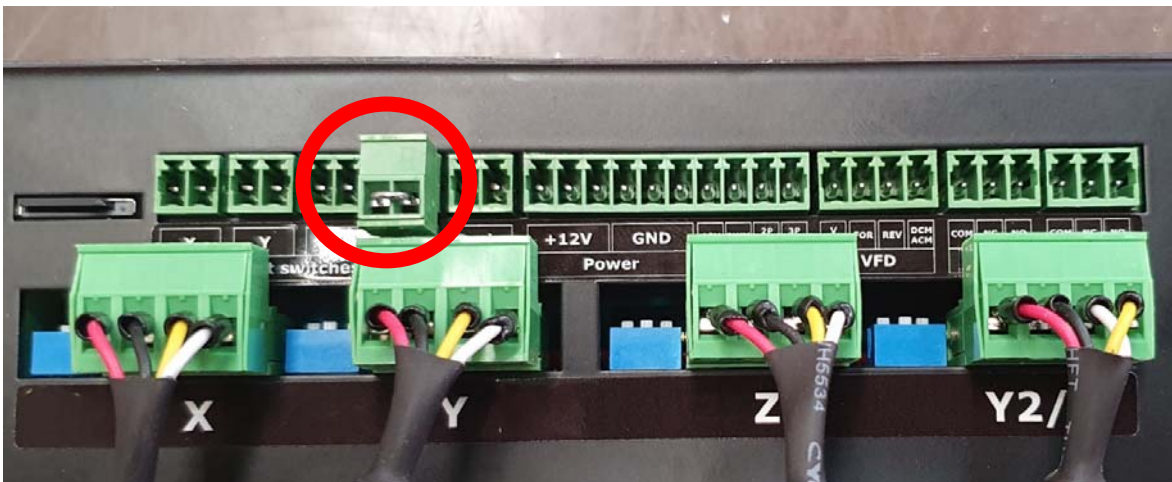# Nighthawk CNC Controller

Dual Y Limit Switch Upgrade

The Dual Y Limit Switch Upgrade will allow your machine to automatically square the Y axis every time it homes. This guide is for one of our Nighthawk CNC controllers and will work with both the fully assembled controller or the standalone Nighthawk control card.

You will need to open the Nighthawk case and move a wire as well as change some settings in the CNC3D Commander software to enable Dual Y Homing.

For this upgrade you will need:

**Small Phillips Head Screwdriver**

If your Nighthawk Controller has a green connector with a piece of wire in the A Limit pin on the front (See Photo for reference), you will not need to open your case as the controller is already wired correctly, skip to the programming section on page 10

