Rumney Models – BR Clasp Brake Tube Wagon Chassis Instructions

Notes

This set of instructions covers the BR clasp brake Tube underframe kit B.54 for diagram 1/448 wagons.

This kit is designed to build into a fully detailed and accurate 4mm BR clasp brake Tube wagon chassis. It is designed with the Parkside Dundas wagon body in mind though could be used with the Bachmann RTR one providing it is the correct length (32’ or 128mm in 4mm scale). The kit follows the prototype wherever possible but is simplified in certain areas to ease construction.

Read through the instructions first and familiarise yourself with the components. Drawings and photographs taken during the construction of the test etches are included to attempt to make my waffle clearer. Note that not all the photos are of these particular chassis but suitably illustrate the item in question.

All fold lines are through 90° with the fold line on the inside unless stated otherwise.

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

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.

Technical

The suspension is individual springs made from 0.008” steel guitar wire soldered to the etched spring/bearing carriers. For this you will need a suitable flux. I use Carr’s Black label. If the finished vehicle is weighted to 50g with the weight evenly distributed then this 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. Also don't over weight the wagon or the springs will not have enough upwards movement before they hit the axleguards. Think of the 50g total as an ideal weight but also a maximum. There are notes on weighting the wagon at the end of the instructions.

The chassis is designed to produce a buffer centre height, when the kit is completed and weighted to 50g of 13.8mm when using Exactoscale wheels. The Exactoscale wheels are 13.4mm (3'1½") in diameter. Different makes of wheel may slightly affect the ride height depending on their diameter.

Materials list

Several sizes of wire are needed to build the chassis. Eileen's Emporium are good source for these and they do a mixed sizes pack if you don't want to buy large quantities.

0.31mm - Most of the brakegear, axleguards ties, brake lever guards
0.8mm - Main brake cross shaft
1.0mm - Alignment pins for the axleguard and vee assemblies

You will also require items such as buffers, vacuum cylinders and pipes, axleboxes and springs as well as couplings to complete.

Clasp brake Tubes mostly had 7 leaf springs but some of the later builds had 8.
Axleboxes fall into 2 categories:

- For those wagons with roller bearings Rumney Models does a 7 leaf spring and roller bearing (FE.07) or and 8 leaf one (FE.08).
- For those with oil axleboxes MJT do a 7 leaf spring and Wizard Models do appropriate 'heavy' axleboxes including Hybox, BR split (2 part) and Platefront types.

Vacuum cylinders are the 21" type. Castings for these are available from Rumney Models (F.02).

For buffers I would recommend those produced by Lanarkshire Model Supplies. They are by far the best around and a lot of types of buffers are available pre drilled for fitting sprung buffer heads. This service is particularly useful for heavy duty buffers with their large 2.5mm shanks. The quality is excellent. Suitable types include 1'6" spindle, 1'6" self contained, 1'8½" self contained, 1'8½" Oleos and 2' Oleos. Check you prototype for the type you need. Metal buffer heads and springs are available from Wizard (including 1.45mm shank buffer heads for Oleos) and MJT (including 2.5mm shank heads for self contained buffers).

Lanarkshire Models also do cast swan neck vacuum pipes though I find them a little fragile and prefer to make my own from wire.

Coupling hooks (B.94) and Instanter links (B.95A) are available from Rumney Models. For links I use the Exactoscale products available through C&L Finescale. For Screw coupling I currently use the Masokits product.

Contact details for the above suppliers can be found at the end of these instructions.

Component List

1 - Chassis top plate
2 - Axleguard assembly
3 - Axleguard overlays
4 - Vee assembly
5 - Solebars
6 - Solebar detailing overlays
7 - Solebar detailing

8 - Solebar/Headstock corner plate
9 - Solebar/Headstock bracing
10 - Coupling pocket detail
11 - Door springs

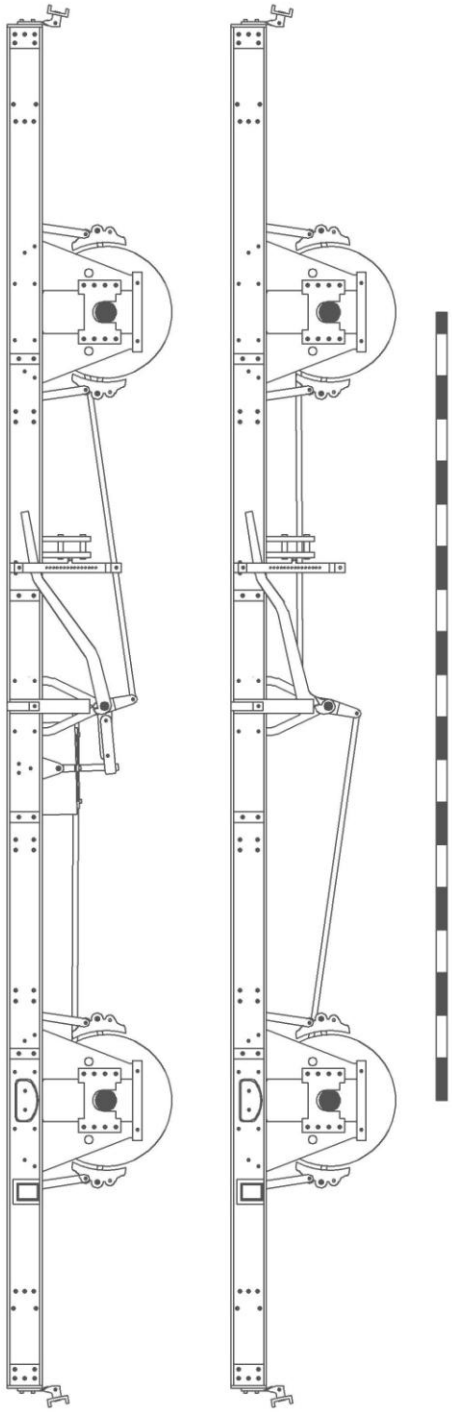
12 - Clasp brakes

13 - Spring carriers
14 - Bearing washers
15 - Axle guard ties

16 - Brakegear linkage
17 - Brake shaft crank overlays
18 - Outer clasp brake hanger overlays
19 - Inner clasp brake hanger overlays
20 - Brake yokes (EM/P4)
21 - Brake yokes (OO)

22 - Brake lever guard stay assembly
23 - Brake lever guards/brackets
24 - Brake levers

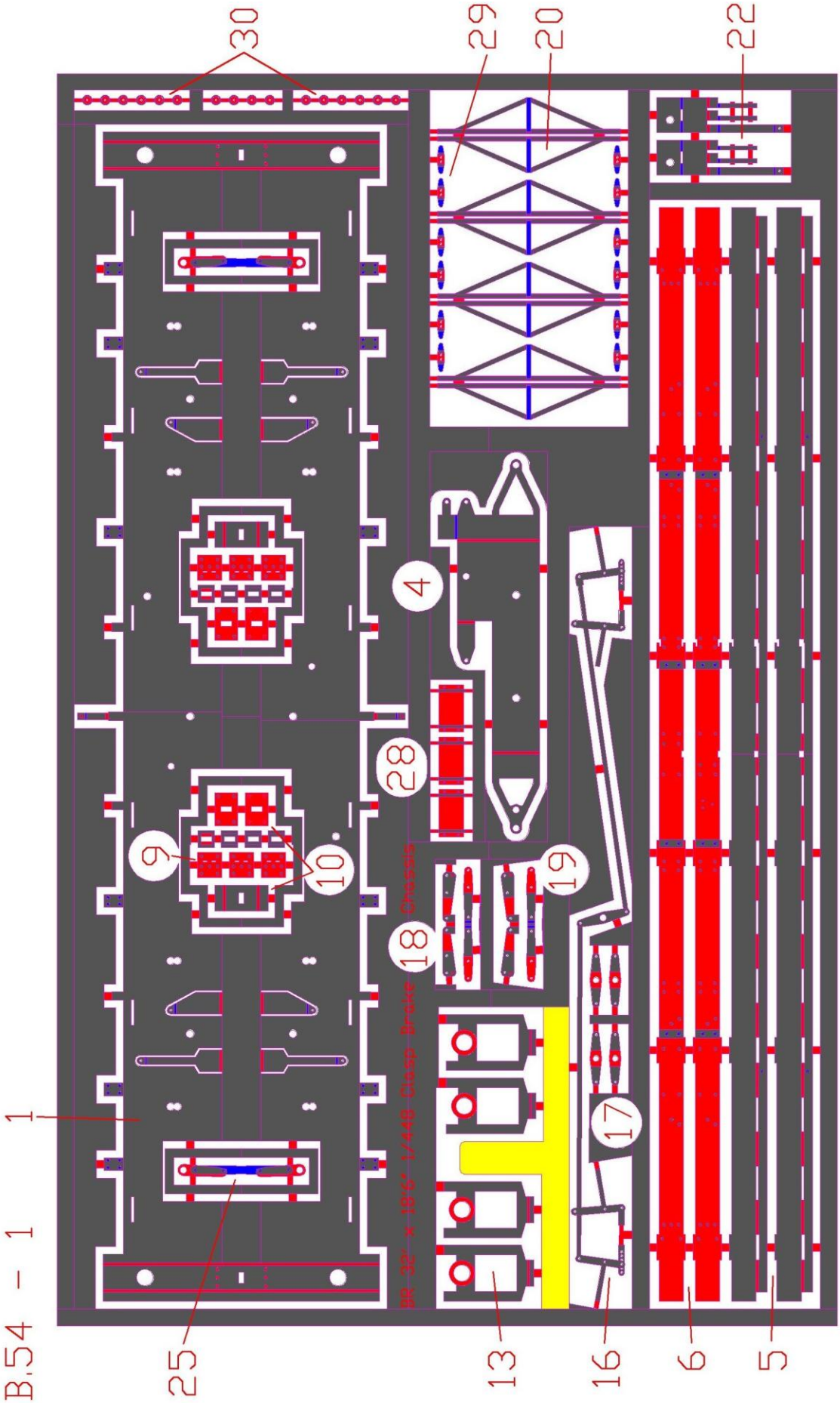
25 - Vacuum cylinder actuators
26 - Lamp Irons
27 - BR swan neck vacuum pipe brackets
28 - Label boards
29 - Butterfly cleats
30 - Round cleats



The areas shaded yellow in the parts diagrams is the jig for forming the safety loops. This should be removed from the fret when the appropriate time comes. This will be noted in the instructions.

The areas shaded green in the parts diagram is the jig for drilling locating holes for the lamp irons. This will be covered at the appropriate point in the instructions.

