

# **Objet Desktop 3-D Printer Site Preparation Guide**

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# 1 Introduction

## 1.1 About this Guide

The site preparation information and requirements provided in this document ensure proper installation and operation of the 3D printing system. The customer is responsible for preparing the installation site according to the instructions and guidelines described in this document.

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

**All site preparation requirements must be met before the installation date.** The Site Preparation Checklist should be faxed to your Stratasys representative. Orders will be processed for shipping after the signed checklist has been received by your Stratasys representative.

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

## 1.2 Installation and Training Schedule

Installation and training take between one and two work days, and include:

- Basic installation and adjustment
- Operator training including practice under supervision

## 2 Physical Description

### 2.1 Configuration

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

- The printer
- The printer computer (built into the printer)
- A printer-server workstation (computer provided by the customer)



Figure 1 Objet Desktop 3D printer

### 2.2 Size and Weight

The following table shows the size and weight of the printer.

Table 1: Printer size and weight

| W × H × D (cm) | W × H × D (inch)   | Weight (kg/lb)  |
|----------------|--------------------|-----------------|
| 82.6 × 60 × 62 | 32.5 × 23.6 × 24.4 | 106 kg / 234 lb |



- W = Width; H = Height; D = Depth
- The weight of the printer does not include printing materials.

## 3 Shipment and Delivery

### 3.1 Shipping Information and Customer Responsibility

Shipment to the customer's facilities will be arranged by Stratasys as indicated in the "ship to" part of the invoice. It is the customer's responsibility to provide detailed delivery instructions. The customer is responsible for transporting the printer to a suitable installation site. Customer Support Engineers will provide advice on site preparation, upon request.



Only Customer Support Engineers are authorized to unpack and install equipment.

### 3.2 Shipping Pallet

The printer arrives on a wooden pallet. The pallet's approximate size and weight with the printer mounted appear in the following table.

Table 2: Size and weight

| W × H × D (cm)  | W × H × D (inch)   | Weight (kg/lb)  |
|-----------------|--------------------|-----------------|
| 114 × 86 × 77.5 | 44.9 × 33.9 × 30.5 | 141 kg / 311 lb |

### 3.3 Lifting Equipment

A forklift with the following specifications is required:

- Lifting capacity of 150 kg (330 lb)
- 100-centimeter (40-inch) extension

### 3.4 Unloading

The type of truck required to deliver the printer depends on whether a loading dock is available at the delivery site.

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



## 4 Installation Area

Prepare an installation area that meets the following conditions:

- The installation area should be free of sources of vibration and electromagnetic interference that could affect the proper functionality of the printer.
- The printer should be positioned on a stable surface, such as a stand with lockable wheels.
- A suitable stand can be ordered from Stratasys.
- The server workstation and the printer should be located in the same room.
- The cable route between the server workstation and the printer should not exceed 5 meters (16 feet).



The communication cable provided should not be extended or replaced with a longer cable.

- Clearance around and above the printer should ensure convenient access and servicing.
- The area around the printer should remain dry. Do not place the WaterJet cleaning station within 5 meters (16 feet) of the printer.
- Shelves and cabinets should be located near the printer to allow convenient storage of tools, parts, accessories, manuals and materials (see section 10 on page 17).

## 4.1 Floor Plan (Printer)

The following is a sample floor plan, showing the 3D printing system—the printer and the server workstation. The dimensions shown in the figure and in the table are the minimum requirements.

