BlueCarve Trax CNC Set Up Guide

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 CNC Group on Facebook >>here<<

1. Safety
2. Warranty
3. Standard Trax Set Up
4. Accessories
5. Maintenance

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. Warranty

Operation and Care

We want you to be satisfied with your new BlueCarve Trax CNC. We encourage you to review the unit's Set Up Guide (provided with the unit in electronic form) and follow the recommended procedures. If you have any questions on how to keep your unit in good working condition, contact BlueCarve CNC.

Warranty Period

The Warranty goes into effect after your Trax CNC unit has shipped from the manufacturing facility or picked up and expires at the end of the Warranty Period being 12 months. The Warranty covers repairs to correct any unit defects related to materials or workmanship existing at the time of purchase. All requests must be approved by BlueCarve CNC prior to any work being performed during the Warranty Period. Specific exceptions to the Warranty are listed in the Exclusions section. BlueCarve CNC will supply parts to the unit during the Warranty Period in accordance with the Terms, Limitations, and Conditions. This is the sole Warranty provided by BlueCarve CNC.

Limit of Warranty

The limit of Warranty is for parts only. This Warranty is only provided in Australia and to the original purchaser. As per your acceptance of the quote sent by BlueCarve CNC, you have agreed to assist BlueCarve CNC in any diagnoses and repair of your unit. Upon determining the issue and remedy, BlueCarve CNC may send you the required replacement part at their cost. Where it is required to send back to manufacturer any component, postage will not be covered by BlueCarve CNC. BlueCarve CNC do not have technicians to assist on site but the customer is welcomed to bring their unit or components in to complete the repair free of charge during the Warranty Period.

Exclusions

Unit components subject to normal wear during the Warranty Period are not covered by Warranty and include the following items:

1. Rack and pinions
2. Consumables
3. Aluminium extrusion
4. Gantry plates

Componentry damage caused by part handling/misuse or corrosion due to exposure to materials, voids the Warranty.

Component failure caused by customer misuse/abuse of the unit (e.g. changing recommended settings, exceeding machine limits, unauthorised repairs or alterations), voids the Warranty. To be safe, get in touch with BlueCarve CNC if you are unsure.

Terms, Limitations, and Conditions

Maintenance

All units require periodic maintenance, as outlined in this set up guide, and it is the responsibility of the customer to perform regular maintenance. Failure to properly maintain the unit and perform regular maintenance may void the Warranty.

Damage from Accident, Misuse, or Alteration

Damage or failure caused by an object striking the unit, fire, theft, freezing, environmental exposure, exceeding the duty cycle, modifying or altering the unit, and/or any other misuse is not covered under the Warranty. Damage or failure due to acts of god (flood, tropical cyclone, etc.) or acts of war are not covered under the Warranty.

Labour

Use of a non-authorized labour to perform the warranty repairs will not be reimbursed by BlueCarve CNC, except under special circumstances which will be handled on a case-by-case basis and will be solely at BlueCarve CNC's discretion.

Extra Expenses

Economic loss or extra expense due to unit damage/failure is not covered under the Warranty. Under no circumstances is BlueCarve CNC liable for any indirect, incidental, or consequential damages due to unit damage or failure.

Disclaimer

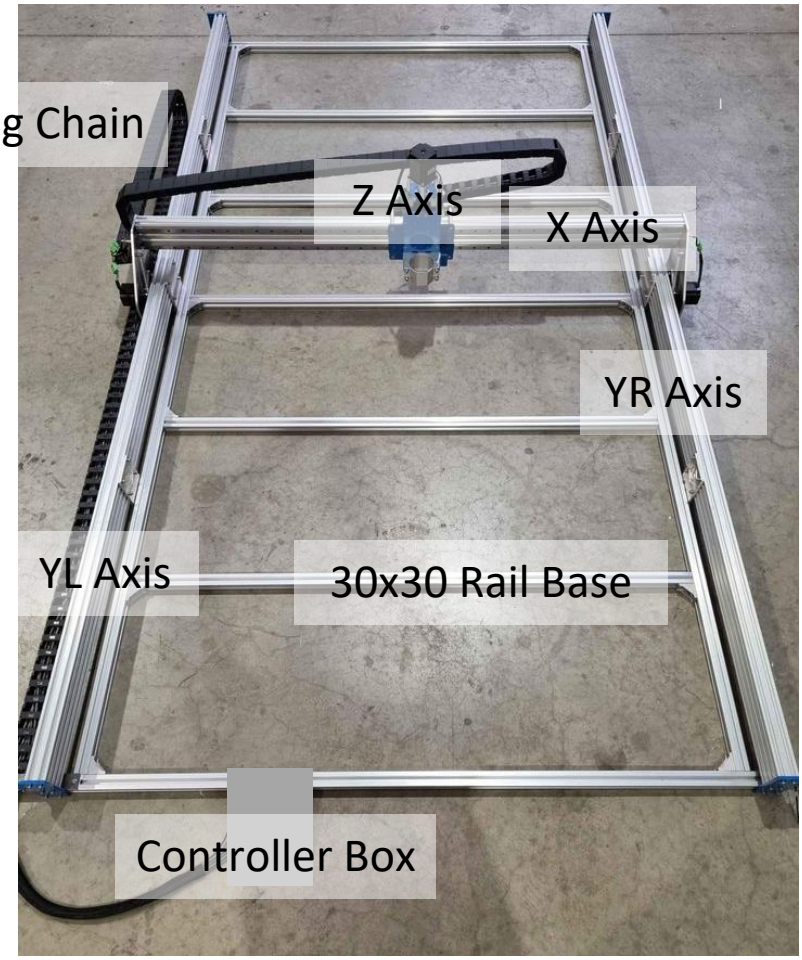
BlueCarve CNC makes no other warranty, express or implied, and specifically disclaims any warranty of merchantability or fitness for a particular purpose. Suggestions concerning use of products are not warranties. The customer assumes the responsibility for determining suitability of products and appropriate use. BlueCarve CNC's sole liability, for breach of warranty, negligence or otherwise, shall be the repair of the unit as specified in this Warranty.

Other Terms

BlueCarve CNC does not authorize any person or persons to create any other obligation or liability in connection to this unit. Any shipping damage should be brought to the attention of both the freight carrier and BlueCarve CNC as soon as possible.

3. Standard Trax Set Up

A. What your Trax CNC will look like



You would have received 1 carte 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. (7x) 30x30 aluminium base lengths
7. Drag chain
8. CNC Controller box (wrapped in bubble wrap)
9. USB Cable

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

1. Spindle and VFD (if purchased)
2. Laser module
3. T slots and clamps

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.

