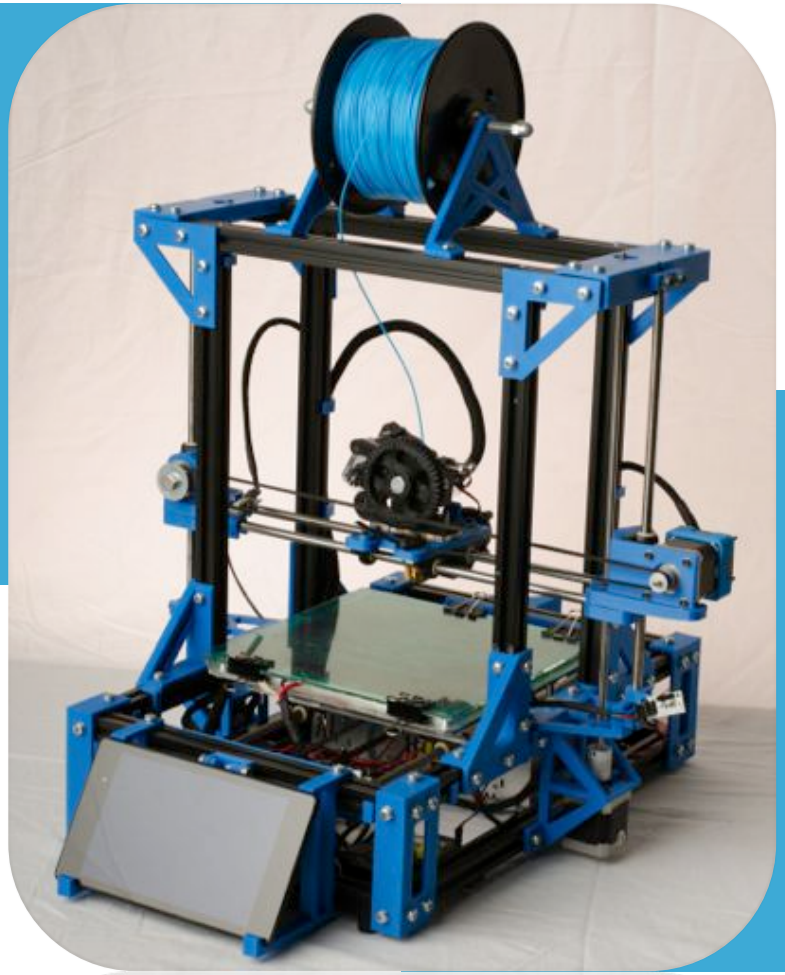
3DSuppli T MAX 2.0

Build Manual



APRIL 2014
VERSION 1.0

[4]Step 1: Assembling the "Pi" Frames

Parts Needed:

- 2 420mm Aluminum Extrusions (with tool access holes pre-drilled)
- 4 Self-Tapping Blind Joints (Stove Bolts)
- 4 340mm Aluminum Extrusions

Tools Needed:

- T-25 Torx Driver

Steps:

- Screw 4 Stove Bolts into the tapped ends of the 340mm extrusions (1 each), leaving about a ¼" gap between the bolt head and the end of the extrusion.
- One at a time, slide the stove bolt head into the 420mm extrusion slot so that the tool access hole lines up with the head of the stove bolt. Insert a T-25 Torx driver through the tool access hole to tighten the stove bolt tightly.
- Repeat until you have 2 "Pi" Frames.
- Set the "Pi" Frames aside for a future step.

Results:

- 2 "Pi" Frames

[4]Step 2: Assemble Z Lower Mounts

Parts Needed:

- 2 Frame – Z Lower (plastic part)
- 6 M5x12mm Bolts
- 6 M5 Washers
- 6 T-Slot Nuts
- 2 420mm Aluminum Extrusions

Tools Needed:

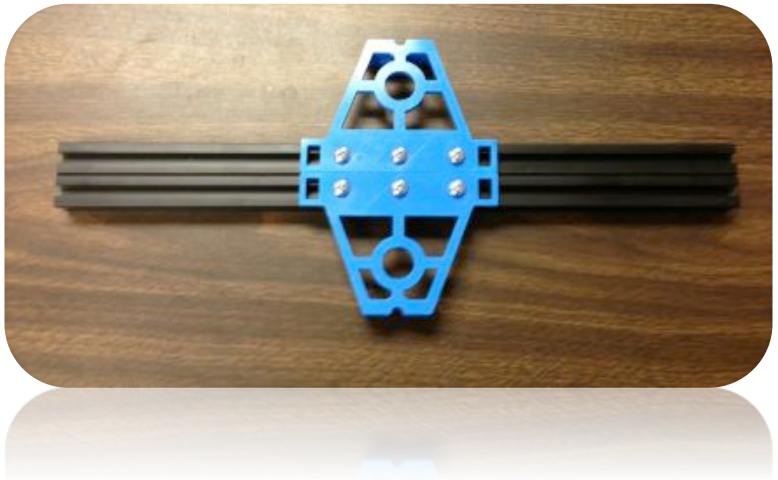
- Digital Caliper
- Philips Head Screwdriver

Steps:

- Put washers on bolts. Put bolts through bolt holes in plastic parts (3 each).
- Thread T-Slot Nuts onto bolts ends approximately 1 full turn each.
- Slide the aligned T-Slot Nuts into the extrusion slot, and center the plastic part on the extrusion. There will be 150mm from the edge of the printed part to the end of the extrusion on each side. Tighten all bolts once centered.
- Repeat for the other plastic part and other extrusion.

Results:

- 2 Z Lower Mounts



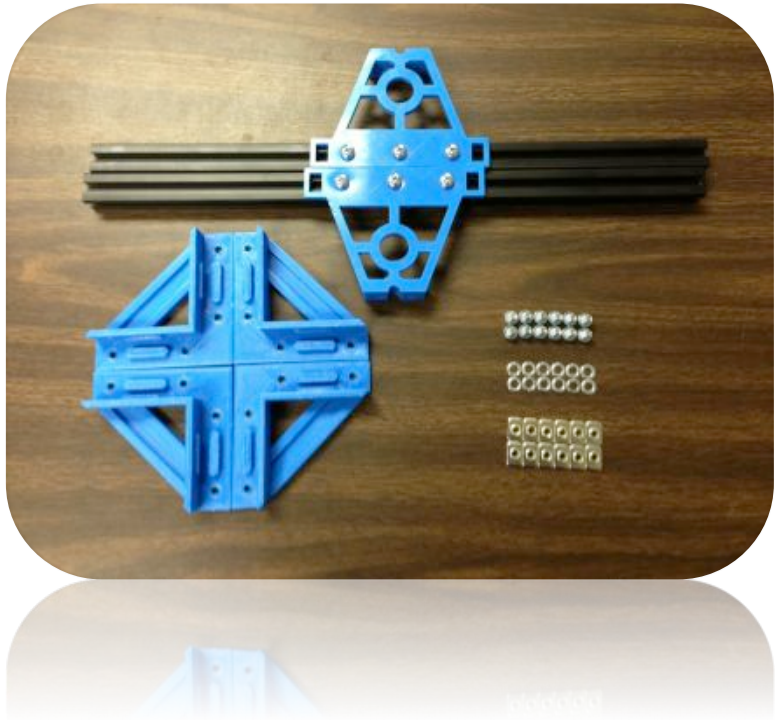
PRO-TIP:

While you're finding the center point, it's easier to just loosen and tighten the center bolt, and then once you have equal spacing, you can tighten all the bolts.

[4]Step 3: Add Frame Supports to Z Lower

Parts Needed:

- 2 Pre-Assembled Z Axis Lower Mounts
- 4 Frame – Z Bottom (plastic part)
- 16 T-Slot Nuts
- 12 M5x10mm Bolts
- 12 M5 Washers



Tools Needed:

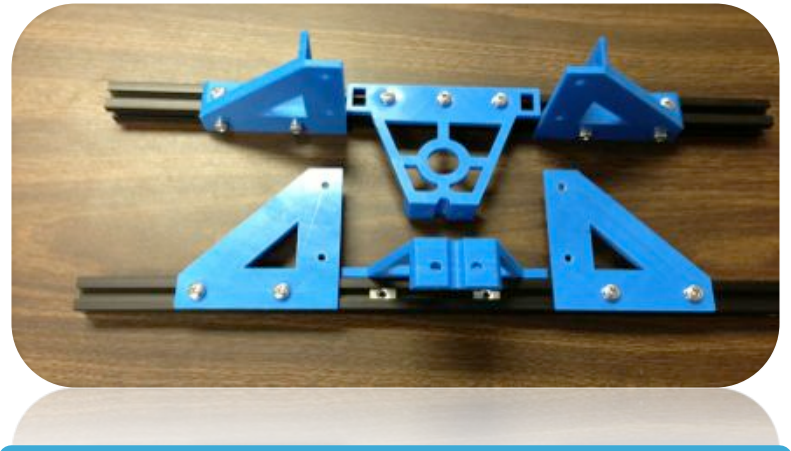
- Philips Head Screwdriver

Steps:

- Put washers on bolts. Put bolts through bolt holes along edge and top of plastic parts (3 each).
- Thread T-Slot Nuts onto bolts ends approximately 4 full turns each.
- Slide the aligned T-Slot Nuts into the extrusion slot, and slide the plastic part so that it does not overlap the Lower Z Mount. Tighten all bolts once in place.
- **ENSURE YOU PLACE 2 EXTRA T-SLOT NUTS ALONG THE OUTER EDGE OF THE EXTRUSIONS.**
- Repeat for the other plastic part and other extrusion.

Results:

- 2 Z Axis Frame Supports Added to Z Axis Lower Mounts



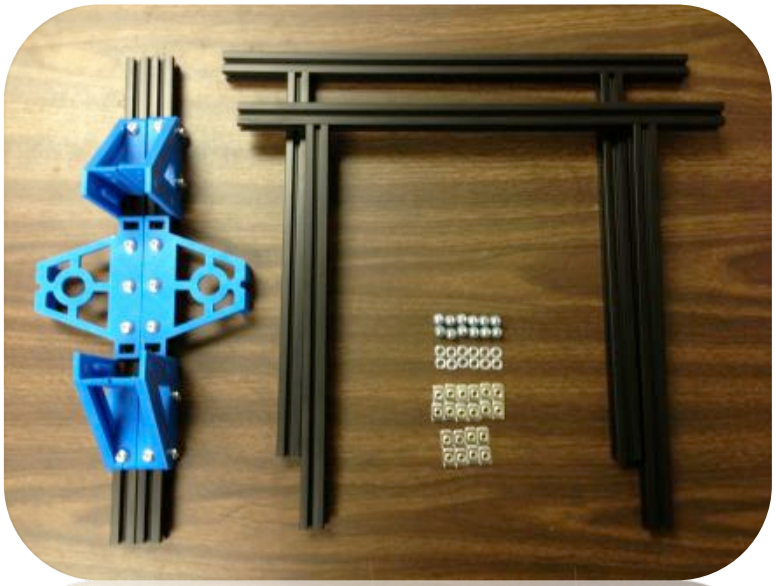
PRO-TIP:

If T-Slot nuts are too tight, loosen to allow them to slide on freely.

[4]Step 4: Assemble the "T" in Your "T MAX 2.0"

Parts Needed:

- 2 Pre-Assembled Z Axis Lower Mounts
- 2 Pre-Assembled "Pi" Frames
- 20 T-Slot Nuts
- 12 M5x10mm Bolts
- 12 M5 Washers

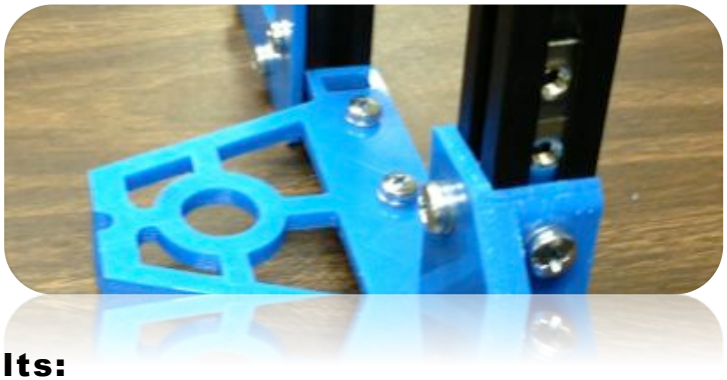


Tools Needed:

- Philips Head Screwdriver

Steps:

- Put washers on bolts. Put bolts through bolt holes along (3 per printer z upright mount).
- Thread T-Slot Nuts onto bolts ends approximately 4 full turns each.
- Insert one "Pi" frame onto Z Lower Mount, making sure to add 2 T-Slot Nuts to each "front-facing" extrusion. (See completed picture below)
- Ensure you have solid metal on metal contact before tightening M5 bolts.
- Repeat for the other "Pi" Frame.



