

BlueCarve Bluey CNC Set Up

I am slowly updating the set-up guide with new instructions. I am always making small improvements here and there so please be patient as some items might seem odd. The basic concept is the same and if there is anything that does not seem right, just get in touch with me.

Don't forget to join the awesome BlueCarve Owners Group on Facebook [>>>here<<](#)

1. Safety
2. Standard Bluey set up
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5. Spindle set up
6. Maintenance
7. Motion Controller Set Up
8. CNC Router Bits

1. Safety

Operation of any CNC is relatively safe, but you need to adhere to the following precautions
Safe Operating Procedures can be found here [>>>CNC Router<<](#) and [>>>Laser<<](#)

During operation of your BlueCarve CNC you must:

- **Never leave your CNC unattended**
- **Wear safety glasses and earmuffs**
- **Keep body parts a clear distance from the CNC**
- **Allow free flowing air to the CNC controller**
- **Take care when handling router bits... they are sharp**

During operation of your BlueCarve CNC laser you must:

- **Anyone in the vicinity must wear suitable laser goggles when power is connected to the laser module**
- **Restrict access to the room where your laser is operating**
- **Only connect power to the laser module once module is attached to the Z axis with the lens facing down to the wasteboard**

2. Standard Bluey Set Up

A. Unpacking (0:54) [Video](#)

You would have received 2 boxes with your BlueCarve order. Inside you will find:

1. Z & X Carriage
2. 8 x M5 20mm screws with washers
3. Y axis Left set up
4. X axis rail
5. Y axis Right set up
6. 3 x 958mm rails with no brackets attached (1458mm for 1.5m version)
7. 2 x 1000mm rails with brackets attached
8. CNC Controller box
9. USB Cable
10. 24v power supply
11. Pack of bits

Also, you may have received the following if you have chosen an upgrade option

1. Laser attached to mount
2. Z probe

Due care has been taken to pack your CNC but we do get the occasional damage in transit or missing items. Please get in touch and take photos if possible. Any items missing or damaged or missing will be replaced at no expense.

B. Tools you will need (0:18) [Video](#)

You will require the following tools to assemble your CNC

1. 8mm spanner
2. 10mm spanner – to tighten wheels after assembly
3. 4mm Allen Key/ Hex driver
4. Philips screw driver

C. Base assembly (0:51) [Video](#)

D. Y axis assembly (1:40) [Video](#)

E. X axis assembly (2:48) [Video](#)

F. Axis & limit switch wiring (3:06) [Video](#)

The wiring looms have changed of which the new sequence is as follows

Y Axis Right hand side

| | | | |
|-------|-------|------|-------|
| Brown | White | Blue | Black |
|-------|-------|------|-------|

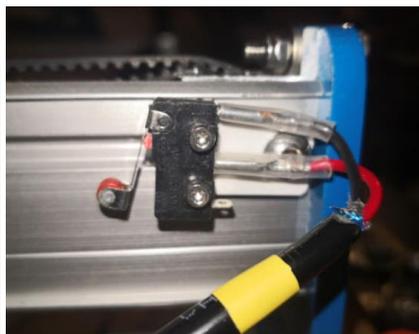
X axis (left hand side) Z Axis (right hand side)

| | | | | | | | |
|-------|-------|------|-------|-------|-------|------|-------|
| Brown | White | Blue | Black | Brown | White | Blue | Black |
|-------|-------|------|-------|-------|-------|------|-------|

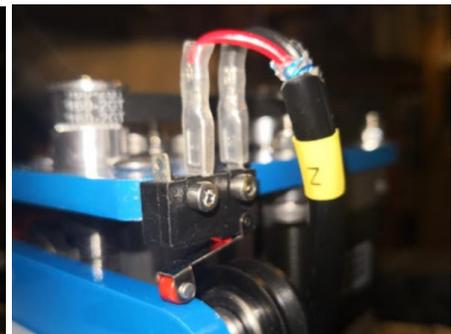
X Limit switch



Y Limit switch



Z Limit switch



If you have purchased the Z upgrade the limit switch will be found on the left hand side. Install the black wire to the pin closes to the start of the arm (or furthest from the red roller). The Red wire is always connected to the middle pin.

