40 – 40 – 40 Grind
And the
Wolverine Jig
With the
Vari-Grind tool holder
3/24/24
Ron Browning

There are several variables to consider with the Wolverine jig as well as the Vari-Grind tool holder. My grinder is not set up in accordance with the OneWay instructions; here are the dimensions of my setup:

- Center of wheel to top of the aluminum clamp for the “V” arm 5 ¾ inches (146 mm), this distance is set and does not change
- Center of wheel to back bottom of “V” 12 inches (295.3 mm) for 40-degree nose angle
- Vari-Grind arm at is shallowest angle against the stop. If the face of the Vari-Grind is against a stop then the end of the arm will touch a line parallel

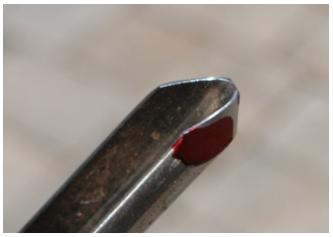
with the face and 7 11/32 inches away (186.5 mm)

- Using a 2-inch stick out for the gouge (50.8 mm)

To reshape a gouge to the 40-40-40 grind first shape the wing angle, here I have used a piece of wood cut to 40-degrees with a “shelf” to support the tool and a sanding disk to grind the wing angle.

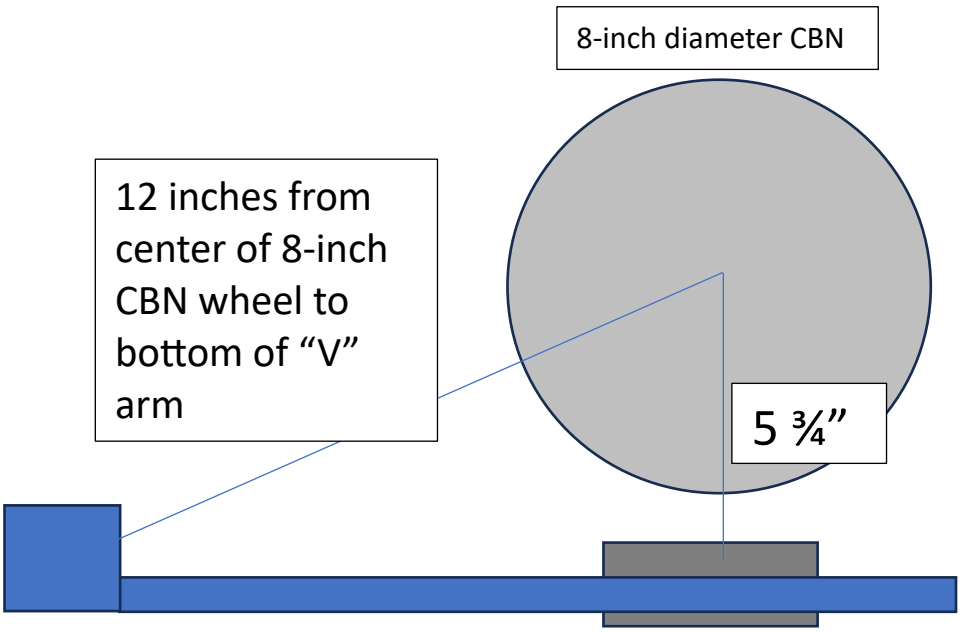
Put the gouge into the Vari-grind jig using a 2-inch stick out. Adjust the arm to the end of travel making the shallowest angle and tighten the wing nut.

Begin sharpening by grinding the wings first, here is the right wing when I started to sharpen it. Notice the flat at the cutting edge.



Continue sharpening the right wing until there is no reflection from the cutting edge and then go on to sharpen the left wing. Once both wings are sharpened blend the nose to the wings to complete the cutting edge. Pictured 3 pages down is what the sharpened tool will look like.

