

Site Preparation Guide



stratasys®

Objet1000 Plus
3D Printing System



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April 2018

DOC-06500 Rev. J

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Introduction

The information and requirements provided in this document ensure proper installation and operation of the Objet1000 Plus 3D printing system. The customer is responsible for preparing the site as described in this document, and according to any applicable local regulations.

If you have any questions about the information in this document, contact your Stratasys representative.

All site requirements must be met before the installation date. The Site Preparation Checklist should be submitted to your Stratasys representative. Shipping will be arranged after the checklist is received by Stratasys.

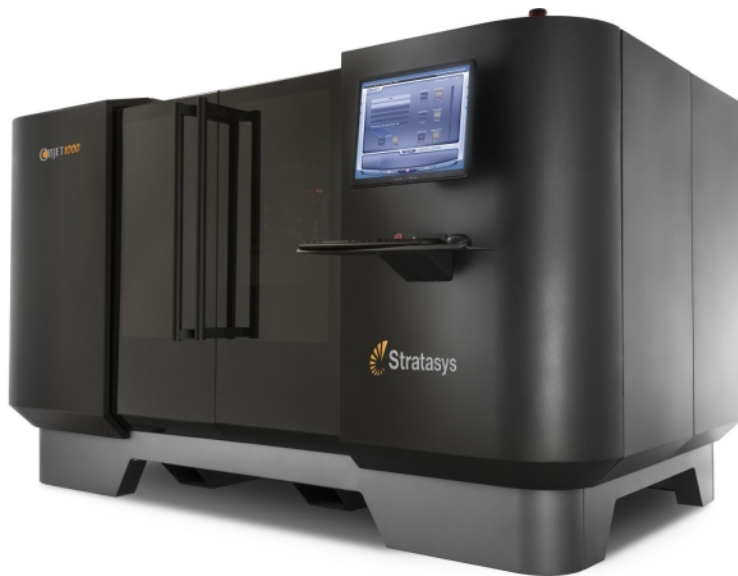
Non-compliance with requirements specified in this document may result in additional installation charges.

Physical Description

The Objet1000 Plus 3D printing system consists of the following main components:

- printer
- printer computer (built into the printer)
- printer-server workstation (built into the printer)

Figure 1 Objet1000 Plus printer



Size and Weight

The following table shows the size and weight information for the printer.

Table 1 Size and weight

W × H × D (mm)	W × H × D (inch)	Weight (kg/lb)
2686 × 1960 × 2102	105.7 × 77.2 × 82.8	2200 kg / 4850 lb



- W = Width; H = Height; D = Depth
- These dimensions do not include the operator console and the signal tower.

Shipment and Delivery

Shipping Information and Customer Responsibility

Shipment to the customer will be arranged as specified in the price quote. The customer is responsible for providing detailed delivery information, including, whether or not there is loading dock at the delivery site.

The customer is responsible for transporting the printer to a suitable installation site. The customer is responsible for ensuring that a professional mover transports the printer to the installation site, and unloads, unpacks, and moves it to its final location. Upon request, your Stratasys service provider will advise regarding these matters.



Note:

A Stratasys-certified customer support engineer must be present while the printer is being unloaded and unpacked.

Shipping Pallet

The following table shows the approximate size and weight of the printing system mounted on a pallet.

Table 2 Size and weight of printer on shipping pallet

W × H × D mm	W × H × D inch	Weight (kg/lb)
3110 × 2230 × 2160	122.5 × 87.8 × 85	2900 kg / 6393 lb



W = Width; H = Height; D = Depth

Lifting Equipment

A forklift with the following specifications is required:

- lifting capacity: 3000 kg (6614 lb)
- extensions: 300 cm (118.1 in.), as shown in Figure 2

Unloading

The unloading area should be a level surface.

A clearance of at least 50 cm (19.7 in.) from the top of the printer is required for lifting the printer onto a forklift. The lifting height of the printer is at least 20 cm (7.8 inches).

