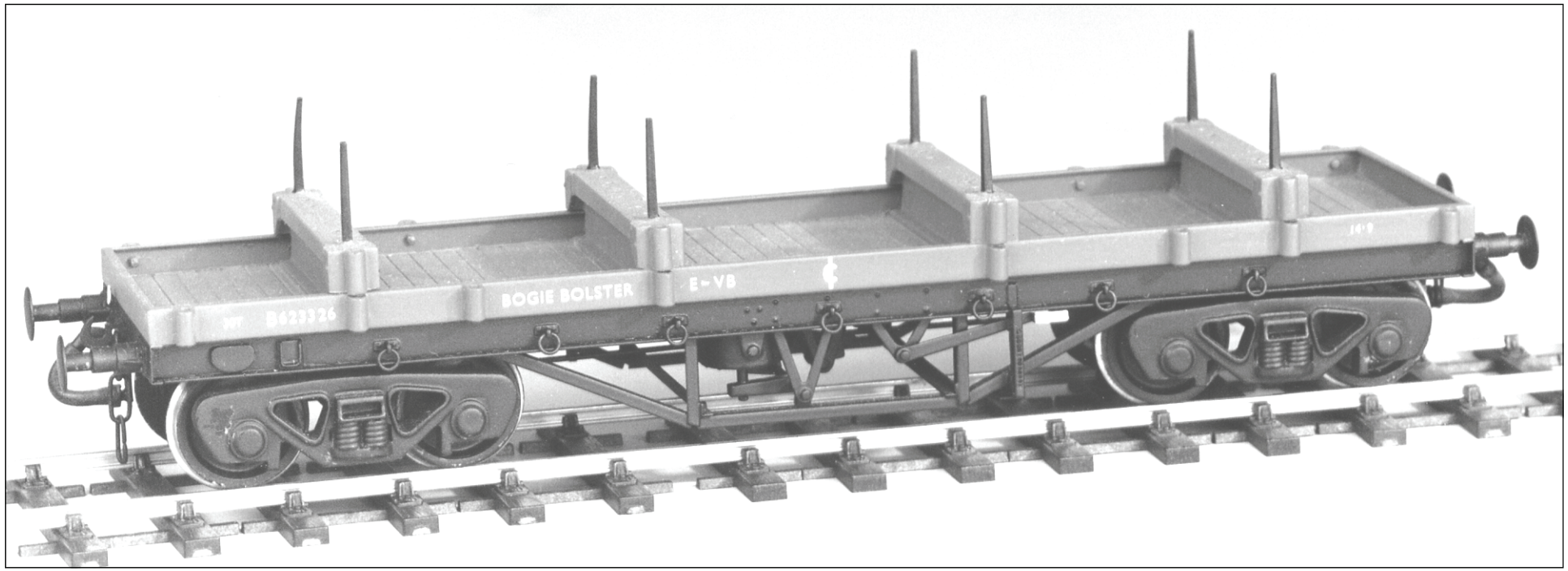
CONNOISSEUR MODELS

British Railways Vacuum Braked Bogie Bolster E



This kit represents the British Railways design of short, 32' long, bogie bolster. 1,200 vacuum braked wagons were built in 1961/62 to diagram No 1/479 and given the code name BOGIE BOLSTER E-VB or TOPS code BEV.

Wheels are required to complete the model. 3'1" three hole disc wheels (Slater's catalogue Number 7122). Temple Road, Matlock Bath, Derbyshire, DE4 3PG, Tel 01629 583993.

Connoisseur Models, 33 Grampian Road, Penfields, Stourbridge, DY8 4UE, Tel 01384 371418

GENERAL INSTRUCTIONS

Please read this section carefully, especially if this is your first etched brass kit. Many modellers fight shy of working in this medium, but the basic skills are relatively easy to acquire. Once you've learned how to form and solder brass, you'll find all kinds of modelling possibilities will open up for you.

Assembling an etched kit involves exactly the same skills that a scratchbuilder uses – the only difference is that the cutting out of the parts is already done for you. Some filing and trimming will, however, be necessary from time to time. Where this is the case, I have highlighted it in the instructions.

The main skill to master is soldering and I would recommend a Weller 40 Watt soldering iron. This has a 6mm diameter, removable copper bit. The bit is shaped like a screwdriver and has a bright coating of solder (tinned). This combination of iron and bit shape is ideal for running fillet joints and has a good reserve of heat, that is necessary for soldering small parts on to large components. Note the shape and condition of a new bit, as this won't last long and will need restoring back to this condition.

It is important to keep the bit clean and in good condition as you work. Get a soldering iron stand containing a damp sponge; old oxidized solder is wiped off on this before picking up fresh solder for each joint. If you haven't made a joint for some time you may find that a hard black crust has formed on the bit. Remove this with a brass wire brush (suede brush) and then feed some multicore solder onto each side of the bit to restore a bright surface (referred to as wetting or tinning the bit). After about 8 hours use you will find the bit is in poor condition, with holes and a ragged edge. File the bit back to its original shape using a hand bastard file and then polish the surfaces on emery cloth. Coat the bit with Fluxite Soldering Paste (traditionally used by plumbers) and this will prevent the bare copper oxidizing as the iron heats up. Then feed multicore solder onto the bit to form a generous coating and leave to bubble away for a couple of minutes before wiping excess off to give a bit almost as good as new.

A smaller Antex 25 Watt iron with a 3.2mm screwdriver bit is very useful for small assemblies and detail work such as handrails, but will have insufficient heat reserve for main assembly work. The Antex has a plated iron bit, after a little use with 145° solder a grey oxide appears on the bit that will prevent you from picking up the solder. Touch the bit to some multicore solder and it will flash over the bit, wetting it so that you can continue picking up 145° solder. I have found no problems with mixing the two solders in this way.

I use 145° solder for virtually all assembly work. I prefer it in wire form, available from Branchlines, but it is also produced in stick form by Carrs. I find that its lower working temperature helps to give a quick clean joint. Limiting the build up of heat in components, which may cause distortion. I find that I can hold parts together with my finger ends and make a joint before heat reaches my fingers or other etched parts drop off.

I use 60/40, tin/lead, fluxed multicore electrical solder (melting point about 190°) mainly to keep the iron bits in good condition. As it gives a slightly stronger joint than 145° I sometimes use it for small spot joints on handrail wire, lamp brackets etc, but still use extra liquid flux.

For all brass and nickel silver work I use Carrs green label liquid flux. You will soon get the feel for how much to use but more problems are caused by too little flux than too much.

Before soldering components together, thoroughly clean both surfaces along the join line with a glass fibre burnishing brush. Using your tweezers or a knife blade etc, hold the parts together in the correct position and, with an old paintbrush, run some flux along the area to be joined. Still keeping the parts correctly aligned, pick up a small quantity of solder on the tip of your iron and carry it to the joint (unlike electrical soldering, when you feed solder into the joint). Hold the iron against the joint just long enough for the solder to flash between the parts. Don't let go of the parts until the solder has cooled – this takes from five to ten seconds. To run a fillet of solder along a joint, wait until the solder flashes between the parts and then pull the molten solder along

the joint with the iron tip. Don't load the iron tip with a lot of extra solder, but work the joint in 1" lengths, bringing in small quantities of solder. Brass is a very forgiving material and if you get something out of alignment, use heat from the iron to desolder the joint before starting again. For complicated assemblies, it is a good idea to only tack solder parts together. You can then make adjustments by desoldering until you are happy with the location of parts and then solder solid.

When you need to laminate two or more layers of brass together, align the parts and carefully clamp them together, either in the vice or by holding them with miniature crocodile clips. Run flux around the edges, and then go around with the soldering iron. Clean up thoroughly afterwards.

To fit small parts and overlays on to a larger assembly, such as strapping to a wagon side, when you need to prevent finely detailed areas such as planking becoming clogged up with solder. Tin the back of the small component first, then hold in place on the model and apply flux. Carefully wipe the tip of your iron on a sponge to remove any solder from it (dry iron), and then touch it against the parts to be joined. After a few seconds you'll see molten solder bubbling from the edges. Remove the iron, still holding the parts in place, and allow the joint to cool. An alternative is to use solder paint (I would recommend Carrs 188 solder paste). As the name suggests, this is a flux and solder in one. Simply apply a thin coat of solder paint to the back of the component instead of tinning. Still apply a small amount of liquid flux before you solder the part into place.

Any surplus solder should be removed using a craft knife, I find No 10 curved scalpel blades ideal, then burnish clean with a glass fibre brush. With practice, you'll learn how to use the minimum amount of solder to do the job. Flux is corrosive so, after each soldering session, give your model a good scrub with washing up liquid or Jif. After a day or two, any remaining flux residues will show as a green film, which should be washed away.

