



## ASSEMBLY INSTRUCTIONS FOR THE MILLRIGHT CNC MEGA V STANDARD AND MEGA V XL. SEE THE RESOURCES PAGE FOR THE XXL.

Version 1.04

For additional resources, see [www.millrightcnc.com/resources](http://www.millrightcnc.com/resources)

Be sure to check the resources page for the most updated assembly instructions.

Contact [support@millrightcnc.com](mailto:support@millrightcnc.com) if you have questions.

We have a big online community. Be sure to join in the discussion.

Facebook MillRight CNC Group

Facebook MillRight Mega V Group

MillRight CNC Forum at [www.millrightcnc.proboards.com](http://www.millrightcnc.proboards.com)

### Important safety rules for operating your MillRight CNC Mega V:

Never place your hands near a spinning end mill or bit.

Always wear eye and ear protection while operating your machine.

Always run a dust collector or wear a mask while performing a milling operation.

Do not leave the machine unattended while running a milling operation.

Do not operate your machine while under the influence of alcohol or drugs.

Secure long hair and loose clothing so it is not caught in spinning mechanisms.

Ensure work pieces are properly secured before running a milling operation.

Keep a fire extinguisher nearby.

Visually inspect wires prior to power up to prevent short circuits.

***We recommend using a blue thread locker on any fastener not secured with a lock washer or lock nut.***

## V-Wheels

### Parts

#### V-Wheel Kit

- V Wheel (12)
- 608 Bearing (24)

### Hardware

#### V-Wheel Kit

- M8 Washer (12)

### Tools

#### Hard Surface

#### Something Flat to Press Bearings

On a hard, flat surface, lay out your v-wheels. Place a 608 Bearing on top of the v-wheel. Using something flat, such as a wood board, press the bearing into the top of the v-wheel.



Flip the v-wheel over. Place a M8 washer flat on the 608 bearing inside the v-wheel. If you forget this step the bearing will not spin correctly. Correcting this will be difficult.



Place a second 608 bearing on the top of the v-wheel.  
Press the bearing into the v-wheel using your  
impromptu tool. Pinch both bearings with your fingers  
and test that the v-wheel spins freely. Repeat this  
process with the other v-wheels and set them to the  
side.



## Gantry End Plates

### Parts

Left Gantry End Plate

Right Gantry End Plate

X/Y Motor Mount (2)

Assembled V-Wheel (8)

### Hardware

M4x12 Machine Screw (4)

V-Wheel Kit

- M8x40 Machine Screw (8)
- M8 Nylock (8)
- Eccentric Spacers (4)
- Standard Spacers (4)

Old Motor Mounts will need:

M6 Washer (4)



### Tools

Phillips Screwdriver

Needle Nose Pliers

13mm Socket or Wrench

We have recently changed the XY motor mounts. The one on the right with the threaded screw holes is the older style and will have instructions after this section. The one on the left with the slotted holes is the new style with instructions in this section. There will be another division of instructions when mounting the XY motor mount on the X plate and mounting the XY motors.



Locate the Right Gantry End Plate (pictured above). Place eccentric spacers in the large holes on the top of the Right Gantry End Plate. The recessed pockets should be face up. Place a v-wheel on a M8x40 machine screw. Spinning the v-wheel on the screw will help align the washer allowing wheel to seat on the screw. Insert the M8x40 Machine screw through the eccentric spacer and secure with a M8 Nylock. Snug the v-wheel to the plate. Repeat the process on the other side of the Right Gantry End Plate.



Repeat the Process with the Left Gantry End Plate. The recessed pockets on the plate should be face up.



Place a v wheel on an m8x40 machine screw. Place a standard spacer on the m8x40 machine screw and place the screw through the bottom set of holes on the front of the right Gantry End Plate. Secure with a m8 nylock nut. Repeat the process with the left Gantry End Plate.



Locate a X/Z Motor Mount. The mount will be installed on the same side of the Gantry End Plates as the v-wheels. Place (2) M4x12 machine screws through the back of the Gantry End Plate (opposite the v-wheels) using the two small holes located between the v-wheels and install the motor mount. Repeat the process on the other Gantry End Plate. Place both to the side.



### **Old Style XY Motor Mounts**

#### **Parts**

YX Motor Mount with threaded hole (2)

#### **Hardware**

M4x12 Machine Screw (4)

M6 Washer (4)

The only addition to the above instructions for the old style XY motor mounts is that you will place (2) m6 washers between the XY motor mount and the Y End Plates.



## Z Plate

### Parts

Z Plate

Z Engager Bracket

Router Mount with Hardware

Anti Backlash Nut with Hardware

Z Rail and Bearings (2)

### Hardware

M3x10 Button Cap (14)

M3x16 Machine Screw (2)

M5x20 Machine Screw (2)

