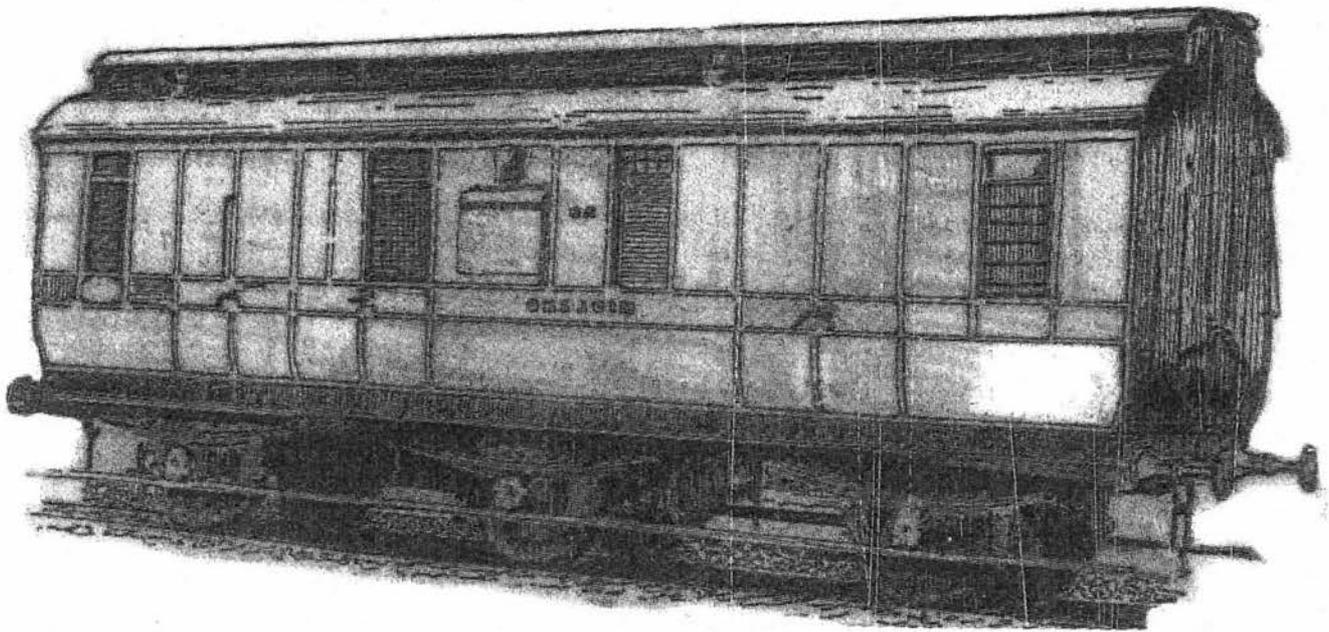


SLATER'S PLASTIKARD LTD

**ASSEMBLY GUIDE
FOR
MR/LMS 6 WHEELED
FULL BRAKE CARRIAGE**



REF.NO. 7C01

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Historical Notes

Between 1897 and 1901 the Midland Railway built 301 of these vehicles in 5 batches. The first batch was constructed alongside other types of carriages to form complete trains for the Bristol to Bradford expresses but subsequent examples were built for general use and soon found their way onto most parts of the Midland in both express and other train formations.

The first 63 examples were 13ft 3" high and the remainder 13ft.1in. This kit is for the original version. When first built in 1897 they had a large guard's lookout but following an accident at Bakewell in 1899, it was decided to fit smaller ones. Between removal of the large and fitting of the small lookouts many vans ran for a time without either type. All the vans were fitted with the new smaller ducklet several years after the turn of the century. The kit can be built with either the small lookout or none at all.

In 1898 there were 30 vans delivered with gangways for the Midland and Scottish joint stock - no provision is made in this kit for these vehicles.

All the vans survived into the post 1923 grouping and spread all over the LMS system. Eight of the joint stock examples were taken over by the LNER. A number survived well into the 1950s as departmental stock and at least one is preserved, though in a poor state, at the Midland Railway Trust's site at Butterley in Derbyshire. We would like to acknowledge that organisation's assistance in allowing us access to the vehicle during the preparation of this kit. In addition we must thank various members of the Midland Railway Society for placing records at our disposal.

The first three carriages were numbered 576 to 578 for the Bristol Bradford trains. From 1933 the LMS renumbered the none gangway'ed stock 33933-34144 and the ex joint stock vehicles 33480-33499.

Lot	Built	Original No.	Type of Ducklet	Renumbered in 1902/3
389	96/97	576 - 8	Large	Not Known
400	6/12/98	3001 - 25	Large	1-4,8,10,11,14,15,21,26,27,31, 33,35,36,113,148,153,219,290
400	6/12/98	3021 - 56	Large	
400	12/98	3057 - 60	Large	32,220

LIVERY NOTES

M.R.

The sides, ends and clerestory sides were crimson lake and the mouldings picked out in black. On the sides only the edges of the black mouldings were lined gold or yellow. The end steps were black.

The roof was grey between the rainstrips whilst the portion up to and including these strips was often black. Until 1902 the solebars and headstocks were crimson lake lined in gold or yellow. Between 1902 and 1914 the lining was deleted and after this date the solebars were painted black. All ironwork under the solebars was black and it is thought that the wheel centres were initially Indian red and later black.

The colour scheme of compartment interiors is described in marvellous detail in "Midland Style". The following simplified notes should provide some guidance to the modeller. First class compartments were panelled with maple & sycamore, the ceiling was white, seats were blue (trimmed with lace) and a blue carriage rug covered the lino floor. The third class compartment was painted in grained oak finish and varnished, upper parts of side and ceiling were white and seats were crimson (moquette). It is believed that the interior of the guard's van was painted yellow ochre to the top of the sides and all woodwork above white.

L.M.S to 1933

As MR post 1914 livery.

Post 1933

As above with the following differences:

From 1934 the lining was simplified. Horizontal yellow lines were painted along the cantrails and the beading above the windows. Additionally the upper of the two waist beading strips was painted black, lined yellow on each edge.

Circa 1936 the ends were painted black.

Excellent sources of information on these vehicles are: -

Midland Carriages, An Illustrated Review by D. Jenkinson and R.i. Essery, published by OPC.

Midland Railway Carriages by R.E.Lacy and G. Dow, published by Wild Swan.

The above also contain full details of M.R.livery; For LMS livery details see: -

LMS Coaches, An Illustrated History by D.Jenkinson and R.i.Essery, published by OPC.

CONSTRUCTION - GENERAL NOTES

These carriage kits all share a common form of construction but with certain changes according to the exact nature of the vehicle being built. Obviously many of the components supplied in each kit are identical and so these instructions have been compiled as a general sheet but with extra notes on the variants as necessary.

A variety of materials have been utilised in the manufacture of this kit although it is predominantly moulded in polystyrene. Moulded parts should be cut from their sprues with a **SHARP** craft knife or scalpel; do not attempt to break them off the sprues, as the risk of damage is high especially with some of the smaller items. Clean off any ejector pips and/or flash using small needle files - do not use a knife as there is a 'high risk of removing too great a quantity at a time.

