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#101 July 2003

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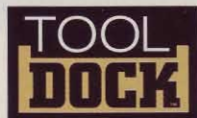
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Question & Answer

Stripping Options

Q. My grandmother gave me her favorite table, but its top is a mess. Is there an easier way to strip off the old finish than using a messy paint remover?

A. For surefire success, go straight to a *liquid* stripper. It will quickly cut through any clear finish and take less time and create less mess than semi-paste strippers. Look for one with methylene chloride, the active ingredient in the fastest working removers.

If you want to do some experimenting, stripper may not be your only answer. Many old finishes will literally melt away with alcohol or lacquer thinner. Alcohol dissolves shellac, and lacquer thinner removes most old lacquer. Furniture refinishers might also be effective. The problem is that one might be more effective than another on a given finish, since their chemical composition varies.

Pour some of the solvent or stripper into a dish. Wipe it over small sections of your piece with steel wool (0 or 00 works well) or a synthetic abrasive pad if you will be finishing the table with a waterborne product. Scrub away, keeping your work area wet by redipping the pad. A gardener's spray bottle is a handy applicator, especially for vertical surfaces.

After the finish begins to break down, wipe away the slurry with paper towels or a rag. Repeat this process until your piece has an even, consistent appearance. Damp rags tossed in a pile are a fire hazard, so hang them outside to dry before you throw them away.



Caution: Work in a well-ventilated area. Outdoors is best. Wear gloves, goggles and a respirator with an organic vapor cartridge.

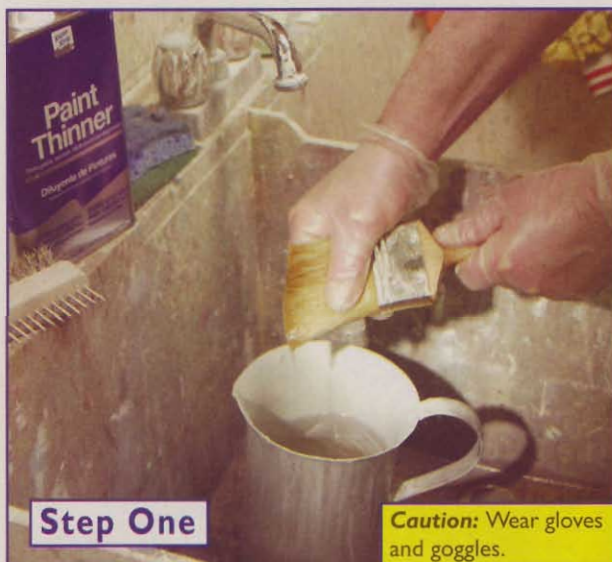
Question & Answer

Better Brush Cleaning

Q. I bought an expensive natural-bristle brush for varnishing, but I can't seem to get it completely clean. The bristles are stiff after the brush dries. What can I do?

A. Pros clean their brushes in stages, often with special solvents and conditioners. This technique will keep your brush soft for years.

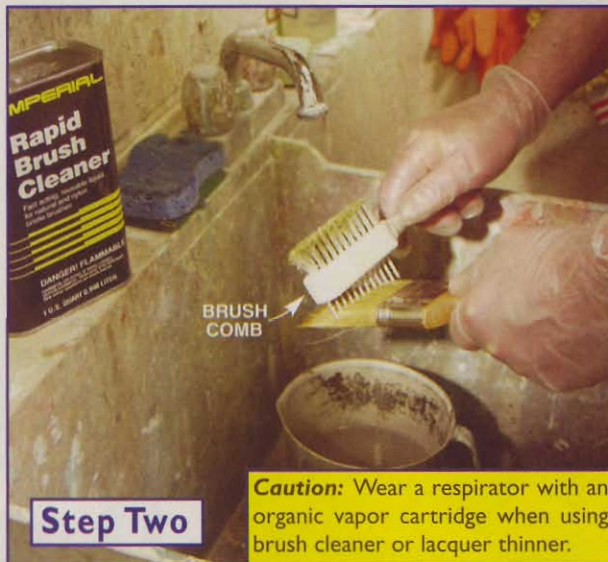
Along with mineral spirits or paint thinner, you'll use a solvent called "brush cleaner" (\$8 per qt.) or lacquer thinner (\$4 per qt.). You'll also use "brush conditioner" (\$7 per 6-oz. tube). Ordinary mineral oil works as well (\$4 for 16 oz.). Finally, you'll need a special brush comb (\$8). All are available at paint stores, or see Sources, page 92.



Step One

Caution: Wear gloves and goggles.

Rinse your brush in mineral spirits until most traces of varnish are gone. Pour the mineral spirits back into the original container. You can reuse it several times, because the varnish solids will sink to the bottom. Dry the bristles thoroughly with a rag.



Step Two

Caution: Wear a respirator with an organic vapor cartridge when using brush cleaner or lacquer thinner.

Repeat the same process with brush cleaner or lacquer thinner. Comb the brush to straighten the bristles and remove all varnish residue. Let the brush soak for 15 to 20 minutes, if time permits.



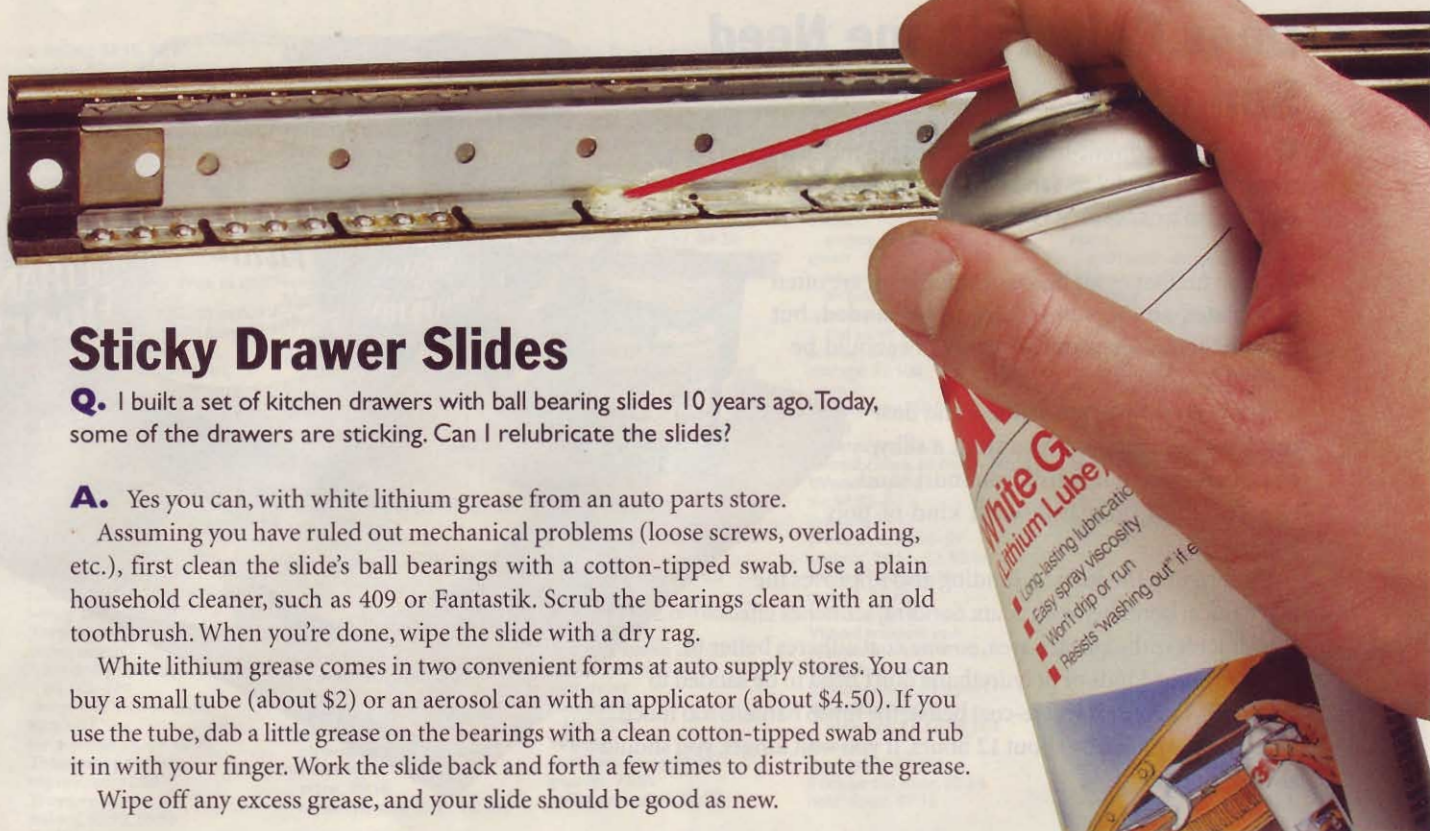
Step Three

Vigorously clean the brush with dishwashing liquid and hot water. Go through at least four to five wash cycles. Turn the brush upward each time so water runs directly into the bristles. Comb the brush when you're done.



Step Four

Wipe the brush dry with a lint-free rag and apply a small dab of brush conditioner or mineral oil. Work it in, then straighten the bristles once more with the comb. Wrap the brush in its original container and hang it to dry.



Sticky Drawer Slides

Q. I built a set of kitchen drawers with ball bearing slides 10 years ago. Today, some of the drawers are sticking. Can I relubricate the slides?

A. Yes you can, with white lithium grease from an auto parts store.

Assuming you have ruled out mechanical problems (loose screws, overloading, etc.), first clean the slide's ball bearings with a cotton-tipped swab. Use a plain household cleaner, such as 409 or Fantastik. Scrub the bearings clean with an old toothbrush. When you're done, wipe the slide with a dry rag.

White lithium grease comes in two convenient forms at auto supply stores. You can buy a small tube (about \$2) or an aerosol can with an applicator (about \$4.50). If you use the tube, dab a little grease on the bearings with a clean cotton-tipped swab and rub it in with your finger. Work the slide back and forth a few times to distribute the grease.

Wipe off any excess grease, and your slide should be good as new.

When Should I Sharpen My Blade?

Q. How can I tell when my carbide tablesaw blade needs to be sharpened?

A. There are three signs that a blade is getting dull: burning on both sides of the cut, more resistance when ripping a board, and worn teeth.

Burning. If your blade consistently leaves burn marks on only one side of a cut, your fence or splitter is probably out of alignment. If you see burning on both sides of the cut, the blade is getting dull.

Feed resistance. If it takes a lot of pressure to push a board through a rip cut, either the wood or blade is to blame. Boards may spread or close up when cut, binding against the fence or splitter. Try testing the feed resistance with plywood instead. Is it the same as when the blade was new?

Worn teeth. Remove pitch buildup with a blade cleaner (see Sources, page 92) and examine the teeth with a magnifying glass. A 10X works best, but any magnifier will do. If any of the corners of the blade have started to wear away, or if you see any rounding over of the tops and sides, the blade should be sharpened. Cleaning the blade can also improve its performance. Pitch build-up won't dull the blade, but it can affect the quality of your cut.

Sources See Page 92

If you have a question you'd like answered, send it to us at: **Question & Answer, American Woodworker, 2915 Commers Drive, Suite 700, Eagan, MN 55121 or e-mail to qanda@readersdigest.com.** Sorry, but the volume of mail prevents us from answering each question individually.

Question & Answer

Does Polyurethane Need Sanding?

Q. I've used solvent-based polyurethane for years, and have always been careful to sand between coats. I have been told sanding isn't necessary. Is that true?

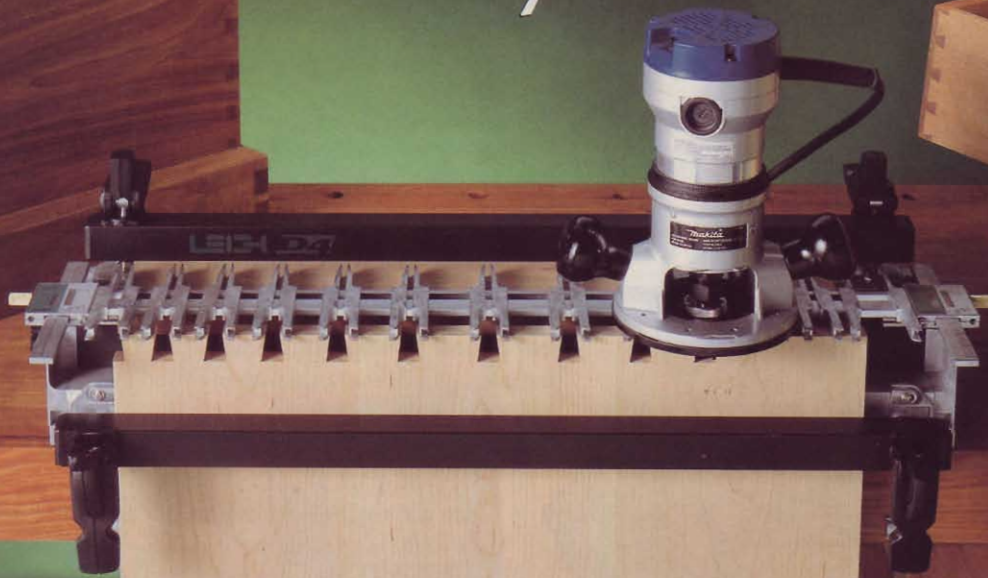
A. Polyurethanes for floors or woodwork are often formulated so they don't have to be sanded, but polyurethanes for furniture generally should be sanded.

Sanding removes unevenness and dust in a brushed surface. If you want a silky, smooth feel to your finish, you must sand between coats no matter what kind of poly you use.

By abrading the surface, sanding also improves the mechanical bond between coats. Sanding scratches effectively increase the surface area, so one coat adheres better to another. Some kinds of polyurethane don't need to be sanded to bond well, but only if you re-coat before the finish hardens too much. The window is usually about 12 hours. If you wait longer, you should always sand. **AW**



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From Our Readers

Edited by Randy Johnson

Workshop Tips



Aluminum Angle Sled Runners

If you've had a problem with the wood runners on your table saw sled shrinking or swelling, make new runners from 1/8 in. x 3/4-in. aluminum angle. These runners will fit most miter slots and will not shrink or swell like wood.

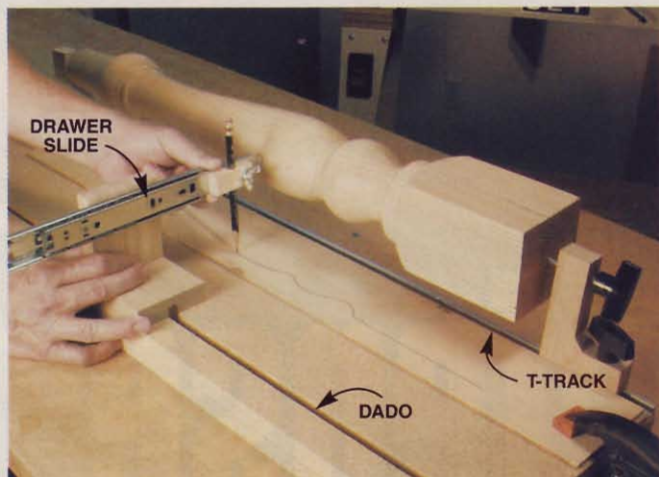
Here's how I built mine: First I fit the angle to the miter gauge slot in my table saw. You may need to file the angle a little to get a good fit. The angle should glide smoothly in the miter gauge slot without binding, with minimum side to side play.

Next I cut a saw kerf in the bottom of the sled base. The kerf makes runner alignment automatic. Turn the sled over and fasten the first angle to the base with a 1/4-in.-thick

spacer. You may have to adjust the thickness of this spacer. You want the angle to ride above the T-slot in the miter gauge. If your miter gauge slot does not have a T-slot, use a thicker wood spacer. Just leave a little clearance between the bottom of the miter slot and the bottom of the angle.

Now I set the sled on the table saw with the first runner in a miter slot. I pulled the sled back a bit and put another piece of angle in the second miter slot, carefully marking the location for the saw kerf. I cut the kerf and attached the second runner. I've used my sled for years with perfect alignment and smooth action year round.

John Rhodes

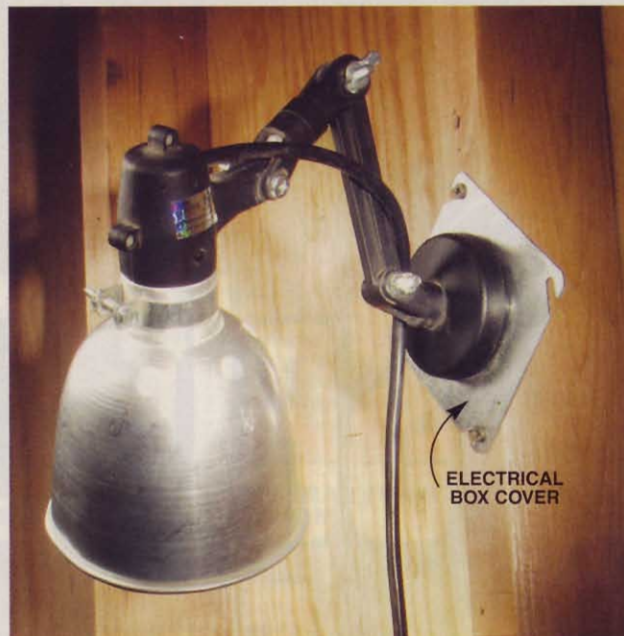


Drawer Slide Tracing Jig

I recently needed a jig to trace lathe turnings. I tried a variety of designs but none produced the accuracy or ease of operation that I wanted.

While rummaging around my shop, I discovered an extra set of 10-in. ball bearing drawer slides (see Sources, page 92) left over from another project. I attached a single slide to a bracket and attached a pencil to the slide with a notched wood block and Wing Nut. The bracket fits in a dado in the jig's base. The lathe turning is held between a couple of sharpened machine screws. The right holder is attached to a T-track with a T-bolt and knob so I can move it for different part lengths. To use the jig I move the slide in and out against the turning while I slide the bracket left or right. The pencil does the drawing and I end up with a very accurate tracing of the part.

Don Posto



Mobile Magnetic Light

My shop has poor light. I've found a magnetic-base work light (see Sources, page 92) to be a real godsend on my bandsaw and drill press. I liked the light so much I figured out how to use it anywhere in my shop. I brought home a handful of metal electrical box covers (about 50 cents apiece) from my local hardware store. I fastened one wherever I needed additional lighting, over my workbench, sharpening station, you name it. Now I can grab my light and stick it anywhere I need it.

Steve Jones



CAUTION: Guard must be removed for this operation. Use caution!