### Tools

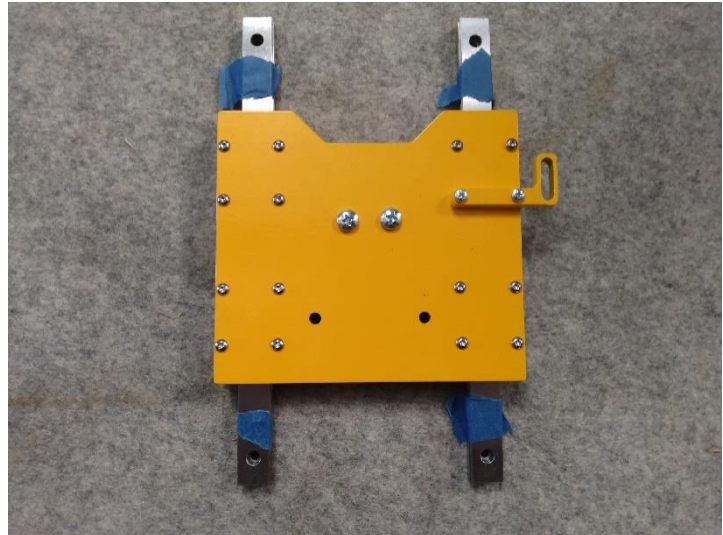
2mm Hex Key

2.5mm Hex Key

3mm Hex Key

Phillips Screwdriver

Masking/Painters Tape

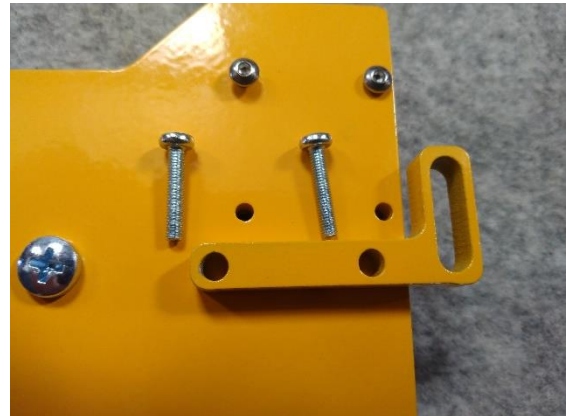


Locate the anti backlash nut (ABN). The ABN will come with (2) m5 nylock nuts, a m5 grub screw, and a m5 jam nut in the bag. Push the nylocks into the hexagonal holes on the face of the ABN with the nylon facing up. Screw the grub screw into the top of the ABN until it touches the bottom. Cap the grub screw with the m5 jam nut. Place the ABN on the z plate and secure using the m5x20 machine screws. Leave loose. Make sure the nylocks can be seen.



Locate the z rails with bearings. **The bearings will slide off the rails expelling all ball bearings. Please proceed with caution.** The rails will have plastic or rubber blocks to keep the bearings from sliding off. Leave them in place until told to remove them. If the blocks are not present, tape both ends of the rails to keep the bearings from sliding off. Place the z rails on a flat surface with the bearings face up.

Place the z plate on top of the bearings lining up the bearings with the 4-hole groups on the corners of the z plate. The ABN should be on the same side of the z plate as the bearings. Secure the z plate to the bearings using the m3x10 button caps. Leave loose. The bottom 2 holes of the top right 4-hole group will not get m3x10 button cap hardware. Locate the z engager bracket. Secure the bracket to the z plate with m3x16 machine screws using the two remaining holes on the top right of the z plate. Leave loose.



Locate your router mount. The router mount will have hardware preinstalled. Remove the 2 button cap screws and washers on the back of the router mount. Carefully turn the z plate on its side making sure the bearings stay on the rails. Place the screws with washer through the back of the plate using the 2 remaining holes. Attach the router to the z plate and tighten the router mount screws. Place your z plate to the side.



## X Plate

### Parts

X Plate

Z Motor Mount

Screw Seat Plate

UHMW Screw Seat

178mm Lead Screw

Assembled V-Wheel (4)

### Hardware

M5x16 Machine Screws (2)

M5 Nylock Nut (2)

M4x12 Machine Screw (4)

M4 Split Lock Washer (4)





M3x16 Machine Screw (6)

M3 Nylock Nut (6)

V-Wheel Kit

- Eccentric Spacers (2)
- Standard Spacers (2)
- M8x40 Machine Screw (4)
- M8 Nylock (4)

### Tools

Phillips Screw Driver

Needle Nose Pliers

8mm Socket or Wrench

13mm Socket or Wrench

Locate your z screw seat plate and UHMW screw seat. Place the UHMW screw seat on top of the screw seat plate. Make sure the pocket of the UHMW screw seat is facing up as shown.



Secure the UHMW screw seat to the screw seat plate using (2) m5x16 Machine screws and (2) m5 nylock nuts. Do not over tighten or you may deform the UHMW screw seat.



The front of the x plate is the face with the recessed pockets. The top of the x plate is the section with the “U” cutout, as shown above. Place the screw seat plate on the x plate near the bottom, center set of holes. Make sure the UHMW screw seat is pointing towards the top of the x plate. Place a m4 split lock washer on (2) m4x12 machine screw and insert the screws through the back of the x plate to secure the screw seat plate to the x plate.



Place the z plate on the front of the x plate. Line up the holes on the z rails with the (3) holes on each side of the x plate. (2) holes on the top on each side and (1) hole on the bottom on each side. Carefully remove the top bearing block or tape on both rails. Insert a m3x16 machine screw in the top hole on both rails and finger tighten a m3 nylock. Repeat the process with the second set. Carefully remove the bearing block or tape from the bottom of the z rails. Insert a m3x16 machine screw in the bottom hole on both rails and finger tighten a m3 nylock.



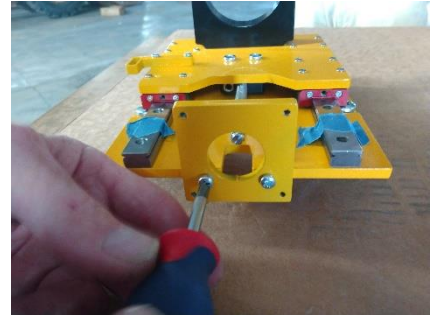
Prop the x plate on its bottom using the router mount. Place eccentric spacers in the top, large holes on the back of the x plate. Insert m8x40 machine screws into the large holes in the front of the x plate and through the eccentric spacers. Place an assembled v-wheels on the M8x40 machine screw and secure with a m8 nylock nut.



