Stratasys F123 Series Shared Office 3D Printing System Installation Guide

Contents

Site Preparation Guide

F123 Series Shared Office 3D Printing System

Part No. 401692-0001_REV_H

Revision Log

Translations of this guide are updated periodically. If you are consuming a translated version, please check the English version for the latest revision and list of updates.

The following table lists the changes in each revision of this document.

Revision	Date	Description of Changes
A	January 2017	First release of this document.
B	February 2017	Updated USB ports and material storage spec.
C	December 2017	Added heat output, updated material storage °C temperature and deleted checklist item
D	November 2018	Added TPU 92A (Elastomer) information
E	November 2019	Added Diran and ESD7 information
F	March 2020	Added 240V note
G	March 2021	Added ABS-CF10 information
H	May 2022	Added F190 CR and F370 CR

Safety

The following basic safety tips are given to ensure safe installation, operation, and maintenance of Stratasys equipment and are not to be considered as comprehensive on matters of safety. Although the F123 Series printers are designed to be safe and reliable, access to areas of the printer are potentially dangerous.

Safe Environment

- Connect equipment to a grounded facility power source. Do not defeat or bypass the ground lead.
- Know the location of equipment branch circuit interrupters or circuit breakers and how to turn them on and off in case of emergency.
- Know the location of fire extinguishers and how to use them. Use only ABC type extinguishers on electrical fires.
- Know local procedures for first aid and emergency assistance at the customer facility.
- Use adequate lighting at the equipment.
- Maintain the recommended range of temperature and humidity in equipment area.
- Do not use this product in an environment containing volatile or flammable compounds.

Introduction

How to Use This Guide

This guide provides information for selecting an appropriate location for the F123 Series printer. This guide also provides instructions for unpacking and preliminary set-up. Information of particular importance is presented in one of three formats:

A **Warning:** indicates a procedure that may cause injury to an operator if the procedure is not followed.
A **Warning:** will precede the paragraph of instruction to which it relates.

A **Caution:** indicates a procedure that may cause damage to equipment if the procedure is not followed.
A **Caution:** will precede the paragraph of instruction to which it relates.

A NOTE is used to highlight a specific point or to provide an operational tip. While useful, a NOTE does not indicate a procedure that can cause injury or damage if it is not followed.
A NOTE will follow the paragraph of instruction to which it relates.

About the F123 Series Printers

The Stratasys F123 Series 3D printers incorporate the latest in innovative technology to provide you with precise prototypes from a CAD design. Stratasys' Fused Deposition Modeling (FDM) technology provides prototype parts, including internal features, which can be used to field-test form, fit, and function. Direct Digital Manufacturing (DDM) allows for the creation of customized end-use parts straight from 3D CAD data. The F123 Series printers feature a servo/belt driven XY gantry with multiple modeling material capability.

System Components

- The F123 Series Printer
- Material Package(s)
- Welcome Kit (containing documentation on how to download your user guide and common tools for maintaining the printer)
- GrabCAD Print Software Package
- A Computer Workstation (not sold by Stratasys)

F170 Highlights

- Maximum build area of 10 x 10 x 10 inch (254 x 254 x 254 mm)
- Material Bays: 1 model, 1 support
- Touchscreen Graphical User Interface
- Wi-Fi capabilities
- Three USB ports (2 in front, 1 in back)
- Camera for remote monitoring

F190 CR Highlights

- Maximum build area of 12 x 10 x 12 inch (308 x 254 x 308 mm)
- Material Bays: 1 model, 1 support
- Touchscreen Graphical User Interface
- Auto changeover capabilities
- Wi-Fi capabilities
- Three USB ports (2 in front, 1 in back)
- Camera for remote monitoring

F270 Highlights

- Maximum build area of 12 x 10 x 12 inch (308 x 254 x 308 mm)
- Material Bays: 2 model, 2 support
- Touchscreen Graphical User Interface
- Auto changeover capabilities
- Wi-Fi capabilities
- Three USB ports (2 in front, 1 in back)
- Camera for remote monitoring

F370/F370 CR Highlights

- Maximum build area of 14 x 10 x 14 inch (356 x 254 x 356 mm)
- Material Bays: 2 model, 2 support
- Insight Software Package
- Touchscreen Graphical User Interface
- Auto changeover capabilities
- Wi-Fi capabilities
- Three USB ports (2 in front, 1 in back)
- Camera for remote monitoring

Site Requirements

Decide where to install the printer based on the following:

1. Space Requirements
2. Environmental Requirements
3. Electrical Requirements
4. LAN Requirements

The F123 Series printers are capable of generating vibrations depending mainly on part build geometry and material characteristics. This consideration will need to be taken into account if locating the printer near vibration sensitive equipment.

