
User Guide

uPrint[™]
by dimension.



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Conforms to ANSI/UL std. 60950-1-2003
Certified to CAN/CSA C22.2 no. 60950-1-03

The *uPrint* by Dimension system conforms with the following standards,
in
accordance with the EU Machinery, Low Voltage and Electromagnetic
Compatibility Directives: EU 98/37/EEC, EU 73/23/EEC
amended by 93/68/EEC, EU 89/336/EEC

Table of Contents

Introduction

How to use this guide	6
Safety	7

Overview

Finding more information	11
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Setup

Minimum requirements:	12
Workspace requirements:	12
Facility requirements & environmental specifications:	12
Work station requirements:	12
Unpacking the Startup Kit	13
Unpacking the Material Bay	14
Unpacking the Printer	15
Set up the material bay and printer	16
Inserting a modeling base	18
Connecting the printer and material bay(s).	19
Power cable	20
Connecting the power cable:	20
Network/Crossover connections	20
Connecting the network cable:	20
Connecting the crossover cable:	20
Powering ON	21
Initial Language Setup	22
Setting your default language:	22
Software	22
Installing CatalystEX:	22
Verifying system software:	23
Networking the printer	23
Establishing communication on a dynamic network:	23
Setting the static network address:	24
Connecting directly to your PC	25
System Software	26
Updating system software:	26
Installing material spools into material carriers	27
Adding material carriers to single material bay	29
Loading material to the head for the single material bay	30
Adding material carriers to the dual material bays	30
Building a test part	33

Operation

Powering on	34
Display panel and keypad	34
System software overview	35
CatalystEX overview	36
Processing your STL file for printing	37
Opening your STL file with CatalystEX:	37
Selecting the scale of your STL file:	37

Selecting the orientation of your STL file:	37
Selecting model interior fill style:	38
Selecting support style:	38
Adding your STL file to the pack:	38
Printing your STL file:	38
Building a part	39
Starting a build from a remote location:	39
Starting a build from the display panel:	39
The display panel during build	40
Chamber Lights	40
Pausing a build	41
Resuming after pause	41
Canceling a build	41
Removing a completed part	41
Remove a part from the modeling base:	42
Removing support material	42
Emptying the purge bucket	43
Replacing material for single material bay	43
Material bay LEDs	45
Replacing material spools	46
Removing a spool of material from the carrier:	46
Storing material spools	46
Auto power down	48
Cancelling auto power down:	48
Powering off	49
Resuming operations from Standby mode	49
Troubleshooting and Maintenance	
Troubleshooting Checklist	50
Fault determination codes	52
Welcome Kit tools	52
Diagnosing loss of extrusion	52
Clogged extrusion tip	54
Recovering From Loss of Extrusion	57
Cycling power	59
Tip wipe assembly	60
Tip shield replacement	61
Extrusion tip replacement and calibration	63
Removing Tips:	63
Installing tips:	64
Tip calibration:	67
Chamber light bar replacement	68

Preventive Maintenance

Daily	69
Empty the purge bucket	69
Inspect the tip wipe assembly	69
Inspect the tip shields	69
Remove Debris Buildup	69
Vacuum Build Chamber	69
Clean Door	69
500 Hour maintenance	69
Replace the tip wipe assembly	69
Replace the tip shields	69
2000 Hour maintenance	70
Tip replacement	70

Support

Registration	71
Customer Support	71

Recycling

Removing the EEpoms from the material guides	73
Warranty Statement	74
Declaration of Conformity	75

Introduction

uPrint is designed with ultimate simplicity in mind. The system enables you to build parts quickly, even if you've never used a 3D printer before.

The system models with *ABSplus™*, so modeled parts are strong and durable. *ABSplus* also ensures you will be able to drill, tap, sand and paint your creations. With Soluble Support Technology (SST), your completed parts are quickly available for review and test. *uPrint* is an innovative combination of proprietary hardware, software and material technology.

Welcome to the new dimension of 3D modeling!

How to use this guide

This User Guide is laid out in easy to follow sections which cover Set-up, Operation, Maintenance, and Troubleshooting. Be sure to read each section carefully so that you will get the best performance from your system.

Throughout this User Guide, text representing **Interface Messages** that appear on the display panel are presented in a bold font.

Safety

The following classifications are used throughout this guide.



CAUTION: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.



WARNING: Indicates a potentially hazardous situation which, if not avoided, could result in serious injury.



Hot Surface: The hot surface sign indicates the presence of devices with high temperatures. Always use extra care, and wear safety gloves, when working around heated components



Gloves: When performing some maintenance procedures, the machine may be hot and gloves will be required to avoid burns.



Safety Glasses: Wear safety glasses to avoid injury to your eyes.



Lifting Hazard: Lift with two or more people to avoid serious injury.



Recycle: Use proper recycling techniques for materials and packaging.

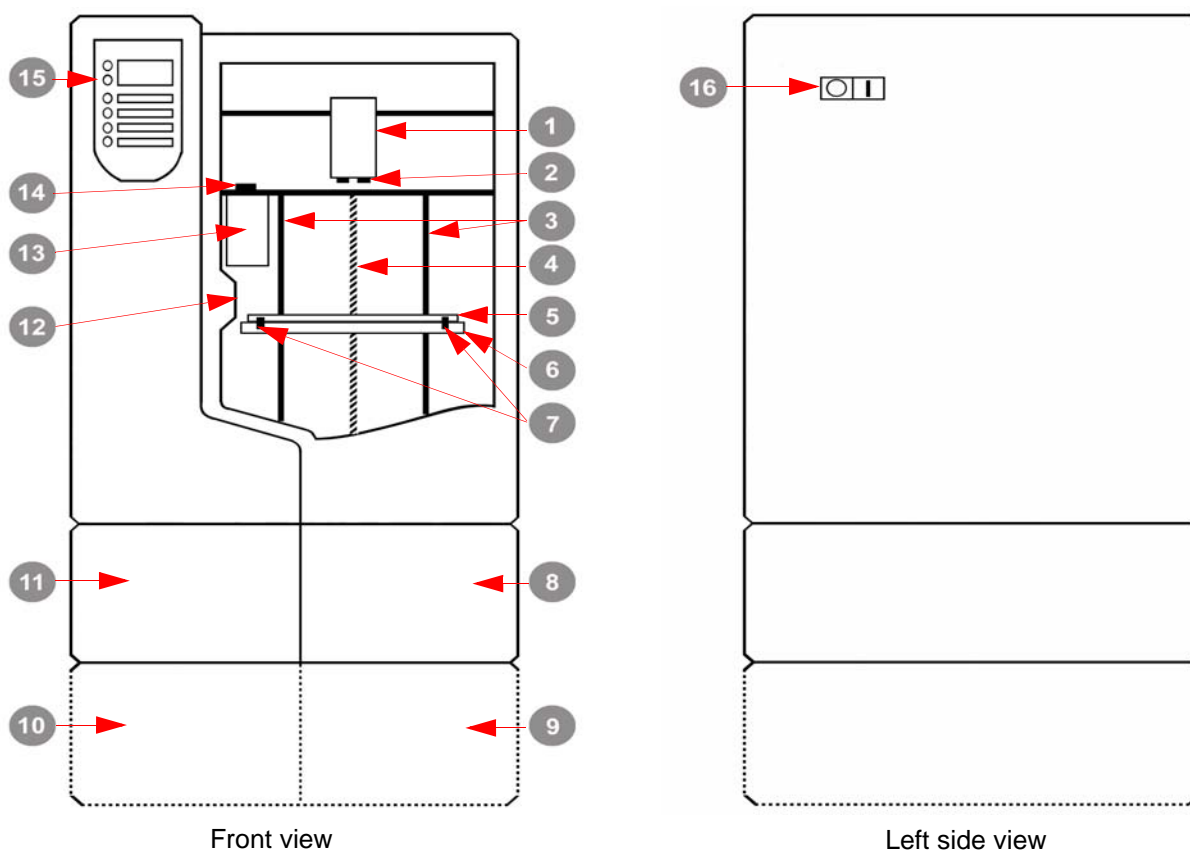


ESD: Use standard electrostatic discharge (ESD) precautions when working on or near electrical components.

Overview

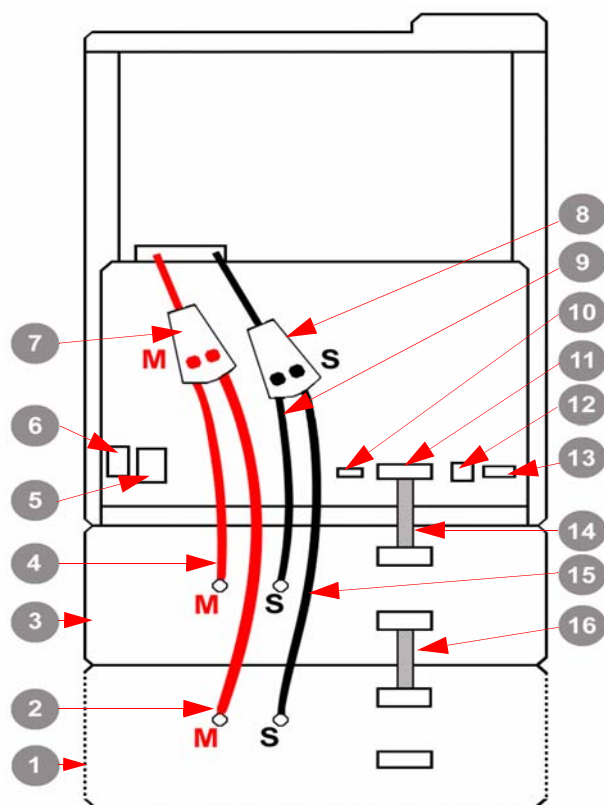
uPrint builds models from CAD STL files. The system builds three-dimensional parts by extruding a bead of *ABSplus* through a computer-controlled extrusion head, producing high quality parts that are ready to use immediately after completion.

Figure 1: Front and left side view of printer.

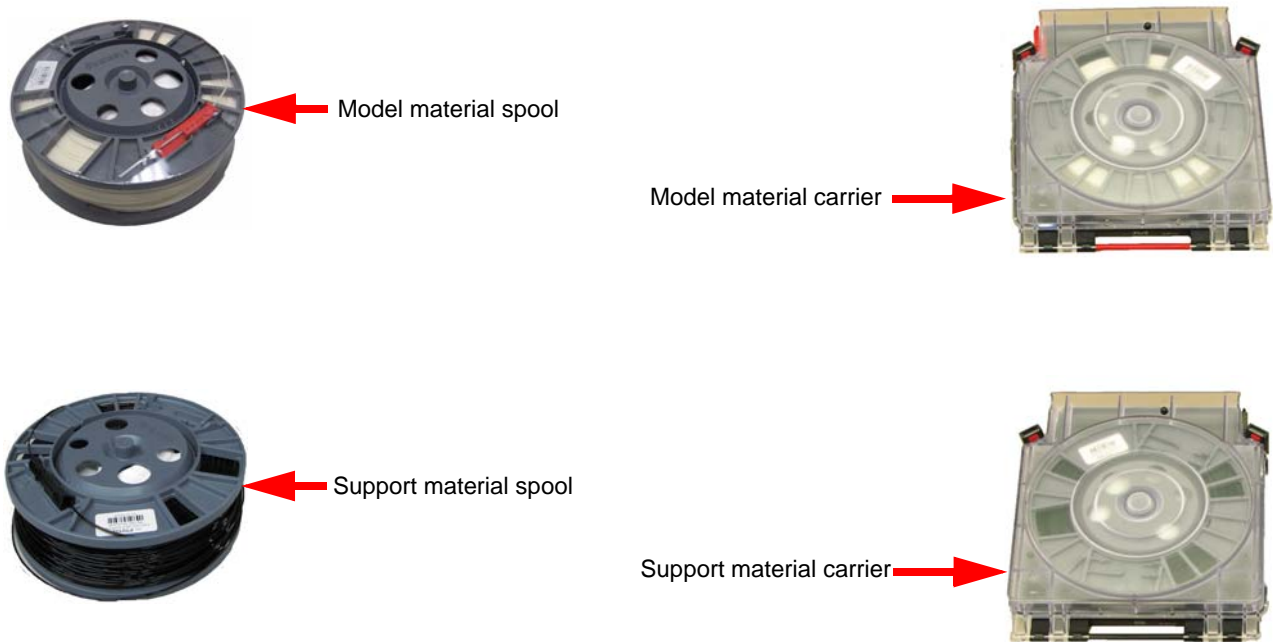
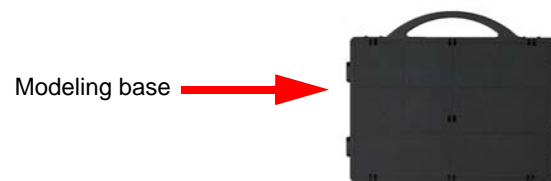


- | | | | |
|---|-----------------------------|----|-------------------------------------|
| 1 | Extrusion Head | 9 | Optional Material Bay, Model Side |
| 2 | Extrusion Tips | 10 | Optional Material Bay, Support Side |
| 3 | Guide Rods | 11 | Material Bay, Support Side |
| 4 | Lead Screw | 12 | Door Interlock System |
| 5 | Modeling Base | 13 | Purge Bucket |
| 6 | Z Platform | 14 | Tip Wipe Assembly |
| 7 | Modeling Base Retainers (2) | 15 | Display Panel |
| 8 | Material Bay, Model Side | 16 | Power ON/OFF Switch |

Figure 2: Rear view of printer



- | | | | |
|---|------------------------------|----|--|
| 1 | Optional Material Bay | 9 | Support Material Tube |
| 2 | Optional Model Material Tube | 10 | UPS Connection |
| 3 | Material Bay | 11 | Material Bay Cable Connector |
| 4 | Model Material Tube | 12 | RJ-45 Network Connector |
| 5 | Circuit Breaker | 13 | Diagnostics Cable Connector |
| 6 | AC Power Cord Connector | 14 | Material Bay Communications Cable |
| 7 | Model Material Y Connector | 15 | Optional Support Material Tube |
| 8 | Support Material Y Connector | 16 | Optional Material Bay Communications Cable |

Figure 3: Material spools and carriers*Figure 4: Modeling base*

Setup

Minimum requirements:

Workspace requirements:

System specifications	
Printer height	762mm (30 in.)
Printer width	660mm (26 in.)
Printer depth	660mm (26 in.)
Printer weight	59 Kg (130 lbs.)
Material bay height	153mm (6 in.)
Material bay width	660mm (26 in.)
Material bay depth	660mm (26 in.)
Material bay weight	17 Kg (37 lbs.)
Air circulation	115 mm (4.5 in.) minimum space behind unit for air circulation. 153 mm (6 in.) minimum space around the printer for air circulation.
Installation location	Stable flat surface capable of holding 100Kg (220 lbs).

Facility requirements & environmental specifications:

Facility requirements	
Dedicated outlet voltage requirements (Nominal):	100-120 VAC, 50/60 Hz, 15 Amp minimum (20 Amp recommended) —or— 200-240 VAC, 50/60 Hz, 7 Amp minimum (10 Amp recommended)
Ambient temperature:	15-30°C (60-86°F) Operating
Relative humidity:	30-70%, Non-condensing Operating
Network connection:	Ethernet 10/100 Base T
Optional UPS for power interruptions:	Rated Power – 1440 VA Output Power – 1500 watts
Heat emission	3050 BTU/hr while powering up 2550 BTU/hr while building
Noise level	55dBA while idle and 62dBA while operating

Work station requirements:

See release notes... <http://www.uPrintDimension.com/productinformation/customerinfo>

Unpacking the Startup Kit

1. Carefully cut the top of the box, open and remove the contents.
2. Remove the Welcome Kit box (A) and open.
3. Remove the model and support material spools (B).
4. Remove the material guide tubes (B).
5. Remove the box of substrates (C).

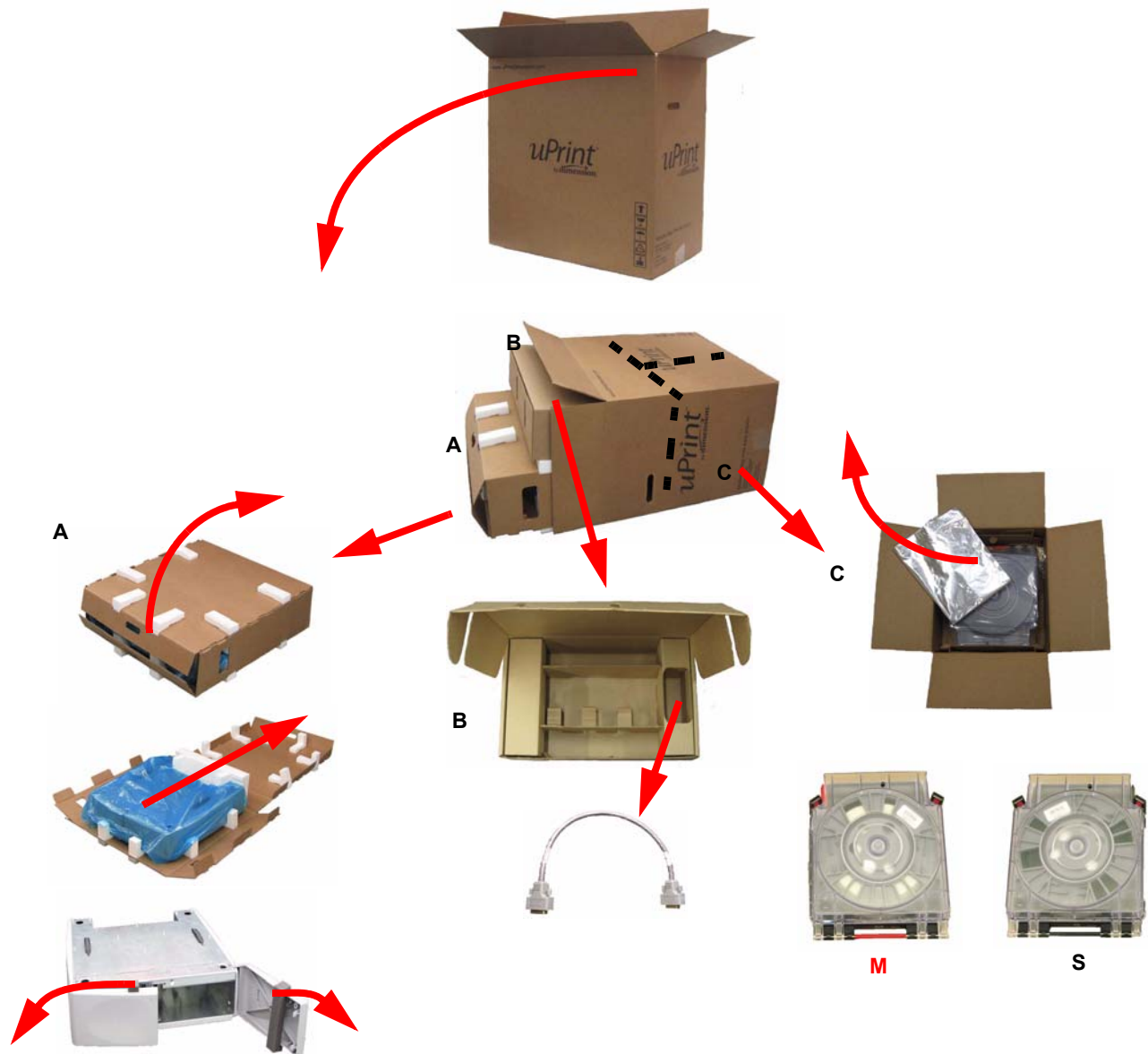
Figure 6: Startup Kit



Unpacking the Material Bay

1. Carefully cut the top of the box, open and lay it on its side.
2. Remove the material bay (A).
3. Remove the material bay cable (B).
4. Remove the model and support carriers (C).