Long Tenoning Sled

Here's a tablesaw-tenoning jig that combines the light weight of a miter gauge with the support of a wide tablesaw sled. I made this sled for use on the right side of my blade so my saw's right-side table supports the sled. I also added an auxiliary wood fence to my rip fence to act as a stop guide and to protect the fence from being cut by the dado blade. The toggle clamp (see Sources, page 92) holds the work flat when cutting the faces of my workpiece. When I cut the sides of the tenon, I just hold the part up against the sled's rear fence.

Joyce Hanna

Handy Dandy Craft Sticks

A \$3 box of 1,000 craft sticks is the best bargain I've found in a long time (see Sources, page 92). I use these small

wooden sticks for everything from spreading glue to shimming cabinet doors. They also work great for mixing

stain and dabbing putty.

If you want to use a craft stick to stir your coffee, just be sure it's a fresh one!

Shannon Hooge

AW

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The Well-Equip

Price-Cutting Saw

Got \$100? That's about all it takes to buy Delta's MS250 compound miter saw—a saw that recently sold for as high as \$170. Miter saws are great for the shop and as fix-stuff-around-the-house tools, and compound miter saws provide even more versatility. On a compound saw you can angle *and* bevel the blade. This is especially useful when installing crown molding.

With its 10-in. blade, the MS250 will cut through 2x6 and 4x4 (nominal) lumber at 90 degrees and at only 28 lb., this machine is a breeze to move around.

A 13-amp motor powers the MS250. This will get you through hardwood, but more expensive machines have more powerful 15-amp motors.

The table angles 47 degrees left and right with positive stops at 0, 22-1/2 and 45 degrees. The blade tilts from -3 to 48 degrees. This is an area where the MS250 falls short. Many miter saws offer a greater span of angles, up to 60 degrees, as well as more positive stops, though not at this low price.

Kink-Free, Lightweight Air Hose

Do you ever feel like the convenience of using air tools is outweighed by the rubber air hose python you have to drag around? Let that snake hibernate and have a look at the new Flexeel polyurethane hoses from Coilhose. They're lightweight, flexible and easy to coil, but resist kinking. They come in cool colors, too.

Coilhose makes Flexeel hoses in a range of diameters and lengths. The 1/4 in. x 25-ft. coil hose costs \$18; the straight hose is \$19, without fittings.

It's amazing how easy it is to work your way around a cabinet with the Flexeel hose, and even more amazing that it doesn't cost much more than a good-quality rubber hose. A Flexeel hose weighs less than half of a rubber hose and it doesn't mar like a rubber hose if you happen to drag it across your work.

All the Flexeel hoses are transparent, so you can watch for problem moisture or oil migrating from the compressor to the tool.

Sources for all products

See page 92

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Coped Shop

By
George Vondriska

New Tools, Supplies and Materials

Rock-Solid Coping Sled

When you make doors on the router table, the tricky part is coping the end grain of the rails. You need a darn good grip on the material and a backer board to prevent blowout. Eagle America has you covered on both counts with their new coping sleds.

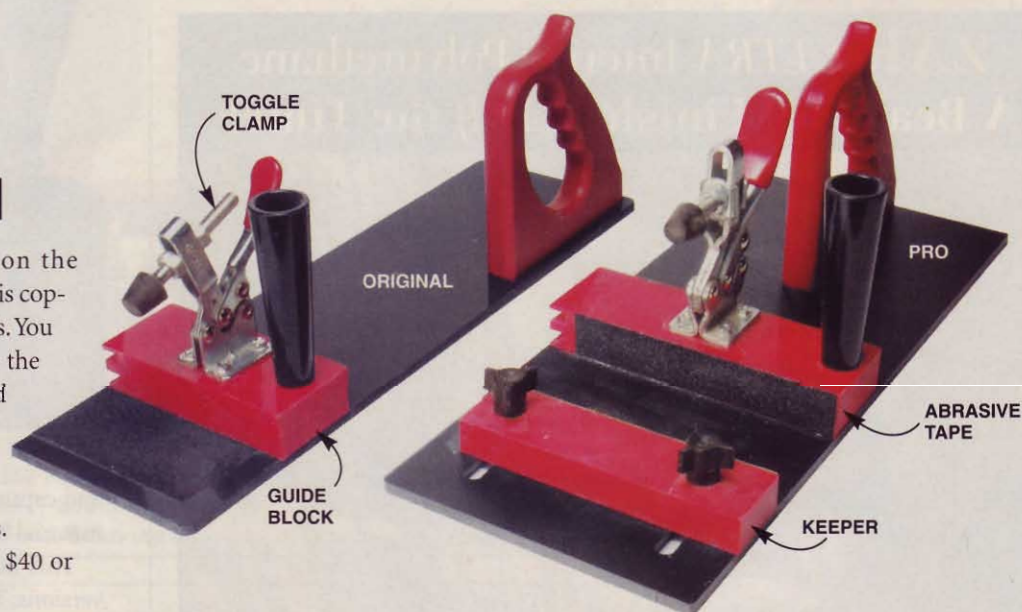
Choose from the Original, \$40 or the Pro model, \$60.

The toggle clamp grips your material, and a replaceable guide block of high-density polyethylene (HDPE) plastic backs up the cut to eliminate tear-out. With two stout handles, holding the sled and feeding across the cutter is a breeze. Sure, you could build one of these, but when you roll in the price of the toggle clamp and time spent to do it, these sleds are a great value.

The Pro model has a slightly wider base than the Original, and includes a "keeper" on the front to help hold material against the guide block. Maximum width between the keeper and the guide block is 3-3/4 in. Both models use a self-adhesive abrasive tape to help keep your workpiece from slipping.

With adequate pressure from the toggle clamp, a sharp bit, and smooth feed rate, the Original sled works fine, but if you're brand new to door making and want a little extra insurance against rail slippage, you'll get it from the Pro model.

After using the sled once, you've got a set-up gauge for your next door. Just use the cope profile that's been cut into the guide block to set the height of the bit.



The Well-Equipped Shop

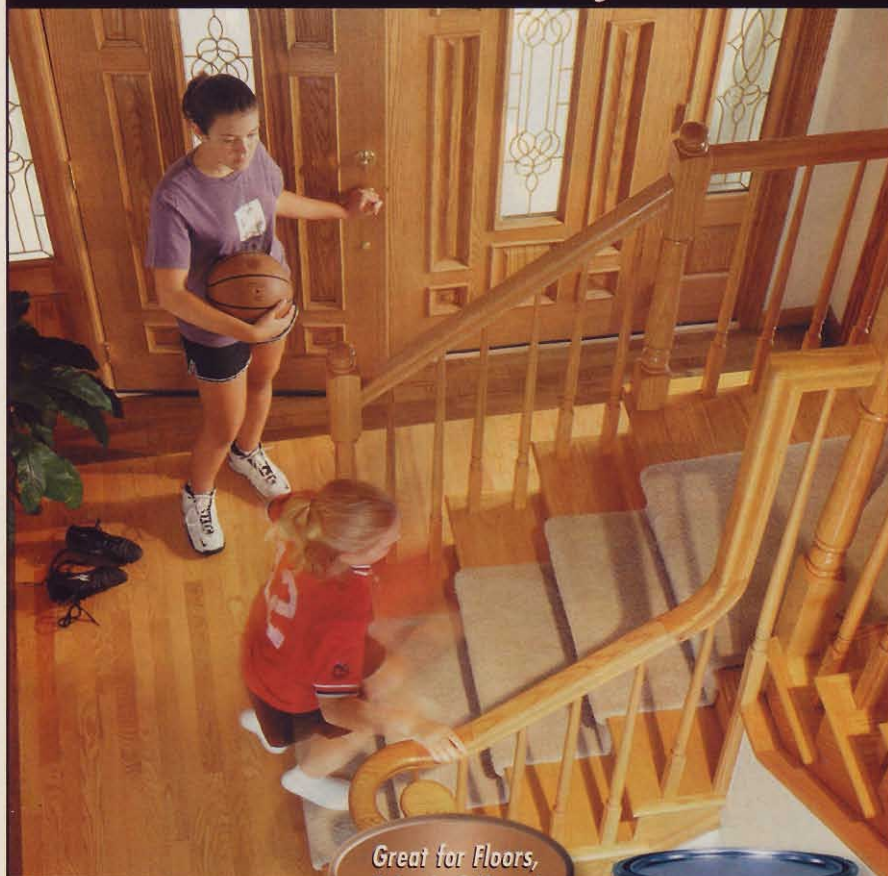
Space-Saving Cyclone System

Dust collectors with balloon-like filter bags have a way of eating up precious shop space. A new 2-hp cyclonic collector from Oneida Air Systems offers

cartridge filters instead of bags. Cartridges take up less space and filter better than bags. Oneida filters are made of high-quality filter material



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and capture over 99.9 percent of test material between 0.2 and 2 microns.

This new collector comes in two versions. The one with an internal filter, \$882, has a footprint of 24 in. x 24 in. The other version, with an external filter, \$977, has a footprint of 24 in. x 46 in. A 35-gallon drum for collecting chips makes the system 86-in. tall; with a 55-gallon drum, it's 99-in. tall.

The external cartridge is a lot easier to clean than the internal cartridge, which must be removed to be cleaned. The external cartridge can be blown from the outside. The dust falls into a plastic-bag-lined dust pan, and the bag can be easily removed and dumped.

Connected to a typical ductwork system, these units pull 900 cubic feet per minute, great for a small to medium size shop. The new 2-hp unit can run on 120 or 240 volts, but draws 20 amps on 120 volts.

Sources See page 92

The Well-Equipped Shop

National Woodcarving School
www.2carve.com
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19 September, 2001

Carving on the WEB

Carving the diamonds
For holding the knife refer to lesson #1. All cuts done using Position number 1.
Follow the line on the right side of the ellipse. (Left for left handed)
Rotate the board by 180°, using position 1, cut the other side of the ellipse.
The two sided chip comes out.

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Online Carving Classes

There's nothing like hands-on carving instruction with an expert teacher looking over your shoulder. But if you want to hone your carving skills using cutting edge technology, and do it for free, check out www.2carve.com.

This Web site offers four free tutorials in chip carving at the beginner level and 11 free tutorials in relief carving at the beginner and intermediate levels. The tutorials can be downloaded from the Web site and printed. The instructions are clear and include good photos, not sketches. However, it may take your computer a while to digest the photos. The files, although compressed, are big, so it'll take some time with dial-up connections.

A paid membership (\$25 per year) gets you access to a greater variety of techniques like sharpening and finishing, as well as many additional carving projects. The membership also includes a CD with the free tutorials, so you wouldn't have to download them. The free tutorials are a great way to see if this is a learning style that works for you. If you like them, you can go on to the paid membership. **AW**

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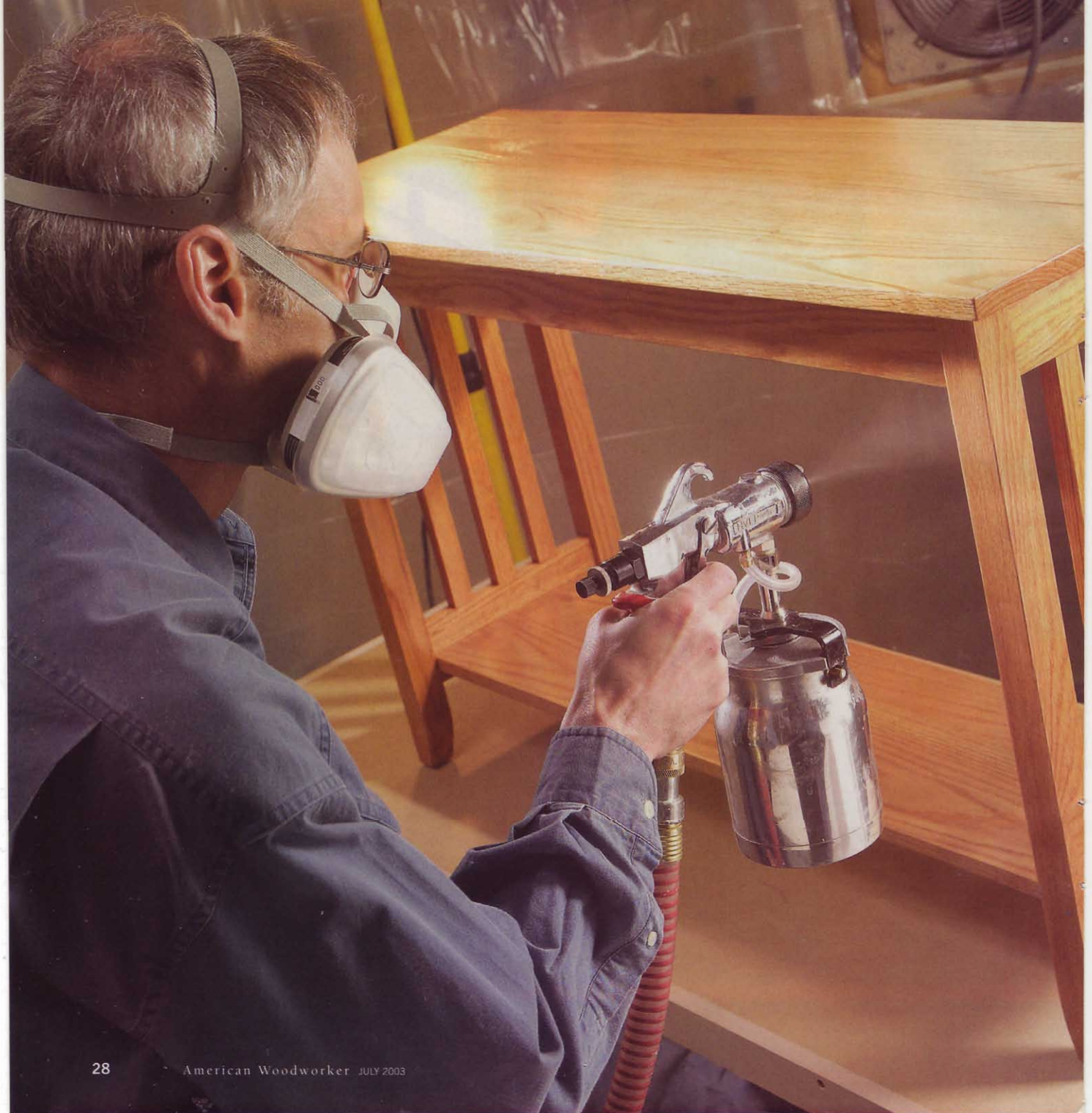
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LEIGH
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By Jon Stumbras





Basic HVLP **SPRAY** **TECHNIQUES**

How to succeed at spraying a waterborne finish

When it comes to finishing, we're all looking for easy answers that give professional results. Years ago, I switched from brushed and wiped-on finishes to shooting waterborne finishes with a high volume, low pressure (HVLP) turbine sprayer, and I've never looked back. Now my finishes are quick, safe and durable, and they look like a thousand bucks.

I made a lot of mistakes along the way, however. Spraying is a whole craft in itself, and I had to learn on my own, the hard way. If you've never sprayed before, or are just learning how, this step-by-step guide will help you avoid the most common pitfalls. We'll cover how to set up your shop, how to adjust the spray gun and how to go about spraying a basic cabinet. Obviously there are a lot of fine points that we won't cover, but this is really all you need to get going.

A good HVLP system can cost \$600 or more (see our tool test on HVLP sprayers on page 56), but if you want to take a test drive before buying, or simply want to get one big project done quickly, you can rent an HVLP system at a paint store.

Waterborne Finishes Are User-Friendly

Waterborne finishes are clearly the best choice for spraying in a home shop. You get most of the benefits of sprayed lacquer or polyurethane without needing an explosion-proof exhaust fan or explosion-proof lights. Waterborne finishes generally dry to the touch in 3 to 10 minutes, and you can re-coat in less than an hour, building up 3 or 4 coats in a day. The quicker a finish dries, the less likely dust will contaminate the surface. Clean-up simply requires warm water.

Be sure to buy a waterborne finish that is labeled for spraying. Waterborne finishes for brushing are too thick to successfully spray, and generally can't be thinned. See *Sprayable Waterborne Finishes*, page 38, for a representative list of manufacturers.



Caution: This workshop setup is designed only for spraying waterborne finishes, not solvent-based finishes, such as lacquer and polyurethane.

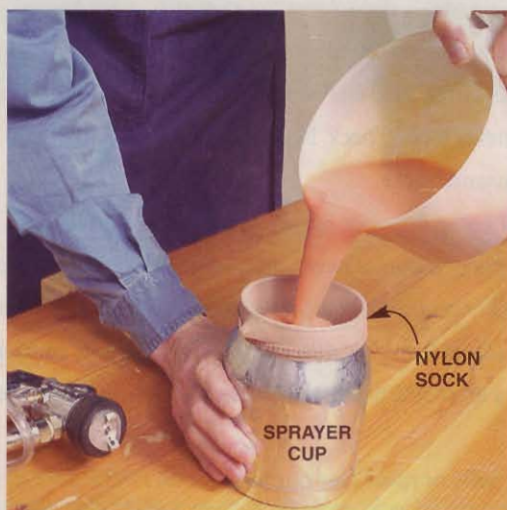
Before You Start

Before spraying, do some housekeeping in your shop and practice how to hold the spray gun.

Prepare Your Shop

Spraying in a small shop is a constant battle with dust and overspray. (Overspray is the fine mist that bounces off or misses your project.) Outfit your shop with plastic sheeting on the walls, a canvas tarp on the floor, a halogen light and a window fan (about \$150 total). Dust kicked up by the gun can ruin a finish. The tarp and sheeting eliminate the dust hazard and keep overspray from settling on your tools, floor and walls. Vacuum your project before you spray.

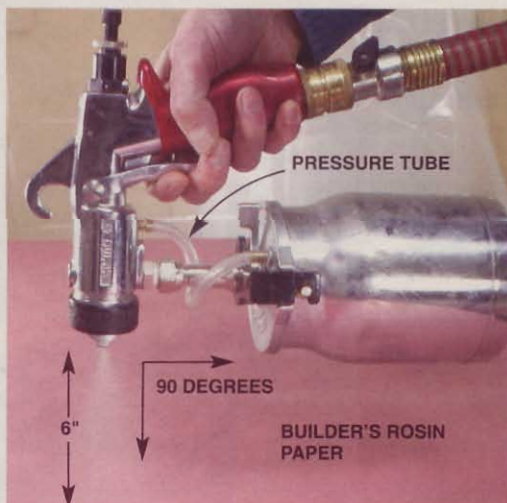
Ventilate your shop with a window fan behind the project, blowing to the outside. Crack open a door or window on the other side of the shop to supply fresh air. Wear a respirator with an organic vapor cartridge when you spray waterborne finishes.



Strain the Finish

Waterborne finishes may contain solid clumps that will clog the gun or spoil a finish. Solid pieces of finish or dust may fall into the finish can, too. When you pour finish into the sprayer's cup, strain it through a small nylon anklet sock. You can rinse the nylon with water and use it over and over.

