51L *The 4mm wagon and van kit*

BRD1/163

British Railways
25½T Ironstone Wagon, Unfitted
Diagram 1/163



From 1955 to 1984
for 00, EM, P4 and S4

Features: Etched sprung chassis, ladders, resin body, white metal detailing parts
Required to complete: 12mm three hole disc wheels, waisted bearings, coupling links, number plates, paint and transfers (e.g. HMRS sheet 25)

The Prototype

Built for the transport of ironstone/iron ore, these wagons were used between ports or quarries and steel works in various parts of England and Wales. They were the BR standard design of iron ore hopper, rather different from all the other contemporary designs which had pre-World War II origins. Wagons were eventually constructed or converted to four different diagrams:

1) D1/163, B438000-439499, built in two lots between 1955 and 1957. These wagons were all built unfitted, with lifting link brake gear, oil axleboxes and self-contained buffers. This diagram is the subject of the present kit.

2) D1/165, B439500-439699, built in one lot in 1957. Built vacuum fitted with Morton brake levers, isothermos axleboxes and self-contained buffers. A kit for this diagram is in preparation.

3) D1/166, B439700-440049, built in one lot in 1959. Built unfitted, but beyond that, things are a little unclear. The most likely story is that the last 229 were built with identical brake gear to D1/163, roller bearings and spindle buffers. The first 121 also had roller bearings and were fitted with a through vacuum pipe from new, but the type of buffer and brake gear is not certain. At an unknown date, full vacuum clasp brake gear was fitted, with buffers being changed to the Oleo type, and this modified version is the subject of a separate 51L kit.

4) D1/168. Vacuum-fitted (to the same pattern as D1/166) conversions of D1/163, retaining the original buffers, with some getting roller bearings at the same time. Eighty-two were converted in 1971, but many had modified bodywork to make them suitable for other traffics. The D1/166 kit can thus be converted to a limited number of D1/168 by fitting 51L's BRC003 buffers and perhaps BRC020A axleboxes.

Two other BR diagrams, D1/164 and D1/167, appear similar at first sight but actually have a different body design.

In later years, these wagons were used for a variety of other traffics, having being displaced from the ore trade by the adoption of tippling for unloading in many steel works. Sand, clinker, salt, limestone and sulphur were all carried, prolonging the life of the design well into the 1980s. As mentioned above, some of these uses required alterations in body fittings.

At least one vacuum-braked D1/166 wagon survives in preservation at the Preston Transport Trust.

Acknowledgements

51L thanks Geoff Kent (builder of the wagon in the photo), Preston Transport Trust and the Barrowmore Model Railway Group for their assistance in preparing this kit.

References (but beware the errors in some of them):

British Goods Wagons, from 1887 to the present day, Rowland, Essery & Steel, p130
British Railway Goods wagons in Colour, R Hendry, pp37-38
British Railways Wagons, the first half million, D P Rowland, pp 55-57

Model Railway Journal Issue 176, pp177-189
Railways in Profile, No.1, Opens and Hoppers, pp46-47
Wagons of the Middle British Railways Era 1955-61, D Larkin, pp48-49
Wagons of the Final Years of British Railways 1962-68, D Larkin, pp 42-43
Working Wagons Vol 1, 1968-1973, D Larkin, pp28-29
Working Wagons Vol 2, 1974-1979, D Larkin, pp30-31
Working Wagons Vol 3, 1980-1984, D Larkin, pp18-19

Paul Bartlett's website: http://paulbartlett.zenfolio.com/paulbartlettsrailwaywagons

