BlueCarve Spark Plasma 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 Spark Plasma CNC Group on Facebook >>here<<

- 1. Safety
- 2. Standard Spark Plasma Set Up
- 3. SWS 50a Plasma
- 4. Maintenance
- 5. Motion Controller Set Up (check MyPlasm Set Up Guide)

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 <a>>CNC Plasma<<

During operation of your BlueCarve CNC you must:

- Never leave your CNC unattended
- Wear appropriate safety glasses/ shields
- Keep body parts a clear distance from the CNC
- Allow free flowing air to the CNC controller
- Take care when handling material pre and post processing
- Anyone in the vicinity must wear suitable safety eyewear when the CNC is in operation
- Restrict access to the room where your CNC is operating
- Only connect power to the plasma power source once vertical torch is attached to the Z axis with the torch facing vertically down

2. Standard Spark Plasma Set Up

A. What your Plasma CNC will look like



You would have received 1-2 boxes with your BlueCarve order. Inside you will find:

- 1. X Axis Rail
- 2. 8 x M5 20mm screws with washers
- 3. YL axis Left set up
- 4. YR axis Right set up
- 5. Z axis (wrapped in bubble wrap)
- 6. (2x) 30x30 aluminium rail front and rear interchangeable
- 7. Drag chain
- 8. CNC Controller box (wrapped in bubble wrap)
- 9. USB Cable
- 10. 24v power supply
- 11. CNC Controller to Plasma Cutter signal cable

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

- 1. SWS 50a Plasma Cutter
- 2. Basic Knife Bed

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

You will require the following tools to assemble your CNC

- 1. 8mm spanner
- 2. 4mm Allen Key/ Hex driver
- 3. Small flat screwdriver

C. Assembly Sequence

The assembly workflow is as follows

1. Unpack each component and place on floor



2. Check for damages. If you spot any, please take pictures and send through to Adam

- 3. Mechanical assembly
 - a. Place both Y axis parallel to each other
 - b. Attach both front and rear 30x30 rails. If you have purchased the knife bed, have the black angles facing inwards. Loosen each sides T nuts and slide rail through. Make each side flush to the leg plate.



c. Attach the X axis rail with the blue plate facing forward with motor cable facing up.





When installing the X axis, use the 8 M5x20 bolts to attach each side but leave the top 2 bolts out on the YL. This will be used to install the top drag chain.



d. Attach the Z axis to the X axis carriage. Loosen the 4 bolts attached to the front plate to be able to slide down the Z axis. Make flush with the bottom plate.



Tighten both top and bottom bolts



e. Attach the drag chain bracket to the front 30x30 rail



f. Attach the drag chain to the left hand Y axis side plate



g. Feed X, Z and H wire through the drag chain

h. Attach the drag chain bracket angle to the back of the Z axis. Loosen the two T nuts and ensure T nuts turn/engage in the T slot. Ensure that the drag chain is on an angle and tighten.



i. Feed the YR wire through the side plate hole, to the right hand side



j. Feed the Y right hand limit switch through the 30x30 rail void to the left hand side



4. Electrical assembly

a. Connect the YR limit switch at the drag chain junction



Brown	Blue	Black
Red	Black	Yellow

b. Connect the YR motor



Black	Yellow	Red	Green
Blue	Yellow	Red	Green

c. Connect the YL motor and Limit switch



d. Connect the X, Z motor and H cable



e. Connect cabling to the controller box





- f. Connect USB and 24v power supply
- 5. Install knife bed

3. Hook up your SWS 50a Plasma Cutter

If purchased, you would have received your SWS 50a separately to the CNC. Inside you will find:

- a. Plasm cutter
- b. Vertical torch
- c. Consumables
- d. Ground cable
- e. Plasma connection/signal cable



You will need a compressor to feed air with a minimum 100lt/m – 60psi.

It is recommended to use an air filter like a AT1000

Cable tie the plasma cable to the drag chain. It is not recommended to feed through the cable through the drag chain to avoid EMI.

4. Maintenance

Ongoing maintenance will ensure your BlueCarve Spark Plasma will last for many years. Failure to perform reasonable maintenance may void your warranty.

Maintenance fundamentals include:

- a. Clean linear rails and rack. Free of obstruction and dust
- b. Lubricated linear rail and rack/pinion
- c. Motor hinges free to move up and down, but not left and right







White Lithium Grease for Linear Rails

https://www.bunnings.com.au/wd-40-specialist-300g-highperformance-white-lithium-grease_p6100408



Multi-purpose (Lithium Grease) for Rack

https://www.bunnings.com.au/valvoline-500g-multi-purposegrease_p0066184