The areas shaded light blue in the parts diagram is the jig for drilling locating holes for the butterfly cleats. This will be covered at the appropriate point in the instructions.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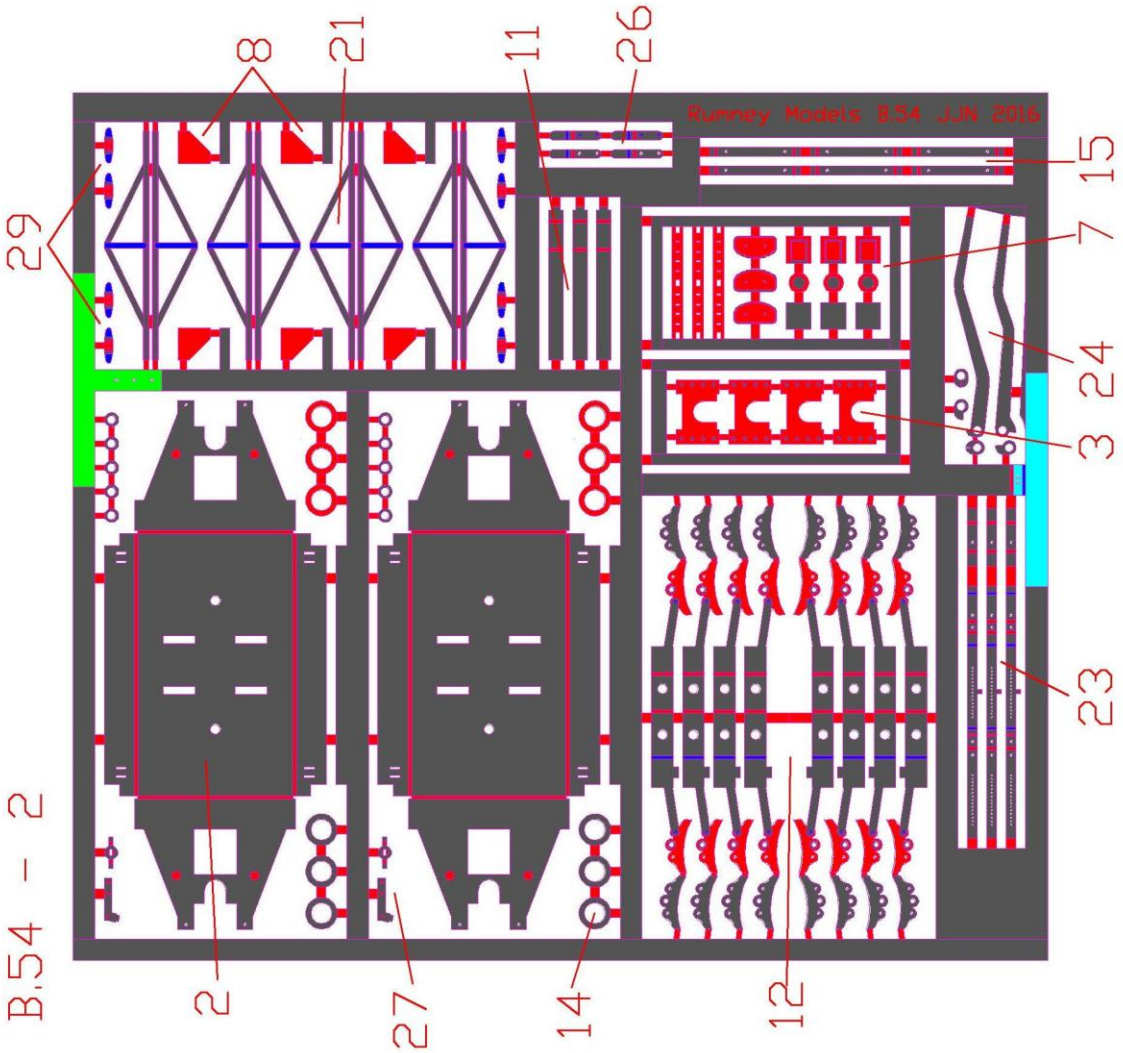
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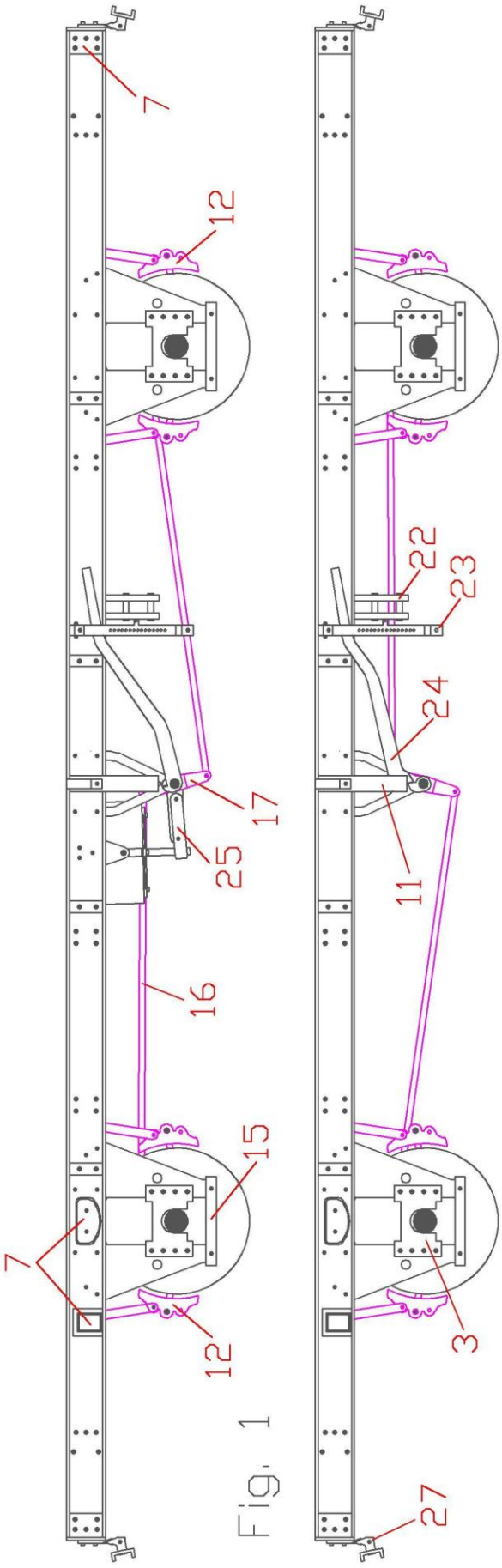


Fig. 1

Construction

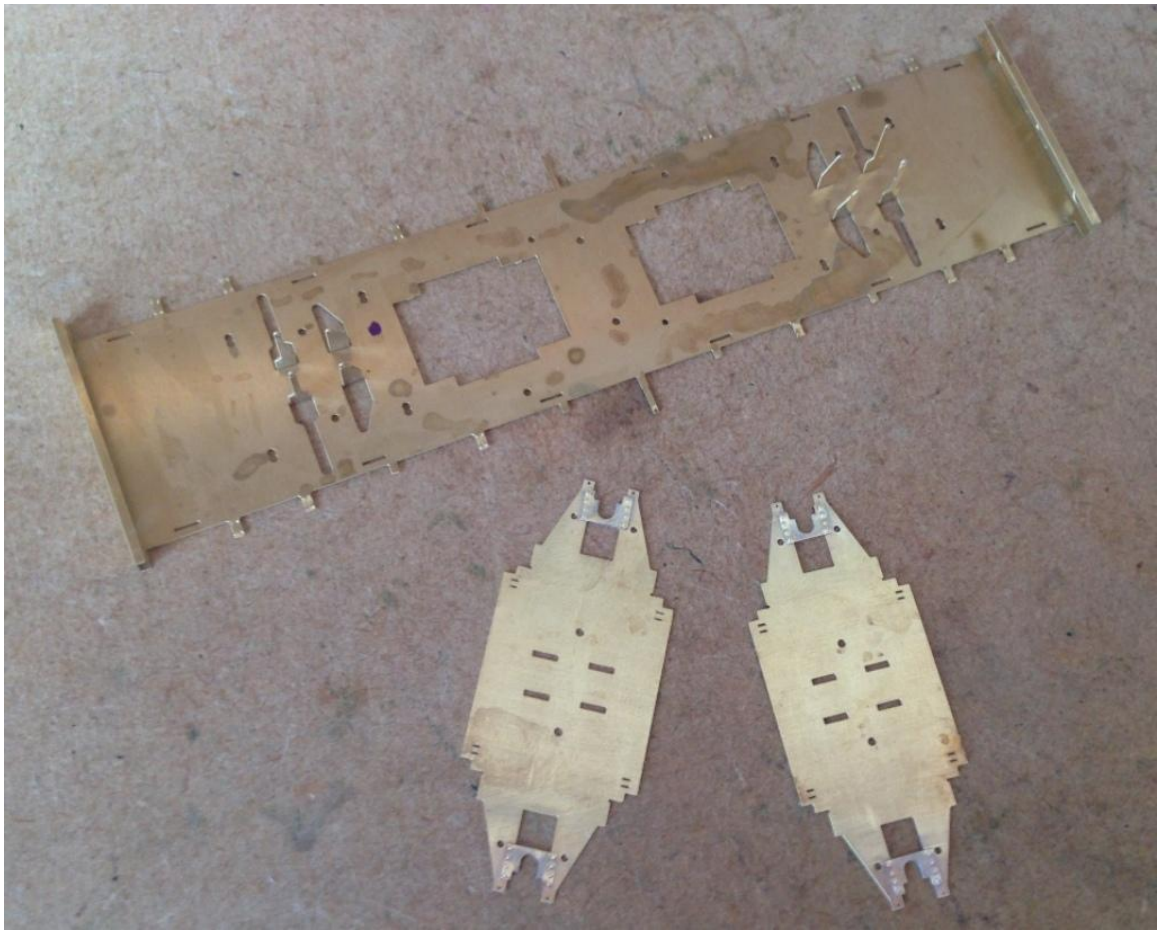
Main Chassis

Start with the chassis top plate (1). Firstly check the fit of your buffers in their holes in the headstocks. It may sound a bit odd starting with something that usually goes on at the end but it will be much easier to open out the holes now rather than later. Push out the half etched rivets on the headstocks and, if required, the body support brackets along the sides. I find the easiest way to do this is with a drop head rivet press with the fret placed over one of those ubiquitous green cutting mats. Remove from the fret.

The headstocks need to be folded up. This is best done with the chassis top plate clamped to something or held in a vice to avoid distortion. There are two sets of fold lines as the headstocks need to be folded into a channel. Start with the outermost part of the chassis top plate and fold through 90°. Next fold the headstocks through 90° to form a channel. Do not reinforce with solder yet.

Check the holes in the clasp brake hanger brackets can accept 0.31mm wire then fold the brackets through 90°. These will be adjusted later but need to be at this angle for the moment.

