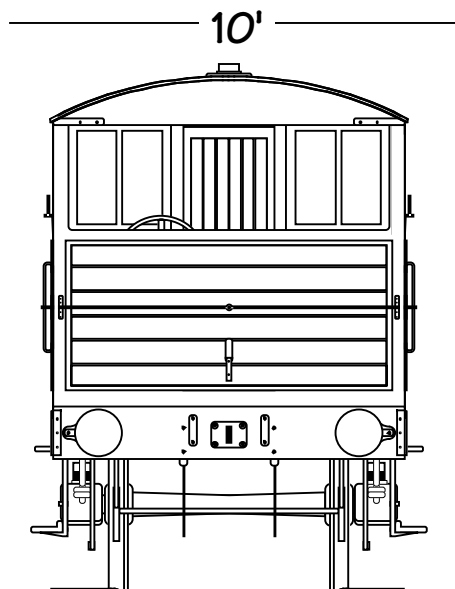
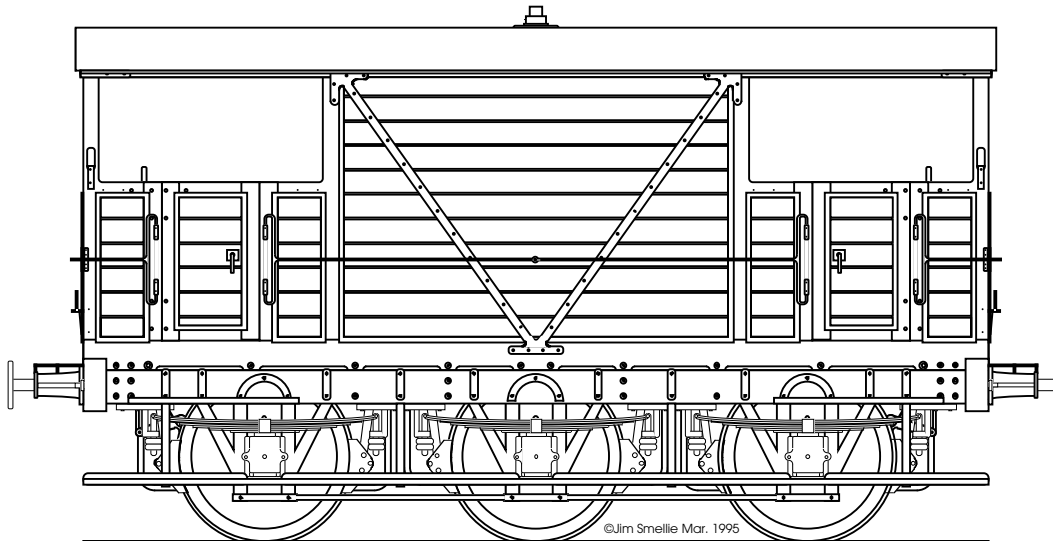


**Caley Coaches Ltd**  
**'True Line' kits in etched brass**

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**Building Instructions for kit CC25**  
**Caledonian Railway 20 Ton Brake**  
**Van**

## Section 1 Prototype Notes

A batch of 40 of these vans were authorised to be built to lot G210 in the period ending January 1903 to undertake main line duties being Westinghouse fitted to work in conjunction with the 30T bogie mineral wagons and Class 600 0-8-0 locos. In the event, the concept of the 30T mineral wagons was abandoned and only one van was built in 1904.

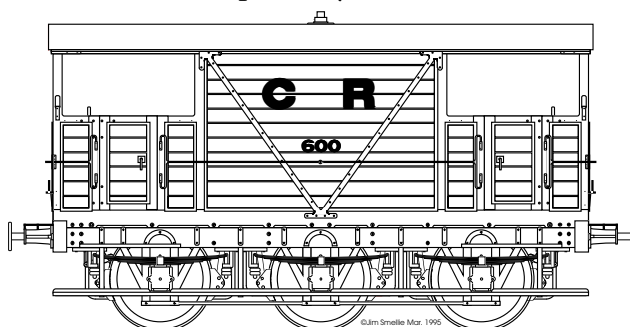
A further batch was however built in early 1907 — a note dated 24/12/06 and initialled by McIntosh states that the roof is to be raised 3" at the centre while two others dated 11/1/07 state that Westinghouse brake is not to go on and that alterations are to be made to the buffers and some internal details of the underframe including the omission of central buffer springs. Unfortunately the details of these alterations were contained on a separate drawing which seems to be lost but it is presumed that self-contained buffers would have been fitted, this being the only change visible from the outside except for the lack of Westinghouse pipes. 20 vans were built to this specification.