The installation location must be accessible from the unloading area. A professional mover is responsible for unloading the printer from the truck and transferring it to the installation location.

The forklift extensions and the printer's center of gravity are shown in the figures below.



Warning: Lifting Hazard

Do not lift the printer from the sides. Do not lift the printer from the front. The printer's center of gravity is near the back of the printer.

The forklift extensions and the printer's center of gravity are shown in the figures below.

Figure 2 Forklift position

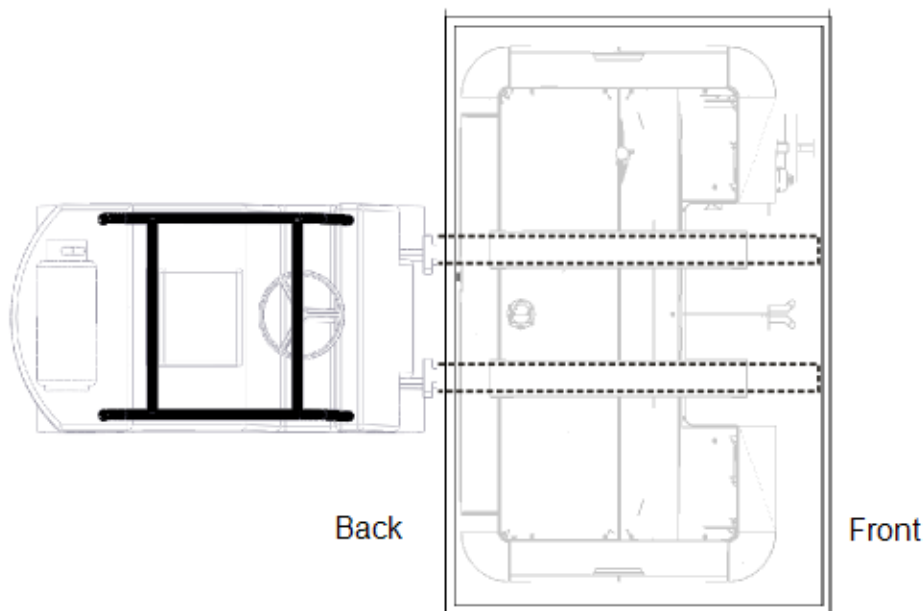
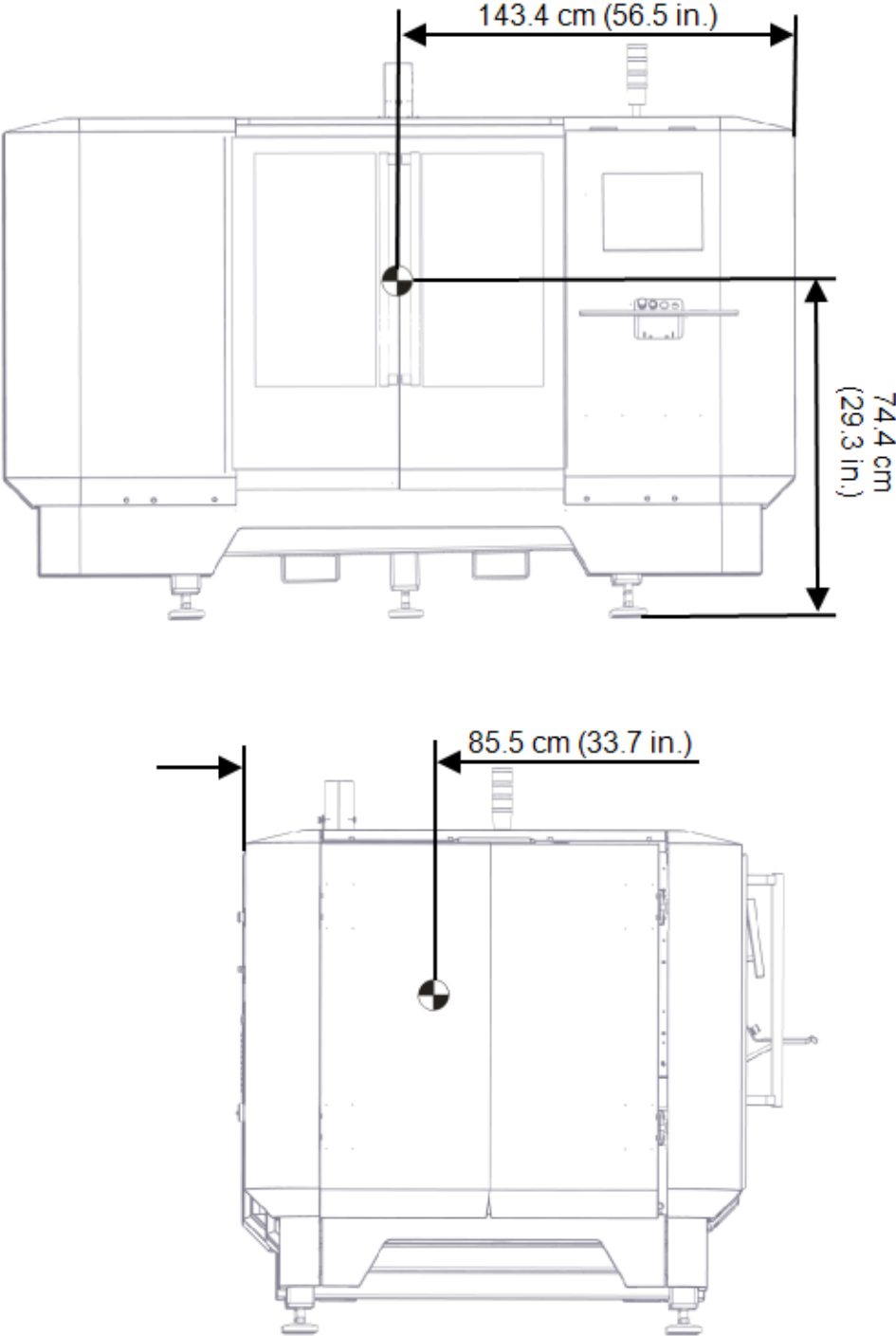


