1. Table of Contents . . . 3
1.1 01.0 Introduction . . . 5
1.1.1 1.1 About this Guide . . . 5
1.1.2 1.2 Copyright . . . 6
1.1.3 1.3 Useful Documents . . . 6
1.1.4 1.4 What's Inside . . . 7
1.1.5 1.5 Features . . . 7
1.1.6 1.6 Packaging . . . 9
1.2 02.0 Safety Symbols & Definitions . . . 9
1.3 03.0 Safety Guidelines . . . 10
1.3.1 3.1 General . . . 10
1.3.2 3.2 Electrical . . . 11
1.3.3 3.3 Ultraviolet (UV) Light . . . 11
1.4 04.0 Part Material Safety . . . 11
1.4.1 4.1 Disposal . . . 11
1.4.2 4.2 Health Hazards . . . 12
1.4.3 4.3 Material Handling . . . 13
1.4.4 4.4 Personal Protection Equipment . . . 13
1.4.5 4.5 Regulatory Information . . . 14
1.4.6 4.6 Spilled VisiJet® Material . . . 14
1.4.7 4.7 Waste Removal . . . 14
1.4.8 4.8 Material Storage . . . 15
1.5 05.0 System Requirements . . . 16
1.6 06.0 Familiarization . . . 17
1.6.1 6.1 System Functions . . . 18
1.7 07.0 Printer Setup . . . 19
1.7.1 7.1 Power on Printer . . . 19
1.7.2 7.2 Install & Remove Material Bottles and Build Platform . . . 19
1.7.2.1 7.2.1 MDM Installation . . . 21
1.7.3 7.3 Install and Run ProJet™ 3-D Modeling Client Software . . . 21
1.7.4 7.4 Create STL File(s) to Build . . . 23
1.7.5 7.5 Submit Test Build . . . 24
1.7.6 7.6 Build Demo . . . 25
1.8 08.0 Operations . . . 25
1.8.1 8.1 Print Preview Overview . . . 26
1.8.1.1 8.1.1 Add Part . . . 27
1.8.1.2 8.1.2 Part Selections, Translation,Rotation . . . 28
1.8.1.3 8.1.3 Submit Job . . . 29
1.8.1.4 8.1.4 Trackball View . . . 29
1.8.1.5 8.1.5 Triangle Selection . . . 30
1.8.1.6 Align Parts Facings . . . 31
1.8.1.7 Auto Part Placement . . . 32
1.8.1.8 Back View . . . 33
1.8.1.9 Bottom View . . . 34
1.8.1.10 Bounding Box Display . . . 35
1.8.1.11 Copy . . . 36
1.8.1.12 Delete . . . 37
1.8.1.13 De-Select all . . . 37
1.8.1.14 De-Select all Triangles . . . 38
1.8.1.15 Display Support Creation Surface . . . 39
1.8.1.16 Estimate Build Time . . . 40
1.8.1.17 Front View . . . 40
1.8.1.18 Help Topics . . . 41
1.8.1.19 Isometric View . . . 42
1.8.1.20 Mirror . . . 43
1.8.1.21 Right View . . . 44
1.8.1.22 Rotate . . . 45
1.8.1.23 Scale . . . 46
1.8.1.24 Scale inch to mm . . . 47
1.8.1.25 Scale mm to inch . . . 48
1.8.1.26 Select all . . . 49
1.8.1.27 Selected Part Information . . . 50
1.8.1.28 Selected Parts . . . 51
1.8.1.29 Shaded Display . . . 52
1.8.1.30 Top View . . . 53
1.8.1.31 Translate . . . 54
1.8.1.32 Undo . . . 55
1.8.1.33 Undo Zoom . . . 56
1.8.1.34 Verify . . . 57
1.8.1.35 View All Parts . . . 57
1.8.1.36 View Platform and Parts . . . 58
1.8.1.37 Wire Frame Display . . . 59
1.8.1.38 Zoom . . . 60
1.8.2 8.2 Save a Build Job . . . 61
1.8.3 8.3 Submit a Build Job . . . 62

1.8.3.1 8.3.1 Remove Build Platform . . . 66
1.8.4 8.4 Manage Build Jobs . . . 67
1.8.4.1 8.4.1 Delete Build Jobs . . . 68
1.8.4.2 8.4.2 Pause Build Job . . . 70
1.8.4.3 8.4.3 Abort Build Job . . . 70
1.8.4.4 8.4.4 Repeat Build Job . . . 71
1.8.5 8.5 Printer Status . . . 72
1.8.6 8.6 Empty Waste Drawer . . . 72
1.8.7 8.7 Shutdown Printer . . . 73
1.8.8 8.8 Remove Part from Build Platform . . . 74
1.8.9 8.9 Shrink Compensation for VisiJet® MX Part Material . . . 74
1.9 09.0 Maintenance . . . 76
1.9.1 9.1 Cleaning Printer Surfaces . . . 76
1.9.2 9.2 Cleaning the Waste Drawer . . . 77
1.9.3 9.3 Preventive Maintenance . . . 78
1.9.4 9.4 Return Printer for Repair . . . 78
1.9.5 9.5 UV LED Cleaning Procedure . . . 78
1.9.5.1 9.5.1 UVLED Board Removal Procedure . . . 80
1.9.6 9.6 Cleaning MDM Areas . . . 81
1.9.7 9.7 Changing the Charcoal Fan Filter . . . 81
1.9.8 9.8 Printhead Maintenance . . . 82
1.10 10.0 Error Messages . . . 82
1.10.1 10.1 Build Messages . . . 82
1.10.2 10.2 Material Messages . . . 83
1.10.3 10.3 Status and Message Lines . . . 83
1.11 11.0 Troubleshooting . . . 85
1.11.1 11.1 Communication Errors . . . 85
1.11.2 11.2 Head Maintenance Station Errors . . . 85
1.11.3 11.3 Material Feed and Waste System Errors . . . 86
1.11.4 11.4 Material Quality Guarantee Errors . . . 86
1.11.5 11.5 Material Waste Errors . . . 86
1.11.6 11.6 Motion System Errors . . . 87
1.11.7 11.7 UV Subsystem Errors . . . 87
1.11.8 11.8 Vacuum Regulator Errors . . . 87
1.11.9 11.9 Power Outage . . . 87
1.12 12.0 Finishing . . . 88
1.13 13.0 Projet™ Spare Parts List . . . 88
1.13.1 13.1 Consumables and Replacement Modules . . . 88
1.14 14.0 Other Documents . . . 88
1.14.1 14.1 Parts Finisher User Guide . . . 89
1.14.2 14.2 Material Safety Data Sheets (MSDS) . . . 89
1.14.3 14.3 Projet™ Quick Reference Guide . . . 89
1.14.4 14.4 Facility Requirements Guide . . . 89
1.14.5 14.5 VisiJet® Material Handling and Post-Processing Guide . . . 89
1.15 15.0 Service and Support . . . 89
1.15.1 15.1 Contacts . . . 89
1.16 16.0 Online Help . . . 90
1.16.1 16.1 Frequently Asked Questions (FAQ) . . . 90
1.16.2 16.2 Getting Help . . . 91
1.16.3 16.3 Part Material . . . 91
1.16.4 16.4 Printer Hardware and Installation . . . 92
1.16.5 16.5 Facility Requirements . . . 92
1.17 17.0 Glossary of Terms . . . 92
1.18 18.0 Index . . . 93

Table of Contents

01.0 Introduction

- 1.1 About this Guide
- 1.2 Copyright
- 1.3 Useful Documents
- 1.4 What's Inside
- 1.5 Features
- 1.6 Packaging

02.0 Safety Symbols & Definitions

03.0 Safety Guidelines

- 3.1 General
- 3.2 Electrical
- 3.3 Ultraviolet (UV) Light

04.0 Part Material Safety

- 4.1 Disposal
- 4.2 Health Hazards
- 4.3 Material Handling
- 4.4 Personal Protection Equipment
- 4.5 Regulatory Information
- 4.6 Spilled VisiJet® Material
- 4.7 Waste Removal
- 4.8 Material Storage

05.0 System Requirements

06.0 Familiarization

- 6.1 System Functions

07.0 Printer Setup

- 7.1 Power on Printer
- 7.2 Install & Remove Material Bottles and Build Platform
    - 7.2.1 MDM Installation
- 7.3 Install and Run ProJet™ 3-D Modeling Client Software
- 7.4 Create STL File(s) to Build
- 7.5 Submit Test Build
- 7.6 Build Demo

08.0 Operations

- 8.1 Print Preview Overview
    - 8.1.1 Add Part
    - 8.1.2 Part Selections, Translation,Rotation
    - 8.1.3 Submit Job
    - 8.1.4 Trackball View
    - 8.1.5 Triangle Selection
    - Align Parts Facings
    - Auto Part Placement

        - Back View
        - Bottom View
        - Bounding Box Display
        - Copy
        - Delete
        - De-Select all
        - De-Select all Triangles
        - Display Support Creation Surface
        - Estimate Build Time
        - Front View
        - Help Topics
        - Isometric View
        - Mirror
        - Right View
        - Rotate
        - Scale
        - Scale inch to mm
        - Scale mm to inch
        - Select all
        - Selected Part Information
        - Selected Parts
        - Shaded Display
        - Top View
        - Translate
        - Undo
        - Undo Zoom
        - Verify
        - View All Parts
        - View Platform and Parts
        - Wire Frame Display
        - Zoom
    - 8.2 Save a Build Job
    - 8.3 Submit a Build Job
        - 8.3.1 Remove Build Platform
    - 8.4 Manage Build Jobs
        - 8.4.1 Delete Build Jobs
        - 8.4.2 Pause Build Job
        - 8.4.3 Abort Build Job
        - 8.4.4 Repeat Build Job
    - 8.5 Printer Status
    - 8.6 Empty Waste Drawer
    - 8.7 Shutdown Printer
    - 8.8 Remove Part from Build Platform
    - 8.9 Shrink Compensation for VisiJet® MX Part Material

09.0 Maintenance

- 9.1 Cleaning Printer Surfaces
- 9.2 Cleaning the Waste Drawer
- 9.3 Preventive Maintenance
- 9.4 Return Printer for Repair
- 9.5 UV LED Cleaning Procedure
    - 9.5.1 UVLED Board Removal Procedure
- 9.6 Cleaning MDM Areas
- 9.7 Changing the Charcoal Fan Filter
- 9.8 Printhead Maintenance

10.0 Error Messages

- 10.1 Build Messages
- 10.2 Material Messages
- 10.3 Status and Message Lines

11.0 Troubleshooting

- 11.1 Communication Errors
- 11.2 Head Maintenance Station Errors
- 11.3 Material Feed and Waste System Errors
- 11.4 Material Quality Guarantee Errors
- 11.5 Material Waste Errors

- 11.6 Motion System Errors
- 11.7 UV Subsystem Errors
- 11.8 Vacuum Regulator Errors
- 11.9 Power Outage

12.0 Finishing

13.0 Projet™ Spare Parts List

- 13.1 Consumables and Replacement Modules

14.0 Other Documents

- 14.1 Parts Finisher User Guide
- 14.2 Material Safety Data Sheets (MSDS)
- 14.3 Projet™ Quick Reference Guide
- 14.4 Facility Requirements Guide
- 14.5 VisiJet® Material Handling and Post-Processing Guide

15.0 Service and Support

- 15.1 Contacts

16.0 Online Help

- 16.1 Frequently Asked Questions (FAQ)
- 16.2 Getting Help
- 16.3 Part Material
- 16.4 Printer Hardware and Installation
- 16.5 Facility Requirements

17.0 Glossary of Terms

18.0 Index

01.0 Introduction

Thank you for purchasing a ProJet™ 3-D Printer System. 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.

- 1.1 About this Guide
- 1.2 Copyright
- 1.3 Useful Documents
- 1.4 What's Inside
- 1.5 Features
- 1.6 Packaging

1.1 About this Guide

This guide describes how to create finished parts using the ProJet™ 3-D Printer. It also provides user's with an understanding of key features, system requirements, and operating procedures.

Should additional questions arise, consult Section 11.0 Troubleshooting of this guide. If further assistance is required, contact 3D Systems Technical Support or visit http://www.3dsystems.com/ Web Site.

1.2 Copyright

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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 their 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 RSS-210, European Council Directive 99/5/EC, 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-SKTKM1 IC: 12666A-SKTKM1. 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

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1.3 Useful Documents

The documents listed listed in this section, will assist you in finding solutions to questions that may arrise during operation. To access documents, click on their title.

ProJet™ 3-D Modeling Client Online Help: Run the client software, select **Help > Help Topics** in the modelers window or in Build Preview window to launch the client online help. The online help provides detailed instructions on how to use the client software to setup, run, and manage build jobs.

ProJet 5000 Quick Reference Guide.pdf: Download the quick reference for advice on how to operate the control panel functions, how to load / remove material bottles, and how to run a test build.

VisiJet® Material Handling and Post-Processing Guide: This document has everything needed to guide you in safely handling and disposing of VisiJet® material, including relevant regulatory guidelines for material disposal worldwide. It also provides information on how to clean parts once the build process is completed.

Projet™ 5000 Facility Requirements Guide. This guide provides the dimensional data that is required when the 3D System's authorized Field Service Engineer or your authorized servicing reseller installs the printer.

VisiJet® Material Safety Data Sheets (MSDS's). Ensure that everyone who handles VisiJet™ materials is familiar with MSDS's and follows the safety guidelines. To obtain extra copies of the MSDS / SDS, click on http://www.3dsystems.com/services/materials/index.asp. to download MSDS/SDS.

1.4 What's Inside

Safety: Read prior to handling VisiJet® materials or operating the printig system. The safety sections inform you of handling the material properly and avoid damage and injury when operating the printer. For more detailed material safety information, refer to VisiJet® Material Handling Guide.

System Requirements: Provides electrical requirements prior to plugging in your modeler for operation. For more detailed facility requirements information, see ProJet™ 5000 Facility Requirements Guide.

Familiarization: Provides a brief description of the printing system.

Printer Setup: Provides information on preparing the 3-D printer for builds using the software, and how to send test and demo builds to the printer from your computer. Also; refer to your online help for software instructions.

Operations: Describes loading and running the printer; start and stop build jobs; monitor and control build jobs; unload build parts and disposing waste material.

Error Messages: Defines error messages you may see on the printer's LCD and provide the actions to take to correct the problem.

Finishing:Provides information on finishing models.

Maintenance: List printer maintenance procedures which must be done to ensure high part yield and low printer down time. Semi-annual preventive maintenance requires a certified 3D Systems Technical Support Representative.

Troubleshooting: If problems occur with the printer, look for solutions in this section first. It describes some common problems which can occur and suggests corrective actions.

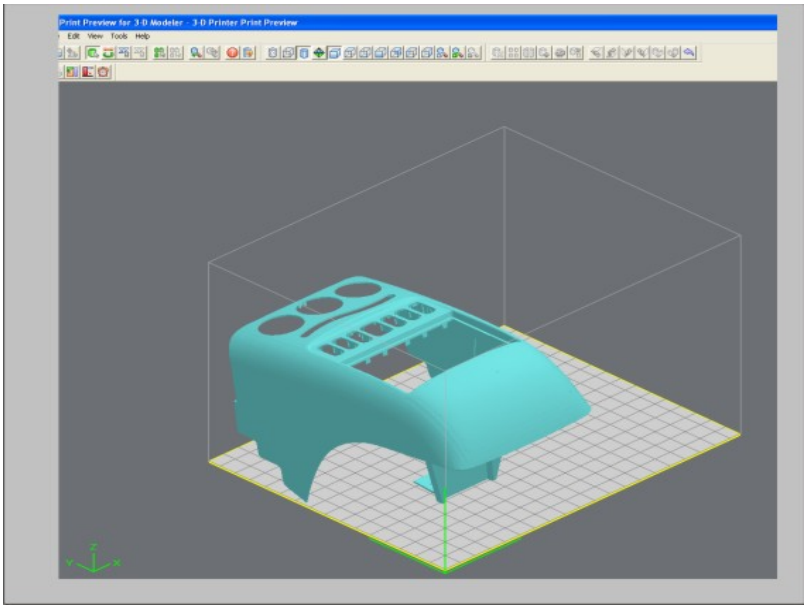
Technical Support: List of contact numbers of sale and support personnel for your printer system.

1.5 Features

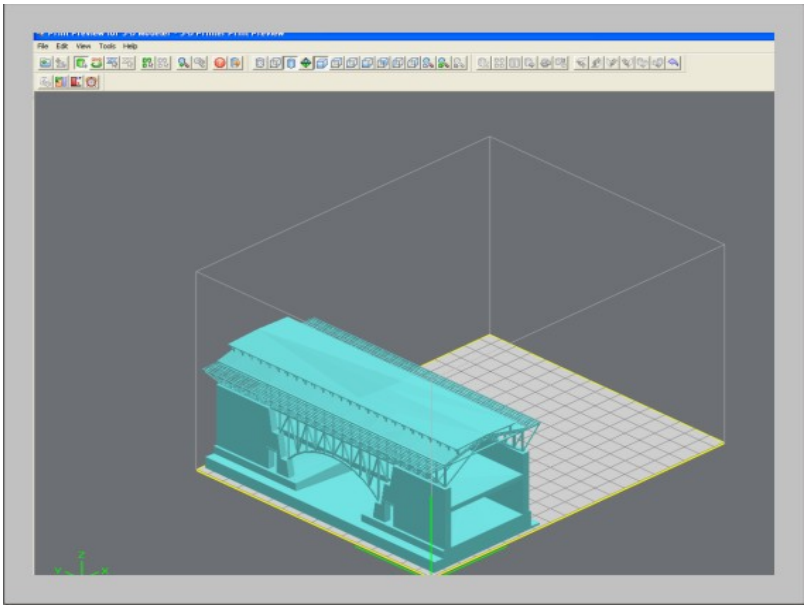
Dual Mode

The new ProJet™ 5000 3-D Production System, features two build styles to meet a variety of model making applications.

- **The High Definition (HD) Mode** allows the user rapid model making capability on a full platform size of 550 x 393 x 399 mm, (21.6 x 15.4 x 15.7 inches), (x,y,z). This mode produces high quality parts for concept models, verification designs and patterns for casting.



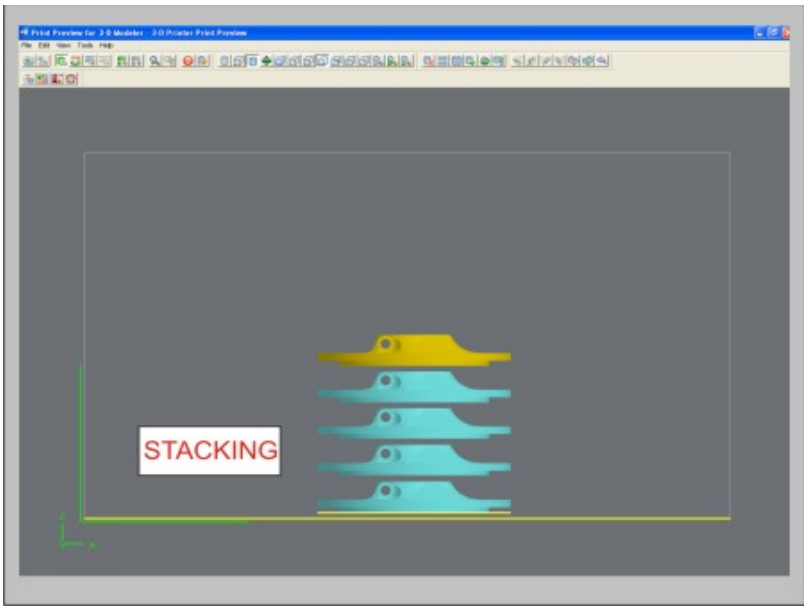
- **The Ultra High Definition (UHD) Mode** allows the users to build extremely high resolution parts with exceptional surface finish and superior accuracy. The platform size in UHD mode is 550 x 393 x 399 mm, (21.6 x 15.4 x 15.7 inches), (x,y,z). Models build in UHD mode are typically used for show models, fit testing and direct manufacturing using patterns for investment casting of fine detailed and high precision components.



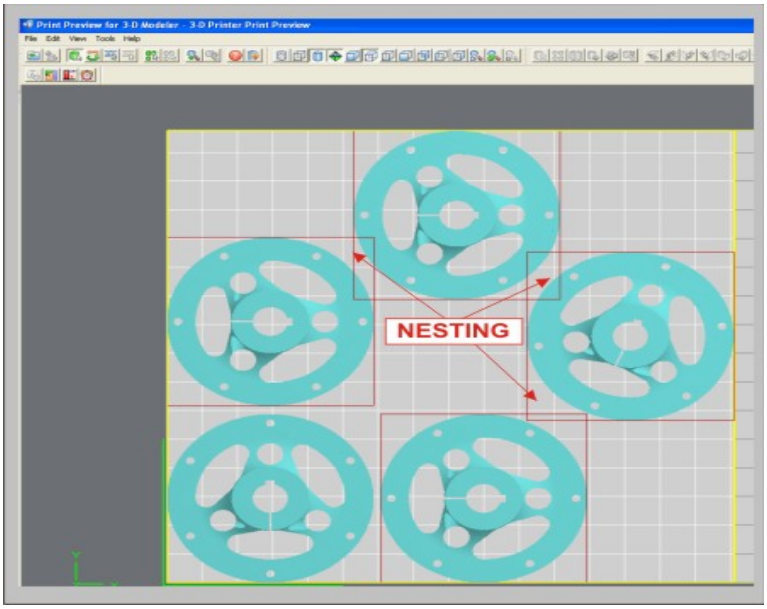
Part Stacking and Nesting

The new ProJet™ 3-D Production System, features part stacking and nesting capability in both build modes.

- **Stacking:** The user can now utilize the entire build volume by stacking parts vertically in the z-direction to fill up the entire build envelop with parts. The user can control the space between layers to minimize support material usage and build time. Now, hours can be saved by stacking parts and submitting single, long builds overnight and weekends



- **Nesting** capability allows parts to be placed within the boundaries of one another but not overlapping the part structure itself. Nesting also allows the user to fully utilize the Y and X axis of the build platform.



1.6 Packaging

Packaging

Do not damage or discard any packaging materials or crate. If the printer needs to be returned to the manufacturer, it should be shipped in it's original packaging and crate. If other method of packaging is used, the customer will be responsible for any shipping damages that may occur.

Only Certified/Qualifed Service Personnel can install the 3-D printer.

02.0 Safety Symbols & Definitions

	This symbol designates the accompanying texts or figures as either a **CAUTION** or a **WARNING**. • **Caution**: Indicates something may happen that could cause loss of data, damage to equipment, or personal injury. • **WARNING**:Indicates a hazard to both equipment and personnel that may be in the immediate area.
	This symbol is used to warn of the presence of potentially **HAZARDOUS VOLTAGE.** 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 or trained maintenance personnel.
	Invisible UV radiation is accessible in the vicinity of this sign or behind the panel. Radiation can cause eye injury. Access panels are for service only and should be opened only by certified service personnel. Use UV radiation eye and skin protection when servicing with "bypass engaged."
	A hot surface is accessible in the vicinity of this sign or behind the access panel. Avoid contact. Hot surfaces can cause severe burns. Access panels are for service only and should be opened only by certified service personnel or trained maintenance personnel.
	Harmful Irritant Warning: Indicates that skin or eye irritation could result while exposed to a chemical composition.
	When accompanied by the word **"NOTE",** the text and symbol are meant to call attention to a practice whose implementation can save time or prevent subsequent inconvenience to the user.

03.0 Safety Guidelines

Before using the printer, your company should have a safety program in place. The safety program should:

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

- 3.1 General
- 3.2 Electrical
- 3.3 Ultraviolet (UV) Light

3.1 General

The printer is designed with built in safety features. Improper use can lead to malfunctions that can cause injury to personnel. To prevent unsafe operation, the printer will automatically shut down if unsafe conditions are detected.

Follow these safety guidelines when operating the printer:

- Read and follow all printer instructions.
- Follow all safety rules and heed all cautions and warnings in this guide.
- Do not attempt to open chamber door while build in progress.
- Do not use any material without reviewing the Material Safety Data Sheets (MSDS).
- Dress power and communication cables behind printer to prevent tripping.
- Do not attempt to access, service, or adjust printer components. Do not attempt to perform any maintenance procedures unless specifically trained to do so.
- Do not operate without all safetys and guards in place and functional.

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

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

Do not ignore warning signs posted during printer service operations.

If an error message appears on the printer's LCD refer to Section 10.0 Error Messages within this guide before resuming operation.

To prevent potential skin-irritation and sensitization due to contact with waste material, follow all guidelines within Build Material Safety.

To prevent pinch and crush injuries to the hand, use caution when replacing platform inside the build chamber.

3.2 Electrical

WARNING: Hazardous voltage exists inside the printer. Injury or death from electrical shock can result if you remove the printer's external panels. Panels should only be removed for service by trained and certified 3D Systems Technical Support personnel or your servicing reseller.
To prevent electrical shock, the printer will not operate unless external panels are installed. Verify facility's electrical service rating before connecting power to the printer.

NOTE: This equipment is not designed for connection to an IT system.

3.3 Ultraviolet (UV) Light

CAUTION: Hazardous UV radiation exists inside the printer's build chamber during build job. Eye injury or blindness can result if the chamber door is opened while a build job is in progress. If build job is running, abort build job before attempting to open chamber door. To prevent eye injury, ultraviolet (UV) light inside the chamber will not operate when chamber door is open. When closed, the chamber door keeps UV radiation from escaping. The chamber door remains locked if build job is paused.

04.0 Part Material Safety

Users of the printer should be informed of potential hazards of part material prior to working with a printer, or performing duties which may result in exposure to uncured part material, such as removal and disposal of empty material bottles and / or waste bag.

- 4.1 Disposal
- 4.2 Health Hazards
- 4.3 Material Handling
- 4.4 Personal Protection Equipment
- 4.5 Regulatory Information
- 4.6 Spilled VisiJet® Material
- 4.7 Waste Removal
- 4.8 Material Storage

4.1 Disposal

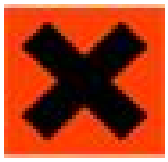
Disposal of **fully cured** part material produced by the printer is not subject to regulations of any known agency worldwide. Disposable bag filled with VisiJet® support and part materials and the material bottles may be disposed of according to your local codes.

Uncured part material waste is classified as regulated, and in some areas hazardous requiring special packaging, transportation, and disposal. The disposal of partially cured or uncured part material must comply with all local, state, and federal environmental safety regulations. Applicable part material "waste" include bottles (empty or full) and waste bag. Any cleaning materials used to clean up spilled uncured part material should be disposed of in compliance with local, state, and federal environmental safety regulations.

To find out facility disposal requirements, contact a local waste disposal provider. (Local environmental regulatory agency should have a list of qualified providers.) You will need to give disposal service provider a copy of the part material MSDS, and possibly other forms included in the Appendix of your **VisiJet® Material Handling Guide**, such as Waste Profile Worksheet and SNUR (Significant New Use Regulation - U.S. only). A report will be provided, indicating disposal requirements, as well as a quotation for regularly scheduled pickups. If assistance is needed locating a waste disposal provider, or completing a waste disposal form, contact 3D Systems;Technical Support Hotline.

3D Systems assumes no liability or responsibility for proper disposal of uncured part material. Proper disposal of uncured material is the sole responsibility of the user.

4.2 Health Hazards



Irritant

Caution: Uncured VisiJet® part material is a sensitizer. Skin or eye irritation could occur when exposed to the chemical composition of the material.	Any chemical may exert harmful effects if contacts or enters the body. VisiJet® part material is a sensitizer and irritant.
Skin Sensitization: Uncured VisiJet® part material is a sensitizer. Skin or eye irritation could occur when exposed to the chemical composition of the material.	Uncured material is a sensitizer, and can cause allergic reactions if contacts skin without protective gloves. Refer to personal protection equipment for more information. To avoid sensitization, do not allow uncured material to contact skin. Consult the MSDS for specific information about the sensitization potential.
Ingestion: Uncured VisiJet® part material is toxic if ingested.	Uncured material is toxic if ingested. Uncured material must not be present where food and drink are *stored, prepared, or consumed and not ingested. After handling materials, wash hands with soap and water before consuming or preparing food.

Inhalation: Under normal operation, inhalation is not an expected route of entry.

Contact With Uncured Material
Employees should be alerted to clean and rinse off any contacted surface promptly in order to prevent further contamination. Ensure a convenient washroom location is provided with access to soap, water, and disposable paper towels.

Handling Finished Parts
Finished (cured) parts can be handled or disposed of the same as standard household plastic products. VisiJet® parts are not recyclable. VisiJet® materials are not intended for, and cannot be used for medical implant, or food or drink handling applications.

Exposure control
The printer has a variety of built-in engineering controls which are designed to prevent operator exposure. Do not try to change or disable these controls.
Appropriate hygienic practices should be followed, including washing with soap and water before meals, breaks, smoking, applying cosmetics, using toilet facilities, and after work.

4.3 Material Handling

Emergency (MSDS)
Chemtrec USA **(800) 424-9300**; Europe **+1-703-527-3887**

Packaging Inspection

VisiJet® materials are supplied in bottles. These bottles are packaged with cardboard packing material inside the shipping carton. Upon receipt of material shipments, inspect cardboard carton exterior for signs of damage and leakage. If leakage is observed, DO NOT open carton, contact 3D Systems'Technical Support Hotline. If no leakage is observed, store shipping carton until material is used. (VisiJet® MX is depicted in the photo)

Building
If uncured material is observed on the part or platform after build, this is an abnormal condition, and is an indication the printer requires servicing by 3D Systems. Assume any liquid or paste-like material is part material. Do not directly touch uncured part material without protective gloves. Discontinue use of the printer, pending service by a 3D Systems Technical Support Representative or your servicing reseller.
Flammability and Combustibility
Do not expose materials to heat at or above 230°F (110°C), flames, sparks, or any source of ignition. (Though the U.S. Department of Transportation does not consider VisiJet® materials a "flammability hazard," they do classify them "combustible" based on flash points.) For more information on VisiJet® material flash points and combustibility, see VisiJet® Material Handling Guide.

4.4 Personal Protection Equipment

	Skin Protection: When removing and disposing of the part material bottles and waste bag, exposure to uncured part material may occur To prevent contact, wear chemically resistant protective gloves - nitrile or neoprene gloves are recommended. **Do not use Latex gloves.**

	Eye protection: In the event of a leak or spill of uncured part material, wear safety glasses with side shields to provide eye protection.
	Respiratory protection: Because of the printer's built in engineering controls, respiratory protection is not necessary during normal operation. A NIOSH-approved (or equivalent) dust mask is recommended when dry sanding cured material parts.

4.5 Regulatory Information

VisiJet® support material has no known regulatory requirements.

In the U.S., **uncured** material is subject to special EPA disposal regulations and record-keeping requirements. "Uncured VisiJet® material" includes any part material bottles (empty or full), and waste bag; about half of which is uncured part material. For complete disposal regulation details, see the VisiJet® Material Handling Guide.

In the U.S., the following disposal records must be kept for five years after the date of disposal:

- The quantity of part material received (new or "virgin").
- The name and address of the shipping location (the "responsible party" - generally your waste disposal service provider).
- The quantity of part material shipped (disposed). For further information, see the VisiJet® Material Handling Guide.

For assistance, contact 3D Systems Technical Support.

4.6 Spilled VisiJet® Material

Spills of material are HIGHLY UNLIKELY, and should NOT occur in normal operation of the printer.

The first priority is to protect users from inadvertently touching material. Spills of support material can be cleaned without use of protective gear, and disposed of as office trash. Handling uncured part material requires use of gloves and other personnel protective equipment to ensure no direct contact with uncured part material. If you don't know which material it is, assume it to be uncured part material, and handle accordingly - with the recommended personal protective equipment.

Promptly clean up spilled material, dispose of clean up materials and waste material per local regulatory requirements. Discontinue use of the printer, and contact 3D Systems Technical Support for a service visit to determine and repair the source of leakage.

Small spills of uncured liquid part material can be cleaned up using disposable towels, non-reusable rags, or absorbing materials such as sawdust, clay, diatomaceous earth, or activated charcoal. If spilled material is hot (liquid), wait until cools and gels before wiping up. After wiping up the spill, wipe surface with denatured or isopropyl alcohol and clean thoroughly with soap and water.

Consider avoiding placement of the printer over carpeting, or consider use of barriers to avoid the possibility of carpet damage if inadvertant spills were to occur.

Advise service provider involved, of the spilled material, and provide MSDS and other material information prior to contact with the material. Advise them of disposal requirements for part material and clean-up products if part material (uncured) is the spilled material. Use of heat above 65°C (149°F) may prove helpful in removing spilled part material from carpet.

Tools contaminated with part material should be cleaned prior to reuse. Solvents such as denatured alcohol or Iso-Propyl Alcohol (IPA), are normally required to clean equipment and tools. Wash with soap and water to remove any traces of excess part material or solvent. Contact solvent suppliers for information on proper handling of solvents if used for clean-up.

