PolyJet Print On - Pencil Bag

Background

This tutorial walks through printing on a pencil bag using on a J3 or J5 printer, using the new “Print On” capabilities within GrabCAD Print Pro

This tutorial was written using GrabCAD Print 1.92.

1. Getting Started

First, gather the necessary supplies. You will need:

- Your J3 / J5 3D printer
- GrabCAD Print Pro Software
- Double Sided Tape – LINK
- Pencil Bags – LINK
- Foam or Printed Block
- Optional – 2D23D Design Software – LINK

2. Creating Your Design

Fabric printing has unique design requirements based on the need for the materials to bend and change shape. Large blocky geometries can lead to printed part cracking, especially with rigid Vero materials. To easily convert 2D images into 3D printable fabric designs we recommend using the Stratasys 2D23D design software.

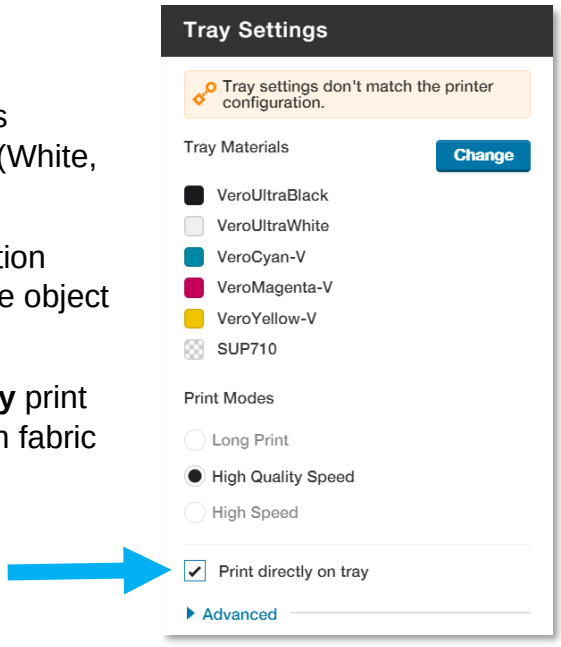
For more details about design recommendations check out this learning module - LINK

3. GrabCAD Print

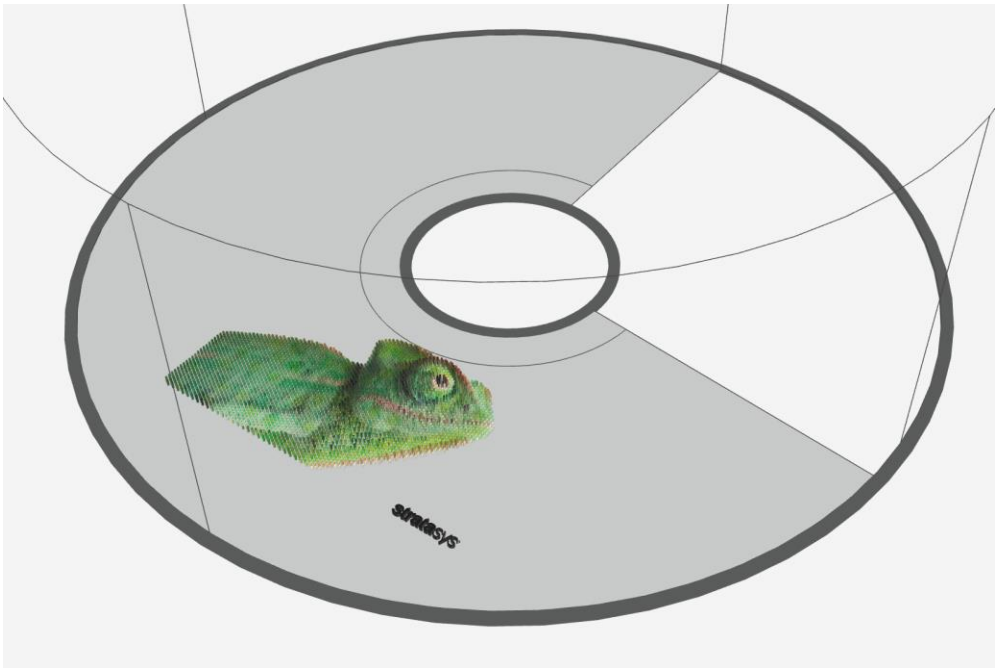
Open GrabCAD Print and set-up your printer settings. For this example, we will use a J55 Prime in a full color configuration (White, Clear, Cyan, Magenta, Yellow).

It’s important that you check the **“Print Directly on Tray”** option within the Tray Settings so your design will print directly on the object and not on a raft of support material.

Also verify in the Model Settings that your part is set to **glossy** print mode. It’s highly recommended to not use support material on fabric prints.



