Geiger's Method to Sharpen Gouges

I designed, manufactured, and supplied a series of systems for the sharpening of woodturning gouges over a 23-year period. Each was designed to enable woodturners to attain accurate grinds with repeatable results. I introduced four models in succession: The Vertical Solution, The Vertical Solution Pro-Sharp, The Vertical Solution Spectrum, and the Evolution. Each system was designed as an aftermarket product to the popular Wolverine system.

I discontinued making and supplying systems in September of 2024. When I announced the discontinuation of my systems, many people asked where or how they could obtain a system.

Below and herein, I am providing plans to enable turners to build an inexpensive system that closely mimics my latest offering: The Evolution.

Feel free to contact me if you have any questions. Thank you for your support over the past 23-years!

Don Geiger

dongeiger4@gmail.com

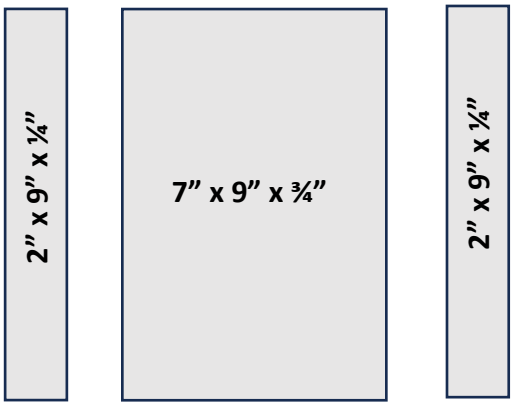
List of Materials:

- A two-wheel bench grinder: preferably an 8" slow speed (~1800 RPM) or variable speed (adjusted to the slowest possible speed)
- A basic Wolverine system: installed as directed in the manufacturer's instructions
- A Wolverine Vari-Grind jig: *NOT* the Vari-Grind II
- A 2" protrusion gauge, as described herein
- Shelving board: ¾" thick x 7" wide x 9" long
- Two pieces of ¼ plywood: 2" x 9"
- A two-step wooden spacer ¾" thick x 2-1/2" x 2", as described herein
- A wooden gauge block: 2" x 1.5" x 7/8"
- Wooden shim for V-notch 2" x 3" x 3/4" as described herein
- Five (5) rare earth magnets: 3/8" dia x ¼" long (amazingmagnets.com)
- Two setscrew-style stop collars (1" i.d. x 1-1/2" o.d.), from Amazon)
- Wood glue and brad nails or small screws
- A small quantity of blue, red, and yellow paint (acrylic works well)
- A 5/8" o.d. bowl gouge with an accurate 60° bevel on the tip to use as a standard
- A black Sharpie permanent marker

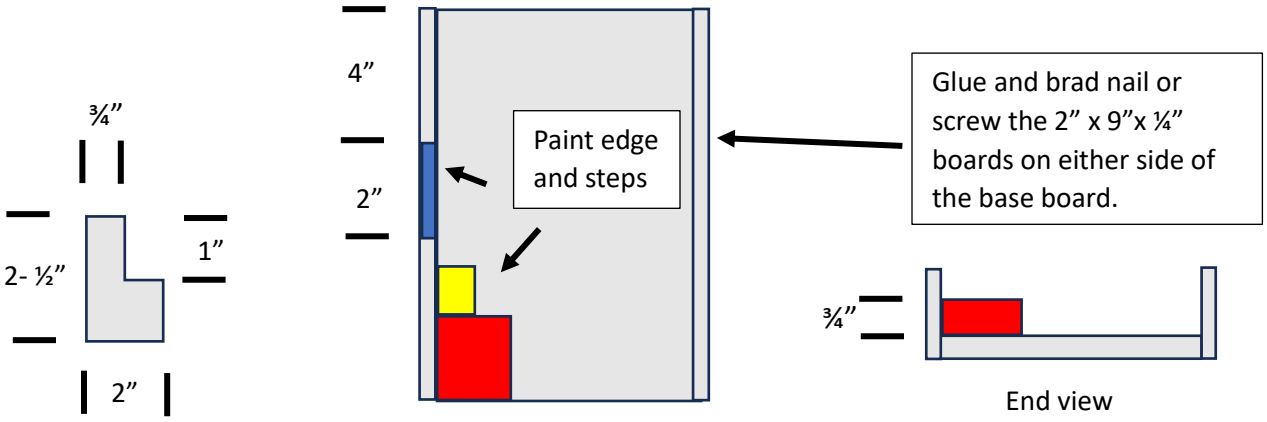
Building a box gauge for pre-setting the Vari-Grind Jig

This box gauge provides three repeatable Vari-Grind jig settings for a variety of bowl gouge grinds and a spindle gouge grind.

