

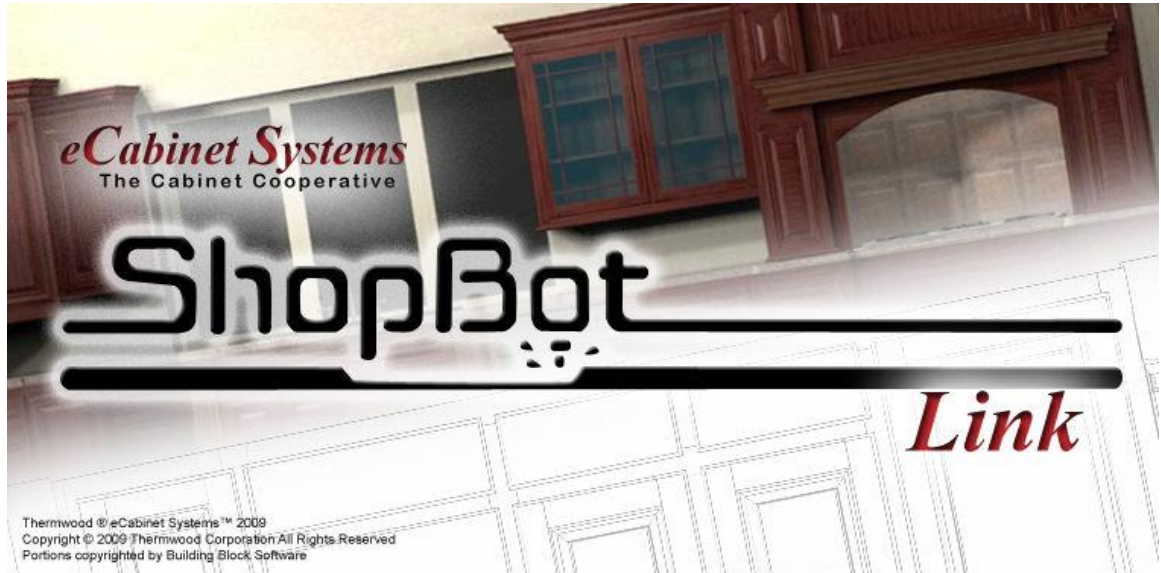
ShopBot Link Manual

Table Of Contents

ShopBot Link	1
Introduction	1
Specifications	2
Operation	2
Export	3
Loading.....	5
Loading Files	5
eCabinet Systems Files (*.twd)	5
Clear All	6
Scrap Part Recovery	6
Selection Filter	6
Settings	9
Settings	9
Dimension Format	9
Table Parameters	10
Machine Settings	10
Machine Settings	10
Sheet Selection	11
Router Off Every Sheet	11
Ck Waste Board Every Sheet	11
Placement Pins Setup	11
Header & Footer	11
Pocket Settings	13
Pocket Settings	13
Pocket Step & Clean Up.....	14
Pocket Area (Through Cuts).....	14
Run Pockets made of 1 arc and 1 line as a drill when the line is on the edge of the part	14
Cut Parameters.....	14
Cut Parameters.....	14
Skin Pass.....	15
Skin Thickness	17
Ramp In Length.....	17
Cut Through Depth.....	17
Retract Height.....	17
Outline Order.....	18
Pre-Ramp Depths.....	18
% Full Feed for Through Cuts	18
Last Line Feed Speed	18
Max Feed Size	18
Min Feed Rate	18
Do Drills First.....	18
Perform All Through Cuts Last (outline cuts).....	19
Perform All Through Cuts Last (rout cuts).....	19
Run Opposite Direction	19
No Outline Cuts	19
Off-Fall	19
Tabbing Parts.....	20
Tabbing Parts.....	20
Tab Parameters	20
Nesting Parameters.....	20
Nesting Parameters	20
Min. Square for Off Fall	21
Add Part Clearance.....	21

Collar	21
Part Rotation Step Angle	22
Nest to the Edge of the Sheet.....	22
Starting Corner	22
Tooling	25
Tooling	25
Select Tool Tolerance.....	25
Tooling Group	26
Copy/Paste.....	26
Group Materials.....	26
Ignore Groups.....	26
Outline Tool Setup	26
Operation Tool(s) Setup	27
Confirmation Screen.....	28
Adding Sheets and/or Off-fall	31
Adding Sheets and/or Off-fall	31
Off-Fall Library.....	31
Off-fall Library	31
Load Operations	33
Delete Operations	33
Search Option	33
Bring Selections to Top	33
Sheet Entry	33
Void Entry	34
Grain Setting.....	34
Rotate Off-fall Input.....	34
Sheet(s) List.....	35
Accept Sheet.....	35
Delete Sheet.....	35
Return	35
Nesting	37
Printing	41
Writing to ShopBot.....	47
Rotate Flip Operation	49
Dovetail Drawer Boxes	51
eCabinet Systems Drawer Box Designer Setup.....	51
Set up at the Machine	52
ShopBot Link Settings Dialog	53
ShopBot Link Tooling Dialog	57
Carvings	59
Inset Carvings with eCabinet Systems	59
Run a Single Carving.....	59
Glossary	63
Index	65

ShopBot Link



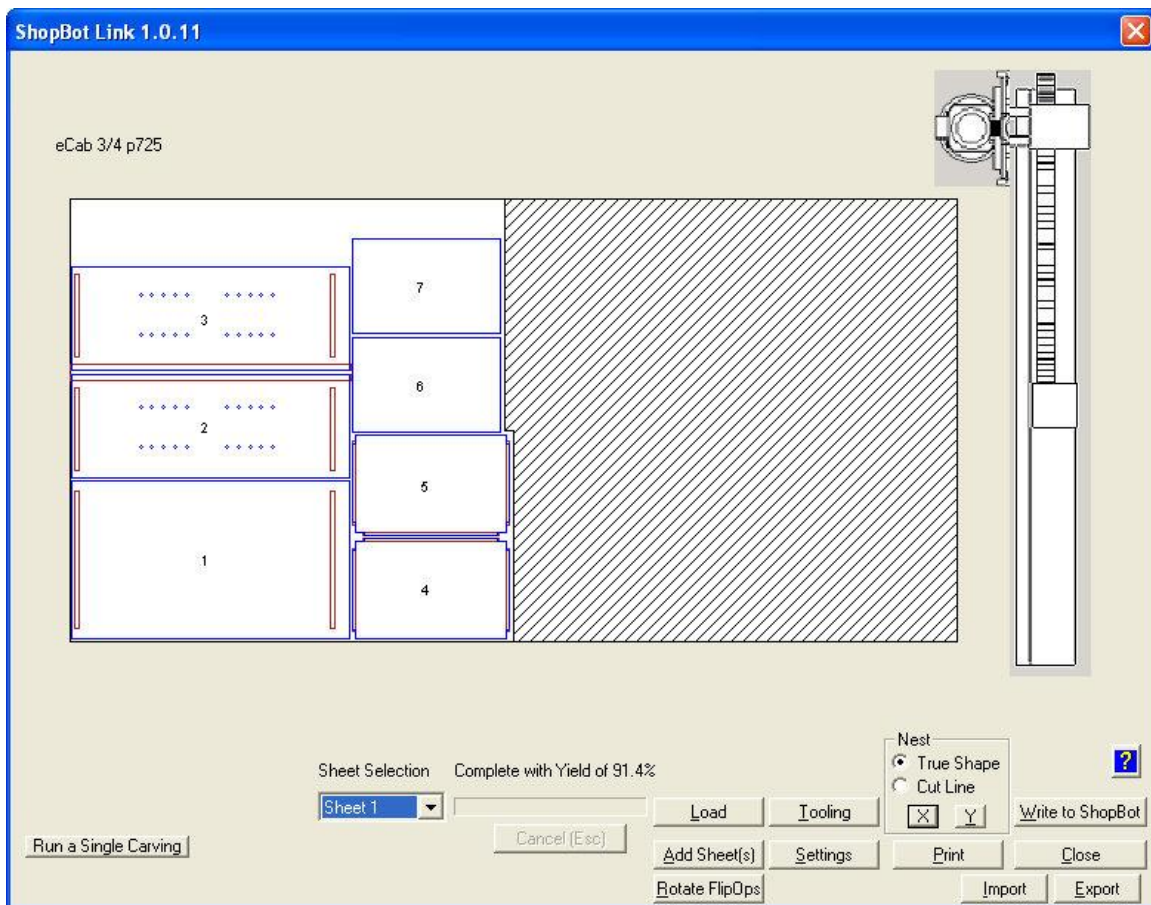
User Manual

Last Updated: L.E. 12-7-2016 Version 1.x

Introduction

ShopBot Link is a nesting package integrated into the ShopBot Control.

This package allows the user to nest various parts into sheet stock, thus creating a user-friendly program. Some benefits of this particular package include better yield, mixing of different parts, label printing for the parts as well as off-fall, ability to re-use off-fall, etc. It will also display a graphical view of the nest to insure it will suit the user's needs along with a yield percentage per sheet stock.



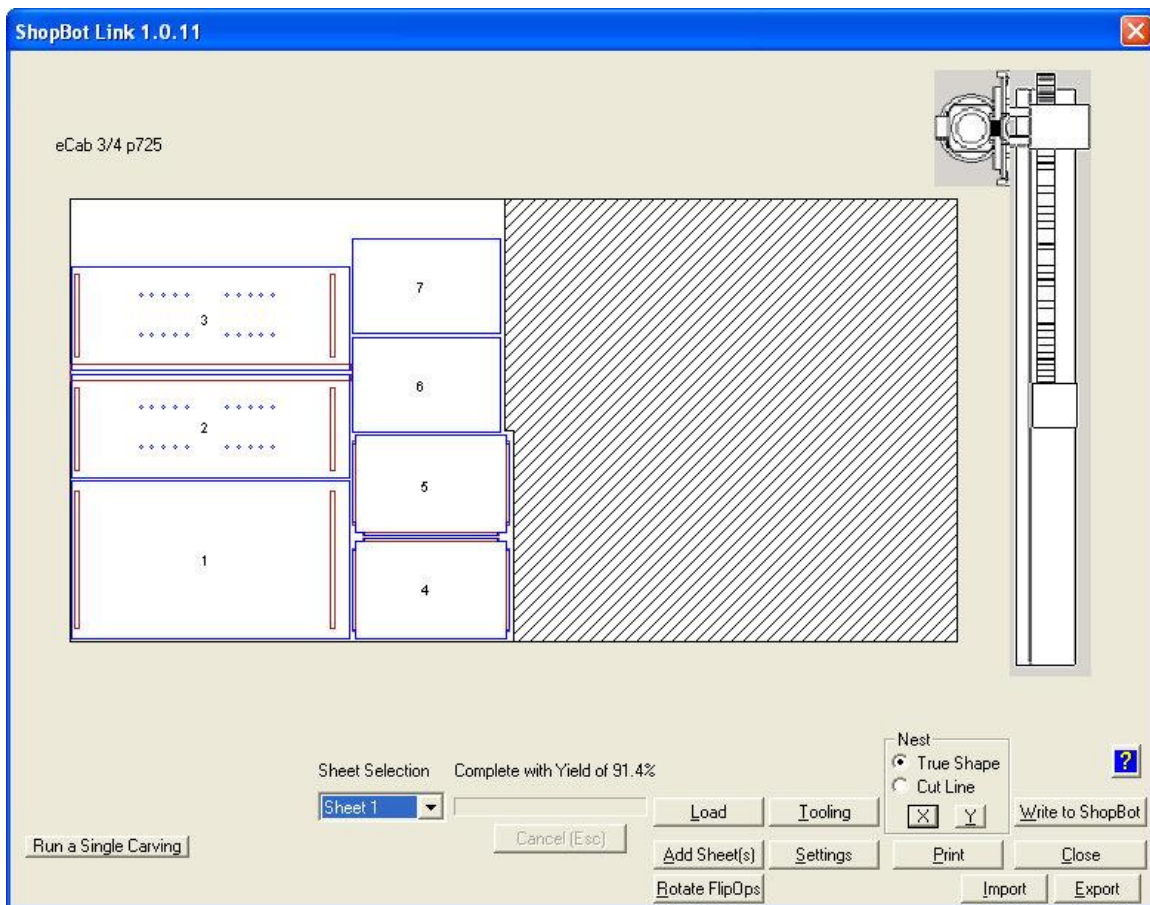
Specifications

ShopBot Link can be used in conjunction with eCabinet systems software to quickly nest and generate CNC programs from the provided TWD files.

Definition: Off-fall = Usable scrap leftover from an operation.

Operation

The user may activate ShopBot Link from the Start menu or an icon on the desktop. A dialog box will appear resembling the following picture:



Export

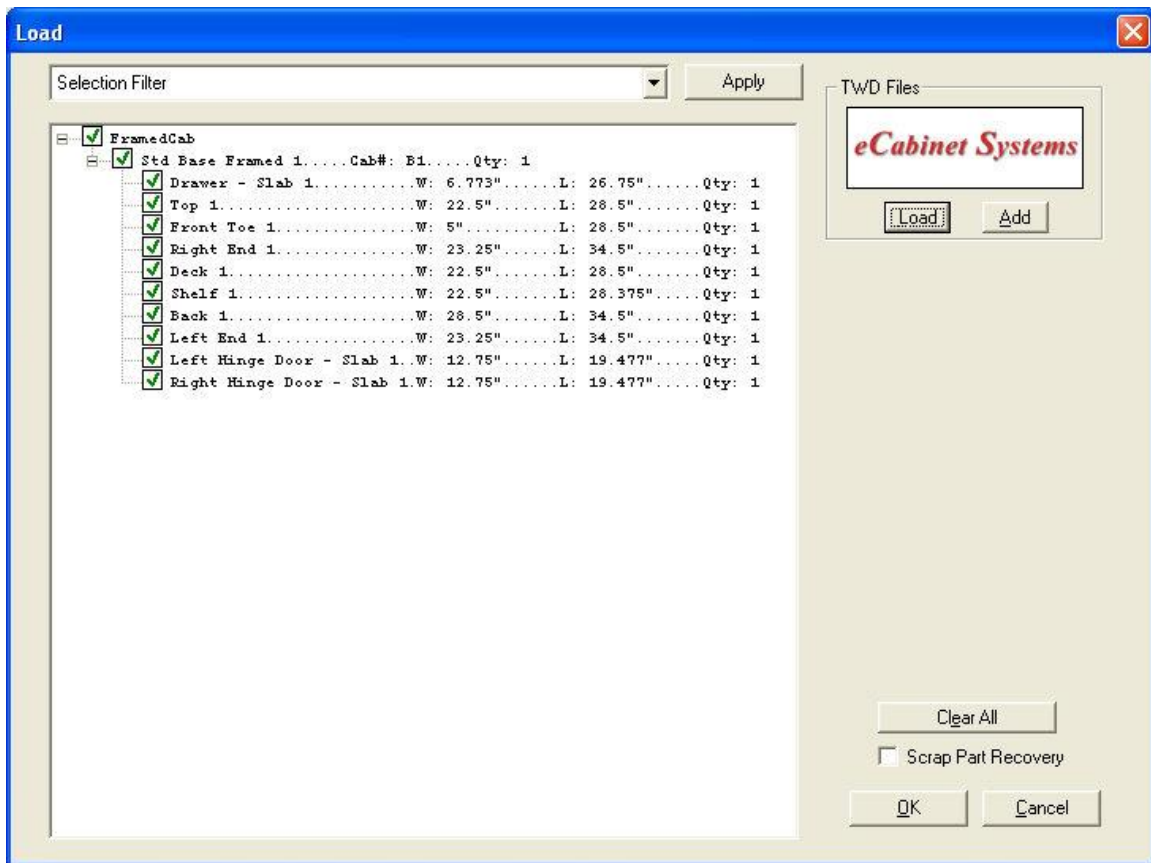
The Export option will create a file containing all the current setting in ShopBot Link.

