

stratasys

Fortus® 900mc

SITE PREPARATION GUIDE

Part No. 108315-0011_REV_A

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REVISION LOG

Revision	Date	Description of Changes
A	August 2008	First release of this document.
B	October 2008	Updated graphics and added air connection.
C	November 2008	Added kick panel box to document and updated crate dimension.
D	June 2009	Changed name of system. Changed to long and short lifting assemblies in Figure 5 and updated text. Added shipping kit contents.
E	August 2010	Removed “FDM 900mc” in all cases and added Fortus as a registered trademark.
F	December 2010	Updated Electrical Specifications.
G	June 2011	Changed to new disconnect fuse box.
H	May 2012	Updated Formatting
I	September 2012	Updated Formatting
108315-0010_REV_A *part numbering convention change from previous releases	August 2015	Added Weight Loading Pads information to Table 1. Revised bullet 2 of the Electrical Requirements section.
108315-0011_REV_A	January 2016	Updated document branding per new Stratasys design and guidelines.

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. The Fortus 900 system is designed to be safe and reliable rapid prototyping system. 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.

ABOUT THE FORTUS 900MC

This system incorporates the latest in innovative technologies to provide precision prototypes from a CAD design. Stratasys' Fused Deposition Modeling (FDM) technology provides prototype parts, including internal features, that can be used to field-test form, fit, and function. The Fortus 900mc features a servo/ballscrew driven XY gantry with multiple high temperature modeling material capability.

900MC SYSTEM COMPONENTS

- Insight Software Package
- Computer Workstation (not sold by Stratasys)
- Fortus 900mc Modeler
- Modeling Material
- Support Material

SHIPPING KIT CONTENTS

- Long Bolt Lifting Assemblies (108235-0001) (2 each)
- Eyebolts (107825-0001) (4 each)
- Short Bolt Lifting Assemblies (108239-0001) (2 each)
- Teflon Shields (107824-0001) (4 each)

HOW TO USE THIS GUIDE

This guide provides information for selecting an appropriate location for the Fortus 900mc system. It 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. Electrical Requirements
4. Compressed Air Requirements
5. LAN Requirements

Note: The 900mc system is 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 system near vibration sensitive equipment.

SPACE REQUIREMENTS

DIMENSIONS, WEIGHTS AND SHIPPING TEMPERATURE

Warning: The system weighs 7247 lbs. (3287 kg) including the crate. Make sure equipment and personnel are capable of moving the system.

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

System Size (uncrated)	Width: 109.1 in. (277.1 cm) Depth: 66.3 in. (168.4 cm) Height: 79.8 in. (202.7 cm) With light tower attached 89.8 in. (228.1 cm)
System Size (crated)	Width: 120 in. (304.8 cm) Depth: 78 in. (198.1 cm) Height: 88 in. ±1 in. (223.5 cm ± 2.54 cm)
System Weight	6325 lbs. (2869 kg)
Shipping Weight	7247 lbs. (3287 kg)
Weight Loading Pads	4 pads, each 5.0 x 3.5 inches (12.7 cm x 8.9cm)
Operating Altitude	Up to 3000m
Shipping Temperature Range	-40°F to 158°F (-40°C to 70°C) Note: In freezing temperatures bring the system indoors and leave crated until the system reaches room temperature.

