

STEPHEN JOHNSON MODELS

1625

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~~ORANGE 2800~~ GEARTON

Assembly Instructions. 2460

5 TON STEEL GANTRY CRANE

This model is based on the crane at Bombala. There are two basic types of gantry. The first, represented by this model has two I beams across the top, the other has a single, larger beam. There are minor variations between individual cranes of each type.

General Instructions:

The kit is comprised of two etchings, each making one half of the A frame structure. The various components on the etch are described in Diagram 1. Other parts are added as lost wax castings and brass section. Data Sheets produce a plan of a gantry crane (Sheet No.G5) which provides a useful reference to work from.

This kit is not recommended for those modellers with limited soldering experience and equipment. A controlled temperature soldering iron is recommended. The Dick Smith T-2000 soldering station at around \$110 was quite adequate. It is possible to assemble the whole model with Carr's 188 solder and green label flux. It may be easier to use other solders with lower melting points for adding some of the detail. Similarly, resistance soldering may be advantageous for soldering some of the smaller parts. A list of recent references is included for further information on these soldering techniques.

1. I Beam Sections: Prior to removing the I beam components from the etched sheets, drill out the pulley mounting hole on each of the main I beams with a No. 78 drill (Diag.1) . Remove parts from the fret with a sharp knife to avoid distortion. Assemble the I beams in the jig (Diag. 2) and solder together. File the protruding tabs from the tops and bottoms of each beam. Cut the rail section to length and solder to the top of each cross beam leaving a space of 4.5mm at the winch end and 3.5mm at the other end.

2. Assembly of the A frames: Referring to Diag. 3 and using the jig supplied, fabricate the endless chain wheel mounting brackets (Left and Right) from the 1mm angle. Cut 2 pieces of angle 5mm long for the top of the other A frame. The 1.5mm U section forms the cross pieces. Cut 2 lengths at 1.4mm and 2 at 2.4mm. File these to length so that they line up with the slots etched in the web of each beam as they sit in the jig. Solder each frame together. The 2 I beams that support the winch housing can be soldered to the inside of the A frame 6mm apart and 6mm from the bottom. Solder the steps to one leg of each A. The steps are supplied on a "sprue" to hold each one in it's relative position until the end of each step is soldered to the I beam. Once this is done, cut away the sprue to allow each step to be bent to a U shape. Solder the other end. (Diagram 4.)

3. Angle Braces: Bend up each of the angle braces noting that the angle butting each leg is folded to a right angle. The angle joining the main beam across the top must be folded to a more acute angle to compensate for the slope of the legs. The etched fold line may need to

be enlarged with a triangular file to allow the tab to bend beyond 90°. It is easier to leave this join unsoldered till the brace is in it's final position.

Assemble the gantry structure at this stage. There should be a gap of 1mm between the two horizontal beams. A small pulley fits between the 2 beams (see Step 5). A small amount of step will have to be removed to secure the angle brace to two of the legs

4. Transverse Carriage: The first step is to drill out the various holes in the side plates and wheels (both etched and cast) with a No. 78 drill. Drill out all of the brass castings at this stage. Use a No. 75 drill to provide clearance for 20 thou wire. It is far easier to do this while they are still attached to the sprue. Tin the back of each half of the pulley wheel. Remove from the fret and assemble with a piece of 10 thou wire through the centre hole ensuring the holes line up. Solder together. Sandwich these between the triangular side plates, solder, remove excess wire and file smooth. The two holes in the smaller wheel should remain visible below the plate. Solder a length of 10 thou wire through two of the carriage wheels. Pass this through the holes in the carriage and solder the wheel on the other side. Fit between the 2 main I beams and make sure the wheels sit properly on the rail.

5. Gears and pulleys: Assemble the 3 small pulleys as in Step 4, noting that there is a spacer in the middle. One of these goes on a 10 thou axle between the brackets on the end of the 2 main I beams (drilled out in Step 1). The other two fit on a piece of 20 thou wire between each pair of lost wax brass mounting brackets (See Diag. 5). These assemblies are soldered to each end of the two main I Beams directly above the legs of the A frame. Leave 5mm of the 20 thou wire protruding through each bracket. This will make it easier to solder them in place. The extra length of wire forms the axle for one of the spoked gears which is turned by the shaft of the endless chain wheel. Solder the endless chain wheel mounting bearings to the brackets formed in Step 2. Solder the endless chain wheel to a length of 20 thou wire. Insert this through the two bearings and solder so that the chain pattern is at the top of the chain wheel. (Diagram 5 refers)

