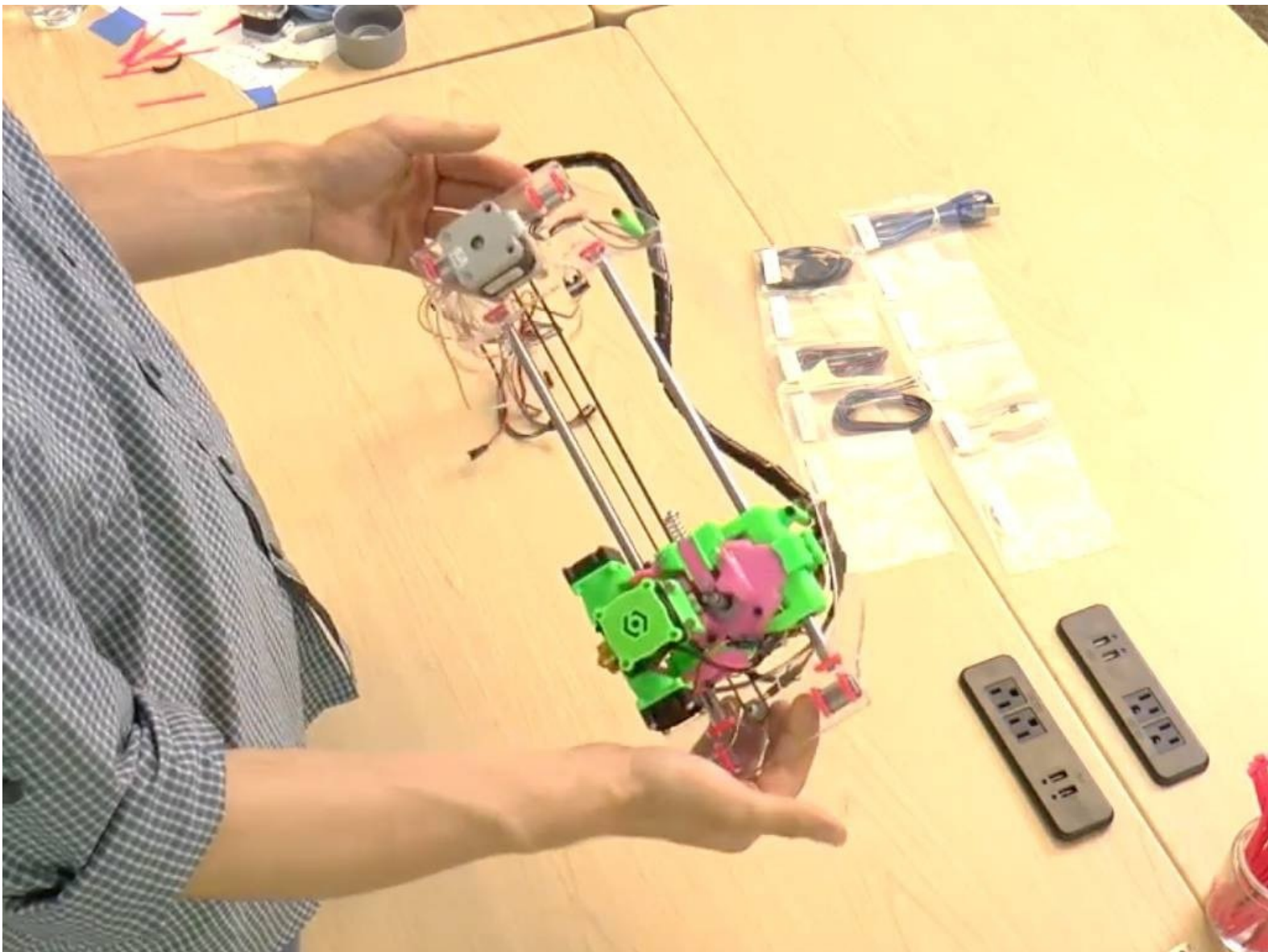




5. Wire Harness

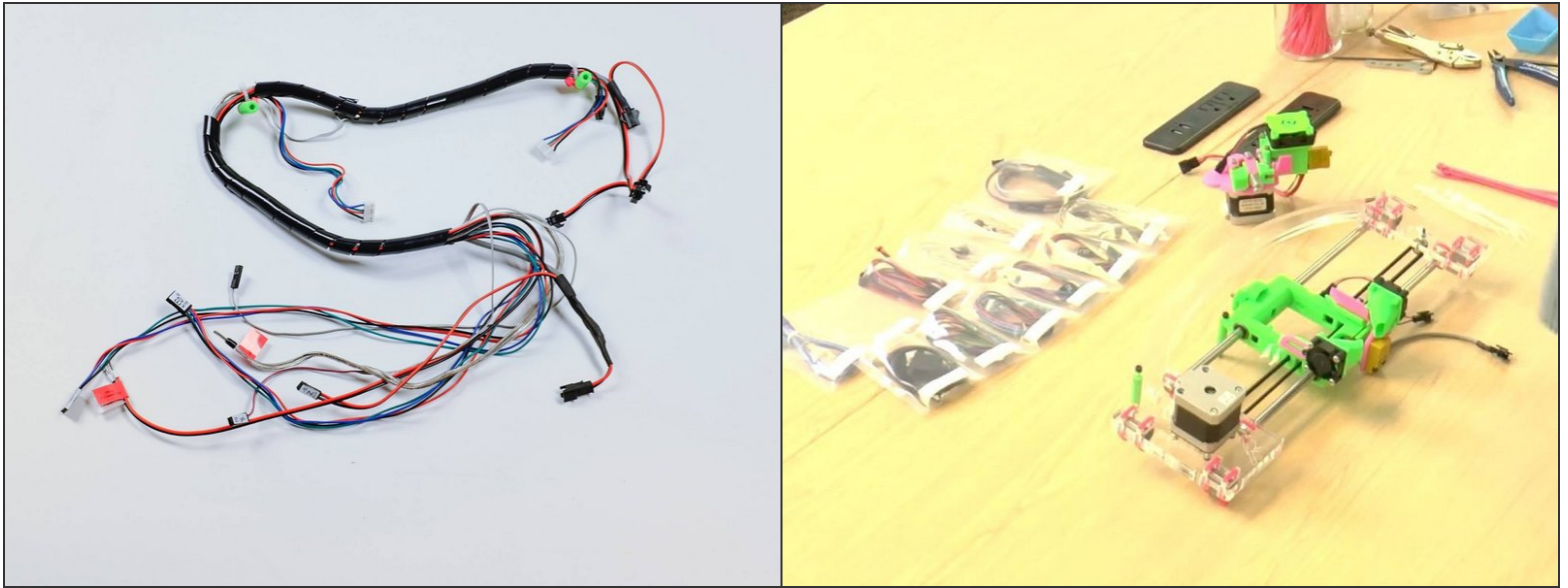
In this guide, we prepare the 'wire harness' - these are all the wires connected to X assembly neatly tied up together. It is **HIGHLY** recommended to watch the video for this part.



