BOOT LANE WORKS
www.bootlane.org.uk

SIMBA

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
  I use Gorilla Super Glue
- Dichloromethane, A liquid solvent for the acrylic
  I 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.

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 couple of carriages.
We DO NOT guarantee this model if used for "Heavy Haulage"!

Released at the Talyllyn Railways, "Anything Goes" weekend, July 2025. Codenamed SIMBA, this model draws inspiration from the Talyllyn Railway's No 6, DOUGLAS. It was built by Andrew Barclay Sons & Co. Ltd. in 1918. Originally used by the Air Service Constructional Corps (RAF) then purchased in 1949 by Abelson & Co. (Engineers) Ltd. who donated it to the Talyllyn Railway in 1953.

We would like to extend our very grateful thanks to the Talyllyn Railway volunteers & paid staff for extending such a warm welcome to the Boot Lane crew.
Their support in helping us getting SIMBA to your workbench has been invaluable.

DOUGLAS at Tywyn on the Talyllyn Railway (courtesy of the TR)

RIGHT, LET'S BUILD A CHASSIS…

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

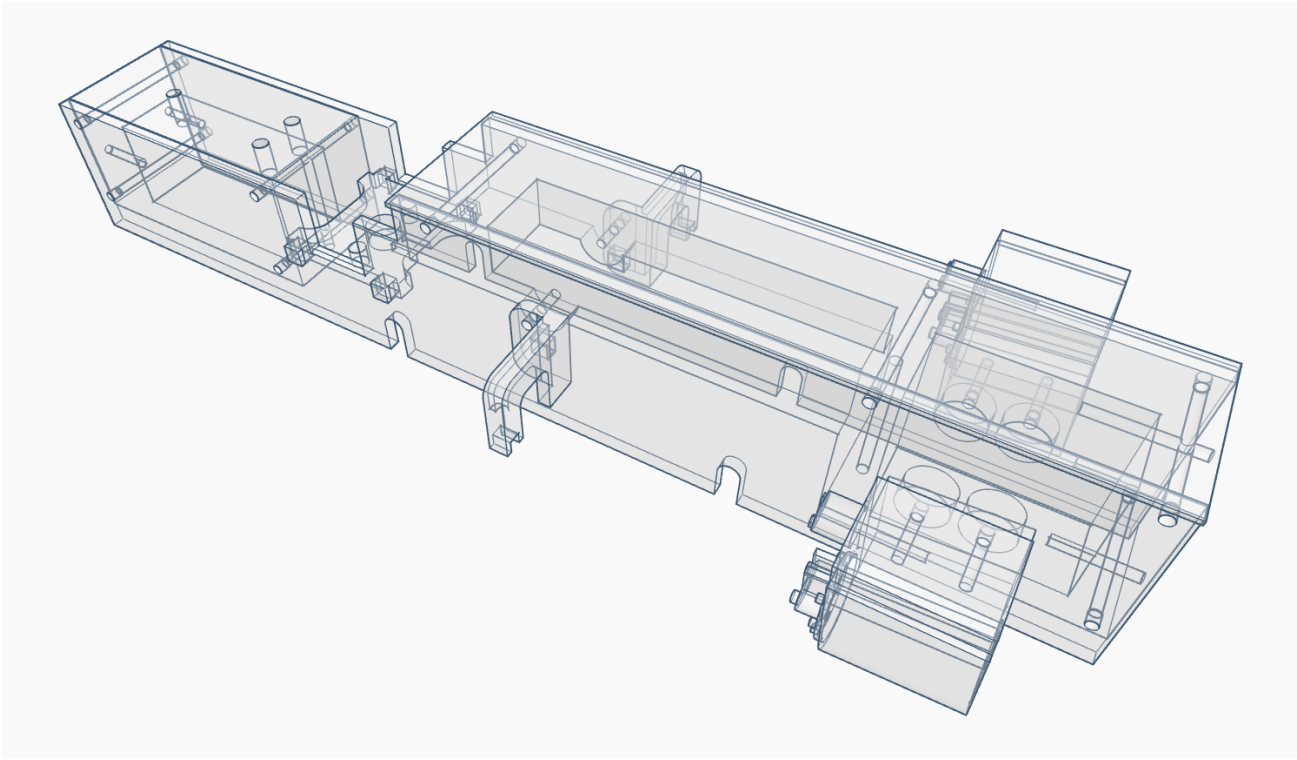
Locate the two cylinder-blocks, spend a few moments ensuring you have the correct ones for each side, they are handed due to their slight inclination.
Check that the 2mm brass rod runs down the bore freely, if it doesn't, carefully open the bore with a 2mm drill.
Attach the front cylinder covers.
I suggest attaching the top valve chest covers once you have built the chassis and offered it to the running frame.
Locate the left-hand cylinder and attach it to one of the 2mm thick acrylic frameplate using two M2 8mm panhead screws. I have designed most of the chassis to accept the screws as self-taping.
I personally run an M2 tap down the holes first, but it isn't completely necessary.
Do the same for the other cylinder & frameplate.

