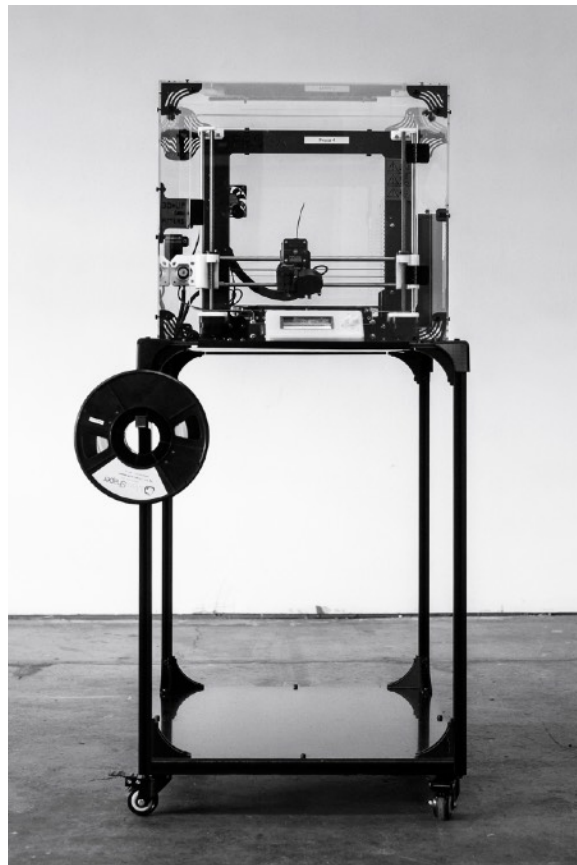


3D•UP FITTERS

3D Printer Cart

Installation Manual 1.5



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You Really Do Want to Read the Directions

Hey, we get it. You just got your cart kit and want to start using it as fast as possible. How hard can assembling a couple of aluminum beams possibly be? It's not really that hard, assuming you're following the directions, but try to use brute force and you'll end up working through your vocabulary of swear words.

As you assemble the kit, please feel free to take notes and get back to us with any sections that aren't clear (or even wrong). We believe in continual improvement, and invest a lot of time and energy into making the manuals the best they can be.

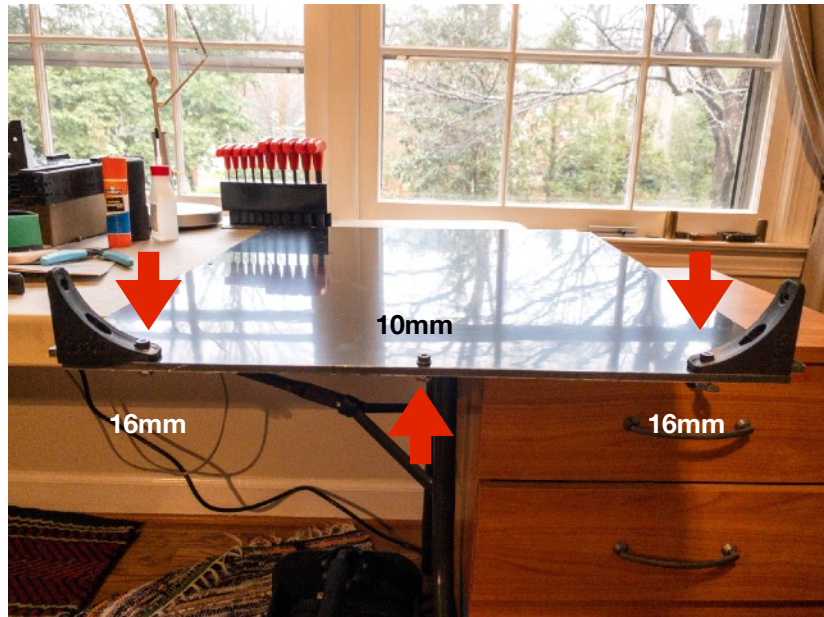
Assemble Bottom Shelf

Below is an image of where you'll end up after the first stage of assembly. This section will show you how to get there step-by-step by assembling each corner one-by-one along with the 20x20 side pieces.

