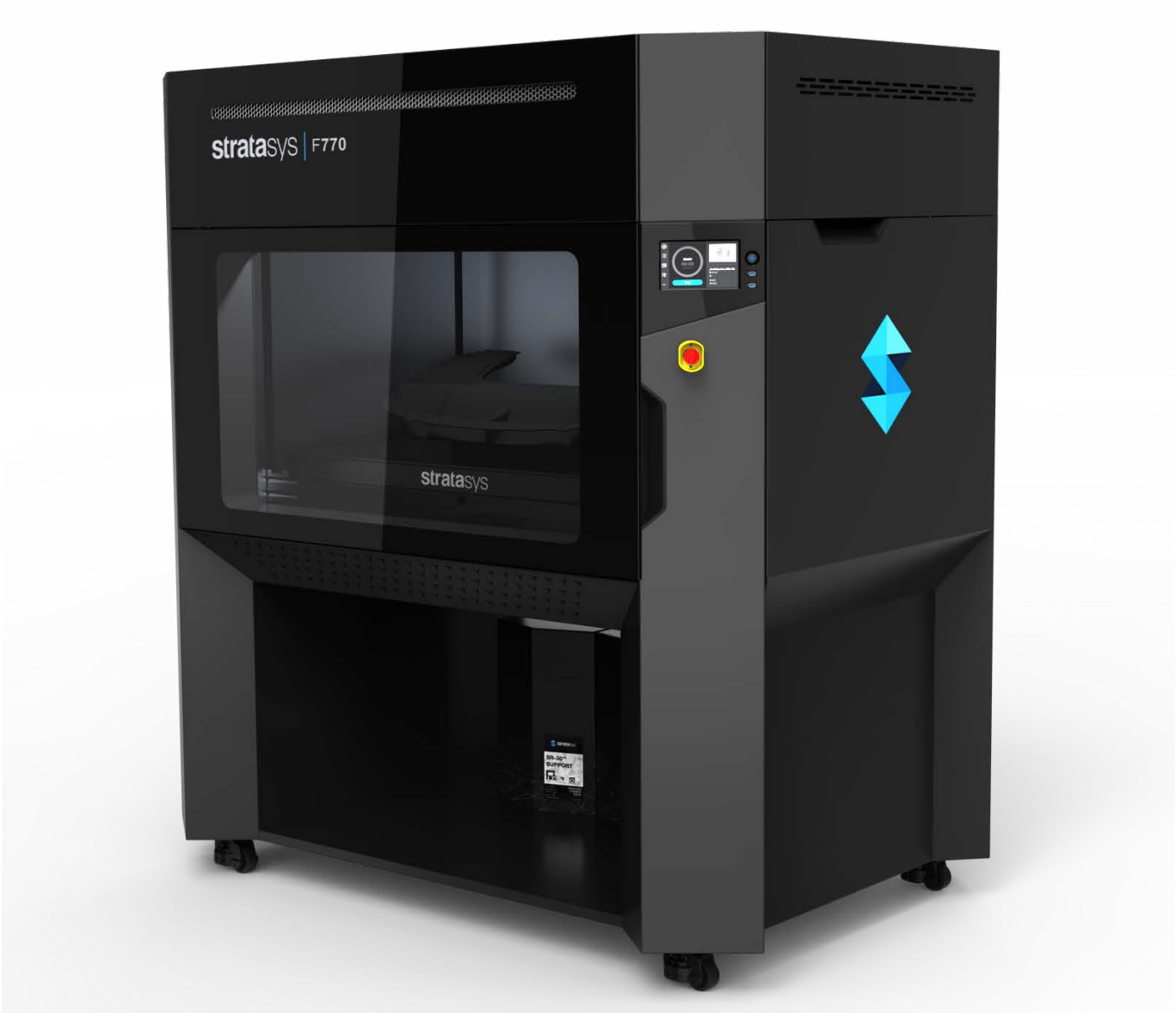
Site Preparation Guide

stratasys®

F770®

3D Printer



Part No. 477002-0001_REV_A

Copyright

Part No. 477002-0001_REV_A

Liability

Stratasys shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this material. Stratasys makes no warranty of any kind with regard to this material, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. It is the responsibility of the system owner/material buyer to determine that Stratasys material is safe, lawful, and technically suitable for the intended application as well as identify the proper disposal (or recycling) method consistent with local environmental regulations. Except as provided in Stratasys' standard conditions of sale, Stratasys shall not be responsible for any loss resulting from any use of its products described herein.

Trademarks

Contents

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 main changes in each revision of this document.

Revision	Date	Description of Changes
A	June 2021	First release of this document.

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 F770 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.

About the F770 Printer

The Stratasys F770 3D printer incorporates the latest in innovative technology to provide you with precise 3-D printed parts 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 F770 printer features an electromagnetically driven X and servo/belt driven Y gantry with multiple modeling material capability.

Components

- The F770 printer
- 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 for preparing build files (not sold by Stratasys)

Highlights

- Maximum build area of 39.4 x 24 x 24 inch (1000 x 609.6 x 609.6 mm)
- Touchscreen Graphical User Interface
- Wi-Fi capabilities
- Three USB ports (2 in front, 1 in back)
- Camera for remote monitoring

How to Use This Guide

This guide provides information for selecting an appropriate location for the F770 printer. This guide also provides instructions for unpacking and preliminary set-up. Information of special 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.

Site Preparation Tasks

Selecting the Installation Site

Decide where to install the printer based on the following:

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

The F770 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. The installation location must be a flat level surface that is stable and capable of holding 1700 pounds (770 kg). The caster pads of the F770 printer are 2.752 in^2 (7 cm^2) in footprint size.

Warning:
Due to the physical size and weight of the F770 printer, it is required to use a forklift when lifting the printer.

Description	Weight	Dimensions
Printer Crated	2000 pounds (907 kg)	Width: 80 inches (203 cm) Depth: 60 inches (152 cm) Height: 84 inches (213cm)
Printer Uncrated	1450 pounds (658 kg)	Width: 70 inches (178 cm) Depth: 52.5 inches (133 cm) Height: 77 inches (196 cm)

Minimum Operational Clearances

Sufficient side clearances allow for proper air circulation and maintenance access, while the recommended front and rear clearances also allows enough room to open doors to the oven and electronics bay. The top hinged covers require additional overhead clearance to fully open.

