs at the ends will need deepening with a file to get them to fit snugly between the buffer beams, the bottom of the timbers should be level with the bottoms of the two extensions at the bottom of the buffer beam. Clearances between the backs of the wheels and these timbers are very tight so tack into place first and try a wheel set to check clearances (you want no more than 28.5mm over the outside faces) before soldering solid. Don’t fold up the V shaped brackets on the timbers yet.

Now fit the central footsteps, parts 11, fold up the etched brackets so that they will fit flat to the solebar and solder the footsteps to the underside of the solebar, there are etched marks to help fix the position. Fit the outside footsteps, parts 12, in the same way.

6. Now for the roof, my intention is that this remains removable until after painting to enable the windows to be glazed and is then glued in place with Evostick. The birdcage lookout must be built up onto the roof so that it butts up accurately against the lookout windows of the end so that when the roof is glued on the joint will be unnoticeable. There is a curved piece of waste fret just below the lookout that you may wish to solder into the etched groove on the underside of the roof as a former. Then tack solder the roof, part 13, to the body, with the lookout end hard up against the van end, make the solder tacks so that it will be easy to remove the roof again.

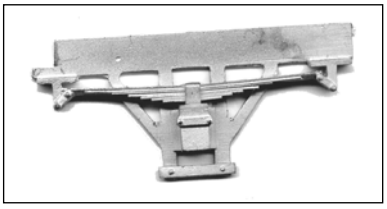
Solder the lookout sliding windows, parts 14, behind the frames of the lookout, parts 15, and then fold the sides of the lookout 90°, reinforce the folds with solder. Then fit two grab handles made from 0.7mm brass wire, soldered from the rear and file the tails of wire flush so that they wont prevent the glazing from fitting. Then solder the lookout to the roof, fitting the ends of the sides into the etched rebates in the van end, scrape off any excess solder on the inside so that it won’t impede the glazing. Form up the lookout roof, part 16, working it with finger and thumb over a piece of tube and solder to the front and two sides of the lookout. Now remove the roof, you can either file the strip at the lookout end of the roof to clear the glazing or cut it out with a piercing saw. Solder rain strips, made from wire, curved by pulling between finger and thumb, into etched grooves above the doors.

If you wish to have the roof permanently removable, solder tabs made from scrap etch to the underside so that they clip into the body (scribe guide lines on the underside before unsoldering tacks and removing roof) the waste fret former may be better soldered at the roof end in this case. I found that I had a slight gap between the top of the end and the underside of the roof and so I soldered a strip of shim (waste etch) on the underside of the roof to fill this.

7. Fit the cast end stanchions, profiling the tops to match the curve of the roof. Fit the handrails made from 0.7mm brass wire, fitting the vertical ones first, spacing them away from the body with thin card. Then fit the horizontal handrails, laying on top of the vertical ones and wrapping around the ends to be spot soldered to the cast stanchions. A split pin supports the handrail at its centre on the body side. There are also four short handrails on the lookout end and one on the plain end (refer to main drawing for positions), again their ends are spot soldered to the cast stanchions.

8. Fold the footboards, parts 17, 90° (you may wish to have a dry run with the axleguards and wheels before fitting footboards, as you can see better what you are doing) and then pin to two parallel lengths of wood. Then solder 50mm lengths of 0.9mm brass wire into the etched marks (like the rungs of a ladder), cut wires down the middle and fold up at 90°, cut wire 15mm from the top of the footboard and then solder into the holes in the solebars.

9. Fit axleguards and wheel sets. My casting technology is not very sophisticated and I never seem to be able to cast axleguards cleanly, so clean out any flash between the W irons with a pointed scalpel blade, also file a notch in one end of the top to clear the buffer mounting hole.



Drill out 2.6mm the hole to take the brass axle bearing (go carefully as you don't want to come through the front of the axlebox). This hole is formed by a small rubber peg in the mould, this tends to flex as metal flows into the mould cavity and you will probably find that the hole is not quite square to the back of the axleguard. Use the drill in a hand pin vice (chuck) and by applying a gentle sideways pressure as you drill out the hole, you will be able to square it up. Then fit the axle bearing into the slightly oversize hole with a blob of Evostick, as this takes a little time to set you can make adjustments to the axleguards and then leave the wagon on a flat surface for the glue to set.

The width between the solebars on the prototype and model is narrower than on most wagons and because of this a standard Slater's axle is to long and will require shortening.

