

Fusion3

Affordable, High-Performance 3D Printers

F410 QUICK-START GUIDE

**PLEASE READ THIS DOCUMENT
BEFORE OPERATING YOUR NEW 3D PRINTER**



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1. Introduction & Contacting Technical Support

Thank you for purchasing the Fusion3 F410 3D printer.

Your 3D printer has been designed and manufactured to the highest quality standards to give many years of reliable, high-quality output with minimal, regular maintenance.

ROLE OF THE QUICKSTART GUIDE

This quick-start guide is designed to assist you with unpacking, setting up and introducing you to the basic workflow of your 3D printer.

THE QUICK-START GUIDE IS NOT A COMPREHENSIVE MANUAL

Your F410 User Manual is available in PDF form and can be found on both the SD card, and on the Fusion3 website under *Support>Manuals & Downloads>F410 3D Printer*.

YOUR 3D PRINTER IS A COMPLEX PIECE OF EQUIPMENT: THERE IS A LEARNING CURVE INVOLVED

Your 3D Printer is a machine tool, not an appliance (like a microwave). Please be prepared to invest the time to learn how it works and how to get the most out of it.

FUSION3 IS HERE TO HELP YOU GET THROUGH THIS LEARNING CURVE!

FREE LIVE TRAINING CLASSES:

Please ensure that all operators attend one of our live training classes offered each week. You will receive emails with links to register.

CONTACT TECHNICAL SUPPORT:

The Fusion3 Technical Support team is available Mondays through Friday via phone (1+ 877-452-0010, extension 2) or via email at **support@fusion3design.com**.

2. What's in the Box

1. F410 3D printer
2. Getting Started packet (Black Folder) which includes:
 - a. Welcome letter
 - b. Quick-Start Guide
 - c. Preventive Maintenance Guide
 - d. REACTOR software activation
 - e. Certified Materials List
3. Operator's toolkit consisting of:
 - a. External SD card
 - b. Spray bottle
 - c. Part removal tool
 - d. Bed Adhesive (Avery Purple Glue Sticks – qty 2)
 - e. Wire Brush
 - f. Toothbrush
 - g. Extruder spring height gauge
 - h. Filament spool holder
 - i. Power cord
 - j. "Torture test" verification print
 - k. 4mm hex wrench
 - l. 3mm hex wrench
 - m. 2.5mm hex wrench
 - n. 2mm hex wrench
 - o. 1.5mm hex wrench
 - p. Wire cutter
 - q. Jeweler's flathead screwdriver
4. 1kg roll of PLA filament
5. Spare print surface

IF YOU ORDERED OPTIONAL ACCESSORIES:

Such as our optional filtration unit or additional print heads, your packing slip will indicate whether they were shipped separately or included in the same box.

3. Unboxing Your F410

IMPORTANT: Please retain all packaging materials (3 pieces of the box, pallet, foam endcaps). Your 3D printer is a sensitive piece of electrical equipment and should always use this packaging when transporting.

To unbox your F410 3D printer:

1. Cut the plastic wrap off the box



2. Cut the plastic tie-down straps



3. Lift the lid straight up off the box



4. Remove the top foam blocks (4 total - marked with arrows) and the Getting Started packet located on top of your printer. Inside you will find this quick-start guide.



5. Carefully lift the sleeve straight up and off the box. Sometimes this is easier with two people.



6. Locate your toolkit box in front of your printer and remove it from the bottom tray.

7. Use 2 people to carefully pick up the printer. Lift it out of the bottom tray. The foam endcaps may stay attached – that's ok. Set the 3D printer on the ground next to the pallet and remove the endcaps one at a time from the printer. Take care not to step in the bottom tray as your spare glass bed is under your printer.



TOOLKIT BOX

8. Now you are ready to move your F410 to its desired location (see Section 4 – “Where Should I Locate My F410 3D Printer”)

9. Under your printer attached to the bottom tray will be your filament and spare print surface.



4. Where Should I Locate My F410 3D Printer?

Please select a location that meets the following criteria:

- A surface capable of supporting 120 lbs
- At least 31" x 30" in size
- Sturdy enough to resist shaking during the printer's operation
- Allows for the rear face of your F410 to be at least 2" from any wall or obstruction
- Provides enough clearance on the right side of the printer for the power cord and for the operator to reach the power switch



5. Moving your F410

Your F410 weighs 85 lbs. and requires 2 persons to lift at any time.

On the left and right faces are cutouts that function as hand-holds.

Your Fusion3 F410 is a piece of precision equipment: PLEASE DO NOT SUBJECT IT TO SHOCKS, DROPS, OR BUMPS.



6. Setup

Once your F410 is located in its desired location:

1. Remove the protective films from the outside of the 3 main door windows and the filament door.

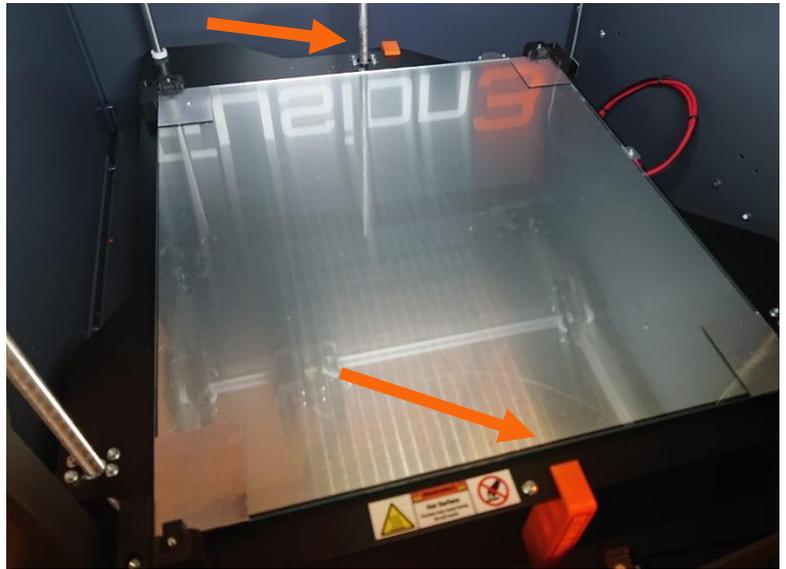
(This step may generate a static charge that attracts dust in the first few days of operation. Gently wipe the windows with a damp paper towel to remove the dust if needed.)



