

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

**57' Non-Corridor Suburban and Excursion stock**  
**Interdistrict Sets**

**Prototype information** by Philip A Millard and 51L

The three models covered by these notes represent the nine compartment third to D283, the six compartment brake third to D333 and the nine compartment composite to D176. The D176 had three third class compartments arranged either side of three firsts. These were the final LNWR non-corridor designs.

The vehicles were built in irregular batches from 1913 until 1924, with some of the last D176 being turned out in LMS livery. Altogether some 160 D176, 93 D283 and 154 D333s were manufactured. Serious withdrawals commenced in the late 1950s, the last of each going in 1962, 1960 and 1960 respectively.

There were detail differences between carriages according to date of build. The first batches turned out had the 1911 pattern bulb iron frame bogies, four bolt buffers and Stone's double battery lighting. By mid-1914 the Wolverton pattern of lighting was in use with a single battery. In 1916 Spencer's shock absorbing buffers and the 1916 pattern of bogie with modified hornblocks were introduced. The kits as supplied are suitable for the post-1916 build which were in any case mainly built in the 1920-23 period. However, it would not be difficult to backdate the model by the use of round bolt buffers.

Many of the earlier batches of 57' carriages were marshalled into twelve six carriage trains for excursion traffic, known as sets 1-12. However, in all of these the composite was a D175. The remaining carriages built before 1919 were loose. Carriages constructed thereafter were formed into four carriage Interdistrict sets, usually consisting of two D176 composite carriages flanked by two D333 brake thirds. (This explains in part the fewer numbers of D283 relative to D176 and D333.) Other Interdistrict sets at this period were made up of 57' vehicles and older 50' arc, cove or high roofed carriages displaced from 'coupled' (set) trains. Sometimes D283s were used to augment existing sets, again not always of the same roof profile. Another configuration was two brake thirds and one lavatory composite to D146, sometimes with an additional D283 third.

Most of these Interdistrict sets remained together until 1926/7 at least, and in many cases considerably longer. But on the other hand some sets were changeable even in LNWR days, vehicles being removed or added at frequent intervals.

In 1930 some of the four carriage sets had one of the composites removed and were therefore reduced to three carriage sets. There were also two carriage formations consisting of a brake third and a composite used for a variety of services. It is thought these were four carriage Interdistrict sets 'split up'. The actual workings of the set trains were laid down in the Marshalling Circulars, but in principle these 57' carriages could be found throughout the system and in later years were mixed up with LMS built stock (both panelled and flush sided) as well as with ex-LYR and MR carriages. What were essentially non-corridor carriages were strengthened with corridor carriages or vice versa.

### **General comments**

These carriages were fitted with electric lighting from new. Originally Stone's double battery system was used but from 1914 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.

The LNWR used Mansell wheels until 1914 when a change to steel disc wheels was made. Carriages produced before 1914 would have retained their Mansell wheels until the end of their days.

## Sample numbers

	LNWR number	First LMS number	Second LMS Number
Loose vehicles			
D176	3731-3742 4038-4114 + others	8900-9059	17078-17234
D283	1613-1724 with gaps	5357-5460 with gaps	13844-13935
D333	In range 6530-7987	7012-7110 7121-7175	22608 22643-22793

## Interdistrict sets

### Set 75

Brake third	6993	7092	22722
Composite	3907	8981	17109
Composite	3908	8982	17110
Brake third	6939	7091	22721

### Set 100

Brake third	7161	7098	22727
Composite	4001	8992	17120
Composite	4009	8998	17126
Brake third	7099	7096	22725

## References

LNWR Liveries; HMRS; Talbot, Millard, Dow, Davies

An Illustrated History of LNWR Coaches (including West Coast Joint Stock); OPC; D Jenkinson

A Register of West Coast Joint Stock; HMRS; R M Casserley, P A Millard

Selected LNWR Carriages, A Detailed Commentary; LNWR Society; LNWR Society

An Illustrated History of LMS Standard Coaching Stock; OPC; R Essery, D Jenkinson

British Railway Pre-Nationalisation Coaching Stock Vol.2; OPC; H Longworth

## Construction notes

### Parts list

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

Packet 1	Packet 2	Packet 3	Packet 4
Underframe parts	Bogie castings & fixings	Body/roof parts	
Regulator, 1 off	Bogie side frame, 4 off	Spherical vent, 18 off (16 in D333)	Set of 16" sprung buffers
Dynamo, 1 off	Bogie end plate, 4 off	Duck board, 2 off	
King post, 2 off	10BA nuts & screws, 2 off	Sidelight, 2 off (D333 only)	
Vacuum cylinder, 2 off	12BA nuts & screws, 4 off	Door tee handles, 18 (16 in D333)	
Vacuum pipe, 2 off	<b>Interior items</b>	<b>Roof materials</b>	<b>Miscellaneous</b>
Steam pipe, 2 off	0.020" plasticard strip, 1 off	Aluminium roof	0.5mm wire, 3 x 12"
Screw couplings fret, 1 off	0.030" plasticard strip, 1 off	Microstrip, 2 lengths	0.7mm wire, 1 x 6"
	Glazing strip, 1 off		
	Seat moulding, 5 off (3 in D333)		

The kit requires 14mm steel disc 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 are as etched on the frets.