6. Winch housing: Drill out the holes in the side plates. All are No. 78 except the central hole for the cable drum which is No. 75. Bend the mounting tabs to 90°. Drill each end of the cable drum to a depth of 1 mm with a No. 75 drill. Solder a 5mm length of 20 thou wire in each hole. Solder the other spoked gear to one end of the drum. Put several windings of the fine copper wire on the drum to simulate cable. Sandwich this assembly between the two side plates and insert lengths of 10 thou wire through the front hole and the two back holes. Solder in place. Trim to length leaving the ends slightly proud. Solder the brake drum in position. The remaining holes are for the winding mechanism. Bend one piece of 10 thou to the shape of the handle (Diagram 7.) The small gear casting is supported in the housing by this and another piece of 10 thou wire. The holes in this casting were drilled 20 thou. to allow some adjustment. Solder this whole assembly centrally on the mounting I beams so that the top of both side plates is

about 0.5 mm above the I beam. Once in place, solder the brake handle to the brake drum and the winding handle. (Diagram 8)

7. Cables and chains: Cables are represented by 5 thou wire. Cut 2 15 - 20 mm lengths and solder them to the pulley at the top of the hook casting. There are enough etchings to fabricate the hook casting if you really want to. The other 2 ends of the wire are soldered to the pulley on the transverse carriage. Straighten and solder another length between the cable drum and the small pulley on the end of the I beams. Chains are represented by slowly twisting 2 strands of the thin copper wire together between your fingers so that the pitch is uniform. This looks much more realistic than even the finest chain (which is grossly overscale). Solder a 10 mm length of "chain" to each small pulley. (Diagram 9) This represents the chain that moves the carriage from one side to the other. The missing section is hidden by the I beams. The endless chain is bent to a long U shape. The length should be juggled so that the chain touches the lower winch supporting I beam as it passes underneath. Soldering them together provides additional strength to the chain. Bend the chain guide to the correct angle and form the ends into a loop with some round nosed pliers. Solder the chain to this and the wheel so that it butts against the simulated chain on the casting.

8. Finishing: Clean up all of the brass work prior to priming and painting the model grey. Paint the mounting blocks a concrete colour and glue to the bottom of each leg. The decal "LOAD NOT TO EXCEED 5 TONNE CLASS 1" can be cropped to the imperial "TON". This is applied to the top winch supporting I beam. The rest of this decal is for another crane project.

REFERENCES:

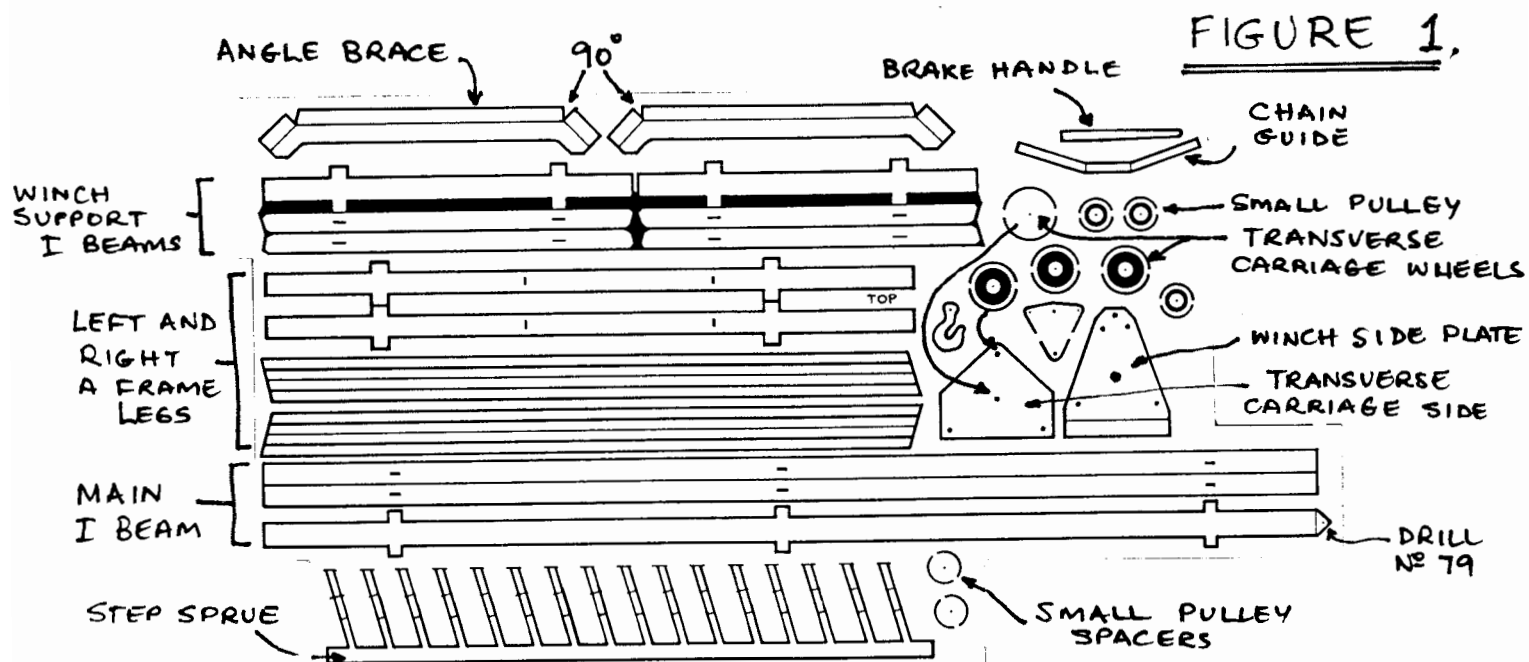
Carr's Modelling Products. Soldering Handbook.

