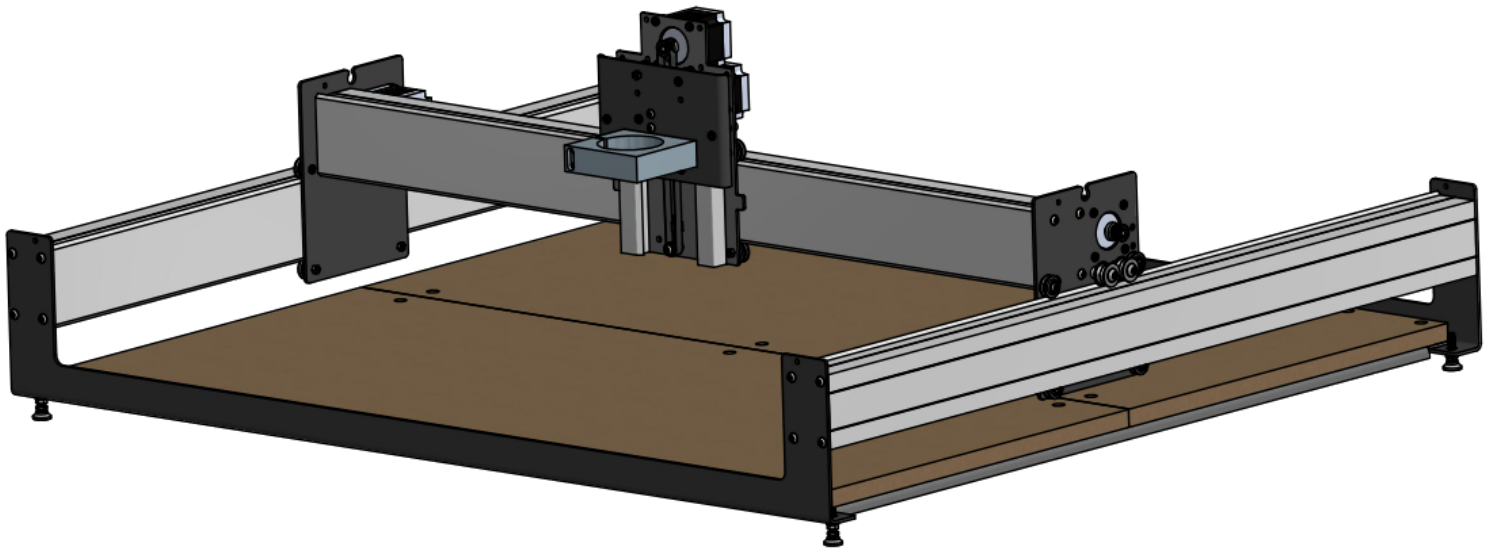


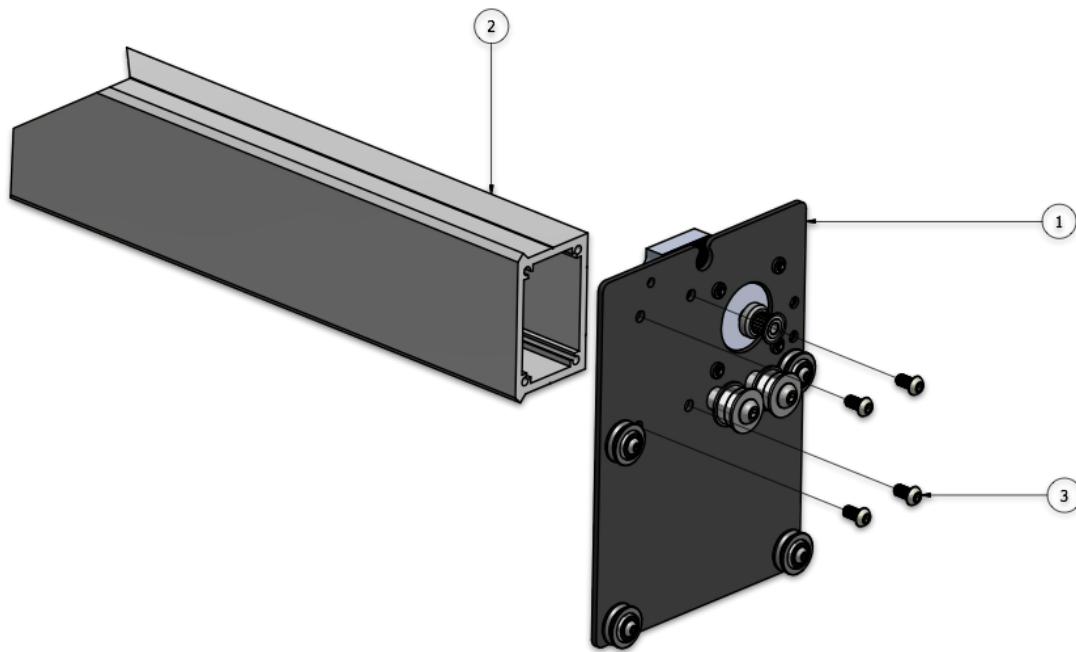
Shapeoko XXL Assembly Guide



04/27/2016

XXL Packing List

Item	Qty	Description
Y-Carriage (left)	1	
Y-Carriage (right)	1	
X/Z Assembly	1	
40" Rail	3	1 rail has mounting holes for controller
Wasteboard Half	2	
Cross Straps	3	
Front/Rear Plates	2	
Carbide Motion Controller	1	
Spindle Mount	1	
Final Assembly Box	1	
Serial Tag	1	
Home Switch Kit	1	
Sharpie	1	
M6x12 BHCS	1 Pack of 24	To Secure plates to extrusions
M5x20 BHCS	1 Pack of 18	To Secure Wasteboard to Cross Straps
M5x16 BHCS	1 Pack of 2	To secure router mount to z-plate
Belt Clips	1 pack of 6	To Secure belting
M5x10 SHCS	1 pack of 6 (included with Belt Clips)	To Secure Belt Clips
Power Cord	1	
Power Supply	1	
96" Wire Extension	2	For X and Z Axis
73" Wire Extension	1	For Y axis (long side)