INTRODUCTION

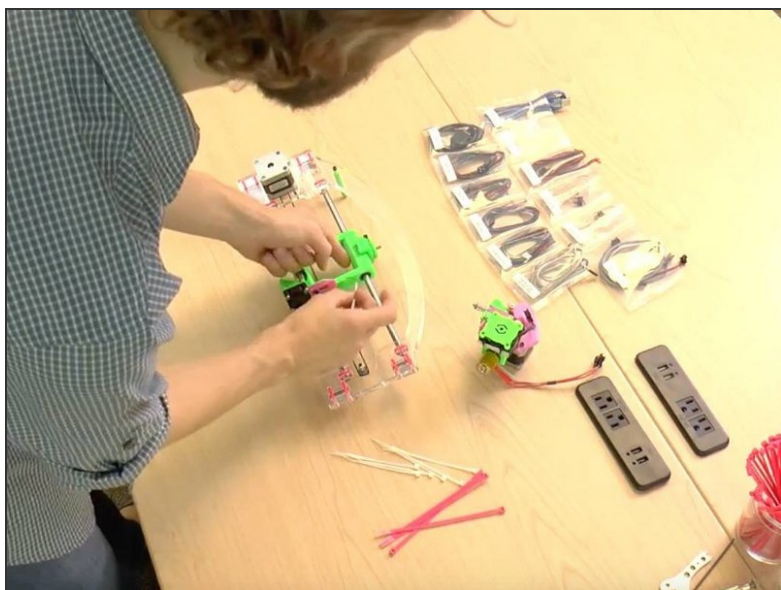
[video: <https://youtu.be/kIO8AvtITkQ>]

Step 1 — You'll Need:



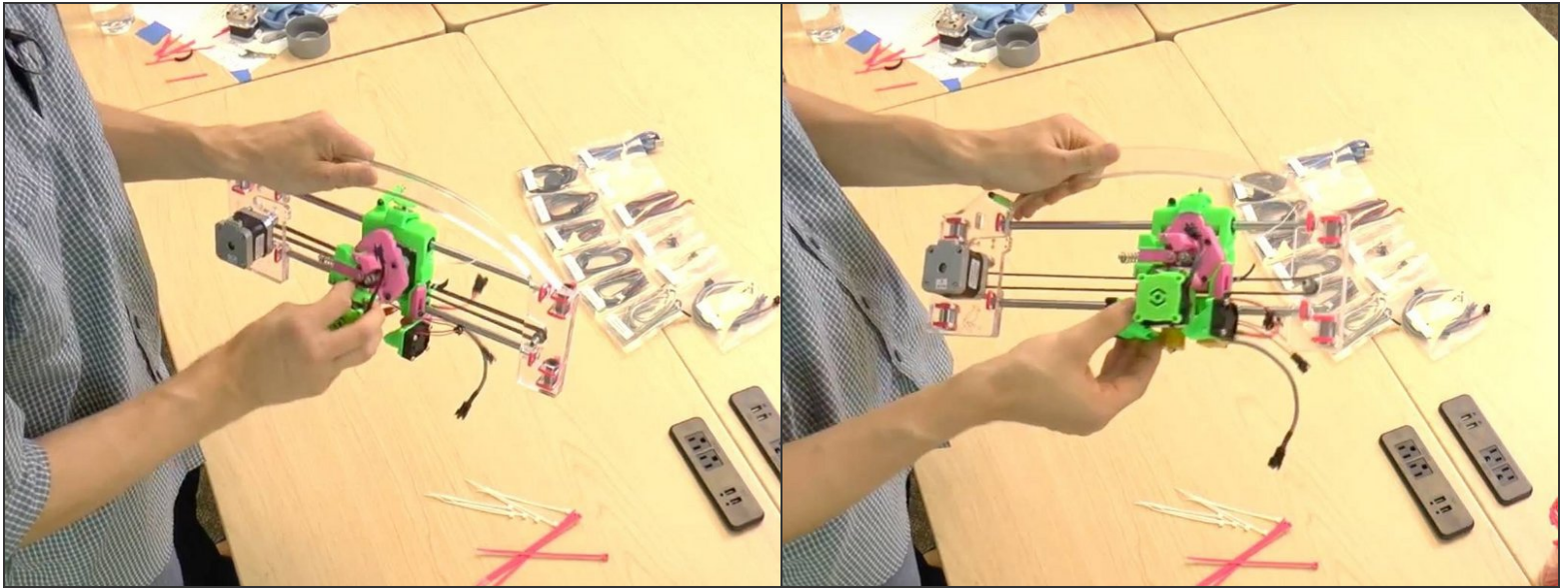
- X assembly and Extruder
- Bags with wires
- 4" zip ties and 6" zip ties
- M2x16 bolts (2)
- M2 regular nuts (2)
- M2 regular washers (2)
- Long Spiral Wrap and Short Spiral Wrap