Place (2) m8x40 machine screws in the large holes in the front of the x plate at the bottom. Place standard spacers on the m8x40 screws, assembled v-wheels, and secure with a m8 nylock nut.



Thread the 178mm lead screw into the ABN. Locate the z motor mount. Using (2) m4x12 machine screws with m4 split lock washers, attach the z motor mount to the top of the x plate.



## Z Motor

### Parts

3675mm Motor

Coupler

X/Y Motor Mount

### Hardware

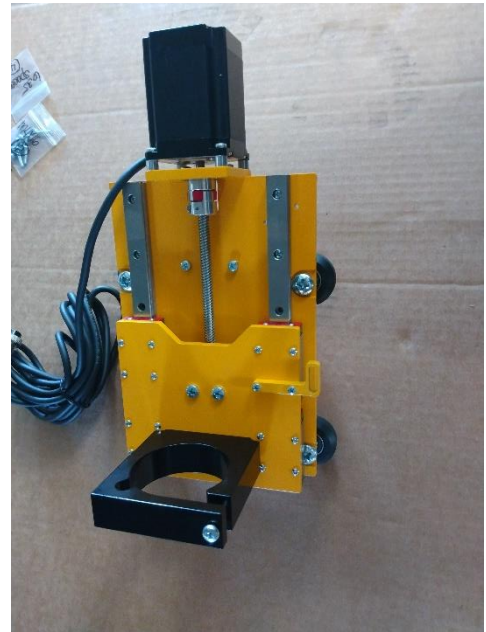
6.35mm Spacer (4)

M4x14 Machine Screw (4)

M4x12 Machine Screw (2)

Old Motor Mounts will need:

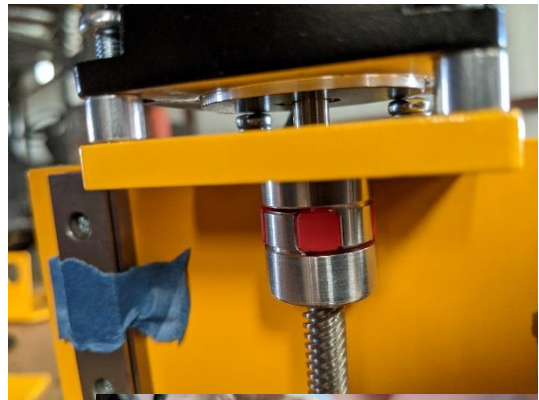
M6 Washer (2)



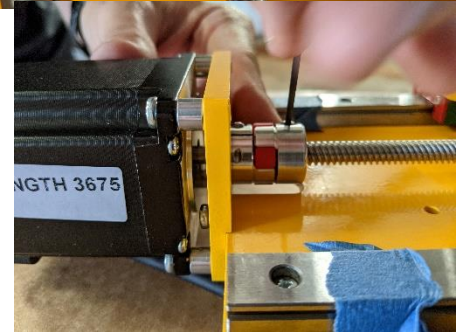
### Tools

Phillips Screw Driver

Locate the 3675mm Motor and coupler. Place the coupler on the 178mm lead screw, allowing it to sit fully on the lead screw. Place 6.35mm spacers (4) on the mounting holes of the z motor mount. Place the 3675mm motor with the motor wire positioned to the back of the x/z assembly, opposite of the router mount, onto the spacers with the shaft in the top of the coupler. Secure with (4) m4x14 machine screws.



Using a 2mm hex key, tighten the bottom screw of the coupler. This will connect the coupler to the lead screw. Make sure the lead screw is fully engaged with UHMW screw seat and apply light downward pressure. Tighten the top screw on the coupler. This will attach the coupler to the motor shaft.



Locate the X/Y motor mount and lower the z plate to expose the two holes near the center top of the x plate. Place a m4 split lock washer on (2) m4x12 machine screws. Insert the screws through the front of the x plate and attach the X/Y motor mount to the back of the x plate.

**If you have the old style XY motor mount with the threaded holes, you will place (2) m6 washers between the XY motor mount and the X plate.**





## X/Y Extrusion

### Parts

1077 Mega V Extrusion w/Logo

1064 Mega V Extrusion (2)

Gear Rack (3)

Drag Chain Mount (3)

Y End Plates (4)

### Hardware

Drop-In T Nut (9)

Large T Nut (12) – XL (21)

M5x12 Button Cap (9)

M5x20 Button Cap (12) – XL (21)

5/16 x 3/4 Button Cap (24)

