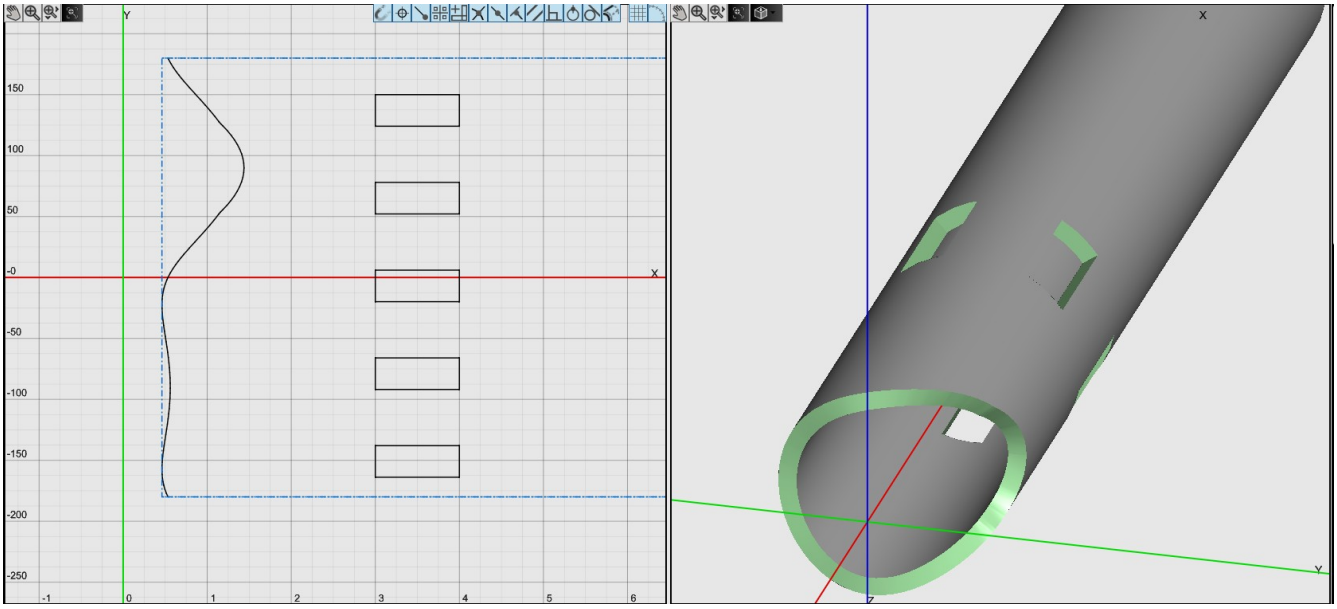
FLASHCUT CNC

CONTROL MADE SIMPLE

Pipe Cutting Software Tutorial



Midwest Office

444 Lake Cook Road, Suite 22

Deerfield, IL 60015

Phone (847) 940-9305 ♦ Fax (847) 940-9315

www.flashcutcnc.com

©1998-2019 WPI, Inc.

Getting Started.....1
About This Manual.....1
Turning Off the Controller.....1
Safety and Usage Guidelines.....2
Setting Up A New Pipe Part.....1
Designing A Pipe Part.....2
Joint Shape Tool.....2
2D Geometry.....4
DXF Import.....4
Creating A Pipe Toolpath.....5
Stock Configuration.....5
Orienting The Pipe.....5
Adding Pipe Parts.....6
Pipe Nesting.....6
Cutting A Pipe Part.....7
Preparing The Machine.....7

Getting Started

About This Manual

FlashCut CNC is a unique application involving hardware and software. We recommend that you read all of these instructions before using the product.

Since automated machining is potentially dangerous, please take the time to completely read through this manual and the software User's Guide to understand the operation of the electronics, software and machine before cutting a part.

Turning Off the Controller

Always turn off the CNC Controller when it is not in use.