Step 2 — Preparations



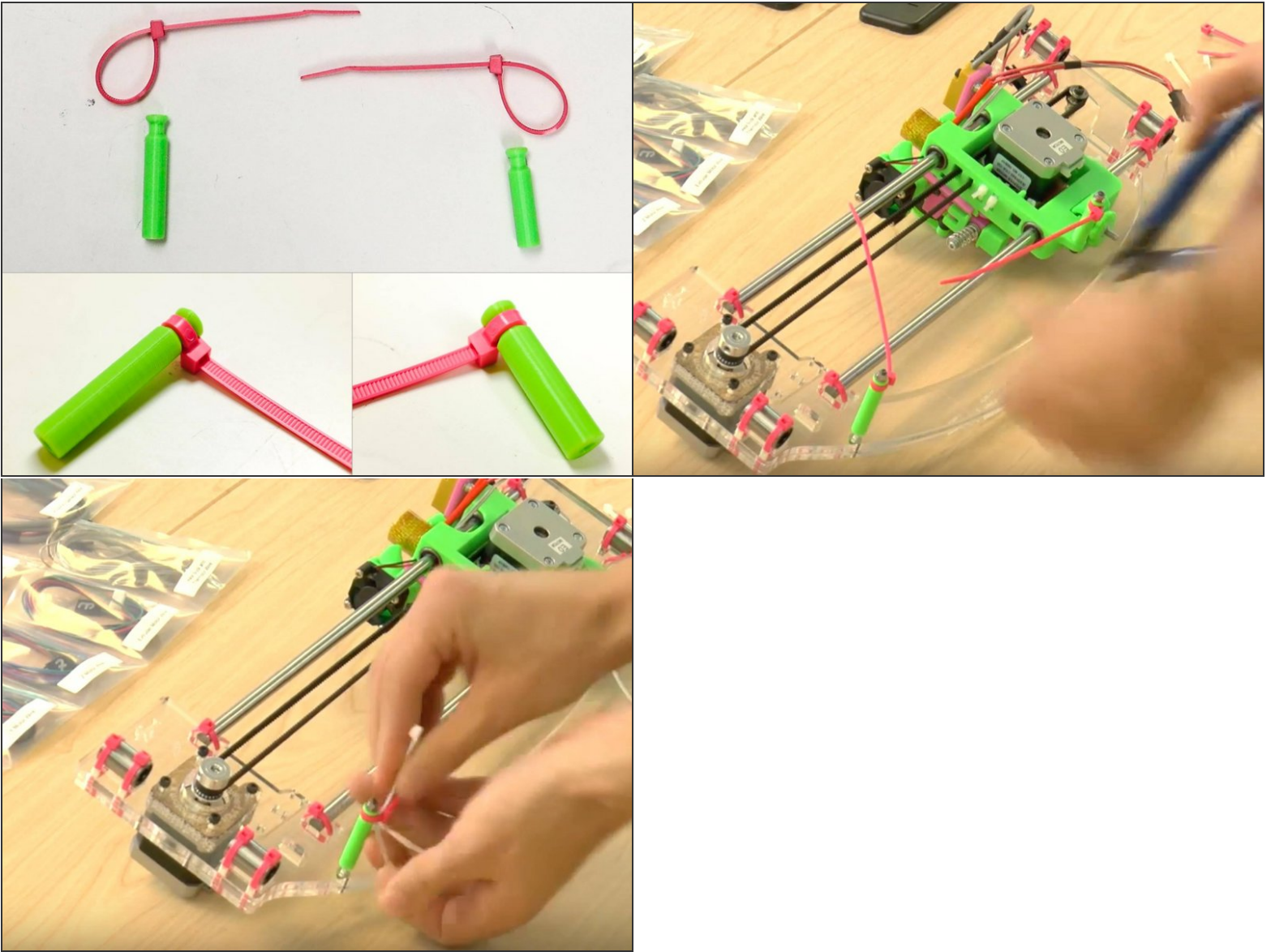
- Pre-install a 4" zip tie with a head out on the right side of the X carriage.

Step 3 — Insert the Extruder



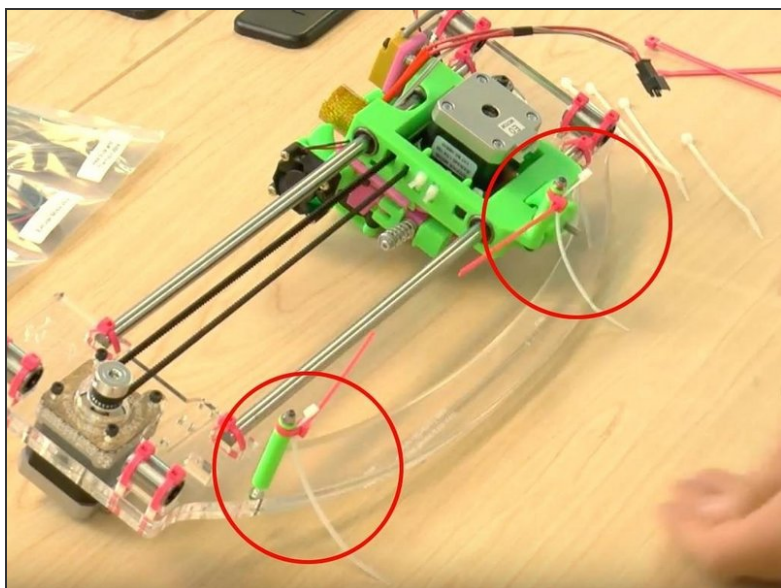
- Note: this is a common procedure. Why else have a quick release extruder?
- Loosen the quick release clamp and insert the extruder. The pink diamond shaped face will slot into the green grooves on the front of the X-carriage.
- Make sure the HotEnd wires pass under the X carriage and especially under the fan wires.
- Tighten the quick release clamp to hold the extruder in place.