### Tools

Phillips Screw Driver

3/16 Hex Key

3mm Hex Key

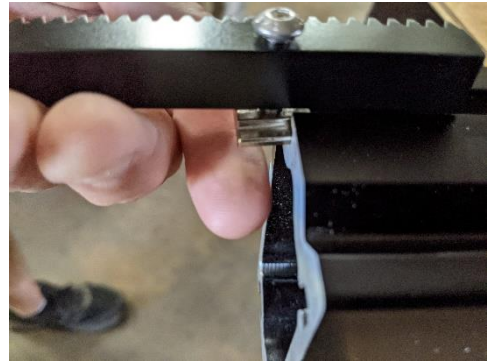
13mm Wrench



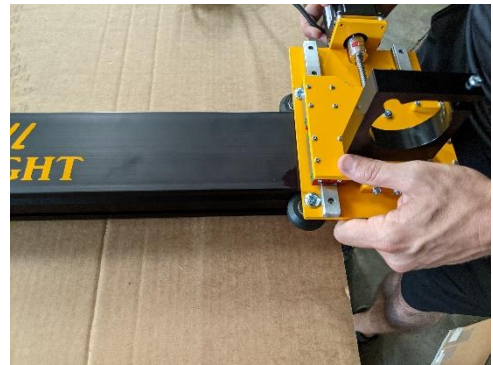
Get one section of gear rack. Place m5x20 Button cap screw through the holes of the gear rack keeping the screw uniform. Spin a large t nut a few turns on each screw. Leave the t nuts loose.



Slide the t nuts into the top of the Mega V extrusion with the gear rack teeth pointing towards the back of the extrusion. The Logo is on the front of the extrusion. Leave the rack loose.



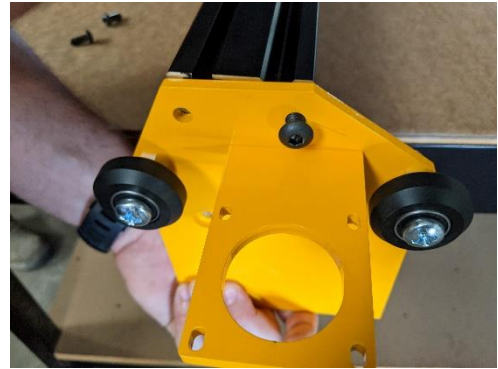
Retrieve the x/z assembly. The v-wheels will pinch the outside of the Mega V extrusion using the v shaped slots on the top and bottom. If the v-wheels are too tight to slide on the extrusion, use a 13mm wrench to turn the eccentrics until the assembly slides onto the extrusion.



Slide (3) large drop in t nuts into the bottom slot of the Mega V extrusion. (6 t nuts shown in picture – only use 3)



Retrieve the left end plate. On the left side of the extrusion, use (4) 5/16 x 3/4 button cap screws to attach the left end plate to the extrusion. Repeat the process on the right side with the right end plate. The end plates should extend more from the front of the extrusion than the back.



Tilt the gantry forward to gain access to the bottom. Using (3) m5x12 button cap and the installed large t nuts, attach the drag chain mount. The drag chain mounts need to be positioned on the right side of the gantry as seen from the front with the slotted ends pointed out towards the end plates. Leave loose. Please be careful not to bend the drag chain mounts. Set the gantry to the side.



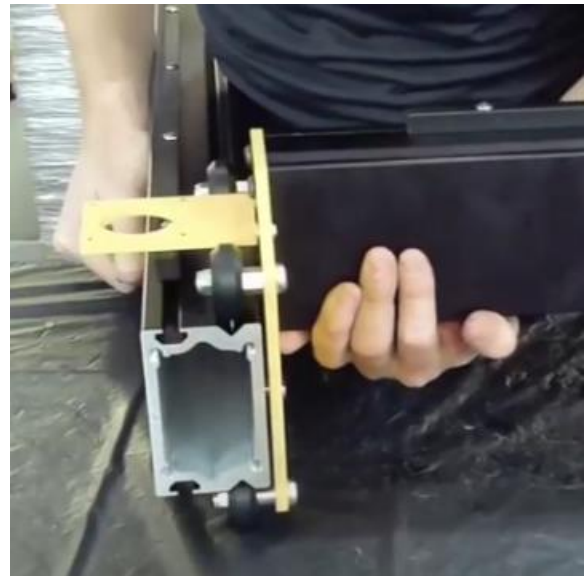
Locate the gear rack (2) and the 1064 Mega V extrusion (2) for the XL, or (2) 670 Mega V extrusion for the standard size. Insert m5x20 machine screws through the holes of the gear rack and lightly thread t nuts on the screws. Slide the t nuts into the slot on the Mega V extrusion with the teeth facing out of the extrusion.



Flip your extrusion over. Slid (3) t nuts into each slot. Locate your drag chain mounts (2). Use m5x12 button caps screws to attach the drag chain mounts to the t nuts. The Drag chain mounts has a slot on one side that should be positioned to the “back” of each extrusion.



Slide the gantry onto the y extrusion. The v wheels should fit in the groove on the extrusion. If the fit is tight, use a 13mm wrench to rotate the eccentric spacers to loosen the fit. Make sure the rack on the extrusion is facing up. Do this for both extrusions.



Locate your Y end plates (4). Use the 5/16 x 3/4" to attach the Y end plates to the ends of both y extrusions. The y end plate should be flush with the top of the Mega V extrusion. Leave the y end plates on the back of the extrusions loose. Set the Gantry/Y Rails to the side.





