

Next Wave Automation



Operations Manual

3d Printer Module

Next Wave 3D Software

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Introduction

Next Wave 3D is a modular 3D Printing Solution that allows users to mix and match a variety of 3D printing components to create a 3D printed model. While there are a multitude of 3D Printers available from all around the world, Next Wave 3D allows a user to print sophisticated 3D models using their Piranha Fx.

The Next Wave 3D System consists of the following...

- 3D Printing Software
- Spindle Mounted 3D Print Head
- 3D Print Head Heater Control and Extruder Motor Driver unit
- Machine Controller with Parallel Port type interface

Features of the Next Wave 3D Software

- Imports many 3D File Formats

3ds	3d Studio
gts	GNU Triangulated Surface
lwo	Lightwave
obj	Wavefront
ply	Standard Triangle Format
Stl	Standard Tessellation Language

- Layer by Layer View
- Outputs standard Gcode for most Machine Controllers
- Built-In Parametric Modeling of Gears, and Lithopane Images
- Optimized Toolpaths
- Water Tight Solid mending of meshes

*****Safety Warnings*****

Read this manual completely before making your first 3D Print

Burn Hazard:

The NW3D Print Head is capable of reaching temperatures in excess of 300°C (575°F). Allow the Print Head to completely cool before servicing. This may take 15 minutes or more. If in doubt, wear protective gloves.

The exit temperature of the Extruded Plastic will be at the Temperature of the Nozzle. Do not touch the melted plastic as it may stick to your skin and cause burns.

Fire Hazard:

Do not place flammable materials near the Print Head. Do not spray flammable materials such as Hair Spray onto the Print Area when the Print Head is hot.

Electric Shock Hazard:

The Cartridge Heater used in the NW3D Print Head runs at Mains Voltage (either 110v in the USA or 220v in most other Countries). Do not open the control box, service the Print Head, or move the Control Box unless the main power cord is disconnected. Do not place the Control box in an area that may be affected by moisture.

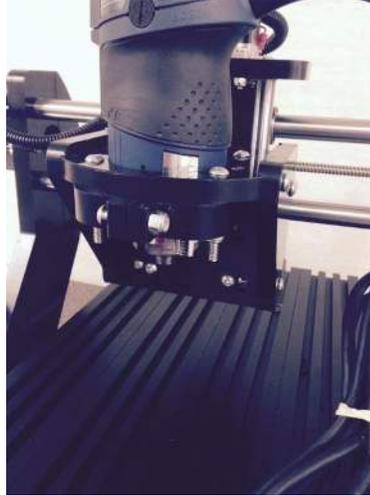
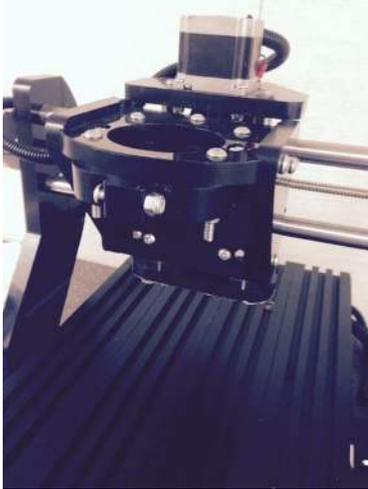
Mechanical Hazard:

Do not place fingers, loose clothing, or hair near the Print Head when the machine is operating.

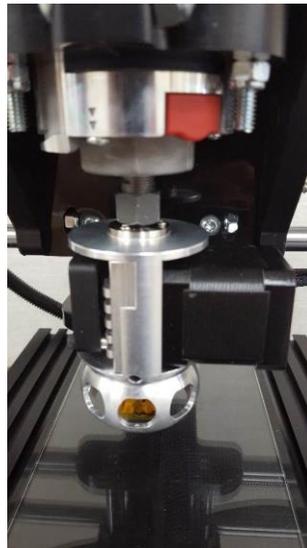
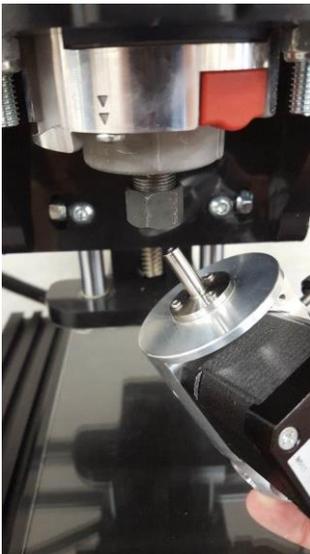
Setup of the 3D Printing Head on the Piranha Fx

- Make sure power is turned off to the Piranha FX Controller, Heating Element, and Piranha Hub

- Invert the router cradle by removing the 4 bolts from the back of the router cradle. Turning the router cradle upside down, and reattach the 4 bolts. Then place the router in the clamp.



- Insert 3D printing head into router collet and tighten the collet nut.



- Connect hub to controller using 20 pin ribbon cable.

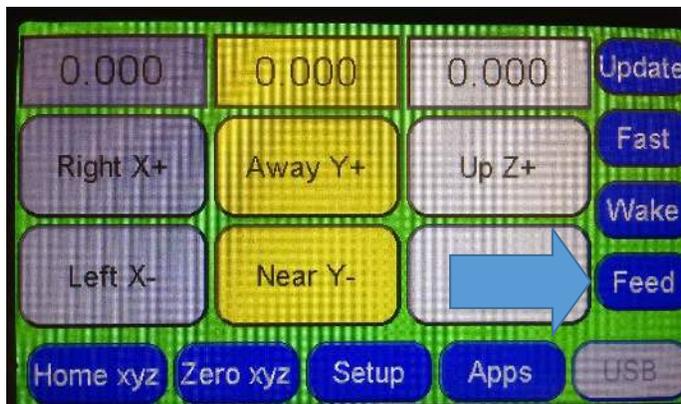


- Connect power adapter to the hub.
- Power on the controller.
- Power on the hub.
- Attach the 3D printing head to the heating element.
- Power on the heating element.
- Wait for the temperature to reach 225 degrees.
- REMEMBER: NEVER ADJUST THE 3D PRINTING HEAD WHILE THE HEATING ELEMENT IS ON!



