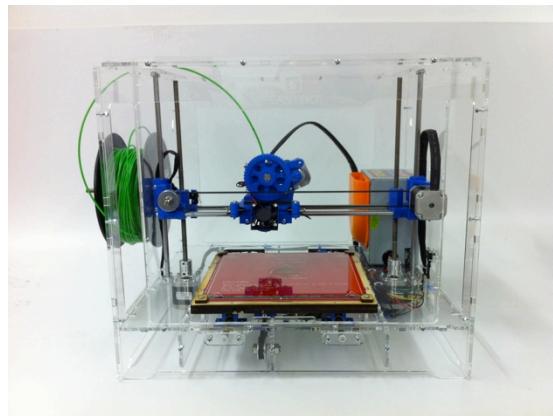




# Mendel 3D Printer Assembly

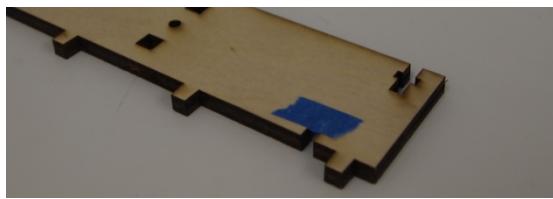
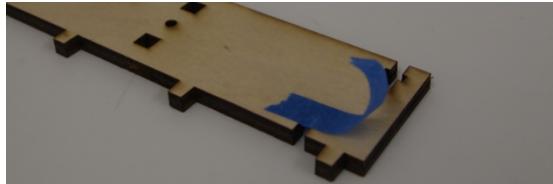


## Section 1 Frame Assembly

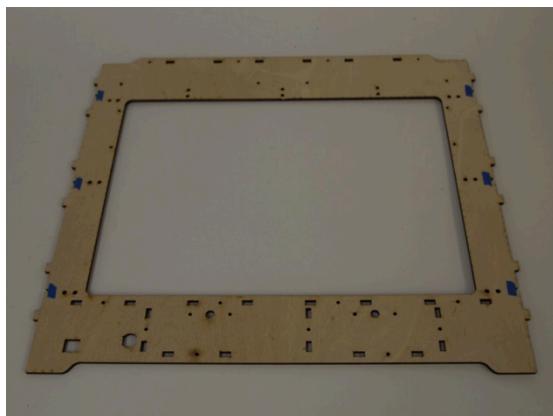
# Step 1: Add painters tape and nuts to the panels

**Attention:** Place painters tape on one side of the “T” shaped slots to hold the nuts in place. Add the hex nut from the opposite side. Place the tape on the side indicated in the pictures below so that later you can have easier access to remove the tape.

**Note:** Make sure that the tape does not cover any holes or overlap any edges.



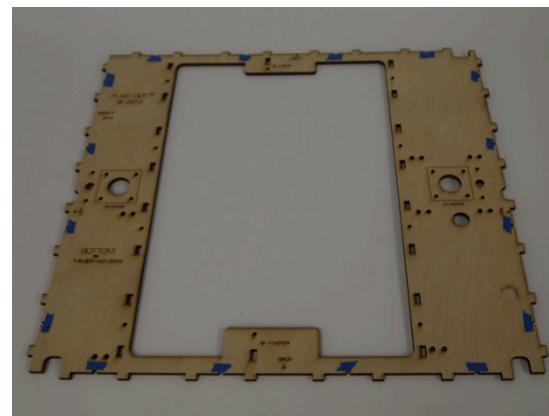
Use a blade to cut strips of tape about  $\frac{1}{4}$ " thick, take the strip and apply on top of the T-slot, then hold the tape down with your finger and snap off.



Back panel – Cover 6 T-slots as shown and add 6 hex nuts on the opposite side. The tape goes on the opposite side as the engraving



Top panel – Cover 16 T-slots as shown and add 16 hex nuts on the opposite side. The tape goes on the opposite side as the engraving.



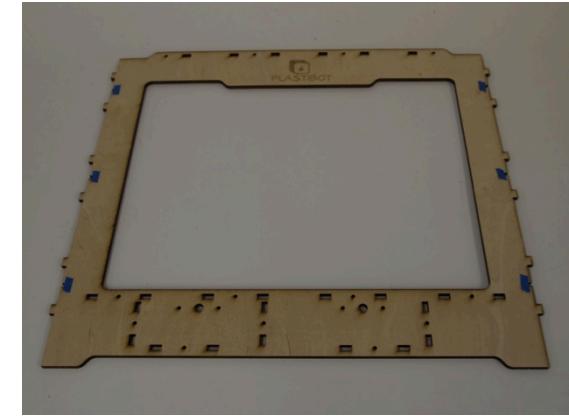
Bottom panel – Cover 16 T-slots as shown and add 16 hex nuts on the opposite side. The tape goes on the same side as the engraving.

## Parts Needed

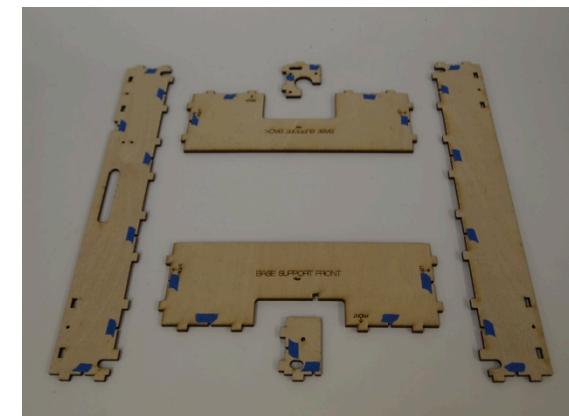
- Laser Cut Panels – Front, Back, Top, Bottom, Y-motor, Y-idler, Base-Support-Left, Base-Support-Right, Base-Support-Front, and Base-Support-Back.
- M3 Hex nuts (69 pcs)

## Tools Needed

- Masking tape
- Knife



Front panel – Cover 6 T-slots as shown and add 6 hex nuts on the opposite side. The tape goes on the same side as the engraving.



Right and Left Base Support, Y-idler and Y-motor (tape opposite side of engraving). Front and Back Base Support (tape engraved side)

Total: 25 T-slots covered, 25 hex nuts

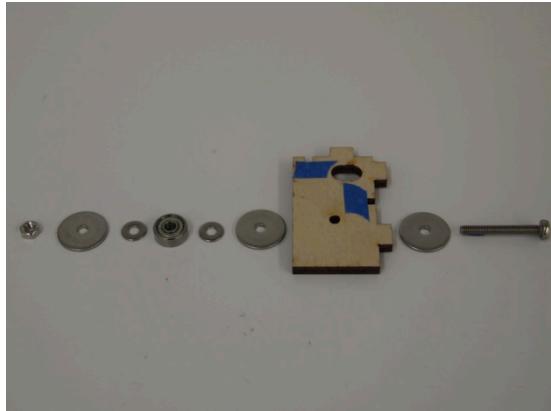
## Step 2: Y-idler Assembly

### Parts Needed

- M4 x 30mm Screw (1pcs)
- 6-32 Fender Washers (3 pcs)
- 6-32 Washers (2 pcs)
- 624ZZ Ball Bearing (1 pcs)
- M4 Hex Nut (1 pcs)
- Laser Cut Panel – Y-idler

