Sharpening Handbook

Because *sharp enough* … usually is not

Chapter 12

Rose Engine Tools

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SharpeningHandbook.info

The full handbook, and the latest version of this chapter, are on the web at **SharpeningHandbook.info**. This chapter: November 2026.

Notes for All Rose Engine Tools

Newer Sharpening Tools

The Accu-Finish machine has been used for years by machinists. These machines use diamond wheels, or a ceramic lapping wheel with a diamond spray. It is a really great machine, especially as it has a built-in goniostat. Accu-Finish machines are no longer being made, but they may be available on the used tools marketplace.

I've found the Tormek grinder to meet my needs, though I did have to make some of my own jigs.

More Information

Books & Papers

- Ornamental Turning (archive.org), by J.H. Evans. Chapter VI
- Turning and Mechanical Manipulation, Vol. 3 (archive.org) by Charles Holtzapffel (en.wikipedia.org). Chapter XXXII.
- Turning and Mechanical Manipulation, vol. 5 (archive.org) by John Jacob Holtzapffel (en.wikipedia.org).

Videos & Presentations

- MDF Rose Engine Lathe: #8 (YouTube video). Making & Sharpening Fly Cutters
- Tormek Tool Rest SVD-110 (YouTube video)
- Tormek AngleMaster WM-200 (YouTube video)

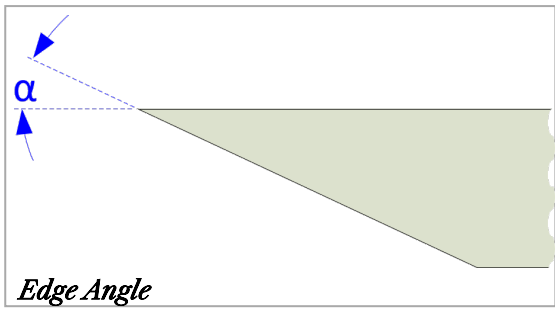
Web Sites

- Ornamental Turning Book of Knowledge (otbok.info)

> **Sharpness Scale** - see Chapter 1.
> **Ongoing maintenance** - see Chapter 4, *Woodworking Tools*.

Rose Engine Cutter for Fixed Tool Work

Sharpen the edge to an exactly correct angle is not usually critical. Rather, the overall shape of the cutting profile (as viewed from the top) is more key.



Sharpening with lapping compounds of 6, 3, 2, and finally 1 micron are recommended. Additional honing information is in the **Notes & Comments** section below.

The artist making pieces with fixed tools on a rose engine has the vision to see the angel inside the wood, and the skills to set her free.
Rich Colvin

Some historical information about sharpening these is available on the Ornamental Turning Book of Knowledge.

General Guidelines

Usage	α	Sharpness
Hardwoods and Ivory-like Materials	20° - 22°	8

Notes & Comments

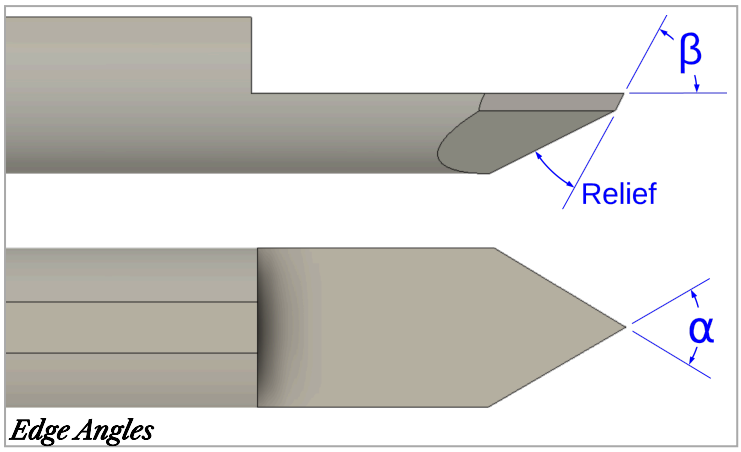
Hardwoods and Ivory-like Materials

This is recommended by Holtzapffel, but if the original angle is different, it is best to match that. Higher angles are recommended for reducing chatter in the cutting operation.

Angles shown are those recommended by John Jacob Holtzapffel in Turning and Mechanical Manipulation, vol. 5.

Sharpness Scale - see Chapter 1.
Notes for All Rose Engine Tools - at the start of this chapter.
Ongoing maintenance - see Chapter 4, *Woodworking Tools*.

Rose Engine Fly Cutter, Round Rod



Edge Angles

As with other tools, these cutters should be re-honed many times before they need to be re-ground (i.e., re-shaping them). This saves time, as well as making better use of the investment in the cutter metal.

Once the shape is established, the sharpener only needs to re-shape the cutter occasionally. **Re-hone often.**

The cutter shown above is "V" shaped, but shows the general ideas behind the angles noted below. The cutting edge shapes shown below are the cutter when viewed from the top.

> *A well-sharpened fly cutter makes an incredible surface. It also makes an incredible mess of the cuttings flying everywhere.*
> Rich Colvin

Some historical information about sharpening these is available on the Ornamental Turning Book of Knowledge.

General Guidelines

Cutter Type	β	Relief	α	Sharpness	Comments
V Shaped Cutter	75°	10° to 20°	30°	8	This angle reaches deep into cuts. This is useful for triple finials.
			45°		
			60°		This is the most common grind.
			90°		
			120°		A wide angle (α) is typically used for an eccentric cutting frame as many designs need an obtuse angle so that the light is reflected back to the viewer. Otherwise, it simply looks like a set of thick dark lines. Something >90° is necessary.
U Shaped Cutter	65°	*n/a*	*n/a*	8	*See Notes & Comments, below.*
Square Cutter	60°	5°	*n/a*	8	*See Notes & Comments, below.*

Notes & Comments

V Shaped Cutter

A goniostat (see Chapter 3) is quite useful for grinding these angles precisely.