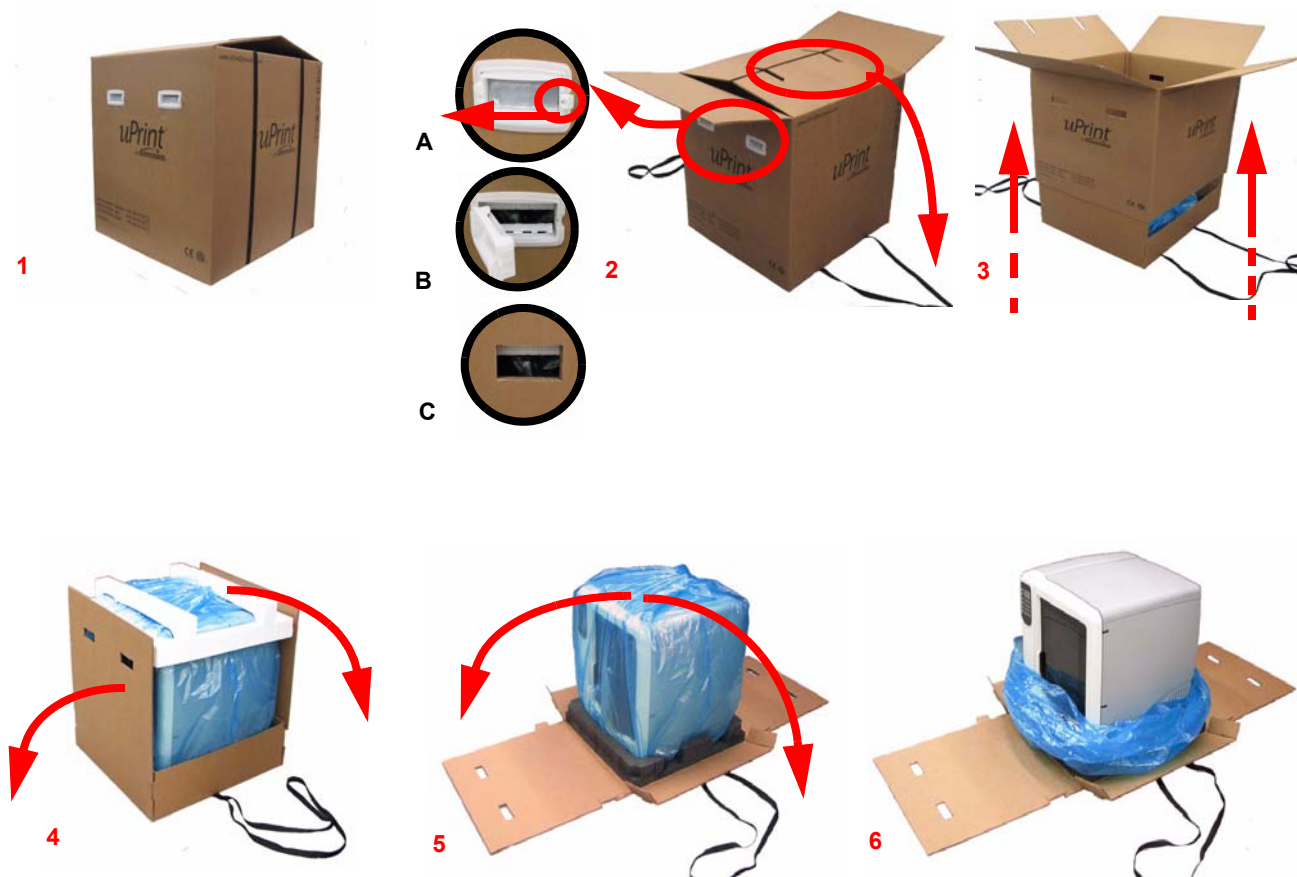
Figure 7: Material Bay



Unpacking the Printer

1. Place the printer close to the area where it will be located.
2. Remove the handles from the box, pulling the tabs outward.
3. Carefully cut the top of the box open, do NOT cut the straps that contain the box.
4. Unfold the top of the box and remove the straps.
5. Raise the outer box up and off of the inner box.
6. Fold down the sides of the inner box to reveal the printer.
7. Remove the foam from the top of the printer.
8. Cut the top of the blue plastic bag the printer is enclosed in.
9. Lower the plastic bag, the printer should now be visible.

Figure 8: uPrint 3D Printer



Set up the material bay and printer

Once the printer and the material bay are unpacked, they will need to be aligned and stacked before operation.

1. Place the material bay on a stable, flat surface where you will have your *uPrint* 3D printer located.
2. Remove the shipping foam from the material bay doors. See [Figure 9](#)

Figure 9: Remove the shipping foam from the material bay doors



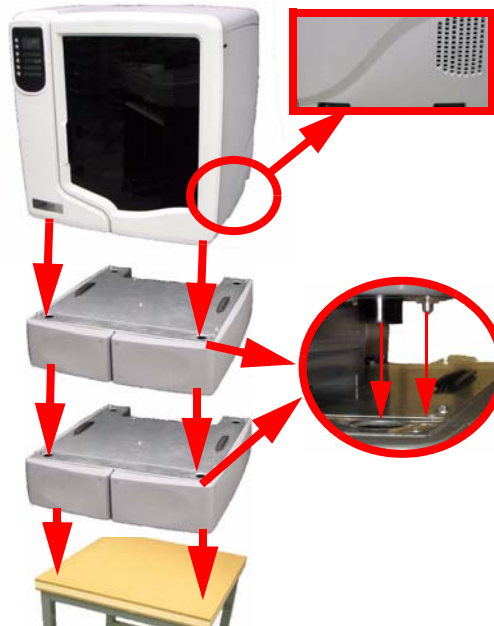
3. The material bay has 4 holes for the feet and 2 holes for the alignment pins. See [Figure 10](#). These must be aligned properly for mechanical stability.
4. Align the 4 feet and 2 two pins on the bottom of the printer with the holes on top of the material bay and set in place. See [Figure 10](#).

LIFTING HAZARD



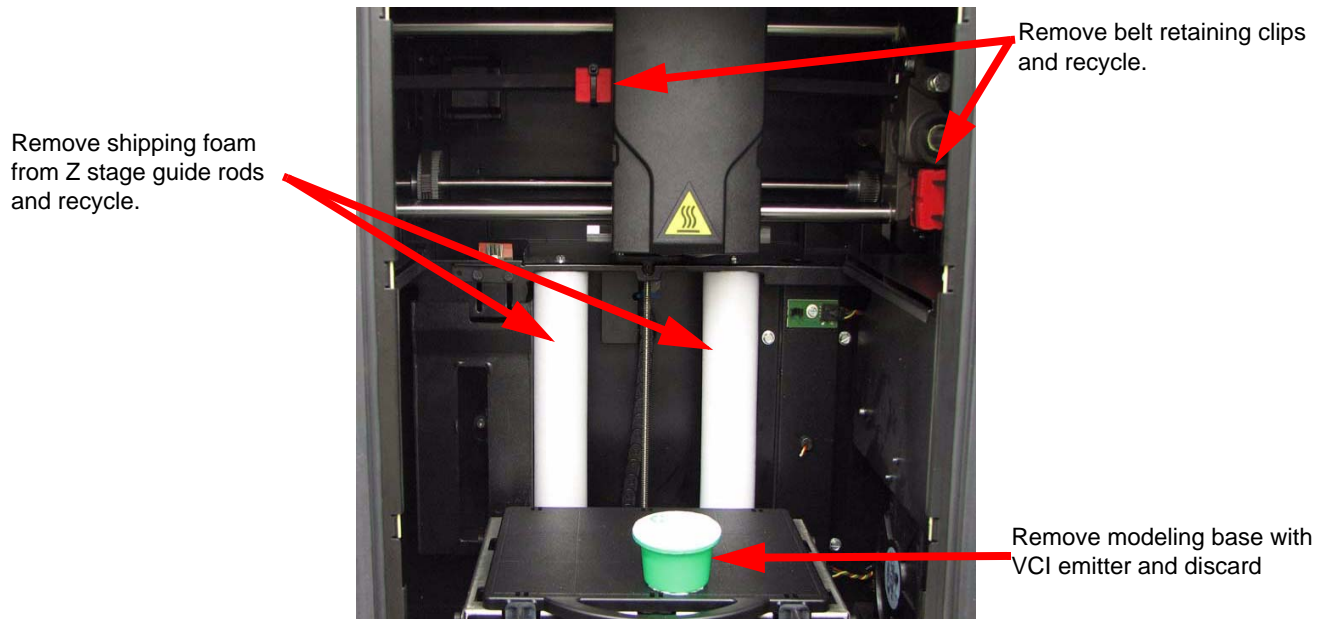
Use proper moving and lifting techniques when positioning the unit.

Figure 10: System stacked (shown with optional material bay)



5. Open the printer door and remove the substrate and Vapor Corrosion Inhibitor (VCI) emitter and discard. See [Figure 11](#).
6. Remove the shipping foam from the Z stage guide rods and recycle. See [Figure 11](#).
7. Cut the tie wraps holding the belt retaining clips in place, remove the belt retaining clips and recycle. See [Figure 11](#).

Figure 11: Open the chamber door and remove shipping materials



WARNING



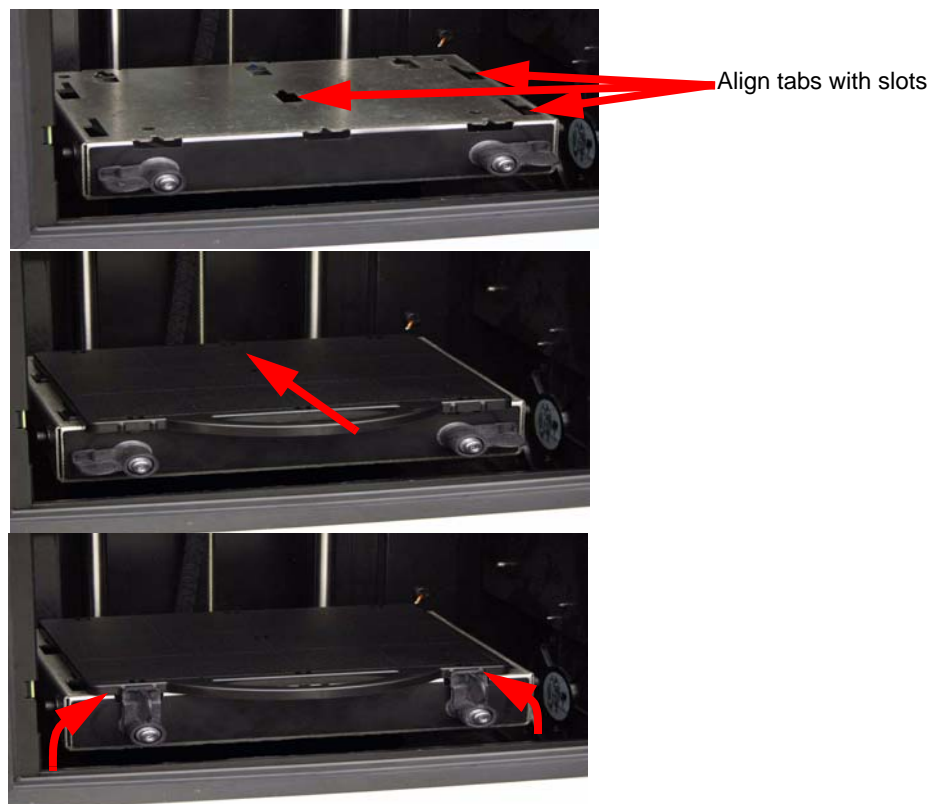
The lead screw and guide rods are lubricated with a thin coat of Krytox grease. Krytox grease can cause skin irritation. Be careful not to get the grease on your hands or clothing.

Inserting a modeling base

The modeling base is the plastic tray on which models are built. You will need to use a new modeling base for every build.

1. Make sure the two retainers are turned down so they do not interfere with modeling base installation.
2. Set the modeling base on the Z platform aligning the tabs on the modeling base with the slots on the metal tray. See [Figure 12](#).
3. Slide the modeling base down and toward the back of the unit until its front edge (with the handle) is flush with the front edge of the tray. See [Figure 12](#).
4. Secure the modeling base with the two retainers by turning them up. See [Figure 12](#).

Figure 12: Z platform slots



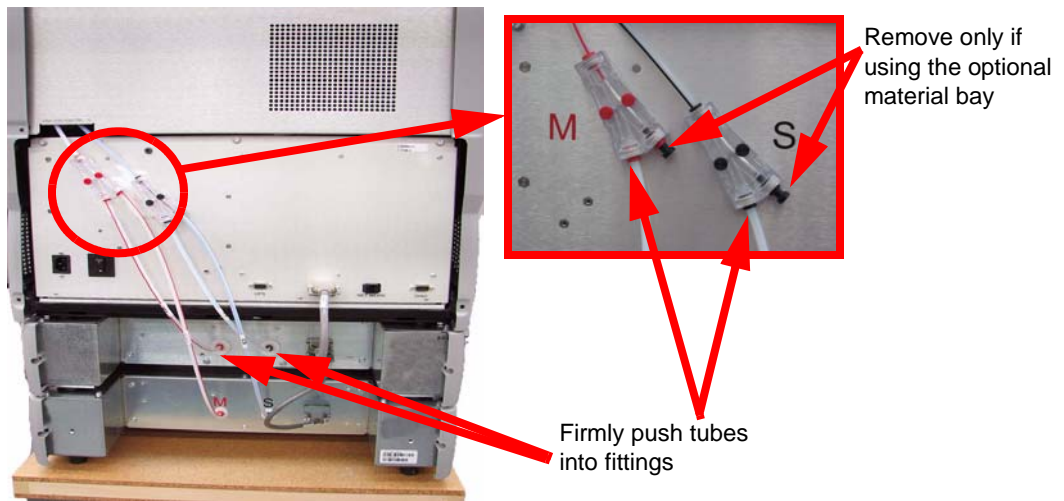
Connecting the printer and material bay(s).

1. Connect the material tubes from the material bay(s) to the printer. The material tube with the red stripe is for the model material and the material tube with the black stripe is for support material. See [Figure 13](#).

Note:

If you are using the optional second material bay, the longer material tubes are for the lower material bay and the shorter material tubes are for the upper material bay.

Figure 13: Material tube connections



2. Connect the material bay communication cable(s) from the material bay(s) to the printer. **DO NOT connect the material bay communication cable(s) while the printer is powered on.** See [Figure 14](#).

Figure 14: Material bay communication cable



Power cable

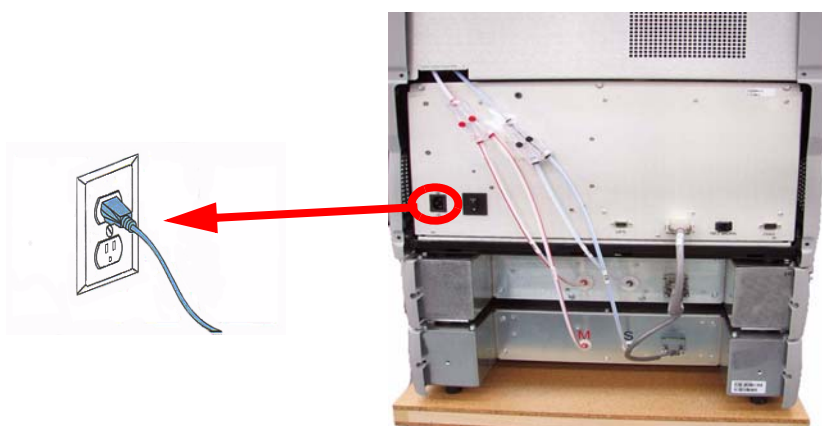
Connecting the power cable:

1. Connect the power cable to the back of the printer.
2. Connect the power cable to the dedicated power outlet. See [Figure 15](#).

Note:

Do not use an extension cord or a power strip, using these can possibly cause intermittent power issues.