Next, we need to add the stretchers.
There are two stretchers, the front which represent the well-tank and the rear.

Using more M2 8mm panhead screws attach the front stretcher to one frameplate, then the rear stretcher to the same frameplate. Locate the motor mount plate, this is sandwiched between both frameplates, with the slot facing downwards and toward the front or the locomotive. The slot is clearance for the grey gear drive.
Add the second frameplate, attach using, yep you guessed it, more M2 8mm panhead screws.

The motion backets can be added, these are also handed; ensure you have the correct one. The flat (build plate) side, facing toward the front of the locomotive. The detail (recessed area) facing the rear.
The motion bracket is held in place by yet more M2 8mm panhead screws, there is a square peg & hole to help with location.

We usually paint the whole chassis at this stage. Then we add the slide bars, these are two 60mm lengths of 2mm square brass rod. They can be driven into the rear of the cylinder block, the rear end of the slidebar locates under the motion bracket.

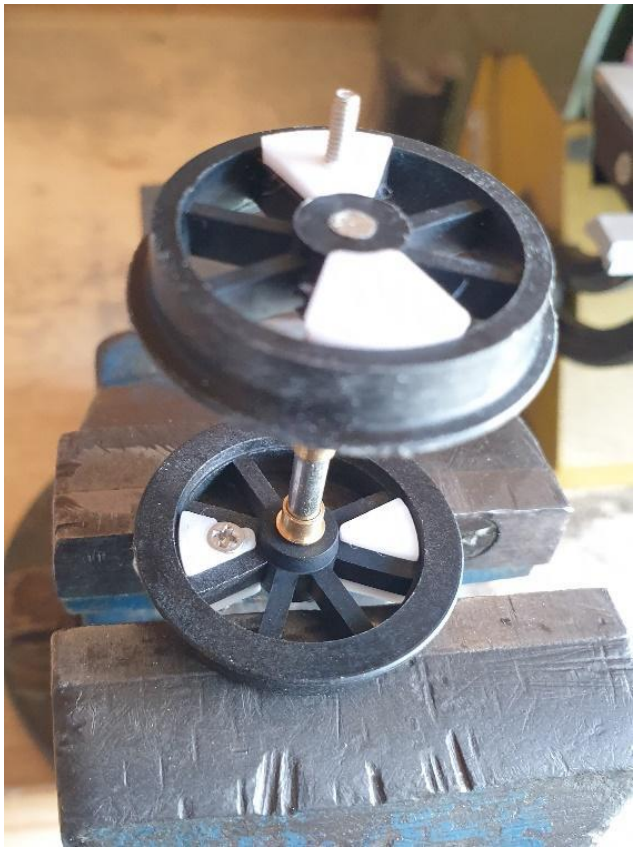


Looking good so far?
Let's do the wheels!

There are eight printed inserts for the Binnie wheels, two inserts for each wheel, one with a hole for the crankpin and the other, a counterbalance weight. The inserts push into the wheel from the front and are a good tight fit, but not so tight as to push the wheel out of shape! I found the best way to fit the inserts is to offer them both to the wheel (they have very slight tapers to help you get started). With the two inserts in position, place the wheel and inserts into a vice and squeeze the whole assembly together.
Do this for all four wheels. You may wish to tidy the wheels a little at this stage. Binnie wheels tend to have slight flash marks on the flanges, part of the injection process. I use a file to tidy up the wheels.
Next, add the crankpins. There are six conehead screws in total, 2x 11mm, 2x 10mm & 2x 8mm.
The 12mm screws for the rear wheels (for connecting & coupling rods).
The 10mm screws for the front wheels (coupling rods only).
The 8mm screws for the crossheads.