Running numbers for the vans are a problem — no Caledonian Railway goods stock number list appears to have survived and the only numbers known with certainty are 600 and 596. Albert Greig of the Caledonian Railway Society has suggested that there was a series of vans with the same numbers as the Class 600 locos (i.e. 600 to 607) but no definite evidence of this has been found.

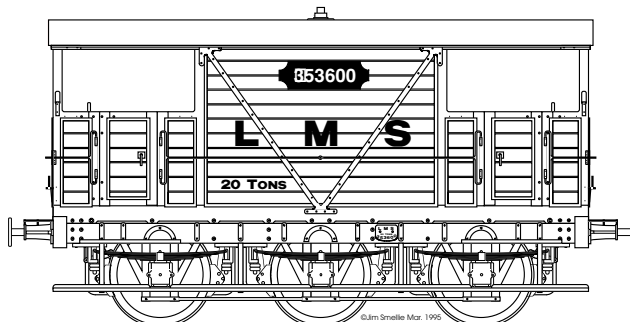
The L.M.S. renumbered Caledonian brake vans by adding 353000 to their original numbers.

Withdrawal dates are also unknown; considering their age, a few vans probably survived into the late '40s but few if any would have lasted into the '50s.

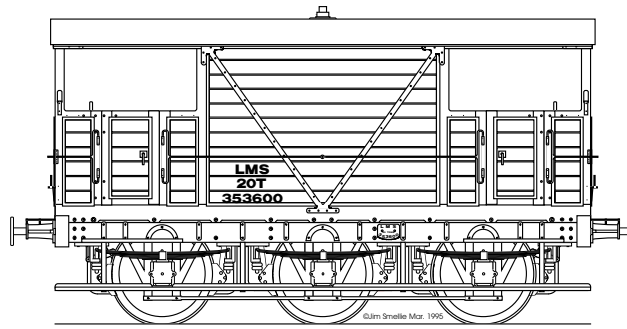
In Caley days the bodywork would have been painted red oxide with vermilion ends, black underframe and white roof. Lettering would have been rendered in white, probably as shown below :



After the grouping in 1923 the L.M.S. would have painted the vans grey — the shade varied according to where and when a wagon was painted. Below the solebars everything was painted black but note that the solebars themselves were painted in the body colour. The roof would have been white and the inside of the van Brunswick green (certainly according to the paint schedule issued in 1929 — this document probably quantified existing practise). Lettering would have been as shown in the drawing below with the 20 TONS branding later abbreviated to 20T.



After 1936 the body colour became bauxite and the insignia smaller, probable set out in 3 lines as shown in the drawing below.



## Section 2 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 Etch containing :-

- 1 Floorpan
- 2 Rocking "W" Iron
- 3 Centre "W" iron
- 4 Fixed "W" iron
- 5 Brake fitting supports (x2)
- 6 Brake hanger and shoe (x12)
- 7 Outer brake "A" frame (x2)
- 8 Centre brake "A" frame
- 9 Outer brake rigging guard (x4)
- 10 Centre brake rigging guard (x2)
- 11 Body side (x2)
- 12 Body end (x2)
- 13 Verandah (x2)
- 14 Roof
- 15 Long verandah seat (x2) Inside part 19, not numbered on etch.
- 16 Short verandah seat (x2) Inside part 17, not numbered on etch.
- 17 Body framing (x2)
- 18 Door framing (x4) Inside part 11, not numbered on etch.
- 19 Verandah side framing (x8)
- 20 End framing (x2)
- 21 Corner strap (x4) Inside part 18 RH, not numbered on etch.
- 22 Lamp iron (x12 — only 6 required!) Inside part 18 LH, not numbered on etch.
- 23 Solebar overlay (x2)
- 24 Running board (x2)
- 25 Hand wheel (x2 — 2 layer)

### 2 Cast fittings :-

- CC25/1 Axlebox (x6),
- CC25/2 5' spring (x6),
- CC25/3 3 bolt "J"-hanger (x4),
- CC25/4 Double "J"-hanger (x4),

- CC25/5 Buffer stock (x4),
- CC25/6 Brake stanchion (x2),
- CC25/7 Stove,
- CC25/8 Chimney top,
- CC25/9 Westinghouse piston,
- CC25/10 Westinghouse tank,
- CC25/11 Westinghouse pipe (x2),  
Self contained buffers (x4)