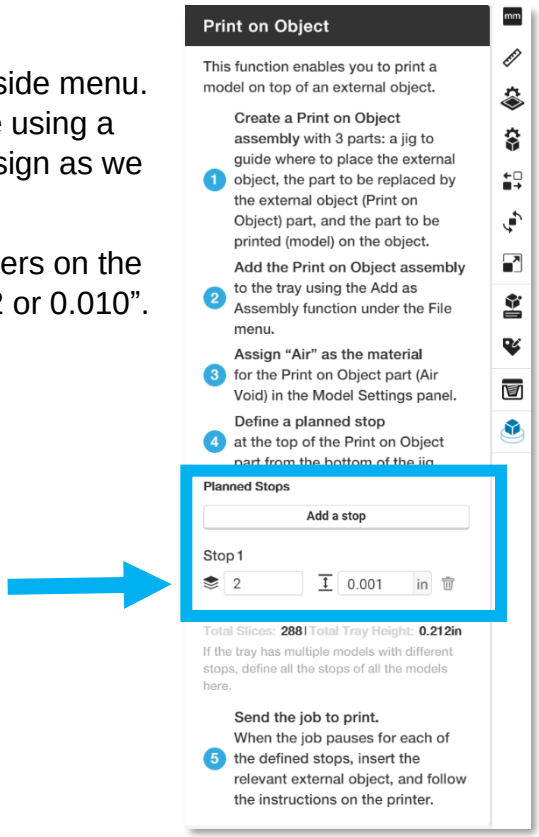
Next load in your design and center it on the build tray. It's important to keep in mind that you will need extra space around the model to account for the bag itself. You can fit up to 2 bags at a time on a J3 or J5 printer.



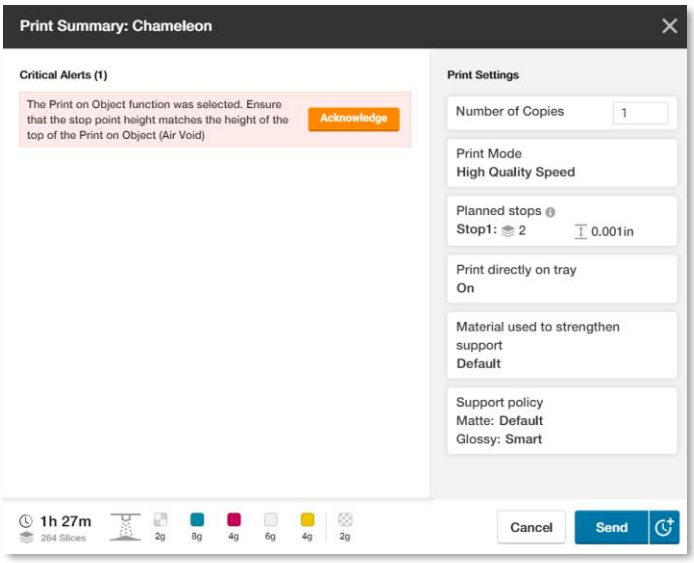
Next, open the **"Print on Object"** tab at the bottom of the right-side menu. This tab explains the full process for setting up a "Print On" case using a print-in-place fixture. This is not necessary for the pencil bag design as we are going to use double-sided tape to secure it to the build tray.

Since we do not have a fixture, we will need to print a couple layers on the build tray to align our bag to the design. **Add a stop** at layer #12 or 0.010".

Different models may only need 1 or 2 layers before the pause.

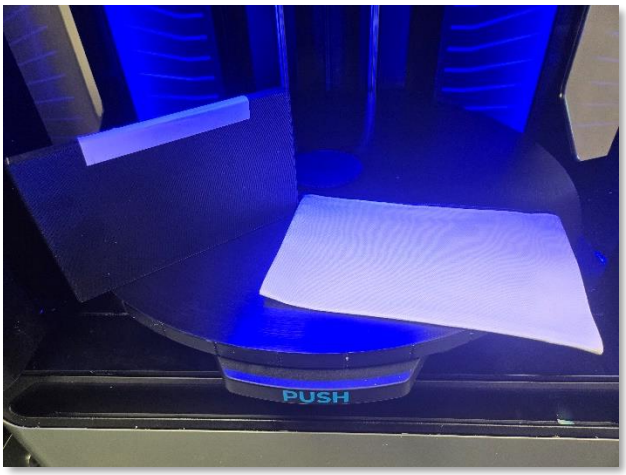


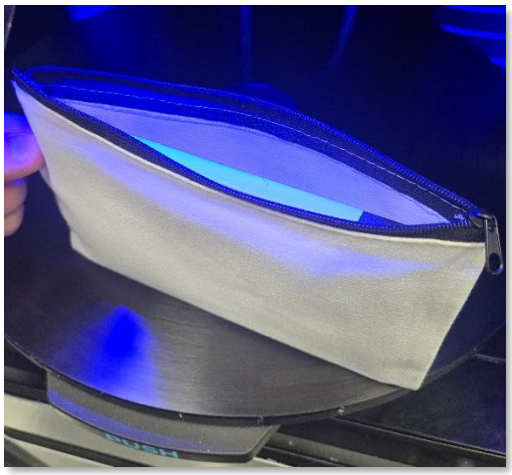
Finally, send the job to the printer like any other print job!



