

FORTUS[®]

Site Preparation Guide

360mc/400mc



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Stratasys Incorporated
7665 Commerce Way
Eden Prairie, MN 55344 USA
952.937.3000
Fax: 952.937.0070
www.stratasys.com

January 2013

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Printed in the United States of America

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Revision Log

FORTUS 360mc/400mc Site Preparation Guide

Revision	Date	Description of Changes
E	June 2010	Format changed and document update.
F	December 2010	Changed company name from Badger Transformer to Badger Magnetics.
G	March 2011	Eliminated redundant information and updated formatting issues.
H	May 2012	Updated formatting, made corrections and included external air compressor specifications.
I	September 2012	Updated formatting,
J	January 2013	Added JA-100 Transformer information for North America.

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 Fortus 360mc/400mc systems are designed to be safe and reliable rapid prototyping systems, access to areas of the system 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

Highlighted Information

This guide provides information for selecting an appropriate location and for connections to the Fortus 360/400mc systems. Both systems throughout this guide will be referred to as the 360mc/400mc. This guide also provides instructions for unpacking and preliminary system set-up. Information of particular importance is presented in one of three formats:



Warning: 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.



Caution: 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.



Note: 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 Prep Tasks

Selecting the Site

Decide where to install the system based on the following:

1. Space Requirements
2. Environmental Requirements
3. Compressed Air Specifications
4. Electrical Requirements - 360mc/400mc System
5. LAN Requirements

Space Requirements

Dimensions and Weights

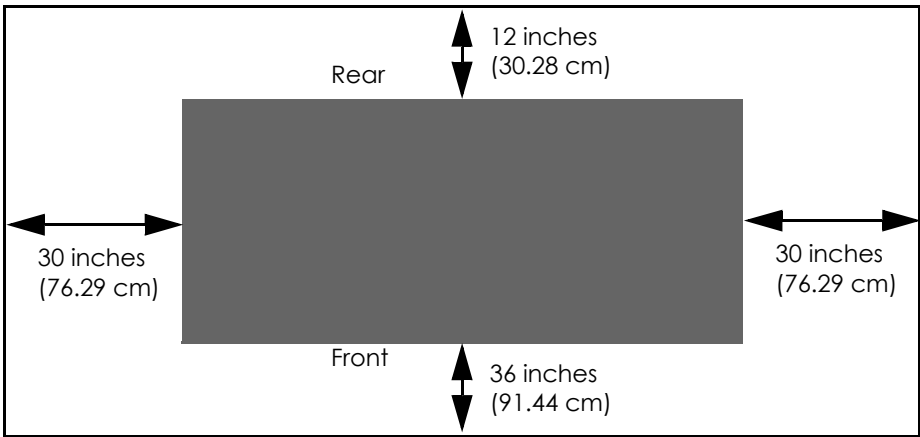
Make sure that the installation site floor space can accommodate the system weight and dimensions plus required clearances (see Minimum Clearances below).

Crated	Width: 58.25 inches (147.96 cm) Depth: 42.75 inches (108.59 cm) Height: 86.5 inches (219.71 cm)
Uncrated	Width: 50.5 inches (128 cm) Depth: 35.25 inches (89.64 cm) Height: 77.25 inches (195.63 cm)
Shipping Weight	1511 pounds (687 kg)
System Weight	1309 pounds (593 kg)

Minimum Clearances

Side Clearance	Minimum 30 inches (76.29 cm) on each side
Rear Clearance	Minimum 12 inches (30.28 cm)
Front Clearance	Minimum 36 inches (91.44 cm)
Overhead Clearance	Minimum 28 inches (71.12 cm)

Figure 1: Minimum clearances



28 inches (71.12 cm) minimum for overhead clearance

Environmental Requirements

- The 360mc/400mc system is for indoor use only.
- Maximum temperature of operating environment: 85°F (29°C)
- Maximum dew point: 78°F (25°C)

Heat Output

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

Material Type	Heat Output
ABS	9,600 BTU/hr
PC	12,000 BTU/hr
PPSF	20,000 BTU/hr

Compressed Air Specifications

Two options exist currently with the 360mc/400mc systems:

1. Customer can use their own shop air system.

If using the site shop air system, the following specifications must be met:

- Supply pressure at the system: 55 psi with a minimum flow of 2.5 CFM. The maximum supply pressure must be less than 145 psi.
- Non-lubricated
- Non-condensing
- DIN ISO 8573-1 Quality Class 5 or better is recommended to improve onboard filter life.
- Connection: The air source connection must meet dimensional standard A-A-59439 for the quick disconnect female ¼-inch coupler. A standard ¼-inch quick disconnect male plug (A-A-59439) is supplied with the system.

