51L 4mm

London & North Western Railway
London Midland and Scottish,
British Railways
57' 0"Non corridor suburban and excursion stock
Interdistrict Sets

Prototype notes

by Philip A Millard

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

The vehicles were turned out in irregular batches from early 1913 until after the Grouping. Indeed some of the last composites were out shopped in LMS livery. Some 160 D176's; 93 D283's and 154 D333's were manufactured in the period 1913 -1924. Serious withdrawals commenced in the 1950's and by 1959 most had gone.

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 51L model is 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 modify the model by use of round bolt buffers and earlier bogies. Both items are available from Wizard Models 51L. Please contact us initially by email or post and we will exchange components.

Many of the earlier batches of 57' 0" carriages were marshalled into twelve six carriage trains for excursion traffic and known as sets 1-12. However, in all of these the composite was a D175. The remaining carriages built before 1919 were loose. Thereafter carriages constructed were formed into four carriages Inter District sets, usually consisting of two D176 composite carriages flanked by two D333 brake thirds. (This explains in part the less common nature of the D283 relative to the D176 and D333.) Other inter district sets at this period were made up of 57" vehicles and older 50" 0" arc, Cove or high roof carriages displaced from 'coupled' (set) trains. Sometimes the thirds to D283 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, and sometimes with an additional D283 third.

Most of these Inter district 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 Inter district 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 Midland carriages. What were essentially non corridor carriages were strengthened with corridor carriages or vice-versa.

Sample numbers

	LNWR number	First LMS number	Second LMS Number
Loose vehicles			
D176	3961-3980	8508-8520	19592-19604
D283	1672-1675 1721-1724	5419-5422 5458-5460	13906-13909 13921-13923
D333	6588/93//97 6614/787/80	7012-7018	22669-22674
Inter district sets			
Set 75			
Brake third	6993	7092	22721
Composite	3907	8981	17019
Composite	3908	8982	17020
Brake third	6993	7092	22721
Set 100			
Brake third	7161	7098	22727
Composite	4001	8992	17120
Composite	4009	8998	17126
Brake third	7099	7096	22725

General comments

These carriages were fitted with electric lighting from new. Originally the Stone's single battery system was used but from 1913 the Wolverton single battery 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 with jumper cables between carriages. Usually it was the brakes that had batteries fitted. After 1913, when the Wolverton system became standard on the LNWR, any loose vehicles without batteries created from 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.

References

LNWR Liveries, P86, HMRS
An Illustrated History of LNWR Coaches (including West Coast Joint Stock), D Jenkinson P109
A Register of West Coast Joint Stock, R M Casserley & P A Millard, HMRS
Selected LNWR Carriages, A Detailed Commentary, P A Millard, LNWR Society
An Illustrated History of LMS Standard Coaching Stock, R Essery, D Jenkinson, P41

Construction Notes for:

D176 Non corridor 9 compartment (3 x3rd, 3 x1st, 3 x3rd) composite
D283 Non corridor 9 compartment all third
D333 Non corridor 5 compartment brake third

This model requires steel disc wheels, paint and transfers to complete.

Parts list

Packet 1
Underfame castings

Packet1A
Regulator (for Wolverton lighting system only)

Dynamo 1 off
Vacuum cylinder 2 off

Packet 5
Set Spencer sprung buffers

Packet 2
Bogie castings

Bogie side plates 4 off
Bogie end plate 4 off

(9' bulb iron pattern)

Interior items
Polystyrene strip 0.030" x1
Polystyrene strip 0.020 x 2

Glazing strip, 2 off
Seating

Packet 3
Other castings and fastenings

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

10BA nuts and bolts x 2

Roof materials
Aluminium roof, 57'

Microstrip, 2 lengths

Packet 4
Roof castings

Spherical vents, 20 off
Duck boards, 2 off

Side lights, 2 off D333 only

Miscellaneous
0.5mm wire, x4
0.7mm wire, x0.5

You are supplied with extra vents so you should have some spare parts to allow for loss.

