Fusion3 EDGE 3D Printer User Manual

Contents

Fusion3™ REACTOR 3D Printing Software

Fusion3 EDGE 3D Printer

RUNNING A PRINT ON EDGE (AKA NORMAL OPERATION)

The steps, procedures, & what to expect when printing with EDGE

SUMMARY
There are 11 key steps to run a print on EDGE:

1. Slicing your part in REACTOR
2. Transferring your .gcode file to EDGE
3. Loading filament
4. Preparing the bed
5. Starting the print
6. EDGE's start-of-print sequence
7. Ensuring a correct first layer
8. The printing process
9. EDGE's end-of-print sequence
10. Removing your finished part from EDGE
11. End-of-print cleanup

STEP 1: SLICING YOUR PART IN THE REACTOR
The basic steps are:

1. Export your CAD file as a . STL file
2. Load this into REACTOR
3. Configure your options & settings in REACTOR (material, quality preset, etc)
4. Generate the .gcode
5. Preview/check the .gcode

6. Save the .gcode file

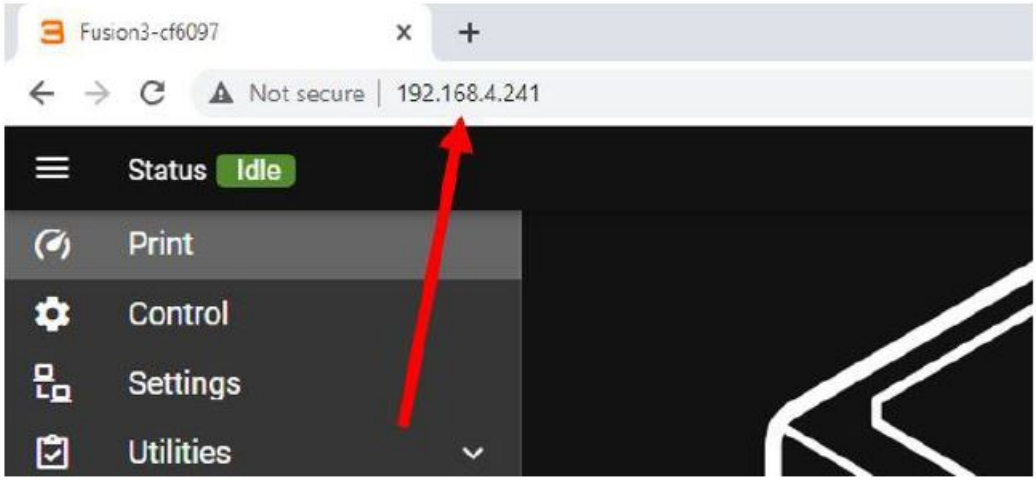
For more information see:

- The REACTOR User Manual for specific instructions on how to slice a file with REACTOR.
- The “Using REACTOR with EDGE” module.

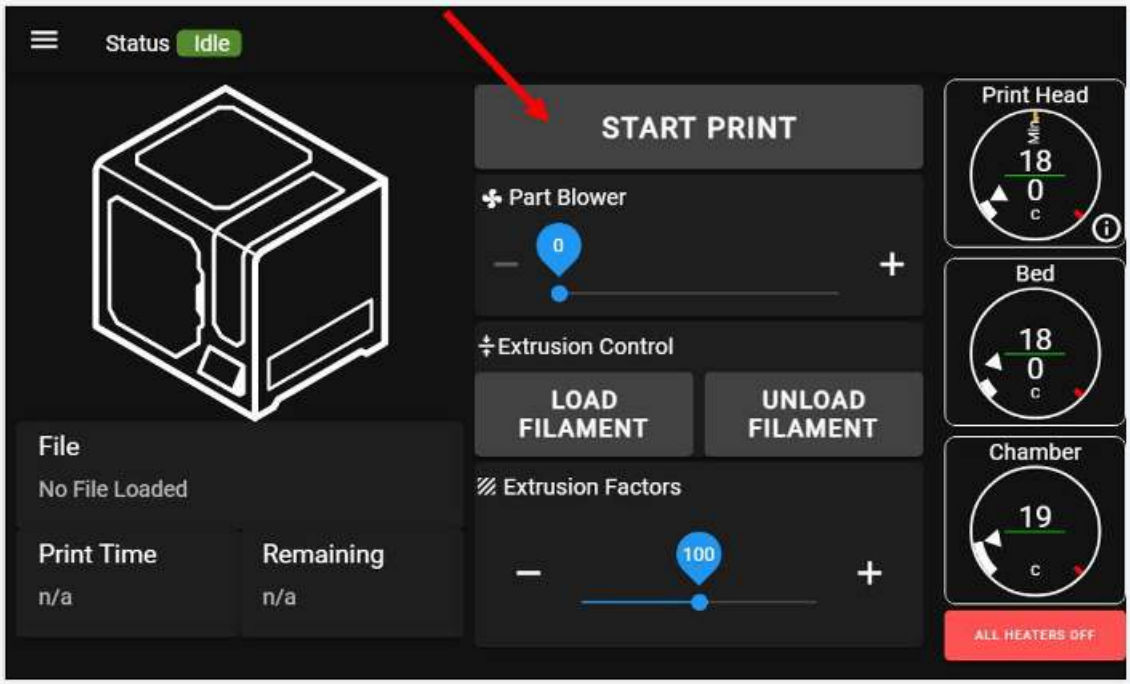
STEP 2: TRANSFER YOURS. GCODE FILE TO EDGE
There are two ways to transfer your .gcode file to EDGE:

