## Long Wheelbase Underframes



Above is a Stoke 5D - a 3d printed model of the LMS/MR "Fish Van" in a red primer coat with brass door handrails. (Available from Shapeways)

This is a generic guide, some details need to be omitted and others added to complete an underframe.

You will need additional materials:

a) inside bearings (optional but preferred for longer wheelbase vehicles)

b) wire to make bearing surfaces (0.5 or 0.7mm diameter) for the axleguards, 0.3m for the door handrails.

c) the wheels - assuming long wheelbase vehicles do not use the axlebox on the axleguard but inside bearings, remove one wheel add the bearings and reassemble. Note the bearings should be mounted on the inner bearer first and the pin-points removed - or use "spare tender axles" which are made shorter - depending on track guage /wheel profile used.

d) axleboxes and springs from one of several possible sources. 51L sells axleboxes and springs, Coopercraft (Paul Dunn) has plastic mouldings of the Slaters Coach underframe parts (8 axleboxes and springs per moulding). Generally the centre axle would be mounted differently from the outside springs - MR used a longer spring hanger. You may be able to find a complete cast W iron, axlebox and spring which could be used instead.

e) a vacuum cylinder, vacuum brake pipes buffers and of course a coupling (to your preference). We use or own buffer shanks, MJT buffers & springs and Alan Gibson buffer bushes and our own screw link couplings and hooks (or your preference). We have some "spare" vacuum cylinders from Ratio coach kits and 51L or Lanarkshire Models sell cast versions.

There are pictures and drawings of the "Fish" van see (and CCT) -

LMS Coaches- NPCS stock - Essery & Jenkinson Drawings in "Historic Carriage Drawings" Volume 3 by Peter Tatlow - Pendragon 2000. Please note some vehicles had LNWR underframes which have detail differences such as wheelbase, axleguards and brake gear.

From HCD references

- Page 16 with battery boxes, footsteps and no handbrake
- Page 20 with full length footsteps
- Page 36 has gas cylinders, steam heating and air brake pipes.
- Page 45 Photo shows LNWR chassis version
- Page 51 with footsteps and no handbrake
- Page 99 the Fish truck/Milk Van
- Page 100 Express Fish with brakes on the centre axle and different brake gear



LMS six wheel fish van No M40029, formerly LMS 1st No 537, towards the end of its life at Hull Paragon on 26 June 1960. (JE Cull)



## Main chassis Part



Fold up the main underframe as shown in the photograph. When the solebar overlay is fixed in place the "W" irons and "vee" hangers can be folded down. The overlay should have the angle brackets folded up and fixed down to the overlay - fold the triangle over first and then bend the whole back to the solebar. The short tabs are for locating axlebox/spring details and the longer tabs for locating the "W" irons.



## Axleguards

We supply a seperate axleguard etching for 3 axle vehicles, later versions of the long wheelbase underframe may include the "W" iron integral with the main underframe.

Remove the "W" etching for attaching to the tabs on the underfame - the remainder of the W iron part will be used later.



If not fold up the "W" from the main part at the appropriate moment in construction.

The bottom "Tie" needs to be folded back over the foot of the "W" and should be fixed down and is best done before any other work is undertaken on the axleguards - unless sprung axles are to be fitted.



## Fixed or flexible wheelbase?

Probably not necessary for "OO" track, but useful for EM or P4 track guages. The fittings allow for a sideways movement on the centre axle and rocking or both or one outer axle. The outer axleguards are allowed to twist (as used by r-t-r long wheelbase wagons) by pivoting them outside the wheelbase. This reduces overhang in the centre and at ends of a vehicle more than the "Cleminson" principle of pivots between axleguards - which is okay for prototype radii but not useful on the much tighter model railway curves.

To make the wheelbase flexible use the holes in the extended axleguard pieces and the holes in the chassis base as pivot points (two brass rivets are supplied for this purpose). Join the axleguard units together with a straight wire - this provides flexibility and stability. The centre axle has no fixing position the wire does this, the axleguard cradle unit has a horizontal slot to allow for sideways movement.

The flexibility required in a wheelbase is not very large, just a few degrees twist at the outer edges and sideways movement for the centre axle of less than 1mm. Unless you have very sharp curves, this should work for radii around 3 feet or 900mm.

The centre parts of the W iron etch are levers used in the braking system largely hidden between wheels and you may choose not to built this into the model. There are also footstep brackets and coupling pockets on the etching (these are missing from the included photographs). An add-on for sprung axleguards is also present, which requires removal of the axle bearing piece, but can also be used to strengthen the "W" iron if added to its rear (though not much use if using inside axle bearings.)

A photo of a long wheelbase 2 axle van shows how this has been set up. (This vehicle was damaged by a fall to the floor and does not show the brake lever parts). It was built without bearings on the axles to test how much wear might occur without a bearing and see how much rolling resistance there is using inside bearing surfaces. It is a Parkside-Dundas CCT



kit, the visible axleguards used were from the kit and not etched subsitutes, note the brake hanger axleguard fold outs were left in situ on the etched parts.

A photo below shows how the standard fixed position axleguard assembly is made using a Slaters 10T MR brake van kit being modified (using the 3-axle etching parts for coach wheels). Tabs which fold out as the unit is bent to shape stop the axleguard from rocking, it you want it to rock cut off the projecting tabs. The brass rod is flattend to stop it falling out.

The axleguard cradle always fits outside of the axleguard unit. In this instance the brake hanger brackets which fold up on the axleguard unit have all been removed. The bearing rod should align the coupling hook slot so the wire could be fed through the headstock if required. No packing should be required under the wagon floor - though this depends on the depth of the floor above/below the solebars.

Remember to weigh you vehicle to about 1oz per axle for better running, especially for plastic wagons.