For the steps ahead you'll need a large disposable surface to practice on. We used builder's rosin paper, available at a home center for about \$14 a roll, but plain brown paper or cardboard would work.



Practice Holding the Gun

There's a right way and a wrong way to hold the gun, and you must be familiar with the right way before adjusting the gun's controls.

The first step is to turn on the HVLP turbine to pressurize the cup. Pressure keeps finish from traveling back up the pressure tube and dribbling out of the gun.

Pick up the gun and hold it at 90 degrees to the surface. Don't let the gun droop, particularly when you adjust the gun's controls in the steps ahead, because that will create an uneven spray pattern. Hold the gun 6 to 8 in. away from the surface.

Lock your wrist and move the gun back and forth with your arm. The speed of your arm movement determines how much finish you apply. Move too slow and the finish will pool. Move too fast and the coat will be too thin. You'll figure out the right speed after you set the gun's controls.

Adjust the Gun

Setting the controls on the gun can be a complicated process of trial and error, but there is an easier way. We'll take you through an orderly process that will work each time you readjust the gun for different situations.

Know the Gun's Controls

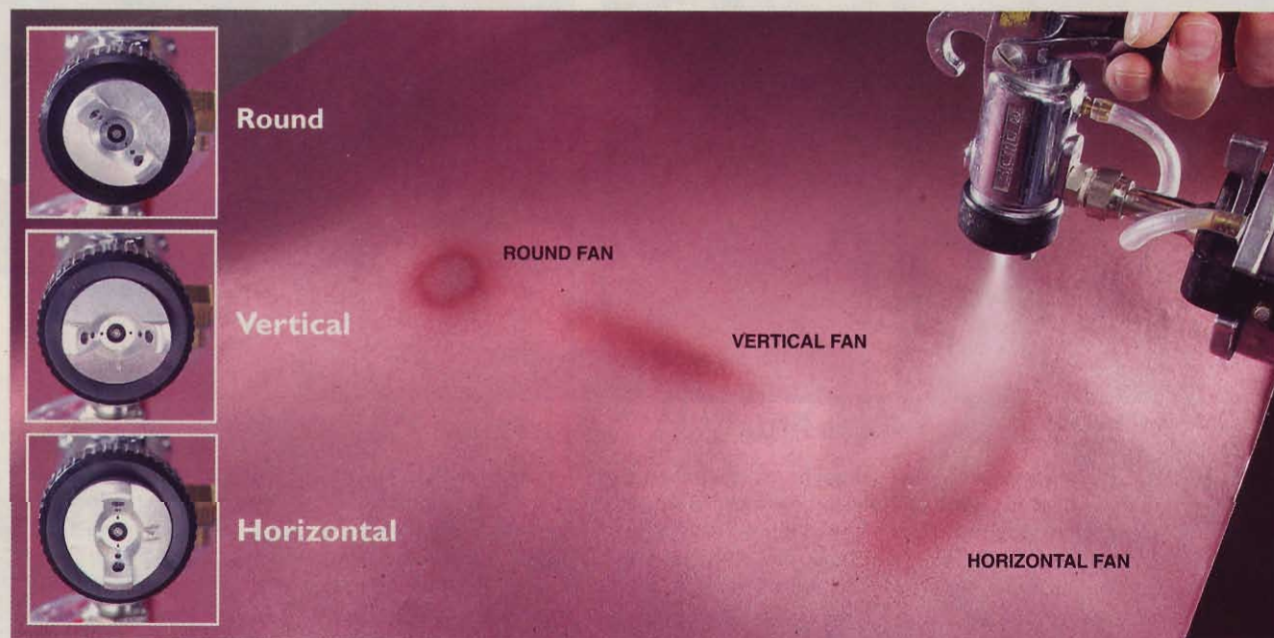
Every HVLP system has three basic controls: the volume of air flow, the volume of fluid flow and the type and size of the fan pattern. These controls may be located in different places than on the gun shown at right. If you're in doubt, check the owner's manual.

An HVLP gun uses air to break up a fluid finish into tiny droplets. It's called "atomization." Once atomized, the droplets are formed into an adjustable spray pattern, called the "fan." The trick to adjusting the gun is to get the right atomization, or balance of air and fluid volume, across the entire width of the fan pattern. But before you tackle that problem, the first control to adjust is the fan pattern itself.

Set the Air Cap for Fan Size

A small detour here. If you have the type of gun that has an adjustable air cap, set it now. Turn the cap so the nozzle is flush with the face of the air cap. As you become better at spraying, you can readjust the air cap to change the size of the fan pattern. For now, leave the nozzle flush with the air cap.

Select the Fan Pattern



All air caps can be set in three positions. Each position creates a different fan pattern. For learning how to set the air and fluid volume controls in the steps ahead, set the air cap to make a vertical pattern. Air and fluid volume settings are about the same for vertical and horizontal fans. Round fans require readjusting



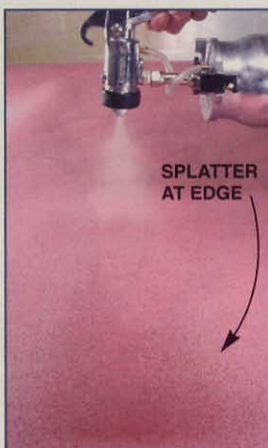
these settings.

A vertical fan is good for tops, or any time you move the gun side to side. A horizontal fan is good for sides, or any time you move the gun in and out, directly away from you. A round fan is used in special situations to concentrate the finish in a small area.

Adjust the Air Volume

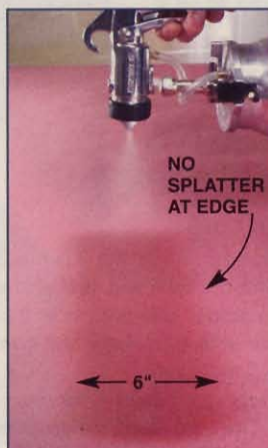


Regulate the air flow from the turbine by turning the knob on the air hose. Make this adjustment *before* tackling the fluid volume, below. Increasing the air flow creates tinier droplets of finish, or more atomization. Thick finishes need more air; thin finishes need less air. Hold the gun 6 in. from the surface and pull the trigger back only far enough to create a 6-in.-wide fan pattern.



too little

To start out, turn down the air control most of the way. Pull the trigger and make a pass. If finish spits out of the gun or if you see splatter at the edge of the fan pattern, turn up the air a little bit.



just right

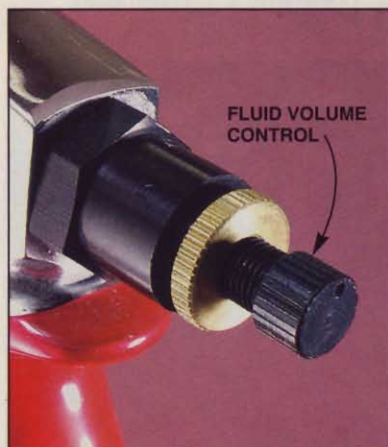
Slowly increase the air volume until the fan is evenly atomized and has clearly defined edges, without splatter.



too much

If you turn up the air volume too much, you'll get spray that looks like a fine mist, plus an excessive amount of overspray. Reduce the air volume and test again. (If the air volume is at the maximum and the gun is still spitting finish, use a thinner finish.)

Adjust the Fluid Volume



Regulate the fluid volume by turning the knurled knob at the back of the gun. This knob controls how far you can pull the trigger. As you pull the trigger, the volume of finish increases and so does the size of the fan pattern. Your goal is to set the trigger so it automatically stops at the ideal size fan for the work you're doing. To start out, stop the trigger at a 6-in.-wide fan.



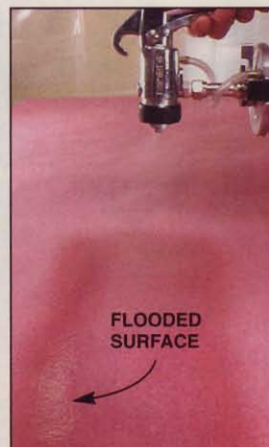
too little

Begin by adjusting the trigger for a minimal pull. As you move the gun, the fan should be smaller than 6-in. wide. Some spraying situations, such as spraying a narrow face frame, call for a small fan in order to minimize overspray.



just right

Increase the fluid volume until the fan is 6-in. wide. Turn the knob to stop the trigger at this point. Now you can simply pull the trigger all the way back, like an on/off switch, to spray the same size fan. As you move the gun, you should get an even, wet coat of finish, not a mist and not a flooded surface.



too much

Back off the fluid volume if your surface is flooded with finish, or move the gun at a faster rate. The fan will be too large when you pull the trigger back too far.

Spraying Techniques

Practice makes perfect. Rather than start right in on an actual project, build a disposable cabinet to try out the following techniques. For construction details, see Practice Cabinet, page 38.

Spraying Inside a Cabinet

Always begin with the inside of a cabinet. A general rule of thumb of spraying is to start with the least visible surface and end with the most visible surface. This minimizes overspray from settling on and spoiling a surface that really counts. Overspray on visible areas will be covered by the final coat.

Fill your cup 3/4 full with finish. This prevents the fluid nozzle inside the cup from being starved of finish when you tip the gun to get into corners.

Adjust the air cap to make a vertical fan. Increase the air flow to create a light spray pattern and minimize overspray. Light coats are fine inside a cabinet. Reduce the fluid volume to make a 6-in.-wide fan.

Next, follow the steps as shown:



Spray under the top, moving from the back to the front. The fan pattern should just reach the edge of the cabinet back.



Spray the back, overlapping each pass by 50 percent. Position the edge of the fan pattern to just reach the inside corners. If you spray directly into the corner, finish will run down the inside edge or overspray will bounce back toward you.

On an actual cabinet, remove the back if you can and finish it separately.



Spray the sides, moving from back to front, away from the overspray.



Spray the bottom, tipping the gun as close to 90 degrees as you can to create an ideal fan pattern. This is the most visible part of the cabinet's inside. Spraying here last blends in overspray from previous steps.



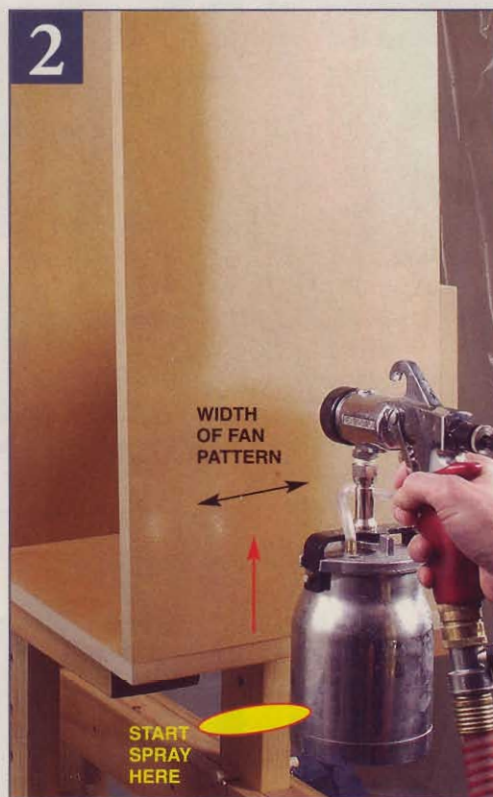
Spraying Face Frames and Small Surfaces

Switch the air cap to a horizontal fan pattern. Reduce the size of the fan pattern to about 3-in. across to minimize overspray. You can reduce the fan by reducing fluid volume, reducing the air and fluid settings together, or moving the gun slightly closer to the surface. Always test on paper before spraying your cabinet.

When you first pull the trigger to spray any vertical outside surface, such as this face frame, don't aim right at it. Instead, aim the gun at a point above the face frame, as indicated by the yellow oval at left. Then pull the trigger and work your way down. Don't release the trigger until you're past the bottom. Do this in one fluid movement, always holding the gun perpendicular to the face frame.



Start spraying at the top. Aim the gun at a point above the cabinet and pull the trigger. Then move down the cabinet, just as you did with the face frame above.



Return at the bottom and work your way up, overlapping the first pass by 50 percent. Once again, use the same technique of aiming at a point underneath the cabinet when you first pull the trigger. Repeat an up and down sequence until the side is covered.

Spraying Vertical Surfaces

Adjust the air cap for a horizontal fan pattern. Adjust the fluid volume and the air volume to make a 6-in. fan pattern on a piece of paper, as shown on page 32.

Spraying Tops

Set up your light at a low angle to the top so you can clearly see your spray patterns.

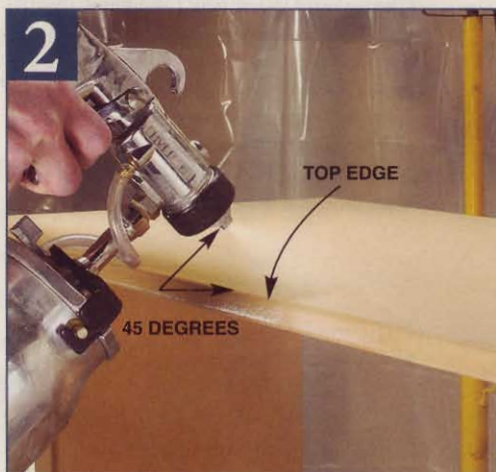
The edge of a top deserves special attention. It gets three coats for every one coat that goes on the top itself, in part because edges inevitably get extra wear. In addition, it's easy to sand too deep between coats on a narrow edge. Extra coats will help prevent accidentally cutting into a stain layer under the finish.

Set the air cap for a vertical 6-in. fan pattern for both the edges and the top surface. It's not necessary to reset the air cap to a small fan for the edges, because that will slow you down.

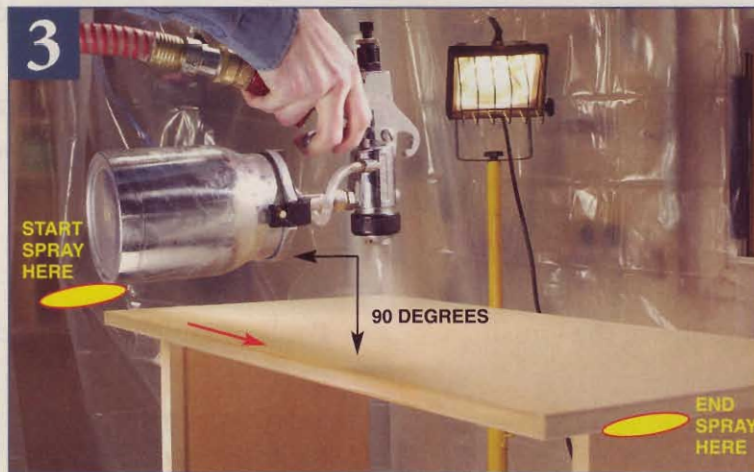
Waterborne finishes dry very fast. Your goal is to keep the gun moving at all times. Each pass should blend into a previous pass while it's still wet.



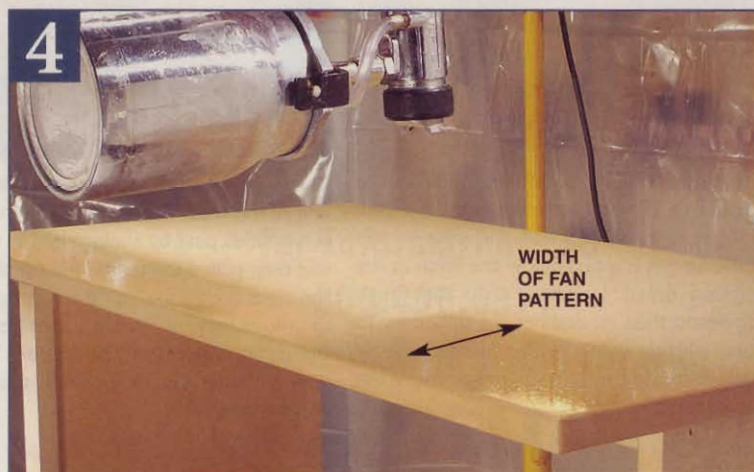
Spray all four edges, all the way around the top. Hold the gun at 90 degrees. Some overspray will land on the top, but that's okay. You'll cover it up later.



Spray the top edges. Hold the gun at 45 degrees. Again, don't worry about overspray onto the top.



Spray the top. Hold the gun at 90 degrees, and spray across the front. Use the same technique of handling the gun's trigger as you did with vertical surfaces on page 34. As you move the gun from side to side, pull the trigger before you reach the top and release the trigger only after you've passed beyond the top.



Overlap each pass by 50 percent. Alternate direction back and forth to keep the gun moving quicker than the finish can dry. Spraying from front to back directs overspray toward the window fan. Stop spraying when you reach the back.

Oops!

Runs, Drips and Errors

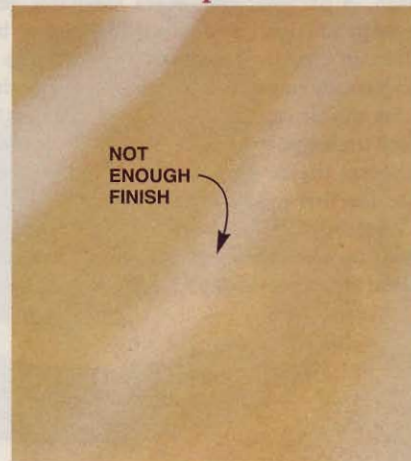


Yuck. Trying to be careful, I moved the gun too slow while spraying the side of a cabinet. Or maybe my fluid volume was too high, I don't know. In any case, I let the mess dry, shaved off the excess with a utility knife and then sanded. Next time I'll check my adjustments by spraying on a piece of paper first and make sure I keep the gun moving.

Mistakes are inevitable as you learn to spray. I've made some whoppers, but I've come to consider them as opportunities, not failures! With each opportunity, you'll become more familiar with fine-tuning the gun's adjustments and holding the gun while spraying.

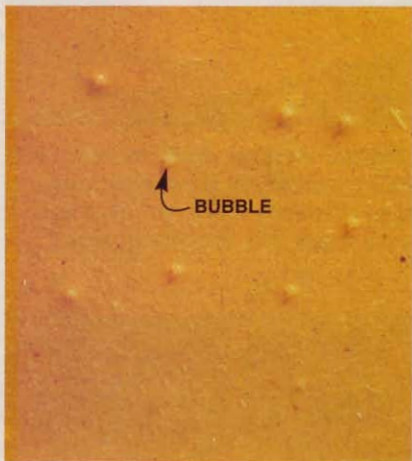
Fortunately, most mistakes are easy to fix by sanding. Waterborne finish dries very fast. When you mess up, wait an hour, sand and spray it over.

Missed Overlaps



Cheapskate! What was I thinking? That I'd save finish by hardly overlapping at all? It's not worth it, because here I've got a rough looking texture between the spray coats. Actually, I just couldn't see where the fan pattern hit the surface, so I couldn't judge the overlaps properly. What I really need next time is a bright, low-angle light.