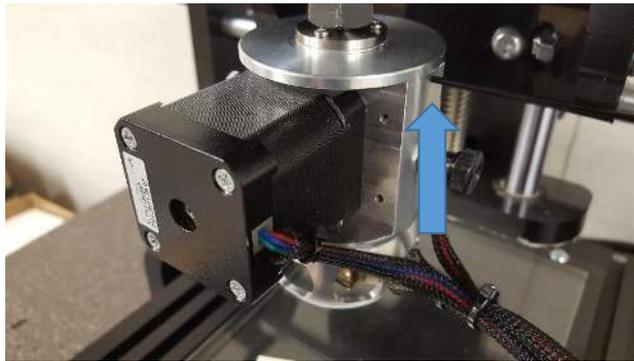
Attaching the filament

- Make sure that all previous filament is ran through the 3D printing head before adding more
 - To do this, you need to access the A axis (fourth axis)
 - There are two ways to access the A axis
 - The easiest is to use the “feed” button located on the home screen of the LCD.



- This option slowly jogs the A axis in small increments

- Simply hold the feed button for 1 second at a time
- The other option is to switch access from the Z axis to the A axis on the LCD home screen
- Add the filament through the opening on the side of the printing head



- Jog it through in small increments, as shown in previous steps.
- To replace the filament, cut off the end of the filament that is currently being fed through the 3D printing head



- Then, gently sand the edge of the new filament that will be added, just enough to make it smooth and straight.



- Make sure that you feed the previous filament in a few more times
- Add the new filament following the “Add Filament” steps above

Leveling the 3D Building Platform (glass panel)

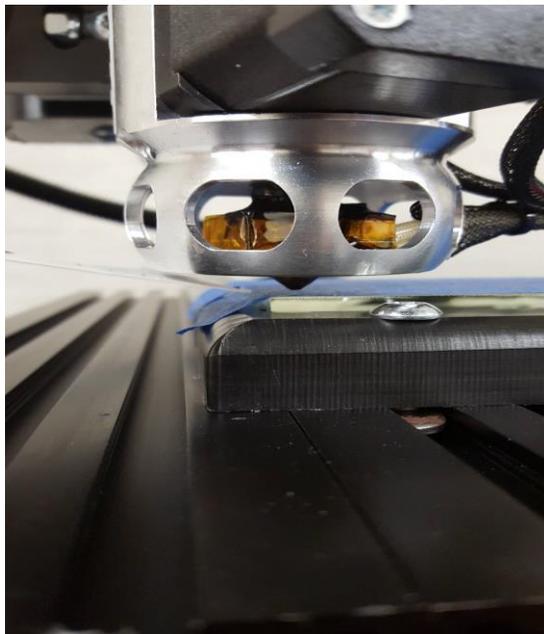
The 3D building platform comes ready to use and should be level. The following guide will assist you in checking the plate to make sure it is level, and the steps to take if it is not.

- You will find bolts in all four corners of the building platform.
- These bolts are attached to industrial t-slot nuts
- With the bolts and t-slot nut on the build platform, slide the t-slot nuts into the t channel of the CNC Piranha
- Position it roughly in the center of the base and tighten down the bolts
- Position the 3D printing head over the top of the glass at the far end of the Y Coordinate
- Run the 3D printing head towards the front of the Piranha

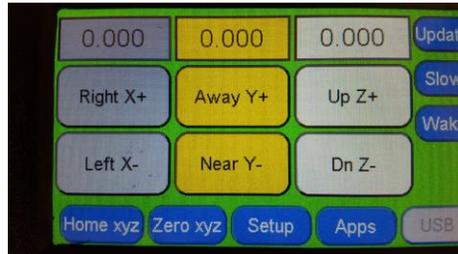
- Note any difference in the space between the glass and the 3D printing head
- Raise the 3D printing head, and move it out of the way to gain access to the glass
- Pull the glass up and apply masking tape to level out the difference you saw between the 3D printing head and the glass
- Repeat this process until there are no significant differences
- Please note that .001-.01 is not a significant difference
- Once leveled, re-insert the glass
- Apply painters tape to any area that will be used for 3D printing
- After the tape is applied, use denatured alcohol to remove the film on the top of the painters tape

Running the 3D Printer

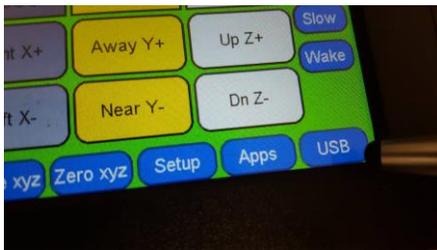
- Move the 3D printing head to the point of origin
- Zero the X and Y axis
- Move the Z axis slowly down, until a piece of paper can barely fit under the nozzle of the 3d head and the Glass surface



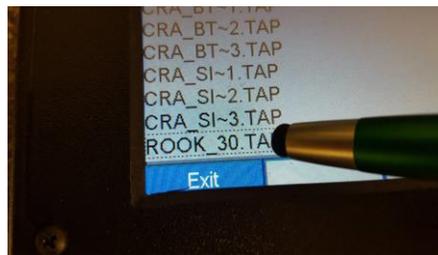
- Zero all axis'



- The system is now ready to run your program.
- Load the TAP file onto a USB flash drive.
 - NOTE: A SanDisk flash drive is recommended.
- Insert USB drive into the Piranha Pendant (refer to Piranha Manual for detailed instructions)



Select the USB tab



Select target file



Press Run.