Do the rear wheelset first.
You will need two wheels, two 12mm conehead screws, the ⅛ inch axle with the gear and two brass top-hat bushes.
Screw the 12mm into each insert.
Slide a bush onto the axle, the lip of the top hat towards the outside, or wheel.
Next, start pushing a wheel onto the axle. *I use my taper reamer to open the hole in the wheel very slightly, to create an easier start.*
Repeat for the other side, then using your vice, squeeze the two wheels on the axle.
We are looking for a "back-to-back" measurement of 28-29mm. *This means the distance between the back of the two wheels.*
Now do the front wheelset. Remember, the 10mm conehead screws, and you should have the ⅛ inch axle with no gear. Don't forget the bushes.

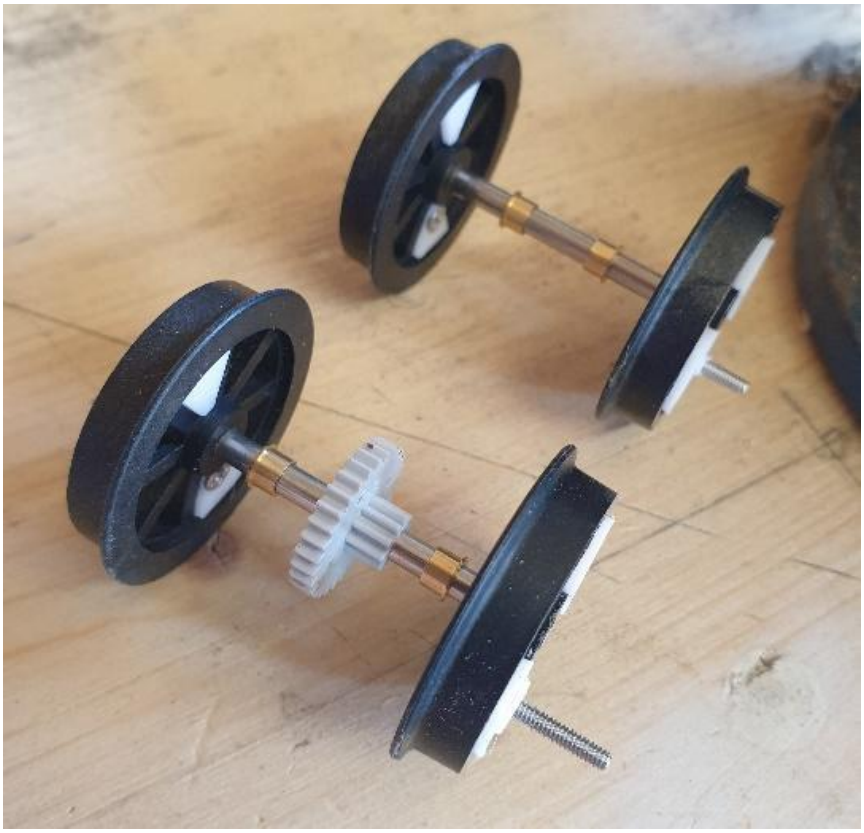
Good.
Let's quarter the wheels.
This is easy, don't get worked up over it…



Locomotive driving wheels are quartered. That's to say, the cranks are at 90° to each other. Both wheelsets must be quartered identically to each other. Here's how we are going to do it.

Although the wheels are tight on the axles, they can be twisted. Try it.
Move the wheels around so they are approximately 90° to each other.
Now place one wheelset in the vice so that the jaws grip the edges of the inserts. The rest of the wheelset pointing upwards.
Ensure that whatever you do, repeat for both wheelsets…
I placed my wheelset in the vice, jaws griping the inserts and the lower crank towards my left, then I twisted the top wheel around so that it's crank was at the top of furthest away from me.

With the lower wheel firmly in the vice it is easy to look over the top and see if the top wheel is at 90° to the bottom!

