

CC04D Etched Ladder Instructions

The etched sheets are in 0.2mm brass to achieve realistic, but reasonably robust ladders with the flexibility for multiple uses. The ladder sides must be cut from the sheet, and handled with extreme care to avoid distortion. The rungs are made of 0.25mm hard brass wire, supplied. By using appropriate simple jigs, a wide range of ladder sizes can be made; typical model railway uses are for signals, and wagons such as tankers and hoppers. The most common ladder widths are 10" and 12" for which simple jigs are available. The ladders can be bent, or curved, if required, but this **must** be done before cleaning up the outer faces where the rungs have been soldered. Failure to observe this precaution may result in a risk of fracturing the soldered joints. For extreme bends, it may be appropriate to anneal the etched sides in the specific area of the bend before assembly. With care, the ladders can be cut to the required length after assembly, using miniature side cutters over both uprights. 188°C solder is recommended, to allow a lower melting temperature solder to be used for securing the finished ladder.

Assembly of ladder:

The assembly of ladders should be done by means simple jigs. These are available for 3.3 and 4mm overall ladder widths, equivalent to 10" and 12", with allowance for the thickness of the ladder sides. Once you understand the operation of the jigs, it will be seen that other sizes could be made up quite simply using single sided pcb strip.

The jigs supplied consist of pairs of fibreglass strips, similar to that used for soldered track construction, but with the copper facing removed.

There is a fine slot near one end of one of the strips. This is to locate the first rung of the ladder, to ensure that assembly is square.

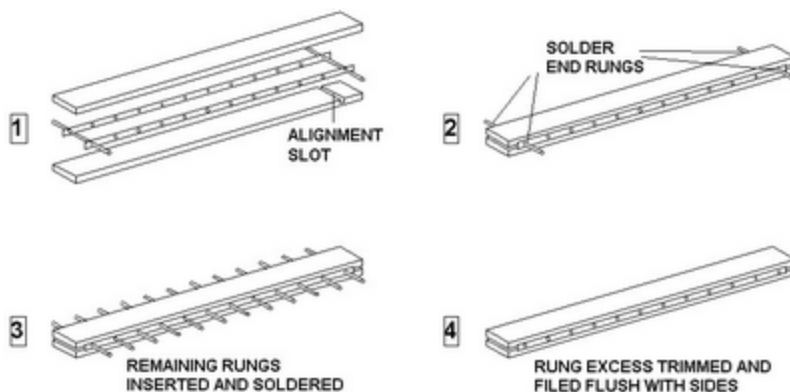
Straighten and cut two lengths of wire approximately 30mm long. Place these in position through the holes at each end of a pair of ladder etches. Place these on the required size jig strip with the alignment slot engaging one of the rung wires, and the etched ladder sides on each edge of the jig. The other strip of the jig is then placed on top, sandwiching the two rungs. Use a pair of clips (Hair clips, self-closing metal tweezers, or paper clips will do the job) to hold the two parts of the jig firmly together with the edges in line. Hold the etched ladder sides against the jig, apply flux, and solder to the exposed rung wire where this is located in the slot. This ensures that the ladder will assemble square. Then flux and solder the rung at the other end of the ladder, ensuring that the sides are flat against the edges of the jig. Push further 6-8mm lengths of straightened rung wire through the holes in the ladder sides, and between the jig strips, every 4 - 5 rung, relaxing the tension on the appropriate clip. Flux and solder each of the rungs in position, ensuring that the ladder sides are firmly against the edges of the jig. This will ensure that the original alignment of the two sides is not lost. Finally fit and solder the remaining rungs, ensuring that the sides are flat against the edges of the jig.

Bending the ladder to a specific shape.

If the ladder is required to be curved, this should be done at this stage. The rung soldered joints, at this stage, are strengthened by the solder fillet, which will be subsequently filed back for the finished ladder.

Finishing the Ladder assembly:

Cut off the surplus rung wire on the outer faces of the ladder, using a pair of miniature side cutters. Carefully clean up the outer faces of the ladder sides using a fine flat needle file, to remove any projecting wire and solder, and any remains of etched tags. If the ladder is straight, it is convenient to support it in the original assembly jig for this finishing operation. For a curved ladder, the outer face of the curve can be supported on a single piece of the jig using finger pressure and the rung projections individually removed, working along the curve. Finally clean off any flux residues in hot water. You should now be holding a miniature representation of the ladder of your choice.



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