BOOT LANE WORKS
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NANCY

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. For best results, clean these with an abrasive prior to painting and rubbing down.
The printer can also leave a bit of a "squish" from the build-plate and there is usually a tiny "ridge" around the flat surface of the object that was attached to the build-plate.
For best results, clean the ridge off with a file, or very carefully with a knife!

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 painted to stop the hardening process.

CHASSIS

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

OK, let's jump straight in!

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…

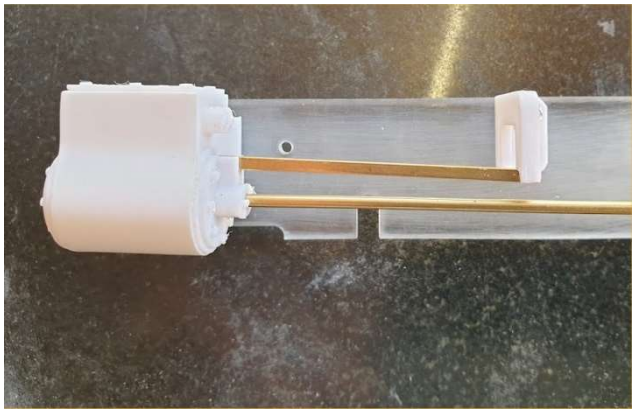
IF YOU HAVE PREVIOUSLY BUILT A CLARA OR LEO FROM BOOT LANE WORKS – NOTE THAT THERE ARE A FEW SUBTLE DESIGN ALTERATIONS WITH THIS KIT.

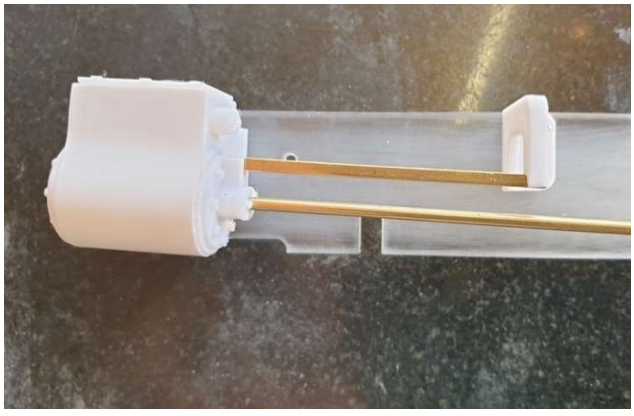
Locate the two 2mm acrylic frames. Be careful with these frames, the strength come from the frame stretchers, especially over the front pony-wheel cut-out.
Now locate the two motion brackets, using liquid or super glue, attach the brackets to the frames. Use a square to ensure the bracket is 90° to the frame.
ENSURE YOU HAVE ONE LEFT & ONE RIGHT FRAME WHEN COMPLETE.

Now locate the two cylinder-blocks, they are marked with a "L" & "R" as they are handed due to their slight inclination. Attach the front cylinder covers to the cylinder blocks.
Ensure the 2mm brass rod will fit into the block, I run a 2mm drill down the piston-rod hole to ensure there are no obstructions.
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 two 2mm brass square sections and the 2mm brass rod.
The brass square section needs to be cut to approximately two 50mm lengths, 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. Use a file to tidy the ends of the square brass section.

With the motion bracket attached to the frame, fit the slide-bar into the cylinder-block and motion bracket. Ensure the cylinder-block is at the correct inclination. Slide the 2mm rod into the cylinder-block and adjust the cylinder-block (loosen the two screws) so that the rod is parallel to the bar.
(Note – images below are of our Clara kit, but the principle is the same)
(Additional – we have improved the fit of the cylinders to the motion, and this procedure may not now, be necessary)





Locate the two frame stretchers and the motor-plate. The longer stretcher at the front, with cut out for the front pony-wheel.

In a slight departure from CLARA & LEO, the motor-plate is now sandwiched between the frames and located using lugs & holes.
Attach one of the frame & cylinder-block assemblies, to the front stretcher, and then repeat with the rear. Once you are happy that everything is square, attach the other frame & cylinder-block assembly. 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.

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 16mm, 2x 12mm & 2x 10mm.
The 16mm screws for the front wheels (for connecting & coupling rods).
The 12mm screws for the rear wheels (coupling rods only).
The 10mm screws for the crossheads.

Do the front wheelset first.
You will need two wheels, two 16mm conehead screws, the ⅛ inch axle with the gear and two brass top-hat bushes.
Screw the 16mm 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 rear wheelset. Remember, the 12mm 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 check your quartering again.
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. This plate will may require cleaning to fit?
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.
NANCY has the mount for the pony-truck, and will obviously need to go towards the front of the locomotive!