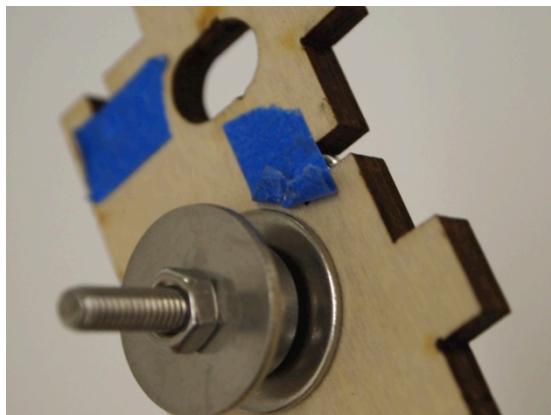
### Tools Needed

- Visegrip plier
- Philips screwdriver

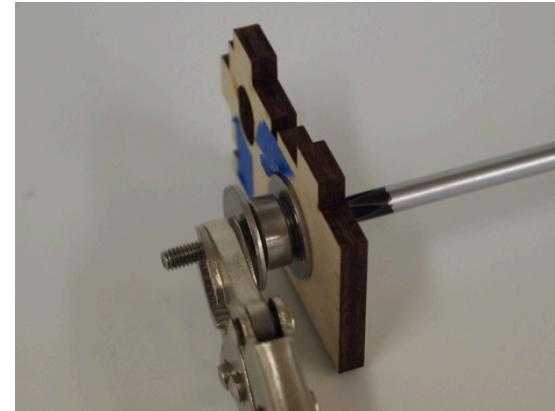


Locate the following parts and place them on the M4 screw in the order shown right to left.

**Note:** The “rounded” sides of he 6-32 fender washers should be facing the ball bearing.



Make sure tape is not beneath the fender washer



Use pliers and a screwdriver to tighten assembly together. **Note:** The bearing should be on the non-engraved side of the Y-idler.



This is how it should look.

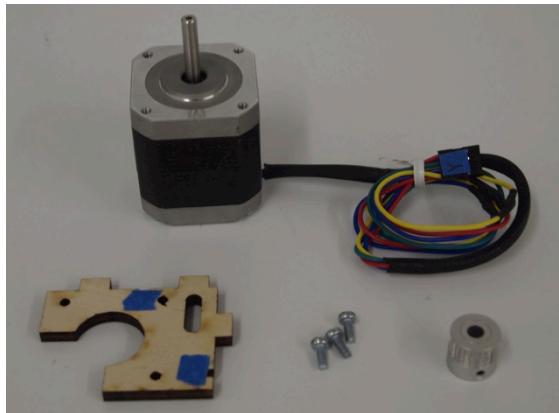
## Step 3: Y-motor Assembly

### Parts Needed

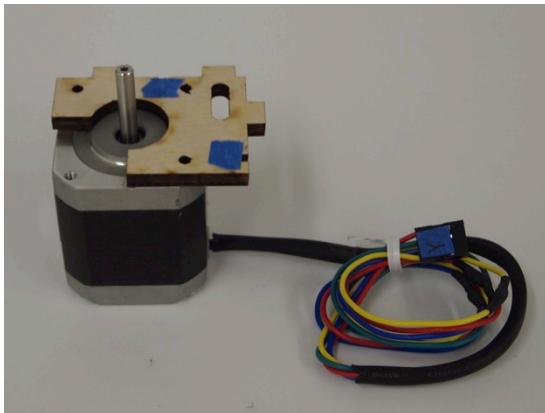
- M3 x 8mm screws (3 pcs)
- Small Pulley (1 pcs)
- Y-Stepper motor (1 pcs)
- Laser Cut Panel – Y-motor-mount
- 6-32 Fender Washer (1 pcs) *use for alignment*

### Tools Needed

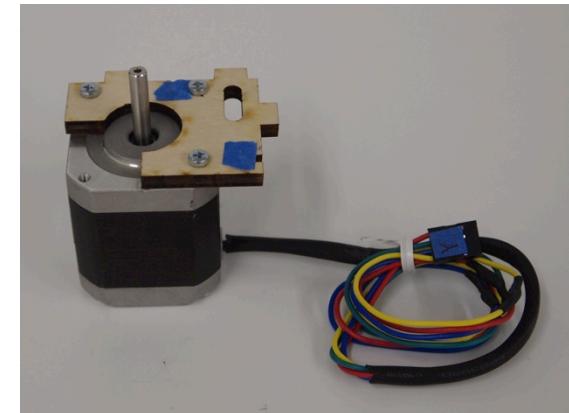
- Philips screwdriver
- Allen key #1.5 (Metric)



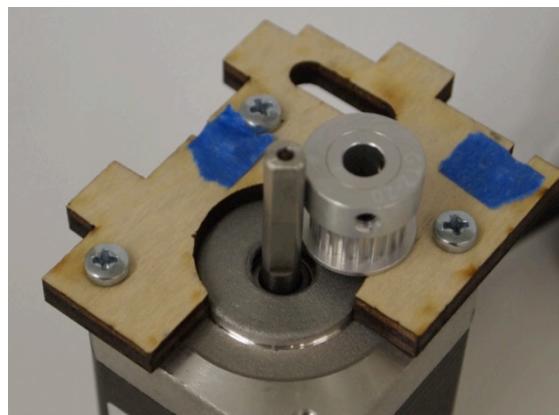
Locate the parts above.



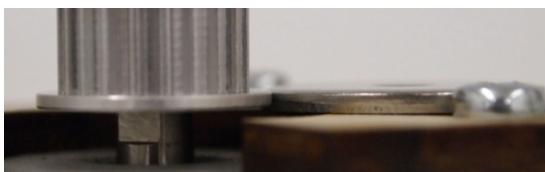
Place the laser cut part on top of motor. Make sure the masking tape faces up and the big slot is in the same side as wire leads



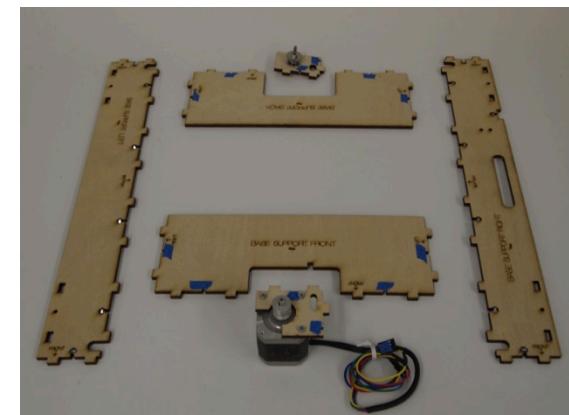
Place 3 screws and tighten. Make sure the tape is not in the way.



Align flat on motor shaft with setscrew on pulley



Place a 6-32 fender washer on top of the Y-motor-mount. Align inner lip of the pulley with the top of the washer. Use allen key to tighten set screw on flat side of motor shaft.



This is how it should look. You will need this parts for the next step.

