

SHARPENING FOR BETTER PERFORMANCE

Let's start off the New Year with Sharp tools

¿WHY?

Turning Guru's Quip

“To Compensate for Dull Tools

use

Bad Techniques”



Oops!

Please don't laugh, I did



MOST ASKED QUESTIONS

- 1 What is the bevel angle
- 2 What grit
- 3 What speed are you turning the lathe
- 4 How do you position the tool rest
- 5 When do you re-sharpen

WHAT IS THE DIFFERENCE BETWEEN GRINDING AND SHARPENING

- **Grinding** is shaping the end of the cutting tool with a rough wheel
 - On the club grind, (Ellsworth), a spindle gouge bevel angle is 40 degrees, and a bowl gouge Bevel angle is 60 Degrees.
- **Sharpening** is refining the edge with a fine wheel

REASON FOR A SHARP TOOL IS:

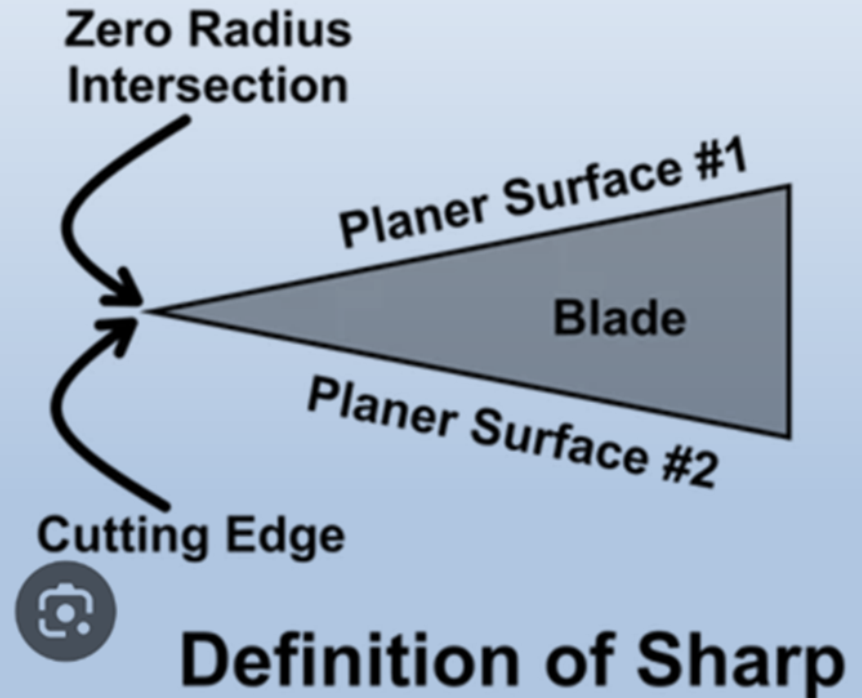
THE FINER THE EDGE THE LONGER IT WILL STAY SHARP

What IS Sharp

- Do you KNOW?
 - I did.
 - I had a slow speed Ricon Grinder
 - 2 stone wheels 60 and 120 grit
 - One way Wolverine System
 - Veri-grind
 - 1 Diamond grinding Wheel Dresser
 - Plus, Plus, Plus....
 - Problem was my tools were still dull

DEFINITION OF SHARP

- To understand sharpness, we must first understand the definition of an edge.
- An edge is the line of intersection between two surfaces
- A highly sharpened edge is one where the two surfaces are highly polished to form a very fine edge.



Rob Cosman | Secrets of
Sharpening | Bevel Angles...

Purpose of today's DEMO

“STANDARDIZATION”

Teaching members the same way to grind using the “club grinders”

- There are many methods to **sharpen**
- Everybody has their preferred system, and all these systems do the job.
- It works for me is the standard phrase

If we all look in the mirror, we see a human being who likes to be right, is experienced and does not need to change.

That is correct. We DO NOT need to change, but we all need to embrace new technology.

What are the Club Standards

- Most Clubs have similar systems:
 - Wolverine Grinding System
 - Wolverine Vari-Grind attachment
 - CBN wheels (most clubs now have a 600 grit and a rougher wheel)

Other systems are also excellent, and we can talk about them some other time, once we are all on the same page.