54" Wire Extension	1	For Y Axis (short side)
USB Cable	1	To connect controller to computer
Thread Lock	1	for any hardware that may come loose
Allen Keys (5, 4, 3, 2, 1.5)	1	
Single Use Wrench (13, 10, 8)	1	
1200mm GT2 Belting (9mm)	3	
Drag Chain	2	
Drag Chain Brackets and hardware	2	To mount drag chain to X and Y axis



STEP 1

Y Carriage - Right

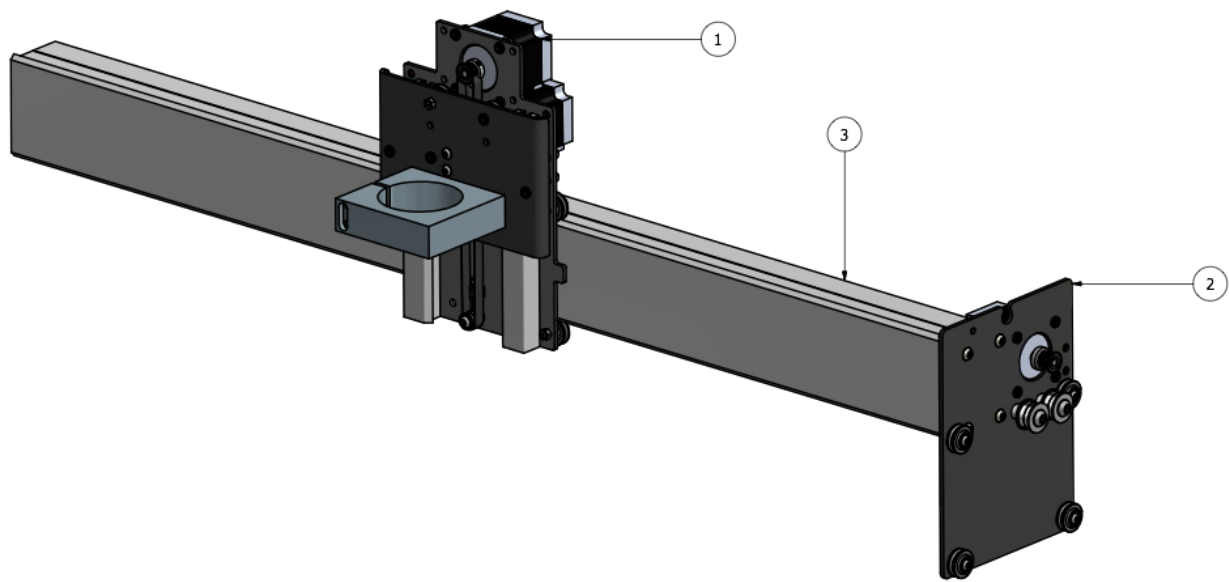
You will need:

- 1.) 40" rail (without pre-drilled holes on backside) (#2)
- 2.) 4x M6x12mm Button Head Cap Screws (#3)
- 3.) Right Y-Carriage Plate (#1)
- 4.) 4mm Hex Key (not shown)
- 5.) tube of loctite (not shown)

Using the rail (2) without the pre-drilled holes on the backside, attach the RIGHT y-carriage (1) using M6 x 12mm (3)Button Head Cap Screws.

Place a small drop of loctite on the threads of each Screw prior to installing.