Bubbles in the Finish



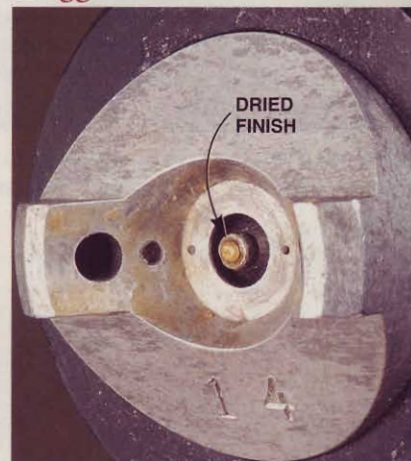
I told everyone I really wanted the finish to look like Mars! Unfortunately, no one bought it. Bubbles mean the coat is too thick. Air got trapped below the finish as the surface dried. I waited until the finish hardened, then sanded out the offenders. To spray a lighter coat, I'll either increase the air flow, decrease the fluid volume or move the gun faster.

Pools of Finish at the Ends



There's a wading pool-size puddle at the end of this top. What happened? I must have started this pass by aiming right at the end, and then pulled the trigger. I know that's not the right technique, so I'll repeat to myself as I move my arm, "aim at a spot just beside the top, and then pull the trigger." In fact, I vow to keep practicing until it becomes second nature!

Clogged Needle



Now what? My gun quit on me after I took a coffee break! No, the gun's not at fault. While I was relaxing, finish dried on the cap and formed a hard bubble over the needle. No problem, I can clean it right off with a toothpick. Now I always check the cap for dried finish if I put the gun down for a few minutes. It's as much a habit as taking coffee breaks!

Spraying Raised-Panel Doors

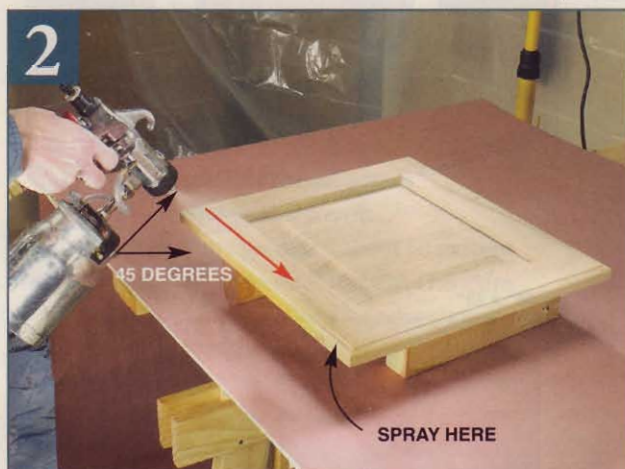
Edges are everywhere on a raised-panel door! The secret to success is to follow a systematic plan.

To set up the gun, turn the air cap to a vertical fan pattern. Then increase the air flow a bit beyond where you set it in "Adjust the Air and Fluid Volume," page 32. This increases the atomization of the finish, producing a finer spray and lighter coat. Finally, reduce the fluid volume (the trigger setting) to make a 4-in.-wide fan pattern. Now you're set to go.

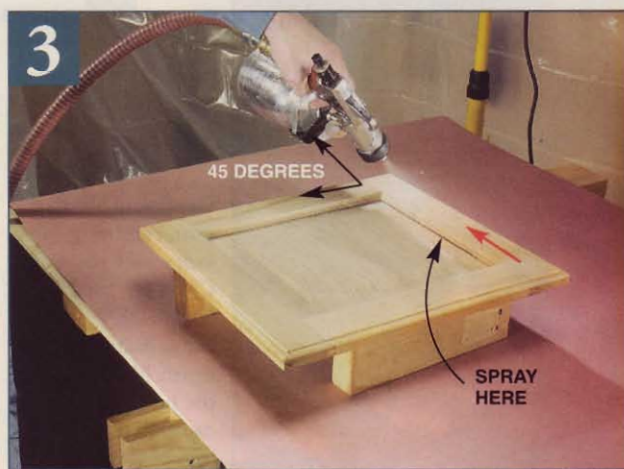
Place the door on some 2x4s to elevate it above the table. The best setup, though, is to make a turntable to support the door. Then you can rotate the door as you go, always spraying towards the window fan.



Spray all four edges, all the way around the door. Hold the gun about 6 in. away.



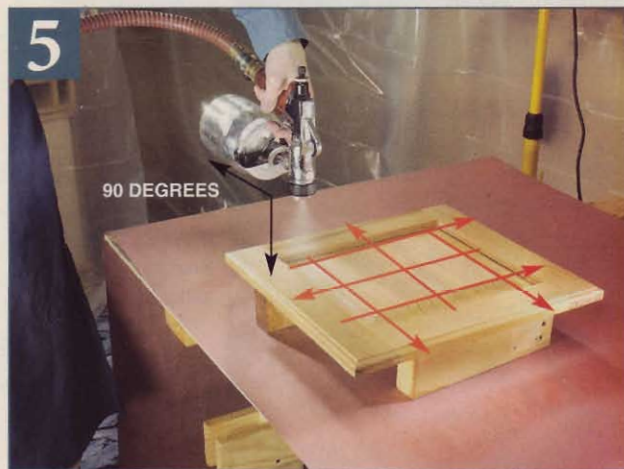
Spray the outside top edges. Hold the gun at 45 degrees and make a second pass all the way around.



Spray the inside top edges. Again, hold the gun at 45 degrees. Keep the gun moving to prevent finish from building up in the corners.



Spray the bevels of the panels. Continue to hold the gun at 45 degrees. If your panel is prefinished, naturally you'd skip this step.



Spray all the top surfaces. Hold the gun at 90 degrees. Spray two continuous coats for full and even coverage. Spray from side to side, then rotate the gun and spray from top to bottom.

Cleaning the Gun

At the end of a day of spraying, take 15 minutes to clean the gun. If you skip this step, the gun may not spray properly.

Empty the cup and fill it with warm water. Adjust the air cap to make a round fan pattern, reduce the air volume and increase the fluid volume. Then follow these steps:



1 **Spray warm water** into a bucket until the water is clear. This cleans the internal fluid passages inside the gun. Empty the cup.



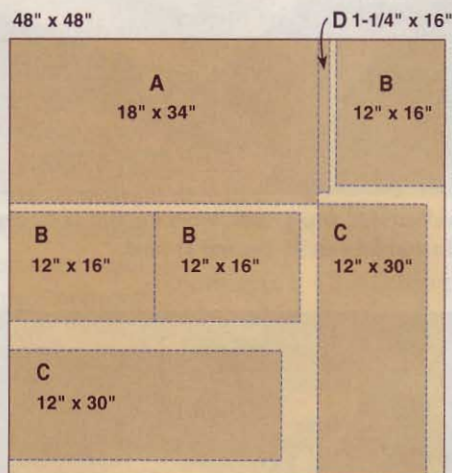
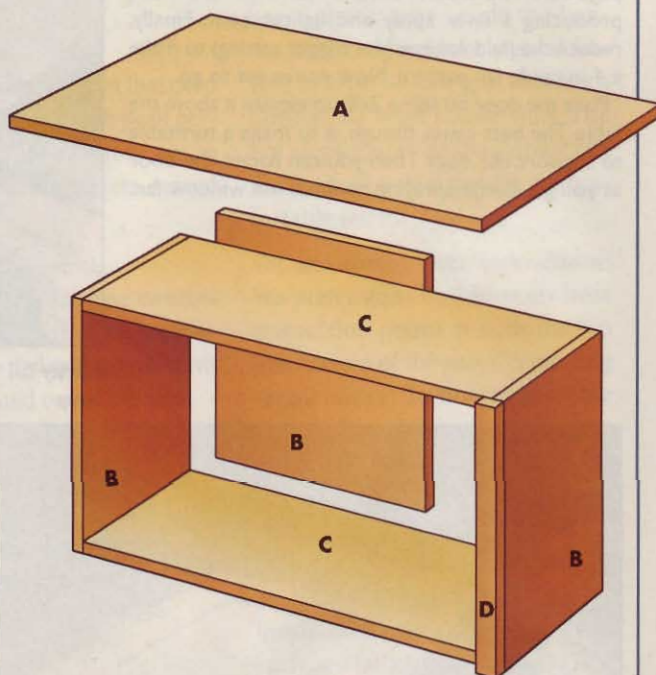
2 **Disassemble the gun**, removing every part you can. Clean off dried finish with warm water and a brass brush. Make sure the holes in the air cap are clean and free of finish. Poke them with a dull sewing needle or toothpick.



3 **Lubricate the gun.** Wipe petroleum jelly on all threaded or movable parts. Reassemble the gun. *AW*

Practice Cabinet

Build this partial cabinet to practice spraying. It's better to make mistakes on a throwaway piece than on your pride and joy! Make the cabinet from a half sheet of 3/4-in. MDF (medium density fiberboard) and assemble with a brad nailer or drywall screws.



Sprayable Waterborne Finishes

These waterborne finishes are specifically formulated for spraying with an HVLP system. This is just a sampling; there are many others on the market.

Apollocoat AquaClear

www.advmachinery.com
(800) 727-6553

Crystalac

www.crystalac.com
(631) 207-0328

EF Pro-series

www.generalfinishes.com
(800) 783-6050

Enduro Wat-R-Base

www.compliantspraysystems.com
(800) 696-0615

Hydrocote

www.hydrocote.com
(800) 229-4937

PianoLac

www.pianolac.com
(845) 855-0996



by Dave Munkittrick

I love my new 36-in. TV but my wife hates what the glass and plastic monolith does to the look and feel of our family room. To avoid marital strife we went looking for something to house the behemoth. No luck. Sounds like a job for the family woodworker! I love it when I get a chance to justify my sometimes-controversial investment in the shop.

A cabinet large enough to accommodate a 36-in. TV could look like an oversized shipping crate. But I used a design with angled corners to ease the big-box look.

Note: There are a few extra-deep 36-in. TVs that may require you to cut a hole in the back for the TV to poke through. You could make a deeper cabinet but you'd have to buy an additional sheet of plywood. Play it safe; buy your TV first, then adjust the depth if necessary.

The double-hinged doors fold flat against the sides to open up the cabinet for unobstructed viewing. Plus, they're a whole lot cheaper and easier to install than pocket doors. The adjustable, no-mortise, partial-wrap hinges (see Sources, page 92) make these doors a snap to hang.

Cost and Materials

I chose pine for its rustic feel. Plus, I love the smell of fresh-cut pine in my shop.

Pine plywood is a special-order item and comes with either knotty or clear veneers (see Sources, page 92). You can

expect to pay about \$600 in materials for this project.

Ventilation and Wire Management

Big TVs kick out a lot of heat, so adequate ventilation is a must. The cabinet is designed to let the heat escape through a series of vent holes (Fig. A).



Television Cabinet

Hide the electronics behind ingenious double-hinged doors

Holes at the bottom of the upper crosspiece and at the back of the TV shelf allow both wires and heat to pass through. All the wires funnel out of an 8-in.-dia. hole in the back (Fig. A). The removable back allows easy access to the snake's den of wires behind the TV and its components.



Double-hinged doors fold flat against the sides, leaving the screen wide open for optimal viewing. Because the doors are double jointed, they can be operated with as little as 14 in. of side clearance.

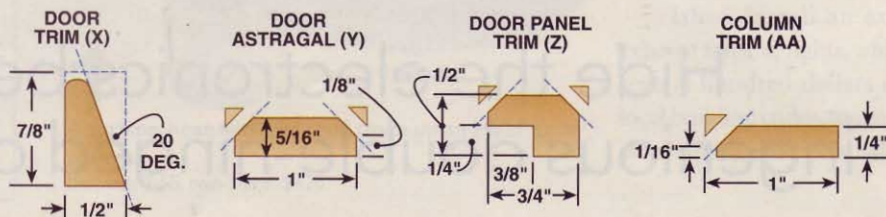


A conveniently located drawer with full-extension slides allows easy access to a treasure trove of movies.

Detail I

Door Moldings

Round over top of door trim (X) with sandpaper



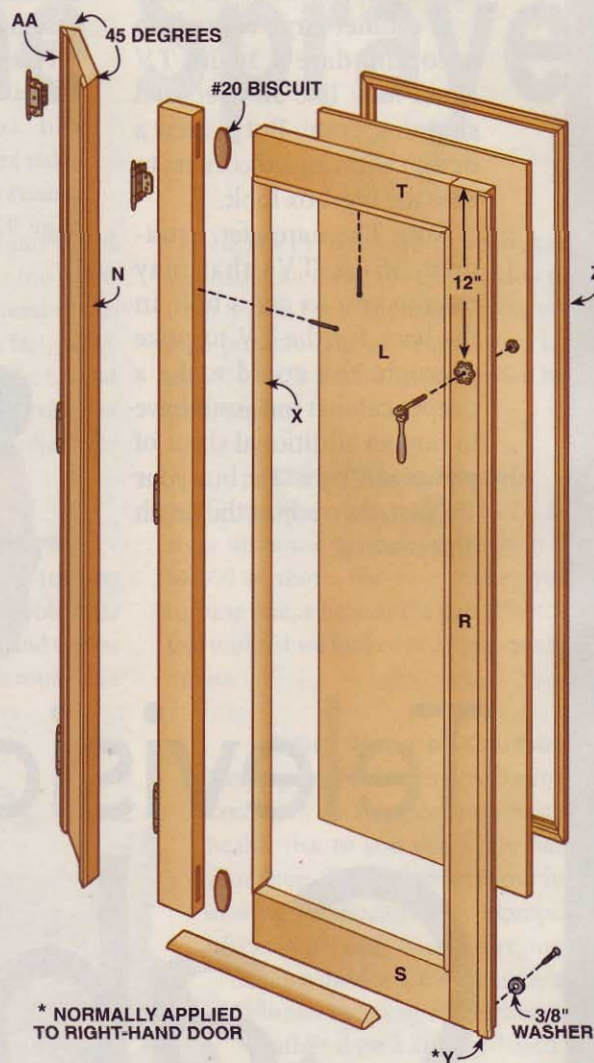
You'll Need a Well-Equipped Shop

To build this project you'll need a tablesaw, a stacking dado set, bandsaw, biscuit joiner, screw gun, router table, router, pneumatic brad and finish nailer, planer, miter saw and at least six 6-ft. pipe clamps.

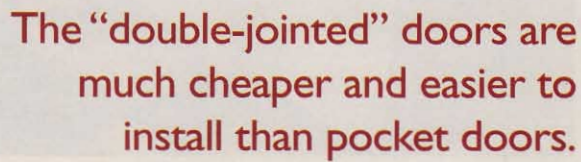
Check your router bit collection for a 1/2-in. Roman ogee, a 1/2-in. cove, a 1/2-in. round over, a flush trim (top or bottom bearing), and a chamfer bit. If you want to make your own bun feet, you'll also need a 1-in. round-over bit (see Sources, page 92).

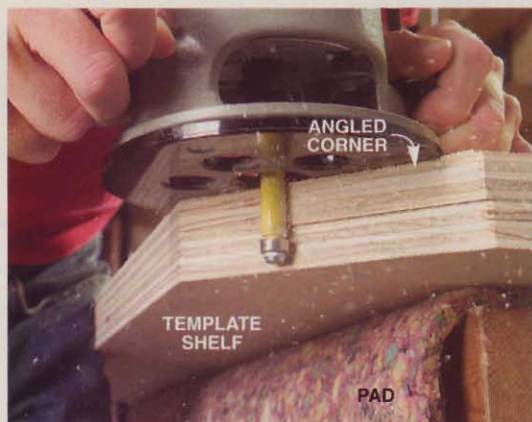
Build some knee-high sawhorses to support an oversized assembly table.

All set? Let's start building.

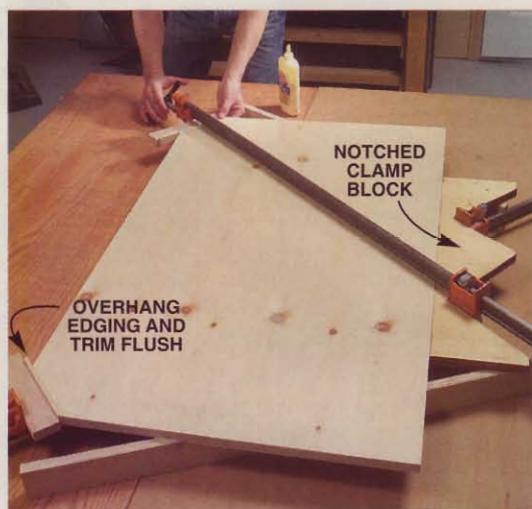


Exploded View

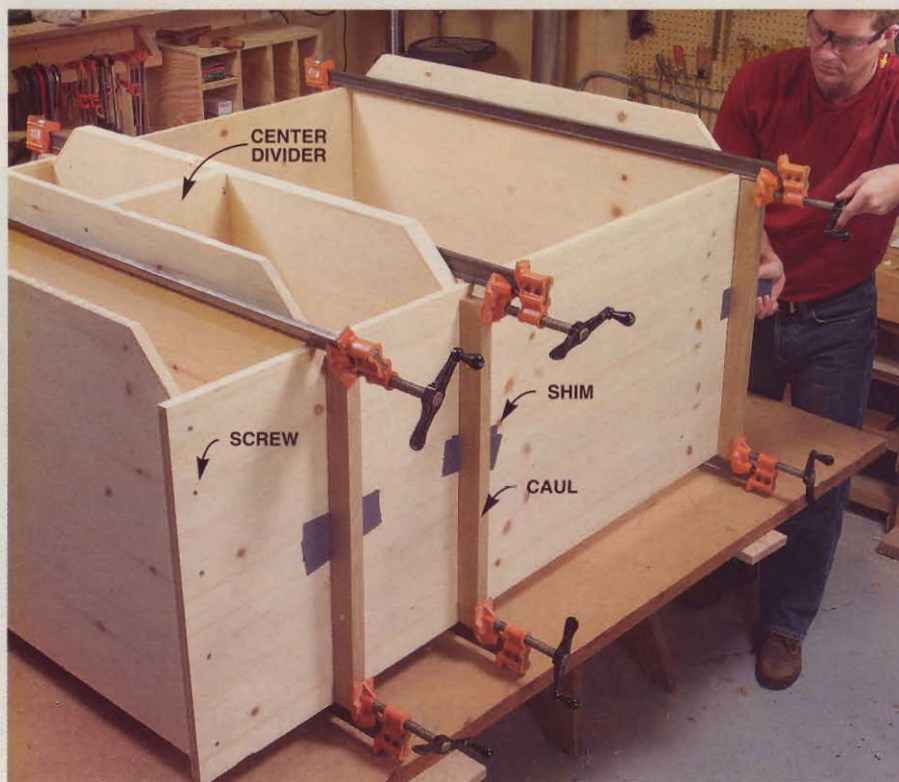




1 Make all the shelves identical by using one shelf as a template. Cut the angled corners on the other shelves a bit oversize. Clamp the rough-cut shelves to the template, and trim flush with a router.



