



C/- P.O. Rhyll, Victoria, 3923.

VICTORIAN RAILWAYS FP HORSE BOX

Prototype Notes

Bogie horse boxes FF7 to FF16 were built at Newport workshops in 1928 and 1929. They featured a steel underframe and bar frame bogies, similar to the MM and LL cattle and sheep wagons that were built at about the same time. FF 7, 10, 11 and 13 were fitted with TT 30 bogies in 1938, to allow their use at passenger train speed. By the 1950s there was less need for horseboxes, with FF9 and 11 having their bodies removed to become flat wagons Q130 and 131 respectively in 1953, while the TT30 bogies from FF11 were transferred to FF12 and FF8 was scrapped in 1954. FF7, 10, 12 and 13 were reclassified FP in July 1956 and the body colour changed to passenger car red shortly afterwards. FF14, 15 and 16 retained their bar frame bogies, but were reclassified FH in 1961, when the letter F became a bogie type speed indicator. FH 14 to 16 were effectively scrapped in 1962 with their underframes being used to build HR159, HR158 and 1HW respectively. FP7, 10, 12 and 13 continued in traffic until 1971 when 10, 12 and 13 were withdrawn. FP7 was reclassified VSPY7 in 1979, was subsequently placed on the Historic Vehicles Register and, at the time of writing (May 2011), is stored at Newport workshops.



Model illustrated has been fitted with couplers (not included).

General Assembly Notes

The majority of this kit is brass, therefore the method of choice for assembly is soldering. However, this does not preclude the use of Epoxy Resin glues or Cyanoacrylate for assembly. **The kit has been designed to make it possible to entirely assemble it using glues rather than solder.**

By far the strongest assembly method is solder. The kit designer highly recommends the use of solder paste rather than wire for assembly. It has a number of advantages. It is clean, easy to place small quantities using a pin and because it can be placed before use of the iron, leaves one hand free to hold parts. The use of a resistance soldering unit (RSU) or hot air gun is highly recommended when using paste.

If you are not comfortable with soldering, the next choice would be an epoxy-resin glue such as Araldite, or finally a medium cure speed super glue. There is no shame in using adhesives to assemble the kit, in fact it is recommended for some parts of the kit that are simply too difficult to solder.

Tools Required or Recommended

Sharp knife such as a Stanley knife with snap-off blades, or a scalpel.
Fine pointed tweezers.
A set of needle files.
Wire cutters.
Needle nose pliers.
A small bench vise or 'Hold N Fold' for forming etchings to shape.
Pin vice for holding twist drills.
A 150mm 'Mill Smooth' file.
Glass fibre burnishing tool.
Emery paper, 300 grit.
A range of metric twist drills including: 0.35mm, 0.4mm and 2.0mm
Set of tapered broaches for enlarging holes in sheet metal.

The kit does not contain paints or couplers. It is designed to accept Kadee No 5 or No 58 couplers.

Spare Parts

There are some spare parts on the etched brass fret, particularly the very small parts that vanish in a ping and cannot be found until after the model is finished and painted.

Assembly Techniques and Tips

Remove parts from the etched fret using a sharp knife with a chopping motion on a hard surface, such as masonite, to cut through the attachment tags. Clean off any tag remaining with from all parts with a needle file.

The best soldering iron is a temperature controlled iron, but any iron with a rating of 50 to 80 watts is suitable. If using solder wire, choose a fine gauge solder wire with low flux content. We highly recommend the use of solder paste rather than solder wire. There are a number of overlays featuring rivet or bolt detail that must be added. It is often helpful to 'tin' the back face of these overlays by applying a thin layer of solder while the parts are still part of the etched fret. They can then be applied by 'sweating' them in place.

A sheet of 12.5mm MDF or Craftwood is excellent as a working surface. It will not burn too easily, does not conduct heat away and soaks up most adhesives. To hold parts in place while soldering, another trick is to use Blu-Tac. Make a small mound of Blu-Tac and bed the part into it to hold it in place. Do not heat the parts for too long however as the Blu-Tac will soften.

In several places rivets must be formed where it is not possible to etch them in the normal way. In these cases it is necessary to press a sharp pointed instrument into the half etched recess on the back surface while the part is supported on a piece of lead sheet.