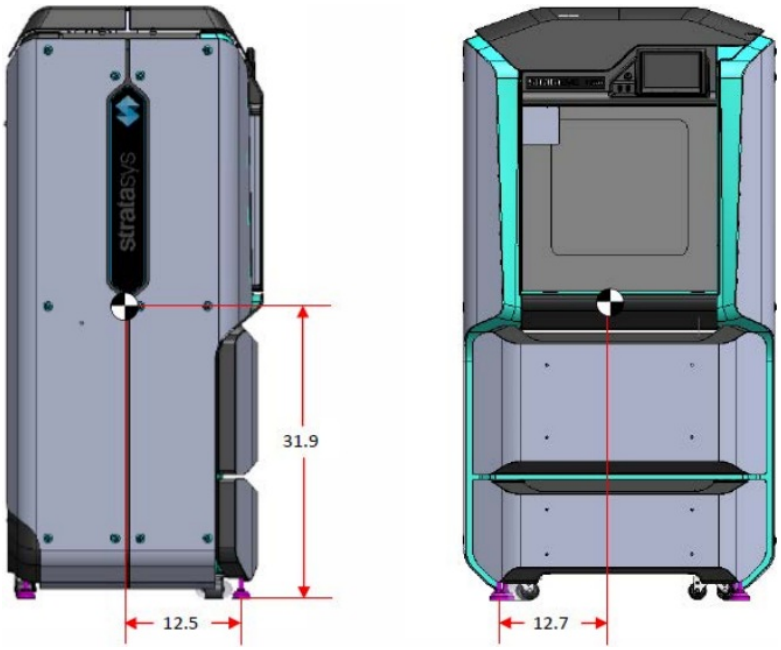
Physical Specifications and Space Requirements

Dimensions and Weights

Make sure that the installation site floor space can accommodate the printer’s weight and dimensions, plus required clearances.

Status	Dimensions/Weights
Crated	Width: 48 inches (122 cm) Depth: 40 inches (102 cm) Height: 76 inches (193 cm)
Uncrated	Width: 34 inches (86 cm) Depth: 28 inches (71 cm) Height: 64 inches (163 cm)
Shipping Weight (crated)	706 pounds (320 kg)
Printer Weight (uncrated)	500 pounds (227 kg)

Figure 1: F123 Center of Mass



All dimensions are in inches and are taken from the center of the front left leveling foot.

