Objet Desktop 3-D Printer

Site Preparation Guide

for

Objet24 (V2): OBJ-14000
Objet30 (V2): OBJ-24000

DOC-04002
Rev. D2

Copyright

February 2013

DOC-04002 Rev. D2

This document applies to the following Objet Desktop 3D printers:

Printer Model	Part Number
Objet24 (V2)	OBJ-14000
Objet30 (V2)	OBJ-24000

Trademarks

The following are registered trademarks of Stratasys Ltd.: Stratasys®, Objet®, FullCure®.

Microsoft and Windows are trademarks of Microsoft Corporation.

All names of products and services cited in this book are trademarks or registered trademarks of their respective companies.

Contents

1 Introduction

1.1 About this Guide

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

The following topics are covered in this guide:

- Physical Description
- Shipment and Delivery
- Site Requirements
- Facility Requirements
- Site Preparation Checklist

Important: **Since site preparation activities must be completed before the installation date, it is important for the customer to read this guide thoroughly and to complete the Customer Site Preparation Checklist at the end of this guide.** On completion, the checklist should be faxed to customer's Stratasys contact person.

For special operating conditions or if you have any questions about the site preparation procedure, contact your local Stratasys representative.

1.2 Installation and Training

Installation and training take two work days:

- Basic installation and adjustment—

  These procedures are described in the printer Installation Guides—

  Objet24/30 printers: DOC-14040

  Alaris30 printers: DOC-04006
- Operator training including practice under supervision—

  Covers the operation and maintenance of the Objet Desktop.

2 Physical Description

2.1 Configuration

The Objet 3-D 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 2–1 Objet 3-D printer

2.2 Size and Weight

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

W × H × D (cm)	W × H × D (inch)	Weight (kg/lb)
82.6 × 60 × 62	32.5 × 23.6 × 24.4	83 kg / 183 lb

Table 1: Printer size and weight

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

2.3 Start-Up Kit

The printer comes equipped with a start-up kit, which includes tools and accessories. These tools and accessories may be required during the installation and are available for use by the customer.

It is recommended that the start-up kit be stored near the printer.

The start-up kit includes the following:

- Customer Tool kit—Allen keys, screwdrivers, a mirror, a scraper, a spatula and a loupe for regular operation and maintenance. The tools are kept in a special pouch.
- Consumable items—wiping cloths, pink paper, transparencies and so on, to maintain the printer for approximately two years.
- Parts and accessories for emergency maintenance of the printing system.

2.4 Noise Level

The noise level at a distance of 100 cm (39.4 in) from all sides of the printer is lower than 70 dB while printing. Impact noise was not found.

3 Shipment and Delivery

3.1 Shipping Information and Responsibility

The Stratasys distributor will arrange shipment to the customer's facilities, as indicated in the "ship to" part of the invoice. It is the customer's responsibility to provide the distributor with detailed delivery instructions. The customer is responsible for transporting the system to a suitably prepared installation site. Stratasys-certified Customer Support Engineers will advise the customer on site preparation, upon request.

Caution: Equipment should be unpacked and installed by authorized Customer Support Engineers only.

3.2 Shipping Pallets

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

W × H × D (cm)	W × H × D (inch)	Weight (kg/lb)
104 × 87 × 79	41 × 34.25 × 31	93 kg / 205 lb

Table 2: Shipping pallet size and weight

W = Width; H = Height; D = Depth.

3.3 Equipment

It is recommended that a hand pallet truck with the following specifications is available for printer installation:

- Capable of lifting 100 kg (220 lb)
- A 100-centimeter (40-inch) extension

3.4 Unloading Space

In order to select the correct type of truck to deliver the printer, the presence or absence of a loading dock at the customer site must be identified.

Check the route from the unloading location to the installation location and make sure there are no obstructions.

3.5 Unloading Assistance

The customer must provide professional unloaders to unload the pallets and transfer them to the site. The unloaders will assist the distributor's personnel in unpacking the equipment.

3.6 Training

After the installation of the 3-D printing system, an authorized Stratasys customer support engineer will train an operator and supervise the operation of the printer (1½ work days). The printer operator needs to be available during the entire installation and training period—two work days.