To cut parts from the fret, use a sharp Stanley knife on a piece of hardboard or a pointed scalpel blade on a block of softwood. Remove tags and burrs with a fine file.

Three-dimensional parts are formed by folding. On an etched brass kit, the fold lines are normally half-etched on the inside of the fold. You'll be able to fold most parts using smooth-jawed pliers. For longer parts folding bars are desirable.

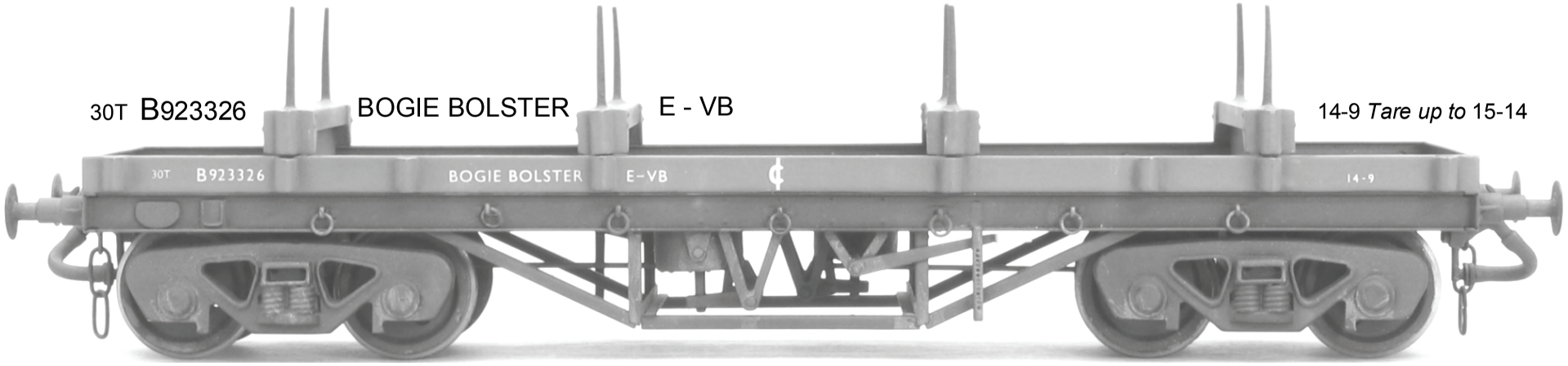
Other useful tools include a bench vice, a good pair of tweezers, a set of Swiss files (get a full set of cheap ones and then buy quality replacements for the three that you use the most), a pin vice with a selection of drills from 0.5mm to 2.1mm plus a few larger sizes that you use regularly (2.6mm for axle bearings etc), some square-nosed pliers and some very pointed-nosed ones, preferably with smooth jaws. Buy cheap tools first and duplicate the most used ones with quality.

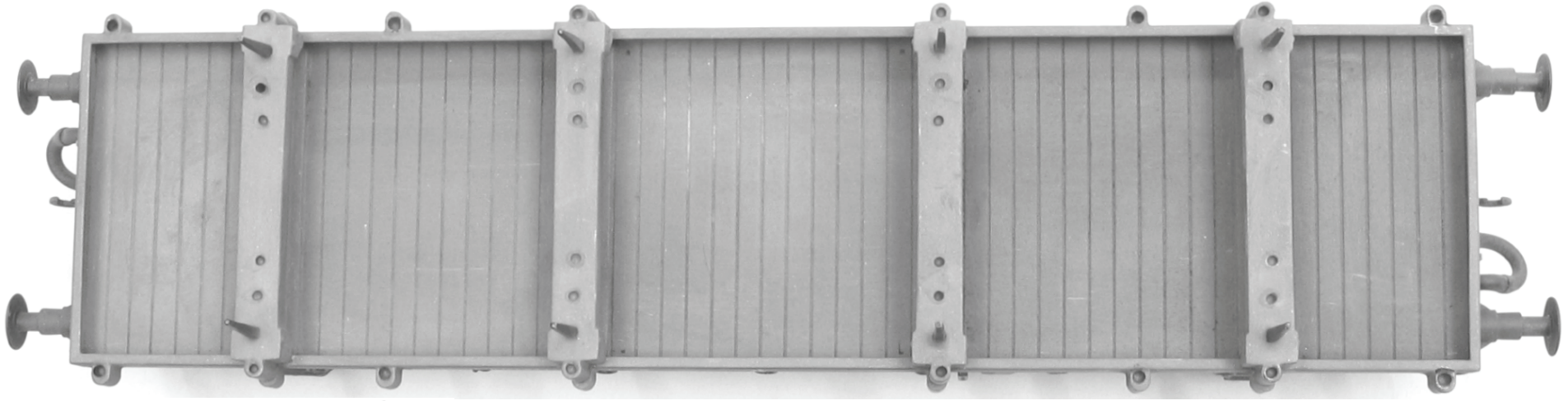
Try to complete all high-temperature soldering before attaching any of the cast whitemetal parts. These can be attached with two-part epoxy resin such as Devcon or Araldite Rapid. Ensure the surfaces to be glued are clean and free of grease.

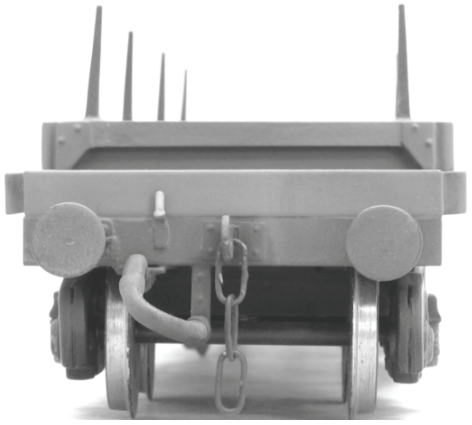
A better alternative is to solder your white metal castings using Carrs 70 degree low melt solder and Carrs red label white metal flux. The iron should be run at a much lower heat so that you do not melt the castings. I have a domestic light dimmer switch and plug socket fixed to a piece of wood, wired up with a lead and 3 amp mains plug to the input side of the dimmer switch and the output of the dimmer switch into the plug socket (remember to continue the earth). Plug your 40 Watt iron (25 Watt iron won't work) with a clean and freshly tinned bit into this and experiment with adjusting the switch until you find the range of temperature at which the solder melts, but a scrap casting does not. **Note** as the iron is running at a lower voltage it will take longer to heat up, so when you think the adjustment is correct do check a few minutes later on another scrap casting to see that it doesn't melt. Then scribe a mark on the switch knob to indicate this position.

When attaching white metal fittings to brass the surface of the brass must be tinned with 145° solder, to allow the solder to grip. The surface of the casting at the joint should be burnished bright. The casting can then be soldered into place with 70° solder and fillets of solder run into any gaps with no risk of melting the casting.