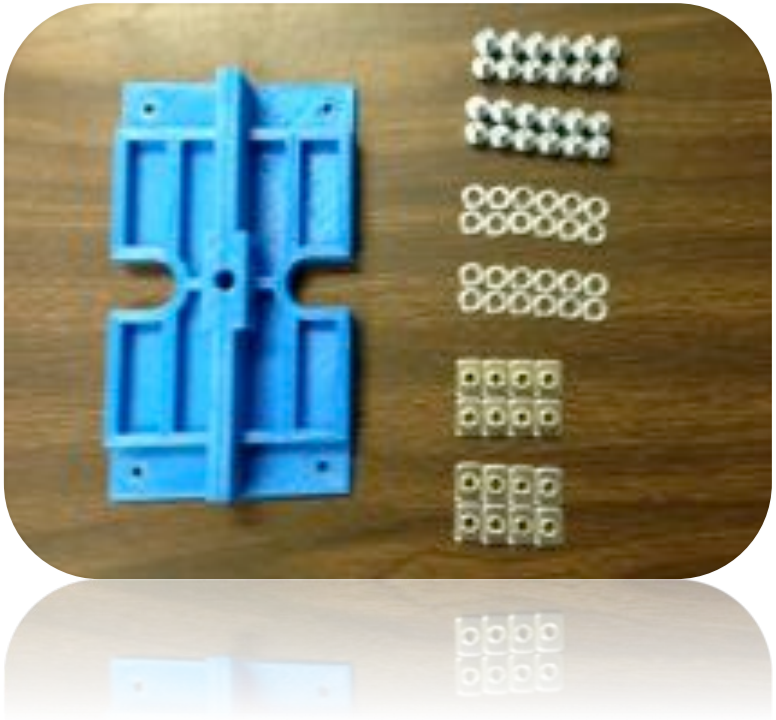
Results:

- You now have the inverted "T" of your "T MAX 2.0" assembled!

[4]Step 5: Attach Z Upper Frame

Parts Needed:

- 2 Pre-Assembled "T" Frame
- 2 Z Axis – Top (Printed Parts)
- 4 Frame – Z Upper (Printed Parts)
- 16 T-Slot Nuts
- 24 M5x10mm Bolts
- 24 M5 Washers



Tools Needed:

- Philips Head Screwdriver

Steps:

- Put washers on bolts. Put 2 bolts through top of each Z Axis –Top and thread T-Slot Nuts onto bolts ends approximately 4 full turns each.
- Place one Z Axis – Top onto top of frame. Insert extra T-Slot Nuts – 2 on the top of each extrusion and 4 on the "front" side of each extrusion.
- Attach final Z Axis – Top onto frame.
- Attach outer-most bolts to connect Z Axis – Top to ends of horizontal aluminum extrusions.
- Attach 4 Frame – Z Upper to support the uprights.

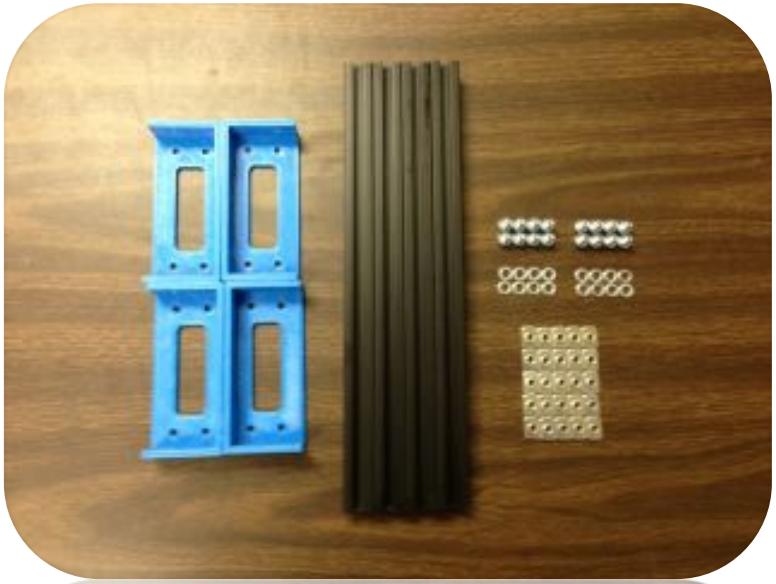
Results:

- Z Upper Frame Attached

[4]Step 6: Build 2 Frame Y Ends

Parts Needed:

- 4 300mm Aluminum Extrusions
- 4 Frame – Lower Vertex (Printed Parts)
- 24 T-Slot Nuts
- 16 M5x10mm Bolts
- 16 M5 Washers

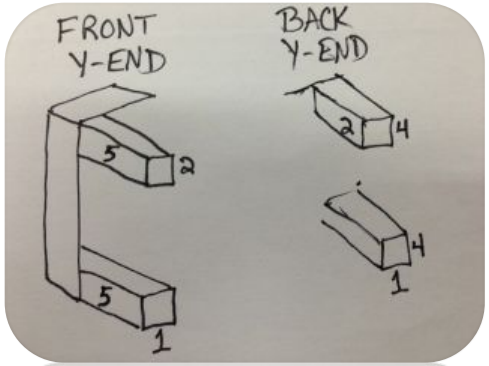


Tools Needed:

- Philips Head Screwdriver

Steps:

- Put washers on bolts.
- Attach 2 Extrusions onto 1 Frame – Lower Vertex via end taps on extrusions.
- Next, incorporate T-Slot Nuts in the required amounts, then attach the opposite vertex via the end taps, capturing the T-Slot Nuts.
- Repeat for the other Y end.
- **BE CAREFUL TO GET ALL T-SLOT NUMBERS AND PLACEMENT CORRECT – THIS WILL HELP YOU AVOID LATER DISASSEMBLY TO CORRECT WRONG/MISSING T-SLOT NUTS.**



Results:

- 2 Frame Y Ends Built

[4]Step 7: Attach Rear Y End to Frame

Parts Needed:

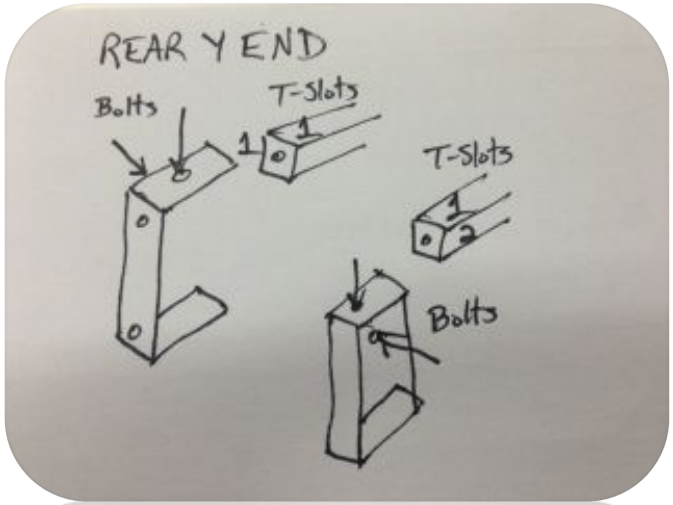
- Pre-assembled Frame
- Pre-assembled Rear Y End
- 5 T-Slot Nuts
- 4 M5x10mm Bolts
- 4 M5 Washers

Tools Needed:

- Philips Head Screwdriver

Steps:

- Insert T-Slot Nuts as indicated in the diagram below.
- Then attach bolts and tighten.
- **BE CAREFUL TO GET ALL T-SLOT NUMBERS AND PLACEMENT CORRECT – THIS WILL HELP YOU AVOID LATER DISASSEMBLY TO CORRECT WRONG/MISSING T-SLOT NUTS.**



Results:

- Frame with Rear Y End Installed

[4]Step 8: Attach Front Y End to Frame

Parts Needed:

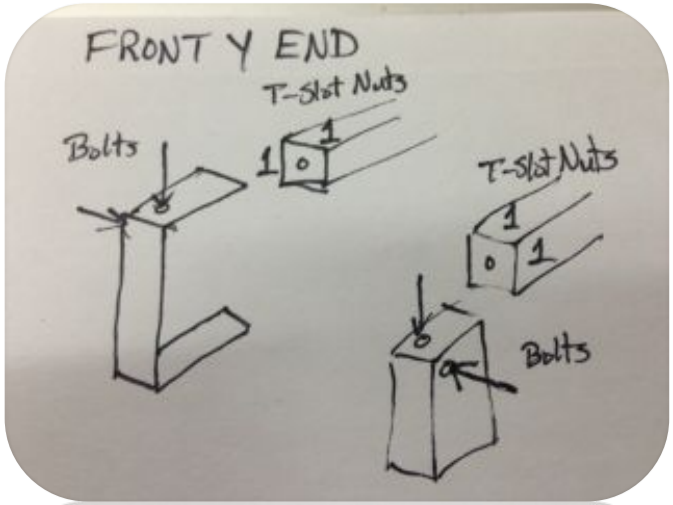
- Pre-assembled Frame
- Pre-assembled Front Y End
- 4 T-Slot Nuts
- 4 M5x10mm Bolts
- 4 M5 Washers

Tools Needed:

- Philips Head Screwdriver

Steps:

- Insert T-Slot Nuts as indicated in the diagram below.
- Then attach bolts and tighten.
- **BE CAREFUL TO GET ALL T-SLOT NUMBERS AND PLACEMENT CORRECT – THIS WILL HELP YOU AVOID LATER DISASSEMBLY TO CORRECT WRONG/MISSING T-SLOT NUTS.**



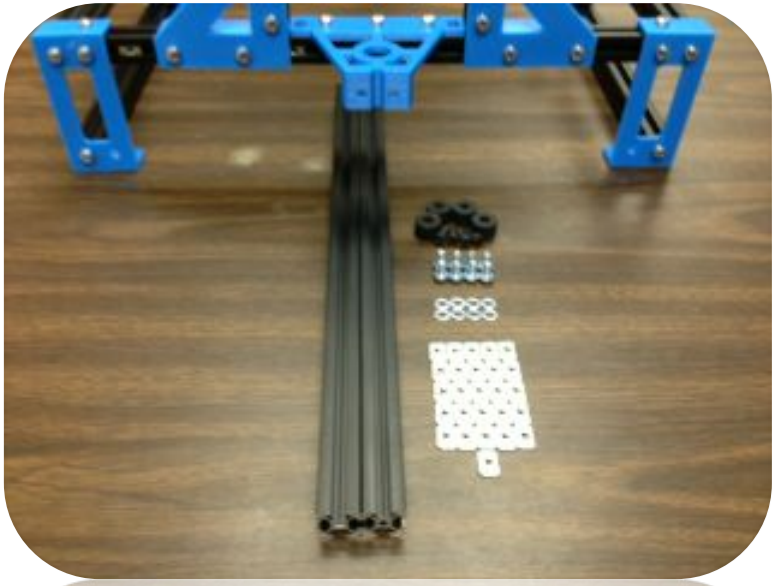
Results:

- Frame with Front Y End Installed

[4]Step 9: Attach Bottom Extrusions and Rubber Feet

Parts Needed:

- Pre-assembled Frame
- 2 420mm Aluminum Extrusions
- 26 T-Slot Nuts
- 8 M5x10mm Bolts
- 8 M5 Washers
- 4 Rubber Feet with 4 M5x12 Mounting Bolts

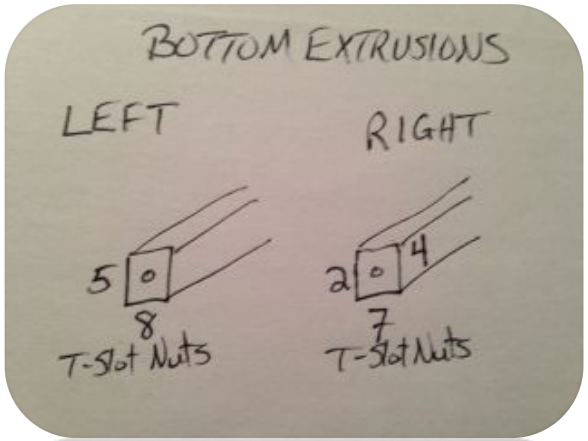


Tools Needed:

- Philips Head Screwdriver

Steps:

- Do 1 Side First: Insert T-Slot Nuts as indicated in the diagram below.
- Attach bolts to the bottom and outer edges of 2 corners and tighten.
- Repeat for other side, making sure to get T-Slot Nut count correct (it is different side to side).
- Install 4 feet in corner-most T-Slot Nuts.



Results:

- Frame Assembly Completed!

