



Decent Models

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CALEDONIAN RAILWAY & NORTH BRITISH RAILWAY DRUMMOND 4-WHEEL COACHES

THE PROTOTYPE

The development of these carriages dates back to the arrival at St Rollox in 1882 of Dugald Drummond.

At that time, the Caledonian had a pressing need for new rolling stock, and no doubt Drummond's forceful personality was instrumental in persuading the Board to loosen the purse strings.

The design of these carriages was closely based on the early Drummond stock built by the North British.

These Drummond vehicles became the foundation from which all subsequent Caledonian designs were developed.

Westinghouse brakes and gas lighting were standard fit, although some brake-vans (and the Killin Branch brake-composite) were oil-lit.

Construction was rapid at first, but by 1889 had lessened, as new building was by then being concentrated on the new bogie stock. Small batches of 6-wheelers were built into the early 1890's, notably the 5-comp third with 4 lavatories. Finally in 1894 two Picnic Saloons were built, with simplified panelling, similar to the Lambie 45' stock.

A typical branch line train would consist of a 4-wheel Brake Third, 6-wheel Third, 4-wheel First and 4-wheel Brake-van, usually white-panelled (see Livery notes). The 6-wheel (and 4-wheel) carriages were also used to form local sets in the Central Area (Cathcart Circle, Edinburgh local). A typical local set would be 12 vehicles (all brown) either all 4-wheel or 6-wheel, usually comprising 4 firsts, 6 thirds and 2 Brake-thirds.

By the turn of the century, 4- and 6 wheel carriages were disappearing from the Central Area local train formations, with the exception of the Cathcart Circle, where they lasted until 1925.

LIVERY DETAILS

Livery in Drummond's time was all over purple-brown, with panels lined out in gold or yellow, edged on the outside with red. After the adoption in 1890 of the white upper panels, most of the 6-wheel, and some of the 4-wheel stock were so painted, but many local area sets retained the all-over brown, notably the Cathcart Circle and Edinburgh local trains. There were, for instance, no white-panelled 4-wheel Thirds.

Underframes were black, roof (when new) white. Also see painting diagram.

INTERIOR FINISH - CALEDONIAN

Third-class compartments are Teak finish, on doors and side-panels also the partitions above the seats. Running across the partitions, just above the seats, was a very small "FLEUR-DE-LYS" design in red.

The only exception to the above is in the Third saloon, (but not the Family Saloon) where the side/door panels were trimmed in buttoned material to match the seats.

Third-class seats were in a very dark wine colour (Pantone 209).

In First-class compts. the raised wooden framing was Walnut with inset panels finished in Maple. The large inset panel above the Luggage racks was finished in white Lincrusta.

Seats and buttoned side/door panels were a very dark Blue (Pantone 276) with a narrow strip of lace running along the top of the seat back. First-class compartments had dark blue carpets. These are available in photographically reduced form, in full colour, for 7mm modellers who wish to add a touch of class to their models. A word of thanks is due here to John Smith Esquire for the loan of a full-size carpet.

Sample numbers and building dates etc. are provided as an Appendix.

SAMPLE NUMBERS FOR C.R. 4-WHEEL

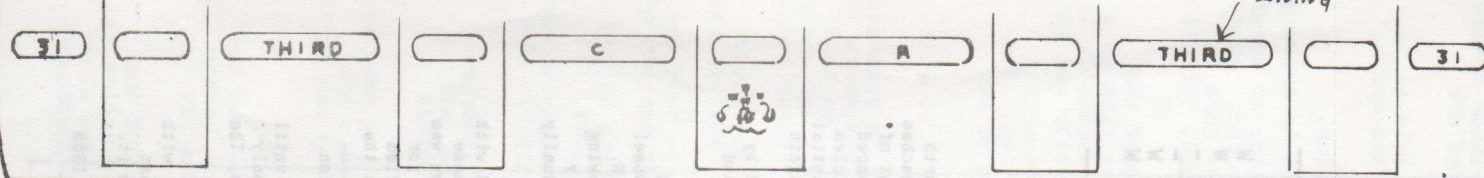
4-Wheel Drummond 1st

Dia. 1 - 4 compt.

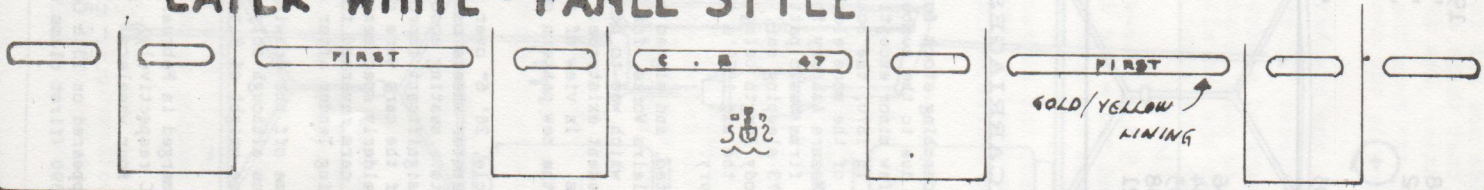
No	BUILT	LMS NO	SCRAP
20	1884	15362	1928
40	1884	15372	1928
45	1884	-	1925
47	1884	-	1925
63	1884	15390	27
100	85	15418	28
110	87	-	1924
113	87	-	1925
150	86	15455	27
182	85	-	25

