

Next Wave[®]
Automation



WITH



USER'S MANUAL

February 2020

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are registered trademarks of Next Wave Automation.
Software copyright by Next Wave Automation. All rights reserved.
All other trademarks are the property of their respective owners.
Information in this manual is subject to change without notice.

**This manual is periodically updated.
New versions (when available) can be downloaded
from Help menu in the software.**



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To Our Customers

Thank you for purchasing **Ready2Control/Virtual Zero Unlimited software**. **Ready2Control** includes a broad set of machine control tools useful in operating your Next Wave CNC tool from your computer. The powerful **Virtual Zero Unlimited** surface mapping application enables you to apply your CNC designs to a wide variety of curved and uneven surfaces.

Please read this manual carefully. It provides setup and operational information for your **Ready2Control/Virtual Zero Unlimited** software. It has been written with the assumption that the user is experienced with the basic operation of a computer as well as the technical knowledge required to safely operate power tools including your Next Wave Automation CNC machine. Refer to the owner's manual for your specific CNC product for information on its operation.

Warranty

Next Wave Automation (NWA) warrants Ready2Control to perform as intended and will provide customer support to the original purchaser when purchased from an authorized retail distributor. Warranty only applies to the current version or the support needed to update a past version. The cost of the software upgrade (if any) is not covered by the warranty.

System Requirements

Ready2Control and Virtual Zero Unlimited software can be used on any PC computer that is running Windows 10 and has a USB output port. The software can be used with any CNCShark or CNC Piranha that has a control box equipped to use a Next Wave Pendant. The Control box firmware may need to be updated to run the software, and that process is covered in this manual.

If your Control box doesn't use a Pendant, please call our Sales team at (419) 318-4822 to discuss your upgrade options.

Next Wave Automation, LLC,

info@nextwaveautomation.com

600 W. Boundary St., Perrysburg, Ohio 43551 USA

Main Office Phone (419) 318-4822

For Technical Support

with Ready2Control/Virtual Zero software
or any of your Next Wave Automation products
please visit our Support webpage at

www.nextwaveautomation.com/support

or email our support team at support@nextwaveautomation.com

Include your product model number, date of purchase,, and any other pertinent information that may be helpful such as .tap files, .crv files, screen captures, and photos of your setup or problem.



When operating machinery always wear the appropriate ear and eye protection and follow all safety instructions per your machine's owner's manual and related equipment manuals.

The **START HERE Instructions** are divided into 5 major sections. The instructions are written in great detail and cover the steps involved in setting up your tool to use with the Ready2Control software.

IMPORTANT

- Follow the steps in order.
- Don't skip any steps unless instructed to do so.

START HERE instructions

1. Machine registration	8
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PROBLEMS?

If something doesn't seem to be working correctly, try repeating the previous step(s) a couple times. If that doesn't solve the problem, please contact our Tech Support team. They are there to help.

Email: support@nextwaveautomation.com

Phone: (419)491-4520

Available 9am – 5 pm Monday-Friday (Eastern time).

1. Register your machine

[Back to TOC](#)



1.1 Visit <https://portal.nextwaveautomation.com> to create a new User Account or open your existing account.

Username _____

Password _____

1.2 Click on the **Hardware** tab



1.3 If your machine is already showing in this list, you can SKIP to [Step 2.1 on page 13.](#)

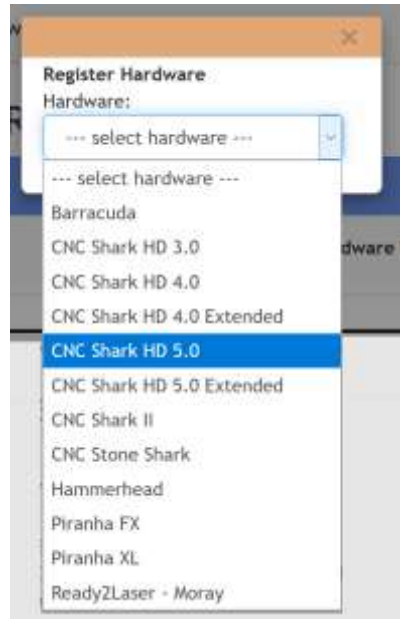
OR

1.4 If your machine is not showing in this window click on the **green button** to add your machine.

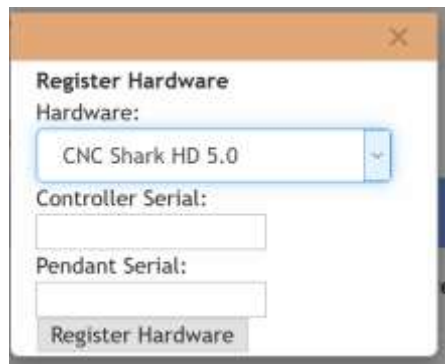
NOTE:

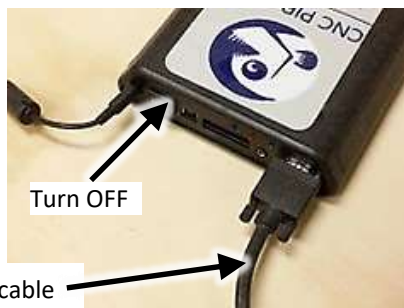
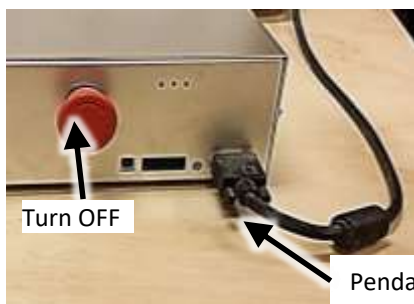
For security reasons, your web browser may cause this screen to become unresponsive after a few minutes of idleness. If that happens, log back into your account to regain access to the screen.

1.5 Select your tool from the drop down list.



1.6 This window will pop-up. Continue to step 1.7 on the next page.





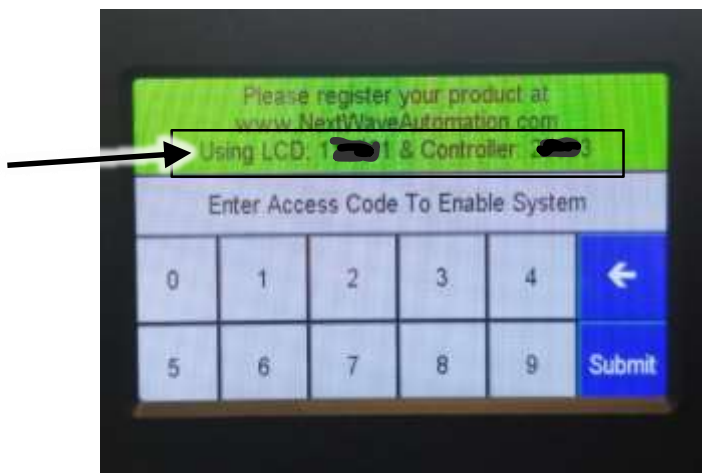
1.7 Turn off the power to the CNCShark or CNCPiranha control box and connect Pendant Cable.

- If your Pendant is already connected – you can skip to the next step.

Always turn off the power to the control box before connecting or disconnecting the Pendant or motor cables. Failure to do so can damage the tool or parts.



1.8 Turn on the power to the control box.



‘Enter Access Code’ screen

1.9 If the screen on your Pendant looks like the picture above, then record the serial numbers below and skip to [step 1.11 on page 11](#).

LCD Pendant # _____

Controller # _____

- If your pendant does not show the ‘Enter Access Code’ Screen, skip to step1.10a below.



Pendant Main Control screen

1.10a If the screen on your Pendant shows the Main Control screen then Press the **Apps** button.

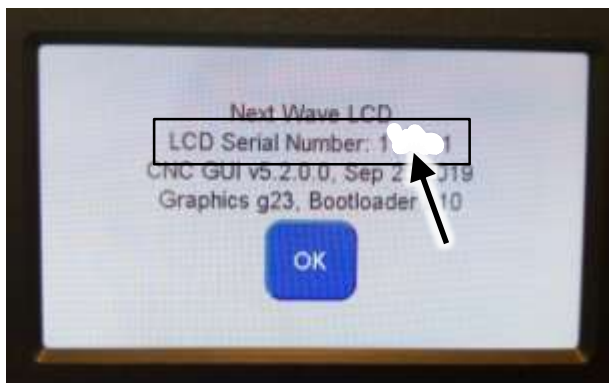
1.10b Press **About LCD** to open the LCD info screen.

1.10c Then Open the **About Controller** info screen. Record the serial numbers below.



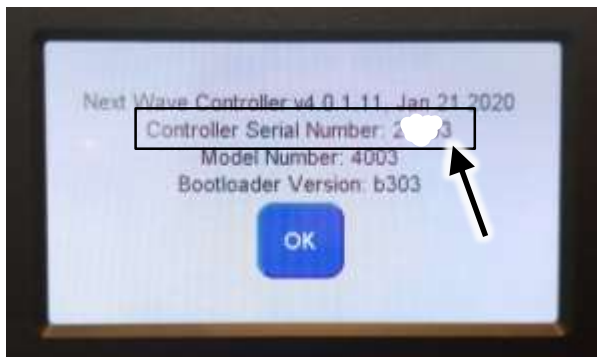
Apps screen

Record your LCD Pendant Serial number:



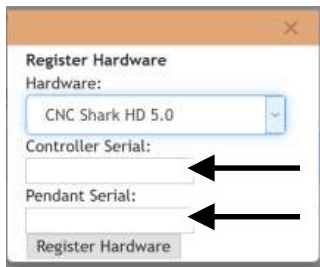
About LCD screen

Record your Controller Serial number:



About Controller screen

1.11 Using the information you gathered on pages 10 or 11, enter the **Serial numbers** for your tool in Register Hardware window. Then click **Register Hardware**.



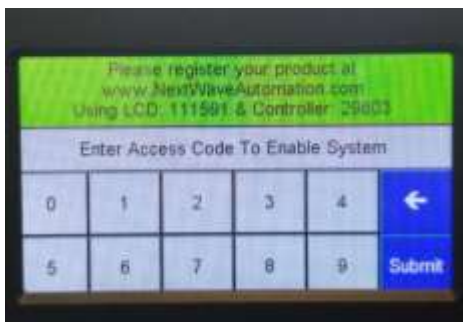
1.12 Your machine should now show in the list. The **Unlock Access Code** is also shown.



Unlock Access Code

1.13 Enter the **Access Code** in the pendant and press **Submit** to **Unlock** the pendant. Then go to step 1.14 below.

If your pendant doesn't show this screen, skip to step 1.14 below.



'Enter Access Code' screen

1.14 The Access Code unlocks the Pendant and makes the Main Control screen available (right). Machine registration is now complete.



Main Control screen

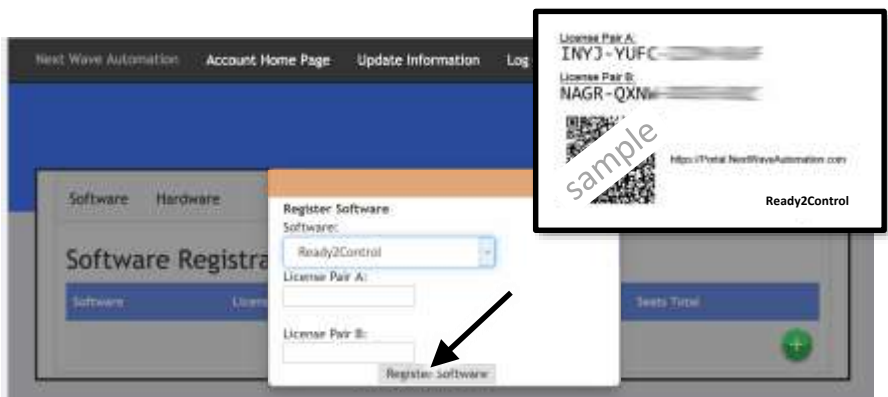
This completes the Machine Registration setup. Continue to **Sections 2 – Software Installation**



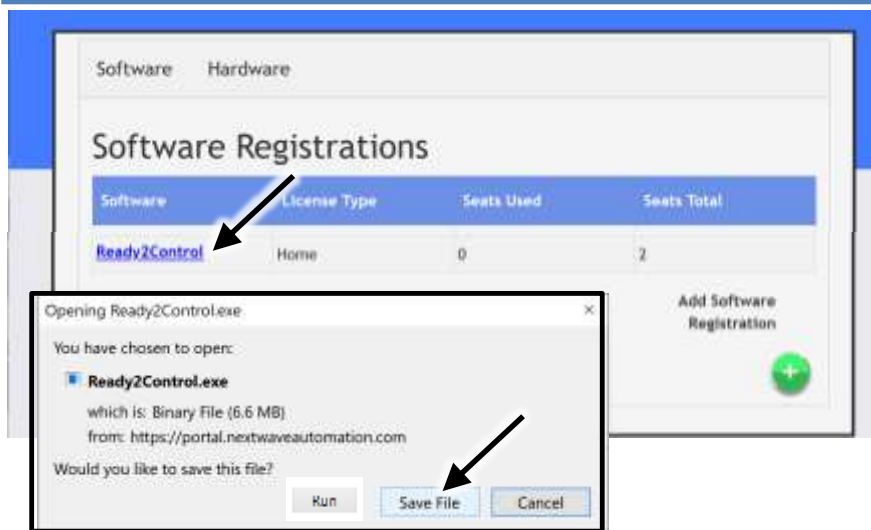
2.1 If need be, sign back into your portal account at <https://portal.nextwaveautomation.com>



2.2 Click on the **Software** tab and then the **green button** to add your software.



2.3 Select **Ready2Control** from the dropdown list. Enter the **AB License Pair** codes that you received by email, or from the **License Pair Card** that came with your tool. Then click **Register Software**.



Open/Save pop-up window

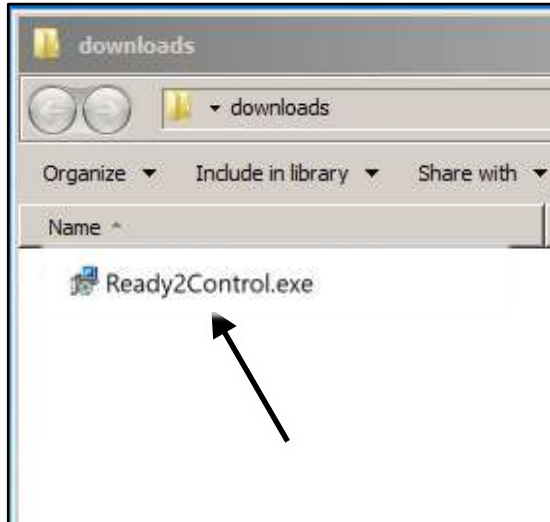
2.4 Ready2Control now shows in the list. The download pop-up will also appear. Click **Save File (See note below)**

NOTE: What happens after you press the **Save File** button will vary depending on the browser you are using. Some will automatically save the file to your Downloads folder. Some may give you the option of picking a folder. The “Open/Save” pop-up window may look different and it may also automatically disappear when you click the Save button. If the “Open/Save” pop-up window does disappear, check your Downloads folder – the file may be there.

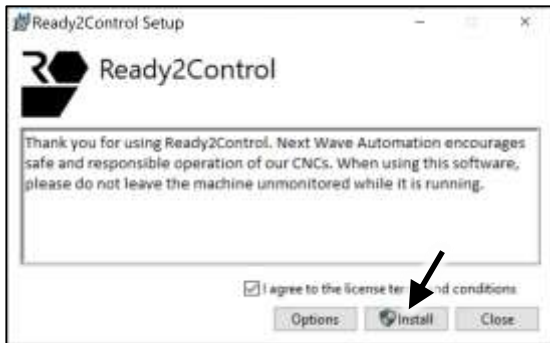
IF YOU NEED TO DOWNLOAD THE SOFTWARE AGAIN, click on the software’s name in the list. A popup window will appear with a download link.

2.5 Locate the file on your computer and double click to open the install window.

NOTE: You may need to grant permission to your computer if it does not recognize the Ready2Control program.