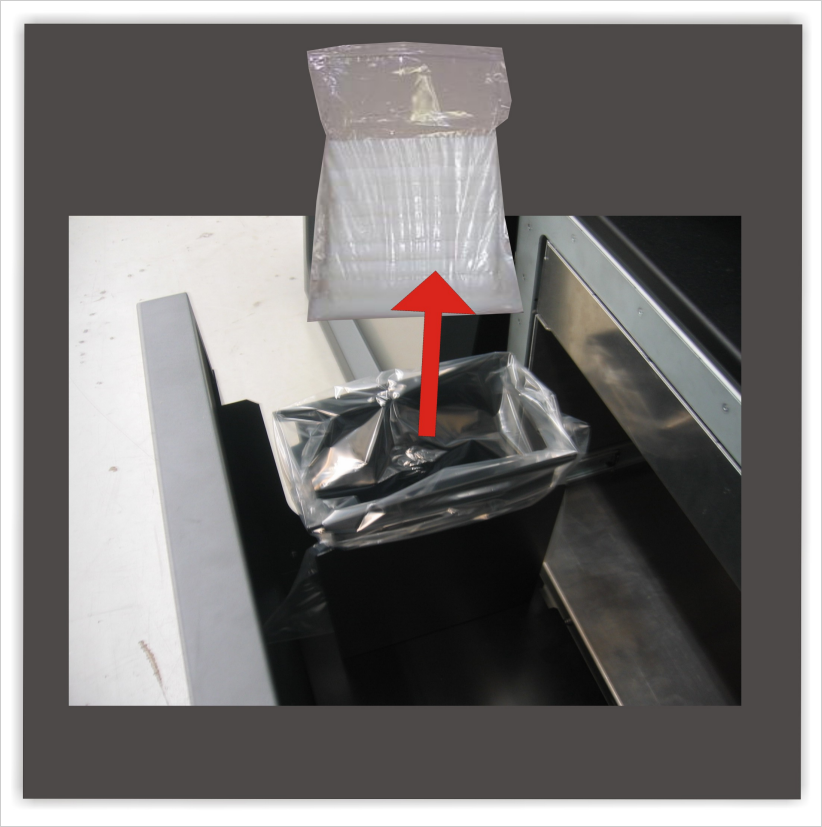
4.7 Waste Removal

	Caution: Uncured part material is a sensitizer. Skin or eye irritation could occur when exposed to the chemical composition of the material.

Wear protective gloves Before removing any waste product from the printer. Be careful not to spill, drop, or expose others to these materials -

particularly part material bottles or waste bag. Dispose of all waste material appropriately per local regulatory requirements.

- Open waste drawer.
- Remove the waste bag from the waste bag holder by pushing the top frame in and rolling the bag that is lap over the holder upward.
- Seal bag and dispose according to your local regulatory guidelines.
- Replace new waste bag by reversing the previous process. Close waste drawer after waste bag is installed.



4.8 Material Storage

PART MATERIAL	SUPPORT MATERIAL
VisiJet® MX	VisiJet® S300
Shelf life- 1 yr.	**Shelf life**- 2 yr.
Climate- Cool, dry area with adequate ventilation	**Climate** - Cool, dry area with adequate ventilation
Temperature Range- 60°F (16°C) to 80°F (27°C)	**Temperature Range**- 60°F (16°C) to 80°F (27°C)
Maximum Storage Temp- 95°F (35°C)	**Maximum Storage Temp**- 95°F (35°C)
Environmental Conditions- No direct sunlight, heat, flames, or UV energy.	**Environmental Conditions** - No direct sunlight, heat, flames, or UV energy.

NOTE: For optimal results, keep stored cartons closed, and do not open until bottle is ready for use.

Always check bottle's expiration date before loading. Do not load bottles into printer if they are about to expire. When printer detects an expired bottle, it aborts the build and rejects the bottle if the expiration date has expired for support material or more than one year past the expiration date for part material.

NOTE: When storing material bottles that have been used but still have materials in them, do not lay the bottles on their side when storing; stand bottles in the upright position. Also, in the case where used bottles with materials are removed from the MDM and are still warm, it must be stored with the cap vented. If the warm bottle is not vented, the wax will contract during cooling and the bottle's bottom may become flat which will prevent reengagement in the MDM.

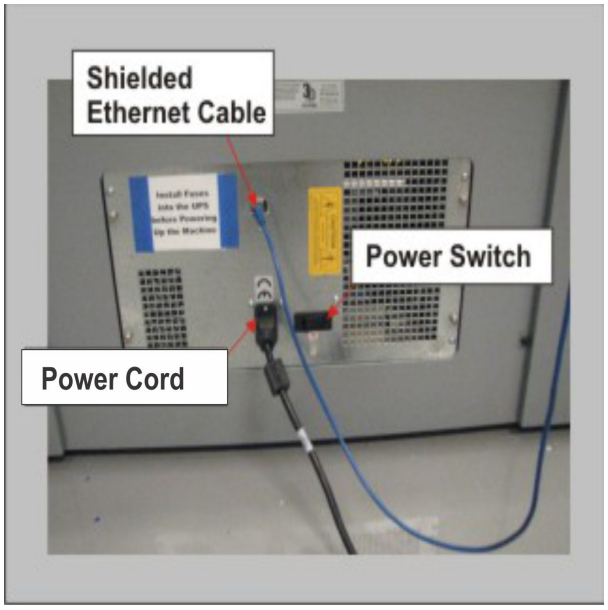
Support material bottles must be loaded in the **left** side material delivery module. The part material bottles must be loaded in the **right** material delivery module. Before loading material bottles into the printer, inspect bottles for signs of damage or leakage. Do not load a damaged or leaking bottle. Dispose of them according to local regulations.

05.0 System Requirements

Power Rating

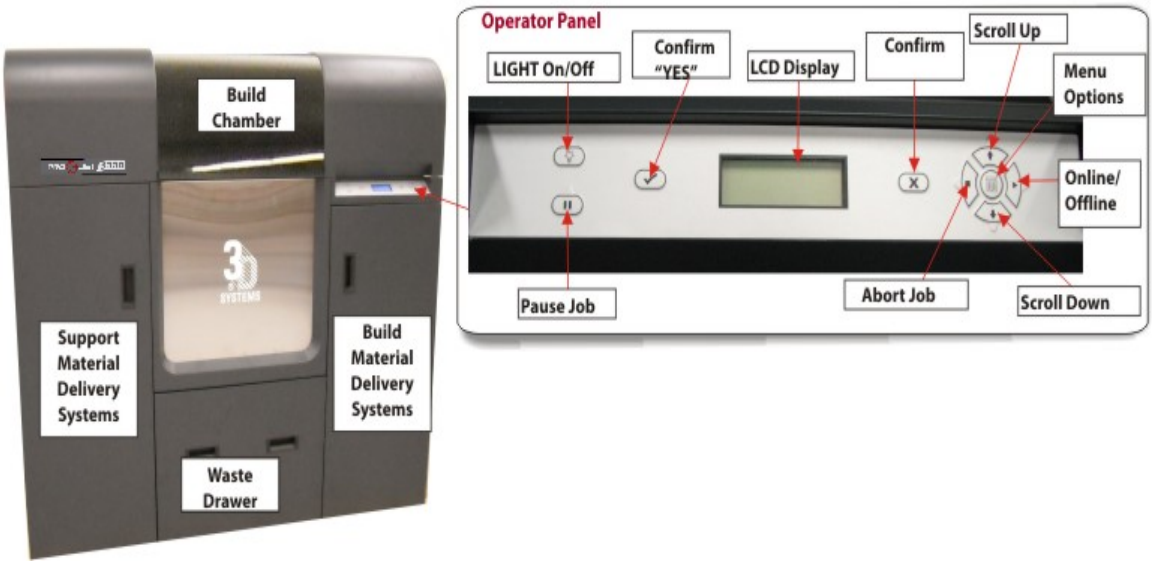
Country	Voltage	Frequency	Amps (A)	Phase	Power Cord
France	200-240 VAC	50 Hz	15 A	single	P/N 21684-101-XX
Germany	200-240 VAC	50 Hz	15 A	single	P/N 21684-101-XX
Hong Kong	200-240 VAC	50 Hz	15 A	single	P/N 21684-111-XX
Italy	200-240 VAC	50 Hz	15 A	single	P/N 21684-101-XX

Japan	115-127 VAC 194-240 VAC	50/60 Hz 50/60 Hz	20 A 15 A	single single	P/N 23417-802-XX P/N 316262-00
Switzerland	200-240 VAC	50 Hz	15 A	single	P/N 21684-107-XX
United Kingdom	200-240 VAC	50 Hz	15 A	single	P/N 21684-105-XX
USA	115-127 VAC 194-240 VAC	60 Hz 60 Hz	20 A 15 A	single single	P/N 23417-802-XX P/N 316262-00



06.0 Familiarization

The ProJet® 3-D Printer is a multi-jet-printing type system. The solid imaging printer produces plastic prototype parts from 3D solid Computer-Aided Design (CAD) and through the ProJet Client Software. The parts are generated in a rapid prototyping (RP) environment. The primary features are the operator panel, build chamber, material delivery systems, and waste drawer.



The three dimensional solid parts built by the printer consist of two materials (support material and part material). The support material is a wax based material providing adhesion to build platform, as well as, providing material used to produce supports required to build the model.

The part material used to build parts is an ultraviolet (UV) curable material. After a layer of material is deposited in the build chamber, the part is exposed to a UV flash lamp. The UV energy is absorbed by the material converting the liquid build material to a solid polymer. When the build is complete the part (consisting of the two materials) is adhered to the build platform by means of the support material.

The material is delivered in a 2kg. plastic bottle and are placed in the machine's material delivery module (MDM). Support material modules are located on the left side of the machine and the part material modules are located on the right side of the machine.

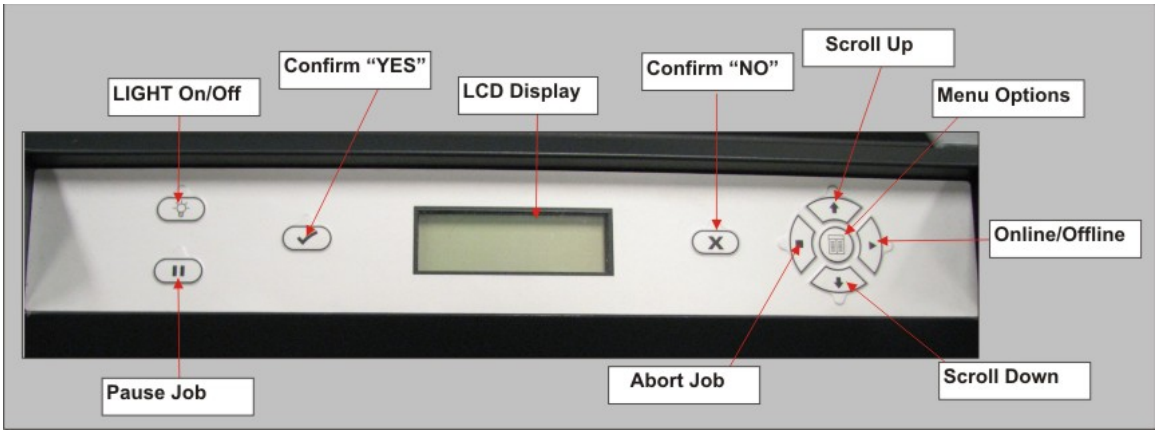
Waste Path, HMS Cleaning & Planerization

A vacuum system draws the waste from the head maintenance and planerization operations to a waste tank. The waste tank is periodically discharged into a waste bag for disposal. A curing light resides above the bag to cure the top layer of material in the bag.
After the build is complete, the platform and the part are removed. A secondary operation, known as finishing, is required to provide a finish/clean part. For cleaning and finishing instructions, refer to the VisiJet® Material Handling.

6.1 System Functions

The instructions use special text formats to highlight menu commands, keys on the keyboard, operator panel buttons, and text on the operator panel display.

Menus:	Menu names and menu options are capitalized in boldface text. Instructions for selecting menu options will appear as described: "Select **Menu>Option**." This means "select (click or highlight) the **Menu**, then select **Option** on the menu.
Keys:	Keyboard key names are capitalized; for example, "Press the Enter key."
Buttons:	Command buttons on the modeler's operator panel are in boldface upper case text; for example, "Press the **ONLINE** button." The command buttons are: **MENU**, **LIGHT**, **PAUSE**, **ONLINE**, **YES**, **NO**, and **ABORT**.
Display Text::	Text on the printer's display appears in uppercase in this guide; for example, "When the display shows **PAUSE JOB**? **Y/N**, press **YES**.



07.0 Printer Setup

To prepare and build part files, connect your PC and printer to the network. For additional information refer to the Client Workstation Requirements in the Facility Requirements Guide.

Component Type	Software Requirements
PC	XP Professional, Vista, Windows 7

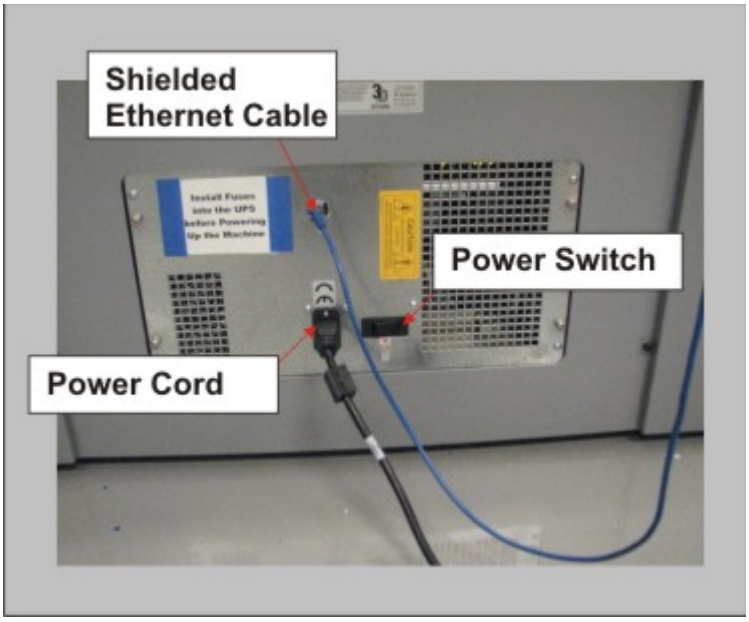
- 7.1 Power on Printer
- 7.2 Install & Remove Material Bottles and Build Platform
  - 7.2.1 MDM Installation
- 7.3 Install and Run ProJet™ 3-D Modeling Client Software
- 7.4 Create STL File(s) to Build
- 7.5 Submit Test Build
- 7.6 Build Demo

7.1 Power on Printer

	Warning: Read and follow all safety guidelines in Electrical Safety. Ignoring these guidelines could result in death, bodily injury, or printer damage due to electrical shock or fire. **Confirm power source is appropriate for use prior to connection.**
	Warning: Verify printer's rear panel power switch is OFF. When connecting the power with switch on can damage the printer and cause bodily injury or death due to sudden, unexpected mechanical motion.

1. Plug printer's power cord into printer's rear panel socket. Plug power cord into a grounded power outlet.
2. Place switch on the rear of printer to the ON position.
3. Wait 4 hours for printer to warm up before pressing **ONLINE** to start a build job.

	Jobs can not be submitted to the printer while it is warming up.



7.2 Install & Remove Material Bottles and Build Platform

Material Bottles

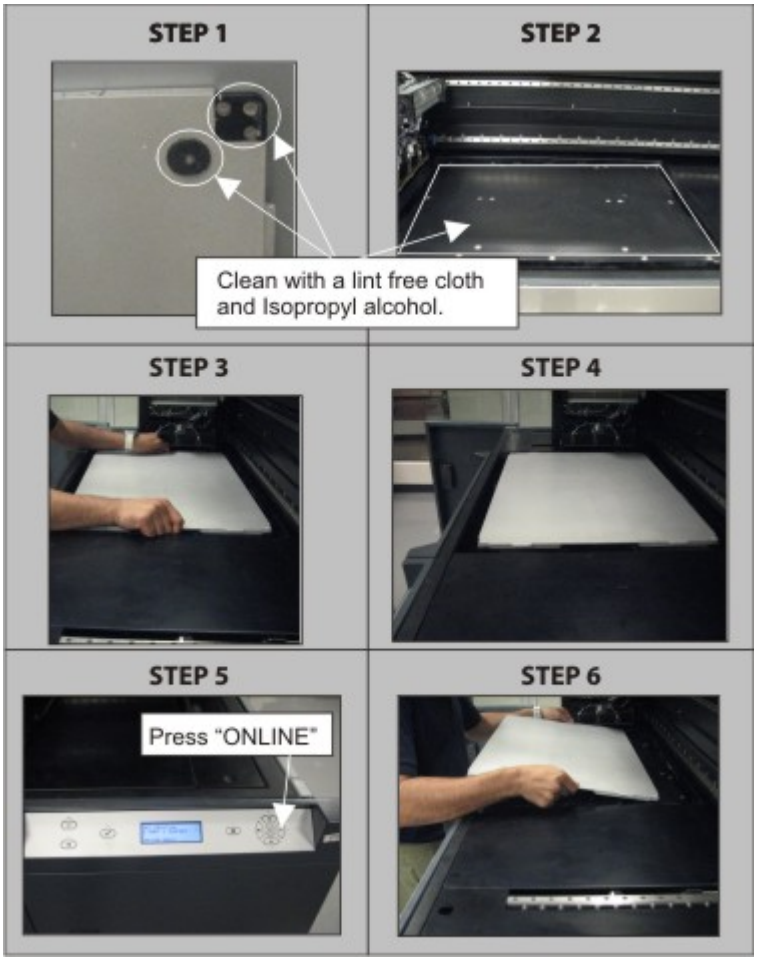
The printer has up to four material delivery modules for part materials and up to four material delivery modules for support materials. The support delivery modules are located on the left side and the part delivery modules are located on the right side of the printer. Each delivery module holds one (1) bottle of material.

NOTE: Before handling the part material bottle, read the Material Safety Data Sheet (MSDS.

1. Unpack bottles and the MSDS/SDS Sheet from cartons.
2. Open left and/or right material delivery doors. Pull material delivery module (MDM) handle down and out to open.
3. Install bottle into the MDM; press bottle down until a click sounds.
4. To ensure that bottle is locked in place, gently pull on bottle. If bottle is loose, press bottle down to ensure it is secured in MDM.
5. Loosen bottle cap 1/2 to 3/4 turn counterclockwise to allow the bottle to vent.
6. Before removing bottle from the MDM, re-tighten bottle cap to prevent spillage. To remove bottle, open material delivery module and press release latch down and lift bottle out of module.

Build Platform

1. Ensure that the corner guides on the backside of platform are clean and free of debris. If debris exists when installing, the platform guides will not lock into the platform elevator.
2. Clean platform elevator and platform using a lint free cloth and Isopropyl alcohol. When cleaning platform, clean the front and back sides.*
3. Lift build chamber door; place platform with corner guides and pads facing down onto the platform elevator. Seat onto elevator. The corner guides will affix the platform to the elevator and if properly installed, platform will not move.
4. Ensure platform sits squarely on the elevator and is firmly located by the corner guides. **Use caution not to drop the platform or hit the printhead.**
5. Close build chamber door and press ONLINE.
6. To remove platform, lift from the sides; pull up and out from the platform elevator.



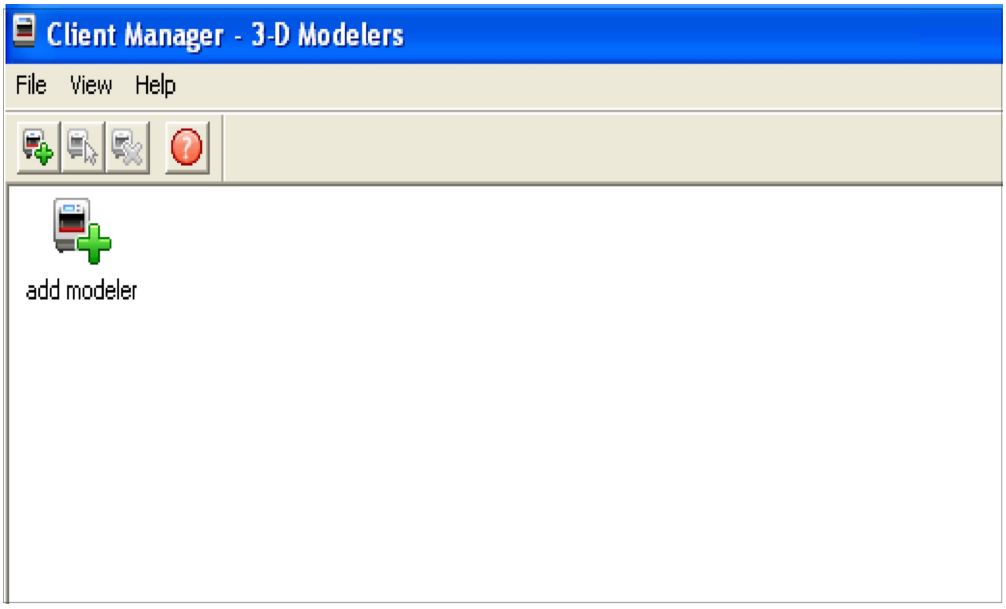
7.2.1 MDM Installation

Please click on the link to access the installation instructions: MDM Installation.pdf

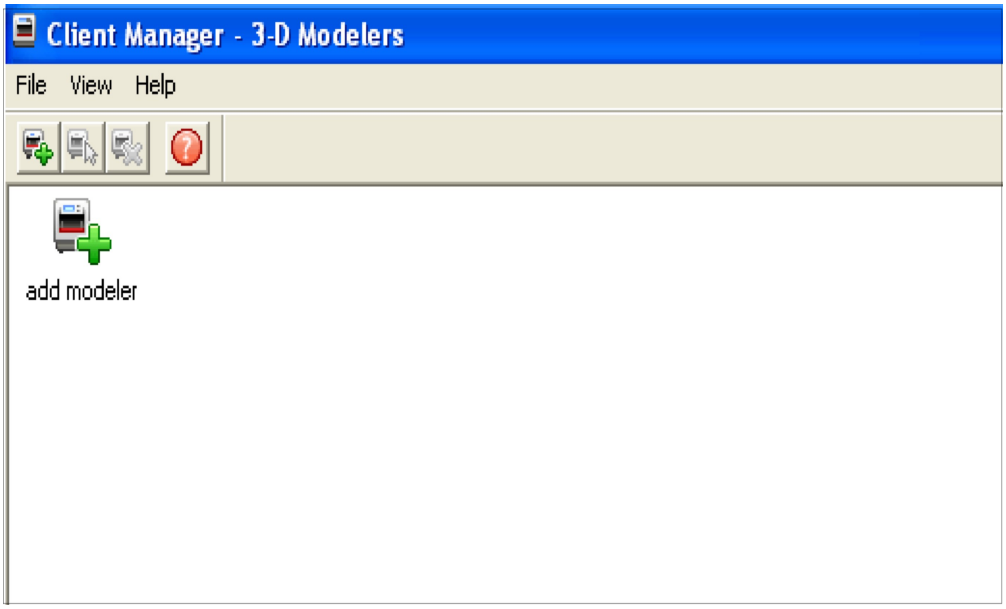
7.3 Install and Run ProJet™ 3-D Modeling Client Software

NOTE: Before installing software, ensure network and PC meet Printer Setup requirements.

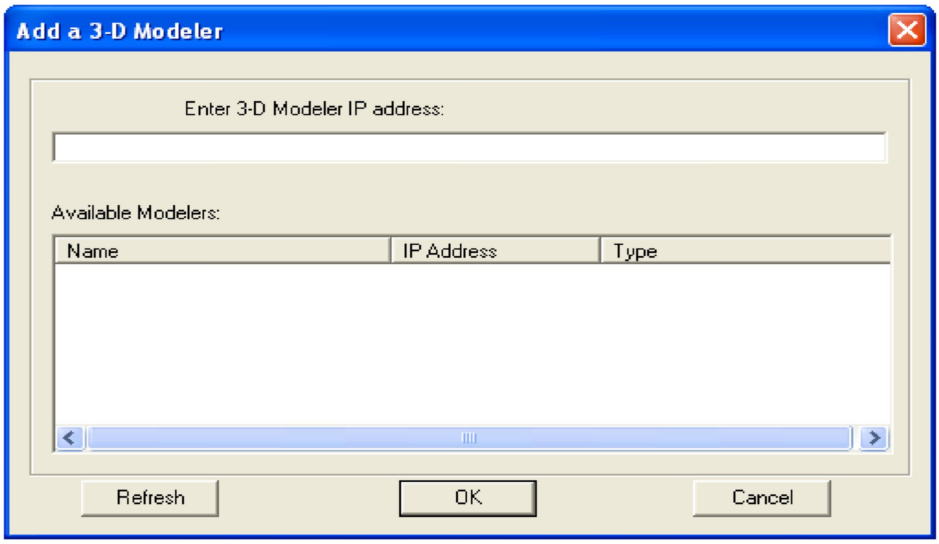
1. Load the **3-D Modeling Client Software** from CD packaged with the printer's accessories kit. An autorun file on the CD will automatically load when CD is inserted into ROM drive of the computer. If installation program does not start when loaded, select and run **Setup.exe** from the root directory of the ROM drive.
2. After successfully installing software, select **Start** from the **Program** menu and then select >**3-D Modeling Client** icon. The printer window appears.



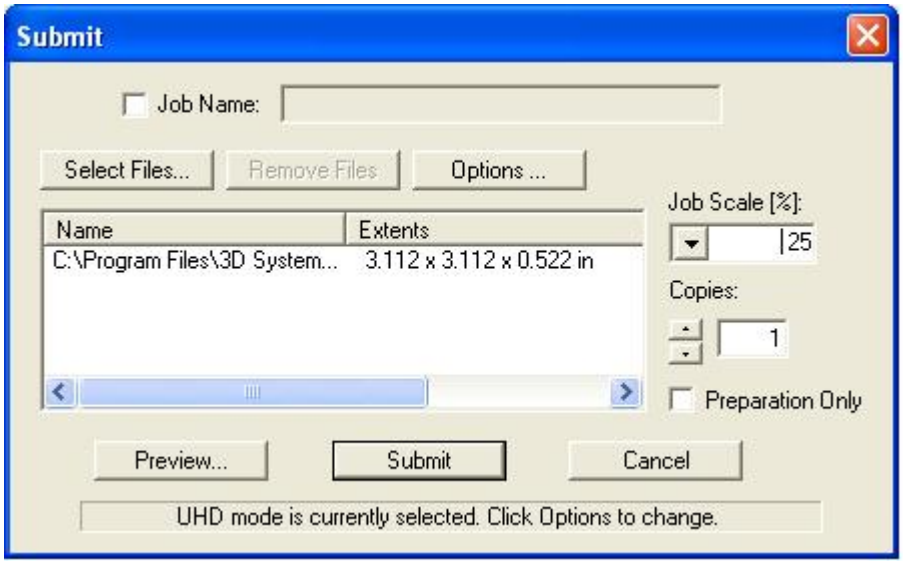
3. Power up printer as described in 7.1 Power on Printer. Establish a network connection between printer and PC.
4. Build jobs can only be submitted to printers that have icons in the window. To create an icon for a printer, click **Add printer** icon (or choose **File > Add 3-D modeler**), the "Add Printer" window appears, prompting to choose the printer's IP address from list of available printers.



5. Select the IP address for desired printer, click OK *NOTE: The IP address is located in the . The client software prompts for a printer name. After entering a name, an icon for the printer appears in the 3-D Printers window. Once an icon exists, click on it to add files for a build job, preview build job, summit a build job, or manage a build job in progress.

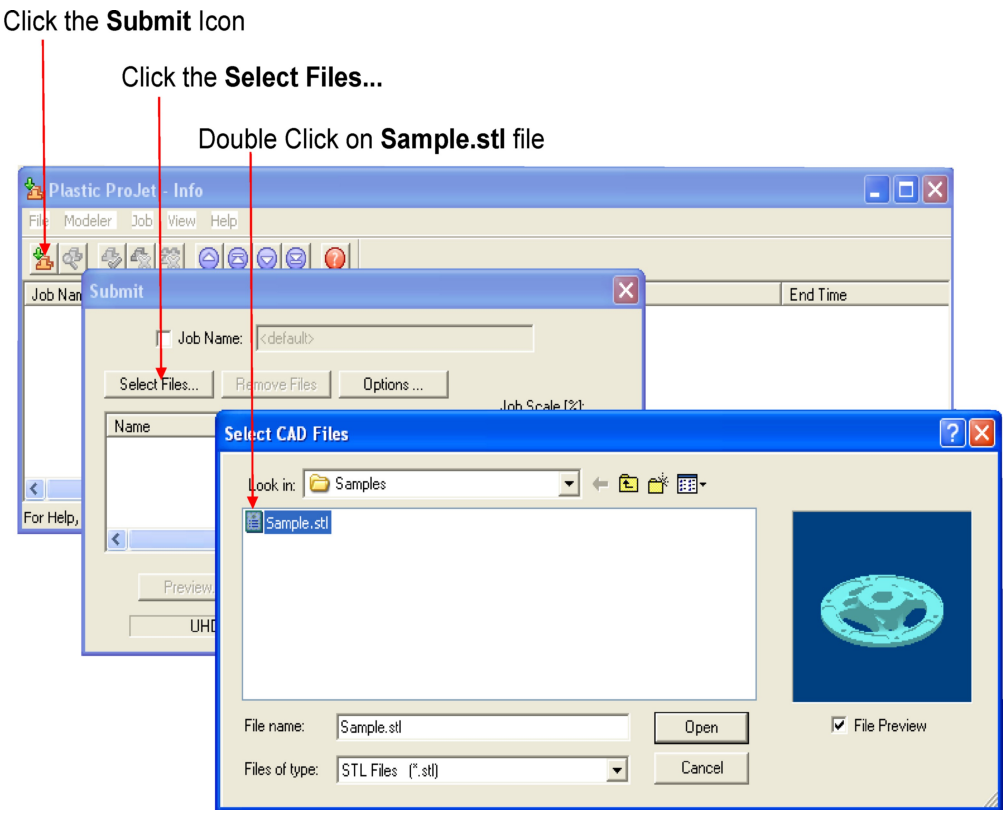


6. After the printer is added, click on the icon in the 3-D Printer window or choose **File > Open 3-D Printer** to submit build jobs to the printer, or manage build jobs in it's queue. If the printer icon has a red lightning bolt, your PC is not communicating with the printer. Jobs cannot be submitted to the printer until communication is restored.



7.4 Create STL File(s) to Build

The printer builds 3-D models from files using industry-standard **.STL** (**ST**ereo**L**ithography) format. Most popular 3-D modeling CAD software packages can save files in STL format. Sample STL files are in the 3-D Modeling Client Samples folder.



7.5 Submit Test Build

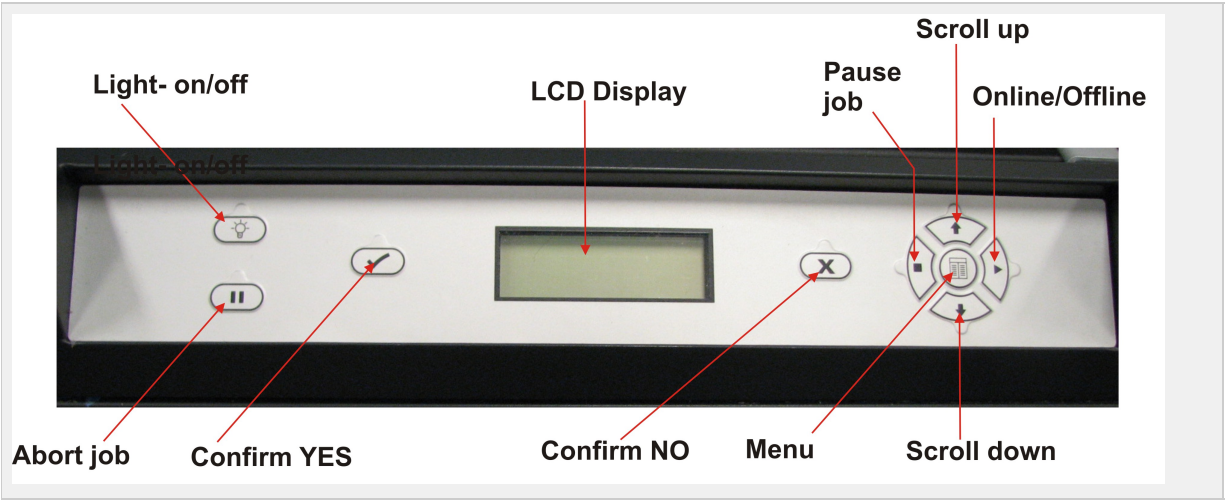
Press **MENU**,scroll up or down until **TEST BUILD** is high lighted in the LCD Display.

Press **YES**. The message **PLATFORM CLEAR DOOR CLOSED? Y/N** scrolls across the display. # Press **YES** if the platform is clear and the chamber door is closed, otherwise press **NO**.

It is recommended to submit a Test Build prior to each build job.