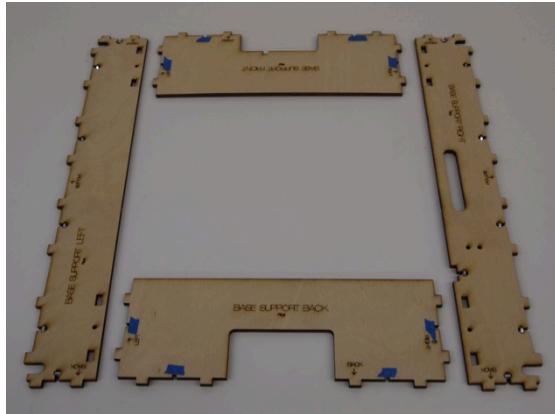
## Step 4: Base Support Assembly

### Parts Needed

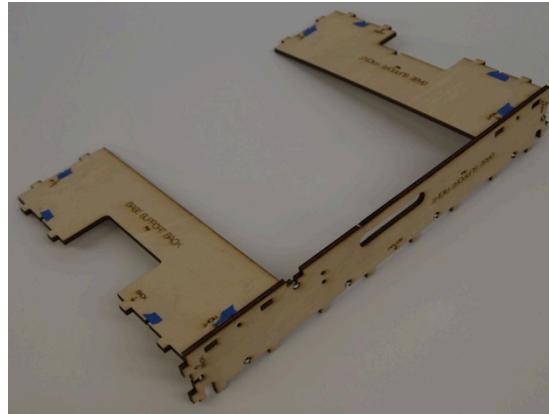
- Laser Cut Panels – Base-Support-Right, Base-Support-Left, Base-Support-Front, Base-Support-Back.
- M3 x 12mm screws (4 pcs)

### Tools Needed

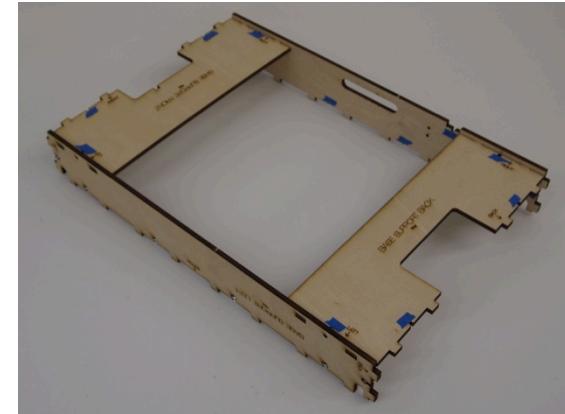
- Philips screwdriver



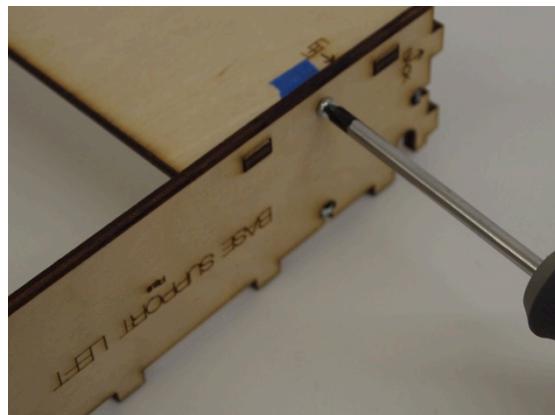
Locate Base-Support-Right, Left, Front, and Back



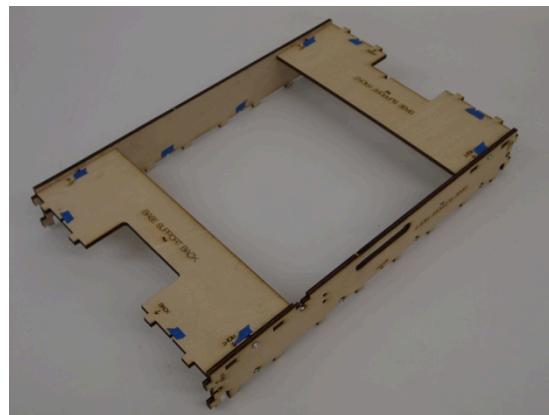
Insert the Front and Back Base Supports into the Right Base Support (notice the Back Support is by a notch in the Right Support and that the engraving are pointing outwards).



Attach the Left Base Support



Insert 2 M3 x 12 mm screws into each side and tighten for a total of 4 screws.



This is how the Base Support Assembly should look.

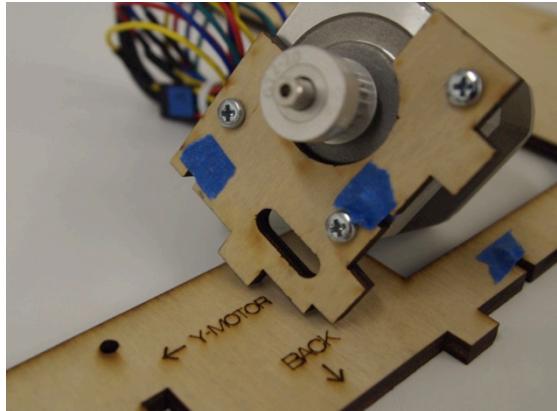
## Step 5: Base Assembly

### Parts Needed

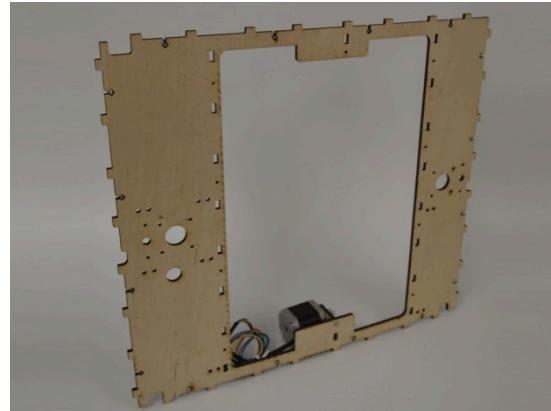
- M3 x 12mm screws (2 pcs)
- Laser Cut Panels – Bottom.
- Y-idler assembly
- Y-motor assembly

### Tools Needed

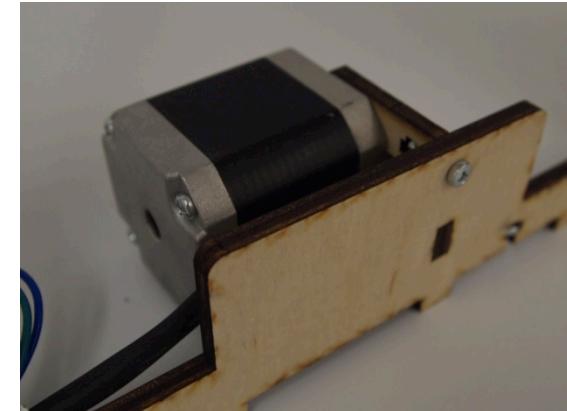
- Philips screwdriver



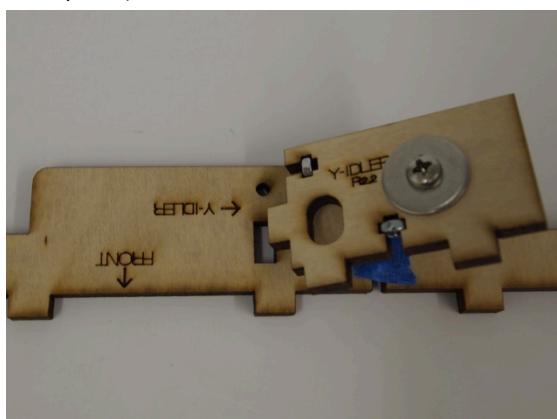
Place the Y motor assembly on the Bottom panel as shown. Make sure to insert it on the right side (marked as “Y-MOTOR” on the base panel) and ensure the tabs face outside.



Secure the Y motor assembly using one M3 x 12 mm screw as shown on this and the next picture



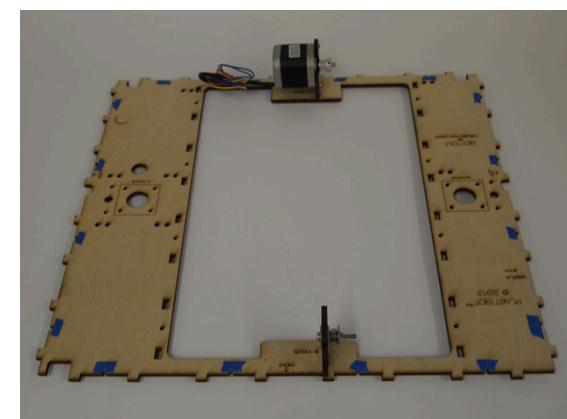
Attach the Y motor as shown.



