ProX® 500
3D Production Printer

Facility Guide

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ProX 500 SLS 3D PRINTER FACILITY REQUIREMENTS POSTER .................. 33
HOW TO PREPARE FOR INSTALLATION

Use this guide to help you prepare your facility for installation of the:

• ProX™ 500 SLS (Selective Laser Sintering) 3D Printer
• ProX Material Quality Control (MQC) System
• Auxiliary equipment for finishing parts created with the ProX 500

This guide gives you the information and guidance you need to complete the Facility Requirements Checklist - ProX 500 SLS 3D Printer and Auxiliary Equipment on page 15. You must complete this checklist and send it to 3D Systems when you're ready to have your equipment installed.

You will find all Contact Information on page 31 for 3D Systems' service and support.

At the back of this guide, you will find the ProX 500 Facility Posters which give you a layout view of the facility requirements for the ProX 500 SLS 3D Printer, ProX Material Quality Control System, and auxiliary equipment.

SAFETY PRECAUTIONS

Please review all safety information in the Safety Guidelines and Instructions section of the ProX 500 User Guide.

WHEN YOU ARE READY FOR INSTALLATION

Once your facility is ready and you have scheduled an installation date with 3D Systems' Customer Support, read Receiving, Moving, and Storing the System on page 22.

This will show you how to properly unpack the ProX 500 3D Printer, MQC System, and auxiliary equipment and move them into place.

CAUTION: After you receive your equipment, do not allow anyone to connect electrical power, compressed air, or nitrogen to any of these devices. This must only be done by your 3D Systems-certified Customer Support Engineer (3D CSE) during installation.

Attempts to install equipment or auxiliary equipment by non-3D Systems-certified personnel could void the warranty and result in serious injury and equipment damage.
WHAT YOUR SYSTEM INCLUDES

This section lists all required and optional components for the ProX 500 SLS 3D Printer System. These include:

• ProX 500 SLS 3D Printer
• ProX Material Quality Control (MQC) System
• Auxiliary equipment for finishing parts created with the ProX 500
• Maintenance and safety equipment for cleaning the system and protecting operators and service personnel
• Items consumed during part printing (“consumables”) such as powder, nitrogen, and filters

NOTE: The ProX 500 SLS 3D Printer prints many types of parts out of several types of SLS materials. Each application has some unique requirements. Your system will most likely not include every component and material listed in this section. Just focus on the components and materials included in your order.

It is especially important that you prepare your facilities for all non-3D Systems-supplied components in your order. These are indicated in each section. The facilities for these non-3D Systems-supplied components—and in some cases the components themselves—must be in place before the ProX 500, MQC System, and any auxiliary equipment from 3D Systems can be installed.

REQUIRED SYSTEM COMPONENTS

Your ProX 500 must include the components described below. Most of these components are 3D Systems-supplied and installed; others can be one of the following:

• Customer supplied and supplier-installed, or,
• Customer supplied and 3D Systems-installed

NOTE: Purchasing information is current at the time of writing, however, it is subject to change. Contact 3D Systems Customer Support if you need help contacting a supplier.

When a required system component can be customer-supplied, the source (or sources) for the component are listed, along with purchasing information.

All required system components are listed below. Each component is detailed separately in the sections that follow.

• ProX 500 SLS 3D Printer
• ProX Material Quality Control (MQC) System
• Chiller
• Nitrogen Generator
• Vacuum Cleaner
• Dust Extractor
• ProX 500 Transformer Requirements
ProX 500 SLS 3D Printer

*Supplied by:* 3D Systems

*Installed by:* 3D Systems

The printer requires a 3-phase, 208 VAC, 50/60 Hz, 10 kVA power source and a separate *Chiller* with its own single-phase power source.

Ceiling drop lines for nitrogen supply and exhaust, electrical, and clean dry air (CDA) are recommended. The floor below the process station must be flat and vibration-free. The room must be air-conditioned, with no vents directly above the machine. Clearance around the process station is required so hinged access panels can be fully opened. See the *ProX 500 SLS 3D Printer Facility Requirements Poster on page 33* for clearance requirements.

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**A** Stacklight: Indicates the state of the system.

**B** Print Chamber Area: There are two doors in front of the Print Chamber—the outer locking door, and the inner print chamber door. The parts are printed inside the Print Chamber.

**C** E-Stop: The Emergency Stop button is a safety mechanism used to shut off the machine in an emergency situation in which it cannot be shut down in the usual manner.

**D** User Interface (UI): The user controls the system using a touchscreen located on the front panel.

**E** LED Interface Lights and Controls: There are three LED lights which give the user visual feedback regarding the system. The two buttons allow the user to control the chamber lights and enable the system. There are two standard USB ports beneath them.

**F** User and Service Access Panels: There are two types of panels on the sides and back of the machine—user access and service access. The user access panels are hinged doors. The service access panels are lift-off panels. A tool is required to open each panel.
The ProX MQC System is an integral part of the ProX 500 3D Printer. It is responsible for properly regulating and controlling the SLS material used to print parts with the ProX 500, as well as breaking out parts from the print cake. Up to two printers can be used with a single MQC System.

**Blended Material Bin:** Material which is a combination of used material and fresh material is stored for production use in this hopper. The system handles this automatically.

**Used Material Bin:** Material which has gone through the system is stored here for production use. The used material is reclaimed through the sifter. [See letter ‘F’ below.]

**Fresh Material Input:** Fresh material is loaded at this location. The user must scan the RFID tag on the container across the RFID Reader [See letter ‘I’ below] to open the doors.

**Breakout Controls:** This roller switch allows the user to turn the sifter on and off.

**Reject Chute:** Spent material (as determined by the user) is loaded into the reject chute.

**Sifter:** The user removes the parts from the print cake in the breakout area and places the material for reuse into the sifter. After sifting, the material will be transported to the used material bin.

**Breakout Area:** The print cake is brought here using the [Part Transfer Cart Assembly.]

**Thermocouples:** Two temperature gauges for the print cake used to determine whether or not the print cake has cooled sufficiently to break out the parts.

**Nitrogen Blanket:** This lid is placed on top of a filled print cake cylinder to control the cooldown of the print cake using nitrogen.
**Stowaway Area:** Underneath the breakout area, there is a shelf which can be used to store part extraction cylinders when they are not in use.