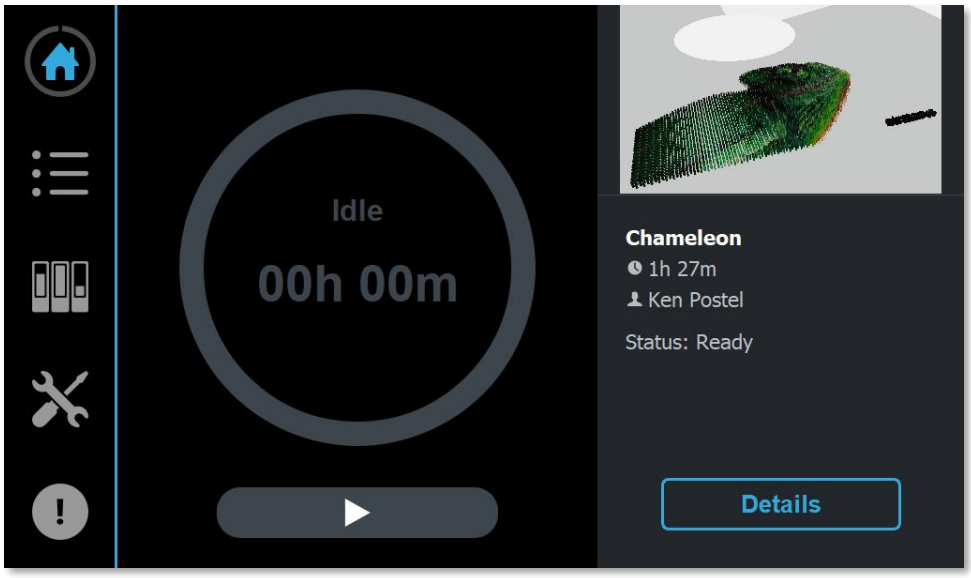
4. Machine Operation

Before we start the job grab a pencil bag, tape, and the printed or foam block. Place the small piece of double-sided tape at the top of your block and slide it into the pencil bag. Try to center the block within the pencil bag for best results. The block is necessary to keep a flat printing surface on the bag.

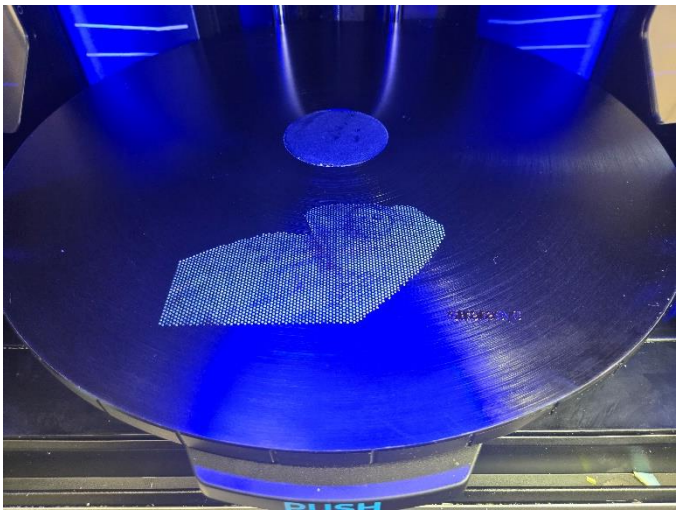


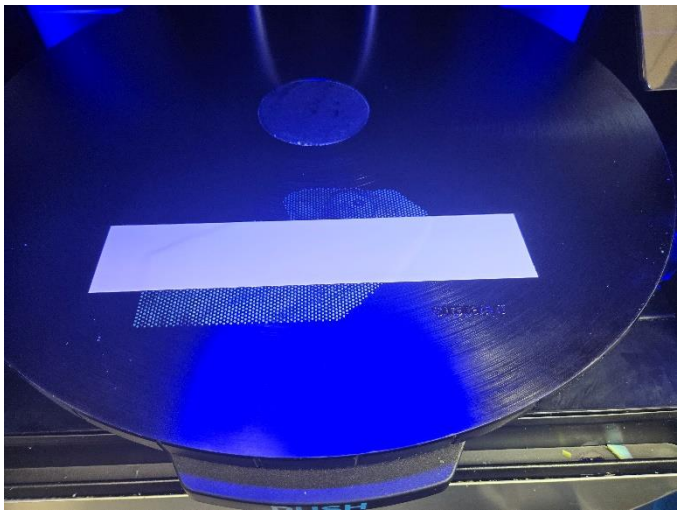


Start the print job on the printer and wait for it to pause after model layer #2.