This helps Thermwood debug any cases that are causing problems. Simply click on the button and designate where to save the file. Then send this file to Thermwood with a description of your problem.

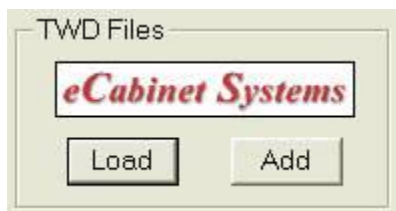
Loading

Loading Files

Clicking on the “Load” button will bring up the Load dialog which is the interface used to load all compatible files into the ShopBot Link Software. The large, white window on the left contains the current parts ready to be nested. The column to the right contains load and add buttons for each compatible file.



eCabinet Systems Files (*.twd)



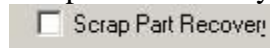
To load a new file, press Load which is located under the heading “TWD Files” (eCabinets icon listed below). Once the window’s browser appears, the operator will

need to select the correct file or files that he/she wants to load (To select multiple files, hold down Ctrl. Key when selecting). Once the selection has been made a list of parts will then appear in the window on the left. If the user looks closely, they will notice check marks aside of the cabinet(s) name and individual parts. If the check marks are removed, that part will not be included in the nest. Then operator also has the option to change the quantity of the parts that are going to be cut. To do this, they must select the specific line containing the parts that they want to change the quantity of. Then, by pressing the “Enter” key, this will enable them to type in a new quantity. Once a file has been loaded, more files can be added by pressing the “Add” button, located under the “TWD Files” heading. To clear all parts listed in the Load Screen; press the “Clear All” button. Otherwise, when loading a TWD the load screen will automatically be cleared.

Clear All

To clear all parts listed in the Load Screen; press the “Clear All” button. Otherwise, when loading a TWD or DXF file the load screen will automatically be cleared.

Scrap Part Recovery



There may be times that a particular part moves during machining, resulting in a defective part. This means a single part will have to be re-machined. To do this, the operator needs to go into the Load screen and make sure that only the parts that need cut again are selected. Then, they will need to place a check mark aside of the Scrap Part Recovery option which will cause the machine to run only one part per sheet. Each part will be cut at the flip operation fence and follow the X & Y Shift settings.

The option for no outline cuts in Settings will be obeyed. If it is selected the part to be machined will need to be cut to size and can be placed in the fence location for the operations to be performed.

If the no outline cuts selection is not selected then the machine will run the outline pass. Material will need to be a size greater than the part by the diameter in width and length when the option Nest to Edge of Sheet is NOT selected. If Nest to Edge of Sheet is selected then the material does NOT need to be oversized.

The Part Rotation Step Angle option in Settings is also obeyed. For example, if the setting is 90 degrees then the part(s) will be rotated 90 degrees.

Selection Filter

The Selection Filter allows for nesting only certain materials in the currently loaded items. By selecting a material(s) in the drop down list the appropriate parts will be selected in the tree for nesting. By choosing "All Materials" all parts will be selected in the tree for nesting. Settings are applied when the Apply button is pressed.

Load

3/4 Generic

☒ All Materials
☒ 3/4 Generic

Apply

TWD Files

eCabinet Systems

Load Add

<input checked="" type="checkbox"/>	Top 1	W: 22.5"	L: 28.5"	Qty: 1
<input checked="" type="checkbox"/>	Front Toe 1	W: 5"	L: 28.5"	Qty: 1
<input checked="" type="checkbox"/>	Right End 1	W: 23.25"	L: 34.5"	Qty: 1
<input checked="" type="checkbox"/>	Deck 1	W: 22.5"	L: 28.5"	Qty: 1
<input checked="" type="checkbox"/>	Shelf 1	W: 22.5"	L: 28.375"	Qty: 1
<input checked="" type="checkbox"/>	Back 1	W: 28.5"	L: 34.5"	Qty: 1
<input checked="" type="checkbox"/>	Left End 1	W: 23.25"	L: 34.5"	Qty: 1
<input checked="" type="checkbox"/>	Left Hinge Door - Slab 1	W: 12.75"	L: 19.477"	Qty: 1
<input checked="" type="checkbox"/>	Right Hinge Door - Slab 1	W: 12.75"	L: 19.477"	Qty: 1

Clear All

☐ Scrap Part Recovery

OK Cancel

Settings

Settings

The Settings option must be addressed prior to running the ShopBot Link software, in order for the nesting feature to operate correctly. When selecting the Settings button at the main ShopBot Link screen, the following dialog box will appear:

Dimension Format

The section named “Format” is the dimensional mode in which the CNC code will be written when the operator chooses too write the CNC code. The Format can be set to any of the dimensional modes when nesting TWD files.

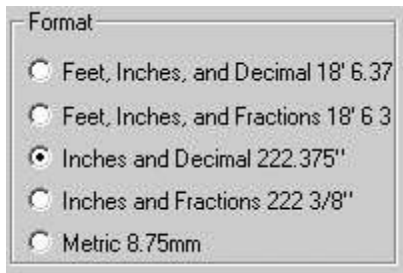
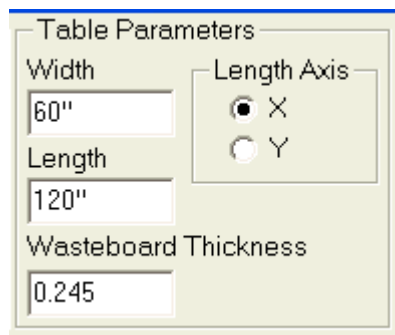


Table Parameters

The section named "Table Parameters" defines the size of the machine table, ability to swap X with Y, and the thickness of wasteboard being used. If a wasteboard is not being used, then this value should be set to zero.

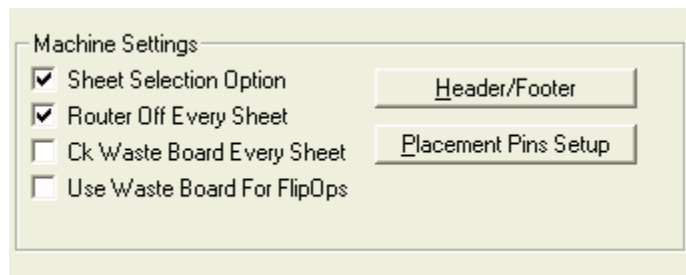
The "Length Axis" value setting is used to set which axis on the machine is longer. Most cabinet machines have X as the long axis. Some Model 67 configurations have the Y axis as the longer axis so this value should be set to Y for those configurations.



Machine Settings

Machine Settings

The section named "*Machine Settings*" is used to activate the different options that the CNC machine being operated may have.



Sheet Selection

“Sheet Selection” enables the operator to select a specific sheet that they want to start machining on, when starting a particular CNC program.

Router Off Every Sheet

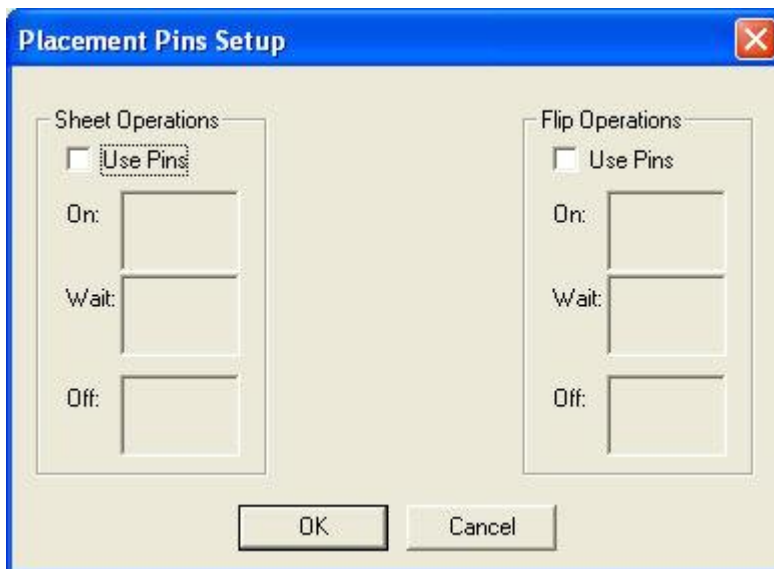
“Router Off Every Sheet” insures that the router will be shut off after completing cut operations on each sheet of material.

Ck Waste Board Every Sheet

“Ck Waste Board Every Sheet” prompts the operator to check wasteboard thickness every time a new sheet is started.

Placement Pins Setup

“Placement Pins Setup” allows the operator to choose settings (which pins to use and I/O’s that operate) for use of automatic popup pins. The operator has the ability with the dialog below to control which output is used to turn the pins on/off as well as which input must be met forcing the pins to “wait”. The pins can be used for Sheet Operations and Flip Operations if required by checking the appropriate boxes.



The image shows a Windows-style dialog box titled "Placement Pins Setup". It has a blue title bar with a red close button in the top right corner. The dialog is divided into two main sections: "Sheet Operations" on the left and "Flip Operations" on the right. Each section contains a "Use Pins" checkbox, which is currently unchecked. Below each checkbox are three input fields labeled "On:", "Wait:", and "Off:". At the bottom of the dialog are two buttons: "OK" and "Cancel".

Header & Footer

Custom code can be entered at various places as headers and/or footers in the program generated. The feature is merely inserting whatever text, which is put in the edit boxes on the dialog displayed below, into the CNC program..

Program

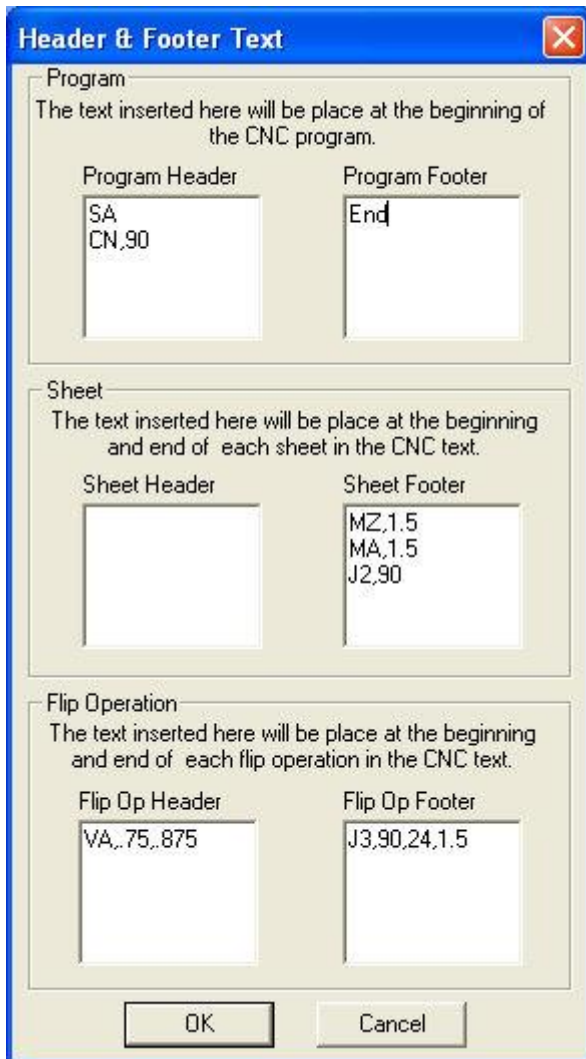
A header and/or Footer can be added for the entire program. The code will be placed at the beginning for Header and at the end for Footer.

Sheet

Code can be inserted before and after each sheet run. This allows you to set how you wish the machine to behave before and/or after each sheet is completely cutt. It also allows for any unique load/unload operations to be inserted at the appropriate points in the CNC program.

Flip Operations

If your job contains flip operations the header and/or footer code will be enter before and/or after each part's flip operations are performed.



Header & Footer Text

Program
The text inserted here will be place at the beginning of the CNC program.

Program Header	Program Footer
SA CN,90	End

Sheet
The text inserted here will be place at the beginning and end of each sheet in the CNC text.

Sheet Header	Sheet Footer
	MZ,1.5 MA,1.5 J2,90

Flip Operation
The text inserted here will be place at the beginning and end of each flip operation in the CNC text.

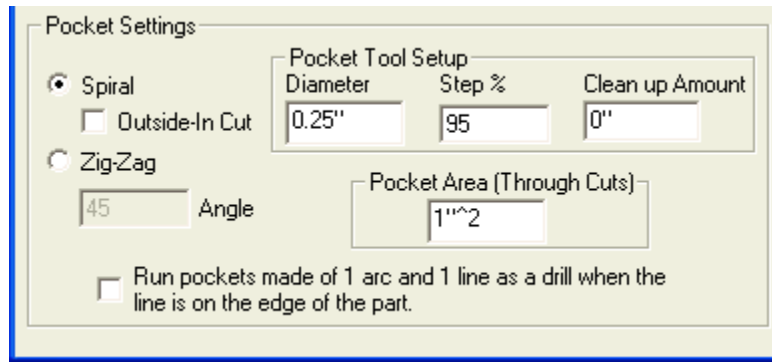
Flip Op Header	Flip Op Footer
VA,.75,.875	J3,90,24,1.5

OK Cancel

Pocket Settings

Pocket Settings

The “*Pocket Settings*” enable the operator to setup parameters for cutting pockets. The operator has the option to choose a “*Spiral*” or “*Zigzag*” cutting method when cutting pockets.