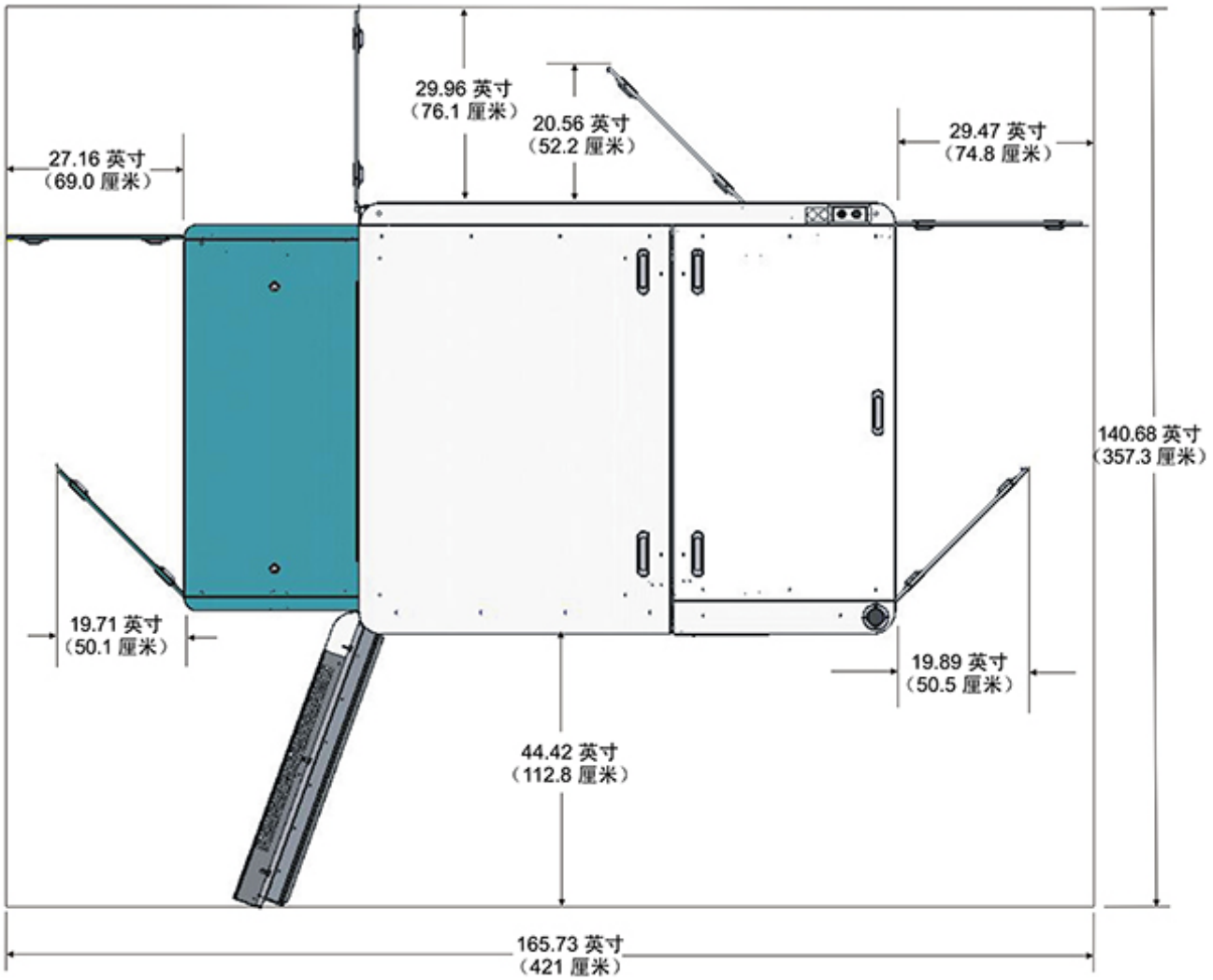
SEPARATELY SHIPPED ITEM

Kick Panel Box	Width: 65 in. (165.1 cm) Depth: 37 in. (94 cm) Height: 34 in. (86.4 cm) Weight: 278 lbs. (126 kg)

MINIMUM CLEARANCES

Left Side Clearance	Minimum 27.16 inches (68.0 cm)
Right Side Clearance	Minimum 29.47 inches (74.8 cm)
Rear Clearance	Minimum 29.96 inches (76.1 cm)
Front Clearance	Minimum 44.42 inches (112.8 cm)
Overhead Clearance	Minimum 115.8 inches (294.1 cm)

Figure 1: System Space Requirements



ENVIRONMENTAL REQUIREMENTS

- The Fortus 900mc is for indoor use only.
- Operating temperature: 60° (15.5°C) to 85°F (29°C).
- Humidity: 20-80% non-condensing.

HEAT OUTPUT

Heat output is material dependent due to the various temperatures maintained in the build oven.

Material Type	Heat Load BTU/hr
PPSF	26,000 heat load BTU/hr
PC	18,000 heat load BTU/hr
M30	12,000 heat load BTU/hr

ELECTRICAL REQUIREMENTS

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

- Rating of system is 13.5KVA
- 230VAC nominal 3-phase service with 5% regulation, with + or - 5 Volt
  Note: 230VAC as measured phase-to-phase
- 50 Hz or 60 Hz
- 40 Amp circuit
- 34 Amp full load current on all three phases
- Maximum inrush current ~570 Amps for 2ms
- Three wire plus ground electrical connection

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 141-1976. Facilities who are unsure of their power quality should contact their service provider.

COMPRESSED AIR REQUIREMENTS

The system has an onboard pressure regulator. The system has onboard particle filtration, water, and oil separation.

- Supply pressure at the system: 90-120 psi with a minimum flow of 6 CFM
- Non-lubricated
- Non-condensing
- DIN ISO 8573-1 Quality Class 5 or better is recommended to improve onboard filter life
- Connection: Dimensional standard A-A-59439

LAN REQUIREMENTS

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

- Category 5 or better
- 10/100 Base T Ethernet
- RJ45 connector



Note: The Fortus 900mc will function in both DHCP or Static IP configurations.