Side Clearance	Minimum 36 inches (91.4 cm) on each side
Rear Clearance	Minimum 36 inches (91.4 cm)
Front Clearance	Minimum 60 inches (152.4 cm)
Overhead Clearance	Minimum 20 inches (50.8 cm)

Figure 1: Minimum Clearances

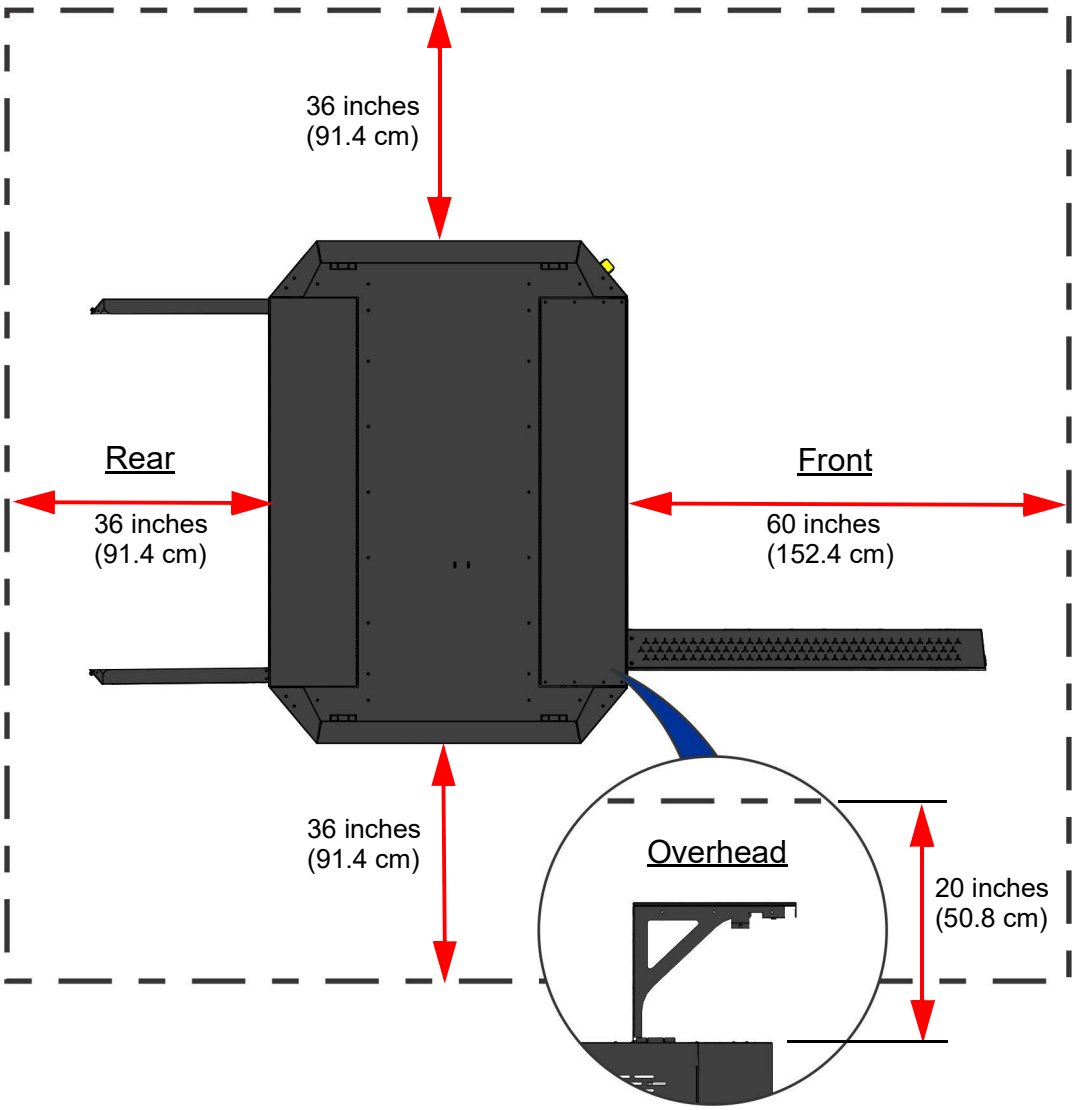


Figure 2: F770 Printer Overall Dimensions

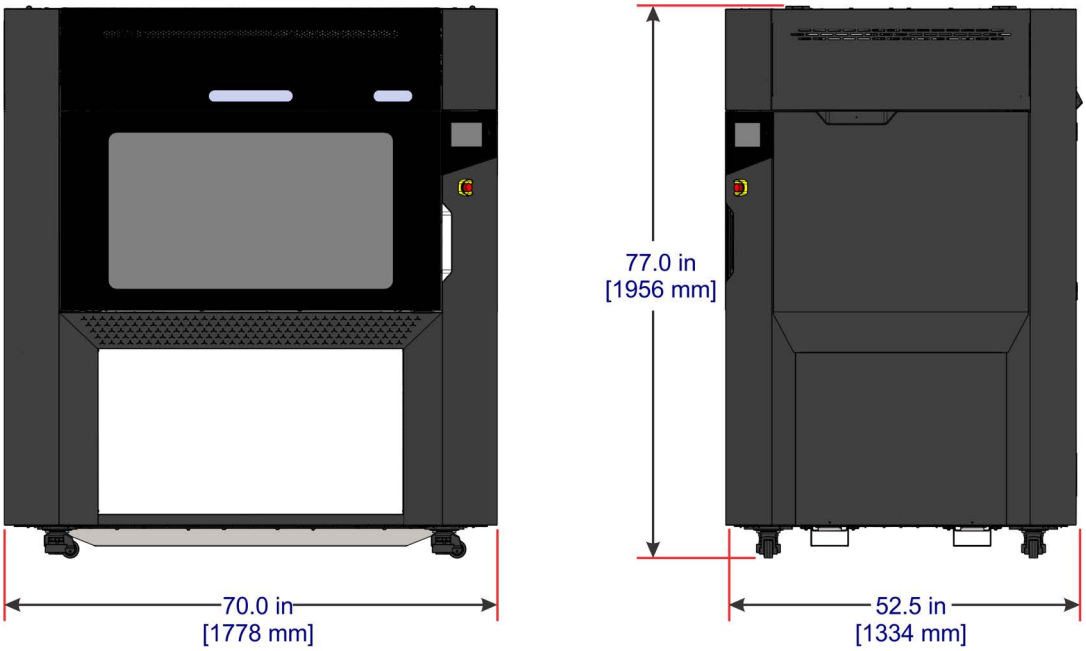
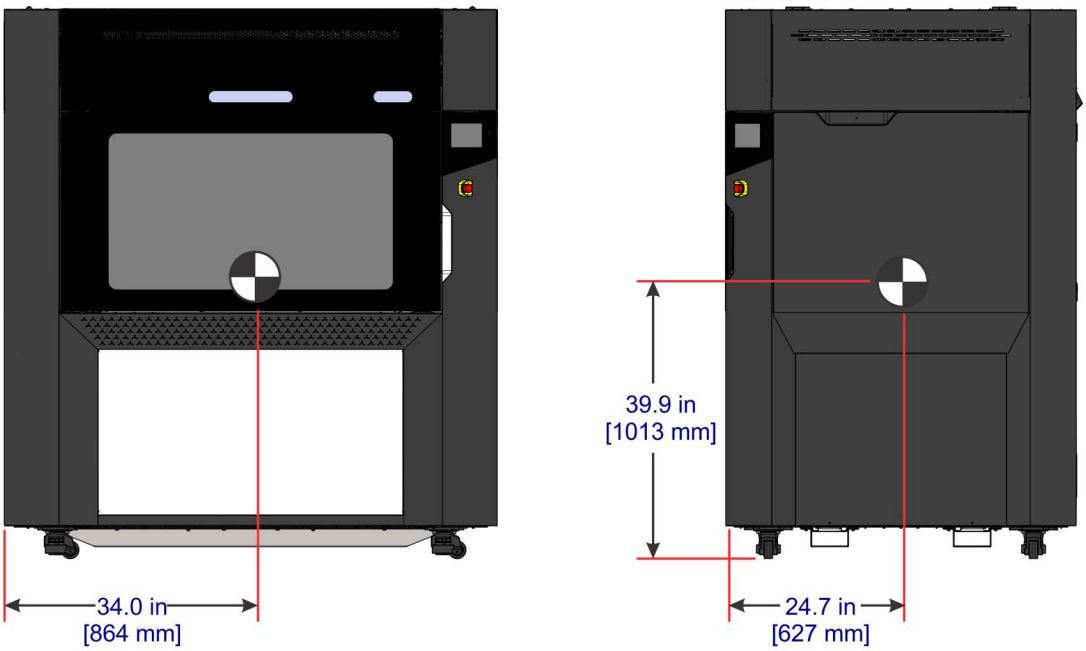


Figure 3: Printer Center of Mass



Environmental Requirements

- The F770 printer can be used in any controlled environment.
- 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): <65dBA when idle and 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	~6800 BTU/hr	~5440 BTU/hr
ASA	~6800 BTU/hr	~5440 BTU/hr

Power Consumption

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

Material Type	Average Power Consumption While Building	Average Power Consumption While Idle
ABS	2000 W	1600 W
ASA	2000 W	1600 W

AC Power Requirements

The facility power is required to meet the following power quality and nominal voltage requirements:

- 50 Hz/ 60 Hz dedicated circuit
- 120/208 V, 3W + N + PE
- Peak operating current:18 A
- Dedicated circuit: 30 A
- In-rush: 50 Amps max for less than 10 milliseconds, 21 Amps max for less than 20 seconds.
- Maximum input voltage variation ±10% of nominal
- Leakage (touch) current: <1.0mA (under all conditions), 0.0mA (when OFF)