[4]Step 10: Heated Bed and Thermistor Wiring

Parts Needed:

- 1 MK2B 3mm Thick Aluminum Heated Bed with Epcos 100k Thermistor
- 2 100mm Sections of High Temp Wire
- 1 450mm Section of Red/Black Wire
- 1 THERM Cable from Wire Bundle
- 2 50mm sections of Teflon Tubing
- 1 225mm Section of Thick TechFlex Tubing
- Heat Shrink for all connections
- 1 Approx. 2"x4" Section of Kapton Tape

Tools Needed:

- Soldering Iron / Heat Gun / Solder / Tip Cleaner
- Wire Cutters
- Wire Strippers

Steps:

- Cut the THERM cable to 350mm of wire length.
- Place Teflon tubing over the thermistor leads, leaving the ends free for solder connections.
- Solder each THERM cable lead to 100mm section of high temp wire, and then solder the other ends of the high temp wire to the ends of the thermistor. BEFORE you solder, ensure you have a solid mechanical connection between wires and don't forget to add heat shrink.
- Use red/black wiring to solder to heated bed according to 24V connection instructions printed on the heated bed.
- Note that if you've got a 3mm thick aluminum heated bed, low wattage soldering irons may have a really hard time melting solder because the aluminum is such a great thermal conductor… Also, the 3mm aluminum beds tend to have the solder pads reversed, so you'll need the full 450mm wire length - 250mm length works for a PCB MK2B heated bed.
- Ensure that the thermistor can poke up through the bottom of center hole in the heated bed, and then tape it in place, allowing the wires to route to the same spot where the heated bed wires come off the heated bed. Wrap sleeving around all wires, using heat shrink to keep the ends from fraying.

Results:

- Heated Bed Wiring Complete

[4]Step 11: Y Axis - Lower Plate

Parts Needed:

- 1 Small Aluminum Plate (9"x4.5")
- 4 Pillow Block Bearings
- 8 M3x16mm Bolts
- 8 M3 Washers
- 8 M3 Nuts

Tools Needed:

- M3 Hex Driver
- Pliers

Steps:

- Fasten pillow block bearings to aluminum plate – just finger tight for now, allowing the bearings to slide side to side.

Results:

- Y Axis Lower Plate Assembled

[4]Step 12: Y Axis - Upper Plate

Parts Needed:

- Pre-assembled Y Axis Lower Plate
- 1 Large Aluminum Plate (9"x9")
- 4 M3x40mm Bolts
- 4 25mm Aluminum Spacers
- 8 M3 Washers
- 4 M3 Nuts

Tools Needed:

- M3 Hex Driver
- Pliers

Steps:

- Attach large aluminum plate to Y Axis Lower Plate assembly, using the following order (bottom to top):
  - Bolt
  - Washer
  - Large Plate
  - Aluminum Spacer
  - Small Plate (pillow block bearings facing up)
  - Washer
  - Nut
- Tighten bolts and nuts with pliers and hex driver.

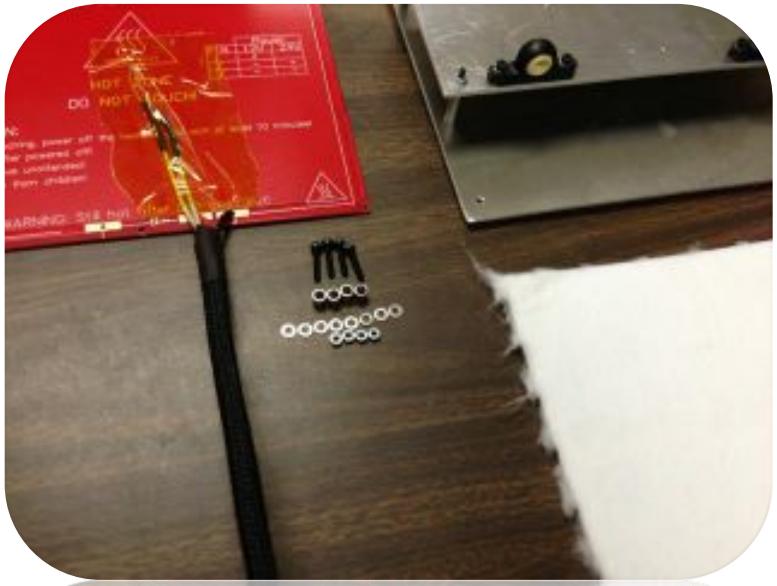
Results:

- Y Carriage Assembled

[4]Step 13: Mounting the Heated Bed to the Y Carriage

Parts Needed:

- Pre-assembled Y Carriage
- Pre-assembled Heated Bed
- 1 Aerogel Infused Insulation Sheet
- 4 M3x16mm Bolts
- 8 M3 Washers
- 4 M3 Nuts
- 4 6mm Aluminum Spacers



Tools Needed:

- Scissors (to cut insulation to size)
- M3 Hex Driver
- Pliers

Steps:

- Cut insulation to size of heated bed.
- Position insulation on top of Y Axis Upper Plate. Position heated bed on top of insulation.
- For each of the 4 corners, use the following order (top to bottom):
  - Bolt
  - Washer
  - Heated Bed
  - Aluminum Spacer
  - Y Axis Upper Plate
  - Washer
  - Nut

Results:

- Y Carriage with Heated Bed Mounted

[4]Step 14: Y Axis - Mounting the Y Carriage

Parts Needed:

- Pre-assembled Y Carriage
- 2 Y Smooth Rods – 420mm length
- 2 Y Axis – Smooth Rod Mount (printed part)
- 4 M5x10mm Bolts
- 4 M5 Washers
- 4 8mm Clamp (printed part)
- 8 M5x25mm Bolts
- 8 M5 Thin Nuts

Tools Needed:

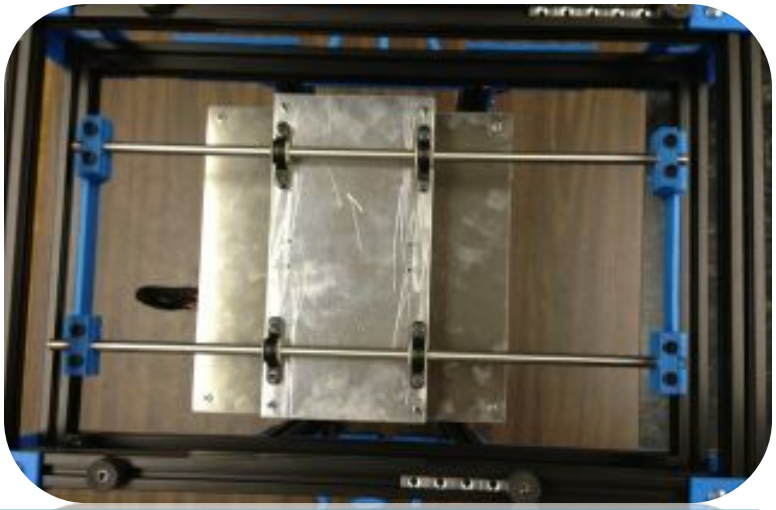
- M5 Hex Driver
- Pliers

Steps:

- Put M5 washers on M5x10mm bolts.
- Attach Y Smooth Rod Mounts to inside edge of top frame extrusion with M5x10mm bolts. Ensure the mounts are centered, then tighten all bolts. Once secure, tip frame upside down.
- Slide smooth rods through Y Carriage pillow block bearings. Position rods into mounts with heated bed suspended below. Position clamps over smooth rods and secure with M5x25mm bolts and M5 thin nuts.
- Now go back and tighten the M3 bolts connecting the pillow block bearings to the lower aluminum plate. The goal is for the Y carriage to smoothly across the length of travel.
- Flip frame right side up when complete.

Results:

- Y Axis Carriage mounted to frame

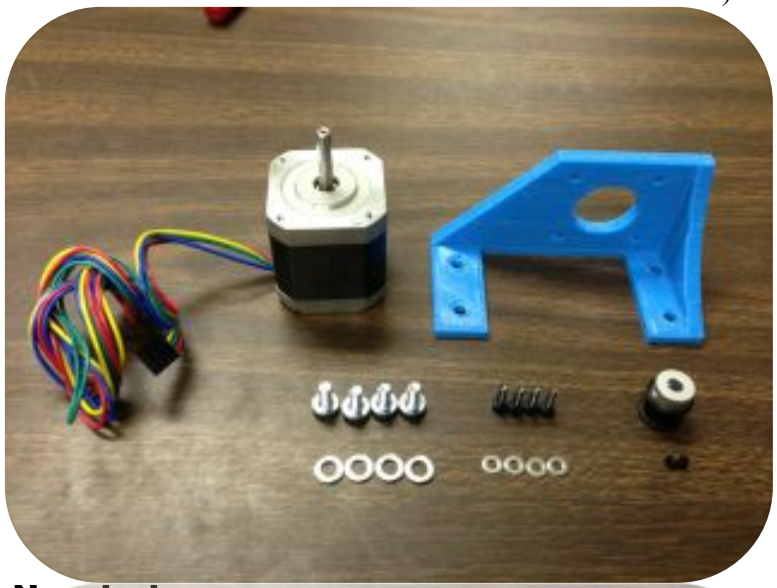


PRO-TIP:
8mm smooth rods usually come with a slightly sticky shipping grease coating (to prevent rust). Remove using soap/water or gentle rubbing with steel wool.

[4]Step 15: Y Axis - Motor Mount

Parts Needed:

- Pre-assembled frame
- Y Axis Motor Mount (printed part)
- 4 M3x10mm Bolts
- 4 M3 Washers
- 4 M5x10mm Bolts
- 4 M5 Washers
- 20 tooth Pulley with 2 Set Screws (located in your RAMPS Kit Box – the one labeled "V3TP")



Tools Needed:

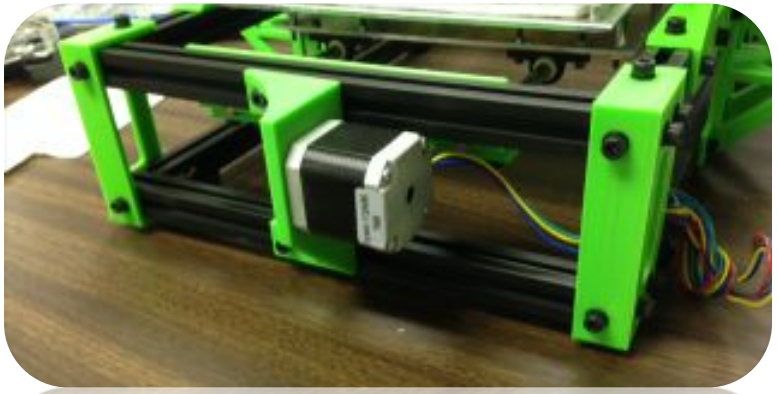
- M3 Hex Driver
- M5 Hex Driver

Steps:

- Attach pulley to motor shaft using set screws. The pulley teeth go furthest from the motor. The pulley can be placed anywhere along the shaft.
- Attach stepper motor to motor mount using M3 bolts and washers. The motor sits outside the motor mount so that the shaft points in the same direction as the M5 mounting "legs" on the motor mount. Ideally you'll want the motor cable along the edge closest to the M5 mounting holes.
- Attach motor mount to frame using M5 bolts and washers. The slanted portion of the motor mount should be closest to the bottom of the printer. Align the motor mount so that the pulley is located roughly halfway between the Y smooth rods. You'll perfect the alignment during Step 17.

Results:

- Y Axis Motor Mount Installed



[4]Step 16: Y Axis - Idler

Parts Needed:

- Pre-assembled frame
- 1 Y Idler Mount (printed part)
- 1 Y Idler Arm (printed part)
- 1 M5x20mm Bolt
- 4 M5x12mm Bolts
- 4 M5 Washers
- 1 M5 Thin Nut
- 1 M8x30mm Bolt
- 2 M8 Washers
- 1 M8 Nut
- 1 608ZZ Bearing

Tools Needed:

- Philips Head Screwdriver
- 2x 13mm Wrench/Socket Driver (not pictured)

Steps:

- Assemble Y Idler Arm axle – order:
  - M8 Bolt
  - Edge of Y Idler Arm (printed part)
  - M8 Washer
  - 608ZZ Bearing
  - M8 Washer
  - Other edge of Y Idler Arm (printed part)
  - M8 Nut
- Secure M5 thin nut into captive nut hole on Y Idler Arm, and insert M5x20mm through hole and into the captive nut.
- Secure Y Idler Arm to Y Idler Mount using 2 M5x12mm bolts with washers.
- Mount Y Idler to frame using remaining 2 M5x12mm bolts with washers.