Pocket Step & Clean Up

“Step Percentage” is the amount the tool will step over each cut pass based on a percentage of the tool diameter. The “Clean Up Amount” is the amount of material that is left around the outer perimeter of the pocket, for a finish pass. When nesting parts that will have pockets cut in them that go through the material, the operator has the option to choose whether or not a plug is left.

Pocket Area (Through Cuts)

“Pocket Area (Through Cuts)” enables the user to control the tool deciding whether to leave a plug or too completely remove all material in the center of a pocket boundary. If the through pocket has an area less than the area specified, the tool will cut away all material within the pocket’s boundary. All through pockets, with an area larger than the specified amount, will be cut leaving a plug.

Run Pockets made of 1 arc and 1 line as a drill when the line is on the edge of the part

“Run Pockets made of 1 arc and 1 line as a drill when the line is on the edge of the part,” is used to cut KD fastener pockets as a drill operation, rather than using the pocketing method.

Cut Parameters

Cut Parameters

The “Cut Parameters” section allows the operator to control the cutting methods used when machining parts. For instance, Direction allows the operator to choose a cut path direction of Climb or Conventional. The direction can be set separately for Outline cuts and Dado/Rout/Pocket cuts.

Cut Parameters	
<input type="button" value="Blind Dove Tail"/>	
<input type="button" value="Outline Order"/>	
<input type="button" value="Skin Pass"/>	
<input type="button" value="Flip Ops First"/>	
Cut Through Depth <input type="text" value="0.025"/>	Rout Cut (Dado/Pocket) Direction <input type="radio"/> Climb <input checked="" type="radio"/> Conventional <input checked="" type="checkbox"/> Perform All Through Cuts Last Ramp In Length <input type="text" value="2"/> Pre-Ramp Depth <input type="text" value="0.26"/>
Retract Height <input type="text" value="0.375"/>	Perimeter Cut (Outline) Direction <input type="radio"/> Climb <input checked="" type="radio"/> Conventional <input checked="" type="checkbox"/> Perform All Through Cuts Last <input checked="" type="checkbox"/> Run Opposite Direction Ramp In Length <input type="text" value="2"/> Pre-Ramp Depth <input type="text" value="0.25"/>
Min Feed Rate <input type="text" value="180"/>	Last Line Feed Speed <input type="text" value="180"/>
<input checked="" type="checkbox"/> Do Drills First <input type="checkbox"/> No Outline Cuts	Max Feed Size <input style="width: 100px;" type="text" value="200"/>
% Full Feed for Through Cuts <input type="text" value="80"/>	
Off-Fall <input checked="" type="radio"/> Cut <input type="radio"/> Save Only <input type="radio"/> None	

Skin Pass

ShopBot Link can be setup so that it will perform a skin pass on the outline operation of parts based on their size. This skin pass is primarily used to help prevent smaller parts from moving while the cutter is machining it. This skin thickness is generally very thin so that the final pass to machine the part free will have very little cutting force, thus reducing the chance that the part will move. The size of this part can be set in the Skin Pass dialog. This dialog is accessed by clicking the Skin Pass button.

Cut Parameters

Cut Through Depth:
 Retract Height:
 Min Feed Rate:

☒ Do Drills First
☐ No Outline Cuts
☒ No Off Fall Cuts

Rout Cut (Dado/Pocket)

Direction:
 ☐ Climb
☒ Conventional

 Ramp In Length:
 Pre-Ramp Depth:

Perimeter Cut (Outline)

Direction:
 ☒ Climb
☐ Conventional

☒ Perform All Through Cuts Last
☒ Run Opposite Direction
 Ramp In Length:
 Pre-Ramp Depth:
 Last Line Feed Speed:
 Max Feed Size:
 % Full Feed for Through Cuts:

The thickness for this skin is defined in the Skin Thickness field. The Skin Pass dialog also allows the operator to set a maximum square inch or millimeter setting as well as a maximum width/length value for skinny parts. Any part that falls below either setting will get a skin Pass operation on the outline. The outline tool will cut the part down to the Skin Thickness before cutting completely through the part.

NOTE: The Cut Parameter option “Perform All Through Cuts Last” on the main Settings dialog will control whether or not this skin pass is removed before moving on to other parts or machined after all other parts in the nest are machined.

On some parts, it may be desirable/beneficial not to remove this skin (leave it on and removed it with some secondary operation or, if thin enough, break/flake off by hand). The "Size to Leave Skin on Skin Pass Part" option is provided to control what size parts should leave the skin. Any part that falls below either the Size or Width/Length setting will have the skin left on.

Skin Thickness

If 2 passes are to be used, ShopBot Link will leave a “Skin Thickness” which is removed on the second pass.

Ramp In Length

ShopBot Link ramps into a part rather than plunging directly into it. The benefits of this include, no burning of the material, longer cutter life, and longer spindle life. The length of this ramp is set within the “Ramp In Length”. If we set this value to 6 inches, then it will take 6” to ramp to the proper depth of cut. The value can be set separately for Outline cuts and Dado/Rout/Pocket cuts.

Cut Through Depth

The “Cut Through Depth” simply cuts through the part by the specified amount.

Retract Height

“Retract Height” is the distance the machine retracts above the part before indexing to the next part.

Outline Order

The “Outline Order” button gives the operator the option to choose what order he or she would like the parts too cut.

Pre-Ramp Depths

“Dado/Rout Pre-Ramp Depth” and “Outline Pre-Ramp Depth” allow the machine to plunge into the material by the specified amount, before continuing with the ramp in. This is useful when machining laminated sheets with an up spiral or compression cutter. It helps prevent chipping of the laminate.

% Full Feed for Through Cuts

The “% Full Feed for Through Cuts” field adjusts the feed rate set for the Outline tool. Example: If the outline tool is set to run at 500 IPM, and the “% *Full Feed for Through Cuts*” field is set to 50%, ShopBot Link will run the outline tool at 250 IPM.

Last Line Feed Speed

The “Last Line Feed Speed” is used to control the rate of speed at which the machine performs the cleanup cut for the “Ramp In Length” of the part. This is used to prevent part movement when cutting the part free from the sheet.

Max Feed Size

The value entered in the “Max Feed Size” field is set to square inches. If a part has an area less than the “Max Feed Size”, then ShopBot Link will adjust the feed rate for this part only. This will also help prevent part movement for the small parts that qualify.

Min Feed Rate

“Min Feed Rate” specifies the slowest feed rate at which the machine will cut.

Do Drills First

By checking the “Do Drills First” check box, all of the drill operations in the program will be executed first.

Perform All Through Cuts Last (outline cuts)

The operator has the option to machine all “skins” last if a part requires 2 passes. To do this, “Perform All Through Cuts Last” can be selected. If left un-checked, the machine will perform the second pass immediately after the first pass.

Perform All Through Cuts Last (rout cuts)

This option is available for all pockets and dado cuts. If there are cuts that do not cut through the part they will be machined first leaving the through cuts last before the outline cuts. NOTE: All operations for a tool are kept in order. If a program requires multiple tools then it is possible to have a through cut occur before a non-through cut if a tool change is required.

Run Opposite Direction

When deflection becomes a problem with parts not getting cut to correct size, it may be helpful to have the machine cut a final pass in the opposite direction. The option "Run Opposite Direction" allows this to occur. It will ONLY be available when "Perform All Through Cuts Last" is selected.

With the option selected ShopBot Link will cut the through cut pass on a part in the opposite direction of the previous pass(es). For example, if the Direction setting is set to Conventional cutting, then the through cut pass on the part will cut in the Climb direction.

To get multiple passes to occur you can either use the Skin Pass feature OR Max Penetration value in Tooling.

No Outline Cuts

When this check box is selected the CNC code generated will not cut the outline pass on all parts in the nest.

Off-Fall

There are 3 options for how Control Nesting generates Off-Fall. Off-Fall is the portion of the sheet that is considered good for re-nesting. This portion of the sheet is stored for use by Control Nesting when needed. The 3 options are:

Cut

Control Nesting will cut the perimeter of the Off-Fall once all the other parts in the sheet have been machined.

Save Only

Control Nesting will not cut the Off-Fall shape, but will still hold the Off-Fall for use.

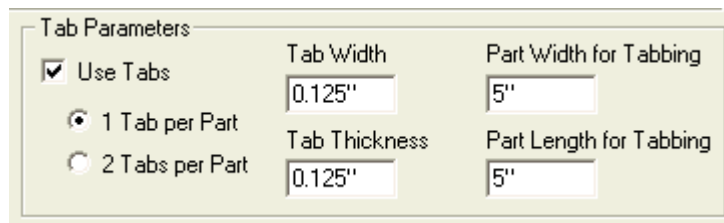
None

Off-Fall is not calculated on the sheet and is not saved.

Tabbing Parts

Tabbing Parts

When parts are too small to hold down with vacuum, the operator has the choice to use Tabs or leave a “skin” around the part. Tabs simply connect parts together to prevent movement.



The screenshot shows a dialog box titled "Tab Parameters". It contains the following controls:

- A checked checkbox labeled "Use Tabs".
- Two radio buttons for "1 Tab per Part" (selected) and "2 Tabs per Part".
- A "Tab Width" input field with the value "0.125\"".
- A "Tab Thickness" input field with the value "0.125\"".
- A "Part Width for Tabbing" input field with the value "5\"".
- A "Part Length for Tabbing" input field with the value "5\"".

Tab Parameters

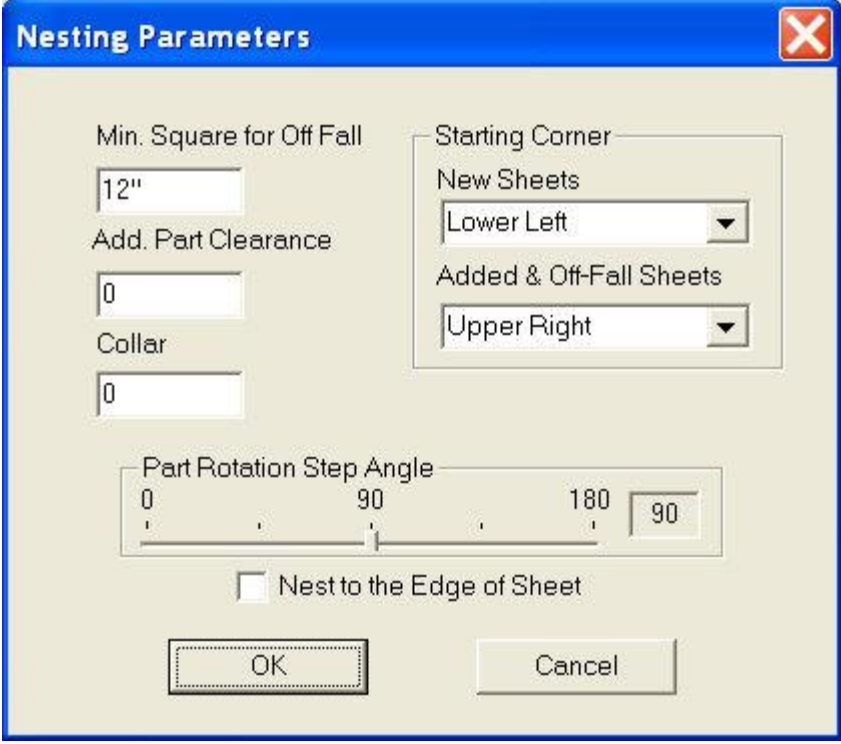
The “Tab Parameters” section defines the width and thickness of the tabs, the minimum width of the part to use tabs, and the minimum length of the part to use tabs. If we set the “*Part Width for Tabbing*” to 5 inches, then any part that has a width smaller than 5” will be tabbed.

The quantity of tabs allowed are 1 or 2 per part. ShopBot Link will place a tab on the longest line or arc that is part of the perimeter of the part. If 2 Tabs per Part is selected, ShopBot Link will then go 1/2 the distance around the perimeter of the part and chose another line or arc to create the additional tab for that part. The location of the tab on the chosen line or arc will be 10% of length of that line or arc from the start point. This will stagger the tabs for most parts, especially rectangular parts, to help avoid movement.

Nesting Parameters

Nesting Parameters

The button named “*Nesting Parameters*” opens a dialog which allows the user to determine size of off-fall, additional part clearance, nest direction, collar, step angle, nest to edge, and starting corner..



The image shows a Windows-style dialog box titled "Nesting Parameters". It contains several input fields and controls:

- Min. Square for Off Fall:** A text box containing "12".
- Add. Part Clearance:** A text box containing "0".
- Collar:** A text box containing "0".
- Starting Corner:** A group box containing two dropdown menus:
 - New Sheets:** Set to "Lower Left".
 - Added & Off-Fall Sheets:** Set to "Upper Right".
- Part Rotation Step Angle:** A slider control with markers at 0, 90, and 180. The current value is 90, shown in a small text box to the right of the slider.
- Nest to the Edge of Sheet:** An unchecked checkbox.
- Buttons:** "OK" and "Cancel" buttons at the bottom.

Min. Square for Off Fall

The “Min. Square for Off Fall” field determines the area in which ShopBot Link searches for off-fall (Scrap material that can be used). For instance, if the operator has a value of 12 inches set, ShopBot Link will search every 12 inches square for off-fall. The smallest off-fall in this case, will be 12 inches square. ShopBot Link will store the dimensions for the off-fall in a database, which may be found under the “Add Sheet(s)” button from the main menu. If the user does not wish to use off-fall, setting this value larger than the maximum sheet area will prevent ShopBot Link from using it.

Add Part Clearance

The “Add Part Clearance” option is the value that increases the distance between parts. This is mainly used to prevent accidental gouging once a part has been machined, in case it moves during other operations. Part movement may be caused by insufficient hold down methods, parts being too small, etc.

Collar

“Collar” is the distance around the outside edge of the sheet stock that parts are to be nested within. Normally, an additional amount is added when the outside edges of the sheet are damaged.

Part Rotation Step Angle

“Part Rotation Step Angle” is a feature added to the Settings dialog to give the operator the ability to control the increments in which each part is rotated and tried when the nest is created. Example: If the step angle provided is 90 degrees, then the parts will be tried in 0, 90, 180, and 270 degrees. This value is what is used for non-grain material nests to rotate parts for optimal nesting.

