BOOT LANE WORKS
www.bootlane.org.uk

ELEANOR

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

Tools & Adhesives

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

- Small Bench Vice
- Modelling Knife *(we 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 our small, tapered reamer, look for them on eBay!
  TAKE CARE WITH THE REAMER - MAKE A SMALL CUT, TRY, AND CUT AGAIN

We 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.
For best results, clean the ridges off with a file.
We apply a Primer/Filler to the filament parts on our display models, which we rub down with 400 to 800 wet'n'dry before applying topcoats. All Halfords rattle cans paints.

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"!

This model was inspired by the Spooner Slate Quarry Locomotive, KATHLEEN.
KATHLEEN (Vulcan Foundry Works No. 805/1876) was a small 0-4-0 narrow-gauge steam locomotive designed by George Percival Spooner.
Built in Newton-le-Willows, Cheshire by the Vulcan Foundry, for the Alexandra Slate Quarry Company in North Wales, it operated on the tramway connecting the quarry to the incline head of the North Wales Narrow Gauge Railway.

This model was released at the 2026 Llangollen garden Railway Festival (Kathleen's 150th anniversary)

We wish to extend our very grateful thanks to follow modeller (and good friend), David Wilcox for locating and suppling drawings of Kathleen at extremely short notice.
Thank you, David.

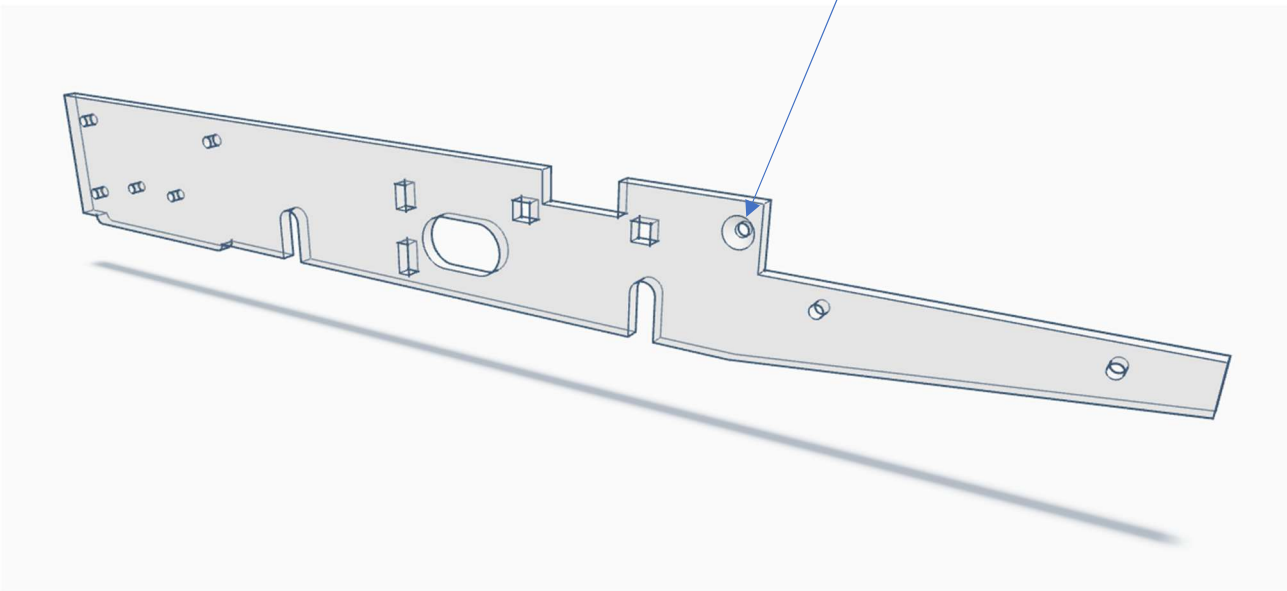
The classic Vulcan Works photo of KATHLEEN, taken (we presume) in 1876

CHASSIS

OK, let's jump straight in!

This is a long description but bear with us. If we can get this right, everything else will fall into place and your model with run like a dream…

Locate the two 2mm acrylic frames. Careful with the frames, the acrylic can be brittle.
BEFORE YOU GO ANY FURTHER - you will need to place one countersink in one hole on each frame. Do this on the OPPOSITE sides of each frame.



