

Caley Coaches Ltd

'True Line' kits in etched brass

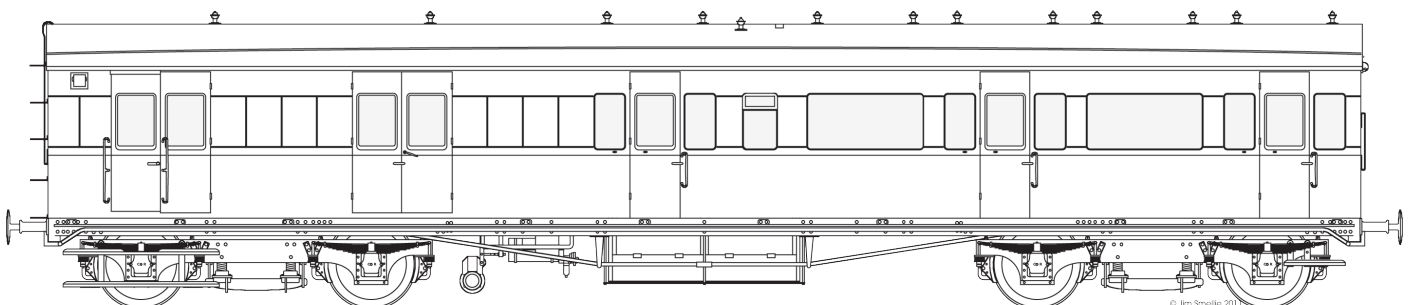
15 Tay Crescent, Bishopbriggs, GLASGOW, G64 1EU

T: 0141 772 5537 E: enquiries@caley.com

Caledonian Railway 1913 Semi-Corridor 57' Stock.

Building instructions covering CC21-24.

- CC21 D114 Lavatory Third**
- CC22 D115 Lavatory Brake Composite**
- CC23 D116 Lavatory Brake Third (illustrated)**
- CC24 D113A Lavatory Composite**



Section 1 Prototype Notes

The 57' semi-corridor stock as represented by this series of kits was first introduced by the Caledonian Railway in 1913 and come from a period in which the Caley had deviated from its traditional 8' wheelbase Fox's pressed steel bogie (to which it later reverted). The 10' wheelbase bogie, together with the style of the coach body which was simply beaded instead of panelled, makes for a distinctive vehicle.

The Caledonian found semi-corridor stock to be very useful having quite a number of longish runs where no dining facilities were provided and hence the passengers had no reason to move along the length of a train. Semi-corridor stock gave each passenger access to a lavatory but they had several advantages over corridor stock :-

- a) slightly higher passenger/weight ratio (hence cheaper to haul),
- b) lower capital and running costs with no vestibule to build and maintain and
- c) quicker for running staff to remarshal train sets as there was no vestibule to uncouple/recouple.

The latter point is important and easy to overlook in these days of fixed sets. The Caley operated many through coaches between diverse parts of the system which necessitated much forming and reforming of trains en-route. Lavatory brake composites in particular were very useful if a single through coach was been run as they were effectively a self-contained train having both 1st and 3rd class passenger accommodation together with a guards van and parcel/luggage space.

Ends are problematic on these coaches not being shown on the G.A.s. They were of the same high elliptical profile as the later 57' coaches and which first appeared on the Caley on 50' stock but what little photographic evidence is available indicates that some coaches had panelled ends while others had matchboarded. Lot H314 of D114 was definitely panelled whereas Lot H318 was definitely matchboarded. On the assumption that things were as clear cut as the evidence suggests —and knowing the Caley they won't be! — I have assigned end types to each lot in the accompanying tables.

The General Arrangement drawings indicate that these coaches were to be built with Havoc roof ventilators and it is believed that they were indeed built with these but at some time during the life of the coaches they were fitted with torpedo style vents. When this took place is a matter of conjecture but it probably happened as and when the old vents were worn out and in need of replacement rather than as part of a concerted effort to replace Havoc vents.

When built most of these coaches were fitted with Westinghouse brake equipment only, the exception being 4 coaches of D115 which were also fitted with vacuum brake for through working onto foreign lines. In about 1933 the LMS undertook a large programme to convert all Westinghouse (only) fitted stock which still has a reasonable life expectancy to vacuum brake which it had adopted as standard at the grouping.

With the exception of number 423 a D113A Lavatory Composite which may have been a war casualty all the coaches lasted in revenue stock until the mid-1950s after which many must still have been in reasonable condition as they seem to have been favourites for conversion to Camping Coaches and in a couple of cases departmental use. So far is as known the last, number 438 of D113A, was not scrapped until 1973 having first been converted to a Camping Coach and then in 1970 to a Mess Van.