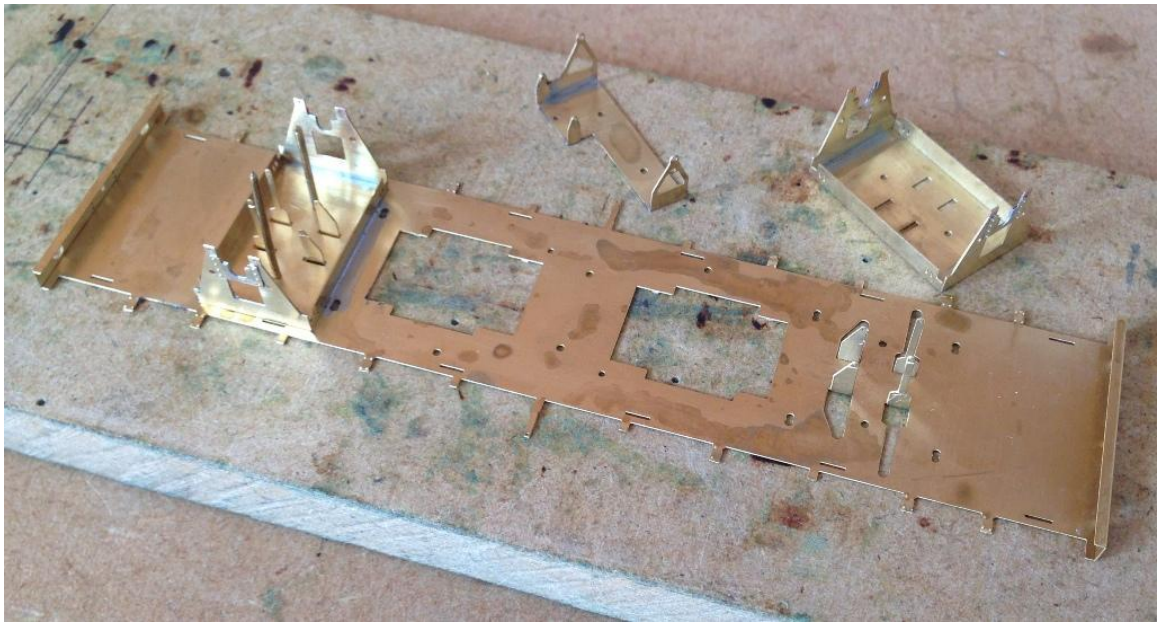
Check that the holes in the axleguards (2) will accept 0.31mm wire and if necessary drill out the holes on the backs of the axleguards as per your prototype (they did vary) using a 0.85mm drill. Remove from the fret.



If you wish to make use of the riveted axlebox guide overlays (3) included then now is by far the best time to fit them. Use the slot for the axle to align them on the axleguard assembly and solder in place. Make sure they will be on the outside of the axleguards when folded up (i.e. on the opposite side to the fold lines - see above photo). Carefully fold up the sides and the four spring supports. Make sure that the sides are at 90° and adjust if necessary.

Check that the brake shaft holes in the in the Vee assembly (4) will accept 0.8mm wire. Remove from the fret and fold up. There are two parts that make up the vacuum cylinder bracket on one side. The outer part needs folding over through 180° with the fold line on the outside and then solder together.

The chassis top plate and both the axleguard and vee assemblies need to be solder together. There are 1mm diameter holes on both the top plate and axleguard/vee assembly to aid location. Using short lengths of 1mm wire with the ends tapered slightly pin the two parts together. You may need to open out the holes slightly but make sure the wire is a tight fit. Solder the parts together and then remove the locating pins. It doesn't matter which way around the vee is.



Next remove the solebars (5) from the fret and fold into an L shape. I find the best way to do this is in a vice though it can be done gradually with a pair of long nose pliers making the fold a little at a time whilst working your way along, repeating this procedure a few times until you have a square fold.

Remove the solebar detailing overlays (6) from the fret. As a result of the etching process there should be a curve through them with the ends closer to you if looking at the rivet detail side. Carefully bend them so that the curve is reversed slightly and that the ends are further away when looking at the rivet detail. This can easily be done between thumb and forefinger but take care not to put any folds into it.

The solebar detailing overlays are designed to fit into the slots in the solebars. The completed solebar then locates into the slots in the chassis top plate. Locate the solebar detailing overlay in the solebar and tack solder in pace. Note that there is a right way up for all the overlays (if in doubt note that the notches for the brake lever guard should match those in the solebar).

Now is probably the easiest time to attach the solebar detailing to the solebars so I shall cover this now before returning to the business of assembling the chassis.

Solebar detailing

The solebar detailing (7) comes contained in its own little fret. See Fig 2 below. On it you will find fabricated axle spring stops, number plates, label clips, a rectangle that is actually a block of wood on the real thing and some small round dual depth plates. I have no idea what the purpose of the last two items is but the rectangular block of wood was quite common. The round plates could be found on shock absorbing vans and can be ignored for this chassis. The positions of all this stuff varied a little so check your prototype. The details can be soldered on or glued. If you wish to glue the detail on its best left until the chassis is assembled.

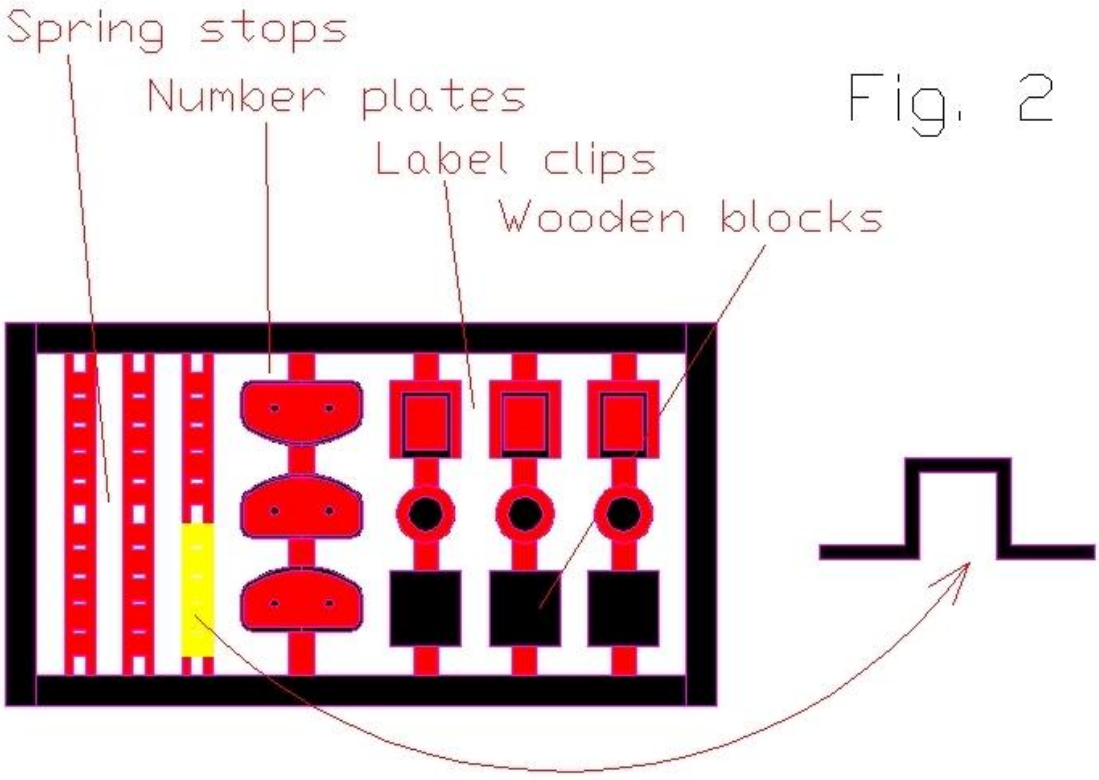
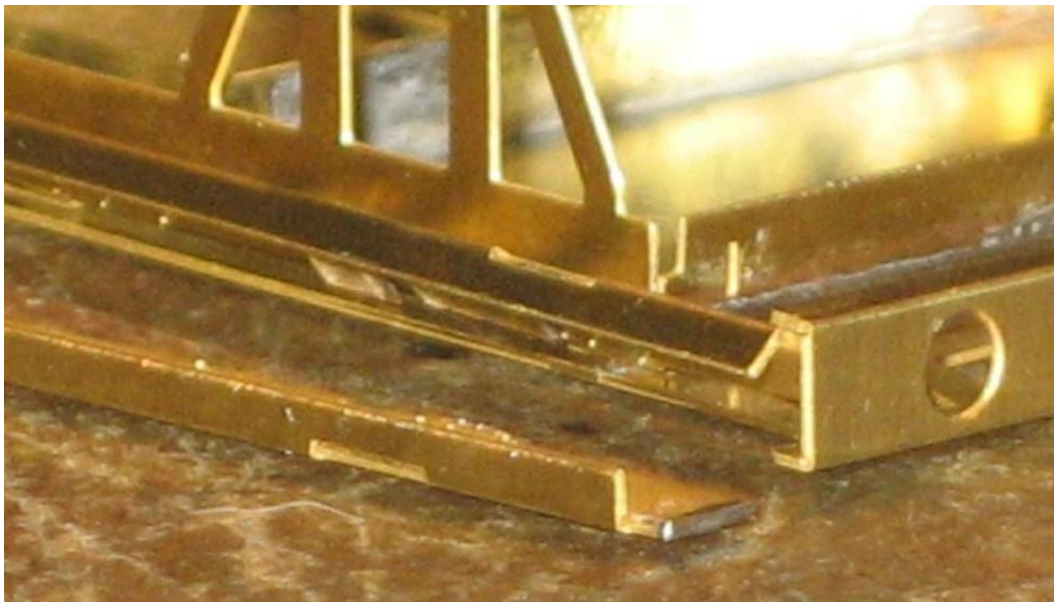


Fig. 2

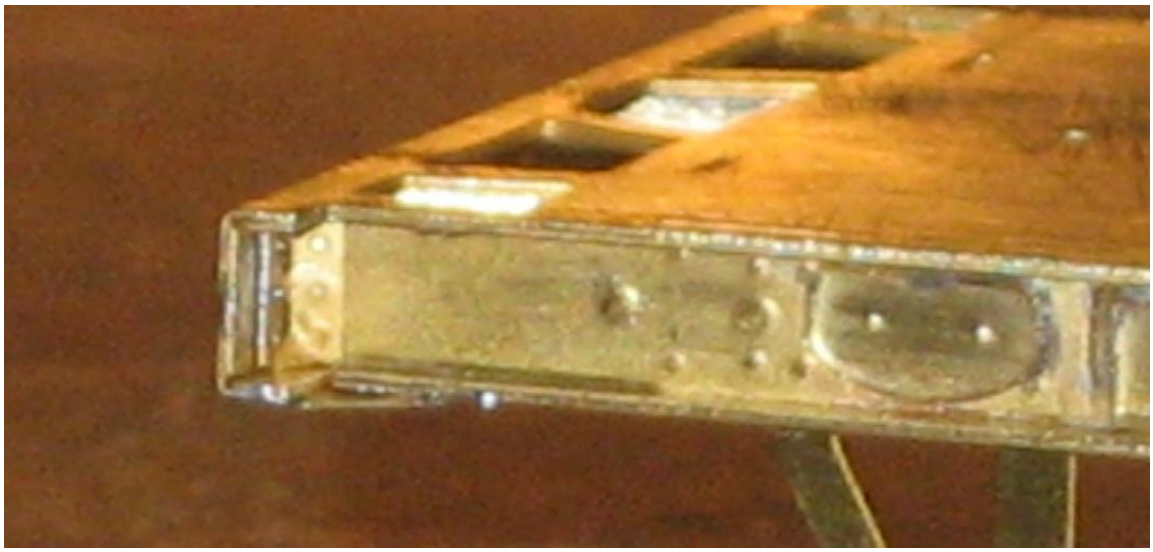
Main Chassis Continued…

The solebars can now be fitted to the chassis. Note there is a correct side for the solebars. There is extra rivet detail on one side and this should be on the side the vacuum cylinder bracket is. There are slots and tabs to aid location and the ends go into the channel that is the headstock. Fit the solebars at an angle and then straighten locating the slots and tabs at the same time. Solder in place.



