



London and North Western Railway
London Midland and Scottish
British Railways

General service, non-corridor suburban stock
(50' Cove roof carriages)

Prototype notes

by Philip A Millard

Manchester Exchange District Sets

There were twenty two of these sets in all built from March 1903 to February 1904. With their 9ft width (seating four, five and six-a-side in the firsts, seconds and thirds respectively) and cove roof profile they were very modern handsome vehicles for their time. The first six and the last six sets had some minor detail differences, which means that the Chowbent kits accurately represent Sets 7 to 16 inclusive.

The history and configuration of these sets is rather complex. To start with they were made up of five carriages marshalled as follows, five compartment brake third D338, two eight compartment thirds D285, a seven compartment first D110 and a six compartment brake second D336 in that order. In 1909 one of the D285 was removed and in most cases the carriage was converted for motor train use. This reduced the sets to four carriages, and they remained in this form until 1927 at least, probably considerably longer.

As a consequence of the removal of one carriage it was thought necessary to revise the seating accommodation in the remainder of the train. The brake seconds had one compartment altered to third class, which meant that they were now brake composites and had to be renumbered accordingly. The all firsts also had one compartment down graded to third class, which meant they also became composites, and were renumbered accordingly. Hardly had this been done before all carriages were renumbered again under the 1910 scheme which reduced the carriage stock to a one number series. A further upheaval resulted from the abolition of second class in 1912; the brake composites (formerly brake seconds) became brake thirds, the composites (formerly firsts) reverted back to all first once again. Needless to say this all meant another change of number into the appropriate series. This means that modellers must choose the date represented by their models with care!

In parentheses, there were broadly similar sets built at the same time for use in the Birmingham and Liverpool areas, but the formation was not the same and included (true) composites to D182 for Birmingham and D183 for Liverpool in place of the D285. The composite D182 is available as a Chowbent 4mm kit. Two more sets again, somewhat different were provided for the Broad-Watford services.

Manchester Exchange Sets Nos. 5, 7 and 22 were disbanded about 1910, the latter two becoming Manchester and Macclesfield Sets 2 and 3. In both cases an additional vehicle was included in the set; this was changed several times over the years but the other carriages stayed together until 1927 at least. The other Manchester Exchange Sets became Inter-District Sets 150-168 in 1919, but for some reason retained the suffix "EX", and presumably remained on their old section. The 'EX' was removed in 1927 by which time all 19 sets had been repainted and renumbered into LMS livery but were otherwise unaltered.

The carriage underframes were of bulb-iron section, and were mounted on deep frame 8ft. wheelbase bogies. The trains were steam heated and electrically lit, but only the brake ends had cell boxes (one on each side), the intermediate carriages being lit by jumper cables. The lower footboards between the bogies were removed by the LMS in the thirties retaining only the short step on the bogie beneath the guard's doors.

Ordinary passenger train workings in the Manchester Exchange District took the sets to Leeds, Huddersfield, Bolton, St.Helens, Liverpool and Wigan. At peak times they were often strengthened with additional carriages, while quite a number of workings required two sets to be coupled together to form an eight coach train, especially between Tyldesley and Manchester. They would also be used for weekend excursion traffic, especially from the Manchester area to Blackpool and the North Wales coastal resorts.

As example a typical day's duty in 1921 was North Eastern District Diagram 77:

	Arrive	Depart	
Wigan		0738	(A)
Exchange	9840	0910	(B)
Tyldesley	0944	0950	
Earlestown	1103	1135	
Exchange	1235	1250	
Leeds	1511	1610	(C)
Exchange	1832	1907	
Patricroft	1928		

- (A) With two additional thirds and parcels van for Exchange.
- (B) Double set.
- (C) With an additional 57ft third.

It would be very tedious to give full numbering information. As a typical example Set No.9 was turned out on 22/9/03 and consisted of;

Brake second D336 No.63 to BC 1962 in 1909. To BC6162 on 24/5/11. To B 7799 on 25/11/12.