1. Installing Next Wave 3D (NW3D)

NW3D Requires:

- Windows Operating System (Vista, XP, 7, 8, 10)
- 2GB Ram
- OpenGL capable Graphics Card.

Installing NW3D:

- Double click on the downloaded Next Wave 3D-Setup.exe to begin the install.
- Follow the prompts associated with the Installation of the Software.
- Registration for the Software See Apendix.
- That's it! You can now run the Next Wave 3D Software.

2. Setting Up your Machine's Workspace

NW3D is an add-on to your existing CNC Machine. Several parameters should be set before you make your first print. The Work Envelope of your machine should be set so that you can get Visual Feedback of the scale and location of the print job. You will also need to set and calibrate your machines 4th axis to deposit the correct amount of plastic if you are using the optional NW3D Motion Controller. These requirements are handled through an Initialization Script that is located in your MyDocuments/Next Wave 3D/Config/default.gsc file. This file contains several Scripts containing both standard and custom NW3D Gcodes. These Gcodes set up both the general NW3D Software as well as more specific commands for the optional NW3D Motion Controller. The Initialization Script is edited by going into the *Setup* Tab and clicking on the *Set Print Parameters*.

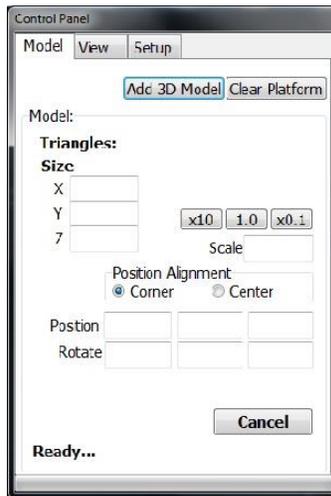


3. NW3D – Importing and Manipulating a 3D Model

NW3D supports a wide range of 3D File Formats for Printing. Each Model can be Scaled, Translated, or Rotated anywhere in your 3D Printers work envelope.

Importing your 3D Model:

- Click the *Add 3D Model* Button



- The Model is automatically placed at the 0,0 Origin.

- If this is the first model added to the Print Job, it will automatically be selected. If there are multiple Models for this Print Job, any model may be selected by right clicking on the Model once. A selected Model will turn Blue while an unselected Model will be Yellow. If only one Model is available, it will always be selected regardless of color. The model's features will be displayed each time a model is selected.
- At this point, you can visually Rotate and Zoom around the Model by using the Mouse buttons. Dragging the Left mouse button will Rotate the display while using the Mouse Wheel will Zoom the display. To Snap the View to a specific Model, select the model first with the Right mouse button (it will turn Blue), and then Double-click the Left mouse button to target the model. To return to the Table View, make sure that no Model is selected (Right click anywhere in table space), and double click the Left mouse button.
- If a Model is selected, it can be Scaled, Rotated, Translated, and Repaired. By default, many 3D File formats are expected to be saved in Millimeters (STL for example). To Scale the Model and make it either Larger or Smaller, enter a value for the Scale Factor and press the Enter key. There are several pre-defined Scale buttons that allow you to instantly scale the Model from:
 - Multiply by 10
 - Multiply by 1
 - Multiply by 1

To Translate a Model and move it around the 3D workspace, enter new values for the 3 X, Y and Z Position entry boxes. The entries represent the X, Y and Z axes respectively. In any of these boxes, pressing the Enter key will invoke the Model translation. The Position can depict the Lower Left Corner of the Bounding Box of the Model or it can represent the Center of the Model depending on the Position Alignment control. When *Corner* is selected, the Model will be placed by its Lower Left corner. Likewise, if *Center* is checked then the Model will be positioned according to its Center. If a model is selected (by clicking on it with the Right mouse button), you can also Drag the model around your Work Envelope by holding the Right mouse button down while dragging.

- **Advanced Model Fix Option:** Most 3D model formats for 3D printing are expected to yield a "water tight" 3D Solid object. This is not always the case and from time to time you may find yourself with a model that will have broken layers due to a leaky model. You can try to fix these models using the automatic mesh mending utility built into NW3D. This utility will guarantee a water tight model but may also distort the model if the model has large holes in it (models made up of Surfaces rather than a Solid). Three options are available for fixing the model: Rough, Smooth, and Sharp. The Rough option will create a Block representation of the model. The Smooth option will round off all sharp corners in the model. The Sharp option will preserve the Sharp corners that exist in the model. In all cases, NW3D will create a new model and append *.fixed* to the model's filename and reload the fixed model.

4. NW3D – Setting Printing Parameters

In order to print properly, certain variables associated with the NW3D Software need to be set according to your machines capabilities. Clicking the *Set Print Parameters* button in the *Setup* Tab will bring up the Print Parameters setup dialog window.



A full set of Parameters can be saved in a single Configuration for later use. By default, the last used set of parameters will be set the next time you run the NW3D Software. Selecting a specific Config from the Drop Down entry box will load the parameters for this Config and allow Editing/Saving of these Config settings.

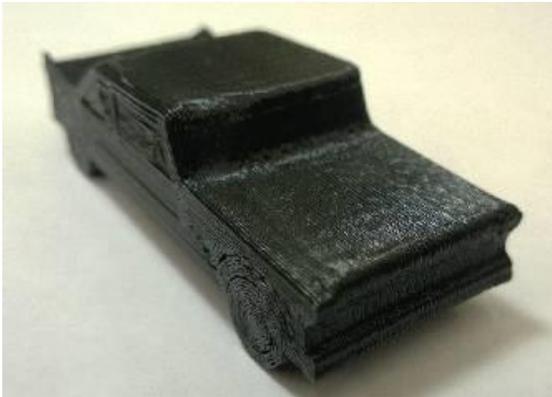
Type a unique name in the Config entry box to start a new set of Printing Parameters. After you have set all of the parameters for the new Config, press the *Save Config* button to store these parameters for later print jobs. You may also select a Config and permanently remove it by clicking the *Delete Config* button.