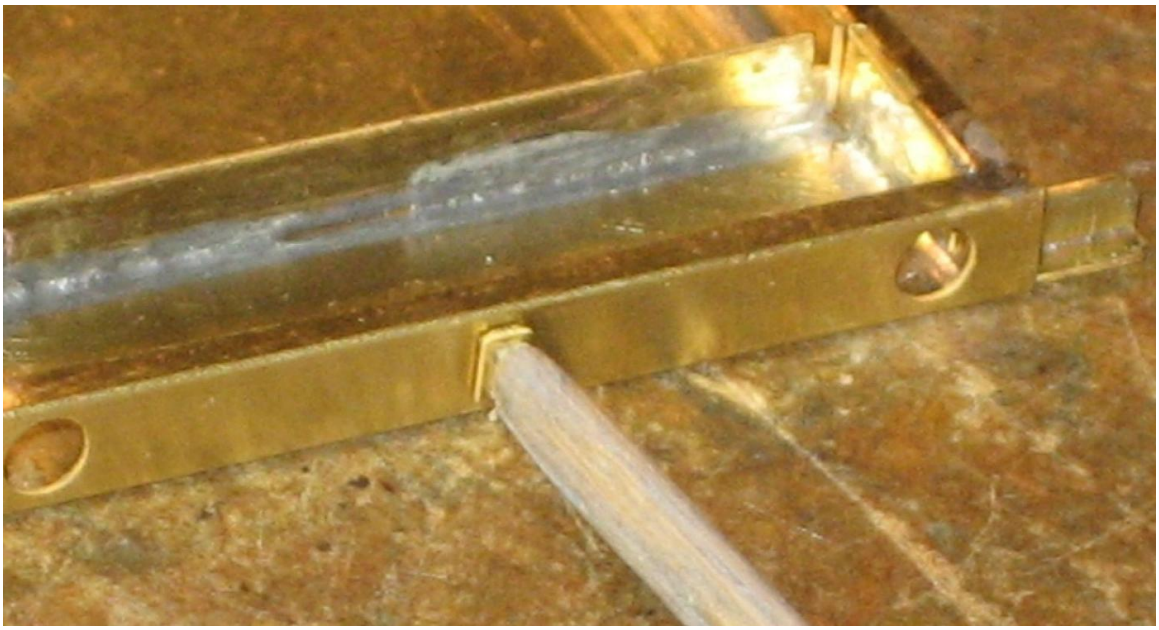
Add the Solebar/Headstock corner plates (8). These should be arranged so that the two straight sides go along the outer edge of the headstock and the inside of the Solebar.

The Solebar/Headstock bracing (17) can also be added now. There are two types one with two sets of rivets and one with three. Check your prototype. These need to be folded into an L using the slots as a guide for the fold. Solder in place in the corners between Solebar and Headstock. The side with one lot of rivets goes against the headstock.



Coupling pocket detail

Now is as good a time as any to fit the coupling pocket detail (18). There are three different types. There is a riveted overlay, a welded overlay and a bracket for use with 2' buffers. Check your prototype. The vast majority should have the riveted type as the underframes were riveted unless it was fitted with 2' buffers when you should use the bracket. Solder in place using the hole for the coupling as a guide. I find the easiest way of doing this is to shape the end of a cocktail stick to fit in the slot. This can be used to align the detail on the headstock and hold it in place while you solder them together



Door Springs

Now is a good time to fit the door springs to prevent the little bracket attached to the top plate from getting damaged. If you haven't already press out the little rivet on the bracket which is located in the centre of each side.

The door springs (11) are designed to locate into the solebar. There are slots in the solebar and solebar detailing overlays which facilitate this. Remove from the fret. Due to an oversight on my part they are approximately 2mm too long so this extra length should be removed form the opposite end to the fold lines. Fold up noting that the fold nearest the rivet detail should be made through 180° with the half etched line on the outside. Bend to shape and solder into position.

Bend over the little bracket attached to the top plate and solder to the door spring.

Spring Stops

There are 6 fabricated spring stops on the solebar detailing (7) fret (see Fig. 2) which can be folded up and then soldered in place. I find a small pair of self closing tweezers good for this. Some Tube wagons had round pattern spring stops. I use 1mm wire for these. I cut almost all the way through the wire with a piercing saw and then solder in place. The cut can then be completed without the joint breaking and filed flat.

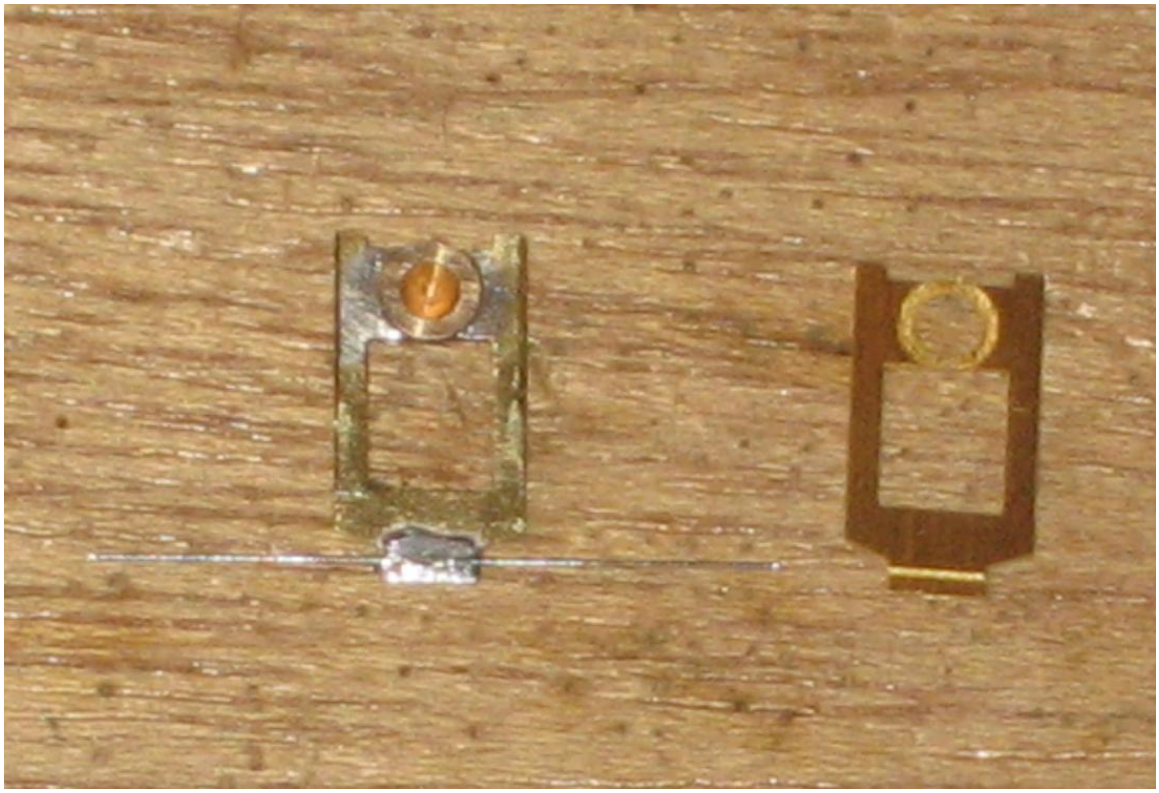
Spring Carriers

The spring carriers (13) 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.

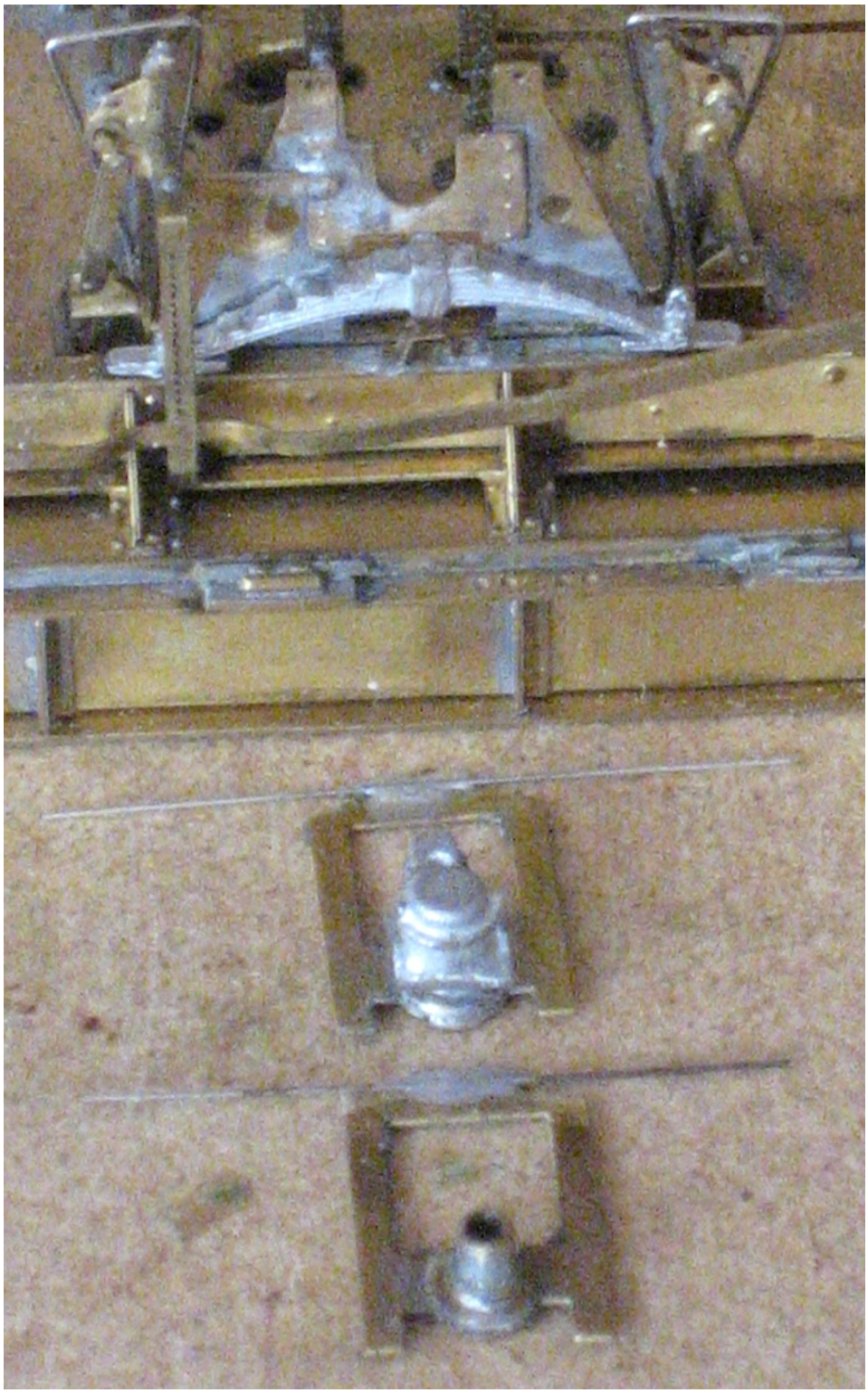
The distance between the backs of the axleguards is 24.5mm. This measurement is wide enough that if you are using pin point axles you shouldn't have to hunt around for bearings that are deep enough but you may find that the carriers need packing out a little to take up any slop. Bearing washers (14) are included for this purpose. There should be a good fit between the axles and the bearings with ideally no sideways movement at all. If using pinpoint axles use a waisted type of bearing to avoid having to remove any more material from the cast axleboxes than is necessary. I have used Exactoscale waisted pin point bearings which are just about perfect for the job with only occasional ones that require packing out.