If Edge Is On Your Local Network

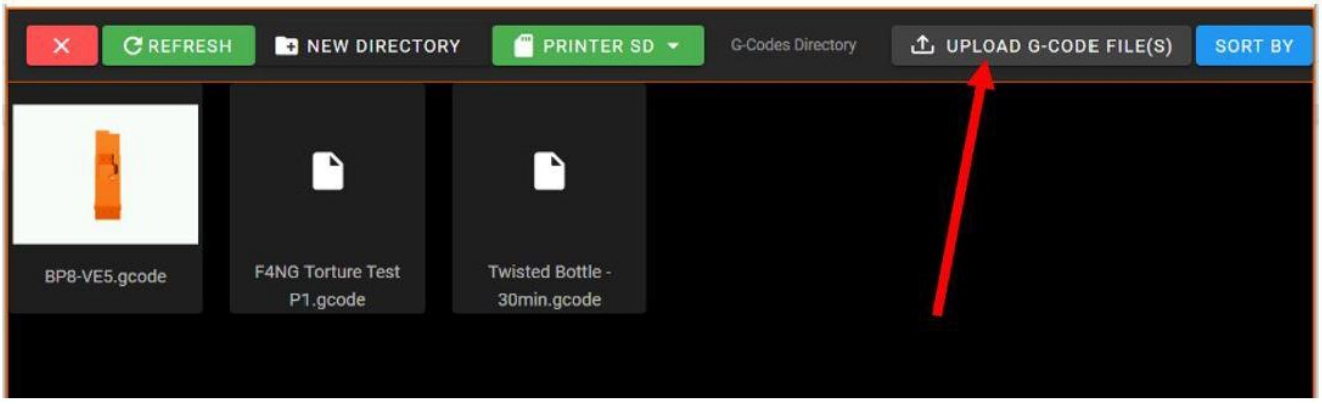
1. Load EDGE’s user interfaces on your computer by navigating to its IP address with a web browser.



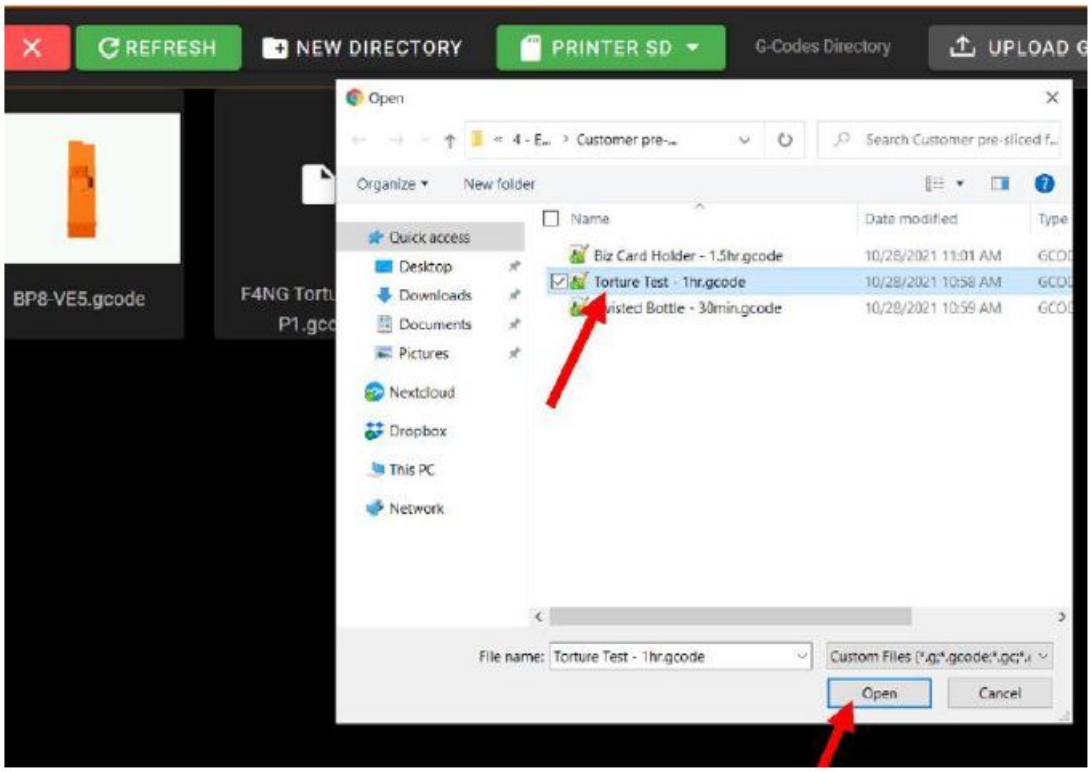
2. Ensure the main door is closed.
3. Click the “START PRINT” button on the main screen.



4. In the file selection dialog box, click “UPLOAD PRINT” in the top right corner



5. In the dialog window that opens, navigate to where your .gcode file is saved on your computer. Select it and click “Open”.
6. The file will upload and appear in the file list.
7. DO NOT select it for printing yet; we have to prepare the printer itself!