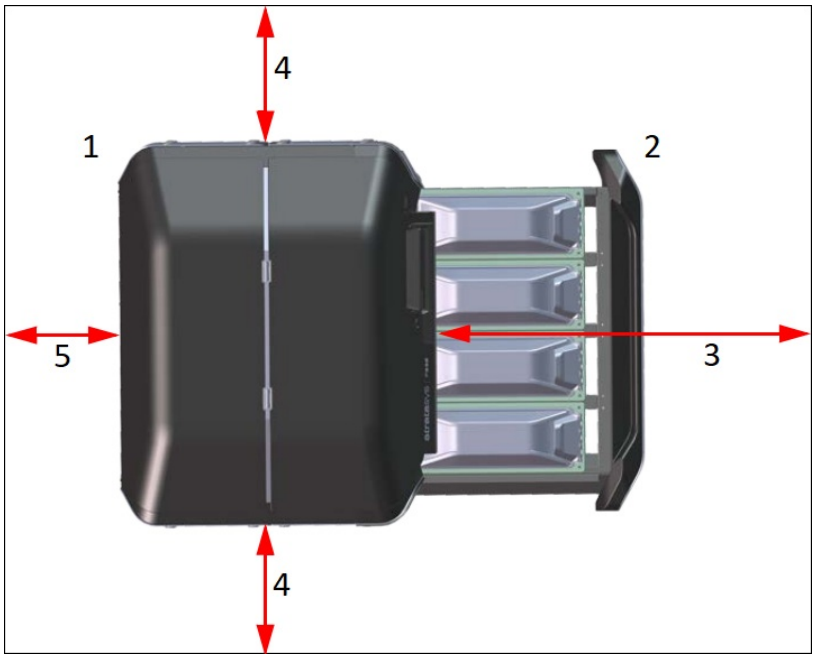
Minimum Operational Clearances

Sufficient rear and side clearances allow for proper air circulation, while sufficient front clearance allows enough room for the oven door and drawers to be opened.

Side Clearance	Minimum 4 inches (10.16 cm) on each side
Rear Clearance	Minimum 6 inches (15.24 cm)
Front Clearance	Minimum 20 inches (50.8 cm)
Overhead Clearance	Minimum 20 inches (50.8 cm)

Figure 2: Minimum Clearances

20 inches (50.8 cm) minimum for overhead clearance



1. Rear
2. Front
3. 20 inches
   (50.8 cm)
4. 4 inches
   (10.16 cm)
5. 6 inches
   (15.24 cm)

Environmental Requirements

- The F123 Series printer is for indoor use only.
- Air quality conditions with excessive solid particulates (conductive or non-conductive) may result in system damage.
- Air quality conditions in which airborne oils are allowed to accumulate on or within the printer can damage the plastic components.
- System operating temperature shall be in the range of 59°F to 86°F (15°C to 30°C), with relative humidity range of 30% to 70% non-condensing.
- System storage temperature shall be in the range of 32°F to 95°F (0°C to 35°C), with relative humidity range of 20% to 90% non-condensing.
- Altitude shall not exceed 6561.68 feet (2000 m).
- Material storage shall be in the range of 55°F to 86°F (13°C to 30°C), with relative humidity less than 70%.
- Noise emission (acoustic): <32dBA when idle, <46dBA when building

Heat Output

Heat dissipation occurs mostly through the top of the printer. Heat output is material dependent due to the various temperatures maintained in the build chamber.

Material Type	Heat Output (while building)	Heat Output (while idle)
ABS	~2300 BTU/hr	~1800 BTU/hr
ABS ESD7	~2300 BTU/hr	~1800 BTU/hr
ABS-CF10	~2600 BTU/hr	~2200 BTU/hr
PC-ABS	~2600 BTU/hr	~2100 BTU/hr
PLA	~550 BTU/hr	~35 BTU/hr
ASA	~2300 BTU/hr	~1800 BTU/hr
TPU 92A	~2300 BTU/hr	~1800 BTU/hr
Diran™ 410MF07	~2950 BTU/hr	~2900 BTU/hr
Nylon-CF10	~2600 BTU/hr	~2200 BTU/hr

Power Consumption

Power consumption is material dependent due to the various temperatures maintained in the build chamber.

Material Type	Power Consumption (while building)	Power Consumption (while idle)	Power Consumption (while sleeping)
ABS	650 W	510 W	10 W
ABS ESD7	650 W	510 W	10 W
ABS-CF10	750 W	650 W	10 W
PC-ABS	750 W	610 W	10 W
PLA	150 W	10 W	10 W
ASA	650 W	510 W	10 W
TPU 92A	650 W	510 W	10 W
Diran 410MF07	850 W	825 W	10 W
Nylon-CF10	750 W	650 W	10 W

AC Power Requirements

- 50/60 Hz.
- Voltage: 100-132, 200-240 VAC.
- Maximum input voltage variation: ±10% of nominal
- Current: 15/7A.
- The grounded electrical outlet must connect to either a Euro or a US power cord plug (provided in the Welcome Kit) and must be located within 6 feet (1.83m) of the printer.

Caution:
A power cable is provided for connecting the printer to the AC electric source. Do not use it with other equipment.

Operation of the printer outside this range is not recommended; degradation of performance and shortened component life expectancy will be experienced. Facilities who are unsure of their power quality should contact their service provider.

Caution:
Do not use an extension cord or power strip; doing so can result in intermittent power issues. Connect the power cord directly into the receptacle or UPS.