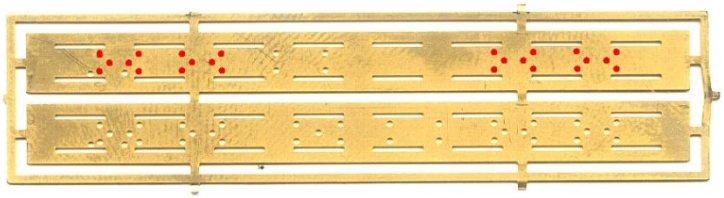
Assembly

Please read these instructions before starting to build your model. Examine all the parts and familiarise yourself with their assembly. Remove any moulding flash and ensure all parts fit correctly. We recommend wet fine 1200 grit emery (silicon carbide) paper or fine needle files for cleaning up the castings. For assembly use low melt solder (70°C) for white metal, an epoxy resin such as Araldite, or superglue. The resin body should be carefully washed in soapy water or a degreasing solvent such as cellulose thinners to remove any residual mould release agent. When working with resin take care to avoid inhaling dust. All etched brass fold lines are inwards (unless otherwise stated) and all components should be cleaned with a glass fibre brush and if possible, tinned prior to removal from the fret.

Chassis

Remove the chassis unit (part 10) from the fret, and if required drill out the second W-iron capstan hook holes. Fold down the solebars, buffer beams and spring supports. Reinforce the folds with solder, avoiding a fillet behind the axleguards, which could hinder the free movement of the suspension system. Fold up the axleguard bridles and solder.

If necessary, smooth the upper surface of the chassis plate with a flat file before attaching the floor plate (8) to the chassis unit using the etched lugs for alignment. Similarly, remove any cusp from (8) before soldering or supergluing the two parts together, ensuring an equal overlap all round. Now check that the lower edges of the buffer beams and solebars are parallel in relation to each other; if not, twist the assembly gently until they are.

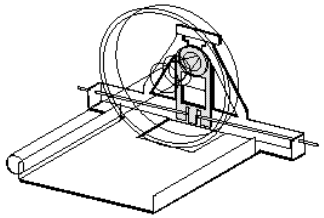


Push out the rivets on the etched solebars using a riveting tool or a blunt pin on a firm surface (only the rivets shown in red in the photo are required, and the bottom solebar is a copy of the top one). Fold up the solebars and solder them to the chassis. They may need trimming a little to line the rivets up with the vees and axleguards.

Drill the holes in the centre of each cast buffer beam for the drawhook and fit the faceplate (7) over it. If self-contained buffers (as supplied) are to be fitted, the etched legs should be removed and the plate fitted flush with the buffer beam. If modelling a wagon later fitted with self-contained buffers, these legs should be bracketed off the buffer beam by folding down the etched "legs".

Open out the holes in both cast and etched buffer beams to suit your chosen buffer guides, and/or file the body spigots to fit the holes. Ensure that the spigots are trimmed to length sufficiently to ensure that they don't hamper the operation of the spring wires. Even so, it's probably wiser to fit the buffers after the suspension system is complete. Whenever you fit them, make sure that the small projection in the buffer guide is pointing upwards; on the real thing this helps to wedge the shunting pole when coupling up. For sprung buffers, the heads and springs should be fitted after painting the wagon.

Now attach the cast buffer beams to the chassis and fit the etched drawhooks (6) suitably doubled over and soldered. Couplings proper may be fitted later using the etched instanter links (15, again doubled up) and two lots of two oval links. These parts should be chemically blackened, rather than painted.

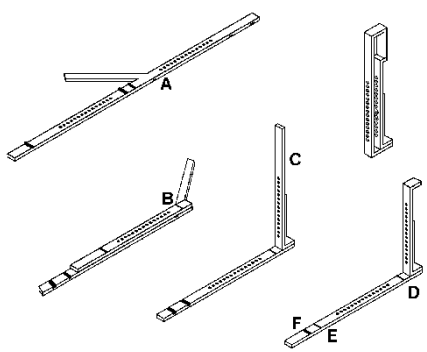


Remove four bearing carriers (3) from the fret. Cut four pieces of the supplied spring wire to approximately 25mm long and thread each one into the horizontal groove at the top of the carriers. To do this you need to bend the central prong one way and the two outside prongs the other way, and then, with the wire centrally positioned, gently clench the prongs together to grip it. Now solder or superglue a waisted pinpoint bearing into each carrier. Thread the spring wires through the holes in the spring supports, and insert the wheelsets. Check for free movement, cleaning any cusp off the axleguards and/or carriers as necessary.

