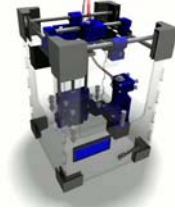


INTERNET ARCHIVE http://www.tantillus.org/Build_3.html Go AUG FEB MAR
WayBackMachine [23 captures](#) 23
12 Oct 12 - 23 Feb 15 2014 2015 2016



The Portable Open Source 3D Printer



- [Home](#)
 - [Gallery](#)
 - [FAQ](#)
 - [Store](#)
 - [B.O.M.](#)
 - [Build guide](#)
 - [Tutorials](#)
 - [Calculator](#)
 - [Downloads](#)
 - [Links](#)
 - [Support](#)
- [Start](#)
 - [Case](#)
 - [X/Y Axis](#)
 - [Extruder](#)
 - [Z Axis](#)
 - [Electronics](#)
 - [Setup](#)

Hotend

1. Insulate bare leads of resistor with Kapton tape leaving 10mm bare.



2. Prepare the thermistor by insulating the bare leads with Kapton tape leaving 20mm bare.



3. Wrap the heater block with two layers of Kapton tape.



4. Remove Kapton from large holes for resistor with a sharp knife.



5. Insert resistor into large opening of the hotend. It is important to have a good fit.

Do not force it in.
 If the resistor is peanut shaped or a loose fit you will need to wrap the center 10mm of the resistor with a layer of tinfoil.



[↑TOP↑](#)

[Contents](#)

INTERNET ARCHIVE
WayBackMachine
23 captures
12 Oct 12 - 23 Feb 15

http://www.tantillus.org/Build_3.html

Go

AUG FEB MAR
23
2014 2015 2016

- Bend resistor leads up and away from the heater block.



- Cut two slits in the Kapton covering the small hole for the thermistor and lift the flaps.



- Insert glass bead of thermistor in opening.



- Wrap the entire heater block with four to five layers of Kapton tape to secure the resistor and thermistor as well as insulate the block.



Carriage

- Install 1 LM8uu linear bearing and 1 LM8suu linear bearing into the upper carriage.
- Install 1 LM8uu linear bearing and 1 LM8suu linear bearing into the lower carriage.



[↑TOP↑](#)

[Contents](#)

- Slide hotend through large hole in lower carriage.

INTERNET ARCHIVE
WayBackMachine
23 captures
12 Oct 12 - 23 Feb 15

4. Slide acrylic plate over groove in hotend to secure.

Go

AUG FEB MAR
23
2014 2015 2016



5. Press upper carriage over hotend and acrylic plate.
6. If the hotend is loose at this point remove it and wrap the top of the hotend with a few layers of Kapton tape.



7. Install one #6 x 2" bolt through middle hole from the bottom securing with one #6 nut on the top.
8. Install one #6 x 1-3/4" bolt through outer hole being sure to have two washers between the upper and lower carriage as pictured and secure with one #6 nut on top.



9. Install 1/4" nut in hex opening on upper carriage.



10. Install Bowden clamp over the two protruding #6 bolts with the cavities facing downwards.
11. Secure with two washers and #6 nuts.



[↑TOP↑](#)

[Contents](#)

INTERNET ARCHIVE **Printed Bushings** Build_3.html AUG FEB MAR
 wayBackMachine 23 captures 12 Oct 12 - 23 Feb 15 2014 2015 2016

1. The bushing require preparation before installation.
2. Do not file the ends of the rods. We need them sharp.
3. Push one of the printed bushings onto the end of one of the 5/16" rods.



4. Tap the rod through the bushing against a hard surface.
[See video on the right.](#)
5. The action of installing and removing the sharp end of the bar will cut a small amount of plastic out of the bushing.
6. Install and remove the rod repeatedly until it slides smoothly over the rod.
[See video on the right.](#)
7. Lubrication of the bushings is recommended after installation and periodically during use. I recommend Vaseline as the lubricant as it is Pet, Child, Furniture and clothing safe.

XY Ends

If you are using the original XYends with zip ties please see [these instructions](#).

