Rumney Models – Milk Tank Chassis Instructions

Introduction

Try and read the instructions before starting construction. I'm probably the worst person in the world for this but certain parts of the kit will be easier to build if done as suggested!

These instructions will cover all the milk tank chassis that I produce. There are all identical in principle. Where they differ in detail this will be covered in the relevant section. They are designed specifically to compliment the excellent David Geen GWR and LMS milk tanks. I have not looked at using them on any other model milk tanks.

The chassis are effectively etched brass sandwiches and are most easily constructed with the main components still in the fret. Only remove what you need at any time. I have designed the etch so that the where the cusp cannot be seen it doesn't have to be filed off. Therefore I clean up any parts that are visible once the kit is constructed. Any connecting tag will need to be cleaned up as you go along.

Technical

The suspension is individual springs made from 0.008" steel guitar wire soldered to etched spring/bearing carriers. For this you will need a suitable flux. I use Carr's Black label. The finished vehicle should be weighted to 75g with the weight evenly distributed. The weight of a completed David Geen Milk Tank should be around 75g but if you find you need to add more weight then the best place is in the tank so make sure you weigh everything before glue the tank ends on!
This combination spring and mass will produce a spring deflection of 0.5mm. Don't be tempted to up the gauge of spring wire. Even moving up to 0.009" springs will have a significant effect on the spring deflection.
The chassis is designed to produce a buffer centre height, when the kit is completed and weighted to 75g of 13.8mm when using Exactoscale wheels. The Exactoscale wheels are 13.4mm (3'1½") and 14.4mm (3'7") in diameter. Different makes of wheel may affect the ride height depending on their diameter.

Wheels

All milk tanks used 3'1½" 3-hole disc wagon wheels except the LMS types which used 3'7" disc coach wheels. I use Exactoscale wheels but any other make with 26mm pin point axles will be suitable though as noted above may affect the ride height.
If using wheels other than to P4 standards then certain areas of the chassis will need to be modified to allow for the narrower gauge and larger flanges. This is covered in the David Geen instructions but will become immediately obvious when trying to fit the wheels if not before hand.

The chassis is designed to allow the wheel sets to be dropped out for maintenance if you wish. This is arranged by making the tie bars removable. They can be painted separately and then glued in place afterwards. This is now my preferred method of arranging chassis as I don't like painting them with the wheels in place and it maintains the integrity of the W-Irons. They refuse to go back to where they should be if you prise them apart to remove the wheels. If all this sounds like unnecessary messing around then they can be arranged in a more conventional manner.

Everyone has their own soldering methods. I now use a temperature controlled soldering iron with predominantly 145 degree solder and La-Co paste flux. For a long time I used an Antex 18W soldering iron on virtually everything.

Check all holes before removing parts from the fret. The drawing process for etching if you use a CAD program as I do is extremely accurate but the actual etching process itself not an exact science. If the fret is slightly over etched then there is no problem but if they are under etched the holes will need enlarging. I find that this is easiest to do before removing parts from the fret. The hole sizes will be noted at the appropriate points.

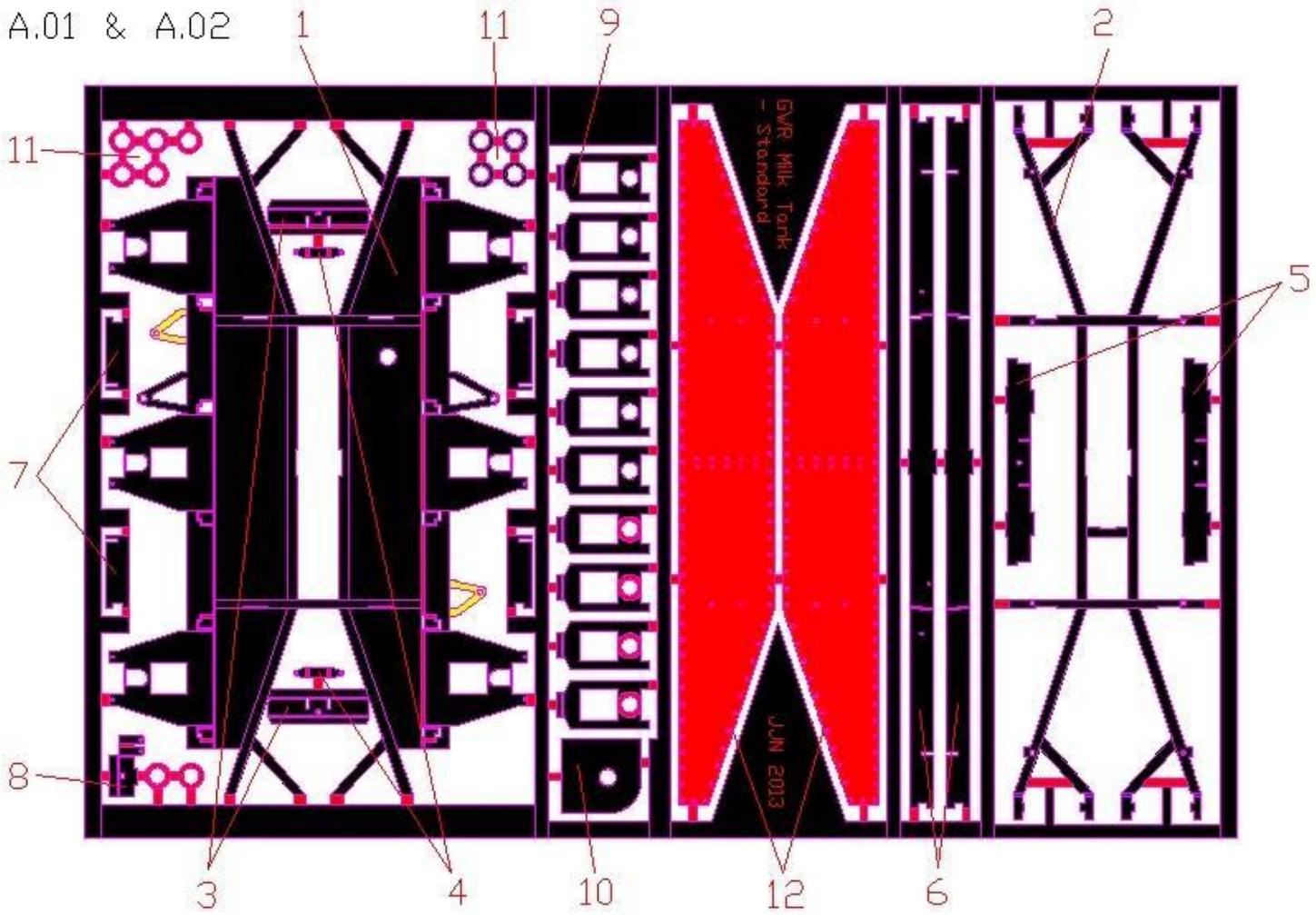
All half etched fold lines are 90 degrees with the fold line on the inside unless stated.

