

Mk.II Honing Guide System

U.S. Pat. No. 7,553,216 and U.S. Des. Pat. D767,360

The Veritas® Mk.II Honing Guide System provides a reliable method for honing a wide range of tools by ensuring consistent, accurate results.

The deluxe honing guide set includes two interchangeable blade carriers, an angle registration jig, and two roller bases. This set is most useful for a wide variety of blades. The standard (original) Mk.II honing guide, consisting of a standard blade carrier, a straight roller and a registration jig, is the best choice for woodworkers who mostly use wide blades. For those who predominantly sharpen narrow blades, a narrow-blade honing guide, consisting of the narrow-blade carrier, a straight roller and a registration jig, is also available. For those who already own the standard Mk.II honing guide, the narrow-blade carrier is available separately.

The standard blade carrier uses a clamping bar that registers on the face of the blade. It accepts flat or tapered blades between $\frac{1}{2}$ " and $\frac{27}{8}$ " wide and up to $\frac{15}{32}$ " thick, including skew blades. It is used with the registration jig to set bevel angles from 15° to 54° and back bevels from 10° and 20° .

The narrow-blade carrier is designed to hold blades and chisels from $\frac{1}{8}$ " to $1\frac{1}{2}$ " wide, using parallel jaws to ensure blades stay square to the jig. The jaws are also canted to keep blades centered and tight to the reference face of the jig, whether they have bevelled or square edges – it will even hold chisels that are triangular in cross-section. It accepts bevel-edged chisels up to $\frac{15}{32}$ " thick and square-edged chisels up to $\frac{11}{32}$ " thick. It is used with the registration jig to set bevel angles from 15° to 40° and back bevels from 10° and 20° .

The angle registration jig sets the appropriate blade projection for the desired bevel angle. It lets you sharpen consistently to the same bevel angle or make a controlled change, as desired. This not only makes tool sharpening faster, but also reduces the wear caused by needless reshaping of edges.

The three-position eccentric rollers let you add a micro-bevel to any angle setting with a simple turn of a knob. The straight roller provides a stable base for even the narrowest of blades, and the barrel-shaped camber roller lets you rock the guide to hone a slight curve or camber into a plane blade edge, eliminating blade tracks when smoothing.

Note: Before using the honing guide, apply a drop of oil to the junction of the roller, as shown in **Figure 21**.

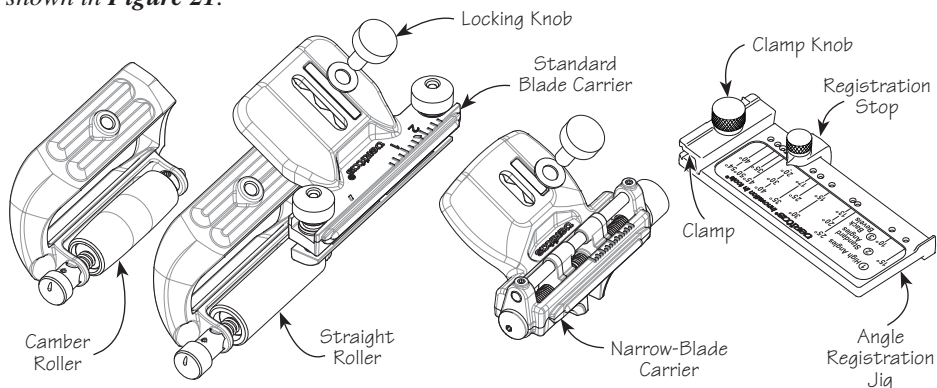


Figure 1: Mk.II deluxe honing guide components.

Step 1: Lapping

Since a sharp edge is basically the meeting point of two flat and polished surfaces, the first thing to ensure is that the face or bottom of any blade is perfectly flat in the area near the cutting edge before you attempt to hone the bevel.

An easy way to lap a new blade is on an 800 or 1000 grit water stone; only on a very wide blade would you have to resort to a coarser stone such as 250 grit. It need not be lapped flat along the entire face, just near the cutting edge. While lapping, be sure to keep the face of the blade flat to avoid gouging the face or creating an unintentional back bevel. Finish by honing with a 4000 grit stone, then polishing with an 8000 grit (or finer) stone.