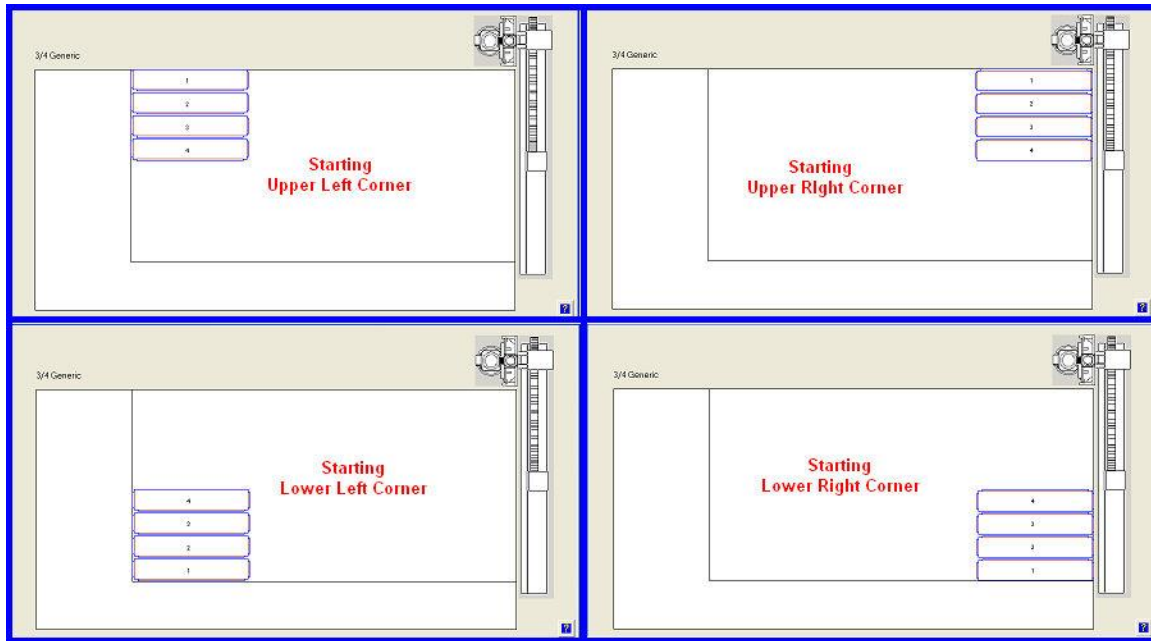
Nest to the Edge of the Sheet

The “Nest to the Edge of the Sheet” check box will allow the operator to nest parts directly along the edge of the sheet of material. By default ShopBot Link will leave the radius of the outline tool around the edge of the sheet when creating a nest and then any Collar amount will be added to that number. If the collar is set to zero and the Nest to the Edge of the Sheet is checked, parts will be nested to the edge of the material when creating the CNC code.

Starting Corner

One of 4 corners can be designated as the starting point for parts to be nested on a sheet. This is NOT related to where your fixture is located. The starting corner represents the corner of the sheet that parts are placed as the nesting calculations are performed.

The Starting Corner can be designated for New Sheets. It can also be designated for Added Sheets & Off-Fall. The designation for Added Sheets and Off-Fall is the same.



Tooling

Tooling

This is where all ShopBot Link tools are defined. Parameters such as diameter, feed and spindle speeds, operation type(s), etc. are set on this dialog.

The screenshot shows the 'Tooling' dialog box with a blue title bar and a close button. It is divided into several sections:

- Group Settings:** Includes a 'Tooling' dropdown menu set to 'Default', an 'Ignore Group' checkbox, and a 'Select Tolerance' text field set to '0.001"'. There are 'Erase', 'Copy', and 'Paste' buttons.
- Group Materials:** A large empty rectangular area with 'Add' and 'Delete' buttons.
- Outline Tool Setup:** Contains 'Outline Tool Number' (3) and 'Diameter' (0.375"). Below are input fields for 'Feed Speed' (200), 'Plunge' (100), 'Spindle Speed' (12000), and 'Max Penetration' (0.8"), each with an 'Erase' button. There is also a 'Reverse Spindle' checkbox.
- Operation Tool(s) Setup:** Contains 'Operation' (1), 'Tool Number' (1), and 'Diameter' (0.1969"). Below are input fields for 'Feed Speed' (200), 'Plunge' (100), 'Spindle Speed' (12000), and 'Max Penetration' (0.8"), each with an 'Erase' button. There is a 'Reverse Spindle' checkbox.
- Type:** A group box containing three checkboxes: 'Rout/Dado' (unchecked), 'Drill' (checked), and 'Interpolate' (unchecked).
- Max Interpolate:** A text field set to '0"'. There are also checkboxes for 'Dove Tail Tool' and 'Use for Male Routs with DoveTail'.
- Buttons:** At the bottom, there is a 'Confirmation Screen' button, and 'OK' and 'Cancel' buttons.

Select Tool Tolerance

This value will tell ShopBot Link what tolerance to use when selecting the proper tool for an operation. The tolerance value is applied to the diameter of the tool. For example, if

an operation calls for a tool with a diameter of 0.25" and the tool at the control that will work for this operation is actually 0.245 a tolerance of 0.006" will allow this tool to be selected for the operation.

Tooling Group

The purpose of tooling groups is to allow a group of tools to be used for specific materials. Currently, ShopBot Link allows 50 different tooling groups to be defined. To set up a tooling group, the operator must first define which group by using the pull-down menu. Once this has been selected, the operator must set the materials that they wish to use for this tool group.

An entire Group setting can be erased by clicking the Erase button next to the Group name.

Copy/Paste

Copy and Paste options are available. To Copy/Paste a group setting select the desired group in the drop down. Then click the Copy button or use the hot key Ctrl-C. Then select the group you wish to Paste the settings into. Once that group is selected click the Paste button or use the hot key Ctrl-V.

Group Materials

The materials that each tool group is used on is specified in the "Group Materials" section. Notice the "Add" and "Delete" buttons. By pressing the "Add" button, a dialog box will appear in which the operator may add materials from the database or create their own. After doing this, the material name(s) will appear in the white window. To delete a material, highlight the name and press the "Delete" button.

Ignore Groups

If it is not necessary to have separate setting for tooling based on the type of material being machined, then the option "Ignore Groups" can be checked on. When checked on, the ShopBot Link will only use the tools and their settings defined within the Default group regardless of the material being machined.

Outline Tool Setup

The first tool is defined in the "Outline Tool Setup" section. This section defines the tool to be used for all perimeter (outline) cuts. You must enter a tool number representing the tool number to be used at the ShopBot along with the diameter of that tool. Note that ShopBot Link also uses the tool's diameter to determine the distance between parts when nesting. Once the tool has been specified, the operator must set the "*Feed Speed*", "*Plunge Speed*", "*Max Penetration*", and "*Spindle Speed*". If the machine is configured for it, the operator has the option to choose the "*Reverse Spindle*" option.

The "*Max Penetration*" setting keeps a tool from being used at a depth greater than this amount in 1 pass. If a depth of cut is greater than this amount ShopBot Link will perform

the operation in incremental passes at the "*Max Penetration*" amount until the operation is complete.

Outline Tool Setup

Outline Tool Number: Diameter:

Feed Speed Plunge Spindle Speed Max Penetration

☐ Reverse Spindle

Operation Tool(s) Setup

All other tooling will be defined in the "Operation Tool(s) Setup" section. ShopBot Link has the option to setup 50 different operations. To start, choose an operation number from the pull-down menu. Then specify the tool number and diameter. Now we need to define the operation(s) that we would like to use this tool for. This can be done by selecting the appropriate operation(s) under the "*Type*" section. Only now can we set the "*Feed Speed*", "*Plunge Speed*", "*Spindle Speed*", "*Max Penetration*", and "*Reverse Spindle*". These fields are grayed out until the operator chooses an operation type.

Tools specified as Rout/Dado will be used in Pocketing operations. The pocketing feature will search through the list of Operation Tools starting at Operation 1. The FIRST tool found which successfully performs the pocketing operation will be selected. It is good practice to set your tools from larger diameter to smaller diameter in the Operation Tools list.

The "*Max Penetration*" setting keeps a tool from being used at a depth greater than this amount in 1 pass. If a depth of cut is greater than this amount ShopBot Link will perform the operation in incremental passes at the "*Max Penetration*" amount until the operation is complete.

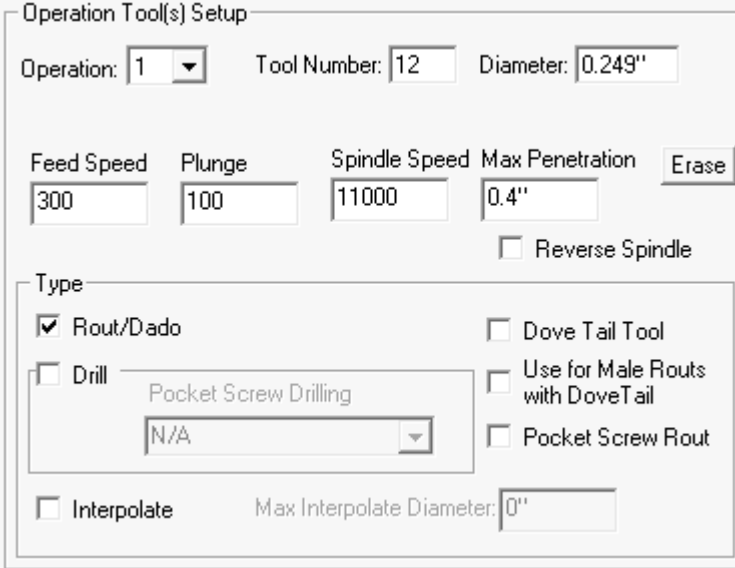
Notice the "*Interpolate*" selection. With this selected, we are allowing that tool to be used for any circle interpolation that may be needed. Also, with this selected we are now able to set the "*Max Interpolate Diameter*" field. The "*Max Interpolate Diameter*" field allows the user to limit the size of hole to machine with that tool. Normally, when drilling a hole with a high RPM, there is a risk of burning the material or damaging the tool. Interpolating a hole will prevent this from happening.

Blind Dove Tail tool specifications can as be set with *Dove Tail Tool* and *Use for Male Routs with Dove Tail* check boxes. The *Dove Tail Tool* check box is to designate the tool is a Dove Tail Tool. The *Use for Male Routs with Dove Tail* check box is to designate this tool is to be used to cut the male ends of the dove tail joint if and only if the tool diameter is small enough to perform the radius cuts that are present in a particular joint.

Pocket Screw Rout check box is to designate which tool will perform the ramp-in rout for the pocket screw operation. This tool must be a 3/8" cutter capable of cutting a ramp in pocket. Designating the operation tool as Pocket Screw Rout means that it will NOT be used for any other type of rout or dado operation.

Pocket Screw Drilling options provide a means to designate a 5mm (or smaller) tool that can perform drilling that creates a shelf for positioning the pocket screw during assembly. Designating the operation tool as Pocket Screw Drill means that it will NOT be used for any other type of drilling operation.

- *Position Shelf Only* will only perform the shelf drill hole operation for aiding in positioning the pocket screw
- *Shelf & Clean Up* will perform the shelf drill hole as well as 2 drill holes for cleaning the corner radius' created by the pocket screw rout



Confirmation Screen

The “Confirmation Screen” button allows the user to review all settings that have been made in the “Tooling” section of Rolling Nest.

Tool Details

File

ShopBot Link Tool Setup

Date: 4/7/2009 Time: 12:53:20

Default

Outline

Tool Number = 3
Tool Diameter = 0.375"
Feed Speed = 200.000000
Plunge Speed = 100.000000
Spindle Speed = 12000
Max Penetration = 0.8"
Reverse Spindle = NO

Operation 1

Tool Number = 1
Tool Diameter = 0.1969"
Rout/Dado = NO
Pocket = NO
Drill = YES
Drill Type = Single

OK

Adding Sheets and/or Off-fall

Adding Sheets and/or Off-fall

A dialog box resembling the following picture will appear when selecting the Add Sheet(s) button. To begin, a job must be loaded before entering any irregular shaped scrap, undersized sheet stock, or off-fall left from prior nests. Off-fall can be added by scanning the barcode at this time or selecting from the Off-fall Library. The material entered in this section may be used in future nests, as long as the material name matches the part material. Once everything is completed under the Add Sheet(s) section, the operator may select the Done button to get back to the main menu.

Off-Fall Library

Off-fall Library

To access the off fall library and view the material that is listed, select the “OffFalls” button. This will bring up a dialog box resembling the following picture.



OffFalls

BarCode	Date & Time	Material
-1428623493	8/8/2007 1:47:47 PM	3/4 Dolphin Material
509307555	8/8/2007 1:38:33 PM	3/4 Dolphin Material
-1845204926	7/21/2007 10:56:07 AM	3/4 Generic 4-8
-1346244906	7/21/2007 10:56:07 AM	1 Non Lam 4-8
-420372581	7/21/2007 10:56:07 AM	3/4 Generic 4-8
612567284	7/21/2007 10:56:07 AM	1 Non Lam 4-8
690700191	7/21/2007 10:56:07 AM	1 Non Lam 4-8
820878145	7/21/2007 10:56:07 AM	3/4 Generic
-2111091046	7/21/2007 9:19:16 AM	3/4 Generic 4-8
-307636306	7/21/2007 9:19:16 AM	1 Non Lam 4-8
-289723117	7/21/2007 9:19:16 AM	3/4 Generic 4-8
7468416	7/21/2007 9:19:16 AM	1 Non Lam 4-8
703430028	7/21/2007 9:19:16 AM	3/4 Generic 4-8
1193672280	7/21/2007 9:19:16 AM	3/4 Generic 4-8
1452877697	7/21/2007 9:19:16 AM	1 Non Lam 4-8
1679900055	7/21/2007 9:19:16 AM	3/4 Generic 4-8
1686821277	7/21/2007 9:19:16 AM	3/4 Generic 4-8
-1984543479	7/18/2007 10:37:32 AM	3/4 Generic 4-8
-2083189373	7/17/2007 9:29:50 AM	3/4 Generic 4-8
-2070586363	7/17/2007 9:29:50 AM	1 Non Lam 4-8
-1470688760	7/17/2007 9:29:50 AM	3/4 Generic 4-8
657304290	7/17/2007 9:29:50 AM	1 Non Lam 4-8
729897833	7/17/2007 9:29:50 AM	3/4 Generic 4-8
1319056319	7/17/2007 9:29:50 AM	1 Non Lam 4-8
1329181332	7/17/2007 9:29:50 AM	1 Non Lam 4-8
1797089142	7/17/2007 9:29:50 AM	1 Non Lam 4-8
-1717161413	7/17/2007 6:46:05 AM	1 Non Lam 4-8
-1518779259	7/17/2007 6:46:05 AM	3/4 Generic 4-8
-1433787506	7/17/2007 6:46:05 AM	1 Non Lam 4-8
-1393357548	7/17/2007 6:46:05 AM	3/4 Generic 4-8
-82323872	7/17/2007 6:46:05 AM	1 Non Lam 4-8
848103487	7/17/2007 6:46:05 AM	3/4 Generic 4-8
1170927329	7/17/2007 6:46:05 AM	1 Non Lam 4-8

Search for Bar Code

Load

Delete

Load Operations

The options within the “Load Operations” section allows the operator to load either the selected or the unselected OffFalls from the box to the left.