Take great care with the etched parts, as some are very delicate indeed as you will soon find out! They should only be removed from the frets when required as the identification numbers are usually etched into the surrounding waste metal. To remove the parts use a **SHARP** craft knife or a piercing saw; do not try to break them out or use cutters, as the risk of damage is very high. Any remaining pips and ties should be removed using small needle files, and the metal cleaned if required using a small glass fibre burnishing brush.

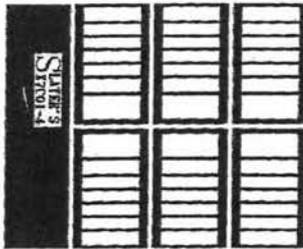
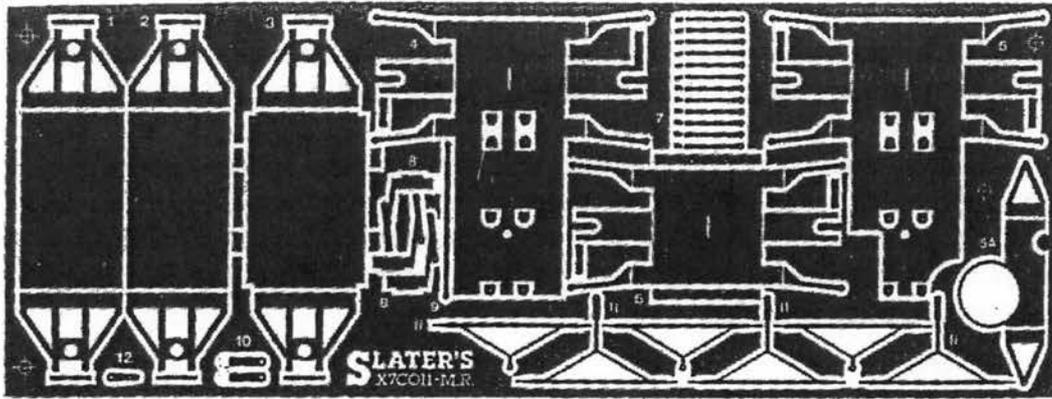
Castings should be removed from their sprues using a piercing or razor saw. The use of cutters will probably damage them. Resultant pips, etc. should be removed using small needle files and/or emery paper.

To construct the model upon it is well worthwhile investing in a small piece of plate glass - this will help to ensure that all the parts go together squarely and accurately. Use **MEKPAK** fluid cement to bond plastic parts together, and use an epoxy type (e.g.: fast setting Araldite) or one of the slower curing cyanoacrylic adhesives (e.g.: Loctite Multibond) for bonding metal to plastic. Solder is recommended for assembling the etched items although it is conceivable that certain types of glue could be used. Solder, however, is far superior!

Before starting the construction of the model please read all through the assembly instructions and study as many photographs of the prototype as you can lay your hands on so as to ensure you get the details correct.

IDENTIFICATION OF ETCHED PARTS

- | | |
|---|---------------------------|
| 1. W-iron unit | 6. Middle axle carrier |
| 2. W-iron unit | 7. Inner brake hanger |
| 3. middle W-iron Unit | 8. Brake lever |
| 4. Axle carrier unit | 9. Brake pull rod |
| 5. Axle carrier unit with cut-out for vac. cylinder | 10. Vacuum cylinder lever |
| 5A. vee hanger unit | 11. Triangular cross bar |
| | 12. Brake actuating lever |



Door guard rails



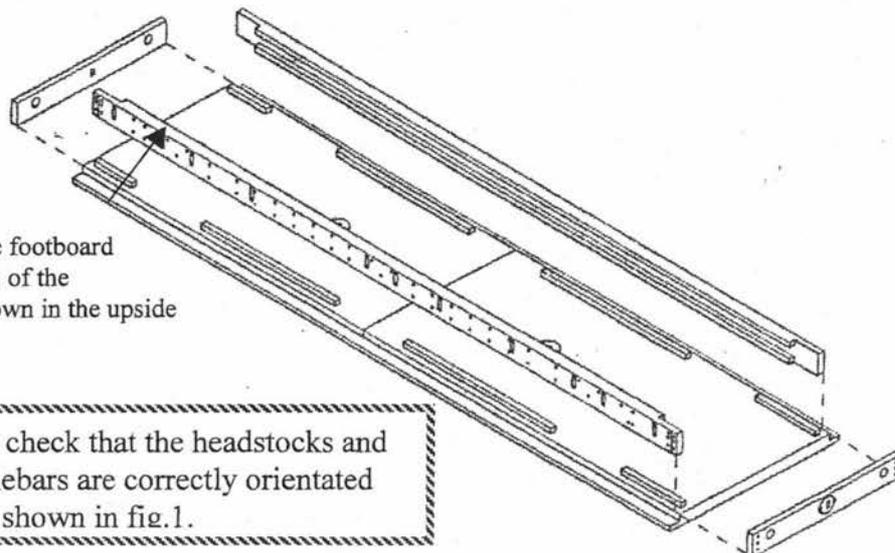
Identification of etch X7C01-3

18. Gas control bar
14. Eye bolt for safety chain
19. Pull rod adjusters

CHASSIS ASSEMBLY

1. The floor is moulded in two halves and will need to be joined. This should not present any problems if you first carefully remove any flash from the parts work on a firm flat surface and check the joined parts with a metal straight edge.
2. Glue the solebars to the floor outside the longitudinal ribs ensuring that they are centrally located. Note the correct way up as shown in the drawing below.
3. Fit the headstocks onto the underside of the floor so that the inner faces locate against the ends of the outer moulded ribs. Note that the holes for the buffer guides are positioned **BELOW** the centre line of the headstock.