4 Site Requirements

The following factors should be considered when choosing a suitable location for the printer and server workstation:

- Isolation from sources of vibration such as generators and central air-conditioning systems.
- Protection against sprinklers or pipes carrying liquids above the system.
- Adequate free space at the front of the printer to ensure convenient access for loading materials and removing printed models.

4.1 Floor Area

For convenience, Stratasys recommends that you place the printer on a stable table or stand with lockable wheels.
You can order a printer stand from Stratasys using part number: OBJ-04005.

In normal operation, the printer requires a clear space of 20 cm behind it.

Figure 4–1 is a sample floor plan, showing the space required for the system units and the minimum recommended service area for the printer.

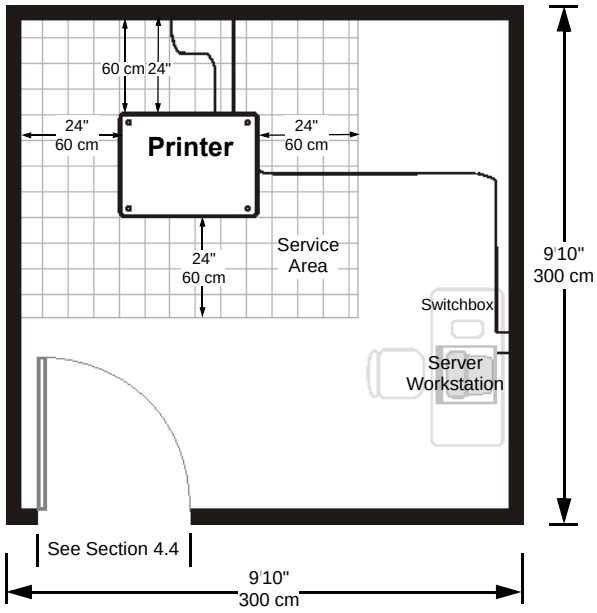

Figure 4–1 Floor plan (minimum maintenance distances shown)

If your specific work area does not meet this minimum floor plan, consult with customer support to consider other possible arrangements.

The system should not be located near heavy machinery (such as generators) that may cause electrical interference or high vibration levels.

The system should be protected from sprinklers or pipes carrying liquids above the system. Similarly, do not place a Water Jet (used for cleaning models) within 5 meters (16 feet) of the printer.

The server workstation must be located within 5 meters (16 feet) of the printer. The monitor, keyboard and mouse of the workstation are shared with the printer computer (the keyboard and the mouse must be USB-type devices).

Shelves and cabinets may be located in the vicinity of the printer to allow convenient storage of tools, parts, accessories, manuals and containers or model/support material.

The temperature requirements for material storage are stated in Section 5.11.1, Storage and Transport Conditions on page 18.

4.2 Table Height & Strength

The height of the table should be 62–72 cm (2 feet to 2 feet, 4 inches). This establishes a working height of 100–110 cm (2 feet, 3 inches to 2 feet, 7 inches).

Warning: Four (4) people are required to lift the printer onto the table.

The stand/table must be capable of carrying a load of at least 100 kg (220 lb). For the weight of the printer, refer to Table 1, “Printer size and weight,” on page 6.

The stand/table must be level.

4.3 Clear Space Above the Printer

A clearance of 60 cm (2 feet) must be maintained above the printer to provide space for opening the top cover and for servicing.

4.4 Doors and Hallways

A minimum width of 65 cm (2 feet, 2 inches) is required for the printer to pass through—90 cm (3 feet) when the shipping pallet is included).

If the printer must be turned (for example, to enter a doorway), the minimum hallway width required is 100 cm (3 feet, 4 inches).

5 Facility Requirements

5.1 Electrical Power Requirements

Your printer has the following electrical requirements.

5.1.1 Power

Voltage	Current
100–120 VAC single-phase, 50–60 Hz	7 A
200–240 VAC single-phase, 50–60 Hz	3.5 A

Table 3: Printer power rating

A Type C circuit breaker with the following specification is recommended on the printer's power line, subject to the local electrical code.

Voltage	Circuit Breaker
100–120 VAC	10 A
200–240 VAC	6 A

Table 4: Circuit breaker requirements

A **stable and uninterrupted power supply** is required. The power to the system should be supplied directly from the main electrical panel, without any tapped feeds on the line.

