Don Geiger’s

“Sharpening Skills for Woodturner’s”

Hands-On Workshop

Student Handout

2014

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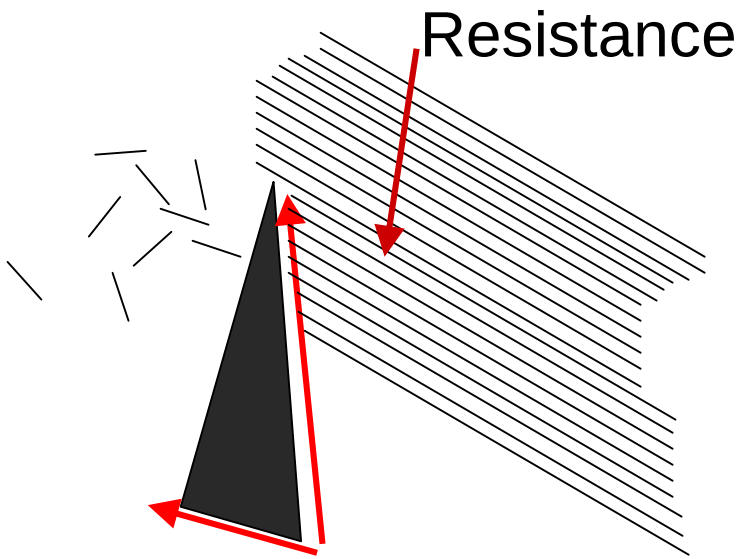
Cutting Edge Properties

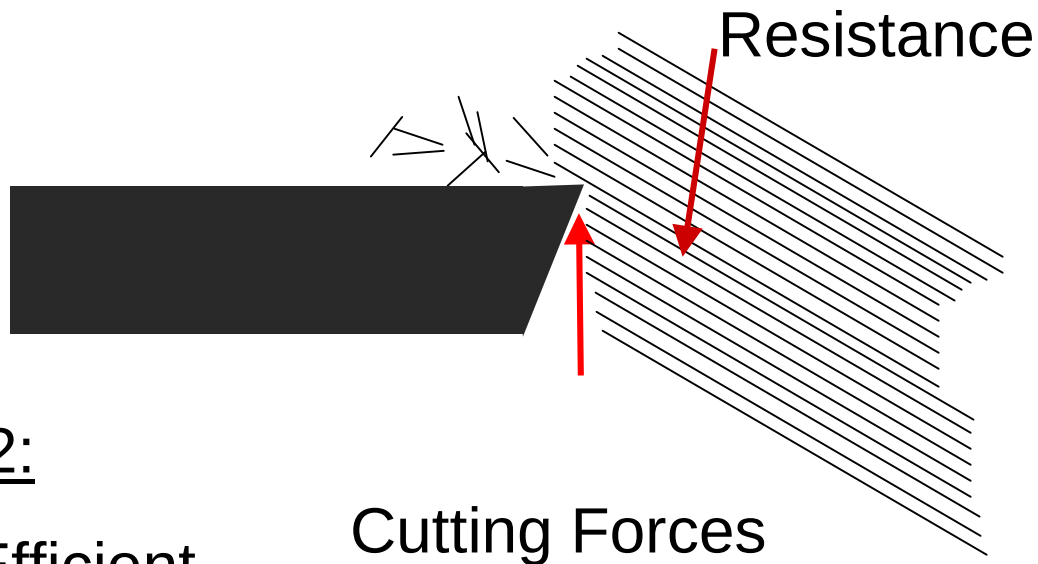


Cutting Forces

Example # 1:

- *Very* Efficient
- *Not* Long Lasting
- May vibrate more

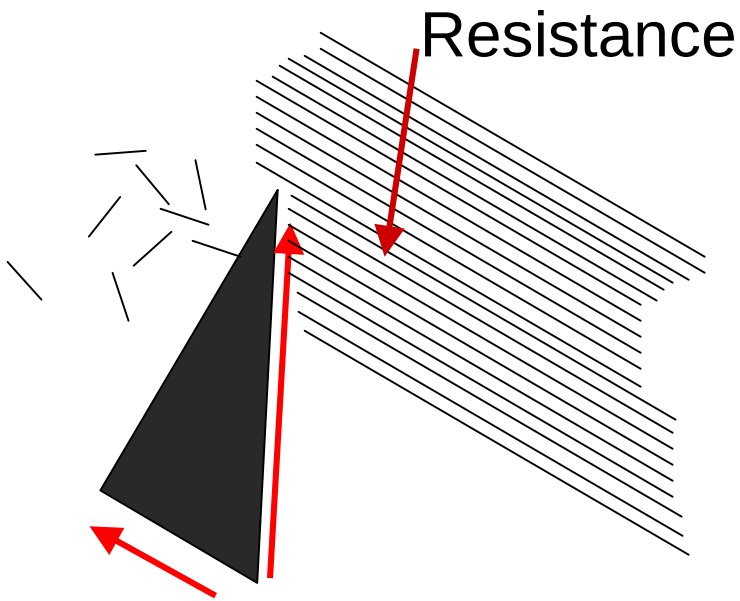
Cutting Edge Properties



Example # 2:

- Not *Very* Efficient
- Very Long Lasting
- The steep the bevel contribute provides more support resulting in less vibration and a longer lasting edge.

Cutting Edge Properties



Example # 3:

- Reasonably Efficient
- Fairly Long Lasting
- Minimum vibration

Tool Properties

Carbon Steel Tools

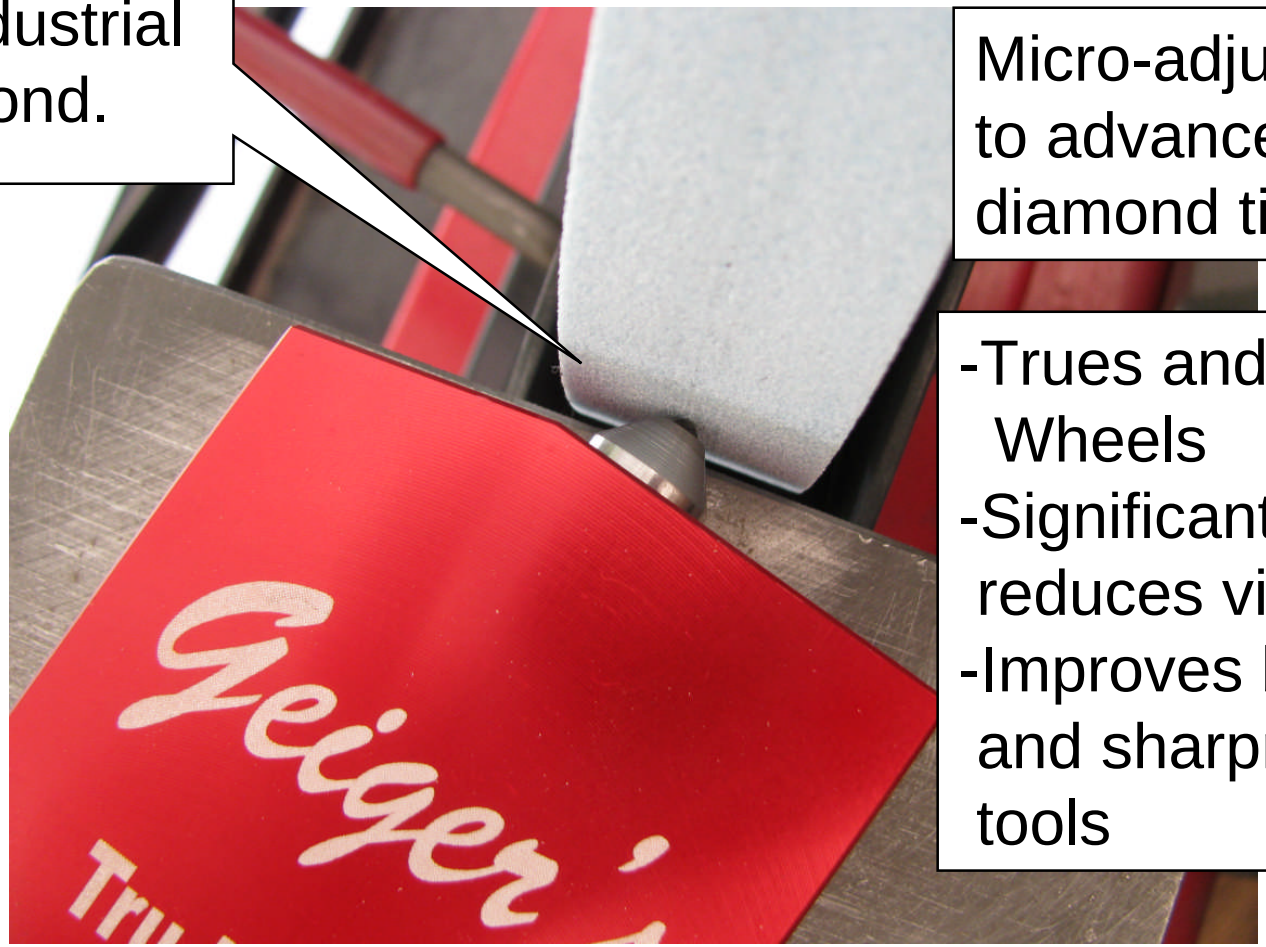
- Less Expensive Initially
- Edge Doesn't Last Long
- May Lose Temper When Sharpening
- Need To Quench In Water Frequently When Sharpening
- Tool May Not Last Long
- Should hone frequently