G. Belt tensioning (2:49) [Video](#)

H. Controller connection & trimmer (2:38) [Video](#)

I. Base and Waste board

You will need to set your CNC up on a solid table. Your table rigidity will determine if your waste board keeps level over time with seasonality. Factors like humidity and moisture may warp your timber table and/or wasteboard. Some options you may wish to explore include:

- Steel table, form ply or MDF table top
- Timber table, form ply or MDF table top

The table size needs to be a minimum 200mm+ beyond your CNC's rail size along the X axis.

- 1x1 – 1000 x 1200mm
- 1x1.5 – 1000 x 1700mm
- 1.5x1.5 – 1500 x 1700mm

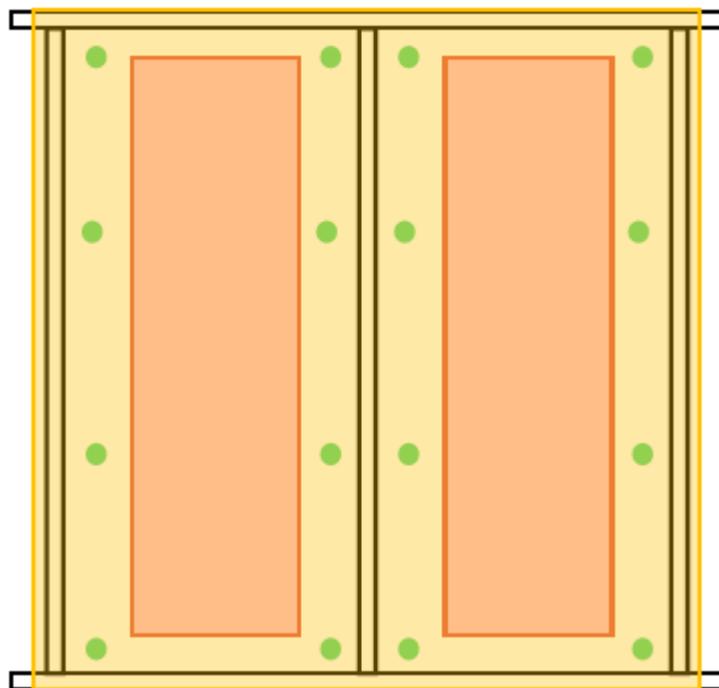
If you extend out your table to the left of the CNC by allowing an extra 300mm, you can place the controller box on the table itself. If not, you will need to attach the controller box to the side of your table or under the tabletop. Please ensure you allow for adequate ventilation to the fan and air intake grill and do not position the controller box with either the fan or air intake facing up. This will avoid dust finding it's way into the controller itself.

After you have set our CNC onto your table, you will need to install a base board. Most common base board materials include 18mm or greater MDF or 17mm form ply. Form ply has the benefit of resisting warping over time and is strongly recommended. The size that you require include:

- 1x1 – 940 x 995mm
- 1x1.5 – 940 x 1495mm
- 1.5x1.5 – 1440 x 1495mm

You might be required to buy 2 sheets to join to be able to cover a 1.5 x 1.5 set up.

Counter screw the base board with minimum 60mm screws directly to your table. You are effectively sandwiching the aluminium base between the MDF/form ply and table. Install screws around the edges, missing the aluminium base but avoiding the middle. If you screw into the middle, you might pull the MDF/form ply down too far causing a dip. You can still screw down the middle if you support the middle with 20mm spacers.



If you have purchased rails, you will need to follow the above method for installation of the base board.

Waste board

Where the base board is used to secure your CNC to the table and add rigidity, the waste board, also known as a sacrificial board is used to secure your material and cut into. It's called a waste/sacrificial board because it is used to avoid replacing the whole bases system after it's been carved into, pitted with screw holes etc. Do not be afraid to destroy this board 😊

For a standard Bluey set up, obtain the correct size in 18mm MDF. The following are maximum sizes. If you choose to use a larger size, you will find that when you surface your board, you will have a step up between your surfaced

section and original board.