DRUMMOND ALL-BROWN PERIOD

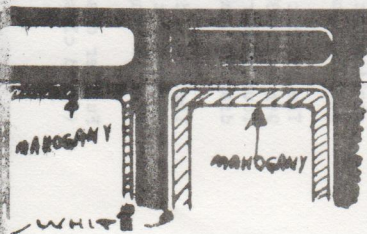
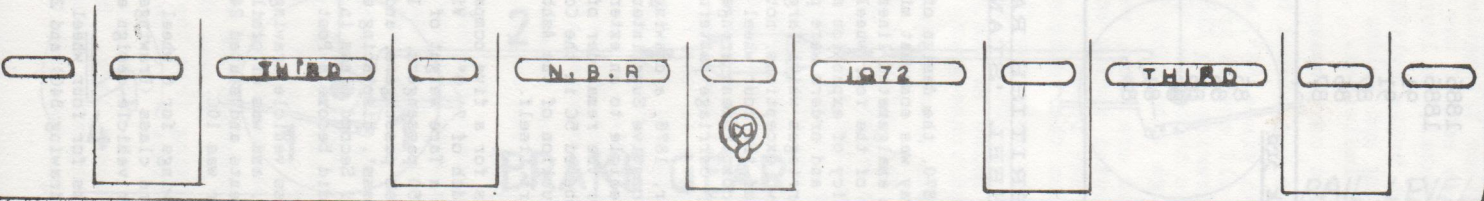
GOLD/YELLOW
LINING



LATER WHITE - PANEL STYLE



Decent Models



CR NOTE
WHITE
OUTLINE AROUND
DROPLIGHT &
WINDOW FRAME
DOOR VENTS
SOMETIMES WHITE,
STILL LINED YELLOW.

NBR

LETTERING - AS FOR C.R.
BODY-SIDES ONLY, "MIDLAND" LAKE,
OFTEN UNLINED.
BODY ENDS & UNDERFRAME - BLACK,
BRAKE-END VERMILION, UNTIL
AT LEAST THE EARLY 1900's.

C.R.

LETTERING
GOLD ~ SHADED RED TO THE LEFT,
AND BLACK SHADING TO RIGHT & BELOW
C.R. VEHICLES ~ LINED PANELS IN GOLD
OR YELLOW - FINE RED LINE ON COACH
OUTLINE - SEE ABOVE. BODY PURPLE-BROWN,
WHITE PANELLED LATER. UNDERFRAME BLACK.
BRAKE-END RED.

Dia. 2 - 5-comp 3rd.

31	1886	-	1925
456	1886	16258	'27
470	91	16542	'28
481	91	-	'25
482	87		25
539	86		25
634	87	16703	'27

Dia. 3 Bk 3rd

170	85		24	W
173	86	16246	26	W
191	86	16264	28	-
220	86	16293	27	-
265	84	16338	29	W
348	84	16421	25	W

NORTH BRITISH RAILWAY
FOUR WHEEL 'STANDARD' CARRIAGES

Until about 1870, the design of passenger coaching stock for the North British Railway was somewhat mixed, mainly due to the numbers of coaches absorbed from amalgamated lines. With a few minor exceptions, most of the stock was of the four wheel variety. In 1870, the Board commenced a further policy of expansion and renewals of the more elderly vehicles in the fleet, and orders were placed with Messrs Ashbury for substantial numbers of carriages which largely to that firms basic pattern. Again with one or two exceptions, notably the 1873 sleeping car, all the coaches were of the four wheel type, the body length being dictated by the interior compartment arrangements. By the mid 1870's the NBR had its 'standard' carriage pattern - the Ashbury.

On 9th October, 1876, a drawing was completed, and signed by Dugald Drummond, Locomotive Superintendent at Cowlairs Works, for a four wheel third class vehicle to an external pattern which was to be the N.B.R. 'standard' for the remainder of its independent existence. The drawing was later numbered 5C in the Cowlairs lists. In view of the fairly recent construction of the Ashbury fleet, the new pattern only gradually began to assert itself.

The design was for a five compartment vehicle, 28' 6" over body and with an overall width of 7' 6". With 4' 0" diameter wheels on a wheelbase of 16' 0" and a Tare weight of 10 tons 4cwt., seating accommodation was provided for 50 passengers. It provided significant improvements for the third class passengers, and a number of the cars were reclassified as 'Second Class', displacing some rather elderly specimens. With the abolishment of Second Class in 1891, these cars reverted to Thirds, although one did become a Post Office Sorting Tender after adaptation.

The first class vehicle drawing did not come off the drawing board until 9th May, 1877, and was of similar dimensions although only it had only four compartments and seated 24, with a Tare weight of 8 tons, 8cwt. The drawing number was 10C.

The first drawings for 6 wheel carriages emerged in February, 1878, with first and third class (Drawings 16C and 17C respectively). Not that the new longer vehicle design eclipsed the four wheelers. Far from it.

Further designs for four wheel carriages appeared on 13th October, 1888 (third class drawing 84G) and 25th April 1890 (first class drawing

101C), the main difference being that the width of the bodywork was increased from 7' 6" to 8' 0". These became the new 'standard' four wheelers for the NBR, and a number were built over the next few years until the six wheel coach came into its own. It is interesting that the design for these 4 wheel firsts appeared the year after that for the first NBR bogie coaches which also included a full first (Drawing 87C).

A further design appeared for 8' 6" wide four wheel passenger vehicles in 1913 as part of the formation of proposed close coupled suburban stock, but this did not materialise.