Safety and Usage Guidelines

When running an automated machine tool, safety is of the utmost importance. For proper and safe use of the FlashCut CNC program and your CNC machine, the following safety guidelines must be followed:

1. **Never let the machine tool run unattended.**
2. **Require any person in the same room as a running machine tool to wear safety goggles and to stay a safe distance from the machine.**
3. **Allow only trained operators to run the machine tool. Any operator must have:**
   - **Knowledge of machine tool operation.**
   - **Knowledge of personal computer operation.**
   - **Knowledge of Microsoft Windows.**
   - **Good common sense.**
4. **Place safety guards around the machine to prevent injury from flying objects. It is highly recommended that you build a safety shield around the entire tool envelope.**
5. **Never place any part of your body within the tool envelope while the machine is online, since unexpected machine movement can occur at any time.**
6. **Always keep the tool envelope tidy and free of any loose objects.**
7. **Be on alert for computer crashes at all times.**

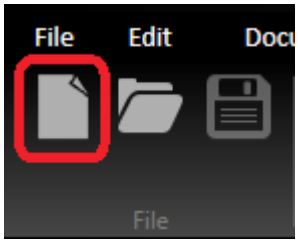
FlashCut CNC, Inc. is not responsible for the safe installation and use of this product. You and only you are responsible for the safety of yourself and others during the operation of your CNC machine tool. FlashCut CNC supplies this product but has no control over how it is installed or used. Always be careful!

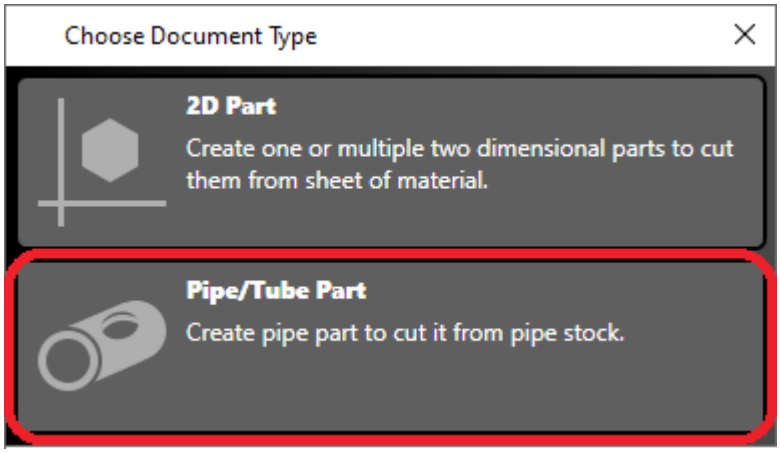
FlashCut CNC, Inc. or its affiliates are not responsible for damage to any equipment or workpiece resulting from use of this product.

If you do not understand and agree with all of the above safety guidelines, do not use this product.

