Troubleshooting Guide

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BCN3D

Index

1. Introduction

The Aim of this guide is to compile the most common issues that the user can experiment in order for the BCN3D Distribution network to provide a better, easier and more reliable support to its customers.

This document is divided in two main categories: Hardware and General issues. Each sub-category has a link to a step by step guide that can be used by the distributors for their own technical service, or send it to the customers so they can perform this actions by themselves.

The **Hardware** section covers the most common issues on each of the printer parts. The issues that are not directly related to a determinate element, may also be covered if they are somehow related to the specific hardware category.

The **General issues** section, covers issues that are not related to a specific part of hardware, like calibration, print quality or printer to computer connectivity issues.

To navigate through the guide, the user should use the main index to go to each category or subcategory. Each of these categories will have links to one or more step by step pdf guides related to its particular issue. These guides can either be seen online or downloaded.

All the issues found on each printer should be archived on the BCN3D **damage protocol** document in order for the distributor to claim for the spare parts under warranty, always indicating the printer's serial number, a description or categorization of the issue and the parts used to solve it.

The damage protocol should be sent to <*support@bcn3dtechnologies*> monthly.

2. Hardware

2.1. SD Reader

2.1.1. SD card not detected by the printer

-   If the SD card is not detected by the printer, check the procedures specified in the following manual:

    -   [SD card reader issues](#)

2.1.2. "Print" menu navigation issues

   a) When a file is selected it disappears

-   Turn off your printer and remove the SD card. Connect it to your computer and Check all the files to make sure there's no unusual character on its names. A quick way to rule this out is to empty the SD reader and load a single file onto it with a simple name.

-   If you are using a different slicer or have recently updated the firmware, make sure there isn't any compatibility issues between the slicer and the firmware.

    -   [Update the firmware](#)

-   If the issue persists the problem could be coming from the LCD's micro SD card.

    -   [Change the micro SD card of the LCD screen](#)

   b) One or more files display an unusual name

-   Turn off your printer and remove the SD card. Connect it to your computer and Check all the files to make sure there's no unusual character on its names. A quick way to rule this out is to empty the SD reader and load a single file onto it with a simple name.

-   If you are using a different slicer or have recently updated the firmware, make sure there isn't any compatibility issues between the slicer and the firmware.

    -   [Update the firmware](#)

2.2. LCD

1.2.1. Static / Distorted images / Freezing / Slow boot

- If the LCD screen is showing the mentioned issues, check the following procedure:

    - [Change the micro SD card of the LCD screen](#)

2.2.2. Unresponsive touch panel

- Make sure that your current Mainboard firmware version corresponds with the files/firmware on your LCD's micro SD card

    a) **Firmware versions:**

        - BCN3D Sigmax: [link](#)

        - BCN3D Sigma: [link](#)

    b) **Firmware update:**

- In order to update the firmware, please follow the following instructions:

    - [Update the firmware](#)

    - [Change the micro SD card of the LCD screen](#)

2.2.3. Broken screen

- If the screen is broken and you want to replace it get in touch with your reseller. In case you feel comfortable replacing it by yourself, follow the next steps:

    - [LCD assembly and connection](#)

2.2.4. LCD does not turn on

    a) **If the LCD boots slowly:**

        - [Change the micro SD card of the LCD screen](#)

b) If the LCD screen turns black:

- If the message "Drive not mounted" shows up on the LCD, check the micro SD card position:

  - [Change the micro SD card of the LCD screen](#)

- If there's no message on the LCD check if the LED's are on. If they are, check the LCD - mainboard connection

  - [LCD assembly and connection](#)

- If there's no message on the LCD and the LED's are off, Unplug the printer from the power outlet, and connect it to the computer through the USB connection to check if the LCD turns on. If it does check the power supply/switch connections:

  - [Printer does not turn on - Power Supply](#)

2.3. Printing platform / hotbed ("Z" axis)

- All hotend and hotbed temperature related issues, should discard a mainboard fuse failure by checking if the other elements heat as well as the stepper motors move.

2.3.1. Bed makes a loud noise when going up

- If the bed goes up smoothly but makes a loud noise when it reaches Z endstop during a homing process, check the following:

  a) In any printer process the bed will home by reaching the endstop placed under the left printing head, so make sure that the left head is automatically positioned over the glass to allow does.

  b) If the head does not position itself check the Layer shifting guide:

    - [Missing steps XY](#)

  c) If the printing head is properly positioned make sure that the glass is installed on the hotbed, and that it actually touches the endstop when the printing platform goes up.

d) If it does, check that the endstop isn't broken, and that it "clicks" when you press it with your finger. In any of these cases the endstop will have to be replaced.