Before fitting the cast springs and axleboxes, remove the tabs from the top of the springs and file down the tops of the spring shoes, aiming to reduce the gap between the centre of each spring and the underside of the solebar to 1mm at most. To achieve this it may also be necessary to gently bend the springs a little flatter. Now solder or glue the springs in place ensuring the free movement of the bearing carriers is unaffected – if in doubt, remove them first, but refit them before starting to fettle the cast axleboxes. Even using waisted bearings, the slot in the back of the axleboxes will almost certainly need opening out to obtain the optimum up-and-down free movement of the bearings, using a combination of drills and craft knife. This time, definitely remove the bearing carriers before finally fitting the axleboxes.

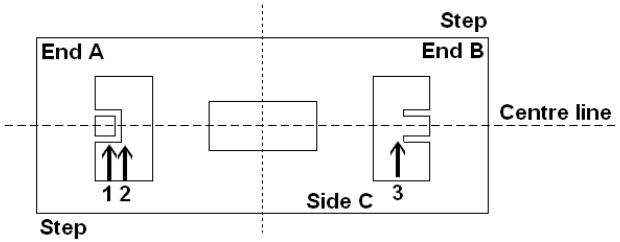
The D1/163 wagon was fitted with independent both sides brake gear, so the arrangement shown in the header photograph applies to both sides. Fold up the brake shoes (13) and sweat together, adding the crescent-shaped packing piece between each pair of shoes, and the oval plate vertically between the central holes. Attach the shoe assemblies to the chassis floor. Take a length of 0.7mm wire and use this to align the vees and the brake shoes. Add the inner vees (4), soldering them to the chassis

plate slots, but not yet to the wire. Prepare the outer vees (5): form the rivet detail by pressing in the half-etched holes with a pin on a firm surface. The vee is attached to the centre of the solebar using the U-shaped packing pieces (2 - spares are supplied). Solder the packing piece to the rear of the vee, then solder or glue it to the solebar channel. The inner vee can be used to position the packing pieces. The wire may now be soldered in place to the brake shoes and all four vees. Trim the outer ends to leave about 1mm projecting, but leave the unwanted section between the inner vees in place for now.



Fold up two of the brake lever guides (9) following the sketch, and lightly solder the folds in turn. There are several ways of folding up the guides, although it's probably best to leave E and F until last. Note that bend A is an outside one. The finished guide slots into the solebar channel in line with the centre of the right-hand spring hanger. Trim the bracing strip at the foot of the guide allowing about 1mm to be bent up and attached to the W-iron.

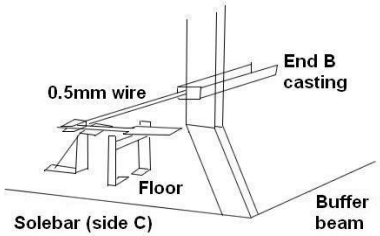
Sweat the two halves of each brake lever (11) together. Double crank the handle ends twice: a) to clear the axlebox when lowered; and b) to create the handle itself. Slot the handle of each lever through the top of the lever guide and place the lower etched hole onto the cross shaft at the outer vee. Solder the levers in place and remove the section of wire between the inner vees, and trim the outer ends. Add a short fulcrum wire through the upper etched lever hole and the offset hole in the underlying outer vee. Finally, fold up and fit a safety loop (12) around each pushrod adjacent to each shoe.



Chassis from above

There are three further castings that may be fitted at this stage in no particular order to complete the chassis. The screw mechanism that locks and releases the hopper door fits on top of the floor plate approximately 10mm from end A (position 1 on the diagram above). Before fitting, thread a length of 0.5mm wire through holes drilled through the two pop-marked blocks, and bend a right-angled handle about 1.5mm long at each end facing the nearer buffer beam. Finally, fit a doubled-up etched handwheel (14) to the cast pip at each end.