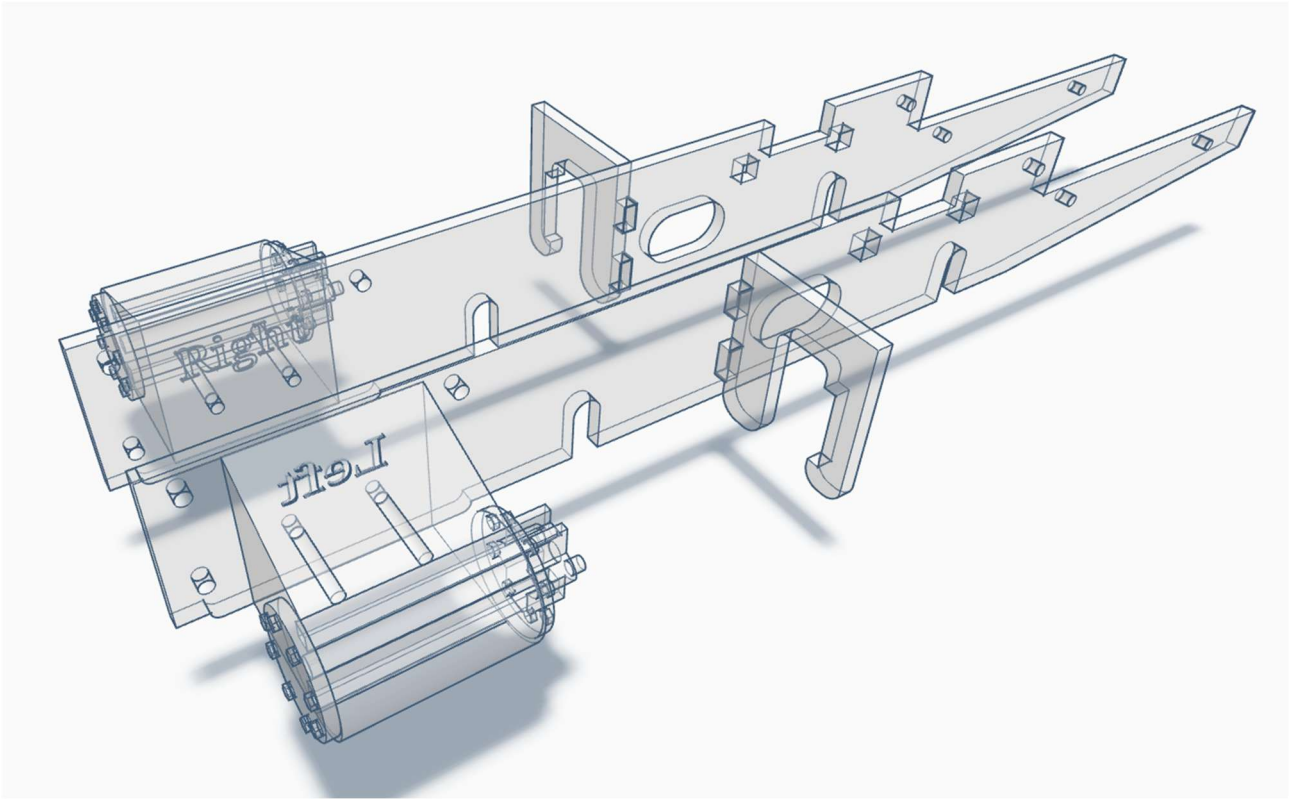
Locate two motion brackets, using liquid or super glue, attach the brackets to the frames.
Use a square to ensure the bracket is 90° to the frame.
ENSURE YOU HAVE ONE LEFT & ONE RIGHT FRAME WHEN COMPLETE.
THE COUNTERSUNK HOLES MUST BE ON THE OUTSIDE OF THE FRAMES.

Now locate the two cylinder-blocks, they are marked with a "L" & "R" as they are handed due to their shapes.
Ensure the 2mm brass rod will slide freely into the block - run a 2.5mm drill down the piston-rod hole to ensure there are no obstruction and the brass rod runs freely in the bore.
Attach the front cylinder covers to the cylinder blocks.

Attach left cylinder-blocks to the left acrylic frame using two 8mm M2 screws. I have designed most of the chassis to accept the 8mm M2 screws as self-taping, some of the holes may require opening slightly to get the screw started.
Repeat for the right-hand side.