2. Customer can use the Stratasys External Air Compressor unit, see [“Stratasys External Air Compressor JA 100 Specifications”](#) on page 5.

Stratasys External Air Compressor JA 100 Specifications

Dimensions and Weight

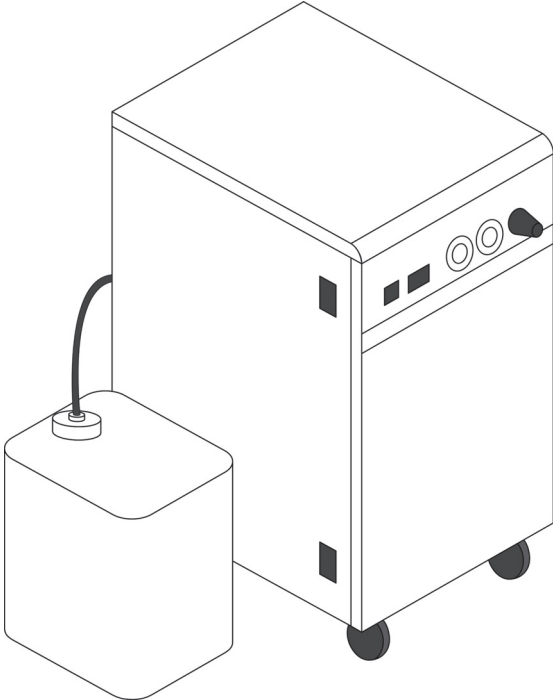
Make sure that the installation site floor space can accommodate the compressor weight and dimensions of the compressor and drain tank.

Compressor Dimensions	Width: 18 inches (47 cm) Depth: 28 inches (71 cm) Height: 34 inches (86 cm)
Compressor Weight	202 pounds (92 kg)
Drain Tank Dimensions	Width: 11 inches (28 cm) Depth: 11 inches (28 cm) Height: 14 inches (36 cm)
Acoustic Level	50dB(A)

- Allow a minimum of 4 inches (10 cm) behind the compressor for proper cooling.

i **Note:** The Stratasys external air compressor option includes an air hose and must be positioned within 15 ft. (4.57m) of the system.

Figure 2: Compressor and drain tank



Electrical Requirements - 360mc/400mc System

Nominal Voltage Level

The Nominal AC Line Voltage requirements for your system are 3-Phase 230 VAC \pm 5%, phase balance \pm 3%, and a 20 Amp circuit. Operation of your system outside this range, even for short periods, is not recommended, as it will result in degraded system performance and component life expectancy. The ideal output voltage from the transformer is 230 VAC to 235 VAC.

Stratasys Part Number	Manufacturer	Incoming Service Voltage
600-00100	Badger Magnetics	200/208/220/240V WYE, 3 phase
600-00200	Badger Magnetics	380/400/415/440V WYE, 3 phase
600-00400	Badger Magnetics	480V WYE, 3 phase

Power Quality

AC power quality is key to reliable performance. The 360mc/400mc system is a precision tool that requires good power quality. Its design incorporates a number of power quality control measures. Customers are required to meet the power quality and nominal voltage requirements. AC power should be provided to the system with a dedicated 3-phase feed. Recommendations of power quality are given in IEEE Standard 141-1976 and FIPS PUB 94. Customers which are unsure of their power quality need to contact their provider.

Electrical Requirements - JA 100 External Air Compressor

The optional external air compressor requires dedicated 50/60HZ, 230 VAC, Single Phase, 15 Amp, electrical service. The air compressor includes an 8 ft. (2.5m) power cable requiring the installation of an AC service connector.