Figure 15: Power cable connection



Network/Crossover connections

Connecting the network cable:

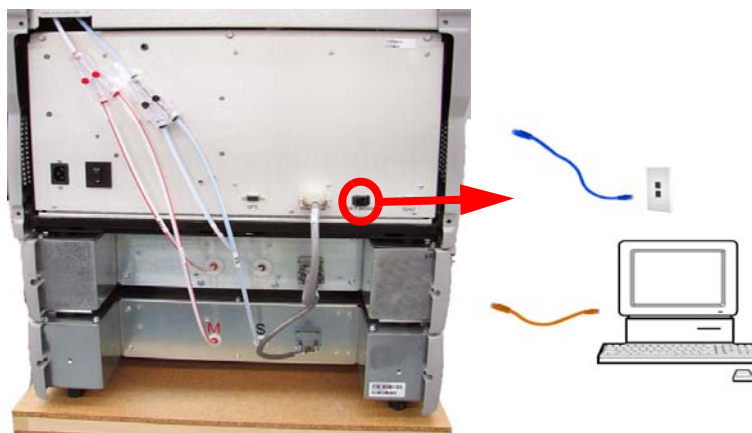
1. Connect the network cable (blue) to the network connection at the back of the printer. See [Figure 16](#)
2. Connect the network cable to the dedicated outlet or network hub.

If not using a network and connecting directly to a PC, you will need to use a crossover cable.

Connecting the crossover cable:

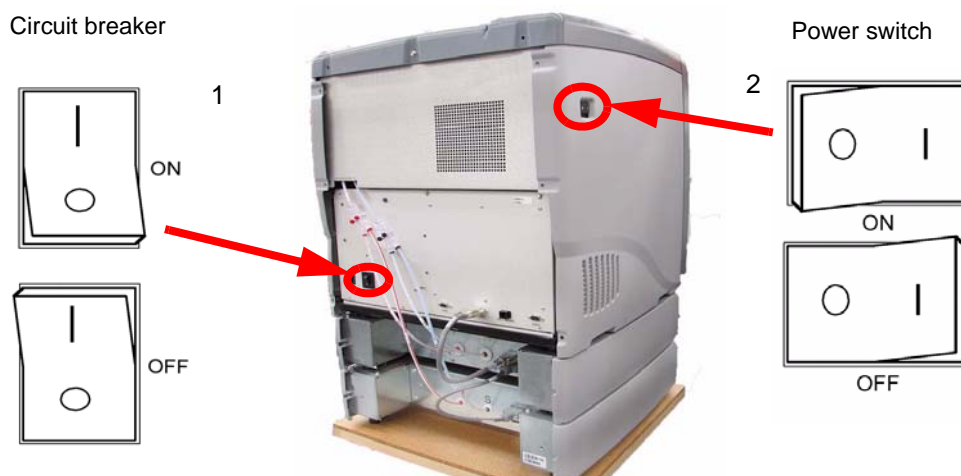
1. Connect the crossover cable (orange) to the network connection at the back of the printer. See [Figure 16](#)
2. Connect the crossover cable to the computer.

Figure 16: Network connection



Powering ON

Figure 17: Circuit breaker and power switch



1. Turn the circuit breaker to the ON position.
2. Turn the power switch to the ON position.

Note:

After powering the printer ON, it may take up to 5 minutes for the system to boot up completely.

Initial Language Setup

Upon first start up of the *uPrint* 3D printer, you will need to set your default language.

Setting your default language:

1. From the display panel press **Maintenance**.
2. Press **Setup**.
3. Press **Select Language**.
4. Select the default language you will be using and press the corresponding button.
 - English
 - Spanish
 - Italian
 - German
 - French
 - Chinese
 - Japanese
5. The display panel will ask **Are You Sure?** Press **Yes**.

Software

There are two software programs that work with *uPrint*. First there is CatalystEX which is the preprocessing software that controls the *uPrint* 3D printer. The second software program is the system software, which is factory installed on the printer. Because there are occasional changes to this software, you will have to verify that you have the latest version installed.

Installing CatalystEX:

1. Insert the CatalystEX installation CD into your CD-ROM drive of your computer.
2. If autorun is enabled, the setup screen should come up in a pop up window after you insert the CatalystEX CD. If autorun is not enabled, you will have to navigate to the CD-ROM directory and launch the setup.exe application.
3. Click the **Install** button.
4. Follow the prompts to finish loading the CatalystEX software.

Note:

CatalystEX's installation setup allows you to change or confirm the target installation directory. To install CatalystEX in a directory other than the default, type the path and directory name in the dialogue box when prompted.

Verifying system software:

1. Press **Maintenance** on the *uPrint* display panel.
2. The display will show the current version number and build number the printer has installed. Compare this build number to the build number that is on the CD from the Welcome Kit. The latest system software CD will be included in your Welcome Kit. If the build numbers do not match, see [“System Software” on page 26](#).

Networking the printer

There are two methods of connecting your printer to your computer, over a network and a direct connection to your PC. This section describes how to set up communication over a network. For instructions on setting up a direct PC connection, see [“Connecting directly to your PC” on page 25](#)

You will need to establish communication between your PC and printer before you can send files to be built. How you establish this communication is dependent upon how your computer network is configured. In many cases, it is a simple matter of letting the CatalystEX software find your printer. In some situations you may need to set the network address for your printer and possibly record the IP address in the CatalystEX program.

Establishing communication on a dynamic network:

If you are on a dynamic network (or not sure of your network type) follow these steps to allow CatalystEX to ‘find’ your printer and establish communication.

1. Connect a network cable from your printer the network PC is connected to. See [“Connecting the network cable.” on page 20](#)
2. Make sure the printer is ‘ON’ and determine the Unique Device Name (UDN) for your printer.
 - A. From **Idle** (or **Ready to Build**), press **Maintenance** on the display panel. The display will show **Maintenance** and the software version.
 - B. From the display panel press **System**.
 - C. From the display panel press **Set Network**. The top window displays: **Network Admin - Dynamic IP Address; UDN**.
 - D. The UDN for your printer is listed here. This is preset at the factory and cannot be changed.
3. From your PC, start the CatalystEX application.
 - A. From the General Tab, click the **Manage 3D Printers** button.
 - B. Click the **Add from Network** button in the lower right corner of the pop-up window.
 - C. A new pop-up, **Add 3D Printer**, should list your printer in the main window (identified by its UDN). Click on the printer in this window and enter a name and location in the lower portion of the pop-up window.
 - D. Click **Add Printer** and you are ready to print. Close the 3D Printer pop-up window.

Note:

If your printer is not displayed in the “Add 3D Printer” pop-up window, you are not using a dynamic network. You will need to set up a static network address.

Setting the static network address:

1. Obtain your static network address from your Network Administrator.
2. From **Idle** (or **Ready to Build**), press **Maintenance** on the display panel. The display will show **Maintenance** and the software version.
3. Press **System**.
4. Press **Set Network**. The top window displays: **Network Admin - Static IP Address; UDN**.
5. Press **Static IP** to display current settings. For example:

IP Address: 192.000.000.001

NM Address: 255.255.000.000

GW Address: 198.000.000.001

Note:

These values are the factory defaults and MUST be changed for your network. If these values are not changed the printer will continue to restart itself until they are changed.

6. Look for the cursor beneath the first digit of the IP Address. The cursor does *not* blink. To update the IP address:
Press **Increment** to increase the value one digit at a time.
Press **Next Digit** to move the cursor one place to the right.
Press **Last Digit** to move the cursor one place to the left.
7. Use the three functions listed above to set your IP address.
8. After setting the final digit of the Internet Protocol (IP) address, move the cursor one more place to the right. The cursor moves to the Netmask (NM) address. Follow the same steps for setting the NM and Gateway (GW) addresses.
9. When you have finished setting the addresses, from the display panel press **Done**. The display will show: **Change IP, Netmask and Gateway?**
10. Press **Yes**. The panel then displays **Resetting Network** and after a moment returns to **Idle** or starts warming up.
11. From your PC, start the CatalystEX application.
 - A. From the General Tab, click the **Manage 3D Printers** button.
 - B. Click the **Add from Network** button in the lower right corner of the pop-up window.
 - C. A new pop-up window, **Add 3D Printer**, should list your printer in the main window (identified by its UDN). Click on the printer in this window and enter a name and location in the lower portion of the pop-up window.
 - D. Click **Add Printer** and you are ready to go. Close the 3D Printer pop-up window.

12. If your printer is not displayed in the **Add 3D Printer** pop-up window, you will need to add the printer IP address manually.
 - A. From the General Tab, click the **Manage 3D Printers** button.
 - B. Click the **Add Manually** button in the lower right corner of the pop-up window.
 - C. In the pop-up window **Add 3D Printer**, enter a Name and Location for your printer in the appropriate fields.
 - D. Enter the IP Address for your printer in the appropriate field. It will be the same address as the one listed in step 4.
 - E. Select the appropriate printer type from the drop down list.
 - F. Click **Add Printer** and close the 3D Printer pop-up window.
13. If you are unable to connect the printer to your PC, contact your Network Administrator.

Connecting directly to your PC

You can also connect the *uPrint* 3D printer directly to your PC without the use of a network. This is most easily accomplished with the printer in Dynamic Network mode (as received from the factory).

1. Connect a crossover cable from your printer directly in to the network port on your PC. (A crossover cable (orange) is included with the Welcome Kit) See [“Connecting the network cable:” on page 20](#)
2. Make sure the printer is “ON” and determine the Unique Device Name (UDN) for your printer.
 - A. From **Idle** (or **Ready to Build**), from the display panel press **Maintenance**. The panel displays **System Maintenance** and the Software version.
 - B. Press the **System** button. The top window displays: **Network Admin - Dynamic IP Address; UDN**.

The UDN for your printer is displayed here. This is preset at the factory and cannot be changed.

3. From your PC, start the CatalystEX application.
 - A. From the General Tab, click the **“Manage 3D Printers”** button.
 - B. Click the **“Add from Network...”** button in the lower right corner of the pop-up window.
 - C. A new pop-up window, “Add 3D Printer”, should list your printer in the main window (identified by its UDN). Click on the printer in this window and enter a name and location in the lower portion of the pop-up window.

Note:

It may take up to 1 minute for your printer to appear in the pop-up window.

- D. Click **“Add Printer”** and you are ready to go. Close the “3D Printers” pop-up window.
4. If the printer does not appear in the pop-up window:
 - A. Close the **Add 3D Printer** pop-up window and click the **Add Manually** button in the **3D Printers** pop-up window.
 - B. In the pop-up window **Add 3D Printer**, enter a name and location for your printer in the appropriate fields.

- C. Enter the dynamic IP address for your printer (from step 2B) in the appropriate field.
- D. Select the appropriate printer type from the drop down list.
- E. Click **Add Printer** and close the **3D Printer** pop-up window.
- F. If you get an “**Error: Unable to connect to printer**” message it may be that your PC is not configured for dynamic networking. To configure your PC for dynamic networking:
 - i. From the **Control Panel** of your PC, double click on **Network and Internet Connections**.
 - ii. Double click on **Network Connections**, then double click on **Local Area Connection**.
 - iii. Scroll the **Local Area Network Connection Properties** window to find the **Internet Protocol (TCP/IP)** selection. Click on **Internet Protocol (TCP/IP)** and then click on the **Properties** button.
 - iv. From the **General** tab of the **Internet Protocol (TCP/IP)** properties pop-up window, click on the **Obtain IP Address Automatically** radio button.
 - v. Click **OK** and then **OK** again.
 - vi. After allowing your PC a minute or so to adjust to the new setting, your PC should connect to your printer.
 - vii. If you are still unable to connect to your printer, recheck your connections and settings.

System Software

The system software is factory loaded on the printer. Due to occasional changes you may need to update the printer system software.

Updating system software:

1. From the *uPrint* display panel, press **Maintenance**.
2. Press **System**.
3. Press **Load Upgrade**. The printer will then display “**Send upgrade from workstation**” followed by the printer’s IP address.
4. Open CatalystEX and click on the **Printer Services** tab.
5. Click on the **Update Software** button. CatalystEX will now connect to the printer and will prompt you to locate the upgrade file. Navigate CatalystEX to the CD where the upgrade file is located. The update will automatically be loaded on to the printer. After the update has been loaded, the display will show **Verifying update**.
6. When verification is complete, the display will show **Reboot to complete**. Select **Yes**. The printer will now reboot and return to **Idle**.
7. Press the maintenance button and verify the updated version was installed correctly.

Installing material spools into material carriers

An instructional video can be viewed at <http://www.uPrintDimension.com/productinformation/customerinfo>

1. Place on a flat surface, unlatch and open carrier. See [Figure 18](#).

Note:

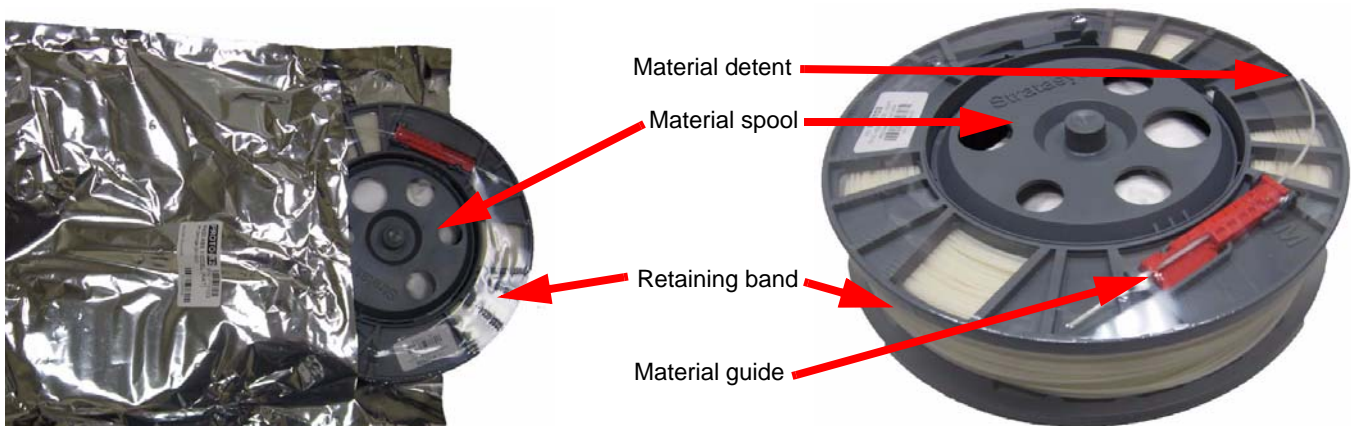
Save the enclosed bag for storage. The storage bag is used to store material spools when they are not in use and will help keep moisture out of the material.

Figure 18: Opening the carrier



2. Tear open the bag and discard. Note how the material and material guide are held in place with clear plastic. See [Figure 19](#).

Figure 19: Removing the material spool



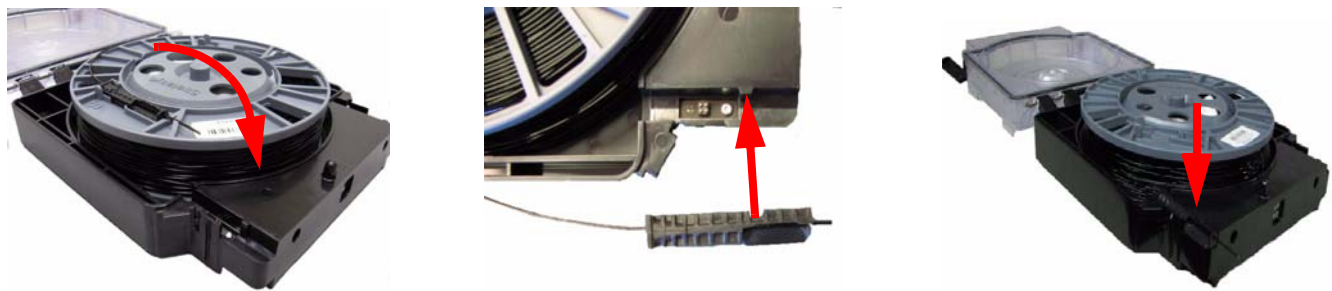
3. Completely remove the clear plastic. DO NOT remove the material guide from the spool at this time.
4. Place the spool in to the carrier with the material guide facing up.
5. Remove the material guide from the spool holding location.
6. Carefully remove material from the spool detent. See [Figure 20](#).
7. Place the model material guide into position see [Figure 20](#).

Figure 20: Place model material spool into model material carrier

Model



Support



Note:

Model (red) and support (black) carriers are different. The material guide tubes install on the opposite side. See [Figure 20](#).

8. Close the carrier with the material guide in place. Latch both buckles completely (the red tab must snap in to place on each buckle). See [Figure 21](#).

Note:

Material must protrude 6.35mm (0.25 inch) from the end of the material guide.

