

SLS 300

User Guide

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Original Instructions



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1 INTRODUCTION

Thank you for purchasing the 3D Systems® SLS 300 3D Printer, auxiliary SLS equipment, and 3D Systems® materials! Before you start printing parts with your process facility, please read this guide carefully to enjoy optimum process performance and longer equipment service life. The SLS 300 is a commercial, precision tool intended for use in the additive manufacture of end-user supplied designs from polymeric powders. The final performance characteristics of fused powder may vary according to your compliance with the instructions for use, design guidelines, application, operating conditions, material combined with, end-use, or other factors. Use the SLS 300 and PA11® materials to produce parts with superior mechanical properties, resolution, surface finish, and edge definition compared to other processes. Ensure repeatable, consistent, tool-free manufacturing and produce durable functional parts faster with this mid-size production 3D printer.

Improvements

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2 IMPORTANT SAFETY INSTRUCTIONS



WARNING: READ AND UNDERSTAND THIS MANUAL AND ITS SAFETY INSTRUCTIONS BEFORE USING THE SLS 300. FAILURE TO DO SO CAN RESULT IN SERIOUS INJURY OR DEATH.



WARNING: ADDITIVE MANUFACTURING MACHINE USES COMBUSTIBLE DUST.

Customer Safety Program

Before using the SLS 300, customers must have a safety program in place. The safety program should do the following:

- Label and point out hazardous equipment, materials, and procedures.
- Explain what to do in an emergency situation.
- Provide information about the hazards of equipment and materials in the form of Safety Data Sheets (SDSs). The SDSs are provided with all materials supplied by 3D Systems®.

The information in this chapter supplements the customer's existing safety program. It points out safety considerations that specifically concern the SLS 300 system.

Safety Symbols and Definitions

The following are safety symbols that are common to 3D Systems® guides. Some or all of these symbols may appear in this guide and/or in other SLS 300 documentation.



CAUTION: Indicates the possibility of loss of data or damage to equipment.



WARNING: INDICATES THE POSSIBILITY OF INJURY OR DEATH TO PERSONNEL.



Electrical Shock: High voltage electricity is accessible in the vicinity of this sign or behind the access panel. High voltage can cause severe burns or death, as well as fires. Access panels are for service only and should be opened only by certified service personnel or trained maintenance personnel.



Arc Flash: High energy electrical discharge between two electrically conductive materials. Take care to avoid opening electrical enclosures unless electrical components are de-energized or specialized personal protective equipment is worn.



Wear Eye Protection: Indicates the need for eye protection.



Wear Protective Mask: Indicates the need to wear an appropriate face mask.



Wear Protective Gloves: Wear the appropriate gloves when required. For example, when touching surfaces that may contain or have been exposed to materials, wear nitrile gloves. Heat gloves are necessary when touching surfaces that may be hot to ensure burns don't occur.



Laser Radiation: Invisible laser radiation is accessible in the vicinity of this sign or behind the access panel. Direct and scattered radiation can cause severe burns and blindness. Access panels are for service only and should be opened only by certified service personnel.



Hot Surface: A hot surface is accessible in the vicinity of this sign or behind the access panel. Avoid contact. Hot surfaces can cause burn injury or fire. Allow surface to cool before touching. Access panels are for service only and should be opened only by certified service personnel or trained maintenance personnel.



Explosive Material: Explosive material when in the form of dust clouds. Take care when in the vicinity of or handling explosive materials.



Note: A note signifies important information but not information of a critical content.

Laser

- Do not try to access, service, or adjust the laser system in any way.
- Do not enter any area displaying posted warning signs during open beam operations. Open-beam operations refer to the laser, and they only occur during service procedures.

Alarms and Warnings

- Displayed error, alarm, or warning messages can result from unsafe practices, such as opening an enclosure door or panel when equipment is powered up and running.

2.1 Intended Use

The SLS 300 is a commercial, precision tool intended for use in the additive manufacture of end-user supplied designs from polymeric powders. The final performance characteristics of fused powder may vary according to your compliance with the instructions for use, design guidelines, application, operating conditions, material combined with, end-use, or other factors.



Note: In some cases, the additive manufacturing process may inherently result in variable performance characteristics between manufacturing runs or within a specific part. Such variances may not be apparent and may result in unexpected defects in additively fabricated parts.

The SLS 300 should only be operated by trained personnel and as described in this document.

Do not carry out any disassembly or tampering with the machine that is not described in the manual.

This equipment design typically applies to commercial or industrial equipment expected to be installed in locations where only adults are normally present.

SLS 300 is a Laser Class 1 product. All laser radiation is completely enclosed inside the machine.



WARNING: THE SLS 300 BECOMES VERY HOT INSIDE THE BUILD CHAMBER AND ADJACENT PARTS. NEVER TOUCH THE INTERIOR SURFACES OF THE SLS 300 OR THE HEATING ELEMENTS. ALWAYS ALLOW THE SLS 300 TO COOL DOWN.

In case of any SLS 300 breakdown contact 3D Systems for service and maintenance.

2.2 Personal Protective Equipment

Face Mask



Wear Protective Mask: A face mask should always be used when handling loose powder in order to minimize the amount of inhaled particles. The powder is not toxic but consists of small particles that could cause irritation in the respiratory passage when inhaled.

Protective Gloves



Wear Protective Gloves: Protective gloves should be used when evacuating the machine after a finished print job since some parts of the machine could still have elevated temperatures. Gloves are also recommended during all handling of loose powder.

Hot Surfaces



Hot Surface: During a print job, the temperature in the machine is elevated, above 100 degrees C, and the user needs to take caution when touching the machine from starting the print job until the machine notifies the user that it is ready for removal of prints.



WARNING: THE HINGES FOR THE DOOR SHOULD BE AVOIDED DURING A PRINT JOB.

2.3 Material Handling

- Do not use any material without first reviewing its Safety Data Sheet (SDS).
- To prevent injury and equipment damage, be sure to follow all handling guidelines detailed in the appropriate Material Guide.

The powder packages (tubes) are currently shipped in boxes of nine units and then loaded onto pallets.

POWDER PACKAGES (TUBES)	
Weight	2.5 kg / 5.5 lbs
Size	10 x 54 cm / 3.9 x 21.2 inch
Storage Temperature	25 °C ± 10 °C/ 77 °F ± 50 °F
Packaging Material	Cardboard, paper and wood.
Reusable	Yes
Locking Mechanism	Sealed lid with patented refill interface.

2.4 Material Safety

All materials certified by 3D Systems are safe during normal operation. However, you should be aware of the following issues:

- Any material, material-like substance, or airborne cloud of material has a remote chance of rapid combustion.
- Breathing some materials may cause certain people to experience respiratory irritation.
- Material safety hazards are minimized by good industrial housekeeping and ventilation practices.
- Spilled material can cause the floor to become very slippery.
- Material should be sifted in a well-ventilated room.

Refer to the SDS's and to 3D Systems material guides for information on specific materials.