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

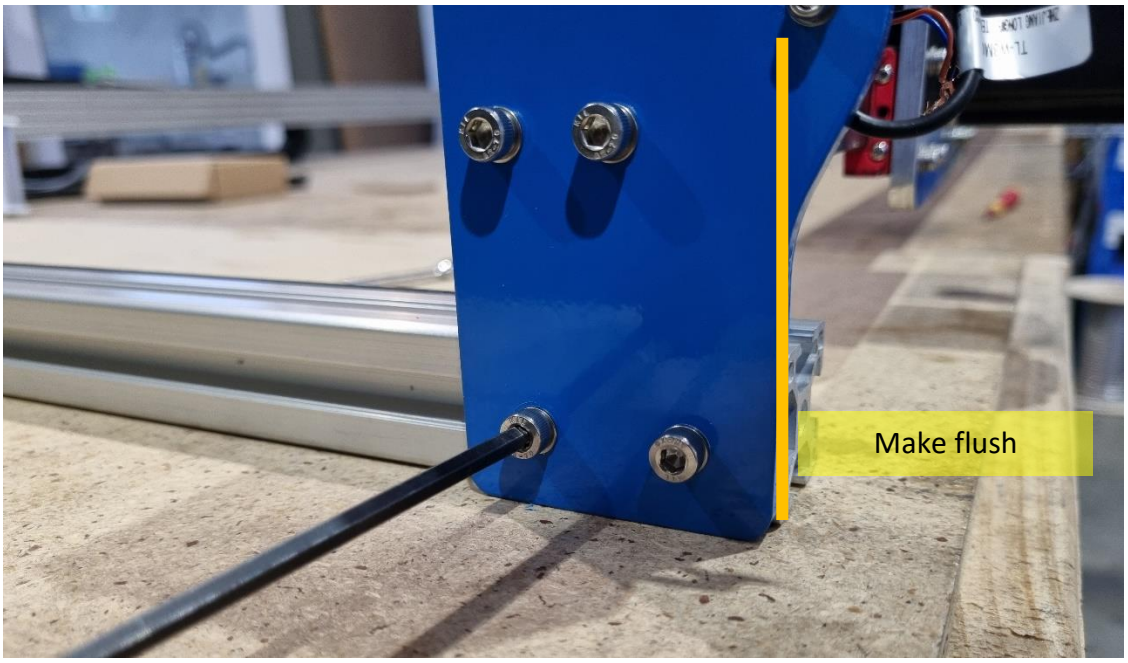
C. Assembly Sequence

The assembly workflow is as follows

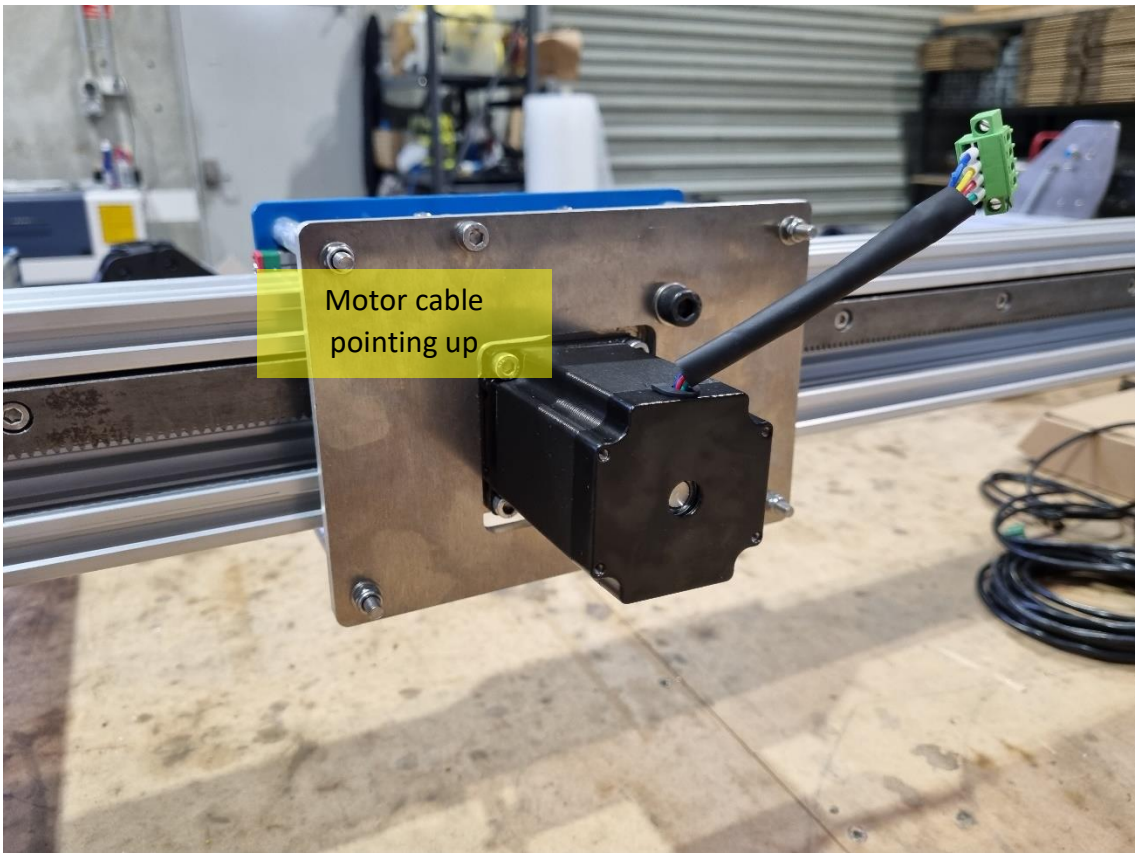
1. Unpack each component and place on floor

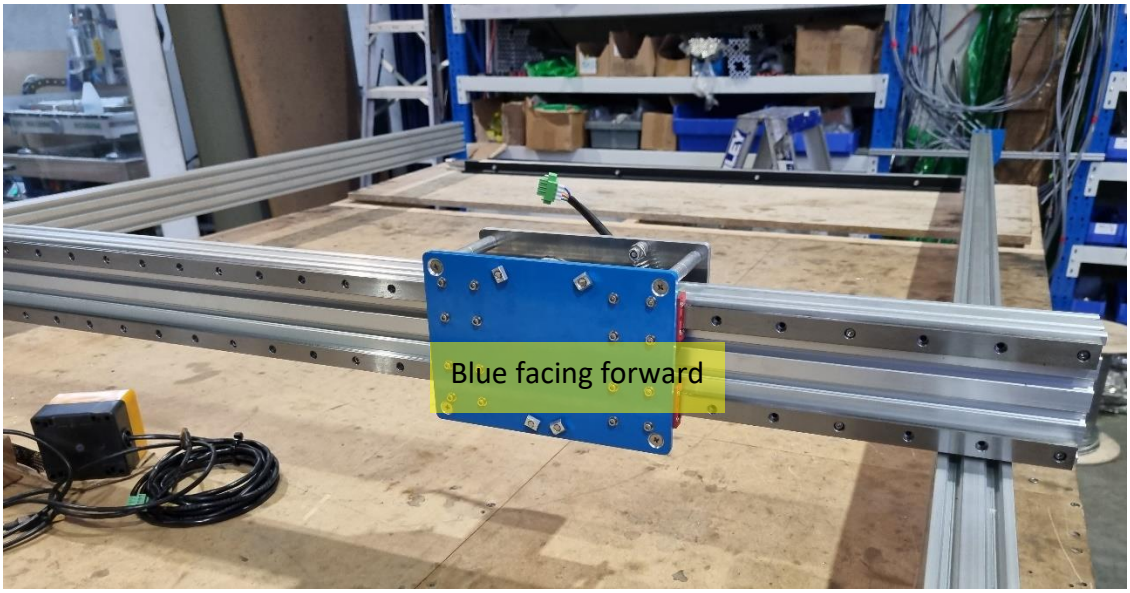
2. Check for damages. If you spot any, please take pictures and send through to Adam

