Woodsmith PLANS

TUNING UP A BLOCK PLANE

TOTAL SUCCESS SHOP TESTED GUARANTEED

TUNING UP A BLOCK PLANE

▲ *Setting a file in a scrap with a 45° saw kerf makes it easy to create a uniform chamfer on the bottom edges of the plane.*

Whether I'm fitting a drawer, trimming a small part, or shaping the edge of a workpiece, I use my block plane on almost every project I build.

But even though my block plane is a precision tool now, it didn't start out that way.

When I first took it out of the box, the cast iron body felt rough and gritty in my hand. And the adjustments on the plane were either too stiff or too loose. Even after fiddling with them, I still wasn't satisfied with the quality of cut.

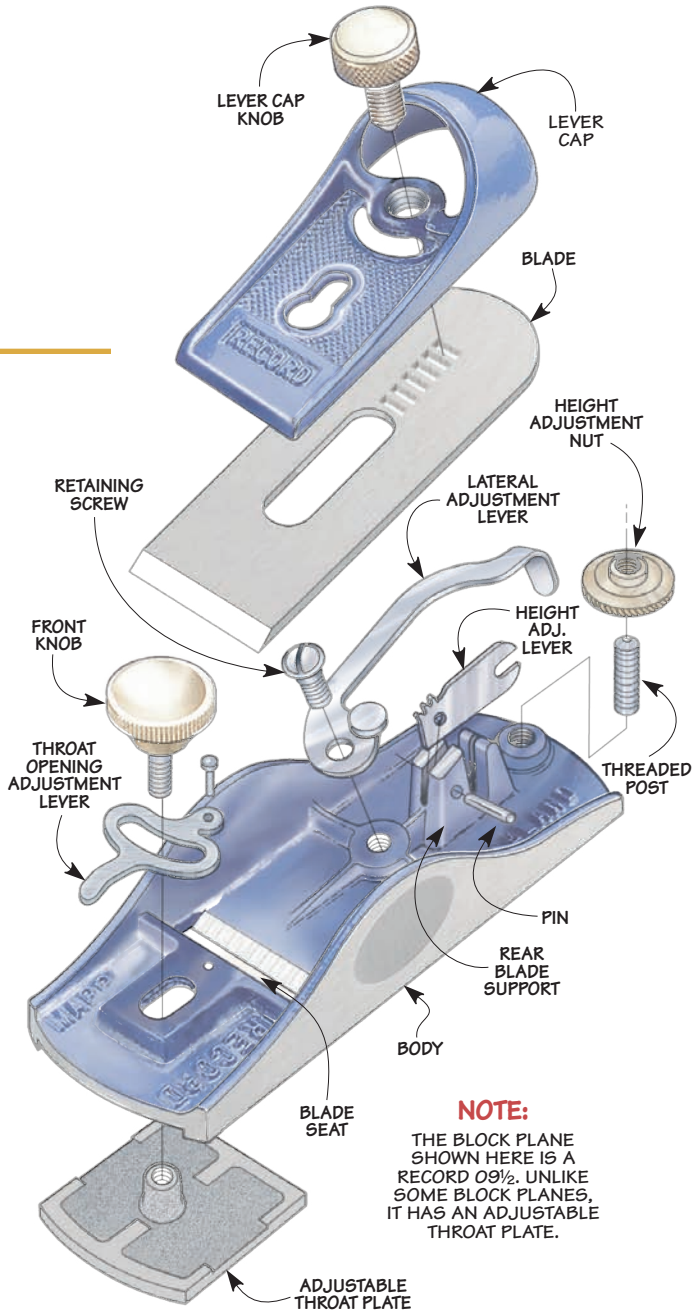
Fortunately, there wasn't anything wrong with the plane. All it really needed was a tune-up.

FLATTEN THE SOLE

The first thing that needed attention was the sole (bottom) of the plane. Although it had been machined at the factory, it wasn't perfectly flat.

Why do you want the sole to be flat? Because if there's a slight hump, it will prevent the cutting edge of the blade from making full contact with the workpiece. And if there's a "dished out" area, it's just about impossible to plane a surface flat.

REFERENCE SURFACE. Before you can check whether the sole is flat, you need to have a flat surface as a reference. This doesn't have to be anything fancy. A piece of ¼"-thick glass works fine. Setting the glass on a scrap with a cleat at each end will prevent the glass from sliding.



NOTE:
THE BLOCK PLANE SHOWN HERE IS A RECORD 09½. UNLIKE SOME BLOCK PLANES, IT HAS AN ADJUSTABLE THROAT PLATE.