- Site must include a disconnecting means that is readily accessible and within sight of the printer during operation. Possible connection methods include cord and plug attachment or direct wiring.
- The connection method and required disconnecting means shall be installed in accordance with all applicable electrical codes and approved by the authority having jurisdiction.
- Site must be equipped with appropriate lockout tagout kit for equipment.

Operation of the system outside this range is not recommended and degradation of the system performance and shortened component life expectancy will be experienced.

The system is to be operated on a 3-phase service meeting the recommendations for power quality given in IEEE Standard 141-1993. Facilities who are unsure of their power quality should contact their service provider.

Optional AC Transformers

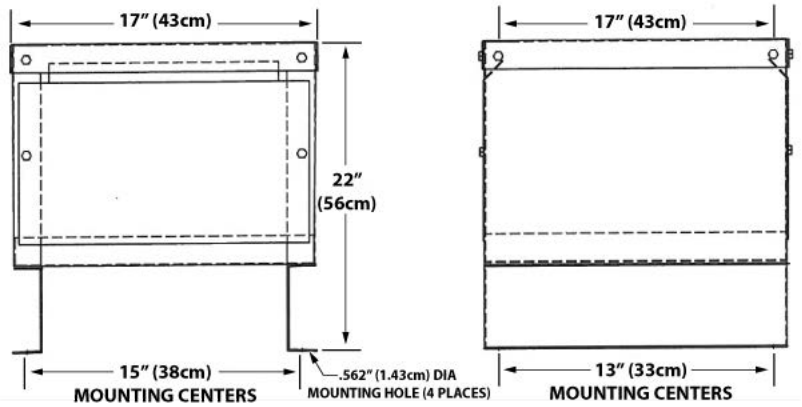
Two optional AC transformers are available from Stratasys for facilities with AC electrical services outside of the 208 VAC specification. The transformers meet applicable electrical and safety standards and carry both the CE Mark and the Mark of a Nationally Recognized Test Laboratory (NRTL) for North America.

A transformer electrical wiring diagram, for use by a qualified electrician, is located within the transformer.