- [Change the endstop of the Z axis](#)

e) If the endstop isn't broken, check the hotend flat cable connections on both the extruder board and the mainboard, to make sure it is properly connected and that it is not installed in a stressful position.

- [Check flat cable connections](#)

2.3.2. Bed stay at the bottom and makes a loud noise

- If the bed platform stays at the bottom part of the "z" axis performing a loud noise, check the following guide:

- [Z axis screw](#)

2.3.3. Bed only moves downwards during calibration or print start

- If the bed only goes down when running a bed calibration or any other process, turn off the printer and check that the Z endstop switch on the left printing head isn't jammed inside its casing. If it is, try to remove by clicking on it, or using a needle/blade.

- [Endstop guide](#)

2.3.4. Bed does not move

- If the bed stays on the same position and does not do any noise, check if the rest of the axes are moving. If they are not, check if the hotends and heatbed preheat. If they don't the fuse on the mainboard may have blown and you'll have to replace it.

- [Check the main board's fuse](#)

- If the issue is located on the bed only, check the Z motor connections:

- [Check Z motor](#)

2.3.5. Backlash

- Due to its construction, the bed can sometimes have some play. This should not have a negative effect on your prints. If the backlash on your bed is causing issues on your print results check the attached guide:

    - [Platform issues](#)

2.3.6. Uneven printing platform

- If, when using the whole printing surface, the nozzle is too close or too far from certain areas of the glass, try adjusting the offset values as explained here:

    - [Flatness on the printing surface](#)

2.3.7. Bed is too far from the hotend during "z" calibration

- If the bed platform is place too far from the hotend while performing a "z" calibration, check the following instructions:

    - [Bed and axes calibration](#)

2.3.8. Bed glass

a) If the glass is broken:

- Replace the glass for a new one

- In order to prevent the bed glass from breaking, follow the next advises:

    - Don't use excessive adhesive.
    - Let the prints cool down before removing them from the glass.
    - Clean the glass regularly to improve adhesion.
    - Consider getting a second glass so you can keep working when the other one is cooling down.

b) Detached magnets

- If the magnets detach from the glass you can glue them back using a thermo-resistant glue. We use [Nural 3](#).

2.3.9. Hotbed

a) If the hotbed reads an illogical value on the temperature:

- [Hotbed temperature issues](#)

b) If the hotbed does not heat / thermal runaway

- [Hotbed temperature issues](#)

2.4. Extruder

2.4.1. Under extrusion

- If you notice that the walls or infill on your prints are weak, or that the filament flow is not constant, check the following guide:

  - [Under extrusion guide](#)

2.4.2. Filament grinding

- If you are having filament grinding issues with a particular print you can try to adjust some values on Cura to prevent this:

  - Reduce "retraction speed" to 20/mms (Speed menu).
  - Activate the "prevent filament grinding" option (Material menu).

- If the problem keeps happening, check the "under extrusion" general guide:

  - [Under extrusion guide](#)

2.4.3. Problems loading the filament

- If you are having issues loading the filament, or moving the filament that's already loaded inside the printer, tale a look at the following guide:

  - [Bowden / filament issues](#)

2.4.4. Extruder does not move

- Make sure that the extruder isn't actually moving, as the problem could most likely be caused by filament grinding a clogged hotend or other non extruder related issues.

  - [Under extrusion guide](#)

- If you suspect that the problem is coming from the extruder:

  - [Check extruder connections(stepper driver upgrade)](#)

2.4.5. Extruder makes noise while printing

- If you hear a dry loud noise while the printer is printing, check the attached guide:

  - [Under extrusion guide](#)

2.5. Printing head ("x" axis)

2.5.1.Motion issues

a) Rough motion

- If the X motor is not moving properly make sure that the X guide is clean and lubricated. If the problem keeps happening afterwards, check the layer shifting guide:

  - [Missing steps XY](#)

- If your prints have layer shifting issues, check the attached guide:

  - [Missing steps XY](#)

b) Random behaviour

- If the X heads are behaving in an unusual way during calibration try reinstalling the firmware or reset the factory values through pronterface

    - [Pronterface](#)

    - [Update the firmware](#)

2.5.2.Printing head makes a loud noise when moving to the side

- If the printing head makes a loud noise when homing to its side, turn off the printer and make sure that the X side endstop isn't broken and that it clicks when you press it with your finger.