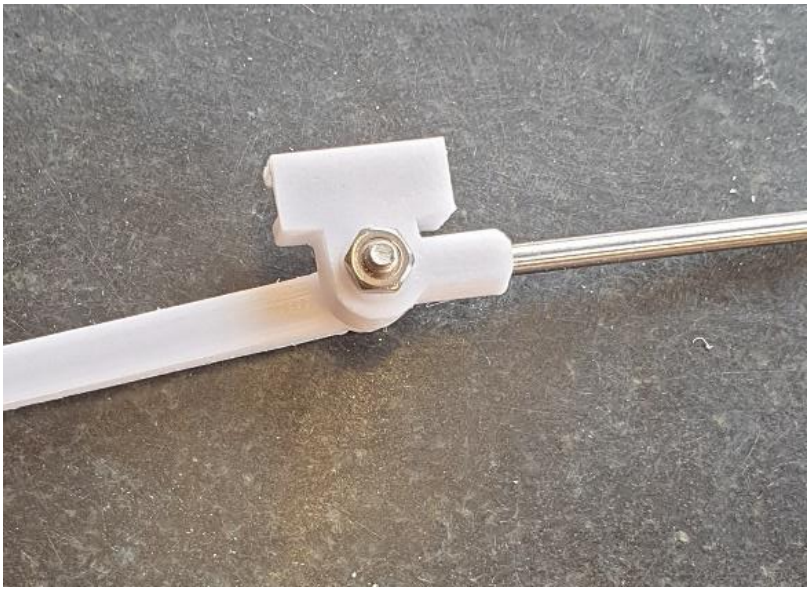


That's it, repeat for both wheelsets. Check your back-to-backs, and then you're quartering again.

The wheelsets will 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.

We're on the home stretch now!
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.

You need two coupling rods (couples the wheelsets), two connecting rods (connects the wheel to the piston rod), & two crossheads. The crossheads are paired, make sure you identify a pair!
Technically, these are not crossheads as the loco only has one slide-bar, but…
You will need two M2 half nuts, 8mm conehead screws & steel washers.

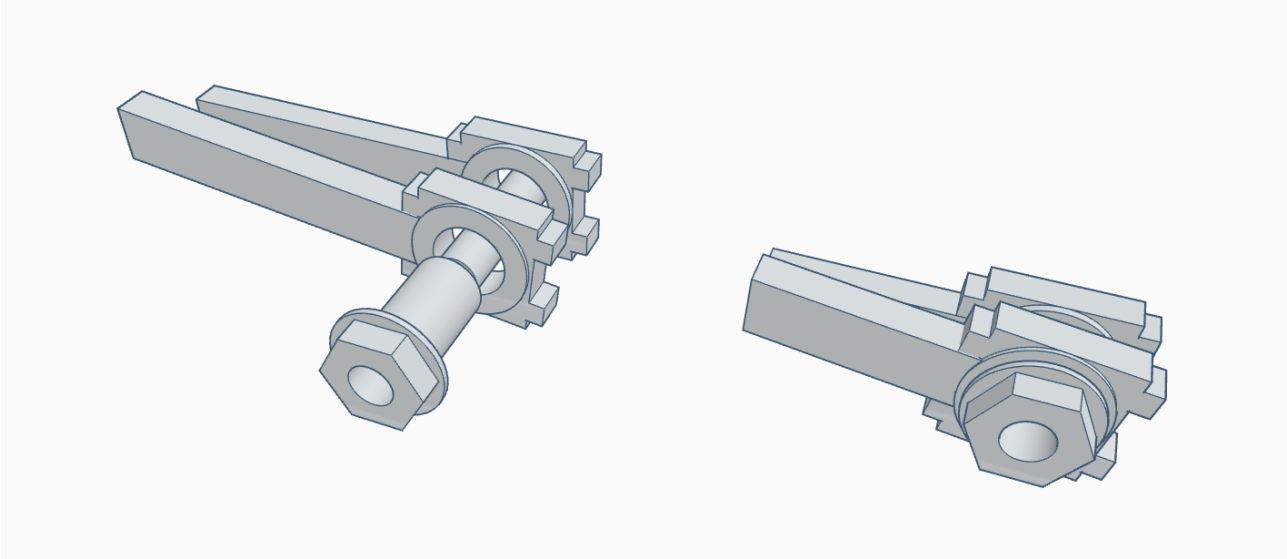
Start by screwing the 8mm conehead screws into the connecting rod, there is a countersink printed into the rod. With the screw in place clean the printed area around the screw. This part fits into the crosshead and should be a nice loose fit.
Cut a 45mm length of 2mm brass rod and push it into a crosshead. Make sure the end of the rod is nice and clean; a rough edge will scrape against the inside of the cylinder bore.
Push the rod in as far as you can. But do not obstruct the bore for the connecting rod.
With the piston rod in place, push the connecting rod into the crosshead and using a washer and nut, tighten the whole assembly.
You should find that the rod and crosshead remain nice and loose, but firmly attached to each other?
Repeat for the other side.

These are handed, you will need a mirrored pair when you are done.
Nearly there, one last fiddly bit!

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 and the assembly rotating until the crosshead lines up with the slide-bar.

With all the rods on, you should now have a free running chassis?
If not, try and locate where there is a bind.
More likely than not, it's the quartering?