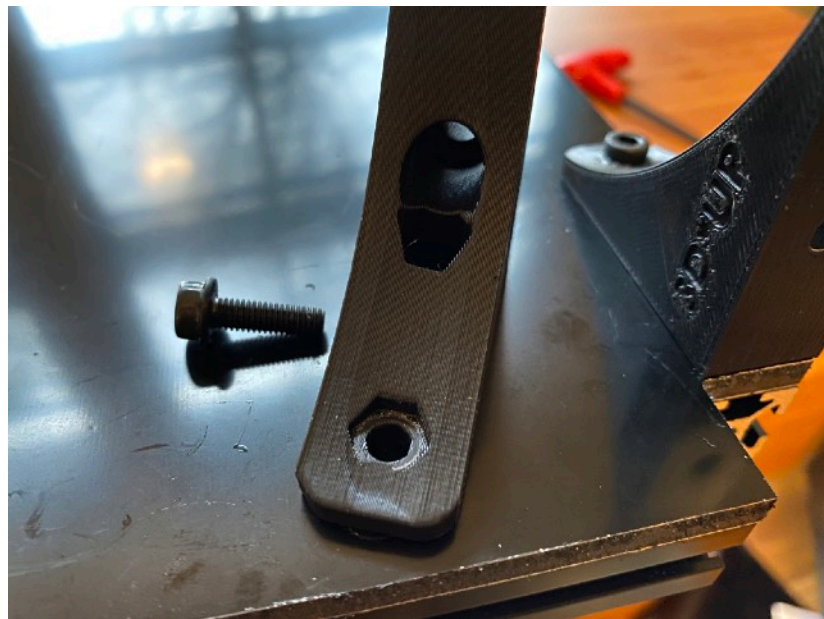


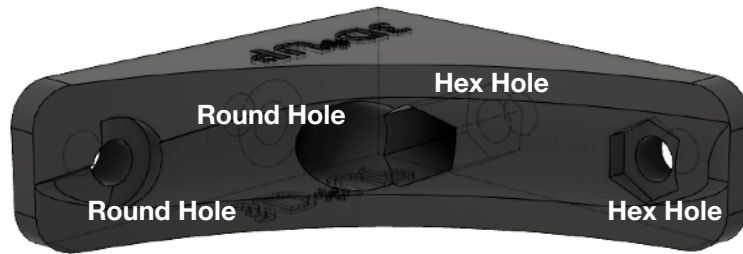
First identify the horizontal Y (second longest), and horizontal X (shortest) 20x20 pieces. Each of these will be attached to the sides of the bottom shelf. The bottom shelf can be distinguished from the top shelf because it has 20mm rectangular cut-out corners.

First lay the bottom shelf on a table so one edge of the shelf is poking out over the edge of the table. Use the M5 10mm flanged cap head screw in the middle, and two M5 16mm flanged cap head screw to attach the plastic L-brackets on each side. On the bottom of the screws attach an M5 t-nut.

