Basic plastic wagon assembly

As the Technical Committee has hosted sessions on etched brass wagon construction it was thought that something similar should be done for plastic wagons. As the joining of the parts not as difficult as soldering them perhaps one to one tuition is not needed and the basics can be expressed in words and pictures.

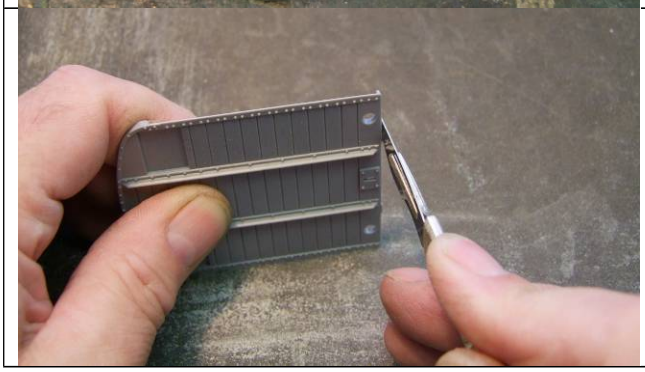
The tool kit is not extensive. What I used is shown below; a choice of two scalpels, I mostly used the straight blade, a Stanley type knife for heavier cuts. The straight edges are used mainly as guides for any cutting need to trim components. The squares are essential for checking that parts are assembled at right angles. Rather than a file for cleaning up edges I use a sheet of 180 wet and dry stuck to a piece of Contiboard. Everything is sitting on a cutting mat.

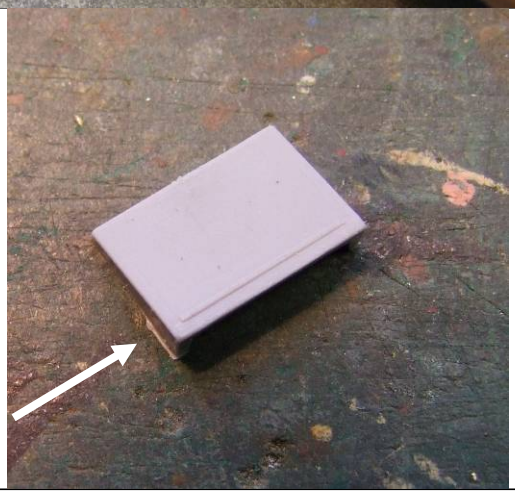
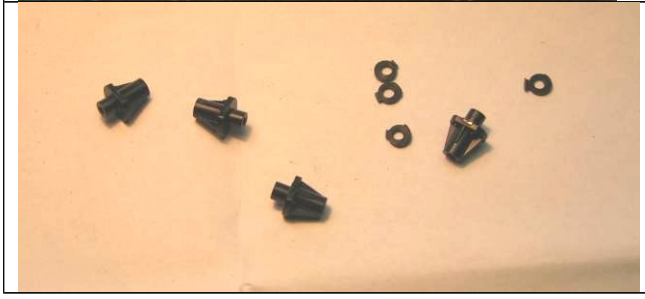
Finally there is the adhesive. There are several available Slater's MEK, Plastic Weld and Butanone from Carr's. Personal preference is for butanone as this will stick other plastics than styrene, ABS for example which turns up in some kits as small mouldings. As you see my bottle of adhesive is wedged in a wooden base. Dipping a paint brush in an unsupported bottle can easily spill it with usually disastrous results.

The wagon illustrating this is a Parkside Dundas Southern van chosen for no other reason than it was the next one I had to build. The parts are shown below sitting on the instructions.

By and large I have followed the instruction for the basic build. I have departed from them in a couple of instances and the reasons should become clear.

		Before construction starts **A WARNING.** I have deliberately placed a large drop of adhesive in the middle of the end. It is on the inside so it does not matter. On a detailed surface a different situation
		Should this happen then simply blow gently onto the adhesive to encourage it to evaporate. It will disappear barely leaving a mark