2. Remove the protective film from the F410's Control Panel.



3. Open the main door and remove the 2 Z axis shipping supports (indicated by orange arrows). One is located near the front of the 3D printer; the other is located towards the center-rear of the F410's print bed.



You may need to move the Z axis up slightly by gripping the belt with your hand and pulling sideways gently.



IMPORTANT INFORMATION FOR INTERNATIONAL CUSTOMERS:

- 1) FUSION3 IS UNABLE TO SUPPLY A POWER CORD FOR LOCATIONS OUTSIDE OF THE USA and CANADA DUE TO THE VARIETY AND TYPES OF PLUGS IN YOUR LOCATION. PLEASE SOURCE A 3-PRONGED DESKTOP COMPUTER PLUG (18 AWG)
- 2) YOU WILL NEED TO CHECK THE INTERNAL POWER SUPPLY'S VOLTAGE SELECT SWITCH BEFORE POWERING ON YOUR F410. PLEASE CONTACT FUSION3 SUPPORT FOR ASSISTANCE.

DO NOT POWER YOUR F410 ON WITHOUT PERFORMING THESE STEPS!

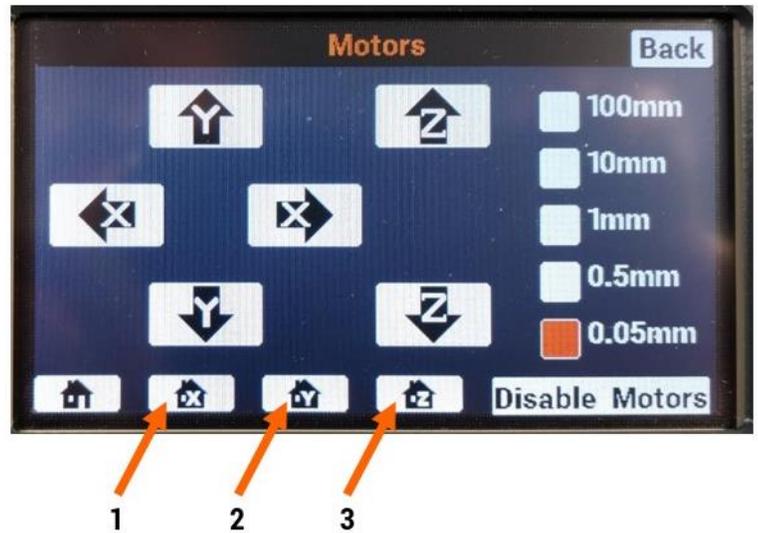
4. Connect the power cord and Ethernet cable (optional). For more information on setting up, including connecting your F410 to your network, see section 3.6 in your user manual.

Check that the power switch is in the OFF ("0") position before inserting the power cord. Sometimes it can get bumped during shipping or unpacking.



5. Power on your printer using the power switch. Wait 3-5 seconds for it to boot up.

6. Go to the F410 Control Panel. Navigate to the *Maintain Printer > Motors* screen. Press the "Home X" button (1) on the touchscreen and make the sure the printer moves smoothly and stops when the X endstop is triggered.
7. Repeat this process for Y (2) and Z (3). The print head should be in the front left corner and the bed should be at the bottom.



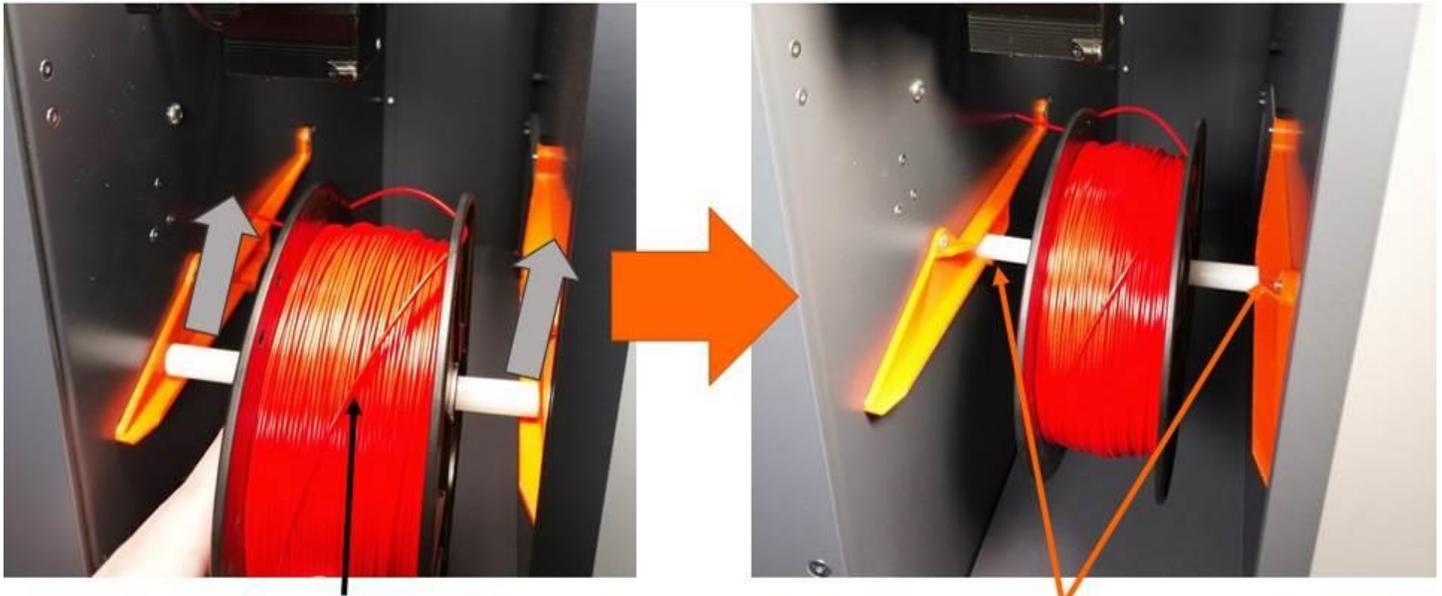
8. If you purchased the optional exhaust filter, remove it from the toolkit box and screw it onto the back of the printer over the upper exhaust fan. The screws are also located in your toolkit box.