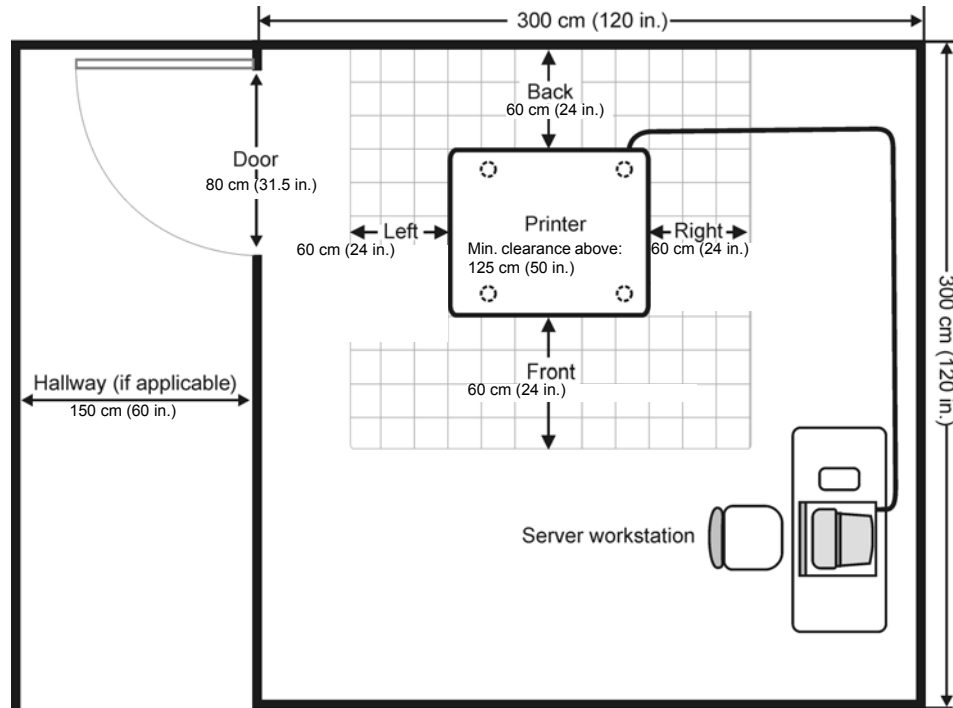


Figure 2 Printer floor plan sample (not to scale)

Table 3: Minimum positioning requirements

|                   |       | Minimum Requirement      |
|-------------------|-------|--------------------------|
| Printer Clearance | Front | 60 cm (24 in.)           |
|                   | Back  | 60 cm (24 in.)           |
|                   | Left  | 60 cm (24 in.)           |
|                   | Right | 60 cm (24 in.)           |
|                   | Above | 125 cm (50 in.)          |
| Door              |       | 80 cm (31.5 in.)         |
| Hallway           |       |                          |
| Table height      |       | 62-72 cm (24.8-28.8 in.) |
| Table load        |       | 150 kg (330 lb)          |

# 5 Workstation Requirements

The customer is responsible for supplying a computer, with the following specifications, for the server workstation. The same specifications are recommended for any additional client workstations.



**Important:**

Make sure that the server workstation is set up with Administrator privileges.

|                            | Requirement  |
|----------------------------|--|
| Computer Type              | Server workstation: Standard desktop PC <sup>1</sup>                       |
| Processor                  | Intel® Core™ i3 or better  |
| Operating System           | Windows® 7 64-bit or Windows® 8 64-bit <sup>2</sup>                        |
| RAM                        | 8 GB or more <sup>2</sup>  |
| Graphics Card <sup>3</sup> | Open GL®<br>Memory: 1 GB or more; 2 GB recommended for dental applications |
|                            | For server workstation: VGA connector <sup>4</sup>                         |
| Optical Drive              | CD/DVD ROM   |
| HDD/SSD                    | 80 GB or larger (minimum free space of 40 GB)                              |
| Network Card               | LAN TCP/IP<br>(2 for server workstation; 1 for client workstation)         |
| Mouse/Keyboard Connection  | Server workstation: USB <sup>1</sup>                                       |
| Monitor Cable              | VGA connector <sup>1</sup>   |

1. For systems using a KVM switchbox to control both the built-in printer computer and the server workstation with same keyboard-monitor-mouse set: All-in-one computer, wireless mouse and wireless keyboard cannot be used.
2. A 64-bit operating system is recommended, to utilize 8 GB of memory.  
Objet Studio running on a 32-bit application can utilize only 4 GB of memory.
3. The following graphics cards were also tested in Stratasys labs:
  - NVIDIA® Quadro® Family – FX570, FX1700
  - NVIDIA® GeForce® Family – 6200 TurboCache™, 7300 GT, GTX 285
  - Intel® Express Chipset – 82915G/GV, 82910GL, Q965, Q963, Q35, Q45, Q43, 82852, 82855
  - ATI Radeon™ HD 5670, HD 5970
  - AMD Radeon™ E6760
4. For systems using a KVM switchbox. If the server workstation has a DVI video connector, a VGA adapter is needed.

