

POPULAR Woodworking MAGAZINE

OCTOBER 2026 | #291

DRILL COMPARISON

Willie Sandry Compares Modern Drills and Drivers To Help You Outfit Your Shop

LAPTOP RISER

This Simple Project Is the Perfect Blend Of Woodworking and Utility

AIR FASTENERS

Choose The Correct Fastener For Your Application

ALBERT KLEINE'S

Marquetry Lamp



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- 5 Table inserts
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Powerful suction for a cleaner shop

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SHOP FOX

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The Bear Trap Dust Collector is the ultimate solution for small shops, offering the power of a full-sized collector in a compact, versatile design. Whether working in a garage or a dedicated shop, the G0405 adapts to your setup, not the other way around. This unit delivers the suction needed to handle both fine dust and heavy chips, while the dual-stage filtration system helps maintain safer, quieter, and cleaner air in your workspace.

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- Dimensions: 40½" W x 18½" D x 19" H
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■ FROM THE EDITOR

The Forgotten Gems

By Logan Wittmer

Do you ever rediscover something you forgot you even owned? I had one of those moments recently. Every summer I tackle the annual garage cleanout. Somehow, despite doing it every year, it never actually seems to get any cleaner. This time, I decided to do a purge. Buried in the back of a shelf was a plastic tote I hadn't opened in nearly a decade, filled with old woodworking books and magazines.

The real treasure? Three of the four volumes of *Audels Carpenters and Builders Guide*, pictured here. If you've ever leafed through one of these, you get it. First published in the 1920s by T. Audel & Co.—one of the premier technical publishers of the 20th century—these books became the standard reference for generations of carpenters and builders. They're packed with beautifully illustrated explanations and knowledge that still holds up remarkably well today.

Working on a woodworking magazine means I spend most of my day staring at a computer. The last thing I usually feel like doing is reading more woodworking literature. But these books are different. Volume 1 covers tools, materials, joinery, and furniture construction. Volume 2 (the one I'm missing) dives into blueprint reading, mathematics, and surveying. Volume 3 covers foundations, framing, and structural layout, while Volume 4 moves into doors, windows, millwork, stairs, and finish carpentry.

If you ever stumble across a set at an estate sale or flea market, do yourself a favor and bring them home. They're not just collectibles—they're an incredible snapshot of how the trade was taught nearly a century ago, and they're still full of useful information. Now... if anyone happens to have an extra Volume 2 lying around, let me know. Cheers!



Logan Wittmer

■ ABOUT THE AUTHORS



CHAD MCCLUNG: *Laptop Riser* –pg. 46

Over the better part of two decades, Chad McClung has been in the woodworking space, teaching his craft to readers across the US. Chad is the former editor-in-chief of *Woodcraft Magazine* and an experienced how-to content creator in the woodworking, home improvement, and luthiery spaces. When he's not in the shop, he's busy justifying an ever-growing Blu-ray collection.



ALBERT KLEINE: *Marquetry Lamp* –pg. 52

Albert Kleine is a self-taught woodworker based out of a small shed in suburban Washington, D.C. Over the past decade, he has focused heavily on fine box making, more recently delving into carving, marquetry, and other decorative aspects of woodworking. He teaches in-person and virtually and plans on expanding classes to his home shop. His book, *Complete Starter Guide to Making Wooden Boxes*, was released by Fox Chapel Publishing in the Spring of 2025. Outside of woodworking, Albert is an economist at his day job and the proud father of Maximilian.



WILLIE SANDRY: *Drill Review* –pg. 34

Living in the Pacific Northwest, Willie Sandry is a longtime fan of Arts & Crafts furniture. He enjoys taking inspiration for his projects from antique furniture exhibitions as well as "old barn finds." Never one to do a job partway, Willie has developed a vast skill set to elevate his projects. From sawing lumber and kiln drying it to finishing a chair with top-notch upholstery, Willie sees a project through from the start until the finish. YouTube: *The Thoughtful Woodworker*.

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B Ben Verified Buyer
★★★★★
AWESOME TOOL!
I am seriously impressed by the performance and build quality. It is also super quiet, which was an important consideration. This tool, with its HEPA filter, is impeccable.

Steve S. Verified Buyer
★★★★★
Best fit and performance
For a 2 car garage, this unit did to do the job over again, I'd definitely recommend this unit.

B Bob B. Verified Buyer
★★★★★
Even the bandsaw is free
This unit exceeded my expectations.

K Kevin L. Verified Buyer
★★★★★
I couldn't be happier with it.
Thanks for all of your help with the design and sale.

D Dennis H. Verified Buyer
★★★★★
The envy of all of my woodworking friends!!
I bought the Oneida dust collection system two years ago and just love it!! It is the best quality, works very well and is the envy of all of my woodworking friends!! I just wish I had bought it many years ago. It was easy to assemble and is so easy to empty the bin when full.

★★★★★
Another league

B Bob F. Verified Buyer
★★★★★
Worth the price. I spent a lot of time researching dust collectors, and finally read a Wood magazine article that showed actual flow/suction test data. Oneida was clearly superior in fan performance. With that coupled to the cyclone, the choice was pretty clear.



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NEW TOOLS

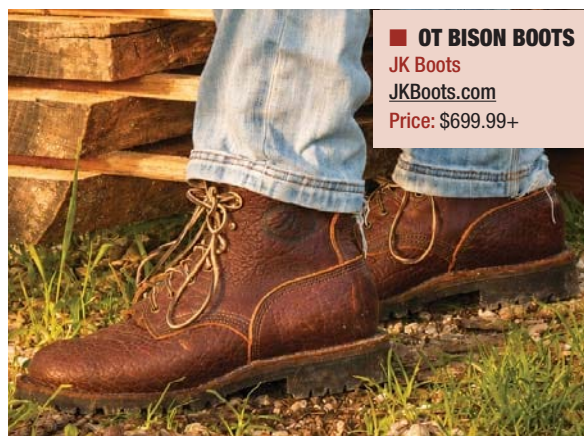
OT Bison Boots By JK Boots

Over the years, I've bought my fair share of inexpensive tools and gear. They usually seem like a good deal, but I've found that replacing something every year or two often ends up costing more than buying the right thing once. As I've gotten older, I've become much more intentional about spending my money on fewer, better-made products. The OT Bison boots from JK Boots fall squarely into that category. For many people, they're a once-in-a-lifetime purchase—but they're also built with the expectation that they'll last a lifetime.

JK Boots are handcrafted in Spokane Valley, Washington. The company traces its roots to founder John Khadzhi, who learned the trade as an apprentice cobbler in his native Ukraine before bringing those skills to the United States. Over the years, he built a reputation for producing exceptional work boots, and today his sons play an active role in carrying that tradition forward.

Let's address the obvious: the OT Bison boots are expensive. There's no getting around that. But after spending time in them, it's easy to understand why thousands of firefighters, loggers, welders, farmers, and other tradespeople depend on JK Boots every day. The craftsmanship is obvious. Just as impressive, though, is the comfort. Once broken in, they're the kind of boots you forget you're wearing.

One of the strengths of JK Boots is the level of customization. You can choose everything from boot height and leather color to sole style and whether or not to include



OT BISON BOOTS
JK Boots
JKBoots.com
Price: \$699.99+

a safety toe. The pair I'm wearing features bison leather, which is noticeably softer than traditional work-boot leather while still being durable. The pebbled texture gives them a refined look that doesn't seem out of place away from the jobsite—I've gone straight from the sawmill to dinner without feeling underdressed. More importantly, they're holding up in ways that other boots simply haven't. I've worn holes through plenty of work boots after only a handful of trips around the mill, but these show little sign of slowing down.

The best comparison I can make goes back to my dad. When I was growing up, he was always talking about how good his old Red Wing boots were. More recently, he's commented that they just aren't built the way they used to be. After wearing the OT Bison boots, I finally understand what he was talking about. They feel like the kind of boots people used to buy expecting they'd still be wearing them years down the road.. — Logan Wittmer

Barron Saw Guide

For years, one of my favorite tools was also one of the hardest to get. It was the magnetic dovetail guide designed by David Barron in the UK. I picked one up from David at one of the early Handworks events in Iowa. Now, thanks to a partnership between David Barron and Veritas, his entire line of magnetic dovetail guides is readily available.

The guide shown here is the 1:6 model, which is my go-to angle for just about every dovetail joint I cut. If your work calls for something different, the guides are also offered in ratios from 1:4 through 1:8. Each machined aluminum guide is anodized in a unique color for quick identification and is also clearly marked with its dovetail ratio.

The concept is simple. An embedded magnet holds the saw plate at the correct angle, making it easy to produce consistently accurate cuts. Simply flip the guide over to switch between cutting tails and pins. Low-friction tape on the guide protects the saw plate while allowing it to glide smoothly.



Barron Guide
Veritas
LeeValley.com
Price: \$54.50

For woodworkers who don't cut dovetails every day, the David Barron Magnetic Dovetail Guide from Veritas is a straightforward tool that delivers consistently professional-looking results. — Greg Kopp

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NEW TOOLS

Oliver's Open-Ended Wide-Belt Sander

There's a love-hate relationship most shops develop with sanding machines. When they work, they're indispensable. They save time, and can help achieve even-thickness stock that exceed a planer's capabilities (think thin stock). When they don't, they can feel like they exist solely to test patience. Drum sanders tend to sit at the center of that frustration for many woodworkers—the constant wrestling with wrapping paper around a cylinder can turn a simple flattening job into a drawn-out exercise in cursing and torn, wasted paper. Wide-belt sanders, by contrast, usually earn a much warmer reception — a straightforward belt change, consistent tracking (or oscillating), and predictable results. The challenge has always been size. Until recently, machines in that category were firmly rooted in industrial shop territory.

That's the gap *Oliver Machinery* aimed at with the 5315 wide-belt sander. Calling it a “benchtop” machine feels like a stretch at just over 300 pounds, though with its optional stand it lands comfortably as a compact, standalone unit. Once set up, it behaves like a proper wide-belt system should. The oscillating belt action helps eliminate the linear tracking marks associated with drum sanders, and the machine's 110-



■ **5315 SANDER**
Oliver Machinery
OliverMachinery.net
Price: \$4110.00

volt power requirement keeps it accessible to most home shop setups without the need for dedicated air systems or industrial wiring. It sits in a relatively small class of machines that bring true wide-belt sanding capability into a scale that makes sense for serious home woodworking shops. — *Logan Wittmer*

Woodline Carbide Forstner Bits

It's hard to make a drill bit sound exciting. After all, they either drill holes or they don't...right? That's exactly what I would have said before I started using truly good Forstner bits. Few woodworking tools have a wider range in quality. You can buy an entire set for \$20, or spend three times that on a single premium bit. Once you've used a high-end Forstner bit, though, it's easy to understand that difference.

Among the best I've used are the carbide-tipped Forstner bits from *Woodline*. Like a quality carbide router bit, the carbide cutting edges stay sharp far longer than high-speed steel while producing exceptionally clean, flat-bottomed holes with crisp entry edges. Woodline offers an impressive selection of sizes, from 1/4" all the way up to 2-1/8", along with several of the most commonly used metric diameters. Rather than selling



■ **Forstner Bits**
Woodline USA
Woodline.com
Price: \$12.99+

only prepackaged sets, the bits are available à la carte, making it easy to buy only the sizes you'll actually use. In my shop, the sizes from 1/4" through 1" handle nearly every task, and being able to add individual bits makes building that collection practical. — *Greg Kopp*

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NEW TOOLS

Tooley Park Marking Gauge

It's rare to find a modern tool that captures the elegance and simplicity of those made decades ago, but Tooley Park has done exactly that with its marking gauges. At its core, it's a simple tool—a beam, a head, and a cutter—but every detail has been thoughtfully executed. The fit and finish are exceptional, the machining is flawless, and the overall quality is exactly what I've come to expect from Phillip's work. I've used several Tooley Park tools over the years, and each has reflected the same level of craftsmanship.

What stands out most to me is the hardware. The beam clamp, wear strip, and interchangeable marking holders are all impressively robust and beautifully machined, giving the gauge a reassuringly solid feel in use. The model shown here is the 3-in-1 version, which includes holders for a blade, a hardened marking pin, and a pencil. When not in use, each insert stores neatly inside the head beneath the beam slot—a clever touch that keeps everything together. Tooley Park also offers a 4-in-1 version that adds a universal holder capable of accepting tools from 7mm to 12mm in diameter.

The gauge featured here is made from maple, though it's also available in purpleheart for those who prefer a darker, more striking appearance. Beyond the marking



TOOLEY MARKING GAUGE

Tooley Park Tools

TooleyPark.com

Price: £130.00

gauges themselves, Tooley Park also produces the MGB (Marking Gauge Block), an accessory that expands the tool's capabilities even further. That's a tool deserving of its own spotlight another day. — Collin Knoff

R-240 Ryoba

The R-240 Ryoba from *Temple Tool Co.* is a modern interpretation of one of Japan's most versatile hand saws. Featuring a 240mm double-edged blade, it combines dedicated rip teeth on one side with crosscut teeth on the other, allowing a single saw to handle everything from breaking down stock to cutting furniture joinery. Designed in the United States and crafted in Japan, the saw pairs traditional Japanese pull-cutting performance with refined details such as a stained Japanese wingnut wood handle, natural rattan wrapping, and brass hardware that secures a replaceable SK85 tool steel blade.

Rather than serving as a specialty tool, the R-240 is intended to be a general-purpose handsaw that fits comfortably into both power-tool and hand-tool shops. Its thin 0.5mm blade produces a narrow kerf for efficient, accurate cuts and will tackle medium sized joinery without batting an eye. For finer joinery tasks, consider looking at one of their dozuki pull saws.



R-240

Temple Tool Co

TempleToolCo.com

Price: \$45

The R-240 is just one of the saws offered by *Temple Tool Co.* In *Temple's* offering, you'll find saws for every task — dovetailing, cross cutting, ripping, flush trimming, and the like. One of the more interesting offerings is their Timberframing saws, which I'm looking forward to trying out. As a general purpose saw, you can't go wrong with a general purpose Ryoba, like the R-240. — Collin Knoff



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WORKSHOP TIPS

Bored Block On Slotted Base

This benchtop gluing jig lets you see, and adjust, both faces of the miter joint while clamping it. Hold the joint tight, without glue, while you clamp one board in place. Then apply glue to both mitered faces. Push the unclamped board into place, then add the second bar clamp.

To make this jig, cut a diagonal notch halfway across a 7-in.-square piece of medium-density fiberboard. The notch lets you see if the joint is closed on the under-side, as well as letting the glue dry thoroughly. For the clamping block, glue together two 4-in. squares of ply-wood, drill a 2-in. hole in the middle, and screw this assembly to the fiberboard with one square corner over the slot. Be sure the corner of the block is square, or your pre-cisely-cut 45-degree joint faces won't be flush when you clamp them together.



WORKSHOP TIPS

Power Tool Caddy

This plywood stand for power tools is compact and mobile. To lock the stand in place, just flip down the hinged board at the base.

Cut the hinged board wide enough so it will lift the casters off the floor when you flip it down. Screw it on the bottom of one of the end panels using 3-in.-wide butt hinges and attach rubber door bumpers for added slip resistance.

When you're planing or jointing (in the direction of the flipped-down board) the stand can't move.



Varnishing Hang Up

I always felt the need for a second pair of hands when it came to varnishing shelves or doors.