Figure 21: Latching the carrier



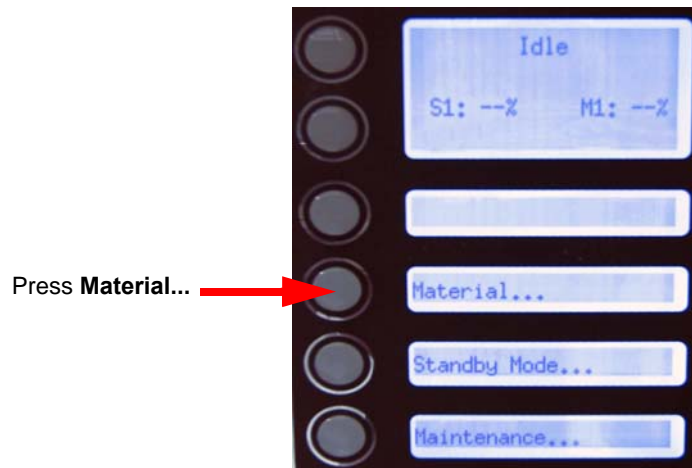
Adding material carriers to single material bay

Once material spools have been inserted into the carriers, you will need to add the carrier to the material bay. If using dual material bays see [“Adding material carriers to the dual material bays”](#) on page 30

An instructional video can be viewed at <http://www.uPrintDimension.com/productinformation/customerinfo>

1. From the display panel press **Material**, the display will show **Add/Remove**.

Figure 22: Adding carriers to the single material bay



2. Add the model and support carriers to the material bay by inserting the carriers into the material bays and pushing the carrier in until it latches. See [Figure 23](#)

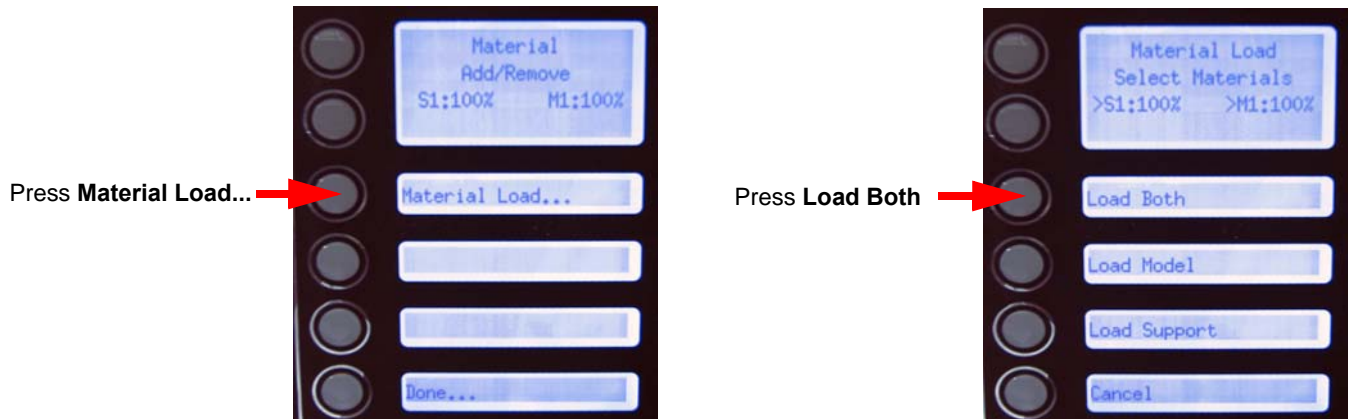
Figure 23: Insert carriers until they latch into place



Loading material to the head for the single material bay

1. Once the material carriers have been added to the material bays, press **Load...** next, press **Load Both**. The display will show **Loading Model**. After the model material has loaded to the head the display will show **Loading Support**.

Figure 24: Loading material to the head



Note:

It can take up to 5 minutes for the printer to load the material to the head.

2. When the printer has finished loading support material to the head, press **Done...** the display will show **Wait for Part** or **Ready to Build** (if a part is in the queue) and will also show the amount of material remaining on the model and support spools.

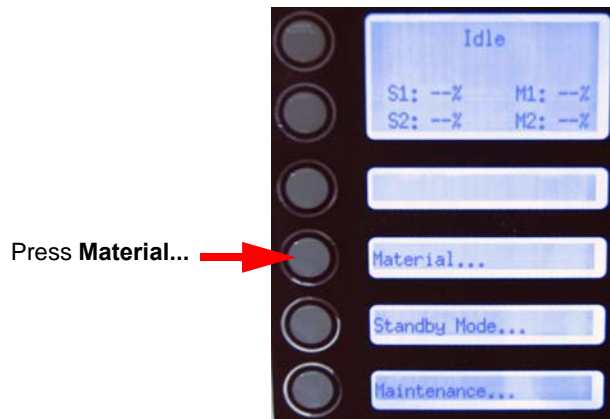
Adding material carriers to the dual material bays

Once material spools have been inserted into the carriers, you will need to add the carrier into the material bay.

An instructional video can be viewed at <http://www.uPrintDimension.com/productinformation/customerinfo>

1. From the display panel press **Material**, the display will show **Add/Remove**.

Figure 25: Adding carriers to the dual material bay

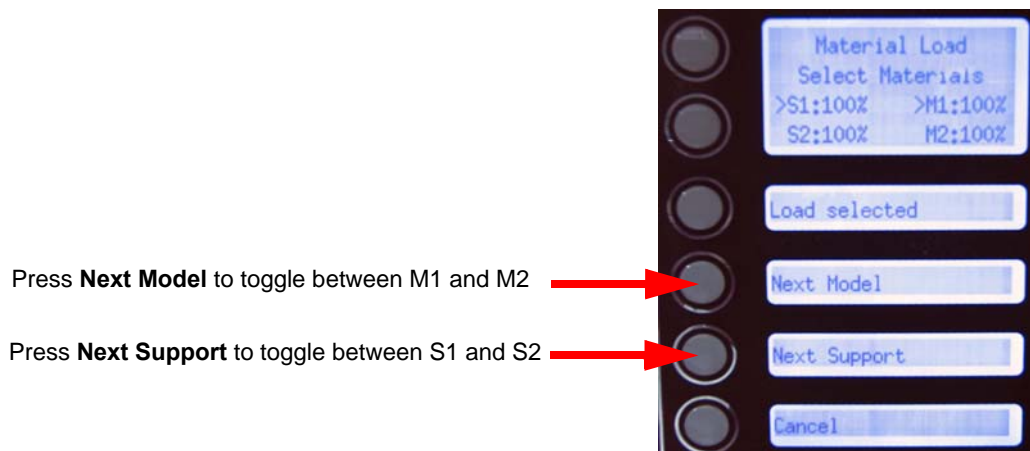


2. Add the model material carriers to the first model material bay (M1) and the second model material bay (M2) by inserting the carrier into the material bay and pushing the carrier in until it latches. See [Figure 23](#)
3. Repeat for support.

Loading material to the head for the dual material bays

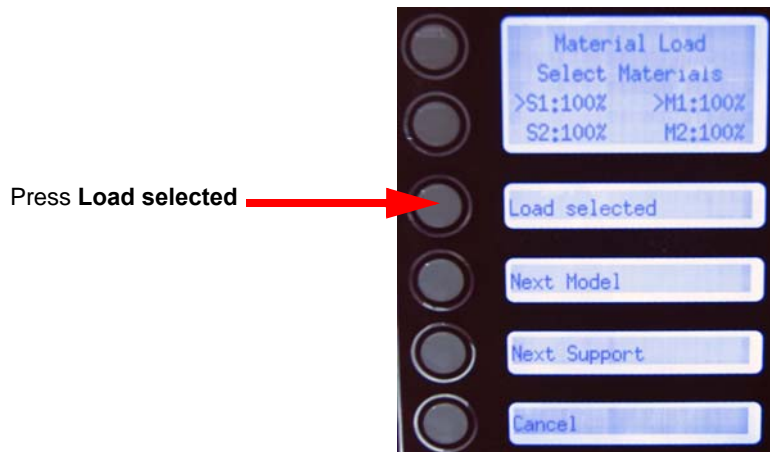
1. Once the material carriers have been added to the material bays, press **Load...** **Select Materials** will now be displayed.
2. Select the material bays that you want to be active, or loaded to the head. Select **Next Model** for the next model bay, this will toggle between M1 and M2, or **Next Support** for the next support bay, this will toggle between S1 and S2. A carrot will be placed next to the material bay that will be activated.

Figure 26: Select material bay



3. When the material bays have been selected, you can now press **Load Selected**. The display will show **Loading** and which model material bay has been selected. After the model material has been loaded to the head, the display will show **Loading** and the support material bay which has been selected.

Figure 27: Load selected



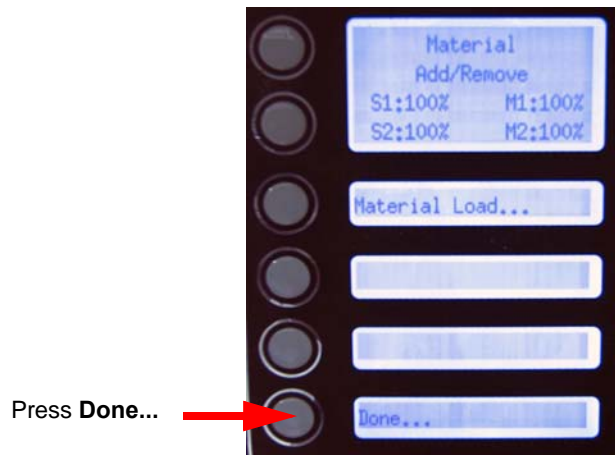
- After the selected material bays have been loaded to the head, the display will show **Preparing** and the inactive model material bay, for example, **Preparing M2**. This will repeat for the inactive support material bay. An asterisk will be placed next to the model and support material bays that are active.

Note:

It can take up to 5 minutes for the printer to load the material to the head.

- When the material has been loaded to the head and the secondary material bays have been prepared, press **Done...** the display will show **Wait for Part** or **Ready to Build** (if a part is in the queue) and will also show the amount of material remaining in both material bays.

Figure 28: Press done when finished loading



Building a test part

Factory test parts have been pre-loaded onto the operating system of your printer. To familiarize yourself with the building process, it is recommended that you build one of these test parts before attempting to build one of your own files.

Once the printer has reached Idle, material has been loaded and a modeling base has been installed, you can build a test part with the printer.

1. From the display panel press **Maintenance**.
2. Press **System**.
3. Press **Test Parts** and select the sample wrench.

The printer will automatically start to print the test part. It will take approximately 45 minutes to complete the build.

When the part is finished, follow the steps under ["Removing a completed part" on page 41](#).

Operation

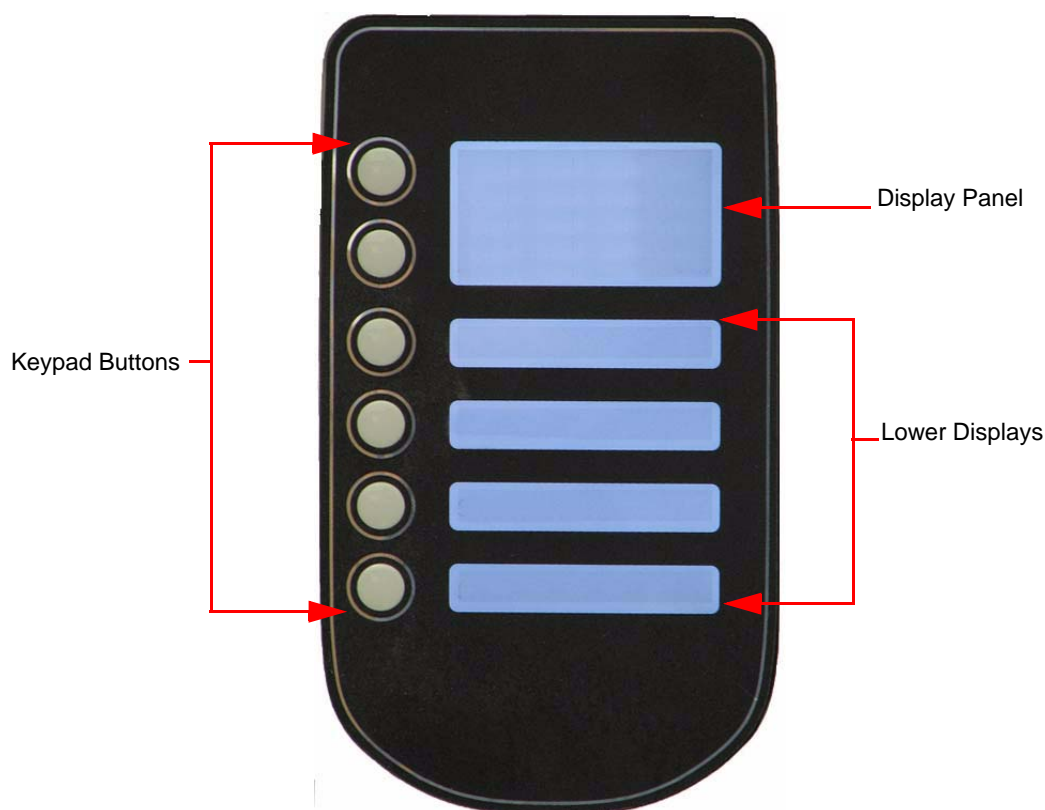
Powering on

Refer to “Powering ON” on page 21 for instructions.

Display panel and keypad

The main user interface is the Display Panel and Keypad. See Figure 29.

Figure 29: uPrint display panel and keypad



The *uPrint* display panel and keypad consist of a multiple-line LCD display with two buttons used for scrolling through messages and four single-line displays, each with one button for making selections. The top line in the large display always shows the printer status.

Note:

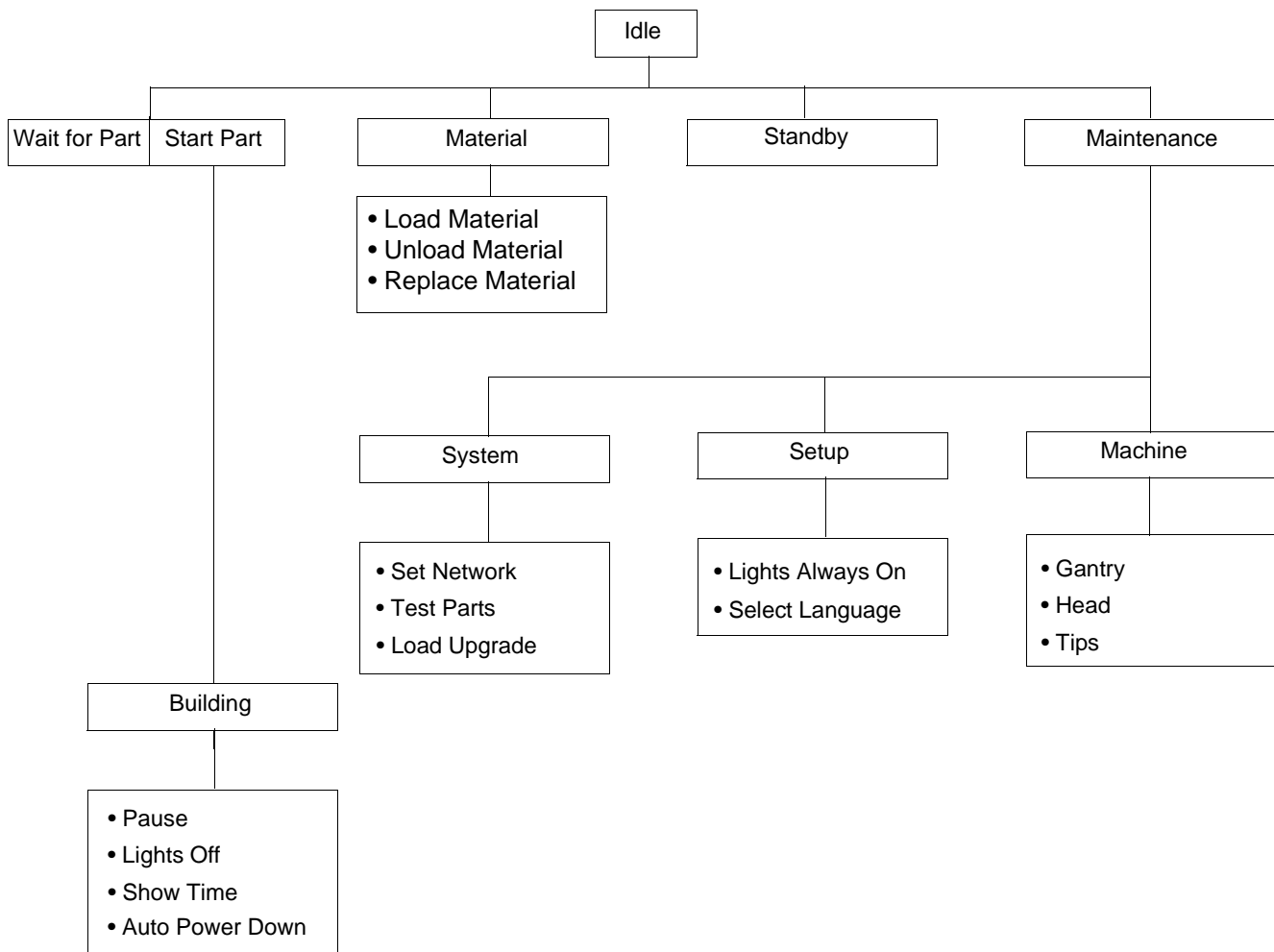
If an item is blinking in the lower displays, the blinking item is usually the next, most logical selection.

System software overview

This is a brief overview of the sections on the Display Panel.

- **Idle:** If there is no part being built and no part in the build queue, the display will show that the printer is **Idle**.
- **Wait for Part** or **Start Part:** If the printer is in Idle and the build queue is empty, you can set it to wait for a part. If the printer has a part in the build queue, you can press **Start Part** to start a build.
- **Building:** If the printer is building a part, you can choose to pause, set the lights either ON or OFF, view the print time or material remaining and set the printer to auto power down.
- **Material:** From this section you can load material, unload material or replace material.
- **Standby:** From this section you can set the printer to Standby mode.
- **Maintenance:** From this section you can make changes to the **System**, **Setup** or **Machine**.