Step 4 — More Zip Ties P.1



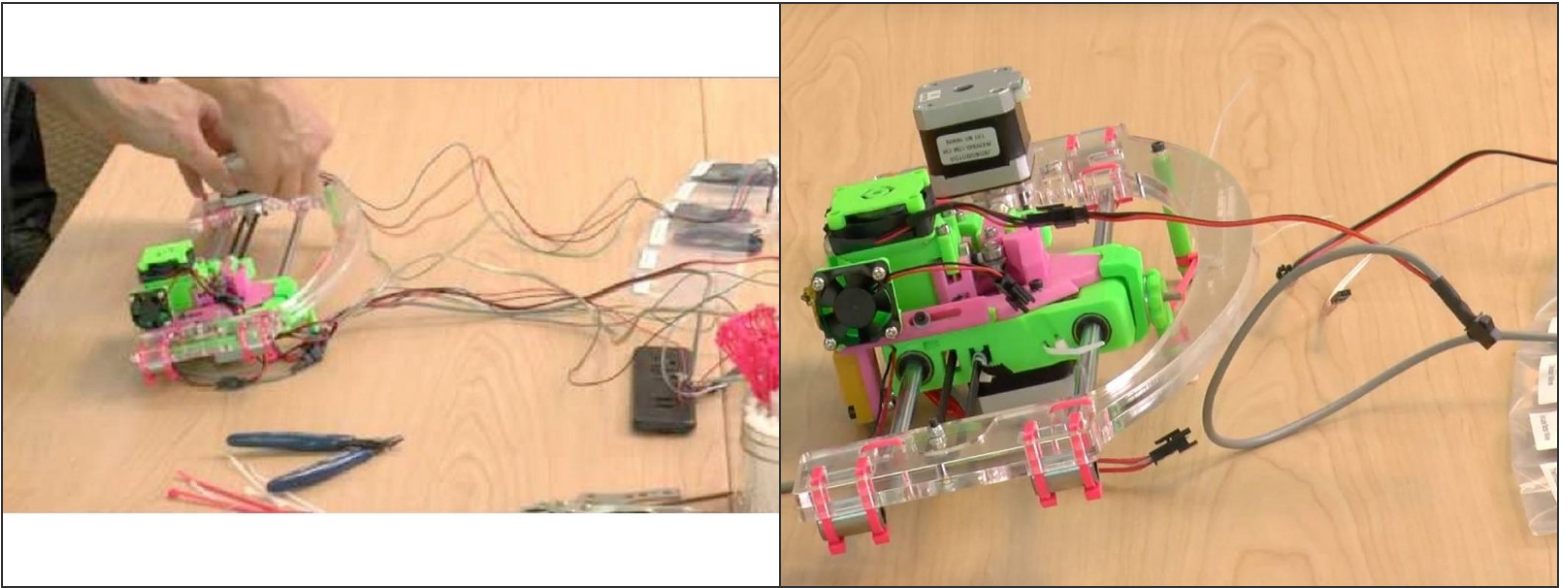
- Form two 5" zip tie loops.
- Place the loops on the two stand-offs with the tails pointing and bending towards the HotEnd. (Tooth side facing towards the bottom of the assembly.)
- Snip off about 1" from each zip tie (2.5cm)

Step 5 — More Zip Ties P.2



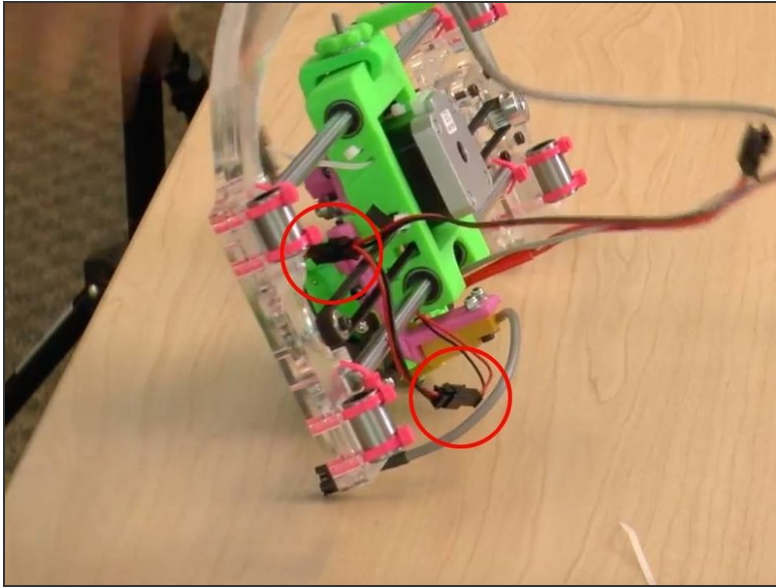
- Then, thread one 4" zip tie inside each 5" loop.

Step 6 — The Wiring



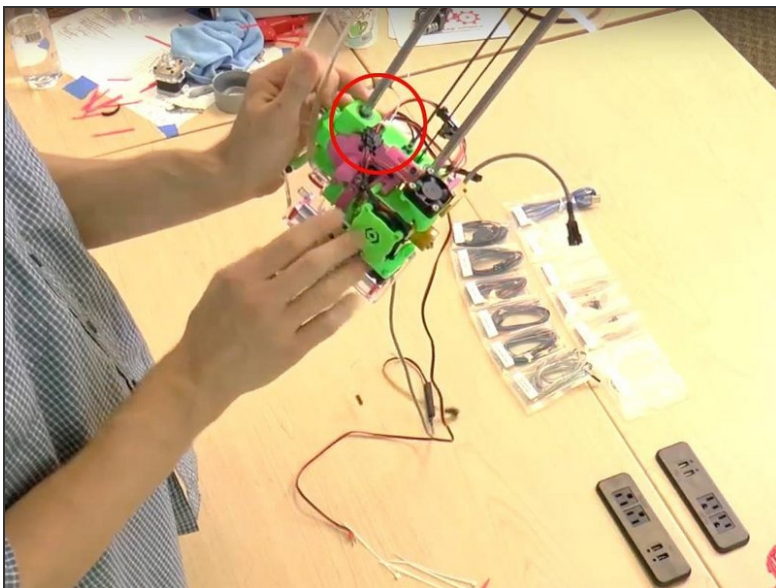
- Really, just watch [the video](#) for this part. It's a better learning experience; the images can't easily convey how the wire slack should feel and what are the wire paths.
- If you insist, here's some text:
- Attach the hot end wire.
- Leave the proximity sensor disconnected for now.

