

## FR2 – Farish BR CCT Detailing Kit v1.3

This etch provides an easy method for adding detail to the Farish BR CCT. It is designed for those people (like me) who have a lot of these vans to convert and are happy with the majority of the Farish underframe.

The van is an excellent moulding with a pretty good underframe that is let down by (a) brake shoes not in line with the wheels, (b) no steps beneath the doors, (c) two V-hangers being moulded solid, (d) no cross rods between the V-hangers and (e) no rodding linking the two sets of brakes with the central vacuum cylinders. Most these elements are covered by this kit. It uses the remainder of the Farish V-hangers and underframe components which are reasonable quality, if not quite as fine as you would get by using a replacement underframe.

### Additional parts required (Association shop numbers in brackets)

2x 7mm disc wheels on 15.2mm axles (2-025) reduced to 14mm axle length\*  
0.3mm Nickel Silver wire

\* Reducing the association wheels gives good running, even though the axle ends finish up more rounded than pin-point. It may be possible to use the original Farish wheels if they are turned down to 2FS standards, but they are 7.2mm diameter and it is not known whether the brakes in this kit can be bent out to accommodate these.

### Additional Tools Required

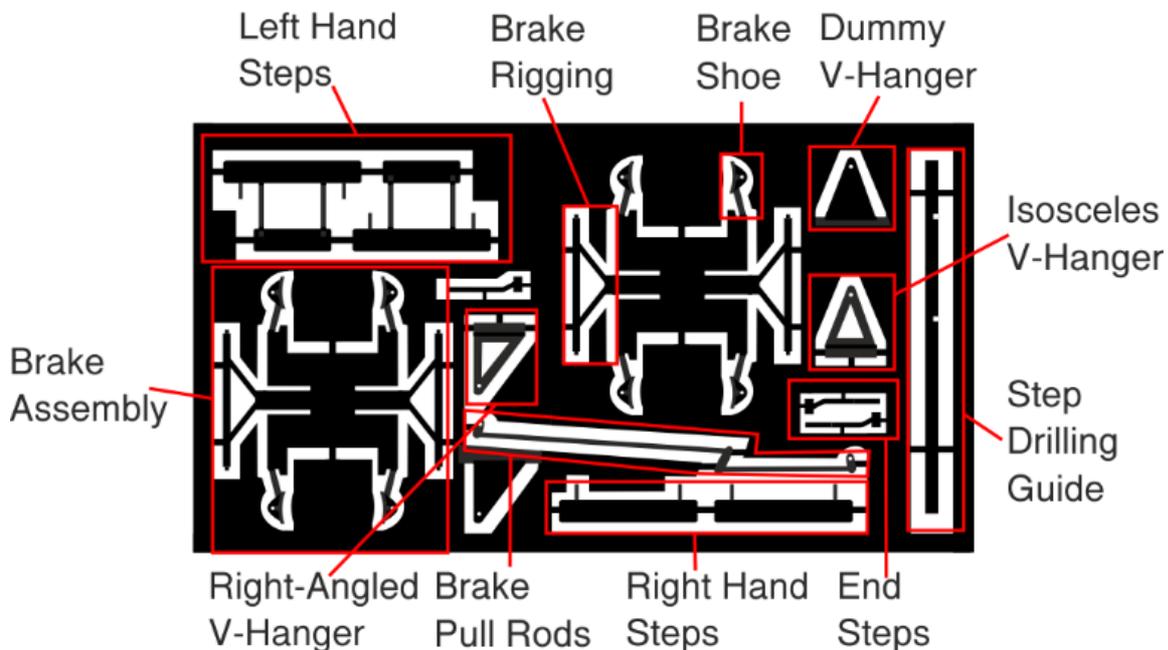
Pin Vice  
0.4mm drill(s)  
Digital Callipers (if modifying Association wheels)  
Flat file (if modifying Association wheels)

For beginners, general instructions on building these kits can be found in a separate document. For experts, or if you don't like reading instructions and just want to know the suggested order, you can simply **follow the text in bold** and dip into the detail where necessary.

There is also a video for the BR1 Brake shoe etch available on the web site at <http://www.festiveroad.net/pages/shared-etches/> which might be helpful in showing the general principles of how the brake shoe assemblies go together.

## Building the etch

The etch contains: (a) two assemblies, one for each wheel, comprising clasp brake shoes and rigging that joins each pair of brake shoes; (b) four sets of steps, two of which are double and go on the left hand door on each side, plus a drilling guide; (c) two replacement V-hangers, one isosceles and one right angle, that replace the equivalent solid parts. (d) Brake Linking Rodding.