The Configuration group is also where you set the master Inch/MM setting for your Config. The values for all parameters will default to MM or Inch units depending on this selection. The output Gcode file from NW3D will also have its Units (G20 or G21) set according to this setting.

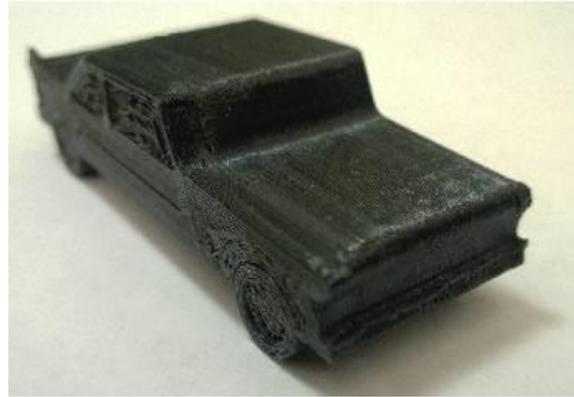
Layer Parameters:



- **Nozzle Diameter:** This is the Diameter of the exit Nozzle of your 3D Print Head. If you are using the NW3D Print Head, the standard Nozzle is 0.016 in or 0.4 mm.
- **Layer Thickness:** This will set the thickness of each individual layer. For best results, it should be no more than the Nozzle Diameter above. A smaller thickness will yield a smoother, higher resolution part at the expense of a longer print time. A value of approximately 2/3 the Nozzle Diameter is a good place to start.



Toy Car @ 0.010 In. Layer Height



Same Car @ 0.005 In. Layer Height

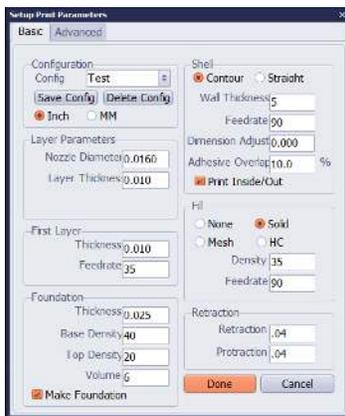
Foundation:

The Foundation is an area under the Model(s) that support the print a small distance above the printing platform. It is typically used for printing materials that have a high degree of shrinkage such as ABS or to prepare a Level surface for the part. The Foundation consists of a thicker Base Layer and thinner Top Surface Mesh layer.

- **Thickness:** Here you will set the Height of the Foundation's Base Layer. The Foundation is usually a heavier/thicker layer and a value of approximately 1.5 times the Nozzle Diameter is usually sufficient.
- **Base Density:** The Base layer of the Foundation does not need to be a full solid layer to perform its function. It is common to make the

Foundation Base a Mesh to save time and material. The Base Density is a value from 1 – 100% with a typical useful range of 10-25%.

- **Feedrate:** Here you set the Feedrate that will be posted to the output Gcode file for the Base layer. The Top surface layer will use the same feedrate as the Print layers. For the best ratio of speed and quality, a feedrate of 30 is recommended.
- **Top Density:** The density of the Top Surface layer of the Foundation. This should be a much denser mesh layer than the Base Layer. A density of 50-75% should suffice. Lower densities will make it easier to remove the Model from the Foundation but may not completely support the Model(s) in all areas.
- **Top Thickness:** This sets the thickness of the Top Surface area of the Foundation. It should generally be less than the Layer Thickness to promote adhesion to the Foundation's base layer. $\frac{1}{2}$ to $\frac{2}{3}$ of the Layer Thickness is typical.
- **Make Foundation:** Check this box to enable the creation of the Foundation. If you are printing directly to your machines table surface and do not require a Foundation, leave this unchecked.



Foundation Settings



Printed Foundation

Shell:

The Shell is the outside surface of a 3D Printed Model. A typical 3D Print will consist of a Shell and its Fill.



Straight Shell



Contour Shell

- **Wall Thickness:** This is the number of passes that make up the outer Shell. Usually 2 or 3 passes will create a decent and hard outer surface.
- **Contour or Straight:** The Top and Bottom of the Model's Shell will always be a solid area. Selecting Contour will create this Solid Surface area using a series of offset contours. Selecting Straight will create this area using a series of straight line segments.
- **Feedrate:** This is the feedrate that will post out to the output Gcode file for your machine. You will want to keep this value within your machine's capabilities. A faster feedrate will get the job done quicker, but might sacrifice quality on loose machines. Typical values range from 50-200 Inch per Minute (20 – 160 MM per Second).
- **Print Inside/Out:** Selecting this option will organize the Print to make the Shell from the Inside Out. This is the default setting. Some Models might benefit from Outside/In depending on the Overhang areas of the Model itself. Experimentation is recommended.
- **Adhesive Overlap:** The percentage that each filament will overlap a previously deposited filament. A value of 0% will have no overlap. A value of 50% will have a 50% coverage over the previously printed filament. Typically, 10% will suffice but Models with steeper overhangs may benefit from a larger value.



Adhesion Overlap set at 25

Adhesion Overlap set at 75

Fill:

Complimenting the Shell is the internal Fill area. There are four options for setting the Internal Fill areas.

