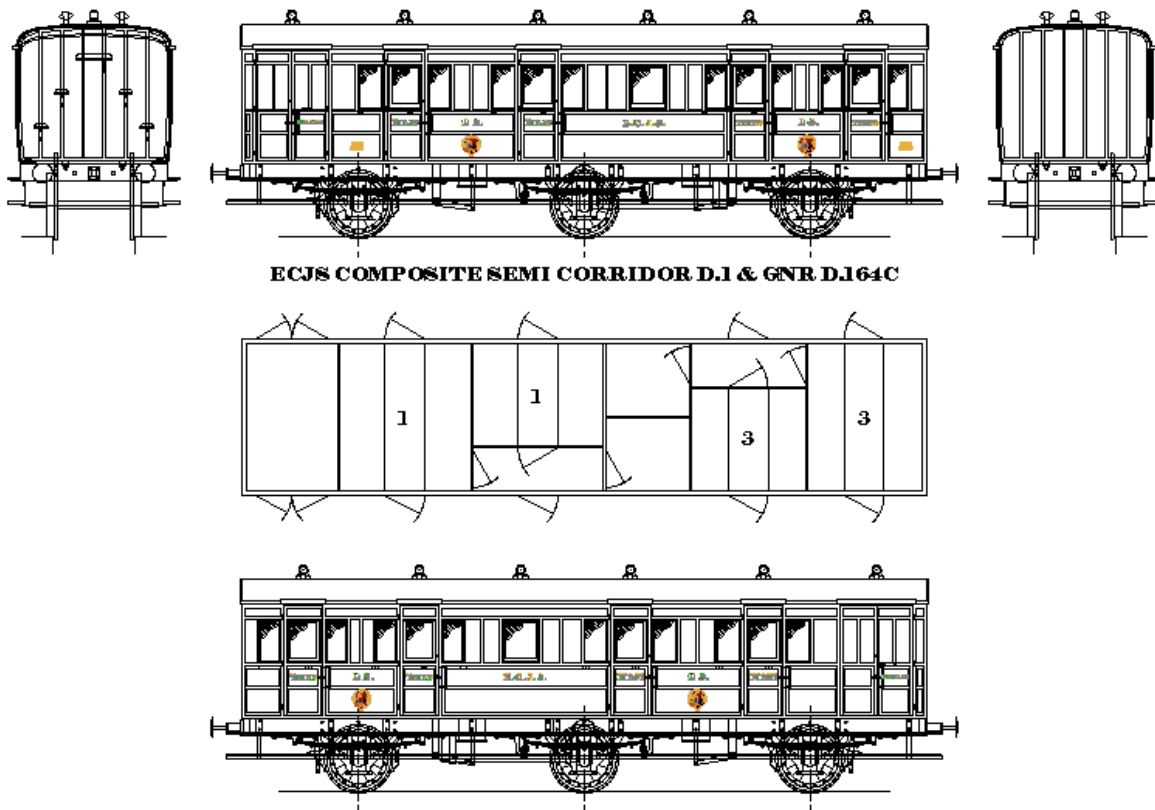


# The Fareham Carriage Works Designs

## By Tony Armstrong



### GNR/ECJS Carriage Instructions



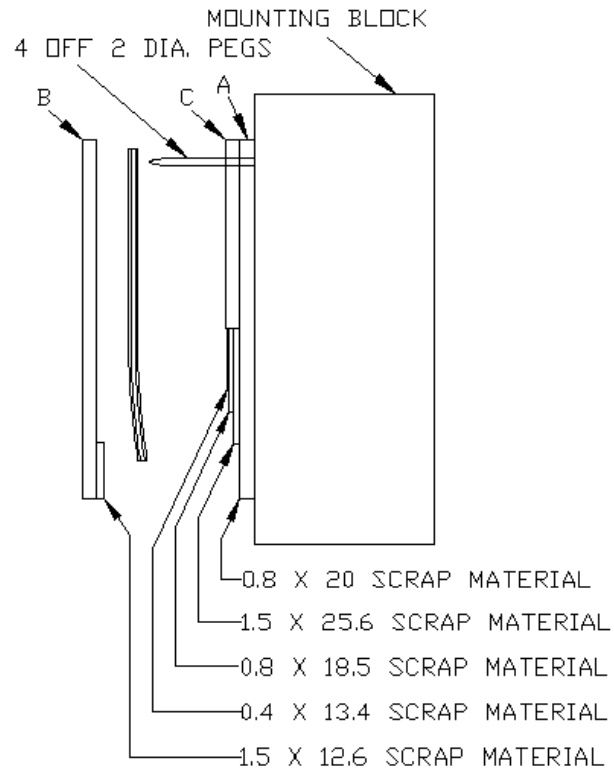
The 'Fareham Carriage Works' designs are not kits: they are the plywood components necessary to build the bodies and under-frames of a vehicle. The designs are exactly as supplied to Tony Armstrong who created them to take the hard work out of scratch building carriages. They are not particularly difficult to assemble, but you need to be familiar with the type of vehicle to work out what some components are and how to assemble them. They are not like an Airfix kit where everything is numbered, and has 'Noddy' notes telling you exactly how to build it. Please note that some fitting/adjustment may be required during assembly – you can't just put the bits in a bag, give it a good shake, with the hope it will put itself together!

