BOOT LANE WORKS
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VALKYRIE

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.
Having said that, this model has been designed with minimal print lines on most of the flat surfaces. The tanks, cab parts & bufferbeams have all been printed with this in mind.
The only parts that will require some preparations are the coal bunkers.

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.

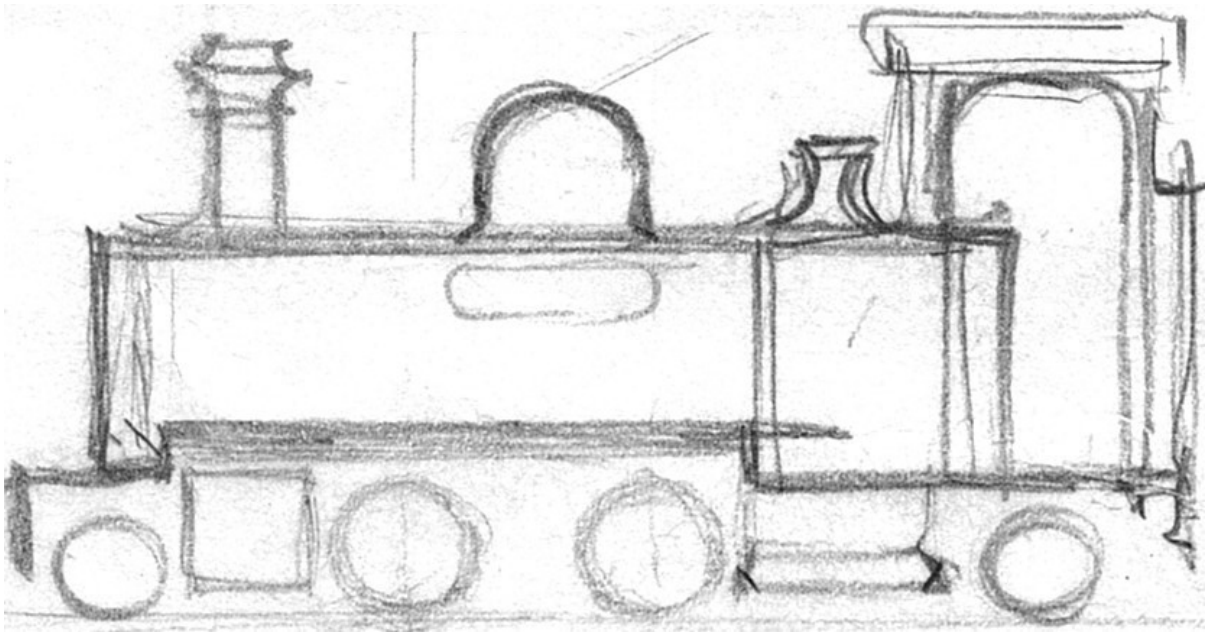
THE ACRYLIC IS ALSO BRITTLE, CARE SHOULD BE TAKEN DURING CONSTRUCTION

***** 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 National Garden Railway Show 2026, Stoneleigh, in loving memory of Peter Binnie who passed away Christmas 2025, VALKYRIE was named by Pete's widow Sheila and his love of Wagner Opera.

Based on a shared interest of the Vale of Rheidol Swindon built locomotives of 1923, and drawing inspiration from a drawing by Andrew's father (below).



This kit is designed for 32 or 45mm gauges. It is not "gauge adjustable", and you will need to choose which gauge you want prior to assembly.

There are two gearboxes provided in this kit -
One fits the 3/6v motor supplied with the kit, complete with two M3 5mm securing screws.
The second gearbox has a different a fixture mount to fit an MFA 385 5 Pole Motor (6-15v). This motor is not supplied, but the gearbox is included should the customer wish to "upgrade" to the larger motor.
Also included is a nylon worm gear that has been bored to 2.2mm to fit the MFA 385.

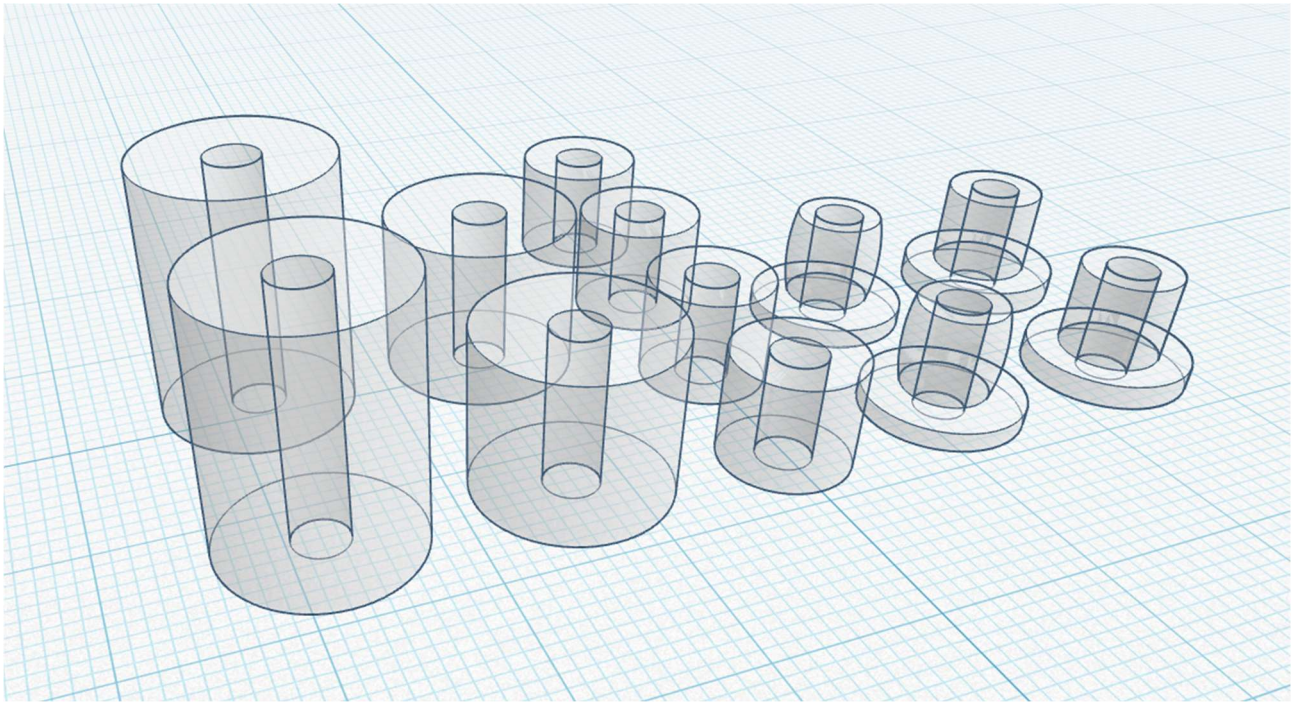
There are two frame variations included within the kit, with or without cutouts for the pony trucks.
You will need to decide which option you require, dependant on your running requirements and chosen gauge.