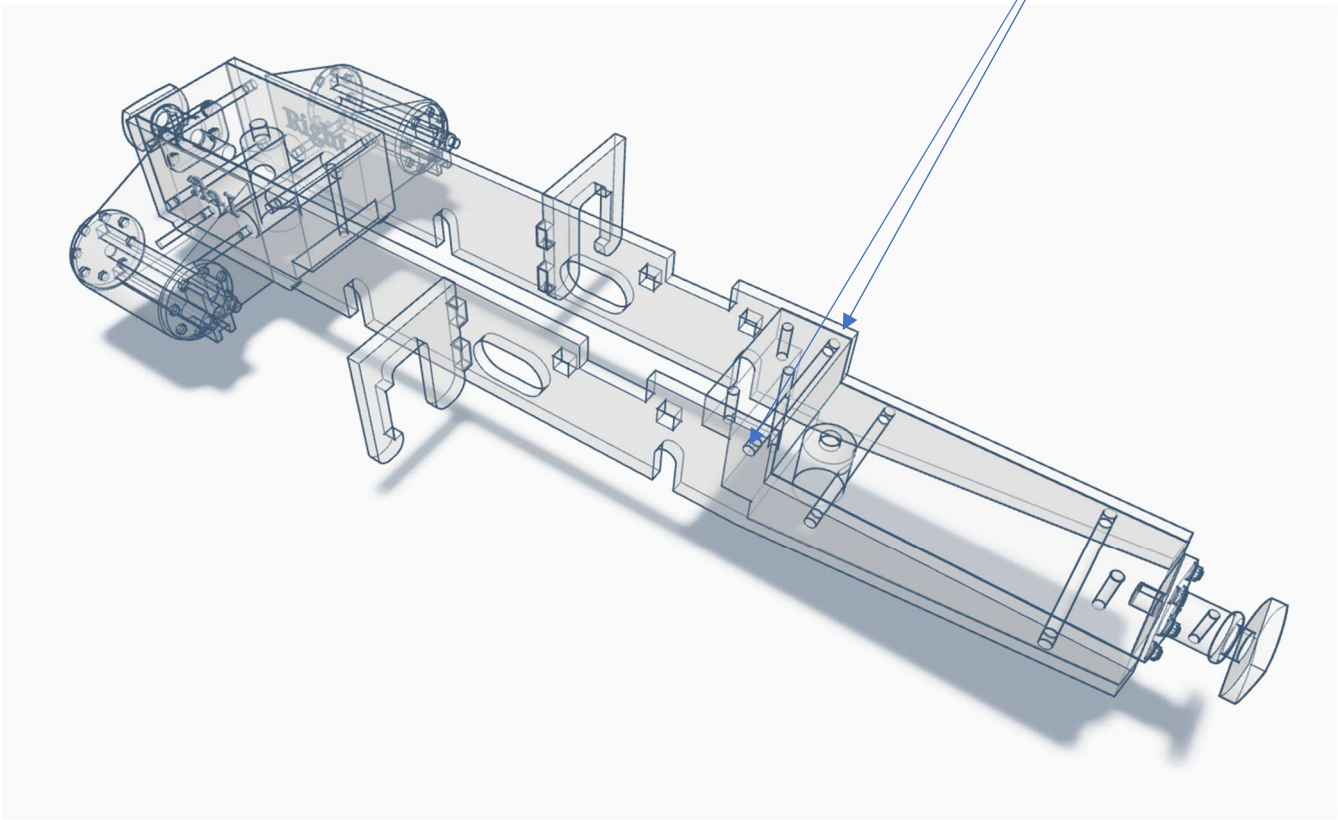
You will also need the 2mm brass square sections.
The brass square section needs to be cut to approximately 50mm in length, you can trim them once you know exactly how they fit, although there is plenty of excess space in the cylinder block to accept any spare brass rod.

With the motion bracket attached to the frame, fit the slide-bars into the cylinder-block and motion bracket. Ensure the cylinder-block is parallel to the frame. (We often do not place the slidebars into the cylinders until the chassis is painted.)



Now, locate the two frame stretchers and the motor-plate.
Attach one of the frame & cylinder-block assemblies, to the front stretcher using M2 8mm panhead screws, and then repeat with the rear. Use X2 M2 8mm conehead screws for the countersunk holes.
Once you are happy that everything is square, attach the other side.