- **None:** No fill will be created. Only the outer shell will be printed. This is useful for many Models that do not need to be super strong but are more cosmetic in nature. This is the fastest way to print.
- **Solid:** Creates the fill as a Solid mass. This setting is useful for Models that need to be as strong as possible. This is the slowest method of printing.
- **Mesh:** A sparse fill setting that will print the internal fill from none to solid based on the Density setting. A density of 50% for example will create a porous fill that is 50% solid.
- **HC:** This is a Honey Comb type fill setting and is a little stronger than the straight Mesh fill. It is much slower than the Mesh fill for a given density however.
- **Feedrate:** The feedrate that will be posted for the fill. This can be significantly higher than the Shell since it will never be seen in the finished printed model.



Toy Car with No Fill.



Toy Car with Mesh Fill.



Toy Car with HoneyComb Fill.



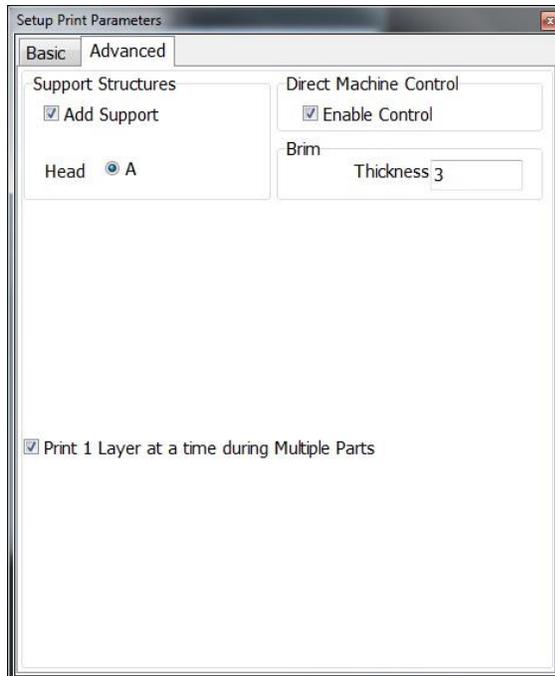
Toy Car with Solid Fill.

Retraction:

When the Print Head moves from one area to another, there may be a small strand of unwanted molten plastic that traverses across the print area. NW3D has the ability to retract the filament before the Print Head makes the move to help alleviate these strands.

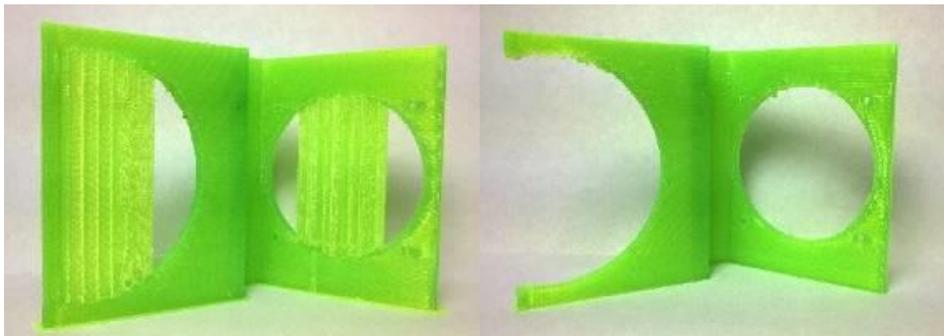
- **Retraction:** The distance the filament will be retracted into the Nozzle before the Print Head moves to a new location.
- **Protraction:** The distance the filament will be protracted after it has been retracted once the Print Head arrives at its new location. The protraction can be a little higher than the retraction to promote better adhesion or it may be slightly less than the retraction to account for Thermal Expansion in the Nozzle. Keeping it equal to the retraction is a good place to start.

5. Advanced Print Parameters



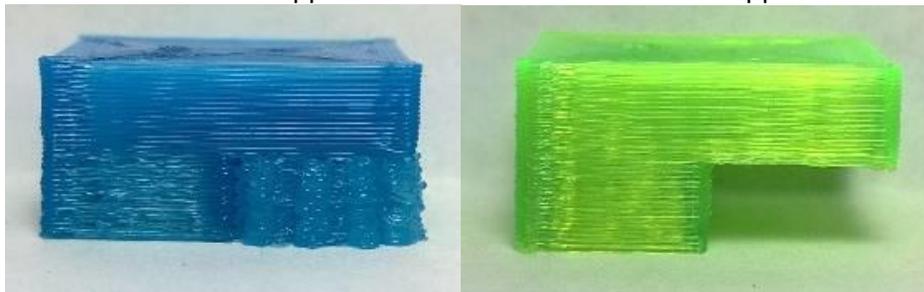
The advanced print parameters allow you to set more advanced parameters for Multiple Print Heads and Bridge/Support material. Using more than one print head allows printing in 2 colors or for printing the Bridge/Support wires in a Water Soluble material.

Support:



Bracket with Printed Support.

Bracket with the Support removed.



Test Block with printed Support.

Test Block with Support removed.

- **Add Supports:** Checking this option will add Support wires to the print job. The Support structure will be a Honey Comb Mesh under any areas that will otherwise print in mid air. These support structures will then be removed manually after the print is finished. NW3D will do a good job printing models that have a strong taper, but can not print objects that overhang in mid air. The Adhesive Overlap value that is set in the Basic parameters plays a big factor in how well a strong taper will print.

Print 1 Layer at a time during Multiple Parts:

When more than 1 Model is to be printed during the same Job, you have 2 options to print the job.

- Print a complete Model in its entirety first and then print the next Model in line.
- Print All Models at the same time, one layer at a time. Checking this box will invoke #2 above.