## 6 Electrical Requirements

It is the customer's responsibility to ensure that all tasks described in this chapter are carried out by personnel qualified to perform electrical work as defined by local authorities.

### 6.1 Power

- A stable, reliable source of power is required. The power to the UPS (or printer) should be supplied directly from the main electrical panel, without other electrical outlets sharing the line. Printer power rating: 100–120 VAC, 50–60 Hz, 7 A
- 200–240 VAC, 50–60 Hz, 3.5 A

For information about actual power consumption, contact your Stratasys representative.

### 6.2 Circuit Breaker

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

Table 4: Circuit breaker specification

| Voltage     | Circuit Breaker |
|-------------|-----------------|
| 100–120 VAC | 10 A            |
| 220-240 VAC | 6 A             |

### 6.3 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 safety codes.

## 6.4 Printer Connection

The printer is shipped without a power cable, which is supplied during installation.

The following electrical outlets are required:

- one outlet behind the printer (for the printer) wired directly to the UPS (or printer)
- three outlets close to the printer (for the server workstation, monitor, and servicing equipment)

## 6.5 UPS (Uninterrupted Power Supply)

The printer should be powered from a UPS, rather than directly from the mains, so that—

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

Table 5: UPS requirements

| Voltage <sup>1</sup> | Current | Power   | Power Factor <sup>2</sup> | Bridging Time | Interface             |
|----------------------|---------|---------|---------------------------|---------------|-----------------------|
| 100–120 VAC          | 16 Amps | 1500 VA | 0.9                       | 15 minutes    | USB port <sup>3</sup> |
| 220–240 VAC          | 8 Amps  |         |                           |               |                       |

1. Single-phase; 50/60 Hz

2. Defined as the input-to-output ratio of the UPS.

3. Do not order a UPS that only has a serial communications-port connector.

# 7 Communication Lines

## 7.1 Local Area Network

A LAN communication cable is required if server/client workstations are connected to a local network, as shown in the following diagram.

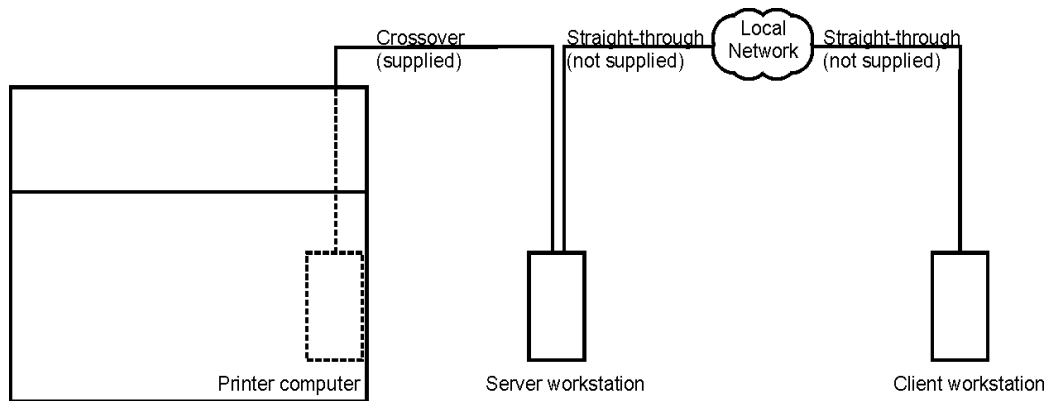


Figure 3 Network installation

The connection to the local network should be done *before* printer installation.

## 7.2 Telephone

A telephone line for general communication and service calls is recommended, close to the printer.

## 8 Environmental Conditions

### 8.1 Room

The temperature and relative humidity around the printer must be within certain limits. Peak conditions occur when the printer and the server workstation draw maximum electrical power, resulting in the heat dissipation shown in Table 6.