1) Cut a ¾" thick shelving board to 7" x 9"
2) Cut two strips of ¼" plywood to 2" x 9"

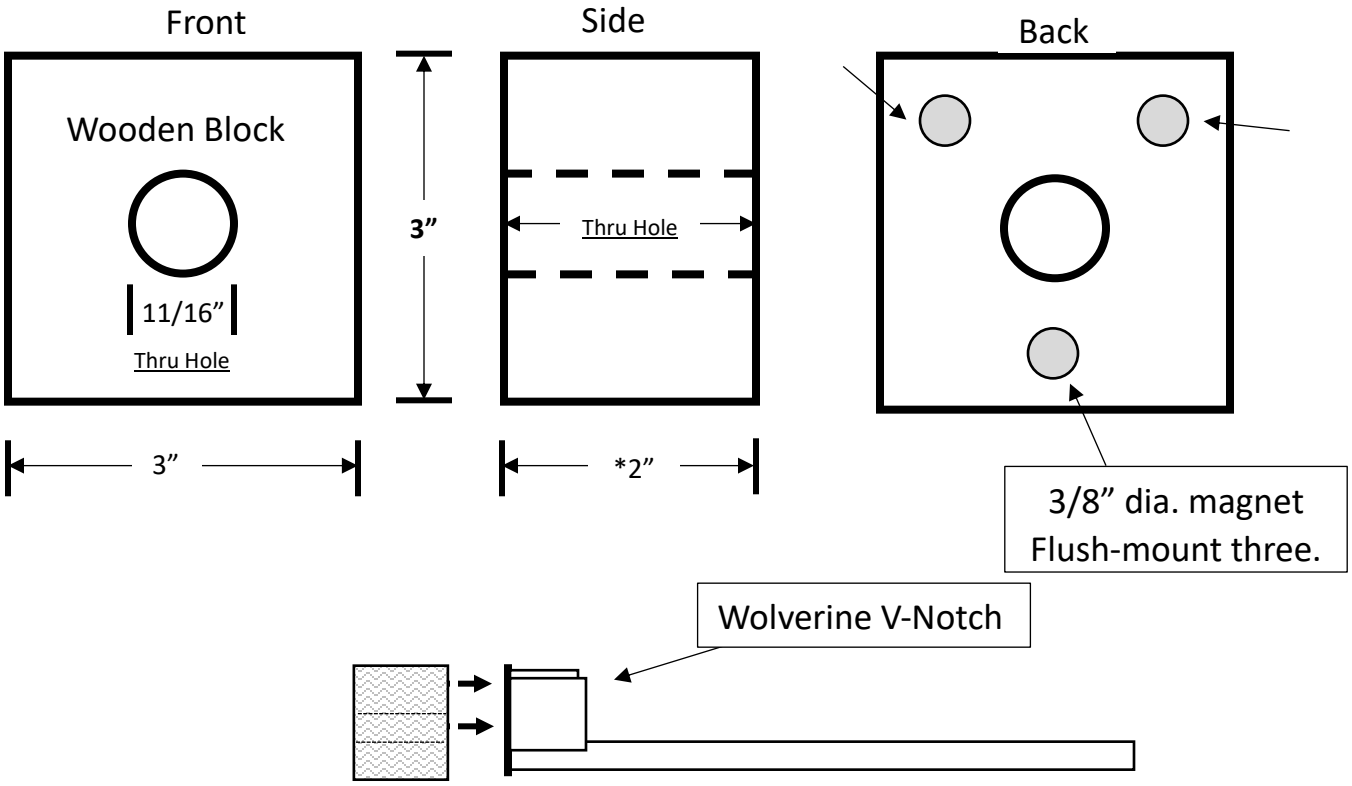


3) Attach the plywood strips to either side of the ¾" shelving using glue and brad nails (or screws).
4) Make a 2-step shim by cutting a piece of ¾" shelving board to the dimensions shown below and apply paint as shown.



