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FEBRUARY/MARCH 2011
ISSUE #70

CANADIAN Woodworking & HOME ROVERNT

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Cover photo by: Michael Taylor

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Your kids will be able to take part in counter-height activities. You might even appreciate the help.



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rbrown@canadianwoodworking.com

There's something enjoyable about spending time in the shop on a cold winter night. With the sun long gone, some snow falling and everybody else "hibernating", it almost seems like the clock has stopped and this is all bonus shop time brought to you by the woodworking gods. Grab a hot cup of tea, toss a log on the fire and you're ready to go.

Once the fire is roaring, I recommend breaking out a thin piece of walnut and trying the hot pipe bending technique that Scotty Lewis describes in this issue. It's a fascinating process and can be used in a number of different ways on your next project. Making wood do what you once thought was impossible is a lot of fun.

I'm also really excited to bring you a project that will make any young child feel larger than life: a safety stool. Once complete, they can participate in counter-height activities – baking, preparing food and eating – with ease. I can't promise they'll do the dishes afterwards but it's a start.

There's also an article that will spark a lot of debate amongst table saw enthusiasts. The woodworking community is split in in terms of their preference for right-tilt or left-tilt saws. The left-tilt lovers likely win the popular vote. Sure, one of each is the perfect scenario but who has the space or money for that kind of indulgence? Over the past couple of decades, the trend has moved toward purchasing left-tilt saws but there are reasons (well, opinions, really) why using a right-tilt saw is preferable. It goes against popular thinking, so be prepared. If you have any thoughts regarding this article, join our website forum discussion.

Then throw another log on the fire. It's getting colder outside.

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Router Bit Comparison

Finally, a Canadian magazine not afraid to give a *decent* tool or tool accessory comparison. I own a number of different brands that are in the comparison test, and I think that it was spot on. I had wondered about the Blue Tornado bits, now I know. The CMT was very surprising...considering the price.

On another note great projects in this issue, and past ones. It's nice to see that you're not trying to branch out into the 'handyman' area, and that you've stayed true to the woodworking.

Thank you for such a fine job done!

Jim L.

On-line Wood Show Special

Thank you for the ad campaign that you put together for R&D Bandsaws – aimed at reaching the woodworkers that we would have missed because we weren't able to attend all of the wood shows.

The banner ads on your website had an enormous effect on both our website's traffic and sales. Our regular customers are telling us that they missed us at the shows, but really appreciated not missing out on the specials.

Perhaps you can tell your readers that because of their response, we have started a new "Sale Section" on our site.

Thanks – and please keep me in mind for next year.

Bob D.
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Wall Cabinet by Don Kondra

According to Don Kondra, "Every full-time woodworker needs to take some time off to make something for themselves," so that's exactly what he did. After a large commission, Don locked the doors, turned off the phone, cranked the tunes and built a wall cabinet for some of his photography needs. The bookmatched curly western maple door and gable panels provide the focal point, and cherry makes up the remainder of the frame. Don's main goal – one that he had to repeat to himself over and over again – was to "Keep It Simple Stupid." Still not completely satisfied with how the base and top mouldings turned out, he mentions, "Since they are removable I may at some point change them." I don't know, Don ... they look pretty good to me!

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- Cutterhead speed: 5000 RPM
- Cuts per minute: 20,000
- Approx. shipping weight: 500 lbs.

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- Max. depth of cut: 3/8"
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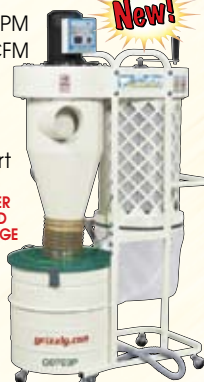
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Milwaukee Cordless ... Jacket?

Maybe it's just my imagination but sometimes it seems to get colder on the very winter day you have to head outside to grab some lumber, deliver a piece of furniture or do some home renovations. Milwaukee has released a product that will help woodworkers and home renovators stay warm during the winter months – an ingenious new battery-powered jacket. What separates this jacket from others is its three heat panels that run off Milwaukee's M12 battery. The battery will keep you toasty warm for up to six hours. Bring on the cold! \$199 for the jacket, one battery and charger, \$149 for just the jacket. For more information, visit www.milwaukeetool.com.



King Sliding Table Attachment

If you do a lot of work with sheet goods but can't justify springing for a dedicated sliding table saw, King Canada has just what the doctor ordered. Although King seemed to underestimate the demand for their new sliding table attachment at first – they have been in and out of stock since introducing the table in Sept 2010 – by the new year their stock will be high again and there will be more than enough for everyone. This sliding table will attach to any 27"-deep table saw and is made of extruded aluminum. It glides effortlessly on ball bearings, yet that's not even the highlight. This attachment will allow you to crosscut 48"-wide sheets with ease; something that some other aftermarket sliding tables will not allow. In addition to all these big features are a few small perks that will surely seal the deal for you. The flip-stop will allow for easy repetitive cuts, the adjustable mitre gauge has positive stops and when you're not using the sliding table it can be locked in place. For an introductory price of \$599, King once again delivers high value to Canadian woodworkers. To learn more about this, and other King products, visit www.kingcanada.com.



Bosch Axial-Glide Dual-Bevel Mitre Saw

Bosch has upped the ante with this mitre saw redesign. The Axial-Glide dual-bevel mitre saw looks, feels and, more importantly, works differently than all its predecessors. An articulating glide arm system allowed Bosch to get rid of the sliding rails common on other large mitre saws and reap the benefits along the way. What Bosch produced was a mitre saw with a smooth feel, a high degree of accuracy, consistent long-term performance and a smaller footprint. To top things off, it even (as the name implies) makes bevel cuts in both directions, making your woodworking life a little easier. If you're someone who uses a mitre saw while earning a living or if you want some increased performance while cutting crown, baseboard, furniture trim and the like, you should consider this machine. It isn't cheap but you'll thank yourself every time you walk away from it. I wonder how long it will be before Bosch incorporates this technology into some of their other mitre saws. Visit www.boschtools.com for more information.



All Ages Enjoy Turning – The youngest turner last year was Alexandra Funk, who was in grade 9.



Everyone Pitches In – Turners in the background confer on a variety of projects while Glen Kenny hollows a vessel. Glen does exceptional work at the lathe without the aid of vision.



A Special Gift – A hollow vessel made for a cancer survivor.

Woodturners Support Cancer Research

A Saskatoon group is up to the challenge ... how about the rest of Canada?

BY GLEN FRIESEN

One does not have to do a lot of research to be aware that cancer is a pervasive and deadly disease. More research needs to be done to control and eradicate this disease and to achieve this end, additional funding is necessary to support vital research. To contribute to this effort, a group of woodturners in Saskatchewan has devoted a weekend to sharing turning skills, as well as raising funds to support cancer research.

The event started as a class conducted through the Saskatchewan Woodworkers' Guild and held at Larry Matisho's shop in Saskatoon with Trent Watts as the instructor. We met in this fashion for several years until Larry suddenly contracted cancer and passed away in 2005. At that time, we decided to continue the event and turn in Larry's honour. Instead of paying a registration fee for the class, writing a cheque to the Canadian Cancer Society was the only cost to attend.

With Larry's passing, a new venue was needed. Support came from the Prairie Spirit School Division, and more specifically, Waldheim School (where I teach Industrial Arts). We have named our event "The Matisho Memorial" and continue to attract new turners and raise funds for cancer research. At the 2010 event, the 31 people in attendance raised just over \$3000. This is a great way for us to remember not only Larry but all of the people we know that have had or have succumbed to this disease.

Plans are well underway for the 2011 version. We will be getting together in Waldheim on the 19th and 20th of March, 2011. If you would like to attend, let us know in advance and we will find space for you. Most bring their own lathe and tools but we have access to a few extra lathes if needed.

Can't make it to Waldheim? It would be really exciting if the turning community across Canada would consider hosting their own versions of "The Matisho Memorial". By doing this, the amount we could contribute to the

cancer society would be limitless. It's an excellent way to contribute to society as well as raise the profile of woodcraft.

The form your event takes is up to you. If you would like to use what we have done as a model for your fund raiser, all the information is at our website, www.turnersforcancerresearch.org. A YouTube search for "Matisho Memorial" will also provide four short video clips that we posted after last year's event. Get your group together, pick a date and host an event. It's a lot of fun, as well as being a very rewarding experience. Then, share with everyone what you've done. Get the local media involved and make people aware that, as a group of turners, we can make a difference.

If you would like to attend or would like more information, please contact Glen Friesen at glenfriesen@sasktel.net.



GLEN FRIESEN
glenfriesen@sasktel.net

Bigger isn't always better. In fact, small is sometimes the only way to go. Build this simple yet attractive addition to your bathroom.

Elegant and Practical Zebrawood Vanity

Photos by: Tom Morton Illustrations by: James Provost

A typical bathroom vanity has at least two doors and a bank of drawers for storage and it also provides a whole lot of surface area for placing other bathroom objects. The only problem is that you need a large bathroom to put it all in. What do you do if you don't have all that real estate? Build a smaller vanity, of course. That's what custom woodworking is all about – adapting the piece of furniture to suit the space it will occupy.

The décor of the bathroom in which I installed this vanity was fairly simple. What it needed was a focal point, and what better species than zebrawood to achieve it. With its strong lines and heavy contrast it was the perfect solution. This small, simple zebrawood vanity will also accent the existing soft browns in the room. The only tricky part about using zebrawood – or most other exotic veneers – is that you have to lay up a panel and press it yourself. If you use a standard species like maple, walnut, cherry, etc., you can purchase a sheet and save yourself the hassle.

The sink I was using sits directly on top of the vanity and is siliconed in place. There's a $\frac{1}{8}$ " overhang on the left, right and front, to account for slight variances in the sink fixture. As long as the plumbing fixtures fit inside the cabinet, it was just a matter of aesthetics to determine the overall height. Because the bathroom was on the smaller side, I wanted to keep an open feeling under the vanity so I kept it off the floor. The dimensions for this vanity are for this specific sink, so if you plan on making a similar vanity, work backwards from the sink you choose. The main dimension you want to work towards is having the top surface of the sink finish 36" above the floor.

Lay up the Panel

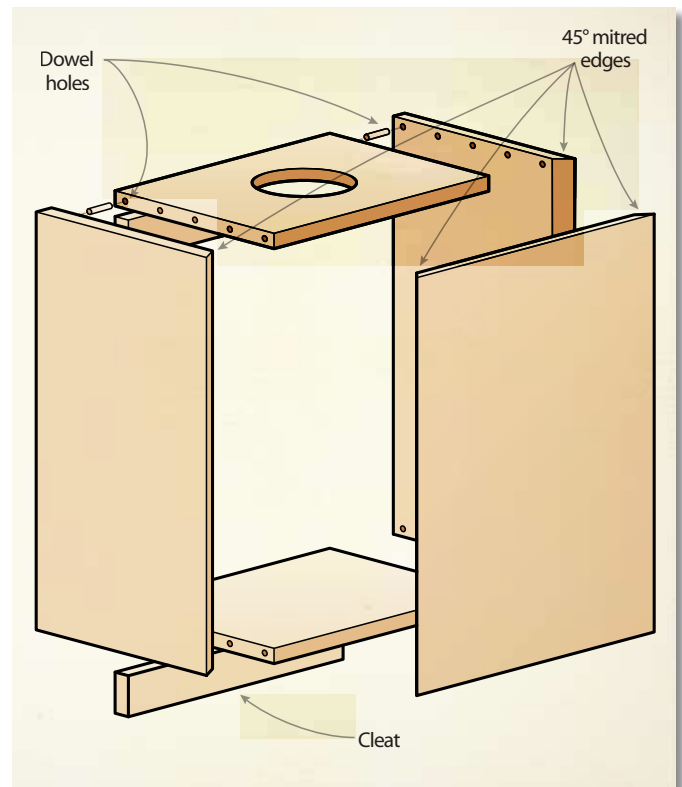
In order to keep the grain of the zebrawood continuous, I laid up the left and right gables along with the door in one long panel so I could cut the three parts from the panel in the order they appear. I started by cutting the core material slightly oversized. I decided on Baltic birch plywood because of the cabinets' proximity to a water source; MDF and particleboard turn to mush if they get wet. The zebrawood veneer I used was 12" wide, so all I had to do was splice two sheets together in a book match to obtain a wide enough face veneer. The same applied to the lower-priced maple for the interior of the cabinet. To splice two sheets of veneer together, I first cut one straight edge on each piece of veneer with a straight-edge and a flush trim bit in my trim router. Although grain direction plays a large role, climb cutting is often your best bet. A conventional cutting direction may chip the veneer. Practice on a test piece if you don't have much extra width to play with. With two straight mating edges cut, I use veneer tape (available at Lee Valley and other retailers) to join the two sheets of face and back veneer together so I can press them onto the core. Line the sheets up side by side and, starting at one end, apply a small piece of the veneer tape every 5" or so to hold the sheet together temporarily.