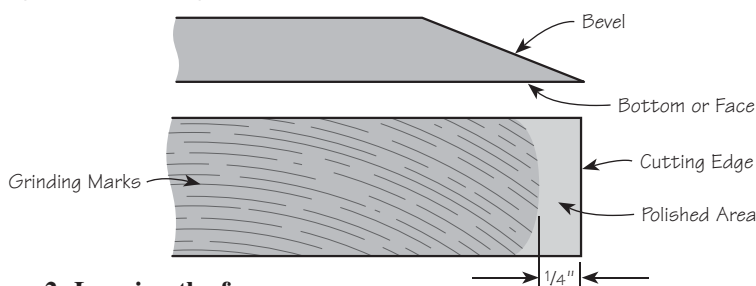


Figure 2: Lapping the face.

Step 2: Setting the Honing Guide

The standard blade carrier can be set to one of three bevel angle configurations, while the narrow-blade carrier can be set to one of two bevel angle configurations. These are numbered and color-coded for clarity and ease of use (see **Figure 3**).

- Position ① (red) for high angles (available only on the standard blade carrier),
- Position ② (yellow) for standard angles and
- Position ③ (green) for back bevels.

Loosen the locking knob on the blade carrier, then lift and slide the head to the required position. For example, if you are honing angles between 15° and 40°, set the head to the ② (yellow) location.

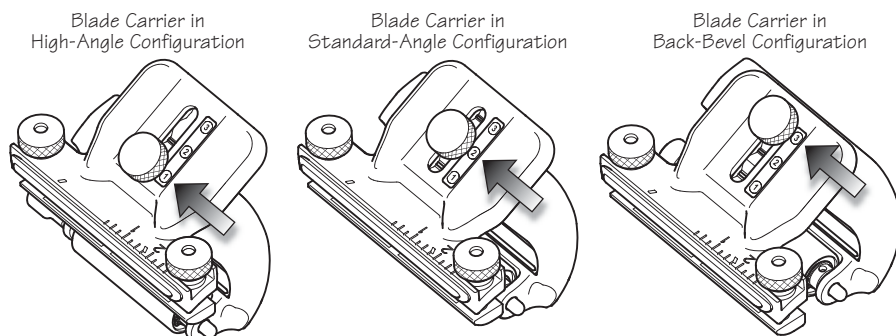


Figure 3: Configurations for different bevel angle requirements.

Tip: In general, position ② (yellow) on the narrow-blade carrier will accommodate the traditional range of chisel bevels.

Switching the Blade Carrier

To switch from one blade carrier to the other, unfasten the locking knob to disengage the blade carrier from the roller base. Position the desired blade carrier on the roller base and secure it to the roller base with the locking knob and washer, as shown in **Figure 4**.

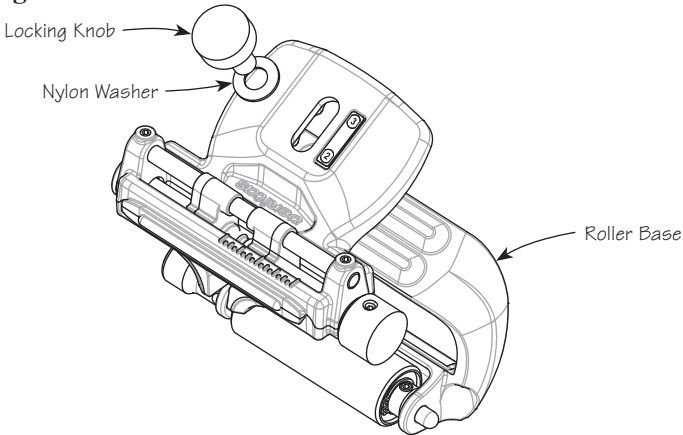


Figure 4: Mounting the narrow-blade carrier onto the roller base.

Step 3: Setting the Angle Registration Jig

The angle registration jig not only sets the blade projection for the desired bevel angle, but it also ensures your blade is centered and squared in the standard blade carrier. (*Note: The parallel jaws in the narrow-blade carrier automatically center the blade.*)

Slide the registration jig onto the dovetail feature along the front of the blade carrier. Set the registration jig such that the pointer on the top jaw of the jig aligns with the approximate width of your blade on the scale on the top of the blade carrier (see **Figure 5**). Tighten the registration jig clamp knob only finger tight. **Do not** overtighten as it is desirable to have some up and down movement of the registration jig to allow it to easily slide off the blade when loosened.

Set the registration stop to the desired bevel angle, aligning it with the scale of your choice. The registration stop in **Figure 5** is set for a 1" wide blade and a 30° bevel angle using the ② (yellow) standard-angle configuration.