Opening the Nighthawk Controller and relocating control wires

Step 1: Remove your Nighthawk Controller from your machine and unplug all green connectors, USB cable, MicroSD card and power cable from the Nighthawk. You will not be able to open the case if there is anything plugged into the controller. You can leave the antenna attached.
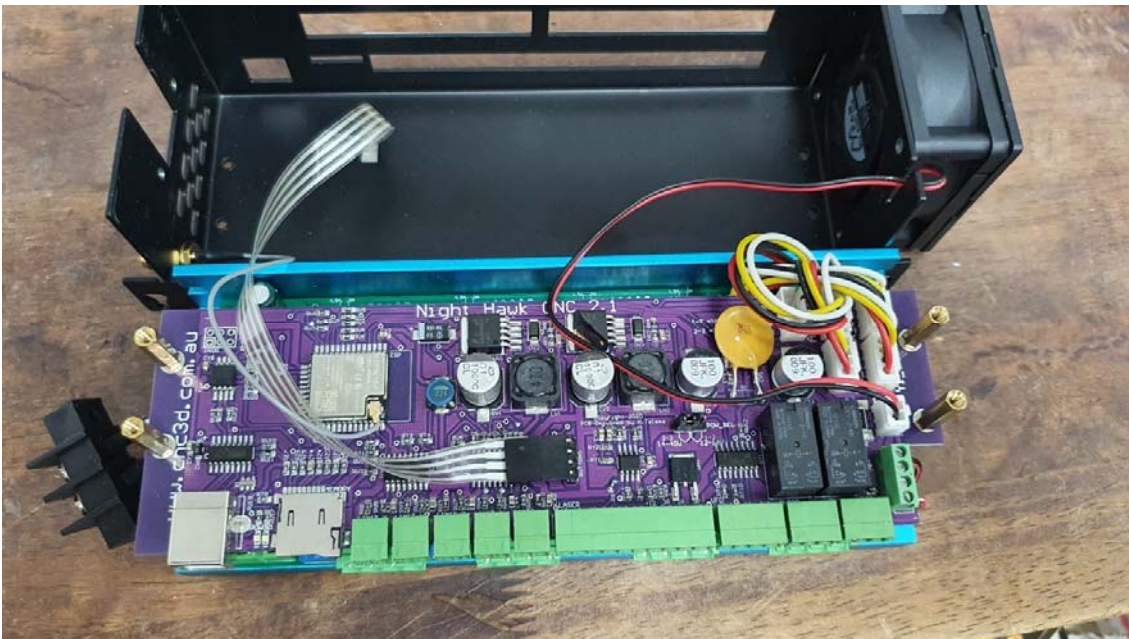
**Step 2: Remove the 4 screws holding the case together.**
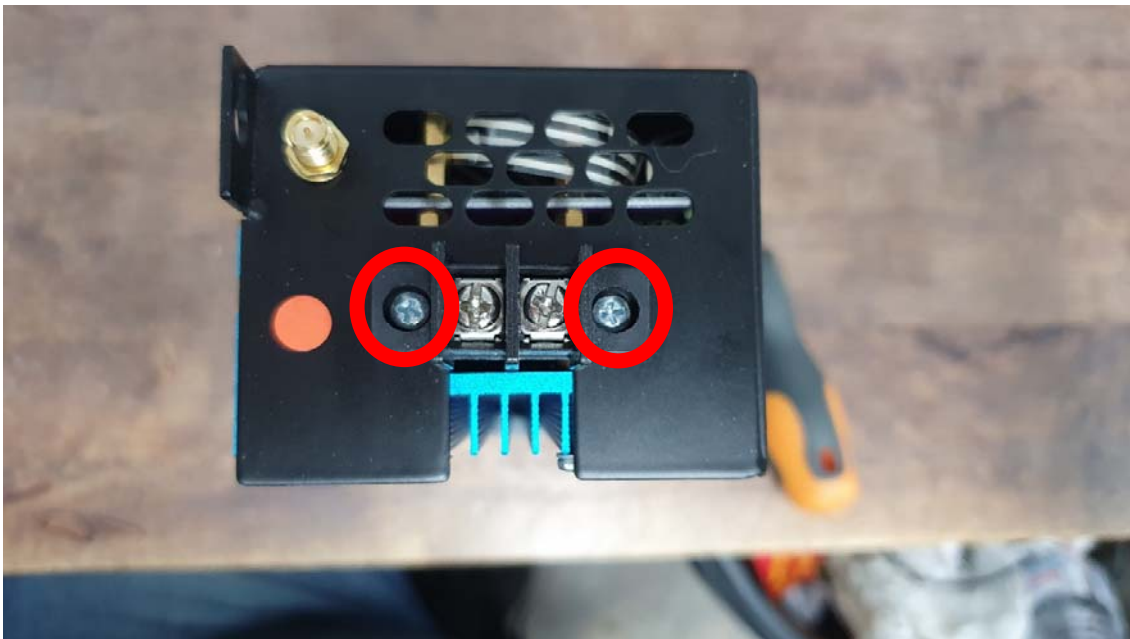
**Step 4: Remove fan cover and loosen (don't remove) the 4 screws holding the fan to the case**

Step 5: Gently slide open the case, be very careful as there are short wires and ribbon cables inside the case that will be damaged if pulled on.

