51L 4mm

London & North Western Railway
London Midland & Scottish Railway
British Railways

Inter Corridor Set Carriages

Prototype information

A four carriage set, comprising two brake thirds and two composites, was widely used on the LNWR and was known as an ‘Inter Corridor set’. They were made up locally as required, but always comprised a 57' corridor brake third, 52'6" corridor composite, 57' corridor composite and a further 57' corridor brake third. Very often the brake carriages at the ends of the sets were of differing diagrams. In fact the actual diagrams changed frequently within the sets. On some occasions a mixture of corridor and lavatory stock was used, for example the Crewe and Llandudno sets.

These notes apply to:

Diagram 131 & 132 57' 7 compartment corridor composite
Diagram 135 52'6" 7 compartment corridor composite
Diagram 307 57' 5 compartment corridor brake third
Diagram 308 57' 5 compartment corridor brake third
Diagram 309 57' 3 compartment corridor brake third

D131/132

A total of 66 D131 carriages were built in two lots between 1914 and 1920. D132 was externally identical to D131, the only difference being two-per-side seating in First Class, and 38 were built between 1914 and 1917. In 1917 to replace an accident victim, one identical carriage was built for West Coast Joint Stock service and was numbered 58 to diagram D23A. This carriage was dual braked, as were most of the LNWR examples. These carriages ran on 9' bulb iron bogies, many with steel disc (rather than Mansell) wheels. All were fitted with the Wolverton lighting system from new. Suitable LNWR D131 numbers (vacuum braked only) are 2511, 2532 and 2575, whereas dual braked examples are LNWR 2706, 2709, 2722. Other numbers (brake status unknown) include 2840, 2958 and 2959. First series LMS numbers for D131 were 8005-44 and 8083-108, which became 4669-708 and 4747-73 (4760 excepted) in 1933. D132 numbers include 2841 and 2957 for the LNWR, then LMS firstly 8045-9, 8051-82 and 8001; and secondly 4709-46/60 (4726 excepted). D23A no.58 became 8004 and then 4726 under the LMS. Withdrawal took place in the 1950s by which time many were running as all thirds.

D135

Fifty-one carriages to this diagram were built between 1912 and 1914, running on 8' bogies. Twenty-five were dual braked, suitable numbers being 2751, 2753 and 2763. Vacuum brake only carriages were fitted with Stone’s double battery electric system, and known numbers include 2502, 2541 and 2555. LMS numbers were 8154-204, then 4575-625. Withdrawal again took place in the 1950s with nine being downgraded to all thirds.

D307

Some 83 carriages to this diagram were built in 1912-13. They ran on 9' bulb iron bogies and all were dual braked. Many carriages went for use in ambulance trains during the Great War and did not return. Suitable numbers include 6504, 6725-7 and 7857. LMS first series numbers were 6501-61, and then 6318-78. Withdrawal took place in the 1950s.

D308

A total of 25 carriages were built to this diagram in 1907, being the LNWR’s first elliptical roof corridor brakes. Note that D308 is built to the opposite hand to D307 and D309; when looking at the corridor side, the brake van is at the right-hand end. The five interior compartments were 6'6" between the partitions. All

were vacuum braked only. Numbers include 7047, 7345, 7381 and 7595. LMS numbers were 6562-86, then 6261-85. Withdrawals took place between February 1937 and December 1960.

D309
Thirty-three carriages were built for general service in 1909. Sixteen went for use in Great War ambulance trains, of which only six returned, three before the Grouping and three much modified examples afterwards. LNWR numbers include 7161 and 7670, becoming LMS 6587-604 and then 6150-67. All were dual braked and were withdrawn between September 1933 and December 1957.

General comments
All five Diagrams were fitted with electric lighting from new. Originally Stone's double battery system was used but from 1913 the Wolverton single battery/regulator combination was used on all new stock. Loose vehicles were fitted with batteries beneath the floor. Carriages operating permanently in fixed sets often had batteries in only one or two vehicles (usually the brakes) with jumper cables between carriages. After 1913, when the Wolverton system became standard on the LNWR, any loose vehicles without batteries from disbanded sets had the Wolverton system fitted.