Table 1: Transformers

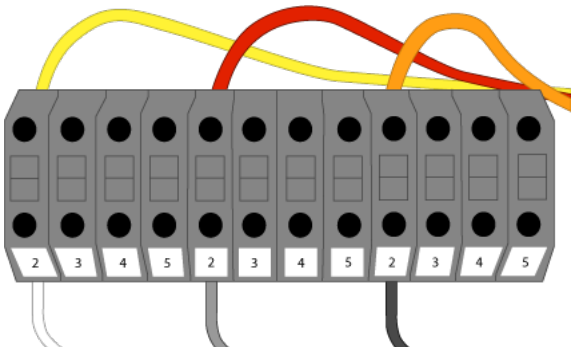
Transformer PN	Specifications	Weight
155-01200	8.0 KVA 200-240 VAC 50/60 Hz Delta-Wye	195 pounds (88 kg)
155-01400	8.0 KVA 380-480 VAC 50/60 Hz Delta-Wye	200 pounds (90 kg)

Figure 4: Transformer Dimensions & Mounting Specifications (applicable to both transformers)



When configuring the transformer for different input voltages, the internal tap 1 connection wires (typically colored yellow, red and orange) must be moved to the appropriate tap position (terminal block number) shown on the connection diagram attached to the inside cover of the transformer. 3 phase input is connected to the same terminal block positions as the tap 1 connection wires, per the connection diagram (see <Cross Ref>Figure for an example).

Figure 5: Internal Jumper Configuration



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 F770 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

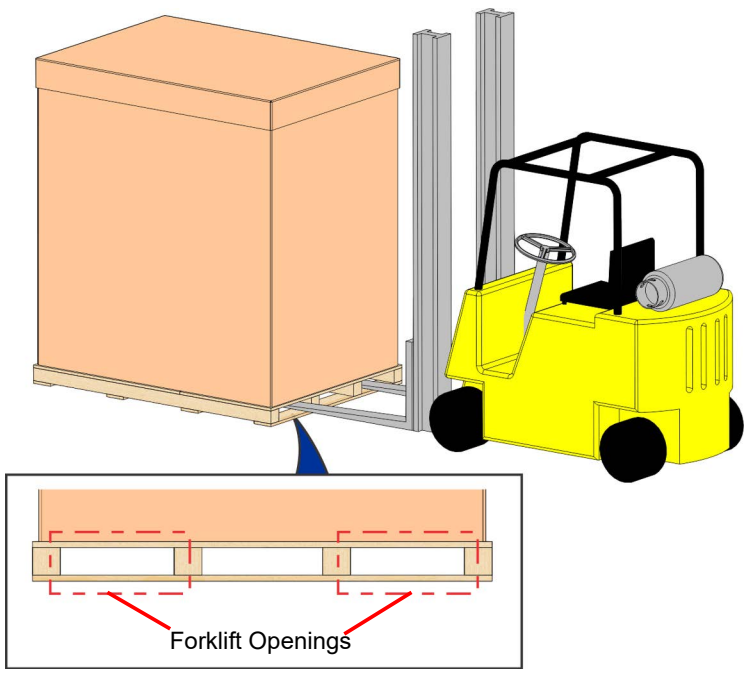
- Basic hand tools (impact drill or hammer drill with Phillips bit)
- Utility knife
- Forklift truck of sufficient size to raise the system from the shipping base
- Ladder
- Two or more people

Moving the Crated Printer

Warning:
The crated printer weighs 2000 lbs. (907 kg). Make sure that equipment and personnel are capable of moving the system.

The F770 shipping crate is designed to be lifted and moved by forklift from the designated locations on the shipping base (Figure 6). Move the crate to a flat, open area with at least 70 inches (178 cm) of clearance on all sides.

Figure 6: Moving the Shipping Crate



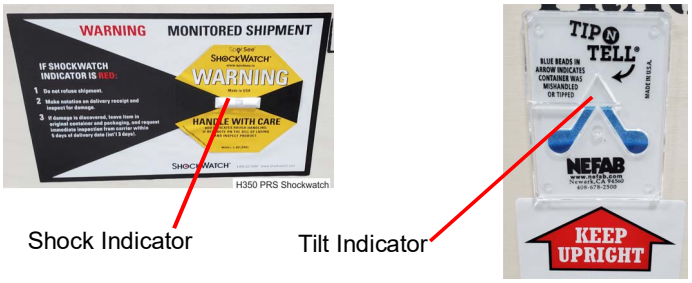
Unpacking the Printer

Make sure that there is at least 70 inches (178 cm) of clearance around the base of the shipping crate for removing 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 7).

   If damage has been detected, do not continue unpacking until a certified Stratasys technician has been contacted.

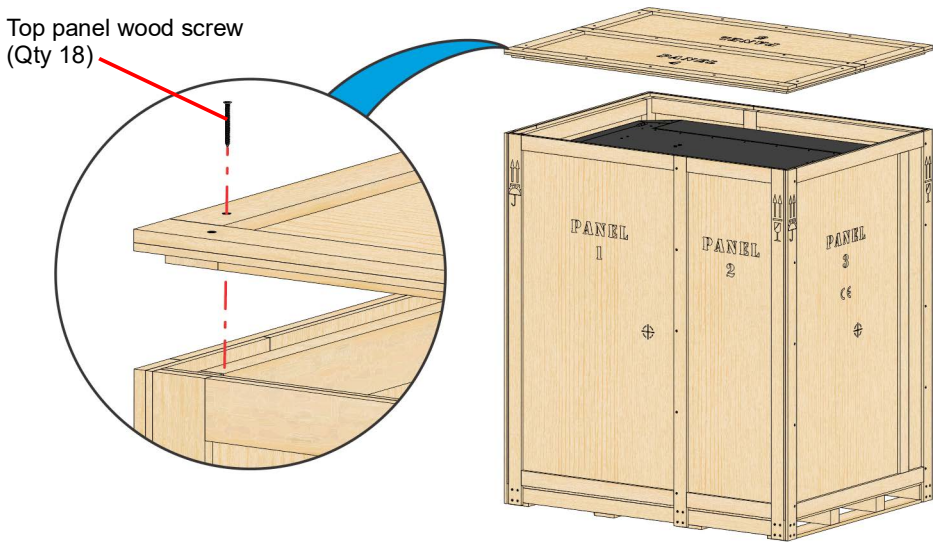
Figure 7: Shipping Crate Damage Indicators



2. Using a drill with a Phillips drive bit, remove the screws (approximately 18) securing the top panel assembly to the crate. Set aside the top panel.

