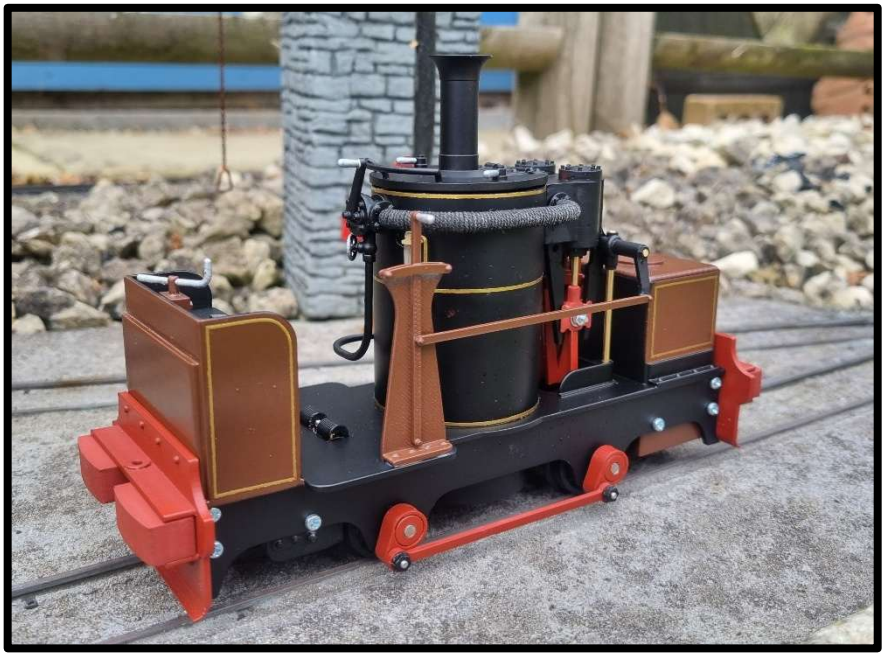
BOOT LANE WORKS
www.bootlane.org.uk

JOAN



Thank you for buying this locomotive kit from Boot Lane Works, please read all the instructions carefully before assembly.

Tools & Adhesives

I recommend a few tools to help you assemble your kit –

- Small Bench Vice
- Modelling Knife *(I use a scalpel)*
- Tweezers, Pliers, etc…
- Needle Files, various shapes
- Wet & Dry abrasive paper *(the mixed selection from Halfords is very good)*
- Selection of small twist drills, including 1.5mm & 2mm diameter
- A 90-degree angle *(I use a set block, but a small set square will work well)*
- Personally, can't manage without my small, tapered reamer, look for them on eBay!
  TAKE CARE WITH THE REAMER - MAKE A SMALL CUT, TRY, AND CUT AGAIN

I also recommend the following adhesives –

- Super Glue
  We use Gorilla Super Glue
- Dichloromethane, A liquid solvent for the acrylic
  We use E.M.A. Model Supplies "Plastic Weld"

A little about the printing process.
The printer extrudes a filament of plastic, layer by layer, to create an object. As it does so, it can leave tiny ridges along the object, and also, the printing "seams".
For best results, clean the ridges off with a file. Before painting and rubbing back with wet'n'dry.

THE RESIN PARTS ARE BRITTLE AND MUST BE HANDLED WITH CARE
The resin is hardened by an ultraviolet light process but continues to adsorb the light after the process.
Please ensure the resin is thoroughly painted to stop the hardening process.

THE ACRYLIC IS ALSO BRITTLE, CARE SHOULD BE TAKEN DURING CONSTRUCTION

***** IMPORTANT *****

Please bear in mind that this kit, although intended for garden use, is a reasonably small power unit, designed for hauling a handful of wagons or a carriage.
We DO NOT guarantee this model if used for "Heavy Haulage"!

Inspired by the locomotives, built by De Winton & Company from the 1860s through to the turn of the century.