I filed the pin points off each end until there was just a hint of the angle left and found that this was about right to allow the axleguards to sit square but without end float on the axle, try a dummy run with a wheel set and axleguards and you should see what I mean. I did not try to restore the pinpoints onto the axle, as the wheels run all right without them.

Now slip wheel sets with two axleguards on, between the solebars (a little filing at the inboard spring hangers will be needed to clear the footboard supports) and tack solder each axleguard with low melt solder to the solebar.

Check that the axles are parallel and about 70mm apart, there are etched centre marks on the underside of the body that I find useful to eye up to, the masters for the castings are hand made and not exactly symmetrical, so don't get worried if the spring ends are not exactly opposite each other.

Place the van onto a flat surface and adjust if necessary, by re-soldering an axleguard until the van sits without rocking, when happy solder axleguards solid.

10. Fit cast buffers, because of limited clearance behind the buffer beam I was not able to use my normal method of sprung buffers, but I find the solid castings quiet strong and durable in service. Also fit chimney into the hole in the roof.

11. Solder brake blocks, parts 17a, to brake hangers, parts 18, remembering to make four L/H and four R/H ones. Then fit into slots on the underside of the body with the brake blocks lining up with the wheels (a little filing of the tab may be required).

I find it best to hold the brake block in a miniature crocodile clip against the wheel and then solder the tab in place from the inside of the body, this is a bit of a juggling act, but try to get the brake block positioned as best as you can. You can then gently bend and twist the brake block with pliers to get it into its correct position slightly away from the wheel.

Fit brake yokes, parts 19, by springing into place between brake blocks. Fold up the V brackets on the longitudinal timbers and fit a cross shaft from 0.9mm brass wire. If you wish you could represent the linkage from the brake yokes to this cross shaft with 0.7mm wire, but it will hardly be seen when running on a layout.

12. Close up the coupling links using round nosed and (angled) long nosed pliers, then open each link slightly and thread three together and the last link through the hole in the coupling hook, parts 20. I reinforce the joint of each link with a spot of solder. File the coupling shank so that it's a tight fit into the buffer beam slot and solder solid. That should now be the metalwork construction completed.

13. Painting, this is a vast subject that cant be covered fully here but the important thing with a metal model is to get a good base coat of primer. Hopefully you have been cleaning up and washing the model at the end of each modelling session, so it should only require cleaning for painting.

I give my models a good scrub with a stiff bristled paint brush in a sink full of hot (as hot as your hands can bear) water and cheap washing up liquid, the expensive stuff that's kind to your hands has an oil in it that will stop the paint keying to the metal, if you know somebody who works in catering and you can scrounge some industrial strength liquid this is better still. Then rinse the model a couple of times in clean warm water and place in a dust free box to dry.

I use car aerosol primer and Halfords grey primer is one of the best. For the best results you want to spray at room temperature (25°C) on a dry (avoid cold, damp or humid) day. I find it helps to warm the model to about 30°C (put it in the airing cupboard overnight) and I warm up the paint tin by putting it onto a radiator (about 40°C, but use your common sense as I don't want anybody blowing themselves up).

I find it best to primer the model in two light coats, about 15 minutes between coats and then leave for 48 hours to harden off (in the airing cupboard in a dust free box).

I then brush paint my models with Humbrol enamel, for years I just stirred it up and painted straight from the tin but I was never completely happy with the results. Recently two things have transformed my painting, the first was a copy of Martyn Welch's book, The Art of Weathering, Wild Swan Publications, ISBN 1 874103 11 9, his basic techniques are very useful and almost foolproof, mixing course talcum powder into the paint to give a textured roof is particularly effective. The second thing is to mix the paint in the tin and then transfer it to a palette (sheet of clean plasticard) perhaps with blobs of lighter and darker shades of paint surrounding the main colour, then work the paint with the brush on the palette, slightly varying the tones of the of the paint. This seems to totally change the texture of the paint and the way it goes on and covers on the model.

14. Make a floor from the quality card that the etch was packed onto and glue inside the body With Evostick. I prefer a card floor as this helps to deaden the rattling empty box noise that you can get when the wagon is running on a layout.

Glaze the windows, to stick this into place I used Poly-Zap supper glue, available from, www.modelfixings.co.uk/adhesives.htm#Gap

This glue if used carefully doesn't fog the glazing like normal superglue. Then glue the roof/lookout into place with Evostick and touch up if necessary the lookout end joints.

