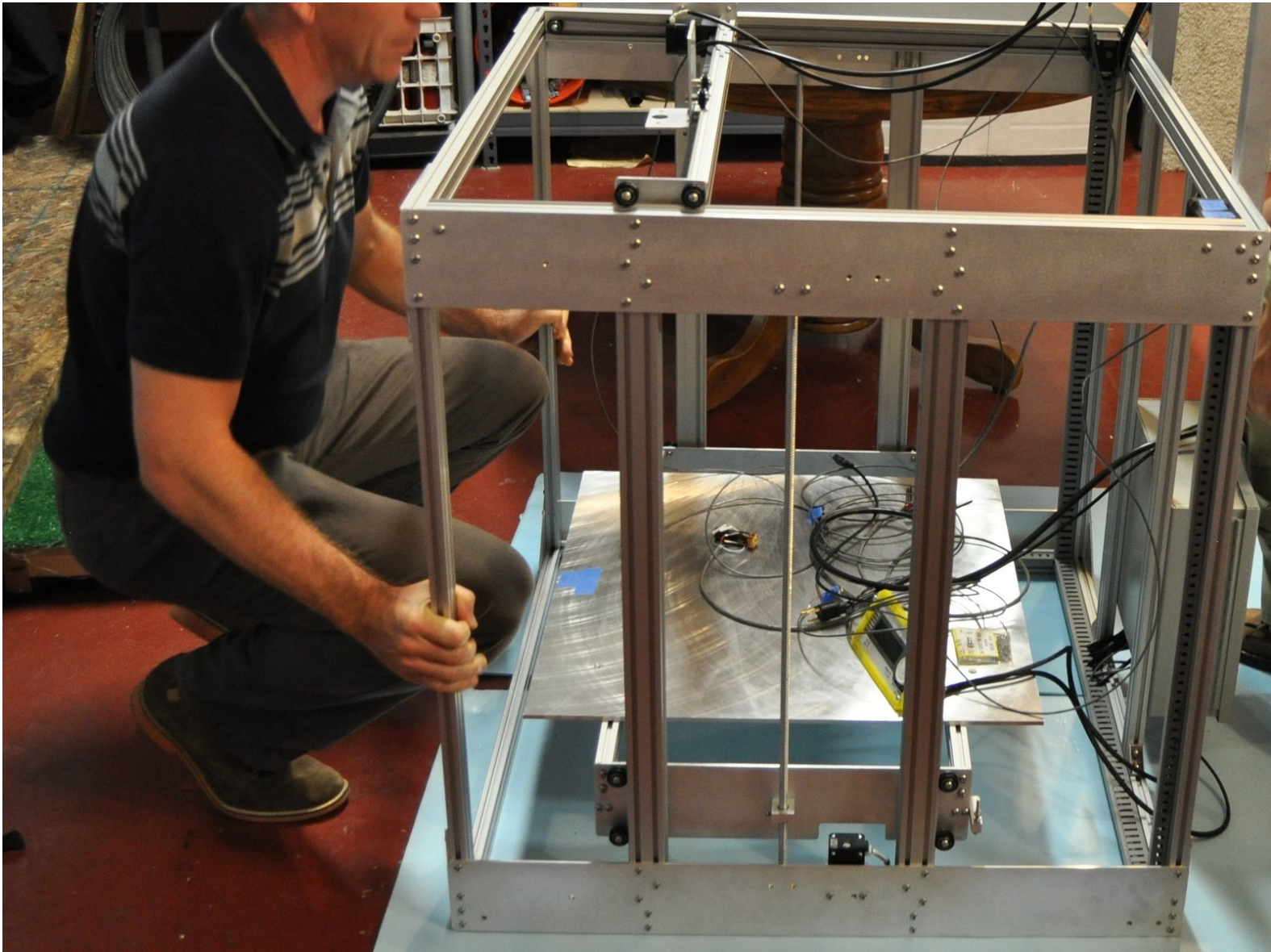


re3D

Assembling Gigabot: "Flatpack"

Your Gigabot was assembled, calibrated, tested, and taken apart for shipping purposes. All you need to do is reassemble it, and you're ready to go!

Written By: Chris Gerty



INTRODUCTION

This guide will help you assemble your Gigabot from a "flat-pack". It is also useful for outlining the steps needed to transport your Gigabot to another location in a vehicle, etc.



TOOLS:

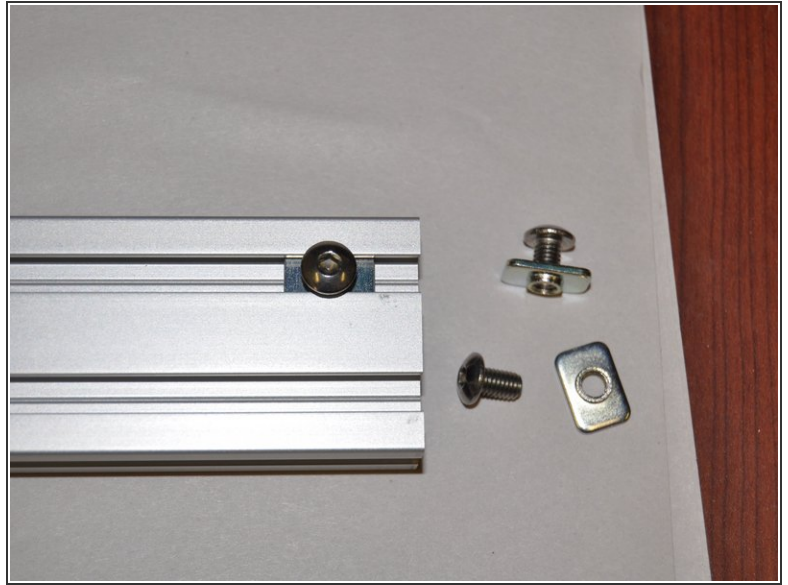
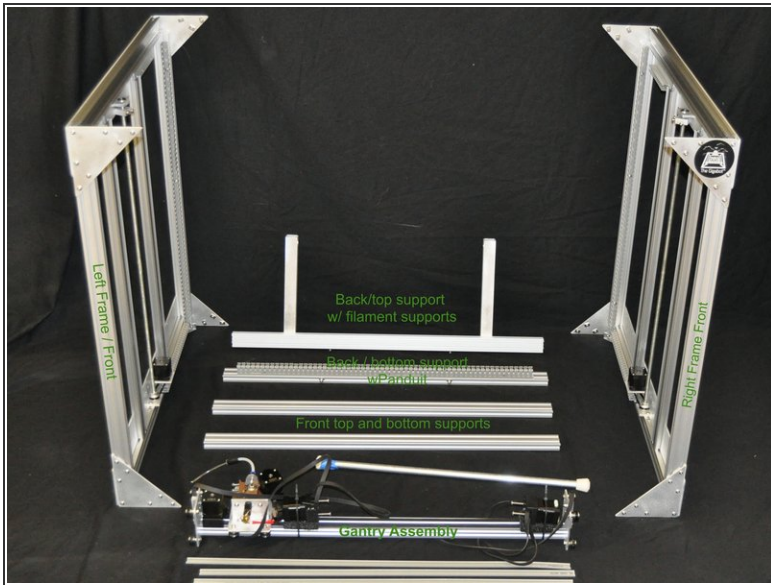
- [Ball-End Metric Allen Wrench Set](#) (1)
 - [8mm combo wrench](#) (1)
 - [Dial Indicator](#) (1)
-

