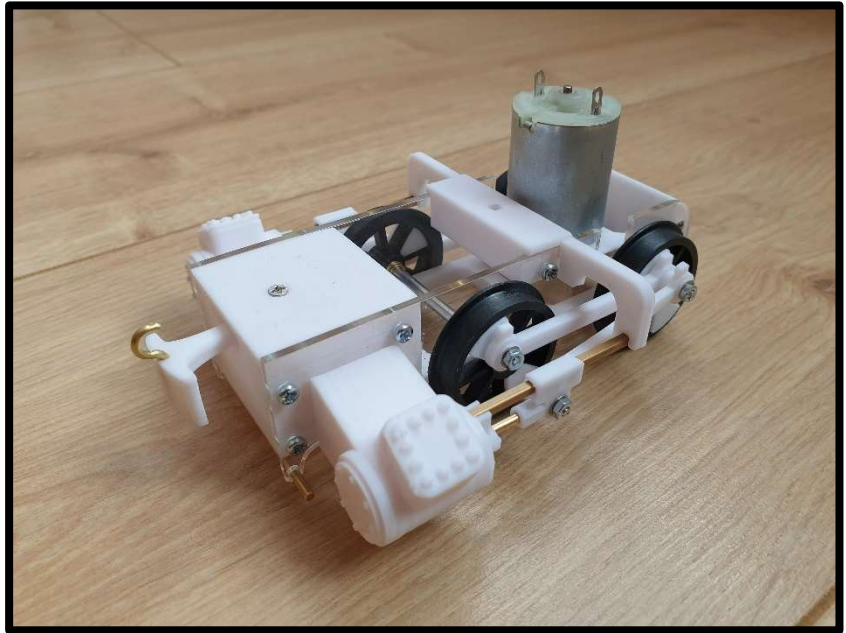


“Nō 7” BOGIE



Thank you for buying this chassis 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
- Tweezers, Pliers, screwdrivers, etc...
- 2mm diameter twist drill
- A countersink drill bit
- 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

This kit contains two power bogies for use with our GUARDSMAN locomotive kit.

These bogie kits are sold in either 32mm gauge or 45mm gauge.

Each bogie has one 3-6v motor, we have tested the GUARDSMAN kit with two powered bogies and with only one bogie powered. On both tests the model ran satisfactorily.

This kit is also sold separately for modelers who may wish self-build. The bogie kit is still sold as a pair.

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”!

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!

OK, let's jump straight in!

This description is for ONE bogie, simply repeat the process for the second bogie!

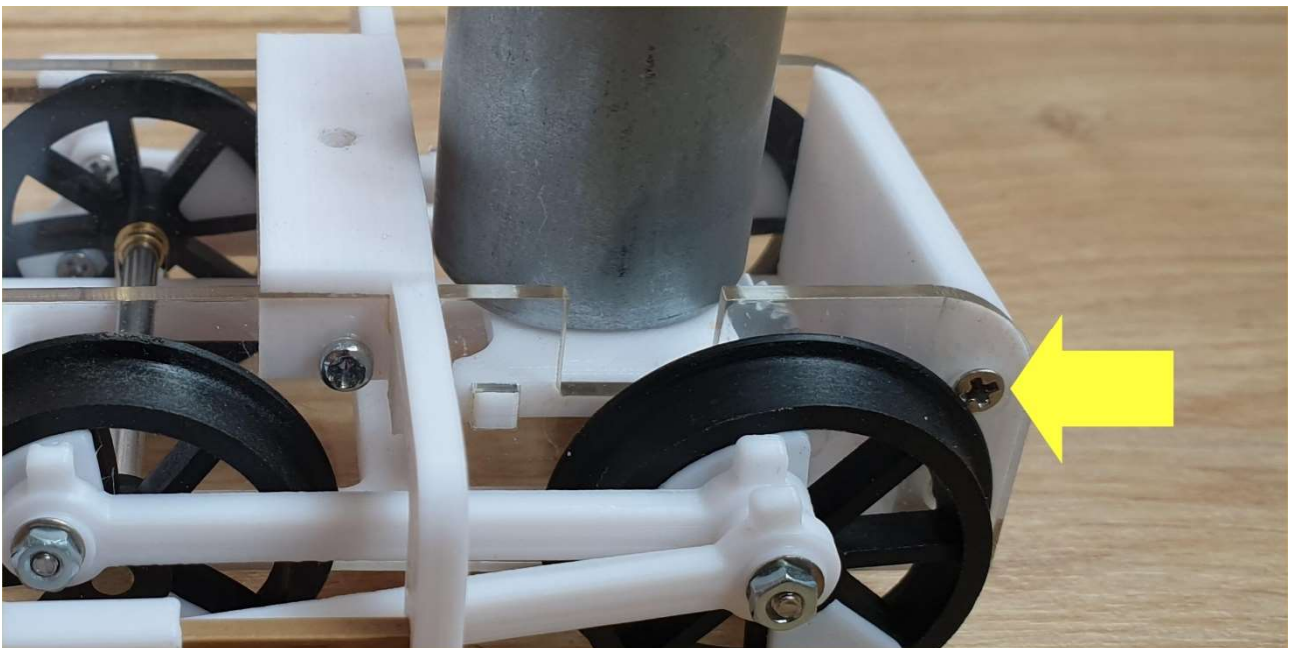
This is a long description but bear with me. If we can get this right, everything else will fall into place and your model will run like a dream...