3. Mechanical assembly
    a. Place both Y axis parallel to each other
    b. Attach both front and rear 30x30 rails. Loosen each sides T nuts and slide rail through. Make each side flush to the leg plate.
    c. Install additional base rails



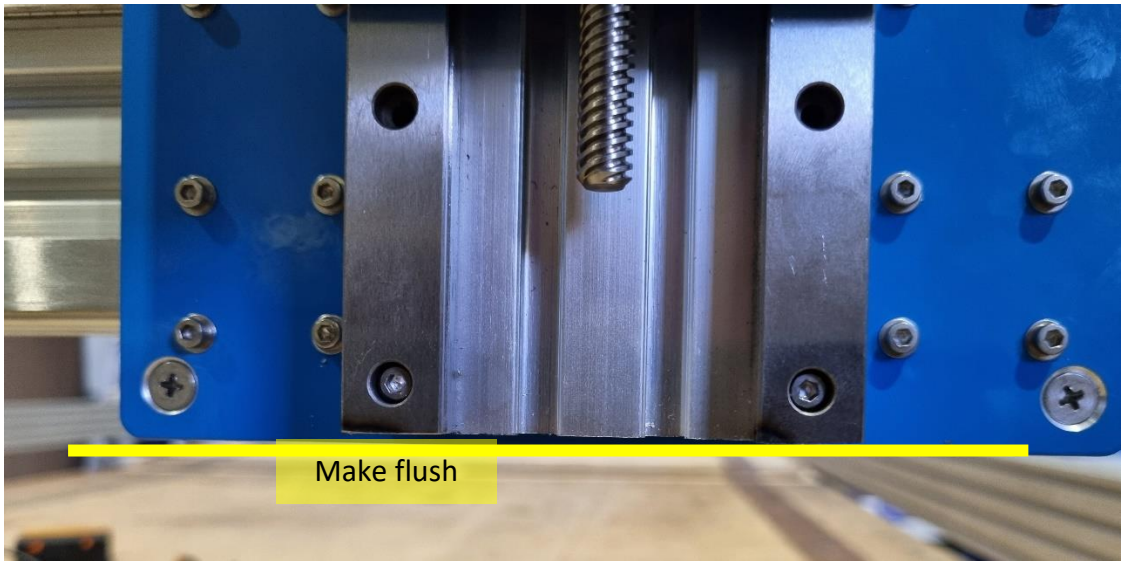
    d. Attach the X axis rail with the blue plate facing forward with motor cable facing up.



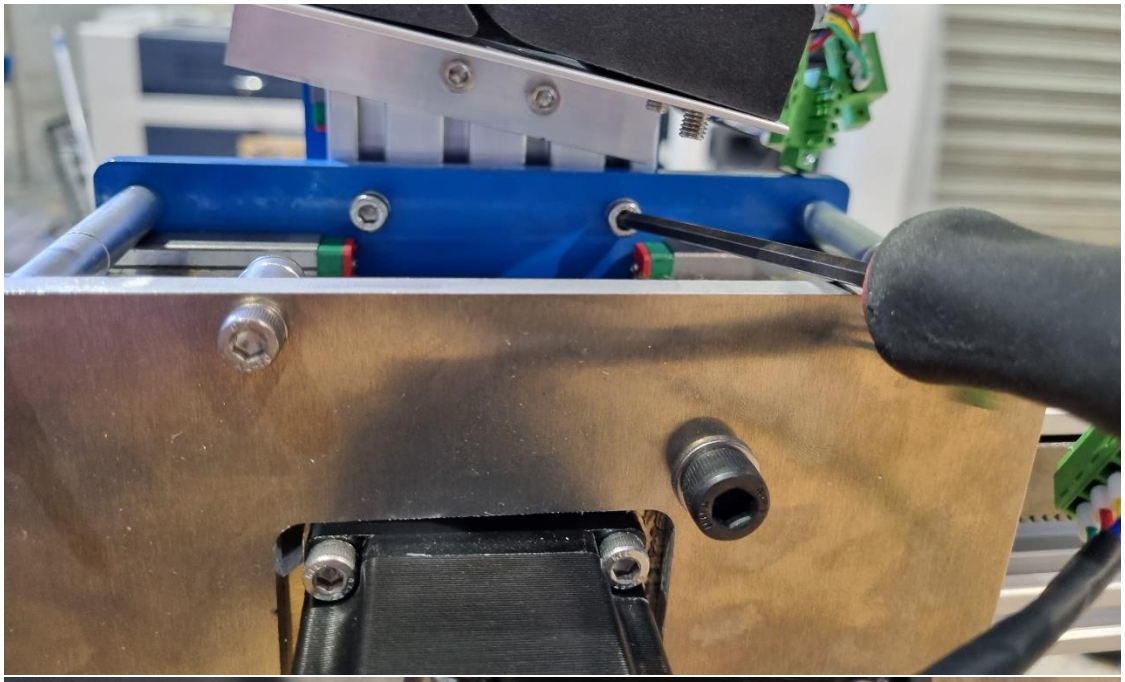


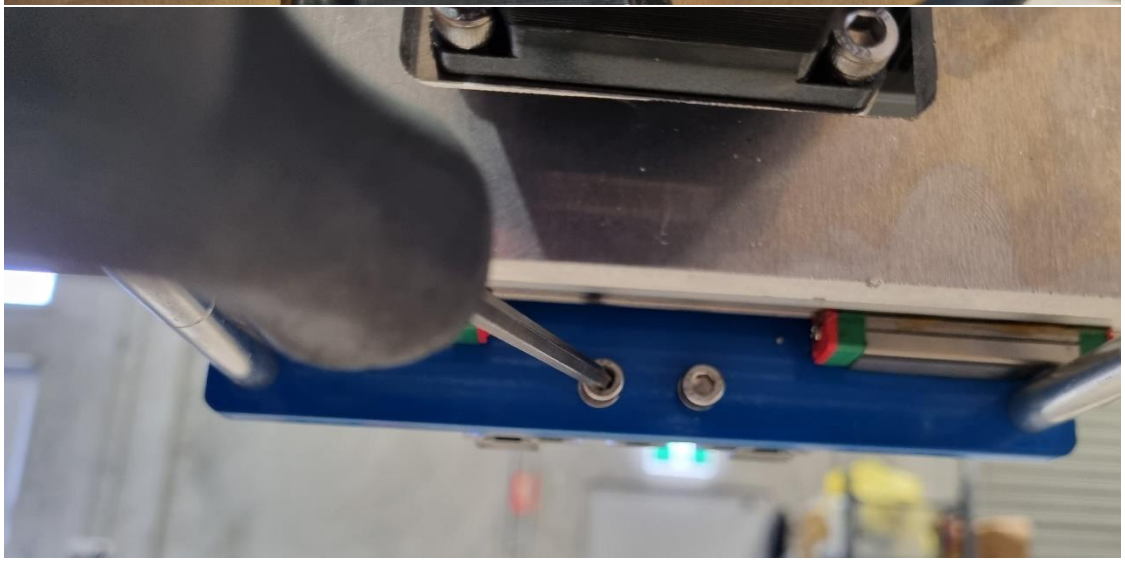
When installing the X axis, use the 8 M5x20 bolts to attach each side but leave the top 2 bolts out on the YL. This will be used to install the top drag chain.