A good solution is to hang them up. A series of eye-hooks screwed into the floor joists turned my shop ceiling into a helping hand. Two hooks screwed into both ends of each shelf allow them to be suspended in mid-air where I can varnish all the sides with ease. A length of bailing wire with loops twisted on the ends is hooked on the bottom pair of hooks to steady the shelf while finishing.

— David Banister (Tallahassee, FL)



Magnetic Nail Starter

Over the years I've built dozens of cabinets. Installing the little nails for the shelf standards was the worst part of this job until I discovered this little device called a mag-netizer. It's commonly used to magnetize screwdrivers for picking up screws. I used it to magnetize my nail set and now I can pick up and start the little nails with ease. — Floyd Steck



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WORKSHOP TIPS

Center A Hole In A Sphere



Drill a perfectly centered hole in a sphere by first counterboring a hole in a scrap board clamped to your table. Drill the counterbore using a Forstner or spade bit that's roughly half the diameter of the sphere. Replace the first bit with a brad point, nest the sphere in the counterbore and drill away.

Two-Sided Tablesaw Insert

I needed a 1/4" zero-clearance throat plate for cutting dados the other day, but my throat plate only had a 3/4" slot in it. I didn't want to interrupt my project to make or buy a new throat plate, so I turned the old one 180° and cut a new slot in it. Why hadn't I thought of that before? Now, whenever I make a new throat plate, I make it two-sided right off the bat.

— Dean O. Travis



Accurate Paring Requires A Flat Back

Is the back of your chisel really flat? For accurate paring, it has to be as flat as flat can be, for at least 2 to 3". Even though your chisel may look like it's OK, it probably needs to be lapped to make it truly flat.

Lapping consists of two stages: flattening and polishing. First, you flatten the back by rubbing it hard on sandpaper that's adhered to a flat surface.

I've used a 1/4" thick piece of glass, the cast iron wing of a tablesaw, or the bed of a jointer, but my favorite lapping surface is an inexpensive granite surface plate (see Source, below).

Start with 220 grit paper. Take a few strokes and examine the back. If it's really bad, begin lapping in earnest with 80 grit paper. On most chisels, I start with 120 grit. If the back is pret-

ty good, stick with the 220 grit.

On your first grit, keep sanding until the scratches go all the way from corner to corner and 2" to 3" up the length of the back. This completes the flattening stage.

In the next stage, polish the back with finer and finer grits. A complete sequence is 80, 120, 180, 220, and 320 grit paper. (You can go even farther, and save wear on your stones, by using 15 micron and 5 micron 3M PSA-backed Microfinishing paper. See Sources, below.)

When you switch to a finer grit, lap in a different direction, so the scratches make a different pattern. Keep lapping on each grit until the scratches made by the previous grit disappear.

Once you've finished with 320

grit, continue lapping on your stones—assuming they're flat.

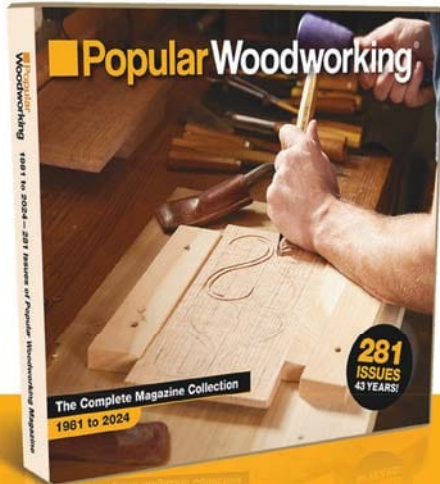
For abrasives, I prefer 3M's PSA Gold, which is available in discs or rolls at auto supply stores. It cuts faster than any other paper commonly available and doesn't require a sprayed-on adhesive.



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PHOTOS BY LOGAN WITTMER

Air Fasteners

Choosing the right fastener can mean the difference between a clean, lasting joint and a frustrating repair. Learn when to use pin nails, brads, finish nails, and narrow crown staples to get the best results every time.

By Logan Wittmer

If you've ever wanted to feel overwhelmed by choices, take a stroll down the fastener aisle at your local hardware store. Around here, that usually means Menards, where three full aisles are packed with every screw, nail, bolt, and specialty fastener imaginable. I rarely buy screws or common nails there—I prefer higher-quality options—but I almost always stop to browse the pneumatic fasteners. Brad nails, finish nails, pin nails, staples... there are far more choices than most woodworkers realize.

Unlike screws, pneumatic fasteners aren't interchangeable. If you're driving screws, swapping sizes is as simple as changing the driver bit. Traditional nails? Grab a bigger hammer. Pneumatic fasteners have to match the tool,

and every nailer is designed for a specific job. Choosing the wrong combination can lead to split stock, poor holding power, or a fastener that's simply too visible. In this article, we'll look at the most common pneumatic fasteners you'll find in a woodworking shop—and when each one makes the most sense.

When To Use a Nailer?

Before diving into the fasteners themselves, it's worth clearing up one point. Throughout this article, I'll use the term pneumatic nailer, but nearly everything here applies equally well to today's battery-powered models.

Most of the nailers in my shop are pneumatic. I use modern oil-free Senco guns that still require

an air hose but need very little maintenance. Older pneumatic nailers and staplers are a different story. They typically require a few drops of oil before use, and if they spend months hanging on the wall collecting dust, they'll often need to be cleaned and lubricated before they're ready to work smoothly again.

I also own several battery-powered nailers, and they've become impressively capable. Runtime is excellent, and not having to drag out an air hose is undeniably convenient. Even so, I still prefer pneumatic tools for most shop work because of one feature: control. With a pneumatic gun, I can make precise depth adjustments simply by tweaking the regulator on my compressor. Battery nailers usually offer depth adjust-

■ Air Fasteners

ment as well, but I find it less intuitive and not nearly as fine-tuned as adjusting air pressure.

It's also worth pointing out that air fasteners absolutely have a place in fine woodworking. We all like to imagine every project featuring flawless joinery and hidden mechanical fasteners, but sometimes a nailer is simply the most efficient solution without sacrificing quality.

Take the two examples shown here. In the top photo, brad nails are used to assemble the sides of the Norwegian Linen Chest (Popular Woodworking #282). The goal of that project was quick, repeatable construction, and simple butt joints were both the fastest approach and faithful to the original piece, which was assembled with common nails.

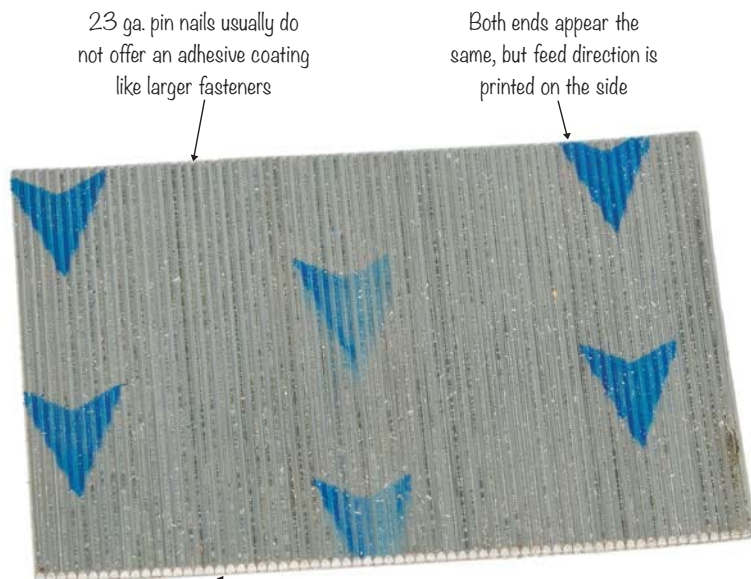
In the lower photo, Collin is assembling the shelves for the Dust Deputy Cart (Popular Woodworking #284). Here, the Baltic birch dividers are glued in place, with a few 23-gauge pin nails added only to hold the parts while the glue cures. The pins contribute very little structural strength—they simply act as tiny clamps until the adhesive does its job.

Both examples highlight what nailers do best: speeding assembly, holding parts in position, and making shop work more efficient. Now let's look at the fasteners themselves and why each deserves a place in the shop.



1. A-battery powered brad nailer is portable and offers a large number of shots-on one charge. The battery platform is a bit less cumbersome, as it doesn't require an air hose.
2. Pin nailers, such as this pneumatic version offer a lot of power with a tiny (almost invisible) entry hole.

23ga. Pin Nail



23 ga. pin nails usually do not offer an adhesive coating like larger fasteners

Both ends appear the same, but feed direction is printed on the side

Clipped, "chisel point" end offers a clean entry hole with little blowout

- Available in sizes from $\frac{3}{8}$ "- 2"
- 23 ga. is a .025" shank diameter
- Entry hole is approximately $\frac{1}{16}$ "

Great for:

- » Pinning Panels
- » Acting as Clamps
- » Attaching Light Moldings
- » Temporarily Holding on Patterns

We'll kick things off with my favorite—and by far my most-used—fastener: the 23-gauge pin nail. Often called a headless pinner, this fastener is exactly what it sounds like. As you can see in the photo above, there's no head at all—just a straight wire about .025" in diameter (slightly smaller than $\frac{1}{32}$ "). They may be tiny, but I reach for them constantly.

The biggest advantage of a pin nail is the nearly invisible hole it leaves behind. Take a look at the inset photos showing pin holes in oak and Baltic birch plywood. In an open-grained wood like oak, the hole practically disappears into the grain. I honestly can't remember the last time I filled a pin nail hole,

even on a finished project. More often than not, sanding dust packs the tiny opening, making it virtually impossible to find.

I use pin nails anytime I need a strong—but temporary—hold. During panel glue-ups, a couple of pins keep boards from skating around while clamps are tightened. They're also excellent for holding difficult-to-clamp parts while the glue cures, essentially acting as tiny clamps themselves. Delicate moldings, inlays, appliques, and other small details are all perfect candidates. Because there's no head, they're also easy to pull back out with a pair of pliers, making them ideal for temporarily attaching routing templates or patterns.

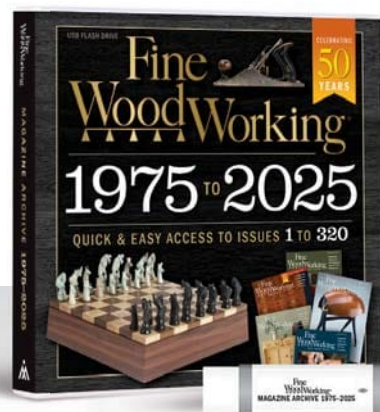
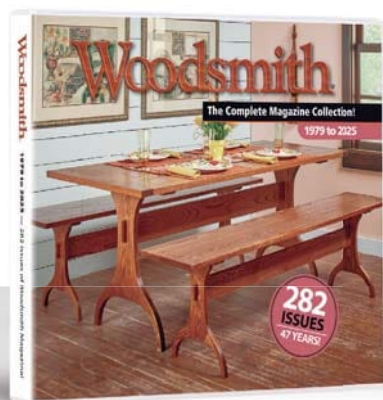


Of course, their size is also their biggest limitation. A 23-gauge pin offers very little holding power on its own and almost no shear strength. Think of it as a positioning tool, not a structural fastener. If the joint needs real strength, glue—or another form of joinery—should be doing the work, not the pin.

Pin nails are available in a range of lengths, but if I could only keep one size in the shop, it would be 1". It's long enough to keep panels aligned during glue-ups, yet short enough to avoid poking through when attaching thin moldings or appliques. If you own a pin nailer, a box of 1" pins will handle the vast majority of jobs you'll encounter.

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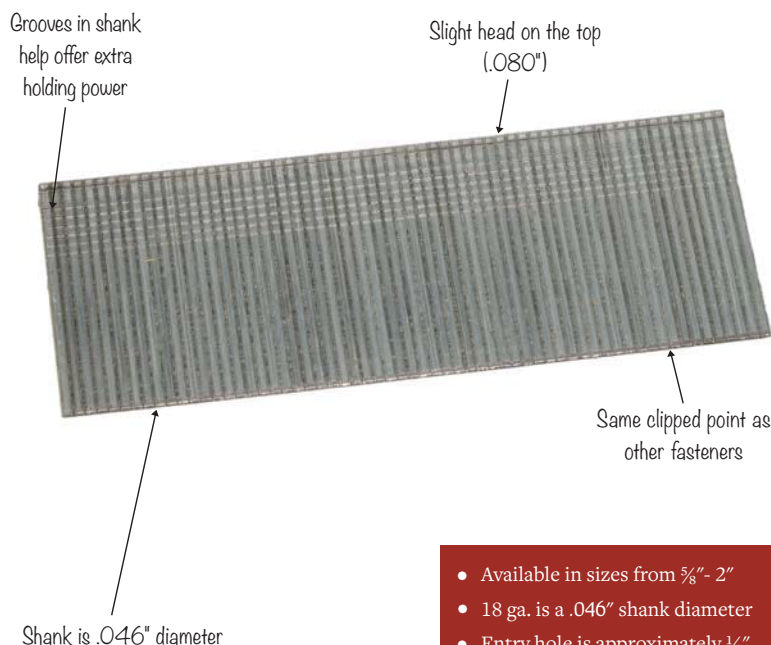
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18ga. Brad Nail



- Available in sizes from $\frac{5}{8}$ " - 2"
- 18 ga. is a .046" shank diameter
- Entry hole is approximately $\frac{1}{8}$ "

Great for:

- » Holding Moldings and Trim
- » Quick Assembly Tasks
- » Semi-structural Tasks (Dadoes)
- » Attaching Face Frames

As biased as I am with my pinner, if I had to pick one nailer that every woodworker should own, it would probably be an 18-gauge brad nailer. While a 23-gauge pin nailer excels at holding parts in place until the glue dries, a brad nailer offers enough holding power to tackle a much wider range of shop tasks. The nails themselves are larger in diameter, have a small head, and are designed to provide real mechanical holding strength while still leaving a relatively small hole.

That extra holding power comes at the cost of a slightly more noticeable hole. The small head helps lock the fastener into the workpiece, making it much less likely to pull out than a pin nail. In many woods, the hole

is still easy to disguise with a little sanding or a dab of filler. On painted projects, a quick touch of wood filler before finishing usually makes the holes disappear completely.

Brad nails are my go-to choice whenever the fastener needs to contribute strength to the assembly. They're excellent for attaching face frames, installing trim, assembling shop fixtures, or building projects where speed is just as important as appearance. They also do a great job holding glued joints together while the adhesive cures, but unlike pin nails, they continue providing useful holding power long after the glue has dried. I'll never forget the first time I saw Norm on New Yankee Workshop shoot a brad into a dado joint to

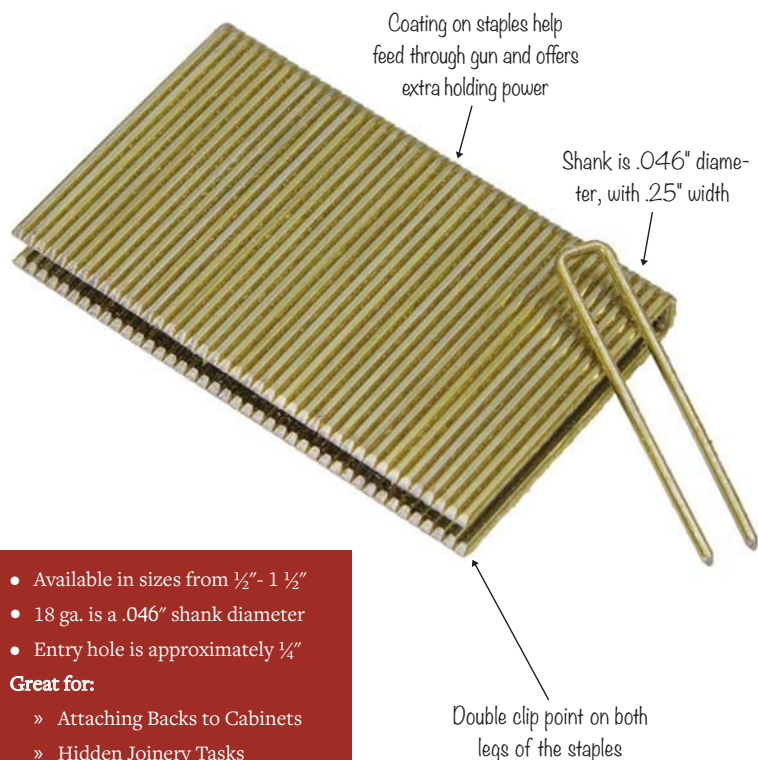


hold everything — genius!