References
LNWR Liveries, HMRS, Talbot, Millard, Dow, Davies
An Illustrated History of LNWR Coaches (including West Coast Joint Stock), D Jenkinson pp85-96, 169-171
A Register of West Coast Joint Stock, HMRS, R M Casserley & P A Millard
Selected LNWR Carriages, A Detailed Commentary, LNWR Society, P A Millard
An Illustrated History of LMS Standard Coaching Stock, R Essery, D Jenkinson, p41
British Railways Pre-Nationalisation Coaching Stock, Volume 2, H Longworth

Construction notes

Parts list
Body, underframe, vee hanger, bogie and commode handle frets wrapped in paper.

Packet 1 Underframe parts	**Packet 2** Bogie castings & fixings	**Packet 3** Body & roof parts	**Packet 4**
Dynamo, 1 off	Bogie side frame, 4 off	Torpedo vent, 16/16/15/15/14 off in Diagram order	Set of 16" sprung buffers
Regulator, 1 off	Bogie end plate, 4 off	Duck board, 2 off	
Vacuum cylinder, 2 off	10BA nuts & screws, 2 off	Lavatory tank filler, 2 off (1 in D307-9)	
King post, 2 off	12BA nuts & screws, 4 off	Brake van sidelight, 2 off (D307-9)	
Vacuum pipe, 2 off		Door tee handles	
Steam pipe, 2 off	**Interior items**	**Roof materials**	**Miscellaneous**
Screw couplings fret, 1 off	0.030" plasticard strip, 1 off	Aluminium roof	0.5mm wire, 3 off
Westinghouse cylinder, reservoir and pipes (not D308)	0.020" plasticard strip, 1 off	Microstrip, 2 lengths	0.7mm wire, 1 off
	Glazing strip, 1 off		Gangways pack
	Seat mouldings		

The kit requires Mansell (or disc for D131) pattern 14mm carriage wheels, bearings, door tee handles, paint and transfers to complete.

Please read these instructions before starting to build your model. Examine all the parts and familiarise yourself with their assembly. Remove any moulding flash or etch attachment points and ensure all parts fit correctly. We suggest wet fine emery paper (1200 grit) to clean up flash marks. Carry out a dummy run before assembly. Assembly is best carried out using ordinary solder for etched components or low melt solder for white metal. An epoxy resin such as Araldite and glues like UHU, Multibond or Thixofix can also

be used. For small parts use superglue. To obtain the best results a combination of several techniques will be needed.

Most sharp bends are given by a half-etched line, which is always on the inside of the bend. In order to achieve a third layer of rivet detail on some components, dimples are etched into the reverse side of the sheet. Before assembly these should be raised. It is sufficient to press onto a piece of solid card with, for example a slightly blunt dart point; attention is drawn to this procedure by the phrase “raise rivets”.

This is the suggested order of assembly but there are many ways of assembling this or any other model. The part numbers quoted as X are etched on the frets; those quoted as “X” should have been!

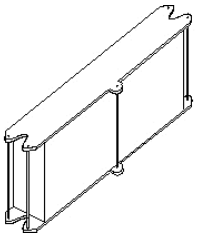
Underframe

Remove the floor (“15”) from the fret and separate it from the full-length stepboards (“17”) either side. Raise the rivets on the solebars and fold them to 90°. Open out the bogie centre pilot holes to a clearance fit on the 10BA screws. Do not fold out the vee hangers – these are misdrawn and are replaced later with a separate etch.

Tin the inner faces of the full-length step boards (“17”), then fold them through 180°. Supporting the step board in a vice, sweat the two halves together. Fit step boards to the solebars, leaving 1mm of solebar showing below.