7.6 Build Demo

1. Press **MENU**, scroll to highlight **BUILD DEMO**. # Press **YES** on Operators panel; the system displays **PLATFORM CLEAR? Y/N**. # When platform is clear, press **YES**. The printer starts demo build job.



08.0 Operations

This section provides information on previewing, saving, submitting, and managing jobs through the printer's operator panel menu and 3-D Modeling Client Software. In addition this section describes how to remove the build platform, how to empty the waste drawer and how to shut down the printer.

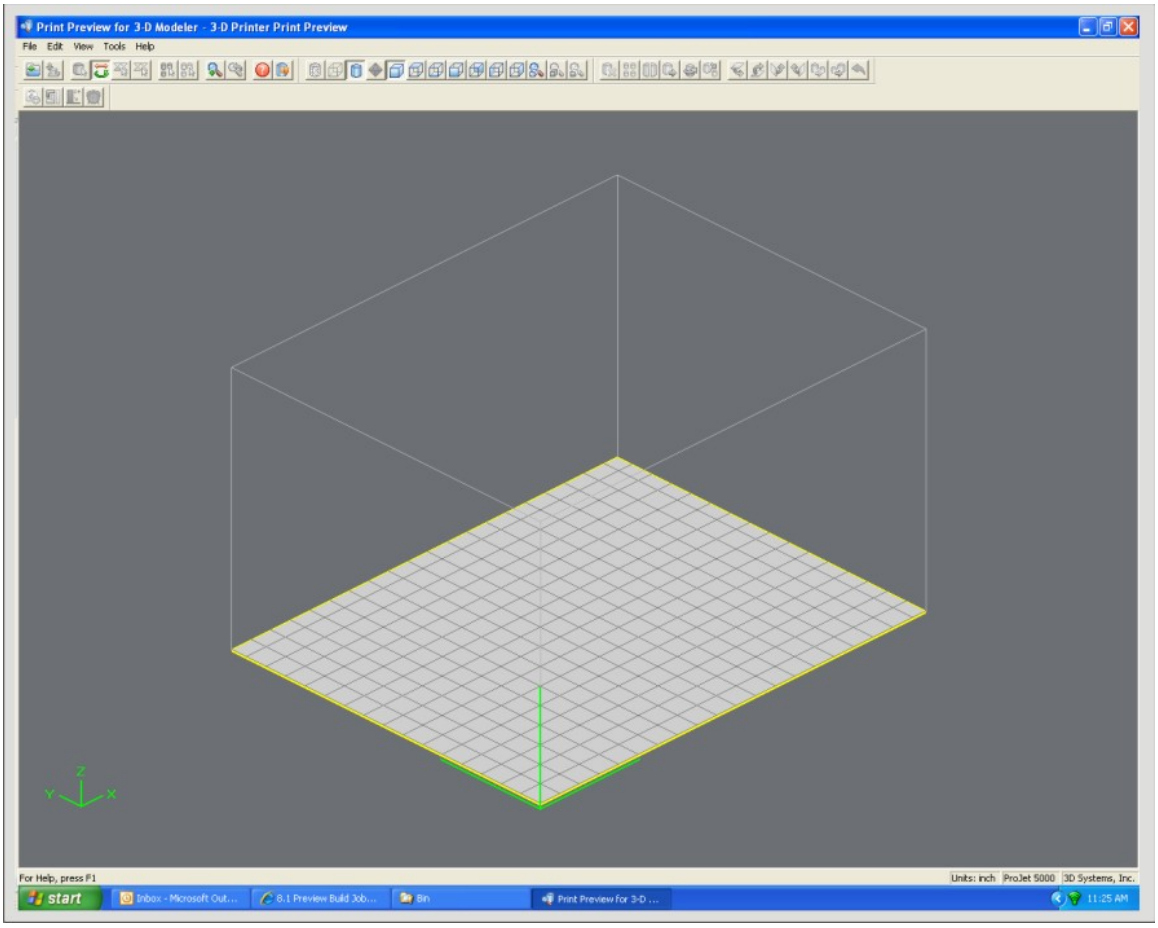
Make certain the printer is *Off-Line during the job submittal process. Place the printer on-line after the job is submitted.

- 8.1 Print Preview Overview
- 8.2 Save a Build Job
- 8.3 Submit a Build Job
- 8.4 Manage Build Jobs
- 8.5 Printer Status
- 8.6 Empty Waste Drawer
- 8.7 Shutdown Printer
- 8.8 Remove Part from Build Platform

- 8.9 Shrink Compensation for VisiJet® MX Part Material

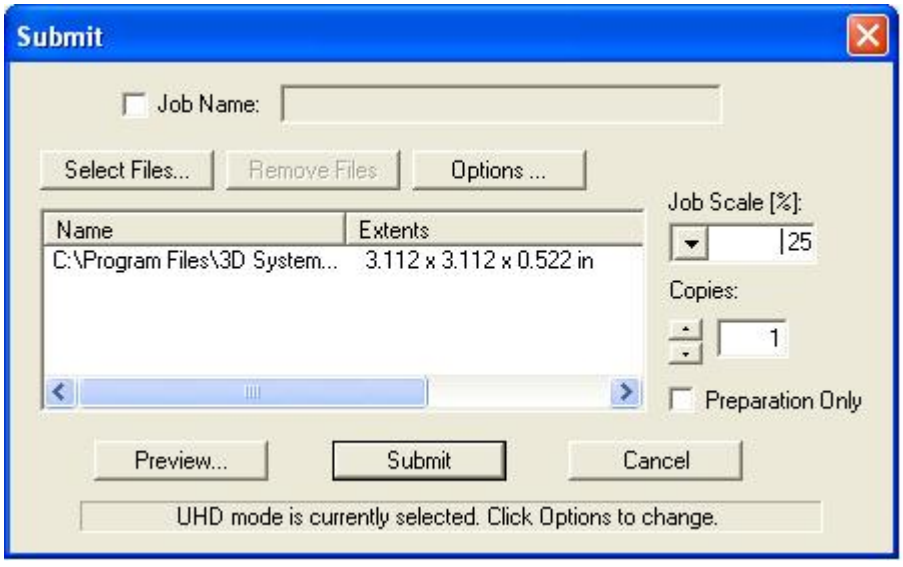
8.1 Print Preview Overview

Click on the icon to view the functionality of the print preview icons along with their individual video clip.



Preview a build job before submitting.
Preview jobs before submitting them to the printer.

1. Click **Preview**...button on the Client's Submit dialog box. At least one part must be added for build in the Submit dialog box before able to preview.

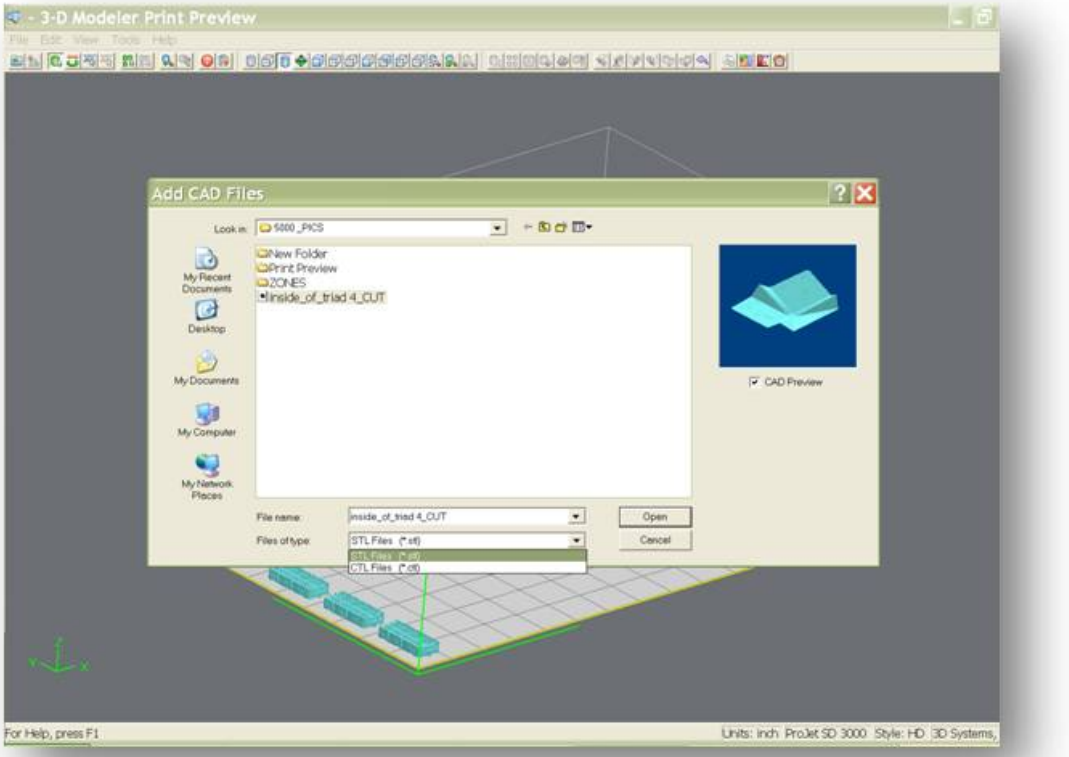


2. Highlight a Job Name in printer's Info window, click **Preview** button or choose **Job > Preview**.

When the preview window opens, STL files can be added and removed, parts can be changed, rearranged, and submitted. The modified jobs can be sent directly to the printer's queue.

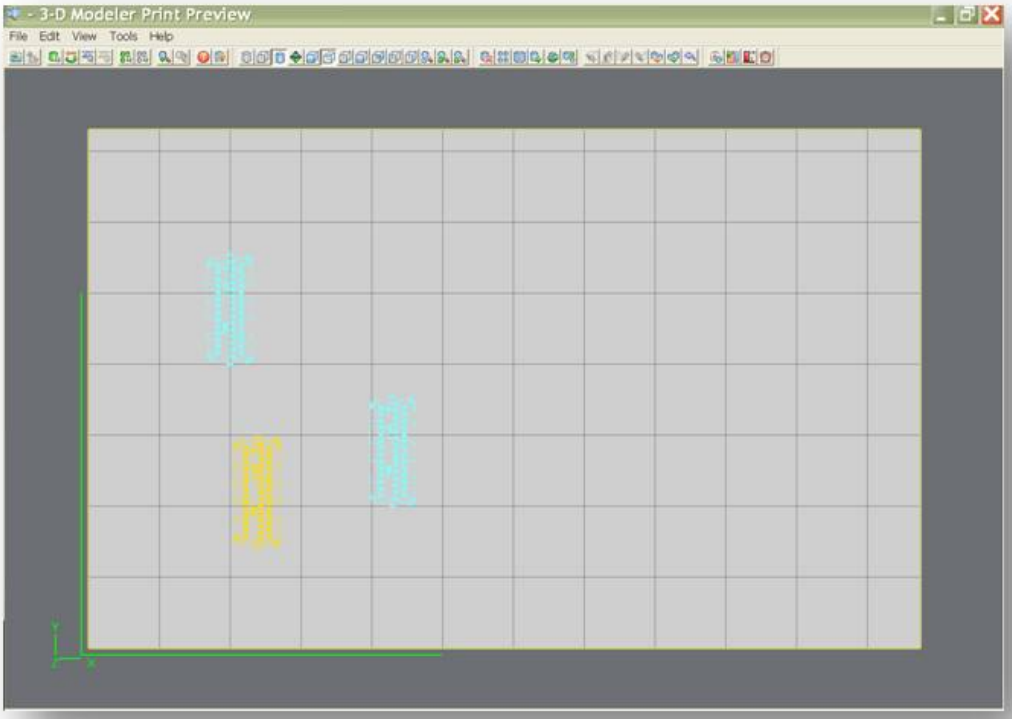
- 8.1.1 Add Part
- 8.1.2 Part Selections, Translation,Rotation
- 8.1.3 Submit Job
- 8.1.4 Trackball View
- 8.1.5 Triangle Selection
- Align Parts Facings
- Auto Part Placement
- Back View
- Bottom View
- Bounding Box Display
- Copy
- Delete
- De-Select all
- De-Select all Triangles
- Display Support Creation Surface
- Estimate Build Time
- Front View
- Help Topics
- Isometric View
- Mirror
- Right View
- Rotate
- Scale
- Scale inch to mm
- Scale mm to inch
- Select all
- Selected Part Information
- Selected Parts
- Shaded Display
- Top View
- Translate
- Undo
- Undo Zoom
- Verify
- View All Parts
- View Platform and Parts
- Wire Frame Display
- Zoom

8.1.1 Add Part

To add a part, click the **Add Part** button or select **File, Add a STL or CTL File**. The system displays a file browser dialog box which you can use to select one or more parts. Select open on the dialog box to add part to the print preview platform.	

Click here to return to Print Preview Browser.

8.1.2 Part Selections, Translation,Rotation

Use part selection, translate, rotate tool to move parts in specified X and Y axis as well as in the X,Y coordinates. The parts must be viewed in top, bottom left or right to manipulate them.	

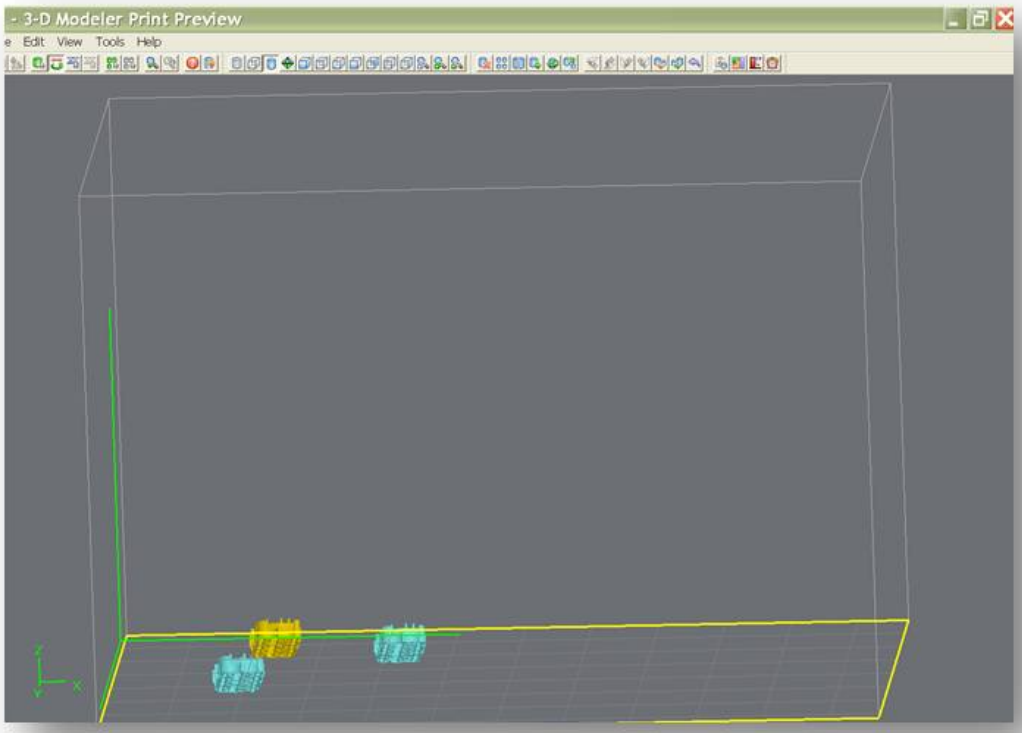
Click here to return to Print Preview Browser.

8.1.3 Submit Job

See Submit Job section to understand how this function is used to submit a job. Once a job is submitted it can be manipulated in print preview.

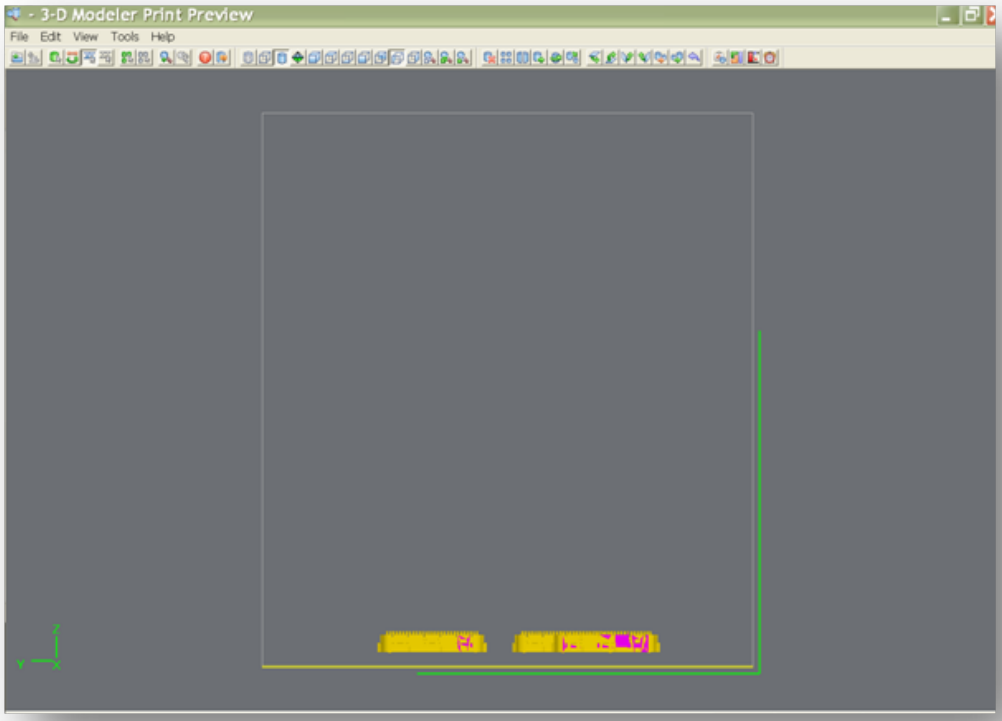
Click here to return to Print Preview Browser.

8.1.4 Trackball View

Use the trackball view to change the platform viewing area. Normal dragging (with the left mouse button pressed down) rotates the viewing area. When using the right mouse button, the build envelope can be dragged around within the viewing area.	

Click here to return to Print Preview Browser.

8.1.5 Triangle Selection

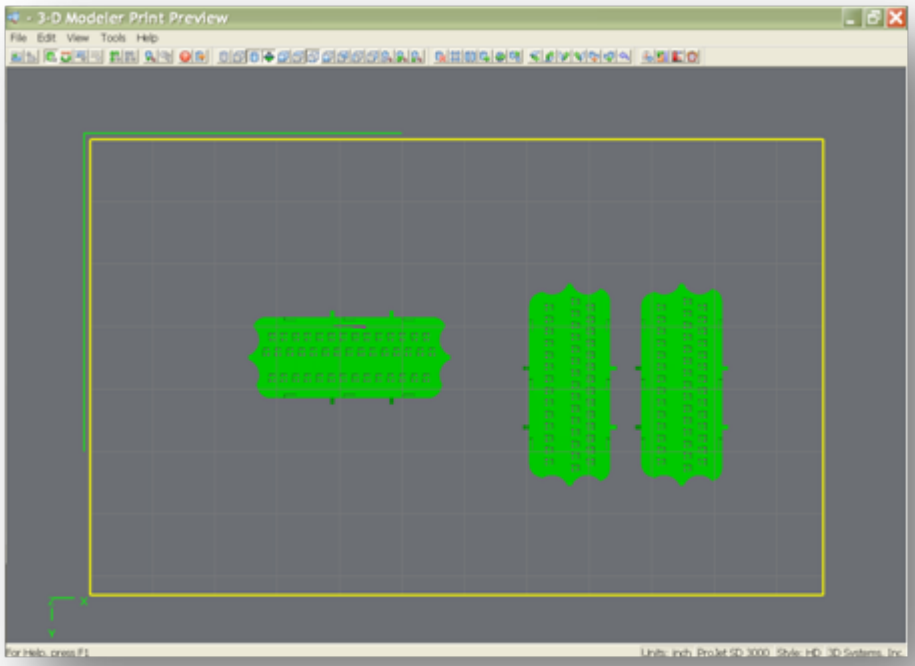
Use the triangle selection to select one or more individual triangular facets on parts. After you select more than one facet, press the shift key while clicking. If you select more than one facet on a single part, that part will not be reoriented when you use the align facing button. You may find it easier to select specific triangles if viewing parts as wireframe. The 2-D views may also help find the triangles that you want to select.	

Click here to return to Print Preview Browser.

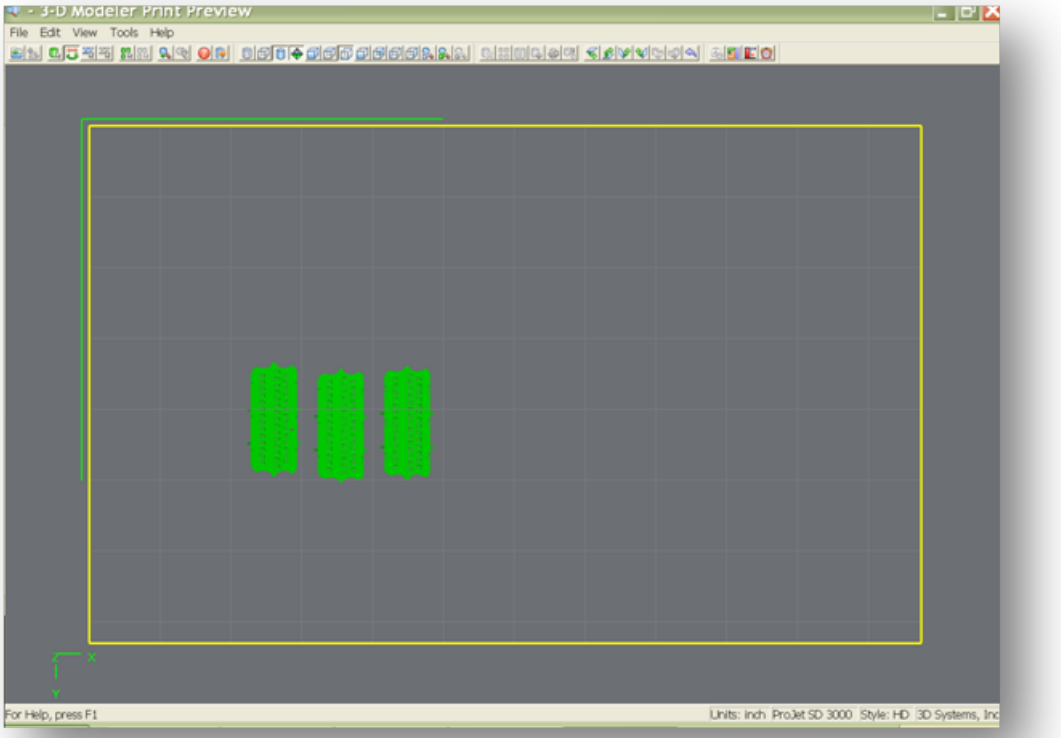
Align Parts Facings

Instead of manually rotating parts, you can select a triangle on the part and have the system align the part until the selected triangle faces a desired direction: up, down, the X-Z axis or the Y-Z axis.

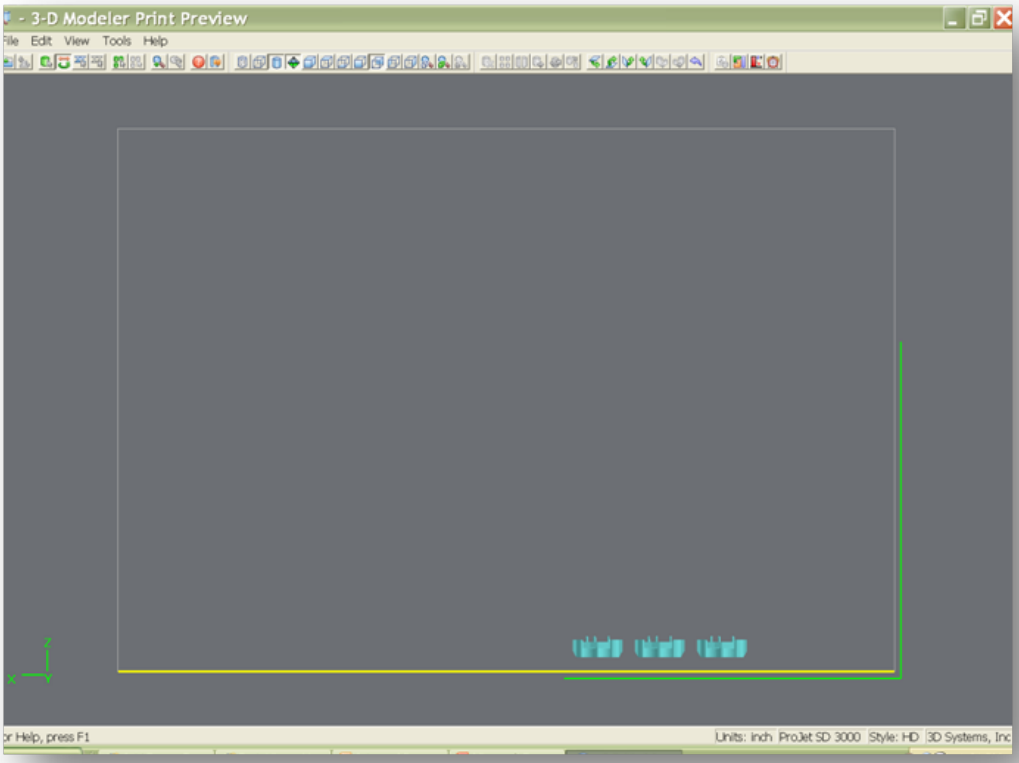
Select a triangle using the triangle selection tool, the align facing buttons become enable. Click the align part icons to rotate the part until the selected triangle faces the selected direction. Triangles can be selected on several parts before clicking an align Parts Facing icons so that all parts can be aligned together.



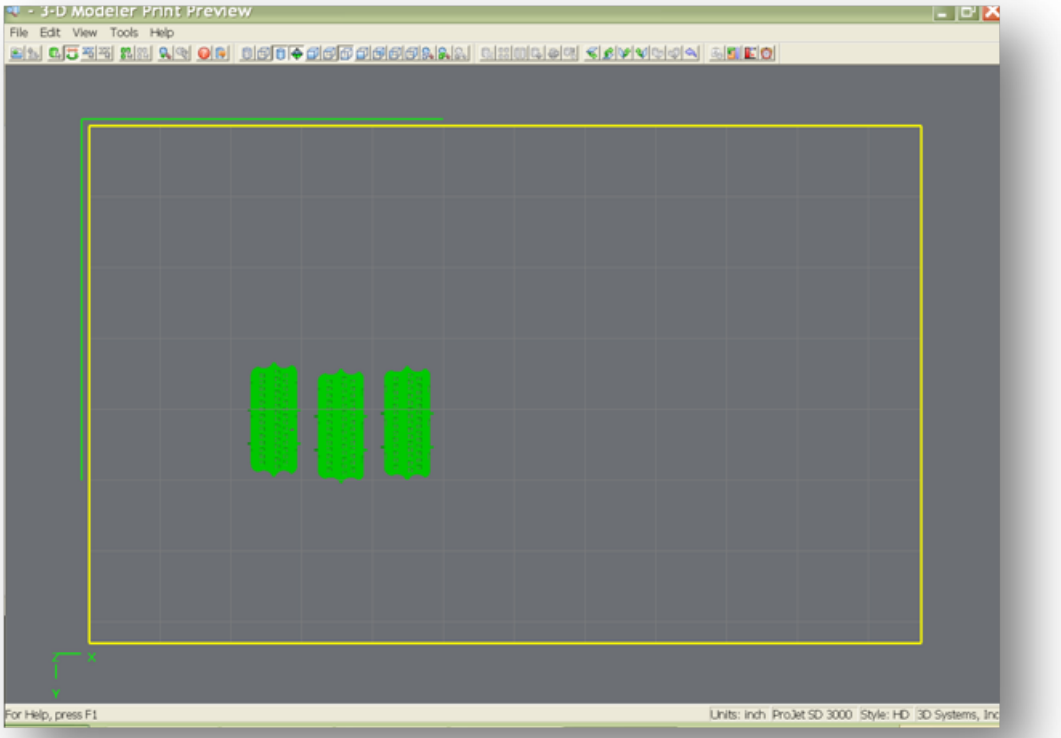
Auto Part Placement

This tool arranges parts for optimum build speed. Select the parts and click on auto place. The parts will automatically arrange in the build envelope.	

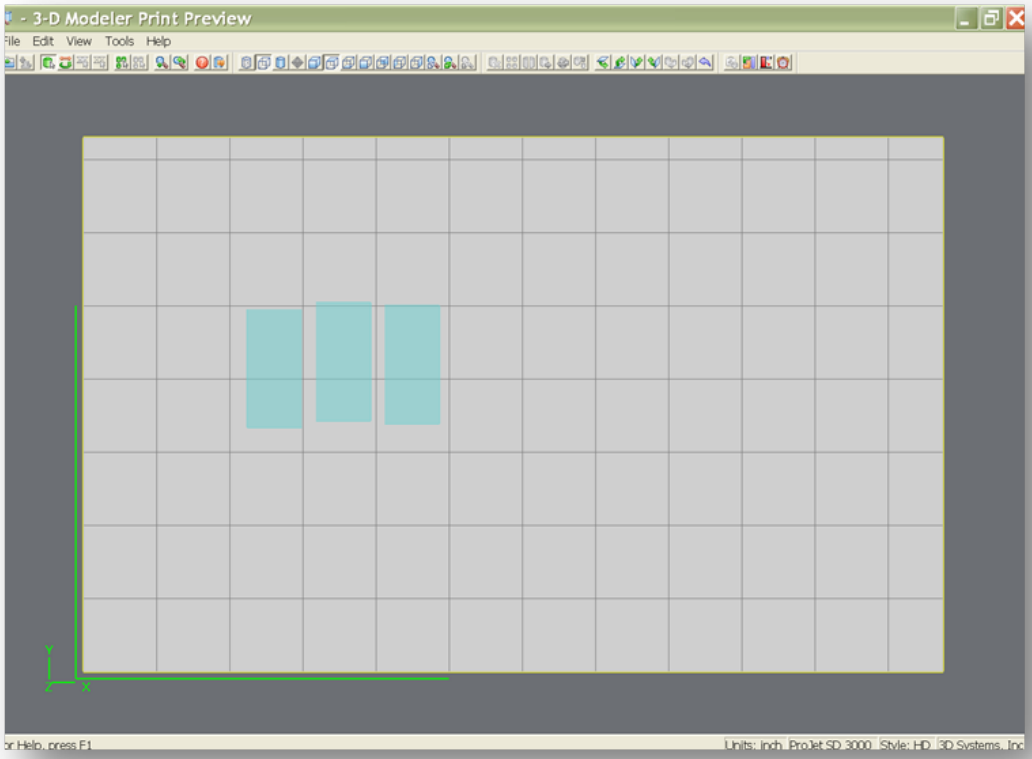
Back View

This view point button is a back two dimensional viewpoint.	

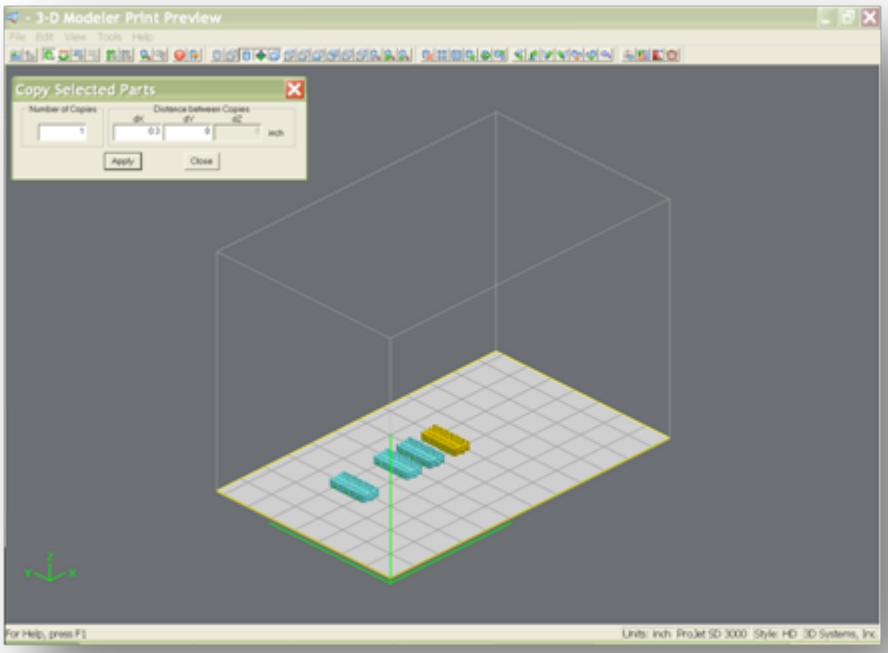
Bottom View

This view point button is a bottom two dimensional viewpoint. It allows you to move the selected parts on the build envelope.	

