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Festiniog 2 Ton Slate Wagon

Ref. 16W03 (Braked)
Ref. 16W04 (Un-braked)

Prototype Information. The Festiniog Railway (these days it is known as the Ffestiniog Railway) was and still is probably the best known narrow gauge line in the World. Its early use of locomotives on such a narrow gauge (1ft-11½in) drew much attention, and encouraged the use of less-than-standard gauges. It pioneered the use of articulated locomotives as well as bogie coaches. However its primary role (until the days of mass tourism in the second half of the 20th Century) was the carriage of roofing slates from the quarries of Blaenau Ffestiniog. At one time, there were well over a thousand wagons for carrying the finished slates, and the most common was the iron bodied type carrying 2 tons, as depicted in this kit. Loaded trains ran downhill by gravity, so a proportion of the wagons were fitted with a handbrake. In any train, which could have up to 100 wagons, at least 1 in 5 had to have a brake, but it is not known how many of the total fleet were so fitted, probably 1 in 3.

Model Information. We are packaging the kits as "Braked" (16W03) or "Unbraked" (16W04); the only difference in assembly is the brake gear itself, so these instructions cover both type. The other differences between the two versions, make no difference to the assembly procedure. These are the axlebox and wheel types: the braked wagon kit has disc wheels and side-bolt axleboxes; the unbraked kit has curly spoked wheels and plain axleboxes. The etchings are identical in both versions, so the unbraked kit includes the superfluous etched parts of the brake gear - principally the "S" shaped brake handle.

The representation of rivets in this kit is by the "push out" method, using half etched holes on the back of the part, and needing a suitable tool for the purpose. The best tool is a proper rivet press, with a male punch and female die, of which there are several available; you will need a 1mm diameter die. It is possible to do the rivets with a blunt scriber (or similar) pressed onto a fairly hard surface (such as an off-cut of MDF). There are a number of "rivets" on a waste part of the etched fret to practice on. Alternatively, you could drill out all the half etched rivet locations and use real brass rivets or pins (not included). As a final resort, don't do the rivets at all; this will look a lot better than a load of badly formed rivets.

The assembly of the etched brass components, is best done by soldering. However, all main parts are designed to fold up like metal Origami, then clip together with tabs and foldovers. It is thus perfectly possible to assemble with epoxy glue (Araldite or similar).

Contents of kit.

Etchings	4 pieces (numbered X16W0301 - X16W0304)
Whitemetal	4 axleboxes (sidebolt type in 16W03 or plain type in 16W04)
Wheels	4 wheels mounted on two axles (oval hole disc in 16W03 or curly spoke in 16W04). With brass bearings.
Lost Wax Brass	Coupling Hook Sprue Buffing Plate & Brake Bracket Sprue (16W03 only) Buffing Plate Sprue (16W04 only) Coupling Bracket Sprue Brake Block Sprue (16W03 only)
Brass Wire	60thou (1.6mm) - 1 piece 40thou (1mm) - 1 piece

INSTRUCTIONS.

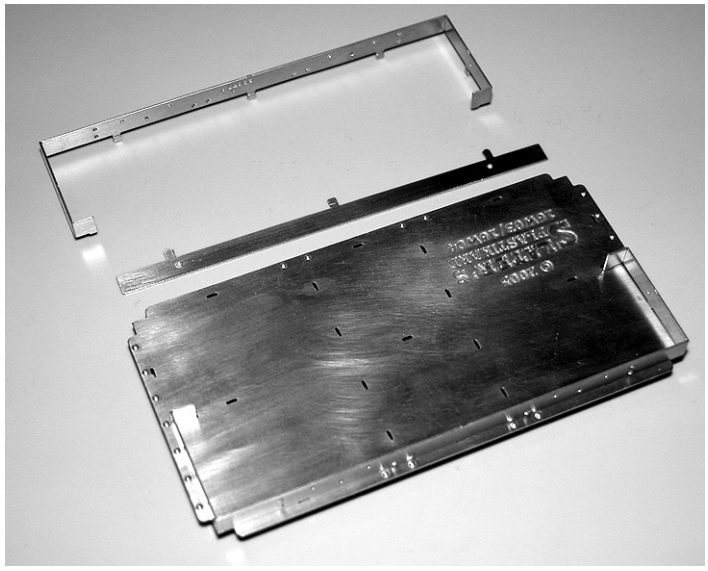
Check parts against the list of contents above. The underframe and body sections are assembled separately; the last operation is to join them together, so either can be done first. An asterisk (*) on a numbered paragraph means that it applies **ONLY** to the braked version (16W03), but note that there will be references to differences between the versions in other paragraphs.