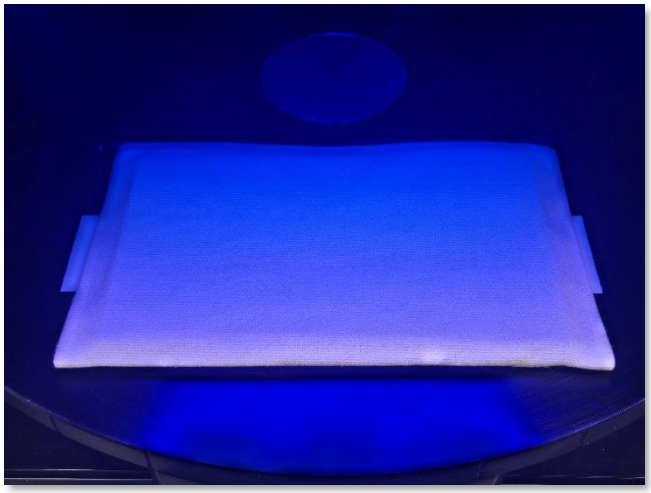


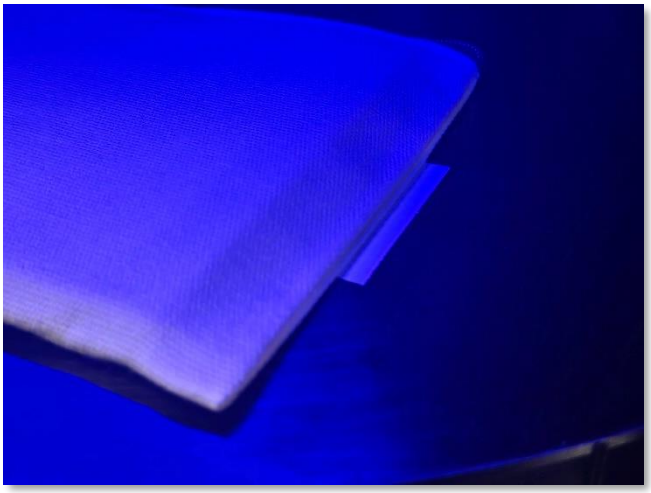
Once the job pauses, open the printer door and inspect the printed part. If the design is printed as expected continue to the next step. Cut a piece of double-sided tape slightly longer than your pencil bag and place it directly over the middle of the printed layers.



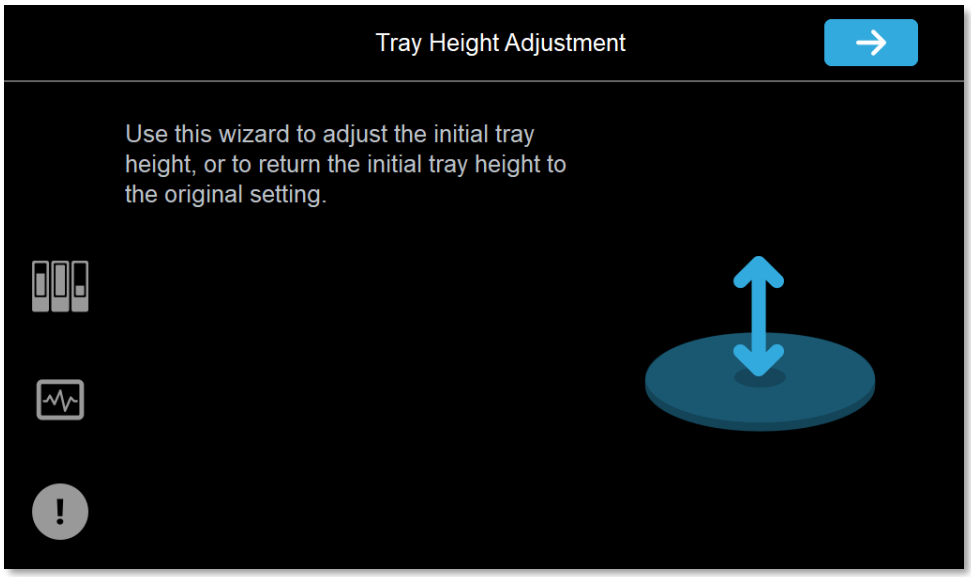


Place and align your bag on top of the tape. Ensure the top surface is flat and secure the edges of the bag to the tape to prevent them from contacting the roller.