Figure 30: Display panel hierarchy

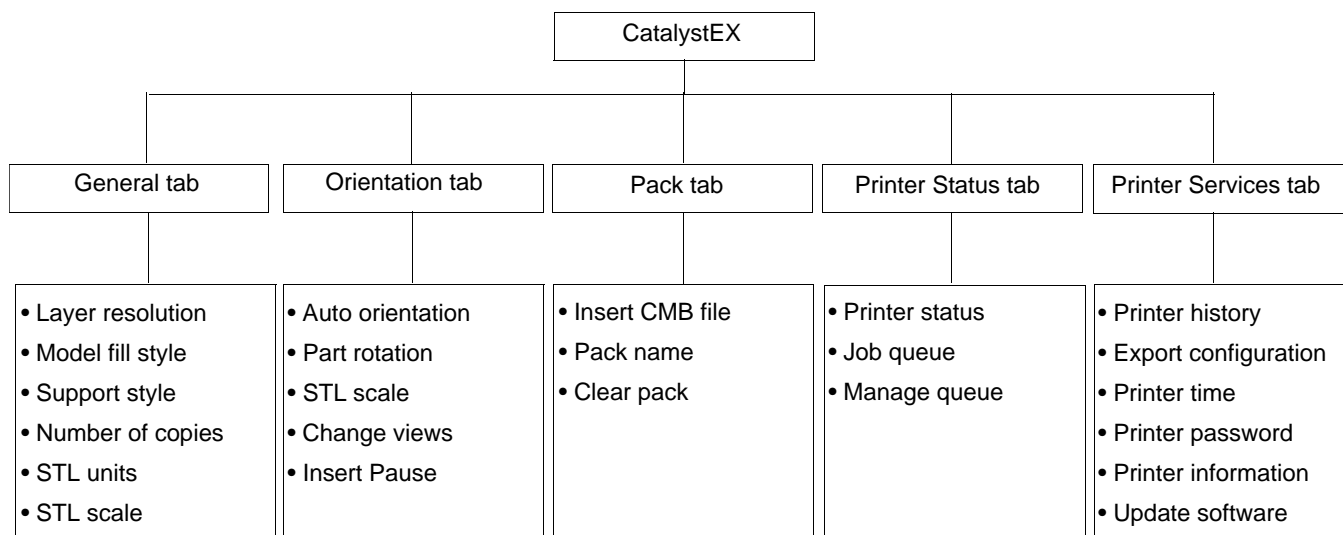


CatalystEX overview

This is a brief overview of the sections in the CatalystEX software.

- **General tab:** This section is where you can select the model fill and support style. You can also change the STL units and STL scale in this section.
- **Orientation tab:** This section allows you to rotate and resize your parts. You can also change the view and auto orient your part or insert a pause.
- **Pack tab:** This section shows you which parts are in the pack for printing. You can add parts, move the parts around to make a better fit or clear the pack from this section.
- **Printer Status tab:** This section shows you the amount of material remaining for both model and support as well as which parts are in the Build Queue.
- **Printer Services tab:** From this section you can check the printer history, set the printer time, set the printer password, update printer software, get printer info and export configuration files, which are files containing specific operating information regarding the printer.

Figure 31: CatalystEX hierarchy



Note:

For detailed information about the many file processing options, STL files, CMB files, part orientation, modeling envelope placement, print “job” efficiency and other print controls, refer to the CatalystEX Dynamic Help.

Processing your STL file for printing

Opening your STL file with CatalystEX:

1. Create an STL file using your CAD software. Refer to your CAD software help section for more information about converting your CAD drawings into STL files.
2. Open the CatalystEX software.
3. From the **File** menu select **Open STL...**
4. Navigate to and select the STL file that you have created.

Selecting the scale of your STL file:

Before you process a part for printing, you can change the size of the part within the build envelope. Every part has a pre-defined size within the STL file. After you have opened the file you can change the size of the part produced from the STL file by changing the scale. The scale always relates to the original STL file size definition.

For example: a cube that is defined as 2 X 2 X 2 can be built to be 4 X 4 X 4 by simply changing the scale to 2.0. If after changing the scale to 2.0, you decide that a size of 3 X 3 X 3 would be preferred, change the scale to 1.5 - the scale relates to the original size of 2.0, NOT the resulting 4.0 from the first scale change.

Click within the scale input box to type a scale of your choice.

Selecting the orientation of your STL file:

The Orientation tab has an expanded preview window. It provides options for viewing a part, measuring a part, orienting a part, processing a part and viewing the layers of a part. How a part is oriented in the preview window will determine how the part is oriented when it prints.

Orientation impacts build speed, part strength, surface finish and material consumption. Orientation can also affect the ability of CatalystEX to repair any problems with the STL file.

You can choose to auto orient your part, which allows CatalystEX to determine the best orientation for the part for the fastest build time and least material usage, or you can manually change the orientation of your part.

Orientation Considerations:

- **Build Speed** - Closely related to material use. A lesser amount of supports will allow for a faster build speed.

Another factor affecting build speed is the axis orientation. The printer can build faster across the X-Y plane than it can along the Z axis. Orienting a part so that it is shorter within the modeling envelope will produce a quicker build.
- **Part Strength** - A model is stronger within a layer than it is across layers. Depending upon what features you want your part to demonstrate, you may need to orient your part to have its greatest strength across a specific area. For example a tab that needs to be pressed would be weakest if you are applying pressure across layers.
- **Surface Finish** - Much like orientating for strength, how the part is orientated will determine how the surface finish will look and allow the printer to provide the smoothest finish for a specific area. For example, if building a cylinder, orienting the cylinder upright will have a smoother surface finish than building it on its side.
- **STL File Repair** - It is possible for an STL file to have errors while appearing to be trouble free. If the STL file contains errors, CatalystEX may have problems processing the file. CatalystEX has the ability

to automatically correct some STL file errors. How the part is orientated can impact this automated repair function.

Selecting model interior fill style:

This establishes the type of fill used for the interior areas of the part. There are three types of model interior that you can choose from.

- **Solid** - Used when a stronger, more durable part is desired. Build times will be longer and more material will be used.
- **Sparse High Density** - This is the default model interior style and is highly recommended. Build times will be shorter, less material will be used and the possibility of part curl for geometries with large mass will be greatly reduced.
- **Sparse Low Density** - The interior will be “honeycombed” or “hatched”. This style allows for the shortest build times and lowest material usage but will decrease the strength of the part.

Selecting support style:

Support material is used to support the model material during the build process. It is removed when the part is complete. Support styles will affect the support strength and build time of the print. Basic support is the default support setting.

- **Basic** - May be used for most parts. Basic support uses a consistent spacing between support toolpaths.
- **Sparse** - Minimizes the amount of support material. Sparse support uses a much larger spacing between toolpaths than basic supports.
- **Minimal** - Used for small parts that have small features in need of supports. Minimal support is designed to make support removal easier on the small parts. DO NOT use minimal supports on large parts or parts with tall columns of support.
- **Surround** - The entire model is surrounded by support material. Typically used for tall, thin models.

Adding your STL file to the pack:

The **Add to Pack** button is found on the General, Orientation and Pack tabs.

When you click on the **Add to Pack** button, CatalystEX will add the file that is currently in the preview window (General tab or Orientation tab) to the pack preview window (Pack tab).

If the file in the preview window has not been processed for printing, processing will occur before the file is added to the pack. Each additional click of the **Add to Pack** button will add another copy of the file to the pack.

Printing your STL file:

The **Print** button is found on the General, Orientation and Pack tabs.

CatalystEX will now process all parts in the pack and create a CMB file from which the printer will print the parts.

Building a part

If a part has not been sent to your printer for building, the build queue will be empty. If the build queue is empty the display panel will show **Idle** or **Ready to build**.

Choose whether or not you want to start a build from a remote location or from the display panel at the printer.

Starting a build from a remote location:

The lower display will show **Wait for Part** and it will be flashing.

1. From the display panel press **Wait for Part**. The display will ask **Is Model Base Installed?**
2. Insert a modeling base. See ["Inserting a modeling base" on page 18](#)
3. Press **Yes**. **Waiting for Part** will now be on the display.
4. From your CatalystEX workstation, send a part to the printer. The printer will automatically start to build the part. See ["Processing your STL file for printing" on page 37](#) for detailed instructions.

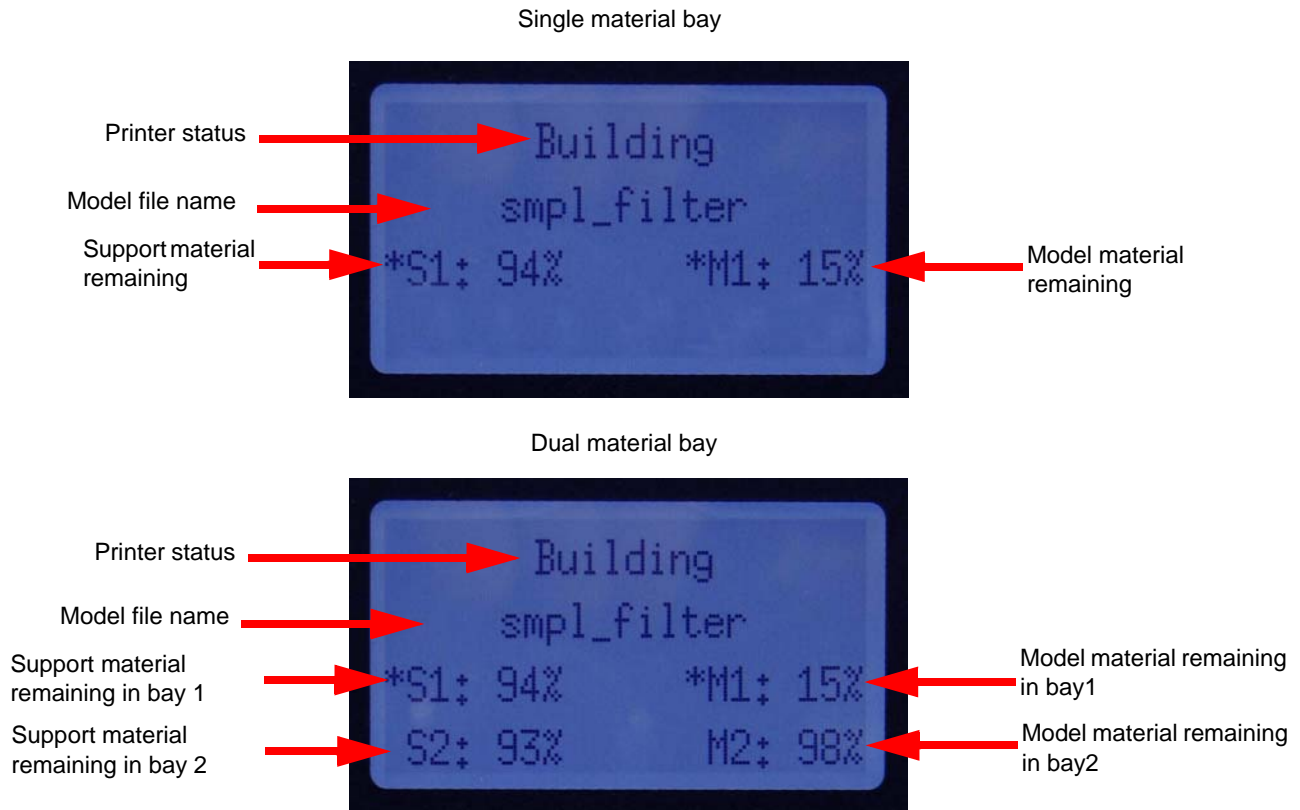
Starting a build from the display panel:

1. From your CatalystEX workstation, send a part to the printer. The display will show **Ready to Build** and the name of the first file that is in the queue waiting to be built.
2. From the display panel press **Start Model** to start building the part.

The display panel during build

The top two lines of the display panel will show the printer status. See [Figure 32](#). The bottom line of the display panel will show the amount of model and support material that remains in the carriers.

Figure 32: Display panel during build



Note:

If a material amount is flashing, it indicates that the remaining material will not be enough to complete the current build.

Chamber Lights

When a part starts to build, the chamber lights are automatically ON. The default time-out for the lights is 30 minutes. You can toggle the lights ON or OFF through the display panel.

You can set the chamber lights on permanently, however the chamber lights will return to factory settings when power is cycled.

1. From **Idle** or **Ready to Build**, on the display panel press **Maintenance**.
2. Press **Setup**.
3. Press **Lights Always On**.

Repeat this process to turn this option off.

Pausing a build

While building a part, you may want to pause the build to allow for material replacement. To pause the build at any time, from the display panel press **Pause**.

Note:

The printer will complete the current tool path before pausing.

Resuming after pause

If you have pressed **Pause**, and are ready to resume building the part, press **Resume** and the printer will resume printing.

Canceling a build

You can cancel a build at any time while the part is building.

1. From the display panel press **Pause**.
2. Once the printer stops building, press **Cancel Build**.
3. The display will ask **Are you Sure?** Press **Yes**.
4. The display will show **Build Stopped** followed by the file name. You will then be prompted to remove the part and replace the modeling base.
5. Remove the part and replace the modeling base. Once the chamber door has been opened and closed, the display will ask **Part Removed?** Press **Yes ONLY** after you have removed the part and replaced the modeling base.

CAUTION



If you press Yes before removing the part, the printer can be damaged.

Removing a completed part

When the printer has completed building a part, the display will show **Completed** followed by the file name. It will also show **Remove Part** and **Replace Modeling Base**.

CAUTION



The modeling base will be hot, wear gloves when removing the part from the printer.

1. Open the chamber door.
2. Turn the modeling base retainers down and remove the modeling base by sliding out and pulling up.
3. Insert a new modeling base by sliding in and pushing down, turn the retainers up to lock the modeling base in place.

4. Close the chamber door.
5. After you have opened and closed the door, the display will show **Part Removed?** *ONLY* after removing the part and replacing the modeling base, from the display panel press **Yes**.

CAUTION

If you press **Yes** before removing the part, the printer can be damaged.

After you press **Yes**, the display will show the status as **Idle** or **Ready to Build** for the next part in the queue.

Remove a part from the modeling base:

1. After removing the modeling base from the printer, firmly flex the modeling base back and forth with your hands to loosen the part.
2. Pull the part off of the modeling base or use a putty knife to completely remove the part.

Note:

Parts are easier to remove from the modeling base when still warm.

Removing support material

uPrint uses soluble support material which is designed to dissolve in a soap and water based solution. Your part is left with a smooth and clean finish with the fine details intact. The soluble support material can be removed by hand with relative ease, but is designed to be dissolved from your parts for hands free finishing.

**Warning:**

Support material is sharp, wear safety glasses and gloves when removing support material.

Refer to the SST Process Guide for details regarding the removal of soluble support material. A copy of the SST Process Guide can be found at <http://www.uPrintDimension.com/productinformation/customerinfo>

Emptying the purge bucket

Empty the purge bucket after each build to avoid part quality issues or damage to the printer.

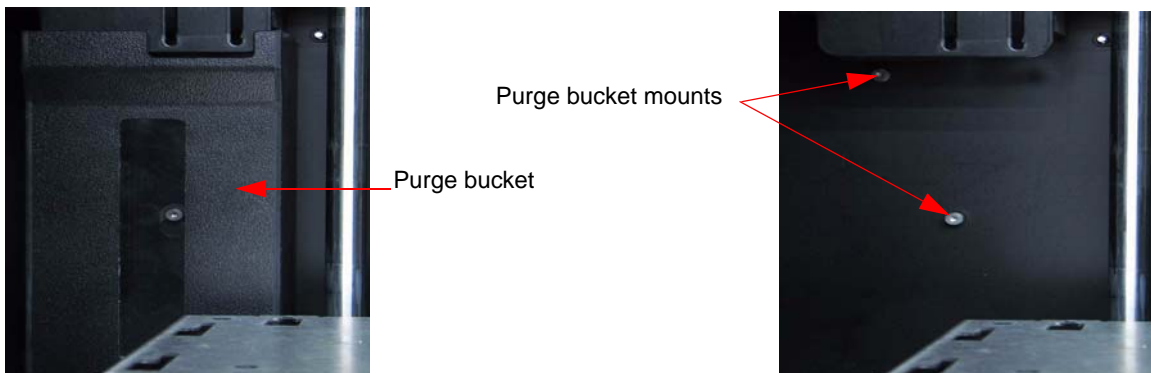


WARNING

Wear gloves when emptying the purge bucket.

1. With a gloved hand, lift up on the purge bucket and pull it off of the two mounts. See [Figure 33](#)

Figure 33: Emptying the purge bucket



2. Empty the purge bucket.
3. Place the purge bucket over the two mounts and push down to lock in place.



CAUTION

When reinstalling the purge bucket, make sure that it locks on both mounts and hangs flush with the chamber wall to avoid damage.

Replacing material for single material bay

1. From the display panel press **Material...** The display will show **Add/Remove** and **S1(remaining%)** and **M1(remaining%)**. Asterisks will mark the currently active material bays (the material bays that are currently loaded to the head).
2. Press **Unload...**
3. Select **Unload both**, **Unload Model** or **Unload Support**.
4. The printer will now unload material from the head. When the material has unloaded, you will need to replace the material carriers.
5. Place the carrier on a flat stable surface.

**CAUTION**

Do not push the material through the filament guide back into the carrier, doing so can cause material to break or become tangled.

6. Open the carrier.
7. Rotate the spool to rewind the material, leaving 2 inches (50mm) remaining at the filament guide. See [Figure 34](#)

Figure 34: Rewinding the material spool



Rewind the material back onto the material spool

8. Using a cutters, cut the excess 2 inches (50mm) of material from the filament guide, leaving a blunt end.
9. Replace the material spool.
10. Close and latch the carrier.
11. Once the material carriers have been replaced press **Load...**
12. Select **Load Model**, **Load Support** or **Load both**.
13. After material has been loaded to the head press **Done...**

Replacing material for dual material bays

1. From the display panel press **Material...** The display will show **Add/Remove** and **S1%**, **S2(remaining%)** and **M1**, **M2** (remaining%). Asterisks will mark the currently active material bays (the material bays that are currently loaded to the head).
2. Press **Unload...**
3. Press **Unload both**, **Unload Model** or **Unload Support**.
4. The printer will now unload material from the head. When the material has unloaded, you will need to replace the material carriers.
5. Place the carrier on a flat stable surface.

**CAUTION**

Do not push the material through the filament guide back into the carrier, doing so can cause material to break or become tangled.

6. Open the carrier.
7. Rotate the spool to rewind the material, leaving 2 inches (50mm) remaining at the filament guide. See [Figure 35](#)

Figure 35: Rewinding the material spool



Rewind the material back onto the material spool

8. Using a cutters, cut the excess 2 inches (50mm) of material from the filament guide, leaving a blunt end.
9. Replace the material spool.
10. Close and latch the carrier.
11. Once the material carriers have been replaced press **Load...**
12. You can select which carriers you want to load to the head by selecting **Next Model** or **Next Support**. When done selecting press **Load Selected**.
13. The printer will now load the selected material bays and prepare the other bays for automatic loading. After they are done loading and preparing, press **Done...** the display will show **Wait for Part** or **Ready to Build**.