Workstation Requirements

For GrabCAD Print workstation requirements please visit: **http://help.grabcad.com/article/195-system-requirements-for-grabcad-print**.

For Insight workstation requirements please visit the Stratasys website.

LAN Requirements

If utilizing a LAN connection for communication and file transfer functions, the LAN connection is a 100 base T, Ethernet protocol, RJ45 connector. One 15 foot (4.57 m) CAT6, 10/100 base T cable is supplied with the printer, located in the Welcome Kit. The printer will function in either DHCP or Static IP configurations.

A LAN connection is not required however, as the printer is also capable of file transfer via a Wi-Fi connection or a USB flash drive plugged into either of the printer's USB ports. See the F123 Series User Guide for detailed information and instructions on transferring files to the printer.

Preparing for Installation

Inspect Crate for Damage

Before opening the shipping crate, inspect the crate for signs of exterior damage. Report evidence of excessive damage to Stratasys and the shipping company.

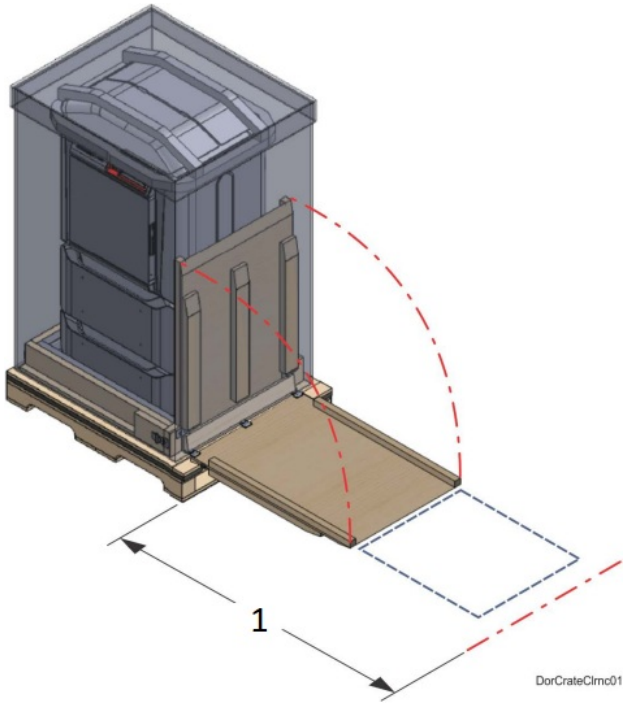
Required Tools and Equipment

- Basic hand tools (powered screwdriver or drill with Phillips bit).
- Utility knife.
- A pallet jack or forklift may be required to move the system.

Unpacking the Printer

If you intend to remove the printer from its shipping base via the ramp, make sure that there is at least 81 inches (206 cm) of clearance for the ramp and the printer before you begin the process of unpacking the printer (Figure 3). The printer's shipping base indicates the location of the ramp.