Do not fully tighten the screws, we will tighten everything last



STEP 2

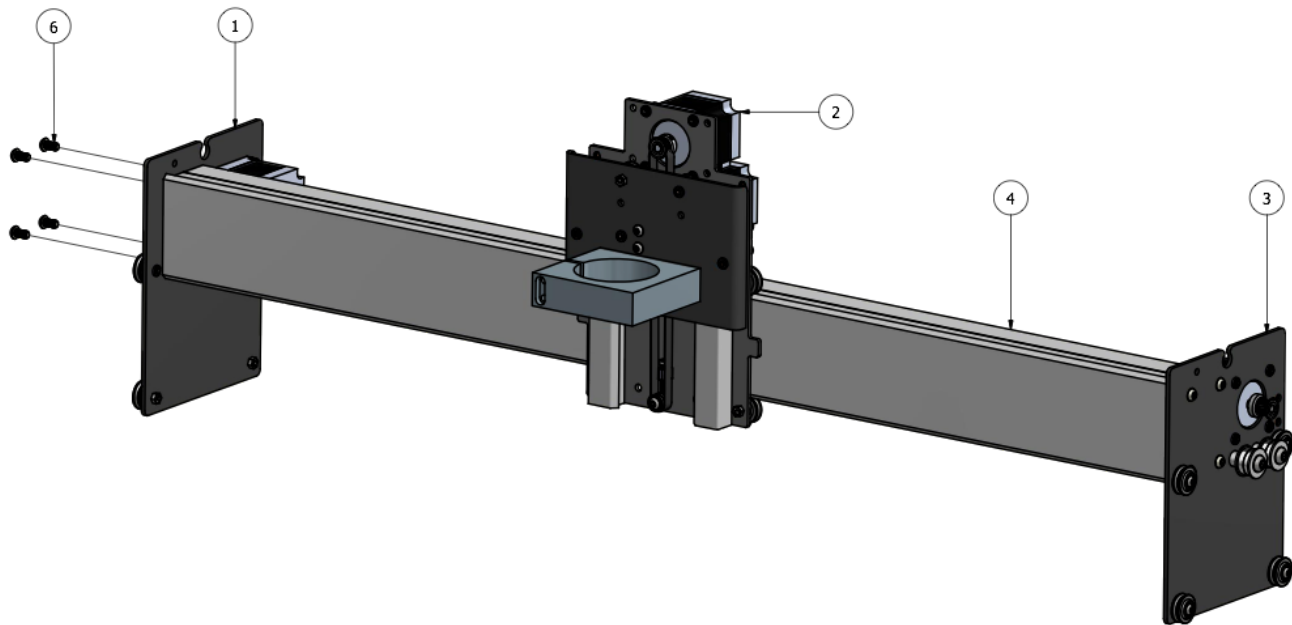
X/Z Assembly

You will need:

- 1.) Completed Assembly from step #1
- 2.) X/Z Carriage (#2)
- 4.) 4mm Hex Key (not shown)
- 5.) tube of loctite (not shown)

With the eccentrics in the 'open' position, slide the X/Z carriage onto the 40" Rail.

Make sure all 4 wheels are lined up with the integrated V on the rails



STEP 3

Y Carriage - Left

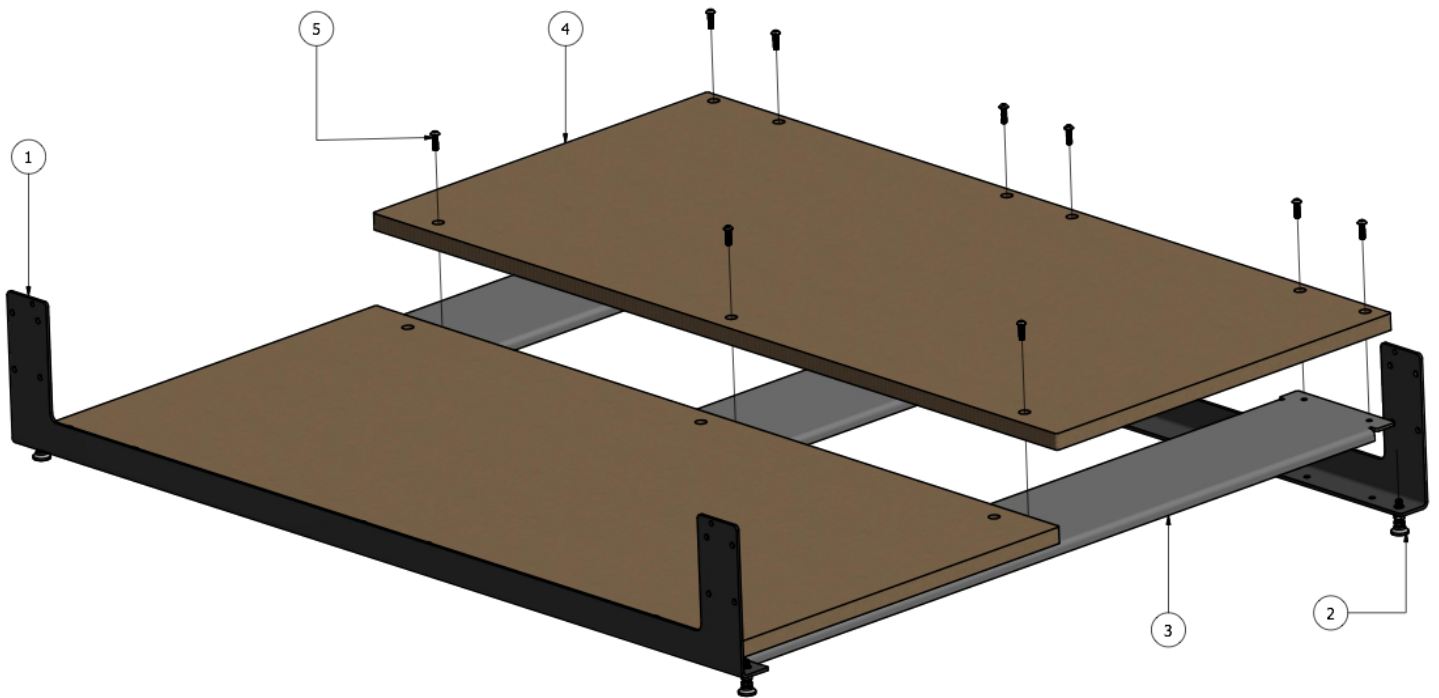
You will need:

- 1.) Completed Assembly from step #2
- 2.) Left Y Carriage (#1)
- 3.) 4x M6x12mm Button Head Cap Screw (#6)
- 4.) 4mm Hex Key (not shown)
- 5.) tube of loctite (not shown)

With the eccentrics in the 'open' position, slide the X/Z carriage onto the 40" Rail.

Make sure all 4 wheels are lined up with the integrated V on the rails.

The wheels do not need to be tight right now, we will tighten the wheels after everything is assembled.



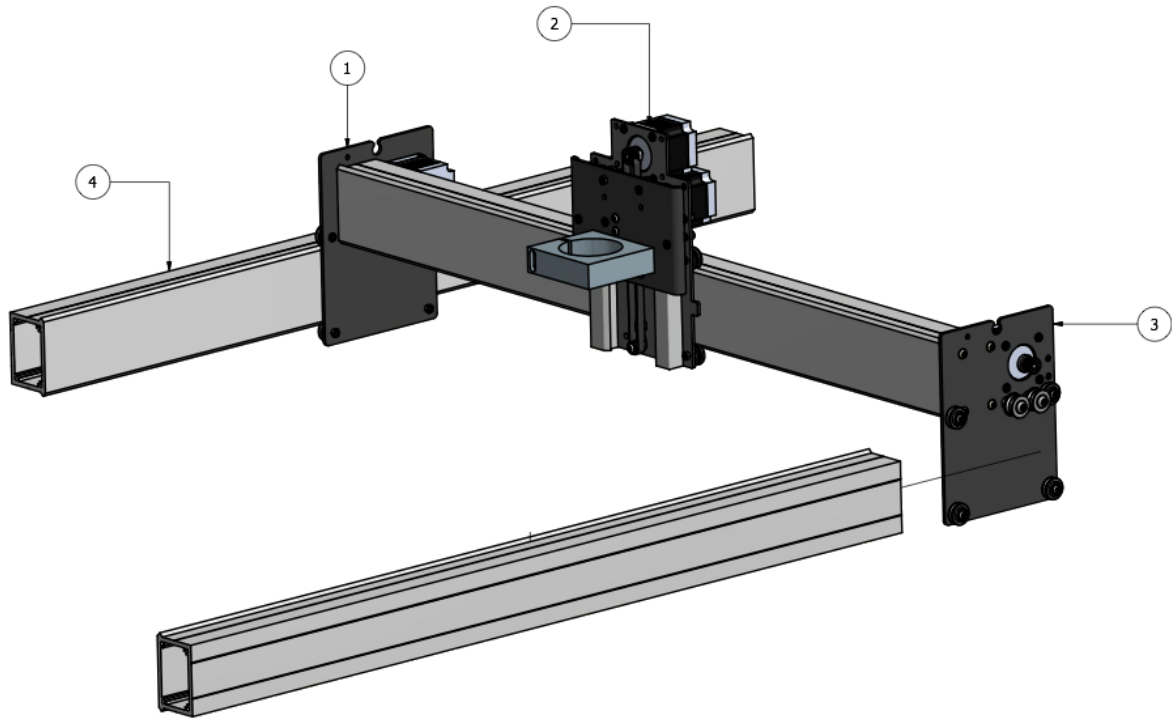
STEP 4

Base Frame Assembly

You will need:

- 1.) End Plates (#1)
- 2.) 2x Wasteboard Half (#4)
- 3.) 3x Cross Straps (#3)
- 4.) 18x M5 x 20mm Button Head Cap Screws (#5)
- 5.) 3mm Hex Key (not shown)
- 6.) Leveling Feet (#2)
- 7.) tube of loctite (not shown)

- Begin by installing the leveling feet in the corners of each End Plate, set aside when finished
- Lay out the cross straps on the table
- Place a washboard half across the cross straps and loosely secure the 3 screws in the middle
- Place the other washboard half across the straps and loosely secure the 3 screws in the middle
- Lift one end of the cross strap / washboard assembly and place on End Plate, loosely secure the outer screws
- Place the other end of the assembly on the opposite End plate, loosely secure the outer screws.
- Insert the remaining M5 x 20mm screws and loosely secure



STEP 5

Y-Axis Rail Assembly

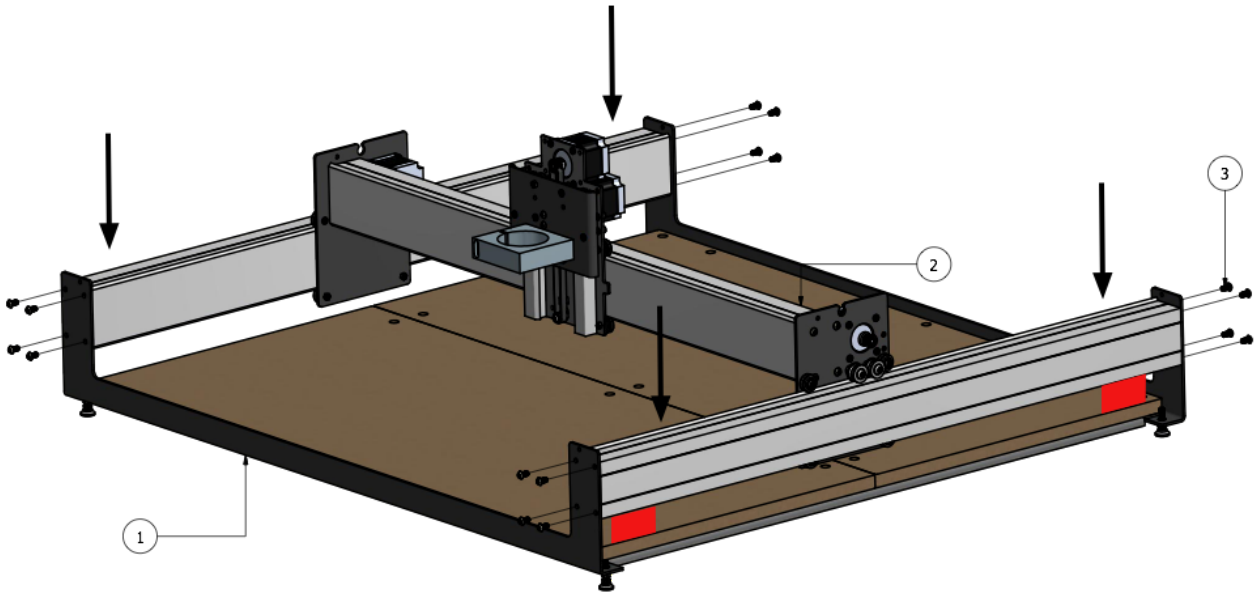
You will need:

- 1.) Completed Assembly from Step #3
- 2.) 2x 40" Extrusions

With the eccentrics on both Y-Axis plates in the fully 'open' position, slide each rail through the carriages.

Ensure all 4 wheels are in line with the integrated V on the extrusion

The extrusion marked (#4) should have 2 holes drilled on the side to mount the enclosure. Its important this extrusion is on the LEFT side of the assembly, as viewed from the front.



STEP 6

Y-Axis Final Assembly

You will need:

- 1.) Completed Y-Axis Rail Assembly (Step #5)
- 2.) Completed Base Frame Assembly (Step #4)

Prior to beginning this step, ensure the base frame assembly is loose, and there is some play that will allow the Y-Axis Rail Assembly to be set down into the base frame.

