



## London and North Western Railway LMS, BR

### Motor driving trailers M25 and M56 Composite

#### Prototype Information

by Philip A Millard

All these vehicles started life in 1903 as 50' 0" x 9'0" cove-roof eight compartment thirds to Diagram 285 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 will refer only to the LNWR carriage numbers carried and Diagram Book pages applicable immediately before the grouping; a cross-reference to numbers at other periods is 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. Unhappily 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 at least some years thereafter, and possibly until scrapping.

All diagram 285's retained the original Stone's dynamo and double-battery lighting system on conversion. To start with the 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 naturally the same width. 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 T537 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, Bisworth, Daventry and Warwick. They normally worked as two-coach sets, coupled to thirds 1168 and 1819 of M57 respectively. They remained in these pairings until 1927 at least (probably longer) and after 1920 the trains were identified 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, Dudley, 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 (M.23I) until 1920 in Walsall No1 Set. Then paired with C 2901 (M23) in CMS No8.

1001 Paired continuously with C 2901 (M23) until 1920 in Walsall No.2 Set. (Noted at Rugby in 1919). Then paired with C 3864 (M.29I) in CMS No.7.

The third member of M56 was T 531 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 INFORMATION

(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		9353	17964	5/51
M25		4019		9534	17966	7/51
M.25	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

### References:

An Illustrated History of LNWR Coaches (including West Coast Joint Stock), D Jenkinson, P147

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

### Construction notes

Please read these instructions with care before starting to build your model. Examine all the parts and familiarise yourself with their assembly. Remove any flash and ensure all parts fit correctly. We suggest wet fine emery paper (1200 grit) may be useful. Always carry out a dummy run before assembly. Assembly is best carried out using 144 degree solder for etched components or low melt 70 degree solder for white metal. When soldering white metal components to brass always tin the brass first. An epoxy resin such as Araldite, or superglue can also be used. Evo-stick or similar impact adhesive is required to attach the roof covering to the timber roof.

## Parts list

Packet 1	Packet 2	Packet 3	Packet 4
Underframe castings	Bogie castings	Investment castings	Roof castings
Dynamo 1 off Vacuum cylinder 2 off	8' Bogie side plates 4 off Bogie end plate 4 off (8' deep frame)	King posts, short 2 off 12BA nuts and bolts x 4 10BA nuts and bolts x2	Torpedo vents, 20 off Side lights, 2 off
Packet 5	Interior items	Roof materials	Miscellaneous
Set sprung round buffers	Polystyrene strip 0.030" x1 Polystyrene strip 0.020 x 2 Glazing strip, 2 off Seating	Timber roof Roof covering material Microstrip, 2 lengths	0.5mm wire, x3 0.7mm wire, x0.5

## Underframe

Cut or snip out floor from the stepboards, place the stepboards carefully to one side. Taking the floor drill out the 4 end pilot holes to accommodate 10 BA bolts. Then drill out the two bogie centre pilot holes to accommodate 10BA bolts. Do not fold up the vee-hangers yet.

Punch out the rivet detail on the solebars. Do this on a firm surface, taking care not to distort the floor. Fold along the half etched lines to 90 degrees to form the floor and solebar. Taking the full length footboards, tin what will become the inner surface of one footboard and then fold through 180 degrees with half etched tab on the inside of the fold. Supporting the stepboard in a vice run your soldering iron along the edge. Repeat this for the other double thickness footboard. The same process can be used to form the lower footboards. If you prefer to use glue just apply to the inner surfaces of each stepboard and fold together with the half etched tabs on the inside of the fold. The full length stepboards can now be fitted to the solebars, leaving just 1mm of solebar showing from below. Now fit the lost wax brass castings of king posts as shown on the scale drawing. Thread the wire through the holes in the king posts to represent the trussing. Fit the droppers to the centre footboards as shown on the scale drawing, then fit the assembly to the underframe as shown in position on the scale drawing.

Remove the cell boxes from the etch.

chowbattery.gif

First drill out the pilot holes to accept 0.45mm wire. Then carefully scribe a centre line on what will become the outer face of the cell box, use this as a guide when lining up with the base. Fold the sides to 90 degrees, then place in position on the base plate with the scribed line in line with the centre hole. Repeat this for the top plate and thread wire through the holes and secure in place, then fit in between the king posts.

The cast dynamo should now be fitted under a third class section of the carriage but not under the brake or first class compartment. 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 lower than the wheel axle.

Fold the V-hangers down now and thread 0.7mm wire through the holes and through etched linkage components. The hole in the floor next to the V-hangers gives the position

for the cast brake cylinders. Fit in place. The vacuum pipe can be fitted and should follow the following path between the cast pipes. Bend the cast pipes as shown on the scale drawing and represent the pipe with wire should you wish. It should follow around the end of the carriage along the solebar under the full length stepboard, around the end to the other cast pipe. Due to the ends of the carriages having headstocks in place the cast pipes should be soldered in place to match the wire vacuum pipe which will be attached under the full length step along the solebar. Do not fix cast pipes and wire vacuum pipe together because if you do you will not be able to separate the body from the underframe.