Like every fastener, however, brad nails have their limits. They're strong enough for light assembly and trim work, but they're not intended for structural joinery. The larger size means they're more likely to split moldings or stock if you're working too close to an edge. When appearance is the top priority or the material is especially fragile, a 23-gauge pin nail is often the better choice.

18 ga. brad nails are available from $\frac{5}{8}$ " to 2". In my shop, I use 1-1/4" brads the most. They're long enough to fasten most trim, face frames, and plywood components while still being short enough to avoid blowing through thinner material.

18ga. Staple



- Available in sizes from $\frac{1}{2}$ " - $1\frac{1}{2}$ "
- 18 ga. is a .046" shank diameter
- Entry hole is approximately $\frac{1}{4}$ "

Great for:

- » Attaching Backs to Cabinets
- » Hidden Joinery Tasks
- » Attaching Panels to Walls
- » Drawer Joinery (Where Hidden)

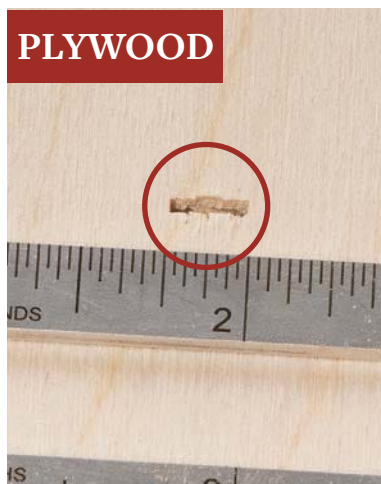
If there's one fastener that doesn't get nearly the credit it deserves, it's the 18-gauge narrow crown staple. It may not be as glamorous as a brad nailer, but it's one of the hardest-working tools in my shop. Anytime strength matters more than hiding the fastener, there's a good chance I'm reaching for a stapler instead.

Unlike a brad nail, a narrow crown staple has two legs connected by a small crown. Those two points of contact dramatically increase the staple's resistance to twisting and pulling out, making it a surprisingly strong fastener for sheet goods and casework. It also does an excellent job pulling parts tightly together as it's driven,

helping to keep assemblies aligned.

One of my favorite uses for narrow crown staples is attaching cabinet backs. Whether it's plywood or hardboard, staples hold the panel securely while adding rigidity to the entire cabinet. They're also my first choice when building shop cabinets, drawer boxes, jigs, and utility projects where the joinery won't be seen. If the fasteners are going to end up hidden inside the case or against a wall, I see little reason not to take advantage of the extra holding power a staple provides.

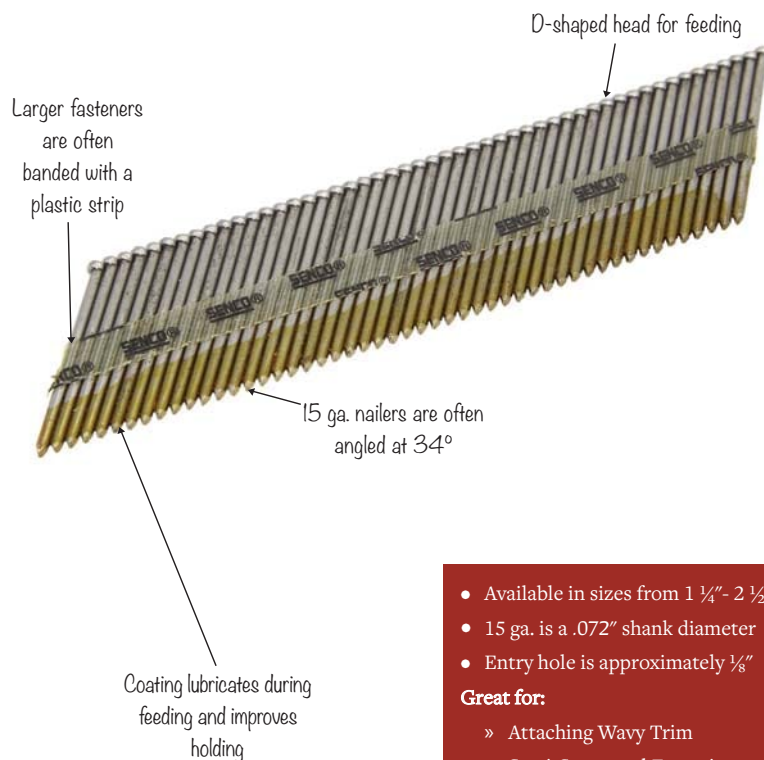
The downside, of course, is appearance. A staple leaves a wider hole, and the head is much more noticeable if it isn't buried or con-



cealed. They're generally not a fastener I'd use on exposed furniture parts or decorative trim. Like brads, staples also work best when paired with glue rather than being relied on as the sole means of holding a joint together, though all the paneling in my shop is held up with just staples.

Narrow crown staples are available in a variety of lengths, typically from $\frac{1}{2}$ " to $1\frac{1}{2}$ ". In my shop, I use $1\frac{1}{2}$ " staples most often. They provide plenty of holding power for $\frac{3}{4}$ " sheet goods without creating unnecessary risk of blowing through the opposite face. For hidden joinery, cabinet backs, and shop projects, they're one of the most useful—and most overlooked—fasteners you can own.

15ga. Finish Nail



- Available in sizes from 1 1/4" - 2 1/2"
- 15 ga. is a .072" shank diameter
- Entry hole is approximately 1/8"

Great for:

- » Attaching Wavy Trim
- » Semi-Structural Fastening
- » Shop Fixtures
- » Stair and Door Trim

When the job calls for maximum holding power, I reach for a 15-gauge finish nailer. Of the fasteners covered in this article, it's the closest thing to a true construction fastener while still being perfectly at home in a woodworking shop. The larger diameter nail and pronounced head give it significantly more holding power than a brad nail, making it suitable for applications where the fastener becomes part of the structure—not just a temporary clamp.

That added strength makes a 15-gauge nail my first choice for installing solid wood trim, fastening door and window casings, securing baseboard and crown molding, and assembling larger

shop fixtures. It's also an excellent option anywhere parts need to be held securely while glue cures. In many situations, a properly placed finish nail provides enough mechanical strength that you can keep on working without worrying about the glue curing.

The tradeoff is, obviously, visibility. A 15-gauge nail leaves a noticeably larger hole than other fasteners and the head is designed to lock the it into the wood rather than disappear. For painted trim, a little filler and a coat of paint make them virtually disappear. Unpainted objects? A little tougher

While a finish nail is remarkably strong, it's important to remember



what it is—and what it isn't. It can absolutely serve as a structural fastener for trim work, cabinet installation, and many shop-built projects, but it isn't a replacement for proper joinery that carries the real structural loads in furniture making. Think of a finish nail as the strongest member of the pneumatic fastener family, capable of doing jobs that would quickly overwhelm a brad nail or pin nail (unless of course, you're building furniture with framing nails).

Finish nails are available in lengths from about 1" to 2-1/2", and I find myself reaching for 2" nails most often. **PW** - Logan Wittmer

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PHOTOS BY LOGAN WITTMER

■ The Stutey Lathe:

A Different Way to Think About Woodturning

By Logan Wittmer

Woodworking is full of specialties. There's carving, scroll saw work, marquetry, chair-making, turning, and countless others. The deeper you dive into any one of those disciplines, the more you discover an entirely different world of tools and equipment that many woodworkers have never even heard of.

Woodturning is a perfect example.

I've never hidden the fact that I'm an avid turner. When I'm not building furniture, there's a good chance I'm standing in front of one of my lathes making shavings. And while many woodworkers think of a lathe as just another machine in the

shop, turners know it's often the centerpiece. In fact, it's not uncommon for a serious turner to spend more on a lathe than many woodworkers have invested in their entire shop.

In this article, I want to introduce you to one of the most interesting lathes I've ever used: the Stutey Lathe.

■ The Stutey Lathe

The Stubby Story

Just before COVID, I stumbled across a lathe online unlike anything I'd ever seen. It was the Stubby S1000, built by AMP Engineering Solutions in Australia.

At first glance it looked almost futuristic—something Optimus Prime might have designed. The bed could slide and pivot, and a variety of bed extensions could be mounted in different positions. It looked less like a conventional lathe and more like the Swiss Army knife of woodturning. Add an all-cast-iron construction, and I was convinced it was capable of handling just about anything I wanted to turn.

I was ready to buy one.

I had pricing from the manufacturer and was preparing to place an order when COVID changed everyone's plans. Looking back, that delay turned out to be fortunate. It appears that many Stubby lathes ordered during the pandemic never reached their owners, and production eventually stopped altogether.

Even so, my interest in the design never faded.

Whenever Stubby lathes appeared for sale, one name seemed to surface repeatedly: Pedro Castaneda. Pedro had become well known for buying, restoring, and selling Stubby lathes in the United States. When I reached out to him, he explained that he had begun working with Greg Stute, an Australian manufacturer who had started to produce after market parts for the Stubby, as well as a lathe in the Stubby style.

Greg's new company was preparing a production run for the U.S. market, now under the name Stute Wood Lathes (The Stutey 3040).

After several conversations with Greg and Pedro, we arranged to bring one into the Popular Woodworking shop for a few months before it continued on to SWOT in Texas. My goal was simple: spend enough time with the machine to understand what

made this style of lathe so unique and share that experience with our readers.

After several weeks of turning, I can honestly say the Stutey delivered on every expectation I'd built up over the years.



1. As a gap-bed lathe, the entire bed of the Stutey 3040 slides to the right. Doing so provides up to 40" between centers.
2. With the bed in the extended, not only do you gain extra room between centers, but also you gain up to 30" of swing within the gap. This allows for turning of large vessels, platters, and bowls.





3

What Makes the Stutey Different?

At first glance, the Stutey is obviously a lathe—but it doesn't look quite like any other lathe you've seen.

The defining feature is its sliding, pivoting bed. Rather than being fixed in one position, the bed rides on a rotating turret that allows it to move both laterally and rotationally. That single design decision completely changes what the machine is capable of.

Although the lathe has a 16" swing in its standard configuration, sliding the bed creates a gap-bed arrangement capable of turning workpieces up to 30" in diameter while also extending the distance between centers to 40 inches.

In practical terms, it combines two machines into one.

It has the compact footprint and ergonomics of a dedicated bowl lathe, yet with the bed extended it has the capacity to comfortably handle long spindle work. Few lathes excel at both, but this one genuinely does.

Those specifications are impres-

sive, but they aren't what sold me.

What really elevates the Stutey into the premium category is the execution.

The machine is built entirely from cast iron and machined in Australia. Everything about it feels substantial. More importantly, nearly every feature suggests it was designed by someone who actually spends time turning.

The 3-horsepower motor might seem oversized for a machine with this footprint, but once you begin turning large platters or bowls in the gap-bed configuration, the extra horsepower makes perfect sense.

Then there are the thoughtful details.

One of my favorites is the built-in vacuum system. On most lathes, using a vacuum chuck means removing the handwheel from the headstock every time you connect your vacuum line. The Stutey instead routes vacuum through a dedicated threaded port in the headstock, allowing you to leave the handwheel installed while permanently plumbing your vacuum

system. It's a small feature that dramatically improves day-to-day usability.

The same philosophy shows up throughout the machine.

Every adjustment knob is machined from steel rather than molded plastic. It seems like a minor detail until you've owned expensive machines with plastic controls that never quite matched the quality of the rest of the lathe.

There are thoughtful conveniences everywhere you look. A recessed tray on top of the headstock provides a natural place to set tools while you're working. Both the control pendant and RPM display can be positioned wherever they're easiest to see. There's even a dedicated hanger behind the headstock for the spindle wrenches so they always have a home.

None of these features is revolutionary on its own.

Together, though, they create a machine that simply feels like it was designed by a turner instead of an engineer working from a specification sheet.

More Than Just Another Lathe

This wasn't intended to be a formal tool review. I could spend pages talking about what I like about the Stutey—and most of it would be deserved—but that isn't really the point.

Instead, I wanted to introduce you to a style of lathe that many woodworkers have never encountered.

Today's woodworking market is filled with machines that share remarkably similar castings, differing little more than the paint color and the badge on the front. There's nothing inherently wrong with that, but it's refreshing to see a company rethink what a lathe can be instead of simply reproducing what's already available.

The Stutey is one of those machines.

It's thoughtfully designed, exceptionally well built, and full of practical innovations that come from understanding how turners actually work. Whether or not it's the right lathe for your shop, it's proof that there are still manufacturers willing to challenge conventional designs and build tools with genuine purpose behind them.

As woodworkers, those are the kinds of machines worth paying attention to.

PW – Logan Wittmer



3. The defining design of the Stutey is the ability for the bed to move on its turret. As you can see in Photo 3, the bed slides to the right, then can pivot towards the operator.
4. The castings of the Stutey lathe are heavy, and machined beautifully.
5. The turret of the Stutey lathe locks in place with a registration pin. With the pin removed, the bed can pivot to any orientation.
6. As if the pivoting bed wasn't versatile enough, the Stutey has an auxiliary bed that can mount in various positions around the lathe to reach nearly any area of a turning.

StuteWoodLathes.com.au

Product Showcase

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Product Showcase

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Comparing Cordless Drills

Rounding up drills and impact drivers from most major manufacturers really highlights the recent improvement in brushless motors, battery performance, and overall thoughtful tool design. If you're still running a brush style cordless drill, you'll be amazed at the significantly increased torque and runtime.

By Willie Sandry

In fact, all of the drills and impact drivers in this test use brushless motors which allows for a smaller, more compact tool design. We'll hog out holes, drill screws, and drive lags to sort these from homeowner grade, shop standouts, or construction beasts. If the drill you're eyeing isn't the fastest or brawniest of the bunch, don't worry, as the tool only needs to meet your personal needs. Often a great shop drill isn't the most powerful of the bunch, but stands out by being light weight and having features that matter to you.

