



# ProJet™ 6000

## 3D Professional Printer



## User Guide

Original Instructions

Rev. G, P/N 40-D053

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## INTRODUCTION

Thank you for purchasing the ProJet™ 6000 3D Printer. We pride ourselves in our ability to offer customers three dimensional modeling solutions.

The 3D Systems team is confident your system will provide many years of service.



### ABOUT THIS MANUAL

This manual provides users with an understanding of features, system requirements, and operating procedures needed to create finished parts using the ProJet 6000.

Should additional questions arise, contact 3D Systems:

### Service Contact

Hotline	Every workday: 8:00 - 17:00 EST/EDT 1.800.793.3669
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## FCC NOTICE

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Changes or modifications not expressly approved by 3D Systems could void your authority to operate this equipment.

## RADIO FREQUENCY TRANSMISSION

This product generates 13.56 MHz using an Inductive Loop System as a Radio Frequency Identification device (RFID). This RFID device complies with the requirements specified in FCC Part 15, Industry Canada RS-210, European Council Directive 2014/53/EU, and all applicable local laws and regulations.

Operation of this device is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The device referenced in this guide contains transmitter, FCC ID: 2ADGF-SKTKM2, IC:12666A-SKTKM2

Access to the transmitter for service technicians is available through common enclosure access methods including use of common tools and removal of covers.



**NOTE: Changes or modifications to this equipment not specifically approved by 3D Systems may void the user's authority to operate this equipment.**

## LIMITATIONS OF WARRANTY AND LIABILITY

This information is provided by 3D Systems for the convenience of its customers. It is believed to be reliable, but NO REPRESENTATIONS, GUARANTEES, OR WARRANTIES OF ANY KIND ARE MADE AS TO ITS ACCURACY, FITNESS FOR A PARTICULAR USE, OR THE RESULTS TO BE OBTAINED THEREFROM. The information is based in whole or in large part on laboratory work and does not necessarily indicate performance in all conditions. Notwithstanding any information provided by 3D Systems or its affiliates, the customer remains fully responsible for determining which federal, state, or local laws or regulations, or industry practices are relevant to activities in which it engages, as well as assuring that those laws, regulations, or standards are complied with under actual operating conditions, and 3D Systems undertakes no responsibility in these areas.

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You must be properly trained before operating the ProJet™ 6000. Also, anyone assisting you must be properly trained. After you are trained, always follow the safety guidelines and procedures in this section before operating the ProJet™ 6000.

## CUSTOMER SAFETY PROGRAM

Before using the ProJet™ 6000, 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 **Material Safety Data Sheets (MSDS)**. The MSDSs 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 ProJet™ 6000.

## LEVELS OF USER



**WARNING: Do not attempt to perform any procedures described in this manual unless you have been specifically trained to do so.**

There are two levels of users of the ProJet™ 6000, based on the amount and type of training the user has received. The two levels of users (operators and certified service personnel), are described below.

### Operators

Operators are trained to operate the system and perform all the necessary tasks to build a part.

### Certified Service Personnel

Certified service personnel are those who have completed the 3D Systems service training package and are certified to perform service tasks. Certification may occur at various levels, and certified service personnel should only perform tasks they are authorized and certified to complete.

## SAFETY DESIGN FEATURES IN THE ProJet™ 6000

The following design features are provided to reduce potentially hazardous operating conditions:



**WARNING: If any of the following safety features fail, your actions may be all that will prevent potentially hazardous operating conditions.**

- Safety interlocks at the ProJet™ 6000 process chamber door and limited access to cabinets are intended to prevent accidental exposure of the user to the laser beam, thermal hazards, pinch points, or to electrical shock.
- The design of the beam delivery system is intended to prevent the laser from being aimed outside the area of the process chamber.
- Limited access to service areas prevents accidental exposure to electrical shock hazards or pinch points.
- The viewing window to the process chamber prevents operator exposure to laser emission while observing operation.
- If the ProJet™ 6000 detects certain unsafe conditions during operation, it is designed to shut down immediately.

## SAFETY SYMBOLS AND DEFINITIONS



**CAUTION:** Indicates the possibility of damage to the equipment.



**WARNING:** Indicates the possibility of injury or death to personnel.



**ELECTRIC SHOCK HAZARD:** High voltage electricity is accessible in the vicinity of this sign or behind the access panel. High voltage can cause severe burns or death. Access panels are for service only and should be opened only by certified service personnel.



**LASER RADIATION HAZARD:** 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.



**IRRITANT:** Indicates that skin or eye irritation could result while exposed to a chemical composition.



**Ultraviolet radiation inside. Exposure may cause eye damage. Do not operate without covers. Wear UV eye protection.**



**HOT SURFACE:** There are surfaces in the vicinity that may be hot and could cause severe burns or fire.



**NOTE:** Indicates an important point.

## SAFETY HAZARDS AND GENERAL GUIDELINES

The ProJet™ 6000 was designed with safety in mind. However, as with all equipment, improper use and malfunctions could cause injury.

This section provides general guidelines for operating the ProJet™ 6000.