Several handrails must be formed from 0.3mm wire. A bending jig is incorporated in the margin of fret 3. Use pliers to make one 90° bend in the wire, insert the end in the appropriate hole and form the second bend over the notch in the edge of the sheet. Use a scrap of brass or strip wood that is 0.65mm thick to space each handrail off the body when soldering them in place.

IMPORTANT NOTE: As a general rule, half etched lines go towards the inside of a fold. The only exceptions are places where a part must be folded double, in which case the half etched line should be on the outside of the fold.

Underframe structure

Refer to figure 1 for arrangement of the components.

Commence construction by pressing out all the rivets half etched in the side sills and headstocks that form part of the floor (19). Now bend the tags at each end of the headstocks at 90°, before bending the side sills and headstocks down at 90° to the floor surface and soldering the corners. Form the centre sill unit into a 'U' shape, locate the tags along the edges in the slots etched into the floor and solder it in place. Note that the tags on the centre sills are not symmetrical, so this part can only be installed one way around. Solder a bogie pivot bush into each of the holes located at either end of the centre sill.

Two styles of coupler supports (15) are provided. Use the parts labelled LB if the model is to be fitted with buffers and the plain parts if not. Note that buffers were removed in the mid 1950s and would not be fitted to a vehicle coded FP. Form the coupler supports to a 'U' shape. Now bend the tags on the nut cages (26) at 90° and use them to attach an M2 nut to each of the coupler supports. Solder the tags in place in the slots etched in the coupler support, then file any projections flush, so that there is a smooth surface for attaching the couplers later. Locate the tags on the coupler supports in the slots etched in the floor and solder them in place.

Form a 90° bend in each rope hitch support (16) then locate the tags in the slots etched in the floor adjacent to the centre of each side sill. Solder each support in place before soldering the rope hitch castings to the support.

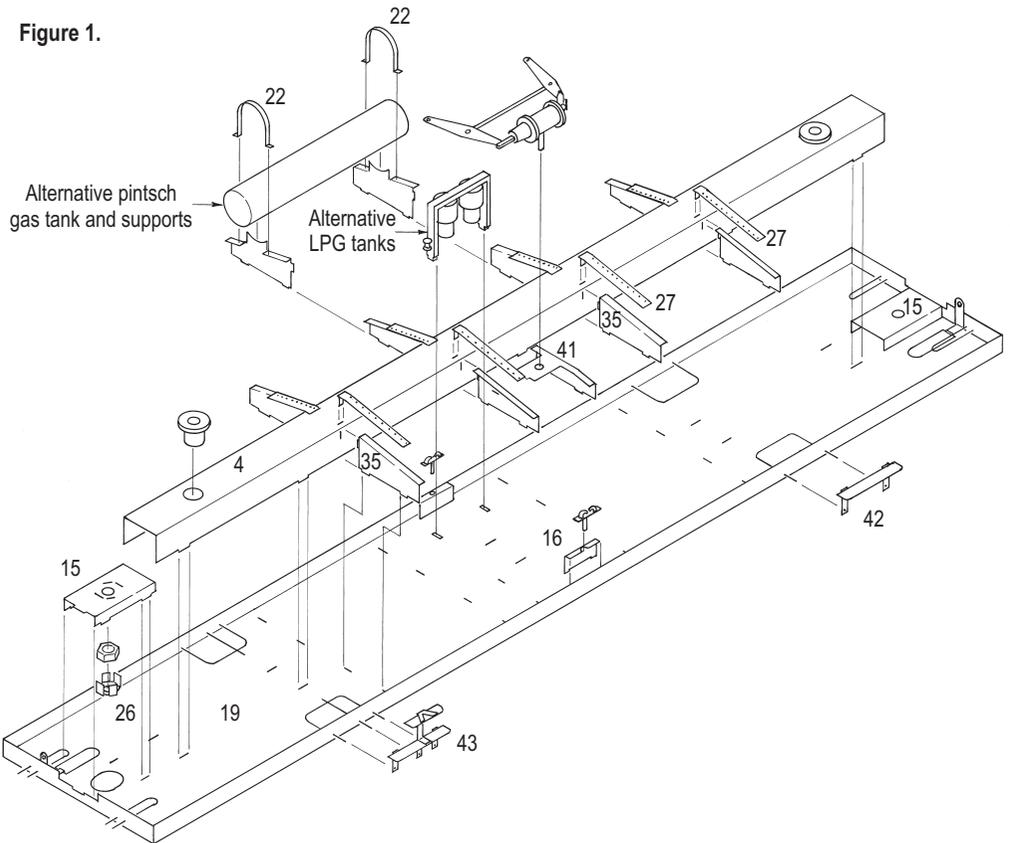
Gas tanks

At this point you will need to decide what era the model is to represent. The FF and FP were originally illuminated with pintsch gas lamps supplied from a cylindrical tank located on the underframe. In mid to late 1966 the pintsch gas tank was removed and two LPG cylinders were installed in a small support frame hung from the underframe.