e. 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. **Skip to j. if you have purchased the Z upgrade**

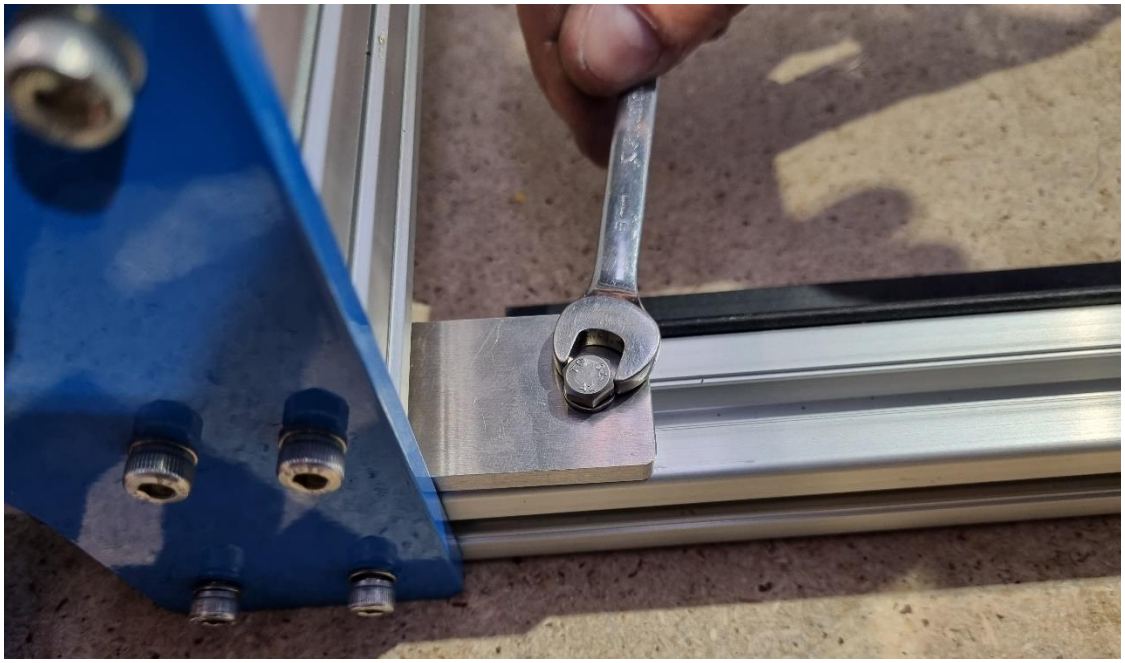


Tighten both top and bottom bolts

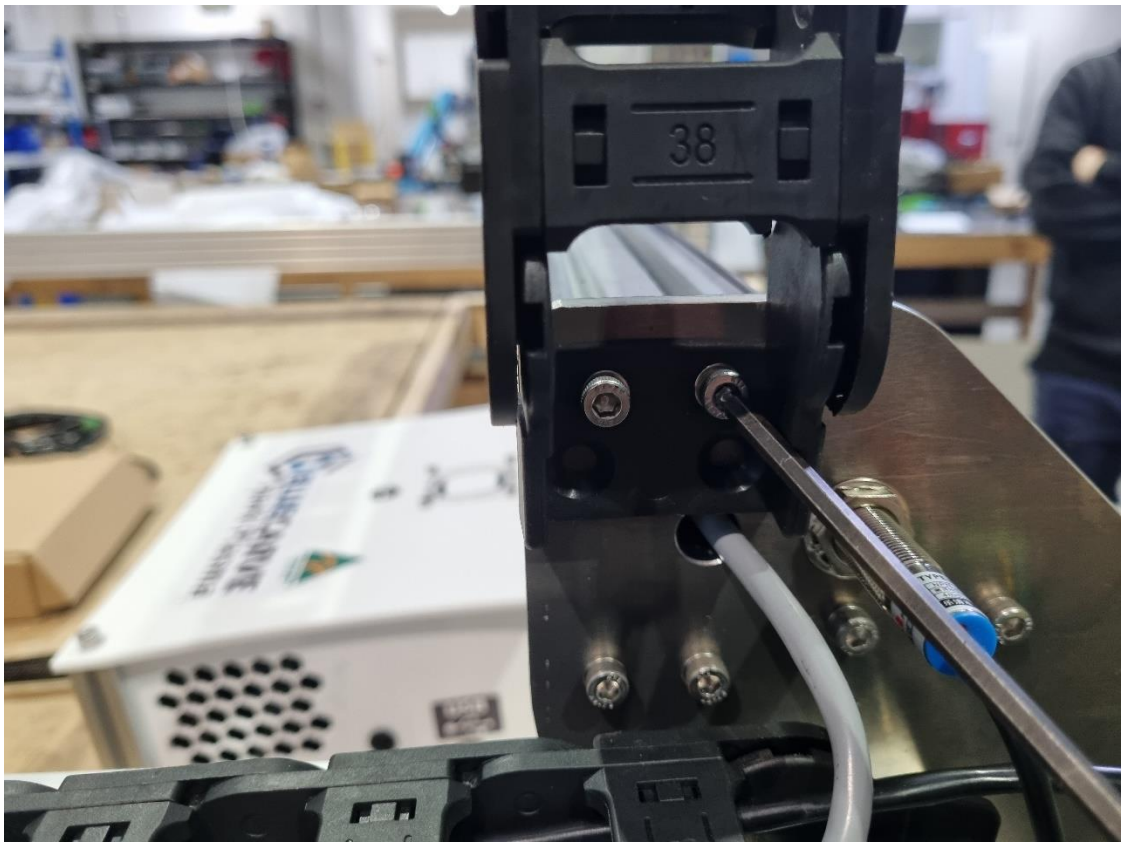




f. Attach the drag chain bracket to the front 30x30 rail

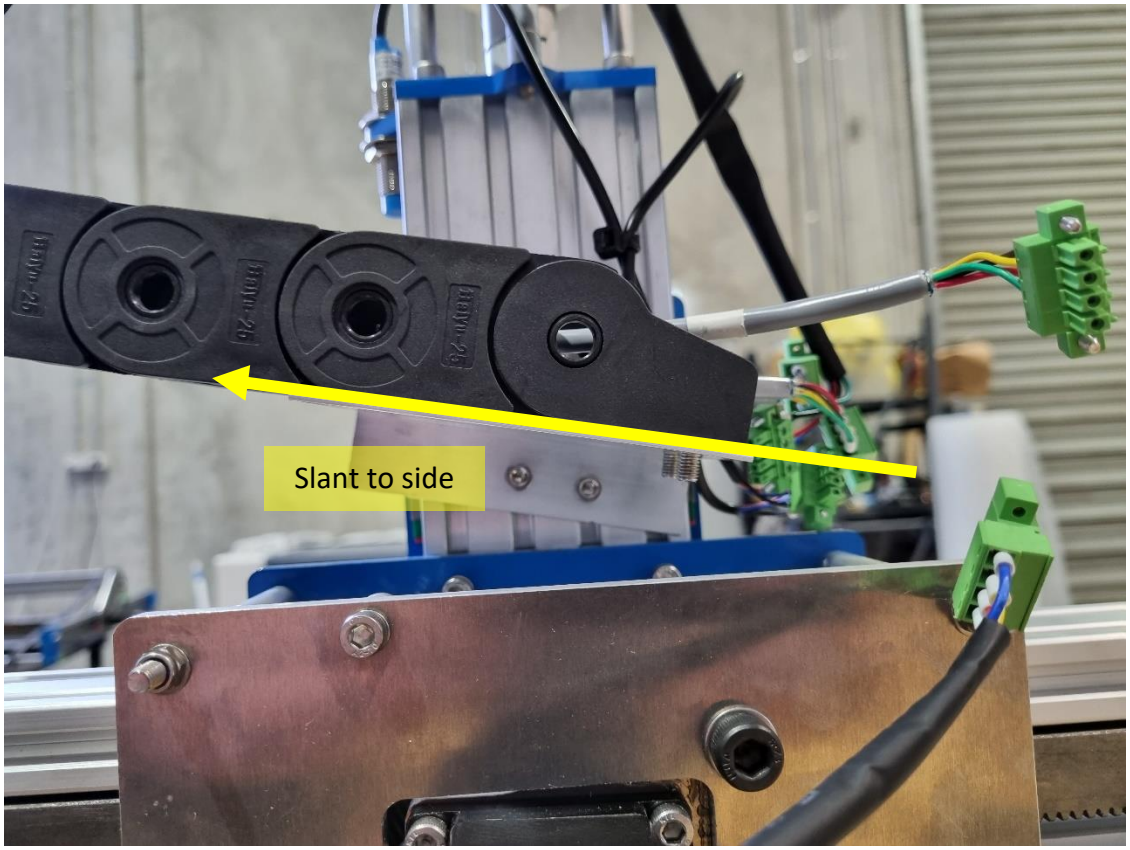


g. Attach the drag chain to the left hand Y axis side plate



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

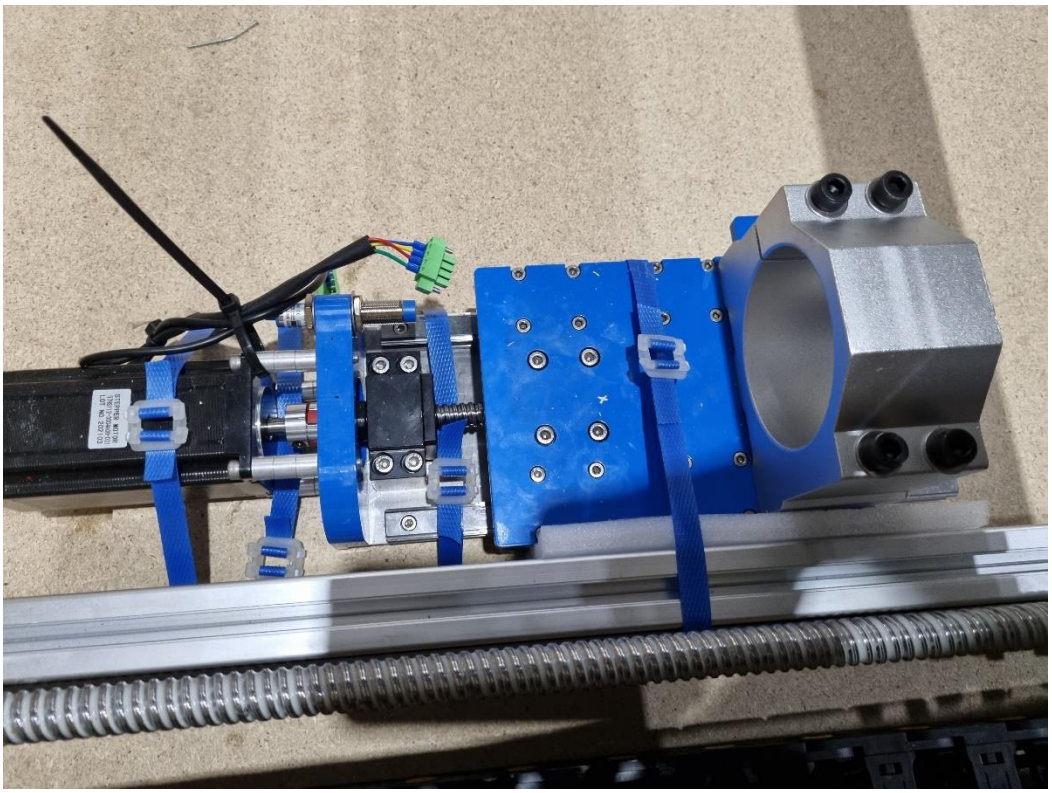
i. Attach the drag chain bracket angle to the back of the Z axis. Loosen the two T nuts and ensure T nuts turn/engage in the T slot. Ensure that the drag chain is on an angle and tighten.



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

k. Installing a Trax Z Upgrade

If you have ordered a Trax with a Z upgrade, you will have received the Z uninstalled



Installation is as easy as

4. locating the four same bolts as mentioned before and attaching the Z to the X axis carriage.
5. Connecting the green Z axis motor and Z axis limit switch plugs
6. If you have a spindle option, plugging in the VFD cable and water tubes if you have a water cooled spindle. It does not matter which tube goes into one of two water fixtures.

k. Base 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.

