



Tool Comparisons:
LASER LEVELS



4 WAYS
to make
BASEBOARDS

Rustic
MIRROR FRAME

OCTOBER/NOVEMBER 2016
ISSUE #104

CANADIAN **Woodworking** & HOME IMPROVEMENT

DEVELOP YOUR SKILLS • TOOL YOUR SHOP • BUILD YOUR DREAMS

**Making Curved,
Solid Wood Panels**

From
PALLET
To
**PATIO
CHAIR**

p.24

**Upcycling & Pallet
Feature**

- + 9 Tips on Working With Pallets
- + Upcycling Century-Old Timbers
- + Create a Rustic Mirror Frame

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TOP10:
Small Shop Safety Items



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FEATURES

16 9 Tips for Using Pallets BY ROB BROWN

Learn what the ReStore has made from pallets, and how you can find, dismantle and use them in your next furniture project.

34 7 Ways to Find Century-Old Lumber BY DAVE ROGERS

There are many buildings being dismantled, and all those timbers lined up for the landfill. We can do something to put this beautiful wood to good use.

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This simple tool can work wonders around the home during a reno. Learn which model has your name on it.

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Learn the basics of how to create 4 different styles of baseboards for your home – all in your small shop.

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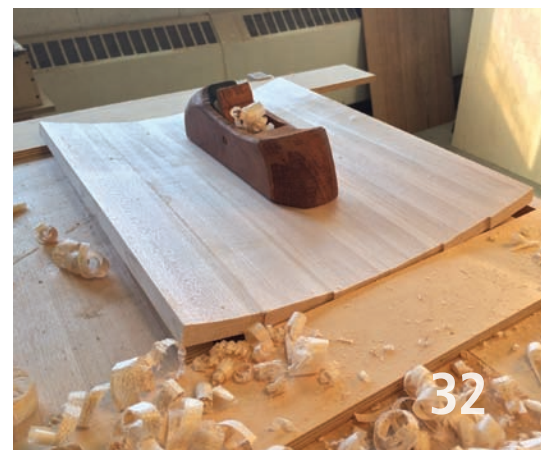
Back Cover: "Garry Oak Jewelry Cabinet" by [Ian Laval](#)

COVER STORY

Cover photo by Rob Brown

24 From Pallet to Patio Chair

Learn all the tricks about how to dismantle a pallet, then turn it into a comfy patio chair. BY ROB BROWN



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- Min. Size: 12" x 12"

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- Max. Square: 36" x 36"
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- Min. Size: 12" x 12"

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- Motor: 1-1/2 HP, 110V, 18 Amps
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- Weight: 126 kg
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- Transparent lower bag
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2 HP Dust Collector w/Canister Filter



- Motor: 2HP, 220V, TEFC
- 1,700 CFM
- Static Pressure - 10"
- Bag Capacity - 5.7 cubic feet
- Weight: 70 kg
- Made in Taiwan

\$599

CX400- Reg \$699



3 HP Dust Collector with Easy On Bags



- Motor: 3HP, 220V, 1 PH
- Static Pressure: 18.5"
- 2,300 CFM
- Weight: 75 kg
- Made in Taiwan

\$575

CX406- Reg \$749



14" Deluxe Wood Band Saw



- Motor: 1HP, 110V
- 2 Speeds: 2300 / 3200 FPM
- Cast Iron Table Size: 14" x 18" (Including sheet metal extension table)
- Table Tilt: -5° to 45°
- Precision Balanced Cast Iron Wheels
- Quick Release Blade Tension Lever
- Weight: 94 kg
- Made in Taiwan

\$699

CX104 - Reg \$899



14" Ultimate Wood Band Saw



- Motor: 2HP, 220V
- Blade Speed: 1430, 2300, 3250 FPM
- Table size: 16" x 20" Precision Ground Cast Iron
- Table tilt: -10 degrees left, 45 degrees right
- Precision Balanced Cast Iron Wheels
- Quick Release Blade Tension Lever
- Weight: 138 kg
- Made in Taiwan

\$1499

CX100 - Reg \$1599



18" Wood Band Saw



- Motor: 2HP, 220V
- 3 Speeds: 1480, 2300 & 3260 FPM
- Table: Precision ground cast iron: 17 3/4" x 17 3/4" with 6" steel
- Table Tilts: 50° right and 10° left
- Precision Balanced Cast Iron Wheels
- Quick Release Blade Tension Lever
- Weight: 185 kg
- Made in Taiwan

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CX108 - Reg \$1999

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Spiral Cutterhead

\$1850

CX08SC - Reg \$2199



15" Heavy Duty Planer

- ▶ 3 HP, 220V
- ▶ Weight: 295kg



4 H.S.S.
Knife Cutterhead

\$1549

CX15 - Reg \$1999

Spiral Cutterhead

\$2650

CX15SC - Reg \$3299



20" Heavy Duty Planer

- ▶ 5 HP, 220V
- ▶ Weight: 395kg



4 H.S.S.
Knife Cutterhead

\$2499

CX20 - Reg \$2699

Spiral Cutterhead

\$3799

CX20SC - Reg \$4199



10" Cabinet Saw with
30" Fence

Available
October
2016



- ▶ 2HP, 115V/230V
- ▶ Table size: 44" x 27"
- ▶ Max depth of cut: 3"
- ▶ Max depth of cut @ 45°: 2-1/4"
- ▶ Weight: 146 kg
- ▶ Made in Taiwan

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new



10" Cabinet Table Saw
with Extension Table &
50" Rail

Watch the video @
busybeetools.com

- ▶ 3HP, 220V
- ▶ Table size - 27" x 73 3/4"
- ▶ Max Depth of Cut @ 90° - 3 1/8"
- ▶ Max Depth of Cut @ 45° - 2 3/16"
- ▶ Weight: 257kg

\$2049

CX201 - Reg \$2550



16" Open End Drum
Sander

- ▶ 1HP, 110V
- ▶ 1725 RPM
- ▶ Max width:
2" x 16"
- ▶ Belt feed
motor: 1/8 HP
- ▶ Weight: 50kg
- ▶ Made in
Taiwan

new

Available
October
2016

\$999

CX507 - Reg. \$1299



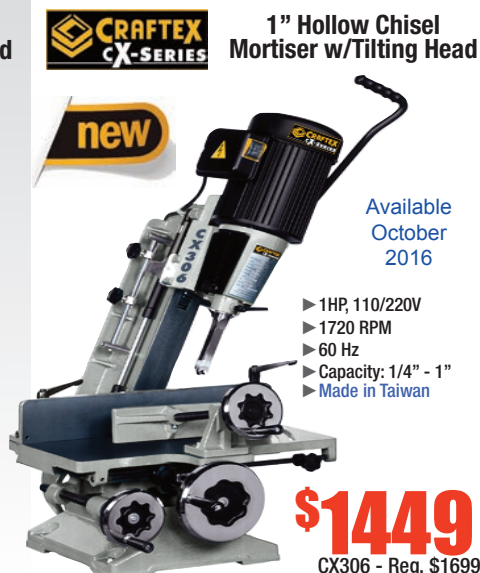
5/8" Hollow Chisel
Mortiser w/Tilting Head

Available
October
2016

- ▶ 1/2HP, 110V
- ▶ 3.8 Amps
- ▶ 60 Hz
- ▶ Capacity: 1/4" - 5/8"
- ▶ Made in Taiwan

\$749

CX305 - Reg. \$899



1" Hollow Chisel
Mortiser w/Tilting Head

Available
October
2016

- ▶ 1HP, 110/220V
- ▶ 1720 RPM
- ▶ 60 Hz
- ▶ Capacity: 1/4" - 1"
- ▶ Made in Taiwan

\$1449

CX306 - Reg. \$1699



Cyclone Dust Collectors

new

▶ 1.5HP, 220V

▶ Made in Taiwan

▶ 2HP, 220V

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\$1579

CX412 - Reg \$1899

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Upcycling Issue

Through upcycling, us woodworkers and DIY'ers can do our part to reduce waste when completing furniture and home projects. Upcycling is the partial theme of this issue, and is not only a sustainable practice, but it forces us to consider furniture and household projects that are a little outside the box. An old headboard for a kitchen tabletop? Sure! An exterior door cut carefully into pieces to make a patio chair? Why not! There are many places to find used materials – the curb, as well as family and friends' basements or attics spring to mind – but I'd recommend also dropping by your local ReStore to see what they have. They have a wide assortment of products and you'll be supporting a good cause at the same time.

One of the most popular forms of upcycling in woodworking and home improvement is using pallets to build projects from. They have decent wood, are easy to find and are generally free. We have two pallet projects in this issue, as well as some tips on how to find and work with pallets. We also have an article from an upcycling pro about salvaging great wood and making the most of it. Once you open your eyes to pallets, and the free wood that is about to be discarded, you'll start to notice it almost everywhere.

Speaking of pallets, we're having our 3rd "Canadians Building Together" event this October. Grab a pallet or two, build your project and update the dedicated area of our forum with details of your build. If you want to see what others are building from pallets check out the "Building Together" section of our forum to be inspired. You can also learn about all the details on our website. As prizes for the members who participate, we will be giving away three Ridgid impact drivers.

"Tool of the Year" Award

Another event we're putting together is our first "Tool of the Year" award. Tools are all about potential, and there is no shortage of great tools on the market right now. Go to our website to learn about the tools in the contest, then make your selections on which tool should win in four separate categories.

—Rob Brown



rbrown@canadianwoodworking.com

Woodworking & HOME IMPROVEMENT

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9" BENCHTOP BANDSAW

- Motor: 1/2 HP, 120V, single-phase, ODP induction, 1720 RPM, 2.8A
- Table size: 12" x 12" x 3/4"
- Table tilt: 0-45° right
- Cutting capacity/throat: 8 7/8"
- Max. cutting height: 3 3/8"
- Blade size: 62" (1/4" to 3/4")
- Blade speed: 2460 FPM
- Overall size: 20 3/4" W x 17" D x 29 1/2" H
- Approx. shipping weight: 48 lbs.

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G0803 ~~\$229⁹⁵~~ **INTRO PRICE \$189⁹⁵**



2 HP PORTABLE DUST COLLECTOR

- Motor: 2 HP, 240V, single-phase, 9A
- Air suction capacity: 1360 CFM
- 6" Inlet and "Y" with two 4" openings
- Portable base size: 27 1/2" x 47 1/2"
- Impeller: 12 3/4" cast aluminum
- Height with bags inflated: 94 1/2"
- Upper bag size (dia. x depth): 19 1/2" x 47 1/2"
- Lower bag size (dia. x depth): 19 1/2" x 33"
- Filter rating: 2.5 micron
- Approx. shipping weight: 137 lbs.