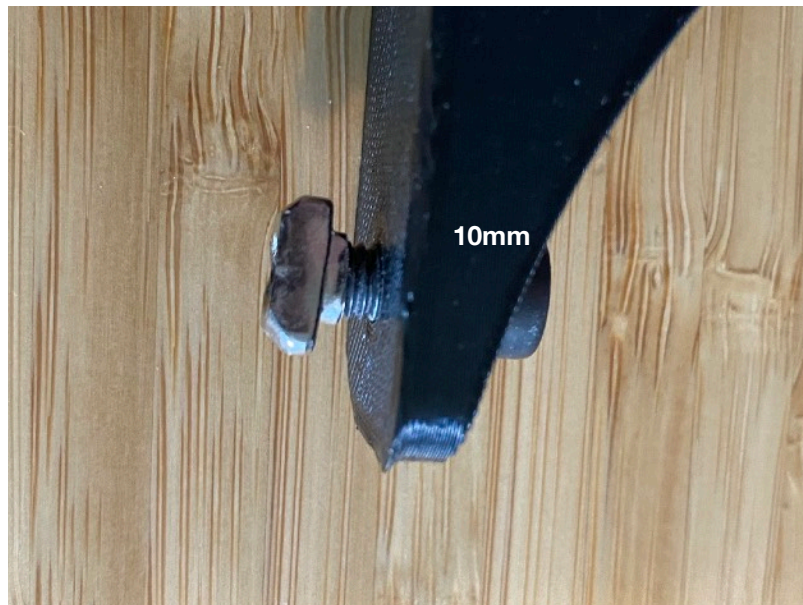


Note that the L-brackets only go one way, so be sure to use the hole with the hex cutout for the 16mm screw as shown below.





Here is the correct orientation of the t-nut on the other side of the screws.



Once the t-nuts are in place its time to insert the 20x20 beam and then tighten the screws.

If you have never worked with t-nuts and aluminum extrusion it can be tricky to make sure that the t-nut twists 90 degrees to catch onto the aluminum. **If the nuts do not rotate 90 degrees it's easy to mistakenly tighten the screw until the brackets crack.** To make this easier, first, make sure the screw is pushed all of the way in before you start to rotate. Next, try to jiggle the screw with your wrench as you begin to tighten. There are lots of videos on YouTube if you get stuck.

Before moving on confirm that the t-nut has twisted so it is perpendicular to the length of the beam. You can do this by trying to pull the beam apart from the shelf and confirming that it is secure, or by simply peering down the slot. (Yes, it is difficult to see this way.)

Once the 20x20 beam is attached the side will now look like this:



Repeat for the remaining three sides. The shelf will now look like this:



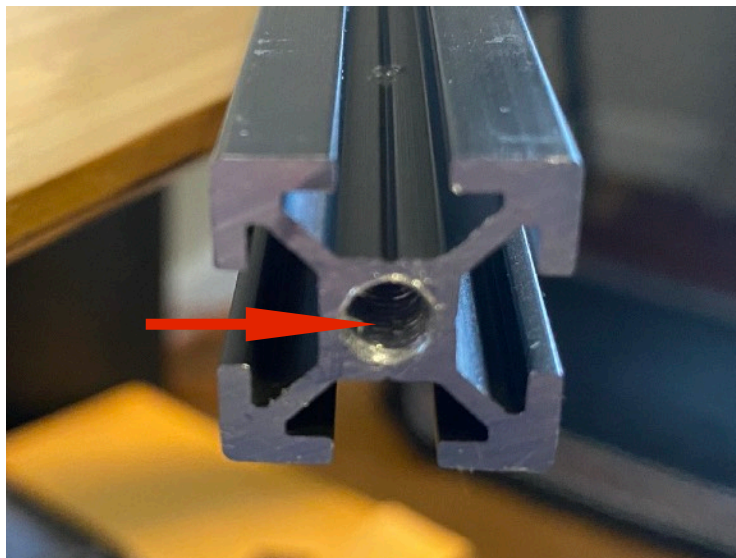
Attach Legs

In this stage you'll attach the legs to the bottom shelf.