Results:

- Y Idler mounted to frame

[4]Step 17: Y Axis - GT2 Belt

Parts Needed:

- Pre-assembled frame
- 1 Section GT2 Belt – 1.1m (the longer of the 2)
- 2 GT2 Belt Clamps (printed parts)
- 4 M3x12mm Bolts
- 4 M3 Washers
- 4 M3 Nuts

Tools Needed:

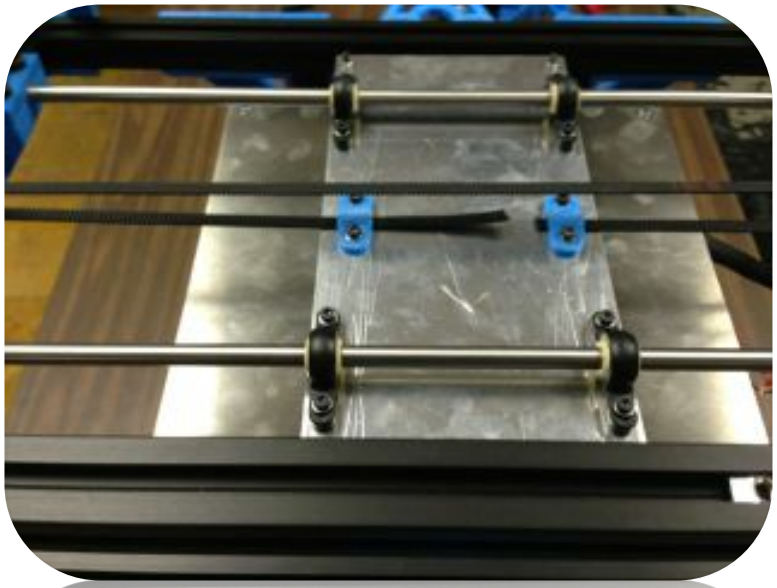
- M3 Hex Driver
- Pliers

Steps:

- Put washers on bolts.
- Flip printer upside down.
- Secure one end of GT2 Belt to underside of Y carriage using clamp and M3 bolts/washers/nuts. The teeth of the belt will engage the slots in the belt clamps.
- Route belt around Y Idler and Y Motor pulley.
- Secure other end of the belt using the other clamp and remaining M3 bolts/washers/nuts.
- Try to get the belt as tight as possible.
- Adjust the tension on the Y belt using the M5 bolt on the Y Idler Arm to remove any slack.
- Belt should be tight enough to "twang" when you pluck it, but not tight enough to snap the belt or prevent the Y carriage from travelling freely.

Results:

- Y Axis GT2 Belt Installed



[4]Step 18: Z Axis - Motor Mounts

Parts Needed:

- Pre-assembled frame
- 2 Stepper Motors
- 2 Z-Axis Motor Mounts (printed parts)
- 8 M5x10mm Bolts
- 8 M5 Washers
- 8 M3x10mm Bolts
- 8 M3 Washers

Tools Needed:

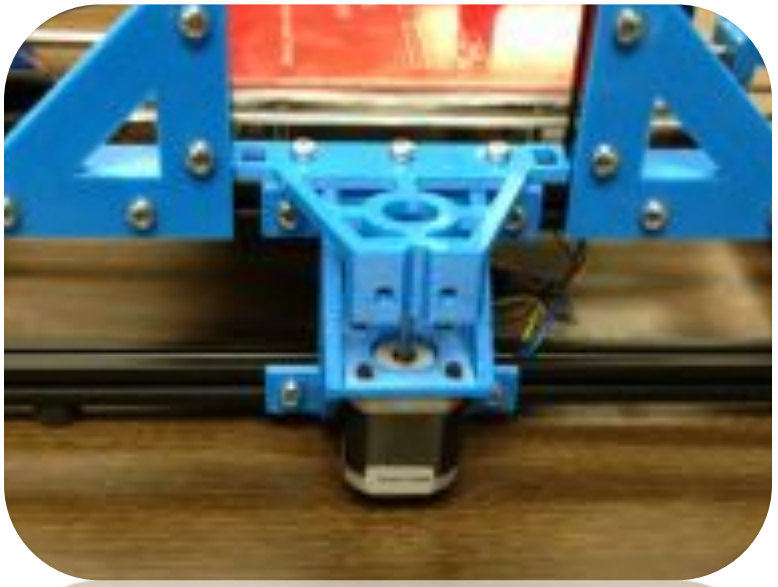
- M3 Hex Driver
- M5 Hex Driver

Steps:

- Put washers on bolts.
- Route motor cable through lower "window" of motor mount. Align motor shaft through hole in motor mount, pointing upwards. Secure motor with M3 bolts/washers.
- Use M5 bolts/washers to secure the motor mount to the frame.
- For the left-hand side motor mount, leave 1 T-Slot nut to the rear of the motor mount (this T-Slot nut will be used for securing the power switch mount in Step 27).

Results:

- Z Axis Motor Mounts attached to frame



[4]Step 19: X Axis - Motor Mount

Parts Needed:

- 1 X-Axis Clamp (printed part)
- 1 X-Axis Motor Mount (printed part)
- 1 Stepper Motor
- 1 M6 Hex Nut
- 4 M3x20mm Bolts
- 4 M3x16mm Bolts
- 4 M3x10mm Bolts
- 12 M3 Washers
- 8 M3 Nuts
- 20 tooth Pulley with 2 Set Screws (located in your RAMPS Kit Box – the one labeled "V3TP")
- 2 Pillow Block Bearings

Tools Needed:

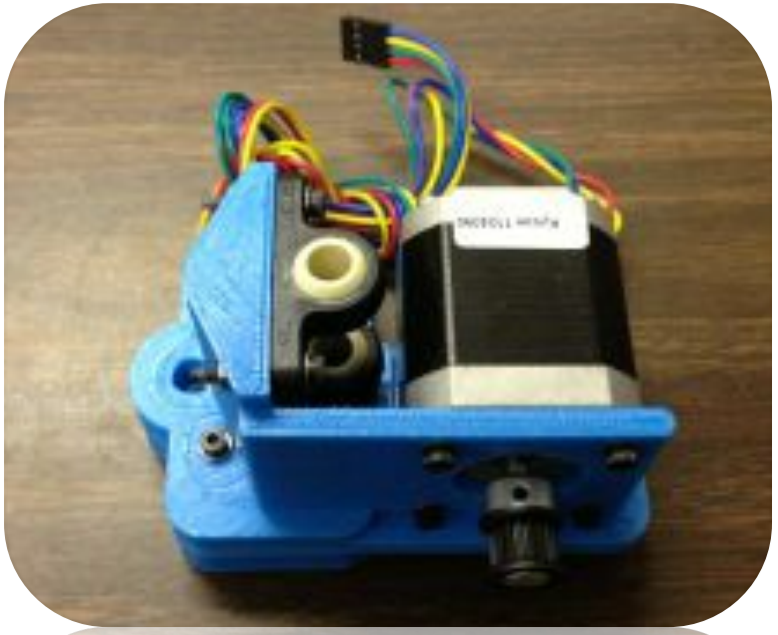
- M3 Hex Driver
- Old/Cheap Soldering Iron (not pictured)

Steps:

- Attach pulley to motor shaft using set screws. The pulley teeth go furthest from the motor. The pulley can be placed anywhere along the shaft.
- Attach pillow block bearings to motor mount using M3x16mm bolts with washers/nuts.
- Insert M6 nut into clamp.
- Use old/cheap soldering iron (i.e. not one you use with solder/electrical components) to easily press and secure 4 M3 nuts into the clamp.
- Attach motor mount to clamp using M3x20mm bolts with washers/nuts. Washers are optional.
- Attach stepper motor to motor mount using M3x10mm bolts and washers. The motor sits inside the motor mount. Ideally you'll want the motor cable along the bottom edge of the motor mount.

Results:

- X Axis Motor Mount assembled



[4]Step 20: X Axis - Idler

Parts Needed:

- 1 X Axis Idler (printed part)
- 1 X Axis Clamp (printed part)
- 2 Pillow Block Bearings
- 1 M6 Nut
- 1 608ZZ Bearing
- 4 M3x20mm Bolts
- 4 M3x16mm Bolts
- 8 M3 Washers
- 8 M3 Nuts
- 1 M8x30mm Bolt
- 2 M8 Fender Washers
- 4 M8 Washers
- 1 M8 Nut

Tools Needed:

- M3 Hex Driver
- Old/Cheap Soldering Iron (not pictured)
- 13mm Wrench/ Socket Driver (not pictured)

Steps:

- Attach pillow block bearings to motor mount using M3x16mm bolts with washers/nuts.
- Use old/cheap soldering iron (i.e. not one you use with solder/electrical components) to easily press and secure 4 M3 nuts into the clamp.
- Insert M6 nut into clamp.
- Attach idler to clamp using M3x20mm bolts with washers/nuts. Washers are optional.
- Insert M8 nut into idler.
- Assemble X Axis Idler axle:
  - M8x30mm Bolt
  - M8 Washer
  - M8 Fender Washer
  - M8 Washer
  - 608ZZ Bearing
  - M8 Washer
  - M8 Fender Washer
  - M8 Washer
  - X Axis Idler (plastic part)
  - M8 Nut (pre-positioned)

Results:

- X Axis Idler assembled

[4]Step 21: X Carriage

Parts Needed:

- X Carriage (printed part)
- 8 M3x12mm Bolts
- 8 M3 Washers
- 16 M3 Nuts
- 2 M5 Flat Nuts
- 4 Pillow Block Bearings

Tools Needed:

- M3 Hex Driver
- Old/Cheap Soldering Iron (not pictured)

Steps:

- Insert M3 nuts and M5 nuts into carriage. You can use an old/cheap soldering iron to make this easier on yourself.
- Attach pillow block bearings to carriage.

Results:

- X Carriage assembled

[4]Step 22

Parts Needed:

- Pre-assembled Frame
- Pre-assembled X Motor Mount
- Pre-assembled X Idler
- 2 8mm Smooth Rods - 380mm long
- 8 M5x20mm Bolts
- 8 M5 Thin Nuts
- 4 Smooth Rod Clamps (printed parts)

Tools Needed:

- M5 Hex Driver

Steps:

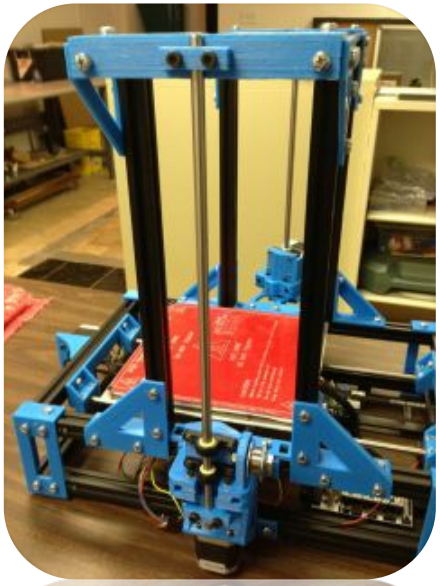
- One clamp at a time:
  - Insert an M5 Nut into the nut trap on the back side of a mounting hole in the Z-Top or Z-Bottom.
  - Insert bolt into clamp.
  - Loosely connect bolts to nuts.

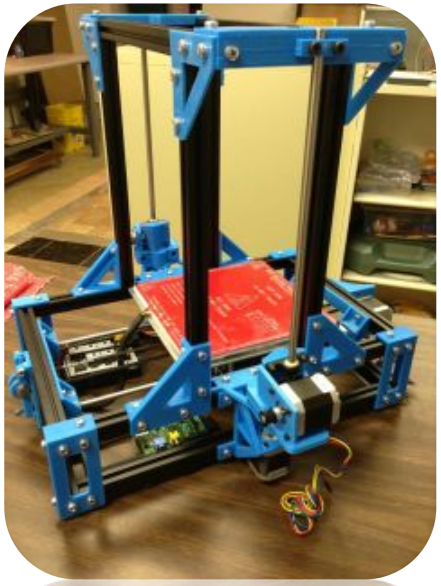
Steps (continued):

- Once the top/bottom clamps are in place, insert smooth rod – MAKE SURE that the X Idler is inserted on the left side and the X Motor Mount is inserted on the right side.
- Once the smooth rod is inserted through the top and bottom clamps (again, with the appropriate X Idler / X Motor Mount in place), tighten top/bottom clamps.

Results:

- Z Smooth Rods and X Ends attached to frame



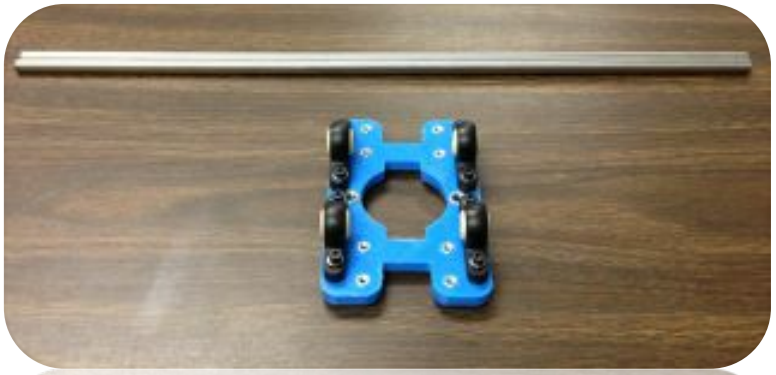


PRO-TIP:
Ensure the spacing at the top of the rods is equal to the spacing at the bottom of the rods. The spacing needs to be EXACTLY the same at the top and bottom.