3 Miscellaneous parts :-

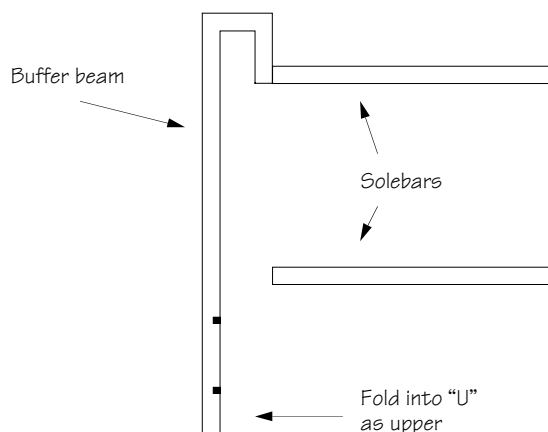
- Buffers heads (x4),
- Buffers springs (x4),
- 0.45mm wire (2),
- Phosphor-bronze wire,
- 1mm square brass section,
- Glazing material.

4 Printed matter :-

- General building notes,
- CC25 building instructions (this document !)

### Section 3 Underframe

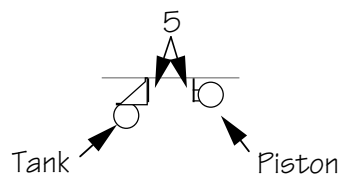
- 3.1 Please study the General Building Notes if you are not familiar with etched brass kit construction in general and **Caley Coaches** products in particular.
- 3.2 Press out the half-etched rivets on the floor-pan (part #1) with a slightly blunt map-tack.
- 3.3 Fold down the solebars to 90°, fold the steps outwards from the solebars until they are parallel with the floor pan. Likewise turn the inner “J” hanger location plates inwards from the solebars — the outer “J” hanger location plates will have folded inwards as you turned the steps out.
- 3.4 Fold down the buffer beams. Fold the ends into “U”s as indicated in the diagram.



- 3.5 Tin the front surface of the buffer beam prior to folding the overlays back up at 180° and sweating in place. File off any tag remnants once the overlay is in place.
- 3.6 Fold the rocking “W” iron pivot and the centre “W” iron location guides down from the floor. Reinforce these folds with a fillet of solder.
- 3.7 On the centre line of the floor there are two tangs each with a small v-shaped groove in the end. These are used during test running to vary the amount of downward force on the centre wheels. For the moment fold them down from the floor by about 45° — note that in order to reduce the chance of these parts breaking off during

adjustment there are no half-etched fold lines.

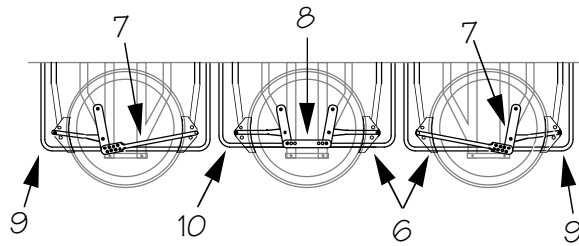
- 3.8 Press out the half-etched rivets from the solebar overlays (part #24) and tin on the rear face.
- 3.9 Tin the front face of the solebars on part #1 taking care to leave all holes clear. Place an overlay in place locating the outer running board supports through the holes in the steps and sweat in place. Repeat with the other overlay. Take care not to block the slots in the solebars.
- 3.10 Fold over the bottom section of the running board supports to take the running board.
- 3.11 Fold up the lip on the running boards (part #24) then solder the running boards to their supports, locating the supports in the half-etched recesses on the rear of the running boards.
- 3.12 Solder the “J” hangers in place now on their location plate before everything gets too cluttered with brake gear. The double ones go to the inside plates, the singles on the outside nearest the buffer beams as per the G.A. drawing on the cover of these instructions.
- 3.13 Press out the half-etched rivets on the fixed “W” iron (part #4) and fold the “W”s and tension wire location plate down at 90°. The bottom section of the “W” folds outwards to 180° giving a double thickness section below the axleboxes and the tie rod locating ears bend round at 90°. Fold the locating tabs at 90° (away from the “W”s) to the central section. Fit to the floor pan (with the wire location plate nearest the centre of the van) using the tabs to aid location and fix in place.
- 3.14 Form the rocking “W” iron (part #2), bending down the “W”s and bending up the strengthening ribs. Ease the centre slot using a slip of emery paper as a file until it can just slip over the pivot then bend the tabs on the pivot over slightly to hold the part in place but still allow it to rock. Note that the rib which has a hole in it goes nearest the centre of the van.
- 3.15 Similarly form the centre “W” iron (part #3). If you are modelling the fitted van solder the Westinghouse fittings location plates (part #5) into the slots in the centre section between the ribs and add the Westinghouse piston and tank castings as shown below:



