

# Vetric Gadget Man Dovetail Maker Version 5.30

MAY 2020



# Dovetail Gadget Agenda

- ▶ Job Setup
- ▶ Running the Dovetail Gadget
- ▶ Joint Setup
- ▶ Making the Toolpaths
- ▶ Testing the Fit

**Please Note:** This Gadget builds a Dovetail Joint by controlling the number of Tails and Pins equally over the size of material by entering the number of dovetails in the joint. The Bit selected plays a large role in the joint settings.



# Revision History

- ▶ Version 5.30
  - ▶ Moved Dovetail Tool database from “ini” file to the Registry
- ▶ Version 5.20
  - ▶ Backer board capability for the prevention of chip out when cutting side material with dovetail cutting it
  - ▶ Left and righthand orientation for cutting the front board pins
  - ▶ Front pin fit adjustment capabilities
  - ▶ Additional code clean up and error trapping
  - ▶ Updated documentation (Wiki and pdf)

# Dovetail Gadget Job Setup




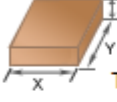
**Job Type** – Set to 'Single Sided'  
Milling operation is on the End of the material

**Job Size** – Units: Set to Your Units


**Z Zero Position** – Set to 'Your Style of Milling'  
I use 'Machine Bed'

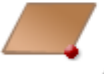
**Job Setup**


**Job Type**  
  
☒ Single Sided  
☐ Double Sided  
☐ Rotary


**Job Size**  
  
Width (X):  inches  
Height (Y):  inches  
Thickness (Z):  inches

**Units** ☒ inches ☐ mm

**Z Zero Position**  
  
☐ Material Surface  
☒ Machine Bed

**XY Datum Position**  
  
☐ Use Offset  
X:   
Y:

**Modeling Resolution**  
 Very High (7 x Slower)   
4 million points

**Appearance**  
 MDF  
Solid Color:

**Job Size** – Width: Set to your material thickness

**Job Size** – Height: Set to your material Width

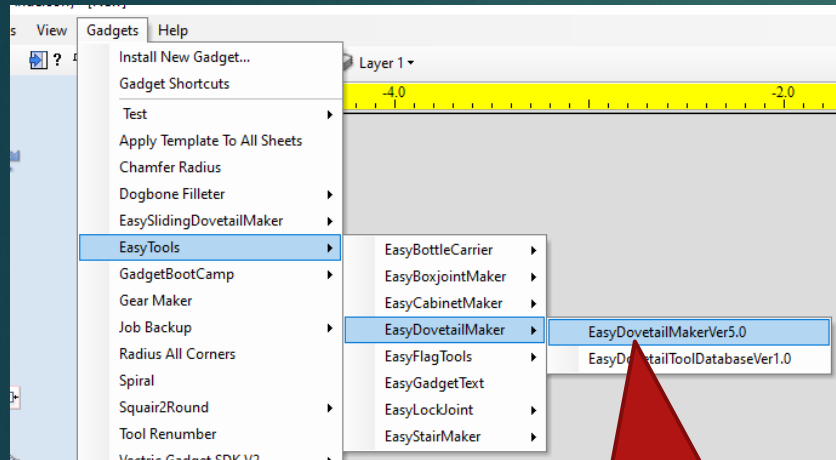
**Job Size** – Thickness: Set to your material thickness

**XY Datum Position** – Set to your Mill  
I use the Lower Right on my Mill configuration

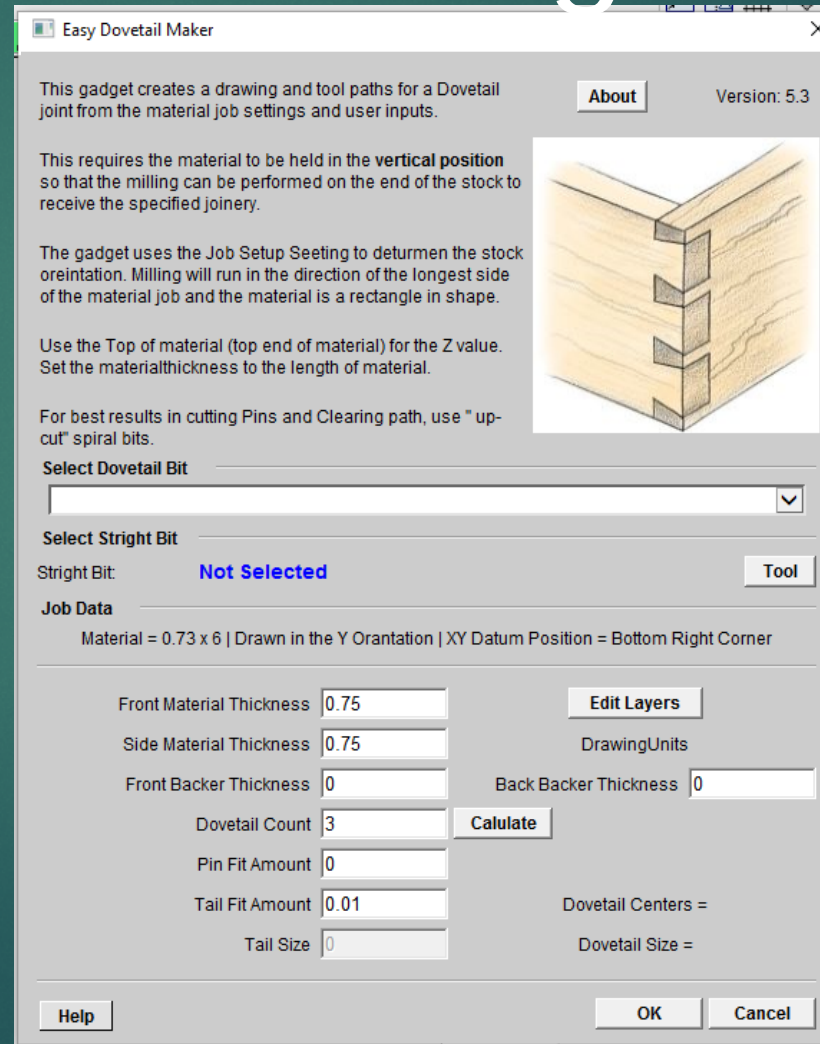


# Dovetail Gadget

## Running the Dovetail Gadget



Run Easy Dovetail Gadget



Version 10 or higher -  
Select Tool From The Tool  
Database

Version 9 or lower - Enter  
The Tool Diameter

# Dovetail Gadget

## Running the Dovetail Gadget



Drop the list to select a Dovetail From The Tool Dovetail Database

Easy Dovetail Maker

This gadget creates a drawing and tool paths for a Dovetail joint from the material job settings and user inputs.