To activate the veneer tape you will need to moisten its glued surface. I tear off a bunch of 1" long pieces then, one by



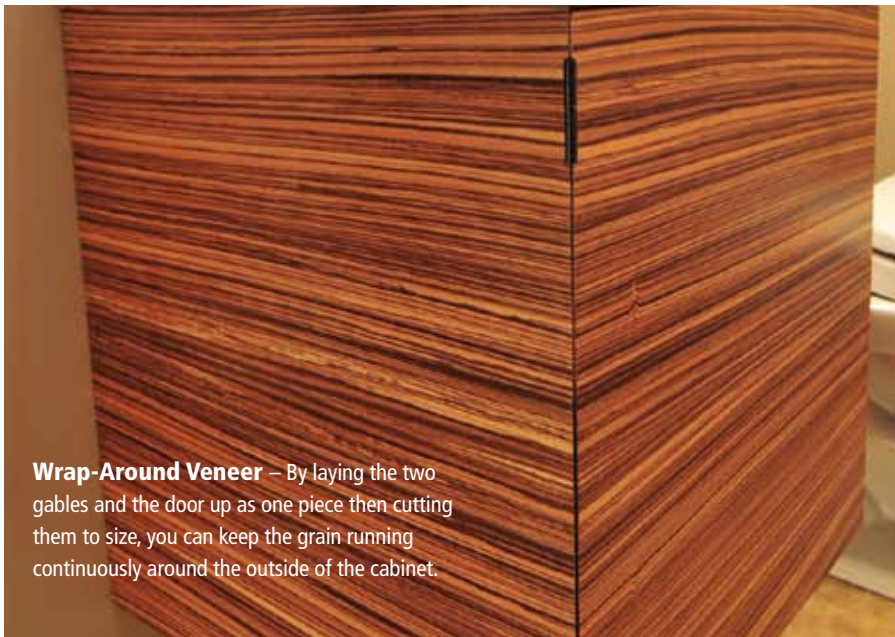
Veneer Tape Does the Trick – Once you have two straight edges, join them with pieces of veneer tape – first small pieces, then longer pieces. (Photo by Rob Brown)

one, press the tape onto a slightly wet paper towel or sponge and immediately place the tape over the edge jointed veneer, overlapping both pieces of veneer and pulling both edges together to form a tight joint. After the entire edge has been taped together with the shorter piece, I tear longer pieces off and apply them between the shorter pieces, making sure the entire joint has tape on it holding it together. Once both the face and back veneer are complete, I apply glue to the core, line everything up and put them in my vacuum bag for pressing. You could also use a large, flat panel, a bunch of cauls and a selection of clamps to press the panel up.



Assemble the Cabinet

When the panel was dry, I trimmed it to width and cut it to rough length. After carefully laying out the gables and door in the order they appear in the finished cabinet, I cut the panels to size. Next I mitred the front edges of the gables and both left and right sides of the door. Mitring allowed the grain to appear continuous around the three visible panels. Next, a top and bottom were cut out of maple plywood. Because of the mitred edges, I couldn't use a rabbet to join the top and bottom to the gables. A butt joint strengthened by dowels would work out simple and strong and would also provide the shape of cabinet I wanted. Before assembling the gables and the top and bottom, apply zebrawood veneer to the mitred edges of the gables. These edges will be *slightly* visible when everything is assembled, so it's nice to have the exterior species showing through, helping to camouflage the joint. Sand the interior of the vanity and assemble everything nice and square.



Wrap-Around Veneer – By laying the two gables and the door up as one piece then cutting them to size, you can keep the grain running continuously around the outside of the cabinet.

To add some strength to the vanity, I installed two V-cleats in each upper corner, out of view from anyone who would be using the vanity down the road. I added a slight mitre to the inside corner of each cleat so glue would have somewhere to go when I installed them. In order to fix the entire vanity to the wall, I installed cleats on the underside

Simple Door Pull – Instead of a face-mounted pull, I opted for a cleaner look and routed a cove into the underside of the door.

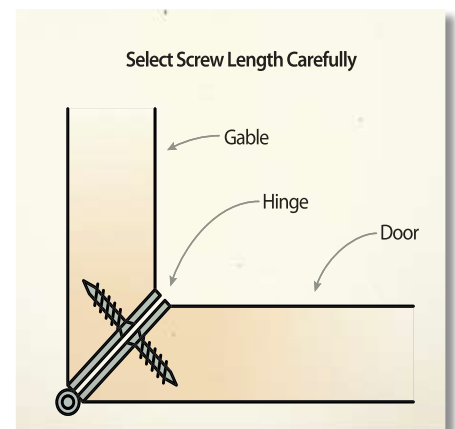


of the top and bottom with glue and screws. All these hard maple cleats were attached with waterproof glue, just in case. When you're making the vanity, just make sure you're aware of the size and location of the plumbing underneath the sink.

With the carcass together, turn your attention to fitting the door. When I cut the gables to size, I took into account the



Select Your Hinges Carefully – The hinge screws may break through the outside of the cabinet if you don't plan your attack.



full-size drawing of the top view of the hinged corner helped out a lot. In the illustration you will notice that, if the hinges were smaller or the screws sized incorrectly, it would have placed the screws closer to the front of the mitre joint, which probably would have caused the screws to protrude through the doors' finished face – a woodworker's nightmare!

With the door hung, I tested its fit. The grain of the veneered surface should line up nicely with the opposite side. If it doesn't, you can adjust the hinges a bit. You may also have to trim the door slightly to get it to fit the cabinet. You're looking for that "perfect" fit. Now apply zebrawood veneer to the last mitred edge, as well as the top of the door.

Invisible Details

Because I was looking for a very simple look, I didn't want to have much visible hardware. Instead of standard pulls mounted to the face of the door, I routed a quarter cove into the underside



Keeping the Door Closed ... Softly – A rare earth magnet keeps the door closed while a press-in bumper stops the door from slamming.



Flush Mounted – The washer that closes against the magnet is flush mounted in a 1/2" diameter hole.



A Cleat Makes Installation Easy – You can screw right through the cleat into the studs, no matter where the studs end up along the width of the vanity.

of the door so someone's fingers could grasp and open the door. To keep the door from "swinging in the wind," I installed a rare earth magnet and magnet cup in the front edge of the top and a mating metal washer on the back of the door. Both were positioned in a shallow hole so they ended up flush with the face when installed. I then installed a small press-in bumper (magnets and bumpers from Lee Valley) to keep the door from banging into the carcass during use. Although any machining was done now, the actual installation of these items didn't take place until after finishing the vanity. The hinges I used were zinc-coated and the knuckles were like beacons against the dark zebrawood surface when the door was closed. I cleaned the hinges and sanded the surface to give it some "tooth." With a dark brown can of spray paint, I gave the knuckles a

couple of coats, making them blend in nicely with the rich brown zebrawood.

Sanding and Finishing

With everything fitting nicely, it was time to sand the exterior of the piece. In choosing a finish, I wanted something that would stand up to water, and whatever else a busy bathroom will throw at it. I chose an oil-based polyurethane, though a catalyzed lacquer would also work well. Penetrating oils like tung oil, Danish oil or linseed oil are poor choices for this application because they offer much less in terms of protection from the elements.

Installation

With the cabinet ready to go, and nobody around to help me install it, I placed it on a stack of books so the top of the sink was at the proper height.

Once I found the location of the studs, I was off to the races, sinking a number of screws through the top and bottom cleats, making sure it was level. I was really happy with the final look of the zebrawood vanity. It was definitely worth going that extra mile to use an exotic species, even though that meant I had to lay everything up myself. It's a really striking addition to the home and one that family and visitors will enjoy for a long time. Now, does anyone know a good plumber?



ROB BROWN
rbrown@

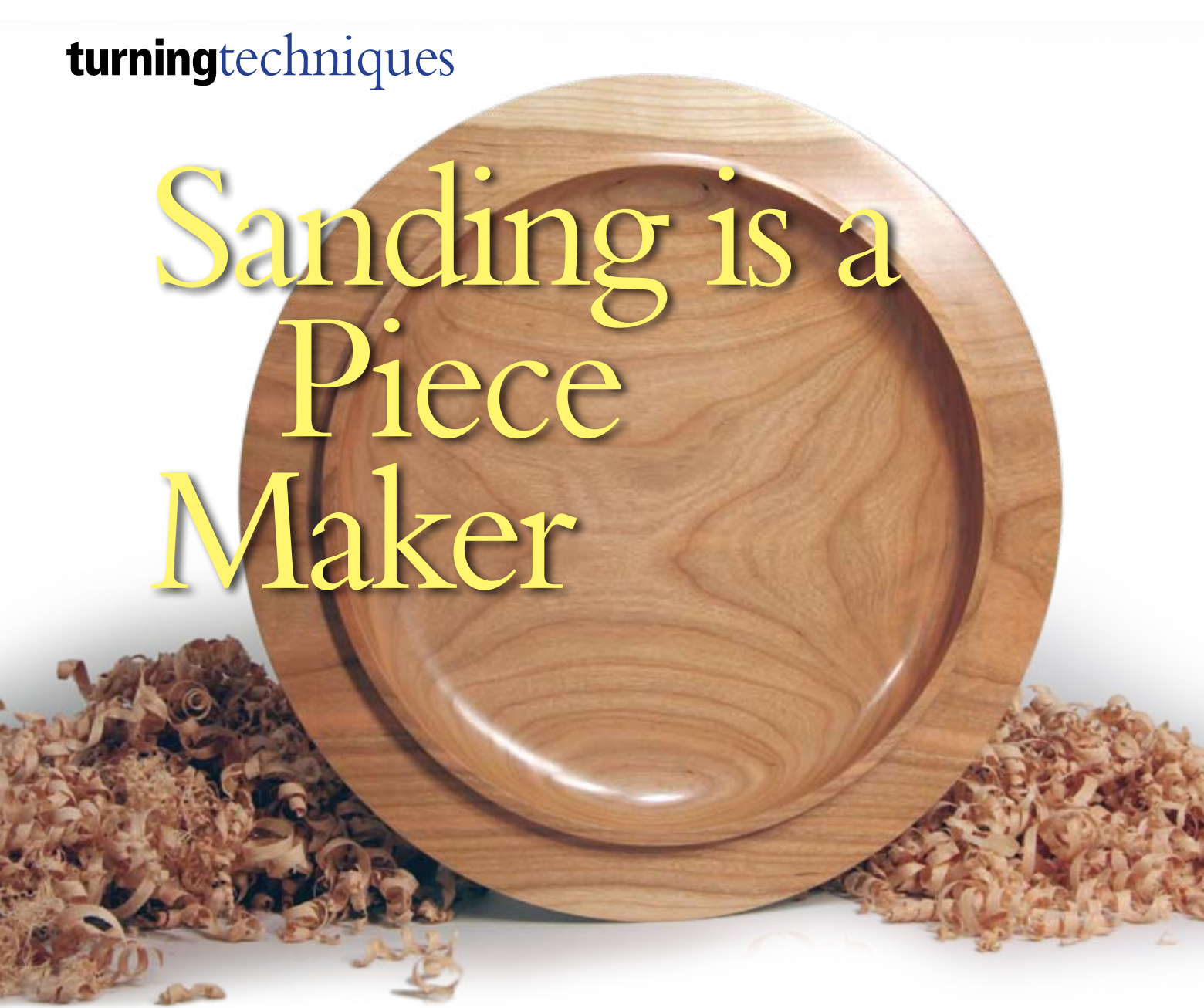
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Sanding is a Piece Maker



Take the drudgery out of sanding and realize the full potential of your projects.

BY MARK SALUSBURY

So you've just made a pretty nice piece and are about to begin the worst part of the job; the part that chokes you and your shop with dust, making you cough and gag and your eyes blur and tear. The part you never wanted to do, the part you want to get over with as fast as possible so you can get on with wiping on some nice shiny finish. The part you'll curse as soon as the finish is on because you know you're going to see ugly dips and sanding scratches. Dammit, that sanding wrecked the whole piece. It doesn't have to always go that way.

Woodworkers of all types should understand the techniques and steps so that taming the wood's fibres easily produces great results. While this article is geared mostly to woodwork crafted at the lathe, the art of effective sanding is applicable to all types of woodworking; the principles and understanding are the same, only the tooling changes.

In my shop, sanding is a refining process I enjoy. Applied in stages, sanding will reveal the subtle grain and natural beauty of the wood, while blending the planes in the surface profile of my workpiece. Magically, in my last pass with my finest grit, the piece comes together just as I'd wished when I started making the piece.

The key elements to a good result are cleanliness, lots of

Photos by: Mark Salusbury

good lighting, fresh/sharp abrasives and good technique. To make sanding a more pleasant part of my experience, I've adopted some pretty common sense approaches, which I'll share with you. It all starts at my grinder ...

A Fine Beginning

A well-dressed and balanced wheel on the grinder allows me to shape my turning tools to a keen edge, an effective shape and a bevel angle appropriate for the inner or outer contours I'm going to turn. Thus, I can do a finer job of shaping smooth, consistent surfaces with less tear-out, reducing the time spent sanding to correct mistakes.

When making cabinets, the same grinding wheel produces a fine bevel on my plane irons and chisels, which I then refine to a keen edge on my sharpening stones. Even twist drills are sharpened at the grinding wheel.

Sharp tools means no tear-out, which means no wood filler and really easy sanding.

Cleanliness

Once I've turned the profile and details as close as I wish with my tooling, I begin sanding. But first, I position my dust collection to draw in the dust as it leaves the piece before it becomes airborne in my shop. A funnel-shaped dust "hood" tapering down to a port where my dust collector attaches is located just an inch or two away from the workpiece so that almost all the dust is drawn away as soon as it leaves the work surface.