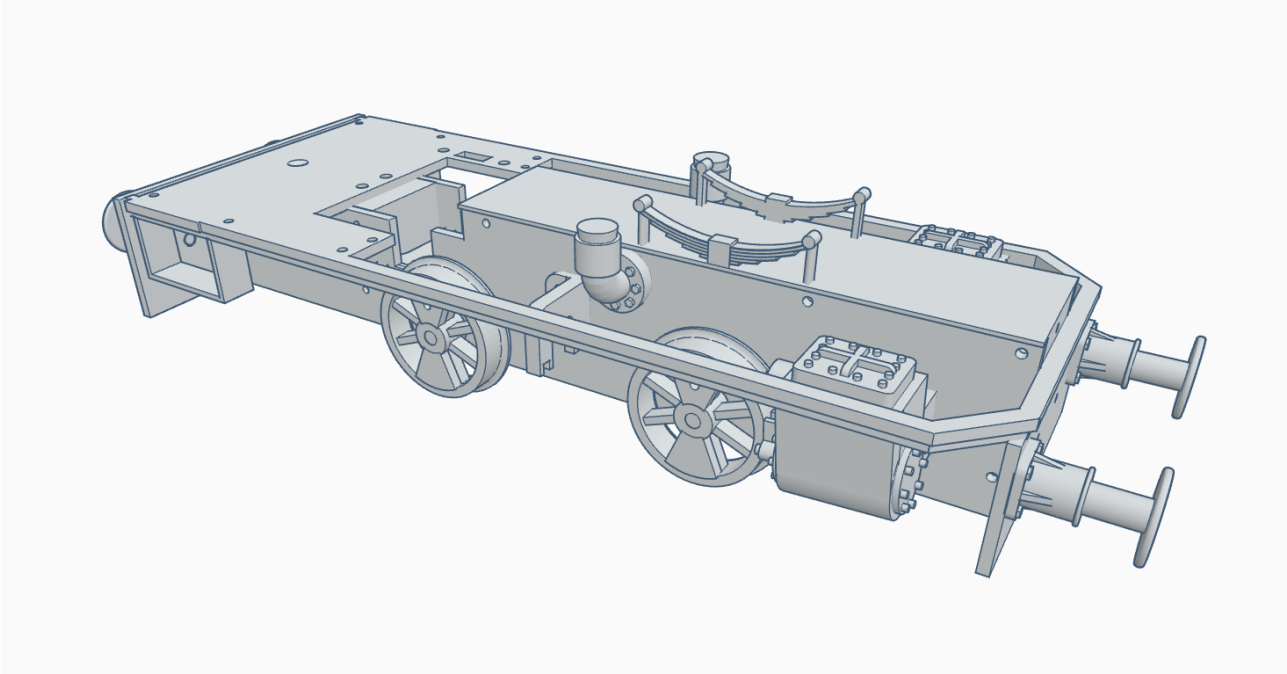
If your chassis is running freely, attach the motor. There are two screws that are already in the motor. We have ensured the motor plate is already perfectly aligned with the motor and drive gear, no need for complicated alignment, it's already done.

