

## QUICK RE-SHARPENING WITH STOP BLOCKS

*Helps Make Sharpening Consistent and Simple*

A stop block makes it very easy to consistently repeat the distance the blade projects from the honing guide for a given angle. Make a jig with stop blocks for the angles you use regularly. We've recommended 35° for a secondary bevel, but sometimes you may need to sharpen at a different angle; for dealing with difficult grain a much steeper angle, 45°-50°, on a bevel-up plane works very well.

Download the Angle Setting Jig PDF on our website for a simple set of plans to build your own stop block sharpening jig.

### STOP BLOCK DIMENSIONS

*For Common Sharpening Angles*

Lie-Nielsen Honing Guide*		Eclipse Style Honing Guide**	
Angle	Approx. Distance	Angle	Approx. Distance
20°	2-1/16" (52.38 mm)	25°	2-1/8" (54 mm)
25°	1-1/2" (38.10 mm)	30°	1-9/16" (40 mm)
30°	1-5/32" (29.36 mm)	35°	1-3/16" (29.5 mm)
35°	7/8" (22.22 mm)	40°	13/16" (21 mm)
40°	5/8" (15.87 mm)	45°	9/16" (15 mm)
45°	7/16" (11.11 mm)		
50°	5/16" (7.93 mm)		

*\*\*Measurements are precise for a .125" thick blade*

*\*When using the Mortise Chisel Jaws, add 5° to each stop*

- If you re-sharpen frequently you probably only need the finishing stone to touch up the bevel. To raise a wire edge, start on the honing stone.
- At some point the secondary bevel will become large and it will take more strokes to raise the wire edge. Re-establish the 25° primary bevel using the sandpaper (and a stop block set for 25°).
- When re-establishing the primary bevel, leave a little bit (approximately 1/64") of the secondary bevel, because this helps define the square edge of the blade.
- While the blade is removed from the tool, clean the body of the plane and brush away any debris or shavings that may have accumulated under the blade with use.
- Once sharpening is complete, blades and chisels should be wiped with oil to prevent rust. We recommend Jojoba Oil, a plant based oil product that is non-toxic, odor-free and easy to use.

## NOTES ON SHARPENING CHISELS

Sharpening chisels is the same as sharpening plane blades, except you **never use the Ruler Trick with chisels** because chisel work requires a flat back reference surface.

**To prepare chisel backs**, work the chisel across the stone, honing off and on the edge. Start with the honing stone, and to make the work easier, use a medium 3,000 grit stone next, then end on the finishing stone. You should never need to use anything other than the finishing stone for the back of the chisel after initial preparation.

*Note:* By working on and off the stone you avoid the risk of rounding the front edge of the blade which can occur if you stop short of the stone's edge. A slightly concave surface is better than a convex one.

Hone the chisel bevel the same way as a plane blade. End by lightly polishing the back on the finishing stone. Flatten stones when done.

**When re-sharpening chisel bevels**, you can use only the finishing stone for a quick polish. To raise the wire edge, go back to the honing stone first.

### NOTE ON STONE GRITS

We refer to 1000, 3000 and 8000-10,000 grit stones, because we use Ohishi Waterstones which are made in these grits. However, the important point is to use coarse (and with chisels, medium) and fine stones, whatever the exact grit may be. For example, soft Arkansas oil stones for coarse, hard Arkansas oil stones for medium, and black hard Arkansas oil stones for fine, may also be used.

### ADDITIONAL SHARPENING INFORMATION

Please visit our YouTube Channel for more details about the care and use of our tools: <http://www.youtube.com/user/LieNielsenToolworks>

For more information on advanced sharpening techniques, we recommend David Charlesworth's videos, *Plane Sharpening*, *Precision Preparation of Chisels for Accurate Joinery*, and *Furniture Making Techniques: 5 Topics*. All of our instructional videos are available on our website.

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(Rev. 4-15-19)



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## BASIC PLANE BLADE SHARPENING

A sharp edge is the intersection of two polished surfaces, so you need to work both the bevel and the back of the blade.

We get a lot of questions about sharpening. Woodworkers have strong, often conflicting opinions about the right way to sharpen. We've taught many beginners to get a razor edge in minutes, using a simple method that gives reliable results. Here it is.

### FOR THIS METHOD YOU WILL NEED:

- 1,000 grit Honing Stone
- 8,000-10,000 grit Finishing Stone
- Side Clamp Honing Guide
- 6" Ruler, approximately .020" thick
- Protractor
- DMT Dia-Flat Lapping Plate or Wet/dry Sandpaper (120-220 grit)

Stones must be flat. Before using any stone for the first time, please refer to the "To Flatten Your Stones" section.