- 1x1 – 750 x 750mm
- 1x1.5 – 750 x 1250mm
- 1.5x1.5 – 1250 x 1250mm

Position the bottom left hand corner of your board directly over the router tip when also in the bottom left hand corner. Use chipboard screws to counter screw into the MDF board down about half way. You would like some distance from the top to avoid hitting with your router bit when carving. This would also allow future surfacing of your board.

Aluminium Rails

If you have purchased aluminium rails, it is suggested to follow this guide by Terry Brown [>>here<<](#). You will still need to use 18mm or greater MDF in between the rails. The rail height is 12mm.

You will need to adjust the distance between the rails depending on the number of rails you have purchase and CNC size.

An example by Duane Pedron

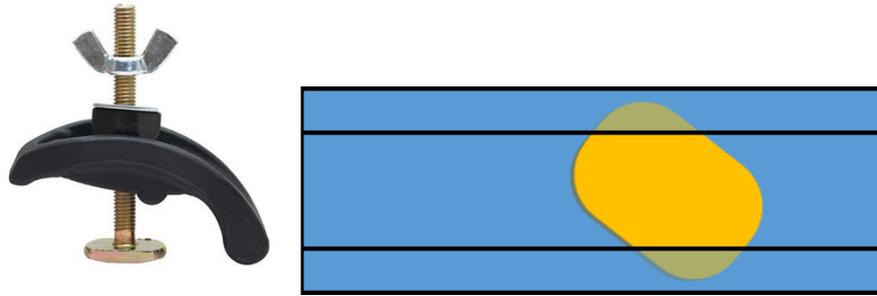


3. Accessories to the Accessories

This part of the guide will cover

- T slot rail clamps
- T slot bed clamps
- Dust boot
- Z probe

T slot rail clamps



T Slot rail clamps will look like this after putting them together. These clamps are meant to be installed at any point along the rail. They will look weird when you install them but they are designed to be twisted into the slot/rail and held by the walls.

Dust Boot

We have relied on our awesome BlueCarve CNC community to provide quality dust boots. There are a few people you can purchase your dust boot from:

1. Brett Whatt can be contacted [>>>here<<](#)
2. Joe Zerafa sells his [>>>here<<](#)
3. Mitch Dryden can be contacted [>>>here<<](#)

Z probe

A Z probe is used to set the height of your material just before starting a carve.



The Z probe consists of a 15mm high aluminium puck, connected with a red banana plug with a black alligator clip. Connect the red and black wire to the controller box which will have labelled either PGLG or a coloured label. The set up of the Z probe will occur during set up of Easel or gSender.

4. Laser set up

The laser will come with a green 4 pin connector that connects straight to the controller box. If you have purchased a Z probe, you might be required to attach that onto the green 4 pin connector. If so, insert the green connector into the controller box. Insert the red wire under P and black wire under G. If for some reason the laser is not connected, the red wire goes under L and black under G.

View a video of how to install your laser [>>>here<<](#)

Follow this guide to install Lightburn and to use your laser [>>>here<<](#)

5. Spindle set up

If you have purchased a spindle, it would have come in one of 4 configurations

1. 1.5kw ER11 collet series 65mm shaft diameter water or air cooled
2. 2.2kw Er20 collet series 80mm shaft diameter water or air cooled