Step 7 — Connect the Fan Wires



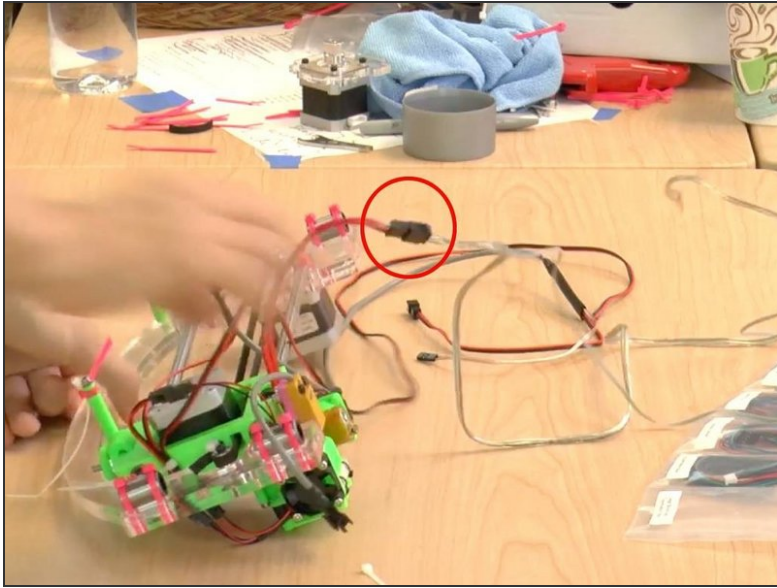
- Connect the two fan wires.
- The left fan connects to the end of the wire.
- The other connector attaches to the right fan.

Step 8 — Zip Tie the Wires to the X Carriage



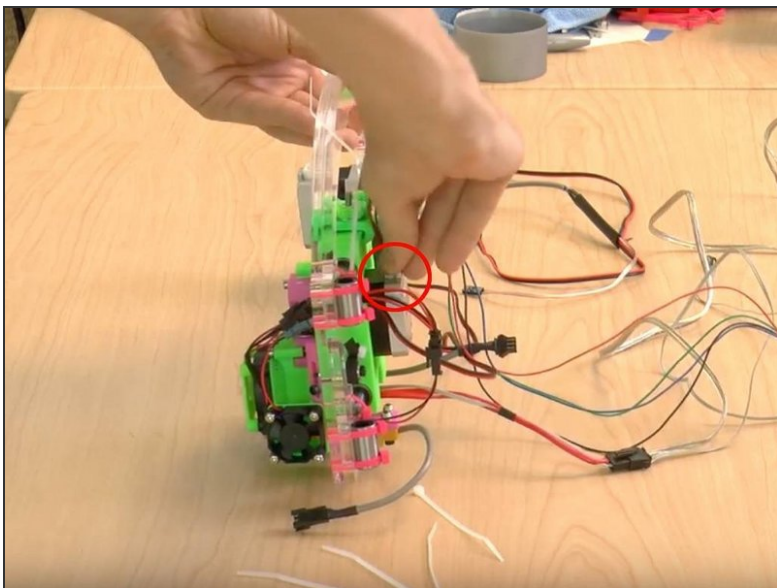
- Use the zip tie in the side of the carriage to hold the wires in place.
- After tightening the tie, snip off the end.

Step 9 — Connect the Heat Block and Thermistor



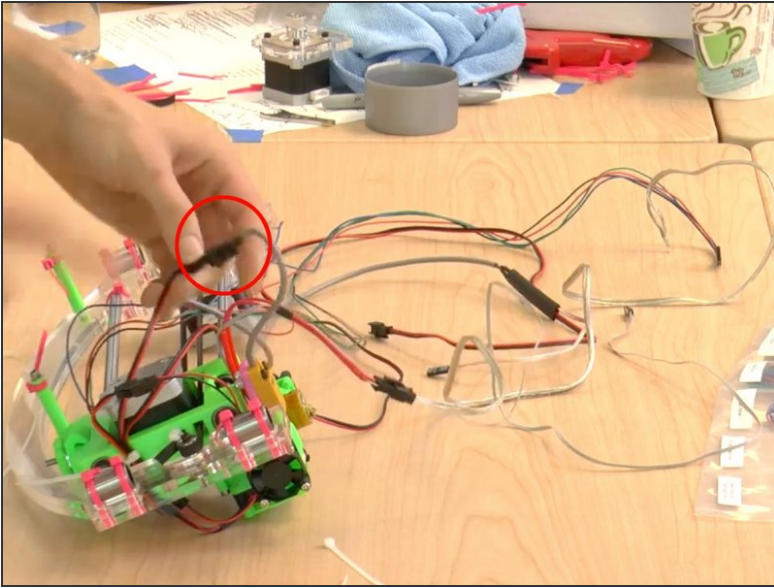
- Connect the heat block and thermistor wire.

