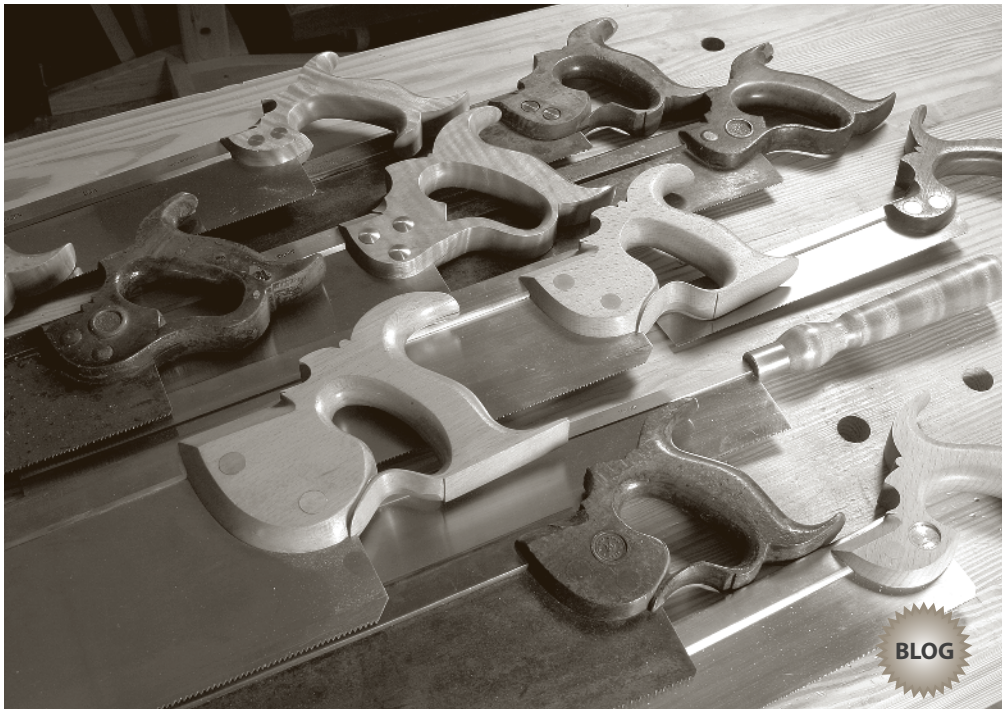
Understanding Western Backsaws

The Western backsaw has almost vanished. But a few toolmakers are trying to turn back the clock to when this saw was in every toolbox.



Western backsaws come in a dizzying array of sizes and tooth configurations. Add to that some confusing nomenclature (sash saw? carcase saw?) and it's no wonder people are confused. We help you choose the three backsaws you need for hand-cut joinery.

The backsaws that built nearly every piece of antique English and American furniture almost became extinct, thanks to the universal motor and the Japanese obsession with quality.

A basic kit of at least three backsaws – a dovetail, carcase and tenon saw – were in the toolbox of every English-speaking cabinetmaker and joiner in the 18th, 19th and early 20th centuries. But after World War II, the manufacturing of these venerable saws went into steep decline with the rise of inexpensive portable routers and saws that were powered by the compact and cheap universal motor.

Handsaw giants such as Disston and Atkins faltered. Their enormous factories were shuttered, and the remnants of these companies began churning out low-quality saws with chunky handles and poorly formed teeth.

But it wasn't portable power tools that delivered the coup de grace to Western handsaws. That occurred at the hands of Japanese sawmakers. As Western saws became worse, the high-quality Japanese saw became more attractive to the woodworker who still needed a backsaw or two for joinery.

Thanks to Japan's thriving carpentry trade that still requires handwork (a result of their traditional timber-frame construction), outstanding manufacturing acumen and a general respect for traditional ways, Japanese saws were inexpensive and worked extremely well.

This was the opposite of the pricey and snaggle-toothed Western saw, which barely cut wood. And so the Japanese saw – which was once the laughingstock in the West as the tool that cut backward – became the best-selling style of saw in North America in less than a generation. And it is, by far, the dominant form today.

Two Guys Revive a Dead Patient

And if it weren't for two tool collectors, that might have been the final word: Either buy antique Western saws or new Japanese ones. But thanks to Pete Taran and Patrick Leach, the Western saw is today experiencing a revival. The two men had technical backgrounds in engineering and software, but that didn't stop them from becoming sawmakers in 1996. They founded Independence Tool and started making a maple-handled dovetail saw based on an early 19th-century example.