Step 6: Unplug the white connector from the Y2 Out plug and move it to the A Out plug. The plug will only go in one way so make sure it is in firmly but do not put too much force on it, you may be trying to put it in backwards.
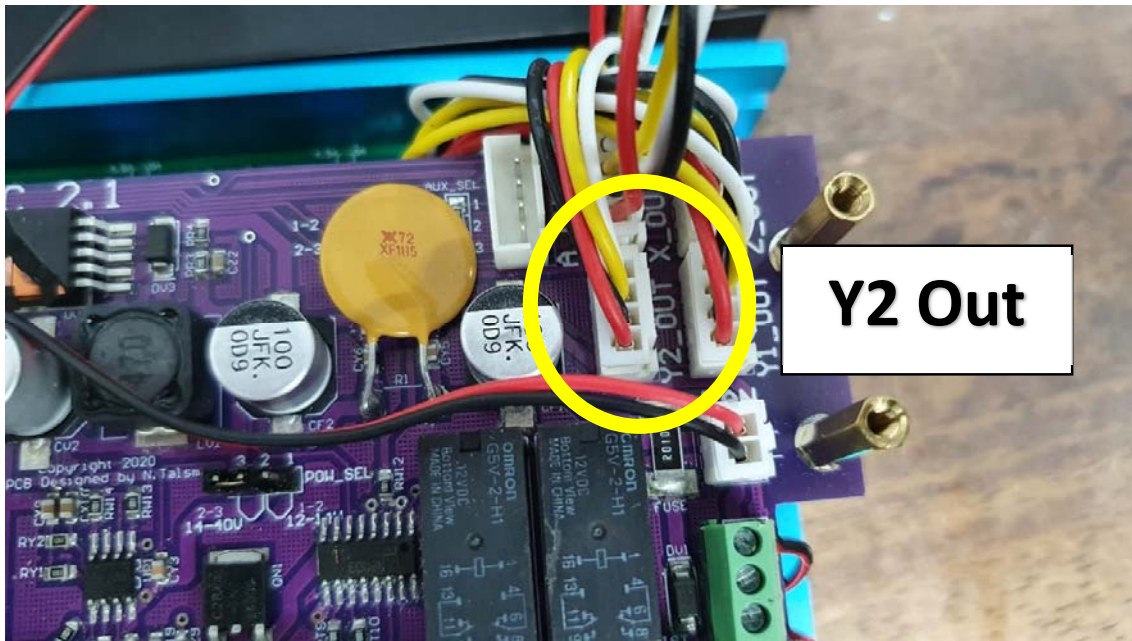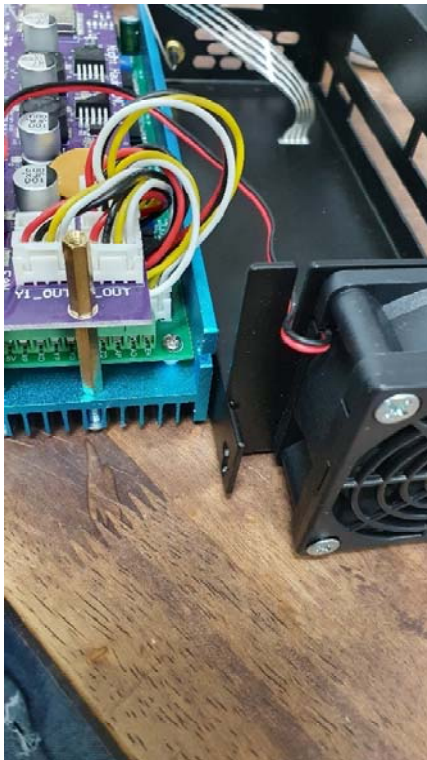