Manual Transfer Via USB

If EDGE is not on your network, or you do not wish to use the network interface:

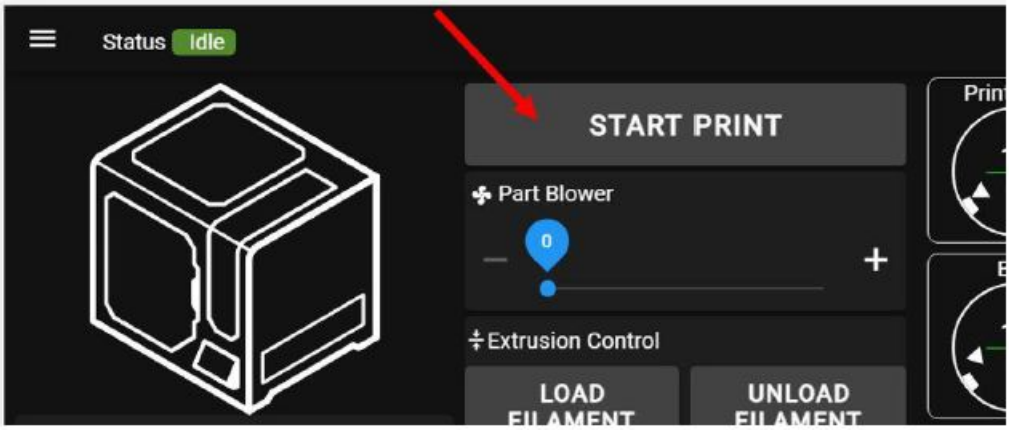
1. Locate a USB thumb drive and insert it into your computer. Transfer your .gcode file to it.
2. SAFELY EJECT the thumb drive and transfer it to the USB port on the front of EDGE, below the LCD screen.
3. THAT'S IT until we've prepared the printer for printing.

STEP 3: LOADING FILAMENT
See the "Loading Filament" section in your QuickStart Guide for detailed information on how to load filament into EDGE. Ensure that the material you load MATCHES the .gcode file you made! For example, don't load PLA if you have sliced for ABS.

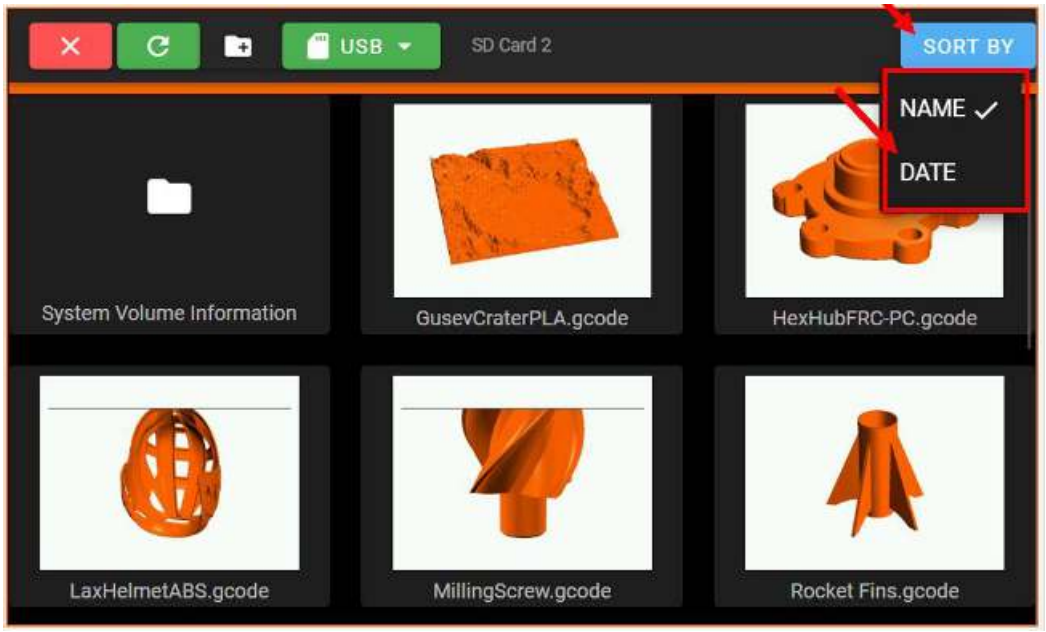
STEP 4: PREPARE THE PRINT BED
See the "Cleaning & preparing the bed" section in your QuickStart Guide for detailed information on how to prepare the bed for printing. Ensure that the bed you have installed on EDGE and its preparation (glass+gluestick, glass+magigoo, flexible, etc) matches the requirements of the material you're using, and your REACTOR settings.

STEP 5: START THE PRINT

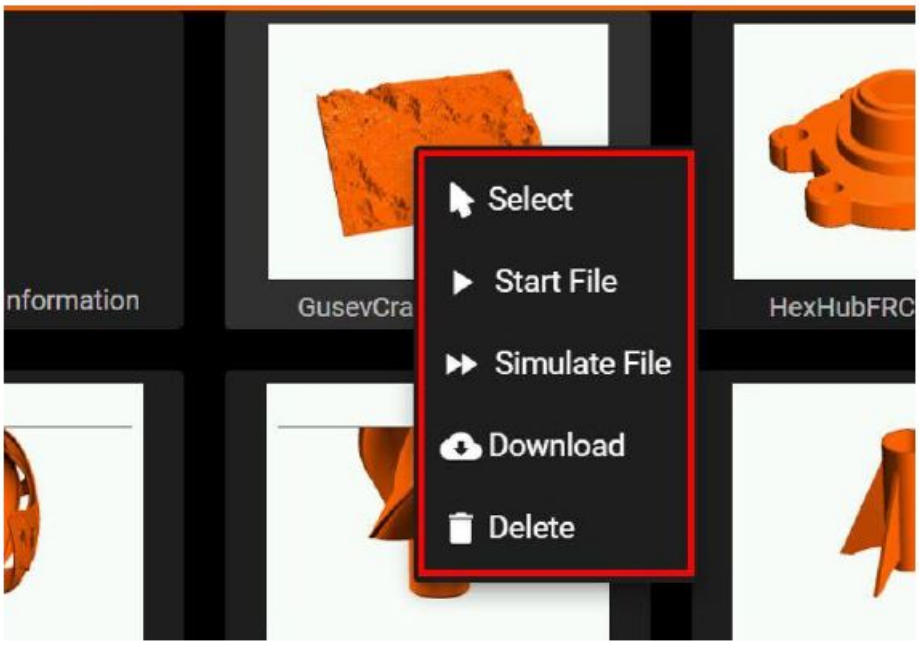
1. Make sure the main door is closed.
2. On the main screen, press the "START PRINT" button.