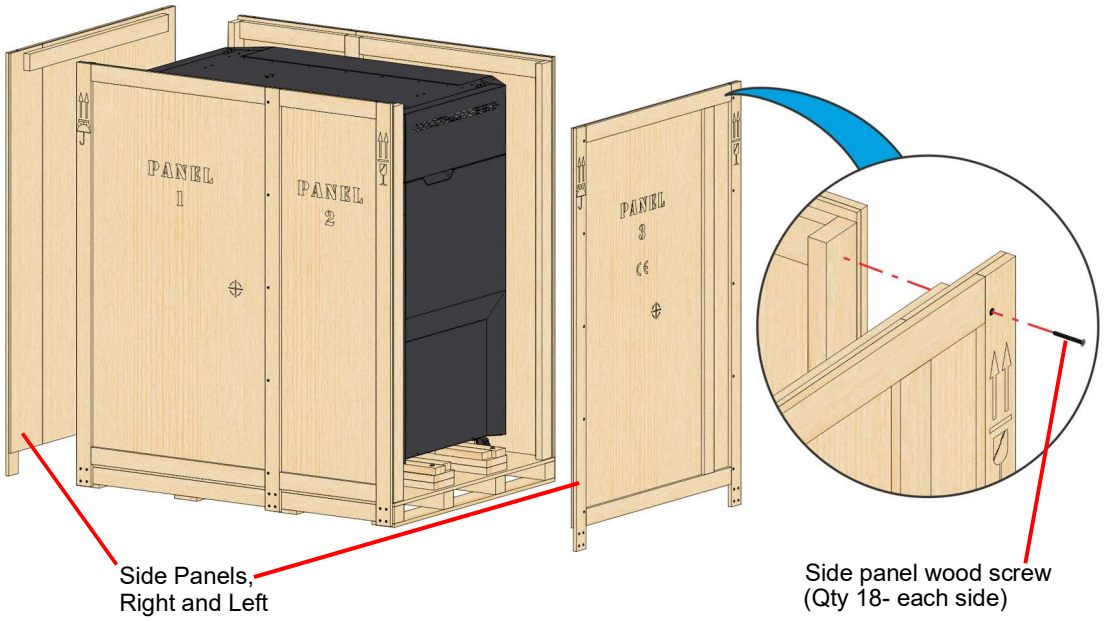
   Black dots on exterior of crate panels indicate wood screw locations.

Figure 8: Removing the top crate panel



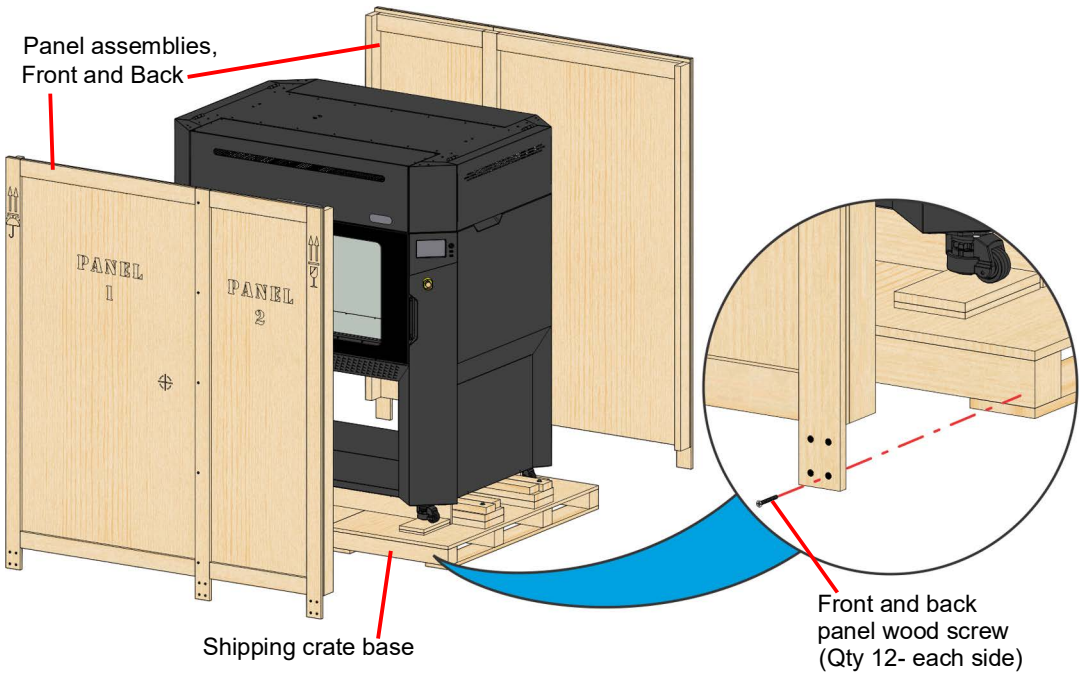
3. Using a drill with a Phillips drive bit, remove the screws (approximately 18 - each side) securing the panels to the left and right sides of the crate. Set aside the panels.

Figure 9: Removing the right and left side crate panels



4. Using a drill with a Phillips drive bit, remove the screws (approximately 12 - each side) securing the front and back panel assemblies to the shipping crate base. Set aside the panels.

Figure 10: Removing the front and back side crate panels

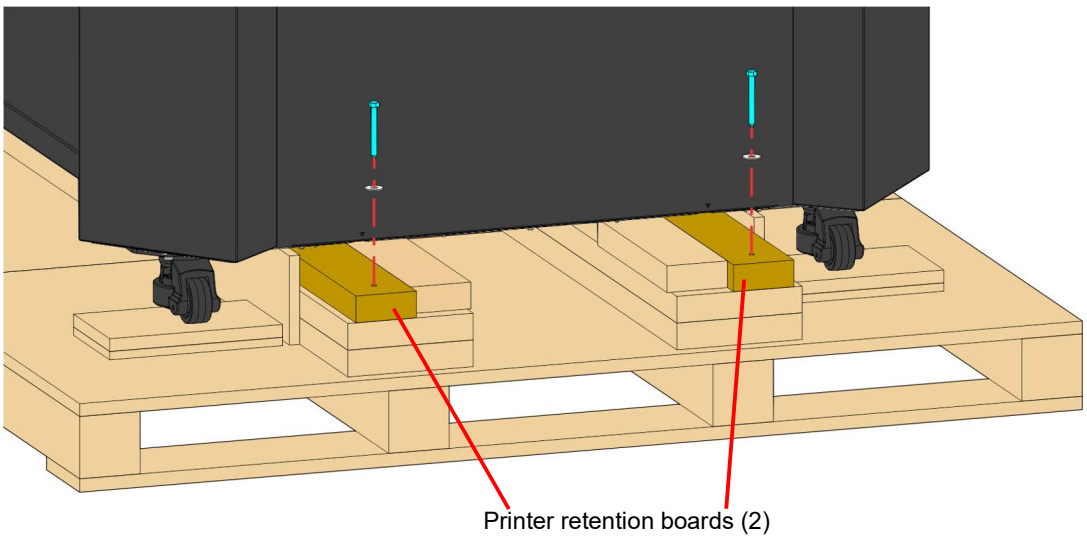


5. Remove all tape and carefully unwrap the printer by pulling the plastic bag/wrap away from the printer.
6. If necessary, use a utility knife to cut away any remaining plastic material obstructing the fork lift openings or the printer's casters.

