CONNOISSEUR MODELS

- 0 Gauge -

North British Railway 20 ton Brake Van

Prototype. These distinctive vans with their enclosed verandas to protect the guard from the worst of the Scottish weather were built in the early 1920s by the NBR to diagram 32B. They spent most of their working lives in LNER livery but a few continued in service with British Railways.

Kit. Main construction is straightforward and uncomplicated but a nice amount of etched strapping and handrails provide some pleasantly challenging detail work. The distinctively curved lookout duckets are castings and the brass roof is pre-formed.

Wheels, 3'1", 8 Spoke (7121) are required to complete, Available from Slater's, Temple Road, Matlock Bath, Derbyshire, DE4 3PG, Telephone 01629 583993.

Connoisseur Models, 33 Grampian Road, Penfields, Stourbridge, DY8 4UE, Telephone 01384 371418

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.

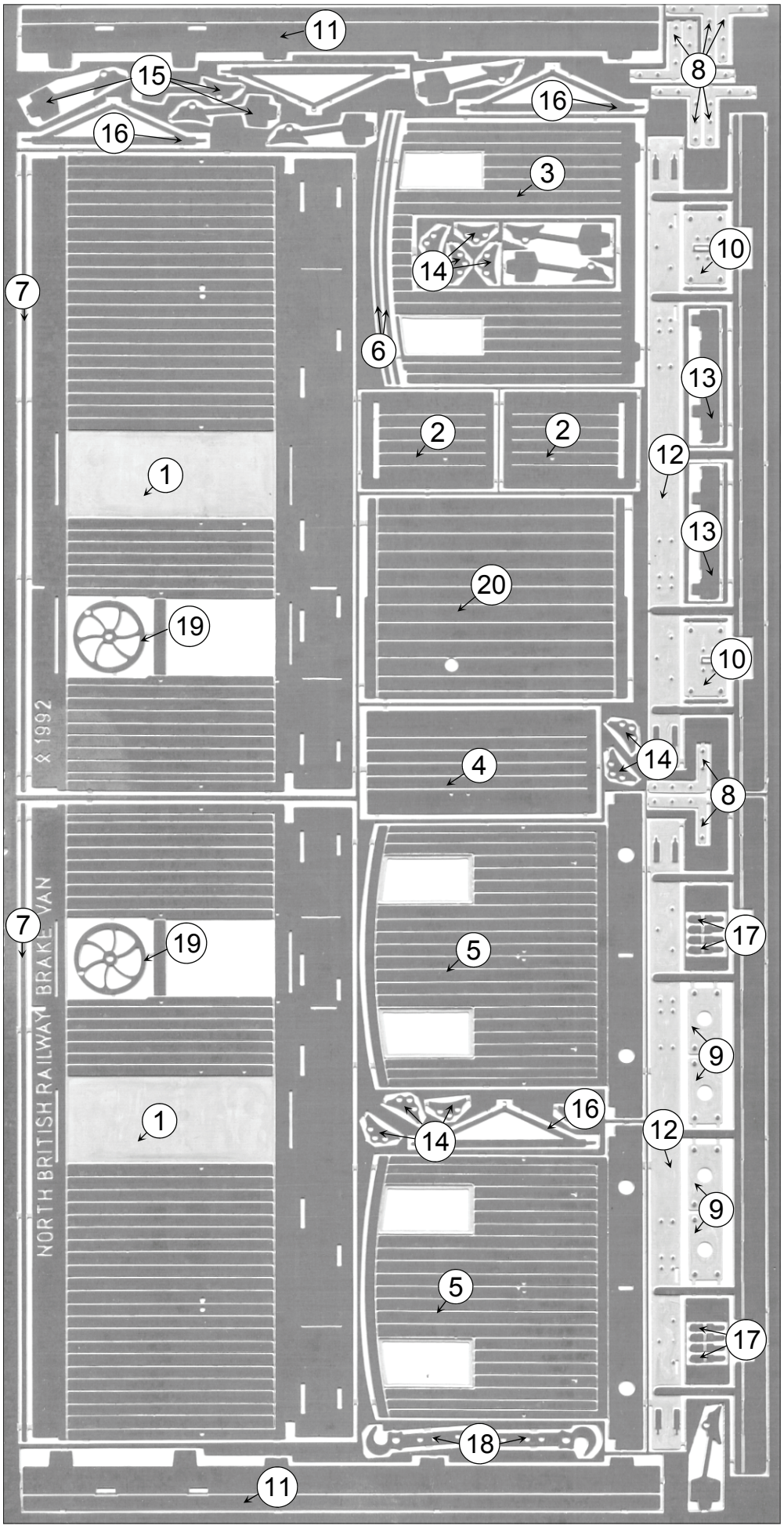
Other useful tools include a bench vice, a good pair of tweezers, a set of Swiss files (get a full set of cheap ones and then buy quality replacements for the three that you use the most), a pin vice with a selection of drills from 0.5mm to 2.1mm plus a few larger sizes that you use regularly (2.6mm 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 Devcon or 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.

NBR Brake Van Parts Identification and check list



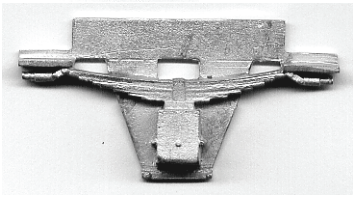
1 X guillotined brass roof approximately 55 X 126mm.
6 X 10” length 0.7mm brass wire. 1 X 4” length 0.9mm brass wire.
1 X 6” length spring steel wire (may be tarnished).
1 X 4” length 22 swg soft tinned wire (rainstrips).