About Version: 5.3

Use the material to be held in the vertical position so that the milling can be performed on the end of the stock to receive the specified joinery.

The gadget uses the Job Setup Setting to determine the stock orientation. Milling will run in the direction of the longest side of the material job and the material is a rectangle in shape.

Use the Top of material (top end of material) for the Z value. Set the material thickness to the length of material.

For best results in cutting Pins and Clearing path, use "up-cut" spiral bits.

Select Dovetail Bit

Select Straight Bit

Straight Bit: Not Selected

Tool

Job Data

Material = 0.73 x 6 | Drawn in the Y Orientation | XY Datum Position = Bottom Right Corner

Front Material Thickness 0.75 Edit Layers

Side Material Thickness 0.75 DrawingUnits

Front Backer Thickness 0 Back Backer Thickness 0

Dovetail Count 3 Calculate

Pin Fit Amount 0

Tail Fit Amount 0.01 Dovetail Centers =

Tail Size 0 Dovetail Size =

Help OK Cancel

Easy Dovetail Maker

This gadget creates a drawing and tool paths for a Dovetail joint from the material job settings and user inputs.

About Version: 5.3

This requires the material to be held in the vertical position so that the milling can be performed on the end of the stock to receive the specified joinery.

The gadget uses the Job Setup Setting to determine the stock orientation. Milling will run in the direction of the longest side of the material job and the material is a rectangle in shape.

Use the Top of material (top end of material) for the Z value. Set the material thickness to the length of material.

For best results in cutting Pins and Clearing path, use "up-cut" spiral bits.

Select Dovetail Bit

Amana Tool 45804 Carbide Tipped Dovetail 14 Deg x 0.5 D x 0.5 CH x 0.25 SHK

Amana Tool 45805 Carbide Tipped Dovetail 10 Deg x 0.5 D x 0.625 CH x 0.5 SHK

Amana Tool 45810 Carbide Tipped Dovetail 7 Deg x 0.750 D x 0.875 CH x 0.500 SHK

Amana Tool 45812 Carbide Tipped Dovetail 12 Deg x 0.8 D x 0.5 CH x 0.5 SHK

PorterCable 43776PC Carbide Tipped Dovetail 7 Deg x 0.53125 D x 0.75 CH x 0.5 SHK

Job Data

Material = 0.73 x 6 | Drawn in the Y Orientation | XY Datum Position = Bottom Right Corner

Front Material Thickness 0.75 Edit Layers

Side Material Thickness 0.75 DrawingUnits

Front Backer Thickness 0 Back Backer Thickness 0

Dovetail Count 3 Calculate

Pin Fit Amount 0

Tail Fit Amount 0.01 Dovetail Centers =

Tail Size 0 Dovetail Size =

Help OK Cancel

Select a Dovetail bit



# Dovetail Gadget

## Running the Dovetail Gadget



Version 9 – Enter the tool data for the straight bit

Easy Dovetail Maker

This gadget creates a drawing and tool paths for a Dovetail joint from the material job settings and user inputs.

About Version: 5.3

Use the material (top end of material) for the Z value. Set the material thickness to the length of material.

For best results in cutting Pins and Clearing path, use "up-cut" spiral bits.

Select Dovetail Bit

Bit Diameter: 0.25 Bit Units: inch Mill Rate: inches/min

Bit RPM: 20000 Feed Rate: 50 Plunge Rate: 20

Job Data

Material = 0.73 x 6 | Drawn in the Y Orientation | XY Datum Position = Bottom Right Corner

Front Material Thickness: 0.75 Edit Layers

Side Material Thickness: 0.75 DrawingUnits

Front Backer Thickness: 0 Back Backer Thickness: 0

Dovetail Count: 3 Calculate

Pin Fit Amount: 0

Tail Fit Amount: 0.01 Dovetail Centers =

Tail Size: 0 Dovetail Size =

Help OK Cancel

Version 10 - Select a straight Tool from the standard Tool database

Easy Dovetail Maker

This gadget creates a drawing and tool paths for a Dovetail joint from the material job settings and user inputs.

About Version: 5.3

This requires the material to be held in the vertical position so that the milling can be performed on the end of the stock to receive the specified joinery.

The gadget uses the Job Setup Setting to determine the stock orientation. Milling will run in the direction of the longest side of the material job and the material is a rectangle in shape.

Use the Top of material (top end of material) for the Z value. Set the material thickness to the length of material.

For best results in cutting Pins and Clearing path, use "up-cut" spiral bits.

Select Dovetail Bit

Select Straight Bit

Straight Bit: Not Selected Tool

Job Data

Material = 0.73 x 6 | Drawn in the Y Orientation | XY Datum Position = Bottom Right Corner

Front Material Thickness: 0.75 Edit Layers

Side Material Thickness: 0.75 DrawingUnits

Front Backer Thickness: 0 Back Backer Thickness: 0

Dovetail Count: 3 Calculate

Pin Fit Amount: 0

Tail Fit Amount: 0.01 Dovetail Centers =

Tail Size: 0 Dovetail Size =

Help OK Cancel

# Dovetail Gadget

## Running the Dovetail Gadget



Select a Tool Diameter smaller or equal to the slot size. You may have to re-select if required

Tool Database

Material: Plywood Online Machine: CNC Router

**Wood**

- Twist Mill Bits**
  - End Mill (0.0625 inch) Down
  - End Mill (0.1250 inch) Down
  - End Mill (0.1250 inch) Up
  - End Mill (0.1250 inch) Up
  - End Mill (0.1730 inch) Up
  - End Mill (0.2500 inch) Down
  - End Mill (0.2500 inch) Up
  - End Mill (0.2500 inch) Up
  - End Mill (0.2500 inch) Up
  - End Mill (0.2500 inch) Up
  - End Mill (0.3750 inches) C
  - End Mill (0.5000 inch) Down
  - End Mill (0.5000 inch) Up
  - End Mill (0.750 inches)
  - End Mill (2.360 inches)
- Imperial Tools**
  - No Tool Table Vacuum
  - Straight End Mills**
    - End Mill (0.0625 inch) Down
    - End Mill (0.1250 inch) Down
    - End Mill (0.1250 inch) Up
    - End Mill (0.1250 inch) Up
    - End Mill (0.1730 inch) Up
    - End Mill (0.2500 inch) Down
    - End Mill (0.2500 inch) Up
    - End Mill (0.2500 inch) Straight
    - End Mill (0.2500 inch) Up
    - End Mill (0.2500 inch) Up
    - End Mill (0.3750 inches) D
    - End Mill (0.5000 inch) Down
    - End Mill (0.5000 inch) Up
    - End Mill (0.5000 inch) Straight