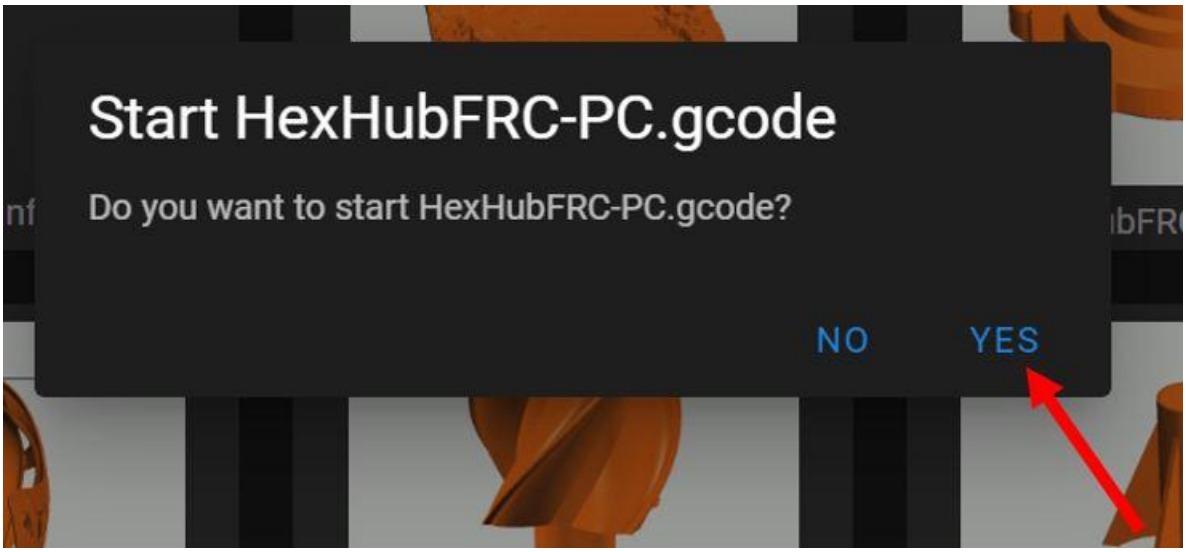
3. A file selection dialog window will pop up. Scroll through the file list to find the file you want to print.



1. Thumbnail images will show what the prints look like
2. Use the “SORT-BY” button in the top right to sort the files by name, or by date created. The latter will put your most recent file first which makes it easy to find.
3. A long press on a file will bring up additional options.



4. Select the file you want to print. Press “YES” to confirm that you want to start the print immediately.
5. The printer will begin executing the print.



STEP 6: BEGINNING-OF-PRINT SEQUENCE
At the start of each print, the printer will complete the following steps:

1. Bed Heating: The bed heats to its target temperature. Nothing else will happen until the bed is up to temperature. You will see the bed temperature gauge pulse orange to indicate it's heating, and the UI will transition to its print progress screen. For ABS or other high-temperature materials, heating the bed for the first time may take up to 20 minutes.
2. Home Axes: Once the bed is up to temperature, the printer will home its Z, Y, and X axes, in that order.
3. Bed Leveling, Nozzle Offset, Heat Print Head: EDGE will perform a calibration routine that cleans the print head, checks the nozzle offset, and checks the bed level. The print head will heat up during this sequence. Watch the screen for status updates and information on what the printer is doing.
4. Prime Print Head: Once the bed probing is complete, the print head will move to the front left corner, extrude some filament in free air to prime the extruder, then the print will begin.

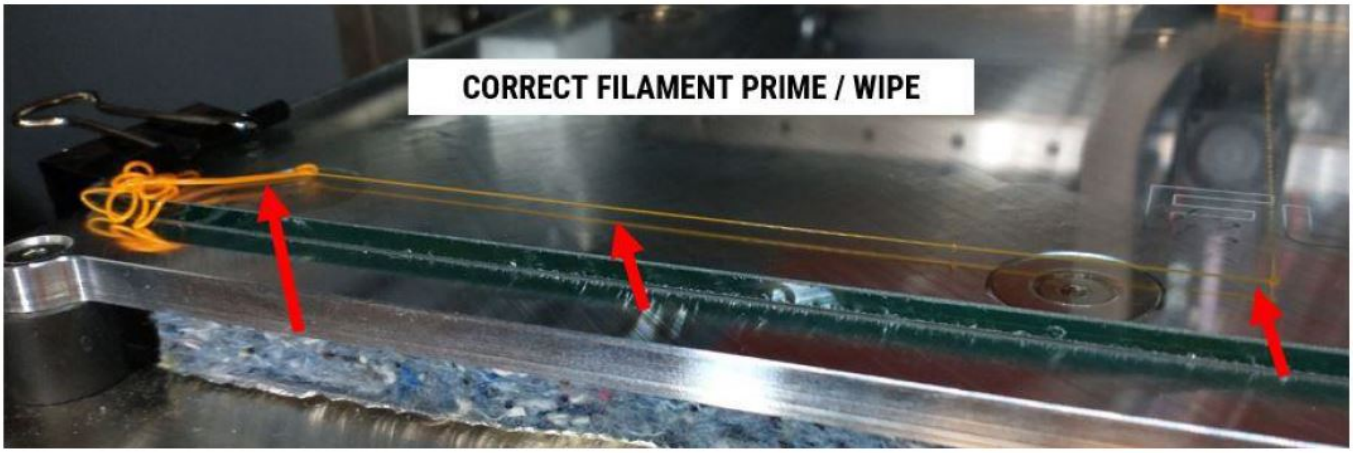
NOTE:

- The "pause print" functionality is not available until EDGE actually begins to print your part.
- If you have enabled quick-turn mode, the start-of-print sequence bypasses the bed leveling and nozzle offset checks, to speed up how quickly the print starts. Instead, the axes will home, a single probe is done in the center of the bed, then the print head heats up to begin the print.