To help with detailing your carriages I would recommend you obtain a copy of *The Illustrated History of East Coast Joint Stock* by Ken Hoole. To help generally with Fareham Carriage Works Designs carriage construction you might also read 'An L&SWR train to Lyme Regis' published in the NL&J commencing issue 265.

## Construction

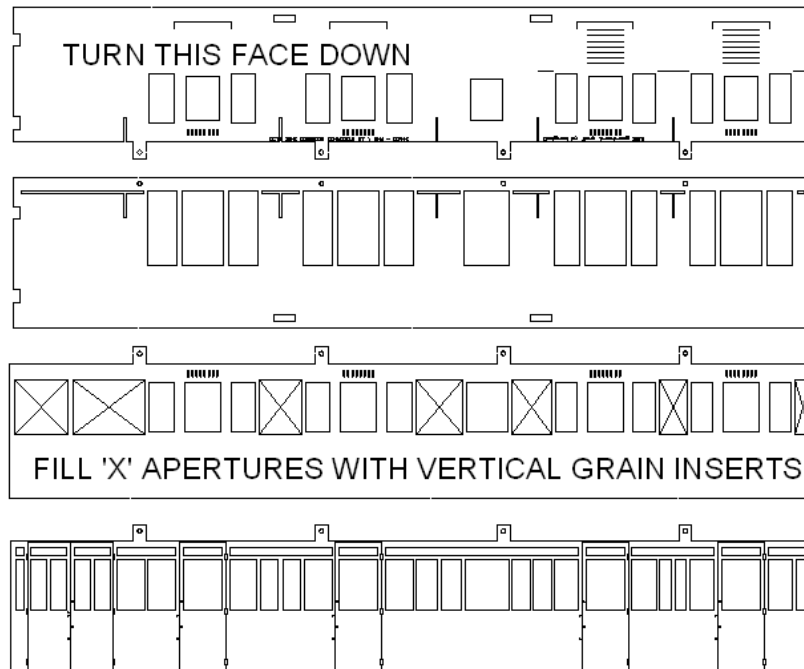
Here are some notes to help you with assembly. Please note this is a generic guide, as all carriage follows the same construction principle.

Laser cut components are available for an assembly/lamination jig, together with roof mould. Assemble a jig to be used for laminating the sides onto a thick flat block (I used a 40mm work surface off cut). You will need to cut packing strips from scrap material, together with making four 2mm diameter location pins.



## Body Assembly

Identify and remove from the ply sheets the eight carriage side components for one vehicle at a time.