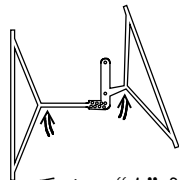
View from rocking “W” iron end

- 3.16 Place the centre “W” iron assembly on centre-line of the floor between the location plates.
- 3.17 Straighten a 2" length of phosphor-bronze wire and bend over the last 3mm to 90°. Thread the long end into the hole in the rib of the rocking “W” iron, then into the holes in the ribs of the centre “W” iron and finally into the hole in the plate of the fixed “W” iron. Pull it through until the bent over “hook” is hard against the rib of the rocking “W” iron, secure by soldering to the fixed “W” iron only and cut off any excess. **Do not** solder to the centre or rocking “W” irons or their movement may be impaired.
- 3.18 Thread a length of 0.45mm wire through the tie-bar locating lugs at the bottom of each of the “W” irons to simulate the tie-bar. Secure by soldering to the lugs of the fixed “W” iron only — again so that movement of the others won’t be impaired.
- 3.19 Since the brake rigging effectively locks the wheels in place it is probably best to fit the bearings and wheels of your choice now. You will however need to be especially careful to clean and dry the wheel assemblies after each construction session or they will rust!
- 3.20 Solder the axleboxes in place over the wheel bearings.

- 3.21 Solder the springs in place above the axleboxes taking care not to impede the movement of the centre and rocking “W” irons.
- 3.22 The overall arrangement of the brake parts is shown below.



- 3.23 Tin the mating surface of the brake hangers and shoes (part #6), fold over and sweat together. File off any tag remnants once the shoes are in place.
- 3.24 Locate the brake assemblies in place on the floor using whichever slots line up with your wheels and solder in place.
- 3.25 Now fold up the “A” frames (part #7 and 8) as shown (part #7 shown, part #8 folds in a similar manner) and solder in place to the back of the brakes.

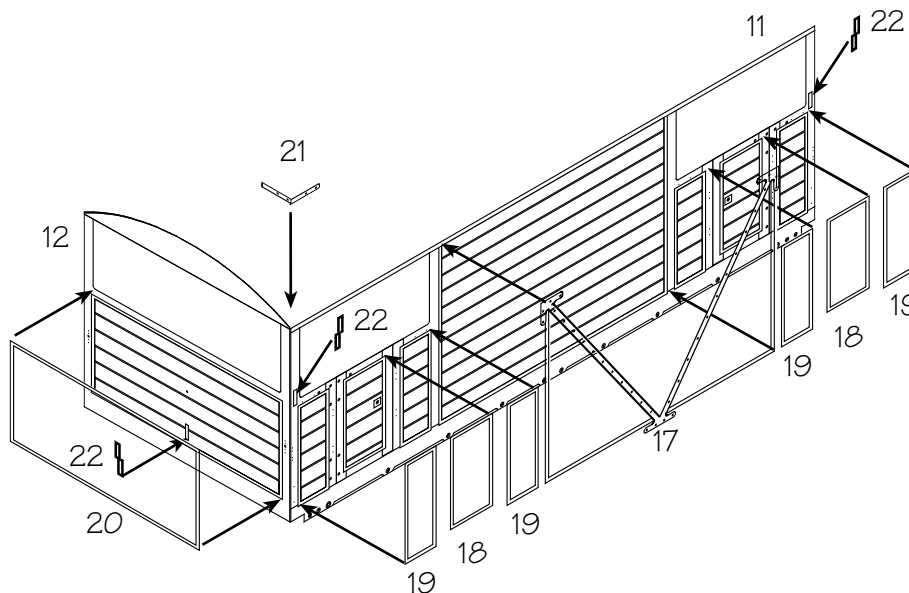


*Twist “A” frames to 90° with respect to the center section*

- 3.26 Solder the brake rigging guards (parts #9 and 10) into the slots in the floor. Note that the inner guards are slightly different from the outer ones.
- 3.27 Drill out the buffer stock castings to suit the heads, fit the bushes to the rear of the holes and then solder the assemblies in place on the buffer beams.