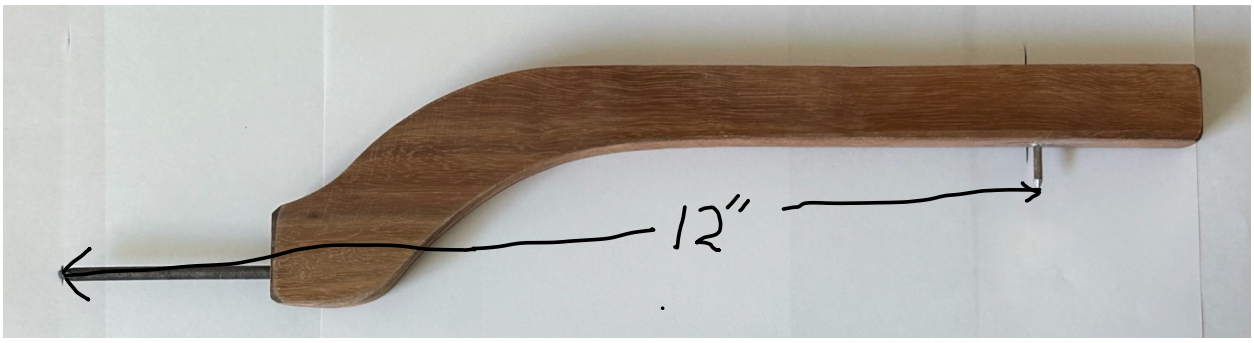
The difference between a jig and a fixture is that the engineer setting up the fixture is responsible for the results while the turner using the jig is responsible for the results he achieves.



An additional benefit to setting the “V” arm at 12 inches from the center of the wheel is that the Vari Grind set for a 60-degree grind (6 ¼ inches apart parallel lines in contact with the nose and leg of jig) and a 2 inch stick out is exactly correct for results of 60-degree grind (Ellsworth grind.)

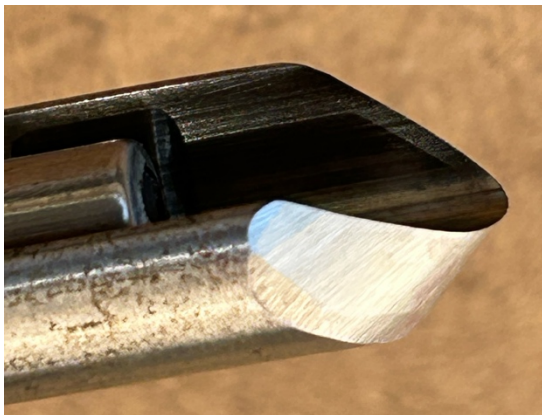
So, to set the distance from the center of the wheel to the back bottom of the “V” arm another jig is called for. Using a piece of 1 x 3 about 12 inches long cut out the shape using a bandsaw and install a nail in the end and mark the place where a line parallel

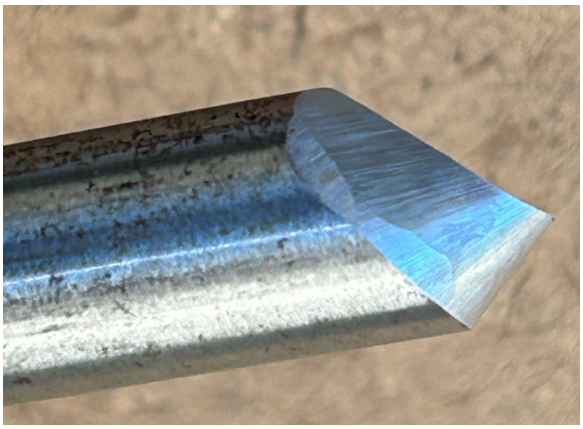
and 12 inches apart crosses the handle while the point of the nail is on the other line. Install another nail at this position and you have a handy way of resetting the “V” arm to 12 inches from the center of the wheel. Here is a picture of my 40-40-40 jig for setting the “V” arm.

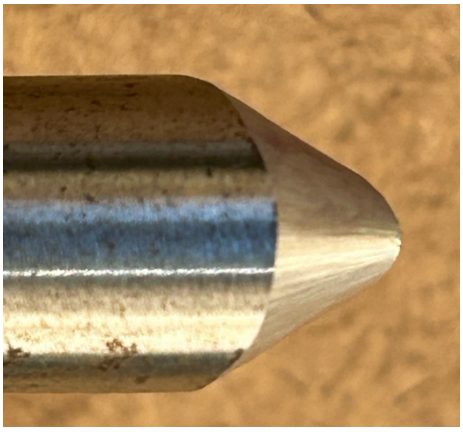


The reason that I am calling it the 40-40-40 grind is that the nose angle is 40-degrees and the wing angle is 40-degrees also the cutting angle of the wings are 40-degrees!