5) Using glue and brad nails or small screws, attach the yellow and red shims to the lower left corner of the 2-sided box, as shown.

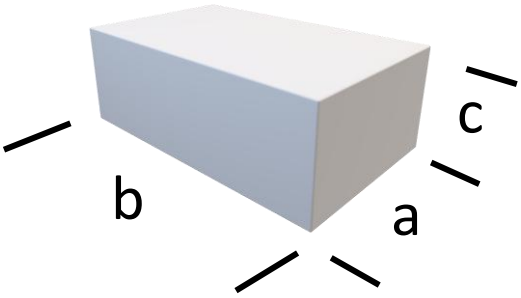
Build a Protrusion Gauge



Magnetically attach the protrusion gauge block to the metal plate at the rear of the Wolverine V-notch

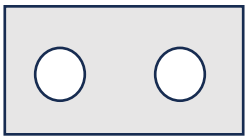
Building a Gauge Block

Cut a wooden block to the dimensions below:



Dimensions:

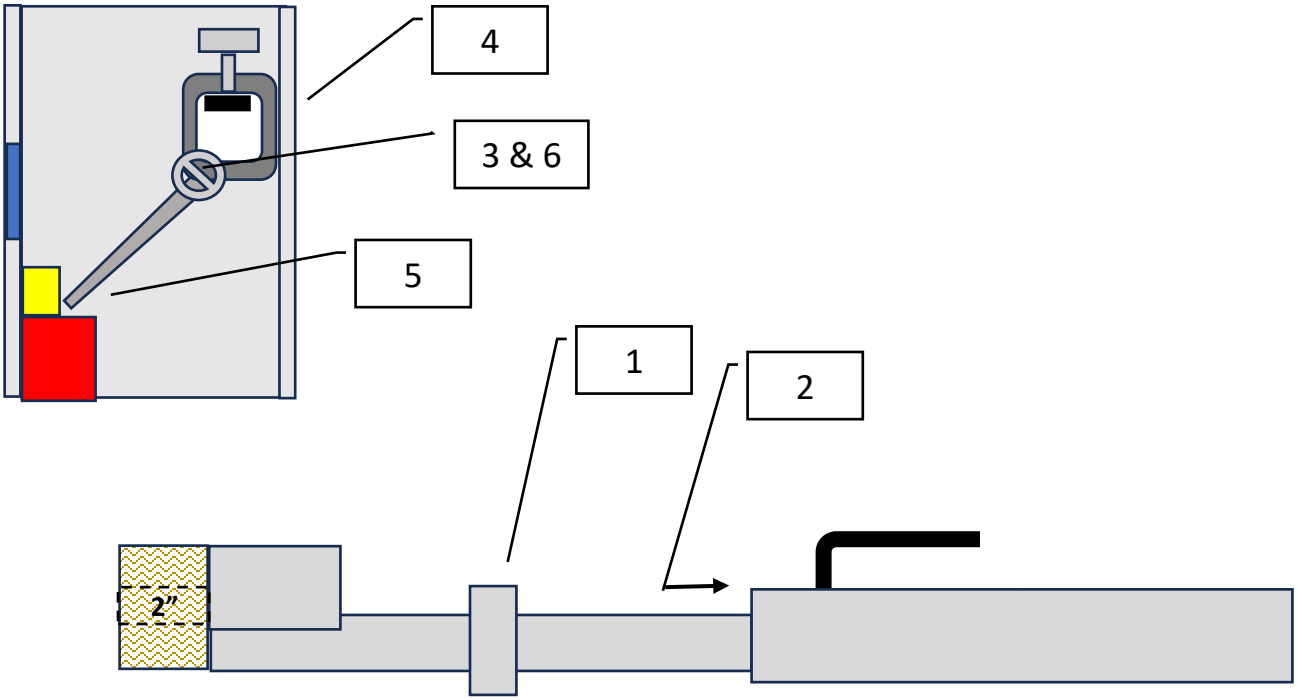
a = 1-1/2”
b = 2”
c = 7/8”



Flush mount two rare earth magnets in one end.