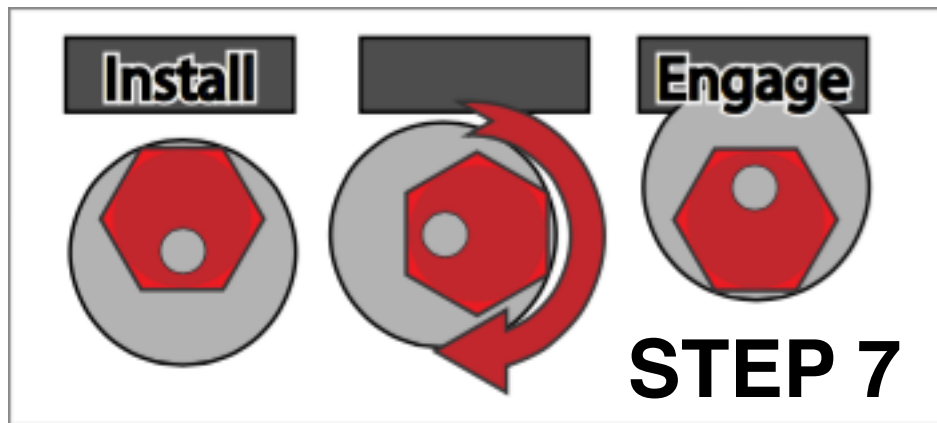
Using a 2" block, support one side of the rail assembly (shown in red). This is simply holding that side of the machine, while you work on the other.

On the side opposite of the support blocks, lift the rail and align with the mounting holes on the Front plate. Secure 1 screw (loosely)

Move to the back of the machine and secure 1 screw (loosely) - so the left side of the machine is now supported

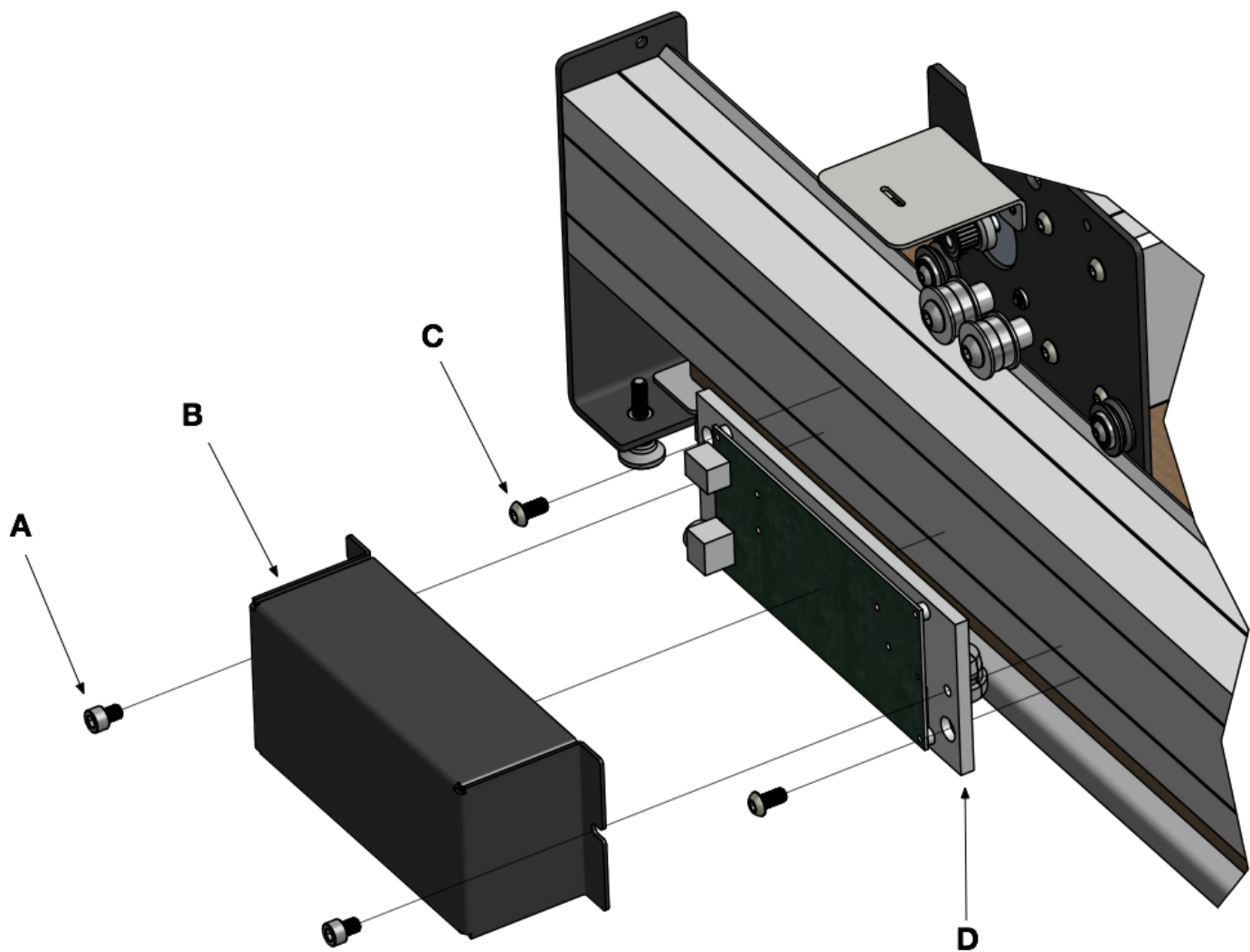
Remove the blocks and secure the right side of the machine with 1 screw in the front and one screw in the back. Once all 4 corners are supported, go through and install the remaining screws on each end of the machine.