- If it does, make sure there's nothing in the way of the printing head that could be preventing it from reaching the endstop. if it does the problem could be on the endstop connections, or the X driver flat cable connections

- If the endstop is broken you'll have to replace it.

- In both cases, check the attached guide:

    - [Endstop guide](#)

2.5.3. Backlash on the printing heads

- Sometimes backlash on the printing heads can appear over time. A minor backlash is common and should not affect any of the printer's processes. If you suspect that the backlash is having a negative effect on your printer, get in touch with the technical service.

2.5.4.Endstops

- If the endstops on the X axis are broken, or are not working, check this guide:

    - [Endstop guide](#)

2.5.5. Fans

a) Cooler fan

(*Smart fan only available in printers with S/N over XXX.XXXXXX.1146 or upgraded)

- If the cooler fan does not turn on or turns on immediately, the problem would most likely be on the extruder board or the FFC, not the fan itself. Try following the instructions on the attached guide in order to solve it.

    - [Cooler Fan](#)

b) Regular fan

- If the cooler fan does not turn on check the cooler fan guide:

    - [Cooler Fan](#)

c) Layer fan

- If the layer fan does not turn on, make sure the machine is printing. Take into account the layer fan only turns on during a print job if it is configured to do so on the gcode. If you are not sure if your layer fans are working, print the attached gcode [(layerfan.gcode)](#).

2.5.6. Hotend

(*All hotend and hotbed temperature related issues should discard a mainboard fuse failure by checking if the other elements heat as well as the stepper motors move)

- There are 6 hotend models available for the sigma and sigmax printer.

- 0.4 and 0.6 have the same construction and electronics, and the only thing that changes is the size of the nozzle.

- 0.5 has a special nozzle designed to print abrasive materials. Due to heat transmission issues, you may have to increase the heat of this hotend slightly when printing with other materials.

- 0.8 and 1 have the same construction and electronics (different than the one on the rest of the hotends) and the only thing that changes between them is the size of the nozzle.

a) Under extrusion

- If the printer has under extrusion check the under extrusion guide:

    - [Under extrusion guide](#)

b) Unstable temperature

- If the hotend temperature is unstable check the hotend temperature issues guide:

    - [Hotend temperature issues](#)

c) Thermal runaway

- If the Thermal runaway message shows up during a print, check the hotend temperature issues guide:

    - [Hotend temperature issues](#)

d) Hotend reads an illogical value on the temperature menu

- If the LCD shows an illogical value on the temperature menu, check the hotend temperature issues guides:

    - [Hotend temperature issues](#)

e) Hotend does not heat

- If the hotend does not heat check the hotend temperature issues guide:

    - [Hotend temperature issues](#)

f) Bed is too far from the hotend during Z calibration

- If the bed is too far from the hotend during Z calibration, and you can move it up any further through the LCD arrows, check this guide:

    - [Calibrate the Z axis](#)

2.6.Carriage (Y axis)

a) Rough motion/Layer shifting

- If the carriage moves abruptly when either manually or electronically, and/or there's layer shifts on the prints, check the missing steps guide:

    - [Missing steps XY](#)

b) Random behaviour

- If the Y axis is behaving in an unusual way during calibration try reinstalling the firmware or reset the factory values through pronterface

    - [Pronterface](#)

    - [Update the firmware](#)

c) Carriage makes a loud noise when going towards the rear of the printer

- Make sure that the carriage is parallel to the printer's rear frame, as if it isn't, the left side of the carriage maybe reaching the rear of the printer before the right side does:

    - [Carriage Parallelism](#)

- Check if the Y endstop works

    - [Endstop guide](#)

d) Eccentric smooth bar

- If the Y smooth bar is to tight it may move eccentricly. If that's the case, loosen the belt tension on the short Y belt. If the issues keeps happening afterwards the bar and/or the bearing pillows may have to be replaced

    - [Adjust the tension of the belts](#)

2.7.Bowden tube

- If you can not remove the filament from inside the bowden tube, check this guide:

    - [Bowden / filament issues](#)

3. General issues

3.1. Layer shifting

- If your prints have layer shifting, check the missing steps guide:

    - [Missing steps XY](#)

3.2. Calibration

3.2.1.Uneven printing platform

- If when printing using the whole glass, the first layer is uneven, try following the steps on this guide:

    - [Flatness on the printing surface](#)

3.2.2.Offset during calibration

- If the Z axis is too far from the bed during calibration, or if there's too much offset between X and Y lines, check the bed and axes calibration guide

    - [Bed and axes calibration](#)

3.2.3.Offset after calibration

- If there's layer shifting on a print after calibration, check the attached guide:

    - [Missing steps XY](#)

3.2.4.Bed calibration loop adjustment

- If the bed calibration asks for a small adjustment (1/8th) to one side each time you may skip the calibration or adjust the screw 1/16th.

