

### Prototype Information

According to John Beckhaus's *Railway Freight Wagons* book, these wagons were built by Ritchie Brothers and the Railway Workshops between 1909 and 1912.

Two survive, in the collection of the Dorriggo Steam Railway and Museum, and are currently located at Ulong. These wagons were measured and photographed for the purposes of building this model.

And yes, there are brake spiders at both ends. Presumably, the designers considered that there was not enough room below the well for a mechanical linkage, so each end of the wagon has its own brake system, the only connection between the two being the air pipe that runs the length of the well, outside the side member.

### Modifications

Like most wagons of this era, a number of modifications have taken place over the life of the wagon. The obvious visual differences are that the wagon originally had hook drawgear, buffers and spoked wheels. By the end of its service life, and currently in preservation, the buffers have been removed, autocouplers replace the hook drawgear, and the wheels have been changed to disc wheels. The kit represents the latter condition, but it should be fairly easy to backdate the model if required.

### Important General Information:

This kit is intended for those with some experience of assembling this type of kit. There are a number of steps that are quite fiddly, and will seem to be a bit daunting to a newcomer to this type of construction. The best advice is to ask for help – if you belong to a model railway club, there is bound to be a member who can assist you. Doing the job yourself, with the appropriate advice and assistance, is the best way to acquire new skills, and create the confidence to go on a tackle other projects of the same or greater difficulty.

Please read these instructions several times, identifying the parts on the fret and understanding the order of construction before removing any parts from the fret. In the case of this kit, there are a number of parts which are within holes in larger parts. When removing these, keep them in a safe place until they are needed. I use a black plastic container that contained a microwave ready meal (after use, and thoroughly washed out, of course). I find that the black colour makes parts easy to see when they are required.

The sequence of assembly described below is a suggestion that has been found to work in the preproduction samples. Of course, those with experience may elect to do things in a different order. Overall, this should make little difference, but a thorough understanding of the outcome is essential to ensure that impossible conditions are not created. An example of this would be soldering the bogie bolsters to the subframe without the bogie retaining nuts in place – these would be impossible to fix later. Although it

is possible to unsolder and remove parts, it is all too easy to damage something if doing this.

Some of the parts of this kit are fairly fragile once removed from the fret, and need careful handling, in particular, the rivet strip overlays for the sides.

### Tools, Jigs and Clamps

This kit does not require any special tools. Anyone that has made kits of this type will have acquired an armoury of their favourite tools. No jigs are required beyond a suitable piece of timber with a nice flat surface at least 150mm x 40mm and 12mm or so thick. The use of this will be explained when it is required. There are lots of parts that will need clamping during construction. I have an array of wooden clothes pegs that I use, with the ends cut and filed to a variety of special shapes. I have also recently purchased some small pegs, about 25 mm long, which are intended, I think, for dolls house collectors. Again, the end of these have been modified using saws, files and sanding, and have proved extremely useful in construction of this kit.

### Folds

Unless otherwise indicated, all folds are 90 degrees, with the half-etched fold line inside the angle. Some folds are reinforced with a fillet of solder. The instructions will indicate where this is desirable.

### Laminations.

In this kit, there are some laminations to be done. For this, solder paste may be your preference, but it is possible to successfully build the kit using only regular solder. In either case, ensure that the parts are retained in close contact, and that, in particular, the edges of the laminations are not spread.

In some cases, where large areas need to be laminated together, holes are provided in the non-cosmetic layer to allow you to solder through the hole from the unseen side.

An unavoidable effect of the etching process is that, when large area is half etched, a curving or cupping can occur. This effect is known as etch annealing. In the case of this kit, all the areas where this is likely to occur, in particular, the top deck, these components are laminated to a more rigid substrate, which will hold the cosmetic surface flat.

### Bogie Mountings

This kit uses an M2 nut soldered to the inside of the bolster, and an M2 bolt. Over the bolt is placed a bush which provides the pivot for the bogie itself, and the stepped end of the bush retains the bogie without gripping it. This system requires that the hole in the bogie bolster is enlarged to provide a running fit over the bush, approx 3.1mm.

The bogie supplies are not the ones that we originally intended to use, but are closer to scale, and, being brass, have the benefit of adding some much needed weight.