Affectionately known as "Coffee Pots", these engines had vertical boilers; and cylinders mounted directly to the boiler. A fascinating upshot of this meant that the locomotives needed to be "unsprung" to allow free and full movement of the upright motion.
One of the targets we set ourselves when designing the kit was to allow as much free space as possible for electronics, etc. With a completely clear boiler and almost a clear space in the water tank, we feel we've fulfilled our own brief?

No two of the De Winton's appear to have been built the same; ours draws a great deal of inspiration from CHALONER, which is currently resident at the Leighton Buzzard Light Railway. Although many other De Winton's survived and are dotted around the UK.

CHALONER at Leighton Buzzard

RIGHT, LETS BUILD THE CHASSIS…

There are included within the kit, a couple of jigs to enable a reasonably easy build, and (we promise you) an idiot-proof system to quarter the outside cranks.

We will start with the wheelsets.

Locate the four Peter Binnie 24mm wheels, the two axles *(one already has a grey gear centred on it)*, two of the small ⅛" brass top-hat bushes and the two white printed tube jigs with a small hole down the centre.

You will also need the two eccentrics and the two eccentric straps/rods…

In the image are the two eccentrics (lower right), the eccentric straps/rods (lower left) and the two spacers (top).

In a slight departure from our other kits, we will need to press the eccentrics onto the plain axle, before pressing on the wheels. The longer of the two white two white printed tube jigs acts as a spacer jig for the eccentrics. The shorter of the two white printed tube jigs acts as a spacer jig for the wheels (when we come to press those onto the axles.

The eccentrics need to be pressed onto the plain axle as shown in the photo.
The photo shows the second "press", the spacer tube is at the bottom of the image.

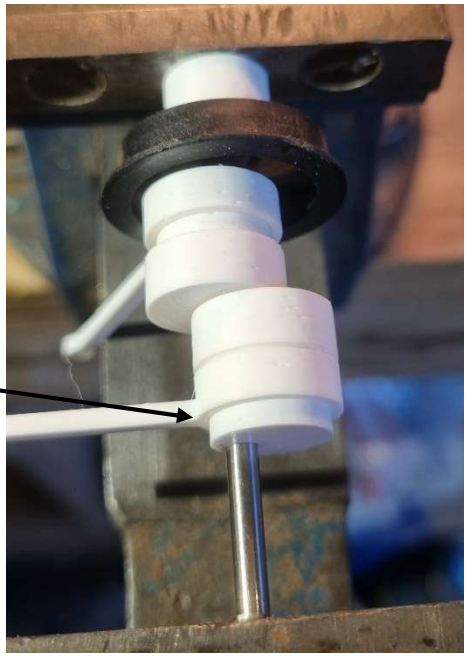
For 100% realism, the eccentrics "should" be a 90° to each other. But, in truthfulness, it makes no difference to the operation of the model, the eccentrics merely make the piston rod, crossheads and rods move up & down…

Next, we need to press on the 24mm Binnie Wheels.

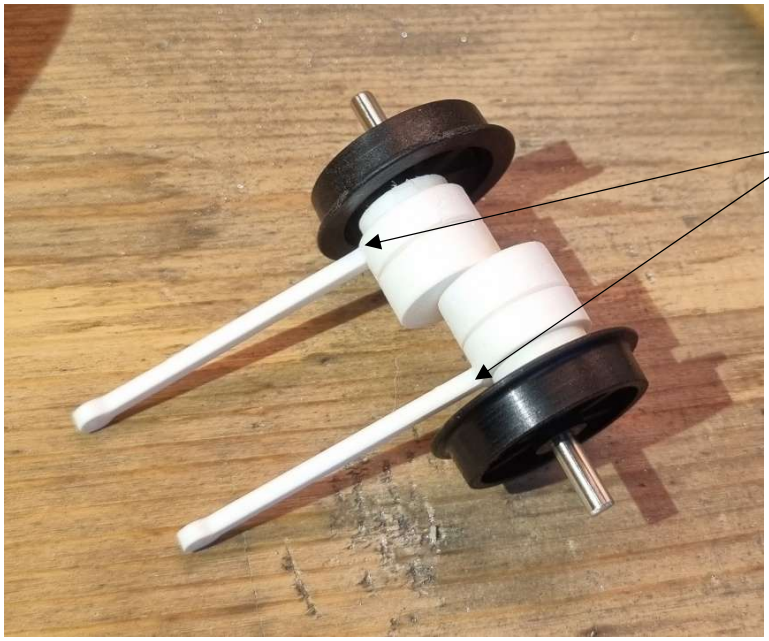
We usually open the hole in the back of the wheel with a small, tapered reamer, just a twist to allow the axle an easy start .

