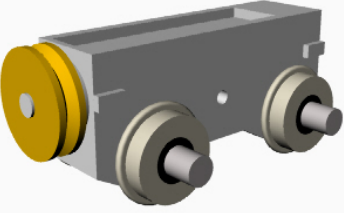
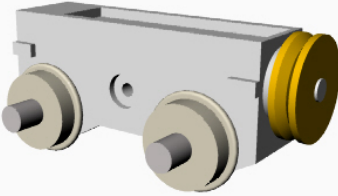
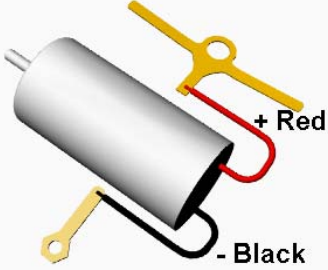
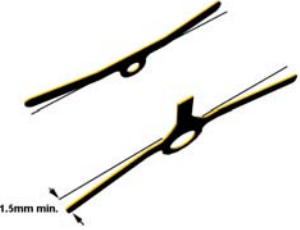
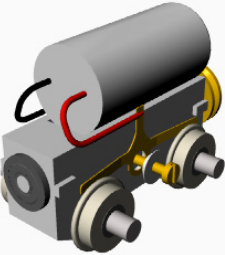
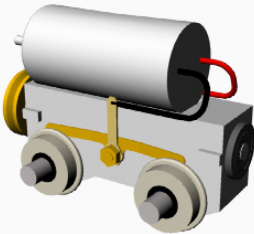
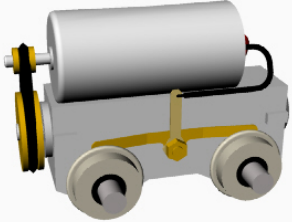
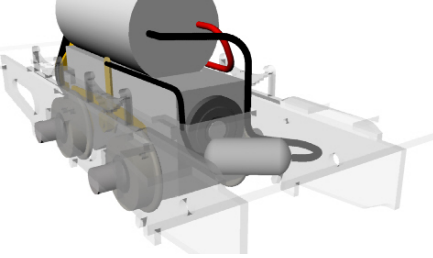


009 Quarry Hunslet Alice Class 'Dorothea' Assembly Instructions (Rev3.2 Dec 2013)

Section 1 Assembling the drive unit (3D printed type block)

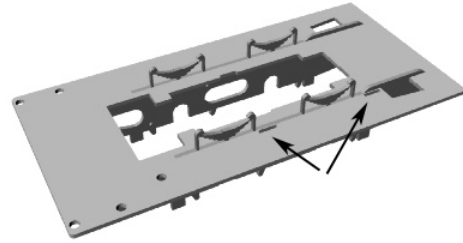
		
<p>1. The drive unit is supplied part assembled as above and is best painted before attaching the motor and pickups. Do not however paint over the motor mounting recess on top at this stage.</p>	<p>2. One side of the housing has a small counter bore to accept the insulating bush for the pickup on that side. The model is driven down through the firebox so this is the left hand side.</p>	<p>3. To avoid damaging the plastic housing when soldering, one pickup and one tag should be soldered to the motor connections as shown. The polarity above will cause the model to run forward on conventional positive powered right hand rail.</p>
 <p>1.5mm min.</p>		
<p>4. The pickups should be formed to stand off from the housing by a minimum of 1.5mm before fitting. Attach the motor using super glue or epoxy and allow to set before attempting to fit the pickups.</p>	<p>5. Thread the insulating bush part way onto the 14BA screw and assemble the left hand pickup as shown. To facilitate fitting of the right hand pickup push the bush fully home but not the screw.</p>	<p>6. Position the right hand pickup and push home the screw. Attach the lead from the motor and fasten with the nut.</p>
		<p>9. Lubrication. The non-drive end layshaft bearing is self lubricating molydenum disulphide impregnated nylon and requires no lubrication. The driven end layshaft bearing is a sealed stainless steel ball race and requires no lubrication.</p>
<p>7. Fit and align the pulley and secure with Loc-Tite or similar, allow to set before fitting belt. The chassis can now be test run. The cast body can be placed temporarily over the motor to provide a little extra weight if required.</p>	<p>8. The motor is rated at 10v. With care it can be run on a 12v DC system, it is however recommended that a 15 ohm resistor be fitted in series with the motor. This can be mounted above the running plate but as space is limited mounting below the plate may be preferred.</p>	<p>The worm wheels can be graphite lubricated by dragging a soft graphite pencil lead over them. The main axle bearing should be lightly oiled using a proprietary plastic friendly oil for models</p>

Please Note: The drive unit should be assembled using the instructions supplied before proceeding with the following assembly.