The pony-truck requires the two remaining brass top-hat bushes, you will need to open the holes in the truck slightly to accept the bushes. The wheels will need to be pressed onto the axle with the truck between.
After a little testing, the locomotive seemed to negotiate Peco 38" curves. By removing some of the material on the face of the pony-wheels (approx. 1.5mm), I have been able to get my 23mm NANCY to negotiate my Peco 30" curves. (I also removed some length from the front axle)

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, I found the crosshead can split, so you have spares and I've included a spare set of coupling rods.

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, 10mm conehead screws & steel washers.

Start by screwing the 10mm 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.
Opening the hole in the crosshead accept the 2mm brass piston rod. The rod will need cutting into two 35mm lengths. Use a file to ensure the ends of the rods are nice and clean.
I opened the hole in the crosshead with a 2mm drill bit. 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.

Nearly there, one last fiddly bit!

Locate the four ABS crankpin sleeves. These have been cut to the correct length for your crankpins, there are two lengths, the short ones are for the short crankpins, the longer ones for the long crankpins!
The sleeve fits over the crankpin, and the rod fits over the sleeve.
An M2 washer fits on the end of the sleeve and the M2 nut captivates the rod while allowing it to move freely on the sleeve.
The bore holes on the rods are reasonably loose on the sleeves, to allow for inaccuracies in the quartering. But, still tight enough to give smooth operation.

The sleeve acts as a spacer on the crankpins, and in a moment, you will be able to tighten the nuts against the tubes but allow the rods to remain free.

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.
Possibly the quartering, or is something fowling, or is one of your spacer tubes to short and causing an issue?

If your chassis is running freely, then attach the motor. There are two 5mm M3 screws to fit the motor.
Try and allow a little play between the worm and gear. Do not push them to tightly together as this will wear the worm done. A little play here is a good thing.
Having said that, if the two are too far apart the gear will strip the worm…

The motor supplied is 3-6v and will comfortably work on one or two AA batteries. Or with a Locoremote MiniB & X4 AA's. *(The choice of electronics is left to the individual modeller.)*

BODY

It's all straight forward from here on in…

Seriously, you've done the hard part.

The boiler & smokebox is two parts assembly. The boiler attaches to the footplate with two M2 8mm screws, the smokebox attaches through the front frame stretcher & footplate with a M3 screw and is one of the two points that fix the model together.
Other detail for the boiler includes the chimney, dome & safety valve. While the smokebox-door & dart affix to the front, and the regulator, gauge-glasses & Firehole-door affix to the rear of the boiler unit.

The body is built up from 2mm acrylic for the tank & cab-sides, the cab-front & rear.
The rear bunker is filament printed, to create the bunker curves, and accepts the M3 screw from the rear stretcher. The rear cab-sheet is recessed into the cab, please study the images below.
The tanks are hollowed at the bottom, as is the boiler to allow for your battery and possible RC unit.
Access to the switch is also under the tank, there is cut outs for the switch in the footplate.
Printed tank fillers have also been provided.
Included are two strips of beading that I used along the tank and bunker top. Spectacle glass in the form of 1mm acrylic discs and printed spectacle rims.

The roof is formed of the printed frame and the 0.5mm styrene sheet. I suggest gluing these two together prior to fixing the cab. Glue the two parts together "upside-down" using a weight and two lengths of wood to form the styrene to the frame.
Remember that the rear cab sheet is recessed into the cab and will need more overhang than the front.

The buffers are mounted onto the buffer-beams with two M2 screws that tap into the stretchers.
The steps are built up from four pieces of 2mm acrylic (two per step), there is a corresponding slot in the footplate to locate.
The production model has boiler-bands, which were made from a few strips of quality writing paper and lined with gold tape!
Included in the kit are resin printed handrail knobs and 1.5mm brass rod for the cab handrails.

We have included rivets, (Nail Art!)
I have found the best way to attach these are to mark a length of masking tape with 3-5mm pencil markings. Fix the tape along the line you wish to place your rivets and, using the point of your modelling knife stab a rivet, dab it in your chosen glue and place it alongside the tape next to the mark. Prime the surface prior to riveting, then prime again after riveting.
Repeat, repeat, repeat, repeat, repeat, repeat, have a cuppa (or treat yourself to a Single Malt)!!!

My own personal choice of paint is Halfords rattle cans, use a primer and a topcoat.
Be sure to prepare the surfaces, wet & dry is great when used with water on the filament printed areas. The chimney and dome can be easily mounted in a small lathe (if you have access to one) and lightly cleaned with wet & dry, prior to painting.