## Bogies

Clean any flash from the bogie sides and transom castings. Cut out the brass stretchers and radius plates from the etch. Drill out the pilot holes to accept 10BA screws. The nuts should now be soldered in place on the underframe in readiness to accept the bogie. Solder the two radius plates in the slots on the brass stretcher. Then solder the transom end castings in place.

Chowbogie.gif

Drill out the pre-marked axle centres on the cast bogie sides to accept brass axle bearings of choice. Solder one bogie side to the brass stretcher, fit the bearings and wheels to choice and solder the other cast side in place. We suggest that the transom end casting /bogie side plate meeting point should not be soldered. This will allow some movement in the bogie and may avoid the need for compensated or sprung bogies. However we recommend that some form of suspension may be required in P4.

### Carriage sides

Carefully remove the carriage sides from the etch. Take care to form the tumblehome curve below the waistline line of the carriage by forming it around a half inch tube or suitably profiled piece of skirting board or kitchen furniture top. The amount of curve required is given by the carriage end.

Carefully remove the droplights with integral hinges from the etched roof cradle. Bend the hinges through 90 degrees and also bend along the half etched line above the window aperture on each droplight.

The ledges formed now by fitting the droplights and hinges gives the position to fit the roof cradle. Now solder or glue in place by passing the hinges through the pre-etched holes in the carriage sides from the back. The carriage ends are prepared next and then joined to the sides. Place the roof cradle to one side for later. Now fit the door louver vents in position as shown in the scale drawing. Fit side light in place at guards end of carriage. (On some carriages the side lights were removed in LMS service.) It is suggested that the casting sprue is fed into a pre bored hole in the carriage side, see drawing. Prepare to fit in place the door hinges. These may be fitted now or glued in place after painting.

## Carriage ends

Carefully remove the ends and the inner ends from the etch. On each end fold the headstock through 90 degrees, ensuring the half etched tabs are outermost and secure with solder. Taking the inner ends. Mark the centres on the lower flaps to match those on the ends of the carriage floor. Drill out to 10BA. Solder in place the 10BA nuts. Repeat this for the other inner end.

Lnwrend2.gif

Now taking the end with step detail fold every half etched line to 90 degrees ensuring the half etched line is on the inside of each bend. Pass each step through the etched holes in

the carriage end and fit in place. The other inner end has the upper step and its supports, cut these out and fit in place on the carriage end as shown in the drawing.

Now returning to the other inner end, fold all the half etched lines to 90 degrees, fitting is aided by the train alarm apparatus "eyes" which fit through the pre-etched holes in the carriage end and secure. You are provided with two profile supports for each end solder these in place to match the cove roof profile of each end as these will support the slight over hang of the roof covering.

You should now have two ends, each with a lower ledge on its inner face with two 10BA nuts in place and each with two small upper ledges on to which will rest the roof cradle. Also you should have two completed sides. Now join the ends with sides ensuring all is square and true. Before you fit any of the brass compartment divisions use them as templates to make the required number in the Plastikard provided. Fit the roof cradle on the ledges of the droplights and inner ends, then fit the brass compartment divisions to stiffen the sides.

Using the wire provided, represent the train alarm apparatus as shown on the scale drawing and the end grab rails for which pilot holes are given in the ends. Now fit in place the buffers on the headstocks, holes are provided to aid their fitting.

### **The roof**

The roof provided is the correct profile for LNWR Cove roof stock and is manufactured in a close grained highly stable wood. Also provided is the roof covering material, to be glued on the wood. A very slight overhang should be allowed at each end. This covering should be attached using Evo-stick or similar contact adhesive. We understand that some modellers have found high quality card to be an alternative. Again fix to the timber using a contact adhesive. A white glue of the PVA type is not suitable.

When securely fixed to the roof you can mark out the positions of the torpedo vents, and roof grab rails as shown on the scale drawing. The torpedo vents are positioned in pairs over the centre of each compartment each some 8mm (2') from the carriage centre line. The grab rails on the roof were at the carriage end with steps.

Having detailed the roof it can be painted as a separate item. Later when the whole carriage is ready for final assembly the roof can be glued in place or secured with small self tapping screws from underneath through the roof cradle.

### **The interior**

The interior is to be constructed using the Plastikard and seating provided. Compartment divisions in Plastikard should be cut out having used the brass compartment divisions as template. Mark their positions on the floor and glue in place, cut the seating to match and glue in place. Two holes will be needed at each end of the interior floor to clear the nuts because the carriage is designed to sandwich the floor in place between the underframe and body.

### **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 the model using a tissue soaked in white spirit. Letter your wagon 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 1/8<sup>th</sup> 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 lemons and orange. A white line 1/8<sup>th</sup> 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 guards 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.

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 early 1934 all carriages were lined in Midland style. Raised beading was painted black and edged with a 3/8<sup>th</sup> gold for gangwayed stock or 3/8<sup>th</sup> pale yellow for non-gangwayed stock. These lines were edged each side with a 1/16<sup>th</sup> 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:

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

### **British Rail**

Non-gangwayed stock was painted maroon and was probably not lined. It is suggested that suitable photographs are examined as only some stock was repainted at all!

We suggest the following Precision Paints:

Carriage maroon P108  
Roof grey P130

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