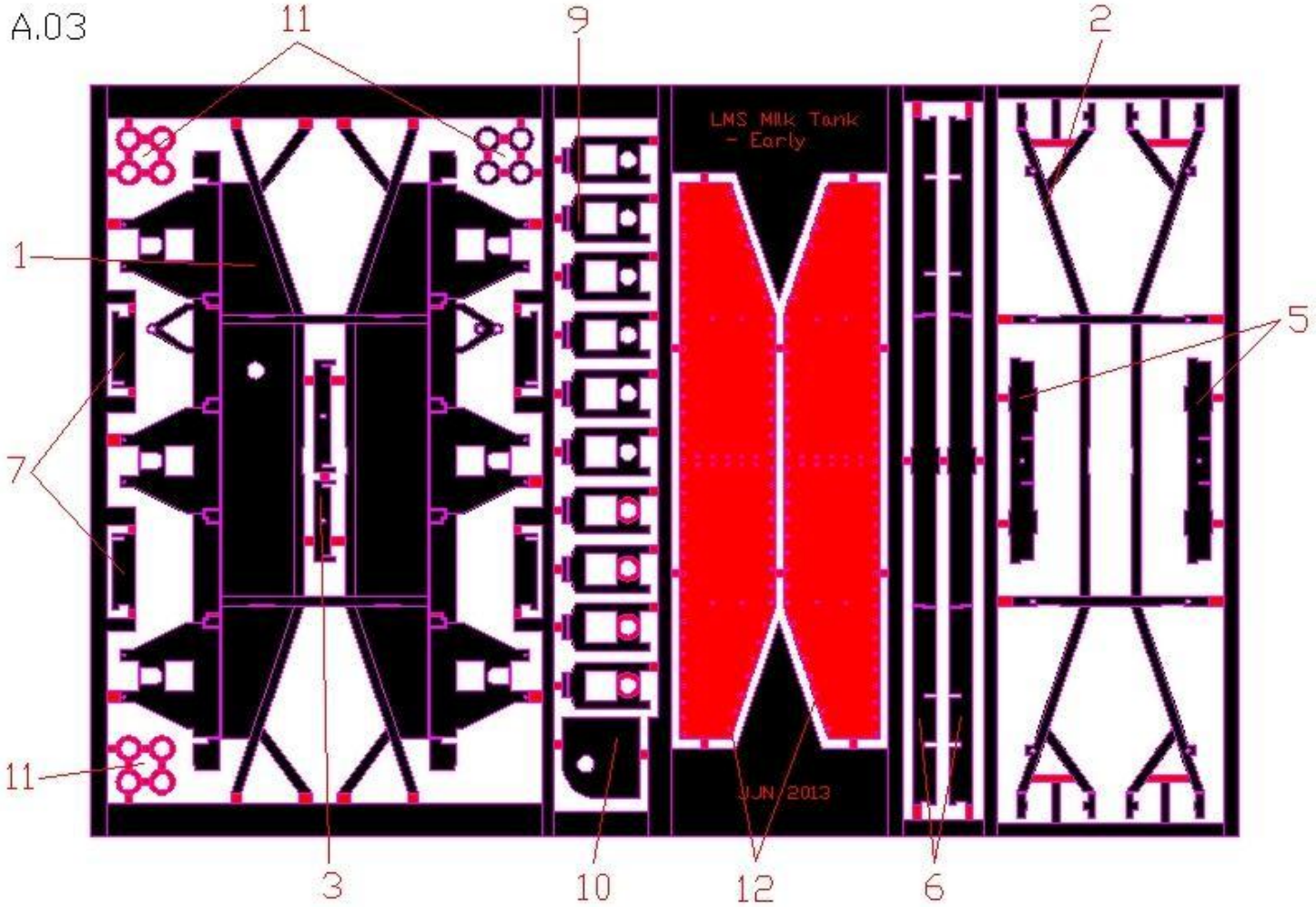
Component list and diagrams

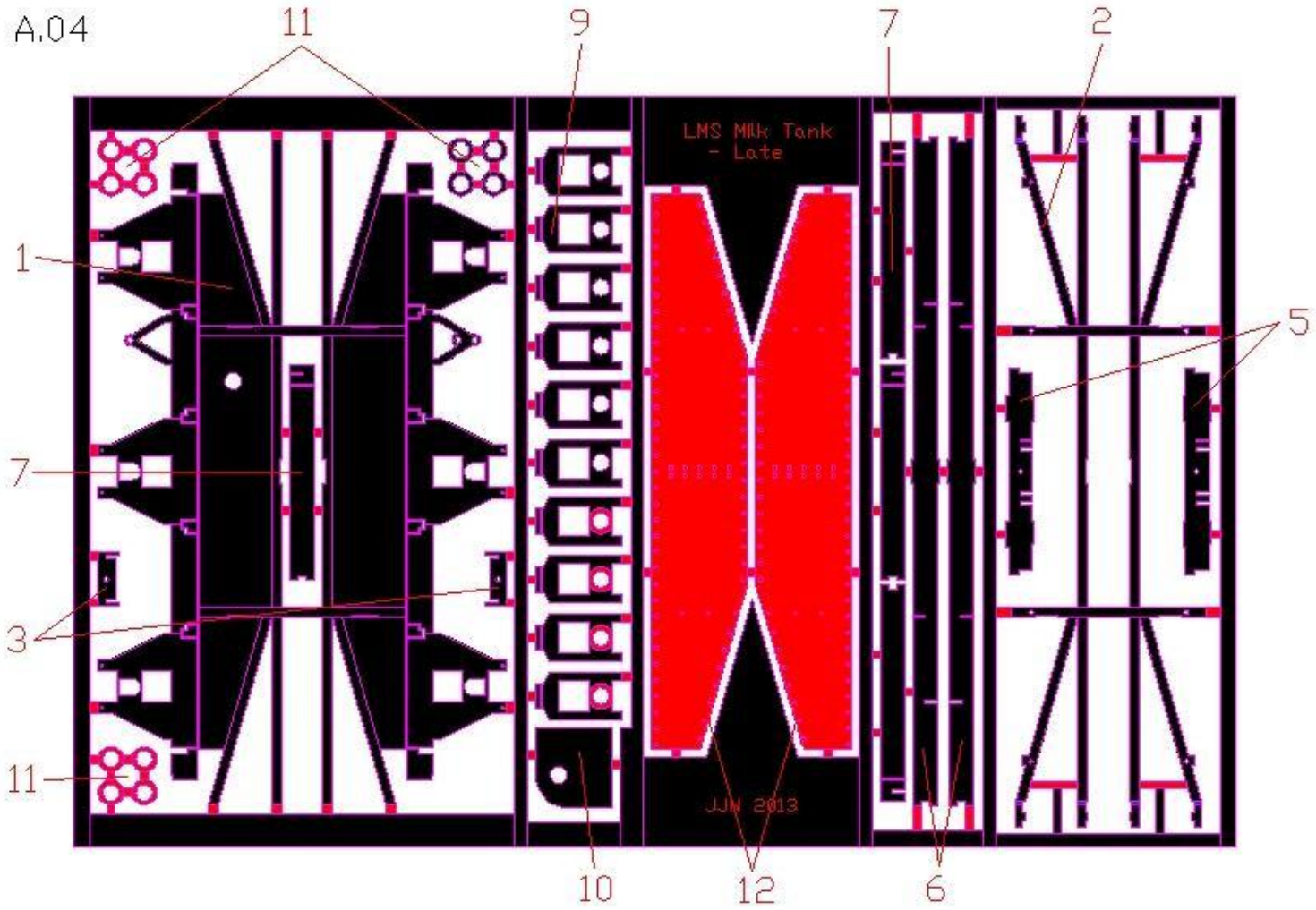
1 - Main chassis
2 - Chassis frame
3 - Clasp brake support pieces
4 - Clasp brake hanger brackets (GWR chassis)
5 - Transverse packing pieces
6 - Main longitudinal packing pieces
7 - Secondary longitudinal packing pieces
8 - Main brake shaft bracket (GWR)
9 - Spring carriers
10 - Vacuum cylinder plate
11 - Bearing washers
12 - Running plate overlays

