



PROJECTS

PLANS

TIPS

JIGS

TOOLS

Canadian Woodworking

OCTOBER/NOVEMBER 2008
Issue # 56

DEVELOP YOUR SKILLS • TOOL YOUR SHOP • BUILD YOUR DREAMS

Oriental Style

Display Stand

Window Shutters

Accent Your Home

Dust Collection

for Small Shops

Mortising Jig

Turns Router into Mortiser

Applying Stains

Like a pro

PLUS: 3 Great Projects:

Ear Plugs • New Generation of Jewellery

Scroll Saw • Yellowknife

Chess Pieces • Complete Your Set

CanadianWoodworking.com

\$4.95

PUBLICATIONS MAIL REG. NO. 40035186



KING rules the workshop!

Professional woodworking machinery for every shop...

Priced for yours



KC-1433FXR

14" WOOD BANDSAW
WITH RESAW GUIDE
• Powerful 10 amp. motor

KC-1702FXR

14" WOOD BANDSAW
WITH RESAW GUIDE
• Powerful 16 amp. motor

KC-520C

20" HEAVY-DUTY PLANER
• Industrial 3 HP (220V) motor

KC-385FX

15" PLANER
• Industrial 3 HP motor

KC-26-1-D

26" x 12" SINGLE DRUM SANDER
• Industrial 2 HP (220V) motor

KC-60FX

6" WOODWORKING JOINTER
• Industrial 1 1/2 HP motor

KC-788FX

6" x 48" BELT & 12" DISC SANDER
• Industrial 1 1/2 HP motor

KC-26DS

26" x 12" DUAL DRUM SANDER
• Industrial 3 HP (220V) motor

KC-10FX/KRF-100T50-32 (Right Tilt)

KC-11FX/KRF-100T50-32 (Left Tilt)

10" HEAVY-DUTY TABLE SAW
WITH INDUSTRIAL RIP FENCE
SYSTEM
• Industrial 3 HP (220V) motor



KING CANADA

www.kingcanada.com



2 YEAR WARRANTY

PUBLISHERS

PAUL FULCHER, LINDA FULCHER

EDITOR

CARL DUGUAY

CONTRIBUTING EDITOR

MICHAEL KAMPEN

WRITERS

BRUCE CAMPBELL, PAUL DEBRUYN, MARTY SCHLOSSER, DON WILKINSON

PHOTOGRAPHER

RAY PILON

PREPRESS

BONNIE WITTEK

GRAPHIC DESIGN

GERRY WIEBE

ADVERTISING

(519) 449-2444

PROOFREADER

ROBERT E. JOHNS

SUBSCRIPTIONS

MAUREEN FULCHER

1-800-204-1773

CANADIAN WOODWORKING

One year subscription (6 issues) \$24.95
Single-copy price \$4.95

G.S.T. REG. #878257302 ISSN #1497-0023

PUBLICATIONS MAIL AGREEMENT No. 40035186

RETURN UNDELIVERABLE CANADIAN
ADDRESSES TO CIRCULATION DEPT.

CANADIAN WOODWORKING

RR 3 BURFORD, ON N0E 1A0

E-mail: circdept@canadianwoodworking.com

COPYRIGHT 2008 BY CANADIAN WOODWORKING
MAGAZINE DIV. OF SAWDUST MEDIA INC.

TEL (519)449-2444 FAX (519)449-2445

e-mail: letters@canadianwoodworking.com

website: www.CanadianWoodworking.com

REPRINTING IN WHOLE OR PART IS FORBIDDEN EXCEPT
BY WRITTEN PERMISSION FROM THE PUBLISHERS.

PLEASE EXERCISE CAUTION WHEN WORKING WITH ANY TOOLS OR
MACHINERY. FOLLOW COMMON SAFETY RULES AND PRECAUTIONS AS
OUTLINED IN ANY MANUALS RELATED TO THE EQUIPMENT BEING USED.
THIS PUBLICATION IS SOLD WITH THE UNDERSTANDING THAT (1) THE
AUTHORS AND EDITORS ARE NOT RESPONSIBLE FOR THE RESULTS OF
ANY ACTIONS TAKEN ON THE BASIS OF INFORMATION IN THIS PUBLICA-
TION, NOR FOR ANY ERRORS OR OMISSIONS; AND (2) THE PUBLISHER
IS NOT ENGAGED IN RENDERING PROFESSIONAL ADVICE/SERVICES. THE
PUBLISHER, AND THE AUTHORS AND EDITORS, EXPRESSLY DISCLAIM
ALL AND ANY LIABILITY TO ANY PERSON, WHETHER A PURCHASER
OF THIS PUBLICATION OR NOT, IN OR RESPECT OF ANYTHING AND OF
THE CONSEQUENCES OF ANYTHING DONE OMITTED TO BE DONE BY
ANY SUCH PERSON IN RELIANCE, WHETHER WHOLE OR PARTIAL, UPON
THE WHOLE OR ANY PART OF THE CONTENTS OF THIS PUBLICATION. IF
ADVICE OR OTHER EXPERT ASSISTANCE IS REQUIRED, THE SERVICES OF
A COMPETENT PROFESSIONAL PERSON SHOULD BE SOUGHT.



Mixed Sources

Product group from well-managed
forests, controlled sources and
recycled wood or fiber

www.fsc.org Cert no. SW-COC-2036
© 1996 Forest Stewardship Council



DEPARTMENTS

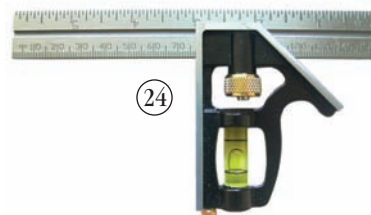
- 2 LETTERS TO/FROM
- 8 WOOD FINISHING: **APPLYING STAINS**
- 24 SHOP ESSENTIALS: **COMBINATION SQUARES**
- 28 SKILL BUILDER: **MORTISE AND TENON**
- 36 SHOP TOOLS: **DUST COLLECTORS**
- 40 COMING EVENTS
- 42 SHOP ESSENTIALS: **FACE SHIELD RESPIRATORS**
- 52 WOOD CHUCKLE

CONTENTS

OCTOBER / NOVEMBER 2008

PROJECTS

- 4 **DISPLAY STAND**
By MICHAEL KAMPEN
- 10 **CHESS SET PART 3**
By BRUCE CAMPBELL
- 12 **EAR PLUGS**
By PAUL DEBRUYN
- 16 **DUST COLLECTION**
By MARTY SCHLOSSER
- 20 **WINDOW SHUTTERS**
By CARL DUGUAY
- 41 **SCROLLSAW**
By MARCUS CUTLER
- 45 **MORTISING JIG**
By THE EDITORS



FEATURE



Cover photo by Ray Pilon



LINDA FULCHER

Thanks to everyone who took the time to fill out the first of our three surveys; the response was better than expected, and much higher than the industry average. Here are some highlights.

Most readers (93%) have their own workshop – 56% of you work in your garage, and 30% have shops in the basement. 38% have a shop space under 300 square feet, 31% have less than 500 square feet and a fortunate 22% have over 500 square feet. Keep dreaming you other 7% - your shop will come!

70% of you are in the shop at least once a week (40% two to three times a week), which works out to about 11 hours per week of quality tool time -more than you spend on the internet (8 hours a week).

41% rate yourselves as having intermediate to advanced level skills (you can build almost anything from scratch), while 39% can build most things, but still have some reliance on plans. Only 20% build simple project straight from plans. It's no surprise then, that 40% of you have been woodworking for over 20 years, 20% have over 10 years experience, and 27% of you have been making sawdust for between 4 and 10 years.

Most of you own homes (94%), 42% are involved in home improvement and home renovation projects – so you will want to check out our home improvement article on window shutters in this issue. We also take a look at some improvements you can do to your shop in the area of dust collection (since 93% of you make dust).

The data from this first survey has helped us get a much better picture of who our readers are. In the next two surveys, scheduled for September and November, we'll get a better idea of what you think about the content of our magazine, web site and newsletter.

Thanks again.



PAUL FULCHER

If you don't know someone who has just gotten a tattoo, or has just had their body pierced, then you might want to (re)connect with some of the younger members of your family or circle of friends. Body piercing has becoming quite popular with today's youth, and its' popularity is growing. In fact, a recent survey reports that half of the college student questioned said that they had non-traditional body piercings (i.e. other than the lower ear lobe).

Combine that statistic with the fact that woodworkers are always looking for new and unique projects to turn into gifts, and do I have a project for you! (see Custom Designed Ear Jewellery, page 12)

Being a father of three university students, I have seen my fair share of 'plugs'. But, when Paul deBruyn walked past me at a woodshow, sporting the largest plugs that I had ever seen, and made from a combination of gorgeous exotic woods, I had to call him over to 'take a better look'.

When I found that he had made them himself, and that he sells them around the world from his website (www.PaulsPlugs.com), I knew that I wanted to share his project and expertise with you.

I reasoned that it would be an ideal project for a seasoned woodworker to introduce a younger protégé to the art of turning. I also thought that it would make a great gift for some of those younger people on our gift lists that we just don't have a clue as to what they like.

What happened next however was still a bit of a surprise. My youngest (daughter) noticed us working on Pauls article, and started to ask when it would be printed. Then, her friends started asking about its publication date. It wasn't long before I started getting pressure to "hurry up and print it", because "everyone is waiting for it."

So here it is. I hope that Pauls unique project is as popular with your kids (and circle of friends) as it was with mine.

CORRECTIONS: Aug/Sep '08, Issue #55

Page 19: The building in the Yellowknife pattern belongs in neighboring Inuvik. The appropriate building should have been the Prince of Wales Northern Heritage Centre.

Page 30: "Blue Tornado R916 (busybee.com)" should have read "Craftex Blue Tornado R917 (busybeetools.com)"

Page 33: The Hitachi Micro Drill Driver (DB10DL) is \$149.95 not \$320.00



EDITOR
CARL DUGUAY
cduguay@canadianwoodworking.com



CONTRIBUTING EDITOR
MICHAEL KAMPEN
mkampen@canadianwoodworking.com



PHOTOGRAPHER
RAY PILON
rpilon@canadianwoodworking.com



FORUM ADMINISTRATOR
BILL MACDONALD
bmacdonald@canadianwoodworking.com

New Product Not On Shelves..Yet.

I saw in your Tool Picks (Aug/Sept'08 Issue #55) a Craftsman Digital Miter Gauge that fits any slotted table. However, when I went to the Sears store (Kitchener location), they did not have it in stock, and seemed unaware of that product.

Please let me know where I can get one! Thanks. Edward F., Kitchener, ON



- We published that piece with

the understanding that the product would be available by press time. I have since confirmed that they are now available at Sears across Canada.

Yellowknife Scroll Saw Pattern

Just got my latest magazine from you - very good - keep up the good work.

The Yellowknife scrolling pattern (Aug/Sep '08, Issue #55) shows a building I'm not familiar with - is it a church from Inuvik? I lived in Yellowknife for 16 years and this is not in my memory - I think I might have seen it in Inuvik when I visited there. Wayne S., Camrose, AB

- You're right, that pattern was mislabeled, and in fact that is the church in Inuvik. We present the corrected Yellowknife pattern in this issue.



Continued on page 27

PAUL FULCHER EXTRA COPY
CANADA'S WOODWORKING & METALWORKING SPECIALISTS

Carpenters Combination Square



- Length: 12"/300mm on both models
- Graduations: 32nds, 16ths, mms

Model B753
 Reg \$59.99 **\$47.50**



Triton Wood Rack

LOWEST PRICE OF THE YEAR!



Model WRA001
 Reg \$79.99 **\$37.77**



23 Gauge Pin Nailer



- Takes nails from 1/2" - 1"
- 2 Year warranty

Model CT119
 Reg \$79.99 **\$38.88**



16" Variable Speed

Scroll Saw

new!



- Stroke - 11 - 16"
- Blade Speed: 400 - 1600 SPM

Model CW40
 Reg \$219.00 **\$189**

Transparent Dust Collection Kit



- Size: 2 1/2"
- Allows instant locating of blockage

Model B2460
 Reg \$115.00 **\$74.98**

4pc Dust Accessories Kit



- Includes: 10 feet of 4" PVC hose, 1 universal dust hood & 2 wire clamps

Model W1054
 Reg \$39.99 **\$24.88**



Portable Downdraft Table



- 6 Adjustable stops

Model CT120
 Reg \$159.00 **\$118**



Portable Dust Collector



- 1 HP, 600 CFM
- 3 Year warranty

Model CT126
 Reg \$189.00 **\$168**



Canister Filter for 1 HP DC's



- Upgrade your current unit
- 1 Micron canister

Model CT053CH
 Reg \$185.00 **\$138**



1 HP Dust Collector

THOUSANDS SOLD!



- 1 Micron bag
- 570 CFM
- 3 year warranty

\$155
 Model CT053
 Reg \$265.00



Canister Filter for 2 HP DC's



- V-Weave filter design increases filter area over 6 times

Model CT095CH
 Reg \$225.00 **\$188**



2 HP Dust Collector



- 1 Micron Bag
- 1280 CFM
- 3 year warranty

\$258
 Model CT095N
 Reg \$369.00



3 HP Dust Collector



- Balanced 12" steel impeller
- 1900 CFM
- 1 Micron top bags
- 3 year warranty

Model CT118
 Reg \$599.00 **\$428**



Two Stage Cyclone Dust Collector



- Only 76" tall
- 2 HP, 220V
- 1 Micron canister
- 3 year warranty

\$1328
 Model CT122
 Reg \$1599.00



5 HP Dust Collector



- 5 HP, 220V
- 3500 CFM
- 1 Micron top bags
- Bag volume: 26.2 cubic feet
- 3 year warranty

\$1288
 Model B2151A
 Reg \$1750.00

PRICES EXPIRE OCTOBER 11th, 2008



Busy Bee Tools

busybeetools.com

1-800-461-BUSY (2879)

New Westminster - Concord - Mississauga - Ottawa - London - Barrie - Pickering - Dartmouth N.S. - Calgary - Edmonton



Oriental Style Display Stand

This Oriental style stand looks just as good displaying your favourite indoor plant as it does a more traditional bonsai.

Bonsai is the ancient art of growing trees in a container and through careful cultivation techniques, training them into a miniature form. Bonsai can be any species of tree, but there are several species, including Japanese white pine, Trident maple and Chinese juniper, that are favoured for their ability to adapt to the traditional appearance and form of the bonsai. These are not genetic dwarf specimens, but rather are the same as the full size version found in the wild; they have been trained through the years to resemble the full size version in potted miniature.

The oldest bonsai known to exist can be found at Happon-en, a private garden in Tokyo, and are between 400 and 800 years old.

After spending years training a bonsai, it stands to reason that it should be displayed on an appropriate stand. This stand, made from African padauk is a common bonsai style display stand. It will age to a deep red colour that will compliment the natural tones of any bonsai. If you have a black thumb and growing your own bonsai is out of the question, the table can be used as a display stand for any other cherished personal item.

Mill the Stock

Begin by milling your stock to thickness, and then cut the pieces to final dimension. The stock I used was flat and straight, so I was able to get a final $\frac{7}{8}$ " from the 1" rough boards, by taking light passes with the jointer and planer. Using 1 $\frac{1}{8}$ " or thicker stock is advisable if your boards are cupped or twisted.

The Slat

Begin by crosscutting the blanks from which the individual slats will be ripped.

- Use a clamp to set a stop block on the fence of the cross cut sled (Feb/Mar '07, Issue #46) and trim all of the slat pieces (A, B) to 16". Tilt the saw blade to 73° to undercut the edges of the slat blanks. You'll need to move the stop block closer to the blade for this; estimate the location and make a test cut to find the proper setback for the stop block. Leave just a hair over $\frac{5}{16}$ " untouched at the top edge of the piece. This flat edge will register on the stop block.

- Set up a piloted 45° chamfer bit in your router table and rout a $\frac{3}{16}$ " wide chamfer on the top edge of the slat blanks. Preparing the ends before ripping the slats to width

will eliminate any possibility of tear-out.

- Joint one edge, rip the first piece from the board, and then lightly joint the cut edge of blank to remove any saw tooth marks. Then repeat this process until all the pieces are cut to width. When milling narrow stock it's prudent to use a push block (Dec/Jan '08, Issue #51) and feather boards (Apr/May '08, Issue #53).

- Run all of the slats through the thickness planer to remove any saw marks from the other side of each piece.

- Drill a $\frac{5}{8}$ " deep dowel hole centered 2" in from the end of each slat. I use a Dowelmax jig, dowelmax.com to drill all of my dowel holes and simply lined up the edge of the jig with the edge on the bottom end of the slat.

The Runners

- Beginning at an end of one of the runners (C), place a pencil mark every inch along the runner. Place the other runner beside it and use an engineer's square to extend the lines across both pieces at once.

- Use a marking gauge to scribe the center of each piece and drill the dowel holes where the lines intersect. If you are using a Dowelmax, line the end of the jig up with the end of the runner and then use the

second hole. After drilling the hole, move the jig down to the next line and repeat.

- Use a marking gauge to mark the locations of the two dowel holes on the underside of the runners and drill these out now.

- When all the holes have been drilled, dry fit the runners and slats with dowels. Mark the length of the runners at the outside edges of the slats. Place another mark back approximately $\frac{1}{8}$ " to $\frac{3}{16}$ ", and use a bevel gauge to mark an angle on the end of the runner. Cut the angle by hand or on a compound mitre saw and chamfer the bottom and sides of each end with a block plane.

The Feet

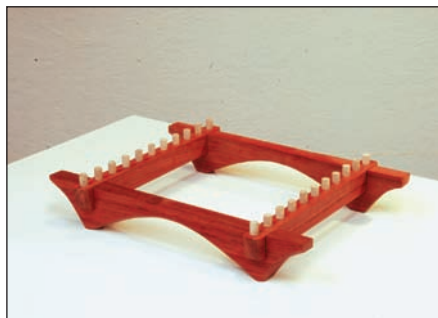
- Cut the pieces for the feet (D) to length.
- Assemble the slats and runners and set them inside a framing square to keep the assembly square. Center the feet (side to side) on the runners and mark the location of the runners. Use a right angle square to extend the lines across the piece. Mark the bottom of the cut at $1\frac{1}{8}$ " down from the top edge.



Drilling holes in top of runners



Pieces ready to assemble



Base assembled

Padauk

The African padauk (*Pterocarpus dalbergioides*) I chose for this project is grown in central and west tropical Africa. The wood has similar working properties of the more pedestrian domestic red oak that we're all familiar with. The predominantly straight grain can be interlocked which leads to some chipping and splinters and the fine to medium texture of the wood possesses a natural sheen. When freshly cut the heartwood is a rich reddish-orange, but over time with exposure to light it changes to bright red, red with dark streaks or dark reddish brown. Colour variation between boards is slight.

The wood is aromatic when milled and fills the shop with a spicy scent. As with cedar, some people are sensitive to this

dust and adequate dust collection and personal protective gear is recommended when sanding or cutting. Over time even those not affected by the dust initially may develop sensitivity to it. The wood is extremely stable and shows very little movement in use. Padauk is very resistant to attack by termites and other insects and the heartwood is very durable and may last for more than 25 years in contact with the ground without any preservative treatment, but its cost makes it prohibitive for the construction of fences and sheds. Quarter-sawn stock with interlocked grain tends to tear in planing, but it machines, drills and finishes very nicely. The porous nature of this wood means that oil finishes will tend to seep out of the pores as it dries, much like red oak.

- Use a bandsaw to cut along the inside of the lines and then move to the scroll saw to cut across the bottom. Aim for a tight fit between the feet and the runners, as this is what will keep the table square.

- Clamp the feet to a workbench and clamp the pieces you cut out for the notches over the lower side of the piece where the legs will be. Find the center of the space between the legs and place a mark $1\frac{1}{2}$ " up from this. Place a stainless steel ruler across the two clamped blocks and use finger pressure to bend the ruler up to the center point and trace the outline with a soft pencil. You also need to trace a curved outline on the outer sections on each piece.

- Use the bandsaw and cut the curves, and then use a stationary belt sander or oscillating spindle sander to remove any saw marks and fair the curve.

- Use a 45° chamfer bit on the router table and rout a chamfer on the curved edges.

The Finish

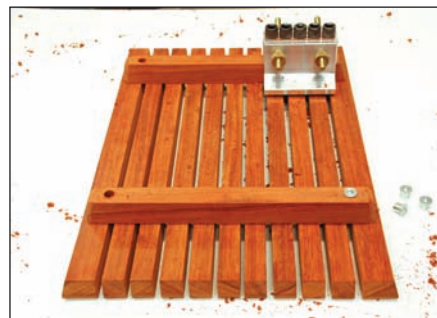
Beginning with 150 grit, sand all of the pieces up to 180 grit. To sand the chamfered edges without the risk of

damaging the profile use a sanding mop, stockroomsupply.com in a drill press. If you are using padauk or any other porous species, be sure to blow the sanding dust out of the pores. If the sanding dust is used as filler, much of the natural figure and colour variation will be lost as the piece takes on a more 'average' appearance.

Following the instructions on the can, apply a coat of Watco Danish Oil, homehardware.com to all pieces. Once the oil is dry apply a couple of coats of wax to protect the wood from any moisture. Do not get any finish or wax in the dowel holes or the glue will not adhere. In short order, this piece will acquire a deep red appearance as the wood is exposed to light.

Assembly

Assemble all of the slats and runners upside down on your bench to be sure everything fits without any problem. Use a carpenter's square to keep the assembly square. Place dowel centers into the four holes in the runners for the feet. Line the feet up so the center of the hole is close to the center of the piece and use a dead blow



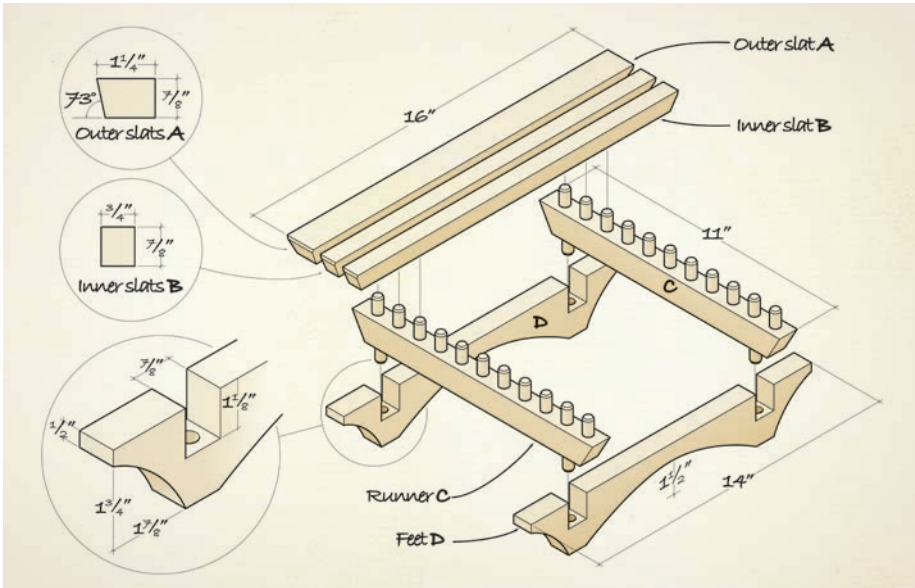
Drilling holes in bottom of runners



Mark edge of front to locate dowel jig

MATERIALS LIST (All measurements in inches)

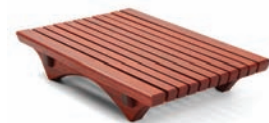
Part		Qty	T	W	L
A	Outer slats	2	$\frac{7}{8}$	$1\frac{1}{4}$	16
B	Inner slats	9	$\frac{7}{8}$	$\frac{3}{4}$	16
C	Runners	2	$\frac{7}{8}$	$\frac{1}{8}$	11
D	Feet	2	$\frac{7}{8}$	$2\frac{1}{4}$	14



mallet to tap the two legs to mark the center of the dowel hole. Drill the holes on a drill press to ensure the holes are perpendicular to the surface.