### Follow these general safety guidelines regarding

- Training and Instructions
- Material Handling
- Machine Handling
- Laser Safety
- Alarms and Warnings

#### Training and Instructions

- Do not operate the ProJet™ 6000 before receiving proper training.
- Read and follow all operating instructions.
- Follow all safety rules in this section and heed all hazard warnings in this guide.

**Operators** are trained to operate the system and perform all the necessary tasks to build a part.

#### Material Handling

- Do not use any material without first reviewing its MSDS.
- To prevent injury and equipment damage, be sure to follow all handling guidelines in 2.09 Print Material Handling and Safety.

#### Machine Handling

- When operating the ProJet™ 6000, always keep the following points in mind:
- Do not try to open any panel or door while a machine is running.
- Do not operate the ProJet™ 6000 before receiving proper training.
- Always follow the procedures in this manual.
- Conform to all the safety rules described in this section and in other sections of this manual.
- Use common sense in dealing with the heated, inert environment of the process chamber.
- Do not allow operators to attempt to access or adjust the laser system in any way.

#### Laser Safety

- Post warning signs during open laser beam operations. Only Certified Service Personnel are permitted to perform open laser beam operations.
- Do not enter any area displaying posted warning signs during open beam operations without proper eye protection.



**WARNING: Open laser beam operation should occur only during service procedures performed by certified service personnel.**

#### Alarms and Warnings

- If you hear an alarm, or if you see an error, alarm, or warning message on the ProJet™ 6000 display or on the front panel indicators, clear the alarm, error, or warning message before resuming operation.
- 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.

## ENVIRONMENTAL SAFETY ISSUES

The following are environmental issues concerning the ProJet™ 6000:

- Controlling waste heat is not required for normal operation of the ProJet™ 6000.
- When you dispose of materials, refer to the MSDS for that material and follow any applicable local regulations.
- All waste products, (spilled print material, cleaning liquids, etc.) must be disposed of in accordance with all applicable local regulations.

## SAFETY INTERLOCKS

### Interlocks

Safety interlock devices on the ProJet™ 6000 equipment help prevent accidental laser exposure, electrical shock and crush injuries.

ProJet™ 6000 equipment will not operate unless all safety interlocks are satisfied.



**WARNING: Never disable or override any safety interlock device on the ProJet™ 6000. Operating equipment without all safety interlocks enabled can cause injury. If you suspect a safety interlock device is not working, do not operate the ProJet™ 6000. Disconnect power from the equipment and contact 3D Systems Customer Support for assistance.**



## LASER SAFETY

The ProJet™ 6000 is designated as a Class I Laser Device by the U.S. Center for Devices and Radiological Health (CDRH). Class I devices are not considered harmful and require no special safety precautions. Under normal operation conditions, the laser beam is completely confined. The viewing window blocks the UV laser radiation from exposure outside of the build area.



**LASER RADIATION HAZARD:** Operating the equipment or performing procedures other than those specified within this guide may result in exposure to hazardous, invisible laser radiation.



**LASER RADIATION HAZARD:** Never stare directly into a laser beam, nor into any beam reflection, whether diffused or from a mirror-like surface.



**LASER RADIATION HAZARD:** During normal operation, and with all panels installed, the ProJet™ 6000 is classified as a Class I laser device. If any of the interlocks are defeated, the ProJet™ 6000 becomes a Class IV device. Eye damage can occur by looking directly into the beam or by viewing any type of beam reflection.

## PRINT MATERIAL HANDLING AND SAFETY



**IRRITANT:** Always wear chemical-resistant gloves, goggles and protective clothing when handling print material. Avoid skin contact. Avoid breathing print material fumes.

- Always wear approved goggles, nitrile gloves and protective clothing when working near print materials or with partially cured parts.
- Wearing contact lenses when working with print materials is not recommended.
- Always wear chemical-resistant gloves whenever handling print materials or partially cured parts. Recommended gloves are 100% Nitrile. Do NOT wear latex gloves.
- Always work in a well ventilated area when using print materials. Avoid breathing vapors.
- Always wash skin thoroughly with a non-abrasive soap and COLD water after working with print materials. DO NOT USE HOT WATER OR SOLVENTS to wash hands, as it will result in absorption through the skin.
- Use extreme care when handling solvents used to remove excess print material from uncured parts. These solvents (e.g., denatured alcohol, isopropyl alcohol) are very flammable.
- Keep all print materials away from heat, sparks and flame. Print material containers may rupture when exposed to extreme heat.



**WARNING:** Use National Fire Protection Association Class B extinguishers such as carbon dioxide, dry chemical, or foam.

## Print Material Characteristics

The photopolymers used in the print materials may be hazardous if handled improperly. Repeated skin contact with print materials may cause sensitization. Consult the manufacturer's Material Safety Data Sheet (MSDS) for information on specific print materials. For further information on this and related topics, consult the 3D Systems - Materials website.



**CAUTION:** Never mix different print materials.

## Print Material Disposal

Do not dump used print material down any drains. Dispose of print material according to the guidelines given in the MSDS included with the print material and all applicable regulations,(local, state, and federal).

## Print Material Spill Containment

Your company has the responsibility to define what constitutes a major spill. Personnel who are involved in cleaning up major