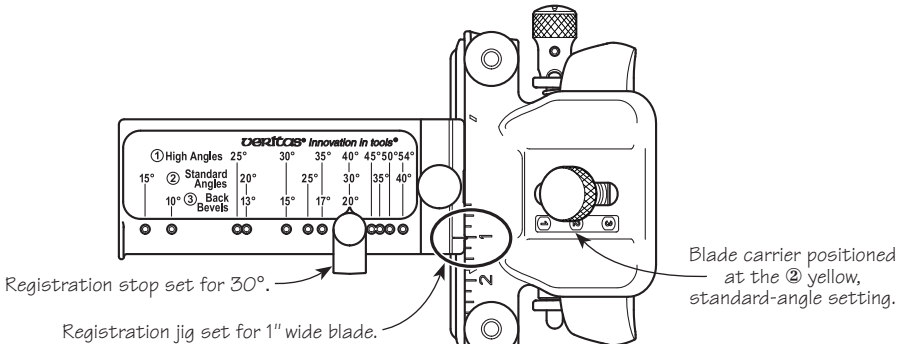


Figure 5: Registration jig installed.

Bevel Angle	Used on these tools
<15°	Back bevels.
15° to 20°	Paring chisels, skew chisels (including turning skews that are bevelled both sides), low-angle planes for softwood, skew-blade planes.
20° to 25°	All of the above (except skews) for hardwood or end-grain use.
25° to 30°	Chisels used both for paring and light mortising, firmer chisels for softwood, most plane blades (smooth, jack, jointer, etc.), and spokeshave blades.
30° to 35°	Mortise chisels, firmer chisels for hardwood, plane blades for hardwood with pin knots.
35° to 40°	Mortise chisels for heavy use, particularly any with brittle steel.
>40°	Scraper plane blades and bevel-up smoothing planes used on wood with difficult/reversing grain to produce Type II wood chips.

Step 4: Installing the Blade

For reliable results, the blade **must** be properly installed in the blade carrier.

Standard Blade Carrier

Loosen the two blade clamp knobs on the standard blade carrier. Open the clamp bar wide enough to slide the blade in. The knobs **must** be loosened and tightened in small increments. **Do not** tighten or loosen one side substantially more than the other; otherwise, the clamp bar or knobs may jam.

Hold the honing guide upside down, and slide the blade in such that it bears against the fence on the registration jig and just barely touches the registration stop (see **Figure 6**). The blade will be centered in the honing guide. The resulting bevel angle will be accurate, and the edge square to the side of the blade. **Hand tighten the knobs firmly and evenly**. The clamp bar must be parallel to the upper jaw to effectively secure the blade.

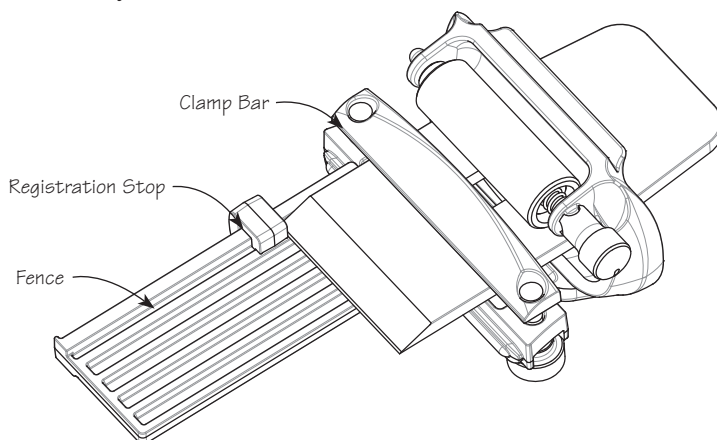


Figure 6: Plane blade installed in standard blade carrier.

Narrow-Blade Carrier

Hold the narrow-blade carrier assembly upside down. Turn the blade clamp knob counterclockwise to open the clamp jaws, place the chisel blade between the two jaws and against the registration stop, then turn the clamp knob clockwise to clamp the chisel blade firmly (but avoid overtightening). (**Note:** The parallel jaws in the narrow-blade carrier automatically center the blade.)