If I'm sanding furniture or cabinet parts and assemblies, I turn off fans and close windows to create "dead" air. Hand sanding is done calmly and purposefully so as not to fling dust into the air, followed with a shop-vac cleanup after each grit. Sanding with a powered "random orbital" or "palm" hand sander

is done with attached dust bags or, better still, vacuum take-off. A down-draft table is nice too, sucking dust down and away instantly. Any steps that can be taken to remove dust at the time it's produced will make sanding more effective and much more pleasant.



A Good Surface Starts with a True, Sharp Grinding Wheel –

Sharp tools will reduce tear-out, making the sanding process easier.

Dress to be Sharp – Grinding wheel dressers keep your grindstone clean, flat and sharp.



I also wear a "clean" dust mask, not some ratty relic lying loose under a bench, permeated with lord-knows-what from months of casual use around the house and yard (don't ask how I know about such things). A clean, fresh mask made to fit well around mouth, nose and eyes and work with eyeglasses (so I can see what I'm sanding *in detail*) and designed for fine particulate dust. 3M 8210 particulate respirator N95 comes in boxes of 20 disposable masks.



Two of Your Best Friends When Sanding – By using a dust hood and extra lighting, your sanding will go much better.



Protect Your Lungs

From Dust – Use a clean, well-fitting mask that's rated for wood dust when sanding.



Collect Dust at its Source – To assist in keeping the sanding dust to a minimum, a downdraft table is perfect. You can make your own or purchase one. (Photo by Rob Brown)

Lots o' Lumens

While turning, I've been merrily working under general shop fluorescent lighting plus the daylight streaming in through the shop windows, but now I need to see my work surface *in detail*. Did I mention that before? I position two flexible-necked, magnetic-based task lights on my lathe, above and behind the work surface so I can inspect the surface I'm working on with incidental or refracted light. Each sports a 40-watt "rough service" incandescent bulb. (Quartz halogen bulbs don't work because the filaments vibrate). Thus, I can see the tiny shadows on the surface resulting from the plagues of the craft: an inconsistent profile, grain tear-out, sanding scratches left from a previous grit.

Refracted light is just as important for a good result when I'm making casegoods or furniture. A clean, soft light source located behind the surface being sanded lets me see dips, rough grain, tool marks and sanding swirls much better than a simple overhead light ever will.

For this discussion, let's imagine I'm at my lathe, turning and finishing a shallow, open dish/bowl about 16" in diameter and 2" deep. The piece is mounted by its foot in the chuck, the outer profile is turned and the inner surface merely roughed out to get the piece in balance as it revolves on the lathe.

True grit

There's a lot of different sanding media out there but I've found the best value in dry lubricated (steartated), open coat, aluminum oxide sanding discs.

Personally, I like Norton A-275 series Norgrip paper discs. (www.nortonindustrial.com). I buy boxes of 50 hook-and-loop discs, in grits from 80 through 1000. I use 3" discs on both 3" and 2" backing pads.

I use a fresh set of discs for each piece I turn; with larger pieces I use a fresh set for the outer surface and another for the inner surface. On average, I use about \$2.45 worth of abrasives in most of my pieces, based on approximately \$0.35 per disc.

For benchwork, I've settled on Carborundum "Premium Red" dri-lube paper in 9" x 11" sheets (www.carborundumabrasives.com), which I buy in 100-sheet sleeves from industrial suppliers. 3M also make a good product in their "3X" series, which is broadly available in smaller packs at many home centers and hardware stores. Both products cut well, are long-lasting and created to resist clogging for maximum effectiveness.

Cheap trick #1 — I buy "back-up pads" that are (a) a few millimetres smaller in diameter than my discs, (b) acutely tapered from the



Choose the Right Pad – The right equipment always helps. In this case it's a sanding pad.

hook-and-loop surface back toward the arbour and (c) the flexible pad must be made of firm, closed-cell foam, not spongy foam rubber.

Thus, I can sneak the edge of my sanding discs into tight spots on the workpiece and the firm yet compliant pad can be controlled to produce averaging pressure without rounding over crisp details.

My preferred back-up pads are distributed by Klingspor Engineered Abrasives. The 3" size is part no. 304891 and the 2" diameter pads are part no. 304892. Both have a ¾" thick pad and ¼" drill arbour.

The Klingspor Engineered Abrasives website is www.klingspor.ca and they can be contacted by e-mail at sales@klingspor.ca or you can call them at (800) 363-2964 for a dealer near you.

Practically smooth

Sanding generally begins at 120-grit or with whatever grit is the most effective given the surface and material I'm dealing with. With the lathe revolving at my last turning speed and my reversible, variable speed drill at full speed (2400 RPM), I begin sanding the outer surface of the piece by contacting it as close to the foot as safely possible, with the top third of my 3" sanding disc, keeping the disc contact patch as close to parallel with the lathe bed as I can. I take a firm and steady pass from the foot to the rim, inspecting the surface as I go, blending until the revolving surface appears consistent in shade. This usually requires two or three controlled passes. I then stop the lathe and inspect closely for tear-out etc.

Next, I put my lathe *and* drill into "reverse" and take similar passes, this time from the rim down to the foot, followed by more stationary inspection.

Any disturbing torn grain or sanding marks are then dealt with by spot applications of power and/or hand sanding until the surface is to my satisfaction with that grit. If power-sanding, I contact the work surface with as much of the sanding disc as I can while making sure the disc edges never touch. I keep the disc moving at all times, often varying the drill's speed as I sand. I'm trying to remove the affected area while blending it into the surrounding area, avoiding creating heat, which will irreparably deeply craze the wood.

On the lathe or at the bench, the principal objective is to cut



Keep Things Fresh – You will go through lots of sanding disks because you should always work with a fresh abrasive surface.

the wood's fibres cleanly from multiple directions, so they're cut and left "standing up," then cut again in the opposite direction, always favouring the grain's direction.

Cheap trick #2 — A second hook-and-loop backing pad is a great way to hand-sand as I progress through the grits. The disc removed from the backing pad on the drill is applied to a second one, hand-held, offering me as much concentrated or generalized surface as I want for any application.

I then reverse the lathe back to normal rotation and take one last blending pass to create a uniform sanding pattern on the work surface.

I've found that once the surface has been "tamed" with this grit, the time-consuming part of sanding is over. From here on it's a matter of smooth, flowing application of the sanding disc and perhaps a bit of hand-sanding with each grit to break up the sanding pattern from the usual swirl produced while the piece is revolving on the lathe.

Are we There Yet?

I repeat this process through each of the following grits in succession: 180 then 240.

For furniture or cabinetmaking, I quit at 180-grit to provide "tooth" for my choice of finishes, then use 240 grit and no finer to refine my finish coats. For lathework, it's

... decision time.

If it's to be a functional piece, I'll often quit there in preparation for an oil and wax or hand-applied food-grade varnish finish. If I'm making something more decorative, I'll go on through 320, 400, 600 and even 800 grit to prepare for building a finer varnish finish.

With each grit, the piece gets sanded revolving first forward then reverse. With each change to a finer grit, I lower the lathe's *and* the drill's speed. If I've begun sanding with the lathe at 750 RPM, I finish sanding with the lathe turning at the lathe's slowest RPM.

Next I do a final fine 'detailed' inspection to make sure I got all the imperfections, have no evident torn grain, pits, tear-out or residual sanding scratches left from any previous grits.



Outside First – With the lathe and drill turning, start sanding the outside.

If there are, I have to go back and deal with them by going back as many grits as it takes to methodically eliminate the imperfections and blend all to a uniform surface. This almost never happens ... I catch *all* the imperfections way back at my first grit.

Last, the Lustre

Finally, I burnish the whole surface using the last grit I sanded with (except if I sanded to 800-grit). I put my lathe and drill speed back to the highest speed I began with and take one last, controlled, uniform, series of passes from foot to rim, rim to foot then foot to rim again, and that's it. This step takes no longer than a few seconds in total but will add a sheen to the surface that my finish of choice will 'pop' in a minimum of coats. If I sanded to 800 grit, I burnish with a fresh disc of 1000 grit.

Goin' In

Now that the outer surface is sanded and burnished, I turn the inner surface of the piece to a consistent wall thickness and begin sanding it, employing the same grits and steps as I did on the outer surface. Here, though, with the lathe running in its "normal" direction of rotation, I contact the surface about two inches to the "left" of the vessel's centre and, with a slow, sweeping pass, I pan across with the vessel's centre and away to the far inner rim. With each successive pass, regardless of grit, RPM speed or direction of rotation, I always pan across the center of the piece slowly and deliberately to avoid dimpling the center and sanding too little here.

After each grit, with the lathe stationary, I close my eyes or look away while lightly panning my finger tips across the surface, feeling for any undulations or irregularities. I then do a close visual inspection with plenty of strong, incidental incandescent light or direct incidental sunlight, looking for sanding scratches.

This tactile then visual inspection is also an important step in my cabinetmaking, allowing me to fully appreciate the surface I'm preparing and enjoy the wood's grain, figure and texture, for the first time as purely free of "the maker's marks" as it can be.

Once again, spot power-sanding followed by blending and/or hand sanding will perfect the surface. Here's where the 3" disc on a 2" backing pad works well.



Fewer Scratches – Holding the pad and lightly hand-sanding with the grain reduces cross-grain scratches.



Move Inside – With the outside of the turning complete, start working on the inside of the piece in a similar fashion.

Cheap trick #3 — The centre of a 3" disc is often left unused. By centering a "previously enjoyed" 3" disc on a 2" backing pad, I create a "flap" disc, which conforms to the concave inner surface of the vessel. The unused center of the disc sands and blends while the rim of the disc flaps freely, creating a soft irregular pattern devoid of harsh swirl marks.

Now that the inside is sanded and burnished, I flip the piece around, chuck it by the rim and turn, detail and finish the foot to suit the rest of the piece and blend it into the surrounding surface using the same techniques as elsewhere. Here's one spot where "cheap trick #3" works well.

Now I'm grinning with satisfaction, admiring a smooth lustrous form, ready for finish. It took a few minutes to achieve this result, no mess, little work at all and it sure was worth it!



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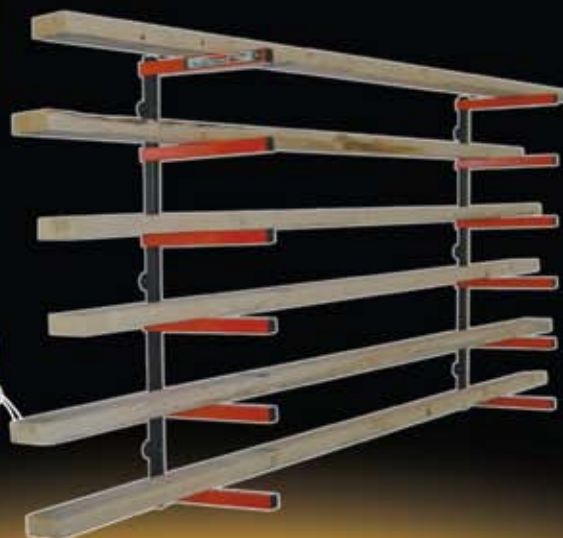
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Hot Pipe Bent Salad Tongs

Bending wood is one of the most exciting and magical things a woodworker will ever experience.

BY SCOTTY LEWIS

Hot pipe bending is one of the simplest things to set up and produces some of the most amazing results. If you don't have any of the necessary supplies to create this set-up, a trip to the hardware store is in order.

What You Will Need

You will need a metal pipe about 6" long with an outside diameter of 1 1/4", as well as the matching flange. The rest of the bending jig can be made of small

scraps of wood. The pipe is heated with a propane torch – pick one up if you don't have one.

Mount the pipe to a board with the corresponding flange. Drill a large hole in the mounting board for the torch to shine through and into the pipe. The board can simply be held vertically in a vise. I chose to attach the board to a platform so I would have a portable set-up I could use in places that I don't have a vise. Before using the pipe for bending, sand off any coating it might have on it.

I decided to create a simple cradle that would allow me to adjust the angle of the flame. With a bend in the neck of the torch, a slight rotation of the propane cylinder changes the angle of the flame. I found being able to change the angle of the flame to be beneficial



Keep it Simple – You don't need anything fancy – just a pipe, a torch and some wood to make the cradle.



Cradle for the Torch – Build a small cradle to hold the torch stationary. The last thing you want to do is quickly grab a rolling torch.



Small Flame – Only a small flame is necessary to heat the pipe to the proper temperature.

in getting the right temperature on the working area of the pipe. Also, I make a template for the shape I'm bending and attach it to the top of my mounting board so I can check the shape I'm bending against it as I go.

Temperature is Key

Like many things, if it's burning, it's too hot. You will find that only a small flame is required to heat the pipe to the proper temperature of about 200 to 250° F.

If you are getting burn marks on the surface of the wood, the pipe is too hot. A stovepipe thermometer is an inexpensive way to check the pipe for the correct temperature. Rotating the torch to increase the angle and intensity of the flame to the working area of the pipe is an extra bit of control over the temperature. Depending on the day and the way in which the torch was burning, I found I could get the right

temperature by aiming the torch a little more down the pipe rather than up at the top of it.