**RFID Reader:** The RFID reader is used to scan the RFID tag of the material container. This ensures that the system keeps track of material quantity and fresh-to-new powder ratios. The tag must be scanned to unlock the Fresh Material Input doors and add the material to the system.

**MQC System Operator Controls:** User interface for operation of the MQC System.
RJ45 Ethernet Connectors (3x): Network connections to service up to 2 printers and a laptop (for service personnel only).

3D Systems Nitrogen Generator Connection: If you have purchased a Nitrogen Generator from 3D Systems, it is connected here.

Oxygen Monitor Connection: If you have a room oxygen monitor, it is connected here. If not, the connection is jumpered-out.

Compressed Air (CDA) Inlet: Input for compressed air coming into the MQC System.

Nitrogen Inlet: Input for customer-provided nitrogen supply.

Material Output A: Material transfer connection for Printer A.

Material Output B: Material transfer connection for Printer B.

AC Inlet: Power connection for MQC System.

Dust Collector Port: Connection for the dust collector.

2-Stage Hepa/Sock Filter: The material filter for the MQC System.
Part Transfer Cart

**Supplied by:** 3D Systems (P/N 13401)

**Installed by:** 3D Systems

The print cake Extraction Cylinder, Part Transfer Tray and Part Transfer Cart, are used to remove the print cake from the ProX 500 print chamber and transport it to the MQC System. The system ships with the cylinder and tray. The transfer cart is optional.

Chiller

**Supplied by:** SMC (Model: HRS024)

**Installed by:** 3D Systems

The SMC chiller ships with the system. It requires a separate, single-phase power source and a coolant hose kit. See *Chiller Requirements on page 20* for chiller electrical and clearance requirements as well as the OEM literature which accompanied your unit.

![Chiller Diagram]

**NOTE:** The chiller requires coolant to run. Be sure to have sufficient coolant (distilled water and OptiShield) on hand when 3D Systems comes to install the system. See *Chiller Coolant Requirements on page 20*.

Nitrogen Generator

**Supplied by:** 3D Systems (P/N 104011-02)

**Installed by:** 3D Systems

See *Nitrogen Requirements on page 21* for nitrogen supply equipment specifications.

![Nitrogen Generator Diagram]
Vacuum Cleaner

**Supplied by:** 3D Systems or customer (P/N 134190)

**Installed by:** Supplier (3D Systems or customer)

The Nilfisk S2 Industrial Single Phase Vacuum Cleaner, 120V, 60Hz, 1Ph, is recommended for SLS facility maintenance. It is used to clean the process station and MQC System between prints.

Explosion-proof and international versions are also available. Contact 3D Customer Service for purchasing options.

Dust Extractor

**Supplied by:** 3D Systems or customer (P/N 134105)

**Installed by:** Supplier (3D Systems or customer)

The Dust Extractor, 230VAC, 60Hz, 3PH (P/N 134105) and 400VAC, 50Hz, 3PH (P/N 134105) draws airborne powder out of the MQC System during part breakout through a flexible vacuum duct and collects airborne powder in the internal dust drawer for disposal. It is recommended that the Dust Extractor be situated at the rear-right of the MQC System, but it is possible to locate it as much as 50 meters away.

ProX 500 SLS Transformer

**Supplied by:** 3D Systems or customer

**Installed by:** Supplier (prior to ProX 500 SLS 3D Printer installation)

A customer-supplied step-up or step-down transformer is required if the facility does not have 208 VAC, 3-phase, 50/60 Hz, 10 kVA power.

There are two U.S. models and one E.U. model available for purchase from 3D Systems:

- **US Transformers:**
  - 230-250 Volt to 208VAC, 10kVA, 60Hz, 3PH (P/N 134005)
  - 460-500 Volt to 208VAC, 10kVA, 60Hz, 3PH (P/N 134006)

- **EU Transformer**
  - 385-415 Volt to 208VAC, 10kVA, 50Hz, 3PH (P/N 134007)

See [ProX 500 Transformer Requirements on page 18](#) for descriptions of specifications.
RECOMMENDED OPTIONAL EQUIPMENT
Your ProX 500 SLS System can optionally include the components listed below. These are described in the sections that follow.

- Room Area Oxygen Monitor
- Bead Blaster

Room Area Oxygen Monitor

**Supplied by:** 3D Systems

- Oxygen Room Monitor, 120V (P/N 23746-101-01)
- Oxygen Room Monitor, 220V, Universal Plugs (P/N 23746-101-02)

**Installed by:** 3D Systems

**Source:** 3D Systems

For safety when working with nitrogen, 3D Systems recommends you install a room area oxygen monitor on the wall of your ProX 500 room.

Refer to the safety guidelines included in the ProX 500 User Guide for information on safely working with nitrogen and oxygen.

Bead Blaster

**Supplied by:** 3D Systems (P/N 26106-101-00)

**Installed by:** 3D Systems

If you plan to use DuraForm® SLS material, 3D Systems recommends you install a pneumatic abrasive blast cabinet (“bead blaster”) in the part finishing area separate from the ProX 500 SLS 3D Printer process station room.

The Bead Blaster Station is a glass bead blaster which is very useful for cleaning sintered DuraForm parts. It requires a 5.5 bar (80 psi) compressed air line and a 110 VAC/60 Hz power source (U.S. and Asia Pacific version) or a 240 VAC/50 Hz power source (European version).
CONSUMABLES

The following items are consumed at varying rates during the SLS process:

- Nitrogen
- SLS Materials
- Filters
- Coolant

These items are described separately in the sections that follow.

- Contact 3D Systems to purchase replacement SLS materials and filters.
- See your nitrogen and coolant supplier to replenish stocks of these items.

Nitrogen Consumption

NOTE: Your site's actual nitrogen consumption may vary from the nitrogen consumption estimate below.

One ProX 500 SLS 3D Printer system will consume approximately 140 cubic meters (4944 cubic feet) of nitrogen gas per week. This estimate assumes seven days of continuous operation (24 hours/day) with seven purge cycles (one per day).

NOTE: This volume estimate is for gaseous nitrogen—not liquid nitrogen. Be sure to ask your supplier for the proper liquid-to-gas volume conversion ratio so you can properly size your tanks.