C.R. Livery

The Caledonian coach livery was purple brown with off-white panels at the waist level and above. Although these carriages do not have panel mouldings at the waist or eves it was C.R. practice to paint the waist and eve panels to simulate mouldings. i.e. the edges of the waist and upper panels were painted purple brown and lined with a single yellow line at the junction with the white. The outside edges of the coach sides and bottom were given a thin red line. Lettering was gold, shaded to the right and below in red, with white highlights.

On composite coaches the class was written in full on each door at the waist otherwise the class was written on the waist about a quarter of the way along the coach from each end. The company initials were placed on the waist to the

| Diagram 113A Weight : 30t10c | | | | | | | | | | | | |
|---------------------------------|----------------|----------------|------|-------|-----------|-----------------|--------------------|----------------|---|------------|---|------------|
| Lavatory Composite | | | | | | | | | | | | |
| Seating : 25 1st 34 3rd | | | | | | | | | | | | |
| Cpts : 4 1st 4 3rd | | | | | | | | | | | | |
| CR Number | 1st LMS Number | 2nd LMS Number | Lot | Built | Withdrawn | Conversion Date | Conversion Purpose | Service Number | Known Locations/Use | Scrap Date | Notes | End Type |
| 422 | 16008 | 19958 | H307 | 6/13 | 9/5/53 | 6/53 | Camping coach | DM.13 | St. Coms '59; Wemyss Bay '61 | 5/66 | | Panelled |
| 423 | 16009 | 19959 | H307 | 6/13 | 4/44 | | | | | | | Panelled |
| 437 | 16023 | 19960 | H313 | 12/13 | 27/2/54 | 20/3/54 | Camping coach | DM.18 | Barnhill '61-63 | | Body to mess at Craigentinny 1967 | Panelled |
| 438 | 16024 | 19961 | H313 | 12/13 | 27/2/54 | 20/3/54 | Camping coach | DM.16 | St. Monance '61; Arrochar '65; Withdrawn 12/69 | | Converted to Mess van 2/70; to Inverkeithing for scrap 1/73 | Panelled |
| 442 | 16028 | 19962 | H320 | 6/14 | 21/3/53 | 1/54 | Staff bothy | | Dundee | | | Matchboard |
| 443 | 16029 | 19963 | H320 | 6/14 | 27/2/54 | 20/3/54 | Camping coach | DM.20 | Tyndrum Lower '61-63 | | | Matchboard |
| 444 | 16030 | 19964 | H320 | 6/14 | 27/2/54 | 20/3/64 | Camping coach | DM.23 | North Berwick '60; Killin '61; Golspie '64 | 5/66 | | Matchboard |

| Diagram 116 Weight : 29t0c | | | | | | | | | | | | |
|-------------------------------|----------------|----------------|------|-------|-----------|-----------------|-------------------------|----------------|--|------------|-----------------------|------------|
| Lavatory Brake 3rd | | | | | | | | | | | | |
| Seating : 44 | | | | | | | | | | | | |
| Cpts : 5 | | | | | | | | | | | | |
| CR Number | 1st LMS Number | 2nd LMS Number | Lot | Built | Withdrawn | Conversion Date | Conversion Purpose | Service Number | Known Locations/Use | Scrap Date | Notes | End Type |
| 460 | 16532 | 25685 | H306 | 6/13 | 27/2/54 | 3/4/54 | Camping coach | DM.22 | Burghhead '61-63 | 5/66 | Scrapped by Youngs | Panelled |
| 477 | 16549 | 25686 | H306 | 6/13 | 27/2/54 | 20/3/54 | Camping coach | DM.19 | Golspie '60 | 5/66 | Scrapped by Youngs | Panelled |
| 508 | 16579 | 25687 | H306 | 6/13 | 29/3/52 | 16/8/53 | Dormitory & messing van | DE.385071 | for S&T Department | 10/70 | Converted at Cowlairs | Panelled |
| 999 | 17056 | 25688 | H306 | 6/13 | 27/2/54 | 10/4/54 | Camping coach | DM.24 | Aboyne '60; Fairlie High '61-63; West Kilbride '64 | 5/68 | Converted at Cowlairs | Panelled |
| 1160 | 17216 | 25691 | H319 | 6/14 | 10/10/53 | | | | | 12/53 | | Matchboard |
| 1161 | 17217 | 25692 | H319 | 6/14 | 25/12/54 | | | | | 3/55 | | Matchboard |
| 1164 | 17220 | 25693 | H319 | 7/14 | 25/12/54 | | | | | 5/55 | | Matchboard |
| 1165 | 17221 | 25694 | H319 | 7/14 | 24/7/54 | | | | | 9/54 | | Matchboard |
| 1170 | 17226 | 25695 | H319 | 7/14 | 10/10/53 | | | | | 12/53 | | Matchboard |
| 1290 | 17346 | 25689 | H306 | 6/13 | | | | | | | | Panelled |
| 1304 | 17360 | 25690 | H306 | 6/13 | 25/12/54 | | | | | 4/55 | | Panelled |