Note that the layout of the parts on the GWR Standard and GWR Long milk tank chassis are identical.

A.01 & A.02

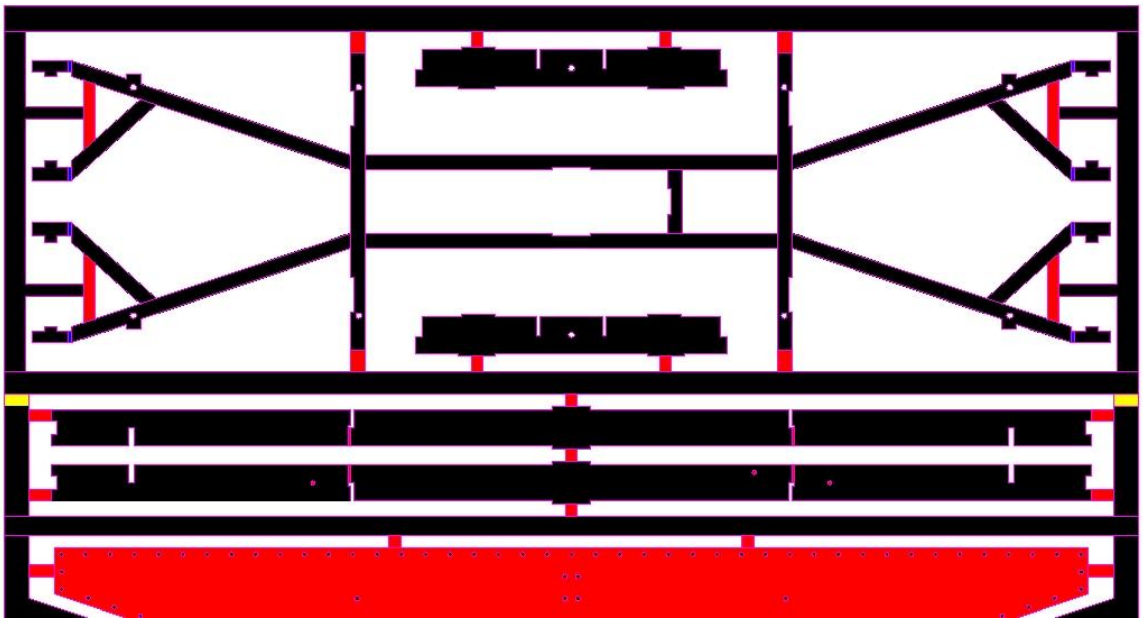



A.03
11
9
2
1
5
7
11
3
10
12
6
LMS Milk Tank
- Early
JUN/2013

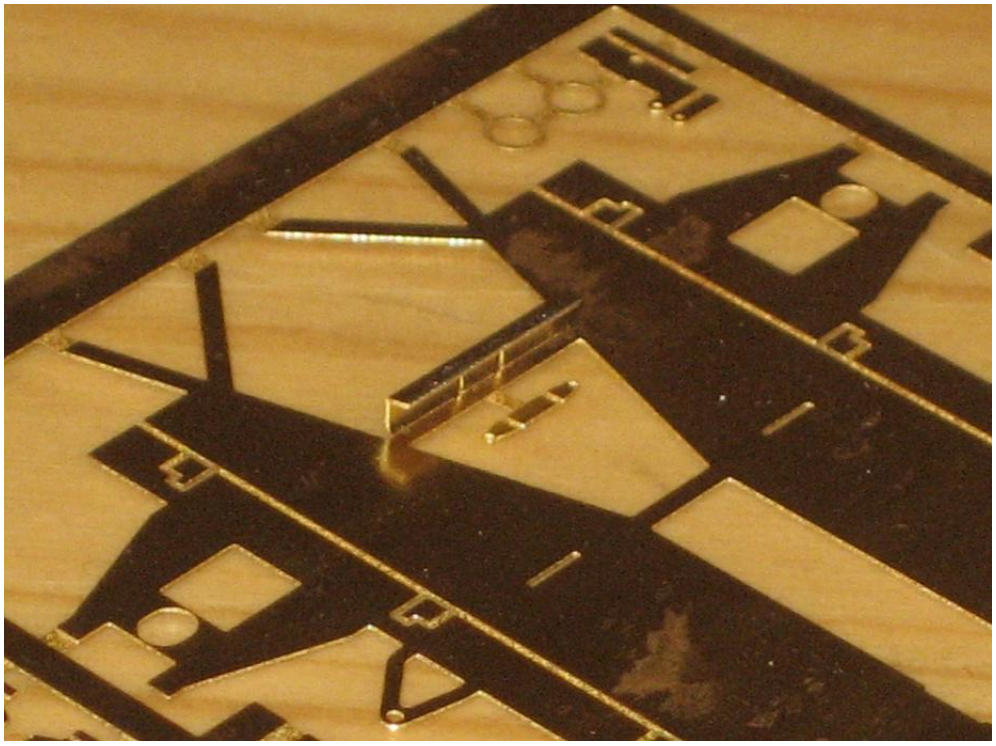

A.04
11
9
7
2
1
5
7
3
11
10
12
6
LMS Milk Tank
- Late
JJW 2013

Construction

The first thing to do is remove the part of the fret containing the chassis frame (2). Do this so that there is a still a complete frame around the chassis frame. Cut through the fret at the points marked in yellow in the following drawing:

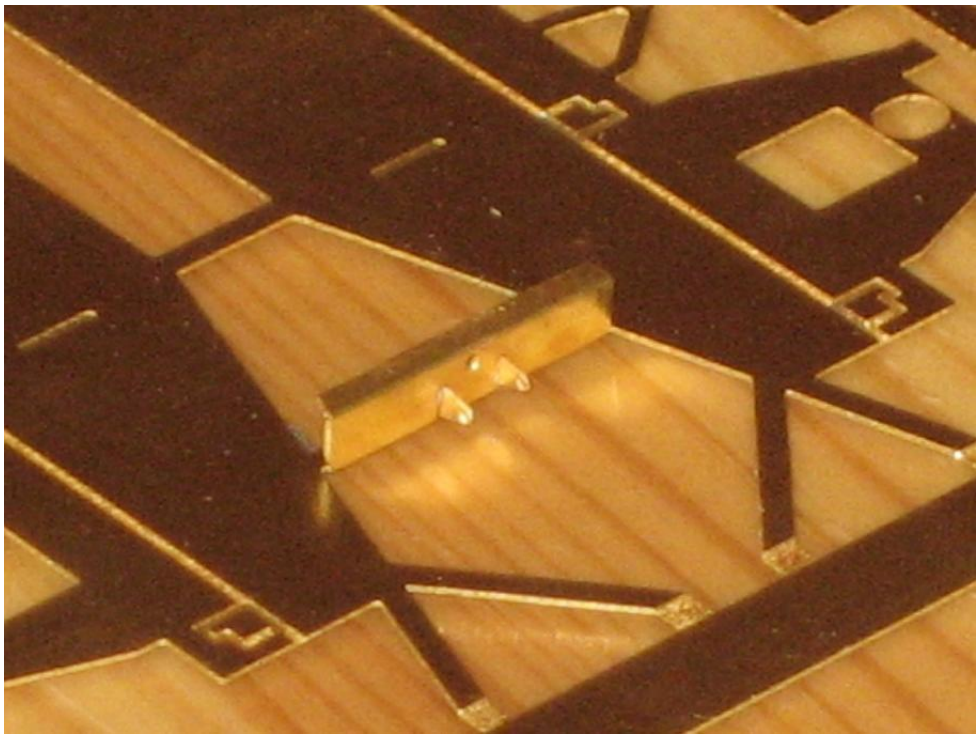


Chassis



GWR clasp brake support pieces (3)

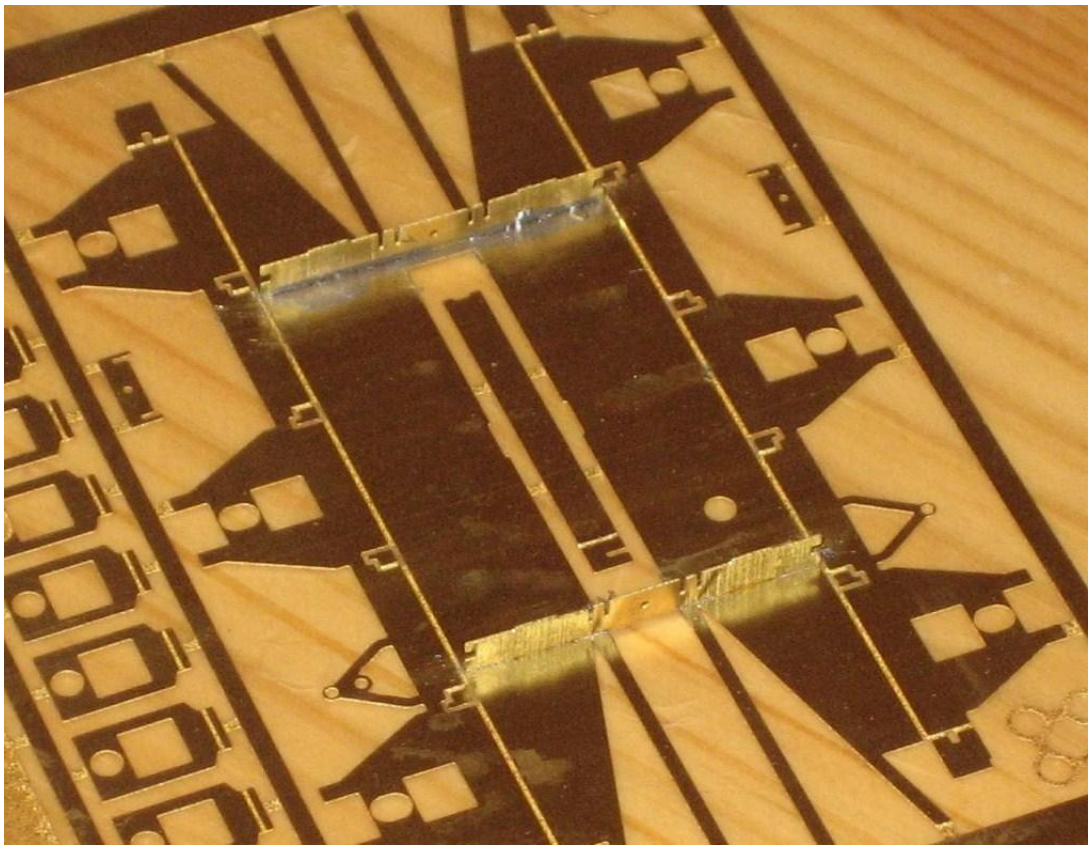
For GWR chassis check that the holes in the two claps brake hanger brackets (4) will accept 0.31mm wire, remove and fold into a U shape. You will then need to fold up the clasp brake support pieces (3) before doing anything else. These form into a channel. Locate the clasp brake fixing brackets into the slots in the claps brake support pieces from the inside of the channel and solder in place.



GWR clasp brake hanger brackets (4)

The LMS chassis are arranged differently and we don't need to worry about the clasp brake supports for the moment.

Check that the holes in the two transverse packing pieces (5) will take 0.5mm wire and then remove them from the fret. The transverse packing pieces need to be arranged so that the slots in them are facing away from the main chassis (1). Locate the tabs into the slots on the main chassis and tack solder in place. Make sure that they are at 90°. Adjust if necessary.