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

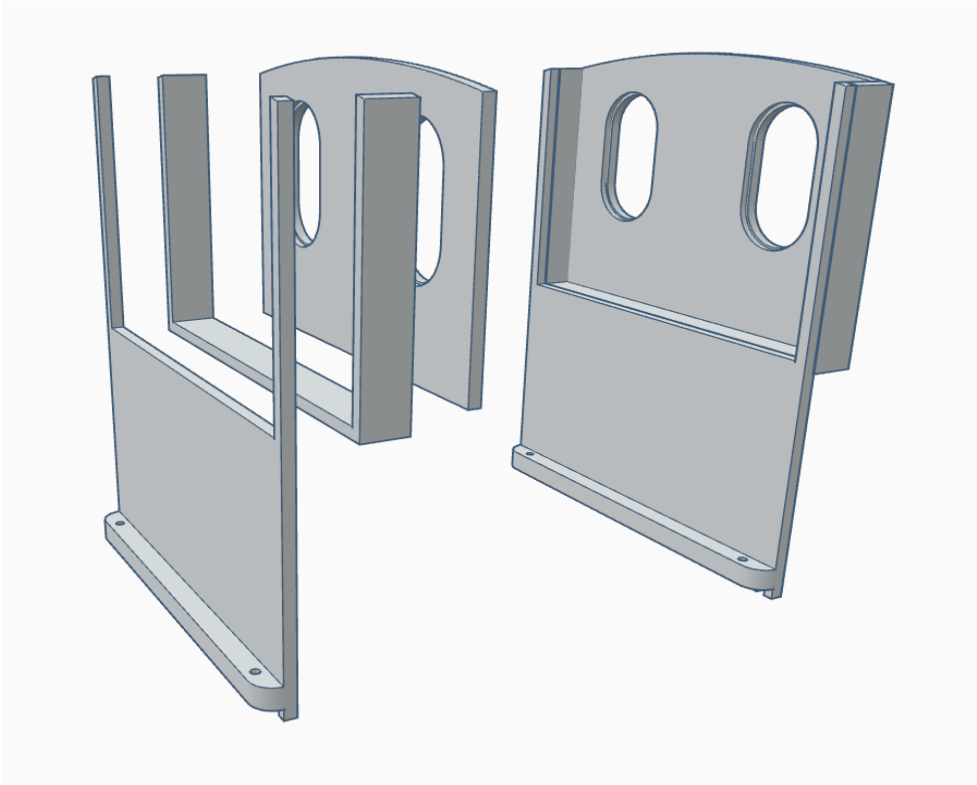
THE BODY

The body consists of three main parts; we spent a lot of time making this as simple and “usable” as possible.

The Running Frame (Essentially the footplate).
As built, the locomotives had no foot-plating other than that of the cab. However, and angle iron footplate of sorts was fitted prior to arrival at the TR.
This is a one-piece print.
It attaches to the rear stretcher with a single M3 10mm conehead screw. The front rests on the cylinders which have recesses to accommodate this. It also rests on the front buffer-beam.



Also shown in the image above, buffers, tanks fillers, cab steps, cylinder chest covers (top & front) and springs *(only over the front wheelset, the real thing has a transvers spring on the rear wheelset!)*

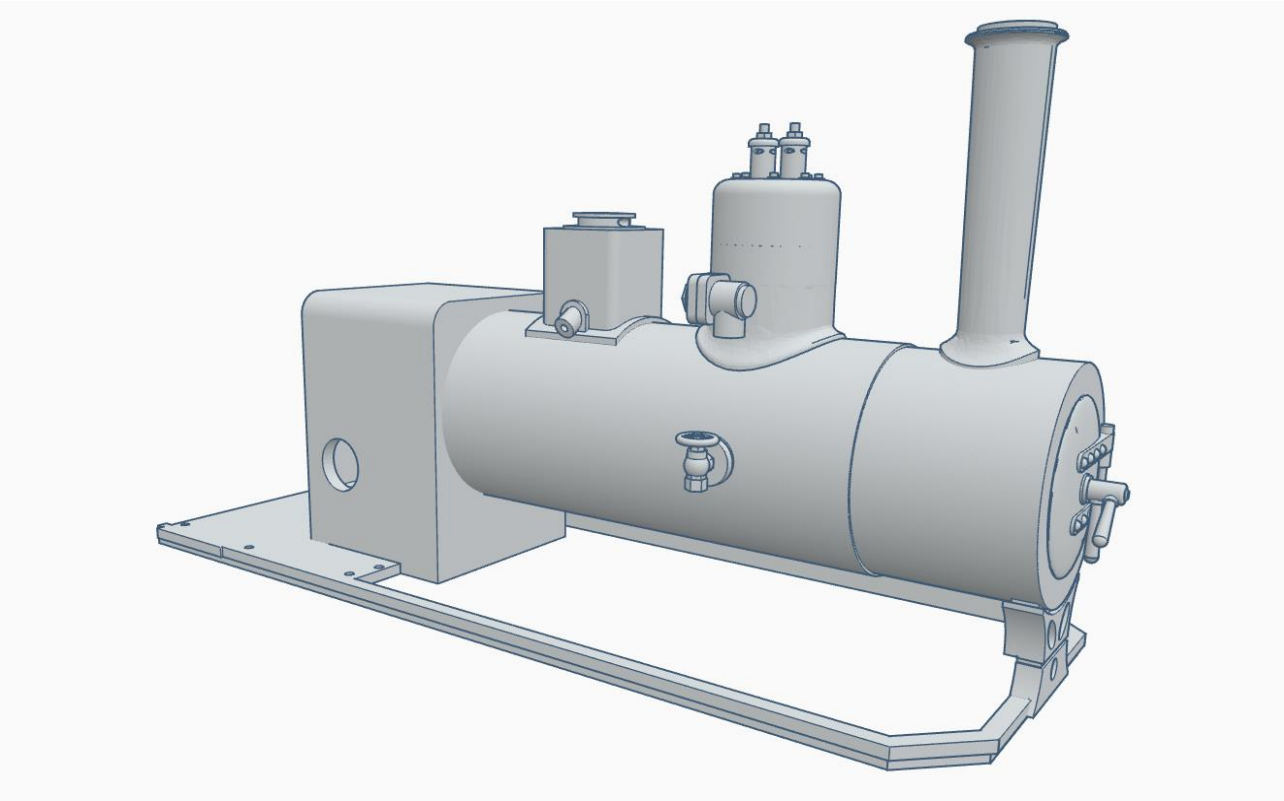


The cab consists of a rear piece made up from two printed parts and an acrylic part.