- Use a standard Ethernet patch cable when connecting to a facility network (included in the start-up installation kit). If connecting directly to a workstation an Ethernet cross over cable is required (not supplied in the start-up kit).

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 FOR INSTALLATION

REQUIRED TOOLS AND EQUIPMENT

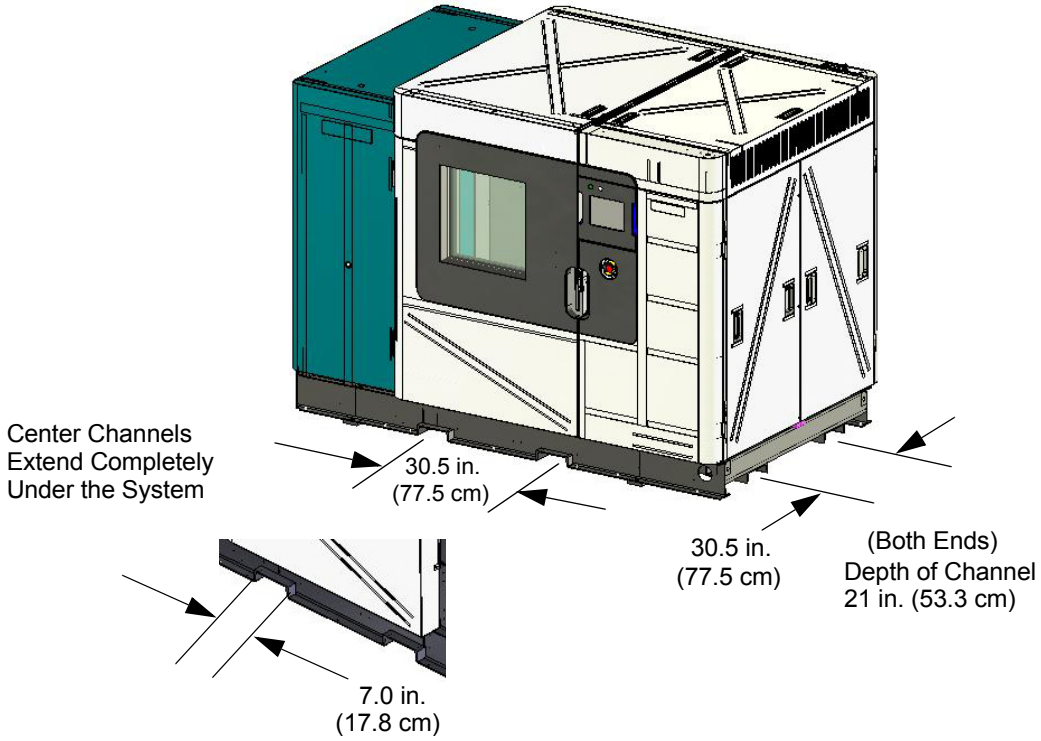
- Basic hand tools (powered screwdriver or drill with Phillips bit).
- Forklift truck of sufficient size to raise the system from the shipping skid.

FORKLIFT TRUCK REQUIREMENTS

The Fortus 900mc is very heavy and requires a forklift truck with the following minimum capabilities:

- Ability to lift 6325 lbs. (2875 kg) if the system is uncrated.
- Ability to lift 7247 lbs. (3294 kg) if the system is crated.
- The forks on the forklift truck must be at least 72 in. (182.9 cm) long to fit under the length of the skid.
- The forks must spread to at least 30 in. (77.5 cm) to fit in the forklift channels.
- The width of the forks must not exceed 7 in. (17.8 cm).

Figure 2: Forklift Channels



MOVING CRATED SYSTEM

Warning: The system weighs 7247 lbs. (3287 kg) including the crate. Make sure equipment and personnel are capable of moving the system.

The Fortus 900mc shipping skid is designed to be moved only from the ends of the shipping skid.

Figure 3: Crated System



UNPACKING THE SYSTEM

REMOVE SHIPPING MATERIALS

1. Unscrew and remove the individual runner boards from the top of the crate.



Warning: Wear safety glasses when removing the shipping bands.