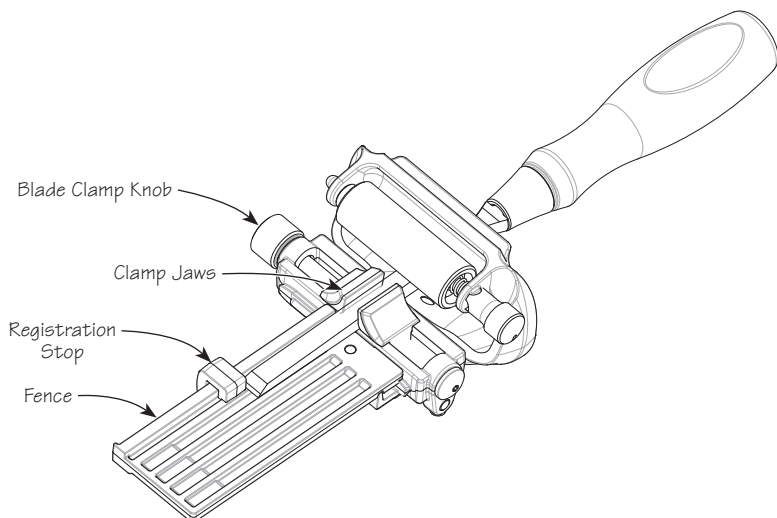


Figure 7: Chisel installed in narrow-blade carrier.

For either blade carrier, loosen the registration jig clamp knob and slide the registration jig off of the blade carrier. Check that the blade clamp knobs are still tight after removing the jig to ensure the blade does not inadvertently shift in use.

Step 5: Honing the Primary Bevel

Ensure that the micro-bevel knob is set to the 12 o'clock position (as shown in **Figure 8**). The spring-loaded knob is easy to adjust by pulling it out of the body just enough to allow rotation of the pointer to the desired position.

Roll the guide and blade back and forth on the abrasive surface until a satisfactory bevel is formed, ensuring that any downward force is applied mainly to the edge of the blade. Since the roller maintains the angle, it should be in contact with the stone at all times. If the roller is lifted off the stone, the very edge of the blade will have a higher bevel angle than the one selected.

The primary bevel should extend at least $\frac{1}{8}$ " back from the edge.

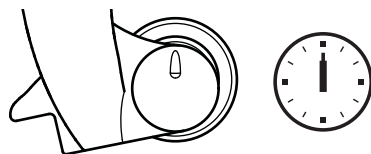


Figure 8: Micro-bevel knob set at 12 o'clock for honing primary bevel.

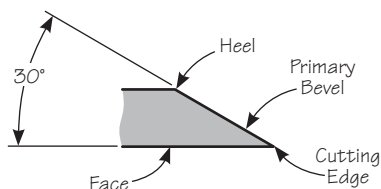


Figure 9: Primary bevel.

Step 6: Honing the Micro-Bevel

One of the features of the honing guide is that the blade can be quickly and easily honed to a razor-sharp edge by adding a micro-bevel (or secondary bevel) to the primary bevel. A smooth micro-bevel on the blade produces the same result as honing the complete bevel, since only the cutting edge itself has any effect when cutting. You remove less steel, but arrive at a sharp edge quickly. With the micro-bevel knob in the 6 o'clock position, you will obtain a micro-bevel with a 1° to 2° difference from the primary bevel.

***Note:** The section between the primary bevel and the micro-bevel can often be skewed in relation to the edge; however, this is not a concern. While the geometry of the guide is sensitive to even the smallest influences, the geometry at the edge of the blade is not nearly as sensitive. The guide will create a square edge, even if the section between primary and micro-bevel appears to be skewed.*

Back Bevels

Back bevels are low-angle bevels applied to the back of a plane blade. There are two major reasons to apply a back bevel, and these depend on the type of plane blade.

On a bench plane (where the blade is mounted bevel down), a back bevel is used to increase the effective cutting angle from the otherwise fixed angle of the plane bed. This is useful when working wood with highly figured and/or reversing grain. The back bevel angle will need to be tailored to the particular situation; however, the following chart may be used as a starting point:

Back-Bevel Angle	Effective Cutting Angle*	Application
10°	55°	Difficult/reversing grain in softwoods (such as pine) and slightly figured/reversing grain in more difficult hardwoods (e.g., oak, ash and maple).
15°	60°	For all but the most difficult woods. Usually required for woods like oak with very severe grain fluctuation, crotch figure as well as near knots and bark inclusions.
20°	65°	To minimize tear-out on the most difficult woods.