5.1.2 Grounding

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

5.1.3 Main Power Connectors

The printer is shipped without a power cable. The power cable is supplied by your local Stratasys dealer.

The following wall outlets are required:

- One wall outlet behind the printer (for the printer)

  This should be connected directly to the main electrical panel.

- Three wall outlets close to the printer (for the printer-server workstation, the monitor, and an extra one for servicing requirements)

5.2 Uninterruptible Power Supply (UPS)

To avoid printing problems due to power outages and other power problems, it is recommended that the customer install equipment that ensures a continuous power supply, with the following functionality and specifications.

5.2.1 Functionality

The device used must have a USB alert output for "graceful system shutdown." (Do not use a UPS device which only has a Serial Com signal output—RS-232 Protocol.)

5.2.2 Specifications

Refer to the relevant voltage below when selecting a UPS:

Voltage	Current	Power
100–120 VAC, 50–60 Hz	16 Amps	1500 VA for 20 minutes
200–240 VAC, 50–60 Hz	8 Amps	1500 VA for 20 minutes

Table 5: UPS requirements

To provide adequate protection if a power failure occurs, the UPS requirements are calculated to supply about 20% more than the printer's power rating, shown in section 5.1.1 on page 13, for the estimated time it may take to shut your system down in a controlled manner. The UPS device recommended is not intended to let you continue working.

5.3 Communication Lines

A telephone line, for general communication and service calls, is recommended near the system (in close proximity to the printer).

5.4 Server Workstation

The customer must provide a computer for the server workstation, with the following **minimum** requirements:

Processor	Single Processor Pentium® 4, 3.0 GHz; 512 KB cache memory
Operating System	• Microsoft Windows XP® Professional (32 Bit **only**) with Service Pack 2 • Microsoft Vista® • Microsoft Windows 7—*Professional, Ultimate and Enterprise* versions only *Macintosh operating systems are not supported.*
Graphics Card	Supporting Open GL; 512 MB of memory ***See recommendations below.***
Memory	4 GB RAM
Mouse and Keyboard	USB type (at least 101/102-key keyboard)
CD/DVD ROM Drive	IDE CD/DVD ROM Drive
Hard-Disk Drive	40 GB
Network Card	Two 10/100 Mbps network cards

Table 6: Server workstation requirements

The above table lists the **minimum** hardware requirements for the server workstation. The customer can use a computer with a faster and more powerful processor, increased RAM and hard disk size, etc.

Other Requirements

- The server workstation **must** have a user with Administrator privileges.
- No additional programs (including antivirus software) should be installed on the server workstation.

It is recommended that the server workstation be connected to the customer's LAN *before* printer installation.

You control both the built-in printer computer and the server workstation with same keyboard-monitor-mouse set by using a KVM switchbox. The switchbox is provided in the printer Start-up Kit.

5.5 Client Workstations

The server workstation specifications (listed in Table 6) are relevant for all CAD and remote client workstations that send models to the printer, with the exception of the following:

- Client workstations require a minimum of 2 GB RAM.
- Client workstations do *not* require a USB connection on the mouse and keyboard.

5.6 Network

A network connection is required near the server workstation.

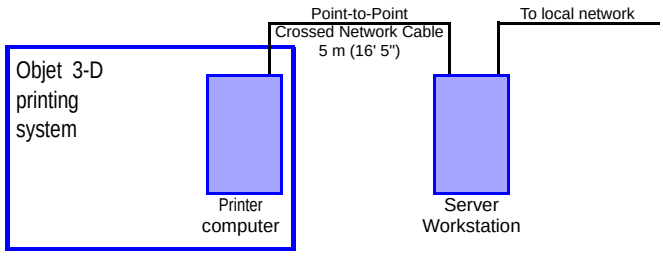

Figure 5–1 Network connection

The printing system enables printing from all workstations connected to the customer's network. Therefore, during the site preparation, identify all such workstations to ensure that each has the correct operating system and computer specifications.

5.7 Heat Dissipation

Table 7 describes the heat dissipation of the system units.

Unit	Estimated Heat Dissipation
Printer	760 W (2600 BTU)
Server workstation	450 W (1530 BTU)

Table 7: Heat dissipation per unit

5.8 Air Conditioning

Room air conditioning must be designed so that the temperature and humidity specifications described below are maintained when the system operates at full power.