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

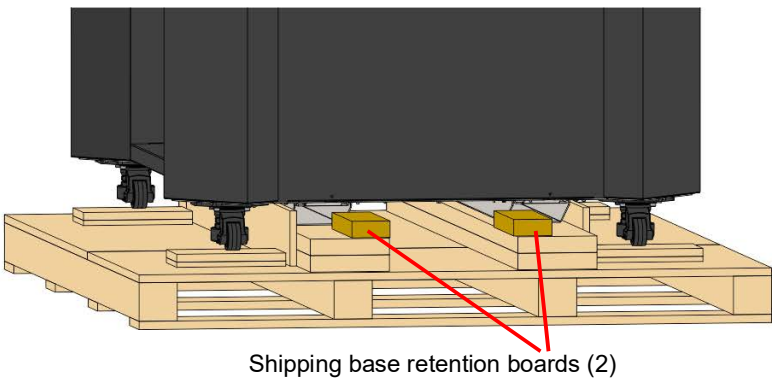
7. Using a drill with a 1/2" socket bit, remove the lag screws (4) securing the printer retention boards inside the structural lifting channels to the shipping base. Remove the boards from the channels and set them aside.

Figure 11: Removing the printer retention boards from the lifting channels



8. Using a drill with a Phillips drive bit, remove the screws securing the two remaining boards retaining the printer to the shipping base. Remove and set aside the boards.

Figure 12: Removing retention boards from the shipping base

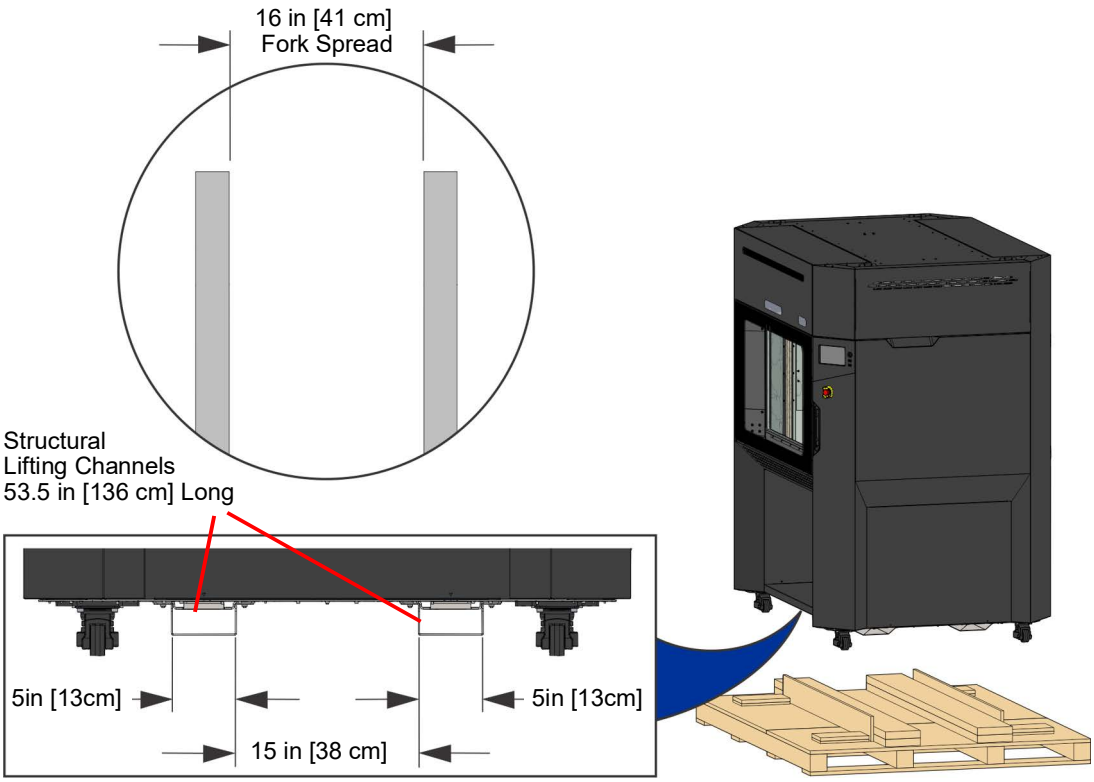


9. Spread the forklift forks to 16 inches to fit inside the structural lifting channels underneath the printer.

> **Caution:**
> Access the fork lift openings from the right side of the printer (Figure 13).

10. Using the forklift and the structural lifting channels (Figure 13), lift the printer above the shipping base.

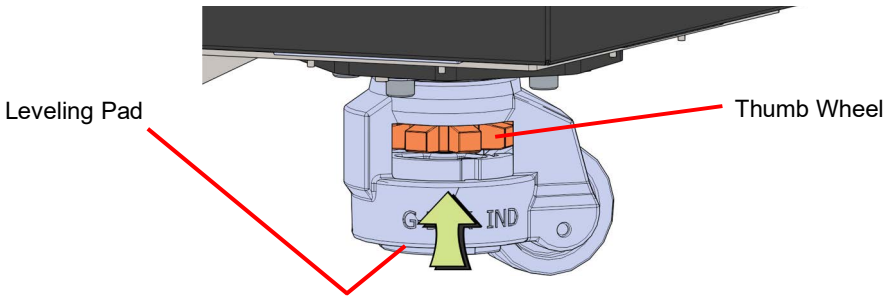
Figure 13: Lifting the Printer



11. Carefully remove and set aside the shipping base from beneath the printer.

12. While the printer is elevated, rotate the thumb wheel on each of the four printer casters to raise the leveling pads so that they will not contact the floor.