Before
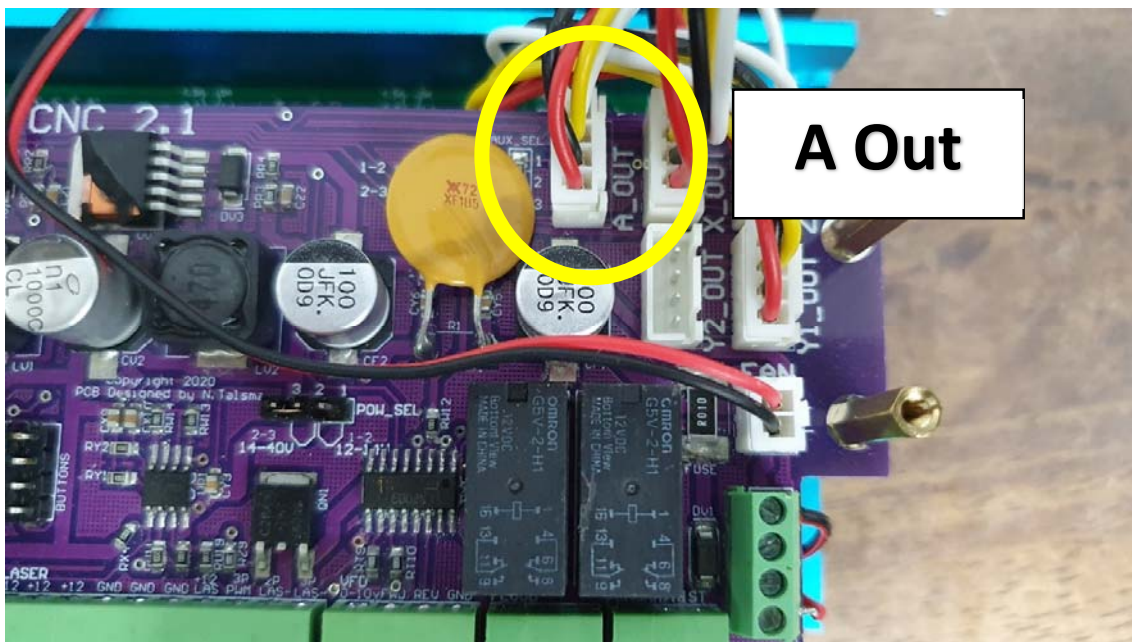
After

Step 7: Reverse steps to close the case. Pay close attention to the red and black fan cable and the coloured motor cables as they can easily get pinched in the case.

The fan cable will thread through the slot on the back of the steel case.

Ensure the red wire on the power connector is closest to the antenna connector before inserting the screws.

Step 8: Re-attach your Nighthawk Controller to your machine, plug in all the green plugs, insert the MicroSD card and hook up the power leads, red to the side with the red dot and black to the other.

Nighthawk CNC Controller Dual Y Limit Upgrade – Revised 16/08/2022
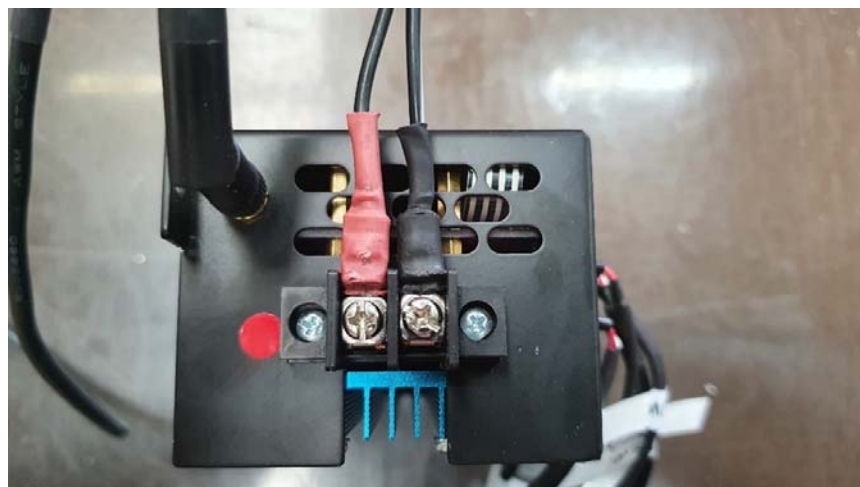
Installing the Dual – Y Firmware and enabling in Commander