[↑TOP↑](#)

[Contents](#)

1. Install the plastic bushings in XYends.



INTERNET ARCHIVE
WayBackMachine
23 captures
12 Oct 12 - 23 Feb 15

http://www.tantillus.org/Build_3.html

Go

AUG FEB MAR
23
2014 2015 2016

- Drill out the bolt hole and into the bushing so it just penetrates the inside of the bushing.



- Install one #8 nut in the rectangular opening of each XYend.
- Install #8 washer on #8 x 3/4" bolt
Tip: Install washer with the rounded edge facing away from the bolt head to prevent it from cutting the cable later.
- Insert bolt with washer into hole in the top of XYend and thread into the #8 nut in the rectangular cavity.
Be sure the bolt goes in the hole previously drilled in the bushing.



- Install one left XYend with flat side facing middle of bar onto each 8mm x 170mm bar leaving the bolt loose.



- Slide the 8mm x 170mm bars through the X carriage as pictured.
Be sure orientation of XYends is correct.
- Proceed to install the right XYends with flat sides facing middle of bars leaving bolts loose.
Be sure orientation of XYends is correct.



Rods

[↑TOP↑](#)

No drilling or taping of metal parts required for kits from Tantillus.org.

[Contents](#)

INTERNET ARCHIVE
WayBackMachine
23 captures
12 Oct 12 - 23 Feb 15

http://www.tantillus.org/Build_3.html Go

Drill two 1/16" holes in the 5/16" x 230mm rods. (22mm from one end and 42mm from the other end)
See drill guide in Drawings folder of source files.

AUG FEB MAR
23
2014 2015 2016



2. Install the XY assembly using 5/16" rods.
3. Insert the 5/16" by 230mm rods through openings in rear upper corner brackets 22mm end first and through the XY end bushings.
4. Remove the front right upper corner bracket and install the 5/16" by 210mm rods through the XY end bushings.
5. Reinstall the front right upper corner bracket.
Corner brackets can be installed securely at this point.

Gears

If you are using the original upper gears with the hex collar please see [these instructions](#).

1. Insert #8 nuts into nut cavities.



2. Thread #8-32 x 3/8" grub screws into nuts.



3. Install 1/4" washers on upper shafts.
4. Install gears on upper shafts.



5. Tighten grub screws evenly.
6. Check if the gear wobbles when rotated. If it wobbles use the grub screws to adjust the angle of the gear.

[↑TOP↑](#)

[Contents](#)

INTERNET ARCHIVE
WayBackMachine

Cables http://www.tantillus.org/Build_3.html Go

23 captures
12 Oct 12 - 23 Feb 15

AUG FEB MAR
23
2014 2015 2016

- Ideally when completed all the cables should look like these:



1. Divide cable into four equal pieces a minimum of 2 metres each.
2. Begin by threading one cable through the hole nearest the gear in the 5/16" by 230mm rod leaving 1/3 of cable on one side of the hole and 2/3 of cable on the other.

Opposite side shown for ease of photography.



3. Taking the long side of the cable, proceed to wrap it around the rod 5 times.

Upper shaft: If viewed from the face of gear, wrap the cable clockwise.

Lower shaft: If viewed from the face of gear, wrap the cable counter clockwise.



4. After wrapping, proceed to push the wrapped cable to the end of the rod nearest the gear past the hole so it sits on the outside of the hole.



5. Taking the short side of the cable, wrap it 5 times around the rod in the opposite direction keeping it on the opposite side of the hole as the long side of the cable.



6. Taking the remainder of the long cable, run it behind the XY end to the opposing 5/16" by

[↑TOP↑](#)

[Contents](#)

INTERNET ARCHIVE
WayBackMachine
23 captures
12 Oct 12 - 23 Feb 15

https://www.tantillus.org/Build_3.html

2.12mm rod and proceed to wrap it around the rod 5 to 10 times.

Go

AUG FEB MAR
23
2014 2015 2016

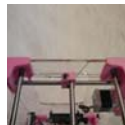


7. Position XY ends in the middle of the rods.
8. Fold the remainder of the long end of the cable over and tie the folded over section in a knot leaving a loop so that the loop ends 10 millimetres from the XY end.