Place the Y-idler assembly on the Bottom Panel as shown. Make sure to insert it on the right side (marked as “Y-IDLER” on the base panel) and ensure the tabs face outside.



Secure the Y idler assembly using one M3 x 12 mm screw as shown above



This is how it should look after completing this step. Note how the pulley and the ball bearing are on the same side (pointing towards the left side)

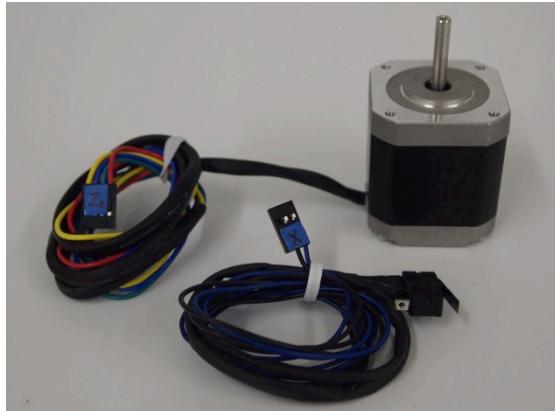
## Step 6: Base Assembly (cont.)

### Parts Needed

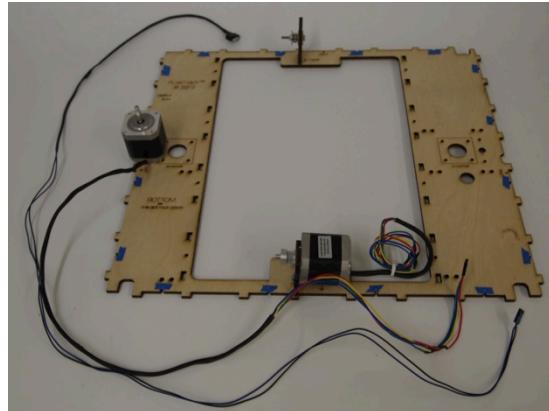
- Base Assembly.
- Z<sub>2</sub> motor Assembly
- X Endstop

### Tools Needed

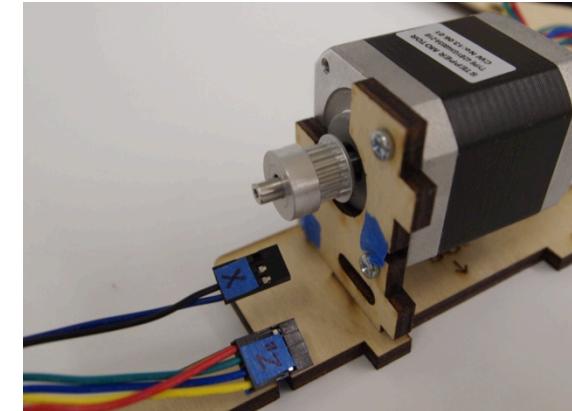
- Your hands



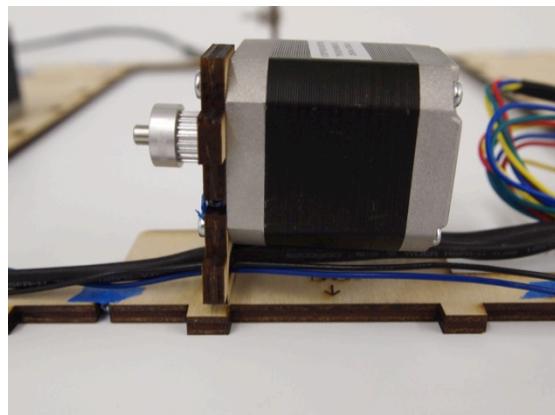
Locate the Z<sub>2</sub> motor and X endstop.



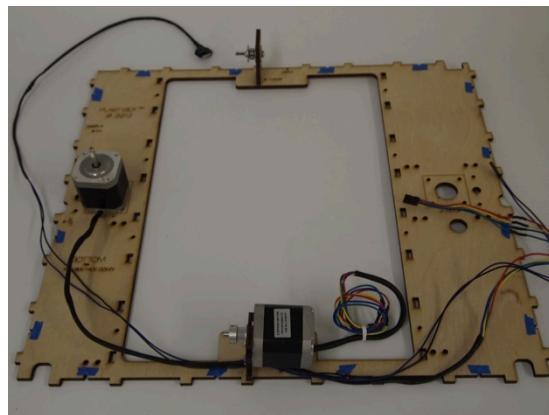
Place the Z<sub>2</sub> motor and X endstop next to the "Z<sub>2</sub> motor" label on the Bottom panel.



Take the 4 positions and 2 positions connectors from the Z<sub>2</sub> motor and X endstop and insert them into the slot underneath the Y motor assembly.



Pass the wires thru and all the way to the other side as shown here and on the next picture.



This is how it should look.

## Step 7: Base Assembly (cont.)

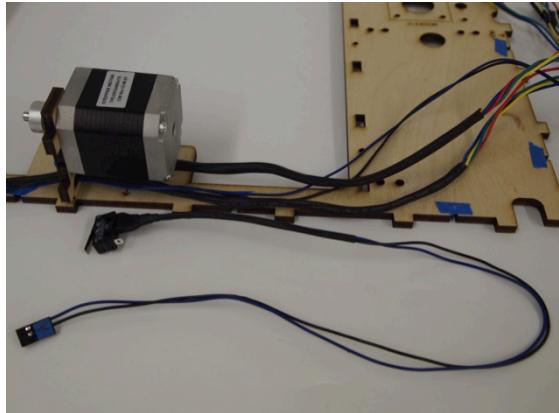
**Attention:** This step will involve wire placement read all parts of step before starting.

### Parts Needed

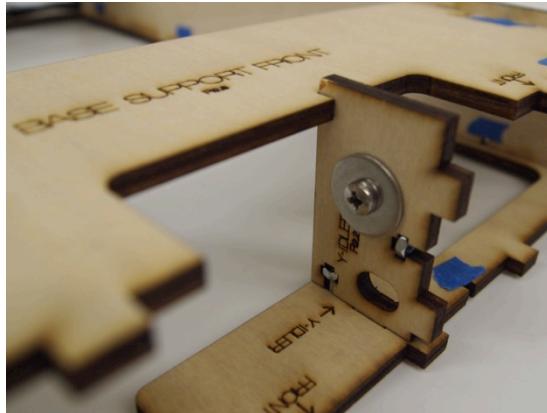
- Base Support Assembly
- Base Assembly
- Z<sub>2</sub> Motor
- X Endstop
- Y Endstop
- M3 x 12 mm screws (8 pcs)