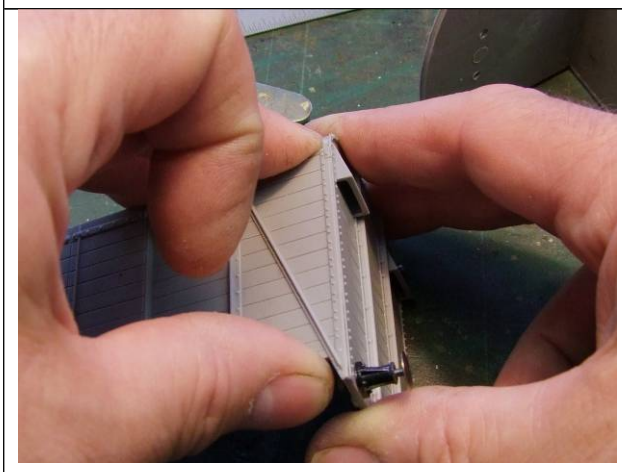
		However a misplaced thumb whilst the adhesive is still wet results in a permanent impression. Disaster on a detail surface.
		The ends are cut from the sprue. As these are large feeds it is better to use a heavy blade to cut through them. Use cutting mat or a piece of mdf to cut on.
		The part removed from the sprue. Note that there are still large registers of its attachment. This is deliberate as it much easier to trim them exactly when they accessible without the sprue.
		Shaving the excess off.

	A final rub on the mounted wet and dry.
	Illustrated here is one of the ventilators on the end. The arrow is pointing to an element of flash or plastic that has escaped the mould cavity. This is not an uncommon feature and can be easily remedied by either shaving it off with the scalpel or rubbing it off on the wet and dry. Without removing such features it makes it difficult to assemble the parts.
At this point I step aside from the main assembly to complete some details.	
	These are the buffer components; very small nuts and springs that can easily vanish from their original packing unless stored safely in something like an old tobacco tin, as here, or something similar.
	The buffer bodies and the ring that completes their shape have been trimmed from the sprue. Note the rings need further trimming. 

	The ring has been stuck to the end of the body. These are some of the parts mentioned earlier that are moulded in ABS plastic. The buffer has been inserted to ensure it moves freely in the housing
	The buffer has been assembled with the retaining nut behind. It sometimes happens that the nut undoes and the buffer head and spring disappear. To prevent this squash the thread in some plain pliers to deform it slightly this will prevent the nut from coming off.
	Fit the buffer assembly into the end BEFORE assembling the end to the sides and floor. Insert it part way into its hole, apply the adhesive behind the flange and push home.
	Trim the coupling slot to ensure that the etched hooks will fit

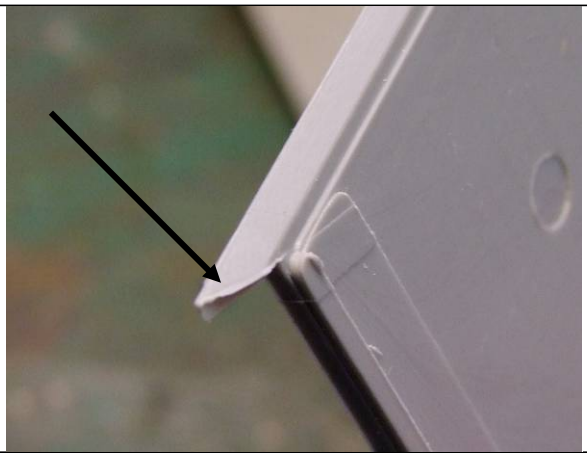
Insert the hook with three link chain attached and secure the spring behind.

Fitting the buffers and couplings at this stage is a departure from most plastic wagon instructions.
Doing it now is far easier and safer than trying to assemble them when the wagon has reached this stage with a lot of underframe detail in situ.

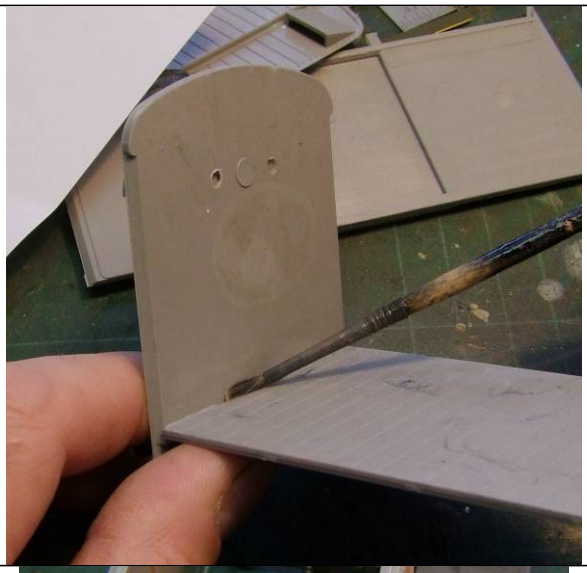
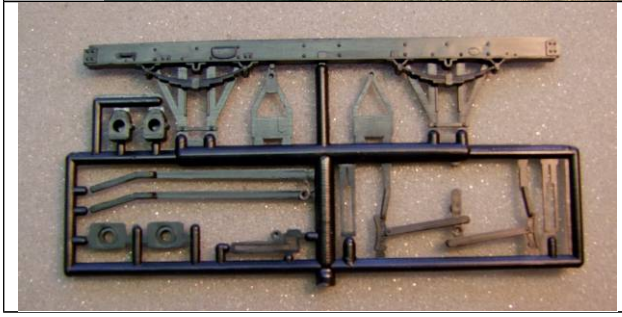


Offer up the ends sides and floor to check the fit one to another.

