

Bevel-Up #1 Bench Plane

U.S. Pat. No. 7,603,783

The Veritas® Bevel-Up #1 Bench Plane has all the features of a standard smoothing plane. It can be used for small-scale work or for addressing small areas of difficult grain. What sets this one apart is its size, which also makes it an ideal plane for woodworkers with small hands. The bevel-up configuration lets you vary the cutting angle as needed by altering the blade bevel angle. A low cutting angle minimizes fiber tearing in end grain. Higher cutting angles are suited to smoothing.

The blade is bedded at 15°, which results in an effective cutting angle of 40° with the supplied 25° lapped blade. Blades are available in O1 tool steel hardened to Rc58-60, as well as in PM-V11®, our proprietary high-performance powdered metal alloy. Hardened to Rc60-63, our PM-V11 blades offer superior edge retention, even at bevel angles below 25°, while still being sharpenable with conventional abrasives.

The plane features an adjustable mouth that can be closed to a narrow slit for fine shavings with minimum tear-out or opened for heavier cuts. All of this can be done quickly and accurately with the toe locking knob and the unique mouth adjustment screw.

The plane body is fully stress-relieved, ductile iron. It is accurately machined and ground so that the sole is flat and the sides are square to the sole. The wooden front knob and rear handle provide a comfortable grip. The adjustment mechanism, with its combined feed and lateral adjustment knob, makes blade setting easy and accurate. The set screws on either side of the blade prevent it from shifting in use, but allow full lateral adjustment.

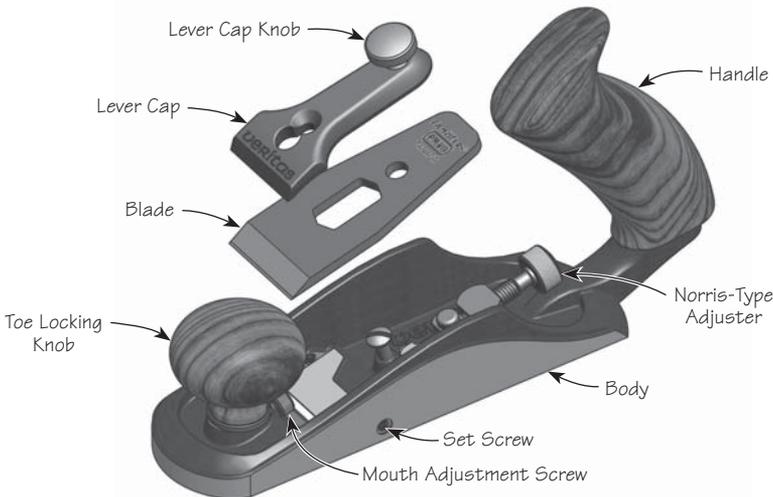


Figure 1: Plane components.

Adjusting the Blade Projection and Blade Skew



Caution: *Be aware that the blade is sharp; careless handling can result in serious injury.*

With the plane assembled, but the blade not cutting, loosen the lever cap knob. Place the plane on a board and slowly advance the blade by turning the adjuster knob clockwise (when viewed from the rear), and take a test cut. To retract the blade, turn the adjuster knob counterclockwise farther than required (to take up any slack in the adjuster), and then advance the blade to the new projection.

A skewed blade cuts more heavily on one side of the plane than the other. In a properly set plane, the cutting edge is parallel to the sole of the plane. If the shaving is not centered in the mouth, shift the adjuster knob (left or right) in the direction in which the shaving is thickest. Close the mouth until it is approximately $\frac{1}{32}$ " (0.8 mm) wide. Continue to advance the blade until it is taking shavings as required by the work.

To prevent the blade from shifting sideways, adjust the set screws on either side of the mouth until they just touch the blade, not to clamp it, but to create a guide.

Blade Clamping

Tighten the lever cap knob to clamp the blade in position.

Two Cautionary Notes

1. The lever cap knob has tremendous mechanical advantage. For normal use, it needs to be tightened only a quarter turn after full engagement with the blade. **Never torque it down as hard as you can or you may damage the plane.**
2. Before advancing the blade at any time, check the mouth opening to be sure you don't run the blade against the adjustable toe. It is a simple matter to close the mouth to the desired opening **after** you have reached the right blade projection. Better to dull the blade in use than when adjusting it.

Backlash and How to Avoid It

To eliminate the possibility of the blade shifting backward unpredictably as the backlash is taken up, the final setting should always be made with the blade being advanced by the clockwise movement of the adjuster knob. If you need to retract the blade slightly, retract it more than required, and finish by **advancing** it to its desired position. This takes up all the play in the forward direction, resisting the backward forces experienced by the blade.

Mouth Adjustment

The movable toe enables you to quickly and accurately set the mouth opening between the blade and the toe to suit the task. Generally, you will want a mouth as small as will allow the shaving to escape. A tight mouth supports the wood ahead of the blade, preventing tear-out.

The mouth adjustment screw can be used to limit the rearward motion of the toe, allowing you to open the mouth to remove wood chips and then return the toe exactly to where it was. It also ensures that you cannot inadvertently slide the toe backwards so that it contacts, and possibly damages, the blade.