Figure 14: Raising the Leveling Pads

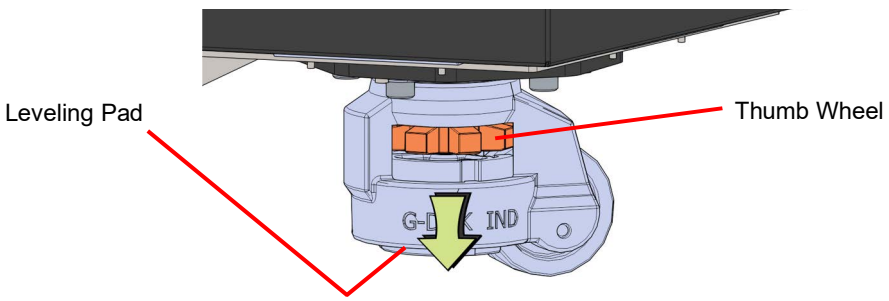


13. Gently lower the printer, until it rests on its casters.
14. Inspect the printer's exterior for dents and scratches. Immediately report any damage to Stratasys and the shipping company.
15. Roll the printer into its approximate operating location.

> 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 2). Refer to Chapter 2 of the F770 User Guide for final setup instructions.

16. Rotate the thumb wheel on each of the four printer casters to lower the leveling pads to the floor.

Figure 15: Lowering the Leveling Pads



17. Open the top left access door. Remove the tie wraps (2) that secure the Y-bridge and head carriage to the printer's frame.

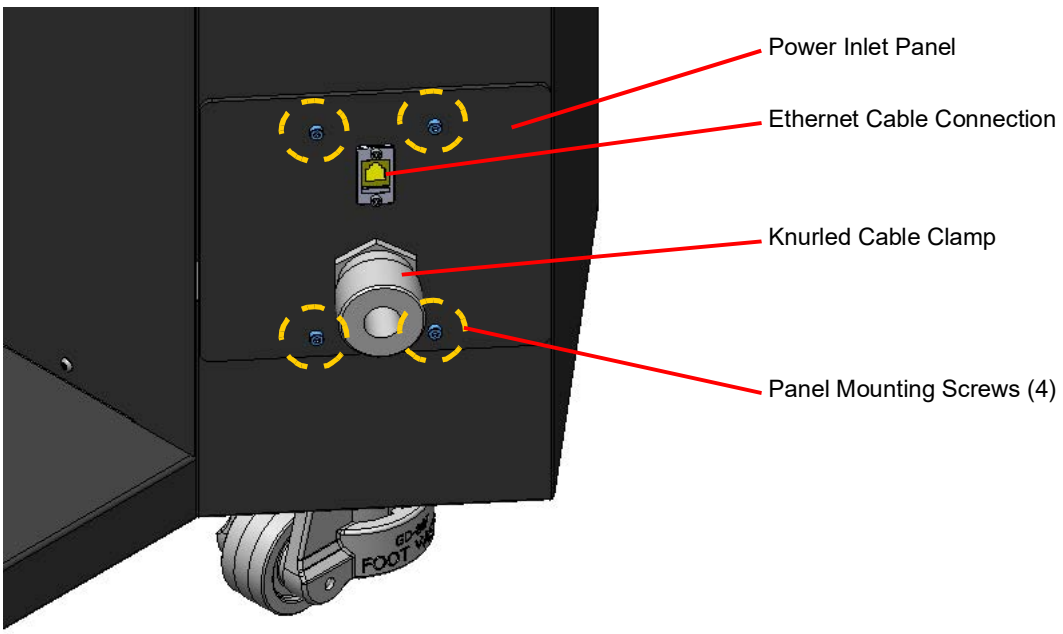
Electrical Service Connection

Warning:
A licensed electrician must perform all wiring from the service connection to the system - including all connectors, cables, and proper strain relief.

Comply with all applicable local and national electric codes.

1. Disconnect the Ethernet cable from the power inlet panel. See Figure 16.
2. Loosen, but do not remove, the four mounting screws securing the power inlet panel. See Figure 16.
3. Slide the panel upward to allow the bottom edge of the panel to tip-out, providing access for routing the power cable.