SLS Materials

The material listed below is available for purchase from 3D Systems. The material comes with its own 3D Systems Material Guide to help you use it successfully.

- DuraForm™ ProX Plastic

Refer to your Material Guide for further information.

Replaceable Filters Kit

The process station and chiller have customer-replaceable filters. 3D Systems recommends you keep a supply of these filters on hand and replace them when necessary to ensure part quality and trouble-free operation. 3D Systems sells a kit containing a year’s supply of filters.

<table>
<thead>
<tr>
<th>FILTER KIT (P/N 132562-00)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laser Power Supply Filter</td>
</tr>
<tr>
<td>EPM Filter, Pleated</td>
</tr>
<tr>
<td>EPM filter, Charcoal, Pleated</td>
</tr>
<tr>
<td>Seal, HEPA Filter</td>
</tr>
<tr>
<td>Filter, HEPA</td>
</tr>
<tr>
<td>Filter, 2-stage, 5u (Sock)</td>
</tr>
<tr>
<td>Filter, Chiller, Air</td>
</tr>
<tr>
<td>Filter, Chiller, Coolant 10”</td>
</tr>
<tr>
<td>Electrical cabinet filters</td>
</tr>
<tr>
<td>CDA Filter on pressure regulator</td>
</tr>
</tbody>
</table>

NOTE: Filters are also replaced as necessary by your 3D Systems Field Service Representative during scheduled preventive maintenance visits.
Coolant

The 3D Systems-standard HRS024 SMC chiller has a fluid capacity of 5 liters (1.3 gallons). It requires a mixture of one pint of OptiShield to one gallon of distilled water.

NOTE: Sufficient coolant must be available on site for 3D Systems to install your ProX 500 SLS System. To keep delays and costs to a minimum, verify that you have sufficient quantities of distilled water and OptiShield on hand before installation.

Caution: Use only distilled water in coolant mix. Do not use tap water or deionized water. Mixing tap water, deionized water, or anything but distilled water with the OptiShield can contaminate the cooling system and void the laser system warranty.

See Chiller Coolant Requirements on page 20 for details.
FACILITY REQUIREMENTS CHECKLIST

In the sections that follow, you will find all the requirements your facility must meet before your ProX 500 SLS 3D Printing System can be installed. After your facility meets all these requirements, complete and sign the Facility Requirements Checklist on page 15 and submit it to 3D Systems Customer Support for review.

When Customer Support receives your completed checklist, a 3D Systems representative will contact you to verify your facility’s readiness. When the representative is confident that all facility requirements are met, he or she will schedule a trip to your site to install the ProX 500 SLS 3D Printer and any additional SLS equipment which was ordered.

NOTE: All facility requirements must be met before 3D Systems Customer Support can schedule a trip to your facility to install the SLS equipment.

ABOUT THE CHECKLIST

Each facility feature on the checklist is covered in the subsequent “requirements” sections of this guide. Each of these sections lists the specific requirements for a facility feature and any instructions you need to meet them. In some cases, you must refer to the ProX 500 SLS 3D Printer Facility Requirements Poster on page 33, for example, when you lay out the room or wire electrical power. The instructions tell you when you need to refer to this drawing.

• After your facility meets all the requirements for a section, check off that section on the Facility Requirements Checklist.
• If you have any questions regarding facility requirements, contact your 3D Systems Sales representative or 3D Systems Customer Support.

HOW TO SUBMIT YOUR COMPLETED FACILITIES CHECKLIST

Submit your completed Facility Requirements Checklist by fax, mail, or email to one of the 3D Systems Customer Support sites below. This notifies them that your facility is fully prepared for installation.

<table>
<thead>
<tr>
<th>COMMUNICATIONS FORMAT</th>
<th>NORTH &amp; SOUTH AMERICA; ASIA PACIFIC</th>
<th>EUROPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Email</td>
<td><a href="mailto:support@3dsystems.com">support@3dsystems.com</a></td>
<td><a href="mailto:support@3dsystems.com">support@3dsystems.com</a></td>
</tr>
</tbody>
</table>

Be sure to include the date you submitted your completed checklist so installation can be scheduled as quickly as possible.

If you need to speak to a 3D Systems Customer Support representative about your facility requirements, call:

• 1.888.598.1438 (U.S.)
• (+49) 6151.357-0 (Europe)
• (+852) 29.23.50.77 (Asia Pacific)
**FACILITY REQUIREMENTS CHECKLIST - ProX 500 SLS 3D PRINTER AND AUXILIARY EQUIPMENT**

**IMPORTANT**
You must complete and sign this form before scheduling installation. The information on this form will be used to determine the necessary time that 3D Systems personnel will need to complete the installation.

<table>
<thead>
<tr>
<th>Contact name</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Phone, email, fax</td>
<td>Phone</td>
</tr>
<tr>
<td>Facility address</td>
<td></td>
</tr>
<tr>
<td>Date submitted</td>
<td></td>
</tr>
</tbody>
</table>

- [ ] Room Requirements completed
- [ ] Atmosphere Requirements completed
- [ ] Electrical Requirements completed
  - Measured facility power: _______ VAC, _______ Hz
- [ ] Chiller Requirements completed
- [ ] Nitrogen Requirements completed
- [ ] Computer and Network Requirements completed

**Signature**
ROOM REQUIREMENTS

Refer to the ProX 500 SLS 3D Printer Facility Requirements Poster on page 33 and ProX MQC (Material Quality Control) System Facility Requirements Poster on page 32 for a visual layout of the room requirements.

CLEARANCE REQUIREMENTS – ProX 500 STATION

<table>
<thead>
<tr>
<th>MINIMUM CLEARANCE</th>
<th>WIDTH</th>
<th>DEPTH</th>
<th>HEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room</td>
<td>427 cm (14 ft)</td>
<td>366 cm (12 ft)</td>
<td>305 cm (10 ft)</td>
</tr>
<tr>
<td>Access door¹</td>
<td>191 cm (6.25 ft)</td>
<td>--</td>
<td>244 cm (8 ft)</td>
</tr>
</tbody>
</table>

1. The process station is 230 cm (7.5 ft) tall and 175 cm (5.75 ft) wide, but extra clearance is needed if it is on a pallet.