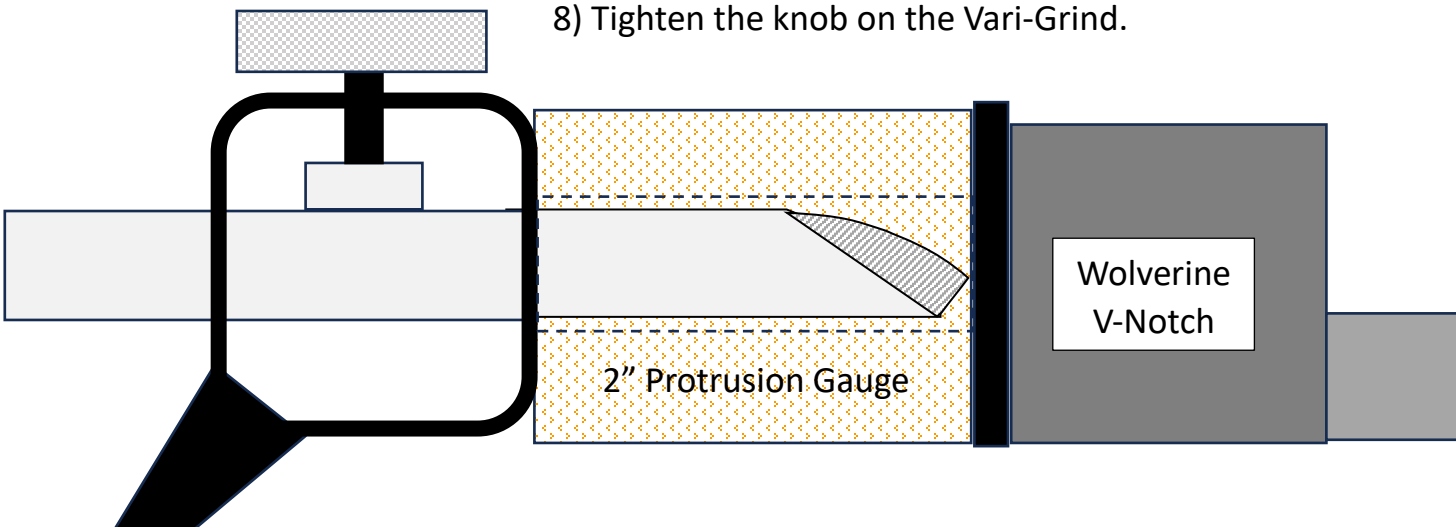
Calibration Procedure: NOTE: If you are using CBN wheels, this needs to be performed only ONE time! If using Aggregate (stone) wheels, repeat the calibration about every 6-months to compensate for wear.

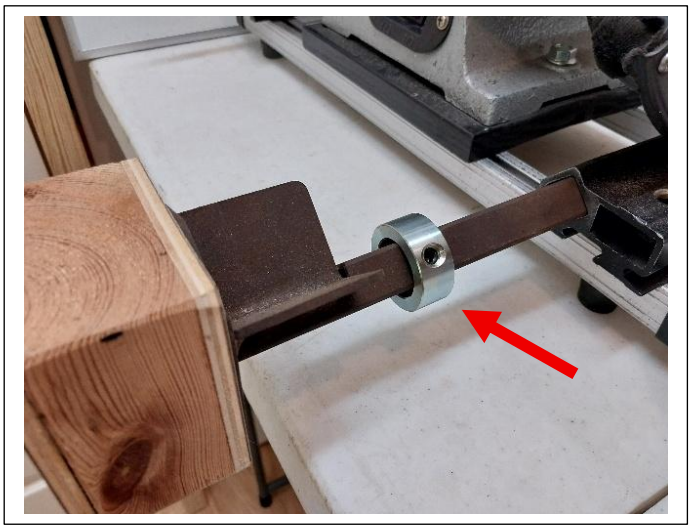
1) Slide a stop collar onto the ¾" x ¾" steel tube that supports the Wolverine V-notch. Do not tighten into place.
2) Insert the ¾" x ¾" V-notch tube into the Wolverine receiver.
3) Loosen the wingnut on the Vari-Grind.
4) Place the Vari-Grind into the gauge box with the head of the jig against the upper right-hand wall, as shown below, with the wingnut facing upward.
5) Pivot the arm of the Vari-grind until it rests against on the yellow step, as shown below.
6) Tighten the wingnut.