Step 1 — Assembling Gigabot: "Flatpack"



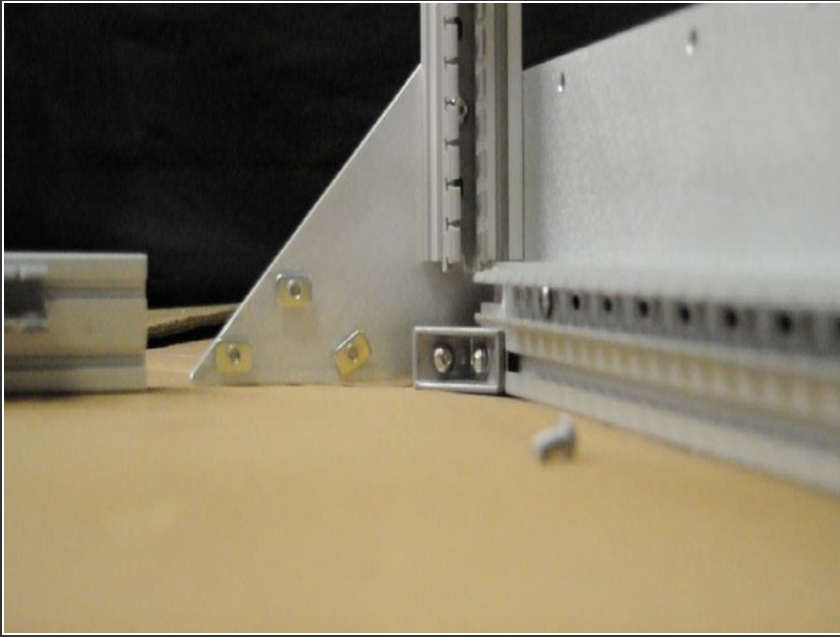
- Box #1:
 - Gantry assembly
 - Bed assembly, filament spool bar, Panduit covers (6) and horizontal supports (4)
 - Side frame assemblies (left and right)
- Box #2:
 - Filament
 - Electronics box
 - Tools and Ancillary Gear (wrench set, 8mm wrench, dial indicator, indicator bracket, spare parts, SD card)

Step 2



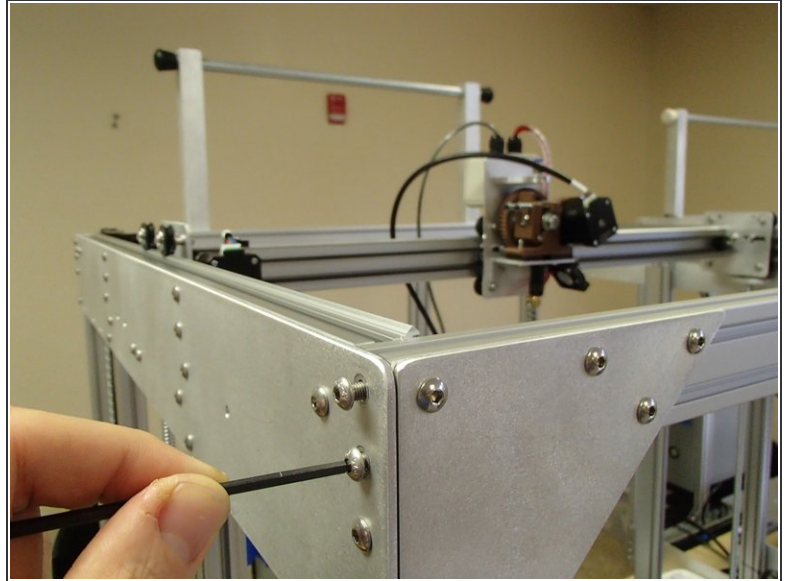
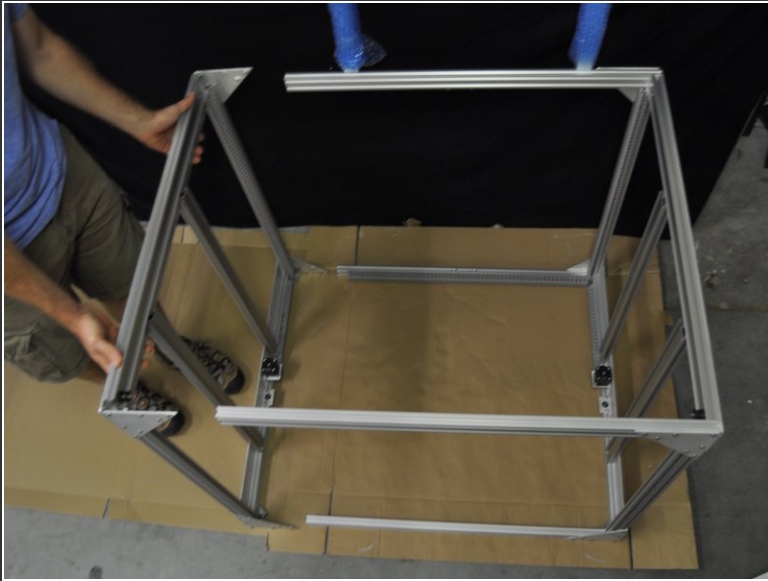
- Remove first side assembly, and 4 horizontal cross-rails from Box #1
- Remove Gantry, bed, and motors from Box #1 and set aside. Then remove second side assembly.
- Become familiar with the function of the "t-nut" and bolt
 - Flat side to t-nut always faces bolt head
 - T-nuts cannot be installed once rails are closed on sides, and therefore must be preloaded in anticipation of other parts later in process
 - In general, leave bolts loose until frame or subassembly is complete, then square everything, and hand-tighten all at once
 - Backing out bolt too far while installed will cause t-nut to detach and slide up and down the rail. Small plastic zip-ties can be helpful in recovering from this situation.
 - Using too long a bolt will cause it to bottom out before becoming tight.