The printer will automatically detect the pause and launch the Tray Height Adjustment Wizard. Click the blue arrow to continue in the wizard.

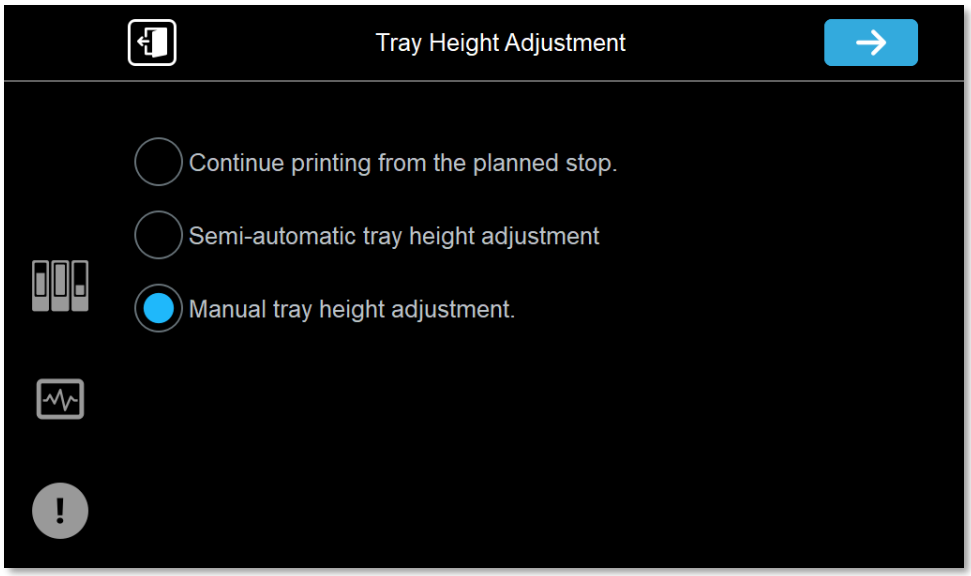


The first step is to select the type of tray height adjustment you want to perform. For the printing on pencil bag, we will be using the manual tray height adjustment option.

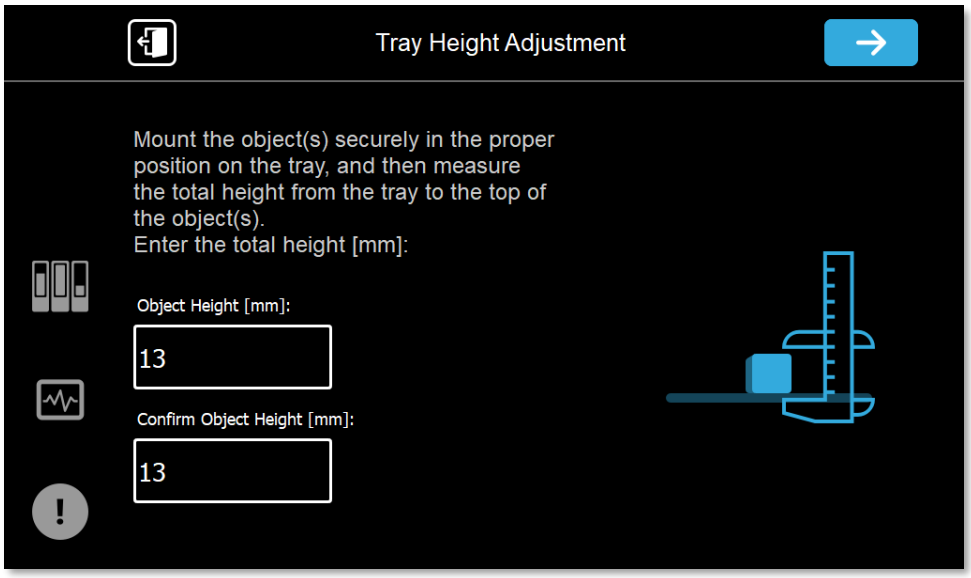
- **Continue from planned stop** – This is used if you are placing an object within a printed jig and the top surface of that insert does not exceed the height of the jig.

- **Semi-Automatic** – The user defines the height of the inserted object, and the printer rotates the bed and raises the z height until the roller is activated. This is ideal for rigid inserts that are properly secured, like a phone case.