Delete Operations

The options within the “Delete Operations” section allows the operator to delete either the selected or unselected OffFalls from the box to the left.

Search Option

The Search Option allows the ability to enter a bar code from the label on the off-fall. Enter the number with out the \$ symbol then hit enter or click Go. The item will be selected in the list if it exists. Then you can load or delete that off-fall.

Note: Previous selections will remain when using this option.

Bring Selections to Top

This button will bring all selections in the list to the top for viewing them together.
Sheet Entry

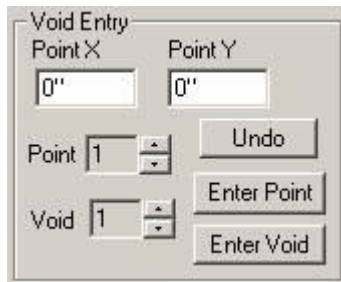
The first section is called “Sheet Entry.” “Select Material” is where the operator will enter a material name, or choose from the pull-down menu. If the material name doesn’t match the part material, then ShopBot Link will not use it. If it is rectangular, check the field next to “Rectangular” and enter the dimensions for “*Length*” and “*Width*.” To the right, ShopBot Link will draw the rectangular scrap. If the material is not rectangular, un-check the “*Rectangular*” field and enter points into the “Point X” and “Point Y” fields. This requires that the material be drawn in a point-to-point fashion. Selecting “Enter Point” will place the point in the large window. If any of the points have been entered incorrectly, “Undo” may be selected to start over. **The points entered must create a closed contour.**



The 'Sheet Entry' dialog box contains the following elements: a 'Select Material' dropdown menu showing '3/4 MDF'; a 'Thickness' input field showing '0.75\"'

Void Entry

The next section is called “Void Entry.” It allows the user to specify a bad section within the scrap material; ShopBot Link will not nest any parts into this section. The void is also drawn in a point-to-point fashion. Once finished entering the points, selecting “Enter Void” will add it to the material in the large window.



The 'Void Entry' dialog box contains the following elements: 'Point X' and 'Point Y' input fields, both showing '0\"'

Grain Setting

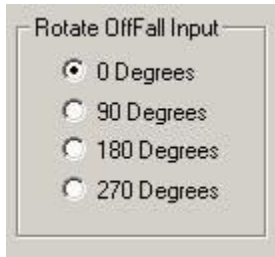
The “Grain Setting” section allows the user to specify the direction of grain for the scrap material. Check the appropriate field that applies.



The 'Grain Setting' dialog box contains three radio button options: 'X Directio', 'Y Directio', and 'None'. The 'None' option is selected.

Rotate Off-fall Input

“Rotate Off Fall input” allows the operator to select the orientation of the off fall material that is selected from the off fall library. The operator must select the orientation before loading the off fall material.



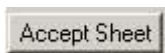
Sheet(s) List

This list contains the sheets created that will be used when nesting.



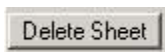
Accept Sheet

Once all sections are completed, selecting the Accept Sheet button will place the material into the Sheet(s) List window.



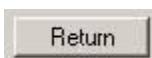
Delete Sheet

To remove sheets from the Sheet(s) List window, the operator must highlight the sheet and then select the Delete Sheet button. Any material in the Sheet(s) List window will be used in the next nest, if possible. Remember, the scrap material name must match the part material name in order to use it.



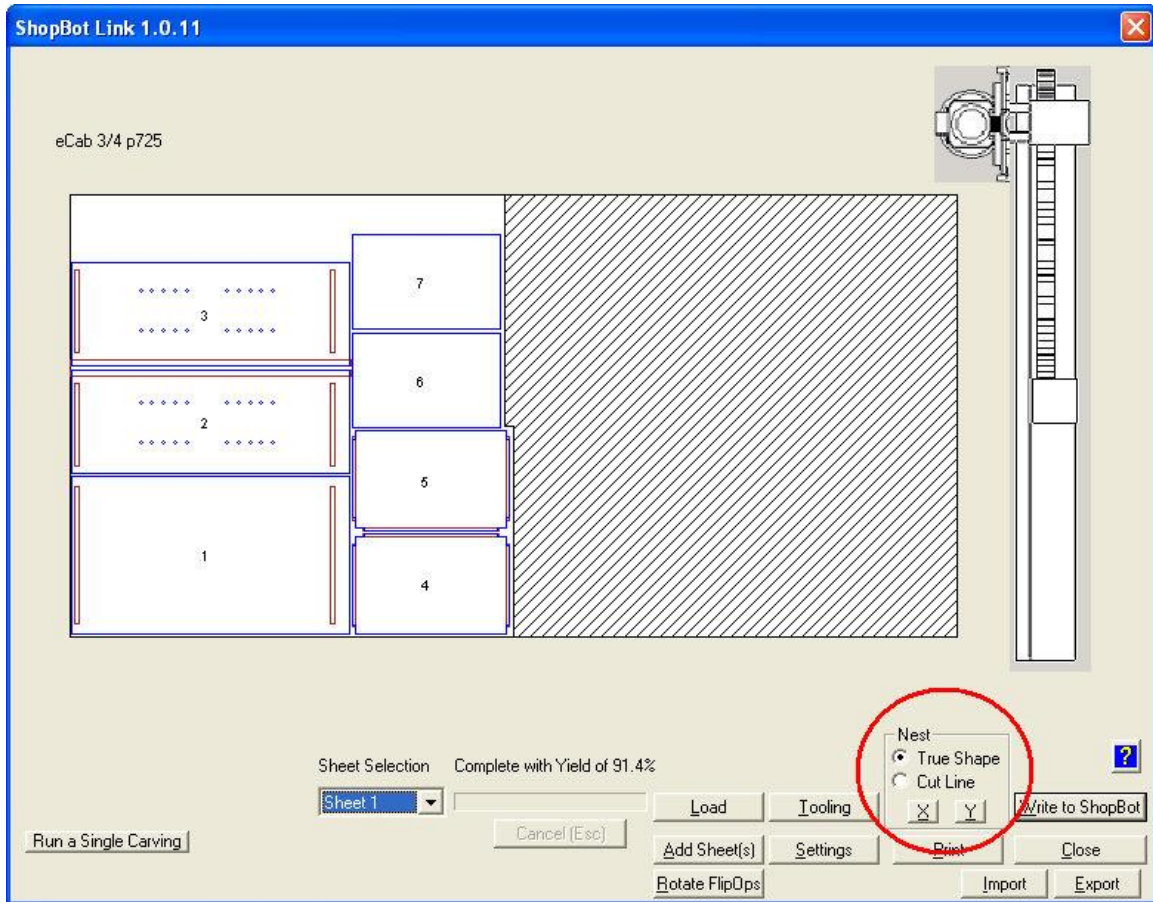
Return

The Return button will return operator to the main ShopBot Link screen if selected.

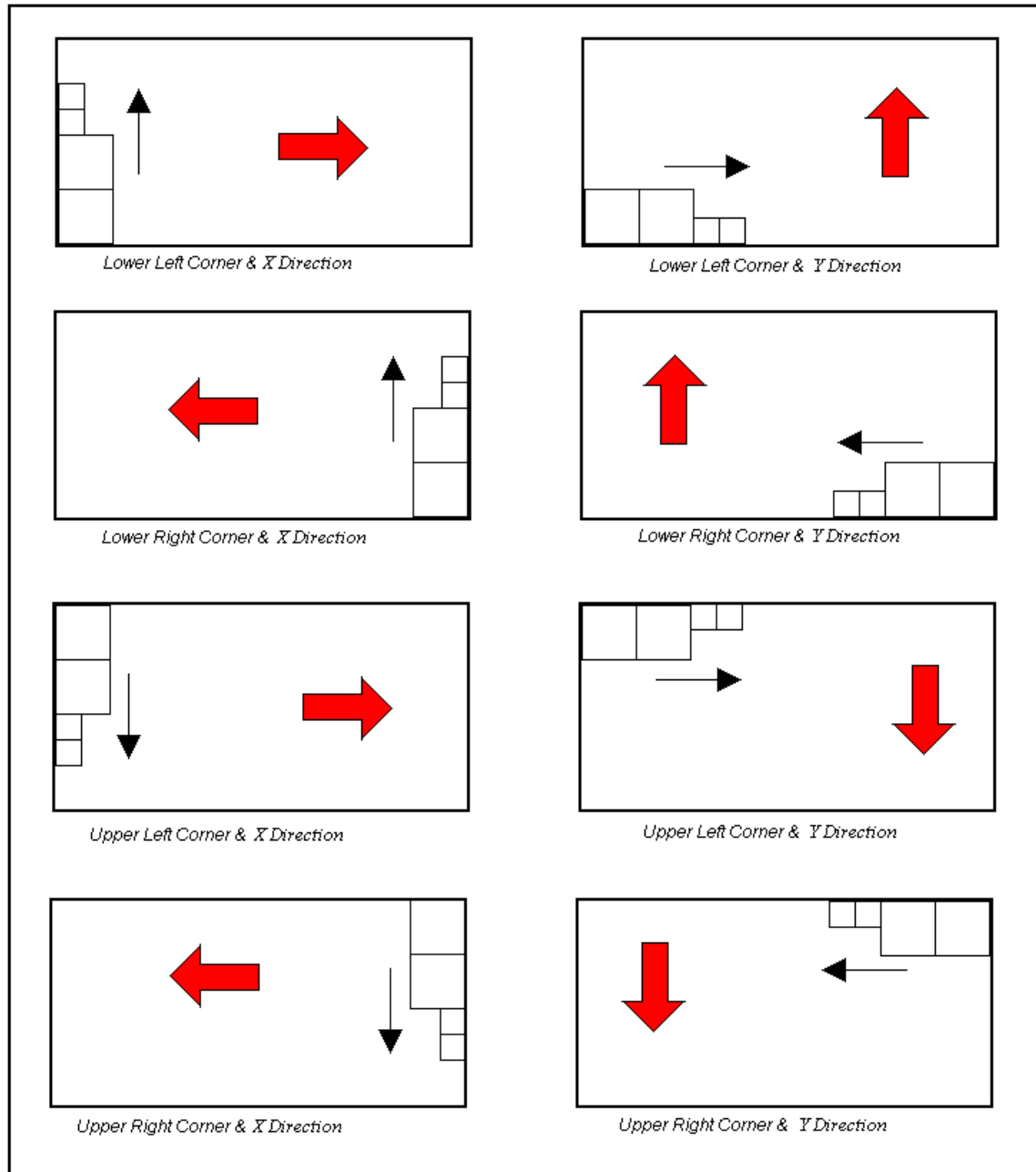


Nesting

ShopBot Link can Nest TWD files from eCabinet Systems once they have been loaded in the Load area. The area circled in red below are the buttons to click to perform a nesting operation.



By selecting the Nest X or Y button, ShopBot Link will display a layout of the nest onto the machine diagram, as shown below. Using the X button means the nest with progress along the X axis. Using the Y button means the nest will progress along the Y axis. The following image illustrates how the nesting occurs based on the direction and starting corner. (see Starting Corner in Nesting Parameters)

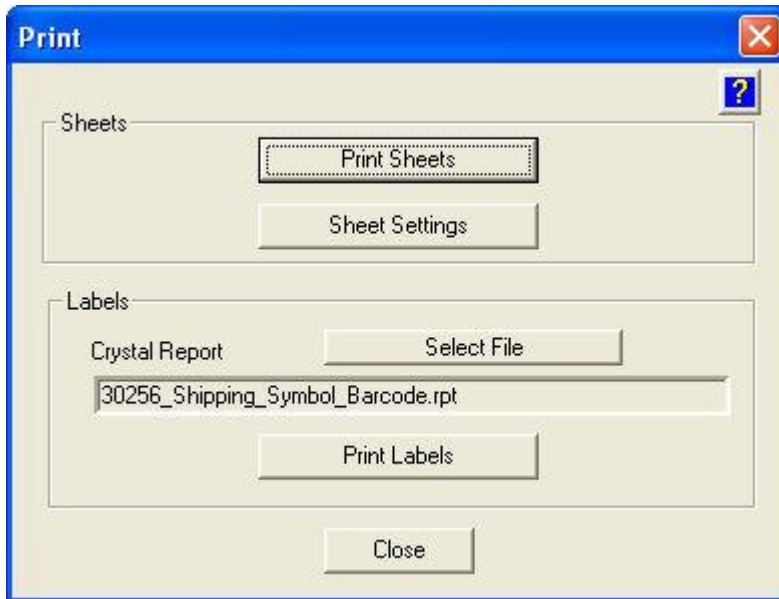


There are 2 Nesting methods that can be selected. True Shape and Cut Line. True Shape method will try to fit the parts tightly to the starting corner allowing them to interlock among each other if possible. Cut Line nesting will fit the parts while trying to leave a common edge between them.

The nest will be based off of the previous inputs. Along with the nest, a yield percentage, material type, and number of sheets used will be displayed. To scroll through the sheets in the nest to view, simply click on the drop down arrow and select the sheet you want to view.

Printing

If the operator wants to print labels and a nest layout, they can select the “Print ” button and the following dialog box will appear.



Printing Sheets:

Print Sheets will perform the printing for the selected Sheet Settings.

Sheet Settings will take you to the following dialog where options for the printed sheet can be set.