Disassemble all of the pieces and glue the dowels into the feet and then glue the runners in place. If you cut the notches for the runners carefully the frame should come together square. Glue the dowels into each slat and then glue the slat into the runners. Be sure that each slat is fully seated before the glue sets up. When the glue has fully cured, give the project a wipe with a paper towel to buff up the wax.

This is an enjoyable weekend project to make. You can tweak the design to suit the environment in which the stand will be displayed by using a different wood, altering the dimensions, or substituting a flat edge rather than a curve on the feet.



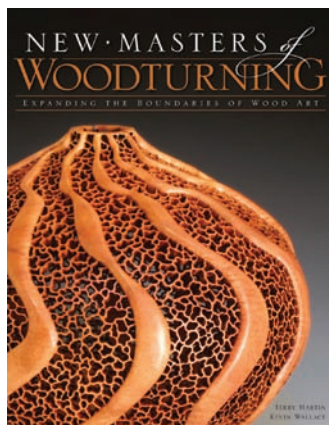
MICHAEL KAMPEN
mkampen@canadianwoodworking.com

Illustration by: www.JamesProvost.com

bookpicks BY THE EDITORS

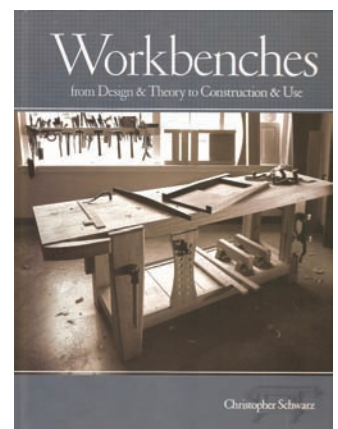
New Masters of Woodturning

- A collection of groundbreaking work from 31 masters including noted Canadian turners Michael Hosaluk, Stephen Kennard and Marilyn Campbell
- Discusses their signature styles and exciting new techniques
- Gallery of 396 superb photos
- 216 pages, 8 1/2" x 11"
- ISBN: 1565233344 (softcover \$20.76), 1565233751 (hardcover \$48.48)



Workbenches: From Design & Theory to Construction & Use

- Covers a wide range of practical issues in workbench design and construction
- Copious photos
- Lots of tips and practical advice
- Plans for French style and English style workbenches
- Christopher Schwartz, 2007, 144 pages, 8 3/4" x 11 1/4", hardcover
- ISBN: 1558708405 (hardcover), \$32.99



www.FoxChapelPublishing.com 800-457-9112

Available from: www.Amazon.ca
or order through your local bookseller

www.FoxChapelPublishing.com 800-457-9112

Available from: www.Amazon.ca
or order through your local bookseller

WELCOME TO THE NEW STONE AGE.



Introducing **HARDCORE** Solid Granite table and fence systems on select Steel City® machines.

Tables and fences made of solid granite. It makes perfect sense if you think about it. Granite is harder than stainless steel. It absorbs vibration better. It will never rust, spring, twist or warp. It resists scratches and stains. And it provides a seamless, continuous work surface. So we kept asking ourselves, "why wouldn't we use solid granite tabletops?" But a better question might be, "why hasn't anyone else?" With other new features including a cabinet saw with a riving knife guard system and jointers with the largest, flattest fences available, you could say we've entered a new era of tool making.

Visit steelcitytoolworks.com to find your nearest distributor.



BY WOODWORKERS. FOR WOODWORKERS.



Applying Stains

Try using stain to make even the most ordinary project look extraordinary.

Choosing a stain can be a confusing experience, as there are numerous types of stains and quite a few different manufacturers. Basically, a stain is any liquid that contains a colouring agent (a pigment, a dye, or a combination of the two) and a binder that bonds the pigment or dye to the wood. Pigments are finely ground insoluble natural or synthetic materials suspended in a binder, which is why they typically settle to the bottom of the can of stain. Dyes, on the other hand, are coloured soluble substances that dissolve in the binder, which is why you don't get any goop at the bottom of the can. Synthetic dyes are referred to as 'aniline dyes'; they use solvents rather than binders.

Pigment stains remain on the surface of wood, lodged in pores and surface scratches, while dyes saturate wood fibres. Dye stains come in a much wider range of colours than do pigment stains, and they are more uniform in colouring wood, but

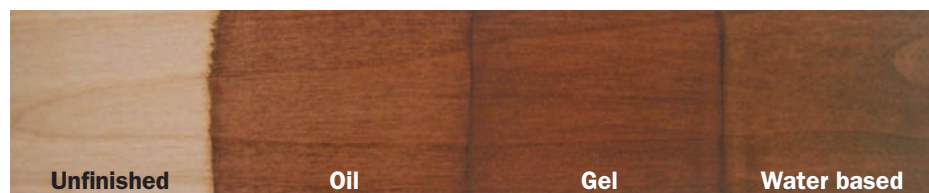
they fade much more quickly in direct sunlight than do pigment stains. Stains that contain both pigments and dyes obviously benefit from the qualities of both.

In most hardware and home improvement centres you will find oil stains, varnish stains and water based stains. Oil and varnish stains also come in a 'gel' formulation, which contains a substance that resists flowing.

On a lot of projects woodworkers use the same wood species in both a solid wood form and as a plywood. Cabinet sides, shelves, and doors are often made of plywood, with the framing done in solid wood. Typically any exposed edges of plywood are covered with solid wood edging. Again, this can pose a problem when applying a stain. The veneer on plywood is very thin, so thin on some brands that you can easily sand through the top in a matter of seconds with a random orbital sander. The veneer is usually rotary cut (sliced off the log as it rotates on a lathe), and then glued, heated and pressed onto the plywood core, and finally sanded. Not only will the wood fibres be crushed, it stands to reason that some of that glue will migrate to the top surface of the veneer. It's no wonder that the plywood will take stain

differently than the solid wood.

For important projects I always buy 'architectural' or 'cabinet' grade plywood, bclumberandplywood.com, welbecksawmill.com, woodshedlumber.com. Typically the face veneer on the good side will be one continuous sheet. Building supply stores typically carry a lower grade of plywood (and usually in a few common species). Often, the face veneer is made up of multiple parallel bands of veneer joined together and running the length of the sheet. The bands may not be matched, and more often than not there are even gaps in the glue lines. When a stain is applied, the glue lines will likely absorb stain differently than the veneer. While more expensive, cabinet grade plywood is consistently of better quality. Exercise caution when transporting, storing and milling the plywood; the sheets are unwieldy to handle and it's very easy to dent or scratch them. There are several products that simplify the



Alder



End grain

task of carrying sheet goods, including the Gorilla Gripper, woodline.com and Panel Tote, leevalley.com.

Proper sanding of both solid wood and plywood is a key to achieving optimal results when staining. Make sure that you do a final sanding by hand, in the direction of the grain. Shine a light across the surface of the wood at a 45° angle; it will help you see any imperfections that need attending to. On coarser open grained species (like ash or oak) you can sand up to 180 or 220 grit, but on close tight grained species (such as maple and cherry) sand up to 120 or 150 grit. If you sand these woods too smooth they will have difficulty absorbing the stain. Pay special attention to end grain. The deep open pores provide cavities for the stain to lodge, which is why end grain usually stains darker than face or edge grain. You can reduce this by either sanding the end grain much smoother (which burnishes the pores and reduces their ability to absorb stain), or you can apply a wood conditioner.

It's important to remove excess glue completely, particularly around joints. I let the glue set for around 30 minutes and then remove it with a sharp chisel that I reserve for this purpose. I then use a card scraper or sandpaper to remove any residue that may remain in the pores. Prior to staining, ensure that you remove the dust; you can use compressed air (though you risk contaminating the wood if you haven't installed an in-line filter to remove oil laden air from the air lines), a tack rag, or wipe the surfaces with a cloth dampened with mineral spirits (if you are using an oil based stain) or water (if using a water based stain). If you wipe it down with water the grain will rise, and you will need to lightly

sand the raised wood fibres before applying the stain.

It's good practice to make sample boards (from cut-offs of the solid wood and plywood from the project) to test the stain that you plan to use. If you anticipate using the same species of wood and colour of stain again, record details on the back side of the sample boards and retain them for future reference. It's very discouraging to discover that the stain you just applied to a finished project is much too dark. If it's a pigment stain you'll likely have to sand down to bare wood in order to apply a lighter stain (or live with the darker stain). If you used an aniline dye you can easily lighten the stain by applying its solvent, even after the dye has dried.

Some woods, such as pine, cherry, and birch, are blotch prone - they absorb stain unevenly. There are two options to deal with woods that blotch. My preference is simply to use a gel stain. These thicker stains don't penetrate wood grain as much as thinner liquid (oil or water based) stains. The second option, which you can try if you choose to use an oil or water based stain, is to apply a wood conditioner before staining. The wood conditioner will help the wood absorb the stain more evenly. Be generous with the conditioner, and remember to wipe it off before it dries on the wood.

Stains can be applied with a paintbrush, foam brush, by rag, or spray. Liquid stains, particularly water based stains, dry fairly quickly, so on large surfaces you want to maintain a wet edge, to avoid lap marks. If they do occur lay on a second coat of stain after the first one has dried. Of course, the best way to avoid this problem is to spray

on the stain. On any project that will likely be exposed to direct sunlight, use a pigment stain - it's much more lightfast. For projects that require vibrant, bright colours, or where you need to match an existing stain as closely as possible, use dyes. Any stain will result in a darker colour if you leave it on longer, or if you re-apply it after the initial stain has dried.

Over the years I have tried stains from a number of companies, and the ones that I have had consistent success with are Varathane, rustoleum.com, Bartley, woodessence.com and Circa 1850, circa1850.com. The Varathane stains are made with clear soya oil to provide maximum colour clarity, and premium translucent pigments in a proprietary anti-settling formula that does away with the need to constantly stir the stain during application.

But don't take my word for it; you really need to try several different stains to find one that suits your needs. Most are available in half-pint sizes for around \$5 a can. Once you've latched onto a stain that you like, experiment with it on the woods that you typically build with. Try different finishes on top of the stains as well.

You wouldn't expect to cut perfect dovetails the first time you try, so you shouldn't expect to get perfect staining results without some practice. But you will be surprised just how easy it is once you've invested a little time in honing your staining skills.

CARL DUGUAY
cduguay@canadianwoodworking.com

VaraEasy



Don't have enough time to stain and topcoat your wood? Now you do, thanks to **Varathane® Water Based Stain & Polyurethane**. It stains, seals and protects your wood in one easy step. Plus, it offers superior protection, is easy to clean up and it's virtually odourless. Makes your choice pretty easy, doesn't it?

VARATHANE. WOOD'S FIRST CHOICE™ FOR 50 YEARS.  **RUST-OLEUM®**
CONSUMER BRANDS CANADA





Part 3 Chess Set

In this final article Bruce shows you how to decorate the tops of the queens, rooks, bishops and kings.

In my last article (Aug/Sep '08, Issue #55), I showed you how to make a collet plug. You'll need this plug to finish turning the chess pieces. I always try to apply any finish to my pieces before taking them off the lathe.

Queens

The Queens need crowns. Use the collet plug to hold the queen by the base. Cut the inside of the top away until the wall is about $\frac{1}{16}$ " thick and extend the dome on her head until the two curves meet well below the rim. Sand and finish the top and remove the queen from the chuck.

The last step is to scallop the crown. To do this I use a $\frac{1}{2}$ " drum sander in a rotary tool. Simply hold the drum at 45° to the rim and sand away a section. Move to the next area and sand again until this new scallop just touches the last one. Continue around the rim until it is entirely scalloped. I prefer to have an odd number of scallops and I try to make each one about the same width and depth. If you use a fine sanding drum the surface will be ready for finish.

Rooks

The rooks need to have their ramparts hollowed out. Mount the rook by the base using the collet plug. Use a $\frac{1}{16}$ " scraper to

hollow out the top to a depth of $\frac{1}{4}$ " leaving a $\frac{1}{8}$ " wall. Sand and finish the inside and top. To finish the rook, six equally spaced slots must be cut in the rampart walls. Again I use the bandsaw, but this time it takes two side-by-side cuts to make the slot wide enough.

Mark out six equally spaced lines on the outside of the rampart. If you have an index head on your lathe use it to do this. Otherwise, you will need to space them out by hand. Again, use a piece of scrap wood under the rook's head to level it. Remember, you will be cutting two slots at once – one on the top and one on the bottom – so level it carefully. Then feed the piece directly into the blade just to the left of the layout line. Repeat the cut on the right.

Do this two more times and you will have the six slots done. If you are careful these cuts will be fairly clean; however they can be easily cleaned up with a small bastard file. Complete the rooks by rubbing some finish inside the slots.

Bishops

The bishop has a cut in the head set off at 45° running to the center line. I do this using my bandsaw where the kerf of the

blade creates a cut that is just about the right width. Arrange the bishop on its side with a piece of waste wood under the head that is thick enough to have the bishop lay level. Slowly feed the whole assembly into the saw at a 45° angle until you are half way through, and then back out. If you do this carefully no sanding or cleanup will be required and the bishops will be finished.

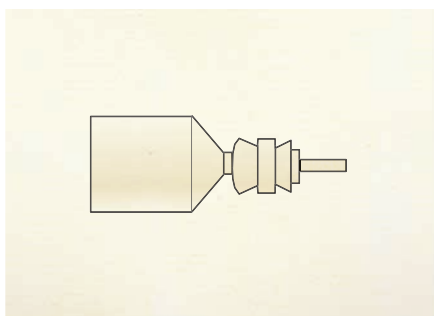


Kings

Mount the king with a collet plug, and then sand and finish the top. The top of the king has a post on it with a ring around the post. If you remove the sides of the post it will suddenly transform into a cross. I do this on the corner of my coarse grinding wheel and then finish it off with a file and fine sandpaper.

Additional Decorations

One simple and very useful decoration is to switch the heads on the bishops so the dark ones have light heads and vice versa. This is helpful in reducing the chances that a player mistakes a bishop for a pawn or



Cross for King turned separately

the other way around. To do this use a very thin kerf saw to remove the head of the bishop just above the top ring. Then sand the surfaces smooth and glue the heads to the opposite colour bases.

Another easy decoration is to turn the crosses of the kings from a different material and glue them on afterwards. Tagua nut, horn, faux ivory, soapstone or aluminum are all attractive choices for this. When finishing the top of the king, cut off the cross (or leave it off to start with) and

drill a hole in the center of the head. Then, turn the cross separately leaving a post on the bottom the same size as the hole you drilled in the king. Remove the sides of the turned piece to create the cross and then glue it in place.

Finally, if you are very adventurous you can turn all the bases from another material such as brass or aluminium leaving a post on each. Turn just the tops from wood, drill a hole in the bottom and glue them to the bases. This alternative looks very impressive and can be done with your wood turning tools just like you would turn wood. But, how to turn and finish metal is a topic for another time.

I hope you enjoy making your chess set and get years of enjoyment from using it.

BRUCE CAMPBELL
bvcampbell@telus.net

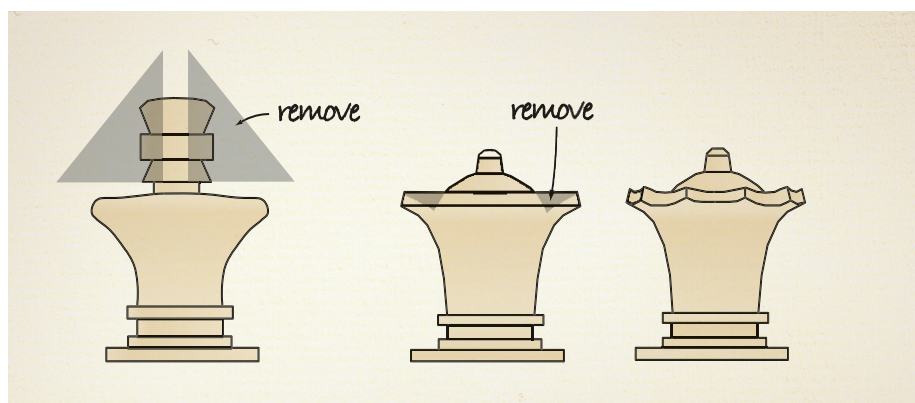


Illustration by: www.JamesProvost.com

(L) On the King, remove the sides of the post; (R) On the Queen, scallop the collar

Vara Clear



If you're looking for professional results and long-lasting beautiful wood floors, your choice is clear. Varathane® Water Based Diamond™ Floor Finish will protect your floor from everyday scuffs and scratches better than any other clear finish on the market. It's clearly the best.

VARATHANE. WOOD'S FIRST CHOICE™ FOR 50 YEARS.  **RUST-OLEUM**
CONSUMER BRANDS CANADA





Custom Designed Ear Jewellery

Stretching ear lobes (and other body parts) has been done by various peoples around the world for thousands of years. Now it is becoming popular in our culture. If you don't believe me, ask the younger adults in your family. Chances are you'll find that most people know someone with a stretched lobe or two.

For the past six years I have been creating custom designed ear jewellery, called plugs, in all shapes and sizes. I've used exotic woods such as Gabon ebony, amboyna burl, pink ivory, olivewood, bloodwood and many others that I import from around the world. While I have around a dozen standard styles that my customers can choose from, I revel in creating custom plugs where I can let my creativity flow.

In this article I'll show you how I create a set of 1" 'inlaid eyelets' made from two of my favourite woods, bloodwood and amboyna burl.

First, I cut and prepare the blanks I am going to use with a plug cutter (leevalley.com) on my drill press. A lot of turners will prepare their blanks from square stock but I have found that cutting my blanks this way

cuts down on waste, saves time and is a lot easier to chuck on the lathe. I always make my blanks around 1/4" larger than what I need, to allow for turning and sanding. For this plug I prepared two 1 1/4" bloodwood blanks for the outer piece and one 7/8" amboyna burl blank for the centers.

Turn the Outer Piece

Generally I turn one plug at a time. With



Blanks drilled out with plug cutter



True and size outer piece



Using awl to mark 1/2" diameter



Turning hole for center piece



True and size center piece



Center piece fits into outer piece



Glue center and outer pieces together



Shaping inside of plug



Sanding plug to final shape



Plug completed



Final buffing



Finished ear plugs

VaraTrue



Ever notice how linseed oil-based stains have a yellow quality to their colours? Not so with Varathane® Premium Wood Stains. Their unique soya oil-based formula not only penetrates deeper into wood, it also results in truer, cleaner, richer colours – all 24 of them. Let your imagination go wild.

VARATHANE. WOOD'S FIRST CHOICE™ FOR 50 YEARS. **RUST-OLEUM**
CONSUMER BRANDS CANADA



everything prepared I head to the lathe and secure the first blank in the chuck. I turn the outer piece true and slightly oversized to allow for what is called a 'flare' or 'saddle' shape that helps hold the plug in the earlobe. These flares generally range from 1 to 2 mm deep.

I follow this by marking and scoring the blank with a sharp awl to the desired thickness, which will typically be ½". Again I'll make it just a bit larger to allow for turning and sanding.

Sanding is the real key to finishing my plugs. I'll turn the outer piece down to a fraction above the desired size and use sandpaper to achieve the desired size. I usually start with a really coarse 150 grit sandpaper and sand up in increments until I reach 2000 grit.

With the outer side of the outer piece done I now turn my attention to its face, where I'll mark out the center so I know how much to take out to allow for the amboyna to be inserted later on. Once the inside of the plug is turned, I repeat the procedure for the second plug.

Turn the Center Piece

After the outer piece is turned I chuck the amboyna blank onto the lathe and turn it to the same size as the center hole in the bloodwood plugs. This is the trickiest part of the whole procedure as it is almost impossible to get the center of the main plug cut straight through. I have to constantly keep checking to make sure the amboyna insert fits perfectly on both ends. You want to take your time here, as it's quite easy to make the center piece too small.

I now repeat this process for the second plug, as most people come with two ears. After both sets of outer pieces are complete I glue and press the pieces together and leave them clamped to dry overnight. When the plugs are dry I rechuck each plug individually and turn a hole in the center of the amboyna insert. Then I roughly shape the centers with a skew chisel so they have a nice curve, and follow this with sandpaper.

Sanding is where the plug takes its real shape. Again I sand with 150 to 2000 grit sandpaper. This step is repeated twice per

plug. I also give them a light coating of jojoba oil during this step, which I wipe off immediately. This acts as a natural stain and helps bring out the natural colour and grain of the wood.

After the plugs are completely turned and sanded I head over to my bench grinder, on which is mounted a buffing wheel, and give them a final high speed buffing with all natural carnauba wax. This helps to remove any fine surface scratches, and also gives them a gloss finish, which helps seal the wood.

While I have created many intricately designed plugs over the past few years I find these inlayed eyelets are still one of my favourites. I love the simplicity of the design, which highlights the natural colour and beauty of each wood.



PAUL DEBRUYN
www.PaulsPlugs.com

WOLVERINE GRINDING JIG

Producing razor sharp tools and finely finished bevels has moved from an art into a science.

Our Grinding Jig can be easily used to sharpen skewers, scrapers, bowl gouges, roughing gouges, & parting tools. The WOLVERINE Grinding Jig will speed up your grinding, give you sharper tools, and prolong the life of both tools and wheels.



JIG CONTAINS:
• TWO BASES
• PLATFORM
• SLIDING ARM

THE INSTRUCTIONAL VIDEO CAN NOW BE DOWNLOADED FROM OUR WEBSITE

* Grinder not included.

"...next to a solid lathe and a good set of tools, the Wolverine Grinding Jig by Oneway is the best investment an amateur or occasional turner can make."

WOOD Magazine
November 2003, Issue 152

1-800-565-7288
www.oneway.ca

ONEWAY
MANUFACTURING

LARGEST SELECTION OF QUALITY WOODWORKING EQUIPMENT, HAND & POWER TOOLS AND ACCESSORIES IN SOUTHWESTERN ONTARIO

Mini Max 16" BANDSAW S400P

The Minimax S400P, with its solid build, advanced components, and user-friendly controls will become your most trusted shop machine

OUR
BEST SELLING
BANDSAW



KEY FEATURES

- 16" resaw capacity
- 4.8hp (1x230v), S-1 rated 60hz motor
- 5mm thick steel chassis
- Flywheels weigh 25 lbs. each
- 13 lb. cast iron fence with quick drift adjustment
- 17.75" x 24.5" cast iron table with indexing pin
- 154" blade length
- 530 lbs. net weight

Federated
TOOL SUPPLY
CO LTD.