6 X Coupling links

4 X Buffer Retaining Collars

4 X Buffer Bodies

4 X Buffer Heads/ Shanks

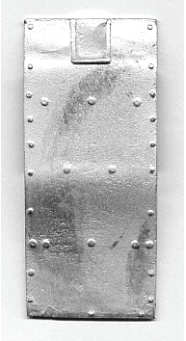


4 X Axle guards

1 X Guards Handbrake Standard

1 X Chimney

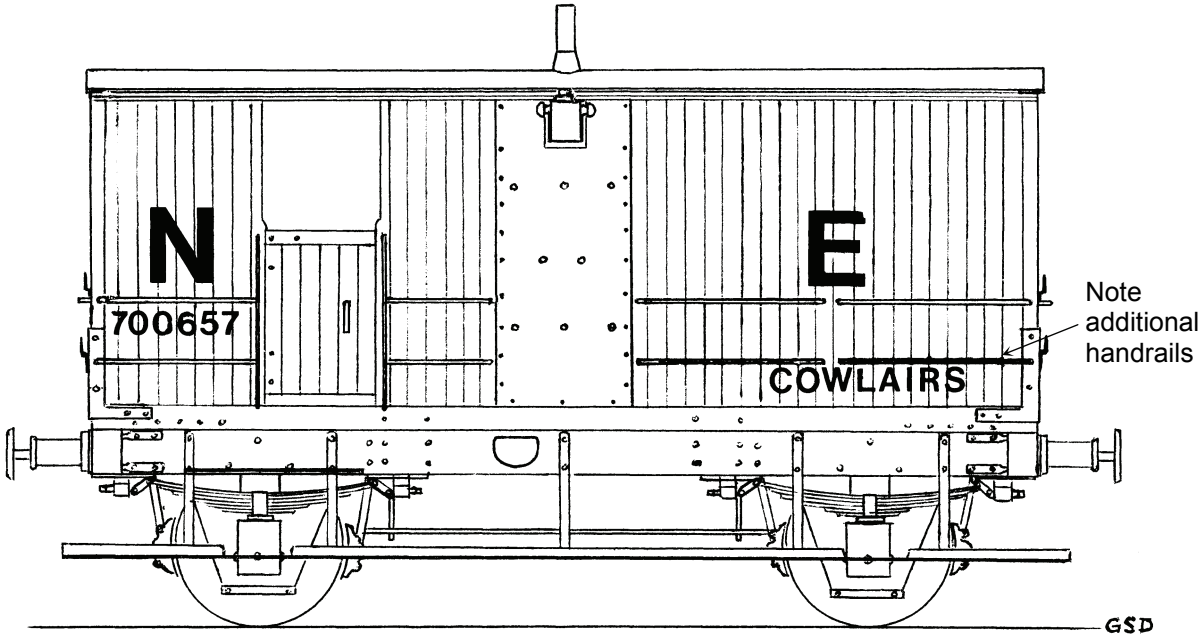
2 X Solebar Wagon Plates



2 X Guards Lookout Duckets

2 X Ducket Side Lamps

North British Railway 20 ton Brake Van

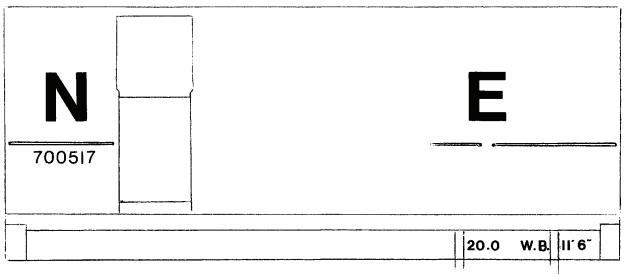


Drawing by George Dawson, reproduced to approximately 7mm scale

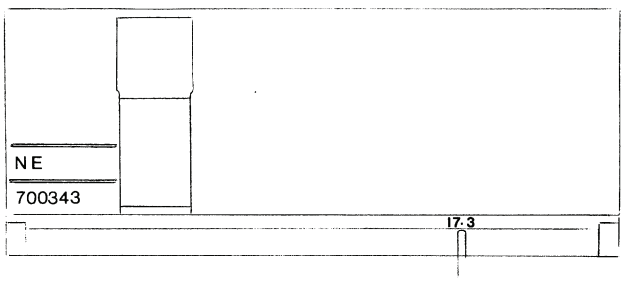
LNER Livery, Red Oxide - bodywork, buffer beams and solebars. Black - all running and brake gear below solebars also footboards and buffer heads. White - handrails and all lettering. Roof - white lead but probably better as dirty grey. Veranda floor - dirty wood. There is some uncertainty but it has been suggested that the brake hand wheel would be red with the standard black. Also that the ducket side lamps were originally painted red.

LNER transfers for lettering are available from the Historical Model Railway Society (HMRS), Voluntary sales officer, 8 Gilpin Green, Harpenden, Herts, AL5 5NR. They are also stocked by some specialist 0 gauge retailers.

You will require sheet 12, LNER goods vehicle insignia.