Due to the removable nature of the axle guards you can easily use Exactoscale parallel axles and bearings if you wish. If doing so then you will need to pack the bearings out on the back of the spring carriers before soldering them in place due to the length of the axle. Use the bearing washers provided.

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 7mm either side of the point where it is attached to the carrier.



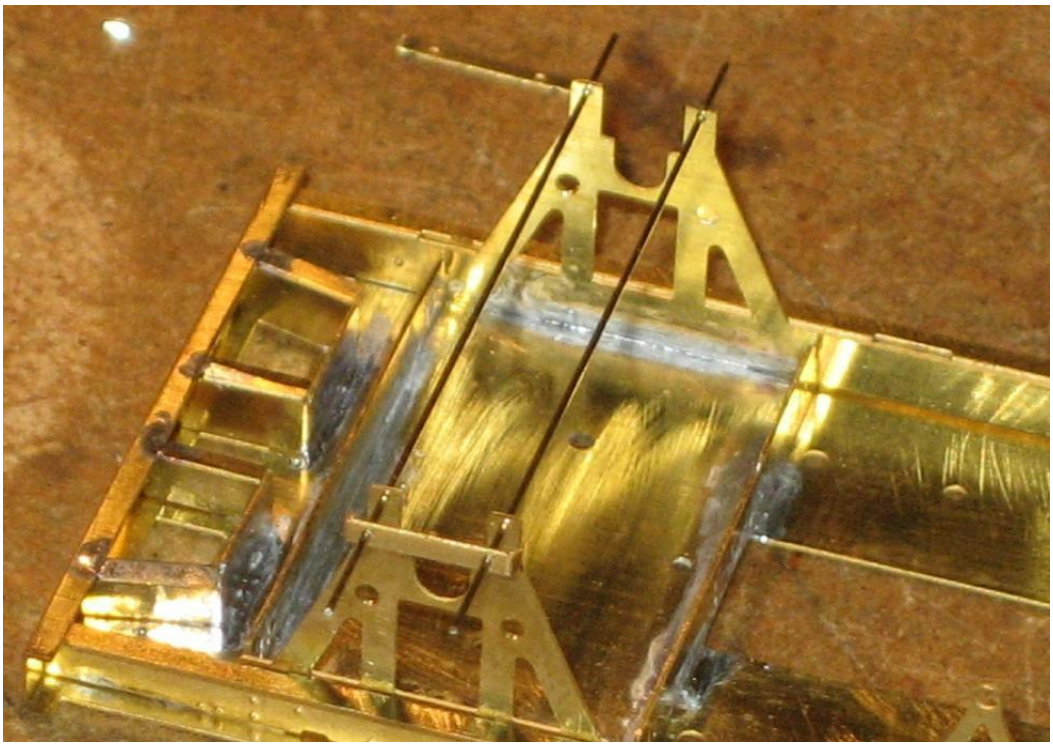
For roller bearing axleboxes I now attach the casting for the roller bearing itself to the axle bearing and have it move with the functional springing. Having removable keeps makes this feasible. For parallel bearings it is a simple case of soldering a short length of 1mm x 1.5mm tube to the face of the bearing. The casting can then be glued in place. Alternatively it can be fixed to a pinpoint bearing. The hole in the casting may need enlarging to do this.



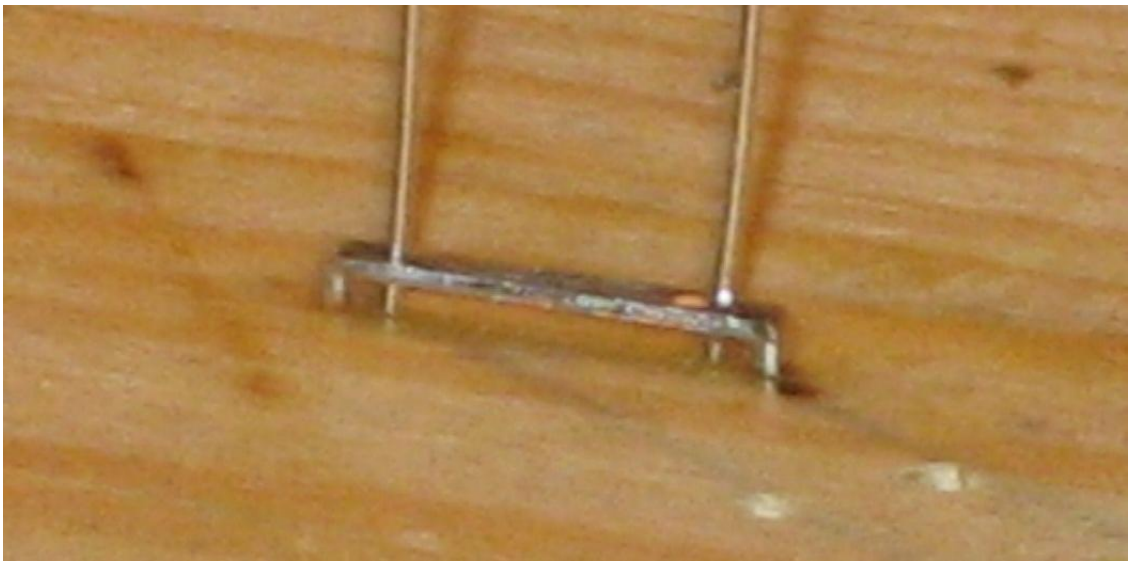
Axle guard ties

The axleguard ties (15) are designed to be removable if you wish in order to allow the wheel sets to be easily dropped out. They can be soldered permanently in place but either way you will need to make sure the holes will accept 0.31mm wire before removing them from the fret.

If you are not planning on making them removable then they can be pinned and soldered to the axleguard. Remove from the fret and fold the ends up. Thread lengths of 0.31mm wire through the axle guard and holes in the axleguard and the corresponding holes on the opposite axleguard. Solder in place. Fit the other axle guard and solder in place. Trim the wire so that it represents bolt heads on the front of the axle guards but extends approximately 0.5mm from the back of the axleguards. These pins will prevent the springs from becoming disengaged form their slots.

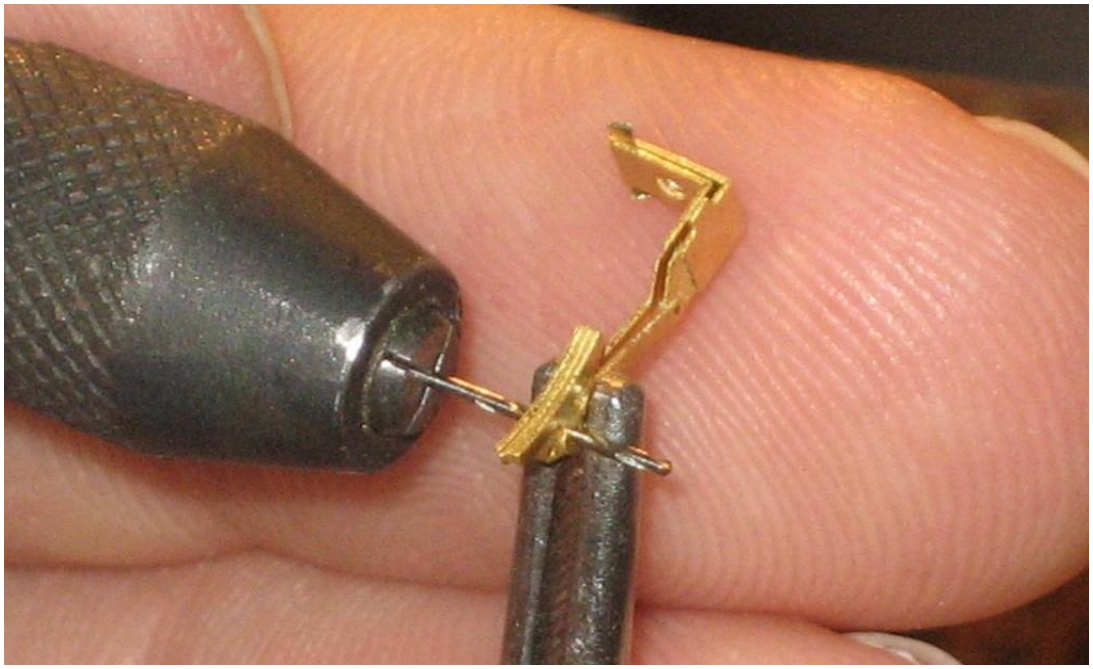


If you want to make them removable to allow the axles to be dropped out then you will need to solder 0.31mm wire ‘pins’ through the holes in the axleguard ties. I find the easiest way of doing this is to use one pair of holes as a jig and drill a pair of 0.3mm holes into a piece of scrap wood. Short lengths of 0.31mm wire can then be threaded through the axle guards locating into the holes in the wood. These can then be soldered in place and filled back to represent bolt heads before folding up the ends. I found it easiest to fold he ends in this order and then quickly reinforce the fold lines with solder before removing the axle guard completely. You will need to make sure there is at least 0.75mm of wire projecting from the back of the axle guards otherwise the spring carriers will be able to fall out of place when everything is assembled. It is also a good idea to leave at least one of the pins in the axleguard ties as long as possible to give you somewhere to hold them when painting. Once the axle guards and the chassis are painted they can be tack glued together on final assembly. The glued joint can be broken and the tie bars removed if you find it necessary to remove the wheels at any point.