Once your controller is reassembled and powered up you will not be able to home the machine until you have installed your second limit switch on the right side of the machine and plugged it into the A limit pin on the front of the Nighthawk Controller and made the required software changes.

Trying to home the machine at this point will result in a crash!

Step 1: Visit the Nighthawk Support page on our website at cnc3d.com.au/nhc and look for the big green bubble labelled <u>Nighthawk FW Tool</u> and click the green bubble to download it.

Step 2: After downloading right click on the ZIP file and go to "Properties" then tick the "unblock" box and click on OK.
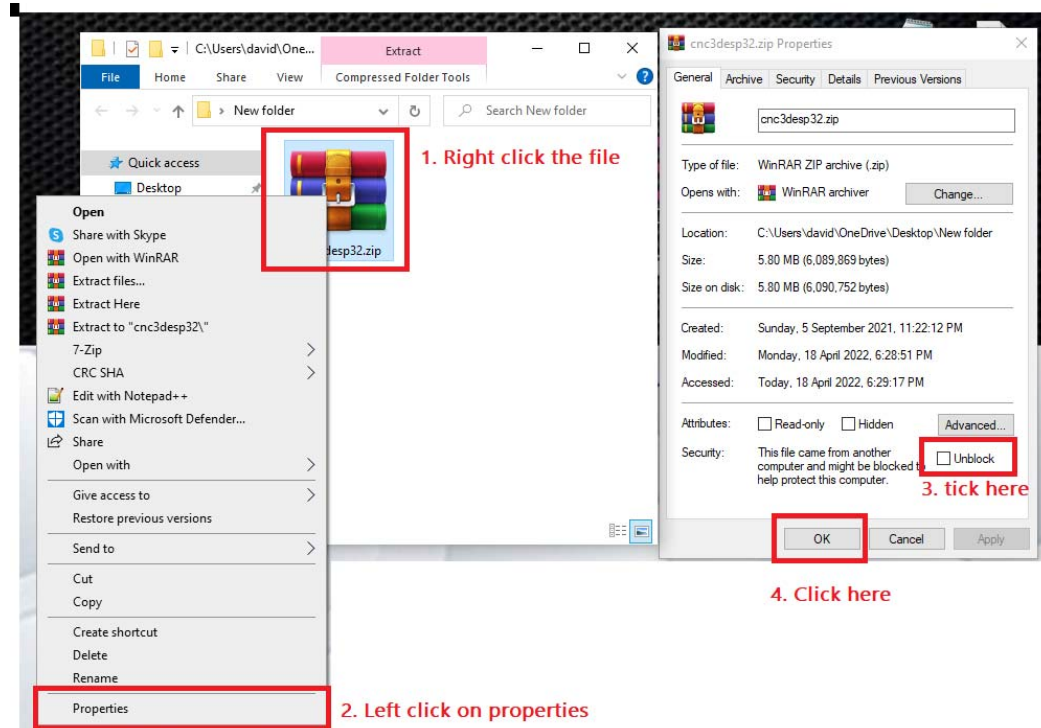
Right click on the ZIP file and go to "Extract Here" or "Extract files". Choose a location to extract to.