****Note:** The effective cutting angle noted in this chart is based on a 45° plane bed. For plane beds other than 45°, calculate the back-bevel angle required by subtracting the plane bed angle from the desired effective cutting angle.*

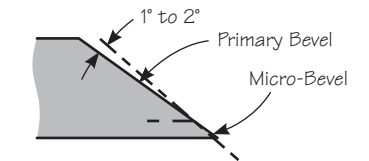


Figure 10: Micro-bevels.

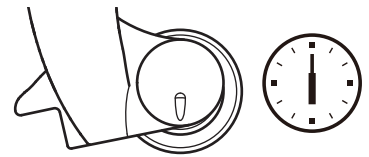


Figure 11: Micro-bevel knob set at 6 o'clock for honing the micro-bevel.

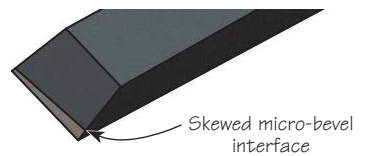


Figure 12: Skewed micro-bevel interface.

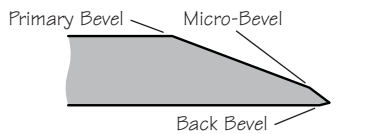


Figure 13: Bevels on a plane blade.

On a low-angle plane (where the blade is mounted bevel up), a back bevel is used to increase the included bevel angle without affecting the effective cutting angle. The purpose of this is to increase the durability of the edge, particularly when working end grain. For this application, very low back-bevel angles must be used to maintain adequate relief angle behind the edge.

To create back-bevel angles of 10° or higher, simply set the blade carrier in the ③ (green) back-bevel configuration and the blade registration stop on the ③ (green) scale. Install the blade with the primary bevel up (as shown in **Figure 14**), and the micro-bevel knob in the 12 o'clock position.

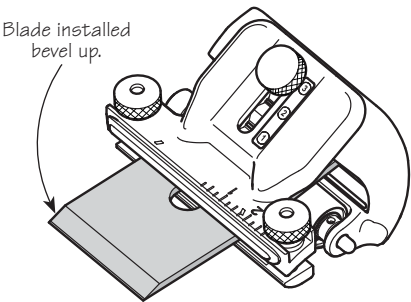


Figure 14: Configuration for honing back bevels.

Back bevels should extend no more than 1/32" back from the edge; a few passes on the abrasive surface should be sufficient to achieve the desired effect. A large back bevel will offer no advantages and will require a lot of material removal from the micro-bevel, should the need arise to remove the back bevel.

Important Note: In the back-bevel configuration, the indicated bevel angle is dependent on blade thickness. The settings on the registration jig have been calibrated for a 1/8" thick blade. Blade thickness does not have a large effect on bevel angle, and a blade 3/16" thick will have a bevel angle varying less than 1° from the registration jig setting.

To obtain back bevels of less than 10°, you will need to set the micro-bevel knob in the 6 o'clock position and use a spacer block (see table below for required offset) underneath the roller. The spacer can simply be a block of hardwood. It is important that the top surface of the spacer block be parallel with the top of the abrasive surface; otherwise, the back bevel will have a skew to it.

Offset*	Back-Bevel Angle	Registration Stop Location
5/8"	8.5°	① (red) high angle 45°
5/8"	7°	① (red) high angle 35°
5/8"	6°	① (red) high angle 30°
5/8"	5°	① (red) high angle 25°
5/8"	4°	② (yellow) standard angle 15°
13/16"	3°	① (red) high angle 30°
13/16"	2°	② (yellow) standard angle 15°

*Note: The offset is the space you have to create between the spacer and the abrasive surface. The thickness of the spacer depends on the thickness of your abrasive material.

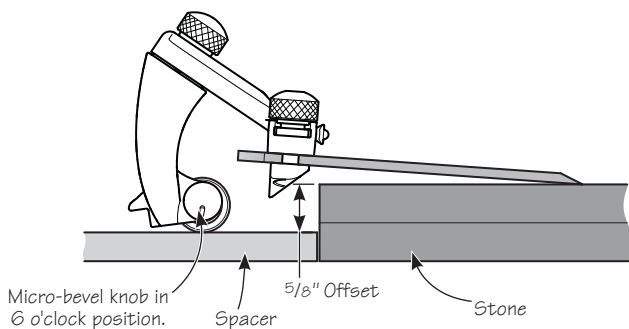


Figure 15: Set-up for very low-angle back bevels.