1581 Oxford St., E., London, ON
Directly across from Fanshawe College
519-451-0100 • Toll Free: 800-387-0608
www.federatedtool.com

DEWALT

DELTA[®] FORCE

INSTANT BONUS PROMOTION

ONLY WHILE QUANTITIES LAST, DEWALT HEAVY-DUTY COMBO KITS COME BONUS PACKED WITH THESE SELECTED DELTA[®] HIGH PERFORMANCE WOODWORKING TOOLS :

\$349
VALUE

**BONUS****Heavy-Duty XRP™ 1/4" 18V Impact Driver Kit****WHEN YOU BUY :**

17-959LDW	17" FLOOR DRILL PRESS WITH LASER, LAMP & TOOL TRAY
31-300DW	12" DISC 6 X 48" BELT SANDING CENTRE
36-715BDW	10" LEFT TILT HYBRID SAW WITH T230 30" UNIFENCE
36-716BDW	10" LEFT TILT HYBRID SAW WITH T230 30" UNIFENCE
36-717BDW	10" LEFT TILT HYBRID SAW WITH BC30 30" BIESEMEYER COMMERCIAL FENCE
36-718BDW	10" RIGHT TILT HYBRID SAW WITH T230 30" UNIFENCE
36-719DW	10" RIGHT TILT HYBRID SAW WITH T230 30" UNIFENCE
36-720DW	10" RIGHT TILT HYBRID SAW WITH BC30 30" BIESEMEYER COMMERCIAL FENCE
37-275XDW	X5 6" PROFESSIONAL JOINTER WITH 3/4 HP ENCLOSED STAND
46-715DW	14" WOOD LATHE WITH STAND

\$399
VALUE

**BONUS****Heavy-Duty XRP™ 18V Cordless 2-Tool Combo Kit****WHEN YOU BUY :**

22-790XDW	X5 15" PLANER 1 PH 3HP WITH DELUXE ROLLER STAND
28-682DW	18" WOOD BAND SAW 230 V 1 PHASE
28-745XDW	X5 14" BANDSAW, ENCLOSED STAND 1-1/2 HP
31-260XDW	X5 18" X 36" DRUM SANDER WITH STAND
36-750BDW	10" LEFT TILT DELUXE HYBRID SAW WITH 50" BIESEMEYER FENCE SYSTEM
37-365XDW	X5 D120 8" JOINTER 115/230V 1-1/2 HP, 1 PH, MANUAL SWITCH

\$749
VALUE

**BONUS****Heavy-Duty XRP™ 18V Cordless 5-Tool Combo Kit****WHEN YOU BUY :**

33-995XDW	X5 12" RAS 2HP 1PH 115/230 MANUAL SWITCH
36-R31X-U50DW	X5 RIGHT TILT UNISAW™, 3HP, 1PH WITH 50" UNIFENCE
36-L31X-U50DW	X5 LEFT TILT UNISAW™, 3HP, 1PH WITH 50" UNIFENCE
36-R31X-BC50DW	X5 RIGHT TILT UNISAW™, 3HP, 1PH WITH 50" BIESEMEYER FENCE
36-L31X-BC50DW	X5 LEFT TILT UNISAW™, 3HP, 1PH WITH 50" BIESEMEYER FENCE
36-L1X-BC50DW	X5 LEFT TILT UNISAW™, 5HP, 1PH WITH 50" BIESEMEYER FENCE
43-495XDW	X5 HEAVY-DUTY WOOD SHAPER, 3HP, 230 1PH MANUAL SWITCH
46-755XDW	X5 16" STEEL BED WOOD LATHE 2HP 230V

AVAILABLE AT THESE PRECISION WOODWORKING RETAILERS :

BRITISH COLUMBIA

Summit Tools	Burnaby	(604) 294-1743
House Of Tools	Campbell River	(250) 286-1060
Midland Tools	Courtenay	(250) 754-6742
The Tool Place	Kamloops	(250) 374-2411
The Tool Place	Kelowna	(250) 860-6404
House Of Tools	Langley	(604) 534-4853
Midland Tools	Nanaimo	(250) 754-6742
Vernon Tool Centre	Vernon	(250) 492-4321
House Of Tools	Victoria	(250) 391-4555
Island Saw & Tool	Victoria	(250) 385-5500

ALBERTA

House Of Tools (32 Ave., N.E.)	Calgary	(403) 250-6683
House Of Tools (72 Ave., S.E.)	Calgary	(403) 640-4594
House Of Tools (McLeod Trail)	Calgary	(403) 258-0005
House Of Tools (Edmonton S.)	Edmonton	(780) 944-9988
House Of Tools (Edmonton N.)	Edmonton	(780) 944-9600
Marson Equipment	Edmonton	(780) 489-3356
House Of Tools	Lethbridge	(403) 380-4609
House Of Tools	Medicine Hat	(403) 529-2700
House Of Tools	Red Deer	(403) 356-0007

SASKATCHEWAN

House Of Tools	Regina	(306) 352-2550
House Of Tools	Saskatoon	(306) 653-5555

MANITOBA

Winnipeg Tools & Fasteners	Winnipeg	(204) 779-2100
----------------------------	----------	----------------

ONTARIO

Angelo's Electric	Barrie	(800) 236-0317
Welbeck Saw Mill	Durham	(519) 369-2144
TEGS Tools & Machinery (Barton St.)	Hamilton	(905) 545-5585
TEGS Tools & Machinery (Upper James St.)	Hamilton	(905) 388-0784
Ideal Supply/Global Tools	Listowel	(800) 265-3335
Federated Tool Supply	London	(800) 387-0608
Markham Industrial	Markham	(905) 477-5192
Millbank Country Hardware	Millbank	(519) 595-4212
Ottawa Fastener	Nepean	(613) 828-4117
Preston Hardware	Ottawa	(613) 230-7166
Larry Electric	Peterborough	(705) 743-3167
Markham Industrial	Pickering	(905) 420-2448
Art's Tool Sales & Service Ltd.	St. Catharines	(905) 646-0728
G.P. McEachern Ltd.	Thunder Bay	(807) 623-4951
Angelo's Electric	Toronto	(800) 236-0317
Atlas Machinery	Toronto	(416) 598-3553
Week's Home Hardware	Waterdown	(905) 689-6618

QUEBEC

Centre D'Outillage Industriel Brobec	Blainville	(514) 948-5540
Distributions Cuisi-Lam Inc.	Chicoutimi	(418) 545-1700
Outils Pierre Berger	La Prairie	(450) 444-3882
NORDIQUES	Quebec	(418) 525-4811
Centre D'Outillage Industriel Brobec	St. Laurent	(888) 948-4220
Centre D'Electricité Jérôme	St-Jerome	(450) 436-8488

MARITIMES

Rideout Tool & Machine Inc.	Corner Brook	(866) 634-3294
Rideout Tool & Machine Inc.	Dartmouth	(877) 577-9943
Rideout Tool & Machine Inc.	St. John's	(877) 898-5360

DELTA[®]

www.precisionwoodworking.ca

Copyright ©2008 DEWALT. The following are examples of trademarks for one or more DEWALT power tools and accessories: the yellow and black color scheme; the "D" shaped air intake grill; the array of pyramids on the handgrip; the kit box configuration; and the array of keystone-shaped humps on the surface of the tool.



Cyclone Dust Collection

for a Small Shop

Cyclone collectors provide an efficient and effective alternative to conventional dust management systems for professional and dedicated amateur woodworkers.

After expanding my shop and adding some additional machinery, I realized that I needed to upgrade my dust collection system. At the time my table saw and planer were connected to a shop-built cyclone dust collector, and I used a shop vacuum to collect dust at source from my other machines or other power tools as needed.

In this article I'll walk you through the process I followed in selecting and installing my shop's new cyclone dust collection system. The transition from an unhealthy and sometimes unsafe environment to one that's virtually dust-free and a joy to work in took a fair amount of research, somewhat more money than a shop built system, and a lot of hard work, but the end result was worth it.

Shop Layout - The Starting Point

The first step involved laying out a simple floor plan for my expanded shop. The shop is divided into two areas, a milling room, and a bench/finishing room. The cyclone was to be located in a small nook in the back of the milling room, and connected to the table saw and mitre saw, which would remain stationary, and to the jointer and planer, which would need to be movable to facilitate milling of long boards. I decided to include a 2 ½" flex hose drop near my mitre saw, to service less frequently used power tools, and a floor sweep near the jointer.

The floor plan, size of the machinery, and knowing which machines I'd likely have powered on at the same time, determined the size and type of ducting and fittings

required to connect them to the dust collector. More importantly, it also told me the two critical figures I needed to select a dust collector that would satisfy my shop's requirements. The first figure, CFM (cubic feet per minute), denotes the collector's capacity required to clear away chips, shavings and dust. The second figure, SP (static pressure), is the resistance encountered by the air stream and particulate as it makes its way down the ducting system. Although there are a few books that walk you through the process to determine the CFM and SP peculiar to your set-up, I particularly liked how Air Handling System's website, airhand.com/designing.asp, simplifies the process. According to their calculations, I needed a dust collector capable of delivering 850 CFM at 8" of SP.

Other Considerations

I knew from my previous set-up that I wanted a cyclone separator. Unlike single-stage collectors, these units divert the heavier material and dust away from the filter so it can do its job more efficiently. That capacity comes with a price though, and I don't mean only money. Most cyclones are taller than other styles of dust collectors and my shop's ceiling is 8'. I also needed to ensure my shop's electrical system could accommodate the extra power requirements of the dust collector. For health reasons, I wanted a system capable of filtering out the dust particles most harmful to your health - those in the .2 to 10 micron range. Because I have a basement shop, a relatively quiet operating system was preferred, and of course, one that would be reliable. Finally, I wanted the system to have an easy-to-dump, relatively large capacity dustbin. After some comparative shopping I elected to go with the Oneida Air Systems Pro Series 1500, oneida-air.com. The Oneida system met all my requirements (along with a five year warranty); and the friendly folks at Oneida helped me design my ducting system and answered my many questions.

Preparing Machinery for Hook-up

The machinery you'll connect to a cyclone system need to be outfitted with properly sized dust ports, or your dust collection performance will suffer. Large tools such as table saws, planers, jointers and drum sanders, usually require 5" ports, while smaller tools such as router tables can normally get by with 4" ones. Hand held power tools will normally be connected to the system via 2 1/2" or smaller flexible hoses. You also need to bear in mind that tools such as mitre saws and router tables may require two dust ports.

Tool manufacturers have only recently outfitted their machinery with truly effective dust ports, so if you have some vintage iron, you may need to make your own ports. I recommend Bill Pentz's very informative website for ideas, billpentz.com/woodworking. I used the thinner, 18 gauge boots to make most of my dust ports, largely because 16 gauge boots aren't a standard stock item. Furthermore, ports are located at the furthest end of the ducting system where pressures aren't as high, so the lighter 18 gauge boots worked out just fine for me.

Ducting

The ducting plan I obtained from Oneida called for 7" diameter ducting at the dust collector to run along the ceiling,

and then reduce to 6" at the first branch. Continuing along the ceiling, branch lines were to be 6" in diameter then reduced to 5" once they turned to go down the wall. According to the staff at Oneida, these smaller wall sections help maintain the high (3,500 to 4,000 feet per minute) air velocity needed to efficiently move those shavings, chips and dust up and away to the dust bin.

Sources

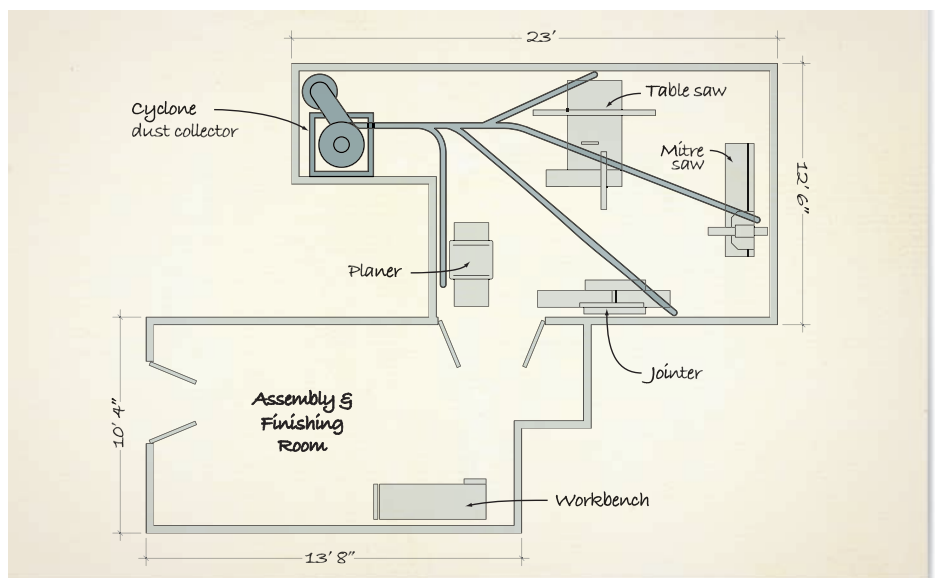
I was able to purchase many of the ducting system components from my local heating and ventilation systems supplier (check your local Yellow Pages). For airflow control gates and connectors I used Workshop Supply, workshopsupply.com, and purchased the various hoses from Flexmaster Canada, novaflex.com. To ensure everything would be strong enough to resist the high vacuum pressures, I installed mostly 16 gauge sheet metal components (except 18 gauge for the boots). I opted to use spiral piping for the main trunk line, which although more expensive, has fewer joints. It comes in 10' and longer lengths, as compared to 16 gauge snap ducting, which comes in standard 30" lengths.



Oneida Pro 1500 cyclone collector

Ducting System

A ducting system consists of everything required to connect machinery and power tools to the dust collector. The list includes: pipes, junctions, 'Y's, reducers, airflow control gates, boots, flex hoses, hose connectors, clamps and strapping. These parts are joined together with pop rivets or sheet metal screws and sealed with silicone caulking and foil (not duct) tape. Most experts agree that PVC pipes should not be used because they are capable of causing hazardous static charges and, potentially, explosions. To install ducting you'll need both a hand crimper and sheet metal snips. Safety glasses and gloves should always be worn when cutting and handling sheet metal ducting.



Shop floor plan

Illustration by: www.JamesProvost.com



Planer flex hose



Shop-built floor sweep



Commercial drum sander connector



Shop-built jointer connector



Spiral duct strapped to ceiling



Wall mounting plate at elbow



Easy Radiant "Works"

12288 Side Rd. 22, Wainfleet, ON L0S 1V0

EZ-Duzzit Residential Garage and Workshop Heater



It's 86.5% efficient and ideal for the home hobbyist!

All products are covered by a "no ifs, Ands or Buts" full 3 year guarantee! We ship anywhere in North America!

Patio Plus Radiant Patio Heater



Heatwave Garage Workshop Heater



Burns up to 50% less gas than forced air systems

1-800-403-3279

www.EasyRadiantWorks.com

www.hammer-canada.ca



The obvious choice!

Your workshop in one machine – extremely compact!

Just because your limited for space doesn't mean you need to compromise on quality. The Hammer **C3 31 full combination machine** will provide professional results on all 4 main applications, sawing, shaping, jointing and planing. Compact in size - Big on performance!

HAMMER,
Quality and precision
made in AUSTRIA





DVD VIDEO
Call for DVD!

FELDER-GROUP CANADA

Felder Group Ontario: info@felder-group.ca
 Felder Machinery Imports, MB: manitoba@felder-group.ca
 Felder Machinery Imports, AB: alberta@felder-group.ca
 Felder Machinery Imports, BC: felderbc@telus.net

Installation

Installing the duct work was relatively straightforward but quite time consuming. I began by installing the rigid ducting first. I elected to start at the tool furthest from my dust collector and worked my way towards the dust collector, one run at a time. In all cases, I first layed out and assembled the required ducting components on the floor. For maximum airflow efficiency and quieter operation I oriented everything with the male ends aiming towards the dust collector. A friend helped me raise the runs into position one at a time and affix them temporarily into place before connecting adjoining sections. I opted to pop-rivet (three per joint) all components together, then sealed all joints with metal tape or silicone caulk in hard to reach areas. You don't need to waste your time taping the snap seams on any of the snap ducting. However, the elbow 'knuckles' are potential air leak sources and need to be sealed. Speaking of elbows, try to keep any turns as gradual as possible; radii no less than two times the diameter of the ducting is ideal, as air velocity drops in tight turns, due to the increased SP. This may dictate that you use two 90° elbows at each corner, each set to approximately 45°. Similarly, never use right angle fittings, instead use 45° 'Y' branch fittings where possible.

Once you have your first run temporarily mounted in place, move on to the next section. I used standard metal strapping and wood screws to fasten ducting to ceiling joists and the walls. As luck would have it, none of my wall sections ran near studs, so I made 3" x 8" mounting plates of ¾" plywood scraps, which I fastened to the walls using drywall screws. I placed these plates wherever things needed to be strapped down, such as where the ducting began its run down the wall and at air control gate locations.

After I had installed all the rigid ducting and connected it to the dust collector, I turned my focus to hooking up the machinery. As mentioned, because of the size and configuration of my shop, I need to move my jointer and planer from their usual positions when milling long boards. On rare occasions, I also need to be able to move my table saw. Hence, these three main tools would be linked to the rigid ducting using 8' flex hoses. Bear in mind that flex hoses provide considerably more SP than smooth walled ducting sections, so keep them as short as practical. For my other moveable power tools I outfitted them with quick connectors, to facilitate connecting them as needed to the dust collection system.

To deal with shavings and residual dust, I installed a floor sweep and mounted its air control gate just above waist level. These sweeps are relatively inexpensive. I highly recommend that you add one to your shop, as they really simplify clean up.

My new dust collection system has greatly improved working conditions in my shop. Gone are the days of sawdust and shavings underfoot. Clean up is now fast and easy and all that's usually required is to vacuum hand tool shavings and the small amount of dust that somehow escapes. My spouse is much happier, too, as there's considerably less dust being tracked into the rest of our house, and a lot less noise generated than with my previous system. Looking back, if I were to do anything differently, it would have been to invest in a new dust collection system years ago.



MARTY SCHLOSSER
www.martyswoodworking.ca

NOW SERVING EVERYONE.

Introducing
The SawStop Contractor Saw



DESIGNED with our revolutionary safety feature that stops the blade within 5 milliseconds of detecting contact with skin, the Contractor Saw lives up to the SawStop name in both safety and performance. With a wide range of options including a 52" fence system and mobile base, the Contractor Saw can be customized to meet your exact needs. Switch to the world's safest saw.
www.sawstop.com



SEE US AT WOODSTOCK OCTOBER 3-5 WOODSTOCK, ON



House Of Tools
Toll free:
1-800-661-3987
houseoftools.com



Federated Tool Supply Co.
London, Ontario
519-451-0100
federatedtool.com



Photo Courtesy of Shutters Toronto: shutterstoronto.com

Window Shutters

If you're looking for a window treatment that adds style, character and beauty to your home, look to shutters.

While shutters do offer a measure of privacy, and control the light entering a window, their primary function today is to enhance the beauty of your home. Shutters can be placed on the inside or outside of a building. The simplest shutters are comprised of an arrangement of boards and battens. There are also 'frame and panel' shutters; these are essentially panel doors placed over a window. You often see either of these kinds of shutters fixed in place on the outside of a window.

'Louvre' shutters consist of a frame with horizontal slats (blades). The blades can be fixed or operable (the blades tilt up and down). You'll also find 'café' style shutters that have operable louvres only in the bottom half of the frame; the top half of the frame is either open or has an insert (often glass). As well, for tall windows you can have 'tier-

on-tier' shutters; one louvre shutter installed on top of another louvre. This enables you to open either the top or lower shutter independently. Louvre shutters, more often than not, are mounted so that you can swing them open or closed. You're also more likely to find them on the inside of windows, particularly in living rooms, dining rooms and kitchens.

You can purchase shutters in just about any imaginable colour in a variety of designs, or you can make your own. Commercial shutters, shutterstoronto.com, are usually available in three materials: solid wood, engineered wood (such as high density fiberboard) or synthetic material (usually vinyl). While you can purchase solid wood shutters unfinished, most shutters come pre-finished. Expect to pay about \$50 per square foot for pre-finished solid wood shutters.



Photo Courtesy of Shutters Toronto: shutterstoronto.com



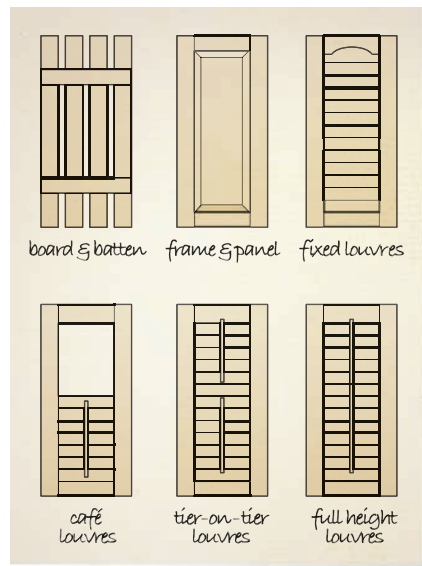
downloaded from www.cro-wood.com

LoneWolf

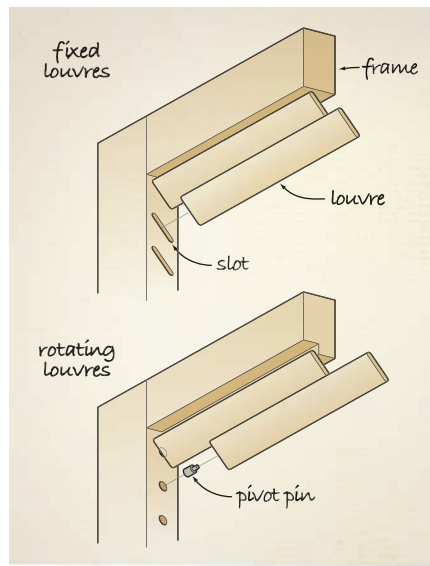
Vinyl shutters are much less expensive, but at the expense of appearance (they look like plastic), and durability (they are difficult, if not impossible to repair).

Traditional style (Colonial) shutters have narrower frames and louvre blades (usually 1 1/4" wide), while plantation style shutters use wider blades (up to 4 1/2"). Depending on the hardware you select, you can mount shutters on the inside or outside of the window frame. A variety of specialized shutter hardware is available, stanleyhardware.com,

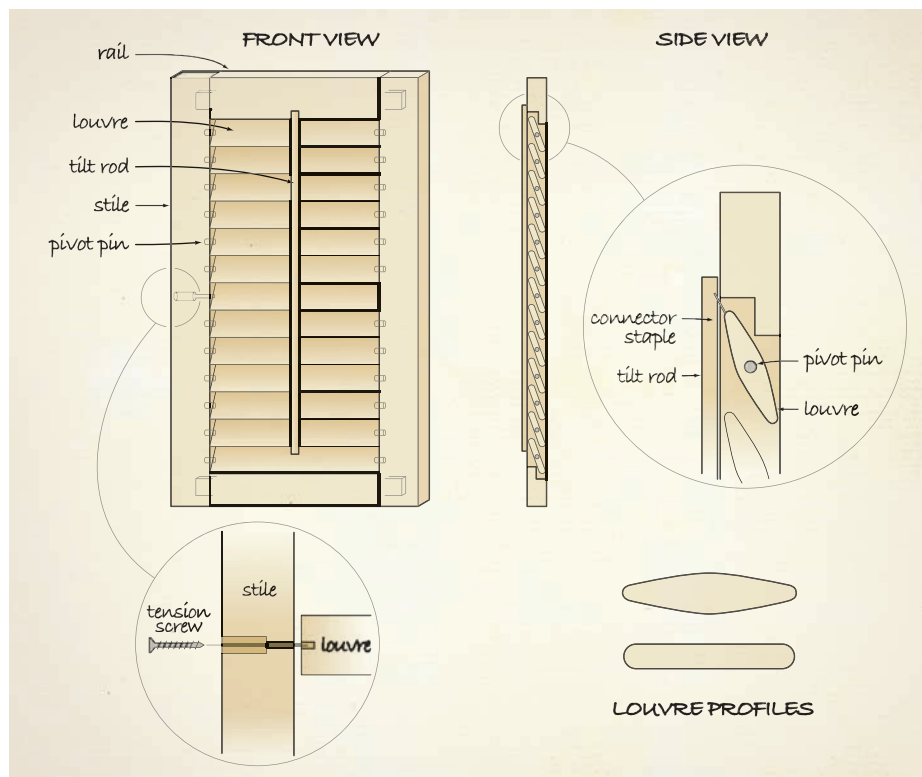
timberlaneshutters.com. Exterior hardware is typically galvanized, enamelled cast iron, or powder coated stainless steel. For exterior shutters the hinges pivot outwards until the shutter rests against the surface of the house. Tie backs (shutter dogs) then hold the shutters in place. On interior shutters conventional hinges are used. The style, size and colour of shutters, and the hardware you choose depends as much on personal preference as it does on the size and depth of the windows and the style of your house – think of shutters as eye makeup for the house.