- If the bed calibration gives you different values all the time, make sure that you are adjusting the screws correctly, that the glass is properly placed and that the Z endstops are making contact with the glass.

  - [Bed and axes calibration](#)

3.2.5.Bed makes a loud noise when going up (calibration)

- If the bed goes up smoothly but makes a loud noise when it reaches the left printing head's during a homing process, check the following:

  - 1.In any printer process the bed will home by reaching the endstop placed under the left printing head, so make sure that the left head is automatically positioned over the glass to allow does.

  - 2.If the head does not position itself check the Layer shifting guide:

    - [Missing steps XY](#)

  - 3.If the printing head is properly positioned make sure that the glass is installed on the hotbed, and that it actually touches the endstop when the printing platform goes up.

  - 4.If it does, check that the endstop isn't broken, and that it "clicks" when you press it with your finger. In any of these cases the endstop will have to be replaced.

    - [Change the endstop of the Z axis](#)

  - 5-If the endstop isn't broken, check the hotend flat cable connections on both the extruder board and the mainboard, to make sure it is properly connected and that it is not installed in a stressful position.

    - [Check flat cable connections](#)

3.3. Print quality

- On all print quality related issues, it is advised to print a known gcode that has been successfully printed before, to rule out a gcode configuration issue.

3.3.1. Z effect

- Check if the printing platform has any mechanical issues:

    - [Platform issues](#)

3.3.2. Blobs and zits

- Check if the printer stops during print, if it does check if the LCD is working correctly, it it does update the micro SD files:

    - [Change the micro SD card of the LCD screen](#)

3.3.3. Under extrusion

- If your prints show signs of under extrusion, check this guide:

    - [Under extrusion guide](#)

3.4.4. Uneven printing platform

- If the printer does not print at the same height on all the printing surface, check this guide:

    - [Flatness on the printing surface](#)

3.5.5. Layer shifting

- If your prints have layer shifting, check the missing steps guide:

    - [Missing steps XY](#)

3.6.6. Ringing

- Make sure that all the pulleys are aligned, and that the belts are tight and moving correctly.

    - [Missing steps XY](#)

3.7.7. Dimensional accuracy

- Try printing a standard file, like a 20x20 cube on fine quality to see if the results are the same.

    - [Adjust the tension of the belts](#)

- Make sure that the first layer is sitting properly on the glass, not too far, not too close. make sure that the flow is 100%. If you think this could be an over extrusion issue, you can reduce the flow progressively.

3.4. Unresponsive printer

3.4.1. Printer does not turn on

- If there's no message on the LCD and the LED's are off, Unplug the printer from the power outlet, and connect it to the computer through the USB connection to check if the LCD turns on. If it does check the power supply/switch connections:

    - [Printer doesn't turn on – power supply](#)

3.4.2. Printer does turn on but is unresponsive

- If your LCD Boots slowly:

    - [Change the micro SD card of the LCD screen](#)

- If you have a black screen on your LCD, check the following:

- If the message "Drive not mounted" shows up on the LCD, check the micro SD card position:

- [Change the micro SD card of the LCD screen](#)

- If there's no message on the LCD check if the LED's are on. If they are, check the LCD to mainboard connection

    - [LCD assembly and connection](#)

- If there's no message on the LCD and the LED's are off, Unplug the printer from the power outlet, and connect it to the computer through the USB connection to check if the LCD turns on. If it does check the power supply/switch connections:

    - [Printer doesn't turn on - power supply](#)

3.5. Connectivity

3.5.1. The printer isn't recognized by the computer

- If the computer does not recognize the printer when it is pluged vis USB, check this guide:

    - [Connect the printer to the computer](#)

3.5.2.Firmware update issues

- If you are having issues updating your printer's firmware, make sure that the printer is recognized by the computer:

    - [Connect the printer to the computer](#)

- One the printer is recognized, update the firmware following the steps explained on the firmware update guide:

    - [Update the firmware](#)

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