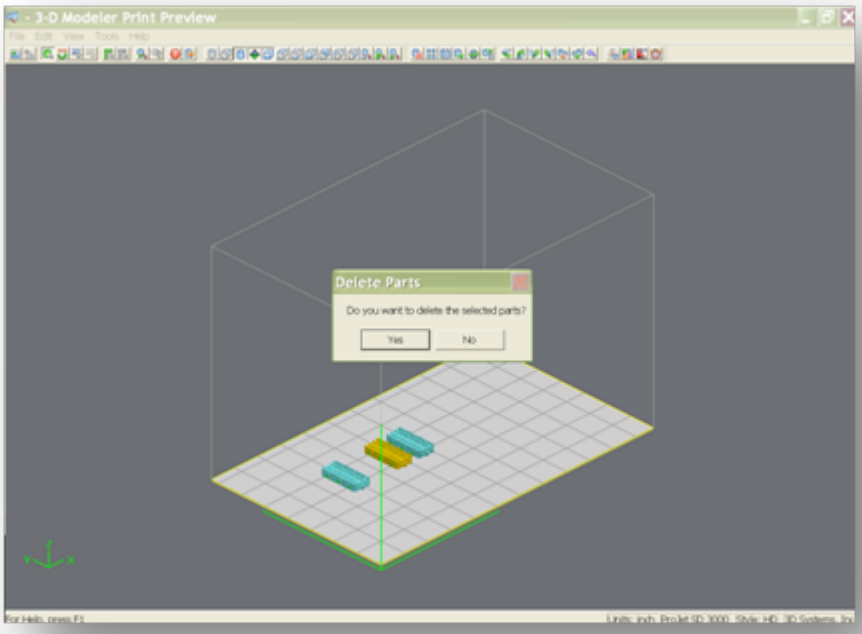
Bounding Box Display

A bounding box for a set of objects is a cuboid that completely contains the set.	

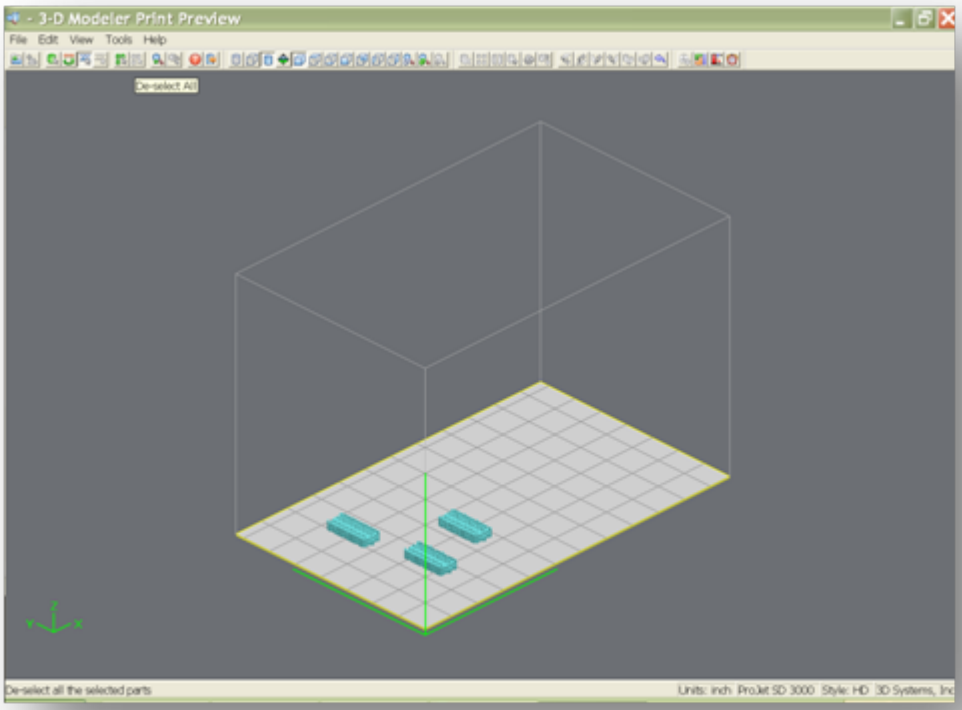
Copy

To copy a part, select part and click on the copy icon. A dialog box will appear asking for the number of copies and the distance between them. Enter the number of copies and distance, click Apply to generate the copies.	

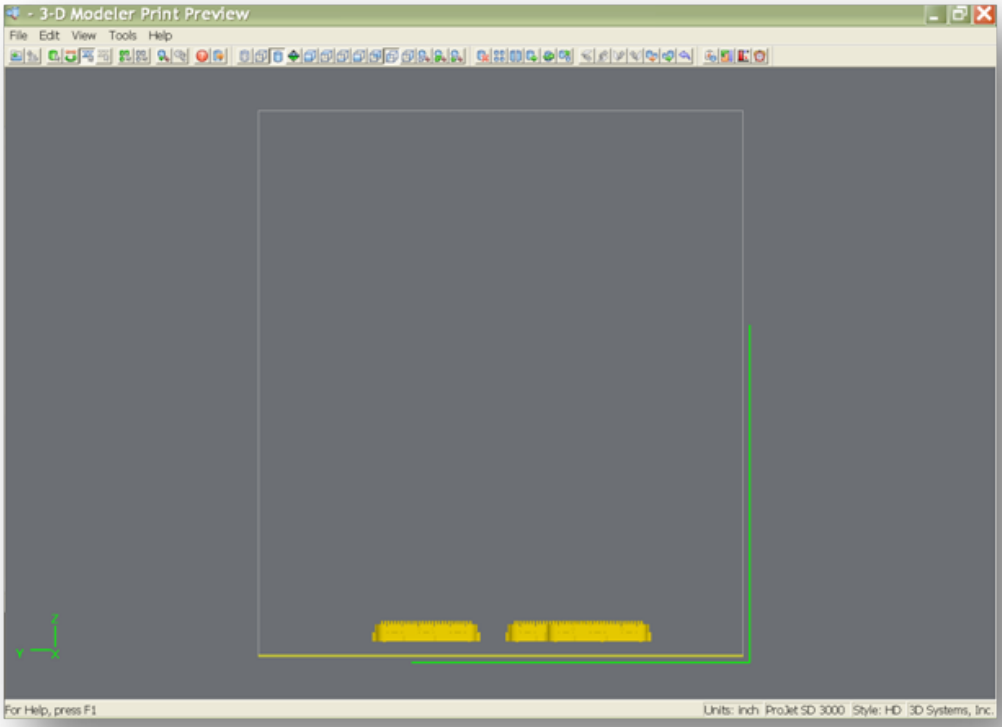
Delete

To delete a part / parts from the platform, select a part using the "Select part" or "Select all" tool and then click the delete icon to delete the selected part / parts.	

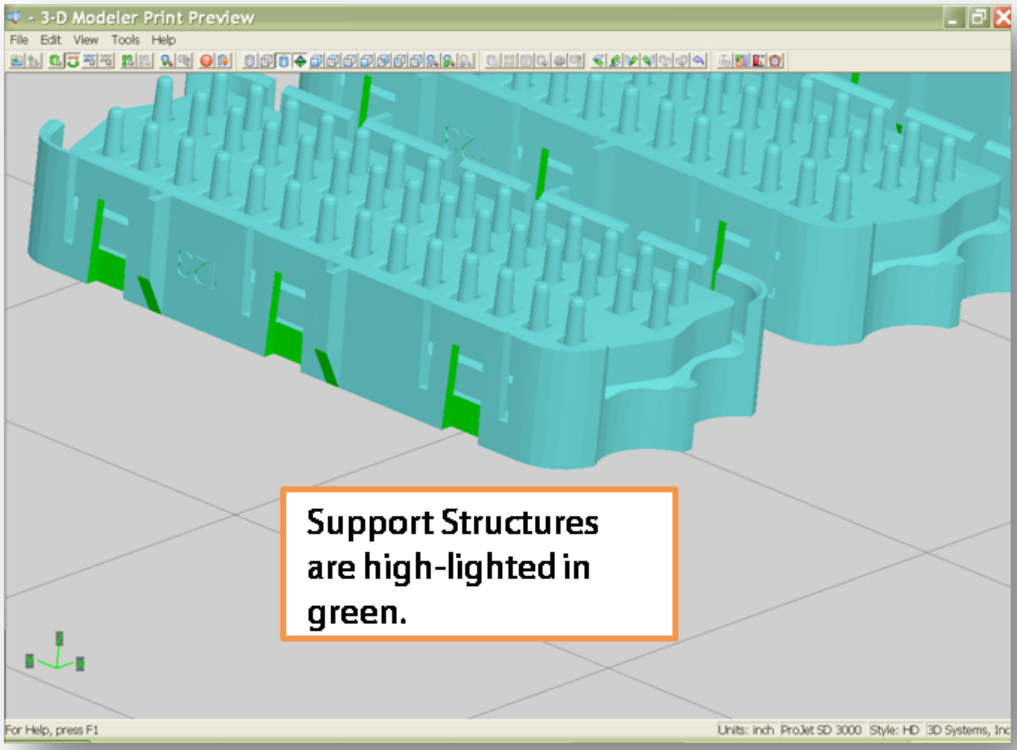
De-Select all

When using the De-Select all icon, all parts on the platform will become stationary.	

De-Select all Triangles

Use the de-select all triangles to de-select the triangular facets on parts.	

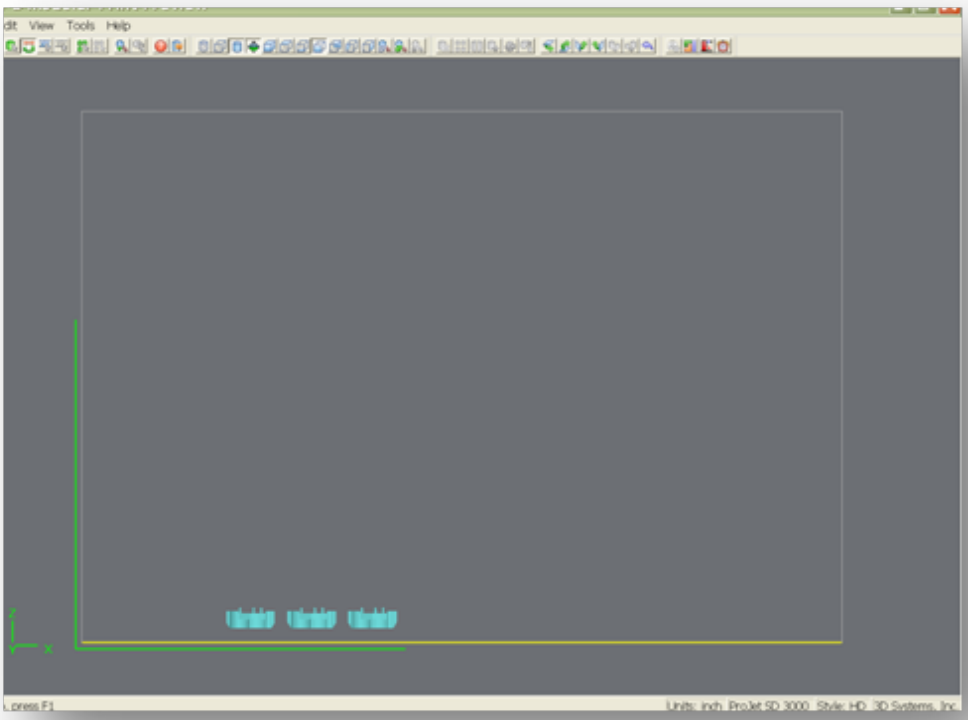
Display Support Creation Surface

Select the part and click on the Display Support Creation Surface to identify where the supports are placed on the part. The support structure will be high-lighted green. Use the trackball to rotate the platform to view structure.	

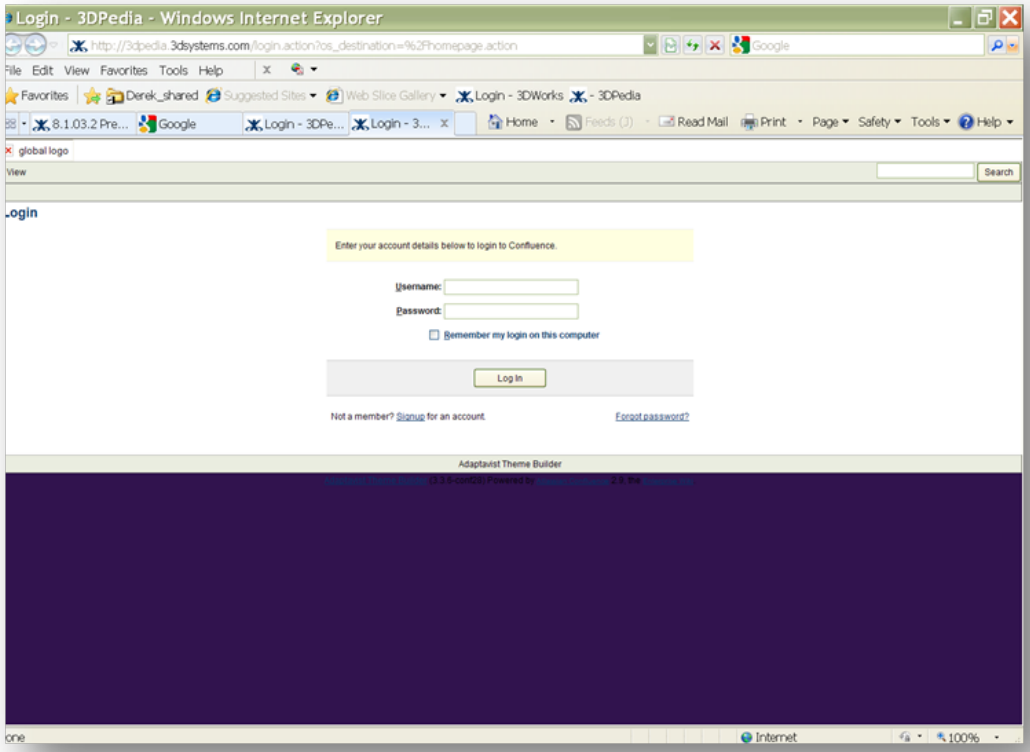
Estimate Build Time

Click on the estimate build time icon to estimate the time it will take to build the part.

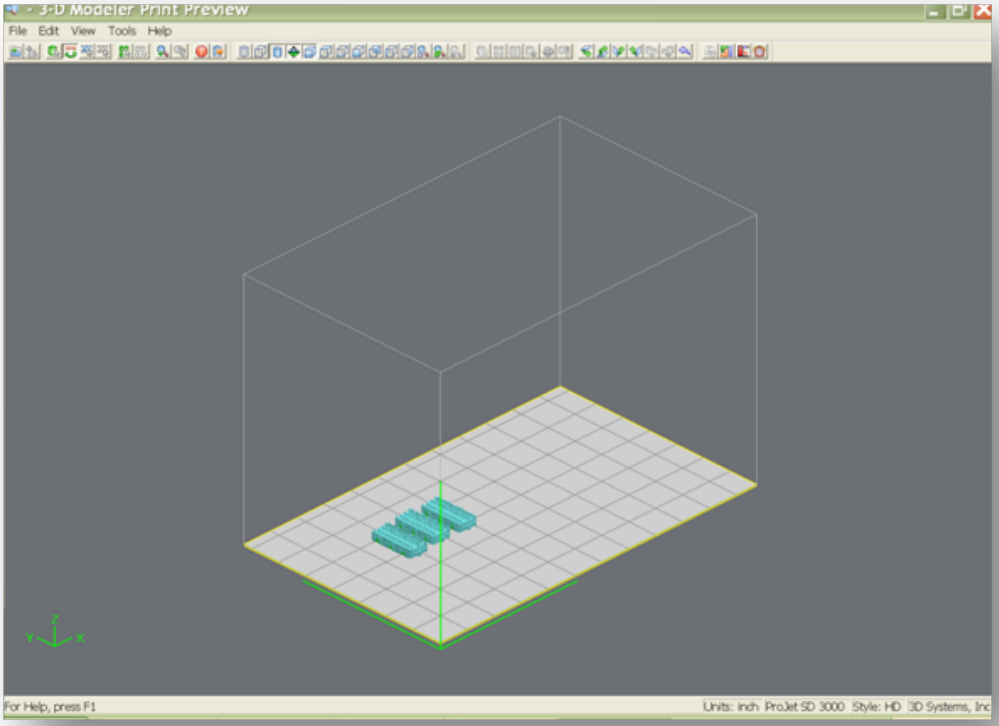
Front View

This view point button is a front two dimensional viewpoint.	

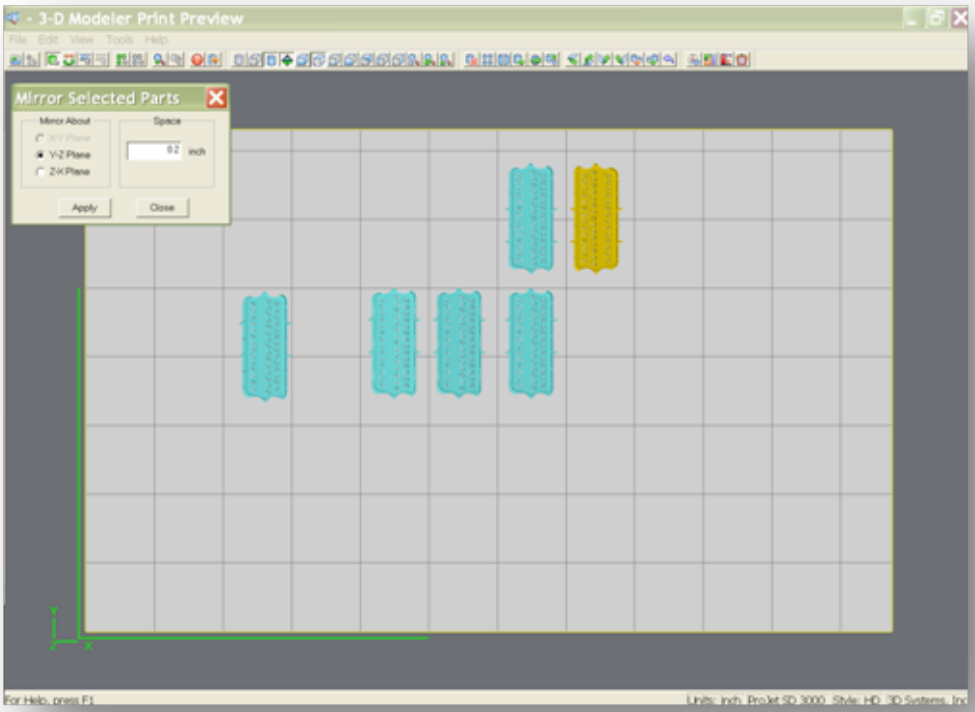
Help Topics

When selecting the help topics icon, 3dpedia log in page will automatically display asking for your User Name and Password. After typing in the log in information, select "Remember my login on this computer" and then click on "Log In". The ProJet 5000 User Guide will become available to help in searching the information in question.	

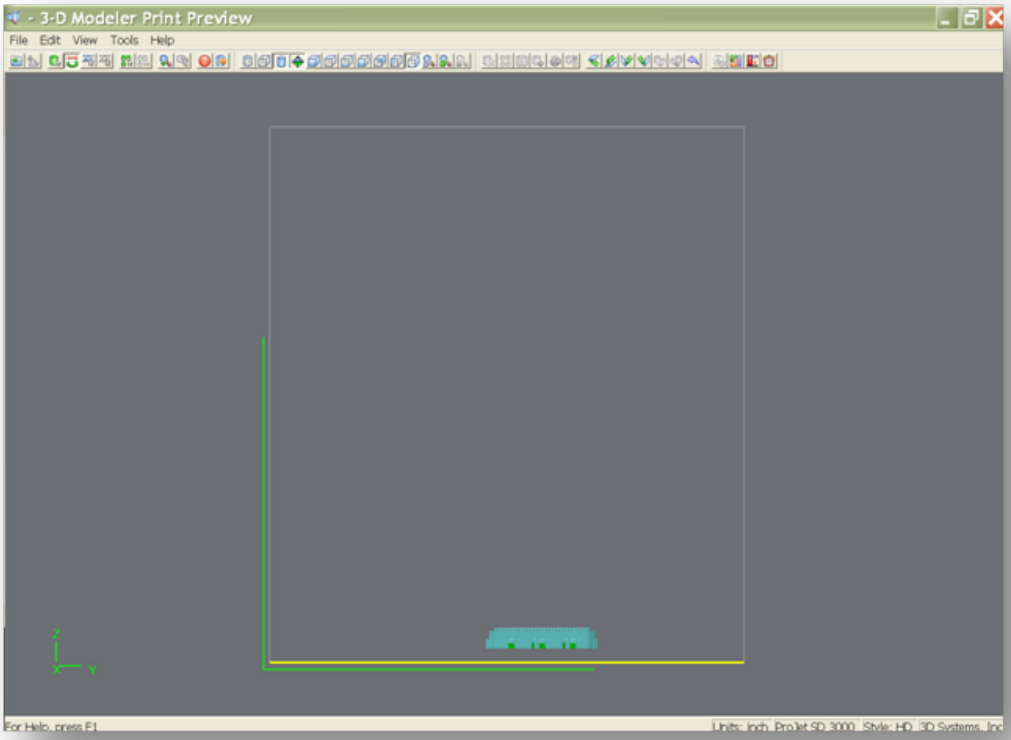
Isometric View

This view point button is an isometric 3-D viewpoint. It scales and orients the display to the standard view point from one corner of the build envelope.	

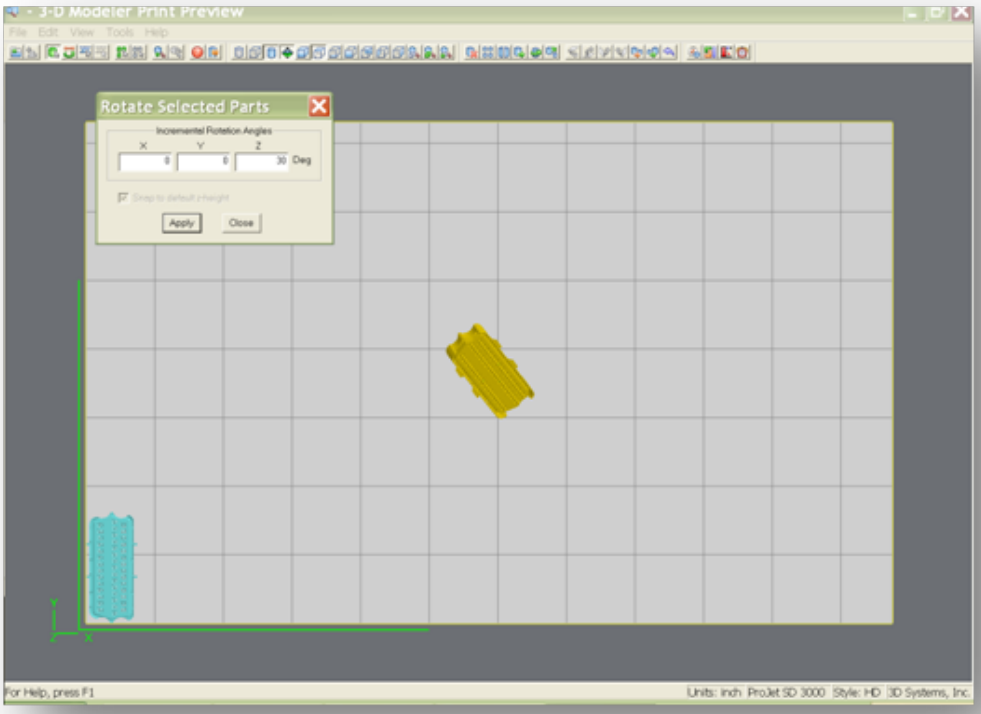
Mirror

To create a mirror image of one or several parts, select the parts and click the mirror icon; the dialog box will appear. Choose an axis around which to mirror the part, and a separation distance, click Apply.	

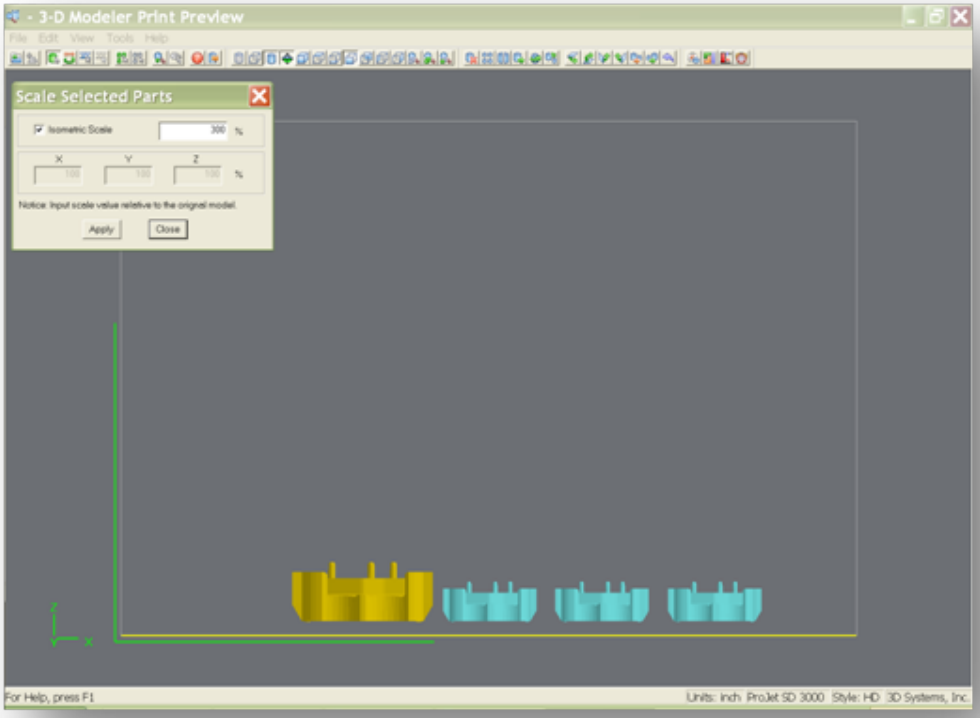
Right View

This view point button is a right two dimensional viewpoint.	

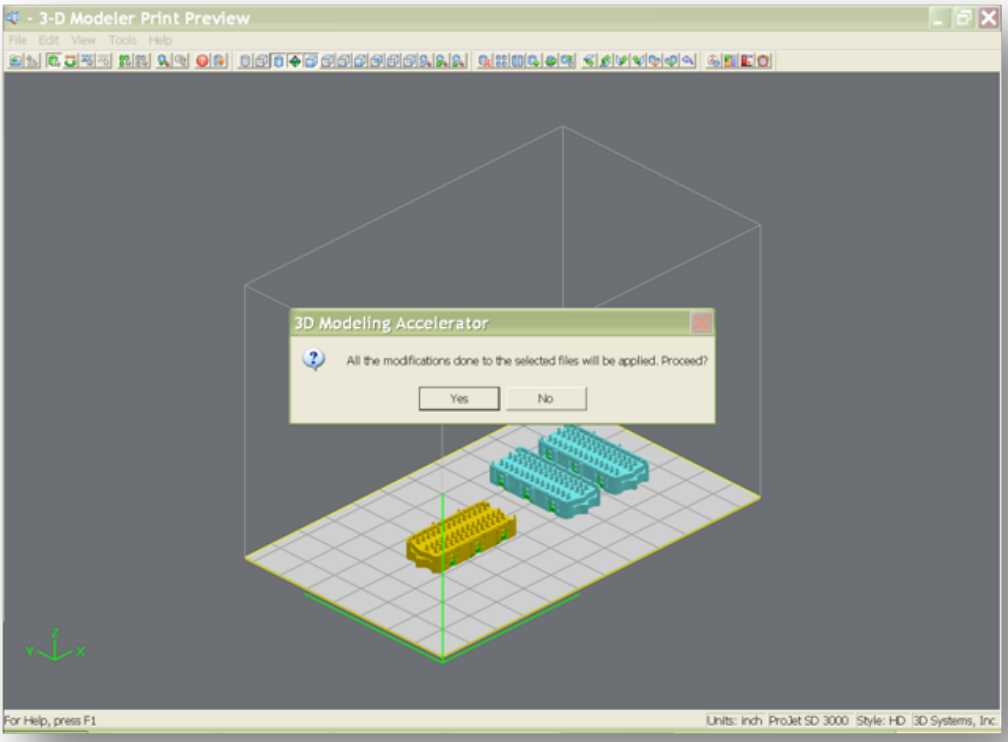
Rotate

Select the part to rotate and click on the rotate icon. Use the dialog box to rotate the degree amount in Y,X,Z directions in the maximum of 180°.	

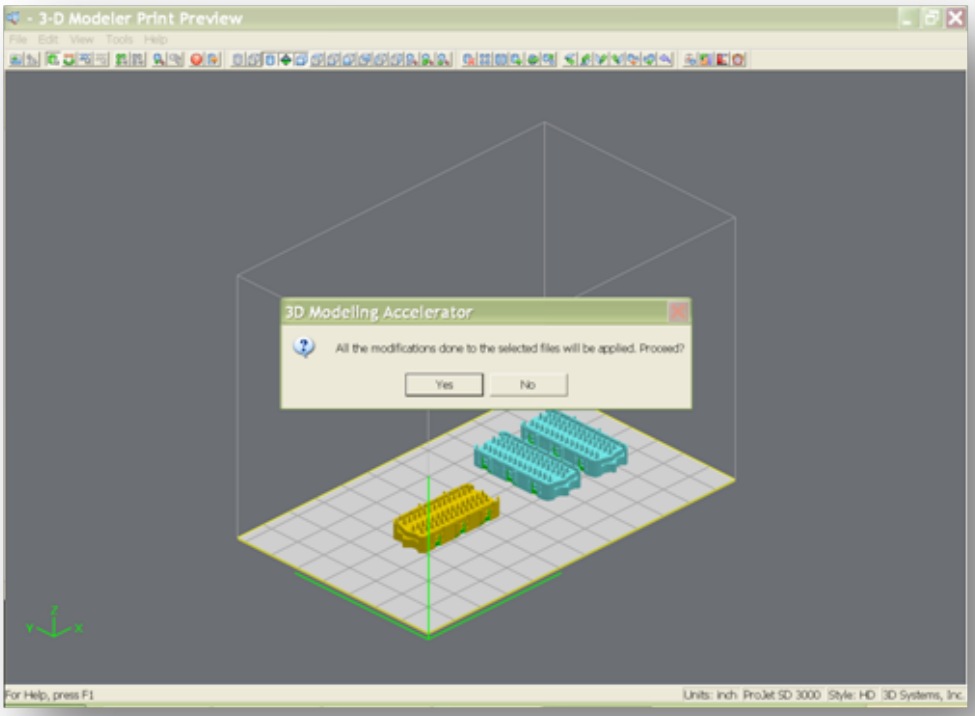
Scale

Parts can be scaled by percentages, eith isometric meaning all axes get the same scale factor or differently in each axis. Select one or several parts and click on the scale icon; the dialog box appears. Enter a scale value, then click the apply. Scale values are absolute. A value of 100% always returns the object to its original scale; 200% is always twice the size of the original.	

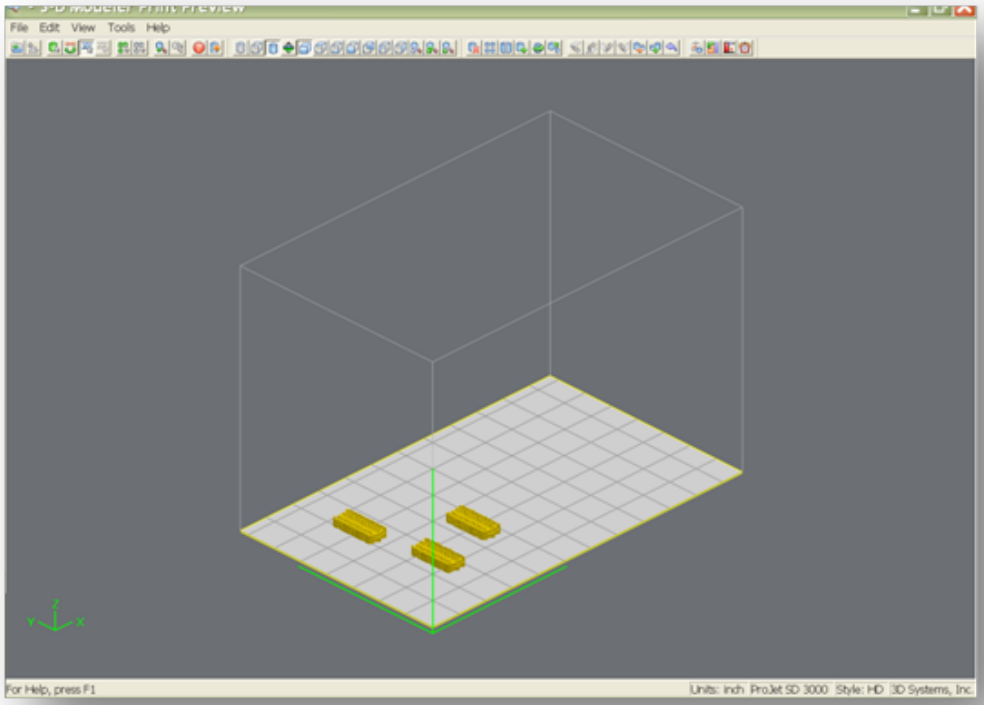
Scale inch to mm

The parts unit can be changed from inch to millimeters by multiplying 25.4 to the part measurement. Select the part and click Scale inch to mm icon. A dialog box will ask if you want to proceed with the modifications; select "Yes" to proceed with the parts unit changes or select "No" to discontinue.	