| Diagram 115 Lav. Brake Composite | | | | | | | | | | | | |
|----------------------------------|----------------|----------------|------------------|-------|-----------|-----------------|--------------------|----------------|---|------------|-------------|------------|
| Weight : 30t0c | | | Seating : 13 1st | | | Cpts : 2 1st | | | 4 3rd | | | |
| (dual fitted) 30t10c | | | 34 3rd | | | | | | | | | |
| CR Number | 1st LMS Number | 2nd LMS Number | Lot | Built | Withdrawn | Conversion Date | Conversion Purpose | Service Number | Known Locations/Use | Scrap Date | Notes | End Type |
| 427 | 16013 | 25975 | H310 | 6/13 | 9/5/53 | 10/5/53 | Camping coach | DM.11 | Elie 1961; Ardlui 1965 | 5/68 | | Panelled |
| 428 | 16014 | 25976 | H310 | 6/13 | 27/3/54 | 27/3/68 | Camping coach | DM.17 | Loch Awe '60; West Kilbride '64 | 5/68 | | Panelled |
| 429 | 16015 | 25977 | H311 | 6/13 | 9/5/53 | 6/53 | Camping coach | DM.15 | Kingussie '61-65 | 5/66 | | Panelled |
| 430 | 16016 | 25978 | H311 | 6/13 | 27/2/54 | 17/4/54 | Camping coach | DM.25 | Comrie '59-61; Kingussie '65 | | | Pnnelled |
| 431 | 16017 | 26979 | H311 | 12/13 | 10/51 | | | | | 1/65 | | Panelled |
| 432 | 16018 | 26980 | H311 | 12/13 | 10/12/55 | | | | | | | Panelled |
| 433 | 16019 | 26981 | H312 | 12/13 | 25/12/54 | 31/3/56 | Camping coach | DM.29 | Roy Bridge '61-63 | 1/65 | Dual fitted | Panelled |
| 434 | 16020 | 26982 | H312 | 12/13 | 9/5/53 | 6/53 | Camping coach | DM.14 | Kentallan '61-62; Wemyss Bay '65 | 3/70 | Dual fitted | Panelled |
| 435 | 16021 | 26983 | H312 | 12/13 | 29/1/55 | 4/2/56 | Camping coach | DM.30 | Wemyss Bay '62 | 10/66 | Dual fitted | Panelled |
| 436 | 16022 | 26984 | H312 | 12/13 | 13/11/54 | | | | | 1/55 | Dual fitted | Panelled |
| 439 | 16025 | 26985 | H318 | 6/14 | 4/55 | 2/56 | Camping coach | DM.31 | Plockton '61-62; Spean Bridge '62-63 | 5/66 | | Matchboard |
| 440 | 16026 | 26986 | H318 | 6/14 | 10/10/53 | | | | | | | Matchboard |
| 441 | 16027 | 26987 | H318 | 6/14 | 19/3/55 | | | | | | | Matchboard |

| Diagram 114 Lavatory Third | | | | | | |
|----------------------------|----------------|----------------|--------------|-------|-----------|-------------------------|
| Weight : 30t10c | | | Seating : 72 | | | Cpts : 8'1 ₂ |
| CR Number | 1st LMS Number | 2nd LMS Number | Lot | Built | Withdrawn | Scrap Date |
| 347 | 16420 | 18963 | H314 | 12/13 | 6/54 | 1/59 |
| 395 | 16468 | 18964 | H314 | 12/13 | 25/12/54 | 3/55 |
| 962 | 17020 | 18961 | H308 | 6/13 | 6/54 | 1/55 |
| 963 | 17021 | 18962 | H308 | 6/13 | 10/51 | 11/51 |

left of the central door with the coach number to the right. The C.R. coat of arms could appear on the lower side panels either once either once on the centre line of the coach or twice about a quarter of the way along the coach from each end — I think this was governed by the arrangement of the coach rather than anything else with the single coat of arms being preferred but two being used if a door or other feature of the coach meant that the single coat of arms couldn't be positioned centrally. It is not believed that the CR Co monogram was used on these coaches at least initially.