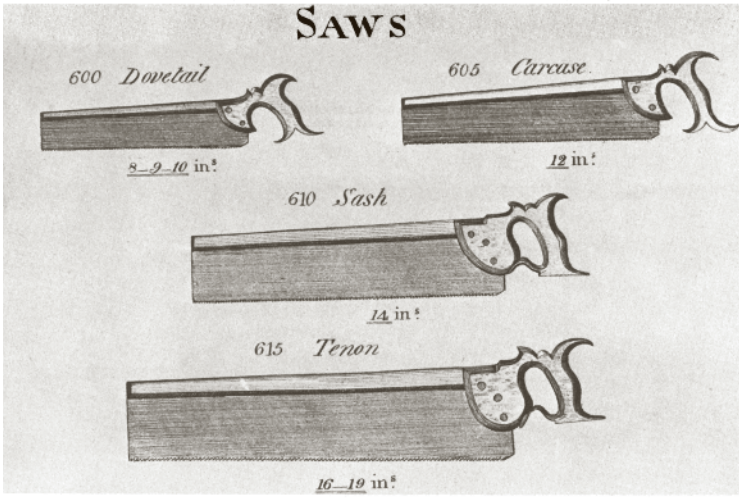
The saw, which was made with an incredible amount of handwork, became a cult classic among woodworkers on the Internet, and the saw began appearing in tool catalogs alongside the pages and pages of Japanese saws.

The Independence saw itself was a technical success. I've inspected and used pristine examples of these saws and I can personally attest that they were a revelation when compared to the chunky, lifeless and dull Western backsaws I used in my first woodworking class.

But the company was short-lived. Leach left Independence Tool and went on to become a full-time tool dealer (his site is supertool.com), and Taran announced in 1998 that he wasn't able to do his day job and still make saws at night. It looked like quality Western backsaws were about to disappear off the market again.

But then Taran sold Independence Tool to Lie-Nielsen Toolworks, which was cranking up its production of handplanes but wasn't yet making saws. (Taran isn't entirely out of the saw business. He now sells restored antique saws at vintagesaws.com as a side job.) Shortly after the sale, Lie-Nielsen began offering a dovetail saw – branded with both the Independence and Lie-Nielsen names – and then the company began selling other patterns of Western saws.

Recently, others makers have entered the Western saw market, including Adria Tools, Wenzloff & Sons, Gramercy Tools and a host of other small makers. And while these companies are making just a dent in the market share commanded by the Japanese sawmakers, it is now possible to purchase an entire kit of quality Western backsaws that work right out of the box. And that is a milestone.



One of the earliest tool catalogs we have, "Smith's Key," shows the four types of backsaws available in 1816 from makers in Sheffield, England. Note how this tool catalog shows the blades as tapered – they are narrower at the toe than at the heel. There's a likely reason for that.

The saw on the bottom is a typical pistol-grip dovetail saw from sawmaker Mike Wenzloff of Wenzloff & Sons. Also shown (at top) is a straight-handled dovetail saw known as a gent's saw, so named (we're told) because it was used by gentlemen hobbyist woodworkers in the 19th century.

Why Use Western Handsaws?

If you do the math, mass-produced high-quality Japanese saws are a bargain. You can buy a Japanese dovetail saw for $35 that works just as well as a $125 Western-style dovetail saw. Plus, the consensus among many craftsmen and woodworking magazines is that the Japanese saws are easier to start and cut smoother.

So why would anyone (with the exception of a historical re-enactor or pigheaded purist) buy an expensive Western saw? The differences between the two tools are more extensive than the fact that one cuts on the pull stroke and the other cuts on the push. The sawplate on Japanese saws is thinner. Japanese teeth are more complex and longer. And sharpening Japanese teeth yourself can be difficult or impossible, depending on the saw.

As a result of these differences, Japanese saws are easier to kink and ruin, especially in unskilled hands. The teeth can break off in some hard Western-hemisphere woods – I've had particular problems in ring-porous species such as white oak. The expensive Japanese saws need to be sent to a specialist for resharpening (sometimes this specialist is in Japan). The inexpensive saws have impulse-hardened teeth, which makes them last a long time but also makes them impossible to refile. The teeth are as hard as a file, so a saw-sharpening file cannot abrade them. This makes the saws somewhat disposable – though you can cut up the sawplates, discard the super-hard teeth and make some thin scrapers with the steel.