Bend the flanges on the transoms (35) and brake cylinder support (41) at 90°. Locate the appropriate transoms and brake cylinder support in the slots in the floor and the centre sill unit, orientated and arranged as shown on figure 1.

Insert the narrow ends of the transom doubler strips (27) into the slots etched in the centre sill unit, bend them down at 90° and solder them over the flanges on the transoms. Make sure that the raised rivets along one edge of each strip are orientated as shown on figure 1.

Figure 1.



If the model is to be fitted with LPG tanks, locate the brass casting in the slots etched in the floor and solder in place. A whitmetal casting is supplied for a pintsch gas tank. Centre this casting in the saddles etched in two transoms and secure with a touch of low-melt solder or ACC. Form support straps for the tank from the two etched strips (22) and secure them to the transom with solder or ACC.

Locate the brake cylinder casting by the hole in the support and solder in place.

Use a large file to dress the top face of the floor smooth, especially along each edge, removing any tags that project through. This will allow the body to sit down correctly later, although it is not a problem that the nut cages for the coupler fixings project above the floor.

Side steps

Refer to figure 1. Bend square 'U' shapes from 0.3mm wire and insert the legs through the holes etched in the side sills. Solder each loop to the floor so that the wires project through the side sills. Add a further piece of wire through the centre holes for the side step at the handbrake end. Press out the rivets in the step brackets (42 & 43) and form the steps to shape. Take care not to confuse the marks to be pressed out with the half etched fold lines. For the double step (43), which locates towards the handbrake end, solder the single bracket to the upper and lower steps where it folds double, with the half etched line to the **outside** of each fold. Only after soldering these joints should the rest of the bends, with half etched lines to the **inside**, be formed. Thread the step brackets over the wires installed in the side sills earlier and solder them in place. Trim the wires so that only about 0.12mm projects, representing one of the fixings for each bracket.

Now add the bogies, attaching them with M2 x 5mm screws, because the bogies will provide some protection for the steps, especially the double steps at the handbrake end which are quite fragile. Place a washer (13 or 45) under the head of the screw to ensure that the bogie is centred and use some pliers to make a burr on the screw thread, so that the screw won't work loose, even though it isn't tight.

End details

Refer to figure 2.

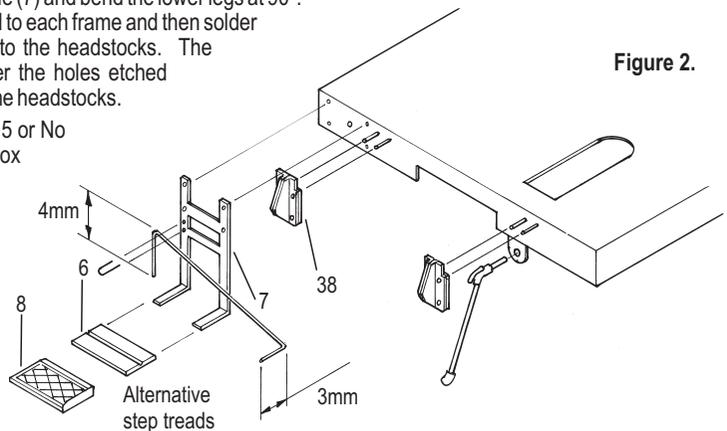
Form the brackets to shape for the coupling hoses and solder each bracket to the back of the headstocks. Add a cast brass coupling hose to each bracket and solder from behind.

Bend 'U' shapes from 0.3mm wire, insert the legs through the holes in the headstocks and solder them to the floor. Press out the rivets on the back of each body bracket (38) and form the brackets to shape. It is easiest to form the 90° bends first, bend the small tags at each side back at 180°, before finally making the centre fold at 180°. Slip each bracket over a pair of projecting wires and solder in place. Trim the wires so that only about 0.12mm projects, representing the other fixings of each bracket.