**End Mill (0.2500 inch) Up**

Notes: 1/4 Dia

Tool Type: End Mill

**Geometry**

Units: inches

Diameter (D): 0.25 inches

No. Flutes: 2

**Cutting Parameters**

Pass Depth: 0.15 inches

Stepover: 0.105 inches 42 %

**Feeds and Speeds**

Spindle Speed: 24000 r.p.m

Feed Units: inches/min Chip Load: 0.0016 inches

Feed Rate: 75 inches/min

Plunge Rate: 35 inches/min

**Tool Number**: 6

Remove Apply Select Close





# Dovetail Gadget

## Running the Dovetail Gadget

Note: Job data is displays here

Note: Front and Side material thickness can be adjusted based your needs

Enter the number of Dovetail for the joint

You can adjust the fit with entering a value here

**Job Data**  
Material = 0.73 x 6 | Drawn in the Y Orantation | XY Datum Position = Bottom Right Corner

Front Material Thickness	<input type="text" value="0.75"/>	<b>Edit Layers</b>
Side Material Thickness	<input type="text" value="0.75"/>	
Front Backer Thickness	<input type="text" value="0"/>	DrawingUnits
		Back Backer Thickness <input type="text" value="0"/>
Dovetail Count	<input type="text" value="3"/>	<b>Calulate</b>
Pin Fit Amount	<input type="text" value="0"/>	
Tail Fit Amount	<input type="text" value="0.01"/>	
Tail Size	<input type="text" value="0"/>	
		Dovetail Centers =
		Dovetail Size =

**Help** **OK** **Cancel**

Displays the Layer Editor

Backer Material Thickness for Side Dovetails Milling

Select the Calculate button to display the Joint data



# Dovetail Gadget

## Running the Dovetail Gadget

Backer Materials are used to prevent chip out when milling Dovetails

Drawn in the Y Orientation | XY Datum Position = Bottom Right Corner

Front Material Thickness	0.73	<b>Edit Layers</b>	
Side Material Thickness	0.73	DrawingUnits	
Front Backer Thickness	0.5	Back Backer Thickness	0.5
Dovetail Count	6	<b>Calculate</b>	
Pin Fit Amount	0		
Tail Fit Amount	0.01	Dovetail Center = 1	
Tail Size	0.5	Dovetail Top = 0.5896...	