Voltage	Frequency	Max Current
230VAC	50Hz	6.8 Amps
230VAC	60Hz	8.2 Amps

Transformer - JA 100 External Air Compressor (North America Only)

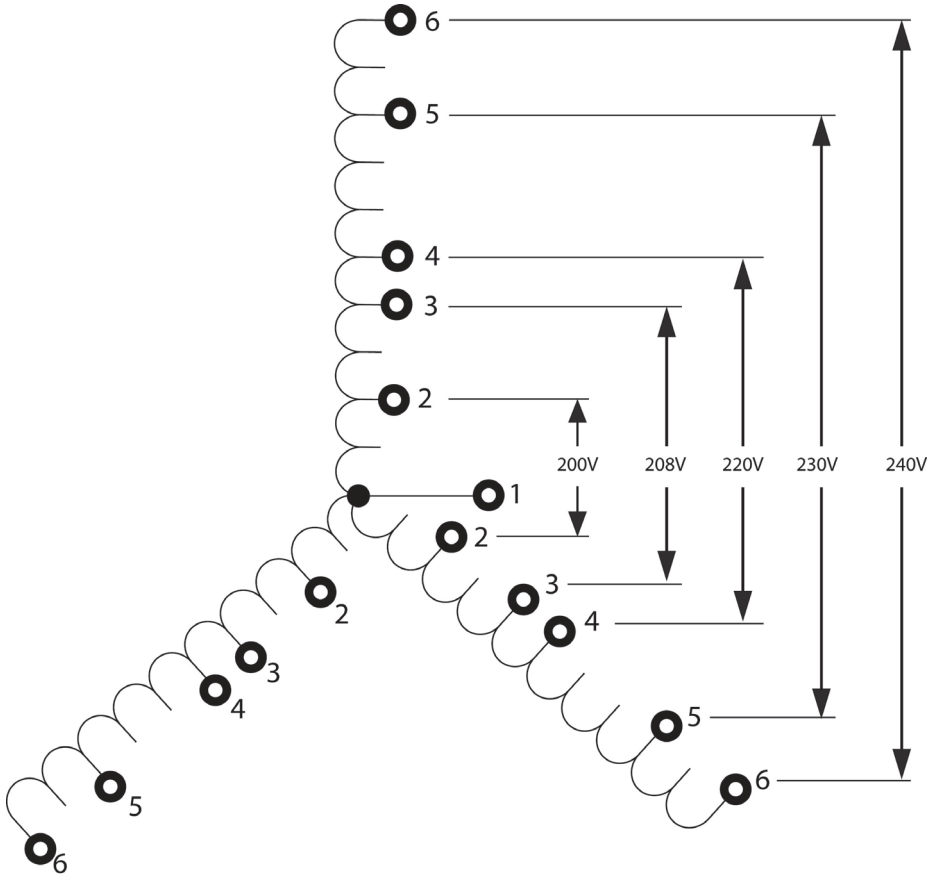
A proven transformer solution for use with the JA-100 External Air Compressor.

Manufacturer	Part Number	Description	Contact
Federal Pacific	SB16N.250F	General purpose transformer, single phase, 600 volt class, 60 Hz. Transformer is wall mounted and is light gray in color.	Midwest Machine Tool Supply 1.800.327.9523

