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INTRODUCTION

COPYRIGHT
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FCC NOTICE
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.
—Increase the separation between the equipment and receiver.
—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
—Consult the dealer or an experienced radio/TV technician for help.

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

KCC
이 기기는 가정용(B급) 전자파적합기기로서 주 로 가정에서 사용하는 것을 목적으로 하며, 모 든 지역에서 사용할 수 있습니다.
This equipment is home use (Class B) electromagnetic wave suitability equipment and to be used mainly at home and it can be used in all areas.

COMPLIANCE
This equipment conforms with International Electric Committee (IEC) 60950-1 and meets the requirements of the applicable EC directives.

CAN ICES-3 (B)/NMB-3(B)
This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d’Industrie Canada applicables aux appareils radio exempts de licence. L’exploitation est autorisée aux deux conditions suivantes: (1) l’appareil ne doit pas produire de brouillage, et (2) l’utilisateur de l’appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d’en compromettre le fonctionnement.

WARRANTY
3D Systems warrants that the CubePro 3D Printer will be free from defects in materials and workmanship, during the applicable warranty period, when used under the normal conditions described in the documentation provided to you, including this User Guide. 3D Systems will promptly repair or replace the CubePro 3D Printer, if required, to make it free of defects during the warranty period. This warranty excludes (i) normal consumable or expendable parts (such as Material Cartridges), (ii) repairs required during the warranty period because of normal use or conditions (such as riots, floods, misuse, neglect or improper service by anyone except 3D Systems or its authorized service provider), and (iii) repairs required during the warranty period because of the use of non-integrated, non-approved or non-licensed materials with the CubePro 3D Printer. The warranty period for the CubePro 3D printer is the shorter of (i) 90 days from the date your CubePro 3D printer is activated or (ii) 24 months after the CubePro 3D Printer is shipped from 3D Systems to the end customer or intermediary. For consumers who are covered by consumer protection laws or regulations in their country of purchase or, if different, their country of residence, the benefits conferred by our ninety (90) day warranty are in addition to, and operate concurrently with, all rights and remedies conveyed by such consumer protection laws and regulations, including but not limited to these additional rights.
THIS WARRANTY IS THE ONLY WARRANTY PROVIDED FOR THE CUBEPRO 3D PRINTER. TO THE MAXIMUM EXTENT PERMITTED BY LAW, 3D SYSTEMS EXPRESSLY DISCLAIMS ALL OTHER WARRANTIES FOR THE CUBEPRO 3D PRINTER AND EACH OF ITS COMPONENTS, WHETHER THOSE WARRANTIES ARE EXPRESS, IMPLIED OR STATUTORY, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR INTENDED OR PARTICULAR PURPOSES.

LIMITATION OF LIABILITY
3D SYSTEMS WILL NOT BE RESPONSIBLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, EXEMPLARY OR INCIDENTAL DAMAGES (SUCH AS LOSS OF PROFIT OR EMPLOYEE’S TIME) REGARDLESS OF THE REASON. IN NO EVENT SHALL THE LIABILITY AND/OR OBLIGATIONS OF 3D SYSTEMS ARISING OUT OF THE PURCHASE, LEASE, LICENSE AND/OR USE OF THE EQUIPMENT BY YOU OR OTHERS EXCEED THE PURCHASE PRICE OF THE CUBEPRO 3D PRINTER.

Warranty Hotline from the Americas
888-598-1440 inside the US and +1 678-338-3480 outside the US
weekdays during normal business hours or at http://3dsystems.com/shop/support.

Warranty Hotline from Europe
+44 1442 279 839 (UK) or +49 6151 357 499 (DE) weekdays during normal business hours or at http://3dsystems.com/shop/support.
SAFETY SYMBOLS AND DEFINITIONS

- **Hot Surface Hazard:** A hot surface is accessible in the vicinity of this sign or at the print jet. Avoid contact with these areas. Hot surfaces can cause severe burns.

- **Caution:** Indicates something may happen that could cause loss of data, damage to equipment, or could cause personal injury.

- **Caution:** Indicates a pinch point hazard that could cause personal injury.

