

**London & North Western Railway
London Midland and Scottish Railway**

Non-corridor lavatory composite

Prototype and Construction notes for:

D146 Non-corridor eight compartment lavatory composite carriage

Prototype information

Eighty five of these highly useful 57' composite carriages were built between 1914 and 1919. The carriage had 3 1st and 5 2nd class compartments with 2 lavatories. Only the first class accommodation had access to the lavatories. They had the non-corridor toplight style of panelling and elliptical roof profile. These carriages found their way around the entire network, often used to 'strengthen' express services. With no matching brakes sets would have been with brakes of an earlier vintage or contemporary stock without lavatory provision. Although in later years they were used on many cross country routes they enjoyed long working lives with examples in revenue service in the 1950's.

Numbering information:

LNWR	First LMS	Second LMS
3743-3750	8448-8532	19532-19616
3752-63		
3774-3805		
Various 3812-3973, 3975-92		

References

An Illustrated History of LNWR Coaches (including West Coast Joint Stock), D Jenkinson P100, 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

Construction Notes

Parts list

Packet 1

Underframe castings

Dynamo 1 off

Vacuum cylinder 2 off

Regulator box

Packet 2

Bogie castings

Bogie side plates 4 off
9' bulb iron type

Bogie end plate 4 off

Packet 3

Investment castings

King posts, long, 2 off
12BA nuts and bolts x 4

10BA nuts and bolts x 2

Packet 4

Roof castings

Spheroidal vents, 20 off

Duck boards, 2 off

Lavatory water tank fillers, x3

Packet 5

Set Spencer buffers with
Springs and steel heads

Interior items

Polystyrene strip 0.030" x1
Polystyrene strip 0.020 x 2
Glazing strip, 3 off
Seating,

Roof materials

Aluminium roof
Microstrip, 2 lengths

Miscellaneous

0.5mm wire, x3
0.7mm wire, x0.5

You are supplied with extra vents and lavatory water tank fillers, so you should have some spare parts to allow for loss.

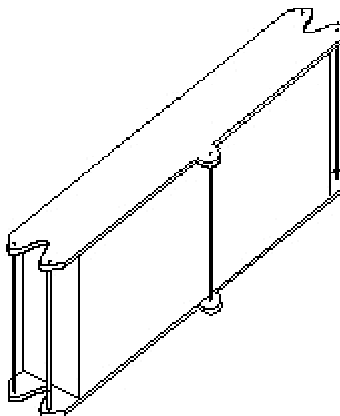
Underframe

Cut or snip out floor (part 10) from stepboards (parts 12, 13), place the stepboards carefully to one side. Taking the floor, drill out the 4 end pilot holes to accommodate the 12 BA bolts provided. Then drill out the 2 bogie centre pilot holes to accommodate the 10 BA bolts provided. Do not fold up the vee hangers yet. Punch the rivet detail on the solebars (part 11) to represent the rivets. Do this on a firm surface, taking care not to distort the floor.

Solder the solebars to the floor using the location slots. Taking the full length stepboards (part 12), tin the inner face of one board and then fold through 180 degrees with the half etched tab to the inside. Supporting the stepboard in a vice run your soldering iron along the edge. Repeat this process for each full length stepboard. Attach the full length stepboards into the solebars (part 11) using slots. Now fit the lost wax king posts, 35mm apart, thread 0.5mm wire through the holes to form the trussing. Taking the lower stepboards (part 13), tin the inner face of one board and then fold through 180 degrees with the half etched tab to the inside, fold the lap or fall plate upwards, solder. Using etched droppers 4 off per board (part 14) fit lower stepboards in place.

The Battery Box and Underframe Fittings

First of all drill out the pilot holes in the upper and lower plates (part 16) to accept 0.5mm wire. Then carefully scribe a centre line on what will be the outer face (part 15) of the battery box, use this as guide when lining up with the base. Fold the sides to 90 degrees, then place in position on base plate with the scribed centre line in line with the centre hole. Repeat this for the top plate and thread the wire through the holes. Solder or glue in place between the king posts. The Wolverton electric system was fitted, as standard after 1916 and therefore only one battery box is needed. Opposite the battery box fix the cast regulator box.