Material bay LEDs

The table below will show the status indicated by the LEDs.

On ●	Material currently loaded to the head
Off ○	No carrier present Carrier present and ready to be loaded
Blinking ☼	Carrier needs replacement (is empty or has an error)

Replacing material spools

Removing a spool of material from the carrier:

1. Place the carrier on a flat stable surface.
2. Unlatch the carrier and open.
3. Remove the spool of material. **Discard any pieces of material that may remain in the carrier.**
4. Remove the material guide and recycle. The material guide can not be reused. See [“Removing the EEPROMs from the material guides” on page 73](#)
5. Recycle the empty material spool. See [“Recycling” on page 72](#)
6. Install a new material spool into the material carrier. See [“Installing material spools into material carriers” on page 27](#)

Storing material spools

If you will not be using the printer for more than 72 hours, unload and store model and support material in the storage bags provided to prevent moisture absorption.

1. Unload material from the printer.
2. Place the carrier on a flat stable surface.



CAUTION

Do not push the material through the filament guide back into the carrier, doing so can cause material to break or become tangled.

3. Open the carrier.
4. Rotate the spool to rewind the material, leaving 2 inches (50mm) remaining at the filament guide. See [Figure 36](#)

Figure 36: Rewinding the material spool

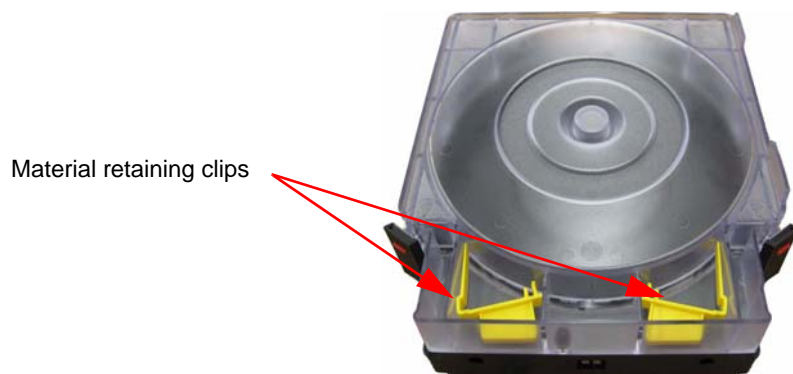


Rewind the material back onto the material spool

5. Using a cutters, cut the excess 2 inches (50mm) of material from the filament guide, leaving a blunt end.

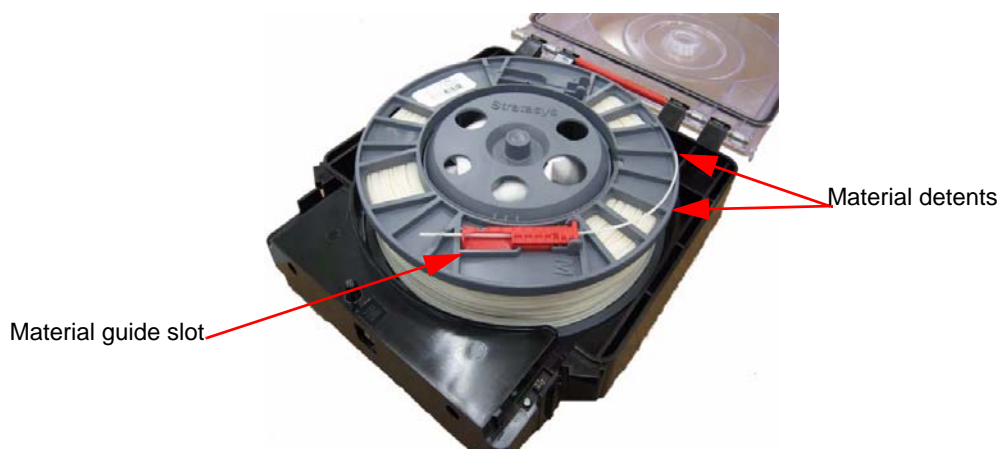
6. Locate the two material retaining clips on the carrier. See [Figure 37](#).

Figure 37: Material retaining clips



7. Place the material guide in the material guide slot on the spool. See [Figure 38](#).
8. Place the material in the material detents. See [Figure 38](#).

Figure 38: Material guide slot and detents



9. Cut the excess material from material guide.
10. Place the material retaining clips on the spool before removing the spool from the carrier. See [Figure 39](#).
 - A. Push the material retaining clips over the material and clip on to the material spool.
 - B. Push the material retaining clips down until they lock in place.

Figure 39: Installing material retaining clips



11. Remove the material spool from the material carrier. See [Figure 40](#).

Figure 40: Properly installed material retaining clips.



12. Place the material spool in the storage bag that came with the material carrier.

Note:

When not loaded in the printer, always store material spools in the material carrier or the storage bag that came with the carrier to prevent moisture absorption.

Auto power down

You can set the printer to automatically power down when it completes a build. This option will save energy usage.

1. While the printer is building, press the **Auto Power Down** button.
2. Turn the power switch to the off position.

The printer will display **Auto Power Down Mode** and the printer will power down as soon as the build is complete.

Cancelling auto power down:

1. Turn the power switch back to the ON position.

Powering off

To power off the printer, turn the power switch to the OFF position. You can do this at anytime without harming the printer. No other steps are necessary. If this is done while the printer is building a part, the current part will not be completed.

Note:

System cooling fans and lights will continue to operate for several minutes after the switch has been turned off.

Resuming operations from Standby mode

After several minutes of inactivity, the printer will enter Standby mode. During Standby, the head temperature will decrease to conserve energy.

From the display panel press **Resume**

Troubleshooting and Maintenance

Troubleshooting Checklist

Problem or error message on display panel	Solution
No power	Verify power cord is securely plugged in.
	Verify that the circuit breaker (at rear of system) and the power switch (on left side panel of system) are both in the ON position.
	Verify AC power is present at wall outlet.
System fails to reach operating temperatures	Verify the system is not connected to an extension cord or power strip.
Material not extruding	Material may be clogged in extrusion head see “Clogged extrusion tip” on page 54.
Purge material accumulating on part.	Check condition of tip wipe assembly. Replace if worn. See “Tip wipe assembly” on page 60
No text displayed on Display Panel	Cycle power. see “Cycling power” on page 59.
Cannot communicate with system through network or crossover cable	Make sure network cables are connected - at the printer, at the PC, or where cables connect to network boxes.
	Re-configure settings, see “Networking the printer” on page 23.
	If using a static network address, verify that the IP address entered in CatalystEX has the same value as the address entered for the printer.
	Your system configuration may have changed. Contact your Network Administrator.
Error code displayed on display panel	Contact Technical Support. For more information, refer to “Fault determination codes” on page 52
Build Error	Partial or bad part file sent to system. Check STL file validity in CAD software; reprocess STL in Catalyst and re-download to system.
Can't Find Home – Check Modeling Base	Verify a modeling base is inserted.
	Modeling base may be used or defective – replace.

Problem or error message on display panel	Solution
Material Error Filament error	Remove the carrier and verify material is coming out of the material guide.
	Verify material pulls freely from the carrier.
	Verify the material tubes are free of material.
	Reload material.
Material Error Filament blocked	Remove carrier and verify material pulls freely from carrier.
	Verify the material tubes are free of material.
	Reload material.
Material Error Carrier invalid	Remove carrier and verify it is not empty.
	Replace material spool.
Material Error Filament broken	Remove the carrier and verify material is coming out of the material guide.
	Verify material pulls freely from the carrier.
	Verify the material tubes are free of material.
Load Error Filament blocked	Remove the carrier and verify material is coming out of the material guide.
	Verify the material pulls freely from the carrier.
	Verify the material tubes are free of material.
Load Error Purge failed	Remove the carrier and verify material is coming out of the material guide.
	Verify the material pulls freely from the carrier.
	Verify the material tubes are free of material.
	Check for and clear any excess material build up around the tips.
Unload Error Unload failed	Remove the carrier and verify the material tubes are free of material.
Pausing	Press Resume .
	Unload the material carriers and reinstall.

Fault determination codes

If a fault occurs which would prevent *uPrint* from executing an operator request, the system will begin to shut down and cool. The panel will display one or two error codes. An error-code list (with the filename "error.txt") can be found on the CD-ROM for the system software. (Because this list may change with each new software version, be sure to check the error.txt attachment when you download new software upgrades.)

After the printer has finished cooling, the only option displayed is **Continue**. Press **Continue** and the printer will reboot and try to return to normal operation. If pressing **Continue** does not eliminate the error, power should be cycled (see "[Cycling power](#)" on page 59.); wait 60 seconds before switching power on again. In most cases you will be able to continue operation. However, if the printer continues to shut down and display the same error, contact technical support.

Welcome Kit tools

The *uPrint* Welcome Kit contains replacement parts and a set of tools used to help you maintain the system. The following is a list of the tools contained in the Welcome Kit.

- Needle nose pliers
- T-Handled allen wrench - 1/8 inch
- T-Handled allen wrench - 7/64 inch
- Gloves (Leather)
- Cutters
- Brush
- Magnifier

Diagnosing loss of extrusion

Occasionally, the printer's head may experience loss of extrusion. This will be evident by observing one of the following:

- Seeing the head moving with no material coming out of either extrusion tip
- The height of the model and support materials are not equal
- Sagging structures due to lack of support materials



WARNING

The head area is hot. Use gloves when working in this area of printer.

1. From the display panel press **Cancel** and remove any parts from the printer.
2. Insert a new modeling base.
3. From **Idle**, press **Maintenance**
 - A. Press **Machine**.
 - B. Press **Head**. The head will come to rest in the center of the chamber and the Z platform will change position.

The display will read: **Model Drive Motor Stopped**

4. Determine if there is a model material extrusion problem by pressing **Forward** (command will be available after head reaches operating temperature). Watch the model tip (right tip) for several seconds, looking for extrusion (material purge).

Note:

If it was previously at a cool temperature, the tip may not immediately extrude material. After the tip reaches operating temperature you may need to wait up to 30 seconds before extrusion will begin.

5. Press **Stop** to stop the extrusion.
6. If material steadily flowed from the model tip, the model tip is not experiencing loss of extrusion.
7. Test the support material tip by choosing: **Select Drive**.
8. Determine if there is a support material extrusion problem by pressing **Forward**. Watch the support tip (left tip) for several seconds, looking for extrusion (material purge).
9. Press **Stop** to stop the extrusion.
10. If material steadily flowed from the support tip, the support tip is not experiencing loss of extrusion.
11. Return the printer to the Maintenance state - Press **Done**, then press **Yes** when the printer displays **Is Material Loaded?**

Note:

If material did not extrude from either tip follow the procedure in, ["Recovering From Loss of Extrusion" on page 57](#).

Clogged extrusion tip

Occasionally, an extrusion tip may clog with material. This is often accompanied by a loss of extrusion (LOE). A clogged tip will prohibit material load and part building.

Note:

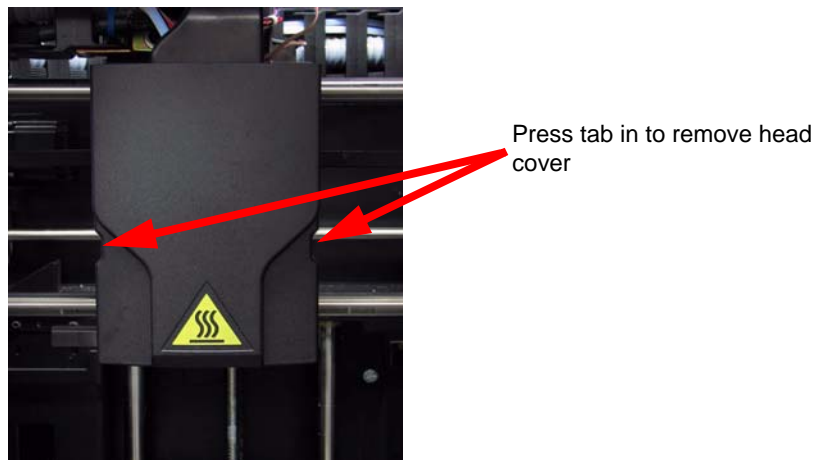
It is recommended that you read and understand this entire procedure before performing any of the work.

This procedure assumes that material is loaded to the extrusion tip. If material has not been loaded, see [“Adding material carriers to single material bay” on page 29](#) or [“Adding material carriers to the dual material bays” on page 30](#)

To clear a clogged extrusion tip:

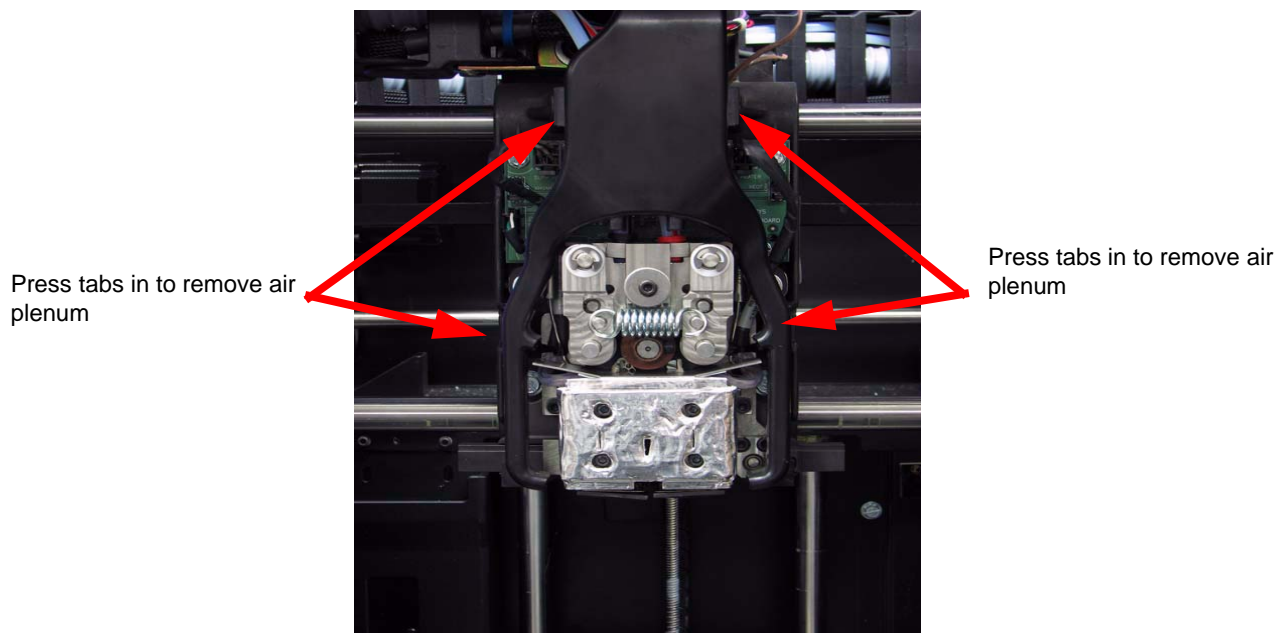
1. From the display panel press **Maintenance**.
2. Press **Machine**.
3. Press **Head**.
4. Remove the head cover by pressing the tabs in and pulling away from the head. See [Figure 41](#)

Figure 41: Remove the head cover



5. Remove the air plenum by pressing the tabs in and pulling away from the head. See [Figure 42](#)

Figure 42: Remove the air plenum



6. Move the material idler wheel out of the way on the side that is clogged. Use a 7/64 and 1/8 T-Handle as illustrated in [Figure 44](#) (model side shown).