CAUTION: Using materials that have not been certified for use in the SLS 300 may cause health or safety hazards and may damage the equipment and void the warranty.

Material Ignition Information

Powdered materials can be flammable and can be ignited by static electricity in a non-inert environment. Refer to each material's SDS for specific information.



CAUTION: The operator must use an approved vacuum cleaner to clean up excess material. 3D Systems recommends an ESD or explosion-proof model. Contact 3D Systems Customer Service for purchasing options.

Finding Material Safety Information

Use the Material Safety Information table to locate references and contacts for information on important material safety topics. Also check the SDS of the material used for the specific precautions to be observed.

Material Safety Information

TOPIC	REFERENCE/CONTACT	
Standard industrial ventilation practices	US: American Conference of Governmental Hygienists, Committee on Industrial Ventilation Europe: Maximale Arbeitsplatz Konzentration, January 1990	
Housecleaning and prevention of accumulation of explosive dust concentrations	US: NFPA 654: Standard for the Prevention of Dust Explosions in the Plastics Industry; National Fire Protection Association, Volume 5 of the National Fire Codes Europe: Maximale Arbeitsplatz Konzentration, January 1990	
Material Exposure	US: Code of Federal Regulations, 29 CFR, section 1900.1000, available from Superintendent of Documents, Government Printing Office, Washington, D.C. 20402 Europe: DIN EN 26184 Teil 1 /06.91	
Specific Materials	Material Safety Data Sheets (MSDS) from 3D Systems, Inc.	
	US/Canada:	Europe:
	Mfgr. Contact:	3D Systems Corporation 333 Three D Systems Circle Rock Hill, SC 29730 USA

TOPIC	REFERENCE/CONTACT		
	Information	Phone: 803.326.3900 or Toll-free: 800.739.3669	Phone: (+49) 6151 357-0
	Emergency	1.800.262.8200 - Chemtrec	1.703.741.56100 - Chemtrec (U.S.)

Material Handling Precautions

During normal operation of the SLS 300 using 3D Systems' materials, you are not required to wear a dust mask or special personal protection equipment unless specifically designated. Check the SDS of the material used for the specific precautions you should observe. Use the following table of precautions as a general guide:

Safe Material Handling Guidelines

CATEGORY	PRECAUTION
Fire/Heat	- Never smoke or ignite anything around powdered materials. - Maintain proper clearance from materials when using portable heating devices. - Store flammable liquids away from materials. - After removing a part from the print chamber, allow it to cool to room temperature in a well-ventilated area. - Use anti-static mats in front of SLS equipment.
Inhalation	- Avoid breathing powdered materials, when exposure to dust or fumes is likely, wear a NIOSH- approved respirator appropriate to the airborne concentration. - Always provide adequate ventilation.
Shop Safety	- Train operators in SLS system procedures. - Wear safety glasses. - Use extreme care with all heated materials. - Make sure that the room is well ventilated.
Avoiding Spills	- Keep containers closed when not in use. - Have a fully-grounded internal non-ignition vacuum cleaner ready to use. - Have any equipment specified in the SDS ready to use.
SDS	- Give operators access to the SDS's that apply to materials they will be handling and ensure that they read them. - File SDS's in an easily accessible location for immediate reference. - Strictly follow all the conditions in each SDS.

2.5 Environmental Safety

The following are environmental issues concerning the SLS 300:

The SLS 300 system emits no toxic substances when using materials approved by 3D Systems.

Temperature

The optimum operating temperature range of the printer is 15-30°C (59-86°F).

Your HVAC System should have at least six air changes per hour to control the machine's waste heat.

Humidity and Altitude

Humidity should always be non-condensing and should not vary outside the range of 0% to 70% RH. Intended for indoor use only. The altitude limitation for proper operation of the SLS 300 system is up to 2000 meters / 6561.6 ft

Sound Pressure

The A-weighted sound pressure levels measured at 1 meter from the surface of the machinery and at a height of 1 meter from the floor is as follows:

Ambient - 62.9dB Front - 68.3dB Left - 72.0dB Right - 72.6dB Rear - 70.0dB

Disposal of SLS 300 Material and Waste

Follow any applicable local regulations.

Emissions

Material heating - Analytical testing on 3D Systems materials indicates no detectable emissions outside acceptable limits from the SLS 300 system.

2.6 Electrical Safety



Electrical Shock: Hazardous voltage exists inside the enclosures of all SLS equipment. Injury or death from electrical shock can result if you remove external panels or try to defeat safety interlocks. Panels should only be removed, and interlocks should only be defeated, by trained and certified 3D Systems Customer Support personnel.



Electrical Shock: Verify your facility's electrical service ratings before connecting power to any SLS equipment. Power must only be connected by a certified electrician.



Electrical Shock: Do not open the panel behind disconnect switch! Live voltage present. This should only be opened by qualified personnel after power is disconnected from the facility's power circuit/breaker panel.

The SLS 300 equipment was designed to minimize operator exposure to electrical hazards during normal operations. All exposed electrical circuits are inside limited-access cabinets. This is to separate the operator from service and maintenance areas.

When operating any SLS equipment, keep the following electrical safety points in mind:

- Only 3D Systems certified service personnel should operate SLS equipment with access panels or service doors open.
- Heed high voltage warning signs and labels.
- Take common-sense safety precautions when operating any electrical equipment.
- After any change to the electrical wiring, make sure the equipment is properly grounded.

2.7 Laser Safety

The SLS 300 printer is a CLASS 1 LASER PRODUCT.

The laser source is a CLASS 4 LASER.

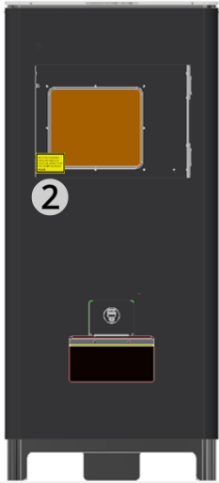


CAUTION: CLASS 4 invisible laser radiation when open and interlocks defeated. Avoid eye or skin exposure to direct or scattered radiation. Max. Power output 50W, continuous wave: 10600nm. Evaluated to EN 60825-1:2014/ A11:2021.

Laser Label Locations

ITEM	LABEL
1	CAUTION CLASS 1 LASER PRODUCT
2	CAUTION CLASS 4 INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED RADIATION
3	

Behind Chamber Door



Right Side



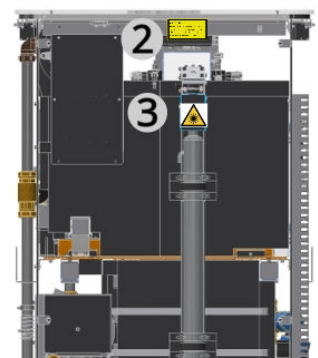
Left Side



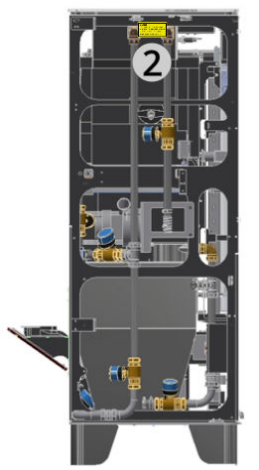
Top



Rear (Internal)



Both Sides (Internal)



2.8 SLS 300 Emergency Stop



CAUTION: In the event of an emergency, immediately hit the E-stop button, located on the top left of the printer. Activating the E-stop will de-energize the machine.