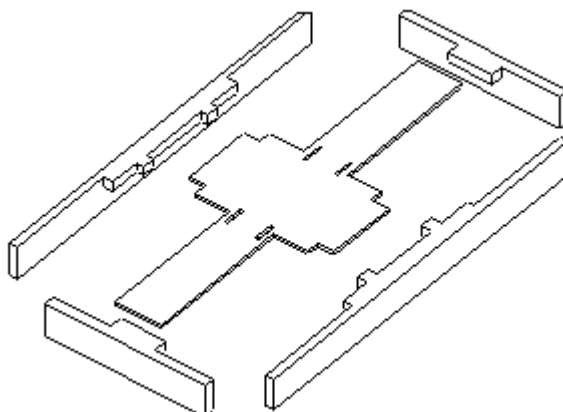


The cast dynamo should be fitted under a third class section of the carriage never under the brake compartment or a first class compartment. The dynamo is positioned some 16mm (4') from the adjacent bogie axle centre line and 3mm from the carriage centre line. The dynamo pulley should now be slightly lower than the wheel axle if not pack as required.

Fold down the vee hangers and thread 0.7mm wire through the holes and through etched brake linkage components. The hole in the floor next to the vee hangers gives the position for the cast vacuum brake cylinders.

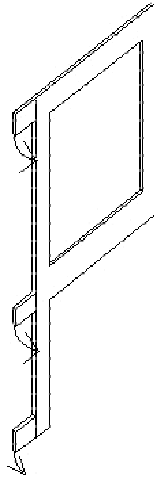
Bogies

Clean any flash from bogie side frames and transom castings. Cut brass stretchers and radius plates out from the etch. Drill out the pilot holes in the stretchers to accommodate 10 BA bolt, which you should now solder into place on the carriage floor in readiness to accept the bogie. Drill out the pre-marked axle centres on the cast side frames. Solder the two radius plates in the slots on the brass stretcher. Then solder the transom ends in place. Solder one side frame to the brass stretcher, fit bearings and wheels to choice and solder the other cast side in place.



Carriage Sides

Carefully remove carriage side from fret. Take care to form the tumblehome curve below the waistline by forming it around a half inch tube or a suitably profiled piece of wooden skirting board, the amount of curve is shown by the carriage end.

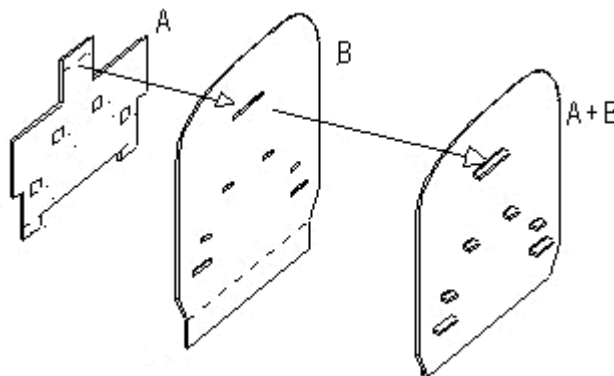


Now carefully remove the etched droplights with integral hinges from the etch (part 9). Bend hinges as shown in the diagram and locate in the pre-etched holes in the carriage sides. Fit ventilators (part 8) above carriage doors.

Ensure the commode handles fit in place. There are two holes per handle and these should be opened to 0.65mm if required. It is suggested that commode handles are fitted after painting but one should be removed from the etch for test purposes.

Carriage Ends

Carefully remove carriage ends, part 3, part 4 and component parts number 5 and 6. Drill out the pilot holes for the end handrails and grab rails on each end. Fold part 5 to form the steps by folding each to 90 degrees and the wings to support the sides by folding each to 90 degrees. Locate the steps by fitting from the inner face of the end with pre-etched slots. Secure with solder or glue. Fold part 6 to form the wings to support the sides and form alarm gear hinge at the other end of the carriage by folding each to 90 degrees. Secure with solder or glue, avoid covering up the holes you have already prepared for the grab rails. Before folding parts 7, drill holes to accommodate 10 BA bolts, now fold up part 7 to make a three sided box. Solder parts 7 to the inner faces of each end, leaving enough space to fit the styrene floor between the etched floor and part 7.



Solder or glue the carriage sides to the ends, ensure square, tack solder first then, when satisfied, run solder into each corner joint. Fit handrails and grab rails from 0.5mm wire to the ends. Trial fit the floor to body, adjust if required, solder 10 BA nuts in place on upper faces of each part 7.

Fit vacuum and steam pipes.

The Roof

Cut the aluminium roof to length trim the corners of the flange to clear the ends. Mark the roof centre line and positions of all roof detail. Torpedo vents should be fitted two per compartment a scale three feet apart on the roof centre line. A ventilator is required for each toilet; on toplight carriages the ventilator is again fitted on roof centre. Lavatory water tank filler caps were positioned on the roof centre line close to the partition between the lavatory and the adjacent compartment. Cast roof duckboards should be fitted on the centre line at each end. Roof grab rails should be fitted at the steps end either side of the duckboard. Glue the roof on to the body of the carriage.