STEP 7: DURING THE FIRST LAYER

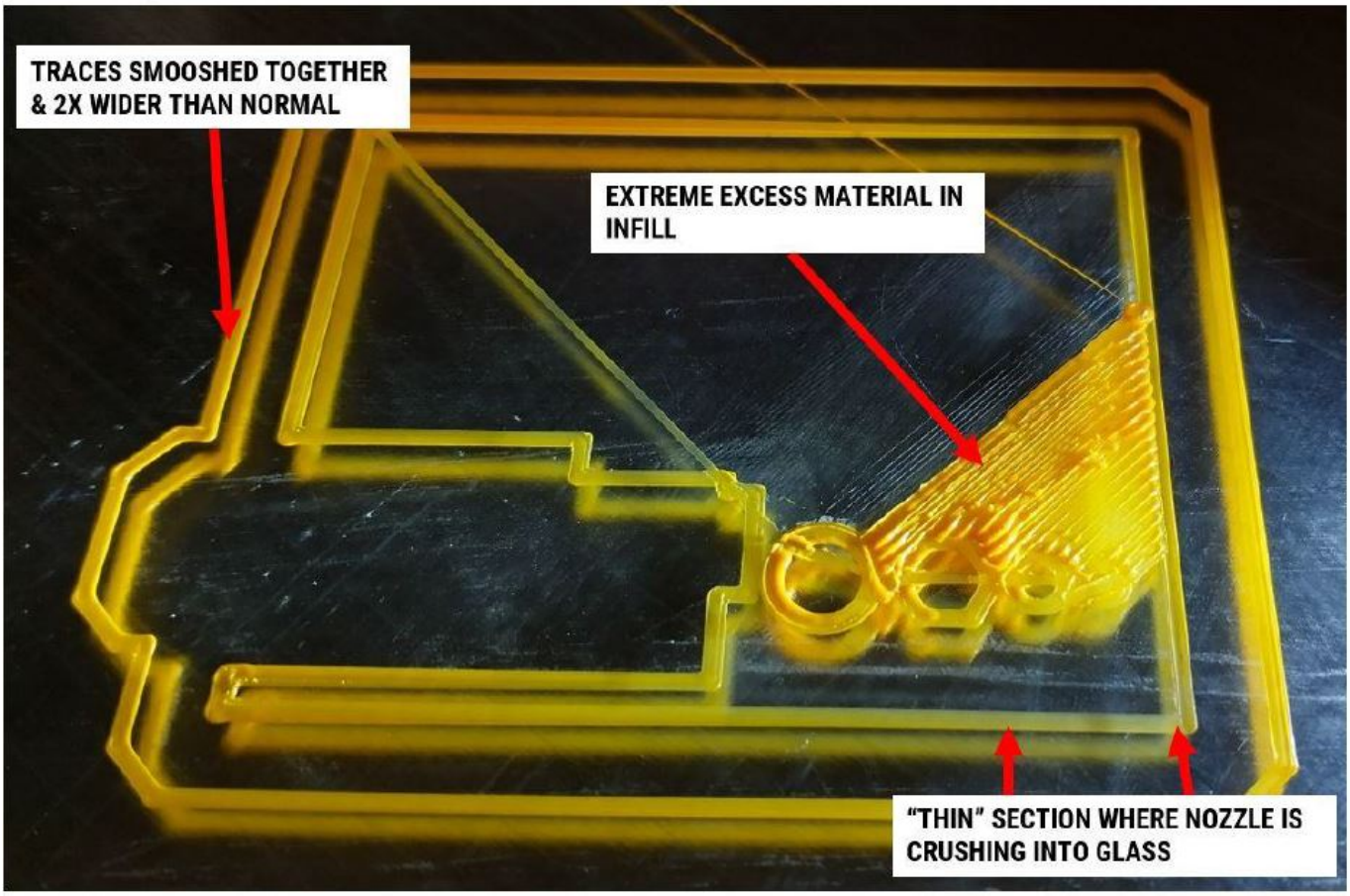
IMPORTANT:
We STRONGLY recommend you ALWAYS monitor the start-of-print sequence and the printing of the first layer. Most print failures result from problems on the first layer that are not caught and corrected promptly. To ensure the success of your print you should evaluate the following during the first layer of the print:

Filament Prime & Wipe:
The printer will extrude a length of filament above the bed, then move down and "wipe" the print head left to right. Sometimes this filament will get stuck on the print head and get dragged into the print. If this happens, you should pause the print and remove it from the print head using needle nose pliers or similar.

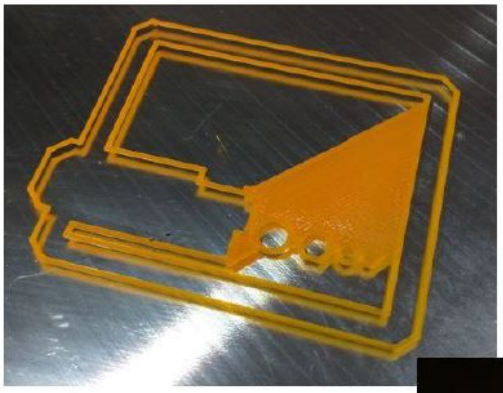


First Layer Height:
Check that the first layer height is correct. You can do this by inspecting the perimeter “skirt” lines the printer will make around the outline of your part. See pic for what they should look like.