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G0786 **ONLY \$385⁰⁰**



5-SPEED FLOOR RADIAL DRILL PRESS

- Motor: 1/2 HP, 110V, single-phase, 5A
- Spindle taper: JT-33 • Spindle travel: 3 1/4"
- Number of speeds: 5 (550, 880, 1520, 2490, 3470 RPM)
- Collar size: 2.160"
- Drill chuck: 1/4" - 3/4"
- Swing: 33 1/2" maximum • Table swing: 360°
- Table tilts: 90° left & right
- Table: 12 3/8" diameter
- Overall height: 64 1/2"
- Approx. shipping weight: 147 lbs.

G7946 ~~\$325⁰⁰~~ **SALE \$299⁹⁵**



16" X 46" SWIVEL-HEAD WOOD LATHE with CAST IRON LEGS & DIGITAL READOUT

- Motor: 2 HP, 110V, single-phase, 14A
- Swing over bed: 16"
- Swing over tool rest: 13 1/2"
- Distance between centers: 46"
- 1" x 8 TPI RH headstock spindle
- MT#2 spindle & tailstock tapers
- Spindle bore: 3/8"
- Variable speed: 600-2400 RPM
- Overall dimensions: 19" W x 72 1/2" D x 48" H
- Approx. shipping weight: 354 lbs.

DIGITAL SPEED
READOUT!



G0462 **ONLY \$595⁰⁰**



12 1/2" LEAN & MEAN PLANER

- Motor: 2 HP, 110V, single-phase, 15A
- Max. cutting width: 12 1/2" • Max. cutting height: 6"
- Max. cutting depth: 3/32" • Min. board thickness: 1/8"
- Feed rate: 32 FPM
- Number of knives: 2 double-edged HSS
- Knife size: 12 1/2" x 2 3/32" x 1/8"
- Cutterhead speed: 10,000 RPM
- Number of cuts per inch: 52
- ON/OFF toggle switch with safety lock
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- Top-mounted return rollers
- Includes knife setting jig and wrench
- Approx. shipping weight: 78 lbs.

WITH
DOUBLE-SIDED
KNIVES!

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6" JOINTERS WITH MOBILE BASE

- Motor: 1 HP, 110V/220V, single-phase, 14A
- Rewired voltage: 110V
- Table size: 6 1/2" x 47 3/4"
- Number of knives: 3
- Cutterhead speed: 5000 RPM
- Cutterhead diameter: 2 1/2"
- Max. depth of cut: 1/8"
- Max. rabbeting depth: 1/2"
- Cuts per minute: 15,000
- Fence size: 29 1/8" L x 4" H
- Approx. shipping weight: 252 lbs. (G0813), 260 lbs. (G0814)

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G0813 WITH KNOCK-DOWN STAND **INTRO PRICE \$525⁰⁰**

G0814 WITH CABINET STAND **INTRO PRICE \$595⁰⁰**



30TH ANNIVERSARY 17" HEAVY-DUTY BANDSAW

- Motor: 2 HP, 110V/220V, single-phase, TEFC, rewired 220V
- Amps: 20A at 110V, 10A at 220V
- RPM: 1725
- Precision-ground cast iron table size: 17" x 17" x 1 1/2" thick
- Table tilt: 10° left, 45° right
- Floor-to-table height: 37 1/2"
- Cutting capacity/throat: 16 1/4"
- Blade size: 131 1/2" L (1/4" - 1" W)
- Approx. shipping weight: 342 lbs.

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ISO 9001 FACTORY!

G0513ANV **ONLY \$895⁰⁰**



10" HYBRID TABLE SAW with RIVING KNIFE

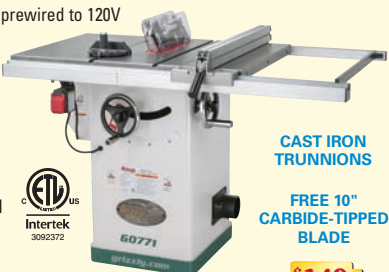
- Motor: 2 HP, 120V/240V, single-phase, rewired to 120V
- Amps: 15A at 120V, 7.5A at 240V
- Precision-ground cast iron table with wings measures: 40 1/2" W x 27" D
- Table height: 35 3/8"
- Footprint: 21" L x 19 1/2" W
- Arbor: 5/8" • Arbor speed: 3450 RPM
- Capacity: 3 1/4" @ 90°, 2 1/4" @ 45°
- Rip capacity: 30" right, 15" left
- Overall size: 57 1/4" W x 37 1/2" D x 35 3/8" H
- Approx. shipping weight: 348 lbs.



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G0771 ~~\$795⁰⁰~~ **SALE \$695⁰⁰**



15" HEAVY-DUTY PLANER

- Motor: 3 HP, 240V, single-phase, 14A
- Max. cutting width: 15", Depth: 1/8"
- Max. stock thickness: 6 3/8", Min: 1/4"
- Min. stock length: 6 3/8"
- Feed rate: 16 and 30 FPM
- Cutterhead diameter: 3"
- Number of knives: 3 HSS
- Knife size: 15" x 1" x 1/8"
- Cutterhead speed: 5000 RPM
- Table size: 20 1/8" x 15" x 3 1/2"
- Overall size: 32" W x 28" D x 23 1/2" H
- Approx. shipping weight: 382 lbs.

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Shed in 2016 issue of *Canadian Woodworking*

I just felt that I should thank you for the excellent drawings and details you provided for the beautiful shed you have built. I have used your drawings continually for the past two months and the magazine is threadbare now. I'm now midway through construction of my own 8' x 10' shed. I'm a very minor woodworker here in Nova Scotia so your story was most interesting. Thank you....

Harry DeLong
Via email



Many Thanks Harry,
I'm glad you are enjoying the project and found my article inspirational. I hope your shed proves to be as useful and friendly as ours has; unlike my dreaded old tin shed, I really enjoy working in the new one.

I appreciate you sharing your thoughts.

Sincerely,
Mark Salusbury

Thanks for your support

We appreciate all you do to support the woodworking industry in Canada. Your magazines are a real hit with our apprentices.

Mick McGowan
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Toronto, ON

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Sep 18 - 23, 2016
Sorrento, BC

For more information on these and other events visit **CanadianWoodworking.com**
List your club and event FREE.

WOODWORKING FORUM CANADIANS BUILDING TOGETHER:

PALLET CHALLENGE

HERE'S HOW IT WORKS

Between Sunday October 1st and Monday October 31st, members of our Woodworking Forum will be building a variety of projects (built entirely from pallet wood) in their home shops, such as cabinets, boxes, wine racks, furniture, and more.

We encourage everyone to document their progress on our Forum – with photos, videos, and commentary. We also encourage participants to reach out to your fellow woodworkers, providing them with advice and encouragement.

OCTOBER
1st to 31st

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**Milwaukee 2740 M18
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Brushless Portable
Planer**

View these reviews and more at:
canadianwoodworking.com/reviews



Woods to Know

Pink Ivory (Berchemia zeyheri)

View these woods and more at:
canadianwoodworking.com/woods-know



Best Build

Check out the **Woodworking** section of our forum for our latest "Best Build" thread – bandsaw-milled lumber. This month's winner, Rod Sheridan, receives a **Veritas Dual Marking Gauge** from Lee Valley. The thread is in keeping with this issue's 'upcycling' theme.



To find out more about this project, go to: forum.canadianwoodworking.com or simply go to CanadianWoodworking.com and click **FORUM**.

Free Plan

From Concept to Comfort: Build a Casual Chair

If you like the patio chair on our cover, you might want to build a similar one for inside. Check out our free plan section on our website to read how to design and build a comfy living room chair.

View this plan and more at:
canadianwoodworking.com/free-plans



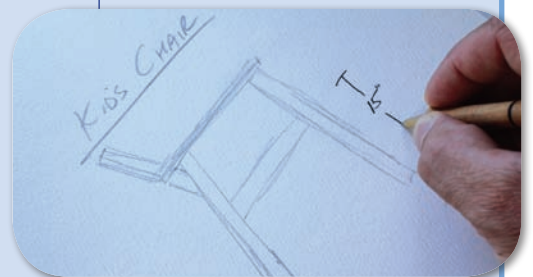
Video Links

www.canadianwoodworking.com/videos

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Last Man Standing:
Thomas Flinn
Hand Made Saws

Video:
Kid's Chair
from a Pallet



Video:
Pallet Chair



Subscription Draw Winner

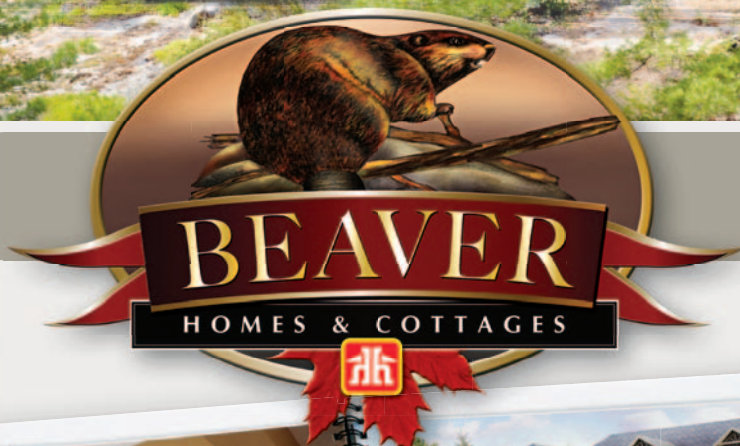
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THE BETTER WAY TO BUILD YOUR HOME OR COTTAGE