When new the roofs were white. This, of course, would quickly weather to a grey/black in service. Underframes and bogies were black.

Fox's Transfers do a nice range of Caledonian transfers which are recommended.

Reference: Caledonian Railway Livery, MacIntosh (Lightmoor Press 2008)

LMS Livery

Soon after its inception the LMS adopted the old Midland colour of crimson-lake for its coach livery. All raised beadings were painted black and edged in a $\frac{3}{8}$ " pale yellow line. It is thought that the LMS carried on the C.R. tradition of painting on the panels at the waist and above the window line. Ends were crimson-lake with steps etc. picked out in black. Roofs were generally painted lead grey above the rainstrips and black between the rainstrips and cantrail but again this would soon assume an overall muddy grey colour in service.

The insignia was applied in gold leaf transfers with the letters LMS (3" high) in the waist panel as near to the coach centre line as possible. The coach number appeared twice in the waist panel towards each end of the coach. It is unlikely that the LMS emblem was used on these coaches. Class was designated by the figure '1' or '3' (8" high) on the doors.

The foregoing describes the initial LMS livery but many changes took place before the demise of the LMS and are tabulated below. Remember, however, that coaches were only due for repaint about every 7 years and that in the late 30's and during the war it was quite usual only to 'touch up and revarnish'. Therefore an individual coach would not sport every change and it is quite possible that some coaches ended the war still fully lined out.

| | |
|---------|---|
| 1923-8 | As described. |
| 1928 | LMS now placed towards the left-hand end and the number towards the right-hand end. |
| 1933 | Coaches renumbered using plain gold transfers. Roof colour specified as metallic aluminium. |
| 1934 | Full lining discontinued. Coaches lined with a single $\frac{1}{2}$ " yellow line just below the cantrail and $\frac{1}{2}$ " yellow line just above the top of the windows probably along the line of the beading. The waist beading would be painted black and edged with $\frac{1}{2}$ " yellow lines. Note that the yellow for both lining and insignia is now a chrome yellow. |
| 1936 | End colour specified as black. |
| 1940 | Form of the class designating 3 changed to a flat top version. |
| Wartime | Roof colour specified as grey and lining discontinued. |
| 1946 | Simple lining reinstated but in straw yellow. |

The HMRS market the excellent range of ex-P.C. Models LMS transfers which are recommended.

Reference: LMS Standard Coaching Stock Volume 1. Jenkinson & Essery (OPC, 1991)

BR Livery

It is thought that most of the coaches would have received the BR all over crimson livery, devoid of any lining. Roofs were grey, underframes and ends black.

The coach number appeared in small yellow letters and figures towards the right hand end of the coach. Class figures were now only on first class doors. The guard's door was usually marked as such in small letters in the waist panel of the door.

Section 2 Building Instructions

Part 1. Parts list

Please check the contents of your kit and inform me of any shortages. If for any reason you wish to purchase parts separately, I can give you a quote for any part unless it is on an etched fret. Normally complete frets only are available.

N.B. Numbers in brackets following a part name are the quantity supplied when other than 1; numbers preceding a part name are identification numbers which will normally be found alongside the part on the etch.

1 Etched parts :-

- 1 Underframe
- 2 Bogies
- 3 Sides and interior
- 4 Alternative Ends (Except CC21)

2 Cast fittings :-

- CC21/1 LH axlebox and spring (x4),
- CC21/2 RH axlebox and spring (x4),
- CC21/3 Bogie bolster spring (x4),
- CC21/4 Buffer stock (x4),
- CC21/5 Havoc ventilator (quantity to suit coach),
- CC21/6 Torpedo ventilator (quantity to suit coach),
- CC21/7 Vacuum cylinder (x2),
- CC21/8 Jumper cable (x4),
- CC21/9 Dynamo,
- CC21/10 Westinghouse cylinder and reservoir,
- CC21/11 Steam pipe (x2),
- CC21/12 Vacuum pipe (x2),
- CC21/13 Westinghouse pipe (x2).

3 Miscellaneous parts :-

- Buffers heads (x4),
- Buffers springs (x4),
- 0.45mm wire (x6),
- 20thou plastic strip (x2),
- Press studs (x2),
- Extruded aluminium roof section,
- Turned and milled brass door handles (quantity to suit coach),
- Seating (type and quantity to suit coach),
- Plastic card,

Glazing material.