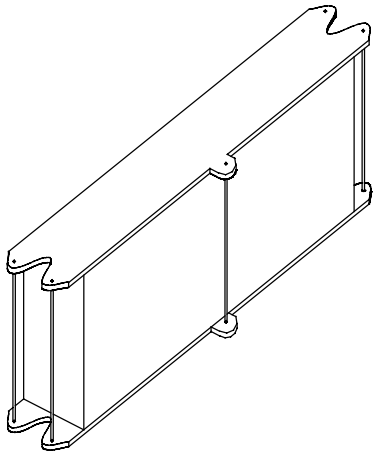
Underframe
Cut or snip out floor (part C1) from stepboards (C4), place the stepboards carefully to one side. The floor has 6 holes four in the corners which will attach body and underframe and two along the centre line for the bogies. Taking the floor drill out the 4 end pilot holes to accommodate the 12 BA bolts provided. Then drill out the 2 bogie centre pilot holes to accommodate 10 BA bolts provided. Do not fold up the vee hangers yet.

Punch the rivet detail on the solebars to represent the rivets. Do this on a firm surface, taking care not to distort the floor. This may be done using a sewing pin and a light hammer. Fold along the half etched lines to 90 degrees form the floor and solebar. Taking the full length stepboards, 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. Start at the centre of the board and work out to the end. Repeat this process for each full length stepboard and for lower stepboards (C5). If using glue, apply to the inner faces and fold.

The full length stepboards should now be fitted leaving 1mm of solebar showing below the floor level. Now fit the king post castings, 35mm apart, thread wire through the holes in the king posts to form the trussing. Using etched droppers (C6) fit lower stepboards. These should be in the center of the carriage.

The Battery Box and Underframe fittings

First of all drill out the pilot holes in the box top and bottom plates (part 10) to accept 0.4mm wire. Then carefully scribe a centre line on what will be the outer face (part 9) 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. Carriages with the Wolverton electric system (those built post 1914) need only one battery box. Opposite to the battery fix the cast regulator box. The regulator box should be fitted with the angled face facing outwards just below the solebar. See P21 Jenkinson for a photograph of the installation. If the carriage is to be fitted with Stones electric system place a battery box between the king posts on both sides. No regulator box is required for the Stone's system.

The cast dynamo should be fitted under a third class section of the carriage never under the brake compartment or a 'superior class'. Position the dynamo some 16mm (4') from the adjacent bogie axle centre line and 3mm from the carriage centre line. The dynamo may require a triangular packing piece to ensure it is vertical and the pulley slightly lower than the wheel axle.

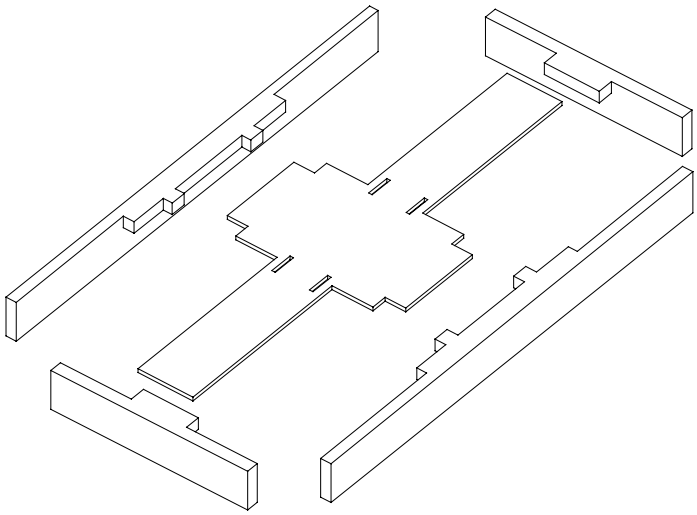
Fold the vee hangers and thread 0.7mm wire through the holes and through etched brake linkage components, the hole in the floor next to the vee hangers gives the position for the cast vacuum brake cylinders.

Attach buffers to buffer beam. Using a 1mm diameter drill bit in a pin chuck 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 as a lubricant. Take care to ensure the bore is square.

Fit steel head without spring to ensure clearance. Thread a spring on to the steel head and insert into the buffer. Ensure the head retracts and returns smoothly under it's own force. It may be necessary to remove the steel head and spring and bore out the 1mm length to accommodate the spring and buffer shank. (Size of these items varies slightly). Repeat as required.

