

CUTTING-EDGE

table saw **tips & tricks**

*How to get the most
out of your saw*

KENNETH BURTON

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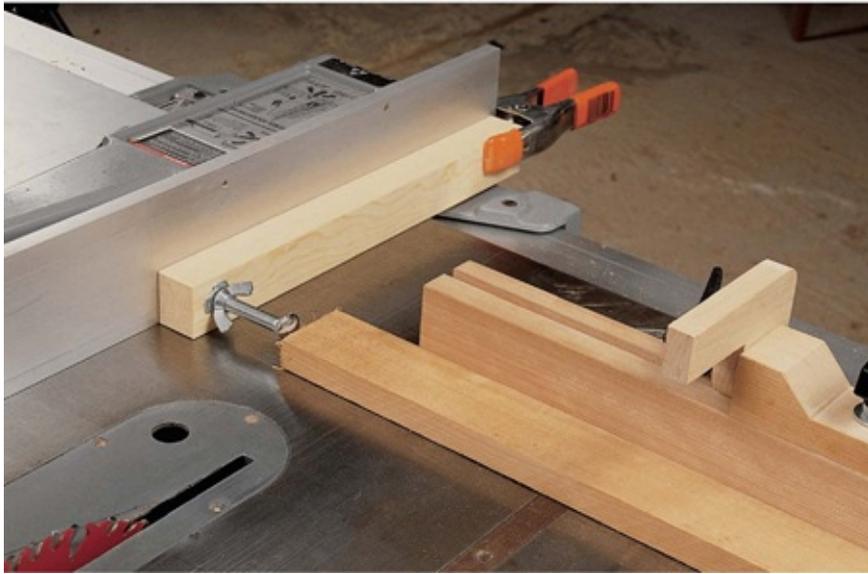
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METRIC CONVERSION CHART

<i>to convert</i>	<i>to</i>	<i>multiply by</i>
Inches	Centimeters	2.54
Centimeters	Inches	0.4
Feet	Centimeters	30.5
Centimeters	Feet	0.03
Yards	Meters	0.9
Meters	Yards	1.1
Sq. Inches	Sq. Centimeters	6.45
Sq. Centimeters	Sq. Inches	0.16
Sq. Feet	Sq. Meters	0.09
Sq. Meters	Sq. Feet	10.8
Sq. Yards	Sq. Meters	0.8

Sq. Meters	Sq. Yards	1.2
Pounds	Kilograms	0.45
Kilograms	Pounds	2.2
Ounces	Grams	28.4
Grams	Ounces	0.035



READ THIS IMPORTANT SAFETY NOTICE

To prevent accidents, keep safety in mind while you work. Use the safety guards installed on power equipment; they are for your protection. When working on power equipment, keep fingers away from saw blades, wear safety goggles to prevent injuries from flying wood chips and sawdust, wear headphones to protect your hearing, and consider installing a dust vacuum to reduce the amount of airborne sawdust in your woodshop. Don't wear loose clothing, such as neckties or shirts with loose sleeves, or jewelry, such as rings, necklaces or bracelets, when working on power equipment. Tie back long hair to prevent it from getting caught in your equipment. People who are sensitive to certain chemicals should check the chemical content of any product before using it. The authors and editors who compiled this book have tried to make the contents as accurate and correct as possible. Plans, illustrations, photographs and text have been carefully checked. All instructions, plans and projects should be carefully read, studied and understood before beginning construction. Due to the variability of local conditions, construction materials, skill levels, etc., neither the author nor Popular Woodworking Books assumes any responsibility for any accidents, injuries, damages or other losses incurred resulting from the material presented in this book. Prices listed for supplies and equipment were current at the time of publication and are subject to change. Glass shelving should have all edges polished and must be tempered. Untempered glass shelves may shatter and can cause serious bodily injury. Tempered shelves are very strong and if they break will just crumble, minimizing personal injury.

■ *For my wife Susan, who has put up with more than her share of sawdust and unfinished cabinets.*

About the Author



Ken Burton has been working with wood professionally for the past 20 years and writing about it for the past 12. He holds an MFA degree from the School for American Crafts at the Rochester Institute of Technology.

Currently, Burton operates Windy Ridge Woodworks in New Tripoli, Pennsylvania, where he designs and builds studio furniture, custom cabinetry and teaches woodworking workshops. He also teaches at the Yestermorrow School in Warren, Vermont.

During the school year, Burton is department leader for the MST program at Boyertown Area Senior High. MST is a unique program that combines the disciplines of math, science and technology.