Pre 1936 lettering positioning

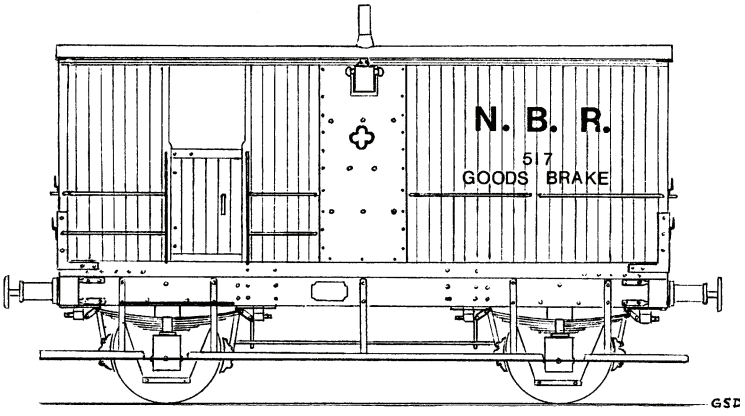


Post 1936 lettering positioning

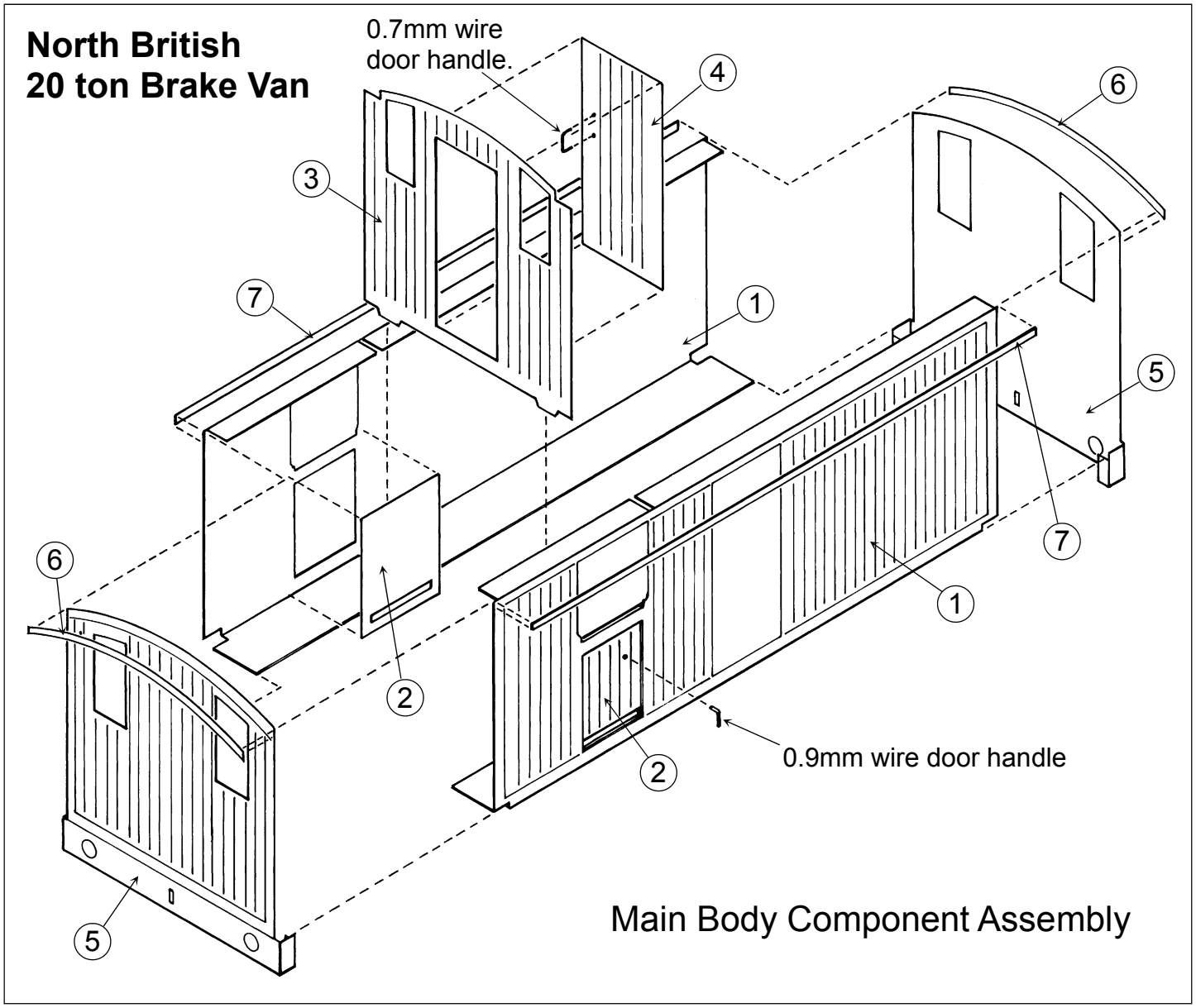
Sample known LNER running numbers
700026, 700077, 700099, 700100, 700108, 700148, 700189, 700209, 700218, 700222, 700236, 700247, 700263, 700324, 700343, 700373, 700385, 700415, 700517, 700655

It can be assumed though not guaranteed that the last three digits are the NBR numbers as the LNER added 700,000 to NBR numbers. In BR days the LNER number was prefixed with E.

Also note additional lower handrails added to some vans by the LNER.



NBR lettering position and livery, Bodywork etc - dark grey. Other components as LNER



Suggested Assembly Sequence

1. I find it best to work up parts 1 to 5 separately before assembling them together so take the main sides (parts 1) and emboss the bolt heads along the bottom of the sides and two in the door cross member. This is best achieved with a rivet forming tool. Alternatively you can use a scriber with the point rounded off slightly on an oil stone. Place the part face down onto a block of softwood and firmly press the point of the scriber down into the half etched hole. Work your way along the row of bolt heads and gently correct any distortion by bending back with finger and thumb pressure. Then fold the top and bottom edges through 90°.

Emboss bolt heads and solder the doors (parts 2) behind the openings in the sides so that the door tops are level with the top of the cross member. Fit door handles made from 0.9mm brass wire.

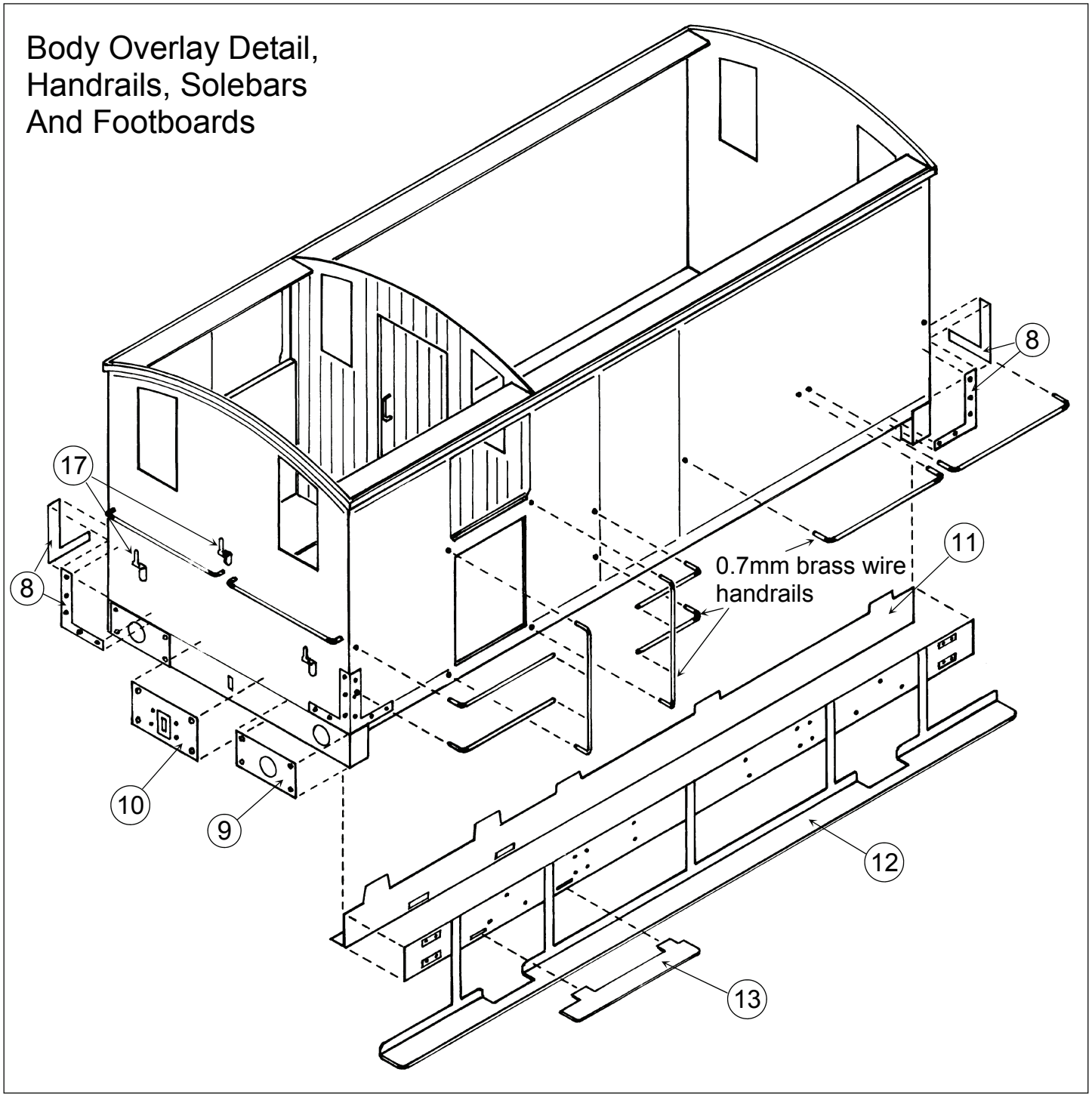
Take the cabin partition (part 3) and solder the door (part 4) behind the opening. Fit door handle made from 0.7mm brass wire. Take the van ends (parts 5) and fold around the ends of the buffer beams.