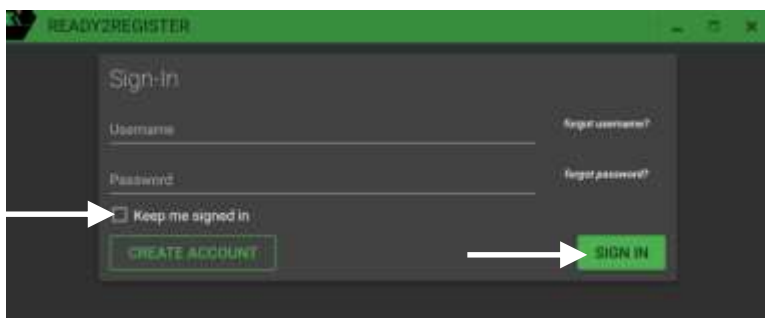
2.6 Check the **I agree** checkbox and click the **Install** button



2.7 Click **Launch** to open Ready2Control

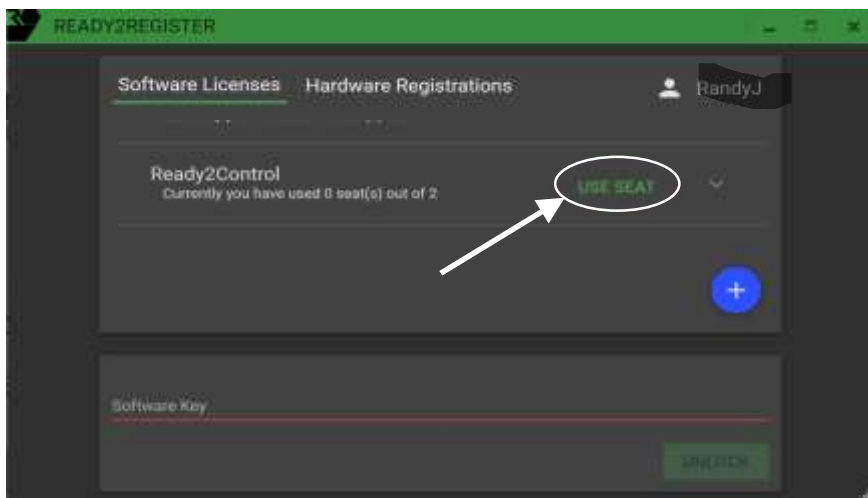


2.8 The Ready2Control logo screen will appear briefly while the registration window loads.



2.9 Sign in to Ready2Register using the same Username and Password that you used for the Portal sign-in for [Step 1.1 on page 7](#)

TIP: Check the box for **Keep me signed in**. This will help you streamline future updates and downloads.

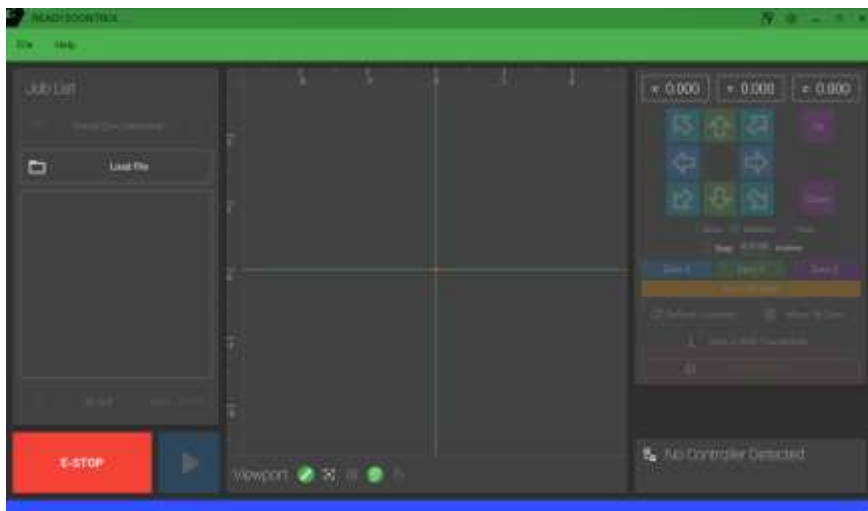
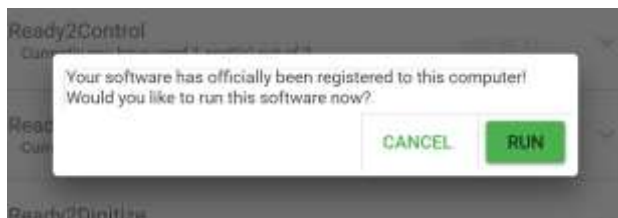


2.10 Click on USE SEAT to as assign a license to your computer.

2.15 Click Confirm

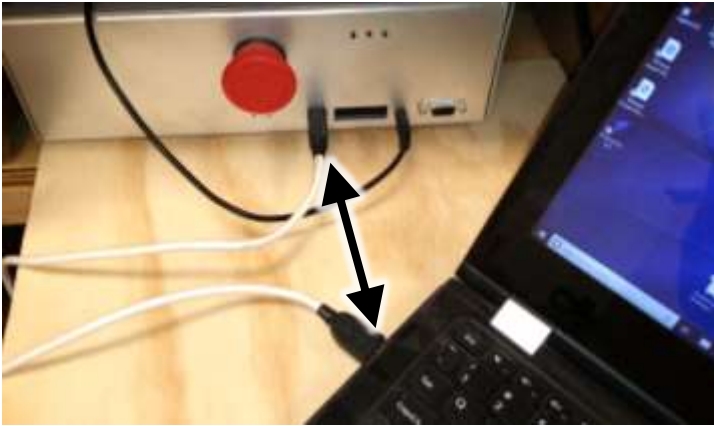


2.16 Click Run



2.17 The main Ready2Control control window opens. Nothing is active in the window because you are not yet connected to your machine. This will take place in the next step. Keep the Ready2Control program open. This completes the **Software Installation** section. Continue to **Section 3 – Connecting your CNC machine.**

3.1 Connect your CNC to your computer with an AB USB (Printer) cable.
(It's OK if the power is turned on for this step.)



CNC Shark Controller box USB cable hookup



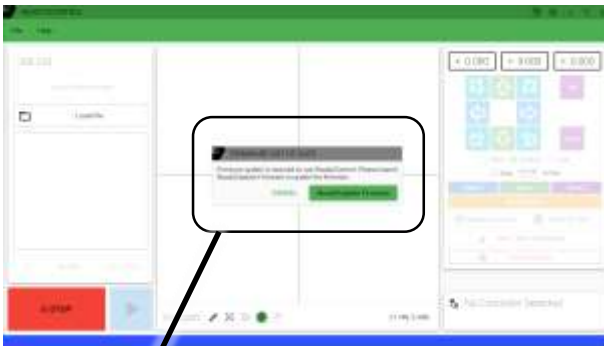
CNC Piranha Controller box USB cable hookup

This completes the **Connecting your Machine** section.
Continue to **Section 4 – Firmware Updates**

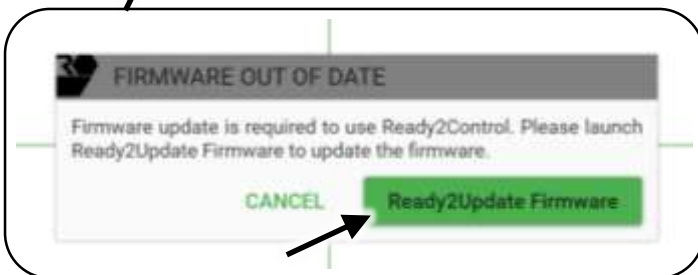
Your computer must be connected to the internet to download the firmware updates.

Your computer must be connected to your CNC machine during the firmware update process.

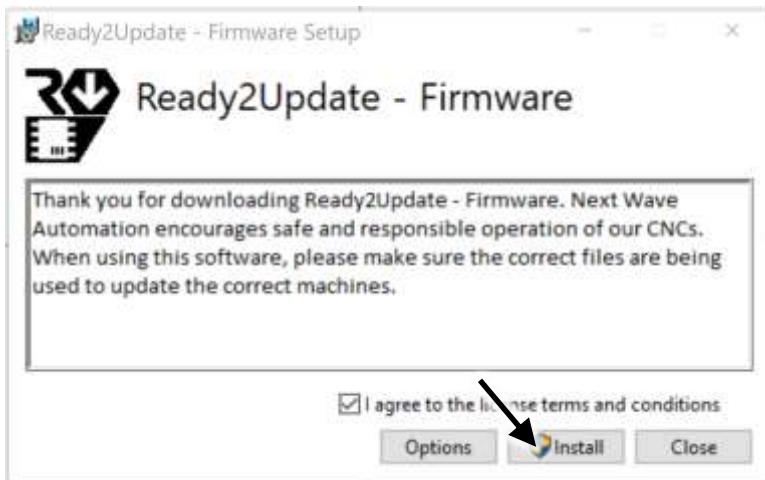
4.1 The first time you connect your CNC to Ready2Control, you will get a **Firmware Out of Date** notice. This section will step you through the process of updating the firmware for both the Pendant and the Control Box.



The picture above shows Ready2Control using a light screen theme. Switching to a light screen theme is covered on [pages 48 and 49](#), but you don't need to switch at this time.

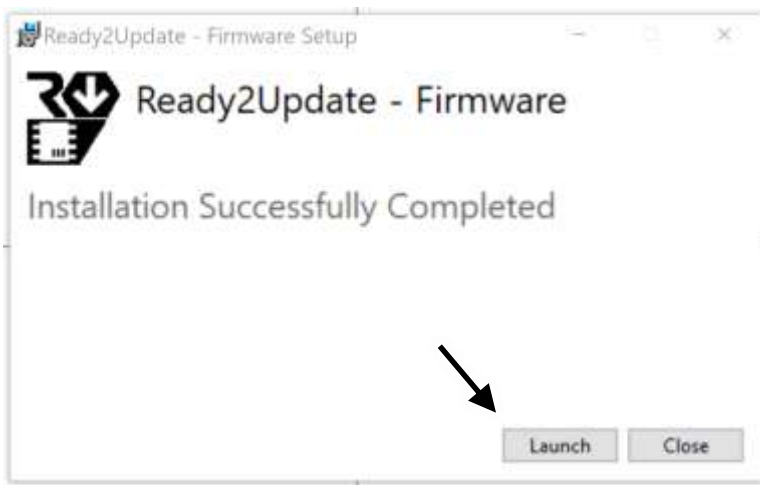


4.2 Click on the **Ready2Update Firmware** button. The Ready2Control window will close shortly after the Install window below opens.



4.3 Check the **I agree** checkbox and the **Install** button.

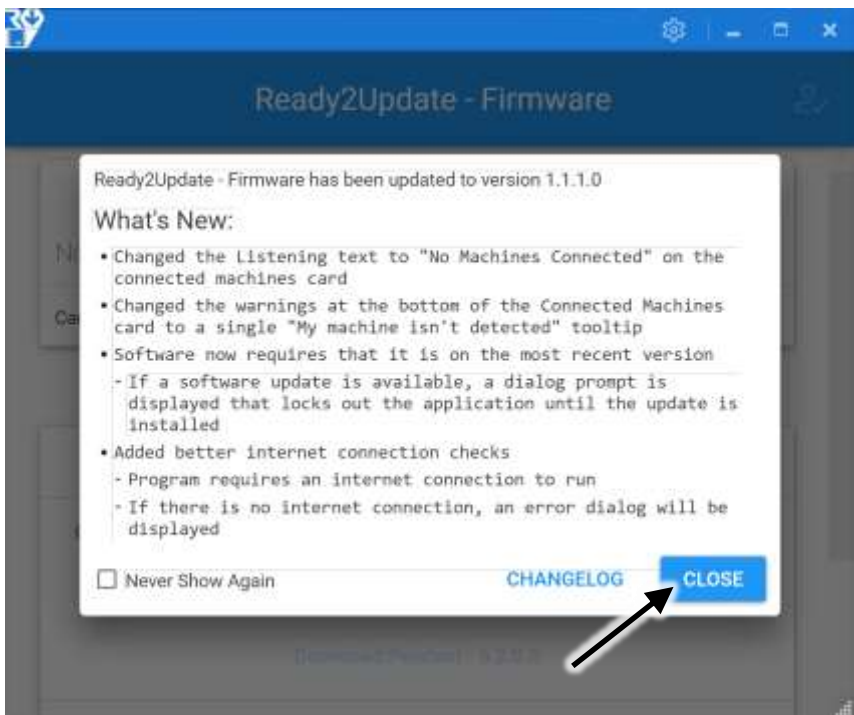
This will install a firmware updating program for the CNCShark and CNCPiranha.



4.4 Click **Launch**



4.5 The **Ready2Update Firmware** logo will briefly appear while the program loads.

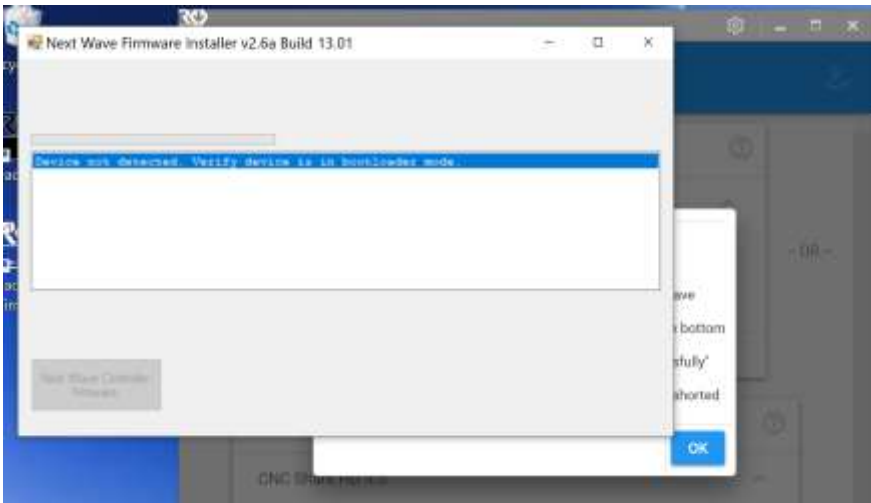


4.6 The **What's New** window may appear. Click **Close** to continue.

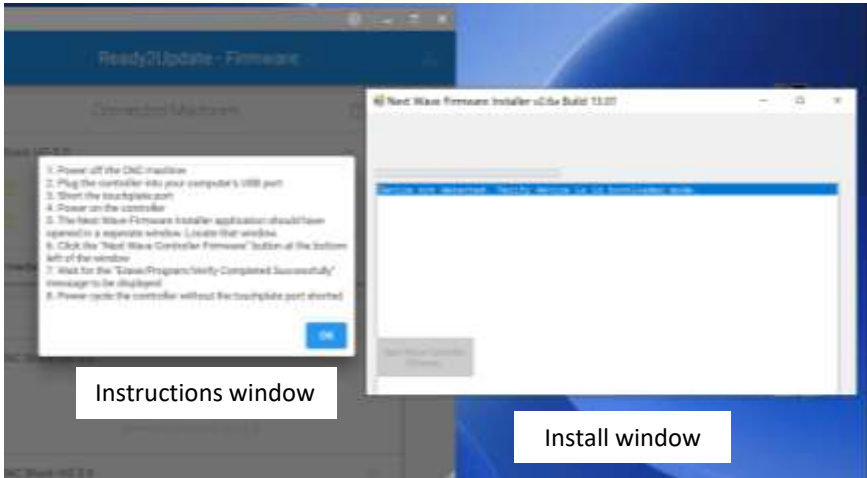


4.7 Click the **New – Download Controller** button to start the install process.

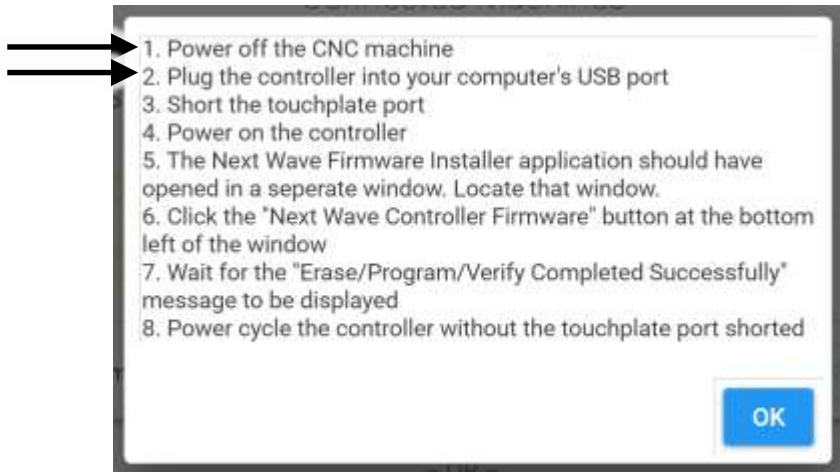
If you don't see your machine listed or the Download buttons, click on the **Can't find machine** link for help.