Two styles of treads are provided for the shunter's steps; a plain wooden type (6), for the period up to about 1968, and a mesh style (8) for 1968 onwards. If using the mesh treads, form the edges at 90°. Press out the rivets on the back of each shunter's step frame (7) and bend the lower legs at 90°.

Solder an appropriate step tread to each frame and then solder the shunter's step assemblies to the headstocks. The step frame locates directly over the holes etched towards the left hand corner of the headstocks.

Add Kadee couplers, either No 5 or No 58, attaching each draft gear box with an M2 x 5mm screw.



The FP wagons had bottom operated couplers, so form an uncoupling lever to the shape shown on figure 2 from 0.3mm wire. Secure the handle to the shunter's step frame with a 'U' shaped loop of 0.25mm copper wire and solder from behind. The handle can also be soldered to the other leg of the shunter's step frame, where it passes in front, to provide further reinforcement. It will help if the inner end of the uncoupling lever is secured below the coupler with a blob of Blu-Tac while the outer end is soldered to the shunter's step.

Body

Refer to figure 3. Cut each side and end (1) from the fret and press out the half etched fixings from the back of each end. Bend the lower edge of each side at 90°, but note that this is an exceptional case where the half etched line goes to the outside of the bend. Leave the end flat until after the sides have been detailed as described below.

Bend the door drip strips (5) at 90°, insert the narrow section through the slots etched above each groom's door and solder them from behind.

Lower doors

Bend sixteen 'L' shaped pieces of 0.4mm wire and insert each one through a hole etched in the side at the top corner of each lower door. Orientate the section that is behind the side so that the leg is horizontal and pointed towards the centre of the lower door, then solder them from behind. Trim the sections that project through the side so that they only extend about 0.7mm above the surface of the side.

Insert the narrow end of each lower door hinge (31, 33, 34 & 37) into a slot etched at the base of the lower door and solder from behind, so that the hinge projects out from the side at 90°. Take care that the different types of hinges are arranged as shown on figure 3.

Cut eight pieces of 0.5mm wire, each 29.5mm long. Lay each piece of wire above the projecting hinges along the base of a door, so that an equal amount projects beyond a hinge at each end and solder in place. Now bend the hinges around the wire and use a piece of wood to pinch each one down close to the wire and up the face of the door. The loops in the hinges at each edge of the doors should fit over the projecting wires soldered in place earlier. Solder the hinges to the doors.