Underframe.

1 Take lower floor (part 1), and carefully dress the edges to removes tags and etching 'cusp'. Emboss rivets around the edges.

2 Take the solbar/headstock strips (parts 2 & 3). Whilst still flat, enlarge the various holes to 1mm using a sharp drill or a taper broach. If building the braked version, drill and open out to the same size the two half-etched holes marked 'Brake' on each solebar. Then emboss the rivets, being careful, if building an unbraked model, not to emboss the the half etched holes marked Brake. Then fold each solebar/headstock, as shown in the photo. Insert into the slots in the floor, bending the 'foldovers' to hold in place. Note that the embossed rivets, the Slaters lettering, and the solebars are on the same 'face' of the floor, i.e. the bottom.

3 Take the centre stretcher (part 20), and insert into the floor, fitted between the headstock sections. Bend over the foldovers. At this stage carefully solder all the seams and tabs to permanently join the assembled parts together. If you are using epoxy glue, this can be achieved using a fillet of glue along the inside of the solebars etc., **BUT** make sure you leave clearance for the axleboxes, couplings and, if appropriate, the brake assembly. Better still, don't glue the solebars etc., until all these items have been fitted. Once the solebars and headstocks are fitted permanently (either now or latter), trim off the tabs flush with the top of the floor; this surface will not be visible on the finished model, so it does not have to be too neet and tidy!



4 Bend up the intermediate stretchers (parts 24-27). These are purely cosmetic, and can only be seen fron the underside, so you can safely omit them if you want to. Fold them as follows: from each end, the first and second folds are at 180° with the fold lines on the outside; the third fold is at 90° with the fold line on the inside. This gives, in plan view, an extended letter I, and the tabs thereon fit in the slots in the floor.

5* If fitting brake gear, take the brake block brackets (parts 5, 6, 7 & 8) and solder or glue one into each inside corners of the solebar/headstocks, as shown in the photograph. Now assemble two 'chains' each consisting of two cast brake blocks joined by the etched brake stretcher (part 11 or 14). The holes in the ends of the brake blocks will need opening out with a 1mm drill or suitable taper broach. Also very carefully check that the holes at each end are 27.5mm apart. If necessary, gently bend the castings, making sure that there is still a smooth curve in the casting. The parts are joined by a short piece of the 40 thou (1mm) wire, cut slightly longer than needed and trimmed after permanently fixing. Now join each 'chain' to the previously fixed brackets, again with a piece of 40thou wire, noting that there is small notch in the stretcher, which on both sides should line up with the brake handle cross rod (which will be fitted to line

up with the two holes drilled in operation 2). The assembly should look like the photograph, which shows the correct orientation of each piece.

6* Now solder (or glue, if you prefer) each of the two brake block 'chains' at each joint, ensuring that: a) everything is in a straight line between the fixed corner brackets, and b) the centre stretcher is horizontal. A suggested way of ensuring the second part, is to find a piece of wood or metal, 1/8in thick, and lay it across the solebars (with the frame upside down). The centre stretcher should rest on this and remain horizontal whilst being soldered.

7 To fit the axleboxes, we found that the best way was to use the 24hour setting variety of epoxy glue (even if you solder everything else) to give plenty of time for fitting and final adjustments. Carefully check the axleboxes and remove any sprue remains or part line flash. Take your 1mm drill and drill the three dimples in the top part right the way through; try to hold the drill vertically, but this is not critical. Glue a brass bearing into each axle hole, and check that there is no glue left liquid to 'gum up' the axles.

8 Now 'dry fit' each axle box in turn. On each one, the three holes you've just drilled should line up with the three holes in the solebar. There is an etched cover plate (parts 15-18), and these holes should line up too. Take the lost wax sprue containg the square headed 'nuts', and snip off each of the 12 larger ones leaving a tail between 4 and 5mm long. Each one pushes through the cover plate, the solebar and the top part of the axlebox; you may need to pass the 1mm drill through all three. If the 'nuts' still don't go through, progressively enlarge the holes in 0.1mm steps (i.e. use a 1.1mm drill bit, and then a 1.2mm drill if they still don't fit).