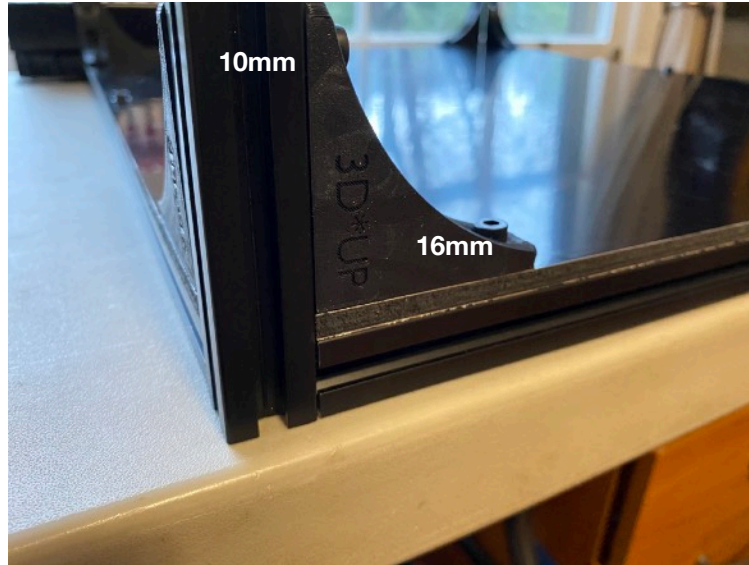
First you'll need to attach M5 10mm flange cap head screws and t-nuts to the holes in the plastic L-brackets so they look like this. Orient the t-nuts so they are all pointing upwards.



Grab a vertical 20x20 beam (the longest) and locate the tapped end as shown below. Only one end is tapped, i.e. has grooves that will take a screw, so be careful and make sure.



Take the tapped end of the vertical 20x20 beam and slide it into place all of the way to the table, flush with the ends of the horizontal 20x20 beams. You may have to re-adjust the t-nuts so they are vertical. Tighten the screws so they are quite secure, but **don't over tighten and destroy the plastic L-bracket.**

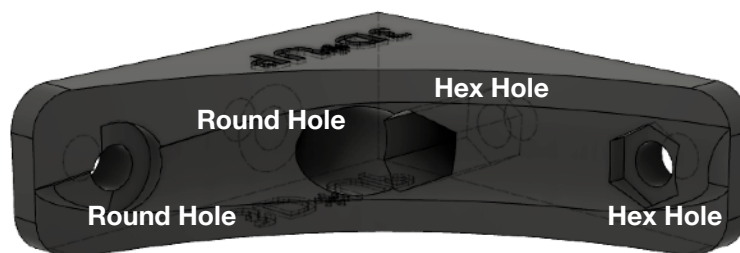


Optional MMU2 Brace

This step is only for the MMU2S version of the cart, and is intended to hold up the filament detangler, although you could use it for anything. Use two metal L-brackets on the bottom of the short horizontal 20x20 and slide down the vertical 20x20 until a few inches from the top. You can adjust the location later. **Note this is included only when purchasing an MMU2 enclosure at the same time.**



When all four vertical 20x20 beams are installed it's time to install the L-brackets for the top shelf. Start off by inserting two flange head 10mm screws and t-nuts into the round holes in each of two large plastic L-brackets and attach them to each vertical 20x20 element. Be careful to make the top of the brackets flush with the top of the post.



When both top shelf brackets are attached to a vertical beam it will look like this. Repeat for each of the four vertical beams.



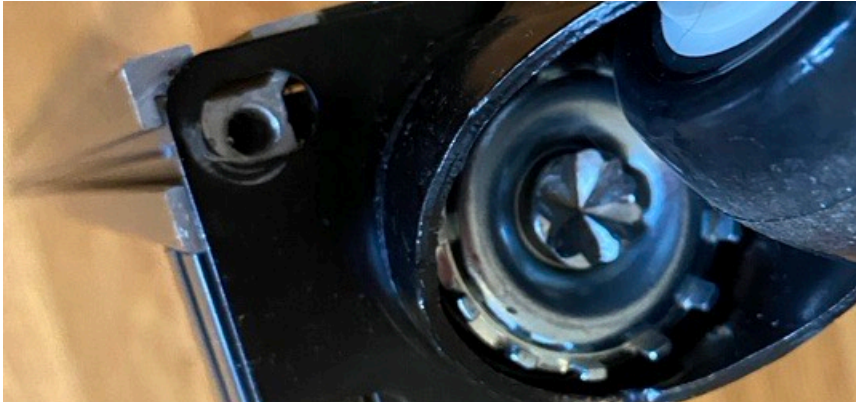
Attach Wheels

In this step you'll be attach the wheels. First turn the entire assembly upside down and locate the small black wheels in the parts kit. To attach the wheels you'll need to use the M5 8mm steel flange button head screws that came in the pack with the wheels. They should look like the picture below.