Before any wheels are added the eccentric strap/rod must be added.

THE ROD MUST BE ADDED TO THE OUTSIDE OF THE ASSEMBLY – IT IS ESSENTIAL THAT THE ROD FACES TOWARDS THE OUTSIDE



The small spacer is used to push the wheels onto the axle at the top of the photo.
Repeat for the other wheel.



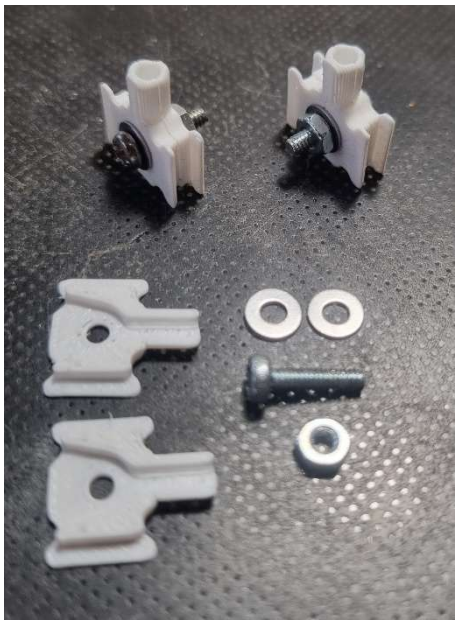
Note both eccentric straps/rods facing outwards. This is essential to align the rods with the crossheads.

A NOTE ABOUT PAINTING

You will almost certainly want to paint these parts, to ensure they are disguised when in place on the finished model.
We painted all the above parts (except wheels & axles) in a red oxide (not in these photos).
However, you must ensure that the eccentric straps rotate freely on the eccentrics prior to assembly.
We found rubbing down the parts after painting worked well.

The finished axle/wheelset.

Now we will need to assemble the crossheads and attach them to the eccentric straps/rods

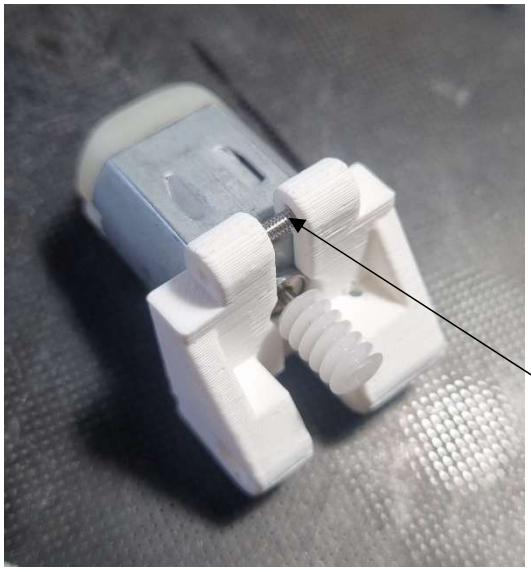


Locate the crossheads, they have been printed in two halves (there are plenty of spares in your kit).
Take two halves and using an M2 8mm panhead screw, an M2 nut & two washers; carefully clamp the two halves together.
With the two halves carefully clamped together (do not overtighten), and using a liquid glue (we recommend "Plastic Weld", see above) glue the two halves together to create a single crosshead.
Once the glue is dry, remove the screw, nut & washers.
Cut a section of the 2mm brass rod into a 24mm length and insert into the crosshead. Ensure there is clearance for the bush on the eccentric strap/rod on the crosshead. You may need the tiniest dab of superglue to fix the rod.