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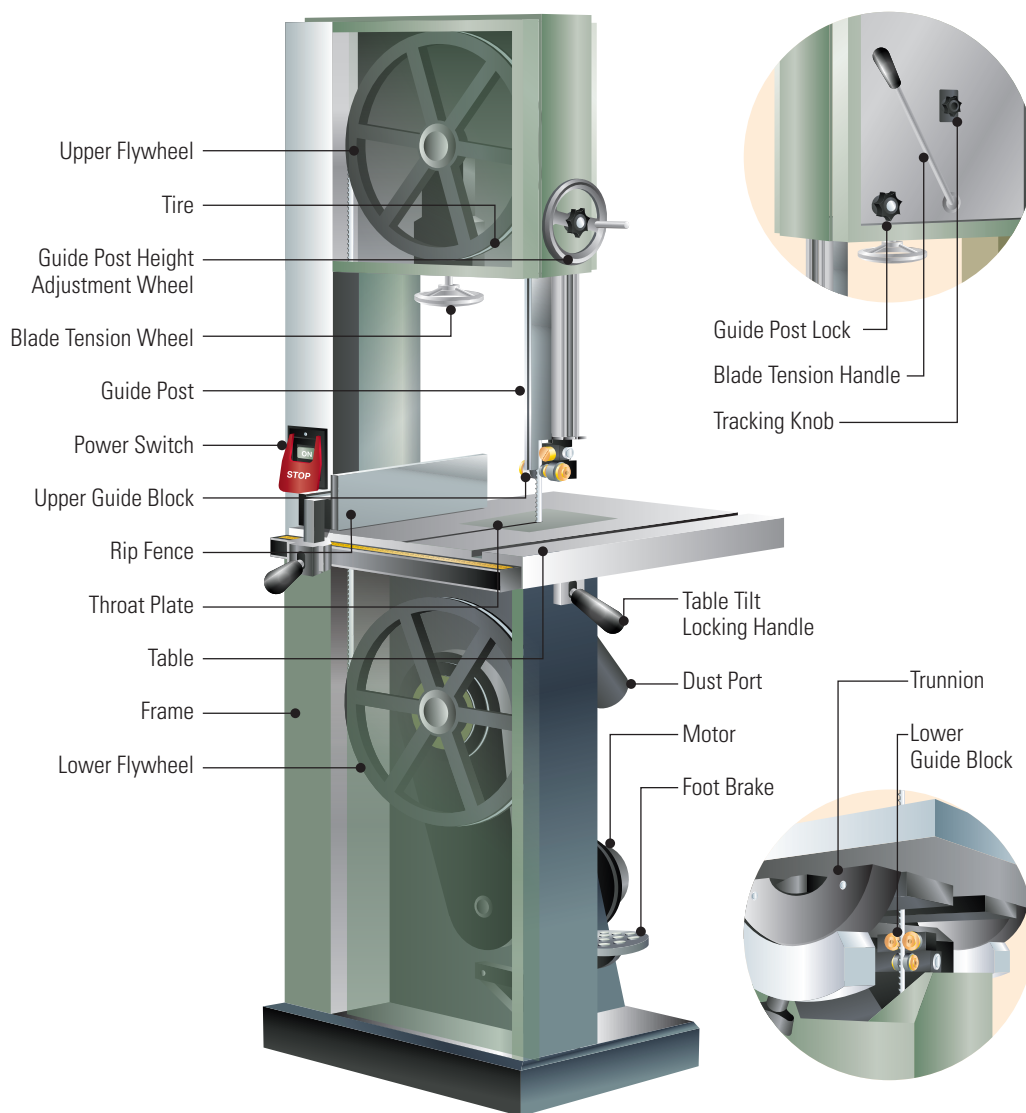
14⁹⁹

With guaranteed material packages. The latest Beaver Home & Cottage Design Book is available at your local Home Hardware Building Centre. There are 116 home and cottage plans to choose from, so you can be sure to find a design that suits your style, budget and building site. We can also alter any plan to your specifications.

hh **Home**
hardware
building centre

Bandsaw

BY CARL DUGUAY



Bandsaws are versatile shop machines that don't take up much floor space, and are both easy and reasonably safe to use. They lack the cross-cutting accuracy of a table saw, but are superb for ripping rough and dimensional lumber to size, re-sawing lumber into shop-made veneer, cutting curves, circles, and irregular shapes, and cutting a variety of joinery, including tenons, lap joints, and tail boards for dovetails.

A 14" saw with a 1-1/2 to 2 HP motor is ideal for most small and hobbyist shops. A larger throat capacity is preferable. However, if you won't be milling your own veneer, a large re-saw capacity may not be important. Look for a welded steel frame, dynamically balanced cast-iron flywheels, cast iron trunnion, flat table, tall sturdy fence, rack-and-pinion guide post with easy-to-adjust guide blocks and a 4" dust port.

Price: \$375-\$8,000

Ripping capacity: 10"-24"

Re-saw capacity: 6"-24"

Motor: 1 HP-7.5 HP

Guides: Blocks (steel/ceramic/phenolic); Rollers/bearings (steel)

Frame: Cast iron; welded steel

Flywheel: Aluminum; cast iron

Blade capacity: 1/4" - 1-3/8"

Get the Most Out of Your Bandsaw

Use the Right Blade

Select a blade width to match the stock you are cutting – around 1/4" for cutting tight curves and thin stock; 1/2" for general sawing; and 3/4" for re-sawing. Don't be a miser – replace worn blades.

Keep the Guides Adjusted

Each time you change blades, check the alignment of your upper and lower guides and thrust bearings. Position the guides just behind the gullets on the blade.

Keep on Track

To help reduce blade drift, track the blade in the center of the upper wheel. Replace damaged tires, and ensure you clean them whenever you change blades.

Don't Over-Tension

Blade tension scales on bandsaws sometimes don't take into account blade size. Instead, move the guidepost all the way up, then push sideways on the middle of the blade with your finger – adjust the tension so that it deflects no more than 1/4".

Shine a Light on Your Work

Especially when freehand sawing or cutting close to a cutline, you need to see your work clearly. Task lighting shines the light exactly where you need it.



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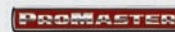
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Ian Laval

...on using locally sourced woods, restoring a sailboat and 'cheapo' products that Canadians seem to love.

BY ROB BROWN



Ian Laval, 79, www.ianlaval.com.

Location and size of studio – Brentwood Bay, Vancouver Island, BC. My workshop is on a First Nations reserve.

Education – London (UK) University, BA Chinese.

How long have you been building furniture?
Since 1970.

What sort of furniture do you specialize in?
Classic domestic furniture in native timbers.

Tell us a couple interesting things about your personal life.

Twice I sailed the Atlantic in a small boat, which is what brought me to BC in 1999 (www.ianlaval.com/lydia/log.htm). I lived for several years in Pakistan and West Africa as a Reuters correspondent. Restored a 16th-century vernacular house in northern England (www.ianlaval.com/mbankfarm.htm).

If you were not a furniture maker, what would you be?

Traveller/journalist.

In order, what are the three most important items in your shop apron?

Tape, pencil, marking tool.

Do you prefer hand tools or power tools?

Hand tools.

Solid wood or veneer?

Solid wood. If you have the whole tree, you have solid wood, veneers and inlays.

Figured wood or straight grain?

Both, for their own purposes.

Inherited Vintage Stanley Sweetheart or fresh-out-of-the-box Veritas?

I have a Veritas shoulder plane, Veritas scraper, Stanley combination moulding plane, a Stanley compass plane and an ever-so-sweet Norris plane.

Flowing curves or geometric shapes?

I prefer straight lines, restrained curves and delicately proportionate shapes.

Favourite wood?

English/Garry oak.

Least Favourite wood?

None. They all have a purpose.



Desk – This English oak desk is 72" long. Its drawers are veneered with sawn English oak burr.

quotes

My shop is 20 ft. x 11 ft., well insulated, heated.



I like to be in the shop not long after 9 a.m. and leave routinely between 5 and 6 p.m. I tidy up before leaving, make sure hand tools are back in their regular spots so I can go straight to them next morning, clean the bench top, maybe leave myself a note for next day. I want to start a new day, not return to the old one.



I like my heavily worn-down 7/8" firmer chisel (Stanley); a steel square with a heavy stock stamped 1900, made by my engineer grandfather in Glasgow, Scotland and in continuous use since then by my father and currently me ("You don't know what 90° is, son – this square knows," he used to admonish me).



I enjoy using local trees, sawing them sympathetically in a traditional way (mainly quartering) and making frequent use of 1/8" veneers sawn on the bandsaw from crotches, burls etc.; then ironing and using them on writing-desk fall-fronts, table-tops, etc.



I have to say I struggle with occasional comments that "West Coast" would sell more – but if that means waney edges and thick proportions I'll probably stay an outsider.



Spend the greater part of your time understanding wood – where the tree grows, where each piece of wood comes from in the tree, how it's processed for each function.



I feel some woodworkers mistakenly use dowels in place of a mortise

and tenon. Machine-cut dovetails are also overused. Waney edges are also overused – they are immature wood containing the tree's plant sugars – not best for long-term survival.



I don't think it serves the craftsman to agree willy-nilly to do anything less than your best, even if that's the only way to get the business.



Business in the UK was non-stop over 25 years and well-rewarded. Canadians – at least in the West – seem generally disinclined to pay a time-served hand-craftsman even \$20 an hour for a job that may occupy many weeks of intricate workshop time when cheap imports are available.



Recently I've gradually wound down my furniture-making and am instead doing a three-year refurbishment of a NW Pacific sail-boat (should be back on the water about mid-2017). The cultural connection with a small and still-viable group of highly skilled traditional boat-craftsmen is very satisfying.



Thomas Moser, Edward Barnsley (UK, died c. 1980 – offshoot of UK Arts and Crafts movement) made timeless furniture of unassailable quality. Edward Barnsley has had the biggest influence over my work. Beautiful, delicately restrained shapes. There are many others making beautiful pieces today in BC, across Canada and the US – but are they more for a too-small, elitist market at the wealthy end of society?



For me the most fulfilling part of making includes having beautiful local wood, to indulge the imagination in a piece of furniture the tree seems to call for, then to spend



Writing Bureau – Laval made this desk – one of many bureaux he's made over the years – from a Garry oak tree he harvested on the Saanich Peninsula, Vancouver Island.

six weeks honouring the tree and making it to the best of our ability – and then better. Of course, you never totally get there.



I'm most proud of a series of eight writing desks (fall-front bureaux) – all except one (in American black walnut) made entirely from native trees felled, air-dried over years then kilned and processed at my shop.



I'm currently very much enjoying rebuilding my boat (www.ianlaval.com/sail/alishoni.htm) interior – basically using East Indian teak and yellow cedar – and connecting with a different set of incredibly talented NW Pacific boat craftspeople.



I hope Canada is past the worst of 'cheapo' and that Canadians will once more see the universal relevance of home-grown skills and abundant materials.



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Top 10 Safety Items That Belong in Every Shop



Woodworking is a lot of fun, as long as you don't hurt yourself.

BY ROB BROWN

1 Dust Mask — You have one set of lungs to last your life, and dust does nothing but harm — even destroy — them. Most dust ends up on the shop floor, but the smallest, most damaging, dust, stays airborne for a long time. Get a dust mask rated to N95 or N99, and wear it whenever you're in the shop (even though it might be uncomfortable) to avoid lung damage in the future.

2 Vapour Mask — Like dust, finishing vapors get into your lungs and can do major damage. This is less important if you're wiping on finishes, especially if they are low in VOCs, though you can never be too careful. A mask with organic-vapor cartridges is what you're looking for.