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

Much of the kit is screw construction, a little glue is needed to bring a couple of major components together.

RIGHT, LETS BUILD A CHASSIS…

We will start with the wheelsets.
Locate the four Peter Binnie 29mm wheels, the two "long" 1/8th inch 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.



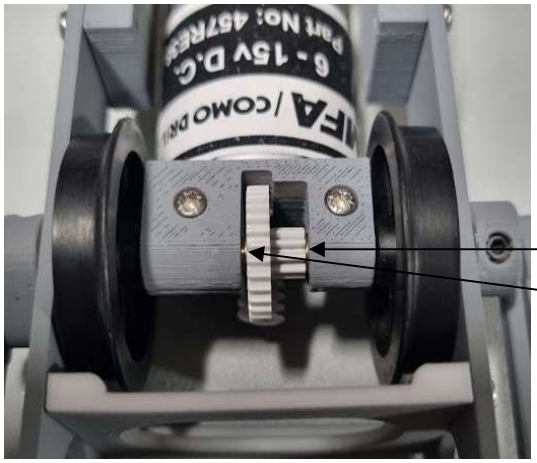
NOTE - THERE ARE SEVERAL PRINTED BUSHES IN THE KIT
From Left to Right
32mm gauge wheel depth spacers *(for use with the 32mm version only)*
45mm gauge wheel depth spacers *(for use with the 45mm version only)*
32mm gauge spacers *(for use with the 32mm version only)*
Pony truck bushes with some lateral movement
Pony truck bushes with no lateral movement

The 32 & 45 mm gauge options use same axles for the driving wheels; there are two pairs of white printed tube/spacers jigs. The shorter ones are for the 45mm gauge option, while the longer ones are for the 32mm gauge option.
Take the plain axle and carefully push a 29mm spoked wheel onto either end. I use a small, tapered reamer to open the hole in the back of the wheel very slightly, to help the wheel start onto the axle. Be careful, if you are using a reamer, take only a tiny twist…
As you push the wheels on, take care to keep them square to the axles. We want to avoid wheel "wobble". I used a small vice to push the wheels onto the axles.

Using the white tube jigs as a depth gauge, push the wheels onto the axle.
You can use both gauges simultaneously *(as in the image)*, or one on its own.

The jigs are the correct depth to ensure that wheels are pushed onto the axle to give you a "back to back" of 28 or 40mm, depending on your choice of gauge. And they will give you equal lengths of axle on each side, on which to mount your cranks later in the build.

The second 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 white tube jig to ensure the wheels are pushed onto the axle to the correct depth.



Locate the two gearbox parts *(there are two gearboxes, choose the correct one for the motor you intend to use).*

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.

Next, 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. I did not use any adhesive to attach the crank to the bush, it was just a push fit.
After testing, my cranks have not moved on the bushes, but it's obviously a possibility, and you may wish to use an adhesive?

CRANKS

Once you've pushed the bushes into the cranks, you need to locate two 12mm & two 10mm conehead M2 screws.

Fix the screws into the cranks, the two longer screws will become the longer crankpins for the rear wheelset, the shorter, for the front wheelset.

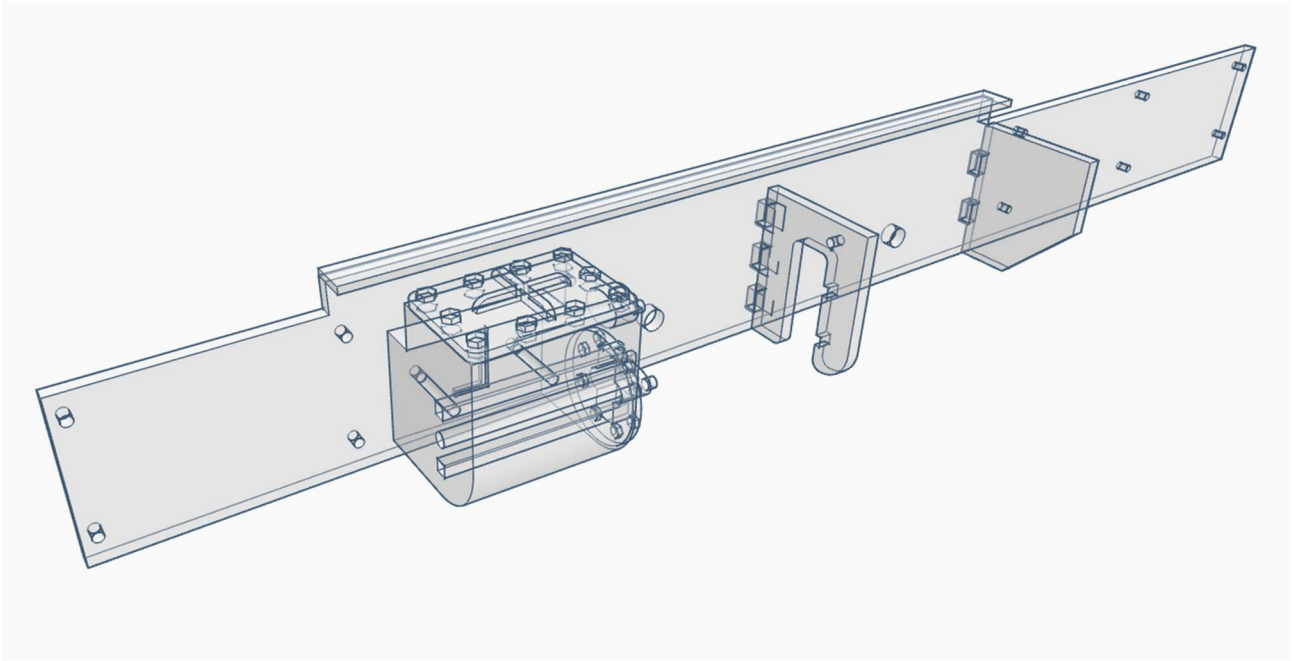
I painted the cranks before fixing the screws.