### Tools Needed

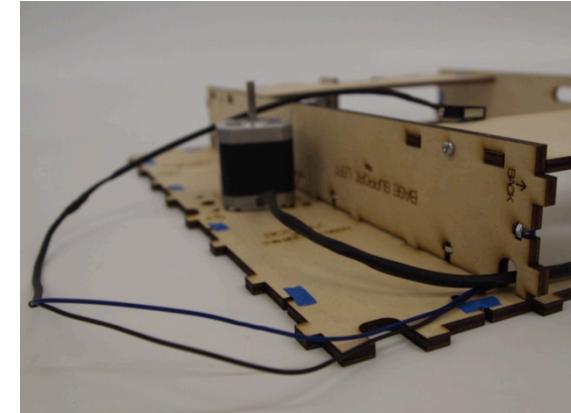
- Philips screwdriver



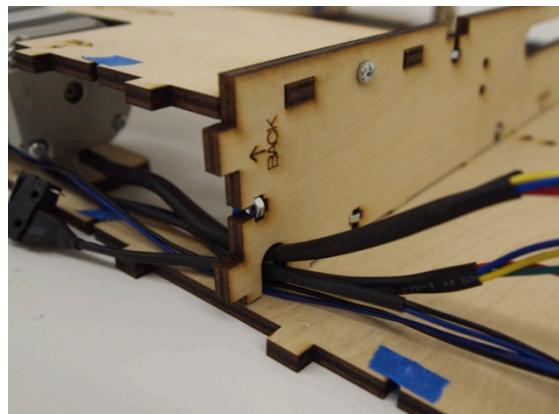
Place the Y endstop next to the Y motor on the Base assembly



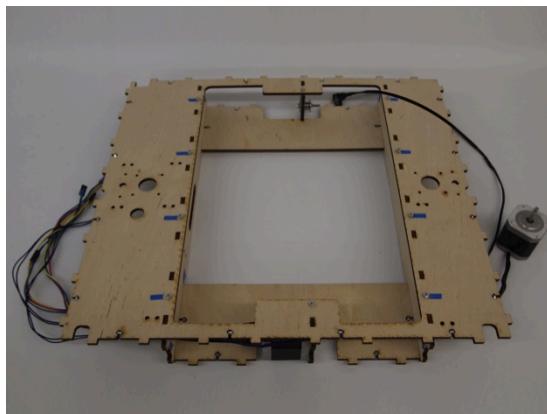
Attach the Base Support Assembly. Notice that there is a notch in the Front Base Support, this is where the Y-idler will fit in.



Make sure that the Z<sub>2</sub> motor and X endstop wires are going through the not chat the back of the Left Base Support.



Make sure that the Z<sub>2</sub> & Y motor wires and the X & Y endstop wires are going through the notch at the back of the Right Base Support.



Flip the Base Assembly over. Insert and tighten 8 M3 x 12 mm screws indicated by the blue tape in the picture above.

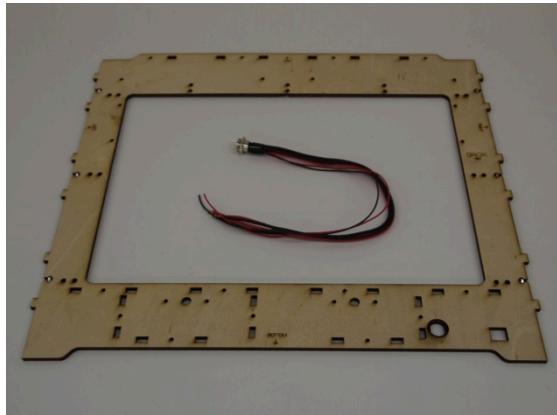
## Step 8: Frame Assembly - Back Panel

### Parts Needed

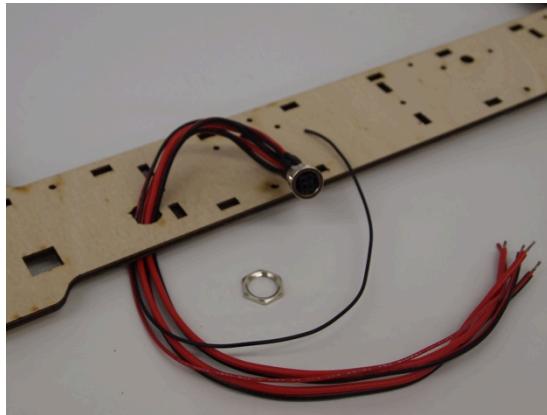
- Laser Cut Back panel
- Power Jack

### Tools Needed

- Visegrip Pliers



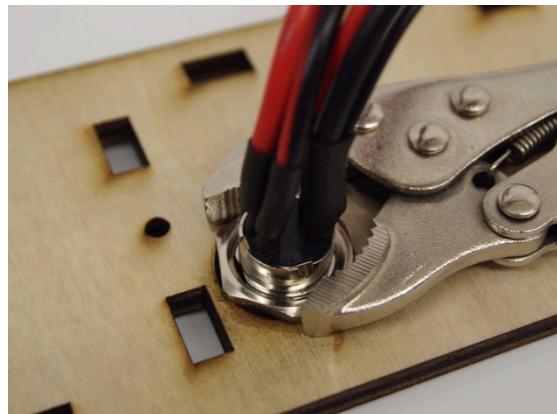
Locate the Back Panel and the Power Jack



Remove nut from the Power Jack and insert all wires through the hole at the bottom of the Back Panel on the non engraved side.



Pull the wire until the metal is flush with the wood. **Note:** The larger notch in the Jack should be facing the top of the printer



Thread the wires through the nut that came off of the Jack and tighten with a pair of visegrip pliers until metal holds flush.

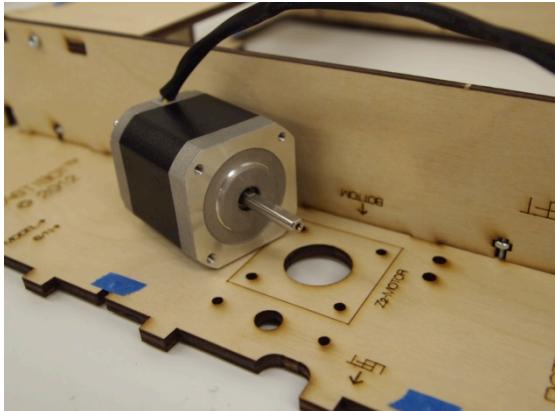
## Step 9: Frame Assembly

### Parts Needed

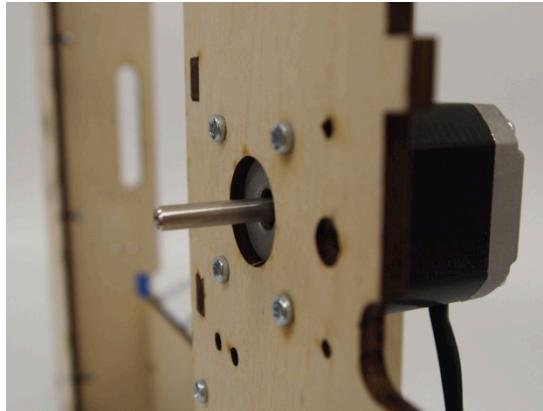
- Laser Cut Back Panel
- Base Assembly
- Laser Cut Top Panel
- M3 x 8mm screws (4 pcs)
- Z2 Motor
- X Endstop
- Zip Ties (2 pcs)

### Tools Needed

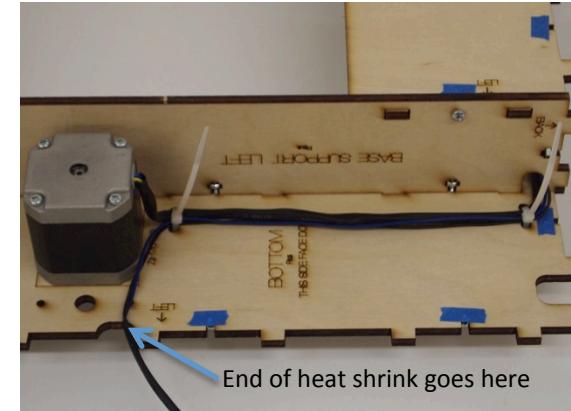
- Philips screwdriver



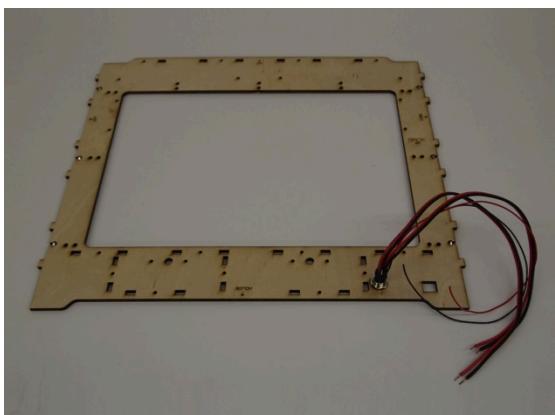
On the engraved side of the Bottom panel insert the Z<sub>2</sub> motor into the hole indicated for it.