High Speed Steel Tools

- More Expensive Initially
- Edge Lasts A Long Time
- Loses Temper at 1100° F
- High Speed Grinding Produces 500° to 700° F
- *Don't* Dunk In Water! Rapid Cooling May Fracture Metal
- Tool Will Last A Long Time
- A Much Better Value!

Geiger's Tru N Dress

Utilizes a single ½ ct. industrial diamond.



Micro-adjustable to advance the diamond tip.

-Trues and Dresses Wheels
-Significantly reduces vibration
-Improves bevels and sharpness of tools

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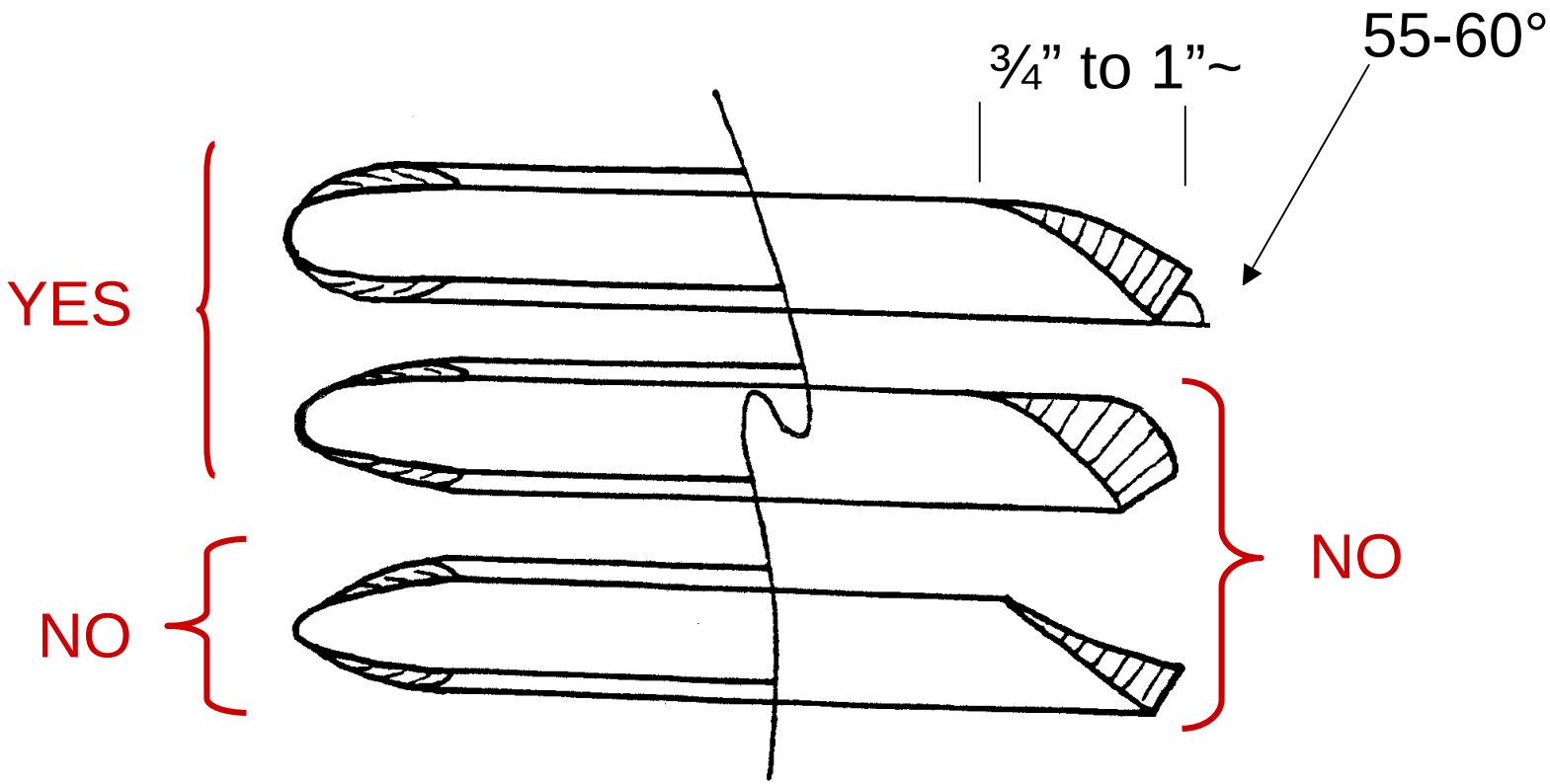
Side-Ground Bow Gouge