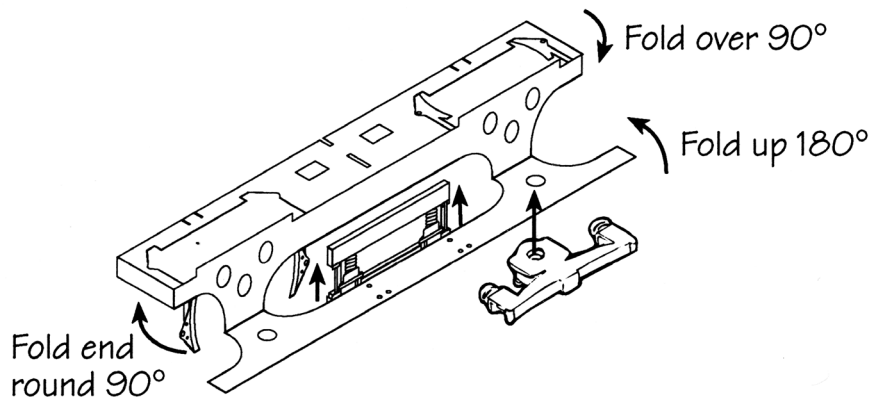
4 Printed matter :-

General building notes,
4mm scale coach drawing,
CC21-24 building instructions (this document !)

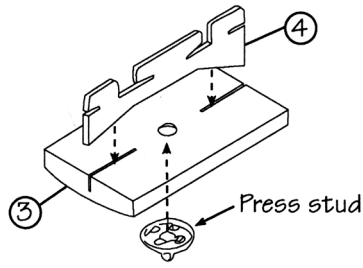
Please note that the coaches are supplied with the most common style of ends for each diagram — should you wish to model the other variety (where appropriate) please return the end etch to me and I will forward the other type. Similarly Havoc vents are supplied — if you wish to fit torpedo vents please return the sprue of Havocs for exchange.

Part 2. Bogies

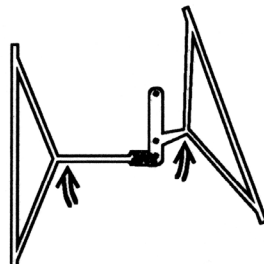
- 2.1 Please study the General Building Notes if you are not familiar with etched brass kit construction in general and *Caley Coaches Ltd* products in particular.
- 2.2 Punch out the rivets in the mainframes, parts (1) and (2) from behind then fold the upright of the frames down at 90° with respect to the centre section. Reinforce the inside of the fold with a fillet of solder.
- 2.3 Tin the inner faces (i.e. the side with no writing) of the main frames and fold up using the bearing holes to ensure alignment and sweat them together.
- 2.4 Fold round the ends of the frames slotting them into the small tabs on the centre section then solder in place.



- 2.5 Remove the two large "glue lands" which project down from the centre of the frame as these are not required for fixing the supplied bolster casting.
- 2.6 Fold down the brake shoes from the frame then solder the wheel bearings in place and add the axlebox and bolster castings. Note that the axlebox castings are handed with the hanger with the triangular plate going towards the ends of the bogies.
- 2.7 On the faces where the two halves of the mainframe come together, there are travel limiter tabs, fold the two which protrude on one frame up a few degrees and fold the corresponding tabs (which do not protrude) on the other half down a few degrees.



- 2.8 Fold up the bolster plate (3) reinforcing the folds with solder then add the rocking knife-edge (4) locating the two triangular shaped tabs into the slot in (3). Take care to ensure that parts (3) and (4) end up perpendicular to each other. Solder the male half of a press stud into the recess inside the box of (3).
- 2.9 Fold up the bearing plate (5) reinforcing the folds with solder, solder the female half of a press stud into the recess and put aside (safely!) for use when building the coach underframe.
- 2.10 Assemble the mainframes (1) and (2) onto the knife-edge of the bolster plate assembly. Simply drop the mainframes over the knife-edge and secure each by twisting one of the tabs which now protrude through the mainframe over a few degrees. If there is too much slop, solder a small piece of scrap brass to the inside of each mainframe to double its thickness and take up the slack. The other tabs are spare in case you ever need to dismantle the bogie.
- 2.11 Insert the wheelsets and check the basic running of the bogie. Note that the wheelsets are about to be locked in place therefore take care to thoroughly clean and dry the assemblies once you have finished to prevent any danger of rust.
- 2.12 Fold up the brake gear A frames as shown below and spring into place between the brake blocks, the long arm pointing up towards the coach floor - on the prototype the brake operating rods would secure to these. Secure by soldering to one brake block either side, say top left and bottom right — if you solder them on each corner the free movement of the compensation is liable to be hindered.



