

# Buy the saws you want (but first, get the saws you need!)



## Mark Harrell reveals the three backsaws you really need in your tool kit

We all like our toys, don't we? We want them just as much as – well, for instance, the lever-action Daisy Winchester BB gun I came into when I was 10 after fulfilling a multitude of chores, strategic hint-dropping and a fervent assurance to my parents that my life would not be otherwise complete. Flash-forward 47 years later, and nothing has really changed. Tools are toys for grownups, and I, like you, want tools. Lots and lots of tools. But do I really need them? My wife will assure you that I do not.

We've all been there, right? It's that holy ritual of acquisition, beginning with an initial aha! moment when we realise we truly want something that we have researched exhaustively, fantasised about on our lunch breaks while surfing the cool tool sites, until the moment of truth arrives and the stars and sun and moon aligns as we finally succumb to our 'I'm worth it' moment, and actually PLACE THE ORDER. Anticipation mounts, our brains on fire with the projects we'll make, and we make damned sure the seller knows to deliver the package to our office ... until finally the tool arrives – Oh, happy, happy day! – and we're like little kids ripping presents asunder on Christmas morning with the goose in the oven and all is well in the world.

And people like me promote this vision to turn a buck in this world.

It's the same with saws, of course – and what a slippery slope that particular addiction can be! Before I became a sawmaker, I, like you, coursed through eBay and Craigslist to dial in an ever-growing collection of saws that I wanted, but didn't necessarily need. So let's address your saw addiction and put things into proper perspective. Perhaps your better half can participate in this journey

with you. No, scratch that. Forget I even brought that up. We'll just enter the dragon on a solo basis here, and perhaps these few words can facilitate your journey. But first, let's make one thing abundantly clear: most people really only need three backsaws to complete their kit – a dovetail saw, a longer carcass saw and a tenon saw. Everything else is a want.

But, of these three backsaws, which one should you buy first? Read on.



Copper backed and with rosewood handles: these saws are a thing of beauty, but do you really need them?

## The longer carcass saw

Acquire a hybrid-filed, longer carcass saw first. Why? Because you can dovetail with it and rip small tenon cheeks as well, as long as you stay away from a dedicated crosscut filing. 'Stay away from dedicated crosscut? In God's name, why?' Because dedicated crosscut serves only to slow down a cut; it invites slop and error, and the edge dulls rapidly. We here at Bad Axe promote hybrid-filing, because it offers phenomenal versatility, and prevents one from collecting multiple saws on one's bench (which generally does not end well, as the pantheon of broken saw horns will testify).

## The case for hybrid-cut

We very rarely file saws dedicated crosscut anymore, unless our customers specify that's what they want. You'd be surprised how only a modest amount of fleam (aka bevel) will clean up end grain quite nicely, particularly if you stone the toothline after sharpening. Even a rip-filed saw with a stoned toothline promotes clean end grain with little blowout on the far side of the cut. A hybrid-filed saw delivers even cleaner end grain with practically no blowout on the far side of the cut. So optimising a toothline is pretty straightforward: hammer-set the teeth to a combined set that complements the pitch (ppi) and gauge of metal for your saw, then sharpen to joint. De-burr the set by stoning the toothline, and voila – you will sever wood fibre like a pro and be AMAZED at how clean the end grain presents without going fleam-crazy (or bonzo with bevel).

As for ripping efficiency, for every 20 strokes in rip mode, you'll make 23–24 in hybrid. Crosscut compared to hybrid? For every 25 strokes in dedicated crosscut, you'll be done in 18–20 with hybrid, and the end grain/blowout factor is just as clean. Frankly, after nine years of making saws, I've come to



A carcass saw can cut components to length and tackle a wide range of joinery like full width dadoes and rebates

believe that dedicated crosscut is just a waste of time for a backsaw. Hybrid excels in the thin-plate world of backsaws, ranging from .015 up to .032, with the most predominant thicknesses between .018 and .025. At the end of the day, it's all about dialling in a consistent set on average about .0075 more than the gauge of metal you're filing, sharpening to joint, then stoning the toothline

that will deliver a cut as if it's on rails.