Step 3



- i** *You may need a partner for this step.*
- Affix right side and left side assemblies together. We refer to left and right as you are facing front of the Gigabot. (see picture in Step 2)
 - Stand up the right side (double-check that the motors are behind the threaded rod on either side).
 - Remove M5x12mm bolts from ends of each horizontal support (2 per end), and insert the horizontal supports into right side of assembly. Loosely reinstall M5x12mm bolts.
 - For reference: the horizontal support with filament holder is top-back, support with Panduit wiring tray is bottom-back, other two are for the front top and bottom (identical).
 - If necessary, loosen the M5-bolts to get the t-nuts in square (should go in very easily if the aluminum is aligned)
 - Leave the M5x12mm buttonhead capscrews slightly loose.
 - Square the frame and tighten down bolts

Step 4



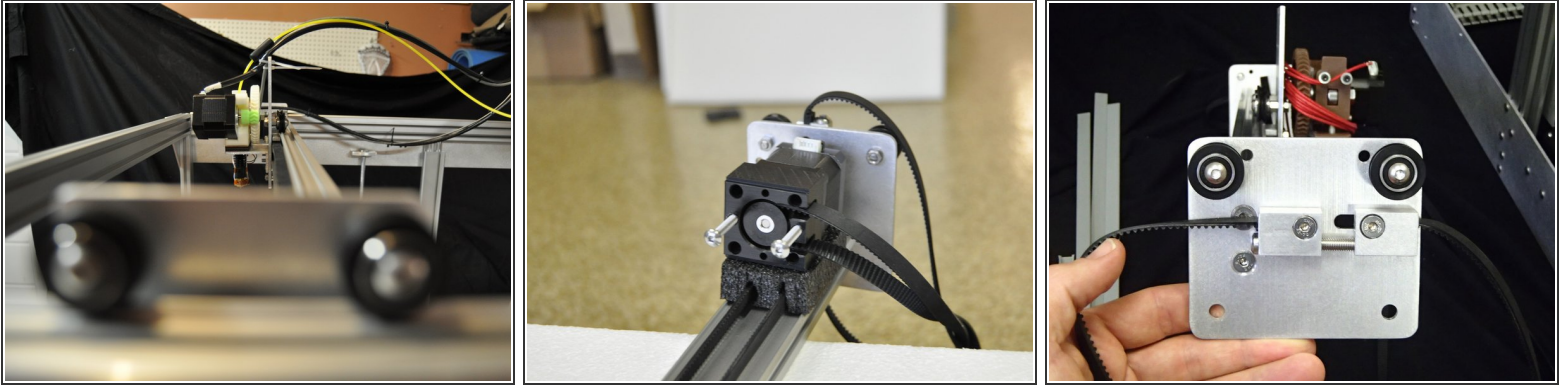
- Once all cross braces are installed on the right side, install the left side assembly onto the cross braces by aligning the t-nuts on all four corners
 - It is useful to keep all T-nuts loose and only slide one at a time over the rail
- After the left side is completely installed, tighten down, but then back off a half-turn, all corner bracket screws
- Square frame
- Tighten only the M5x12mm screws (8) that connect the cross braces to the side assemblies
- It is a sign of good alignment when the end screws can be tightened without resistance

Step 5



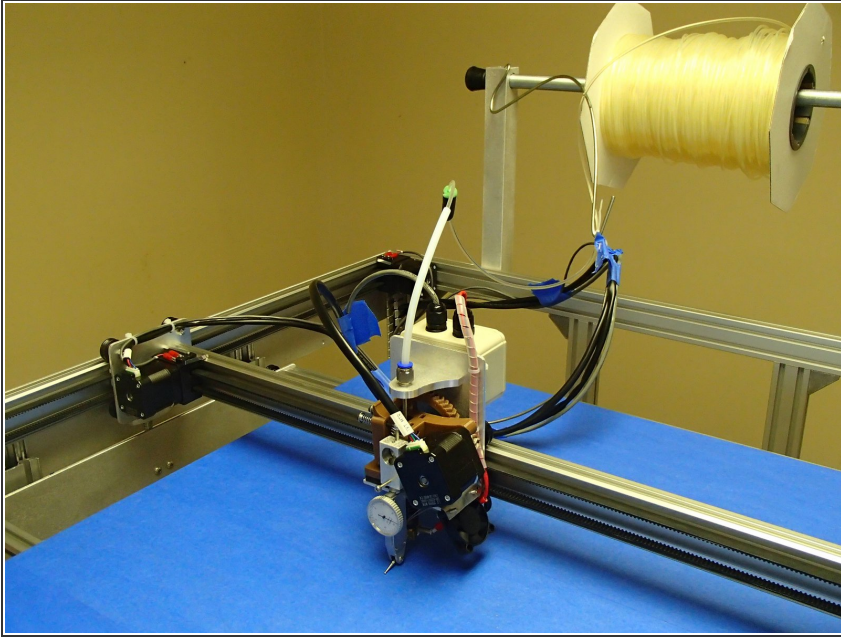
- V-Groove wheel assembly introduction
- Any structure riding on the maker rails requires 2 wheels to restrain that structure.
- To allow for some play and friction adjustment some wheels assemblies include an eccentric spacer. This spacer when turned moves the wheel towards or away from the rails
- See movie for more information on V-Groove wheels