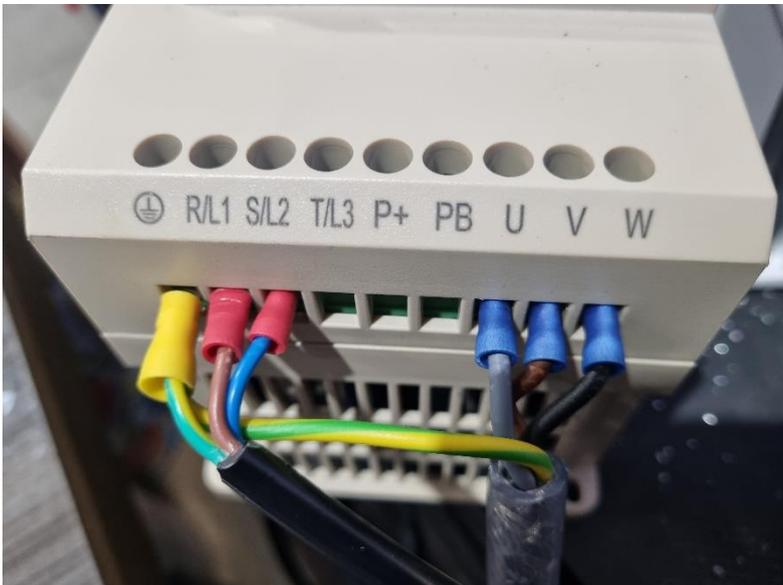
We provide a pond pump with limited warranty. If you would like to purchase an additional pump as a spare, you would want one with a minimum 2500L/h flow rate as found [>>>here<<](#). We will supply your tube with a barb.

Connect the pump to the barb that is connected to one of two tubes. Place your pump into a reservoir and the other end to flow back into the reservoir to recirculate. Ensure the pump is fully submerged. It is suggested to use a large tub with > 30ltr with a lid.

We use a Folinn Variable Frequency Drive or VFD (H1 Series)

It is not necessary to consult that manual but if you are inclined to do so, here are the [>>simple<<](#) and [>>detailed<<](#) manuals.

Your VFD will already be connected but if for some reason it is not, please consult the following. It is recommended that electrician is used to make the connections. Turn on your VFD to check if your spindle is turning clock wise. If the spindle is not turning clock wise, turn off your VFD and ensure it has completely powered down. Swap any two wires on the right hand side (example brown with black).



To ensure 100% reliability, we do not connect the VFD to the controller for automated control.

To operate your VFD

1. turn on your mains power and wait for the VFD to initialise.
2. Ensure the spindle with any router bit is not obstructing anything before turning on
3. Press the green **RUN** button
4. Adjust the speed by turning the dial
5. You will see the following **E** symbol which represents RPMs. To read the RPMs, the value would be X + 0. So for example 1200 would be 12,000 RPMs.
6. Press the **STOP RESET** button to stop the spindle spinning. That's it!



6. Maintenance

Maintaining your CNC will ensure hours of productivity and an enjoyable experience.

Key principles of maintaining your CNC include:

1. Ensure your CNC is clean of chips/dust/debris on both aluminium rails and wheels
2. Lubricate z axis linear rails and lead screw with white lithium grease to reduce wear and ensure smooth motion
3. Inspect bolts for anything loose
4. Inspect connections for any loose connections

Cleaning

Periodically, clean both aluminium rails and wheels with a combination of a brush and vacuum. While cleaning, take the opportunity to inspect for loose bolts or connections.

Belt Tensioning

Over time your belts may lose tension which could lead to sloppy curves. Follow this guide again to retention your belts [Video](#)

Inspection

Over time things may become loose. It is a good idea to periodically inspect both connections and key bolts.7.

7. Motion Controller Set Up

There are two options you may choose to operate your BlueCarve Bluey. Easel works great but has a tendency to change your settings if instructions have not been followed correctly. It is therefore recommended to use Easel for designing but gSender to control your CNC.

1. Design in Easel/VCarve/Carbide Create and export your Gcode to gSender [>>instructions here<<](#)
2. Design and control your CNC in Easel [>>instructions here<<](#)

8. CNC Router Bits

You are in good hands here! You are welcome to purchase additional router bits from www.endmill.com.au

[A guide to CNC Router bit profiles](#)

[Quick guide to feeds and speeds](#)

[Feeds and Speeds Calculator](#)

Your exclusive BlueCarve CNC discount code is **BC20%**. This discount code is valid for original purchasers of a BlueCarve CNC.