## MDF BED

(skip to T Plate Section if you purchased that option)

### Parts

MDF Bed Section (2)

Long 2040 Extrusion (2)

Short 2040 Extrusion (1)

### Hardware

MDF Bed Hardware Bag



### Tools

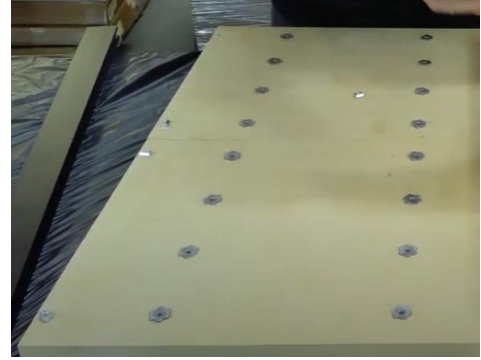
Phillips Screw Driver

Hammer

The top of your MDF bed sections will have 6 recessed pockets. Flip both section over so the bottom of the beds are showing. There are 4 sets of 4 holes on each of the bed sections. Place your pronged T nuts into the holes. Use a hammer to insert the prongs into the bottom of the MDF bed. Make sure the pronged T nuts are secure in the bed.



Place a split lock washer on each of (6) m5x18 machine screw place and a flat washer. Insert the screw into the pockets of the MDF bed section using the pocketed holes. Lightly tread a small t nut onto the screw. Repeat with the second bed piece. With both sections top down, place them side by side, lining up the pronged t nuts.



Locate the long 2040 extrusion (2). Slide the extrusion over the (4) t nuts on the edge of the bed sections. **On the 19x19" Mega V, the extrusion is flush with the side edge of the bed sections. On the 35x35" Mega V, the extrusion should extend over the side edge of the bed sections.** You will repeat the process with the short 2040 extrusions and the middle T nuts. Make sure the bed sections are pressed together firmly and even. Tighten the m5x18 machine screws.



The Mega V 35x35" should overhang the bed sections as shown.



### **Optional Aluminum T Plate Bed**

#### **Parts**

Aluminum Bed Section 19x19" (2) Large (1) Small

Aluminum Bed Section 35x35" (4) Large

Bed Joiner (2)

Long 2040 Extrusion (2)

Short 2040 Extrusion (1)

## Mid-span Joiner Plate (2)

### Hardware

#### T Plate Bed Hardware

### Tools

3mm Hex Key

13mm Wrench or Socket

Locate the long 2040 extrusion (2) and T plate joiners (2). These will be the outside of your aluminum bed. Orientation of the extrusion does not matter as long as the longer end of the extrusion is flat against the take. Place M5x12 button cap screws through the holes near the middle, length wise, of the bed joiners. The holes on the joiners that extend past the edge of the joiner will be used later. Thread small t nuts loosely onto the m5x12 button cap screws. Slide the t nuts into the slot on the 20mm edge of the long extrusion. Repeat the process on the opposite side of the other long 2040 extrusion. **The t plate joiners for the Mega V 19x19 have to be oriented in a specific way as there is a front and a back to the joiners. The end of the joiners with two bed holes about 4" apart is the back. Make sure the joiners mirror each other.** The orientation of the Mega V 35x35 joiners do not matter.

Locate the shorter 2040 extrusion and a midspan joiner. Attach the midspan joiner to one side of the shorter 2040 extrusion using (2) #10 x1" self tapping screws. WD40 or other lubricants can be used to easy the cutting of the threads. Set the extrusion to the side.

Grab your aluminum be pieces;  
(2) large sections, (1) small  
section for the Mega V 19x19 or  
(4) Sections for the Mega V 35x35.

Place your bed sections on the 40mm tops of the long 2040 extrusion, one extrusion on each side. For the Mega V 19x19 you will have the two large section at the "front" of the bed and the small section at the "back". Order does not matter on the Mega V 35x35. Make sure the top of the bed sections are showing; the side with the large, numerous slots is the top. The top holes of the Bed Joiners should match up with holes on the side of the bed sections. Connect the joiners with the bed sections using #10 x 1" self tapping screws. WD40 or other lubricants can be used to easy the cutting of the threads. Leave the screws loose.



Grab the shorter 2040 extrusion with the mid-span joiner plate attached on one end. Slide the extrusion under the middle of your aluminum bed. Take (2) small t nuts and slide them into the slots on the edge of the front of your aluminum bed. Repeat with the back edge of the bed. Connect the mid-span joiner to the front of the bed using m5x12 button caps. Locate the second midspan joiner. Use (2) #10 x 1" self tapping screws to secure the mid-span plate to the other end of the shorter 2040 extrusion. Attach the mid-span joiner plate to the bed using (2) m5x12 button cap screws.



### **Attach Gantry to Bed**

#### **Parts**

Completed Gantry

Completed Bed

#### **Hardware**

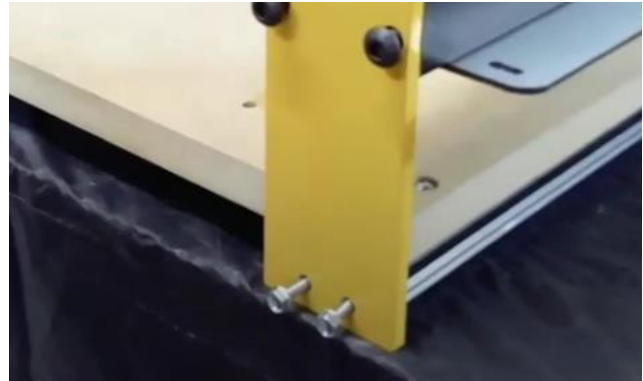
#10 x 1" Self tapping screw (8)

#### **Tools**

8mm wrench or socket



Take gantry and set it over the bed. Use (8) #10 x 1" self tapping screws to attach the bed extrusion to the y end plates, (2) screws for each plate. WD40 or other lubricants can be used to ease the cutting of the threads. Tighten screws.