Transformer Installation

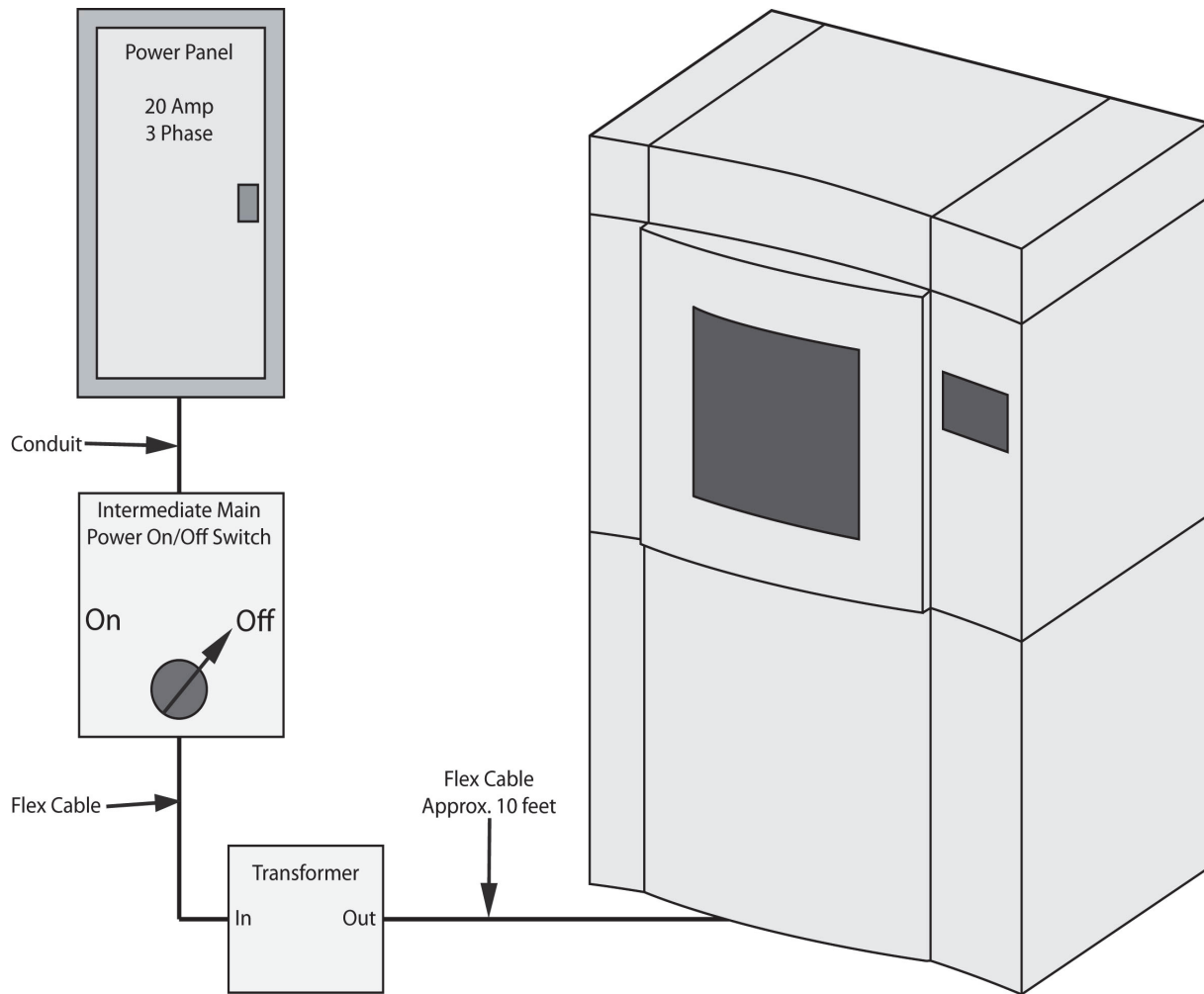
Warning: A licensed electrician must perform all wiring from service connect to the transformer, and from the transformer to the system - including all connectors, cables and proper strain relief. Improper installation of a transformer, or installation of a transformer not meeting system requirements, may invalidate the warranty and/or cause performance problems.

Figure 3: Transformer Schematic (Badger Magnetic Model)



Note: A neutral line is neither used nor valid in this configuration.

Figure 4: Main power connection block diagram



LAN Requirements

A LAN connection is required for communication and file transfer functions.

- The LAN connection is a 100 base T, Ethernet protocol, RJ45 connector. One 25-ft. CAT5, 10/100 base T cable is supplied with the system, located in the Startup Kit.
- The 360mc/400mc will function in either DHCP or Static IP configurations.



Note: Systems configured with a network option of UPnP=ON will occasionally broadcast a unique system identifier across the network for use by the Insight FDM Control Center software application.

Refer to Insight user information for workstation requirements.

Receiving the System

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.

Preparing the System for Installation

Required Tools and Equipment

- Basic hand tools.
- Forklift of sufficient size to raise the system from the shipping base. See [“Space Requirements” on page 3.](#)