BRITISH RAILWAYS BEV BOGIE BOLSTER E VACUUM BRAKED





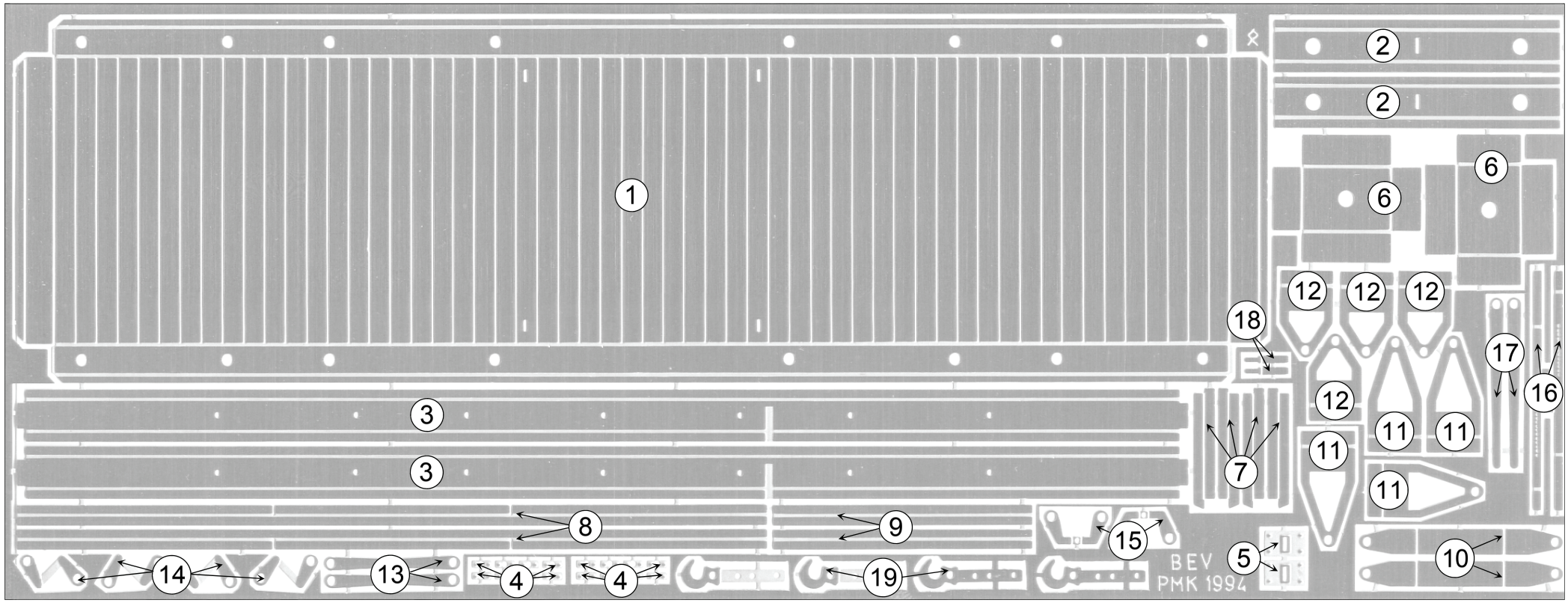


I have tried to reproduce these photographs at scale size so that they will provide assistance in positioning lettering and components.

Livery. Bodywork including metalwork of bolsters-Bauxite. Wooden tops of bolsters-dirty wood. Solebars, truss rods, buffer beams and bogies-black. Floor-dirty wood. Brake lever end and lettering-white. Running numbers B923300-B924399, B924800-B924899.

Transfers for lettering are available from the Historical Model Railway Society, 8 Gilpin Green, Harpenden, Herts, AL5 5NR. You will require sheet number 25, BR revenue wagons. They are also stocked by some specialist model shops. The centreline symbol is not included on the transfer sheet but I made it up using a C and I from another sheet of transfers that I had in the scrap box.

British Railways Bogie Bolster E Etched Parts Identification and Suggested Assembly Order

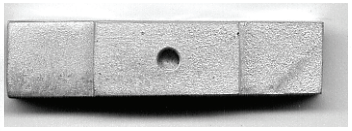


Casting Identification and Parts Check List

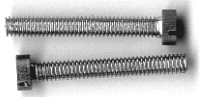
1 X 8” length of 1.6mm brass rod, 1 X 10” length of 0.9mm brass wire, 1 X 6” length of spring steel wire (may be tarnished black), 2 X 6” lengths of 24 SWG tinned soft copper wire. As the mould must be run four times for a full set you should find extras of some small castings.


4 X Bolsters


4 X Bogie Side Frames


2 X Bogie Stretchers

2 X 6BA Screws

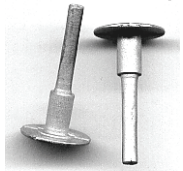

2 X 6BA Nuts

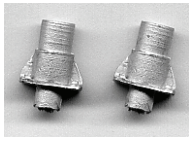

14 X Split pins


Vacuum Pipe Components.
2 X Dummy support.
2 X Buffer beam top of pipe.
2 X Rubber sleeve.
2 X End of pipe coupling

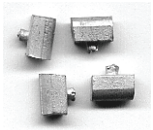

2 X 6BA Washers

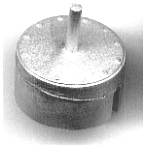

2 X Springs


4 X Buffer Heads/Shanks


4 X Buffer Bodies

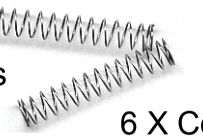

4 X Buffer Retaining Collars


16 X Side Pockets

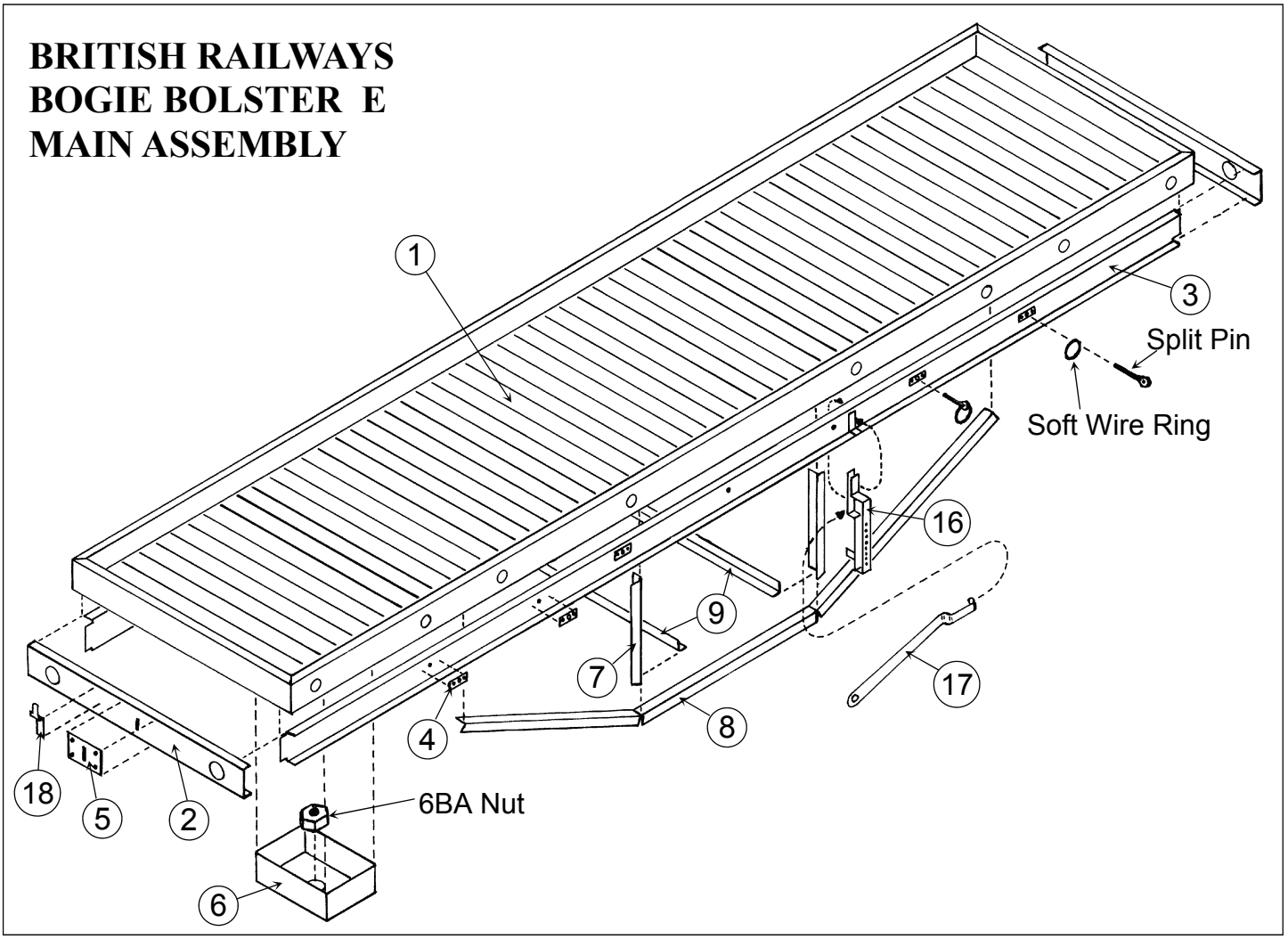

2 X Vacuum Cylinders

8 X Stanchions


2 X Number plates and label clips




6 X Coupling Links



British Railways Bogie Bolster E Assembly instructions

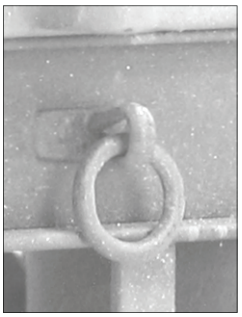
1. Using bending bars fold up the main body (part 1). The suggested order of folding being the top lips of the sides first, then the main sides, then the top lip of the ends and finally the ends. For the last fold of the ends you will not be able to use the bending bars so place the main body on a flat surface and place a piece of square off cut of 2”X1” wood hard down inside the floor. The ends can then be folded up using finger pressure, the wood ensuring a 90° fold. Ensure that all is square and then run a fillet of solder into each corner.