2. Assemble the main body by tack soldering the two ends to a side. You will find that the cut outs on the top and bottom strips of the side will help locate the ends. Then fit the cabin partition, part 3, into the slots (but don't solder it into place) and then fit the second side.

Now check that the body is square (adjust tack solder joints if required) and then solder each corner joint solid with a seam of solder on the inside. Dress and blend in using a flat file the outside of each corner joint to give a crisp square corner.

Now solder solid the cabin partition. Its a good idea at this point to offer up the veranda floor, part 20, to ensure that it will fit between the van end and cabin partition, Reduce the length with a flat file if required.

Fit the curved beading (parts 6) to the top of the ends. This beading should be longer than required to form an overlap with the side beading. Then fit the side beading (parts 7) trimming it slightly for a snug fit between the end beading. Then file back the corner joints to give a crisp square corner.

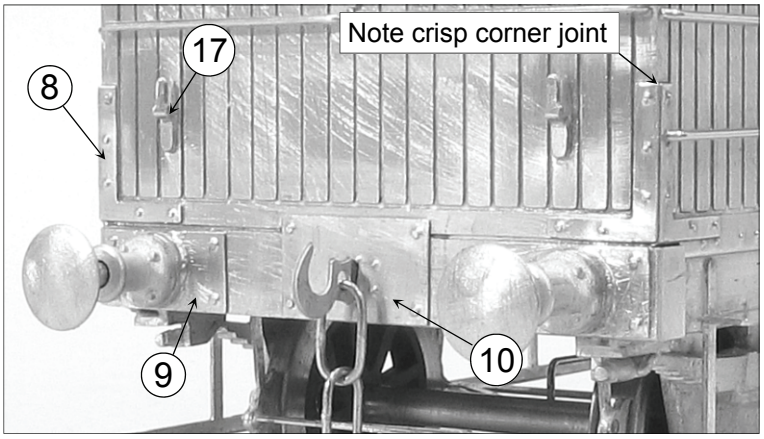


3. I now find that it is best to detail up the body as far as possible before fitting the solebars/ footboards as these can be a little vulnerable to getting bent as you work.

For the plate work and corner strapping I tin the back of the parts first and then remove them from the fret and clean off the tags. I then hold the part in place on the side with the end of a file or knife point and apply plenty of flux and a dry iron to the edge of the part until molten solder runs out from all the edges.

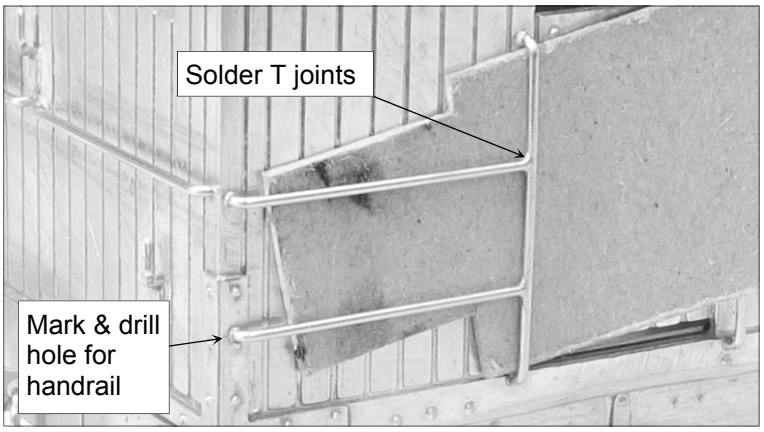
Fit the two part corner strapping (parts 8). First fit four halves at the corners of the sides and then the other halves to the corners of the ends so that they overlap the sides to give a crisp corner.

Fit the buffer reinforcing plates (parts 9) and the coupling reinforcing plates (parts 10). Ensure that the coupling slot in the reinforcing plate and buffer beam line up and remain free of solder.



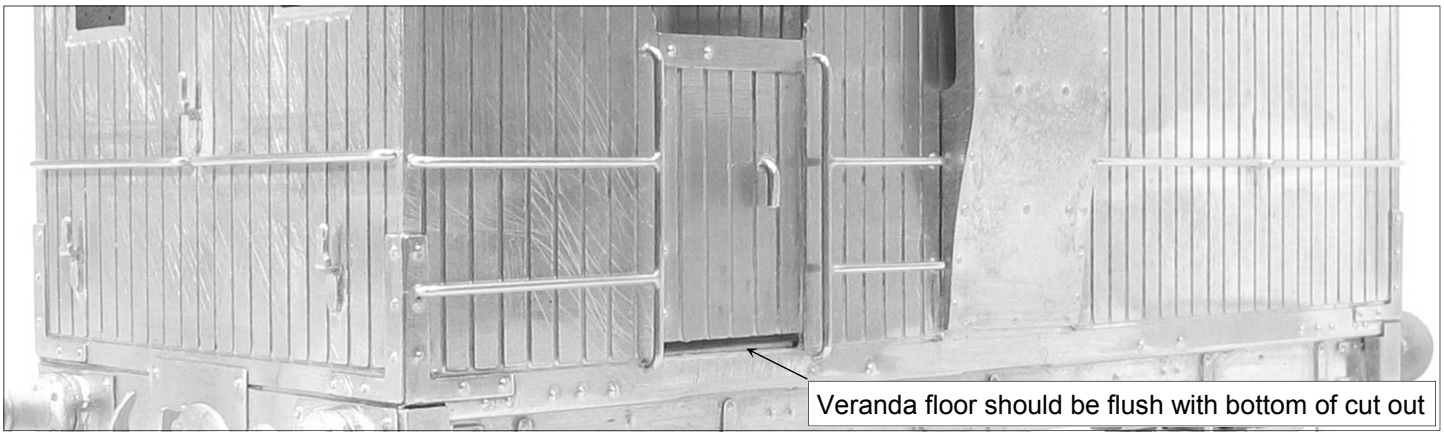
Its a good idea to open up the holes to take the cast buffers now. Also some time spent now cleaning off excess solder from the edges of the overlay parts with a knife blade will be repaid with crisp edges to the detail work after painting.