Don't forget to sandwich the motor-plate between the frames, the slot on the face is to clear the drive gear on the wheel axle and should face the axle.



NOTE - motor mount plate omitted for clarity.

The resin buffers are glued into the ends of the stretchers, a short length of 1.5mm brass round can be bent into shape and secured into the buffer to create a coupling hook.

We usually paint this whole assembly at this stage…

Let's do the wheels!

Locate the four printed wheels.
We recommend painting these prior to assembly. We could have printed these black, but we have discovered that painted printed wheels work much better than unpainted wheels!
Unpainted, the prints seem to collect muck and grim from the rails, painted wheels seem to be more resistant to the garden detritus…

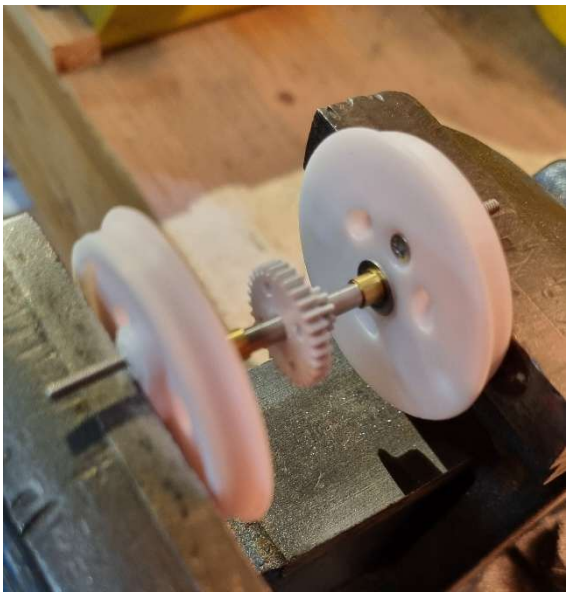
The wheels need pressing onto the ⅛" axles.
Before we do that, we need to screw crankpins into the wheels. ***We recommend that you tap each hole with an M2 tap, it's not completely necessary as the screws will self-tap into the plastic, but the use of a tap makes it much easier to assemble.***
Two of the wheels require M2 12mm conehead screws, the other two require M2 8mm conehead screws.
Screw the M2 screws into the rear of the wheel and into the countersink in the wheel.
Before we press the wheels on, we need the top-hat brass bushes, and the metal washers from the screw-bag.
The washers act as a boss to the rear of the wheel.

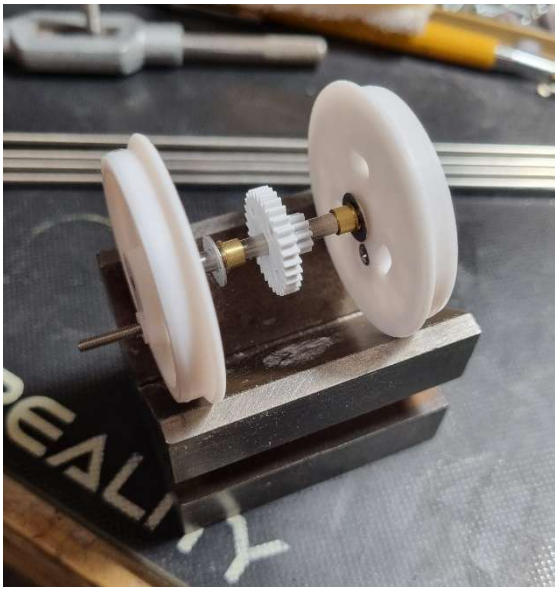
Push a top-hat bush onto the axle with the grey drive gear, then a washer. The lip of the top-hat bush should be on the outside next the washer. As in the photo below *(photo of Fairlie wheels, but the same principle).*

Push the two wheels with the longer M2 12mm screws into the ends of the axle with the grey drive gear, they should start onto the axle easily.
Place both crankpins along the same degrees. We will quarter the wheels shortly.

Care needs to be taken here, a great deal of experimentation has led us to the perfect size bore in the wheel, with the perfect lead taper. PLEASE DO NOT ALTER THE BORE IN THE WHEEL.