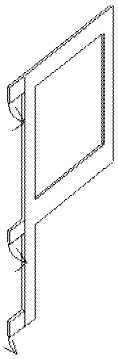
To fix the buffer head in place grip the tail with a fine pair of pliers, holding the jaws against the rear of the casting. Bend the end of the tail to 90 degrees against the side of the pliers to retain the head in the casting. Trim the steel head tail to length with side cutters. Alternatively place a short length of plastic tube, from electrical cabling perhaps, over the tail and cut the tail to length. It is suggested that buffer heads are fitted after painting.

Bogies
Clean any flash from bogie side frames and transom castings. Cut brass stretchers (part C2) and radius plates (partC3) out from the etch sheet.



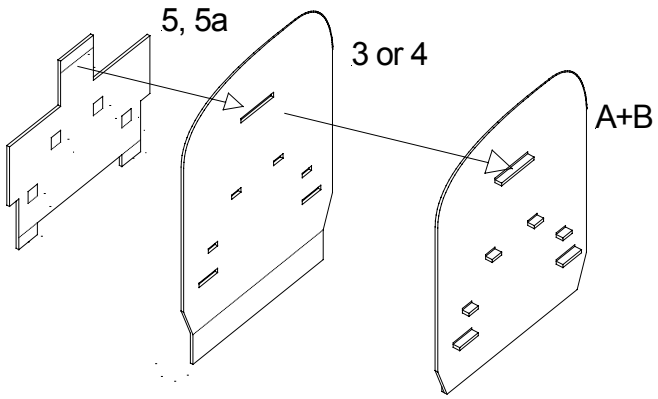
Drill out the pilot hole in the stretchers to accommodate a 10 BA bolt, which you should now solder into place on the carriage floor in readiness to accept the bogie. Drill out the pre-marked axle centres on the cast side frames. Solder the two radius plates in the slots on the brass stretcher. Then solder the transom ends in place. Solder one side frame to the brass stretcher, fit bearings and wheels of choice and solder the other cast side in place. Adjacent to the brass stretchers you will find the bogie foot steps. These should be prepared as per the long foot boards.

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 (part 8) with integral hinges from the etched sheet.



Bend hinges as shown in the diagram and locate in the pre-etched holes in the carriage sides.

Carriage Ends
Carefully remove carriage ends, part 3 and part 4 and parts number 5 and 5a. Drill out the pilot holes for the end handrails and grab rails on the end with steps (part 3). 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 (part 3). Secure with solder or glue. Fold part 5a to form the wings to support the sides at the other end of the carriage by folding each to 90 degrees. Insert in end as before. Secure with solder or glue, avoid covering up the holes you have already prepared for the grab rails.



Before folding parts 7 mark centres to line up the two holes at each end of the carriage floor, drill to accommodate 12 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 brass floor and part 7.

Solder or glue the carriage sides to the ends, ensure squareness, tack solder first then when satisfied run solder into each corner joint. Fit handrails and grab rails from wire to the ends. Carefully cut door and window ventilators, fit short vents in the panel over each door and the longer vents over the corridor windows. Trial fit the floor to body, adjust if required, solder 12 BA bolts in place on upper faces of each part 7.

We suggest door furniture is fitted after painting.

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. Spherical vents should be fitted two per compartment a scale three feet (12mm) apart on the roof centre line. 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 styrene floor must be cut to length to fit between each headstock and to have a width of 34mm. And four holes drilled at each end to accommodate the 12 BA bolts bolts. Use the remaining 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.

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 fit buffer heads and door furniture.

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.

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 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, 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. Suitable lettering materials are supplied by the HMRS sheet number 16.

London Midland and Scottish carriage livery
Whilst many carriages were repainted by their new owners some, particularly obsolete, stock retained their previous livery to the end with the addition of LMS numbering and lettering. Suitable lettering materials are supplied by the HMRS, sheet number 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 seam 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 all carriages were lined in Midland Railway 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 ½" yellow line just below the cant rail, and a similar line above the tops of the windows. In addition just below the windows

two ½" 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 untill1934/5 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

Non corridor carriages were repainted by BR in maroon and were lined.
We suggest the following Precision Paints:

Maroon	P108
Roof grey, maroon carriages	P130

Wizard Models 51L
PO Box 225 ,
Macclesfield
Cheshire,
SK10 4GB
Tel and fax 01625 585312
www.51L.co.uk
email: info @51L.co.uk

Version: 2.0
Issued: May 2004