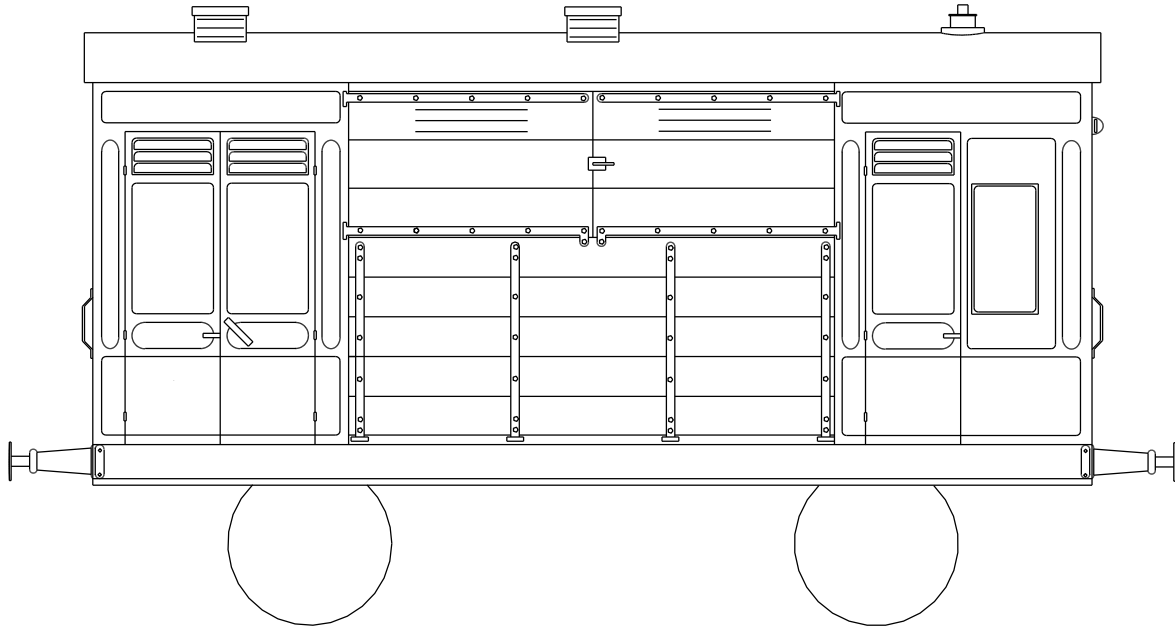


London & North Western Railway
London Midland & Scottish Railway
British Railways

Diagram 436 Horsebox
1890-1953



Prototype information

The standard LNWR horsebox was a well-appointed design. The vehicle had a combined groom's compartment with a separate luggage/feed compartment. The earliest horseboxes had the outside W-irons favoured in the 19th century. It is unlikely that any of these early vehicles survived into the LMS. The kit model represents the later version with conventional inside W-irons.

Vehicles built before 1906 originally had no hand brakes but these were added later. Like many LNWR vehicles of the period they were fitted more or less indiscriminately with either horizontal or vertical brake cylinders. Unfortunately it is not possible to say which horse box had which style of brake gear. The kit model is supplied with a vertical vacuum cylinder which would appear to be the more common type.

681 of these vehicles were built between 1890 and 1906 with a further batch of 11 in 1913. Most survived into the LMS period and four into nationalisation in 1948. No definite information on scrapping dates is available at the present time.

Sample numbers

Sample numbers given below are for the later LNWR period. However the early LNWR number can be obtained by subtracting 10,000 from the later quoted numbers.

Later LNWR numbers			LMS 1923-33 numbers.		
10002-16	10075-119	10243	3352-64	3462-524	3640-88
10254-65	10334-38	10455-77	3756-64	3829-930	3922-4007
10504-16	10599-699	10722-82			

LMS 1933 onwards
42133-44 42180-8 43217-25
43280-7 43316-33 43383-95
43419-25

Livery details

The underframe and fittings were painted black throughout. The LNWR livery was dark chocolate brown for the sides and ends, with the side mouldings lined in chrome yellow. The waist panels of the double doors were grey (slate). The roof was white when new but very rapidly become grey or even black in service.