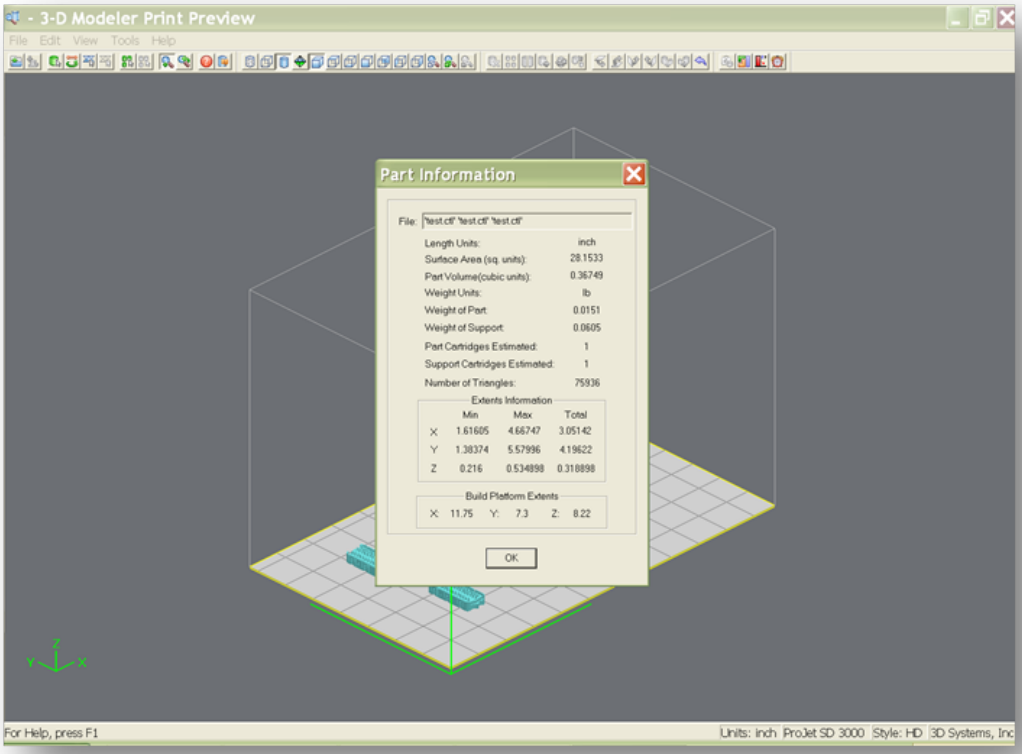
Scale mm to inch

The parts unit can be changed from millimeters to inch by dividing 25.4 into the part measurement. Select the part and click Scale to inch icon. A dialog box will ask if you want to proceed with the modifications; select "Yes" to proceed with the parts unit changes or select "No" to discontinue.	

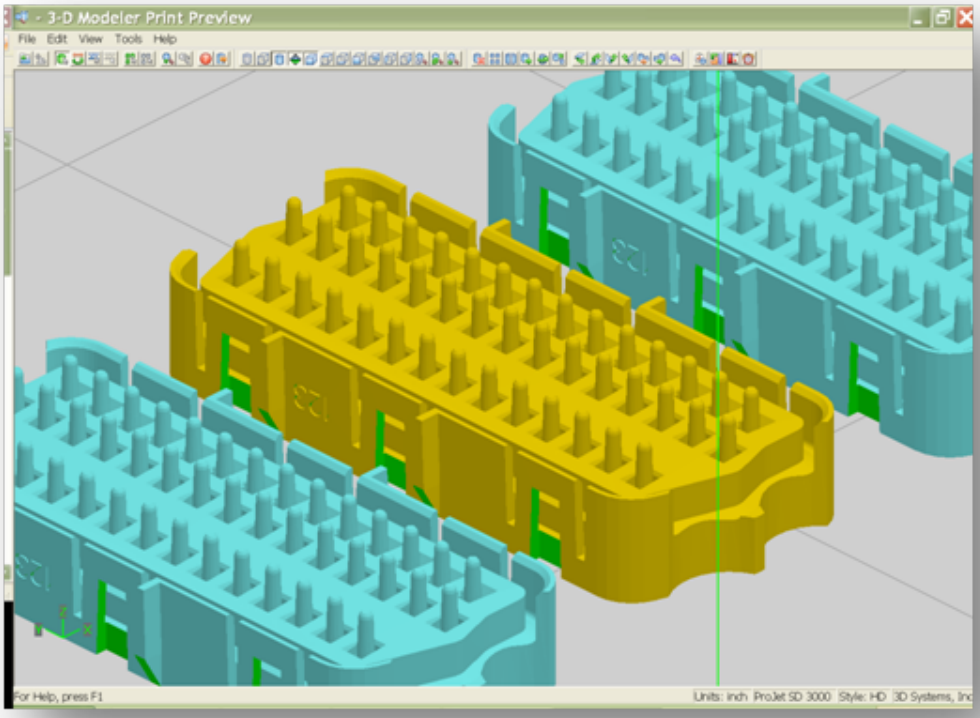
Select all

Select a multiple parts; the parts will high light once selected. To manipulate parts on the platform, select the Bottom View or Top View icon.	

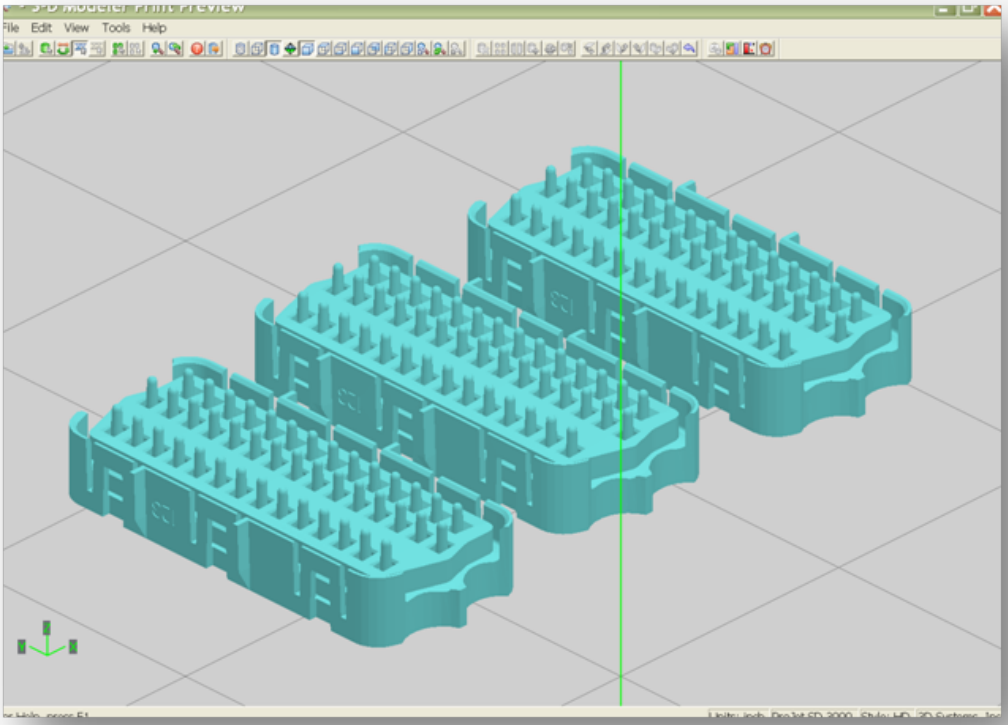
Selected Part Information

Click on the selected part information icon to display the part's information dialog with details about the currently selected part.	

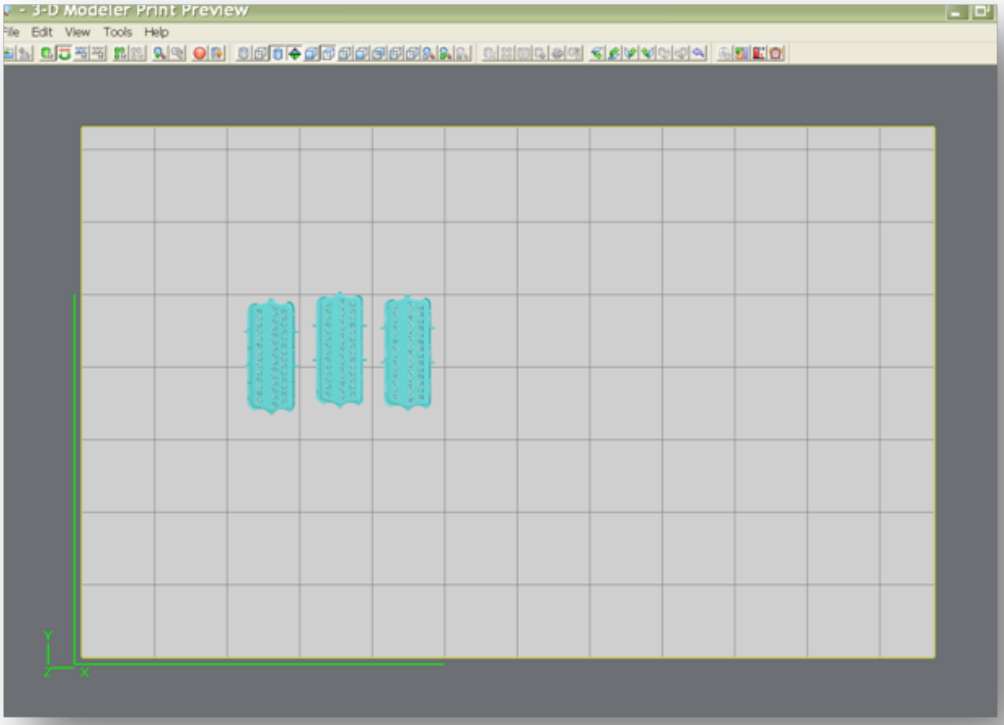
Selected Parts

View selected parts enlarges the selected parts until they fill the viewing area.	

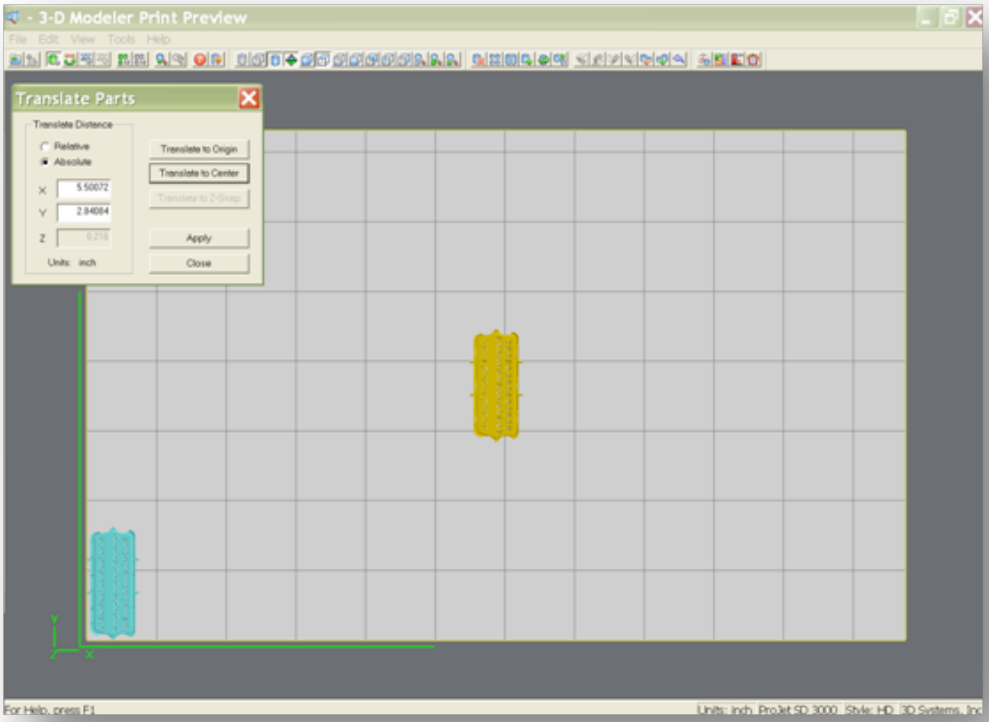
Shaded Display

Using a Shaded Display allows visualization of the solid design structure of a part. When using the wireframe display, toggle back to the Shaded Display to view the solid design.	

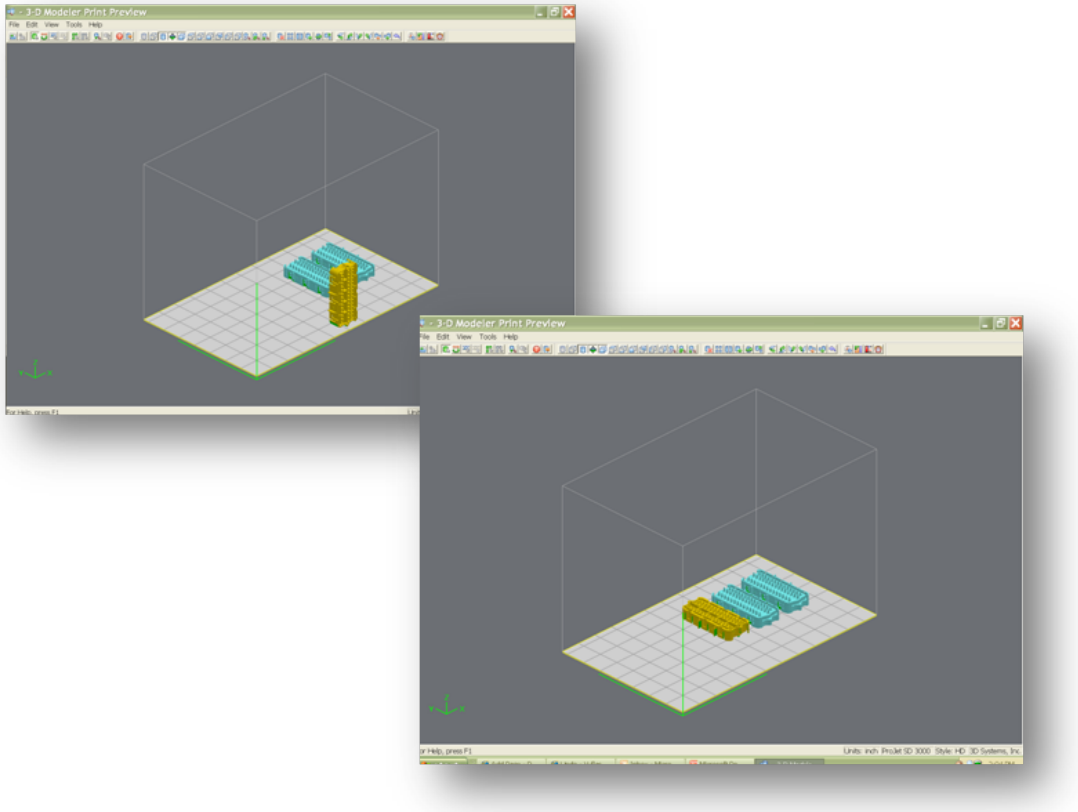
Top View

This view point button is a top two dimensional viewpoint. It allows you to move the selected parts on the build envelope.	

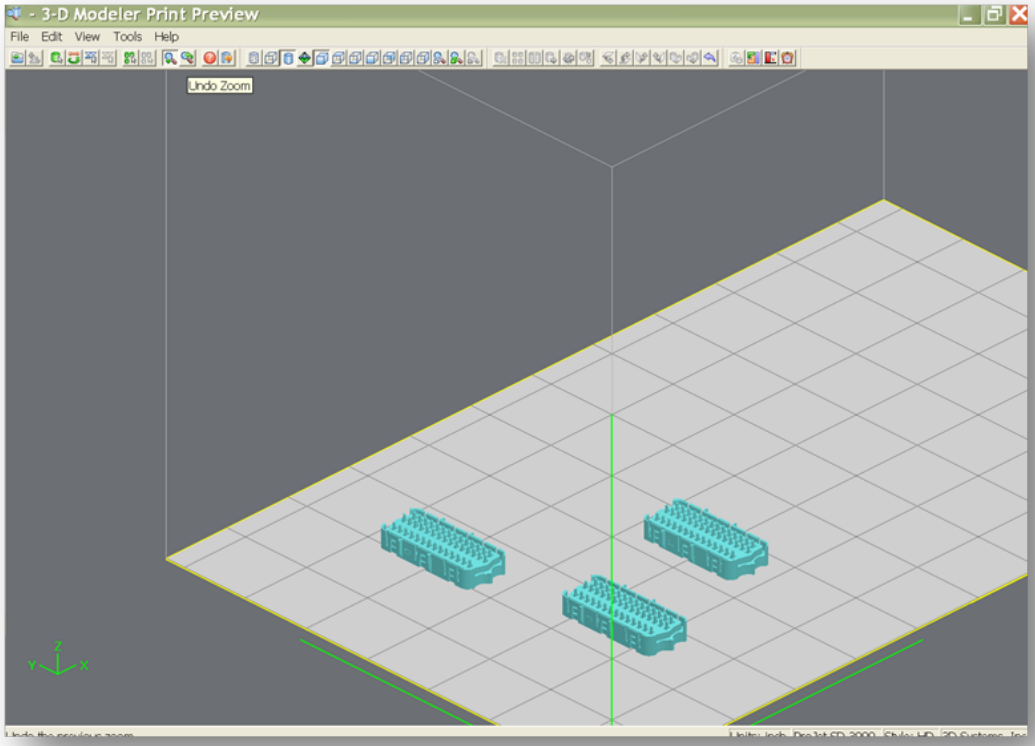
Translate

Use the translate part dialog box to move parts by entering inch values. The dialog box allows relative movement (parts are moved from their current location in specified X and Y axis) as well as absolute (parts are specified in the specified X,Y coordinates).	

Undo

Click the undo icon to bring part back to its previous state after changes have been made.	

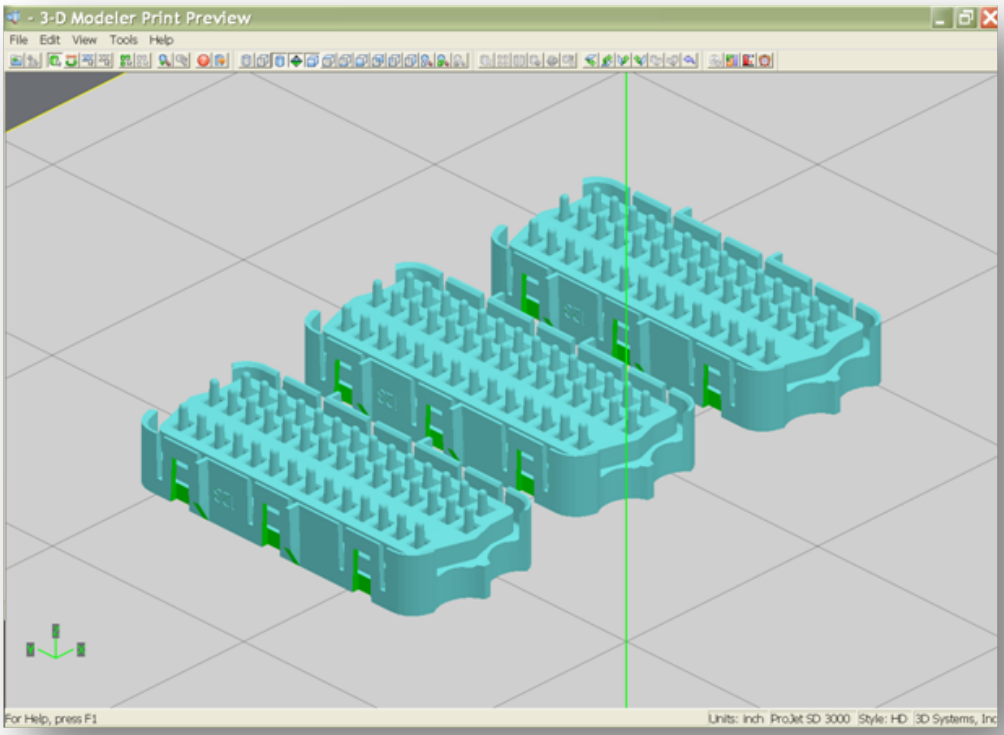
Undo Zoom

Click on the undo zoom button continously, the build envelope will reduce incrementally until they are at the normal viewing area.	

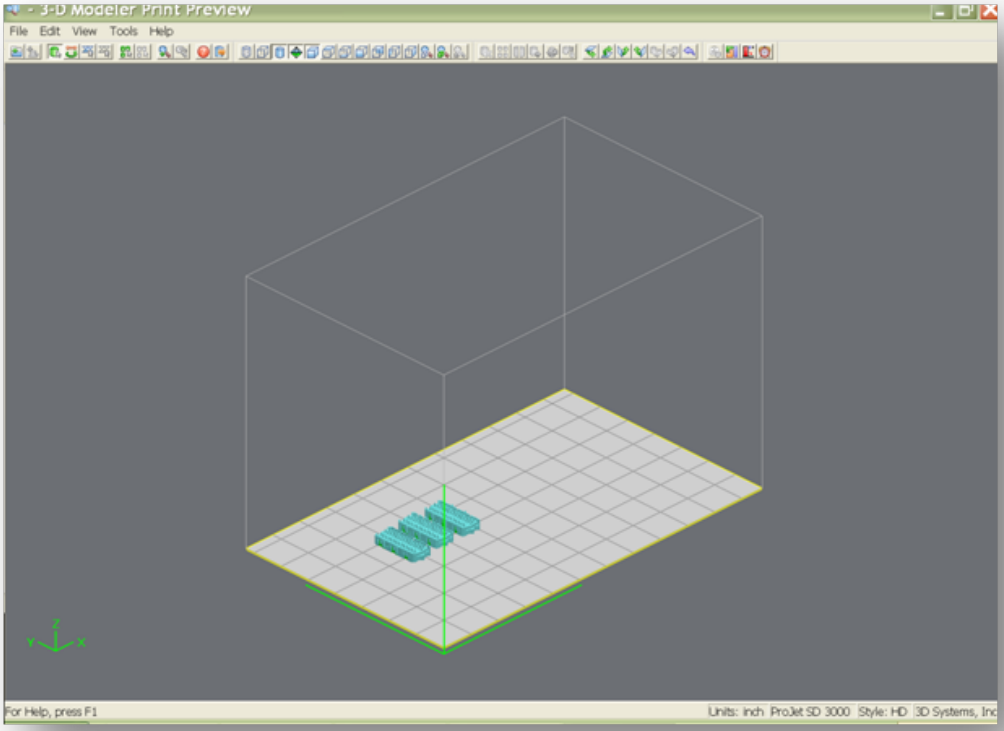
Verify

Verification detects and fixes problems in the STL. Also individual STL part can be verified by selecting it and then clicking the Verify icon.

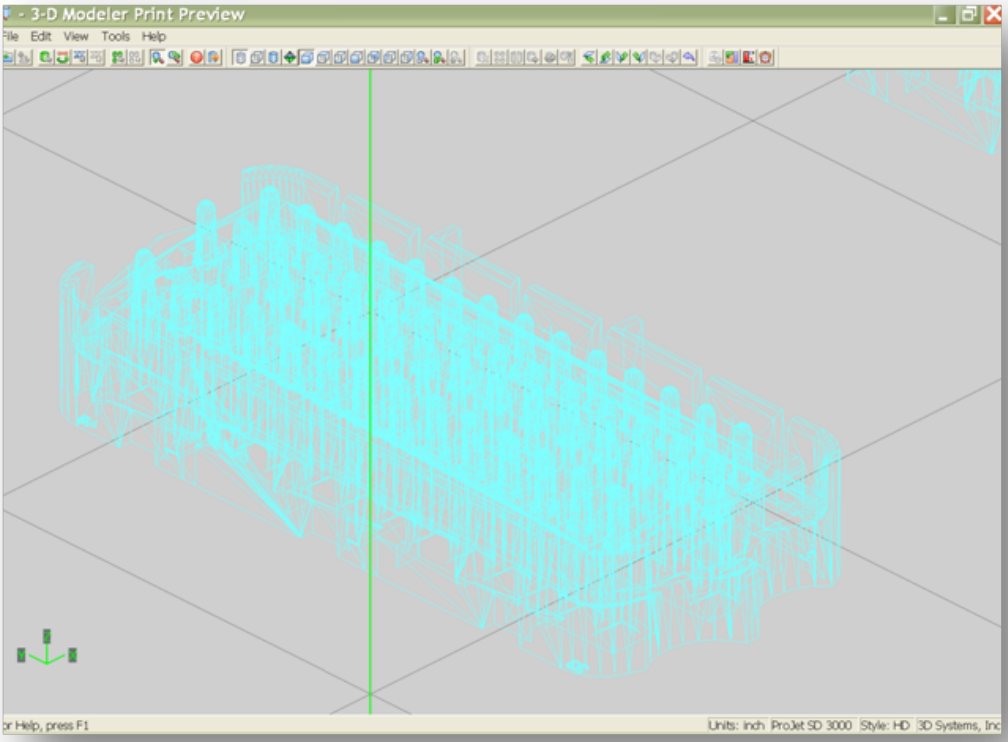
View All Parts

View all parts display the parts, and enlarges them as much as possible omitting empty portions of the build envelope.	

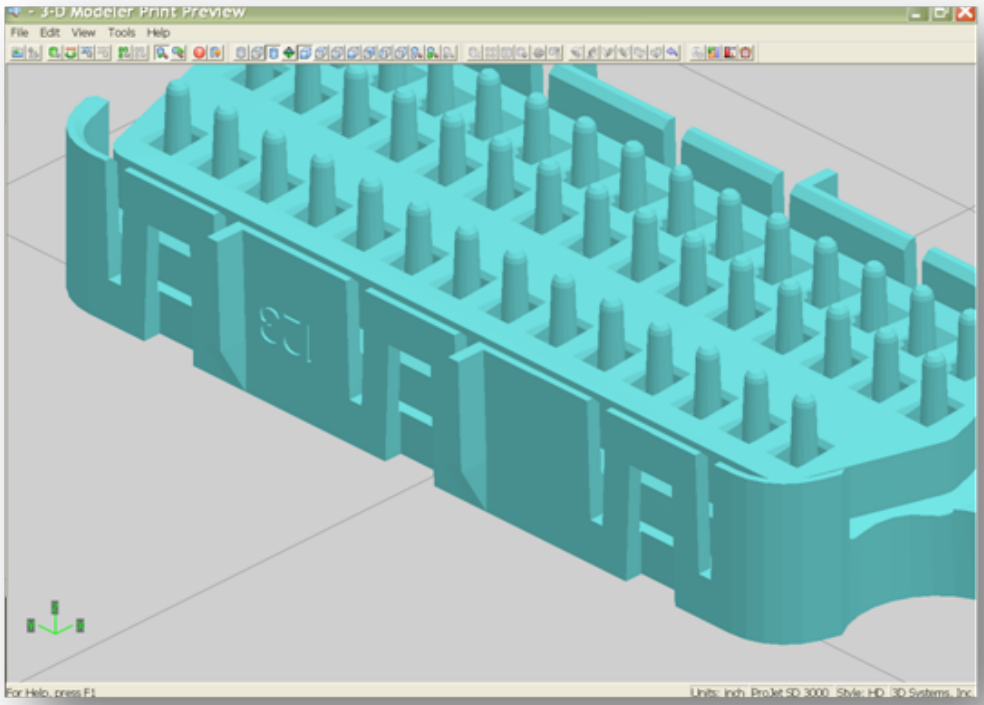
View Platform and Parts

This predefined view zooms the view to include the entire build envelope and all the parts on the platform.	

Wire Frame Display

Using a wire frame allows visualization of the underlying design structure of a part.	

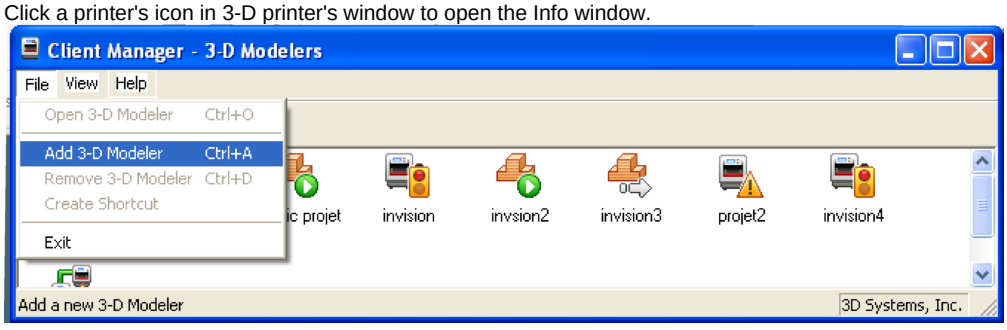
Zoom

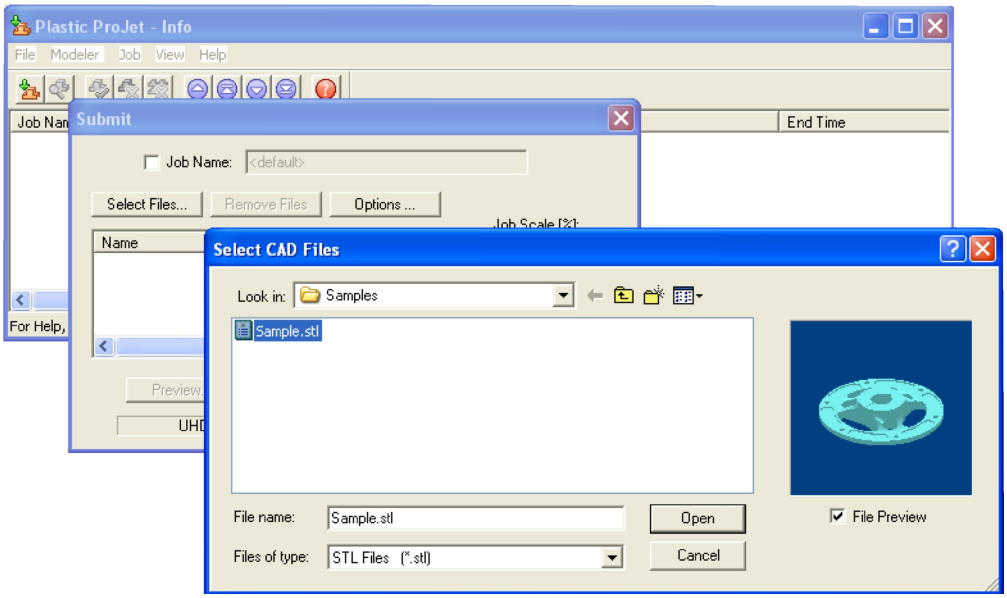
Zoom in on the parts incrementally to enlarge until they fill the viewing area. Click and hold the mouse button until and drag across the area that you wish to zoom in on for part detail.	

8.2 Save a Build Job

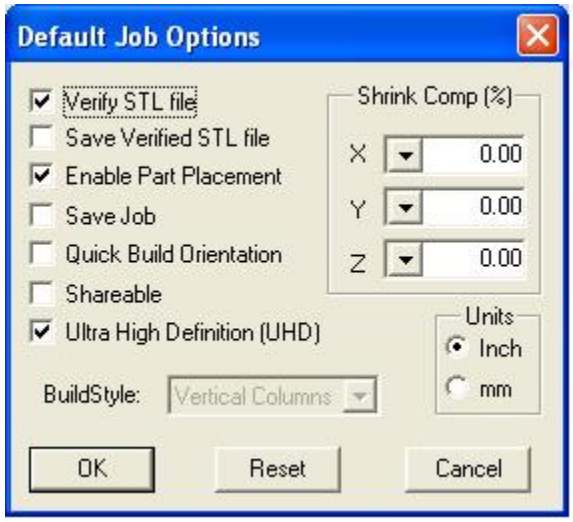
Prepare and save build job(s) on your PC. Later, submit the job, skipping preparation steps. A saved job is specific to a single PC and can only be built or deleted from that PC.

