



4mm

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

Diagrams M25 driving trailer composite/M56 driving trailer third

Prototype information by Philip A Millard

All these vehicles started life in 1903 as D285 50'0" x 9'0" cove roof eight compartment thirds in the Manchester Exchange District sets. In 1909 these sets were reduced to four carriages and subsequently the redundant vehicles were mostly converted to motor driving trailers.

To avoid confusion and repetition, the descriptions which follow refer only to the LNWR carriage numbers carried and Diagram Book pages applicable immediately before the grouping; cross-references to numbers at other periods are given in the table at the end. Abbreviations used include T (third), C (composite) and CMS (Composite Motor Set). This set designation was applied in 1920, and remained in use in the LMS period. There is no extant record of the services to which these sets were assigned after 1920, but it is most likely that they remained in the same districts as in 1919. Carriage 'pairings' are known until about 1927, after which all records disappear, but all the evidence is that the pairings lasted for some years after, and possibly until scrapping.

All carriages retained the original Stone's dynamo and double-battery lighting system on conversion. To start with, the locomotive regulator control was via rodding, but from 1927-1937 most were altered to the LMS standard system of vacuum control.

The only difference between the two diagrams was the seating capacity; M25 was arranged 3/3/3/3/1/1/Luggage+Guard (seating 16 first and 48 third); No 4033 of M56 was originally 3/3/3/2/2/2/Luggage+Guard, while the other two M56 vehicles had six third class compartments. All the compartments were the same length regardless of class. In 1916 the second class compartments of No. 4033 were retrimmed as thirds (and in consequence the coach was renumbered from the composite to the third class series), and in this form the now No. 537 seated 72 third, the same as its M56 fellows.

The first M25 conversions were composites 4017 and 4027 altered in November 1909 for use on services between Northampton, Blisworth, Daventry and Warwick. They normally worked as two-coach sets, coupled to thirds 1168 and 1819 of diagram M57. They remained in these pairings until 1927 at least (probably longer) and after 1920 the trains were end branded as CMS Nos. 14 and 34 respectively.

The other two members of M25, C 4016 and 4019 were converted at the same time for use on the South Staffordshire line between Dudley and Walsall with occasional forays to Lichfield. However, these were originally seven compartments 3/3/3/3/1/1/2/luggage and guard, and thus conformed to M27. However, in 1912 they were again rebuilt and the former (and now redundant) second class compartment was incorporated into the luggage section. They seem to have stayed in South Staffordshire until 1916; their subsequent history is: 4016, 1919 .St Helens (paired with T 941 of M55); 1920-27 CMS No. 11 (paired with T 103 of M62); 4019 1918-20 Llanberis branch; 1921-27 CMS No 9 (continuously paired with T 926 of M57).

Turning now to M56, two vehicles were similarly converted in November 1909 to seven compartment composites for the South Staffordshire line; in this form their layout was 3/3/3/3/2/1/2/Luggage and guard. In 1912 second class was abolished and they were again altered and re-upholstered to third class as 1000 and 1001 of M56. These two appear never to have been fitted with the LMS vacuum regulator control. Further details are: 1000 paired continuously with C 2887 (M23) until 1920 in Walsall No.1 Set. Then

paired with C 2901 (M23) in CMS No.8. 1001 paired continuously with C 2901 (M23) until 1920 in Walsall No.2 Set (noted at Rugby in 1919). Then paired with C 3864 (M29) in CMS No.7.

The third member of M56 was T 537, which was converted in February 1912 direct from an ordinary third. Until 1926 at least it operated paired with C 3972 of M30 in Willesden/Harrow No.1 Set, after 1916 named Willesden No. 16 set, then in 1920 redesignated CMS No. 4.

Numbering (no numbers given for periods when the coach did not conform to the model)

Diagram No	LNWR Composite Numbers		LNWR Third	LMS1923	LMS1933	Date
	Pre-1910	Post-1910	Class No	Number	Number	Withdrawn
M25		4016		9532	17963	3/56
M25	2035	4017		9533	17964	5/51
M25		4019		9534	17966	7/51
M25	2047	4027		9538	17967	10/51
M56		4033	537	5326	15804	9/49
M56			1000	5327	15805	5/53
M56			1001	5328	15806	4/52

BR, 1948-1956: 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, pp152-3, 181-2

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

LNWR Liveries, HMRS, Talbot, Millard, Dow, p86

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

Construction notes

Parts list

Side, ends, underframe, vee hanger, roof cradle, vent and commode handle frets wrapped in paper.