Step 6



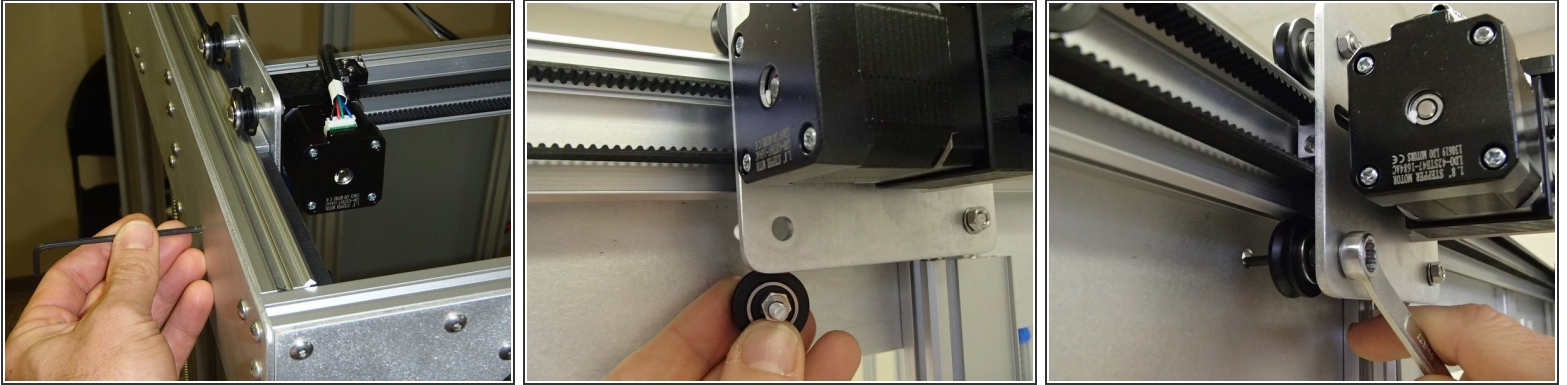
- Installing the gantry
- The gantry assembly includes the belts, X-axis support structure, trolley, y-axis motors (2), print head and X-axis stepper motor for the extruder. Additionally, there is belt tensioner on the ends.
- Prepare the gantry for assembly on to the frame
 - Remove all protective packaging. Carefully cut zip ties restraining the Y-Motors (2) from the support rail. Remove and discard the foam support used to package and protect the belt. (picture 2)
 - Remove lower (eccentric) wheels. 2 from each side plate (picture 3)

Step 7



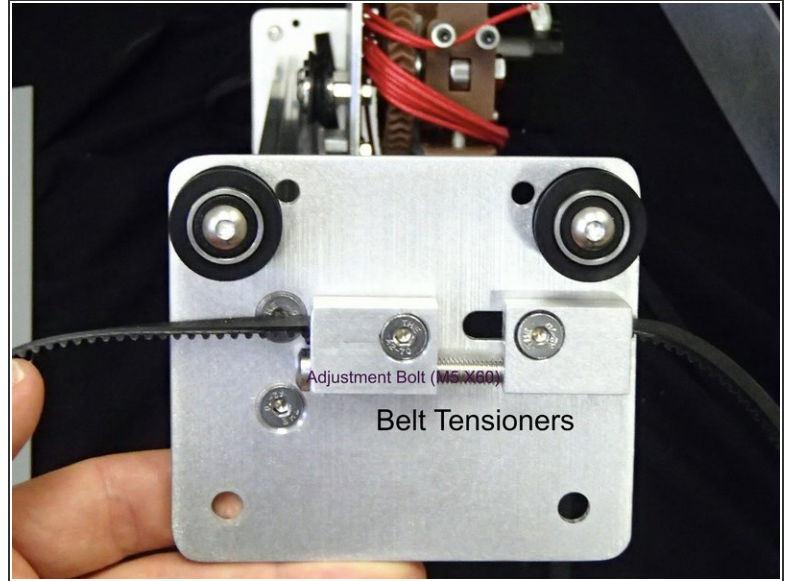
- Place the gantry assembly on the frame, with the top V-groove wheels on the gantry side plates riding on the left and right maker rails on the frame. Let the Y-axis motors hang down for now
- Be careful to not let the Y-Axis motors (2) to drop and swing into structure
- The extruder assembly should be facing the front of the Gigabot

Step 8



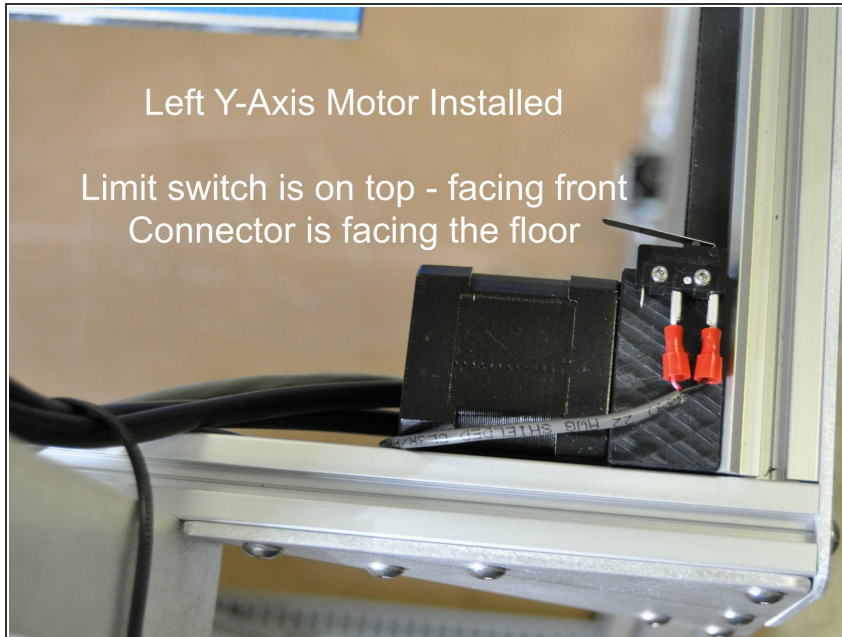
- Reinstall the eccentric V-groove wheels on the bottom of each gantry side plate. A sight / access hole on each side plate is provided to allow for insertion of allen wrench to tighten the wheels Use the front access /sight hole to tighten
- Belts will be loose and the gantry will have some play
- Prior to putting lower wheels on make sure lower (loose) part of belt is between the wheels and the tensioner that is restraining the top part of belt (see pictures)
- Getting the wheel in place with rail in the V-groove and the eccentric spacer seated in the side plate hole may require clocking the eccentric spacer to maximize the wheel gap (see second picture for clocking of eccentric spacer)
- You can loosen the top wheels if needed to make adding bottom wheels easier.
- Adjust eccentric spacer to check overall fit and friction between all 4 V-groove wheels and the rails on each side. You will know that you have the right tension when you lift the gantry assembly and don't feel any play AND when you roll the wheel the whole belt moves