Even with bending bars the long folds can be a little tricky. Clamp the etch into the bending bars as tightly as you can and then clamp one end of the bending bars in the jaws of your vice. Make a bend through about 30° for 1/4 of the length of the side (about the length that is supported by the vice jaws). Then move the bending bars along and re-clamp in the vice jaws to bend the next 1/4 of the side through 30°. Work along to the other end and then work back forming the bend through 60° and then 90°. Stroking along the bend with a block of wood or gently tapping the wood block with a hammer can correct any slight distortion.

My vice is a record No3 and is deep enough to take the floor as I make the second bend on the side. But if you are not able to use your vice for this bend you may find it helpful to deepen the fold line by pushing a triangular file up it until a faint witness mark appears on the other side of the brass. This should reduce the amount of pressure required to make the bend and you should manage without the bending bars being supported in the vice. If you have done this you may wish to reinforce the fold by running a small fillet of solder between the plank ends and the side. Solder all four corners and dress with a file to give a crisp square corner.

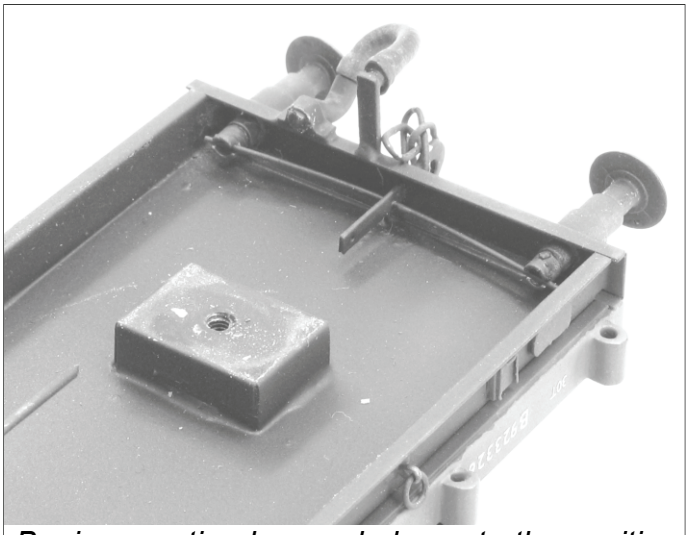
2. Fold the top and bottom of the buffer beams (parts 2) through 90° and then fit to the underside of the body flush with the ends. Emboss bolt heads then fold the top and bottom of the solebars (parts 3) through 90°. Again use bending bars and work the bend in sections. Then fit the lashing ring plates (parts 4) so that the centre hole in them corresponds with the holes on the solebar.

The lashing rings that fit into the holes in the plates on the solebars are represented by soft wire rings and split pins. Wind the soft tinned copper wire around a 2.5mm drill shank to form a tight coil (like a spring). Using flush cutting side cutters snip into the coil to make the individual rings. Straighten up each ring with long nosed pliers and then close each ring with a spot of 60/40 solder. Thread each ring onto a split pin and then gently squeeze each head closed again. Thread each split pin through the hole in the solebar and then splay out each leg of the split pin through 90°. This should hold the split pin firmly and allow you to set all the split pin heads vertical in the solebar. Turn the solebar upside down so that the rings hang down freely and spot solder from the back of the solebar the split pins into the holes. Snip off the legs of the split pins and with a file dress the remainder flush with the solebar back. You should now have separate moving lashing rings to secure a wagon load too and impress your friends.



Now fit the solebars to the underside of the main body. There are etched dotted lines to give a guide for positioning the back edge of the solebars and you may have to file the ends slightly to achieve a snug fit between the buffer beams.

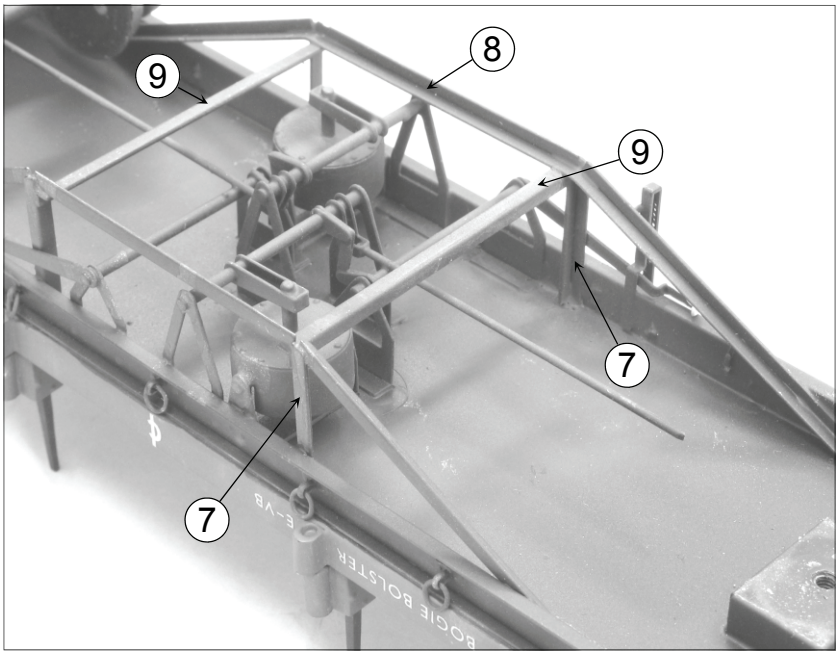
3. Fit the coupling plates (parts 5) to the buffer beams so that the coupling slot corresponds with the slot in the buffer beam but ensure that the slot remains free of solder. Fold up the bogie mounting boxes (parts 6) and solder the corner joints. Then solder a nut over the hole on the inside of each box. This is best done by first polishing the six sides of each nut with a flat file. Then lock each nut into place with a screw that has a washer between the screw head and the outside face of the bearing plate. If you put a spot of light oil onto the screw thread this will prevent solder creeping in and locking everything solid. Now solder the nut into place using a generous amount of solder so that the solder flows all around the nut and part way up each of the six sides.

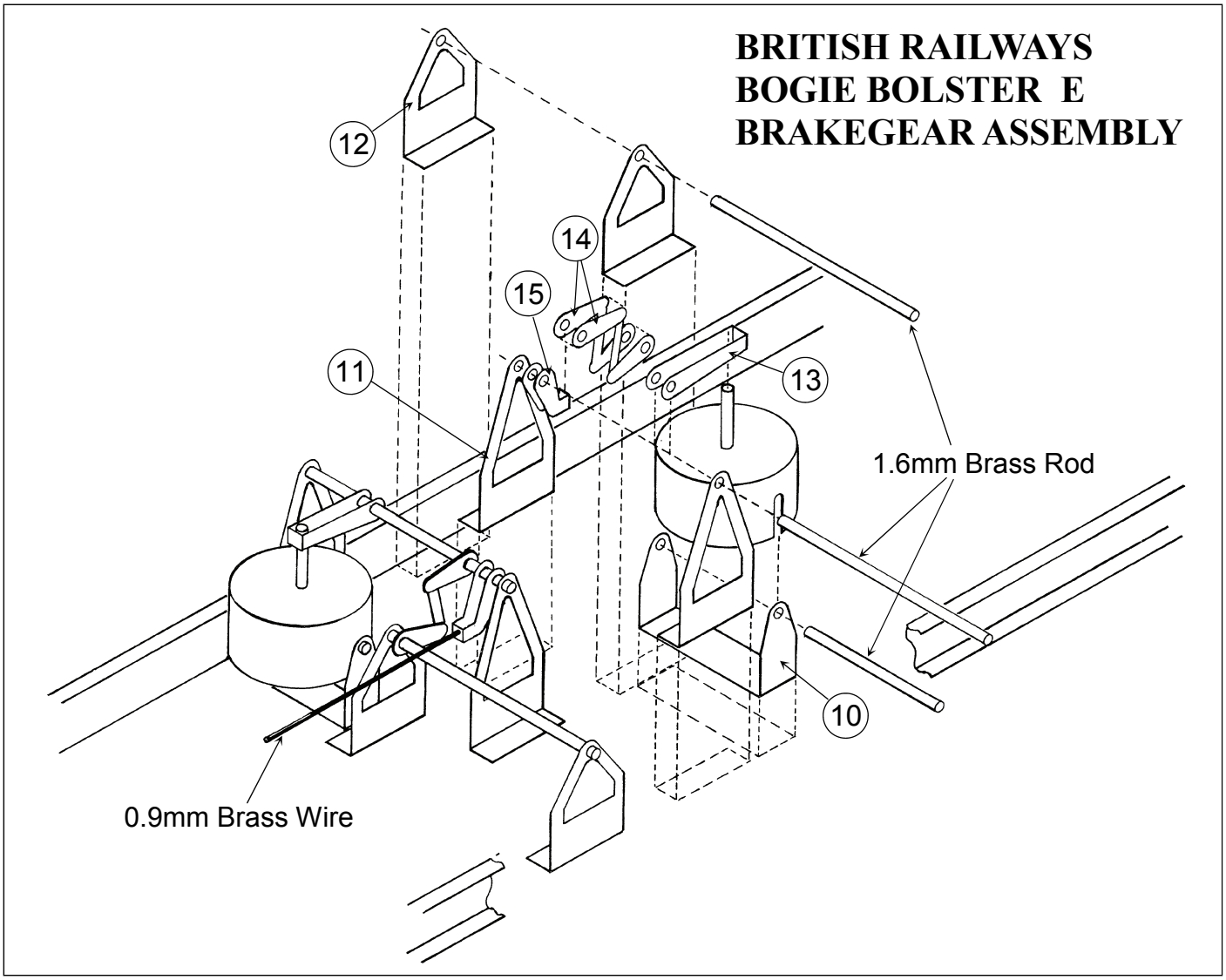


Bogie mounting box and also note the position of solebars in relation to buffer beam

Then solder the mounting boxes to the underside of the floor (check by eye that the box is sitting square and flat) locating into the etched slots and noting that there are etched centreline marks.

