



# Hexx Case Tool Roll

 **Davie.BIN**

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## Summary

Modular Hexagonal Hard Case System with this Small Tool Roll at it's Core



59.71 hrs



6 pcs



0.20 mm



0.40 mm



PET



954 g



Prusa  
MK3/S/S+

[Hobby & Makers](#) > [Organizers](#)

Tags: [hexagonal](#) [hexagon](#) [box](#) [organizer](#) [tool](#) [holder](#)  
[organiser](#) [assortment](#) [storage](#)

After seeing many other container projects, and old products like the [Dutch Roly Kit](#), I thought I'd try my hand at designing my own. I spent weeks worth of manhours working on prototypes and iterations, so please, if you really like it, and print more than one, or use it commercially, please throw a little tip in the donation bucket. ;)

## Features

- Modular
- Stackable
- Standardized

- Efficient Material Usage
- Scalable
- Modifiable

There were many considerations to getting this system dialed in. Of course, the hexagonal pattern can stack and tile together with no gaps. The proportions allow 5 to be lined up longways to match 7 lined up shortways. This is for efficient packing on a shelf, but also packed into the foot print of a standard Euro crate, or pallet. (Arranged 3x4 is also good) The complete, closed roll is ~24x17x19cm. The size and depth of each compartment effectively fits most handtools, but also most spools of thread, or small paint bottles, or fishing bait jars. The overall size was optimized for efficient extrusion outlines (~.42mm), and to fit on a Prusa MK3 print bed (with a little finesse, two compartments can be printed at the same time.) The exterior faces can be customized with colors, textures, or text by adding those elements to the first three layers of the print. The overall features, and strength of the tool roll case was optimized to use less than a single 1kg roll of filament when printed at 100% infill. Hopefully this accounts for normal printing run-out and false starts, but helps lower waste. Lower density can be used to shave off about 15% of material usage. Multiple methods can be used to fasten the compartments together, either bolts, staples, and/or glue. The belts are spec'd at 25mm/1inch and can be a nylon belt, a plain ribbon, cut section of cloth, or even **bias tape** depending on what you have around, or how strong you want it to be. Small fixtures within the compartments can hold divider panels, either the ones provided in the print files, or can be easily cut out of cardboard of various thickness. Clever sliding panels and false bottoms can be improvised. A standard 17x30mm washer is used to combine the cases together. The included printable piece also does the job, but with a bit more flex factor. A cut piece of acrylic will also do. The box can be locked closed with a pretty wimpy luggage lock, or **printed padlock**, if you'd like to keep people from snooping around.

Designed to work flawlessly with the additional Tool Box bin underneath.

The additional Grip Lid also does a lot to make grouping them into a package, easy.

**The sliding latch is updated and finished!** If you've downloaded one of the original models, sorry, but the newer versions of piece A and the Latch might work out a little better.

Unfortunately, the biggest drawback is if you have to get in the middle containers, you'll always have to roll open the whole case. ;)

## Print Settings and Tips

Filament: PETG, PLA, ABS, etc

Resolution: .2 recommended

Top/Bottom Layers: 3

Perimeters: 3+

Infill: 100%

Infill/Bridging Angle: 45°

Bridge Flow Ratio: 1+

Skirt/Brim: Recommended

Raft: No

Support Material: No

Thin Wall Detect: No

However, if you wanted to save material, as few as 2 perimeter loops, and as little as 50% infill can still yield good, yet more flexy and fragile, results. I've received good results with both PLA and PETG, but would recommend PETG. The thinness of the items make the characteristic limitations of PLA more apparent.

Considering how this scales, I would recommend anywhere between 80% smaller, to 130% larger, but of course that'll break cross compatibility when stacking. The size of the features will change, and you'll have to find new dimensions for the belts, washers, or bolts, but after some quick research, it seems like it'll generally work out.

A couple pieces have manually modeled support material added to reinforce some long bridging strokes. These can be clipped off easily after printing, or the mesh file can be split apart in any slicer app and removed if necessary.

The first few layers are designed to give a specific texture and appearance to the outside, while allowing easy color changes. If this isn't desired, adding additional solid objects, or simply sinking the objects .3mm on the build plate in the slicer will skip this with no problem.

Besides material changes on the first few layers to give an outline effect, I tend to insert a print pause and switch materials to a lighter color filament just for the top layers of the floor surface on the interior of the compartments (~2.2mm layer height.) This is for more internal visibility and contrast, and creates a nice stripe effect on the ends.