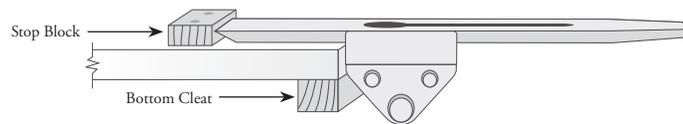
### BASIC TECHNIQUE

*With Blade in Decent Condition*

Lie-Nielsen Blades are delivered ground flat, with a bevel of 25°. Other blades, especially old ones, may need work on both the back and the bevel using coarse stones, sandpaper, or a cool grinding wheel first to establish a flat, straight surface.

1. Set the blade bevel down in the honing guide at 35° using a protractor.

*Note:* If you record the length the blade projects from the front of the honing guide, you can re-set it to the same angle without the use of the protractor. An easy way to do this is with a simple stop block attached to a small piece of plywood or hardwood. Download our Angle Setting Jig PDF for a set of plans to build your own.



2. Hone on the 1000 grit stone until a wire edge/burr forms on back of the blade, about 4 strokes pulling the blade towards you. Distribute wear evenly by using the full surface of the stone.

If the edge of the blade is square and your finger pressure is even, this secondary bevel will be parallel to the edge. Use a strong light to see this.

*Note:* The 35° angle will result in a 10° 'microbevel' or secondary bevel. This secondary bevel concentrates all of your sharpening energy on the very edge of the blade—this is the only part of the blade that needs honing, because it is the only part of the blade that does the work.



3. Finish on the 8,000-10,000 grit stone—4 to 5 strokes, pulling the blade toward you.

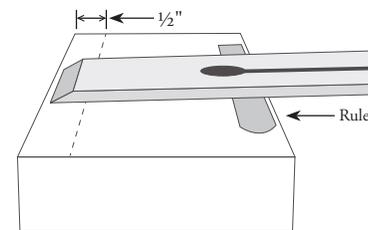
4. Polish the back of the blade using the Ruler Trick—10 passes on and off the finishing stone.

### THE RULER TRICK

*To Finish the Back of the Blade*

1. Place a thin ruler (approximately .020" thick) along one edge of the finishing stone.

2. Place the blade bevel up across the stone and ruler. Doing so raises the blade a bit (less than 1°) and concentrates your honing force on the very tip. Hone by stroking the blade on and off the stone (distribute wear by moving up and down the stone while honing). Do not bring the edge of the blade more than 1/2" onto the stone to minimize the back bevel. About ten passes should remove the wire edge and polish the edge.



*Note:* By honing on and off the stone you avoid the risk of rounding the front edge of the blade which can occur if you stop short of the stone's edge. A slight concave surface is better than a convex one.

3. At the end of the sharpening session, flatten your stones.

## TO FLATTEN YOUR STONES

*Essential for Getting a Sharp Edge*

1. Mark cross hatch lines on the stone using a pencil.
  2. Find a flat reference surface, like a granite surface plate, power planer bed, etc., and temporarily adhere wet/dry sandpaper (between 100-220 grit), or use the DMT Dia-Flat Lapping Plate.
  3. Spray the sandpaper or DMT Dia-Flat Lapping Plate with water and rub the stone until the hatch marks are removed, 15-20 strokes.
- Note:* Distribute wear evenly by occasionally rotating the stone 180° and using the full surface of the sandpaper or Dia-Flat Lapping Plate.
4. Check for flatness with a straight edge. Repeat step 3 if needed.

## CAMBERING A BLADE

*Honing a Slight Curve in the Edge*

This method will produce a camber of .002"- .005" (or more depending on finger pressure and number of strokes used). For any plane, the amount of camber needed is only a bit bigger than the thickness of the shaving you will take—usually less than .002" thick for a smoothing plane. Some planes (shoulder planes, jointer planes, others as desired) require a straight edge.

1. Set the blade in the honing guide at 35°.
2. On the honing stone, take six strokes pulling the blade towards you while applying finger pressure to one outside blade edge—repeat on the other edge.
3. Take four strokes pulling the blade towards you while applying finger pressure one half the distance from the edge to the middle on one side of the blade—repeat on the other side.
4. Take two strokes pulling the blade towards you while applying finger pressure to the center of the blade. (If two strokes do not raise a wire edge, repeat steps 2-4.)
5. Repeat steps 2-4 on the finishing stone.

*Note:* To create a greater curve, use more strokes at each step, but keep the number of strokes at the edges greater than in the middle.

6. Use the Ruler Trick to remove the burr from the back of the blade.
7. Flatten your stones when you are done.