LET'S PUT THE FRAMES TOGETHER

Locate the cylinders blocks, these are helpfully marked with an "L" & "R", you will also need the cylinder-head and valve chest covers.
Ensure that the 2mm brass rod passes freely through the centre of the cylinders. I also take the time to ensure that the 2mm square brass rod will fit in the slidebar runner on the rear of the cylinder.
Glue the cylinder-head covers on the front of the cylinder blocks, and the valve chest covers to the top of the cylinders.
I also cleaned and painted the cylinders before attaching to the frames.
Actually, I covered the cylinders with same very thin styrene sheet.

Take both acrylic main frames, and the two acrylic motion brackets.
Glue (suggest Plastic Weld) a motion bracket to each frameplate, ensure you build a matching pair of left and right frames…
Also attach the cab supports towards the rear of the frames and the frame strengthener (1mm acrylic) along the top edge of the frames.

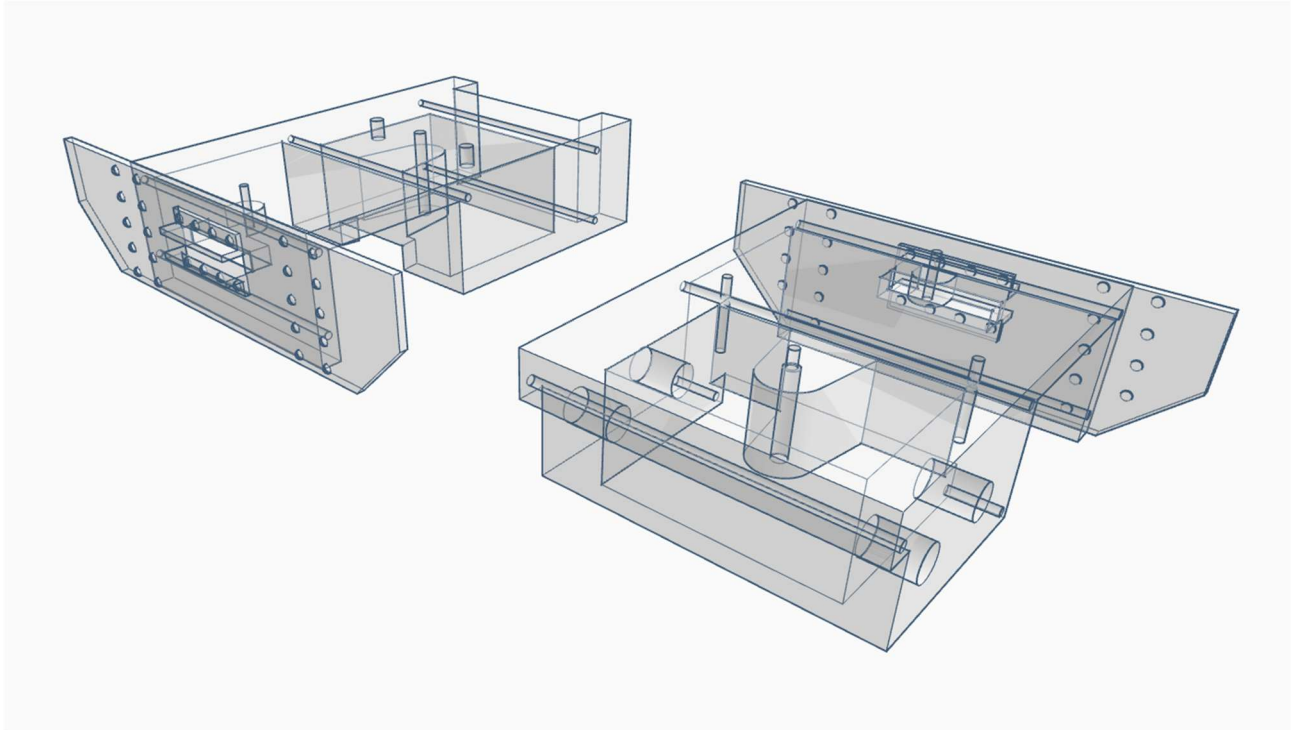
Next, screw the cylinders to each frameplate. These are attached with four M2 8mm panhead screws (two each cylinder).
I have designed the whole loco to allow the screws to “self-tap” into the white filament printed part. However, you can, if you wish, tap out the holes first using an M2 Tap, before fixing the screws.



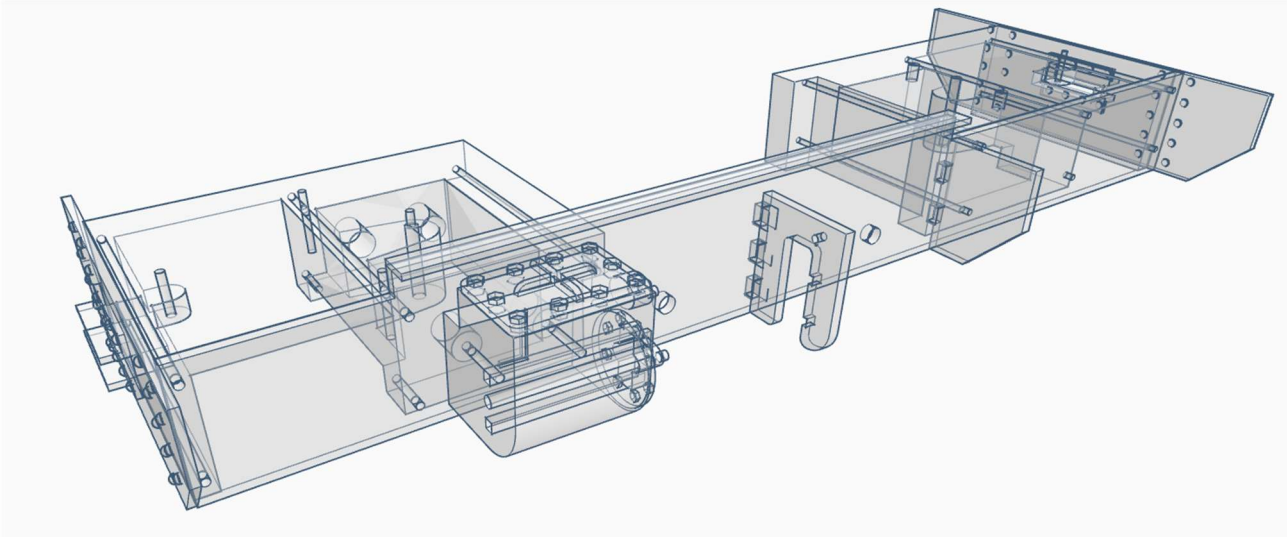
Once together, I painted the frames and cylinders.

