

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

D146 57' non-gangwayed lavatory composite

Prototype information

Eighty-five of these highly useful 57' composite carriages were built between 1914 and 1919. The carriage had three first and five third class compartments with two lavatories, accessible only from two of the first class compartments. They had the non-corridor toplight style of panelling and the elliptical roof profile. These carriages found their way around the entire network, often being used to strengthen express services. With no matching brakes built, sets would have used brakes of an earlier vintage or contemporary stock without lavatory provision. In later years they were used on many cross-country routes and enjoyed long working lives – BR inherited 78 of them, with the last being withdrawn in 1960.

Numbering

LNWR, as built: 3743-3750, 3752-3763, 3774-3805, various in the ranges 3812-3973, 3975-3992
LMS, 1923-1933: 8448-8532
LMS, 1933-1947: 19532-19616
BR, 1948-withdrawal: later LMS number prefixed M, then also suffixed M from 1951.

References

An Illustrated History of LNWR Coaches (including West Coast Joint Stock), D Jenkinson, pp100, 109, 172
A Register of the West Coast Joint Stock, R M Casserley, P A Millard
Selected LNWR Carriages A Detailed Commentary, 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	Packet 2	Packet 3	Packet 4
Underframe parts	Bogie castings & fixings	Body & roof parts	
Dynamo, 1 off	Bogie side frame, 4 off	Door tee handles, 16 off Spherical vent, 18 off	Set of 16" sprung Spencer pattern buffers
Vacuum cylinder, 2 off	Bogie end plate, 4 off	Duck board, 4 off	
King post, 2 off	10BA nuts & screws, 2 off	Lavatory tank filler, 2 off	
Vacuum pipe, 2 off	12BA nuts & screws, 4 off		
Steam pipe, 2 off			
Screw couplings fret, 1 off	Interior items	Roof materials	Miscellaneous
Regulator, 1 off	0.030" plasticard strip, 1 off	Aluminium roof	0.5mm wire, 3 off
	0.020" plasticard strip, 1 off	Microstrip, 2 lengths	0.7mm wire, 1 off
	Glazing strip, 1 off		
	Seat moulding, 2 off		

The kit requires 14mm disc carriage wheels, bearings, 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 those etched on the frets.

Underframe

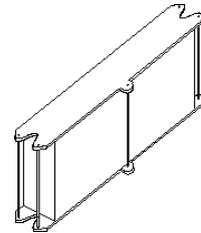
Remove the floor (10) from the fret and fold up the side strips. Open out the bogie centre pilot holes to a clearance fit on the 10BA screws. Do not fold out the vee hangers – these are misdrawn and are replaced later with a separate etch.

Raise the rivet detail on the solebars (11, 2 off). Solder the solebars to the bottom of the floor using the location slots. Tin the inner faces of the full-length step boards (12, 2 off), then fold them through 180°. Supporting the step board in a vice, sweat the two halves together. Attach the step boards into the solebar slots.

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 (13, 2 off) as described for (12) above, then fold at 90° to form the kick plate. Fit the step boards in place, using the etched droppers (14, 10 off).

Battery box and underframe fittings

Carefully scribe a centre line on the battery box (15), on what will become its outer face. Fold the sides to 90°, then solder it in place on a base plate (16) with the scribed centre line in line with the centre hole. Add the top plate (16), and thread 0.5mm brass wire through the holes. Solder the battery box to one side of the underframe inside the king post in the position shown in the drawing. The opposite side of the underframe carries the regulator casting, which should be fitted slightly offset to the left, with the angled face facing outwards just below the solebar.

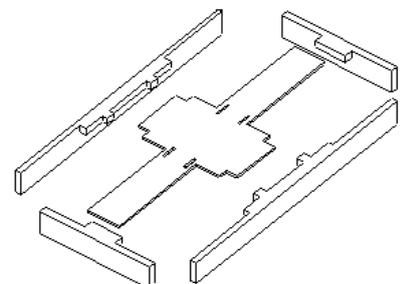


Position the dynamo 16mm from the adjacent bogie axle centre line and 3mm from the carriage centre line. The casting may require a triangular packing piece to ensure it is vertical and the pulley is slightly lower than the wheel axle.

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 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,

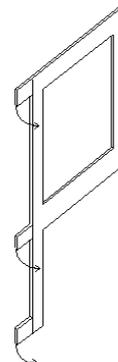


fit the wheels (paint them first!), then trap them in place by soldering on the other cast side. Ignore the etched footsteps; these are only fitted to brake carriages.

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 side (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. Also remove the etched droplights/hinge strips (9, 16 off). 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 unnumbered pieces with a horizontal bar if you want an open droplight.

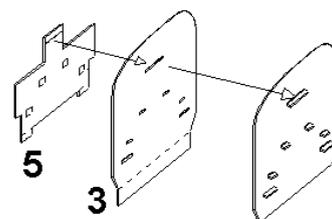


Although the commode handles are best fitted after painting, now is the time to ensure that the pre-etched holes are opened out sufficiently to take them; there are two holes per handle.

Add the door ventilators (8, 16 off and rather scattered about!), one above each door.

Body ends

Remove the external ends (3 and 4) and their corresponding internal ends (5 and 6) from the fret. Drill out the pilot holes for the handrails on each end. Fold up the headstocks on the external ends. Fold parts (5) and (6) to shape, including the side support wings and the steps on (5) and the train alarm gear lugs on (6). Locate each internal end into its corresponding external end and sweat together. Open out the holes in the end boxes (7, 2 off) to 12BA clearance. Fold up the boxes and solder them to the inner face of each end. Add the buffer bodies to each end, but leave the springs and heads until painting is completed.