Here are pictures of the results:



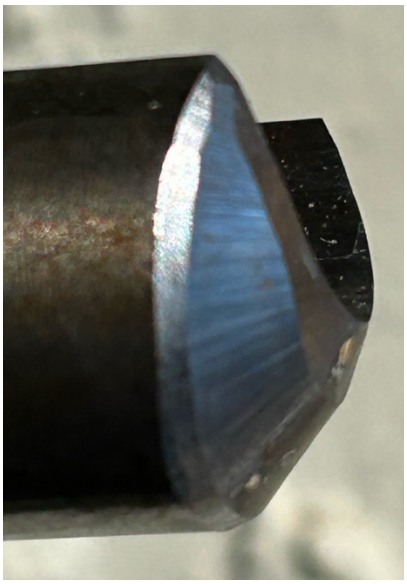


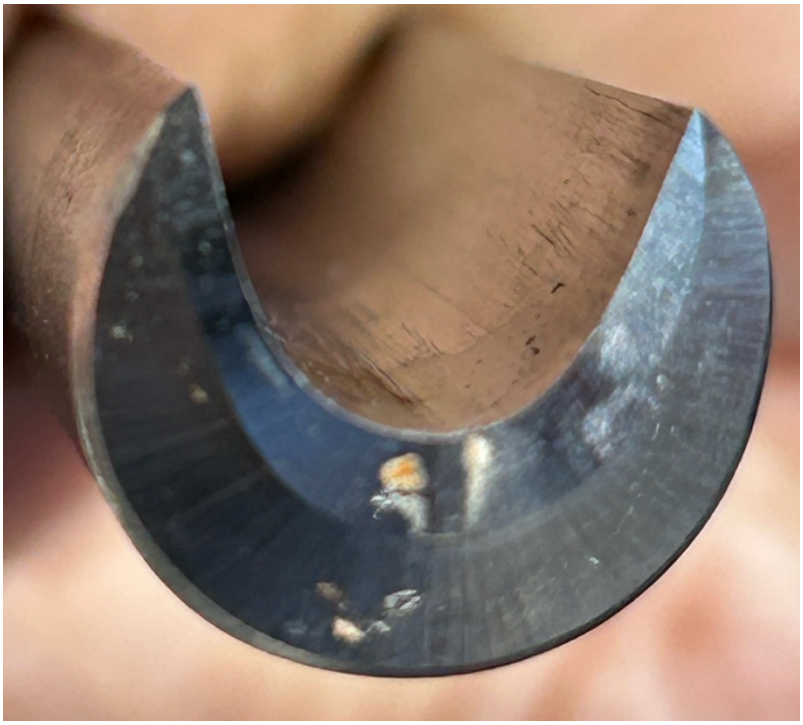


The 40-40-40 grind is only good at cutting across end grain, a “grain supported” cut. It can be used to cut the entire outside of a bowl because the outside of the bowl presents mostly end grain.