Figure 43: Head components

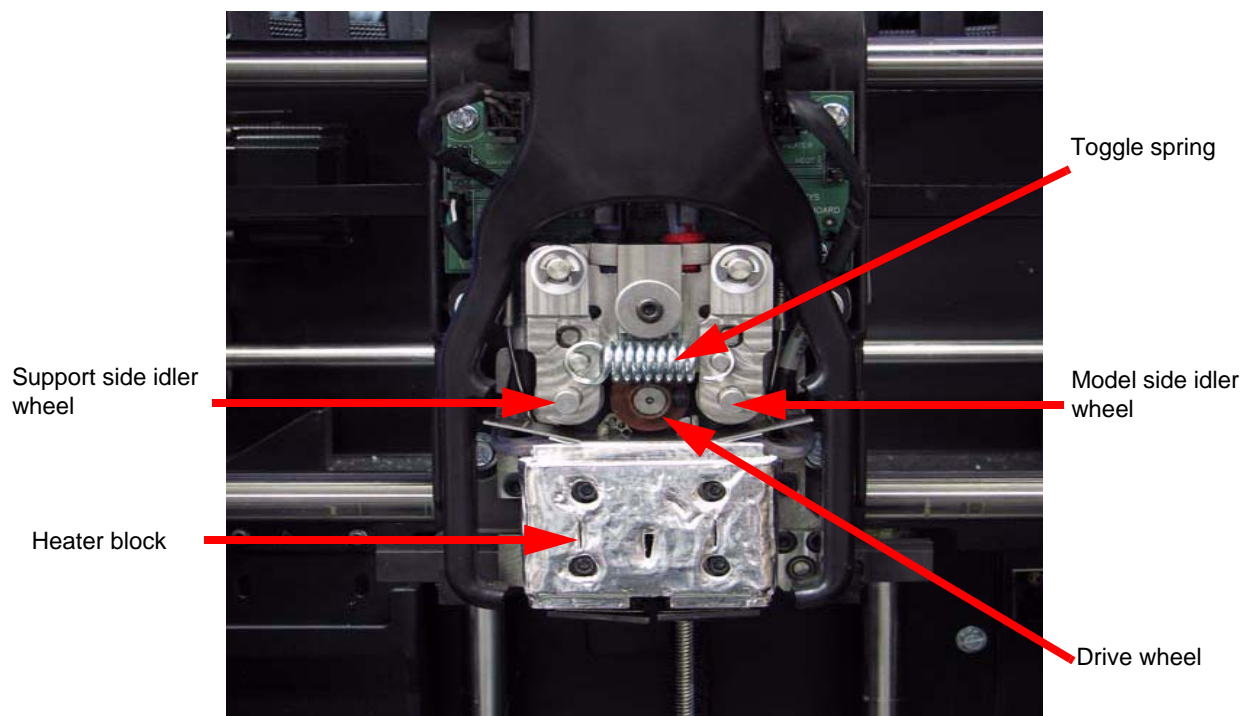
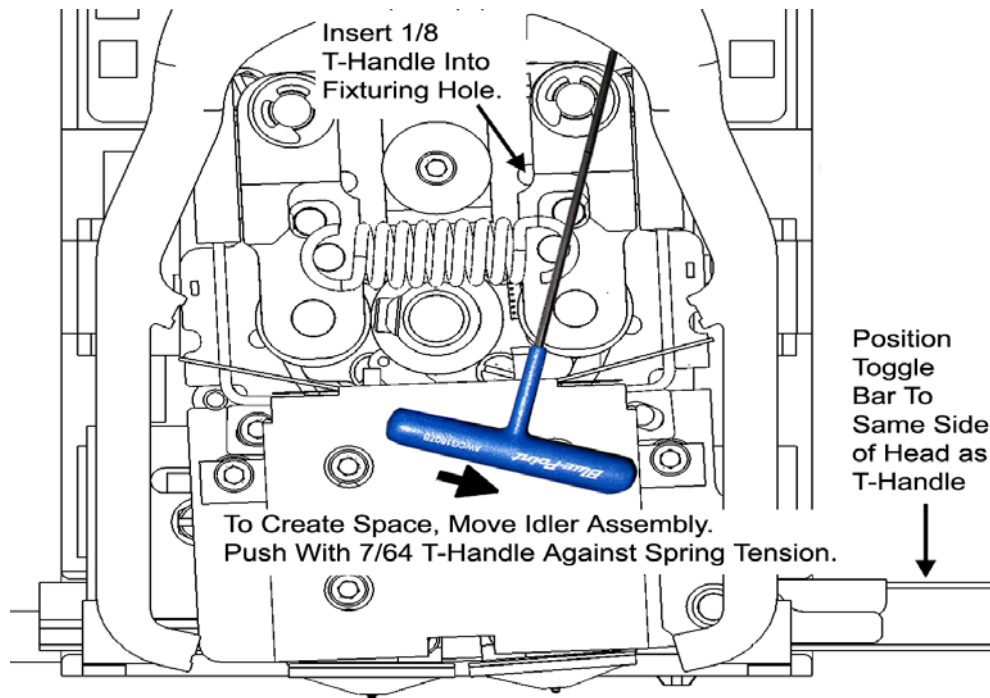


Figure 44: Create access space for cleaning - model side shown



7. Move the toggle bar to 'deactivate' the clogged tip.

Note:

Push the toggle bar to the right to deactivate the support side. Push the toggle bar to the left to deactivate the model side.

8. Snip the material just after it passes between the drive wheel and the idler wheel ('pinch point').

Note:

If necessary manually pull more material forward in order to reach the 'pinch point'.

9. Move the toggle bar to activate the clogged side. This will make the drive wheel control options active for the clogged side.

Note:

Push the toggle bar to the left to activate the support side; push the toggle bar to the right to activate the model side.

10. Press **Forward** on the interface panel. The drive wheel will turn, but material will not feed because the idler wheel is held out of position.

11. Use the 7/64 T-Handle to hold pressure against the toggle spring and keep the idler wheel away from the material. Remove the 1/8 T-Handle.
12. Press **Blower Off** on the interface panel. With the head blower off the temperature of the extrusion tube will increase.
13. After approximately 5 seconds, reduce pressure against the toggle spring and allow the idler wheel to contact the material. Material should extrude from the clogged tip.

Note:

The blower will automatically turn on after 10 seconds.

14. Press **Stop** on the interface panel.
15. Move the toggle bar to activate the drive wheel control options for the non-clogged side.
16. Press **Forward** on the interface panel. Make sure that material extrudes from the non-clogged extrusion tip.

Note:

It is necessary to confirm proper operation of the non-clogged side. Temporarily having the blower off can occasionally cause the non-clogged side to clog.

17. Press **Stop** on the interface panel.
18. Install air plenum.
19. Install plastic head cover.
20. Exit Maintenance mode.

Recovering From Loss of Extrusion

Note:

It is recommended that you read and understand this entire procedure before performing any of the work.

1. Enter **Head Maintenance** mode.
 - A. From **Idle**, press **Maintenance**.
 - B. Press **Next**.
 - C. Press **Head Maintenance**.



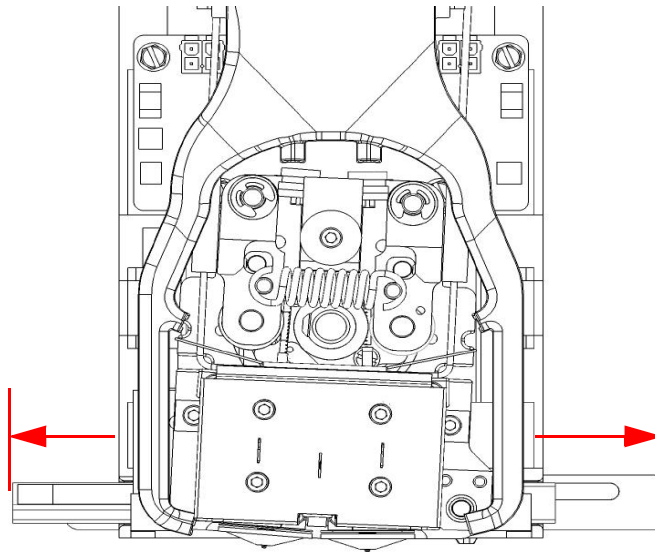
WARNING

The head area is hot. Use leather gloves when working in this area of printer.



2. Remove head cover by squeezing raised pads on sides of cover. See [Figure 41](#)
3. Place the tip toggle bar in neutral position (bar will extend equally from both sides of head). This can be done manually - push on the extended bar end.

Figure 45: Toggle Bar in Neutral Position



CAUTION



The end of the extrusion tip where the material enters is called the extrusion tube. Extrusion tubes are fragile. Use care when working in this area so as to avoid damage to the tubes.

4. Remove excess material found around the head area.

Note:

Material fed to the tip can sometimes jam causing a build-up of material under the head cover.

- A. Clean out as much of the material as possible using needle nose pliers, a probe, or equivalent tool.
- B. For easier access to areas that may need to be cleaned, move the material idler wheels out of the way (there is one idler wheel for support material and one for model material, see [Figure 43](#))

Note:

Move only one idler wheel assembly at a time. Finish cleaning around the moved wheel and restore it to its normal position before moving the other idler wheel. Having both wheels out of position simultaneously could stretch the spring.

- i. Using a 7/64 T-handled hex driver (from Welcome Kit) to leverage against the lower idler wheel shaft, push the idler assembly away from the material drive gear by pushing against the spring tension. See [Figure 44](#).

Note:

When moving the idler wheel assembly, you can obtain maximum clearance for cleaning if you also move the Tip Toggle Bar so that it is extended to the same side of the head assembly as the one on which you are working. It is not necessary to keep Toggle Bar in a neutral position.

- ii. Insert 1/8 T-handled hex driver (from Welcome Kit) into the fixture hole.
 - iii. Ease pressure on the 7/64 T-handle driver to carefully return the leveraged idler wheel back toward its original position - until the idler assembly is resting against the 1/8 T-handled hex driver.
 - iv. Remove the 7/64 T-handled driver.
 - v. Clean the area that is now accessible. Remove the 1/8 T-handle hex driver when complete.
6. Remove excess material from the top of the liquefier, using a needle nose pliers to carefully grip and remove excess material from the top of the liquefier.
 7. Cut the material line from the carrier close to the drive wheel.
 8. Make sure that all loose material is removed from the affected extrusion inlet area.
 9. Check for loose material in the other extrusion inlet area. Clean the area as necessary.

Cycling power

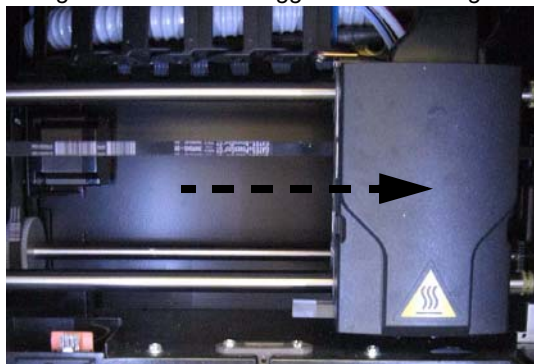
1. Turn the power switch to the OFF position. The display will show **Shutting Down**.
 2. After the printer has cooled down enough to shut down, the display will go blank.
 3. When the display is blank and the printer has shut down, turn the circuit breaker to the OFF position.
 4. Once the circuit breaker has been turned to the OFF position, wait 60 seconds and turn the circuit breaker back to the ON position.
 5. Turn the power switch to the ON position. The printer display will show that it is starting up.
- Once the display shows **Idle** or **Ready to Print**, you can send a file to the printer to be printed.

Tip wipe assembly

The tip wipe assembly should be replaced approximately every 500 hours.

1. Completely power down the printer. See [“Powering off” on page 49.](#)
2. Move the head to the right of the printer to gain access to the tip wipe assembly.

Figure 46: Move the toggle head to the right



3. Remove the tip wipe assembly by lifting the assembly up and out of the printer. Discard this tip wipe assembly.

Figure 47: Replacing the tip wipe assembly

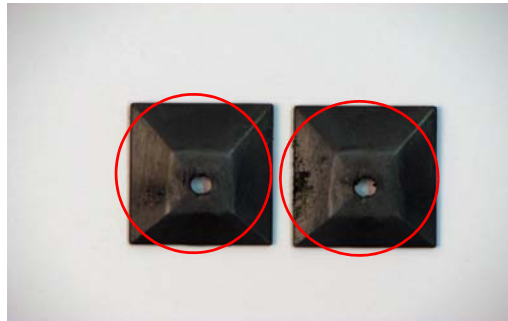


4. Place the new tip wipe assembly over the two mounting posts making sure the assembly is fully installed.

Tip shield replacement

Tip shields can become worn or damaged over time. This can have a negative impact on the surface finish and detail of models. Replace the tip shields every 500 hours.

Figure 48: Tip Shield Damage



1. Enter **Head Maintenance**.
 - A. From the display panel press **Maintenance**.
 - B. Press **Machine**.
 - C. Press **Head**. The head will come to rest in the center of the chamber and the Z platform will change position.

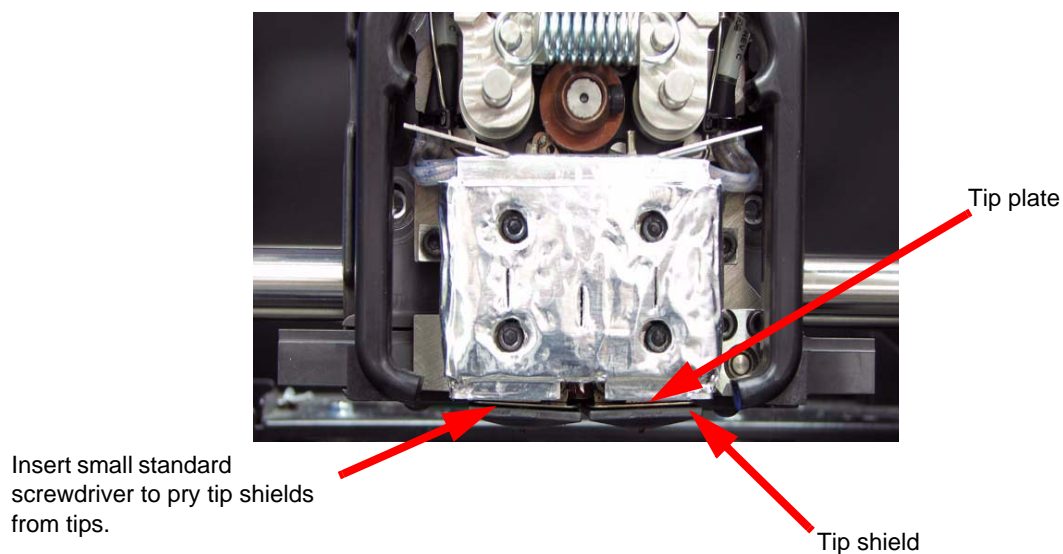


WARNING

The head area is hot. Use gloves when working in this area of printer.

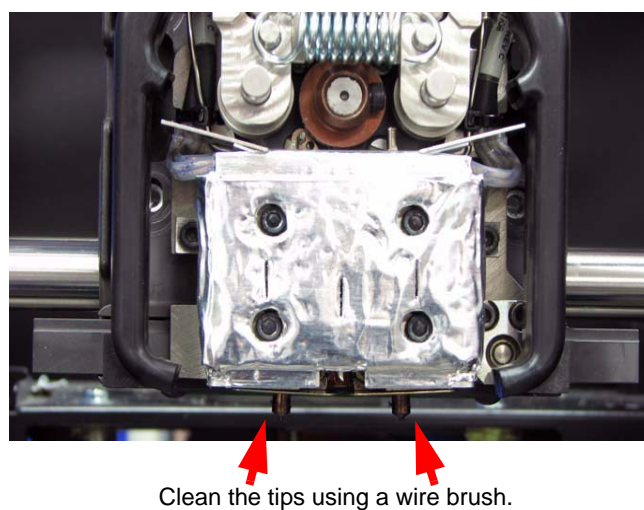
2. Remove the head cover by pressing the tabs in and pulling away from the head. See [Figure 41](#)
3. Position the blade of the small screwdriver between the tip shield and tip plate. Use the blade of the small screwdriver to separate the tip shield from the tip plate. See [Figure 49](#)

Figure 49: Tip Shield Removal



4. Clean the tip using the wire brush supplied with the Welcome Kit to remove any debris. See [Figure 50](#)

Figure 50: Clean tips with wire brush



5. Install a new tip shield by pushing it, by hand, over the exposed tip, keeping the slotted end towards the back of the tip. See [Figure 54](#)
6. Exit **Maintenance**.

Extrusion tip replacement and calibration

Replace tips at approximately 2000 hours.

Note:

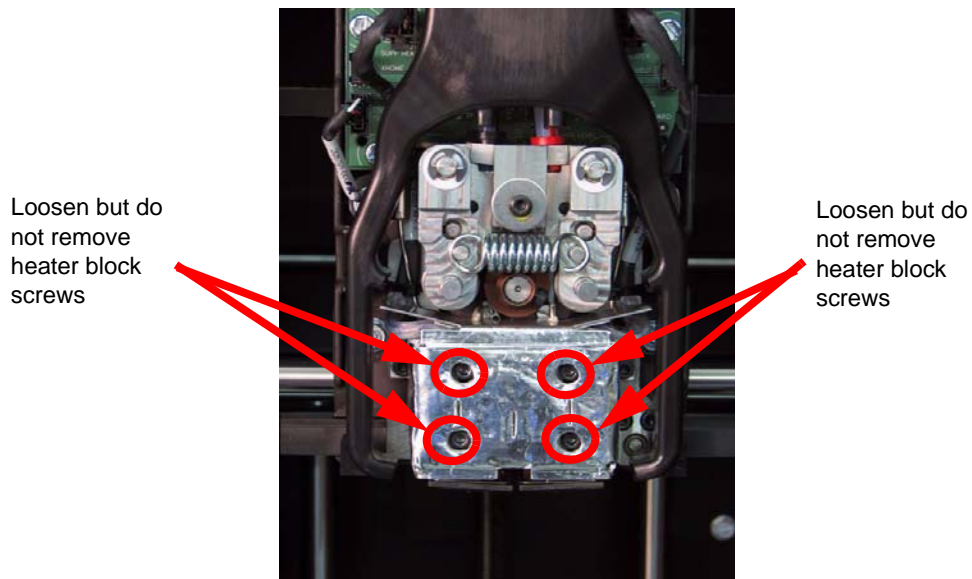
Tips can also be damaged by improper care while performing maintenance in the area around the tips.

CatalystEX displays the tip time (hrs) - from the Printer Services Tab - Printer Info button (Tip time will reset to zero after replacement).

Removing Tips:

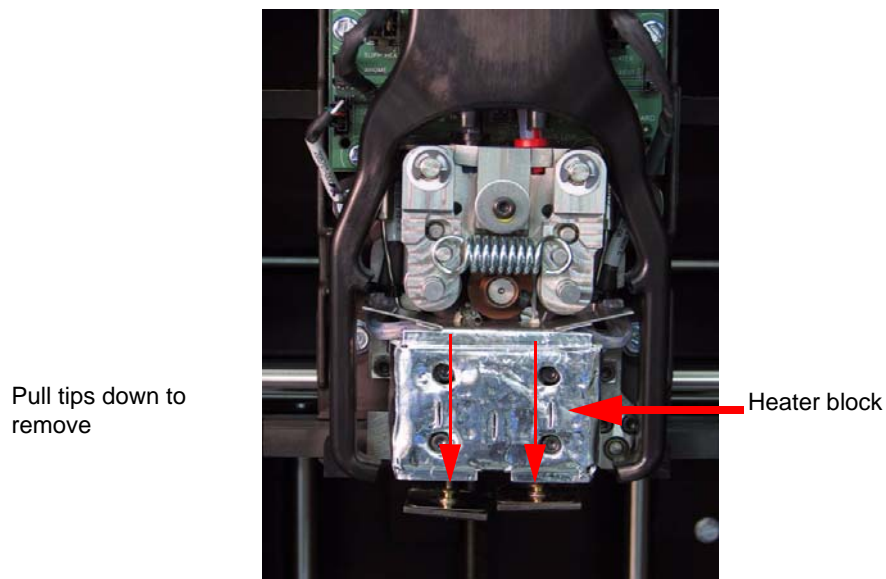
1. You will need to make sure the printer is powered ON before replacing the extrusion tips.
2. From the display panel press **Maintenance**.
3. Press **Machine**.
4. Press **Tip**.
5. The printer will display **Load Model - Unloading**.
6. After the temperature has stabilized, the printer will display **Tip Maintenance - Replace Tips**. You can now open the printer door and replace the tips - or you can **Cancel** the tip replacement procedure.
7. Remove plastic head cover by squeezing raised pads on sides of cover. See [Figure 41](#)
8. Remove tips
 - A. Use 7/64 T-Handle Allen wrench to loosen the heater block screws three to four full turns counterclockwise - or until the top of the screws are flush with the metal cover. **DO NOT** remove the screws entirely. See [Figure 51](#).