2. Cut and remove the shipping bands.
3. Unscrew and remove all four sides of the crate.



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

4. Carefully remove the plastic wrap from the system.

INSPECT SYSTEM EXTERIOR

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

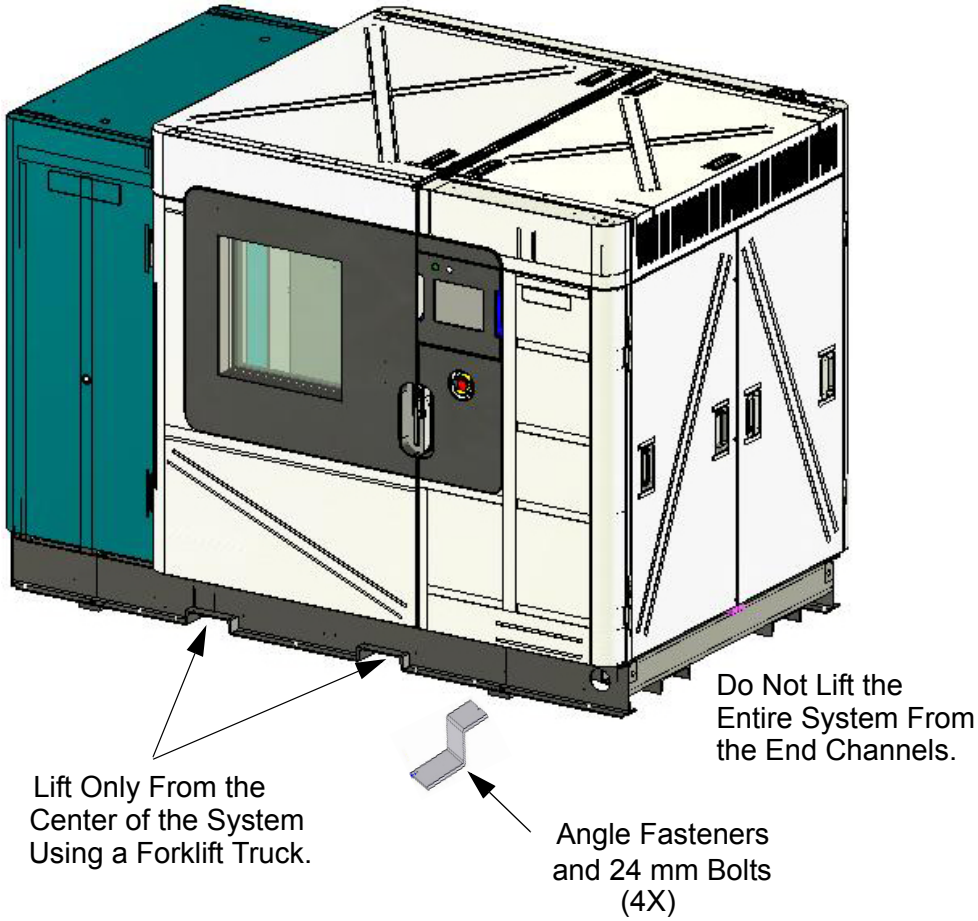
REMOVE SYSTEM FROM SHIPPING SKID

LIFTING THE SYSTEM

Remove all angle fasteners attaching the Fortus 900mc to the shipping skid. Use a forklift truck to lift the system from the shipping skid. The system can be lifted only from the center forklift channels. Lifting the entire system from either end may result in damage to the system.

The shipping skid with attached shipping straps can be positioned by using a forklift truck. Make sure the shipping straps are secured to the forklift truck before moving.