FLATTENING THE SOLE

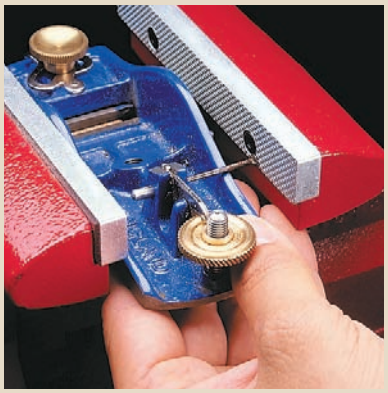
1 *Using a permanent marker, draw a squiggly line across the sole of the block plane.*

2 *Sand the sole on 220-grit silicon carbide paper that's taped to a piece of glass.*

3 *Remaining dark lines indicate low areas. Keep sanding until the marks disappear.*

CHECKING THE HEIGHT ADJUSTMENT

1 *A loose fit between the height adjustment lever and nut results in a sloppy adjustment.*



2 *To improve the fit, use a nail and a vise to press out the pin that holds the lever in place.*

3 *Then, lightly squeeze the ears of the lever until it fits closely around the adjustment nut.*

To check the sole, start by drawing a line across it (Step 1 on page 1). Then slide the plane across a piece of silicon carbide sandpaper (Step 2). After a few strokes, check your progress. Any low spots will show up as dark lines (Step 3).

The idea is to continue sanding until the lines disappear. Then you'll need to polish the sole on progressively finer grits of silicon carbide sandpaper (up to 400-grit). Lubricating the sandpaper with oil will carry away the metal "dust."

Note: Sand the sole with the blade installed (make sure it's retracted). This will "stress" the body of the plane like it is in use.

CHAMFER EDGES. Once the sole is flat, the bottom edges of the plane may be sharp. So to avoid accidentally scratching the surface of a workpiece, file a small chamfer on these edges, as shown in the left margin on the previous page. While I'm at it, I run a hand-held file across the top edges of each side to provide a comfortable grip.

THROAT PLATE. If your plane has an adjustable throat plate, it's also a good idea to see if it operates smoothly. Occasionally, there's a small burr on the edge which will make it stick. But a few strokes on a piece of sandpaper is a quick fix, as you can see in the margin at right.

HEIGHT ADJUSTMENT

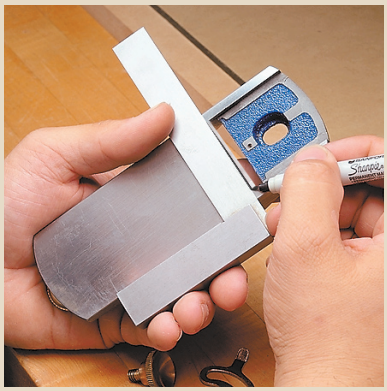
Another thing to check is the adjustment that allows you to raise and lower the blade. Basically, it consists of two parts: a short lever with a C-shaped opening and an adjustment nut that travels up and down on a threaded post. As you turn the nut, it pivots the lever up and down, which raises or lowers the blade.

But sometimes the blade won't move right away when you turn the nut. Instead, there's a dead zone where you turn the nut and nothing happens. That can be caused by a gap between the "ears" of the lever and the nut (Step 1 above).

To fix this, take out the pin that holds the lever in place (Step 2), and press the ears together until the lever fits closely around the nut (Step 3).

▲ *To allow the throat plate to slide smoothly, sand each edge lightly on a piece of sandpaper.*

SQUARING UP THE THROAT OPENING



1 *Use a fine-tipped marker to square a line behind the back edge of the throat opening.*

2 *Tighten the plane in a vise and use a file to remove material up to the line.*

THROAT OPENING

At this point, you can turn your attention to the throat opening — where the blade extends through the sole of the plane.

To produce a consistent cut all the way across the width of the blade, the back edge of this opening needs to be square to the sides of the plane.

MARK & FILE. You can square up the opening by marking a line in back of it (Step 1 at left) and making a few light passes with a file (Step 2).

BLADE SEAT

One part of a block plane that's easy to overlook is the blade seat. This is the angled platform inside the body that supports the blade. To eliminate any "chatter," it's important for the blade to sit flat against the blade seat.

But in a brand new plane, you may find that it's rough and covered with paint. As a result, the blade can't sit flat. The solution is to file the blade seat so it's smooth and flat (Step 1 at right).

REST. To hold the file at a consistent angle as you're working, use the rear blade support as a "rest." Then make several long strokes across the blade seat and the rear blade support. Make sure you remove the same amount of material all across the blade seat.

To check for this, hold the plane and look into the throat opening. Tilt the plane back and forth until the light catches the edge of the throat opening (Step 2). The reflection of the light should reveal a consistent thickness all the way across.

SMOOTHING THE BLADE SEAT

1 *Use a file to make long, smooth strokes across the blade seat and rear blade support.*

2 *Check that the front edge of the blade seat is a consistent thickness all the way across.*

LEVER CAP

Once the blade seat is nice and flat, you still need a way to hold the blade tightly against it. That's the job of the lever cap.

To apply pressure evenly across the entire width of the blade, the nose has to be smooth and flat on the bottom. But here again, a rough casting or uneven paint job will prevent the lever cap from fitting tight against the blade.

A little sanding is all it takes to get the nose of the lever cap flat and smooth (Step 1 below). You'll know when you're done by the consistent pattern of scratches (Step 2).