Figure 3 Printer center of gravity



Installation Area

The installation area should be free of sources of vibration and electromagnetic interference that could affect the proper functioning of the printer.

The floor gradient should be less than 0.5% (5 mm per meter).

The floor should be stable and able to bear the load of the printer.

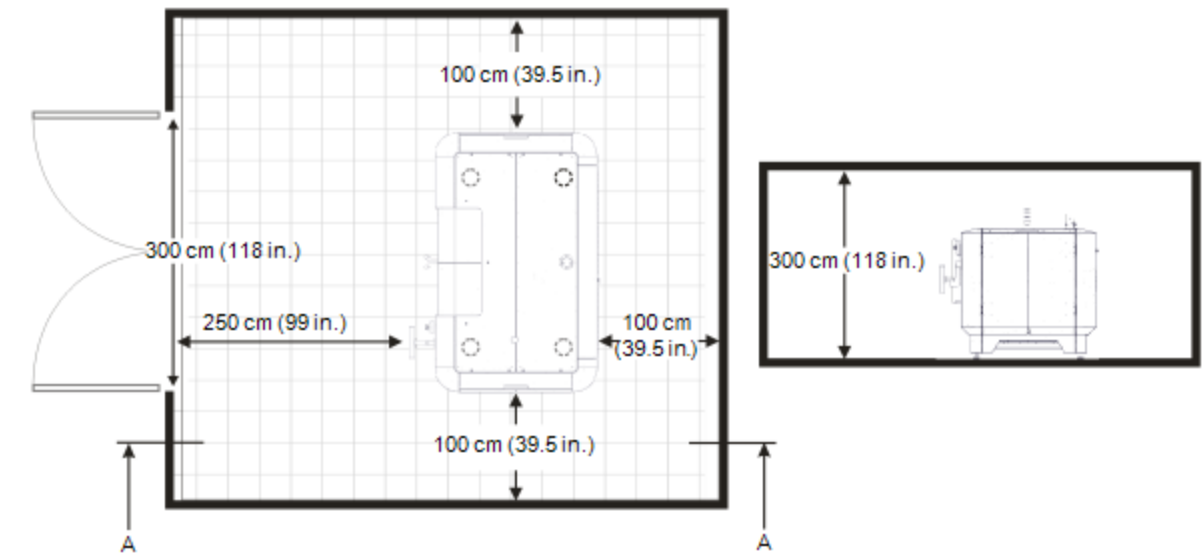
The area around the printer should remain dry at all times.