NOTE: When using the "Use Part Name on Parts" option you must keep in mind that if you have parts with long names it could appear messy. Plus if the nest contains multiple parts with the same name it will be difficult to depict where a part is located in the nest. This option is recommended for jobs with simple unique part name strategies.



Printing Labels:

Print Labels will bring up a dialog box to perform label printing. The labels will be printed based on the Crystal Report file selected. Click the Select File button to select a Crystal Report file. The files provided with ShopBot Link are located in the C:\Documents and Settings\All Users\Application Data\Thermwood\ShopBot Link\Labels directory on XP and C:\ProgramData\Application Data\Thermwood\ShopBot Link\Labels on Vista.

The following is a list of the available Crystal Report files with a label type and an example of the data they display per label.

NOTE: Files with the word "Barcode" in the title will only print labels with barcodes.



30252_Address.rpt & 30252_Address_Barcode.rpt

Label Type: Dymo label printer with 30252 Address labels






30256_Shipping.rpt & 30256_Shipping_Barcode.rpt

Label Type: Dymo label printer with 30256 Shipping labels

Part:	Back 1	
Cabinet:	Std Base Frameless-MOD1	
Material:	3/4 Generic	
Job:	My Kitchen	
EBanding:	Generic	
		Sheet #: 1 Part #: 1 Cabinet #: 1
 R01P0001		




30252_Address_Symbol.rpt & 30252_Address_Symbol_Barcode.rpt

Label Type: Dymo label printer with 30252 Address labels

Back 1	
 Cab: Std Base Frameless-MOD1 Sheet#:1 Part#:1 Cabinet#:1	
Job: My Kitchen	
Material: 3/4 Generic	EBanding: Generic
 R01P0001	

30256_Shipping_Symbol.rpt & 30256_Shipping_Symbol_Barcode.rpt
















Label Type: Dymo label printer with 30256 Shipping labels

Part:	Back 1	
Cabinet:	Std Base Frameless-MOD1	
Material:	3/4 Generic	
Job:	My Kitchen	
EBanding:	Generic	
		Sheet #: 1
		Part #: 1
		Cabinet #: 1
		
R01P0001		

1p33x4_Address_Sheet.rpt & 1p33x4_Address_Sheet_Barcode.rpt

Label Type: Sheet Inkjet or Laser printer with 1.33" x 4" labels

- Avery 5162 or 8462
- OL100WR from www.OnlineLabels.com

Part: Back 1 Cabinet: Std Base Frameless-MOD1 Material: 3/4 Generic Job: My Kitchen EBanding: Generic Sheet #: 1 Part #: 1 Cabinet #: 1   R01P0001	Part: OffFall Cabinet: N/A Material: 3/4 Generic Job: My Kitchen EBanding: None Sheet #: 2 Part #: 3 Cabinet #: N/A  \$-2122130565\$
Part: Left End 1 Cabinet: Std Base Frameless-MOD1 Material: 3/4 Generic Job: My Kitchen EBanding: None Sheet #: 1 Part #: 2 Cabinet #: 1 	Part: Right End 1 Cabinet: Std Base Frameless-MOD1 Material: 3/4 Generic Job: My Kitchen EBanding: None Sheet #: 3 Part #: 1 Cabinet #: 1 
Part: Front Toe 1 Cabinet: Std Base Frameless-MOD1 Material: 3/4 Generic Job: My Kitchen EBanding: None Sheet #: 1 Part #: 3 Cabinet #: 1 	Part: Right End 1 Cabinet: Std Base Frameless-MOD1 Material: 3/4 Generic Job: My Kitchen EBanding: None Sheet #: 3 Part #: 2 Cabinet #: 1 
Part: OffFall Cabinet: N/A Material: 3/4 Generic Job: My Kitchen EBanding: None Sheet #: 1 Part #: 4 Cabinet #: N/A  \$-1929569339\$	Part: Top 1 Cabinet: Std Base Frameless-MOD1 Material: 3/4 Generic Job: My Kitchen EBanding: None Sheet #: 3 Part #: 3 Cabinet #: 1 
Part: Right End 1 Cabinet: Std Base Frameless-MOD1 Material: 3/4 Generic Job: My Kitchen EBanding: None Sheet #: 2 Part #: 1 Cabinet #: 1 	Part: Top 1 Cabinet: Std Base Frameless-MOD1 Material: 3/4 Generic Job: My Kitchen EBanding: None Sheet #: 4 Part #: 1 Cabinet #: 1 
Part: Top 1 Cabinet: Std Base Frameless-MOD1 Material: 3/4 Generic Job: My Kitchen EBanding: None Sheet #: 2 Part #: 2 Cabinet #: 1 	Part: Deck 1 Cabinet: Std Base Frameless-MOD1 Material: 3/4 Generic Job: My Kitchen EBanding: None Sheet #: 4 Part #: 2 Cabinet #: 1 
Part: Deck 1 Cabinet: Std Base Frameless-MOD1 Material: 3/4 Generic Job: My Kitchen EBanding: None Sheet #: 2 Part #: 3 Cabinet #: 1 	Part: Deck 1 Cabinet: Std Base Frameless-MOD1 Material: 3/4 Generic Job: My Kitchen EBanding: None Sheet #: 4 Part #: 3 Cabinet #: 1 

2x4_Shipping_Sheet.rpt & 2x4_Shipping_Sheet_Barcode.rpt

Label Type: Sheet Inkjet or Laser printer with 2" x 4" labels

-Avery 5163 or 8463
-OL125WR from www.OnlineLabels.com

Part: Back 1 Cabinet: Std Base Frameless-M OD1 Material: 3/4 Generic Job: My Kitchen EBanding: Generic   R01P0001 Sheet #: 1 Part #: 1 Cabinet #: 1	Part: Back 1 Cabinet: Std Base Frameless-M OD1 Material: 3/4 Generic Job: My Kitchen EBanding: Generic   R01P0002 Sheet #: 1 Part #: 2 Cabinet #: 1
Part: Front Toe 1 Cabinet: Std Base Frameless-M OD1 Material: 3/4 Generic Job: My Kitchen EBanding: None  Sheet #: 1 Part #: 3 Cabinet #: 1	Part: Front Toe 1 Cabinet: Std Base Frameless-M OD1 Material: 3/4 Generic Job: My Kitchen EBanding: None  Sheet #: 1 Part #: 4 Cabinet #: 1
Part: Offfall Cabinet: N/A Material: 3/4 Generic Job: My Kitchen EBanding: None  \$129032096\$ Sheet #: 1 Part #: 5 Cabinet #: N/A	Part: Left End 1 Cabinet: Std Base Frameless-M OD1 Material: 3/4 Generic Job: My Kitchen EBanding: None  Sheet #: 2 Part #: 1 Cabinet #: 1
Part: Left End 1 Cabinet: Std Base Frameless-M OD1 Material: 3/4 Generic Job: My Kitchen EBanding: None  Sheet #: 2 Part #: 2 Cabinet #: 1	Part: Offfall Cabinet: N/A Material: 3/4 Generic Job: My Kitchen EBanding: None  \$-2122130565\$ Sheet #: 2 Part #: 3 Cabinet #: N/A
Part: Right End 1 Cabinet: Std Base Frameless-M OD1 Material: 3/4 Generic Job: My Kitchen EBanding: None  Sheet #: 3 Part #: 1 Cabinet #: 1	Part: Right End 1 Cabinet: Std Base Frameless-M OD1 Material: 3/4 Generic Job: My Kitchen EBanding: None  Sheet #: 3 Part #: 2 Cabinet #: 1

Writing to ShopBot

The “Write to ShopBot” button is the final step for creating a nested program. When this button is clicked, ShopBot Link will output the necessary code to cut parts, to the ShopBot Control Software screen.

If the option to "View Code Before Writing to ShopBot" is selected in Settings, then a viewer will pop up showing you the code that will be written to ShopBot. You can either click Continue to have the code written to ShopBot or click Cancel to return to ShopBot Link.

NOTE: There is no file that can be opened to look at the code. This viewer is the only mean of seeing the code written by ShopBot Link.

Rotate Flip Operation

Sometimes parts can be nested in an orientation where locating the part at the flip operation fence is difficult or impossible. This option allows you to rotate this part by 90, 180, or 270 degrees so that a good corner of the part can be used to locate the part at the flip operation fence. After a nest is created click the Rotate Flip Op button to bring up the following dialog. The angle can be changed for the appropriate part by either clicking the angle entry or hitting the space bar. When locating the part at the flip operation fence, flip the part as usual then apply the desired rotation to the part.

[illegible]

Dovetail Drawer Boxes

eCabinet Systems Drawer Box Designer Setup

To properly create a drawer box for CNC machining, there are a few parameters that need to be set. Several of these settings revolve around the geometry of the female dovetail router tool that will be used.

Load a drawer box into the drawer box designer. Go to construction setting, then construction parameters of the part that will have the male dovetails. You will see the Dovetail Settings in the upper right corner of this dialog. These values (excluding inset fields) can also be changed globally on the global settings tab of the construction setting dialog.

Placement Inset Values: Distance from the edge of the part to the center of the first tail.

Max. Dist. Between: Maximum allowed distance between (center to center) before adding an additional tail.

Dovetail Depth: This value is dependant on the female dovetail tool 's geometry. (see dimension A in illustration 1) When using the Thermwood supplied dovetail tool **FSH1065** this value is .35"

Fit Clearance: This value will apply side clearance for the dovetails. This may be desired for gluing purposes. The amount entered is the sum of the total clearance (a .01" fit clearance will apply .005" of clearance on each side of the dovetail)

Thickness (% of Material): This value defines the thickness of the dovetails. When using the Thermwood supplied dovetail tool **FSH1065**, it will be necessary to machine down approximately .21" of material to hide the dovetail radius when parts are assembled. The Thickness % can be calculated by taking the material thickness being used minus .21" divided by material thickness being used.

Thickness % = ((Material Thickness - .21") / Material Thickness)

Dovetail Width: This is the dovetail width from tip to tip. Typically this value should not exceed 2 times the dovetail bit diameter (see dimension B in illustration 1)

Corner Radius: This value is dependant on the female dovetail tool 's geometry. (see dimension R in illustration 1) When using the Thermwood supplied dovetail tool **FSH1065** this value is .125"

Corner Angle: This value is dependant on the female dovetail tool 's geometry. (see angular dimension C in illustration 1) When using the Thermwood supplied dovetail

tool
FSH1065
this
val
ue
ran
ges

7-10 Degrees.

Set up at the Machine

Table flatness is very important to the success of a quality dovetail joint. If the machining surface is not flat, it may result in the dovetail tool's top radiuses gouging in some areas and being too shallow in others. This may result in an unsatisfactory fit.

With that said, surfacing of the spoil-board and possibly the waste board/handling sheet will most likely be required.

The tool for the female dovetail routes has two critical values that be set up properly. These values are Diameter and the Z axis zero reference on the machine itself.

Z axis zero reference: This value is set at the ShopBot machine and is as important as the machining surface flatness. If this number is not accurate, again it may result in the dovetail tool's top radiuses gouging or being too shallow. This may result in an unsatisfactory fit. It **MUST** be understood that this value can be altered for the dove tail tool to help with the fit of the joint. If the tool is not cutting deep enough the joint will show a gap. If the tool is cutting too deep the joint will be too tight. This value will need to be altered based on fluctuations in material thickness. Keep in mind that the value for depth that is set in eCabinet Systems **MUST** be an accurate value relative to the tool's geometry. (Please refer to eCabinet Systems Drawer Box Designer Setup)

Diameter: This value is taken from the tip of the tails (see dimension B in illustration 1) If this value is not defined correctly, unsatisfactory fit may result. This diameter is set in the ShopBot Link's Tooling dialog with the operation tool that is checked to be the "Dove Tail Tool".

Note: Although it may be best to locate the underlying issue, this value can be used to tighten loose side to side fit by increasing the value enter.

ShopBot Link Settings Dialog

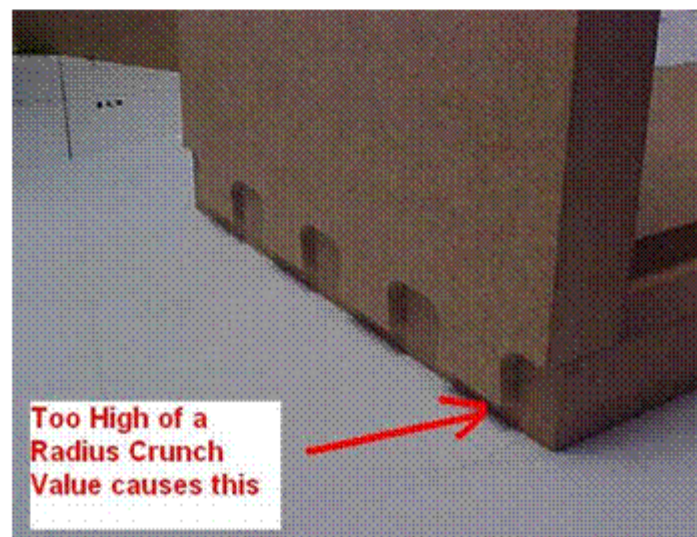
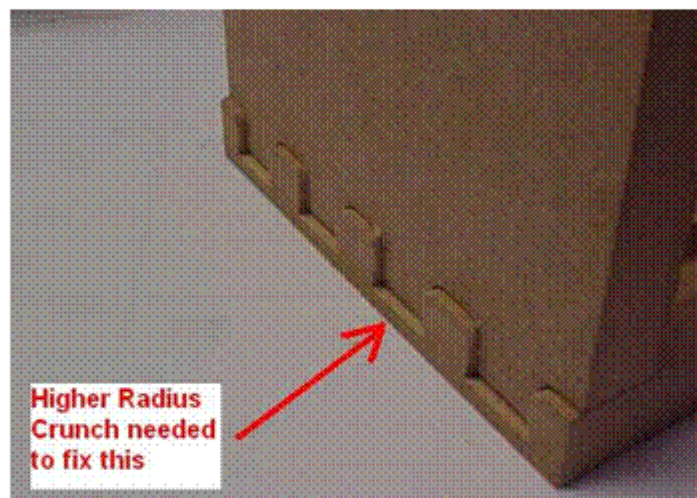
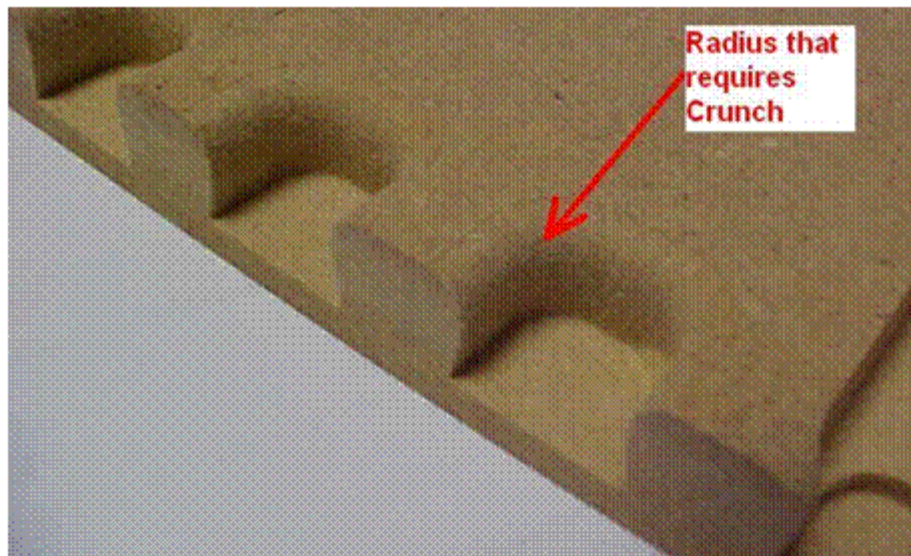
In ShopBot Link, there are 2 parameters in the settings dialog that pertain to dovetail machining. They are Dovetail Radius Crunch and Male Dovetail Feed.