Note: Turn door handle through 90° after installation

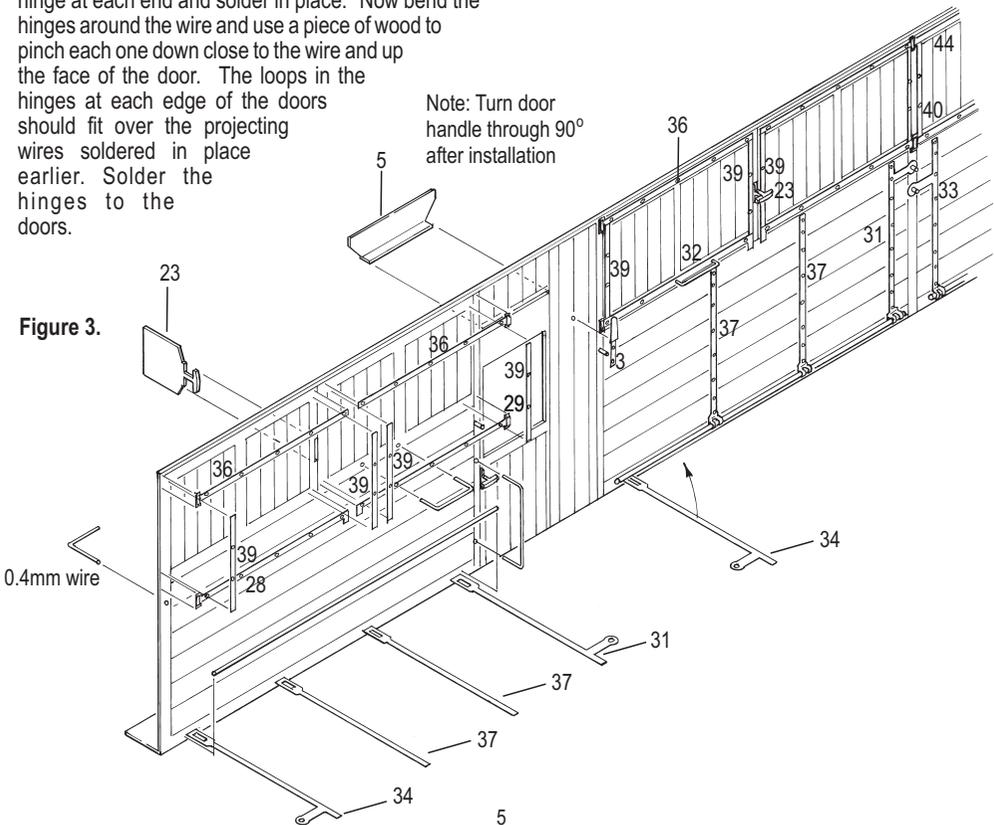


Figure 3.

Upper doors

Insert a door handle (23) through each of the locating slots in the upper doors and solder from behind. Repeat for the slots in each of the groom's doors. The excess tag behind each handle can be trimmed off with a sharp pair of side cutters. Carefully file the area behind the groom's door smooth, so that the window sash can sit flat later on. Use a pair of pliers with smooth jaws to grasp each door handle and twist through 90° , so that the end of the handle is horizontal.

Solder the lower hinges (28, 29, 30, 32 & 40) to the lower edge of the upper doors. Take care to align the holes in hinges 29 and 32 with the holes etched in the sides.

Now add the vertical detail strips (39) to each edge of each upper door. The raised bolt heads on the face of each strip should be centred over the half etched marks on the doors.

Solder the upper hinges (36 & 44) to the top edge of the upper doors.

Body assembly

Refer to figure 4. Bend each end at 90° to the side and bend the narrow strip along the bottom edge double, so that it sits in front of the end. Form the two partitions 'B' to shape and locate the three short tags on one edge in the three slots etched along the edge of one groom's door, so that the tags project and represent the door hinges. Solder both partitions to one side.

The groom's window (17) can be positioned in a closed or open position. Note that the notches in one edge are not evenly spaced and ensure that the window sash is orientated as shown in figure 4. The lower notch in one edge locates against the centre hinge tag on partition B for a closed window. If the window is to be open, locate the upper notch against the centre hinge tag. Solder the window frame in the desired position.

Offer up the second side/end to the first, taking care to locate the hinge tags on both partitions B in the slots in the side. Solder the partitions B to the second side. Solder the groom's windows in place on the second side.

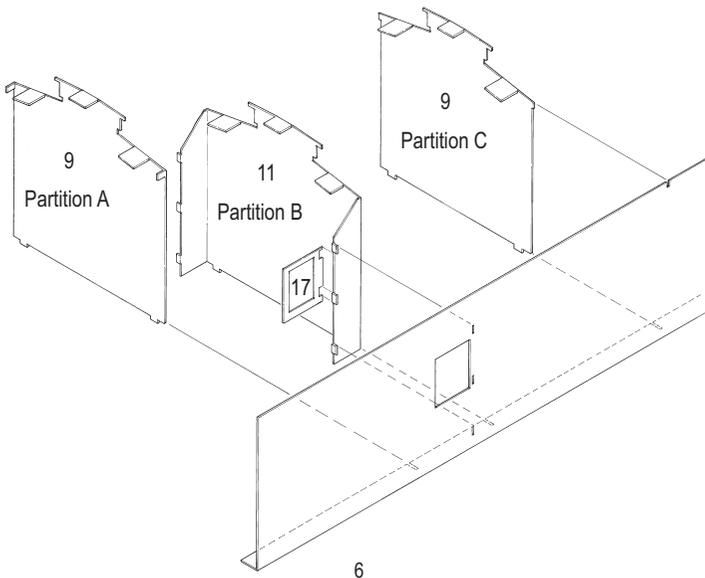
Bend the tags at the top corners of the two partitions 'A' at 90° and insert the partitions between the sides, orientated as shown on figure 4. The tags in the lower corners locate in slots etched in the return edge at the base of each side and the top locates against the edge of the groom's door drip strip (10), soldered in place earlier. Solder the partitions in place.