Brake Shoes

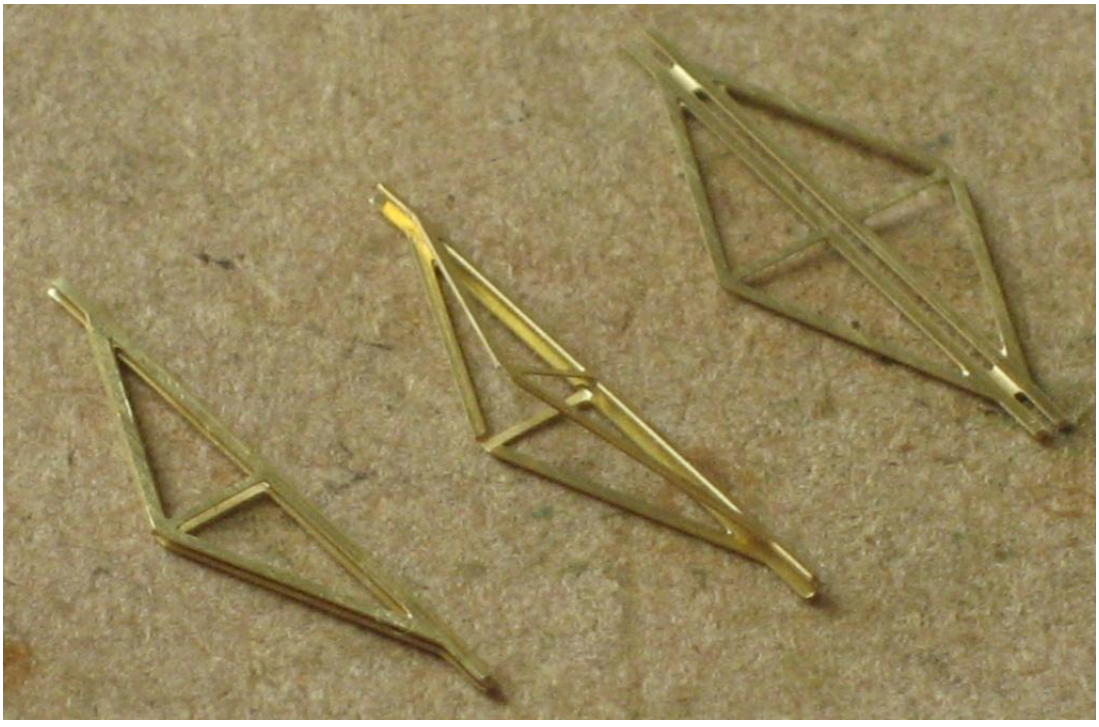
The clasp brakes (12) are designed to be folded up as one piece, soldered together and then tidied up afterwards. If you wish press out the half etched rivets at the top of the brake shoe. I use a drop head rivet press for this with the parts held on one of those ubiquitous green cutting mats. Remove from the fret and fold up. Most of the fold lines are through 90° except for the one between the two plates with the holes in which is through 180° with the fold line on the outside. There are four parts to the brake shoes: Two outer detail parts and two inner shoes. The inner shoe parts needs to be folded through 180° with the fold line on the outside. The four parts of the brake shoes need to be aligned and soldered in place. I do this by putting a 0.5mm drill bit or a suitably sized tapered reamer through the holes for the yolks and clamp the four etched layers together using a pair of self closing tweezers. If you hold the drill in one hand you can rest the base of the tweezers on the workbench leaving one hand free for the soldering iron. It's easier than it sounds, see attached photo. Solder together via the curved face of the shoe. You can now clean up the clasp brake assembly and the shoes in particular.



Put to one side and continue with the rest of the brakegear for the moment.

Yokes

The brake yokes, either for EM/P4 (20) or for OO (21) can be folded up next. Remove your chosen set from the fret and fold them over on themselves. Note that there is a half etched recess on the centre of both sides of the yolks. They should be folded so that these form a slot into which the brakegear linkage will fit. Once folded up solder together and file off the tabs that connected the two sides. Be very careful not to get any solder into the slot in the centre.



You will need to fettle the ends of the yolks to fit the holes in the brake shoes. A little work with a file to make them more rounded should suffice and the holes can always be opened out a little if necessary. It is much easier to make sure all is well now rather than when the clasp brakes are attached to the chassis.

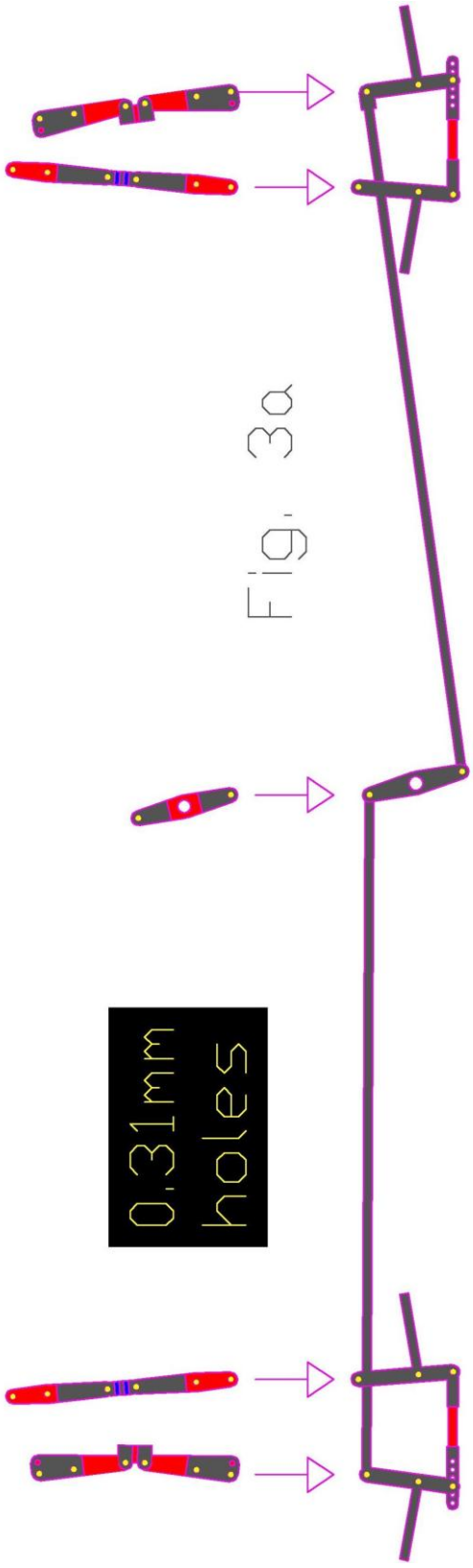


Fig. 3a

Brakegear

Next attention can turn to the brakegear. Check and open out where necessary the holes in the brakegear linkage (16), brake shaft crank overlays (17) and outer clasp brake hanger overlays (18) and inner clasp brake hanger overlays then carefully remove from the fret. Refer to Fig.3a below for hole size details.

Start with the brake shaft crank overlays (11) to the centre of the brakegear linkage. Again use 0.31mm wire to attach the overlays, solder in place then trim to represent bolts. The large hole in the centre for the main brake shaft can now be opened out to accept 0.8mm wire.

Next attach both the outer and inner attach the clasp brake hanger overlays (18 & 19). These fold over the brakegear linkage to form the detail on both sides. You will note that the outer ones are triangular in shape with a long straight edge. The three holes along this long straight edge line up with the three holes at either extreme end of the brakegear linkage (16). Use short lengths of 0.31mm wire to pin everything together. Note that the long angled face of the triangle faces towards middle of the assembly. Solder in place. Repeat for the inner overlays.

Trim the wire so that the middle length on the outer hanger and the top length on the inner hanger extend approximately 2mm either side of the assembly. These will be used to attach the brakegear to the brackets on the chassis. Trim the others to represent bolts. Refer to Fig.3b if in doubt.

Make sure that there are no half etched connecting tags left on the brakegear linkage (this is important or the yolks wont be in the right place). Fit the yolks to the brakegear linkage using the slots on the yolks and tongues on the linkage. Make sure that they are hard up against each other and solder in place.

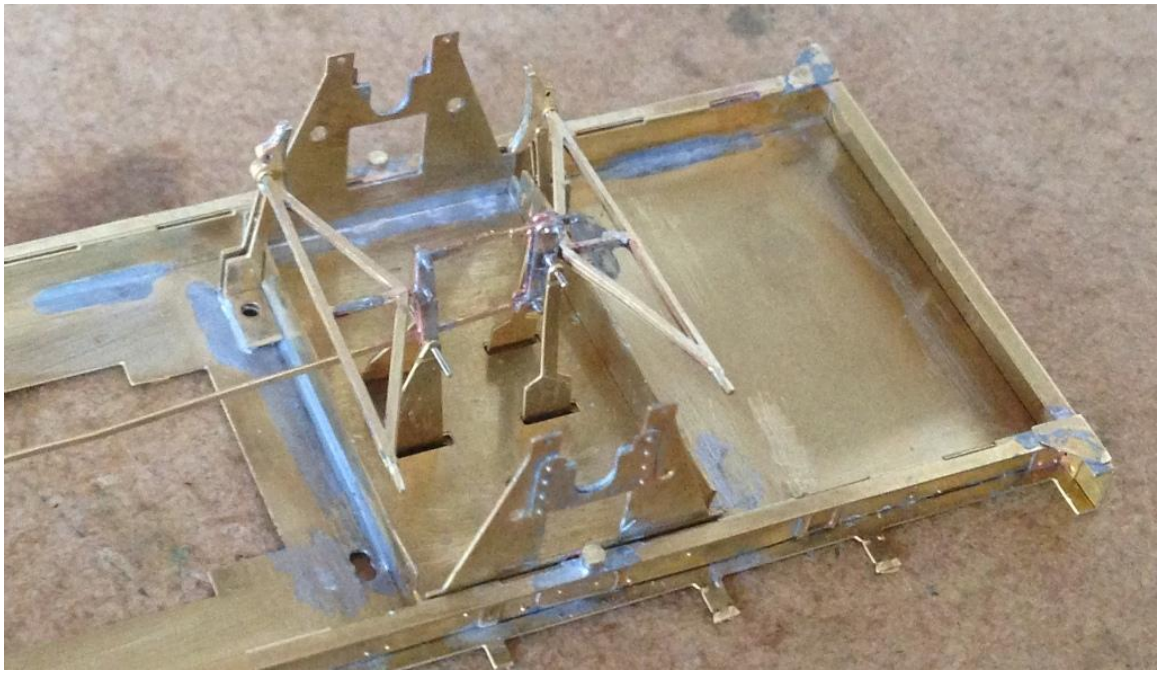
Carefully twist the yolks through 90° as shown in the photo below.