Testing Procedures

Included in the test are the flagship drill / driver in the 18-20v

range from each make, as well as a compact drill and 1/4" impact driver. Tools were specifically selected for woodworking, where power often takes a back seat to a light weight and ergonomic design. There are certainly great tools that fall outside these criteria, and one that comes to mind is Makita's 40v line. In the end, the field had to be narrowed somehow, so the focus was cast on these popular 18-20v offerings. Each drill/driver drilled 100 holes in 1/2" OSB sheet goods as an endurance test and battery check, using a new 1" spade bit. Next, a speed test was performed drilling holes in a fir 2x4 with the same 1" spade bit. Drills were set in high gear, drill mode, with any special features such as auto speed

function, or kickback control disabled. Now, drilling 1" holes in high gear is a brutal test of the motors ability to quickly generate power. In a shop setting, you'd normally switch to low speed for increased torque, when drilling larger holes. So as a second chance, any drills that struggled in the test were given another go in low speed. Impact drivers drove 60 lag bolts to assess power and battery performance. Next, they underwent a speed test driving 1/4" x 1-1/2" long lag bolts, with no pre-drilling except a 1/4" deep hole to make the lags easier to get started. Three trials were performed with each impact driver, and averaged for test results. Any outlier time that varied greatly from the mean, was discarded and repeated. Our stopwatch operator was pleased she recorded identical numbers on two of the three trials, for multiple tools. Finally, the tools were used in the shop for 2 weeks performing everyday tasks to hone in on our favorites. When the dust settled, we had drilled 1500 holes, driven over 500 lags, and countless drywall and woodworking screws to assess chuck function and overall useability of each model.



PHOTOS BY WILLIE SANDRY



Hammer Drill vs. Impact Driver

Here's a topic where a lot of confusion persists, so we should set the record straight. There were a few drills in the test that included a hammer drill function, although it wasn't a feature we sought out. After all a hammer drill function, usually indicated by a small hammer icon, is designed for drilling masonry and cementitious material. Now, both a hammer drill and impact driver use an anvil of sorts to create impacts or bursts of momentum to drive the spindle and attached chuck. The key difference between the two is this: a hammer drill creates longitudinal impact along the axis of the bit, while an impact driver creates a rotational impact. This makes an impact driver ideal for driving larger screws and lag bolts, while a hammer drill creates a chipping or pounding action for drilling concrete or bricks. For woodworkers, it may be difficult to know if you need a hammer drill function at all. The answer simply depends on whether you also want to occasionally work with concrete. One drill

that incorporates a hammer mode particularly well in a fairly compact size is the Bosch GSB18V-65.

Drilling 100 consecutive holes is a torture-test by any measure, yet all drills in the test managed the feat, except the compact Ryobi with smaller 1.5Ah battery, which stopped at 84 holes.

A fresh 1" Freud Diablo Speed Demon spade bit for each drill kept the test fair for each brand.

The better models feature sturdy all-metal chuck construction. All models tested performed best when the chuck was turned $\frac{1}{8}$ " or "Ratcheted" by hand with the drill off. This universally improved bit retention for round and hex bits.

Battery performance and selection is often enough to sway a purchase decision. The best brands offer extended run times, rubber coatings on the battery, or integrated cooling fins. The Milwaukee, DeWalt and Bosch battery packs stood out from the crowd.

A Word About Chucks

Most of the chucks on the drill / drivers are all-metal construction, with a couple exceptions. Either style can work, however metal chucks are generally seen as more robust for heavy duty work. If your last drill has an old-fashioned brush style motor, you likely got in the habit of installing and removing bits by spinning the chuck in your hand. I don't know about you, but my last kit drill liked to spit out bits like a dog taking a bitter pill. Luckily, brushless motors offer enough resistance to rotation, so there's a more effective way to install or remove bits. Sure, you can run the bit loosely into the chuck in the traditional way. Then, with the chuck stationary, give it a $\frac{1}{8}$ turn by hand to snug up the bit. Likewise, when it's time to swap drill bits or drivers, loosen the chuck by hand, with the drill off. The extra rotational resistance of a brushless motor works to your advantage here, and I've never lost a bit with this simple technique.

Drill / Driver Test Results

Initially, it was surmised that the 100-hole test might just be a battery test. That was an interesting point, because the drills were tested as equipped. Some tools came with a 1.7 or 2.0Ah battery, and others had a 4 or 5Ah battery. One model even came with a 6Ah battery, and some came as tool-only, leaving the tester to decide which battery made the most sense. To our surprise, all drills but one in the test managed the 100-hole test, regardless of the battery size. Some of the compact models developed more heat during this extended and unusual test, and specific notes are included with each model, as applicable. For the speed drilling test, there was a wide range of results, with the leaders blasting through 2x material like it was polystyrene, and other models that couldn't drill a single hole with the gearbox in high. The

fastest performers were the Dewalt DCD801 at 1.31 seconds, the Makita XPH14 at 1.46 seconds, and the Milwaukee and Ridgid tied for third at 1.59 seconds. The fastest drills weren't always the ones selected as best, so be sure to check out the model specific sections, and winner's circle discussion to learn all the details.

All impact drivers managed the 60-lag test, regardless of battery size. That's an impressive feat, considering they were driven consecutively, as fast as the tester could go. Three models topped the charts in the lag bolt speed driving test. The Dewalt DCF860 managed the quickest time at .61 seconds, with the Ryobi and Milwaukee right behind at .80 and .86 seconds respectively. Again, the fastest tools didn't always make the winners circle due to other important factors, such as weight and special features.

The top-tier impact drivers were often separated by a fraction of a second in the lag driving test. Ergonomics and build quality are important as well, where the Bosch GDR18V-1800 scored well.

Size and weight vary greatly within the impact driver category, with some built for tight quarters, while others are heavier but more powerful as well. Battery type plays a key role in the overall size and heft, and can often be swapped for a smaller pack to save weight.



Bosch GDR18V-1800 *Top Tier Impact Driver*

The top-tier impact drivers were often separated by a fraction of a second in the lag driving test. Ergonomics and build quality are important as well, where the Bosch GDR18V-1800 scored well.



Drill / Drivers Field Notes



Bosch GSR18V-400 *Cordless Drill*

Bosch GSR18V-400 Compact Drill. This small drill features a brushless motor and $\frac{1}{2}$ " chuck in a lightweight, compact footprint. Holding it in your hand, it feels well suited for home repairs like installing door hinges and similar light-duty tasks. Starting with a fully charged 2Ah 18v AMP Share battery, we noted the battery drained quicker than other models. The 100-hole test dropped the battery life indicator from 3 bars (full charge) to just one bar. That said, it's impressive that a tool weighing just 2#, 13oz including battery (lightest drill weight in test) could complete such a grueling task. With the minimal torque output we observed in high speed, it performed more naturally in low speed for drilling larger holes. The gearbox has two speeds and a manual selector switch that we've come to expect on top of the tool. The drive mode selector is pretty basic and allows switching between drilling mode for unlimited power output, or turn the clutch dial for 1-20 settings for driving fasteners. The metal chuck operates smoothly, and was easy to use. A small, single-source LED light is well-positioned just above the battery, with adequate brightness. A partial rubber overmold and the small size grip, makes this a perfect fit for those with smaller hands.



Beautifully made parts fit precisely together and give the Bosch Flexiclick drill more versatile than ever. Choose from a standard chuck, right angle chuck, or clever $\frac{1}{4}$ " hex-style offset chuck for drilling in confined spaces.

Bosch GSB18V-800FC *Cordless Drill*

Bosch GSR18V-800FC Flexiclick Full-Size Drill. This is a specialty drill that allows you to remove the metal chuck, without any tools, and replace it with your choice of a right-angle chuck or offset chuck. The quick-change system is impressive, because it doesn't take much force to release the attachment, yet it stays put in normal use. It's reminiscent of a compact Bosch router from the 90's that included various bases, including an offset base for laminate trimming. Best of all, there's a hidden quick-release chuck beneath the standard chuck, allowing use of common hex-style bits. With this drill, you get a couple of advanced features, in addition to the swappable chucks. Behind the chuck twist lock is a typical drill mode and clutch mode selector dial with 20 clutch positions. Like the rest of the Bosch drills, a red two-speed gear selector sits on top of the tool, and a partial rubber overmold provides a good grip. Similar to the GSB18V-65, the Flexi Click drill gives you kickback control, and a quick way to turn the clutch on or off, but the interface is entirely different. Here, both the kickback control and clutch on/off switches are digital, and located at the base of the tool. Nestled between these special buttons is a one-source LED light, smartly positioned for even lighting without a shadow. With the standard chuck and a 4Ah Core 18V battery installed, the weight jumps to 4lbs, 2oz, placing it firmly in the full-size drill category. You can save about 7oz, by using a 2Ah battery, but the removable chuck thrusts the center of gravity forward, so the tool perhaps feels more balanced with the larger battery. If you like the advanced features on this drill, but don't need the quick-change chucks, consider the GSR18V-800CB24 kit or GSR18V-800CN bare tool.



The Bosch GSB18V-65 drill has some special features like Kickback Control, which can be disabled, and a pair of bright LED lights.

An ingenious quick-selector saves time by easily letting you choose drill, drive or hammer drill modes, without rolling past all the clutch settings as with most drills.

Bosch GSB18V-65 *Cordless Drill*

Bosch GSB18V-65 Drill. This is one model that can only describe as a midsize drill, and it's a perfect fit for any shop. While it shares some DNA and good looks with its little brother, it adds a couple key features, and performs much better. Backing up the all-metal chuck is a 3-position quick selector, to easily swap between drill, drive, or hammer modes - all without rotating the 20-step clutch selector dial. Stepping up to this professional line drill also gets you kickback control to prevent twisting your wrist. I found the anti-kickback circuitry performs very naturally, and did just what was expected. Or you can turn the function off with a single button located at the base of the tool. A two-source LED light is functional, although the upper light (mounted just above the trigger) does little more than cast a shadow on your bit. Luckily, the lower light above the battery pack is bright enough to pick up the slack. The partial rubber overmold grip is comfortable for most users, and the overall weight with a 2Ah AMP Share battery is just 3#, 4oz, making this drill an ergonomic champ.



The Atomic series is highly regarded for striking a perfect balance between power and compact size. The shape of the DCD794 is so blunt and stubby, it almost looks like an impact driver.

The LED isn't flashy, but it's well-positioned and aimed for effective task lighting. This drill pairs well with the ubiquitous 2Ah Dewalt Li-Ion battery.

Dewalt DCD794 *Compact Drill*

Dewalt DCD794 Compact Drill. Around construction sites, you'll hear the phrase "Atomic or Nothing" touting the power-to-weight ratio of many 20v tools in Dewalt's Atomic line. While this compact drill is a good performer, it's actually positioned below the top-tier XR lineup of tools. The $\frac{1}{2}$ " plastic-sleeved chuck works better than older Dewalt kit drills, and performed best with a good hand-snugging of the chuck with the drill stationary. The DCD794 completed the 100-hole test without much trouble, and was on-par with the compact Milwaukee for the drilling time trial. The 15-position clutch plus drilling mode was somewhat stiff initially, and like most brushless drills, there's less room for your hand to grasp the dial. Adorned with Dewalt's hallmark overmold handle, and weighing in at just 3lbs, 3oz with a standard 2Ah lithium-ion battery, this Atomic model is easy to get a grip on. There's a standard two-speed gearbox on top for speed changes, and like the clutch ring control, they both feel a little stiff right out of the box. A single-source LED light is wisely placed above the battery pack for evenly dispersed task lighting, without harsh shadows. While its stature places it squarely in the compact category, you don't give up much in terms of power or speed. Plus, this one's easier to hang from your tool belt than a full-sized drill. This model would be a good choice if you occasionally work from a ladder, and need one drill to do it all.

Cordless Drills



The DCD801 feels well-planted on your workbench thanks to the rubber coated Power Pack battery that, like most modern batteries, features a power level indicator.

Just when you thought tool LED's couldn't get any better, they do. The pivoting light bar on the 801 is easy to position or change brightness with a mechanical switch, or choose the extra bright worklight mode.

Dewalt DCD801 *Full Size Drill*

Dewalt DCD801 Full-Size Drill. This is Dewalt's flagship XR drill, and it shows. Scarcely $\frac{1}{2}$ " longer than the DCD794, the DCD801 weighs in at 4lbs, 10oz. That weight feels manageable, because it's well-balanced with a 4Ah XR Power Pack battery, or you can trim it to 3lbs, 10oz with a standard 2Ah battery pack. The 2-speed gearbox and 15-step clutch have a traditional layout, and both feel a little stiff initially. The articulating 70 lumen LED light is the best of the bunch, and provides bright, even lighting in two different settings, including an extra-bright worklight mode that stays on for 20 minutes. The pivoting light is a nice touch, and can be turned off if desired, but some testers wondered how durable it would be over time. With advanced features like Anti-Rotation protection and Tool Connect Chip-Ready optional add-on, you won't likely need to upgrade anytime soon. If you don't need a hammer drill, you'd be hard-pressed to find a better performing full-size drill. While it may be built for a construction site, there's nothing it can't tackle in the shop.



The new Kreg 20v drill comes with a nice metal chuck, and easy-to-grip clutch selector ring, making this tool easy and enjoyable to use.

If you find pocket holes useful for building cabinets and shop projects, the Kreg $\frac{1}{2}$ " Cordless drill is a perfect companion for the Kreg jig you already own.

Kreg KPTDR0500 *Compact Drill*

Kreg KPTDR0500 Compact Drill. The headliner of Kreg's exciting new Blue Ion launch is perhaps the $\frac{1}{2}$ " Kreg 20V drill with all-metal chuck and two-speed gearbox. Now you can drill and drive pocket hole screws with a matching blue drill. The controls are standard, including a 20-position clutch ring with drill mode selection as well. The Blue Ion drill posts a respectable 3#, 4oz weight using a 2Ah battery, and felt right at home in the shop. While the raw torque didn't quite match the top performer for drilling large diameter holes in high gear, all you need to do is flip the selector to low speed, and it does just fine. The 2Ah battery gives the tool a nice overall balance, and it performed well with common cabinet making and furniture building tasks. The single-source LED light seems bright enough, and provides even lighting, without shadow lines. If the lions share of your work is drilling with bits $\frac{1}{4}$ " diameter or less, and driving screws all day, the all-new Kreg Blue Ion drill/driver would be a great choice. Plus – once you're on the Kreg Blue Ion battery line, you can drool over other new tools like the Kreg Rebel cordless pocket hole machine.



Makita XFD15 *Compact Drill*

Makita XFD15 Compact Drill. Equipped with a 2Ah 18v lithium-ion battery, this $\frac{1}{2}$ " drill was the second lightest in the test, and it truly felt like one of the most compact models. The controls are standard and well-placed, so you can get to work without much fuss. It offers a 20-step clutch ring, plus drilling mode if you'd rather not be limited by the clutch. The two-speed gearbox selector was a little stiff initially, but certainly does the job. The plastic covered chuck works well if you give it a final $\frac{1}{4}$ turn by hand, with the drill stationary. In fact, the chuck clicks positively as you snug it up, signaling a solid bite, that won't let go. This chuck was a little more work to release by the power of the drill, but was easy to operate with a hand-twist. The full rubber overmolded handle is comfortable, and combined with its light weight make this drill easy to use. The single-source LED is mounted above the trigger, where it can cast a shadow on your work. This was really only an issue when using extremely short driver bits. If you like smaller drills on a 12v platform, but need a little more power, the Makita XFD15 18v compact drill would be a perfect fit.



The full-size Makita XPH14 towers over its little brother, and weighs an extra 2lbs, 3oz. However, it also packs plenty of power, and has a consistently high build quality.

Makita XPH14 *Full Size Drill*

Makita XPH14 Full Sized Drill. This $\frac{1}{2}$ " 18v drill features an all-metal chuck and standard controls including a 21-step clutch ring, as well as drill and hammer drilling modes. The clutch ring projects out beyond the trigger housing, making it easier to rotate than some other brushless models. Commonly equipped with a 5Ah lithium-ion battery, this drill crashes the scales at 5lbs, 10oz, the second heaviest in the test. It universally drew comments from testers such as "Wow this thing is heavy." That extra weight comes with a lot of power as well, and it can plow through a 2x4 in under 1.5 seconds with a spade bit. It was unphased by the 100-hole test, while the brushless motor and metal gear case stayed cool with continual use. The rubberized grip is a comfortable size, and the tool is well-balanced with the 5Ah battery. The single-source LED light is positioned just above the trigger, where it tends to cast a shadow on your work. If you like heavy-hitters that use their weight as an advantage, such as boring large holes, the full-size Makita might be right for you.