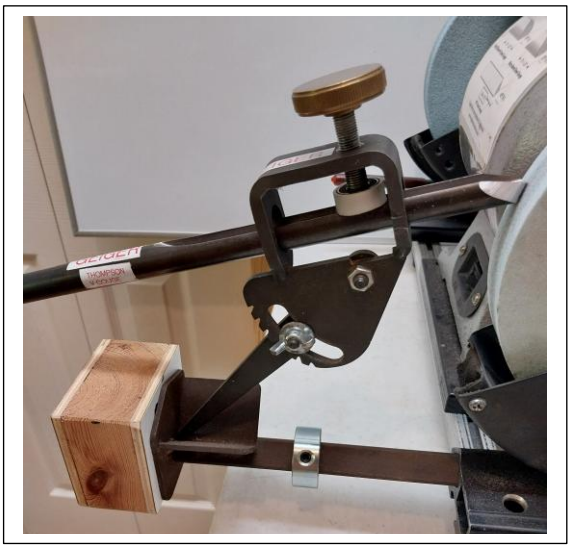
7) Insert a 60° bowl gouge through the Vari-Grind and into the 2" Protrusion gauge until it bottoms out.

8) Tighten the knob on the Vari-Grind.





In this photo, the stop collar is not tightened into place.



Use a Sharpie to <u>blacken the bevel of the 60° gouge.</u>

<u>WITHOUT THE GRINDER RUNNIG:</u>

Position the Vari-Grind support stem into the V-notch and rest the tip of the 60° gouge on the surface of the wheel.

Slide the V-notch arm forward and back until the bevel *visually* appears to match the surface of the wheel.

With the bevel resting on the wheel, rotate the wheel clockwise. Pull the gouge away from the wheel and inspect bevel for the resulting scratch mark made by the wheel. If it is at the top of the bevel, move the V-notch forward slightly. If it is at the bottom, move it backward slightly. Adjust until a scratch mark appears evenly across bevel, as shown left.

Tighten the red camlock handle on the Wolverine receiver.

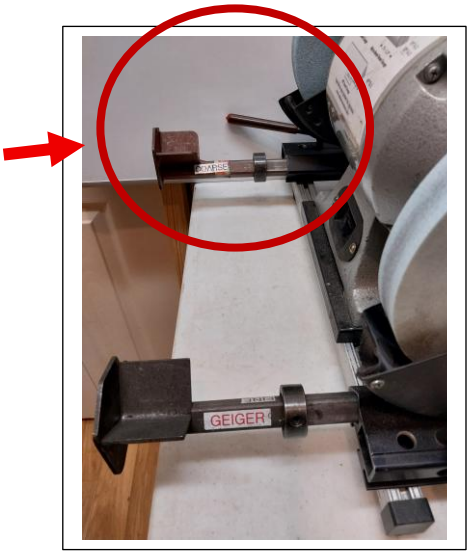
Tip: When the position isn't perfect, you can hear a gritty sound as you rotate the wheel. When the match is good, a smooth sound is evident.

Place the gauge block, as shown left with the 1-1/2” dimension pinched between the stop ring and the receiver. Secure the position of the stop ring by tightening the set the setscrew.
NOTE: Make sure the set screw tightens against one of the <u>flat surfaces</u> of the square tube.

TIP: I recommend purchasing an additional V-notch arm and stop collar. Having a second set enables one to grind on the coarse and fine wheels, with identical bevel angles on each. A match calibration, as described below, will be necessary.

Performing a Match Calibration:

A <u>match calibration</u> is easily performed using the same procedures on the second wheel as you did for the first one. Once the first wheel is calibrated, Calibrate the first wheel as described above.
<u>Don’t remove the gouge from the Vari-grind!</u> Use it as it is to set the position of the second V-notch in the identical fashion. Using the gauge block, set the position of the second stop ring and tighten it into place. You now should have the ability to obtain *identical bevel angles* on either wheel- coarse and fine.