Before assembly, stain, paint and varnish the inside skin of the vehicle as required:

I found it quite easy to assemble something the wrong way up: so for each vehicle make two piles of side components, with the outside mouldings (door scorings) facing upwards, the second skin cut-outs for vertical grain panels, on top of that the core and finally the inner skin with scoring facing down.

Position the inside skin, score lines down, onto the pins of the jig.

Apply slow setting cyanoacrylate to the appropriate side of the 0.8mm core, drop the core onto the pins of the jig, drop the clamp plate over the pins and clamp everything together. I use a 12" woodworking vice.

When the cyanoacrylate has set take the jig apart, apply slow setting cyanoacrylate to the face of the core and place the skin with cut outs for vertical grained panels over the pins and clamp together.

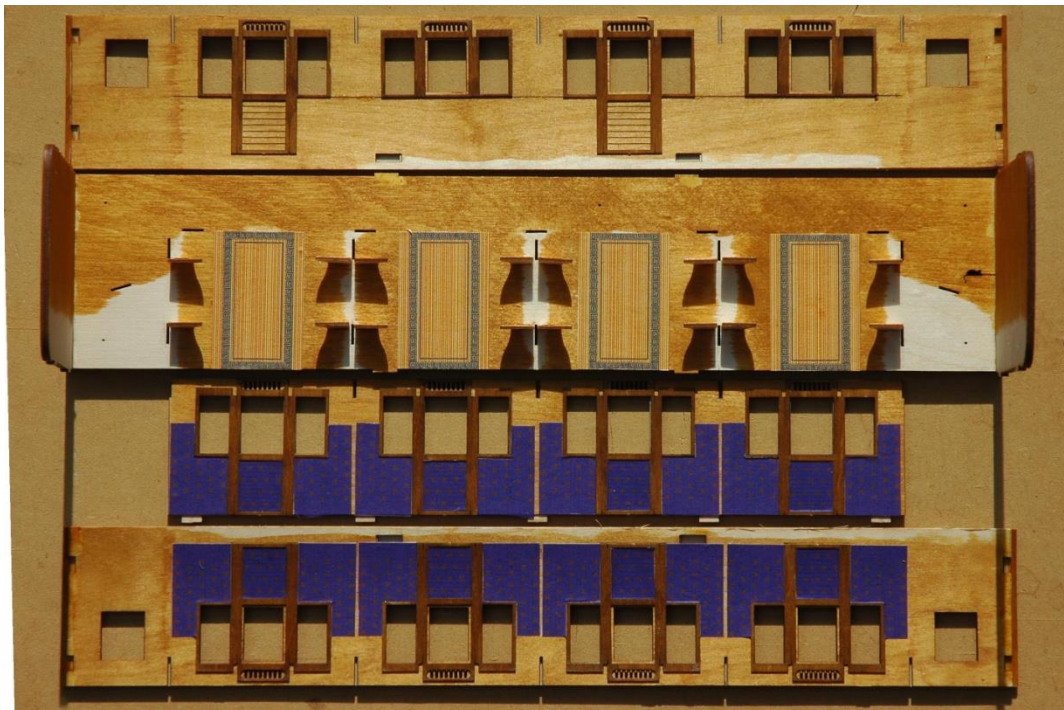
When the cyanoacrylate has set take the jig apart, apply slow setting cyanoacrylate to the underside of the outer skin (the one with cut-outs marked 'X'), place it over the pins and clamp in place.

When the cyanoacrylate has set take the jig apart, fill the cut-outs marked 'X' with vertical grain panels and clamp in place.

When the cyanoacrylate has set take the jig apart, apply slow setting cyanoacrylate to the underside of the mouldings laminate, place it over the pins and clamp in place.

When the cyanoacrylate has set leave the carriage side on the jig and drop the mouldings guide over the pins. Bond the mouldings to the lower part of the carriage side.

Stain interior door frames as required and bond to the inside of the carriage. It is much easier to work on the carriage sides while in the flat, so decorate the interior of the carriage sides as required.