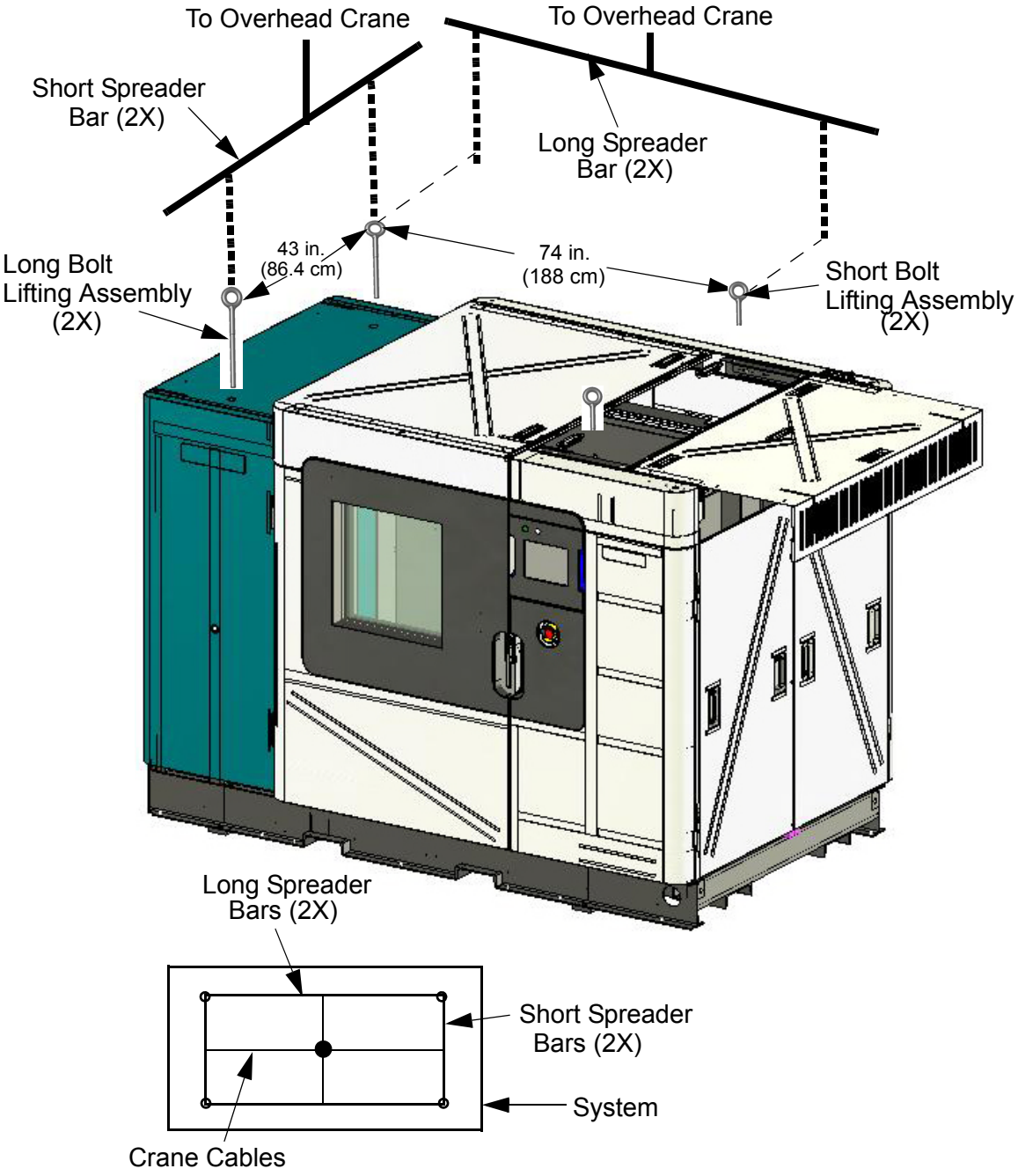
Figure 4: Lifting the System



LIFTING BY CRANE

If lifting by an overhead crane, four spreader bars must be used. Open the right top slide cover. Two spreader bars with a span of 43 in. (86.4 cm) and two with a span of 74 in. (188 cm) must be used to distribute the weight of the system and prevent bending of the lifting assemblies when lifting. Connect the spreader bars to the lifting assemblies screwed into the top of the system frame.