Here it can be seen that the corner does not fit well.



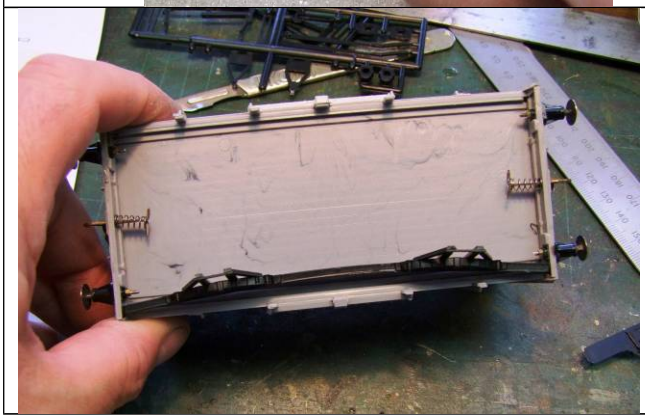
This is the reason. A small piece of flash on the corner. Simply trim with the scalpel. Scraping sometimes works better than cutting. Check all the parts for similar features.

	The instructions next required the first end to be joined to the floor. Once joined it appeared that the floor was wider than the ends. Offering up the sides this was proved as it was not possible to get the clean joint from the try out assembly. The side fitted the end at the top but not against the floor. The end was removed from the floor. If this done before the adhesive has fully hardened the parts can be separated carefully by pushing the scalpel blade between them.
	The typical construction of plastic wagons with bevelled joint at each corner means that it possible to assemble the ends and sides without the floor. Assemble one end and one side to form an “L” shape aligning the corner. Repeat for the other two. Join these two assemblies and check they are square. The joints will be flexible initially so can be pushed around. The large square being used to check that everything is at right angles
	Once the ends and sides are secure the floor can be trimmed and fitted. In this instance the floor locates the solebars in grooves. Material has to be removed equally from each side to maintain symmetry. The floor can then be fitted from above to sit on its locations on the ends and between the sides.
	The body is now ready to accept the underframe details.

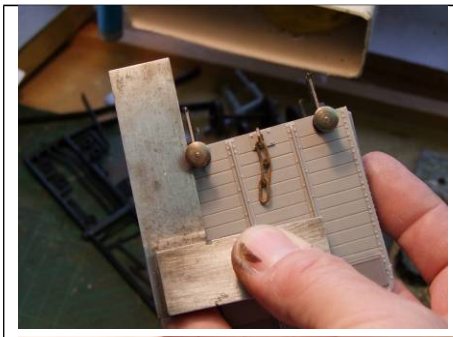
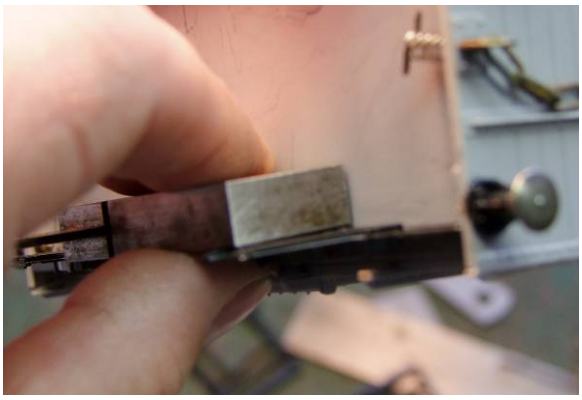
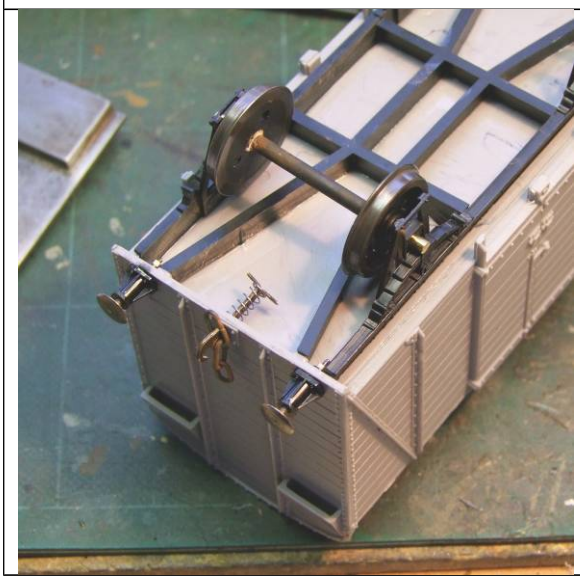
Parts of the underframe are quite finely moulded so when cutting from the sprues again leave material to be trimmed when access is easier than on the sprue.