With the cylinders attached to the frameplates you can now attach the stretchers.
Before you attach the stretchers, you need to attach the bufferbeams. There are two stretchers, front & rear, and two bufferbeams. Ensure that you attach the correct bufferbeam to the correct stretcher.
See the image below. The narrower bufferbeam fits onto the front stretcher (which has holes in the sides to allow the cylinder screws to clear the stretcher).

Attach using Plastic Weld again and ensure that the bufferbeams are central and flush to the top edges of the stretchers. I painted the stretchers at this stage.

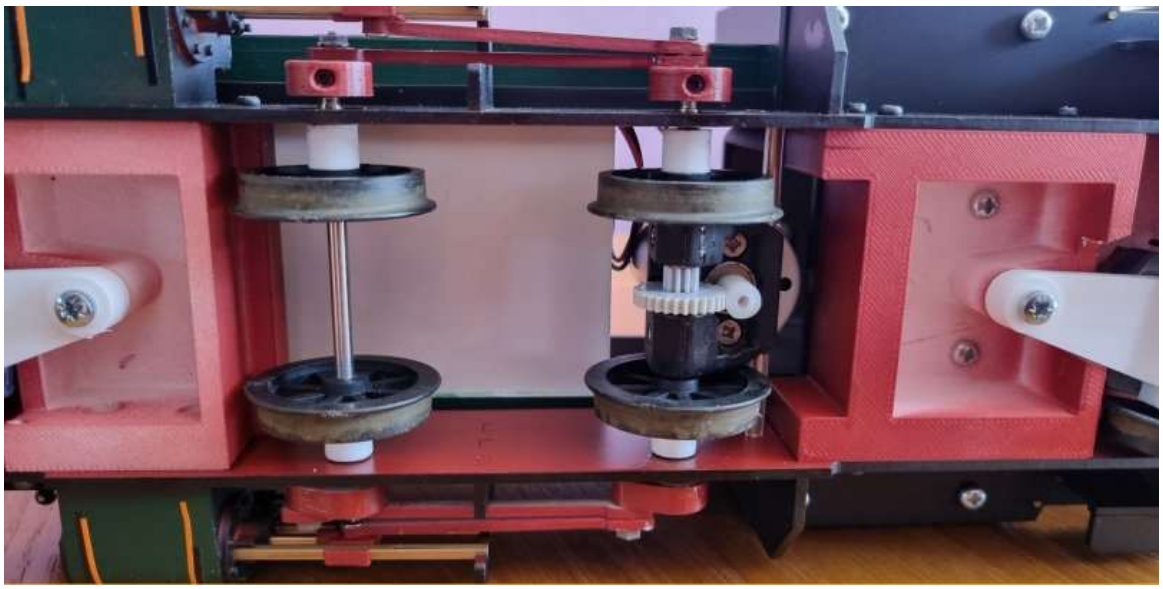


Now attach the front & rear stretcher to one of the frameplates using the M2 8mm panhead screws. There are five screws for the front stretcher & five for the rear for each side.



With one side and stretchers together, the wheelsets need to go in.
Place a brass top-hat bush on each axle end with the lip up against the wheels.

IMPORTANT - IF YOU ARE BUILDING A 32MM GAUGE MODEL YOU WILL NEED X4 OF THE WHITE PRINTED BUSHES BETWEEN THE WHEELS AND BRASS TOP HAT BUSHES (THIS WILL ENSURE THE WHEELS STAY CENTRAL BETWEEN THE FRAMES.



NOTE
The wheelset with the gearbox must go in the correct way round, rotate it on the axle and ensure that the 2mm holes in the frameplates & gearbox align.

The image shows the gearbox mounted with a length (62mm) of 2mm brass rod.
THE IMAGE IS OF VARSITY, BUT THE PRINCIPLE IS THE SAME.
NOTE: VALKYRIE'S MOTOR SITS UPRIGHT

Finish off by, by attaching the second frameplate to the whole assembly.

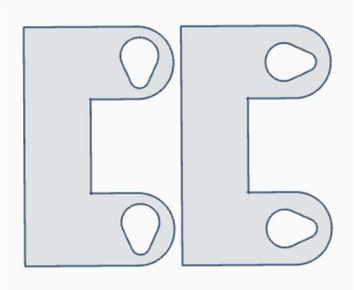
BUILDING THE MOTION

With a smooth rolling chassis, you can now attach the cranks.

Place the cranks on the axle ends, the end on the axle will need to be flush with the bush in the crank.
attach the cranks on one side and tighten the grub screws. Now attach the cranks on the other side, but do not tighten the grub screws.

QUARTERING JIGS

Locate the quartering jigs, these are cut from 2mm acrylic, there are two jigs with the cranks cut away and slots to clear the motion brackets *(right)*.