[4]Step 23: X-Axis Smooth Rod and X Carriage Mounting

Parts Needed:

- 8mm Smooth Rods – 420mm Long
- Pre-assembled X Carriage



Tools Needed:

- M3 Hex Driver
- 8mm Round File or Drill with 8mm or 5/16" bit (not pictured)

Steps:

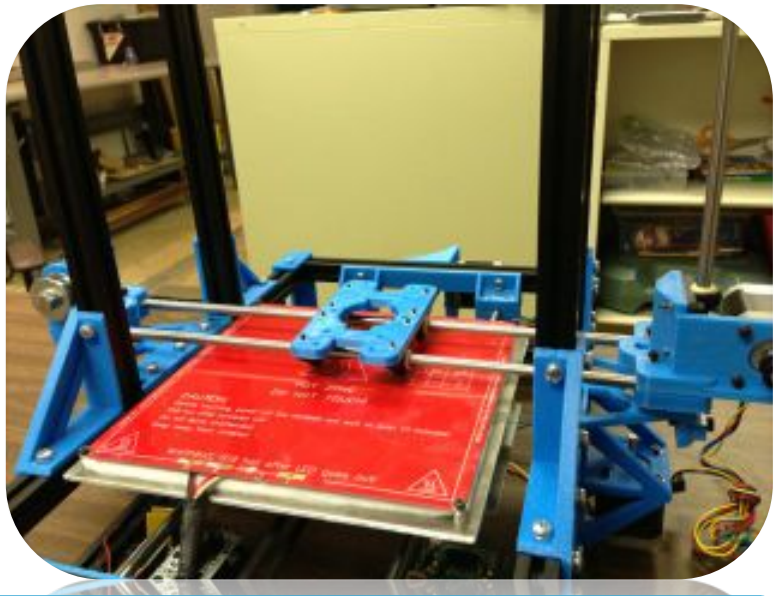
- With X Motor Mount securely clamped to X Clamp, file/drill the 8mm holes. You want the 8mm smooth rods to fit securely into the holes without rotating once the clamp is tight.
- Repeat for the X Idler and its clamp.
- Loosen clamp bolts for both X Motor Mount and X Idler.

Steps:

- Insert 8mm smooth rod through X Idler, the through the X Carriage, then into the X Motor Mount.
- Make sure the X Carriage moves smoothly.
- Tighten the bolts on both X Clamps.

Results:

- X Axis smooth rods and X Carriage mounted



PRO-TIP:
If you got your Z smooth rod spacing EXACTLY perfect in the previous step, you should now be able to lift the X Carriage assembly (including both X Ends), and gravity should be able to pull it down once both ends are even with each other. If your X Carriage assembly binds, you need to double-check the Z smooth rod alignment, re-check that you've removed any shipping grease, and try loosening the X Idler Clamp bolts until you get smooth movement, then re-tighten.

[4]Step 24: Z Axis Threaded Rod Mounting

Parts Needed:

- Pre-assembled frame
- 2 6mm Threaded Rods
- 2 5mm to 6mm Shaft Couplers

Tools Needed:

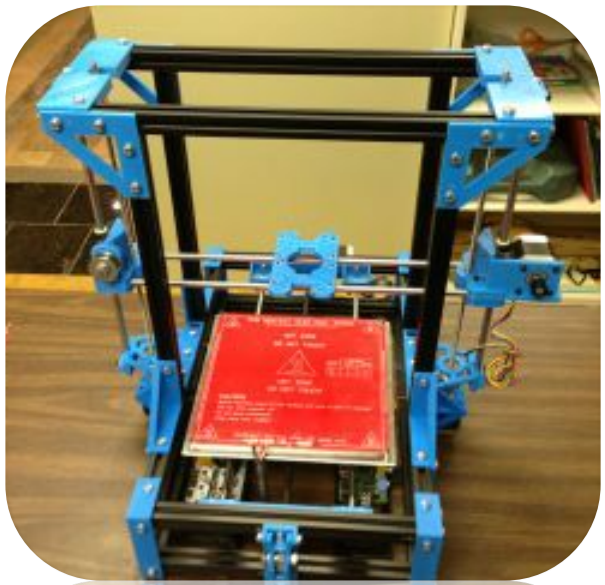
- M5 Hex Driver
- 2mm Hex Driver (not pictured)

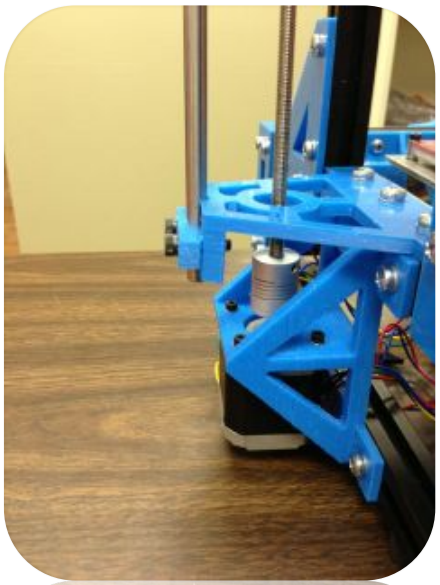
Steps:

- Attach shaft couplers to Z stepper motor shafts. Use both (90 degree offset) set screws to tighten completely onto the shaft.
- Thread 6mm rod through X Motor Mount / X Idler and down into the shaft coupler.
  - NOTE: If the 6mm rod doesn't align with the coupler, you need to adjust the X Carriage angle and Z Motor Mount positions in order to align.
  - PROPER ALIGNMENT IS CRITICAL!
  - Double check that your Z threaded rods and Z smooth rods are exactly parallel.
- Secure 6mm rod in top of shaft coupler with both set screws.
- Ensure Z Motor Mounts are tightened again if you loosened them.
- Tighten all pillow block bearing bolts on the X motor Mount and X Idler.

Results:

- Z Axis threaded rods attached





[4]Step 25

Parts Needed:

- Pre-assembled frame
- 1 Section GT2 Belt – 1.1m (the longer of the 2)
- 2 Belt Clamps (printed parts)
- 4 M3x12mm Bolts
- 4 M3 Washers
- 1 Belt Tensioner (not pictured)

Tools Needed:

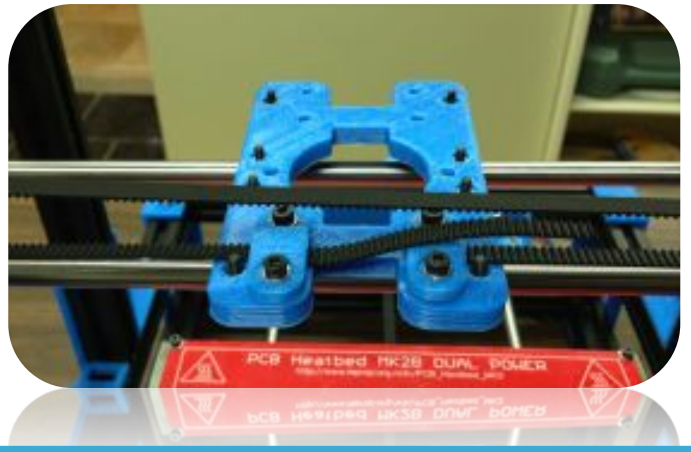
- M3 Hex Driver

Steps:

- Put washers on bolts. Put bolts through belt clamps.
- Secure one end of GT2 Belt to the top of the X Carriage using the clamp and M3 bolts / washers / nuts. The teeth of the belt will engage the slots in the belt clamps.
- Route belt around X Idler and X Motor pulley.
- Secure other end of the belt using the other clamp and remaining M3 bolts/washers/nuts.
- Try to get the belt as tight as possible.
  Attach the belt tensioner to automatically keep the belt tight.
- Belt should be tight enough to "twang" when you pluck it, but not tight enough to snap the belt or prevent the X carriage from travelling freely.

Results:

- X Axis GT2 Belt attached – and you've now got all the mechanical parts of your printer assembled!



PRO-TIP(s):
Have a friend help you by holding the belt tight while you secure it. Excess belt length can be cut off, but be sure to leave enough (4-5cm) so that you can get it back together if you ever remove the belt. Make sure your X Ends and X Carriage are secure and tight before attaching the clamps and belt.

[4]Step 26

Parts Needed:

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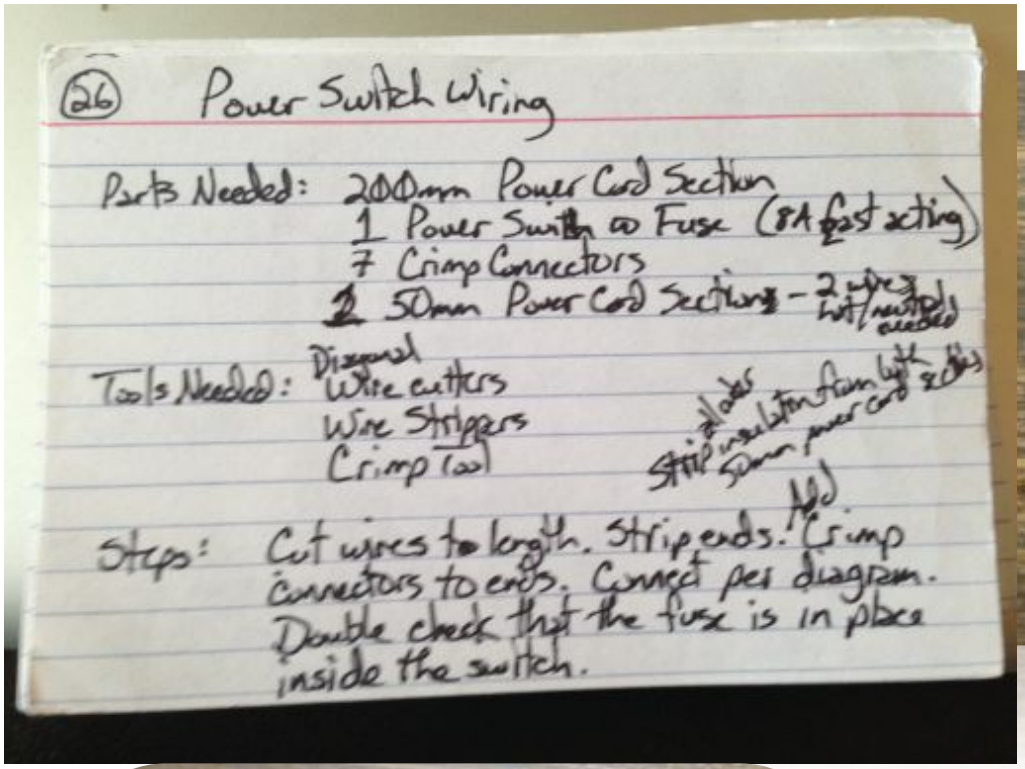


Steps:

- See the instructions at:
  - http://www.3dsuppli.com/3d-printer-power

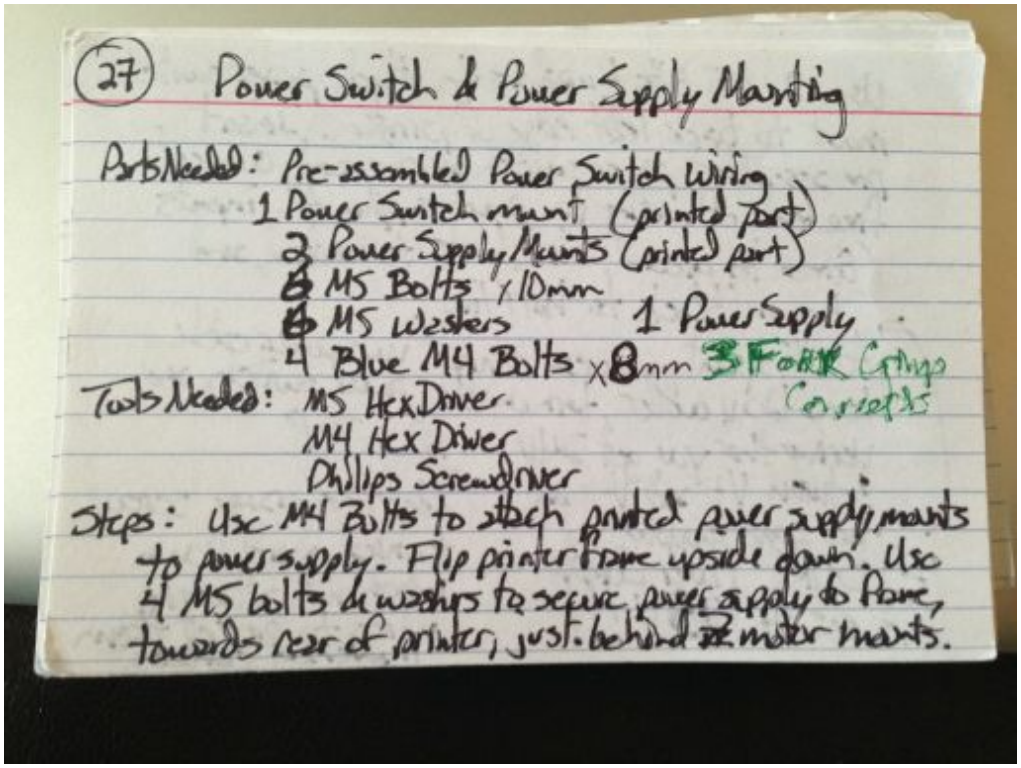
Results

-

[4]Step 27

Parts Needed:

-



Steps:

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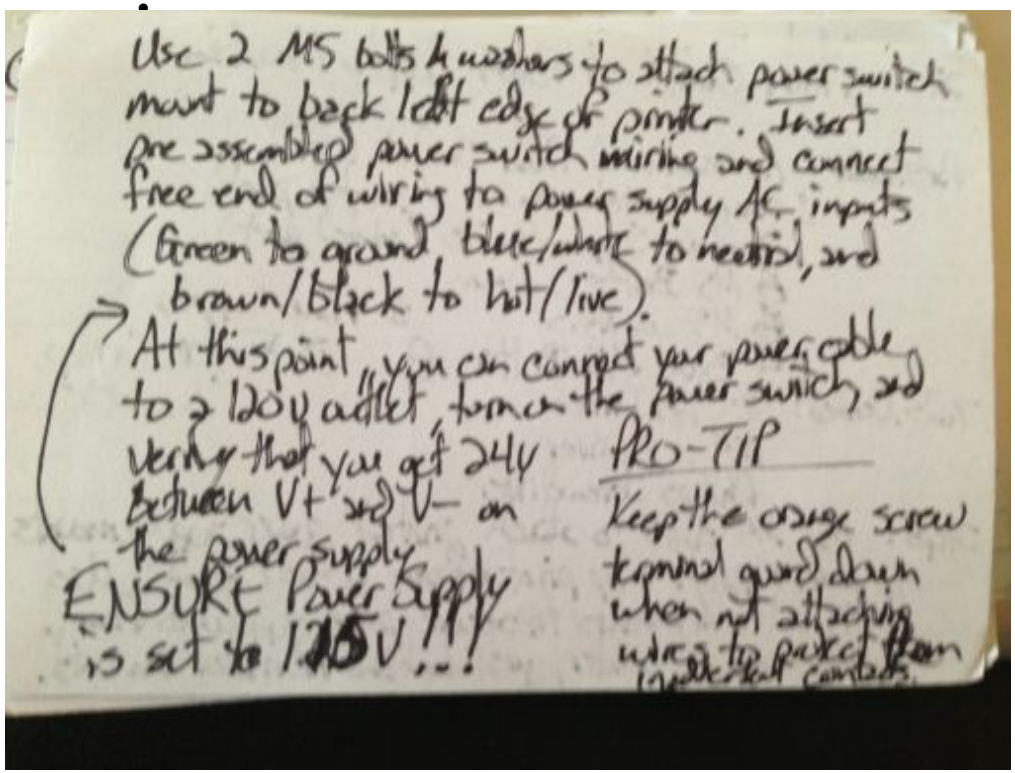

Tools Needed:

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[4]Step 28

Parts Needed:

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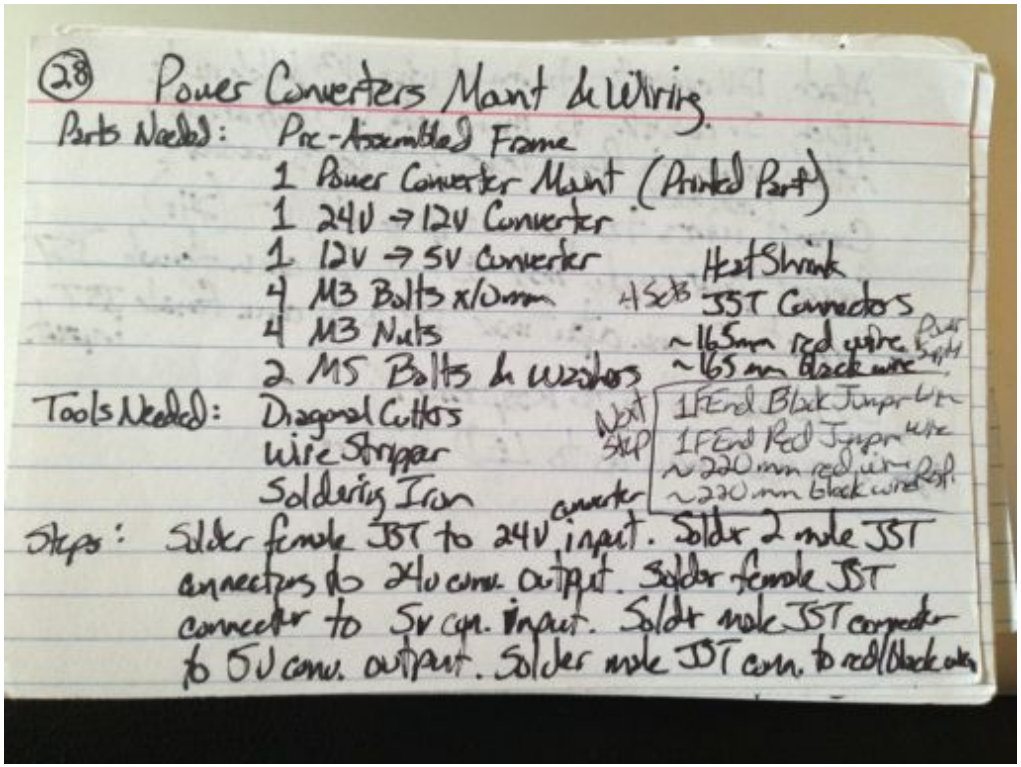

Steps:

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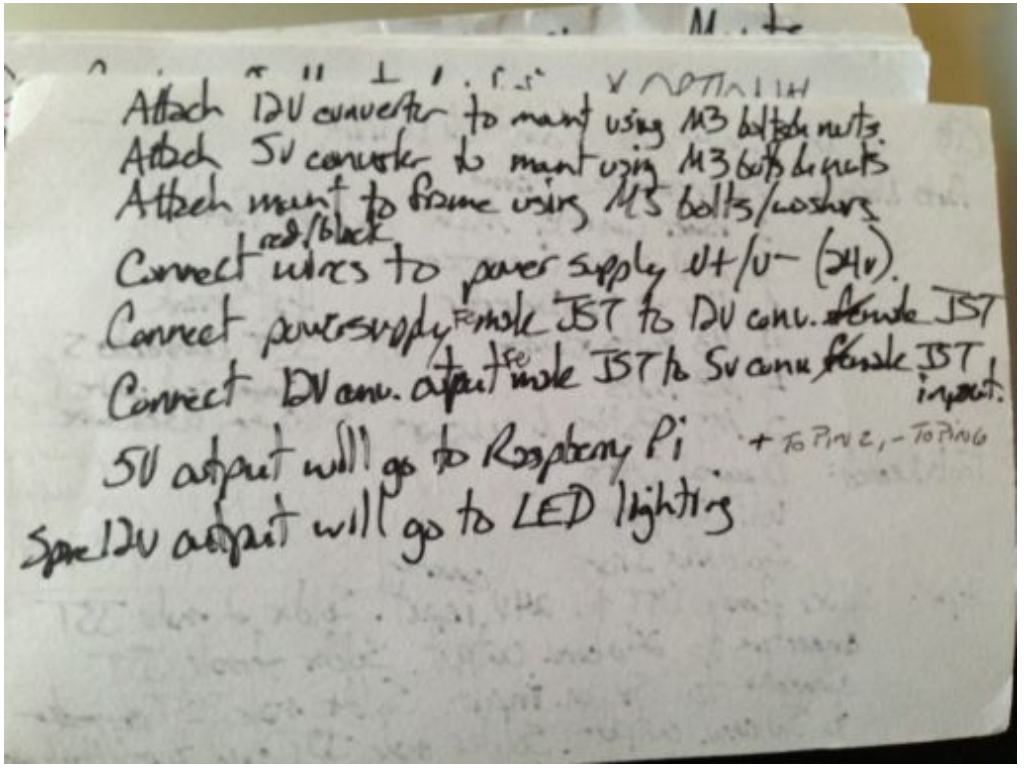

Tools Needed:

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[4]Step 29

Parts Needed:

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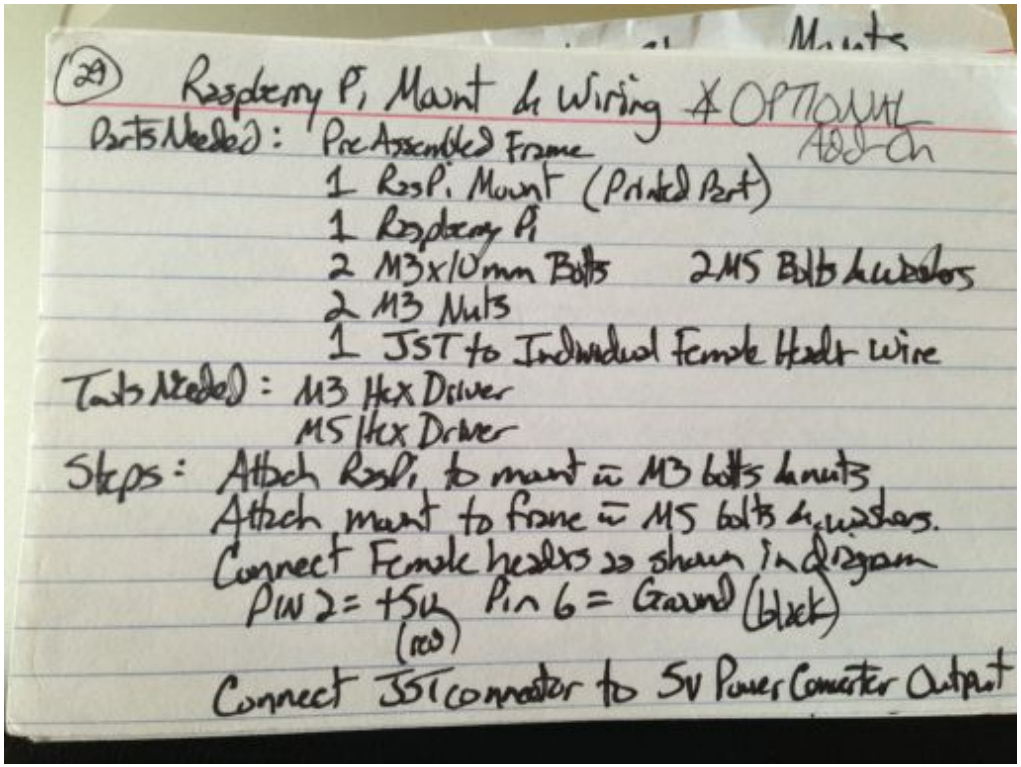

Tools Needed:

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Steps:

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Results:

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[4]Step 30

Parts Needed:

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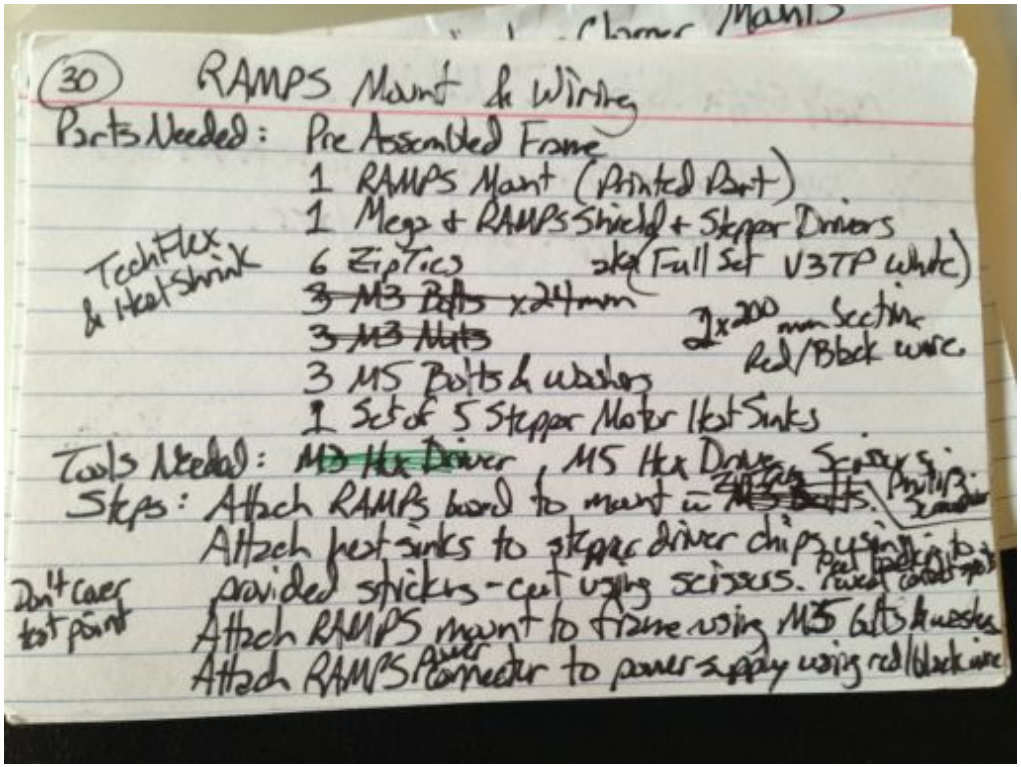