Packet 1

Underframe parts

Dynamo, 1 off
Vacuum cylinder, 2 off
King post, 2 off
Vacuum pipe, 4 off
Screw couplings fret, 1 off

Packet 2

Bogie castings & fixings

Bogie side frame, 4 off
Bogie end plate, 4 off
10BA nuts & screws, 2 off
12BA nuts & screws, 4 off

Interior items

0.030" plasticard strip, 1 off
0.020" plasticard strip, 1 off
Glazing strip, 1 off
Seat moulding, 6 strips

Packet 3

Body & roof parts

Torpedo vent, 16 off
Brake van sidelight, 2 off
Door tee handles, 16 off

Roof materials

Aluminium roof
Microstrip, 2 lengths

Packet 4

Set of 16" sprung buffers

Miscellaneous

0.5mm wire, 3 off
0.7mm wire, 1 x 6"
0.9mm wire, 1 off

The kit requires Mansell pattern 14mm 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 on the inside of the bend unless stated otherwise. 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

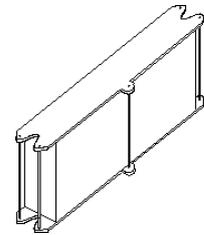
Separate the full length stepboards (C2, 2 off) from the floor (C1). Raise the rivet detail on the solebars and fold up to 90°. Open out the bogie centre pilot holes to a clearance fit on the 10BA screws. Do not fold out the vee hangers – these are misdrawn and are replaced later with a separate etch.

Tin the inner faces of the full length step boards, then fold them through 180°. Supporting the step board in a vice, sweat the two halves together. Attach the step boards to the solebars, leaving 1mm depth of solebar showing below.

Fit a king post casting to each side of the floor, symmetrical about the centre lines and 31mm apart. Thread lengths of 0.5mm brass wire through the holes and bend to form the trussing. Form the lower step boards (C4, 2 off) as described for (C2) above. Fit the step boards in place according to the drawing, using the etched droppers (C5, 8 off). *[The etched droppers are only loosely held in place on the fret, and it is possible that some may have become lost in packing/unpacking. If so, replace them with wire.]* **Parts C6 and C8 are not required and may be discarded.**

Battery boxes and underframe fittings

Carefully scribe a centre line on each battery box (unnumbered, 2 off), on what will become its outer face. Fold the sides to 90°, then solder it in place on the base plate (unnumbered, 2 off) with the scribed centre line in line with the centre hole. Add the top plate (unnumbered, 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.



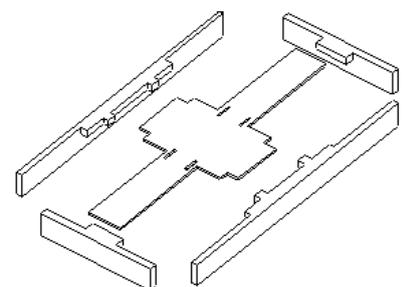
Position the dynamo 16mm from the adjacent bogie axle centre line and 3mm from the carriage centre line. The casting may require a triangular packing piece to ensure it is vertical and the pulley is slightly lower than the wheel axle.

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 40mm from the bogie pivot hole. The bogie push rod lever should be on the carriage centre line.

Motor fitted carriages carried a regulator vacuum pipe which ran from end to end via the solebar (on the opposite side to that shown in the drawing). This is best modelled in three parts, so the body and underframe can be separated. Take the 0.9mm brass wire and make two 90° bends in it, so that the inside faces of the short legs are 200mm apart. Solder the wire underneath the long step board down one side of the underframe. Leave the short legs overlength for now.

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

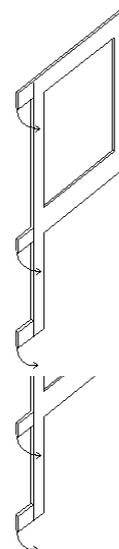


other cast side. Fold up the etched footsteps (C7) and fit them to each side of the same end of one bogie – this end will go under the driver's compartment. Ignore the footsteps etched as part of the bogie fret.

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 sides from the fret. The thin strip at the top of each side provides support for the roof cradle – do not remove it! 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 from the centre of the roof cradle. Bend the hinges as shown in the sketch, but do not bend along the half etched line above the window aperture on each droplight. 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. **The ledges formed by the top of each droplight fret give the position of the roof cradle; fold the side top strips 90° inwards on top of these.**

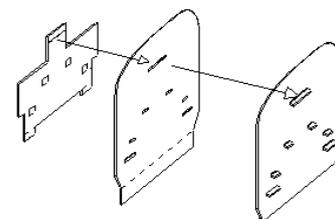


Although the commode handles are best fitted after painting, now is the time to ensure that the pre-etched holes are opened out sufficiently to take them; there are two holes per handle.

Add the door ventilators (18 off), one above each door, including the droplight-less van doors. Also add the brake van sidelights to the rectangular plate above the endmost window as shown on the scale drawing if required – they were removed in the 1930s.