Fig.1

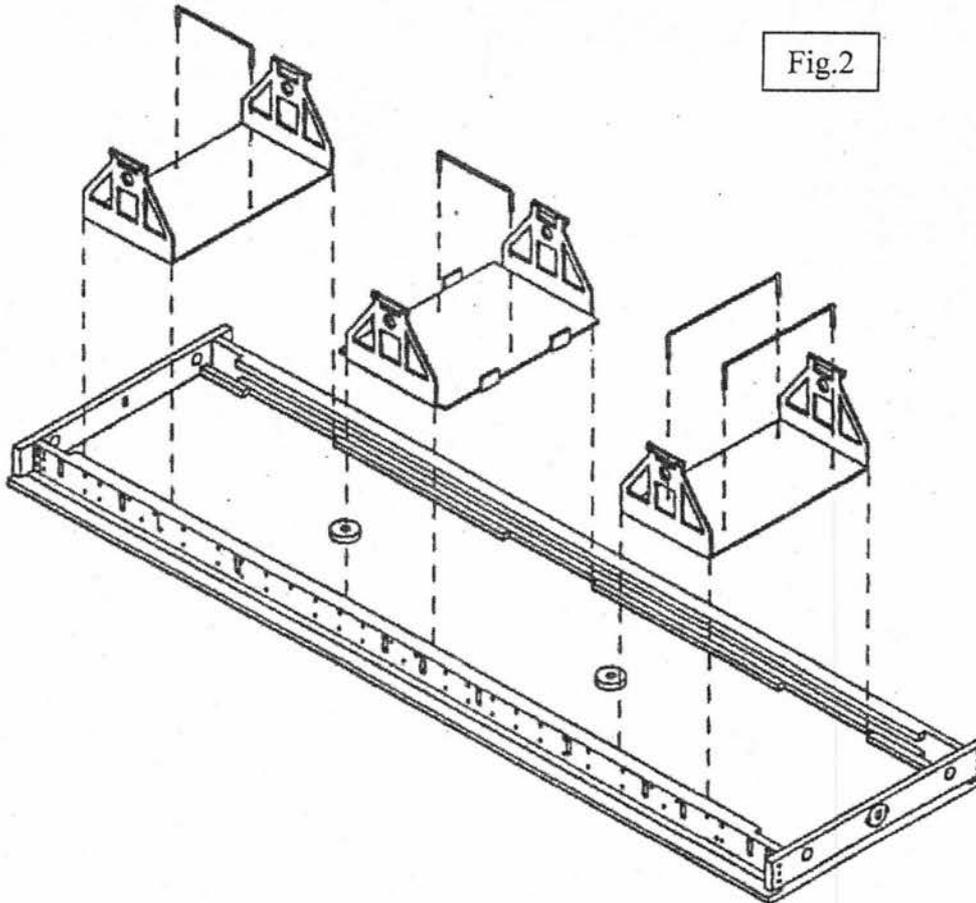


The locating holes for the footboard supports go to the bottom of the underframe (or top as shown in the upside down view in fig.1).

Do check that the headstocks and Solebars are correctly orientated As shown in fig.1.

4. Remove the three w-iron assemblies (1,2 & 3) from the etched fret and, refer to figure 2, bend up four lengths of 0.020" diameter brass wire to fit into the holes in each unit. These form the pivots for the compensation. Solder them in place noting that they must lie on the same side of each component as the main fold lines. Now cut off any excess wire on the top and file flush - this is important!

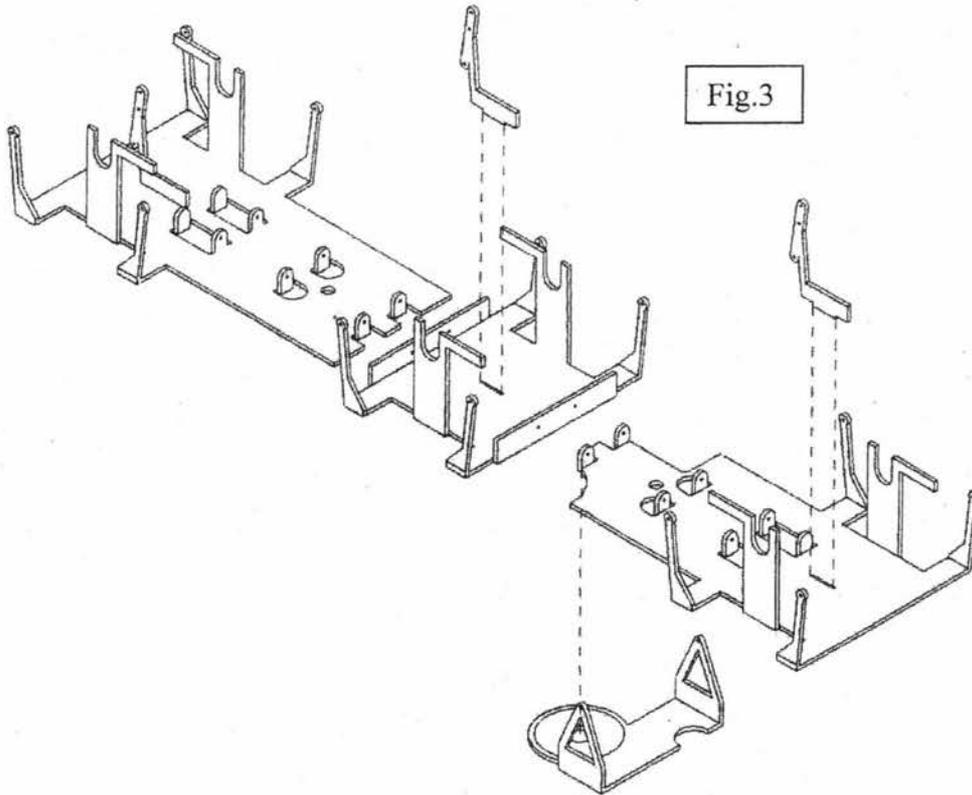
5. Using a blunt scribe and Plastikard anvil, or better still a riveting tool, punch out the rivets on the stays on these w-irons. Fold the stays back through 180 degrees (fold line on the outside of the bend) so that the stays will end upon the outside face of each unit. Now fold up the W-irons at 90 degrees to the stretcher and, in the case of the middle unit (3) the small rectangular tabs. When satisfied that all are square reinforce each bend with a fillet of solder.



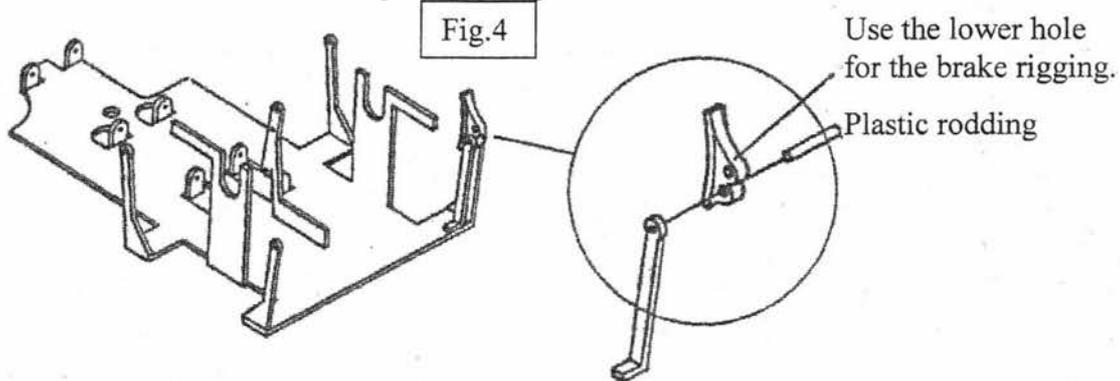
6. Using an epoxy adhesive (e.g. Araldite or similar) fix each w-iron unit to the floor in between the raised ribs. Ensure that each unit is in the correct position; figure 2 should make this clear.

7. Remove the outer axle parts (4 & 5) from the etched fret and fold up the bearing supports, brake hangers and spring wire tabs. Note that it may be necessary to drill out the holes in the tabs NO.74 (0.022"/0.58mm) to allow the piano wire spring to pass through. The centre unit (6) can also be prepared. When satisfied that all is square, reinforce each fold with solder. At this stage check that the centre unit (6) fits into the centre w-iron unit. It should slide freely from side to side between the folded tabs.