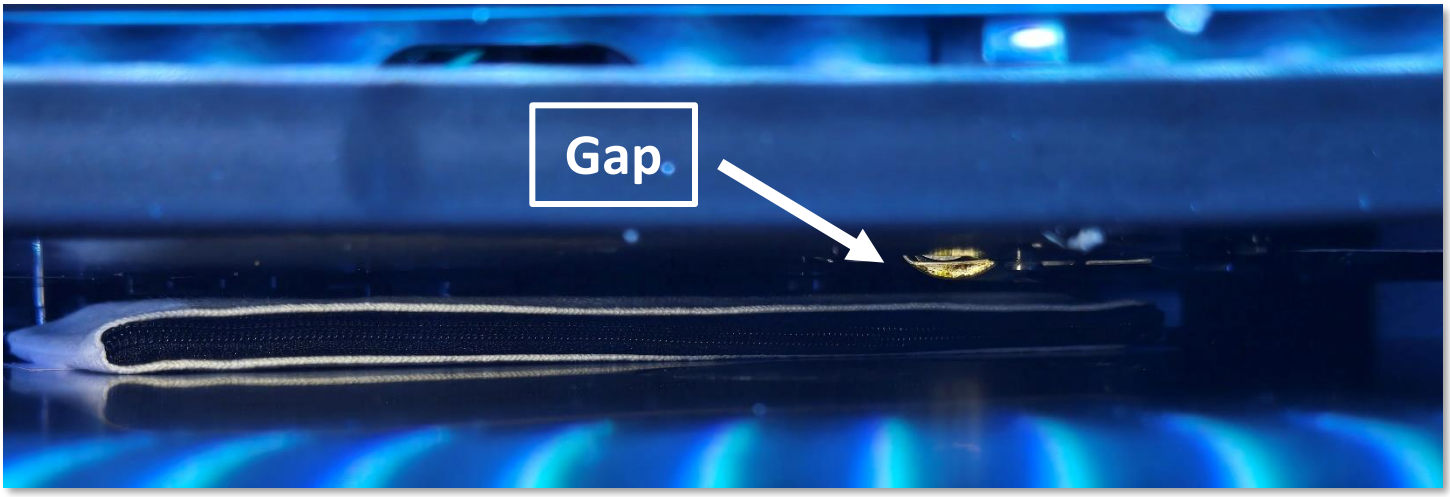
- **Manual** – The user defines the height of the inserted object and verifies the height manually by rotating the tray and adjusting the final tray height.

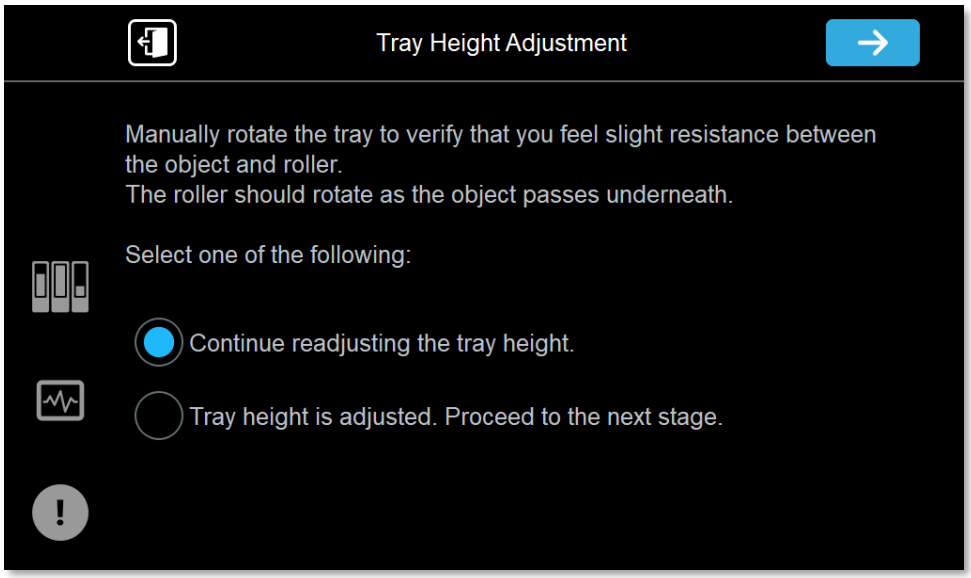


Measure the height of the object using calipers. In this example we will use 13 mm as we want a small amount of clearance above the model, and I need to account for the height of the tape and model that were already printed on the bed.