IMPORTANT: If locating your 3D printer near a wall, please ensure at least 2 inches of clearance between the filter and the wall.



7. Loading Filament

1. Slide the filament dowl through the center hole of the filament spool. Orient the spool so that the filament pays off the front underneath the spool.
2. Using one hand on either side of the spool, slide the dowl into the track in the filament bay. The dowl will drop into the groove in the track when it's positioned correctly.



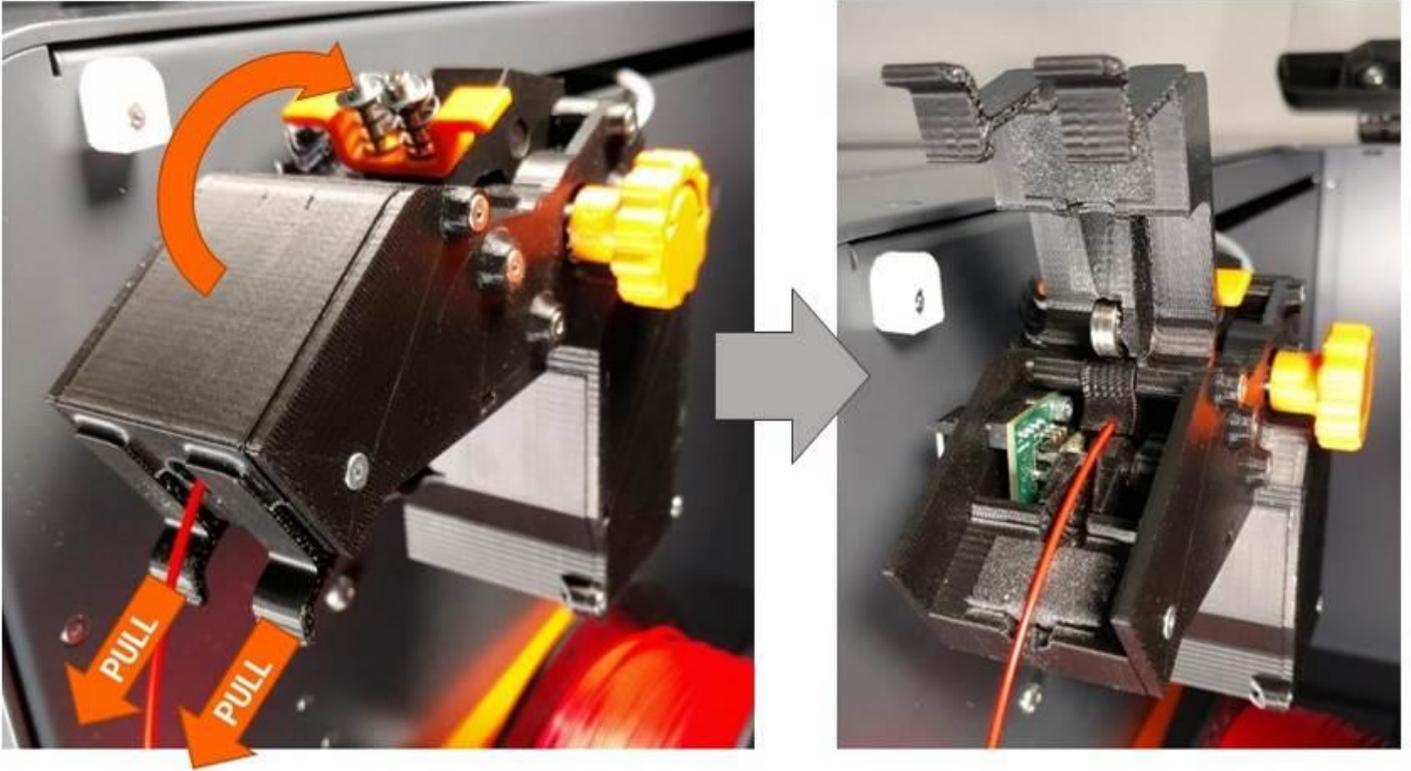
**Filament pays off from
bottom of front**

Seated in notch

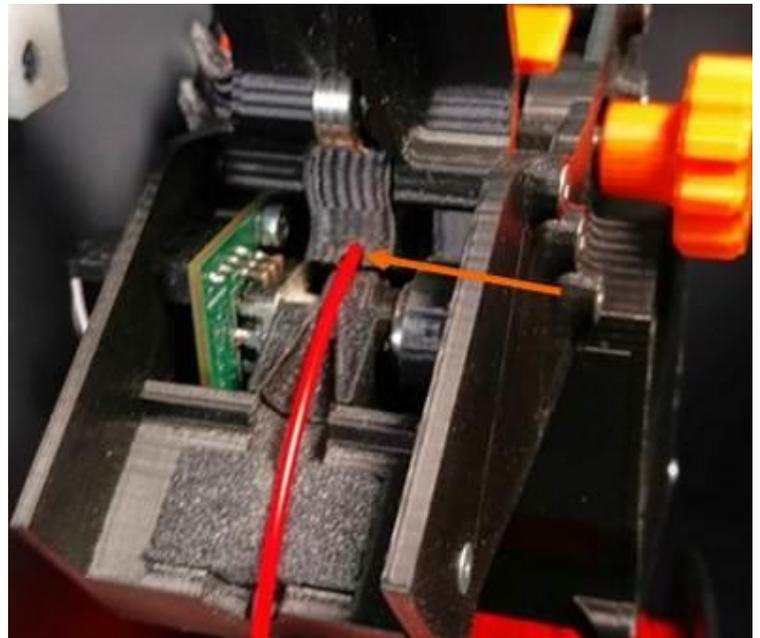
3. Locate the end of the filament. Free it from the spool and trim off the end of the filament at an angle.