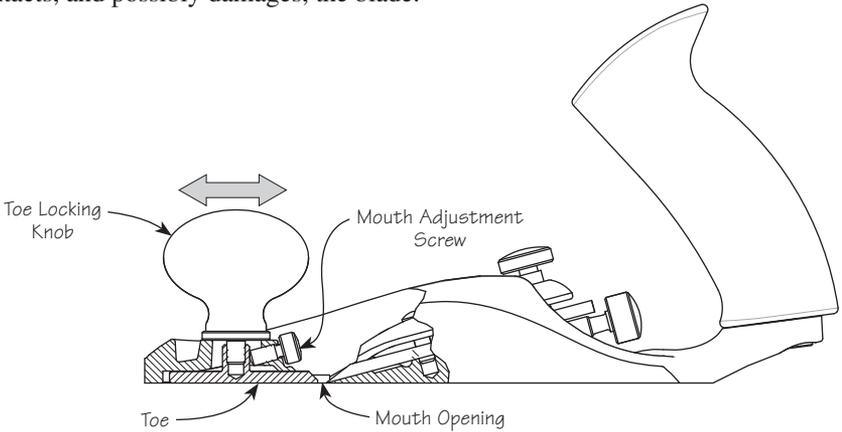


Figure 2: Mouth adjustment.

Blade Sharpening

The 25° bevel blade is ideal for fine trimming work on end-grain softwood and some hardwoods. Ring-porous hardwoods such as oak may require a 30° bevel to prevent blade edge failure. Simply hone the micro-bevel to the required angle.

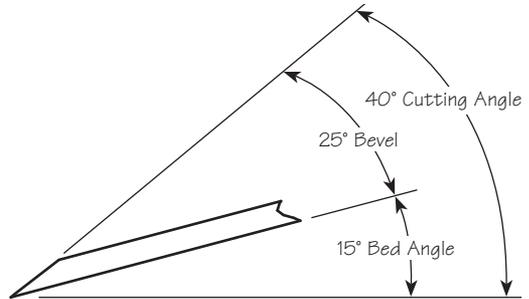


Figure 3: 25° blade geometry.

It is difficult to be definitive about bevel angles. Some people never skew a plane in use; other people always skew it. If you normally use a plane in a skewed position, you can get away with lower bevel angles. If you are always working clear pine, you can get away with very low bevel angles. Only you know which wood you will be working and how you will be working it. Experience will tell you what you can and cannot do.

High-Angle Smoothing

A high-angle blade enables a bevel-up plane to excel at smoothing woods with varying grain.

A 35° blade yields an effective cutting angle of 50° (commonly known as a York pitch) and is an excellent blade for general smoothing. Higher cutting angles require greater force to push the plane, making this bevel an ideal starting point (a balance of performance and effort) when working difficult wood.

A 45° blade is for smoothing woods with widely varying or reversing grain (e.g., bird's-eye maple) where tear-out is difficult to control. The resulting cutting angle of 60° produces what is known as a Type II chip (or shaving), one created by wood failure right at the cutting edge, eliminating tear-out on even the most difficult grain patterns. Planing wood at this cutting angle will give you a bit of a workout – but the results are well worth it.

Note: You can convert a 25° blade to a high-angle blade by simply changing the micro-bevel; however, changing back to 25° requires substantially more work due to the amount of blade material that must be removed. If you plan on using this plane for various applications, having multiple blades with different bevel angles gives you the option of quickly changing the cutting angle without having to rework the blade.

You can sharpen the blade as you would any other blade; however, a honing guide will greatly ease the task of accurately setting primary and micro-bevel angles.

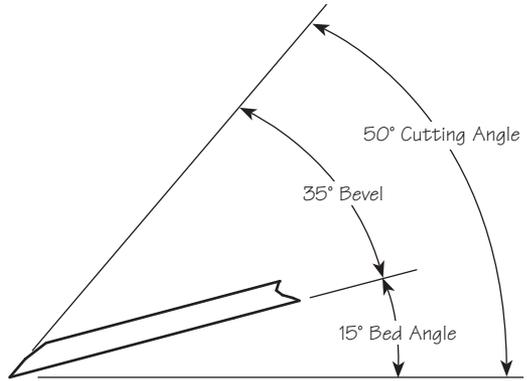


Figure 4: 35° blade geometry.

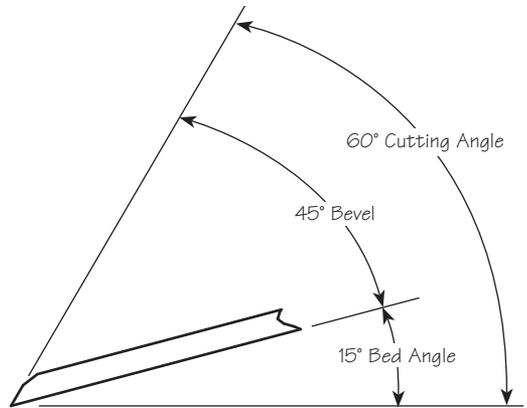


Figure 5: 45° blade geometry.

Care and Maintenance

The body of the bevel-up #1 bench plane is ductile iron and comes treated with rust preventative. Remove this using a rag dampened with mineral spirits. Clean all machined surfaces, including the area under the nose and the toe itself.

We recommend that you initially, then periodically, apply a light coat of silicone-free paste wax to seal out moisture and prevent rusting (as well as act as a lubricant for smoother planing). Wipe off any wood dust from the surfaces that you will be waxing, apply a light wax coating, let dry, then buff with a clean soft cloth. At the same time, the solvents in the wax will remove any harmful oils left from your fingers that can lead to corrosion.

If storage conditions are damp or humid, the plane should, in addition to the treatment outlined above, be wrapped in a cloth or stored in a plane sack. This precaution will also guard against dings and scratches.

Accessories

05P57.72 PM-V11® Blade

05P57.52 O1 Blade