9* If building the braked variety, hold a wheelset and axleboxes in place and check that they don't touch the brake blocks. Gentle bending of the previously assembled 'chain' will cure any problem.

10 When all is well, place the axleboxes on the end of the axles, and using the 24hr epoxy sparingly, place each pair of axleboxes in place, then the cover plate (with only a smear of glue to avoid it oozing out), and then the nuts. When you've done both axles, carefully check that the axles are parallel and that the axleboxes are perpendicular to the floor. Use a piece of 'bluetack' or 'plasticene' to hold everything in place and set aside to full harden.

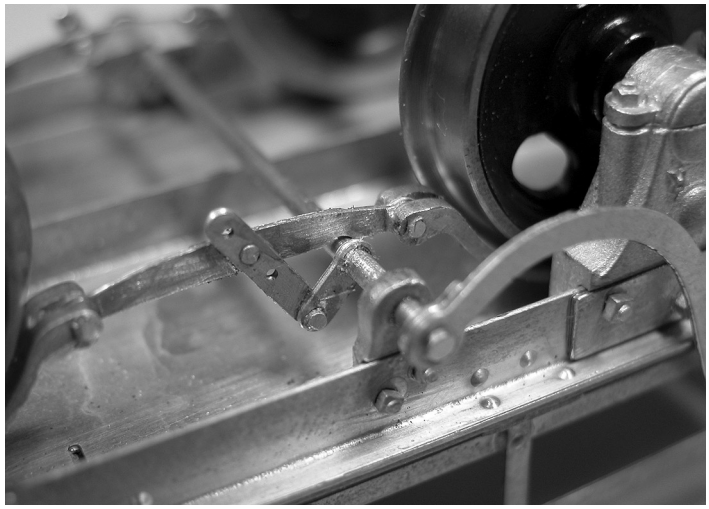
11* The cast brass brackets for the brake cross rod can be fitted with the same mix of epoxy. Drill out the three holes in each casting, the large one at the bottom 1.6mm (1/16in), and the two smaller ones to 1mm. Fix to the solebar and locate using two of the smaller square nuts through the holes drilled in the solebars in operation 2.

12* After stage 10 is complete, make a further check, and any corrective bending, to ensure that the brakes are not modelled 'on' and that a short circuit cannot occur if you are using 2-rail electrification.

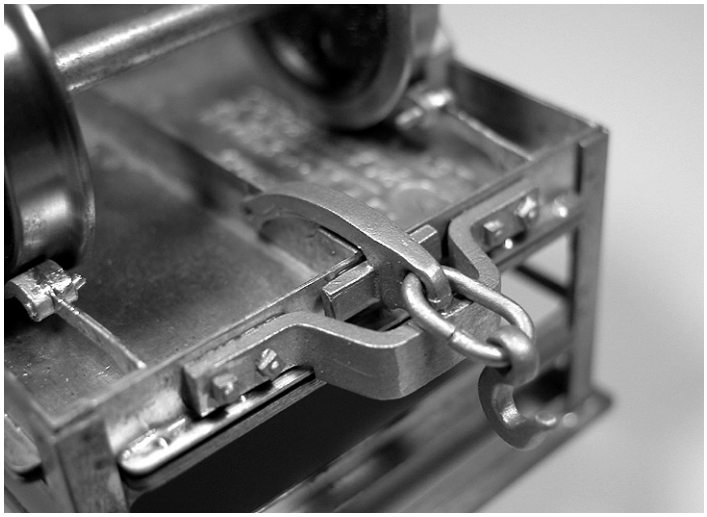
13* Assemble the 'S' shaped brake handle by bending the small thickening piece back on itself, then soldering near to one end of the 60thou wire, being careful to get the wire perpendicular to the handle, with the thickening piece on the inside. File the end of the wire smooth, to leave about 0.5mm proud. Slide into the two brackets (paragraph 11), and mark the end of the wire away from the handle, to cut it to length, again leaving about 0.5mm proud. Note that the two brackets are nearer one end of the wagon than the other; the brake handle goes towards the 'short' end.