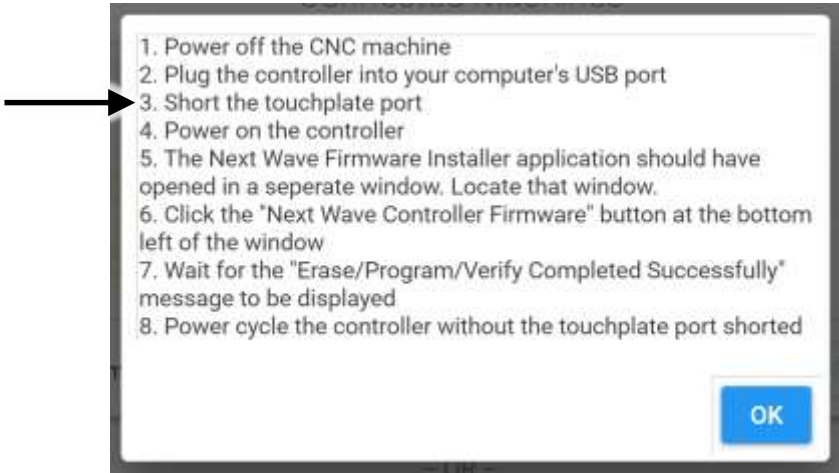
4.8 The Firmware Installer window appears. The online instruction may be hidden behind this window.



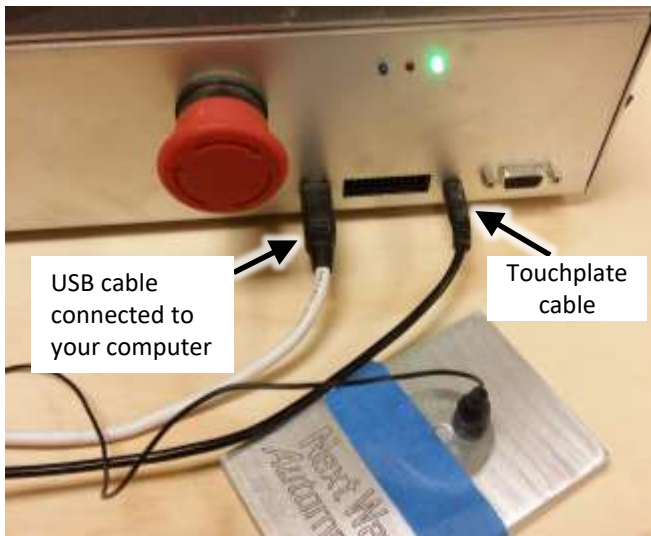
4.9 Arrange the Instructions and the Install windows so you can see both.



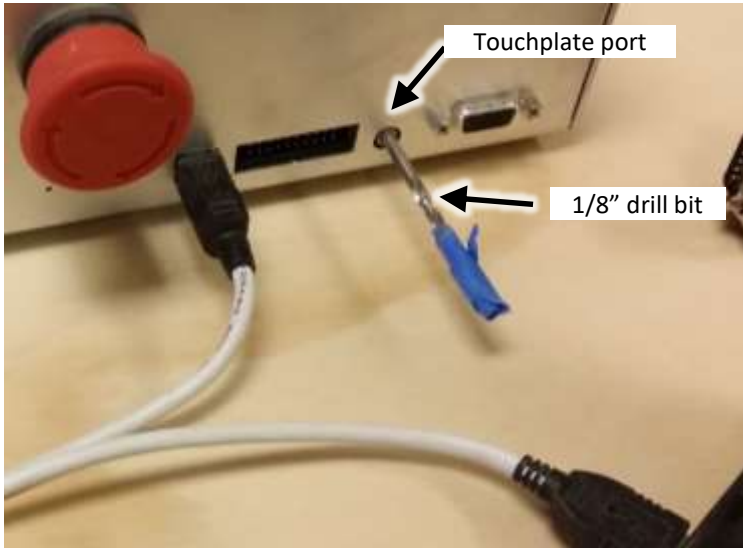
4.10 Complete (Steps 1 and 2) in the instructions. (Your controller should already be connected to your computer with a USB cable)



4.11 (Step 3) Short the touchplate port. You can **short** the touchplate port in one of the two ways shown below and on the next page. This applies to both the CNCShark controller (shown below) and the CNCPiranha controller.



Shorting the touchplate port - Option 1 – The touchplate port can be shorted by holding the touchplate magnet against the touch plate. This must be maintained for steps 4-7. Taping a steel washer to the aluminum plate makes this a little easier.

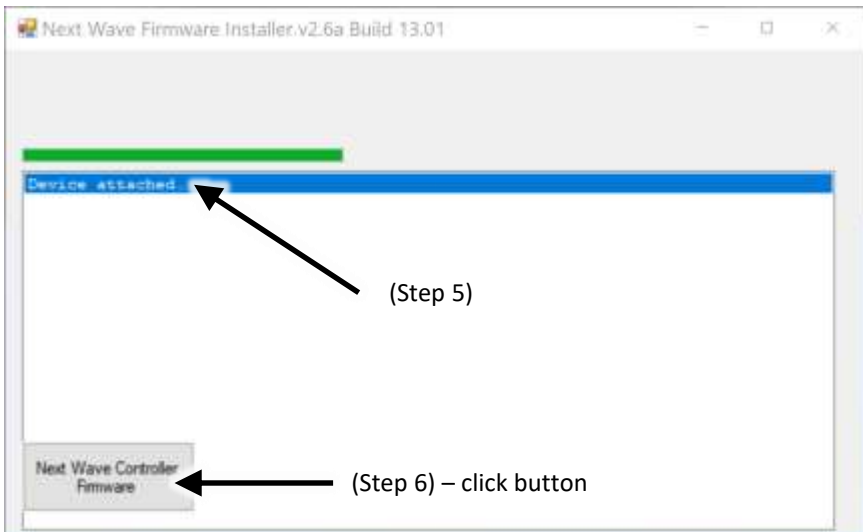
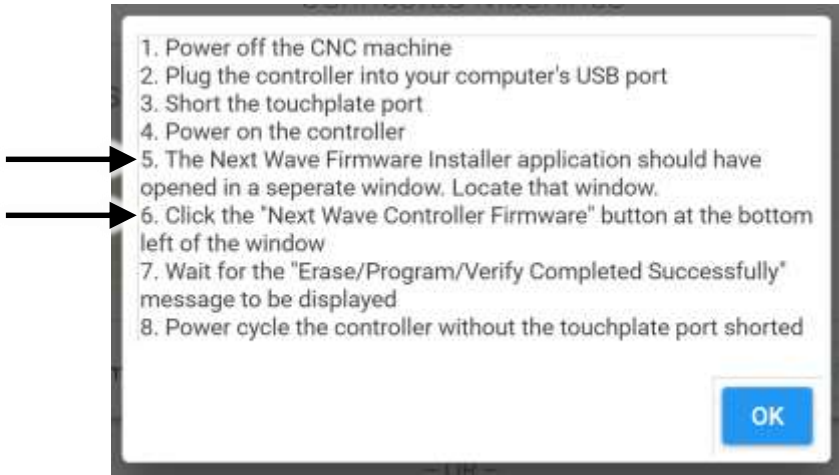


Shorting the touchplate port - Option 2 – Insert the smooth shank end of a 1/8-in. dia. drill bit into the touchplate port.

1. Power off the CNC machine
2. Plug the controller into your computer's USB port
3. Short the touchplate port
4. Power on the controller
5. The Next Wave Firmware Installer application should have opened in a separate window. Locate that window.
6. Click the "Next Wave Controller Firmware" button at the bottom left of the window
7. Wait for the "Erase/Program/Verify Completed Successfully" message to be displayed
8. Power cycle the controller without the touchplate port shorted

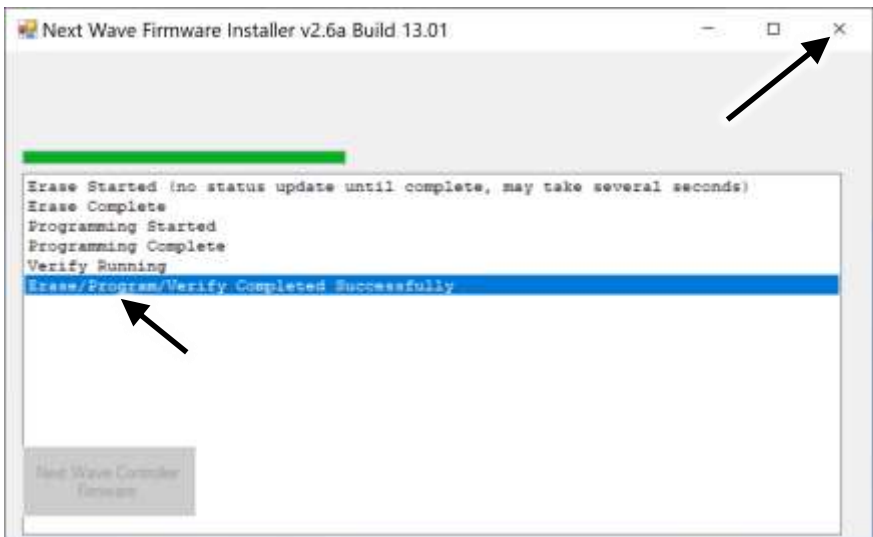
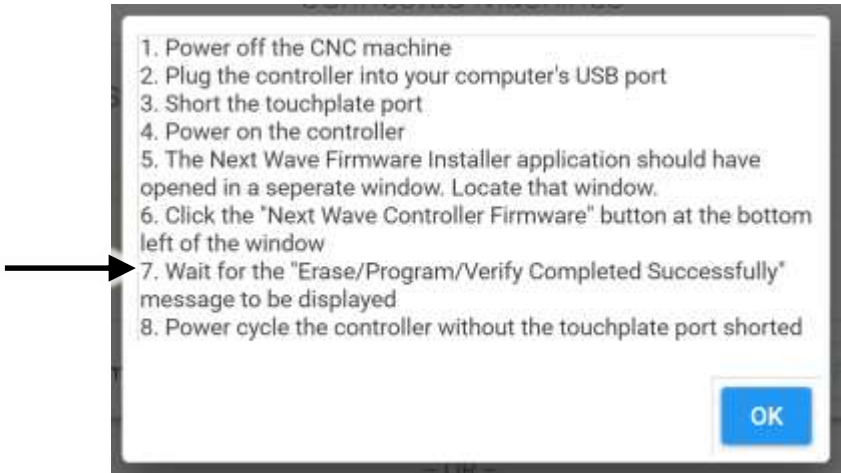
OK

4.12 (Step 4) Power on the controller.



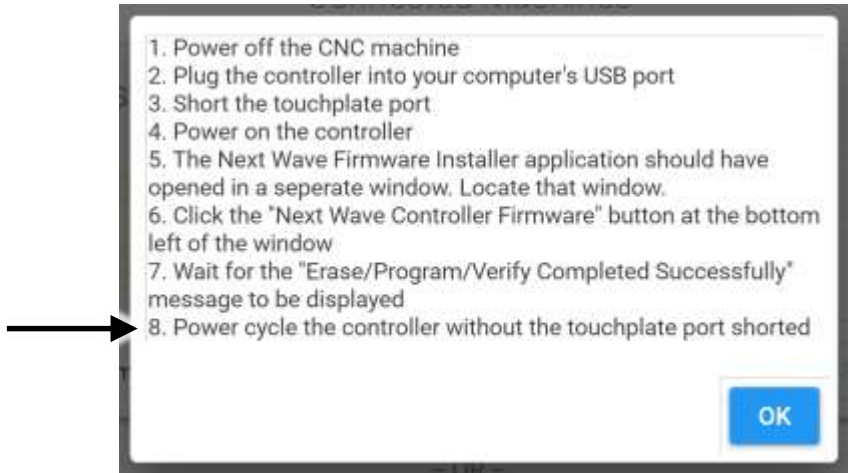
4.13 (Step 5) The Next Wave Firmware Installer window should now show **Device attached**.

4.14 (Step 6) Click **Next Wave Controller Firmware** button



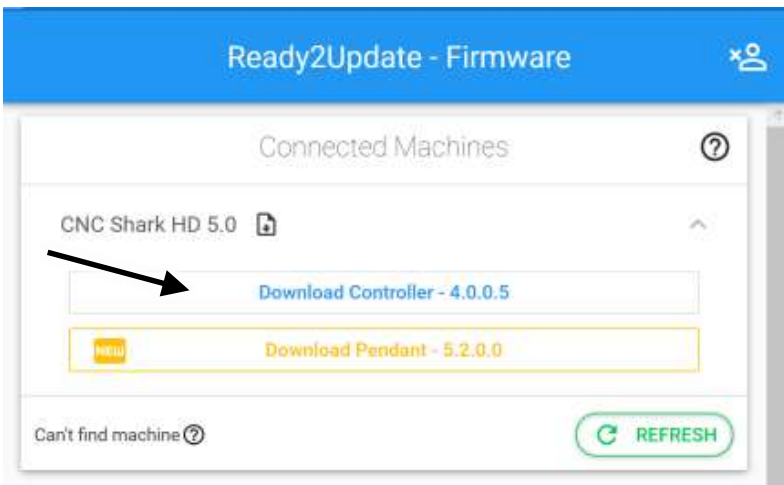
4.15 (Step 7) The firmware update process is complete when the **Erase/Program/Verify Completed Successfully** message appears.

Close the Install window by clicking on the X in the upper right corner



4.16 (Step 8) - **Power cycle the controller** by following the steps below.

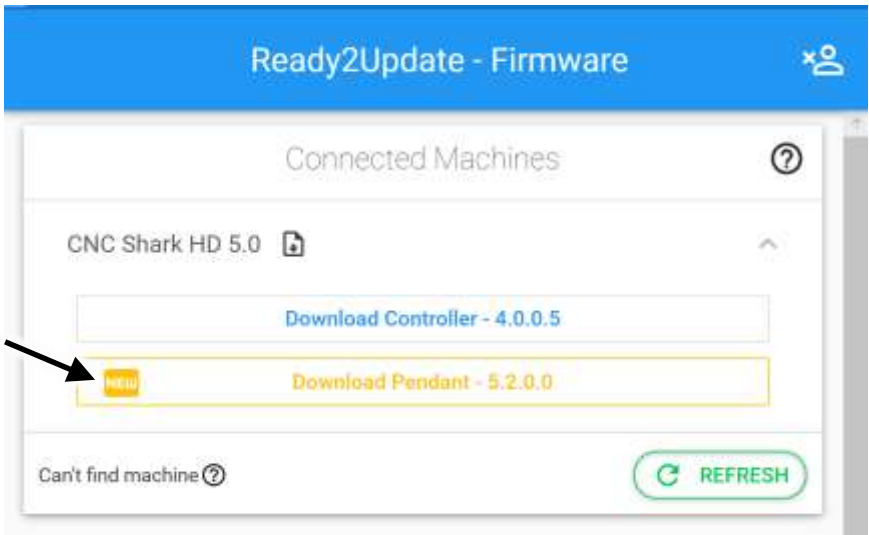
- **Turn OFF** the controller
- **Remove** the magnet from the touchplate or remove the drill bit from the touchplate port.
- **Turn ON** the controller
- Click **OK** to close the instruction window



4.17 The **Download Controller** button should now be blue, signifying that your controller is up to date.

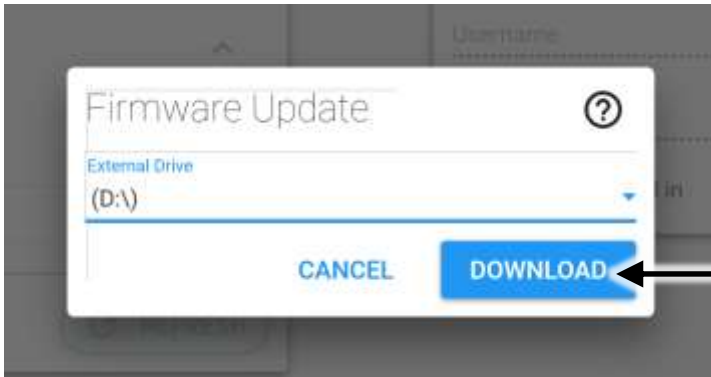


4.18 Insert a USB flash drive into your computer.

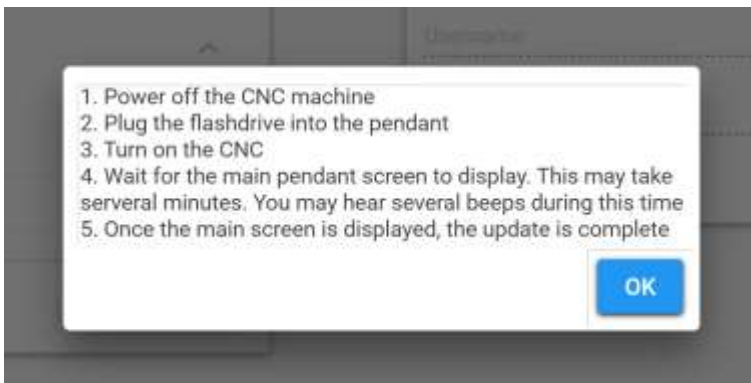


4.19 Click the **New – Download Pendant** button to start the install process.

If you don't see your machine listed or the Download buttons, click on the **Can't find machine** link for help.