*First class gangway carriage decoration*

Similarly, detail the exterior: fit door ventilators, door hinges (billeted from 1mm plastic rod) and fit the door buffers. I glue the wooden buffer base to the beading using a pin to locate it over the hole in the moulding. I then bond a 0.6mm diameter wire into the hole, cut off and trim to length. It is also a good idea to drill door handle and commode handle holes at this stage. If you are going to line the mouldings it is a good idea to do this with the side mounted nice and stable on the jig. You will need to stain the carriage sides before lining, blank off the windows with thick paper or thin card, apply five or six thin coats of varnish, line the mouldings, apply decals, fit door handles together with commode

handles and seal with a couple of coats of lacquer. For convenience I apply all of my paint, varnish and lacquer from spray cans. Instead of staining, some of you prefer to paint the bodies – the choice is yours.

When detailing is complete the tabs and strip along the top edge of the body side can be removed, together with the window blanking.

If building a brake end carriage or brake van assemble the ductet sides from three laminates. The middle laminate has a larger window aperture to accept glazing. Note the score lines at the top of the core. Do not bond this part to the first layer because you will be removing it before bonding the third layer in place. Assemble the ductet sides to the body. If you are building the third class brake end carriage, assemble the carriage end starting with component 1 (face up) through to 3. Laminate 4 has a larger window aperture to accept glazing. Note the score lines at the top of the core. Do not bond this part to the laminate because you will be removing it before bonding layer 5 in place.

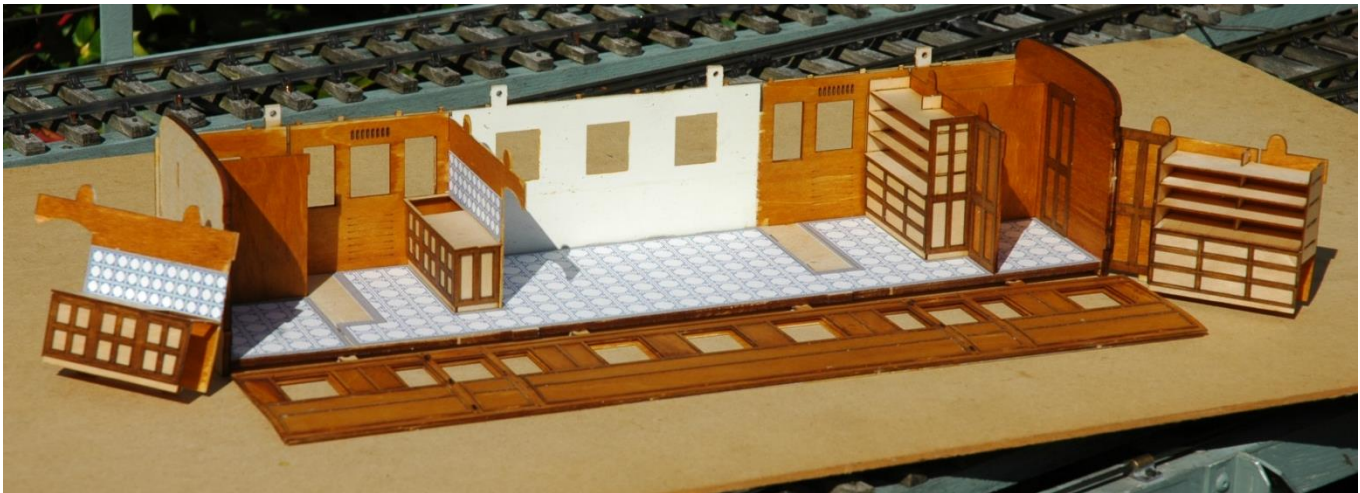
You might find an 'X' on major components: these either face down or in the same direction axially along the length of the vehicle.

Remove the floor and end panels from the 3mm plywood sheet, together with the 0.8mm end panel overlay, partitions and picture frames from the ply sheets.