Tighten the 5/16 x 3/4" button cap screws that were left loose on the y end plates. Push the aluminum bed to the front of the machine and tighten the bed screws on the joiner plate.

## X/Y Motors

### Parts

Motor (3)

Pinion Gear (3)

### Hardware

Set Screw (in bag with pinion gear) (6)

M4x16 Machine Screw (9)

M4 Nylock Nut (9)

Old Motor Mounts will need:

M4x12 Machine Screw (9)

2.5mm Spacers

and will NOT need the M4 Nylocks.

### Tools

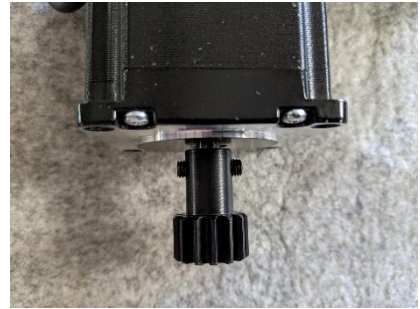
Phillips Screw Driver

7mm Wrench or Socket

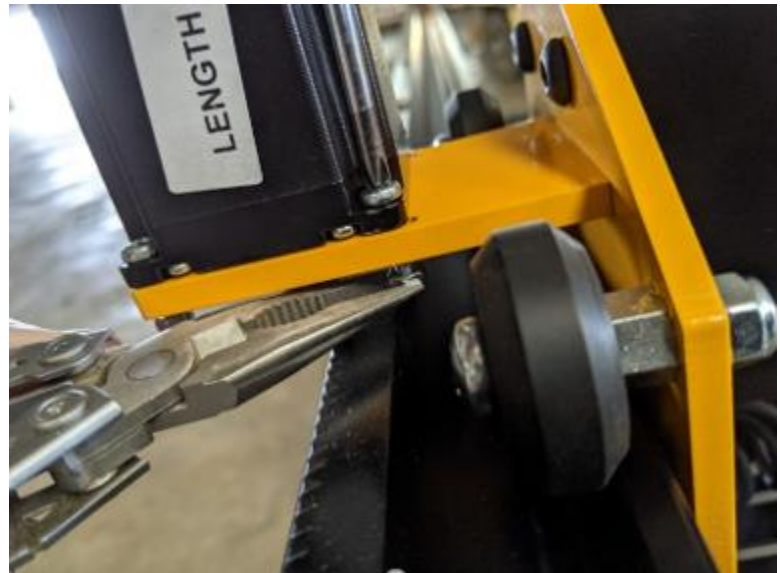
2.5mm Hex Key



Locate the pinion gears (3) and the motors (3). The set screws are in the bag with the pinion gears. There are two screws for each pinion gear. Slide the pinion gear over the shaft of the motor and secure with the set screws. Have one set screw over the flat section of the motor shaft for a more secure hold. Repeat the process for the remaining motors.



Take note of what side is the front of the machine. The side of the gantry with the MillRight sticker is the front. As viewed from the front, the right side of the gantry gets a “Length 3675” motor and the left side gets a “Length 2550” Motor. The X Plate gets a “Length 3675” motor. Notice where the cable exits each motor. The Left Y motors should be installed so the cable exits towards the gantry, the right Y motor should be installed so the cable faces the rear, and the X motor should be installed so the cable exits to the left. Place each motor into its



respective motor mount and get them “snug but adjustable” with M4x16 machine screws and M4 nylock nuts. It’s easiest to use needle nose pliers to hold the M4 nylock nuts as you screw in the M4x16 screws. One motor mounting hole for the X axis and one motor mounting hole on both Y axis motor will instead receive an M4x20 screw that you will install later for the purpose of attaching drag chain. You can mount these motors with just three screws for now. The front outside screws on the y motor mounts and the back right screw on the x (as viewed from the front of the machine) can be left out.

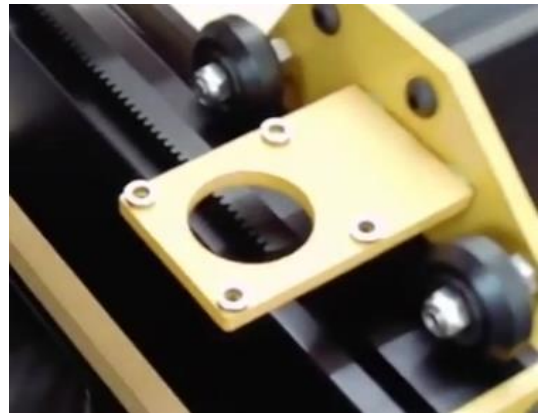
## **X/Y Motors for Old (Threaded, NOT slotted) Style Motor Mounts**

### Hardware

M4x12 Machine Screw (9)

2.5mm Spacer (12)

If you have the motor mounts with the threaded holes, you will need to place (4) 2.5mm spacers on each of the XY motor mounts. Place the motor on the spacers lining up the holes and secure with (3) M4x12 machine screws in each motor. The M4x12 machine screws will thread directly into the old style (threaded) motor mounts. You will not need the m4 nylock nuts. Leave the same holes empty for the m4x20 machine screws for the drag chain connections as explained above.



## **Homing Switches**

### Parts

Homing Switch Kit

### Hardware

Homing Switch Kit

Install the Z Switch Engagement Stud into the Stud bracket on the Z axis. Put the M5x35 button cap screw through the stud bracket, then slide on an M5 split-lock screw and a regular M5 nut (not a nylock nut). Notice that the stud bracket is slotted so you can adjust the engagement position later.