1. Click a printer's icon in 3-D printer's window to open the Info window.





2. Select Job name to be saved.
3. Choose **Job > Default Options**.



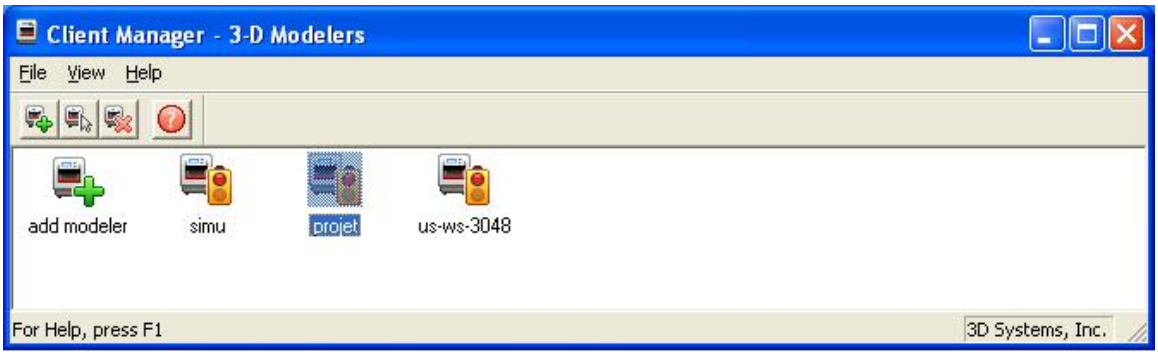
4. In the Default Job Options, select **Save Job**, then click **OK**.

After submitting jobs to the printer's queue, it cannot be saved unless Save Job was selected. When a build job with the Save Job option enabled reaches Pending status, another job (with the suffix "_s") is added to the queue. For more information see Saving, Repeat, and Confirming Build Jobs in your ProJet Client online Help for more information.

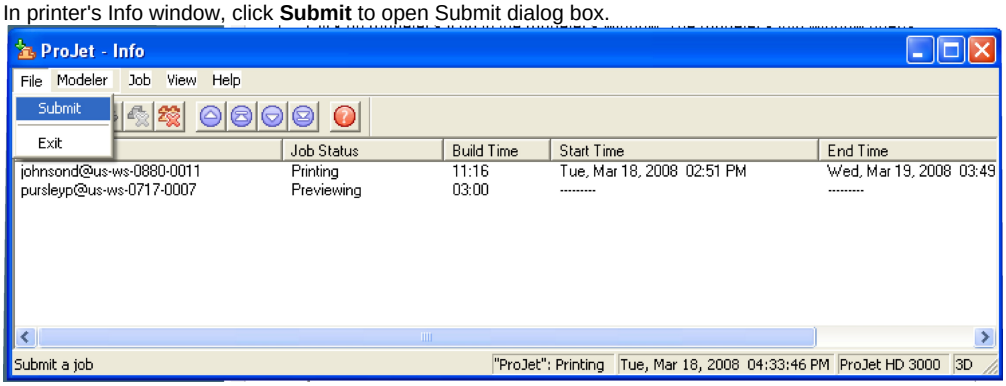
8.3 Submit a Build Job

Make certain the printer is Off-Line during the job submittal process. Place the printer on-line after the job is submitted.

1. Click on printer's icon in the printer's window. The printer's Info window opens.

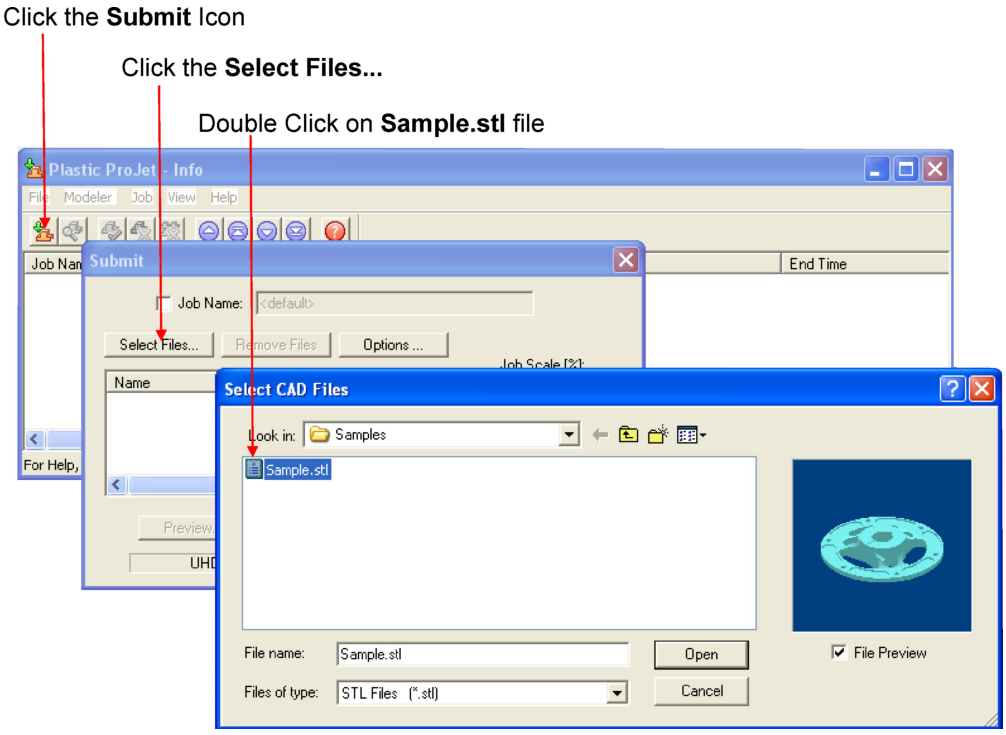


2. In printer's Info window, click **Submit** to open Submit dialog box.

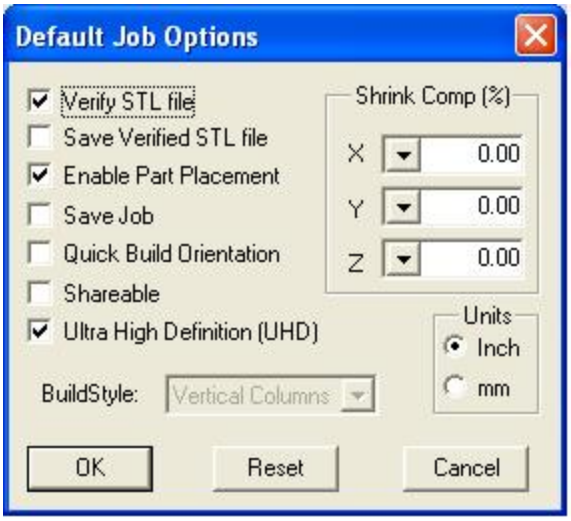


3. Click **Select Files** on the Submit dialog box to add one or more parts to the build job.

	More than one STL file can be selected at a time. In Select CAD Files dialog box, hold down the Ctrl key and click on several STL files. Add parts in Preview window. After you have added at least one STL file, use Preview window to view build jobs in three dimensions, and to add more STL files if desired. Sample STL files are in the \3-D Modeling Client\Samplesfolder.



4. Browse files in Select CAD files window. When files are selected, file names appear in build job parts list of Submit dialog box.
5. Click **Options**...button on Submit dialog box. The Default Job Options dialog box appears.



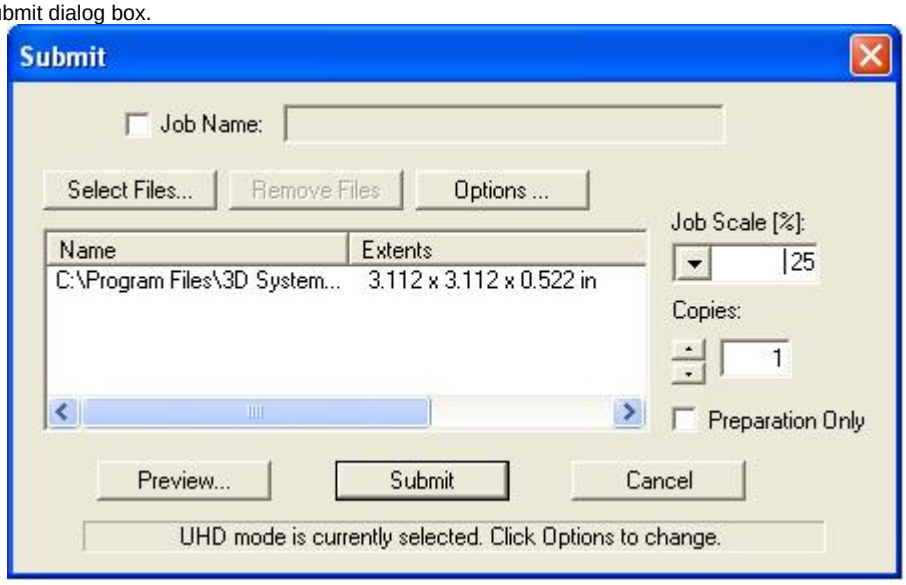
6. Change or reset values, such as Build Style, Shrink Comp (%), and Units. (See "Default Job Options Dialog Box" in the 3-D Modeling Client online Help for job options definitions.)

Parts shrink in X and Y. The degree of shrinkage depends on part geometry. To improve part accuracy, apply the X, Y, and Z Shrink Comp (%) values below initially, then measure your parts and refine these values.

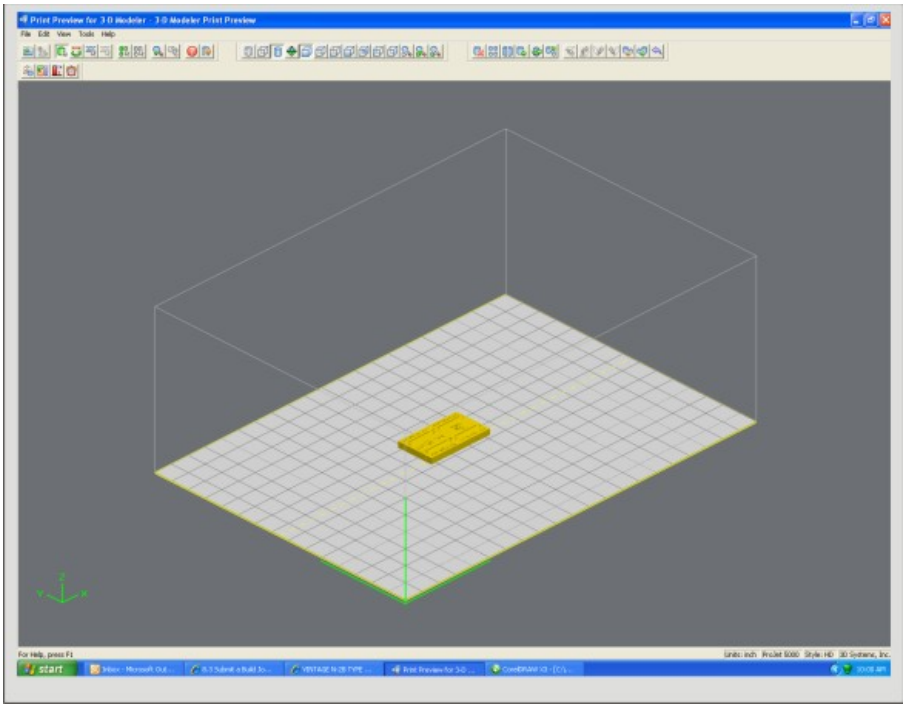
|| DIM. || SHRINK COMP % (INIT.) ||

x	1.12
y	1.19
z	0.00

7. Click **Preview** on Submit dialog box.

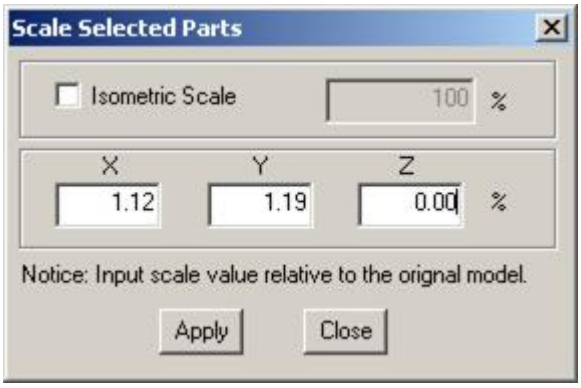


8. Manipulate parts interactively in the Preview window's virtual printer 3-D build workspace.



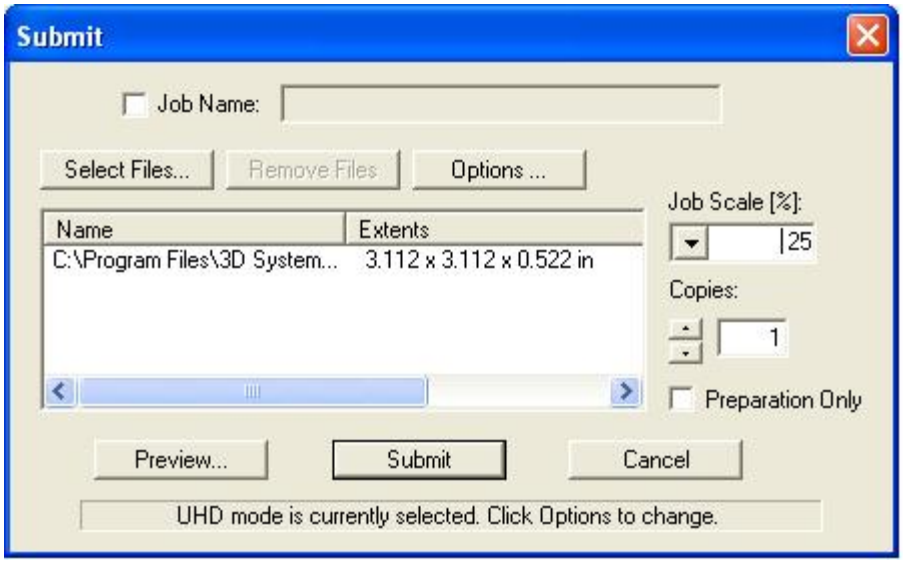
9. If required, resize all parts in build job by the same scale factor, enter a Job Scale % in the Submit dialog box before clicking **Submi**t. To resize some of the parts of your job, use **Edit > Scale** in Preview. (See the topic "**Previewing Print Jobs > Scaling Parts**" in your ProJet Client online Help for instructions.)

	Applying Job Scale % (or scale percentage(s) using Edit > Scale in Preview)) is different than applying Shrink Comp % values in the Default Job Options dialog box. Applying scale percentages changes "nominal" part dimensions in the STL file(s). Applying Shrink Comp percentages does not change nominal part dimensions in the STL file(s). Rather, Shrink Comp adjusts for expected shrinkage during the build so the actual final part dimensions more closely match the nominal dimensions.

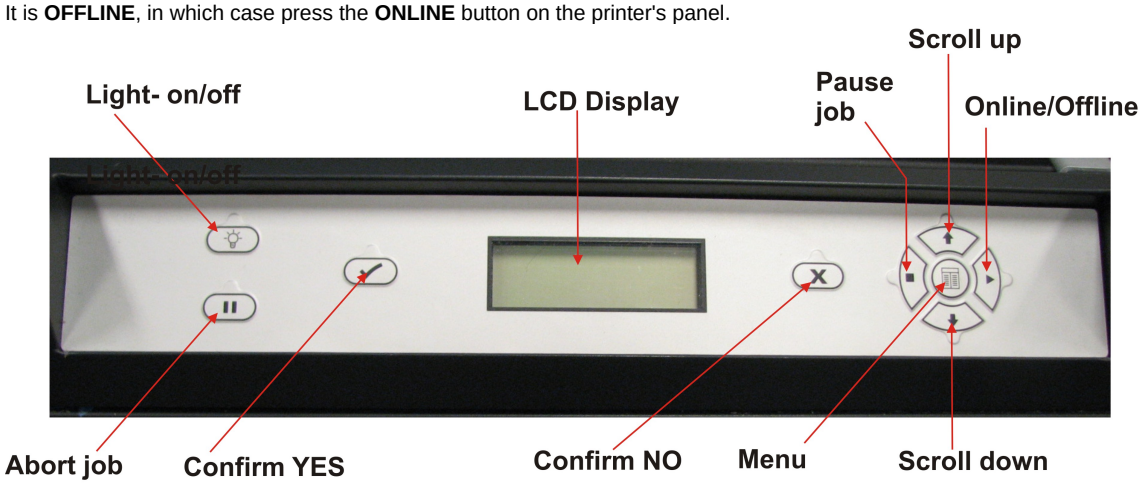


1. See Previewing Build Jobs.

1. Click **Submit** on Submit dialog box if you did not preview the job, or click **Submit** toolbar button in the Preview window if you did preview the job.



1. The build job submitted will be built when printer is ready unless:
   - It is **OFFLINE**, in which case press the **ONLINE** button on the printer's panel.



   - It does not have a clean build platform installed; install clean one and press **ONLINE**.
   - The Preparation Only option in the Submit dialog box was checked. This causes the modeler to wait until the build job was confirmed before building --- enabling you to change the job in the Preview window again before confirming.

See "Checking printer Status" and "Confirming Build Jobs" in the online Help for more information.

2. When the Operator panel LCD shows **PLATFORM EMPTY? Y/N**, verify platform is clean and free of debris. If required, press **NO** and remove build platform from the printer to replace. See 7.2 Install & Remove Material Bottles and Build Platform
3. Close chamber door and press **ONLINE**. When the Operator panel LCD shows **PLATFORM EMPTY? Y/N**, press **YES**. If the display shows please Empty Waste Drawer, waste on the next build will exceed waste capacity, open the waste drawer and dispose of waste material. See 4.7 Waste Removal
4. Close waste drawer. The job starts automatically.

If the display shows *WAITING FOR JOB, no jobs are in the printer's queue. Go back to Step 2 and submit a build job to the queue. Once in the queue, the job starts automatically.*

5. Refer to Manage build jobs for additional information.

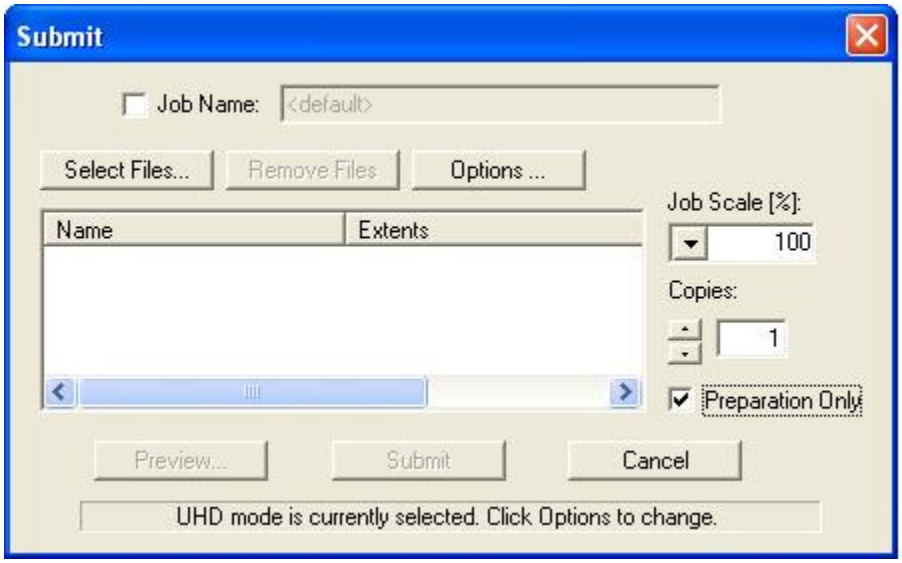
8.3.1 Remove Build Platform

When operator panel display shows **DONE: <job_name> remove build.**

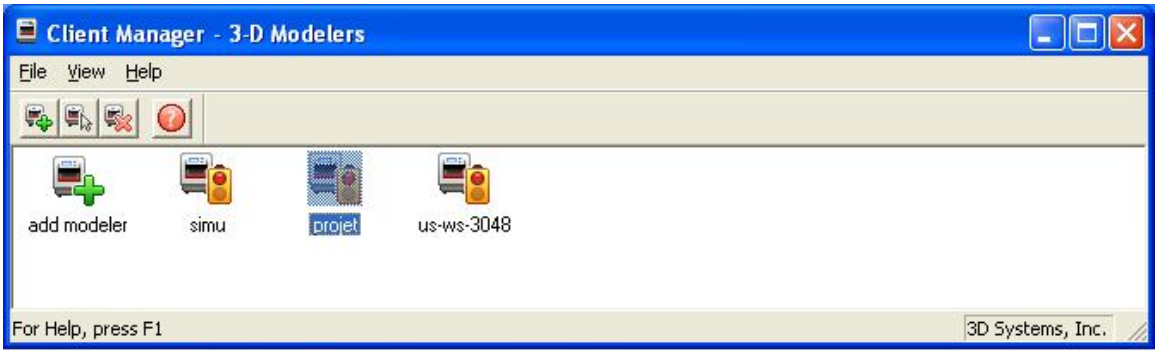
1. Lift chamber door.
2. Lift up build platform and pull out, then install a clean platform or close chamber door. See 7.2 Install & Remove Material Bottles and Build Platform

8.4 Manage Build Jobs

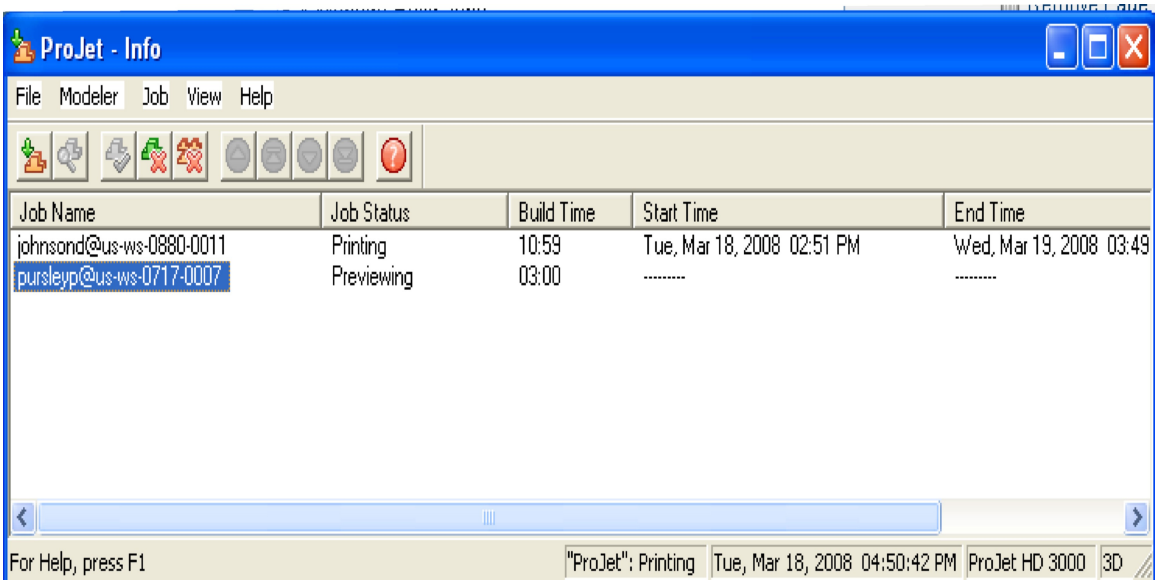
The client software will not send build jobs to the printer until job confirmed by selecting **Preparation Only** checkbox on Submit dialog box or resubmit a saved build job.



1. Click printer's icon in client software to open printer's Info window.



2. Select build job with **Job Status** of **Needs Confirm** or **Saved**.
3. Click **Confirm** button or choose **Job > Confirm** located on the tool bar of the printer's window.



4. Click **Yes.** Job is sent to printer as soon as it's available.

A **Needs Confirm** build job status immediately changes to **Pending** when confirmed.

Confirming saved jobs generates a Pending build job whose name lacks the "_s" suffix. However, saved jobs remain in the queue.

8.4.1 Delete Build Jobs

8.4.2 Pause Build Job

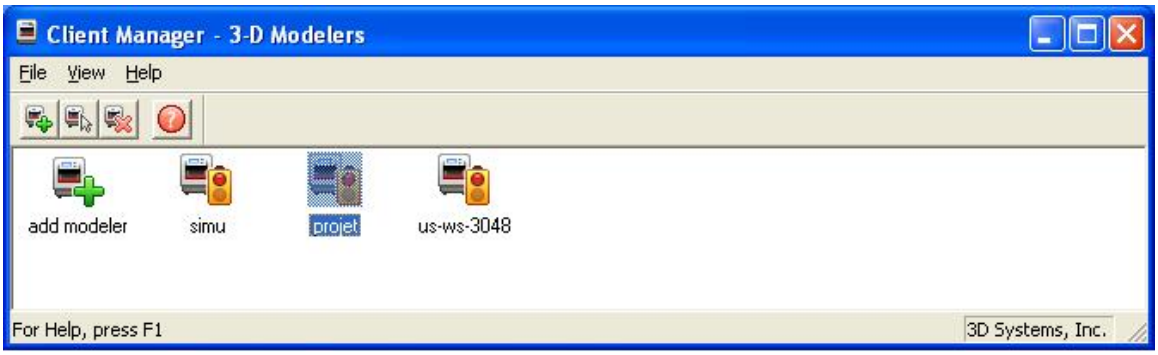
8.4.3 Abort Build Job

8.4.4 Repeat Build Job

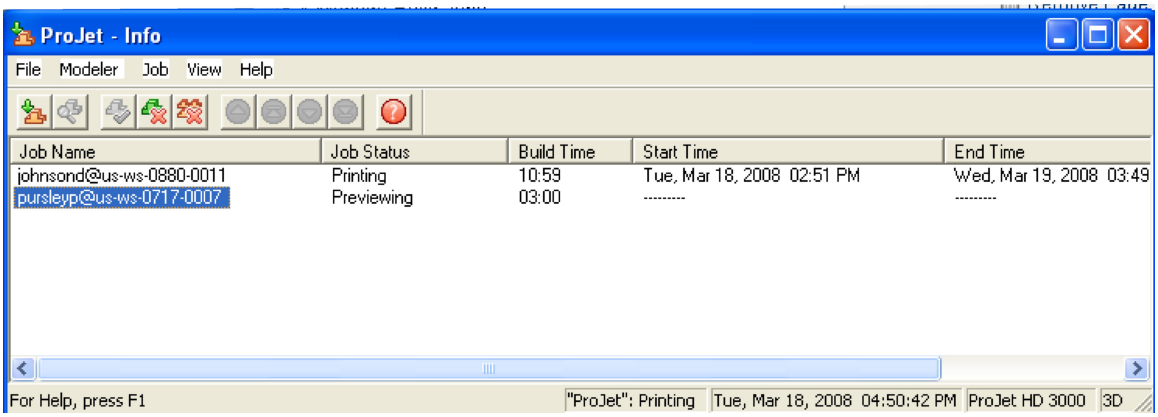
8.4.1 Delete Build Jobs

Follow the instructions below to delete one or more jobs from the queue after you submitted.

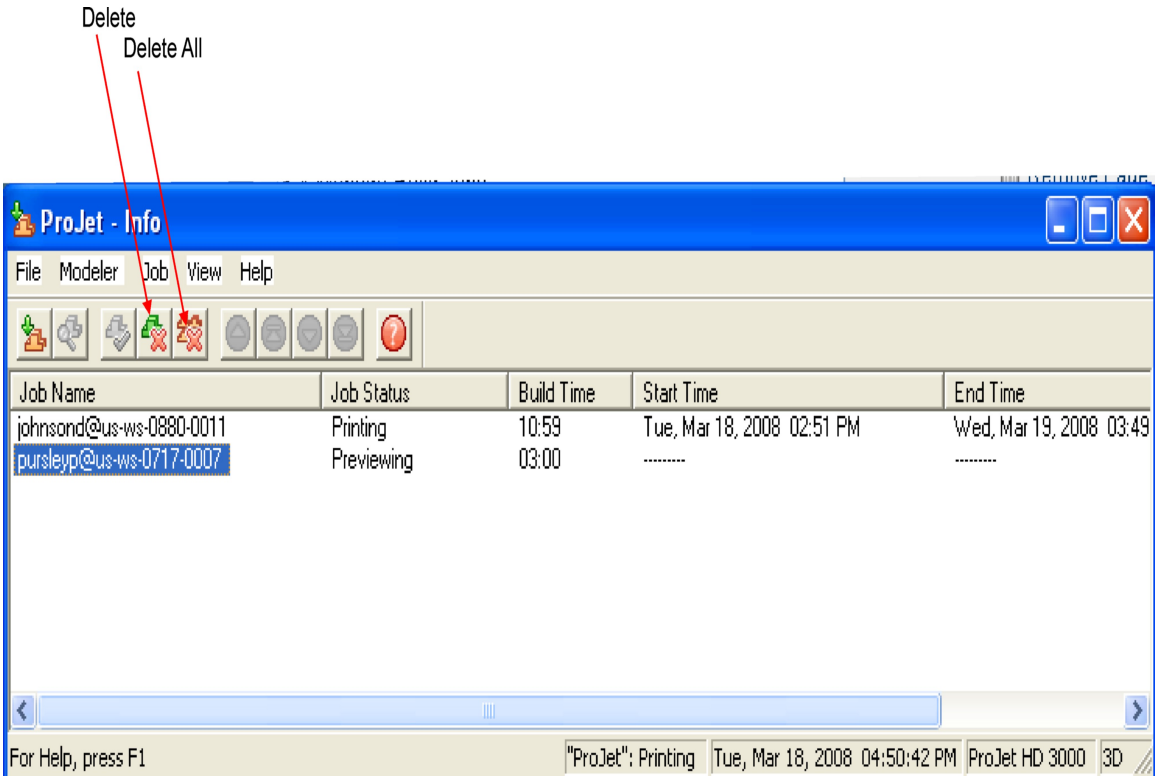
1. Click on modeler's icon in modelers window to open Info window.



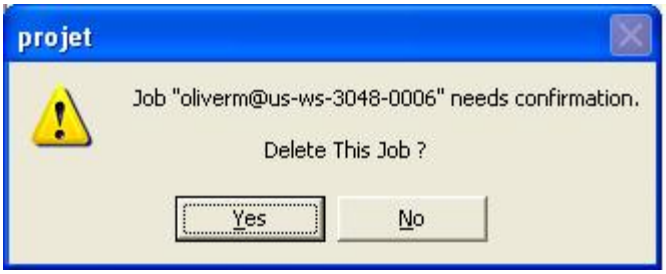
2. Select build job(s) to delete. (Ctrl-click to select several jobs.)



3. Click **Delete** or **Delete All** button or choose **Job > Delete** or **> Delete All**.



4. To delete all jobs, click the **Delete All** button or choose **Job > Delete All**. If you use **Delete All**, and there are saved jobs, the ProJet Client will ask you if you want to delete saved jobs as well as other ones.



If you delete a job that is currently building; this aborts the build operation. However, the job status will continue to show as "Building" at the PC until deletion is confirmed at the modeler.

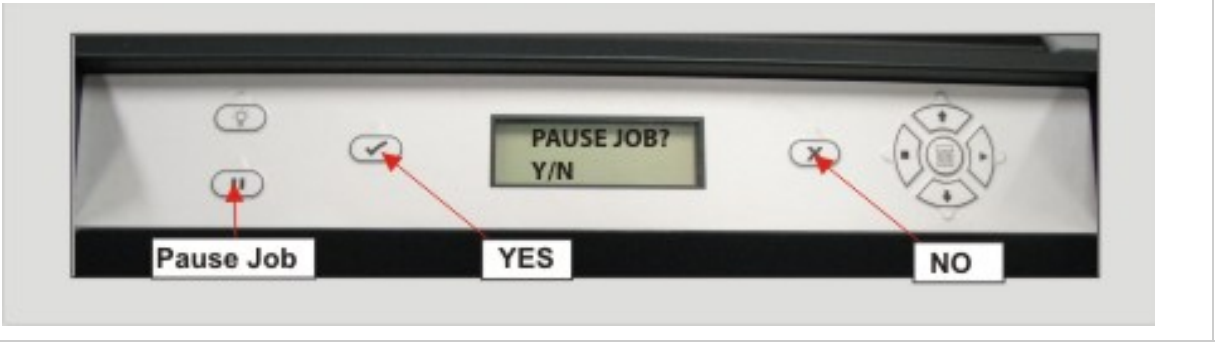
8.4.2 Pause Build Job

Press **PAUSE**. When display shows **PAUSE JOB? Y/N**, press **YES** to pause building or **NO** to keep building.

The modeler keeps building after pressing **PAUSE** while it displays **PAUSE JOB? Y/N**.!

If **YES** was pressed in response to **PAUSE JOB? Y/N**, the modeler completes current layer or its current task. Then moves the platform forward while chamber door and waste drawer remain locked. Press **PAUSE** again to resume paused job. If you don't press **PAUSE** again, the paused job resumes automatically after 5 minutes.

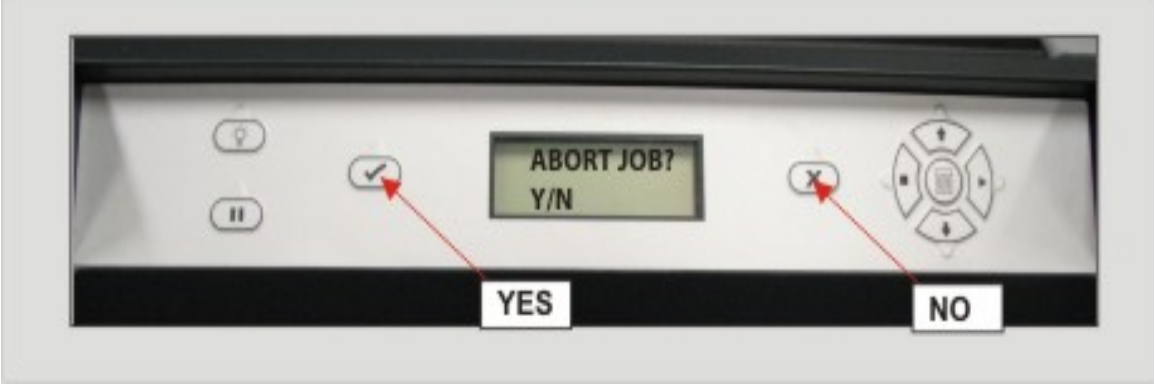
- If you press **NO** in response to **PAUSE JOB? Y/N**, the job does not pause and the confirmation prompt disappears.