Locate the partition 'C' in the centre of the body, locating the tags in the bottom edge and top corners in the slots provided and solder the partition in place.

Bend the tags in the top edges of all partitions over at 90° .

Finally, solder the sides to the ends at diagonal corners, taking care not to fill any of the handrail holes with solder.

Figure 4.



Handrails and end details

Refer to figures 3 and 5. Handrails for the groom's doors, the lower corners of the ends and the upper side doors need to be made from 0.30mm wire using the holes marked D, E, and F respectively in the margin of fret 3 to form them to length. Install the handrails in the holes and solder from behind. Use a steel ruler to bend the handrails adjacent to the groom's doors over slightly, so that they stand off the surface of the side at about 65°, instead of 90°, allowing some clearance for the door handle.

The FP vehicles were built in two batches and the end details were different. FP7&10 had handrails and steps for accessing the roof at both ends, as shown on figure 5A. FP12&13 just had a single horizontal handrail across each end, as shown on figure 5B. For FP7&10, bend four handrail shapes from pieces of 0.3mm wire using the hole marked 'D' to set the size. The length is a very small amount too long, so bend a shallow kink in the centre section of each 'U'. Now insert the ends of these 'U' shaped wires through the holes in each end that locate the end steps and solder from behind. Press out the half etched fixing marks on each end step (25) and bend the step at 90°. Thread each step over a wire projecting from the end and solder in place, so that the step tread is horizontal. Trim the wire so that it only projects about 0.15mm and represents a third fixing for each step. Bend further handrails to shape, using the holes marked 'B' and 'C' as a guide. Install the handrails in the holes etched in the ends, as shown on figure 5A and solder from behind.

For FP12&13 bend a short piece of 0.3mm wire into an 'L' shape and install it through the hole in the centre of each end and solder from behind. Trim the end that projects through the end, so that it projects 0.65mm from the surface. Now form two handrails using the hole marked 'A' as a guide, install them across each end and solder from behind. Attach the rail to the stub of wire in the centre with a tiny drop of rubber 'contact cement' applied with a pin.

Solder a tail disc (24), either open or folded, to each end. Note that the tail disc would normally only be open at the rear end of a train.

Solder two lamp irons (3) to each end, so that the middle of each iron is centred over the holes etched towards the bottom and about 5mm either side of the centreline. Solder two further lamp irons to each side, so that each is centred over a half etched mark in the planked area adjacent to the groom's door, as shown on figure 3.

Figure 5A.

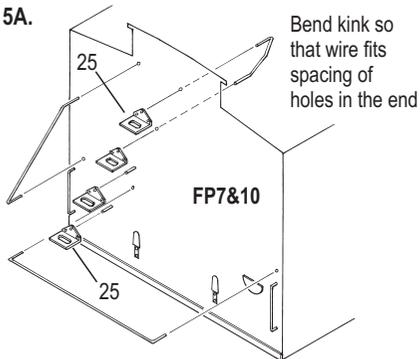
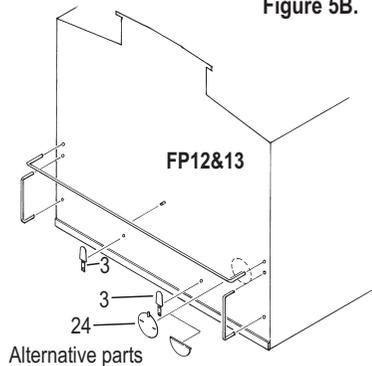


Figure 5B.



Roof

Refer to figure 6. The strips of fret waste between the sides, clerestory sides and the centre sill unit on fret 1 are carefully dimensioned to go behind the openings of the clerestory sides (2). Cut this waste into eight sections 31mm long and four sections 10mm long. These pieces of brass must be soldered behind the clerestory sides very carefully, with the bottom edges flush and the top edges *just* covering the openings in the clerestory sides, so that this extra layer won't interfere with the partitions and the placement of the carlines.

Solder a 10mm length behind the opening above each groom's compartment and then each of the 31mm sections behind a group of three openings, between the ends and the positions corresponding to the partitions.