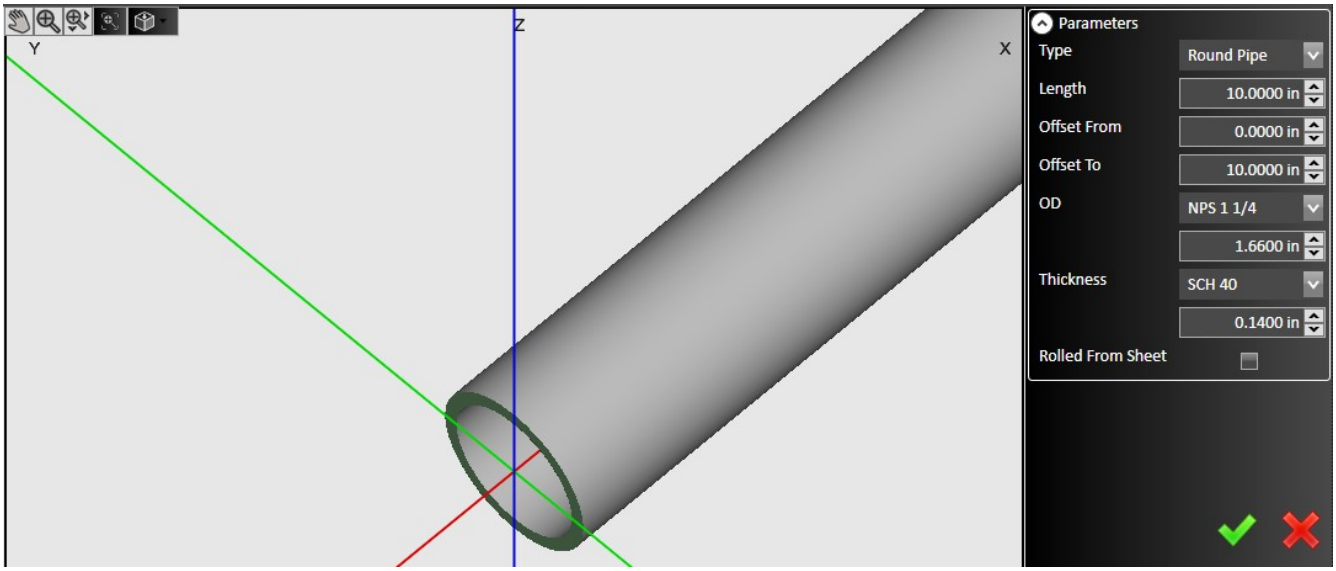
Setting Up A New Pipe Part

The software will create a new 2D project when launched. To change this to pipe, click the “New Document” button. This can also be access from the “File...” drop-down. Then click ‘New Pipe/Tube Part’ on the following pop-up screen.





Next, open the “Pipe Dimension” tool and enter the length, OD and wall thickness of your stock. If you select an NPS rating, OD and wall thickness will be automatically populated. For now, ignore the “Offset From” and “Offset To” parameters. Click the green check to accept.

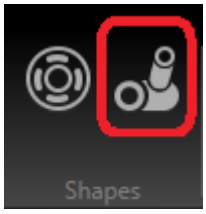


Designing A Pipe Part

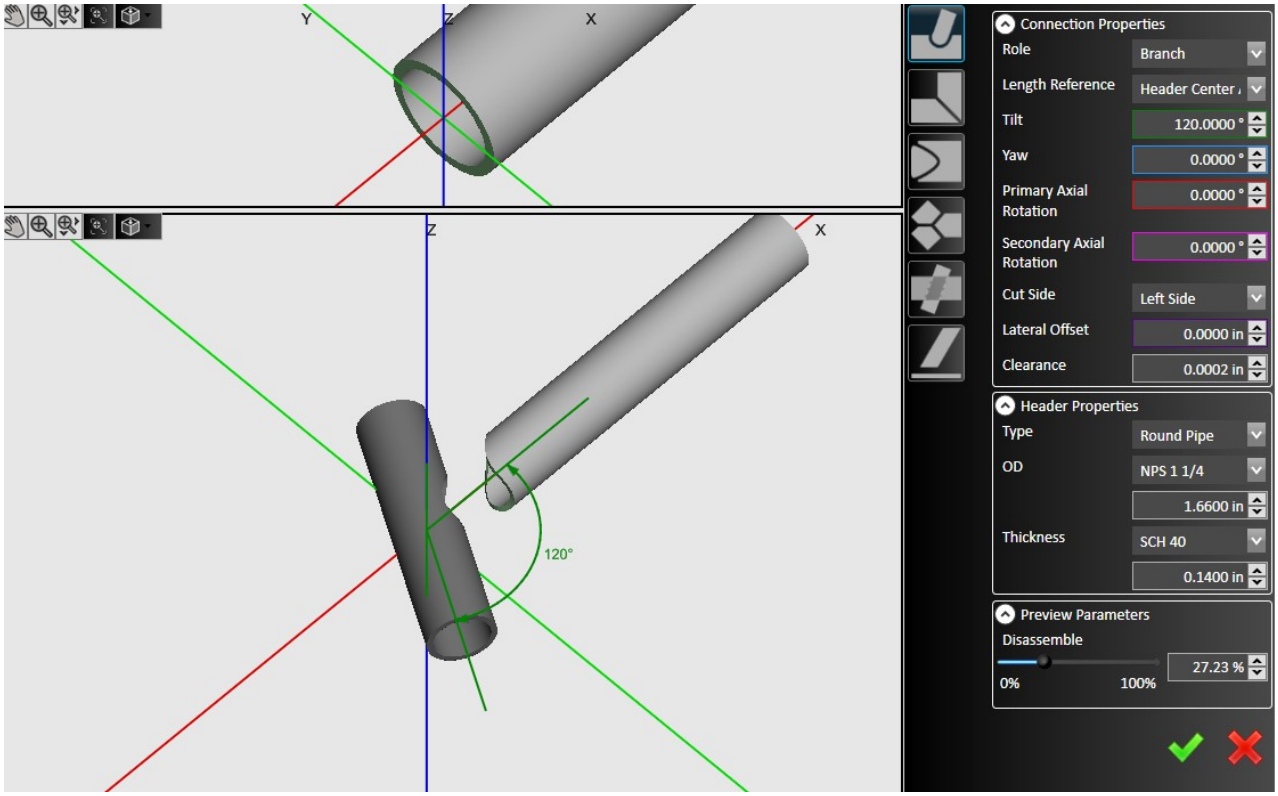
Pipe CADCAM includes several methods to draw the part in the software, all of which can be used separately or together.