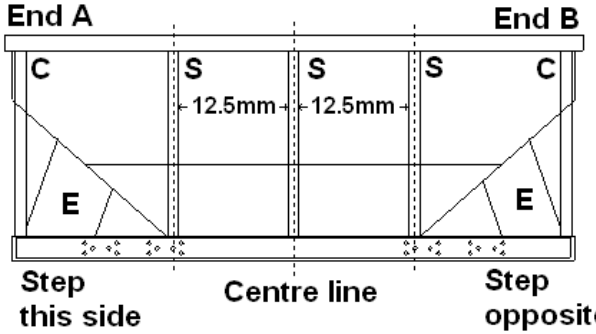
The other two castings represent the bottom door closing mechanism, and fit underneath the floor plate at positions 2 and 3 so that the curved lever appears above floor level with its base on the centre line of the wagon and its curved edge facing side C. Notice that the two castings aren't identical: one includes a pop-marked bracket around the curved section which should be drilled 0.5mm and fitted at end B. This is because the mechanism at this end of the wagon incorporates the fittings that hold the hopper door open until the operator wants it to close.



The sketch shows the layout at end B, with a release lever above the floor plate on side C. These parts are all rather too delicate to etch successfully, but if required may be fabricated from scrap etch. A more detailed description and photographs of the arrangement may be found in the article in issue 176 of Model Railway Journal.

Body

Attach the body centrally and squarely to the floor plate; superglue or a two-part epoxy such as Araldite should be used to join resin and metal parts together. Attach the cast detailing parts working from the sketch below:



Add two white metal end supports (E) to each end in line with the cast resin ribs. Note that the supports fit only one way up, as per the sketch.

Now fit the corner posts (C) to the body side, approximately 0.3mm inside each corner, first filing an angle at the foot so that it fits flat on the edge of the floor, and then trimming the top as necessary.

The intermediate side stanchions (S), six in all, will also need to be trimmed top and bottom before fixing. The bottom corner should be chamfered at 45° at the same time. On each side fit one stanchion centrally and the other two 12.5mm on either side of it.

Add a step beneath the left-hand end of each solebar. A ladder (1) is fitted to each end above the buffer beam adjacent to each step approximately 1mm inside the corner post. Remove the ladder etches from the fret and fold up the stiles. For each ladder thread four lengths of 0.3mm wire through the etched holes and fix, using as little solder as possible. Clean the stiles using either a fine file or a carbide cutting disc, and remove both spacer pieces. The first rung of the ladder should be about 4mm above the floor. On the prototype the ends of the stiles are twisted through 90° so that flat surfaces may be welded to both floor and body. This effect can be reproduced using two pairs of

pliers: grip the stile firmly adjacent to where you wish to make the twist and use the second pair to twist through 90°. At the lower end make this twist far enough up to leave room for a right-angled bend in each stile to form the feet that will stand on the surface of the floor plate. The upper ends fit flat to the vertical plating of the body.

Livery

In summary, these wagons were painted grey. In practice, this soon deteriorated to weathered rust, especially in later years. Lettering was white on black panels. Running gear, including solebars, was black. Hopper door wheels and the various hand levers were usually picked out in white, as were in many cases the bottom corners of the side stanchions (being approximately at shoulder/head bashing level for shunters etc.). The most prominent lettering wad the legend “IRON ORE” in six-inch capitals at the foot of the second vertical side panel.

However, although the shades of the body colours changed over the years in some degree, more noticeable were the changes in both style and substance of the lettering, particularly as the use of the vehicles for other traffics became more common. As always, therefore, modellers are advised to refer to photographs wherever possible; many of the published sources listed earlier will be helpful in this respect.

Numbers
D1/163: B438000 to B439499

A more recent version of these assembly instructions may be available on the Wizard Models website.

Wizard Models

Wizard Models stocks a wide range of kits, components, and other necessities for the modeller in 00, EM and P4. Contact us at:

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