The early LMS livery was crimson lake for the sides and ends, with the side mouldings black lined with yellow, giving yellow-black-yellow. After the re-numbering, from 1933 the body was unlined crimson lake. The double door waist panels remained slate colour and the roof was painted grey. We suggest Precision Paint P30 and P35.

References

An Illustrated History of LNWR Coaches (including West Coast Joint Stock), D Jenkinson, p162.
LNWR Liveries, HMRS, Talbot, Millard, Dow & Davies, p105.
British Railways Pre-Nationalisation Coaching Stock Vol. 2, OPC, Hugh Longworth, p389.

Assembly

This model requires Mansell pattern 14mm carriage wheels, bearings and paint 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 always on the inside of the bend. Where rivets need to be raised these are shown on the back of the part, and should be punched with a blunt scribe on a firm surface, taking care not to distort the part.

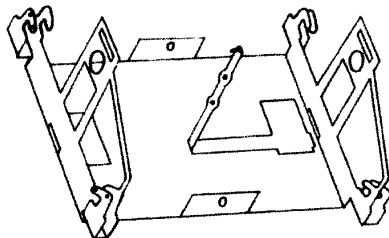
This is the suggested order of assembly but there are many ways of assembling this or any other model. The part numbers quoted are those etched on the frets.

Underframe Assembly

- 1) Floor. Fold the steps double and squeeze flat and secure with glue or solder. Bend the solebars down and the steps out, then bend the headstocks down and their ends back twice. Fix the buffer bodies.