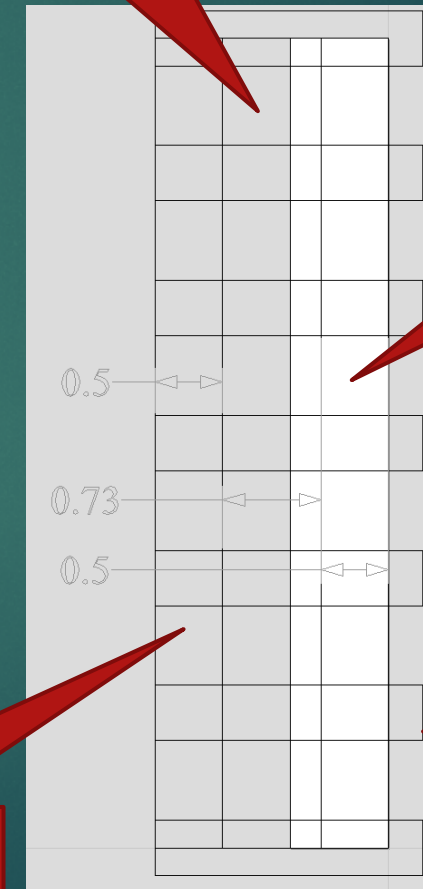
**Help** **OK** **Cancel**

0.73 Side Material

0.5 Back Backer Material

Dovetail Clearing Pockets

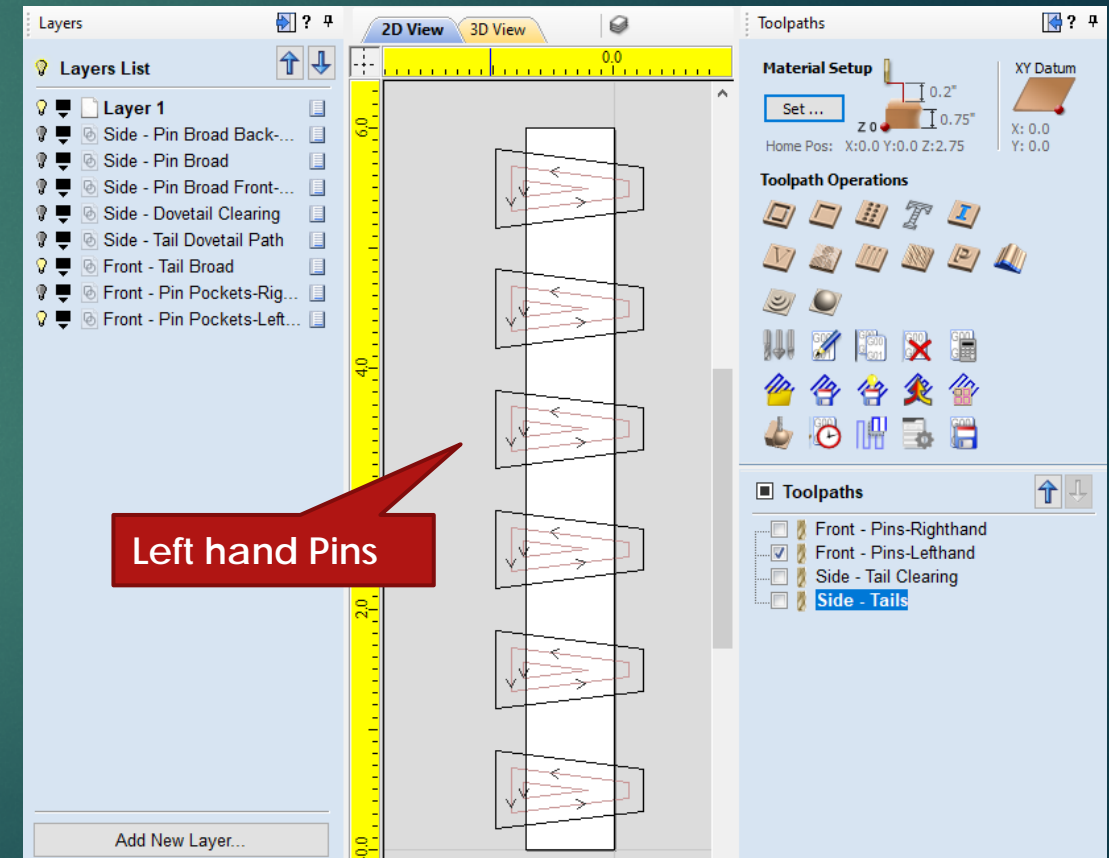
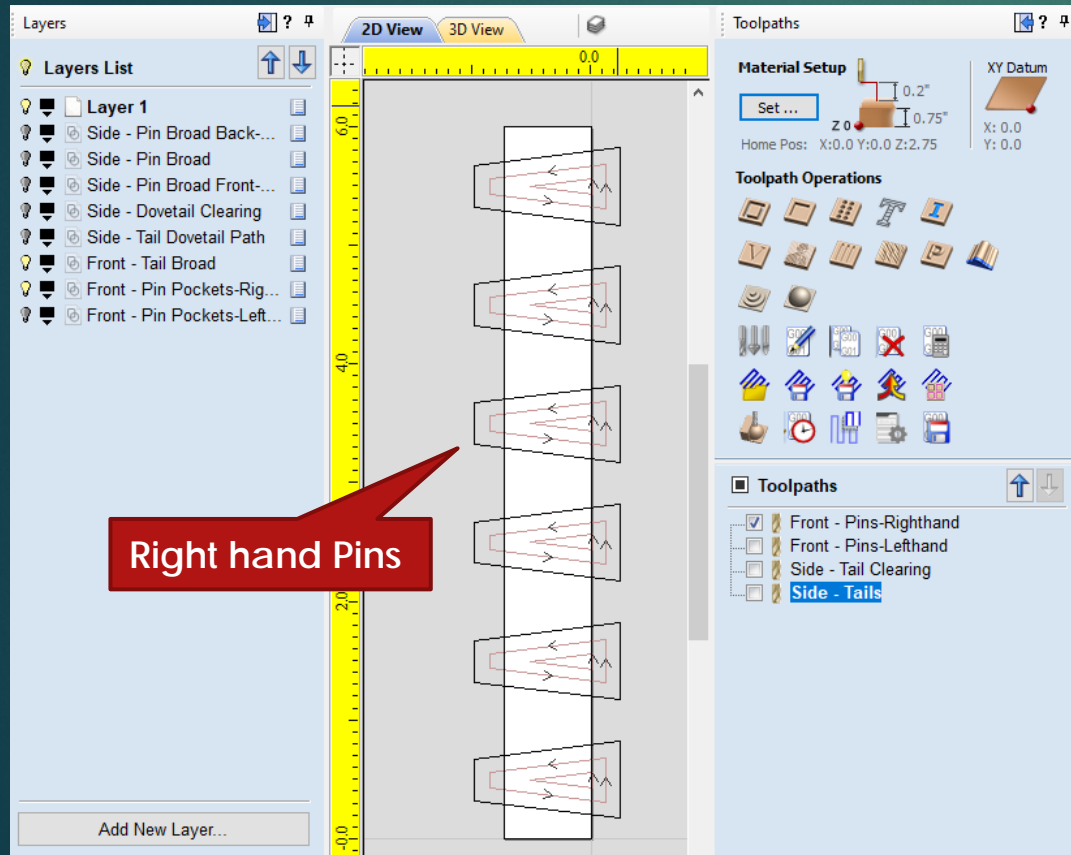
0.5 Front Backer Material





# Dovetail Gadget

## Running the Dovetail Gadget



# Dovetail Gadget

## Running the Dovetail Gadget



Layer Setup

Layer Names

Side - Broad: Side - Broad

Side - Dovetail Clearing: Side - Dovetail Clearing

Side - Dovetail Path: Side - Tail Dovetail Path

Front - Broad: Front - Broad

Front - Pockets: Front - Pin Pockets

Tool Path Names

Side - Dovetail Path: Side - Tails

Side - Clearing: Side - Tail Clearing

Front - Pins: Front - Pins

Cancel OK

Edit Layer and Tool-path names



# Dovetail Gadget

## Running the Dovetail Gadget



Easy Dovetail Maker

This gadget creates a drawing and tool paths for a Dovetail joint from the material job settings and user inputs.

About Version: 5.3

This requires the material to be held in the **vertical position** so that the milling can be performed on the end of the stock to receive the specified joinery.

The gadget uses the Job Setup Setting to determine the stock orientation. Milling will run in the direction of the longest side of the material job and the material is a rectangle in shape.

Use the Top of material (top end of material) for the Z value. Set the material thickness to the length of material.

For best results in cutting Pins and Clearing path, use "up-cut" spiral bits.

Select Dovetail Bit

PorterCable 43776PC Carbide Tipped Dovetail 7 Deg x 0.53125 D x 0.75 CH x 0.5 SHK

Select Straight Bit

Straight Bit: End Mill (0.2500 inch) Up

Tool

Job Data

Material = 0.73 x 6 | Drawn in the Y Orientation | XY Datum Position = Bottom Right Corner

Front Material Thickness 0.75

Side Material Thickness 0.75

Front Backer Thickness 0

Back Backer Thickness 0

Dovetail Count 6

Pin Fit Amount 0

Tail Fit Amount 0.01

Tail Size 0.5

Edit Layers

DrawingUnits

Calculate

Dovetail Center = 1

Dovetail Top = 0.5921...

Help OK Cancel

Enter the number of  
Dovetail for the joint

Select the Calculate  
button to display the Joint  
data

# Dovetail Gadget

## Running the Dovetail Gadget



Easy Dovetail Maker

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The gadget uses the Job Setup Setting to determine the stock orientation. Milling will run in the direction of the longest side of the material job and the material is a rectangle in shape.

Use the Top of material (top end of material) for the Z value. Set the material thickness to the length of material.

For best results in cutting Pins and Clearing path, use "up-cut" spiral bits.

Select Dovetail Bit

PorterCable 43776PC Carbide Tipped Dovetail 7 Deg x 0.53125 D x 0.75 CH x 0.5 SHK

Select Straight Bit

Straight Bit: End Mill (0.2500 inch) Up Tool

Job Data

Material = 0.73 x 6 | Drawn in the Y Orientation | XY Datum Position = Bottom Right Corner

Front Material Thickness 0.75 Edit Layers

Side Material Thickness 0.75 DrawingUnits

Front Backer Thickness 0 Back Backer Thickness 0

Dovetail Count 6 Calculate

Pin Fit Amount 0

Tail Fit Amount 0.01

Tail Size 0.5

Dovetail Center = 1

Dovetail Top = 0.5921...