Unpacking the System

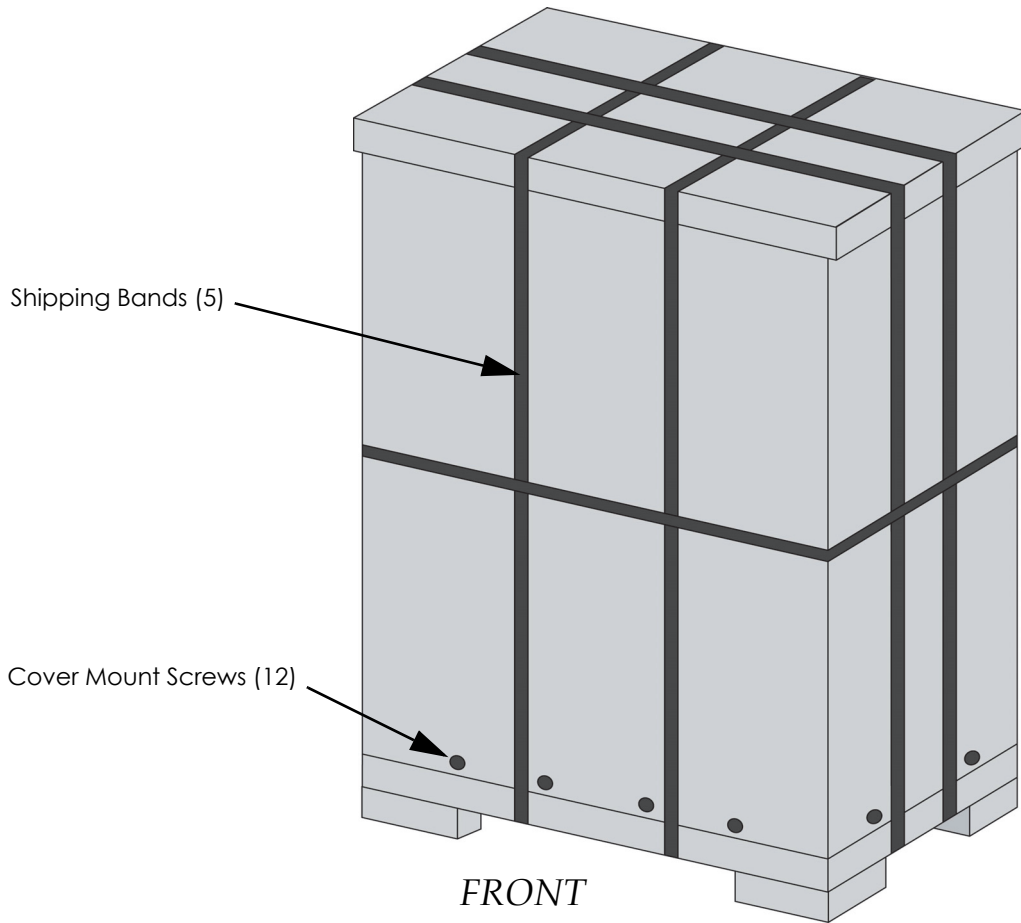
Remove shipping materials

1. Using a phillips screwdriver, remove the cover mount screws from the base of the crate. See [Figure 5.](#)
2. Carefully cut the shipping bands. See [Figure 5.](#)



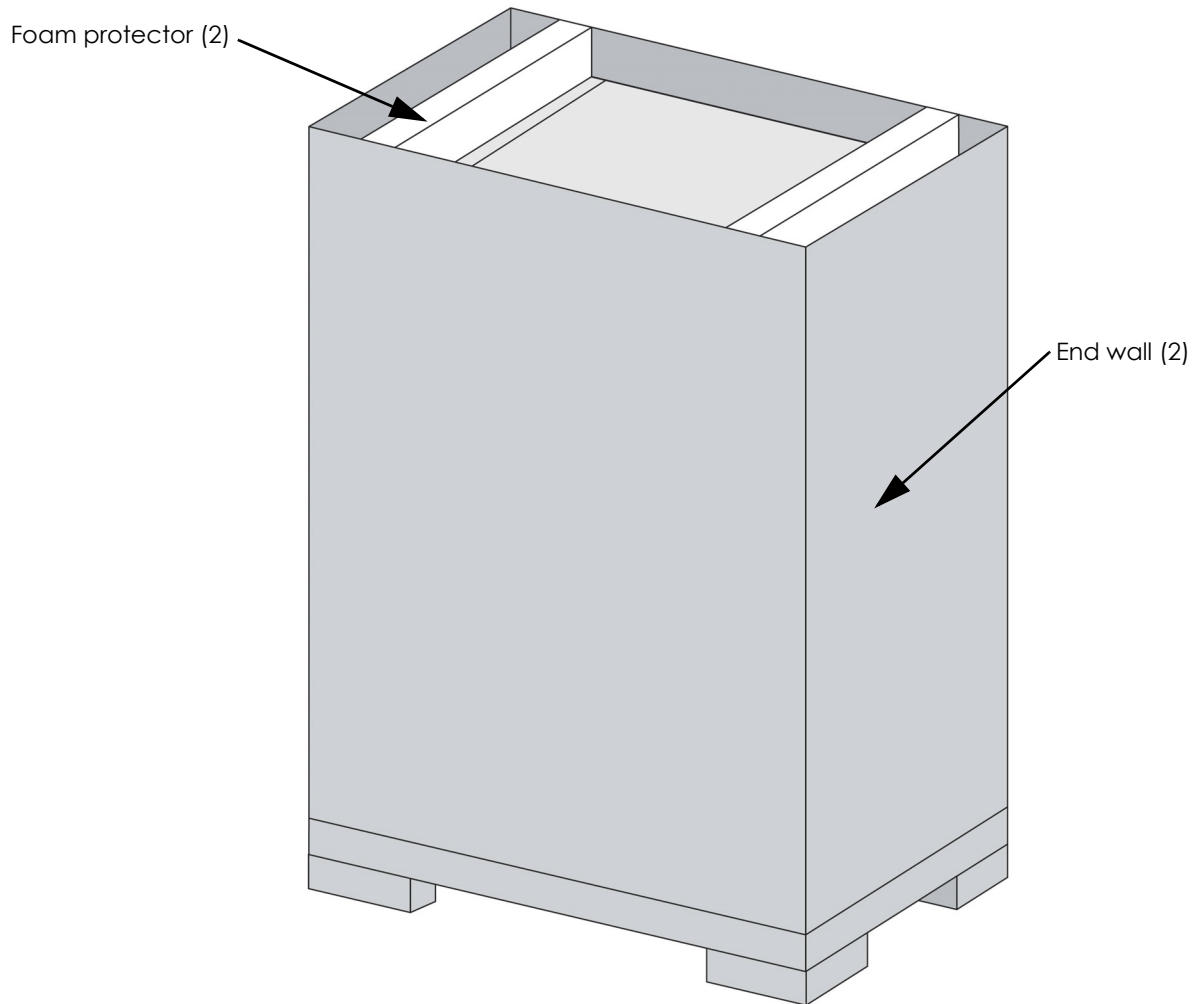
Warning: Wear safety glasses when removing the shipping bands.

