28. Handbrake lever. Fix the lower end to the short piece of wire projecting from the V-hanger with the upper end resting in the notch at the top of the stirrup 26. A slight bend is needed about 6mm from the upper end to make this end portion parallel with the solebar.
29. First outer side - ease down over door hinges and glue from behind and at edges.
30. Second outer side. ditto
31. Door vents. Fit to panel above groom's doors.
32. Lower strapping. Cut from fret and remove panels containing parts 34-36, as well as the narrow strips, four to each set of strapping, which give extra thickness to the top and bottom part (see diagram). Fix these strips, then the complete strapping to each side of the body.
33. Upper strapping. Fit to each side of the body at the top of the middle of the horse compartment.
34. Window bolections. Fit to the end windows of the groom's compartment.
35. Door T-handles. Fit to the groom's door at waist level and the bale doors about 5mm higher.
36. Grab handles. Bend as shown, fit alongside each groom's door.
*37. Corner lampirons. Raise rivets, bend and fit as shown at each side of each end.

Now fit the spring/axlebox castings. At the fixed axleguard end they may be glued to the solebar as well as the axleguard, but at the pivoted end they must only be glued to the axleguard so as to allow movement. End fittings at the step end are as shown. Alarm gear piping (if fitted) is made from thin wire. Side chains (if fitted) have a hook to the right-hand chain only. Glue the vacuum brake pipe to the end and to the underside of the headstock. Cut out the remaining coupling parts and fit to the coupling hooks (see diagram). The other end has no steps or alarm gear, identical couplings and side chains, but vacuum brake pipe on the other side of centre.

The vehicle should now be painted in accordance with the colour scheme already described. If the original fully lined livery is desired, this can readily be achieved as follows:
After the body sides have been painted brown and allowed to dry, use a craft knife and carefully scrape away the paint from the raised mouldings on the groom's and bale compartments (leaving the window bolections painted. Provided the brass has not been fingered, the black centres of the mouldings can be drawn in with black ink in a draughtsman's pen of 0.25mm line width (Rotring, Staedtler etc.) Errors can be wiped away with a moist cloth and redrawn. After touching in the corners, a coat of clear varnish should be applied to protect the ink.
When painting the underframe, take care not to 'gum up' the sprung buffers or to fill the gap between the pivoted axleguard and the solebar.

After fitting the groom's compartment partition and seat paint the interior, then when dry glaze the windows. Curve the roof carefully to shape, add fittings as illustrated, then paint the complete roof before fitting to the body.

'Pressfix' transfers are supplied covering each of the livery styles described in the introduction. To fix these transfers, use a sharp knife to cut through the tissue around each item as required, lift it from the backing paper with the point of the knife and place face down in position on the model (tweezers may be helpful). If the position is incorrect, lift, adjust and replace. When correct, press down firmly. Wet the tissue, leave for about half a minute to release, then peel away and wash off any remaining gum. Sample complete vehicle numbers are supplied - other numbers may be built up from the single numerals, in which case the above fixing sequence should be followed for each figure in turn; it is essential to dry thoroughly before adding a further numeral.

Finally ease the wheels into place in their bearing cups: the ends of the brake pullrods (part 23) will need to be bent slightly to do this. They are then bent back and hooked onto the lowest prongs of the linkage hangers.

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GWR horse box (Diagram N6)

THE PROTOTYPES.

50 of these vehicles were built during 1889/91, numbered 581-610 and 671-690. Nos. 598, 678, 680, 682/3 and 685 were withdrawn in 1927-29, 684 in 1930, 600 in 1937 and 686 in 1938. The remainder lasted until 1932-36, except for 603, which was fitted with a loading gauge frame in 1933 for tunnel inspection, renumbered 80951 and withdrawn 1961. The body design was based on that of the one-off N5 horsebox no.88, the most obvious difference being that the N5 had tumblehome sides and ends whereas for N6 theywere flat. The basic underframes were similar, though N5 still had the early outside-rigged clasp brake gear, which on N6 was superseded by the standard later pattern with triangular tie-bars between brake blocks. Painting details are believed to have been as follows:
Body sides and ends: Coach brown (possibly crimson lake 1912-22). The sides were almost certainly lined in gold at first (the N5 as built in 1889 was) with black mouldings, with drop-light frames and window bolections probably Indian red. An unlined livery was probably adopted later (perhaps during the first world war). Lettering and numbering was originally in the second plank down from the side louvres with e.g. G . W . R 686 in small characters, the number towards the groom's end. After 1903 the large 25" letters G W were applied to the lower flaps of the horse door doors, with the number just below the waist panel of the groom's door. The 25" letters were superseded by the 16" size from 1920. With so many of the class then being withdrawn, it seems unlikely that any would have been repainted to bear the1934-43 round monogram.
Underframe and fittings: Black.
Roof and fittings: White when painted, soon becoming grey or black in service.