Basic shutter styles



Fixed and rotating louvres



Shutter anatomy

Visit our website at www.canadianwoodworking.com

Circa 1850 makes all your windows look great – inside and out!

When it comes to enhancing the beauty of your wooden shutters, Circa 1850 has you covered.

For indoors, **Circa 1850 Antique Danish Oil** penetrates into the wood and builds on the surface to give a **warm look and feel**. It provides a **durable finish** with very good protection from heat and water.



Circa 1850 Antique Danish Oil is **easy to apply** to bare, stained or previously finished woods, using a brush or cloth. It's also an ideal **touch-up** for covering scratches.

For the outdoors, **Circa 1850 Exterior Varnish** transforms your shutters into a breathable, **water repellant** surface. Rain and snow cannot penetrate the coating to damage the wood. However, because moisture can escape from the wood through the varnish, it resists rotting and the finish is less likely to blister or crack.

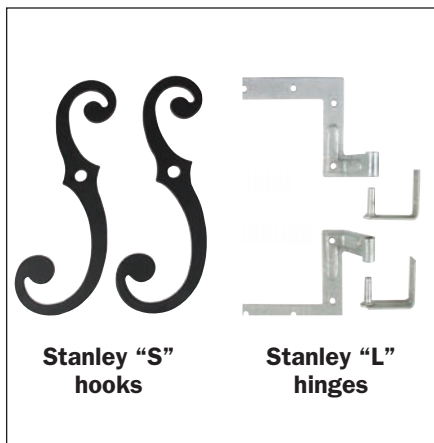


It even **screens out UV** rays and inhibits the greying and fading effects of the sun.

WWW.CIRCA1850.COM
we make finishing easy

Illustrations by: www.JamesProvost.com

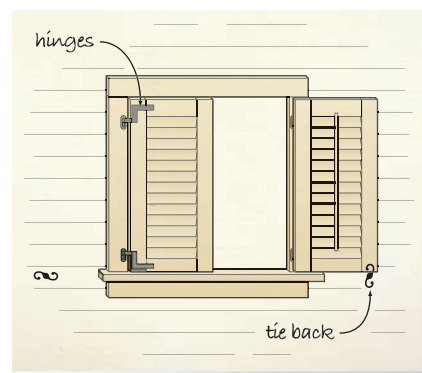
For the woodworker with beginner skills, the easiest exterior shutters to make are board and batten shutters. You can easily embellish the shutters using a jigsaw or bandsaw to cut decorative designs along the edges of the boards. If you have intermediate level skills, then frame and panel or fixed louvre shutters for exterior windows will be easy enough to make. For interior shutters you really want the flexibility of operable louvre blades. They are somewhat more challenging to make and install, requiring more time and patience.



For a structurally sound frame, use mortise and tenon joinery - either stopped (blind), wedged or floating tenon. For exterior shutters that you intend to leave natural or stain, select a decay resistant wood like redwood, western red or eastern white cedar, white oak or teak. For interior shutters that you'll leave natural or stain, select a wood that compliments your furniture or trim work. If you plan on painting the shutters, then good choices include basswood, pine, poplar or mahogany.

Traditional shutter blades are wedge shaped; contemporary shutters generally have flat blades with radiused edges. These are easy to make on the router table using a beading bit sized to the thickness of the blade.

The blades for fixed louvre shutters are held in 45° slots milled in the stiles. You'll need to construct a simple jig to rout these slots, or if you have the Leigh Frame and Mortise Jig, leighjigs.com, you can purchase a template to rout 1/4" x 1 1/4" slots. For rotating blades you install pivot pins, cordscanada.com, shuttermedic.com, into the stiles, and into the ends of the blades. A tension screw is installed through a stile into the middle blade. Tightening or loosening the screw affects how smoothly



Exterior shutters

the blades open and close. A tilt rod is attached to each blade, either by eyelet screws or connector staples.

Whether you choose to buy or build your own, shutters offer the perfect combination of practical window covering and home beautification. They add texture and depth to otherwise dull looking facades while adding curb appeal (and resale value) to your home.

CARL DUGUAY
cduguay@canadianwoodworking.com

toolpicks BY THE EDITORS

Leigh FMT

- The easiest to use and most versatile mortise and tenon jig on the market
- Mill M&Ts from toothpick size up to 1/2" x 2 1/2" x 5"
- Cut straight and compound angle tenons
- Cut single, double, twin and quadruple joints
- Can be used with any plunge router
- \$629.00



www.LeighJigs.com 800-663-8932

Available from: www.LeeValley.com
or order through your local bookseller

Veritas Surface Clamp (05G19.01)

- Installs in a 3/4" diameter hole in material as thin as 5/8"
- Can be installed vertically or horizontally
- Secures stock up to 3 1/4" thick
- Wedging mechanism anchors the clamp firmly in place
- Excellent value in a versatile clamp
- \$69.00



www.VeritasTools.com 613-596-1922

Available from: www.LeeValley.com
or order through your local bookseller

Forrest Blades

Ideal for High-End Kitchens and Baths

For almost 60 years, experienced woodworkers have relied on Forrest for the very finest in precision-engineered saw blades.

Kitchen and bath remodelers especially appreciate the smooth, quiet cuts that Forrest blades deliver—without splintering, scratching, or tearouts. In fact, independent tests rate Forrest blades as #1 for rip cuts and crosscuts. So they are perfect for cabinets, countertops, and flooring.

Forrest blades and dados owe their superior performance to a proprietary manufacturing process, hand straightening, and a unique grade of C-4 micro-grain carbide. Nobody beats these American-made blades for quality or value.



"Your blades are without question the best by miles, and I have tried them all."

Bob Jensen-Fridley, MN

"From the first cut on, I realized that this blade was a bargain at any price! Nothing else I have cuts comparably."

Calvin Brodie-Spanaway, WA

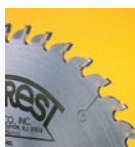
Forrest has over 12 blades designed for serious woodworkers. **These blades are especially useful for high-end remodeling:**



Duraline – Available in several tooth count/style combinations for flawless cutting of laminates, acrylics, wood, and more.



Duraline Hi-AT – Best for cutting two-sided veneers and low pressure laminates without chip-outs or splintering.



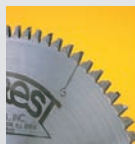
Solid Surface Planer – For super-smooth cutting of solid surface countertops without scratches or long finishing times.



Woodworker II – The best-rated all-purpose blade for excellent rips and crosscuts on all hard and softwoods.



Custom Woodworker II – A specialty blade that's ideal for box joints, dovetails, flat bottom grooves, and high feed rates.



Chop Master – For tight, perfectly cut miter joints and smooth cross cutting at any angle.



Dado King – The finest multi-tooth set for making flat-bottom grooves without splintering across and with the grain.

It's Easy to Order

All Forrest blades come with a 30-day, money back guarantee. So order today in any of these convenient ways:

- Visit one of our fine-quality dealers or retailers.
- Call us toll free at 1-800-733-7111. (In NJ, 973-473-5236) Ask about special discounts, free shipping on orders over \$275, and discounts for blade sharpening.
- Visit our website: www.ForrestBlades.com

FORREST

The First Choice of Serious Woodworkers Since 1946

© 2008 Forrest Manufacturing

Code CWW

* As seen in Fine Woodworking's 2004 Tool Guide, pg.121.

Woodworker II
Fine Woodworking*

Woodworker II
Wood Magazine

Woodworker II
Woodshop News

Chop Master
Woodshop News

Dado King
Wood Magazine

Dado King
Woodshop News

Duraline Hi-AT
Woodshop News

Custom Woodworker II
Woodshop News





Pocket Combination Squares

A pocket combination square is pretty much a ‘do-all’ marking and measuring tool. In addition to fitting easily into the palm of your hand, and storing handily in your shop apron, it is incredibly helpful for a variety of shop tasks.

Carpenters and cabinetmakers require large capacity measuring tapes, large framing squares, and oversized straight edges and levels. However, for those of us who primarily build small and moderate size projects, proportionately sized tools are much more convenient to use.

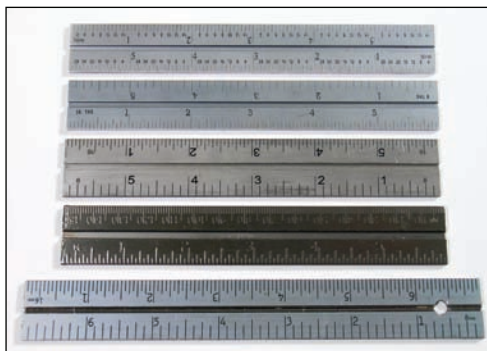
I’ve found that a pocket-sized combination square is just the right size for the majority of my measuring and marking needs. It provides the same functionality (albeit in smaller format) as a try (or engineers) square, double square, mitre square, depth and height gauge, and ruler and straightedge (by removing the blade).

Most combos also contain a level and scribe (awl). That’s pretty good service from a single tool.

A combo square does a lot more than simply laying out 90° and 45° lines.

Use it to:

- check that the ends and edges of boards are square (on stock up to 5" wide)



An easy to read blade is essential

- lay out cut lines (the scribe does a good job; a marking knife does a better job)
- set router bit and saw blade heights
- check the depth of mortises, tenons, rabbets, dados and the like
- ensure your table saw blade and fence are square before cutting material
- lay out mitres (on stock up to 4" wide)
- lay out lines parallel to the edge or end of stock (up to 5" wide)
- find the center of stock (up to about 7" wide)

The Blade

The blade is the most important part of the combo square; your eyes will typically be focused on the blade and scale rather than the head. You want the scale to be easy to read in a range of lighting conditions. A matte or satin finish will have less glare than a bright,

glossy finish. Thin, sharply defined etched lines are much easier to see and use than thicker stamped or pressed lines. The edges of the blade should be square rather than rounded over, so that the lines you cut with a scribe or marking knife don't waver. The edges of the blade should also be parallel to each other, and the blade should be flat or else it will bind as it moves along the head. All the blades have a channel running down one face; the head holds the blade in place by means of a locking pin that glides along the channel.

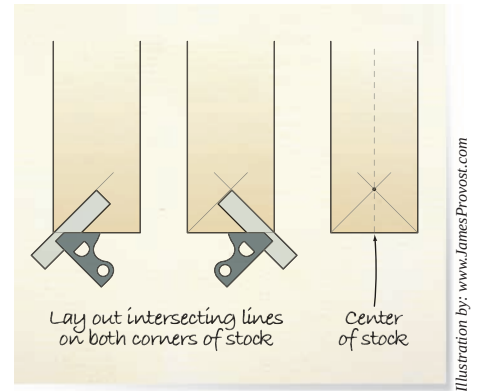
Blades come in a range of scale markings from 8ths to 64ths, while some have both imperial and metric scales. Often you'll find different scales on either side of the blade. I find a blade with 16ths and 32nds on both sides is more convenient to use. I never use the 64ths markings while the 8ths are generally too large for precision work (and easy to see on the 16th scale).

Likewise, blades come in a variety of widths, though most are $\frac{5}{64}$ " thick. This thickness makes them superior to steel rules (typically $\frac{1}{32}$ " thick) for use in scribing lines with a marking knife. The $\frac{23}{32}$ " wide blades are perfect for laying out $\frac{3}{4}$ " wide mortises; I like to chop mortises a tad narrow so that I can fine tune them with a chisel for a perfect fit (assuming I've cut the tenons a perfect $\frac{3}{4}$ ").

The etched blades on the Bridge City and PEC combos were the easiest to read, with square edges, parallel sides, and perfectly straight. The etched blades on the Empire and Stanley were almost as easily readable. The edges were square and parallel, though the Empire blade was bowed sufficiently that it interfered with the smooth movement of the head, while the Stanley blade had a slight bow that didn't interfere with head movement. The stamped Johnson blade was difficult to read in all but the best lighting. The edges were rounded though the blade was straight and the sides parallel.

The Head

A precisely milled head is important if the square is going to deliver accurate 90° and 45° readings along the full length of the blade. The head is held onto the blade by a locking pin that runs along the channel in the blade. A knurled knob on the end of the locking pin enables you to loosen or tighten the head in place. A large knob that is easy to turn is obviously desirable, as is a well-formed pin that glides smoothly. You should barely have to turn the knob to loosen the locking pin, and you shouldn't have to apply a lot of torque to lock it in place. The weight of the head is a matter of personal preference. Most combos have heads made of die cast zinc, which is lighter than steel or brass.



Marking center of stock

When assembled, the Bridge City and PEC squares were at 90° and 45°. The Empire, Johnson and Stanley squares were all out of square by less than 1/10°. The cast silicone brass head with rosewood inlays on the Bridge City is gorgeous. In fact, it's so nice that you might be overly cautious in use for fear of scratching or denting it. The head glides smoothly, though I did find the locking nut a tad small. The PEC head is the only one made of cast steel. It's very well machined with crisp edges and it moves smoothly across the blade. The knurled locking knob is also cast steel, but rather on the small side. The die cast zinc heads on the Empire, Johnson and Stanley



Check machinery set-up



Draw 90° lines



Draw lines parallel to edge



Draw 45° lines



Measure depth of grooves



Check ends for square

EDITORS CHOICE TOP OF THE LINE

EDITORS CHOICE BEST VALUE

					
	Bridge City CS-6	Empire E255	Johnson 40-0533	P.E.C. 7181-006	Stanley 46-323
\$	135.00	14.97	16.40	19.95	13.99
Blade thickness	$\frac{5}{64}$	$\frac{5}{64}$	$\frac{3}{32}$	$\frac{5}{64}$	$\frac{5}{64}$
Blade width	$2\frac{3}{32}$	$1\frac{3}{16}$	$5\frac{3}{64}$	$2\frac{3}{32}$	$5\frac{1}{64}$
Blade type	Etched, satin chrome	Etched, matte	Stamped	Etched, satin chrome	Etched, chrome
Scale	16 ^{ths} , 32 ^{nds}	8 ^{ths} , 16 ^{ths} , 32 ^{nds}	16 ^{ths} , 32 ^{nds} , mm	8 ^{ths} , 16 ^{ths} , 32 ^{nds} , 64 ^{ths}	8 ^{ths} , 16 ^{ths} , 32 ^{nds}
Scale readability	Excellent	Very good	Poor	Excellent	Very good
Head size	$\frac{3}{16} \times 2$	$\frac{5}{8} \times \frac{3}{16}$	$\frac{5}{8} \times 2\frac{7}{8}$	$1\frac{9}{32} \times 2\frac{63}{64}$	$\frac{5}{8} \times 2\frac{7}{8}$
Head type	Cast silicone brass	Die cast zinc	Die cast zinc	Cast steel	Die cast zinc
Ease of blade/ head travel	Excellent	Poor	Good	Excellent	Excellent
Ease of blade insertion	Excellent	Good	Poor	Very good	Excellent
Pin	None	Friction fit	Screw in	Friction fit	Friction fit
Vial width	None	$\frac{5}{8}$	$1\frac{5}{16}$	$\frac{7}{16}$	$\frac{9}{16}$
Quality of vial	-	Excellent	Very good	Poor	Very good
Accuracy	Excellent	Very good	Good	Excellent	Good
Fit and finish	Excellent	Very good	Good	Excellent	Good
Manufacturer	bridgcitytools.com 800-253-3332	empirelevel.com 800-558-0722	johnsonlevel.com 514-695-7221	productseengineering.com 310-787-4500	stanleytools.com 905-825-1981
Available from	bridgcitytools.com	homedepot.ca	homedepot.ca	fowlercanada.com	Most building supply outlets

All squares have 6" blades except Stanley (7"). All measurements are in inches



Checking for Square

It's easy to confirm if your square is square. Joint one edge of a board, and then scribe a line 90° to the edge. Flip the square 180°, place it directly against the scribed line, and scribe another line square to the edge. If the lines match, the square is aligned accurately.



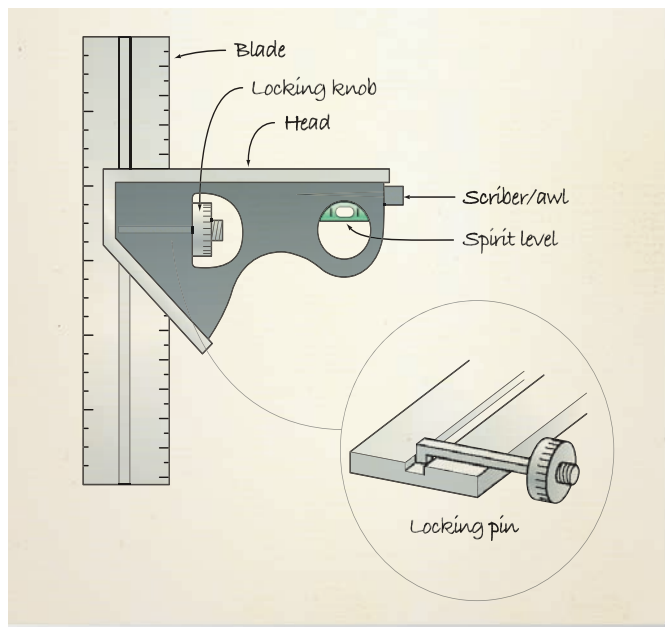


Illustration by: www.JamesProvost.com

look very similar. All have large brass knurled knobs that are easy to use. The edges on the Empire are slightly bevelled, a nice touch, but the head doesn't move smoothly across the blade. The Johnson head travels slightly better, while the Stanley head moves freely. There was a slight burr along the edges of the Stanley head that needed to be sanded smooth.

The Extras

Spirit vials and scribers are of varying usefulness. I personally don't have much use for such a small level, but I do find scribers to be very handy. They produce a more accurate line than a pencil (though less so than a marking knife). I also use it to mark out and start screw holes.

Except for the Bridge City, all the squares had a spirit vial and scriber incorporated into the head. The vial on the PEC, at $\frac{3}{8}$ " wide, is just too narrow to be of much use. The vials on the other squares are easy to read. The True Blue® vial on the Empire square is guaranteed accurate to within .0005 "/inch and it carries a lifetime guarantee. The Johnson square has a screw-in scriber, which I find less convenient than friction fit scribers. On the Stanley square the scriber doesn't fit very snugly.

My choice for the best of these combination squares is the PEC. It's well machined, accurate, has an easy to read scale, and at just under \$20 is a bargain. The Bridge City square is to die for. But at \$135, it would be the equivalent of purchasing a Porsche. Still, if money wasn't an object, I would definitely buy the Bridge City. For the cost conscious consumer who just wants a combo square, no frills please, then either the Empire or Stanley would be a good choice.

CARL DUGUAY

cduguay@canadianwoodworking.com

Continued from page 2

Thanks For The Forum

Thank-you for your website's Woodworking Forum.

Since joining your on-line woodworking community a couple of years ago, I have noticed a significant improvement in my personal woodworking skills and in the woodworking skills of others.

During my time on the forum, I have met a number of people online that could not make a wood box only a few years ago, and now produce furniture that would blow your mind - and these are people that have no formal training. It is simply amazing how much one can learn by joining a forum such as yours.

Taking into consideration accessibility and affordability, I feel that forums (and especially yours) are one of the best learning tools out there! Thanks! Chris D., Pickering, ON

• I'm glad that you are getting so much out of our Woodworking Forum. By the looks of our next letter, there are a lot of woodworkers (from around the world) who are also making the most of our Forum.

Forum Withdrawal

Is there any news as to when the forum might be back up and running. I am a pro cabinet maker moving from the UK to Toronto later this year and I have made a

lot of contacts through the forum, so while it has proved an invaluable resource, its loss would be a real setback to me.

Any info gratefully received. Kind Regards, Tim B.

• Sorry for the interruption of service. We had to upgrade our forum and move to a new server to better serve our growing woodworking community. It's back on-line now.

Pattern Transfer

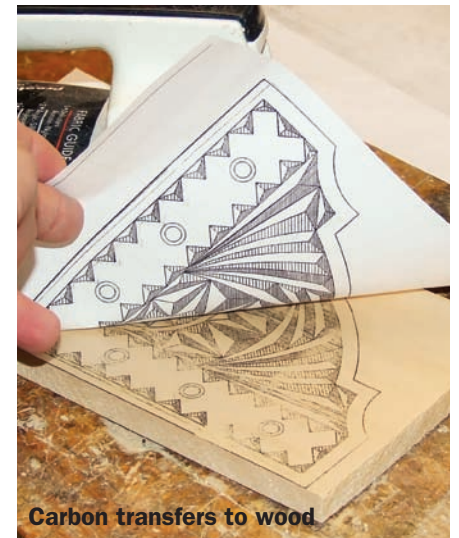
In your April/May #53 issue of Canadian



Iron pattern onto workpiece

Woodworking on page 20 you describe ironing a photocopy to transfer a pattern onto wood. What type of photocopier were you using? Thanks. Bill W., Lunenburg, ON

• That method of transfer works pretty well with any photocopier or laser printer. Just place the copied page face down on the wood. When you iron the back of the page, the carbon powder is released from the photocopy and adheres to the wood.



Carbon transfers to wood



Mortise and Tenon

Mortise and Tenon joinery is both attractive and structurally solid. Because of that it is one of the most widely used joinery in woodworking, with uses ranging from traditional frame and panel doors to furniture.

M&T Geometry

There are a wide variety of M&T joints, with the most common being the 'stopped' (blind) joint. Other frequently used joints include the through, wedged, pinned, haunched, double (twin) and offset (barefaced). All of these joints share two common features: a 'mortise', which is simply a square or rectangular recess into which a tongue, the 'tenon', is inserted. The typical configuration is that the mortise is cut on a stile, and the tenon on a rail. The tenon itself is typically smaller in width and thickness than the rail on which it is cut. Once you know how to make a stopped mortise and tenon joint, you can apply the principles to any kind of M&T joint.

There are two important things to consider when cutting a stopped M&T joint. You want sufficient gluing surfaces so that the joint won't fail, and you want the walls of the mortise thick enough so that they are structurally sound. If the mortise is too

wide there will be less strength provided by the narrow side walls. When both the mortise and tenon pieces are the same size I make the mortise about 1/3 the stile width. For the most common stock size, 3/4", I cut the mortise 5/16" wide rather than 1/4" wide (one third of the stock width); a 5/16" router bit is more robust than a 1/4" bit, and is much less likely to break in use. When the mortise and tenon pieces are not the same size, as in a leg to apron joint, you can make the mortise wider, but not so wide as to compromise the wall strength.

When calculating the depth and length of the mortise I tend to use the '2/3' guideline. The mortise depth is calculated as 2/3 of the thickness of the mortise stock. I find that this usually provides sufficient gluing surface, without making the mortise so deep that it becomes difficult to cut.

I calculate the mortise length at 1/2 to 2/3 of the width of the rail stock (longer

on wider stiles). Again, this usually leaves enough material for a shoulder on each edge of the tenon. I aim to have shoulders no less than 1/8" wide.