The various parts can be built in any order, but the brake assemblies should be added to the vehicle after the V-hangers and rodding in order to give clearance for filing, and the steps should be added last to avoid them getting damaged. In addition you can paint the various assemblies before fitting, or fit them in the metal and spray the entire underframe. I favour the latter as there will be a couple of bits of wire added during assembly that will need painting at the end in any event. The Rail Blue version has blue solebars which need to be masked if you planned to keep the livery unweathered – I don't bother because in practice the solebars didn't stay blue for long.

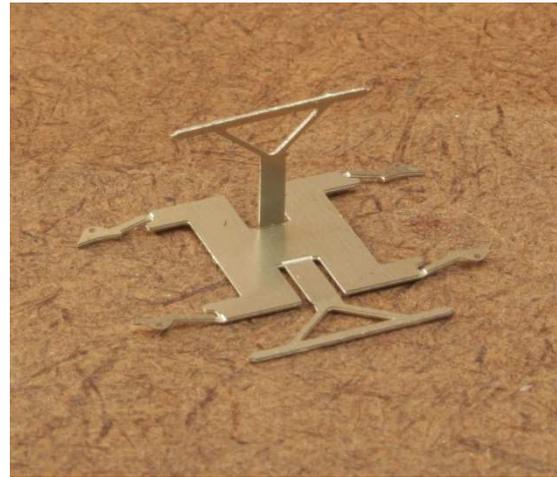
**All fold lines are on the inside.**

### Brake Assemblies

1. **Remove one assembly from the sheet** by cutting through the tabs that join them together, then file away the remains of the tabs (particularly those on the brake rigging which will be visible). Take care when cutting the tabs not to exert any sideways force on the parts. The brake rigging is held to the etch with a relatively thin piece of metal and sideways movement when being cut or filed will weaken the piece making it more prone to detach before it has been soldered.

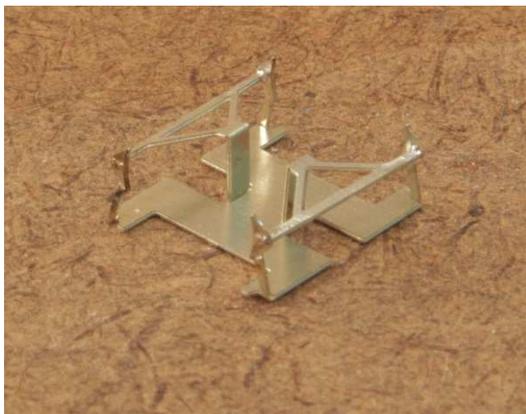
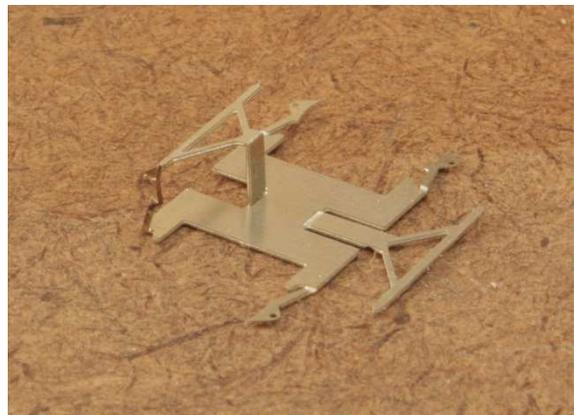
2. At this stage you might want to **open out the holes in the brake shoes slightly**. Hold the brake shoe firmly with pliers whilst doing this. The holes need to be big enough to take the protruding piece on the end of the brake rigging.

3. The brake rigging is connected to the floor of the etch by a piece of metal that has two fold lines, one on each side. Using a pair of long nosed pliers, hold one piece of brake rigging so that the nose of the pliers is just shy of the fold line, then **bend the entire piece of brake rigging up at 90° to the floor**. Do not solder it as we need some movement here for adjustment later.



4. Using tweezers, hold the bottom part of the brake below the second fold line, and use your finger or a steel ruler to **fold the top of the brake rigging down 90° so that it is parallel to the floor**. Again do not solder this, but check it is square with the floor.