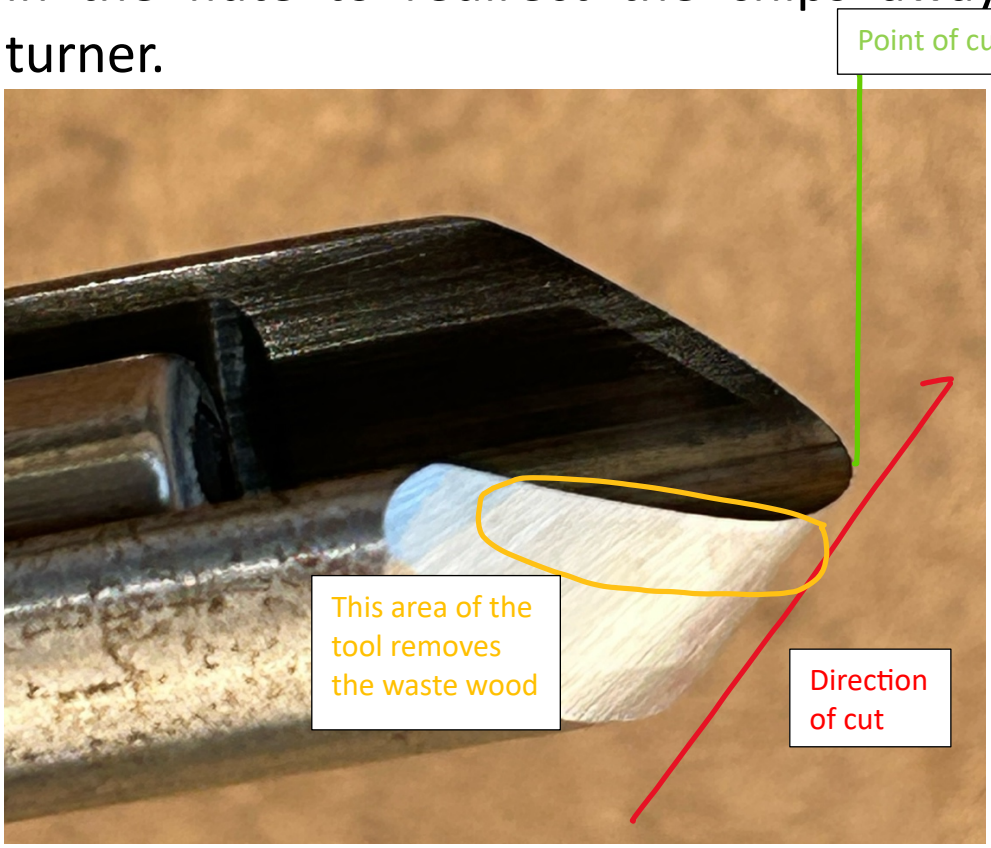
On the inside of the bowl, it can only cut the top 2/3rds of the bowl, which is mostly end grain. The bottom 2/3rds of the bowl is mostly side grain and

needs the “bottom feeder” or a bowl gouge sharpened at a 70 to 80 degree bevel angle and thus will be able to perform a bevel “gliding” cut.



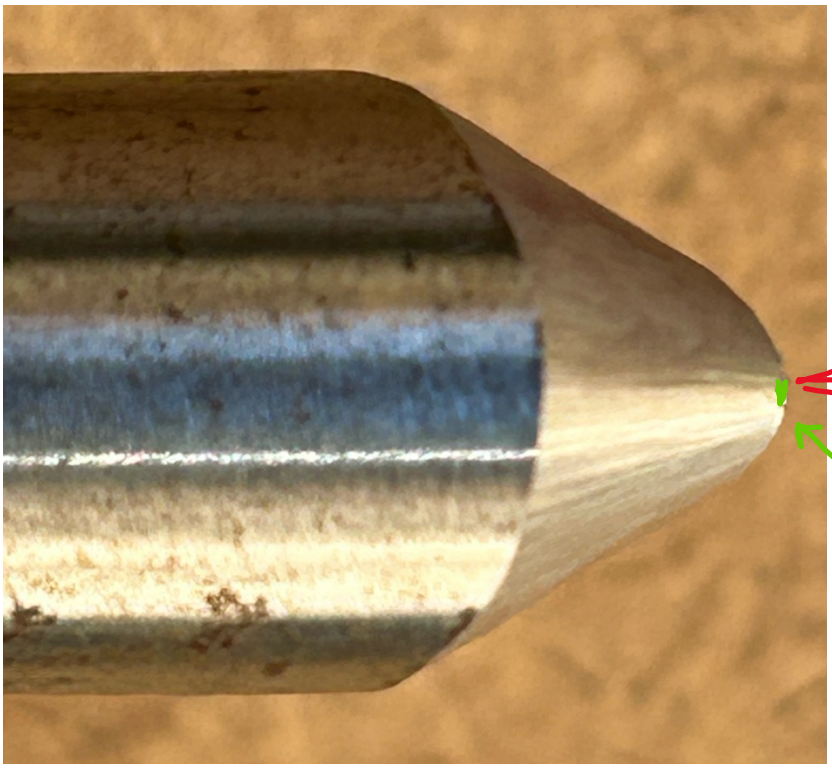


In the below picture there is a ¼” rare earth magnet in the flute to redirect the chips away from the turner.



I hope this helps you in your turning future, I can be reached by email at:

ronwoodturner@gmail.com


Point where the wood and tool meet to form the cut.
Amount of bevel on the wood just cut.