Setting Other Angles

The blade stop on the registration jig has discrete positions for preset bevel angles, providing quick, accurate sharpening and perfectly repeatable results. The angles specifically marked on the jig represent the most common blade angles you will encounter on manufactured chisels and plane blades. But that does not mean the honing guide cannot handle other angles. On the contrary, by mixing configurations and settings, the honing guide can yield just about any bevel angle.

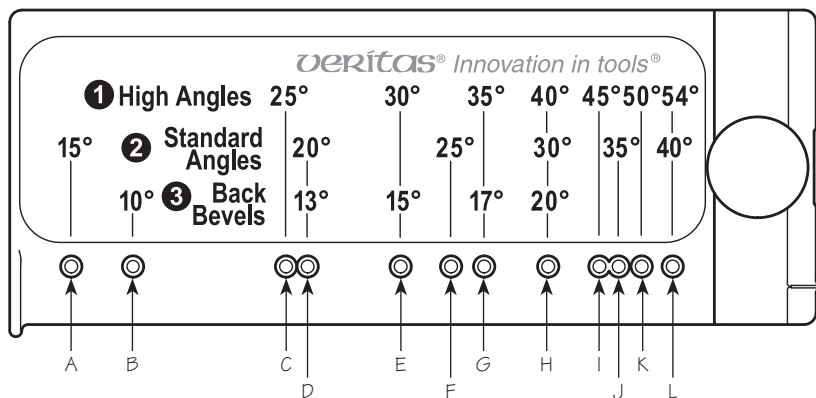


























Figure 16: Registration stop hole locations.

Table 1 indicates the bevel angle that each registration stop will achieve in each of the three configurations (standard angle, high angle and back-bevel angle).

Table 1: Obtaining Other Angles by Adjusting Micro-Bevel Knob

Standard Angles									
Hole	Arrow Direction				Hole	Arrow Direction			
									
A	15.0	15.4	15.8	16.2	G	26.5	27.0	28.0	28.4
B	16.0	16.5	16.9	17.3	H	30.0	30.4	31.7	32.1
C	19.4	19.9	20.4	20.9	I	33.5	33.8	35.4	35.7
D	20.0	20.5	21.1	21.5	J	35.0	35.3	37.0	37.3
E	23.0	23.5	24.2	24.7	K	37.0	37.2	39.1	39.3
F	25.0	25.5	26.4	26.8	L	40.0	40.2	42.3	42.4
High Angles									
Hole	Arrow Direction				Hole	Arrow Direction			
									
A	19.0	19.4	19.8	20.2	G	35.0	35.3	36.7	36.9
B	20.4	20.8	21.3	21.7	H	40.0	40.2	41.9	42.1
C	25.0	25.4	26.2	26.6	I	45.0	45.0	47.2	47.1
D	25.8	26.2	27.0	27.4	J	47.2	47.1	49.4	49.3
E	30.0	30.4	31.4	31.8	K	50.0	49.8	52.4	52.1
F	32.8	33.2	34.4	34.7	L	54.3	53.9	56.8	56.3
Back-Bevel Angles									
Hole	Arrow Direction				Hole	Arrow Direction			
									
A	11.5	11.6	12.2	12.6	G	DO NOT USE			
B	12.3	12.7	13.0	13.5	H				
C	14.6	15.2	15.5	16.1	I				
D	15.0	15.6	15.6	16.5	J				
E	17.1	17.7	18.2	18.7	K				
F	18.5	19.1	19.7	20.2	L				

Alternatively, the blade projection can be set according to the desired bevel angle, as shown in **Table 2**. Measure from the edge of the registration jig and mark the line on the bottom of the jig. Align the edge of your blade to this line.