Body ends

Remove the external ends and their corresponding internal ends from the frets. Drill out the pilot holes for the handrails and grab rails on the plain end. **Fold up the headstocks on the inner surface of the external ends.** On each internal end, mark out the centres of the body fixing holes on the lower flaps to match those on the ends of the carriage floor and drill out to 12BA clearance. Fold the internal ends to shape, including the steps, side support wings and lamp irons. *Note that the lamp irons may not have survived the etching process, or may break off during bending. If so, replace them with flattened wire.*



Locate the internal end into the plain external end and sweat together as shown in the sketch. Repeat this process for the driving 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. Do not solder the vacuum pipe to the ends. To the plain end, add the profiled roof end strip and two long curved handrails formed from 0.5mm brass wire. You will need to fabricate the long central step from scrap etch; it should be 8mm long and 3mm wide. To the driving end, add the long curved panel and the three visors above the windows, and the beading strip below them. Trial fit the underframe to the body, adjusting if required, and solder the 12 BA screws in place on upper faces of each inner end.

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. Using the etched bulkheads 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.

Remove the interior assembly from the body, and separate it from the underframe. Fit the roof cradle to the body, on the side support strips.

Roof

Cut the roof exactly to length; it is designed to fit within the ends. 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. The torpedo vents are positioned in pairs over the centre of each compartment 8mm (2') either side of the carriage centre line. The grab rails are fitted to the plain end.

Painting

Paint the body, underframe, roof, interior and bogies 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'	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.

London Midland & Scottish Railway

Carriage sides were painted crimson lake, identical to the Midland Railway shade. Ends were painted crimson lake and remained so for motor carriages after 1936 (all other stock going black) 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

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 crimson red

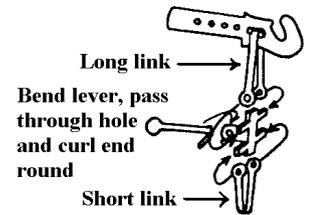
P116

Roof grey

P131

Finishing

Add the commode handles to each passenger door, and your choice of etched or turned tee handles. 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. Fit the buffer heads and their springs.



Assemble the vehicle. The roof may be glued in place, or secured with small screws from underneath through the roof cradle.

Bend the cast vacuum pipes as shown on the scale drawing and trim and fit them so they meet the brass pipe. Also trim the ends of latter to length. Do not fix the cast and wire pipes together unless you are certain you will never need to separate the body from the underframe. Patch paint as required.

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.

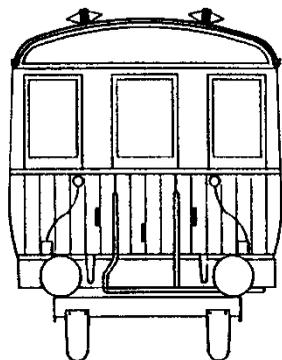
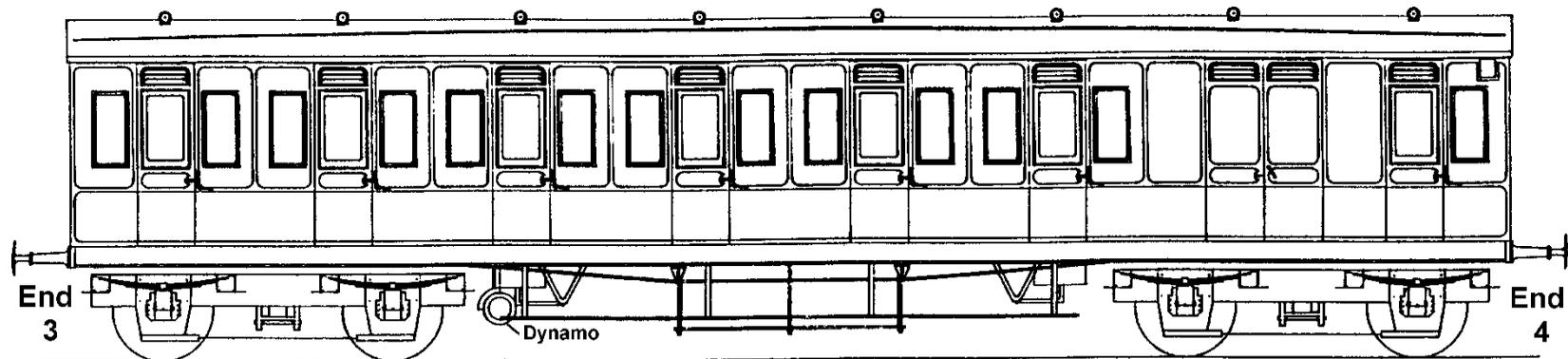
Wizard Models Limited
PO Box 70
Barton upon Humber
DN18 5XY
Tel: 01652 635885

www.wizardmodels.ltd

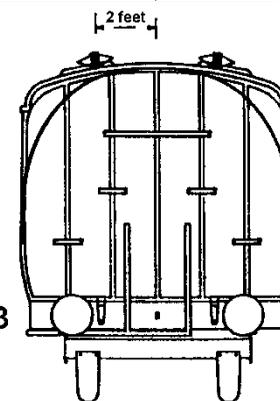
Version: 3.00

Issued: December 2021

© Wizard Models Limited 2021



End 4



End 3

LONDON & NORTH WESTERN RAILWAY DIAGRAMS
M25 50' DRIVING TRAILER COMPOSITE
M56 50' DRIVING TRAILER THIRD

To 4mm scale.