The Blackhawk Sharpening Rig & Jig

By

Capt. Eddie Castelin

Setting and aligning your Blackhawk Rig is fairly easy. Please follow these guidelines for a sure and simple installation: (complete details on the Ellsworth Grind at www.eddiecastelin.com

- The Blackhawk is designed to work best with a Delta GR450 Variable Speed Bench Grinder (now Porter-Cable). Other models will work, but I needed a base model to start with.
- The grinding wheel should be flat, round and not rougher than 80 grit. Otherwise you will be removing too much material with each grind.
- A diamond dressing stone works best for dressing. Protect your lungs while dressing.
- Mount your grinder to a sacrificial surface, such as ¾' plywood. Don't complete the anchoring until the Blackhawk rig is in place.
- Put the longest arm (gouge arm) in the rig, as far out as possible, tighten screw.
- Find the exact center of the wheel face and, using a straight edge or square, place the center of the arm directly in line with the center of the wheel. Center the base under the wheel with ½ on each side of the arbor or shaft. Anchor the base at this point.
- To set the baskets, create a template using the drawing provided in the package. Cardboard, MDF, anything works.
- Adjust the bolts and lock bolts to get the main basket 4" down from the center of the shaft and 7" out from the face of the wheel.
- The second basket is set 2" down from the first.
- Put the ACCU-SET sleeve on the bar and set against the face of the base unit. This will not have to be adjusted until you burn up some wheel or dress the wheel. At that time you use your template and move the ACCU-SET.
- Remove the screw from the jig and grind the tip to fit in the bottom of the gouge and hold it true. You may want to have several screws if you have several gouges. Extra jigs are available.

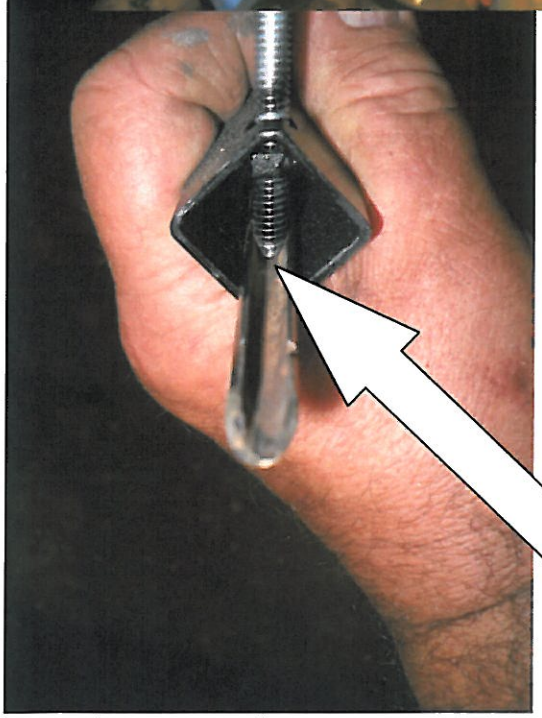
To sharpen:

- Put your deep fluted gouge in the jig, bring the screw down.
- Using the 2" offset on the side of the rig, leave the tip sticking out of the jig 2"
- With the grinder running at its slowest speed, make smooth sweeping arcs from the base to the tip of your gouge. Do not loiter on the tip, this will square it off.
- See the Ellsworth sketches for great shapes and what not to do.

If I can be of service, please contact me at eddiecastelin@cox.net or 504-251-6987

Thanks for buying Blackhawk Tools. Made in the U.S.A., just like me.

How to align the basket with the center of your wheel. This is critical to a good grind.
If you are using steel tubing, the alignment would be the same. The bar shown on the right sets the face of the wheel, move the basket to align with the center of the wheel. A poor alignment will result in a poor grind.



After you have it set to 7", move the Accu-Set to touch the base and tighten. This is now your base setting and should be good for quite a few grinds.

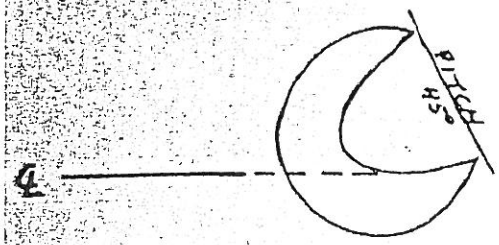
Remember: to recreate an Ellsworth or elliptical grind, the math is critical. The basket must be 4" lower than the center of the wheel and 7" from the face of the wheel. Tool is held with 2" out front of the tool holder. (for 6" wheels, the adjustment is 2-3/4" out of tool holder, all else the same) Make whatever adjustments you need to have this formula work out.