8. Referring to the brake gear sketch in figure 3 solder the brake levers (8) into the slot in the centre of each of the units.



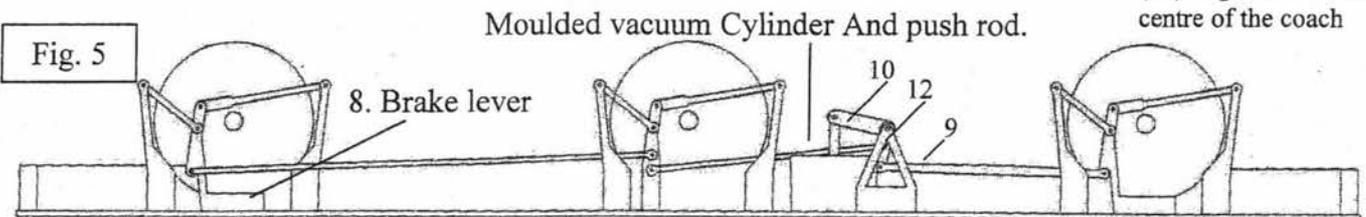
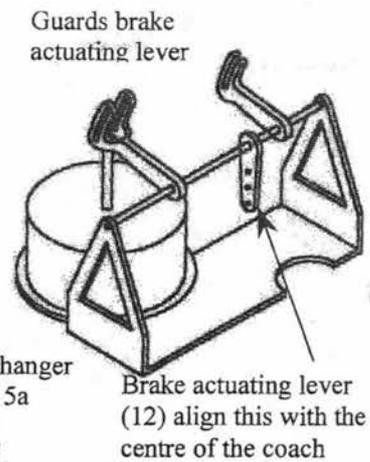
9. Carefully drop the wheel sets into place but **DO NOT YET FOLD OVER** the retaining straps. Following the sketch in figure 4 assemble the brake shoes to the hangers using a 3mm length of 0.030" plastic rod through the upper hole and the hangers. **Mekpak** will secure the rod to the shoe and a quick touch with the soldering iron (or - drop of cyanoacrylate) will secure the etched hanger to the rod. Wait at least 12 hours for this to set before cutting off the surplus rod.



10. Locate the moulded vacuum cylinder in the recess on the vee hanger unit (5A) and glue in place. The cover plate locates into this. Fold the vees through 90 degrees (fold line on the inside) and carefully reinforce the folds with solder. Fix this unit to the underside of the floor with the half round cut out fitting around one of the raised bosses. At this stage it does not matter which boss you choose.

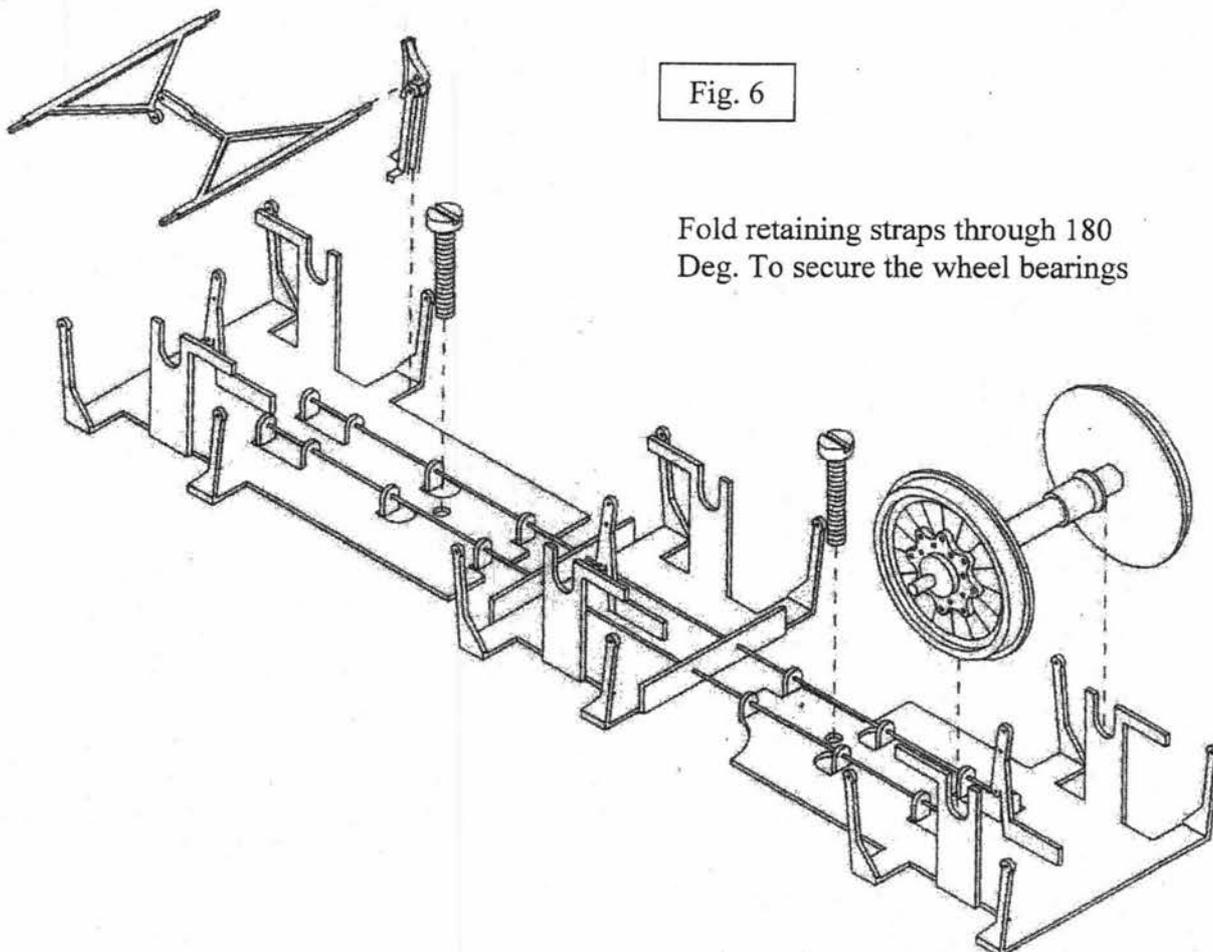
11. If you are building the full brake kit refer to fig 5a and use the two lost wax brake & guard lever castings supplied on the sprue containing the guards hand brake, **DO NOT** use etch part 10. The lost wax lever is its replacement; the remainder of the instructions in 11a should be followed.

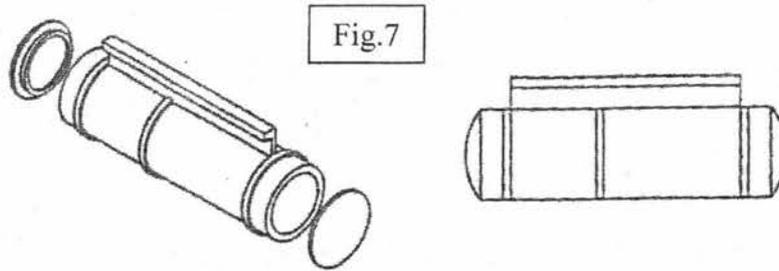
11. Fold the vacuum cylinder lever (10) through 180 degrees with the half-etched fold on the inside. Glue the moulded vacuum cylinder push rod into the hole in the cylinder cover; note that the other end will need to be thinned so that it fits inside the lever (10). Thread a piece of 0.030" diameter wire through the vee hangers and slide on the brake actuating lever (12) and the lever (10) before soldering the wire in place. The brake actuating lever must be positioned along the centre line of the vehicle.