Step 10 — Attach the Extruder Motor Wire



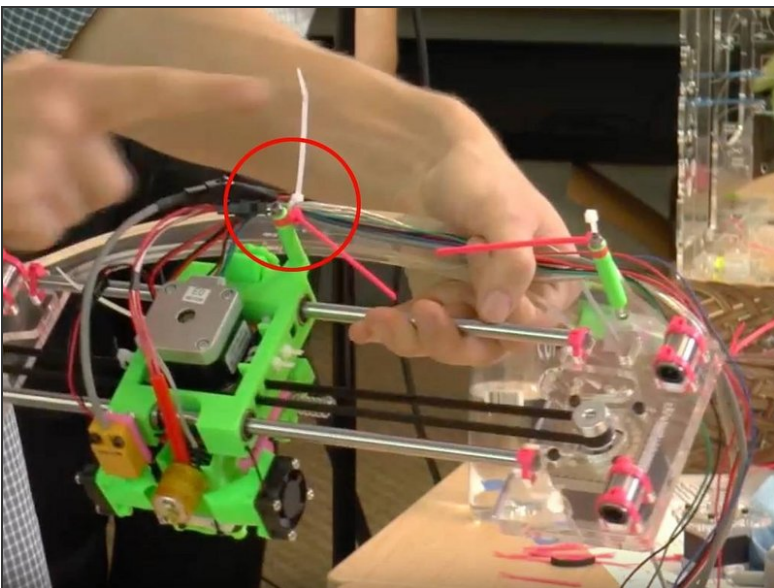
- Connect the wire for the extruder motor to the header on top of the motor.

Step 11 — Connect the Proximity Sensor



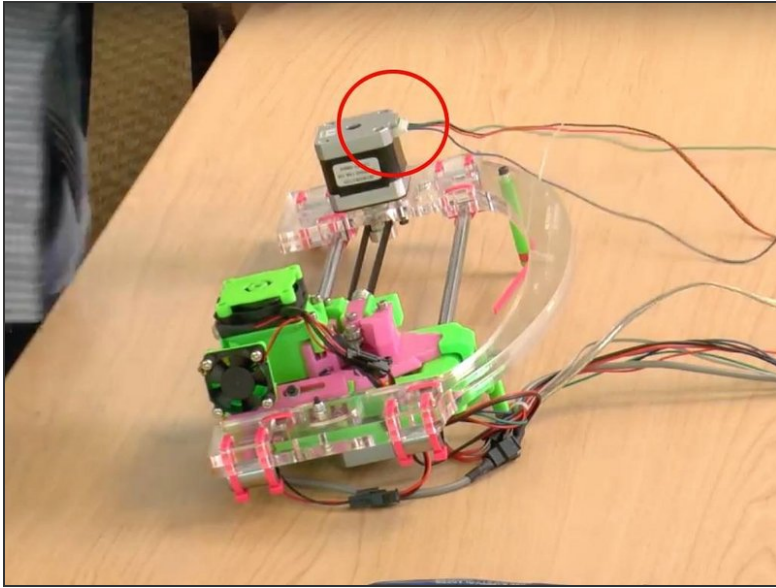
- Connect the proximity sensor to the wire you left hanging earlier.

Step 12 — Attach the Wires to the X Carriage Spacer



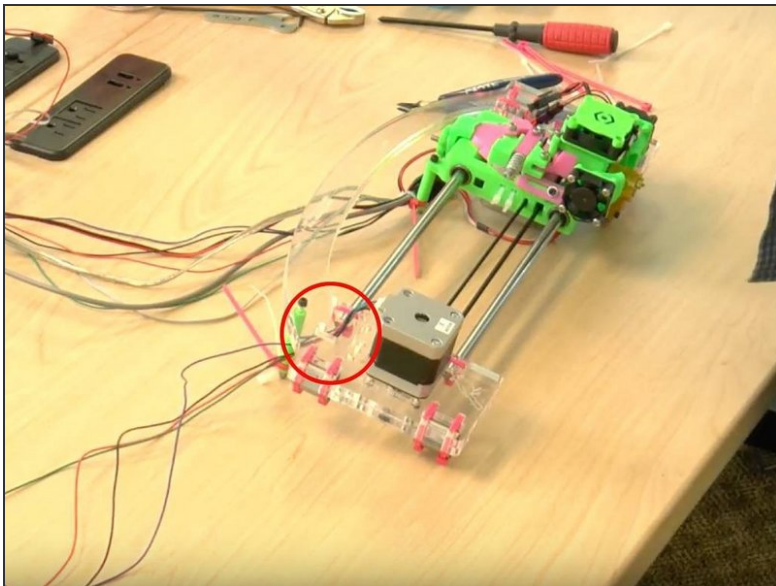
- Use the 4" zip tie on the spacer to hold the wires. Keep it loose so you can adjust the wires. Make sure all the wires have enough slack and are not being pulled.
- When you're happy with how the wires sit, tighten the zip tie and snip the end.

Step 13 — Attach the X Motor Wire



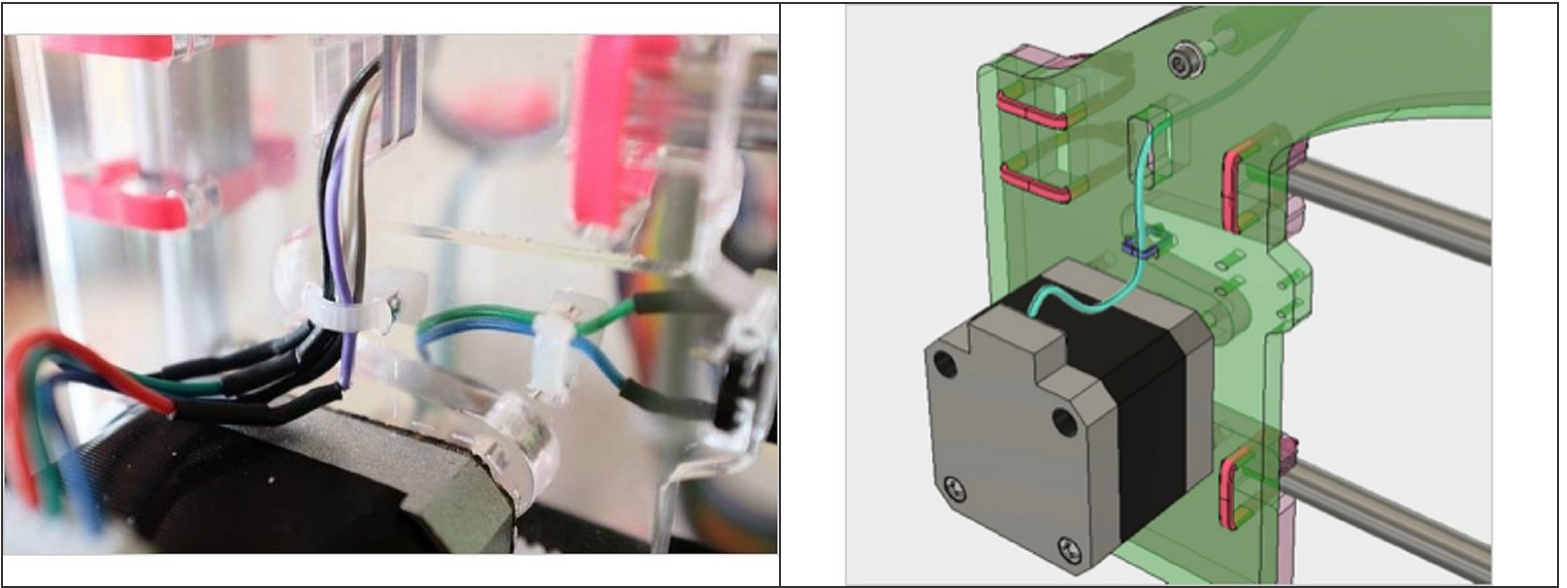
- Attach the X motor wire to the header on top of the motor.