4.20 The download window opens. The USB flash drive (D:\ in this case) will automatically be selected. Click **DOWNLOAD** to save update to the flash drive. The instruction window (shown below) will appear when the download is complete.



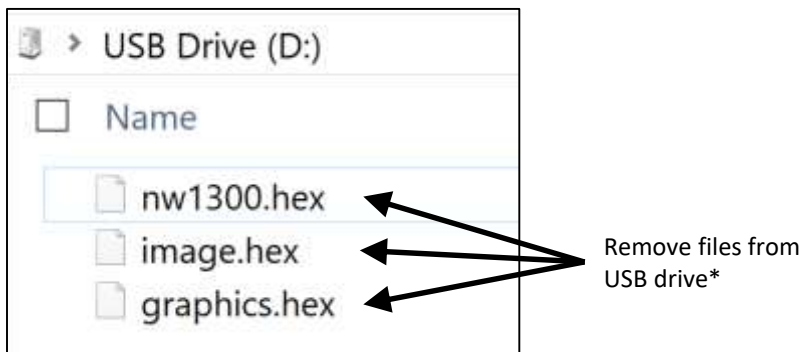
4.21 Complete Steps 1, 2, 3 in the instruction window

- Step 4 After few minutes a **calibration** screen will appear on the pendant. Follow the calibration instructions on the pendant.
- Step 5 A welcome screen (Next Wave logo) screen will display at the end of the calibration setup.

4.22 Click **OK** to close the firmware Instruction window



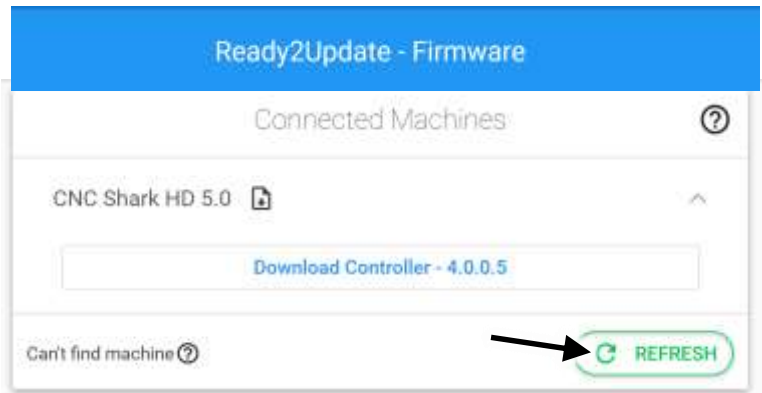
4.23 Remove the USB flash drive from the pendant



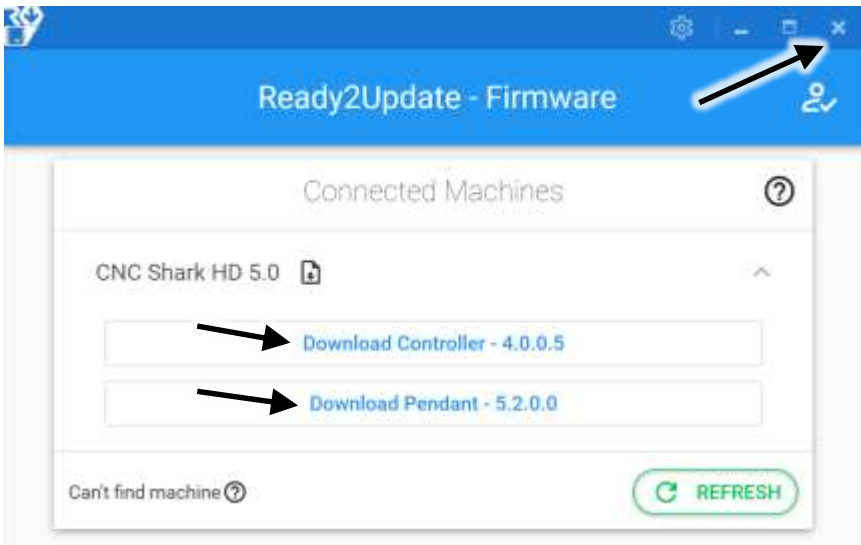
4.24 Insert the USB drive back into your computer and remove the 3 pendant firmware files from the flash drive.

*The files can be deleted or moved to a folder.

The files should be removed because they can trigger the pendant to update again if you use the USB drive to run toolpath files on the pendant.



4.25 The Ready2Update – Firmware window may now look like this. The Pendant button may have disappeared because the Pendant was updated. Click the **Refresh** button to return the button.



4.26 Both buttons should now appear blue signifying that the firmware is update-to-date. Click the X in the upper right corner to close this window.

This completes the **Firmware update** section.
Continue to **Section 5 – Software Updates**

Your computer must be connected to the internet to run the software update.

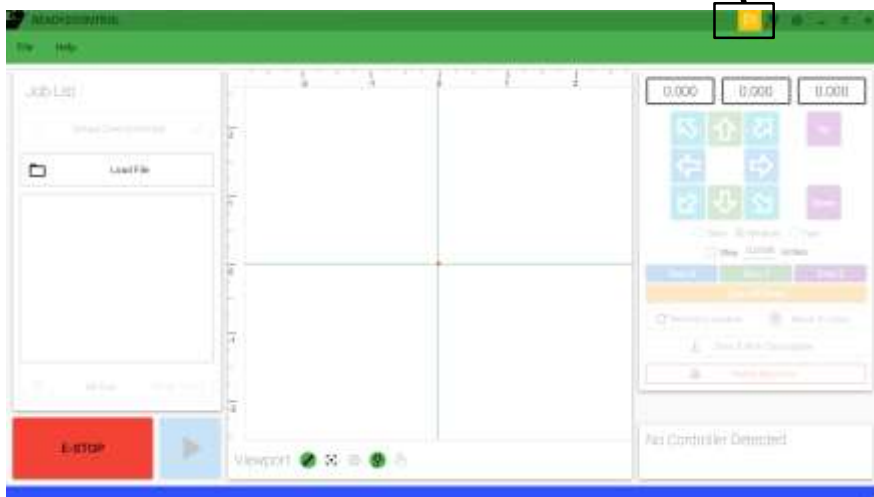
Your CNC does not need to be connected to your computer during this update process – but it's OK if it is connected.

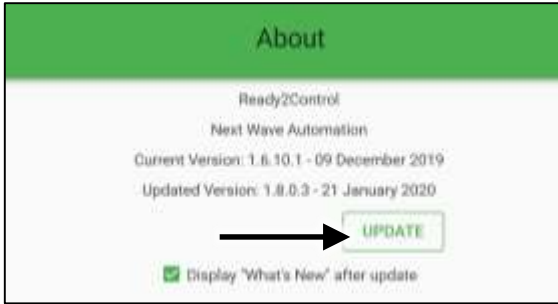


5.1 Open the **Ready2Control** program.

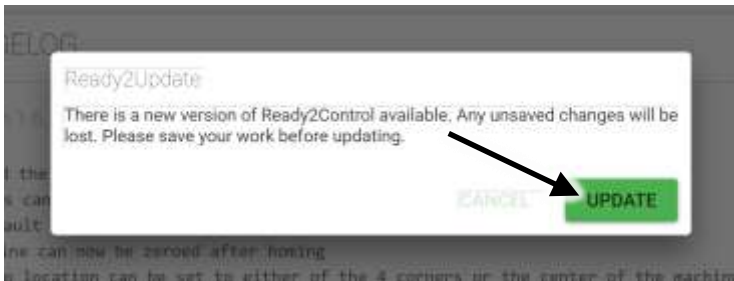
5.2 If the **Software Update flag** is showing then a new version of the software is available.

5.3 Click on the flag to start the update process.





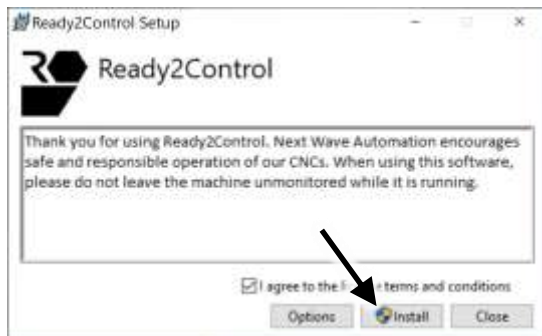
5.4 Click the **UPDATE** button

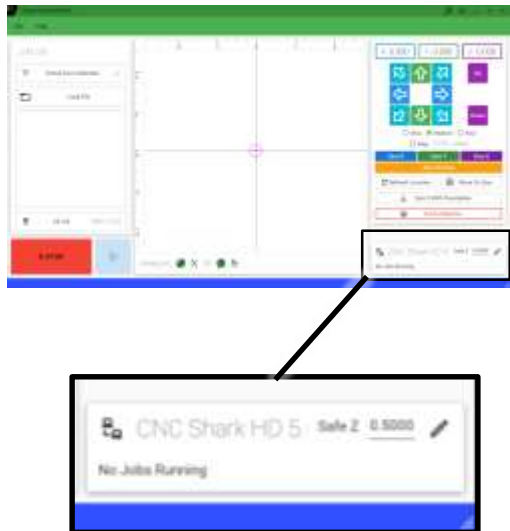


5.5 Click the **UPDATE** button. This will start the update process.

NOTE: The Ready2Control program will automatically close during the update process. The software cannot be updated while it is open.

5.6 Check the **I Agree** box and click the **Install** button



5.7 Click Launch**5.8 Connect your computer to the Controller and turn on the controller.**

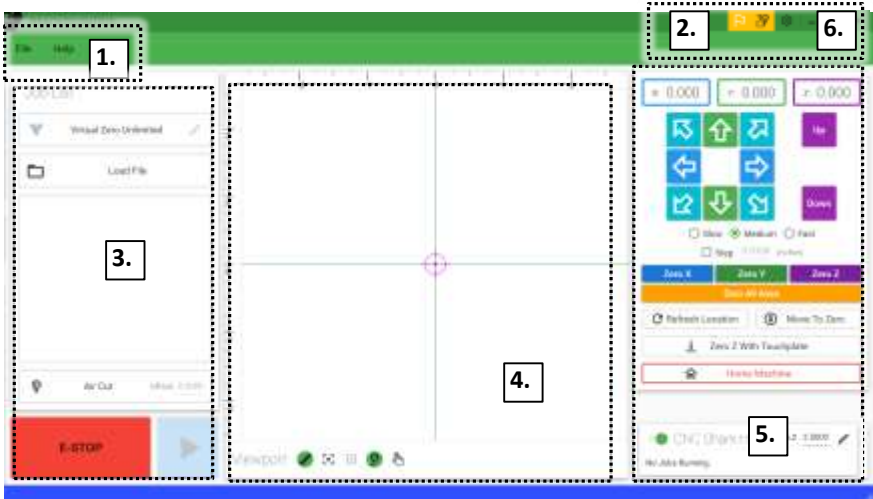
Your **connected tool** should be showing in the lower right corner.

This completes the **START HERE - Software update** section.
You are now ready to use **Ready2Control** with your CNCShark or CNCPiranha.

[See page 37](#) for information on the main features and tools in R2Control.

[See page 57](#) for a **Ready2Control Workflow Guide**

[See page 62](#) for a **Virtual Zero Unlimited Workflow Guide**



Main Control Panel window

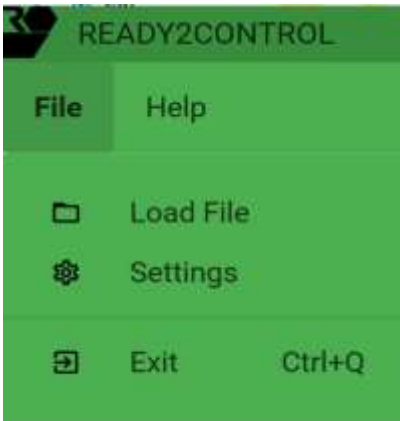
The **R2Control** main window contains six main sections:

1. **Menu Bar** ([see page 38](#))
2. **Update** icons ([see page 39](#))
3. **Job List, Virtual Zero** and **Run** functions ([see page 40](#))
4. **Viewport** window and commands ([see page 42](#))
5. **Machine controls** ([see page 43](#))
6. **General Settings** ([see page 48](#))
 - More Settings** menu ([see page 55](#))
 - Controller settings
 - Software Shortcuts
 - Registration window
 - About window.

For a step-by-step guide to the workflow of Ready2Control or Virtual Zero Unlimited see:

Ready2Control Workflow Guide - [page 58](#)

Virtual Zero Unlimited Workflow Guide - [page 62](#)



File menu

Load File – Loads a .tap cutting file to Job List window.

Settings - Opens General Settings window. [See Page 48](#) for more information.

Exit - Closes Ready2Control program. **Ctrl+Q** – keyboard shortcut to Exit program.



Help menu

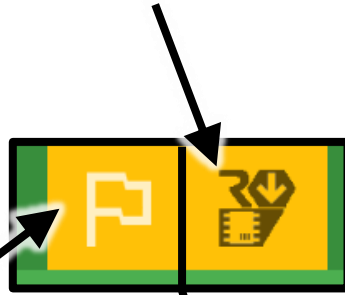
About– Opens the About window that contains Current Version information and Change Log history

Shortcuts - Opens the Ready2Control keyboard shortcuts window.

View manuals – **Access to the user manuals for Ready2Control and the currently connected machine..** The most recent version of the manual displays when the software is connected to the internet.

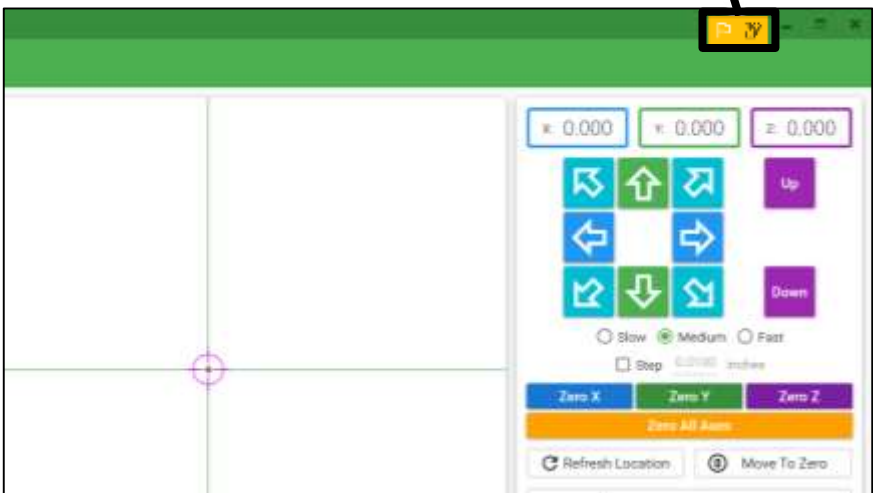
Firmware Update Icon

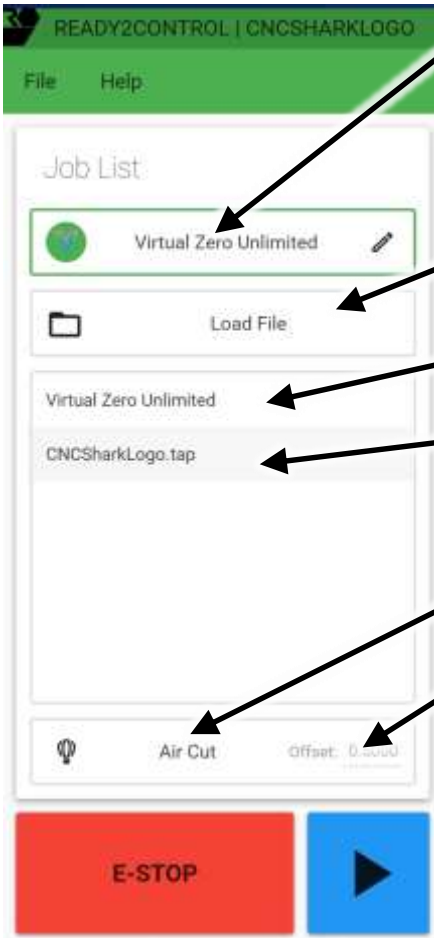
When this icon is glowing yellow it means a machine firmware update is available. Clicking on the icon launches the **Ready2Update – Firmware** application. It also automatically closes Ready2Control. See [page 20](#) for instruction on how to use Ready2Update to update the firmware for your machine's control box and pendant.