THE KEYHOLE

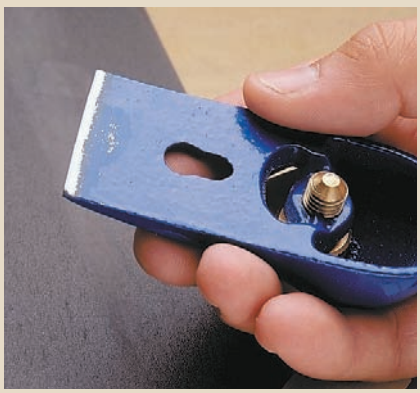
After sanding, the last thing you'll need to do to the lever cap is countersink the keyhole-shaped opening for the screw that secures the lever cap to the body of the plane.

The reason for this is simple. When I put my plane away, I always retract the blade. This means I have to loosen the knob that holds the lever cap in place. The problem is that when I tilt the plane to the side to check the blade, the keyhole slides over the screw and the lever cap falls off.

COUNTERSINK. An easy way to prevent this is to drill a countersink in the small opening in the keyhole (Step 1 at top of page 4). This will "seat" the head of the screw and hold the lever cap in place (Step 2).

SANDING THE LEVER CAP

1 *Raise the back end of the lever cap slightly, and sand the nose by making a few smooth strokes.*



2 *The nose of the lever cap should end up flat and smooth after sanding off any paint.*

SHARPENING THE BLADE

No matter how well you tune up the various parts of the plane, there's no way you'll be able to get a quality cut without one thing — a sharp blade.

There are a number of different ways you can go about this. But the silicon carbide sandpaper used for the body of the plane can put a razor sharp edge on the blade, as well.

THE EDGE. The thing to keep in mind as you're sharpening is that the edge is formed by the intersection of two surfaces — the back and the bevel. To get a sharp edge, the idea is to get each of these surfaces as smooth and flat as possible.

FLATTEN BACK. The first step is to flatten the back of the blade.

Although this requires a little elbow grease, the nice thing is you only need to do it one time. Once it's flat, you just need to concentrate on the bevel when you sharpen the blade.

Here again, it's important to work on a flat surface (I use a piece of glass). And as before, marking the back of the blade will help keep track of your progress.

To flatten the back, I start with a piece of 220-grit silicon carbide sandpaper and sand until the marks disappear, as shown in Step 1 below. At this point, the back is flat. But just being flat isn't enough.

That's because the coarse grit leaves a swirl of large scratches behind. And each scratch forms a tiny nick where it meets the cutting edge of the blade.

POLISH BACK. So in order to get the back as smooth as possible, I polish it with a progression of finer grits. I move on to 400-grit sandpaper next, and then follow it up with 800- and 1000-grit sandpaper.

While this produces a serviceable edge, I continue polishing with 1500- and 2000-grit paper to get a mirror smooth finish. (You can find extra-fine grits of paper at an auto body parts store.)

FLATTEN BEVEL. Once the back is flat, you're halfway to a sharp edge. Now just make the bevel as flat and smooth as the back.

CONSISTENT ANGLE. The secret to getting a smooth, flat bevel is to hold the blade at a consistent angle. To do this, I use a honing guide. Basically, this is a rolling clamp that holds the blade at the desired angle (Step 2).

When securing the blade in the honing guide, try to match the existing angle of the bevel. To do this, position the blade in the guide so the entire surface of the bevel lies flat on the glass.

Now it's just a matter of sanding the bevel. Once again, the idea is to proceed from a coarse to a fine grit. The trick is knowing where to start.

GRITS. This requires matching the grit to the condition of the bevel. If there's a nick in the edge, I'll start with 180-grit sandpaper. But for most work, this is too coarse. For example, a piece of 220-grit paper is fine for a new blade. But if you're just touching up an edge, you may want to start with 800-grit.

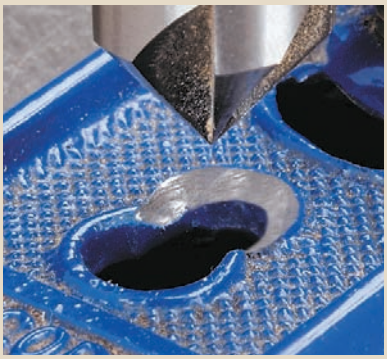
EVEN PRESSURE. Regardless of the grit, the key is to apply even pressure across the blade. The only exception is if the blade is out of square. In that case, you'll want to apply extra pressure on the high corner to square the blade as you sharpen.

BURR. As you work with each grit, a burr will start to form on the back side of the blade. Although you can't see it, you'll be able to feel the burr by running your finger up the back of the blade.

When you get a nice, even burr across the entire width of the blade, remove it by sanding both the back and the bevel (Step 3).

COUNTERSINK THE KEYHOLE

1 *With the lever cap against a fence clamped to the drill press table, countersink the key-*



2 *The countersink should be deep enough to seat the head of the retaining screw.*

SHARPENING THE BLADE

1 *Using oil as a lubricant, you can sand the back of the blade with a piece of silicon carbide paper.*

2 *By holding the blade at a consistent angle, a honing guide ensures that the bevel stays flat.*

3 *To remove a burr, alternately sand the bevel and the back with the final grit used to flatten the back.*