4. Open the Filament Monitoring section of the extruder by pulling towards you on the latch tabs on the Monitoring section door.

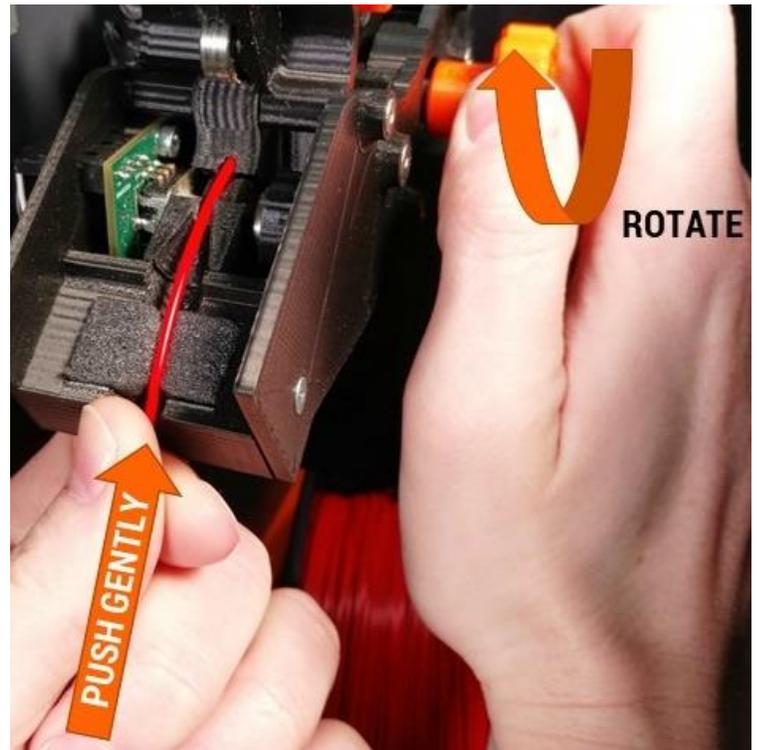


5. Insert the end of the filament into the inlet on the far side of the Filament Monitoring encoder wheel. Push forward gently until you feel the filament bump into the feed gear (inside the feed section).

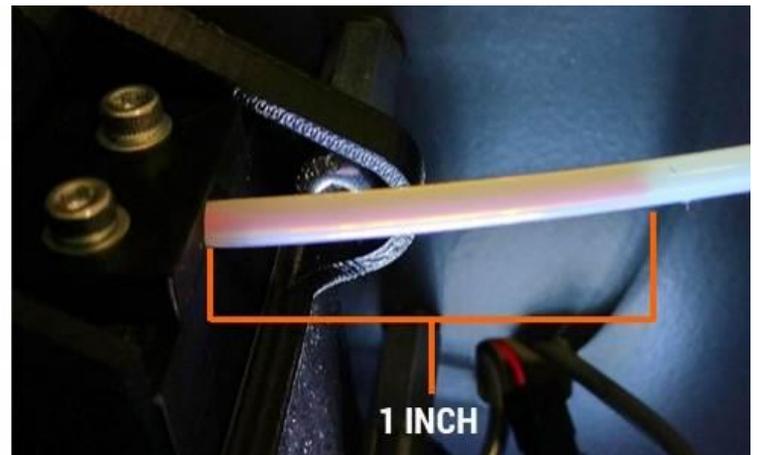


6. While gently pushing on the filament, slowly turn the orange wheel until you feel the extruder “bite” on the filament and begin to pull it. You will see the idler bar “hop” up slightly when this happens.

For more information on the functions and operation of the F410’s extruder, including opening the idler bar, see Section 4.5 of the F410 User Manual.

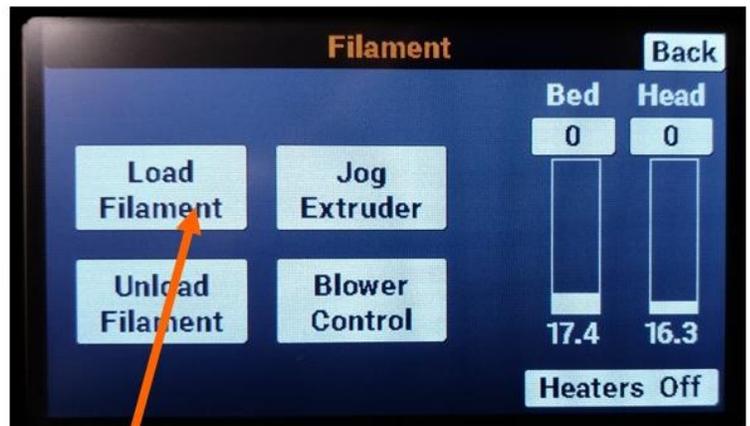


7. Continue to turn the wheel until the end of the filament protrudes into the feed tube on the exit side of the extruder about **1 inch**. Close the Filament Monitoring section.