In contrast to Japanese saws, Western saws have robust teeth. When I tally the tooth-decay problems I've had with saws, I've probably lost 20 teeth in Japanese saws but have yet to chip a tooth on a Western saw. You can resharpen Western teeth yourself, or get the job done domestically. Any Western saw can last for generations.

For some woodworkers, the above reasons are a compelling reason to use Western saws. If you are one of those, read on. If you still prefer Japanese saws and want to learn more about using them for joinery, I recommend you get your hands on the immensely readable "Japanese Tools: Their Tradition, Spirit and Use" (Linden) by Toshio Odate.

Four Western Backsaws

The backsaws shown in this article are particular to the English-speaking world for the most part. Traditional European woodworkers still use frame saws, where a thin sawblade is held in tension in a wooden frame, though other saw forms are available and used on the Continent.

Western backsaws are typically separated into four forms, and their details (blade length, number of teeth etc.) are usually traced back to Edward H. Knight's 1876 opus "American Mechanical Dictionary." But some modern woodworkers are confused about which of these four saws they need in their shop, so here is a discussion of each saw, its details and the operations that it excels at.

The Dovetail Saw

The most familiar saw to modern eyes, the dovetail saw is the smallest backsaw and has a blade that is 6" to 10" long. The blade's width is between 1½" and 2". It can have a pistol-grip or a straight handle. Most beginners seem to prefer the pistol grip because it whispers to your body when the blade is straight up and down. However, using a straight-handled "gent's saw" isn't difficult. It just takes a little more getting used to.

"If not for the sea,
we'd have to carry our boats".

— Norwegian saying

The teeth of a dovetail saw are quite fine, between 14 and 18 points per inch (ppi) is typical. However I've seen dovetail saws with as many as 23 ppi.

Most woodworkers prefer the teeth filed for a rip cut – a rip tooth has its cutting face filed so it is 90° (or nearly so) to the sides of the tooth.

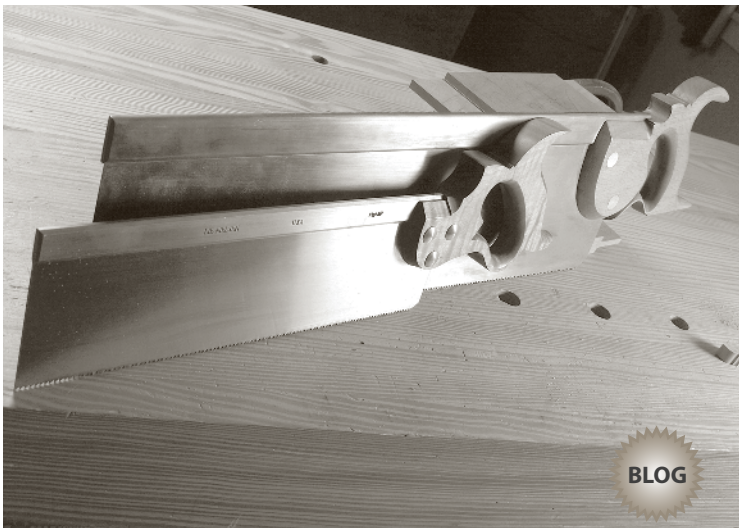
Recently, Lie-Nielsen Toolworks has begun making a dovetail saw with what is called "progressive pitch." At its toe, the saw has 16 ppi. Each tooth gets bigger and bigger until the saw has 9 ppi at the heel. The fine teeth make the tool easy to start and the coarse teeth at the heel make it cut fast. The resulting finish is remarkably smooth and after using this saw for a couple years, I have become quite fond of it.

The number of teeth on your dovetail saw should relate to what kind of job you use that saw for. When you have fewer teeth, the saw will cut faster but coarser. The speed comes from the fact that fewer teeth equals deeper "gullets," which is the space between each tooth. When gullets fill up with waste, the saw stops cutting until the sawdust is removed as the tooth exits the work.

So a fine-tooth saw works well for small work in thin material, such as ½"-thick drawer sides. A coarse dovetail saw works better when sawing carcase dovetails in ¾" stock or thicker. You don't have to have two dovetail saws, however. I'd just pick a saw that reflects the work you do most of the time.

Speaking of pushing your tool into unfamiliar territory, many woodworkers end up using their dovetail saw for other chores, including some crosscutting. You can get away with this many times because the teeth of the saw are so fine.