The whole assembly should now be placed into a vice and lined up so that the wheels are at 90° to the axle, both while looking from the top and the sides.
Ensure that the jaws of the vice are only touching the wheel centres, and not the raised bosses of the crankpins.
When you are happy, close the vice until the jaws push up against the axle.

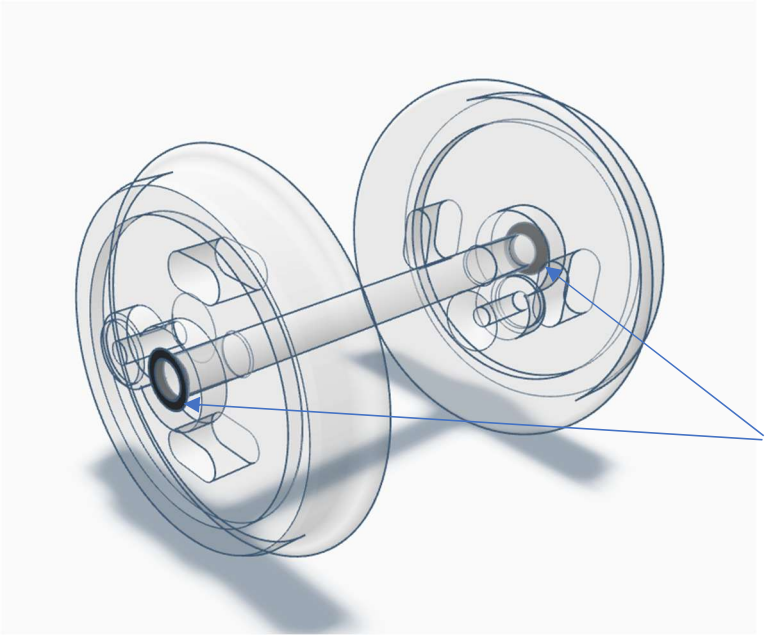




Unpainted (for photos only) wheelset in the vice (left), and ready to be quartered (right).

Do the same for the other driving wheelset, just no grey drive gear and the shorter crankpins.

Locate the two, wheel quartering jigs, they are two square prints, with the wheel shape recessed into the block.
Quartering is a simple matter of dropping the jigs over both the wheels and turning one jig so that it is at 90° to the other. Place the whole assembly on a flat surface to check that they are at 90°.



PLEASE TAKE CARE – do not excessively twist the wheels on the axles. If possible, do the process in one smooth movement, then leave alone. Excessive twisting can loosen the wheels on the axles.

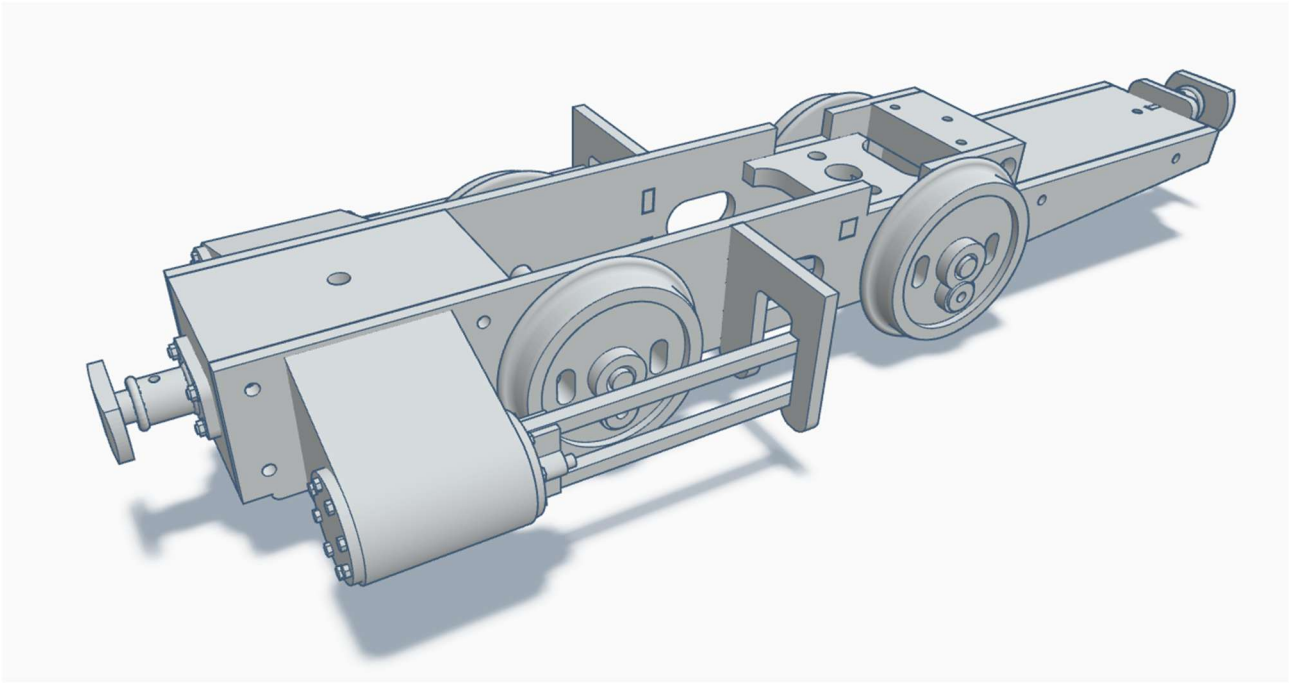
We have found that a tiny drop of Superglue in the small countersunk recess of the wheel & axle will stop the wheels twisting on the axles in the future.