No brake ended four wheeled passenger carriages were introduced until May, 1893, (Drawing 337C), well into the six wheel era. Hitherto, the brake and parcels accommodation on trains had been provided by the use of full brakes. Initially, these carriages had the 'duckets' sloping down and out from beneath the cantrails, but later builds had the 'duckets' projecting straight out from the cantrail, curving away below. This alternative arrangement had also been provided at one end of the four wheel full brake vehicles.

Apart from the Brake Third, no composite vehicles were built to the Drummond pattern on the four wheel chassis.

The earliest known NBR Carriage Diagram Book is dated 1908, and in this the 7' 6" wide First and Third Class Vehicles are allocated Diagrams 20 & 23 respectively, being renumbered 22 & 24 in the c1921 book. In early LNER days they were allocated SSA Diagram Numbers 20B & 22B.

The corresponding Diagram Numbers for the 8' 0" wide vehicles were 20 & 22 (1908), 21 & 23 (c1921), and 19B & 21B (LNER SSA)

Diagram Numbers for the Brake Third and Full Brake four wheelers are 24 & 26 (1908), 25 & 27 (c1921) and 23B & 25B (LNER SSA). Only the Full Brake vehicles survived in Capital Stock until the 1938 Hollerith Code reclassification and they became LNER Diagram 3006).

No Carriage Register is known to exist for NBR vehicles, with the earliest being that issued c1930 by the LNER, but it is possible where no alternative exists, to make assessments of running numbers by referring to the fleet sizes in conjunction with Board Minutes.

Specimen Running Numbers:

First Class (7' 6"):	NBR	5,	150,	153.					
	LNE	31871,	32016,	32019.					
First Class (8' 0"):	NBR	2,	8,	81,	100,	117,	291.		
	LNE	31868,	31874,	31947,	31966,	31983,	32157.		
Third Class (7' 6"):	NBR	1212,							
	LNE	31212.							
Third Class (8' 0"):	NBR	27,	135,	222,	1071,	1191,	1282.		
	LNE	327,	3135,	3222,	31071,	31191,	31282.		
Brake Third	NBR	88,	199,	213,	348,	1257,	1272.		
	LNE	388	3199	3213,	3348,	31257,	31272.		
Full Brake (Small LO)	NBR	33							
	LNE	333,							
Full Brake (Large LO)	NBR	36,	54,	74,	80,	102,	198.		
	LNE	336,	354,	374,	380,	3102	3198.		