5. The ends of the brake rigging should be more or less in line with the holes in the brake shoes. Fold up one shoe and see if the rigging fits into the hole on the shoe. If it does not then you may need to open up the hole in the shoe with a reamer, but take care as there is not much metal surrounding the hole. It may be that the rigging needs to be tweaked slightly to align the two parts. When the end of the rigging fits neatly into the shoe, apply some solder cream to the ends of the brake rigging, then **solder the brake rigging to the shoe**.



6. Repeat for the opposite brake shoe.

7. Repeat for the opposite brake rigging.

8. Repeat the exercise for the other assembly.

## Steps

9. **Remove one of the Double steps from the etch** and file off any remnants of the tabs.

10. Hold the strips that connect the steps in a pair of pliers and with your fingers gently **form the fold on the bottom step**. Check it is square and **solder it in position**.

11. **Hold the top step with pliers** with the jaw running parallel and adjacent to the fold line, **then fold up the connecting strips with your fingers**, making sure they are clear of the locating lugs. The fold is soft and easy to form and you can then use tweezers to ensure the corner of each fold is square before **soldering in place**.

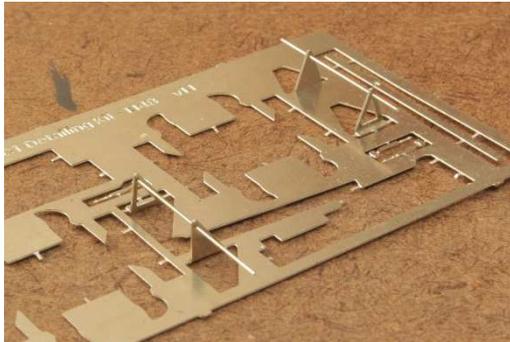


12. **The single steps just need removing from the etch** and the tabs filed off.

## Underframe Details

13. The etch is designed to create an assembly comprising the internal v hangers and the brake pull rods. It does this by utilising two dummy v hangers that are solid. **Open out the holes in the v-hangers and in the brake pull rods** until they take a piece 0.3mm wire.

14. **Remove the brake pull rods from the etch and carefully remove any remnants of tabs**. Place them carefully to one side.

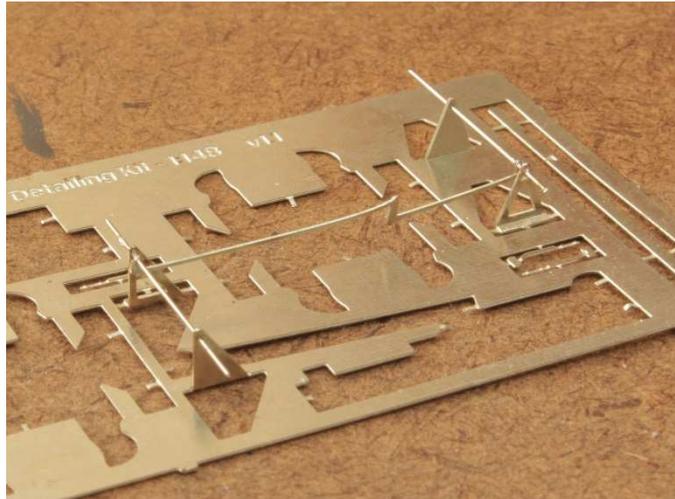


15. **Fold the dummy and internal v hangers up 90 degrees**. Hold the base of the internal v-hangers firmly with the tips of tweezers whilst bending the body of the v-hanger with a scalpel blade. Ensure the base doesn't twist or become detached from the etch. You can solder them if you want but the fold is quite secure on its own.

16. **Thread a piece of wire through each dummy v hanger and its adjacent internal v hanger**.

17. Take the brake pull rods and make sure the orientation is correct – the shorter end goes towards the right (next to the isosceles v hanger) and the linking pieces at the end face upwards away from the etch (which be downwards on the finished model). **Place the brake pull rod on the wires between the two sets of v hangers** by sliding the wire out of each internal v hanger and passing the wire through the pull rod and then back through the internal v hanger.

18. **Solder the brake pull rods to the wires, then solder the wire to the internal v hangers.** The pull rods should be a couple of mm away from the internal v hanger towards the dummy v hanger so that the pull rods are perpendicular to the v hangers.



20. **Trim the wires flush with the internal v-hangers.** It is best to leave this assembly on the etch until you are ready to fit it. If you are painting it before fitting then you can do so while it is still on the fret. When it is time to remove it, cut the cross wires inside the dummy v hangers and cut the tabs to release the real v-hangers from the fret.