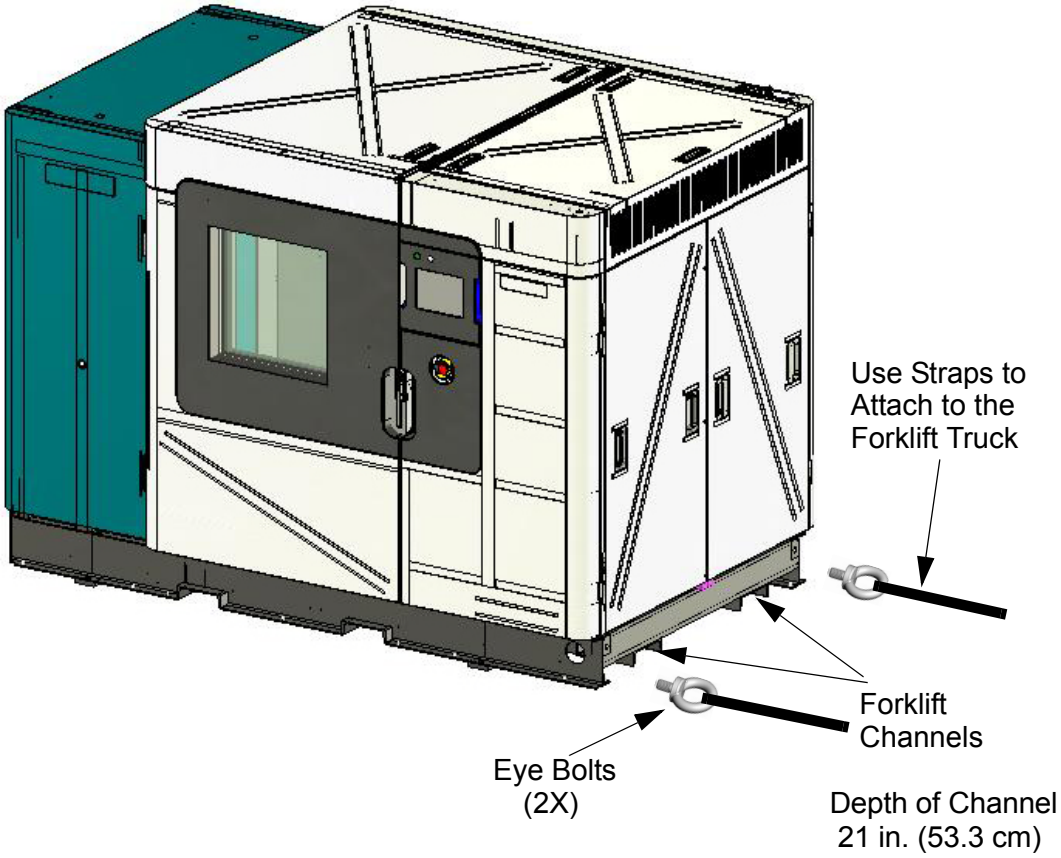
Figure 5: Lifting by Crane



MOVING THE SYSTEM

The system can be moved on its casters by using a forklift truck under the end forklift channels. Attach two eye bolts to one end of the system. Make sure to attach nylon straps from the eye bolts on the system to the forklift truck. This provides stability and control while moving the system.

Figure 6: Moving the System



TRANSPORTING TO A NEW LOCATION

When transporting the system to a new location, tie downs (front and back) must be used to secure the system. Teflon shields must be used so the panels of the system will not be marred.

Figure 7: Tie Down Locations (Front View)

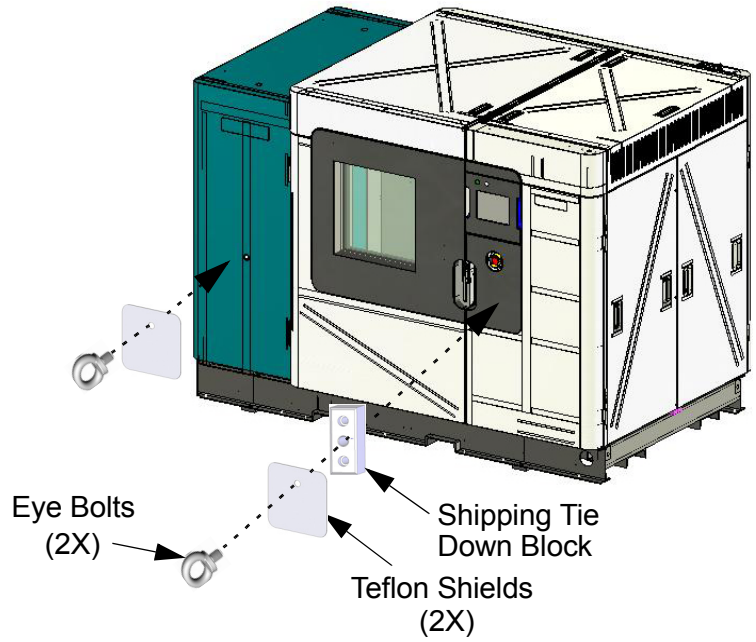
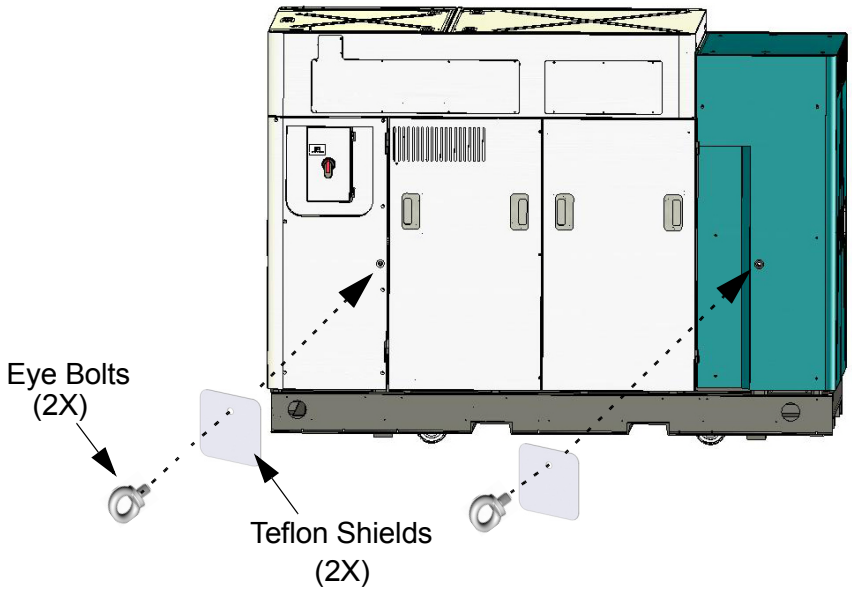


Figure 8: Tie Down Locations (Back View)