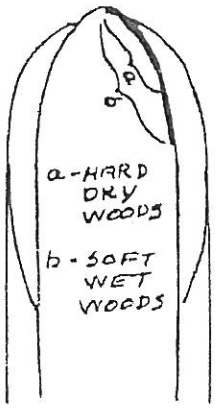
Shape the screw to fit the bottom of your gouge. You may want different screws for different grinds.

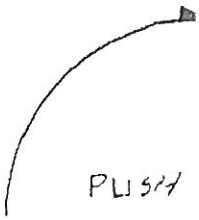
***** Interior Cuts *****

Centerline of Workpiece	Axial Pitch of Gouge	Position of Gouge on Workpiece	Area of Edge Used Top View	Direction a Type of C

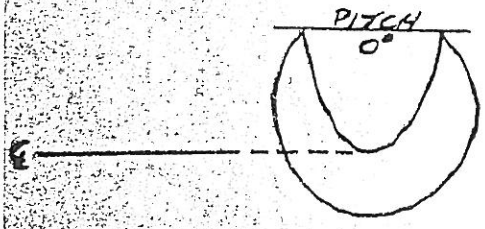
ROUGHING CUT – Used to clear mass from interior in preparation for finishing cut (same as exterior roughing

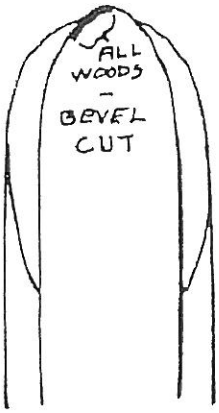


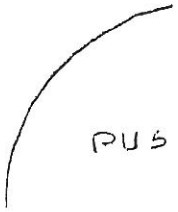




FINISHING CUT – Final cut on interior surface in preparation for sanding.







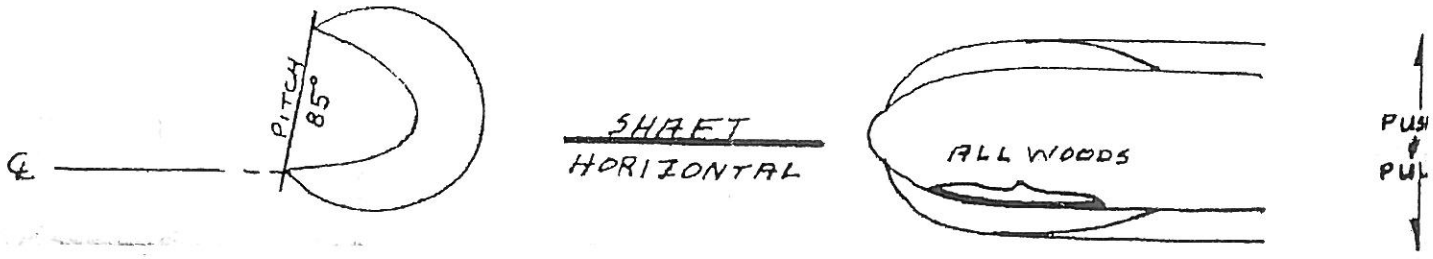
NOTES: Bevel must be in contact with wood throughout the cut.
To safely enter the rim, begin the finishing cut in the 'roughing' position as shown above, th
rotate the gouge counterclockwise to horizontal to complete the cut in the 'finishing' positior

The Ellsworth Signature Gouge
***** Exterior Cuts *****

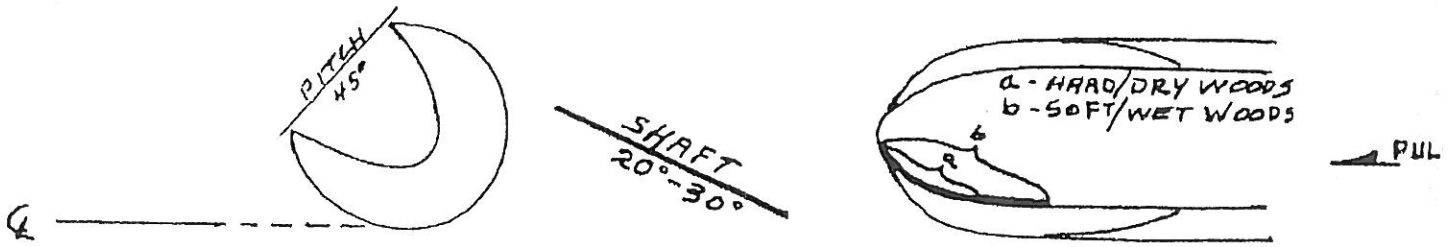
Centerline of Workpiece	Axial Pitch of Gouge	Position of Gouge on Workpiece	Area of Edge Used (top view)	Direction Type

ROUGHING CUT – Used to remove excess stock in preparing to make bowl or vessel forms.