2 Glue edging to the cabinet parts. The angled corner edging on the shelves is done first. Use a notched block to apply clamping pressure. Let the edging overhang along the front. Then trim it flush to the plywood on the tablesaw.



Build the Cabinet

1. Cut the 3/4-in. plywood parts A through J (see Cutting List and Cutting Diagram, page 51).
2. Cut the shelf blanks (B, C and D) to size. Lay out the angled corners on one shelf blank by making marks 4-in. from the corner along the side and front edges. Connect the marks and rough-cut the corner on the bandsaw.
3. Clamp a straightedge along your layout line and use a flush-trim bit to finish the corners. Use the finished shelf as a template for making the other shelves (Photo 1).
4. Glue up the double-thick TV shelf (C) and the center divider (F). A couple of brad nails will keep the halves from shifting under clamp pressure.
5. Add the 1/4-in. edging (QQ and RR) to all the angled corners (Photo 2). Then add the front edging pieces (NN and RR) to all but the bottom shelf (it'll be added later).
6. Cut the semicircular hole in the back of the TV shelf. Add 1/4-in. edging to the drawer opening dividers (J) and the center divider. Cut the notch at the top of the drawer opening dividers (Fig. A).
7. Cut through dados and rabbets on the sides (A) according to Fig. D. Glue on the solid-wood edging (PP) and sand flush.

Glue Up

Gluing up this cabinet is a big job. Dry clamp the cabinet as a dress rehearsal for the real thing. Measure the exact distance between the TV shelf and the component shelf and cut the center divider (F) to fit. Screw the TV and component shelves to the center divider and disassemble.

3 Assemble the cabinet with cauls and shims.

The shims help put pressure in the center of the cabinet sides. Fasten the center divider to the two center shelves before assembly. Use screws for the bottom shelf; molding will cover them later.

1. Assemble the cabinet with glue (Photo 3). Make sure it's square!
2. Cut the upper (G) and lower (H) crosspieces to width. Cut the wire and vent arches in the upper crosspiece. Add the screw flanges (GG) to both.
3. Turn the cabinet on its side and reach in from the back to screw in the upper and lower crosspieces (Figs. C and D).

Apply the Cabinet Trim

The cabinet trim is applied to nailer boards fastened to the subtop and the component and bottom shelves.

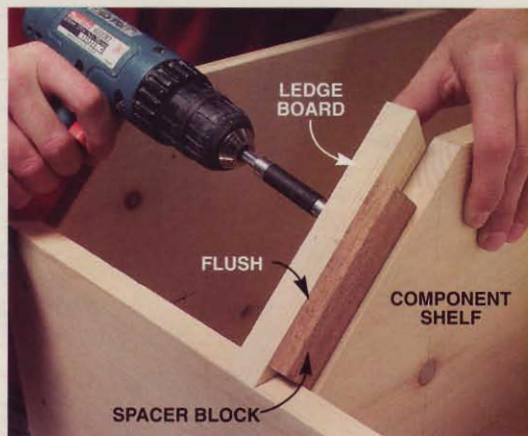
Before you cut your trim stock, select the best-looking, straight-grained pine for the column doors (N), column bases (P), door frames (R, S and T) and drawer front (Q).

1. Rip the nailer stock (DD). Cut and fit nailer boards under the component shelf (Photo 4 and Fig. F). The tops of these boards create the ledge under the doors, so use defect-free stock.

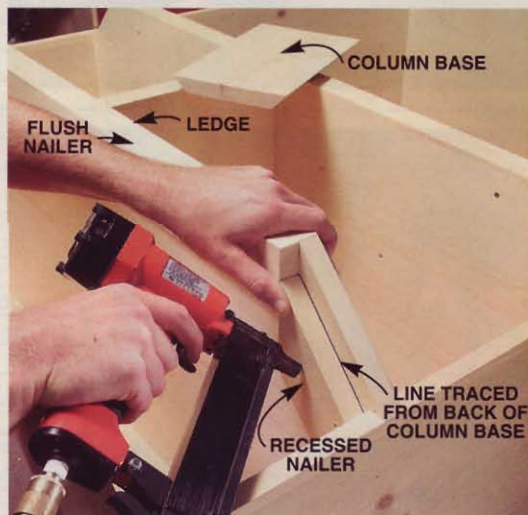
Note: Before you add the nailer to the front of the component shelf, slip the two drawer opening dividers into the opening. You won't be able to get them in once the nailer is in place. Don't screw them in place just yet.

2. Double up the nailer board along the front edge of the component shelf. The nailer board at the angled corners is set back to accommodate the column base (Photo 5 and Fig. F).
3. Cut, glue and nail the column bases in place.
4. Attach the drawer opening dividers (Photo 6 and Figs. A and C).
5. Add shelf edging (MM) and nailers to the bottom shelf (see Fig. F).
6. Machine the ogee (KK) and round over moldings (LL). Glue them together to make a single molding. Note: Remove the bearing from the round-over bit to create the double fillet (Fig. D). Cut and fit the two bands of molding around the lower portion of the cabinet (Photo 7).

- 4 Create a ledge below the doors with solid wood fastened to the underside of the component shelf. Use a 7/8-in. spacer block to keep an even reveal.



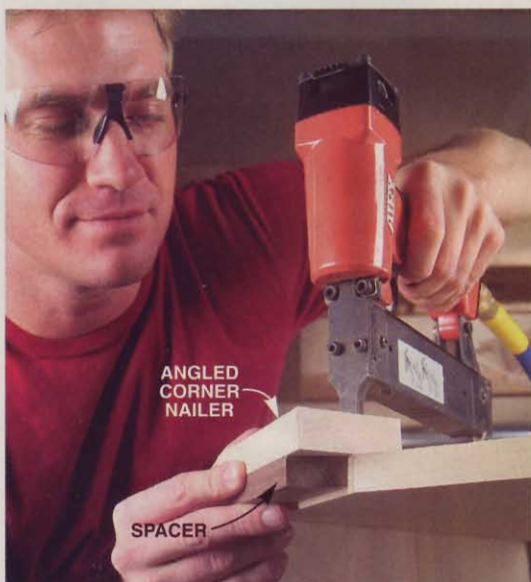
- 5 Add a row of nailers below the ledge to create a surface to nail moldings to. The nailer is flush with the ledge in front but is recessed at the angled corner where the column base fits. Determine the setback for the recessed nailer by holding the column base in place and tracing the back edge onto the ledge above.



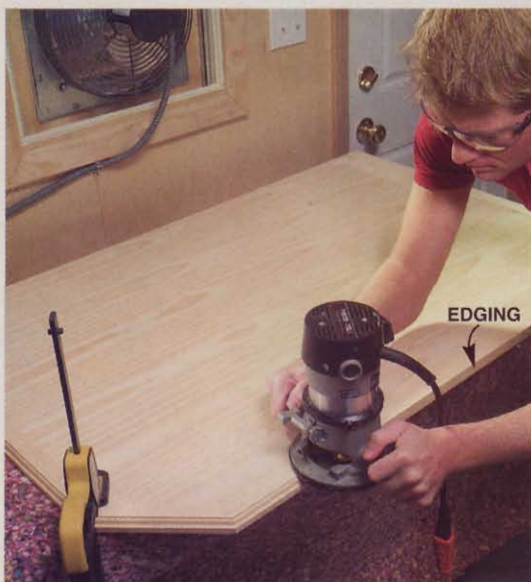
- 6 Screw dividers into the case to create the drawer opening. A 35-in. long spacer board keeps the dividers parallel as they are screwed into position. Tip: Mount the drawer slides to the dividers before they're fastened to the cabinet.



7 Attach the moldings with nails and glue. We used special molding glue instead of traditional yellow glue. The thick-bodied molding glue won't drip or run while positioning the molding.



8 Fasten nailer boards on top of the cabinet. These nailer boards create an overhang above the doors and provide a surface for applying the cove molding. Start with the angled corner nailer. Use a 1-1/4-in. spacer block to set the overhang. Attach the remaining nailers and screw them down securely.



9 Rout the ogee edge on the top. Just glue on the edging, sand flush and rout. Then screw the finished top onto the cabinet.

10 Apply cove molding under the top and against the edge of the nailers. Hold the molding in place with spring clamps as you go. Fasten the molding with glue and pin nails.

7. Add nailers to the top of the cabinet (Photo 8 and Fig. E).

8. The angled corners of the top (E) are cut in the same way as the template shelf except you measure back 4-3/4 in. from the corners instead of 4 in. Glue on the top edging (HH). Then rout the ogee edge (Photo 9).

9. Attach the top, keeping about a 1-in. margin on the front and sides. Apply the cove molding (Photo 10).

Doors and Drawer

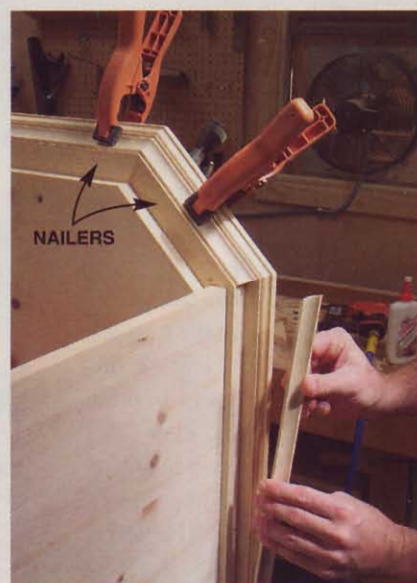
The double-hinged doors may look like a nightmare to hang, but they're really a snap. Adjustable, partial-wrap, no-mortise hinges are the key.

Be careful when screwing the hinges onto the beveled edge of the column door (N). The hinges come with 1/2-in. and 5/8-in.-long screws. Play it safe and nip 1/16-in. off the ends of the 1/2-in. screws with a side cutter so they won't poke through.

1. Make the column trim (AA) (Fig. A, Detail 1). Glue and clamp it flush to the outside edges of the columns (no nails, please). Then cut the beveled edges (Photo 11).

2. Attach hinges to the cabinet side of the columns. The point of the beveled edge should butt right up against the barrel of the hinge. Attach the columns on the cabinet (Photo 12).

3. Assemble the door frames with biscuits. Remove the column doors and attach them to the door frames (Photo 13). Put the door





11 Rip the 45-degree bevels on the columns. To avoid kickback, make sure the blade tilts away from the fence. That's easy on a left-tilt saw; on a right-tilt, move the fence to the left side of the blade.



12 Hang the column on the cabinet. First, fasten the hinges to the column. Then use shims to position the column door on the cabinet. The half-wrap, no-mortise hinges wrap around the inside surface of the cabinet; all you have to do is screw them in place. Remove the columns after you're satisfied with the fit.



13 Attach the door to the column. Make sure the column and door frame are even at the top by butting both pieces against a board clamped to your bench. Put some short 2x4s under the hinged joint so you can get to the screw holes.



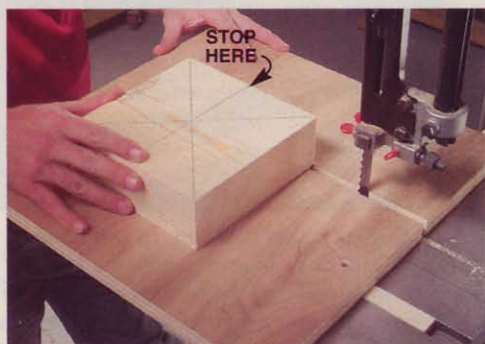
14 Nail panel molding to the back of the door frame to hold the 1/4-in. panel in place. Miter the corners of the molding to give your door a finished look inside and out.



15 Cut the door trim on the bandsaw. Tilt the table to 20 degrees and secure a guide fence. Use a sharp, high-tooth-count blade (6 to 8 teeth per inch) for a cleaner cut that won't require a lot of sanding.



16 Nail the drawer front to the drawer box. Shim the drawer front so the gaps will be even. A piece of duct tape stuck to the inside of the drawer acts as a temporary pull. Open the drawer and screw on the drawer front from inside the box. The holes left by brad nails are tiny and easy to disguise with filler.



17 Cut the bun feet on a bandsaw using a circle-cutting jig. Set the blank onto the pivot point of the jig. Then slide the jig onto the bandsaw and cut halfway through the blank. Clamp the jig in place and spin the blank to cut the bun foot.

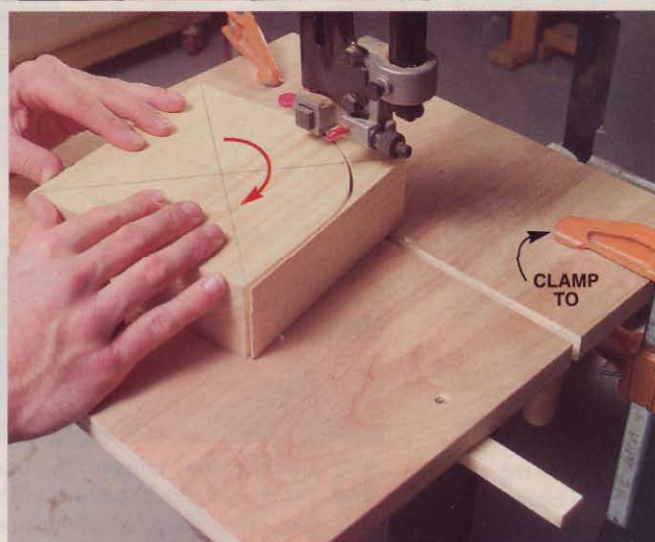
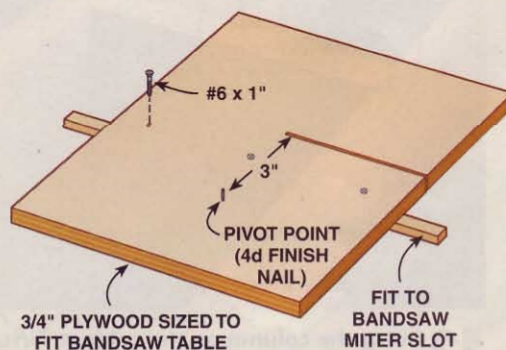


Fig. B Circle-Cutting Jig

Machine the solid-wood strip to fit the miter slot of your bandsaw. Screw the strip to a piece of plywood and slide the jig onto your bandsaw, cutting a slot to about the halfway mark. Make a line perpendicular to the end of the cut. To set the pivot point, mark the radius of your circle from the saw kerf to a point on the line and pound in a finish nail so the head protrudes 1 in. or so. Nip off the head and your jig is ready to go.



assemblies back on the cabinet. Apply the astragal (Y) to the right-hand door.

4. Drill 1/2-in. holes in the edging of the subtop and component shelf for the four rare earth magnet cups (see Sources, page 92) that keep the doors closed (Fig. A). Remove the door assemblies and hinges for sanding and finishing.

5. Make the panel trim (Z) (Fig. A, Detail 1) and add the panels (L) (Photo 14). Make the door trim (X) (Photo 15) and fasten with glue and nails inside the door frame opening (Fig. A).

6. Build the drawer box (Fig. C), add the full extension drawer slides and install the drawer in the cabinet. Attach the pine drawer front (Q) (Photo 16). Add the iron pulls (see Sources, page 92).

The Bun Feet

1. Make the four 7-in. blanks (BB). Run diagonal marks from corner to corner to establish a center point and drill a 1/16-in. hole at the center of each blank.

2. Cut the bun foot blanks into 6-in. dia. circles (Photo 17). Round over the edges to finish the bun feet (Photo 18). (For ready-made feet, see Sources, page 92.)

3. Machine the foot support blocks (CC) so they compensate for any sag in your floor (Photo 19). Screw them to the bottom of the cabinet. Screw the bun feet to the foot blocks (Photo 20).

The Finish

I have to confess, even after 20 years of professional woodworking experience, my knees shake when it comes to finishing pine. Blotching is so hard to control if you want to add any color. For this project, I kept the blotch monster at bay by spraying the whole piece with a shellac sealer (see Sources, page 92). Then I sprayed a color layer of toned shellac. I made the toned shellac by adding 1/2 tsp. of Trans Tint Golden Brown Dye (see Sources, page 92) to 1 qt. of shellac sealer. I topped it all off with a couple coats of satin, waterborne poly.

For more on finishing pine from someone who knows what he's doing, see "Staining Pine," page 52, by the incomparable finishing wizard, Tim Johnson.

18 Shape the bun foot on a router table with a 1-in. round-over bit.

With the subfences wide open, set the fence over the bit so the blank just makes contact with the bearing and the subfences are just shy of the blank. This will minimize bit exposure.



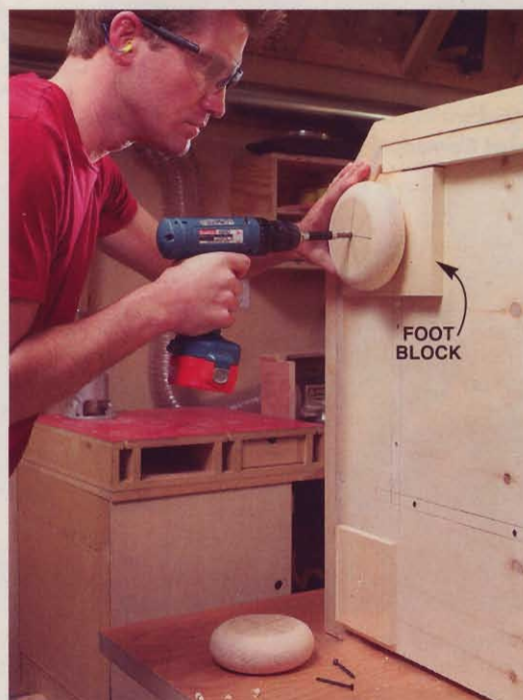
19 Measure how much your floor dips away from the wall.

This cabinet must be level so the doors will stay open. Simply subtract an amount equal to the dip in your floor from the thickness of the foot blocks for the back feet. Now there'll be no unsightly shims under the feet after your cabinet's installed.

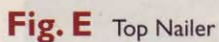


20 Screw the bun feet to the foot blocks.

The thinner foot block in back allows the cabinet to sit level on a sagging floor.



Horizontal Cross Section
Through Drawer



Top Nailer

the angled corner
so that one
end runs directly over
the subtop and
the mitered end runs
outside
the
subtop.

