

Technical manual

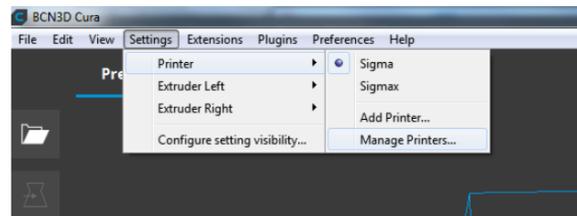
How to update the firmware

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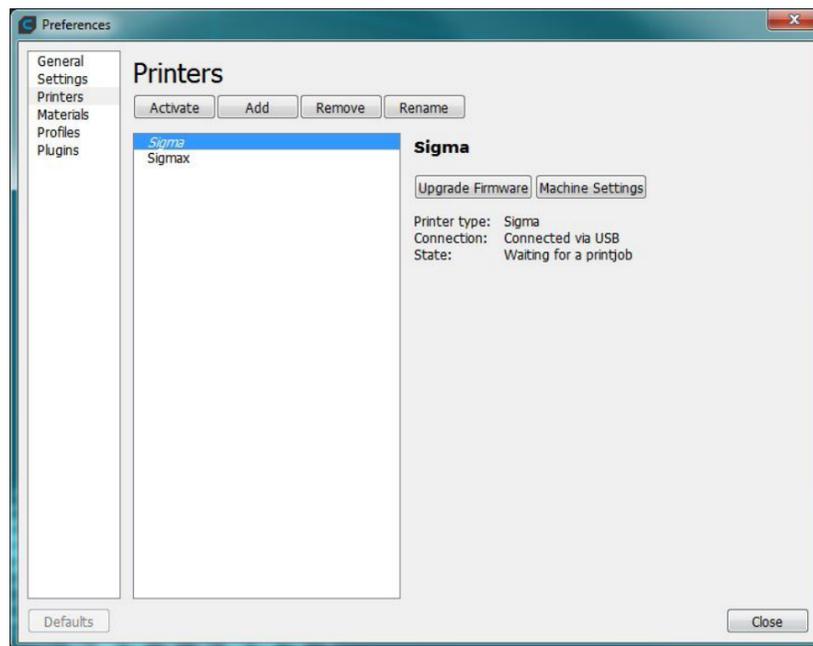
At BCN3D Technologies we want you to have a great printing experience, and to achieve it, we are continually working to create new firmware upgrades for our printers. In fact, most of the evolutions deployed on the Sigma and Sigmax newest versions R19 are compatible with the older printer versions.

Use the software BCN3D Cura to get the latest firmware version (2.0.2 or newer) and take profit of the new R19 features.

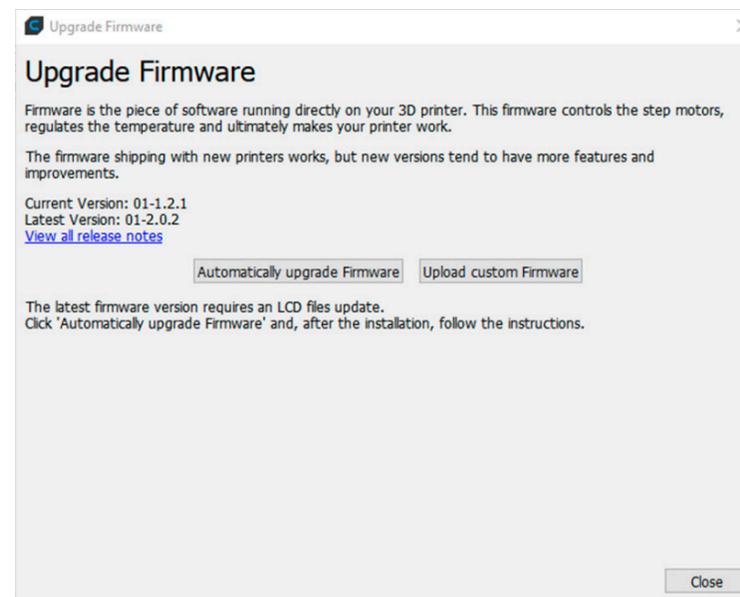
1. Use the USB cable to connect the Sigma / Sigmax to the computer.
2. Open BCN3D Cura. Go to *Settings* --> *Printer* --> *Manage Printers*