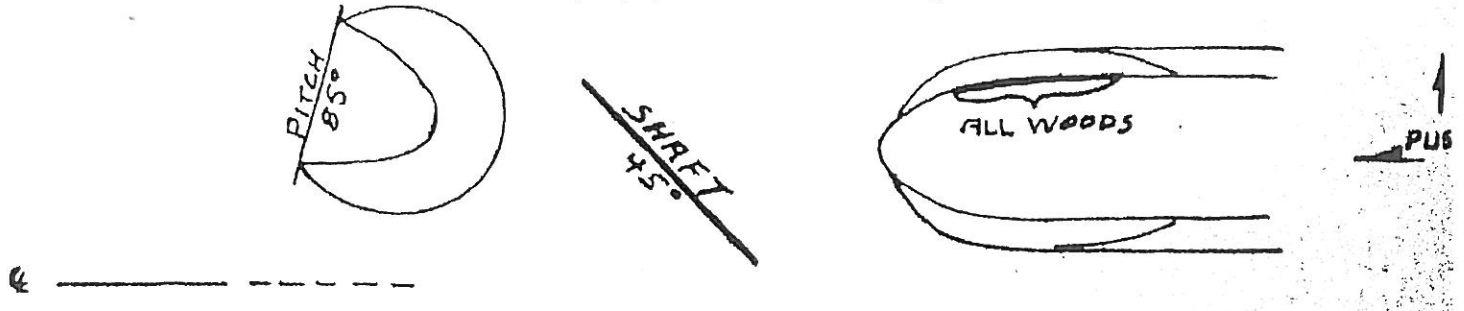
SCRAPING CUT – Used to flatten base of form in preparation for chuck, glue block or faceplate.



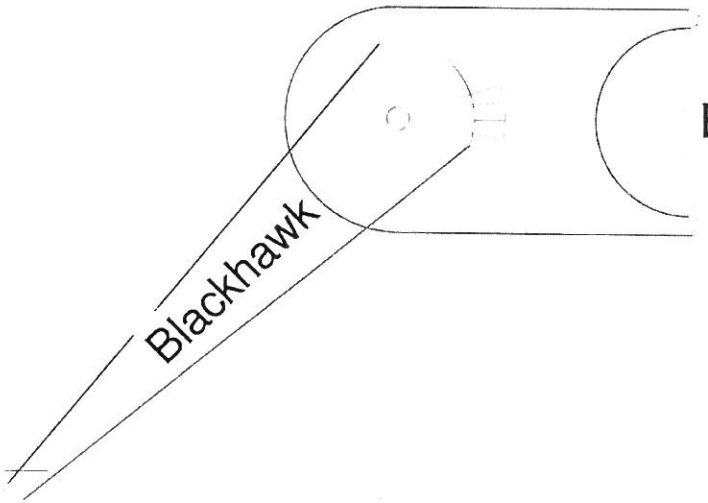
SLICING CUT – Used to shape the form, prepare surface for shearing cut (below).



SHEARING CUT – Used to refine shape, prepare surface for sanding.

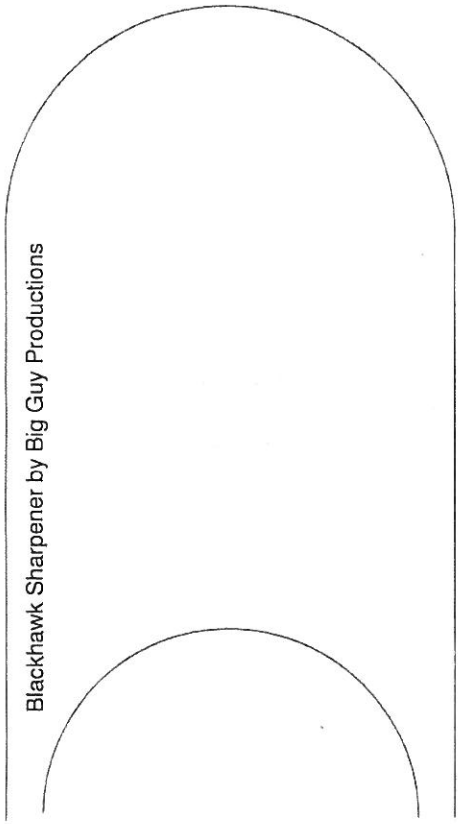


The Blackhawk Gauge is designed to help you reproduce your favorite grinds on turning tools. Used with Ellsworth, Wolverine, or other rigs, this gauge allows you to quickly place the pocket of your rig in the same place each time. You decide what angle, what gouge, what grind and make the necessary notes on the Blackhawk Gauge. Then all you have to do is "Set it and Forget it",