And finally, speaking as a woodworker myself, I prefer having one versatile saw on the bench with which to make the majority if not all of my cuts for a given project, so I don't have to break my concentration looking for another saw, or risk knocking one off the bench.

And the star of the show is...

## The Bad Axe 14in Precision Carcass Saw, aka 'The Bayonet'

This saw presents a 14in-long toothline with a .018 plate filed 14 ppi hybrid cut, with usable plate depth at the heel measuring 2½in, canting to 2in at the toe. Of course, Bad Axe isn't the only game in town when it comes to a longer, low-slung carcass saw finely honed with a thin plate and an expertly sharpened toothline, but ours along with a few others making similar saws all have these characteristics in common: a .018-gauge plate filed 14 ppi, a longer, 14in toothline compared to the traditional 12in carcass saw and a low-hung handle that gets your hand behind the toothline, rather than making it ride bent-wristed above the cutting axis. Our Bayonet is the one saw I've used for the majority of my last few projects, such as the plant stand I made for Yvonne on the right, which oftentimes involve a range of quartersawn white oak (*Quercus alba*) measuring ¾ up to ¾ stock in thickness, with typical tenon cheeks spanning up to 2in across and 2in in depth. I can use the same saw to make dovetails in ¾ up to ¾ and even the occasional ¾ thick stock, dadoes and rabbets up to 02in across, mitred off-cuts and sliding dovetail joints. Whether ripping or crosscutting stock, this saw does it all quite well.



Hybrid tooth geometry will handle everything from cross cutting shoulders to ripping tenon cheeks

## The dovetail saw

You're eventually going to want a dovetail saw as you rise to the challenge of hand-cut drawer joinery and other dovetail missions. There's no real science here, just pick one up when you're ready. I would suggest a plate gauge of .018 filed 15 ppi rip: this configuration presents a thin plate for elegant pins and tails, but with enough of a heat sink that can take the occasional hard workout without flopping the plate into an s-roll: cut friction with hard use generates heat, which can quite easily overwhelm a .015 plate (which is best filed 17 ppi and reserved for half-blind dovetail missions, where finesse and carefully stroked cuts count the most). But honestly, if you're on a budget, you'd be best served to pick up a tenon saw before the dovetail, since you can dovetail with your carcass saw in a pinch (just make sure you get it hybrid-filed).



A dovetail saw is often the first back saw in a collection but it doesn't have to be that way

## The tenon saw

Which brings us to the tenon saw. This is where your own personal style of woodworking comes into play; your individual approach to woodworking is what truly drives the train, and it bears repeating. The size of tenon saw you choose has everything to do with your personal style of woodworking, and the scale of projects you most commonly pursue.

So what is your individual woodworking style? Know what it's like when someone you're close to, like your wife, your husband, etc., tries to impart upon you a 'more correct' way to interface with your personal computer, and things quickly get heated when you don't do it their way? That's because we interact with a computer in our own

unique manner, just like we woodworkers interact with tools in our own unique manner. Woodworking, after all, is a solitary craft. The style, make and type of tools in your shop reflect your personality: the species of wood, alloys and finishes for your chosen tool all formulate a resonant cocktail of personal choice that reflects you and how you and you alone prefer to get things done in the manner you prefer. It's an incredibly personal construct no one else navigates for you. The same dynamic applies to selecting a tenon saw that's right for you. Following is a list of common tenon saw configurations that will help you identify the size of tenon saw you NEED, rather than a checklist of saws you may think you want.



Select a tenon saw for the largest joints you expect to cut

## Choosing between a 14in, 16in or 18in tenon saw

Which size of saw best suits your most typical scale and species of stock, and the kind of joinery you most commonly employ in the kind of projects you gravitate toward?