M5 Steel Flange Button Head Screw

Position a wheel on one corner and insert a steel flange button head screw into the tapped corner hole. Do not tighten completely at this time.



Positioned Wheel for First Screw

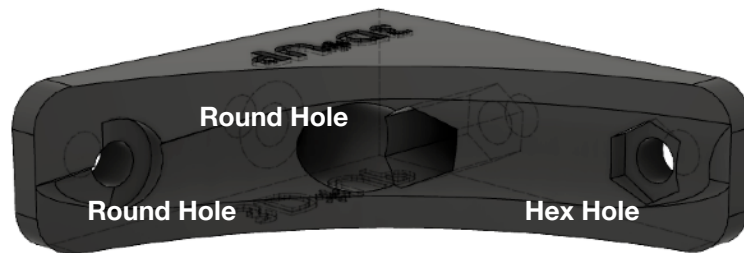
The other two screws are to be attached using the M5 t-nuts. Attach a t-nut to each screw, and insert them through the holes. When both are attached and somewhat screwed down, move the wheel to the center of the cart to get the maximum coverage of the screw's steel flange over the wheel's solid base. When you are done it should look like the image below. Repeat for each corner.



Attached Wheel

Assemble Top

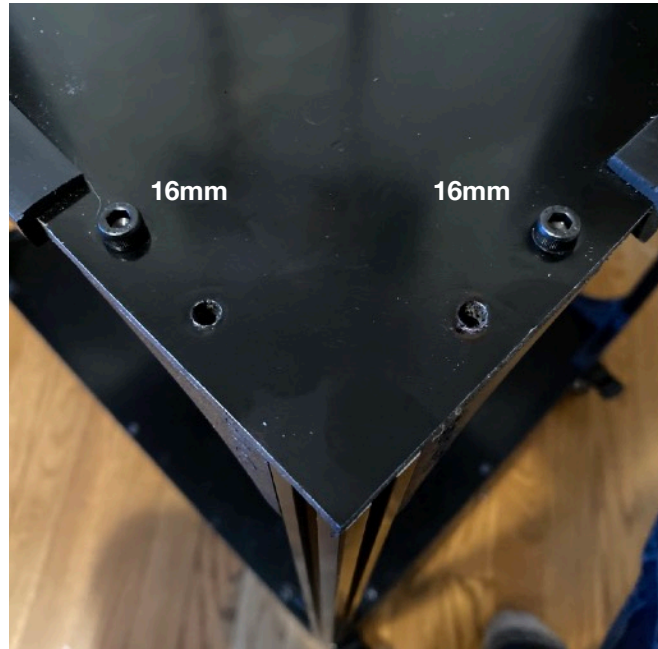
This is the last step in the main part of the construction. It also involves the plastic L-brackets, and again you'll want to be careful to use the right holes. Use the round holes for flange head screws to attach to 20x20, while the hex holes will be for nuts to attach the top.



Lay the top shelf on top of the posts. Now is a good time to put on the rubber bumpers as shown below:



On each corner attach a 16mm M5 Flanged Cap Head Screw and nut as shown below. These will be in the shallow part of the bracket, and so easy to install.



The next two screws will be harder since the nuts are recessed. These longer 25mm screws will also hold on the corner connectors.



To make it easier put a nut on a separate screw and use that to insert the nut into the hole on the bottom. As you screw in the top 25mm screw, unscrew the bottom nut holder screw. Be sure to just barely attach the nut to the insertion screw.

When you're finished with that corner check the tightness of all four screws.

Repeat for the other three corners and you're basically done.

Accessories

The big advantage of 20x20 aluminum, besides being light and strong, is you can attach stuff all over. You're welcome to invent new things to attach, but on the [product's Thingiverse page](#) you'll find a wide variety of things to make right now.

<https://www.thingiverse.com/thing:4117115>