Locate the two cylinder-blocks, unlike our other kits they are NOT marked "L" & "R" as the valve chest make the left & right obvious.

Open out the piston rod bore holes, the piston rods are 2mm brass rods, I usually open the holes to 2.5mm.

Now attach the front cylinder covers, I use a dab of superglue.

Locate the frame plates, you will need to countersink the two holes at the rear of the frames. This is to allow the use of two conehead screws to attach the rear stretcher. This is in turn, to allow the rear wheelset clearance from the screws.



The rear stretcher screw (conehead) countersunk into the acrylic to allow rear wheelset clearance

Attach the left-hand cylinder to one 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.

It is important to get the cylinder parallel to the frames, ensure they are not tilted up or down.

Locate the front frame stretchers. The rear stretchers have a curved rear.

Attach (with three M2 8mm screws) the frame plate with cylinder.

You should now have an acrylic frame sandwiched between a cylinder and front stretcher.

Now attach the rear stretcher using two M2 10mm conehead screws.

Attach the right-hand cylinder to the other frame plate ensuring it is parallel as before.

Locate the motor mounting plate, this will require a little work with a file to ensure to fits comfortably into the locating holes in the frame plates.

Now offer both frames together.

The motor mount plate has a clearance slot on one side, this allows clearance to the axle drive gear, and should face downwards (towards the track) and to the rear of the bogie.

With the frames and stretchers assembled, the motion bracket can be added.

The motion bracket on this kit is a single piece, doubling up as a bogie support for the locomotive.

There are locating slots in the frames and two M2 8mm screws, one from each side holds the bracket firmly into place.

I usually paint the frames at this stage, without any brass or motion.

A quick primer, then topcoat (usually black!)

Cut two 45mm lengths from the 2mm square brass section supplied.

These are the slide bars and locate into the rear of the cylinders and the underside of the motion bracket.

Ensure the slide bars are parallel to everything else. I usually check this by inserting a length of the 2mm brass rod into the cylinder and ensure that the two brass sections are parallel to each other.

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. You need six conehead screws in total, 2x 16mm, 2x 12mm & 2x 10mm.

The 16mm screws for the rear wheels (for connecting & coupling rods).

The 12mm screws for the front wheels (coupling rods only).

The 10mm screws for the crossheads.

Do the rear wheelset first.

You will need two wheels, two 16mm conehead screws, the 1/8 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 (32mm gauge) or 40/41mm (45mm gauge) *This means the distance between the back of the two wheels.*

Now do the front wheelset. Remember, the 12mm conehead screws, and you should have the 1/8 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 identical 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 gripping 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 your 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.

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 32mm lengths. Make sure the end of the rod is nice and clean with no sharp edges.

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 too 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 too 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...

You should have a couple of M2 10mm conehead screws left over?

These are for securing the coupling/buffer into the front frame stretcher.

Countersink the hole in the top of the stretcher and drop your M2 10mm conehead through. The buffer pushes through the slot in the front of the stretcher and over the M2 screw. Use a M2 nut to hold it all together.

One final addition is the Foul Bar, cut a length of 2mm brass round section to either 38mm (32mm gauge) or 52mm (45mm gauge) and push it through the drop-down holes at the front of the bogie.

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

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