Once extracted, navigate to the folder and launch the "CNC3D ESP32 tool.exe" file

Nighthawk CNC Controller Dual Y Limit Upgrade – Revised 16/08/2022
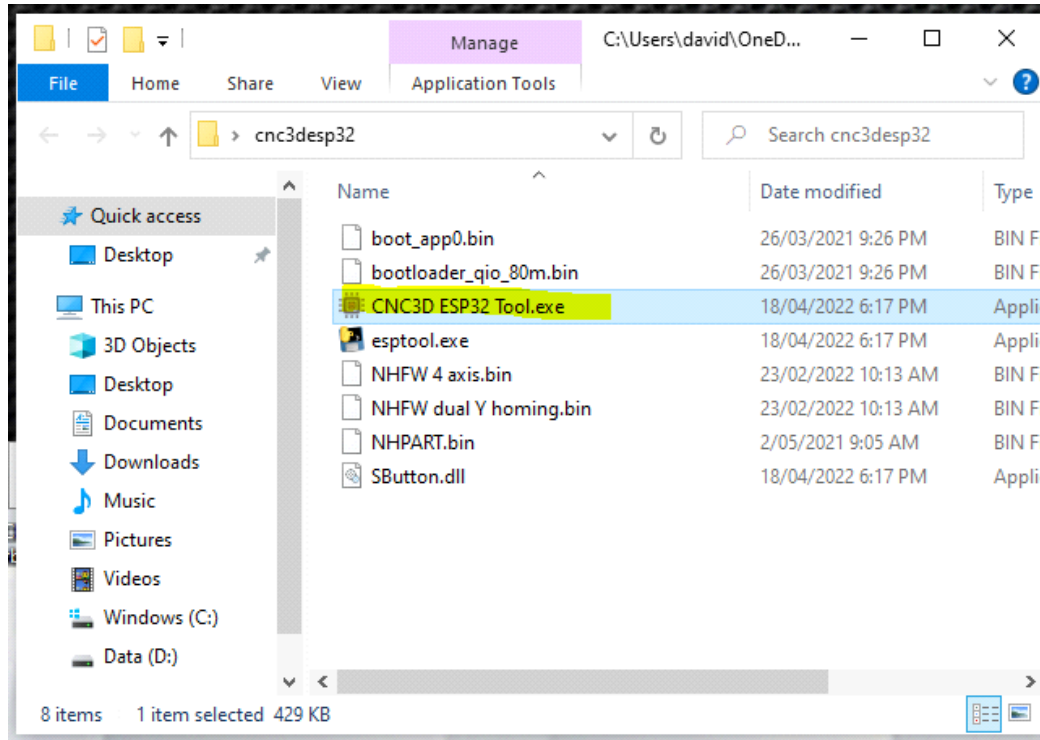
Connect your controller via USB to your PC. Click "Refresh" to refresh the COM list. Use the "…" button to select the firmware file. You will need the **NHFW *dual Y* homing.bin** file. Choose the COM port the controller is on then when ready, click Start and wait for it to finish. Once the upload is complete you can close the program and powercycle the Nighthawk by turning it off for a few seconds then powering it back on.
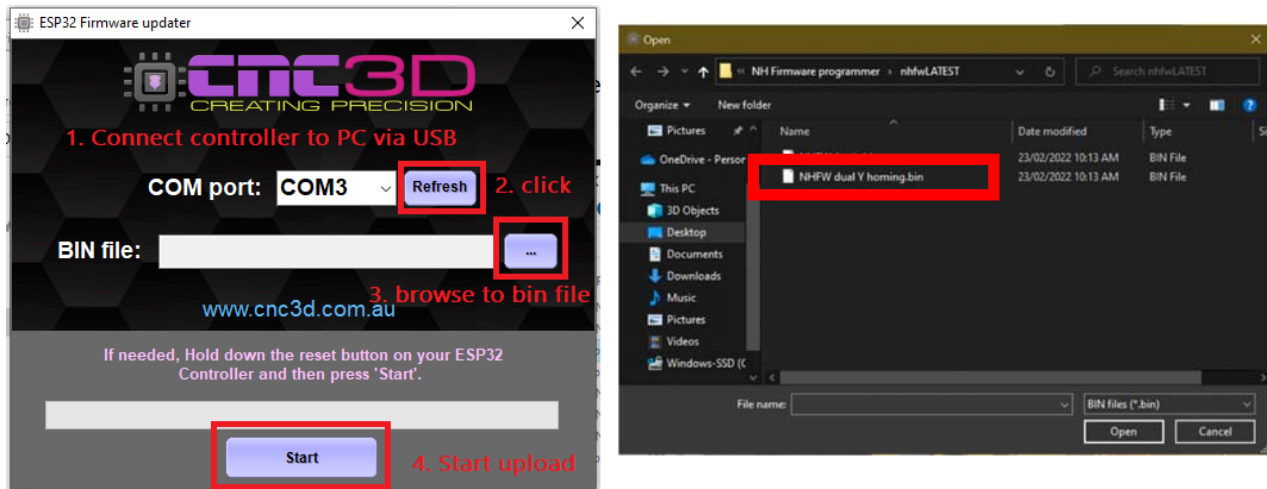