- First D110 No.204 to C1959 in 1909. To C3982 on 24/5/11. To F4699 on 25/11/12.
- Third D285 No.2172 (Removed from the set 1909 - to C4017 on M25.
- Third D285 No.2157 (Retained this number until the grouping.
- Brake third D.338 No.1811 to BT 7507 on 24/5/11.
- The four remaining vehicles were renumbered in December 1925 as L.M.S. Nos.7241, 10132, 5551 and 7347 respectively. They became 22566, 10412, 13758 and 22369 under the LMS. 1933 renumbering scheme.

A second example is Set 14 turned out on 18/11/03. It consisted of;

- Brake second D336 NO.266 to BC1241 in 1909. (BC5951 allocated) To 13T 7706 on 4/12/11.
- First D110 No.137 to C 1826 in 1909. To C 3901 on 4/12/11. To F 4703 on 1/5/13.
- Third D285 No.1973 (Retained this number until the grouping)
- Third D285 No.2228 (Removed from set 1909 - to C4027 on M.25) Brake third D.338 No.805 to BT 7155 on 4/12/11.
- The four remaining vehicles were renumbered in August 1927 as LMS Nos. 7236, 10136, 5545 and 7313 respectively. They became 22584, 10419, 13786 and 22388 under the L.M.S. 1933 renumbering scheme.

Many of the D110 all firsts were marked down to all thirds (and renumbered of course!) in later LMS days. These cove roof sets were mostly withdrawn in the immediate post war period, with odd vehicles surviving until about 1953 and yet others were converted into service stock. As usual they were some what down at heel in their final years and doubtless they saw use on workmen's trains, football excursions and the like.

Additional comments

These carriages were fitted with Stone's double battery lighting system from new. Loose vehicles were fitted with batteries beneath the floor one each side. Sets of carriages 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 single battery lighting system became the LNWR standard it was fitted to any loose vehicles created from sets. A regulator box is include with the model if the Wolverton lighting

system if desired. There is no reason to suppose that carriages fitted with the Stone's system were converted to Wolverton pattern lighting at a later date.

In common with other LNWR non corridor stock these carriages were not fitted with the Westinghouse brakes. These carriages were fitted with Mansell pattern wheels.

References:

An Illustrated History of LNWR Coaches (including West Coast Joint Stock), D Jenkinson P22, P109-116
Historic Carriage Drawings Vol 2 LMS and Constituents, D Jenkinson
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, E Talbot, P Millard, G Dow, P Davies

Acknowledgements

51L would like to Philip Millard for his prototype notes and assistance in answering our queries.

Construction notes for 50ft Cove roof carriages

These instructions apply to the following carriages:

D110 Suburban 7 compartment non corridor, first 7 x 1st
D182 Suburban 7 compartment non corridor composite, 5 x1st, 2 x 3rd
D285 Suburban 8 compartment non corridor third, 8 x 3rd
D336 Suburban 6 compartment non corridor third brake, 6 x 3rd
D338 Suburban 5 compartment non corridor third brake, 5 x3rd

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

Underframe castings

Dynamo 1 off
Regulator (for Wolverton lighting system only)
Vacuum cylinder 2 off

Packet 2

Bogie castings

(8' deep frame)
Bogie side plates 4 off
Bogie end plate 4 off

Packet 3

Other items

King posts (short) 2 off
10BA nuts and bolts x 2
12BA nuts and bolts x 4

Packet 4

Roof castings

Torpedo vents, 20 off
Side lights, 2 off brakes only
Roof lights 2 off D338 brake only

Packet 5

Set sprung round buffers

Interior items

Polystyrene strip 0.030 x 1
Polystyrene strip 0.020 x 2
Glazing strip, 2 off
Seating