REPEAT FOR THE SECOND CROSSHEAD

Now, you need to attach the two crossheads to the eccentric straps/rods.

Ensure that there is sufficient play in the crosshead holes to allow the screw to rotate freely.
Pass the screw through a washer, the crosshead, through the eccentric rod, the other side of the crosshead, a second washer, and finally the M2 nut. The nuts need to be on the outside of the whole assembly. To allow plenty of clearance on the inside for the fake valve gear.
Do not overtighten, as this will clamp the crosshead onto the eccentric strap/rod. We used a tiny spot of superglue on the end of the tread to ensure the nut does not come off the end of the screw.

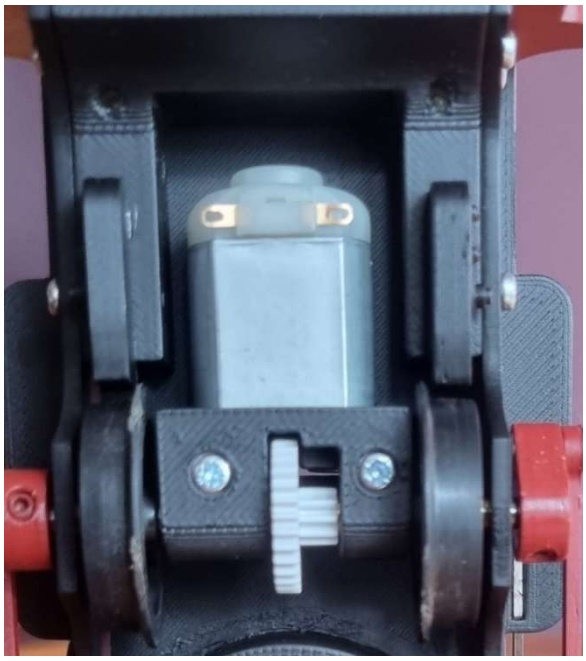


Next, we need to look at the axle with the gearbox.

First ensure the motor fits into its recess in the gearbox. There may be supports, etc left from the printing process? Remove any excess to ensure a good, snug fit.

The motor is the same as the one used in our sweetie kits and is clamped to the gearbox by a M2 12mm conehead screw through the top of the box and draws either side together around the motor.

Once you know the motor fits the gearbox, let's put the wheels onto the axle,



First the axle requires a brass top-hat bush be placed either side of the grey gear, between the wheel & grey gear. The lip of the brass top-hat bush must be flush against the grey gear on both sides.
Again, use the shorter of the white tube jig to ensure the wheels are pushed onto the axle to the correct depth.

The two halves of the gearbox are held together with two M2 8mm panhead screws.

Clamp the two gearbox parts over the axle. The two, brass top-hat bushes are clamped up against the grey gear with the lips visible between the grey gear and gearbox.

Do not attach the motor yet, it's much easier to build the motion without the constraint of the motor.

IMPORTANT – WHEN YOU DO ATTACH THE MOTOR ENSURE IT IS THE CORRECT WAY ROUND! YOU NEED THE ELECTRICAL CONNECTORS FACING DOWNWARDS AND NOT HIDDEN BETWEEN THE MOTOR AND THE FOOTPLATE

Now, you need to press the cranks onto the crank bushes.