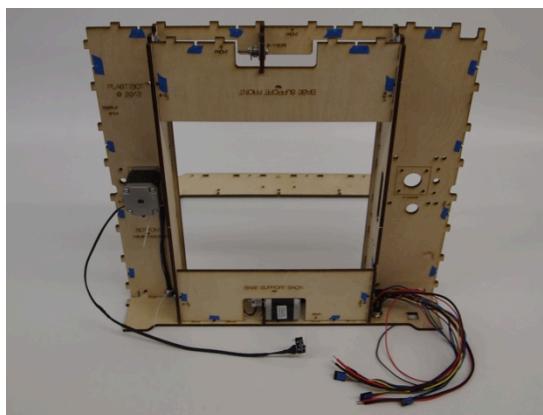
Attach the Z2 motor to the Base assembly using 4 M3 x 8mm screws



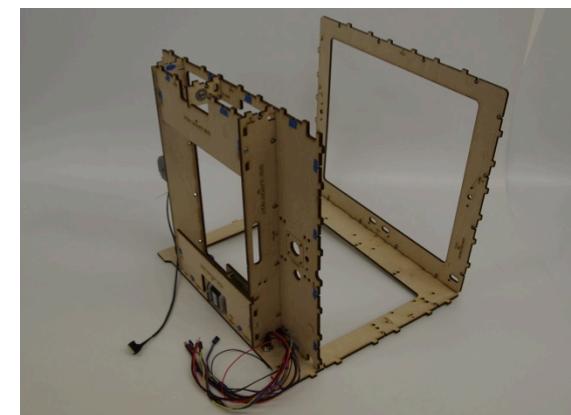
Use 2 zip ties to guide the Z<sub>2</sub> motor and X endstop wires on the left side. **Note:** The end of the heat shrink on the X endstop should be aligned with the notch in the left side of the Bottom panel.



Place the Back panel on the table with the wires facing up.



Insert the base assembly on the back panel as shown. Make sure the Y-Motor is resting on the back panel. If having trouble getting the base to fit in it may help to loosen the screws nearest the back panel just make sure they get tightened back down.



Take the top panel and position it as shown. Make sure the side labeled "BACK" is pointing towards the Back panel and the engravings are facing the inside of the printer.

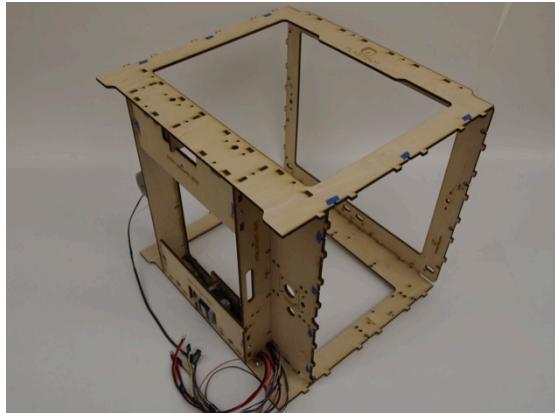
## Step 10: Frame Assembly – Front and Back

### Parts Needed

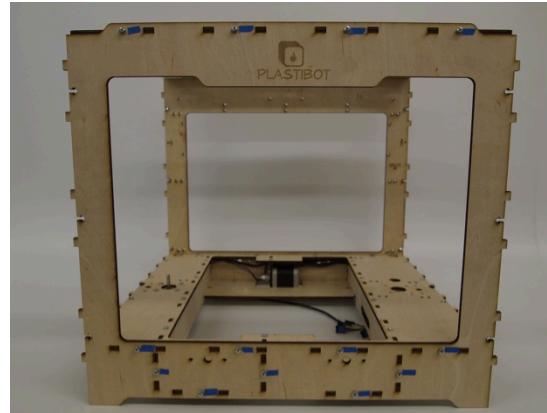
- Frame Assembly
- Laser Cut Front Panel
- M3 x 12mm screws (26 pcs)
- M3 x 8mm screws (4 pcs)
- Z<sub>1</sub> Stepper Motor

### Tools Needed

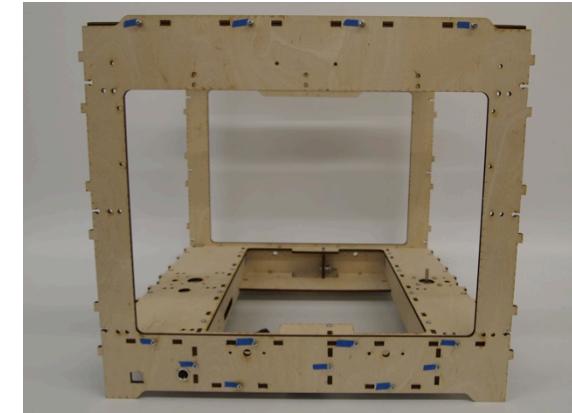
- Philips screwdriver



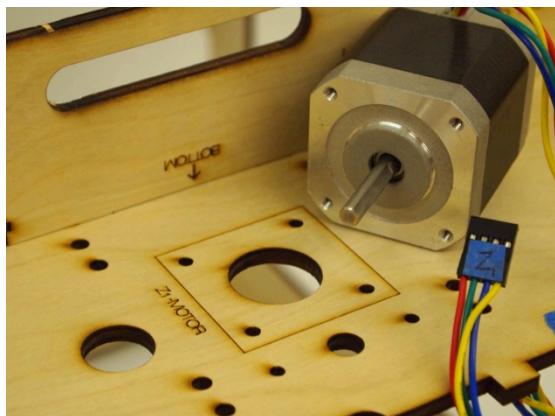
Take the front panel and position it as shown. Make sure the “Plastibot” logo is facing the top panel. Use the same trick that was done on the Back panel if having trouble.



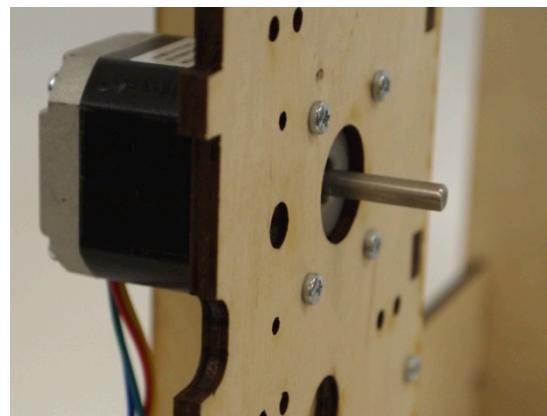
Insert M3 x 12mm screws (13 pcs.) on the locations marked with blue tape and tighten.



Carefully flip the assembly over and Insert M3 x 12mm screws (13 pcs) on the same locations done on the previous picture and tighten.