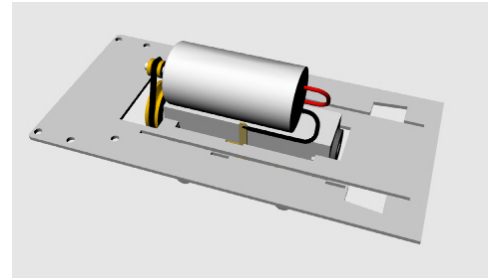
Section 2 Assembling the main Frame

Note: Side frames and buffer beams profiles may differ from illustrations according to model.

The side frames are etched and will require cleaning up to remove the cusping. If necessary the slot for the side frames can be eased with a piece of folded wet and dry paper. Check alignment with the front edge of the running plate. Note the control slots arrowed for correct orientation of running plate. Solder or glue side frames in position ensuring they are at right angles to the running plate.

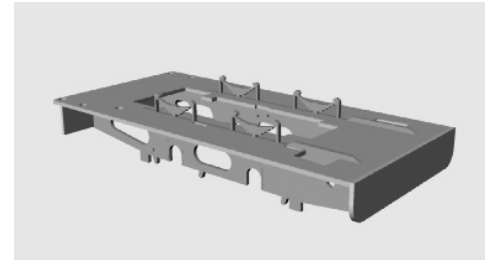


Insert the previously assembled drive unit into the chassis frame. It may be necessary to ease the running plate slightly. When doing so pay particular attention to the wheel clearance on the insulated wheel side. A thin coating of epoxy applied to the inside of the side frame in the wheel area will help prevent any problems while test running, Ease the axle slots a little if required to allow the drive unit to be rotated into position entering the front or rear axle first, this will enable the drive unit to be removed carefully later when coupled.

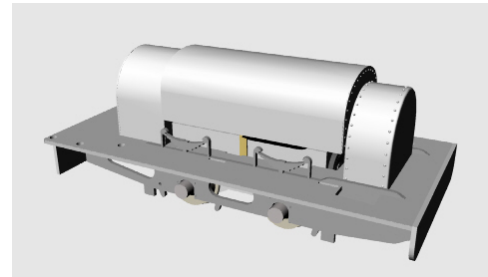


There 2 styles of buffer beams to cater for those wishing to model alternative versions of the engine.

For Dorothea as running at Launceston Steam Railway, the smaller beams are correct. You may wish to drill them to suit your chosen couplings before attaching to the chassis frame.



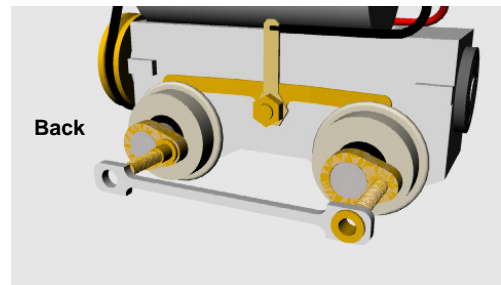
Clean up the one-piece saddle tank, smoke box and firebox casting and check for alignment with the drive unit in position. You may have to ease the rebates at the lower edge of the smoke box for a good fit to the running plate. The smoke box should align with the cylinder openings as shown. Locations for filler cap, dome and handrail knobs have not been pre-drilled to allow for variations in the prototypes. The handrail knob locations are best marked out for a specific prototype with the casting off the frame on a flat surface before fitting. It is recommended that the casting be glued to the running plate rather than soldered.



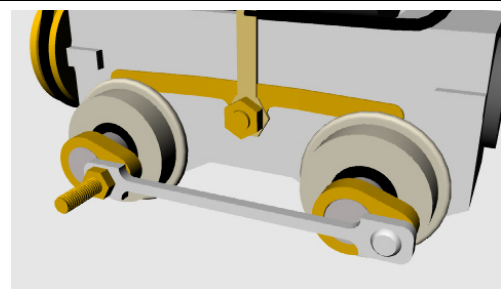
Section 2 Assembling the motion

The motion for this model is very fine and requires careful handling and assembly. The cranks are of milled brass with pre-fitted 16BA crankpins and are a slide fit on the axles. It is important to appreciate that the coupling and connecting rods run on the flanged bushes and not the bushes running on the crankpin screws.