Make it or Break it

The pieces you wish to bend should be straight-grained and free of knots and any other imperfections. I often select and plan my pieces to have knots or figured areas where the milder bends are, as they add nice character, and keep the straighter grain for the tighter

bends. If the grain is not straight/parallel, you are likely to see fibres lifting on the outside of the bend. You will have much better luck bending air-dried lumber than kiln-dried lumber. Hardwoods such as ash, oak and walnut bend especially well to a tight radius. Woods like maple and cherry will bend but not to as tight a radius. I am never afraid to try bending a new species of wood but I recommend ash, oak or walnut to start off with. The maximum thickness



The Right Temperature – Somewhere between 200° F and 250° F is the perfect temperature for hot pipe bending.





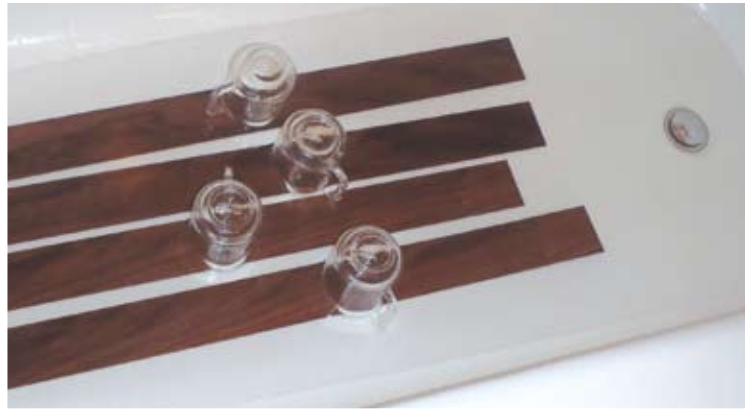
Be Patient – Apply light pressure and take your time.



Let it Set – For a sharp bend like this, hold the part on the pipe for a few minutes, allowing the wood fibres to totally reposition themselves.



Over Bend – Account for spring back by slightly over-bending.



Soak 'em! – The tub is an easy solution for a spot to soak the parts prior to bending.

you can bend will vary; $\frac{1}{4}$ " is the thickest material that can easily be bent to a tight radius but it is possible to bend material up to $\frac{3}{8}$ " with this approach, especially with a more gradual bend.

Soak the pieces in water for three or four hours before bending. Depending on the size of your parts to be bent, you may be looking for a place to soak them. I found an inch of water in the bottom of the bathtub to be an easy solution. Just wait till the "boss" isn't looking. For these particular tongs, I started with pieces $\frac{1}{8}$ " x 2 $\frac{1}{2}$ " x 30". Make an extra piece or two and don't expect a 100 percent success rate.

The Bend

Don't rush it! Work the piece over the pipe, heating the section to be bent. Apply only light pressure to the piece. You will know when the wood is ready to bend. The heat loosens the lignin bond around the wood fibres. A $\frac{1}{8}$ "-thick piece of wood will take just a few minutes to become hot enough to bend. You can actually feel the wood let go and loosen up. The trick is not to jump the gun. Apply consistent



Check the Shape – Mount a template to the top of the jig for easy reference.



Drying Jig – Clamp the part to a drying jig to let it set to the shape.



Final Shape – Add some gentle and user-friendly curves.



Cut With Care – Avoid putting fingers in between the pieces "just in case".

pressure. Allow the wood to do its thing: compress and reposition its fibres. Do not heat the wood on both sides. The fibres on the outside of the bend remain the same length and the fibres on the inside of the bend compress. Heating the outside of the bend may cause the fibres to fail.

Once the bend has been made, you will find the piece will spring back. Hold the shape around the pipe and let the fibres totally reposition themselves. For this 180-degree bend, I clamped the part around the pipe for a few

minutes. This actually cooks the part and sets the shape minimizing spring back. You want the piece to be as close as possible to your template without needing to force it into place. Once the shape has been bent, it should be held in a way that allows good airflow to allow even drying. Only light clamping should be necessary. The drying process can be sped up with a fan. Use a moisture meter to ensure the piece is dry before the final shaping and sanding.

Final Shaping

Hot glue a scrap in between the tongs, to hold them in a more parallel arrangement. Use a scrap that is narrow enough to be out of the way of the curved shape to be cut. Make a template of the curve to be cut, out of thin cardboard and use a bandsaw to cut the curves. A piece of wiggle wood works great as a contoured sanding block. I finished the tongs with a food-safe salad bowl finish. These



Sanding Curves – A piece of wiggle wood works great as a curved sanding block.

tongs are a great way to finish off a set of bowls. They are great for buffet dinners and potlucks where you only have one free hand. Good luck and happy bending!

SCOTTY LEWIS
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Lee Valley Veritas Carcase Saw



by Tom Fidgen

Last year I had the chance to try the new line of Veritas dovetail saws offered at Lee Valley Tools. Now, I'll be the first to admit they looked a little 'different', with their stainless-steel powder mixed, fibre/polymer backs and uniquely designed bubinga handle assembly. However, after seeing the price tag, I realized how much we really need these saws in today's hand-tool market.

They're not designed to compete with the boutique varieties, nor should they be. What they are is a back saw that anyone can afford to buy. Maybe even a back saw that no workshop or classroom should be without.

The student or the professional wood worker will find many uses for a saw in this range. They're well made, dependable and if you close your eyes (never during use, of course!) they feel like a saw priced twice as much.

As of November, 2010, I'm happy to say the Veritas back saws just got a bit bigger. They now offer Carcase Saws: one 12-tip rip tooth and a 14-tip crosscut. That's an 11" high-carbon steel blade with a $2\frac{3}{8}$ " depth of cut. That will cover 90 percent of tenon applications on standard-sized furniture in most shops.

Think about this: the pair of these saws will cost you less than one saw from most other hand tool manufacturers.

Who can argue with that?

www.leevalley.com

Coming Events

Hamilton Woodworking Show

January 28, 29, 30
Canadian Warplane Heritage Museum
Hamilton, ON
www.hamiltonshows.com

Kitchener-Waterloo Woodshow

March 11, 12, 13
Bingeman Park
Kitchener, ON
www.woodshows.com

Tool Expo

February 4, 5
Leamington Home Hardware
Leamington, ON
www.thetoolstore.ca

Niagara Woodcarvers Show/Competition

March 26, 27
Optimist Recreational Park
Niagara Falls, ON
www.niagarawoodcarvers.ca

For more woodworking events:
www.CanadianWoodworking.com
List your club and event FREE.

Two Well-Known Woodworking Supply Retailers Retire

Morley Miller (Morley Miller Machinery, St. George, ON) and George Berg (Berg Woodworking Supplies, Powassan, ON) have each recently announced their decisions to retire and close up their woodworking supplies shops.

Each has made this difficult decision for their own reasons, but both wanted to say "Good-bye" and "Thank-you" to their customers and fellow woodworkers.

Morley and George each operated their respective shops and exhibited at various woodworking shows across Canada for over 25 years – so their helpful advice and insights will be missed by all of us.

Morley and George – from all of us: "Thanks for all you've done for us, and all the best in your retirements!"



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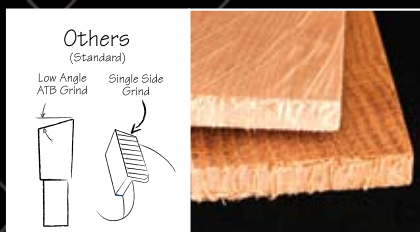
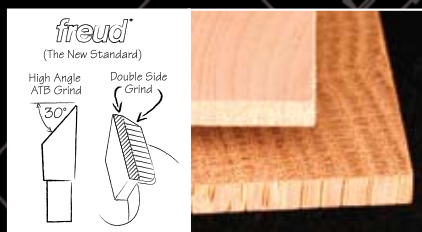
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Allow your child to participate in counter-height activities by building this stool.

BY MATT DUNKIN

Just before my son turned two, he began to want to participate in activities that were happening on our kitchen counter: making muffins, stirring the batter for Saturday morning waffles, or chatting with us as we were cooking. We tried for a while to have him stand on a basic stool but he couldn't get up on it without our help and had a couple of falls because it wasn't stable enough. I wasn't thrilled with the stools that were commercially available, so I decided that the solution was to create a stool that would allow him to be able to get up and down himself and would welcome him to participate more fully in family life by bringing him closer to our level.

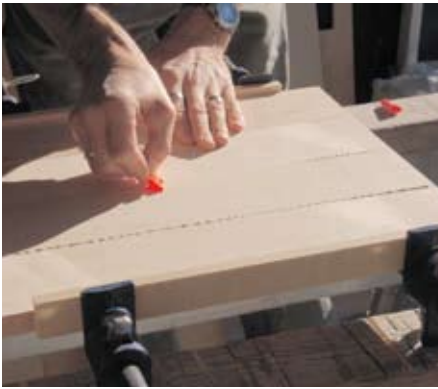
I designed a stool that would combine ladder-like stairs with handholds so that he could climb to a platform that was enclosed on three sides. It was meant to be pushed up to a counter or sink area but not be too large as to clog up our kitchen floor space. I wanted it to be strong enough for an adult to stand on but light enough that a little person could pull it across the floor to where it was needed.

Dimensions & Materials

I chose to make the sides out of $\frac{1}{2}$ " Baltic birch plywood and it is possible to get the material for two stools out of one 5'x5' sheet. The stairs and platform are made out of 1x4 maple and one piece 8' in length is required. The stool is 35" high so as to fit under the overhanging edge of most kitchen counters and the platform height I set at 18" from the floor. Little feet can handle the rise of 6" between steps and layout is simple. Overall width is 16" and the stool's sides are 18" at the base but taper to 12" by the time they reach the top. For anything to exist in our

Build a Safety Stool

Photos by: Matt Dunkin Illustration by: James Provost



A Strong Platform – Since 1/2" Baltic birch would not be strong enough, laminate a solid maple panel to the platform.

house it must be useful on more than one level, so the front of the stool doubles as a chalkboard and easel.

The Platform and Stairs

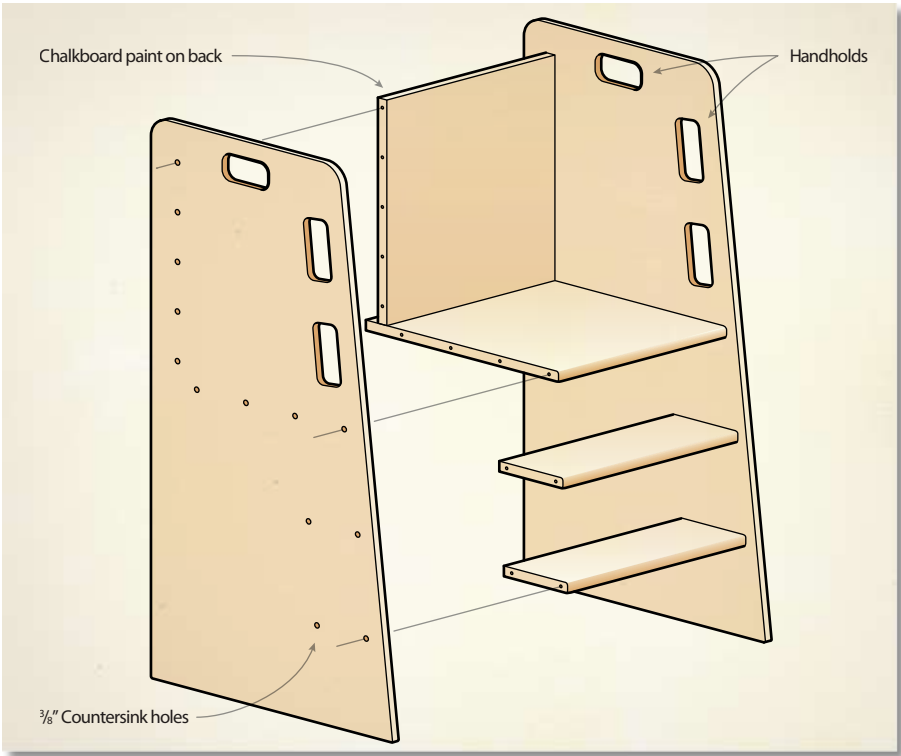
I took the 8' length of 1x4 dressed maple and cut it into six 15" long pieces. Four of those I edge-glued together to make the platform, alternating the grain patterns, clamping them tightly together and removing glue squeeze-out with a plastic razor blade. After a couple of hours of drying time, I cleaned the glue up with a card scraper and a random orbital sander to make the surfaces smooth. Along one edge of the glued platform panel I used a 1/4" round-over bit to soften the leading edge of the platform and did the same on all four corners of the two stair treads. I ripped 3/4" off the back of the platform to make it the correct depth and cut the platform and the two stairs to exactly 15" in length.

The Sides

I took a 5'x5' sheet of 1/2" Baltic birch plywood and cut a piece of plywood that was 35" long by 30" wide. I placed a mark 12" in from opposite corners and ripped the panel with a track saw to create the two identical sides, each tapering from 18" at one end to 12" at the other. Next I laid out where the stairs would go on the sides and got ready to create the handholds.