8.4.3 Abort Build Job

Press **ABORT**.

When display shows **ABORT JOB? - Y/N**, press **YES** to abort the build job or **NO** to continue. The modeler keeps building after you press **ABORT** while it displays **ABORT JOB? - Y/N.**

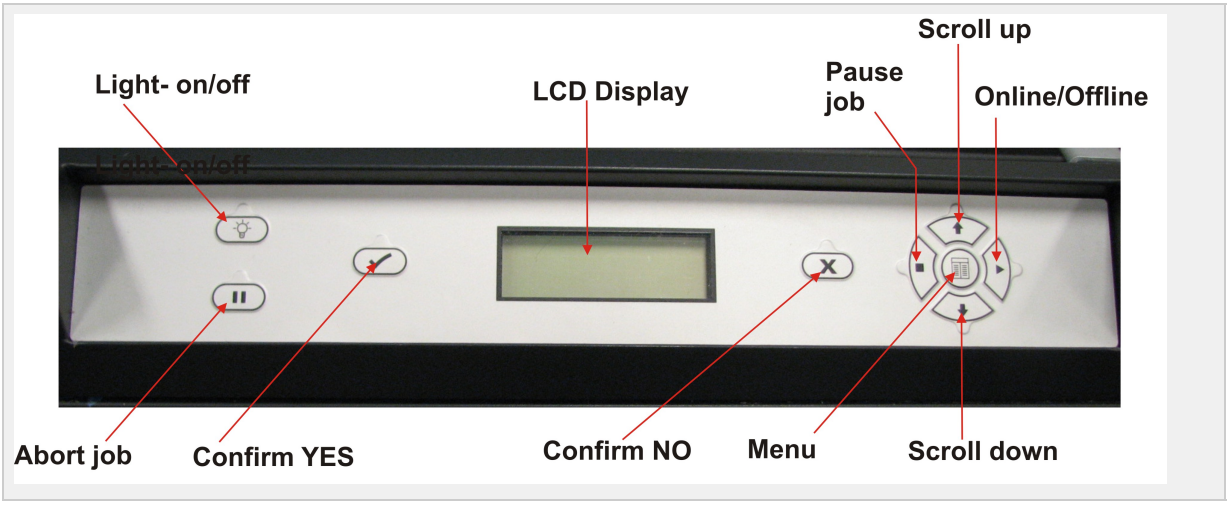


If you press **YES** in response to **ABORT JOB?- Y/N**, the modeler does the following:

- Stops building immediately.
- Displays waiting for DSP (Digital Signal Procesor) done.

Abort does not finish the current layer or current task.

- Displays **Finishing Build** while it cures any uncured material on the platform.
- Displays **Raising Printhead** as it raises the printhead.
- Moves the platform forward and unlocks the chamber door.
- Displays:**abort: <job_name> remove print**

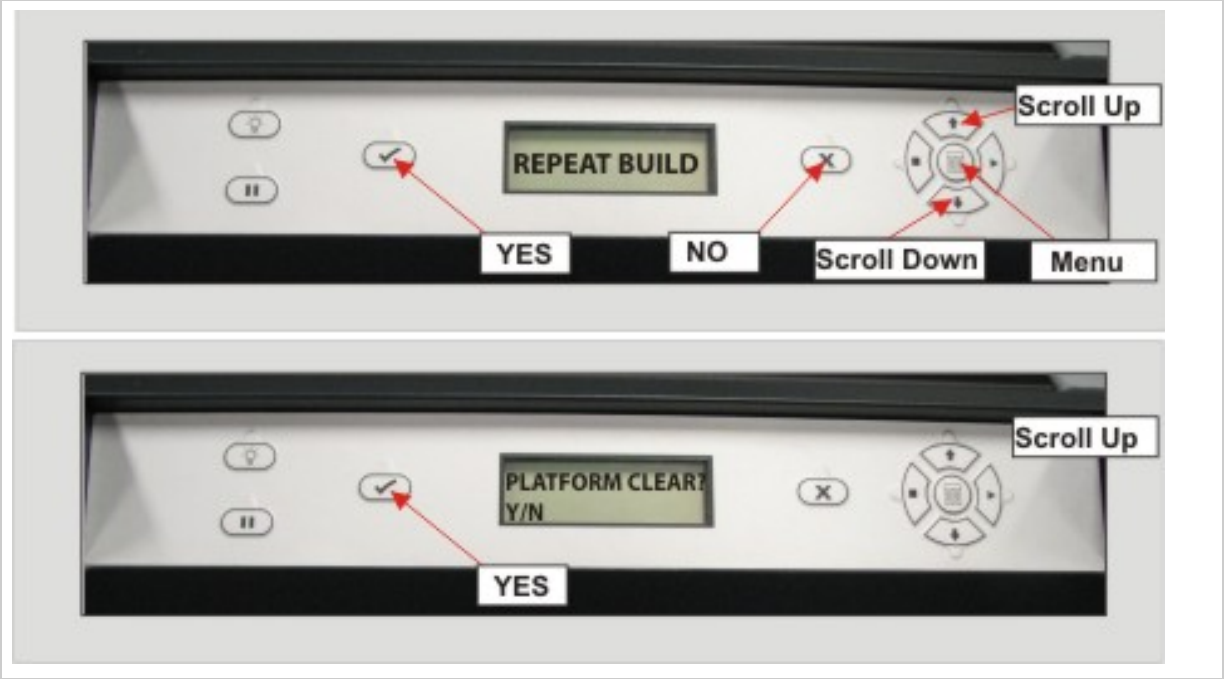


You can now remove the platform. See "7.2 Install & Remove Material Bottles and Build Platform".
If you press **NO** in response to **ABORT JOB? - Y/N**, the job does not abort and the confirmation prompt disappears.

8.4.4 Repeat Build Job

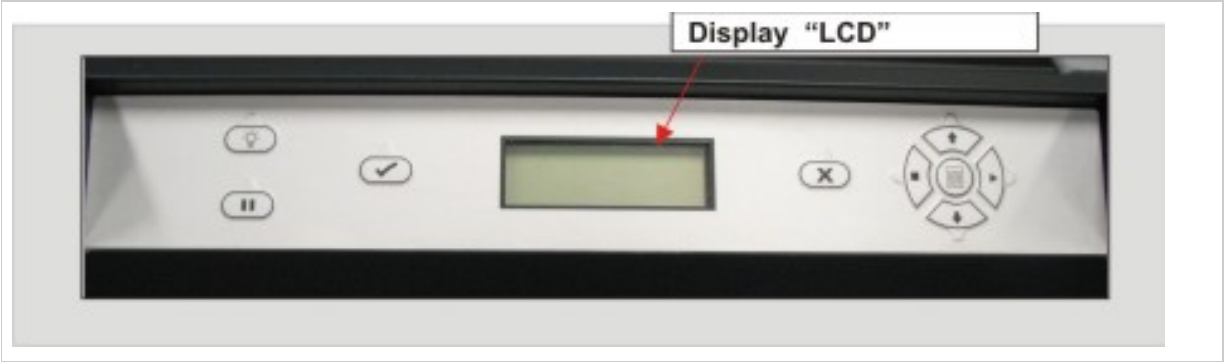
Do not select Repeat from the Operators Panel after a test print.

1. Press **MENU**, scroll to highlight **REPEAT BUILD**. # Press **YES**; the system displays **PLATFORM CLEAR? Y/N**.
2. When platform is clear, press **YES**. The modeler repeats the previous build job.



8.5 Printer Status

To view the status of the printer, observe the Liquid Crystal Display (LCD) screen located on the printer for elapsed build time, Build time remaining, material information, job status, name, time remaining on build, error messages, and System Statistics.



8.6 Empty Waste Drawer

	Personal protection equipment is required before opening waste drawer. Follow all material handling and disposal guidelines. Always follow MSDS guidelines and local regulations regarding handling and disposal of regulated materials. Keep disposal records if local law requires.
	Caution: Wear protective gloves before removing any waste material. Be careful not to spill, drop, or expose others to these materials. Dispose the material according to your local regulatory guidelines.
	When removing the draped portion of the bag, be careful not to spill the material that may be on the top portion of the bag.

1. Open waste drawer.
2. Remove waste bag from waste bag holder by rolling the draped portion of bag from the sides of the holder. Take care that the rear edge of the bag is taught. Push the top frame and remove bag.
3. Reverse procedure to install new bag.
4. Close waste draw and press "ONLINE* to resume.

8.7 Shutdown Printer

	Switching off or disconnecting the printer's power without going through a shutdown process can damage the printer. Always perform shutdown procedures before switching off printer's power unless power must be disconnected immediately for safety reasons.
	The printer takes approximately 45 minutes from a completely cold state. Once the MDM bottles are placed in the cubbies, it will take approximately 120 minutes for the bottles to become heated. Before shutdown and switching off, verify no need to build parts again soon.

Mode	Time
Standby	15 Min.
Conserve	25 Min.
Initial Pwr Up	165 Min.

	It is recommended to leave your printer in either standby or conserve mode instead of shutting down if the printer is to be used within 7 to 10 days of last build.

After printer is idle more than 2 hours up to 72 hours, it enters Standby or Conserve mode, respectively. In these energy-saving states, the printer's heaters are partially cooled and many other components are disabled. The heaters are cooler in Conserve mode more than Standby mode. It takes much less time for the printer to warm up from Standby or Conserve mode than it does from full shutdown/power off. Warming up from Conserve mode takes more time than from Standby.
To increase or decrease wait time before the printer enters Standby mode or Conserve mode, contact 3D Systems Technical Support.

1. Verify printer is not building.
2. Abort current build job.

1. Press **MENU**, scroll to highlight **SHUTDOWN**.

1. Press **YES** twice.
2. When the display shows **OK TO POWER OFF XXX**, press the power switch on the rear panel.

	To halt shutdown, press "ONLINE" before you press the power switch.

8.8 Remove Part from Build Platform

Remove build platform from printer. Refer to section 8.4 Manage Build Jobs.

- Place warm platform of parts in a freezer for a few minutes. As the parts and platform cool, they contract at different rates and separate.
- Alternatively, the parts can be mechanically separated from the build plaform by force using a tool with a stiff thin blade such as a putty knife. Make certain you do not mark the platform. For more information on how to clean parts, refer to the VisiJet® Material Handling Guide.

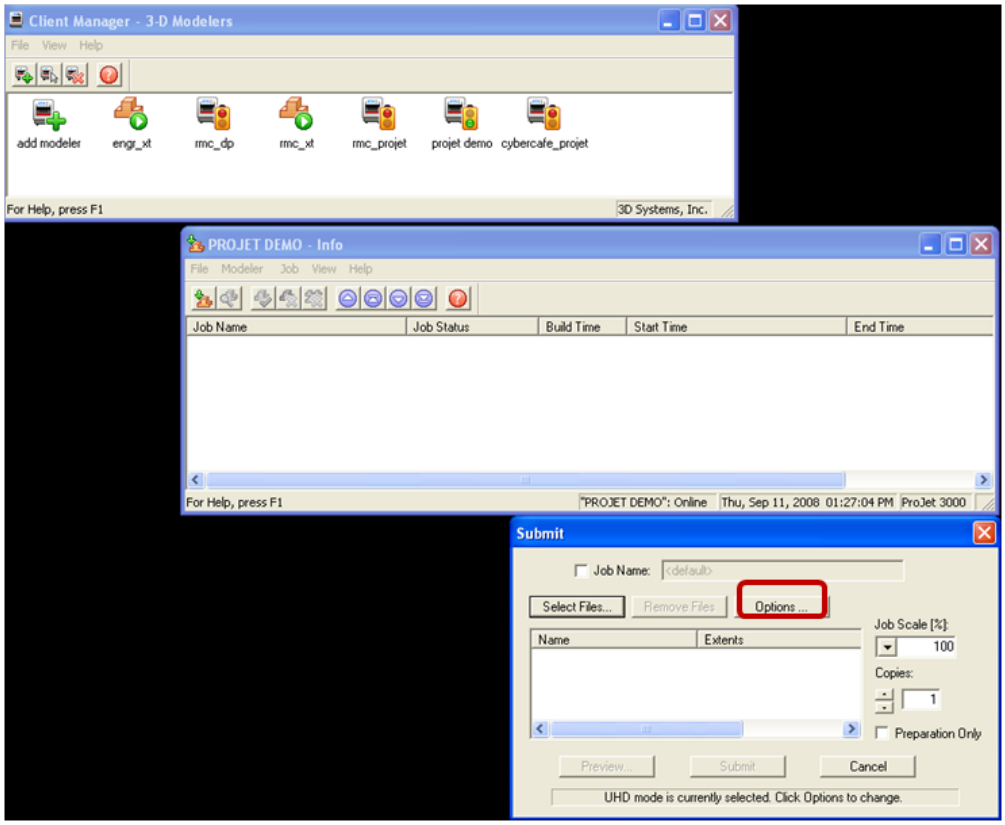
8.9 Shrink Compensation for VisiJet® MX Part Material

Material shrinkage occurs in thermoplastics as they transition from liquid state to solid (change in density). In the case of photopolymers used in the Multi-Jet building process, this shrinkage can occur during the curing stage of printing.
The ProJet Accelerator Client Software has features built in to allow a user to compensate for the natural shrinkage of the material and also fine tune the accuracy of a part.
The instructions below will explain the process for entering shrink compensation and fine tuning part accuracy using scaling factors.

SHRINK COMPENSATION VALUES FOR VISIJET® MX PART MATERIAL

X value	Y value	Z value
0.60	0.60	0.00

1. Enter Standard Shrink Compensation Values for the material.
   a. Open ProJet Accelerator Client software and select the desired printer.
   b. Select the part to build.
   c. Select the "**Options**" button.



d. Within the Options panel, enter shrink compensations values for X or Y. Z compensation is rarely necessary (see table above for the values).*

!Shrinkage 3.png|width=300,depth=300|align=right!|

2. Identify the exact X and Y dimensions of the part using a CAD program.
a. Most CAD programs and simple stl file viewers will provide a way to view a part with its dimensions.
b. Make note of the actual X and Y dimensions as XCAD and YCAD.

3. Build and clean the part and take measurements of the finished part.
a. It is recommended to measure along the critical dimensions of the geometry, take measurements in multiple areas and take an average of the values.
b. Measurements can be made using calipers or more advanced metrology methods.
c. Make note of the X and Y dimensions of the printed part and mark them as XPART and YPART

NOTE: If the measurement of the finished part is different from the measurements of the CAD model, fine tune the accuracy using scaling factors.

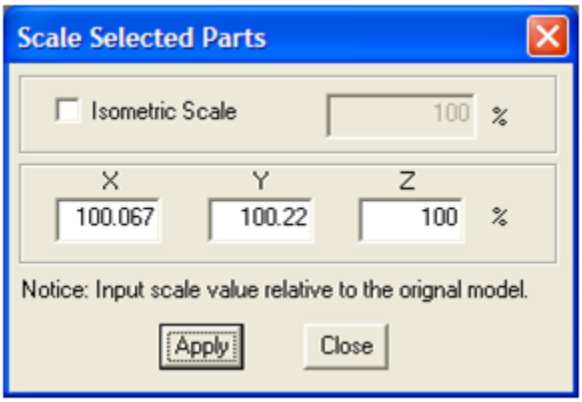
4. Determine "Scaling Factor" to use for the next build
a. Use the following formula calculate the scaling percentage to be used on the "fine tuning" build:

X Scaling Factor = (XCAD - XPART)/ XCAD * 100 (answer will be as a percentage)
Y Scaling Factor = (YCAD - YPART)/ YCAD * 100 (answer will be as a percentage)

EXAMPLE:
X measurement of CAD model = 3.000"
Y measurement of CAD model = 5.000"
X measurement of printed part = 2.998"
Y measurement of printed part = 4.989"
X Scaling Factor = (3.000 – 2.998)/3.000 *100 = 0.067%
Y Scaling Factor = (5.000 – 4.989)/5.000 * 100 = 0.22%

5. Enter "Scaling Factor" for adjustment build

a. Open ProJet Accelerator Client software and select the desired printer.
b. Select the part to print
c. Open Print Preview to view the part. Select the part (color should be yellow)
d. Select the "Scale" Icon and enter the dialog box to enter the above scaling factors.
e. Uncheck the "Isometric Scale" button. This allows user to make individual x and y adjustments.
f. In the example above the x scaling factor should be 100% + 0.067% = 100.067%
d. The y scaling factor should be 100% + 0.22% = 100.22%
e. Enter these two numbers in the corresponding scaling boxes for x and y.



6. Build Part with Scaling Factors and measure
a. Additional iterations of adjusting scaling factors and taking measurements may be necessary with certain geometries.

09.0 Maintenance

The following general maintenance procedures provided must be accomplished to help maintain high part yield and low printer down time.

- 9.1 Cleaning Printer Surfaces
- 9.2 Cleaning the Waste Drawer
- 9.3 Preventive Maintenance
- 9.4 Return Printer for Repair
- 9.5 UV LED Cleaning Procedure
  - 9.5.1 UVLED Board Removal Procedure
- 9.6 Cleaning MDM Areas
- 9.7 Changing the Charcoal Fan Filter
- 9.8 Printhead Maintenance

9.1 Cleaning Printer Surfaces

Do not remove any outer panels when cleaning the printer. Panels must only be removed by qualified 3D Systems Technical Support Representatives.

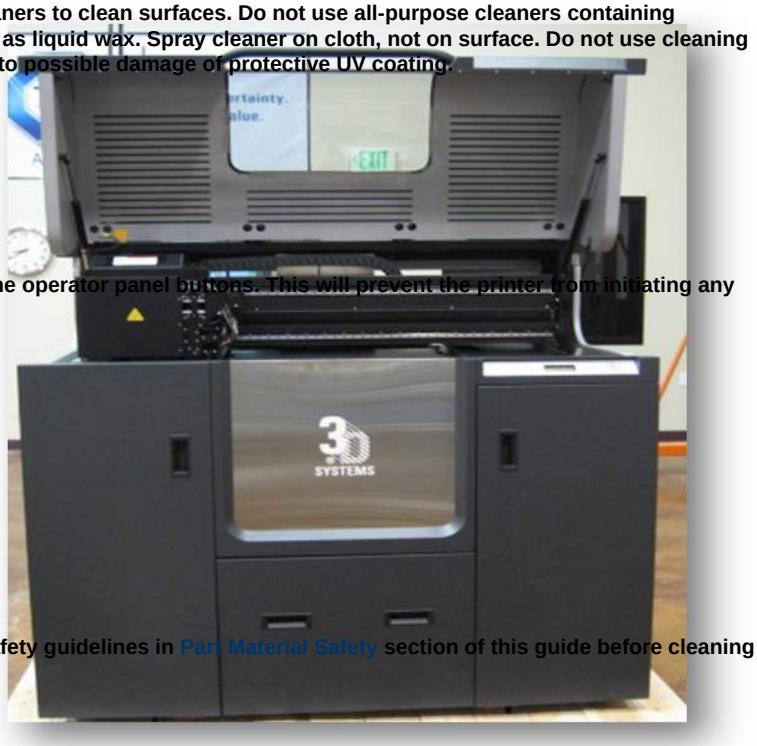
- Remove dust from outer surfaces of the printer by wiping with a clean dry, lint-free cloth.
- Dust and clean the outside surfaces only. DO NOT dust inside the build area.
- Remove dirt and grease from on the outer surfaces by spraying an all purpose cleaner on a clean cloth and gently wiping.
- se only non-abrasive, alcohol-free cleaners to clean surfaces. DO NOT use all purpose cleaners using petroleum-based polishing agents such as liquid wax. Spray the cleaner on the cloth, not on the surface.
- Do NOT use any cleaning solvents on the build chamber window as this can damage its protective UV coating.

Use only non-abrasive, alcohol-free cleaners to clean surfaces. Do not use all-purpose cleaners containing petroleum-based polishing agents such as liquid wax. Spray cleaner on cloth, not on surface. Do not use cleaning solvents on build chamber window due to possible damage of protective UV coating.

- Switch the printer OFF. Remove dirt, grease, and build material residue from operator panel buttons and display window using a mild soap and water on a clean, lint-free cloth gently wiping the buttons and windows.

Remove build platform before cleaning the operator panel buttons. This will prevent the printer from initiating any actions when buttons are pressed.

- Remove dirt, grease, and build material residue from operator panel buttons, display window by spraying an ammonia-based cleaner (e.g., Windex®) on a clean, lint-free cloth then gently wiping the buttons and display window.



9.2 Cleaning the Waste Drawer

Review VisiJet material handling and disposal safety guidelines in Part Material Safety section of this guide before cleaning the waste drawer.

Clean printer's waste drawer as follows:

1. Verify modeler is **OFFLINE**.
2. Put on protective gloves. Refer to Personal Protection Equipment.

3. Empty waste drawer.Refer to 8.6 Empty Waste Drawer.
4. Dispose waste bag if required. Refer to Disposal.
5. Re-install bag. Refer to 8.6 Empty Waste Drawer.
6. Gently scrape any material stuck onto interior surface of waste drawer bin. Use a flexible plastic scraper to avoid damaging the paint.

7. Vacuum inside waste drawer to remove scrapings.
8. Wipe inside surfaces of waste drawer using a clean cloth and all-purpose spray cleaner.

9.3 Preventive Maintenance

Preventive maintenance must be performed by qualified 3D Systems Technical Support Representatives or by an authorized servicing reseller after either one year of total build time, or consuming 208 lb (94 kg) of build and support materials combined.

The printer automatically tracks total build time and combined weight of material consumed to date. When either the time or weight limit mentioned above is reached, its LCD panel will prompt you to contact 3D Systems Technical Support to schedule a PM visit. When prompted, schedule PM as soon as possible in keeping with the terms of your 3-D printer warranty.

9.4 Return Printer for Repair

Guidelines for repacking the printer

When shipping the printer for service or repair, use the original shipping carton and packing material. Shipping damage as a result of inadequate packing is your responsibility. If you have already disposed of the packing material, contact 3D Systems Customer Support for information on repacking the printer.

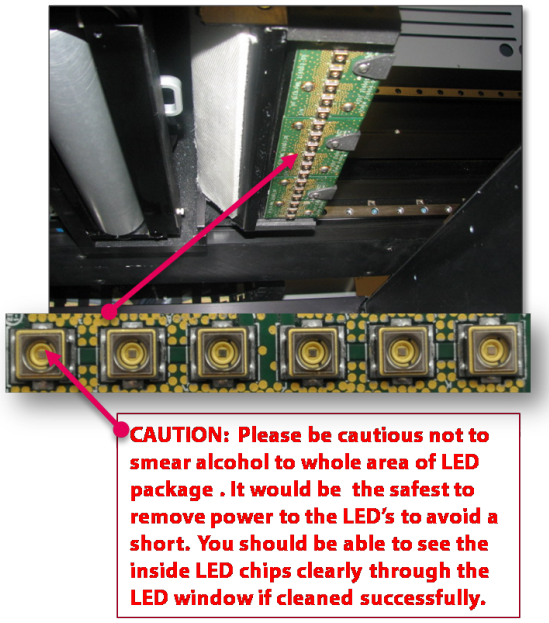
9.5 UV LED Cleaning Procedure

Each LED has "glass window" for air sealing and optical performance. The window material is hard glass (Borosilicate) and the size is diameter 4.35mm, thickness 0.55mm. Even though the glass is mechanically hard enough to clean the surface, **be cautious**! It is important to clean the LED windows periodically as optical power is very sensitive to the transparency of the window.

	CAUTION: To prevent personal injury or damage to the printer, shut down the printer and disconnect the power before performing the UVLED Cleaning Procedures. ! Wear protective eye wear and gloves!

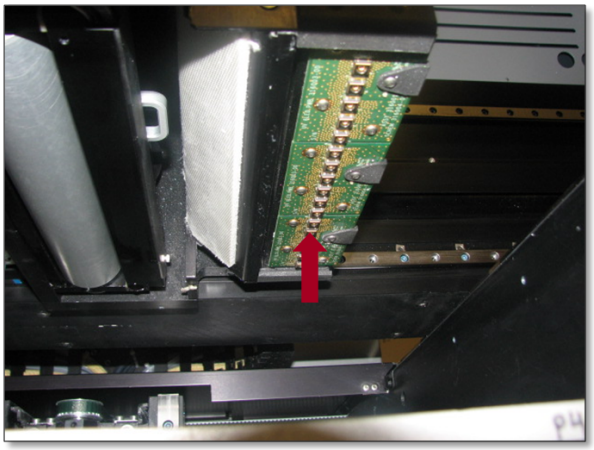
When there Is resin or dust on the LED window:

1. If optical power of LED has dropped due to dust or resin on its glass surface, remove its LED board (three boards per one system) from its assembly.
2. If dust on the surface you can use a soft bristle paint brush and lightly brush off any dust that may be present.
3. **NOTE: The removal of the board will need to be done if any cooked on material is present.**
4. If dust is not removable, the use of a few drops of alcohol on a Q-tip to clean the particles from the surface can be done. The size of window is relatively small (dia. 4.35mm) so the Q-tip should be smaller than the size of the LED glass surface and focus on only the window.



When there is liquid/uncured resin or partially cured resin on the LED window:

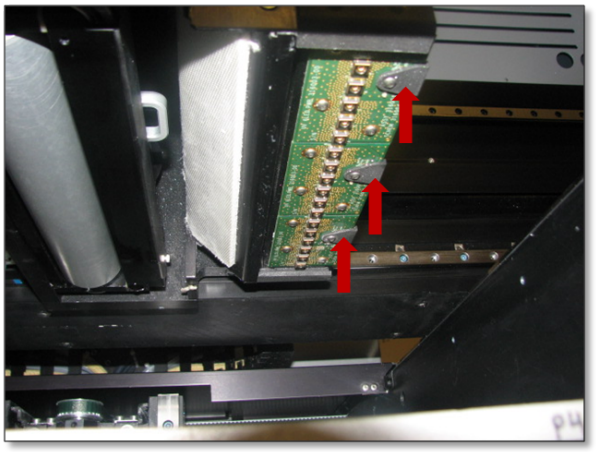
1. If liquid/uncured resin is on the surface, use alcohol and Q-tips as in "Step 4- When there Is resin or dust on the LED window." until hard particles on the window are completely removed.
2. If partially cured resin or sticky substance is stuck on the LED window, a piece of wood (or hard plastic scraping tool) or the other side of Q-tip can be used to remove by scraping it away from the surface.
3. After removing the resin, repeat Step 2 again until particles on the window are completely removed.



When resin is cured completely/stuck on the LED window

Electro-static protection for grounding is required when removing the circuit board to avoid damage to the board. If you do not feel that this is in your area of expertise, please contact 3D Systems Customer Service for customer support: US/Canada (800) 793-3669 Central Region, Europe +49-6151-357357

1. During normal operation of the modeler high temperature are used. After a mis-build or after long periods of operation, material can be "cooked" to the surface of the LED.
2. To clean, remove the board (see UVLED Board Removal Procedure) in question and use a razor blade or sharp metal knife to scrape away (only window glass area) the stuck resin/unnecessary substances. The glass window is hard enough to use the blade or metal knife, but be cautious. After removing the substances on the window, clean the window as described in Step 4- "When there Is resin or dust on the LED window."



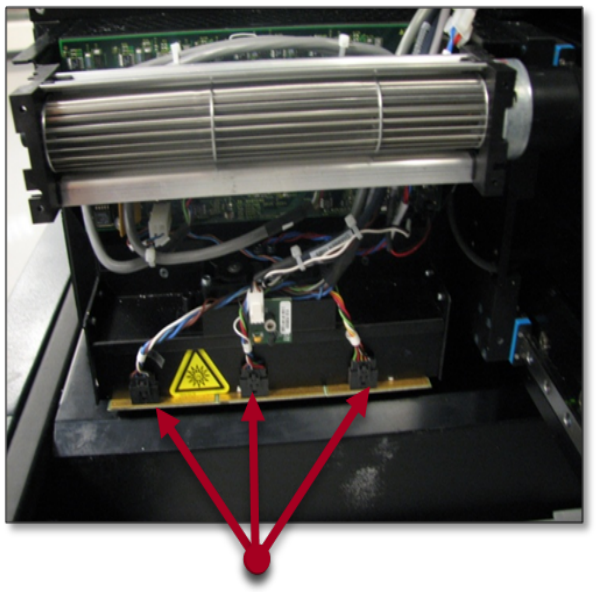
- 9.5.1 UVLED Board Removal Procedure

9.5.1 UVLED Board Removal Procedure

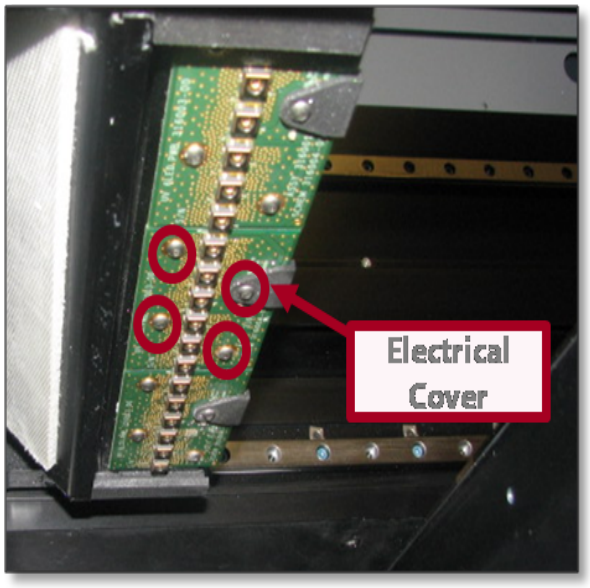
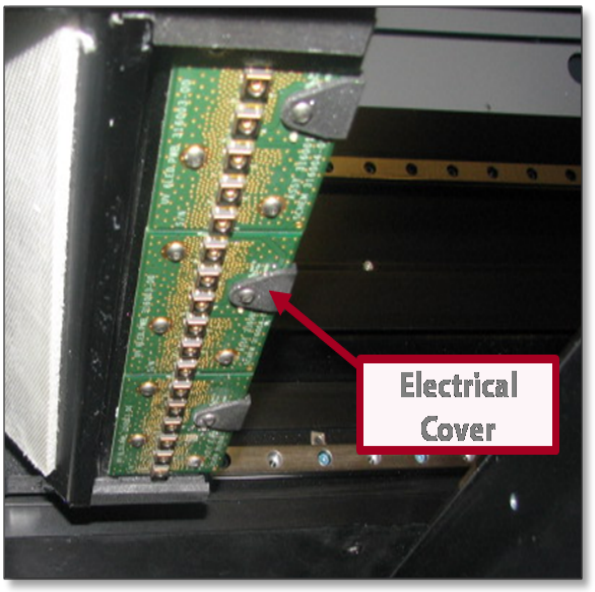
CAUTION: To prevent personal injury or damage to the modeler, shut down the modeler and disconnect the power before performing the UVLED Board Removal Procedures. ! Wear protective eye wear and gloves!

Electro-static protection for grounding is required when removing the circuit board to avoid damage to the board. If you do not feel that this is in your area of expertise, please contact 3D Systems Customer Service for customer support: US/Canada (800) 793-3669; Central Region, Europe +49-6151-357357

1. Disconnect the three wire connectors located on the top side of the three UVLED boards.



NOTE: Before touching the boards UVLEDs, ensure your fingers are clean of any oily residue. If oily residue contacts the UVLEDs, it may cause damage to them.

2. Using a 2mm Allen wrench, remove the four (4) screws and the electrical cover from the board that is to be removed (middle board is shown for depiction purpose). 3. Remove board from UVLED holder assembly. 4. If cleaning is required for the UVLEDs, refer to the UVLED Cleaning Procedures. 5. If installing a new board, reverse this procedure.	
NOTE: When installing board, ensure the electrical cover is re-install at the location shown in the picture. If the cover is not installed, it will short out the board. Also, ensure screws are tighten securely and not loosely where they are hanging down from the board.	

9.6 Cleaning MDM Areas

- Verify that the printer is OFFLINE.
- **Wear protective gloves.**
- Open the side panels and gently scrape off any material adhered to the metal surfaces. Use a flexible plastic scraper to avoid damaging the paint.
  DO not clean the backside of the MDM.
- Vacuum inside around the MDM clamps and the back area around manifold to remove the scrapings.
- Wipe the inside surfaces using a clean cloth and all-purpose spray cleaner.
- If material residue is on the back side where the MDM connects to the manifold, BE CAREFUL not to damage wires and fittings when cleaning.