Husband of Susan and father of Sarah, Burton has a to-do list about 4 miles long. You can contact him at ksburton@fast.net.

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table of contents

[Title Page](#)

[Special Offers](#)

[introduction](#)

[suppliers](#)



chapter one

[essential operations](#)



chapter two

[joinery](#)



chapter three

[shaping](#)



chapter four

[cutting sheet stock](#)



chapter five

[tuning up your saw.](#)

[PROJECTS]



chapter six

[wall-hung spice cabinet](#)



chapter seven

tabletop valet



chapter eight

demilune table

Introduction

C*utting-Edge Table Saw Tips & Tricks* grew out of a weekend class I run in my studio called Table Saw Trickery. The class is designed to present a sweeping overview of all the different tricks you can make your table saw do. It is intended for beginning and intermediate woodworkers who are looking to upgrade their skills and get more out of their saws. I cover everything from cutting wood to size efficiently and accurately, to shaping and precision joinery. This is a pretty tall order for a weekend; however, those who take the class tell me they really get a lot out of it. Over the past seven years, I have come to appreciate this type of quick, intensive learning as a way to help woodworking enthusiasts improve their skills without taking a big chunk of time out of anyone's schedule.

This book was written with the same mind-set. It is not especially long, but it is packed full of shop-tested techniques that cover the entire range of what a table saw can do. Not only will these techniques yield good results, but they will also help you accomplish these results efficiently and, most importantly, safely.

I encourage you to try these techniques in your own shop: Adapt them to your equipment and to your ways of working. If I've learned one thing about working with wood, it is that there are many ways to get the job done. During the classes I teach, I think I often learn just as much as my students because of all the questions that start out "Why can't you?"

After you finish reading all of the tips and tricks, you may want to start using them by building one of the projects from the back of the book. They were designed with a table saw in mind. The spice cabinet is the project we build in the class. Its construction is relatively straightforward, and it packs a lot of different techniques into a small package. It can be easily built in a weekend, and it will expand your appreciation of what you can accomplish with a table saw. Or try the tabletop valet with its drawers and moulded mirror frame to push your saw technique a little beyond the ordinary. And for a bit more of a challenge, tackle the demilune table. It features bentwood aprons and the tricky joinery that goes along with pieces that aren't straight.

Some things to be aware of: While a few simple jigs and fixtures are scattered throughout the book, I have never been one who builds really complicated jigs and fixtures. The few that show up are ones that I have found especially useful. Some, such as the box joint jig, give you the capacity to make a cut that you simply could not do any other way. Others, such as the tenoning jig or the crosscut extension fence, are so handy that they are really worth investing a little extra time and effort in.

Also, this book is not intended as a buying guide to saws and saw accessories. While I do make a few general suggestions, if you want more specific recommendations, get one of the woodworking magazines that publishes tool reviews, such as Popular Woodworking. They are in a much better position to publish up-to-date information about current models than I can offer in this book. As for accessories, I have included a few specialized items simply because of the added techniques they allow you to accomplish. The market certainly has a lot more goodies available. About the only advice I can offer is: Try to see the item in question in operation before you invest.

Finally, using a table saw is not without risks. The techniques I have included here are all safe and shop-tested. However, they are not foolproof. If something doesn't seem right to you, or makes you hesitate, don't do it. Consult with someone who is familiar with the technique or try to find some other way around it. Better yet, come take one of my classes; we welcome woodworkers of all experience levels.

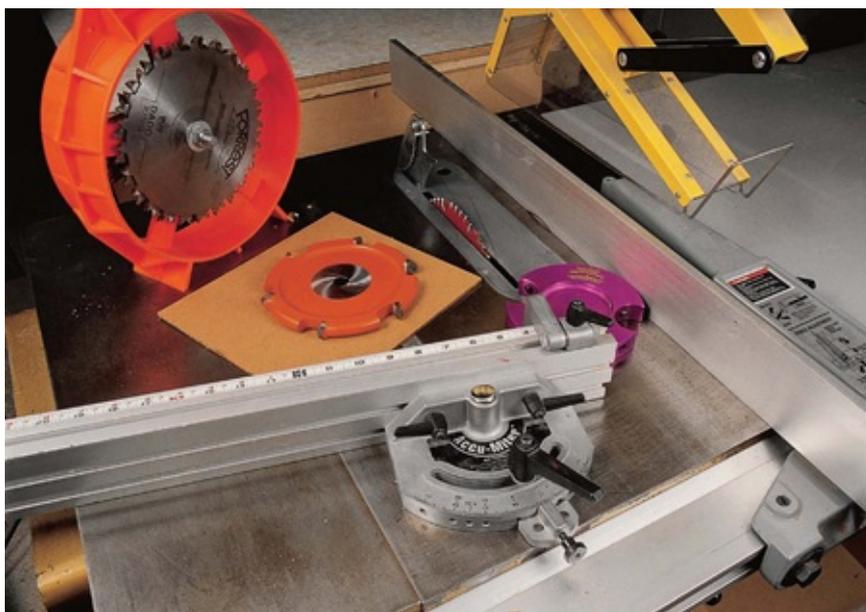
I hope you enjoy the book and put it to good use.