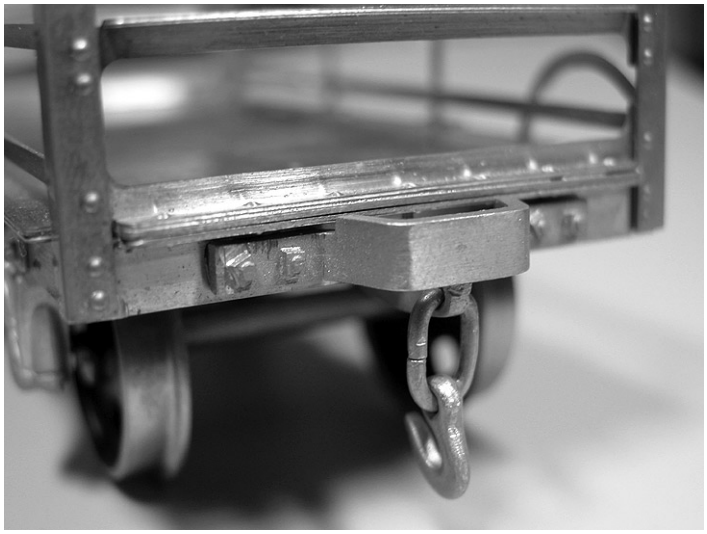
14* Finish the links from the brake cross rod to the brake block stretcher by reference to the photos. The etched parts involved are 9 & 10 and 12 & 13.

15 Remove the two buffer plates from their sprues, cleaning up the remains of feeds with fine files. Check that the pins on the rear fit into the holes in the headstocks (enlarging as necessary), then solder or glue in place, noting that the slight cut-out goes towards the top.



16 The coulping brackets should be removed from their sprues. The slot fits over the underframe centre stretcher with a pin from 40thou wire inserted through the casting and etching. The slot may need easing with a fine saw blade, and the holes will need enlarging with your 1mm drill. Try in position with a wire pin - the 'T' piece should come flush with the headstock, but do not fix in place until the coupling links have been fitted.





17 Remove the cast hooks and the plain links from the sprue (the shackle is not needed for this kit, but is part of a 'standard' sprue covering many different kits). Feed the link through the bracket and the hook, the close up the link with fine pliers. Note that the hook faces towards the wagon when fitted in place - see

photograph. Now re-fit the bracket and solder or glue permanently, making sure you don't solder up the link to the bracket.

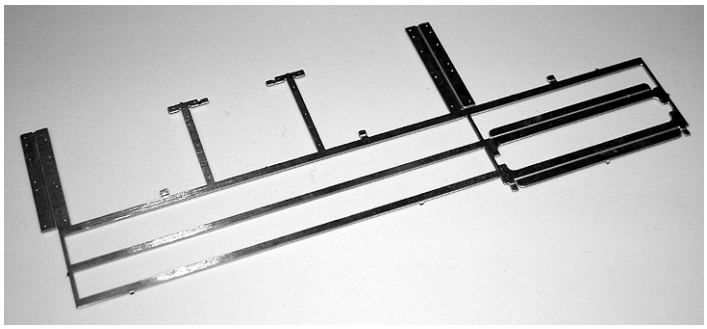
The underframe is now finished apart from painting.

Body

The body is indentical on both the braked and the unbraked versions.

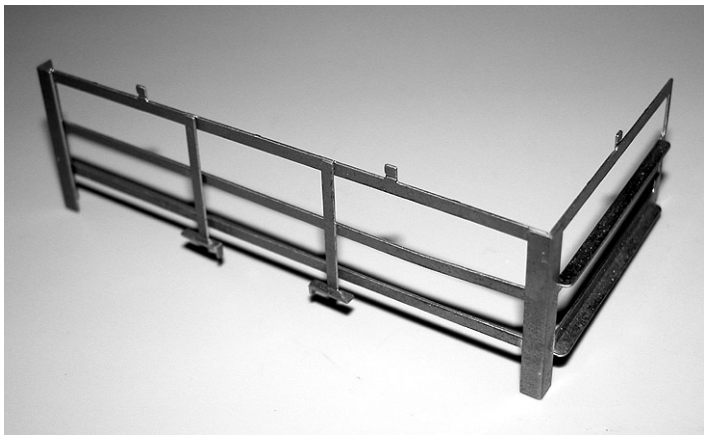
18 Cut out the floor (22) and top rim (23) and dress the edges to remove tab remains and etching cusp.