Brakegear assembly

Firstly attach the clasp brakes to one side of the chassis. There are tabs on the clasp brakes that locate into slots in the axleguard assemblies (2). There are two different sets of slots depending on which gauge you are building to. The outer ones are for EM/P4 and the inner ones for OO. The clasp brakes can now be soldered in place on the chassis but only do one side of the wagon at the moment. Make sure that the clasp brakes are hard up against the axleguard assembly. The holes can also be used to help pin the clasp brakes to the chassis top plate when soldering.

Next take the brakegear assembly and attach it to the chassis so that the yolks go through the holes in the brake shoes and the protruding pins in the brakegear linkage engage with the holes in the clasp brake hangers attached to the chassis top plate. See photos below. Note that there is a correct way around in relation to the Morton cam side of the vees. Refer to Fig.1 and 3b for the correct orientation. Solder in place.

Add the remaining clasp brakes and solder in place.

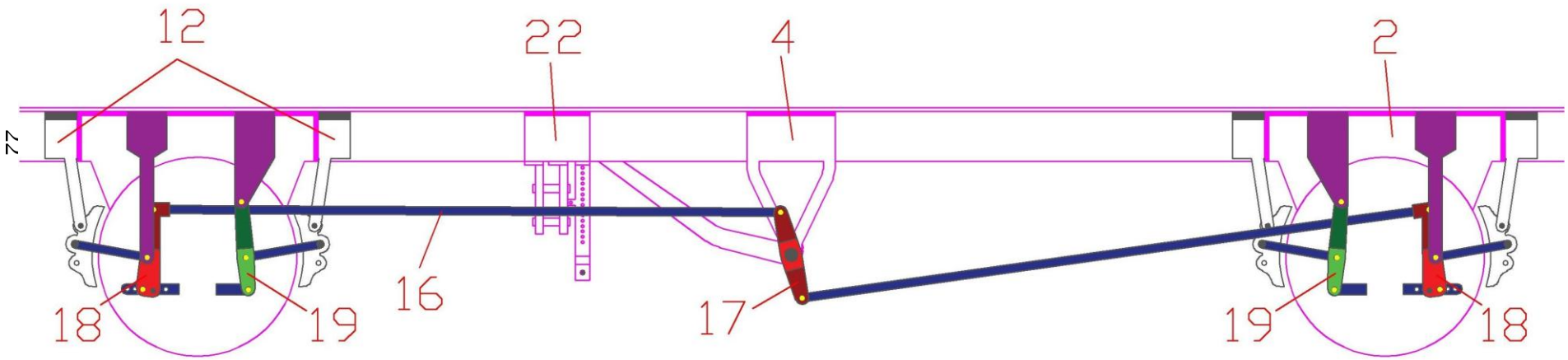


In order to fit the wheels you will need to remove the small section of the brakegear linkage which would be below the axle. This is half etched to make it easier to remove.

Tweak the brake shoes if necessary with the wheels in place.

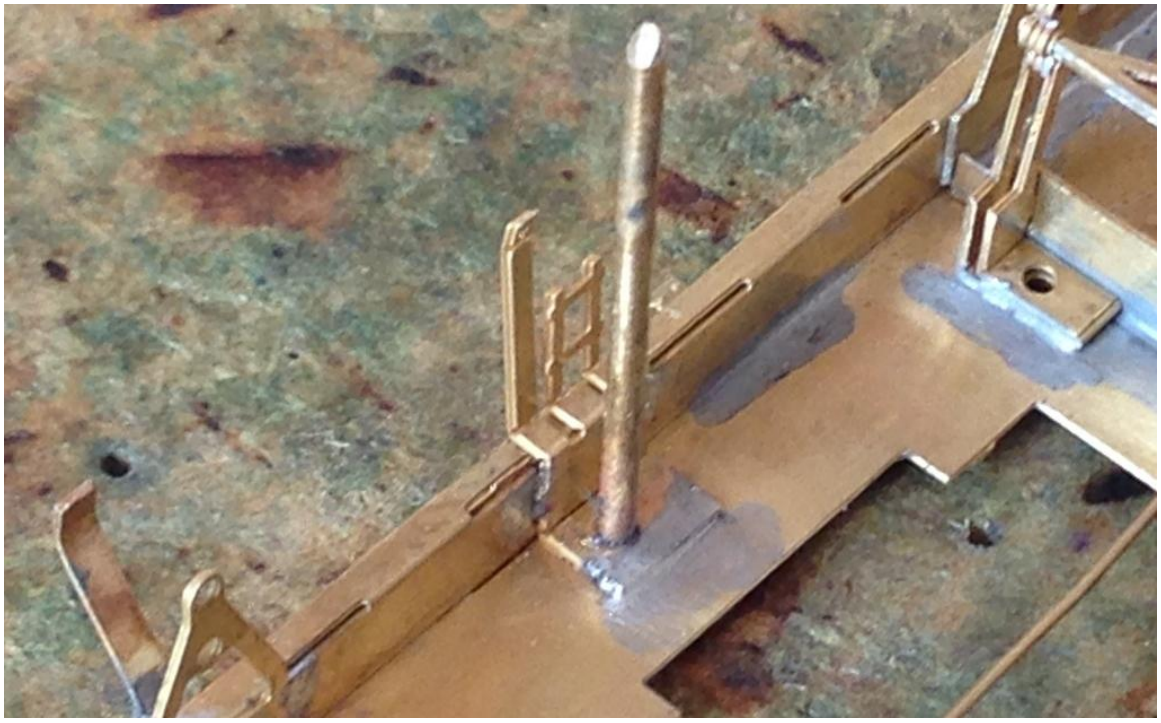
Fig. 3b

0.31mm wire

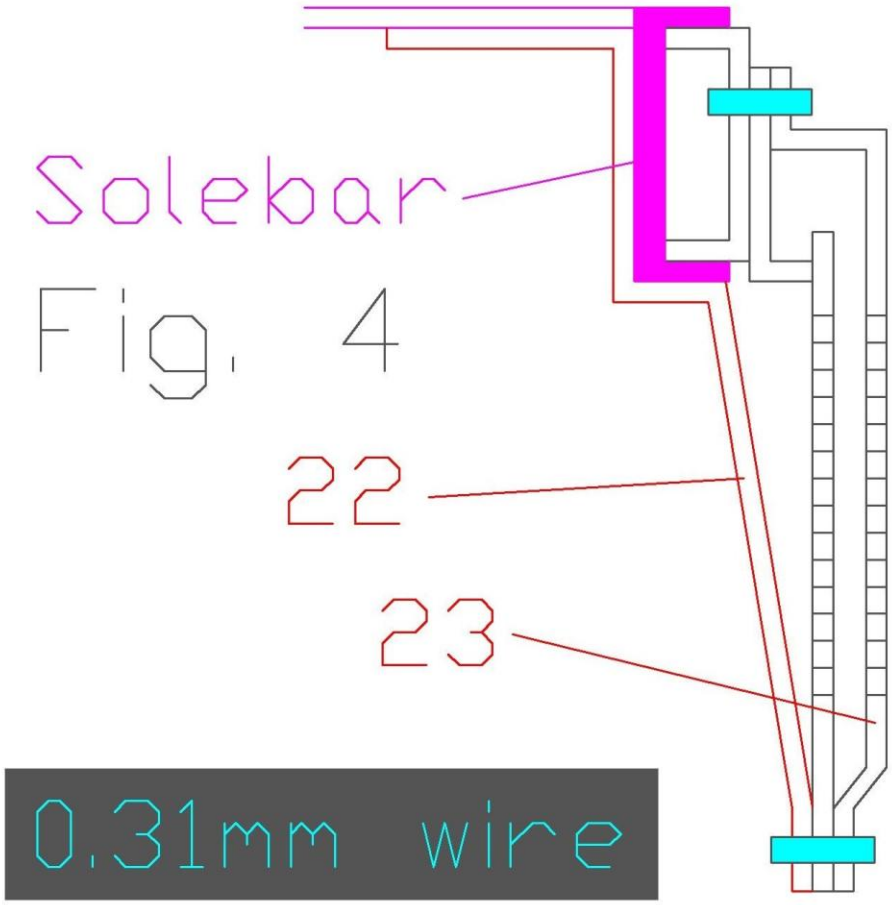


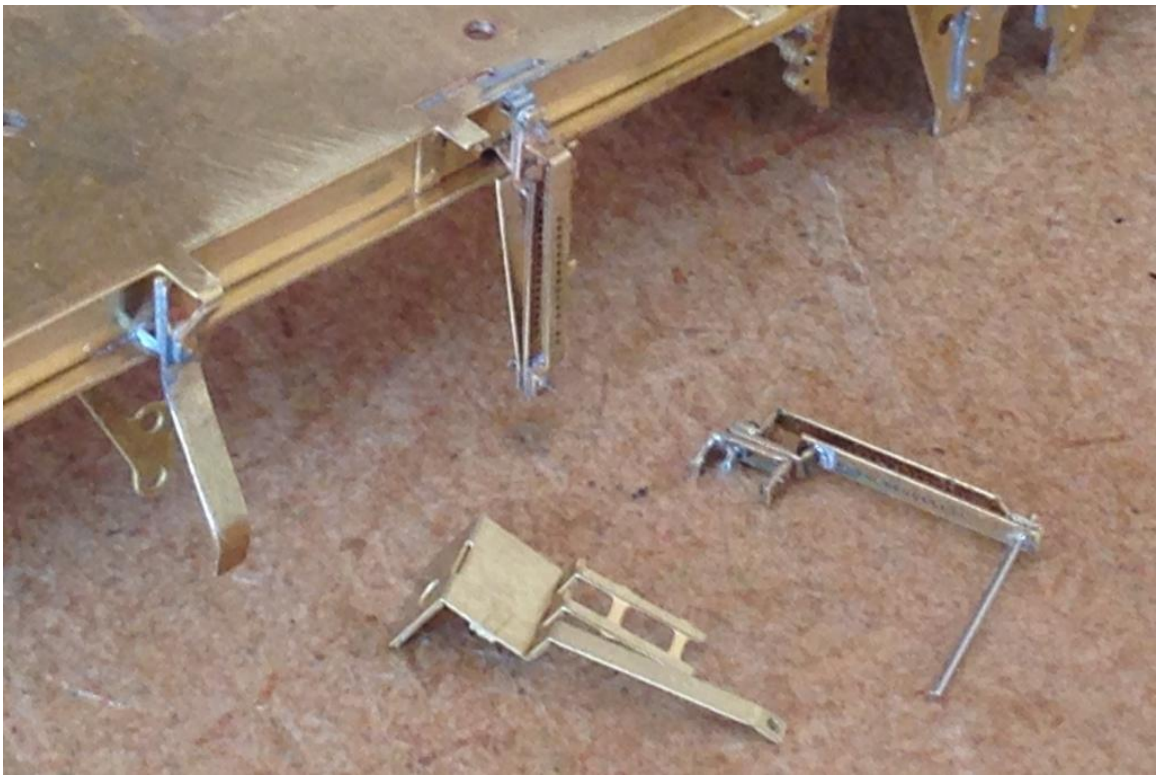
Brake Lever Guards

Make sure the smaller hole in the brake lever guard stay assembly (22) can accept 0.31mm wire and remove from the fret. This part has the shunter's pole ladder which needs to be folded, along with the stay, so that they are in line with the outer edge of the solebar. Use a length of 1mm wire to pin the assemblies to the chassis top plate and solder in place.