Desired Shape



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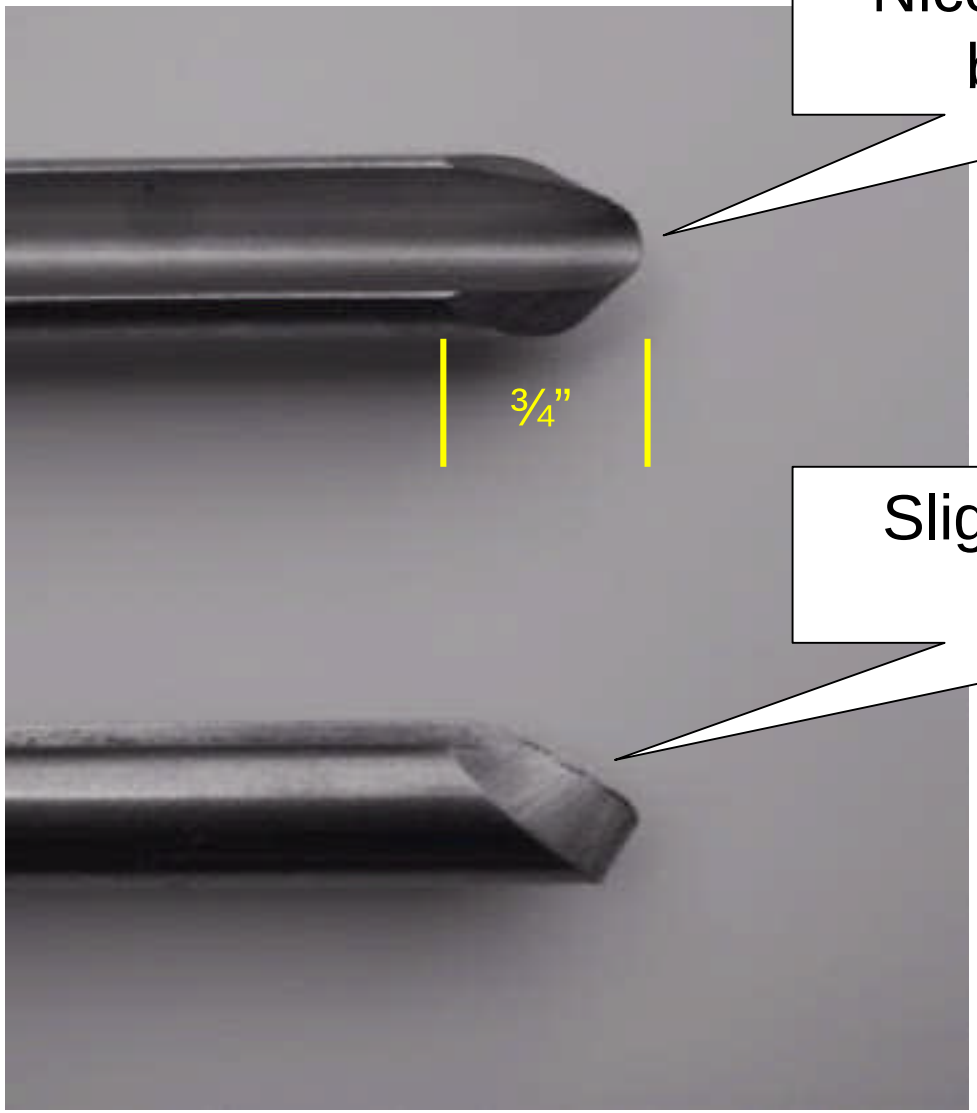
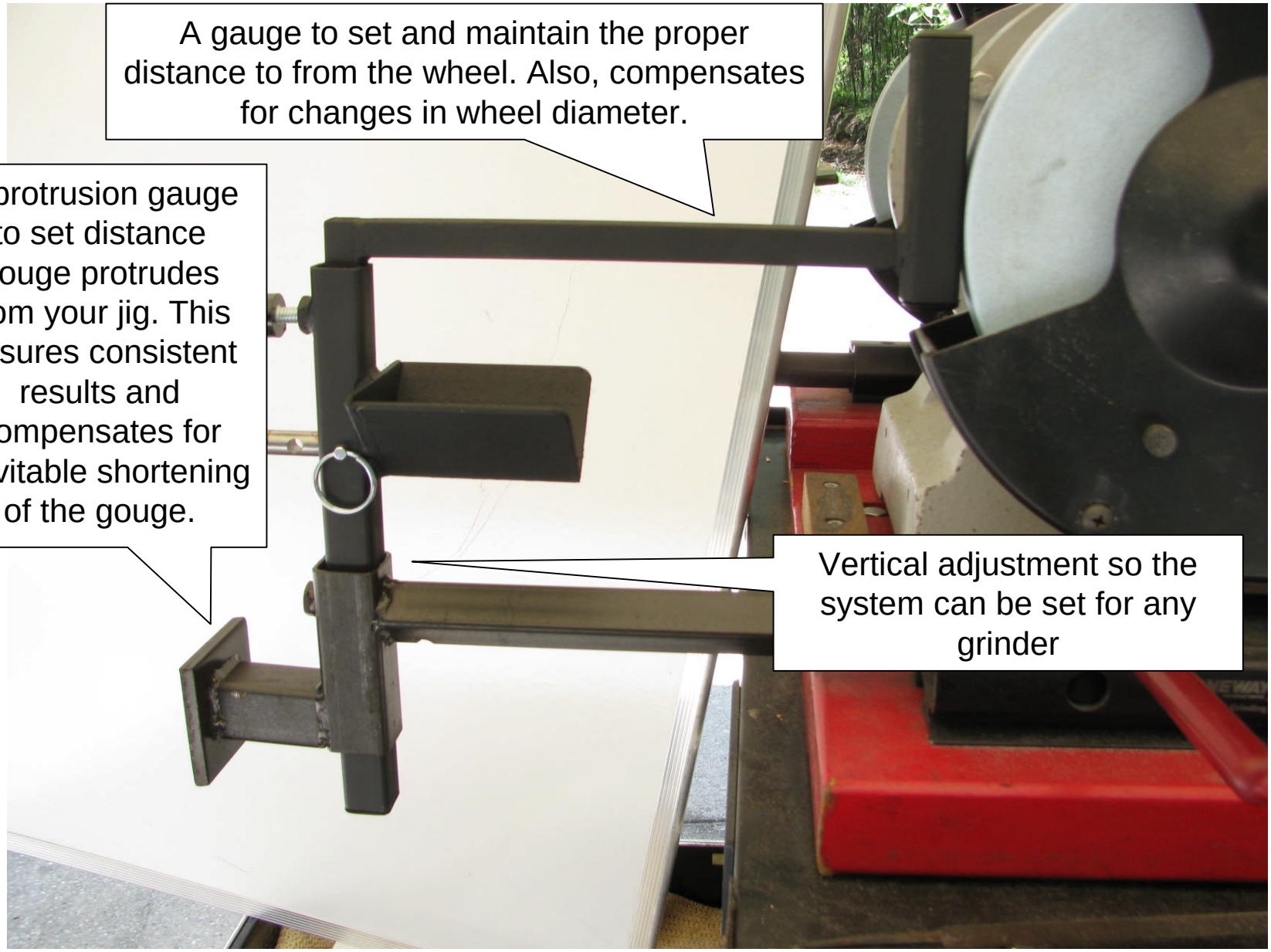
Desired Profiles



Nicely rounded tip. Not too blunt or too pointed!

Slight convex curve to the edge.

Important Features of a Bowl Sharpening Jig



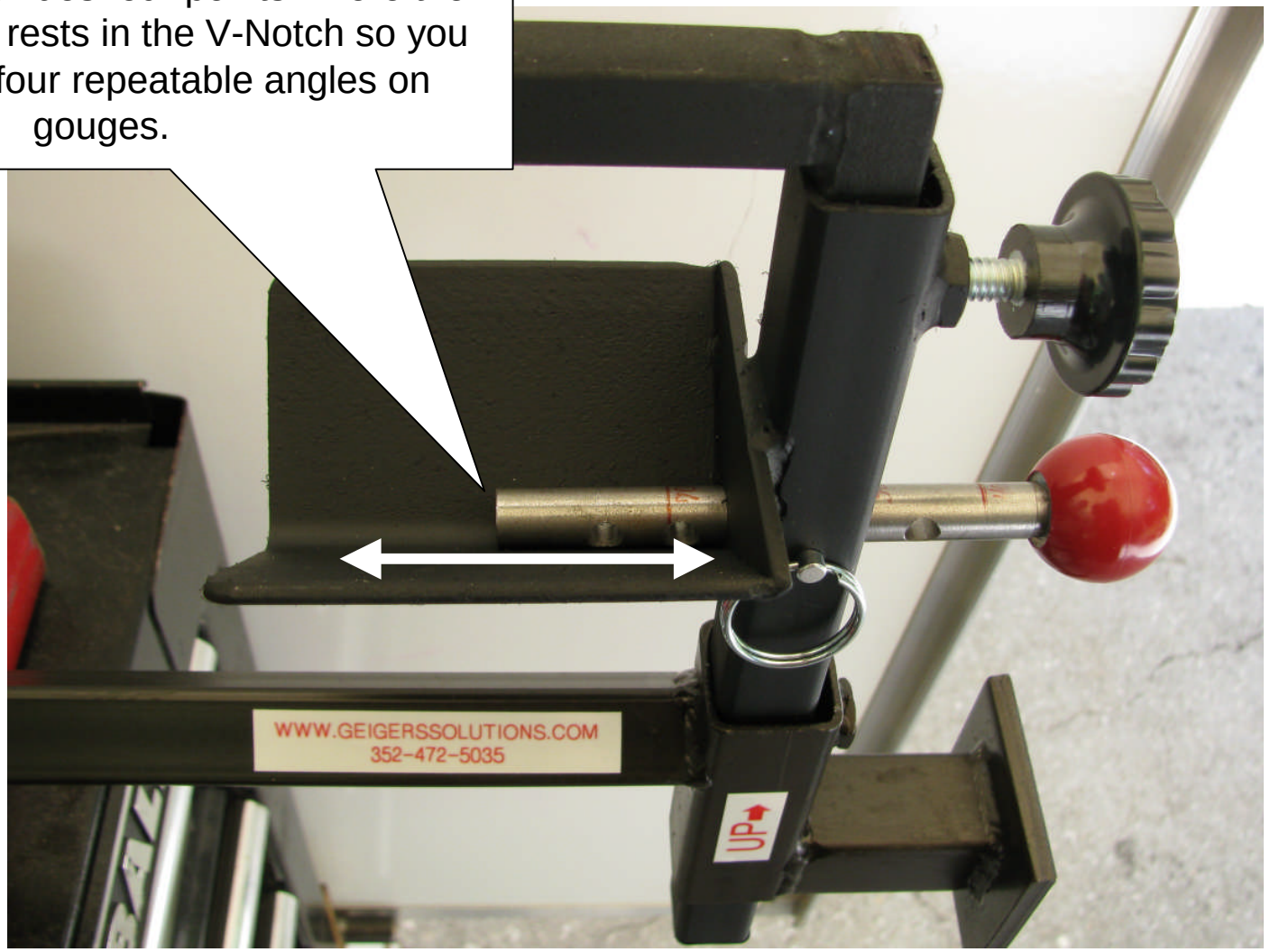
This system provides four points where the stem of your jig rests in the V-Notch so you can produce four repeatable angles on gouges.