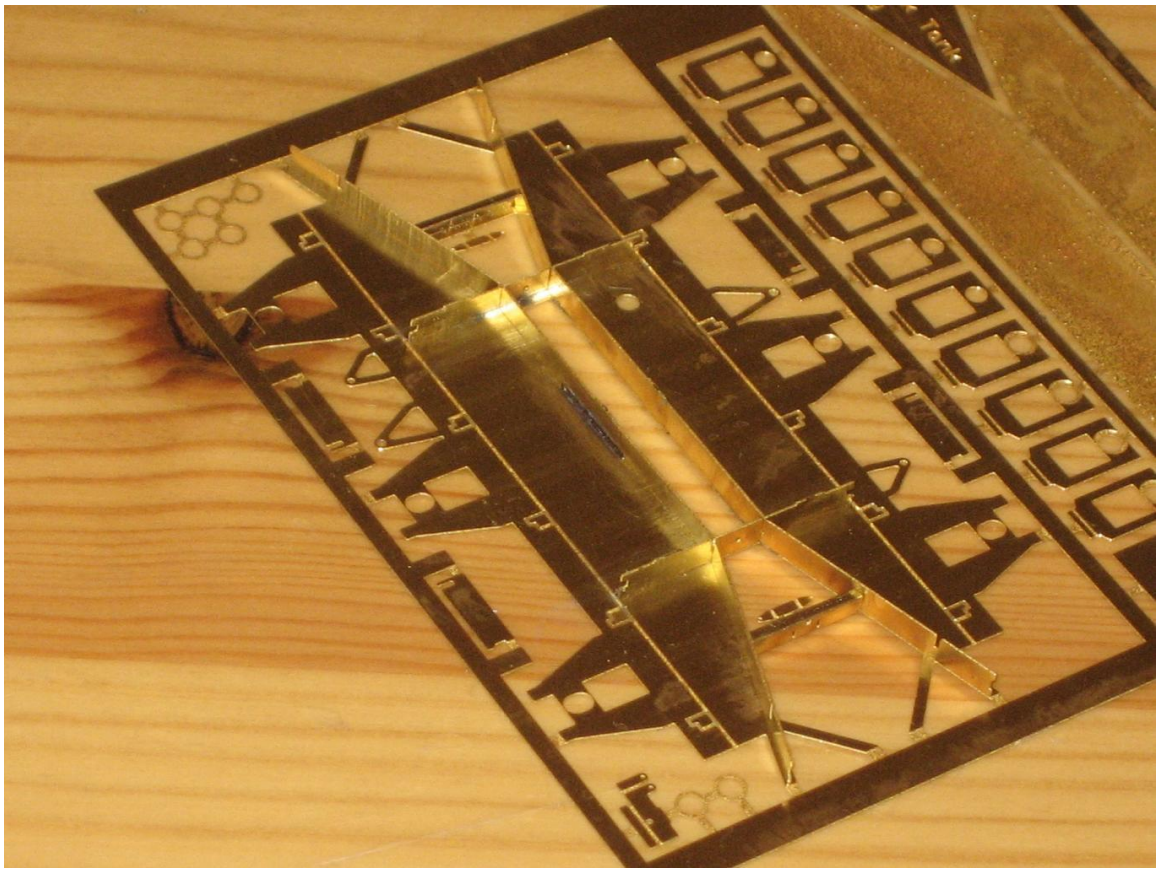


Transverse packing pieces (5)

If making a Dean-Churchward braked vehicle then there are three half etched holes on one of the main longitudinal packing pieces (6) which need to be drilled out to accept 0.31mm wire. You will also need to remove the vees for the brake levers. These are marked in yellow on the relevant parts diagram. If making a GWR lever brake vehicle then leave the half etched holes and the vees alone.

Remove the main longitudinal packing pieces from the fret. In the case of the GWR and early LMS chassis they need to be folded to follow the contours of the chassis which is about 25°. Do this so that the fold line is on the inside as you would for a 90° fold. Locate the main longitudinal packing pieces so that the slots locate into the slots in the transverse packing pieces. In the case of D-C braked GWR vehicles the longitudinal packing piece with the holes in is arranged so that it is on the opposite side to the vacuum cylinder (the position of the vacuum cylinder is marked by the 2mm diameter hole in the chassis). In the case of the late LMS chassis these are the innermost slots on the transverse packing piece.

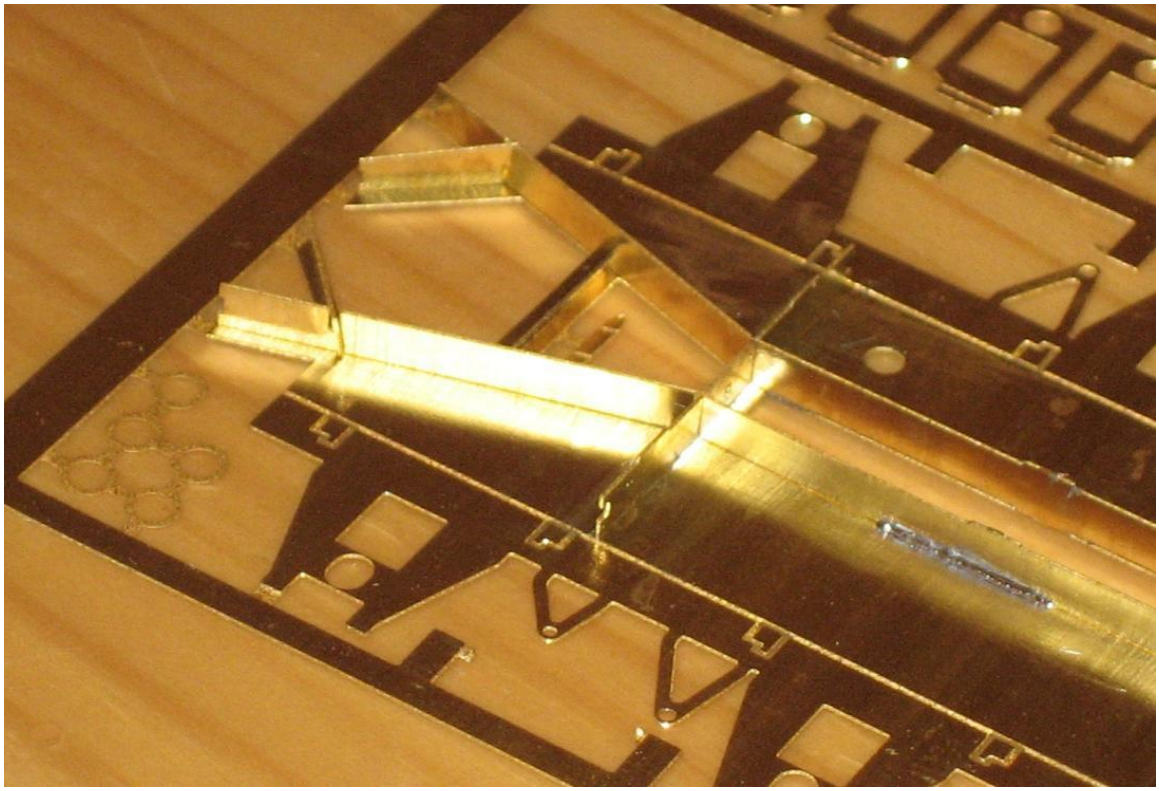
Recesses for the tabs on the main longitudinal packing pieces can be found in the centre of the main chassis. Make sure that the main longitudinal packing pieces are hard up against and at 90° to the main chassis and that the tabs are located in their recesses. Tack solder in place.



Main longitudinal packing pieces (6)

For the LMS chassis check that the holes in the clasp brake fixing supports (3) accept 0.5mm wire, remove and locate in the slots in the main longitudinal packing pieces. The ones for the early LMS chassis are different sizes and it will be quickly apparent which slots they go in. Brackets for the clasp brake hangers are included in the David Geen kit (part 'C'). Do not solder yet.

Remove the secondary longitudinal packing pieces (7) from the fret and locate in the remaining free slots in either the main longitudinal packing pieces (GWR and early LMS) or transverse packing pieces (late LMS). Do not solder yet.