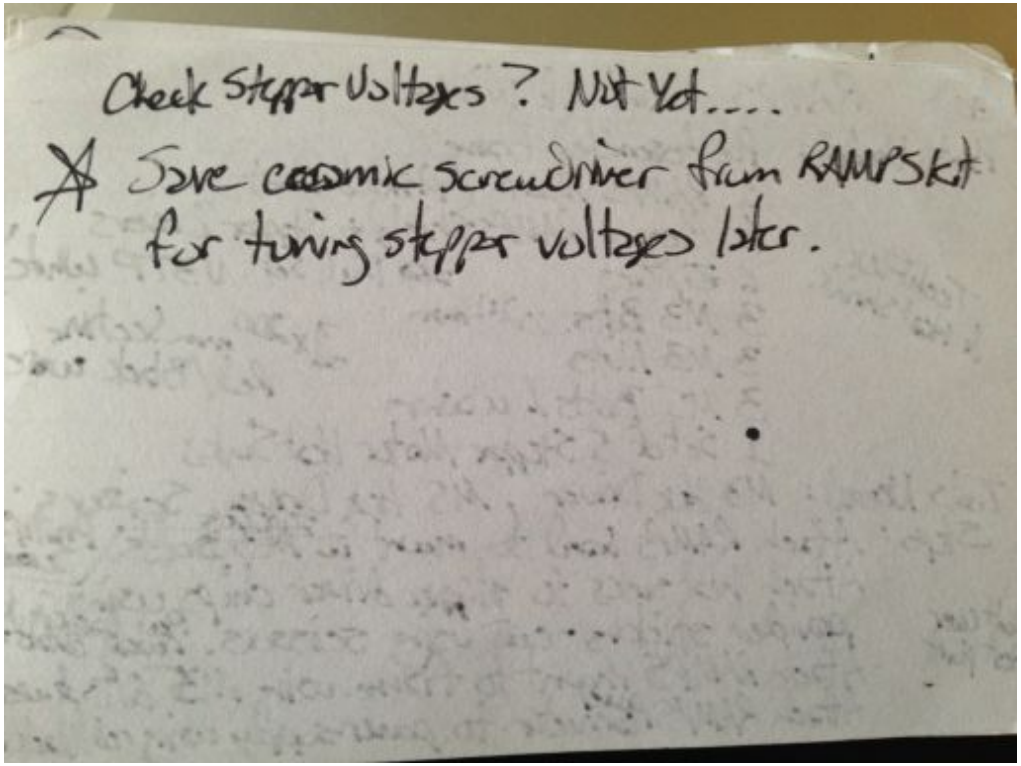
Tools Needed:

-

Steps:

- See wiring at:

http://reprap.org/mediawiki/images/6/6d/Rampswire14.svg



[4]Step 31

Parts Needed:

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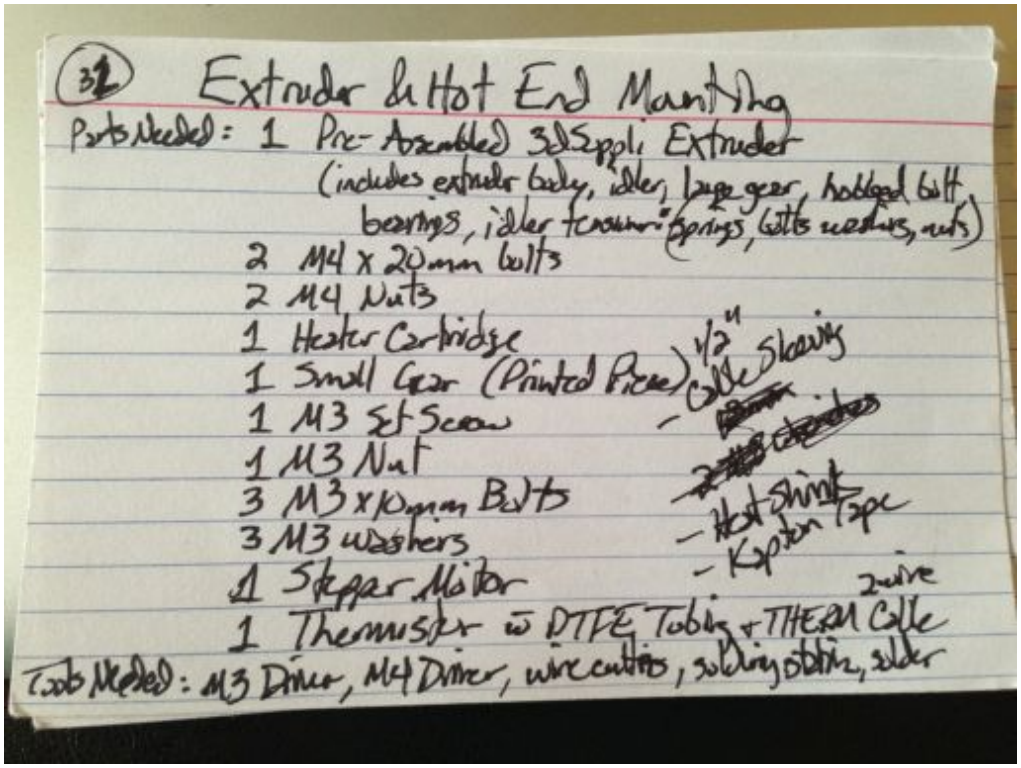

Tools Needed:

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Steps:

Results:

-

[4]Step 32

Parts Needed:

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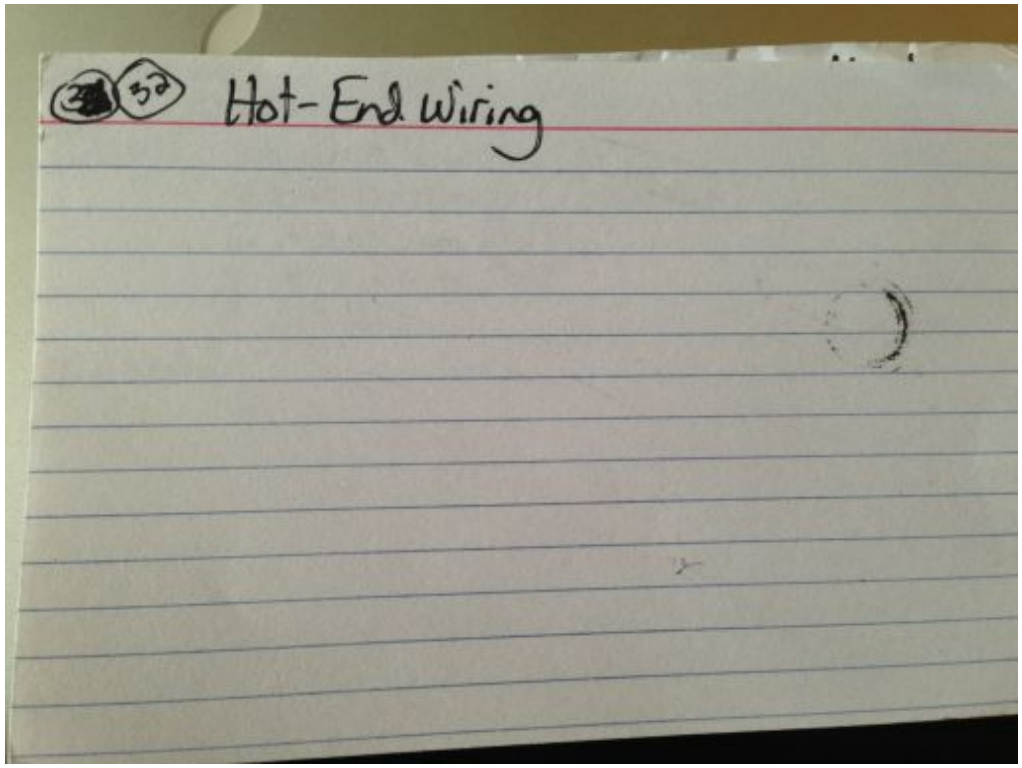

Tools Needed:

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Steps:

- J-Head hot-end wiring at:

  http://www.3dsuppli.com/j-head-hot-end-wiring

- E3D hot-end wiring at:

  http://e3d-online.com/Documentation

Results:

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[4]Step 33

Parts Needed:

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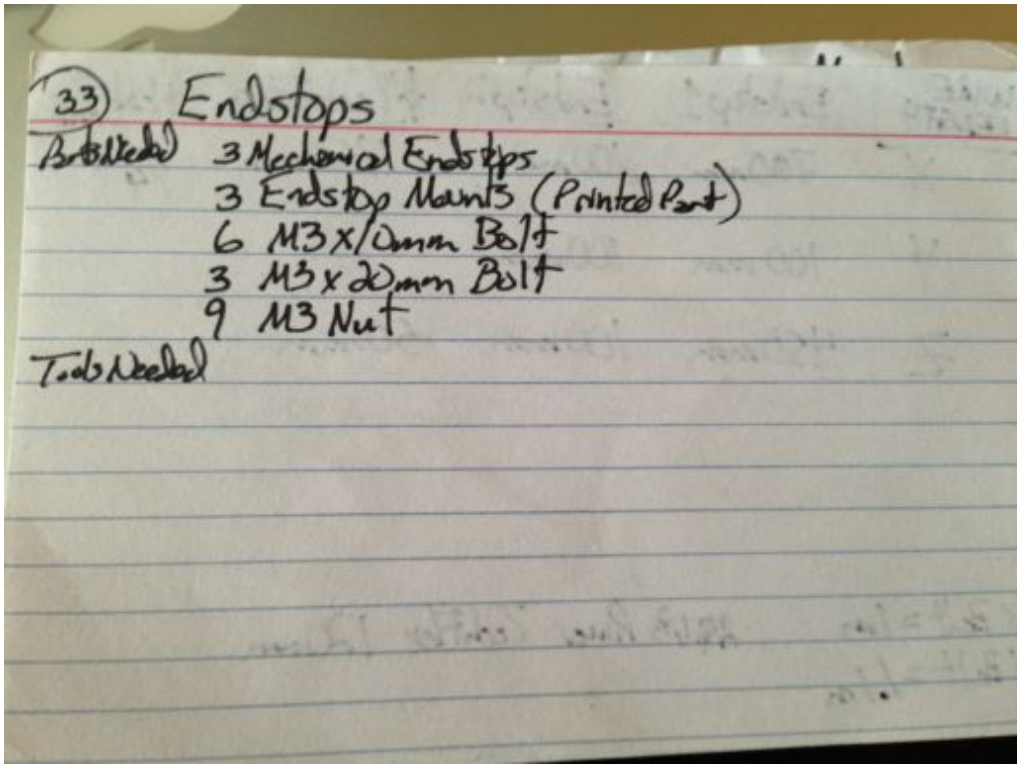

Tools Needed:

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Steps:

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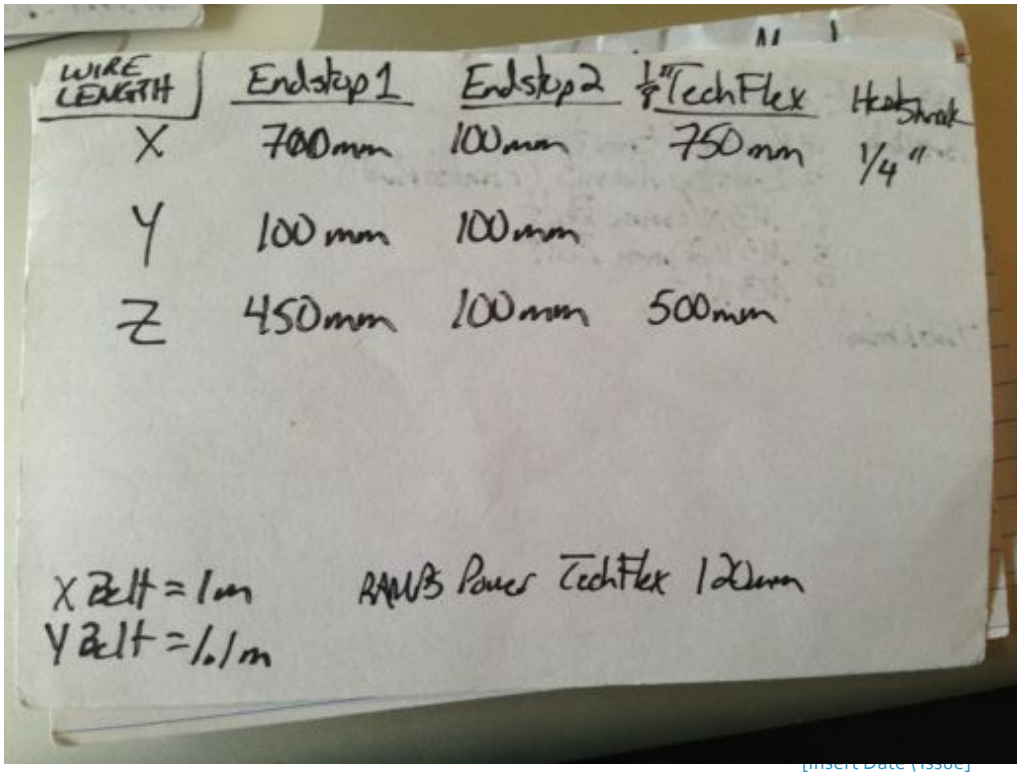

[4]Step 34

Parts Needed:

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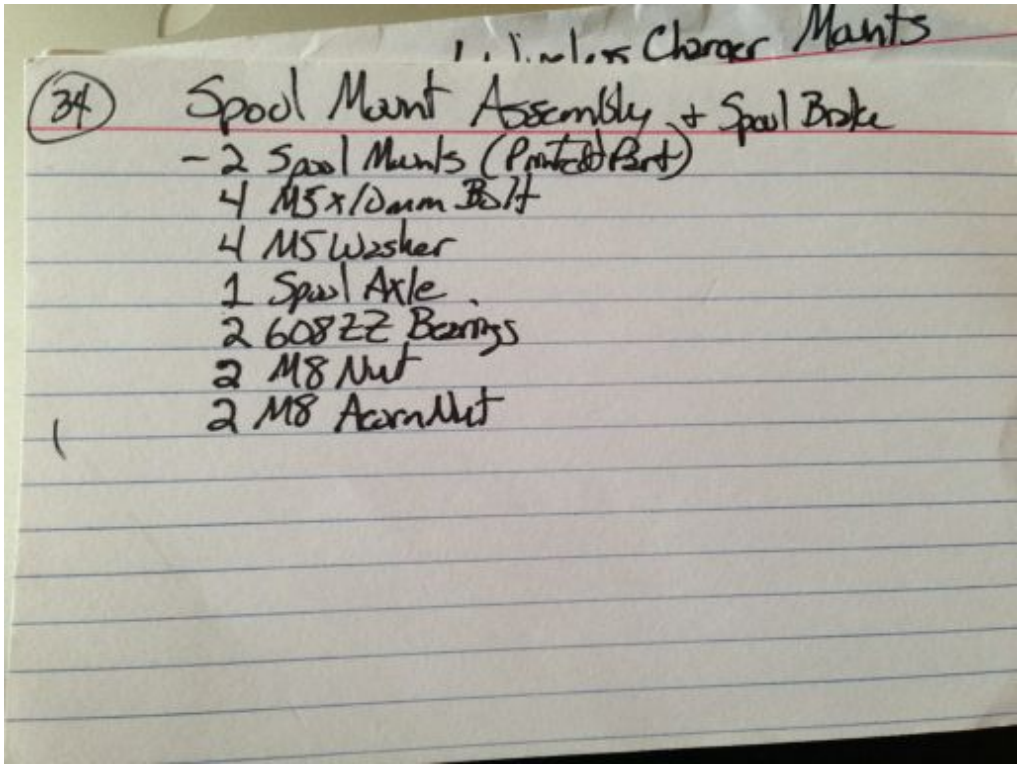

Tools Needed:

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Steps:

-

Results:

-

[4]Step 35: LED String Wiring and Mounting

Parts Needed:

- 1 Female JST Connector
- 4 50mm wire sections (2 red / 2 black)
- 2 400mm wire sections (1 red / 1 black)
- 5 20mm 3/8" heat shrink tubing sections
- 2 35mm 3/32" heat shrink tubing sections
- 3 LED strip sections (2 with 6 groups of 3 LEDs and 1 with 5 groups)

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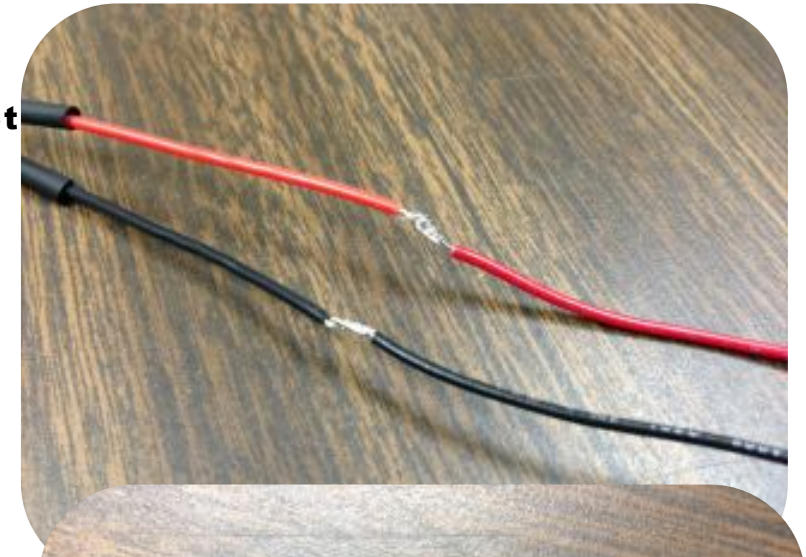

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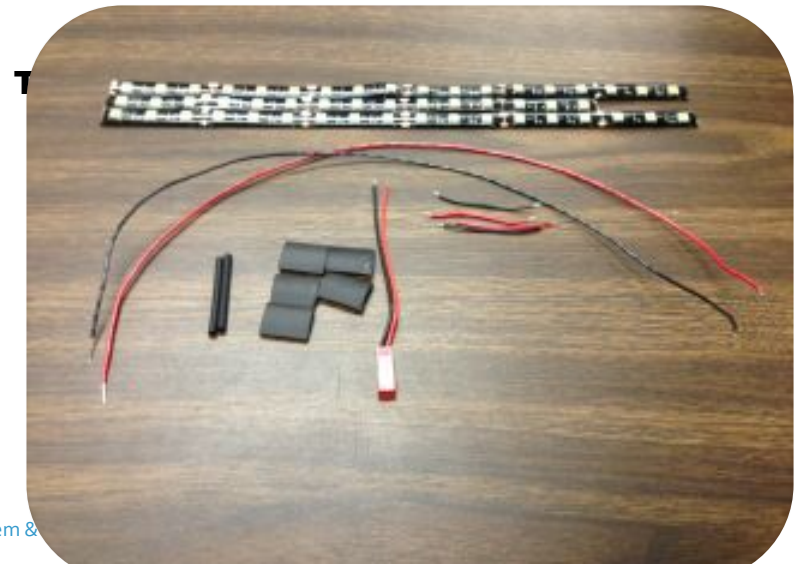

Step 36

Parts Needed:

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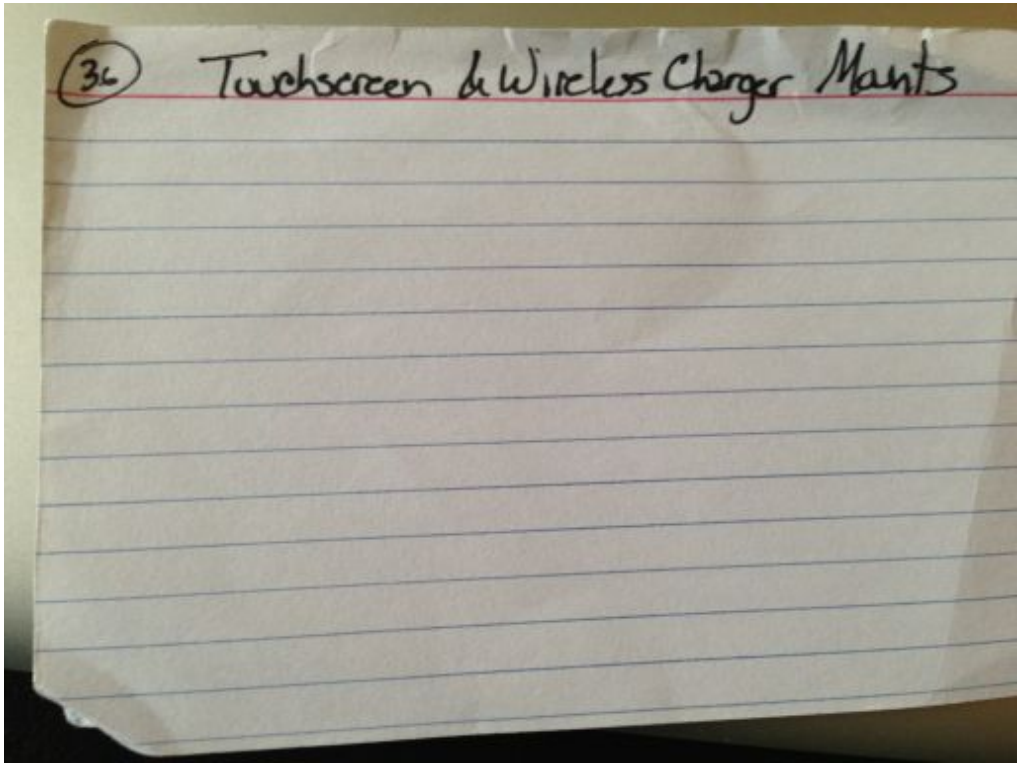


Tools Needed:

Steps:

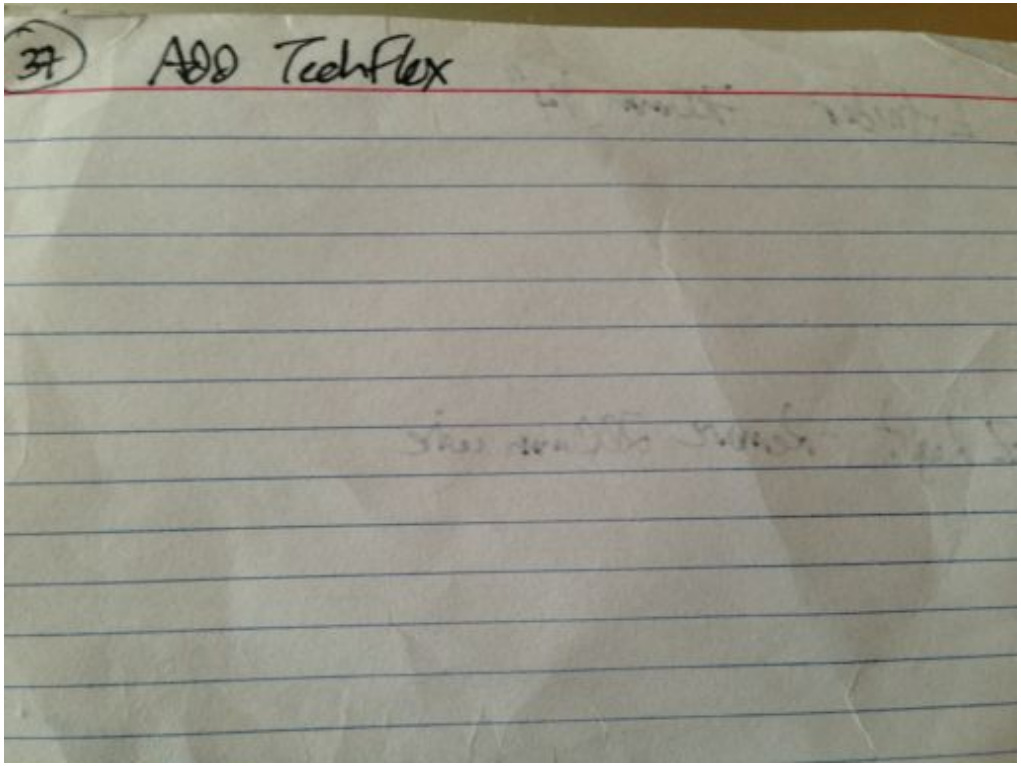
-

Results:

Step 37

Parts Needed:

-



Tools Needed:

Steps:

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