CLEARANCE REQUIREMENTS – ProX MQC SYSTEM

<table>
<thead>
<tr>
<th>MINIMUM CLEARANCE</th>
<th>WIDTH</th>
<th>DEPTH</th>
<th>HEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room</td>
<td>481 cm (16 ft)</td>
<td>427 cm (14 ft)</td>
<td>305 cm (10 ft)</td>
</tr>
<tr>
<td>Access door¹</td>
<td>290 cm (9.5 ft)</td>
<td>--</td>
<td>260 cm (8.5 ft)</td>
</tr>
</tbody>
</table>

1. The MQC System is 244 cm (8 ft) tall and 275 cm (9 ft) wide, but extra clearance is needed if it is on a pallet.

FLOOR REQUIREMENTS

<table>
<thead>
<tr>
<th>REQUIREMENTS</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vibration-free</td>
<td>Required</td>
</tr>
<tr>
<td>First floor installation</td>
<td>Preferred</td>
</tr>
<tr>
<td>Level and flatness</td>
<td>within 25.4 mm (1 in) below the printer</td>
</tr>
<tr>
<td>Distributed load-bearing capacity</td>
<td>• The weight of the ProX 500 process station is 1361 kg (3000 lbs). The weight of the station is distributed on four 68 mm (2.7 in) diameter pads.</td>
</tr>
<tr>
<td></td>
<td>• This is an area of 3631 mm² (5.628 in²) per pad.</td>
</tr>
<tr>
<td></td>
<td>• The total area for all four pads is 1,427 mm² (2.212 in²)</td>
</tr>
<tr>
<td></td>
<td>• Each pad receives 903 kPa (131 psi, 0.0937 kg/mm²)</td>
</tr>
</tbody>
</table>
The atmosphere in the ProX 500 SLS installation room must meet the following specifications:

### Atmospheric Variables Requirements

<table>
<thead>
<tr>
<th>Atmospheric Variables</th>
<th>Requirements</th>
</tr>
</thead>
</table>
| Room temperature controls   | Heating and air conditioning installed  
                         | A/C not blowing on top of process station |
| Temperature                 | Operating range: (16 to 27) °C; (60 to 80) °F  
                         | Setpoint range: (18 to 24) °C; (65 to 75) °F  
                         | Stability: ± 2 °C (± 5 °F) |
| Non-condensing relative humidity | No higher than 70% |
| Room air changes            | 4 per hour minimum |
| Heat dissipation            | Maximum: 3.2 kW (11.0 BTU/hr)  
                         | Average: 2.4 kW (8.2 BTU/hr) |
| Atmospheric corrosives      | None; Clean Dry Air (CDA) is required |

**NOTE:** ATEX-MQC must be installed in a room that meets the same or higher ATEX-level certification.
ELECTRICAL REQUIREMENTS

Refer to the ProX 500 SLS 3D Printer Facility Requirements Poster on page 33 and ProX MQC (Material Quality Control) System Facility Requirements Poster on page 32 for visual layouts of the electrical connections. Refer to the Chiller Requirements on page 20 for information on the chiller electrical requirements.

NOTE: The ProX 500 is designed to be connected to primary AC power directly from the facility’s power circuit to the machine’s input power line filter. This task must be performed by a qualified electrician. The facility’s power circuit must have a 50A branch protective circuit breaker or fused disconnect with lockout/tagout capabilities.

ProX 500 PROCESS STATION POWER REQUIREMENTS

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>REQUIREMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process station input voltage</td>
<td>208 VAC, 10kVA, 50/60 Hz, 3PH</td>
</tr>
<tr>
<td>Normal operating current</td>
<td>10 to 21 A</td>
</tr>
<tr>
<td>Peak operating current</td>
<td>25 A</td>
</tr>
<tr>
<td>On/Off fuse rating</td>
<td>35 A</td>
</tr>
<tr>
<td>Power cable (for 3-phase power)</td>
<td>(3 Delta Conductors + P.E. connection) Wire size according to local electrical code. Cable drop from ceiling over rear-left side of process station</td>
</tr>
</tbody>
</table>
| Power cable circuit breaker wiring | phase 1 to L1  
phase 2 to L2  
phase 3 to L3 |

- The 3-phase power cable and cable gland (cord grip) are customer-supplied and installed. The cable feeds through the access port on the top of the printer.
- Connect the power cable ground wire to the ground bus bar in the printer’s power disconnect box.
- Connect the printer to a dedicated power circuit.

ProX 500 TRANSFORMER REQUIREMENTS

If the facility does not have 208 VAC, 3-phase, 50/60 Hz, 10 kVA power, a customer-supplied step-up or step-down transformer is required.

3D Systems stocks the following transformers:

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>3D SYSTEMS PART NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transformer, 230-250 Volt to 208VAC, 10kVA, 60Hz, 3PH</td>
<td>134005</td>
</tr>
<tr>
<td>Transformer, 460-500 Volt to 208VAC, 10kVA, 60Hz, 3PH</td>
<td>134006</td>
</tr>
<tr>
<td>Transformer, 385-415 Volt to 208VAC, 10kVA, 50Hz, 3PH (EU Version)</td>
<td>134007</td>
</tr>
</tbody>
</table>

- If you purchase a transformer from a supplier other than 3D Systems, specify a “wye-to-delta” primary-to-secondary configuration.
- Connect the transformer secondary neutral to the transformer secondary ground.

Caution: Do not connect the transformer secondary neutral to the printer ground.

ProX MQC SYSTEM POWER REQUIREMENTS

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>REQUIREMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input voltage (Single Phase)</td>
<td>208-230VAC, 50/60Hz, 1PH</td>
</tr>
<tr>
<td>Normal operating current</td>
<td>1.6 A</td>
</tr>
<tr>
<td>Peak operating current</td>
<td>4A</td>
</tr>
<tr>
<td>On/Off breaker rating</td>
<td>5A</td>
</tr>
</tbody>
</table>
| Power Cable IEC320-C19 Plug        | 16AWG (ø1.29mm)  
(2 Conductors + P.E. Connection)         |
| Maximum Room Ambient Temperature   | 27 °C                                             |
GROUNDING REQUIREMENTS

All connections between powered equipment and the power panel must be grounded as shown in the diagram below.
CHILLER REQUIREMENTS

The ProX 500 SLS system incorporates a chiller to dissipate heat energy from the system. The model recommended by 3D Systems is the ThermoFlex 2500 Recirculating Chiller, Water Cooled, T1 Pump, 2500W Cooling. For complete information regarding your particular chiller model, refer to the OEM documentation which accompanied your unit.

