Fortus 400mc: Introduction

An explanation of the intended use of the Fortus and descriptions of machine layout and components.

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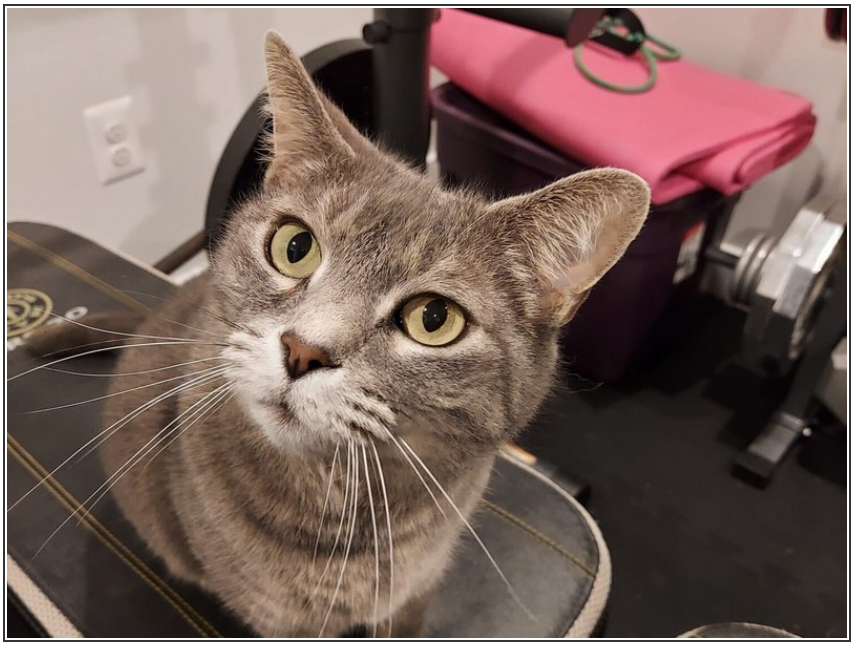
Introduction

The Stratasys Fortus 400mc is an industrial grade FDM printer intended for small scale manufacturing of functional parts. This guide will give you a brief overview of the machine's strengths, a description of the physical layout of the printer, and instructions on how users can interface with the Fortus.

Step 1 — Advantages of the Fortus



- **Consistent Quality** - A *TIGHTLY CONTROLLED* print environment means that all parts have *CONSISTENT QUALITY*
- **Functionality** - Fortus parts aren't always the prettiest; the focus is on making *FUNCTIONAL* products
- **Advanced Materials** - The Fortus can run materials with *EXCELLENT MECHANICAL*, *THERMAL*, and *CHEMICAL PROPERTIES* which include PC, PC-ABS, PPSF, Ultem 9085, and more
- **Large Volume** - A build volume of 16 x 14 x 16 inches provides enough room for *MEDIUM* to *LARGE* prints

Marfa Approved

Step 2 — Machine Layout: Exterior

- **Top Door** - Houses the *PRINT HEAD*
- **User Interface** - *ALL* operations including maintenance, calibration, and running jobs are done through the interface
- **Oven/ Oven Door** - This is where parts are printed
- **Canister Bay/ Canister Bay Door** - This is where *FILAMENT* is loaded into the machine along with useful *TOOLS* for performing varying tasks
- **Upper Side Panel (left & right)**
- **Lower Side Panel (left & right)**