Note: E-Stop is a push-to-lock and turn-to-reset type actuator.



2.9 Interlock

Process chamber door is equipped with a safety interlock switch to safeguard against Mechanical, Radiological and Process hazards. Do not attempt to defeat or modify.

2.10 First Aid and Protective Equipment



WARNING: IN THE CASE OF AN ACCIDENT WHILE USING THE SLS 300, SEEK MEDICAL ATTENTION IMMEDIATELY. USE THE FOLLOWING GUIDELINES FOR SPECIFIC SAFETY INSTANCES.

Burns

This equipment contains high temperatures and burning laser radiation which could cause 2nd degree burns. Do not attempt to remove any protective panels. There are no user serviceable parts inside. If a burn occurs, seek first aid and immediate medical attention.

Reporting Laser Radiation Exposure

If the injury was determined to be the result of laser radiation overexposure, please send a report to:

Attention: Laser Safety Officer 3D Systems, Inc. 333 Three D Systems Circle Rock Hill, South Carolina, 29730 USA

Include the following information in your report:

- Nature of the accident and circumstances surrounding it
- Where the accident occurred
- Model and serial number of the machine
- Number of people involved

- Any other pertinent information

Please send this information to 3D Systems within a day of the accident.

Electrocution

The SLS 300 system contains equipment energized at 240V or 125V. Do not attempt to remove protective panels. There are no user serviceable parts inside. If electrocution occurs, seek first aid and medical attention immediately.

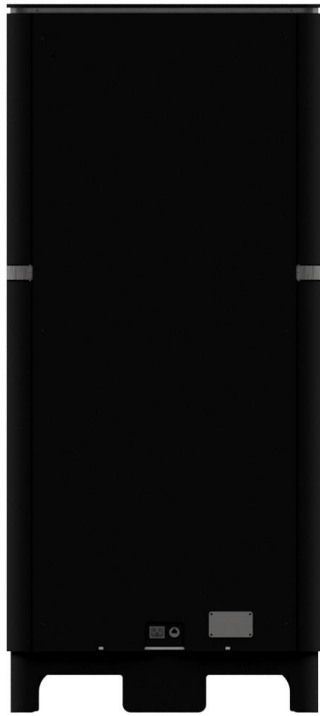
Material Inhalation

The part cleaning process may create a choking or air restriction hazard. If someone has difficulty breathing or a "loss of breath" sensation, transport the person to a well-ventilated room or outside of the facility. If the condition persists, seek immediate medical attention.

2.11 Machine Disposal

Disassembly and disposal of the equipment must be done in accordance with all local, state, and federal regulations. Dispose of material according to the guidelines provided in the Safety Data Sheets for that particular material and in accordance with all government regulations.

3D PRINTING TECHNOLOGY	SELECTIVE LASER SINTERING (SLS)
Weight	310 kg / 683.43 lbs
Size	170 x 75 x 60 cm / 66.9 x 29.5 x 23.6 inches
Minimum Dimensions for Convenient Access	The SLS 300 must be placed on a flat horizontal surface.
Operating Temperature	15-30 °C / 59-86 °F
Power Requirements	• 230 V Earth Connected with RDC • ~ 10 A • 50 Hz • Peak 2200 W • Nominal 400 W • SCCR: 5KA
Supply Earthing Configuration	TN - System
Laser Specifications	• 1 Light Processing Unit • EN 60825-1:2014/A11:2021 certified Class 1 Laser • Product • Contains a class 4 laser source.
Radiation Information	The SLS 300 is a Class 1 Laser product.
Ethernet Connectivity	RJ-45 Ethernet (10BASE-T/100BASE-TX/1000BASE-T) LAN Port Connect with an Ethernet cable (not included); minimum Cat5, or Cat5e or Cat6 for 1000BASE-T
Sound Emission	Does not exceed 80 dB(A).
Printer Control	WeMote Interactive touchscreen
Ventilation	Well ventilated with free-flowing air.
Maximum Allowed Pressure	The SLS 300 gas inlet shall only be connected to the SLS 300 Atmosphere Generator (Max Pressure: 10 bar).



3.1 Understanding the Display and Status Light

The SLS 300 includes a WeMote display with touchscreen and status lights. It serves as the user interface for the machine operation of the SLS 300.

The status lights indicate the printer's state. Refer to chapter 7 [Light Indicators and Display](#) to understand the meaning of the status lights.

4 PREPARATION AND SETUP

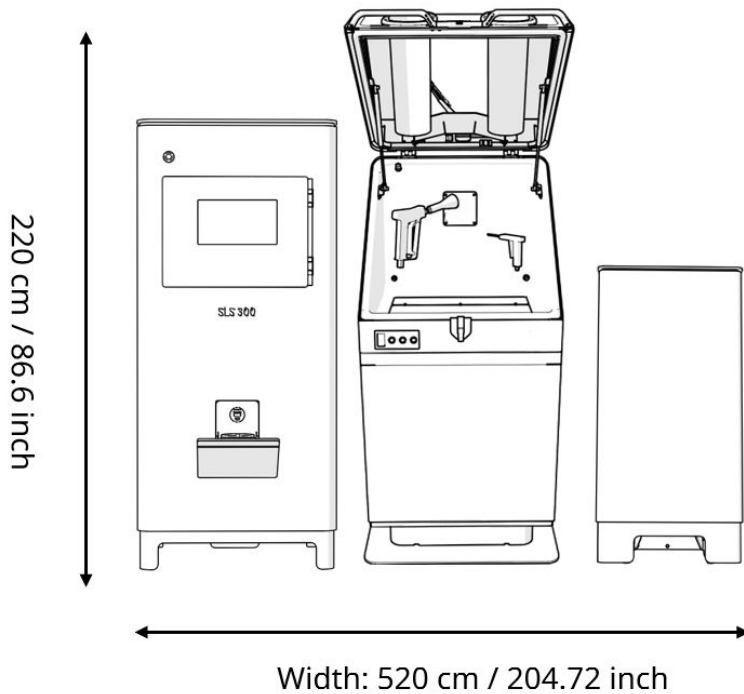
- [Arranging the Workspace](#)
- [Uncrating](#)
- [Connect with Ethernet to the Internet](#)
 - [Network Requirements for the SLS 300](#)
 - [Network Requirements for Deep Space](#)
- [Prerequisite for Procuring Liquids](#)

4.1 Arranging the Workspace



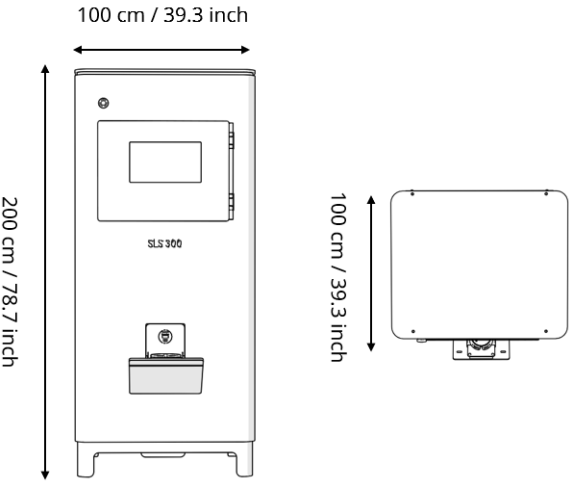
CAUTION: Strong vibrations from heavy trucks or machinery should be avoided.