- 1.5x1.5 – 1700 x 1500mm
- 1.5x3 – 1700 x 3000mm

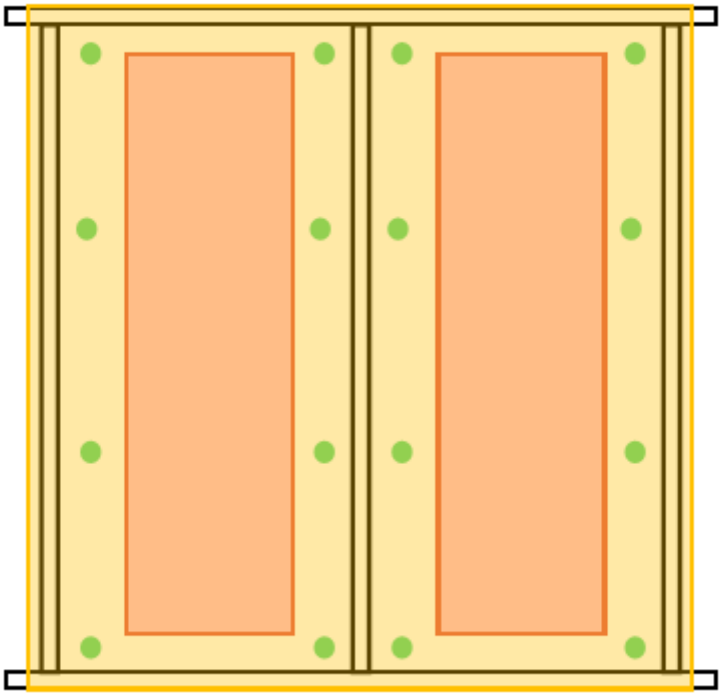
If you extend out your table to the left of the CNC by allowing an extra 300mm, you can place the controller box on the table itself. If not, you will need to attach the controller box to the side of your table or under the tabletop. Please ensure you allow for adequate ventilation to the fan and air 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:

- 1.5x1.5 – 1352x 1495mm
- 1.5x3 – 1352x 2995mm

You might be required to buy 2 sheets to join to be able to cover a 1.5 x 1.5 set up, 3 for 1.5 x 3.

Screw the base board 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. For aluminium beds, you will skip this method as the bed itself forms 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 Trax 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.

- 1.5x1.5 – 1270 x 1270mm
- 1.5x3 – 1270 x 2770mm

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

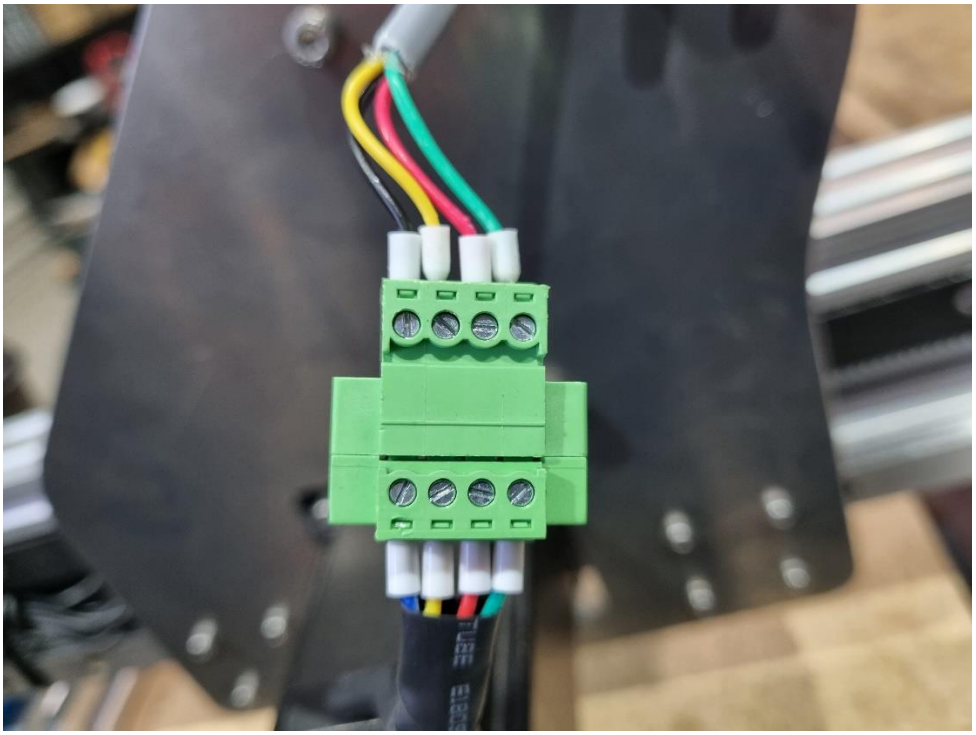
If you have purchased aluminium rails, it is suggested to follow this guide by Terry Brown >>here<<. You will still need to use 18mm or greater MDF in between the rails. The rail height is 12mm.