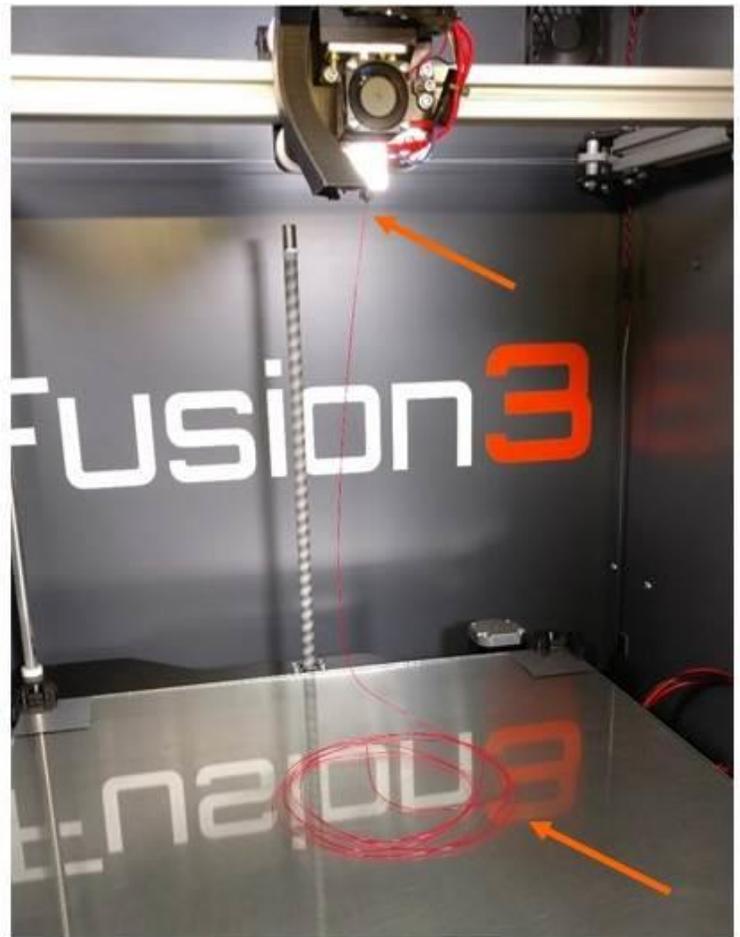
8. Go to the Control Panel. Navigate to *Maintain Printer > Filament*, and press the *Load Filament* button.

Your F410 will begin its load filament sequence by moving the bed down and starting to heat the print head. It will take **3-5 minutes for the print head to reach the correct temperature**; please be patient. Once it's up to temperature it will feed the filament up the tube and into the print head.



9. After the load is complete the extruder will reverse slightly and the heaters will shut off. **CAUTION: The print head will still be hot.**

10. Remove the string of filament from below the print head.



8. Your First Print

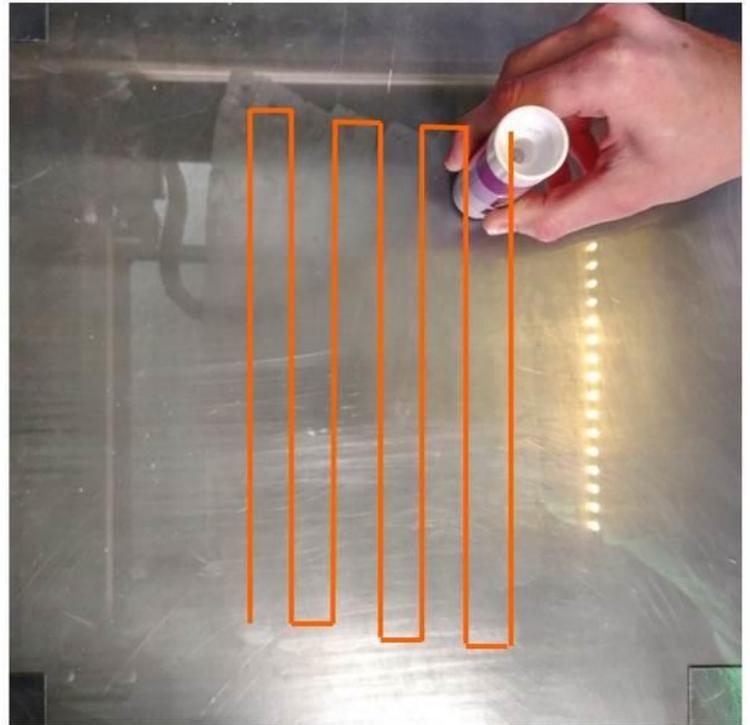
We include a few pre-prepared print files on the included SD card so you can get printing before setting up the bundled REACTOR 3D printing software. These files are ONLY set up for the roll of PLA filament we include with your printer.

Even if you intend to print another material regularly, please start with PLA for these prints!

1. Use the included glue stick to apply a **single, even** layer of glue to the center of the bed. You do not need to coat the entire bed unless you are printing a large part. **You want NO GAPS in your glue application**; bare glass should not be present in the area where the printer will print.