SERVICE CONNECTIONS

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

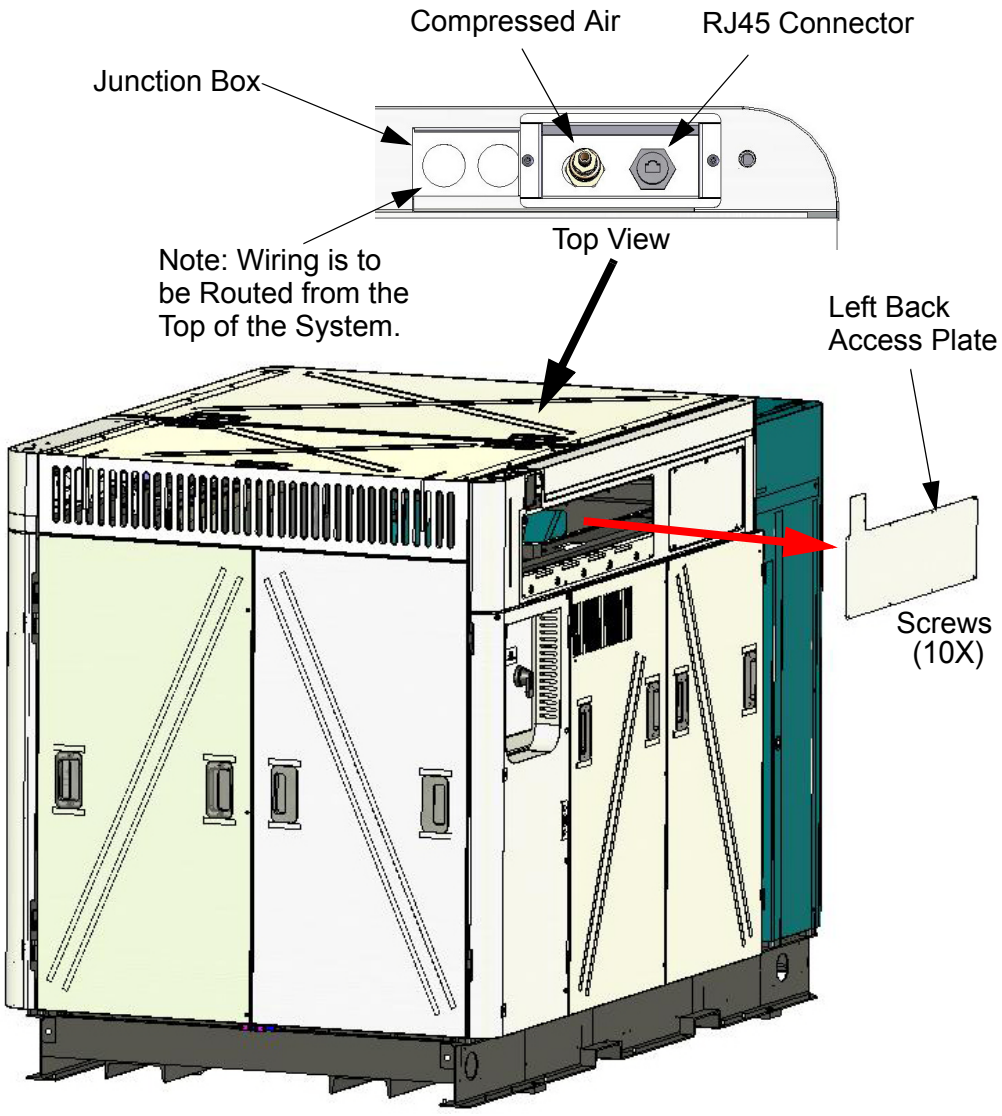
Comply with all applicable local and national electric codes.

1. Remove 10 screws that attach the Left Back Access Plate to the system, This provides access to the electrical junction box. (Figure 9)

Caution: Make sure to replace the back panel after the system is wired.