Fit a king post casting to each side of the floor, symmetrical about the centre lines and 35mm apart (31mm for D135). Thread lengths of 0.5mm brass wire through the holes and bend to form the trussing. Form the lower step boards (“18”, 2 off) as described for (“17”) above. Fit the step boards in place, using the etched droppers (“19”, 10 off).

Battery boxes and underframe fittings



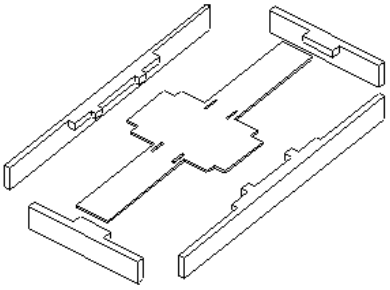
This section starts by assuming you are modelling a carriage fitted with the Stone’s electrical system. Carefully scribe a centre line on each battery box (“22”, 2 off), on what will become its outer face. Fold the sides to 90°, then solder it in place on the base plate (“23”, 2 off) with the scribed centre line in line with the centre hole. Add the top plate (“23”, 2 off), and thread 0.5mm brass wire through the holes. Solder a battery box symmetrically inside each king post so there is a gap of 20mm between them. *For a carriage fitted with the Wolverton system*, only one battery box is required, which goes on what will become the corridor side. The compartment side carries the regulator casting, which should be fitted slightly offset to the left, with the angled face facing outwards just below the solebar.

Position the dynamo 16mm from the adjacent bogie axle centre line and 3mm from the carriage centre line. The casting may require a triangular packing piece to ensure it is vertical and the pulley is slightly lower than the wheel axle. Check the drawing, as the end to be fitted varies with the Diagram.

Fold up the vee hangers in the nickel silver frets, then fix the vacuum cylinder casting to the half-etched circle. Drill out the centre hole to suit the long etched lever. Make up the operating levers (the medium-length levers are bent then sweated together, forming a yoke into which the long lever is inserted), then place them into the cylinders. Thread a 0.7mm wire cross shaft through the vee hangers, the operating lever, and the short bogie push rod lever, thus trapping the latter two in place. Fix the units to the floor, so that the cylinder is adjacent to the solebar on each side, and the cross shaft is 45mm (43mm on D135) from the bogie pivot hole. The bogie push rod lever should be on the carriage centre line.

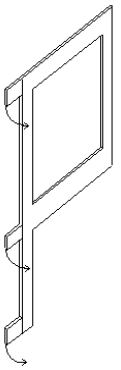
For dual fitted carriages, castings are provided for the Westinghouse brake system. The brake reservoir should be fitted transversely next to the dynamo so that its far end is 14.5mm from the carriage centre line. The cylinder should be on the longitudinal centre line of the carriage so that its centre is 9mm away from the transverse centre line, and towards the non-brake end on Diagrams 307-309.

Bogies



Clean off any flash from the bogie side and end castings. Drill out the pilot holes in the etched stretchers to accommodate the 10BA screws, which should now be soldered into place on the underframe. Solder two radius plates into the slots on the top of each stretcher, then solder the end plates in place. Drill out the pre-marked axle centres on the cast side frames to accept your chosen bearings. Solder one side frame to the brass stretcher, fit the wheels (paint them first!), then trap them in place by soldering on the other cast side. For D307-309, fold up the etched footsteps and fit them to each side of the same end of one bogie – this end will go under the guard's doors.

Body sides



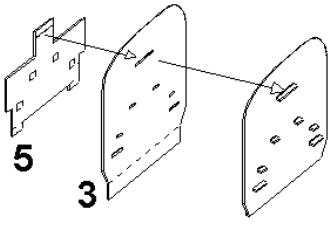
Important: the door outlines have erroneously not been continued on to the lower panels. Using a sharp point, carefully scribe them in place. Alternatively, draw them in after painting, but before final varnishing, although the then presence of the hinges makes this the more difficult option.