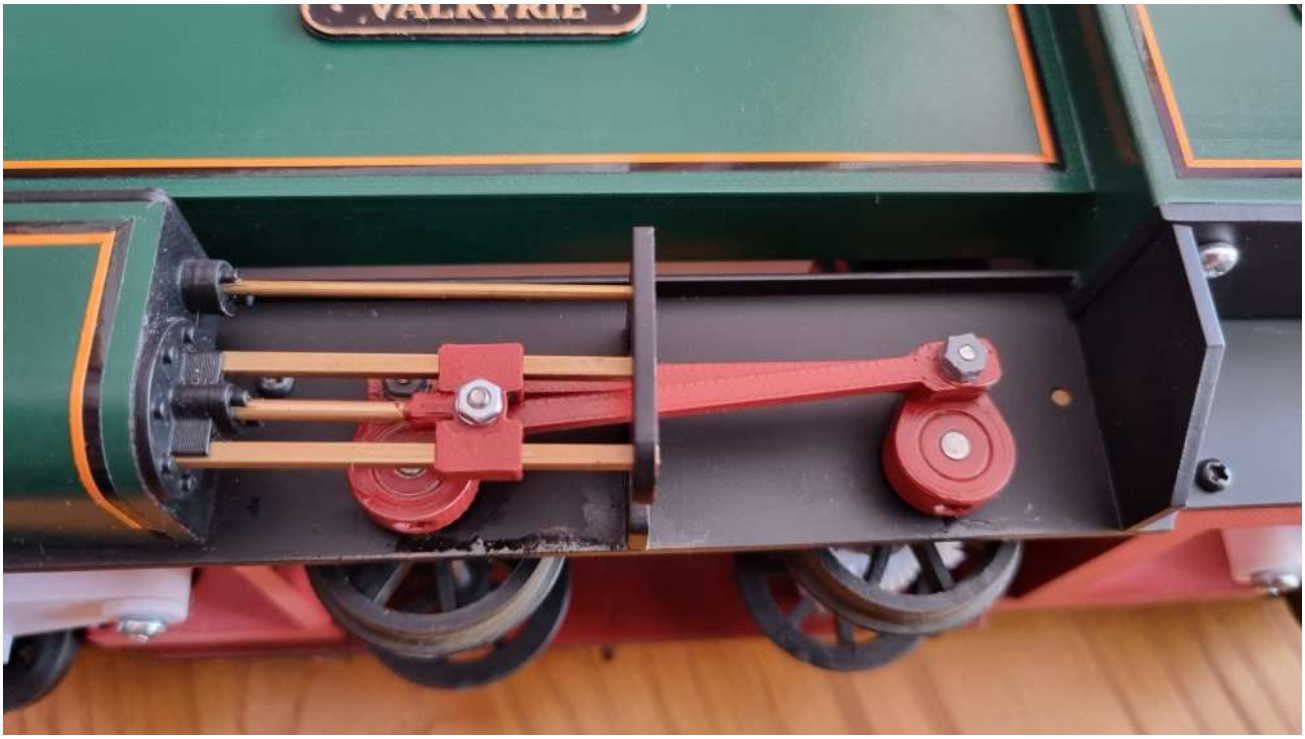
The jigs are set to the locomotive wheelbase and will fit over both cranks on one side of the engine.

Use the jig with the cranks set horizontally on the cranks you have already tightened.
The other jig will slip over the other side and loose cranks. Because the crank cut away is upright, the grub screws should be accessible on the underside of the chassis to tighten up.
With both jigs on both sides, the cranks MUST be quartered correctly. Although fiddley, with both jigs in place, all grub screws should be tightened, and the model will be properly quartered.

KEEP THESE JIGS SAFE - THEY WILL COME IN HANDY IF YOU EVER NEED TO SERVICE YOUR MODEL IN THE FUTURE

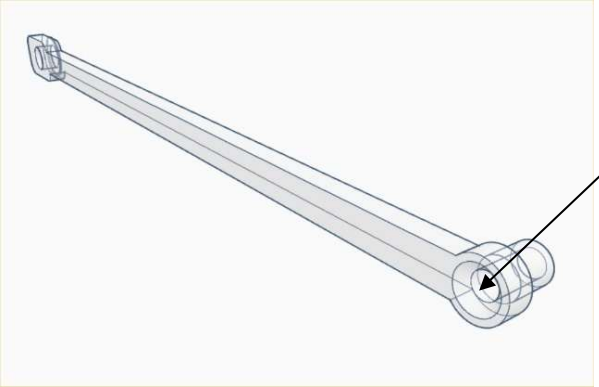
SLIDEBARS

Cut the 2mm square brass rod into 50mm lengths and fixed into place between the cylinders & motion brackets. A tiny amount of glue may be necessary to secure the bars.



Locate the following –
Two coupling rods, two connecting rods & two crossheads *(there are spares of all these in the kit in the kit).*
Two M2 8mm coneheads screws, two M2 nuts, two M2 washers & 2mm brass rod, cut to two 32mm lengths.

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



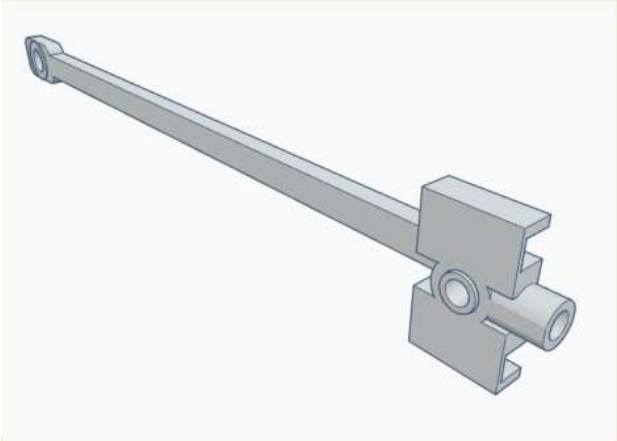
Create a better countersunk hole in the rear of the connecting rods, small end.

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

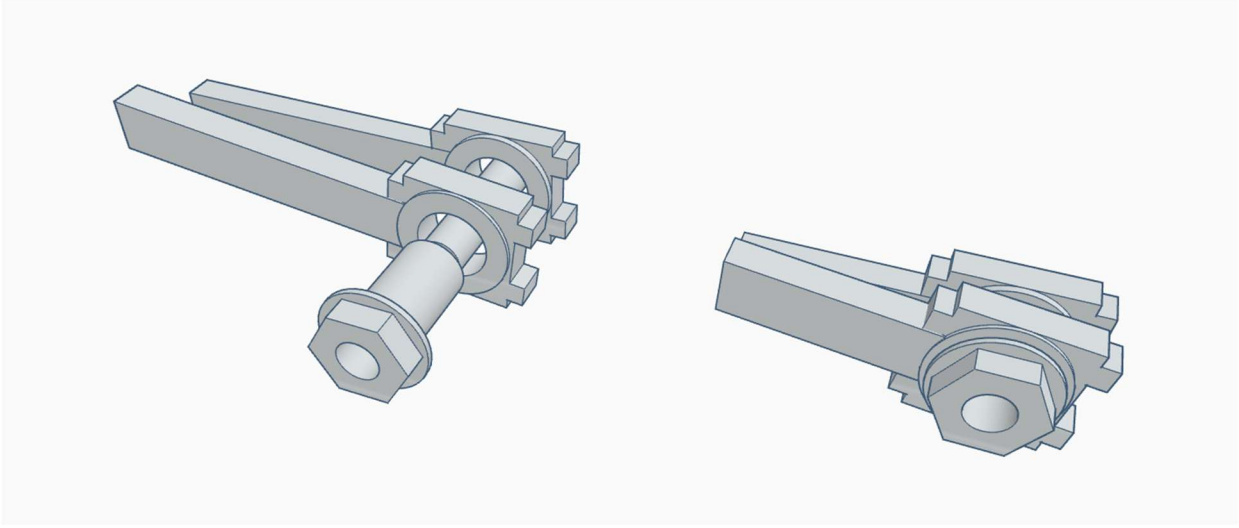
Fit the M2 8mm conehead screws into the countersunk hole, try and get the head of the screw flush with the back of the connecting rod.