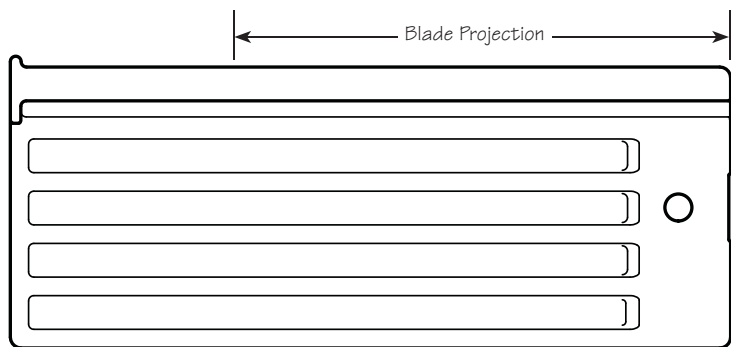
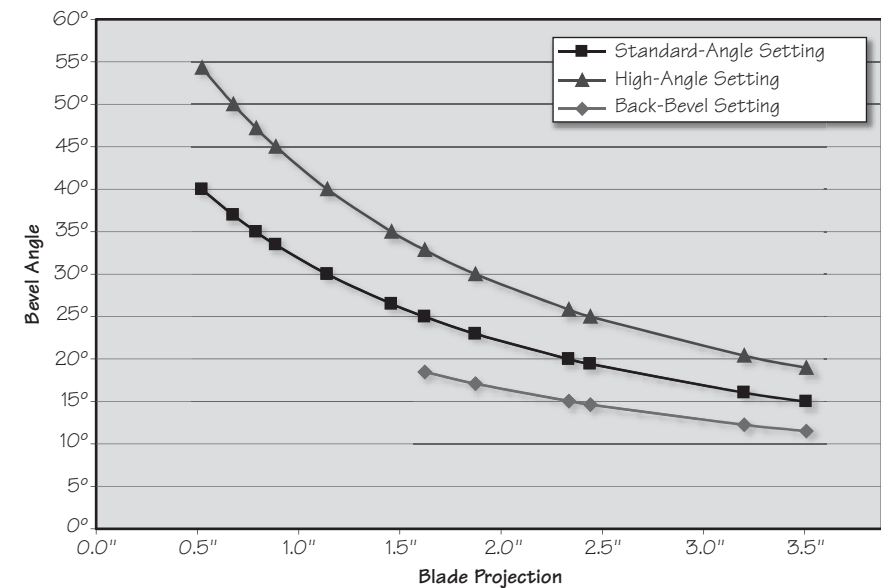


Figure 17: Measuring blade projection.

Table 2: Obtaining Other Angles by Adjusting Blade Projection



Camber Roller Assembly

The straight roller assembly provides a stable base so that blade edges remain perfectly straight and square to the blade. This is desirable for most blades; however, with larger smoothing planes, a perfectly straight blade can result in “plane tracks”, small steps in the surface of the wood between plane strokes. To avoid this, it is beneficial to add a slight camber or curve to the edge of the blade.

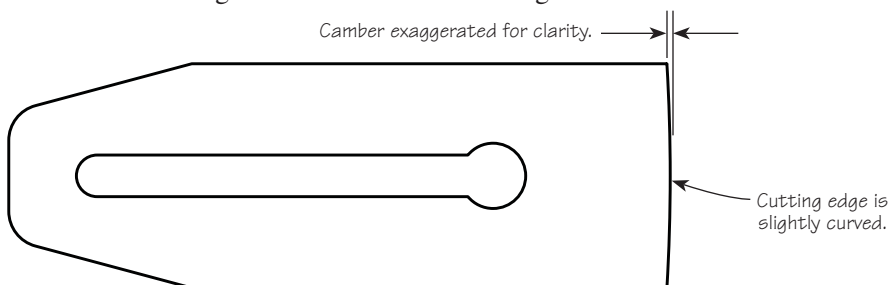


Figure 18: Typical plane blade with camber.

The barrel-shaped roller on the camber roller assembly allows the guide to rock slightly as pressure is applied across the blade. It also has a flat section in the middle to indicate a position straight across the blade.

By replacing the straight roller assembly on the standard blade carrier* with the camber roller assembly, adding a camber to the edge of a blade is easily controlled while still maintaining an accurate and consistent micro-bevel angle.

****Note:** Since narrow blades do not require a camber, the camber roller assembly is not used with the narrow-blade carrier.*

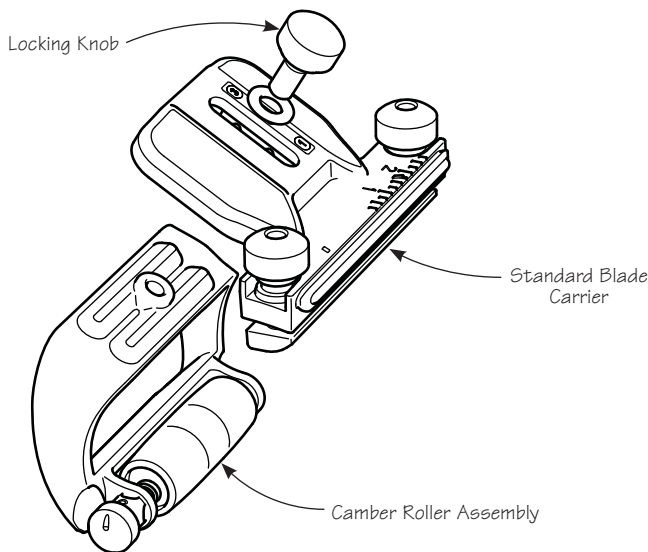


Figure 19: Installing the camber roller assembly.