(The included print jobs are small, so you only need to cover about a 6" x 6" area in the center of the bed)

NOTE: Different materials require different amounts of adhesive prior to printing. Please to the Fusion3 Certified Materials list available from the Fusion3 website for details under “# of Layers of Glue”

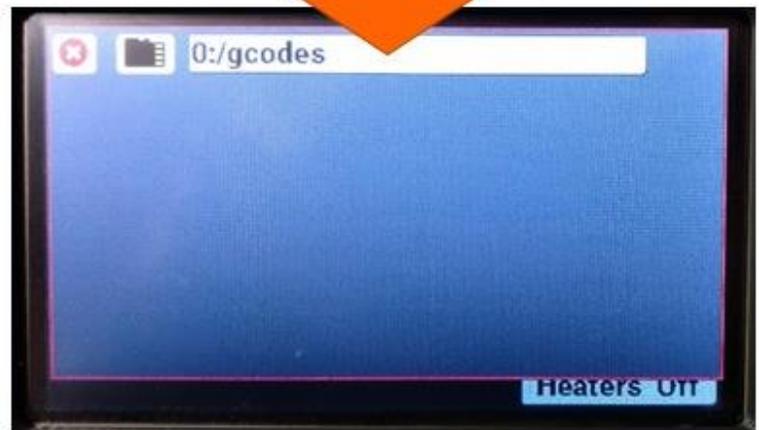
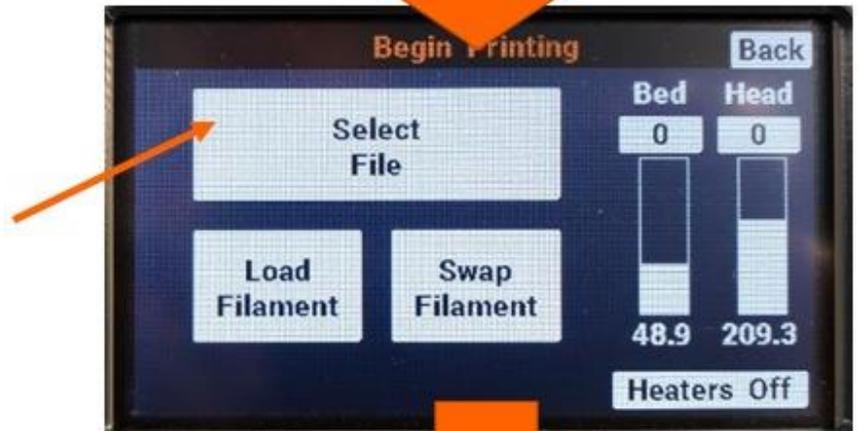


BACK AND FORTH, LIKE A 3D PRINTER PRINTING INFILL

2. On the LCD, navigate to the home screen (the one you first saw when the printer started up). Press *Print*.



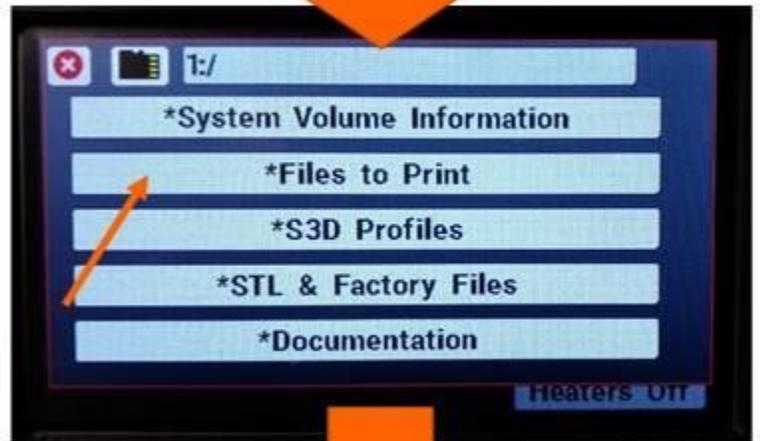
3. Then press *Select File*. This will open the file selection menu. Your F410's internal storage (card 0) will be empty; this is normal



4. Press the small SD card icon in the top left corner to cycle to your external SD card (card 1).



5. Navigate to the "Files to Print" folder. Folders are denoted by an asterisk in the name.



6. Select one of those files to print. The twisted bottle is the shortest one.



7. You will see a pop-up with some additional information about the file. Select "Print". The next section will describe the processes that your F410 Printer to undergo during the process of a print.



9. Sequence of Operations During A Print

Each time you start a print, your F410 3D printer will always go through the following steps:

1. **Home Axes & Heat Bed:** Your F410 will home all its axes and begin heating the bed to the correct temperature for your selected material (PLA in this case).
2. **Auto Bed Leveling:** The printer will prepare to run the auto bed leveling sequence by pre-heating the head to 250°C. Once the head is up to temperature the head will be emptied of filament and scrubbed against the bed to ensure good electrical contact. Make sure the bead of filament squirted out of the print head drops off cleanly and isn't in the way of the probing sequence. Then it will check the 4 corners of the bed to determine the height and level of the bed.
3. **Heat Print Head & Bed:** The F410 will begin heating the print head to the correct temperature for your selected material.
4. **Printing:** When the print head and print head are at the correct temperature, the print will start.

NOTE: During a print we recommend closing the door, but your printer will run with the door open (there are no safety interlocks). You will get better quality, especially on larger prints, with the door closed.

5. **Completion:** After the print is finished the bed will drop all the way down and the heaters will shut off.

10. Removing Finished Parts from the Bed

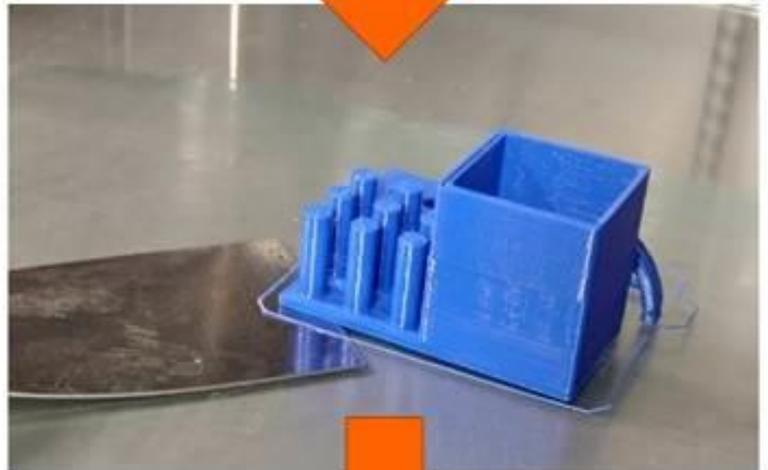
Different materials behave differently. Use the part removal tool to work the part loose from the bed as shown on the right.