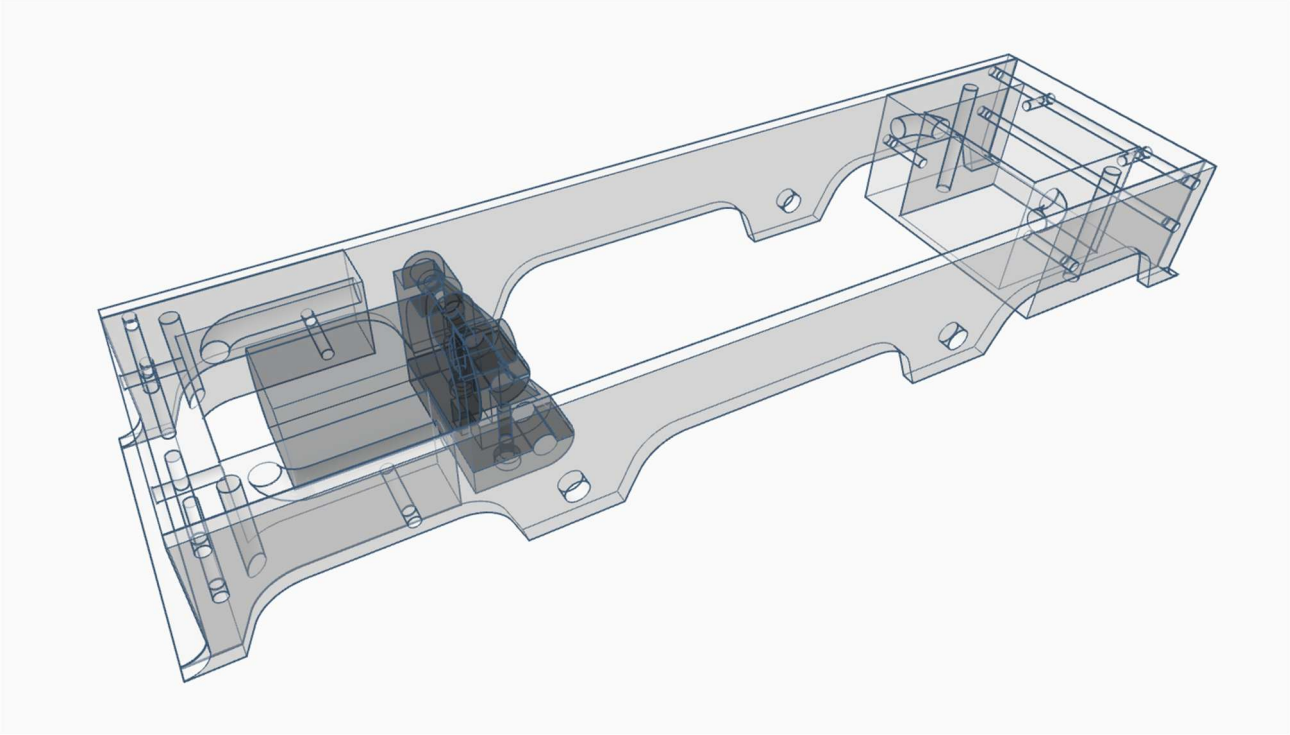
Locate the four bushes, four M3 grub screws, four white printed cranks & the Allen key supplied. A few spares have been provided.
Using a vice, squeeze the bush into the crank.
The hole for the grub screw in the bush needs to align with the hole in the crank.
Once you've pushed the bushes into the cranks, you need to locate four 10mm conehead M2 screws. Fix the screws into the cranks as in the photos.

LET'S PUT THE FRAMES TOGETHER

I have designed the whole loco to allow the screws to "self-tap" into the white filament printed part. However, you can, if you wish, tap out the holes first, before using the screws.

There are two stretchers, one simulates the lower part of the tank, while the other is shaped to allow the motor to tuck up inside.
Both are interchangeable on the frames, and it doesn't matter which way round they go!

