



GarrettWade

White Paper

Steel and Wooden Planes

In this age of power-driven tools, it's easy to forget how important hand planes are for fine woodworking. Not only can you usually do better and more careful work with a hand plane, but you can often work much more quickly, because of power tool set-up time.

Skill at hand planing is one of the most important abilities of any woodworking craftsman. Experience with hand planes will help you understand exactly what a power tool is doing when you use it for a particular job; an important and subtle appreciation, if one is to achieve consistently good results with power tools. A hand plane is also a far more forgiving tool; experienced woodworkers know that care sacrificed for speed ruins more otherwise good work than anything else.

General Tips

Here are a few hints about using any plane. First, keep the blade as sharp as possible. Bench stones and honing guides are excellent for this purpose. Secondly, with rare exception, plane *with* the grain. Look at the side of the stock to see at a glance which way the grain runs. If you don't work with the grain, you run the danger of catching the grain, lifting chips of wood, and producing a rough surface. Exceptions to this rule are discussed with the applicable plane.

When planing end grain, push the plane in one direction to the middle of the board only, then repeat this process going in the other direction. This prevents splitting the board at the edge.

Choosing a Plane

Until 30 or 40 years ago, a craftsman could literally get hundreds of types of planes. Even though that number has dwindled, the variety of planes available can still be confusing for the novice woodworker, and even sometimes for experienced craftsmen. Each plane is designed to excel at a specific type of job. For example, the scrub plane can rough out stock very rapidly. However, it certainly isn't necessary to have every type in your tool box. Here is a guide to what might be best for you.

First, all planes are divided into two groups: bench planes and specialty planes.

Bench Planes, whether steel or wooden, Japanese or Western, are characterized by wide blades and a large, flat sole. All bench planes are used two-handed. They are designed for flattening, smoothing, or leveling wide surfaces or long edges. They vary greatly in width, length, and weight. You should try to have at least a short, medium, and long bench plane in your shop.

An example of a Specialty Plane is a block plane, which is like a small bench plane in general shape, but is used one handed. Its specialty is general trimming (made possible by its small size) and cutting of end grain. It comes in several different styles, and one has a special low angle, to make end grain work more effective. Every shop should have at least one.

Next in specialty planes are the relatively long soled trimming planes. There are a large number of these, characterized by narrow

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blades extending the full width of the sole. Bullnose planes are the shortest version of this style, and shoulder planes are the longest. They are used for a multitude of purposes, and are extremely useful. We recommend having a minimum of two, of varying lengths and blade widths.

Rabbeting planes are also specialty planes, and resemble bench planes in general size, except they have a blade that covers the full width of the sole and may have a fence. We recommend purchasing this kind of plane as the need arises.

Spokeshaves are also specialty planes. There are two basic types—round face and flat face—as well as a number of special shapes. You should have at least one flat face spokeshave and one round faced spokeshave in your shop, or perhaps two round faced spokeshaves of varying radii. Purchase of the specialty spokeshaves can wait until you need them for a particular job.

Next are special function planes, like the side rabbet plane and the routers. These perform a particular shaping or trimming function that no other plane can, and are invaluable when you need them.

There are also miscellaneous small trimming planes, such as palm planes, and various brass planes. The variety is extensive, and you are likely to use them frequently for one job or another. We recommend having one or two in your shop.

Last but certainly not least, are the multi-cutter planes. These old-fashioned type planes had their heyday in moulding, edge decoration work, and joint making before the advent of the electric, high speed router. These are particularly expensive tools and are certainly not for everyone. However, for those who love to hear a plane iron sing as it cuts, these planes have a special value.

Care of Planes

By using a modest amount of common sense, your planes will last a lifetime (and more). Be careful not to drop a steel plane, as the casting may crack or break. Also, keep a light coating of oil on the unplated surfaces, to prevent rust spots and stains (from the natural acids on your hands). In general, try to avoid denting the soles of your wooden planes; however, a minor dent or two over the lifetime of the plane will not affect its function.