Carefully remove carriage sides ("1") and ("2") from the fret. Form the tumblehome curve below the waistline to match the ends by forming around a half-inch tube or a suitably profiled piece of wooden skirting board. Taking the etched droplights/hinge strips, bend the hinges as shown in the sketch, locate them through the pre-etched holes in the carriage sides and fix in place. Use the pieces with a horizontal bar if you want an open droplight.

Although the commode handles are best fitted after painting, now is the time to ensure that the pre-etched holes are opened out sufficiently to take them; there are two holes per handle.

Add the door ventilators, one above each door fitted with a droplight. Also add the brake van sidelights to D307-9 as shown on the scale drawing if required – they were removed in the 1930s.

Body ends



Remove the external ends (3 and 4) and their corresponding internal ends (5 and 5A) from the fret. For D131 and D135, the correct part (3) is the one without windows. Drill out the pilot holes for the handrails and grab rails on each end. Fold up the headstocks on the external ends. Fold parts (5) and (5A) to shape, including the steps and side support wings. Locate each internal end into its corresponding external end and sweat together. Before folding the two end boxes (7) to shape, mark out and drill 12BA clearance holes in the larger rectangle, to match the holes in the underframe. Solder an end box to each internal end. Add the buffer bodies to each end, but leave the springs and heads until painting is completed.

Solder the sides to the ends, tack soldering first then running solder into each corner joint once satisfied with squareness. Add the handrails and grab rails formed from 0.5mm brass wire. End (3) has two long curved handrails and end (4) two short straight ones, as shown in the drawing. You will need to fabricate the train alarm gear for end (4) from scrap brass for the brackets and 0.5mm for the rods and piping. Trial fit the underframe to the body, adjusting if required, and solder the 12 BA screws in place on upper faces of each part (7).

Interior

Temporarily fit the body to the underframe for this section. Trim the 0.030" plasticard floor to fit inside the body, and drill holes to clear the bogie screw heads. Fold the corridor wall ("8") to shape and for D135 and 307-9, add the bulkhead (the rectangular plate with the slot) to the end with the tab. For D131, add the two corridor end screens at approximately 45° to represent the lavatory walls. Fix this assembly to the plasticard floor, leaving a corridor 9mm wide. Using the bulkheads to give the profile of the compartment partitions cut the required number from the 0.020" plasticard and glue in place. Cut the seat moulding to fit each compartment and again glue in place.

Roof

Cut the roof to the length of the body plus a slight overhang at each end. Trim the corners of the flange to

clear the ends. The flange also needs removing in line with each corridor side window. Add the rainstrips from the supplied microstrip.

Mark out the positions of the torpedo vents and 0.5mm brass roof grab rails as shown on the scale drawing, and fit them. Compartment vents are on the longitudinal centre line, and lavatory vents offset 4mm towards the compartment side. Also add a duckboard to each end (planking transverse) and a lavatory water tank filler cap on the roof centre line close to the partition between each lavatory and the adjacent compartment).

Gangways
Make up the gangways according to the enclosed instructions. Paint them before fitting.

Painting
Paint the body, underframe, roof, interior, bogies and gangways as separate units and fit together on completion.

Liveries
London & North Western Railway
LNWR livery is often referred to as ‘plum and spilt milk’. The lower panels and mouldings were a ‘carmine lake’ colour. Usually the vents were also lake. The upper panels were a shade of white created by the addition of a small amount of blue to the white base colour and the yellowing effect of varnish. The ends were painted chocolate, not lake, and the underframe, running gear and gangways black. Fixed window frame mouldings were usually Indian red and the door and window drop lights varnished natural wood. On the rounds of the raised mouldings a 1/2" gold coloured line edged 1/8" in white was applied. When applied adjacent to a carmine lake panel this white line was both sides of the gold. In contrast, the white line was only on one side where the adjacent panel was white. The gold colour was made from a mixture of lemon and orange. A 1/8" white line was applied to the edges of the doors. The brake van double doors were given a slate waist panel for marking destinations. Roofs were generally painted white but this quickly degenerated to a grey colour in service. The interior should be painted dark red for third class seats and darkish green for first class seats, and wood brown for the compartment divisions and van area.