Slide a flange bush onto a small broach to use as a gauge. Carefully broach out the rod holes if required to run freely on the bushes. Note that the rear (pulley end) crank bush is flange inner most and front crank bush flange out



Slide one crank on to an axle and secure with Loctite®. Slide second crank onto axle and use coupling rod and bushes to align. Carefully apply Loctite® to crank and end of shaft to secure. Crank holes are slightly octagonal to allow Loctite® to be taken up by capillary action. 16BA nuts can be used to hold the coupling rods in place temporarily for test running. Repeat on other side bearing in mind that the left hand cranks should lag by 90 degrees. As both axles are driven, quartering does not have to be precise. Check for smooth running before nipping off the front crank pin and applying solder or Loctite® to retain bush.



The slide bar/cylinder mounts are supplied pre-folded. They are milled but will require a small amount of cleaning up particularly between the bars. Take care not to distort the slide bars.

Check that the cylinders sit squarely in their mountings and that the slide bars are in line with and parallel to the cylinder bores.



Before securing the cylinders to the brackets, insert a 16BA screw as shown. If using epoxy to assemble filling the cavity between the cylinder and bracket with epoxy will secure the screw otherwise solder the head.



De-burr the top and bottom edges of the crossheads. Prepare two crossheads by attaching 16BA screws with epoxy or soldering as shown. Screws are used rather than rivets to simplify assembly. File back the heads until at least the slots are removed. Temporarily assemble a second half to each crosshead and check for operation in the slides; ease where necessary to give smooth, free movement.

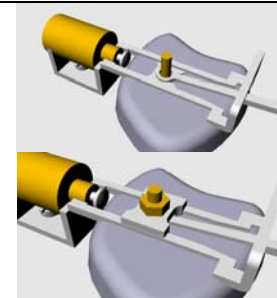


Steel pins are supplied for the piston rods, these have been pre-cut to length but may require trimming back to be flush with the cylinder end when fully inserted. Insert the pins into the cylinder and assemble the prepared crosshead onto the slide bar using plasticene or Blu-tac® to hold in position as shown.

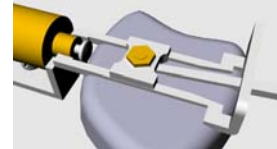
Add the second crosshead side and secure with a nut. Do not over tighten.

Remove the assembly and check for free movement.

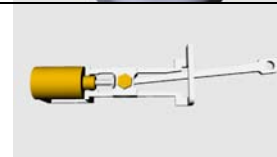
Note: 0.7mm NS rod is supplied for those preferring a soldered con-rod



Secure the nut using solder or glue. Trim the screw and file back the nut. Depending on your preference the crosshead may be assembled with the screw head to the outside. Bear in mind Please note however that the back of the crosshead must clear the coupling rod when fitted to the chassis.



Being stainless the connecting rod cannot be soldered and is secured to the crosshead using 'super glue'. To avoid glue being drawn into the crosshead and locking the connecting rod pivot, a gel type super glue is recommended. Clamp the assembly vertically, apply a small amount of glue to the pin head only and allow the cross head to fall onto the pin head. Set aside for at least 1 Hr before handling.



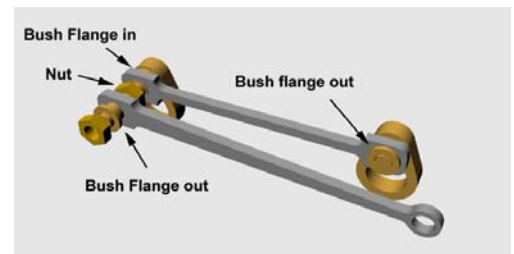
Before assembling the cylinders to the mainframe the drive unit must be installed.

Internal Note: Test models are running with Blu-Tac® or a small amount of superglue applied to the location points on running plate to retain the chassis.

Either of these appears ok in practice.

The cylinders are bolted into place and mounting the assembled motion is straightforward. The rear connecting rod can be attached using a 16BA nut or the crank pin can be nipped off and the bush soldered or glued to the crankpin. **Tip: If soldering, take care not to un-sweat the crankpins. The crankpins are supplied soldered to cranks with 180 deg soldering, use lower melting point solder and heat sink crank with damp tissue placed behind crankpin.**

Once tested for smooth running the motion bracket is glued to the running plate and a little super glue applied to one edge of the cylinder mount to lock it in position.