Fit the handrails, made from 0.7mm brass wire. I find some strips of thin card (0.8mm-1mm thick) useful to help space out the handrails from the body as they are being soldered into place. I fitted the vertical doorway handrails first (make sure that the ends of the wire doesn't come too far inside or this will prevent you fitting the veranda floor later) and then the horizontal ones.

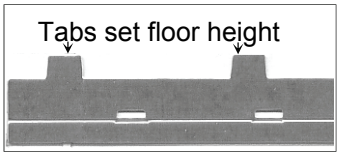


The horizontal doorway handrails join the vertical ones as a T joint. I spot-soldered these joints using 60/40 electrical solder as this gives a stronger joint than using 145° solder. Use plenty of flux and make sure the solder runs all around the joint. You will have to mark and drill a hole in the corner strapping for the bottom horizontal handrail. Also note that some vans had extra horizontal handrails fitted by the LNER (see scale drawing) and if fitting these mark and drill extra holes.

once the handrails are fitted Its a good idea to offer the veranda floor into place. If any of the tails of the handrails are preventing it from sitting down trim them flush or file notches into the floor to clear them.

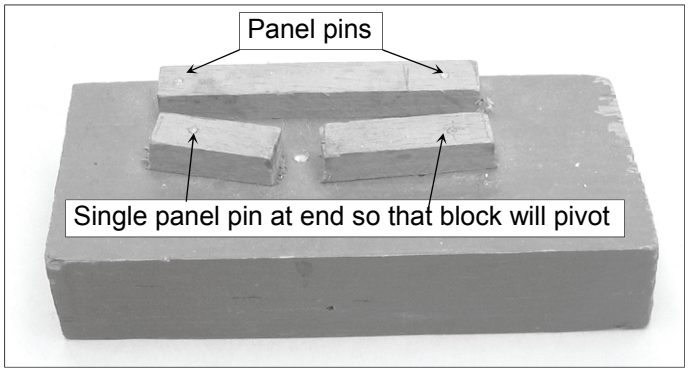


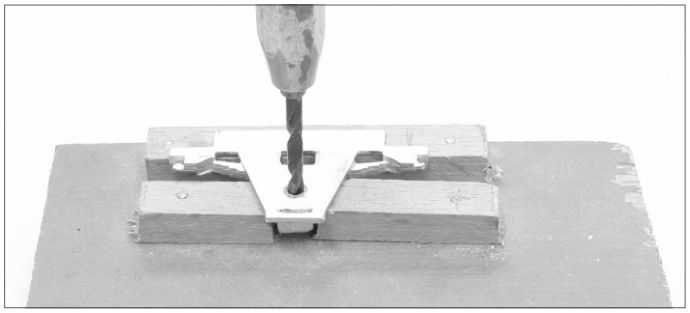
4. Fold through 90° the bottom edge of the solebars (parts 11). The tabs towards the ends of each solebar set the height of the veranda floor. Its a good idea to temporarily fit the solebars into their slots and offer the floor into place. The top surface of the floor should be flush with the bottom of the below door cut out. If required file the tops of the tabs to achieve this.



Emboss bolt heads on solebar/ footboard overlay (parts 12) and then fold the footboards through 90°. It is a good idea to reinforce the footboard folds by running a seam of solder up them. Then solder the overlays to the solebars so that their tops are flush. Then solder solebars solidly into place. Fit the top footsteps (parts 13) locating into the slots in the solebar.

5. Fit cast axle guards and wheels. The axle guards will need to be drilled out 2.6mm diameter to accept the brass bearings. To help achieve this I suggest that you make this supporting block. It should prove a most useful tool for your workbench. It is made from three lengths of $^{1}/_{4}$" wooden strip secured to an off cut of 2"X1" wood. The three strips will support the axle guard flat and firm so that you have the best chance of drilling the hole square.





I suggest that you hand drill the hole with the drill bit held in a pin vice so that you have control over the depth of the hole. If you want to speed the job up by using an electric mini drill I would suggest drilling only $^{2}/_{3}$ of the depth with this and then finishing off by hand so that you can check the depth with the bearing. You don't want to have to patch the axle box with low melt solder because you have come through the front.

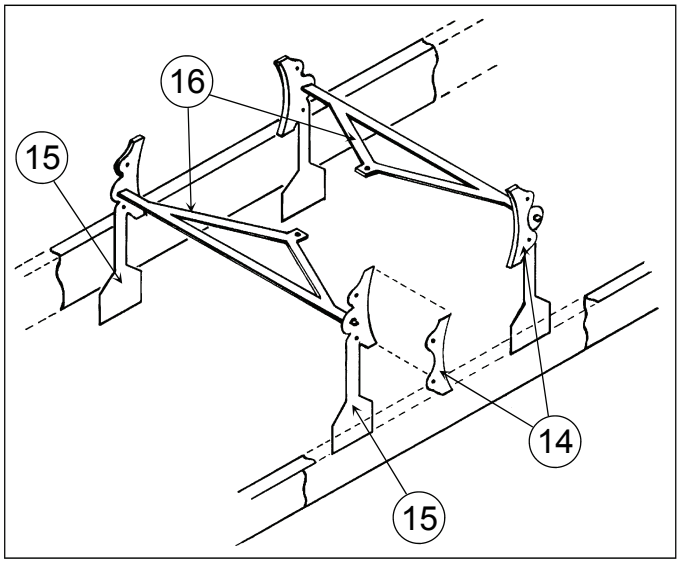
When the axle guards are drilled temporarily fit bearings and wheelset and offer into place between solebars. You will find that the standard axle length is too long and forces the axle guards outwards. The simplest solution is to file down the axle ends. I found that filing off the pin points so that the axle end projected about 5mm from the wheel boss was about right but reduce the length a little at a time and keep offering into place between solebars until you are happy that the axle guards will fit nice and square. I did not bother trying to restore the pin point on the axles as I find that the wheels run free enough without them.