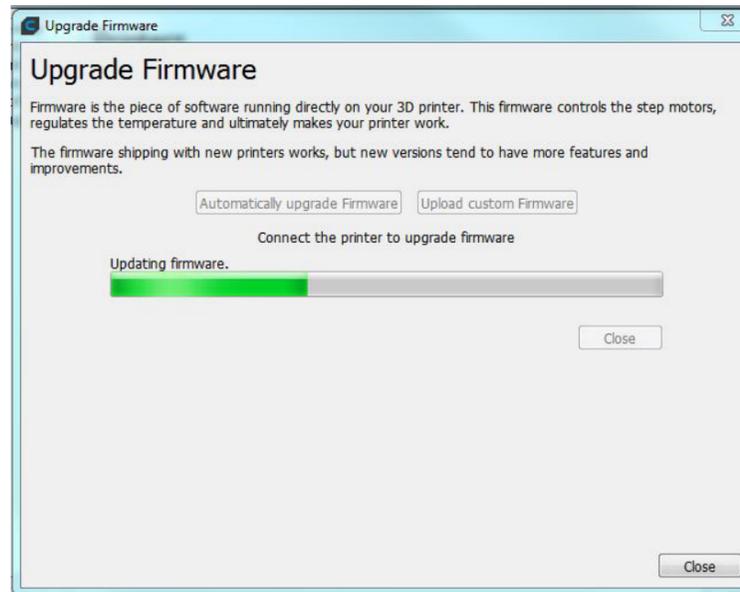
3. Select *Upgrade Firmware*



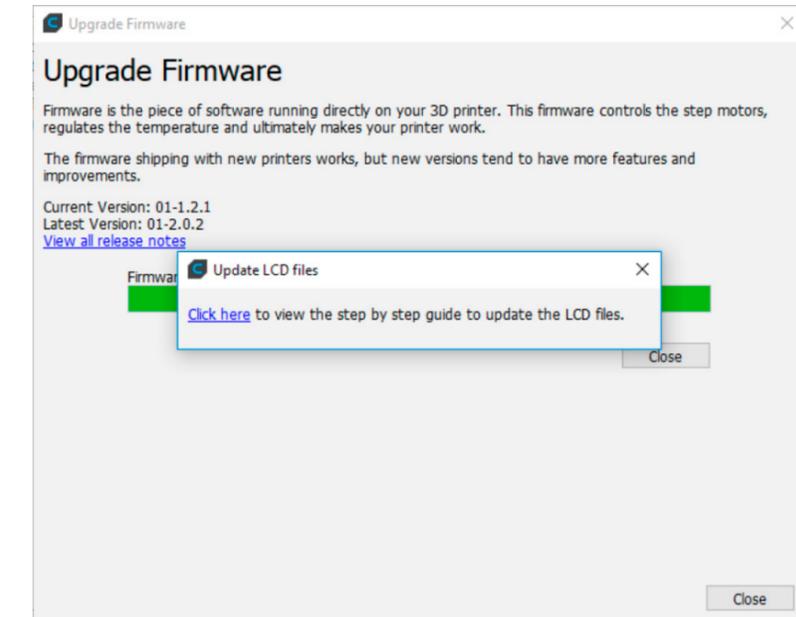
4. Click *Automatically upgrade Firmware* to download and install the latest version available (2.0.2 or newer).