Step 14 — Thread the Wire Through the Frame



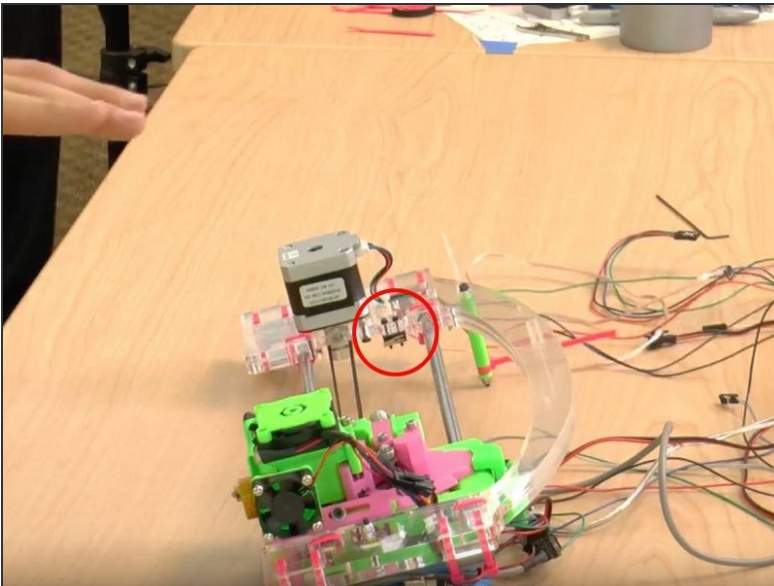
- Above the X motor is a hole in the frame. Thread the x motor wire through it.

Step 15 — Zip Tie the X Motor Wire



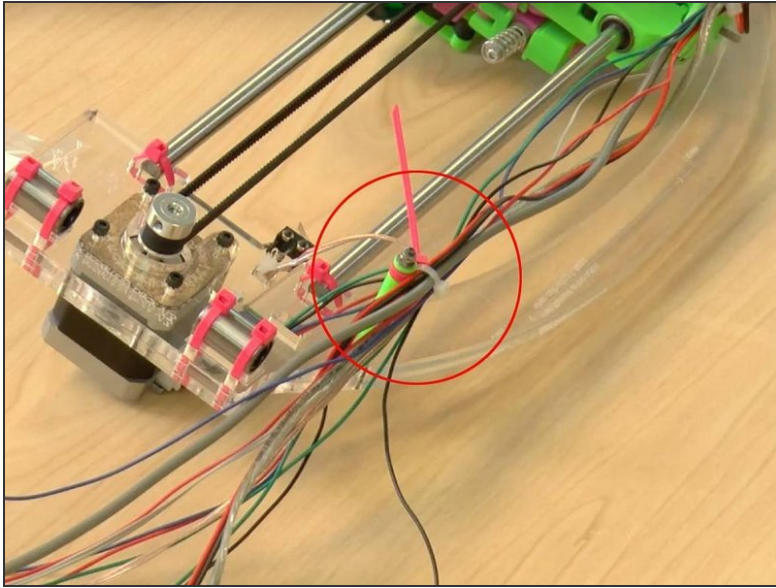
- Use a 4" zip tie to secure the X motor wire. Make sure there's plenty of slack in the wire. This will result in a cute wave as the X motor wire goes up first and then curls down.

Step 16 — Bolt the X Axis End Stop in Position



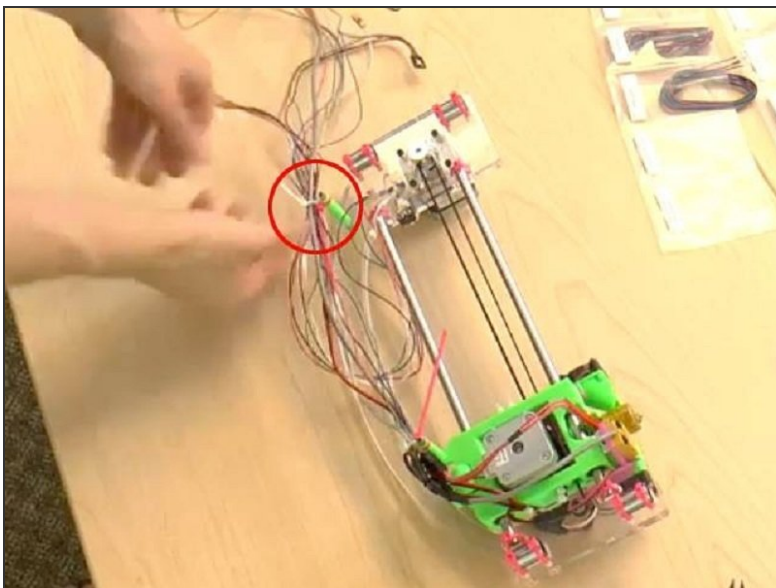
- Place two M2 washers onto two M2x16 bolts.
- Use the bolts and two M2 nuts to secure the end stop in place.