4. Fold into L section the truss rod queen posts (parts 7) and locate the tops into slots in underside of body. Check that they are square and then solder solid to the backs of the solebars. Fold up truss rods (parts 8) and solder centre part between queen posts. Bend up outer sections and solder to back of solebar. Fold up truss rod cross members (parts 9) and solder between queen posts across wagon so L rests on truss rods.

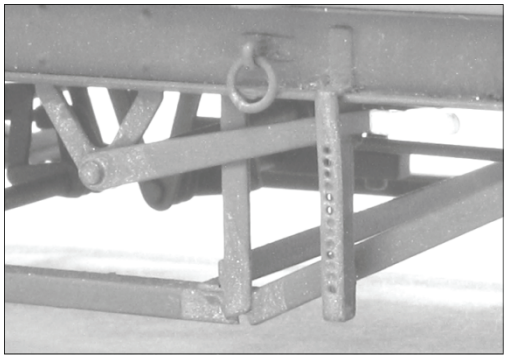




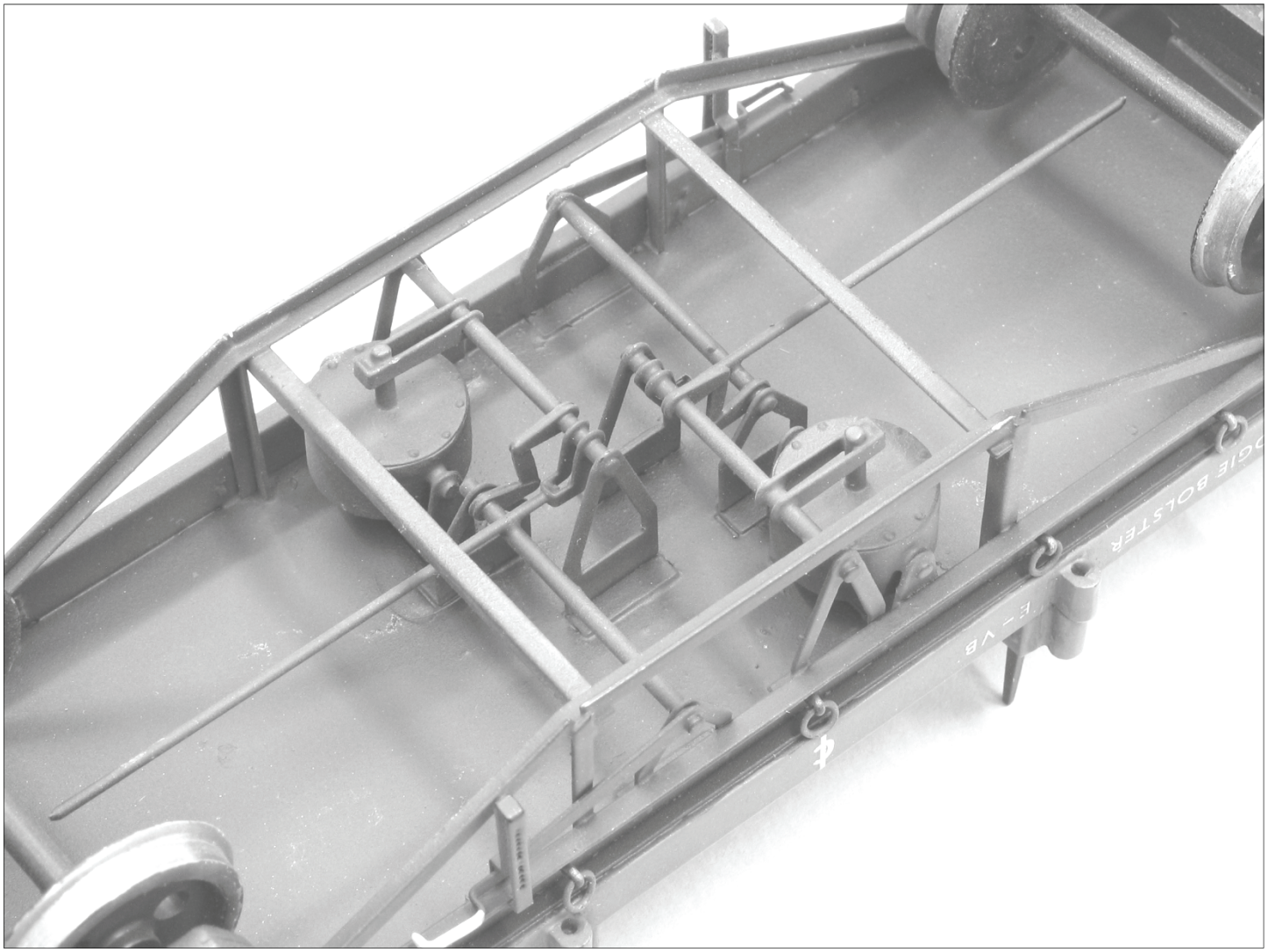
5. Because the brake gear is compact it looks a little confusing but once you have the parts in your fingers and start assembling them it becomes more obvious. The drawing and photographs illustrate the assembly better than written words so study these in conjunction with the following notes.

Fold up the vacuum cylinder supports (parts 10) and solder to the underside of the floor locating on top of the etched positioning marks (also note marks for positioning the bases of the vee hangers). Fit a piece of 1.6mm brass rod through supports to provide a mounting for the vacuum cylinder. When fitting all the brass rods I prefer to square off one end with a file and then thread it through the holes also threading any cranks or linkages onto it. I then solder the squared off end so that the rod projects through by about 1mm. I then cut the other end to length with side cutters and dress this end square before soldering. The cranks and linkages can be left to swing loose until they are required to be soldered into position as construction progresses. The vacuum cylinders will be fitted last with their position and angle being determined by the linkage part 13.

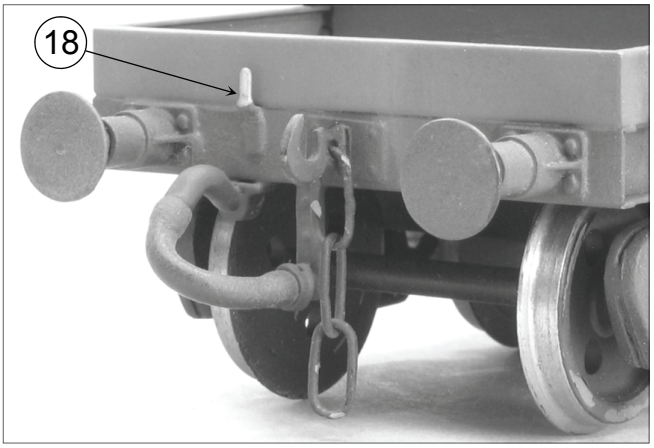
Fold up the vee hangers (parts 11 and 12) and fit to the underside of the floor. With reference to the drawing make up brake gear using (parts 13,14, 15 and brass rod). Fit a length of 0.9mm brass wire to run from the operating crank part 15 to about the centre of the bogie. The bogie end of this wire is not fixed to anything.



Fold up brake lever pin guides (part 16). I reinforce each fold with a spot of 60/40 solder and then fit top into half etched rebate in solebar. There is also a fold round tag towards the bottom that is spot soldered to the truss rod. Form up brake levers (parts 17) pass handle end through pin guide and fit bottom end over brass rod. Solder into place at rod and pin guide.