5. Wait until the firmware is installed. The process may take a few minutes to complete.

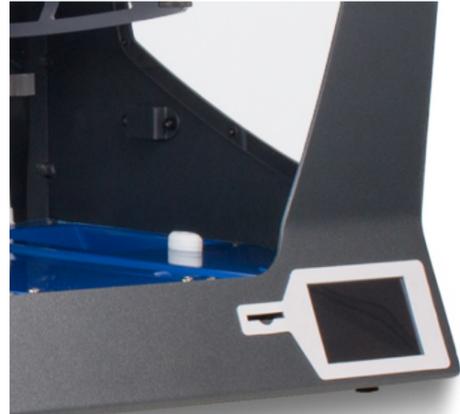


6. Once the process is completed, a window will prompt. It informs it is necessary to update the files of the printer's LCD screen. Either follow the link to open the manual or continue this document.

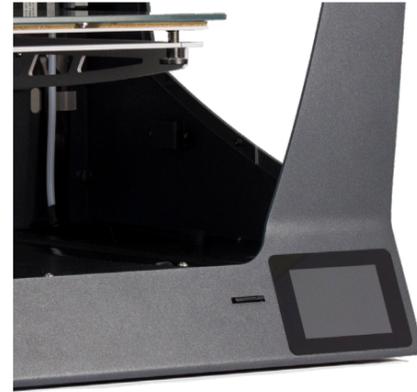


How to update the firmware

To change the micro SD card files, first, let's check the LCD version installed on your printer. Follow the steps of the corresponding section according to the printer version you have.



BCN3D Sigma Original



Sigma R17 / BCN3D Sigmax
Original

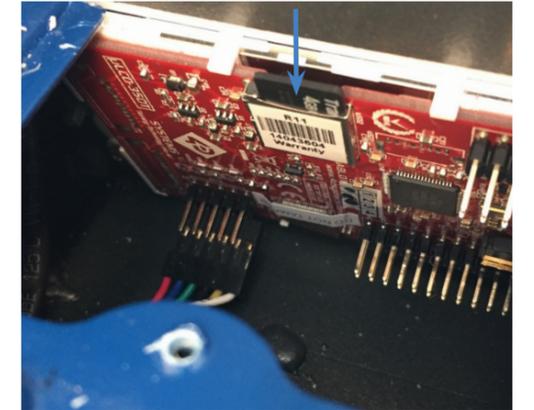
For the BCN3D Sigma Original

7.1. The Sigma original LCD has a white frame, and the micro SD card can be easily accessed.

7.2. Turn off and disconnect your printer from the power outlet. Also make sure that the USB cable is not connected to the printer.



7.3. Remove the small cover over the LCD and press on the micro SD. (You don't have to disassemble the screen from the printer).