Shelves and cabinets are recommended near the printer for convenient storage of tools, parts, accessories, manuals, and materials.

Floor Plan (Printer Area)

The following is a sample floor plan, showing the 3D printing system. The dimensions shown in the figure are the minimum clearance requirements.

Figure 4 Printer floor plan (sample, not to scale)

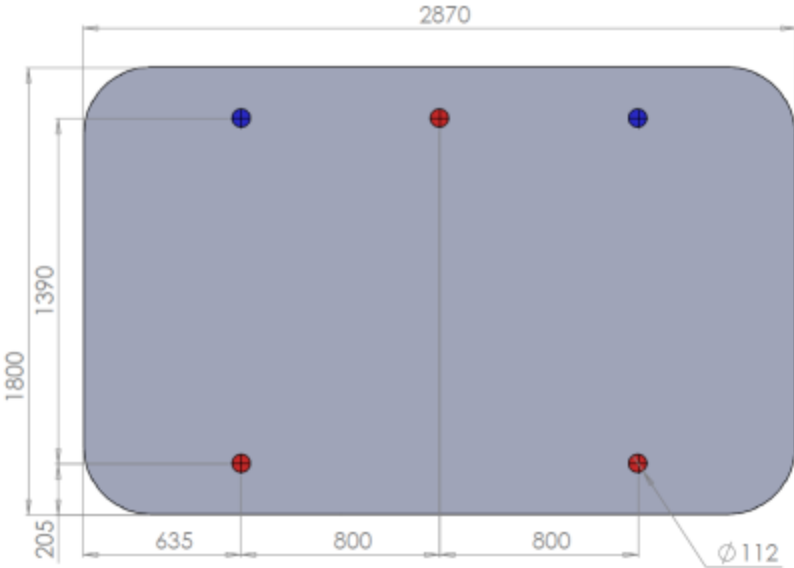


Make sure that the printer is on the same level as the area surrounding it.

If the printer is positioned above or below the area surrounding it, it might not be possible to attach the unloading cart.

Figure 5 shows the position of the leveling legs under the printer.

Figure 5 Position of leveling legs



Client Workstations

Specifications for client workstations running GrabCAD Print (instead of Objet Studio) are listed here:
<http://help.grabcad.com/print/system-requirements>.

Electrical Requirements

The customer is responsible for ensuring that all tasks described in this section are performed by qualified personnel.

Power

A stable, reliable source of power is required. Power to the UPS should be supplied directly from the main electrical panel. The power line should not be connected to other electrical outlets.

Printer input power rating:

- 230 VAC $\pm 2\%$, 50–60 Hz, 1 phase
- Full load current: 8 A
- Short circuit rating: 15 A

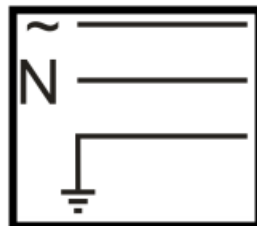
Printer short circuit rating: 10,000 A

If the power at the facility does not support the above specifications, contact your Stratasys specialist.