12. Remove the etched triangular cross bars (11) from the fret, note that there are two types - those with a circular end and one of each type for the outer wheelsets. Referring to figure 6 twist the shaft through 90 degrees near to the end. Locate the cross bar with the circular end between the pairs of brake shoes and carefully solder the circular end to the central hole in the brake lever (8).

13. Solder the etched brake pull rod (9) between the actuating lever (12) and the lever (8). Also solder a length of 0.030" wire from the actuating lever to the brake lever (8) at the far end of the vehicle. Do not add the other pull rod until the wheelsets have been finally fitted.





14. Remove the wheelsets and place to one side. The underframe components should be painted, before proceeding. An airbrush or aerosol can of matt black will be ideal for this task. Paint the wheels at this stage but do take care to keep the treads clean.

15. When the paint is dry drop the wheels back in situ and fold over the bearing retaining straps with the fold line on the outside of the bend). Use a drop of glue to secure them in place.

16. Now fit the remaining brake pull rods between the brake shoes and attach the ends to the lower hole in the brake lever. Touch up the unpainted areas with matt black paint.

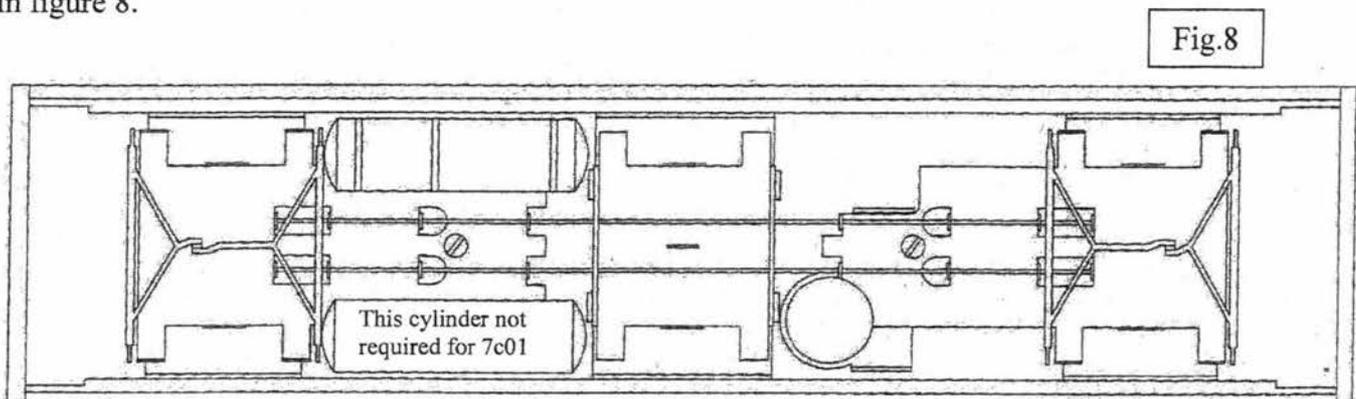
17. Cut two pieces of piano wire to 5" (127mm) in length. Lay the three units (4, 5 & 6) on your work surface and thread the wire through the tabs. The end tabs do not have holes so they will trap the wires in place.

18. Now fasten the units to the carriage floor using the two 8BA cheesehead screws as per figure 6. The screws will form their own thread in the plastic but do not attempt to overtighten, as the units should be free to pivot slightly.

19. Try the underframe on your track. What appears at first sight as a complex system to hold the wheels in place has been designed to both assist your model in negotiating the sharp curves that abound on a typical model railway layout as well as helping the Vehicle ride smoothly over irregularities in the rail levels.

20. Using the positions of the w-irons as a guide fit the moulded springs and hangers to the bottom of the solebars. See notes regarding the springs on page 1. Glue a moulded axlebox onto each 'w' iron underneath each spring. Note that the long 'J' hangers were fitted to the centre pair of wheels only. See drawing on page 16.

21. Assemble the gas cylinders as shown in figure 7 and fix to the floor. The correct locations are shown in figure 8.



Undersides of underframe showing the positions of the vacuum cylinder and the gas reservoir for coach lighting.

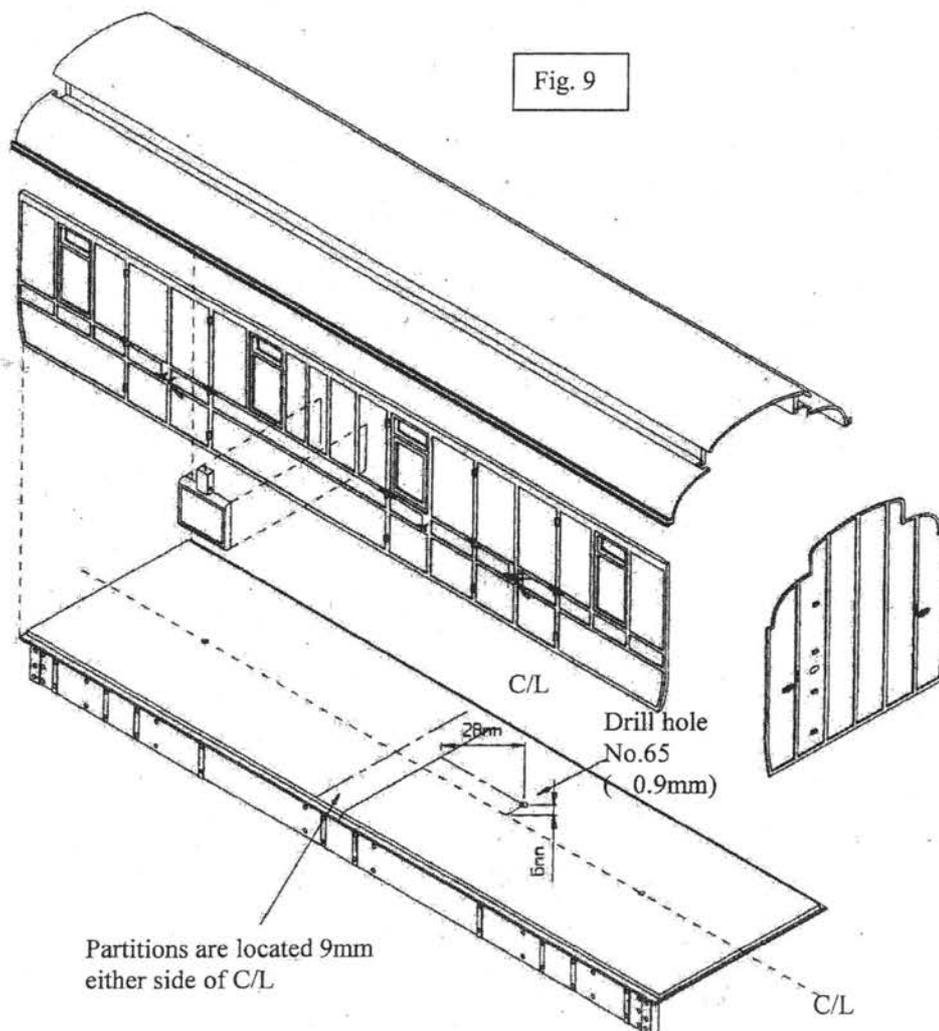
BODY ASSEMBLY

Before starting to actually assemble the components of the body it is worth while spending a little time working on them whilst still separate. Indeed, you may wish to paint the sides and ends and line them out before construction commences as it will be found far easier to do this now rather than after all the small details have been applied. Any damage as a result of assembling can of course be touched up later.