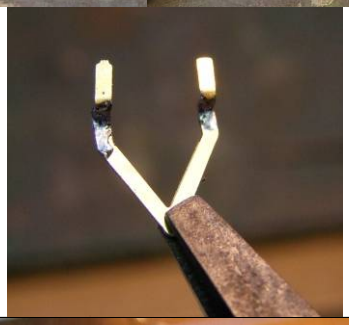
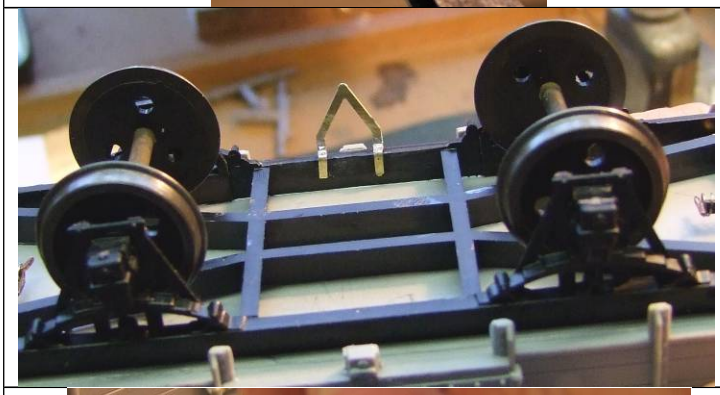
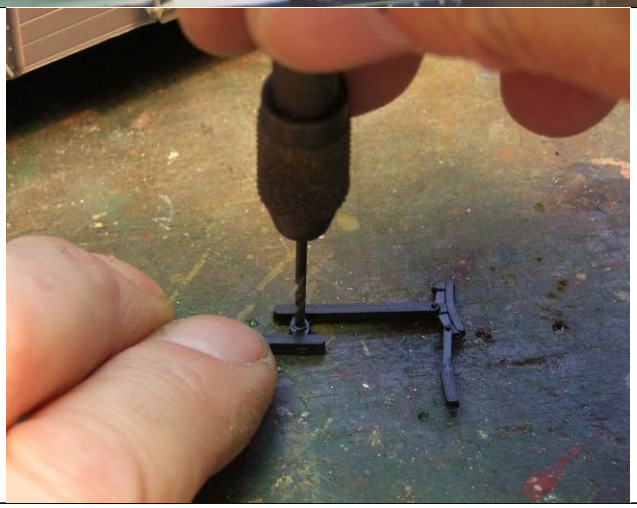
Some parts are best trimmed whilst still attached to the sprue. Typically here there is a register of the mould halves. This is scraped away with a scalpel blade.

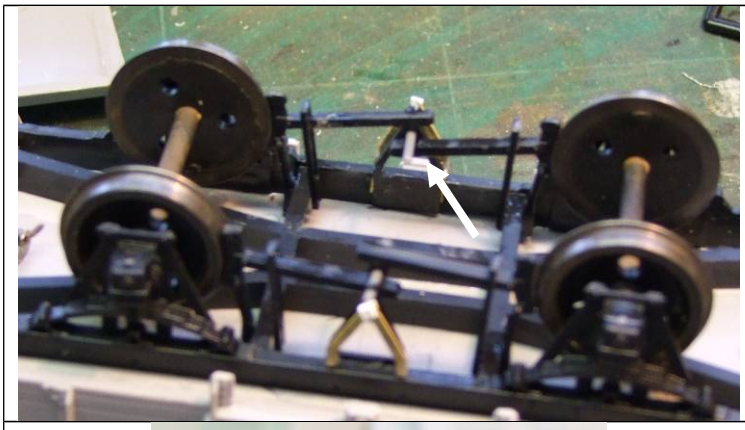
In this instance there is lot flash on the brake lever guide that has to be shaved away too.



Fitting the solebars appears to be quite brutal on this kit. It isn't really. They have to be flexed to fit between the ends and dropped into the slot in the floor. Check the fit of the ends of the solebar into the ends behind the buffers, Some trimming may be required. Once a good fit is assured apply adhesive.