**Important:**

The diagram below shows the required connection to the power socket. Make sure that the electrician sees this before installing the printer.

Figure 6 Connection diagram



Grounding

The printer is grounded through a single-phase, AC plug. Make sure that the AC outlet is properly grounded, in accordance with local electrical codes.

Circuit Breaker

A Type-C circuit breaker with the following specification is required on the power line (subject to the local electrical code).

Table 3 Circuit breaker

Voltage	Circuit Breaker
220-240 VAC	16 A

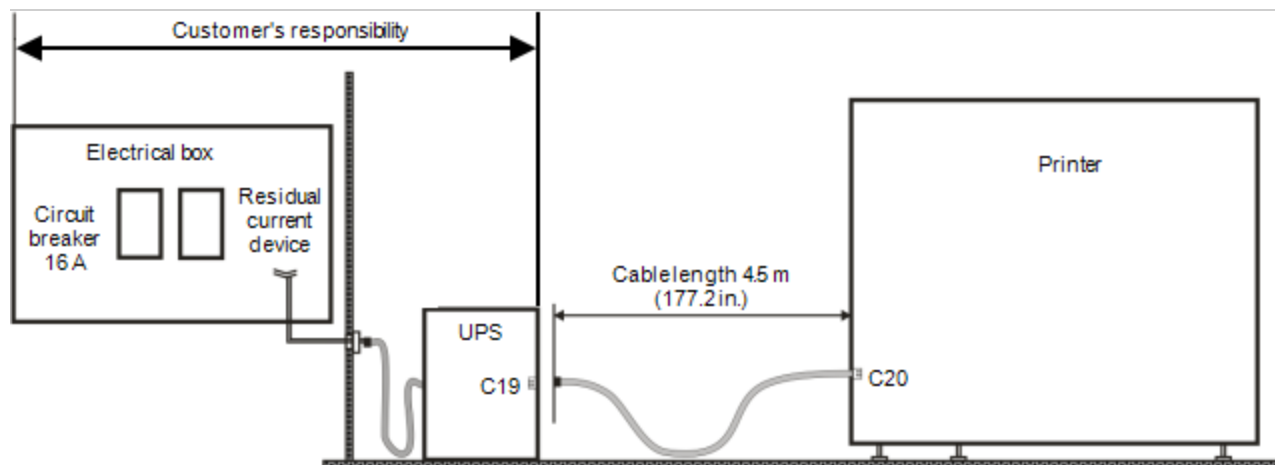
Residual Current Device (RCD)

The wall outlet must be connected to a residual current device (RCD).

Power Connection

The following diagram shows how to connect the printer to the local power supply.

Figure 7 Electrical connection



The following electrical outlets are required:

- one outlet (C19) behind the printer wired directly to the UPS
- three outlets close to the printer (for servicing equipment)

UPS (Uninterrupted Power Supply)

It is mandatory that the printer is powered through a UPS unit, provided by the customer. This ensures that—

- the quality of printing is not affected by power fluctuations from the mains.
- the printer computers can perform a “graceful shutdown” in the event of a power failure.

The UPS specifications are listed below.

Table 4 UPS Requirements ²

Output	
Output Power Capacity	2100 W (minimum)
Nominal Output Voltage	230 VAC
Output Frequency (sync to mains)	50/60 Hz \pm 3 Hz user adjustable \pm 0.1
Topology	Double conversion online
Waveform type	Sine wave
AC output static voltage regulation	\pm 2%
Output Connections	IEC 320 C19
Batteries & Runtime	
Bridging time	Minimum 60 minutes at 1500 W
Interface port(s)	RJ-45 Serial, Smart-Slot
Network Management Cards	
Remote monitoring and control	Via the LAN network
Computer interface	Command line ability ¹
Simultaneous remote management access	Via Telnet or SSH
Ability to configure time lag from power failure	10 minutes
Reliability	
MTBF	36 months (minimum)

¹Command line ability is necessary for the UPS to be able to execute script located in the printer software.