7.4. Go to step 10 to continue the process.

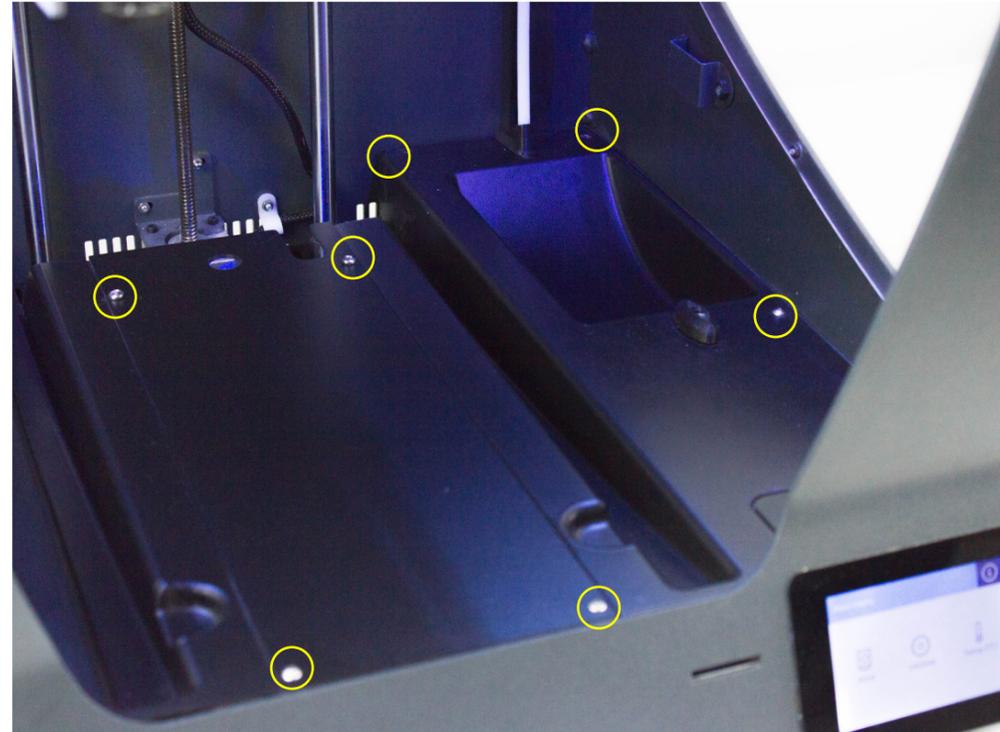
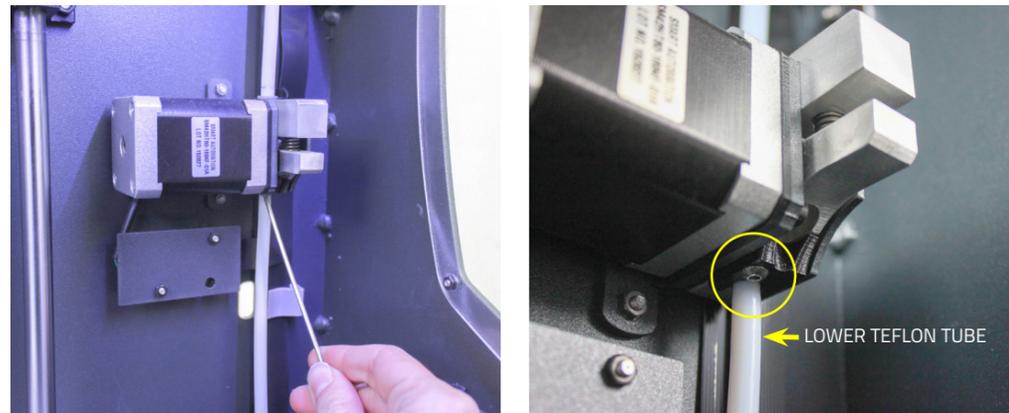
How to update the firmware

For the Sigma R17 version

8.1. The Sigma R17 LCD has a black frame.

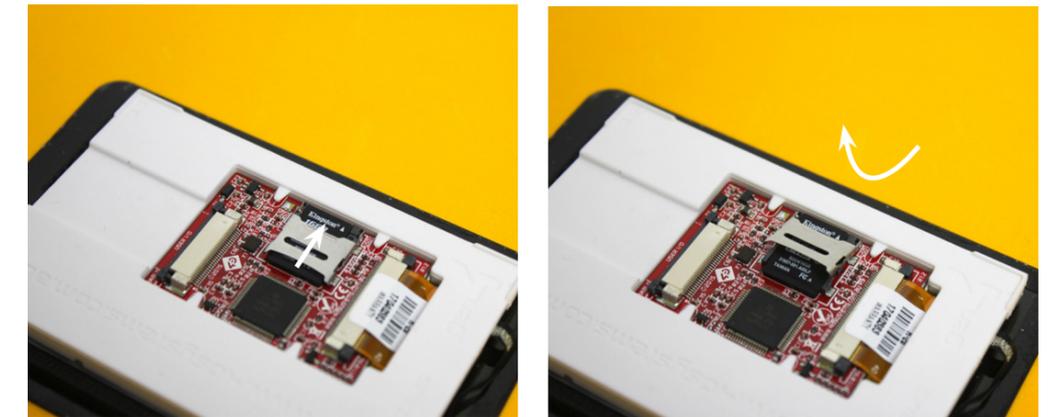
8.2. To remove the micro SD rise your printer's bed, **turn it off and disconnect it from the power outlet.** Also make sure that the USB cable is not connected to the printer.