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

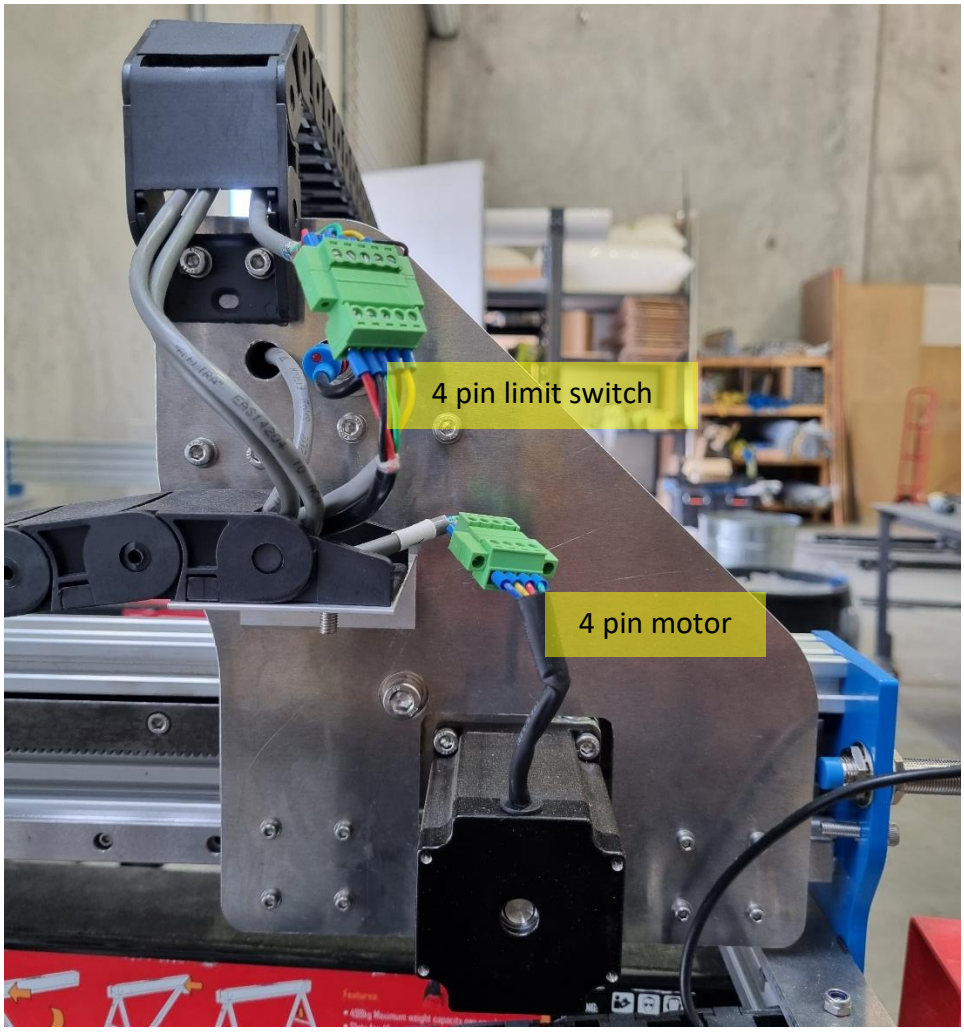
7. Electrical assembly

a. Connect the YR motor

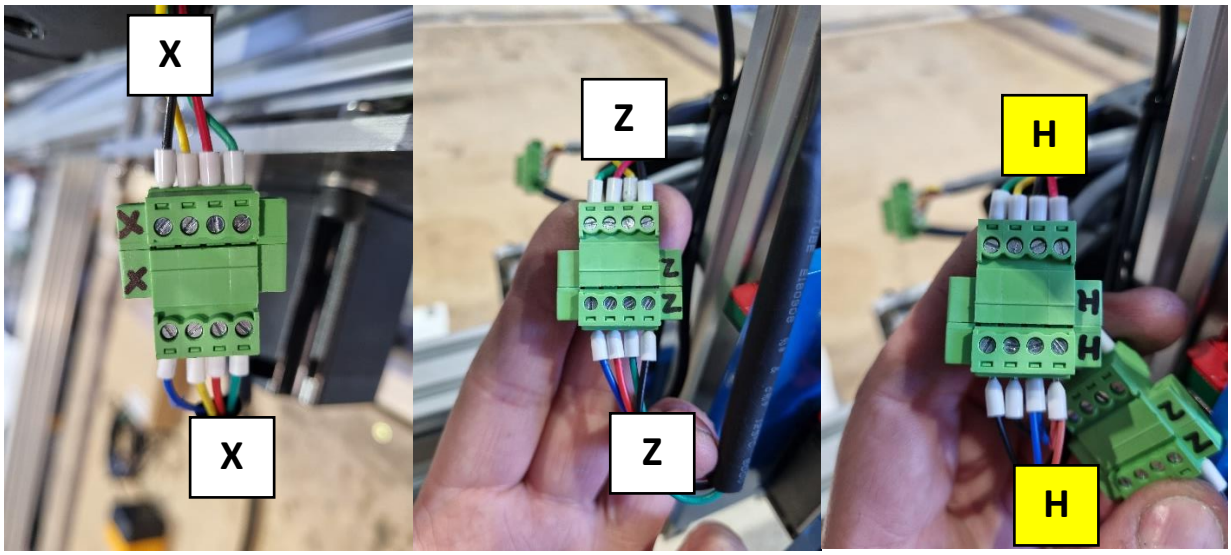


Black	Yellow	Red	Green
Blue	Yellow	Red	Green

b. Connect the YL motor and Limit switch



c. Connect the X, Z motor and H cable



d. Connect cabling to the controller box by matching the corresponding wires to their respective plugs

You are now good to install Easel and perform the software set up >>here<<

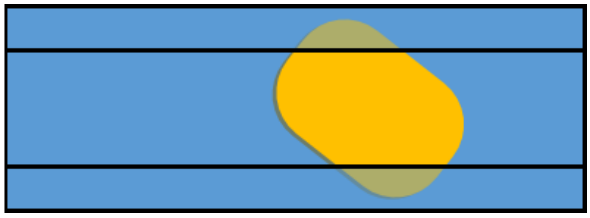
For accessories and additional information, you'd want to read on and come back to installing Easel.

3. Accessories to the Accessories

This part of the guide will cover

- T slot rail clamps
- Dust boot
- Z probe

T slot rail clamps



T Sot 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 for Z upgrade boots >>here<<
2. Joe Zerafa sells his Z standard boots >>here<<
3. Mitch Dryden can be contacted for boots that attach to the spindle >>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

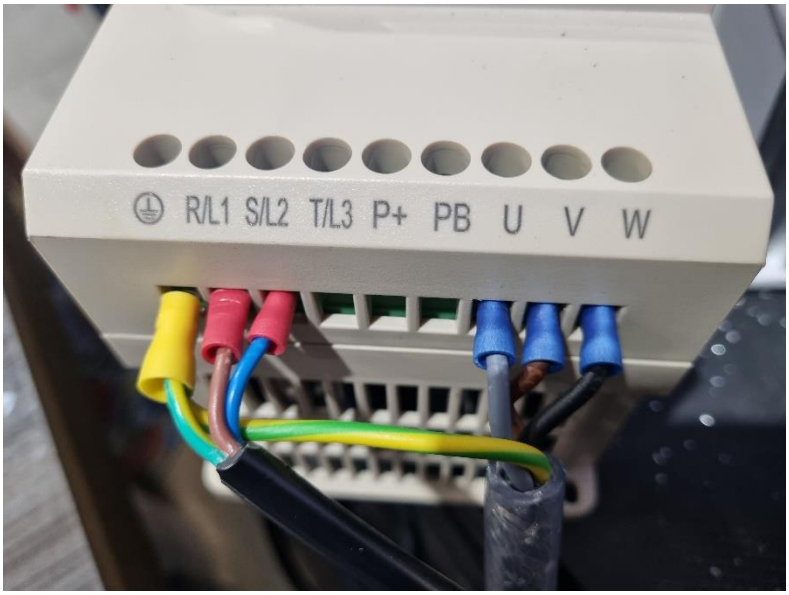
We provide a pond pump with limited warranty. If you would like to purchase an additional pump as a spare, you would want one with a minimum 2500L/h flow rate as found >>here<<. We will supply your tube with a barb.

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

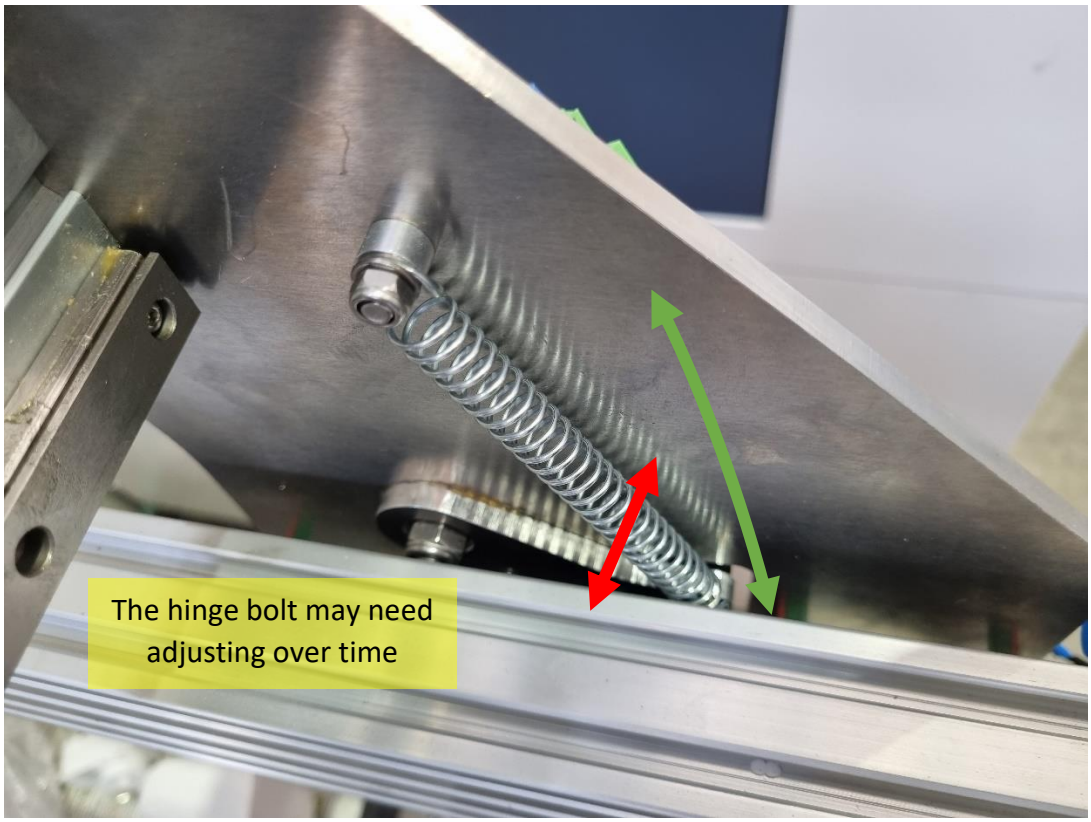
1. turn on your mains power and wait for the VFD to initialise.
2. Ensure the spindle with any router bit is not obstructing anything before turning on
3. Press the green RUN button
4. Adjust the speed by turning the dial
5. You will see the following  symbol which represents RPMs. To read the RPMs, 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!