²The UPS requirements are based on the time it might take to complete a "graceful system shutdown."

Communication Lines

Local Area Network

A LAN communication cable is required for connecting to the printer via remote workstations.

Telephone

A telephone near the printer is recommended for general communication and service calls.

Environmental Conditions

Temperature and Humidity

The temperature and relative humidity around the printer must be maintained within certain limits. Peak conditions occur when the printer draws maximum electrical power, resulting in the heat dissipation listed in the table below.

Table 5 Heat dissipation (peak conditions)

	Heat Dissipation
Printer	6278 BTU/hr

The room temperature and relative humidity should not exceed the limits listed in the table below.

Table 6 Room temperature and relative humidity specifications

	Range
Temperature	18°C to 25°C (64.5°F to 77°F)
Relative humidity	30%–70% non-condensing

Air Quality

To maintain the air quality around the printer, a connection to an external ventilation duct is required.

Noise Level

The noise level around the printer is typically less than 85 dB during printing.

Accessories and Utilities

Start-Up Kit

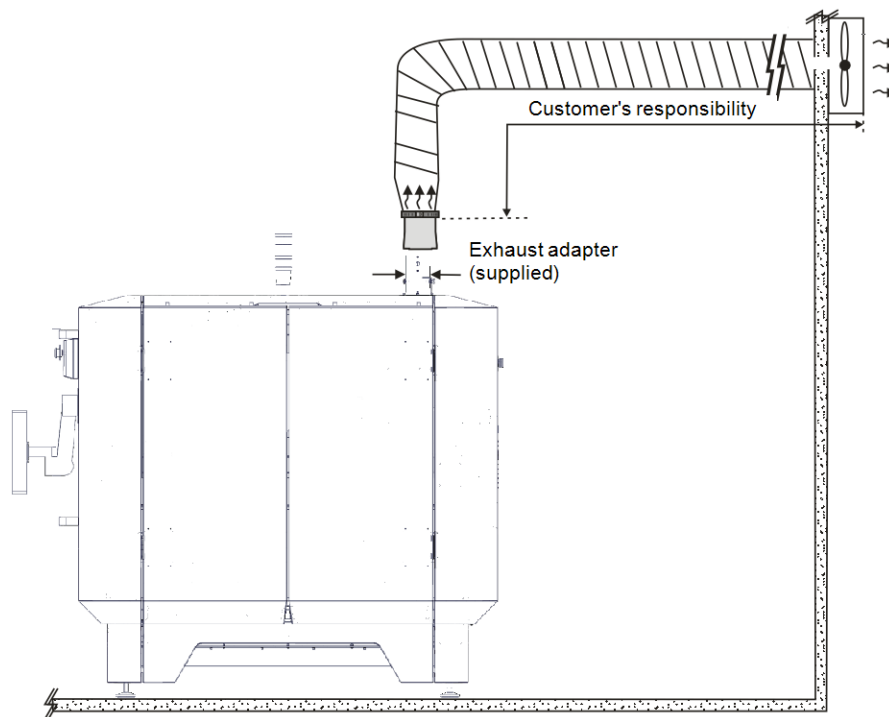
The printer is supplied with a start-up kit, which includes tools and accessories. These tools and accessories should be available during printer installation and operation.

Exhaust Adapter

An exhaust adapter is supplied with the printer. When attached to the back of the printer and connected to an external ventilation fan with a duct, air expelled from the printer is discharged directly outdoors, as shown in the figure below.