22-1/2 DEGREE ANGLE

22-1/2 DEGREE ANGLE

QQ

EE

1-1/4"

6-3/4"

DD

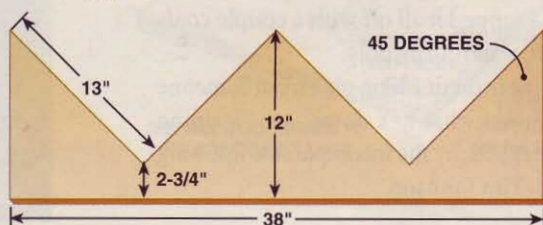
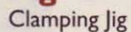
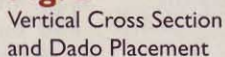
DD

PP

CABINET SIDE

CORNER OF SUBTOP

Angled Corner Construction

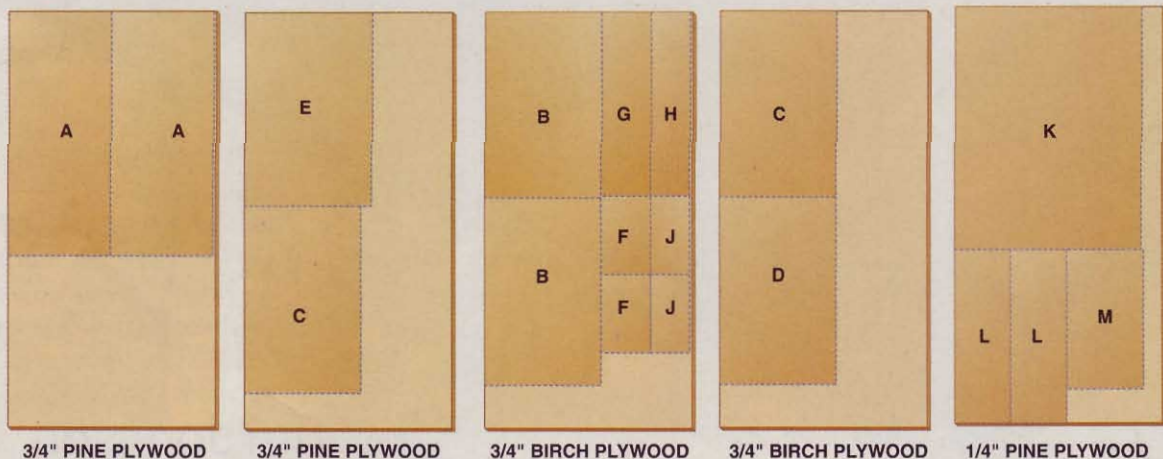


Cutting List overall dimensions 60" x 47-1/2" x 30-7/8"

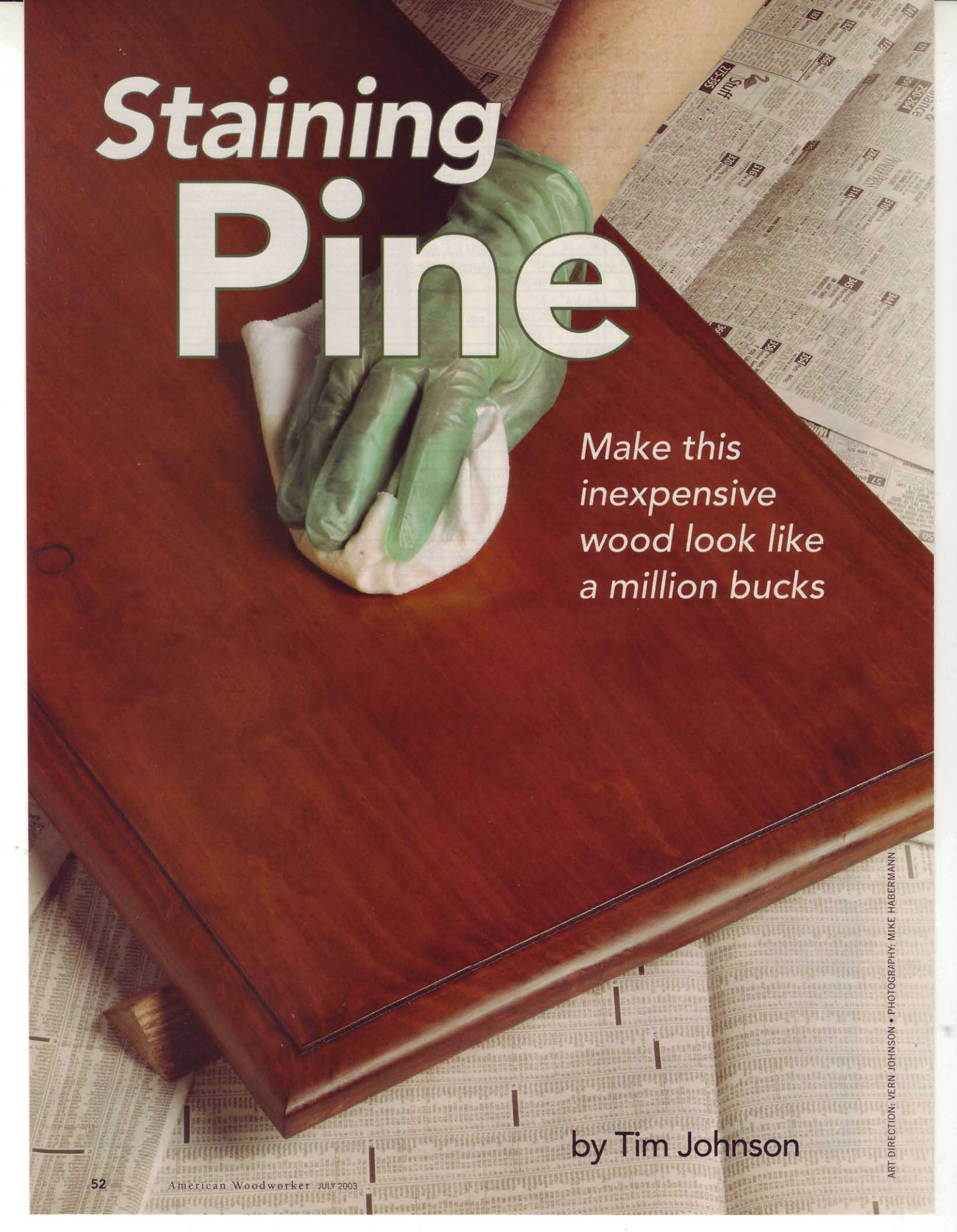
	Part	Name	Qty.	Dimensions	Notes
3/4" Plywood	A	Sides	2	23-3/4" x 56-1/2"	add 1/2" edge
	B	Subtop/Component Shelf	2	26-7/8" x 43"	add 3/4" pine edge to front
	C	TV Shelf	2	26-7/8" x 43"	add 1/4" pine edge
	D	Bottom Shelf	1	26-7/8" x 43"	pine is added to the cut corners, then add 1-1/2" edge to front
	E	Top	1	29-1/2" x 44-3/4"	measure back 4-5/8" from the corner along both edges to create angled corner
	F	Center Divider	2	11-1/2" x 18"	glue together and add 1/4" edge; don't cut to final width before the dadoes are cut
	G	Upper Crosspiece	1	11-1/2" x 42-1/2"	add screw flanges; cut a little oversize, then trim to fit after cabinet is assembled
	H	Lower Crosspiece	1	9" x 42-1/2"	add screw flanges; cut a little oversize then trim to fit after cabinet is assembled
1/4" Ply	J	Drawer Opening Dividers	2	9" x 18"	add 1/4" edge; cut a little oversize then trim to fit after cabinet is assembled
	K	Back	1	43-1/2" x 55"	screw back to cabinet to provide access for wiring
	L	Door Panels	2	13-1/4" x 40-3/4"	
3/4" Pine Stock	M	Drawer Bottom	1	17-3/4" x 32"	
	N	Column Door	2	6-1/4" x 45-3/4"	add column trim before cutting angled edges
	P	Column Base	2	6-1/4" x 9-3/4"	
	Q	Drawer Front	1	7-1/4" x 35-1/4"	trim to fit
	R	Stiles	4	2-1/2" x 45-3/4"	
	S	Lower Rails	2	3" x 12-1/2"	
	T	Upper Rails	2	2-1/2" x 12-1/2"	
	U	Drawer Box Sides	2	1/2" x 6-3/4" x 18"	
	V	Drawer Box Front	1	1/2" x 6-3/4" x 32"	
	W	Drawer Box Back	1	1/2" x 6-1/4" x 32"	
	X	Door Trim Molding	24'	1/2" x 7/8"	miter to fit inside of door frame
	Y	Astragal	1	5/16" x 1" x 46"	trim length to fit as required
	Z	Door Panel Trim	20'	1/2" x 3/4"	add 1/4" x 1/4" rabbet; bevel inside and outside edges; miter around door panel
	AA	Column Trim	4	1/4" x 1" x 48"	bevel inside edge
	BB	Bun Feet Blanks	4	2" x 7" x 7"	glue up 2 layers of 3/4" stock plus one 1/2"-thick layer; finished foot is 6-in. dia.
	CC	Foot Support Blocks	4	6" x 6"	vary thickness to level cabinet on floor
	DD	Nailers/Ledge Boards	26'	2-1/2"	keep the clear nailer stock to make the ledge under the doors
	EE	Top Angled Corner Nailer	2	2-1/2" x 6-3/4"	measure 6-3/4" from long point to long point; 22-1/2-deg. miter on both ends
	FF	Angled Corner Ledge Board	2	2-1/2" x 6-1/4"	measures 6-1/4" from long point to long point; 45-degree miter at cabinet side, 22-1/2-deg. miter on the other end
	GG	Screw Flange	4'	3/4" x 1-1/2"	glue or screw flanges to back of crosspieces
	HH	Top Edging	10'	3/4" x 1-3/8"	route ogee edge after edging is glued on and sanded flush
	JJ	Cove	10'	3/4" x 5/8"	route cove on wide piece of wood, then rip on the tablesaw
	KK	Ogee	18'	3/4" x 1-3/8"	
	LL	Round-Over Molding	18'	3/4" x 3/4"	route profile on two edges of a wide board, then rip on the tablesaw
	MM	Bottom Shelf Edging	1	1-1/2" x 36"	cut to fit between column bases
	NN	Other Shelf Edging	6'	3/4" x 3/4"	trim length to fit as required
	PP	Side Edging	2	1/2" x 3/4" x 56-1/2"	trim length to fit as required
	QQ	Edging	4'	1/4" x 3/4"	trim length to fit as required
	RR	Wide Edging	6'	1/4" x 1-1/2"	trim length to fit as required

AW

Fig. H Plywood Cutting Diagram



Staining Pine



Make this
inexpensive
wood look like
a million bucks

by Tim Johnson

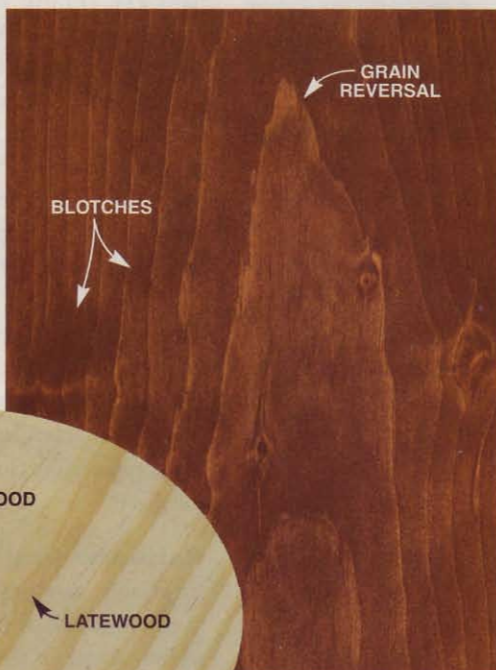
ART DIRECTION: VERN JOHNSON • PHOTOGRAPHY: MIKE HABERMANN

Antique pine often has a dark, mellow color. Unfortunately, when woodworkers try to duplicate that color on new pine by using stain, the results are usually disappointing. It's easy to end up with mega-blotches and it's hard to avoid "grain reversal," a peculiar effect that makes stained pine look unnatural (photo below). It doesn't have to be that way, though. If you follow the process presented here, you can give pine deep, rich-looking color without losing its natural appearance.

Pine is hard to stain for a couple of reasons. First, its grain is unevenly dense. Typical wood stains cause grain reversal because they color only the porous earlywood; they can't penetrate the dense latewood. Second, pine's surface is usually loaded with randomly occurring figure and super-absorbent pockets that suck up stain and look blotchy.

Our staining process includes four ingredients, water-based wood conditioner, water-soluble wood dye, dewaxed shellac and oil-based glaze (see Sources, page 92). Our process isn't fast, because there are several steps. But it isn't hard, and it's home-shop friendly. You don't need any special finishing equipment, just brushes and rags.

In a nutshell, the conditioner partially seals the wood's surface to control blotching. Dyes penetrate both the earlywood and latewood, so they minimize grain reversal. Shellac and glaze add color in layers, creating depth and richness. This coloring process works on all types of pine, although the end result varies from one species to another.



Staining usually causes blotches and always makes pine's porous earlywood darker than its dense latewood, just the opposite of unstained pine (inset). This transformation is called "grain reversal."

BEFORE YOU STAIN



A FILL GAPS and stabilize loose knots with epoxy. Tape the back of the knot so the epoxy can't leak out.



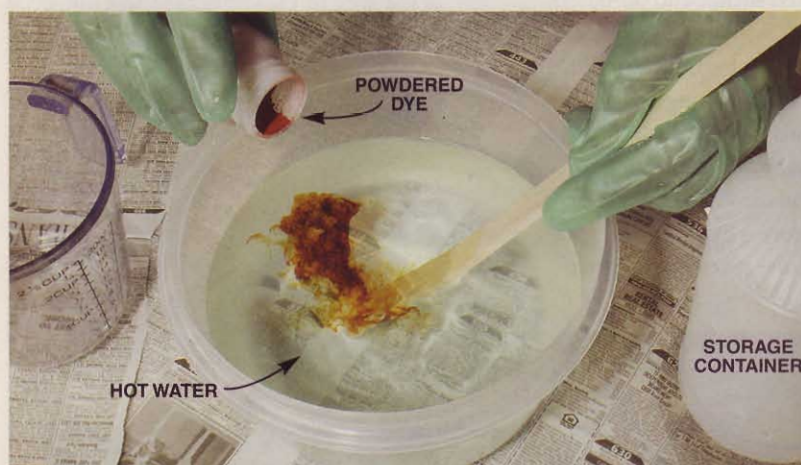
B SAND WITH A BLOCK angled across the growth rings. Because of the difference in hardness between the earlywood and latewood, bridging as many rings as possible helps to keep the surface level.



C PREEMPTIVE GRAIN-RAISING is a must-do for all water-based finishes. After you've finished sanding, dampen the surface, to raise the grain. Then sand it again, with 400-grit sandpaper.



STEP 1 BRUSH ON two generous coats of water-based conditioner. With each application, keep the surface wet for three to five minutes, then wipe off the excess. Let the conditioner dry thoroughly, then sand it with 400-grit paper. Go lightly on contours and edges, so you don't cut through.



STEP 2 DISSOLVE POWDERED DYE in hot water. When the powder is completely dissolved, transfer it to a lidded container and let it cool.



STEP 3 BRUSH ON a liberal coat of dye and keep the surface wet. Wipe the end grain occasionally to check its appearance. After the surface is uniformly colored, wipe off the excess dye and let the wood dry. Then repeat the process.

Look Before You Leap

Before you touch your project with a brush or rag, get familiar with the materials and the process by practicing on good-sized pieces of scrap. Experiment on end grain, face grain and veneered stock. Practice until you're comfortable with the process and know what to expect.

Fix Loose Knots

Before you sand, stabilize any loose knots by dribbling epoxy into the gaps (Photo A, page 53). To make cleanup easier, keep it off the surrounding wood surfaces. After the epoxy has set, sand it flush with the surface. Clear epoxy transmits the dark color of the knot. If your epoxy cures milky-white, touch it up later, after you've dyed the wood and sealed it with shellac.

Sand Thoroughly

A good-looking finish always starts with a thorough sanding job, especially with a soft wood like pine. Here are some guidelines:

Sand with a block. Orbital sanders leave swirl marks that make the stained surface look muddy. After power sanding, always sand by hand, using a block, before you go on to the next grit (Photo B). Sanding with finger pressure alone wears away the soft earlywood, creating an uneven surface.

Change paper often. Pine gums up ordinary sandpaper with pitch-laden dust that quickly renders it useless. Dull paper mashes the wood fibers instead of cutting them, which also creates a muddy appearance when you stain. Stearated sandpaper lasts longer (see Sources, page 92).

Sand up to 220 grit. First, level the surface with 100-grit paper. Then work through the grits to create finer and finer scratch patterns. 220-grit scratches are fine enough to disappear when you stain, as long as they don't go across the grain.

Raise the Grain

Invariably, sanding leaves some fibers bent over. Water-based finishes swell these fibers so they stand up, leaving a rough surface. For smooth results with these finishes, raising the grain prior to finishing is essential (Photo C).

Two Coats of Conditioner

Water-based wood conditioner (see Sources, page 92) makes the water-based dye easy to apply. It limits the dye's penetration by partially

sealing the wood, like a thin coat of finish. Two coats are necessary to control blotching (Step 1).

It's important to keep the surface wet until you wipe it, and then to wipe thoroughly. Any conditioner that's allowed to dry on the surface will seal so well the dye won't penetrate.

Two Coats of Dye

We used Transfast "antique cherry brown" water-soluble dye powder (see Sources, page 92). Water-soluble dye from other manufacturers will work just as well, although the color will be different. Dissolve the dye at the label-recommended ratio of 1-oz. powder to 2-qts. hot water (Step 2). Be sure to let the solution cool to room temperature before use.

On the conditioned surface, the dye acts like a liquid oil stain (Step 3). Let it penetrate for a couple minutes before wiping. The second coat of dye imparts a deeper color and a more uniform appearance.

It's tough to get uniform penetration on end grain. Fortunately, you can minimize any uneven appearance later with the colored glaze.

When you have a large surface to cover, use a spray bottle to apply the dye and a brush to spread it. Simply re-spray previously worked areas to keep the entire surface wet until you're ready to wipe it dry. Spraying and brushing also works great on vertical surfaces. Start at the bottom and work your way up.

Two Coats of Shellac

Shellac prepares the dyed surface for glazing (Step 4). It also keeps pitch sealed in the wood. Without shellac, pine's pitch can bleed into oil-based finishes, leaving fissures or shiny spots that remain tacky, especially around knots.

Apply Glaze

Glaze is nothing more than paint formulated for wiping. It's easy to make your own pro-quality glaze (Step 5). Artist's oils contain high-quality pigments for pure, clear color. Glaze medium makes the artist's oil easy to spread and quick to dry (within 24 hours).

Glazing adds a second, separate layer of color that really makes the pine come alive (Step 6).

Topcoats

You need to protect this layered finish with clear topcoats. Any topcoat will work as long as you wait until the glaze has completely dried. To check, wipe the surface gently with a cotton rag. If it picks up any color, wait another day.