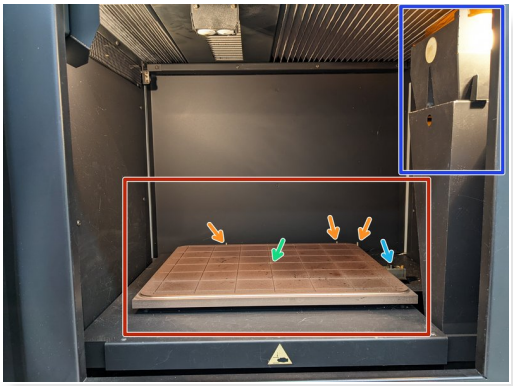
Step 3 — Machine Layout: Canister Bay

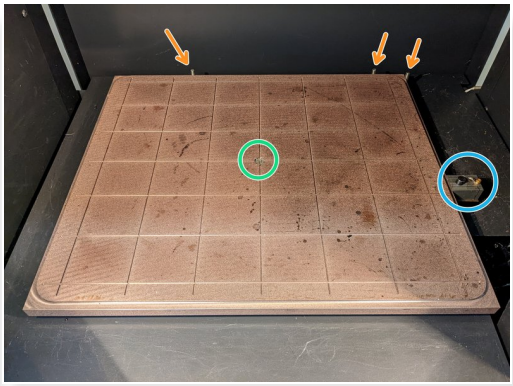
- **Canister Bays** - The two *LEFT* bays are for *MODEL* material and the two *RIGHT* bays are for *SUPPORT* material
- **Purge Waste Bucket** - Catches all purged materials during prints
- **Platen Vacuum and Filament Path Pressure gauges** - Monitors the suction on the *DISPOSABLE* build plates as well as the available building air pressure
- **Drive Block Levers** - The drive block levers allow for the filament canisters to be *LOADED* and *UNLOADED*
- **Canister LEDs** - These lights will indicate the *STATUS* of each canister bay. It will either be *OFF*, *SOLID GREEN*, *FLASHING GREEN*, or *RED*

Step 4 — Machine Layout: Canister Bay Door

- **Screw Driver** - This screwdriver is *ESSENTIAL* to have when *OPERATING* on the *PRINT HEAD GANTRY*
- **Purge Blocks** - There are a *VARIETY* of *PURGE BLOCKS* for different materials because the *INTERNAL TEMPERATURE* of the *OVEN* will change depending on the material being printed and only certain blocks can withstand the temperatures
- **Flash Magnifier** - Used when *CALIBRATING* the print head
- **Lightbulbs** - Occasionally we will need to replace the lightbulbs in the oven so we can *SEE* the *BUILD PLATE*

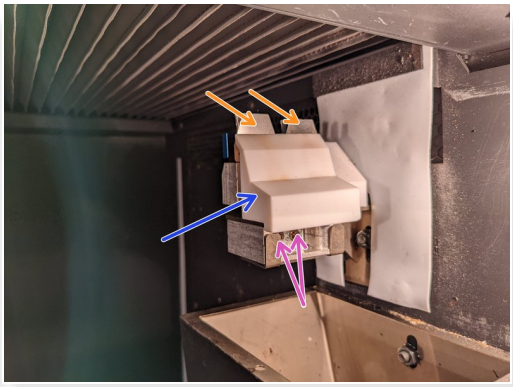
Step 5 — Machine Layout: Oven Bay





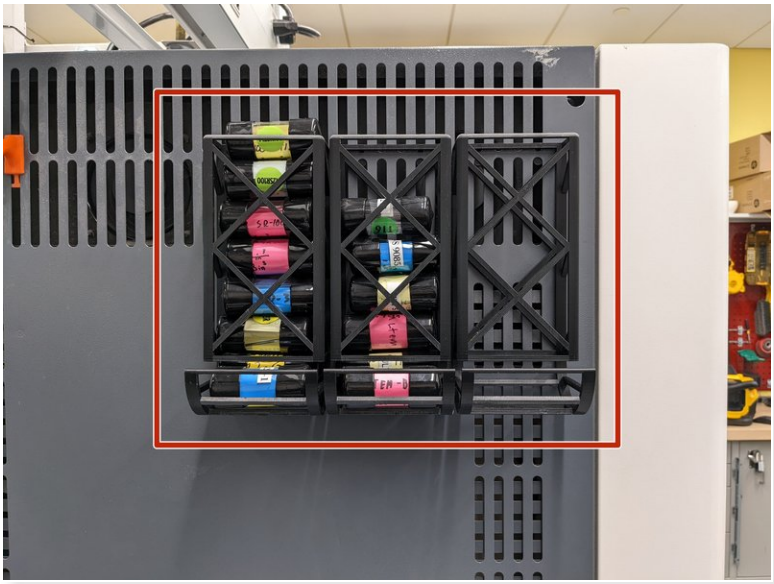
- **Platen** - This is where the disposable *BUILD* plates are placed
- **Vacuum Port** - This *SUCTIONS* the disposable build plates to the platen
- **Tip Sensor** - Used to *CALIBRATE* the tips
- **Debris Chute Hood** - Ensures *PURGED MATERIAL* does not *FALL* onto the *BUILD* plate
- **Barriers** - Aids in *ALIGNING* the build plates on the platen