Fit the mirror frame overlays to the compartment partitions and appropriate end panels, stain as required and fit mirrors.

Clean-up all side, end and floor component joints and trial assemble the body – the sides can be held in place with elastic bands at the ends if necessary.

Take the body apart, decorate the floor as required ('X' facing down), and bond the ends to the floor ensuring they are square.



*Part assembled kitchen carriage*

Bond the sides of the carriage to the floor and ends.

Bond the 0.8mm end overlays in place and sand off any of the side that extends beyond the end panels.

Bond the beading to the end panels.

Fit the compartment partition, seat supports and seat cushions. Profiled seat backs are not included. I cut and profile my own, but balsa aircraft wing trailing edge could be used.

Varnish the ends of the carriage.

Make and fit handrail steps, handrailing, gas pipe, vacuum hoses and corridor connectors (where appropriate) to the ends of the carriage.



*Carriage ends showing steps, corridor connector, vacuum hoses and handrail*

Glaze the windows and fit droplights (some partially open).

### **Roof Assembly**

Assemble the roof mould.

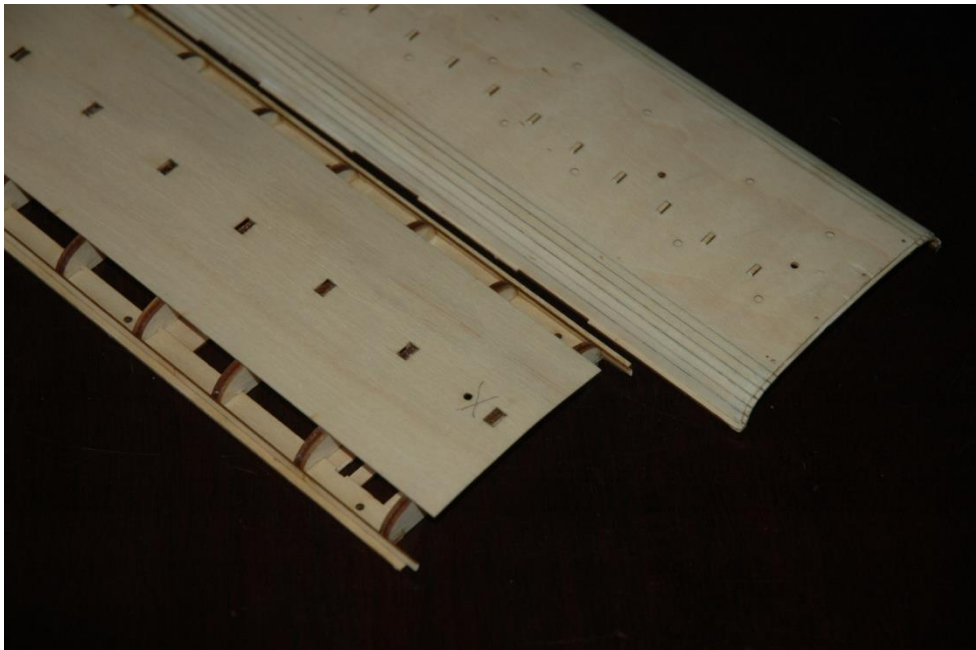
Sand the edge of the roof ring beam so that it fits snugly into the carriage body (X facing down). Bond the ring beam to the roof gutter ring beam and then add the central spine to the ring beam assembly.

Bond the roof beams to the ring beam, and check the ring beam still fits the body – sand as required.

Fit the 0.8mm roof skin to the tabs on the beams (X facing down) and clamp into the roof mould.

Bond the 0.8mm roof planks in place to form the curved sides to the roof.

Sand off the curved sides of the roof.