Choose a stable, level workspace to install and operate the SLS 300. Allow additional space for accessories, such as the SLS 300 Water Jet Cabinet, SLS 300 Atmosphere Generator, Powder packages, and Laser Calibration tools. Reserve the following minimum dimensions for the most convenient access:



SLS 300

SLS 300	
Width	100 cm / 39.3 inch
Depth	100 cm / 39.3 inch
Height	200 cm / 78.7 inch

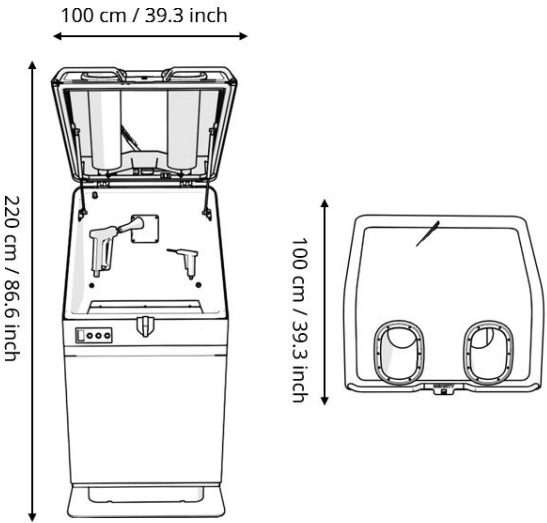


SLS 300 POWER REQUIREMENTS

- 230 V Earth Connected with RDC
- ~ 10 A
- 50 Hz
- Peak 2200 W
- Nominal 400 W
- SCCR: 5KA

SLS 300 Water Jet Cabinet

SLS 300 Water Jet Cabinet	
Width	100 cm / 39.3 inch
Depth	100 cm / 39.3 inch
Height	220 cm / 86.6 inch



SLS 300 WATER JET CABINET POWER REQUIREMENTS

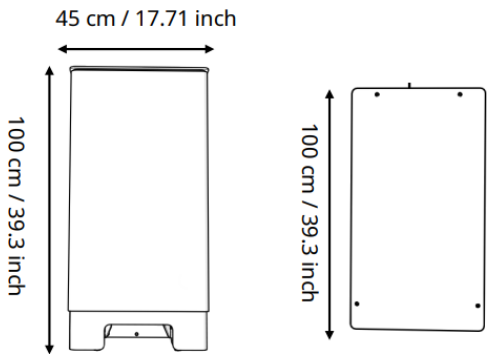
- 230 V Earth Connected with RDC
- ~ 10 A
- 50 Hz
- Peak 1800 W
- Nominal 800 W
- SCCR: 5KA
- The SLS 300 Water Jet Cabinet should be connected to a separate fuse from the SLS 300.



CAUTION: If the main fuse blows, contact support immediately.

SLS 300 Atmosphere Generator

SLS 300 Atmosphere Generator	
Width	45 cm / 17.71 inch
Depth	100 cm / 39.3 inch
Height	100 cm / 39.3 inch



SLS 300 ATMOSPHERE GENERATOR POWER REQUIREMENTS
• 240 V Earth Connected with RDC • 3 A • 50 Hz • Nominal 500 W • The SLS 300 Atmosphere Generator should be connected to a separate fuse than the SLS 300.



CAUTION: It is necessary to place the SLS 300 in a way that allows you to be able to pull the plug from the machine or power outlet.



CAUTION: Make sure you have an appropriate pallet to lift and move the SLS 300 printer.

Always have the SLS 300 connected to power and Ethernet to allow for the best machine reliability. The SLS 300 will enter Standby mode when not in use to minimize power consumption.

4.2 Uncrating

Inspect Shipped Items

For each shipped item you receive, visually inspect the exterior for any damage that may have occurred during shipping. Notify shipping carrier immediately to file a claim if any damage is evident at this point. DO NOT proceed with the uncrating until you have discussed the damage with 3D Systems.

Uncrate the SLS 300 system



WARNING: UNCRATING WILL REQUIRE AT LEAST TWO PEOPLE.

1. Utilize a pallet jack to move the SLS 300 crate at your facility.



2. Begin by loosening the six screws that fasten the crate front cover. Consider using a drill for added efficiency during this step.



3. Once the screws are removed, carefully remove the crate front cover to access the content inside.



4. Utilize the crate front cover as a ramp to move the SLS 300 with a pallet jack.



5. Take out all the boxes that come inside the crate before you move the SLS 300.



6. Before moving the SLS 300, ensure to remove the upper panel from the crate, as the printer needs to be lifted slightly during the process.



7. Use a pallet jack to transport the SLS 300 to its designated location. Handle the pallet jack with care when lowering the unit, as the SLS 300 is heavy.



4.3 Connect with Ethernet to the Internet

The rear of the unit is equipped with an RJ-45 Ethernet (10BASE-T/100BASE-TX/1000BASE-T) LAN Port.

Connect to a LAN with an Ethernet cable): minimum Cat5, or Cat5e or Cat6 for 1000BASE-T.

1. Plug one end of the Ethernet cable into the back of the SLS 300.
2. Connect the other end to your LAN.

4.3.1 Network Requirements for the SLS 300

- The SLS 300 requires a minimum Internet speed of 10 Mbit and a recommended Internet speed of 100 Mbit for upload and download.
- The SLS 300 printer requires the following open ports to function:

PORT	PROTOCOL	DESCRIPTION
53	DNS	Used by devices to resolve host-names for connection to the 3D Systems services.
123	NTP	Network time synchronization.
443	HTTPS	Used by SLS 300 to download 3D print jobs as well as software updates from Deep Space.
80	HTTPS	Used by SLS 300 to stream video to Deep Space.

4.3.2 Network Requirements for Deep Space

Deep Space requires the following open ports to function:

PORT	TARGET	PROTOCOL	DESCRIPTION
5349	turn.wematter3d.com	TCP/TLS & UDP/DTLS	Used by Deep Space to establish a connection to the Media Server.
49152-65535	turn.wematter3d.com	UDP/DTLS	Used by Deep Space to stream video from SLS 300.

