



GarrettWade

White Paper

Japanese Tools

Overview

Over the last few years, there has been increasing interest in the traditional tools of the Japanese woodworker. This may be the result of curiosity about things that are different or new, but it is also at least partly related to a general sense that the overall quality of many Western tools has been in decline for some time, in part because of mass production, as well as the high cost of a final hand fitting.

The Japanese consumer, on the other hand, demands an exceptionally high level of quality, and tends to patronize smaller workshops, each presided over by a master craftsman assisted by journeymen and apprentices. It is the embodiment of a culture in which tradition, and the experience of elder craftsmen, are held in the highest regard. Woodworking itself, whether it involves house or room construction, or the building of interior fittings and furnishings, occupies a more important place in the Japanese economy and society than in most Western countries.

The apprenticeship period for a Japanese woodworker being trained in traditional skills is still very much ingrained in the culture. During this period an apprentice learns that he should not use a tool of very high quality until he is worthy of it. Respect for the tool, and a true understanding of how it functions, are considered critical. The Japanese woodworker must be able to work both skillfully and quickly. He may have all the ability in the world, but if he cannot work rapidly and to a high standard, he will not be considered a craftsman.

Tools

The design of Japanese tools has evolved from centuries of use and tradition. The laminated construction of chisels and plane blades essentially evolved from Japanese sword making techniques, and the best Japanese edge tools are still made this way, despite the cost and complexity of this method. Although it may seem surprising that this kind of production technology can be profitable, the top quality hand tool industry in Japan is still essentially a cottage industry, dominated by many small family companies.

Japanese tools are identical in function to their Western counterparts. This is an important point. A chisel is, after all, a chisel—a good, well sharpened piece of steel that cuts wood. Yet their form is different, and their differences in form are ones whose roots are both cultural and technical. By design, Japanese tools are highly functional, lightweight and, above all, tuned by the individual craftsman to his style and particular needs.

The blades themselves are often somewhat heavier than their Western counterparts, and are made with a laminated construction. The backs and edges are a thin, extremely hard layer of steel, and the upper supporting surface is a softer, more resilient steel. The result is a highly durable tool that will take an exceedingly sharp edge and hold it.

Perhaps the most unique feature of the Japanese blade is its intentionally concave back. Blades are made this way to facilitate

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flattening the back and bringing the outer edges into exactly the same plane—an important step in achieving maximum performance.

Preparing Blades

Most Western chisel blades require additional honing to flatten their backs, which show irregularities from the manufacturing process. Japanese blades are actually designed for this honing step, rather than pretending the back is really flat.

The all important techniques of preparing the backs of chisels and plane blades, and in tapping out the hollow back when necessary, are discussed in *Fine Woodworking*, issues #20 and #29 (the latter is more thorough). Here is a brief outline of the steps you should take.

Using successively finer grits of grinding powder, with water as a lubricant, press the back firmly on the steel plate while rubbing it back and forth. As you work the chisel on the steel plate, the powder is crushed into finer particles; this slurry should be reused. By placing a wood block on top of the chisel, you can use both hands, making the work go faster. Considerable pressure can, and should, be used.

As you work, you will see the flat spots begin to appear as shiny wear areas on the edges of the chisel or plane blade. Your goal is to create an un-streaked, even, mirror finish along all the outside edges of the chisel or plane blade. Once this is prepared, the back will require little attention in the future. If there is a gap in the back along the cutting edge caused by the hollow, you should push it out, as discussed below, before grinding the back flat.

Once the back is prepared, you can move your attention to the bevel. If there is a line of the flat cutting edge all across the end, you need do no work on the bevel other than honing. If, however, there is a gap in the edge caused by the hollow surface, you must restore the edge by tapping down the grayish low carbon (soft) steel of the bevel, or by honing away more of the back. This process of tapping may take some practice before you can do it with skill and confidence.

The honing alternative must be used on the smaller width chisels, which is why they are thicker than Western style chisels. It can also be used on larger chisels and plane blades by those too hesitant to use the tapping technique. It does, however, wear the blade down faster.

Holding the back firmly against a solid surface (the edge of an anvil or large hard wood block), tap carefully (a special Japanese hammer is well suited for this) along a line parallel to the edge, 1/4 to 1/2" back from the cutting edge (further back is safer than closer). Use steady, firm taps, spaced evenly. You may need to repeat this process many times before you are satisfied with the results. Be careful, as an improper hit can damage the super hard cutting edge itself.

It is also worth noting that the hollow back design of Japanese chisels and plane blades is simply functional design carried to its logical conclusion—in other words, it is important that the back be made flat, and it is far easier to accomplish this objective if you only need to work on the edges.

For honing, the Japanese use water stones, which are unique in their fast cutting action and evenness of grit. The special bond holds the grit particles yet permits them to gradually break off and form a slurry of water and stone particles. Since it uses water as a lubricant, it is easier to clean up than the residue from oil stones, which often finds its way onto works in progress in the form of oily fingerprints. We have always preferred water stones. Their performance is exceptional, and they are a real pleasure to use.

Planes

Japanese plane blades are wedged shaped. New planes are typically fitted to the blade by the craftsman, eliminating the need for an additional wedge or complex adjustment mechanism. The Japanese craftsman tunes the bottom of the plane by scraping, using a series of hollows whose high points run across the width of the plane, and have exactly the same effect as a flat bottom plane, but with less friction.

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The methods of preparing the bottom of a Japanese plane and fitting the blade are complicated, but are fully discussed in Fine Woodworking issue 20.

Chisels

Most Japanese chisels sold in the USA are known as A-Grade chisels, and use the same type of blade as do the planes. They are held in their handles with a socket and tang arrangement. The tang is forged as a part of the blade, and a cone shaped ring is placed around the tang, with its narrow end at the shoulder of the chisel.

As the handle is inserted, the tang spreads the wood, while the socket ring compresses it. This makes for a very secure handle, with very little tendency to split. The top of the handle is encircled by a smooth steel ring whose inside is slightly curved. As the chisel is used, the ring is driven down and the wood mushrooms over the top, forming a cushion.

Saws

In contrast to Western saws, Japanese saws cut on the pull stroke, placing their fine hard steel in tension (stretching). This permits the use of a thinner, harder steel that produces thinner kerfs, a smoother cut, and better control, in addition to longer teeth and deeper chip channels. Because of their shape and construction, Japanese saws need to be sharpened with special files. In addition, care should be taken not to press on the push stroke, as you may inadvertently break a tooth. With care and a little practice, these saws will give you exceptional performance. We believe that this style of saw is preferable to the Western style that cuts on the push stroke.

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