Now solder the clerestory sides to the body, with the tags on each end of the clerestory side interlocking with the notches in the ends. The tabs extending from the top of each partition, which represent overhanging carlines, should sit in notches in the top edge of the clerestory side. Place individual carlines (20) in the remaining notches and solder them in place.

The upper deck of the clerestory roof has been rolled to shape. For FP7&10 bend two handrails to shape, using the hole marked 'D' in the margin of fret 3. Locate these handrails in the holes at each end of the upper roof deck and solder from underneath, then trim and file any projection smooth on the underside.

Place the upper deck on the roof structure, with the tags on top of each end located in the slots etched in the upper roof. Solder the upper roof deck in place from underneath. A small fillet at each partition and on the inner face of each end is sufficient. Solder a curved strip (5A) on top of each end, up against the lower edge of the upper deck.

A piece of curved polystyrene sheet has been provided for the lower decks of the roof. Cut two sections each 157.5mm long x 10mm wide and check the fit against the body structure. Attach each lower deck section with ACC, applied from underneath.

Use a sharp knife and carefully scrape along the outer edge of each lower roof deck, so that the edge is vertical and hangs over the side by about 0.5mm.

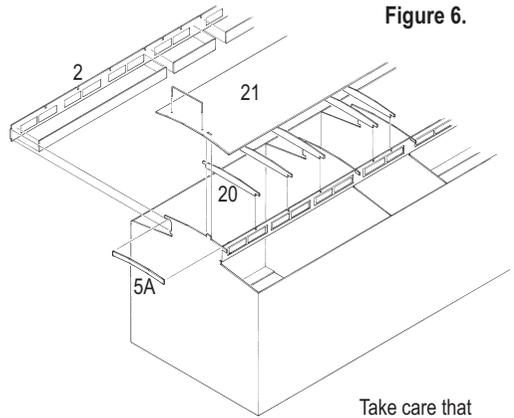
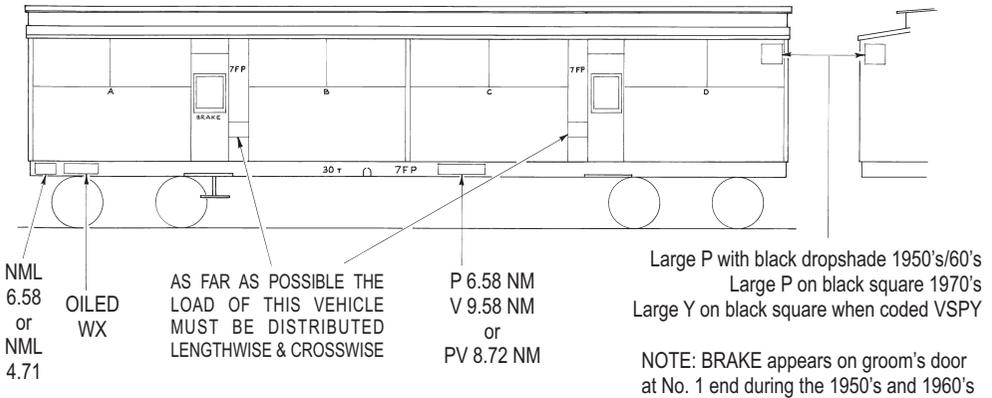


Figure 6.

Take care that patches soldered behind the clerestory side do not interfere with the partitions or the carlines.

Figure 7.



Painting

Wash both the body and the underframe in a bath of methylated spirits to remove flux residue if you have used solder paste, and then a further wash in warm water with a little detergent. Rinse in clear water and set aside to dry. Paint the underframe with black self-etch primer or, alternatively a 50:50 mix of black and grey. Paint the body with grey self-etch primer, followed by a coat of passenger car red. Paint the window sashes of the groom's doors a light grey and the roof, including the sides of the clerestory, mid brown such as Humbrol matt dark earth. The edges of the lower decks of the roof should remain passenger car red.

Apply the decals as per the lettering diagram and seal with a coat of clear flat varnish after the decal film has dried. Glaze the groom's door windows with small pieces of clear plastic, held in place with ACC or contact cement.

Final assembly

There are four small tags along the inside of each side. Bend each tag down at 90 and position the body on top of the underframe, feeding the tags through the slots etched into the top face of the underframe. If you have lettered a groom's door with the 'BRAKE' decal, make sure that it is positioned above the double steps on the underframe. Fold each tag over, to secure the body to the underframe.