- **SHOCK WARNING:** INDICATES A POTENTIAL SHOCK HAZARD.

SAFETY GUIDELINES

- Follow all safety rules in this section and observe all cautions and warnings in this guide.
- Do not modify any safety features or make modifications to the CubePro. Doing so is prohibited and voids the warranty.
- Use of print materials other than genuine 3D Systems components may void the warranty.

**WARNING:** HAZARDOUS MOVING PARTS. KEEP FINGERS AND OTHER BODY PARTS AWAY.

**HOT SURFACE HAZARD:** DO NOT TOUCH THE PRINT JETS DURING SETUP AND OPERATION. THE PRINT JETS BECOME VERY HOT.

**Caution:** Read and follow all instruction prior to setting up the printer.

**SHOCK WARNING:** DUE TO RISK OF SHOCK, AVOID CONTACT WITH ALL INTERNAL ELECTRONIC COMPONENTS.

**WARNING:** THE CUBEPRO SHOULD ONLY BE SERVICED BY AUTHORIZED SERVICE TECHNICIANS. PRIOR TO ANY PART REPLACEMENT PROCEDURE, THE PRINTER MUST BE POWERED OFF AND DISCONNECTED FROM UTILITY POWER.

**HOT SURFACE HAZARD:** WHEN PRINTING WITH ABS MATERIAL, THE INTERIOR (PRINT CHAMBER) OF THE PRINTER WILL HEAT TO A PREDETERMINED TEMPERATURE. THE SURFACE OF THE PRINT CHAMBER HEATER WILL BE HOT. AVOID CONTACT WITH THE PRINT CHAMBER HEATER AND NOTE THAT OTHER COMPONENTS INSIDE THE PRINT CHAMBER MAY BE HOT.

To ensure safety, please exercise caution when operating your CubePro. Read and follow all safety precautions as outlined in this user guide. Be careful when operating your CubePro to ensure proper printing and be mindful of and avoid hot surfaces.
VERIFY THE PRINT JET NOZZLE LEVEL

Leveling the print jet nozzles is very important to ensure quality prints especially after replacing a print jet, an extruder assembly or the print pad.

The Print Jet Level Gap calibration file requires all cartridge bays to be loaded with the same material type cartridges.

**NOTE:** Ensure the file used matches the printer model and the installed print material type. All installed cartridges must be of the same material type. (Ex. If the cartridge bays have ABS material cartridges installed, print the ABS Level Gap calibration file.)

These files are available at www.cubify.com/cubepro/activate. The Level Gap Calibration files are available from the Calibration Files download link in the Free Files section of the web page.

The file names are listed below:

**PLA:**
- noz12_PLA_LEVELGap.cubepro (This file is for printing PLA on a CubePro Duo)
- noz123_PLA_LEVELGap.cubepro (This file is for printing PLA on a CubePro Trio)

**ABS:**
- noz12_ABS_LEVELGap.cubepro (This file is for printing ABS on a CubePro Duo)
- noz123_PLA_LEVELGap.cubepro (This file is for printing ABS on a CubePro Trio)

**Nylon:**
- noz12_NYL_LEVELGap.cubepro (This file is for printing nylon on a CubePro Duo)
- noz123_NYL_LEVELGap.cubepro (This file is for printing nylon on a CubePro Trio)

**Level Nozzle Calibration Print Overview**

The following illustration demonstrates what you would see when the print jet nozzles are properly leveled.
**Z-Gap** - The Z-Gap is the distance between the print pad and the print jet nozzles. The Z-Gap should always be checked and adjusted first before the Level Gap.

**Important**
If either ABS or PLA materials are used to check nozzle level, the gap must be checked with the nylon single nozzle Level_Gap file.

- When using NYL_LEVEL_GAP it is best to have the corner-plate level patterns contain a gap above and below the baseline.
- The gap for nylon is different than the gap for ABS and PLA materials. For best print results, the Z-gap for nylon should be slightly more than the Z-gap for other materials when reading the open Z-gap print. This gap is found between the measurements lines (A) and the baseline (B).

- The closed pattern should remain be closed.
Printing The Level Nozzle Calibration File

NOTE: Ensure the print pad is completely clean from glue and printed parts before beginning this procedure.