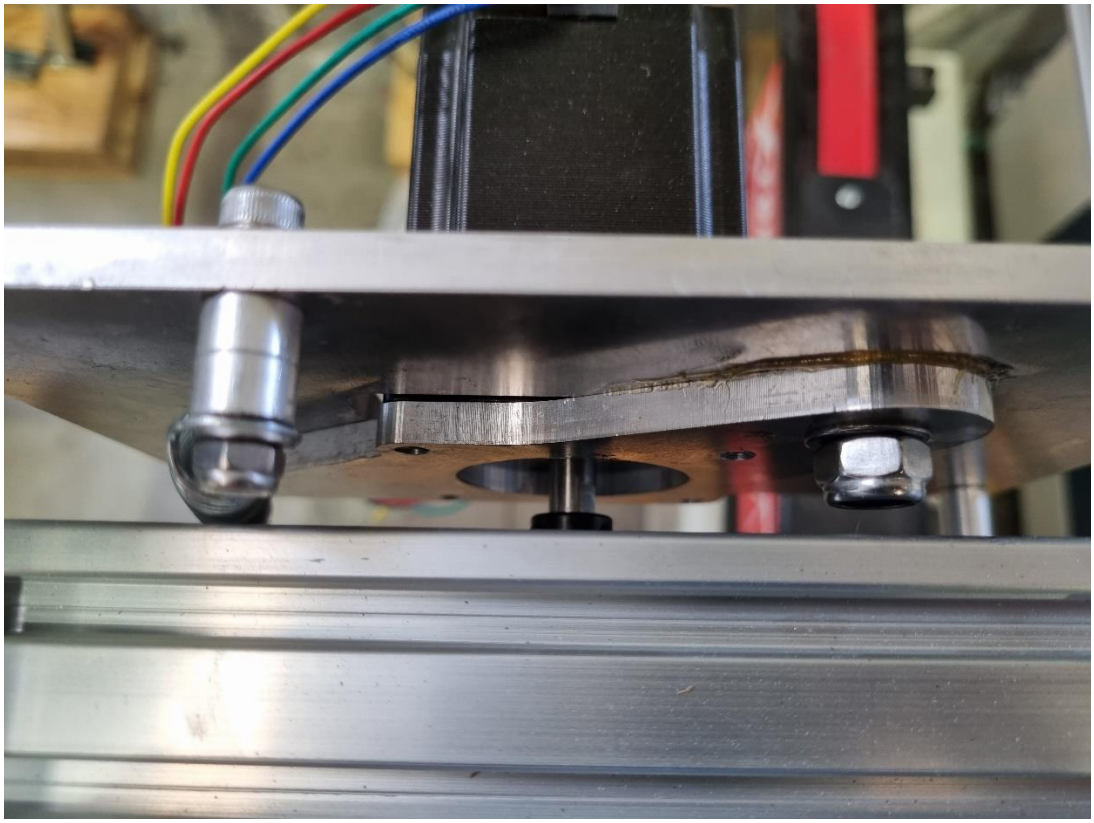
4. Maintenance

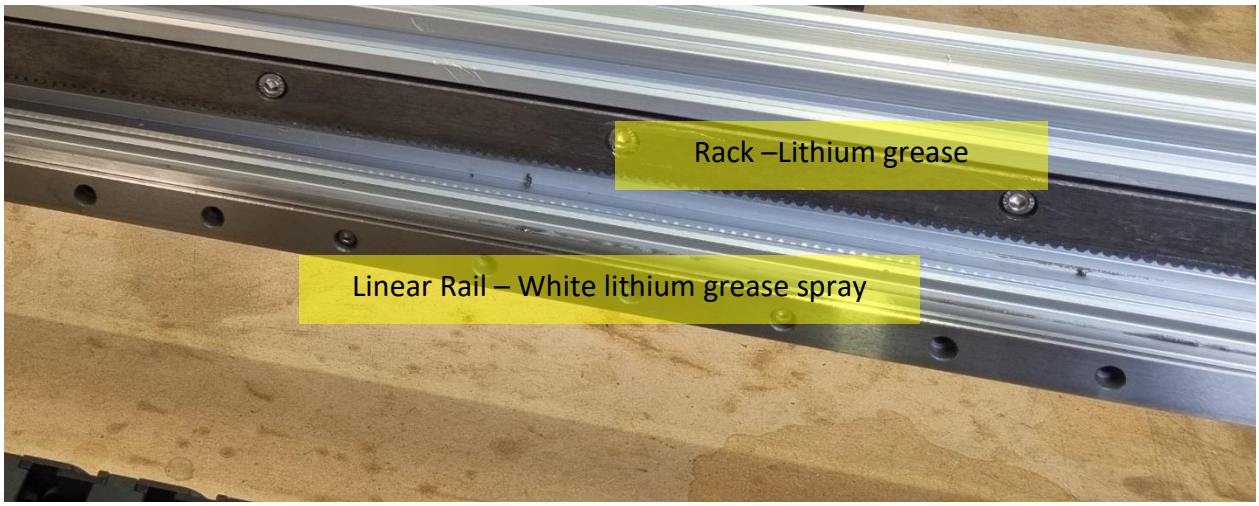
Ongoing maintenance will ensure your BlueCarve Trax will last for many years. Failure to perform reasonable maintenance may void your warranty.

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-high-performance-white-lithium-grease_p6100408

Multi-purpose (Lithium Grease) for Rack

https://www.bunnings.com.au/valvoline-500g-multi-purpose-grease_p0066184