Figure 5: Shipping Crate detail



3. Remove the cardboard cover. See [Figure 6](#).
4. Remove the two end walls of the shipping container (two-part triple wall sleeve). See [Figure 6](#).
5. Remove the two foam protectors from the top of system. See [Figure 6](#).

Figure 6: Unpacking the System (cover removed)



6. Carefully remove plastic wrapping and plastic bag from the system.



Caution: Use care when removing the plastic wrap to avoid scratching the system surfaces.

7. Inspect the system exterior for dents and scratches. Immediately report any damage to Stratasys and the shipping company

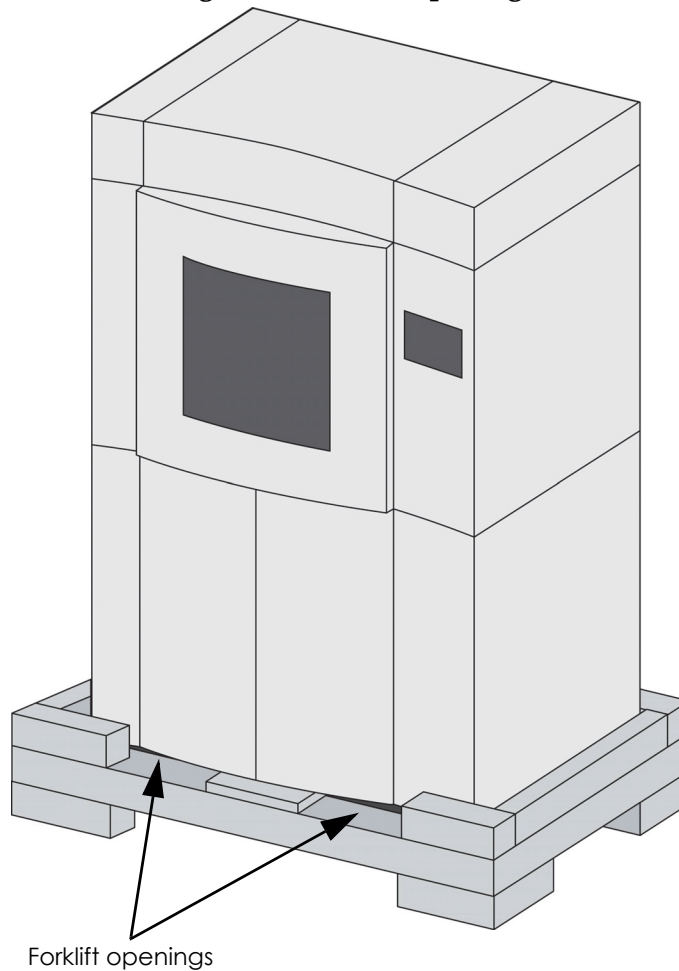
Remove system from shipping base



Caution: Access the fork lift openings from the front of the system.