NORTH BRITISH RAILWAY FOUR WHEEL PASSENGER STOCK 1908 & 1921 DIAGRAM BOOK INDEX LISTS

Diagram

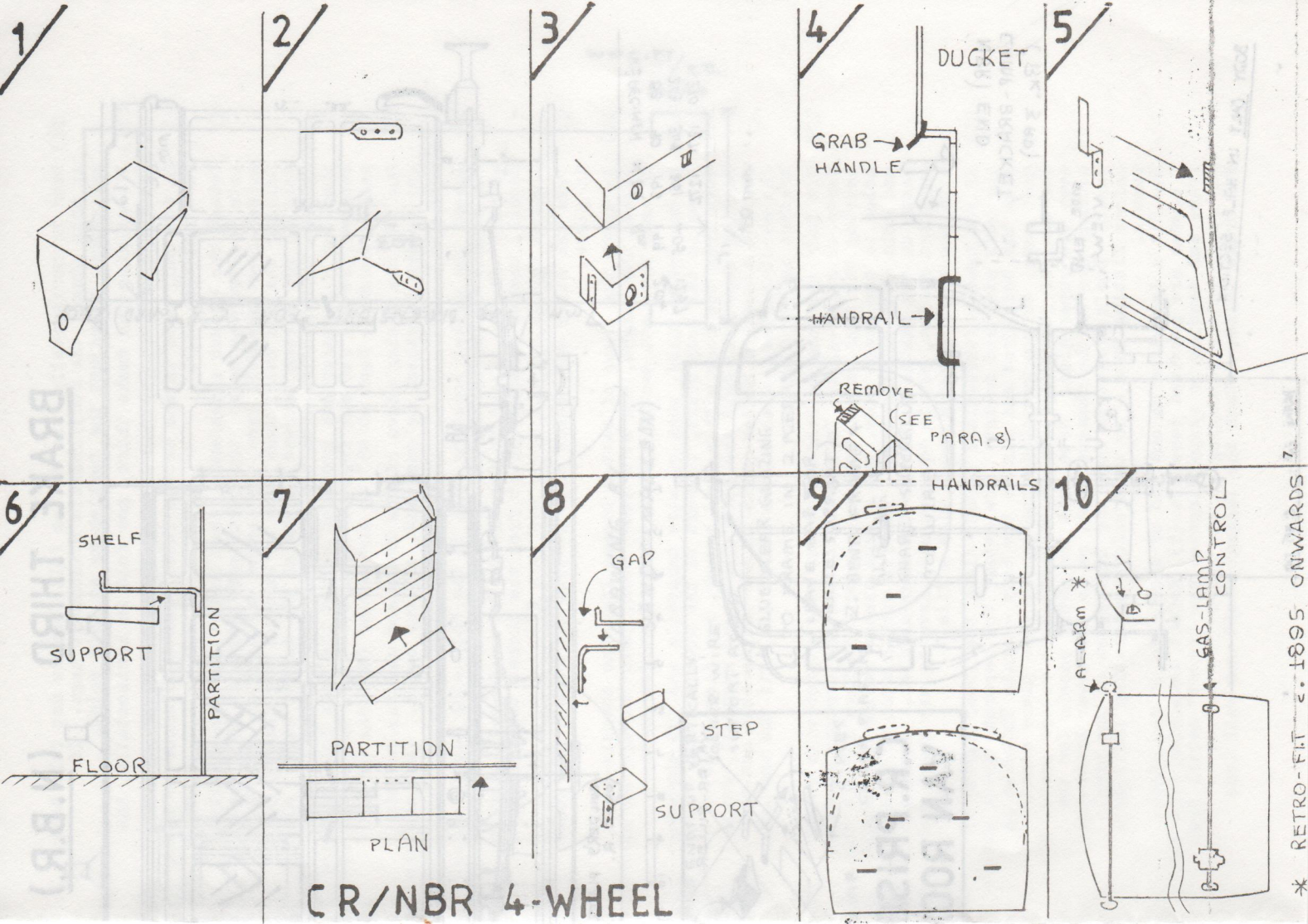
<u>1908</u>	<u>1921</u>	<u>Body Sizes & Roof Height</u>			<u>Type of Accommodation and Notes</u>
20	21	28' 6"	x 8' 0"	x 11' 7½"	4 Compt First Class
21	22	28' 6"	x 7' 6"	x 11' 7½"	First Class
22	23	28' 6"	x 8' 0"	x 11' 7½"	5 Compt Third Class
23	24	28' 6"	x 7' 6"	x 11' 7½"	Third Class
24	25	28' 6"	x 7' 6"	x 11' 7½"	3 Compt Third Brake
26	27	23' 3"	x 7' 6"	x 11' 8"	Passenger Brake Van
28A	30	28' 6"	x 7' 6"	x 11' 7½"	P.O. Sorting Tender
29	147	27' 3"	x 7' 6"	x 11' 0"	4 Compt First Class
30	31	25' 0"	x 7' 6"	x 11' 0"	5 Compt Third Class
31		22' 8"	x 7' 6"	x 11' 0"	2 Compt Third Brake
32		22' 8"	x 7' 6"	x 11' 0"	Passenger Brake Van (Ashbury)
95	86	25' 0"	x 8' 0"	x 11' 4"	Passenger Brake Van (Ex MSJS)
99		28' 0"	x 7' 6"	x 11' 0"	3 Compt Third Brake (727&729)
100	90	28' 0"	x 7' 6"	x 11' 0"	5 Compt Third Class (Ashbury)
101	91	25' 0"	x 7' 6"	x 11' 0"	4 Compt Third Brake (Ashbury)
102		27' 3"	x 7' 6"	x 11' 0"	3 Compt Third Brake (Ashbury)
103		22' 8"	x 7' 6"	x 11' 0"	4 Compt Third Class (ex Second)
105	33	22' 10"	x 8' 0"	x 10' 7"	Hounds Van (Ex 5T)
109	134	25' 0"	x 7' 6"	x 11' 2"	4 Compt Composite* (2F.2T)
111	96	25' 0"	x 7' 6"	x 11' 0"	3 Compt Saloon Third (TST)
114		28' 9"	x 7' 9"	x 11' 9"	4 Compt First Class (Ex ECJS)
115		28' 0"	x 7' 6"	x 11' 0"	4 Compt First Class (Ashbury)
116	98	23' 3"	x 7' 6"	x 11' 6"	2 Compt Third Brake
117		16' 0"	x 6' 0"	x 7' 11"	Port Carlisle Dandy No. 1
118		21' 0"	x 7' 9"	x 9' 0"	No. 2

* = Vehicles altered to Third Class by 1921.