40°

50°

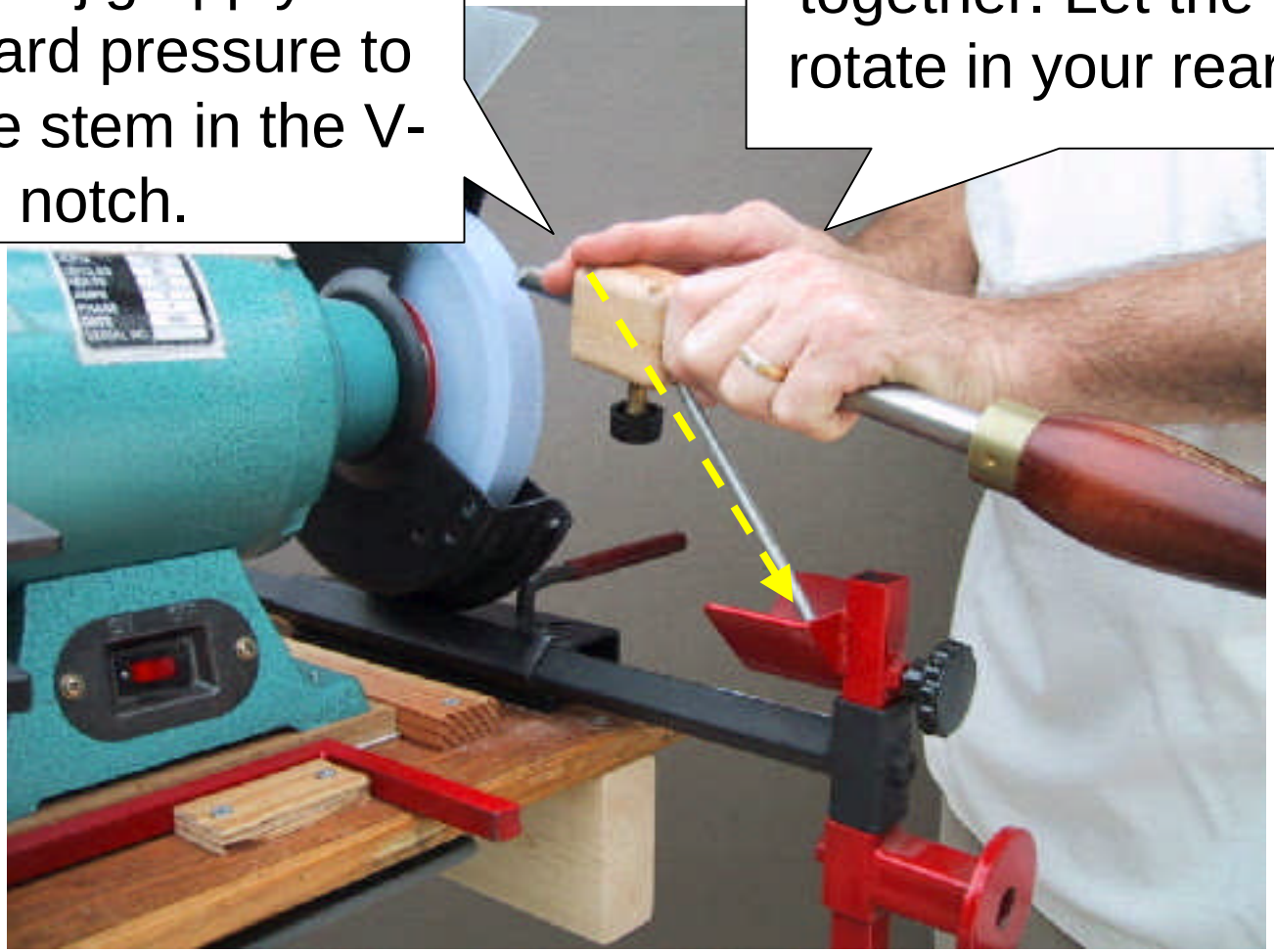
60° (calibrated)

70°



Using two fingers on top of the jig apply downward pressure to keep the stem in the V-notch.

Place your hands close together. Let the gouge rotate in your rear hand.



Concentrate on keeping the gouge in the *center* of the wheel.

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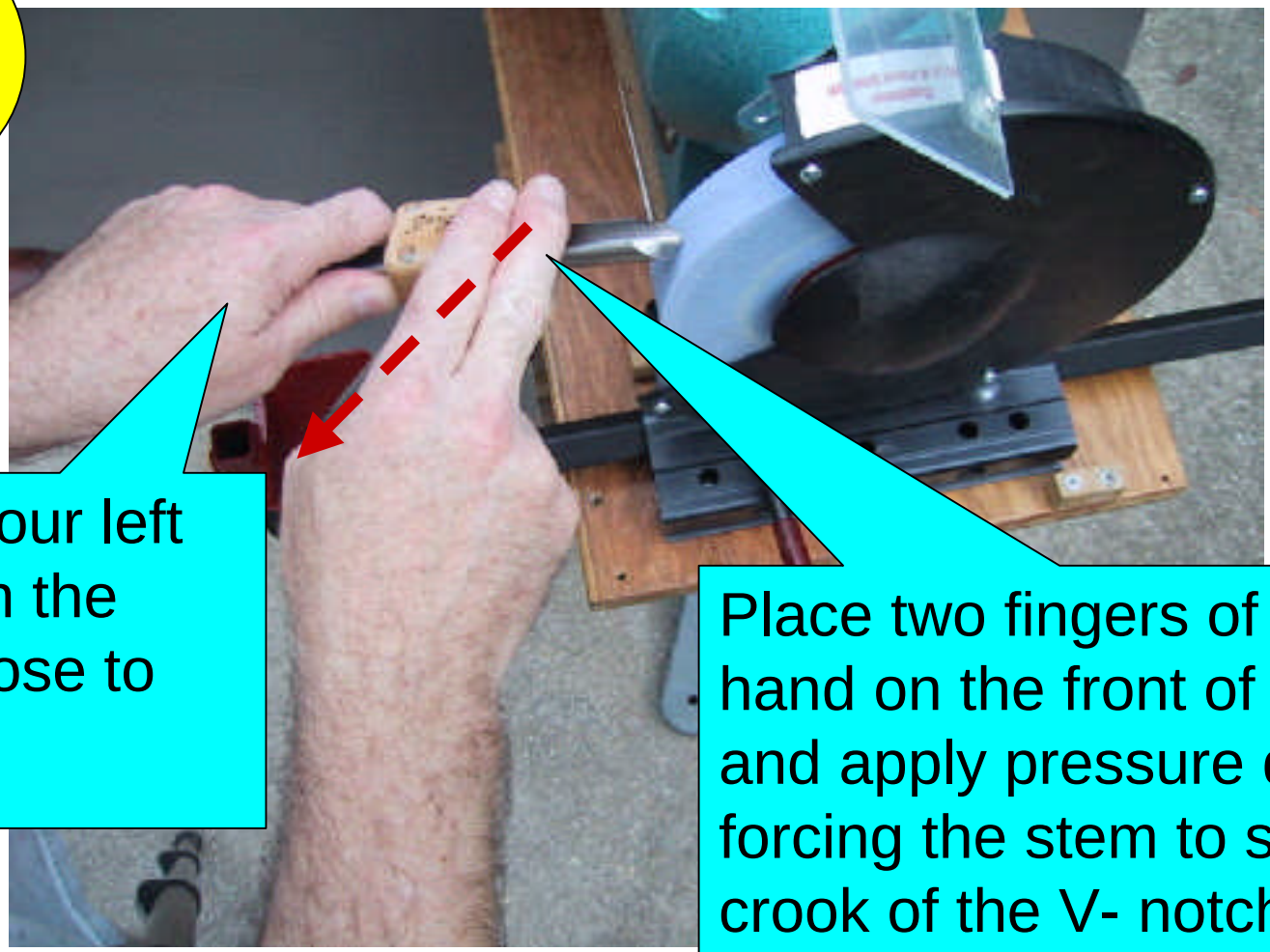
Geiger's Sharpening Method

Step 1



Place your left hand on the shaft close to the jig.