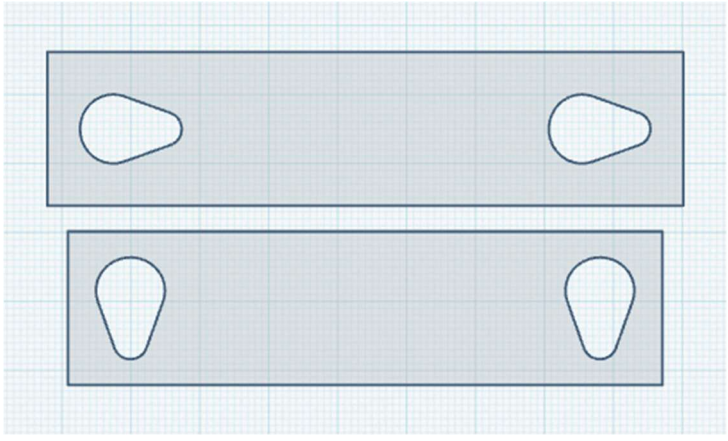
Note the motor & gearbox assembly in darker shade in the photo below.



Attach the front & rear stretcher to one of the frameplates using the M2 8mm panhead screws. Six screws each side, twelve in total.

With one side and stretchers together, the wheelsets need to go in.
Place a 1/8th inch brass top-hat bushes on each axle end with the lip up against the wheels.
Ensure you have the motor at the correct end of the chassis.

Now offer the second frame to the stretchers, don't forget the 1/8th bushes.
Once the second frame has been fixed the whole should start to become more solid, however true solidity comes with the attachment of the footplate.
We have one more thing to do before that.



Take two of the cranks you've made up and attach to each axle on one side of the locomotive. Keep the end of the axle & the edge of the crank flush to each other. Tighten the M3 grub screws against the axles.

Now locate the two quartering jigs in your kit. Drop one over the cranks you've just fitted and fit the other two cranks on the opposite side and drop the second jig over them.
Then tighten the remaining cranks.
That's it, that's your cranks all quartered and ready for the side-rods.

Now we need to offer the footplate to the frames/chassis.

As with the above (chassis construction) we recommend painting the individual body parts prior to assembly.

Locate the footplate, this is printed in one complete unit with the tank & bunker integral.
DRILL OUT THE TWO SMALL HOLES IN THE FOOTPLATE USING A 2MM TWIST DRILL
The boiler drops into the footplate, and like the real thing, below the footplate. One of our primary design objectives was to leave the boiler 100% clear for your choice of electronics.
Speaking of electronics, you will notice small holes in the lower section of the boiler. These are to pass wires through; you will also find corresponding holes in the stretchers. Hopefully this ought to allow your electronics to be a little neater than otherwise. Thanks to Myles Jones for this!

The boiler can only be in one position and will align for the cylinder block perfectly.
It will, however, need to be glued into position.

Randomly, you will need to attach the motor at this point. It was left out to enable ease of quartering, and I forgot to add the motor to the instructions after! (Andrew)

The footplate, with boiler attached, drops onto the chassis. You will need to feed the piston rods, crosshead & rod assembly through the hole in the footplate.
You will also need to swing the motor around to allow the top section of the gearbox to fit in its corresponding hole in the footplate. This hole is one of the few compromises made during the model's design. The gearbox locates in the footplate, but it takes a prominent position on the footplate!

The whole assembly is secured with four M3 10mm panhead screws. They screw down through either the tank or bunker and into the stretchers.