BUILDING THE MODEL.

CUTTING OUTTHE PARTS. Lay the fret on a firm level surface such as a sheet of aluminium or hardboard. Cut through the retaining tabs by pressing with a heavy duty craft knife or small chisel.

BENDING. Almost all sharp bends are marked by an etched bend line. THIS LINE IS ALWAYS ON THE INSIDE OF THE BEND. Short bends can be done with the fingers or by pushing with a small screwdriver etc. Longer bends can use the edge of a steel rule as a guide. Edge flanges can be bent by holding the main portion and pressing the flange against a flat board.

ADHESIVES. Solder gives the strongest construction and is perfectly practical for most of the structure. An adhesive will probably be found preferable for large flat surfaces (such as the outer sides) and may be used for the entire construction if preferred. Cyanoacrylates are probably the most satisfactory. Very small quantities can be applied with the tip of a small screwdriver from a drop placed on a piece of non-absorbent scrap material. Parts must be in the right place before applying the adhesive; there is no time to adjust them afterwards. Take care not to glue your fingers together (it takes only a few seconds) and keep cyanoacrylates away from children. Quick-setting epoxy adhesive may be used if preferred. This gives more time to adjust parts if necessary, but is more messy. Either soldew or epoxy when applied to the inside of a bend will very much strengthen it - this technique is particularly useful for such parts as W-irons and brake hangers.

RIVET DETAIL. In many cases rivet detail is etched in relief on the front surface of the metal. Some small parts if made in this way would be unduly weak. In the case of raised plates having rivets upon them (e.g. end step flanges) there is one more layer of detail than can be etched by straightforward techniques. In the case of such components a depression has been etched into the back of the sheet where the rivet is situated. Before assembly the part should be laid face down on a surface such as dense cardboard and a point such as a slightly blunted

pin (or a dart, which is easily held) pressed into each depression. This will raise the rivet on the front of the part. In the following instructions the part numbers of each part requiring this treatment are marked with an asterisk (*).

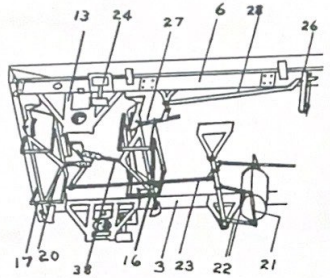
ASSEMBLY. The parts should be assembled in the following order (the part numbers are those etched on the fret):

1. Floor. Bend buffer beams, brake hangers and pivoted axleguard brackets down.
* 2. Buffer beam detail. Raise rivets and fit to floor. Fit buffer bodies and if required eyes for coupling safety chains (removed sometime early this century) and central coupling hooks.
3. First inner solebar. Tabs through slots in floor. Glue or solder inside of joint under floor.
* 4. First outer solebar. Raise rivets, fit on top of 3.
5 and *6. Second solebar, as 3 and 4.
7. First inner side. Bend end, bottom and top flaps inwards (the latter sloping upwards to match roof curve) and door hinges outwards. Bend the brackets in the bottom flaps not quite vertically, then back up on themselves at their bottom ends (see sectional drawing). Fit side onto floor over solebar tabs and solder or glue to floor.
8. Second inner side. Bend and fit as 7.
* 9. Step end. Raise rivets and fit to inner sides at groom's compartment end. The lower steps should first be bent out from the inner sides in all cases, and the alarm gear brackets if required (not fitted when built - probably added in the first few years of this century).
10. Second end. Fit to other end of vehicle.
11. Middle steps. Bend and fit to end 9 from behind.
12. Upper step. ditto.
15. Brake blocks. Fit to axleguards 13 and 14 before these are bent. They go on the side without bend lines. Locate the block by means of a pin through the hole while glueing or soldering. Cut the pressed bearing cups from their strip and fit through the axle holes - the pointed end of the cup appears through the hole on the same side as the brake blocks have just been fitted. Any glue or solder which strays onto the inside of the cups must be removed.
13. Fixed axleguards. Bend W-irons, brake hangers and linkage hanger and fit to floor at groom's end with the linkage hanger towards the end of the vehicle.
14. Pivoted axleguards. Bend as 14 and put aside.
16. Safety loop. Bend and fit to fixed axleguard, nearer to centre of vehicle.
17. Safety loop. ditto nearer to end of vehicle.
18. Safety loop. Bend and fit to pivoted axleguard at side away from linkage hanger.
19. Safety loop. ditto at side with linkage hanger.
20. Brake block connecting bars (short links). Bend sideways the three small prongs on each brake linkage hanger. Twist the link of each connecting bar through 90° and fit between the brake blocks at the outer end of each axleguard, hooking the middle prong of the hanger through the middle hole of the link.
38. Brake block connecting bars (long links - numbered out of sequence). Twist the links as parts 20, fit between the brake blocks at the inner end of each axleguard and hook the uppermost prong of the linkage hanger through the middle hole of the link.