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.

Unfortunately…
The crosshead can only be mounted to the rod when the crosshead & piston rod are in position on the model.
I do suggest a "dry run" to ensure that the two parts fit together prior to final assembly on the model.



Locate four crankpin sleeves/nuts.
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. *(For best results, run an M2 Tap up the bush prior to fitting).*
The crosshead & connecting rod will need assembling with the piston rod in place in the cylinder. It is a little fiddly, but patience is key here.



With all the rods & motion now 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.
Cut a length of 2mm brass round to 62mm and pass it through the frames and the motor to keep the motor in the upright position.

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

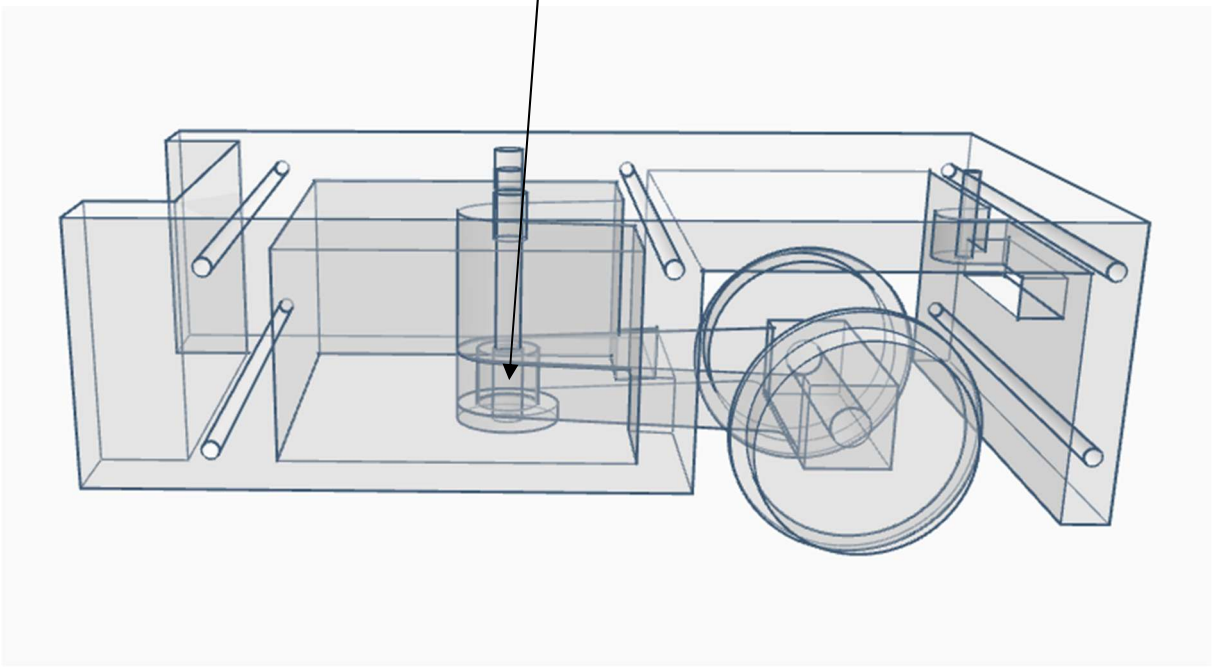
THE PONY TRUCKS

The pony trucks gave me a few issues and I have included a couple of options.

The primary issue was of lateral movement when VALKYRIE was tested at the Candlebridge Tramway, where our trackwork is far from forgiving…
I have included two designs of bush that mount the pony trucks to the two stretchers.
The original parallel sized bush with allows for very little lateral movement, and the redesign which is oval shaped.
Choose whichever bush suits your needs.

Both pony trucks are mounted onto the stretchers with the flat surface uppermost. There are for trucks in the kit, two are 32mm gauge, and two are 45mm gauge.
Locate the axles relevant to your chosen gauge and press a 20mm wheel onto one end of the axle.
Push a brass top-hat bush into the pony truck *(one each side)* and push the axle through. Now press the other wheel onto the axle.
The pony trucks are secured to the stretchers using the bushes (straight or oval bushes) and two M3 16mm screws. Screw up from underneath, through the bush and into the stretcher.
I have stacked weight onto the top of the truck (there is plenty of space between the pony and stretcher), and they seem to work well on our railway.