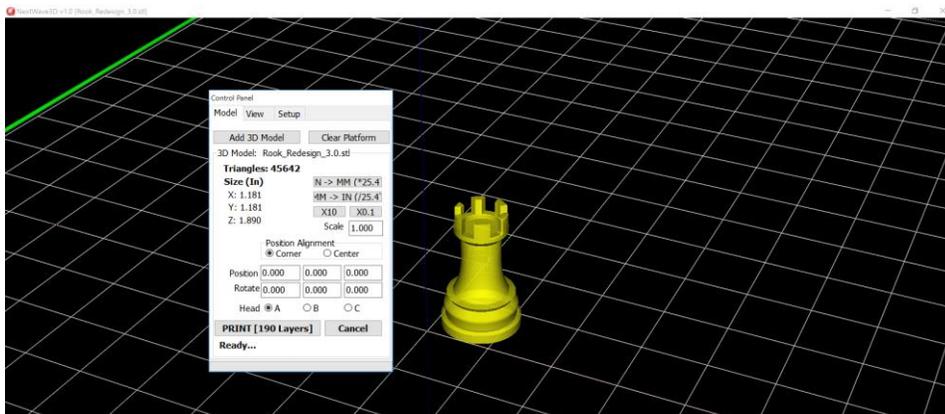
Config:

Enable Control: To use the Next Wave 3D Piranha Controller, check this box to automatically have NW3D connect to your machine when the machines USB cable is plugged in.

6. Printing and Viewing your Model(s) Toolpaths

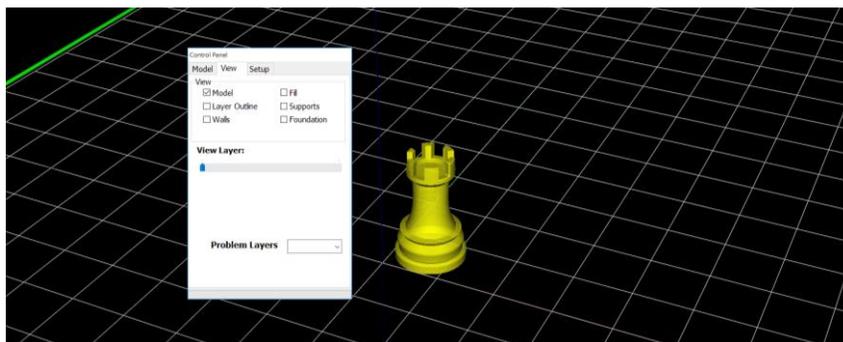
Printing Model Toolpaths

NW3D creates a 3D print file in a generic dialect of RS274 Gcode. This file format can be used by most machine controllers including the NW3D Mini Machine Controller. When you are satisfied with your Print Settings, simply press the *PRINT* button. The *Print* button will automatically update itself displaying how many layers the model is. You will be prompted for a Filename to save the Gcode print file. While NW3D processes the print job, each layer will be displayed in the 3D Viewer. When the job has finished processing, you can view each layer.



Viewing Model Toolpaths

Once the Gcode print file has been created and saved, the model can be viewed layer by layer. Under the *View* tab, you have the option to include the entire Model, the Layer Outline, Walls, Fill, Supports or Foundation in the layer by layer view. If these options were used when creating the model they will be visible while inspecting the layers when their checkboxes are selected. Use the slider in the middle of the *View* tab to change and select the layer that you would like to view. The mouse buttons and scroll wheel will allow you to work within the work envelope to view the layer that was selected. If the model has any Problem Layers, the dropdown menu will list them for further viewing. If there are no Problem Layers the dropdown menu will read none.

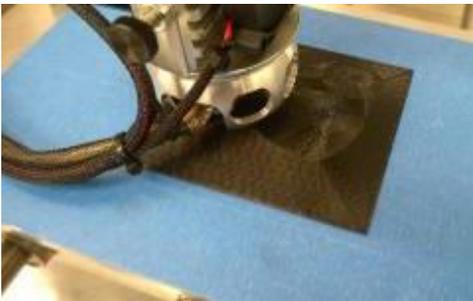


7. Running a Print Job

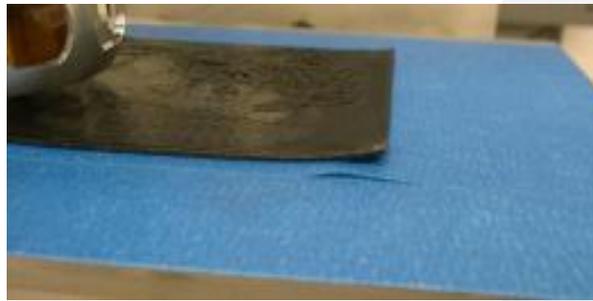
After setting up the workspace, the machine, the print parameters and saving the Gcode file, it is time to print your 3D object.

Prepping the Surface

In order for the 3D Print to be successful, the filament must be able to easily adhere to the print surface. Regardless of the type of machine being used the print surface should be covered with blue painter's tape to obtain maximum adhesion. Make sure that the tape is not overlapping to ensure a smooth flat print surface. The surface must be cleaned with alcohol just prior to printing to make sure the surface is free of oil or debris.



Strong Adhesion



Weak Adhesion –Corners are pulling up. Tape is pulling up.

Running the Print Job

After saving the Gcode print file, you can select the *Run* tab in NW3D. The axis can be zeroed using the X, Y, Z, A buttons. In most cases, the Print Head should be centered on the print surface using the X and Y coordinates. When creating larger objects that take up most of the machine's travel, it may be beneficial to adjust the Print Head's Zero point away from the center of the print surface in order for the entire object to fit on the surface. Once the Print Head has been situated in the correct location, click *Zero* next to the X and Y axis. The Z axis should be lowered using the Z- button until it just touches the print surface. Allow only the

width of a sheet of paper between the Print Head nozzle and the print surface, and click Zero next to the Z axes. The filament will need to be fed through the Print Head before beginning the print. Using A+ (feed button) to feed the filament until it comes out of the nozzle and clean the nozzle off.