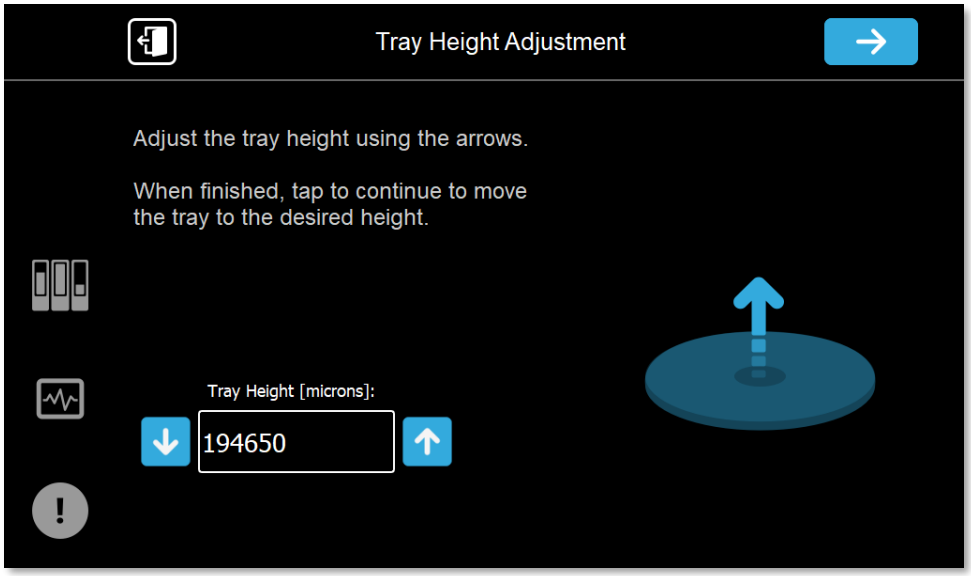


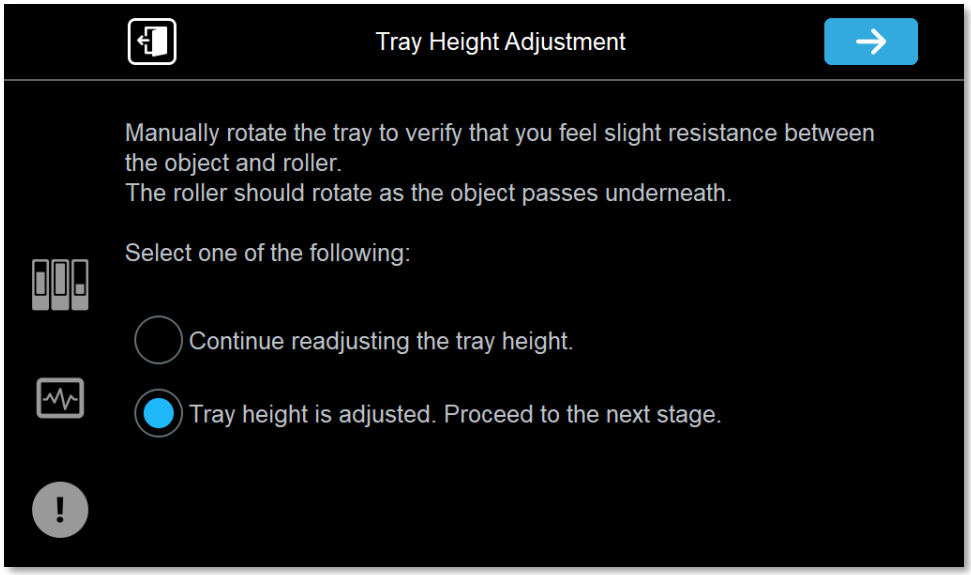
When you click next the tray will raise the selected height, and the screen will ask you to verify the height of the part. You are looking for a small gap between the inserted object and the bottom of the roller (gold reflection in picture). The pictured height is the maximum gap recommended.



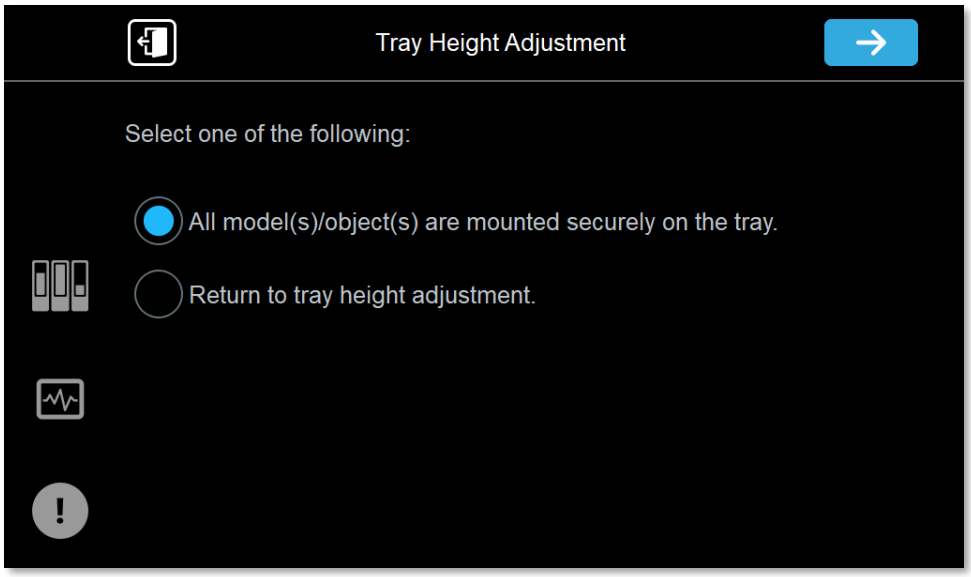


If the height is correct, select the second option. If you want to adjust the tray height further, select the “continue readjusting the tray height” option and move the tray up or down on the following screen.