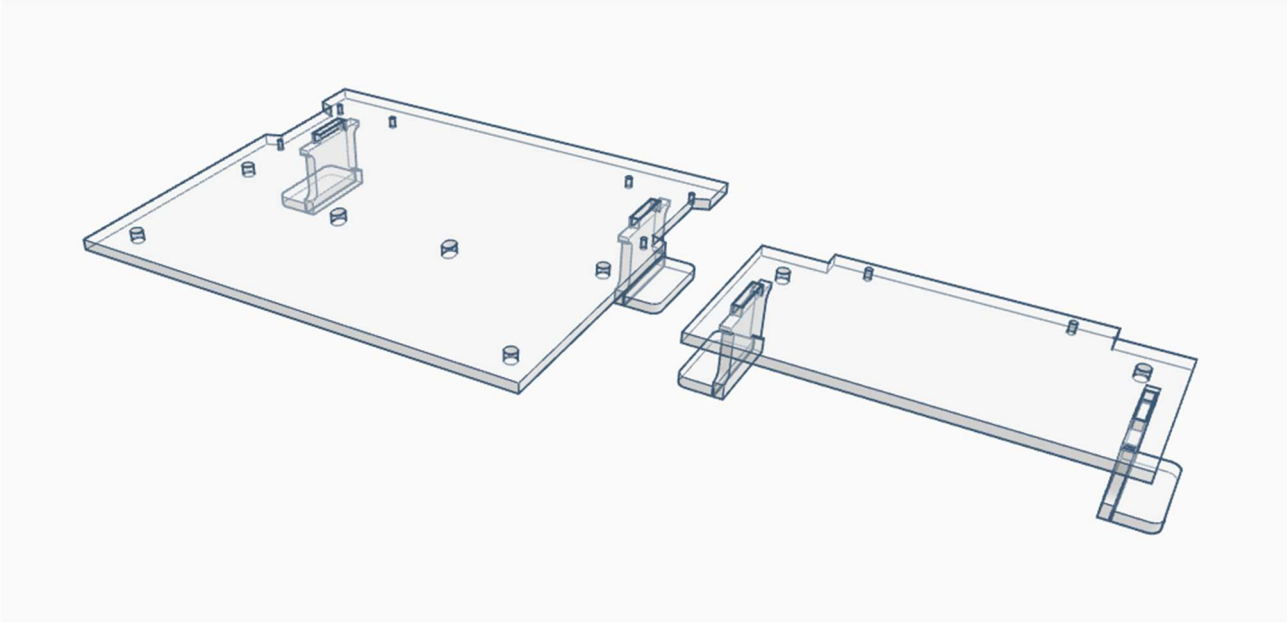
The two halves of the buffers are glued together and pass through the bufferbeam. And then secured to the stretchers using M3 10mm screws.



THE BODY

Start with the footplates, everything builds from these.

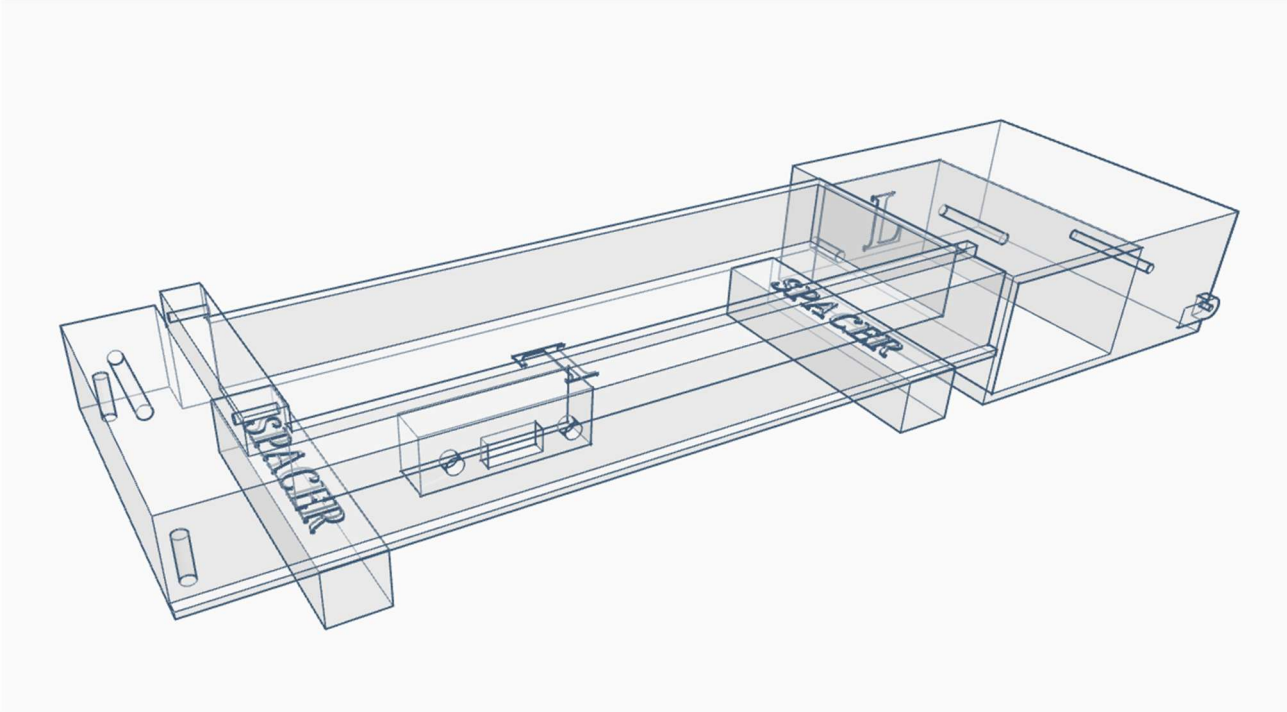
Locate the front and rear footplates, along with the eight step pieces.
The steps pieces are glued together to create four identical steps that are then glued into the slots on the front and rear footplates. Once done, I would recommend painting the footplates.



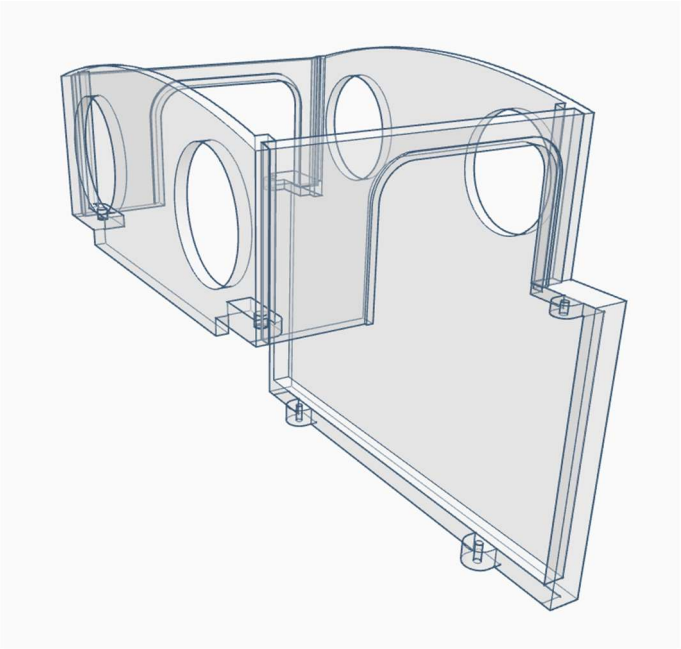
The front footplate can now be secured to the front stretcher. Use two M2 8mm screws down from the top, through the footplate and into the stretcher.