COMPONENTS OF “CLUB GRIND”



Wolverine
Basic



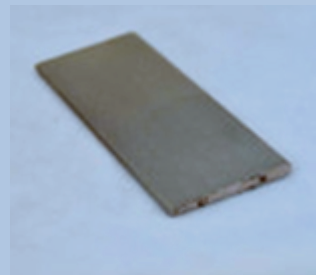
One way wolverine



Vari-grind Jig



CBN Wheel
Rounded Edge



Alan Lacer Tear drop hone



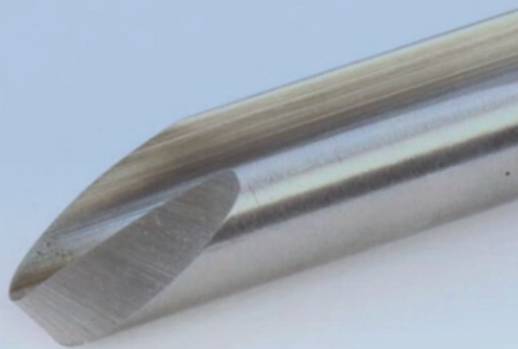
CBN Wheel
Square Edge

TOOLS TO SHARPEN AT DEMO

- SRG – Spindle Roughing Gouge
- Parting Tool
- Bowl Gouge
- Spindle Gouge



- Difference between Bowl and Spindle Gouge
- Last two will be demonstrated with an Ellsworth Grind

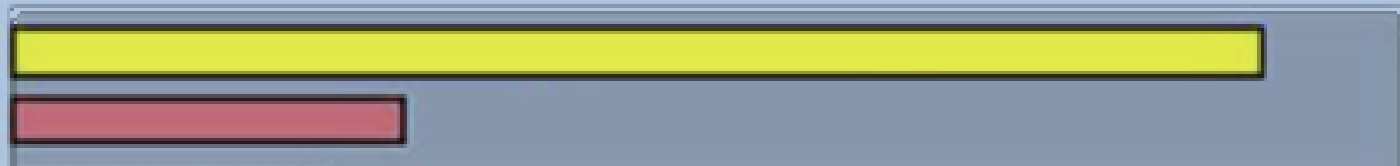


DEFINITIONS OF STEELS

- HSS-
- High Speed Steel is a set of 40+ tool steel alloys that consist of carbon steel, alloyed with more than 7% tungsten or molybdenum, together with percentages of chromium, vanadium and cobalt
 - M-1 - 8.5% molybdenum, 1.5% tungsten, 1.15% vanadium +++
 - M-2 - 4.5% molybdenum, 5.5% tungsten, 2.2% vanadium+++
 - M-3 - 4.75-6% molybdenum, 5.5% tungsten, 2.75 3.75% vanadium+++
 - M-42 - 9.5% molybdenum, 1.6% tungsten, 1.2% vanadium+++
 - CPM 2% molybdenum, 1,6% tungsten, 9.75vanadium+++

Comparative Wear Resistance

■ CPM 10V
■ M2



OTHER DEFINITIONS

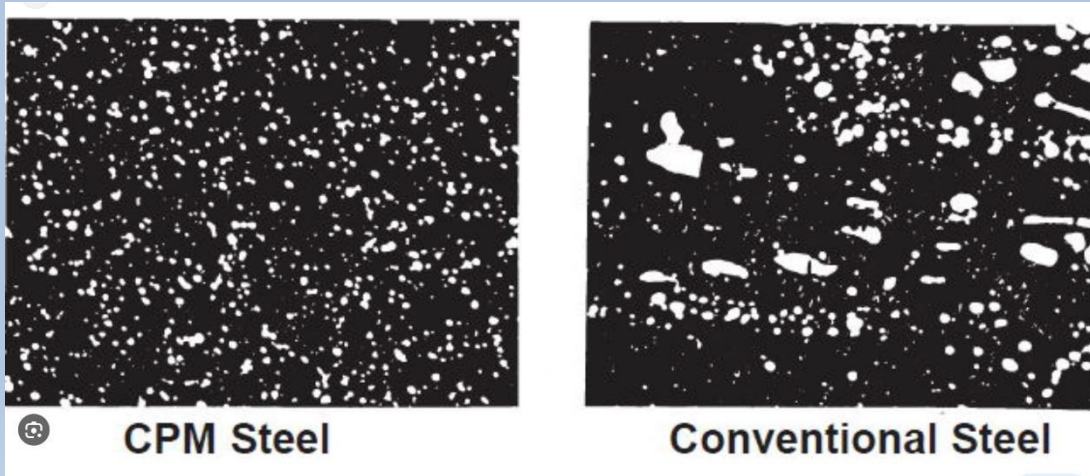
CBN Wheels – Cubic boron nitrite

A highly durable synthetic abrasive material second only to diamond in hardness. This makes it ideal for grinding hardened steel and superalloys.

CBN doesn't chemically react to iron allowing CBN to remove more material and last longer than diamonds when grinding most hard metals.

CPM –Crucible Particle Metallurgy.

A method of producing higher alloyed grades of superior quality than could be accomplished through conventional steelmaking.



POST SCRIPT

- “I will have my sharpening station at the ready as my 1st machine to start a day of turning... then go to the lathe as the 2nd machine to go to. This will be opposite of how I always proceeded in the past.”
- “Thank you. You have re-kindled the joy of turning”
- “You mean I no longer have to fear my Ellsworth?”