Roof materials

Timber roof
Roof covering material
Microstrip, 2 lengths

Miscellaneous

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

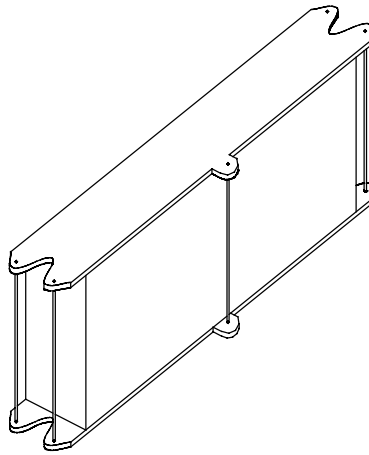
Underframe

Cut or snip out floor (C1) from the stepboards (C2), place the stepboards carefully to one side. Taking the floor drill out the 4 end pilot holes to accommodate 12 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 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 (C5) to the centre footboards (C4) as shown on the scale drawing, then fit the assembly to the underframe as shown in position on the scale drawing.

Carriages to be permanently in sets need only have dynamos and battery boxes in the brake carriages. If producing either a "loose" carriage, one not in a set, or of course a brake, (D336 or D338) construct cell boxes two for the Stone's and one for the Wolverton lighting system respectively. See drawings. Bore the 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.



If using the Wolverton system the regulator box should be placed on the opposite side of the carriage to the battery. Ensure the angled face faces outwards and the box is just below the solebar. (See P21 Jenkinson). Modelers may wish to add support bolts from fine wire.

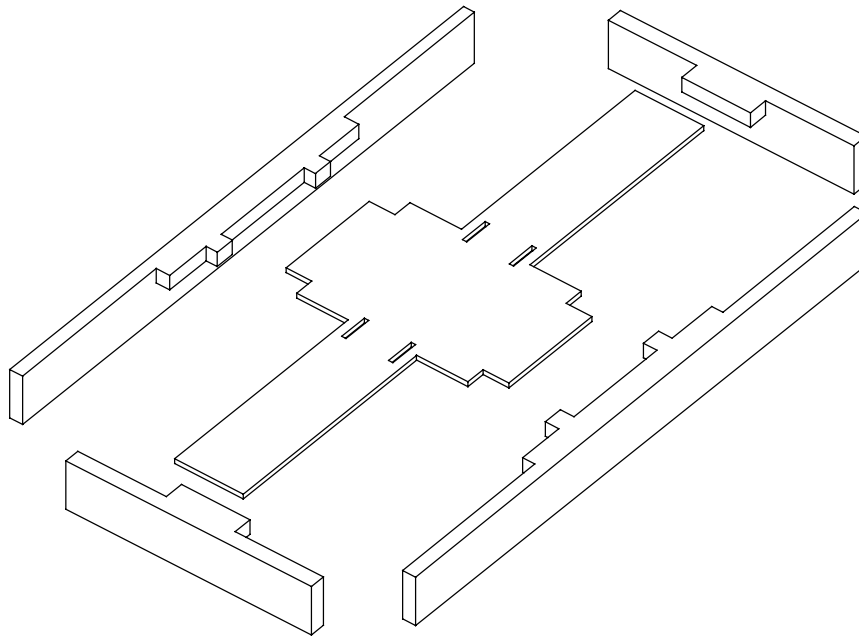
The cast dynamo should now be fitted under a third class section of the carriage but not under a brake or first class compartment. Position the dynamo some 16mm (4') from the adjacent bogie axle centre line and 3mm from the carriage centre line. The dynamo may require a triangular packing piece to ensure 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 (C6). 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 bolts 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. 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.

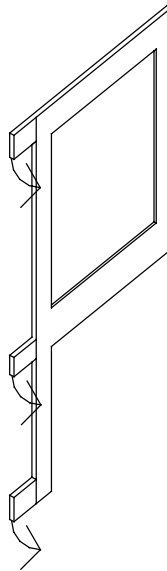


We recommend that some form of suspension may be required in P4 however.

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.