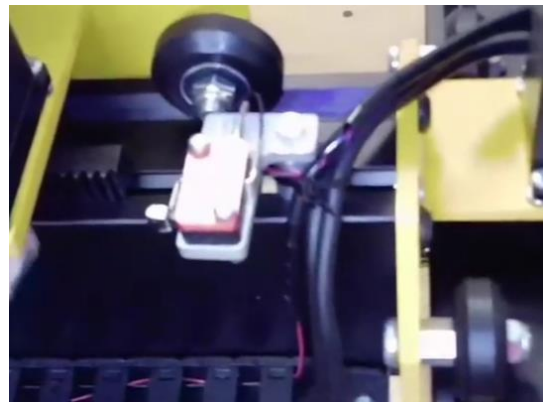
Then gather the long paddle switch, (2) M3x20 machine screws, and (2) M3 nylock nuts. Install the Z switch onto the back of the X Plate as shown.



Slide the small black extender piece onto the paddle of the switch and secure it in place by threading an M3x8 machine screw into the plastic.

You can now spin the coupler on the Z axis motor with your thumb to observe where the switch will engage. Listen for a click from the switch to indicate it has engaged. Adjust the set screw as desired. Note that you may want to reexamine this position after you install your router, as it can collide with the Z motor mount before the switch engages if installed too high.

The X homing switch will be positioned on the far left of the gantry if looking at the Mega V from the front. Locate an L bracket and a short roller switch in your homing kit switch. Use (2) m3x20 machine screws and (2) m3 nylocks nuts to attach the switch to the L bracket as pictures (red side up). Place a drop-in t nut in the same slot as the rack on the x gantry rail. Place a m5x30 machine screw through the L bracket, through the homing spacer, and screw into the drop-in t nut. The switch should engage the x motor mount.



Repeat the process on the rear of the left Y extrusion. Make sure the black side of the switch is up as pictured.

The black homing wire connects to the terminal on the side of the switches that curves towards the other terminals. The red homing wire connects to the rear terminal closes to the black wire terminal.





The Y homing wire is on the same plug as the X axis switch. The Y wires directly into the control box without having run through any drag chains. The X wires will run through the drag chains. The Z homing wires will run through the drag chains. See the table on the following page for further information on cable routing.

## **Drag Chains**

### **Parts**

Drag Chain (3)

### **Hardware**

M4x20 Machine Screw (3)

M4x12 Machine Screw (3)

M4 Nylock Nut (6)

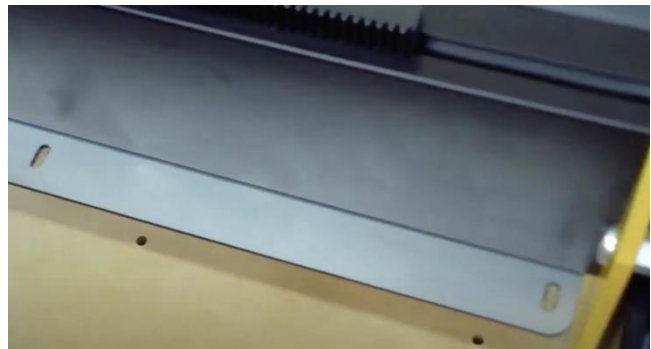
### **Tools**

Phillip's Screw Driver

7mm Wrench or Socket

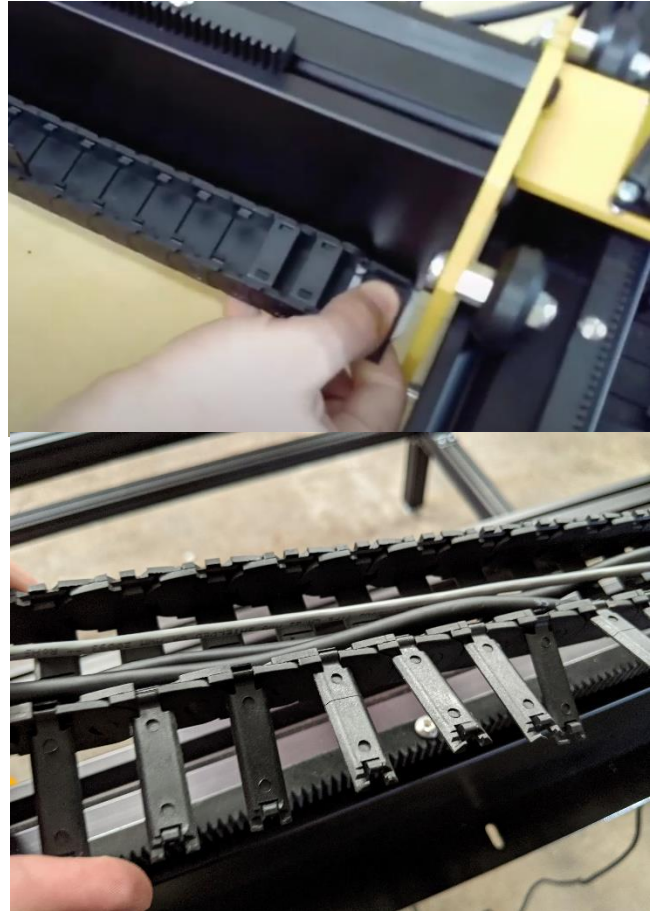
Needle Nose Pliers

Make sure the slot on your drag chain mount that you previously installed on the gantry rail is positioned to the right as viewed from the back of the machine. Attach one end of the drag chain by placing a m4x12 machine screw through the drag chain, through the slot on the drag chain mount, and secure with a m4 nylock nut.