<table>
<thead>
<tr>
<th>SPECIFICATIONS</th>
</tr>
</thead>
</table>
| **Process Fluid Temperature Range** | +5°C to +40°C  
+41°F to +104°F |
| **Ambient Temperature Range**    | +10°C to +40°C  
+50°F to +104°F |
| **Temperature Stability**        | ± 0.1°C          |
| **Cooling Capacity at 20°C**     | 60 Hz 2500W (8538 BTU)  
50 Hz 2200W (7513 BTU) |
| **Reservoir Volume**             | Gallons 1.9  
Liters 7.2 |
| **Footprint or Dimensions**      | Inches 29.1 x 17.2 x 25.7  
cm 73.8 x 43.5 x 65.2 |
| **Unit Weight (empty)**          | lb 177  
kg 80.3 |
| **Pump**                         | T-1 Turbine Pump  
60 Hz 3.5 gpm @60 psid |
| **Machine Cooling**              | Water Cooled |
| **Power Options**                | Option 1 - 200V/230V/1 Phase 20A Circuit  
Option 2 - 208-230V/60Hz/1 Phase 15A Circuit |

![Chiller Diagram](image-url)
NITROGEN AND COMPRESSED AIR REQUIREMENTS

A properly functioning nitrogen supply system that meets the requirements listed below must be in place before the ProX 500 SLS System installation.

NITROGEN SUPPLY REQUIREMENTS

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>REQUIREMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purity</td>
<td>99%</td>
</tr>
<tr>
<td>Nitrogen line fittings</td>
<td>Inlet: ¼ inch Barbed Hose Fitting</td>
</tr>
<tr>
<td>Continuous flow</td>
<td>10 slpm (21 scfh) for length of build</td>
</tr>
<tr>
<td>Purge flow</td>
<td>50 lpm (106 cfh) for 15 minutes</td>
</tr>
<tr>
<td>Exhaust</td>
<td>Must exhaust to outside at pressure 0.0025 bar (1.0 in H_2O)</td>
</tr>
<tr>
<td>Weekly consumption</td>
<td>140 m^3 (4944 ft^3) of N_2 gas based on 24 h/day operation with 7 purge cycles</td>
</tr>
</tbody>
</table>

NITROGEN SUPPLY OPTIONS

Use one of the following nitrogen supply methods to meet the requirements:

• Liquid or bottled (gaseous) nitrogen with auto-switching manifold
• Nitrogen generator
• Bulk nitrogen tank

NOTE: Nitrogen supply systems are customer supplied and installed. 3D Systems does not service nitrogen supply equipment except for 3D Systems’ Nitrogen generator.

N_2 Generator O_2 Exhaust

The nitrogen generator separates nitrogen from ambient air (CDA required), creating two air streams; N_2 supply and O_2 waste. Both exit at the bottom of the generator.

The N_2 supply stream is greater than 99% nitrogen. The O_2 waste stream is less than 40% oxygen. If the SLS process room meets the air exchange requirements, it is safe to vent the O_2 waste stream into the room. The waste stream flow rate is low.

NITROGEN SUPPLY AND EXHAUST LINES

Nitrogen supply and exhaust lines must be in place before ProX 500 SLS System installation. Follow these guidelines for nitrogen supply and exhaust lines:

• Route nitrogen supply lines through the ceiling.
• Locate the drops over the right side of the process station (viewed from the front).

NOTE: Keep the nitrogen lines—especially the exhaust line—as short as possible to ensure proper pressure.

COMPRESSED AIR REQUIREMENTS

<table>
<thead>
<tr>
<th>COMPRESSED AIR</th>
<th>ProX 500 3D PRINTER</th>
<th>MQC SYSTEM</th>
<th>3D SYSTEMS N_2 GENERATOR (OPTIONAL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection Type</td>
<td>1/4” Barbed Hose Fitting</td>
<td>1/4” Barbed Hose Fitting</td>
<td>Industrial interchange male coupling plug: 1/4 inch coupling size, air inlet at top of nitrogen generator</td>
</tr>
<tr>
<td>Flow Rate</td>
<td>35 slpm</td>
<td>130 slpm</td>
<td>270 lpm (572 cfh)</td>
</tr>
<tr>
<td>Supply Pressure</td>
<td>6 bar (90 psi)</td>
<td>6 bar (90 psi)</td>
<td>620-690 kPa (90-100 psi)</td>
</tr>
<tr>
<td>Quality</td>
<td>CDA (Clean Dry Air)</td>
<td>CDA</td>
<td>CDA</td>
</tr>
</tbody>
</table>
RECEIVING, MOVING, AND STORING THE SYSTEM

This chapter tells you what you will receive in your shipment and how to properly move and unpack the various system components.

Before you move the equipment verify the following:

- The room is large enough to allow the specified clearance around all sides of the ProX 500 and MQC System. Refer to the Room Requirements on page 16, the ProX 500 SLS 3D Printer Facility Requirements Poster on page 33, and the ProX MQC (Material Quality Control) System Facility Requirements Poster on page 32 for specifications.
- The equipment, including the pallet jack or forklift, will fit through all doorways leading to the installation room as specified in the “Clearance” sections of the Room Requirements on page 16.

WHAT YOUR SHIPMENT INCLUDES

All possible components of 3D Systems’ ProX 500 SLS 3D Printer system are listed below. They include a ProX 500 SLS 3D Printer for printing the parts, the system options for material handling, peripheral equipment for part finishing, and items consumed during part prints such as nitrogen, material, and filters.