You should now have two wheelsets.

The wheelsets should now drop into your chassis.
The lip of the bush should sit outside the frame and is kept place between the wheel & the frame.

Locate the printed retaining plate.
It sits in between the frames and screws to the bottom of the stretchers. The plate follows the shape of the frames, and its purpose is to keep the wheelsets in place, pushing up against the bushes.

Once you have ensured a comfortable fit and fixed it into place, try your chassis for free running.



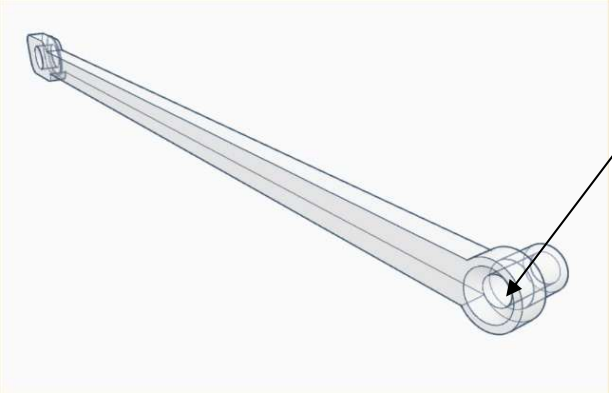
Let's fit the motion.

We have supplied a few extra parts in your kit, we found the crosshead can split, so you have spares, and a spare coupling rod.

Locate the following –

- Two coupling rods *(the longer rods)*
- Two connecting rods *(the shorter rods)*
- Two crossheads
- Two M2 8mm coneheads screws
- Two M2 nuts
- Two M2 washers
- Four sleeve/nuts *(two long & two short)*
- 2mm brass rod, cut to two 32mm lengths

Once again, we painted all the components prior to assembly.



Create a better countersunk hole in the rear of the connecting rods, small end.

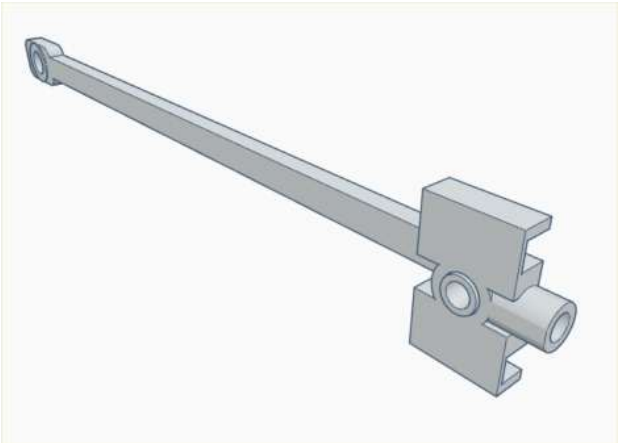
(Unfortunately, it is very difficult to get a better countersink on the printer).

Fit the M2 8mm conehead screws into the countersunk hole, try and get the head of the screw flush with the back of the connecting rod.

Fit a 32mm length of brass rod into the crosshead, you may need a dap of glue to secure it into place.
Do not push the brass rod too far and block the hole for the connecting rod.