The Handholds & Edges

A simple template and router allow uniform handholds to be cut in the stool sides. I set the dimensions at 4 1/2" long by 1 1/2" wide and created a handhold



Materials List

Part	Qty	T	W	L	
Stool Sides	2	1/2"	18"-12" Taper	35"	Baltic Birch plywood
Stair Treads	2	3/4"	3-1/2"	15"	Solid Hardwood (Birch or Maple)
Platform Panel	1	3/4"	13-1/2"	15"	Solid Hardwood (Birch or Maple)
Easel	1	1/2"	15"	18"	Baltic Birch plywood

template out of an off-cut of 1/2" stock, over-cutting the hole with my chop saw. Clamping the template onto the stool sides 3/4" back from the edges, I drilled a pilot hole and used a jigsaw to hog out the bulk of the material inside the handhold area. Next I used a 3/4" pattern bit on my plunge router to rout the

remaining material out of the holes, travelling in a clockwise motion. The diameter of the pattern bit creates a soft radius in the corners for little hands. Similarly, the two top corners of the stair sides were softened with a curve created by a rounded template, jig saw for bulk waste removal and a router



Round over Certain Edges – To eliminate some of the sharp corners, use a round-over bit in a router table.



Cut into the Sheet – After some planning, cut the plywood parts to size.



Simple Template – Make a simple rectangular template to guide the router.

with a template bit. Finally, I ran a router with a ¼" round-over bit in a laminate trimmer around both sides of the stool sides softening the perimeter of each handhold and each exposed edge.

The Easel

For the front of the stool I cut a piece of ½" plywood that was 18" long by 15" wide and eased the one top edge with the ¼" round-over bit. This would become the third side of the railing around the stool's platform and, when tilted back slightly and painted with some chalkboard paint, it would be transformed into a place to create artwork.

Assembly

I drew the stairs, platform and easel onto the stool sides, stacked the sides together and then drilled tiny pilot holes through for screws through both pieces at the same time. Two screws hold the stair treads and the screws into the platform and easel are roughly 4" apart. Next I countersunk through the exterior faces with a ½" Forstner bit ⅜" deep to create clean holes that could be easily filled with shallow plugs. On the



Trim to Size – After roughing out the hole with a jig saw, use a router and template to cut the hand holds to size.

inside of the stool sides I used the Forstner bit indexed into the pilot holes to give me location marks for the angle of the easel, and drew a light pencil line to aid in assembly. I assembled by gluing, pre-drilling and screwing 1 ¼" pocket screws through the sides into the treads, platform, and easel. Laying the first stool side on a sawhorse and screwing up from the bottom made assembly relatively straightforward.

I used a ½" tapered plug-cutting bit in a drill press to drill maple plugs out of my off-cut and then taping them in place, ripped through the back of the plugs to free them from the block. The tape kept them from flying out and disappearing as they were cut. Placing glue in the holes, I oriented the grain to match the plywood and gently tapped the plugs into place. After the glue had dried, I used a sharp chisel to pare off most of the plug and then sanded it flush with a random orbital sander.

The Finish

To create a simple dye I used orange pekoe tea, giving the wood a warm glow. Letting eight tea bags steep in four cups of boiling water overnight gave me a suitable colour.



Ease the Edges – So that little fingers have an easier time, round over many of the exposed edges.



Drill Stacked Parts – Stack like parts on top of each other, then drill pilot holes to ensure they are in the same location.



Counter-Sink – Counter-sink holes $\frac{1}{8}$ " deep. Any further and you might weaken the screws' holding power in the $\frac{1}{2}$ " material. The holes can be plugged later.



Added Assistance – A light pencil line can help when it comes time for assembly.



Easy Assembly – During assembly, lay the gable down so gravity doesn't fight you.



Plug the Holes – On the drill press cut enough plugs to fill all the holes and then glue them in place.



Double Duty – Cover the back surface with chalkboard paint so the stool can also be used for artwork.

I wiped on the tea and removed the excess after a few minutes. I let it dry fully and then finished the stool with AFM Safecoat Low Odour Polyureseal BP in a Satin Finish so that it wasn't too slippery but would be easily wiped off if there were spills. The easel area I painted with two coats of Benjamin Moore's Studio Finishes Chalkboard Paint. Felt pads on the bottom of the stool allow it to glide over our hardwood floors but are resistant to slipping when the stool is in use. A large binder clip permits paper to be attached to the top edge for painting or drawing. A narrow ledge may also be added at the bottom of the chalkboard for chalk or crayons.

Safety

The stool has garnered much praise among parents who visit our house and I am happy with its design. Its stability is ideal for it to be pushed up against a counter and it is wide enough to be stable. If my kids were to be using it away from counters or walls I would outfit it with "toes" that would give it more forward stability but that would still allow it to fit under a standard cabinet toe-kick recess. I haven't done so because it wouldn't store well in our kitchen as a result and would create a tripping hazard. As our daughter begins to crawl and experiment with climbing, the stool may need to go away for a brief time until she is ready for it. We also need to make sure that knives and other risky items are not left on the counter so they are not in reach of little hands.

My son's stair stool has been well used over the last year; as a hand-wash platform, an art studio, and even an extra dining room chair in a pinch. I can clearly remember giving it to him as a gift and watching him climb it and with a grin of satisfaction begin to participate in life at counter level.



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Stone Age Joinery

Some projects call for a whole new approach when it comes to joinery.

BY ROB BROWN

I often work with stone because it adds another element to a piece of furniture. Whether it's an interesting texture, colour or shape, all will add to the finished piece. When stone is square, it's fairly easy to work with, but in the case of this table the stone I was using was anything but square. It took some "outside-the-box" joinery to produce a strong table that would stand the test of time.

I started by creating a full-sized drawing on a piece of plywood. This gave me something to reference when choosing and cutting the pieces. I then cut the three top pieces to rough size and shape. Once joined together, these three pieces would keep the stone from shifting during use. I carefully traced the contour of the stone onto each piece then cut the inside of each piece to mate closely with the stone's edge. When all three pieces were fitted to the stone nicely, I cut them to proper length and at the proper angle so they would allow the stone to sit in the cavity. The joint near the narrow end of the stone is mainly side grain, so I could just glue those surfaces together. The other two joints were much closer to end grain, so I wanted to strengthen them a bit. I did this after the three parts were glued together by cutting a 1/4" wide groove and inserting a key into the joint. I applied a size coat of glue to the end grain areas, followed shortly by another regular coat and glued the three pieces together. A 1/4" dowel in each of the three joints assisted with keeping everything aligned during glue-up.

Once dry, I cut the outside edges to shape on the bandsaw, mimicking the inside profile. To add strength, I ran the two end grain joints (with the entire assembly standing on end) across a 1/4" dado blade in my table saw. I used a vertical guide that ran on my table saw's fence equipped with some temporary cleats to position the assembly. I glued the strips of wood into these two slots, let them dry then trimmed them flush. I then cut a notch



Shape the Wood to the Stone

— After making a full-sized drawing for reference, you can start to shape the top pieces so they will fit the stone accurately.



Additional Strength –

A solid key is glued into the groove. This key will help reinforce the joint.



Notch the Top – To protect against racking and provide a flat surface to glue a notch is added. It will also assist with location during glue-up.

Photos by: Rob Brown



Stepped Surfaces – The steps are cut to mate precisely with the top assembly.

in the top assembly with a handsaw to accept the leg. The notch was $\frac{3}{8}$ " deep and the exact same width as the legs. Its purpose was threefold: to add some racking strength, to provide a flat surface to glue each leg to and to provide some location assistance while fastening each leg to the top.

So the stone wouldn't fall through this assembly, I added another layer of material under the top surface, offset inwards by 1". The outside of this layer was cut to mimic the shape of the top. It is glued to the underside of the top assembly with the joints staggered from the top joints by about $\frac{1}{2}$ " for added strength. I used four pieces, instead of three, because I wanted to add a short piece near the narrow end of the stone, for strength reasons.

With the stone assembly complete, I turned my attention to the three legs. During breakout I kept them oversize and rectangular, so machining notches in them would be easier. A full sized pattern is crucial for laying out and cutting the notches in these legs. On the table saw, I cut stepped notches in each leg that corresponded with the mating area of the top assembly. Each set of notches had to be fine-tuned individually for an accurate, snug fit. Once the joints fit perfectly, I cut the legs to final shape and sanded everything. I then drilled a $\frac{3}{8}$ " counter sink hole and pilot hole through the top assembly into a horizontal surface of the leg.

After I machined the joinery for the stretchers (sliding dovetails), I assembled the three legs, one at a time. First I taped off the show surfaces so glue would not penetrate the wood fibres. I then applied glue size to any end grain. After waiting a few minutes, I applied a regular coat of glue to all mating surfaces and brought the joint together by driving a screw through the top assembly, into the leg. When



Staggered Joints – The leg has been attached with a screw and the plug has been inserted and trimmed flush. You can also see the fourth, smaller piece of the lower assembly.



Strong and Invisible – The lower section of the top adds a lot of strength to the assembly and also provides a surface for the stone to sit on (above). Because it's offset from the top, it won't usually be seen when the table is complete (below).



all legs were attached and solid, I added a tapered plug and trimmed it flush.

Standard mortise and tenon, through dovetail and half lap joints are great – if that's what the situation calls for. In many cases you have to invent new joinery to ensure a strong and beautiful piece of furniture. As long as you are knowledgeable regarding materials, machines and joint fundamentals, you have the freedom to try something a little different.

ROB BROWN

rbrown@canadianwoodworking.com



Advantages

- Relatively safe, flexible and easy to use
- Will cut sheet goods, lumber, laminates, solid surfaces, some metal, etc.
- Portable enough to easily fit into most vehicles
- Will not take up permanent space in a small shop
- Not confined to cuts that are parallel to a fence
- Can be set up to cut more than one piece of material at a time
- Produces cuts that minimize splintering
- Offers excellent dust collection

Limitations

- Clamped cutting requires a bit of set-up and take-down time
- Possible to make mistakes with setting the track up if you're not paying careful attention
- Can only clamp and cut material wider than the offset distance between your clamps and the edge of your cut (ripping narrow material is out)

TRACK SAWS

Take the Plunge into the World of Track Saws



Easy for Any Angle – With most machinery, square cuts are the easiest, but with a track saw, angled cuts are just as easy. (Photo by Manufacturer)



Smaller Can Be Better – The DeWalt track (top) allows the user to make a narrower clamped cut than with the Festool and Makita style track (above).



Consider Clamps Carefully – Using a clamping system that's comfortable and easy to use will pay big dividends if you're doing a lot of sawing.

BY MATT DUNKIN

When I first encountered a track saw, I was smitten. As a general carpenter focusing on renovation work, I was building custom cabinetry and built-ins for additions and renovations, so most of my work was based at a job-site; portability and flexibility were essential in a tool. The idea that a saw could be easily moved across a piece of fixed material instead of moving the material across a table saw was not a new one; I was more than familiar with circular saws. I had never, however, thought of a circular saw as a particularly accurate tool. Wandering cuts, burn marks and splinters seemed challenging to avoid. The combination of a brilliantly designed track and dedicated saw, which together could rival the accuracy of a panel saw, was a revelation. I took the plunge (pun intended) and, after some initial research, purchased a Festool TS75 EQ track saw and have been using it for almost two years now.

I recently welcomed the opportunity to test a saw from each of three track saw manufacturers: Makita's SP6000, DeWALT's DWS520K and the larger of two models made by the original pioneers of the track saw: Festool's TS75 EQ. What follows is the information that I wished was available when I was track-saw shopping to be able to make an informed decision.

The Tracks

All three companies use lightweight aluminum tracks with a groove that holds a clamp from below while guiding the saw above. The track bottoms have slip-resistant rubber padding so that they will not mar the surface of the workplace beneath them and for some cuts you may use the tracks without clamping them down. Plastic runners on the top of the track reduce friction so the saw glides along with minimal resistance. On the edge of the tracks, a replaceable zero-clearance splinter-guard stops the blade from pulling wood fibre upwards as it exits the cut.



Photo by: Matt Dunkin

Plunge Action – The Festool and Makita saws are hinged at the back and pivot forward (left), while the entire DeWalt saw plunges forward parallel to the base as it's lowered (right). (Festool photo by manufacturer)

Makita and Festool's tracks are similar. The off-set between clamp and blade, and therefore the narrowest clamped cut you can make, is 5 1/4". DeWalt's track is unique in two notable ways: it is narrower than the others, making possible clamped cuts as narrow as 3 3/4", and it is double-sided, allowing you to cut in either direction, saving you the hassle of removing clamps and spin it around between cuts. Festool's eight tracks come in a variety of lengths from 32" to 197". DeWalt's three range from 46" to 102" and Makita's two on offer are 55" and 118" long. It's possible to connect tracks of different lengths for extra-long but still accurate cuts. The guide rails are also compatible with other tools like routers, and each company sells a mitre guide for setting up angled cuts.

The Track Clamps

On a busy day, the time taken to tighten and remove clamps can add up, so design is important. Festool offers three types of clamps: Standard f-clamps in two sizes, ratcheting Quick-grip clamps, and a pistol-grip Rapid Clamp allowing for the fastest set-up primarily on sheet goods. Makita's guide rail clamps are mid-sized F-clamps – unfortunately, I found the ones I tested to be difficult to move in their groove, sticking in the tracks. DeWalt has on offer a ratcheting handle-style bar clamp similar to an Irwin quick-grip clamp. Larger clamps like the Festool and DeWalt ones allow a work piece to be sandwiched

between a bench top and the track for greater stability, but the small Festool standard f-clamps can sometimes be an advantage in tight situations.