Step 9



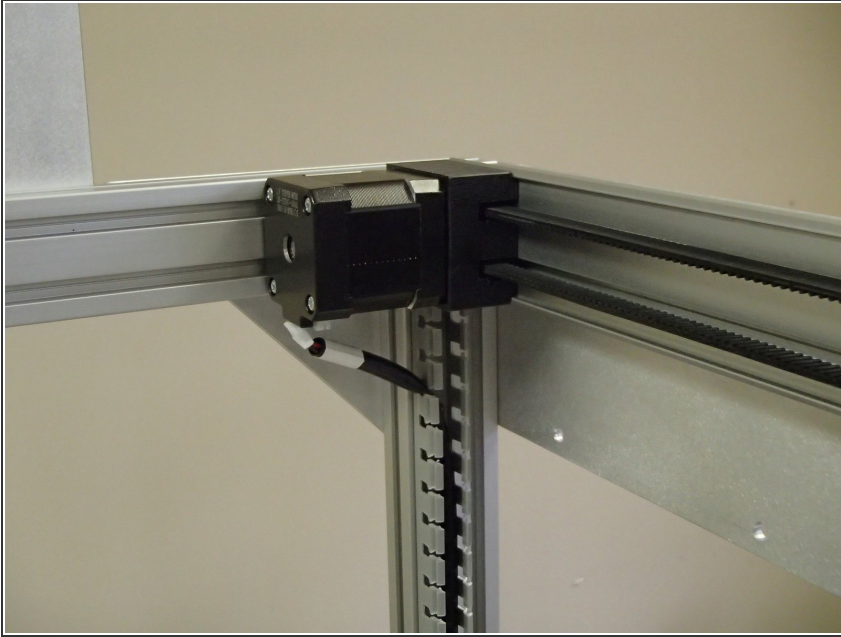
- Install Y-axis belts. With the gantry structurally in place now it is time to install the belts
- Wrap the belt around the idler pulleys, 1 on each side of the frame, near front near front.
 - Teeth on belt should be facing inward
- As shipped the tensioner on the belts should be loose allowing for the next step to install the Y-axis motors (inclusive of belt and motor mounts)

Step 10



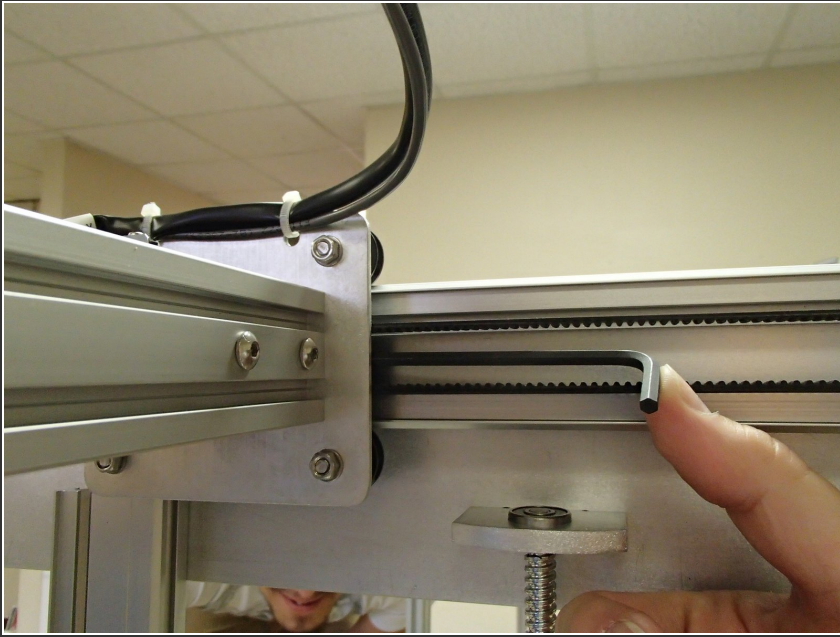
- Attaching the Y-Axis stepper motors to the frame
- Remove the 2 M5 X 45mm screws from each motor
- Each motor will be installed in the rear left and right corners with the holes used to hold the M5 X45 bolts now facing the left and right support rails.
- Left Motor Installation - Per picture attach motor in back corner of frame. Look for 2 holes on side plate and align with holes in motor pulley mount. Push bolts thru side plate and initially tighten by hand. Limit switch should be facing up and motor electrical connector should be facing down
- Picture shows electrical cables attached and limit switch cables. Electrical cables will be connected in a later step.