3 Safety Glasses — It's surprising how easy it is to seriously damage your eyes. A basic pair of safety glasses should be nearby at all times. If you think getting a high-end pair that are very comfortable and good looking will help you put them on, then I'd say that's money well spent. For the turners, a full-face shield might be the answer.

4 Push Sticks — Using push sticks when required will go a long way to ensuring your fingers stay where you want them. Use or make push sticks that are comfortable, specific to the operation and hold the workpiece precisely and properly. Don't be afraid to make a push stick whenever you feel one is needed — they are usually quick and easy, and a good one makes a tough job much easier and safer.

5 Short (or tight) Sleeves — I've seen someone get their sleeve caught in a jointer. If you wear a shirt with sleeves that dangle, you're risking getting them caught in one of many machines while you're working. A T-shirt is great for a warm shop, but a sweater is sometimes needed. If that's the case, make sure your sleeves are rolled up while working on machinery and that they fit on the snug side.

6 Proper Shoes — Slipping is one thing, but dropping an 8' long board of 8/4 hard maple board on your toes is another.

Wearing approved footwear will protect against slips and drops. I used to think that because I was only working in a small shop, I didn't need to worry about really heavy things damaging my feet, but after a few very close calls I have changed my way of thinking.

7 Hearing Protection — Like your lungs and sight, your hearing needs to last a lifetime, and is quite easy to protect. I have a set of hearing protectors that are easy to grab whenever I use a louder machine — my routers and planer mainly. I used to machine without hearing protection and found I was always tense and couldn't focus well. With ear protection I'm not only saving my hearing, but am much more able to relax and concentrate on the operation at hand while working. Ear plugs are okay, but I prefer the earmuff-style units, as they are very easy to put on, even for a short operation.

8 Clean Floor — It goes without saying, but a clean shop is a safe shop. I have temporarily lost tools underneath heaps of shavings. Obviously not good for production, but also poor for safety.

9 Phone — If your spouse is always home, and is constantly keeping an eye on your well-being, a phone in your pocket is likely overkill. But if your time in the shop is spent in the country, far from a neighbour, a phone is your lifeline if something goes really wrong.

10 Sharp Tools — A sharp tool is a safe tool. To many this sounds crazy, but a sharp tool will require less effort to use and will act predictably. Dull tools may not be initially dangerous as they lay on your workbench, but as soon as you pick them up to use them they become accidents waiting to happen.

A safe to store all your freshly sharpened chisels? A chime to indicate when your neighbour is heading towards your shop? What item should have been added to this list? Add your thoughts at the end of this article, on our website.

ROB BROWN

rbrown@canadianwoodworking.com



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9 TIPS for Using Pallets to Make Furniture

It's easy to create beautiful, functional pieces of furniture using wood from discarded pallets, as long as you know some tricks. Learn some pallet basics so your experience working with this endless supply of free wood will be a great one.

BY ROB BROWN

Habitat for Humanity is a not-for-profit organization whose main focus is to provide house ownership to low-income people. There are 83 ReStores across Canada, where people can purchase used, but still valuable, building materials. Products from hardware and tools, to appliances and moulding, are available at the different locations. People in the community can also volunteer their time in many different ways.

Scott Adams is the director of business development and ReStore advancement at Habitat for Humanity Brant, in Brantford, Ontario, and heads up the location's pallet furniture manufacturing operation. The ReStore he works at has been building pallet furniture to help raise funds for their local building projects since January 2016 and have learned a lot along the way. The crew at the Brant location have built interior furniture like wine racks, chairs and tables, as well as planters and swinging chairs for the exterior. Here Adams shares some tips

for anyone who's interested in building furniture from pallets. You can learn more about the pallet furniture at the Brant location by visiting www.habitatbrant.org.

- 1 Look in manufacturing/industrial areas for pallets** – Often you will come across a stack of pallets out front of a business. They are generally there for the public to take free of charge, as otherwise the company will have to pay to dispose of them. If you're at all unsure, it's always good to ask.
- 2 Look at hardware/home improvement stores** – If you live far from an industrial area, take a trip to your local home improvement or larger big box store. Essentially, any store that receives its products from a large truck will likely have pallets to dispose of. Even if you don't see any around, just ask – often pallets can be found away from the regular customer area. Even shipping or farm feed companies will have the odd pallet in need of a good home.



Keep it Cold – Outdoor cooler stands are one of the more popular items the ReStore has produced.

3 Pallets come in two general types – Though there are many different methods of construction, the woodworker rarely cares about the specific function of a pallet. On the other hand, we do care about the type of wood in a pallet. Softwood pallets are very common, and are almost always free. Hardwood pallets were likely purchased by a company for a specific use, and they will often be reused, so they're harder to find. If you have the choice, keep your eyes open for the hardwood variety. Here's a tip on getting lucky – look for a pallet that's painted blue, at least in part. They're usually made from hardwood.

4 4' lengths are common – Though they will be of many different construction styles, when taken apart, the wood pieces are often about 4' long. You can sometimes find pallets about 6' long, but they are rare. Plan your projects with these shorter lengths in mind, unless you want to start stack laminating.

5 Wood thickness is usually about 3/4" – While it's great for many furniture construction applications, it's likely not strong enough – visually or structurally – to make large pieces of furniture from. If you need the odd thicker piece, you have two options: either face glue multiple pieces together or (and some may say this is cheating, but I disagree) use material from your local lumberyard when it's absolutely necessary.



Wine Rack – The bottom of this wine bottle rack has slots for six wine glasses.

6 Dismantling a pallet – If you have a Sawzall, this is the time to use it. Stand the pallet on end and cut the nails between the slats and backbone. Adams says two people take about 10 minutes to completely disassemble a pallet properly. If you try to use a pry bar and hammer you run a strong risk of breaking the slats, and it's also simply very hard to do. Nail halves left in the wood provide an extra dose of authenticity to a rustic project, though they ruin blades very quickly. If you plan on dressing the pallet lumber before using it, make sure all the metal has been removed from the wood.

7 Check for foreign objects – Rocks, metal, and other objects that can quickly ruin woodworking machinery, as well as cut hands, may be present in the pallet wood you salvage. A quick check of all the parts will go a long way to a pleasant time in your workshop.

8 Fumigation? – Adams says it's very rare to have any sort of bugs – even ants – come in on a pallet. In fact, in the six months since they started this project, he has not come in contact with any pests. A visual scan of the pallet before bringing it into your shop, especially a basement workspace, is a good idea though, as you don't want to be the exception to the rule.

9 Moisture Content – Pallets are typically kept dry during shipping, but if you feel the wood is heavier than it should be, and you don't have a moisture meter, it's a good idea to let the parts dry out a bit. Because of the nature of pallet furniture, moisture content issues are rare, but it's something that should at least be considered.



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Rustic Reflections:

Simple Mirror Frame with a Weathered Look

BY ROB BROWN

When making frames for pictures or mirrors, there are many options for design. Rather than just make a standard mitred frame, I wanted to add some angles to the project so I tilted each of the four frame pieces in towards the center of the frame. If you want to make this frame even easier to build, just cut the mitres with the parts flat on your table saw's mitre sled, or your mitre saw's surface.

Source your Material

If you keep your eyes open for a pallet or two as you drive around your home town, you might be surprised at how many you notice. Lumberyards, home improvement stores, and industrial areas are your best bets. Always ask before taking them. When you're scouting, you might want to bring a battery-powered circular saw or a handsaw with you, as you might have to break down a pallet to fit it into your vehicle.

It's best not to use wood that is very wet, so if you don't have a moisture meter you should allow the wood to dry out before building something with it. Then again, if you're going for a really rustic frame, and don't mind gaps, start cutting right away.

This simple frame is accentuated by a bold, distressed finish to give it some added character. There are many different types of finish you can use to customize this frame, and make it look great in your home. Learn how this finish was applied, and see a few other options for different looks.



Trim, Then Cut – In order to fit the workpiece on the sled, without interfering with the thin strips, Brown rough-trimmed each mitre on the bandsaw before making the final cut on the table saw.

Once your pallet is home, plan which pieces will look best for use in your project and extract them from the pallet. Account for the longest pieces first, as they will be the most difficult to find. I used a saw to cut the ends of two cross-pieces away from the pallet, then used a pry bar to remove the nails in the center of the piece. Make sure there are no nails in the material before you machine it.

I used a pallet that was outside for the last six months. It was very weathered, but was structurally sound. The rough, weathered surface of the wood lent itself to a rustic looking frame, but there's nothing wrong with using wood that looks like new, and dressing all of the surfaces smooth. It all depends on the look you want.

Lay out your Frame

With the wood on your workbench, plan where each piece will be positioned. I wrote on the backs of the parts, and even added rough lines where mitres were going to be cut, so there was no confusion during machining. Because I was going to be using the inner edges of each of these boards to run a rabbet router bit bearing on, in order to cut the mirror rabbet, I made sure the inner edges were at least fairly straight. You can joint the inner edge of each piece, but that will remove any patina that's already there – if you're okay with that, go for it. I settled on a 30" x 17" frame.

Tilted Mitres

Because the frame parts were going to finish on a slight angle, I added 5/16" thick strips to my table saw's mitre sled. My frame parts were 3-1/2" wide, so I added the strips 3-1/4" away from the sled's fence. The strips had to be kept about 1" back from the cut line, otherwise they would interfere with each cut. You'll know what I mean once you go to make your first cut – if the opposing fence is too close it will not allow the workpiece to get close enough to the blade.

The first operation was to roughly cut the mitres on my bandsaw. This was so the waste material wouldn't butt into the opposing 5/16" high fence. I cut all four of the cuts needed on the left side of my mitre sled, then measured, marked, aligned and cut the mating four edges. If this was a finer piece I would



Mitre Cut – With the thin strips secured to the mitre sled, the workpiece sits tilted on an angle while it's being mitred.

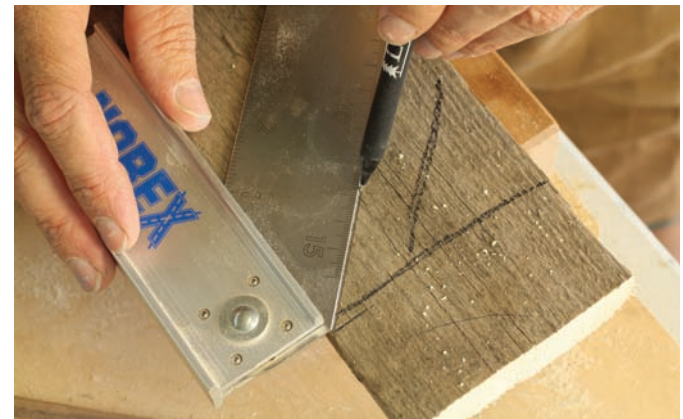
have set up stops to cut like pieces to the exact same length, but I didn't go to those lengths on this rustic frame. It's kind of fun working to "close enough" tolerances.