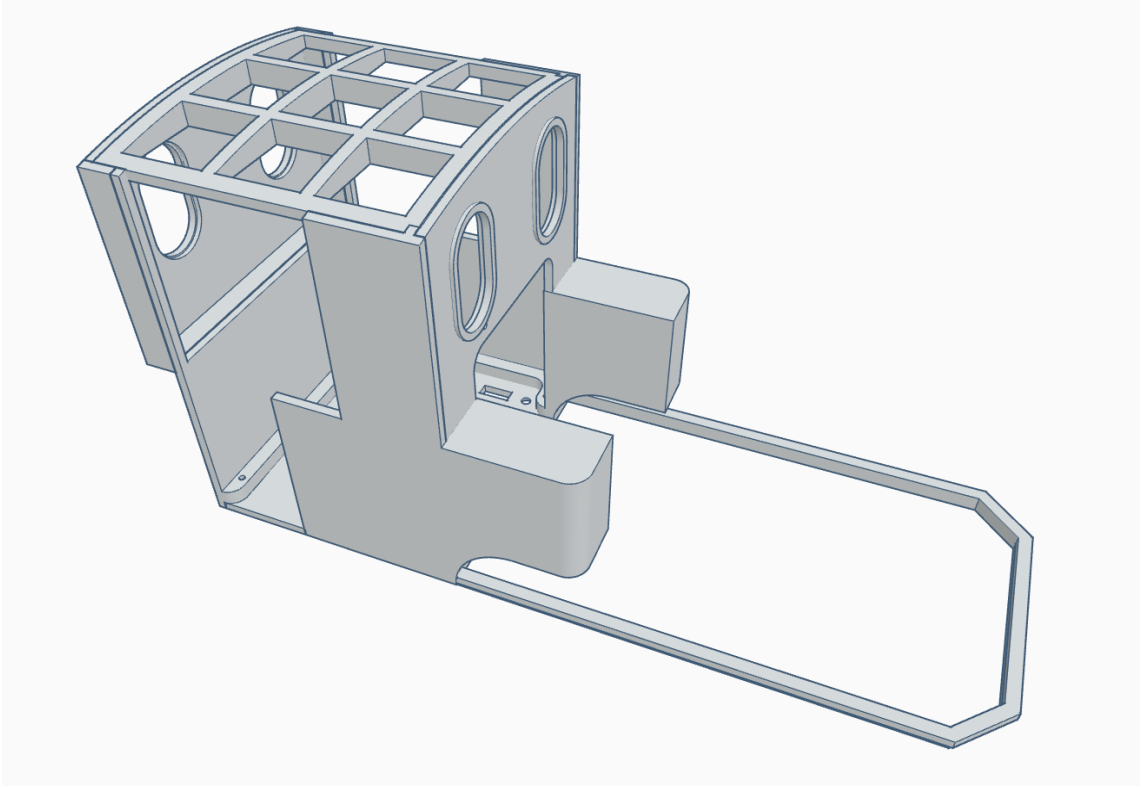
The acrylic part fits “inside” the printed frame, and the two printed parts glue together to create the box section of the rear cab sheet.

There are printed window frames and 1mm acrylic windows.

The rear cab sheet is attached to the running frame with two M2 8mm panhead screws from the underside if the running frame.



The main cab section consists of two printed side pieces and a 2mm acrylic front cab sheet.
Again, like the rear cab sheet, the front one fits inside the two side sections.
The hole is fixed to the running frame with six, three either side, M2 8mm panhead screws.