Help OK Cancel

Select the OK button to build the drawing and toolpaths

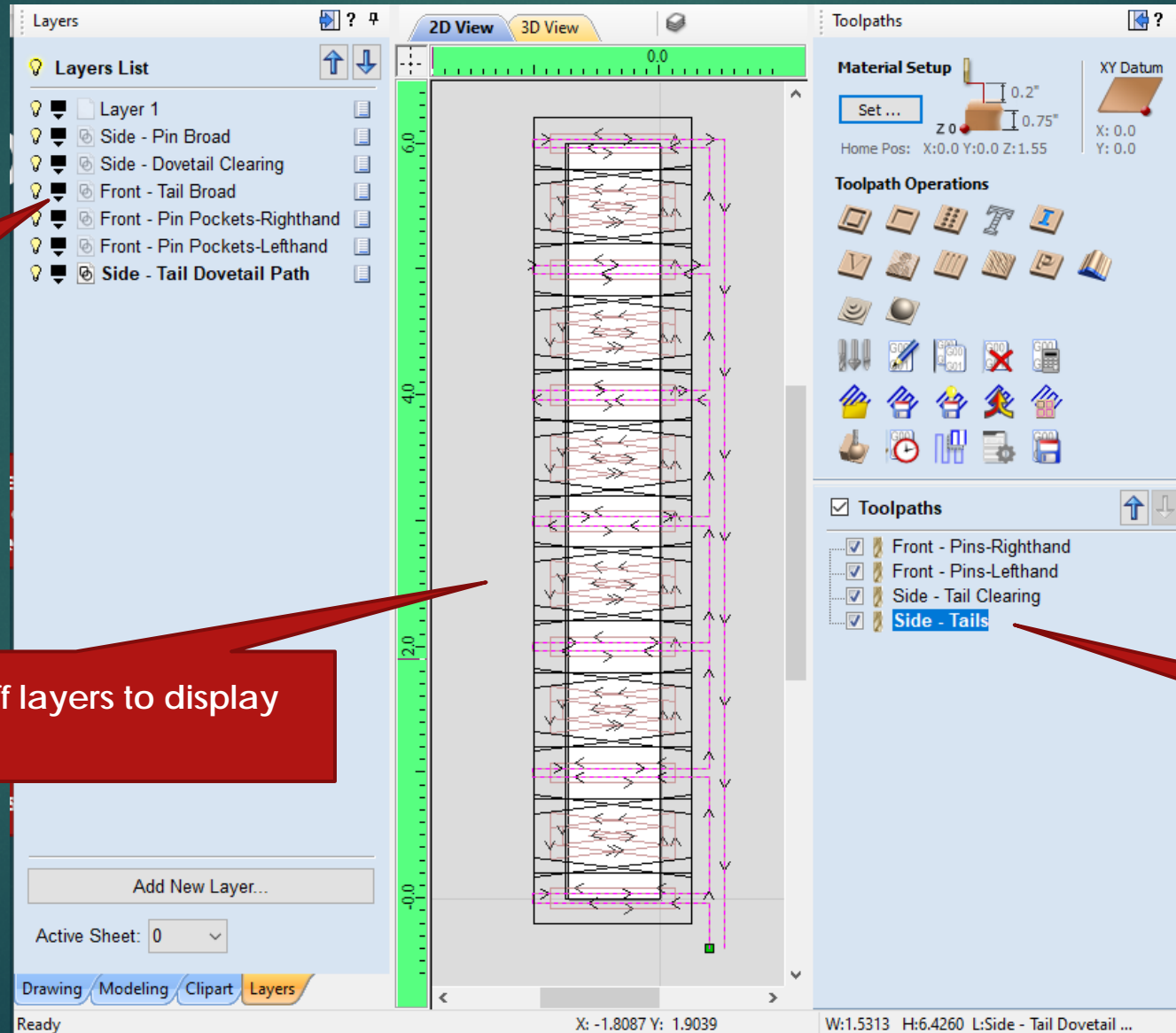


# Dovetail Gadget



Note: The Layers are named so each milling of the Dovetail joint

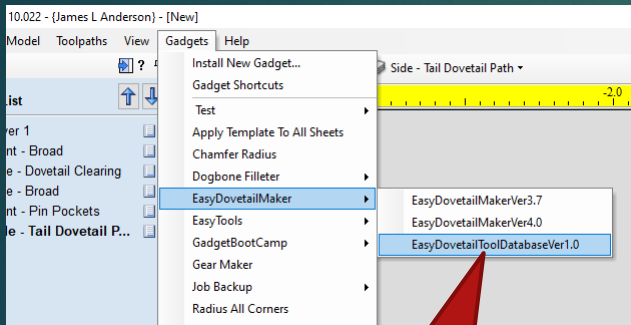
Toggle on and off layers to display the Joint cuts