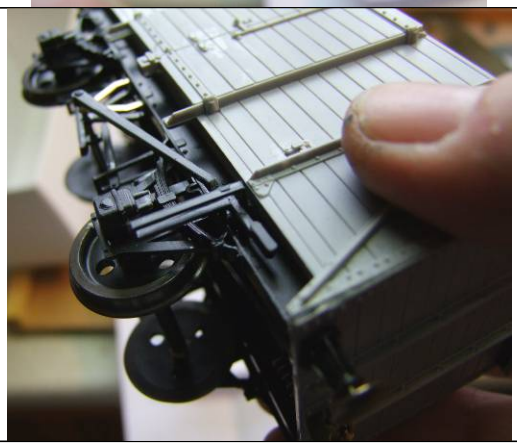
 **A**  **B**	It is essential that the solebars and W irons are square to the floor. Checking by eye as in picture “A” is not as reliable as “B”, actually placing the square against the item on the floor.
	This wagon has axleboxes that slide within the W irons. The inner part accepts the axle bearing. Again these need to be trimmed carefully from the sprue. Do not fit the bearing with any adhesive. Check that the bearing block slides freely in the W iron. Scraping a little off the sides of the W iron is easier than trying to file a little off the bearing.
	Fit an inner bearing to the end of the axle. Fit one side first into the W iron and then insert the second, springing the assembly in place.

	The axleboxes are then glued onto the inner bearings. Apply the adhesive into the hole. Do not have it swimming in adhesive. Fit the axlebox over the brass bearing. To stop the axlebox adhering to the W iron a light application of saliva to the surface will prevent this. Work the bearing up and down in the W iron whilst the adhesive cures to ensure that it does not bond to the W iron in any case.
  	This kit had some etched brass detail other than the coupling hooks. These were trimmed from their fret, tabs carefully filled off and then bent to shape. The bends were reinforced with a solder. In this case electrical cored solder. Using this type of solder is less likely to leave flux contamination that will affect sticking them to the solebars.
	The inside faces of the solebar where the etched vee brake hangers were to be attached was roughened with 180 wet and dry paper. The vee was located and superglue adhesive applied to fix it
	Other brake gear parts required drilling. A drill in a pin vice turned by hand is safer than using a powered drill.



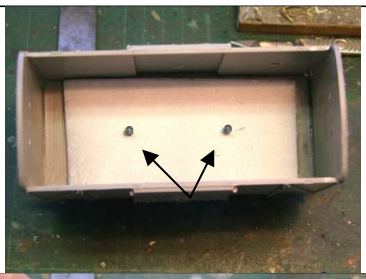
The brake components are fitted in line with the wheels. To help locate them the plastic rod representing the actuating shaft is fitted through the holes in the components

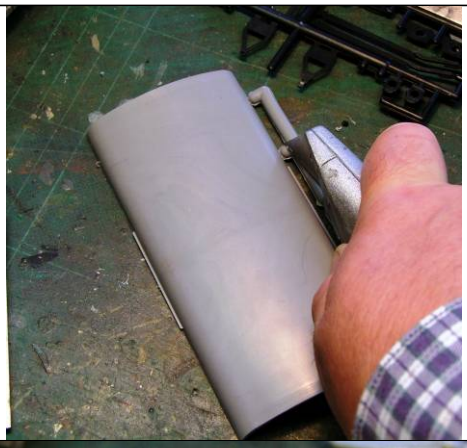
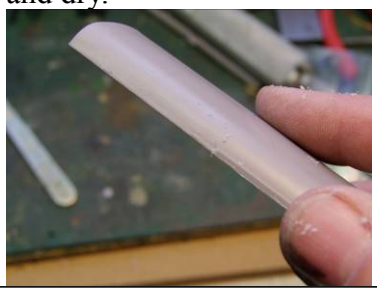
Clean up the brake handles to remove mould marks and assemble over the handle guides before fitting them to the chassis. Use no adhesive at this stage.



Locate the brake handle and guide onto the solebar and apply adhesive.
In this instance rather than drilling the etched vee hanger for the rod a piece a small piece of 1mm plasticard was superglued onto the apex and the brake lever stuck to this.

At this stage as the model is a van it is time to consider adding some weight. This is a piece of lead roof flashing fixed to the floor. This is cut to a nominal size that fits inside. To protect the lead it is sprayed with primer. Rather than gluing it place a more reliable fixing is to screw it in place using self tapping screws



	The roof is the final part to be fitted. Again this requires trimming from its sprue with a large knife.
	The residual feeds are trimmed with the scalpel and cleaned up with wet and dry. 
	Trim any flash from the ends and check the fit of the roof to the ends. When satisfied glue to the body. Ensure it is equally disposed on the ends. A curved roof can slip to one side or the other.
	Complete and awaiting painting. From this point there is a choice, original livery or later British Railways.