Step 11



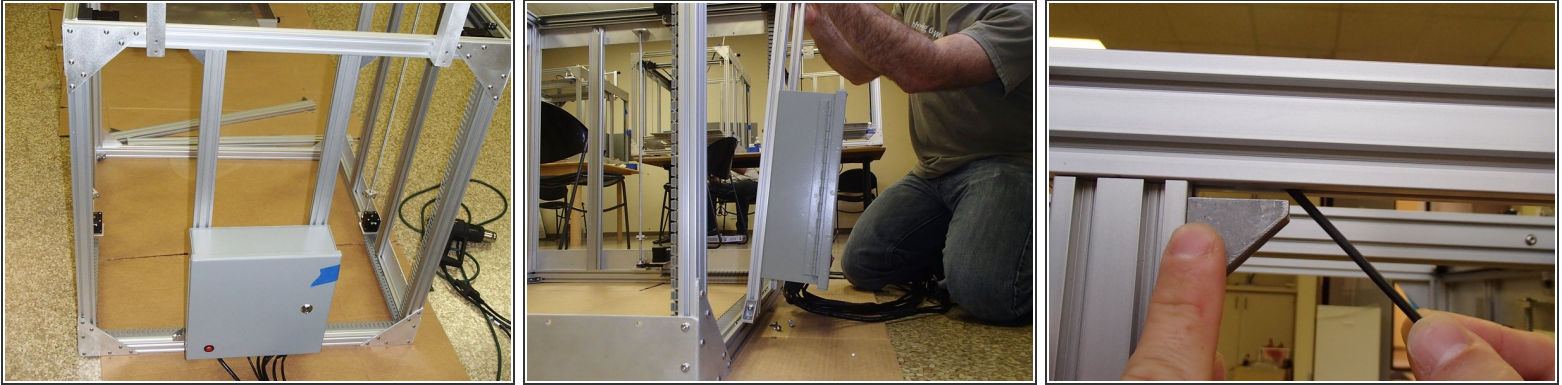
- Right Motor Installation
- Per picture attach motor in back (right) corner of frame. Motor mount should fit snug into the side rail Look for 2 holes on side plate and align with holes in motor pulley mount. Push bolts thru side plate and initially tighten by hand. Motor connector should be facing down (no limit switch on this motor)
- Picture shows electrical cables attached. Electrical cables will be connected in a later step.

Step 12



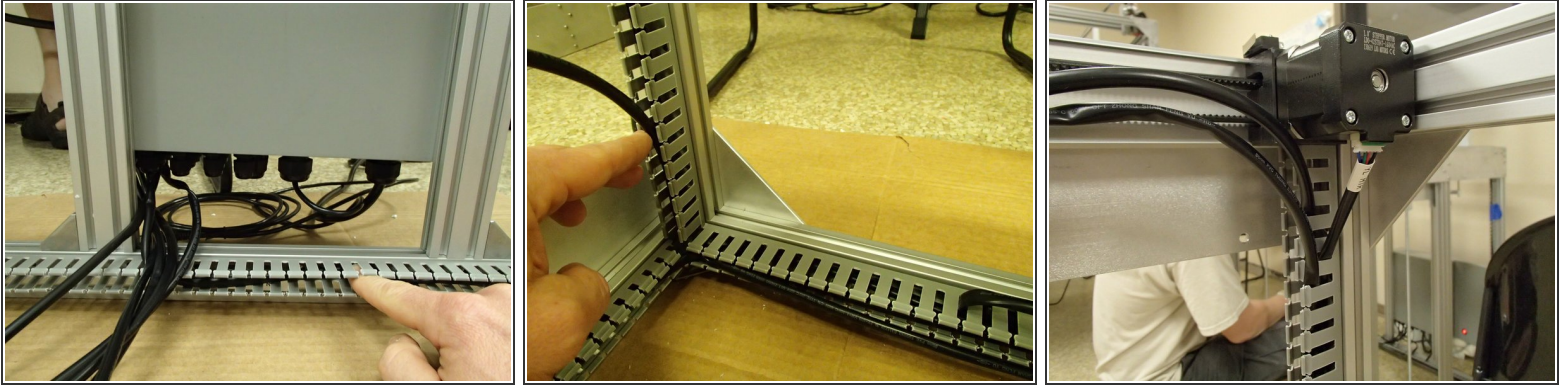
- Tension the Y-Axis belts
- A **4mm** Allen wrench is used to tension the belt by accessing the tension bolt and turning clockwise to tighten.
 - Belts should be taught but not overly rigid
 - The tightness of the belts helps control how much friction – if you over tighten it, then the belt will constrict and you will feel it
- Move gantry back and forth across entire Y axis range. Observe / feel for abnormal friction or torquing on the belts
- Perform final check of gantry fit. Carefully pull up and push down on rail to look for movement at each side of the gantry. It should not wiggle up or down
 - If still loose, tighten up the top wheels and then using the access hole for the bottom wheels – get the nut barely snug and then adjust / turn eccentric spacer until you feel the wheel become snug against the rail

Step 13



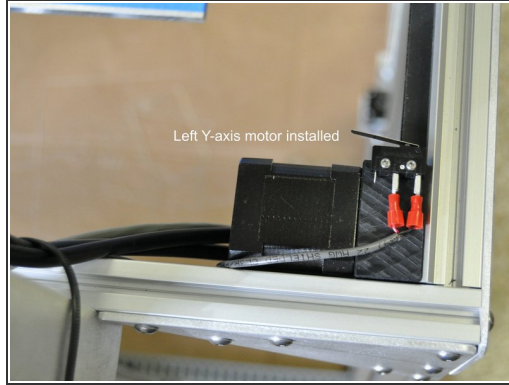
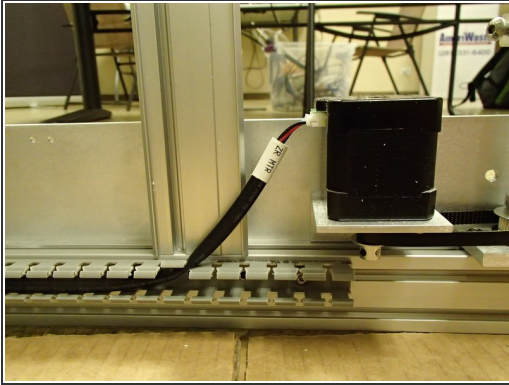
- Attaching the power assembly
 - Preparation. Power box is preassembled with rails and right angle cleats (outboard of rails on top and bottom). Make sure door on box is secured. On frame remove M5 bolts (2 on rear rails)
 - As delivered the top corner cleats should be slightly below the end of the rails to allow for a clean rotation into place
 - With help position electronics box onto the back panel of the Gigabot. Right angle cleats will fit into the rail. Fit in bottom cleats, then rotate assembly to align support rails to top rail While holding power assembly in place, align T-nuts with the bolts – (tip... use allen wrenches to slide T-nuts into position)
 - With T-nuts and bolts aligned on bottom frame rail, secure the bolts (but do not tighten). Then loosen adjacent bolts on cleat going into the power assembly upright. Tighten bolts into bottom frame rail, allowing each cleat to travel down. Finally tighten adjacent bolts into power support rail.
 - Repeat step above for upper angle connectors