This should correctly flash your firmware. If it doesn't the following may be stopping it:

- Another program is already using that COM. Please close any other senders or programs like Commander or Lightburn etc.

- You may have the wrong COM selected. Try another port.

Step 3: Open CNC3D Commander and connect to your Nighthawk Controller. You will have a flashing Alarm next to the Emergency Stop button because the machine isn't homed. Click on the Emergency Stop button, then on the Unlock button to clear the alarm.

Once the alarm is cleared, navigate to the Peripherals tab and look for the "Homing Order section in the middle of the page.
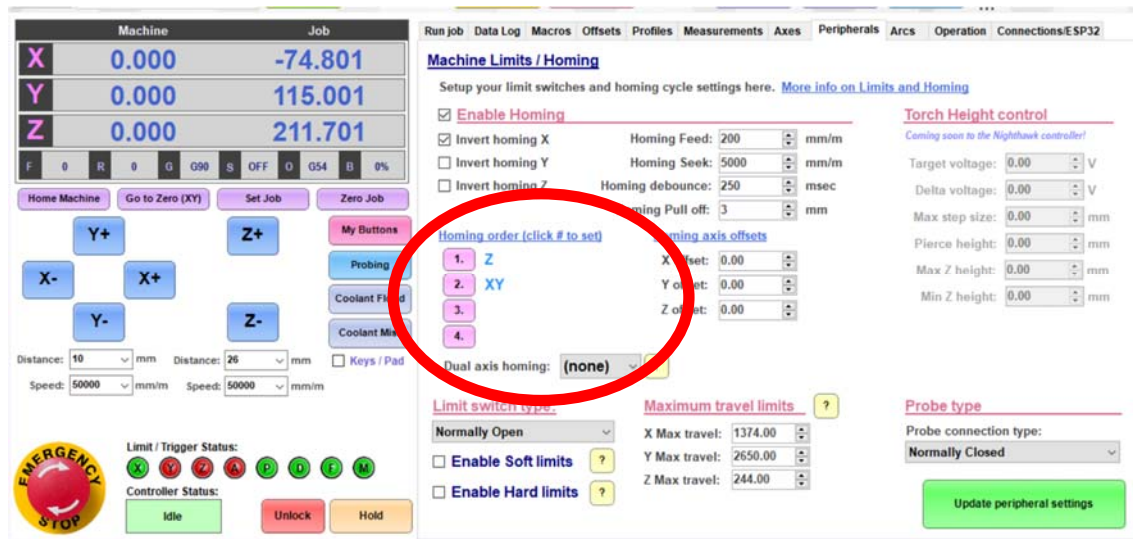
In order to enable the Dual Y Homing, you will need to change the homing order so that each axis homes by itself, whereas up till now the X and Y axis have been homing at the same time. To change the order, click on the pink number and select the axis you want to home in that position. The order should be 1: Z, 2: X, 3: Y.