Place two fingers of your right hand on the front of the jig and apply pressure downward forcing the stem to stay in the crook of the V- notch.

Concentrate on keeping the gouge in the center of the wheel.

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Geiger's Sharpening Method

Step 2

Rotate the gouge to the left.

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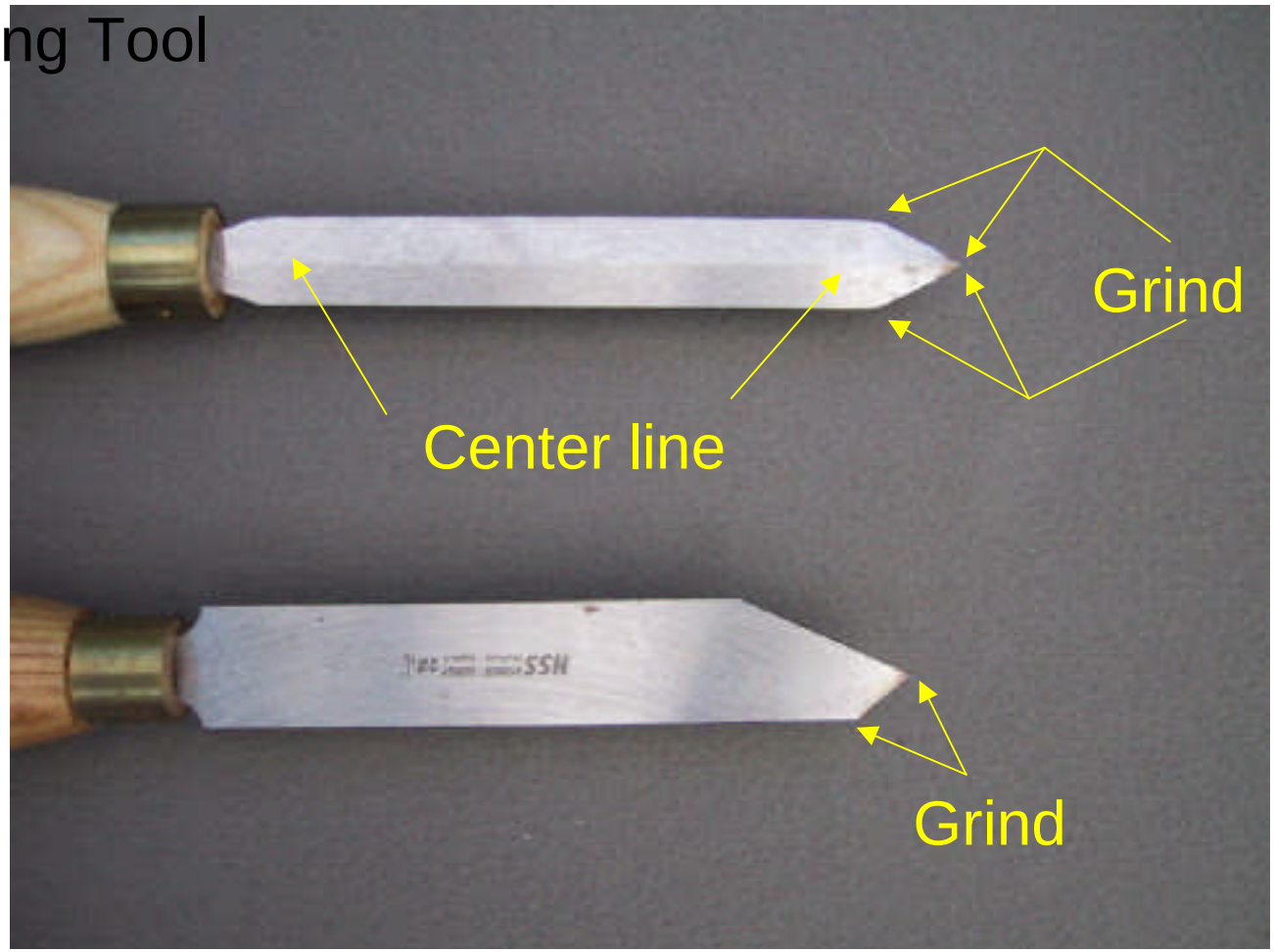
Parting Tools

¼” Diamond Parting Tool



1/8” Parting Tool

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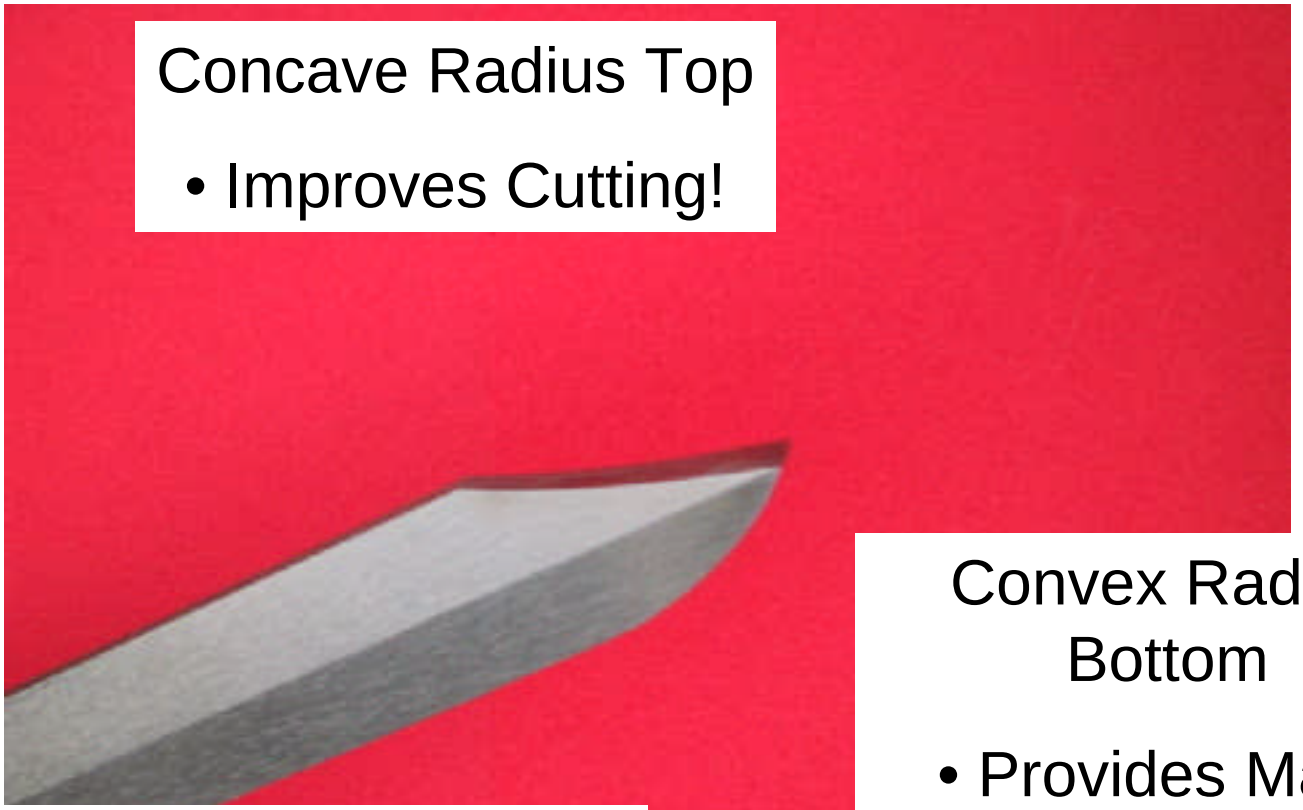
Improved Diamond Parting Tool



Tip: Top and bottom grinds must intersect at the centerline!