THE CYLINDERS

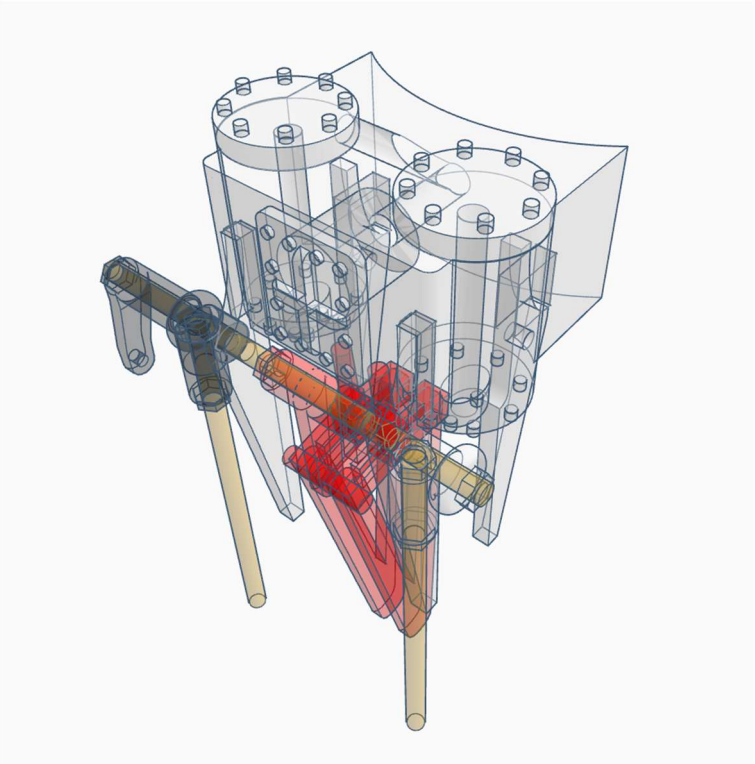
We are going to need, the cylinder block, four slidebars (there are spares) cylinder covers and an M3 16mm conehead screw.

The four slidebars fit into the cylinder block. Ensure you have the correct slidebars. The two shorter ones slide into the back of the block; the two longer ones attach into slots on the front.
ENSURE THAT THE BARS ARE PARALLEL TO EACH OTHER BEFORE GLUING INTO PLACE

Fit the two covers onto the top of the cylinder block.

The crosshead should of course be attached to the motion, and not as here in the photo…

Now for the tricky part…
Feed the two piston rods and crossheads into the cylinder block and slidebars.
This is best, just taken steady, and we apologise for this, we could not see another solution to this.
Once it is together, you can attach the cylinder block the boiler with the M3 screw, and the motion should now move freely as you rotate the wheelset.
There is also a rectangular valve chest cover that will sit on the front of the cylinder block and cover the screw hole. We held ours in place with spot of BluTac, should you want to remove it at a later stage.



DETAILS

There is a selection of resin printed details.

The cylinder & motion detail consists of two brackets that together with three 46mm lengths of 2mm brass rod create a structure that represents the uprights that support the cylinders on the original. A third part represents the valve gear and is suspended from the lateral brass rod.

We found the easiest method of construction was to ensure that the resin parts had been “CAREFULLY” drilled out with a 2mm twist drill, and the lateral brass rod fed into place through the first bracket, through the hole in the slidebar, then the valve gear, then the second slidebar and finally the last bracket. One of the brackets also has the reversing arm as part of the bracket.

With this all in place, it is reasonably easy to push the upright brass rods through the footplate and up into the brackets.

THE ABOVE IS “FIDDLY” – JUST TAKE YOUR TIME AND BE SURE TO OPEN THE HOLES FIRST AND ENSURE THAY WILL ACCEPT THE BRASS ROD

There are two sections of printed pipework. One represents the regulator and steampipe from the boiler to the cylinder block. There are corresponding holes in the boiler and cylinder block.
We wrapped a length of twine around the steampipe on the display model to represent lagging, as on the originals.

A second print represents injector feed, and there is a hole in the boiler and a hole in the underside of the regulator pipework print. If you clean the injector pipework carefully, it can be fitted into the regulator. Oddly, once both were glued together, both were pushed into (opened) holes in the boiler and have remained there with no glue!

A small safety valve fits into the top of the side of the boiler.

The big print is the top of the boiler/chimney. This will probably require some cleaning to enable a good fit on the boiler.