4.4 Prerequisite for Procuring Liquids

The following liquids need to be procured by the customer through local DIY stores as part of the facility maintenance and operational requirements:

- **300031 Isopropanol**
- **300034 Denatured Alcohol**
- **300032 Dishwasher Detergent**
- **Distilled Water.**



CAUTION: Please note that using incorrect liquids or substitutes may void the warranty of the equipment. It is essential to procure and use only the specified liquids listed above to ensure compliance with safety and operational standards.

5 PRINT WITH THE SLS 300 AND DEEP SPACE

- [Log in to Deep Space](#)
- [Preparing a Job in Deep Space](#)
- [Starting a Print Job](#)
- [Emergency and Exceptional Situations](#)

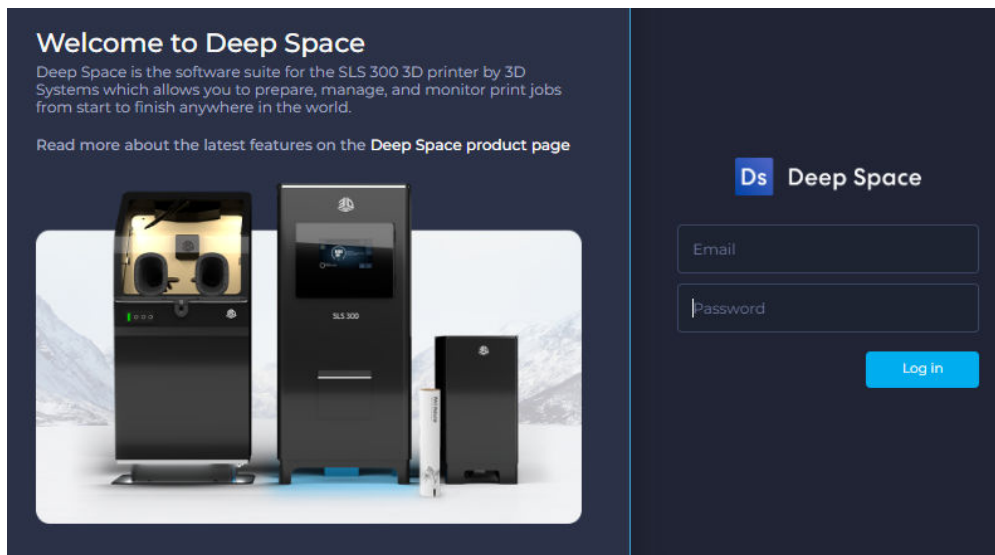
5.1 Log in to Deep Space

Deep Space allows individuals and teams to remotely monitor SLS 300.

SLS 300 will send data to Deep Space as long as the printer's Ethernet connection is able to access the internet. You can prepare and organize your 3D scene even when the printer is disconnected from the internet but the notifications will be paused.

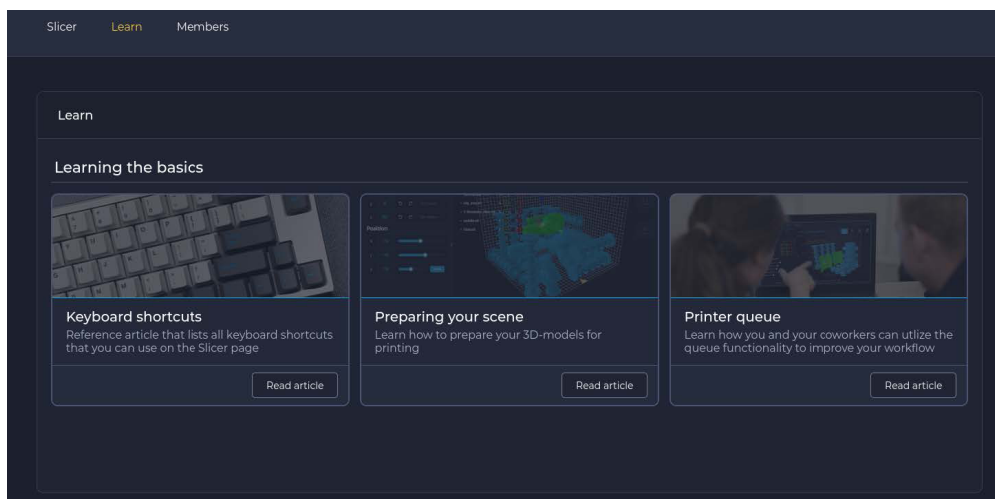
Log in to the Deep Space preparation interface at <http://deepspace.3dsystems.com/>.

An invite email will be sent to you, which contains a link to a page that allows you to create a Deep Space account. If you were invited as a Gatekeeper, you may invite your colleagues once you have logged in with your newly created account.



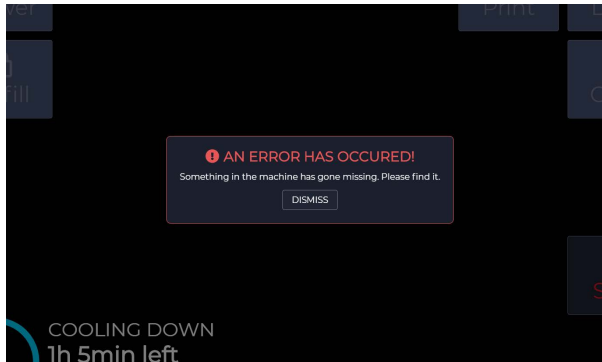
5.2 Preparing a Job in Deep Space

Instructions on how to use Deep space to prepare a print job are available in the *Learn* section in Deep Space.



5.4 Emergency and Exceptional Situations

3D Systems has made every effort to provide you with guidance and information to be able to use and manage SLS 300 satisfactorily but sometimes things go wrong. Our first course of action is to use our sensors, data, and algorithms to reduce the impact. In these cases, the WeMote and Deep Space will show an error message and the machine will shut down in a controlled manner.



6 POST-PRINT ROUTINES



WARNING: THE SLS 300'S DOOR CANNOT BE OPENED UNTIL THE UNIT HAS COOLED TO A PREDETERMINED TEMPERATURE SET BY 3D SYSTEMS AND ITS PARTNERS.

1. Remove your 3D prints
2. Clean the build chamber



Note: The vacuum used in this procedure must be approved for the collection of combustible dust. A portable vacuum listed for Class 2 Division II locations is recommended.

3. Power health check
4. Refill the machine with powder



Note: 3D Systems provides instructions to advise skilled and non-skilled persons in installing, operating, and maintaining the SLS 300. The SLS 300 shall only be maintained by a qualified and trained person.



CAUTION: Unauthorized disassembly or repair procedures may damage the printer, void the warranty, and be dangerous.



Wear Protective Clothing: Wear personal protective equipment when performing maintenance tasks.



CAUTION: Use tools only as described.