When happy fit the axle bearing into the slightly oversize hole in the axle guard with a blob of Evostick, as this takes a little time to set you can make adjustments to the axle guards and then leave the wagon on a flat surface for the glue to set.

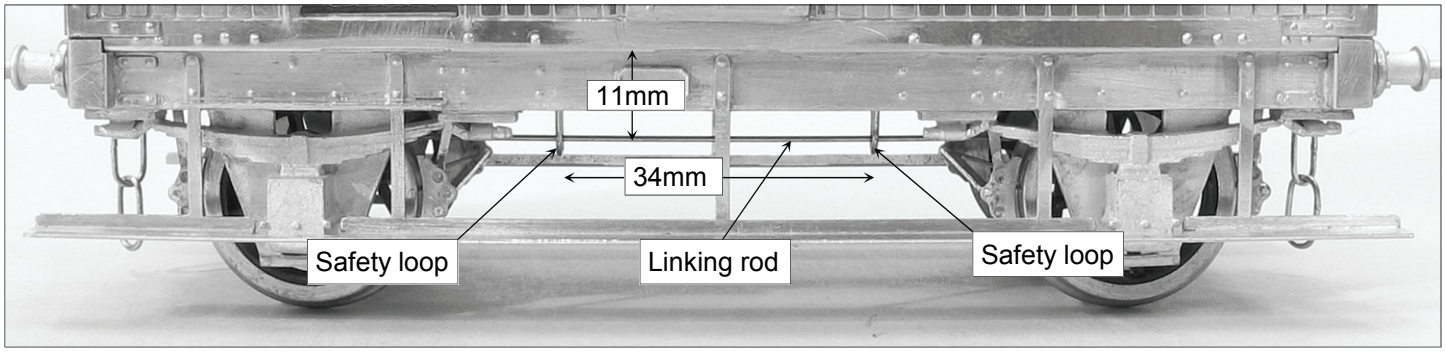
Slip wheel sets with the axle guards on between the solebars and tack solder each axle guard with low melt solder to the solebar (the cut-outs in the footboards will help with positioning). Check that the axles are parallel and the wheel centres are about 80.5mm apart (there are etched centre lines on the underside of the floor to help with lining up). Place the van onto a flat surface and adjust if necessary, by re-soldering each axle guard until the van sits without rocking, when happy solder solid.

6. Solder brake blocks (parts 14) to brake hangers (parts 15) making up four left hand and four right hand. Using a round file put cut outs into the bases of two pairs of hangers that will form the outer brakes. This is to provide clearance for the buffer springing wire.

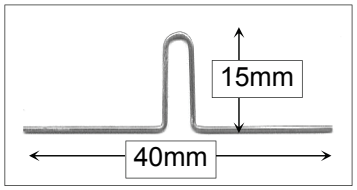
Solder the base of the brake hangers into the slots in the underside of the body so that the brake blocks line up with the wheels and sit just clear of the wheel treads. I find it helpful to hold the brake block with a miniature electrical crocodile clip.



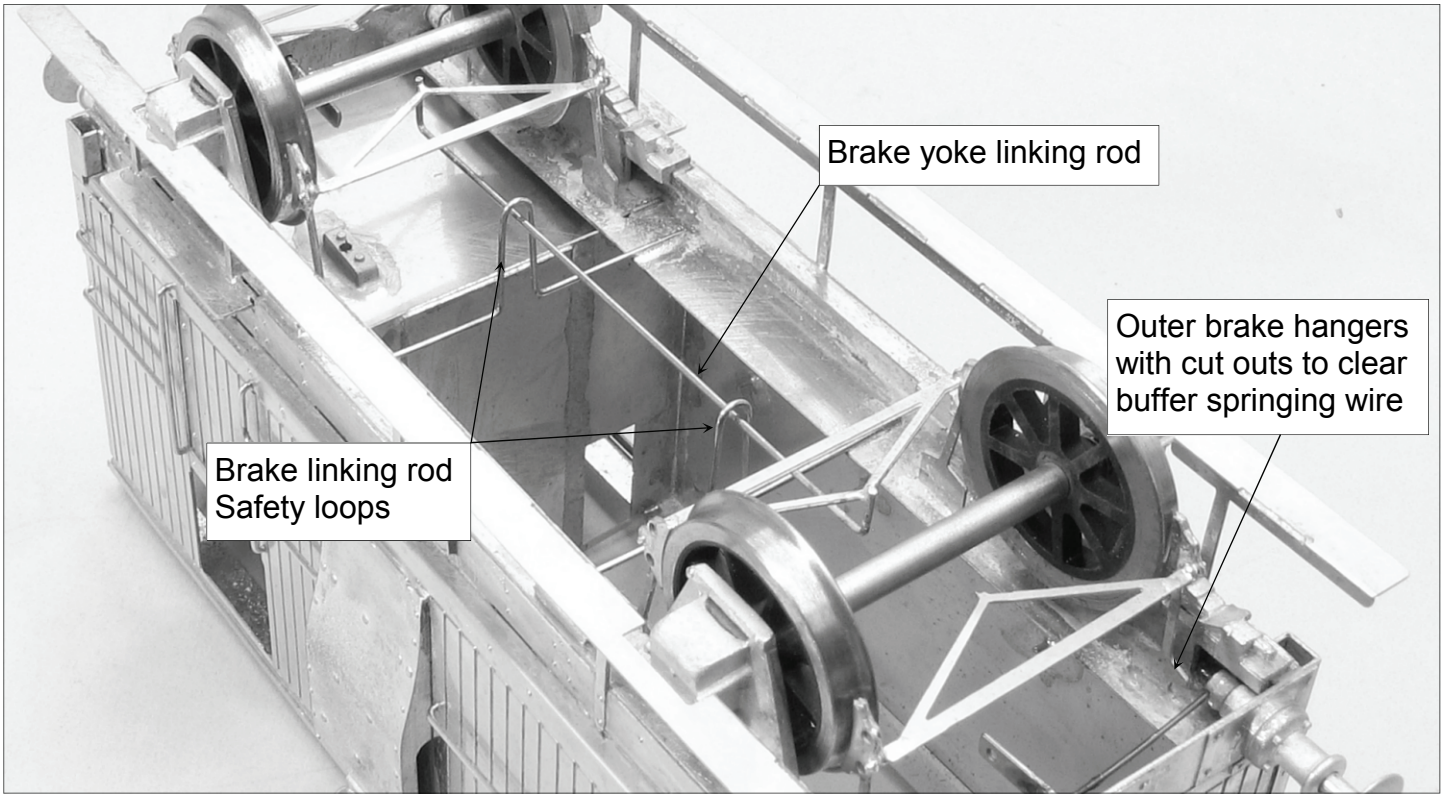
Spring brake yokes (parts 16) between brake hangers and solder so that they run towards the axle.