8.3. First, remove the screw under the extruder in order to remove the lower teflon tube and work comfortably. Remove the central and right side cover to have full access to the LCD's micro SD slot.



8.4. Once the covers are removed, you can easily access the micro SD behind the screen. The micro SD socket has two positions: up (unlocked) and down (locked). To remove the micro SD, drag the socket up as shown in the pictures. (It's not necessary to detach the screen from the printer's frame).

**Be careful when removing the micro SD to avoid causing any damage to the mechanism.*



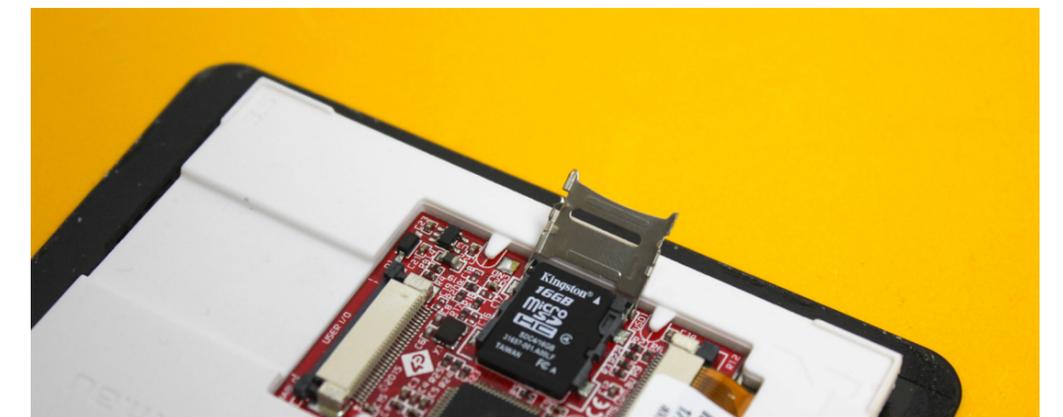
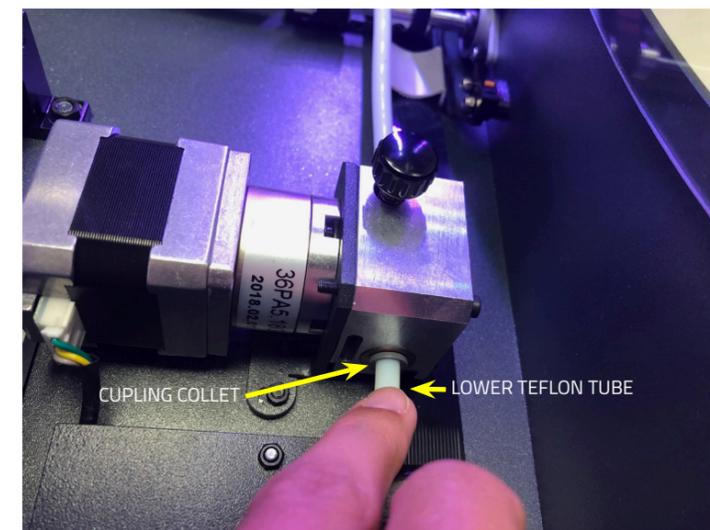
For the BCN3D Sigmax Original

9.1. The Sigmax Original LCD has a black frame.

9.2. To remove the micro SD rise your printer's bed, **turn it off and disconnect it from the power outlet.** Also make sure that the USB cable is not connected to the printer.

9.3. Remove the lower teflon tube by pressing up the grey piece (cupling collet) and then pull out the tube. This will allow you to work more comfortably. Then, remove the central and right side cover to have full access to the LCD's micro SD slot.

Go to step 8.4 to continue the process.



8.5. Go to step 10 to continue the process.

How to update the firmware

10. Format and replace files from the micro SD

Once we have removed the micro SD, we will proceed to install the new files.