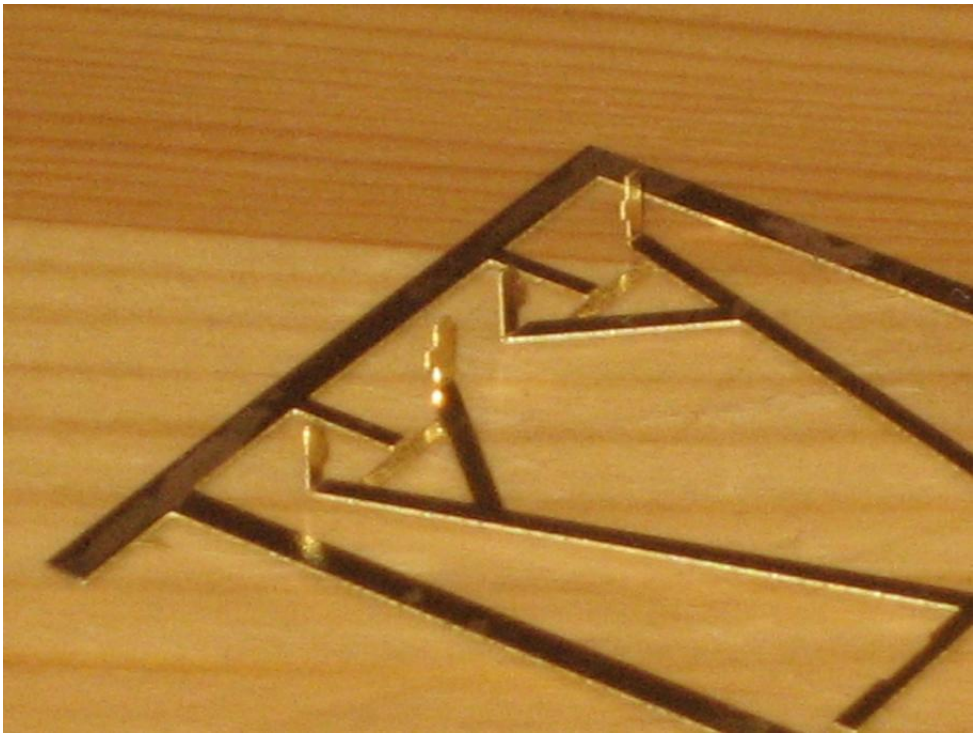


Secondary longitudinal packing pieces (7)

The next stage is a little fiddly in places but all the parts will locate so just take your time and do it slowly and methodically. The chassis frame (2) needs to be located on top of all the packing pieces and then the longitudinal packing pieces need to be adjusted and soldered in place. Do not remove the chassis frame from the fret until everything is soldered in place!

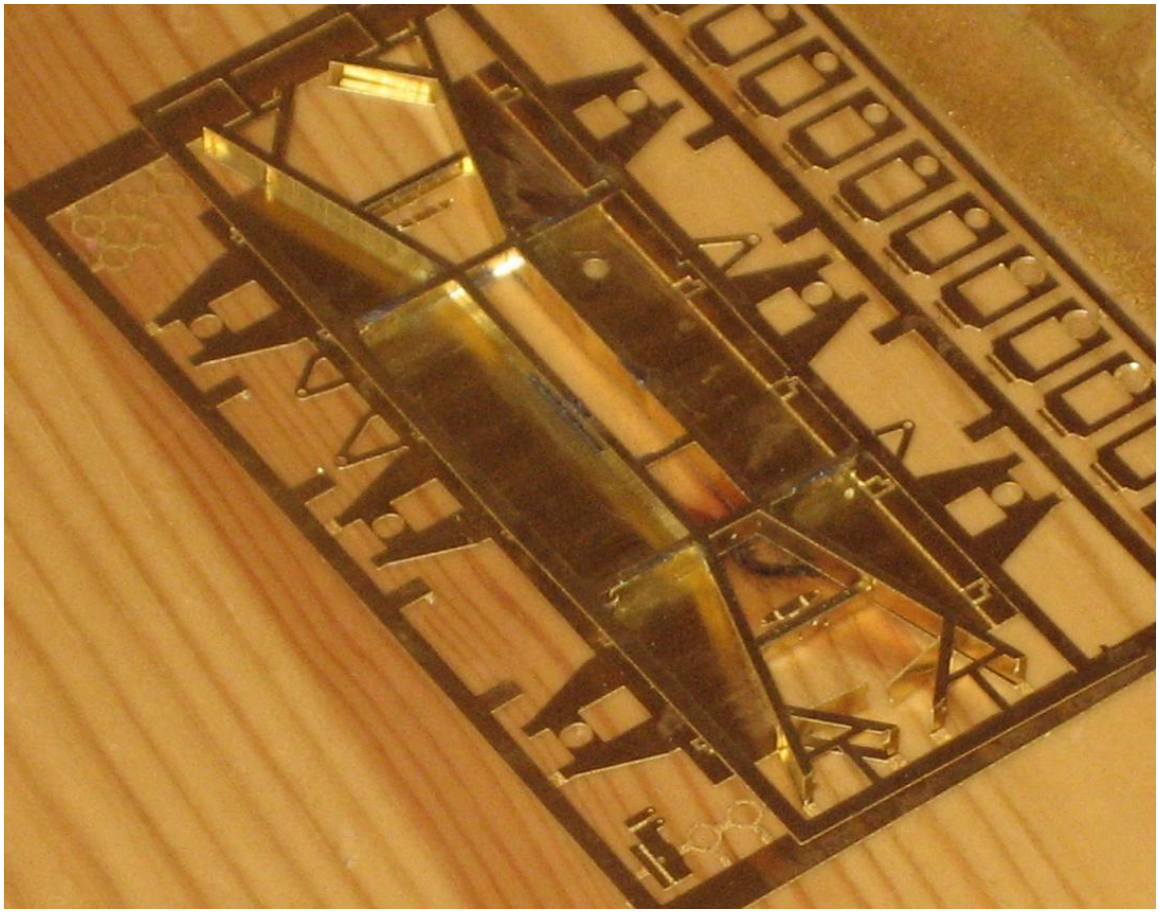
There is a correct way around for this part on the GWR chassis. The off centre beam across the middle needs to go on the opposite end to the vacuum cylinder.

If using my etched clasp brakes (which are on the appropriate detailing fret) make sure the holes can accept 0.5mm wire. Fold the ends of the chassis frame through 90°.



Chassis frame (2) ends.

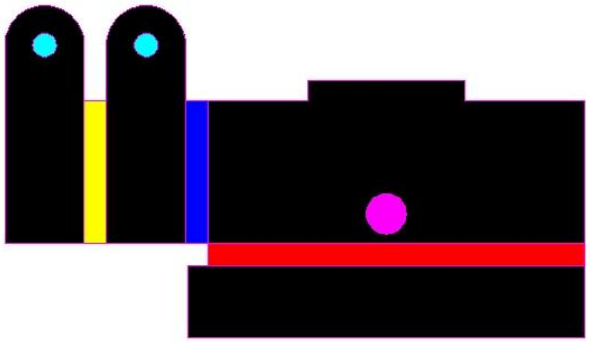
Locate the chassis frame over the top of the packing pieces so that the tabs on the packing pieces locate into the recesses in the chassis frame and that the ends that you've just folded down on the chassis frame face towards the main chassis. You need to start in the centre and work outwards. Once the chassis frame is satisfactorily in place tack solder to the transverse packing pieces only. The ends of the longitudinal packing pieces have recesses etched in to them that locate with the tabs on the folded down ends of the chassis frame. I tend to start with the main packing pieces tack soldering them in as I go when I'm happy with the fit and then do the secondary packing pieces. Once everything is satisfactorily in place and tack soldered in place then work your way through the chassis reinforcing the joints with solder. You don't need to do every part of every joint (you may not be able to get to some) but just work through until you're happy that everything is firmly in place.