1. Using a forklift, carefully raise the system vertically and remove the shipping base (see [Figure 7](#)).

Figure 7: Forklift Openings



2. Gently lower the system, until it rests on its casters.
3. Roll the system into its approximate operating location.



Note: Position the system to allow at least three feet of clearance on all sides until the installation process is complete. See [“Space Requirements” on page 3](#). Final installation and setup must be accomplished by a qualified service representative.

Service Connections



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

Comply with all applicable local and national electric codes.

Do not apply power to the System until the Installation Service Representative has verified that AC service connections have been made correctly.

A dedicated 20 Amp, 3-phase power source is required.

The transformer does not include a power switch or a circuit breaker. It is recommended that an Emergency Off (EMO) switch be located between the power panel and the transformer, see [Figure 4 on page 8](#).

Connect the system to the transformer as follows: (see [Figure 9](#).)

- Line 1 connects to terminal block L1.
- Line 2 connects to terminal block L2.
- Line 3 connects to terminal block L3.
- Neutral has no connection.
- Ground connects to lug located inside electrical panel. Do not terminate to hinged access door.



Note: Minimum wiring length for (3) incoming AC phases is 7 inches (178 mm) from strain relief. Minimum wiring length for ground wire is 12 inches (305 mm) from strain relief.

Figure 8: Rear view

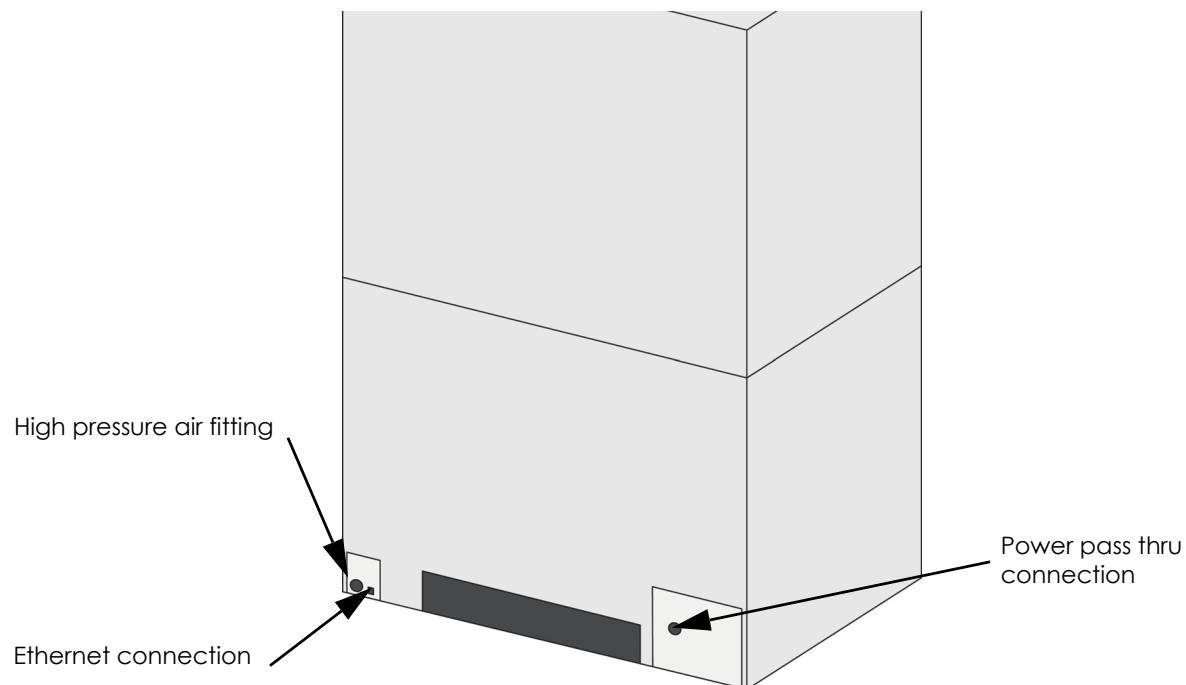


Figure 9: Line Connections