Getting all the basics right in a compact package, made the Milwaukee 3601 the first drill we reached for.

Milwaukee 3601M18 *Compact Drill*

Milwaukee 3601 M18 Compact Drill. This compact 18v drill has several simple features that make it stand out, and operates on the excellent M18 battery platform. Not only is the partial overmold handle rubber-lined, but so is the battery, for extra grip when setting the drill on slippery or uneven surfaces. As we've come to expect from Milwaukee, the $\frac{1}{2}$ " chuck is metal, but the gear case on this model is all-metal as well. Testers found the chuck locked firmly in place with a $\frac{1}{8}$ " twist by hand, and unlocked just as easily. The three-jaw chuck also has grooves that allow it to register either the flats or edges of a hex bit. The 13-step all-new M-clutch is much easier to position than other brands, or select the drill icon for unlimited torque. The 2-speed gearbox selector is firm, but not unnecessarily stiff like so many other drills in the test. Equipped with Milwaukee's excellent CP2.0 Red Lithium battery, the 3601 weighs just 3lbs, 3oz. and overall, the tool feels light and well-balanced. While this model doesn't connect to the internet, or communicate with your mini-fridge, it does have Redlink Intelligence advanced overload protection. This system monitors temperature to prevent damage in the most demanding scenarios. Whether you need your next shop drill, or a tool that can climb a ladder without dropping your Levi's, the 3601 is a winner.



A premium battery platform and special One Key connectivity features make this Milwaukee M18 Fuel drill a strong contender.

The all-metal chucks and easy-to-operate clutch selector rings on both Milwaukee drills were some of the finest in the test.

Milwaukee 2905M18 *Full Size Drill*

Milwaukee 2905 M18 Full Sized Drill. This $\frac{1}{2}$ " solid state brushless drill performed very well in the 100-hole test, without ever slowing down. Packed with features like Autostop rotation control, and One Key to let users customize, track, and manage the tool. Very specific settings can be dialed in with a mobile app, including Autostop sensitivity, and 3 digital presets at the base of the drill for various speed and power output. Like other Milwaukee tools in the test, the 2905 uses Redlink Intelligence circuitry to protect from overloads, heat, and over-discharge. The premium all-metal ratcheting chuck has carbide teeth for maximum durability and bit retention. The single-source LED light is well-positioned at the base of the tool, and plenty bright too. The handle has a full rubber overmold, and is comfortable to hold, despite a fighting weight of 4lbs, 10oz. including the capable CP3.0 Red Lithium battery. Like the smaller 3601, the clutch selector ring is easier to turn than most. Full-size, full-weight, and full featured. If that's your jam, this is your next drill.



Rigid R87012 *Compact Drill*

Rigid R87012 Compact Drill. This is a nice brushless $\frac{1}{2}$ " drill / driver offering from Rigid, and it feels similar to the Ryobi compact drill, perhaps with a little nicer fit and finish. The chuck is plastic coated, and features a small groove in each of the three jaws. This lets the chuck grab the bits on either the flats or the corners. A 23-step clutch ring provides just the right torque for any application when driving screws, or choose the drill icon for max torque. A two-speed gearbox on top of the tool has a short, firm throw, but is predictable to operate. This compact drill pairs well with Rigid's 2Ah 18V Lithium battery, and weighs just 2lbs, 15oz. in that configuration. The R87012 earned praise for good ergonomics and a finely textured full rubber overmolded handle. It has a soft-start feature that helps when starting fasteners, once you're accustomed to it. The features all have a standard layout on this model, so it's easy to jump in and start working. It handled the 100-hole test without issues, and drilled through a 2x4 in a little over 2 seconds. The LED light is notably brighter than some in the test, and angled for a perfect line-of-sight to your work. Generally, the two-tab battery release makes sense, although the tabs on the Rigid batteries do project slightly beyond the base of the tool. With the battery removed, the drill tips forward on the rounded base, and doesn't feel stable enough to stand on its own. This compact model feels more like a shop or household drill than a construction site staple, which is fine for most woodworkers.



Rigid R861152 *Full Size Drill*

Rigid R861152 Full Size Drill. This large $\frac{1}{2}$ " hammer drill looks like it's been hitting the gym, and ready to work all day. With a 4Ah Max Output 18V Lithium battery clicked in, it weighs 5lbs, 2 oz. That's a chunk of weight to drag around the shop, but might be worth the effort if you need one drill to build backyard decks as well as furniture. Layout and finish of the tool is very similar to its younger sibling, with the notable addition of a hammer drill setting, which can be useful for drilling concrete and brick. There's also a bit clip that can mount to either side, just above the battery. It increases the width of the tool though, and might snag your leg when hanging from a toolbelt, but it's easy to remove if needed. The LED light was universally liked for brightness and placement on this tool.

Cordless Drills



Ryobi PSBDD02 *Compact Drill*

Ryobi PSBDD02 Compact Drill. A lightweight brushless $\frac{1}{2}$ " drill is something that every household needs. While it gave up at 84 consecutive holes in our drilling test, you'll likely never push it that hard. It stalled frequently when drilling 1" spade bits in high gear, but was capable if you take your time in the recommended low gear. At 3lbs flat with a 1.5Ah battery, most users will find this one comfortable in the hand. The plastic covered chuck, like the Ridgid, has a groove in each jaw allowing it to grab the flats or corners of common hex bits. The LED light is bright and useful, without casting unwanted shadows. Unlike the compact Ridgid drill, the Ryobi easily stands upright with the battery removed. It's one of the lightest drill / drivers in the test, and would be perfect for many homeowners who love to tinker.



Ryobi PBLDD02 *Full Size Drill*

Ryobi PBLDD02 Full Size Drill. With a 4Ah High Performance Li-Ion battery, this 4lbs, 8oz cruiser blew through the 100-hole test and performed well. Despite the stemmed battery design that fits inside the handle, the grip is average size and easy to grasp. You'll find standard layout of the adjustments including a short-throw 2-speed gearbox up top, and a 23-step clutch ring for precision driving. It has the same bright LED as the compact Ryobi, however it steps up to an all-metal $\frac{1}{2}$ " chuck. Carried on from other drills in this family, is the grooved chuck jaws to quickly accept most any bit. If power is paramount, and you don't want to pay the premium for a lighter drill, the full-sized Ryobi will meet your needs.



Vevor DJZH 5025-13 *Compact Drill*

Vevor DJZH 5025-13 Compact Drill. Here's a brushless drill / driver with $\frac{1}{2}$ " metal chuck and traditional features and layout. A 21-step clutch or drill mode is easy to select for the job at hand. A short-throw 2-speed gearbox is a little stiff, but seems to function well. Equipped with a slim 2Ah 20V lithium-ion battery, it weighs just 2lbs, 15oz., so it feels light weight and easy to handle. The partial rubber overmold makes the grip ergonomic, and comfortable even for smaller hands. The LED had average brightness, but was well-positioned at the base of the tool. It managed 100+ large holes for our drilling test, but bogged down when drilling 2x4's in high gear. In a more appropriate 1st gear, it drilled through framing lumber in a little over 6 seconds. The virtues of the Vevor are a relatively low cost, and being light weight and compact – especially the overall tool length which is just 5- $\frac{3}{8}$ ". If the bulk of your work is drilling small diameter holes, and precisely driving screws, this value drill could be a good fit. As a late entry in the test, we didn't have a Vevor impact driver to test, although they are available online.



Bosch GDR18V-1800 *Impact Driver*

Bosch GDR18V-1800 Impact Driver. This solid offering from Bosch had no trouble driving 60 lags for our test. While it wasn't the fastest driver, it posted a respectable 1.39 second time for the lag driving speed test. The brushless motor ran strong and steady, without any excess heat buildup, and felt like it could go all day. Paired with a 4Ah Core 18V battery, this one comes in at 3lbs, 9oz and feels well-balanced in the hand. The $\frac{1}{4}$ " quick-release hex style chuck requires the user to retract the collar to install a bit, which is an extra step. However, the chuck did retain bits securely and performed well in all testing. Unlike many impact drivers, it places the LED light on the base of the tool which provides fairly bright, even lighting. Many users select an impact driver based on what color tools they already own, but this Bosch would be a good bet, regardless of your current platform.

Impact Drivers



Dewalt DCF860 *Impact Driver*

Dewalt DCF860 Impact Driver. An absolute banger in the group, the 860 managed the fastest lag driving speed test of just .61 seconds. Spinning 60 lags to full depth was child's play for this brushless motor housed in a metal gearcase. With Dewalt's 4Ah 20V Power Pack battery, it weighs 3lbs, 11oz, or can be trimmed to an impressive 3lbs, 2oz with the smaller 1.7Ah Power Stack battery pack. Three digital speed / torque settings are controlled with a button on the base of the tool, along with a 4-setting light switch allowing off, standard or extra bright settings as well as a 20-minute worklight mode. Pull the trigger and an array of 9 LED lights come on at the nose of the driver, eliminating any possibility of shadows. It's "Tool Connect Ready" with optional chip sold separately, allows additional control with Site Manager mobile app. If brute strength and the fastest speed are your driving factors, the DCF860 is your best pick.



Dewalt DCF870 *Quiet Hydraulic Impact Driver*

Dewalt DCF870 Quiet Hydraulic Impact Driver. This 1/4" premium 20V XR series impact driver is differentiated with black nose trim, and an ultra-compact stance. Click in the 1.7Ah Power Stack 20V battery and it weighs an incredible 2lbs, 14 oz. While it only measured only one dB quieter than similar impact drivers, this one excels in other areas. Testers repeatedly used the term "Smooth" to describe the efficient action of this nimble driver. Lags went in straighter and more consistently, with less effort than most tools. The 60-lag test was a walk in the park, and lag driving time trials recorded a solid average of just over 1 second per fastener. The brushless motor stayed cool, even after rapidly driving and removing large quantities of fasteners. Like the 860, the 870 lights up the night with a 9-LED array, recessed in the nose of the tool. A mechanical two-step speed / torque selector switch, plus 20-minute worklight mode are located at the base of the tool on this model. It's "Tool Connect Chip-Ready" for inventory management and customization, with optional chip sold separately. Perhaps the new flagship impact driver at Dewalt, the DCF870 is truly confidence-inspiring in the shop or on the jobsite.



Kreg KPTDV0250 *Impact Driver*

Kreg KPTDV0250 Impact Driver. A brand-new entry in the 20V Blue Ion line is the Kreg 1/4" brushless 1/4" impact driver. A digital speed / torque mode selector offers three distinct settings, plus an auto mode. Ergonomics and styling on this new line of cordless tools looks good, and the impact driver is no exception. The metal casing didn't start to feel warm until after 90 lags had been driven or removed (long after the 60-lag test was complete) indicating good heat management for continual work. Some testers found the auto setting over-reaching how it limited torque output, so must users will prefer the manually selected 1-2-3 modes. Outfitted with a 4Ah battery (as tested) the driver weighs in at 3lbs, 10oz, or it can fight in the featherweight class at 3lbs flat with a 2Ah Blue Ion battery. It posted a respectable average lag driving time of 1.41 seconds, and has enough power for most common shop tasks. A single LED is placed just above the battery, and smartly angled forward. This projects a nicely dispersed light, making your work easy to see. While the Kreg drill or Rebel pocket hole machine may be your catalyst into the Blue Ion line, the 1/4" impact driver is a natural next step.



Makita XDT18 *Impact Driver*

Makita XDT18 Impact Driver. Matched with a 20Ah 18V Li-Ion battery, this compact 1/4" impact driver weighed in at an astonishing 2lbs, 10oz. It certainly felt and looked the smallest of the bunch, and was nimble and easy to control. The quick-release chuck needs to be retracted to insert a hex bit, which is a minor annoyance. The single LED light mounted high near the chuck can cast shadows, but only with short length bits. The Makita batteries are smooth and slick on the bottom, which might let them slide on uneven surfaces, but isn't much of an issue in a shop setting. Even this little sprite will drive a lag bolt in just over 2 seconds, hinting at brawn beneath the demure appearance. The control panel on the Makita impact drivers are the least intuitive of the bunch, and require a thorough reading of the manual. A single button scrolls through "H" for hard (higher RPM and impacts per minute), "S" for soft (lower RPM and impacts per minute), auto regulating mode where the driver determines output based on current conditions. You can also long-press the same button to turn the LED light on or off. Once accustomed to the controls, testers universally liked this tool for light to medium dutywork.

Cordless Drills



Makita XDT20 *Impact Driver*

Makita XDT20 Impact Driver. This full sized brushless 18v driver has loads of power, and is easy to use. It's ergonomic and feels great in the hand, even with a heavier 5Ah battery as tested. That combination weighs 3lbs, 4oz, or trim it to just 2lbs, 11oz with a smaller 2Ah battery. With either battery pack, the tool feels well balanced and ready to work. There's a unique ring light that shines a well-dispersed and even light, without unwanted shadows. Testers remarked on the tool's excellent power and speed throughout lag bolt speed and endurance trials. The rear control panel on the XDT20 is the most cryptic of the bunch. Luckily, most users will simply scroll through the four manually selected speed / torque settings as desired. There are also four auto settings for specialty applications to limit torque and avoid over-driving fasteners. Or long-press the control button for low-medium-high-off LED settings.



Milwaukee 2957 *Impact Driver*

Milwaukee 2957 Impact Driver. This 1/2" brushless model packs a gut-punch of power, while still being easy to control. With the excellent CP2.0 Red Lithium battery, it sits at just 3lbs, 4oz. The overall dimensions feel quite compact for the 2957, especially when you consider the power it offers. Average lag time trial test was third best in this lofty group of performers, at just .86 seconds. The grip feels great, and it always felt well-balance whether setting screws or driving lag bolts. A 4-position digital speed / torque selector lets you dial in your preferred settings, or really customize things with One Key app. With every Milwaukee tool we tried, we appreciated the side-pinch battery release, which makes it easy to remove a battery with one hand. The LED is a 3-light affair, mounted at the nose of the tool, which provides adequate illumination. Whether you're on the M18 platform or not, this all-star performer strikes a great balance between power and weight, and is definitely worth a close look.



Ridgid R862312 *Impact Driver*

Ridgid R862312 Impact Driver. As tested with a 6Ah Max Output 18v Li-Ion battery, this one weighs in at 3lbs, 15oz, or you can trim the load to 3lbs, 5oz with a smaller 2Ah battery pack. It shares many attributes with its Ridgid drill brethren, like the gray stippled rubber grip, and effective single-source LED light. The 1/2" quick release collet can be a little finicky, sometimes needing to be reset by putting it out manually. But otherwise, the system works well to retain hex bits, even during bouts of heavy driving. A metal gear case adds to the robust build quality, and expected lifespan of this tool. The Ridgid completed the lag time trial in a respectable 1.09 seconds, and had power to spare on the 60-lag marathon. A digital 4-way selector lets you optimize the speed and torque required for the job. Equally comfortable in a home shop or construction site, the Ridgid impact driver is a solid performer if you don't mind the extra weight compared to smaller models.