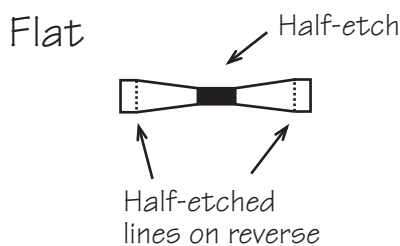
- 2.13 Add the 8 safety loops over the flats of the A frames locating them into the slots in the centre section of the bogie frames prior to soldering.
- 2.14 Finally add steps as appropriate to your coach. For the long steps under the brake ends first fold up and solder in place the lower step then add the upper step into its legs.

Part 3. Floorpan and Underframe

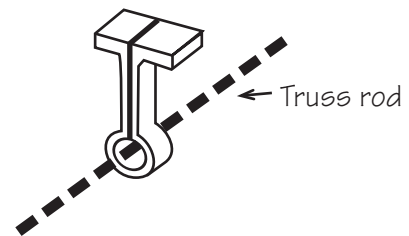
- 3.1 Identify and remove the main floor unit from the fret.
- 3.2 Fold up the long flange at each side to which the lower body will later be attached. Use one of the interior bulkheads as a guide to the angle of the fold.

- 3.3 Press out the rivet detail on the brackets and fold up the solebar footstep fixing brackets and locate the solebar footstep tabs into the slots in the solebars, brackets to the top of the step. Solder in place.
- 3.4 Take the solebars and fold to “L” shapes, locate the tabs into the slots in the floor and solder in place.
- 3.5 Solder the bogie mounting plates into slots in the floor. Fold down the motion limiter tabs on one bogie only by a few degrees — these are finally adjusted when the coach is ready for a test run.
- 3.6 Fold down the locating plates for the outer ends of the truss rods from the floor.
- 3.7 Fold the sides of the battery boxes round by 90° and fit the boxes to the floor. Solder the battery box bottom in place then, using 0.45mm wire, fit the five brace rods between the floor and the battery box base.
- 3.8 Take the queenposts and fold over the locating plates at the outer edges by 90°. Solder one location plate into the recess in the solebar aligning the outer faces.

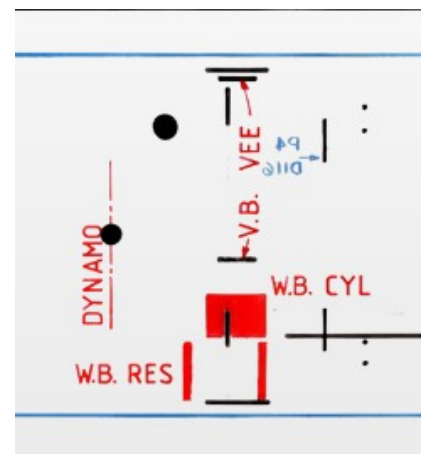
Queenposts



Folded



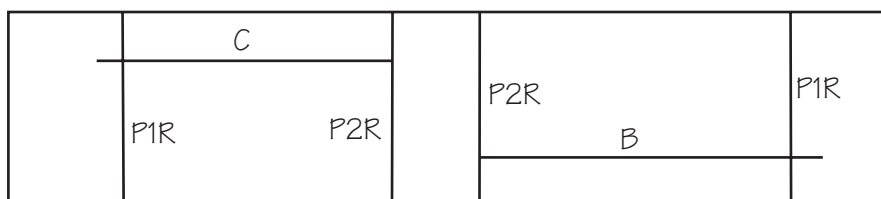
- 3.9 Take two lengths of 0.45mm wire and form the truss rods — use the scale drawing to get the angle of the outer sections correct but measure the width over the queenposts on your coach to get the length for the central section. Leave the outer ends slightly over long for now.
- 3.10 Slip the outer ends of the truss rods into their locating lugs then wrap the queenposts round the rods and solder their other location plate into the recess in the solebar behind the first location plate. Adjust the truss rods as required then solder to the queenposts and the outer lugs, trimming off any excess length once you have done so.
- 3.11 If you are building a Westinghouse fitted coach solder the Westinghouse reservoir and cylinder to the floor of the coach in the indicated position, the larger reservoir goes nearest the solebar.
- 3.12 If your coach is dual-fitted or you are modelling the later period once all the coaches were fitted with vacuum equipment fold up and fit the two sets of ‘V’ hangers and cylinders in the positions indicated on the underframe making the operating rod from wire.
- 3.13 Fit the dynamo in the indicated position.