If building a brake carriage also remove the hinges for the luggage compartment remembering to fold down the flap at the upper end of each set of hinges. 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. If building a brake (D336 or D338) fit side light in place at guards end of carriage. (On some carriages the side lights were removed in LMS

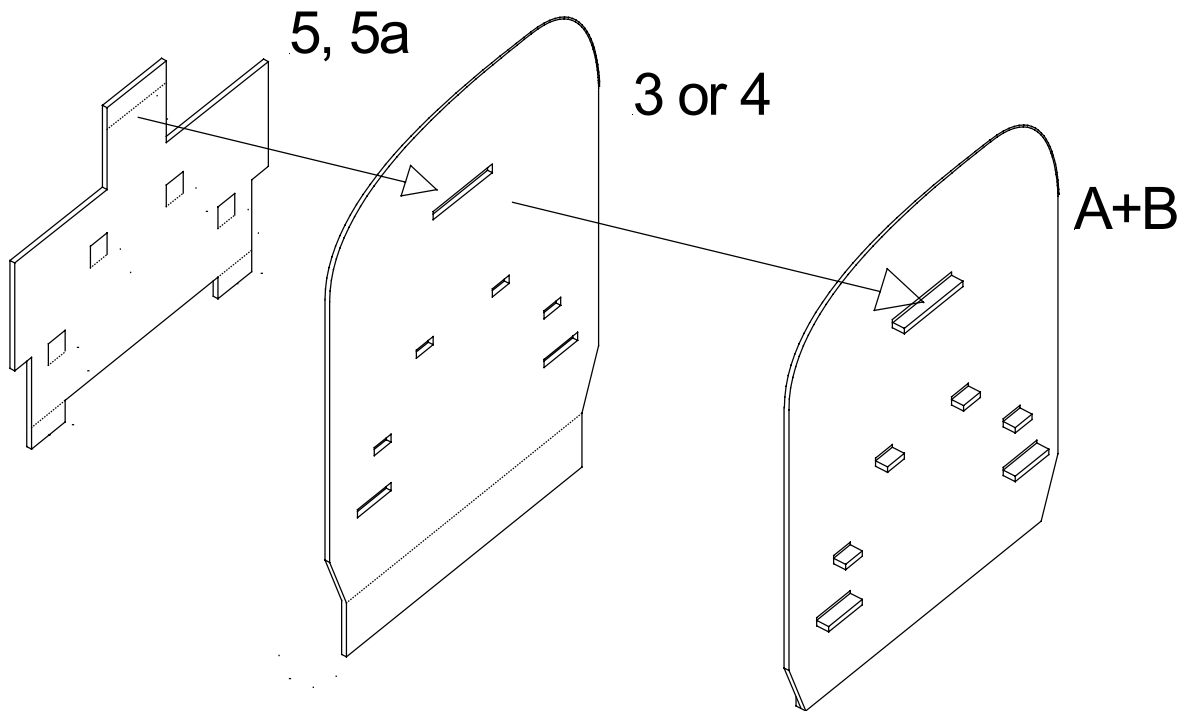
service.) It is suggested that the casting sprue is fed into a pre bored hole in the carriage side, see drawing. Prepare to fit in place the door hinges. These may be fitted now or glued in place after painting.

Carriage ends

Carefully remove the ends and the inner ends from the etch. In the case of the brake third carriages (D336 and D338) there are two brake ends, one with four glazed windows for the early period and one with two for the later period. (A requirement to remove two of the glazed areas was made in 1910, but It is believed that up to 3-4 years were required to complete the work.)

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 12BA. Solder in place the 12BA nuts. Repeat this for the other inner end.

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 it's 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.

Lastly if building a set add the set name plate to the brake end. This should be between the outside panels approximately 2mm above the buffer beam.

You should now have two ends, each with a lower ledge on its inner face with two 12BA 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.

Lastly in the case of brake carriages add the set name boards at the brake ends. These should be around 2mm above the buffer beam.

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.

When securely fixed to the roof you can mark out the positions of the torpedo vents, deck (roof) lights (D338 only) 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 deck lights were situated above the rain strip to the passenger compartment side of the double luggage doors. 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 modellers 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 lemons 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 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.

Lettering and lining

Prior to the close of 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" lettering. 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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