Joint Shape Tool

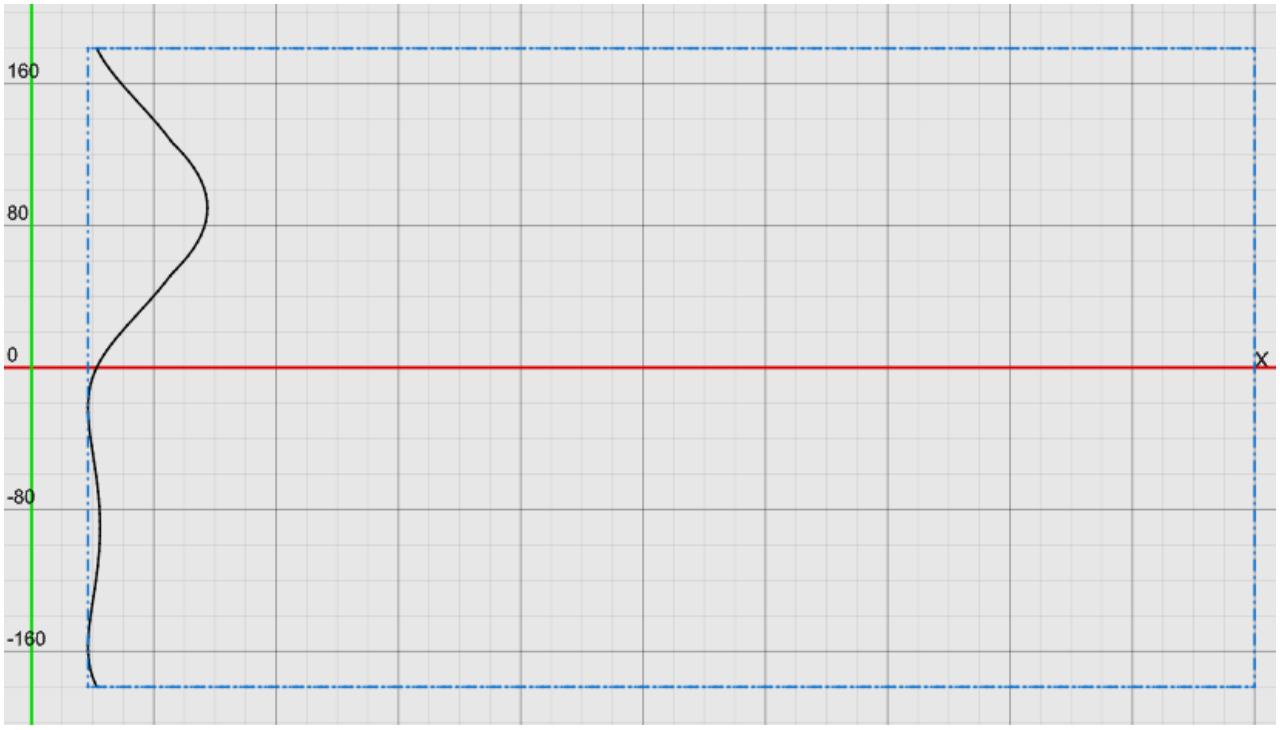
This powerful tool can automatically shape the pipe to interact with other pipes, tubes and plates. To begin, click the “Pipe Joint Shape Tool”.