Make sure that the holes in the brake lever guard and bracket (23) can accept 0.31mm wire and remove from the fret. Separate the lever guard from the lever guard bracket. Fold the lever guard along with the lever guard bracket referring to Fig. 4 below. Solder the lever guard and bracket together using 0.31mm wire to align them. Trim the wire on both the front and back to represent a bolt. The whole assembly can then be located in the solebar and soldered in place. There are slots in the solebar to receive the lever guard brackets. Press out the half etched rivet on the brake lever guard stays and fold both ends through about 30°. The bottom of the lever guard can then be pinned to the stay using 0.31mm wire and then soldered together.





Brake shaft

Cut a length of 0.8mm wire to form the main brake shaft.

Check that the vacuum cylinder actuators (25) can accept 0.8mm wire. The actuators need to have their half etched rivets pressed out and then folded over. They are designed for the ends to wrap around a 0.6mm piece of wire extending from the vacuum cylinder. These can be fitted along with the brake shaft (0.8mm wire) through the vees. Leave soldering of the actuator until the vacuum cylinder is in place.

Solder the brake shaft in place and trim the ends if necessary.

The vacuum cylinder can be added now or later and then the two halves of the vacuum cylinder actuator soldered together and to the brake shaft.

Brake Levers

Make sure the holes in the brake levers (24) and the cams can accept 0.8mm wire. The levers and cams can then be removed from the fret but note that the small connecting tab between the non-Morton lever and cam should be left intact. Once removed from the fret the connecting tab between the cam and the non-Morton brake lever can be folded through 180° with the fold line on the outside. Solder a short length of 0.8mm wire through the hole in the Morton cam brake lever. This will locate into the top hole on the vee. I use a hole drilled into a piece of scrap wood to aid doing this. Once soldered in place trim the wire and file so the end is flat.

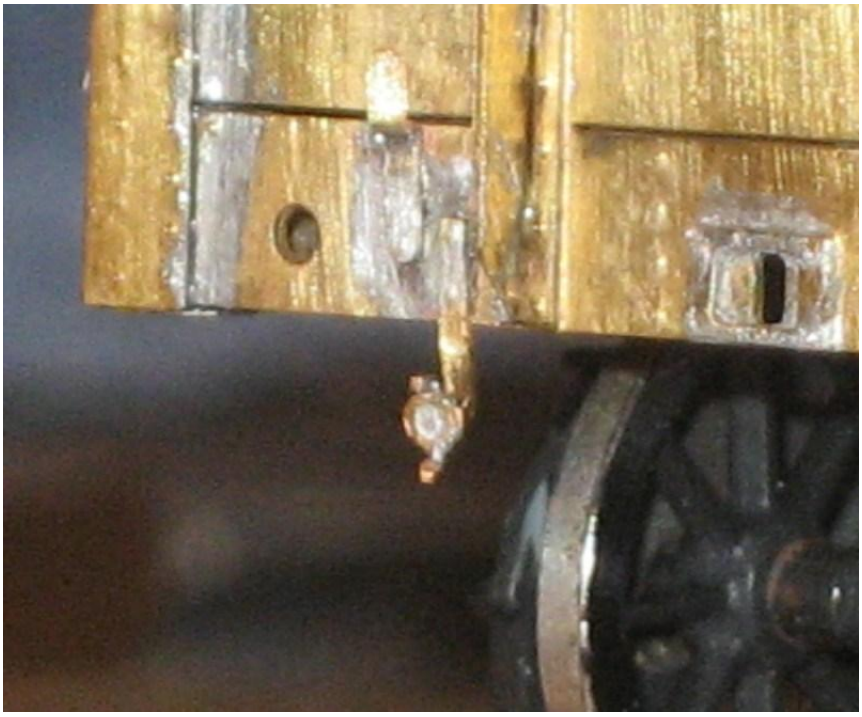
The brake levers then need to be bent up as per the prototype so that they sit on the brake lever guards and then cranked for the handle. Check on the model and adjust until you are happy with the shape. Once you are happy the brake levers can be soldered in place. Solder the Morton cam into place on the brake shaft.

Safety loops

Formers are included on the fret for making safety loops for the yokes from 0.31mm wire. These are marked in yellow on the parts diagram. There were different shapes used, even on the same type of wagon. I have included the shape I think is most appropriate though you could mix and match types depending on your prototype and whether you have the different chassis etches. Once bent to shape they can be soldered to the chassis.

BR swan neck vacuum pipe brackets

There are two BR swan neck vacuum pipe brackets (27) included. These are quite distinctive and come in two parts. There is a bracket which attaches to the solebar and a round head that has ‘tails’ that fold up. Press out the rivets on the bracket and remove from the fret. Twist the base of the bracket through 90° so that the interface with the head faces away from the rivets. This bracket can then be soldered to the back of the head (the side with no half etched areas). It is easiest to do this while the head is still attached to the fret. There is a small slot to help provide a positive location. Once soldered in place the assembly can be removed from the fret and the ‘tails’ on the head folded out. If you’re brave these fold lines can be reinforced by the use of a very small quantity of solder and a very quick soldering iron. Some step soldering might be a good idea but I haven’t encountered many issues with just using 145° solder. These can then be soldered in place on the headstock.



Lamp Irons

Lamp irons (26) are included for fitting to either the wagon body or the headstock if required. Check your prototype.

There are two pairs included, one with half etched holes for pressing out the bolt heads and one with the bolt holes etched out completely. I dislike relying on glued joints for these sorts of things on plastic bodies and so have included these for use with 0.31mm wire pins to provide a more positive location. I have also included a drilling jig which has the correct spacing for drilling holes in plastic bodies. This is the part shaded green in the parts diagram. Use a 0.3mm drill.

If you wish to use the half etched bolt type then press out the rivets whilst still in the fret and then remove and fold up and fix in place

If using the pinned type then check that the holes will accept 0.31mm wire and remove from the fret and fold up. Two short lengths of 0.31mm wire can be soldered in the holes and then the lamp iron glued in place on the body having drilled receiving holes for them. Alternatively simply glue the wire and lamp iron in place at the same time without the solder.

Axleboxes and springs

Now is a good time to fit the cast axle boxes and springs along with the buffers and, if you haven't already, the vacuum cylinder. The back of the axleboxes will of course need slotting to allow the wheel bearings to move with the springs and drop out if making them removable. Some types come with the riveted reinforcing strips for the axlebox guides moulded on. These are for heavy duty types and should be removed if using the riveted overlays (3) before fitting.

Label boards

Label boards (28) are included to detail the ends. I find that if simply glued on they have a tendency to come off so I solder a short length of 0.5mm wire in the centre back of the label board. This goes between the corrugations and provides a more positive location.

Cleats

Later builds had various cleats for lashing ropes to attached to the body. These are included to add detail if required.

Butterfly type rope cleats (29) could be found fixed to the corners of the headstocks and also fixed to the lower edge of the body.

There are two types, those with holes and those without. The cleats attached to the headstock corners were welded on so use the type without holes. For those attached to the body side a similar method to that used to locate the lamp irons using pins is employed. A drilling jig (the area shaded light blue on the parts diagram) is included.

Whilst still attached to the fret, the drilling jig can be used to drill a pair of 0.3mm holes in a piece of wood into which two lengths of 0.31mm wire are inserted. The cleat can be placed onto the two lengths of wire and soldered in place. The bits of wire can be trimmed almost flush on the front before removing them from the wood. You will need about 0.75mm of wire on the back.

The drilling jig can be removed from the fret and folded into an L. This can be used to drill holes in the plastic sides into which the cleats can be glued in place.

Round rope fixing cleats (30) are also included to detail the bodies. Again wire pins are used to provide strength and a positive location.

Make sure that the holes can accept 0.31mm wire. Use the cleats whilst still attached to the jig to drill a series of holes in a piece of scrap wood. Insert short lengths of 0.31mm wire through the cleats and into the holes making sure that the half etched area is facing towards the wood. Solder from the back using a little solder. These can then be tidied up whilst held in a pin vice and the wire filed back on the half etched side to resemble a bolt.

Painting

One of the advantages of having the chassis as a complete unit with solebars and headstocks is that you can paint it separately from the body and then glue the two together afterwards. If using an airbrush or aerosol this means you can prime it and then paint it all black with no masking at all which makes life a little easier.

I now use Halfords grey primer in a tin through an airbrush with cellulose thinners to prime just about everything, including plastic bodies. The primer is synthetic and has no adverse effects on the types of plastics used on RTR railway models and kits. The cellulose thinners used evaporate so quickly that they don't have time to attack the plastic. You can then put your choice of paint over the top including cellulose. Don't use the red oxide in a tin on plastic though as it won't adhere and the paint will just come off.

Notes on wagon bodies and weighting

Tube wagon bodies are long so care should be taken when assembling the Parkside kit so as not to introduce warping. Often bowing in sides and floors is down to the plastic mouldings trying to return to the shape that they were before they were assembled. If there is a bow in the sides or the floor then leave it as it is when assembling. Trying to straighten it out usually ends up with a worse result! Also make sure that the floor is exactly the right size. Often they aren't and this can also result in bowed sides.

The suspension on the underframe is designed to work optimally under a 50g load. There is plenty of room in the underframe to add sufficient lead sheet to bring the wagon up to 50g.

Finally

Thanks must go to the staff of The Buckinghamshire Railway Centre at Quainton for letting me measure up and photograph at close quarters the Tube wagon in their care which has greatly helped in the preparation of these kits.

Last but certainly not least if you haven't come across the wonderful resource for BR wagon photos that is Paul Bartlett's website then I would thoroughly recommend a visit to:
http://paulbartlett.zenfolio.com/

Justin Newitt 2016

Suppliers List

Eileen's Emporium
(brass wire and supplies)
Unit 19.12 Highnam Business Centre
Newent Road
Gloucester
GL2 8DN
UK
www.eileensemporium.com

Lanarkshire Models and Supplies
(buffers and vacuum pipes)
9 Nairn Avenue
Blantyre
G72 9NF
www.lanarkshiremodels.com

C&L Finescale
(Exactoscale wheels, bearings and couplings)
Aran Lodge
Severn Road
Hallen
Bristol
BS10 7RZ
http://www.finescale.org.uk

Masokits
(Screw couplings)
Michael Clark
c/o 27 Crotch Crescent
New Marston
Oxford
OX3 0JL
www.scalefour.org/masokits

MJT
(7 leaf spring castings)
Dart Castings
17 Hurst Close
Staplehurst
Tonbridge
Kent
TN12 0BX
www.dartcastings.co.uk

Wizard Models
(axlebox and castings)
PO Box 70
Barton upon Humber
DN18 5XY
www.wizardmodels.co.uk