Figure 51: Tip Removal



- B. Use needle nose pliers to grasp the stainless steel shield of the tip.
- C. Pull the tip shield toward you, then pull down to remove the tip from the heater block. Discard the used tip. See [Figure 52](#).

Figure 52: Remove the tips



- D. Repeat for second tip if necessary.

Installing tips:

1. Place the tip shield on the tip. Be sure to install the proper tip. See [Figure 54](#)

Figure 53: Identifying Tips

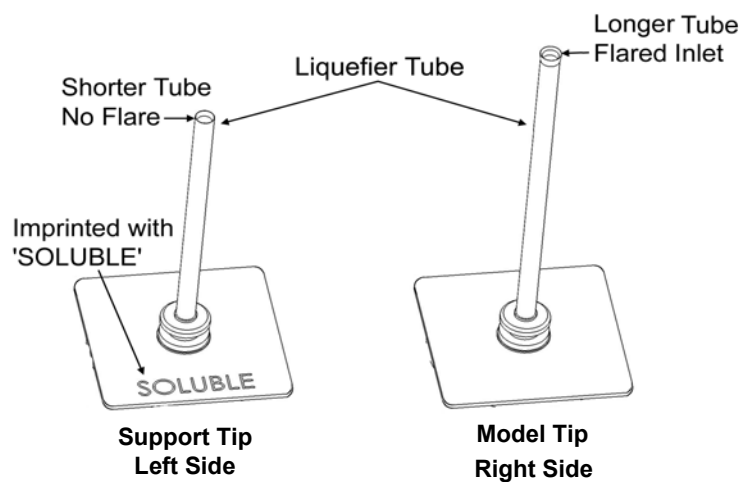


Figure 54: Tip shield alignment

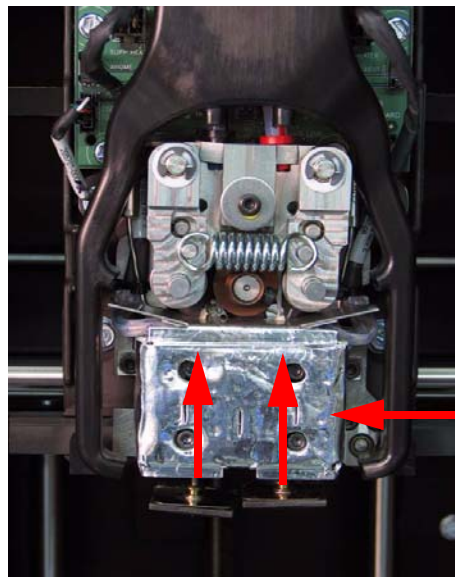
Align the tip shield so the slotted end is facing the back of the printer



2. With gloved hand, insert the new tip into the heater block. With the slotted side towards the rear of the printer. See [Figure 55](#).

Figure 55: Install the tips

Push the tips up to install



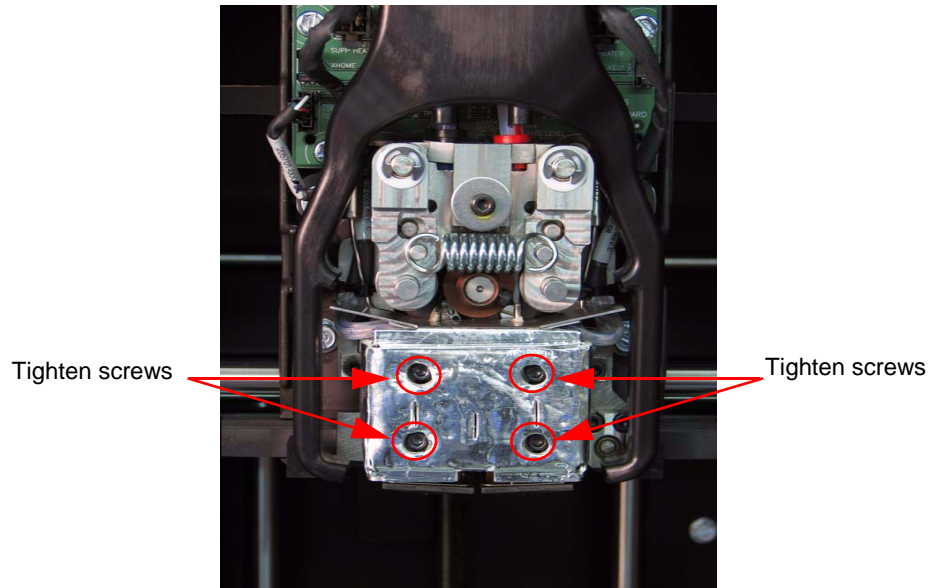
Heater block

3. Use needle nose pliers to grasp the stainless steel shield of the tip.
4. Pull the tip shield toward you, then lift up to install the tip.
5. Push the tip toward the back of the printer once it is all the way up against the heater block.
6. Verify the tip is fully inserted into the heater block and that the stainless steel shield is aligned (See [Figure 56](#)).
7. Use 7/64 T-Handle Allen wrench to firmly tighten the heater block clamp screws. See [Figure 56](#)

Note:

Make sure the tip remains all the way up against the heater block as you tighten the screws.

Figure 56: Tighten heater block clamp screws.



8. Repeat steps 3 through 8 for the other tip if necessary.
9. Replace head cover and close the printer door.
10. The printer will display **Tip Maintenance - Tips Replaced?** - press **Yes** to begin material load.
 - A. The printer will display **Load Model - Replace Both Carriers** (flashing).
 - If you want to replace a material carrier, do so now.
 - If you do NOT want to change a material carrier, you must unlatch and latch the carriers to continue (Push the carrier forward to unlatch, then push it forward again to latch). Because the material 'unloaded' during the tip replacement, the printer is in the material replacement mode. You must unlatch and then latch the carriers to continue. If there is a delay in the unlatch/latch process, the printer will display **Both Carriers Not Replaced Or Invalid**. Select **Retry**, then unlatch and latch the carriers.
 - B. The printer will now begin to load material.
 - C. After material loading is complete the printer will display **Tip Calibration - Install Modeling Base And Build Calibration Part**.

Note:

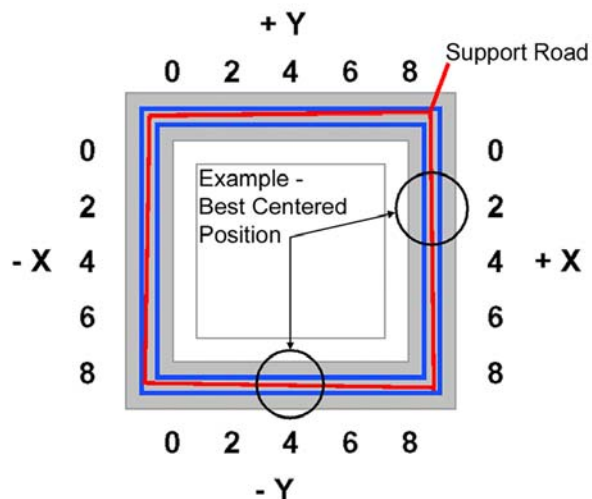
Make sure a NEW modeling base is installed before starting calibration. Calibration results will be incorrect if a NEW modeling base is not used.

Tip calibration:

Tip Replacement requires Tip Calibration.

1. Select **Start Part** (flashing) - the printer will run two calibration parts.
 - The printer will automatically build a Z Calibration part, measure the part and calibrate the Z Axis for tip depth and tip level (approximately 5 minutes). The Z calibration is automatic.
 - The printer will then automatically build an XY Calibration part (approximately 10 minutes). You must inspect the XY Calibration part and calibrate the X and Y axis for tip offset:
2. When the XY Calibration part is complete the printer will display **Remove Part and Select XY Adjustment - X:0, Y:0**
3. Remove the XY tip calibration part from the printer.
4. Inspect the part and calibrate the X and Y axis (See [Figure 57](#)).
 - A. Use the magnifier from the Welcome Kit to view the support road (shown in red).
 - B. Identify the location on the +X **or** -X side of the part where the support road is best centered within the model boundaries (shown in blue).
 - C. Read the number closest to this location. This is the required X Tip Offset adjustment. If the number is on the -X side, a negative offset is required.
 - D. Select **Increment** or **Decrement** to input the X offset adjustment - the value will change in the upper display window (by default, the printer will be ready to accept the X value).
 - E. When you are satisfied with your X offset value, **Select Y** and repeat steps A- D to identify and input the required Y Tip Offset adjustment.
5. Select **Done** after you have input the X and Y offsets. The printer will return to **Maintenance**. Run the XY calibration a second time to be sure the values changed the offset properly.

Figure 57: Example XY Tip Offset Part.
This example requires an adjustment of X = + 2, Y = - 4



Chamber light bar replacement

1. Power down the printer.
2. Locate the wiring harness leading away from the top of the light bar.
3. Disconnect the light bar from the wiring harness by squeezing the wiring harness clip while pulling down.
4. Remove the light bar by removing the three attachment screws (top, middle, bottom) - use the 7/64 T-handle wrench supplied in the Welcome Kit.
5. Install a replacement light bar with the three attachment screws - do not overtighten the screws.
6. Re-attach the wiring harness lead.

Preventive Maintenance

Daily

Empty the purge bucket

Empty the purge bucket after each build has completed.

Inspect the tip wipe assembly

After each build you should inspect the tip wipe assembly to make sure there is no material build up. If there is material build up, clean the tip wipe assembly. Material build up on the tip wipe assembly can cause part quality issues. See [“Tip wipe assembly” on page 60](#)

Inspect the tip shields

After each build you should inspect the tip shields for damage or material build up. If there is material build up remove it as needed. If the material will not break free or there is damage to the tip shield, replace the tip shield. See [“Tip shield replacement” on page 61](#)

Remove Debris Buildup

Remove all material buildup on the Z platform and around the lead screw. Failure to do so could cause the base to not be level or the Z platform to jam at its upper limit.

Vacuum Build Chamber

Vacuum the build chamber to remove all debris and purged material.

Clean Door

Do not use ammonia based glass cleaner on the door. It will damage the acrylic window.



CAUTION

ONLY use acrylic cleaner.

500 Hour maintenance

Replace the tip wipe assembly

See [“Tip wipe assembly” on page 60](#).

Replace the tip shields

See [“Tip shield replacement” on page 61](#).

2000 Hour maintenance

Tip replacement

See [“Extrusion tip replacement and calibration”](#) on page 63.

Support

Registration

To register your *uPrint* 3D printer, visit <http://www.uprintdimension.com/productinformation/customerinfo>

Customer Support

Visit <http://www.uPrintDimension.com/productinformation/customerinfo> for the following:

- How to order consumable parts for your *uPrint* printer.
- Technical support contact information for your *uPrint* printer.
- Technical support for your SST tank.
- Part finishing information.

When contacting technical support please provide the following:

By phone:

- System model.
- System serial number.
- System software build number.
- CatalystEX version number.
- Detailed description of the problem you are experiencing.
- Please try to be near the printer for troubleshooting, if possible.

By email:







- System model.
- System serial number.
- Your name.
- Your telephone number.
- Detailed description of the problem you are experiencing.

For advanced troubleshooting (provide by email):

- System CFG file.
- STL and/or CMB files.
- Detailed photographs showing the issue.

Recycling

Recycle all materials per your local recycling guidelines.

System Component	Materials	Recycling Code
Model material guide (red, both halves)	ABS	
Support material guide (black, both halves)	ACETAL	
Material retaining clip (yellow)	ABS	
Material Carrier (clear top, black bottom and bottom cover. Latches, hinge pin and electronics not included)	PC	
Material Spool & lid (gray)	PS - HI	
Modeling bases	ABS	
EEproms	Electronics	
Dessicants can be recycled per your local recycling guidelines		
All packaging materials can be recycled per your local recycling guidelines.		

Follow your local recycling guidelines when recycling electronic components.

Removing the EEproms from the material guides

1. Open the model and support material carriers and remove the material guides.
2. With a small standard screwdriver, pry the two material guide halves apart. See [Figure 58](#).

Figure 58: Pry the model material guide apart



Pry apart with a small standard

3. Recycle the EEPROM per your local electronics recycling guidelines.
4. Recycle the material guides per your local guidelines. See [Table on page 72](#).

uPrint™ Limited Warranty

Stratasys, Inc. ("Stratasys") warrants its' uPrint™ 3D Printer system and associated peripheral devices and replacement parts (collectively, the "Product") purchased from Stratasys or an Authorized Stratasys Reseller to be free from defects in material and workmanship according to the terms and conditions stated below:

Warranties extend only to the original purchaser of the Product. The warranty on the original Product, as delivered, extends for one year starting on the date of delivery. Your sole remedy as purchaser under this Limited Warranty shall be repair or replacement as provided herein.

To preserve your warranty rights, all uPrint™ Products must be installed in accordance with the then-current User Guide available at www.uPrintDimension.com. During the Limited Warranty period, Stratasys or its' designated representative will, at their option, repair or replace a defective Product as set forth below. Service Parts and replacement Products will be furnished on an exchange basis, and will be either new or refurbished. All replaced parts or replaced Products become the property of Stratasys, and you will be invoiced for replacement parts if defective parts are not returned as directed by Stratasys under this Limited Warranty.

Stratasys will bear the cost of returned parts, as well as for shipping new or rebuilt replacement parts to you, provided that you report the warranty claim within the Limited Warranty period and obtain return instructions from Stratasys prior to return. Replacement parts independently carry a 90-day warranty from date of shipment from Stratasys or designated representative location. Consumable parts are not covered by this Limited Warranty. Warranty services may be provided by Stratasys, an Authorized Reseller, or a third party service provider designated by Stratasys.

No coverage or benefits under this Limited Warranty will exist if any of the following conditions apply:

- (a) The uPrint™ Product has been subjected to abnormal use, improper or inadequate maintenance, unauthorized modifications, unauthorized repair, misuse, abuse, exposure to moisture, flooding, fire, electrical problems associated with incoming power, or other acts which are not the fault of Stratasys, Inc.
- (b) Stratasys' Customer Service Department was not notified of the defect or malfunction of the uPrint™ system prior to expiration of the one year warranty period.
- (c) Parts or consumables were installed and used that were not certified or approved by Stratasys.

Stratasys will also not be liable under any circumstances for Product replacement or associated labor, loss of use, loss of profits, or for any other indirect, incidental, collateral, exemplary, punitive, consequential or special damages, or losses arising out of the purchase of uPrint™ Products and/or out of this limited warranty, even if Stratasys or its' designated representative have been advised of the possibility of such damages or claims. To the extent such claims are not excludable as adjudged by a court of competent jurisdiction, you agree to accept as sole and exclusive remedy, a payment equal to the original purchase price for the product adjudged to be defective.

SOME COUNTRIES, REGIONS, STATES OR PROVINCES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF REMEDIES OR OF INCIDENTAL, PUNITIVE, OR CONSEQUENTIAL DAMAGES, OR THE APPLICABLE TIME PERIODS, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU. EXCEPT TO THE EXTENT LAWFULLY PERMITTED, THIS LIMITED WARRANTY DOES NOT EXCLUDE, RESTRICT OR MODIFY, AND IS IN ADDITION TO THE STATUTORY RIGHTS APPLICABLE TO THE SALE OF THIS PRODUCT TO YOU.

This warranty gives you specific legal rights and you might also have other rights that vary from country/region to country/region, state to state, or province to province.

EXCEPT FOR THIS LIMITED WARRANTY, AND TO THE FULLEST EXTENT ALLOWED BY LAW, NEITHER STRATASYS NOR ANY AUTHORIZED RESELLER MAKES ANY OTHER WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. STRATASYS DOES NOT OFFER, ASSUME OR AUTHORIZE THE OFFER OR ASSUMPTION OF LIABILITY FOR IT OR FOR ANY OTHER WARRANTY, EITHER EXPRESS OR IMPLIED BY ANY AUTHORIZED RESELLER OR OTHER INDEPENDENT THIRD PARTY.



Declaration of Conformity

Manufacturer Stratasys, Inc.
7665 Commerce Way
Eden Prairie, MN 55344-2080

Type of Equipment 3D Printer

Model Number 180-00108 uPrint 3D Printer
180-00109 uPrint 3D Printer
180-00110 uPrint 3D Printer

We declare under our sole responsibility that the devices mentioned above comply with the following EU Directives:

Electromagnetic Compatibility (EMC)	89/336/EEC
Machine	98/37/EC
Low Voltage	73/23/EEC amended by 93/68/EEC
Common Technical Specification Used for demonstration of Compliance	EN55022:1998 EN6100-3-2: 2003 EN55024:1998 EN6100-3-3: 1995 EN60950-1:2006
Date of Validity:	September 8, 2008
Design and Technical Construction File maintained at:	Stratasys, Inc. 7665 Commerce Way Eden Prairie, MN 55344-2080
Name of Authorized Signatory:	S. Scott Crump
Position Held in Company:	Chief Executive Officer

Signature:

A handwritten signature in blue ink that reads "S. Scott Crump".

Stratasys, Inc. 7665 Commerce Way Eden Prairie, MN 55344
Phone: 952.937.3000 Fax: 952-937-0070
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