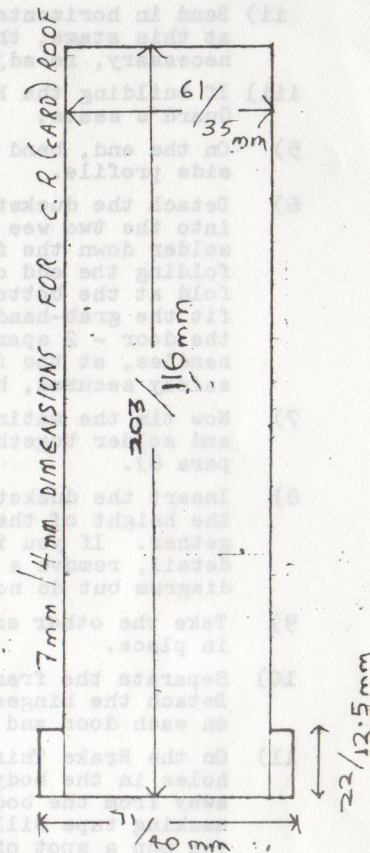
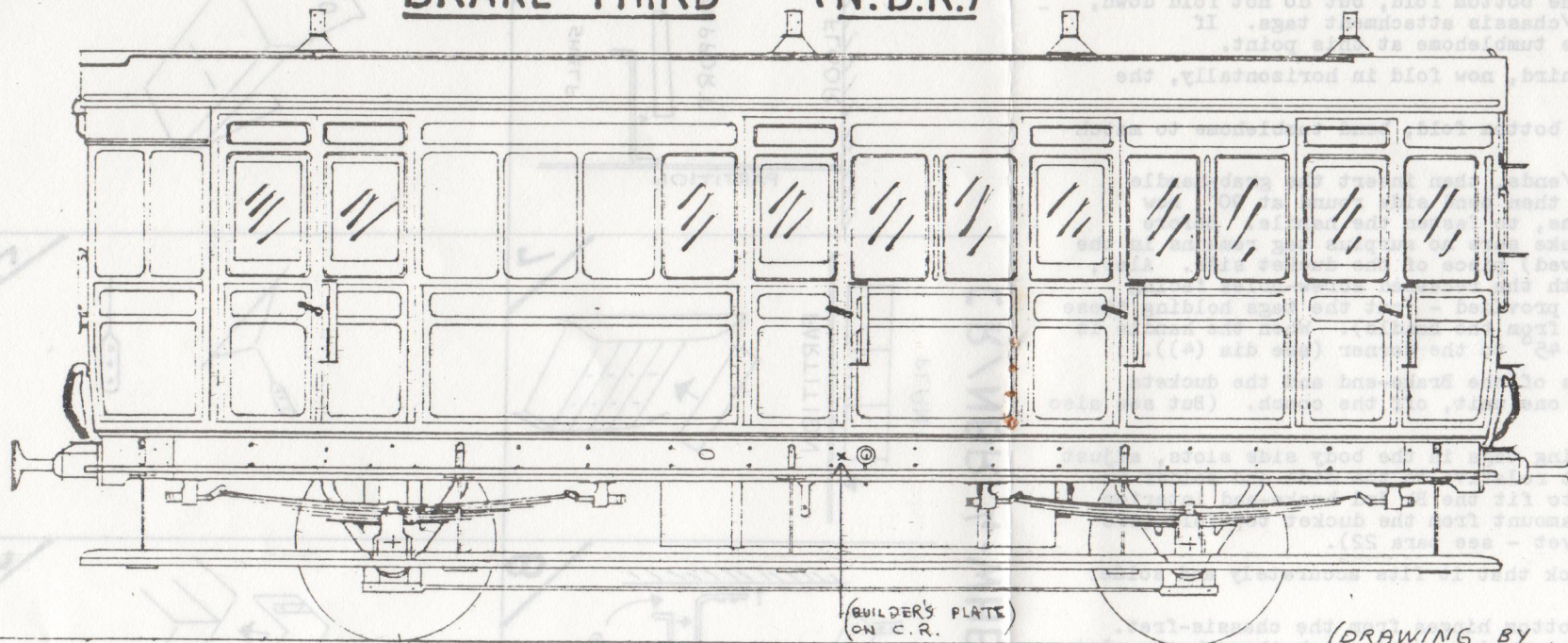
\$ = Vehicles altered to Semi-Open Third Class by 1921.

CALEDONIAN/NORTH BRITISH DRUMMOND 4-WHEEL BODIES

- 1) Identify the 3 body/chassis attachment tags on each side and remove the body sides from the fret, leaving these tags intact and unbent. (Do not detach Guards seat on Bk 3rd from the side).
- 2) While the sides are still flat, fit droplights to the doors, open or closed to choice. Note that 3rd class droplights are on the chassis fret, 1st class are alongside the body of the carriage. Open droplights will block the hole for the door handle, so redrill this as necessary.
- 3) Detach the appropriate ends (two 3 step for First and Third, one 5 step and the Brake end, obviously, for Brake Third) -curve bottom part of the end, to match side profile. Do not detach fold-in plate at the bottom of the ends, this bends inwards, after you have curved the end, as above.
- 4) Now form the tumblehome on the sides - I use a piece of copper central heating pipe, with the side (upside-down preferably) resting against the bevelled edge of a ruler, taped to a board, so that the ruler cannot move. Check against the end profile, then bend the side as follows
 - i) Top fold - bend in to the end profile for C.R, bend in horizontally for NBR. On the latter only, now bend up vertically the little ears, and strengthen these with solder - these will support the vac-form roof.

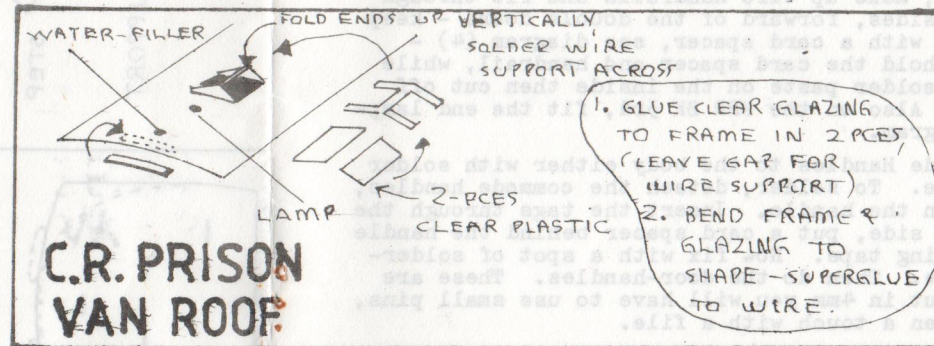
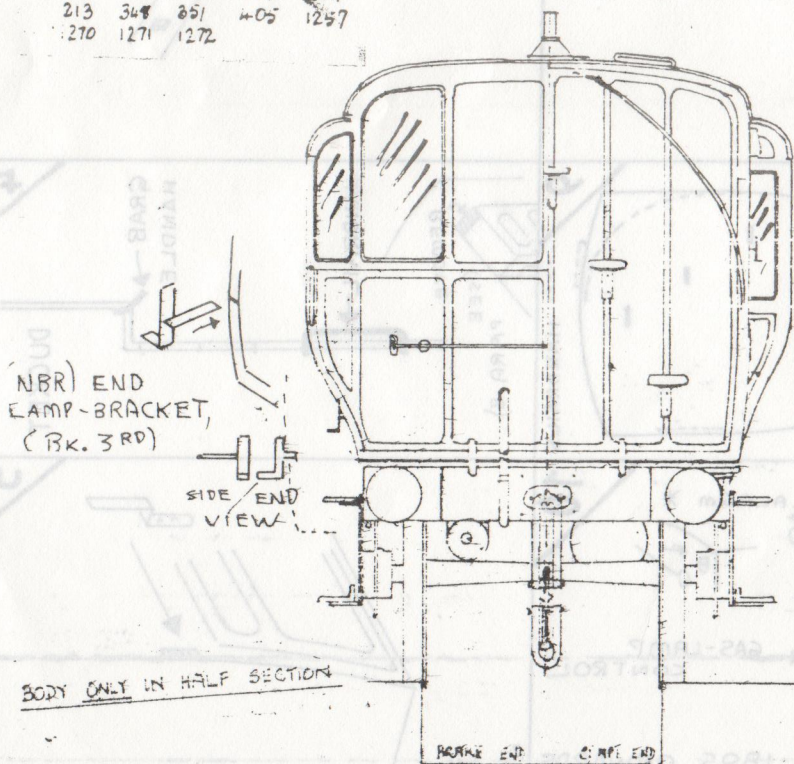