In hindsight, I wish I had tilted the four frame members even more. Adding another 1/8" to 1/4" to the thickness of the strips that were applied to the mitre sled would have created sides with a more pronounced angle to them.

Dowel joinery

Butt-joining mitres is not overly strong, so I decided to add a few 1/4" diameter dowels to the joints to make sure that when this frame falls off the wall it will have a fighting chance to remain in one piece. Rather than get all serious about jigs and accuracy, I drilled two holes in one side of each of the four joints freehand with a cordless drill. I used a brad-point bit – I wouldn't think of using a regular twist bit, as it skates around at the start of the cut. To ensure the holes were bored perpendicular to the face of the joint, it's important to watch the start of the cut carefully. The two lips of the bit should form a circle at once if the bit is held perpendicular to the face. If only an arc shows up, the bit is on an angle.

With a pair of 1/4" dowel centers in the holes I worked my way around the four joints, butting each joint together to leave



More Accuracy – Though the first mitre cut doesn't need to be positioned accurately, the second mitre cut does. Brown marked the length on the face of each part, then added a 45 degree line to the workpieces' surface so he could cut to the line.



Perfect Circle – When drilling dowel holes freehand with a brad point drill bit, make sure the initial cuts made by the bit's lips cut a full circle; otherwise, the hole will not be perpendicular to the face.

two tiny points. I then drilled the mating holes in all the joints. A quick dry assembly revealed they didn't all work out perfectly, as the end-grain of softwood is never easy to drill into accurately, but, once again, I was able to say "close enough".

Assembly

Add a light layer of glue to all eight of the mitre joint faces. This will cause the next layer of glue to not sink in as much, creating a stronger joint. Next, install the 1-1/2" long dowels in one side of each joint, making sure they all protrude about 3/4". With four clamps nearby, coat all the dowel holes and mitre face and bring the frame together. Run two clamps underneath the assembly, and two more clamps on top. When tightening the clamps, be sure to apply only a bit of force in one direction, then apply force to the clamps in the opposing direction. Work back and forth, using a bit of hand strength when needed, to bring the four joints tightly together. With the dowels in place, small gaps can be shrugged off, as long as you mutter to yourself "close enough". This is a rustic frame, after all.

Run a rabbet

Set up a rabbet bit in your router table, so it makes a 3/8" high cut. The width of rabbet it leaves is determined by the size of bearing installed in the bit. I changed the bearing so the width of the rabbet was 7/16".

To ensure the front faces of the rabbets would all be coplanar, and the mirror would sit against the rabbets without flexing, I used a hand plane to take away some of the twist in the underside of the frame. Removing the high spots left a frame that sat on a flat surface and didn't rock at all. Now, when I lay the frame face-up on a router table to run the rabbets, they will be in the same plane.

Make a few passes around the inner edges of the frame to remove the material. You could even start with a large bearing, make a pass, then switch to a medium-sized bearing to make a second pass, before switching to the smallest bearing to finish the rabbets. When the rabbet has been run, square off the corners with a chisel.



Dowel Centers – With one half of each joint drilled for dowels, insert dowel centers into the holes, align the mating parts, and press together. Repeat for the other three corners then drill the holes.

Mirror clips

To hold the mirror in place you could silicon it in place, but that gets problematic when the mirror needs to be replaced. I used plastic retaining clips from Lee Valley (Product #00S07.02). I always have a few different sizes on hand, depending on the depth required.

I set up a fence on my drill press then drilled 7/16" diameter holes to a depth of about 3/16". The holes were positioned so a quadrant of each hole was in line with the edge of the rabbet. Each hole had to be opened up a bit with a chisel, so the clip could extend over the back of the mirror.

Hanging Groove

You could use a simple picture frame hanger on the back of your frame, but I opted to rout a short groove with a keyhole bit. With my fence positioned to cut a groove in the middle of my frame, I set up a stop block to help me position the frame so I could slowly lower my frame onto the rotating bit. I then slowly moved the frame about 1/2" to create the groove. If you move the frame the wrong way – trust me, it's easy to do – you



Angled Assembly – Since the parts will be assembled with their faces on an angle, this assembly is a bit trickier than normal. Four clamps are needed – two in each direction – to bring the joints together. Just make sure to close the joints evenly, as the dowels will only do so much to ensure the joints are aligned during assembly.



Even Back – Before running the rabbet to accept the mirror, ensure the inner, rear edges are all coplanar. This will ensure the rabbet will be even and the mirror will sit in the rabbet nicely.

can just rerun the groove, but move the frame in the opposite direction.

Ease some edges ... maybe

Because my frame didn't go together perfectly – remember my “close enough” approach – I eased all sharp edges of the mitre joints, as well as removed any small bits of wood that looked like they were going to fall off as soon as I hung the frame. It exposed fresh wood, which didn't look fantastic when beside the rough, silver surfaces of the rest of the wood, but since I was adding a painted finish I wasn't too concerned. If you plan on leaving the wood its natural colour, or even just adding a natural oil, I would carefully consider how much edge easing you do.

Add a finish

Because this is a fairly simple project, and I don't often paint wood, I wanted to add some colour to the mix. I've always liked milk paint, especially when the look is on the worn side. I played around with a few different options of laying colours, and then applied my first coat of dark walnut stain (“Provincial Walnut”, homesteadhouse.ca) with a brush, making sure the corners and edges were covered. I didn't worry too much about completely



Position the Clips – Mark a line about 1/4" away from the start of the rabbet, set up a fence on your drill press and bore shallow 7/16" diameter holes to accept the retaining clips.



Run the Rabbet – With a rabbet bit in his router table Brown creates the joint with a few passes. Be sure to avoid climb-cutting, or the frame might jump during the cut.

Selecting a Finish

From coloured to natural, distressed to even, painted to stained, how are we supposed to decide on how to finish this frame? The bottom line is you have to finish this frame with something you will like, and will look good in your home. The finish can be the focal point of the project if you choose a bold colour, or it can barely be noticed if you brush on a simple, clear oil.

Before deciding on a general finish for this frame I applied a bunch of finishes to some similarly weathered wood. All the finishes were nice, but it all depends

on what you're looking for. If your wood has a silvery, worn look you might just want to apply a simple wiping oil and be done. Polyurethane, coloured or clear spray-can finishes, stains and one of my favourites – milk paint – are all possibilities. With a simple frame like this, the right finish can really punch it up or it can let the wood speak for itself. Here are what a few different finishes look like on the weathered wood I was using.





Final Fit – A bit of material needs to be removed before the arm of the retaining clip will fit in place.

covering each face. When dry, I mixed up a fairly thick batch of the tan (“Hampton”) colour paint and brushed it on. I focused on covering all the high spots, edges and much of the face surfaces, but again didn’t fuss too much.

The next step in this finishing process was to mix and apply the blue (“St. Laurent”) over the tan. Again, I wasn’t aiming for complete coverage, as I wanted some of the tan, and even a little bit of the brown stain to show through. The final application was another very light coat of the tan paint. I probably only covered about 5–10 percent of the surface; this was a light coat with the intention of adding a highlight to the textured surfaces and edges. I used a fairly dry brush, and a light touch for this final coat.

When it was dry, I used 150 grit sandpaper to remove some colour from the edges, as well as the higher spots, on the wood.



Add, Then Subtract – On top of the tan paint went a blue milk paint, again with near-full coverage. A very light layer of tan-coloured paint was applied to a very small portion of the surface, before Brown used medium-grit sandpaper to distress the finish. Uncovering layers of blue and tan paint, as well as brown stain, produced an aged look.



Hanging Groove – Brown positioned his router table fence so the groove to hang the frame was positioned on the top rail. He then added a stop block to position the initial plunge cut. Once the frame made contact with the router table’s surface he moved the frame about 1/4" towards him, stopped the router and waited for the bit to stop spinning before removing the frame from the bit.



Start Layering – Brown applied a wet coat of brown stain to most of the frame; he didn’t worry about covering the entire surface, so there was some variation. When dry, he applied a tan-coloured milk paint. Notice he allowed some of the dark stain to show through the tan paint, to add an aged look.

This gave an even more worn look. A coat of hemp oil over the paint gave a nice sheen and offered a bit of additional protection.

Nothing is perfect

It’s important to not aim for perfection when applying this finish, as wear rarely happens evenly. Edges and high spots are going to wear down quicker, as well as pick up a darker, worn look. There are likely thousands of approaches to applying a finish like this, so I’d suggest practicing on some scrap wood before reaching for the frame.

Install the mirror with the clips, drive a screw into the wall and hang your mirror. Don’t forget to have a quick glimpse to see how great you look in your new mirror.

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ROB BROWN

rbrown@canadianwoodworking.com



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From PALLET To PATIO CHAIR

Upcycling, the Comfortable Way

This chair was designed and built with the material from one pallet found at a local lumberyard. Grab a pallet (or two) and before you know it you'll be relaxing on your deck in your comfy new upcycled chair.

BY ROB BROWN

There are many different types of chair designs out there, but I wanted to keep this on the simple side of things. A comfortable, simple chair for the patio and backyard campfire was all I was after. I already had a pallet, so I knew how much useable wood I had. I could have cheated a bit and used another few pieces from my woodpile, but that would have taken away some of the fun. You may have to either alter this design to work with the amount of wood you have, grab a second pallet, or use a few pieces from your woodpile. You can view a video of how I designed this chair on our website, in the "Videos" section.

When choosing a pallet, look for clear wood that doesn't have many rocks, metal or other debris embedded in the wood. Pallets are typically fairly dry, but if it feels heavier than anticipated you've either got some prized, dense exotics, or you have some really wet wood, in which case you should let it dry a while before building much with it.

Time for a model

A chair is the one piece of furniture that comes into close contact with the body during use. For this reason, it has to be sized and shaped so it's not only functional, but comfortable. I made a model from 3/4" particle board so I could fine-tune most of the details. The model wasn't overly strong, but if I was careful I could sit in it and check it for fit. I'm 5' 8" tall, and about 155 lbs., and I find my finished chair very comfortable. If you're much smaller, or larger, you might want to consider adjusting the overall proportions to suit.



Make a Model – Brown worked out details like proportion and comfort with this model. Unless you want to change the overall design quite a bit, or hone in on the perfect dimension, there's likely no need for you to make a model.