CAUTION: Failure to follow these routines may cause machine failure or lowered 3D print quality.



Note: Fugitive combustible dust inside, outside and around the machine, in quantities that obscure the color of the surface shall first be collected by gently brushing and manually removing the accumulations, followed by vacuuming any residual dust. Light accumulations are permitted to be removed by vacuuming.



Note: The vacuum cleaner shall be certified for the collection of the combustible dust involved.

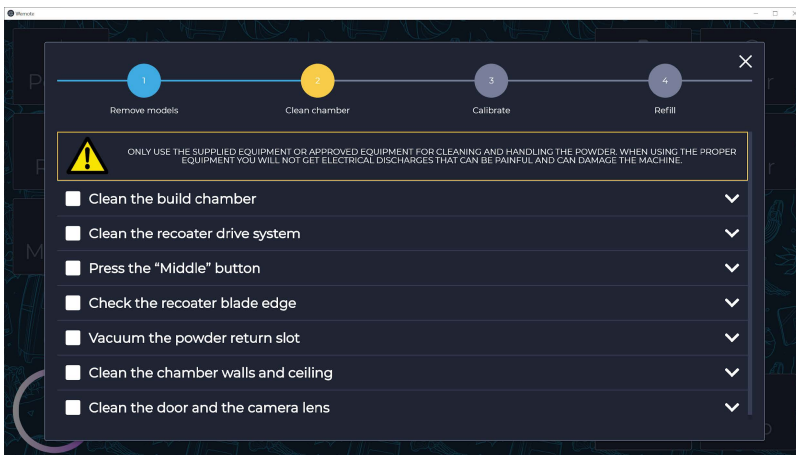


Note: For non-metal dust, wiping down all surfaces with a dry cloth, then wiping all surfaces down with a damp cloth, and finally again wiping all surfaces with a dry cloth is permitted.

6.1 Post-Print Guide

The SLS 300 Machine will guide the user through the Post Print Routine using the built-in touchscreen.

It is recommended to read the routine below carefully on first use and use the guide as a reminder for future use.



6.2 Remove Your 3D-Printed Models



Wear Protective Mask: Use personal safety equipment when handling the powder to avoid inhalation and unwanted spreading of powder.



Hot Surface: Beware that the temperature inside the powder cake and of printed objects may still be elevated. Never touch the heating elements in the roof of the build chamber.

Remove your 3D-printed components while vacuuming up loose powder in the chamber. Beware not to vacuum up components with the vacuum cleaner. Place your 3D prints in the provided container.

Post-process the 3D prints with The SLS 300 Water Jet Cabinet, please see the separate manual.



6.3 Clean the Build Chamber



CAUTION: Only use the supplied equipment or approved equipment for cleaning and handling the powder. When using the proper equipment you will not get electrical discharges that can be painful and can damage the product.

Follow the below steps to evacuate the powder and clean the build chamber:

1. Clean the build chamber with the supplied powder vacuum cleaner. Do not forget to vacuum the powder return slot to the left in the chamber.
2. Clean the top of the recoater:
 - a. Click the “Middle” button on the WeMote to move the recoater to the middle of the chamber.



WARNING: KEEP OUT OF THE CHAMBER WHEN THE RECOATER MOVES.

- b. Vacuum loose powder from the top of the recoater cover plate.
3. Check the recoater blade edge for possible irregularities or fine particles. Irregularities should be removed with a Cleaning Wipe and AirGlow Machine Cleaner. If that does not help, lightly use Scotch-Brite along the blade.
 4. Vacuum the powder return slot behind the recoater to the right in the chamber.

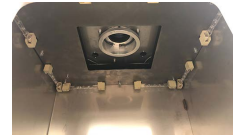


5.

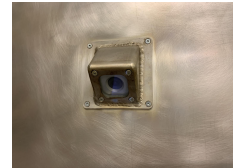


CAUTION: The chamber ceiling has sensitive components and wiring. Only wipe the surfaces visible in the picture above. Do not wipe in between, on top, or above the lower ceiling plates as there is sensitive wiring there. Do not touch the lamps. Do not insert anything into the holes in the ceiling.

Clean the chamber walls and ceiling with AirGlow Machine Cleaner to remove any loose powder.



6. Clean the door and the camera lens in the door with AirGlow Machine Cleaner.



6.4 Power Health Check

6.4.1 Cleaning the Laser Lens



CAUTION: CLEANING ROUTINE SHOULD ALWAYS BE DONE BEFORE POWER HEALTH CHECK



CAUTION: The lens is the component directing the laser beam and positions the laser on the powder surface. It is vital and of extreme importance to handle the lens carefully.



CAUTION: Always clean the lens with the supplied lens cleaning kit.

Go to [3D Files for Printing](#) to download the Lens Cleaning Tool .stl file.

1. Select the Door button on Wemote screen and open the build chamber door.



2. Turn off the printer by unplugging the power cord at the rear of the machine.



3. The lens is located in the ceiling of the build chamber, centered above the build volume. Do not remove the lens from the build chamber, it should be cleaned from its operational position.

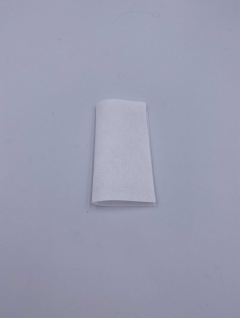


4. When cleaning the lens, use, for all lenses, the lens cleaning tool with the shorter support arms. The part number is 700194_1. Compare the tools in the picture below, the one to the left (shorter arms) is the correct version to use.



5. Prepare the lens cleaning tool by folding a lens cleaning paper in the middle, placing the paper with its long side parallel to two of the supporting edges on the tool and lock it with the rubber band double twisted.

- Prepare the lens cleaning tool by folding a lens cleaning paper in the middle.



- Place the paper with its long side parallel to two of the supporting edges on the tool



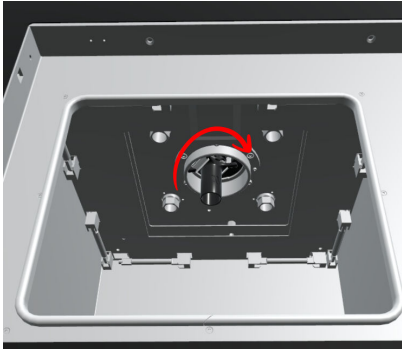
- Lock it with the rubber band double twisted.



6. Soak the tool entirely with a dish soap and water solution (1dl of water / 2.2 US gal. + 4-5 drops of dish soap). No part of the paper should be dry since there is a risk for scratching the lens.



7. Place the tool against the lens in the chamber roof. The supporting edges will keep you from pressing too hard and the built-in spring function will make sure the pressure against the lens is correct. Rotate the tool to clean the lens and only rotate in one direction. Rotate the tool 5 revolutions.



8. Remove the paper from the tool and place a new paper in the same manner as step 5 above.

- Prepare the lens cleaning tool by folding a lens cleaning paper in the middle.