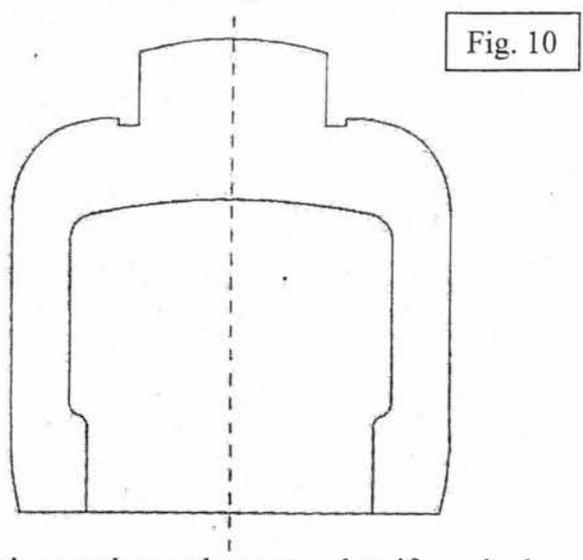
22. Take the side mouldings and clean off any flash and moulding pips, etc with fine needle files. Open out the holes for the door and commode handles with a 0.5mm drill (NO.76/0.020"). Do not fit the handles at this stage, however.

23. Clean up the two end mouldings and check that they fit satisfactorily to the sides trimming if necessary. With a sharp craft knife scrape down the corner of the inside edge of the side where the end fits. There is nothing to do to the ends at this stage. You could conceivably fit the lamp irons, steps, etc. at this stage but we strongly recommend that you do not as they are rather vulnerable!

24. Assemble one end to a side on your piece of plate glass to ensure that the bottom of each is coincident and ensure that the two parts are at right angles to each other. You may find it necessary to remove a small amount of plastic from the inside edge of each end to ensure that the panelling on the ends is at the same level as the extreme ends of each side - the ends of the side form the outside verticals of the panelling on each end. Run **MEKPAK** along the join to weld the two together. Add the other end and then the opposite side to form a box without base or lid. Ensure all is square and leave to set. Carefully fit the body shell onto the floor and run **MEKPAK** around the joint.



25. The two partitions can be now added either side of the centre line. The originals were cut away in the centre. We have left them solid as they are also used on the lavatory third kit and it is unlikely that they will be visible inside the guard's compartment, however for those who would like to have the vehicle open throughout the correct profile is shown in fig.10

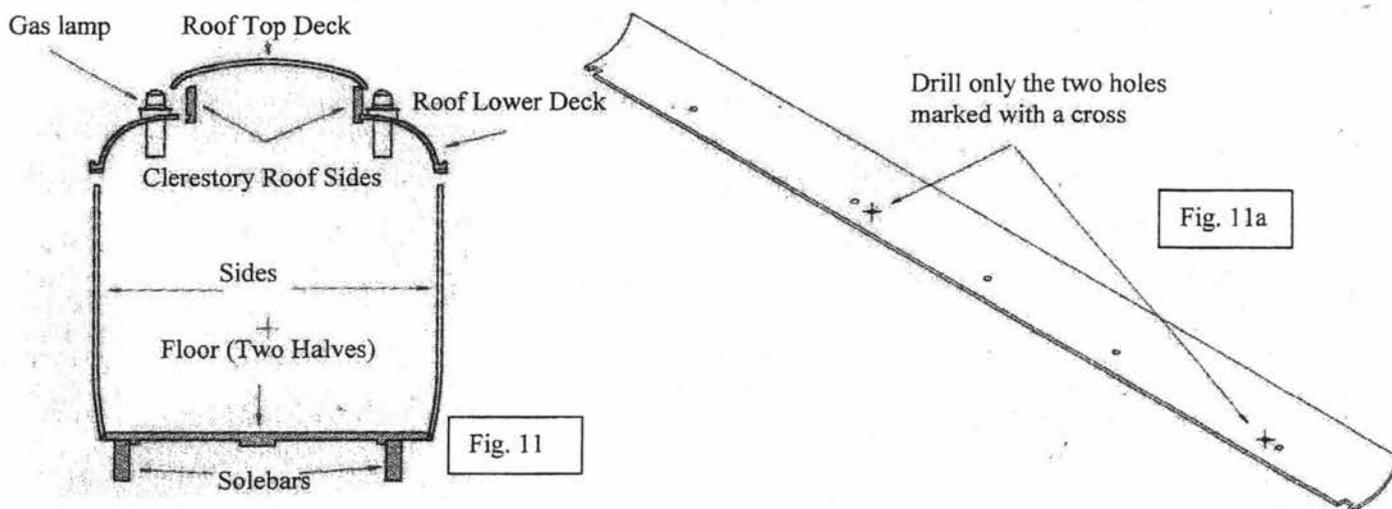


This drawing can be used as a template if required.

26. It is a good idea to paint the inside of the vehicle at this stage, as it will become a little inaccessible later! Any extra detailing that you wish to incorporate should also be added at this stage. You are referred to the livery notes at the end of the instructions.

27. The guards brake column can be fitted at this stage, into the hole previously drilled (fig. 9). The fixing bracket should first be removed, as this is a freestanding column.

28. At this stage we will start drilling the roof for vents (shown in fig. 11a)



29. Fit the lower deck roof onto the sides, the two little slots at each end locking onto the ends and before the **MEKPAK** is set slip the clerestory side down onto the partitions and at the same time push it home against the roof edge locking it into the slot on the clerestory side that you have already insured will fit! Glue in place. Do not glue the top deck roof in place at this stage. Note stage 42 may be carried out first before fitting the lower roof if preferred.

30. There should now be a 1.5mm gap between the back of the clerestory side and the edge of the partitions. This is correct; from the piece of 1.5mm x 1.5mm **MICROSTRIP** supplied in the kit, cut four short lengths and drop them into the gaps to act as packing pieces. Allow the **MEKPAK** fumes to dissipate at least 24 hours before fitting the top roof.