The Saws

All three saws feature a soft start motor, variable speed adjustment for a variety of materials, an automatic brake, a swivelling dust port and a glide adjustment to regulate lateral play as the saws fit onto their tracks. The Festool and Makita saws are hinged at the back and pivot forward, while the entire DeWalt saw plunges forward parallel to the base as it's lowered. I found when using the DeWalt that I needed to hold the base from moving forward on the track as I plunged the saw for greater control. The Festool and DeWalt seem the safest: both feature riving knives for cutting solid wood and the ability to stop kickback. Festool's approach is to clamp a stop onto the track so the saw cannot jump backwards during a plunge cut while DeWalt has integrated continuous kickback protection into the base of the saw so that, when engaged, a camming device allows the saw to move forward only. The Festool TS75 EQ also contains a slip clutch; in the event you were cutting a piece of reclaimed wood and hit a nail the likelihood of damage to the saw, or injury to its operator, is reduced. This feature is not available on the smaller Festool TS55 EQ.

Depth stops are standard on the saws, but I liked the speed of the positive stops

set in millimetres and smooth functioning of the Festool push-and-slide adjustment. I appreciated the imperial measurements of the DeWalt saw and that the depth scale included the thickness of the track reducing mental arithmetic, although undoing and tightening a knob to adjust it seemed cumbersome as it did with the Makita depth adjustment. The Festool TS75 is the largest and heaviest of the saws at 13.6 lbs and will cut to a depth of 2 3/4"; the smaller Festool TS55 weighs in



Riving Knife – The Festool and DeWalt units both feature riving knives, reducing the chance of kickback. (Photo by Manufacturer)



Extra Insurance – A camming device on the DeWalt saw allows the saw to move forward only, protecting against kickback.

A Track Without a Saw: The Veritas and Black Jack Tool Guides

Another alternative to a track saw is to purchase a track and supply your own saw. Two power tool guides on the market allow for use of a router as well: **Lee Valley's Veritas Power Tool Guide** and the **Black Jack Power Tool Guide** from Workshop Supply. Both systems provide a track that can be used as a straightedge to guide a saw or router along its length, and both companies sell a means of attaching the tools to the guide for greater accuracy.

The Veritas track itself comes in three different lengths (100", 52" and 48"), which allow ripping and cross-cutting of sheet goods and the two shorter tracks can be connected with excellent results for long cuts. Two different clamp sizes (1" and 2") are available, which dovetail into the bottom of the track and fasten the track to a work piece, and you can also purchase a position stop, which will limit the

distance of your cut. With the Veritas system, you'll need to make a base out of $\frac{1}{4}$ " plywood to bolt through the bottom of your saw and that will attach to the 12" traveller accessory, which is pre-drilled and tapped with supplied screws. I found some minor lateral play between track groove and traveler hook but with some low-friction tape (supplied) it tightened up and ran smoothly. Low-friction tape on the bottom of the plywood base plate also made for a smoother cut.

The Black Jack guide is a bit longer than the Veritas one and consists of two 55" rails and one connector making long diagonal cuts of up to 109" on a 4'x8' sheet of plywood possible. The track clamps are fixture clamps that are finger adjustable with a rubber pad on the bottom and open to approximately $1\frac{3}{4}$ ". Blackjack also makes a universal base of PVC with a high-density polyethylene traveler, which is compatible

with the rail to which you attach your own circular saw or router. The initial fit between base traveller and track was tight to the point of making travel nearly impossible but being of a soft material you can tune it up yourself by sanding or shaving slightly where necessary.

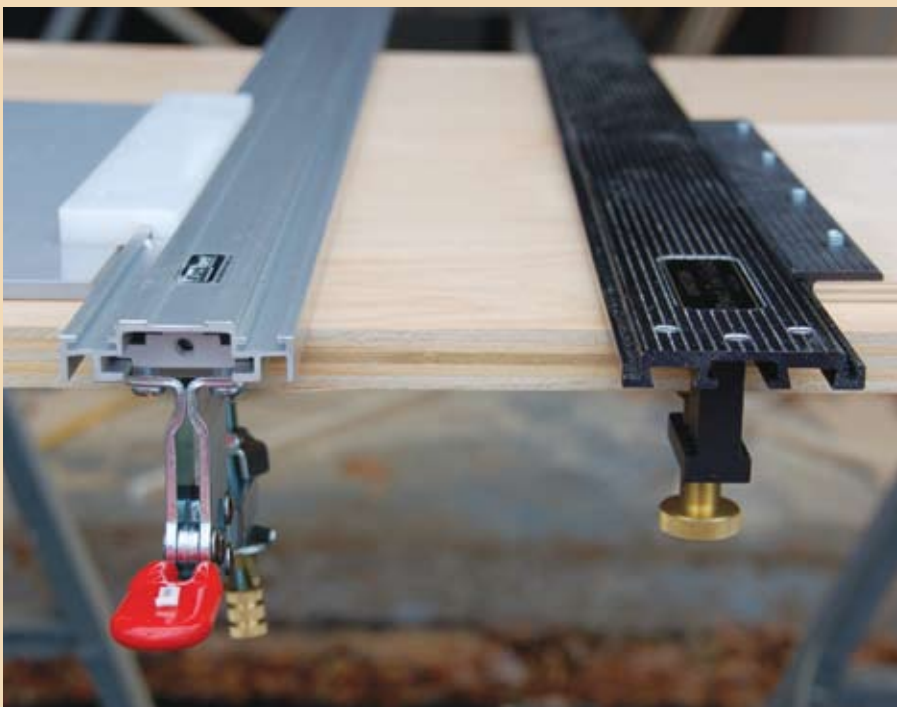
I found the tracks comparable in terms of machining and accuracy but preferred the Veritas clamps. They seemed more finely machined and less gangly than the Black Jack ones. The Veritas aluminum traveller seemed more durable than the Black Jack poly slider, which could wear over time but it was nice to be able to pull the base and slider out of the box ready to use and not have to connect them, or hope that I had a piece of $\frac{1}{4}$ " ply of the correct size lying around.

One of the minor inconveniences of these systems is that you will need to make two marks on your work piece: the first where you want the cut to be and then the offset mark which will allow you to set your track. This will take a bit more time than using a track saw with the advantage of zero off-set between blade and track but you can use a block of wood cut to the offset distance to keep from measuring each time. The system stops short of being an accurate or safe plunge saw but is a viable option for making relatively accurate through-cuts in a variety of materials.

A basic kit contains two clamps, two guide rails and a connector; the Black Jack system retails for \$145 and the Veritas guide for \$175. Overall, this system is a great option for occasional use, if you have a limited budget, already own a circular saw and if you factor in a bit more time to set it up and remove the base so the saw can be used for other projects.

www.levalley.com

www.workshopsupply.com



Solid Alternatives – The Black Jack guide (left) and the Veritas guide (right) will provide the same basic operations, but at a much lower price. They work well if you only need them sparingly.



Best Overall Festool TS75 EQ

(Photo by Manufacturer)



Makita Wins the Bevel Race – Makita's positive stops and a wider range of movement makes it the leader when it comes to beveling. They also added a small clip to keep the saw from tipping over while making bevel cuts.



A Bit Too Small – The depth positioning knobs on the Makita and DeWalt saws are a bit small, causing added strain to the hands.

at just under 9.92 lbs and cuts to $1\frac{5}{16}$ ", the DeWalt is a solid 12 lbs, cutting down to $2\frac{1}{8}$ " and the Makita at a mere 9.1 lbs will cut to an impressive $2\frac{3}{16}$ ". If lightness is preferred, the Makita delivers the best depth of cut to weight ratio.

The DeWalt and Festool saws come with long cords around 13 feet, which is a necessity when circumnavigating a sheet of plywood, while Makita's is shorter at only eight feet long. Festool's removable cord is a handy feature given the possibility that it will take some abuse over the years. Makita has put a bit more attention into their bevel features, including positive stops and a range of -1 to 48 degrees and a smart little safety clip to keep the saw from tipping over while making a bevel cut. Makita's accessory dust bag did surprisingly well at collecting the majority of off-cut dust and I wish one was available for the other saws. Results for all three saws when connected to a vacuum were great.

Clean Cuts

Festool is the only saw that provides splinter protection on both sides of the blade. An adjustable plastic secondary splinter guard is mounted on the housing and the blade cuts through it to create a second zero-clearance guard on the off-cut side of the blade, although the results not using the second splinter guard are still great. I think of the secondary guard as an insurance policy



Splinter Protection – Festool has created a little adjustable device that puts pressure on the upper surface, reducing tear-out drastically. (Photo by Manufacturer)



Scoring Pass – The Makita unit has a setting that will cut a 2mm deep scoring pass to reduce tear-out.

when dealing with expensive veneered materials. The results of the Festool saw cuts are excellent and predictable with a finish nearly worthy of a jointer.

Makita's approach to clean cuts is to make the cut in two passes: the first is

a scoring cut and there is a dedicated depth stop button which allows the blade to cut 2mm deep; the second cut goes to just below the full depth of the work piece to minimize tear-out. The resulting amount of tear-out is minimal but I found that there was consistently some chatter left on the cut edge of the work piece and obviously it takes more time to take two passes with the saw. Out of curiosity, I tried to omit the scoring pass and the tear-out on the off-cut was more significant.

Although DeWalt does not make a provision for minimizing tear-out in the off-cut, I was impressed with the results of the cuts. They were as tear-out-free as the Makita with two passes. Chatter was not visible on the DeWalt, nor was tear-out a problem during my testing.

Concluding Thoughts:

Each of these three saws was a pleasure to use and each offers something unique, depending on your priorities and budget. As a saw, the Makita SP6000K's strength would be in its bevel settings, that there is a plan to address tear-out through the scoring cut. That it's over four pounds lighter than the Festool TS75 and about three pounds lighter than the DeWalt may be significant. At \$478.80, it is the best value if you are on a limited budget and includes a 55" guide rail. Limitations include its lack of a riving knife or other form of kickback protection, its short cord, and clamps.

For me, the DeWalt DWS520K saw with its narrow dual track and its clamping system is versatile and innovative and sells for \$599.99 with a 59" track. I was pleased with the cuts that it made and features that it offered. DeWalt has built safety features into their saw that gave me piece of mind when using it.

Of the three saws the Festool TS75 EQ seems positioned to deliver the safest, most predictable and refined results: the cleanest cuts with the secondary splinter-guard, greatest cut depth and a range of clamps and accessories. It is a larger saw than the other two reviewed, and as such it delivers greater performance due to its capacity of cut, and power of motor. It is also the most expensive at \$790.63 including a 75" track. To compare a bit more closely with the DeWalt and Makita saws is the smaller Festool track saw: the TS 55 EQ which at \$632.50 includes a rail at a comparable length of 55". If I had to choose a saw to send through a slab of solid surface countertop worth a couple of thousand dollars or a sheet of expensive veneer that I had gone to great lengths to produce, the Festool Saws and the TS75 EQ in particular would be my saw of choice. Peace of mind can justify a slightly higher initial purchase price that I won't later regret.



Best Value Makita SP6000K

(Photo by Manufacturer)



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Big News From Forrest

4 New Blades

For Discerning Woodworkers

Forrest sets the standard for excellence with these new top-quality blades:

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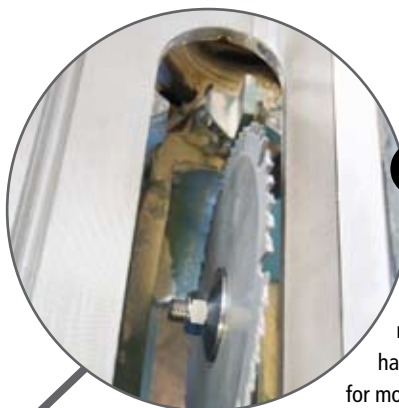


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The MYTH of the LEFT

Tilt Wheel – Since the tilt wheel of a right-tilt saw is on the left it makes it slightly more difficult for a right-handed person to use.

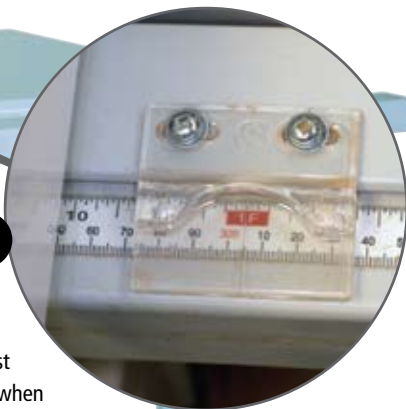


2

Nut Handedness

– With a right-tilt saw (shown) the nut is manipulated with the left hand, a slight disadvantage for most people. (Photo by Tom Morton)

(Photo by Tom Morton)



6

Cursor Accuracy

– The largest advantage when using a right-tilt table saw is that no matter what type of blade you're working with the cursor will always be dead on. This is the overriding reason Eisan favors a right-tilt saw. (Photo by Tom Morton)



3

Bevelling Wide Pieces

– With a right-tilt saw you can move the fence to the left of the blade to make perfect cuts up to about 12" wide but no wider.