### **Modifying the Farish Vehicle**

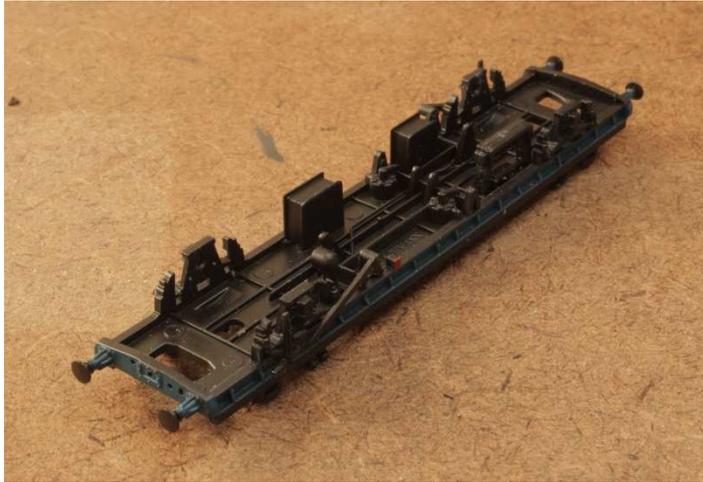
21A. If you are using the Wheel Turning Service **send the wheels off for turning** and make sure you have them back before commencing the final assembly.



21B. If you are modifying the Association standard wheels, start by taking a reading of the axle length using a pair of digital callipers. It should be near to 15.2mm. We need to reduce it to 14mm, so start with one side and **file the pin point away until the length of the axle when measured is 14.6mm**, then repeat for the other end of the axle and you should have an equally wheelset on a **14mm** axle. Check both axles run smoothly in the axleboxes. If there is any stiffness, take a 1mm drill and open out the axle bearing slightly.

22. With the Body still affixed to the underframe, place the drilling guide on the solebar under one set of doors with the half etched V pointing upwards and in line with the centre of the doors. With a 0.4mm drill, **drill holes for the footboards in the solebar using the holes in the drilling guide for alignment.**

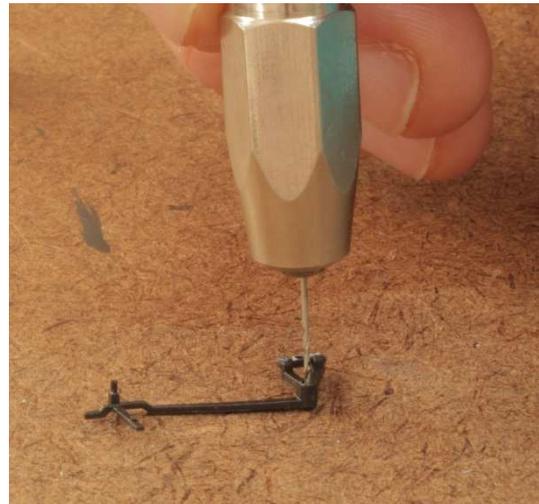




23. **Remove body.** The body is fixed to the underframe by four clips, one over each wheel. Slide a scalpel blade or other thin implement under the body side, taking care not to damage the solebar, and gently prise the underframe away from the body.

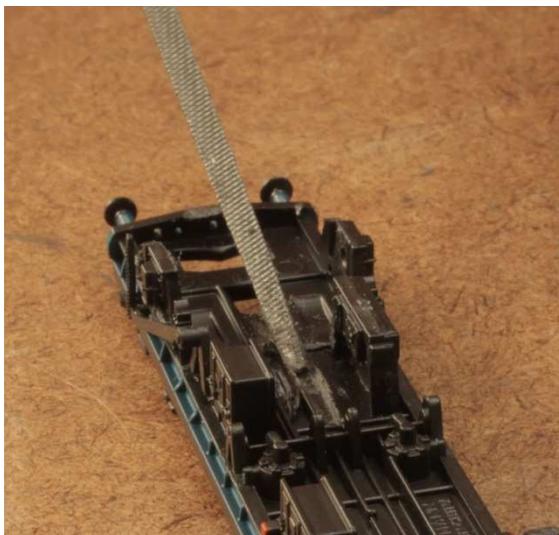
24. If not using the NEM couplings **unclip the coupling cover and remove the coupling**

25. **Drill a 0.4mm hole in the brake lever v hangers** - this does not need to go all the way through, and it is neater if it doesn't - it just needs to be enough to retain the cross rodding wire. This is easier to do if you remove the brake lever and v hanger by pulling the brake lever out of the solebar then pulling the v hanger down from the solebar. Drill the hole on the inside of the v-hanger where there is an impression to get you started. Ensure the drill remains central. Don't replace the brake lever and v-hanger until you have removed the brake shoes (see later).