Adding a Camber to the Edge of a Plane Blade

Generally, it is not necessary to add camber to the primary bevel. Since no more than a slight curvature is required, you need only camber the edge of the micro-bevel.

There are a number of theories regarding the amount of camber that is necessary and how to achieve it. Some references recommend using three locations (left, right and middle of the blade); others recommend five or more locations.

Since these techniques will result in a blade that is slightly faceted across its bevel, some techniques call for taking a few strokes while varying the pressure across the blade during the stroke in an effort to smooth out the curve.

No matter which technique you choose, in order to get a consistent and even curve across the blade, you need to apply consistent finger pressure to various locations across the blade and count the number of strokes at each location to ensure that equal amounts of metal are being removed. Keep in mind that the resulting camber is **not** controlled by the shape of the roller. With practice, you will develop just the right procedure.

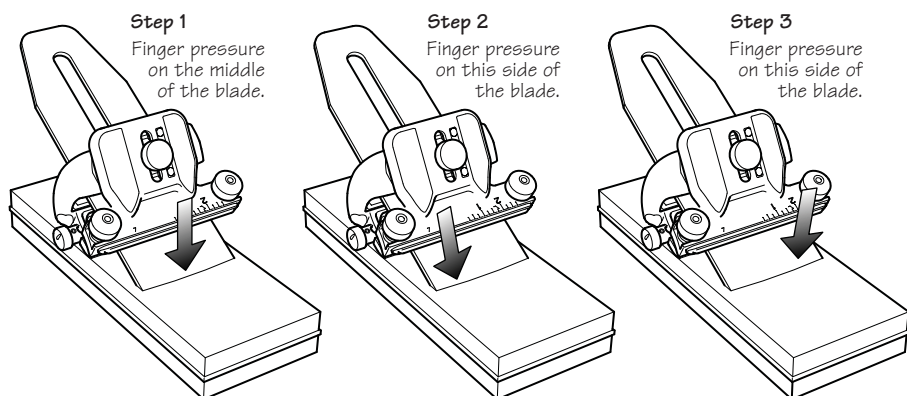


Figure 20: Basic process for honing a camber onto a plane blade.

Care and Maintenance

Since the guide is exposed to water and abrasive particles in use, fine particles can get between the roller and the cam to interfere with smooth operation. We recommend that you flush the roller with water, dry it and apply a drop of oil to the junction of the roller, as shown in **Figure 21**, every few times you use it. Work the roller with your fingers to ensure that the oil is well distributed inside. As grit from the sharpening process eventually fouls the clamping screws, they should be cleaned and oiled occasionally as well.

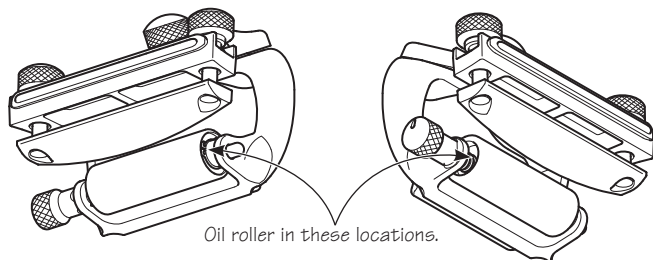


Figure 21: Locations to oil roller.

Accessories

- 05M09.04** Straight Roller Assembly
- 05M09.02** Replacement Straight Roller
- 05M09.05** Camber Roller Assembly
- 05M09.06** Replacement Camber Roller
- 05M09.03** Skew Registration Jig
- 05M09.09** Veritas® Narrow-Blade Carrier
- 05M09.12** Mortise Chisel Adapter
- 50K09.01** Veritas® Bevel Gauge

veritas® Tools Inc.

814 Proctor Avenue	1090 Morrison Drive
Ogdensburg NY 13669-2205	Ottawa ON K2H 1C2
United States	Canada

customerservice@veritastools.com
www.veritastools.com