Ryobi PBLID04 *Impact Driver*

Ryobi PBLID04 Impact Driver. Dressed with a 4Ah High Performance Li-Ion battery as tested, this one weighs 3lbs, 14oz. Or it can lighten up to 3lbs, 3oz with a 1.5Ah Ryobi 18v battery. A single mode button lets you select 1-2-3 or Auto mode for the speed / torque setting you need. Ryobi drills offer a larger than normal LED with a nicely dispersed light, and this impact driver is no exception. Not unlike the Ridgid impact driver, the 1/2" hex style quick release chuck on the Ryobi was finicky at times, but never dropped a bit. This big driver yawned at our 60-lag bolt test, and posted a truly impressive .80 second lag time trial. The Ryobi does feel a little heavy next to other models, but it brings power in spades. If that's a defining factor for you, make your next impact driver a Ryobi.

Light brightness and design really matter for cordless tools. The multi-LED array on both Dewalt drivers, and the unique ring light on the Makita offered the best lighting among the impact drivers.



The Milwaukee, both DeWalt models, and the larger Makita were standout performers in this category. If you've already committed to a battery platform, you won't be disappointed with any of these, but if you're starting from scratch the DCF860 is the fastest, and the DCF870 is the easiest to control.

Three drills rose to the top, and will exceed the needs of most woodworkers. If you need one drill to handle everything including construction jobs, go with the DeWalt DCD801. For a midsize shop drill that's high quality throughout, and has all the features woodworkers want, the Bosch GSB18V-65 would be the best bet. While the Milwaukee 3601 doesn't stand out on paper, we actually enjoyed the compact size and light weight of this model, and found it a go-to tool for most any job.

The Thoughtful Woodworker.



DRILLS

DRILL	DRILLING 2X4 TIME SECONDS (SPEED 1 OR 2)	WEIGHT W/ BATTERY (AH)	WEIGHT TOOL-ONLY	TORQUE (MFG-RATING)*	SIZE HXLXW (INCHES)**	SPECIAL FEATURES
Bosch GSR18V-400	5.56 (1)	2#, 13oz (2)	2#, 1oz	400 in-lbs	9-1/4 x 6-1/8 x 2-7/8	Lightest weight in test
Bosch GSB18V-65	2.22 (2)	3#, 4oz (2)	2#, 8oz	575 in-lbs	9-1/4 x 6-3/4 x 3	Quick- change selector
Bosch GSR18V-800FC	2.00 (2)	4#, 2oz (4)	2#, 15oz	565 in-lbs	9-3/8 x 7-1/4 x 3	3 Chuck Options
Dewalt DCD794	2.15 (2)	3#, 1oz (1.7)	2#, 7oz	[404 UW0]	9-1/8" x 5-7/8 x 3	Good Power-to- weight
Dewalt DCD 801	1.31 (2)	4#, 1oz (4)	2#, 13oz	[1050 MW0]	9-3/4 x 6-1/4 x 3-3/8	Fastest Drill, Best LED light
Kreg® KPTDR0500	5.5 (1)	3#, 3oz (2)	2#, 6oz	650 in-lbs	9-1/4 x 6 x 3-1/4	Solid Shop Performer
Makita XFD15	5.34 (2)	2#, 14oz (2)	2#, 0oz	350 in-lbs	9 x 6 x 3-3/8	Most Com- pact
Makita XPH14	1.46 (2)	5#, 1oz (5)	3#, 10oz	1250 in-lbs	10-1/4 x 7 x 3-1/4	Cooler running motor
Milwaukee 3601	2.19 (2)	3#, 3oz (2)	2#, 4oz	550 in-lbs	9-1/8 x 5-3/4 x 3	Redlink Intelligence
Milwaukee 2905	1.59 (2)	4#, 10oz (3)	3#, 5oz	1400 in-lbs	9-7/8 x 6-7/8 x 3-1/8	Redlink + One Key
Ridgid R87012	2.20 (2)	2#, 15oz (2)	2#, 0oz	500 in-lbs	9 x 6-1/4 x 3	Soft Start
Ridgid R861152	1.59 (2)	5#, 2oz (4)	3#, 9oz	1250 in-lbs	10 x 7-1/4 x 3-7/8	Bit Holder
Ryobi PSBDD02	6.19 (1)	3#, 0oz (1.5)	2#, 1oz	450 in-lbs	8-3/4 x 6-1/4 x 3	Grooved Chuck Jaws
Ryobi PSBDD02	1.72 (2)	4#, 8oz (4)	2#, 15oz	850 in-lbs	9-3/4 x 7-1/8 x 3	Impressive Speed + Power
Vevor DJZH5025-13	6.39 (1)	2#, 15oz (2)	2#, 2oz	487 in-lbs	9 x 5-5/8 x 3	Compact + ergonomic

*Not all manufacturers use the same torque / power units. In-lbs torque was provided, unless unavailable by manufacturer.

UW0=Unit Watts Out. MW0=Max Watts Out from motor.

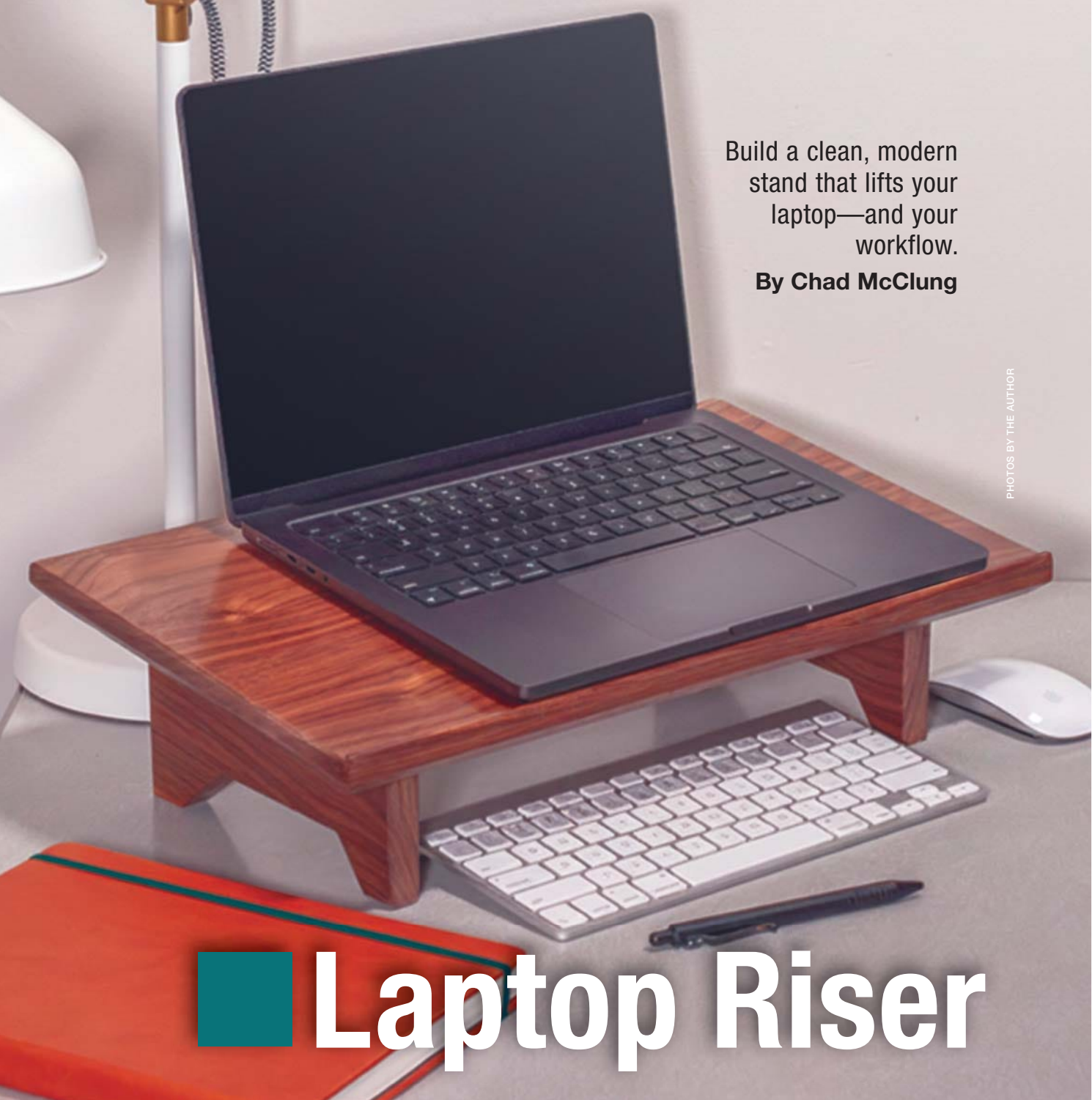
** Overall size includes battery as tested

IMPACT DRIVERS

DRILL	DRILLING 2X4 TIME SECONDS (SPEED 1 OR 2)	WEIGHT W/ BATTERY (AH)	WEIGHT TOOL-ONLY	TORQUE (MFG-RATING)*	SIZE HxLxW (INCHES)**	SPECIAL FEATURES
Bosch GDR18V-1800	1.33	3#, 9oz (4)	2#, 5oz	1800 in-lbs	9-1/2 x 5 x 3	
Dewalt DCF860	.61	3#, 11oz (4)	2#, 6oz	2500 in-lbs	9-5/8 x 4-3/4, 3-3/8	Fastest Driver
Dewalt DCF870	1.05	2#, 14oz (1.7)	2#, 3oz	500 in-lbs	9-1/4 x 4 x 3	Best Control
Kreg KPTDV0250	1.41	3#, 10oz (4)	2#, 2oz	2200	10-1/4 x 4-5/8 x 3-1/8	Auto Modes
Makita XDT18	2.10	2#, 10oz (2)	1#, 12oz	1240	8-1/2 x 5-1/4 x 3	Lightest Driver
Makita XDT20	1.09	3#, 4oz (5)	1#, 14oz	1590	9-1/8 x 4-1/2 x 3	
Milwaukee 2957	.87	3#, 4oz (2)	2#, 4oz	2000	9-1/4 x 4-1/2 x 3	
Ridgid 862312	1.09	3#, 15oz (6)	2#, 6oz	2400	9-5/8 x 5 x 3-7/8	3 Mode Selector
Ryobi PBLID04	.80	3#, 14oz (4)	2#, 4oz	2300	9-1/2 x 5-1/8 x 3-1/4	

Editor's Note: At Popular Woodworking, our goal is to present objective, measurable data as clearly and accurately as possible. Some of the specifications and performance figures included in these reviews come directly from the manufacturers, while others are based on our own testing and evaluation. Personal factors such as ergonomics, balance, features, noise, or even personal preference can make one tool a better choice for you than the one we selected. We encourage you to use these reviews as a guide, but whenever possible, handle and test a tool at a local retailer before making a purchase. Finally, you'll notice that we don't publish pricing in these comparison reviews. Many tools are offered in numerous configurations, kits, and promotions, and prices can change frequently. Rather than include information that may be outdated by the time you read it, we prefer to focus on the performance, features, and value of each tool so you can make the most informed decision. - Logan Wittmer





Build a clean, modern
stand that lifts your
laptop—and your
workflow.

By Chad McClung

PHOTOS BY THE AUTHOR

Laptop Riser

If you're like me, your “lap-top” doesn’t spend much time on your lap. Mine lived on my desk, tethered to a monitor, always just a little too low and never at the right angle. I’ve resorted to stacks of books more times than I care to admit. Eventually, I decided it was time to make a stand that solved the problem properly and looked

sharp enough to earn a place on my desk.

This riser does both. The top is roomy without feeling bulky, a small lip keeps devices from sliding forward, and a bevel on the underside adds a clean, crisp profile. The top meets a pair of angled feet with loose-tenon joinery, and a cutout in

each foot keeps the design light.

There’s useful storage below for a keyboard or other desk essentials, and while most of the construction is straightforward, the angled feet need to be cut in a specific order. Still, this is an accessible weekend project that pays off every time you sit down to work.

Size the Parts and Rout the Mortises

Refer to the Cut List for the basic formula, but size the parts and adjust the angle to accommodate your devices and setup. To get the width for the top, bookmatch two or three pieces, orienting them for best grain composition. Edge-glue the top pieces so the panel is slightly wider, longer, and thicker than the final size. After the glue has cured, scrape away any squeeze-out and plane to final thickness. Then rip and crosscut it to final size. For the lip, rip a thin strip so its grain matches well with the top. Ensure that the lip's exposed face and edge are oriented like the top. Process two pieces for the feet to be 8" x 4".

Use double-stick tape to adhere the two inner faces of the feet

together. Lay out the mortise locations on the top edges of the feet, referring to the Foot Detail drawing. You'll remove $\frac{3}{8}$ " from the top edge of the feet later in the process, so factor that into the mortise layout. Transfer the mortise locations to the underside of the top.

Clamp the taped-together feet between two scrap boards the same height as your feet, but longer. This will support the router during the operation. Secure this setup to your bench before chucking a $\frac{3}{8}$ " spiral upcut bit in your handheld plunge router outfitted with an edge guide. Rout the mortises as shown. After completing the three mortises in one foot, unclamp the assembly, rotate it, and reclamp it to avoid having to reset your edge guide. Rout the mortises in the top in the same fashion.



1. Mortise the feet. Position the bit, turn on the router, and plunge to full depth at both ends of a mortise before routing out the rest in successively deeper cuts.
2. Mortise the top. Reset your edge guide as needed and use the same procedure to rout the top's mortises.

Laptop Riser

To make loose tenons, mill a strip from the same material as the project slightly narrower than your mortise length and long enough for all six tenons. Get close with your planer and sneak up on the fit with a hand plane. Then chuck a $\frac{3}{16}$ " roundover bit in your router table to round over the tenon edges. Finally, crosscut them to length at the table saw using a miter gauge and stop.

Cut the Angles and Bevels

Referencing the Foot Detail on page 51, layout the foot on one face of the taped-together assembly, transferring lines to the ends. Angle your miter gauge to 7.1° and set a stop to align the transferred line with the blade. With the bottom end against your gauge fence and one edge against a stop, saw the first angle. Flip the piece end

for end, readjust the stop, and saw the opposite edge. Use a simple carrier board to cut the angle along the bottom. At the bandsaw, finalize the shape of the feet.

To cut the top's bevel, angle your table saw's blade to 45° and set the depth to leave a $\frac{7}{16}$ " flat around the edge and ends. With the top's bottom face flat on the table and firmly against the fence, saw the bevel along the ends first. Then, readjust the fence to saw the edges.

Set up a dado stack in your table saw and clamp a sacrificial board to your table saw's rip fence. Turn on the saw and raise the blade slowly into the sacrificial fence to make a $\frac{3}{16}$ " deep cut, leaving $\frac{3}{16}$ " of the blade exposed. Rip the rabbet along the bottom edge of the top's show face.

3. Angle the feet. Align the feet's bottom angle with the edge of a wide carrier board and double-stick tape it in place. Set the fence to the width of the carrier, and make the angled cut.
4. Shape the cutout. Saw to the layout lines for the cutout in the feet. Use a spokeshave and sanding block to clean up any bandsaw lines.
5. Rip the rabbet. Using a dado stack and a sacrificial fence, saw the thin, shallow rabbet for the lip.





6. Clamp the feet. With glue applied to the loose tenons and their mortises, clamp the feet in place, using cauls to prevent marring the top. Light taps with a mallet will help seat the joint.