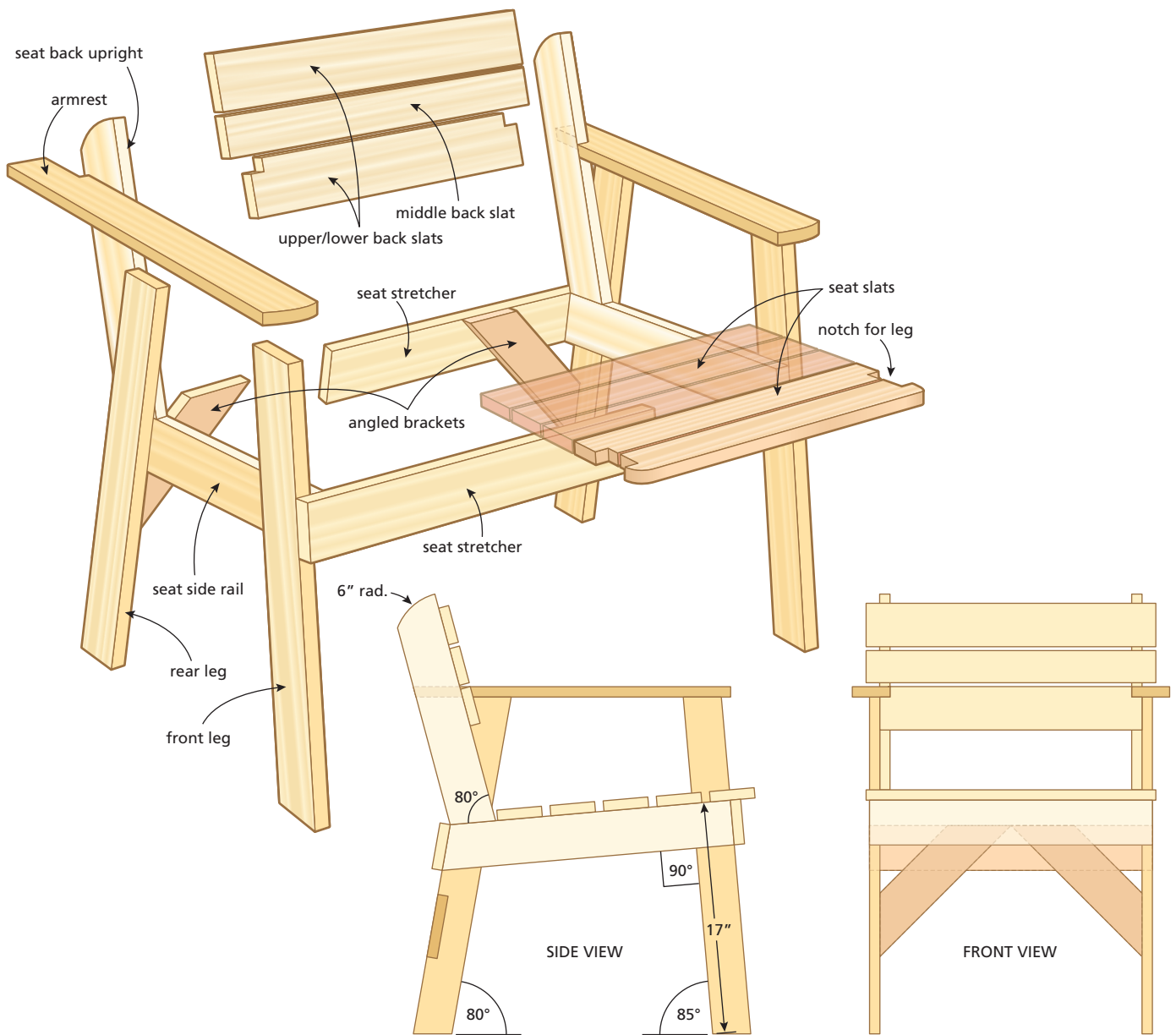
Take it Apart – Before proceeding with the build Brown took apart the pallet he had chosen. With a hammer, a couple of pry bars and a jigsaw he was able to remove all the parts relatively easily.

Dismantle the pallet

Since I needed every piece of wood from my pallet to build this chair, I had to be careful while taking it apart, as I didn't want to ruin any pieces. Turns out pallets are a lot stronger than they look, but I eventually won the battle. I started by removing some of the nails and prying a few of the boards off, but ended up using a jigsaw to free up the last few boards. I knew the quantity and length of pieces I needed, so I was sure not to cut the pieces shorter than necessary. With all the nails removed it was time to start putting this free lumber to use.

Dress the parts

A number of the joints in this chair needed to be strong enough to support the weight of a person, so creating strong glue joints was crucial. Rough lumber can be glued, but the joints will be on the weak side. To ensure the joints would hold, I lightly flattened and dressed all the boards. All the



boards finished at 3/4" in thickness. Also, because this chair will see sun and rain, a waterproof glue is essential.

Most of the boards are over 3" wide, but a few of them were either cracked or had some large knots near their edge, so some of the boards were ripped down slightly. One of the nice things about building this chair is that exact widths and lengths aren't crucial – use the material you have as best as you can. My legs and armrests were all 2-3/4" wide, but if you can get parts wider than that I would recommend doing so.



Joint #1 – To make the first joint glue and screw the front leg (at left) to the seat stretcher. Clamps and cauls will help keep each joint tight while the glue dries.

Materials List

Part	Qty	T	W	L	Material
Front Legs	2	3/4	2-3/4	24-1/2	Pallet Material
Rear Legs	2	3/4	2-3/4	24-3/4	Pallet Material
Seat Stretchers	2	3/4	3-1/4	21-1/4	Pallet Material
Seat Back Uprights	2	3/4	3-1/4	17	Pallet Material
Armrests	2	3/4	2-3/4	23	Pallet Material
Aprons	2	3/4	3-1/4	20-1/2	Pallet Material
Seat Slats	5	3/4	3-1/4	21	Pallet Material
Upper / Lower Back Slats	2	3/4	3-1/4	21	Pallet Material
Painted Back Slat	1	3/4	2-3/4	21	Pallet Material
Angled Brackets	2	3/4	3-1/4	To Fit	Pallet Material

Long, strong parts first

Most of the parts in this chair around about 20" long, but the legs are about 25" long and the arm rests are 23" long, so I made sure to obtain those parts from the material first. The legs would also bear the brunt of the weight, so they needed to be free of large knots, and have fairly straight grain. At this stage I labelled all the parts to avoid confusion.

Start assembling

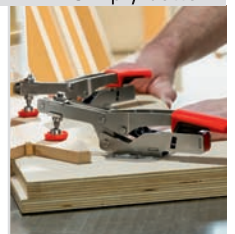
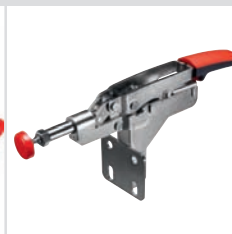
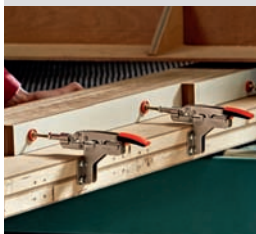
My main approach was to just glue and screw most of the joints in this chair, using either 1-1/4" or 2" long exterior screws. If the joint needed to be extra-strong I used clamps and cauls to keep these lap joints together until the glue dried. For a few joints – like fastening the seat slats to the seat stretchers – I just clamped the joints

until the glue dried. In all the areas where the joints were visible I plugged the holes afterwards to keep a sleeker look. And before assembling each part I heavily eased all the sharp edges and corners.

Cut the four legs to final size, and at the correct angles. The back legs are set at 10° of perpendicular to the ground, while the front legs are 5° off perpendicular. Trim the front end of the two seat stretchers at 90°, but leave these two parts long for now. Mark a line 17" up from the bottom of each front leg, and glue and screw the seat stretchers to the front leg at a 90 degree angle, so the upper edge of the seat stretchers are even with the 17" mark.

Mark a point on the underside of the seat stretcher 14-1/2" from the intersection of the underside of the seat stretcher and the back edge of the front leg. Attach the rear leg so its front edge is at this point. I aligned the bottom of the front and back legs with the edge of my router table while doing this, in order to keep the parts oriented properly. There's also nothing wrong with using a compass to

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Joint #2 – With the bottom ends of the front and rear legs aligned with the edge of his router table, Brown positions the rear leg and joins the seat stretcher to it.



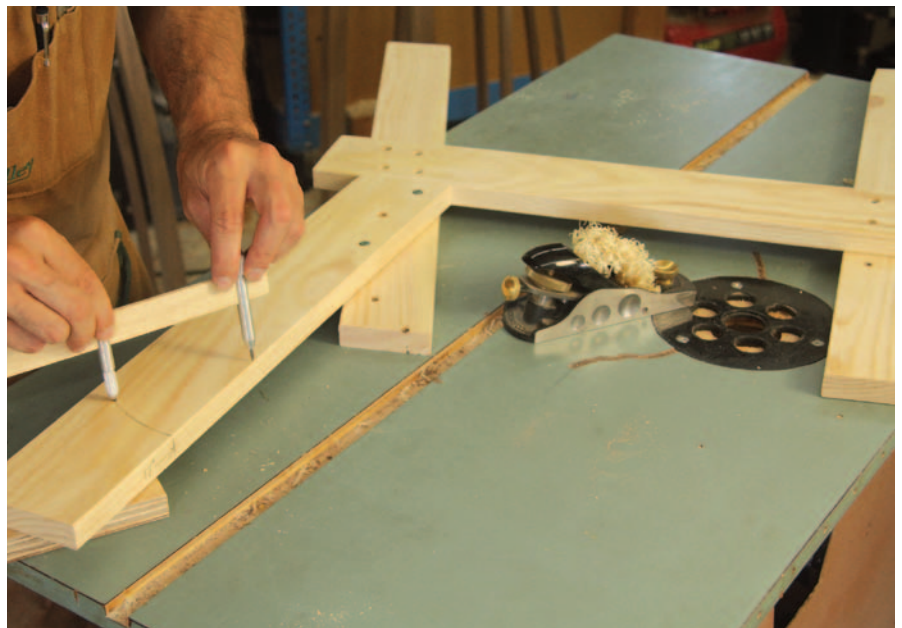
Nice and Straight – With the leg/seat stretcher sub-assembly together, Brown uses a cross-cut sled on his table saw to ensure the upper ends of the legs are in the exact same plane. This ensures the armrests will mate with the legs properly.

double-check angles. Be sure to attach the seat stretcher to the inner faces of the legs.

If the tops of your legs are in perfect alignment, you're a much better woodworker than I am. I placed the assemblies, one by one, on my cross-cut sled, aligned and secured them to the sled, then trimmed the tops of the legs slightly so they were coplaner. This allows the arm rests to mate with the legs properly.