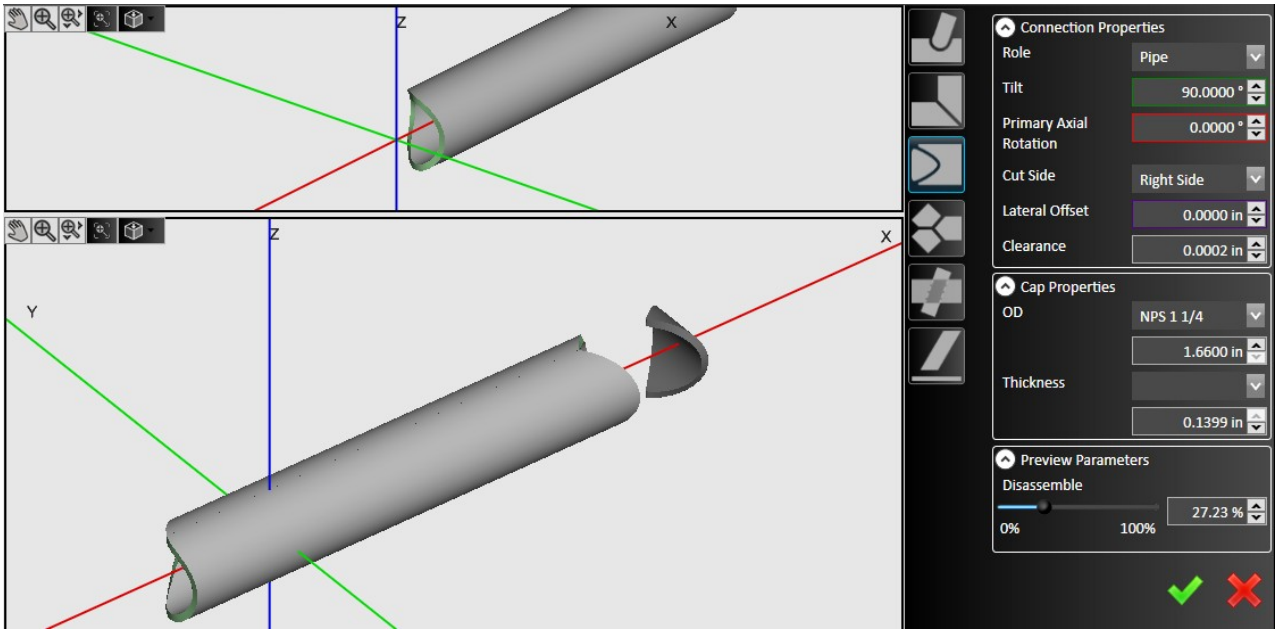
From here, select the type of interaction you’d like to add. For certain joints, you can select which role the current pipe plays, such as header or branch in the joint shown below. While the tool will default to mating with a pipe of the same specification, you can also adjust the size of the second pipe. Using the “Disassemble” slider, you can also see the joint separated.



Pressing the green check will accept the joint and create the geometry on the unrolled, 2D view.