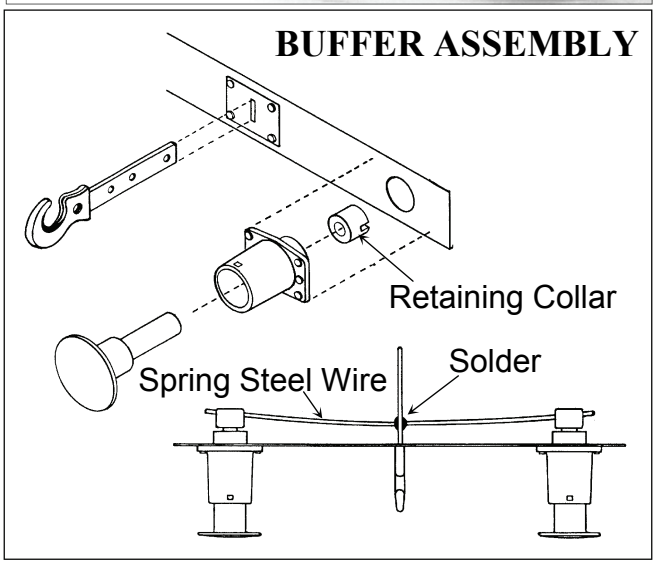


6. Fold up and fit lamp brackets (parts 18) to buffer beams. Now laminate together both halves of the coupling hooks (parts 19) and make up the links. I close up the links by holding the curved end in the jaws of a pair of round-nosed pliers in one hand and squeeze the flat parts of the link parallel with long-nosed pliers held in the other hand. Once you have six even-shaped closed links, you can open each one slightly and thread three together. The last link passes through the hole in the coupling hook. I reinforce the joint of each link with a spot of 60/40 solder.

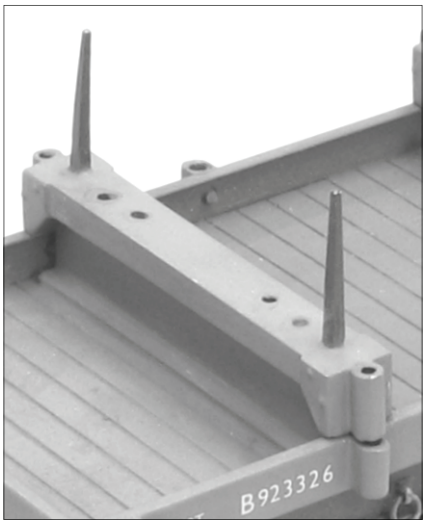


Fit buffer heads/shanks into the bodies and check that they will depress fully and turn within the body freely. You may have to open the holes with a drill or dress the shank with a file to achieve this. Once happy fit a retaining collar onto the back of the shank so that the slot is level with the end of the shank. Open out the holes in the buffer beams and fit the buffers.

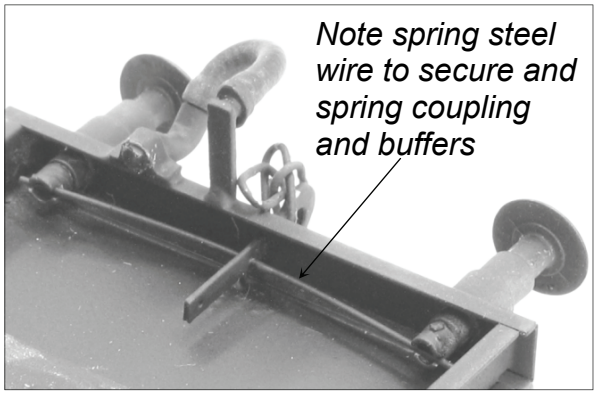
Pass a coupling hook through the slot in the headstocks and retain it with a length of spring wire (make sure that the ends of this wire don't jamb on the solebars). Polish the centre of this wire with emery cloth first so that you can solder it to the coupling hook shank once you are happy that the buffers spring freely.

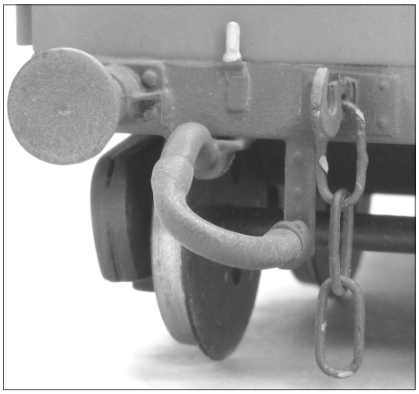


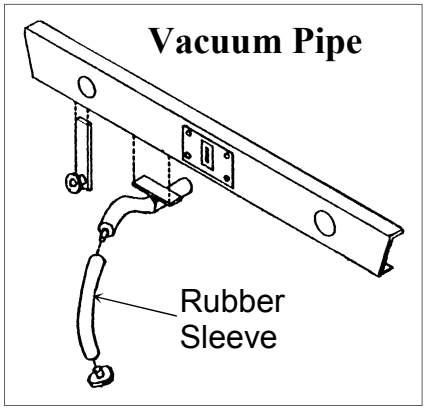
7. Fit cast side pockets to the sides of the wagon. Solder these firmly into place using plenty of low melt solder and then clean them up and blend them in to the wagon side using an old file. With them solidly in place you can then drill into them from the top to deepen the holes if required. The bolsters were movable on the prototype wagon and located into these pockets. The photos show the general position for most loads.



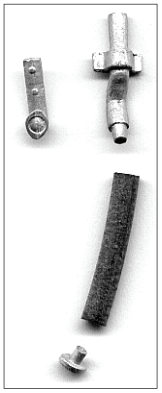
Clean up the cast bolsters. These are a large casting that tend to flash and the mould part line runs along the top of the bolster. Dress the top flat with a old file and then drill out the stanchion holes. Locate the two side pegs into the side pockets (pegs may require a little filing) and solder the bottom of the bolsters to the wagon floor. Then fit the eight cast stanchions by soldering solidly at the base. Again these were movable to suite the load being carried. I find the cast stanchions very durable they tend to get bent a bit just like the prototype without getting snapped off but if you wish you could replace then with square section brass.



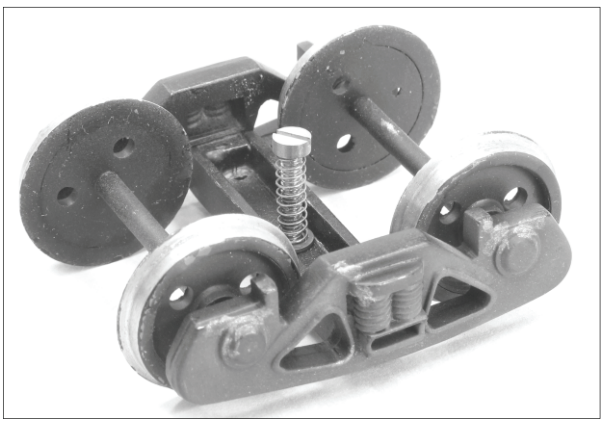




8. Fit the vacuum pipe castings. Solder the top of pipe and hose support (known as the dummy) casting to the buffer beam. Push the end of pipe coupling casting into the rubber sleeve and then push the sleeve onto the top of pipe casting. You can then leave the pipe hanging down (this was the case in some photos I looked at) or you can secure the end of the pipe to the dummy with a spot of low melt solder so that it is secured as required by good railway practice. There are also castings for wagon number plate and label clip.