Use this reference table

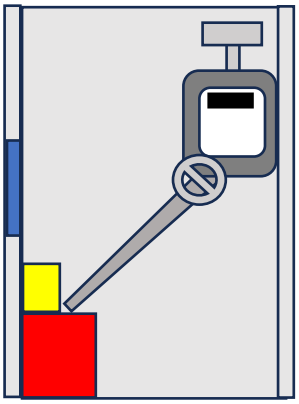
Geiger's Gouge Sharpening Method Reference Table			
GRIND	**VARI-GRIND**	**GAUGE BLOCK**	**V-NOTCH SHIM**
60° Calib.		**1-1/2”**	**--------**
60° Bowl		**1-1/2”**	**--------**
70° Micro-Bevel		**2”**	**--------**
50° Relief-Bevel		**7/8”**	**--------**
40°/40° Bowl		**7/8”**	**--------**
40° Spindle		**--------**	**3/4”**
NOTE: Use a 2” Protrusion for *all* Grinds			

I recommend printing this reference table and taping it to your grinder. It provides the settings necessary for each of the five grinds.

Below are graphic examples settings for all five grinds:

Gauge Block Position:

60° Calib. and Bowl Gouge: 1-1/2”
70°Micro-Bevel: 2”
50°Relief Bevel: 7/8”

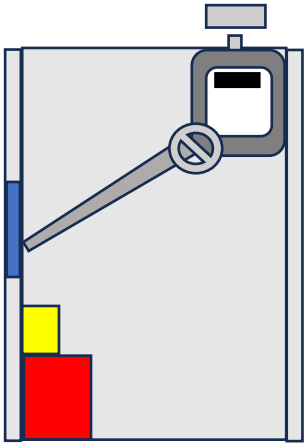


Set the Vari-Grind, as shown left for the following grinds:

- **Initial Calibration using a 60° standard**
- **60° Side-Ground Bowl Gouge**
- **70° Micro-Bevel Bowl Gouge**
- **50° Relief below Micro-bevel**

Gauge Block Position:

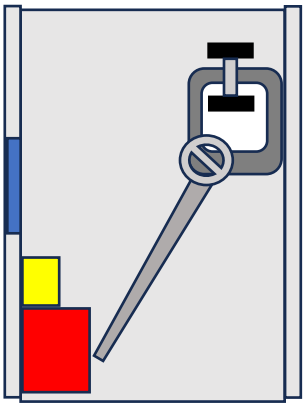
40°/40° Bowl Gouge: 7/8””



Set the Vari-Grind, as shown left for the following grind:

- **40°/40° Bowl Gouge**

Note: Use no gauge block and install the ¾" shimt, in the Wolverine V-notch.

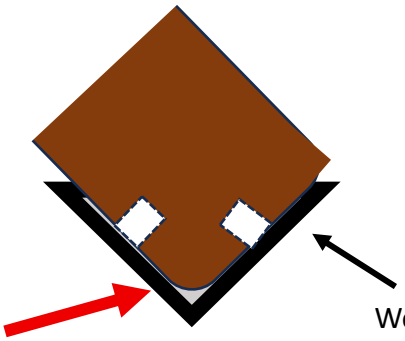


Set the Vari-Grind, as shown left for the following grind:

- **40° Traditional Spindle Gouge**

Cut a wooden shim:
2" x 3" x 3/4"

Flush mount magnets where shown, left.



Wolverine V-notch

Sand the lower corner of the shim, as shown, to match the interior shape of the V-notch.

Sharpening Sequence:

1) Decide on the grind you want.
2) Refer to the reference table for the necessary Vari-Grind setting and the gauge block dimension.
3) Pre-set the Vari-Grind support arm using the 3-Step box (Yellow, Blue, or Red).
4) Set the 2" protrusion- tighten the gouge in the Vari-Grind jig.
5) Position the gauge block (2", 1-1/2", 7/8", or *none) between the stop ring and the Wolverine receiver.
6) Proceed to sharpen your tool.

If you have any questions, contact Don Geiger at:

Dongeiger4@gmail.com

*As noted above, to set up to sharpen a traditionally ground spindle gouge: Do not use the gauge block, set the Vari-Grind arm to the Red step, and place a ¾” shim in the V-notch.