BRAKE THIRD (N.B.R.)



SPECIMEN	N.B.R.	Nos.
88	90	193
213	348	251
270	1271	1272

(DRAWING BY
SANDY MACLEAN)



- ii) Bend in horizontally, the bottom fold, but do not fold down, at this stage, the body/chassis attachment tags. If necessary, re-adjust the tumblehome at this point.
- iii) If building the Brake Third, now fold in horizontally, the Guard's seats.
- 5) On the end, bend in the bottom fold, bend tumblehome to match side profile.
- 6) Detach the ducket sides/ends, then insert the grab-handle into the two wee holes. then bend side round at 90°; now solder down the fold line, to fasten the handle. Before folding the end over, make sure no surplus tag remains in the fold at the bottom (curved) piece of the ducket side. Also, fit the grab-handles with the recessed screw-holes facing the door - 2 spares are provided - (cut the tags holding these handles, at the far end from the handle). When the handle is safely secured, bend at 45° to the corner (see dia (4)).
- 7) Now tin the mating edges of the Brake-end and the duckets and solder together, as one unit, off the coach. (But see also para 8).
- 8) Insert the ducket locating tags in the body side slots, adjust the height of the ducket relative to the side and solder together. If you intend to fit the Bk 3rd brake-end interior detail, remove a small amount from the ducket top fold (see diagram but do not fit yet - see para 22).
- 9) Take the other end, check that it fits accurately and solder in place.
- 10) Separate the frame of bottom hinges from the chassis-fret. Detach the hinges, one at a time, bend, push through the slot on each door and secure with a touch of solder paste.
- 11) On the Brake Third, make up wire handrails and fit through holes in the body sides, forward of the double doors - keep away from the body with a card spacer, see diagram (4) - masking tape will hold the card spacer and handrail, while you pop a spot of solder paste on the inside then cut off the surplus wire. Also on the NBR BK 3rd, fit the end lamp-bracket as per diagram.
- 12) Fit Door and Commode Handles to the body either with solder paste or super-glue. To solder, detach the commode handles, leaving the tags on the handle. Insert the tags through the holes in the coach side, put a card spacer behind the handle and hold with masking tape. Now fix with a spot of solder-paste on the inside. Then do the door-handles. These are supplied in 7mm, but in 4mm you will have to use small pins, with the heads given a touch with a file.
- 13) If you have a fibre-glass brush, clean the lower panels on the body side and ducket. Now detach the separate lower panels from the body fret and fix to the body - again Thixofix is good here, as you can slide the panels into place nicely. You can, if you prefer, sweat them on, with solder paste, or even use super-glue. Note that the extra panels for the duckets are on the chassis fret, as is the lower Brake-end panel. Don't forget to form the tumblehome on the panels before fitting them - do this before separating individual panels.
Now fit a lamp-iron on one end of each side of the coach, 2 spares are provided (see dia (5)). Before detaching from the frame and bending to shape, impress the "rivet" detail from the rear, before soldering on the body.
For Brake Third, detach the Luggage Compt end-wall (one

marked "SHELF") from the chassis fret. Now go to the body fret and detach the shelf and its support. Bend these as per diagram (6). Fit support centrally, underneath the shelf, then solder shelf to the wall where so indicated.