Figure 3: Ramp Clearance

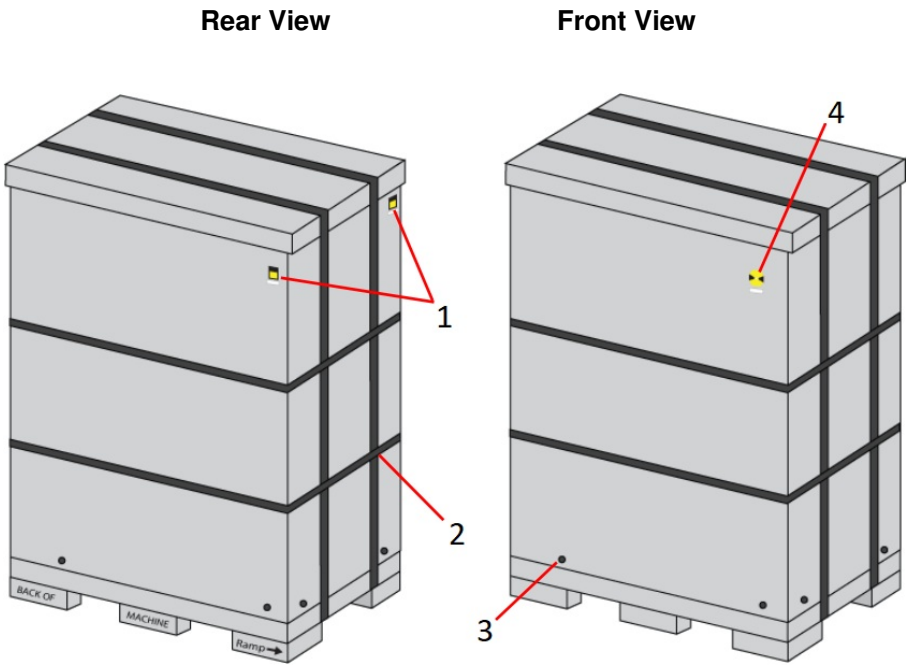


1. 81 Inches
   (206 cm)

Remove Shipping Materials

1. Inspect the Tilt Indicators (2) and ShockWatch indicator affixed to the exterior of the cardboard box. If possible, take a picture of these indicators to share with your installation representative. If damage is detected upon installation, this photo will assist your installation representative in determining the cause of damage (Figure 4).
2. Using a Phillips screwdriver, remove the cover mount screws from the base of the crate (Figure 4).

Figure 4: Shipping Crate Detail



1. Tilt Indicator
   (2 as shown)
2. Shipping Bands (6)

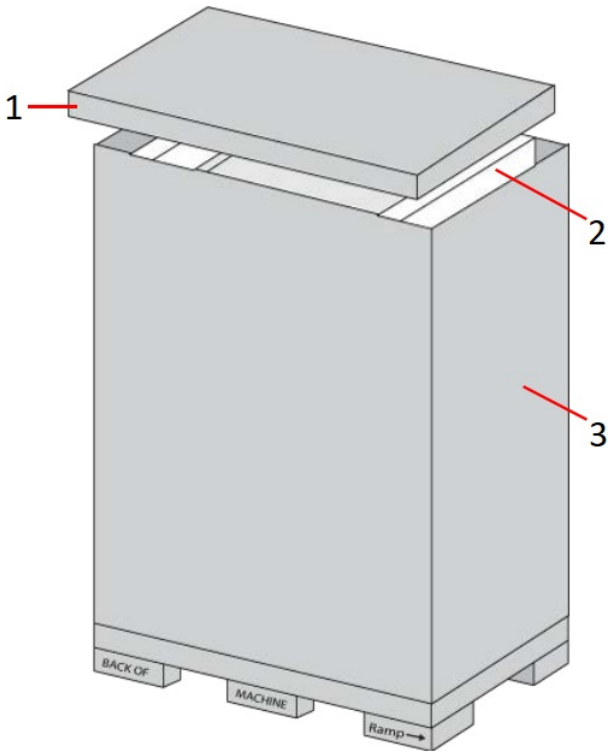
3. Cover Mount Screws
4. ShockWatch Indicator

   (1 as shown)

Warning: Personal Injury Hazard
Shipping bands are very tight; when cutting shipping bands they may pop open with force. Wear safety glasses when removing the shipping bands.

3. Carefully cut the shipping bands (Figure 4).
4. Remove the cardboard cover from the top of the crate (Figure 5).
5. Remove the 2 protective cardboard container panels encasing the printer (Figure 5).
6. Remove the foam restraining insert from the top of the printer (Figure 5).

Figure 5: Unpacking the Printer (cover removed)



1. Cover
2. Foam Insert
3. Protective Cardboard Container Panels (x2)

7. Remove the printer from the shipping base, this can be done using a fork lift (see “Remove Printer from Shipping Base – Fork Lift Instructions” (page 13)) or manually via the use of a ramp (see “Remove Printer from Shipping Base – Ramp Instructions” (page 14)).

Remove Printer from Shipping Base – Fork Lift Instructions

1. Unlatch the two link locks securing the ramp in a vertical position (Figure 7). Remove the foam insert from the top edge of the ramp and set the ramp aside.
2. Unlatch the link locks indicated in Figure 8 and remove the panels secured by these link locks.
3. Remove all tape and carefully unwrap the printer by pulling the plastic bag downward.