4

Tear-out – While bevelling with a right-tilt saw you will often have to cut with the good side down, which increases the chance of tear-out.



5

Kickback – Because the angled blade of a right-tilt saw traps the work piece between itself and the fence with nowhere to go any internal stress that's released when the work piece is machined may cause the blade to bind, causing kickback to occur.

TILT SAW

Take a closer look at a trend in one of woodworking's most popular machines, and prepare to be surprised.

BY DAVID EISAN

The Powermatic 66, the holy grail of table saws in the USA up until a few years ago (now discontinued), was only available in left-tilt. This was Powermatic's flagship saw for over 40 years. Delta's Unisaw, released in 1939, was only available in right-tilt until the late 1980s when Delta released a left-tilt saw to compete with the PM66. I expect the right- and left-tilt Unisaws of old will both be discontinued with the release of Delta's new left-tilt-only version Unisaw. General released the model 350 table saw in 1966 and it wasn't until July 2001 that they released the left-tilt model 650. General was rapidly expanding into the USA and needed a saw to compete with the PM66. The new kid on the block, Sawstop, has released three left-tilt table saws and I understand they have no intention to make a right-tilt version.

I believe the shift to left-tilt saws has been magazine/advertiser-driven. Articles on scary safety problems with right-tilt saws ignore the realities how people actually use table saws and miss out on some key points about how saws work.

Let's look at the key arguments:

Motor cover on left vs. right. The motor cover is on the right of a right-tilt table saw and on the left of a left-tilt table saw. You could argue on a right-tilt it is hard to gain access to the motor. Or, you could argue, on a left-tilt it is harder to mount a sliding table. Left-tilt allows you to have a full cabinet of drawers under your side extension table. **Advantage: Even**

Arbor nut handedness. On a right-tilt, the nut is left-handed. On a left-tilt, it is right-handed. **Advantage: Left-tilt**

Location of tilt wheel. On a right-tilt, the bevel wheel is on the left. On a left-tilt, it is on the right, so you can turn it with your right hand. **Advantage: Left-tilt**

Ripping material greater than 12" wide. If you are using a right-tilt table saw, the second bevel rip will leave the bevel of the first rip wanting to go "under" the rip fence. On a right-tilt table saw, you can move the fence to the left side of the blade for cutting parts 12" or less. Most table saws have a rip capacity

of 12" to the left of the blade. On a left-tilt table saw you can rip work pieces up to the full capacity of the fence on the right-hand side of the blade. **Advantage: Left-tilt**

Tear-out on bevel cuts. On a right-tilt table saw, the "point" of the cut is at the bottom where tear-out is more likely. On a left-tilt saw, the "point" is on top where tear-out is less likely. This is reversed when using a sliding table. **Advantage: Left-tilt**

Kickback while bevel ripping. On a right-tilt saw, your material is trapped between/underneath the blade and the fence. Any "movement" in the wood will increase the friction between the material and the blade, increasing the likelihood of kickback. On a left-tilt, the material is between/above the blade and the fence. Any "movement" of the material and it simply rides up on top of the blade. **Advantage: Left-tilt**

Cursor accuracy. On a right-tilt saw, you align the fence to the arbor flange. It does not matter if you use a full kerf blade, a $\frac{3}{32}$ " blade or a 22mm dado, the fence cursor is always accurate. On a left-tilt saw, the fence cannot be aligned to the arbor flange. **Advantage: Heavily Right-tilt**

If you regularly rip a lot of pieces greater than 12", a left-tilt saw may be your best choice. The alternative is to rip square and bevel on your router table.

I believe the safety of left-tilts is exaggerated and used mostly to sell magazines and saws. I could see if you take a dressed 4' long, 12" wide board and want to rip a bevel in the middle of it, you could have potential kickback. But whether it is a left or a right-tilt, you will end up with two pretzels if there's that much internal stress in the board. It would have been much better to rough dimension the board to 7" wide before dressing. You will then be removing so little wood on your bevel rip (left or right-tilt), you won't be relieving any more internal stresses and distorting the board. When you bevel-rip the edge of this 7" board on a right-tilt, the board will be trapped under the blade and you will get a nice crisp cut. On a left-tilt, the board bounces on top of the blade requiring some sort of feather board near the blade to hold the board down. This potential kickback issue is virtually eliminated with sheet goods due to their uniformity.

The thing that every article I have ever read glosses over is cursor accuracy. On a right-tilt saw the cursor is accurate no matter what blade or dado size you put on your saw. On a left-tilt saw, once you zero your fence with a full-kerf blade, you have to subtract $\frac{1}{32}$ " from your fence scale when you use a thin kerf blade or reset your cursor. With a 22mm dado, you have to add 0.7414" to your cursor reading.

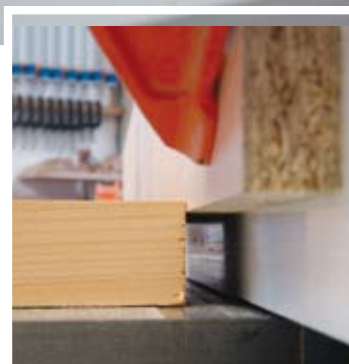
I believe that, in the real world, the hypothetical safety benefit of bevel-ripping wide solid wood boards on a left-tilt saw is of far less importance than the cursor accuracy of a right-tilt. I also believe that if you are uncomfortable performing new operations on any machine you shouldn't do them.



DAVID EISAN

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TILTING to the RIGHT



1 Attach a Sacrificial Fence – The top $\frac{1}{8}$ " of the work piece should be the only portion overlapping the sacrificial fence, creating a cavity for the offcut to sit in.

BY ROB BROWN

I have used both left- and right-tilt table saws over the years but when it was time to purchase a saw I would spend the rest of my life with, the choice was easy: right tilt. There are pros and cons to both but unless you are doing things most woodworkers would consider “out of the ordinary,” I think the choice is simple. The three advantages the left-tilt saws have can be easily overcome by machining bevels with one specific set-up on a right-tilt saw. Once you realize how fast, safe and easy this technique is, you will kick yourself for purchasing a left-tilt saw. Not only will beveling be improved in every way but you will also enjoy the added benefit of always having your cursor reading accurately.

This set-up machines bevels on all the straight edges for a project, regardless of the width, length or angle of the work pieces. I have to readjust it for different thicknesses of material but it's rare to have multiple thicknesses in need of bevel cuts in the same project. It takes a bit longer to set up (three to four minutes) vs. a left-tilt saw (30 seconds). However, with this one set-up, I bevel every edge that needs it, no matter what size, shape or angle the piece is, so it's time well spent. If I

only need to make one mitre cut, this might not be the fastest method, but if even three or four cuts are required, it's a no-brainer. Make sure you cut all the pieces in need of beveling to exact finished size before you start this set-up. This operation will simply machine the bevel on the edges that need it.

Another thing I like about this set-up is that the blade remains virtually buried in the sacrificial fence the entire time. It's not out in the open where a momentary lack of concentration could be disastrous.

The final advantage is in the actual quality and crispness of the bevelled edge being cut. With any other beveling method, the first cut (with the full thickness edge against the fence) often goes okay. It's when you turn the piece around to cut the opposite side that you run into trouble. This is mainly because you're now asking a razor thin edge to run against the fence and keep the entire panel perfectly aligned with the fence at all times; a tall task for less than $\frac{1}{32}$ " of material. This method has about $\frac{1}{8}$ " against the fence before being cut by the blade and this makes all the difference in the world. After the piece is cut, the same $\frac{1}{32}$ " edge will be asked to help keep the panel from shifting.

Photos by: Rob Brown



2 Angle the Blade – Adjust the blade to the proper angle and raise it so it's about $\frac{1}{16}$ " below the height of the work piece.



3 Adjust the Fence – Bring the fence as close to the blade as possible without touching the blade. The blade should still spin freely.



4 On and Up – Turn the saw on and raise the blade until it protrudes about $\frac{1}{8}$ " into the sacrificial fence.



5 Test Cut – A test cut will tell you how you need to adjust the fence. You want the corner of the bevel to meet precisely at the top of the piece.



6 Perfection! – After some minor adjustments you're ready to go.



7 Run All the Parts – With your parts already cut to size run every edge that needs it against the sacrificial fence, removing a wedge from each piece. The offcuts sit in the cavity until the next piece pushes it out. Notice the blade is buried in the sacrificial fence, reducing the chance of injury.

The Process.

1. Clamp a sacrificial fence to the main fence so the bottom of the sacrificial fence is about $\frac{1}{16}$ " to $\frac{1}{8}$ " lower than the top of the work piece.

2. Angle the blade to 45° (assuming you want a 90° finished corner) then raise the blade until the top of it is about $\frac{1}{16}$ " below the top surface of the work piece.

3. Slide the fence (and sacrificial fence) over until it is about $\frac{1}{16}$ " away from the blade.

4. Turn the saw on and raise the blade until it protrudes into the sacrificial fence about $\frac{1}{8}$ ".

5. Make a test cut with a scrap piece. With a bit of practice you will only be about $\frac{1}{16}$ " off.

6. Readjust the set-up by moving the fence away from or closer to the blade. Re-test until perfect.

7. With the set-up dialled in, make passes wherever you want a bevelled edge. This works for an edge measuring any angle. The offcut stays in the cavity until the next work piece pushes it through during the next pass. There's enough room for it in the cavity, and unless you didn't

follow any of the first steps properly, the chance of it flying anywhere is virtually non-existent.

One of the nicest parts of this set-up is that you can do any angle or shape (other than circular) with no additional set-ups.

I know what some of you are saying right now: "I can do that same operation on my left-tilt saw!" You're right, you can. But the work piece will need to be placed to the right of the blade and fence and this is something most people will not be familiar or comfortable with. Not the perfect situation. And if you're machining a large work piece, the use of an outfeed table and side supports are very helpful.

This operation may seem finicky at first but after you set it up a couple of times it will become second nature and will take only a few minutes. Now, with the bevel cuts taken care of, what else can a left-tilt saw do that a right-tilt saw can't? Nothing. I thought so.

If you have anything to add to the right-tilt vs. left-tilt discussion visit our forum at forum.canadianwoodworking.com.

–Rob Brown

10 Ways to Make Better Use of Your Shop Time

Make the most of what little you have.

BY ROB BROWN

1 Schedule shop time regularly, and stick to it as much as possible. Try not to be overly optimistic or you may start missing scheduled times and get frustrated. Family and friends will start to get used to your schedule and will be more likely to work with you, as opposed to against you, as long as it's reasonable.

2 Have a place for everything, and put everything back in its place. A lot of time can be spent looking for tools or tripping over them if they're on the floor. To make the best of the time, you have to do your best to keep everything organized. Besides, storage cabinets, tool chests and shelving units are great projects for practicing some new skills.

3 Don't clean up after each and every session. Unless the shop is overly messy, just leave things where they are, ready for the next session. The tools you were using today will likely be the tools you will need next time. Besides, leaving things as they are may jog your memory regarding where you were in a project and what the next step is.

4 Don't let your shop get too dirty. Time spent searching for tools under 6" of sawdust is time wasted. And it isn't safe, either. If you trip over a hidden tool, you can break it, or worse, injure yourself. Sometimes spending even five minutes cleaning up will result in tools being found and clutter being eliminated. Both of those are nice feelings.

5 Design the piece you are working on before going into the shop. Not only will you end up with a better looking piece of furniture that is very functional, you will waste much less time and materials if you have a very good idea of what you're building before you start making sawdust. Some people need very detailed drawings and accurate cut lists, while others just need a decent sketch and some overall dimensions. Know what you need and do it before you start to build your project.

6 Make good use of jigs and fixtures. Time spent making jigs and fixtures is time well spent. Make them to last, with quality materials and add in some flexibility if possible. Jigs and fixtures will assist you in making accurate, repeatable cuts for years to come, so don't fret about the time it takes to construct them.



Photo: Dreamstime

7 Understand how to use your machinery and use these machines whenever it's appropriate. Machines are accurate and fast when used properly, but if you don't fully understand how to use the machine, you can ruin a project very quickly. You can also hurt yourself just as quickly.

8 Understand how to use your hand tools and use them when it's appropriate. Hand tools can be very flexible and can be much faster than using machines in some situations, especially when making custom furniture, but only if you know how to use them properly. Also take the time to sharpen chisels, plane irons and the like before they get dull and become a hazard.