- 14) Fit the brass partition c/w shelf into the coach and solder to the sides at the end of the Luggage Compt - rest it against the end of the handrails, protruding inside the coach.
- 15) Detach the inside layer for the Brake end. Detach the letter rack and bend, gently, as in Dia.(7). But before that, detach one piece "A". Bend in the following order (all bend lines inside).
 - 1) Bend 'C' in, then 'D', followed by 'B'.
 - ii) Then, with snipe-nose pliers, carefully fold piece "A" which is still attached, at angle indicated. Now re-attach other piece 'A' at the same angle. This is a nuisance, but was dictated by space constraints on the artwork.
Now solder the rack on the inside of the interior layer, but do not fit to the coach yet. (See para 22).
- 16) Door ventilators - Caledonian are etched (3rd on chassis fret, 1st on the body fret) and North British are cast. Either way, you can fasten them with solder paste (through the hole inside the door) or with adhesive. When removing the Galey 3rd class ones from the chassis fret, I would recommend leaving the gas-lamp controls on the fret, they are easily damaged.
- 17) Now you need to detail the ends, with steps and handrails. For the steps, you have a choice of two methods:-
 - i) Impress "rivet detail" on the rear of the end, at each step position.
 - ii) Detach the actual steps, fold, pass through the slots in the end, solder on the inside - end of story.
Or, if you wish to have more correct detail, then detach the step supports, fold, and solder to the outside of the ends in the marked positions. Then solder the steps to the supports, but spaced away from the ends, by virtue of a card spacer. This is more fiddly, but worth it for the improved appearance. See Diagram (8).
- 18) Now fit the handrails - see Diagram (9).
- 19) Detach a gas-lamp control from the fret and fasten to the appropriate end (3-step end with 3 small holes, or the 5-step end). Place the handle across the 3 holes, hold in place with masking tape, with card spacer, to keep it off the end of the coach and fasten with fuse-wire, soldered from the inside.
- 20) Finish off the ends by fitting the gas-lamp control, and the alarm gear box - having also fitted, where appropriate, the alarm ears and the alarm paddles - see diagram (10).
- 21) Finally, make a card roof to the dimensions given and fit a lamp centrally over each compartment.
- 22) After the body is painted and the glazing fitted to the rear of the brake-end interior (recess on the rear of each large window) - slide the painted interior down through the small gap between the external end and the folded over duckett-side, glue in place. Paint luggage area interior walls a stone colour, guards seat black.
- 23) When the body and chassis are all nicely painted, clip together by gently sliding the body attachment tags through the holes in the floor and twist with pliers to hold the two together.

PAINTING

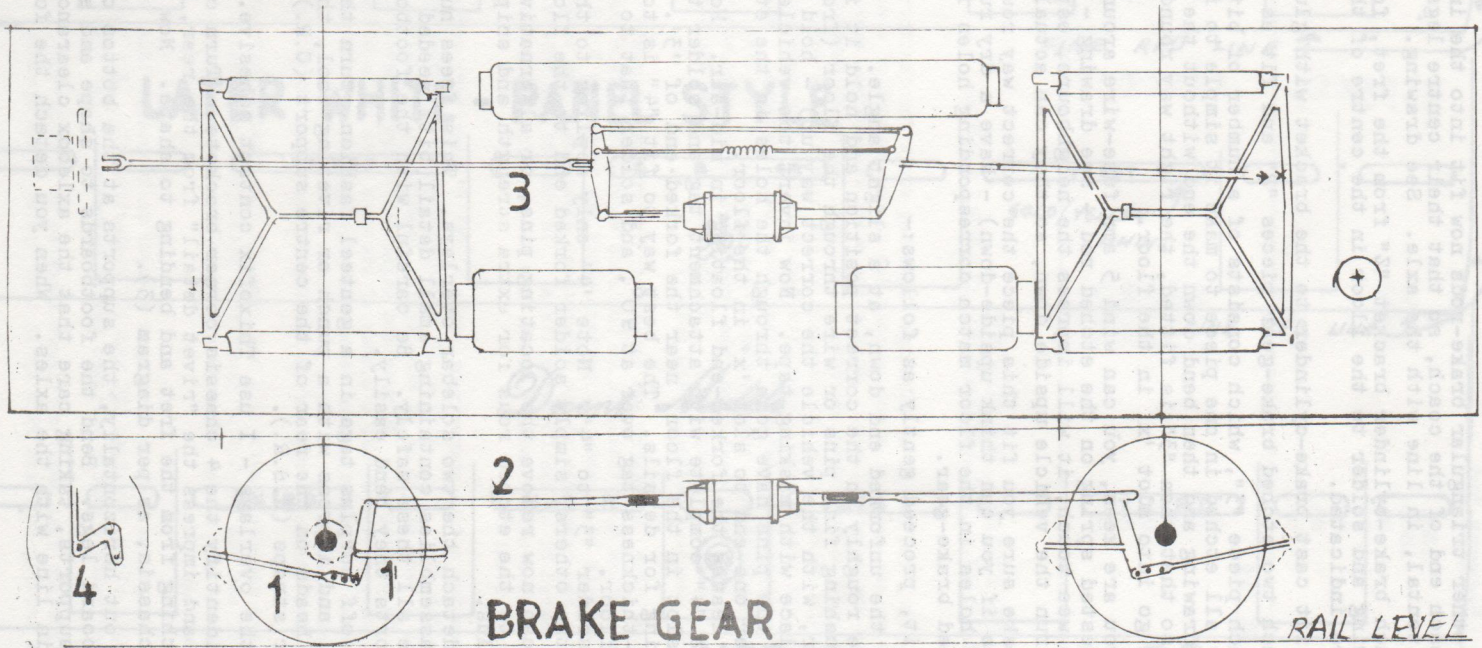
Correct shades of white and purple-brown are available from your kit supplier. To ensure that the purple-brown looks correct, I now airbrush that over a black undercoat. I do the yellow lining next, and then outline the white panels by dropping thinned white paint into each panel in turn, so that the paint runs around the panel, to neatly define the edges. You can then build up the white with successive coats, brushed out thinly.

Lettering is as per the diagram. At the time of writing the hoped for transfers for lettering and crests have still to materialise - keep in touch with supplier for availability.

CHASSIS

- 1) Detach main chassis and file off surplus tags. Remove coupling hook-sockets (attached to one wheel unit) and store safely. At this stage do not disturb the brake-shoes.
- 2) Bend the chassis to shape, in the following order:-
 - i) Bend down the chassis sides.
 - ii) Bend out the top footboard each side.
 - iii) Bend in the narrow fold at the bottom of each headstock.
 - iv) Bend down the headstocks, add a touch of solder to each corner for strength and rigidity.
- 3) Check brg-holes for size, ream out gently if necessary, then fold down the fixed wheel-unit, insert brgs and wheels. You now have a 2-wheel chassis.
- 4) To make it into a 4-wheeler (it runs better that way) fold down the two tags on the longitudinal centre-line at the other end of the coach. Stiffen the bend line with a touch of solder-paste for strength.
- 5) Now detach other wheel-unit from the main fret, clean off the tags and fold carefully, as in dia. (1):-
 - i) Bend down the long side folds.
 - ii) Bend down the "w-irons".Solder the corners for strength.