Precautions when Printing

Make sure the Print Head is fully heated up before feeding filament at any step in the process. When changing the filament, it is **STRONGLY** recommended to only feed the filament in the positive (A+ or feed button) direction. Reversing the filament direction (A-) can cause the filament to jam the Print Head. It is best to cut the filament off a $\frac{1}{4}$ of an inch away from the entry point and feed the new filament in behind the old. This will also work when switching from the top feed entry point to the side feed entry point and vice versa.

Obtaining adhesion to the print surface is crucial for the print to be successful. Watch the print and periodically check to ensure the object has not pulled off of the print surface. If the object has lifted away, the print should be canceled. Clean the print surface again before attempting another print and double check the Z axis depth.

At any point, if changes are made under the *Model* tab or the *Setup* tab a new 3D model must be created by clicking the Print button to create a new Gcode file.

Running the Print Using Piranha Fx

MAKE SURE THE SPINDLE FOR THE MACHINE IS TURNED OFF DURING THE ENTIRE PRINT PROCESS INCLUDING ANYTIME THE PRINT HEAD IS ATTACHED.

After saving the Gcode print file, you can open this saved file in Piranha Fx pendant or the controller software to complete a 3D print. Ensure the power to your machine is on that the Print Head has fully heated up. The machine needs to be homed by pressing the home button. Set up your Work Coordinate Offsets as you would normally do for machining a part. Also, set your TLO so that the Print Head's nozzle is just touching the print surface. Now the .DNC file can be added by selecting *File=>Open NC*, then select the .DNC file that was saved in NW3D and click *Open*. Before beginning the print, set the jog speed to Slow (Slow jog feed equals 5 IPM). Click and hold *CW* (Clockwise) to feed filament through the Print Head and clean off excess filament. It is **EXTREMELY IMPORTANT** to zero the A axis after starting the filament, but before printing, by clicking the A button under Control Mode above the coordinate readouts. Failure to zero the A axis can cause the filament to be reversed out of the print head causing a jam or other damage to the Print Head. The last step in the process is clicking *Go* and watching the print begin.

Precautions when Printing Using the Piranha Fx Controller or Pendant

Make sure the Print Head is fully heated up before feeding filament at any step in the process. When changing the filament, it is **STRONGLY** recommended to only feed the filament in the positive (A+) direction. Reversing the filament direction (A-) can cause the filament to jam the Print Head. It is best to cut the filament off a ¼ of an inch away from the entry point and feed the new filament in behind the old. This will also work when switching from the top feed entry point to the side feed entry point and vice versa.

Obtaining adhesion to the print surface is crucial for the print to be successful. Watch the print and periodically check to ensure the object has not pulled off of the print surface. If the object has lifted away, the print should be canceled. Clean the print surface again before attempting another print and double check the Z axis depth.

8. NW3D Print Head



Features:

- Top or Side Filament Feed
- Multiple Shank Sizes available for your Spindle
- All Metal Construction
- Forced Air Cooling
- Powerful 2 Amp Stepper Motor
- 110v/220v AC Heater Options heats up fast
- Precision Thermocouple temperature Sensor
- Heater Guard to protect

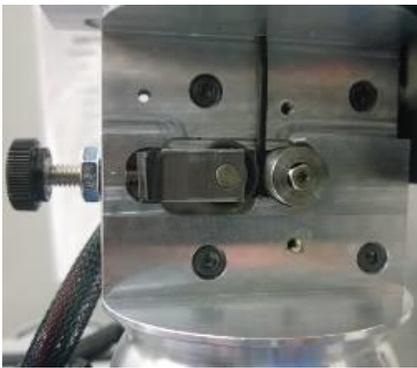
Loading the Filament:

The NW3D Print Head accepts 1.75mm Dia Plastic Filament. The Filament can be fed from either the Top or from the Side. When feeding the Filament from the Top, it is inserted down through the Feed Hole in the center of the Shank. The Shank may be either 3/8" or 10 mm Diameter to fit most Spindles with other sizes available by request. The Filament can also be fed from the side when access to the Shank is not available

Adjusting the Filament Tensioner:

Under normal use, the Filament Drive system will not require adjusting. If it does become loose, or you notice the NW3D Print Head is jamming from time to time, then follow these steps to put the NW3D Print Head back to its factory state.

- Without any Filament in the Print Head, loosen the Tension Adjuster Jam Nut on the Side of the Print Head.
- Tighten the Tension Adjustment Knob until you just feel it making contact with the internal Pinch Roller.
- Back off the Tension Adjustment Knob to the point where it is right on the edge of where it makes contact with the internal Roller.
- Tighten the Jam Nut and the Print Head is now ready to be charged with plastic.





Charging the NW3D Print Head:

- Turn the NW3D Heater Control on; wait for the NW3D Nozzle to reach temperature.
- From your Machines Control Panel, start slowly Jogging the A Axes (The NW3D Print Heads Motor should start turning CounterClockwise).
- Feed the Filament by hand through either the Top or Side Entry location. Once the Filament reaches the Print Head's Drive system, you will feel the Filament start to tug and you can now let go of the Filament.
- Keep Jogging the A Axes until molten plastic exits the Nozzle.
- If the Filament is Kinked or Bent, it may be necessary to remove the front cover of the Print Head and manually guide the Filament into the Feed Tube using a stiff wire such as a Paper Clip.