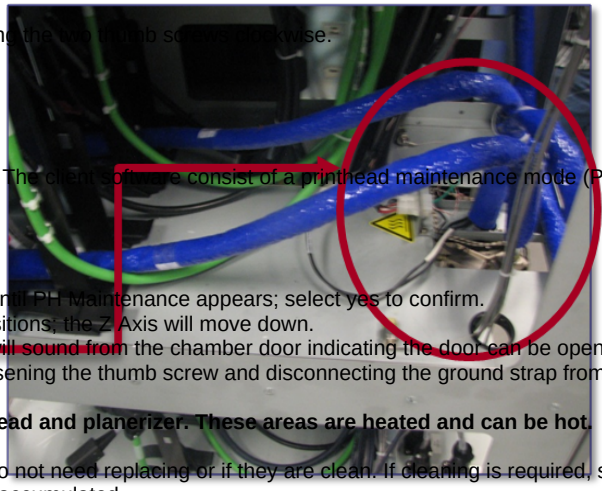
9.7 Changing the Charcoal Fan Filter

The fan filter will need to replace every 30 days to ensure the printer will perform at it's optimal level.

To replace filter:

- Using a flat screwdriver, turn the two top thumb screws on the fan back panel counterclockwise.

- Pull fan out and discard.
- Install new fan filter and secure fan panel turning the thumb screw clockwise.



9.8 Printhead Maintenance

The printhead will need to be cleaned after every build. The client software consist of a printhead maintenance mode (PH Maintenance).

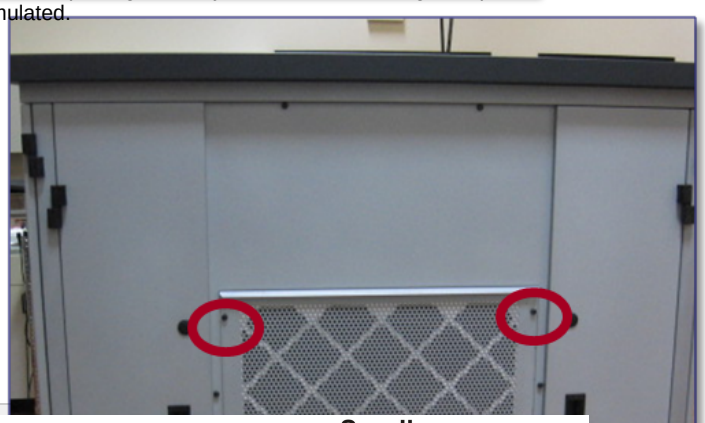
To access the PH Maintenance Mode:

- Close chamber door.
- Press the menu button and scroll up or down until PH Maintenance appears; select yes to confirm.
- The X and Y axis will move into their home positions; the Z Axis will move down.
- Once axis have reached home positions, a click will sound from the chamber door indicating the door can be opened.
- Remove the front panel from the printer by loosening the thumb screw and disconnecting the ground strap from the panel. Lift panel out a

If material residue is on the back side where the MDM connects to the manifold, BE CAREFUL not to damage wires and fittings when cleaning

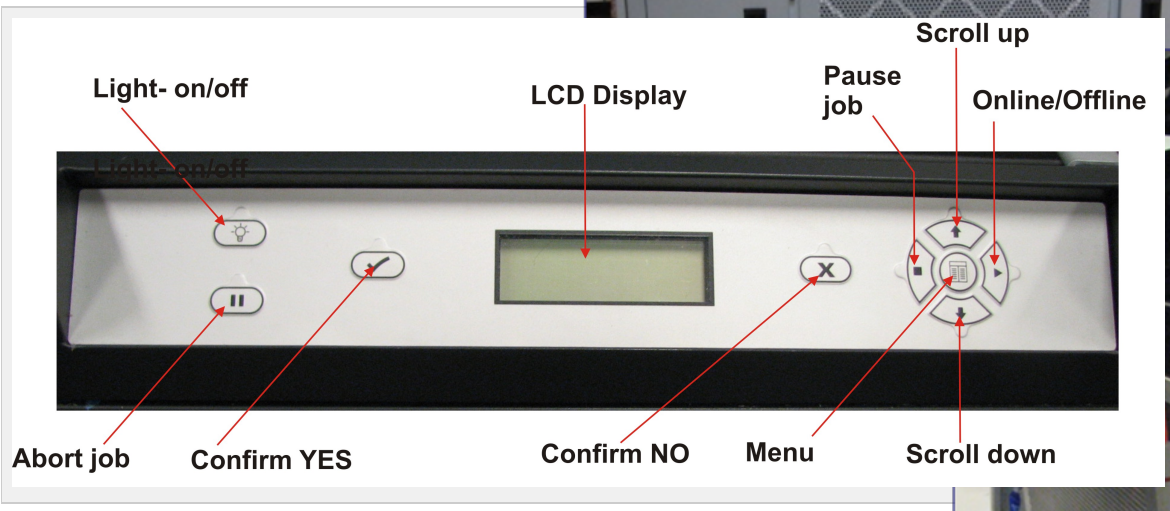
Use caution when doing maintenance on the printhead and planerizer. These areas are heated and can be hot.

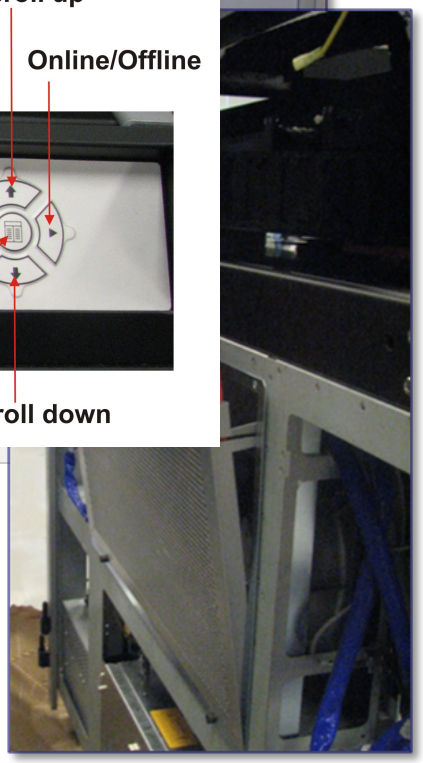
- Visually inspect the UV LEDS to ensure they do not need replacing or if they are clean. If cleaning is required, see the UVLED CLEANING
- Clean areas where materials debris may have accumulated.
- Inspect the planerizer for damage. Also, wipe the planerizer roller using a lint free cloth and acetone.
- Clean the printhead's array plate using a lint free cloth and acetone. Ensure that it is sufficiently cleaned and that there are no drips left on plate.



10.0 Error Messages

There are three primary types of error messages which could appear on the operator panel display of your printer. The primary types of error messages found will be Build, Material , and 10.3 Status and Message Lines.





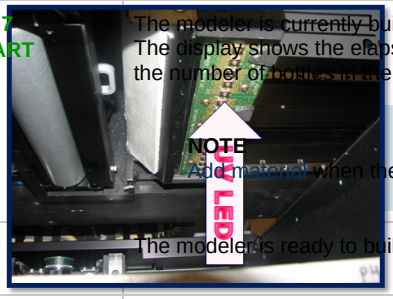
- 10.1 Build Messages
- 10.2 Material Messages
- 10.3 Status and Message Lines

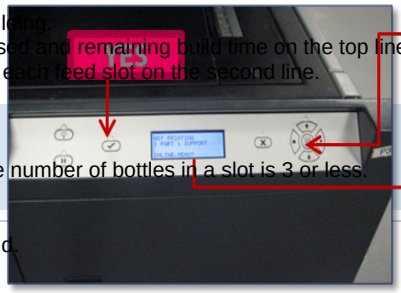
10.1 Build Messages

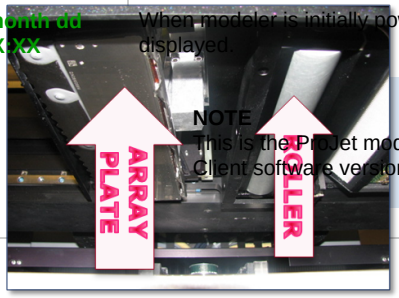
Use these messages to help you manage print jobs before, during, and after printing. The causes of and actions to take in response to various messages are described in the following table:

MESSAGE	CAUSE	ACTION

XX:XX.....XX:XX 7 SUPPORT....7 PART PRINTING	The modeler is currently building. The display shows the elapsed and remaining build time on the top line and the number of bottles in the each feed slot on the second line. **NOTE** Add material when the number of bottles in a slot is 3 or less.	None
NOT BUILDING	The modeler is ready to build.	Press **ONLINE** to build or **MENU** to list menu options.
ProJet™ [X.X] month dd yyyyTIME XX:XX:XX	When modeler is initially powered-up the latest version of software is briefly displayed. **NOTE** This is the ProJet modeler's control code version; not the ProJet Client software version.	None







10.2 Material Messages

Use the following messages to help manage build jobs before, during, and after building. The causes and actions to take to various messages are described below:

MESSAGE	CAUSE	ACTION
#X PART	The current number of modeling material bottle in the right material delivery system.	None
#X SUPPORT	The current number of support material bottle in the left material delivery systems.	None
ADD PART	The maximum number of model material bottles in the right material delivery system are four (4) bottles.	Add model material bottles.
ADD SUPPORT	The maximum number of support material bottles in the left material delivery system are four (4).	Add support material bottles.

10.3 Status and Message Lines

Messages appear either on the Status line or the Message line. Read both lines together to determine the exact state of the modeler. The Status line generally indicates current state of the modeler. The Message line shows the action to take to complete a function and move to the next step.

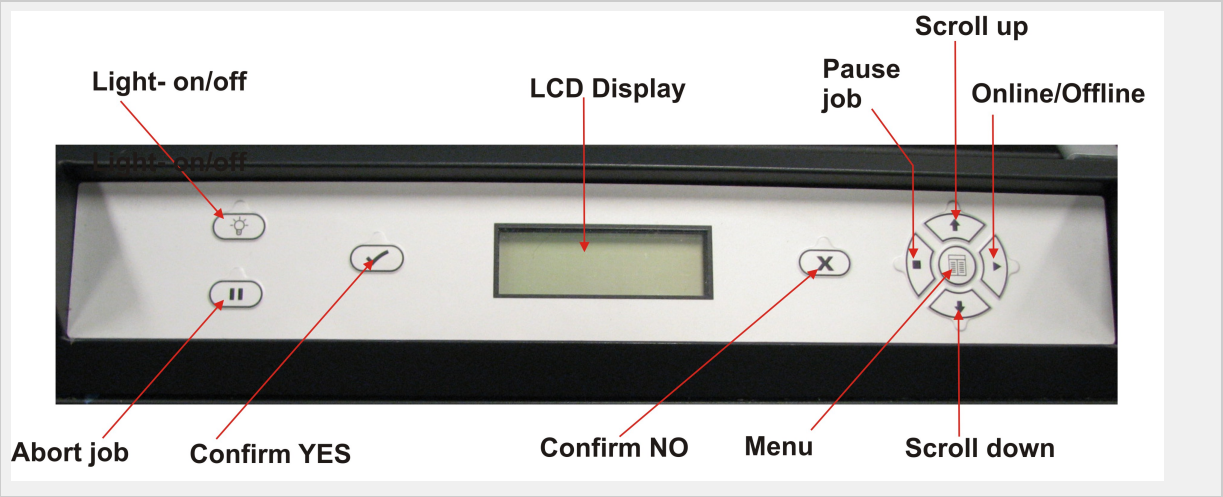
MESSAGE	CAUSE	ACTION
ABORT	**ABORT** button pressed. Refer to abort build job.	Press **YES** to abort or **NO** to cancel the command.
ABORT ACKNOWLEDGED	You confirmed an abort command. The modeler is aborting the current job.	None. Refer to abort build job.
BUILD PAUSED	**PAUSE** button pressed during the build. The build platform moves forward and the chamber door and waste drawer remain locked. When you press the **PAUSE** button during a build, the modeler completes its current task before stopping.	Press **PAUSE** to continue. Refer to pause build job.
CLEANING PRINTHEAD	The modeler is cleaning the build jets.	None. (This occurs automatically before every build.)
CLOSE DOORS	The chamber door is open.	Close the chamber door.
CONFIRM PLATFORM CLEAR OR CANCEL	The modeler is prompting you to verify the platform is clean and clear of obstructions. Refer to installation of build platform.	Verify the platform is clean and clear, then press **YES** to continue or press **ABORT** to cancel.

PRESS PAUSE TO CONTINUE	The modeler is paused.	Press **PAUSE** to continue or **ABORT** to cancel.
CYCLE POWER TO CONTINUE	A severe error occurred. The modeler cannot recover from it and must be switched off.	Cycle power to the modeler. If the error message occurs again, contact your Technical Support Hotline.
DONE REMOVE BUILD	The modeler completed building the current job.	Remove the platform. Refer to removal of build platform.
HOMING PRINTHEAD	The modeler is initializing the Z-axis prior to building.	None.
HOMING X - Y	The modeler is initializing the X-axis and Y-axis prior to building.	None.
INSTALL PLATFORM	The modeler cannot detect a platform.	Install a clean platform. Refer to installation of build platform.
NOT BUILDING	The modeler is ready to build.	Press **ONLINE** to build or **MENU** to list menu options.
OK TO POWER OFF	The modeler completed its internal shutdown procedure and is ready to be shutdown. Refer to modeler shutdown.	Toggle power switch on modeler rear panel to the OFF position. **NOTE** Before you switch power off, verify you will not need to build parts again soon. It can take several hours for the modeler to warm up after you switch power back on.
ONLINE/MENU?	The modeler is ready to build.	Press **ONLINE** to build, **MENU** to list menu selections.
PAUSE ACKNOWLEDGE	The **PAUSE** button was pressed. The modeler is acknowledging and complying with the command.	None. **NOTE** If you press **PAUSE** during a print job, the current layer or process is completed before the pause takes effect.
PLEASE WAIT	The modeler is cooling to shutdown temperature.	Wait for the modeler to complete its shutdown procedures. Refer to modeler shutdown.
PRE-JOB CHECKS	Briefly displayed during modeler build preparation.	None.
BUILDING	The modeler is currently building.	Allow the build job to continue or press **PAUSE** or **ABORT** to stop building.
RAISING PLATFORM	The modeler is raising the printhead so you can remove the platform.	None.
REMOVE BUILD	The modeler completed a build job and unlocked the chamber door so you can remove the platform.	Remove the platform and replace it with a clean platform. Refer to removal of build platform.
SHUTDOWN IN PROGRESS	You selected the **SHUTDOWN** menu option, then pressed **YES** twice. The modeler is cooling down so power can be switched off. Refer to modeler shutdown.	None. **DO NOT switch off the modeler while shutdown is in progress.**
SHUTDOWN COMPLETE	Modeler cooldown is complete; modeler is ready for power off.	Wait for **OK TO POWER OFF** message, then switch power off at the modeler's rear panel. **NOTE:** Before you switch power off, verify you will not need to build parts again soon. It can take several hours for the modeler to warm up after you switch power back on. Refer to modeler shutdown.

STANDBY	The modeler is in energy-saver mode. All internal subsystems are partially cooled and the modeler is inactive.	None. The modeler will warm to operating temperature when you press any button or submit a build job.
WAITING FOR JOB	The modeler is online, but there is no build job in it's queue. The modeler is ready to build as soon as it receives a job.	Submit a build job to the modeler. Refer to submit a build job.
WARMING STAGE [4,3,2,1]	The material heaters and printhead jet heaters gradually warm up to either standby or build temperature.	None. The numbers on the LCD panel count down as the modeler warms up. At **Warming Stage 1**, all heaters and material are at build temperature.

11.0 Troubleshooting

If problems occur with the printer, error messages appear on the LCD of the Operator's panel. Refer to appropriate troubleshooting table for assistance. There may be times when an unrecoverable error message will appear and will require a call to Technical Support Hotline. Prior to contacting Technical Support Hotline ensure you have serial number of the printer, a brief description of the problem including exact error message displayed on the LCD panel, and when the problem occurred (while submitting a job, during the beginning or end of the build, after power off recovery, etc.)



- 11.1 Communication Errors
- 11.2 Head Maintenance Station Errors
- 11.3 Material Feed and Waste System Errors
- 11.4 Material Quality Guarantee Errors
- 11.5 Material Waste Errors
- 11.6 Motion System Errors
- 11.7 UV Subsystem Errors
- 11.8 Vacuum Regulator Errors
- 11.9 Power Outage

11.1 Communication Errors

MESSAGE	CAUSE	ACTION
RT_ERROR: No machine Identification (ID)	No network connection.	Ensure you have a valid network connection. Cycle power to the modeler. If error message occurs again, contact your Technical Support Hotline.
evm6x_hpi_open()	A communication error occurred.	Cycle power to the modeler. If this does not restore communication, contact your Technical Support Hotline.
evm6x_init_emif()	A communication error occurred.	Cycle power to the modeler. If this does not restore communication, contact your Technical Support Hotline

11.2 Head Maintenance Station Errors

MESSAGE	CAUSE	ACTION
HMS ERROR Recovery	An error occurred during printhead maintenance (cleaning the printhead before beginning a build).	Cycle power to the modeler. If error message occurs again, contact your Technical Support Hotline.

11.3 Material Feed and Waste System Errors

A just loaded cartridge did not engage correctly during the material feed cycle or the printhead sensors did not detect the required material level.

MESSAGE	CAUSE	ACTION
RT_ERROR: material feed 1 (or 2) can't fill head	A just loaded bottle did not engage correctly during the material feed cycle or the printhead sensors did not detect the required material level.	Cycle power to the modeler. If error message occurs again, contact your Technical Support Hotline.

11.4 Material Quality Guarantee Errors

MESSAGE	CAUSE	ACTION
Support (or build) material bottles not detectedd	Modeler is out of material bottles, a bottle misfed, or the material identification system is faulty.	The build will abort if it needs to use the questionable bottle to finish the build. • Add the specified material bottle, install a clean build platform and repeat the build job. • If error message occurs again, contact your Technical Support Hotline.
Support (or build) material bottle not melted	A cold bottle was added to the material delivery system and it did not have enough time to melt before the modeler requested material.	The build will abort if it needs to use the questionable bottle to finish the build. • Install a clean build platform and repeat the build job after the modeler has reached build temperature. • If error message occurs again, contact your Technical Support Hotline.
Support (or build) material bottle expired	The material identification system detected expired material.	Follow the discard instructions posted to the LCD panel.
Support (or build) material bottle incorrect type	A material bottle was inserted into the wrong feed slot.	The build will abort if it needs to use the questionable bottle to finish the build. • Follow the discard instructions posted to the LCD panel. • If error message occurs again and you have inserted the correct material bottle into the correct feed slot, contact your Technical Support Hotline.

11.5 Material Waste Errors

MESSAGE	CAUSE	ACTION
RT_ERROR: draintank not responding	Fault detected in control circuitry.	Cycle power to the modeler. If error message occurs again, contact your Technical Support Hotline.
RT_ERROR: Draintank Position error	Fault detected in control circuitry.	Cycle power to the modeler. If error message occurs again, contact your Techncial Support Hotline.
RT_ERROR: Draintank timeout error	Fault detected in control circuitry.	Cycle power to the modeler. If error message occurs again, contact your Techncial Support Hotline.
RT_ERROR: can't empty draintank	Sensor or valve malfunctioned.	Cycle power to the modeler. If error message occurs again, contact your Techncial Support Hotline.

11.6 Motion System Errors

MESSAGE	CAUSE	ACTION
X-Following ERROR	An attempt to open the build chamber door was made, or position sensor errors occurred.	Ensure the build chamber door is secured, then cycle power to the modeler. If error message occurs again, contact your Techncial Support Hotline.
Negative Firing Delay	Variations in scanning axis velocity.	Cycle power to the modeler. If error message occurs again, contact your Technical Support Hotline.
Pause Timeout ERROR	Position sensor contamination.	Cycle power to the modeler. If error message occurs again, contact your Technical Support Hotline.

11.7 UV Subsystem Errors

MESSAGE	CAUSE	ACTION
RT_ERROR: UV Lamp Power Too Low	UV sensor detected a possible fault.	Cycle power to the modeler. If error message occurs again, contact your Techncial Support Hotline. **CAUTION** To prevent skin exposure to uncured model material, do not handle parts in a build without wearing gloves if a UV lamp problem occurred during the build.

11.8 Vacuum Regulator Errors

MESSAGE	CAUSE	ACTION
RT_ERROR: Printhead Vacuum Low	Indicates a fault within the vacuum system.	Cycle power to the modeler. If error message occurs again, contact your Techncial Support Hotline.
RT_ERROR: Printhead Vacuum High	Indicates a fault within the vacuum system.	Cycle power to the modeler. If error message occurs again, contact your Techncial Support Hotline.

11.9 Power Outage

If you are present during a power outage, or discover the main power OFF, complete the following steps:

1. Switch power OFF on modeler's rear panel so it does not automatically start when power is restored. This prevents modeler damage due to power flickers and surges.

1. When power is restored and stable, switch modeler power ON located on the rear panel.

If power outage occurs and is restored before anyone can take action, the modeler will recover as follows:

The modeler advances through warming stages until reaching the required build temperatures. If modeler was not building when power outage occurred, the top line on the LCD panel will display "**Not Building**" and bottom line will display "**Online/Menu**?". The modeler is ready to accept a build job.

If modeler was building when the power outage occurred, the LCD panel will display "**Power Off Recovery**" after power is restored and modeler has reached build temperature. This safety feature prevents accessing incomplete build until all build conditions are satisfied. Once occurred, the job will end, the LCD panel will display **"Done Remove Build"** and the build platform will move forward, and can be removed and repeat build job if desired.

If the modeler is in Power Off Recovery, the build chamber will not be able to open until modeler completes recovery.

12.0 Finishing

When the build is complete, refer to the VisiJet® Material Handling and Post-Processing Guide for information on how to detach parts from build platform, remove support material from parts, and clean parts to a smooth finish. Basic part coating and equipment maintenance recommendations are also included.

13.0 Projet™ Spare Parts List

- 13.1 Consumables and Replacement Modules

13.1 Consumables and Replacement Modules

To view the parts and modules that are available, click on the Projet™ Spare Parts Locator.

14.0 Other Documents

- 14.1 Parts Finisher User Guide
- 14.2 Material Safety Data Sheets (MSDS)
- 14.3 Projet™ Quick Reference Guide
- 14.4 Facility Requirements Guide
- 14.5 VisiJet® Material Handling and Post-Processing Guide

The documents listed are available to help guide you in how to finish parts, detailed safety information pertaining to the Visijet® materials, and also, printer's dimensional data. Refer to these documents for specific instructions previously stated.

14.1 Parts Finisher User Guide

When the build is complete, refer to the ProJet™ XL Finisher Guide for information to detach parts from build platform and how to remove support material and clean parts to a smooth finish.
Basic part coating and equipment maintenance recommendations are also included.

14.2 Material Safety Data Sheets (MSDS)

TO obatin a copy of the Material Safety Data Sheet (MSDS) or a Safety Data Sheet (SDS), click here.

14.3 Projet™ Quick Reference Guide

Click on the link to download a copy of the ProJet™ 5000 Quick Reference Guide.

ProJet™ 5000 Quick Reference Guide

14.4 Facility Requirements Guide

Projet™ 3-D Modelers Facility Requirements Guide

14.5 VisiJet® Material Handling and Post-Processing Guide

VisiJet® Material Handling and Post-Processing Guide

15.0 Service and Support

- 15.1 Contacts

15.1 Contacts

For information, questions, or comments about ProJet™ 3-D modeler system(s), VisiJet® materials, or request service, please contact a 3D Systems Customer Service or Sales Representative nearest you.

3D Systems
333 Three D Systems Circle
Rock Hill, SC 29730 USA
tel: 803.326.3900
email: moreinfo@3dsystems.com
www.3dsystems.com
Nasdaq: TDSC

Customer Support Hotline

U.S.A. 800.793.3669

Asia-Pacific (+852) 29 23 50 77

Europe (+49) 6151 357-0

Sales and Service

FRANCE tel (+33) 1 60 87 88 77	ITALY tel (+39) 039 68904 00

GERMANY tel (+49) 6151 357-0	JAPAN tel (+81) 3 5451-1690
HONG KONG tel (+852) 29 23 50 77	UK tel (+44) 1442 282 600
SWITZERLAND tel (+41) 26 439 95 90	

16.0 Online Help

- Find Help topics on the Content Pages of each section.

- 16.1 Frequently Asked Questions (FAQ)
- 16.2 Getting Help
- 16.3 Part Material
- 16.4 Printer Hardware and Installation
- 16.5 Facility Requirements

16.1 Frequently Asked Questions (FAQ)

General

What is rapid prototyping?

Rapid prototyping (RP) is the process of building a part from a 3D Cad drawing and converting the drawing format into an .STL file. When the printing event takes place in the printer, it is constructed layer by layer using VisiJet® materials.

What is 3D Printing?

A type of rapid prototyping, typically defined by faster, more affordable, and easier-to-use technologies.

How does 3D Printing fit into the design process?

For a growing segment of designers using 3D CAD drawing, the ProJet Printer is quickly becoming an essential extension of overall CAD systems and a critical part of the entire design process by:

- Accelerating Time to Market - through shortening design and development cycles and ultimately get products to market more quickly enabling users to easily fine tune design and explore multiple design configurations.
- Generating Savings - by helping companies significantly lower production costs and reducing expensive revisions late in the development cycle.
- Enhancing Communication and Collaboration - through bringing ideas off flat screens and producing functional 3D prints that can be easily shared, critiqued, and improved upon.
- Creating Better Designs - designers are no longer limited to the number of models they can produce and test, resulting in more creative designs and better final products.
- Ensuring Confidentiality - eliminating the need to exchange confidential design files with service providers, allowing companies to maintain product confidentiality and control.

How does the 3D printing process work?

The printer builds functional 3D prints from the bottom up, one layer at a time.
STL files are imported into the printer that automatically slices and orients the parts and creates any necessary support structures. The materials are fed into the printer in a heated semi-liquid state and accurately deposited in layers upon the build platform. After completion of the build, support structures are simply removed through a post curing process.

How durable are the build material?

VisiJet® materials create accurate, detailed, and durable prints from your 3-D CAD designs. Popular applications include concept models, casting forms, prototype parts, and specialty tools. All the specific physical and process characteristics of VisiJet materials are detailed in

Is post-processing required?

Yes, upon removing the part from the printer you will need to remove the support material from VisiJet® parts. The parts finisher makes removing bulk support material from VisiJet parts efficient and easy. Forced airflow and precision temperature control deliver faster, shorter, and more predictable VisiJet part finishing times.

Are there any special facility requirements or operating systems necessary to install and operate the printer?

Refer to the ProJet™ 3-D Printers Facility Requirements Guide.

Can more than one user process files and build parts?

Multiple users can send files to the printer build queue, move, delete, and set build priorities in the build queue. Depending on the size of the print, multiple files can be added onto the build platform in one build application.

Can prints be sanded, painted, dyed, and glued?

The parts can be sanded to remove imperfections or layer lines from the surface. After priming, the parts can be painted using any oil- or water-based paint that is compatible with the primer, or you can dye VisiJet parts with candle-craft dyes. You can also use super glue to join parts together.

What is Computer-aided design (CAD)?

Computer-aided design (CAD) is use of a wide range of computerbased tools that assist engineers, architects and other design professions in their design activities. It is the main geometry authoring tool within the Product Lifecycle Management process and involves both software and sometimes special-purpose hardware.

What is a .STL file?

A .stl file is a format used by Stereolithography software to generate information needed to produce 3D prints on Stereolithography machines. It is a triangular representation of a 3-D object. The surface of the object is broken into a logical series of triangles. These triangles represent the surface of the object.

How do I export an STL file from my 3-D CAD program?

Most CAD software offers STL conversion add-ins.

Are the build platforms reusable?

Yes the build platforms are reusable.

How many builds can one material bottle produce?

This depends on the size and the complexity of the part being built.

If material runs out before the print has completed the build process, does the build abort?

Yes the build will be aborted. Ensure that there is sufficeint amount of materials to complete the build.

When submitting a build, will the 3-d printing client software inform me if the amount of material is sufficient for completing a build?

The client software will tell you how many bottles of material will it take to complete the build.

How do I order parts?

To order replacement parts you will need to contact 3D Systems' Customer Support.

16.2 Getting Help

This section provides quick access to operating, maintenance, troubleshooting, and contact information to 3D Systems Customer Support Centers.

- Material Safety Documentation
- Contact 3D Systems Corporation

16.3 Part Material

Part Material Safety Guidelines

- Material Disposal
- Material Handling
- Material Safety
- Material Usage
- Spilled VisiJet Material
- Waste Removal

16.4 Printer Hardware and Installation

This section describes the modeler setup appications and functions.

Client Hardware & Network Interface
Electrical

- Electrical Safety
- General Safety Guidelines

Ultraviolet (UV) Safety
Unpacking Printer
Network and System Setup
Installing Material Cartridge
Installing & Removing Build Platform
Build Process & Previewing Build
Printer Status
Abort Build
Part Removal
Shutting Down System
Notification Messages
Return Printer for Repair

16.5 Facility Requirements

The requirements for electrical and room preparation are specified in the Projet™ 5000 Facility Requirements Guide.

17.0 Glossary of Terms

Build Material - is a paste-like acrylic compound that is an ultraviolet (UV) curable material.

Build Platform - this part is used by the printer to build parts. Support structures link the print to the build platform and must be removed from the printer once complete.

Chamber Door - the chamber door prevents harmful UV radiation from escaping the build chamber during the build process. The chamber door must be closed prior to starting or resuming a build job and is locked when a build is in progress.

Debug Log - is a text file used for obtaining information for resolving potential problems that may occur with the printer.

Job Scale Percentage (Job Scale %) - is used to resize parts during the build process.

Material Delivery Module- stores and feeds the material to the printer during the build process. Each material delivery module (MDM) can hold one (1) bottle of material. The printer can be equipped with four (4) build side MDMs and up to four (4) support side MDMs.
Material Quailty Guarantee - the printer reads an encrypted RFID tag on the cartridge to communicate parameters and ensure optimum build quality.

Modeling - the printer uses materials and a build platform to create 3-dimensional plastic prototype prints.

Operator Panel - is used to display build job status, menu options, and command prompts for the printer.

Post Curing (Finishing) - is the final process to remove support material from parts and clean the parts to a smooth finish prior to surface finishing and coating.

ProJet Client Software - is used to setup, run, and manage build jobs.

Shrink Comparison Percentage (Shrink Comp %) - is used to adjust for expected shrinkage during the build so actual part dimensions more closely match actual dimensions.

.stl File -- is a 3-dimensional solid Computer-aided design (CAD) software system used to produce prints.

Support Material - is a wax based material that provides adhesion to the build paltform and support for down facing surfaces and open volumes within the print.

Waste Material - is any uncured support and/or build material generated during a build process.

X-Axis - is the orientation of the part from front to rear on the build platform.

Y-Axis - is the orientation of the part from left to right on the build platform.

Z-Axis - is the orientation of the part height on the build platform.

18.0 Index

A
Abort Build Job
About this Guide
Add Cartridge

B
Build Demo
Part Material
Part Material Safety
Part Material Safety Data Sheet (MSDS)
C
Cleaning Surfaces
Cleaning the Waste Drawer
Communication Errors
Contacts
Copyright
Create STL File(s) to Build

D
Delete Build Jobs
Disposal

E
Electrical
Empty Waste Drawer
Error Messages

F
Facility Requirements
Facility Requirements Guide
Familiarization
Features
Finishing
Frequently Asked Questions (FAQ)

G
General
Getting Help
Glossary of Terms

H
Hardware and Parts Return
Head Maintenance Station Errors
Health Hazards
How to Order Parts

I
Install & Remove Material Bottles and Build Platform
Install and Run ProJet Client Software
Introduction

M
Maintenance
Manage Build Jobs
Material Feed and Waste System Errors
Material Handling
Material Messages

Material Quality Guarantee Errors
Material Safety Data Sheets (MSDS)
Material Storage
Material Waste Errors
Printer Hardware and Installation
Printer Setup
Printer Status
Motion System Errors

O
Online Help
Operations
Other Documents

P
Packaging
Parts Finisher User Guide
Pause Build Job
Personal Protection Equipment
Power on Printer
Power Outage
Preventive Maintenance
Preview Build Job
ProJet™ Quick Reference Guide

R
Regulatory Information
Remove Build Platform
Remove Part from Build Platform
Repeat Build Job
Return Printer for Repair

S
Safety Guidelines
Safety Symbols & Definitions
Save a Build Job
Service and Support
Shutdown Printer
Spilled VisiJet Material
Status and Message Lines
Submit a Build Job
Submit Test Build
System Functions
System Requirements

T
Troubleshooting

U
Ultraviolet (UV) Light
Useful Documents
UV Subsystem Errors

V
Vacuum Regulator Errors
VisiJet® Material Handling and Post-Processing Guide

W
Waste Removal
What's Inside