A PDF copy of this document can be downloaded from – www.bootlane.org.uk/instructions

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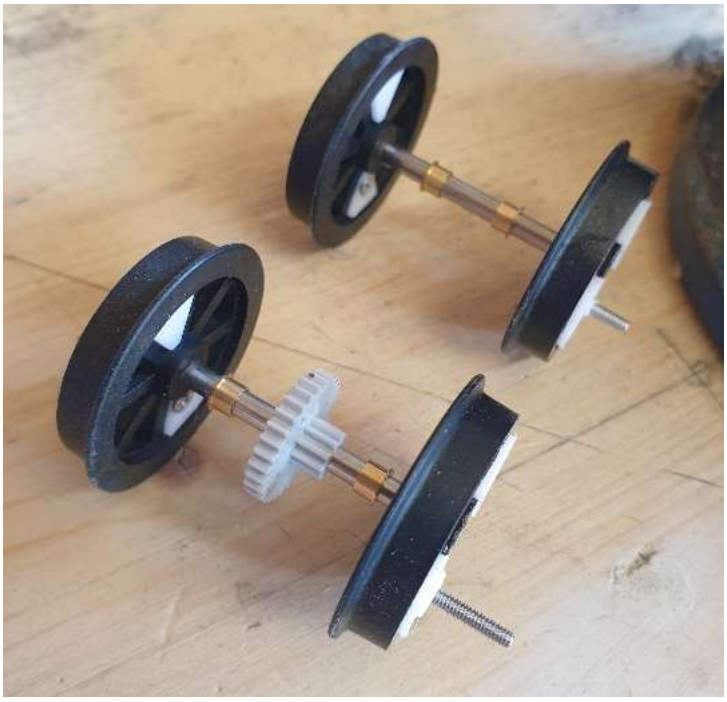

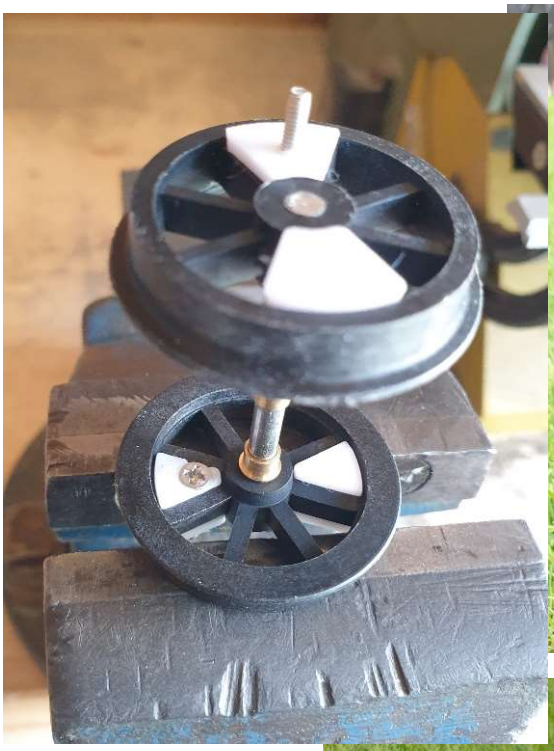


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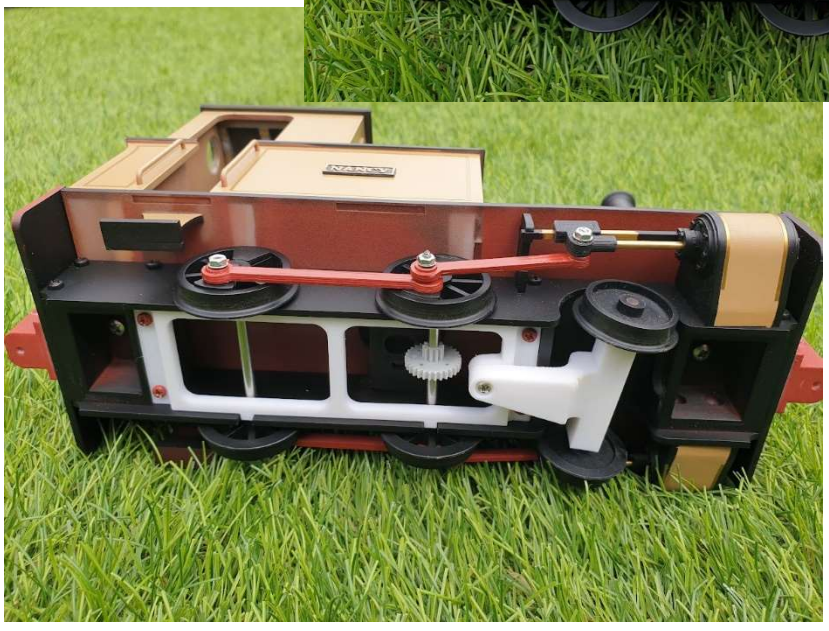
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This last image was taken before backhead detail was added (regulator, gauge glasses, etc.)