Pillar modular shelf system

Tiny Wire

VIEW IN BROWSER

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Summary

A stackable part kit for building shelves with push and click assembly.

Household > Other House Equipment

Tags: shelf assembly filament modular supportless storage bracket snapfit filamentstorage

Create custom shelves using 18mm wooden boards and this stackable part kit. All pieces push and click together. No glue, nails or screws required.

You'll need some 18mm boards for the shelves which you can get from your local hardware store (or similar). I had some pine timber panels left over from another project which I cut down to size.

Features

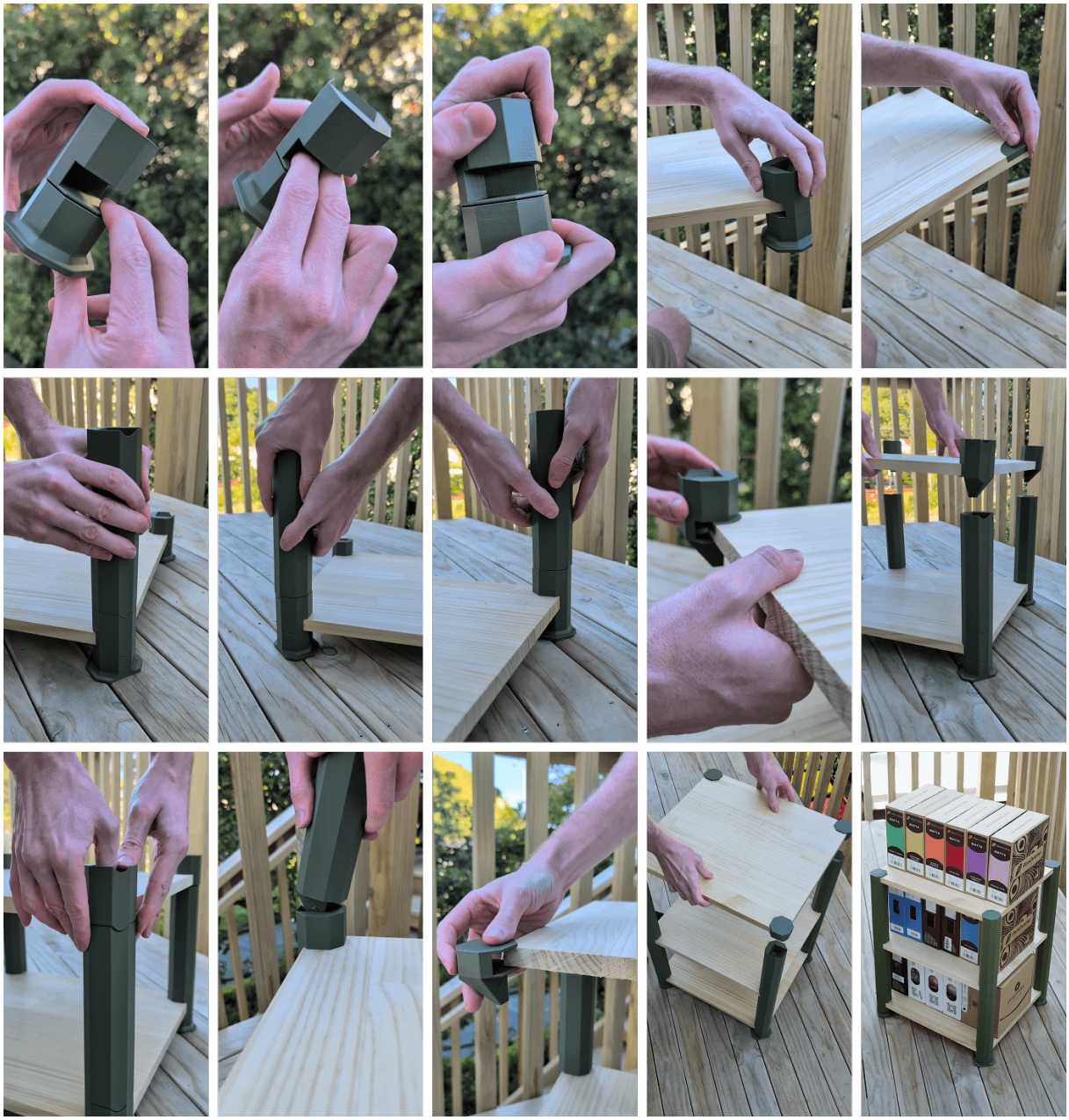
- Simple assembly, just push and click together
- Includes a detailed printing / assembly manual PDF
- Optional 0.2mm Shim for correcting shelf panel tolerance issues
- Optimised to print completely without supports
- 234mm space between shelves (try stacking Leg parts for additional height)
- Use to it hold and organise anything you like (I've used mine for a filament shelf)

Printing & assembly

Basic print settings

- **Layer height:** 0.2mm
- **Infill pattern:** Gyroid
- **Sparse infill density:** 12%
- **Supports:** No
- **Wall loops:** 3
- **Top / Bottom shell layers:** 5

I highly recommend downloading the Print manual / assembly guide for lots more optimal print settings, and watching the assembly video on Instagram.



Details from the **assembly video** on Instagram

You might be thinking, why would I build this when there are plenty of affordable and easily obtainable shelving units at my local hardware store?

Simple — this is way more fun! The parts snap together like giant pieces of lego.

The assembly also only takes a few minutes with no hardware, meaning the whole system is a lot more flexible. Need to move the shelf to a new space and now it's the wrong shape? Just swap out the boards. Need more shelves? Add another layer.

Note, it does use a lot of filament and depending on your printer will take some time to print. The design pictured took approximately 1.5kg of eSUN PLA+. Even though it takes a while it's pretty fun to watch the whole thing come together!

A note about strength

A lot of people in the 3D printing community suggest never to print load bearing parts using PLA. That generally is really good advice and you should follow it. However, this design works around these limitations in a few key ways.

First, all load on the parts is 'compressive' or 'downwards'. All weight is supported vertically, with no 'bending' forces on any part (in contrast to what you see with many of the 3D printed angled shelf brackets out there in the wild). What this means is that the PLA never 'creeps' as it is often prone to do. Second, the shelves slot in to sit squarely over the end of each column, so all the weight is acting evenly over them. The specific print orientation also means layer lines run vertically for additional strength.

That said, I haven't done any scientific testing yet so I can't make any specific upper weight limit claims (I might do this soon!). What I can say is in my experience it is a very sturdy result. I've had one in service for 12 months holding a range between 18kg - 22kg with no signs of movement, loosening of any parts, layer separation, bending, or any of the sorts of things you'd expect from 3D printed parts 'under stress'.

Feel free to experiment with printing speeds but I do recommend printing a little slower than you would usually for added layer adhesion and strength.

Disclaimer

As with anything 3D printed, I still strongly recommend you exercise common sense and caution when in use. Unless you're absolutely sure, don't store expensive irreplaceable items on the shelf. I also would not

recommend you put a 3D printer on the shelf. It's an important asset and deserves the best most rock-solid surface you can afford to place it on! You will always get better prints by eliminating causes of printer wobble.

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Please share a make if you build something cool! Follow on Instagram for future uploads and things in progress.

Model files

Previews 1 file

plate-preview.stl

Parts 5 files

foot.3mf

join.3mf

leg.3mf

cap.3mf

shim.3mf

pillar-modular-shelf-system-all-parts.3mf

Other files

print-manual-assembly-guide-for-pillar-modular-shel... .pdf

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