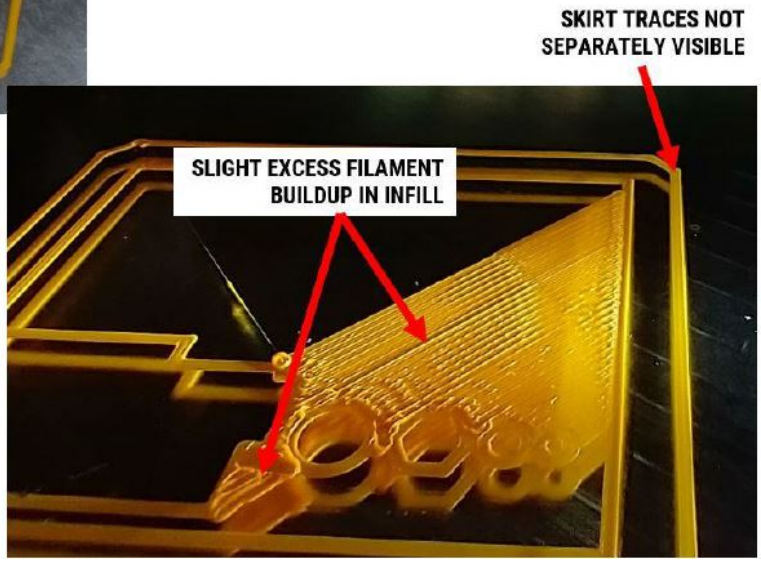
The first layer is FAR TOO close. STOP PRINT, fix, try again:



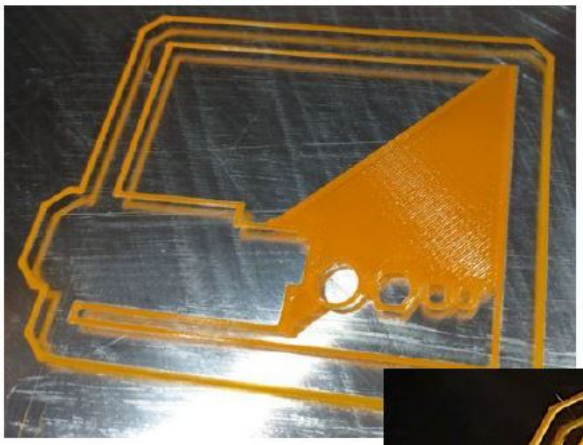
The first layer is slightly too close, but OK to keep printing:



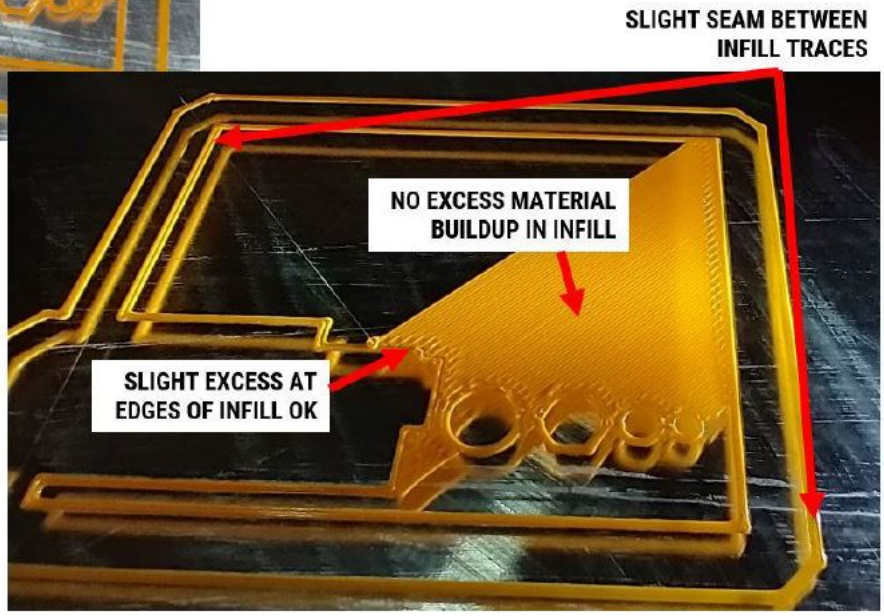
FIRST LAYER:
SLIGHTLY TOO CLOSE
BUT OK TO KEEP PRINTING



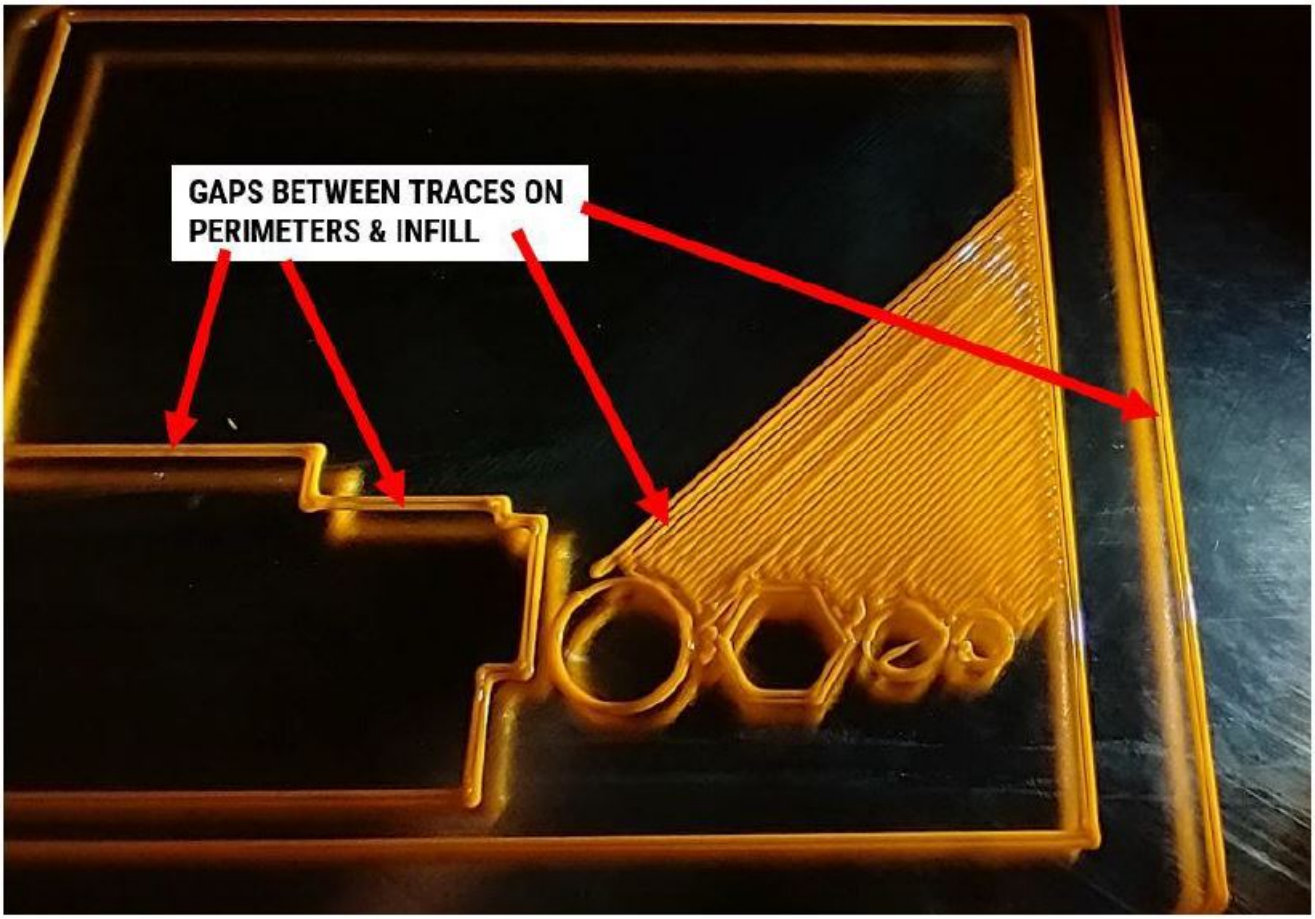
First layer “goldilocks” – Just Right:



FIRST LAYER:
“GOLDILOCKS” – JUST RIGHT



The first layer is TOO FAR AWAY. Stop print, fix, try again:



If you're not sure about your first layer height from the skirt lines, you can also look at the infill pattern. See the pictures above for examples. If your first layer height is not correct, use the Babystepping buttons to adjust it. For more information on Babystepping see the Bed Leveling module.

Bed Adhesion

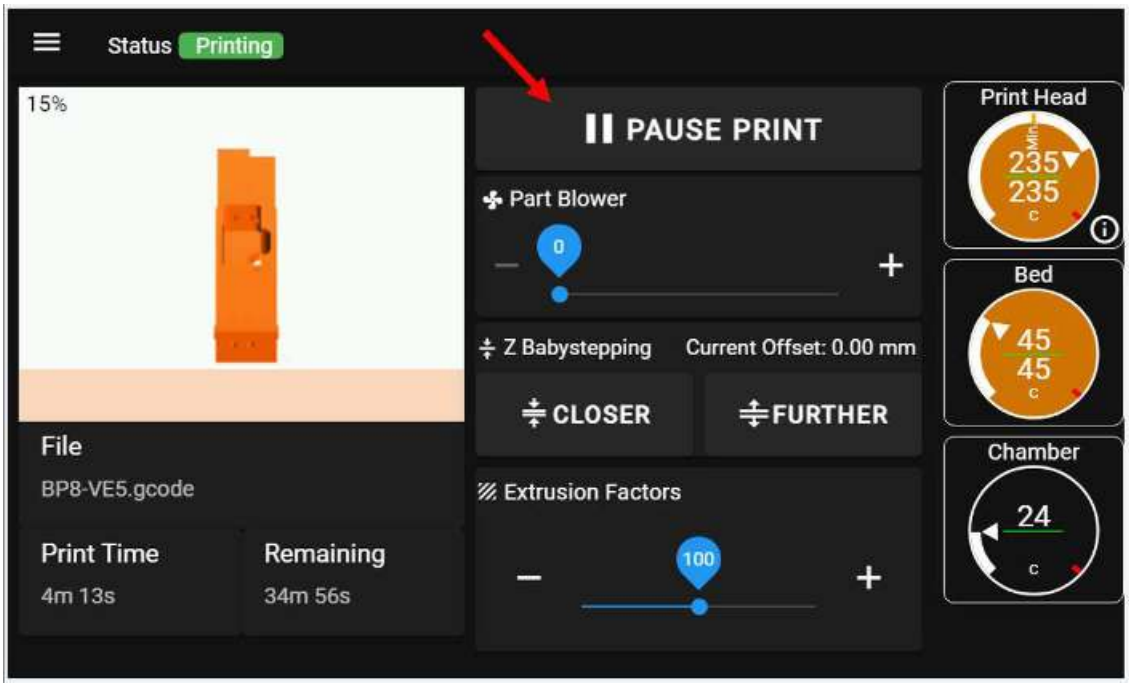
Make sure the entire first layer sticks firmly to the bed. If you see a corner or other section lift or peel off, stop the print. Check the following:

- Your slicer settings & material loaded match
- Your bed surface is correct for the material (glass, flexible, etc)
- Your bed coating is correct for the material (gluestick, magigoo, nothing, etc)
- Your bed coating is fresh and was applied to a clean, cold (<40C) bed

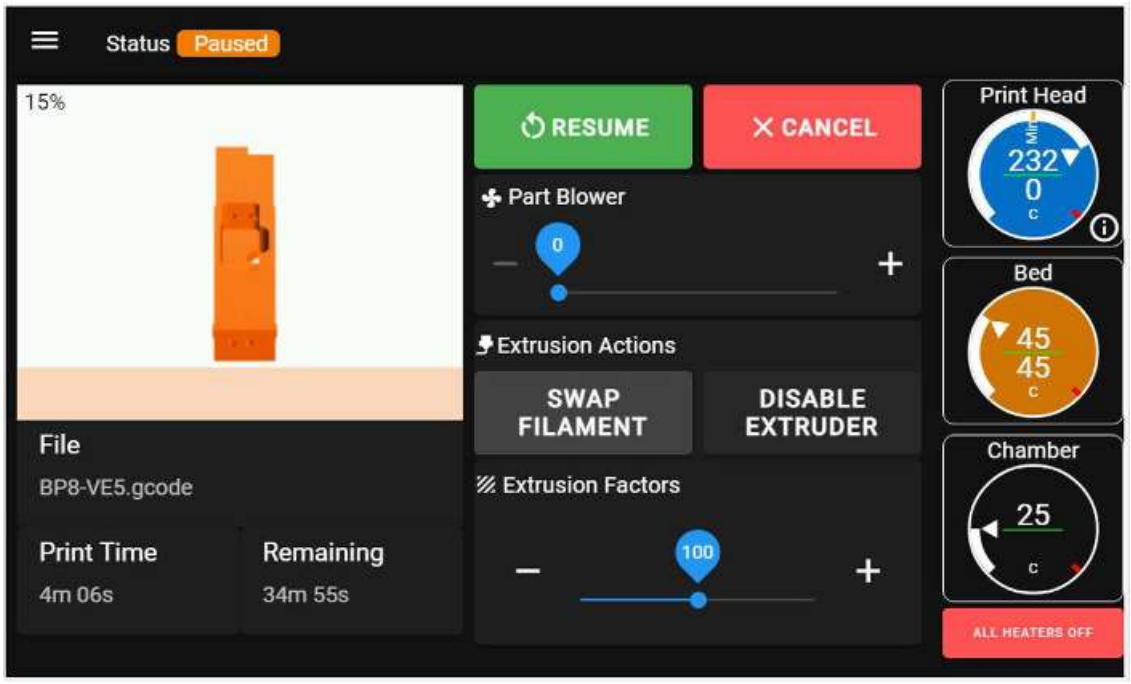
STEP 8: DURING A PRINT

NOTE:
If you open the main door during a print, the printer will automatically pause the print for safety reasons. To resume a print, close the main door and select "Resume" on the control panel.

Pausing, Resuming, Canceling A Print:
To pause a print, press "PAUSE PRINT" on the control panel, or open the main door.



To resume a print, close the main door and press “RESUME PRINT” on the control panel. While a print is paused, you will get additional options on the control panel to swap filament or cancel the print.



When a print is paused:

- The print head will be turned off
- The bed will stay hot
- The motors will stay energized

When you resume a print, it will look like nothing is happening while the print head is heated up. The longer the print has been paused, the longer this will take.

STEP 9: END OF A PRINT
When the print is finished, the printer will move the head to the back-left corner and move the bed all the way to the bottom.

- If quick-turn mode is off (default), the bed will turn off and begin to cool down.
- If you enabled quick-turn mode, the bed will stay hot.

For high-temperature materials (ABS, PC, PC-PBT, etc), you may want to leave the door closed while the bed cools down. This helps the part cool more evenly and makes it less likely to warp after it's been removed from the bed.

STEP 10: REMOVING YOUR FINISHED PRINT
NOTE: If you have enabled quick-turn mode, you will need to remove your print surface from the printer in order for it to cool down because the bed will stay hot. For detailed information on removing parts, see the Removing a Finished Part module.

In general:

1. If quick-turn mode is off (default), removing the glass is optional.
2. Let the bed cool to <40 C before attempting to remove the part.
    1. For PLA, remove as quickly as possible; the longer the part sits on the bed the stronger the bond becomes.
3. Attempt to work the part scraper under a corner or edge of the part and progressively separate more of the part.
4. If you find yourself needing more than a couple of pounds of force, STOP. Attempting to separate parts with brute force can result in damage to the printer, injury to you, broken glass panels, and broken/deformed prints.
5. Instead, thermally shock the part loose (see above module for recommended procedure).

STEP 11: END-OF-PRINT CLEANUP

1. Remove the priming line and print the skirt from the bed.
2. (Glass surface) Clean off the coating applied, if any, using water. For best results do not use a coating for more than 1 print.
3. (Flexible surfaces) Wipe the surface down with rubbing alcohol.
4. Don't re-apply a bed coating until you're ready to print again. In other words, don't prep a bed and then let it sit for a week until you use it.

For more information see the "Cleaning & Prepping the Bed" section in your QuickStart Guide.

Related Articles / Resources:
Tags: edge, quickstart, printing, running a print, normal operation

Documents / Resources

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