Duct Diameter	Required Suction at the Exhaust Adapter	
	Minimum	Maximum
4 in (100 mm)	212 cfm (6 m ³ /min)	269 cfm (7.6 m ³ /min)

Figure 8 Printer exhaust system



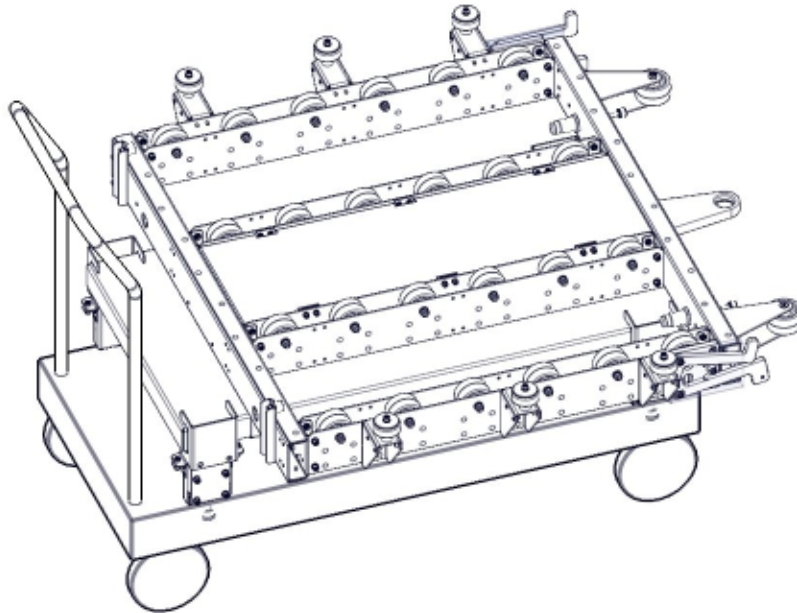
Eyewash Station

It is recommended to install an eyewash station near the printer, for emergency use.

Build Tray Unloading Cart

A cart is provided for moving the build tray between the printer and the cleaning unit.

Figure 9 Build-tray cart



The table below lists the specifications of the build-tray cart.

Table 7 Cart specifications

Load capacity	300 Kg (662 lbs.)
Lower limit	545 mm (21.5 in.)
Upper limit	1110 mm (43.7 in.)



Note:

This cart is designed for use with the Krumm RKK1600 cleaning unit. If any other cleaning unit is used, contact your Stratasys representative.

Compressed Air

Compressed air is useful for routine cleaning and maintenance activities. If a compressed air line is available at the site, it is recommended (but not required) that an outlet be installed near the printer.

**Note:**

If the compressed air line does not include an air-dryer unit, a water/oil trap must be installed on the air gun used for cleaning the printer. The recommended air pressure is 5-7 bar (70-90 PSI).

Fire Safety Equipment

A gas-based fire extinguisher is recommended in case of fire in or near the system. Some other fire extinguishers are also acceptable, but liquid fire extinguishers should not be used. (Contact local fire authorities for specific recommendations.)

Materials Handling and Storage

Printing Materials

Printing materials should be stored indoors, in a dry area with adequate ventilation. The following table lists general requirements for transport, storage, inventory control, and disposal.

Table 8 Requirements for hazardous materials

Topic	Requirement
Storage	15°C to 27°C (59°F to 81°F)
Inventory control method	First In First Out (FIFO)
Disposal	In compliance with local regulations

These specifications are applicable for most printing materials. Requirements for handling and storing specific materials appear in the Material Safety Datasheet (MSDS) included with each material.

No more than five crated containers can be stacked on top of each other.



Note:

- Non-compliance with these recommendations might result in reduced shelf life.
- Disposal of all liquid and solid waste, cleaning cloths, gloves, and empty material containers must be done in accordance with local laws and regulations.

Cleaning Solvent

One liter of isopropanol (IPA) or ethanol (ethyl alcohol) should be available at all times for cleaning purposes.

The customer is responsible for ensuring that the material storage area complies with local regulations.

Site Preparation Checklist

A checklist is provided by your Stratasys representative listing all of the tasks described in this document.

Fill in the information requested in the checklist, and submit it to your Stratasys representative. An installation date will be scheduled after the checklist has been approved by Stratasys.



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