26. **Drill a 0.4mm hole through the four central v hangers**

27. We now need to **remove the solid v-hangers** that are to be replaced with our etched versions. The easiest way to do this is to take a scalpel and score repeatedly along the base of the v-hanger on both sides, then grip the piece in a pair of pliers and bend left and right until the piece snaps off.



28. The replacement v-hangers will be fixed to the floor the other side of the central ridge from the old ones so it is not necessary to remove all traces of the old ones, only where they are visible. It is necessary to **file away the diagonal cross piece from the floor adjacent to the site of the isosceles v-hanger** in order to provide space for its replacement.

29. You will also need to **remove the moulded brake shoes**. These are quite easy to remove with three cuts using a sharp scalpel. They are moulded adjacent to the conical spring dampers which can be used to guide the blade diagonally for the first cut; then down towards the solebars for the second; and finally a horizontal cut along the lower face of the solebar to remove the last trace. If you are careful very little if any filing is necessary.

30. **Replace the Brake lever and v-hanger.**

### Final Assembly

31. **Clean and paint the assemblies.** You can leave the painting until the end and paint the entire underframe if you prefer.

32. **Place the internal brake rodding assembly roughly in position.** The linkage part way along should be in line with the position of the central cross rodding.

33. Note how much the wire protrudes beyond the outside v-hangers and **trim the wire to length** so that the ends of the wire will be held by the holes in the v hangers you drilled earlier.

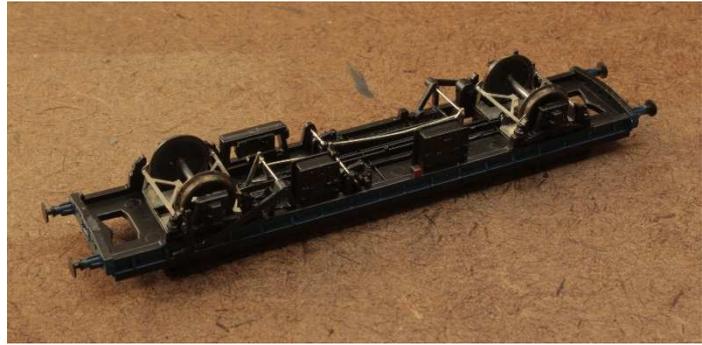
34. **Thread a piece of 0.3mm wire through the central v hangers and through the hole in the centre of the brake pull rods.** You may need to tweak the position of the pull rods to do this. Check that all the cross wires are parallel. If the addition of the central wire causes the others to go out of true, it is possible to replace the central wire with two pieces that do not pass through the pull rods. This subterfuge is invisible from normal viewing angles and is how the etch was originally designed.



35. When you are happy that everything is straight and true **glue the replacement v hangers to the underframe.** You should be able to lift each v hanger up sufficiently to apply a small dab of glue on the end of a cocktail stick.

36. Roughen up the faces of the parts to be joined and **glue the brake shoe assemblies to the wagon floor.** These are designed to sit on the ridges in the floor and you therefore need a generous drop of a thick glue to fill the gap. We recommend using a slow setting glue such as Araldite or Serious glue which gives you time to adjust the alignment of the assembly to ensure it is central.

37. Place a wheelset in the axleboxes while the glue is still wet and adjust the positioning of the brake assemblies so that the brake shoes are central. Don't worry if the shoes drag on the wheels slightly as this can be adjusted once the glue has dried. Hold the assembly firmly until the glue has hardened.



38. Glue the steps in the holes previously drilled in the solebars. The double steps go under the left hand doors on each side.



39. Remove the end steps from the etch, bend the bottom step 90 degrees and fix in place on the end of the vehicle. These are placed to the right of the left buffer where they should leave sufficient space for body mounted DG couplings to operate. NEM couplings and bogie-mounted DGs will probably be obstructed by these in which case it is best to omit these steps.

40. Clean and paint the parts. Even if you chose the paint the parts before assembly there will be a couple of bits of wire forming the central cross rodding that will need painting at this stage.

Document v1.3.0 June 2016

#### Change History

V1.0 – Initial Release

V1.1 – Extra clearance for brake shoes and added End Steps

V1.2 – 0.2mm extra length on brake rodding. Better shape for end steps

V1.3 – Changed position of tabs on end steps to make cleaning up easier