You now have a running-chassis. The other 4 tags in the floor at the side of the floating wheel-unit can be folded, if desired, to stop it twisting.
- 6) Turn chassis upside-down on a flat surface and carefully cut through the wee tags holding the brake-shoes in place. Then fold the brake shoes down in line with the wheels. Now gently fold each brake-shoe over on itself, to give relief detail on the outside face.
- 7) Now detach the 4 separate brake shoes and fit to the chassis via the 4 longitudinal slots in the floor, around the floating wheel-unit. Bend the base-plate, with the bend line on the outside, so that the base-plates face in towards the centre of the coach - reason for that will be obvious when you fit the body.
- 8) Now look for brake-gear pieces "1" on the main fret. There are 4 of these, two of them with a longer central spine, with adjustment holes in them. These pieces fit into the brake shoes. Take the 2 pieces "1" with the wee holes, twist as in diagram (2) so that the end with the 3 holes in, is vertically aligned. Now solder the outer ends through the slots in the outer brake-shoes at either end of the coach, so that the unit runs under the axle, with the coach sitting on its wheels.



BRAKE GEAR

RAIL LEVEL

- 9) The other triangular brake-rods now fit into the inner brakes at each end of the coach, so that their centre legs are horizontal, in line with the axle. See drawing.
- 10) Detach brake-cylinder bracket "Z" from the fret, fold as in drawing and solder to the floor in the centre of the coach, where indicated.
- 11) Now fit cast brake-cylinder to the bracket with glue.
- 12) Detach two etched brake-gear pieces "2" and fit as in drawing.
- 13) Detach piece "3", which consists of a number of bits of brake-gear all etched in one piece to make it simple to fit. Study the drawing and then bend down the end without the fork in it, so that when "3" is fitted, the right way round, the end will go into slot 'x' in the floor.

If you are keen, you can wind 5 amp fuse-wire around the suggested spring on the etched rod - see drawing - this is a nice wee touch, it will impress the neighbours, especially if you run the vehicle upside down, so they can actually see it.

To make sure you fit this piece the correct way round (it helps if you can think upside-down) - have a dry run. The four holes in the floor match corresponding holes in the etched brake-gear.

To fit, proceed gently as follows:-

- i) Bend the unforked end down, at a slight angle.
- ii) Place roughly in the correct position and hold it in position by pushing fine pins or wire through the floor (from above the floor, with the vehicle the correct way up) - hold pin heads in place with masking tape. Now invert the vehicle and ensure that the pins have gone through the holes in the etched rods.
- iii) Solder one end to slot 'x' in the floor.
- iv) This leaves the forked-end floating in mid-air. Now detach piece "4" complete with attachment tag and solder the end into the slot in the floor, near the forked end of '3'. See drawing for details. The best way to fit "4" is to bend the half-thickness tag over at 90°, and solder that to the top of the floor.
- v) Now solder "3" to "4". Note '4' only applies to the Bk 3rd - for the others, simply solder forked end to the floor.

You can now remove the locating pins, or alternatively solder them to the etched rods for extra strength and snip off the surplus.

- 14) Now detach the two solebar overlays. This frees numerous sub-assemblies containing small detail bits needed later - store all these safely. Be careful with the footboard supports they bend easily.

File off surplus tags in a genteel fashion, turn the overlays over, and impress with a punch or riveting tool, the two bolt heads on the rear of the centre support (C.R.) and on the other straps (N.B.R.).

Fit the overlays - I use Thixofix contact adhesive.

- 15) Now identify the 4 chassis corner brackets. Turn over the fret and impress the "rivet detail" from the rear, before detaching from the fret and bending to shape. Now fit to the chassis, as per diagram (3).
- 16) Bend out horizontally, the supports at the bottom of the footboard legs. Bend the footboards to shape and solder to the supports, taking care that the axlebox clearance slots are in line with the axles. When you detach the footboards

from the fret, take off the tie-bars also, and put them somewhere where the cat wont walk on them and bend them.

- 17) Solder on the tie-bars, after you have impressed the "rivet detail" from the rear.
- 18) Now solder on the coupling-hook sockets, on the headstocks, and attach the safety-chains with an etched hook soldered on each.
- 19) Also - attach the builders plates to the solebar, in the position shown in the drawing.

The chassis is now complete, apart from fitting the various brake cylinder castings etc., as per the drawing.

The chassis can now be painted. I normally spray the whole thing, having protected the wheel treads with masking fluid, with a primer, then a grey/black colour can be applied by aerosol or airbrush.

You may notice that in the middle of the chassis fret, there is a section devoted to silly things like old bicycles, gardening implements and even an impressive old cast-iron fireplace and grate.

These are simply a bit of fun, to provide some items to fill the Bk 3rd Luggage Compt, or to use elsewhere on your layout, as you wish.

If you enjoy building this kit, please feel free to comment either to the designer or the supplier - polite comments are always welcome.

John Boyle

Decent Models.

Thanks are due to Duncan Burton and Sandy McLean, for the prototype information on Caley and North British vehicles, respectively.