Assemble the seat back uprights

Cut a 10 degree angle on the lower ends of the two seat back uprights. Cut the



Gentle Curve – Brown temporarily screwed the seat back upright to the rear leg then drew a 4" radius arc on its top. The arc was then smoothed before being reattached with glue, screws, cauls and clamps.



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Trim it Flush – Use a flush-cut saw to trim the rear end of the seat stretcher flush with the back edge of the rear leg. The rear apron will be attached over this joint, so try to make it as flush as possible.

seat back uprights to finished length, then mark and cut a 4" radius to the upper back of the seat back upright. With the arc sanded smooth, glue, screw and clamp the uprights to the rear legs. You can now use a flush-cut saw to trim the rear end of the seat stretchers flush with the rear edge of the back leg. The more even this is, the better, as the rear apron will eventually be attached over this area.

Notch and attach armrests

Cut a 6" radius in the front end of the armrests, then cut and smooth those two edges. Cut the back of the armrest square to bring the part to final length. Place the armrests on top of the legs, beside the seat back uprights, and mark the angle and location of a notch that will allow the inside edge of the armrest to sit flush with the inside face of the seat back upright. Use a handsaw to remove the notch. Drill some countersunk holes, then glue and screw the armrests in place. When dealing with end grain, like when attaching the armrests to the tops of the legs, I applied a size coat of glue to the end grain, allowed it to dry for a few minutes, then applied another regular coat of glue to the surface. The first coat soaks into the end grain and stops the second coat from doing the same.

Bring the two assemblies together

I used two right-angle plywood brackets to help me hold the two sub-assemblies upright during assembly. With the two chair halves positioned, I glued and screwed the front and back aprons in place. At this point the chair is still a bit weak, but the seat and back slats will help greatly.

Seat slats

Once I determined the widths of the seat slats, I ripped them to width. A 1/4" gap is between each slat in the seat and back. Start with the rear seat slat, gluing and clamping it in place. I didn't use screws, as only downward pressure would be exerted



Mark the Notch – Brown positioned the armrest in place on top of the legs and marked the angle and location of the notch on the armrest. The inner edge of the armrest should finish flush with the inner face of the rear leg.

on these slats, and any holes or plugs would be quite visible, yet hard to get at. Moving forward, add the second and third slats. The fourth and fifth slats will need notches to allow the slats to fit around the front legs. The fifth slat should also have its front edge eased heavily, to reduce the pressure on the backs of your legs while sitting in the chair.

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Add Seat Slats – After ripping the seat slats so they have a 1/4" gap between them, sit flush against the rear leg and have a slight overhang at the front of the chair, Brown glues and clamps the rear three slats in place. The front two slats need to be notched to fit around the front legs.

Back slats

I painted the middle back slat, which made the operation a bit more confusing. Either way, place the middle slat on top of the armrests temporarily, then notch the lower slat to end up with a 1/4" gap, then glue and clamp the lower back slat in place. If you're skipping the painted treatment, glue and clamp the middle and upper back slats in place now.



Next, Back Slats – With the middle back slat temporarily in place, Brown marks and cuts the notch in the lower back slat so it's located 1/4" away from the middle slat.



Mask Then Prime – Once the area to be painted was laid out, Brown masked it off and sprayed on an exterior primer, then let it dry thoroughly.



National Colours – After the white, then red areas have been sprayed, remove the tape to reveal a detail that many Canadians will recognize. If you're feeling artistic you can try your hand at adding a red maple on the white band.



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Extra Strength – Though they might not be required, two angled brackets running between the rear legs and apron ensure the chair doesn't rack while in use.

If you want to try your hand at a painted feature slat, position the middle slat in place temporarily and glue and clamp the upper slat in place. When dry, remove the middle back slat, lay out the area to be painted, mask the wood on either side of the area to be painted and prime it with an exterior, sap-blocking primer. I used an aerosol can of BIN primer from Zinsser. Once the primer was dry I sprayed on two coats of white paint, allowed it to dry, applied one strip of tape down the center of the painted area and sprayed a coat of red paint on. I used Rustoleum's Painter's Touch 2X Satin Blossom White and Satin Poppy Red, both in aerosol cans. When dry, glue and clamp the slat in place.

Angled brackets

While the paint on your middle back slat is drying, cut and attach two angled brackets to the front face of the rear apron and the inner face of the rear legs. Plug the visible holes. These brackets will keep the chair from racking while in use. They may be overkill, though I'd rather not find out down the road that I really shouldn't have skipped this step.

A finish?

Other than the painted slat, the chair I made didn't get any finish at all. A film

finish will help protect the wood, and keep it looking new, though it needs to be taken care of or it peels and looks very worn. A simple oil finish of some sort could have also been used to maintain a newer look, if that's what I was after. Both of these finishes would also provide protection against rot. I opted to skip the finish, as I wanted the silvery look that wood left outdoors naturally turns. My reasoning? It would look nice with the painted slat, and would require no maintenance. I also had my patio to enjoy, as winter was closer than I wanted to admit.

ROB BROWN

rbrown@

canadianwoodworking.com



Brown now has his eyes peeled for another nice-looking pallet, as his wife and kids rarely let him use this chair. Truth be told, he knew he should have built two chairs all along.

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Strong Curved Panels

Use this technique, combining a coopered solid wood and store-bought veneer, to build strong curved panels.

BY NICHOLAS BRYGIDYR

The most popular way to make a curved panel is to build a big, heavy MDF form, and use bending plywood as the substrate. A better way is to cooper poplar strips together and hand-plane the curve, then press a layer of commercial veneer on perpendicular to the poplar grain to minimize any wood movement, apply solid-edge banding and a final show veneer layer. This method avoids having to spend a few hours routing and gluing together MDF, saving your router bits and lungs for another project. It also produces a much stronger panel.

Prepare the core

Start with some 8/4 poplar, as it's stable, widely available and cheap. Next, rip and flip each piece to make a quarter-sawn core. I would suggest ripping on the bandsaw, because the thinner kerf means more wood is left for the project, and there is no chance of a kickback. Here a little math is required. Let's say you want a 3/4" thick panel. You would need to subtract the thickness of the outer layers of veneer (about 1/16" each, depending on how thick you cut them), and the commercial cross-grained layer (two sheets at 1/32" each) from the final panel thickness. In this case you're left with a board thickness of 9/16". Finish milling the poplar about 3/32" thicker so you can plane down the board, and in case your staves move during glue-up.

A nice touch is to taper the panel in thickness; this works especially well for a pair of doors as they thin out as they meet in the middle. If you choose to taper the panel in thickness, I would plane the last stave down about 3/32" or 1/8" to give you a reference for shaping. Mellow details add elegance to a piece.



Stable, Curved Panel – Brygidyr's first step is to rip a flat-cut board into narrower strips that are quarter-cut. This reduces movement as the seasons pass. Notice in this photo that the growth rings are running up and down, and the slight angles on the edges of each of the pieces, so when they're glued together the resulting panel will be curved.

Begin to shave angles into the edges of the staves, checking against a full-scale drawing as you go. You could tilt the table saw blade to each angle, but it is often faster to just use a hand plane, if you're comfortable with one.

Glue up and shape

Glue up the panel, ensuring the staves stay in line with each other – if the curve is extreme, glue it up in stages. Cross-cut the panel and draw the finished curve on the end grain. Using a hand plane, start removing waste until you reach the lines on either end. I use a round bottomed plane for the inside curve, but you could use a curved scraper and sand paper to achieve the shape, what matters most is to



Glue it Up – This panel could be glued up in one go, but if there was more curve, or the panel was wider, it would have to be glued up in stages.



Smooth the Curves – Hand tools will help smooth the faces, as any imperfections will be mimicked by the two layers of veneer.

produce an accurate surface, no bumps or lumps, straight and even without twist. Remember, this is your substrate for veneer so it must be smooth.

Cross-grain veneer to reduce movement

Once your substrate is smooth and even, and you're happy with the shape, it's time to press on the cross-grain commercial veneer. I would suggest buying the cheapest veneer your supplier carries. This veneer is being used only to minimize movement in the panel – it will be covered by a layer of show veneer.

Cut the veneer with a sharp knife, then use blue tape to stitch the pieces together to make one big sheet – you will need 1/16" overhang all around. When pressing the veneer, the panel is the form, so all you need is a vacuum bag, 1/8" thick MDF cauls, and some breather mesh to evenly draw out the air. The secret to a successful veneered panel is not getting carried away with the glue. Apply too much glue and you'll be introducing excessive moisture into the panel, causing the veneer to bubble and possibly warp the panel. Use blue tape to hold the veneer in place with the MDF cauls and place it into the bag. I use white PVA glue, so 2-1/2 to 3 hours is enough time in the bag, but I always allow the glue to cure overnight.

Cover the core

Next, mill up some 5/16" thick solid wood for the four outer edges. I typically use the same species of wood as the outside veneer. Clean up and square the end grain then apply the top and bottom edges. Once the glue has dried, using a spokeshave,

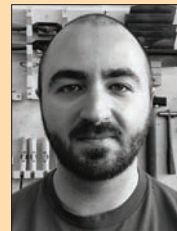
file, card scraper, or whatever else you have available to you, flush it up to the panel. It's very important to take your time and not add any slight dips to the edges while flushing them, as gaps between the solid edging and the show veneer will be seen. Next, glue on the side edge banding, carefully following the curve while trimming.

Back in the bag

Now you're ready to apply the final layers of veneer. I like to cut my own veneer on the bandsaw at 3/32" thick and remove the bandsaw marks to end up with a 1/16" thick sheet. As with the commercial veneer, apply just enough glue and place the panel into the vacuum bag for a couple of hours. Once the glue has cured, clean up the panel and admire your work.

NICHOLAS BRYGIDYR
nick.brygidyr@gmail.com

After a long week of loud machinery and dust in his studio, Nick often enjoys taking in the rewarding tranquility of a walk through nature.



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Into the Press – With the cross-veneer and MDF cauls in place, Brygidyr places the sandwich into a vacuum press until the glue dries.



Solid Edges – Brygidyr adds 5/16" thick solid wood to the edges of the board before adding the final "show" veneer over top of the edging.



Trim the Edging Flush – Once the edging is trimmed, the face and back veneer can be added to complete the panel.



Upcycling

How and Why You Should Start Looking for Century-Old Lumber

There are many buildings in Canada that were built in the 1800s and are now being demolished. Instead of having all the beautiful and functional lumber added to a landfill site, we should be using it to build new products. The new piece will not only be functional for many years to come; it will also have an interesting story with it.

BY DAVE ROGERS

It has been nearly four years to the day since I walked out of that tech company office one final time. The vague, uncharted future that I had convinced myself to believe in was suddenly in jeopardy. My days of being underworked and overpaid would inevitably come to an end. From business casual to work boots and a tee, my transition into the shop was almost seamless. And while it may present itself as a step backwards to some, it has

proven to be the best decision I have ever made.