Cutting Tenons

Cutting a tenon is a fairly straightforward affair that can be done on the table saw (see "Tenoning Jig", Apr/May '07, Issue #47) or router table. With a tenoning jig and a table saw you can process a lot of tenons in fairly short order. If you use a router table, you can cut the tenons with either a slot-cutting bit or with a mortising bit, and a cross slide. With the appropriate bit installed, set the length of the tenon by fixing a stop block to the cross slide and making one cut on each face. If the router bit is too short to cut the tenon in one pass you will need to reposition the stop block for the final cut. Always be sure to have the material firmly in contact with the cross slide and the stop block to prevent the bit from grabbing the wood. After cutting the

CROWNING ACHIEVEMENT



NOW YOU CAN MAKE

EXTRA WIDE CROWN MOULDING

FROM ORDINARY TO
EXTRAORDINARY WITH
JUST A FEW ROUTER BITS

NINE POSSIBLE PROFILES!

By interchanging the multiple wide crown moulding bits from Freud, you can achieve up to nine different 5½" crown profiles to best match your application. The individual bits can also be used separately to create smaller crown mouldings and other profiles that can be used in many wood working applications.



freud[®]
www.freud.ca



For more info on Freud's Wide Crown Moulding Bits and other Freud products visit: www.freud.ca



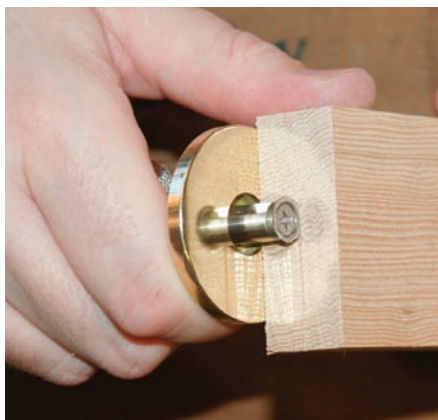
Measure thickness of your stock



Divide thickness in half and set calipers



Use end of calipers to set marking gauge



Mark center of stock with gauge



Highlight scribed line with a pencil



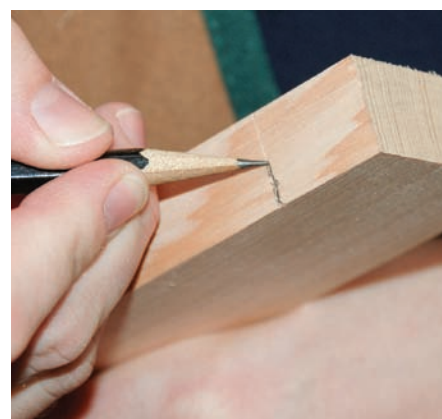
Measure width of stock



Mark center of rail



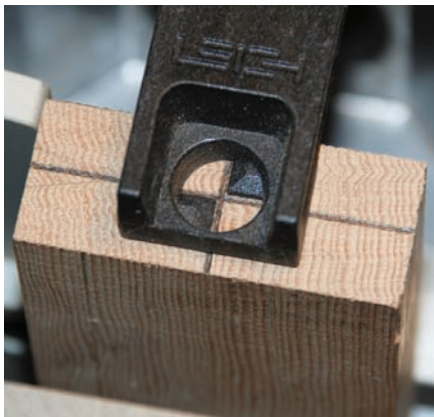
Mark mortise on stile



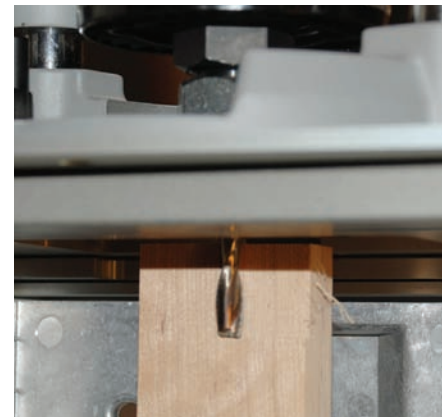
Highlight scribed line



Mark center of stile



Line up FMT scope with layout lines



Shallow climb cut eliminates tear-out



A perfect tenon in minutes



Stile mounted to FMT for machining



Plunge bit and drill out first; clean up perimeter



Perfect mortise and tenon joint

tenons this way you will still need to round over the square corners with a rasp or file, but this takes only a moment.

Cutting the Mortises

Cutting mortises efficiently means you'll need to choose the best method and employ the proper technique. When you need to make only a few, it's just as expedient to cut them by hand or with a bench mortiser, steelcitytoolworks.com, general.ca. However, for production work, nothing beats a router mortising jig for speed, accuracy and efficiency. You can make your own jig (see "Mortising Jig" on page 45) or purchase a commercial product.

Choosing the Right Bit

To rout a mortise you will need a plunge router and a jig of some sort; it is simply not possible to rout these joints free hand. While the jig will control the movement of the router during the cut, remember, it is the router bit that does the actual cutting. Choosing the right bit and using it correctly is as important to a perfectly fitting joint as using an accurate jig to guide the router.

For the best results, put away your straight bits. Some straight bits are designed for plunging and have carbide cutters on the bottom for this, but the straight sides of these bits provide very poor chip clearance during the cut. Spiral up-cut carbide bits, leevalley.com, freud.ca, dimarcanada.com, busybeetools.com, on the other hand, have helical flutes like a drill bit, and specially designed cutting edges on the bottom of the bit and the edges of the flutes. These allow the bit to be plunged straight down into the material while the flutes bring the chips to the top of the hole, preventing the bit from jamming and overheating.

While straight bits are among the cheapest of router bits on the market, owing to the rather simple manufacturing process involved, the opposite is true for solid carbide spiral bits. They are much more complicated to manufacture, are cut from a single piece of carbide and they spend a considerable amount of time on the CNC grinding machine. As a result, they command a higher price, especially the larger bits. However, once you start using these bits you will find it impossible to go back to the straight bits for plunge routing. Because of their high cost, manufacturers produce these bits in more affordable high-speed steel (HSS) as well. Like other edge tools, the solid carbide version will hold an edge much longer than the steel version, which is important as the complex geometry of this bit doesn't make it practical to sharpen them. Choose a solid carbide bit in the sizes you use regularly

for their ability to hold an edge for the long run, and save some money by buying the HSS version for the sizes you use less often.

Right Routing Technique

Routing technique is the next step to master when cutting mortises and tenons. Shallow mortises, such as those needed to flush mount a hinge, are best cut at full depth. These mortises rarely exceed $\frac{3}{16}$ " in depth, and the material being removed presents very little resistance to the bit. You can rout out to the cut line, and then finish up with a sharp chisel, or use a hinge mortising jig to cut the mortise in one fell swoop; you'll still need to chisel the round corners square (see "Installing Hinges", Apr/May '07, Issue #47).

When cutting deeper mortises you need to change your approach. Many woodworkers cut deep mortises incrementally, setting the bit deeper with each pass, until the final depth is achieved. This is a poor practice and doing this will result in a mortise with uneven sides. As the bit tries to remove more material, the forces acting on the

Floating Tenons

When using a shop-made jig you can speed things up by using floating tenons with a pair of mortises instead of a mortise and a tenon. You'll likely find that you tend to use several sizes of tenons time and time again, which makes the use of floating tenons that much more attractive. You can mill the tenons in a batch and store them for future use (in which case it's a good idea to put the tenons in a plastic bag to retain their dimensional stability, or you can also simply mill the tenon material as you need it. You can also purchase tenon stock in $\frac{1}{4}$ ", $\frac{5}{16}$ " and $\frac{3}{8}$ " thicknesses from Lee Valley.

Generally I make all my tenons out of a straight-grained hardwood. I begin by milling stock in whatever lengths I have on hand to the required thickness for the tenons. Use a caliper to check the thickness of the stock as it comes out of the thickness planer, against the width of a mortise. When you have achieved a snug fit in the mortise rip the stock to width. Use a block plane to round over the sides of the tenons to fit the rounded mortises. Alternatively, round over the edges on a router table using an appropriately sized round-over bit. Remember to use a fence and feather boards. When cutting the tenon stock to length, cut the tenon $\frac{1}{8}$ " less than the depth of both mortises combined.

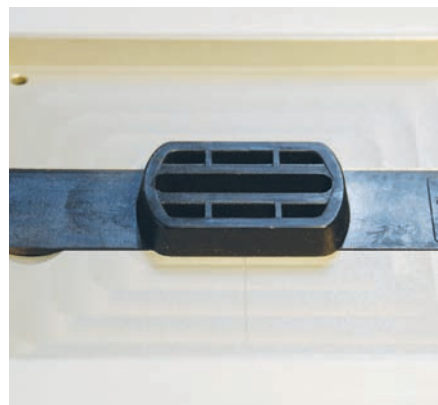
bit increase and as you are pushing the bit through the wood, the forces are only acting on three sides of the bit. The tendency is for the bit to want to twist and pull to one side, which will result in an irregular cut. This becomes more noticeable as the cutting action moves further from the router base, as the mortise gets deeper. Straight steel bits, when used this way can flex enough to begin to chatter. Carbide, on the other hand, is a very hard but much more rigid material. The only router bit I have ever snapped off was a 1/4" solid carbide spiral bit that I was using in this manner. On the last pass I was feeding the router at what I thought was a conservative pace when all of a sudden the bit snapped off at the collet; carbide is very hard but this also makes it very inflexible and at some point the forces applied at the far end of the bit became strong enough to flex the bit enough to snap it.

When routing a deep mortise, always use a spiral bit in a plunge router and use the depth stops to set the plunge mechanism to the depth of the mortise. Set your router on the jig and then, beginning at one end, plunge the bit to full depth, and then let the router come back up. Move the router over about one third of the width of the hole and repeat. Continue doing this until you have reached the other end of the mortise. At this point the mortise will have slightly scalloped sides so plunge your bit to the full depth once again and run it along the mortise to clean the sides.

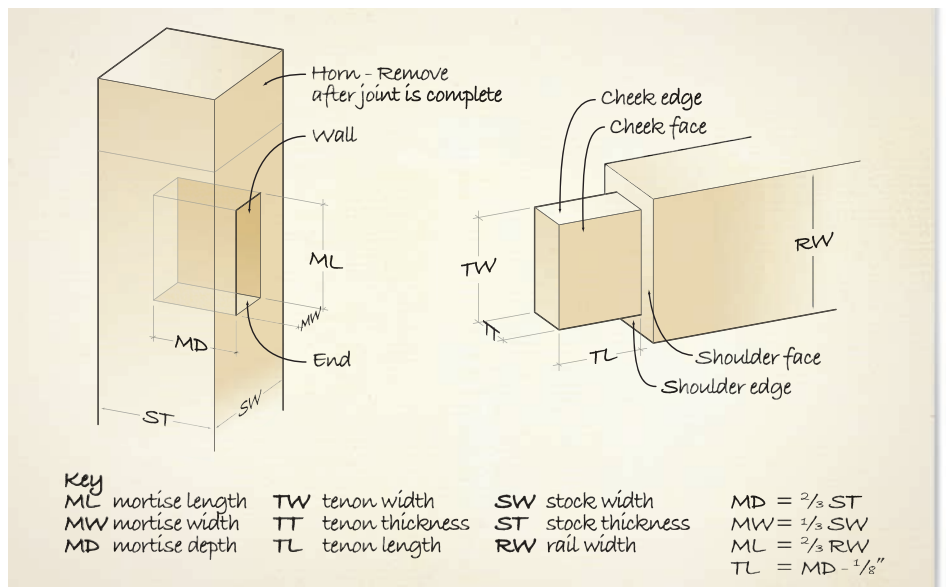
Mortising Jigs

There are only a few commercial router mortising jigs on the market. One of the simplest is the Mortise Pal, a slot mortiser that clamps onto stock from 3/4" to 2" thick and enables you to rout mortises from 3/4" to 2 1/2" in length and from 1/4" to 1/2" in width.

Both Trend, trend-usa.com, and Leigh, leighjigs.com, make a dedicated jig that you can use to rout both the tenons and mortises. Without a doubt, the Leigh Frame Mortise



Leigh joint guide



and Tenon (FMT) is the most versatile of the two (see "Leigh Mortise and Tenon Jig", Aug/Sep '03, Issue #25). The jig is composed of a base with a clamping plate and is mounted to a workbench. The router is mounted to a guide plate and runs in guide-ways on the top surface of the jig to cut the mortise.

When cutting mortises by hand you would normally lay out the outer boundaries of the mortise on the stock and then cut up to these lines. The accuracy of the joint is dependant on precise layout work followed up with competent tool work. When cutting mortises with a router, the layout is somewhat different. Most mortising jigs are lined up with the centerline on each axis of the mortise with the design of the jig and the bit used defining the outer boundaries of the mortise. With the Leigh FMT there are two guide pins on the underside of the sub-base that is attached to the router, and these run along two guide-ways on the top of the jig body. On the right side is a straight guide-way that is used for all operations and on the left side of the jig there is a place to insert the various joint guides; there is a different



Leigh FMT jig

joint guide for every common mortise size. By using different router bits and joint guide combinations the first time you use them you can cut mortises and tenons for everything from full size furniture to miniature models. For each bit and guide combination you need to make a series of test cuts to determine the perfect fit; these settings can then be recorded for test-free cuts in the future.

A Simple M&T Joint

Let's take a look at how you would make a simple mortise and tenon joint for a frame and panel assembly using the Leigh FMT. I always cut the tenons first and the mortises afterwards. With the frame members being the standard 3/4" thick, the best size for the tenon is 5/16". Select which face will be the front face on the two rails and the two stiles and mark an 'X' on the back side with a piece of chalk. For a 2" wide frame, select the 5/16" x 1 1/2" joint guide and snap it in place on the FMT and set up the 5/16" spiral bit in your plunge router. Because of the high degree of precision possible with this jig, I use a digital caliper, leevalley.com, and a Glen Drake Tite-Mark marking



Spiral Router bit and FMT joint guides

MLCSwoodworking.com...

Free "Online Videos" show you how to rout it, join it, and build it.



"Hide the Ply"

The Edge Banding router bit set adds an attractive edge to plywood panel doors and shelves. Two piece, carbide tipped, 1/2" shank.

#1475 - T & G\$44.95

#1474 - 90°\$39.95



"Custom Made Doors"

Our Mitered Door Frame Kit creates elegant Rail & Stile Doors. Includes 1/2" shank carbide tipped Profile Router Bit, 1/4" & 5/32" Slot Cutter bits & 100 #11 biscuits.

Item #1480.....\$79.95



"Portable Versatility"

The Marvel 40 3-In-1 Router Kit is a 1 HP Router, Laminate Trimmer & Cut-Out Tool with 1/4" & 1/8" collets, 3 bases, straight edge, and circle cutter.

Item #1478\$89.95



"Beauty-In-Utility"

The Shaker Cabinetmaker Router Bit Set makes professional Raised Panel Doors and Drawers. Five piece, carbide tipped, 1/2" shank.

Item #1485.....\$114.95



"Classic Strength"

Make strong Half Blind 1/2" Dovetail Joints. Our set includes a solid Aluminum Template, 12" Steel Jig, and a carbide tipped 1/4" or 1/2" shank Dovetail Router Bit.

1/4" shank • #1483 | 1/2" shank • #1484.....\$59.95



ALL PRICES IN US FUNDS

1-800-533-9298

PROFESSIONAL ROUTER BITS & WOODWORKING PRODUCTS

MLCS

ECONOMICAL SHIPPING
OPTIONS AVAILABLE!

P.O. BOX 4053CA, RYDAL PA, 19046 *2008

gauge, glendrake.com, for all of my layout work. Digital calipers capable of displaying fractions make layout work much quicker and easier than trying to read a ruler and doing fractional math.

Set the marking gauge to half the width of your stock and lay out the centerlines for the length of the tenon and the mortise on the stock. Next, set the marking gauge to half the thickness of your stock and use the marking gauge to scribe your stock for the center of the mortise from side to side. You should now have a set of crosshairs marking the center of each mortise and tenon. These lines, while highly accurate, are not as easy to use with the table sight on the FMT so I highlight them with a pencil. With the pencil centered in the scored line, the resultant pencil line is then also centered and this is much easier to use when sighting the top plate on the workpiece.

Rout the Tenon

Use the marking gauge to scribe a line defining the length of the tenon on one of the rails and clamp the rail to the jig body. The top plate on the jig contains guide-ways and is equipped with a table sight that is used to center the top plate on the workpiece. Once the top has been centered and locked down and the table sight retracted, set the router on top and lower the bit just enough so it

will remove the scribed line, leaving you with crisp edges on the tenons shoulders. Set your bit depth and then make a shallow climb cut in a clockwise direction around the outside of the piece; by making this shallow climb cut there will be no tear out as the fibres are completely supported during the initial cut. Follow this up with a final cut in the other direction ensuring that the left hand guide pin follows the outer edge of the guide-way. You'll end up with a perfect tenon every time.

Rout the Mortise

If you are routing the mortise close to the end of the stile you may find it convenient to leave some extra material (referred to as the horn) on the end to be trimmed off later. To rout the mortise, clamp the stile to the jig body, keeping the 'X' side against the jig, and then center the top plate on the cross hairs using the table sight. Set the depth stop on the router to rout a mortise that is just slightly deeper than the length of the tenon. This time, rather than following the outside of the joint guide, place the pin in the center of the joint guide and move the router to one end. Plunge the router to its full depth and then raise the bit out of the hole. Move the router over just about 1/3 the width of the bit and repeat. Continue doing this until the entire mortise has been drilled out. Then run the router back and forth, first against one

side of the groove and then back against the other side to clean up the slightly scalloped walls of the mortise. The tenon should fit into the mortise with piston like precision.

Other Options

The front clamping face on the jig body also tilts out making it possible to easily cut angled mortises. On the rear of the top plate there are a couple of limit stops that work to set stops on the front-to-back and side-to-side movement. Using these sliding stops you can rout double, twin, triple and quad mortise and tenon joints as easily and accurately as a single mortise, though there is a little more time involved. Recently, Leigh has released a few extra joint guides to further enhance the functionality of the FMT. There are joint guides that enable you to make the necessary cuts to build louvered doors and to make square tenons. Another set of joint guides allow you to rout mortises on the X-axis, that is to say, at 90° to the clamping plate. The Leigh manuals are the best instruction manuals I've ever read. They can be downloaded from their site should you want more detailed information on individual procedures.



MICHAEL KAMPEN
mkampen@canadianwoodworking.com

CARVEWRIGHT™
WOODWORKING SYSTEM

Now Available In Canada

Project files & plans available online at www.carverwright.ca

The CarveWright Woodworking System is a revolution in computer controlled carving, bringing unimagined possibilities to the home shop. For more information and projects visit www.carverwright.ca or call 1.888.874.8661

New Dovetail Jigs by Leigh! 12" 18" or 24"

Now Available at **Lee Valley Tools**

OPTIONAL VRS VACUUM & ROUTER SUPPORT

Leigh Super Jigs rout through, half-blind, sliding, single pass half-blind dovetails and box joints. Includes bits, guidebush, DVD, etc.

leighjigs.com 800-663-8932

LEIGH
Leigh Router Joinery Jigs

25 YEARS of Innovation and Excellence

woodworkersgallery

This project was selected from our website's woodworking forum.

Chris spent the better part of six months refining the design of this cabinet on paper and collecting the perfect materials before beginning construction. He even made a full size leg out of pine to make sure he was happy with the shape.

The cabinet is constructed of quarter-sawn white oak and features hand cut dovetails. Chris found that chopping dovetails in oak can be quite the challenge; he spent the better part of four evenings cutting the dovetails, but feels that the result was well worth the effort. The carcass fits together perfectly. The cabinet body was finished with light walnut Watco Danish Oil and three coats of wax. The lacewood legs taper from top to bottom and from inside to outside, and are attached to the carcass with ebony plugs and turned brass spacers, polished to 600 grit with wet paper and then coated with a clear lacquer.

The legs are finished with three coats of blond shellac and three coats of wax. The door panels feature spalted curly maple panels. The door frames are finished with Watco Oil and wax while the panels are finished with water-based polyurethane and wax. Chris used Brusso knife hinges and 'Twin Bow' hardware from Lee Valley, leevalley.com. The three drawers have spalted maple fronts with hard maple boxes and half blind dovetails. Inside the cabinet are three ½" thick glass shelves. The cabinet measures 16" deep by 20" wide by 50" tall. Chris says that he took his time with this project and he couldn't be happier with the result.

Visit, CanadianWoodworking.com, and join our woodworking forum. That way you'll be able to show your work to the world, and then vote for our next featured project.

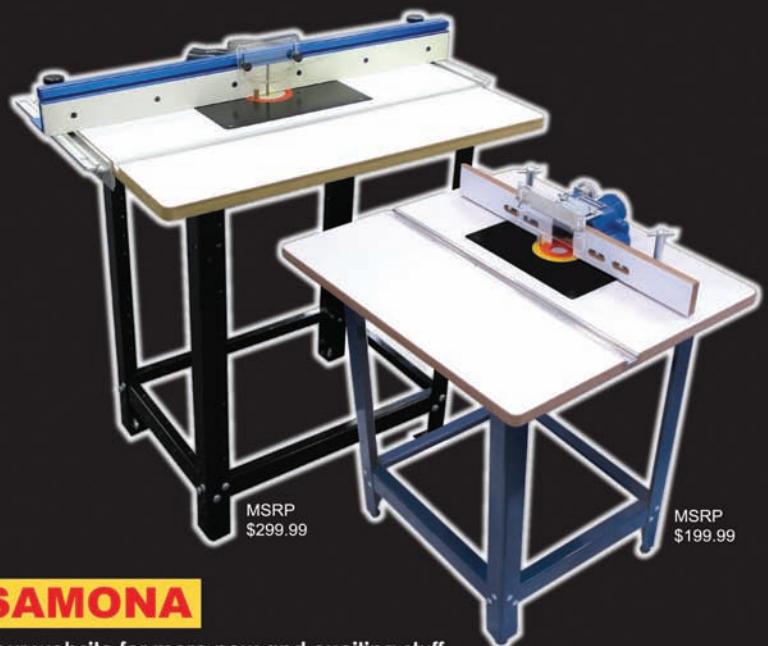


Quarter-sawn white oak stilted cabinet by Chris Delaney, Pickering, ON.



Work of Art

Introducing two new Professional Router Tables from Samona



SAMONA

www.samona.com Visit our website for more new and exciting stuff



Dust Collectors for the Home Shop

For carvers primarily using hand tools, a simple broom and dustpan will make quick work of cleaning up wood chips. But, in most woodworking shops, large or small, the proliferation of machinery and power tools creates a lot of wood chips and dust. This debris represents two significant hazards; chips left to accumulate become a fire and tripping hazard. Shavings will combust much more easily than a solid block of wood and will help a fire spread with lightning speed, while finer dust makes walking on a smooth floor that much more slippery.

A dust collector is designed to be the first stage in your dust abatement program and must be able to do three things well: it must move a sufficient volume of air to capture the material generated at each machine; the air must travel at a sufficient velocity to transport even the largest chips

and debris; and it must have filter media sufficient to capture and hold the finest (and most damaging) particles. Without the ability to capture and hold particles 1 micron in size and smaller, a dust collector becomes nothing more than a system to re-circulate the dust and keep it airborne.

Small Shop Options

There are three types of dust collection systems suitable for home shops. Carvers, crafters, and those who don't rely on stationary machines that produce large volumes of dust and debris can use a shop vacuum. This is very cost effective, doesn't take up a lot of floor space, and is flexible – you can easily move the vacuum to the dust source. While vacuums move air at a high velocity, they don't move a large volume of air. So while they do a good enough job collecting the fine dust and smaller wood chips from power tools (random

There is one thing that all woodworkers share no matter what aspect of woodworking they participate in – as long as you are working with wood, you need to clean up a mess.

orbital sanders, router tables, circular saws and the like) they are unsuitable for shop machinery. They also have a small storage capacity necessitating frequent emptying. Adding a cyclone lid leevalley.com and trashcan to this type of set up will greatly increase your chip storage capacity and reduce how frequently you'll be emptying the vacuum canister.