9. Taking the short end of the cable, thread it through the small hole in the side of the XY end, under the washer on the #8 bolt and through the small hole on the opposite side. Then put it through the loop that you created on the end of the long side of the cable and go back through the holes in the XY carriage and under the washer again, leaving the end sticking out of the hole so you can tension it.

You may need to remove the bolt to thread this through.



Tighten the bolts only enough to hold the cable in place. They will be tightened during the alignment process.

[↑TOP↑](#)

[Contents](#)

INTERNET ARCHIVE
WayBackMachine
23 captures
12 Oct 12 - 23 Feb 15

AUG FEB MAR
◀ 23 ▶
2014 2015 2016



[↑TOP↑](#)

[Contents](#)

INTERNET ARCHIVE
WayBackMachine

23 captures
12 Oct 12 - 23 Feb 15

Square and tension the XY axis. Go

AUG FEB MAR
23
2014 2015 2016

1. Left
 1. Position the XY carriage in the front left corner.
 2. Loosen the bolt in the left side XYend until you can slide the cable under the washer with ease.
 3. Taking the loose end of the cable pull it tight and tighten the bolt until snug.
DO NOT over tighten.
 4. Slide the carriage from front to back a few times.
 5. Repeat steps 1 - 4 twice more.
2. Right
 1. Position the XY carriage in the front right corner.
 2. Loosen the bolt in the right side XYend until you can slide the cable under the washer with ease.
 3. Taking the loose end of the cable pull it tight and tighten the bolt until snug.
DO NOT over tighten.
 4. Slide the carriage from front to back a few times.
 5. Repeat steps 1 - 4 twice more.
3. Rear
 1. Position the XY carriage in the rear left corner.
 2. Loosen the bolt in the rear XYend until you can slide the cable under the washer with ease.
 3. Taking the loose end of the cable pull it tight and tighten the bolt until snug.
DO NOT over tighten.
 4. Slide the carriage from left to right a few times.
 5. Repeat steps 1 - 4 twice more.
4. Front
 1. Position the XY carriage in the front left corner.
 2. Loosen the bolt in the front XYend until you can slide the cable under the washer with ease.
 3. Taking the loose end of the cable pull it tight and tighten the bolt until snug.
DO NOT over tighten.
 4. Slide the carriage from left to right a few times.
 5. Repeat steps 1 - 4 twice more.



[↑TOP↑](#)

[Contents](#)


INTERNET ARCHIVE
WayBackMachine
23 captures
12 Oct 12 - 23 Feb 15

http://www.tantillus.org/Build_3.html

Ideally, when completed all the cables should look like these:

Go

AUG FEB MAR
23
2014 2015 2016



XY Motors

1. Install the X and Y motors using M3 x 10mm bolts and washers.



2. Install #8 nuts and #8 x 3/8" set screws into openings on motor gears.



3. Push motor gear onto the motor shaft.
4. Slide motor up until the gears fit together and tighten the four M4 x 10 bolts through the holes in the gear.



5. Ensure alignment of the motor gear with the upper gear before tightening the #8 x 3/8" set screws.
6. Rotate the gears by hand. If they turn smoothly through their entire range of motion proceed to Extruder assembly. If they bind or feel tight once or twice per rotation follow the steps below.
 1. Loosen the four M3 x 10mm bolts that hold the motor on just enough to slide the motor down.
 2. Rotate the motor gear 45 degrees.
 3. Slide the motor back up and re-tighten the M3 x 10mm bolts
 4. Rotate the gears by hand. If they turn smoothly through their entire range of motion proceed to Extruder assembly. If they bind or feel tight once or twice

[↑TOP↑](#)

[Contents](#)

INTERNET ARCHIVE
WayBackMachine
[23 captures](#)
 12 Oct 12 - 23 Feb 15

http://www.tantillus.org/Build_3.html Go

AUG FEB MAR
 23
 2014 2015 2016

per rotation repeat steps 1 - 3 three
 more times. If it still binds try rotating
 them in 10 degree increments. Some
 friction is normal on a fresh set of
 gears as the surface texture gets worn
 down.

[Extruder](#)

All artwork and videos © Tantillus.org 2012

[↑TOP↑](#)

[Contents](#)