Note: The tool-paths for milling the dovetails

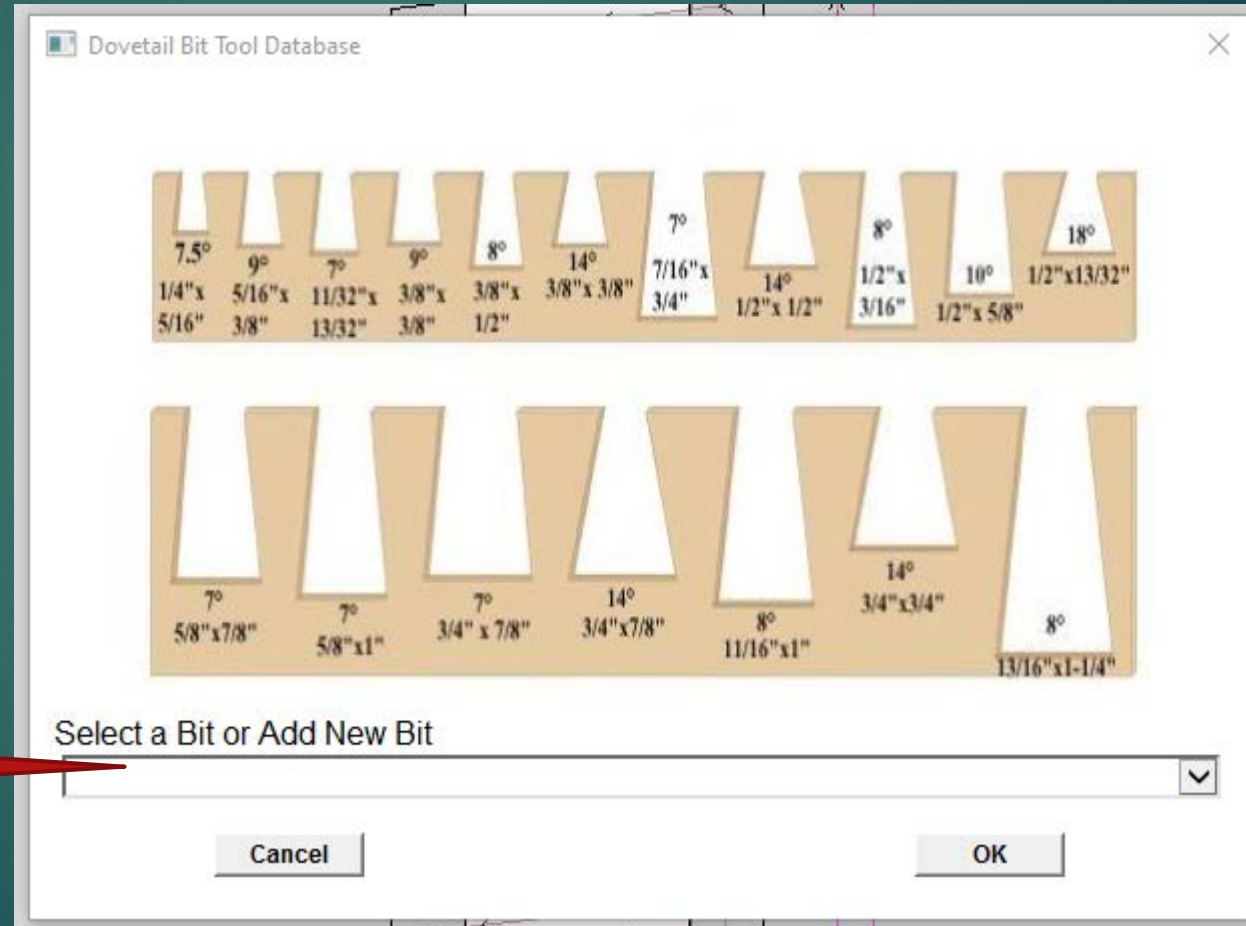
# Dovetail Bit Gadget

## Adding and Editing Dovetail Bits



Open the Dovetail Tool Database Gadget

Select the Add New or Select a bit to edit

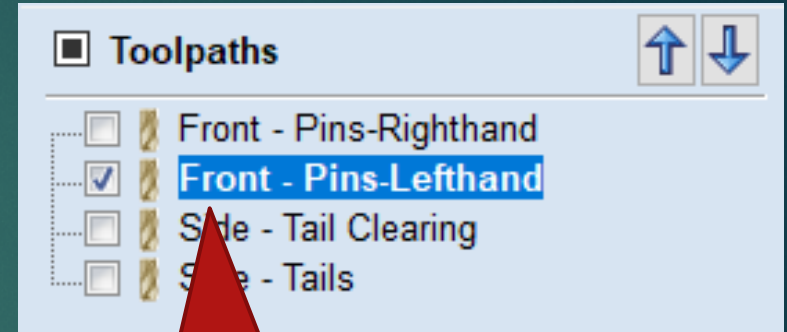
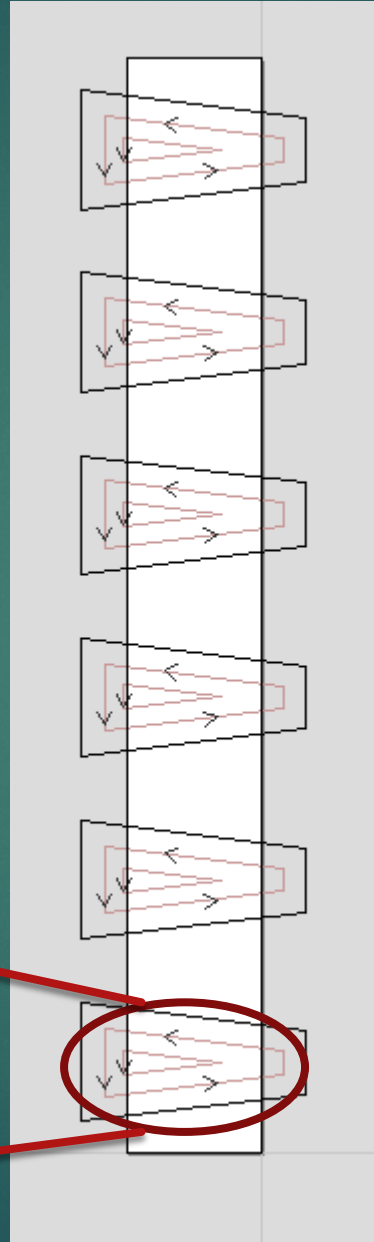
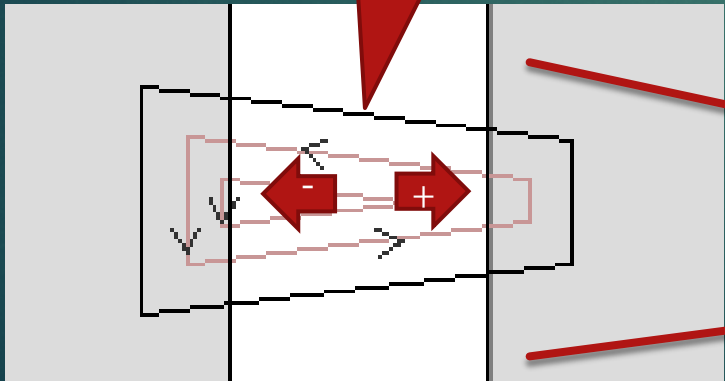




# Dovetail Gadget Mill Setup



Note: The Pin Fit Amount (+/-) is integrated in the Front Pin geometry. Positive values will loosen the joint and negative values will tighten the joint