Locate the vacuum cylinder plate (10) in place using the hole in the main chassis as a guide and solder in place.

The auxiliary brake hanger bracket on the GWR chassis needs to be folded up and fixed in place. Check that the hole will accept the appropriate size of wire as noted in Fig. 1 and remove from the fret. Fold up so that all the fold lines are 90° except that in yellow in Fig. 1 (below) which is 180° with the fold line on the outside. This part locates with the small off centre beam so that it appears to be formed from channel section. It is a bit of a fiddle to fix but using a piece of 0.5mm wire threaded through the holes in the packing pieces and the auxiliary brake hanger bracket will help.

Fig. 1 0.5mm 0.31mm



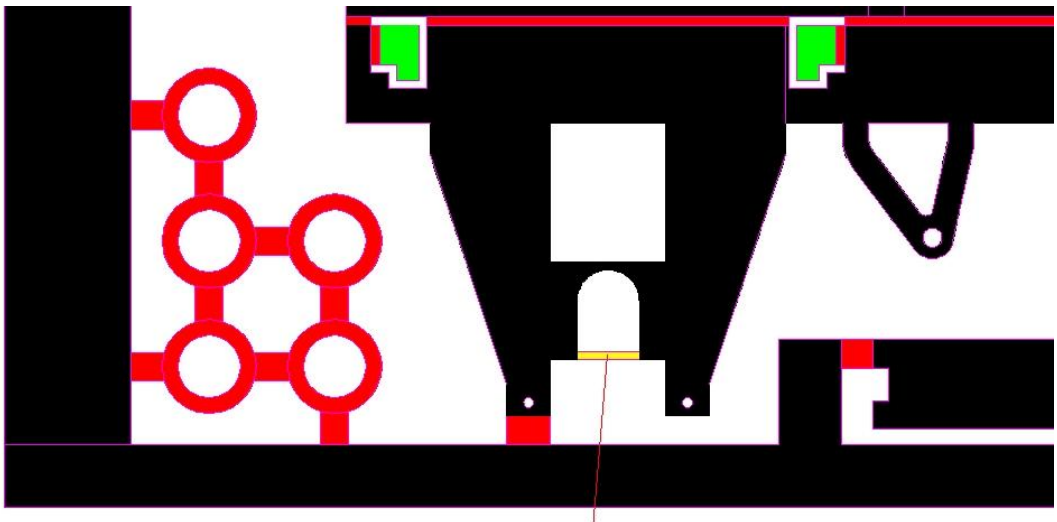
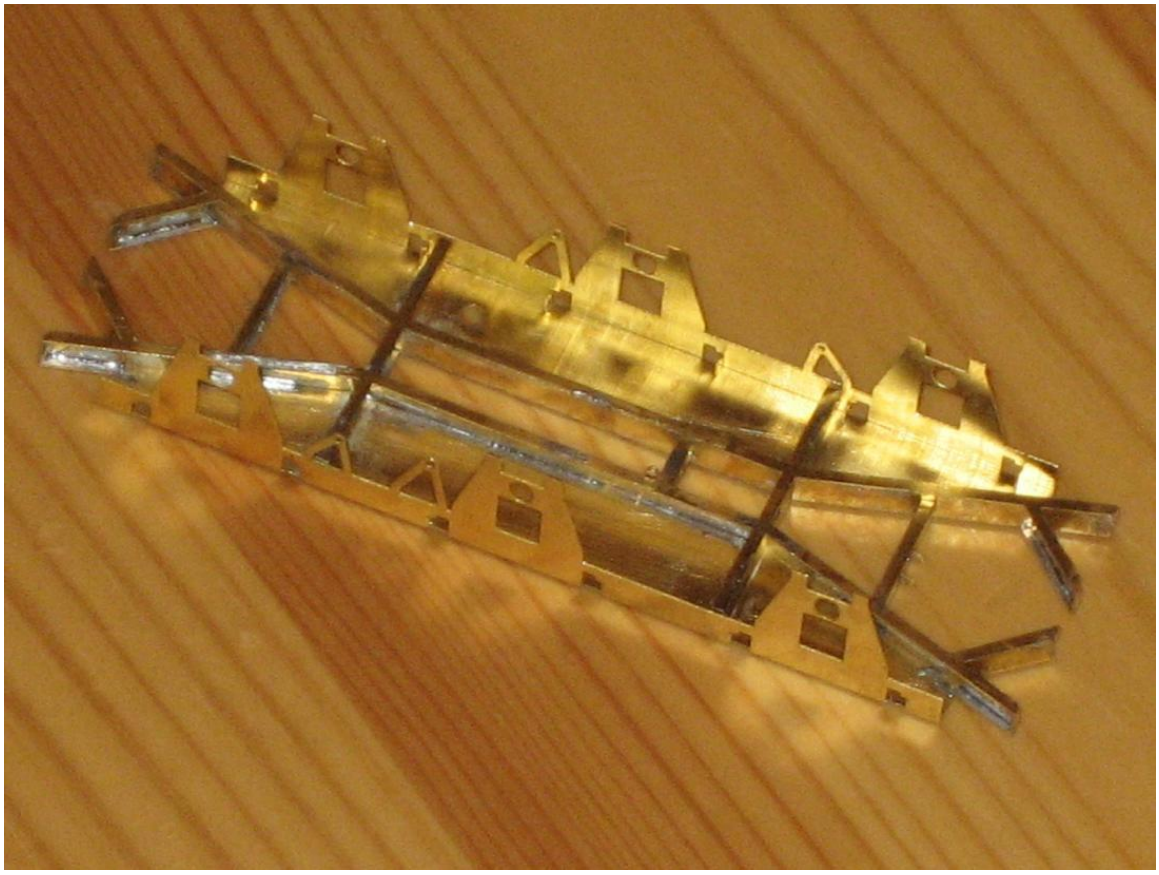


Fig.2

If using the tie bars for my detailing etches check that the holes in the W-Irons will accept 0.31mm wire then remove the chassis from the fret and clean up any connecting tags. Fold the sides up and then fold out the spring fulcrum points. These are indicated in green in Fig. 2 (above) in case there is any confusion. Once you're happy that the sides and fulcrum points are at 90° reinforce the fold lines and solder the fulcrum points to the chassis.



Folded up chassis

If you wish to arrange the chassis so that the wheels can be dropped out then you need the tie bars from my appropriate detailing etch and then to remove the parts of the W-Iron that will stop the spring carriers from falling out. This is shown in yellow in Fig. 2. The notes on constructing the tie bars are included in the instructions for the detailing etches.