AW



STEP 4 SEAL THE SURFACE with two coats of 2-lb.-cut dewaxed shellac (see Sources, page 92). Sand after each coat with 400-grit paper.



STEP 5 MAKE YOUR OWN GLAZE by dissolving artist's oil into glaze medium (see Sources, page 92). You don't have to be scientific about the ratio as long as you use only one color. Don't go overboard with the amount you mix—a little glaze goes a long way.



STEP 6 GLAZE ACTS AS A TONER on the sealed surface, resulting in a deep, rich color and a uniform appearance. Just brush it on and wipe it off. Blend uneven areas by varying the amount of glaze you leave on the surface.

TOOL TEST

HVLP

High
Volume
Low
Pressure

Turbine Sprayers

Advantages of HVLP Sprayers

Less Overspray

Less overspray means more finish goes on your project and less is wasted going into the air. Some manufacturers claim a transfer rate that's double conventional high-pressure sprayer guns.

Dry, Clean Air

Moisture and oil in the air supply, which can wreak havoc with your finish, are common problems when using compressor air with a high-pressure spray gun. HVLP-turbine supplied air is totally free from moisture and oil.

Portable

HVLP turbines are compact and easily stored in a cabinet or under a table and are easily transported.

You've probably brushed and wiped on gallons of finish over the years. But have you ever dreamed of the luxury of spraying on a fast, silky-smooth finish? If you're ready to wake up and start spraying, read on and we'll help you make the best choice of HVLP sprayers for your shop.

How an HVLP Turbine Works

An HVLP sprayer uses high-speed turbine (spiral-finned) fans to compress and blow air (Photo 3). Each fan is called a "stage" and rotates up to 20,000 rpm. That's as fast as a router! It's

called HVLP because it produces high volumes of air (50 to 100 cfm) at a low pressure (4 to 8 psi). For comparison, a conventional high-pressure spray gun runs on 6 to 12 cfm of air at 50 to 70 psi, which is supplied by an air compressor.

Three Basic Models

HVLP turbines come either as 2-, 3- or 4-stage units and range in price from \$100 to \$1,000 or more. For your money you get a turbine unit, a hose and a gun (Photo 1). For this tool test we looked at 22 systems for \$600 or less.

A Big Word of Caution

Spraying can be dangerous. The overspray created by spraying can present a serious health risk to you and a fire hazard to your shop. You can protect your lungs by wearing a respirator mask appropriate for the kind of finish you are spraying. Overcoming the fire hazard can be accomplished by using a waterborne finish rather than a solvent-based finish.

This is what we recommend. If you choose to spray solvent-based finishes, install an explosion-proof exhaust fan and lights, which will cost you several hundred dollars or more. Check local building codes, too, since they'll probably require additional safety precautions.



1 A turbine, hose and spray gun make up an HVLP spray system.

Lemmer T-55, two-stage; \$420.

*Here's what to look
for when buying an
HVLP sprayer*

MIKE HABERMANN

By Randy Johnson

4 Anatomy of an HVLP Spray Gun

The spray gun, with controls for fluid and air flow, is the working end of an HVLP spray system. The gun shown here is from the Capspray CS5100 system and has a built-in air control valve. Some guns use an air control valve on the hose instead. The Capspray gun also has an external lever that is used to rotate the position of the fluid pickup tube.

We Used Waterborne Finishes

It's important to use a waterborne finish that is formulated specifically for spraying (see Basic HVLP Spray Techniques, page 28). Many waterborne finishes are formulated for brushing and are too thick to spray with an HVLP turbine system. This is particularly true with the two-stage sprayers. Some brushable finishes can be thinned, but you must be careful not to thin them too much because this can adversely affect the finish's performance.

3-Stage Turbines Have Plenty of Power

A three-stage turbine produces about 50 percent more pressure than a two-stage turbine. This extra pressure atomizes finish better. The extra air pressure also allows a wider range of adjustments for the fluid and air settings. This in return provides better control over the shape and size of the spray patterns. The most expensive two-stage systems do an acceptable job of atomizing sprayable waterborne finishes, but apply them at a slower rate. A four-stage unit provides 25 percent more air pressure than a three-stage unit but this additional pressure is not needed for applying sprayable waterborne finishes.

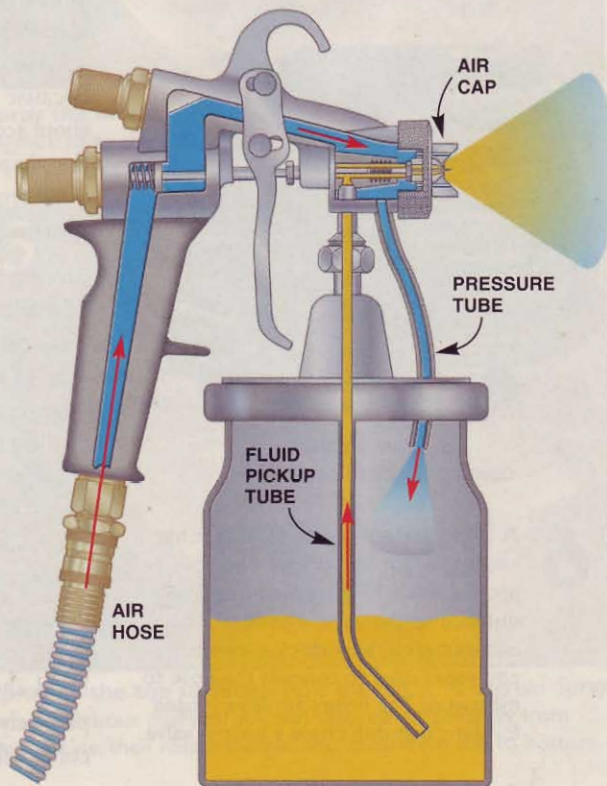
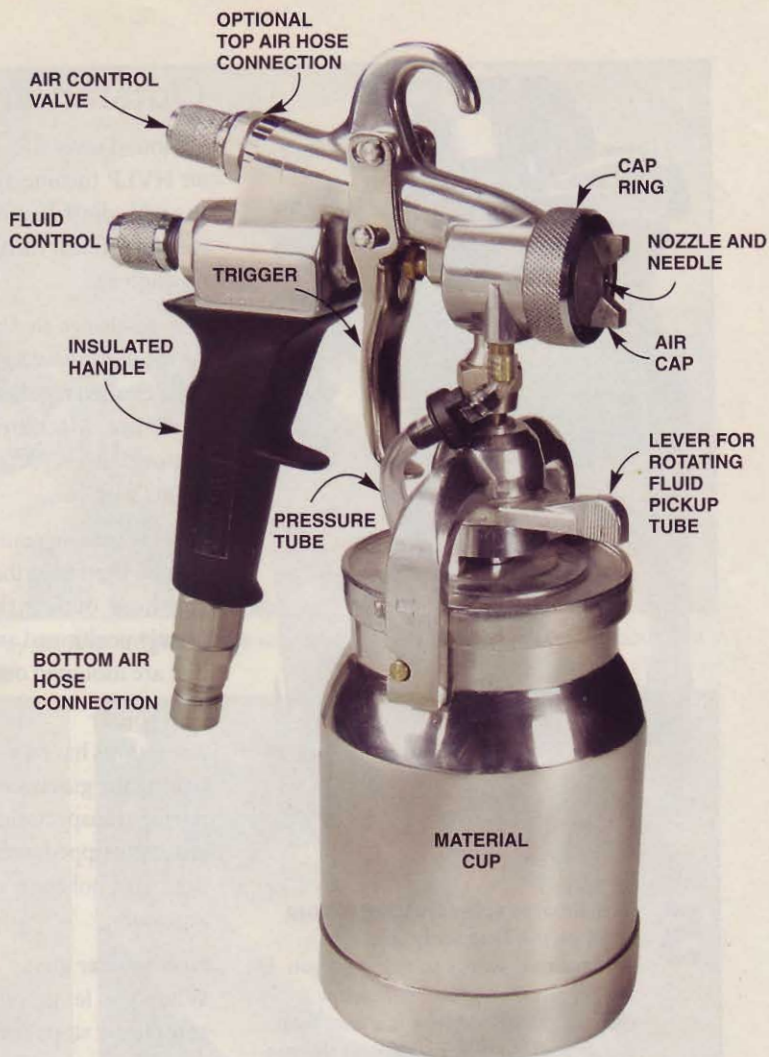


Fig. A How an HVLP Spray Gun Works

An HVLP gun has large internal airways. They allow easy passage for the high volume of air that is used for atomization. Some of the air travels down a pressure tube and pressurizes the material cup. When you pull the trigger, finishing material is pushed up the pickup tube and out the nozzle. As the fluid leaves the nozzle it is atomized by air coming from openings in the air cap.



5 The flexible self-adjusting pickup tube on the Titan spray gun automatically swings to any angle you tip the gun. It's a great feature, but cleaning the ribbed tube is a pain. Titan includes an extra flex tube with the gun.



6 A 20-ft. hose is useful because it has enough length to work around your project, while keeping the turbine at a distance so the filter doesn't pick up excess overspray. A quick-connect coupler is used to connect the hose to most guns. The hose's air valve is used for guns that don't have a built-in valve.

Outstanding Features

We found several features that make an HVLP turbine system easier to use and adjust. Some can affect how well your finish turns out (Photos 2 through 6).

Easy-to-change air filters

All machines have air filters that need to be cleaned regularly for peak performance. Machines with easy to remove and replace filters scored points with us.

Easily accessible controls

We also liked units that have switches and hose outlets that are conveniently positioned and power cords that are mounted out of the way.

Gun holster

A few units have a gun holster for storing the gun between uses and during transportation. Spray guns are easily tipped over and damaged, so a holster is a valuable accessory.

Non-bleeder guns

When you let go of the trigger, air completely stops coming out of the nozzle of a non-bleeder gun. On a bleeder gun, air continues to come out. We prefer the non-bleeder style because you don't have to worry about accidentally blowing dust into the air when you point your gun away from your project between spraying passes.

Easy-to-adjust air cap

The air cap controls the shape of the spray pattern from horizontal to vertical to round. An air cap should rotate easily because it is common to readjust it several times while spraying a project. Some air caps require you to loosen and retighten the cap ring to make adjustments. Others rotate roughly or are hard to turn.

Finely adjustable fluid and air controls

Fluid and air controls that can be precisely adjusted make it easier to control fluid atomization, the spray

pattern size and overspray.

Metal guns with insulated handles

Some metal guns have a plastic cover over the metal handle, others use a plastic tube inside the handle. This is a particularly good feature to look for in a gun that has a bottom air hose connection. The hot air produced by the turbine can make an all-metal handle uncomfortably warm.

Top and bottom hose connections

We prefer guns that have air hose connection points at both the top and bottom of the gun. Connecting the air hose at the bottom gives the gun a balanced feel and works great for most spraying. Connecting the air hose at the top of the gun allows you to run the hose up your arm, over your shoulder and out of the way. This is useful when spraying inside cabinets or a wide flat area such as a tabletop.

Easy-to-adjust fluid pickup tube

This feature really caught our attention. The Titan uses a flexible tube (Photo 5) that is self-adjusting. The Capspray uses an external lever that rotates a rigid pickup tube that rotates forward, backward, and left (Photo 4). Being able to keep the bottom of the fluid pickup tube in the finishing material when tipping the gun at various angles is a great feature. It's especially valuable when the spray cup gets half empty and you need to tip the gun to the side or backward in order to spray that hard to reach spot. Pickup tubes on other guns require you to open the cup and then turn the tube by hand or with a wrench, which is not very practical while spraying.

A 20-ft. air hose provides the best reach

We found that you need at least a 20-ft. hose to provide enough length to work around most projects.

Recommendations

If you want an HVLP turbine sprayer for finishing your fine furniture or cabinetry projects, you should plan on spending at least \$400 on a three-stage system. Our Editors' Choice and Best Buy tools are both three-stage units and have almost all the features we liked.

Other Recommended Tools

The **Graco HV-2500** and the **Capspray CS5100** have many of the features we liked but they are only two-stage units. They are both however, available as three-stage models, but at a price higher than \$600. In fact, you can get three-stage models for most of the two-stage units represented in our test.



PHOTO COURTESY OF MANUFACTURER

Wagner Softspray 2600; \$475

3-stage machine

This system has everything we liked except the power cord is mounted right next to the switch so it gets in the way when turning the machine on and off and the fluid pickup tube can't be adjusted while spraying.

THE FIELD				TURBINE				HOSE	
Brand	Manufacturer/ Customer Service	Model	Street Price*	Stages	Tool-Free Filter Changes	Conveniently Mounted Switch, Hose and Power Cord	Gun Holster	Hose Length In Ft.	
Rockler	(800) 279-4441	HVLP 1000	\$100	2	Y	N	Y	15	
Campbell Hausfeld	(866) 247-6937	HV 1000	\$172	2	Y	Y	Y	15	
Campbell Hausfeld	(866) 247-6937	HV 1500	\$215	2	Y	Y	Y	15	
Campbell Hausfeld	(866) 247-6937	HV 2000	\$221	2	Y	Y	Y	15	
Wagner	(800) 328-8251	Finecoat Plus	\$255	2	Y	Y	Y	15	
Campbell Hausfeld	(866) 247-6937	HV 2500	\$321	2	Y	Y	N	25	
Wagner	(800) 328-8251	Finecoat 2000	\$366	2	Y	Y	Y	15	
Lemmer	(800) 561-6908	T-55	\$425	2	N	Y	N	25	
Accuspray	(800) 465-2325	22SP	\$470	2	Y	Y	N	10	
Graco	(800) 690-2894	HV-2500	\$525	2	Y	Y	Y	30	
American Turbine	(800) 328-4827	AT 950	\$530	2	N	Y	N	25	
SprayTech/Capspray	(800) 443-4500	CS5100	\$575	2	Y	N	Y	30	
Lex-Aire	(800) 539-2473	LX-30C	\$595	2	N	Y	N	20	
Apollo Spray	(888) 900-4857	A 700	\$600	2	N	Y	N	14	
Campbell Hausfeld	(866) 247-6937	HV 3000	\$430	3	Y	Y	N	25	
Wagner - Best Buy	(800) 328-8251	Softspray 2600	\$475	3	Y	N	Y	20	
Fuji	(800) 650-0930	Super	\$500	3	Y	Y	N	25	
Turbinaire	(800) 866-4857	MiniPro 1135	\$550	3	Y	Y	N	25	
Campbell Hausfeld	(866) 247-6937	3500	\$594	3	Y	Y	N	25	
Fuji	(800) 650-0930	Q3	\$600	3	Y	Y	N	25	
Titan - Editors' Choice	(800) 526-5362	TS40	\$600	3	Y	Y	N	20	
Wagner	(800) 328-8251	Softspray 2900	\$580	4	Y	N	Y	25	

* see Sources, page 92 for street-price vendor list.



Titan TS40; \$600

3-stage machine

This system has almost everything we liked: a nonbleeder gun, self-adjusting fluid pickup tube, front-mounted switch and hose connection, rear-mounted power cord and onboard tool kit. It only lacks a gun holster.

You Should Also Know About

There are HVLP spray guns that are designed to run off regular compressed air. They're called HVLP conversion guns and they offer the same low-overspray high-transfer advantages of a turbine system. One advantage these guns have over turbine-powered HVLP guns is that conversion guns hook up to a regular small-diameter high-pressure air hose. This is easier to pull around than the larger hose on a turbine unit. Some of these guns are available for less than \$200 but most cost twice that, or more (see Sources, page 92). Some run on a 1- or 1-1/2-hp compressor but many require a 5-hp compressor or bigger and you still have to be on guard against moisture and oil in the air supply. If you have an appropriate compressor, and a way to extract the moisture and oil, then going with a HVLP conversion gun might save you some money.



Lynx-3 HVLP Conversion Gun.

PHOTO COURTESY OF MANUFACTURER

GUN								COMMENTS
Non-Bleeder Gun	Easy-to-Adjust Air Cap	Finely Adjustable Fluid and Air Controls	Metal Gun Body	Insulated Handle	Two Air Hose Connections	Adjustable Fluid Pickup Tube While Spraying		
N	Y	N	N	n.a.	Top only	N		Has no air control valve.
N	N	N	N	n.a.	Top only	N		
N	N	N	N	n.a.	Top only	N		
N	N	N	N	n.a.	Top only	N		Has small built-in spare parts/toolbox.
N	Y	N	N	n.a.	Top only	N		Has no air control valve.
N	N	N	N	n.a.	Top only	N		
N	Y	Y	N	n.a.	Top only	N		
N	N	Y	Y	N	Bottom only	N		
N	Y	Y	N	Y	Bottom only	N		Has a short hose because the turbine is designed to be hung from operator's shoulder via a strap.
Y	Y	Y	Y	Y	Bottom only	N		Has built-in spare parts/toolbox.
N	Y	Y	Y	Y	Bottom only	N		
Y	Y	Y	Y	Y	Y	Y		Hose and switch mounted on opposite sides of the turbine.
N	N	Y	Y	N	Bottom only	N		
N	Y	Y	Y	Y	Y	N		
N	N	N	N	n.a.	Top only	N		
Y	Y	Y	Y	Y	Y	N		Switch and power cord mounted too close together.
N	Y	Y	Y	N	Y	N		
N	Y	Y	Y	N	Bottom only	N		
N	Y	Y	Y	Y	Y	N		
N	Y	Y	Y	N	Y	N		
Y	Y	Y	Y	Y	Y	Y		Has built-in spare parts/toolbox.
Y	Y	Y	Y	Y	Y	N		Switch and power cord mounted too close together. AV

n.a.: Not applicable because gun has only a top air connection

Hold It! Roll It! Hang It! Store It!

Edited by Randy Johnson

Small Shop Tips

TOP 2" x 2" x 8'

BOTTOM 2" x 2" x 8'

WINDOW FAN WITH FURNACE FILTER

Spray Booth for Waterborne Finishes

Fifty bucks and a few hours is all it takes to put together this finishing booth. It keeps overspray off my tools and dust off my projects. Since I use waterborne finishes, I'm able to use a regular box fan in the window to vent the fumes. A furnace filter over the fan keeps overspray off the fan blades. Before spraying I thoroughly sweep my shop floor, put down paper and crack open my garage door several inches to make up for the air being blown outside by the fan.

I built the booth by first stapling an 8-ft. by 8-ft. piece of plastic to the ceiling. Then I stapled the top edge of the plastic to 2x2s, which I screwed to the ceiling rafters. Once the plastic walls were hung, I stapled 2x2s to the bottom edge of the plastic. I cut a hole in the back plastic wall for the fan. To store the plastic walls I roll them up and hang them on loops of rope that hook onto screw heads. This booth also works great for brushed-on finishes.

Brent Greer



NOTE: This setup is for spraying waterborne finishes only.