Table 6: Heat dissipation during “peak” conditions

|                    | Heat Dissipation     |
|--------------------|----------------------|
| Printer            | 760 W (2600 BTU/hr)  |
| Server workstation | 450 W (1530 BTU/hr)  |
| Total              | 1210 W (4130 BTU/hr) |

Environmental control should ensure that the room temperature and relative humidity do not exceed the limits shown in Table 7.

Table 7: Ambient temperature and relative humidity

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

### 8.2 Ventilation

To ensure optimal air quality around the printer, a connection to an external ventilation duct is recommended. Otherwise, the room ventilation system should change the air at least four times every hour.

### 8.3 Noise Level

The noise level at a distance of 100 cm (39.4 in) from all sides around the printer is less than 70 dB during printing. The printer does not generate impact noise.

## **9 Accessories and Utilities**

### **9.1 Start-Up Kit**

A start-up kit, purchased with the printer, includes tools and accessories that are essential for the installation and proper operation of the printer. Make sure that this kit is available during printer installation.

### **9.2 Fire Safety Equipment**

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



# 10 Materials Handling and Storage

## 10.1 Printing Materials

Printing materials should be stored indoors, in a dry area with adequate ventilation. Table 8 lists general requirements for transport, storage, inventory control, and disposal.

Table 8: General Requirements

| Topic                    | Requirement                          |
|--------------------------|--------------------------------------|
| Storage                  | 15°C to 25°C (60°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 of printing materials are specified in the Material Safety Datasheet (MSDS) for each material.

Printing materials can be used until the expiration date indicated on the container. Inventory provisions should be made to ensure that containers with the closest expiry date are used first.

When a material container is not in use, it should be securely capped, to protect the material from contamination and UV radiation. In addition, this minimizes the risk of accidental spillage.



- 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.

## 10.2 Cleaning Solvent

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

Solvents should be stored and handled in accordance with local regulations.

# 11 Summary

Dear customer,

Thank you for reading this Site Preparation Guide. Please fill in the information requested on the following page, and fax it to your Stratasys representative. An installation date will be scheduled after this checklist is approved by Stratasys.

You can consult with an Stratasys-certified engineer if you have any questions relating to the site requirements and the checklist.

## Customer Information

Company Name: \_\_\_\_\_

Address: \_\_\_\_\_

Phone No.: \_\_\_\_\_ Fax No.: \_\_\_\_\_ E-mail: \_\_\_\_\_

## Site Preparation Checklist

| Item and reference                                     | Meets Requirement        |                          | Notes |
|--|--------------------------|--------------------------|-------|
|  | Yes                      | No                       |       |
| Personnel available for training                       | <input type="checkbox"/> | <input type="checkbox"/> |       |
| Forklift and unloading area                            | <input type="checkbox"/> | <input type="checkbox"/> |       |
| Floor requirements                                     | <input type="checkbox"/> | <input type="checkbox"/> |       |
| Room layout (printer)                                  | <input type="checkbox"/> | <input type="checkbox"/> |       |
| Access to installation location: doors, hallways, etc. | <input type="checkbox"/> | <input type="checkbox"/> |       |
| Power requirements                                     | <input type="checkbox"/> | <input type="checkbox"/> |       |
| Circuit breaker  | <input type="checkbox"/> | <input type="checkbox"/> |       |
| Grounding protection                                   | <input type="checkbox"/> | <input type="checkbox"/> |       |
| UPS unit   | <input type="checkbox"/> | <input type="checkbox"/> |       |
| Server workstation                                     | <input type="checkbox"/> | <input type="checkbox"/> |       |
| Communication lines                                    | <input type="checkbox"/> | <input type="checkbox"/> |       |
| Environmental conditions                               | <input type="checkbox"/> | <input type="checkbox"/> |       |
| Gas-based fire extinguisher                            | <input type="checkbox"/> | <input type="checkbox"/> |       |
| Cleaning solvent                                       | <input type="checkbox"/> | <input type="checkbox"/> |       |

I understand that non-compliance with the requirements specified in this document may result in additional installation charges.

Full name: \_\_\_\_\_

Customer signature: \_\_\_\_\_ Date: \_\_\_\_\_