Place the crosshead over the connecting rod, then a washer and finally a nut to attach the crosshead to the rod.

Once tight, the crosshead should move freely on the connecting rod.

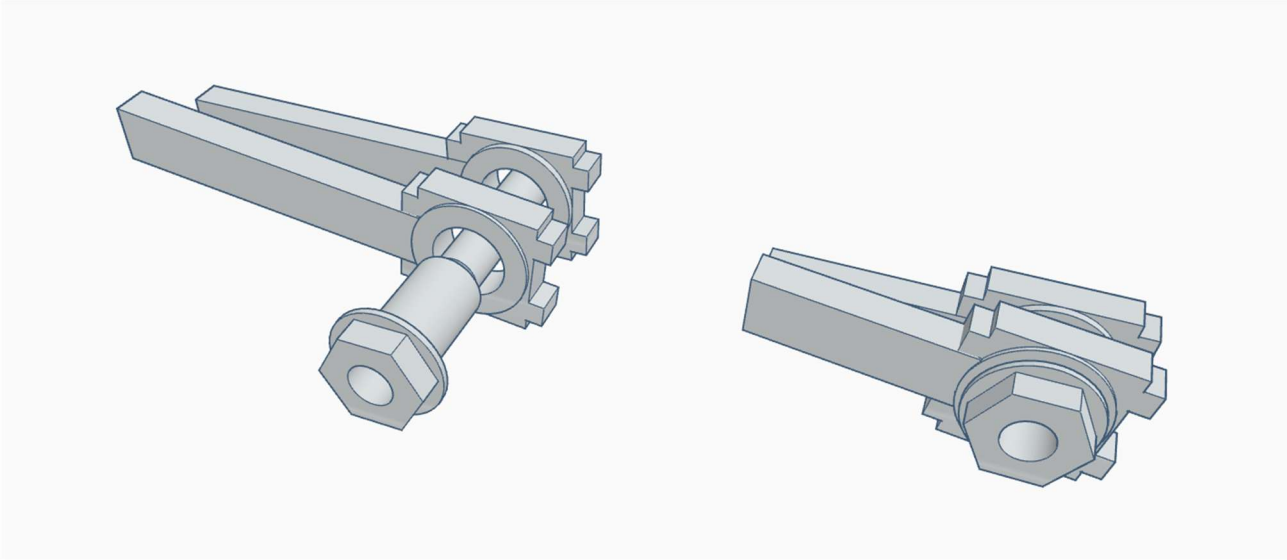


Locate four crankpin sleeves/nuts.

This is a new design for Boot Lane, no more messing with tubes!!!
You will have some short sleeves/nuts, and some long ones.

These sleeve/nuts screw over the crankpin and are the correct length to capture the coupling rods but still allow them to rotate.
The short sleeves/nuts are for the front crankpins, the longer are for the rear crankpins and capture both the coupling rod and the connecting rods.

No more need for tubes, washers and nuts…



The piston rod will need pushing into the cylinder, you may need to work out the best orientation for assembly?

With all the rods on, you should now have a free running chassis?