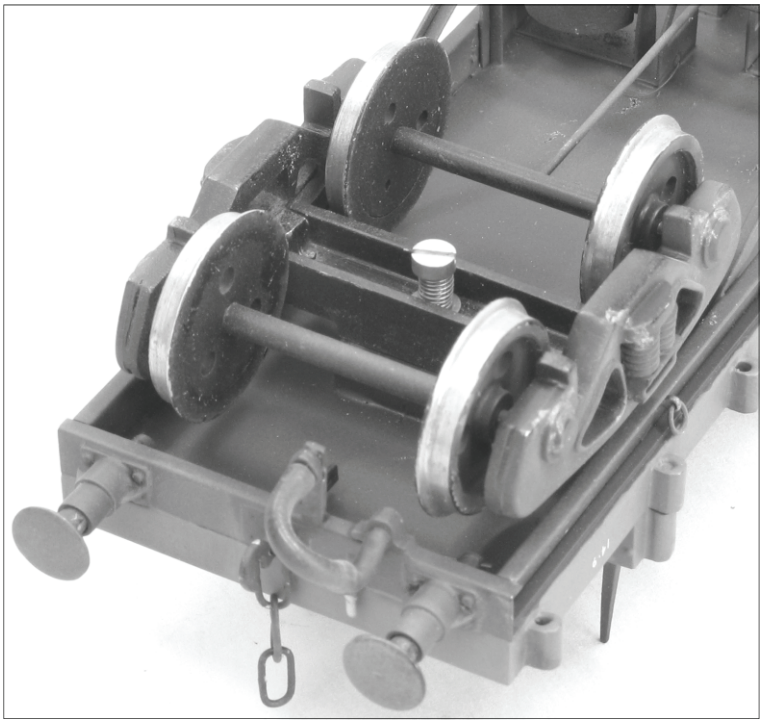


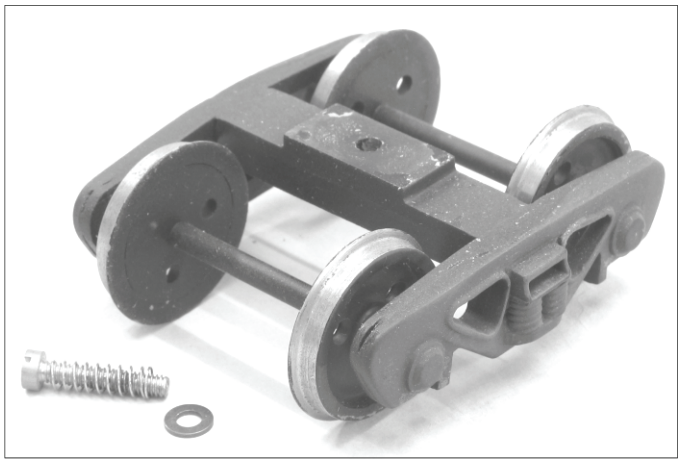
9. Make up the bogies. Again these are large castings that tend to flash so a little cleaning up of the part line and side frame cut-outs will be rewarded by improved appearance. The holes in the side frames that the brass axle bearings fit into are formed by small rubber pegs in the mould. These tend to flex as the metal flows into the mould cavity and you will probably find that the hole is not quite square to the back of the side frame. Hold the bogie side frame square on a flat surface and drill the hole out with a 2.7mm drill in a hand held pin chuck. By putting a gentle sideways pressure on as you drill out the hole you will be able to square it up. If you then fit the axle bearings into the slightly oversize holes with a blob of Evostick. As this takes a little time to set you can assemble the bogie side frames around the wheel sets and then solder the stretcher into place. Then leave the assembled bogie on a flat surface for the glue to set and this should give you a pair of square free running bogies.



The bogies are mounted using 6BA screws. Fit a spring and washer onto the screw shank so that the bogie stretcher will be pressed against the etched mounting box and this will help keep the body stable as the wagon is running but still allow the bogies to tilt slightly to follow any irregularities in your track work. It may be necessary to cut off some of the screw thread to achieve the optimum length.

When the wagon is painted and you are happy with its running you may wish to smear some Evostick onto the end of the screw thread to lock it into place but with Evostick you should still be able to crack the glue joint with a sharp turn of a screwdriver if the bogies ever require removing.

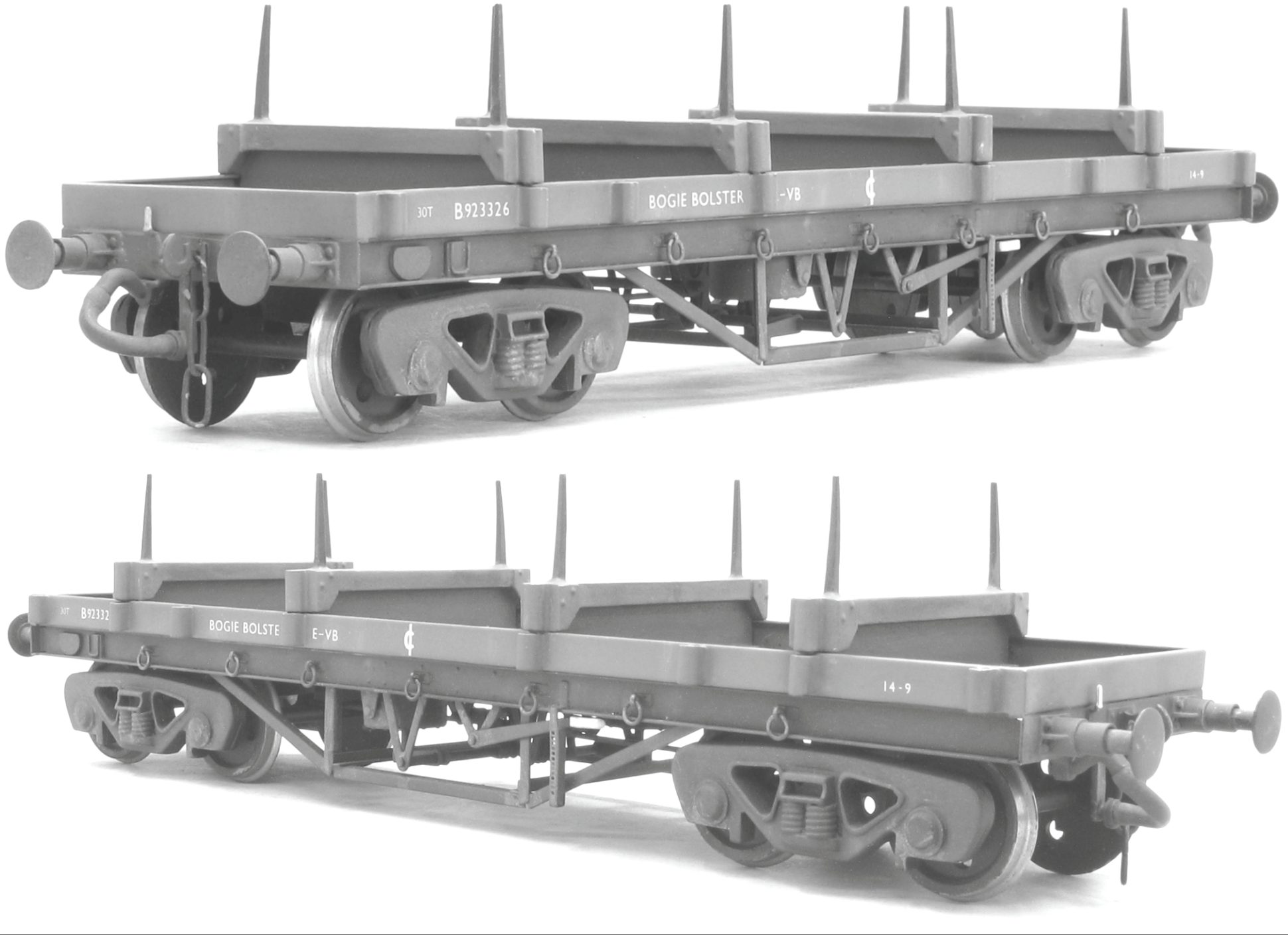




10. Painting is a vast subject that cannot be covered fully here. The important thing with a metal model is to get a good base coat of primer. Hopefully you have been cleaning up and washing the model at the end of each modelling session, but it will still need thoroughly cleaning before painting. I give my models a good scrub with a stiff-bristled paint brush in a sink full of hot (as hot as your hands can bear) water and cheap washing up liquid (the expensive stuff that's kind to your hands has an oil in it that will stop the paint keying to the metal). If you know somebody who works in catering and can scrounge you some industrial-strength liquid this is better still. Then rinse the model a couple of times in clean warm water and place in a dust-free box to dry. I use car aerosol primer and Halfords grey primer is one of the best. For the best results you want to spray at room temperature (25°C) on a dry (avoid cold, damp or humid) day. I find it helps to warm the model to about 30°C (put it in the airing cupboard overnight) and I warm up the paint tin by putting it onto a radiator (about 40°C, but use your common sense as I don't want anybody blowing themselves up). I find it best to prime the model in two light coats, about 15 minutes apart and then leave for 48 hours to harden off (in the airing cupboard in a dust-free box).

I brush-paint my models with Humbrol enamel. For years I just stirred it up and painted straight from the tin but I was never completely happy with the results. Recently two things have transformed my painting. The first was a copy of Martyn Welch's book, The Art of Weathering, Wild Swan Publications, ISBN 1 874103 11 9. Martyn's basic techniques are very useful and almost foolproof. Martyn's method of creating worn and weathered planking for wagon floors by blending brown and grey paints to form a base. Then dry brushing darker shades to represent the wood grain is particularly effective on this type of wagon. The second thing is to mix the paint in the tin and then transfer it to a palette (a sheet of clean plasticard) with blobs of lighter and darker shades of paint surrounding the main colour. Then work the paint with the brush on the palette, slightly varying the tones of the paint. This seems to totally change the texture of the paint and the way it goes on and covers on the model.