The buffer-beams are screwed onto the stretchers using four M2 8MM conehead screws.
Once attached, you can add the buffers, although they are optional?
The buffers do hide the M2 coneheads though.
The buffer simply push into the bufferbeams.

The tank top has a tank filler, and both can be arranged to be removable, if needed?

The reversing lever is in two parts, one filament printed, one resin. Glue the resin to the top of the filament and attach to the footplate. There is a locating slot in the footplate.
A reach rod that reaches from the reversing lever to the reversing arm and simply glued into place.

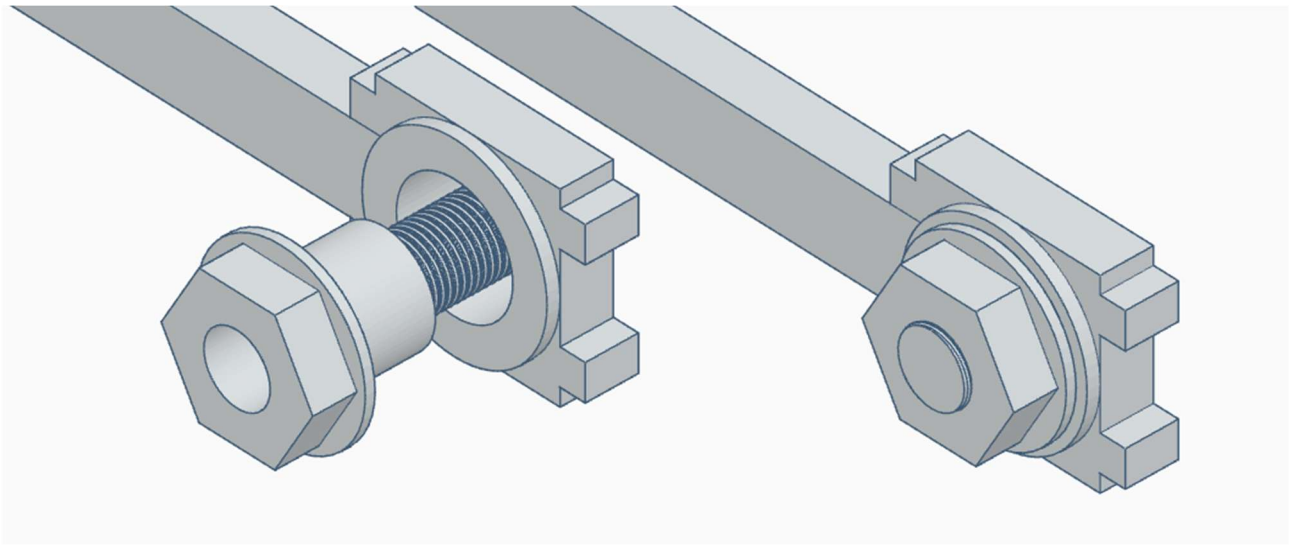
A resin handbrake is supplied, it sits inside the bunker, on the centreline of the locomotive.

The originals *(well, Chaloner!)*, have/has a seat on top of the bunker, the bunker being filled with coal behind the seat. It's a neat little design, although you don't have to model it?
We have included a seat and taken the opportunity to install our customary switch into the seat. This is down to the modeller if they need/want it there? The seat is held into place with two M2 8MM panhead screws.

Two brake blocks have been included in your kit; they are integral to the look of the De Winton but also help to hide the motor on the model.
They simply fit underside of the stretcher (motor end) and glue into place.

FINALLY, FIT THE RODS

A new design for Boot Lane, no more messing with tubes!!!
Locate four crankpin sleeves/nuts.
These sleeve/nuts screw over the crankpin and are the correct length to capture the coupling rods but still allow them to rotate.



An electronic copy of theses instructions can be found at -
www.bootlane.org.uk

Andrew & Jacqui

www.bootlane.org.uk
sales@bootlane.org.uk
Find us on Facebook – Boot Lane Works Community