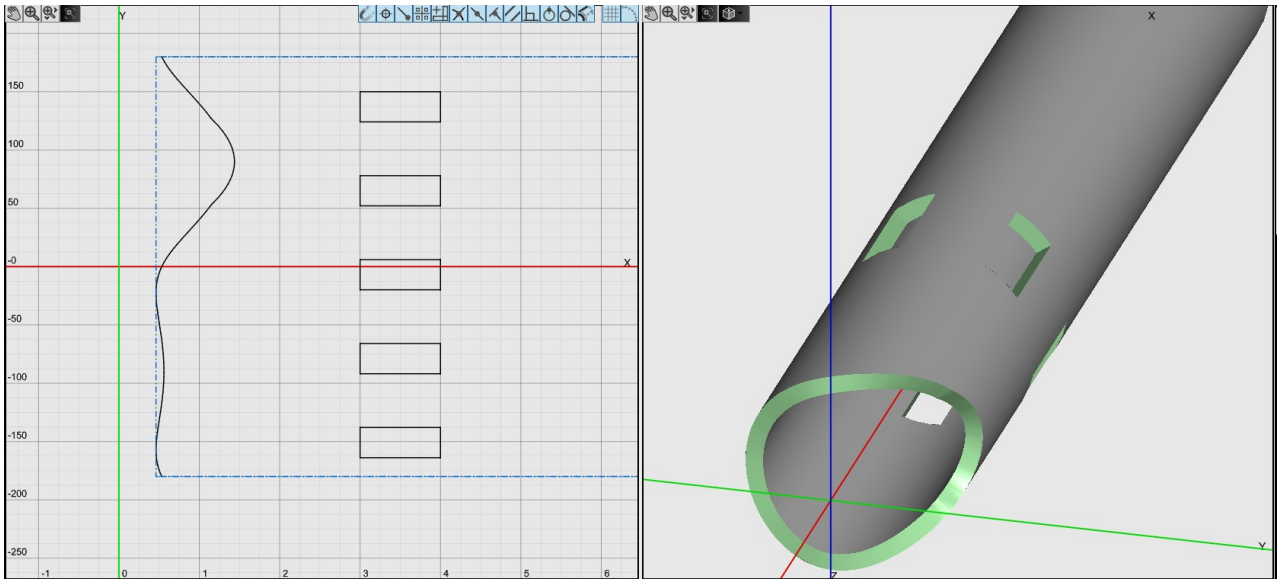


When using this tool, you can select whether this feature is created on the left- or right-hand side in order to create an entire pipe part. This is selected using the “Cut Side” dropdown.



2D Geometry

Using this unrolled view, you can also draw features on the pipe as if it were a 2D sheet. Every tool normally available for working with plate or sheet material can also be used here—including shapes, text, bridges, *etc*. When working on the 2D view, note that the vertical scale is in degrees to make it easier to conceptualize rolling the pipe into a 3D object.



DXF Import

The software also supports importing “unrolled” DXF files from other CAD software. After importing, the pipe can then be modified by either of the other two methods.

Creating A Pipe Toolpath

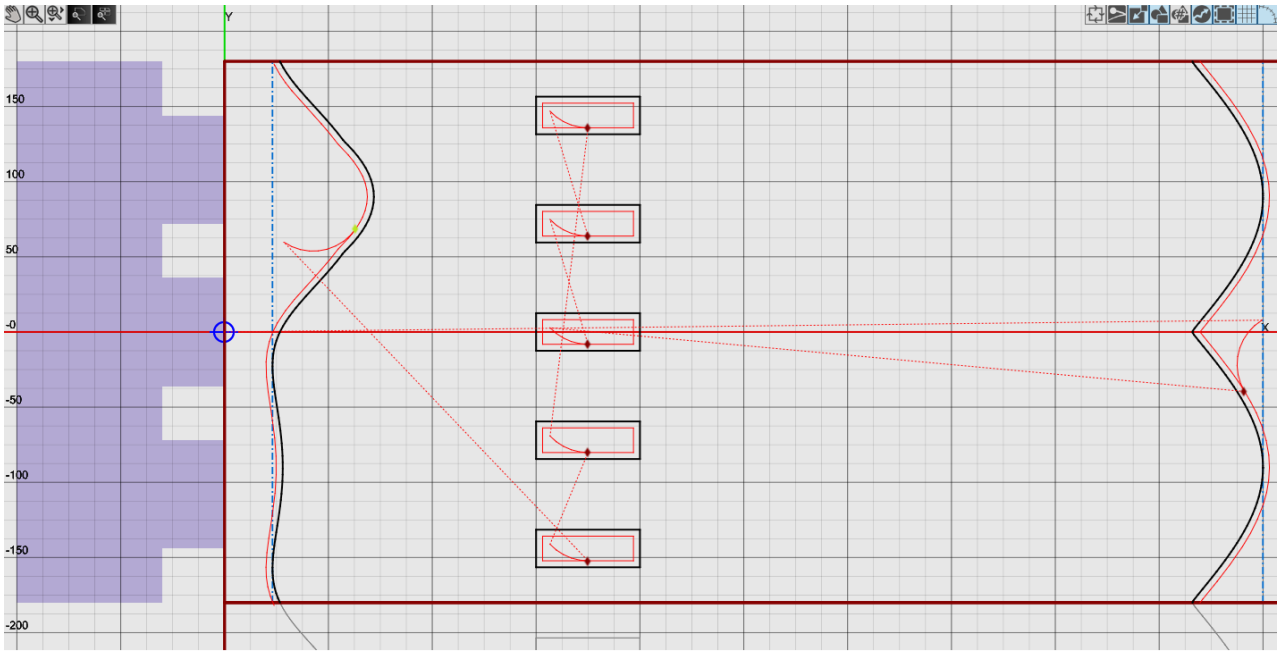
Once the part has been drawn, use the double arrows between CAD and CAM to push the part over and automatically generate a toolpath.