Ken Burton Windy

Ridge Woodworks

2002

“My table saw is something of a hybrid. The basic machine is a Powermatic model 66. To it I've added a Delta Unifence, a Biesemeyer splitter and an Excalibur blade cover. With all that, plus a few blades and other cutters, I can make dust with the best of them.



chapter one

essential operations

AS YOU WILL SOON SEE, THE TABLE saw is an incredibly versatile machine. Joinery, shaped profiles, tapers and more are all within the tool's capabilities. At the root of all of these operations is the table saw's ability to cut a straight line. Being able to saw straight is what makes accurate woodworking possible. Cutting these Cutting a board to an exact width (ripping) and cutting it to a precise length (crosscutting) are the two essential operations that come into play with almost every project. Before getting into these matters in more depth, let's look at the table saw itself and a few general guidelines about its operation.



■ *types of saws*

There are essentially four types of table saws, the size of which is determined by the largest-diameter blade the saw can handle. Portable saws are lightweight models that are easy to move from place to place. They are great for carpentry because they can be set up near wherever you are working. They are also good for woodworkers who don't have the space for a larger model. In exchange for portability, however, portable saws often have smaller motors and are limited in the size of pieces they can cut. Portables usually can spin either an 8"- or a 10"-diameter blade.

The next step up is a contractor's saw. This stationary saw sits on an open base. The motor generally hangs off the rear of the machine, and it takes a 10" blade. Contractor's saws usually have a bit more power and capacity than portable saws.

For more money, you can purchase a cabinet saw. Cabinet saws have an enclosed

base with a motor that hangs below the blade/arbor assembly. The added weight of the base and lower center of gravity help cut down on vibration, which makes for a smoother cut. This is the type of saw many small professional shops use. It will probably have enough power and capacity to handle any job you throw at it. Sizes range from 10" through 16".

At the top of the heap are the European-style saws with a built-in sliding table. These are designed for serious production work and come equipped with an equally serious price tag.

If you are in the market for a saw, a myriad of choices is available. Which to choose depends a lot on the work you intend to do and the space you have available. Unless you are really cramped for space, or intend to move the saw around a lot, I recommend either a contractor's saw or a cabinet saw. If you work primarily in pine and only occasionally cut thick (2") hardwoods, a contractor's saw will be perfectly adequate. If, however, you work mainly in hardwood, you will quickly appreciate the added power a cabinet saw has to offer.

Make sure your electrical system can handle the load from the saw's motor. Most contractor's saws can be plugged into a standard 120-volt outlet. Cabinet saws, on the other hand, require more juice. These saws have a 3-horsepower motor, which requires a 220-volt line with a 30-amp fuse or circuit breaker.

Another thing to consider is the capacity of the saw's rip fence. For most work in solid wood, a fence with a maximum capacity of 24" is adequate. If you intend to cut a lot of sheet stock, however, you'll be happier if your fence reaches 48" or more away from the blade.

■ *saw blades*

You'll need at least one saw blade. Most saws come with some kind of blade, but chances are it won't be a particularly good one. While you can still purchase steel blades, most woodworkers find that the durability and accuracy of carbide-tipped blades make them worth the added expense. If you buy just a single blade, try to find a combination blade. These blades are designed to do a good job of both ripping and crosscutting. I leave my combination blade on the saw most of the time.

As you add blades to your collection, the next one to acquire is a rip blade (especially if your saw is on the underpowered side). A good, sharp rip blade can make a big difference in how easy it is to cut through hardwood stock such as oak or maple. Finally, add a precision crosscut blade for making exacting joinery cuts.