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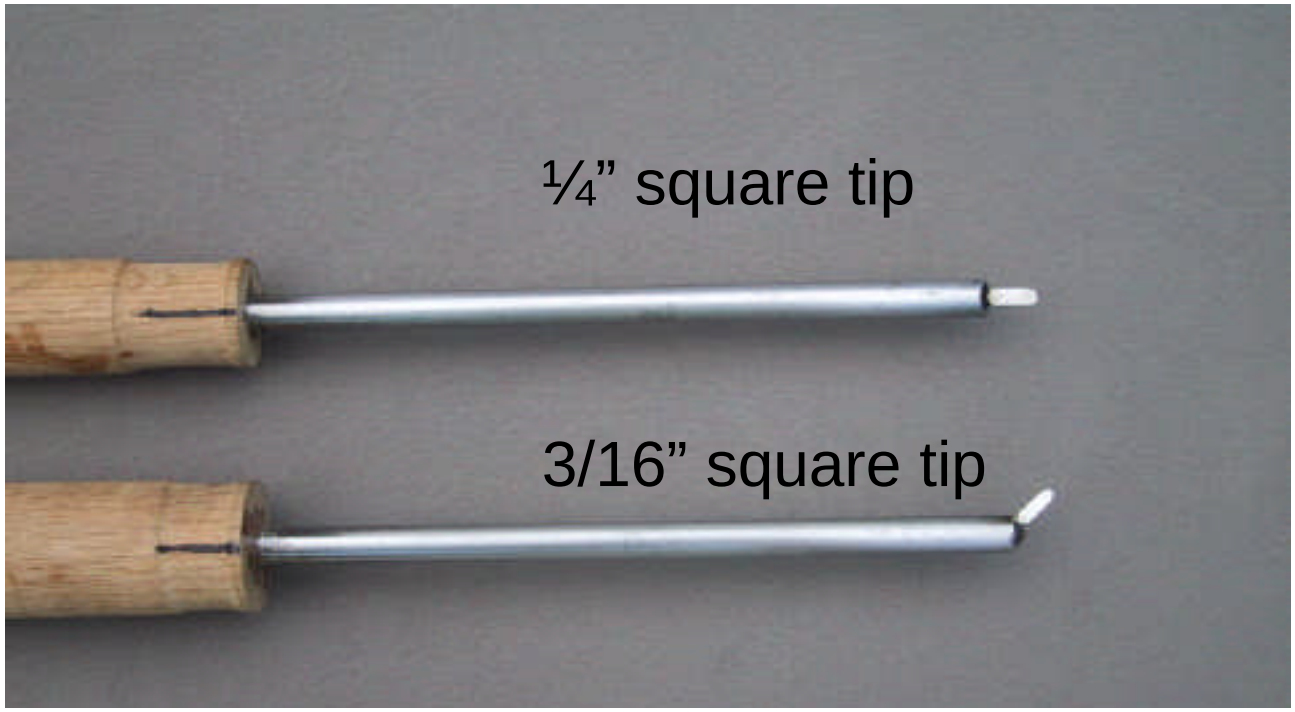
Ellsworth Deep Hollowing Tools

Straight

Angled



Shafts are made of “01” oil-hardened drill rod.

Tips are made from 10% cobalt tool bits.

Tips are glued into place.

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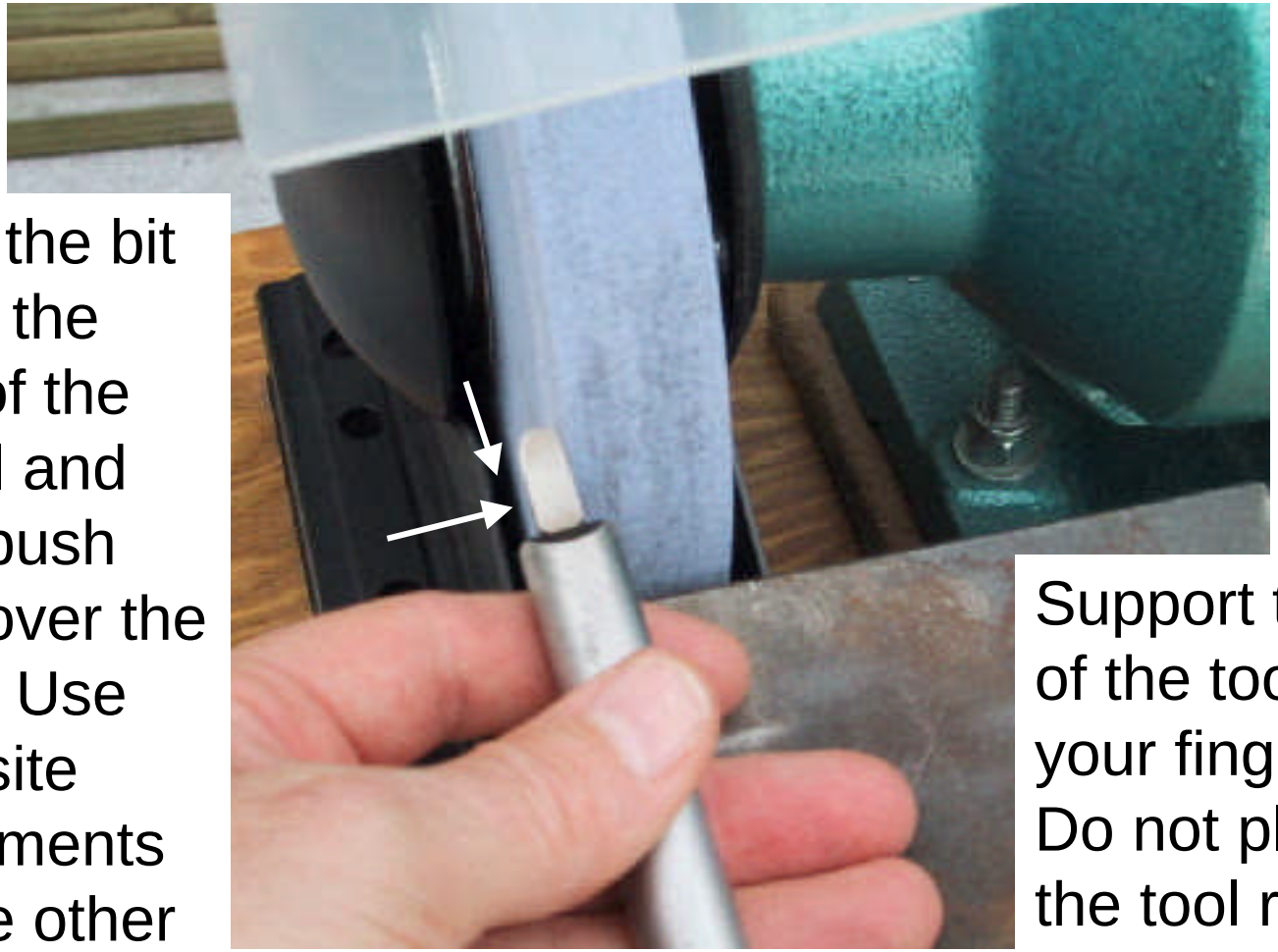
Re-Sharpening Hollowing Bits

Draw the bit along the side of the wheel and then push *right* over the edge. Use opposite movements on the other side.



Support the shaft of the tool with your finger tips. Do not place on the tool rest.