## Section 4 Body

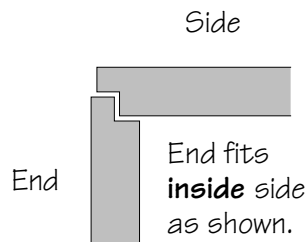
- 4.1 The general arrangement of the body parts is shown in the isometric drawing below :



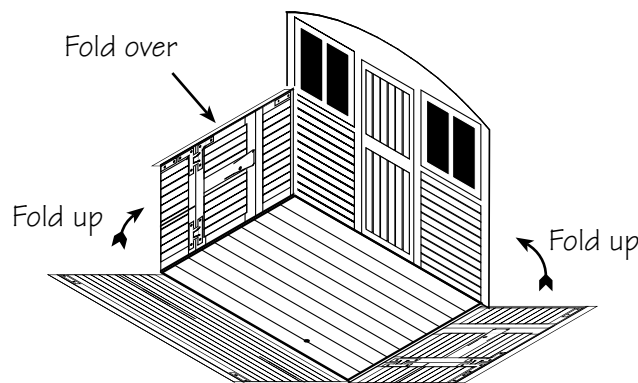
- 4.2 Start by pressing out the rivets on the body sides (part #11). There should be a handrail location hole in the

centre of the body side but unfortunately it is only half-etched so it needs drilled out — sorry !

- 4.3 Fold over the lips of the lower body sides and locate the tabs in the slots of the solebars after opening out the slots with an emery paper “file” if required. Don’t solder anything in place yet.
- 4.4 Solder the ends (part # 12) to the sides, fitting the parts as shown below :



- 4.5 The body assembly can now be fixed to the underframe.
- 4.6 Press out the rivets on the rear of the body framing (part #17), tin its rear face and sweat in place on the body sides.
- 4.7 Similarly, tin the rear of the other framing pieces (parts #18, 19 and 20) and sweat in place as shown in the isometric drawing.
- 4.8 Press out the rivets on the corner straps (part #21), fold to shape and fix in place.
- 4.9 Tin and sweat together the hand-wheels (part #25) to give two double layer assemblies. Solder a short length of wire into the hole in each to represent the handle. Fix the wheels to the cast stanchions.
- 4.10 Press out the rivet detail on the rear of the verandahs (part #13), fit the verandah seats (parts #15 and 16) in place on the verandah ends. The seats are handed, on the long seats which were hinged such that they could fold down out of the way, the etched through line goes nearest the side wall. In the case of the short seats, the projecting corner is slightly rounded.
- 4.11 Fold the verandahs to shape as shown below :



Note that there is a lip which folds over to 90° on both of the sides and the end.

- 4.12 Open out the mounting holes for the brake stanchions and fit the cast stanchions in place.
- 4.13 Position the verandah assemblies in the body and solder in place. Note that the verandahs are handed — the short seat goes on the right when looking from the rocking “W” iron end (and thus the brake stanchions is on the same side as the Westinghouse piston).
- 4.14 Cut 4 lengths of 1mm square brass and solder in place inside the body/end joints — there should be a suitable hole in the verandah lips. These both strengthen the joins and give the prototypical “square timber” look.
- 4.15 Fold six of the lamp irons (part #22) to shape and sweat in place on the body as shown in the isometric drawing. Six spares are provided to allow for practise and/or accidents!

- 4.16 Roll the roof (part #14) to shape and solder the chimney in place.
- 4.17 A cast stove is provided for anyone wishing to detail the van interior but otherwise you are on your own here — it will be invisible when the van is in service!
- 4.18 Now comes the tricky bit — fashion the handrails as shown in the G.A. drawing from the wire provided and solder in place.
- 4.19 Paint and letter the van according to your chosen period, then glaze the van and fit the roof in place. (Alternatively, omit the glazing, solder the roof to the van and then paint — no one will be any the wiser and the roof won't come adrift!)
- 4.20 Fit the buffer springs and heads.
- 4.21 Add couplings to your chosen standard and your van is ready for test running.

## **Part 5          Suspension Tuning**

Adjust the tension in the phosphor-bronze wire using the two adjuster lugs either side of the centre “W” iron assembly so that there is slight downward pressure on the central axle when the van is placed on the track.

You are aiming at the minimum amount of pressure required to hold the centre wheels on the track (so that 3-point suspension is achieved via the two outer axles). A little trial and error while test running the van should give you this.

Other items in the *Caley Coaches* range

*Caley Coaches Ltd* now produces a wide range of kits and accessories exclusively for modellers of the Caledonian Railway and its successors. Please check on line at [www.caley.com](http://www.caley.com) for up to date details.