The wrap for the cylinders should be fitted as shown to provide the distinctive cylinder covers and the cylinders and motion bracket secured with super glue. Although fiddly it is possible to remove the drive assembly with the coupling rods and crossheads attached.

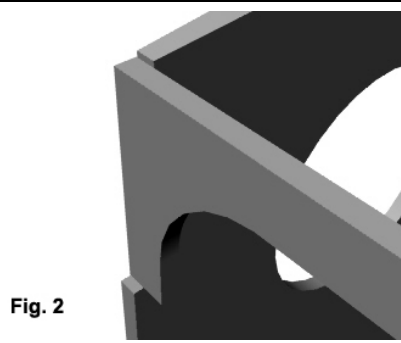
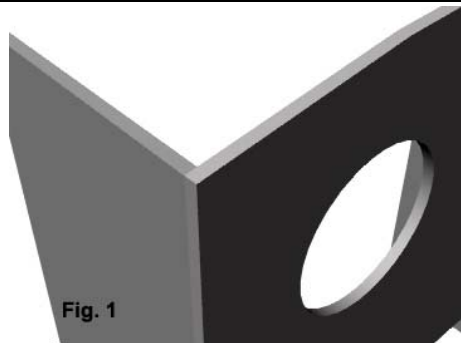


In designing the cab I have attempted to retain the rivet detail and sharp corners. The cab walls are formed from 8 pieces, 4 plain inner panels and 4 half etched outer overlays. There are two ways of assembling the cab, by assembling the inner panels first and then attaching the overlays or, by assembling the overlays to the inner panels first. The inner panels are smaller by the thickness of the overlays to form a rebate when assembled and care must be taken to allow for this during assembly using either method.

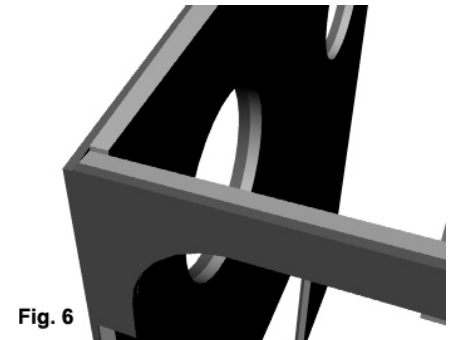
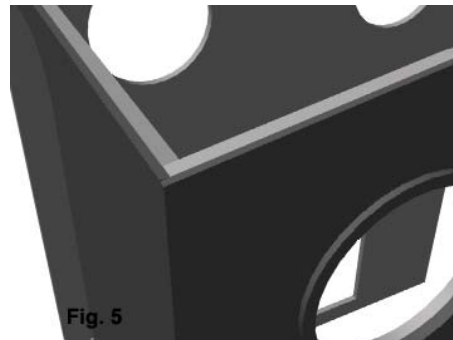
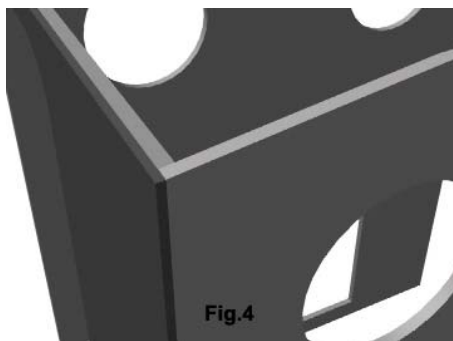


Both assembly methods are described, the method chosen is left to the modeller. The following instructions describe the former method whereby the inner panels are assembled first.

Before you start assembling the cab you may wish to remove from the fret and set aside the rather delicate cab side overlays to avoid damaging them when removing other parts.