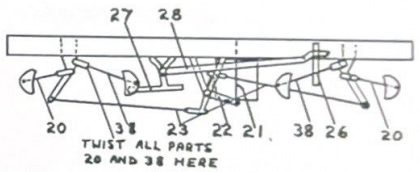
Now cut a length of the thick brass wire about 15mm long and use this to fit the pivoted axleguard assembly to the floor with the linkage hanger towards the end of the vehicle. Push the buffer heads into place, cut and bend four pieces of thin wire and solder to the end of the buffer head stems and to the floor so as to spring the buffers (see diagram)

21. Brake cylinder bracket. Bend, glue plastic cylinder into centre of bracket and fit to floor (locating tabs through small slots near V-hanger.
22. Brake cylinder levers. Cut a length of thick wire 16mm long. Fit this through the holes in the V-hangers, threading on to it the two levers 22 at the outer end and 23 brake pullrods at the inner end, with the almost right-angled joint away from the floor and that pullrod at thegroom's end.

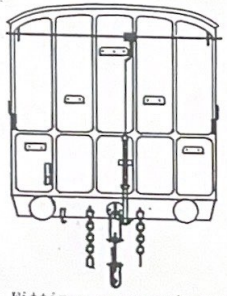
24. Bottom steps. Bend both ends at right angles the same side of the upright (no bend lines on these parts). One end is the lower step - the other is glued or soldered into the recess on the underside of the top step.
25. Wooden top steps (optional). These were not fitted when built but almost certainly were added at a later date as on the slightly later N9 horseboxes. Fold each step double and fit above the small top steps against the solebar, centred below the groom's door.
26. Handbrake lever stirrup. Twist and bend as shown. Pass the upper end through the small slot in the solebar with the groom's door to the left and fix in place.
27. Handbrake pushrod. Cut a short length of thick wire (about 5mm), pass through the handbrake V-hanger with all but about $\frac{3}{4}$mm on the inside and fix. Thread the pushrod onto this longer end of the wire and fix the end of its greater length to the back of the bottom of the nearby brake block. Fix also to the wire.



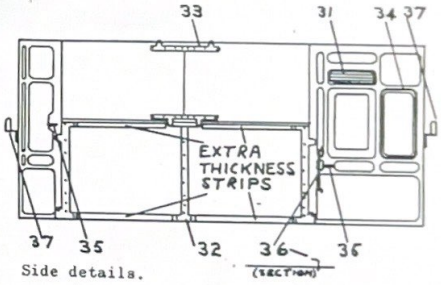
Underframe arrangement



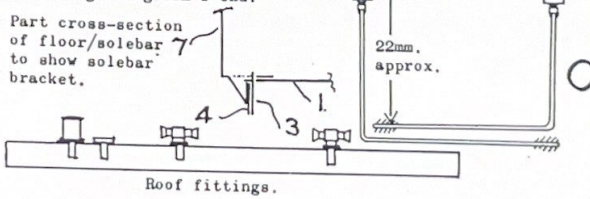
Layout of brake rigging.


Fittings on groom's end.

Handbrake lever stirrup (section)



Side details.



Roof fittings.