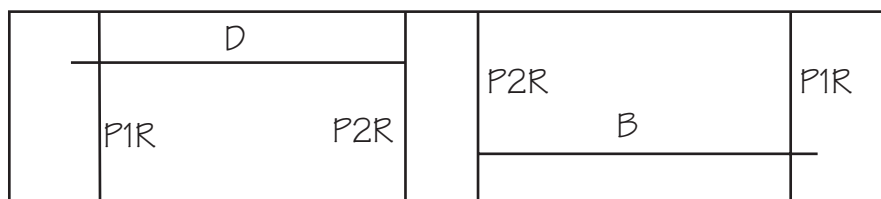
- 3.14 Finally on the inside of the floor pan dress all tabs etc. until they are flush with the floor — they may interfere with the fit on the interior parts otherwise.

Part 4. Interior and Ends.

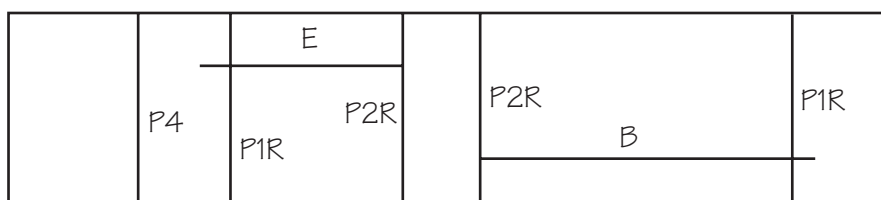
- 4.1 Due to space limitations on the etch not all the interior partitions are modelled in brass. The sketches below indicate which partitions are modelled for each coach. Using one of the supplied partitions as a template make the remaining partitions from plasticard.



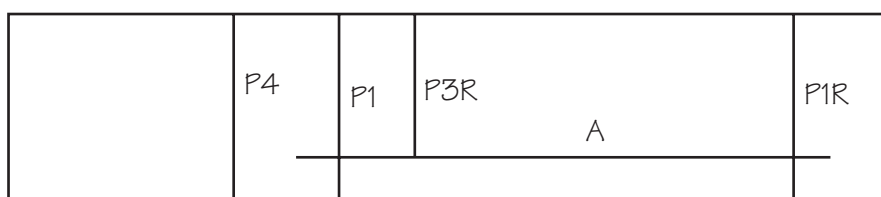
D113A Partitions



D114 Partitions

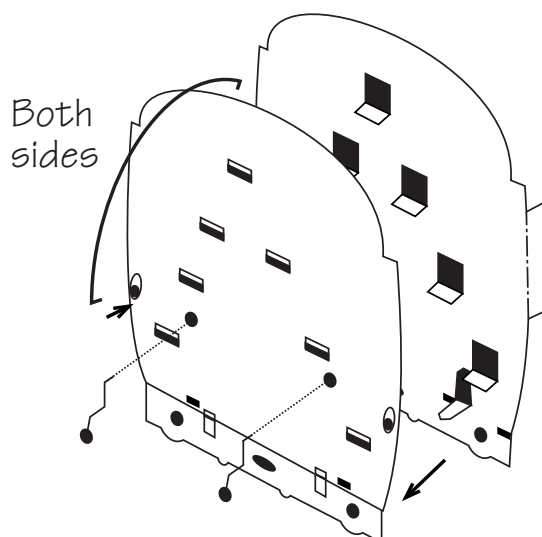


D115 Partitions



D116 Partitions

- 4.2 Slot the various partitions together and solder to the floor then glue the plastic partitions in place (or see the section on painting in the General Building Notes for an alternative view).
- 4.3 Clean up the plastic seats and then glue them firmly in place.
- 4.4 Each end is assembled from two layers. On each inner end bend the lampirons and steps (or train alarm gear lugs) forward at 90° such that they will pass through the slots in the corresponding outer end. On the outer ends press out the rivet detail from behind. Tin the outside of the inner ends and the inside of the outer ends.