THE CAB, TANKS & BUNKERS

These are all printed parts; care was taken to ensure that much of the preparation work has been removed during the printing process. In the display model, only the bunkers required any priming and rubbing back! The tanks and bunkers have an “L” & “R” printed in within to help identify them.

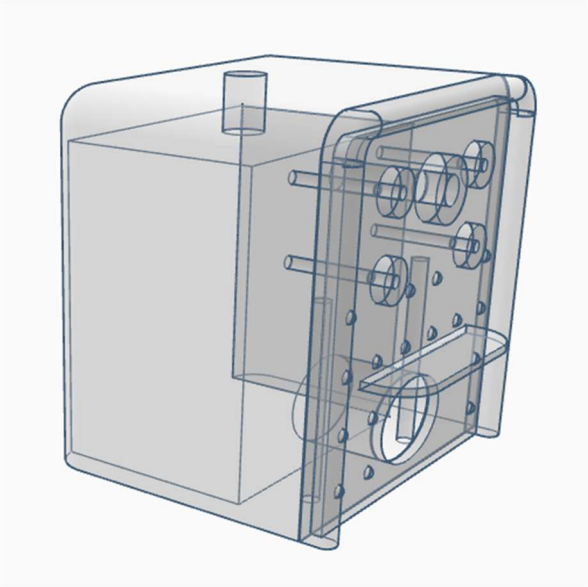


Start with the tanks and bunkers.
We have included two spacer prints; these are placed as shown in the image below. They ensure that the tanks are at the correct depth to the bunkers.
The tank & bunker need to be glued together and we recommend superglue for this procedure. It is important that the top edge of the tank & bunker align. *THE TOP OF THE TANK & BUNKER NEEDS TO BE ONE CONTINUOUS STRAIGHT LINE.*



Next the cab, the four parts of the cab are glued together, as shown in the image below.

With the tank, bunker & cab assemblies together, now is a good time to paint these parts.

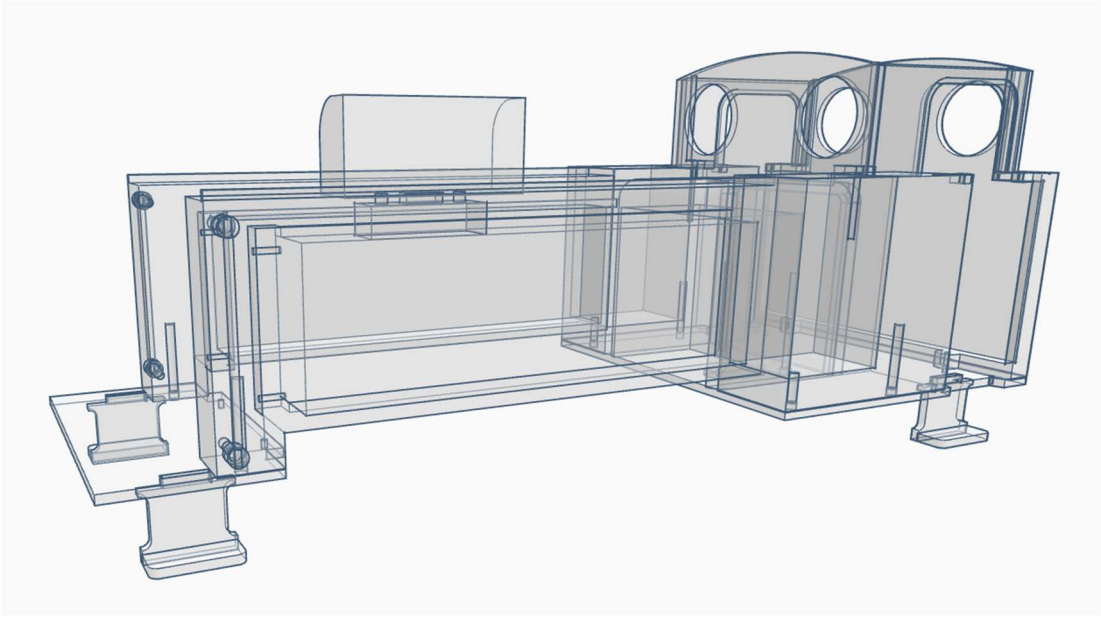


THE FIREBOX

The firebox is made up from three pieces, the box itself, the backhead and the “brass” cowl.
The cowl does not need to be painted brass colour, but the part does lend itself to painting separately.

Paint all three parts and glue together.

Now take the rear footplate and the firebox, using two M3 16mm attach the firebox to the rear stretcher and footplate from underneath the stretcher.



The tanks can now be added to the front and rear footplate using six (three each side) M3 10mm screws.

There is a piece of 2mm acrylic that attaches to the front of the tanks using four M2 8mm screws and acts as a strengthener for the front of the tanks and is the fixing place for the smokebox door.

The cab fits onto the rear footplate and the top of the bunkers.
Four M2 8mm screws are used, two from underneath the footplate at the very rear of the model and two from above down through the lugs on the front of the cab sheet down into the bunkers.

THE DETAILS

There is a piece of 2mm acrylic that fits on top of the tanks and fills the gap. On this attaches the chimney, dome & top feed.
The safety valve bonnet attaches to the top of the firebox.

A switch is supplied and attaches to the underside of the left tank, if so desired. To disguise the switch, one of two GWR style toolboxes can be mounted on the tank tops. Note that the Rheidol locos have the toolboxes facing each other!!!

The cab roof is precut from black styrene and attaches to a printed roof piece. We have included a length of 1mm styrene strips that can be added to the edges of the roof to act as rain strips.

A 45mm length of 1.5mm brass can be used to represent the valve rods (above the slide bars) reaching from the cylinder block to the motion bracket.

1.5mm brass can also be cut to 60mm lengths and reproduce the cab handrails. Through the guilds in the cab and holes in the rear footplate. While 48mm lengths reproduce the front handrails with the supplied handrail knobs.

Details include -

- White filament spectacle rims *(and 1mm acrylic spectacle glass.)*
- Resin printed chimney.
- Resin printed dome.
- Resin printed GWR style “Top Feed” cover.
- Resin printed GWR style safety valve bonnet
- Plus, resin printed tank fillers, fire door, regulator, clear gauge glasses, smokebox door & smokebox door handles, handrail knobs.
- 1mm styrene strip for use on the roof as rain strips.
- Name & number plates *(for that final finish!)*

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

Andrew & Jacqui

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VALKYRIE
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VALKYRIE