A classic vintage carcase saw from Wheeler, Madden & Clemson. This saw is 14" long and has 12 ppi. The carcase saw is used for almost all joinery cross-cuts when building furniture.



These two saws are so different in size that it's hard to believe that they both are called tenon saws. The big saw is a much older (and almost extinct) form.

However, your cut will be more ragged than if you used the correct tool: the carcase saw.

The Carcase Saw

By far, the most-used saw in my shop is my carcase saw. This saw is so named because it is useful for many operations in building a furniture carcase. A Western carcase saw always has a pistol grip, though ancient versions might have looked more like a chef's knife with a straight handle and no back.

The blade of a carcase saw is 10" to 14" long and 2" to 3" wide. It typically has 12 to 14 ppi, and the saw teeth are sharpened to make crosscuts. A crosscut tooth looks different than a rip tooth in that its cutting surface is at a 15° to 24° angle to the sides – 20° is typical. This angle is called "fleam" and it allows the tooth to sever the grain like a knife, reducing the raggedness that would be left behind by a rip tooth.

I haven't found the number of teeth in a carcase saw to be as critical as it is with the other forms of saws. A 12-point saw and a 14-point saw cut plenty fast enough for most operations, and they both leave an acceptable surface behind.

The difference I think you should pay attention to is the length of the blade. In general, longer saws tend to saw straighter, so I avoid saws that are 10" long. Getting an 11" saw makes a difference. A 14"-long saw even more so.

Keep in mind that a saw doesn't have to be labeled a carcase saw to be a carcase saw. There is some overlap in the saw forms. Pay attention to the specs of a saw in a catalog or in the store. A saw that is 14" long and filed crosscut with 12-14 ppi is a carcase saw, no matter what the tool seller might label it.

Carcase saws are the jack plane of the backsaw family. They get used for everything, from cutting tenon shoulders to trimming through-tenons to notching out corners to cutting miters. I use them for cutting door rails and stiles to length when working by hand – pretty much any precision crosscut that is on a board that is less than 6" wide. Plus, almost every time I reach for my carcase saw I'm also reaching for my bench hook.

Tenon Saws

When you start wading into tenon saws, it can get confusing. Knight's dictionary says a tenon saw should be 16" to 20" long (that's huge) and 3½" to 4½" wide (also huge). Tenon saws should have about 10 ppi.

Modern tenon saws are not nearly this big.

These ancient giant tenon saws have nearly disappeared, except in vintage tool collections and from one lone maker, Wenzloff & Sons. I purchased one of these old-school tenon saws and was surprised (strike that, amazed) at how easy it is to use, even when cutting tenons that were dwarfed by the saw's blade.

The long blade definitely helps the saw track a line straighter and work quickly – a 1¼" tenon cheek can be sawn down one side in six to seven long strokes. And the extra weight of the saw allowed the tool to supply all the downward force necessary when sawing.

The saw's size does intimidate some woodworkers and they worry that they will tip the tool too much as they begin the cut. However, if you use a second-class sawcut (see "How to Saw" on page 14 in this issue) then starting the saw isn't much of a challenge.

"In 20 years on this mountain, I've never been cheated by a hoe."

— Stonehouse (Shan shi)
poet

Some fellow woodworkers have also fronted the theory that this big saw was intended more for cutting the tenons to entryway and passage doors – not for furniture. Perhaps. But I have a couple great old photos that show some real old-timers sawing out huge tenon cheeks. They're using a big 26" rip saw. Wow.

I do have one caution if you choose to get a large tenon saw: The sawplate is more fragile than on other Western backsaws. Historically, the sawplate on a tenon saw is quite thin, and because of this vast acreage of thin metal and the fact that the brass back is so far away from the toothline, there is the danger of the saw bending if it is misused. I'm not saying you need to use your tool gingerly. I just don't know if lending it to your neighbor or teenager is a good idea.

