The 2mm Scale Association

Part Ref 2-354

BR 4 Shoe Vacuum Fitted 10' w/b Underframe Etch

This kit represents a British Railways 10 foot wheelbase, four brake shoe, vacuum fitted underframe and was common under many BR wagons constructed during the 1950's. This kit was designed to suit the Association BR Banana Van (part 2-563) project and has been made available as a separate item. There are several slots on each side of the u/frame top plate, which are location points for the banana van body and can be ignored for all other purposes.

To complete this kit you will also require:

4 No	2-041	Brass Top Hat Bearings	(*only sold in packs of 50*)
1 No	2-346	Turned Brass Vacuum Cylinder	(*only sold in packs of 5*)
2 axles	2-2XX	6mm Wheels on 12.25mm Axles	(*pattern to choice)*
1 Set	2-4XX	Brass or Whitemetal Buffers	(*pattern to choice*)
1 Length		0.3mm Dia Straight Nickel Silver or Brass Wire	

1. Carefully remove the main underframe unit from the etch.
2. Using a suitable broach ream out the axle bearing holes until turned brass top-hat bearings (2-041) are a push fit. Ream out the small holes in the vee-hangers to suit 0.3mm wire.
3. Bend down to 90 degrees the axleguard/solebar sides using a pair of bending bars or a small vice. As usual the half-etched fold lines go on the inside of the bend. Bend down the buffer beams using a small pair of smooth flat pliers. If you wish to make use of the integral coupling mounts these should now be folded down out of the baseplate, formed to shape and soldered in place.
4. Carefully solder in the top-hat bearings ensuring that they are fully seated into the half-etched recesses. Test fit a pair of wheels (on 12.25mm axles) and check for free running. Carefully adjust the axleguards if required. The wheelsets should spin freely for 10 or 15 seconds when flicked, but should not be so loose as to fall out easily.
5. The cosmetic solebars fold over to form a double thickness piece. Pre-tin with solder the two inner mating surfaces before removing from the etch. Remove from the etch but be careful not cut the two 'hinge' tabs connecting the two halves. Fold over and then sweat together, ensuring the two halves are accurately aligned. Carefully file off the two 'hinge' tabs from each solebar. The solebars include etched spring detail. You may prefer to use separate cast whitemetal springs and axleboxes in which case the etched ones may be cut off.
6. Solder the solebars to the main underframe unit ensuring that the top edges are parallel and that the springs fit neatly over the top hat bearings.
7. The etch includes axlebox covers. You can use these or separate cast whitemetal ones. The etched ones are formed by folding together three layers using the etched tabs as hinges. Again pre-tin the mating surfaces before sweating together. Carefully file off the hinge tabs after soldering. Solder to the spring units.
8. If your chosen body does not include integral buffer-beam detail you will need to use the separate ones supplied on the etch. These can be aligned onto the main u/frame using dressmakers' pins as temporary aids or fit turned brass buffers (2-443) at the same time. Etched draw-hooks and plates are supplied for detailing these buffer beams, but be aware that these hooks may foul your coupling latches if using DG's or BB's.
9. Ream out the holes on the brake unit to clear 0.3mm wire. Remove from the etch and fold down each side to 90 degrees. Locate the brake unit into the u/frame using the tabs and slots provided. There are long and short tabs to ensure assembly the correct way round. Thread a piece of 0.3mm nickel silver wire about 20mm long through the vee hangers and brake unit to ensure alignment and then solder the brake unit in place. Remove the wire.
10. Ream out the vacuum cylinder arm (the small strap with a hole at one end on the etch next to the coupling hook plates) to take 0.3mm wire.
11. Re-thread the 0.3mm wire through one vee hanger and one side of the brake unit. Then thread the vac cyl arm onto the wire, keeping the half-etched side facing inwards. Take the wire through the other side of the brake unit and vee hanger. Tack solder it to the inside of the brake unit, but keep the vac cylinder arm free to slide for now.
12. Solder the turned brass vac cylinder onto the bracket on the brake unit. This bracket can be bent down a few degrees to put the vac cylinder on an angle. Refer to a photograph of your chosen prototype to get this right. The etched vac cylinder arm can now be aligned with the centre line of the cylinder. The end of the arm bends around the piston rod on the cylinder and needs to be soldered back on its self.
13. Ream the holes in the brake levers to 0.3mm and remove from the etch. Fold up as per the illustration. There is a profile guide etched into the fret to assist you with this task. Be aware that there is a cam and a non-cam lever and a vee hanger to suit each ! Thread the lever over the wire and locate the bracket on the other end into the hole on the sole bar. The solebar hole may need opening out slightly first. This bracket can then be soldered from the rear of the solebar. The cam-lever side needs a further short piece of 0.3mm wire for its pivot. Trim the wires back flush with the levers once they have been soldered in place.
14. If using whitemetal buffers, springs & axleboxes these can now be glued in place.

Etch Artwork by Bob Jones 2001. Instructions & Notes by Edward Sissling 2002.

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INSTRUCTIONS
BR 4 SHOE VAC FITTED CHASSIS - S2 354