Step 17 — Secure the Wires to the Post



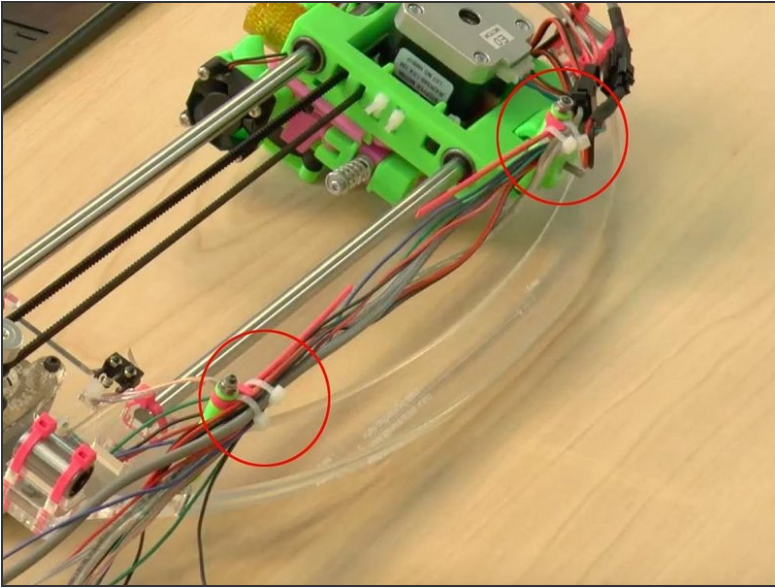
- Use the 4" zip tie attached earlier to form a loose loop around the wires. All the wires must enter the loop from the same direction (from the right in the picture); including the X end stop and X motor wires.

Step 18 — Tighten the Zip Ties



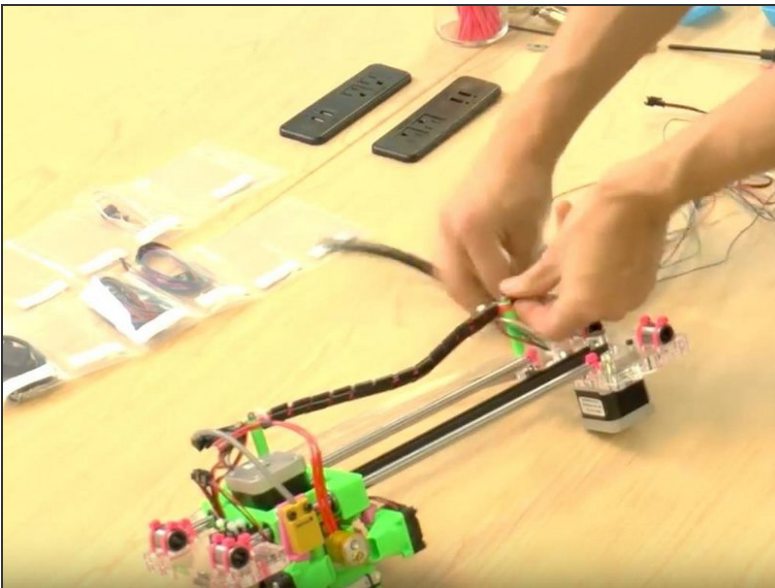
- Adjust the cables so they form a gentle curve with plenty of slack. Slack Slack Slack. Don't leave wires hanging, but they need their space.
- Tighten the zip tie and snip off the tail.
- Make sure the X carriage is at the end of its run.
- Make sure none of the connections are being pulled on.

Step 19 — Zip Tie the Brace



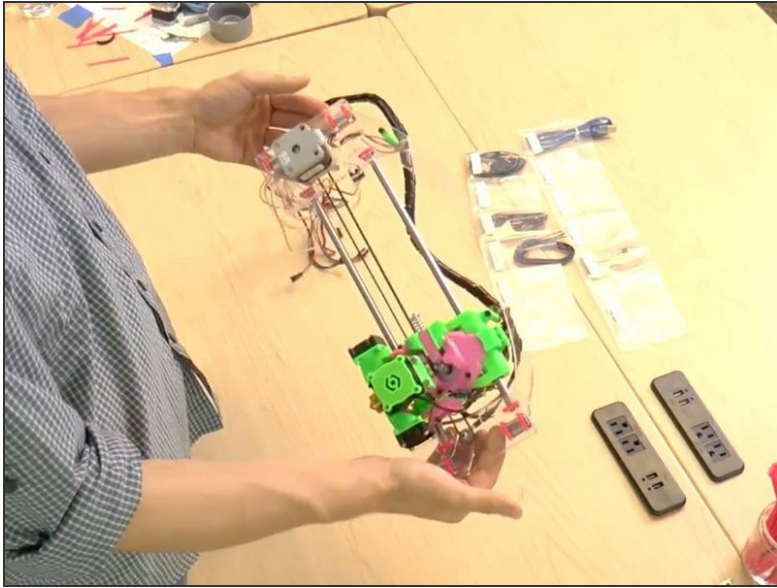
- Use two more 4" zip ties to bring the tails of the two 6" ties into the bundle.

Step 20 — Spiral Wrap the Wire Bundle



- Use the shorter piece of spiral wrap to cover the wire bundle. Leave the spiral wrap loose so it can fold smoothly.
- Snip off any excess length.

Step 21 — Wrap the Rest of the Wires



- Use the longer piece of spiral wrap on the rest of the wires. If you're building with a friend this is a good place for a race to see who can wrap the remainder faster.