Stock Configuration

With pipe, the only parameter you need to enter in CAM is the length of your material. This is found in the "Project Settings" button in the *CAM Actions* section.

Orienting The Pipe

On the CAM view, the blue shape represents the location of the chuck. If this is on the wrong end of the machine, go to the "Machine….Rotary Axes" page in the configuration and adjust the "Chuck End" setting. The blue cross-hair represents the 'zero' point of the program—if you'd like to zero your machine at the far end of the chuck, simply click and drag it to the far side of the workpiece. It will stay at the new location until adjusted again.



You can click and drag the pipe along your material to change its location. You can also flip its direction by selecting the part and clicking the 180° symbol at the corner.

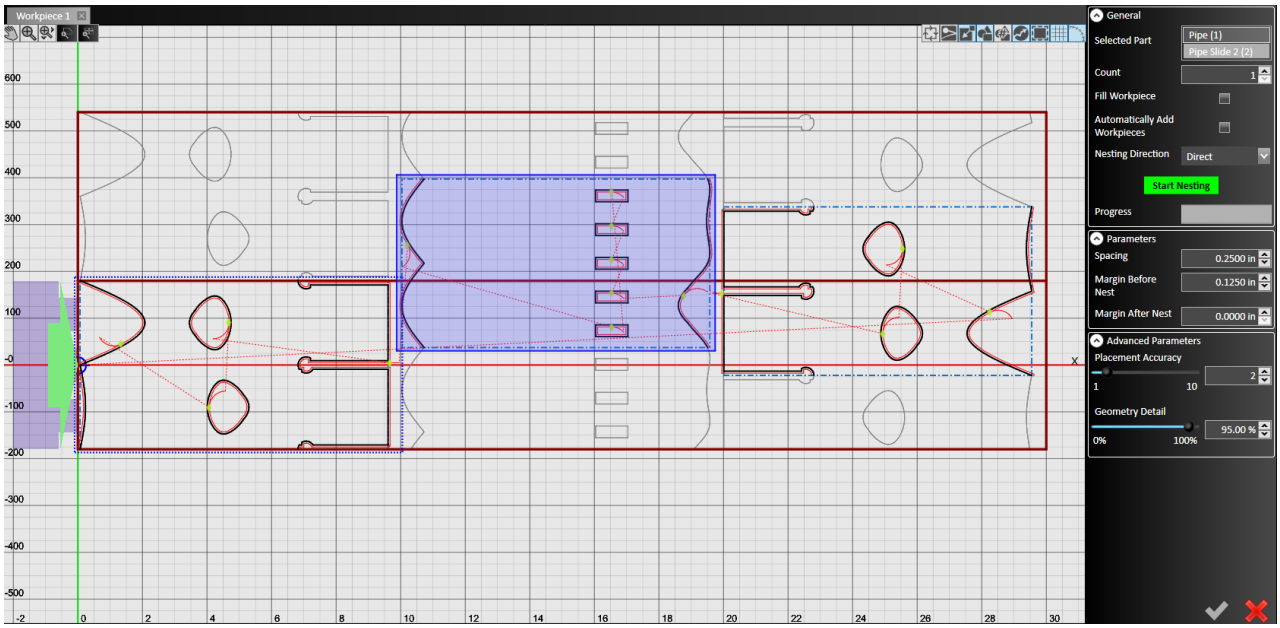
Adding Pipe Parts

You can cut multiple parts from the same stock. After creating and saving a pipe CADCAM file, you can import it into another pipe CAM screen by using the “CAD” tool in the *Import* section.

Pipe Nesting

The software will automatically nest together pipe parts to use the stock most efficiently. To begin, open the “Pipe Nesting” tool in the *CAM Actions* section.