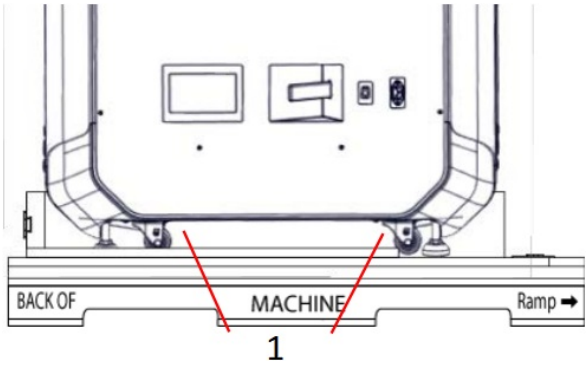
Caution:
Use care when cutting the plastic bag to avoid scratching the printer's surfaces.

4. Using a utility knife, cut away and remove the plastic bag's material ensuring that the bag is not blocking the fork lift openings or the printer's wheels.

Caution:
Access the fork lift openings from the back of the printer (Figure 6).

5. Using a forklift, carefully raise the printer vertically and remove the shipping base.

Figure 6: Opening for Forks



1. Opening for forks

6. Gently lower the printer, until it rests on its wheels.
7. Inspect the printer's exterior for dents and scratches. Immediately report any damage to Stratasys and the shipping company.
8. Roll the printer into its approximate operating location.

Position the printer to allow at least three feet of clearance on all sides until the installation process is complete, see "Physical Specifications and Space Requirements" (page 4). Refer to Chapter 2 of the F123 Series User Guide for final setup instructions.

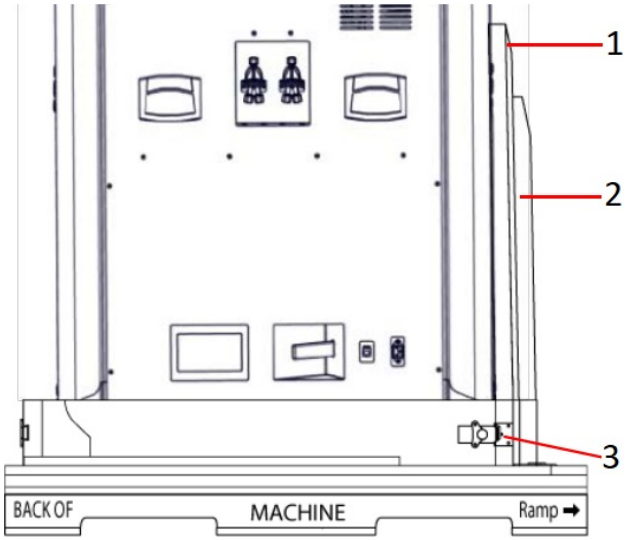
9. Open the oven door, cut the cable tie securing the startup materials, and remove the startup materials from the oven chamber.
10. Open the top cover. Cut the zip ties securing the head and X bridge to the front left corner of the gantry. Confirm that the toggle plate moves smoothly throughout the gantry.
11. Open the chamber door and remove the orange tape securing the tip wipe assemblies to the purge chute.
12. Remove the protective film covering the Stratasys logo on the side panels.

Remove Printer from Shipping Base – Ramp Instructions

Warning: Lifting Hazard
Before removing the printer via the ramp, ensure that you have enough manpower to remove the printer from the shipping base, as the printer is heavy (see "Dimensions and Weights" (page 4)). A minimum of 2 capable adults should be used to remove the printer from the shipping base.

1. Unlatch the two link locks securing the ramp in a vertical position (Figure 7). Remove the foam insert from the top edge of the ramp and set the ramp aside.