However, the bolster of these bogies is lower than the original, so the packing provided is insufficient. I found that 1.75 mm was needed to gain the correct ride height. I used styrene (30' and 40' laminated) and cut to the size of one bolster at one end, with a 2mm hole centrally at one end, and a number of 2mm washers at the other, where I wanted to allow some lateral rocking of the bogie.

### Bogie Assembly

This revision of the kit is supplied with Ian Lindsay archbar bogies in kit form. The instructions supplied are reproduced below, but there are a couple of steps you need to undertake first.

The hole in the bolster must be drilled, reamed or filed to 3.1mm, to give a nice running fit on the supplied bushes. In addition, you may wish to consider drilling the four holes in each wheel (unfortunately, 4-hole wheels are not available commercially) The holes are 1.4mm dia, on a 5.8mm dia circle.

#### Bogie assembly instructions

These archbar bogies (in model form) were originally designed to be assembled by screws, but due to shrinkage in the brass castings, it has become necessary to assemble them with soldered joints.

Ordinary electrical cored solder will do, or Carrs if you have it available.

1. Remove each component from the sprue carefully using good sharp sidecutters or a razor saw. Take care as these castings are quite fragile.

2. File the stubs of the feeders from the ends of the castings, noting that the sideframes are meant to have about .030" (.8mm) overhang from the axlebox. Also, don't overdo the bolsters as they need to be no less than 21mm long and a little longer if possible.

3. File a champher on the top corners of the bolster stud on the back of the sideframes, the top is identified by the dimple. There is no dimple on the bottom! Make sure the sideframes are a neat fit into the bolster (a bit sloppy is preferable to tight). Tin (apply a small amount of solder) the underside of the bolster and the tops of the previously filed tops of the studs. Then solder one sideframe to each bolster (right way up)

4. Fit top hat bearings (supplied) with a small amount of Superglue or 5 min Araldite.

5. When the bits are cool enough to handle, test assemble with wheelsets to ensure that the bolsters are not too long or too short. Cut a piece of scrap craftwood or similar to fit between the sideframes and of a height that can be held in a vice or similar, to support the bogie during assembly. The length of this piece should also be just long enough to give a back to back of approx. 21mm. If you make it too short the axles may be too tight in the bearings. This bit is a little trial and error!

6. When you solder the second sideframe (with the previously tinned bits); you must use a very hot iron for a very short jab (try 1/2 second to start). Too much heat for too long and you may manage to damage the wheels. If you are concerned about heat transferring to the wheels, keep a container of water handy, and as soon as you have finished with the iron, dunk the bogie but keep the iron away from the water

Finally, if you have done everything as suggested, you should have a pair of very free running bogies.

### Assembly Procedure

1. Remove the inner subframes (1) and bogie bolsters (2) from the fret. Solder an M2 nut to each bolster, on the same side as the half-etched fold lines, using a bolt to hold in place. Fold up the sides and ends of the bolsters. Fold up the small tabs at each end of the subframe. Use a square to ensure that the sides and

end of the subframes are at right angles to the top, and run a fillet of solder along the folds, ensuring that the various holes and gaps are left clear.

2. Insert the bolt, bush and packing to retain the nut, and trim off the surplus bolt, if necessary, so that it clears the subframe. Insert the tabs in the bolster through the corresponding slots in the subframe, and solder the bolster to the subframe. File off the surplus tab that project through the subframe.
3. Remove the top deck (3) from the fret. Remove the various bits inside the hole in the deck, and place aside for the time being. Place the deck, rivet side down, on the piece of timber mentioned above, and select a drill that fits nicely through one of the holes in the deck at each end (approx 1mm). Drill corresponding holes in the timber, deep enough that the drill bits can be used as a mandrel, and sit nice and straight. Place one subframe over each mandrel (drill bit) and place a straight edge along one side of the subframes, to line them up. Pressing down hard enough to remove any bowing of the deck, solder the subframes to the deck, soldering through the blind holes provided. Ensure that the holes that are in the deck, with corresponding holes in the subframe remain clear of solder.
4. Assemble the well ends. The inner part (4) is bent to a Z shape, and the cosmetic overlay (5) is laminated on with the row of rivets at the top. Attach the well ends to the top, still inverted on the timber, such that the end lines up neatly with the large hole in the top, and one end against the straight edge used to align the inner subframes. See Fig 2. Place the deck and subframe assembly to one side for the time being.
5. Remove the sides (6) and the top (7) and bottom (8) rivet strips from the fret. Using lots of clamps, and ensuring both that the side remains flat, and that the lugs in the top strip remain aligned with the etched holes, solder the rivet strips to the sides.
6. Remove 8 small (9), eight large (10) brackets and 8 bracket plates (11) from the fret, noting that the large brackets are handed – you need 4 of each hand. Fold the half etch tabs of the brackets, and insert the bracket from the inside of the side, and solder the back. The outer two small tabs MUST face towards the middle of the wagon. The orientation of the remaining tabs is less important, but you must ensure that 2 left and 2 right handed brackets are available for the ends. The soldering can be done by drilling small holes in the flat timber, such that the brackets projects into the hole with the side laying flat and rivet side down on the timber. Turn the sides over, and solder the bracket plates on the outside of the large brackets, ensuring that the brackets themselves to not move.
7. Solder a pair of number plates to the sides, using a short length of wire to retain them in position. Remove the surplus wire.
8. Take the deck and subframe assembly, and place it upside down on the timber. Offer up the sides to the subframes, and making sure that they are straight and central. Solder to the deck and subframe. While doing this, ensure that the details already added do not fall