Tensioning Eccentrics



To tension your carriages against the rails, follow the instructions below

- 1.) Rotate the eccentric nuts to the 'install' position. The wheels will now be at their furthest point away from the rail.
- 2.) Begin rotating the eccentric nut clockwise, until the wheel comes in contact with the rail.
- 3.) The wheel only needs to be snug against the rail, you do not need to tension the wheel too tightly against the rail.
- 4.) Proper tensioning should result in the carriages sliding smoothly on the rail without noticeable 'bumps'.

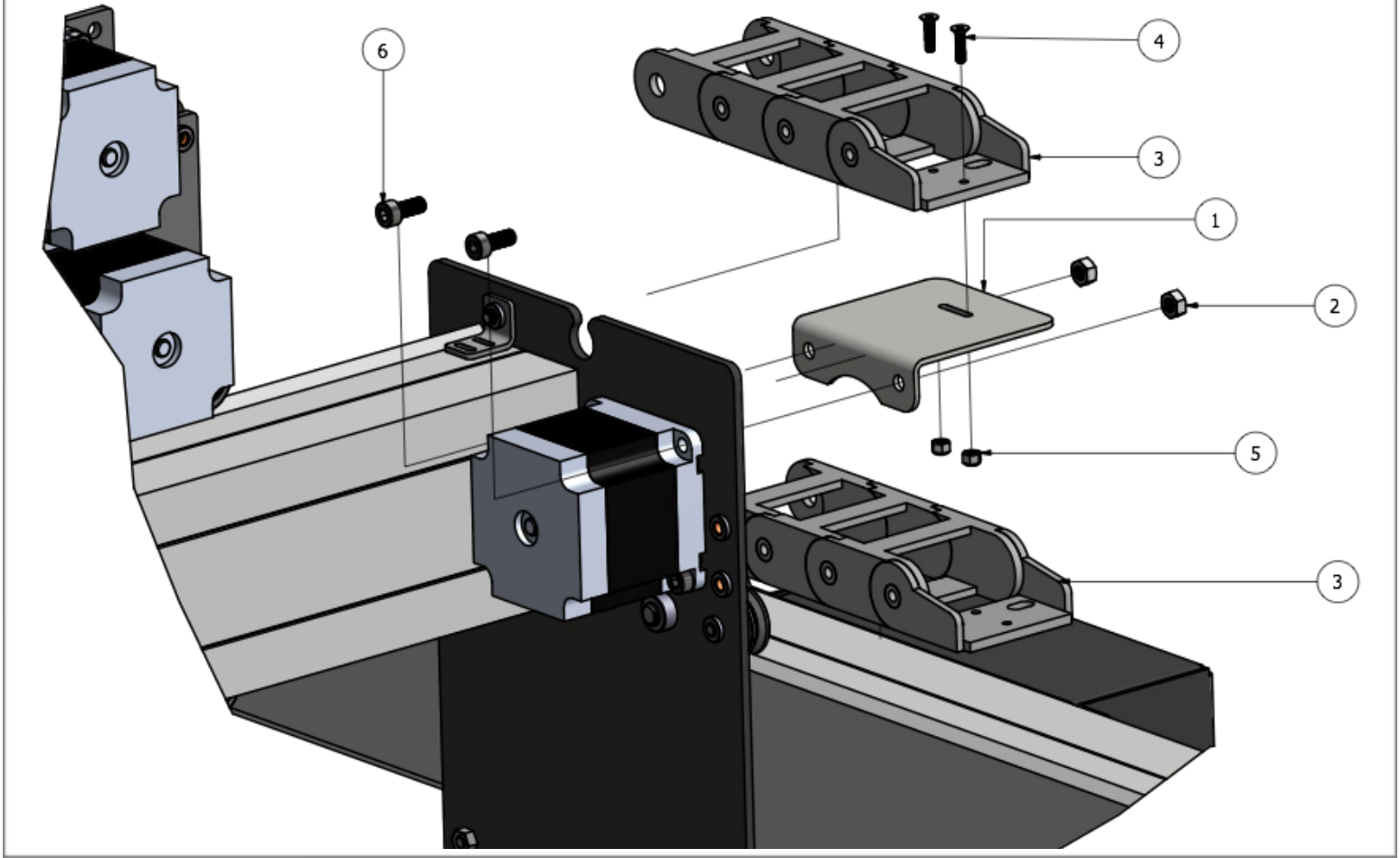


You will need:

- A.) M6x12 Cap Screws
- B.) Electronics Shroud
- C.) M6x12 Button Head Cap Screws
- D.) Carbide Motion Controller (mounted on heat sink)

Begin by removing the shroud from the controller. Inside you will find 3 rubber grommets and the 2pc of M6x12 BHCS (Item C) for mounting the controller to the rail.