For most general-purpose work, a quality combination blade such as Freud's LU84 or Forrest's Woodworker II will yield great results. When you're doing a lot of ripping, switch over to a rip blade such as Freud's LM72. The limited number of teeth means the blade requires less power to cut cleanly. For exacting crosscuts, a precision cutoff blade such as Freud's LU85 will produce a glasslike surface.



Rather than jamming a piece of wood against the blade (which can bend a tooth), the folks at Forrest recommend tightening the arbor nut by resting the wrench against the saw table and turning the blade by hand. Wear work gloves to protect your fingers and make sure the saw is unplugged.



Loosen the blade by slipping the wrench on the arbor nut and rotating the blade until the wrench rests against the table at the back of the opening. Grasp the blade firmly and turn it backwards, freeing the nut. Again, wear gloves to protect your fingers. If the nut is particularly tight, place a scrap of wood across the opening and turn the blade so the wrench breaks the nut free.

TOOL TALK

Loosening and Tightening Blades

As I was researching blades for this book, I talked to Charles Bazikian at Forrest Manufacturing. As part of our discussion, he asked how I loosened and tightened the blades on my saw. When I told him I used a piece of wood to hold the blade in place while I worked the wrench, I could feel him cringe over the phone. He explained how Forrest had found that this technique (typical among many woodworkers) can bend a tooth on the blade — not much, but enough to affect the quality of the cut. As Forrest strives to produce blades that leave a glue-line-ready surface, a tooth bent even 0.002" to 0.003" leaves a surface that is rough enough to see and feel.

Note: My saw is equipped with a electronic brake, which cuts the speed of the blade when the power is turned off. I have discovered (the hard way) that if you do not adequately tighten a blade, the arbor nut will come loose when the brake kicks in. While this didn't cause an accident, it didn't do my blade any good either. The problem is worse with a dado head, I suspect, because the dado has a lot more mass than a blade. If your saw is equipped with a brake, be sure to tighten the arbor nut with a wrench. Bazikian's technique works on my saw, but I am sure to wear gloves so I can really get the nut tight.

■ SAFETY FIRST

Key Rules for Ripping

For safe, trouble-free rips, make sure:

- Your workpiece sits flat on the saw table.
- Your workpiece has a straight edge to run against the fence.
- You have installed a splitter on your saw.

Ripping

Ripping is cutting a piece of wood with the grain, or parallel to the direction in which the tree grew. You rip a board to straighten its edges and to make it the right width. Ripping is one of the two basic table saw operations; crosscutting (described later in this chapter) is the other. Most of the time, ripping involves cutting a piece that is at least as long as it is wide. If this is true, you can use the rip fence as a guide as you push the board through the cut. If the board is wider than it is long, use the miter gauge to guide the piece even though you are “ripping” it.

To make a rip cut, you need to set the rip fence at the necessary distance from the blade. For example, if you need a piece that is 6" wide, set the fence 6" away from the blade. As with all operations, the proof is then in the actual cut. If the dimension is really critical, start the cut, just nicking the end of the piece with the blade, then back the workpiece out and measure from the edge to the kerf to be sure the fence is set

properly.

Kickback

Of all the operations done on the saw, ripping is potentially the most dangerous. The danger comes from a phenomenon called kickback. Kickback occurs when the blade throws your workpiece back at you. With even a modestly powered saw, this can happen with astonishing speed and force. Should kickback occur, your fingers can be pulled into the blade or a flying board can hit you.

Kickback can occur for two reasons: Either your workpiece comes away from the fence as you are guiding it through the cut, or the kerf (the space the blade produces as it cuts) may close and pinch the back side of the blade. The first situation is largely due to operator error. You need to be constantly aware of what is happening to your piece as you push it through the cut. The second situation can occur if you are cutting warped wood, or if the piece you are cutting warps as it is cut. With warped wood, the answer is straight-forward: Don't cut it. Every piece you cut should sit flat on the saw table and should have a straight edge to run along the fence. To create a straight edge, use a jointer or see "Straight-Line Ripping" later in this chapter.

The truly scary situation is when you cut a board that warps as it passes by the blade. Every once in a while you may come up against a board that, for whatever reason (something about the way the tree grew, improper drying, etc.), bows and twists as it is cut. There can be no way of knowing this will happen until it is too late. So how do you deal with this possibility? The answer is to use a guard.

Guards

Table saw guards are, at best, something of a nuisance. However, they are critical to the safe operation of your saw. So, rather than storing yours on a shelf someplace, get to know how it works so you can use it effectively. To this end, here are a few things to recognize about saw guards.