We suggest the following Precision Paints:			
Carriage carmine lake	P379	Carriage ‘white’	P380
		Lining tan	P381

Insignia was applied in the gold colour used for lining, sans serif style and edged in black. Class designation and other wording were applied to the waist panels of the doors and running numbers were placed towards both ends just above the waist. Transfer crests were applied to the lower panels below the numbers. Monogrammed initials were also used. We recommend HMRS sheet number 16.

West Coast Joint Stock
Paint and lining details were the same as the LNWR. Insignia was shaded green to the left and below and WCJS crests were used in place of LNWR crests. HMRS sheet number 16 is suitable.

London Midland & Scottish Railway
Carriage sides were painted crimson lake, identical to the Midland Railway shade. Ends were painted crimson lake until 1936 (black afterwards) with detail work such as gangways, steps and pipework being black. In 1946 the LMS changed the name to maroon although it is doubtful if the colour actually changed too. Roofs were generally painted in the Midland style of light grey between the rain strips and black between the rain strips and cantrail. From 1933 onwards to the outbreak of WWII, the roof was specified to be a metallic aluminium type finish. The roofs quickly became dirty in service and more often than not were a muddy grey colour. Underframe and running gear should be painted black.

Prior to 1934 all carriages were lined in Midland style. Raised beading was painted black and edged with a 3/8" gold line. These lines were edged each side with a 1/16" vermilion line. All three colours were carried on the beading and not the body panels. In all cases the lining followed the outline of the beading. The end beading was also painted black, but not lined.

From 1934 onwards a simplified lining system was adopted. This consisted of a 1/2" yellow line just below the cantrail, and a similar line above the tops of the windows. Two further 1/2" yellow lines separated by a 1" black line were positioned just below the windows. During WWII lining was discontinued on the few carriages to be repainted. Lining was reintroduced in 1946, with yellow being changed to straw.

We suggest the following Precision Paints:

Crimson lake	P30	Lining gold	P35
Carriage roof grey	P40	Lining yellow	P36
Carriage roof aluminium	P41	Vermilion	P37

Lettering such as LMS etc. was applied in serif characters 4" high to the side waist panels, as near to the centre of the carriage as possible. The colour was gold until 1934/5 after which chrome yellow was used. The lettering was shaded in pinkish white to the left blending to dark red/brown below the characters; the shading in turn was shadow shaded to the right and below in black. The class type was marked on the doors in 8" high numbers rendered in gold. The LMS roundel was placed on the lower side panels, near to the centre of the carriage. We suggest the use of HMRS sheet 1 for the early period and sheet 2 for the later period.

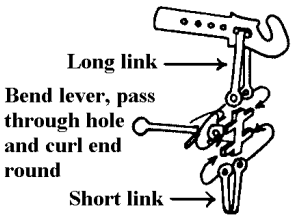
British Railways

Being gangwayed, these carriages should have been painted crimson and cream (blood and custard) and lined black and gold. However, photographs show that unlined crimson was more likely. Ends, underframe and running gear would be black, with a grey roof.

We suggest the following Precision Paints:		Carriage cream	P117
Carriage crimson red	P116	Roof grey	P131

Finishing

Add the commode handles to each passenger door, and the etched tee handles. Fix the glazing in place, noting that trimming may be necessary to clear the door handles. Add the corridor window handrails from 0.7mm brass wire, at mid-window height. Assemble the screw couplings according to the sketch and fit to the headstocks. Also add the vacuum and steam pipes – both go to the right of the coupling hook, in the order hook/steam/vacuum. If dual braked, add the Westinghouse hoses to the left of the coupling hook. Fit the buffer heads and their springs.



Finally, assemble the vehicle.

A more recent version of these assembly instructions may be available on the Wizard Models website. For further help or information please email: andrew@modelsignals.com

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