Software Update Icon

When this icon is glowing yellow it means a **Ready2Control** software update is available. Clicking on the icon launches Ready2Update for the software. It also automatically closes Ready2Control. When Ready2Update launches, follow the screen prompts to update the software. Step-by-step information on updating the software can be found on [page 34](#).





Press to toggle **Virtual Zero Unlimited** on and off for the currently loaded .tap file. See [page 62](#) for the **Virtual Zero Unlimited Workflow Guide**.

Press **Load File** to load a .tap cutting file. See [page 58](#) for the **Ready2Control Workflow Guide**.

Shows that Virtual Zero Unlimited is active for the current .tap file.

The currently “loaded” file appears here.

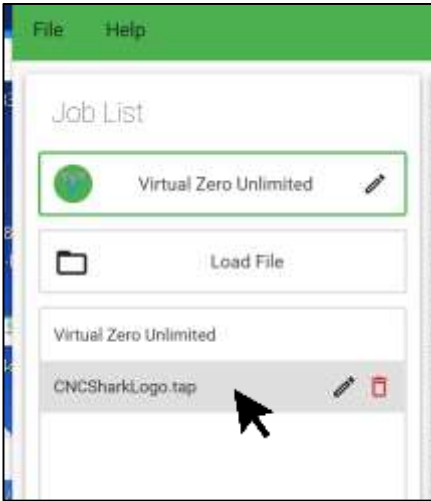
Press **Air Cut** to test cut the loaded .tap file.

Set **Offset** to thickness of the material plus a clearance amount. For example for .75” material thickness add .25” clearance for an **Offset** amount of 1.00”. This will keep the router bit at least .25” inches above your material during the Air Cut - when the Z is zeroed to the top of the material.

If the Z is zeroed to the bottom of the material, then the router bit will clear the material by at least 1”.

Press this button to **RUN/PAUSE/RESUME** the cutting file.

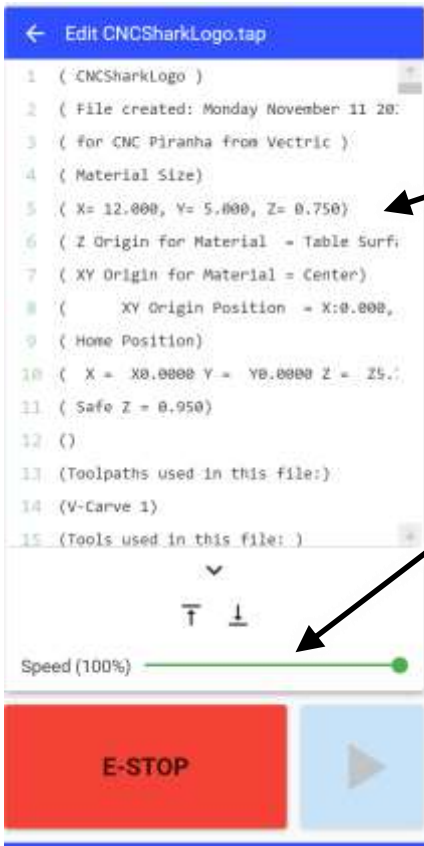
Press the **E-STOP** to stop the machine movement and cancel the cutting file. After pressing E-STOP the cutting file must be restarted from the beginning. For a temporary stop, use the blue Pause button



Holding the cursor over the .tap file name reveals the Pencil icon and the Trash icon.

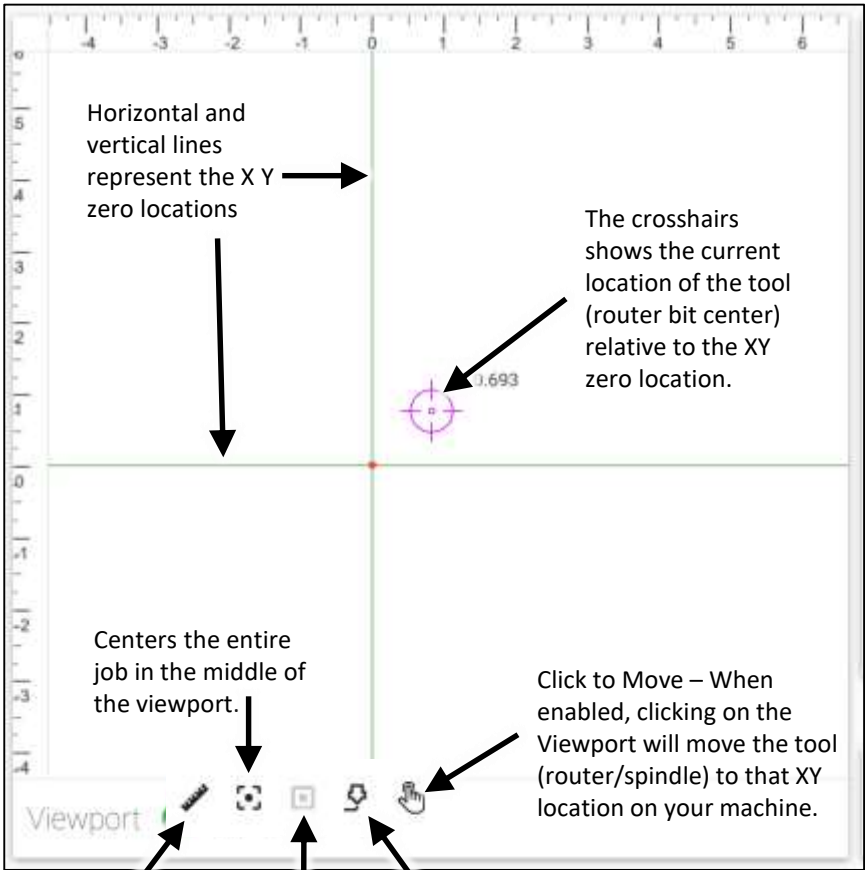
Use the Trash icon to delete the .tap file from the list.

Click on the Edit icon to view the G-code for this file and to access the feed speed override slider (see below).



G-code file. G-code can be viewed, but not edited. G-code editing will be available in a future “Pro” version of Ready2Control.

Feed speed override slider



Horizontal and vertical lines represent the X Y zero locations

The crosshairs shows the current location of the tool (router bit center) relative to the XY zero location.

Centers the entire job in the middle of the viewport.

Click to Move – When enabled, clicking on the Viewport will move the tool (router/spindle) to that XY location on your machine.

Toggles ruler visibility on and off

Click this button to center the table area in the viewport. You must first Home the machine for this options to work.

Visualize Height - When enabled toolpath lines that are deep appear dark, shallow cuts appear light.

Keypad ENABLED view

The **Keypad ENABLED view** provides quick access to axis keypad. You can activate keypad by clicking on one of the axis position fields. This will open the keypad control for that axis as shown at the bottom of this page.

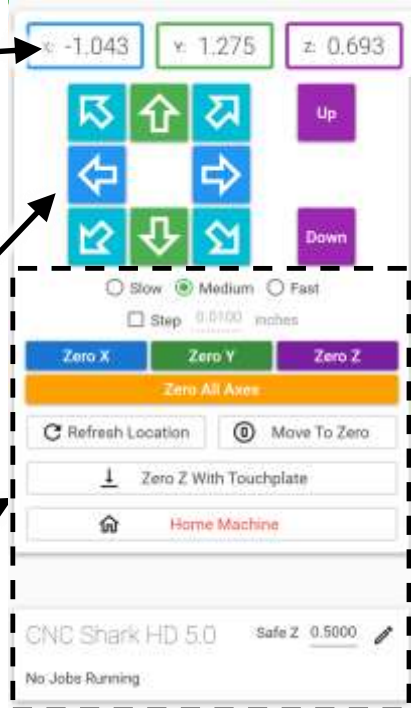
[See page 50](#) on how to enable and disable the Keypad

Axis Position fields

- Show the current location of each axis.
- Clicking on one of these fields will open the **Keypad** control for that axis – see bottom of this page.

Arrow buttons – press arrows to move axis in that direction. To change arrow buttons can also be changed to the “classic” pendant style layout - [see page 51](#).

[See pages 44 and 45](#) for information on these buttons and functions



Axis Keypad (pop-up view)

Position fields

- They show the current location of each axis.
- Clicking on a position field will activate the keypad for that axis and the keys will change color to match.
- The location fields can be edited and used in conjunction with the **Move to Position** and **Set Position** buttons.
- The keypad also functions as a simple calculator.



Keypad DISABLED view

The **Keypad DISABLED view** prevents access to the keypad. Instead axis location can be entered directly in the axis position fields. [See page 50](#) on how to enable and disable the Keypad.

Axis Position fields

- Show the current location of each axis.
- When the Keypad is disabled, values can be entered directly into these fields and used in conjunction with the **Move to Position** and **Set Position** buttons below.

Jog speed setting (to change default speeds [see page 49](#))

Step – check this box to jog by the entered amount. (To set the default Step amount [see page 49](#))

Zero X, Y, Z, All Axes buttons
Clicking these button will set the Position field(s) to zero.



[See page 45](#) for information on these buttons and functions

(Cont.) Keypad DISABLED view

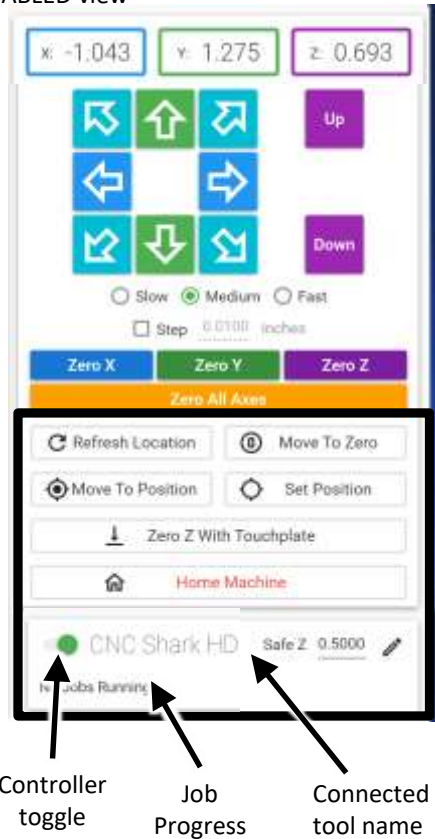
Refresh Location button -

Click this button if Position fields fail to update or if the machine stalls. The need to refresh can sometimes be caused by a underpowered computer, too many programs open or a program problem in Ready2Control. If you frequently need to use the Refresh Location button, contact support@nextwaveautomation.com or call Ron at (419) 491-4520

Move to Zero – Click this button to move one or all axis to its zero location.

Move to Position – Press this button after entering an amount in one or all the Axis Position fields

Set Position – Press this button after entering an amount in one or all the Axis Positions fields.



Zero with Touchplate – Press this button to start Z zeroing routine using a Touchplate. [See page 46](#) for a step-by-step guide to using a touchplate.

Home Machine – Press this button to start XY Homing routine (Only available on Piranha XL and CNC Shark tools that use a Pendant.)

Safe Z – Enter the amount that you want the bit to raise above Z zero between cuts. Set to a height that keeps the bit from colliding with clamps or other objects. This amount can also be set in the Control settings window, [see page 56](#).

Job Progress – Shows the runtime and progress of the active job. The currently connected tool name appears above the Job Progress

Controller Toggle – Switch control between Ready2Control and the Pendant.

How to Zero Z with a Touchplate

The Zero Z Touchplate is an accessory available from your local Next Wave Automation retailer or online at www.nextwaveautomation.com



Step 1

Start the routine by clicking on the **Zero Z With Touchplate** button.



Step 2 Prepare the touchplate per the instruction in the pop-up window

The **Touchplate Thickness** can be edited in this pop-up or in the Control Settings window ([see page 56](#)). Editing the Touchplate Thickness is useful if the plate is slightly over or undersize or if you want the routine to set the Z Zero slightly deeper or shallower. The Touchplate Thickness setting can also be used to accommodate the thickness of a custom-made plate.

(Cont.) How to Zero Z with a Touchplate



Step 3 After the Confirmation notice appears, click **NEXT**.



Step 4 The Z axis will move down until the tip of the router bit touches the touchplate. It will then retract up to the Safe Z Height that was set in the control panel ([page 45](#)).



Step 5 Remove the magnet and touchplate from the machine before proceeding.



Settings icon

Click the Setting Icon to open the **General Settings** window (below)
Additional setting and options can be access by clicking on the **More Settings** and **More Option** icons.

General Settings window

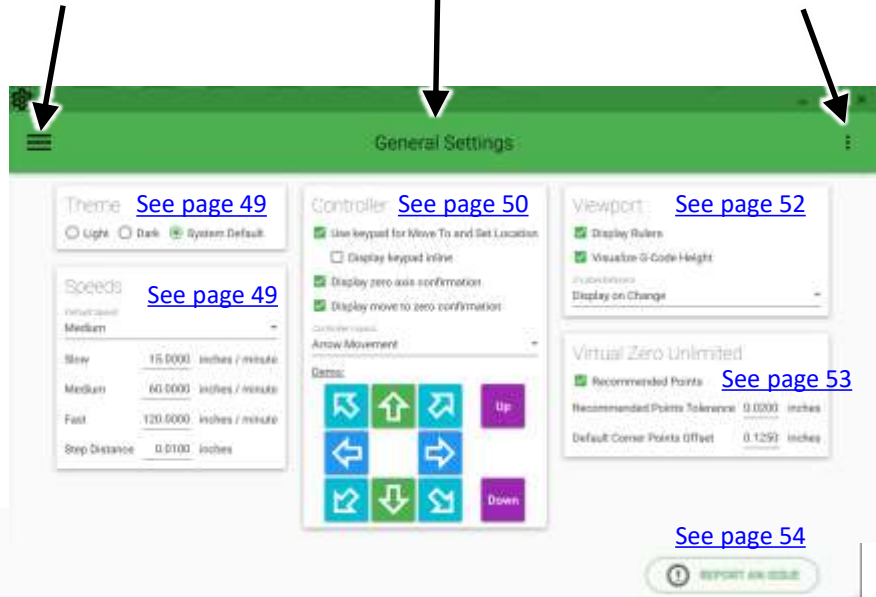
See the pages listed below for detailed information.

More settings menu

Opens a menu with access to additional settings and information windows.
[See page 55](#) for details.

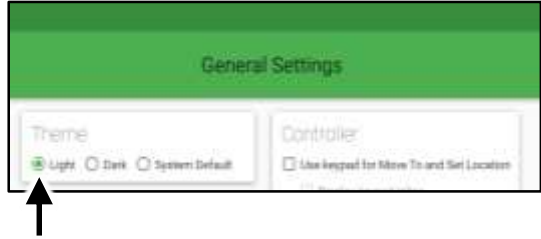
More options

Opens access to the **Hard Reset** option, which resets all program functions to original default settings.



Theme Settings

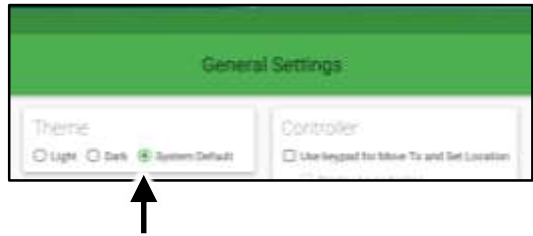
The **Light** theme setting uses a light background color



The **Dark** theme setting uses a dark background color



The **System Default** theme setting uses your computer's theme setting (light or dark or other)



Speeds settings

Use this area to adjust the default jogging speeds for the three jog speed buttons in the main control window.

Default Speed – Sets the default jog speed option in main Control window. ([See page 43](#))

Slow, Medium, Fast - Set the default speed for each of these settings.

Step Distance - Sets the default step distance when using the “Step” option in the main Control window. ([See page 44](#))

A screenshot of the 'Speeds' settings window. It has a title 'Speeds' and a dropdown menu for 'Default Speed' currently set to 'Medium'. Below this are three rows of speed settings: 'Slow' at 15.0000 inches / minute, 'Medium' at 60.0000 inches / minute, and 'Fast' at 120.0000 inches / minute. At the bottom, there is a 'Step Distance' setting at 0.0100 inches.