5. Unzip the files to your USB mass storage device.
6. Insert the USB mass storage device into the USB host port on the printer.
7. Select PRINT.

8. Using the arrows, navigate to the appropriate Level Gap Calibration file and select PRINT.

   NOTE: There are several Level Gap Calibration files as well as Nozzle Offset Calibration files. Select the Level Gap Calibration file for the print material type installed in the printer.

9. Apply two thin layers of Cube Glue to the print pad in an area of 50mm x 50mm. Select the checkmark to continue.

   NOTE: For more information, refer to the section titled Applying Cube Glue in the user guide.

   NOTE: It may take about five (5) minutes to print the file.

10. When finished, remove the print pad from the printer and verify the Level Gap.

    NOTE: If adjustments are needed, perform this procedure again after making adjustments. Make sure all glue and plastic residue have been removed prior to performing this procedure again.
Compare Print Jet Z-Gaps
Inspect the Z-Gap readings for each print jet. If any of the print jets have an incorrect Z-gap, they will need to be leveled again.

NOTE: The Closed Z-Gap (A) and the Open Z-Gap (B) are two different measurements but should be read together.

Correct Closed Z-Gap
The Closed Z-Gap bars (B) should touch the baseline (A). This should be consistent with the calibration print for each print jet.
Incorrect Closed Z-Gap
If there is a gap (B) between the Closed Z-Gap bars (C) and the baseline (A), that print jet is too high and should be adjusted. Once it has been adjusted, print the calibration file again to verify that the print jets are level.

Correct Open Z-Gap
If there is a gap (B) between the Open Z-Gap bars (C) and the baseline (A) and there is no gap between the Closed Z-Gap bars and the baseline, that print jet is level.

Incorrect Open Z-Gap
If there is no gap (B) between the Open Z-Gap bars (C) and the baseline (A), that print jet is too low and should be adjusted. Once it has been adjusted, print the calibration file again to verify that the print jets are level.
Leveling The Print Jet Nozzles

Tools Needed

- T10 Torx Driver

Level The Print Jets

**SHOCK WARNING:** EXERCISE CAUTION WHenever YOU ARE NEAR ELECTRICAL COMPONENTS.

**WARNING:** BEFORE SERVICING THESE COMPONENTS, ENSURE YOU ARE WEARING A WELL-GROUNDED ELECTRO-STATIC DISCHARGE (ESD) STRAP. ESD PROTECTION IS REQUIRED.

**WARNING:** NEVER PULL ON WIRES TO DISCONNECT THE CONNECTORS. THIS COULD DAMAGE THE WIRES AND THE CONNECTORS AND VOID THE MANUFACTURER’S WARRANTY.

The following procedure is intended to provide instructions about how to level print jets for printers with more than 1 print jet.

1. For printers with two (2) or three (3) print jets, loosen the T10 torx screws on extruders 1 and 3.

   **CAUTION:** There should be enough access to reach the torx screws using an insulated torx driver. Exercise caution when working around the PCBs.

   **NOTE:** Print jet 2 should not need adjustments.

2. Connect the printer to utility power, turn on the main power switch and then turn on the display.

3. Navigate to the **Print Plate Calibration** screen and select **MOVE JETS**.

4. Select the Z: down arrow until the display reads -0.50.

   **NOTE:** For printers with 2 or three print jets, visually inspect the gap between the nozzle tip of print jet 2 and the print pad. If necessary, press the Z: down arrow until there is a gap.
5. Press the X and Y adjustment arrows until print jet 2 is closely aligned above the front print pad adjustment knob.

NOTE: The red line in the illustration demonstrates an approximate alignment of print jet 2 and the front print pad adjustment knob.

6. Press the Z: up arrow until the nozzle of print jet 2 lightly touches the print pad.

NOTE: If there is still a gap between the nozzle of print jet 2 and the print pad, and the Z: up arrow will not raise the print pad further, rotate the front print pad adjustment knob counterclockwise (from the bottom side) until the nozzle lightly touches the print pad. If the adjustment knob was turned, turn it back the same amount and then be sure to perform the print pad leveling procedure.