The most common dust collection systems are the conventional single-stage 'bag collectors'. They offer an efficient, cost effective way to manage shop dust. Increasingly you'll see the filter bags on this style of collector being replaced by canister (cartridge) filters.

An alternative to bag collectors are the two-stage 'cyclone collectors' that use cyclonic action to separate heavy dust chips from finer dust. These systems are

highly effective, but come at a premium price.

Conventional Bag Collectors

Conventional bag collectors come in a wide range of sizes from 1 to 2HP units designed for small home shops, 3 to 5HP units with larger air flow and bag capacity for larger professional workshops and mid-sized production shops, and larger two-stage collectors specifically designed for the big production shops. General Canada, for example, offers 16 different dust collector models.

There are four main components to a bag collector: the filtering medium, which is made up of a filtering bag or canister suspended above the drum; the impeller, which moves the air from the piping into the filtering medium; a motor that drives the impeller; and a containment medium, which is usually a plastic bag suspended below the drum. Rigid (metal or PVC piping) or flexible hosing connects the collector to the shop machinery.

You have the option of rolling your collector to the machine you need to use and connecting the two together with a short length of flexible hose or installing a permanent system of ducts to connect the collector to every machine in your shop. The decision will be based on the kind of work you do, the size of your shop, and the number of machines you have. These factors, in turn, will determine the size of collector you will need.

Typically, small 1HP collectors have an air flow capacity of about 400 to 650 CFM. You'll get maximum performance from these collectors by connecting them directly to a machine as needed, and keeping the collector hose as short as possible, certainly no longer than six feet. For a system like this, you can use a 4" to 5" diameter collector hose.

CFM Requirements	
Machine	CFM Requirement
12" planer	450
6" jointer	450
10" table saw	350
14" band saw	350
Drill press	300
Mitre saw	450

For a larger home workshop, up to around 500 square feet, where you typically operate one machine at a time, a 1 ½ to 2HP bag (canister) dust collector will likely be a better choice. These collectors typically have an air flow capacity of from 1,000 to 1,600 CFM. You can have machines located further from the dust collector, and incorporate various connector fittings. For a system like this, you can use 6" diameter hose. They will also be more suitable if you move to a larger shop in the future.

The ducting in our 400 square foot shop consists of 4" flexible hoses connected to most machines. Some, like the jointer are stationary and are permanently connected to the system, but others, like the thickness planer are on a wheeled stand and are rolled out of the way after use. For machines that are portable, we have provided gated drops with flexible hoses that can be hooked up in seconds. All of these hoses and fittings impose a resistance on the air flow, but by keeping the runs as short and straight as possible with tight fitting connections, our 1 ½HP Delta 50-850 provides enough suction to clear all of the debris we can throw at it.

Design Ductwork for Maximum Efficiency

If you are connecting the dust collector to a set of ducts, design the ductwork for maximum efficiency before you decide which collector to buy. A dust collector hooked up directly to a machine will perform differently if that machine is installed at the end of a 16' length of piping. Performance will also be affected by the size of piping you use and the style, number and location of fittings (such as elbows, Y-connectors, T-connectors, and blast gates). Several companies provide free duct design guides that can help you lay out your ducting, Oneida-air.com; airhand.com; nordfab.com.

Each machine in your shop will require a certain volume of air to clear the debris it generates and you should ensure that the collector you purchase can accommodate the machine with the greatest CFM requirement (refer to the accompanying chart for the CFM requirements of some common shop machines). If you will be running two machines at the same time, then your system will need to handle the combined CFM requirements of both machines. In our shop we occasionally run the table saw and jointer or thickness planer at the same time, so we need a collector with a minimum CFM rating of 800 CFM (350 for the table saw and 450 for the planer or jointer).



Remote Start

If you set up a dust collector in a permanent location in your shop and run piping to the machine, then having a remote control to turn your collector on and off can be a great advantage. Craftex, busybeetools.com, has both 110 and 220 volt models. The 110 volt model works with any collector up to 1 ½ HP while the 220 volt unit handles collectors up to 3HP. Both come with a control box, to which you connect the collector, and a battery operated remote control that operates the control box from up to 75 feet away.

The piping and fittings that convey debris to the collector impede the flow of air. This is referred to as static pressure (SP) loss. You can easily calculate the SP loss for each machine. Calculate the number of feet of duct between the machine and collector. To this add 6' for each 90° elbow along the line, 3' for each 45° elbow and 7' for each T-fitting. Then multiply the number of feet by .055 if you will be using 4" ducting; .042 for 5" ducting; or .035 for 6" ducting. The result is the static pressure loss for the machine. In our shop the table saw is 18 feet from collector, and there is one 90° elbow, for a total footage of 24' (18 + 6). We use 4" piping, so the SP for our table saw is 1.32 (24 x .055). You need to do this for each machine in your shop. We occasionally run the jointer or thickness planer while the table saw is running. The SP for these two machines is .88 and 1.1. For our system then, we need a collector with a minimum SP of 3.42 (1.32 SP for the table saw + 1.1 SP for the planer and 1 SP to account for air leakage and the caking on the filter bag).

Unless you are lucky enough to have an unlimited budget and space, installing the piping system for a dust collector will require you to make compromises as you go along. Invariably, the object is to reduce the impact the piping has on the efficiency of the system. Most collectors have dual 4" intake ports. In some cases you may be able to remove the dual ports and use the

What It Means

CFM - Air volume measured in cubic feet per minute.

FPM - The velocity of air as it moves through a dust collection system, measured in feet per minute.

SP - The resistance to air at rest in a duct measured in inches of static pressure. Also called 'friction', 'friction loss', 'resistance', or 'pressure loss'.

An excellent guide to calculating SP can be found in "Woodshop Dust Control", ISBN 1561584991.

larger opening for the main run of pipe. As the diameter of the pipe decreases, the volume of air you are moving will decrease but it will move faster. As the air speed in the pipes increases so does the friction, but this increase is exponential, not linear, so a doubling of the airspeed will cause a fourfold increase in friction. Eventually the added friction will eliminate any potential gains from an increase in airspeed. Use the

largest diameter possible for your ducting to allow the impeller to move a sufficient volume of air to carry the chips easily.

Convert to 240 Volts

Most 1 ½ and 2HP dust collectors are equipped with motors that allow them to be operated at 120 or 240 volts. Some of these collectors can have trouble starting when on a circuit with other machinery or if the circuit is at a distance from the panel. These motors take a few seconds to come up to full speed. As the motor comes to speed there will be a great in-rush of current to the motor and this can sometimes trip the circuit breaker. Switching the motor to operate on 220 volts will help eliminate this problem by reducing the voltage drop at the motor. Switching from 120 to 220 volts typically requires altering a couple of connections in the motor's junction box or if in doubt; follow the manufacturer instructions, or hire an electrician to do it for you. Generally, it is best if a dust collector has its own dedicated circuit when used at 120 volts. All the collectors we looked at have 120/240 volt motors, except Craftex and Samona, which are only available in 240 volts.

Impellers

The motor drives an impeller, which is what actually moves the air. On the models we looked at, impeller size was between 11" and 12" diameter. There are several designs in use by the various manufacturers as well as some different materials, but our preference is for a heavy welded steel impeller. These have the strength to survive unscathed after an encounter with a large chunk of wood or metal. Although highly unlikely, the impact of a piece of metal on a metal impeller could create a spark or

A Little Cake is Good

The fine dust that accumulates on the inside of the bag is known as cake. As the cake builds up it restricts the particle size that will pass through the filter media, which is a good thing. After a certain point though, too much cake on the inside of the dust collector begins to hinder the airflow through the entire dust collection system. Periodically give the filter a shake to clear the excess cake.

SERIOUS ABOUT
YOUR WORK ?

SERIOUS ABOUT
YOUR TOOLS ?

MAKE SURE
ITS A GREX

UP TO 2" PINS INTO RED OAK ... ALL DAY, EVERYDAY.
THE BEST PINNERS ON THE PLANET. PERIOD.

GREX P650
23 GA. HEADLESS PINNER



GREX industrial fastening tools
Now available in Canada
T: 905.838.4887 • info@grexcanada.com
www.grexcanada.com



Popular Models

Craftex CT095N - \$369.00
busybeetools.com

Delta 50-760 - \$419.00
deltaportercable.com

General 10-105 M1 - \$399.00
general.ca

King KC-3105C - \$319.00
kingcanada.com

Samona 80102 - \$429.99
samona.com

SCTW 65200 - \$369.00
steelcitytoolworks.com

cause a piece of hot metal to smoulder in the collection bag, so it is a good practice to empty the collection bag at the end of every shop session. Getting into this routine will reduce your risk of a fire and will leave the bag empty and ready for a new session in the shop.

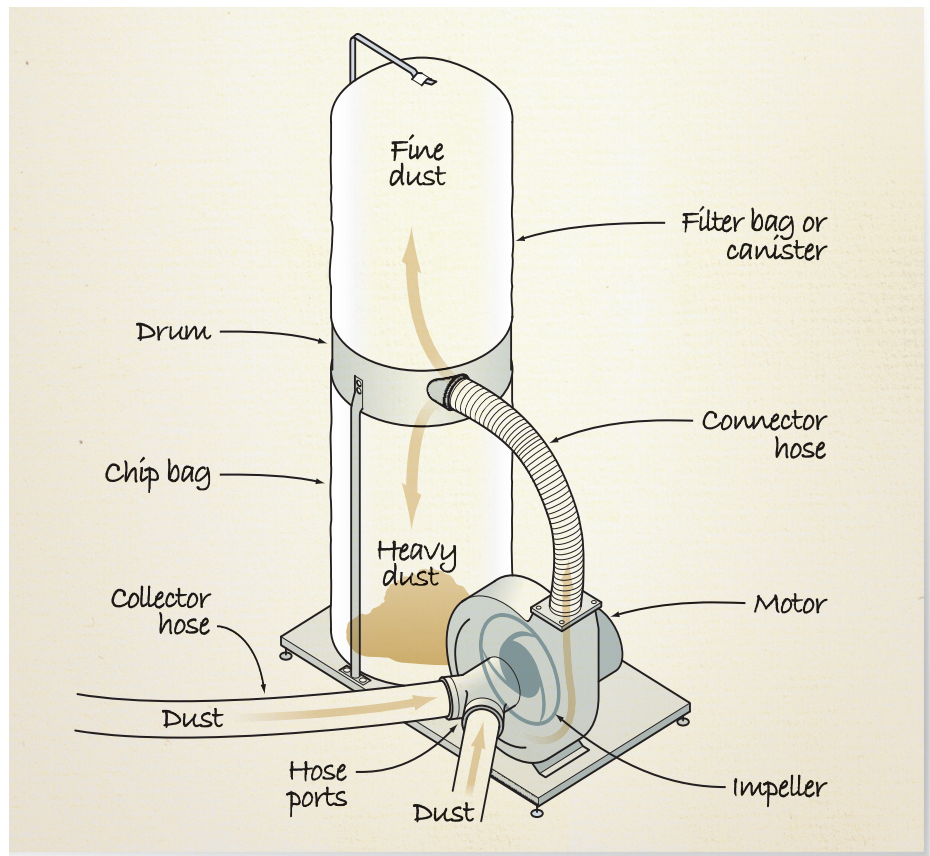


Illustration by: www.JamesProvost.com



Ideal for Outdoors!

Elmer's new Waterproof Wood Glue is ideal for outdoor projects. Just like all Elmer's wood glues, it has a strong initial tack and superior strength, now with a 100% waterproof bond!

Elmer's Waterproof Wood Glue passes ANSI Type-I water resistance and also resists heat, mould and mildew. Plus it can be sanded, painted and cleans up easily with water.

Try it yourself at
www.elmers.com/GlueGuide
 1-800-984-0401



Bag or Canister

For your dust collector to be effective, it should be equipped with a bag capable of filtering out fine dust particles. Fortunately most manufacturers now provide 1-micron bags as standard equipment. Bags rated at 1-micron are dense enough to capture the particles most dangerous to your health. The excess cake on the inside of the bag can be removed by simply banging the upper bag after you reinstall the empty lower bag. The bags provide between 12 and 20 square feet of filter area. There are woven and knitted polyester bags, and felted polyester bags. Felted bags offer the best particulate filtration. Most manufacturers provide these as standard equipment.

A number of companies also offer canister filters instead of bags. Canisters have a pleated filter media inside a rigid canister that provides a much larger

Points to take away....

- Use a 1-micron felt bag.
- Plan your ductwork to maximize the volume and velocity of air.
- Place machines requiring the highest CFM closest to the dust collector.
- Keep fittings, particularly T-connectors and elbows, to a minimum.
- Only open the blast gate for the machine you are using.
- Empty the collection bag outdoors at the end of every day to reduce a potential fire hazard.

filtering surface. This means the filter needs to be cleaned less often. Some of these filters are equipped with a flapper to help release the dust from the media. All the models we looked at come with an optional canister filter except the Steel City.

Noise Levels

Dust collectors are loud, and you should always wear hearing protectors when they are on. While some manufacturers provide decibel levels, the figures aren't

overly useful; manufacturers will measure the dB level at varying distances from the collector. Current standards suggest that 85-86dB is the threshold at which hearing protection becomes necessary to avoid long term hearing damage and since the dust collector is only used when another machine is used, the dB levels will require you to use of some form of hearing protection.

If you only use your shop in the summer then placing the collector in a weatherproof outdoor enclosure is another option, though this might be problematic if you don't live in the country and have neighbours that prefer more quite dust-free outdoor pursuits in the summer. Having the motor outside will also limit how late into the evening you can use the system before getting an angry visit from your neighbour. Because dust collectors move a great volume of air, placing the dust collector outdoors will very quickly remove all of the heated air from your shop in the winter. Placing the dust collector in a separate room in your shop can go a long way to deadening the noise but be sure that the room is large enough to remain cool with the dust collector running for extended periods. You can provide some baffled ventilation to aerate the room and contain the noise.

Warranty and Pricing

It's always good to get the longest warranty that you can on shop machinery. While there isn't much that can go wrong on a dust collector, you don't want to be stuck having to foot the price of repairs. The best warranty is on the Steel City (5 years), followed by the Craftex and Delta (3 years). The remaining units offer one to two year warranties.

Considering what they provide (a clean shop and healthy lungs), dust collectors are a sound investment and provide excellent value for the money. With prices ranging from \$319 (King) to \$429 (Samona) you're bound to find the right collector that fits your budget.

COMING EVENTS

THE WOODSTOCK WOODSHOW October 3, 4, 5

Woodstock Fairgrounds
Woodstock, ON
WoodstockWoodShow.ca

TOOLS OF THE TRADES October 5

Pickering Recreation Complex
Pickering, ON

VANCOUVER WOODWORKING MACHINERY, TOOL SHOW AND SALE

October 17, 18, 19
Abbotsford, BC
WoodandToolShow.com

KMS TOOLS WOOD SHOW October 17, 18, 19

Coquitlam, BC
KMSTools.com

BRETTWOOD MACHINERY WOOD SHOW

October 18
Madoc, ON
Brettwood.com

SIBO SALON INDUSTRIEL DU BOIS OUVRE

Place Forzani, Laval, PQ
Sibo.ca/en/index.shtml

HOME DEPOT WOODWORKING SHOW

October 25
St. Catharines, ON

THE EDMONTON WOODWORKING MACHINERY, TOOL SHOW AND SALE

October 24, 25, 26
Northland Park, Edmonton, AB
WoodandToolShow.com

WOODCARVING SHOW AND COMPETITION

October 25, 26
The Moose Lodge, Windsor, ON
WindsorWoodCarvingMuseum.ca

THE CALGARY WOODWORKING AND TOOL SHOW

October 31, November 1, 2
Stampede Park, Calgary, AB
WoodandToolShow.com

THE MONCTON WOODWORKING SHOW

November 14, 15, 16
Moncton Coliseum, NB
WoodShows.com

THE OTTAWA WOODWORKING SHOW

November 28, 29, 30
Lansdowne Park, Ottawa, ON
WoodShows.com

For more woodworking events: www.CanadianWoodworking.com

List your CLUB and event FREE.

Go to www.CanadianWoodworking.com/
data for detailed product specifications.

THE EDITORS

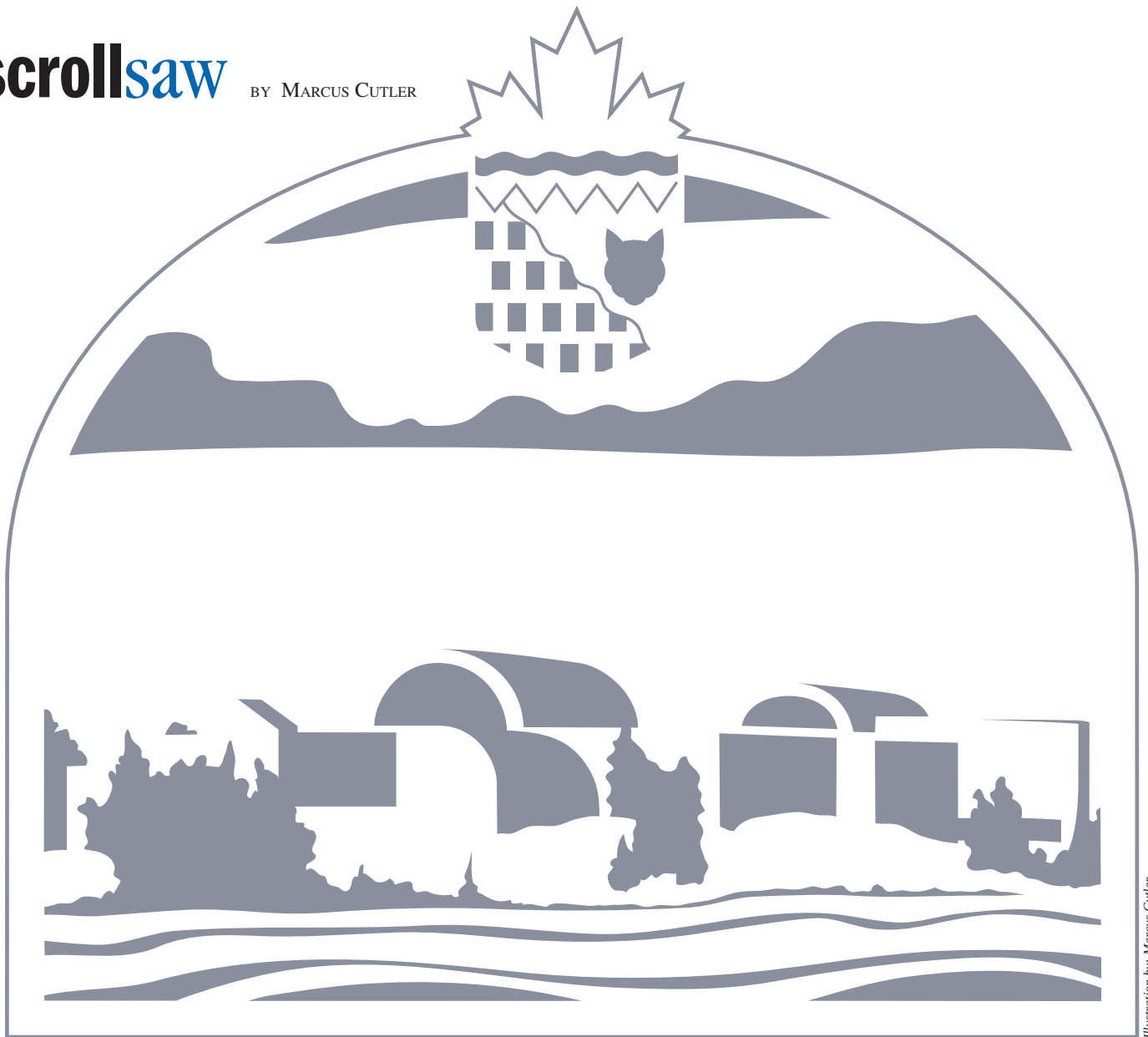


Illustration by: Marcus Cutler

Yellowknife

The capital of the Northwest Territories, Yellowknife, is home to about half the territory's population of 40,000.

It is located on the north shore of ancient Great Slave Lake near the outlet of the Yellowknife River. While originally settled by First Nations people, the town grew in response to natural resource exploration and extraction. The NWT is home to some of Canada's largest rivers and biggest lakes as well as the great Mackenzie Valley. As with its cousin to the west, the Yukon,

the NWT exists within the boreal forest ecosystem. The official tree of the NWT is the Tamarack Larch, a small to medium size deciduous coniferous tree (it has needle-like leaves which it sheds in the fall.) reaching about 60' in height with a trunk of about 2' in diameter. It is used for posts, poles and firewood.

The shield at the top of our pattern is from the territorial coat of arms. The wavy line at the top, which should be blue, represents water, while the white above and below the wave represents ice and snow. The bottom left part of the shield shows gold squares on a green background (standing for the

mineral and forest resources of the south part of the NWT), while the right part shows a fox on a red background (the fur resources of the northern tundra).

Scroll cutting tips

Photo-enlarge the pattern to the size you want. Cover your substrate (such as 1/4" Baltic birch ply) with masking tape, and then spray-glue the pattern to the substrate. Using a #5 13 tpi blade, cut out the shaded areas on the template. Start cutting out the smallest areas first, moving on to the next larger areas. Once the pattern is cut out, remove the masking tape, lightly sand as required, and then apply your finish.



Photo courtesy of Triton Manufacturing

Powered Face Shield Respirators

For maximum eye and lung protection nothing beats a powered face shield respirator.

In the shop, while your body presents the largest target for injuries because of its sheer size, and the fact that your hands are often in close proximity to sharp edges, it is an injury or damage above the shoulders that can have the most debilitating and lasting effect. We should all be in the habit of wearing eye protection any time we are working in the shop. When you fire up that noisy planer or sander you should already be wearing proper hearing protection as well. To complete the picture, and to protect your lungs from fine particulate found suspended in the air in every wood shop, the final piece of personal protective equipment you should be reaching for is a good quality dust mask or respirator.

When I worked in the construction industry, I wore a variety of different dust masks, respirators, safety glasses and safety goggles. During hot summer days this gear is uncomfortable and confining, while in

the winter your warm breath will condense the moment it hits a cold surface. Flimsy dust masks made to cover your nose and mouth offer little protection from the most dangerous particulate and will typically divert your breath upwards toward your eye protection where it will invariably condense and obscure your vision as the lenses fog up. Facial hair makes getting a good seal with a mask or respirator even more problematic. To further complicate matters, wearing earmuffs over a respirator means you'll need to remove them before you can remove your breathing gear.

Several companies have attempted to address these issues by combining these three pieces of personal protective equipment into one package. Triton, tritonwoodworking.com, and Trend, trend-ca.com, both offer systems that combine three pieces of personal protective equipment into one package. The

result, in both cases, is a self-contained face shield that provides full-face protection and a constant supply of clean filtered air. To guard your lungs, these units provide a battery powered filter/fan combination that directs clean filtered air to the top of the face shield. The filtered air is pumped into the face shield through vents at the top of the shield and then it flows over the face finally exiting via holes at the bottom of the shield. These two models both achieve the

The US National Institute for Occupational Safety and Health (NIOSH) provides efficiency ratings for respirator filters. N95 is a rating for respirators that filter out 95% of airborne particles (not gases or vapours) larger than .03 microns.

same result, but they come at it from slightly different perspectives.