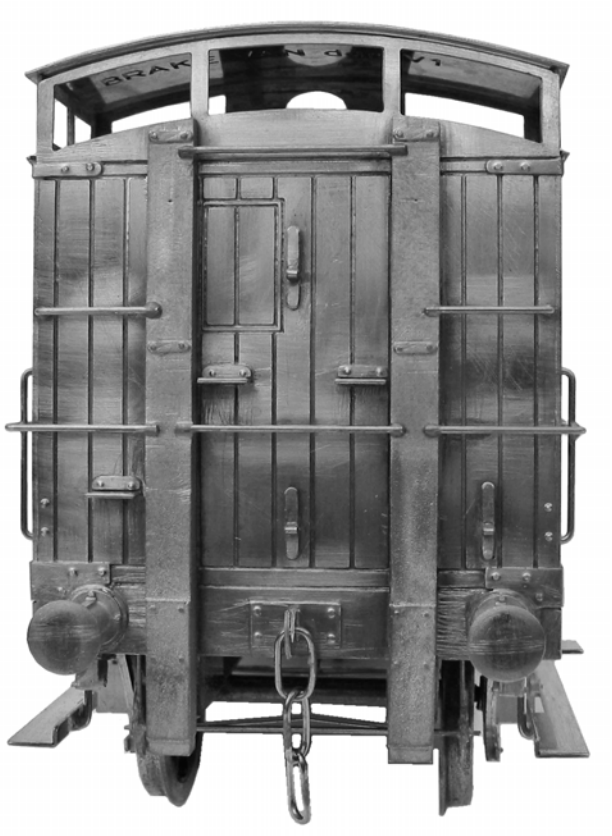
Can You Help Me

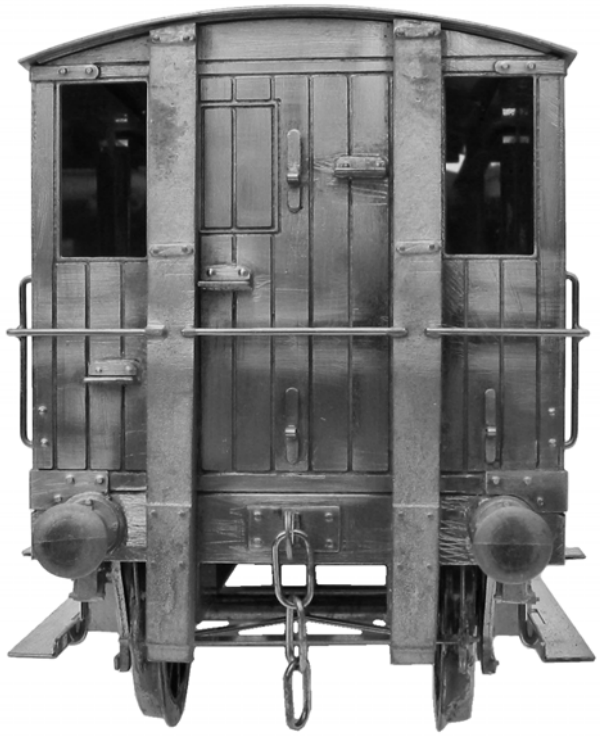
If you have enjoyed building this kit and have been satisfied with the quality. I would be most grateful if you could recommend it to your friends and fellow modellers. Although my kits are not perfect, I try to put a lot of time and effort into producing them. If I can get extra sales of a kit through customer's personal recommendation, I find that word of mouth is the best form of advertising; this will help me to put extra time and money into developing the next kit. Hopefully this will give me more satisfied customer to recommend my kits to there friends.

If you are not happy with this kit then please tell me. Hopefully I will then be able to help and sort out any problem.