Step 14



- Connect the motor, extruder and limit switch cables
 - Protuding from the power box is 5 motor controller cables (YR, YL, ZL, ZR, X), 3 limit switch cables (X, Y, Z; 2 strands), Head wire (single grey bundle with 6 strands), USB and power plug. All cables should be labelled.
- Pull all cables, except for power plug and USB underneath the power box into the central part of the frame.
- All cables should be placed into the Panduit (1 max per tooth gap) and run left or right to intended location. Facing the front of the frame (back of the power box) ...
 - Left: X LMT, Y LMT, Head, Ext MTR, YL MTR, ZL MTR, and X MTR
 - Right: Z LMT, YR MTR, and ZR MTR

Step 15



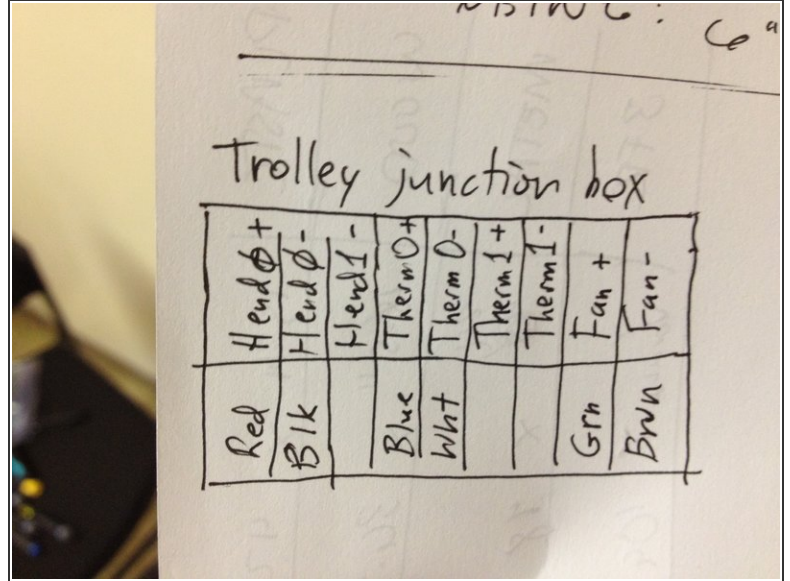
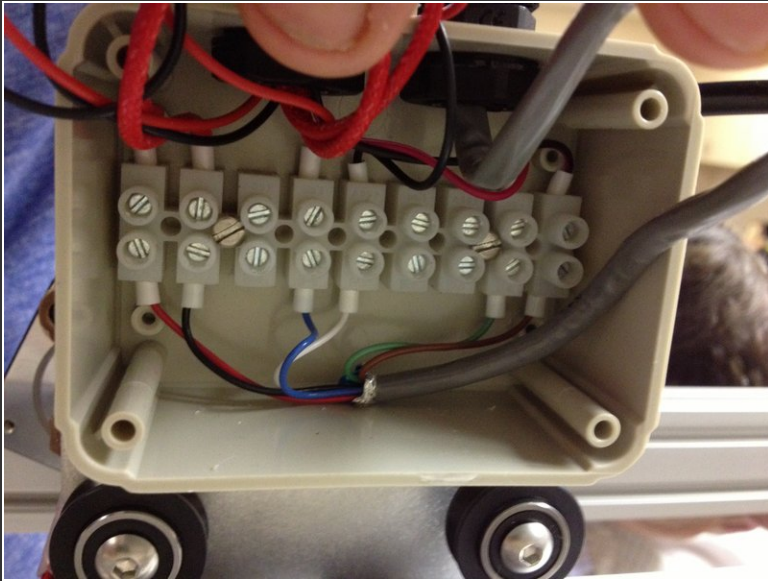
- *Making connections continued ...*
- Motor controller (black, 6-wire) - connectors for these motors are keyed. Make connection and ensure wire bundle is firmly tucked into the Panduit.
- Limit Switch Connections (grey, 2-wire)
 - Use labels to identify location. X and Y limit switches are located on motor mounts and Z is located inside right side panel
 - For all limit switch connections the red wire is connected to the center post (of 3 available). The black wire connects to the post across from the switch arm (see pictures)
 - For the Z -limit connection make sure the wire placed so that it will not interfere with the gantry wheels on the right side (see picture)

Step 16



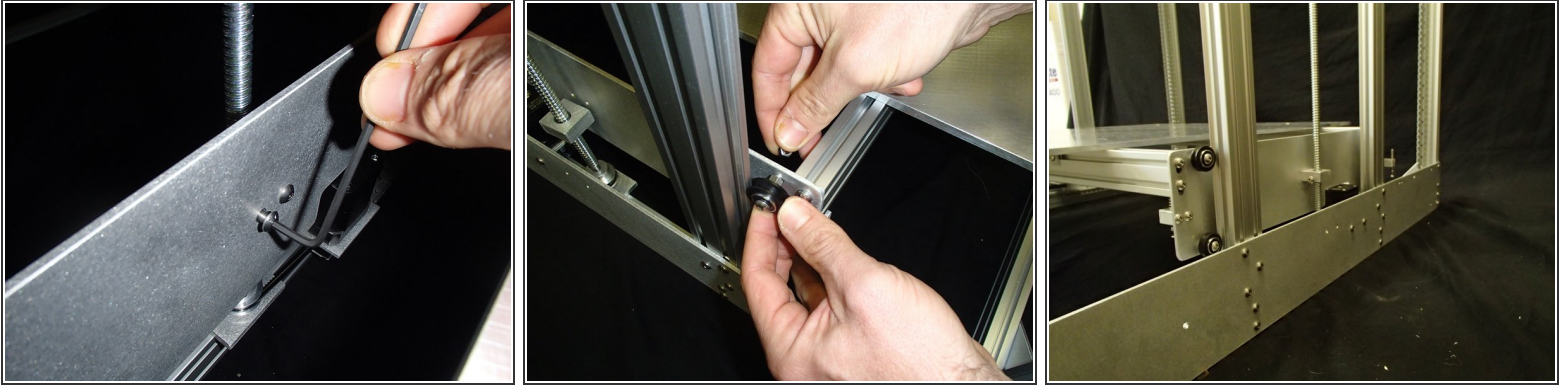
- Cover the Paduit with covers provided
 - Tips – be sure to place one side of the Panduit below the teeth and carefully snap into place
 - The longest 2 strips of Panduit go on the verticals of the frame