PLA will need to be manually detached. Larger parts will require more force. One helpful trick is to heat the bed to 70°C to soften the bottom layer.

ABS will self-release as the bed cools below 45°C (you will hear a “pop”).

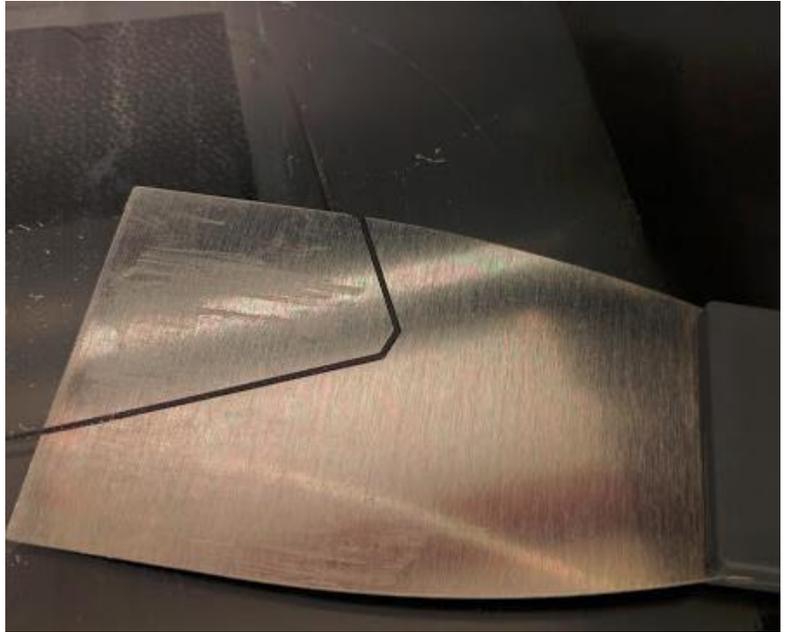
Nylon blends will need to be pried off. Since they are flexible they can be worked off a little bit at a time.

For more detail, see section 10.3 in the F410 User Manual.



11. Cleaning Up After a Print

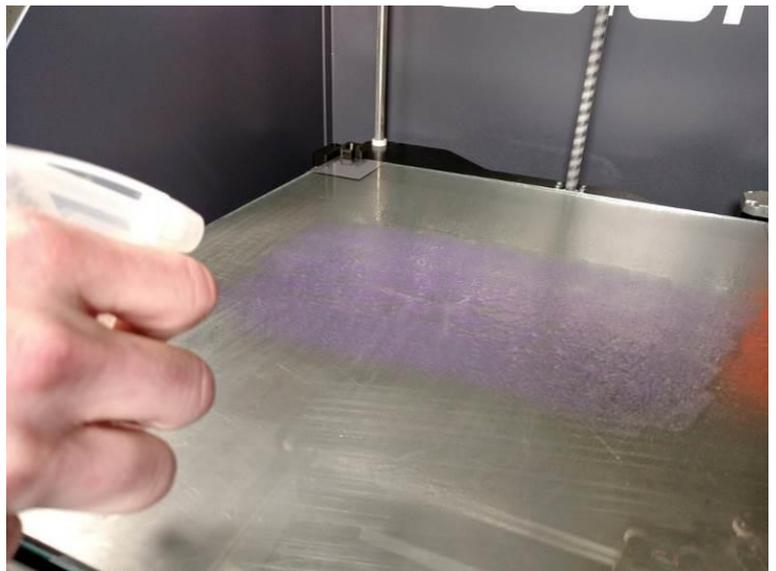
1. Remove the outline (skirt) printed around the part.



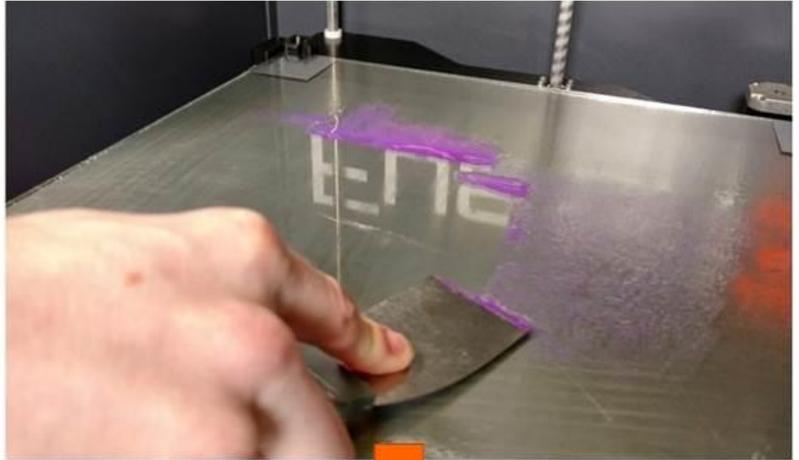
2. Remove the priming pile at the front left corner.



3. Allow the bed to cool to at least 45°C. Spray water onto the bed using the supplied spray bottle. Let it soak for at least 15 seconds. The glue will turn purple again.



4. Use your part scraper to “bulldoze” the glue residue into a line. Then wipe up the residue with a paper towel. The bed does not need to be **perfectly** clean, just remove 95% of the gluestick.



PLEASE NOTE:

- Fresh glue must be used for every print!
- **ONLY** use normal tap water to clean the bed. Cleaners such as rubbing alcohol, windex, etc will affect print adhesion.

12. Setting up REACTOR (3D Printing Software)

The installation and use of the REACTOR software are covered in separate documents.