## Assembly Instructions

### Supplies:

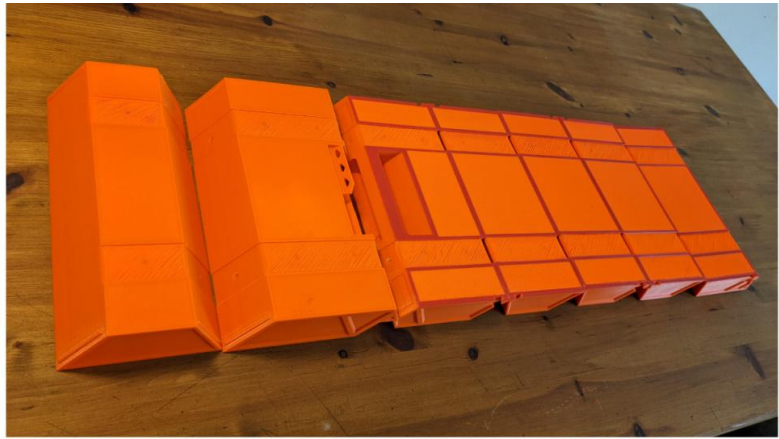
- 2x 80cm of Belt, 2.5cm/1" wide, by about .15cm thick
- 2+ Steel Washer 17mm I.D. x 30mm I.D. x 3mm thick (DIN 125)

- Hot Glue, or Super Glue, or other plastic epoxy; or
- 34 M2.5x5 Bolts countersunk (DIN 963 ISO 2009)
- 34 Hex Nuts M2.5; or
- Carpenter's Staples

## Steps:

1. Print and post-process a complete set of compartments.
  1. If you plan on using bolts to affix the belts, cut out the openings now.
2. There are two methods for aligning the compartments for gluing.
  1. Line up the compartments with open face down and no distance between compartments A, B, C, D, and E, and then about 2mm between the remaining compartments.
  2. Assemble tool roll into a closed position and tape it tightly together.
3. Glue the belt on the belt track, starting with the A compartment. Continue gluing the belt around each compartment. Personally I find the best, tight, results when gluing together in the closed position.
4. After getting the G compartment, cut off any excess belt material.
5. If some sort of mechanical fixture is desired for reinforcement, there are two options.
  1. For bolts, poke a hole through the belt from the inside using the witness holes. Either use a drill bit, or a hot needle, soldering iron, etc. Fasten the bolts.
  2. For staples, either use the template jig to properly align the staples, or measure 25mm/1" from the edge of the container, on the centerline of the belt. Staple from the beltside of the container, so one leg of the staple lands in the bolt hole, and the other goes towards the outside edge of the container. With a little luck, this lands the legs on the grooves inside, and you can use a flathead screwdriver to bend them down into place.
6. Roll it up and slide the hexagonal latch on to the track between compartment A and F.

7. Take a photo of your completed Hexx case and upload it to the gallery!

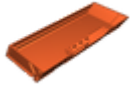


# Model files

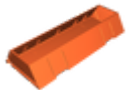


## Base Components

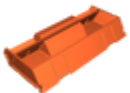
10 files



**a.stl**

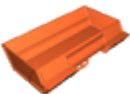


**bcd.stl**

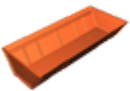


**e.stl**

☐ Might possibly need support material if your bridging strokes don't work so well.



**f.stl**



**g.stl**



**latch.stl**



**divider.stl**



**staple-template.stl**



### snap-cap.stl

☐ Can be exploded in your slicer

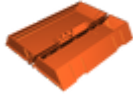


### snap-ring.stl



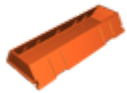
## Multi Color Print Files

3 files



### abcd.3mf

☐ The color change pauses can be deleted, ignored, or modified as you like.



### bcd.3mf

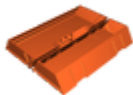


### ebcd.3mf



## Single Color Flat Bottom Print Files

6 files



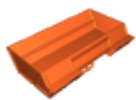
### abcd.3mf

☐ If your printer has poor bed adhesion or don't want the multimaterial effect, use these.

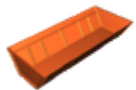


### ebcd.3mf



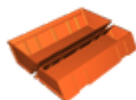


**f.3mf**



**g.3mf**

☐ Only one G container is necessary. Skip if you use the combined file.



**gbcd.3mf**



**accessories.3mf**

## Print files



### Multi-color Print Files

6 files



**abcd\_02mm\_petg\_mk3s\_14h59m.gcode**

PET 0.40 mm 0.20 mm 14.99 hrs 255 g Prusa MK3/S/S+

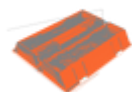
☐ 3 Print Pauses.



**bcd\_02mm\_petg\_mk3s\_7h15m.gcode**

PET 0.40 mm 0.20 mm 7.25 hrs 120 g Prusa MK3/S/S+

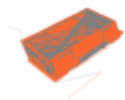
☐ 3 Print Pauses.



**ebcd\_02mm\_petg\_mk3s\_17h7m.gcode**

PET 0.40 mm 0.20 mm 17.12 hrs 294 g Prusa MK3/S/S+

☐ 3 Print Pauses.



### f\_02mm\_petg\_mk3s\_10h0m.gcode

PET 0.40 mm 0.20 mm 10.00 hrs 156 g Prusa MK3/S/S+

No material change.



### g\_02mm\_petg\_mk3s\_7h9m.gcode

PET 0.40 mm 0.20 mm 7.15 hrs 94 g Prusa MK3/S/S+

No material change.



### accessories\_02mm\_petg\_mk3s\_3h12m.gcode

PET 0.40 mm 0.20 mm 3.20 hrs 35 g Prusa MK3/S/S+

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