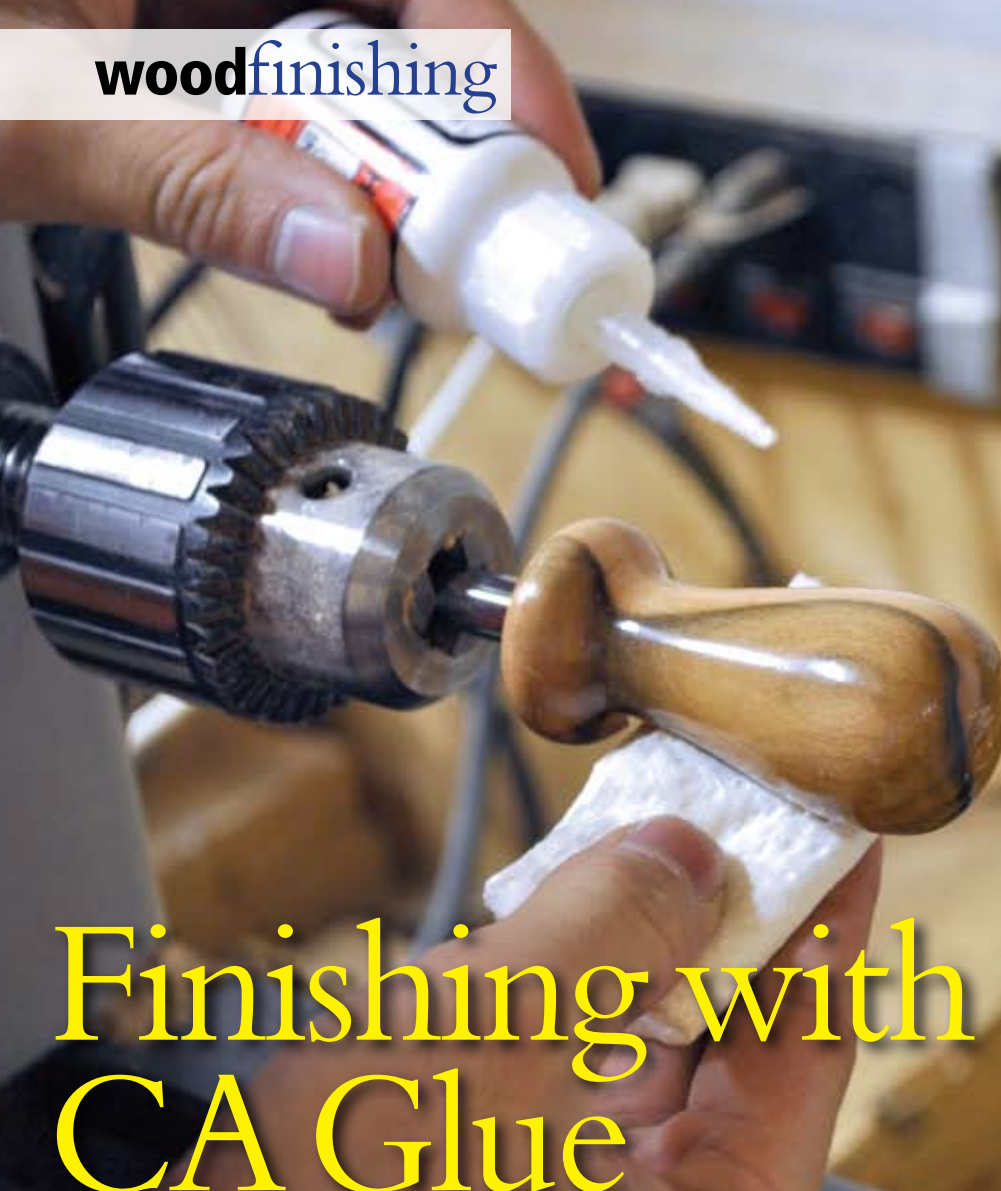
9 Use quality materials. If you make something with decent materials you will not have to over-engineer a project, making it complicated and visually cluttered. Use solid wood that has been properly dried and man-made boards that are not cheap. After spending time on a project, you don't want to see it fall apart because you skimped on the materials.

10 Have a community to ask questions. Clubs, forums, teachers, books and magazines are valuable resources that you can learn a lot from. Rather than waste time and materials experimenting, get good advice then proceed accordingly. Often it's a clarification of the specifics that's required, and most people really enjoy helping. Sometimes it's the question that you didn't know you had that you learn the most from.



ROB BROWN

rbrown@canadianwoodworking.com



Finishing with CA Glue

Next time you reach for your CA glue, it can be for finishing a small project, not gluing it together.

BY CHRIS WONG

Cyanoacrylate glue, or CA for short, is commonly known by trade names such as Super Glue and Krazy Glue. It is an extremely strong and fast-setting adhesive available in three viscosities: thin, medium, and thick. Thinner glues have faster set times, while thicker versions have better gap-filling abilities. Once cured, CA is hard, crystal clear and waterproof but can be reversed with a special solvent or acetone. Though the solvent specifically for CA is expensive, it has the advantages of being faster acting and safer.

CA polymerizes, or hardens, when it comes in contact with moisture in the air and on surfaces it is applied to. Surface area is key to how quickly polymerization takes place – the thinner the CA is spread, the greater the surface area and, thus, the faster it will cure. Thicker pools of glue take longer to cure, from 10–60 seconds, or even longer.

To instantly harden the glue you can use accelerator, which comes in a pump bottle. Hold the pump bottle vertically, with the spout about eight inches above the workpiece and about one foot from the workpiece and disperse the accelerator. It is important to apply accelerator sparingly or it will turn the surface

white, an effect called blooming. Too much glue or high humidity can also cause blooming; regardless of the cause, it is only cosmetic.

Making it Last

To ensure CA glue in its liquid state lasts as long as possible, you need to protect it from moisture. The best way to do that is to keep it in its specially designed container with the cap on. Whenever glue comes in contact with dust or other material, it will harden and become a lump of hardened glue. In order to keep the tip free of blockages, it is important to keep the tip away from anything that would cause the glue to cure – never touch the tip to the workpiece!

The gradual introduction of contaminants and moisture in the air will also cause the CA to thicken over time. There is really only one additional thing you can do to prevent this; buy smaller bottles so they will be used up quicker, hopefully before it thickens too much. Thickened glue doesn't need to be thrown out; instead, it simply acts like a thicker-viscosity CA glue.

CA Glue as a Finish

I first discovered the idea of using CA glue as a finish while searching for a more durable finish for turned items subject to high wear. I found that the finishes marketed towards woodturners work quickly to build a gloss finish but aren't as durable as I'd like.

Hard, clear, waterproof ... even reversible with the right solvent. Those are four of the most important properties of a finish. Like any finish, CA requires careful technique for it to be applied successfully. There are many different methods, each suited for specific situations. Regardless of which method you use, you will end up with a resilient finish. Once the finish is applied, rub it out to achieve either a wet look or a finish as matte as bare wood. I usually apply two or three coats for a gloss finish and four and five coats for a satin finish.

Safety

Like many finishes, CA glues give off strong fumes so good ventilation is a must. Low-odour CA glues are available but cost roughly twice as much as



Too Much of a Good Thing – To speed up the drying process, you can spray accelerator on the newly finished piece, but too much will cause blooming.

the regular version, so I would use them only if the fumes are an issue. Unlike other finishes, CA is a strong, fast-setting *adhesive* so you must be a little more careful when applying it. You can protect your hands by wearing polyethylene gloves, which CA glue won't stick to. Although nitrile and latex gloves are more commonly available, they are poor substitutes.

Application

On unadorned spindles like your average pen barrel, I use thin CA, one polyethylene glove, and a scrap of plain white note paper roughly 2"x 3". After sanding, I remove any sanding dust with a cloth dampened with methyl hydrate. Then I put the glove on my right hand and hold the paper, folded in half, ready for application. With my left hand, I add two drops of CA to the paper and apply it to the workpiece, quickly sliding the paper along the axis of the lathe while rotating the lathe's hand wheel with my left hand. I continue until I've made it all the way around or when I start to feel the paper dragging. When you feel the drag, it means the CA is starting to set and if you continue to spread it, you will end up with smears that will have to be sanded back later.

For more complicated turnings with beads, coves, or other details, a different technique is required. I use the medium-viscosity CA because of its slightly longer open time. It's also thicker so it won't splatter as much. Instead of note paper, I use a folded paper towel, which will conform to the contours of the workpiece, ensuring more even distribution. Don your face shield, set your lathe to



Simple Applicators – A piece of paper (right) will work well for simpler surfaces. A section of folded paper towel (left) will allow you to apply the CA glue to a more contoured surface.



Not Just For Turnings – This type of application is possible on almost any project, but start with the smaller items first.

its lowest speed and turn it on. Drip CA onto the workpiece while using the paper towel to distribute it evenly, stopping before it gets tacky. You should have an even coat over the entire workpiece.

With the first coat applied, I tidy up around the shop while waiting for the finish to set on its own; if your shop is already clean, you can use a spritz of spray accelerator to instantly set the CA. Once the finish feels smooth and no longer tacky, I apply the next coat exactly the same way as the first coat. I don't bother sanding between coats unless the surface feels really rough.

Not Just For Turnings

With a slightly different technique, you can apply the same tough finish to other woodworking projects. When finishing larger surfaces, knowing how much glue you need becomes more important. Satellite City did an experiment with their thin CA glue, Hot Stuff, and found that one ounce covered 55 square feet of cardboard.

To apply CA to a flat surface, I use two polyethylene gloves, thin CA, and a rigid spreader (polyethylene is best but an old credit card or business card would also work). Apply a couple of drops and spread it out. Continue until the surface is covered. The first coat will soak in a lot – one drop will cover about one square inch. The second coat will also soak in, though not as much.



Buffing – 0000 Steel wool, mineral oil, an extra-fine sanding block and abrasive compounds will allow you to fine tune the amount of gloss the surface has.



Pens Are Perfect – A pen is a great place to try a CA finish (Photo by Mack Cameron)

Once the wood is sealed, expect one drop to cover more than 10 square inches. Don't apply many more than half a dozen drops at a time or you may find it sets before you can spread it out. Be careful of runs, which require more work later. As with any brushed finish, you can avoid runs by applying the finish sparingly – especially near corners. Once you've applied one coat, you can



Smooth and Even – To produce a glossy surface, the finished piece should have a smooth and even coat of CA finish on it.

either let it dry on its own or you can use an accelerator. If you use accelerator, be careful not to drip any on the work piece, which would turn that area white.

To remove any imperfections, I use wet/dry sandpaper wrapped around a sanding block and lubricated with mineral oil. Before the second-to-last coat, I use 320-grit then I wipe the surface clean and apply a coat of finish. Then

I sand with 400-grit before applying the final coat. Once the final coat has dried, some quick work with 600-grit should be enough to get a pristine surface.

Rub Out the Finish

At this stage your finish should be glossy and smooth. By buffing it with tripoli and white diamond compound applied to cotton rags or soft buffing wheels, you can slightly increase the gloss. Or, by scuffing the surface with 0000 steel wool and diffusing the reflected light, you can make the finish look almost as flat as unfinished wood. Should you rub through the finish, simply apply some more CA to that area and try again. Once you've achieved the sheen you like, you're done. The best part about finishing with CA is that it is virtually maintenance-free – just keep it clean and it will continue to look as good as it did on day one.

CHRIS WONG
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The Tablesaw

BY DON WILKINSON

If there is one tool in the average workshop that has done more damage to more people than any other tool, it is the tablesaw. For some inexplicable reason, many woodworkers become strangely complacent around this tool, which has the capability and the sheer vindictiveness to easily and happily slice off assorted parts of your anatomy that you may have later found a use for.

Strangely enough, this is also the only tool in my workshop that *hasn't* injured me, not that it hasn't tried. Completely ignoring the bump on my noggin I receive every time I clean out the dust chute, as well as ignoring pinching my fingers in the mitre groove whenever I slide the fence across too fast.

Oh yeah! And the scraped knuckles when the wrench slips while changing the blades, something I seem to do a few dozen times a day. It always seems that I have a plywood blade on when I need to rip a piece of hardwood and a melamine blade when I need to cut some white oak plywood or whatever. The right blade is always hanging on the wall.

I've never understood the casualness with which people tend to treat their tablesaw. Me? Heck, just the thought of the great grey beast scares the willies out of me, and that's not a pretty sight. But when I feel the heavy clunk of the capacitor kick in and that motor slowly climbs to such an ear-splitting wail that send the banshees heading for the hills in terror, I know I am in the presence of a malevolent monster whose sole purpose is to kill me. Or, failing that, at least cut the piece of wood down to size. Either way, it's good with it.

As you may have guessed by now, I have a favourite story regarding table-saws. While working in my shop late one night, I was ripping some 20-foot long, red cedar planks into 1"x1" for somebody's canoe gunnels. I had ripped a couple pieces off the plank and was just coming to the end of the fourth piece when the entire thing simply vanished before my eyes. There was no prior warning or discernable quiver or even a simple vibration. Nothing! Poof! It was just gone.

After carefully counting my fingers to be sure they hadn't accompanied the board to wherever, I shut down the beast and looked around in bafflement. My usual state, actually.

I searched high and low for that board in ever-increasing perplexity. After all, where could a 20-foot long piece of wood go to on its own? Eventually I wandered through the doorway into the storage area of the shop. There, after completely passing through a sheet of

¾" birch plywood and halfway through an additional two sheets, the piece of cedar had finally come to rest, a full 47 feet, 9 7/16 inches from the centre point of the tablesaw blade. (Yes, I measured it. Not only that, but I later mounted the piece on the wall with the measurements carefully recorded in blood red ink. I almost painted its flight path on the shop floor but that would have been a little weird.)

I often recall that incident with fondness for two reasons. One, that thing would have skewered me like a giant shish kebab without even slowing down. But it missed. That time! And two, it gave me this great story.

I'm sure there's also a profound moral here somewhere but I can't for the life of me think what it might be. I'll let you know if I think of something better than *getting hit by flying lumber may be detrimental to one's health.*

DON WILKINSON
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Illustration by: Mike Del Rizzo



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