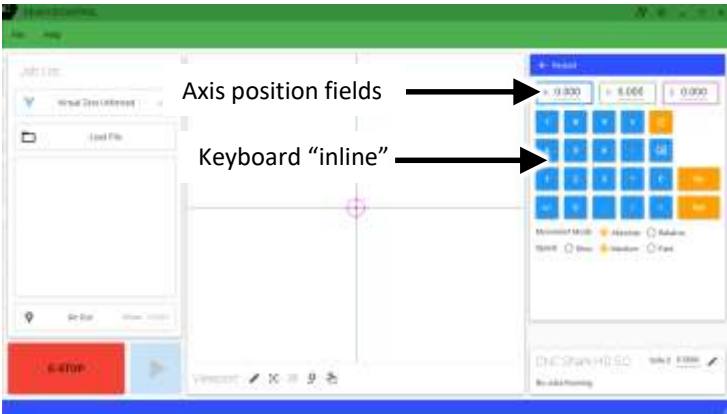
Speeds		
Default Speed	Medium	
Slow	15.0000	inches / minute
Medium	60.0000	inches / minute
Fast	120.0000	inches / minute
Step Distance	0.0100	inches

Control settings

Check this box to enable the Keypad. When enabled the Keypad will pop-up when you click in one of the axis position fields in the main Control Panel (see bottom image)



When checked the Keypad will replace the direction controls. When unchecked the Keypad will appear as a separate pop-up when clicking on one of the axis position fields. (See images below)



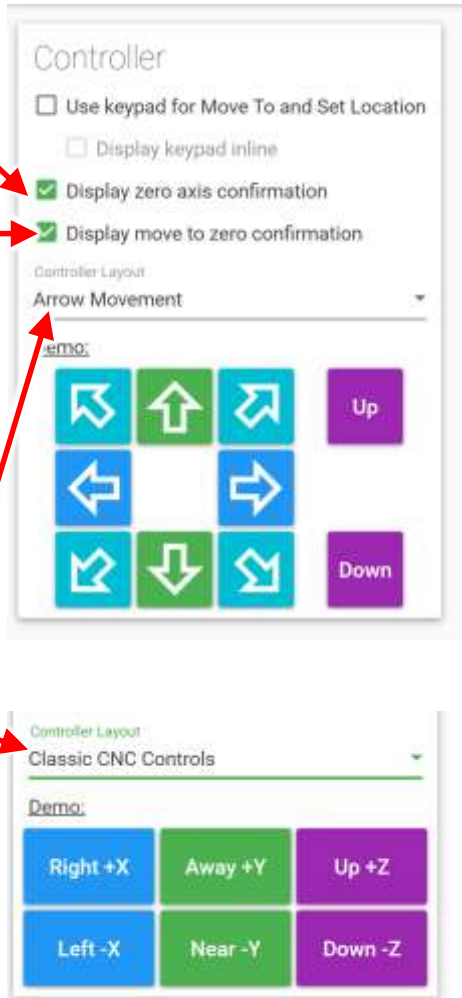
Control settings (cont.)

Checking the box makes the **Zero Axis** confirmation message pop-up by default in the main control window.

Checking the box makes the **Move to Zero** confirmation message pop-up by default in the main control window.

IMPORTANT NOTE: When this box is UNCHECKED, the machine will move to XYZ zero when Move to Zero button is clicked in the control panel.

Click on the name dropdown menu to toggle between the **Arrow Movement** layout and the **Classic CNC Controls** buttons. The Classic layout is similar to the Pendant control button layout.



Viewport settings



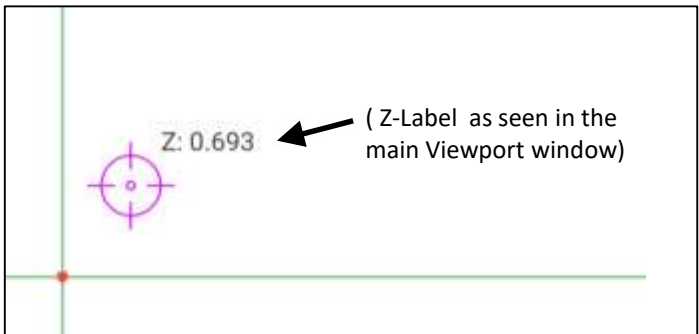
Display Rulers – Check this box to make ruler visibility the default setting in the main Viewport window ([See page 42](#))

Visualize G-Code Height – Check this box to turn on this option as the default in the main Viewport window. ([See page 42](#))

(dropdown menu)

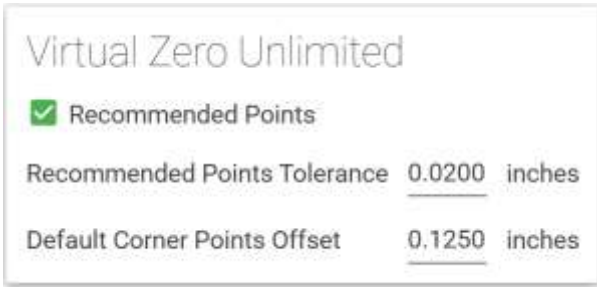
Z-Label Behavior

- The Z label becomes visible for a few seconds each time the machine moves to a new X or Y or Z location.
- The Z label is always visible
- The Z label is always hidden



(Z-Label as seen in the main Viewport window)

Virtual Zero Unlimited (VZU)



Recommended Points

- These are “recommended” points that appear between the previously captured points. When this box is checked, Recommended Points appear between the previously captured points that have a Z height variance greater than the Recommended Points Tolerance (see below) amount.
- The Recommended Points function can be used as many times as necessary until all captured points are within the Recommended Points Tolerance amount.
- Check the box to make Recommended Points the default action in the Virtual Zero Unlimited application window ([see page 73](#) for more information)

Recommended Points Tolerance

- The amount of variance the Recommended Points function uses when suggesting new points to capture.
- The amount entered here becomes the default amount in the Virtual Zero Unlimited application window ([page 75](#)).

Default Corner Points Offset

- This is the distance from the corners of the design area (Job Setup area) that Virtual Zero places default “corner” capture points. Using a negative number will place the corner capture points within the design boundary by that amount. Using a positive number will place corner points outside the design boundary by that amount. A positive amount can be used when your actual part is larger than the Job Setup/design area of your cutting file. A negative offset it best when the project material is the same as the material size in Job setup.
- The amount entered here becomes the default amount in the Virtual Zero Unlimited application window ([page 68](#)).

[See page 62](#) for the **Virtual Zero Unlimited Workflow Guide**

Report an issue

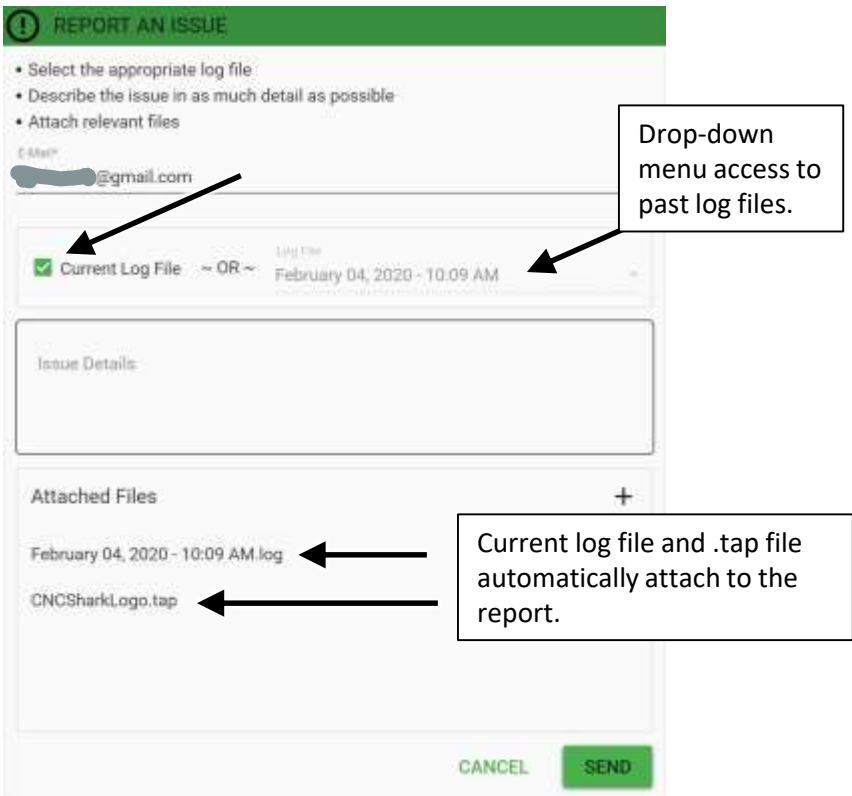


Click the button to open the **Report An Issue** window. Use this window to report issues (software problems) related to Ready2Control software. The reported issue is forwarded to the software support team.

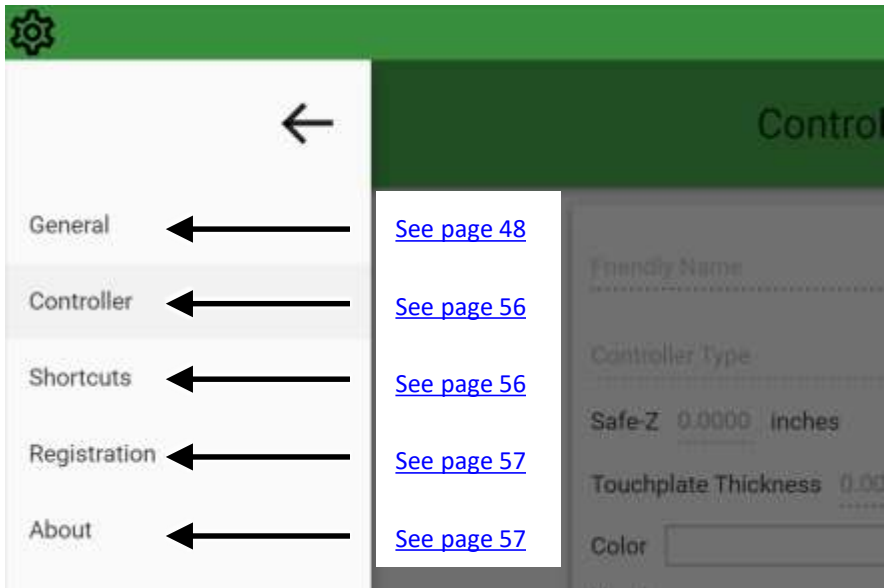
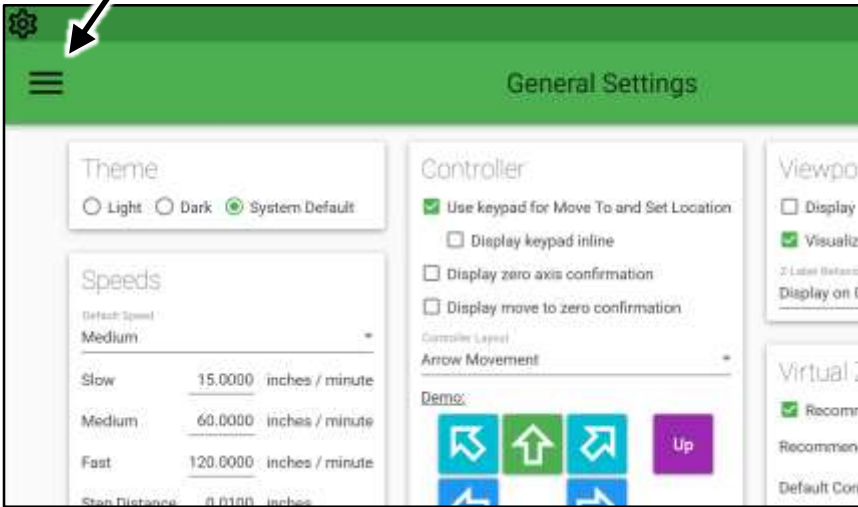
You can also use this window to submit “Wish List” items for features you’d like to see added to Ready2Control.

Current Instance checkbox

- Check this box to automatically attach a log file (history) of your current usage of Ready2Control. The log file is helpful to the programmers because it provides information about the problem you encountered and things that may have contributed to the problem .
- Leave the box unchecked if you wish to submit issues, comments, suggestions not directly related to your current instance of Ready2Control



The **More Settings Menu** icon is in the top left corner of the Settings window



Click on the name in the menu to go to that window. See the pages listed above for detailed information on each window.

Controller Settings (Applies to the Connected Controller)

You can enter a customer name for your tool in this field. It shows up in the bottom right corner of the main control window.

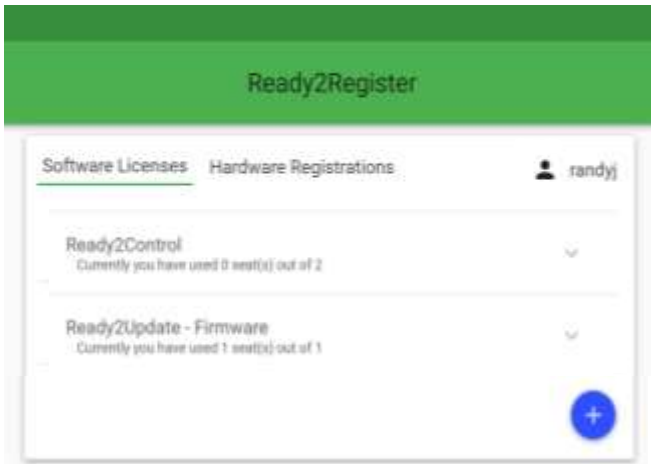
Changes the color of the Crosshairs in the Viewport window

Check these boxes to make these options the default function when Homing the XY axes in the main control window.
Not available on the Piranha FX

Information for the controller that is currently connected.

Keyboard Shortcuts

Registration window



The Registration window lists the software and hardware that you've registered.

About window



Provides program version and change history information.

Ready2Control Workflow Guide



[Back to TOC](#)

This guide assumes that you've completed the **START HERE** section ([pages 6-36](#))
If not, do that before you start this Workflow Guide.

NOTE: If you are new to CNC machine operations, please carefully read the Owner's Manual that came with your CNCShark or CNCPiranha and follow the instructions to familiarize yourself with the setup and operation of your machine before starting this Ready2Control Quick Start Guide.

The following instructions provide a quick guide to the basic workflow of Ready2Control when connected to a CNCShark or CNCPiranha machine.

This guide assumes you are familiar with how to operate your CNCShark or CNCPiranha and how to safely set up and run a toolpath cutting file on your machine. If not, please read and follow the instructions in the Owner's Manual that came with your machine.

If you are familiar with using the CNCShark or CNCPiranha Control Pendant you will find that many of the functions are same in Ready2Control. For detailed information about each Ready2Control function [see pages 37-57](#).



USB AB style cable



Step 1 Connect your computer to the control box with a USB AB (printer) cable and turn on the control box.

Step 2 Open the **Ready2Control** software.

Step 3

Secure your project material to the table or spoil board of your machine.

Step 4

Use the Arrow buttons to move the X and Y Axes (router bit) to the XY Zero (datum point) for your project.

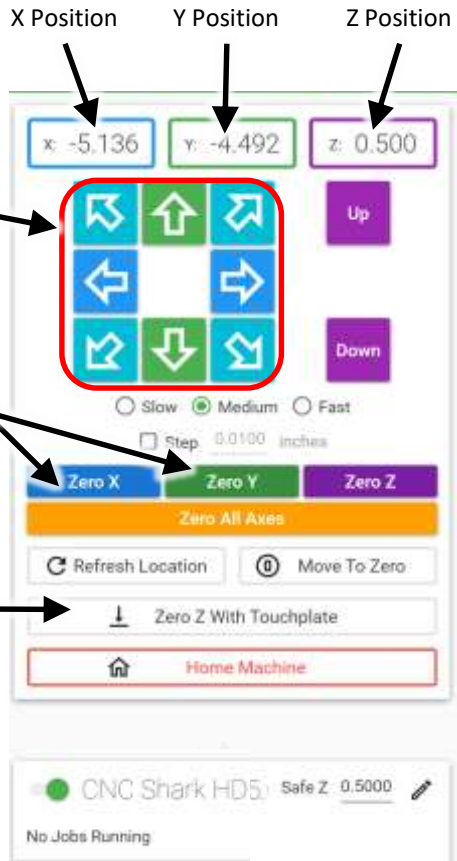
Step 5

Zero the X and Y axes using the **Zero X** and **Zero Y** buttons. The X and Y position fields at the top of the window should now display 0.000

Step 6

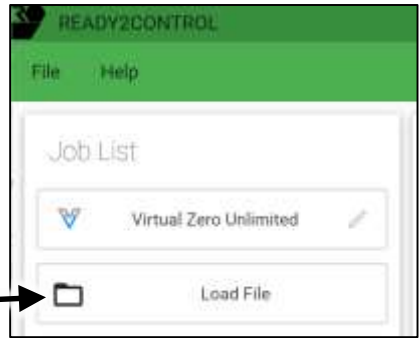
Use your touchplate and the **Zero Z with Touchplate** button to zero your router bit to the material or table. The Z axis will move to the Safe height when the touch off routine is complete. The Z position field at the top of the window should now display 0.000 + the safe Z height.