ART DIRECTION: VERN JOHNSON • PHOTOGRAPHY: BILL ZUEHLKE, UNLESS OTHERWISE INDICATED



Tubular Storage

Here's my solution for storing skinny things like wood trim and edge banding. I bought a 12-in.-dia. by 8-ft.-long cardboard concrete form at a home center for about \$14. I slid plywood dividers into the tube and added a few screws to hold the dividers in place. I hung it from the ceiling in my basement with plumber's strap. Get plumber's strap at a home center for about \$2 for a 10-ft. roll. It took one roll to hang my storage tube.

George R. Hoffman

Spray Can Storage

I'm a great fan of aerosol finishes, especially now that many of them have adjustable tips that make much less splatter. But my shop got so cluttered with half-used cans that I had trouble finding the color I wanted, so I built this simple storage rack for all the cans. Now I can instantly find just the color I'm looking for. The shelves need to be 5-in. deep, but the angle isn't critical. Anything between 45 to 75 degrees will work. Mine is 70 degrees.

Tim Johnson



Tablesaw Tool Drawer

It seems like I'm always misplacing my push sticks, blade wrench, featherboards and other small table-saw accessories. To solve my problem I added a shallow drawer under the side feed table. I simply built a wood box that was open in the front and screwed it to the bottom of my side table. Then I installed a drawer using a set of 22-in. full-extension heavy-duty drawer slides (see Sources, page 92). The slides cost me \$14 and I used leftover plywood. It didn't cost much but it sure provides a lot of convenience.

Tom Caspar

AW

If you have an original Small Shop Tip, send it to us with a sketch or photo. If we print it, you'll get \$100! Send your tip to: **Small Shop Tips, American Woodworker, 2915 Commers Drive, Suite 700, Eagan, MN 55121 or e-mail to smallshoptips@readersdigest.com.** Submissions can't be returned and become our property upon acceptance and payment. We may edit submissions, and use them in all print and electronic media.

3-year Index

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The Wagner Advantage

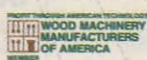
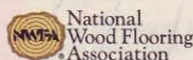
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What's Coming Up

in AW #102, Sept. 2003



Arts and Crafts Table

Jon Stumbras is assembling the pieces of a small round table, perfect for putting next to your favorite big chair. It's got contemporary lines, but is actually a scaled-down version of a hidden gem from the American Arts and Crafts movement, made 100 years ago by the Limbert Company in Holland, Michigan.

Brad Nailer Tool Test

What's the *real* difference between a \$50 and a \$300 brad nailer? Tim Johnson has vowed to find out in our next tool test. He's poking and prying into virtually every 18-gauge nailer on the market.

Simple Kitchen Upgrades

Don't you wish you had designed your own kitchen cabinets? Think of all the cool ways you could make them more roomy and useful. Mac Wentz has three simple projects that turn ordinary kitchen cabinets into custom-built problem solvers.

Go Anywhere Drill Caddy

Bits, drivers, countersinks, extra battery: where is all that stuff when you need it? Jan Carr is putting the final touches on a small carrying box that organizes all the essentials for drilling and driving.

Foolproof Scraper Sharpening

Does it feel like your card scraper only works half the time, and you can't figure out why? Tom Caspar is taking the mystery out of how to sharpen this incredibly useful tool, using what he calls the world's simplest jig. He says that any woodworker can make shavings like those pictured here the first time out of the gate.



PHOTO COURTESY OF MANUFACTURER



Sources

Where to buy all the stuff we used.

Q&A page 10

Better Brush Cleaning

Wilson-Imperial Co., (800) 332-6050
www.wilsonimperial.com

Rapid Brush cleaner; \$8 per qt.

Wooster Brush Co., (800) 392-7246

www.woosterbrush.com
Brush comb; \$8

Flood Co., (800) 321-3444
www.floodco.com

Brush Stuff brush conditioner; \$7 per qt.

When Should I Sharpen My Blade?

Woodworker's Supply, (800) 645-9292
www.woodworker.com
OxiSolve blade cleaner; #828-418; \$9 per 8 oz.

Workshop Tips page 16

Drawer Slide Tracing Jig

Woodworker's Hardware, (800) 383-0130
www.wwhardware.com
10" drawer slides, #KV8400-B10; \$13 pr.

Rockler, (800) 279-4441, www.rockler.com
36" #21746, T-slot track; \$10 ea.
18-5/16" x 1-1/2" T-slot bolt, #83311; \$1 ea.
T-knob, #71514; \$1 ea.

Mobile Magnetic Light

Woodcraft, (800) 535-4482
www.woodcraft.com
Magnetic work light, #09L06; \$25

Long Tenoning Sled

Highland Hardware, (800) 241-6748
www.tools-for-woodworking.com
Toggle clamp, #166105; \$7

Handy Dandy Craft Sticks

Gramco School Supplies, Inc., (800) 788-5250
www.gramcoonline.com
#2499; \$3 for 1,000

Well-Equipped Shop page 22

Price-Cutting Saw

Delta Machinery, (800) 438-2486
www.deltawoodworking.com
MS250, 10" Compound Miter Saw; \$100

Kink-Free, Lightweight Air Hose

Coilhose, (732) 390-8480, www.coilhose.com
1/4" x 25' coil; \$18

1/4" x 25' straight; \$19

Rock-Solid Coping Sled

Eagle America, (800) 872-2511
www.eagle-america.com

Original Coping Sled; \$40

Replacement Guide Block; \$10

Pro Model Coping Sled; \$60

Replacement Guide Block; \$15

Space-Saving Cyclone System

Oneida Air Systems, (800) 732-4065
www.oneida-air.com
\$882; \$977

Online Carving Classes

www.2carve.com

Basic HVL Spray Techniques page 28

Lab Safety Supply, (800) 356-0783

www.labsafety.com

Half-mask respirator; 3M 6000 series, #15255;
\$12 (available in small, medium and large)
Organic vapors/P100 filter cartridge, #34270;
\$21

Northern Tool and Equipment,

(800) 556-7885, www.northerntool.com
Halogen light, 500 watt, with stand, #160982-
B226; \$20.

TV Cabinet page 40

Lee Valley & Veritas

(800) 871-8158, www.leevalley.com
Two Iron Pendant Pulls, 01A60.30; \$6 ea.
Two Iron Oval Pulls, 01A60.40; \$7 ea.
Twelve Part Wrap Iron Hinges with Minaret
Tips, 01H31.50; \$4 ea.
One 18" Black Full-Extension Drawer Slide,
02K11.18; \$16 ea.
Four 3/8" x 1/10" Rare Earth Magnets,
99K32.03; \$0.50 ea.
Four 3/8" Cup for Magnets, 99K32.52; \$0.50 ea.
Four 3/8" Washers, 99K32.62; \$0.40 ea.
One 1/2"-high Roman Ogee Bit, 16J33.51
(16J33.01 for 1/4" shank); \$27
One 1/2" radius Cove Bit, 16J29.58 (16J29.08
for 1/4" shank); \$29
One 1/2" radius round-over bit, 16J27.58
(16J27.08 for 1/4" shank); \$28
One 1" radius round-over bit, 16J27.66; \$57
One 1/2" flush-trimming bit, 16J09.58; \$12
One 45-deg. chamfer bit, 16J30.58 (16J30.08 for
1/4" shank); \$21

Public Lumber Company, (313) 891-7125,
www.publiclumber.com

Two 3/4" birch plywood; \$50 ea.
Two 3/4" clear or knotty pine plywood; \$70 ea.
One 1/4" clear or knotty pine plywood; \$40 ea.
50 bd. ft. pine; \$4 per bd. ft.

Adams Wood Products, (423) 587-2942

www.adamswoodproducts.com,
Four 5" Maple Bun Feet, A0554-DS; \$8 ea.

Woodworker's Supply, (800) 645-9292
www.woodworker.com

One pint Titebond wood molding glue,
921-971; \$7

One gal. sealcoat (shellac), 119-459; \$23

Woodcraft, (800) 225-1153

www.woodcraft.com
One Trans Tint Golden Brown Dye, 128482; \$17

Staining Pine page 52

Minwax

(800) 523-9299, www.Minwax.com
Waterbased Pre-Stain Wood Conditioner 1-qt.; \$8

Klingspor's Woodworking Shop

(800) 228-0000
www.woodworkingshop.com
Tranfast water-soluble dye, HS3266, antique
cherry brown; \$9 per 1 oz. bottle

Wood Finishing Supplies.com

(866) 548-1677
www.woodfinishingsupplies.com
Zinsser Sealcoat dewaxed shellac (2-lb. cut); \$8
per qt.

Dick Blick Art Materials

(800) 828-4548, www.dickblick.com
Van Dyke Brown artist's oil
00461-8313 1.25 oz. tube; \$5
Liquin glazing medium
00445-1004 250 ml. Bottle; \$9

Norton Abrasives

(800) 551-4415, www.nortonabrasives.com
Stearated sandpaper
3X High Performance Abrasive Paper
100-, 150-, 220-grit 3-packs; \$4 ea.

Tool Test: HVL Spray Systems page 56

Accuspray 22SP; \$470

(800) 696-0615,
www.compliantspraysystems.com

American Turbine ATI 950; \$530

(877) 434-3951, www.mikestools.com

Apollo A700; \$600

(800) 727-6553, www.advmachinery.com

Campbell Hausfeld

HV1000; \$172 / HV1500; \$215 / HV2000; \$221
HV2500; \$321 / HV3000; \$430 / HV3500; \$594
(410) 692-6300, www.jacksmallengines.com

Capspray CS5100; \$575

(888) 385-9969, www.o-geepaint.com

Fuji

Fuji Super; \$500
(941) 613-1017, www.cheyennesales.com
Fuji Q3; \$600
(800) 645-9292, www.woodworker.com

Graco HVL2500; \$525

www.o-geepaint.com
(888) 385-9969

Lemmer T-55; \$425

www.lemmer.com
(800) 561-6908

Lex-Aire LX-30C; \$595

(800) 539-2473, www.lexaire.com

Rockler HVL 1000; \$100

(800) 279-4441, www.rockler.com

Titan TS40; \$600

(800) 338-1042, www.jnequipment.com

Turbinaire MiniPro 1135; \$550

(800) 225-1153, www.woodcraft.com

Wagner

Softspray 2900, \$580 / Softspray 2600; \$475
Finecoat 2000; 366 / Finecoat Plus; \$255
(228) 863-3942, www.glempaint.com

Small Shop Tips page 64

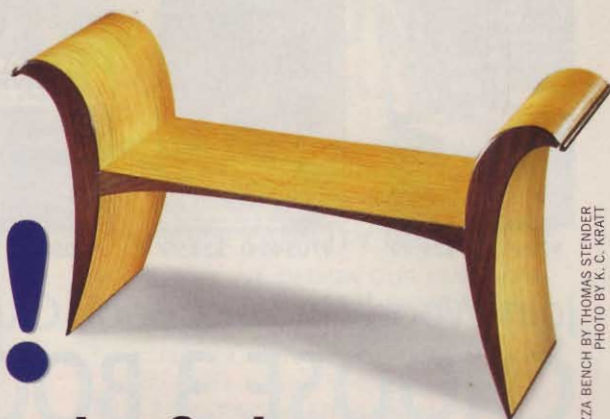
Tablesaw Tool Drawer

Woodworker's Hardware, (800) 383-0103,
www.wwhardware.com
22" drawer slides, #KV8400-B22; \$12 pr.

Great Wood! page 94

Gilmer Wood Co., (888) 667-3979;
www.gilmerwood.com, \$17/bd.ft. for plain
stock, \$25 and up for figured stock; Note: \$100
minimum order on lumber.

Great Wood!



SPREZZA BENCH BY THOMAS STENDER
PHOTO BY K. C. KRATT

Beeswing Ceylon Satinwood

Look beyond the striking beeswing figure in Ceylon satinwood and you'll find something else very special—the color. Ceylon satinwood has a beautiful pale yellow to golden yellow color often accented with darker streaks. But the coolest thing about Ceylon satinwood is that it *retains* its color, changing very little over time.

The combination of stable color and spectacular figure is what made Ceylon satinwood one of the “great woods” of the 18th-century masters. Early cabinetmakers used satinwood veneers to create stunning effects. Ceylon satinwood is still largely used as a veneer. But solid wood is also in demand, not only for edging to match the veneer but also for box making, turnings and as fine detail in larger pieces.

Named for its natural satin-like sheen, Ceylon satinwood is often figured; a wavy, narrow ribbon figure is most common. But, anything from mottle, roe, ribbon, broken stripe to the beeswing figure featured here can be found in any given tree. Beeswing simply refers to a pronounced but very fine mottled figure. Like the ray fleck in white oak, the beeswing is most pronounced when the wood is quartersawn.

Ceylon satinwood (*Chloroxylon swietenia*) grows in the dry deciduous forests of Sri Lanka (formerly Ceylon) and Southern India.

Ceylon satinwood is as hard as ebony, with a specific gravity of .80, so it's a bit of a bear to machine or work with hand tools. But, Ceylon satinwood is well behaved on the lathe.

Ceylon satinwood glues and finishes well. Because of its beautiful color, it's usually given a natural finish without any stain or dye. Sanding to 400 grit will yield a glass-like surface that almost doesn't need a finish. A natural oil finish will deepen the yellow color to produce a warm, amber tone. **AW**

“Beeswing” is a great way to describe the figure in this piece of Ceylon satinwood. The shimmering “wings” combine with a deep yellow color and a soft, silky smooth appearance to create a truly stunning visual effect.

Ceylon satinwood's unique look comes at a pretty stiff price. Figured Ceylon satinwood like this runs about \$25 a bd. ft.

PHOTO BY MIKE HABERMANN

Sources See page 92

Know of some Great Wood? We'd love to hear about it.
Write to us at greatwood@readersdigest.com.

ART DIRECTION: PATRICK HUNTER

Oops!

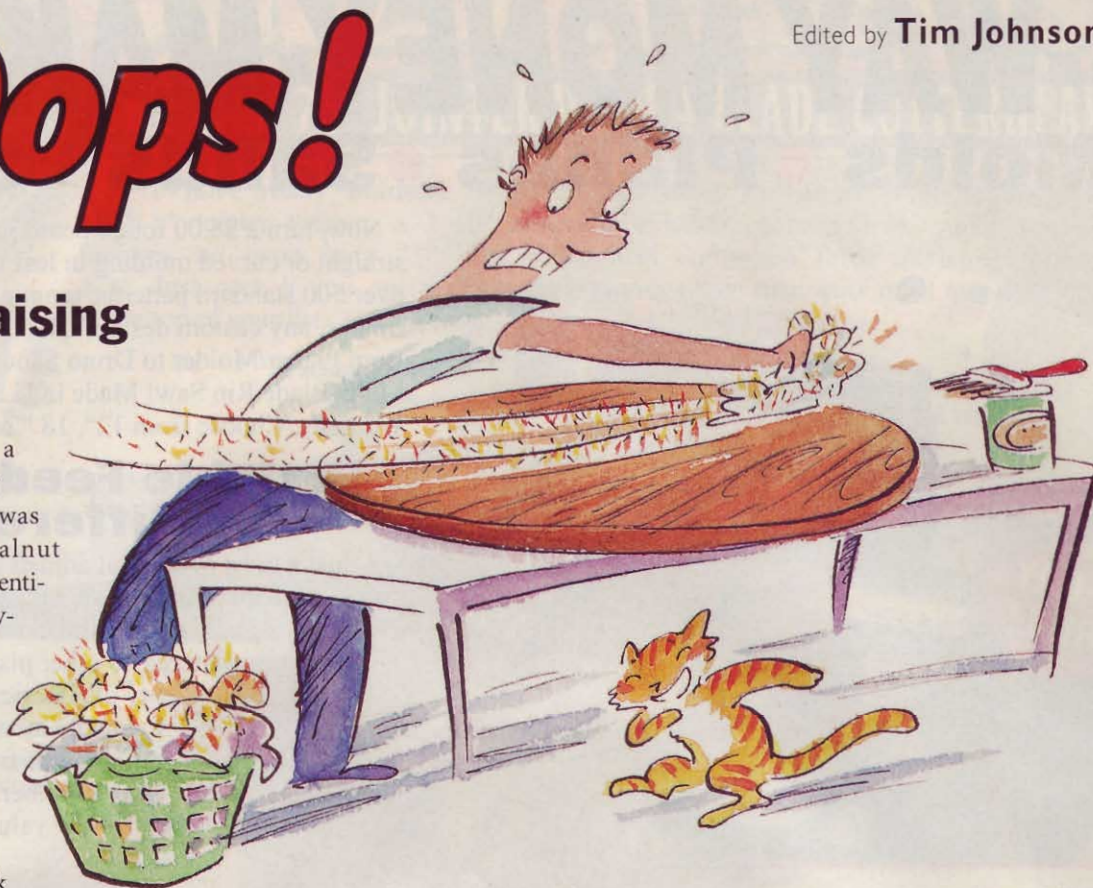
Edited by **Tim Johnson**

Hair-Raising Finish

I had just built a lazy Susan for my in-laws. It was made from walnut that had lots of sentimental value, having come from a magnificent tree that once stood on their family farm. I wanted the wood to look really special, so I

chose an oil finish, the kind you brush on generously and allow to soak in. Then you just have to wipe off the excess oil before it dries.

Just after I'd slathered on the oil, I got distracted by a lengthy phone call (from a fund-raiser, of course!).



Unfortunately, the oil sat on the surface so long it got tacky. Panicked, I grabbed the nearest rag—from the old laundry basket where I store them—and began wiping furiously. Only then did I realize that Abby, the family cat, had discovered that the laundry basket

made a perfect bed! My special finish was a tacky, furry mess.

Fortunately, more oil, followed by wiping with *clean* rags, saved the day. My in-laws were thrilled with the lazy Susan and Abby has lived to achieve a ripe old age.

Dave Prasuhn

Master Planner

My two boys, Steven and Daniel, and I enjoy doing woodworking projects together. We're currently making oak end tables and a walnut sofa table from a set of plans that I bought. The plans are for three tables—we're not making the coffee table that completes the set.

As project organizer, I deciphered the instructions and assigned jobs. We labored many hours making legs with hand-cut mortises and tenons. Unfortunately, during assembly we noticed that we had two walnut legs for one of the oak end tables and two oak legs for the walnut sofa

table. We also had a number of oak pieces that appeared to go to the coffee table that we were not making.

Tomorrow I'll go to the lumberyard for more oak and walnut. Next time, we'll highlight the parts we need on the plans and check all the parts after rough machining, to make sure they're correct, before we spend the time on joinery!

Gary Arvan
AW

If you have a woodworking blunder you're willing to share, send it to us. You'll receive \$100 for each one we print. Send to: **AW Oops!, American Woodworker, 2915 Commers Drive, Suite 700, Eagan, MN 55121, or e-mail to oops@readersdigest.com.** Submissions can't be returned and become our property upon acceptance and payment. We may edit submissions, and use them in all print and electronic media.