No matter what size tenon saw you choose, the teeth should be filed for a rip cut. Tenon saws

Supplies

Adria Woodworking Tools
604-710-5748 or adriatools.com

Gramercy Tools
From Tools for Working Wood
800-426-4613 or
toolsforworkingwood.com

Lie-Nielsen Toolworks
800-327-2520 or lie-nielsen.com

Wenzloff & Sons Saw Makers
503-359-4191 or wenzloffandsons.com

Nice saws, but what are they good for? Sash saws are a bit of a mystery to modern woodworkers. Were they undersized tenon saws or oversized carcase saws? Or both?

are used to cut the cheeks of tenons, which is a rip cut. The carcase saw handles the shoulder cut, which is a crosscut. I also use my tenon saw for other sizable rip cuts, such as when defining the top of a cabriole leg – the square part that attaches to the table's apron. I also use it for laying a kerf down a tenon to accept wedges (a dovetail saw is slow and makes too small a kerf in most cases).

But if you don't think the ancient tenon saw is for you, then you should do what most woodworkers do and buy a true sash saw.

Sash Saws

If you think tenon saws are confusing, you haven't gotten into a discussion on sash saws. Their name suggests that they were used for cutting the joinery for window sashes, yet they show up in tool catalogs and inventories of people who built fine furniture. And there is no consensus among tool scholars as to whether they were filed rip or crosscut or both.

So what is a sash saw? Knight's dictionary says that a sash saw has a blade that's 14" to 16" long and 2½" to 3½" wide. The sash saw has 11 ppi. Those specifications look a lot like what we moderns would call a tenon saw.

To see if I could learn anything about the sash saw by using it, I bought two sash saws that were made to Knight's general specifications, one filed crosscut and the other rip. After a couple years of use I found that the crosscut sash saw was effortlessly doing all the jobs of my carcase saw, and the rip-tooth sash saw had somehow become my daily tenon saw.

This makes sense because the sash saw's specifications overlap with both the carcase and tenon saws, according to Knight's dictionary. What became clear to me in the end is that you might not need a sash saw if you already have a tenon saw and a carcase saw.

Your Basic Saw Kit

I think that most woodworkers who want to use Western handsaws can do all the common operations with three backsaws: A dovetail saw, a large backsaw that's filed crosscut (either a sash or a carcase saw), and a large backsaw that's filed rip (either a sash or a tenon saw). Exactly which saw you need depends on the size of your work and the characteristics of your body. Do you have large hands? Then you should try a tenon saw. Do you build jewelry boxes? Then you should select a fine-tooth dovetail saw.

Once you pick your three saws, I recommend that you stick with that set for a couple years before you get disgruntled and start test-driving other saws. Sawing (like sharpening) is a skill that develops over months and months. And one of the critical parts of learning to saw is getting comfortable with your saws. You need to understand – by instinct – how wide each saw's kerf is, and how fast each saw cuts.

Many woodworkers find that certain forms of saws speak to them when they use them. I've let more than 100 students use my saws and find that to be true. Certain people gravitate to certain forms of saws. A few people end up purchasing all the forms. But one thing is certain: After using a sharp well-made Western saw, almost none of them go back to their Japanese saws. WM

— Christopher Schwarz

Halfback Saws: A Jack of All Trades or a Half-baked Idea?

Recently some woodworkers (myself included) have become interested in halfback saws, a rare form of saw that was made by several sawmakers, including Disston, which made the saw between 1860 until the 1920s, according to Pete Taran.

The halfback was supposed to be a hybrid saw between a full-size handsaw and a backsaw. The small back wouldn't get in the way of many large crosscutting chores, but it would stiffen up the blade enough for joinery.

The saws are fairly rare, so it's safe to assume the idea didn't catch on with consumers. While that would doom the saw in the mind of a pragmatist, I reasoned that the halfback might be a tool whose time had not yet come. Perhaps it's like the low-angle jack plane – that tool was a commercial flop last century when it was invented but is an extremely popular plane in this one.

So I've been using a few versions of halfback saws in my shop for the last three years. And here's my conclusion: I think the halfback is a good tool for a woodworker who doesn't want to own both a carcase saw and a full-size handsaw that's filed for crosscuts. You can use this one tool for both. It's not perfect for both operations, but it does a yeoman's job.

When crosscutting stock on a sawbench, the halfback is fairly useful until you start trying to crosscut boards wider than 6". Then the little brass back tends to strike the work during the downstroke. When used at the workbench, the halfback is indeed stiff enough for most cuts that a carcase saw would be used for, but it's not as assured a tool as the carcase saw on small bits of work (it is, for example, overkill when crosscutting dowel pins).

This custom halfback saw is beautiful, but is it just wall jewelry?

So I don't think every shop needs a halfback saw. But mine does. I enjoy using it a great deal and it keeps me from shuffling as many saws around on my workbench when it's out.

— CS