Required and Optional System Components

<table>
<thead>
<tr>
<th>REQUIRED ProX 500 SLS PRINTER COMPONENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component</td>
</tr>
<tr>
<td>-----------------------------------------</td>
</tr>
<tr>
<td>ProX 500 SLS 3D Printer</td>
</tr>
<tr>
<td>ProX MQC System</td>
</tr>
<tr>
<td>Chiller</td>
</tr>
<tr>
<td>Nitrogen supply</td>
</tr>
<tr>
<td>Vacuum Cleaner</td>
</tr>
<tr>
<td>Accessory Kit</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OPTIONAL ProX 500 SLS PRINTER COMPONENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component</td>
</tr>
<tr>
<td>-----------------------------------------</td>
</tr>
<tr>
<td>Pneumatic blast cabinet (&quot;bead blaster&quot;)</td>
</tr>
<tr>
<td>Room oxygen monitor</td>
</tr>
<tr>
<td>Anti-static floor mats</td>
</tr>
</tbody>
</table>
SLS MATERIALS AND FILTERS

The materials and filters you receive in your shipment depend on your SLS application. All available materials and filters are listed below.

<table>
<thead>
<tr>
<th>SLS MATERIALS AND FILTERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLS materials</td>
</tr>
<tr>
<td>Filters</td>
</tr>
</tbody>
</table>

SHIPPING WEIGHTS AND DIMENSIONS

The shipments consist of several numbered pallets or crates of equipment and one crate of accessories. Check the count labels on the pallets and crates to verify that your shipment is complete.

The weights and dimensions in the domestic shipment example below include the equipment plus the pallet or crate. Shipping configurations may vary from this example.

NOTE: For “bare” equipment weights and dimensions (without pallets and crates included), see System Component Weights and Dimensions on page 25.

<table>
<thead>
<tr>
<th>ProX 500 SLS 3D PRINTER SYSTEM AND COMPONENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHIPING WEIGHTS AND DIMENSIONS, DOMESTIC EXAMPLE</td>
</tr>
<tr>
<td>Pallet or Crate Contents</td>
</tr>
<tr>
<td>--------------------------</td>
</tr>
<tr>
<td>3D Printer Station</td>
</tr>
<tr>
<td>MQC System</td>
</tr>
<tr>
<td>Chiller²</td>
</tr>
<tr>
<td>Dust Extractor</td>
</tr>
<tr>
<td>Bead blaster³</td>
</tr>
<tr>
<td>Accessories</td>
</tr>
<tr>
<td>Nitrogen Generator</td>
</tr>
</tbody>
</table>

1. Shipping weights are estimates.
## ProX 500 Ship Kit

This accessories crate contains the following items:

<table>
<thead>
<tr>
<th>Qty</th>
<th>Item No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4100-01430</td>
<td>Dust Cloths (MCM 7124T12)</td>
</tr>
<tr>
<td>2</td>
<td>4100-01431</td>
<td>SWABS, Anti-static foam (tip .375&quot; dia x .181&quot; L) length 6&quot; - pack of 40</td>
</tr>
<tr>
<td>2</td>
<td>4100-01439</td>
<td>Sight Saving Tissues (Grainger 4T934)</td>
</tr>
<tr>
<td>1</td>
<td>4100-01881</td>
<td>Allen Wrenches/Tools (MCM 5709A18)</td>
</tr>
<tr>
<td>1</td>
<td>4100-02518</td>
<td>Bottle Ethanol 16 Oz McM 40185T26</td>
</tr>
<tr>
<td>1</td>
<td>4100-03544</td>
<td>Paint Brush (Grainger 3UW35)</td>
</tr>
<tr>
<td>1</td>
<td>132506-00</td>
<td>ProX 500 Extraction Assembly</td>
</tr>
<tr>
<td>1</td>
<td>9204-20137</td>
<td>Plug, 2540-03574 Red Cap &amp; 4100-03575 Rope</td>
</tr>
<tr>
<td>1</td>
<td>2540-03574</td>
<td>Plug RED Capplugs 1100</td>
</tr>
<tr>
<td>1</td>
<td>4100-03575</td>
<td>Rope, Poly, McM 3856T31</td>
</tr>
<tr>
<td>3</td>
<td>7000-03145</td>
<td>Mylar, Black 12 x 12 .005 - Graphic Arts</td>
</tr>
<tr>
<td>5</td>
<td>120307-00</td>
<td>Printed Calibration Mylar</td>
</tr>
<tr>
<td>2</td>
<td>9208-30021</td>
<td>Water Distilled 1 Gal McM 3190K901</td>
</tr>
<tr>
<td>1</td>
<td>110362-00</td>
<td>Additive for chiller coolant (pint)</td>
</tr>
<tr>
<td>1</td>
<td>132561-00</td>
<td>Chiller Plumbing Kit</td>
</tr>
<tr>
<td>3</td>
<td>2580-03533</td>
<td>Fitting Push lock (Parker G0182-8-8B)</td>
</tr>
<tr>
<td>2</td>
<td>2580-03534</td>
<td>Fitting Street Elbow (Parker L2202P-8-8)</td>
</tr>
<tr>
<td>24</td>
<td>2580-03535</td>
<td>1/2&quot; Hose (Parker 7212-501BK)</td>
</tr>
<tr>
<td>4</td>
<td>132601-00</td>
<td>Hose Clamp for 1/2&quot; (McMaster-Carr 5415K32 or equivalent)</td>
</tr>
<tr>
<td>2</td>
<td>106035-00</td>
<td>Sock Filter</td>
</tr>
<tr>
<td>2</td>
<td>103230-00</td>
<td>HEPA Filter</td>
</tr>
<tr>
<td>2</td>
<td>106029-00</td>
<td>Pleated Filter</td>
</tr>
<tr>
<td>2</td>
<td>532855</td>
<td>Charcoal Filter</td>
</tr>
<tr>
<td>4</td>
<td>132031-00</td>
<td>Enclosure Filter</td>
</tr>
<tr>
<td>2</td>
<td>131920-00</td>
<td>Laser Power Supply Filter</td>
</tr>
<tr>
<td>1</td>
<td>110008-00</td>
<td>NYLON CABLE TIES; 11&quot; LG; .18&quot; WIDE; BLACK; 100 PIECES/ PACK</td>
</tr>
<tr>
<td>1</td>
<td>132350-00</td>
<td>Cable, O2 ESR Alarm Jumper</td>
</tr>
<tr>
<td>1</td>
<td>23099-107-00</td>
<td>SCREWDRIVER TORX PLUS T-20</td>
</tr>
<tr>
<td>150</td>
<td>110004-00</td>
<td>CAT5E SHIELDED CABLE 26 GAUGE - GRAY</td>
</tr>
<tr>
<td>10</td>
<td>110005-00</td>
<td>RJ45 8 POSITIONS SHIELDED CONNECTOR</td>
</tr>
<tr>
<td>1</td>
<td>110006-00</td>
<td>RJ45 STRAIN RELIEF BOOT-GRAY; PACKAGE OF 10</td>
</tr>
<tr>
<td>150</td>
<td>104594-00</td>
<td>TUBE 3/4&quot; STATIC DISIPATIVE</td>
</tr>
<tr>
<td>1</td>
<td>132349-00</td>
<td>Cable, O2 ESR Alarm 50 Foot</td>
</tr>
<tr>
<td>2</td>
<td>104138-00</td>
<td>QUICK_DISCONNECT HOSE COUPLING</td>
</tr>
<tr>
<td>2</td>
<td>132602-00</td>
<td>Hose Clamp for 1/4&quot; (McMaster-Carr 5415K11 or equivalent)</td>
</tr>
<tr>
<td>2</td>
<td>104194-00</td>
<td>BARBED HOSE FITTING 1/4 HOSE ID 1/4 NPT</td>
</tr>
</tbody>
</table>
System Component Weights and Dimensions