Step 17



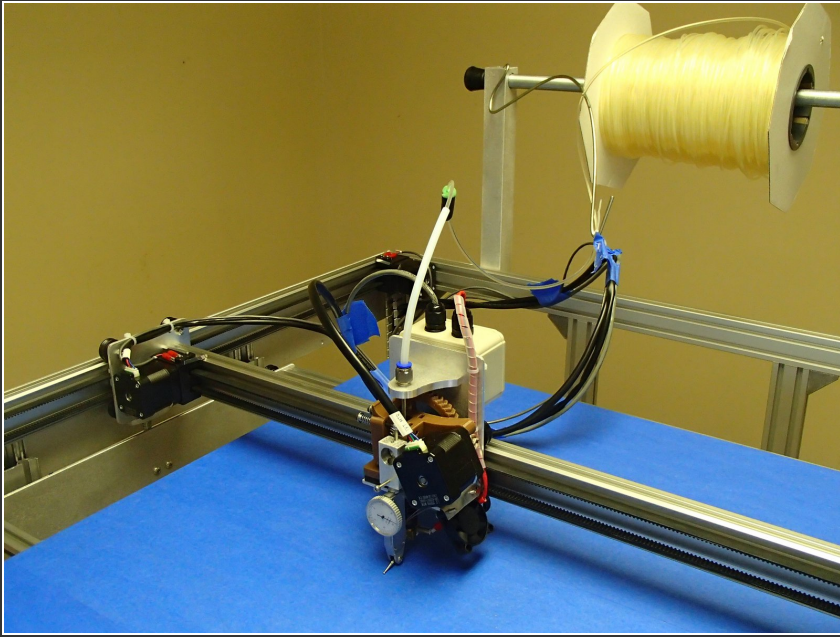
- Wiring the extruder junction box (grey wire bundle installation)
 - terminal block / junction on the back of the printhead assembly...remove the back case/ to connect the 6 colored wires.
 - Put all 6 wires through the nut and then cable grommet that adjoins the terminal case, feed them through one at a time
 - Once all 6 wires are inside the box, loosen the 2 screws holding the junction box, and remove the terminal block out so that you have access to all the terminals – consult the enclosed wiring diagram
 - USE SMALL Flathead SCREWDRIVER to tighten
 - reassemble the junction, push wires back in box, screw cover back on box and tighten down the nut / grommet to constrain the grey wire

Step 18



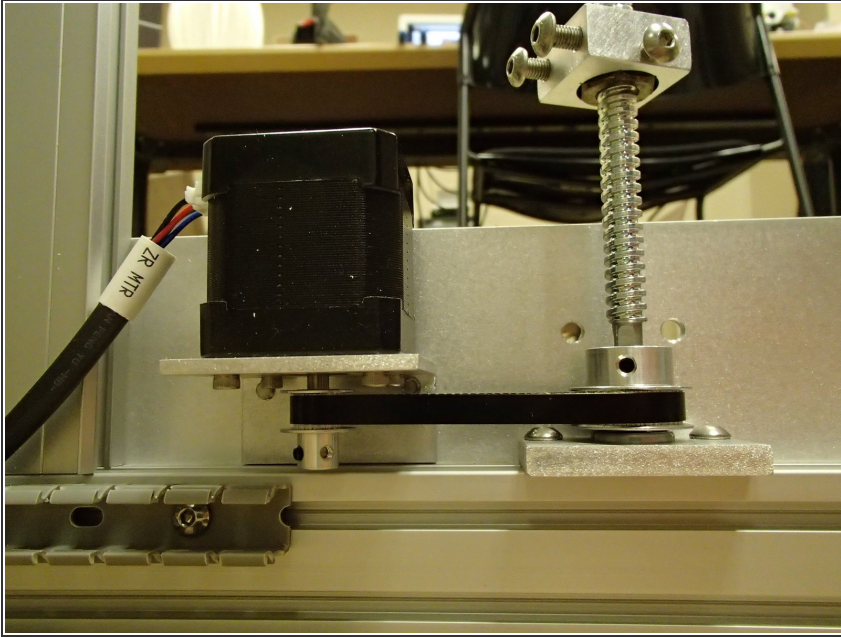
- Installing the bed
 - slide the bed in from one side and place in the center of the frame with the front facing forward (as marked)
 - using 2 M5x12 buttonhead screws per side (4 total) attached the bed side brackets to the z-lift blocks of the frame
 - using wheels kits (2 round on back and 2 eccentric on front per side – 8 total wheel kits) – place the guide wheels on the bedside plates
 - with the wheel kits on, adjust the level of the bed right to level to reduce the need for leveling later, you can do this by twisting z-lift screws (large vertical screws in the ‘bed walls’) or level the lift blocks before installing the bed
 - find the t-nut on the back rail of the bed and attach the z-lift bracket using 2 M5x12 bolts
 - this is the bracket that manually touches the limit switch when the bed is raised vertically and bolt into the side plate

Step 19



- Filament Holder Installation
 - Tighten T-nuts on the 2 filament support posts
 - Place Filament on rod and insert rod into place. Use rubber ends to secure in place. (tape on ends may be necessary to keep the ends from coming off)
- As packaged a piece of filament was left going into the extruder. This was done to allow the use to see how the filament was fed thru the cleaning filter and into the extruder mechanism
- Remove the old filament and insert new filament into the extruder. Turn the large gear ?? direction to move the filament down until it stops at the heated extruder

Step 20



- Perform 1 more check for tension in all belts.
- Look to see that belts are firmly seated and not moving laterally through the entire range of either the gantry (for the Y-motor belts) and for the extruder (for the X-motor belt)
- Final check of belts on Z-rods
 - Instruction on how to adjust
- Lubricate the Z-rods
- Ensure frame is square again and tighten down all bolts.
- Place 3" blue painter tape on bed frame. This will allow for easier removal of prints extra plastic that has hardened on plate. Ensure tape does not overlap and seams are minimized

Have questions? Need help? Email support@re3d.org