With the Nesting tool open, you can define the quantities of each part to include in the nest as well as the spacing between parts. It’s also possible to fill the stock with as many parts can fit. In this case, the tool will use the entered quantities as a ratio.

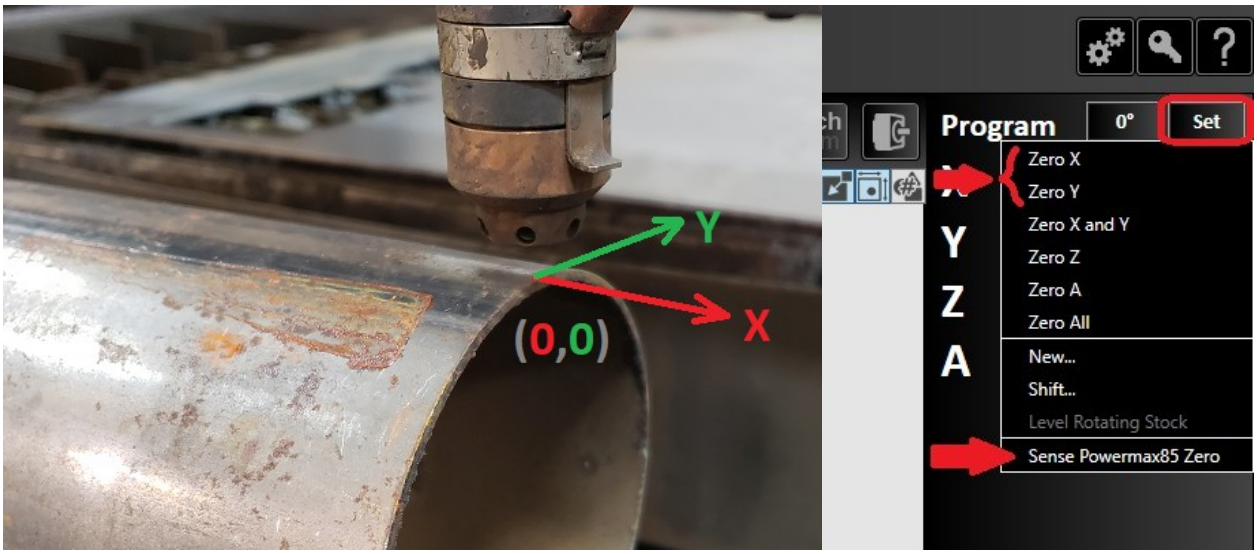


Cutting A Pipe Part

Once you're happy with the toolpath, click the double arrows between CAM and CNC to push the part over to the control portion of the software.

Preparing The Machine

You will need to zero the machine appropriately before you begin cutting. For the length-wise axis, this is as simple as positioning the torch where the blue cross-hair was in CAM and zeroing the axis from the "Set..." dropdown. If your machine has a lateral axis, the process to zero it will vary between machines. One might have a switch to home to while another might require the axis to be manually zeroed.



After this process, use the "Set..." dropdown once again and select the "Sense ___" option to zero the Z axis.

At this point, the machine should be ready to cut. Click the green 'Play' button to run the part.