Ensure the USB and Power ports are facing the rear of the machine, then use the hardware to mount the controller. Once mounted, route the stepper motor and limit switch cables through the 3 access ports and reconnect the shroud.



Y-Axis Drag Chain Bracket Assembly

You will need:

- 1.) Y-axis drag chain bracket - 1pc
- 2.) M5 Hex Nut - 2pcs
- 3.) Drag Chain - 1pc @1meter
- 4.) M3 x12mm Flat Head Screw - 2pc
- 5.) M3 Nylon Nut - 2pcs
- 6.) M5 x 16mm Button Head Cap Screw
- 7.) VHB Tape (1 piece) - not shown in image

Begin by removing the top two screws from the Y axis motor. Replace these 12mm screws with the included 16mm screws. Attach the Drag Chain Bracket (#1), by sliding it over the protruding threads from the screws in the previous step, and secure the bracket with the included M5 hex nuts (#2).

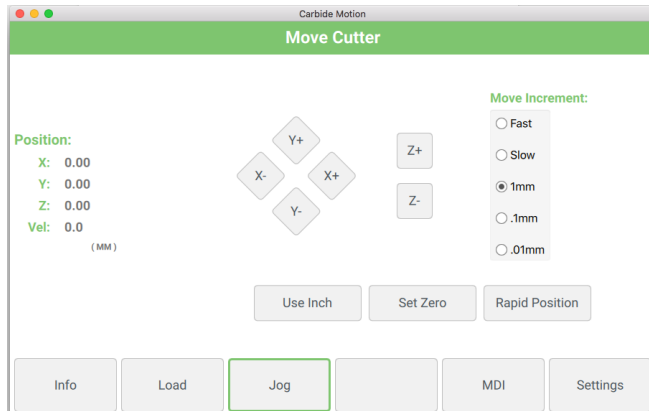
Secure one end of the drag chain to the bracket with the included M3 flat head screws, use the m3 nylon nuts to attach the bracket to the drag chain.

At the other end of the drag chain, mount flush with the back of the controller. Use 1 piece of VHB tape to secure to rail. Use the included alcohol wipes to clean the rail prior to applying the VHB tape. Allow the alcohol to dry before applying the VHB tape. Apply downward pressure to the VHB tape for approximately 30 seconds to create a strong bond. Do not stress this bond for at least 15 minutes after applying tape.

Software

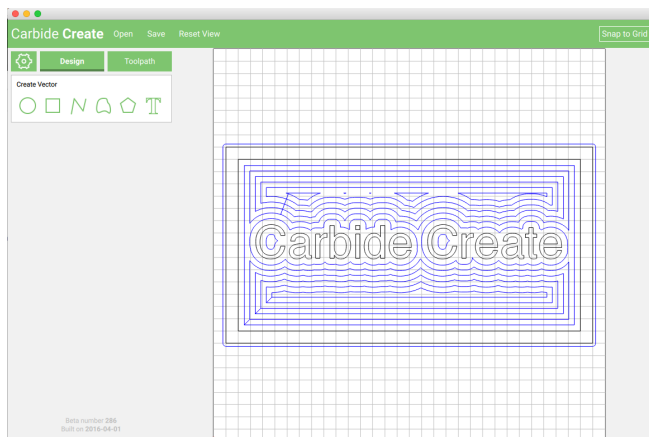
Carbide Motion

This is our custom made machine control software that allows you to control your machine from your computer. From Carbide Motion you can Home, Jog, Zero, load G-code files, and generally control your machine. www.carbide3d.com/download



Carbide Create

This is our custom made CAD / CAM software. The package has built-in design tools for use creating your next CNC project along with the ability to import DXF and SVG files. Carbide Create has a powerful toolpath engine which creates the gcode to make your designs into physical goods. <http://carbide3d.com/carbidecreate/download/>



Hello World

Find instructions to run your first job (with a sharpie) here:
<http://docs.carbide3d.com/article/37-shapeoko-3-hello-world>

Squaring Gantry to Front/Rear Plates

- 1.) Loosen all of the screws that hold the gantry together (4 on each side), these should still be loose from the initial assembly.
- 2.) Loosen the screws that hold the Y axis rails in place (16 total). These should also still be loose from the initial assembly.
- 3.) Slide the gantry to the front, so both Y plates are touching the front plate.
- 4.) While holding the gantry against the front of the machine tighten the front of the Y rails (8 total)
- 5.) Now - systematically begin tightening the 8 bolts on the gantry. Work your way from left to right, going back and forth in a X pattern (similar to tightening the wheel of a car).
- 6.) After the gantry has been secured, slide the gantry to the rear of the machine and tighten the 8 screws while keeping the gantry pressed against the rear plate