A relief may not be needed. If not, it will make the sharpening of this cutter much faster, and will probably help ensure it is well balanced.

Key Note: Setting a nose radius of 0.007 in. (0.2 mm) is a good idea. If it is too pointy, the result on the work will look rather like a just-raked sand trap. (I've used cutters purchased from Alibaba where this was a flat, not round. They also worked quite well.)

U Shaped Cutter

Use the Tormek SVD-186 Gouge Jig with the square rod for holding the cutter.

A relief grind can be added if needed. This is easily done when using the SVD-186 jig by adjusting the stop ring.

SVD-186 Jig Settings		
Hole	JS	Hole
B	4	55mm

Square Cutter

Use the Tormek SVD-110 Tool Rest with the square rod used as a cutter holder.

Key Note:. The high β angle helps support the cutting edge.

Tormek Cutter Holders

A simple square rod is the jig I've found useful for holding cutters on the Tormek.



Square Rod as a Tool Holder

This holder can be used with the SVD-186 or the SVD-110 platform and an alignment block.

Cutter Rod	Drill Size
1/8"	#30 0.1285"
3/16"	#12 0.1890"
6mm	B 0.2380"

Dimensions for the Square Cutter Holder are also not terribly critical. I used ½" x ½" square steel rod, 2½" long for mine, and it works very well.

The end hole must be drilled for the cutter size. A slightly over-sized hole is recommended as shown in the table to the left.

I use ¼"-20 set screws with brass tips. 6M-1.0 set screws with brass tips could also be used.

An alternative is to make a holder held in the SVD-186's sleeve. The assembled set is shown in the picture to the right.

Drawings for this are in at this link (on the web site).

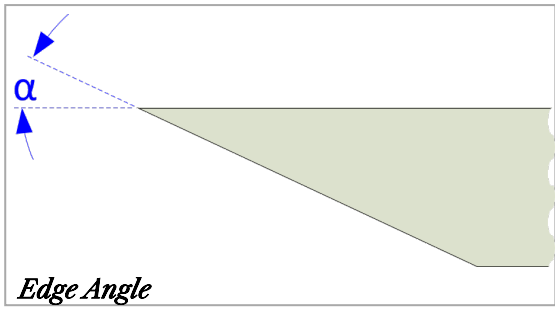


SVD-186 sleeve with tool holder

Sharpness Scale - see Chapter 1.
Notes for All Rose Engine Tools - at the start of this chapter.
Ongoing maintenance - see Chapter 4, *Woodworking Tools*.
Grindstones and Other Sharpening Media - see Chapter 2.

Rose Engine Fly Cutter, Traditional

Sharpen the edge using a goniostat (or *goneostat*, if you prefer the Queen's English) to ensure the correct angle is maintained.



Edge Angle

Sharpening with lapping compounds of 6, 3, 2, and finally 1 micron are recommended. The 1 micron paste should also used for resharpening via a micro bevel approach.

Additional honing information is in the **Notes & Comments** section below.

> *Considering the tools and machinery available in the 1800s, it is amazing such beautiful works were made. They must have been better machinists than we.*
> Rich Colvin

Some historical information about sharpening these is available on the Ornamental Turning Book of Knowledge.

General Guidelines			
Usage	α	Micro Bevel	Sharpness
Hardwoods and Ivory-like Materials	60° - 65°	3° - 5°	8
Metal	70° - 75°	3° - 5°	8

Notes & Comments

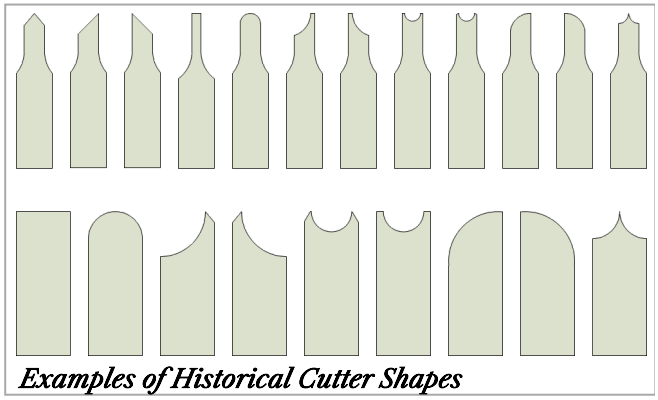
Hardwoods and Ivory-like Materials

This is recommended by Holtzapffel, but if the original angle is different, it is best to match that.

Higher angles are recommended for reducing chatter in the cutting operation.

Historical Cutter Sharpening Method

With regards to sharpening, the method outlined by J.H. Evans in Ornamental Turning, Chapter VI (1903) is:


Examples of Historical Cutter Shapes

1. **Primary Bevel**
    1. Use an oil stone
    2. Use a brass plate with oilstone powder and oil
2. **Secondary / Micro bevel** (Evans recommended +3°)
    1. Use a brass plate with oilstone powder and oil
    2. Use a cast iron plate with very fine crocus powder and oil
3. **Debur** - very lightly on the back side
    1. Use a cast iron plate with very fine crocus powder and oil

Sharpness Scale - see Chapter 1.
Notes for All Rose Engine Tools - at the start of this chapter.
Ongoing maintenance - see Chapter 4, *Woodworking Tools*.