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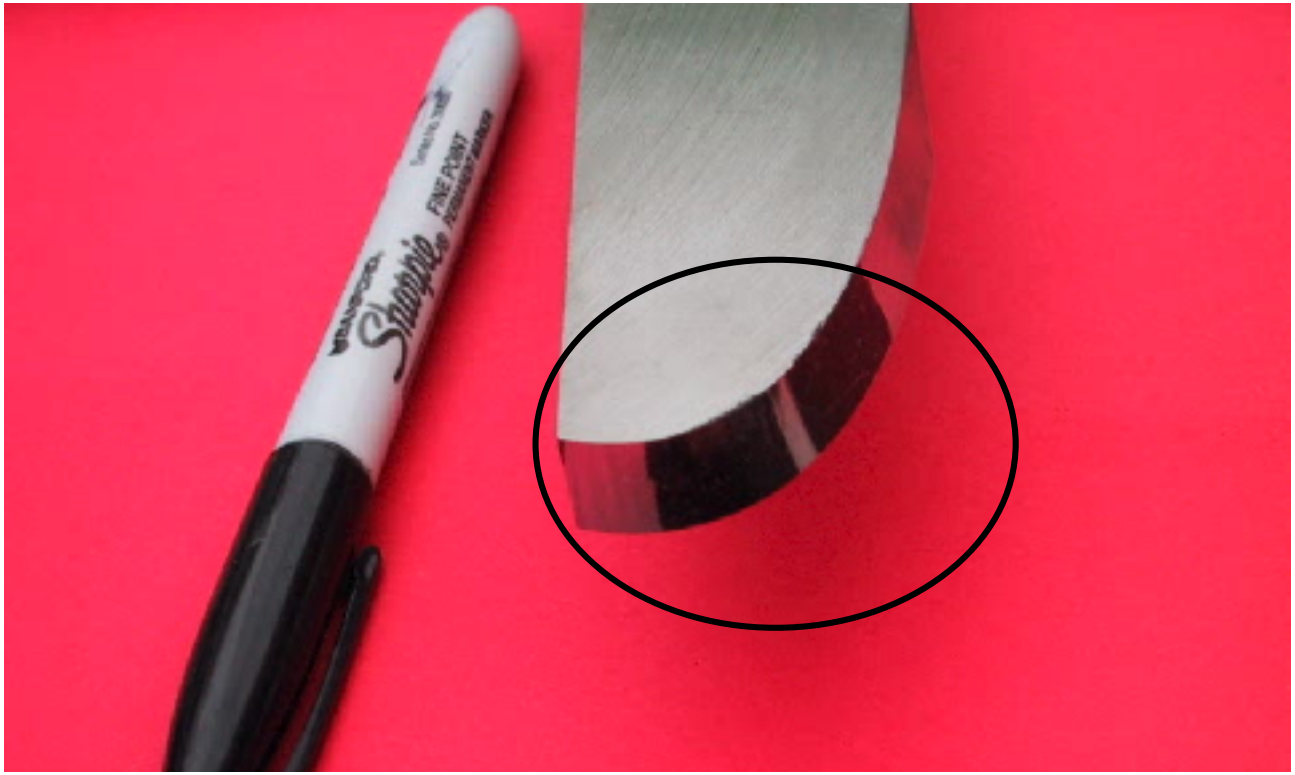
Geiger's Jig For
Shaping and Re-Sharpening Hollowing Bits

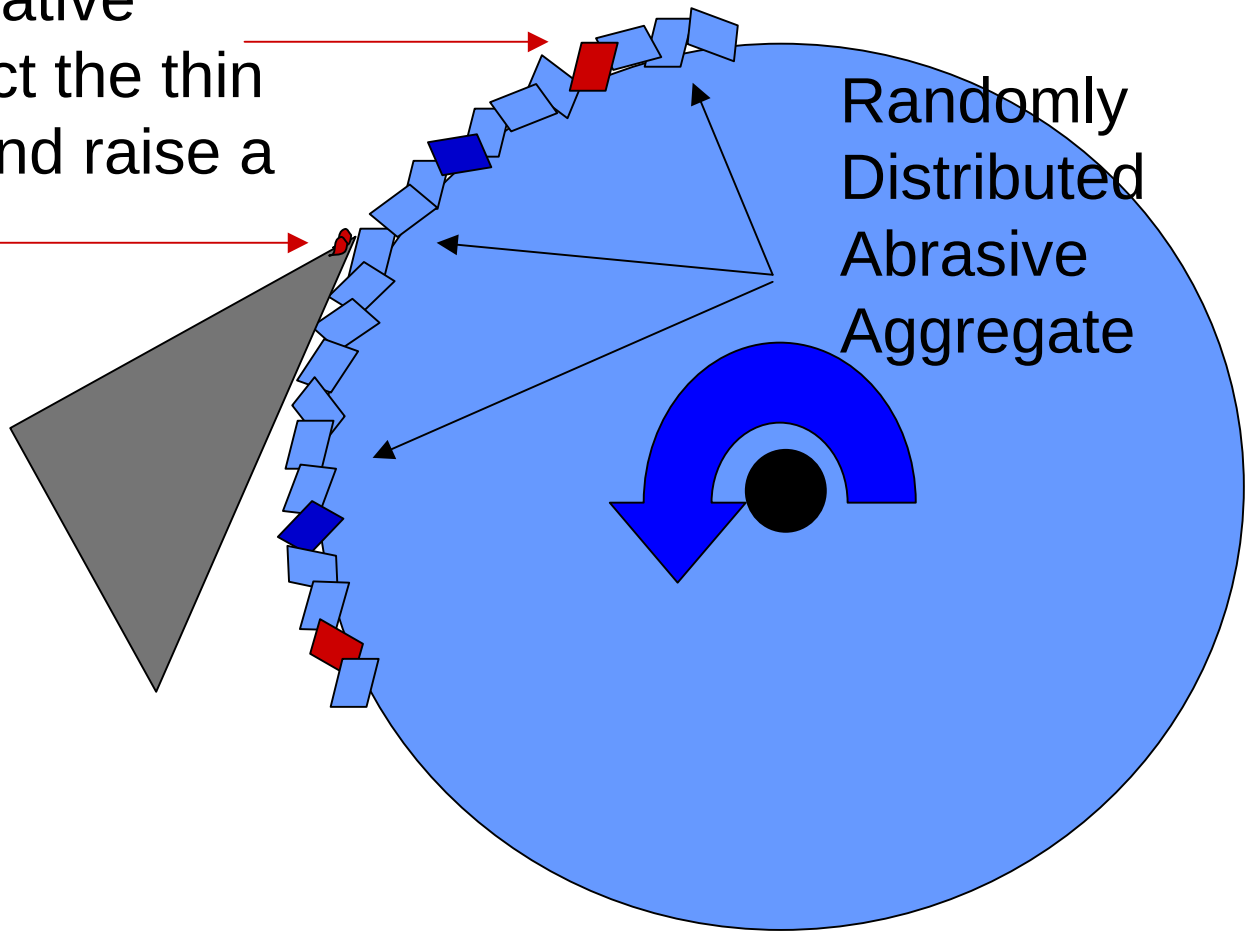
Set the Angle Consistently



When re-sharpening a scraper, blacken the bevel. Adjust the angle of the grinding platform close to the same angle. With the grinder *OFF*, place the scraper against the wheel and hand-turn the wheel. Check the blackened edge to see if the angle is consistent with the previous time it was ground.

How a Burr is Created

Particles with negative rake angles impact the thin edge of the tool and raise a burr.