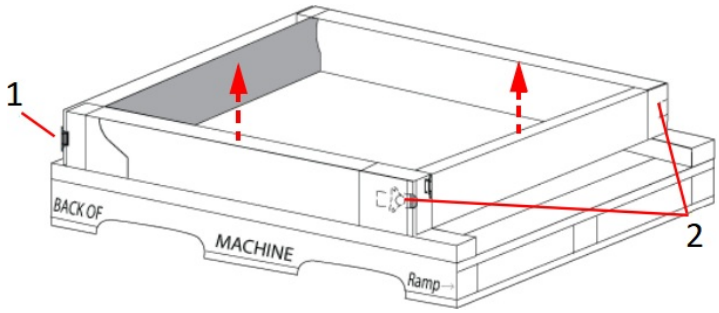
Figure 7: Ramp Hardware



1. Foam insert location
2. Ramp (in vertical shipping position)
3. Link Lock (1 per side)

2. Unlatch the link locks indicated in Figure 8 and remove the panels secured by these link locks.

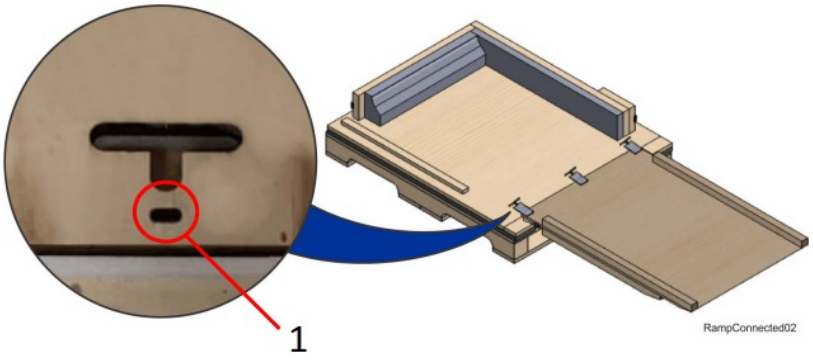
Figure 8: Remove Shipping Base Panels



1. Unlatch this link lock and remove back panel by pulling it upward.
2. Unlatch these link locks and remove side panel by pulling it upward.

3. Secure the ramp to the shipping base using the 3 mounting holes on the edge of the shipping base.

Figure 9: Ramp Connected



1. Secure ramp to shipping base via 3 post mounting holes

Caution:
Use care when cutting the plastic bag to avoid scratching the printer's surfaces.

4. Remove all tape and carefully unwrap the printer by pulling the plastic bag downward.
5. Using a utility knife cut, away and remove the plastic bag's material. Ensure that the bag is not blocking the exit side of the ramp or the printer's wheels so that the printer can roll freely down the ramp.
6. Make sure that all four stabilizing pads are in the highest possible position.
7. Carefully roll the printer from the shipping base using the ramp.

When removing the printer it is recommended that one person guide each side of the printer.

8. Inspect the printer's exterior for dents and scratches. Immediately report any damage to Stratasys and the shipping company.
9. Roll the printer into its approximate operating location.

Position the printer to allow at least three feet of clearance on all sides until the installation process is complete, see "Physical Specifications and Space Requirements" (page 4). Refer to Chapter 2 of the F123 Series User Guide for final setup instructions.

10. Open the oven door, cut the cable tie securing the startup materials, and remove the startup materials from the oven chamber.
11. Open the top cover. Cut the zip ties securing the head and X bridge to the front left corner of the gantry. Confirm that the toggle plate moves smoothly throughout the gantry.
12. Open the chamber door and remove the orange tape securing the tip wipe assemblies to the purge chute.

Site Preparation Checklist

Electrical Installation Requirements

- A dedicated outlet of 100-132, 200-240 VAC~15-7A 50/60 Hz has been installed.
- The grounded electrical outlet is within 2 meters (80 inches) of the printer.
- The grounded electrical outlet is able to accept either a Euro or US power cord plug.
- If utilizing a LAN connection, the LAN connection is within 4 meters (14 feet) of the printer.

Environmental Requirements

- The site's environmental temperature is between 59°F to 86°F (13°C to 30°C).
- The site's environmental humidity is between 30% to 70%, non-condensing.
- The site's altitude does not exceed 6561.68 feet (2000 m).

Required Installation Tasks

- GrabCAD Print software has been downloaded and installed on the user's workstation PC.
- The Welcome Kit and startup materials have been removed from the oven chamber and storage drawer.
- Verify that the orange clip/tie wrap securing the X belt in place has been removed.
- Verify that the orange tie wrap securing the X motor in place has been removed.

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Documents / Resources

	Stratasys F123 Series Shared Office 3D Printing System [pdf] Installation Guide F123 Series Shared Office 3D Printing System, F123 Series, Shared Office 3D Printing System, 3D Printing System, Printing System

References

- System requirements for GrabCAD Print - GrabCAD Help Center
- Stratasys - Industrial 3D Printing Manufacturers