### **Underframe**

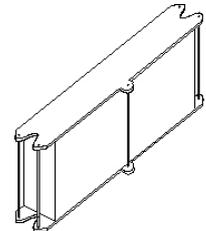
Remove the floor (C1) from the fret and separate it from the full-length stepboards (C4) either side. Raise the rivets on the solebars and fold them to 90°. Open out the bogie centre pilot holes to a clearance fit on the 10BA screws, and those at the ends to 12BA clearance. Do not fold out the vee hangers – these are wrongly drawn and are replaced later with a separate etch.

Tin the inner faces of the full-length step boards (C4), then fold them through 180°. Supporting the step board in a vice, sweat the two halves together. Fit the 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. Thread lengths of 0.5mm brass wire through the holes and bend to form the trussing. Form the lower step boards (C5, 2 off) as described for (C4) above. Fit the step boards in place as shown in the drawing, using the etched droppers (C6, 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 (9, 2 off), on what will become its outer face. Fold the sides to 90°, then solder it in place on the base plate (10, 2 off) with the scribed centre line in line with the centre hole. Add the top plate (10, 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 for D333 goes on what will become the side with the brake compartment to the right. The other side carries the regulator casting, which should be fitted slightly offset to the left, with the angled face facing outwards just below the solebar. D176 and D283 have both sides identical, so the positioning does not matter.*

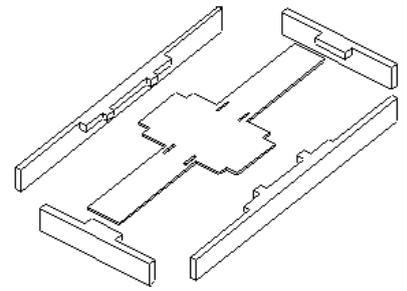


Position the dynamo 16mm from the adjacent bogie axle centre line and 3mm from the carriage centre line. The casting may require a triangular packing piece to ensure it is vertical and the pulley is slightly lower than the wheel axle. For D333, the dynamo goes under the passenger end.

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 from the bogie pivot hole. The bogie push rod lever should be on the carriage centre line.

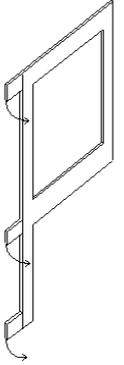
## Bogies

Clean off any flash from the bogie side and end castings. Drill out the pilot holes in the etched stretchers (C2) to accommodate the 10BA screws, which should now be soldered into place on the underframe. Solder two radius plates (C3) 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 D333, 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.*



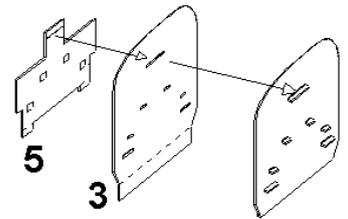
Carefully remove the carriage sides from the fret. Form the tumblehome curve below the waistline to match the ends by forming around a half-inch tube or a suitably profiled piece of wooden skirting board. Taking the etched droplights/hinge strips (8), bend the hinges as shown in the sketch, locate them 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. Add hinge strips (8A) to the van doors on D333.

Although the door 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 three holes per passenger door.

Add the door ventilators, one above each door, including both the guard's and van doors on D333. Also add the brake van sidelights to D333 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. 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. Using a 1mm diameter drill bit in a pin vice, open up the buffer bore to 1mm so that the bore is coned. Bore out to a depth of approximately 5mm then bore out to 0.5mm diameter for the remainder. Bore the hole slowly to ensure a smooth finish perhaps using white spirit or beeswax as a lubricant. Take care to ensure the bore is square. Leave fitting 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. Also add two lamp irons to each end, slightly inboard of the buffers, as shown in the drawing. 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. Using the etched bulkheads (6) to give the profile of the compartment partitions cut the required additional number from the 0.020" plasticard and glue all in place. (You may choose to solder in the brass partitions instead, but this will then require the seats to be

fixed to the floor with a gap between them, rather than to the partitions.) Cut the seat mouldings 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. Add the rainstrips from the supplied microstrip.

Mark out the positions of the spherical vents as shown on the scale drawing, and fit them. The compartment vents are 6mm to the left and right of each door centre line, and 8mm either side of the roof centre line. Also add a duckboard to each end (planking transverse). Note that these carriages do not appear to have been fitted with roof end grab rails.

## Painting

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

## Liveries

### London and 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'

Lining tan

P380

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 ½" yellow line just below the cantrail, and a similar line above the tops of the windows. Two further ½" 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

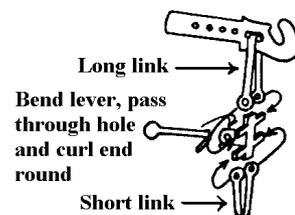
These carriages should have been painted unlined crimson on the sides; ends, underframe and running gear would be black, with a grey roof. Some may have lasted long enough to receive the later unlined maroon.

We suggest the following Precision Paints:

Carriage crimson red	P116	Carriage maroon	P108
Roof grey	P131	Roof grey (if maroon sides)	P130

### **Finishing**

Add the commode and tee handles to each passenger door. Fix the glazing in place, noting that trimming may be necessary to clear the door handles. 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. 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 web site. For further help or information please email: [andrew@modelsignals.com](mailto:andrew@modelsignals.com)

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