

Centroid CNC controller Beagle Bone Green (BBG) Debricker Instructions.

Terminology. "debrick" / "debricker" is slang for: CNC control board firmware, firmware update or firmware installation or firmware repair.

In this document the terms Firmware and Debrick are used interchangeably.

Acorn has slightly different instruction then AcornSix and Hickory. The only difference is that you do not have to remove the BBG when updating an AcornSix or Hickory, only the Acorn requires the BBG to be removed from the Acorn.

Before you begin. Don't be quick to assume the BBG needs to be debricked.

If there is no power LED or heartbeat LED on the Beagle Bone Green(BBG) before debricking...

STOP! and do some trouble shooting procedures first:

1. Disconnect the Ethernet cable from BBG
2. Unplug ALL connections to the CNC control board except for the logic power connector. (If something is wired wrong it could be "dragging" down the BBG" so, an easy test is to go back to "bench test mode" with no connections except for the logic power).
3. Once all connections have been removed, power up the CNC control board and see check for a heartbeat on the BBG.

If heartbeat returns, then power it down and plug the Ethernet cable back into BBG and retest. If heartbeat is still present, start CNC12 to see if it comes up with communication established and run the communications stress test \ncfiles\stressTest.cnc

Note: communication errors are not firmware/debricker related see

<https://centroidcncforum.com/viewtopic.php?f=61&t=1451> for more information on solving communication errors.

If heartbeat DOES NOT come up with everything disconnected from Acorn, but the power led on Acorn does, then proceed to the debricking procedure.

If the BBG has been damage by incorrect voltage applied to it, then you may order a Beagle Bone Green from a supplier of your choice, and then perform the debricking procedure to load the Centroid firmware onto the new Beaglebone Green to prepare it for use with the CNC control board.

If the BBG heartbeat comes on and then goes off as the PC boots, disconnecting the Ethernet cable may help diagnose this.

Lastly, if no heartbeat at all pull BBG off the CNC control board and power it up via the mini USB port on BBG (as if you were going to debrick it). Does the BBG boot up and heartbeat LED come back? If so, could be an issue with the CNC control board or connections to it.

Centroid CNC controller Beagle Bone Green (BBG) Firmware SD card preparation instructions.

Micro SD Card Firmware preparation requirements:

- Windows 10/11 PC
- A Micro SD or Micro SD HC card (1GB to 32 GB capacity). Do not use Micro SD XC (over 32GB capacity).
- HP USB Disk Storage Format Tool v2.0.6 Portable.exe format utility (included with the Centroid debricker download)
- Centroid Firmware files (included with the Centroid debricker download)
- Micro USB cable

How to Load the Micro SD card with the Centroid CNC firmware:

1. Insert an appropriate MicroSD card "Use a MicroSD or MicroSD HC card (1GB to 32 GB capacity) into the PC. Do not use Micro SD XC (over 32GB capacity)."
2. If using a used SD card, remove any files/data from the SD card to another drive
3. Using a Windows PC, Run the HP USB Disk Storage Format Tool and ensure that the correct drive letter is selected for the SD card. (if the wrong drive letter is selected you WILL LOSE DATA on that drive).
4. Format the SD card with the HP USB Disk Storage Format Tool, ensure FAT32 is selected and all the check boxes that are not checked.
5. Once the SD card is finished formatting, Use Windows to copy and paste the matching the corresponding firmware files MLO and APP from the Centroid firmware folder onto the SD card. The MLO and APP files should be the only files present on the SD card when finished.

Be sure to use the Acorn MLO and APP files with a BBG for use with Acorn.

Be sure to use the AcornSix MLO and APP files with a BBG for use with AcornSix.

Be sure to use the Hickory MLO and APP files with a BBG for use with Hickory.

6. The SD card can now be ejected from Windows and is ready for flashing the CNC firmware onto the BBG.

ACORN Installation of the Centroid CNC firmware on the BBG:

1. Disconnect Ethernet cable and Remove BBG from the CNC control board without bending any pins use the corners to lift and rock the BBG up off the control board, place the BBG on a wood table top. (do not use metal or plastic tables)
2. Insert the prepared SD card into SD slot on the BBG.
3. On the BBG Firmly hold down USER button while inserting a microusb cable into the microusb connector to power the BBG. (Note: the microusb cable is connected to a powered USB connector on the other end, such as a USB connector on a PC)
4. Verify all 4 LEDs on board light up sequentially. (Should take 2-5 seconds) Wait until all 4 tiny LED's come on, then release the USER button.
5. Wait a couple seconds then remove power (unplug the microusb cable from the BBG).
Remove SD card from slot.
BBG should now have firmware flashed and is ready to place back on the CNC control board.
6. Install the BBG back onto the CNC control board, ensure that the pins are aligned correctly and not offset.
7. Power up the CNC control board and wait for the BBG Heartbeat light (once-a-second flashing blue led). The Heartbeat indicates that the BBG has successfully been debricked.
8. Power down, connect the CNCPC to control board shielded Ethernet cable, power up wait for CNC control board to boot and start CNC12 from the CNCPC.

During this first boot, CNC12 will update the firmware on the BBG to match the CNC12 version automatically. Do not power off the CNC control board during CNC12 updating of the firmware!

Please use the latest CNC12 software on the CNCPC. The latest CNC12 software download is here.

https://www.centroidcnc.com/centroid_diy/centroid_cnc_software_downloads.html

Resources

- Step by step Acorn Debrick Video.

<https://youtu.be/x7Wk6ocPfwY>

- Acorn Debricker CNC tech support forum discussion thread.

<https://centroidcncforum.com/viewtopic.php?f=63&t=2406>

AcornSix and Hickory BBG Firmware Installation

Note: No need to remove the BBG! from an AcornSix or a Hickory.

See the Hickory/ AcornSix Video directions.

<https://youtu.be/gZEU2SXhGUM?si=nDJPJLnp3YKvGV7s>

1. Disconnect Power from the AcornSix/Hickory.
2. Install boot Jumper and Insert the prepared SD card into SD slot on the BBG.
3. Power up the AcornSix/Hickory
4. Verify all 4 LEDs on board light up sequentially. (Should take 2-5 seconds) Wait until all 4 tiny LED's come on, then release the USER button.
5. Wait a couple seconds then remove power (unplug the microusb cable from the BBG).
Remove SD card from slot, remove the boot jumper

BBG should now have firmware flashed and is ready for service.

7. Power up the CNC control board and wait for the BBG Heartbeat light (once-a-second flashing blue led). The Heartbeat indicates that the BBG has successfully booted.

Note: During this first boot, CNC12 will update the CNC12 side of the firmware on the BBG to match the CNC12 version automatically. Do not power off the CNC control board during CNC12 updating of the firmware!

Please use the latest CNC12 software on the CNCPC. The latest CNC12 software download is here.

https://www.centroidcnc.com/centroid_diy/centroid_cnc_software_downloads.html