This table lists the “bare” (unpacked) dimensions and weights of all required and optional ProX 500 SLS Printer System and part finishing equipment.

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
<th>Width</th>
<th>Depth</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printer Station¹</td>
<td>1360 kg</td>
<td>174 cm</td>
<td>123 cm</td>
<td>230 cm</td>
</tr>
<tr>
<td></td>
<td>3000 lb</td>
<td>69 in</td>
<td>48 in</td>
<td>90 in</td>
</tr>
<tr>
<td>MQC System</td>
<td>800 kg</td>
<td>276 cm</td>
<td>128 cm</td>
<td>241 cm</td>
</tr>
<tr>
<td></td>
<td>1764 lb</td>
<td>109 in</td>
<td>51 in</td>
<td>95 in</td>
</tr>
<tr>
<td>SMC Chiller</td>
<td>40 kg</td>
<td>38 cm</td>
<td>50 cm</td>
<td>62 cm</td>
</tr>
<tr>
<td></td>
<td>88 lb</td>
<td>15 in</td>
<td>20 in</td>
<td>24 in</td>
</tr>
<tr>
<td>Transformer, Step Down, 240/208 VAC</td>
<td>127 kg</td>
<td>56 cm</td>
<td>23 cm</td>
<td>41 cm</td>
</tr>
<tr>
<td>3-phase, 60 Hz, 10 kVA</td>
<td>280 lb</td>
<td>22 in</td>
<td>9 in</td>
<td>16 in</td>
</tr>
<tr>
<td>Transformer, Step Down, 385-415/208V</td>
<td>127 kg</td>
<td>80 cm</td>
<td>75 cm</td>
<td>60 cm</td>
</tr>
<tr>
<td>3-phase, 50 Hz, 10 kVA CE approved</td>
<td>280 lb</td>
<td>32 in</td>
<td>30 in</td>
<td>24 in</td>
</tr>
<tr>
<td>Dust Extractor</td>
<td>453.6 kg</td>
<td>76.2 cm</td>
<td>165.1 cm</td>
<td>188 cm</td>
</tr>
<tr>
<td>Standards Volume Sifter</td>
<td>34 kg</td>
<td>53 cm</td>
<td>58 cm</td>
<td>86 cm</td>
</tr>
<tr>
<td></td>
<td>75 lb</td>
<td>24 in</td>
<td>40 in</td>
<td>34 in</td>
</tr>
<tr>
<td>Nitrogen Generator</td>
<td>113 kg</td>
<td>25 cm</td>
<td>56 cm</td>
<td>97 cm</td>
</tr>
<tr>
<td></td>
<td>250 lb</td>
<td>10 in</td>
<td>22 in</td>
<td>38 in</td>
</tr>
<tr>
<td>Bead Blaster</td>
<td>68 kg</td>
<td>66 cm</td>
<td>102 cm</td>
<td>160 cm</td>
</tr>
<tr>
<td></td>
<td>150 lb</td>
<td>26 in</td>
<td>40 in</td>
<td>63 in</td>
</tr>
<tr>
<td>Vacuum Cleaner</td>
<td>65 kg</td>
<td>60 cm</td>
<td>53 cm</td>
<td>80 cm</td>
</tr>
<tr>
<td></td>
<td>139 lb</td>
<td>23.6 in</td>
<td>31.5 in</td>
<td>51.2 in</td>
</tr>
</tbody>
</table>

1. Printer station dimensions and weight include panels
2. Estimated
GENERAL LIFTING AND MOVING SAFETY

When moving the SLS process equipment, observe the general lifting and moving safety guidelines below. Then, follow the separate moving instructions for each machine later in this section.

⚠️ Before you move and place your equipment, be sure your layout provides sufficient clearance in front of the facility electrical supply panels to meet local electrical code.

Lifting Safety Guidelines

Always follow standard lifting practices, one person per 23 kg (50 lb), when moving any equipment or material container. If you are not accustomed to lifting this much weight, or if you have back problems, do any or all of the following to protect yourself:

- Use additional people to lift the items
- Remove mass to reduce weight
- Use mechanical assistance such as a jack, crane, or lift cart

⚠️ Never try to lift more than weight than you are accustomed to. Get assistance!

Equipment-Specific Manual Lifting Safety Guidelines

- The SLS system is designed to be lifted and moved with a pallet jack or forklift. Do not try to lift or move it manually.
- Have an assistant help you if you choose to remove the Nitrogen Generator, or SLS system frame risers from their shipping crates for inspection before installation.

⚠️ Do not attempt to mount the Nitrogen Generator, SLS system frame risers, or stacklights yourself. These must only be mounted by your 3D CSE.

UNCRATING THE SYSTEM

Crating and uncrating the system is usually performed by 3D Systems service personnel. If it is necessary for the customer to perform these procedures, refer to the following steps. The procedure for uncrating both the ProX 500 SLS System and the MQC System are the same.

1. The crates are sealed with wood screws which must be removed using a Torx 20 screwdriver.
   - Remove the screws from the lid first, and remove the lid.
   - Remove the top crossbar on the crate.
   - Remove the screws from the sides and remove the sides.