Step end

- 4.5 Fit the outer ends over all the projections and sweat to the inner ends. Take care to leave the small slots near the base of the ends clear.
- 4.6 Use a thin piece of scrap brass as a spacer and fold the lamp irons up parallel to the body.
- 4.7 Bend the side location tabs to the rear.
- 4.8 Make up the train alarm gear from wire and fit in place. Fit the cast jumper cables, two to each end.
- 4.9 Fit the handrails on the end without steps.
- 4.10 Drill two 0.45mm holes to take the lower ends of the handrails on the ends with steps. The upper end of these handrails locate on the roof and so are among the last parts fitted.
- 4.11 Fit the ends to the underframe (taking care to get the handing correct) by passing them over the projecting lugs on the underframe. Secure temporarily by folding up the lugs parallel to the body.

Part 5. Sides and Roof

- 5.1 Take the sides and remove any parts from inside the window frames, remembering to dress the tabs.
- 5.2 At each door score the continuations of the door edges onto the lower body side using a straight edge and LIGHT pressure with a sharp knife.
- 5.3 Form the tumbleholme in the lower body sides. Lay the bottom edge of the side on the edge of a 12" rule with the inside facing up, take a length of central heating or similar pipe and lay it on the coach side and roll gently from the waist towards the bottom. This should produce a nice even tumbleholme.
- 5.4 The door hinges are formed by folding the little strips into a double thickness (half-etch to inside), inserting into the slots (3 per door) and soldering in place. Align the hinges such that their outer edges form a vertical line — i.e. the bottom hinge sticks out more. Dress the inside of the lower sides flush such that there are no protrusions which will foul on the long flanges of the underframe.
- 5.5 The sides now require beading using wire. One day multi-layer etching will be an economic reality but for now this is the best way and it is fairly easy (if a little time consuming) once you get going. First thoroughly tin some 0.45mm wire and cut into small lengths to fit between each of the windows. Lay in place in the etched groove, flux then apply a dry soldering iron until the solder runs, remove the heat and allow to cool without moving the work.
- 5.6 The break ends also have some vertical beading which should be formed in the same way.
- 5.7 Tin the inside of the lavatory window hoods and solder in place over the upper light of the lavatory windows on the outside of the body.
- 5.8 Depending on your painting and lining methods you might like to solder the door T and grab handles in place now. This makes the coach trickier to paint but it is more secure than gluing them on after painting.
- 5.9 Tin the long flanges on the underframe then take one side, noting at which end the alarm gear and/or brake end goes, and solder one edge to an end, adjusting the end until vertical.
- 5.10 Solder the other edge of the side to the other end, adjusting as required then tack the side to the underframe flange. Only a few tacks are required — there is no need to try to solder the two together all the way along and something is bound to fall off if you try.
- 5.11 Repeat 5.9 and 5.10 with the other side. You will not be able to adjust the ends this time but they should be in alignment.
- 5.12 Solder the inside of the ends firmly to the underframe.

- 5.13 Take the roof and file small recesses in the flange which sits inside the body to clear the ends. Check the fit of the roof. If necessary dress the tops of the ends with a file, until a good fit is achieved.
- 5.14 Using the G.A. as a guide, drill holes in the roof for the ventilators and fit by gluing. Note that over the van portions of the coaches the vents were placed on the roof centre line otherwise they were off centre by 12" (4mm) displaced to the compartment side of the coach. Where there are two lavatories back to back there are two vents in a line displaced to each side by 12".
- 5.15 Mark the position of the rainstrip on the roof and glue 0.020" x 0.020" plasticard strip in place. Car lining tape could be used if preferred.
- 5.16 At the step end of the roof drill two 0.45mm holes for the handrails.
- 5.17 Fit the buffers, steam heat and brake pipes to the coach ends. The screw link couplings should now be fitted if required.

Part 6. Final Assembly

- 6.1 Paint body, underframe and roof according to period, line and letter.
- 6.2 Fit the door and grab handles as indicated on the drawing if you have not already soldered these in place.
- 6.3 Glaze the windows using the supplied clear plastic sheet.
- 6.4 The roof need not be glued to the body unless desired as it should spring into place.
- 6.5 Fit the handrails at the step end of the coach.
- 6.6 Reattach the bogies then test run the coach. Adjust the limiter tabs on one of the bogie bolsters until there is minimal side-to-side rock between the coach body and bogie — leave the other end free to rock to achieve three point suspension.

Part 7. Acknowledgements

My thanks are due to Alistair Wright for the artwork and design, Niall Ferguson for the prototype and numbering information and Peter Tatlow for the painting notes. I must also thank you for buying the kit!

Other items in the **Caley Coaches Ltd** range

Caley Coaches Ltd now produces a wide range of kits and accessories exclusively for modellers of the Caledonian Railway and its successors. Please see the web site at www.caley.com for full details..