1. Remove cab front and side inner panels from the fret and clean up the edges. Check the front panel for fitting around the firebox and adjust where necessary. Unfortunately some variation in the white metal casting is unavoidable so the fret may require filing to accommodate these variations. Make sure the cab front sits down on the running plate and right up against the saddle tank. The overlay can be adjusted later after attaching to the cab front.
2. Note that the side panels are attached to the inside of the front panel (**fig.1**). Solder/Glue the side panels to the front panel ensuring they are at right angles.
3. Remove the back inner panel from the fret, clean up the edges and check fit of side panel into notch (**fig.2**). The back can now be soldered into place but for gluing you may prefer to form and fit the roof first. The roof curvature can be formed by rolling with an 8 -10mm drill shank on a compressible surface before folding up the gutter lip. The fold lines should be facing up while forming i.e. on underside of roof when formed.
4. The roof should be fitted before the overlays are applied but is not shown in the following figures for clarity. Apply the side overlays first, these should be aligned with the front of the cab inner panel (**fig. 4**).
5. The front and back overlays can now be applied and carefully aligned. Both front and back overlays extend over the side overlays.



6. Once adhesive is fully hardened clean up the remaining cab edges around cab openings and check for fit over firebox. Whether or not the rear doors are fitted in the open or close position will depend on whether you intend to add a tender.
7. The remaining detailing is left to the modeller who may well wish to finish the model as one of the many variations of this engine.

The following instructions describe the alternative method for assembling the cab and is the designers preferred method.

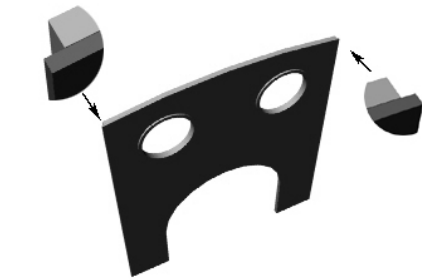


Fig 7

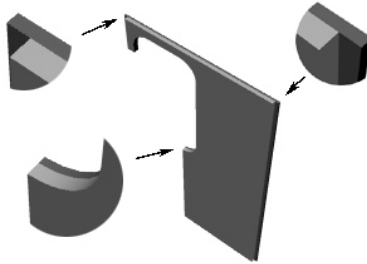


Fig. 8

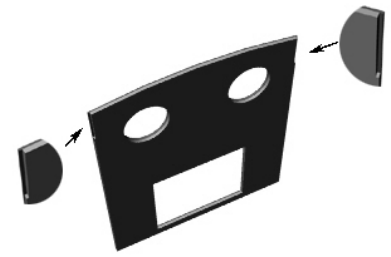


Fig. 9

1. Remove cab front and side inner and outer overlays panels from the fret and clean up the edges. Check the front panel for fitting around the firebox and adjust where necessary. Unfortunately some variation in the white metal casting is unavoidable so the fret may require filing to accommodate these variations. Make sure the cab front sits down on the running plate and right up against the saddle tank. The overlay can be adjusted later after attaching to the cab front.
2. Study the way the panels are assembled to provide rebates at the corners. (Fig. 7,8,9)
3. Starting with the front spectacle plate apply solder paste or slow setting adhesive to the inner panel and attach the overlay taking care to align them to sit correctly at the corners as shown.
4. Repeat for the side and rear panels.
5. The cab can now be soldered or glued together depending on method used in 3 above. You may prefer to leave attaching the rear panel at this stage to facilitate detailing of the back head and cab interior.
6. The roof curvature can be formed by rolling with an 8 -10mm drill shank on a compressible surface before folding up the gutter lip. The fold lines should be facing up while forming i.e. on underside of roof when formed.