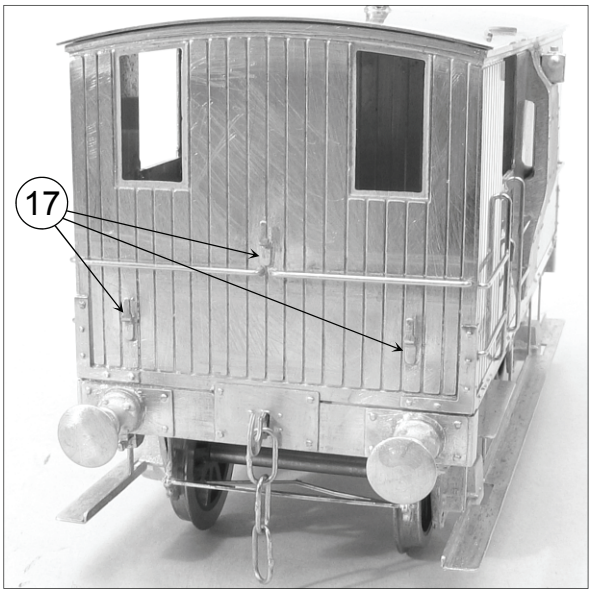
Using 0.7mm brass wire form up a rod to link the inner brake yokes and solder into position so that it runs parallel to and 11mm below the wagon floor. Again using 0.7mm brass wire form up two safety loops for this rod and solder to the underside of the floor 34mm apart. The centre footboard support will give a good visual guide for the vans centre line.



This is about all of the brake gear that is visible from normal viewing angles and so is all that I bother to model. The rest of the prototype brake gear consists of a complicated arrangement of links, cranks, fixed pivots and swinging pivots hidden behind the wheels.

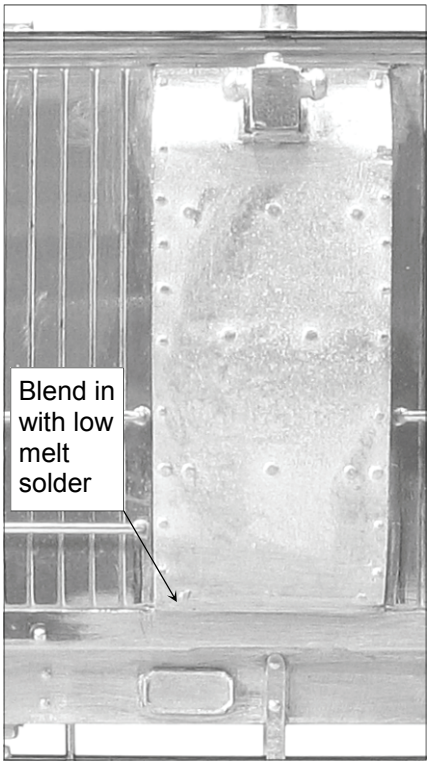


7. Fold up the end lamp brackets (parts 17). I reinforce the folds with 60/40 solder before soldering the lamp brackets to the van body using 145° solder. Note that there are etched marks on the planking to help with the positioning of the bottom of the lamp bracket.

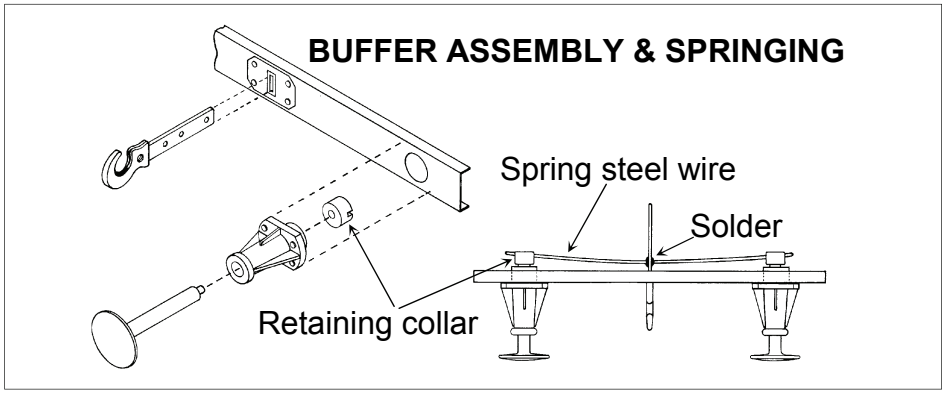


Take the cast look out ducket and if required gently bend with finger and thumb pressure to correct any distortion so that the back of the casting will sit fairly level on a flat surface. The sides of long flat castings tend not to be parallel. This is because the flexible rubber mould cavity tends to distort as metal flows into it. Using a flat file dress the two long sides until they look parallel and the casting fits snugly into the etched rebate on the van side.

Generously tin with 145° the top and bottom of the etched rebate panel and adjacent brass timbers. Fit the cast ducket into the etched panel and run a good fillet of low melt solder along the top and bottom edge. Then using a knife blade and fibre brush scrape back and blend the casting into the etched top and bottom timber.

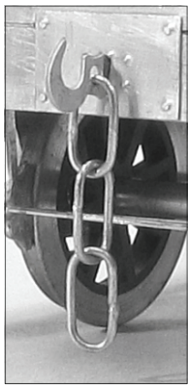


Fit cast side lamps into rebate at the top of the ducket and fit cast wagon plates to solebars.



8. Drill out 2.1mm the buffer bodies to take the cast head/shank. I hold the drill bit in a pin vice (chuck) and grip the buffer body between finger and thumb. Drill through the body from each end so that the hole breaks through in the middle. Use a little spot of spit on the end of the drill (some more technical people have a block of furniture polisher's bees wax that they smear on the drill end). This will prevent the drill wandering in the white metal and breaking through the side of the buffer (a little lubrication on the drill will make drilling holes in any white metal casting more accurate). Then fit the shanks through the buffer body, snip off some of the narrow end of the shank to leave just over 1mm from the step and solder a retaining collar onto the shank. Then fit the assembled buffers into the holes in the buffer beam.