On the Y axis, make sure the slots on your drag chain mounts are positioned to the back of your machine as viewed from the front. Secure the drag chain with a m4x12 machine screw and nylock nut.

The drag chains have gates that can be opened to allow you to run wires through. You can also separate the chain segments by twisting the links or using a flat head screwdriver. Separating the ends of the drag chains will make running the AC connectors on the motor wires easier to run through the chain.

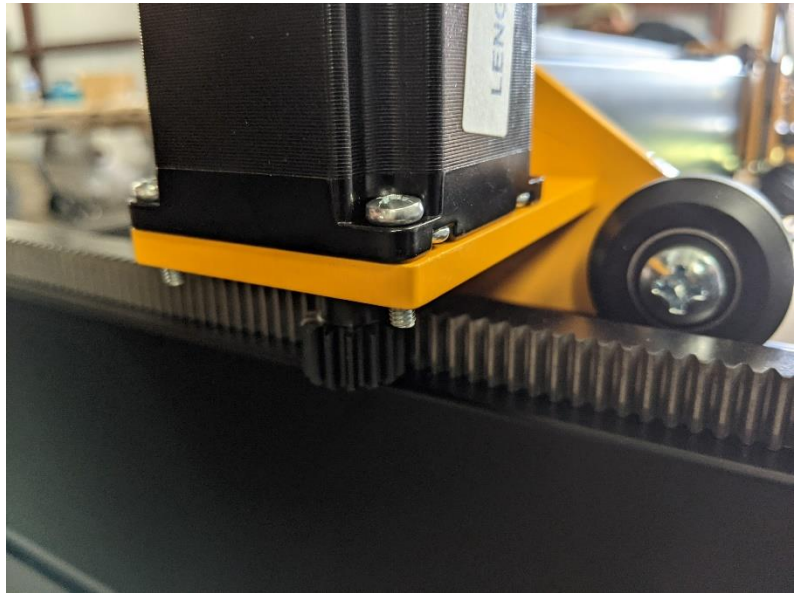


Roll your drag chain mounts up to your empty motor mount holes. Place a m4x20 machine screw through the motor and mount, through the drag chain hole on the end, and secure with a m4 nylock nut. Do this for the X and both Y drag chains.

Wires	Cable Routing
X Switch Wires	Runs in Left Y drag chain
Y Switch Wires	Does not run in any drag chain
Z Switch Wires	Runs in X drag chain, then runs in Left Y drag chain
X Motor Wires	Runs in X drag chain, then runs in Left Y drag chain
Left Y Motor Wires	Runs in Left Y drag chain
Right Y Motor Wires	Runs in Right Y drag chain, then behind machine to box
Z Motor Wires	Runs in X drag chain, then runs in Left Y drag chain
Router Wires	Runs in X drag chain. If ran into Y, must exit at plug

## Adjust Gear Rack

The gear rack needs to be adjusted to allow for proper engagement. The pinion gear should only have a couple of teeth left before running off the gear rack at the point of engaging the homing switch. This applies to both the X and Y. Position the axis, so it clicks the switch. Take note of how much gear rack, if any, is left. Loosen and slide the gear rack as necessary. There are adjustments in the motor mounting holes (they are



slotted), but you should instead tighten these screws down now, leaving some adjustment room in the slot for later, and adjust the gear rack to the pinion gear. In other words, this adjustment is done with the pinion gear fixed and the gear rack is adjusted to it. To position the gear rack properly and parallel with the motion of the machine, you should start on the homing switch end and tighten the M5x20 screws in the gear rack one at a time as you move the axis towards the other end of travel. The gear rack will have a bow to it and installing it this way will bring it straight on the machine. If you experience binding later due to excessive pinion gear to gear rack mesh, you can adjust the mounting position of the motor by loosening it and moving it further back in the slotted holes. Using your index or middle finger on the gear rack and thumb on the pinion gear, apply some pressure to pinch them together. Tighten the closest screw. Clear your hand out of the way, then push the axis near the next screw in the gear rack.

## Router Installation

### Parts

Router

### Hardware

Already in place

Loosen the pinch bolt in the router mount and slide the router into the opening of the mount. The mounts are machined very close to the size of the router body. Depending on the amount

of powder coat accumulated in the opening, you may have to use a flathead screwdriver to gently pry the opening as you wiggle the router into position. Note the depth to which the router is installed in the mount in the picture below. The cable should exit the router as shown. There is no “exact position of the router in the mount as some users will want more tool clearance over the part while other users will want it lower. It can be too shallow, however, which can cause the top of the router to hit the Z motor mount.



### Electronics Box

The Back of the electronics box will be labeled to show what connector needs to be plugged where. The Motors are on the left of the box as viewed from the back, the homing wires, probe, and laser are on the right respectively. Please note that the x and y homing switches share a connection point. The standard position for the electronics box is at the back left of the machine.



## **Congratulations on the build of the Mega V!**

**For tips on start-up and to learn more about operating the machine, check out the Operating and Troubleshooting Guide at <https://millrightcnc.com/wp-content/uploads/2021/08/Operating-and-Troubleshooting-Guide-version-1p00.pdf>**

**Also see [www.millrightcnc.com/resources](http://www.millrightcnc.com/resources) for more information**

**Have questions or comments? Contact [support@millrightcnc.com](mailto:support@millrightcnc.com)**