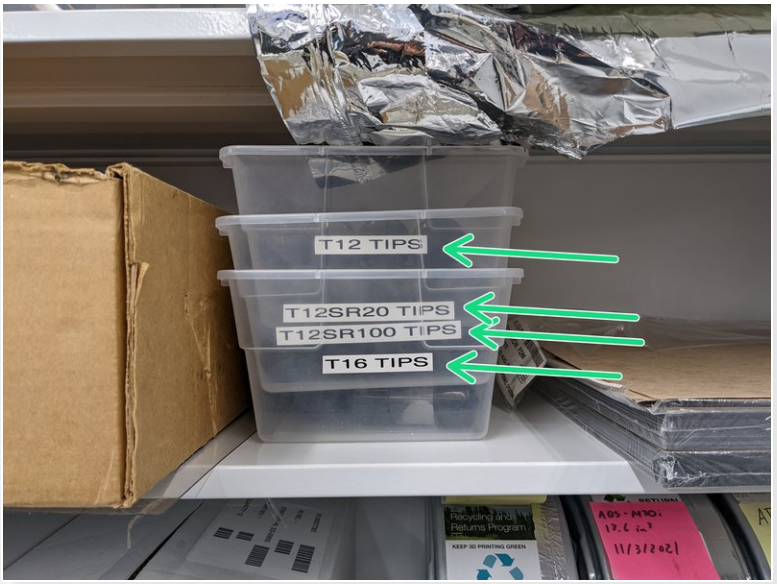
Step 6 — Machine Layout: Tip Cleaning Assembly


- **Platen** - This is where the disposable *BUILD* plates are placed
- **Debris Chute Hood** - Ensures *PURGED MATERIAL* does not *FALL* onto the *BUILD* plate
  - ⓘ Lift straight *UP* and then move to the *LEFT* to remove the hood
- **Purge Block** - Assists in *REMOVING* any excess *MATERIAL* from the *NOZZLES*
- **Flicker/Brush Assembly Adjustment Screws** - Used to *SECURELY* mount the *FLICKER BRUSH* assembly
- **Flickers** - Assists in *REMOVING* any excess *MATERIAL* from the *NOZZLES*
- **Brushes** - Assists in *REMOVING* any excess *MATERIAL* from the *NOZZLES*
  - ⓘ They are located *BEHIND* the *FLICKERS*