31. The rainstrips are formed from the 0.030" x 0.030" Microstrip supplied. Carefully mark the positions of the ends and middle of each strip following the diagram and carefully cement the strips in place ensuring you get a nice even curve along the roof. Do take care to get this right as the roof is so obvious on the finished model. The drawing on page 15 shows the correct position

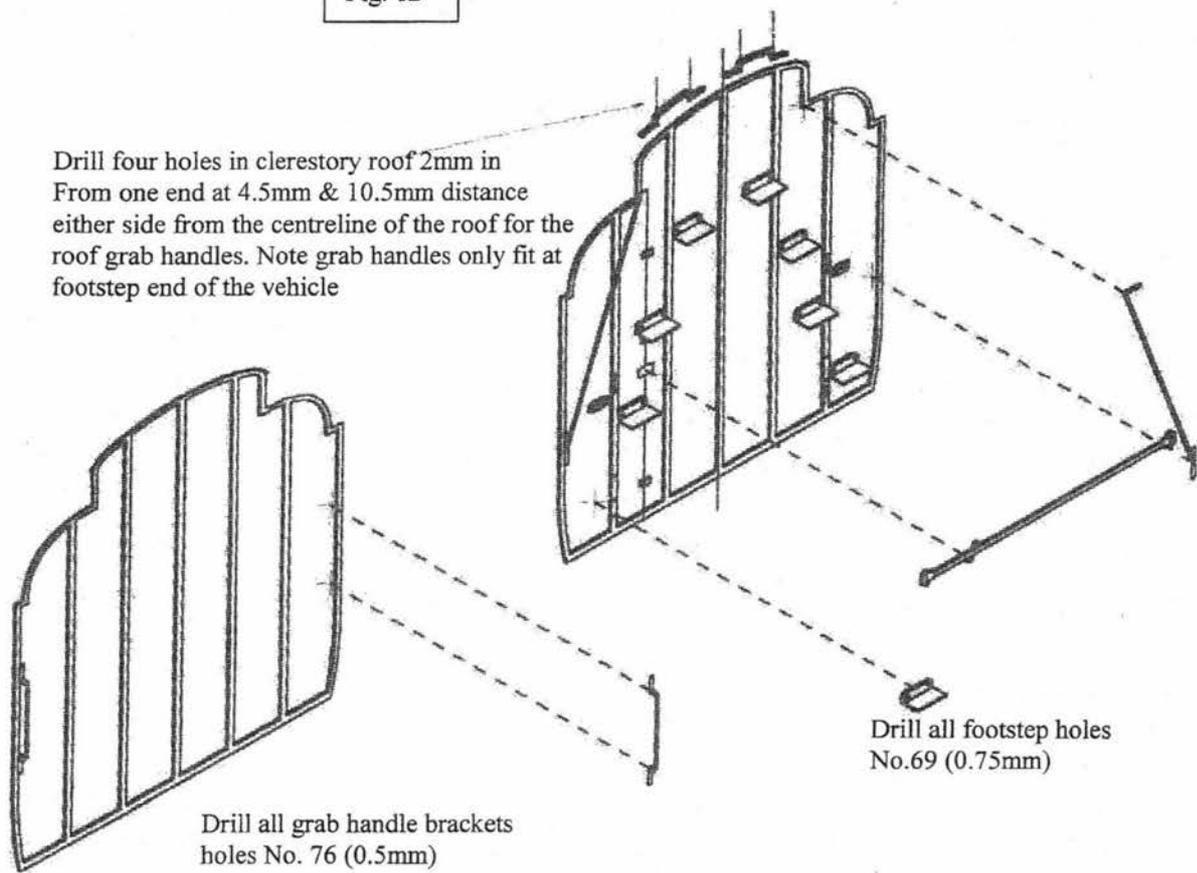
32. Drill holes in the roof for the grab handle at the end of the coach, as in figure 12.

33. The detail on the ends is next. The gas control valve and steps were fitted on one end. Fit the gas control lever to the end with the small ON - OFF plaques moulded onto it.

34. The moulded steps should be carefully removed from the sprue and glued to the end as in figure 12. This shows their positions relative to the bottom of the end.

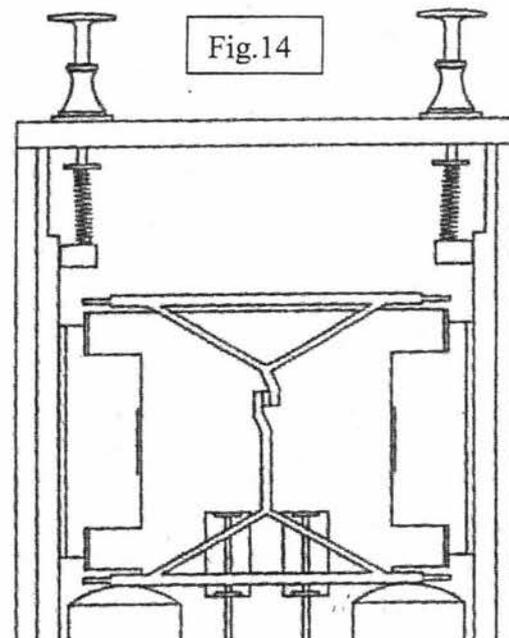
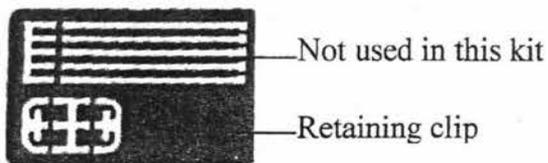
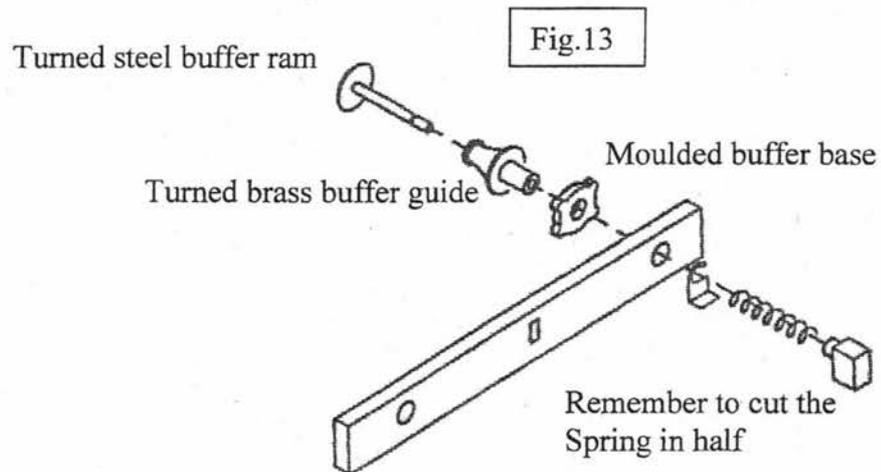
35. Figure 12 should explain the gas control gear better than words but the gas pipes should be added from fuse wire or the thin plastic rod supplied running up the end and onto the roof after it is fitted properly. Note that in order to leave the roof removable the pipes, can be cut immediately underneath the Roof.