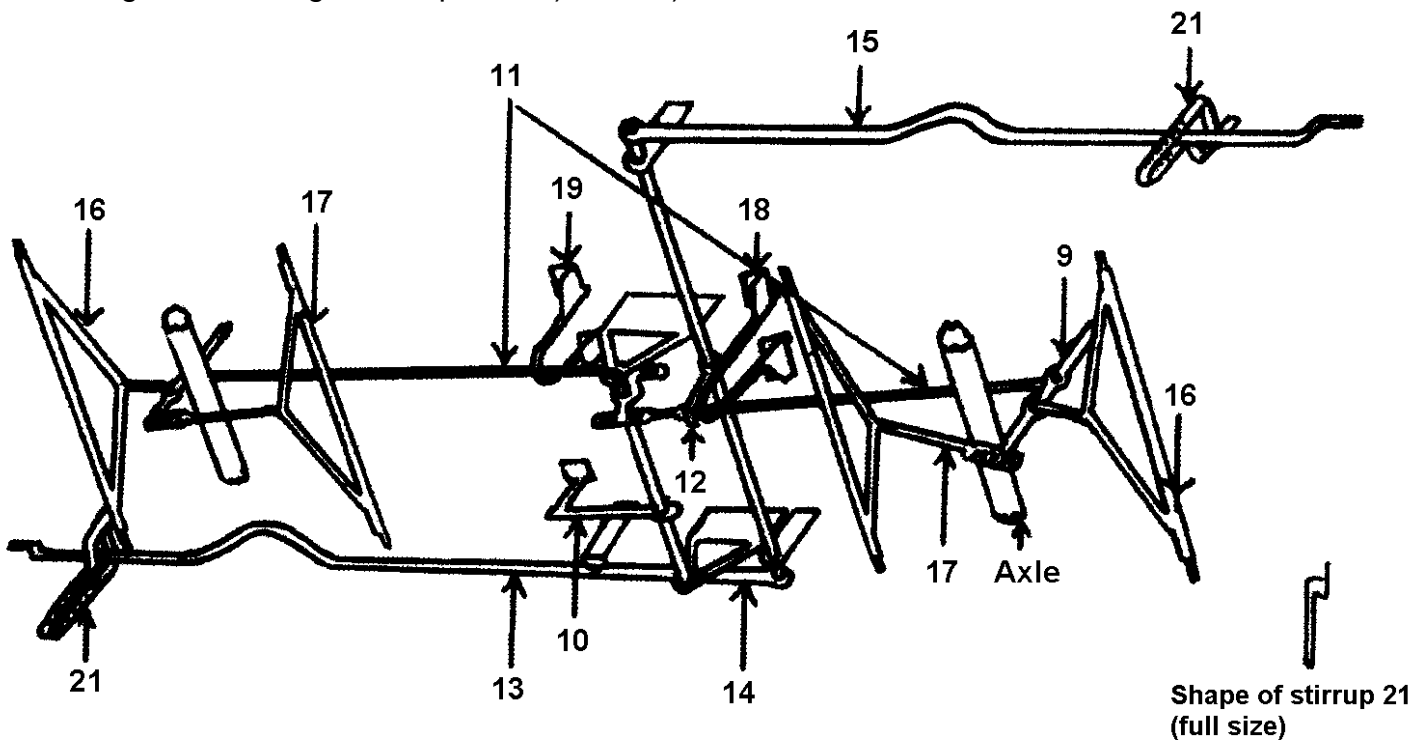


Cross-section of floor at fixed axleguard



- 2) Spring hanger detail, fixed axleguard end x4. These parts fit inside the solebars, lined up with the corresponding parts on the axleguards themselves. Note that the rivet detail faces outwards. Bend down the fixed axleguards, the vee hangers and the remaining brackets under the floor.
- 3) Solebar detail, for the side with the vee hanger close behind the solebar. The two vertical groups of three rivets align with the vee hanger, and there is a group of five rivets forming an inverted W over each axle guard.

- 4) Solebar detail, other side.
- 5) Pivoted axleguards. Bend to shape as shown in the diagram above. Then fit between the brackets in the floor, and secure in place with a piece of 0.9mm brass wire passed through the holes. Bend the ends of the wire to hold the axleguard in place. Fix your chosen bearings into the axleguard holes from the inside. Bend down the brake linkage hanger.
- 6) Brake block detail x8. Fix in position on brake hangers 7) and 8), by pinning through the hole to ensure accuracy.
- 7) Brake hangers, fixed axleguard end x2. Bend down the hangers and safety loops and fix into the locating slots in the axleguards.
- 8) Brake hangers, pivoted axleguard end x2. Fit as for 7).
- 9) Brake linkage hanger, fixed axle guard end. Bend over the top flap and the small prong at the other end. Fix the flap above the floor with the hanger vertically downwards in the notch between the axleguards. From the 0.9mm brass wire, cut a length 30.5mm long for the handbrake shaft and another 15mm long for the vacuum brake shaft. Fit the vacuum brake shaft through the holes in the vee hangers threading on to it parts 10) and 11).



Brake gear layout (seen from below)

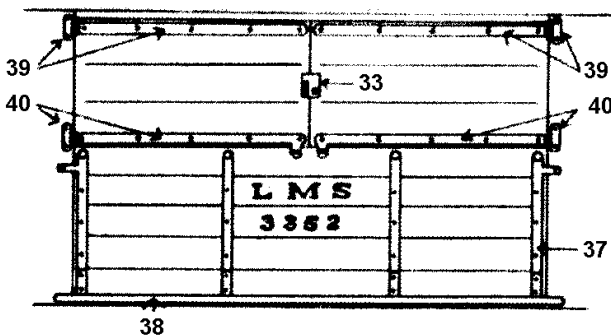
- 10) Vacuum brake lever. Ensure it points towards the half etched circle on the floor, having bent over the rectangular flap first.
- 11) Pull-rods. First bend over the small prongs at the ends. The shorter end is furthest from the floor and passes below the handbrake shaft. Fix the ends of the vacuum brake shaft to the vee hangers and the prongs on the pull-rods through the holes nearest the floor in the brake linkage hangers. Fix the brake cylinder to the floor in the half-etched circle and part 10) to the cylinder. Then fit the handbrake shaft through its brackets, threading on to it part 12).
- 12) Handbrake drop arm. The end of this engages the outward side of the stops on pull-rod 11).
- 13) Long brake lever.
- 14) Handbrake reversing lever. Fit these two as shown to the handbrake shaft and the bracket near the vacuum cylinder. The cranked part of the lever points upwards and is just above the bottom of the solebar when the brake is off.
- 15) Short handbrake lever. Fit to the handbrake shaft diagonally opposite 13).
- 16) Outer brake block yokes x2. Twist the central pull-rods to 90° and bend over the prongs through the lower holes of the brake linkage hangers and fix in place.
- 17) Inner brake block yokes x2. Prepare as for 16), but do not fix in place until the end of assembly, after the wheels are fitted.
- 18) and 19) Brake pull-rod safety loops. Bend the fixing flaps and fix into the locating slots in the floor.