7. Verify that the nozzles of print jet 1 and print jet 3 are also touching the printpad.

8. When all of the print jet nozzles lightly touch the print pad, power off the printer and disconnect it from utility power.

9. Tighten the left and right print jet screws using a T10 torx driver.

10. Connect the printer to utility power and power on the printer.

11. Ensure the print pad is at its lowest position.
12. Holding on to the extruder carriage assembly, gently position it over the jet wiper assembly.

13. Verify the wiper blade meets the tapered portion (A) of the print jet nozzle. If it does, the jet wiper is properly adjusted. Proceed to step 17.

   NOTE: There should be a 1mm gap between the top of the wiper and the bottom of the nozzle flange.

   NOTE: If the wiper tip is too high, proceed to the next step. If the wiper tip is too low, proceed to step 16.

14. If the wiper blade is too high, remove the jet wiper assembly and turn the adjustment thumbscrew (A) clockwise. Reinstall the jet wiper and return to step 14.

15. If the wiper tip is too low, remove the jet wiper assembly and turn the adjustment thumbscrew (A) counter-clockwise. Reinstall the jet wiper and return to step 14.

16. Once satisfied with the adjustment, connect your printer to utility power and power on the printer.

17. If necessary, calibrate the print pad.

18. Proceed to the Z-Gap and Level Gap procedure. Once the Z-Gap and Level Gap are correct, calibrate the offset jets.
GLUE

Using Cube Glue is always recommended for printing, especially for areas of the print pad where INF prints. Ensure that glue is applied to the print pad in an area that is larger than the base of your part.
PRINTING WITH SUPPORTS

Overview
Flex print material properties require many parts to be supported. INF material works well as support material for flex. Flex material has three (3) options for supporting parts and some may be combined for optimal results.

⚠️ NOTE: Flex support material will need to be cut away.

Flex parts may warp when they contain large, flat, overhanging features or long rectangular, round beams. For best printing results, add supports to your build file.

CubePro software provides three (3) options for adding supports:
- INF, PLA or Flex Supports
- Manual Supports - These supports can be combined with any of the other three options.

PLA Supports
PLA supports are effective, general purpose supports that require post-processing to cut and clean the support attachment points. These supports provide the most support for preventing warp, and of the other options, require the most post-processing to remove them.

Select a PLA option from the Support Material drop down menu in the Build Settings utility.

Printing A Large Flat Radius Feature
Parts with large radius features need more supports than flat angles. Because of nylon printing properties, it requires more support than PLA and ABS. If not properly supported, the nozzle can break if the print begins to curl and warp.

Use the Advanced menu in the Build Settings utility to set the Support Angle to 75° or the appropriate angle for supporting your part,
Verify the part in the software after it has been built to confirm that the support angle is correct.

**OPTIMAL SURFACE QUALITY**

Use the diamond hatch option to achieve the optimal surface quality from flat upper surfaces.
Organic shapes, slight overhangs or tall parts may be susceptible to moving during the print process. It is recommended that the number of outer walls is increased using the Advanced menu.
CLEANING THE NOZZLE TIP

Excessive buildup on the nozzle tip can lead to poor part quality. Remove the excessive buildup prior to starting your print. Heat the nozzle to 100°C and use needle nose pliers to carefully scrape away buildup.
MULTI-MATERIAL PARTS

PLA/Flex
PLA and Flex surfaces will not adhere to each other. When designing parts with these to materials, ensure the mating surfaces are interlocked to ensure a successful print.

Print Sample
The following renderings illustrate a PLA/Flex print.

- Blue = PLA
- Yellow = Flex
**Nylon/Flex**

Nylon is compatible with Flex when printing multi-material parts.

- Nylon and Flex surfaces will adhere together. Mating surfaces do not need to be interlocked.
- To ensure proper adhesion, the level gap must be calibrated properly.
- Overlapping Nylon and Flex material may cause filament flow failures. Verify that the materials do not overlap.

**REMOVING PARTS**

To remove parts from the print pad, soak it in water for 5-10 minutes. This will enable you to remove the print easily without damaging the bottom of the part.