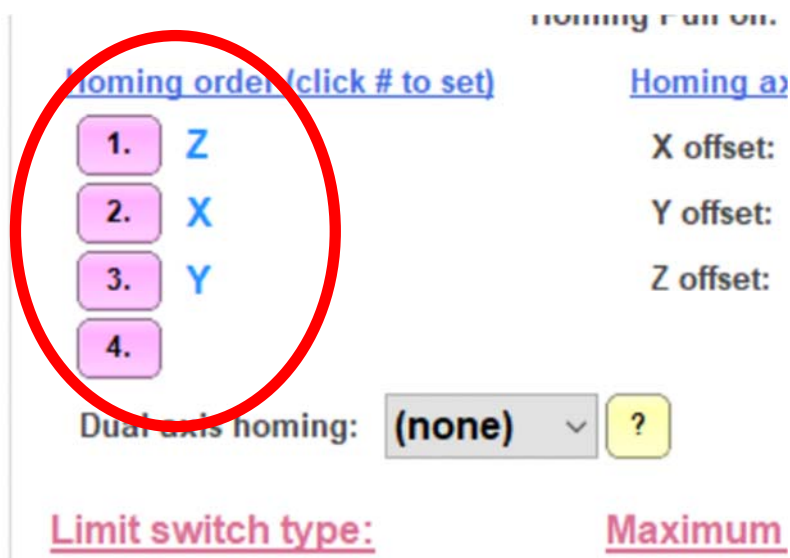
The next step is to use the drop down menu next to "Dual axis homing" and select Y
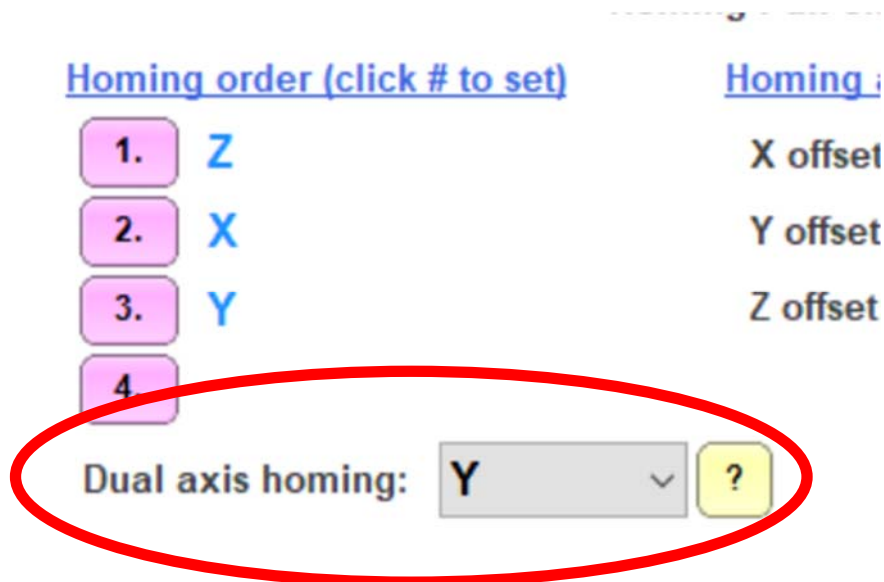
The last step is to click the big green "Update Peripheral Settings" button in the bottom right of Commander and wait for the popup confirmation.

When the confirmation pops up, click OK then you will need to turn the Nighthawk off, wait a few seconds then turn it back on. You will need to disconnect and reconnect in the Commander window.

You should now be able to home the machine and if everything is set up correctly it will touch off both sides of the machine and be square!

Be sure to hit the Emergency Stop if the machine does not behave in the way you expect or does not stop on the limit switches!

If you run into any difficulties with this guide or would like some more information, reach out to us at CNC3D.com.au!