## *Roof planking*

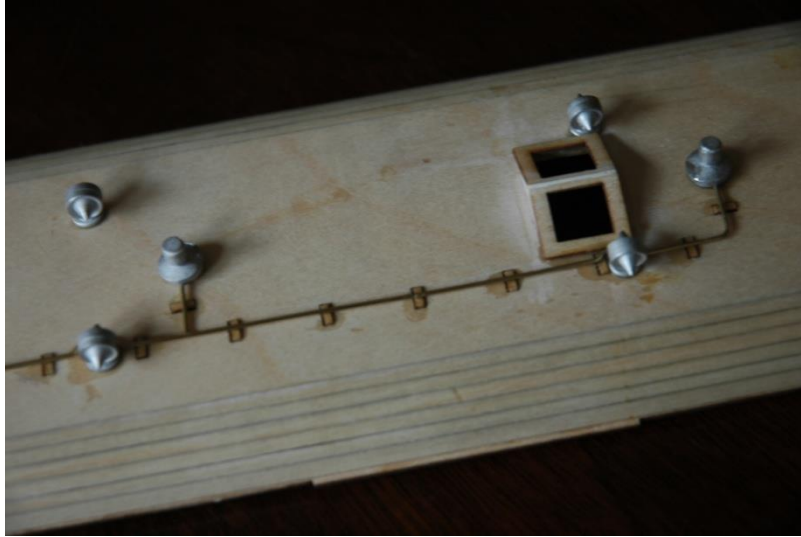
Using location pegs fitted through the holes in the first roof skin, bond the 0.4mm roof skin to the first skin (X facing down) and clamp into the roof mould.

Bond the 0.4mm roof planks in place to form the curved sides to the roof.

Sand off the curved sides of the roof.

Fit the ventilators, gas lamps, gas pipe pads, pipes and roof lights where appropriate.

Do not fit the gutter strips over the doors, which will be stained and varnished, until after the roof has been painting.



*Gas lamp and pipework for a third class brake*

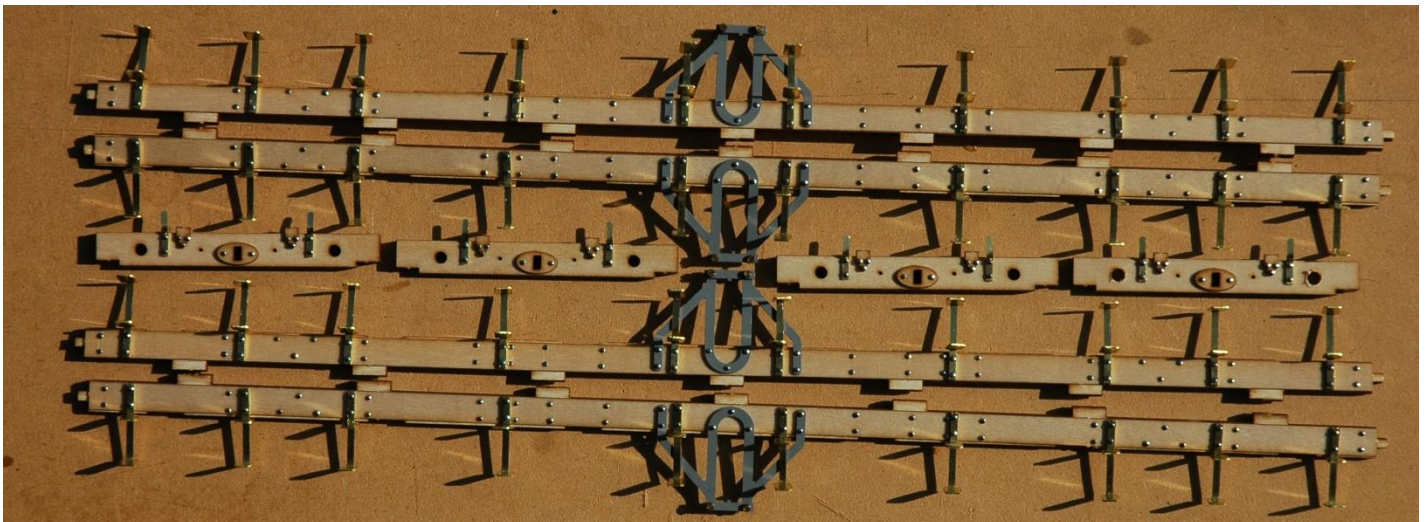
### **Under-frame Assembly:**

Laminate the solebars and headstocks.