[See page 46](#) for more info on using the Touchplate function.

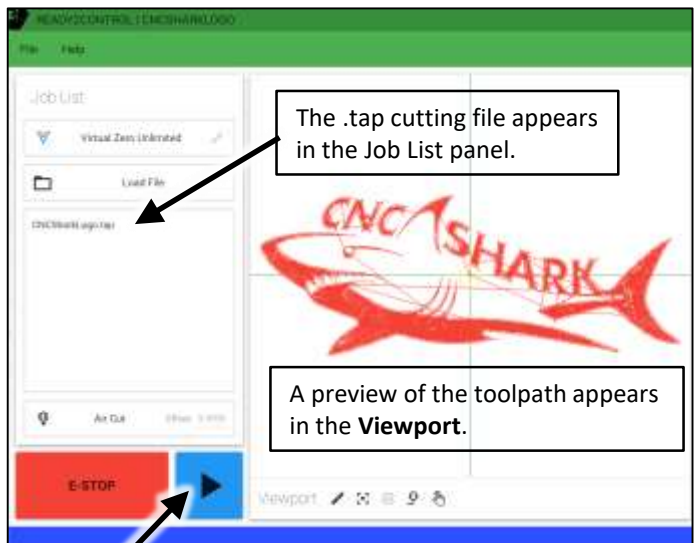


If you don't have a Touchplate you can move the router bit to the Z Zero location using the purple **Z Up** and **Down** buttons. When the bit is positioned at the desired Z zero position press the purple **Zero Z** button. The Z position field at the top of the window should now display 0.000. Next, use the purple **Up** button to move the Z axis up so the router bit is safely above the material.

Step 7 Click on **Load File**



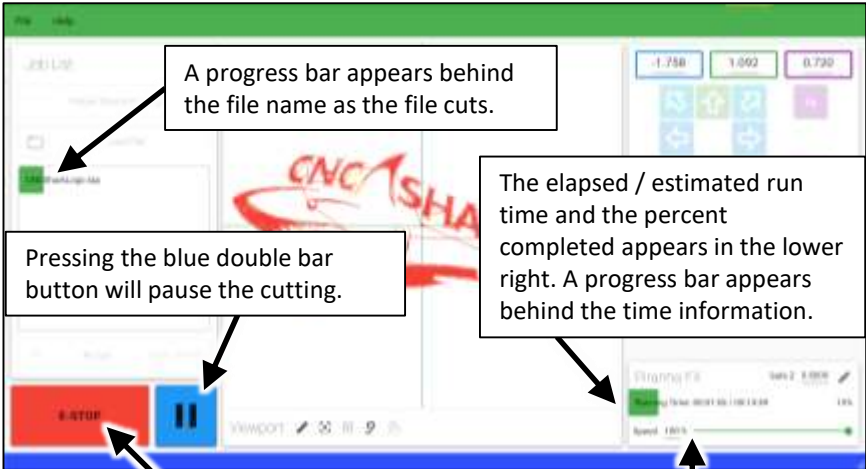
Step 8 Select your **.tap** cutting file.



Step 9

Press the blue **Run** button to start the file. Your file should now run the same as if it were running from the Pendant.

The information below describes some of the basic functions that are useful when running a file.



Pressing the E-STOP button will stop the file and the machine. To restart the file you must re-zero all three axis and restart the file from the beginning.

Use this slider (if needed) to decrease the feed speed while the file is cutting.



To rerun the same file, click on the blue **Run** button.

When the file is complete, the actual total run time / estimate run time appears in the lower right.



**This guide assumes that you've completed the
START HERE section ([pages 6-36](#))
If not, do that before you start this Workflow Guide.**

NOTE:

The following guide provides an overview of the basic workflow of **Virtual Zero Unlimited** when connected to a CNCShark or CNCPiranha machine.

This guide assumes you are familiar with how to operate your CNCShark or CNCPiranha and how to safely set up and run a toolpath cutting file on your machine. If not, please read and follow the instructions in the Owner's Manual that came with your machine.

If you are new to CNC machine operations, please carefully read the Owner's Manual that came with your CNCShark or CNCPiranha and follow the instructions to familiarize yourself with the setup and operation of your machine before starting this **Virtual Zero Unlimited Workflow Guide**.

You should also work through the Ready2Control Workflow Guide ([pages 58-61](#)) before starting the **Virtual Zero Unlimited Workflow Guide**.

Virtual Zero Unlimited allows apply a “flat” design to an existing curved part right at the machine. It eliminates the need to create a 3D Model in the computer



“Flat” vector line design



Toolpath saved as “flat” design



Toolpath applied to an existing curved part using **Virtual Zero Unlimited**.

Note: For this project, the design was rotated to match the orientation of the chair back on the machine.

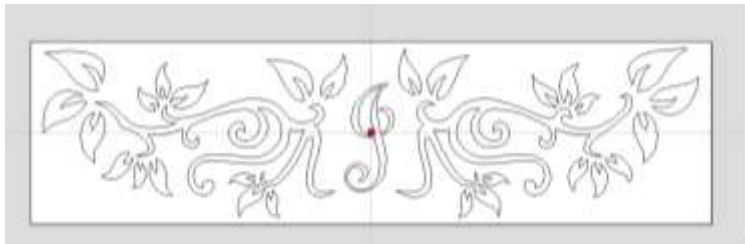
Step 1

Set up the job to the size needed for you design.

You can set the XY Datum to any location you prefer but Center works well for most Virtual Zero Unlimited projects – especially irregularly shaped projects such as a chairback.

The screenshot shows the 'Job Setup' dialog box with the following settings:

- Job Type:** Single Sided (selected), Double Sided, Rotary.
- Job Size:** Width (X): 15.0 inches, Height (Y): 4.0 inches, Thickness (Z): 0.75 inches.
- Units:** inches (selected), mm.
- Z Zero Position:** Material Surface (selected), Machine Bed.
- XY Datum Position:** Use Offset (unchecked), X: 0.0, Y: 0.0.

**Step 2**

Create your design. It can be Vector line design or a 3D model. Both work with Virtual Zero Unlimited.

Step 3

Save the toolpath to a folder on your computer.

There's not need to save it to a USB thumb drive when using Ready2 Control or Virtual Zero Unlimited.

The screenshot shows the 'Save Toolpaths' dialog box with the following settings:

- Output all visible toolpaths to one file:** checked.
- Output Tiled Toolpaths:** unchecked.
- Add side to toolpath name:** unchecked.
- Toolpaths to be saved ...:** Charback [1] V-Bit (90 deg 0.5").
- Post Processor:** CNCSharp-USB Arcs (inch) (*.tap).
- Output direct to machine:** unchecked.
- Driver:** CNCSharp.
- Buttons:** Save Toolpath(s) ..., Close.



Step 4 Mount project to the table

Step 5

Move bit to it's XYZ zero location.

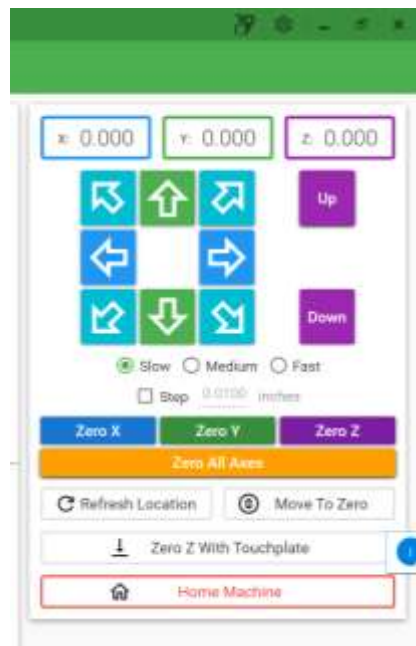
For some projects it in the low area, but for other projects it may be the high area or a middle level.

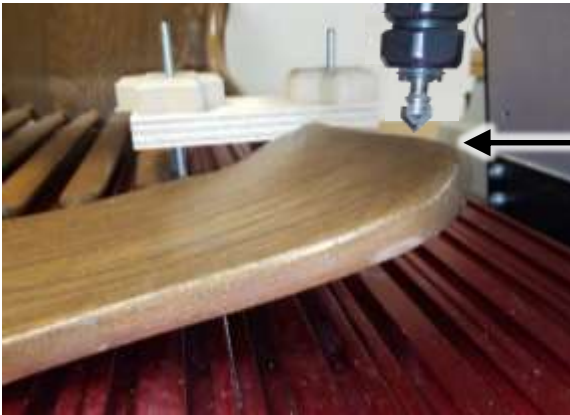


Step 6

Set XYZ axis to Zero by clicking on the **Zero All Axes** button.

You can also Zero the Z with the touchplate rather than the Zero button.





Project high point

Step 7

Move the router bit to the top of the highest area of the project. The bit does not have to touch the project – close is fine.

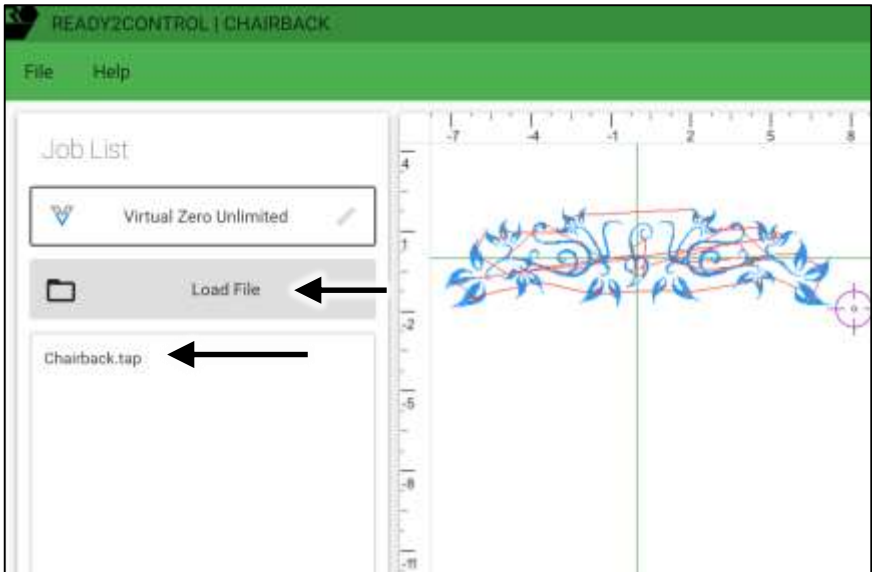


Step 8

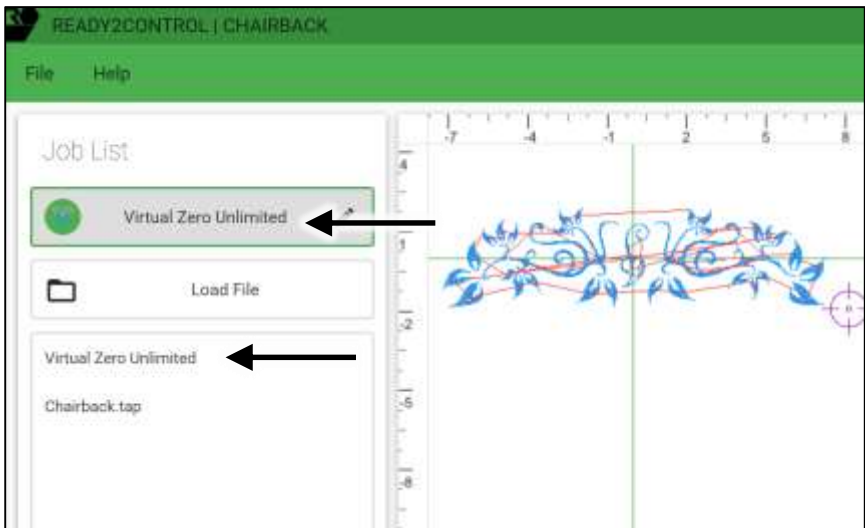
Note the Z axis height in the Controller

Step 9

Set Safe Z to a height that clears the highest area on the project. (2.50 for this project.)



Step 10 Load the .tap file for your project.

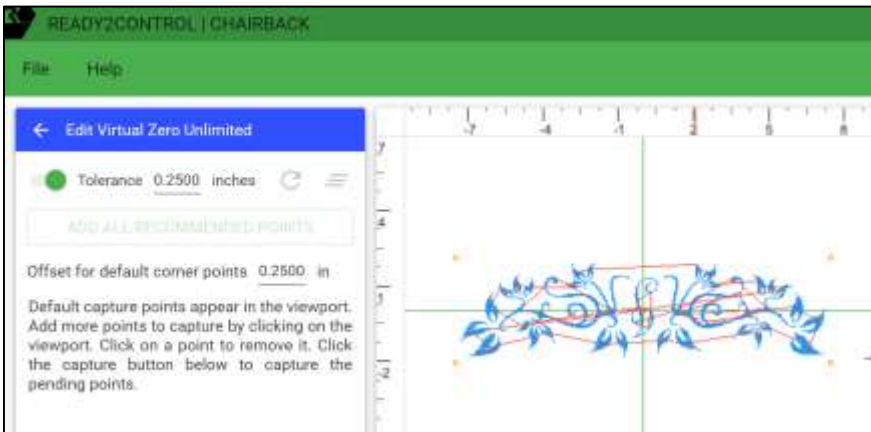
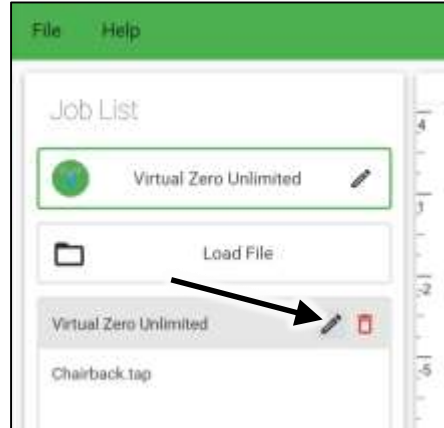


Step 11

Click the **Virtual Zero Unlimited** button. This will insert the application in the job list above your tap file.

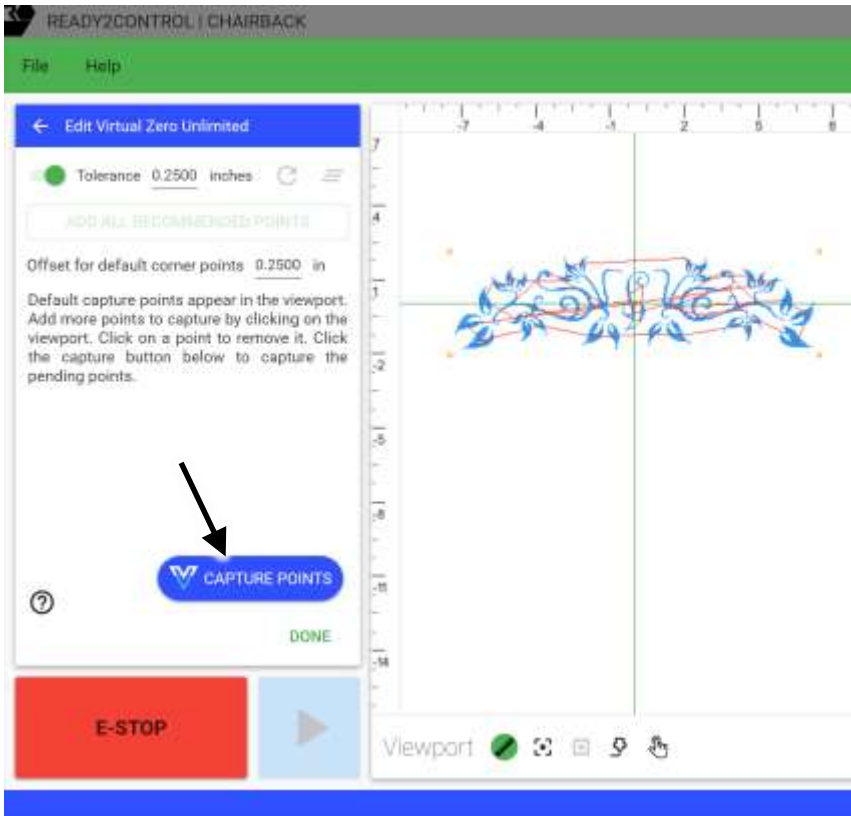
Step 12

Click on the Pencil/Edit icon to open the VZU edit panel.