Spring carriers

The spring carriers (9) can now be assembled. They are designed so that the springing wire is soldered to the carrier using the half etched slot as a guide.

The distance between the backs of the W-Irons is quite large when compared with other systems. This is ultimately dictated by the cast headstocks in the David Geen kit.
The advantage of this is that if using pin point axles you don't have to hunt around for bearings that are deep enough but you may find that the carriers need packing out a little to take up any slop. For the outer axles there should be a good fit between the axles and the bearings with ideally no sideways movement at all. Bearing washers (11) are included for this purpose. Use the spring carriers without the bearing recess for the outer two axles. Your bearings will be very shallow if the fit is too tight. Also use a waisted type to avoid having to remove any more material form the cast axleboxes than is necessary. I use Exactoscale waisted pin point bearings which are just about perfect for the job with only occasional ones that require packing out.

We will cover the centre axle now. As the chassis is a rigid three axle affair it is worth considering if some side play in the centre axle is needed. I have constructed a chassis with no sideways movement in any of the axles and it will just about creep around a 1m radius curve in P4 but not at speed. A small amount of side play on the centre axle is good. There are a couple of ways to achieve this.

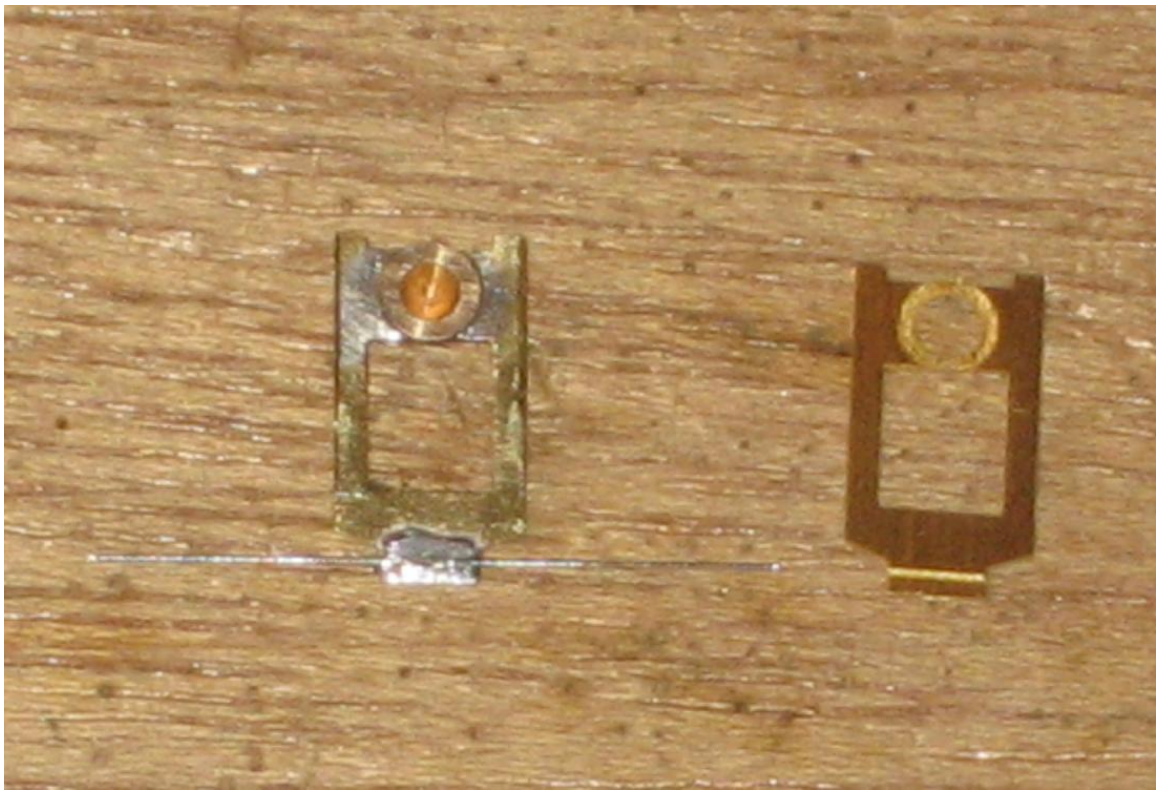
The first is rather ham fisted but is to simply allow for a degree of movement in the centre axle. You can use the spring carriers with either the recesses for bearings or the full width ones depending on the depth of your bearings. Unless using curves below 1m radius you don't need a lot of side play, 0.25mm over the whole axle will be fine.

The second is a bit more elegant and uses Exactoscale parallel 1mm axles and bearings. I have tried this system and it works very well. Due to the sizes of the components used you will need to pack the bearing out on the back of the spring carrier rather than solder it in conventionally. I used 0.375mm (3 half etched) worth of washers placed between the flange of the bearing and the spring carrier. Additional washers can be used on the axle to take up any movement if there is too much which there almost certainly will be. You must take care though that the system is set up so that the bearings remain located in the slots in the W-Irons.

I have had another method suggested to me involving mounting the wheels on a length of 2 x 1mm tube and then using an Exactoscale 1mm pinpoint axle. The idea being that the wheels on their "hollow axle" are free to move from side to side. I haven't tried this though.

A note on roller bearings. These were fitted to a number of milk tanks from the late fifties. My preferred method of doing this is to extend a non-waisted pinpoint bearing using 1.5mm brass rod and a small sleeve of 2 x 1.5mm brass tube. The actual bearing part of the axlebox casting is then removed with the bearing moving up and down with the spring. Wizard Models make a suitable hooded type roller bearing axlebox casting (BRC023). Extending the bearings is a bit of a fiddle and I'd like to try and get a batch of custom bearings made to make the gob easier.

I find the easiest way to assemble the spring carriers is to make a small jig consisting of an off cut of wood with a 2mm hole drilled into it. The spring carrier can then be placed so the half etched guide slot for the spring is facing towards you and the bearing locates through the hole in the carrier and the wood. The bearing can then can be soldered in place. The spring wire can then be located in its half etched guide slot and soldered in place using a suitable flux. I use Carr's black label. The spring wire needs to extend at least 7 mm either side of the point where it is attached to the carrier.



Spring carriers (9)

Milk tank construction

Once the spring carriers and wheels are in place the chassis is complete and construction of the rest of the wagon can begin. If using my etched clasp brakes, which are included in the appropriate detailing etch, these can be aligned using the holes in the chassis frame using 0.5mm wire. My general method is to construct as much of the brakegear that I can and then attach the cast solebars and headstocks. The running plate overlays can then be glued in place and the brakegear finished. Any locating holes for ladders (if using my etched ladders/platforms) can then be drilled before things like the tank supports start to get in the way. You will need to remove the W-Irons from the back of the cast axleboxes/springs and slot them to clear the bearings. The LMS ones are very vulnerable around the hanger brackets and most of mine broke. This is hardly surprising as 0.3mm whitemetal "wire" isn't exactly strong and it's just a case keeping each one separate and reassembling them on the model.

The David Geen kits and my additions to them aren't the quickest to construct but will make into a beautiful model.

Justin Newitt - June 2013