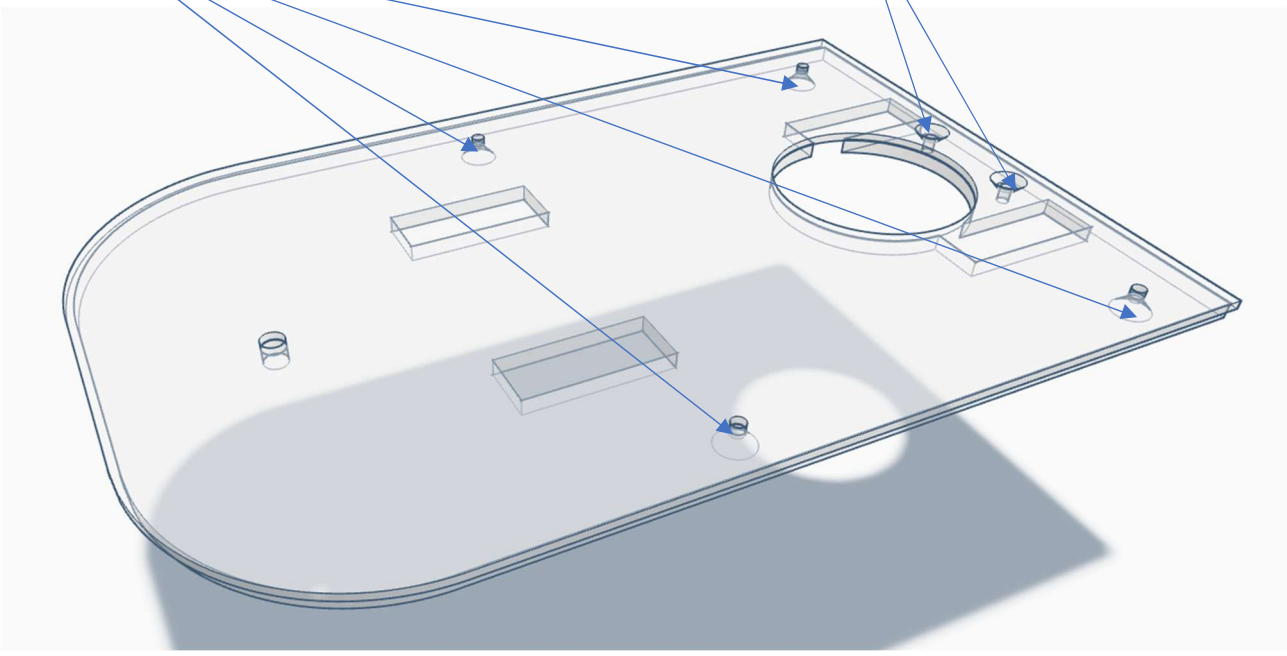
If your chassis is running freely, attach the motor. There are two screws that are already in the motor. We have ensured the motor plate is already perfectly aligned with the motor and drive gear, no need for complicated alignment, it's already done.

PLEASE LUBRICATE THE DRIVE GEARS & MOTION
WE HAVE EVEN INCLUDED SOME OIL FOR YOU.

THE BODY

Locate the two acrylic running plate sections, one is 2mm thick, the other is 1mm.
Glue these two parts together, face to face. Ensure the holes align and the back edge is flush.

Once together, you will need to countersink six of the holes. Two from above (the 1mm acrylic) and four from below (the 2mm acrylic). The four from under are to attach the tanks from below while to two at the rear hold the running board central to the rear stretcher.



We painted the running board before assembly.
In fact, we painted all the remaining parts prior to assembly.

All the white filament prints were given a coat of “Hycote” rattle can primer/filler and then rubbed back with 400 grade wet’n’dry. Then a Hycote primer, before a final topcoat. Halford do a good range of colours.

The boiler is only two parts. The main boiler and the backplate. The two are secured together using two M2 8mm conehead screws.
We simulated the smokebox by wrapping a very thin piece of Plastikard around the boiler print. In fact, we simulated the rivets by pressing them into the back of the Plastikard before wrapping it around the boiler print.

The rear cab/bunker sits on top of the rear frames and stretcher and is held in place by a M2 8mm conehead down through the footplate floor into the stretcher. We have printed a countersink hole in the cab floor for the screw.
The front end of the cab is sandwiched between the stretcher and the boiler using a M3 16mm panhead screw. The screw is driven up from underneath, through the footplate/cab and into the boiler.
The front of the boiler is held to the front stretcher with a M3 10mm panhead screw and goes through the running board.

The tanks are held to the running board with four (two each side) M2 8mm conehead screws.

Finally, the cabsheet has been pre-formed for you. There are two cab struts (there are spares) that fix inside the cab as per the works photograph!

We suggest that the order of assembly is

1. Chassis
2. Running Board
3. Cab/Bunker (including footplate)
4. Boiler
5. Tanks
6. Cabsheet (the cabsheet drops into little groves in the cab footplate and two M2 8mm panhead screws drive through the cabsheet, the Cab/Bunker and into the rear of the Tanks.

There is a small, printed toolbox that sits on top of the left tank, there is room in the tank to mount the supplied switch is desired. The toolbox disguises the switch if needed.

Also included is a regulator and gauge glass for the backhead. While other detail includes a chimney, dome (with a Salter safety valve), smokebox door, smokebox door dart & tank top fillers.

We have also included spectacle rings for the outside of the cabsheet windows.

A PDF copy of these instructions can be found at –
www.bootlane.org.uk/instructions

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