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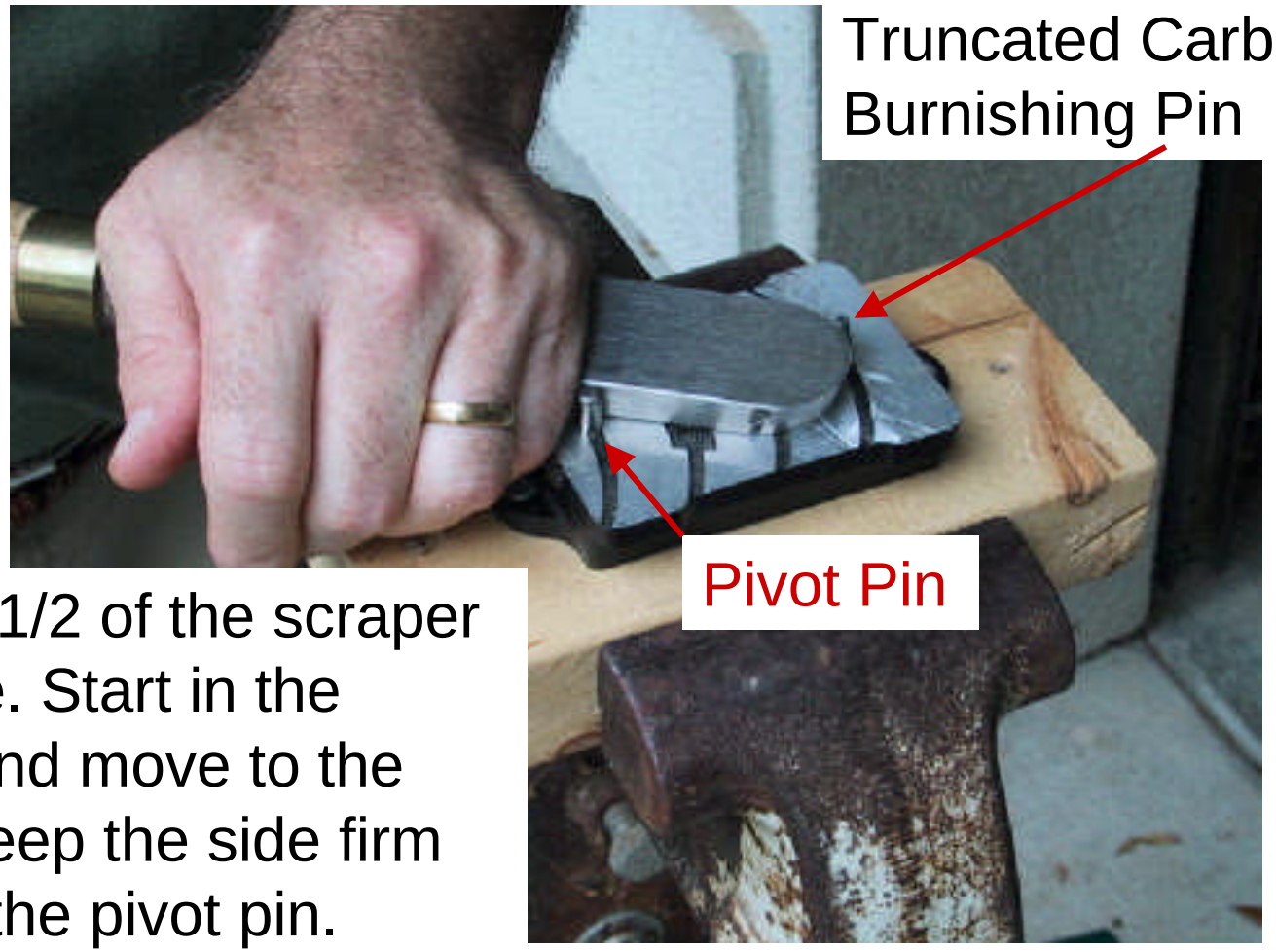
Using the Veritas® Skew Burnishing Tool

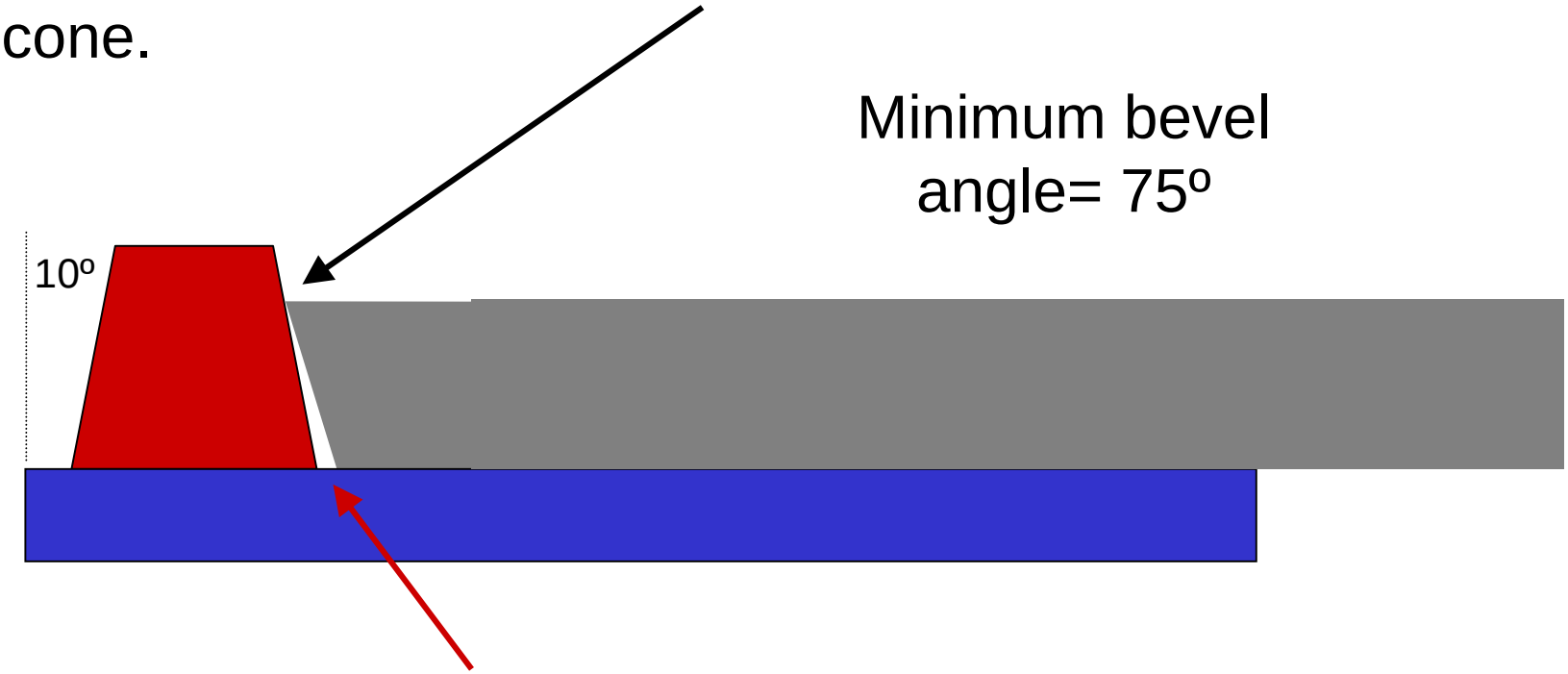


Burnish 1/2 of the scraper at a time. Start in the center and move to the edge. Keep the side firm against the pivot pin.

Tip: Secure the burnishing tool in a vise or to a bench top.

Side Profile of Scraper on the Burnishing Tool

Top edge of the scraper must contact the truncated carbide cone.



Make sure there is enough rake on the bevel of the scraper to ensure there is at least a small gap at the base.

How NOT to Sharpen A Spindle Roughing Gouge

Use the platform tool rest instead.

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Bevel Angles for Various Tools

- Roughing Gouges: ~45º
- Side Ground Bowl Gouges: ~55º to 65º
- Micro Bevel Gouge: 70 º primary with 50 º relief bevel
- Spindle Gouges: ~40º
- Scrapers: ~65º to 70º (burr preferred)
- Negative Rake Scrapers: 50º bevel to bevel (produce a burr on top of the edge by grinding the lower bevel)
- Standard parting tools ~25º
- Skew: 70º from point to point, 40º (bevel to bevel)
  or with bevel length ~1.5 times the thickness of the
  tool. Hone with 600 grit diamond hone or fine stone until the bevel becomes flat then return to the grinder to re-establish a hollow grind.
  On large skews: produce a
  perpendicular edge ¼ of the width starting
  at the long point. This can be used to make peeling cuts. Produce a radius on the remaining 3/4s of the width.

Thank you very much for attending my workshop.

I hope you were pleased with the information conveyed and will encourage other turners to attend my workshops.

Please notify clubs and symposium staff members in your area to inform them about my workshop and demo services.

Good sharpening!

Don Geiger