Dovetail Radius Crunch: Due to the nature of the blind dovetail joint, there are certain crushing factors that take place when assembling the parts. When machined to the perfect dimension, the sharp corners of the male tails will crush against the radius created by the female dovetail tool causing the tails to seat potentially too deep. This phenomenon is controlled by the *Dovetail Radius Crunch* value. The value entered in this field will pull the female tool geometry back causing a shallower fit. This amount should be adjusted until desired fit is achieved. Keep in mind that different materials may require different values. (A value of 0" will have no crunch applied. The larger the value, the shallower the female cut will be. *See illustration 2 for more detail*)

Male Dovetail Feedrate: This is the federate that will be used when machining around the male dovetail joints. It is not uncommon for the same tool cutting dado operations (which typically can be cut at much higher feedrate) to be used for cutting around the male dovetail cuts.

Material Thickness to run Outline cut around Dove Tail Tenons to minimize load on Male Dove Tail tool: This is a value that ShopBot Link will refer to when making the decision whether or not to use the outline tool to 'hog out' the tenons to give relief to the smaller tool which will do the final cutting. If the material is thicker than this value the outline pass will cut around the tenons if and only if the diameter of the outline tool can fit between the tenons. It will leave the skin thickness value. This option will cost time in machining, but will help with thicker materials since experience has proven that the smaller tools cannot handle the full load of thicker materials for this operation.

During the testing phase of the dovetail drawer boxes, it was discovered that a conventional cut direction seemed to leave a much cleaner finished edge resulting in no or minimal clean up for assembly. With that said, a conventional cut direction would be the recommended way. Keep in mind that not all materials will react in the same way, so a climb cut should be tried if conventional does not seem to give the edge quality desired. This setting is changed on the settings dialog under cut parameters, direction.



ShopBot Link Tooling Dialog

When setting up tooling for the dovetail joints, there are a few tooling settings that need to be discussed. To get to the tooling dialog, select the Tooling button on the main ShopBot Link dialog. First, it is required to designate an operation tool as being the female dovetail tool. This is accomplished by the following steps:

- Select the operation # desired
- Select a tool number for that operation
- Check on the *Dovetail Tool* option for that operation

Next, the operation tool for the male dovetail routs may be specifically designated by checking the *Use for Male Routs with Dovetail* option. Having this option checked will force it to use this tool if the diameter is acceptable for the rout. If the diameter is too large, it will search the operation tools for the largest acceptable diameter that will work. If this option is not checked for any operation tools, it will automatically do a search for the largest acceptable tool diameter available.

Note: If using tooling groups, ensure that the material being used exists in the group and that the operation tools needed are specifically set for that group.

Tooling

Group Settings

Tooling

Default

Erase

Copy

Paste

☐ Ignore Group

Select Tolerance

0.001"

Group Materials

Add

Delete

Outline Tool Setup

Outline Tool Number:

1

Diameter:

0.25"

Feed Speed

360

Plunge

120

Spindle Speed

12000

Max Penetration

0.8"

Erase

☐ Reverse Spindle

Operation Tool(s) Setup

Operation:

3

Tool Number:

3

Diameter:

0.375"

Feed Speed

50

Plunge

100

Spindle Speed

10000

Max Penetration

0.4"

Erase

☐ Reverse Spindle

☒ Dove Tail Tool

☐ Use for Male Routs with DoveTail

Type

☒ Rout/Dado

☐ Drill

☐ Interpolate

Max Interpolate

0"

Confirmation Screen

OK

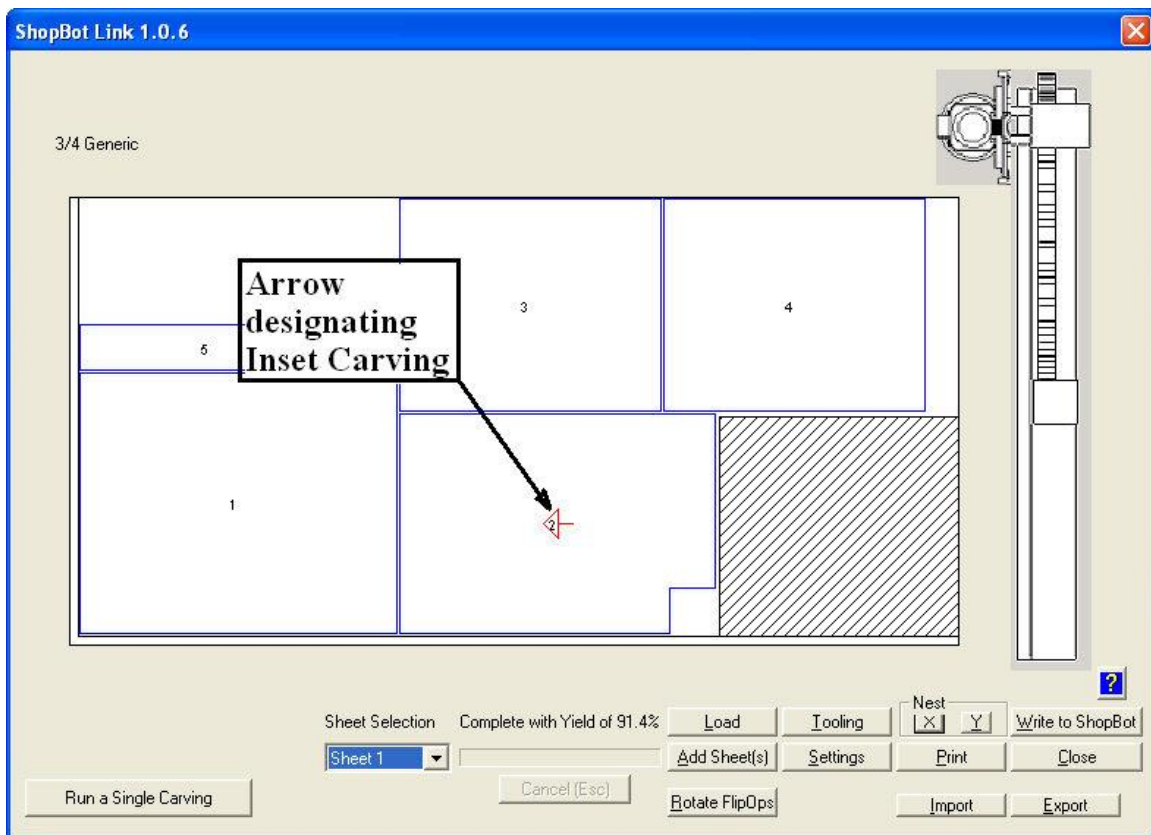
Cancel

Carvings

Inset Carvings with eCabinet Systems

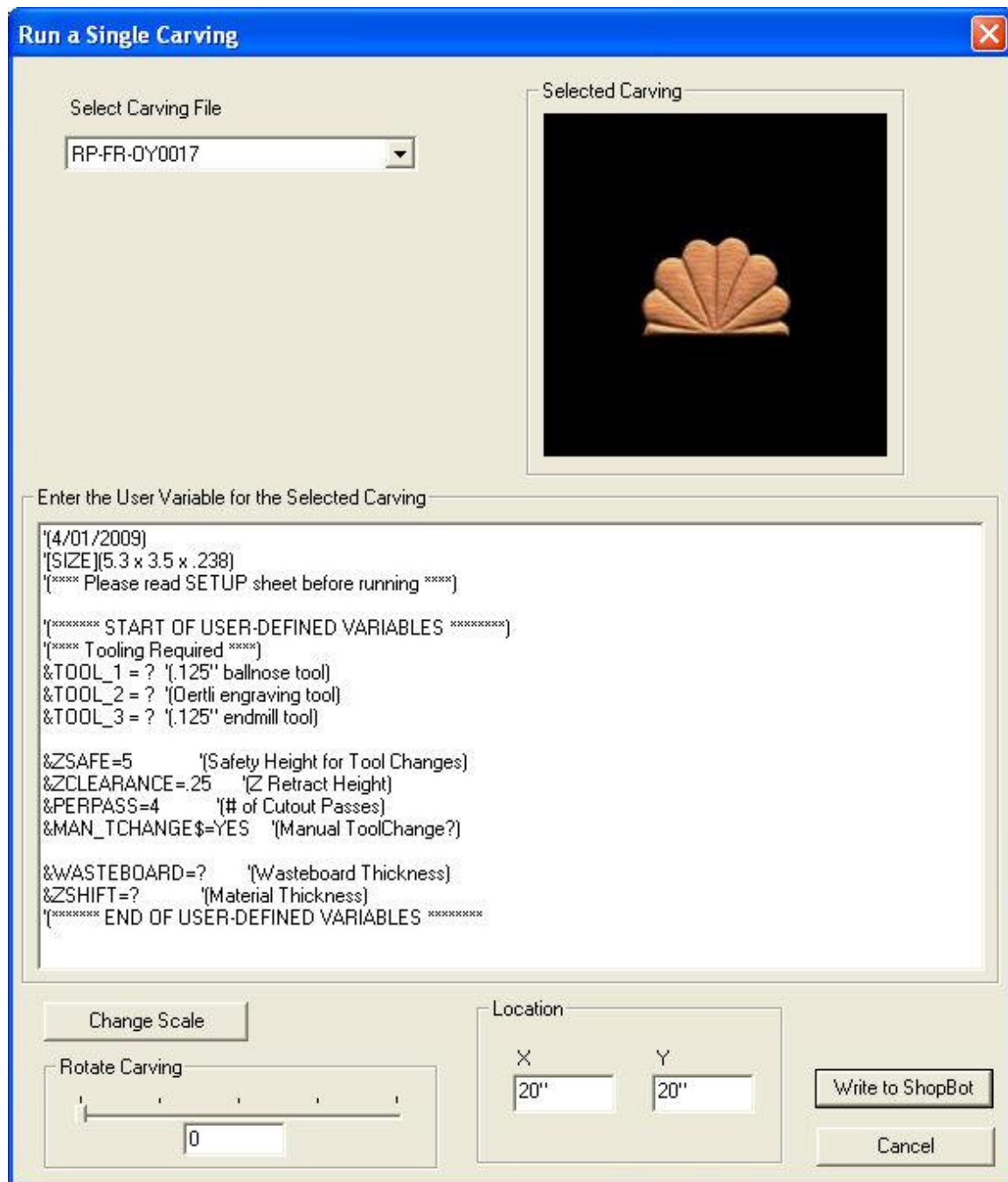
Inset Carvings which are available at www.ecabinetsystems.com can be applied to parts in eCabinet Systems. ShopBot Link will perform these carvings as long as the particular carving is installed. This allows you to perform carvings in a nest of parts.

The screen for ShopBot Link will not display the carving. It will only display an arrow in the location the carving is to occur.



Run a Single Carving

A carving can be cut at any location on the machine with any rotation and scale. To accomplish this you must have the carving installed on your computer that you wish to cut. Carving installations can be found at www.ecabinetsystems.com. Then click the Run a Single Carving button.



To select your carving click on the drop down box labeled Select Carving File.

A picture of the carving should appear in the window.

The user defined variables text for the file will appear in the large edit box. This is where you can set user variables for tool numbers, ZSafe, ZClearance, PERPASS (for perimeter cuts), Wasteboard thickness, and ZShift (material thickness based on your needs).

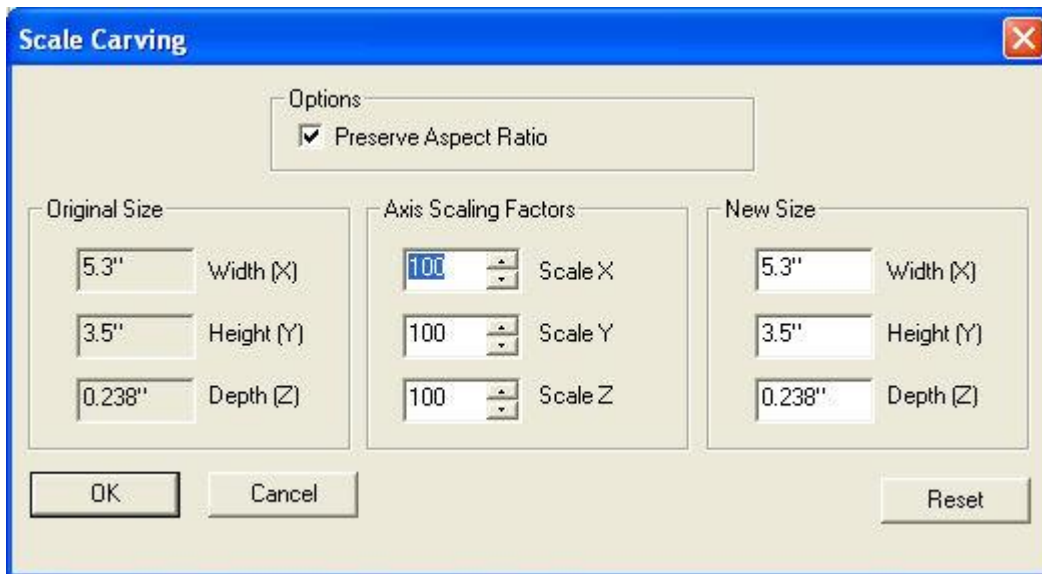
Documentation is available at www.ecabinetsystems.com for how to use these settings.