off or become displaced, and correct as you go if necessary.

9. Remove the bottom flange (12) from the fret. Curve it to match the bottom of the sides, and clamp and solder it to the small tabs on the subframes, and also at several points along the bottom
10. Remove the top deck rivet detail (13) and bottom flange detail (14) from the fret, and solder on centrally to the top deck beside the well, and the bottom of the bottom flange, respectively.
11. Remove the buffer beam inner (15) and outer (16) from the fret. Bend the top and bottom flanges in the inner buffer beam, and insert two large brackets in the cosmetic outer buffer beam, as with the sides, and with the tabs towards the centreline of the wagon. Solder the inner and outer buffer beams together, and then solder onto the wagon, with the bottom flange hard up against the sides, and the top flange proud. You may need to file a little of the ends of the lower flange in order to get the end to sit true against the end of the wagon.
12. Cut a length of 10 thou wire to provide the pivot for the brake releases, and similarly 15 thou wire for the brake spiders. Solder these to the brackets provided, and solder the brake release lever to the bracket, and the brake spider to the wire, a millimetre or so out from the bracket. Trim the wires, leaving a short length to represent the nut holding these.

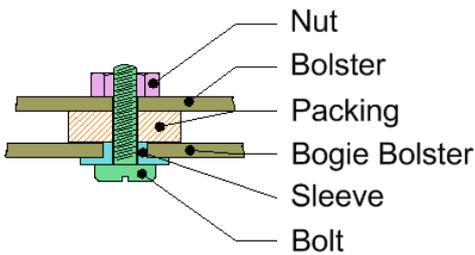


Fig 1 – Bogie Mounting

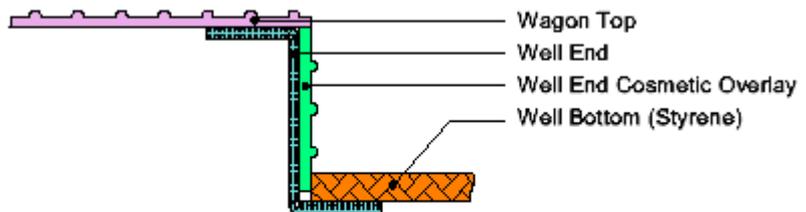


Figure 2  
Inner Well End

Fig 2 – Well End

13. Gently curve the remaining 10 thou wire to represent the external brake pipe. Note that this pipe runs from the hole adjacent to the buffer beam to the nearest hole beside the well on one side, and to the far end of the well on the other side, see drawing.
14. Thoroughly wash the wagon and paint and decal, using the drawing to position the decals. All the evidence is that they were black (gunmetal) their entire lives, but wagons of this nature would have had the minimum of TLC, and were probably in a dirty and rusty state most of the time.

#### Contents

- Brass fret
- M2 6mm machine screws x 2
- M2 nuts x 2
- M2 washers x 2
- Bogie spacers x 2
- Bogies x 2
- .010" brass wire x 50mm
- .015" brass wire x 50mm
- Kadee Couplers x 2

#### Not supplied

Solder, Flux, Glue, Paint