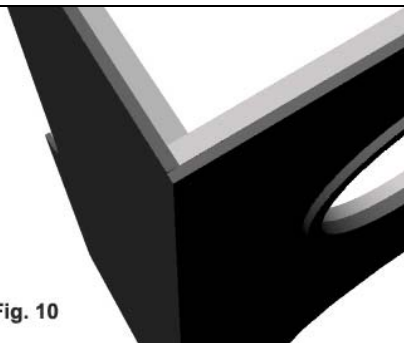


Fig. 10

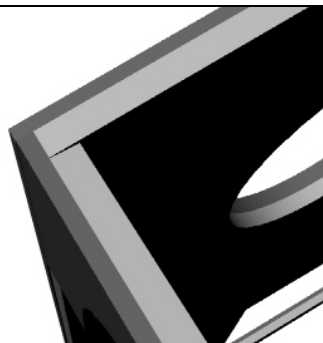


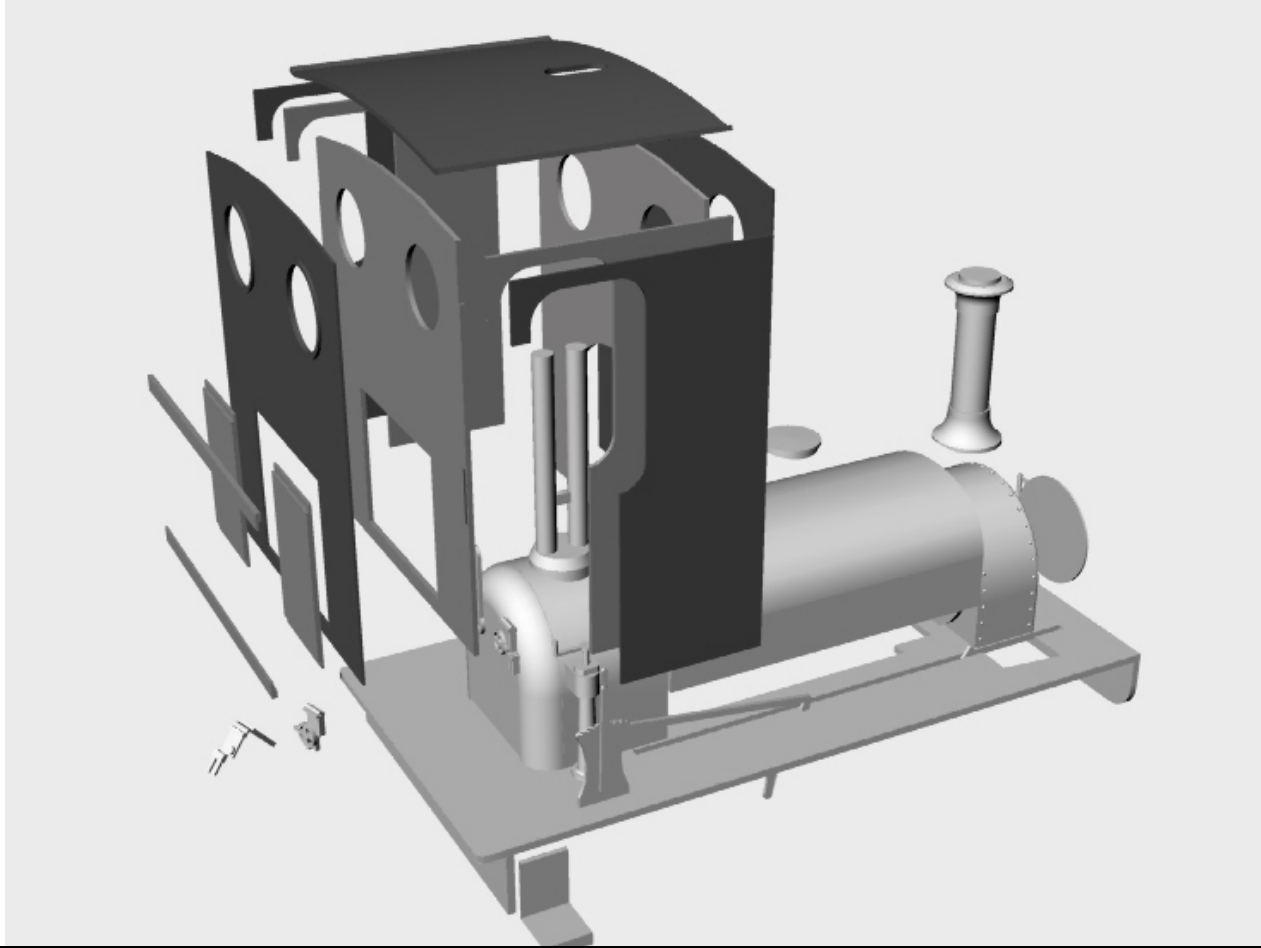
Fig. 11



Fig. 12

The superstructure for this kit is based on the cabbed Alice class Hunslet Dorothea. Dorothea is owned by Kay Bowman of Launceston Steam Railway. Kay actually restored the locomotive herself from what was considered a pile of scrap. It took 24 years to complete and is now running as part of Hunslet fleet at the railway. If you are into Hunslets you should visit <http://www.launcestonr.co.uk/>

Name and builders plates for other models may be obtained from <http://narrowplanet.co.uk/products/NPP-312>



For support or replacement parts please contact Brian Madge

Email: ngmodels@btconnect.com

Website: www.madge00n3.co.uk/contact.htm

Or write to Brian Madge, 1 Park Road, Lapford, Devon EX17 6QJ UK