A carving can be rotated using the slider control or edit box under Rotate Carving.

NOTE: The image will not rotate with this setting. Only the resulting carving will be rotated.

The location you wish to perform the cut can be entered in the Location area for X and Y. Z values are handled with the user variables.

If you wish to change the size of the carving, click the Change Scale button.



The size can be alter by entering a scale or size value. Once the desired setting is made click the OK button.

Once all the settings have been made for your carving click the Write to ShopBot button and the ShopBot controller software will be called to run the carving.

Glossary

O

Off-fall: Usable scrap leftover from an operation.

Index

0		
0	55	
1		
12		
value	21	
1p33x4_Address_Sheet.rpt	41	
1p33x4_Address_Sheet_Barcode.rpt	41	
2		
2x4_Shipping_Sheet.rpt	41	
2x4_Shipping_Sheet_Barcode.rpt	41	
3		
30252_Address.rpt	41	
30252_Address_Barcode.rpt	41	
30252_Address_Symbol.rpt	41	
30252_Address_Symbol_Barcode.rpt	41	
30256_Shipping.rpt	41	
30256_Shipping_Barcode.rpt	41	
30256_Shipping_Symbol.rpt	41	
30256_Shipping_Symbol_Barcode.rpt	41	
5		
50		
set	18	
A		
Accept Sheet	36	
Accept Sheet button		
selecting	36	
Accept Sheet button	36	
Add	5, 26	
Add Part Clearance	21	
Add Part Clearance	21	
Added Sheets		
selecting	31	
Added Sheets	21, 22	
Added Sheets	31	
Adding		
Sheets and/or Off-fall	31	
Adding	31	
Address	41	
All Materials	7	
And/or	12	
Apply button	7	
Arc	14	
Avery 5162	41	
Avery 5163	41	
B		
Barcode		
scanning	31	
Barcode	31	
Barcode	41	
Barcodes	41	
Blind Dove Tail tool	27	
Board/handling	54	
Bring Selections		
Top	34	
Bring Selections	34	
C		
Change Scale button	63	
Checking		
Use	60	
Checking	60	
Ck Waste Board Every Sheet	11	
Ck Waste Board Every Sheet	11	
Clean Up	14	
Clean Up Amount	14	
Clear All	5, 6	
Clear All	6	
Clicking		
Double Pass button	15	
Erase button	26	
Clicking	15	
Clicking	26	
Climb	14, 19	
CNC		
creating	22	
selected	19	
write	10	
CNC	2	
CNC	10	
CNC	10	
CNC	11	
CNC	12	
CNC	19	
CNC	19	
CNC	22	
CNC	53	
Collar	21	
Collar	21	
Collar	22	
Confirmation Screen	28	
Confirmation Screen	28	
Conventional		
set	19	
Conventional	14	
Conventional	19	
Copy button	26	
Copy/Paste	26	
Corner		
Starting	22	
Corner	22	
Corner Angle	53	
Corner Radius	53	
Creating		

CNC.....	22	Dovetail Width	53
Creating	22	Drill	14
Crystal Report.....	41	Drills First.....	18
Crystal Report file	41	DXF file.....	6, 37
Ctrl.....	5	Dymo	41
Ctrl-C.....	26	E	
Ctrl-V	26	ECabinet	2
Currently, Rolling Nest	26	ECabinet Systems	63
Cut		ECabinet Systems Drawer Box Designer Setup	
Off Fall	19	refer.....	54
Cut	19	ECabinet Systems Drawer Box Designer Setup	
Cut Parameters	14	53
Cut Parameters	14	ECabinet Systems Drawer Box Designer Setup	
Cut Through Depth.....	17	54
Cut Through Depth.....	17	ECabinet Systems Files	5
D		ECabinet Systems MUST	54
Dado/Rout Pre-Ramp Depth.....	18	ECabinets icon.....	5
Daylight.....	54	Edge	
Default.....	26	Nest.....	6, 22
Degrees.....	53	part.....	14
Delete	26	part,.....	14
Delete Operations	34	Edge.....	6
Delete Operations	34	Edge.....	14
Delete Sheet.....	36	Edge.....	22
Delete Sheet button		Enter	5
select.....	36	Enter Point	34
Delete Sheet button.....	36	Enter Void	35
Diameter	54	Erase button	
Dimension Format.....	10	clicking	26
Direction.....	14, 19	Erase button	26
Dist	53	Es	19
Do Drills First.....	18	Exiting	
Doesn't	34	ShopBot Link.....	26
Done button		Exiting	26
select.....	31	Export	3
Done button	31	F	
Double Pass		F2.....	26
get	15	F9	
use.....	19	pressing.....	26
Double Pass	15	F9.....	26
Double Pass	19	Feed Speed.....	26, 27
Double Pass button		Feedrate	55
clicking	15	Files	
Double Pass button	15	Loading.....	5
Double Pass dialog	15	Files	5
Double Pass Part.....	15	FIRST tool.....	27
Dove Tail.....	27	Fit Clearance.....	53
Dove Tail Tenons	55	Flip Operations	11
Dove Tail Tool	27	Footer.....	12
Dovetail	60	Format	10
Dovetail Depth	53	Format	10
Dovetail Radius Crunch	55	FSH1065.....	53
Dovetail Settings		Full Feed	
see.....	53	Through Cuts	18
Dovetail Settings	53	Through Cuts	18
Dovetail Tool.....	60	Full Feed.....	18

G		
Get		
Double Pass	15	
Get	15	
Grain Setting	35	
Grain Setting	35	
Group		
Tooling	26	
Group	26	
Group Materials	26	
Group Materials	26	
H		
He/she	5	
Header	12	
I		
I/O's	11	
Ignore Groups	26	
Ignore Groups	26	
Inset Carvings	63	
Interpolate	27	
Introduction	1	
IPM	18	
K		
KD	14	
L		
L.E.	1	
Label Type	41	
Labels		
Printing	41	
Labels	41	
Laser	41	
Last Line Feed Speed	18	
Last Line Feed Speed	18	
Last Updated	1	
Leave Skin		
Size	15	
Leave Skin	15	
Length	34	
Length Axis	10	
Line	14	
Load	5	
Load dialog	5	
Load Operations	34	
Load Operations	34	
Load Screen	5, 6	
Load/unload	12	
Loading		
Files	5	
TWD	5, 6	
Loading	5	
Loading	5	
Loading	6	
Loading	6	
Location	63	
M		
Machine	54	
Machine Settings	10	
Machine Settings	10	
Male Dove Tail tool	55	
Male Dovetail Feed	55	
Male Dovetail Feedrate	55	
Male Routs		
Use	27	
Male Routs	27	
Male Routs	60	
Management	26	
Material	53	
Material Thickness	53, 55	
Max Feed Size	18	
Max Feed Size	18	
Max Interpolate Diameter	27	
Max Penetration	26, 27	
MDB	37	
Min	21	
Min Feed Rate	18	
Min Feed Rate	18	
Model 53	20	
Model 67	10	
MUST	54	
N		
Nest/Labels		
Rolling	41	
Nest/Labels	41	
Nesting		
Edge	6, 22	
Parameters	20	
selecting	37	
TWD	10, 37	
Nesting	6	
Nesting	10	
Nesting	20	
Nesting	22	
Nesting	37	
Nesting Parameters	20	
New Sheets	22	
NOT	6, 22	
NOTE	41, 63	
O		
Off Fall	21	
cut	19	
Square	21	
Off Fall	19	
Off Fall	21	
Off Fall Cuts	19	
Off-Fall	22	
Off-fall Library	31, 32	
OffFalls	32	
OffFalls	34	
OffFalls	34	
OffFalls	34	
OK button	63	
OL100WR	41	
OL125WR	41	

On/off	11
ONLY	19
Operation	2, 25, 27
Operation Tool	27
Operation Tools list	27
OR Max Penetration	19
Outline	55
Outline Cuts	19
Outline Order	18
Outline Order	18
Outline Pre-Ramp Depth	18
Outline tool	
set	18
Outline tool	18
Outline Tool Setup	26
Outline Tool Setup	26
P	
Parameters	
Nesting	20
Parameters	20
Part Rotation Step Angle	22
Part Rotation Step Angle	6
Part Rotation Step Angle	22
Part Width	
Tabbing	20
Part Width	20
Part,	14
Parts	
edge	14
Tabbing	20
Parts	14
Parts	20
Paste	
wish	26
Paste	26
Paste button	26
Perform All Through Cuts Last	19
Perform All Through Cuts Last	19
Perform All Through Cuts Last	19
PERPASS	63
Placement Inset Values	53
Placement Pins Setup	11
Placement Pins Setup	11
Plunge Speed	26, 27
Pocket Area	14
Pocket Settings	13
Pocket Settings	13
Pocket Step	14
Pocket's	14
Pocketing	27
Point X	34
Point Y	34
Popup	11
Pre-Ramp Depths	18
Pressing	
F9	26

Pressing	26
Print	41
Print Labels	41
Print Sheets	41
Printing	
Labels	41
Sheets	41
Printing	41
R	
Ramp In Length	17, 18
Ramp In Length	17
Rectangular	34
Refer	
eCabinet Systems Drawer Box Designer Setup	54
Refer	54
Retract Height	17
Retract Height	17
Return	36
Return button	36
Reverse Spindle	26, 27
Rolling	
Nest/Labels	41
Rolling	41
Rolling Nest	26, 28
Rotate Carving	63
Rotate Flip Op button	51
Rotate Flip Operation	51
Rotate Off Fall input	35
Rotate Off-fall Input	35
Rout/Dado	27
Router Off Every Sheet	11
Router Off Every Sheet	11
RPM	27
Run	
ShopBot Link	9
Single Carving	63
Single Carving button	63
Run	9
Run	63
Run Opposite Direction	19
Run Pockets	14
Run Pockets made	14
S	
Scanning	
barcode	31
Scanning	31
Scrap Part Recovery	6
Screen	
Control Nesting	63
Screen	63
Search Option	34
See	
Dovetail Settings	53
See	53
Select Carving File	63

Select File button	41	ShopBot	26
Select Material	34	ShopBot	49
Select Tool Tolerance	25	ShopBot	63
Selecting		ShopBot button	
Accept Sheet button	36	Write	63
Add Sheet	31	ShopBot button	63
CNC	19	ShopBot Control	1
Delete Sheet button	36	ShopBot Control Software	49
Done button	31	ShopBot Link	
Nest	37	exiting	26
Settings button	9	running	9
Tooling button	60	ShopBot Link	1, 2, 3
Selecting	9	ShopBot Link	9
Selecting	19	ShopBot Link	15
Selecting	19	ShopBot Link	17
Selecting	31	ShopBot Link	17
Selecting	36	ShopBot Link	18
Selecting	36	ShopBot Link	18
Selecting	37	ShopBot Link	19
Selecting	60	ShopBot Link	21
Selection Filter	7	ShopBot Link	22
Set		ShopBot Link	25
50	18	ShopBot Link	25
Conventional	19	ShopBot Link	26
Outline tool	18	ShopBot Link	26
Set	18	ShopBot Link	27
Set	19	ShopBot Link	34
Set	54	ShopBot Link	35
Settings	6, 9	ShopBot Link	36
Settings button		ShopBot Link	37
selecting	9	ShopBot Link	41
Settings button	9	ShopBot Link	49
Settings dialog	22	ShopBot Link	55
Setup	27	ShopBot Link	63
Sheet	22	ShopBot Link dialog	60
Printing	41	ShopBot Link Settings Dialog	55
Sheet	6	ShopBot Link Software	5
Sheet	22	ShopBot Link Tooling Dialog	60
Sheet	36	Single Carving	
Sheet	36	Run	63
Sheet	36	Single Carving	63
Sheet	41	Single Carving button	
Sheet Entry	34	Run	63
Sheet Entry	34	Single Carving button	63
Sheet Inkjet	41	Size	
Sheet Operations	11	Leave Skin	15
Sheet Selection	11	Size	15
Sheet Selection	11	Skin	20
Sheet Settings	41	Skin Thickness	17
Sheets and/or Off-fall		Skin Thickness	15
Adding	31	Skin Thickness	17
Sheets and/or Off-fall	31	Skins	19
Shift	6	Specifications	2
Shipping	41	Spindle Speed	26, 27
ShopBot	49	Spiral	13
Writing	49	Square	

Off Fall	21	TWD	10
Off Fall	21	TWD	37
Square	21	TWD Files	5
Start menu	2	Type	27
Starting		U	
Corner	22	Undo	34
Starting	22	Use Part Name on Parts	41
Starting Corner	22	User Manual	1
Step Percentage	14	User's	
Suit		suit	1
user's	1	User's	1
Suit	1	Uses	
Super Control's Tool Table	26	checking	60
T		Double Pass	19
Tab Parameters	20	Male Routs	27
Tab Parameters	20	tool's	26
Tabbing	20	Uses	19
Parts	20	Uses	26
Tabbing	20	Uses	27
Table	26	Uses	60
Table Parameters	10	V	
Table Parameters	10	Value	
Thermwood	3, 53	0 55	
Thermwood Control Prior		12	21
Tool Management	25	Value	21
Thermwood Control Prior	25	Value	55
Thermwood SuperControl's tool	54	Version 1.x	1
Thickness	53	Void Entry	35
Through Cuts	18	Void Entry.	35
Full Feed	18	W	
Through Cuts	14	Wait	11
Through Cuts	18	Wasteboard	10, 11, 63
Tool Management		Width.	34
Thermwood Control Prior	25	Width/length	15
Tool Management	25	Window's	5
Tool's		Wish	
uses	26	Paste	26
Tool's	26	Wish	26
Tool's	54	Write	
Tooling	28	CNC	10
Group	26	ShopBot	49
Tooling	19	ShopBot button	63
Tooling	26	Write	10
Tooling button		Write	49
select	60	Write	63
Tooling button	60	Writing	
Top		ShopBot	49
Bring Selections	34	Writing	49
Top	34	Www.ecabinetsystems.com	63
TWD		Www.OnlineLabels.com	41
loading	5, 6	Z	
nesting	10, 37	ZClearance	63
TWD	2	Zigzag	13
TWD	5	ZSafe	63
TWD	6	ZShift	63