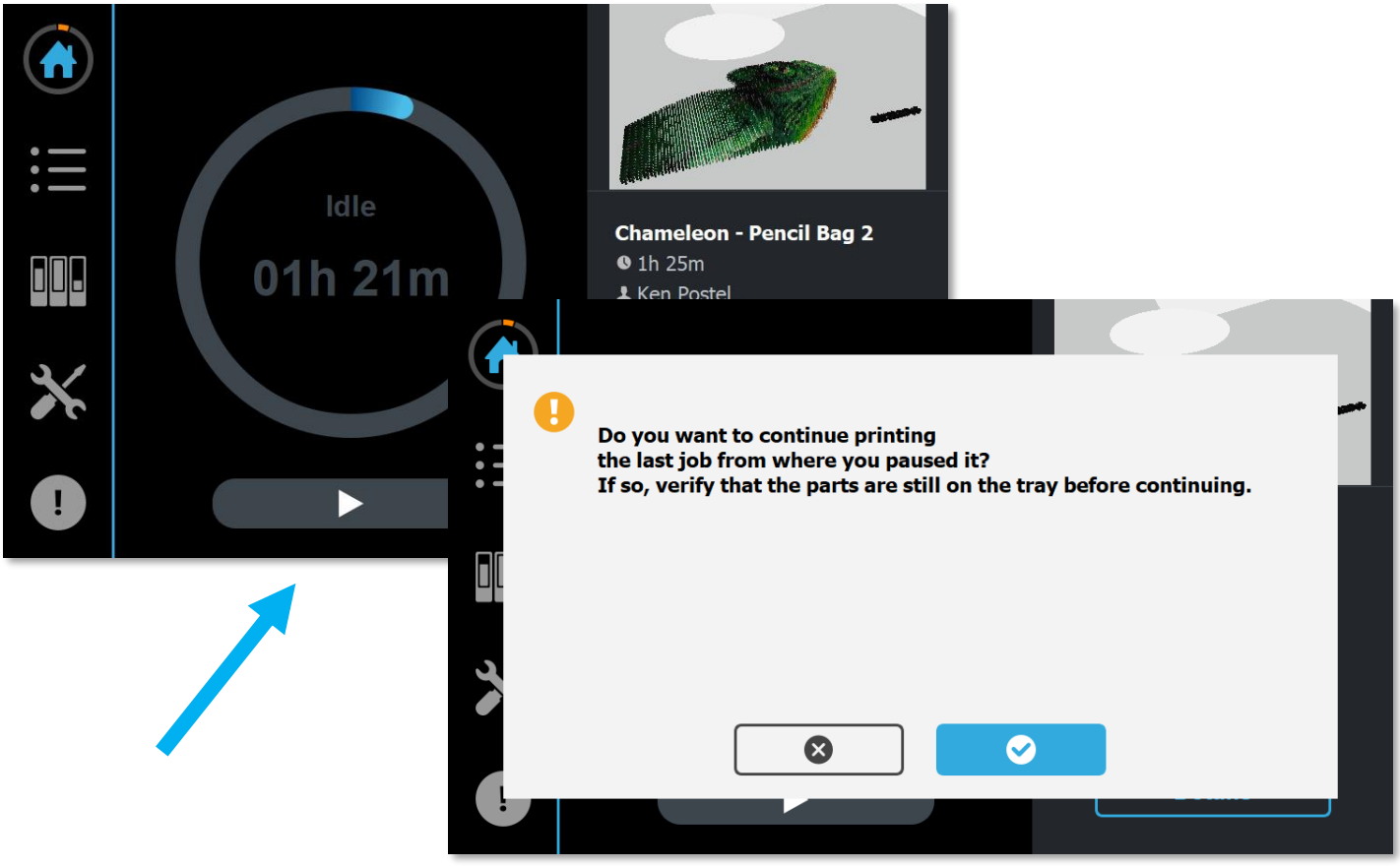




Once the height is properly adjusted click next and verify that the part is secured to the build tray.



Continue the build job by clicking on the play triangle icon and verify you want to continue from the paused point in the model.



Once finished, remove the part from the tray, remove the tape and remaining model material from the tray, remove the block from the bag, and you have a completed pencil bag!