Prototype Reference. This kit was developed using a Datafile article by Roger Silsbury and Trevor Mann in the March 1983 Model Railway Constructor.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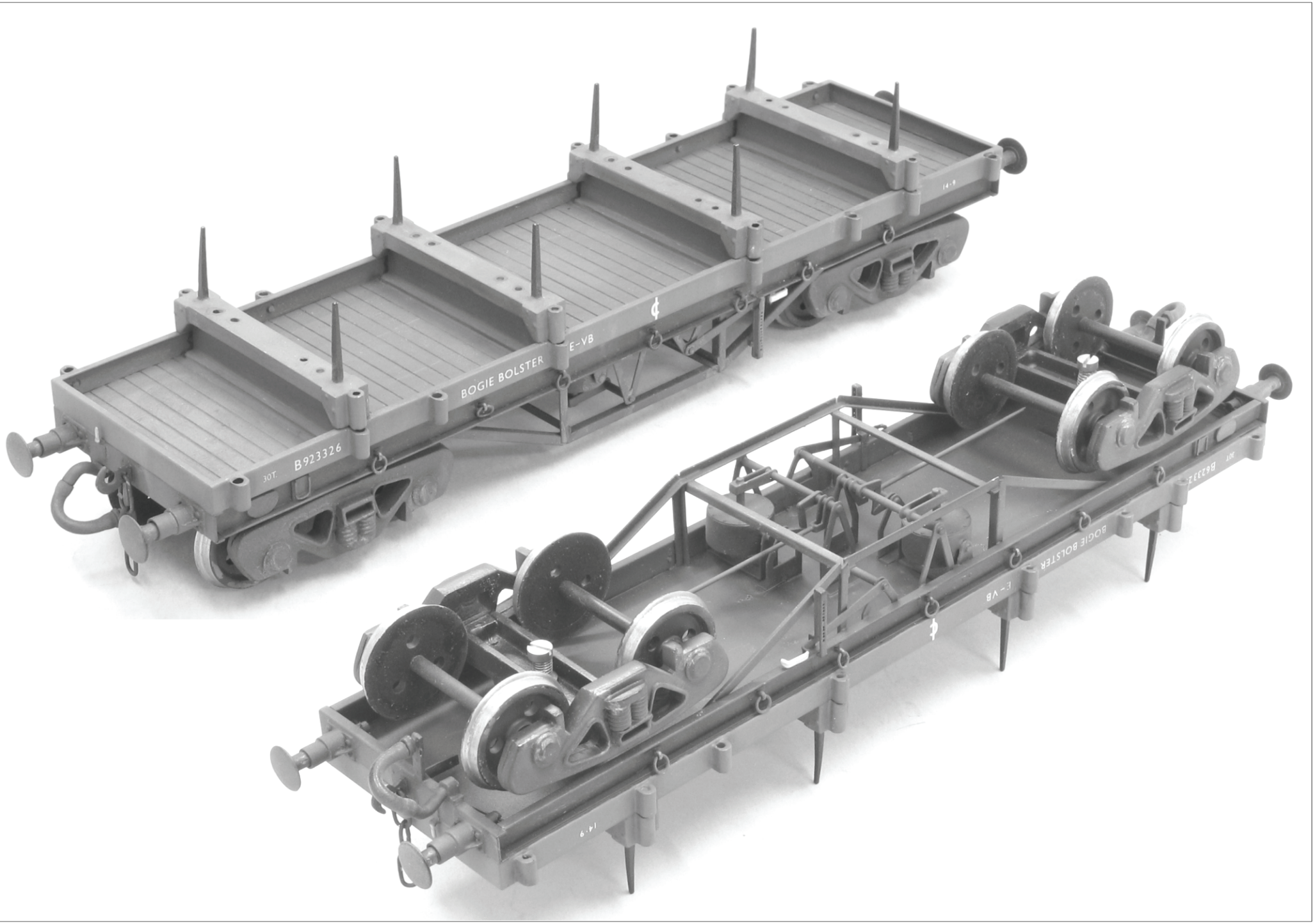
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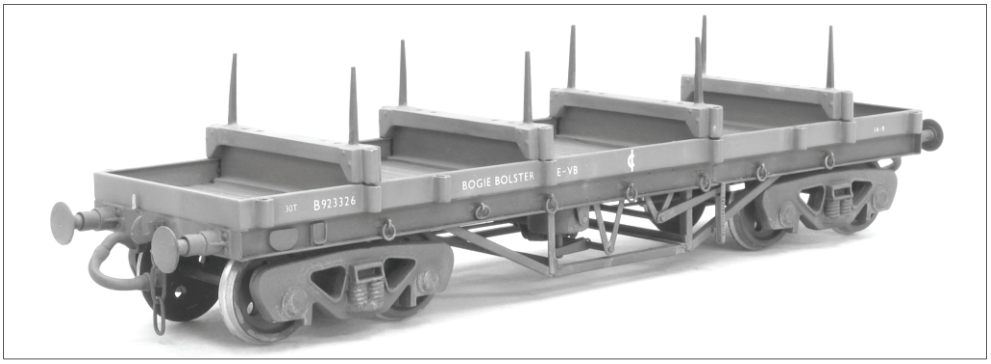
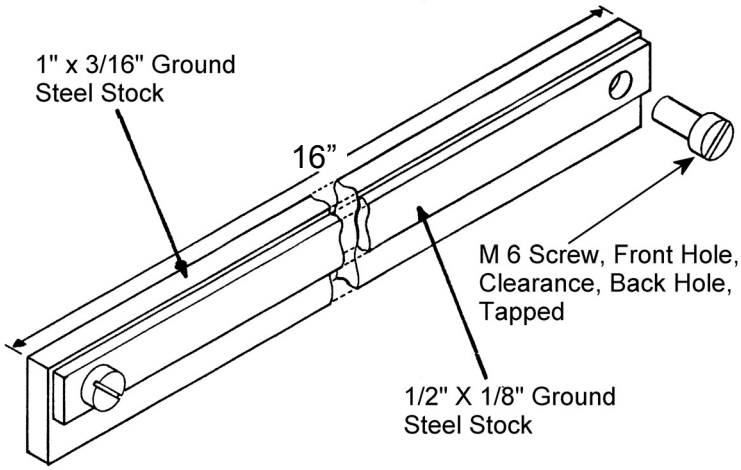


Fibreglass Scratch Brush

The use of this tool is mentioned in the instructions. This is like a propelling pencil holder into which a fibreglass refill is fitted and which will give a vigorous abrasive action. I find this tool indispensable for cleaning up and removing solder. One very useful tip is to soak the refills in dilute PVA glue (Evostick resin W wood glue let down 50/50 with water and a spot of washing up liquid) and then drill holes in a block of wood and stick the ends of the refills in the holes while they harden off. This will make the refills much more abrasive and longer lasting, and also stops the fibres breaking off and ending up in your fingers. You will need to give the refill a good rub to get it started but if you use green label flux you will soon have plenty of rusty tools that need cleaning. These and most other general modelling tools can be obtained from Squires Model and Craft Tools, 100 London Rd, Bognor Regis, West Sussex, PO21 1DD, Tel 01243 842424. They do a free catalogue and a very good mail order service.

Folding Bars



You will find a set of these very useful and here are details of the set that I have made for myself, in fact I have made three sets of different sizes. The dimensions or materials are not critical so make yourself a set to suit the materials you can get hold of. The important thing is that you can clamp the part along its entire length, with the etched fold line just above the front bar. Then clamp the bars in the jaws of your vice, a couple of 1” G clamps are also useful for long folds, and laying a steel rule at the back of the part to help transfer the pressure from your fingers evenly, pull forward to make the fold. Once the fold is close to 90° you can finish by pressing down on it with a block of wood and moving the block along the fold with a stroking action or by giving gentle taps with a small hammer on the wood block. Occasionally it is necessary to emboss bolt heads onto a part before folding, by lining the face of one of the bars with two or three layers of masking tape, you can still clamp the part without crushing the bolt heads but you won’t get such a tight fold, so deepen the fold line with a triangular file.

Can You Help Me?

If you have enjoyed building this kit and have been satisfied with the quality, I would be most grateful if you could recommend it to your friends and fellow modellers. Although my kits are not perfect, I try to put a lot of time and effort into producing them. If I can get extra sales of a kit through customer’s personal recommendation and I find that word of mouth is the best form of advertising. This will help me to put extra time and money into developing the next kit. Hopefully this will give me more satisfied customer to recommend my kits to their friends.

If you are not happy with this kit then please tell me. Hopefully I will then be able to help and sort out any problem.

Best Regards And Happy Modelling

Jim McGeown