Step 7 — Machine Layout/ Storage: Model and Support Tips



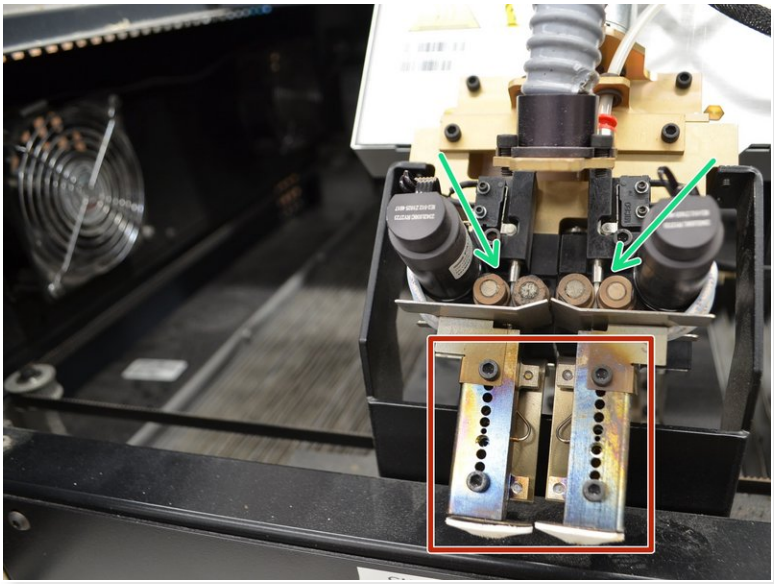


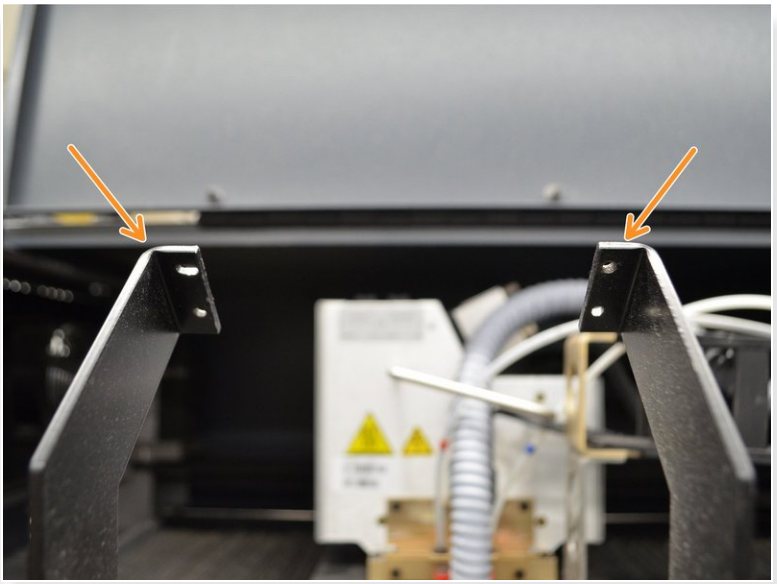
- **Fortus Tip Holders** - The Fortus has the ability to print in a *VARIETY* of *MATERIALS* and can extrude this materials in a variety of *SIZES* which we *STORE* on the *TOP LEFT SIDE PANEL*

  ⓘ The Fortus *CAN NOT CROSS CONTAMINATE* materials which is why we have a large abundance of tips

- **New Tips** - We store brand *NEW TIPS* in small bins on the *SECOND HIGHEST SHELF* of the Fortus *CABINET*

Step 8 — Machine Layout: Head Assembly





- **Liquefiers** - There are *TWO LIQUIFIERS* that melt that plastic. One for model and support.

  ⚠ These reaches *EXTREMELY HIGH* temperatures so be careful when handling them

- **Filament Drive Gears** - These *FEED* the filament into the *LIQUIFIERS* so that the filament can be extruded

- **Head Maintenance Bracket** - This is used when *SWITCHING* tips on the head assembly or performing *MAINTENANCE*

Step 9 — Navigating the User Interface

Symbol	Description
<E>	Push ENTER to execute the command line. (The cursor ">" must be on the same line.)
<E>..	Push ENTER to execute command line. Also pushes you into another menu.
".."	Tells you that this line is a menu change. It implies that you may return without executing a command.
":"	Indicates that this command line value changes.
" = "	Value displayed in the command line is user changeable.
" * "	Indicates that this is a comment line. (Symbol is shown at beginning of line.)
(!)	Displayed at the end of a line in the job queue or sample queue. Indicates insufficient material available; wrong type of material loaded; or wrong tip installed. Select line and press <.> (Dot key) to show details.
" ! ! "	Displayed at start of Warning message.
C	Temperatures are displayed in Celsius only.

- **User Interface** - ' ALL" operations including maintenance, calibration, and running jobs are done through the interface

ⓘ The next photo explains basic *COMMANDS* that the *BUTTONS* correlate to