Add the Final Touches and Apply a Finish

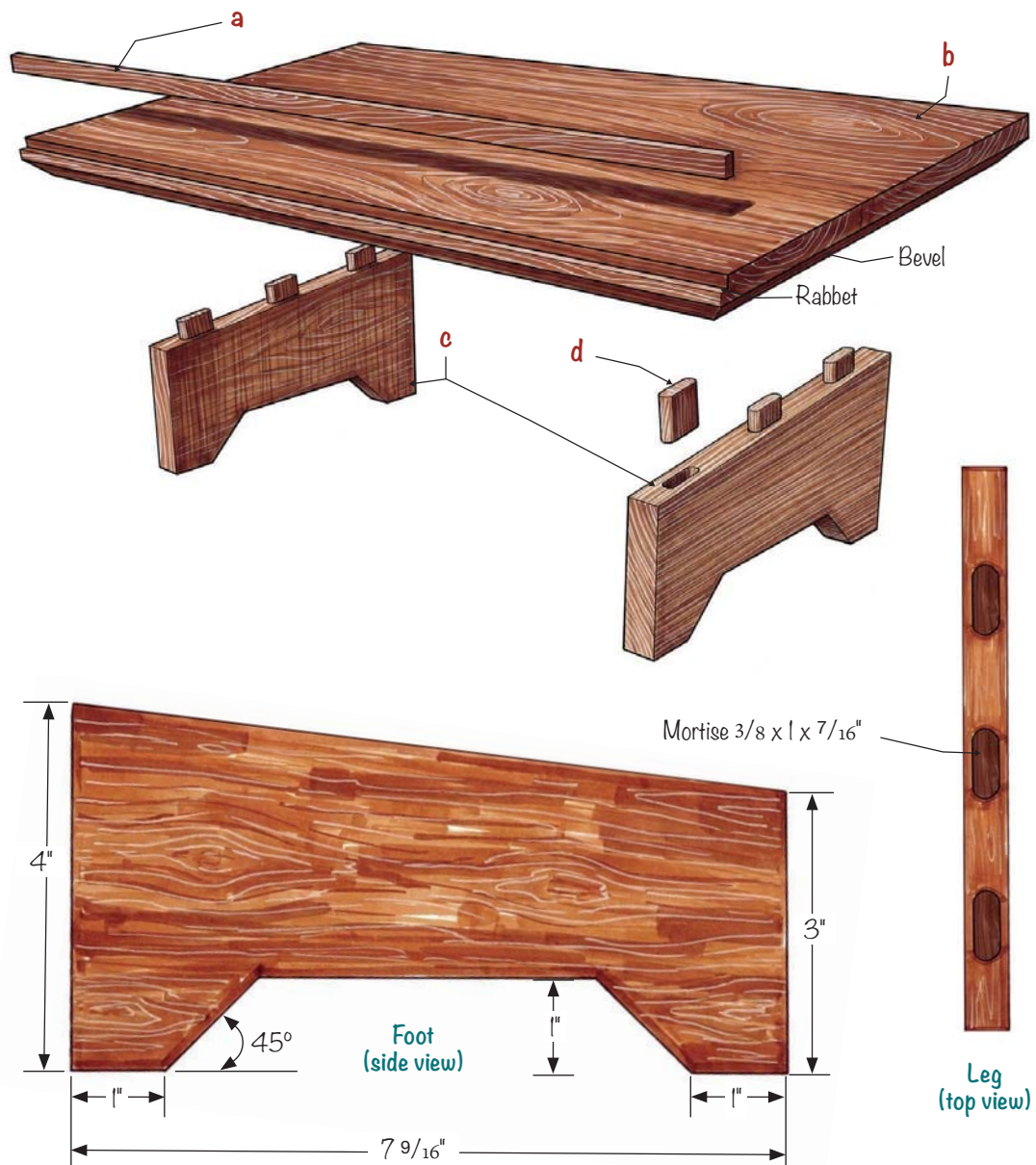
Now, chuck a $\frac{3}{16}$ " chamfer bit in your router table and chamfer the feet's exposed edges and ends and the top's show face, avoiding the rabbet. Run the ends first to clean up any tearout on the edge grain. Sand all the parts through 220 grit.

Glue the lip in place and clamp it with masking tape. Apply glue to the mortises in the top and on their loose tenons. Tap in the tenons. Apply glue to the mortises in the feet and along the mating end of each foot. Slip each foot's mortise onto the tenons, tap them in place, and clamp them. When dry, flush trim the lip and ease the edges with a block plane. Finally, apply your durable finish of choice. **PW**—*Chad McClung*



7. Chamfer the lip. With the assembly complete but before applying finish, add any final details such as a decorative chamfer to the lip.

Laptop Riser



NOTE: Additional dimensions and SketchUp file are available at PopularWoodworking.com/OnlineExtras

Cutlist

No.	Items	Dimensions (in)		
		T	W	L
1	A Riser Lip	5/16	3/16	18
1	B Riser Top	7/8	10	18
2	C Foot	5/8	7 5/8	4
6	D Tenon	3/8	1	7/8

■ Endgrain Veneer Lamp



Some specific material, solid technique, and a little bit of hardware produces this beautiful lamp. **By Albert Kleine**

PHOTOS BY LOGAN WITMER

Last year, when I was visiting Shea Alexander's shop to do a photoshoot for Popular Woodworking, he asked if I had any interest in blocks of stabilized spalted maple that he was no longer selling. I figured I could use them for something so I took them home to the shop.

On these particular blocks, the endgrain was far more interesting than the face grain. Eventually, I was working on a marquetry panel of a hummingbird and remembered the way it looked—it was the perfect

material for the bird's chest.

So I sliced off a veneer of endgrain at the bandsaw to see if it would hold up enough for use in my project. Because the stabilization process impregnates the wood with acrylic resin, endgrain veneers are much more likely to stay together, particularly during intricate scroll cuts. To my great joy, everything went perfectly.

Later, while I was working on another portion of the hummingbird, I held the panel up to the

light to detect any gaps, and that's when I saw it. Light was only penetrating through the endgrain maple veneer - everything else prevented any illumination from shining through.

The effect wasn't particularly useful on the hummingbird, but it made me realize that with a little careful planning, I could take advantage of the variance in light penetration in future.

The hardest part about all of this is obtaining the endgrain

■ Endgrain Veneer Lamp

veneer. Not all species and cuts will penetrate light through endgrain equally, so it's best to experiment a bit before jumping in to a project. In all the projects I've done using endgrain veneers, the material has been stabilized — I'm not entirely sure if this is a must, but I've defaulted to it given the potential for movement and general fragility of non-stabilized stock. You can often find stabilized stock online from various retailers.

Let's lay the playing field quickly. This lamp is a simple box — dovetailed at the corners and with a front and back. The front panel is cherry with the marquetry leaf on it. Creating this panel is the first task.

On the largest sheet of cherry veneer, I sketched a simple maple leaf pattern consisting of ten distinct leaf sections separated by veins. From here, the process is fairly standard for double-bevel marquetry work.



1. Start by sketching out your marquetry panel on your field veneer. You can print off a pattern or template, or you can just free hand it. For something like this, I sketch it how it feels right, and go from there.

2. Identify your first cut and tape your marquetry veneer on the back of the field veneer. Here, it's a piece of wenge that is taped over one of the vein portions of the leaf. Note the quarter-sawn grain on the wenge — this will transfer to a very linear looking vein.



■ Endgrain Veneer Lamp

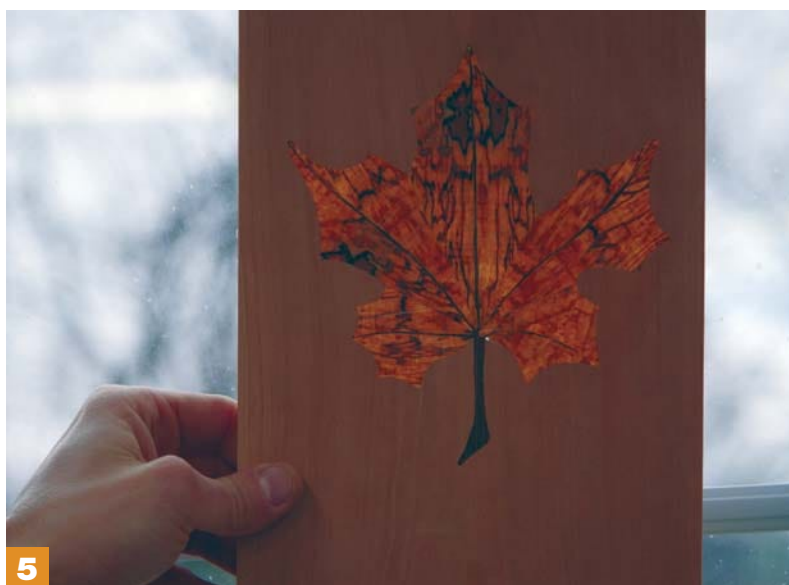
First, I'll fill out the veins using a dark, straight grained wood (here I'm using some wenge). I tape the veneer for each vein segment in place on the back of the cherry veneer, thread a 2/0 fret saw blade through the packet, and cut out each piece. Since I use $\frac{1}{16}$ " thick veneers, I tend to cut with my table tilted at a 8.5 degree angle. In this pattern, all pieces are inserted into the cherry veneer from behind, so the bevel needs to be outward flaring — a table tilted to the left requires a clockwise cut and one tilted to the right a counterclockwise. (An article on double-bevel marquetry is available on popularwoodworking.com/onlineextras/).

As I cut out the veins, I will intentionally oversize them. This is because they are entirely within sections of the leaf that will be filled in later — I can make the veins their final thickness when I do the leaf sections.

Once I finished with the veins, I go back to redraw their final desired thickness with a pencil (photo 5) and move to filling in the leaf sections. The process here is the same as before. The only difference is for these sections, I'm using the endgrain veneer.

Once all the leaf sections are filled in, the marquetry portion is finished and I'll move on to creating its case.

- 3.** Saw along the vein line using a fret saw.
- 4.** After gluing in the veins, re-sketch the leaf portions that will be endgrain. Then, saw those out.
- 5.** The finished veneer panel will feature translucent leaf areas that are endgrain.





Now, it's time to create the box. This starts by taking the tailboards from the cutlist and set a marking gauge to project a bit more than the thickness of the stock (in this case, $\frac{1}{16}$ " over the $\frac{1}{2}$ " thickness — also known as $\frac{3}{16}$ "). Scribe a line on the faces and edges of the tailboards and only on the face of the pinboards.

Clamp a tail board in your vise with the end facing up. Set a marking gauge to $\frac{3}{16}$ " and strike a line across the ends of the board, pressing the head of the gauge against the edge of the board. Set a pair of dividers to open about $1\frac{1}{16}$ " and place one point into one of the gauge marks you just made. Set the other point into the end of the board and make a mark. Rotate and "walk" the dividers along the edge of the board, making light marks with the points as you go. Repeat this process, starting from the gauge mark at the other edge of the board. When you are finished, you should end up with three equally spaced tails. To speed things up, I'll use all the marks I made in the previous step as a template for the three remaining tailboard ends. Just clamp the boards together in your vise and use a combination square to accurately transfer your marks.



6. Scribe a line on your tail board slightly wider than the thickness of your parts.
7. Use dividers to walk out the dovetail spacing.
8. Cut the tails using a dovetail saw. Cut just down to the line.



Set a bevel gauge to your desired angle or use a dovetail marker. For this case (and pretty much everything I make), I chose 7 degrees because it's a nice overall angle

that provides adequate strength. Use the bevel gauge/marker to transfer pencil lines to the face of your tail board down to the marking gauge line.



9



10

9. Use a coping saw to cut away the waste.
10. Chisel down the line to remove the rest of the waste.
11. Transfer the dovetail positions to the pin board using a marking knife.
12. Cut the pin board once again using a dovetail saw. Cut just inside of the knife line.



11



12

With the tailboard clamped in your vise, place your saw directly on one of your marks. Use the thumb and forefinger from your non-sawing hand as a fence to stabilize the saw on the mark and ensure that it is perfectly square across the board. Tilt the saw slightly to match the dovetail angle you drew on the face of the board. Once you feel comfortable that your saw is square across the board and tilted at approximately the correct angle, you are ready to cut.

Focus on holding the angle you set in the previous step while gently moving the saw forward and backward to establish a cut. Continue sawing, checking continually to make sure you aren't going past your marking gauge lines (especially on the side of the board that isn't facing you).

Once you have established all your tail walls, remove the waste between tails using a coping or fret saw. Reorient the tailboard in your vise so that the edge is facing up. Working from the waste side on the edge of the tail board, make a wedge shaped paring cut toward your marking gauge line. The result should be a small gullet in the waste side of the tail board that goes right up to the marking gauge line. Place your saw in the gullet and make sure that it is square. Cut until you meet the dovetail angled cut that you made earlier. If the waste doesn't fall off easily, you may have to apply light pressure to snap it off. Any waste left behind can be cleaned up with a chisel.

Remove the tail board from your vise and place it on your bench. Using the widest chisel possible, chop

out the remaining waste between tails. Make sure you start far away from your baseline and only go about halfway through the board or you'll risk blowout on the backside. As you chop, move your chisel closer to your marking gauge line until only a small amount of waste remains. Place your chisel directly in the marking gauge line and angle it so that it is slightly under 90 degrees – this will ensure that no lingering waste material keeps your joint from coming together. Deliver your final mallet blows, still making sure to only go halfway through the board. Repeat this process on both sides of both tailboards, making sure you remove all the waste between tails.

At this point, I like to line up my tail and pin boards in the way they will be assembled and mark



13



14



15



16



17

13. It's okay to cut slightly past your line on the inside of the board.

14. Chop away the waste, working from both sides.

15. Test fit the joint — the pins should be slightly proud.

16. Plane the top edge of the box flush.

17. Glue in the glue blocks.

them accordingly. Clamp a pin board in your vise and line up its corresponding tail board perpendicular over the end of the pin board. It can help to elevate your tail board with a handplane so that everything lays flat. With one hand placing firm downward pressure on the tail board, use a marking knife to transfer the walls of your tails onto the endgrain of the pin

board. It helps to place your knife right up against the wall of the tail to act as a fence while you make your marks. Mark both ends of both pin boards.

When sawing the pin walls, you need to make sure you are sawing square to the edge of the board — i.e. there is to “tilt” to your saw like when you cut the tails. Also ensure your saw is on the waste side of the lines you made. Cut the pin walls, remove the waste, and chop to the base line just as you did on the tail board. Make sure you spend time ensuring that all lingering waste is removed.

After all the waste from the pin board has been removed, clamp it in your vise. Rub a pencil on the inside walls of your tails and try to press the joint together by hand or with light mallet taps. Don't try to

force the joint together. If it's too tight pull the tail board out once you feel resistance. The pencil markings from the tails will transfer to the walls of the pins where the joint is too tight. Using a chisel, pare lightly across the grain to remove these pencil markings from the pin walls. Re-pencil your tails and try to refit. Keep refitting and paring until your joint comes together with moderate pressure.

With the case dry fit, I'll run a block plane along both edges to remove any mismatch between boards. As I do this, I'll make sure I keep the sole of the plane on both edges as I turn corners. Once I get a full shaving all the way around, I know I'm done.

Set a marking gauge to about ½" and score lines on the inside faces of the pin boards referencing both

the front and back edges. Spread a bead of glue along one edge of a glue block. Place a wide chisel in the middle of the scoreline with the flat facing the inside of the board and use it as a fence to properly place the glue block. You can clamp here if you like, but firm pressure and about 30 minutes of waiting is fine. Do this for the remaining glue blocks.

After the blocks are set, glue the case together by spreading glue only on the walls of the pins. If everything fits well here, clamps will likely be unnecessary.