If the sole of a wooden plane becomes slightly warped due to occasional humidity changes, don't be alarmed; simply reflatten it by taking a few very light passes over your jointer. However, if you live in a climate where there are regular extremes of humidity, we recommend storing your wooden planes in a closed container with a desiccant, to keep the humidity stable. This will help keep the plane body from continuously changing shape.

Sharpening Plane Irons

There are two steps to putting a proper edge on any plane iron: grinding (shaping) the edge and honing. Grinding may be required when the edge has developed a nick or become thick due to frequent honing, or when the bevel has become rounded due to rocking on the oilstone. To avoid drawing the temper out of the edge by excessive heat buildup when grinding, it's best to use a variable speed grinder and cool running aluminum oxide wheels (white and pink).

The corner edge for a bench plane, when used for rough coarse work, can be rounded slightly by 1/64" to 1/32". For more general work, a square edge with the sharpness just very gently off on the corners is preferred. For jointing, the entire edge must be absolutely square.

Approach the grindstone with the edge radially. Using a gentle pressure, pass the edge back and forth across the face of the stone. After you have shaped the edge, grind the bevel to 25 degrees. A bevel of slightly less than 25 degrees may be used, but only for soft woods. Again, work back and forth, using even pressure along the blade. The bevel must be ground absolutely flat (a slight concavity produced by the grindstone is fine).

After you have finished grinding, you must hone the edge. The edge produced by a grindstone, although properly shaped, will be too crude for fine work. You will probably hone the edge many times before it becomes necessary to grind it again.

It's a good idea to clean the stone first with a few drops of oil and a clean cloth or, if it is a waterstone, to wash it off with clean

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water. Then, after putting more oil or water on the stone, place the bevel flat on the stone and raise the blade slightly, so that only the cutting edge is resting on the stone. Do not allow the blade to rock, as this will produce a rounded bevel which will not cut well.

As you hone this way, you will gradually produce a secondary bevel (note: some craftsmen prefer to hone the entire bevel, and therefore work only with one bevel, not two). Gradually, a wire edge will be produced. To remove this edge, turn the blade over and, laying the other side down absolutely flat, draw the blade across the stone to remove the wire edge. Repeat this procedure until finished. A final touch can be put on with a strop.

The goodness of the edge will depend on the accuracy with which you have kept the bevel and the back face absolutely flat, the sharpness of the angle at which these two faces meet, and the degree of polish you have put on the edge with the stone.

Steel versus Wooden Planes

The question of which type of plane—steel or wooden—is best has no correct answer, unless you are a devotee of Japanese planes. It really is a matter of taste and budget, as each type will do its job as well as the next. However, the variety of steel planes is much greater.

Wooden vs Steel Body Planes

In Colonial days, the standard plane used by cabinet makers and carpenters alike had a wooden body. A fully equipped workshop might have as many as thirty or forty—one for every shape needed. A wood block wedged into the body of the plane was used to hold the steel cutting blade in place. In the United States, we have grown accustomed to using the Bailey-type steel body plane (invented, of course, by a Mr. Bailey), since its knurled knob blade adjuster is easier to use than the wood wedge.

However, the advantages of wooden planes are many. The wood sole will not mar the work surface, and the wood-to-wood contact between the sole and the stock lets the plane slide more easily than with a steel-bodied plane. Also, because a wooden plane is lighter than a comparable steel plane, it is less fatiguing to use.

Note on Plane Blade Angles

The working angle of the blade to the wood surface is crucial to its function. Except when cutting end grain, a higher angle will allow a smaller chip and a smoother cut, especially in hard woods. In general, most steel bench planes are made with a general purpose 45 degree angle. Trimming and block planes vary from this.

The Use of Bench Planes

Of all the bench planes, the Jack Plane is usually the first to be used – for preliminary cleaning up and squaring of stock, and accurate truing of short edges. For truing long edges, the Jointer (or trying) plane is used. The Smooth plane is used for final smoothing on flat surfaces of any roughness after a jack plane has been used, and after gluing.

The most common fault when using bench planes is dipping. For accurate results, it is critical to avoid this. Just pay attention to these two simple rules:

- 1—At the beginning of each stroke, put slightly more pressure on the front of the plane.
- 2—At the end of each stroke, keep slightly more pressure on the back end of the plane.