APPENDIX

Registration of Software and 3d Print Head



Figure 78 - Registration - Products Panel



Figure 79 - CNC Model Pulldown

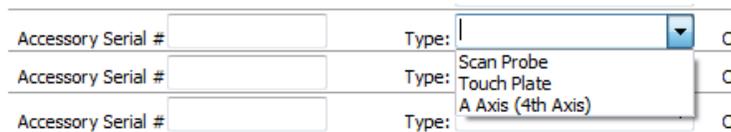


Figure 80 - Accessory Type Pulldown
Customer Owner

From this panel you will enter in information about yourself/your company. Note that every entry marked with a red asterisk is a required entry. The email address associated with this registration is entered two times to ensure it is accurate. Once you have made the appropriate entries, tap 'Next'. You will be prompted to fill in any 'missing' required information and not be able to proceed to the 'Get Registration' panel.

The screenshot shows a registration form titled "Get Registered" under the "Customer Owner" tab. The form is divided into two main sections. The first section, "Please tell us about yourself...", contains the following fields: "Company" (text), "Phone #" (text), "First Name" (text), "Last Name" (text), "Country" (dropdown menu with "United States" selected), "Province" (text with "None" selected), "Address" (text), "Address 2" (text), "City" (text), "State" (text), and "Zipcode" (text). The second section, "Please enter your email information.", contains "Email address" (text) and "re enter Email address" (text). A legend at the bottom left states "* Required Field". Navigation buttons at the bottom include "<-- Previous", "Next -->", and "Close".

Figure 81 - Registration - Customer Owner Panel

Get Registered

There are two ways to submit the registration:

- Via the internet
- Via email

On the 'Get Registered' panel you will see 3 buttons



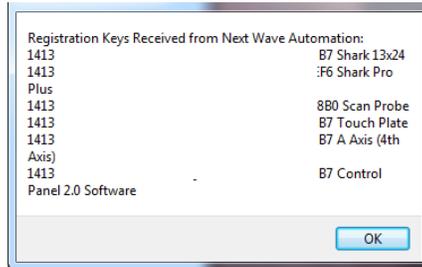
Figure 82 - Registration - Get Registered Panel

Submitting Via the Internet

If the computer you have installed the Control Panel is connected to the internet, this method is by far the easiest as it not only submits the registration serial numbers automatically, but returns the registration keys and installs them for immediate use for you. If your computer is 'out in the shop' and not connected to the internet, it may be worth the trouble to bring it to a location where it can be connected to the internet to perform this step.

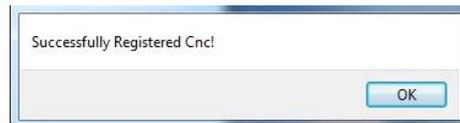
Tap on the 'Submit' button. You will next see a panel that informs you

of what registration keys were received from the NWA registration server.



**Figure 83 -
Registration
Keys Received**

After tapping on the 'OK' button, you will next be presented with an information panel as each of the registration keys are installed on your setup. Click 'OK' to acknowledge the message. Again, you have to acknowledge one information panel for each component registered.



**Figure 84 - Successful Registration
Notice**

After closing that last information panel, the Control Panel will open.

Submitting via Email

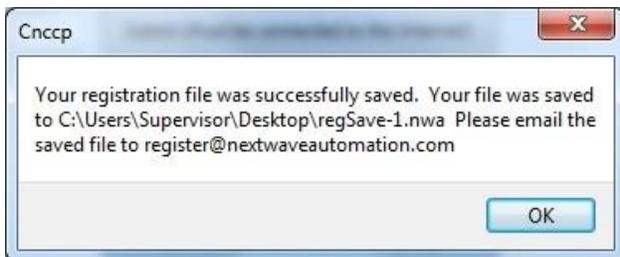
The other 2 choices on the 'Get Registered' panel result in submitting the registration information via email.

If you tap on 'Email Registration to Next Wave', your email client will

start and a new email message will be created with the 'To' line filled out and the registration file attached. Send the email message. This method may not work with every email configuration. However you will see a message telling you

where the registration file was saved on your computer. If your email client does not open, simply create a new email message, attach the file, and send the email to register@nextwaveautomation.com.

If you tap on 'Save Registration Info to Local File', you will be prompted to define where on your computer the registration file will be saved. After you hit 'Save', you will see a message telling you where the registration file was saved on your computer. Create an email message, attach the file, and send the email to register@nextwaveautomation.com.



**Figure 85 - Saved
Registration File Information Panel**

In both cases, you will receive an email with the registration keys associated with your request. You will then have to enter the registration key(s).

After acknowledging the information panel, the Control Panel will start to open. You will be reminded about how many days you have remaining to register. If you have not yet received the registration keys via email from NWA, select 'No' and the Control Panel will open.



Figure 86 - Registration Status and Reminder

First Registration Keys

If you did not register via the internet, you will receive an email from NWA with registration keys for each component registered via email. From the registration reminder, select 'Yes' (I have a controller registration key). The 'Enter Registration Key' panel will open. Enter the registration key for the CNC Piranha machine and tap the 'Set' button.

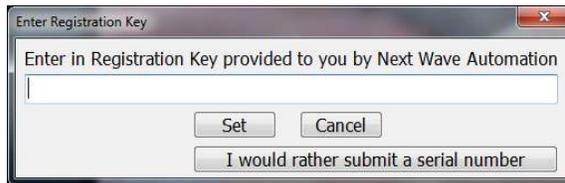


Figure 87 - Enter Registration Key

You will next see a panel letting you know that you've successfully registered your CNC machine and the Control Panel will open.

Ensure there are no spaces between any of the alphanumeric values when entering the registration key. If copying and pasting from an email, double check that there are no spaces in what you received from the NWA registration system.

You will enter the other registration keys associated with your system

from the Control Panel. This can include the registration key associated with the CNC machine (if you 'skipped' entering it while starting the Control Panel).