- 20) Axleguard tie rods x2. Fix to the outer faces of the axleguards. Then fix the axlebox/spring castings in place on the face of the axleguards.
- 21) Handbrake lever stirrups x2. Bend to the shape shown in the diagram, trim off any excess and fix to the solebars 2mm in from the right hand end, with the hand brake levers passing through the stirrups.
- 22) and 23) Gas cylinder brackets (22's number is missing from the fret). Bend the fixing flaps down. Fix the cylinder through the holes in the brackets and secure in place on the underside of the floor, ensuring a lengthways aspect opposite the vacuum brake cylinder. Note the brackets should be 3mm in from the end of the gas cylinder.

Body Assembly

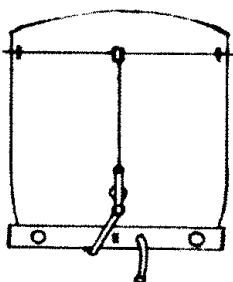
Parts 30, 32-36, 1x37, 39 and 43 are on the underframe fret.

- 24) Inner layer, first side. Form the tumblehome to match the curve on the ends. Bend the side flaps, hinges and alarm gear brackets at the groom's end to right angles, and bend the top flap to match the curve of the end roof line. Bend the floor locating tabs down.
- 25) Outer layer, first side. Curve the side to match the tumblehome formed on 24), ease in place over the projecting door hinges and secure in place.
- 26) and 27) Second side. Assemble as for 24) and 25).
- 28) Luggage end.
- 29) Groom's end.
- 30) End handrails x4. Fit these through the waist level holes in the ends. Then assemble the ends to the sides. Fit the body onto the underframe with the locating tabs through the slots and secure in place. Note that the body will only fit one way round.
- 31) and 43) Lamp irons x6. Bend the fixing flaps. Pass two through each headstock and one through each end at waist level, secure from the inside, then bend up 0.75mm out from the ends.
- 32), 34), 35). Fitted after painting.



Arrangement of horse door hinges. Also shows probable position of first LMS number; second LMS number was probably in lower panel at right-hand end, with "LMS" at same height on left.