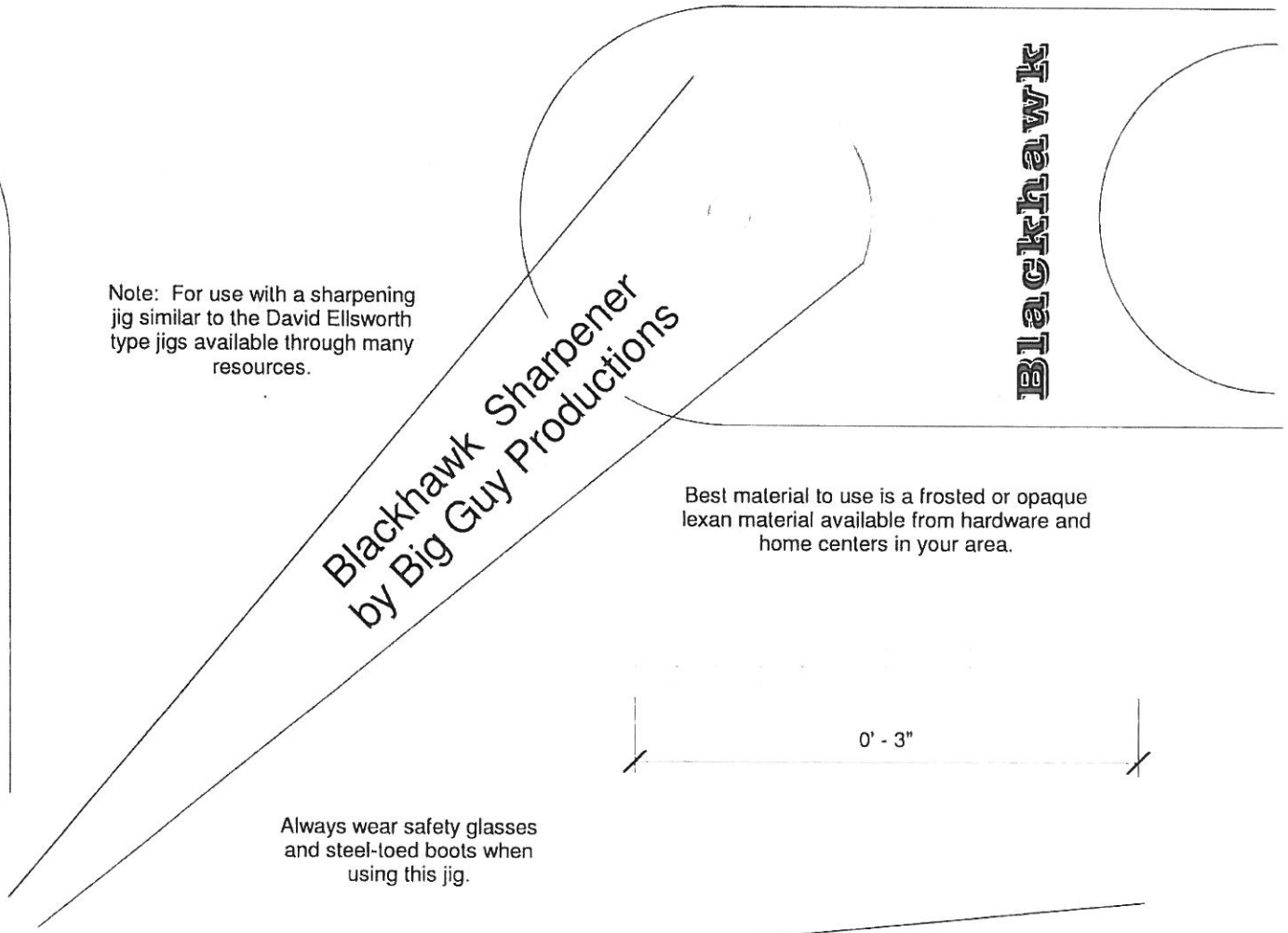


Blackhawk by Capt. Eddie Castelin
Big Guy Productions

Blackhawk Sharpening Gauge



Note: For use with a sharpening jig similar to the David Ellsworth type jigs available through many resources.



Best material to use is a frosted or opaque lexan material available from hardware and home centers in your area.

Always wear safety glasses and steel-toed boots when using this jig.

Created by: Capt. Eddie Castelin
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Please feel free to copy and share with your woodturning friends.