- 14in sash saw: modest requirements, where the span and depth of your tenon cheek cuts hover around  $2\frac{1}{2}$ in. These saws are generally best filed 12 ppi hybrid (or 12 ppi rip) on a .025-thick plate. This choice finds a home in a shop where a woodworker primarily focuses on small-scale projects like boxes, smaller furniture pieces and the occasional need to sink a tenon 3in deep and 3in across.
- 16in tenon saw: handles more robust requirements, where the span and depth of your tenon cheeks hover between 3in and  $3\frac{1}{2}$ in. I like filing these at 12 ppi hybrid on the .025-thick plate, or 11 ppi for dedicated rip. This is a great saw that can handle any cut the 14in saw can make, and can also be employed for a modest bench build.
- 18in tenon saw: Our longer, 18in tenon saw is the most versatile of the mix and my personal favourite, speaking as a woodworker. I generally recommend filing this saw 11 ppi hybrid on the .025 plate. Those of you working predominantly in softwoods should consider 10 ppi hybrid or dedicated rip on the .0315 plate. Our hybrid-filing at 11 ppi on the .025 plate delivers the most versatility for working in hardwoods. For instance, the last 6ft long Trade Show Roubo workbench I made all involved working with dense white oak in dimensions between  $2\frac{1}{2}$ in up to 5in in timber width and thickness, with tenons ranging from 3in in span and depth, up to 5in in span and 4in in depth. I made every single cut on that bench with the 11 ppi toothcount filed on the .025 plate.

## What is the gauge?

The gauge of a sawplate relates to the thickness of the material in which the teeth are cut. Typically this will be presented in a three-number sequence such as 015, 018, 020, for example. It's shorthand for 0.015in etc. and can sometimes be recorded as .015.



**The Continuum of a Toothline**  
*(selecting the right plate gauge and ppi for the work you want to do)*

Delicate .015	Thin .018	Slim .02	Regular .025	Thick .0315	
Thin-plate, fine teeth, smaller Plate dimensions = delicate work		<b>Plate gauge, ppi and dimension work together for the task at hand</b>			Thicker plate, coarser teeth, larger Plate dimensions = robust work
<b>.015</b> 17-16-15 ppi DT saw for ¾ - 2/4 stock (dedicated)	<b>.018</b> 16-15-14 ppi 10" DT saw ¾ up to 5/4 stock (recommended)	<b>.02</b> 14-13 ppi 10" Carcase, 12" HDT, & 12" & 14" Carcase saws	<b>.025</b> 12-11-10 ppi 14" Sash, 16" & 18" Tenon, & 20" Miter Saws	<b>.0315</b> 10-9 ppi 18" heavy ripping, Roubo Beastmaster	
<b>Pros:</b> Delicate plate for dovetailing thin Stock ONLY  <b>Cons:</b> Not versatile; prone to warping in ¾" & thicker stock	<b>Pros:</b> outstanding general-purpose DT saw plate gauge.  <b>Cons:</b> not suitable for plates longer than 2" & deeper than 2.5"	<b>Pros:</b> outstanding gauge for dovetailing, small tenons & carcase work  <b>Cons:</b> warps when ripping tenon cheeks longer & deeper than 2.5"	<b>Pros:</b> Rips/knouts up to 3.5 - 4" tenons, VERY versatile for most work  <b>Cons:</b> warps when ripping tenon cheeks longer & deeper than 4"	<b>Pros:</b> perfect for dedicated ripping tenons more than 4". Best for timber-framing  <b>Cons:</b> heavy saw not suitable for general-purpose work.	

**Here's the takeaway:** don't get a backsaw with a plate thinner than what you need for the work intended. Friction, heat, and potential metal expansion can warp your toothline if you ask more of the sawplate than what it is designed to do.

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## Which order to buy?

Brand-new to hand tools in general and hand saws in particular – and on a budget? Select your saws one at a time. Start off with the 14in carcass saw, then as your choice of projects reveal better fidelity in scale, buy your tenon saw. Finally, go for the dedicated dovetail saw. These are your needs. Everything else is a want, which may manifest in one of our 20in

mitre saws, or perhaps a half-blind dovetail saw once you discover that elegant form of joinery. Maybe you'll develop an interest in timber-framing scale joinery, and our Beastmaster fits the bill for 5in-deep tenons and a rugged .032 plate that can handle it. Or perhaps you're a budding luthier or boat-builder, where one of the speciality

saws in our lineup will scratch that itch.

But make no doubt about it: about 90% of your work will be derived from three saws: a hybrid-filed longer carcass saw, a tenon saw and a dovetail saw filed dedicated rip.

Those three workhorses will carry the yeoman's share of any cordless workshop when it comes to severing wood fibre. *F&C*



Three steps to workshop heaven: dovetail, carcass and tenon but not necessarily in that order