**Step 13**

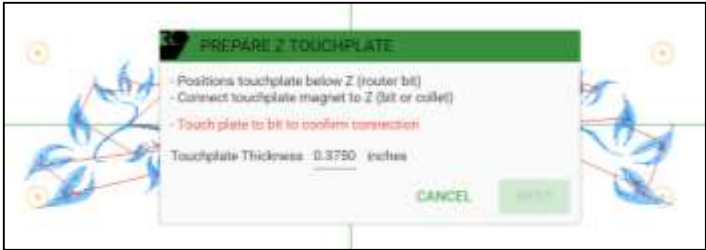
VZU automatically places 5 initial capture points in the viewport area. They appear as small orange circles. One is at the center of the design and one at each corner of the design.

The location of the 4 corner points is controlled by the **Offset for default corner points** setting. A positive number places the point outside perimeter of the design area. A negative number places the corner points inside the design perimeter. In this case the points are outside the design are by .25 in. Because the chair back is larger than the design. If your project is the same size as the design, use a negative offset amount so the points fall on top of the project material.



Step 13

Click **Capture Points** to start the capture process. As soon as you click the button the machine will start to move to the nearest capture point. When it reaches the point, a pop-up message will appear with instructions. (See Step 14)



Step 14

Place your Z zero touch plate below the router bit and connect the magazine the bit or collet. Then touch the plate to the bit to confirm the connection.



Step 15

After the **Confirmation** message appears, click **NEXT** to bring up the Touchplate Search window.

MINI TOUCH PLATE ACCESSORY

Stock: 128C Accessories

SKU: 20142

\$29.99

In stock

[Add to Bag](#)

Product Details

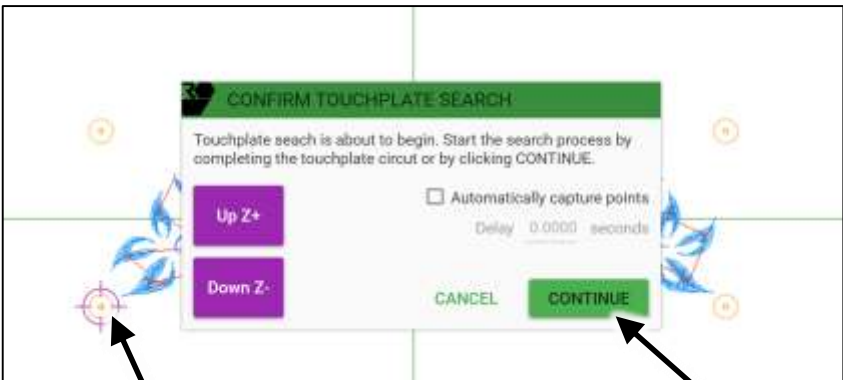
The new mini touch plate is a great addition to our larger version. Use the 1" diameter mini touch plate in tight spots like made curves when setting up the new Virtual Zero Unlimited. Just like the larger version the mini touch plate is made from solid 3/8" aluminum and comes with it's own 12" patch cord with banana receiver. To use, simply remove the coat from the larger touch plate and insert it into the receiver. Requires standard NWA touch plate 20141 to work.

⚠️ WARNING: Contact & Misplacement Hazard - see 20141 for more info

The Mini Touch plate is only 1-in in diameter, so it works well on curved surfaces. The mini touchplate is available from your Next Wave distributor or online at NextWaveAutomation.com



Step 16 Keep touchplate under the router bit.



First capture point

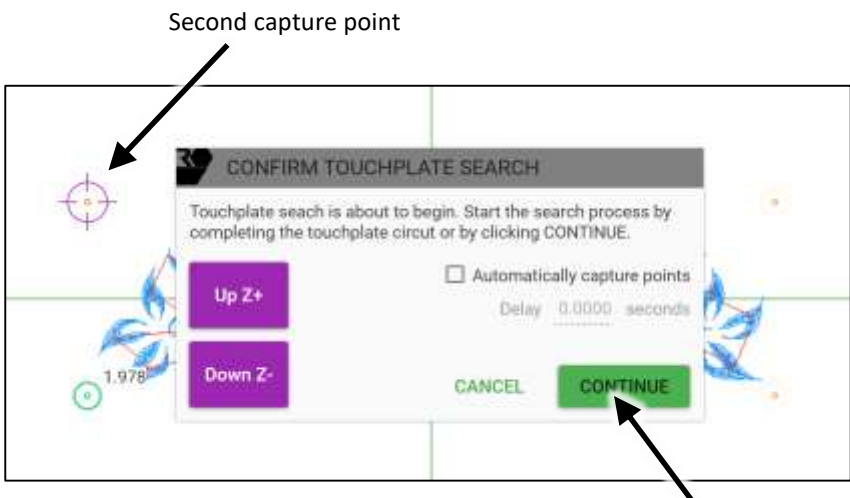
Step 17

Click **Continue** to capture the first points.

The bit will move down to the plate. It will then retract and move to the next location.



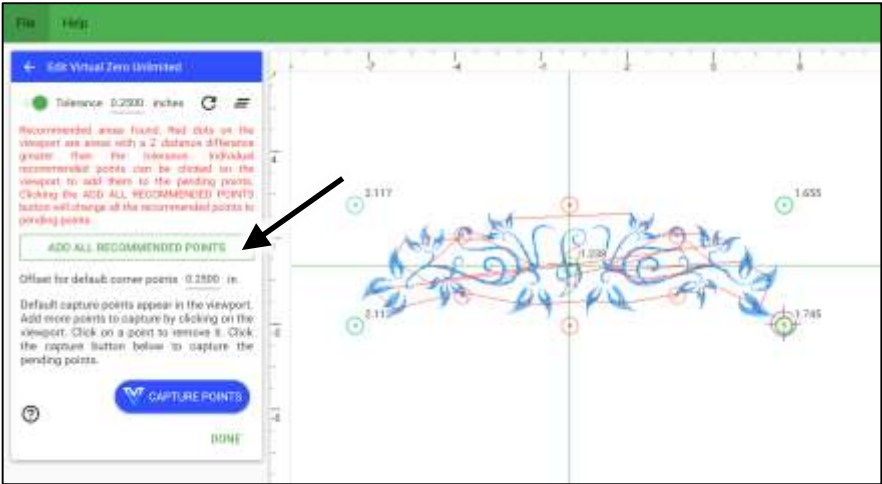
Step 18 Move the touch plate to the next location.



Step 19

Click **Continue** to capture the second point.

Capture the remaining three points using the same process.



Step 20

When you're done capturing the 5 default points, they turn green, and the Recommend Points screen automatically appear at the left. Recommended points are points mid-way between the previously captured points. Recommended points appear as red circles until they are accepted. Press the **Add All Recommended points** button to accept the new points. Accepted points appear orange. Click the Capture points button to run the capture routine for these new points.

CAPTURE TIP

Use the Down Z button to move the bit closer to your touchplate. This saves time when the bit must travel more than an inch.



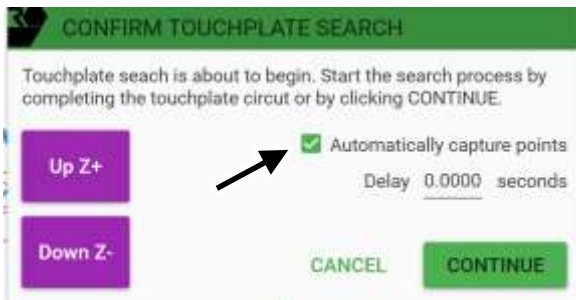
CAPTURE TIP

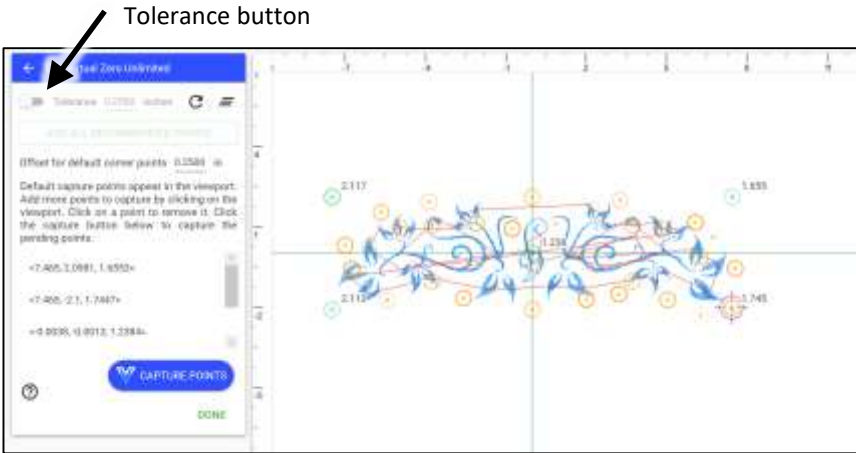
Touching the plate to the bit also triggers the capture process. You can do this in place of clicking the Continue button.



CAPTURE TIP

Checking the **Automatically capture points** box will automate the capture process. The machine will automatically move to the new point and capture the point. There is no need to touch the bit or click the Continue button. When using this option, make sure to pay attention to the movement of your machine

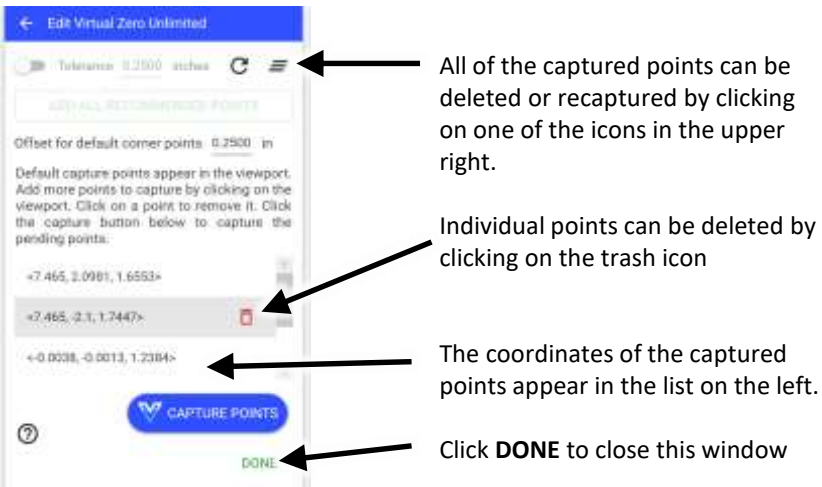


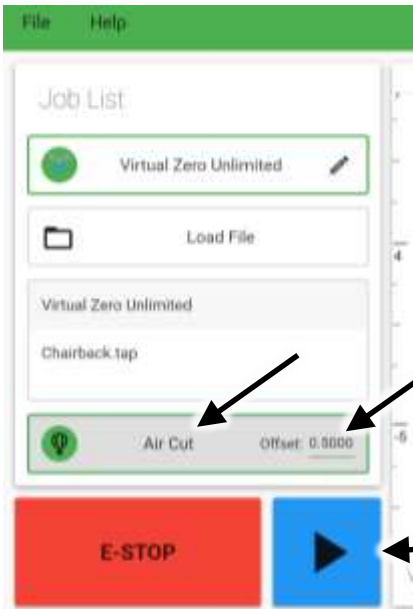


Step 22

After you capture the first set of recommended point, more may appear. It depends on what you have set for the **Tolerance** amount. Sometimes the recommend points can produce more points than you need or in places that are needed. For this project, we’re turning off the **Tolerance** button, which will turn off the visibility of the recommended points.

Points can be added manually by clicking on the design. Manually added points allow you to strategically place points where they are most needed. Designs with fine detail (i.e. small letters) and/or parts with high contours benefit from more points. Once you’ve added the points where you want them, click **Capture Points** and run the routine again.

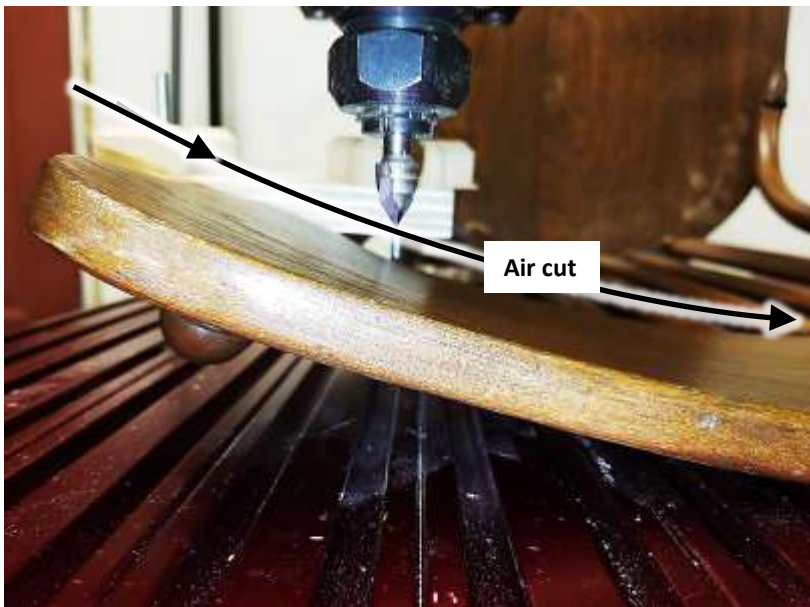


**Step 23**

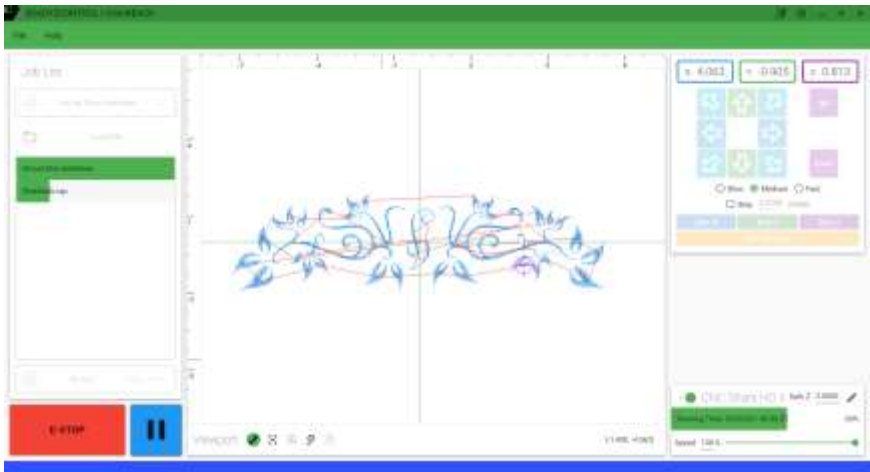
Press the Air Cut button and set the Offset to a dimension that's more than the deepest cut. For this project the deepest cut is about 3/8", so the offset is set to .5 inch. That will provide about 1/8 of clearance below the bit during the Air cutting.

Step 24

Press the Run button to start the air cut.



Air Cutting allows you to watch the axis movements of the machine without cutting the material. You can do it with the router turned off.



Step 25

When you're satisfied with the Air Cut turn it off and click the Run button to cut the part.



Step 26 Done

Virtual Zero Unlimited is a convenient way to carve on existing curved surfaces, but because you are cutting on a curve, some details may appear different from a flat carved design. Some experimentation is recommended.

Next Wave Automation

www.nextwaveautomation.com

Manufacturer of the CNC Shark HD4, Piranha CNC, Moray Laser and CNC accessories. The website has software and documentation downloads as well as other general product information.

NWA Owners Only Forum

<https://forums.nextwaveautomation.com/>

A user group of the CNC users geared around CNC Shark owners. The website has projects, ideas, showcase, and valuable support from users of all levels.

CNC Shark Talk User Forum

www.cncsharktalk.com

CNC forum open to all CNC users.

Vetric

www.vetric.com

Producers of the VCarve and Aspire software package. The Vetric website has product information, FAQs, on-line tutorials, and an excellent user forum. Keep in mind that Vetric supports Vetric software, not the CNC Shark.

Notes

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**Ready2Control / Virtual Zero Unlimited User Manual
February 2020**