In the next link you can find the files to install in the folder:

• **Sigma:** <https://github.com/BCN3D/BCN3DSigma-Firmware/releases/tag/01-2.0.2>

For the Sigma R17 (Download the files from the Folder SD.files.v202-LCD-SIGMA-R17-R19.zip)

These files are valid for firmware versions 2.0.2 or higher.

For the BCN3D Sigma Original (Download the files from the Folder SD.files.v202-LCD-SIGMA-R16.zip)

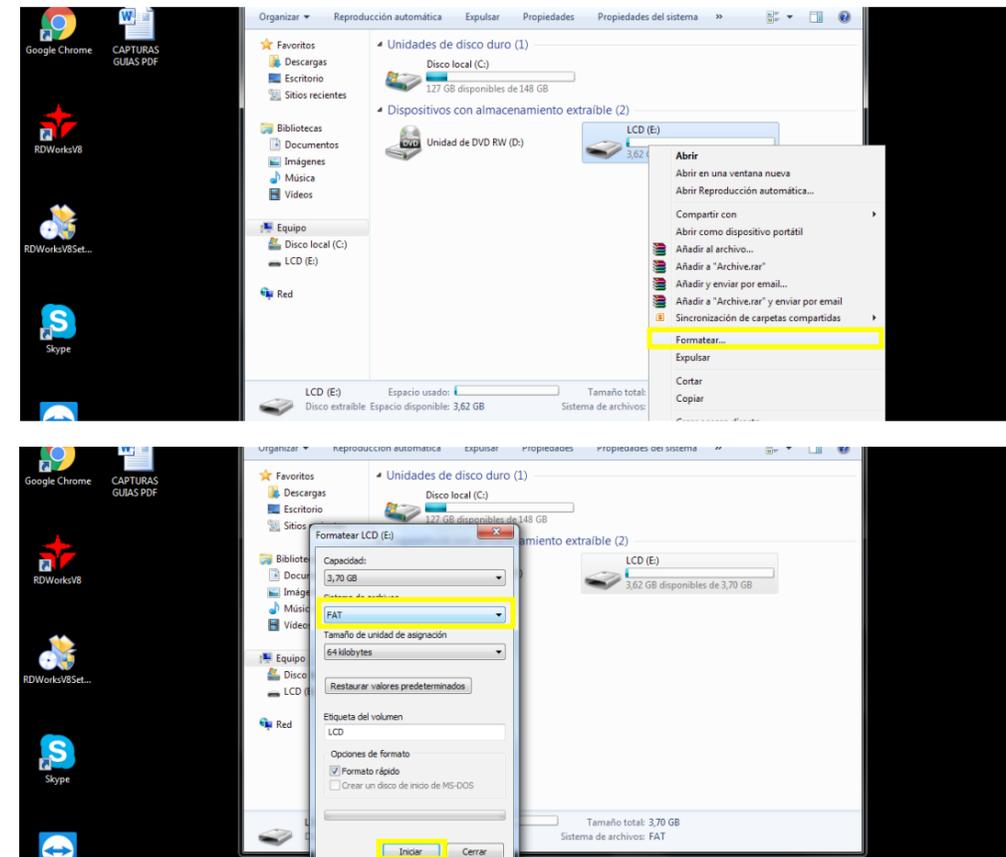
These files are valid for firmware versions 2.0.2 or higher.

• **BCN3D Sigmax Original :** <https://github.com/BCN3D/BCN3DSigmax-Firmware/releases/tag/02-2.0.2>

(Download the files from the Folder SD.files.v202-LCD-SIGMAX.zip)

These files are valid for firmware versions 2.0.2 or higher.

10.1. Before install the files, format the micro SD: you have to connect the card to the computer and follow these steps:



10.2. The micro SD card has to be formatted in FAT format. If this option doesn't appear, follow the steps on this link:

<https://github.com/BCN3D/BCN3D-Cura-Windows/wiki/Updating-the-SD-Files-from-the-LCD-Display>

10.3. Once formatted, drag and drop the files downloaded in the in the SD card, place it again in the micro SD socket and put the cover back (for Sigma R17 and Sigmax Original users remember to put also back the lower teflon tube).