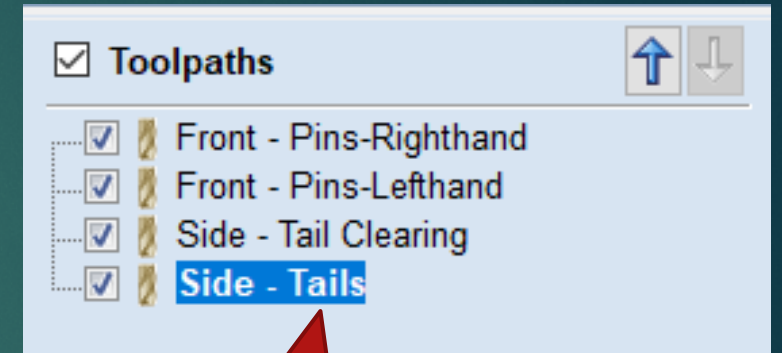
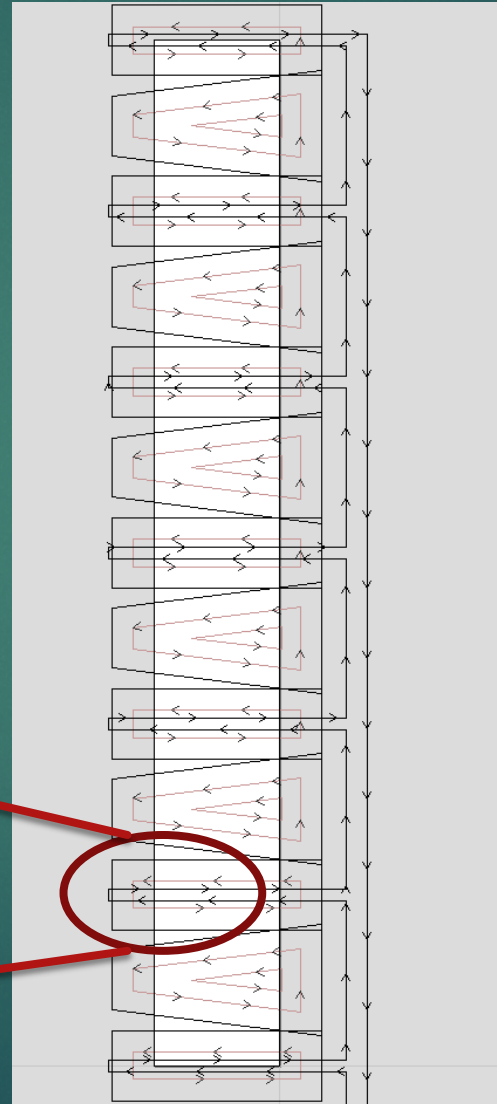
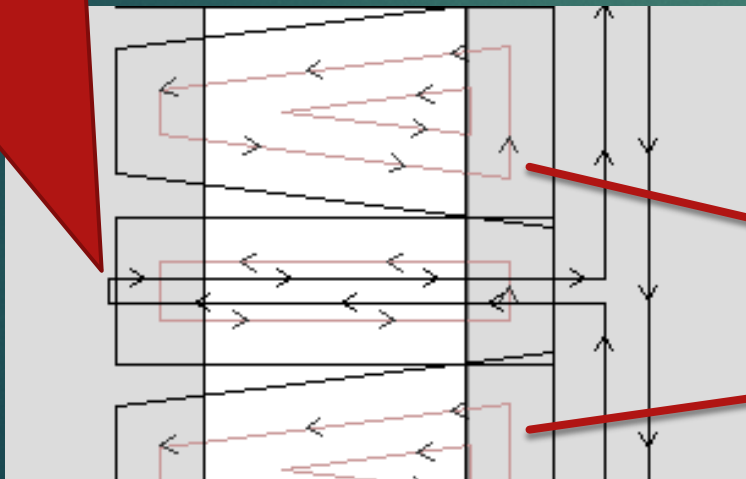


Note: The Milling is on the Front board

# Dovetail Gadget Mill Setup



Note: The Tail Fit Amount is integrated in the Dovetail path geometry. The larger the Tail Fit Amount number the wider the Dovetail milling path



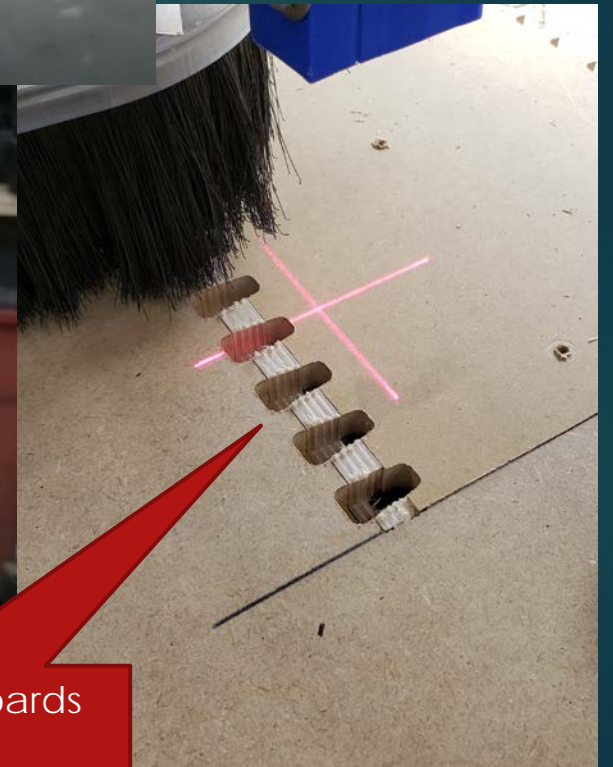
Note: Milling is on the Side boards



# Dovetail Gadget Running the parts

**Note:** Material is clamped to the front of the mill and is projected the thickness of the material above the mill table.