Fig. 12



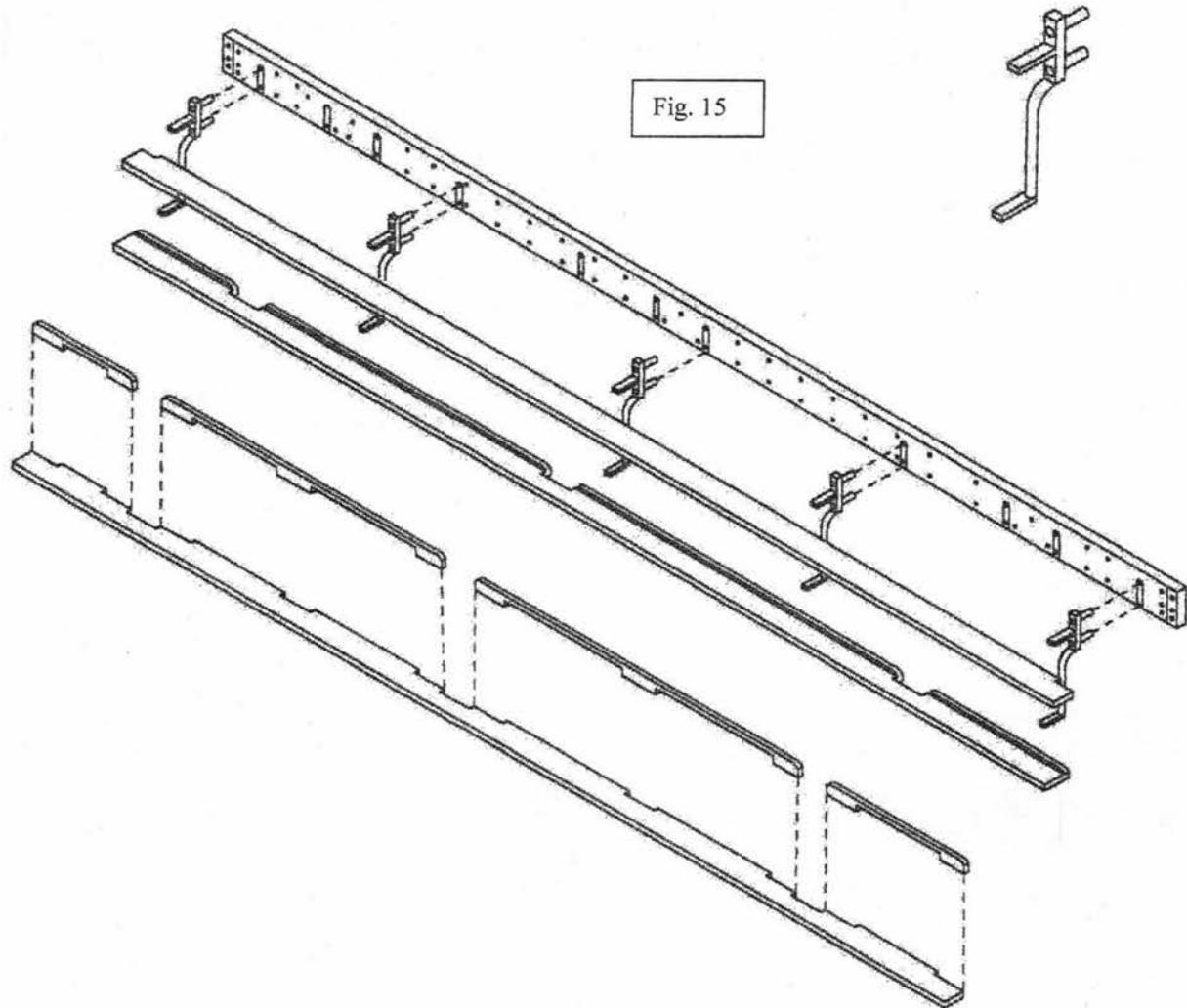
36. Fit the turned buffer guides into the holes in the buffer bases. These turnings are correct for the long buffers fitted to Clayton clerestory roof stock.

37. Following figures 13 & 14, slide the buffer ram into the buffer guide, fold over a little etched spring clip and carefully glue this into the groove towards the end of the buffer ram. Cut the springs provided in half, glue a buffer spring pad to the solebar and position a (half) spring between the spring clip and the buffer pad. Admittedly somewhat "Heath Robinson", but it does work!



The etched spring clip slides over the slot in the buffer ram. Secure it in place with a TINY spot of adhesive but not to the vehicle floor. The steel buffer ram should be chemically blackened by heating to a bright red colour over a gas flame and then quickly quenching in oil. This will, in addition, help prevent rusting.

38. Carefully clean up ten cast footboard supports and, referring to figure 15, glue five onto each solebar using the cast pegs and moulded holes for location. Ensure that they are all pushed well, home and vertical before allowing, the glue to harden.



39. The etched top footboard should be fitted first, the notches at each end fit around the headstocks. The lower footboards come in five parts - the main board and four parts to form the rear edge or upstand. The upstand should be soldered (or glued) to the main board, as shown in figure 15, and then attached to the supports. A quick touch with the soldering iron or a drop of adhesive should be used to secure both boards in place.

FINAL ASSEMBLY AND DETAILING

40. The model can now be painted or any touching up completed as required depending on how you decided to proceed. Before glazing fit the cast commode handles and the door handles. You may like to file these down a little and polish them before fitting. They should be secured to the sides using a tiny drop of cyaploacrylic adhesive so as not to damage the paintwork so carefully applied!

41. Fit the cast vacuum pipes to each end of the chassis. Glue a connector onto one end of each vacuum pipe spring and glue the other end of the spring over the top end of the vacuum pipe. These pipes will look most realistic in a train of vehicles as they can be easily coupled and uncoupled.

42. The glazing can now be cut to the correct size and bonded into the recess in the sides. The guards window bars fret can be used as jig to cut the glazing to the exact size. The guards window bars should be very carefully sprayed white several mist coats are better than one thick coat; note that the window bars are half etched on one side this is so that the bars "stand off" from the glazing. The bars can be first bonded to the glazing with Loctite adhesive and then the whole assembly bonded into the side recess with **MEKPAK** remember the bars are on the inside of the coach!

43. Carefully fit the cast handrails onto the end. The drawing on pages 9 & 10 shows side and end views. Note that there are two sprues included, these correspond to figures **A & B** back on page 1.

44. Screw link couplings are not supplied in the kit but can be obtained from **Slater's** (reference **M7023**).

45. Transfers of your choice can now be applied; midland numbers, etc. are to be found on the sheet **Ref.7150** from the **Slater's** range of transfers.



46. Note that after you glue the top roof in place you should drill a small hole through the floor of each compartment to equalise air pressure.

47. The four castings left on the sprue are details for gas lighted vehicles. The round part is a gas gauge and locates on each solebar near the gas cylinder. The second piece, a filling valve, fits behind the solebar close to the gauge. Both items are shown on pages 16. Wrap the short lengths of piping behind the solebars.

48. Steam heating was not fitted when the vehicle were built however they would have been converted by the early 20th century. A suitable set of steam heat pipes & hoses are available ref. No. **7211**