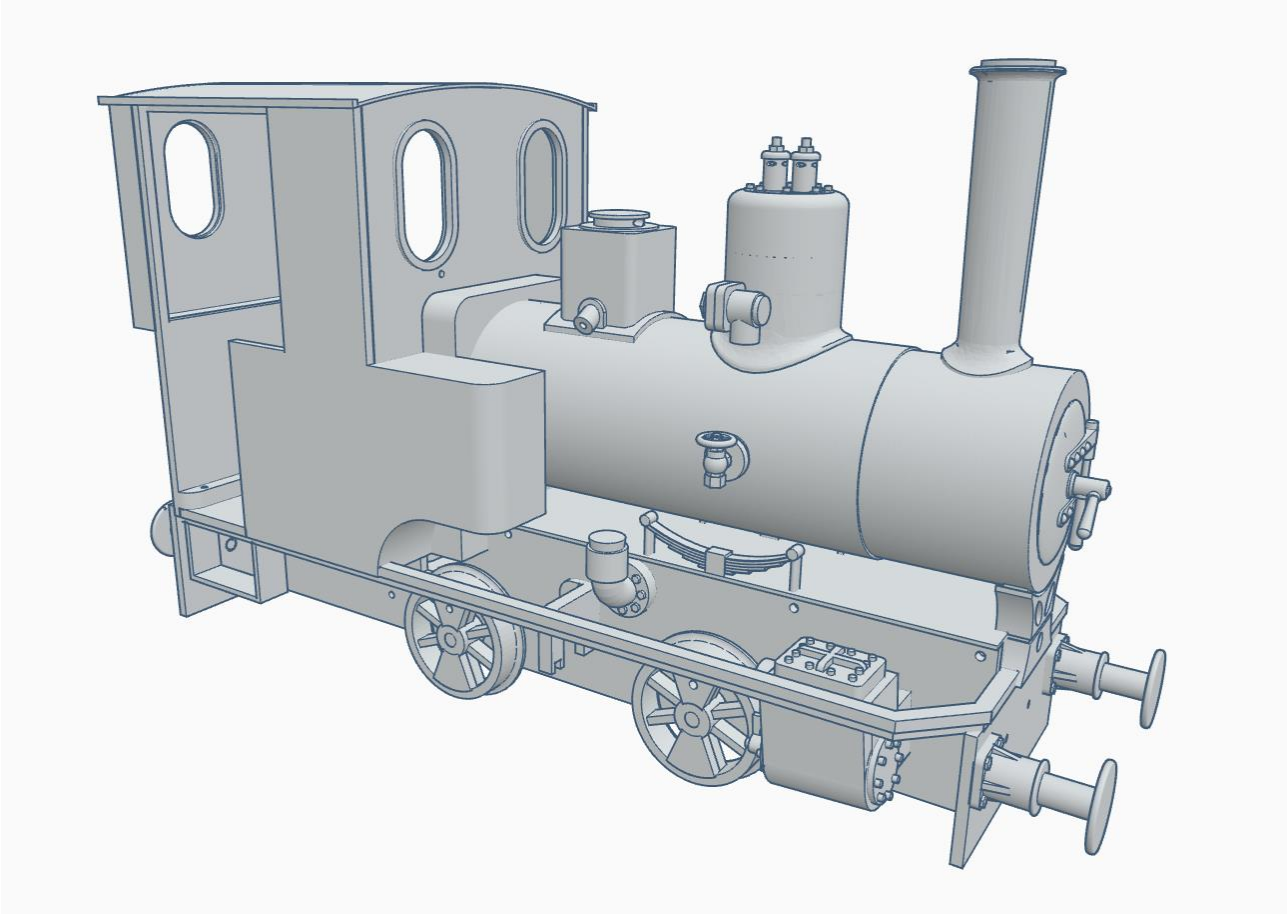


The cab roof is built up from the printed frame and a pre-cut black styrene sheet. We've also included a couple of lengths of styrene 1mm strip to act as rainstrips.
The boiler is in two parts, the boiler barrel and the firebox.

The firebox is attached to the running frame by two M3 16mm panhead screws. *(I used two screws because I didn't want it to move, I might have overdone it!)*
The barrel slots onto a ring printed on the front of the firebox, and fixes to the front of the running frame with a M2 12mm conehead screw.
This allows the modeller to release the boiler for access to batteries easily.

The display model has X4 AA batteries in the barrel and a Micron RC receiver in the firebox over the motor.

Also in the image above are resin printed, chimney, dome, sandbox and boiler water feed valves (either side of the barrel), smokebox door and dart.
We have included lengths of 1.5mm brass rod to act as pipes for the feed valves, sand pipes and regulator rod.
And, a length of 3mm copper wire to act as the steam feed from the regulator on the side of the dome to the steam chests.
We suggest that the modeller looks at the images below or at photographs of the original locomotive for correct placement of pipes.



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Andrew & Jacqui

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