Figure 16: Power Inlet Panel

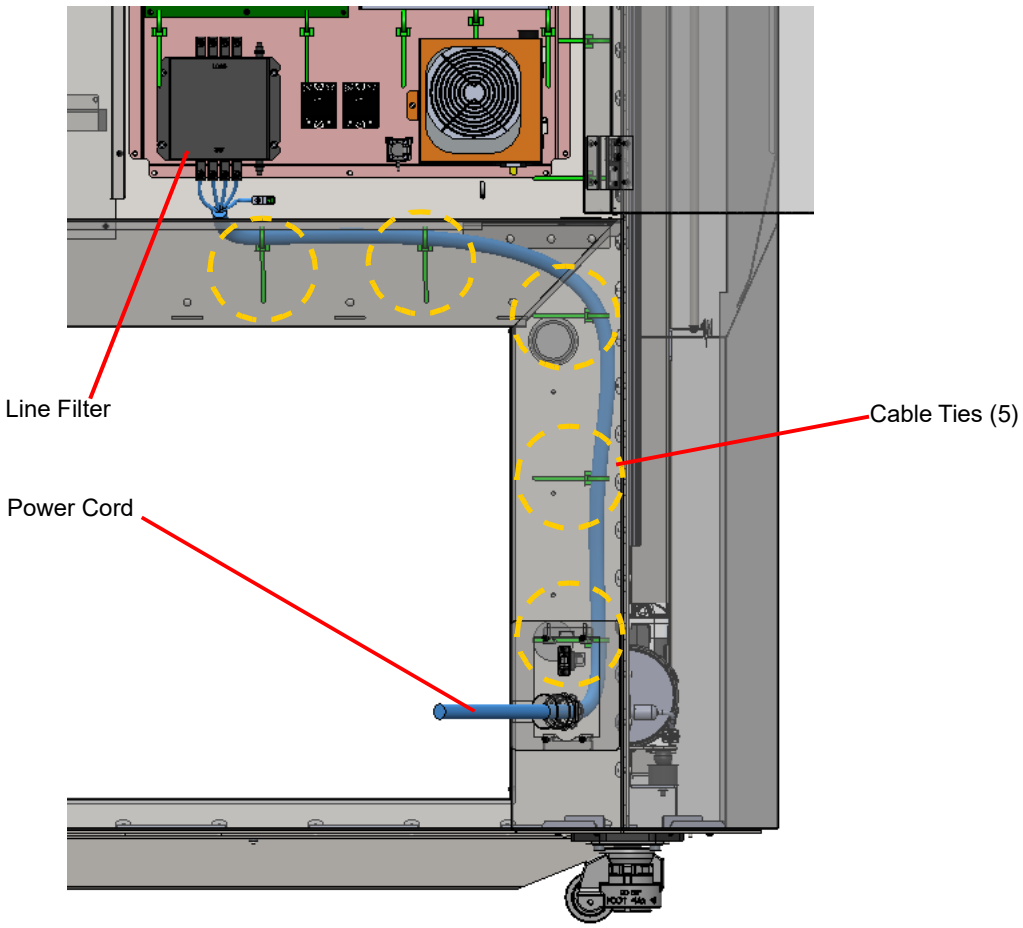


4. Open the electronics bay door.

5. Route the customer supplied power cable through the power inlet panel to the line filter inside the electronics bay. Use the releasable cable ties (5) to secure the cable as shown in Figure 17.

> Make sure that all five of the cable ties are utilized. Do not proceed until the cable is securely retained.

Figure 17: Routing the Power Cable



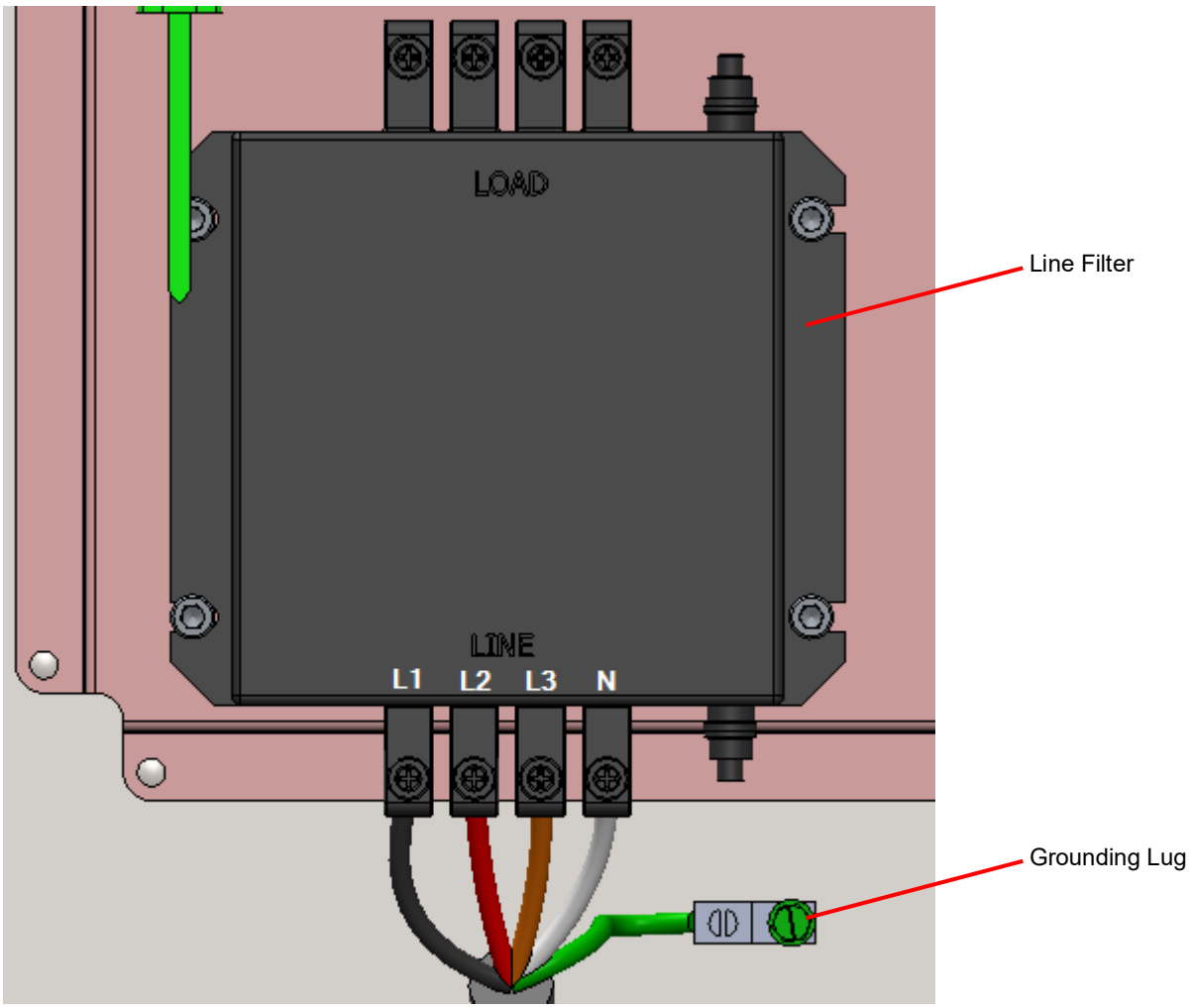
6. Reinstall the power inlet panel and tighten the four mounting screws.

> Make sure that the printer's Ethernet cable has not disconnected from the back of the panel before tightening the mounting screws.

7. Tighten the cable clamp by rotating the knurled cap until the power cord is securely retained.

8. Connect the power cable wires to the line filter as described below:
   a. Connect the ground wire to the printer grounding lug.
   b. Connect the supply wires.
      - Line A connects to terminal L1.
      - Line B connects to terminal L2.
      - Line C connects to terminal L3.
      - Neutral connects to terminal N.

Figure 18: Line Connections



9. Close the electronics bay door.
10. Reconnect the Ethernet cable to the power inlet panel. See Figure 10.

Site Preparation Checklist

Electrical Installation Requirements

- A dedicated 120/208V 3 phase 50/60hz 30A circuit has been installed.
- An electrical wire with bare leads has been supplied by the customer to connect the printer to the facility power.
- 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.

www.stratasys.com

c-support@stratasys.com

stratasys

THE **3D PRINTING SOLUTIONS** COMPANY