To make sure any gaps in my marquetry panel don't allow light through, I'll spread a mixture of glue and sawdust on the back of the panel. Be careful not to put too much glue here — I did way too much and my panel started to cup. All I had to do to fix things was clamp it between some flat surfaces to dry, but it would have been nice to avoid that.

Next, I'll glue some $\frac{1}{4}$ " strips of wood across the grain of the veneer on the back at the top and bottom of the panel. This will help prevent cupping, and gives the panel a more substantial surface to be adhered to the case.

Before gluing the panel in place, I'll take my stock for the back panel and drill centered holes at the top and bottom. I'll then affix it to the back of the case by driving screws into the glue blocks.

With the back in place, I attached some battery powered (and remote controlled) puck lights to the inside.

Before gluing the panel in place, I'll do a test fit and adjust things at the shooting board if necessary. From there, I simply spread a bead of glue along the glue blocks and press the panel in place. **PW** — *Albert Kleine*



18



19



20



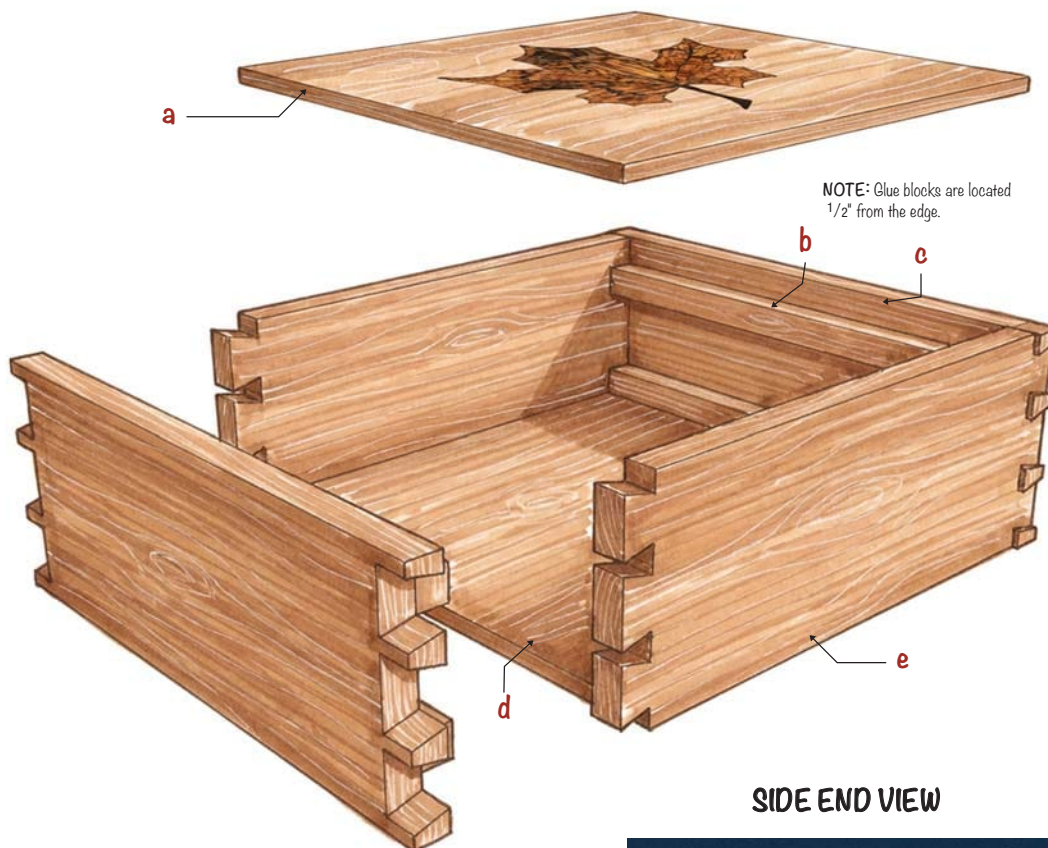
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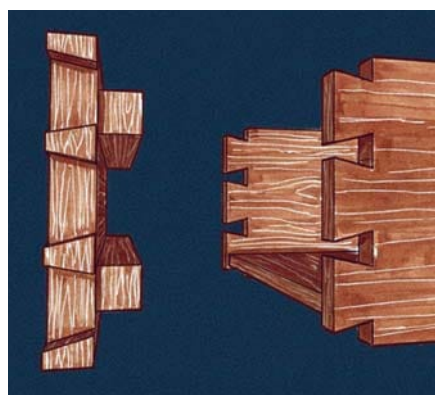
- 18.** I use my chisel as a reference to position the glue blocks.
- 19.** Assemble the box with glue.
- 20.** The back is installed with a pair of screws.
- 21.** Puck lights get placed inside.
- 22.** The front panel is glued on.

Endgrain Veneer Lamp



NOTE: Additional dimensions and SketchUp file are available at PopularWoodworking.com/OnlineExtras

SIDE END VIEW



Cutlist

No.	Items	Dimensions (in)			Materials
		T	W	L	
1	A Top	1/4	8	8	Cherry
4	B Glue strips	1/2	1/2	8	Pine
2	C Pin Board	1/2	3 1/2	9 1/8	Pine
1	D Bottom	1/4	8	8	Pine
2	E Tail Board	1/2	3 1/2	9 1/8	Pine

■ End Grain

Magazine History

The Dovetail Decade: How history, habit, and retirement created the modern hobbyist.

By Collin Knoff



I was recently doing some research for an article, and had the sudden realization that almost every major woodworking publication was founded within 10 years of each other. Fine Woodworking was founded in 1975, followed by Woodsmith in 1978, Popular Woodworking (originally Pacific Woodworker) in 1981, Wood Magazine in 1984, and American Woodworker in 1985. Even Woodwork Magazine came along in 1989, just a few years later. What in the world caused this sudden avalanche of specialty publications during that time frame?

It's not just woodworking magazines rolling out during this

era. Roy Underhill started the long-running Woodwright's Shop television show on PBS in 1979. That same year, Norm Abrams made his debut on This Old House, though his dedicated woodworking show, New Yankee Workshop, wouldn't air for another decade. On the commerce side of things, Lee Valley, Garret Wade, and Lie-Nielsen were also founded during this age of woodworking renaissance.

Clearly this return to hobbyist woodworking was based on some socioeconomic factor. First, I looked at what was happening during that time period in American history. And oh boy, what wasn't happening? There's climbing gas prices, war in the Middle East, and inflation running rampant (sounds familiar). That being said, I'm not entirely convinced that Watergate and the end of the Vietnam War were the answers I was looking for. In order to understand why woodworking became popular again, I had to understand what had changed in the first place.

I think there are several places you could point to where trends changed, but I think the real culprit was mid-century America. Going back to the late 1940's, you see a pivot to mass-manufactured



goods in the postwar US.

Chrome and plastic are in, wooden furniture is decidedly out. The Eames Molded Plastic & Fiberglass Armchair dropped in 1950, and with all due respect to the Arts & Crafts movement, the future had clearly arrived. To consumers at the time, wooden furniture was considered stuffy and out of touch with the space-age aesthetic gripping the nation.

These new materials were also very popular with the emerging middle class. Mass manufacturing created a democratization of furniture for the American people. Nice furniture, no longer requiring fine craftsman skill, became easily accessible to all. This, combined with the postwar economic boom, allows consumers to outfit their homes with the latest and greatest from Sears on a consistent cycle. At the same time, anecdotally, at least, the suburban homeowner is doing handiwork instead of woodwork. Suburb living means mowing the lawn, planting a garden, or building a nursery. Publications that feature woodworking, like Workbench Magazine, are targeted to all sorts of hobbyists and homeowners. So this means the things being built are generally more utili-



Eames Molded Plastic & Fiberglass Armchair

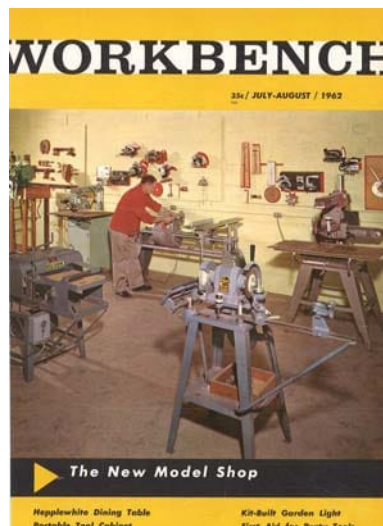
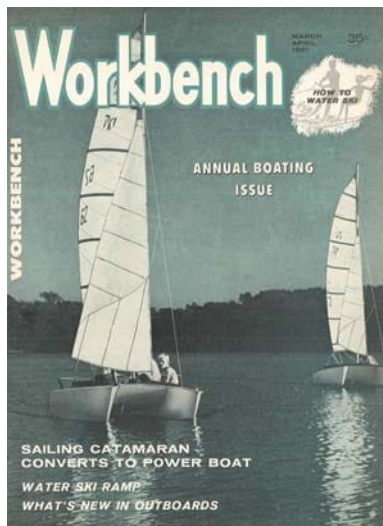
tarian in nature. The craft certainly isn't dead, but the focus has moved sharply away from it. And then, in the mid 1970s, things change course again.

Fine Woodworking Magazine is the first new publication out of the gate for this rebirth. Paul Roman, a hobbyist woodworker, was disappointed with the lack of information available for him to grow his skills. After losing his corporate job with GE in 1975, he decided the time was right to act on his longtime dream of creating a publication. Along with his wife Jan, he started the magazine out of his own home that summer. Back then, in order to put up a new publication, letters would be mailed to potential subscribers, asking them to send money. Recruiting friends and family, he mailed out 20000 letters. His original goal, in order to successfully print and send a magazine, was 800 subscriptions. He received 3000. With funding in hand, he redoubled his effort and sold another 15000 subscriptions. The print run of the first issue was 25000 copies, and each one sold.

Clearly, Paul was not the only woodworker in search of more knowledge.

From there, the trend moved west, with Woodsmith Magazine being founded by Don Peschke in Des Moines, and Pacific Woodworker hailing from Steven Aquilina in California.

What was causing this explosion of interest though? I have two ideas. The Strauss-Howe generational theory posits that society runs in 21-year cycles. While it specifically is looking at generational differences, the timeline tends to line up with phases in popular culture. Twenty years or so after something goes out of fashion, people seem to remember why they loved it in the first place.



Workbench magazine featured woodworking projects in the 1960's, alongside articles on boating, electrical work, and more.



The staff of Fine Woodworking in 1976. From left: Publisher Paul Roman, Contributing Editor R. Bruce Hoadley, Editor John Kelsey, Contributing Editor Tage Frid and Art Director Roger Barnes

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Oak (White).....	4/4 Select	7.00	\$150.00
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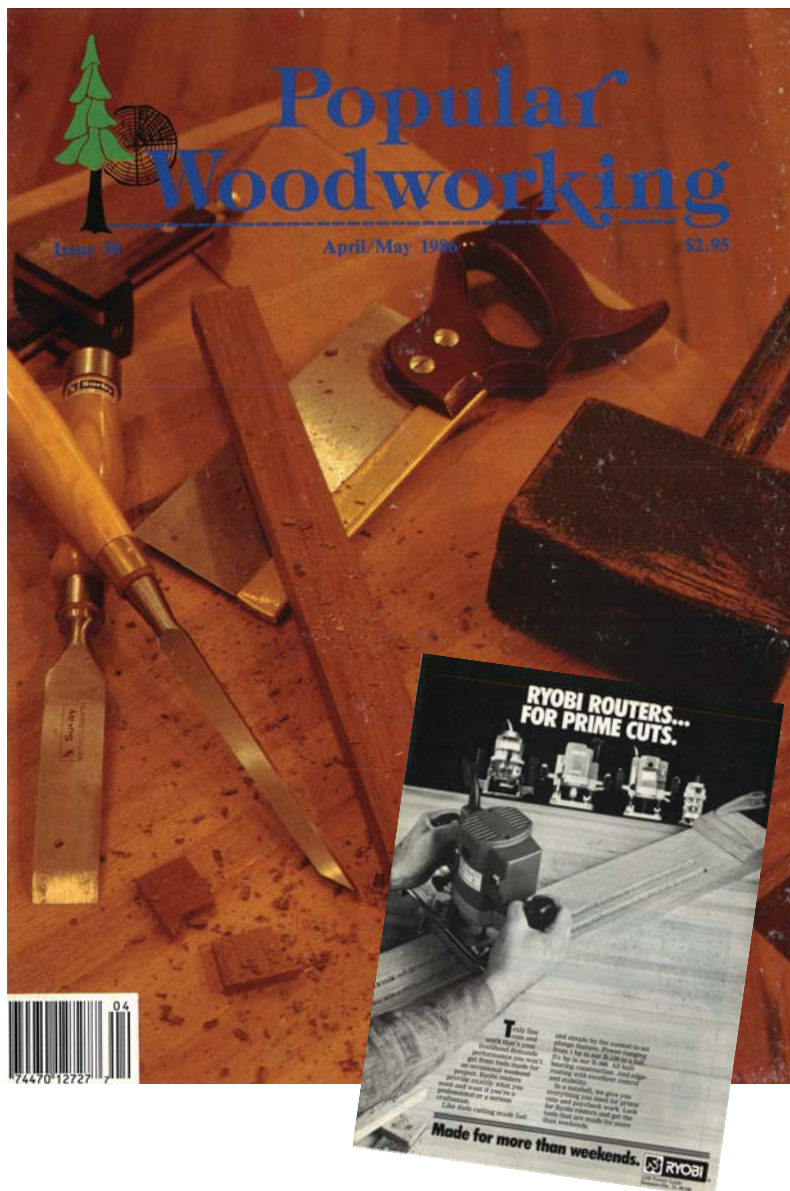
- First issue of Popular Woodworking Magazine

So looking at the math, if plastic furniture and the space race kicked off in the 1950s, then the 1970s would fall perfectly into that time frame for that cycle to complete. Simply put, a generation had cycled, and there was a desire for change, a return to the old ways. As we've seen before, everything old is new again. The acceptance of wood as a household material swings back into fashion.

The next part is where the 1970s society steps in. Though the 1960's counterculture movement had largely run out of steam by then, there is still ongoing dissatisfaction with corporate life and structure. Like Paul Roman, people were searching for alternatives, either as a hobby or as a career. Woodworking, being very tangible, is a compelling choice. There's one more factor I think is important though.

For decades now, the statistical average reader of woodworking magazines has been a 65-year-old male. It just so happens that 1975-1985 is when the bulk of WWII veterans reached that age. Being the first generation to enjoy widespread retirement with a full pension after a life of white-collar work, they had both time and disposable income. And so begins a cycle of someone who worked behind a desk all day, wanting to reconnect with the use of their hands to produce real, beautiful items, and with it, the birth of the modern woodworking magazine.

PW - Collin Knoff



In only 5 years, Popular Woodworking grew from a 16 page publication printed on newsprint, to 64 pages with glossy paper and even some color photos. The advertisements changed from niche tools to familiar names like Bosch, Lignomat, and Ryobi

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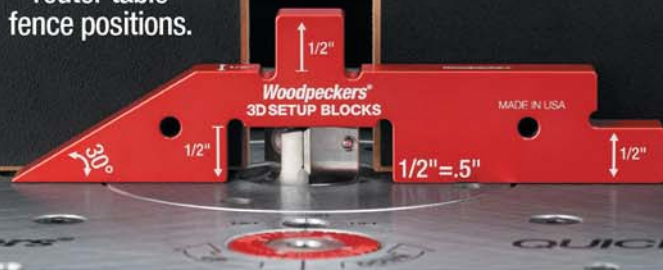
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