Switch on the printer and an Setup Assistant will appear in the screen to properly set up the physical configuration of the Sigma or Sigmax. It will be asked to:

- Choose the hotend sizes installed.
- Select the extruder installed (only in Sigma).

Contact us if you have any questions about this process:
support@bcn3dtechnologies.com

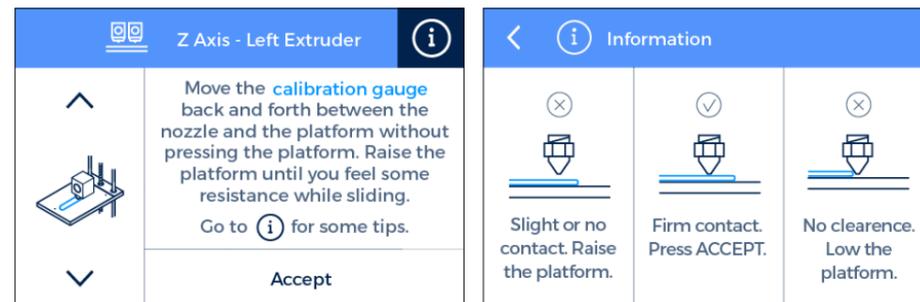
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11. CONSUMABLES TO ENJOY A FULL R19 EXPERIENCE

• Calibration gauge:

<https://www.bcn3dtechnologies.com/en/3d-printer/calibration-gauge-z-offset-bcn3d-sigma-sigma/>

Besides the internal improvements to make the Printer Calibration process more accurate, it is recommendable to use a Calibration Gauge instead of a piece of paper to adjust the Z height of the hotend. The use of a steel gauge reduces the subjectivity of the process and provides an unambiguous feedback.



• R19 upgrade kit:

Available in November

The installation of the new mechanical components equipped on the new R19 version is not compulsory to upgrade the firmware to the R19 version, but it is recommendable. The upgrade kit contains:

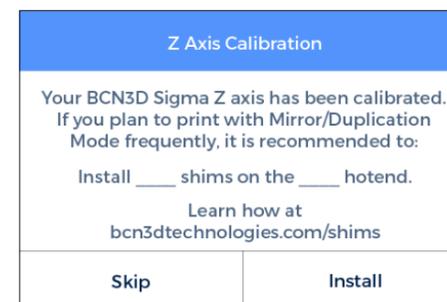
- Filament Runout Sensor: This device is required to enable the prevention of running out of filament.
- Bondtech Extruders (only for Sigma): Increased torque and reliability.
- Hotends by E3D: Increased thermal behaviour, conferring better performance and higher reliability.

• Shims:

<https://www.bcn3dtechnologies.com/en/3d-printer/shims-mirror-duplication-modes-bcn3d-sigma-sigma/>

The firmware for the Sigma R19 now supports Mirror and Duplication modes, previously only available for Sigma. In these printing modes both toolheads work simultaneously, so it is key important to make sure both nozzles are exactly at the same height. However, due to manufacturing and assembly tolerances the offset between tips can be up to 0.5mm.

For this reason, it is recommended to install shims to mechanically correct the Z offset when it is suggested during the *Printer Calibration* process. As a result, it will be possible to avoid any geometrical distortion of the part or additional consumption of time and material. The installation of shims is specially important for those planning to use frequently Mirror or Duplication modes.



• Lubrication kit:

<https://www.bcn3dtechnologies.com/en/3d-printer/lubrication-kit-3d-printer-bcn3d-sigma-sigma/>

A key factor to obtain consistent and accurate prints over the time is keeping the printer properly lubricated and maintained. Consequently, the new firmware version includes maintenance alerts to remind the user to properly lubricate the axes of the printer with recommended products.