Solder the sides to the ends according to the drawing, tack soldering first then running solder into each corner joint once satisfied with squareness. From 0.5mm brass wire, add two long curved handrails to end (3) and two short straight ones to end (4), as shown in the drawing. Add the train alarm gear rods and pipes to end (4). 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. Trim the 0.030" plasticard floor to fit inside the body, and drill holes to clear the bogie screw heads. Add bulkheads between each compartment, cut from the 0.020" plasticard. 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. Add the rainstrips from the supplied microstrip.

Mark out the positions of the spherical vents and 0.5mm brass wire roof grab rails as shown on the scale drawing, and fit them. 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).

Painting

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

Liveries

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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 'white'	P380
Carriage carmine lake	P379	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.

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

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.

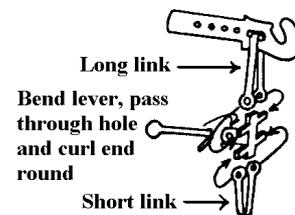
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These carriages should have been painted unlined crimson on the sides; ends, underframe and running gear would be black, with a grey roof.

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

Finishing

Add the commode 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 as shown on the drawing. 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

Wizard Models

Wizard Models stocks a wide range of items for the 4mm scale modeller.

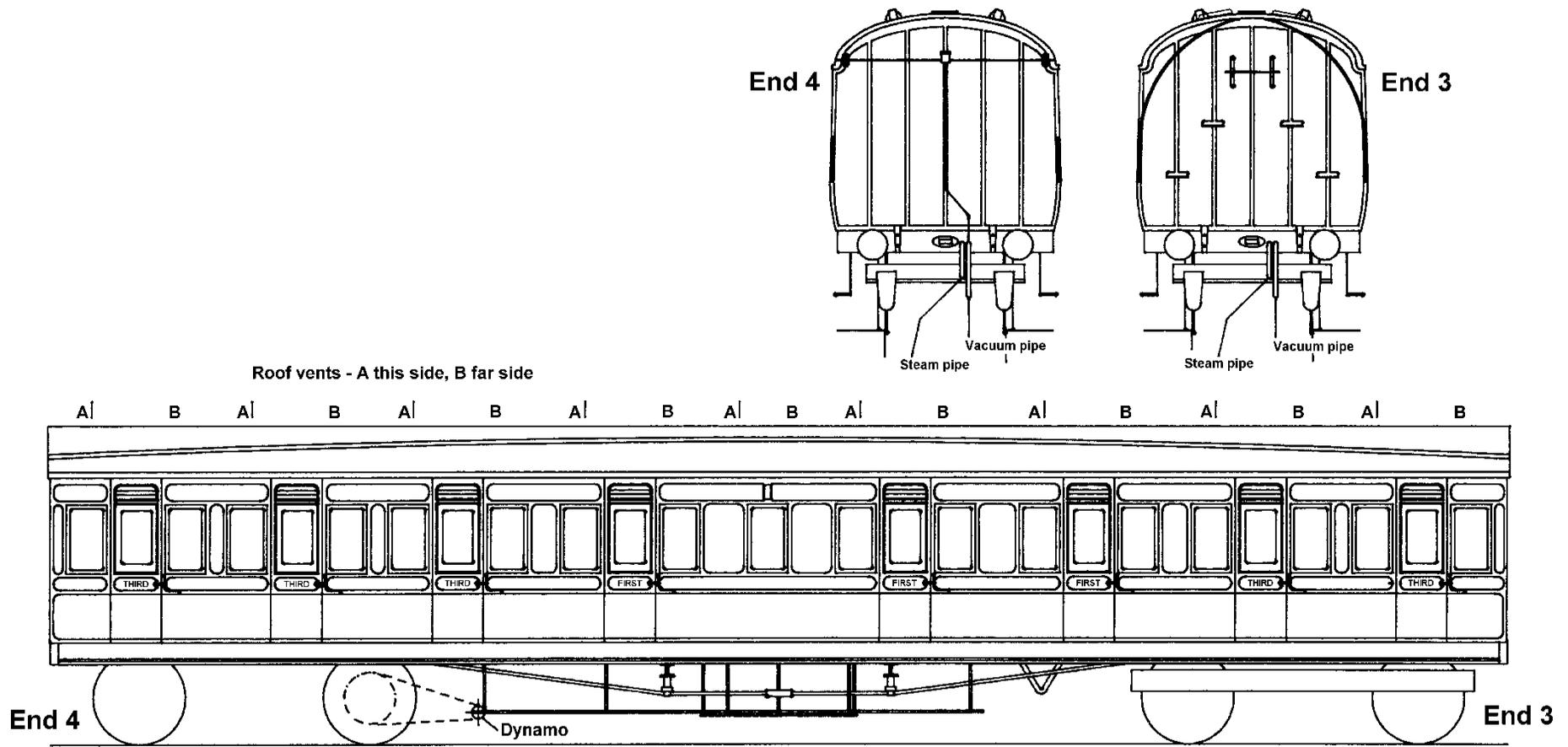
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Version: 4.00

Issued: December 2020

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LONDON & NORTH WESTERN RAILWAY D146 57' LAVATORY COMPOSITE

To 4mm scale.