19 Very carefull remove both side/end foldups (19 and 21), equally carefully removing the tab remains with a fine file. Emboss all the rivets (half etched dots on the back), following which it will be necessary to gently straighten each part with your fingers to correct the resultant distortion.



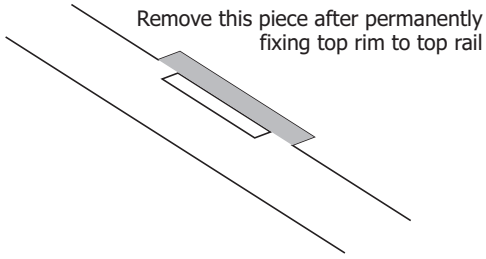
20 Both side/end pieces fold up like Origami; it looks complicated, but is actually quite simple. As with the underframe, assembly is best done with solder, but glue is also a practical option.

21 First fold down the angle pieces on what will be the ends. The photo should make this clear. This operation is best done with a smooth jawed vice, using if necessary, a suitable spacer piece to avoid crushing the rivets and the first fold whilst doing the second one.



22 Fold the centre vertical strips down and form the base of each. After checking that they are truly vertical, solder or glue them to the horizontal rails. Once secured, file off the remains of the fold lines, level with the top rail. Finally fold the corner angles. The result should look like the photo above.

23 Fit both pieces to the floor, using the tabs in the base of the centre verticals and with the corner angles on each corner of the floor. The corner angles project below the floor, located vertically by the horizontal (rivetted) angle - the photos will make this clear. Fold over the small tabs to secure in place to the floor until everthing is soldered up.



24 Fit the top rim to the six projecting tabs; fold the latter over to secure. Solder or glue everything permanently in place, then remove the 'loops' in the top rim which were needed to encompass the tabs. The top rim and top rail all round will now resemble the angle iron from which the real thing is formed.

25 Remove the remains of the tabs from the underside of the floor. Trim off the tabs flush with the underside of the floor; like the top surface of the underframe, this surface will not be visible on the finished model, so it does not have to be too neet and tidy!

Finishing Off

26 The last operation is to unite the underframe and body. The four angle irons of the body fit over the corners of the underframe. You might need a little bit of trimming, especially if you've been a bit over-enthusiastic with the solder or glue! The two parts could be left separate (merely being held together by friction) or a drop or two of epoxy will do the job permanently.

Painting & Finishing.

Now the interesting bit starts! The majority of Festiniog iron bodied slate wagons were painted either brick red or mid grey, the change taking place around the First World War. Some have been observed painted black. The current preserved fleet has a mixture of all three, but with grey predominating.

All wagons carried a fleet number, the two ton iron bodied wagons carried numbers in the range 501 to 805 and 1001 to 1079 plus some numbers in the range 1 to 500. Suitable lettering sheets are available from Blackham Transfers of (appropriately) Blaenau Ffestiniog.

The Festiniog Railway supplied slate wagons to each of the quarries it served. Individual wagons seem to have allocated to particular quarries, and this allocateion was denoted by colour coding painted on the middle of the middle rail. For example, Oakeley (the largest served by the Railway) had a blue patch. Unallocated wagons had no colour coding. The best advice for those who want to include this feature on their model is observe the current preserved fleet, which is planned to number about 100 wagons.

Being everyday working vehicles, the paintwork was probably not maintained to a high standard, so a certain amount of 'weathering' should be applied; there are several good books available on this subject.

The finishing touch is a load of roofing slates; one way of doing this is to use 20thou black Plastikard cut up into suitably sized rectangles, with the edges bevelled by scraping the edgeswith a sharp scalpel blade held at approximately 45°. Assemble them into a block - no doubt the quarrymen had a particular way of arranging them for each different size, but the real things would have been jammed in hard to avoid movement and thus breakages. On any exposed faces or edges, dull the surface by rubbing very fine emery paper or an abrasive rubber, and a dark grey matt finish is the result. Ffestiniog area slate tended to have a very neutral grey colour, so you can spend time adding realism to the model.

Bibliography

The have been numerous books published on the subject of the Festiniog Railway. Probably still the best, despite being one of the first, is the two volume history writen by J. I. C. Boyd, and published by the Oakwood Press of Usk, Monmouthshire. The latest edition was published in 2002.