The Triton Powered Respirator

The Triton Powered Respirator system (\$219.99, sears.ca) comprises two distinct parts, the face shield, consisting of a helmet and visor, which is worn on the head, and the filter/battery pack, which is self contained and is worn on a belt around the waist. The fan and filter pack are then connected to the back of the helmet by a hose. There are two N95 rated filters at the top of the battery pack, and a pre-filter located on the bottom. The Triton, which is rated at minimum 5.3 cubic feet of air flow per minute, will remove 99% of particles down to one micron in size and 95% of the particles down to .3 microns. A built-in battery charger recharges the two NiCad batteries in eight hours, but the lack of a quick charger means that you'll need to get in the habit of establishing a regular charging routine to be sure the batteries are charged when you need them. The Triton doesn't offer the convenience of being able to plug in a spare battery while you charge the one that you have drained. The batteries are soldered in place and can't be removed.

Having the battery slung on your hips makes for a lighter helmet, and at around two pounds, the Triton is comfortable to wear, even for those with prescription glasses or beards. There is a ratcheting

adjustment knob at the back of the helmet for adjusting the fit. The rigid hose that extends from the back of the helmet to the battery pack could be somewhat longer (and more flexible). When the fan is turned on the noise level in the helmet increases noticeably (we measured it at 77.6 dB). The visor is made of a polycarbonate material, and is quite clear, with little distortion. A pair of integrated ear muffs with a 23dB rating are attached to the hard hat; these tilt out and can be adjusted upwards and downwards for a comfortable fit. The visor can be opened to one of three positions. A replaceable shroud (face seal) covers the neck and is held tightly in place with a draw cord. The shroud does an excellent job of keeping dust from entering the bottom of the helmet. I was very pleased with the performance of the Triton, and despite a couple of shortcomings (non-removable battery, short, rigid hose), it offers excellent protection to anyone working in a high dust environment. The Triton comes with a three year warranty.

The Trend Airshield Pro

The Trend Airshield Pro (\$399.00, canadianwoodworker.com) is the most recent version of their powered face shield. Unlike the Triton version, the Airshield Pro is a single, self-contained unit with all of the filtering done on the headpiece itself. The unit ships with a 3.5Ah Ni-MH battery that can be recharged without removing it

Full-Face Respirators Unplugged

If you don't think that a powered full-face respirator is what you need, you might consider a standard, non-powered respirator, like the 3M 6800 (\$154.25, from acklandsgranger.com) or the North Safety 5400 (\$171.77, from acklandsgranger.com). In appearance and function they are quite similar products. They are very light weight protectors (approximately one pound) providing a wide field of vision and impact resistant visors. Both feature soft lightweight face piece shields made of a pliable elastomer material, easy to adjust head straps, and come with peel-away visor covers. A nasal piece on the front of the mask contains a one way flap that emits humid breath (helping to reduce visor fogging). On the 3M the nasal piece is removable for easy cleaning. These respirators are very comfortable in use and the N95 rated filters offer excellent levels of protection from fine dust. The dust cartridges on the 3M have a three point connector, while those on the North Safety screw on. Unlike the conventional paper dust masks, that tend to be used a few times and then chucked away, the filters on these masks last quite a bit longer before having to be replaced. Hearing protectors fit comfortably over either of these respirators. We tried both respirators in the shop and found that they performed admirably. They aren't as comfortable as the powered respirators when used for long periods of time, particularly in hot or humid environments, and if you wear glasses, the fit will be bit tight against the temples. However, we found it much more convenient to slip on a full face respirator than having to search around for a dust mask and eye protectors. And, you can buy a range of different filter cartridges for different applications (organic vapours, gases and the like).



North Safety 5400



3M 6800

Exclusive Canadian Distributor



AIRSHIELD FACE SHIELDS

Trend's powered respirators for full face and lung protection when woodworking. Keeps you cool and won't fog your glasses!

AIRSHIELD PRO

Combination face-seal & hood.
8 hour on board battery.

C \$399

C \$320

AIRSHIELD

The original air circulating face shield. 4 hour on board battery.

AIRACE

Dust mask with replaceable filter system.

C \$79

www.trend-ca.com

Winnipeg Store

Phone - (204) 786-3196 Fax - (204) 783-6867
Toll Free - 1-800-665-2244
1054 Portage Ave, Winnipeg, MB R3G 0S3
Email - info@canadianwoodworker.com

Calgary Store

Phone - (403) 255-8743 Fax - (403) 255-8753
Toll Free - 1-877-255-8743
105E - 58th Avenue S.E. Calgary, AB T2H 0N8
Email - salescalgary@canadianwoodworker.com

trendTM
routing technology

AD0816



Triton: visor up

from the helmet; the user can also purchase a second battery, which can be charged on an external charger and inserted when needed. Replacement of the battery is quick and easy, and battery life has been doubled on this new version, with a run time of eight hours. As an added bonus, an audible beep sounds when the battery is low. The Airshield Pro is noticeably heavier than the Triton, but with the placement of the battery pack at the rear of the helmet it feels well balanced. As expected, with the battery in the helmet the Airshield Pro is a bit noisier than the Triton, measuring 84.6dB. Air flow, which is rated at between 5.6 (minimum) and 7.06 (fully charged) cubic feet of air flow per minute, is noticeably stronger than on the Triton. Twin filters are rated at 98% efficiency, but are not NIOSH N95 rated.

The visor has also been moved closer to the face to improve the field of vision; eyeglasses end up being quite close to the visor. Like the Triton, the visor is very clear, with little visual distortion. To protect the visor from scratches, Trend offers a plastic overlay with adhesive edges that is simply attached over the visor. When the overlay is scratched or damaged, it is simply peeled off and replaced and at a cost of around \$4, which is considerably less than the cost of replacing a scratched shield. Unlike the Triton, ear muffs are an optional accessory on the Trend Airshield Pro. The helmet also uses a ratcheting adjustment knob at the back



Trend Airshield Pro



Triton: filter and battery pack

of the helmet to adjust fit (you need to press on the knob to lock it in place). While on the Triton you can move the visor away from the helmet, on the Airshield you tilt the whole helmet shifts upward out of the way. There is a small removable shroud that wraps around the bottom of the helmet and sits just above the ears. It doesn't do as good a job as the Triton in sealing off the entire head from dust, particularly around the ears. You can wear glasses under the helmet, but the fit is somewhat tight, particularly along the side of the head. The Airshield Pro, which has a one year warranty, has a lot to recommend it, particularly its removable battery and higher air flow rate.

Ideal for Dust Work

These powered face shield respirators are the perfect solution for anyone that is involved in a dusty and noisy operation. Woodturning is the type of situation where these tools really shine and show their worth; they have become a favourite of turners for a very good reason. Turning a bowl or spindle generates a considerable amount of shavings and dust, and at times this will be directed right at the turner. Standard safety glasses will not protect the worker from flying debris that can come around the sides of safety glasses, and they will certainly not offer any protection whatsoever if the bowl should be released from the chuck accidentally. When a bowl comes off it can cause considerable damage to whatever it contacts. This can



Triton Powered Respirator



Trend: visor up

happen without warning and turners should always wear a full-face shield. The fresh air flowing over your face will keep the shield free from condensation as well.

When standing at a lathe, holding your head more or less in the same position, the weight of these shields may become fatiguing during prolonged use. Users will need to take the added bulk of a powered full-face respirator into account when working in confined locations. Wearing either of these products takes some getting used to and looking like a member of your local Hazmat team, you'll certainly get a curious look or two should anybody drop by for a visit.

Powered face shield respirators offer the woodworker a final line of defence to protect their sight, hearing, lungs and good looks. Whether you are turning a bowl or grinding and cutting concrete, these systems are your ideal safety solution. Neither of these units are cheap, but when stacked up against a trip to the hospital and the potential damage an accident could cause, it only makes sense.

Powered face shield respirators are not designed to be used in areas containing explosive vapours such as paint spray booths.

MICHAEL KAMPEN
mkampen@canadianwoodworking.com



Trend: filter and battery

Mortising Jig

This versatile jig enables you to rout mortises for furniture construction and hardware installation.

Any jig used in the shop will enhance your woodworking, but when building a jig you must always come to a compromise somewhere between 'simple to build' and 'versatile in use'. Make the jig too all-encompassing and it becomes overly complex to make and use. Make it too simple and you may find it of limited utility.

This jig consists of two parts: the top guide surface upon which the router sits and

the clamping mechanism underneath. The top is fastened to the clamping mechanism using $\frac{1}{4}$ " x 20 quick-connect hardware allowing it to be positioned anywhere on most common sized workpieces, and to be easily centered on the mortise using cross hair marks.

You'll need to drill a lot of holes accurately to make this jig. I used the Dowelmax, dowelmax.com, however, you can use any dowelling jig that enables you to drill evenly spaced holes.

This jig is sized to fit a Triton MOF001KC router, tritonwoodworking.com, equipped with an 'E' ($\frac{3}{8}$ " O.D.) guide bushing. You will need to adjust the measurements to suit the router and guide bushing you use.

The Clamping Mechanism

The top guide surface is centered on the layout marks on your stock using the cross hairs in the opening. The clamping mechanism is then snugged up against the workpiece and locked in place with the large head bolts, leevalley.com, and a pair of clamps secure the jig to the workpiece.

- Cut the clamp face pieces (A) to size. These will be in contact with the workpiece when the jig is in use.

- Cut the clamp top pieces (B) to size; these will be in contact with the underside of the guide top (D). Drill two $\frac{1}{32}$ " holes in each piece (as shown).

- Drill dowel holes along one edge of each top piece (B). Drill a corresponding set of

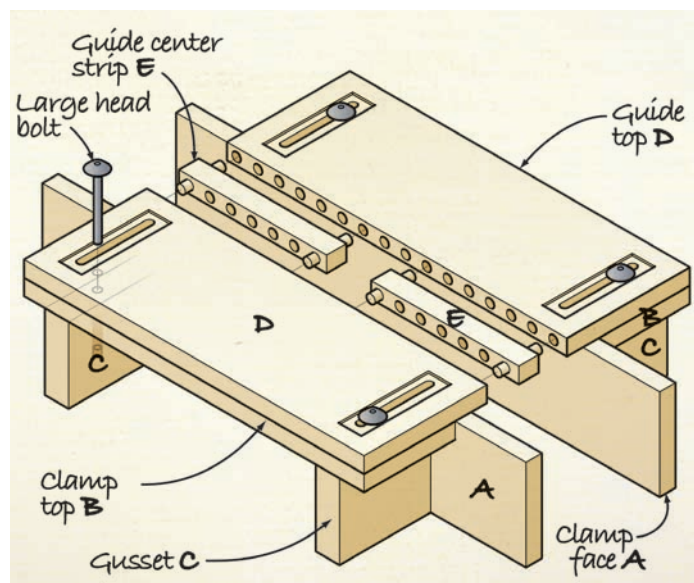


Illustration by: www.JamesProvost.com

MATERIALS LIST (All measurements in inches)

Part		Qty	T	W	L
A	Clamp face	2	½	2 ⅞	15 ¼
B	Clamp top	2	½	3	10 ¾
C	Gussets	4	¾	2 ⅜	2 ⅟16
D	Guide top	2	½	4	10 ¾
E	Guide center strip	2	½	⅝	10 ¾

SUPPLY CHECKLIST

Plain insert nuts, (Lee Valley Tools, #00N11.20)
Large head bolts, (Lee Valley Tools, #00N15.40)

dowel holes centered on the upper edge of the clamp face pieces (A). Using dowels and glue instead of screws makes it impossible to damage a bit should something happen through operator error that has the bit coming in contact with the edges of the clamp face.

- Cut the four gussets (C) to size; these strengthen the connection between pieces A and B and house the insert nuts.

- Drill a 2" deep hole in the top of the gussets, 1 3/4" in from the inside edge and install a plain insert nut in the bottom of each hole.

- Glue and assemble the top and face pieces. Use clamps to ensure a tight joint.

- Apply glue to the top edge and inside edges of the gussets (C), place 1/2" spacers over the top pieces (B), insert the large head bolts through the spacer and the top piece and into the gussets (C). Tighten the bolts, and then drill two countersunk pilot holes and drive two steel screws through each top piece and face piece into the gussets. Apply clamps and let the glue set. Once the glue is dry, remove the steel screws and replace with brass screws.

The Top Guide Surface

The top guide surface is what supports and guides the router through the cut. The configuration of the top makes it possible to cut any size mortise by simply making up additional center pieces (E). Label each pair of center pieces to indicate the size of

the mortise they are used for.

- Cut the two guide top pieces (D) to size and drill a series of dowel holes along one long edge of each piece. Fit the two pieces together with a couple of dowels and use a knife to mark the center along the length of the joint. Separate the pieces and use a scroll saw to make a shallow 1/8" cut at the knife mark; these will be the cross hair marks used to center the jig on the mortise layout lines, lengthwise.

- Install a 5/16" spiral bit in the router table, and using a fence and end stops, rout the two mortises required for each large head bolt.

- Prepare the solid wood strip for the guide center strips (E) and drill corresponding dowel holes along their length. My center strip was 5/8" wide to accommodate the 5/8" bushing on my router.

- Fit the solid center strip to the side pieces and use the cross hair cuts to center the cut lines to create a 1 1/16" opening. Cut the waste piece out of the center using a mitre saw or a cross cut sled on the table saw.

- Measure the width of the center strips and use a marking gauge to mark the exact center of each piece at the opening. Make a 1/8" deep cut with the scroll saw for the cross hairs to form the second axis.

- To assemble the jig, use dowels without glue to connect the four top pieces. If you want to cut mortises of a different size, simply make a new set of center pieces (E). Using a large head bolt, fasten the top guide

assembly to the two clamp mechanism pieces.

Using the Jig

Prior to using the jig, lay out the mortises on your stock; mark the center of the mortise on both axes. Loosely fasten the clamp mechanism to the underside of the router guide and place the jig on the stock and center the jig on these lines using the cross hair marks. Snug the clamp mechanism up to the material and then use some Irwin Quick-Grip clamps to secure the jig to the workpiece. Tweak the final placement of the top on the layout lines and then tighten the large head bolts. With the jig now secure you can rout the mortise.

For production work such as when joining legs and an apron on a table, mark one side of the clamping mechanism and leave that side securely fastened in place. Use this side as a common reference face and adjust the other side of the clamp for any variation in material thickness. The top guide surface can also be clamped directly to a flat surface when working in the center of a larger panel.

Mortise and tenon joinery is one of the most commonly used woodworking techniques, and this jig will help you make perfect mortises every time.

THE EDITORS

ADVERTISERS INDEX MANUFACTURERS/DISTRIBUTORS			
Contact these companies for detailed product information or to find a local re-seller.			
CarveWright.ca	888-874-8661	MLCSWoodworking.com	800-533-9298
Circa1850.com	514-932-2157	OneWay.ca	800-565-7288
DowelMax.com	877-986-9400	RustOleum.com	800-387-3625
EasyRadiantWorks.com	800-403-3279	PrecisionWoodworking.ca	800-463-3582
ElmersRebuilt.com	800-848-9400	Samona.com	866-572-6662
Felder-Group.ca	800-340-0233	SawStop.com	800-387-0608
ForrestBlades.com	800-733-7111	Trend-uk.com	800-665-2244
Freud.ca	800-668-8802	TritonWoodworking.com	888-874-8661
FujiSpray.com	800-650-0930	RETAILERS	
General.ca	819-472-1161	Contact these companies for product availability and pricing.	
GrexCanada.com	905-838-4887	BCWLumberandPlywood.com	519-770-3460
IBEXEnt.com	888-380-2422	Bill's Machine & Welding	519-580-7140
KingCanada.com	514-636-5464	BlackBridgeOnline.com	800-826-8912
KregTool.com	800-447-8638	Brettwood.com	800-799-2199
LaMemoireDeLartisan.com	514-250-7752	BusyBeeTools.com	800-461-2879
LeighJigs.com	800-663-8932	CraftTimeClockery.com	800-263-2569
Lie-Nielsen.com	877-562-2623	EliteTools.ca	888-830-0124
		FederatedTool.com	800-387-0608
		HomeHardware.ca	519-664-2252
		KMSTools.com	800-567-8979
		MarksMach.com	613-831-8047
		MorleyMillerMachinery.com	519-448-1361
		PenBlanks.ca	877-585-0403
		RobCosman.com	877-967-5966
		RosewoodStudio.com	866-704-7778
		SawBird.com	800-729-2473
		ShakerRoads.com	905-304-8474
		StockroomSupply.com	877-287-5017
		TegsTools.com	866-462-8347
		TheOnlineWoodShow.com	877-287-5017
		TheSawShop.com	877-778-5585
		TuffTooth.com	800-461-3895
		VielTools.com	800-463-1380
		Waterborne.ca	888-897-2947
		WelbeckSawmill.com	519-369-2144
		WoodCraftPlans.com	800-296-6256
		WoodEssence.com	306-955-8775
		WoodShedLumber.com	905-975-3933
		WorkShopSupply.com	800-387-5716



WOODWORKING MACHINERY, TOOL SHOW & SALE
...for the Professional & Hobbyist Woodworker

Enjoy on-going seminars
Talk to the Experts!

Giant Tool Sale!
100's of Exhibits!

Enter to win a Tool Prize Package worth \$7500

Courtesy of Delta Porter Cable

15th Annual
Vancouver & The Valley
Tradex Centre, Abbotsford, BC
Oct. 17, 18 & 19, 2008

13th Annual
Edmonton
Northlands Agricom, Edmonton, AB
Oct. 24, 25 & 26, 2008

13th Annual
Calgary
Roundup Centre, Stampede Grounds
Calgary, AB
Oct. 31, Nov 1 & 2, 2008

Hours: Friday 1-9, Saturday 10-6, Sunday 11-5
Adults \$10.00 • Seniors \$7.00 • Students \$7.00 • Children under 12 Free

\$2 OFF ADMISSION
At the Show

with this coupon & a non-perishable food donation to...

Abbotsford Community Services

\$2 discount per customer only.
Not to be combined with any other offer.

Friday is Contractor's Night!
FREE Admission from 6pm-9pm
with proof of occupation!

Get Expert advice from John Silouts appearing on our Main Stage
Friday: 2:00 pm • 5:00 pm • 7:00 pm
Saturday: 11:00 am • 4:00 pm • 5:30 pm
Sunday: 11:30 am • 12:45 pm • 2:00 pm

WOODANDTOOLSHOW.COM

WRITERS WANTED

BE A PART OF OUR DYNAMIC, GROWING, AND REWARDING TEAM.

WE ARE LOOKING FOR ABLE, ENTHUSIASTIC WOODWORKERS TO CONTRIBUTE PROJECTS IN THE FOLLOWING AREAS:

- HOME FURNISHING PROJECTS
- INTERIOR AND EXTERIOR HOME IMPROVEMENT -PROJECTS
- SHOP PROJECTS

CONTACT: CARL DUGUAY
cduguay@canadianwoodworking.com
250-598-4671

CANADIAN WOODWORKING IS EXPANDING
**MORE PAGES; MORE READERS;
MORE NEWSSTAND LOCATIONS.**
AND THAT MEANS WE NEED MORE WRITERS!
PAST WRITING EXPERIENCE NOT NECESSARY.



HARD-to-FIND Woodworking PLANS!

"THE place to find hundreds of plans."

WoodcraftPlans.com

ONLINE or SEND FOR CATALOG
\$2 To: 300 Warren St, Dayton, OH 45402

Furniture – Queen Anne-Mission-Shaker-Chippendale, Spanish, English, and more.
Toys – Rocking Animals, Youth Furniture.
Outdoor – Sheds, Furniture, Windmills.
Scroll Saw – Patterns Galore, Blades, etc.

www.WoodcraftPlans.com
www.FurnitureDesigns.com

SUBSCRIBE NOW

and Save over 40% off the Cover Price

PLANS • PROJECTS • WOODWORKING TIPS • WORKSHOP JIGS • TOOL REVIEWS
WOOD JOINERY • WOOD FINISHING • DUST COLLECTION • SKILL BUILDERS

Canadian Woodworking

SUBSCRIBE NOW FOR YOUR CHANCE TO WIN!

THREE EASY WAYS TO SUBSCRIBE:

1. Call **1-800-204-1773**
2. Subscribe online
www.CanadianWoodworking.com
3. Mail subscription order to:
Canadian Woodworking
RR 3, Burford, ON Canada N0E 1A0



1 HP Dust Collector with Hook-up Kit
Model 10-005/10-100
Retail value: \$338.00

☒ **Yes!** Start my subscription to Canadian Woodworking and enter my name in the draw for a General International 1 HP Dust Collector with Hook-up Kit.

BEST DEAL! →

☐ 2 YEARS - 12 issues only \$39.95 Save over 40%

☐ 1 YEAR - 6 issues only \$24.95 Save over 25%

FIRST NAME _____

ADDRESS _____

CITY _____ PROVINCE _____ POSTAL CODE _____

TEL _____ EMAIL _____

☐ PAYMENT ENCLOSED ☐ BILL ME LATER

CREDIT CARD # _____ EXPIRY _____ SIGNATURE _____

☐ Please send me FREE Monthly e-Newsletter

Prices include GST. U.S. orders add \$15 CDN/year.
Foreign orders add \$40 CDN/year.
Subscription prices in effect until Nov. 30, 2008.

Draw period ends Nov. 30, 2008



3245 Harvester Road,
Burlington, ON
1-800-668-5721
905-333-0075

Visit Our Showroom or Check out our **Hot Deals** and
On-line Flyers at www.AshmanTools.com

Huge Inventory of Woodworking Tools and Machinery
Full Sharpening and Repair Service



www.blackjackcompany.com



Deluxe Pocket System

Pocket Hole joinery is the fast solution for strong joints in modern cabinetry. Shallow pockets and self-tapping screws provide instant high strength joints



Workshop Supply Inc.
1-800-387-5716

WATERBORNE.CA

Lacquers
Stains
Abrasives
Supplies
Spray Guns

Commercial & Educational
Discounts Available



Stocking 100's of products we ship
anywhere in North America. Call
or visit www.waterborne.ca

1.888.897.2947

Lie-Nielsen TOOLWORKS INC.

www.lie-nielsen.com
1-877-LN Canada
(1-877-562-2623)
Ottawa, Ontario

Beading Tool with Blades \$145.

Your Band Saw Can't Do It Alone!

Add incredible accuracy and versatility to your band saw with our Precision Band Saw Fence. It's the only fence on the market that adjusts in two dimensions to compensate for blade drift and also includes a Precision Lens Cursor for incredibly accurate cuts, time after time!



See it in action at www.kregtool.com



Precision Lens Cursor for incredible cutting accuracy.



Rigid aluminum construction for amazingly straight cuts.



Low profile position allows you to lower the blade guard to cut thin material.



Precision Band Saw Fence



800.447.8638 | www.kregtool.com

KMS Tools and Equipment Ltd.