Fit the footboard bracket supports, position as shown on the general arrangement drawing – fine dressmakers pins or lace pins can be used to represent coach bolt heads.

Fit the middle set of W irons to the solebars. (Not applicable to the bogie dining saloon)

Fit the drawhook plate and clamp plates and buffer shanks to the headstocks.



*Typical solebars and headstocks*

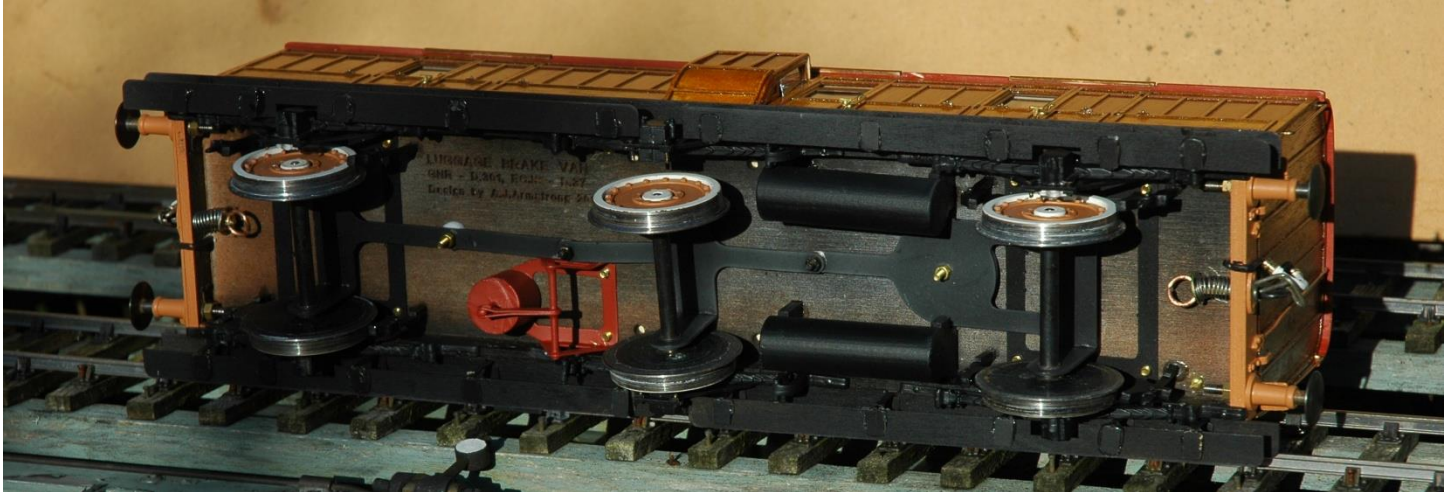
Glue the solebars to the under-frame base board.

Glue the headstocks to the solebars.

Paint the underframe as required.

Paint or stain and fit the footboards.

Fit the end W irons, axle boxes, springs, buffers, draw hooks, gas tanks, vacuum cylinder and running gear of your choice. In the case of dining saloons: make and fit queen posts and tie bars, together with bogies and bolsters.



*Underframe*



*ECJS D.41/GNR D.301 Full Brake Van (can be built as ECJS D.46 with corridor connectors)*



*ECJS D.1/GNR D.164C Semi-corridor lavatory composite with baggage compartment*



*ECJS D.48/GNR D.281 Brake third*



*ECJS D.20/GNR D.240 Third class lavatory corridor (not connected)*





*ECJS D.26 Third class lavatory corridor connected*



*ECJS D.61 First class lavatory corridor connected*



*ECJS D.75 Dining Saloon*



*ECJS D.80 Kitchen Carriage*