- Place the paper with its long side parallel to two of the supporting edges on the tool



- Lock it with the rubber band double twisted.



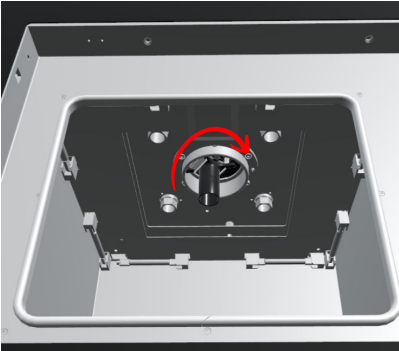
Now soak the paper entirely with Isopropanol.



9. Place the tool against the lens in the chamber roof. The supporting edges will keep you from pressing too hard and the built-in spring function will make sure the pressure against the lens is correct.



10. Rotate the tool to clean the lens, only rotate in one direction. After rotating the tool 5 revolutions remove it and check the cleaning paper for dirt.



11. If the paper is dirty, remove and replace the paper and soak it in Isopropanol and clean again. If the paper is clean you can proceed with power health check.

6.4.2 Power Health Check



CAUTION: This procedure involves directing a high-power laser onto the power meter. It is of the utmost importance to follow these instructions to avoid any unnecessary damage to the machine or equipment.

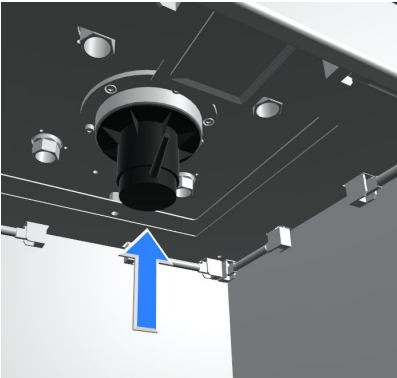
Go to [3D Files for Printing](#) to download the Power Meter Display Holder .stl file and the Power Meter Detector Holder .stl files.

1. When doing a power health check, the average power obtained should be in the range of 25-27 W.

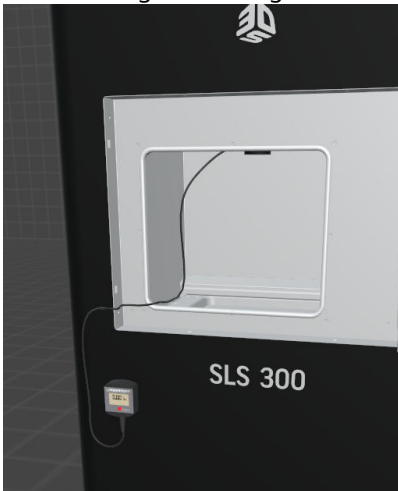
2. Prepare the power calibration by mounting the provided power meter in the machine. The power meter should be placed directly under the lens in the chamber roof. The sensor will fit in the lens holder.



3. Make sure that the sensor holder is pressed all the way into the lens holder until it is physically stopped.



4. Route the cable around the left side of the door. Not above or under. The power meter can be attached to the front of the machine with the magnet backing.



5. Start the power meter by pressing the red button and calibrate the meter.



6. The display will show the most recent readout. Press the red button and the power meter will calibrate itself.



7.  **WARNING: FOR SAFETY REASONS, IT IS NOT POSSIBLE TO FIRE THE LASER WHEN THE DOOR IS OPEN. IT IS NOT UNDER ANY CIRCUMSTANCES PERMITTED TO TAMPER WITH THIS SAFETY FEATURE.**



Hot to Touch: After extensive use of the power meter, the meter housing can become hot. Please be careful and allow the power meter to cool before detaching the power meter. There is an indication at the bottom of the display if the laser meter is hot or not.

Close the machine door.



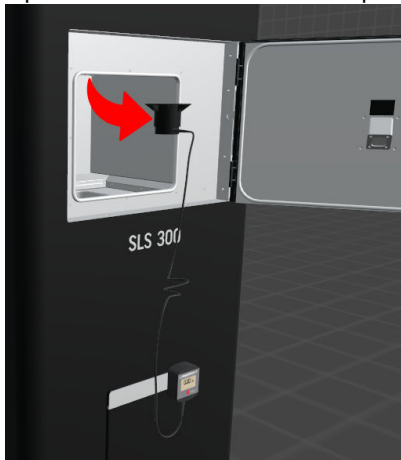
8. Click "Power" on the WeMote.



9. Start the power calibration by clicking "Warmup". Power rate should be 25-27W. If not, adjust the power rate percentage to obtain the correct wattage.



10. When the Warmup is done Press "**Measure**" to measure the power.
- Enter the value displayed on the power meter into the corresponding field on the WeMote.
 - Repeat this process five times.
 - Calculate the average value of the five measurements. The average should fall within the recommended range of **25-27 W**.
 - If the average power is outside this range:
 - Adjust the power percentage as needed.
 - Repeat the measurement process until the average falls within the recommended interval. It is completely normal that the percentage % will vary up and down 1-3% in between jobs.
11. After five tests press "Save".
12. Open the door and remove the power meter.

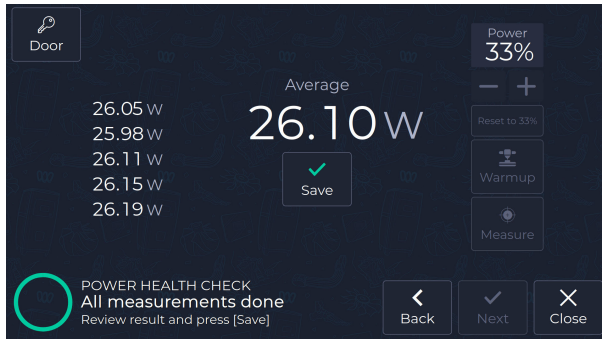


13. Close the door and press "Clear".



6.4.2.1 In Case of Connection Issues

If there is a connection problem with the SLS 300 a dialog will appear communicating that there is no internet connection. Please check the Ethernet cable at the back of the SLS 300 and the internet connection. If this does not solve the issue please contact support@3dsystems.com



6.4.2.2 If the Power Meter Is Showing Incorrect Measurement Type

If the power meter shows that it measures YAG laser instead of CO2 laser, follow the steps below to swap back to CO2 laser measurement.

1. Press and hold down the ON / Zero button until the device turns off.



2. Press and hold down the ON / Zero button again until the device resets and show CO2 on the right-hand side of the screen.

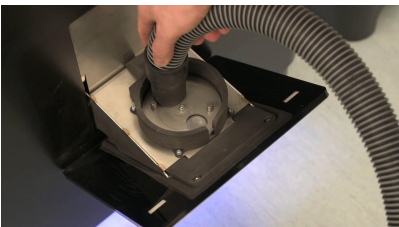


6.5 Refill Powder



CAUTION: Be careful not to overload the machine with powder. When the light at the refill hatch turns red, finish emptying the current powder package but do not continue powder refill with a new powder package. Always remember to clean the filter before and after refilling as forgetting to do so might cause machine failure.