**Note:** Use material to flush the top so it is projected above the mill table.

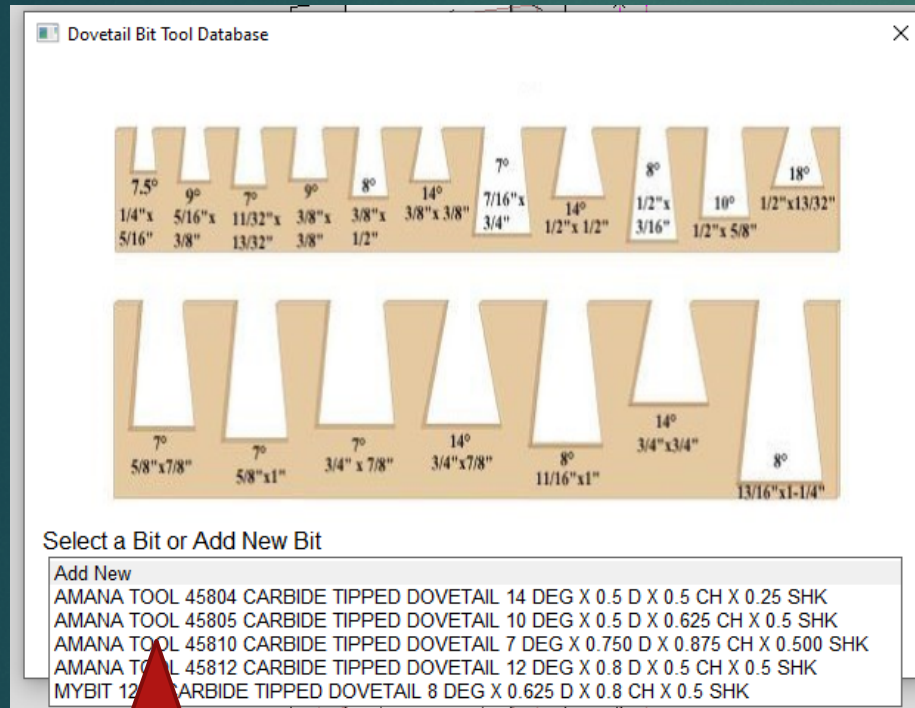


**Note:** Use Backer Boards to prevent chip out.

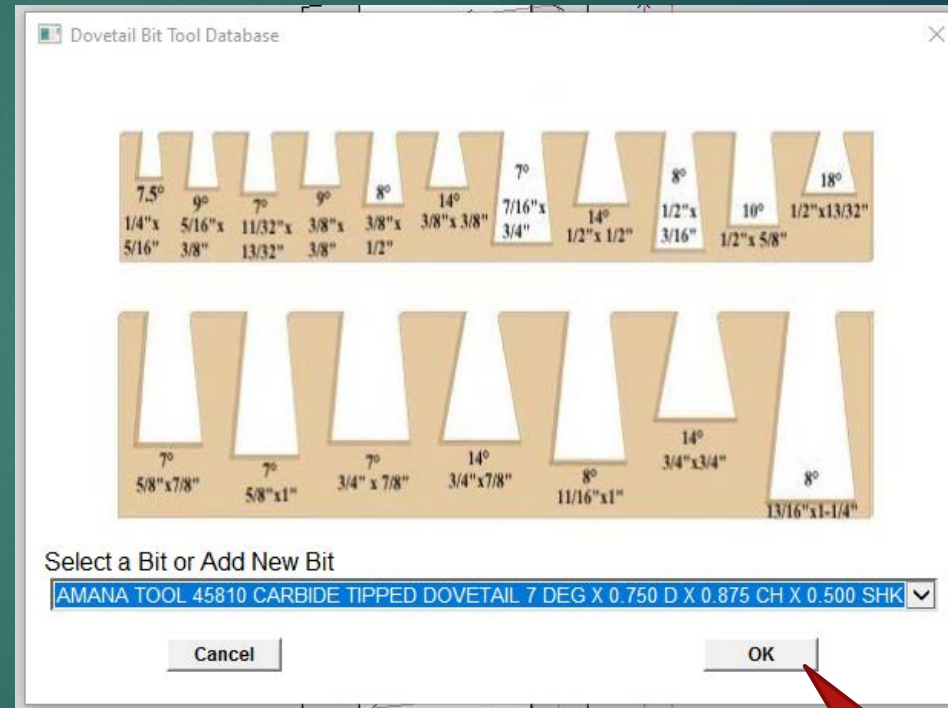


# Dovetail Bit Gadget

## Adding and Editing Dovetail Bits



Select Add New or Select  
a bit to edit



Select the OK button to  
Open the



# Dovetail Bit Gadget

## Adding and Editing Dovetail Bits



Update the tool data as needed

Edit Dovetail Bit

Tool Brand	Amana Tool
Tool Type	Carbide Tipped
Model Number	45810
Bit Angle (A)	7
Cut Depth (I)	0.875
Flute Count	2
RPM	18000
Base Dia (D)	0.75
Shank Dia (S)	0.5
Overall Length (L)	2.625
Feed Rate	22
Plunge Rate	22
Note	Test 3

Bit Units: inch  
Mill Rate: inches/min

Help OK Cancel

Select the OK button to save your changes

# Dovetail Bit Gadget

## Adding and Editing Dovetail Bits



Note: If needed, You can edit the Dovetail bit database in the Registry Editor

Registry Editor

File Edit View Favorites Help

Computer\HKEY\_CURRENT\_USER\SOFTWARE\Vetric\VCarve ProV10\EasyDovetailToolDatabase2.0

Name	Type	Data
(Default)	REG_SZ	(value not set)
Bit1-BitAngle	REG_SZ	14.0000000000
Bit1-BitDia	REG_SZ	0.5000000000
Bit1-BitLength	REG_SZ	1.7500000000
Bit1-BitName	REG_SZ	Amana Tool 45804 Carbide Tipped Dovetail 14 Deg ...
Bit1-Brand	REG_SZ	Amana Tool
Bit1-CutDepth	REG_SZ	0.5000000000
Bit1-FeedRate	REG_DWORD	0x00000018 (24)
Bit1-Flutes	REG_DWORD	0x00000002 (2)
Bit1-Notes	REG_SZ	System Defalt bit - Edit as needed
Bit1-PartNo	REG_SZ	45804
Bit1-PlungRate	REG_DWORD	0x00000011 (17)
Bit1-Rates	REG_SZ	inches/min
Bit1-RPM	REG_DWORD	0x00004650 (18000)
Bit1-ShankDia	REG_SZ	0.2500000000
Bit1-Type	REG_SZ	Carbide Tipped
Bit1-Units	REG_SZ	inch
Bit2-BitAngle	REG_SZ	7.0000000000
Bit2-BitDia	REG_SZ	0.5312500000
Bit2-BitLength	REG_SZ	2.5000000000
Bit2-BitName	REG_SZ	PorterCable 43776PC Carbide Tipped Dovetail 7 De...
Bit2-Brand	REG_SZ	PorterCable
Bit2-CutDepth	REG_SZ	0.7500000000
Bit2-FeedRate	REG_DWORD	0x00000014 (20)
Bit2-Flutes	REG_DWORD	0x00000002 (2)
Bit2-Notes	REG_SZ	Amazon \$29.50
Bit2-PartNo	REG_SZ	43776PC
Bit2-PlungRate	REG_DWORD	0x00000013 (19)
Bit2-Rates	REG_SZ	inches/min
Bit2-RPM	REG_DWORD	0x00000010 (16)

LastRun

Note: Your Application Name may be deferent

Computer\HKEY\_CURRENT\_USER\SOFTWARE\Vetric\VCarve ProV10\EasyDovetailToolDatabase2.0



Thank  
You