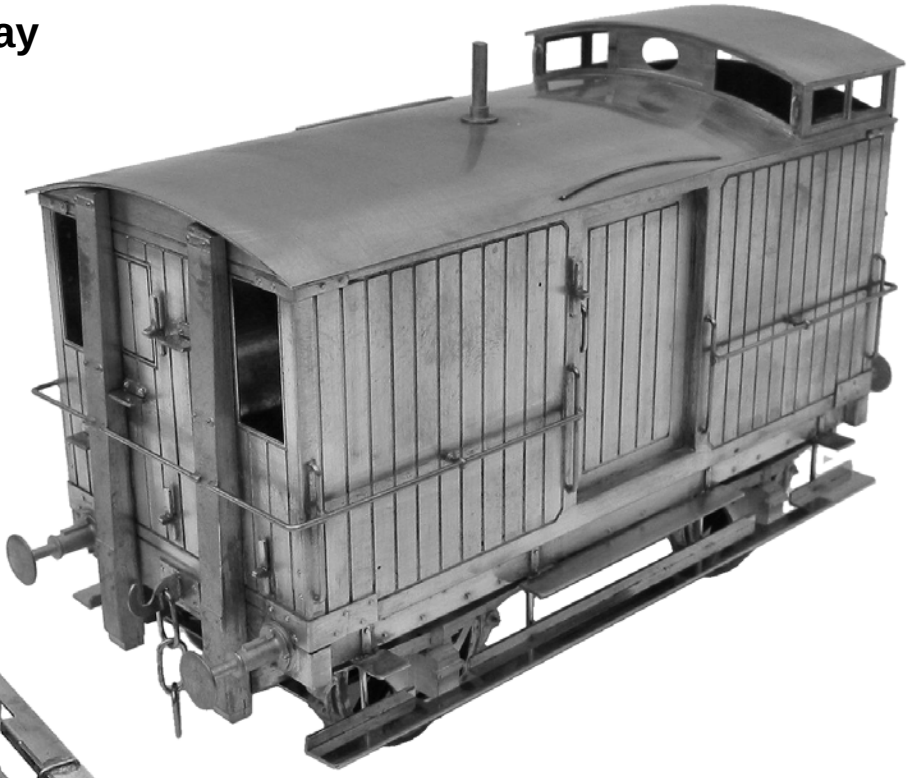
Jim McGeown

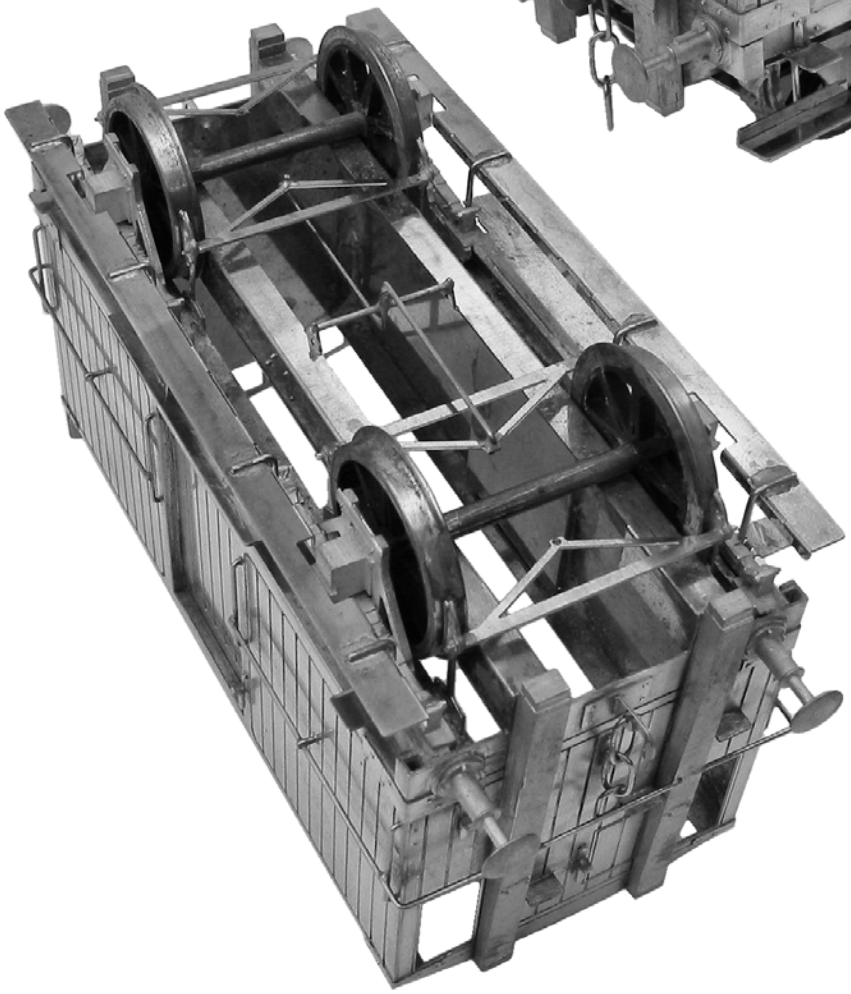
North Eastern Railway
Birdcage Brake Van, Diagram V1





North Eastern Railway
Birdcage Brake Van
Diagram V1,





Underside of Roof

Note tabs made from waste etch to clip onto the body so that the roof can be permanently removable

Underside of Roof

Note that the strip at the back edge has been cut out with a piercing saw after assembly to clear the glazing.