Insert the Z<sub>1</sub> stepper motor (Z<sub>1</sub> has shorter wire leads compared to Z<sub>2</sub>) and doesn't have heatshrink. Wires should face the back panel.



Secure the motor with 4 M3 x 8mm screws as shown.

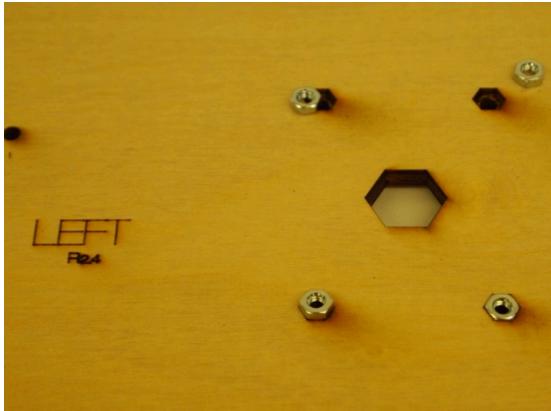
## Step 11: Frame Assembly - Side Panels

### Parts Needed

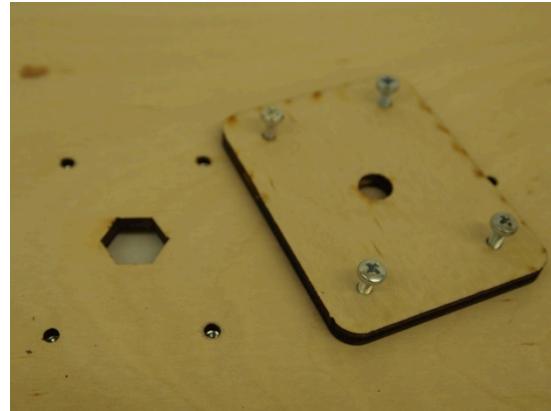
- Laser Cut Panel - Left
- Laser Cut Panel - Right
- Laser Cut - Bracket (2 pc)
- M3 nuts (8 pcs)
- M3 x 10mm screws (8 pcs)

### Tools Needed

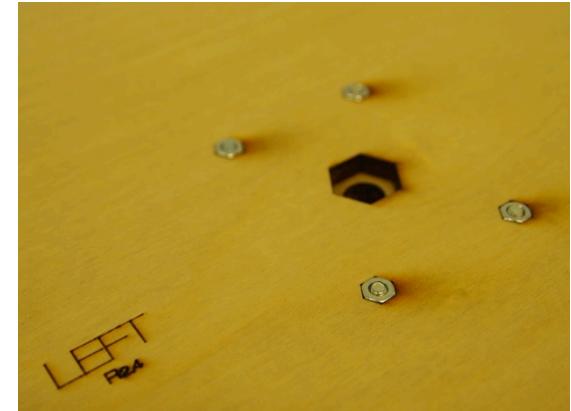
- Philips screwdriver



Take the left panel and insert 4 M3 hex nuts into the nut traps as show. Then flip over the left panel. If tight fit use a screw to pull nut into place from back side.



Insert 4 M3 x 10mm screws into a Bracket and then into the left panel.



Use the screws to finish press fitting the nuts into position. The nuts should end being almost flat to the surface.



Repeat process for Right Panel

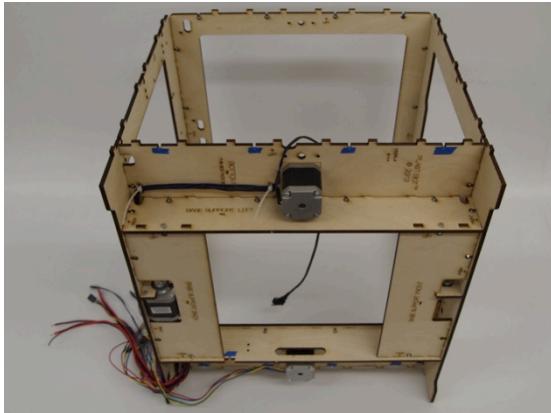
## Step 12: Frame Assembly - Side Panels

### Parts Needed

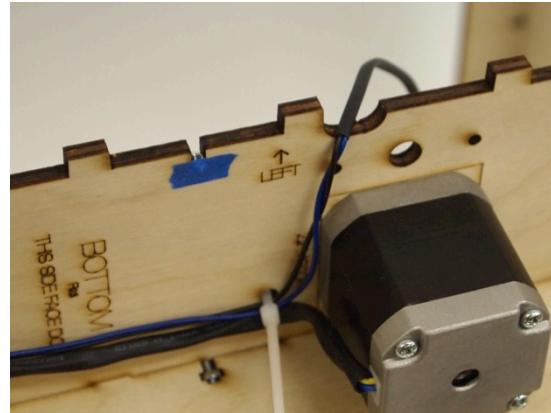
- Frame Assembly
- Laser Cut Panel - Left
- Laser Cut Panel - Right
- M3 x 12mm screws (28 pcs)

### Tools Needed

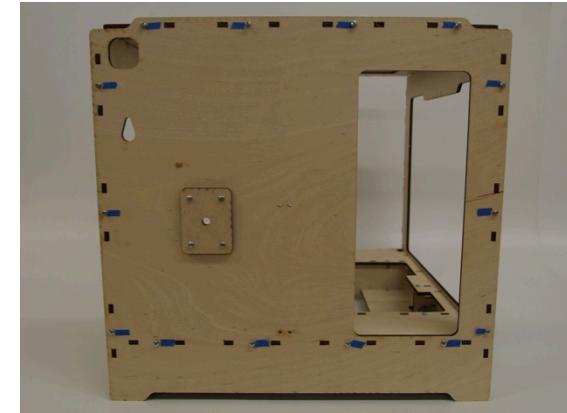
- Philips screwdriver



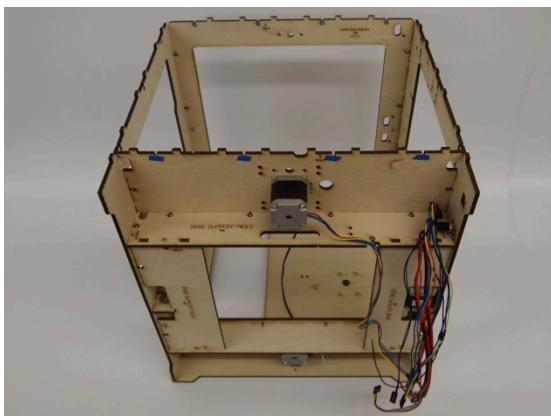
Flip the Frame assembly over so that the Front panel is on your right, the Back panel on the left and the Bottom panel is facing you.



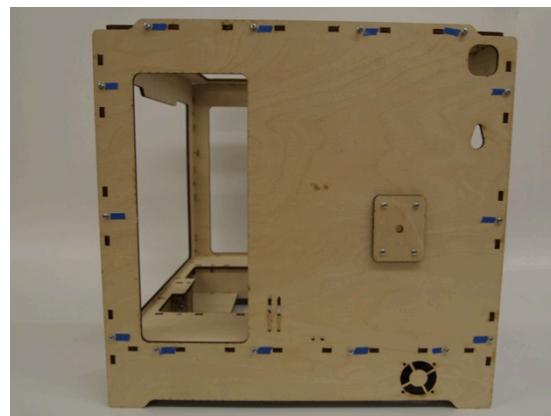
Guide the X endstop wire harness through the notch in the base assembly as shown on this picture. Refer to the previous picture for an overall view.