1. Click "Refill" and let the machine open the refill hatch for you.
2. Clean the filter before filling a package.
 - a. Vacuum the machine's inlet hole. This is done by turning the refill lid on the refill hatch by hand and vacuuming in the hole closest to the machine for three seconds. Remember to manually turn the refill lid to its original position before using another powder package or exiting refill.

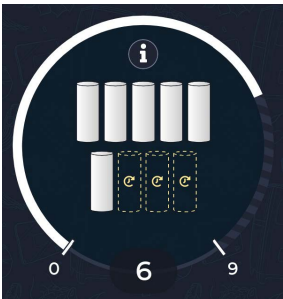


3. Place the powder package in the refill interface on the front of the machine.
4. When mounted, turn the powder package 180 degrees clockwise and then remove it.
5. When the machine has become silent, turn the powder package 180 degrees clockwise and then remove it.
6. Repeat steps 3-5 until the machine indicates that is full. The machine indicates that it is full by turning the light on the front of the refill hatch red.
7. Clean the filter as described in step 2.
8. Exit refill when the machine is full and you have performed the filter cleaning. Press "Refill" on the WeMote to unlock the refill hatch and close it by hand.

6.5.1 SLS 300 Powder Status



- The picture above illustrates the powder level gauge that is shown during refill and on the main screen of the WeMote.
- The center bottom number displays how many powder packages SLS 300 is filled with.
- The outer gauge represents how filled SLS 300 currently is. The notch at the end position of the gauge represents the maximum amount of powder packages SLS 300 can fit.
- The dashed powder package slots represent packages that we could fill SLS 300 with, and upon refill will be replaced with a filled (white) package.
- From this example picture, we can conclude that the SLS 300 can be filled with 2 additional powder packages.
- The information icon is pressable and when pressed it will extend the powder meter to display more information.



- The picture above illustrates a scenario where the SLS 300 is not full but further refill is not currently possible, this is indicated by the clock icon in the remaining empty powder packages, as well as the gauge background being dashed.
- Refill will be possible again once the SLS 300 has processed the inserted powder packages, which can take a few hours.

8 TROUBLESHOOTING

ERROR	CAUSE	SOLUTION
Unresponsive machine	Power cable is disconnected	- Check that the power cable is connected to the outlet. - Power cycle the machine by disconnecting power plug for 60 seconds and then connect it.
Hard cake	Bed temperature too high	- Control that the gas hose is connected between SLS300 and SLS 300 Atmosphere Generator. - If the issue persists, contact 3D Systems support.
Brittle parts	Too high oxygen level inside the building chamber	- Control that the gas hose is connected between SLS300 and SLS 300 Atmosphere Generator. - If the issue persists, contact 3D Systems support.
Warping	- Parts printed too close to the wall - Part printed with a large flat area in the X & Y plane.	- Move away parts from the build chamber walls. - Print big flat surfaces with an angle of 20 degrees instead.
Delamination	- Insufficient laser power - Build plate motor malfunction	- Health check the laser calibration. - If the issue persists, contact 3D Systems support.
Melting	Powder heated is too much	Contact 3D Systems support.
Bad surface finish	- Ratio of recycled to unused powder is too high - Reused powder too many times	Start using unused powder.

9 SERVICE AND SUPPORT



Note: Whenever you have a problem or a question it is best to contact your reseller directly first.

If the certified partner cannot help you, then there is a Customer Support Hotline you can use. If you and your reseller are unable to recover from a printer error, or if you need to contact us for another problem, you may contact our Customer Support Hotline. Before you call Customer Support with a problem or question, please make sure that you have the following information:

- The serial number of your SLS 300.
- A brief description of the problem, including the exact error message.
- When the problem occurred; for example, when you submitted a job, during the beginning or the end of a print, or after power off recovery, etc.

If you are calling about a failed build, please make sure that you have the following information:

- Job parameters, if set differently from the defaults
- Build file, if not restricted by company policy
- Log files with timestamp.
- Relevant pictures and/or videos
- The steps you took that produced the error, if those steps are apparent to you
- Deep Space version
- Controller and Printer firmware/software versions.

How to Reach 3D Systems

You can learn more about 3D Systems' warranty, service, updates, and other support by visiting our customer support site at <https://support.3dsystems.com>. You may also directly contact 3D Systems using the numbers or email addresses below:

WARRANTY HOTLINE FROM THE AMERICAS	WARRANTY HOTLINE FROM EUROPE, AFRICA AND MIDDLE EAST (EMEA)	WARRANTY HOTLINE FROM ASIA/PACIFIC
+1 888.598.1438 +1 803.326.3930 Weekdays during normal business hours or by email at Support@3DSystems.com	+44 1442.279.839 +49 6151.357.499 Weekdays during normal business hours or by email at Support@3DSystems.com	+852.8191.2453 Weekdays during normal business hours or by email at Support@3DSystems.com

10 SLS 300 EC DECLARATION OF CONFORMITY



24
EC DECLARATION OF CONFORMITY (DoC)

We

Manufacturer: 3D Systems, Inc.
Address: 333 Three D Systems Circle Rock Hill, SC 29730

declare under sole responsibility for issuing this declaration of conformity in relation to the following Product(s):

Product Description: 3D Printer, Selective Laser Sintering (SLS)
Model(s): SLS 300
Serial Number:

For the above given Product(s) is hereby declared that it conforms to the essential requirements set out in community harmonization legislation mentioned below:

*Machinery Directive 2006/42/EC of 17 May, 2006
Electromagnetic Compatibility Directive 2014/30/EU of 14 October 2014
Restriction of use of certain Hazardous Substances Directive 2011/65/EU of 7 January, 2011; Directive 2015/863 of 31 March 2015*

Statement about the relevant harmonized standards that have been used, or statement about the specifications in relation to which conformity is declared (Standard: Date of Issue):

EN ISO 12100:2010	EN 1127-1:2019
EN 60204-1:2018	EN ISO 4414: 2010
EN ISO 11553-1:2020	EN 60825-1:2014/A11:2021
EN 61000-6-3:2007/A1:2011/AC:2012	IEC 63000:2016+A1:2022 (EN 63000:2018)
EN 61000-6-1:2007	

Name of Legal Entity authorized to compile the technical construction file and contact for regulatory topics:	North America	Europe
	3D Systems, Inc 333 Three D Systems Circle Rock Hill, SC 29730, USA	Layerwise NV (a wholly owned subsidiary of 3D Systems, Inc.) Grauwmeer 14, 3001 Leuven, Belgium

Signed for and on behalf of:

<u>San Diego, CA, USA</u> Place of issue	<u>October 29, 2024</u> Date of issue	 Doug Hoffman, VP of Strategic Accounts
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3D Systems, Inc. CD-000285-ENG Rev B

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Register Statement

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