Interior Fittings

The 0.030" styrene floor must be cut to length to fit between each headstock and to have a width of 34mm and two holes drilled at each end to accommodate 10 BA bolts. Use the remaining 0.020" styrene to make the compartment partitions. Using the bulkheads to give the profile of the compartment partitions cut the required number from the styrene and glue in place. Cut the seat moulding to fit each compartment and glue in place.

Finishing

Clean and degrease your model, using white spirit before painting. For etched brass and white metal models an etching primer, such as Precision Paints PS1, is essential. Follow the manufacturers instructions bearing in mind that only a light covering is required. The model should then be painted using the livery of your choice.

After painting, clean your model using a tissue soaked in white spirit. Letter your carriage to suit your chosen period. Suitable lettering is supplied by the HMRS and paint by Precision Paint for the LNWR, LMS and BR periods. It will be appreciated that some carriages, those at the end of their useful life, would not have been repainted by their new owners and earlier liveries could have been around for many years. The London and North Western Railway used a painting cycle of 5 to 6 years and so LNWR livery survived to around 1930. The following information is offered as a guide and modelers are advised to obtain suitable photographs and consult the suggested references listed above.

Fit glazing, note we supply a PVC material which is non soluble in common solvents. However it is brittle, use a new blade in you scalpel.

London and North Western Railway Carriage livery

The 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 yellow effect of varnish. The carriage ends were painted chocolate not lake and the underframe and running gear 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 gold coloured line (1/2") edged with a 1/8th white was applied. When applied adjacent to the 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 white line 1/8th was applied to the edges of the doors. The brake van double doors were given a slate waste panel for the marking of destinations.

The roofs were generally painted white but 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, wood brown for the compartment divisions and guard's area.

We suggest the following Precision Paints:

Carriage carmine lake	P379
Carriage 'white'	P380
Lining tan	P381

London and North Western railway carriage lettering and numbering

This was applied in the gold colour used for lining, Sans Serif style and edged in black. Class designation and other wording was applied to the waist panels of the doors and running numbers located just above the waste rail. Transfer crests were applied to the lower panels usually one or two to a carriage. Often monogrammed initials were also used. The HMRS sheet number 16 supplies suitable lettering materials.

London Midland and Scottish Carriage livery

Suitable lettering materials are supplied by the HMRS and paint by Precision Paint.

The London Midland and Scottish carriage livery was highly standardised and it is possible to be fairly sure what the livery was like for a given period. In general up to the war years carriages were painted every six or seven years. Carriages were painted crimson lake, a shade very similar to the Midland Railway shade. Until 1936 both the ends and sides were painted crimson lake but from that date the ends were painted black with the exception of driving ends of motor carriages which remained crimson lake. Detail work on the ends, steps, pipework etc was painted black. In 1946 the LMS changed the name to maroon although it is doubtful if any change in colour was discernible. However it does seem possible that the colour had become slightly darker over the years. 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 outbreak of war 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.

London Midland and Scottish lettering and lining

Prior to the close of 1934 early 1934 all carriages were lined in Midland style. Raised beading was painted black and edged with a 3/8th gold for gangwayed stock or 3/8th pale yellow for non-gangwayed stock. These lines were edged each side with a 1/16th vermilion line. All three colours appeared on the beading and not the body panels. In all cases the lining followed the outline of the beading. Carriage ends were not lined and beading if present painted black as per the previous Midland practice.

From 1934 onwards a simplified lining system was adopted. This consisted of a 1/2" yellow line just below the cant rail, and a similar line above the tops of the windows. In addition just below the windows two 1/2" yellow lines separated by a 1" wide black line. The yellow lining had a darker shade than previously. During the Second World War lining was discontinued on the few carriages to be repainted. General touching up was the norm during this period. From 1946 lining was readopted and the yellow changed to straw.

Lettering such as LMS etc was applied to the carriage sides in serif characters 4" high. The colour was gold until 1934/5 when chrome yellow was used. The lettering was shaded in pinkish white to the left blending to dark red/brown below the characters, in turn the shading was shadow shaded to the right and below in black. Some pre-group carriages with shallow depth waist panels had 3" letting. The class type was marked on the doors 8" high rendered in gold. The LMS emblem was not used on non corridor stock and was near to the centre of the carriage. Insignia were generally placed as near to the centre of the carriage as possible in the waist panel. We suggest the use of HMRS sheet 1 for the early period, gold lining; or sheet 2 for the later period.

The following Precision Paints are suggested:

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

British Rail

Those gangwayed carriages which were repainted by BR were painted crimson and cream (blood and custard) and were lined. It is suggested that suitable photographs are examined as only some stock was repainted at all!

We suggest the following Precision Paints:

Carriage crimson red	P116
Carriage cream	P117
Roof grey	P131
Maroon	P108

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