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I. Rice "Resistance soldering". The Model Railway Journal, No. 51 1991. p. 318



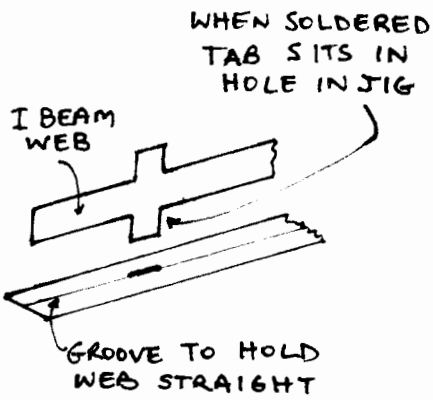


DIAGRAM 2:

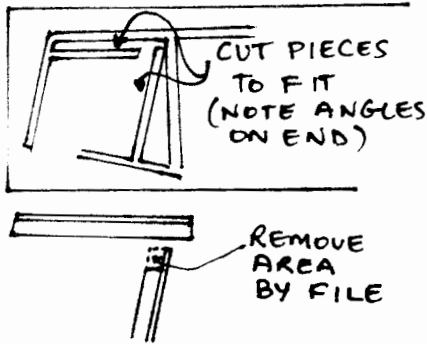
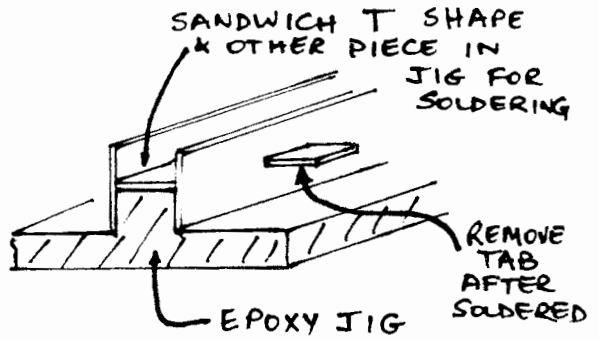


DIAGRAM 3

DIAG. 4

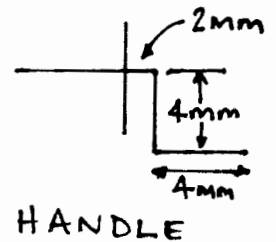
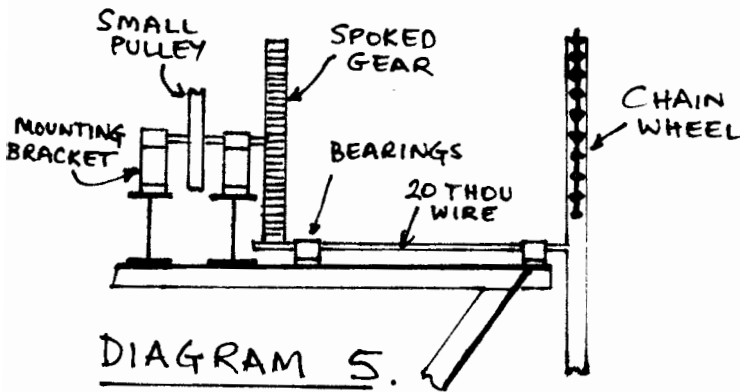
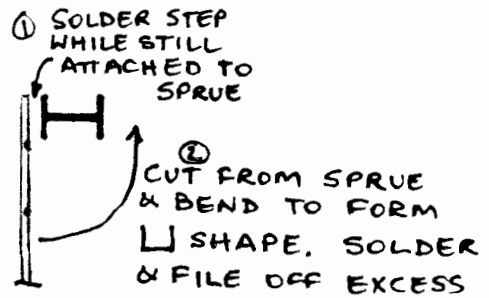


DIAGRAM 5.

DIAGRAM 7
ARRANGEMENT OF
GEARS - END VIEW

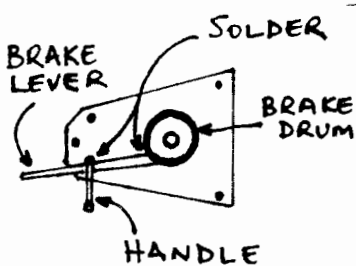
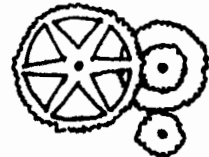


DIAGRAM 8