5.8.1 Temperature

The temperature in the room containing the printing system should be 18° C to 25° C (64.5° F to 77° F).

5.8.2 Humidity

The relative humidity in the room containing the printer should be 30%–70% non-condensing. The room requires constant refreshing of the humid air by appropriate ventilation units (refer to Section 5.8.3, Ventilation).

5.8.3 Ventilation

Ventilation is required to maintain the necessary environment conditions in the room where the printing system is operated (see section 5.8.2). The ventilation system should have the capacity to replace all of the air in the room four times an hour.

The printer evacuates air using an internal blower with a capacity of 106 CFM (cubic feet per minute) (180 m^3 per hour).

5.9 Waste Disposal (for Model/Support Material)

The customer is responsible for disposing all of the liquid and solid waste according to local laws and regulations. This waste also includes the following:

- Wipes and gloves used for cleaning the printer
- Printing material cartridges

Plastic containers made from monomer-soluble materials such as polystyrene or polyvinyl chloride should not be used for the storage of 3-D printer waste.

5.10 Solvent/Cleaning Solution

The customer is responsible for stocking either isopropanol or ethanol (>96%). At least one liter of either solvent should be available at the site at all times.

Isopropanol is a common solvent that can generally be supplied by any chemical store. The full name of isopropanol is 2-propanol or iso-propyl alcohol (IPA).

If isopropanol is not available, ethanol (ethyl alcohol) (>96%) is an alternative cleaning solvent.

5.11 Storage of Printing Materials

5.11.1 Storage and Transport Conditions

Store containers of model and support materials, indoors, in a dry area with adequate ventilation and with the temperature kept between 16–27 degrees Celsius (60–81 degrees Fahrenheit). Similarly, transportation of these materials requires a dry environment kept between 16–27 degrees Celsius (60–81 degrees Fahrenheit).

Printing materials are combustible. Never expose printing materials to flames, heat or sparks. Printing materials should be stored in conformance with applicable fire department and insurance company regulations and other applicable laws, regulations, codes and guidelines.

5.11.2 Shelf Life

Printing materials can be used until the expiry date indicated on the container, provided that the container is undamaged. Inventory provisions should be made to insure that containers with the closest expiry date are used first.

If the printing materials are not stored under the recommended conditions, their effective life is shortened.

5.11.3 Printing Material Containers

Printing materials for are supplied in UV-proof containers.

When a container is not in use, the container must be capped to protect the material from contamination and stray UV radiation. In addition, keeping a container capped minimizes the risk of accidental spillage of the material.

Plastic containers made from monomer-soluble materials such as polystyrene or polyvinyl chloride should not be used for the storage of spilled material.

5.12 Fire Control

A gas fire extinguisher should be used in case of fire in or near the system. Other extinguishers are also acceptable, but the use of liquid fire extinguishers must be avoided. (Contact your local fire authorities for recommendations.)

6 Site Preparation Checklist

Dear customer,

Thank you for reading this site preparation guide. Please fill in the customer information and table below and fax it to your local Stratasys contact person (after which an installation date can be scheduled).

Consult with an Stratasys-certified engineer if you have any questions related to the checklist and its implementation.

Please be aware that Stratasys technical staff will not be able to arrive on site for installation and training until this form is received and approved.

Customer Information

Company Name: _____

Address: _____

_____

Phone No.: _____Fax No.: _____

E-mail: _____

Item and reference	Completed (according to spec.)		Notes
	Yes	No	
Floor area and strength (section 4.1)	☐	☐	
Room layout (section 4.1)	☐	☐	
Access to final site, doors, hallways, etc. (section 4.4)	☐	☐	
Electrical power supply and outlets (sections 5.1.1—5.1.3)	☐	☐	
Circuit breaker (section 5.1.1)	☐	☐	
Grounding protection (section 5.1.2)	☐	☐	
UPS unit (section 5.2)	☐	☐	
Air conditioning and humidity control (section 5.8)	☐	☐	
Isopropanol / ethanol (section 5.10)	☐	☐	
Server workstation and client stations (section 5.4)	☐	☐	
Network connection (section 5.6)	☐	☐	
Gas fire extinguisher (section 5.12)	☐	☐	

Full name: _____

Customer signature: _____Date: _____