Nova DVRXP Lathe
• Free stand and Free Supernova 2 Chuck
• 1.75 Actual horsepower
• Variable speed from 100 - 3500 RPM
• 16" Swing
• 24" Between centers (can be extended with optional bed segments)
\$1999⁹⁵

Nova G3 Chuck
• Includes 2" dovetail jaw set, woodworm screw & insert to fit your lathe
\$99⁹⁵
Lowest Price Ever
Limited Quantities

Nova Cole Jaws
• A must have for bowl turning
• Mounts to all Nova chucks
• Holds bowls up to 10" in diameter
• Soft rubber pads for a great grip
\$59⁹⁵

King 10" x 16" Wood Lathe
• 6 Speeds: 500 to 3950 RPM
• 10" swing, 14" between centers
• Includes face plate, spur centre, live centre, toolrest & motor
\$249⁹⁵

VicMarc 24" x 52" Wood Lathe
• Powerful 2.2HP motor
• Electronic variable speed with digital RPM indicator
• Infinitely variable 30-3000 RPM
• Forward and reverse switch
• Made in Australia
• Includes: 6" face plate, spur drive, live center, knockout bar, 300mm tool rest & faceplate spanner
\$5269⁹⁵
Call store for Bonus offer with this purchase

6pc High Speed Steel Kit
• Professional profiles that are excellent for beginners or intermediates
\$69⁹⁵

30% OFF
Maxwood Turning Tools With
The Mention Of This Ad

Each store carries a wide selection of wood turning tools and other supplies to suit the needs of any wood worker from the novice to the professional

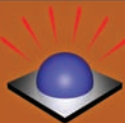
Shop online www.kmstools.com

Woodworking Demos Online

Free Woodshows

24 Hours A Day

www.theonlinewoodshow.com



Wood Essence Distributing

Canadian Suppliers of Specialty Wood Finishing Products

Shellac
Abrasives
Spray Equipment
Dyes & Stains
Buffing & Polishing



Tel: 306.955.8775
Fax: 306.955.0865

TARGET COATINGS
PREMIUM WATERBORNE FINISHES

In Stock at our Oakville Warehouse!

www.woodessence.com

DOWELMAX

PRECISION ENGINEERED MULTIPLE DOWEL JOINERY SYSTEM

GOLD MEDAL WINNER AT THE TOMORROW'S WORLD SCIENCE FAIR, LONDON, ENGLAND



This china cabinet was built with Dowelmax to create 60 precision hardwood dowel joints for the strongest and most accurate construction possible.

Our Unconditional Guarantee: Wood joints that are stronger than a mortise and tenon, and a joinery system that is more accurate and versatile than any other system on the market.



For more information, or to order call **1.877.986.9400** or log on to www.dowelmax.com



www.stockroomsupply.com

1-877-887-5017



Specializing in Sandpaper and Abrasives

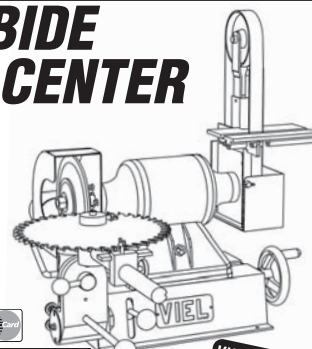
VIEL CARBIDE SHARPENING CENTER

SHARPENS:

- CARBIDE SAW BLADES
- CARBIDE ROUTER BITS
- CARBIDE SHAPER CUTTERS

● WOOD CHISELS
● SCISSORS
● BUTCHERS KNIVES
● DRILL BITS
● AND MORE.....

THE MOST COMPLETE MACHINE ON THE MARKET - MADE IN CANADA - BASIC MACHINE STARTS AT \$345.00



VISA CALL 1-800-463-1380 MasterCard

VIEL TOOLS INC.

P.O. BOX 250, ISLE-VERTE, QC. CANADA - G0L 1K0

VHS VIDEO \$9.95

"Big or Small ... We've got them all!"

Scroll Saws • Table Saws • Blades • Routers • Router Bits • Jointers
Air Nailers • Planers • Intarsia Patterns • Books • Bandsaws • Compressors



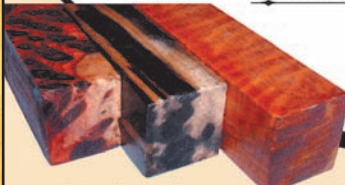
MORLEY MILLER MACHINERY **24TH YEAR**

"Come see our showroom!" Hwy. #5, St. George, ON
(519) 448-1361 • www.morleymillermachinery.com

Mother Nature's Finest

william wood-write

Pen Kits
Stabilized Pen Blanks
Exotic Wood Pen Blanks



1-877-585-0403
Cambridge, ON, Canada www.penblanks.ca

Ask us for a free catalogue

R&D BANDSAWS

Manufacturer of TUFF TOOTH® Blades



Little Ripper Blade Special
5/8" x .025" x 3TPI High Tungsten Silicon
(from 72" to 150" long)

Sale Price \$25.00 CDN
(Regular Price \$36.00 CDN)

Call for your FREE catalogue!
1-800-461-3895

www.tufftooth.com

SHAKER

Excellent selection of **cherry wood**

Woodworking Classes Available - visit our website

ROADS
905-304-8474
WWW.SHAKERROADS.COM
E-MAIL: SHAKER-ROADS@SYMPATICO-CA

Ancaster, Ont. Maurice Desnoyer & Janice Currie

New! Clamex



The biscuit-shaped connector

IBEX **Lamello**
www.ibexent.com

NOW ACCEPTING VISA **4x8 PLYWOOD** 3% CASH DISCOUNT

1/2" - Aspen G2	\$36.40	1/4" - Birch G1	\$28.10
3/4" - Aspen G2	\$43.70	1/2" - Birch G2	\$39.50
1/4" - Pine	\$70.70	3/4" - Birch G2	\$46.80
1/4" - Oak G1/G2	\$27.00/40.55	1/4" - Cherry	\$45.76
1/2" - Oak G2 F.S.	\$49.95	3/4" - Cherry	\$75.00/99.95
3/4" - Oak G2 F.S.	\$64.50	1/4" - Maple G1	\$33.00
3/4" - Oak FACTORY SECOND	\$45.00	1/2" - Maple G2	\$49.95
3/4" - Okoume	\$40.55	3/4" - Maple	\$52.50
WE CARRY WHITE MELAMINE		1/4" - Walnut	\$96.75

Baltic Birch -
60"x60"

1/4"	\$19.95
1/2"	\$27.05
3/4"	\$39.55
1"	\$43.65
3/4"	\$47.45

PRICES & STOCK SUBJECT TO CHANGE • LUMBER ALSO AVAILABLE

BCW LUMBER & PLYWOOD
1158 Colborne St. E. Brantford, Ont.
Tel: (519) 770-3460 / bcwlumberandplywood.com
NOW OPEN 6 DAYS

THE WOOD SHED

Serving woodworkers since 1990

Kiln-dried lumber sales
Red and White Oak
Hard and Soft Maple
Pine, Ash, Black Walnut,
Cherry, Curly Maple, Bird's Eye Maple
exotics and much more.
Crown moulding and trim also in stock

Smithville, ON
905-957-3933
www.woodshedlumber.com
Check our website regularly for specials!

OVER 220 PATTERNS, BOOKS, TOOLS AND SCROLL SAW BLADES!

SAWBIRD INTARSIA DESIGNS
by *James Hall*

OVER 90 DIFFERENT BLADES!
\$3.33/doz. (by the gross)

FREE CATALOGUE write:
SAWBIRD INTARSIA DESIGNS
BOX 1339, ESTEVAN, SASK., S4A 2K9
1-800-SAW-BIRD 1-800-729-2473
www.sawbird.com

Rosewood STUDIO

SCHOOL OF FINE WOODWORKING
One week to nine month programs
Almonte, ON, Canada
1-866-704-7778
rosewoodstudio.com

TEGS TOOLS AND MACHINERY

the right tool... the right price... the right place!

Bosch | Dewalt | Grex | Hitachi | Makita | Milwaukee | Panasonic | Paslode | Porter Cable | Triton
Delta | General | King | Powermatic | Steel City

(905)545-1590
1104 Barton St. E.
Hamilton
"Just east of Ottawa St."

www.tegstools.com
(866) GO 2 TEGS
4 6 2 8 3 4 7

(905)388-0784
1250 Upper James St.
Hamilton
"Just south of the Linc"

THINK OUTSIDE THE BOX

Rob Cosman's The Dovetail Story DVD AND BOOK

\$52⁵⁰ DVD and Book

Hand-Cut Dovetails DVD - \$29.95
Hand-Cut Dovetails Shop Copy - \$24.95
Plus taxes and shipping.

TO BUY, VISIT www.robcosman.com

Oneida Air Systems

- Cyclone systems available from 1.5 h.p.
- Pleated filter replaces multiple filter bags
- Filters 99.9% of material over 1 micron
- Bulky waste is separated before entering the fan
- System designs available

Available at: **WELBECK SAWMILL**
RR#2 Durham 519-369-2144
www.welbecksawmill.com

MARK'S MACHINERY

Single Tools or Full Shops
Woodworking • Metal-Working
Buy • Sell • Trade-Ins
New and Used

111 Grey Stone Drive
Ottawa, Ontario K0A 1L0
tel: 613-831-8047
email: mark@marksmach.com
website: www.marksmach.com

North America's Largest

2008 Woodstock Woodshow

Oct. 3, 4, & 5
Woodstock Fairgrounds

Admission: \$12
3-Day Pass: \$25
FREE Parking

Friday: 10am-6pm
Saturday: 10am-6pm
Sunday: 10am-6pm

Woodworking Machinery ~ Tools ~ Crafts
Seminars ~ Demonstrations ~ and more...

(519) 539-7772 Fax: (519) 423-6802
www.woodstockwoodshow.ca

NOV 14 - 16, 2008

EXHIBITIONS & DEMONSTRATIONS
WOODWORKING, CARVING, TURNING



TOOLS!
SHOW SPECIALS!
SUPER SAVINGS!

2008
MONCTON WOODWORKING SHOW

Fri. 1-8, Sat. 10-6, Sun. 10-5

519-657-8646
WWW.WOODSHOWS.COM
MONCTON COLISEUM,
AGRENA COMPLEX

NOV 28 - 30, 2008

EXHIBITIONS & DEMONSTRATIONS
WOODWORKING, CARVING, TURNING



TOOLS!
SHOW SPECIALS!
SUPER SAVINGS!

2008
OTTAWA WOODWORKING SHOW

Fri. 1-8, Sat. 10-6, Sun. 10-5

519-657-8646
WWW.WOODSHOWS.COM
ABERDEEN PAVILION,
LANSDOWNE PARK

La Mémoire de l'Artisan

Hand furniture
finishing products,
pigments and milk paint.

lamemoiredelartisan.com

514-250-7752

- AUTHORIZED SERVICE PROVIDER FOR KING, DELTA, PORTER-CABLE, GENERAL, AND GORILLA CNC
- MACHINERY DELIVERY, INSTALLATION, AND SET-UP
- PREVENTATIVE MAINTENANCE PROGRAMS CUSTOMIZED TO YOUR NEEDS
- ON-SITE SERVICE THROUGHOUT SOUTHWESTERN ONTARIO



BILL'S
MACHINE & WELDING CO. LTD.

Find out how
we can help you!
Call 519-580-7140 or
billsmachine@sympatico.ca

Enjoy the Benefits of HVLP with a FUJI



Visit: www.fujispray.com
or call: 1-800-650-0930

Brettmood

MACHINERY WORKS, LTD.

13TH ANNUAL WOOD SHOW

SATURDAY OCTOBER 18, 2008
8:00 AM - 5:00 PM

- DOOR PRIZES • SALES
- SEMINARS • FACTORY REPS

15138 HWY 62N, MADOC, ON
1-800-799-2199

RED-LINE

NEW! Accessorize our fence with your table saw!

- Multi-Purpose low profile attachments • Taper jigs
- High profile attachments • Table extensions



"The fence is the most important member of the table saw cutting team."

LIFETIME BLADES!
RIDGE CARBIDE TOOL CORP.
All Red-Line Accessories fit the Accusquare.

PROUD DEALERS OF:
TURBINAIRE
BOESHIELD T9
GENERAL
GENERAL INTERNATIONAL

www.TheSawShop.com Call 1-877-778-5585
email: info@thesawshop.com

ATTENTION: MAKERS OF SOLID PANEL CABINET DOORS

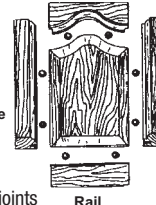
SPACE 10 BALLS

US Pat# 5317853 CDN Pat# 2115722

Revolutionary NEW Product

The inexpensive solution to your age old problem:

- Centers solid panels
- Compresses if panels expand
- Stops panel rattle
- Helps eliminate cracking glue joints



Stile
Rail

1-800-826-8912 • blackbridgeonline.com



Router Bits
Shaper Cutter
& more

www.elitetools.ca
1-888-830-0124

Elite

Free catalogue

NEW!
THE SKELETON CLOCK
MORE DETAILS ONLINE



CRAFTIME LOCKERY

YOUR ONE STOP CLOCK SHOP

QUARTZ MOVEMENTS, FITUPS,
DIALS, HANDS,
WEIGHT SHELLS,
PENDULUMS,
WEATHER
INSTRUMENTS,
AND A COMPLETE LINE OF
OTHER CLOCK
BUILDING
ACCESSORIES

PH: 1-800-263-2569
WWW.CRAFTIMECLOCKERY.COM

WANTED

Original
woodworking projects
and articles
for publication.

CONTACT THE EDITOR:
editor@canadianwoodworking.com

Canadian Woodworking

Collectors Are A Strange Breed

Walk into any woodworking shop in any basement or garage, and you'll notice one inescapable fact - woodworkers are inveterate collectors.

I once had a friend – actually he still is my friend, at least until he reads this – who spent many years, many thousands of dollars and every iota of his wife's goodwill in the pursuit and acquisition of at least one of every hand plane that the Stanley Tool Company ever produced. He collected tools with the full acknowledgement that not only would he never use any of them but also knowing that he had no idea how to use them even if he had wanted to. All collectors are weird that way, not just tool collectors.

Another woodworker friend, actually it's the same guy but I know a few others just like him, myself included, who simply cannot pass up a particularly nice board even though he/me/we haven't a single project or plan that the board could be used for. Maybe the particular plank is extra wide or has a particularly seductive grain pattern that simply begs to be softly and lovingly caressed (I sometimes get really strange looks at the lumberyard). It doesn't really matter what the appeal happens to be, all that matters is that it is a really nice board and it catches your eye and simply cannot be passed up. Something like the affinity

between women and shoes, perhaps.

If you ever have the chance, and can do so without getting in trouble, walk around a hobbyists workshop and look at the tools hanging on the walls or stored in the cupboards and shelves. Chances are, under the thick layer of sawdust that covers everything you will find a good number of tools, woodworking aids, jigs and other devices that have never been used. Indeed, many will still be in the original packaging they came in years ago, and not just because the fellow couldn't get through the space age plastic packaging. No, these tools were likely purchased long before that cursed material was ever created.

Woodworkers as a whole simply cannot pass up a good deal or even a bad one on a new or semi-improved tool or woodworking aid, whether they actually need it or not. Until we actually see the item, most of us never know we even needed the thing. But then we see it gleaming on the tool store shelf or in the new tool catalogues that our wives have tried and failed to hide from us. Luckily we all have friends and colleagues who keep us informed whenever a new catalogue comes out. Once we've seen

a new tool or woodworking jig we absolutely must have it, no matter what the consequences. We will happily shell out our hard earned money and then gleefully and surreptitiously carry the thing home, all the while wondering how we can hide this tool from our spouses. If that fails, and it inevitably does, we try to convince our loved one that this tool is the only tool that could possibly be used to finish that Arts and Crafts bed, the Morris chair, the Prairie Settle or the dining room suite you so rashly promised so many years ago (or all of the above, in my case).

Yes, we woodworkers are a strange bunch. Accept it, revel in it, blame your strangeness on the sawdust and fumes you've breathed in for so many years, but be sure to continue collecting whatever it is that you so choose.

Just be sure to remember your collection of lumber or tools (that you may never actually use) the next time you're shaking your head at someone's shoe closet.

DON WILKINSON
yukoners@rogers.com

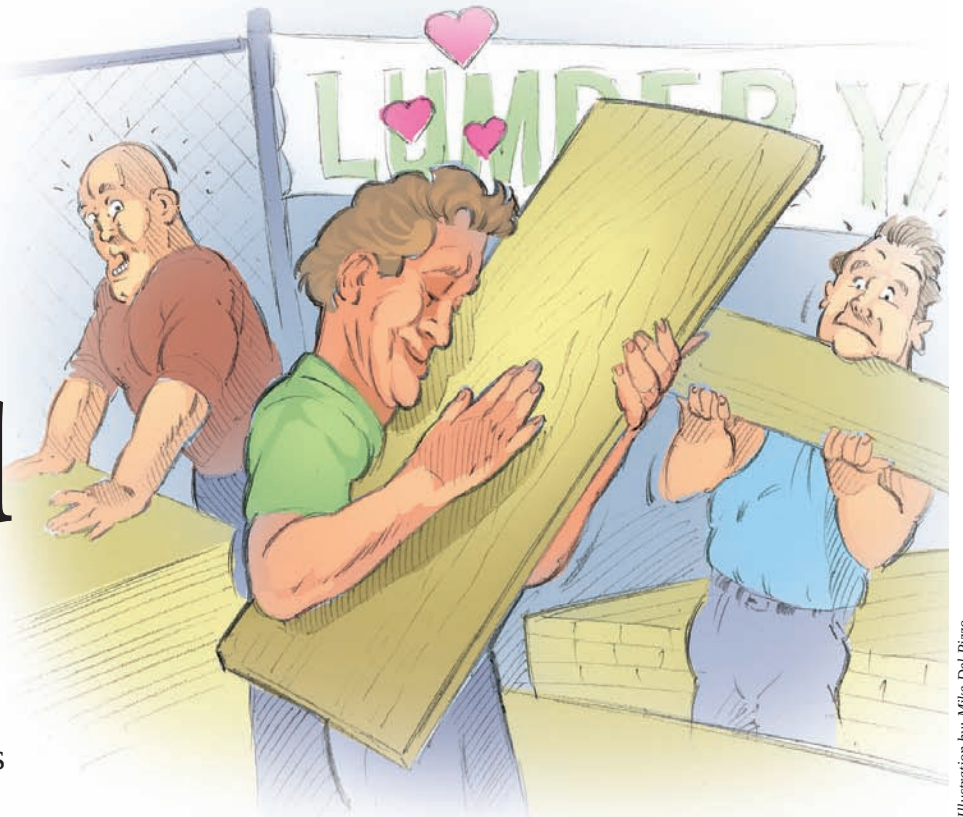


Illustration by: Mike Del Rizzo

10" TILTING ARBOR SAW WITH EXCALIBUR SLIDING TABLE

Complete table saw and sliding table package includes 2 HP left tilt model 50-220R saw with new Excalibur T-fence and Excalibur sliding table system in place of the left side table extension wing.



\$1990.00

Reg. \$2400.00

\$2159.00

Reg. \$2595.00



For complete details and to download
a copy of the current brochure visit us online at
WWW.GENERAL.CA



ONTARIO STOCKING DISTRIBUTORS

ART'S TOOL SALES

28 Clark Street #2
Welland, (905) 735-5023
10 Nihan Drive
St-Catharines, (905) 646-0728

ASHMAN TECHNICAL LTD

3245 Harvester Road - Unit #15
Burlington, (905) 333-0075
www.ashmantools.com
ashmantools@bellnet.ca

BERG WOODWORKING SUPPLY

21 King Street E.
Powassan, (705) 724-2207

BRETTWOOD MACHINERY WORKS

15138 Hwy 62 N
Madoc, (613) 473-4122
1-800-799-2199
www.brettwood.com
brettwood@sympatico.ca

COBOURG HOME HARDWARE

764 Division Street
Cobourg, (905) 372-3381

FEDERATED TOOL SUPPLY

1581 Oxford St E.
London, (519) 451-0100
1-800-387-0608
www.federatedtool.com
sales@federatedtool.com

LEAMINGTON HOME HARDWARE

114 Erie St. N.
Leamington, (519) 326-9088

LEVAC SUPPLY LTD

330 Laurier Blvd
Brockville, (613) 345-1991
25 Railway Street
Kingston, (613) 546-6663
www.levacsupply.com
info@levacsupply.com

MARKHAM IND. & TRADE SUP.

7634 Woodbine Avenue
Markham, (905) 477-5192
1084 Salk Road Unit 6 & 7
Pickering, (905) 420-2448
www.markham-industrial.com
mifs@newwebmail.com

NORTHFAST LTD

261 Regent St S.
Sudbury, (705) 673-1449
northfast@on.aibn.com

TAURUS CRACO WOODWORKING MACHINERY INC.

282 Orenda Rd.
Brampton, 1-800-386-5222
905-451-8430

TEGS TOOLS & MACHINERY

1104 Barton Street E.
Hamilton, (905) 545-5585
1250 Upper James Street
Hamilton, (905) 388-0784
www.tegstools.com

TJV WOODWORKING MACHINERY & TOOLS INC

6660 Kennedy Road Unit 18
Mississauga, (905) 670-3344

NORMAND

2895 Argentia Road Unit 6
Mississauga, (905) 858-2838
www.normand.ca
info@normand.ca

TOOLS WOOD

319 Victoria Avenue E.
Thunder Bay, 1-866-248-9663
(807) 475-8333
www.toolwood.com
toolwood@baytel.net

VARTY (JH) MACHINERY

112 Saunders Road Unit 7
Barrie, (705) 726-0091
1-877-JHVARTY
www.jhvarty.com

WELBECK SAWMILL LTD

R.R. #2
Durham, (519) 369-2144
199 Victoria St S., P.O. Box 760
www.welbeckawmill.com
sk@bmils.com

WILLIAM KNELL & CO.

199 Victoria St S., P.O. Box 760
Kitchener, (519) 578-1000
42 Arthur St. S.
Elmira, (519) 669-1664

Prices in effect until November 30th, 2008

LEAMINGTON HOME HARDWARE

Located in the beautiful lakeside city of Leamington Ontario, Leamington Home Hardware is proud to offer one of the largest selections of woodworking machinery and accessories in the area.

Leamington Home Hardware has been a family owned business for over 29 years. Today, from our 11,000 sq. ft. facility we cater to woodworkers, tradesmen, contractors and hobbyists, offering a huge selection of machinery, power tools, fasteners, hand tools and much, much more.

Our friendly, knowledgeable staff is looking forward to introducing you to a truly enjoyable experience in Canada's tomato capital. Drop by and let us show you around.



A family owned institution serving the Eastern Ontario Industrial market since 1965. With 2 generations of Levac's at the helm, they carry a broad selection of construction, safety and industrial supplies, automotive equipment and woodworking machinery. Levac has one of the largest General and General International inventories in Eastern Ontario.

From their two locations, Levac is able to source a wide range of products quickly and efficiently. Between Brockville and Kingston, they have over 24,000 sq. ft. of combined warehouse and showroom space.

Levac is proud to carry complete product lines of machinery and equipment, power tools, hand tools, abrasives, cutting tools, chemicals and adhesives as well as material handling products and safety supplies. Levac also offers a complete range of Health & Safety training courses for their customers including fall protection, confined space, WHMIS, First Aid, and many other courses designed to ensure you are compliant with industry standards.

Remember the Levac philosophy... "Service is our Success".



**TAURUS
CRACO**

Since it's formation in 1994, Taurus Craco has assembled one of the most experienced teams of industrial woodworking machinery professionals in Canada.

The principal of Taurus Craco, Peter Feindel, has been active in the industry since 1962, and has dedicated himself to educating and training the Taurus Craco team, to bring you the level of expertise you need when making your machinery buying decisions.

We represent some of the finest and best-known manufacturers in the world and are also connected with reliable sources for exceptional used and reconditioned equipment.

We welcome your inquiries for machines and systems you wish to buy, or those you wish to sell. Contact us by phone, fax or email - or visit our office and showroom in Brampton, ON.



Time spent on a project is more than the pride you have in your accomplishments, it's about building relationships. For more than 100 years the Home family has been helping Canadians with all of their building project needs. More than 1000 stores from coast to coast to coast carry an exceptional selection of tools and more than 450 stores also carry lumber, building materials and building project plans to ensure your success every step of the way.

Decorating to Renovating  **Help is close to home.**

 **Home**
hardware
building centre

 **Home**
hardware