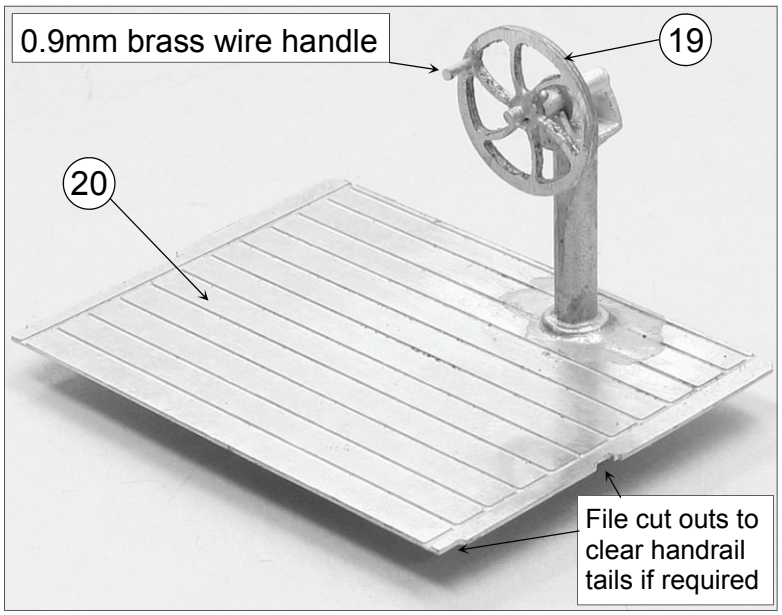
Take the coupling hooks (parts 18) and make up and fit the coupling links. I close up the links by holding the curved end in the jaws of a pair of round-nosed pliers in one hand and squeeze the flat parts of the link parallel with long-nosed pliers held in the other hand. Once you have six even-shaped closed links, you can open each one slightly and thread three together. The last link passes through the hole in the coupling hook. I reinforce the joint of each link with a spot of 60/40 solder.

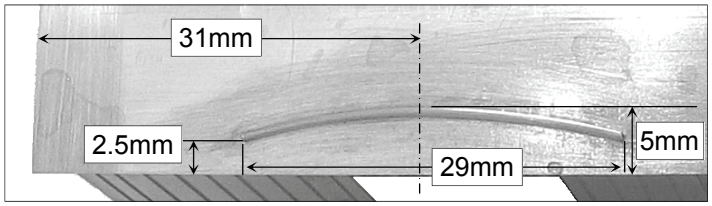


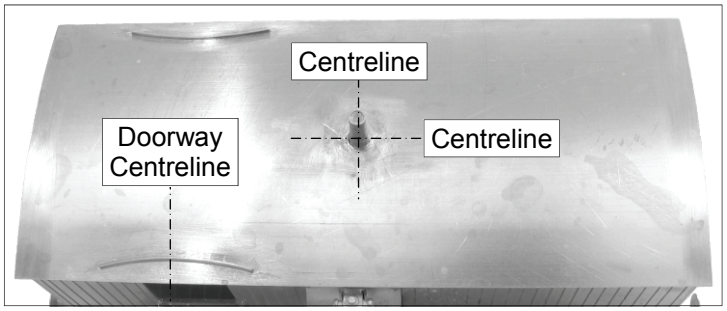
Pass the coupling hook through the buffer beam slot and retain it with a length of spring wire. Polish the centre of this wire with emery cloth first so that you can solder it to the coupling hook shank once you are happy that the buffers spring freely. Because of tight clearances they will only depress about half way in.

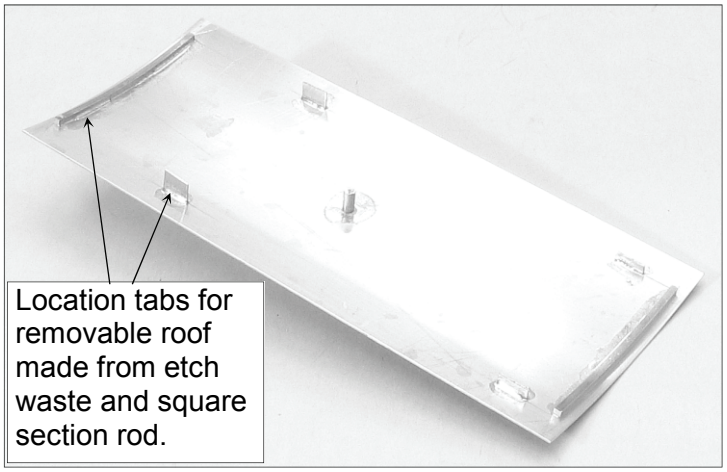
9. Laminate together the two layers of the brake hand wheel (parts 19) and fit a handle made from 0.9mm brass wire. Fit hand wheel onto spigot of cast brake stand and fit stand into veranda floor (part 20).

Fit veranda floor down into body of van. You may wish to include a guard on the veranda with his hand resting on the brake wheel or side door. If so now is a good time to determine his position and then drill up his leg to fit a wire pin. A corresponding hole can be drilled in the floor so that he can be glued and pegged into place after painting. Once the hole is drilled you can solder the floor into place.









10. Now for the roof. I have pre-rolled this in my rolling bars but you may have to work it a little with finger and thumb to get it to the exact profile. Mark out the roofs centrelines and drill a hole for the chimney.

Mark with a pencil the position and centre point of the rain strips. The rain strips are made from soft wire by gently pulling the wire through finger and thumb to curve it and then spot soldered to the roof at the centre point. Trim square the two ends of the wire with side cutters and then holding the wire down with a knifepoint, solder the two ends to the roof. Apply plenty of flux and solder again at the centre point with the iron tip on the inside of the curve.

The solder should flash along the wire soldering it solid to the roof. The wire will tend to expand with the heat but by soldering on the inside it should still keep an even curve. Clean up with knife and fibre brush.

It is intended that after painting the roof is glued into place with Evostick, used as a contact adhesive (follow the instructions on the tube) but if you wish to have a removable roof, solder tabs made from waste etch or rod to the underside of the roof so that they will clip inside the cabin body. Then fit chimney casting. That should now be all the construction work completed.

11. Painting is a vast subject that cannot be covered fully here. 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 but it will still need thoroughly cleaning before painting. I give my models a good scrub with a stiff-bristled paint brush in a sink full of hot water, as hot as your hands can bear, 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 can scrounge you 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 day, avoid cold, damp or humid days. 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 prime the model in two light coats, about 15 minutes apart and then leave for 48 hours to harden off (in the airing cupboard in a dust-free box).

I 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. Martyn's basic techniques are very useful and almost foolproof. Martyn's method of mixing coarse 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 (a sheet of clean plasticard) 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 paint. This seems to totally change the texture of the paint and the way it goes on and covers on the model.

Make a floor from the quality card that the etch was packed onto and glue inside the cabin 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.

For glazing the end windows, you can use clear plasticard, 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.

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 and 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 their 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.

Best Regards And Happy Modelling

Jim McGeown