2. Wiring is to be routed from the top of the system to the fuse blocks.

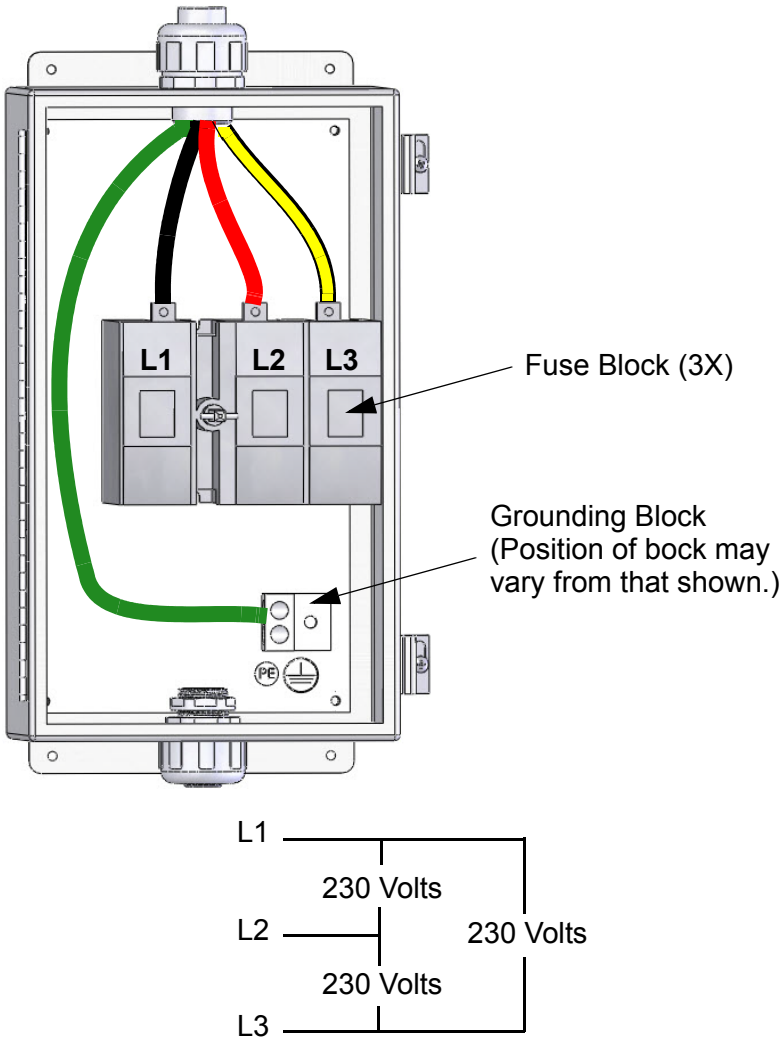
Figure 9: Back Panel Removal



3. Connect the system to the electrical service as follows (Figure 10):
   - Line 1 connects to fuse block L1.
   - Line 2 connects to fuse block L2.
   - Line 3 connects to fuse block L3.
   - Ground wire connects to the grounding block.

Note: A licensed electrician must perform all wiring from service connect and system including connectors, cables, and proper strain relief. Consult a licensed electrician to comply with all applicable local and national electric codes.

Figure 10: Line Connections



COMPRESSED AIR CONNECTION

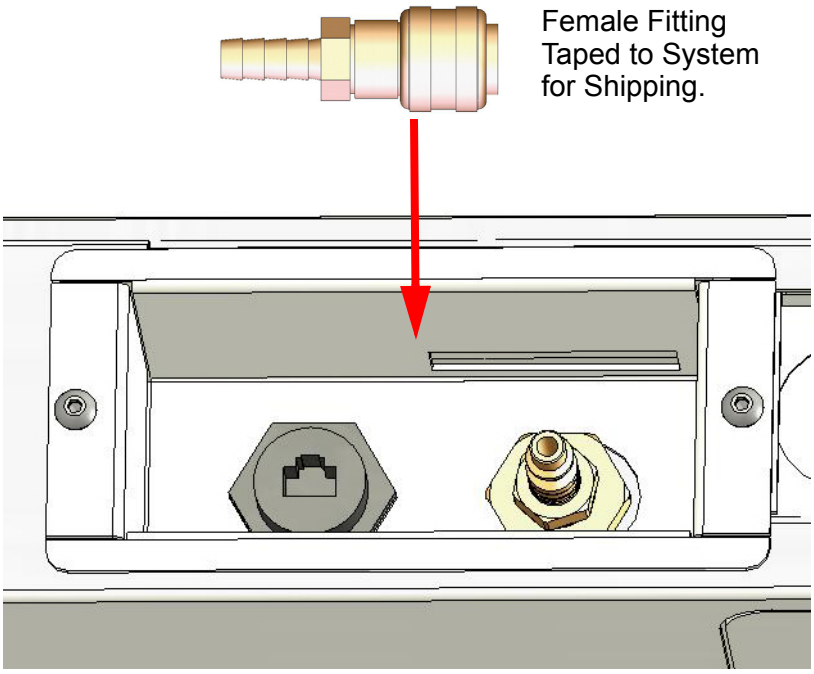
There are 3 options for coupling the compressed air source:

- Clamp a 3/8 inch ID hose to the installed female removable fitting (the female has a 3/8 inch hose barb).
- Remove the female half of the quick disconnect and attach to the male coupling half (i.e., if the installer does not want to use the hose barb). The female coupling must meet dimensional standard A-A-59439.

Note: The following method will not allow a quick disconnection from the air supply.

- Remove the installed male/female quick disconnect and attach to the 3/8 inch NPTF thread.

Figure 11: Supplied Compressed Air Fitting



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