Install the Left panel making sure the window is facing the front panel. Press fit on all the tabs. Some of them may need alignment to fit in. Insert 14 M3 x 12 mm screws at the locations of the blue tape and tighten.



Flip the Frame assembly over 180 degrees to your left so that the Back panel is on your right, the Front panel on your left and the Bottom panel is facing you.



Attach the Right panel to the Frame Assembly making sure the window faces the Front panel. Insert 14 M3 x 12 mm screws located by the blue tape in the picture and tighten.

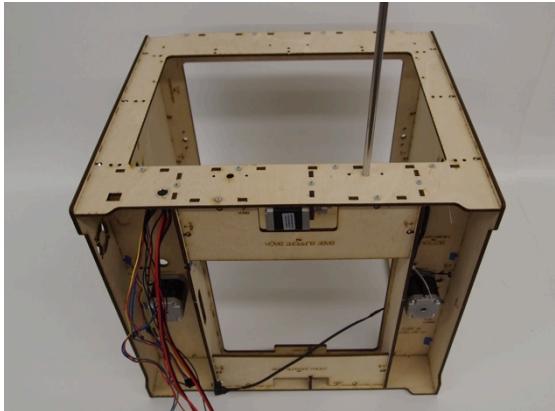
## Step 13: Frame Assembly – Rod Caps

### Parts Needed

- Frame Assembly
- M3 x 12mm screws (8 pcs)
- M3 hex nuts (8 pcs)
- Laser Cut – Rod Caps (4 pcs)
- Smooth Rod – long (1 pcs)

### Tools Needed

- Philips screwdriver

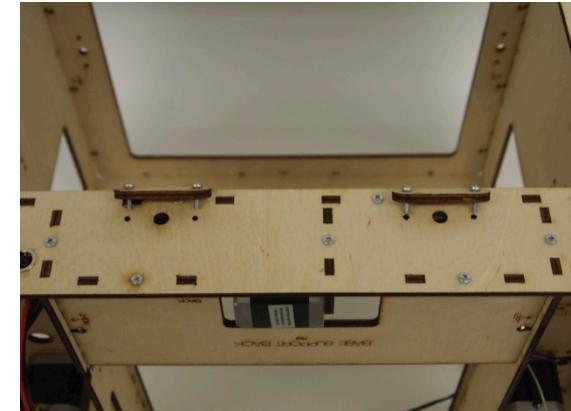


Take one of the larger smooth rods and insert into the 2 rod holes on the Back panel to lap the hole and make insertion of the smooth rods at a later time easier.

**Note:** Watch out for the wires on the back side.



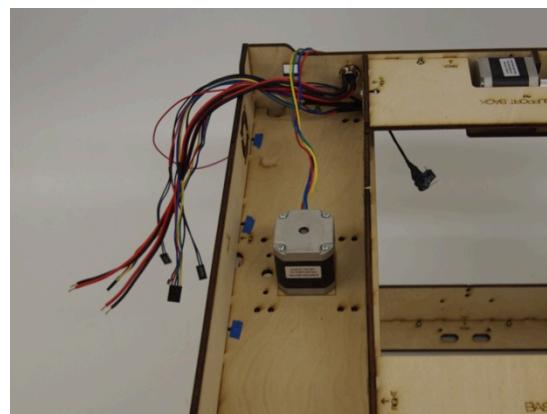
Prepare 4 Rod caps by scraping out wood debris from the laser. Insert M3 x 12mm screws (8 pcs) and have M3 hex nuts (8 pcs) ready.



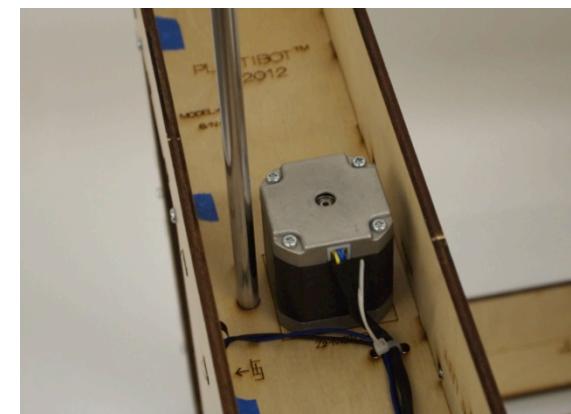
Take two of the rod caps and insert them on the holes shown on this picture.



Secure the caps in place screwing in the M3 hex nuts.



Flip the frame assembly so that the bottom side faces up and the Front panel faces you.



Take the same smooth rod used before and lap the holes on the bottom assembly. There is one hole located next to the Z<sub>1</sub> and Z<sub>2</sub> motors make sure to get both.

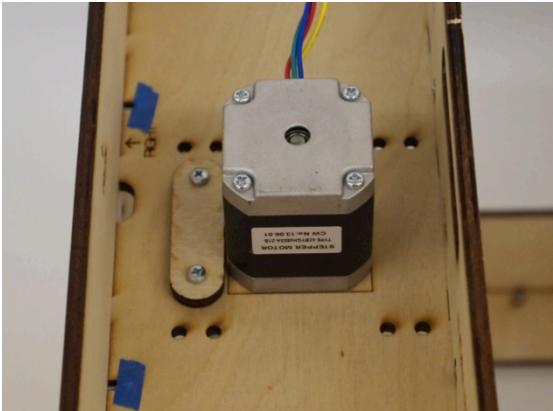
## Step 13: Frame Assembly – Rod Caps (cont.)

### Parts Needed

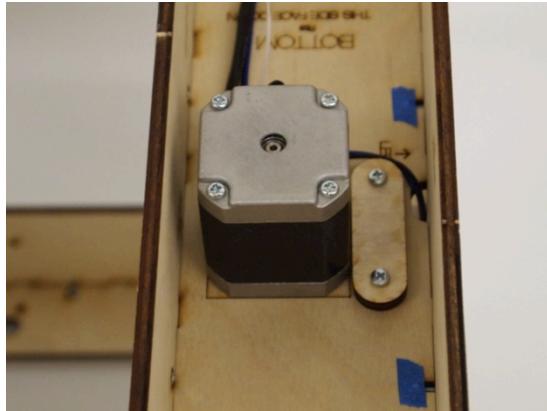
- Frame Assembly
- M3 x 12mm screws (4 pcs) from previous page
- M3 hex nuts (4 pcs) from previous page
- Laser Cut – Rod Caps (2 pcs) from previous page
- Zip Ties (2pcs)

### Tools Needed

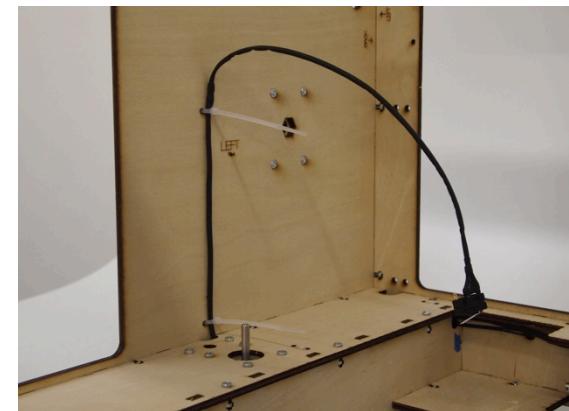
- Philips screwdriver



Insert the cap next to Z<sub>1</sub> motor and screw in M3 nuts from the other side.



Insert the cap next to Z<sub>2</sub> motor and screw in M3 nuts from other side.



Turn the frame assembly up right and use 2 zip ties to attach the X endstop to the left panel. You can trim excess zip tie off when finished.