- You will be provided with the activation key and download instructions on a sheet in the black folder that ships with your 3D printer.
- The REACTOR User Manual is included within the software itself and also can be found on the [MANUALS & DOWNLOADS](#) page of the Fusion3 website.
- There are two versions of the software available to Fusion3 customers. An 'Online' version and an 'Offline' version.
 - The Online version is self-updating and customers will be provided with up-to-date material profiles from the Fusion3 Certified Materials list as they are released.
 - The Offline version contains the initial set of material profiles and those customers will be provided with material updates as they are released.

13. General Precautions & Operating Notes

1. Unattended Operation:

PLEASE DO NOT LEAVE YOUR PRINTER RUNNING UNATTENDED

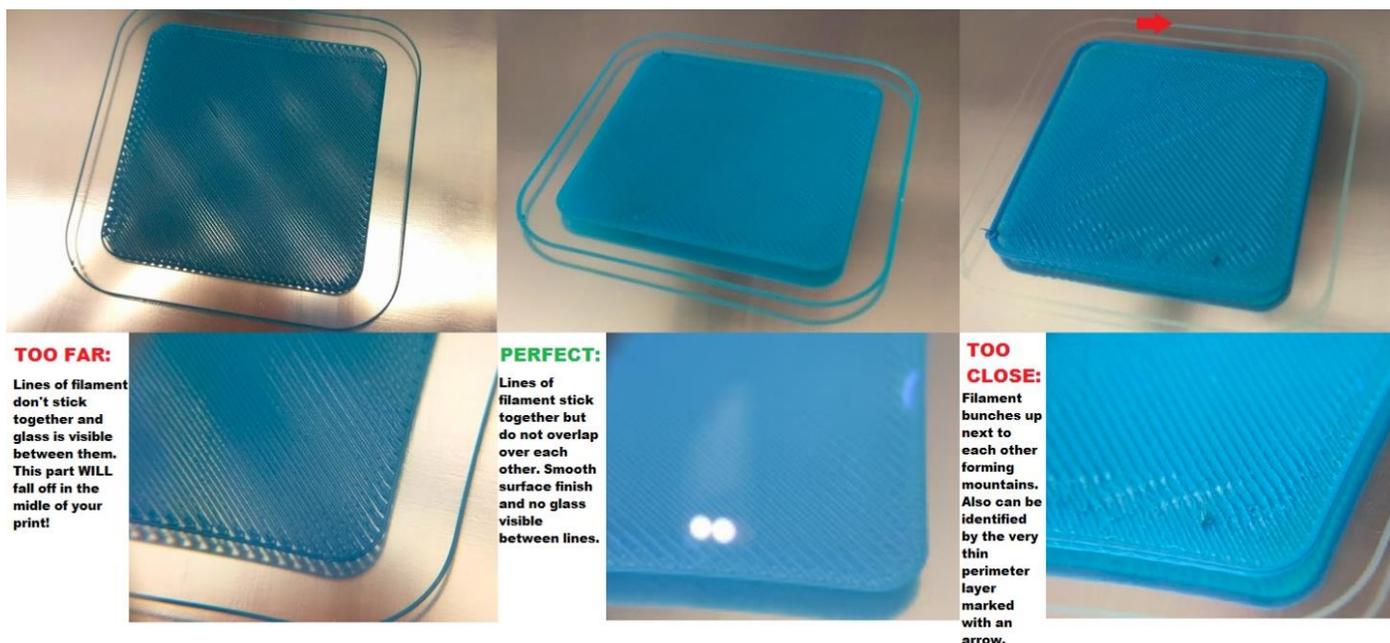
While the F410 is highly reliable and includes many safety features, there is always a chance something can go wrong. This can cause damage to your printer, and worst case can cause a fire. Damage due to unattended operation may not be covered under your warranty!

That said, the F410 is designed to print large parts reliably which means that you may have 40+ hour prints with makes its somewhat unreasonable to expect that someone is present at all time. A 3rd party cloud camera allows you to view the printer when not physically located. Please be sure to check every hour or two to ensure that the printer is operating properly.

2. **Onboard File Storage:** Your F410 has 2 different locations to store files: the external SD card and the printer's internal memory. Files you upload through the web interface will, by default, be uploaded to internal memory. For more details are found in Section 8 of the F410 User Manual.

3. **First Layer:** When the printer starts a part, the first layer the printer lays down is the most crucial layer of the entire print as it's the one that makes sure that the part sticks to the glass bed and stays put during the duration of the print.

Occasionally, this first layer will be laid down either too close to the bed or too far away from the bed, so you will want to observe this first layer on EVERY print to ensure the layer is put down properly. Below is a diagram of what a good, too close, and too far first layers typically look like. You want your first layer to look like the "Perfect" example below. If it looks like either of the examples on the left or the right, do not let the print continue and please contact support.



14. If You Encounter an Issue

Please don't panic! We've designed the F410 to be easy to maintain and repair if something goes wrong.

If you believe there is an issue, you can stop your printer during a print.

- A. Go to the F410 Control Panel
- B. Select "Pause print"
- C. Select "Cancel"

OR

You can press the "STOP / RESET" button on the front of the control panel to stop the printer immediately.

Once the print has stopped:

1. Please do not disassemble or adjust your F410 in ways that are not covered in the manual. Damage caused by doing so may not be covered under your warranty.
2. Please check the Fusion3 User Manual to see if your issue is covered there. Start with sections 12 and 13.
3. If you don't see your issue, OR if you have any questions, please contact Fusion3 Technical support at:
Email: Support@fusion3design.com
Call: 1+877-452-0010 extension 2
4. If specific repair or maintenance is needed please contact Support – we will provide you parts under the F410 2-year warranty and send you instructions for specific tasks.

15. Additional Resources

Manuals & Downloads: <https://www.fusion3design.com/fusion3-f410-manuals-downloads/>

Questions about Filament: http://www.fusion3design.com/3d_printer_filament/

Contact Support: http://www.fusion3design.com/contact_support/ or 877-452-0010 x2