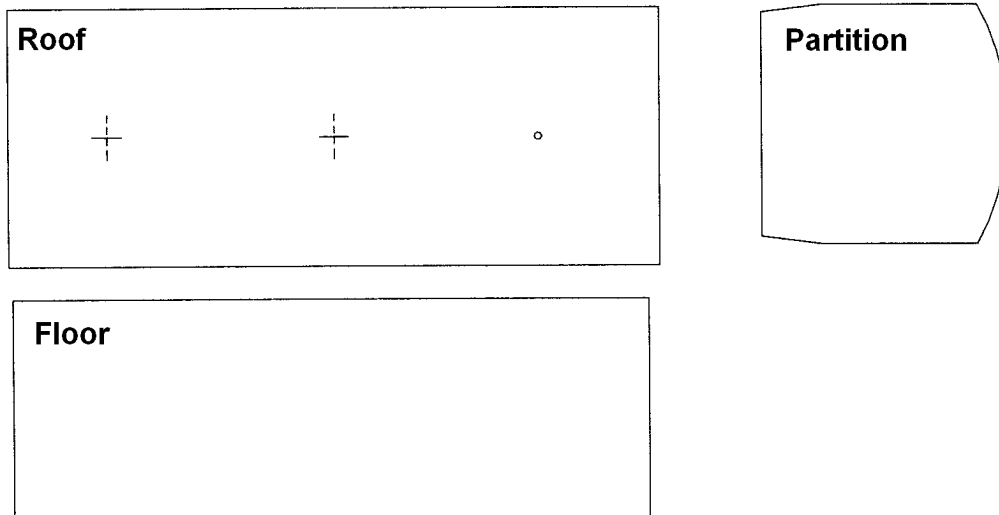
- 33) Lock plates for top horse doors x2. Line up the hole with that in the top door with most of the plate above and to the left of this hole.
- 36) Door ventilators x6 (number missing from the fret). Fix in place in the top panel of each door.
- 37) Bottom door hinges x2. Fix in place as shown on the diagram.
- 38) Detail layer x2. Fix on top of the bottom edge of 37).
- 39) Top door upper hinges x4. Fit as shown on the diagram.
- 40) Top door lower hinges x4. Fit as shown on the diagram.



At the groom's end fit the brake (carefully bend to crank it in the opposite direction) and steam pipe castings and alarm gear pipes and rods (the latter from 0.45mm wire) as shown in the diagram. At the other end fit the brake and steam pipe castings to mirror those at the groom's end.

Roof and Interior Assembly

Cut out the floor and partition from 0.030" plasticard, according to the templates below, and fit in place. Add the plastic seat moulding. This needs to be trimmed to length and fitted to the groom's end wall, with the top of the seat squab 8mm above floor level. The combined underframe and body can now be painted in your chosen livery. When dry, fit the glazing to the inside of the groom's windows.



Mark out and drill pilot holes in the planked plasticard roof according to the template above. Lightly score along the embossed roof plank lines – this will cause it to form a gentle curve. Offer up the roof to the body – it is likely that ½mm will need trimming off both long edges. Fix the roof in place. Once set, open out the right-hand pilot hole to 1.5mm then cover the roof with a sticky label or solvent weld paper on top, trimming the edges to fit. Fix the lamp in place. Using a needle or similar, locate the other two pilot holes and also add:

- 41) Ventilator bases x2 (on body fret). Fold into a box shape and glue to the roof centred on the pilot holes with the louvres showing to the sides.
- 42) Ventilator tops x2 (on underframe fret). Curve very slightly to match the top of 41) and fit in place.

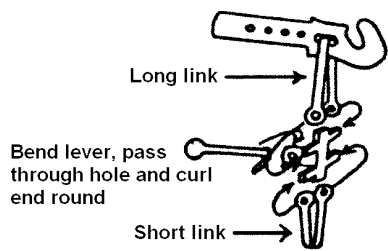
Paint the roof as required.

Select and apply the transfers appropriate to your chosen livery according to the box photograph or the drawing above, and any other information you have to hand.

Final detailing after painting/lining and fixing transfers

Spring the axleguards apart and fit the wheels.

- 17) Inner brake block yokes x2. These pass below the axle to the bottom prong of the brake linkage hangers. With care, these can be sprung in place without gluing to permit easy changing of wheels. For extra security, glue the brake blocks only, if the other end is left unglued, the wheels may still be changed without too much difficulty.
- 32) Grab handles x2. Fitted through the two holes below the groom's windows.
- 34) Door T handles x6. Fit three each side, through the holes in the waist panels of the groom's and luggage doors and the lock plate of the top horse doors.
- 35) Luggage door handles x2. Fit through the upper hole in each pair of luggage doors - bend over the short end before fitting.



Assemble the screw couplings according to the drawing, and fit to the headstocks. Finally, fit the buffer heads and their springs, bending over the buffer tails to retain them.

A more recent version of these assembly instructions may be available on the Wizard Models website. 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.

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