2. Remove the transportation lag bolts from the shipping tie downs using a 9/16” or 15mm hex driver.

3. Cut off the plastic wrapping.

To recrate the system, follow the reverse of the uncrating procedures above.
Moving Safety Guidelines

If you do not unpack your equipment immediately after you receive it, be sure it is stored in a dry, indoor area away from any sources of extreme heat or cold.

- Use a pallet jack or forklift with a load capacity of at least 2268 kg (5000 lb).
- Forks should be at least 48” (4ft / 1.2m) long.
- When moving crated equipment, only lift crates with forks parallel to crate skids and fully inserted in channels between skids.
- When moving uncrated equipment, insert forklift or pallet jack forks at lifting points labeled on the equipment frame.

Only insert forks and lift equipment at labeled lifting points on equipment frame. Inserting forks and lifting at other locations can damage equipment and cause fatal injuries if the equipment tips or falls.

![Insert forks between these labels](image_url)  
![Insert forks below this label](image_url)
MOVING THE ProX 500 SLS PRINTER STATION AND MQC SYSTEM

When moving the printer station observe the following:

- Use a pallet jack or forklift with a load capacity of at least 2268 kg (5000 lb).
- Forks used to move the printer should be at least 48" (4ft / 1.2m) long.
- When the printer station is on the pallet, use a forklift to move it. Wood blocks around the bottom of the station pallet prevent the unit from tipping when it is on the forks. (However, the thick forks on most pallet jacks will not fit into the pallet’s forklift holes.)
- When the printer station is on the pallet, you can lift it from any side using the extended forks.
- When the printer station is off the pallet, you must lift it from the front or back following the fork guides at the bottom of the frame.

When moving the MQC System, observe the following:

- Forks used to move the MQC System must be at least 66" (5.5ft / 1.7 m) long.
- The bottom of the frame of the MQC System is slightly lower than the bottom of the outer panels. It is therefore possible to move it using a forklift at any point.
- Take care to not interfere with the powder transporters and tubing that protrude from the bottom of the frame.
- Ensure that the red shipping bracket (p/n 121962-00) is installed across the opening of the MQC System, below the breakout area.
- The center of gravity of the system is biased towards the left side, where the material bins are, so the optimum position to insert the forks is closer to the left end or from the left end (as illustrated below).

CAUTION: When the printer station is off its pallet, lift it from the front or rear only with the forks fully inserted. Lifting it from the side, or lifting it with the forks partially inserted, might cause it to tip.
ProX 500 Printer and MQC System Placement
3D Systems Customer Support can advise you on placement of the equipment before installation. Also refer to the ProX MQC (Material Quality Control) System Facility Requirements Poster on page 32 and the ProX 500 SLS 3D Printer Facility Requirements Poster on page 33. Be sure your facility meets the “Clearance Requirements” in the section Room Requirements on page 16 so there will be sufficient room for air circulation and service/operator access.

INSTALLATION VERIFICATIONS (PERFORMED BY 3D SYSTEMS)
Once all the ProX 500 3D SLS Printer System equipment is in place, your 3D Systems Field Service Representative will make the required nitrogen, power, and coolant hook-ups and connections. The representative will also level the process station, then perform the following verification procedures:
• Complete machine module functional tests
• Verify functionality of safety interlocks
• Perform complete calibrations and tuning of components
• Print an acceptance part to ensure system function

STORING THE SYSTEM
If it becomes necessary to store the system for an extended period of time, ensure that the storage area meets the Temperature, Non-condensing relative humidity, and Atmospheric corrosives requirements listed in Atmosphere Requirements on page 10.
The SLS equipment uses ethernet ports on the ProX 500 Printer and MQC System to send and receive powder transfer and system status messages. There is one ethernet connector on the ProX 500 system that is connected to the MQC and another that is connected to the facility's LAN. To share the resources of the MQC System, up to two printers can be connected to each MQC System.

The ethernet connectors are RJ-45, using Category 5 unshielded twisted pair; 10BaseT, 100BaseT cables.
3D Systems
333 Three D Systems Circle
Rock Hill, SC 29730 USA
tel: 803.326.3900
e-mail: moreinfo@3dsystems.com
www.3dsystems.com
NYSE: DDD

Customer Support Hotline
USA: 1.888.598.1438
Asia-Pacific (+852) 29 23 50 77
Europe (+49) 6151 357-0

Sales and Service Phone Numbers
France: (+49) 6151 357-0
Italy: (+39) 039 68904 00
Germany: (+49) 6151 357-0
Hong Kong: (+852) 29 23 50 77
Switzerland: (+41) 26 439 95 90
UK: (+44) 1442 282 600
**Nitrogen Options**

1. **Bulk nitrogen tank**
   - 99% pure nitrogen
   - option for high nitrogen demand sites

2. **Nitrogen dewars**
   - 99% pure nitrogen
   - connect dewars with auto-switching manifold(s) to ensure constant N₂ supply during build

3. **Nitrogen generator**
   - 99% pure nitrogen

**Coolant Panel**

- Included with 3D Systems-supplied chiller
- 1/2” barbed hose fitting
- Included with 3D Systems-supplied chiller
- 1/2” barbed hose fitting

**Room temperature setpoint and stability**
- Set temperature between 18°C and 24°C (65°F and 75°F)
- Temperature should be constant to ±2°C (±5°F)

**Air Conditioning**
- Required
- Do not install vent directly above process station
- Setpoint and stability
  - Set temperature between 18°C and 24°C (65°F and 75°F)
  - Temperature should be constant to ±2°C (±5°F)

**Chiller Power Panel**
- Single phase
- Separate from process station power

**Process Station Power Panel**
- Input: 208VAC, 50/60Hz, 3PH, 10kVA
- Separate from chiller power

**Process Station Power Cable**
- Drop down from ceiling
- Route through cable gland at top of process station
- Connect to power distribution panel

**Room Area Oxygen Monitor**
- Recommended
- Customer supplied/installation
- Safety interlock contact rating: 10 A

**Transformer (step-up or step-down)**
- Required if facility does not have: 208 VAC, 3-phase 50/60 Hz, 10 kVA power

**Coolant Panel**
- Included with 3D Systems-supplied chiller
- 1/2” barbed hose fitting