Fast forward to July 2016, and I find myself a little more than a year into my own woodworking venture, at least as a registered business is concerned anyway. My monthly income has been both unpredictable, and significantly reduced. Work-life balance is almost non-existent, and my muscles are continuously sore. All of that said, I have never been happier. What was once just a hobby is now a significant part of my daily life.

Photos by Dave Rogers (Lead Photo by Rob Brown)

Make the old new again

Whether through good luck, or good management, my interest in salvaging materials from 19th-century structures meshes well with the worlds growing interest in living “green”. Possessing degrees in both history and business, perhaps I’m a bit of an anomaly amongst small-shop owners. Beyond a simple “interest” in history, however, I consider neither to be an advantage. Instead, it is the joy and comfort I derive from time spent in the shop, along with a self-assigned task of preserving pieces of our past, which motivates me to continue.

Admittedly, there is no magic formula to be followed when it comes to building a successful business. What works for you may have no effect on the next person. That said, I believe it to be within our own best interests to share our experiences, as some degree of commonalities are sure to exist.

Where are upcycled materials?

To some, it is reclaimed; to others, it is salvaged. Some may refer to my creations as either upcycled or repurposed, but I see them as fragments of the past, reborn for the modern world. Regardless of the verbiage, my business would be nothing without an ongoing supply of appropriate materials.

Even when my shop was little more than idea, material sourcing was always a primary concern. Not because there is any shortage of century old structures being demolished; rather, it’s the difficulty in trying to work with the involved parties, and the red tape that will often prevent a contractor from simply passing things along. Instead, leaving the demolished remains of pre-confederation era structures to be destined for a landfill, while like-minded individuals look on in both anger and frustration.

Having made a rapid transition from not having enough materials to being nearly out of storage space, I offer up a few tips on how to both collect, and maximize the utility of, reclaimed timber. Appearing in abundance today, the high-quality stuff from the 1800s is a finite resource. Let’s not see it go to waste.

1. SPREAD THE WORD

As is often the case, word of mouth has proven incredibly valuable. Tell everyone you know. Tell them about what you do, why you do it, and the materials you use. Before I even had a business number, a friend of my dad was out for lunch one day when he was introduced to another individual. This person just happened to have an entire barn’s worth of hand hewn timber he was looking to get rid of. Two 15-foot trailers worth to be exact.

2. DO YOUR READING

Open the newspaper, or check it out online. Generally speaking, when there is construction/demolition work being done on a historic building, somebody is going to write about it. Take note, and pass by at some point. You never know who you might run into.

3. NETWORK

Perhaps this is starting to sound like Business 101, but the need for networking applies to nearly every business in the world. Get to know some local contractors, and introduce



Lots of Character – This is the material from Rogers’ first decent dumpster find. The wood is full of square nail holes and one piece even has a signature in calligraphy from back in the 1880s. It’s hard to find wood with more character.



A Reno Find – These 2x4s were removed from a local century home renovation. Rogers cleaned the wood up, milled it to size, then made a kitchen counter top from them for the owners.

yourself to the demolition guy as well. The best materials I have worked with to date were brought to my attention by a contractor contact. Refer back to tip #1 if you need help with the dialogue when introducing yourself.

4. IF YOU DON’T ASK, YOU WON’T KNOW

Having been preached this idea for years, it seems as though it has finally started to resonate. If you see something that you want, ask for it! Provided that there’s no concerns over liability – and assuming they don’t have other plans for it – there is really no reason for anyone to deny an opportunity to reduce demolition waste. After all, they have to pay for its disposal.

In some cases, it is next to impossible to meet with the decision maker in person. Take the time to leave a voicemail, send



Barn Beams – Though he tends to avoid barn beams, as they are very common, Rogers still has a hard time saying no when they're offered. A few have since been cut into mantles, while the rest will be milled into generic dimensions for future use.

Save the Small Pieces – Proving that every little piece can have a use, Rogers makes lamp bases from the offcuts of larger pieces.



an e-mail and even drop off a letter. You have to get the ball rolling somehow, so be persistent.

5. GET CREATIVE

Having spent the first day of the July long weekend collecting ice-damaged dock boards from the rocky shorelines of Ontario cottage country, and my last picking through a privately run wood disposal site for discarded dock cribs, I firmly believe that every little piece has a use. And even though they don't fit my 19th-century criteria, they still come with a story. In this case, it's a story that helped generate 40-plus sales of a particular product last summer.

6. DON'T BE AFRAID TO GET DIRTY

Though I will stop short of recommending the practice to others, it would be a lie to suggest that I haven't found myself in the depths of a dumpster on more than one occasion. My only defense is that such actions are just another part of my contribution in helping to divert waste from our landfills. When all else fails, you just have to do what feels right.

7. MAXIMIZE WHAT YOU HAVE

Having put in both time and energy to acquire your materials, why would you then turn around and throw some of

it out? While I have multiple dustbins, and one for "garbage" wood, the biggest ones are for my end cuts. Once again, I believe that every last piece has a use. Only time and persistence will help you determine what that is. For me, it's lamps: a product that I never dreamt I would make, and yet it is amongst those that I am most proud of.

While its historical value is subjective, I have been both incredibly happy, and even surprised, by the quality of materials that have been collected to date. With few exceptions, much of my lumber has been salvaged from mid-to-late 1800s construction. From structures including a county jail, a church, and a beautiful stone house that was knocked down to make way for the eastern extension of Ontario highway 407.

When it comes down to it, there is clearly no shortage of materials out there. And for those who will continue to pursue a more sustainable approach to design, this will forever be the case. It is entirely possible that there may never be a substitute as enjoyable to work with as first-growth timbers, but there will always be something else.



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Introduction to LASER LEVELS

Given the broad number of choices in the laser level market, and the current level of technology compared to even just a few years ago, it's no wonder that so many people are starting to purchase laser levels for use at work and at home. Learn about the different levels on the market today, and which one is right for you.

BY RICH KELLER

For most of us, when we think of lasers, our mind flashes to movie scenes like that of James Bond in the 1964 film *Goldfinger*. Bond, of course, successfully escapes his planned demise with some fast talking as the laser inches towards him, whilst cutting through the metal table he is strapped to. I can assure you, lasers are used for much more practical, real-life situations than Hollywood blockbusters.

When one picks up a laser in the store, and reads all kinds of warnings on the package saying "Warning: Laser light. Avoid contact with eyes", you have to wonder if the tool is really safe and useful. After all, lasers are also used in eye surgery these days, so are you more likely to perform impromptu eye surgery than level something with one of these devices? Well, the good news is that the laser beams used in laser levels are a little different than the one James Bond faced, and the one your eye doctor uses. The laser levels I tested for this article are all Class 1 or 2 lasers, very

Photos by Rob Brown (Lead Photo by Manufacturer)

low power, and safe under normal operating conditions. Your eye's blink reflex should protect you from accidental contact with this type of laser beam. The only real danger would be if you purposefully stared into the laser for a period of time.

Other varieties

In this article, I'm going to take a close look at five of the most popular levels on the market today and give you a run-down on each one so that you can decide which one is best for your shop. All five lasers that I evaluated are what are known as "Laser Line Generators." This is the most popular and useful type of laser for the small shop or homeowner. There are two other types of laser that you might want to know about as well.

The laser plumb bob is a fairly simple device. It's a laser pointer with a self-leveling feature that projects a dot straight up and straight down, providing a straight line just like a plumb bob. Laser plumb bobs tend to be a bit limited in their uses. You can only see the dot from a laser plumb bob where it intersects a surface, like the floor or the ceiling. However, if all you want to do is transfer a mark from a surface, either straight up or straight down, a laser plumb bob is your answer.

The other main type of laser level is the rotary laser. The main difference between rotary lasers and line generators is the visible distance. Typical line generators are visible for about 50 ft. indoors, while a good rotary laser is visible for about 200 ft. indoors. Generally speaking, no laser level is visible outdoors. Line generators diffuse laser light to cast a line, while rotaries take a powerful beam projecting a dot and spin it at high speed to create the illusion of a continuous line on the surface of a wall, floor, or ceiling. This is what allows rotary units to have a greater visible range. A good quality rotary unit will set you back around \$700 or more, with some units costing over \$1000. Reasonable quality line generators can be bought for less than \$200, with top-notch units around \$300.

Tested: 5 laser line generators

I took a close look at laser line generators from five different manufacturers: Bosch, DeWalt, Mastercraft, Stabila and Stanley. Each of the units shared some common features and created level lines, but there were some important differences. All the units I examined cast both a horizontal and vertical line, but a couple of them had extra lines. The Stabila level has a plumb dot built in, while the Stanley has a third line, an additional vertical line cast at 90° to the main vertical line.

Each of the lasers I looked at are self-levelling. This means that once set up closely level (usually within 2–3° of level), the level adjusts itself to show



Stanley
SHT77341
\$195



DeWalt
DW088K
\$169



Bosch
GLL 2-50
\$369.99



Stabila
LAX300
\$349.99

Mastercraft
57-4587-6
\$89.99



Hands On – Keller get his hands on all five models of laser levels in this article, and put them through their paces.

a perfect level line. One of the first tests I did was to check each one for level. While each manufacturer published different specs for the accuracy of the levels, they were all spot on, casting parallel lines with each other. I also checked each level with a top-quality “old school” vial level and found that the lasers were just as accurate. Each level had an indicator of some sort to show if the unit was sitting too far out of level for the internal mechanism to bring the unit to level.

Quick Clamping

– The Stanley and Mastercraft versions both have clamping accessories that allow the user to quickly clamp the level to a 2x4 or other item. The clamp mechanism on both units isn’t overly strong and grippy though, and is slightly prone to slipping unless you take good care to use it.



Mounting and positioning

Each laser came with some sort of mounting bracket to enable it to be attached to just about anything you want. While the configuration of the brackets varied, the general purpose was the same. The MasterCraft and Stanley levels both had clamps that could directly grab onto a 2 x 4, while the Stabila, Bosch, and DeWalt levels all had brackets that could be hung just about anywhere with a single screw. The Stabila, Bosch, and DeWalt

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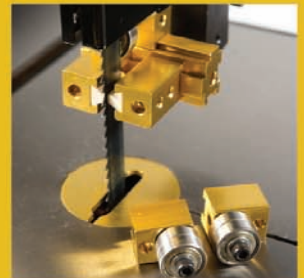
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A Simple Screw – The Bosch, Stabila and DeWalt products can all be hung from a single screw, making for quick and stable positioning.



Magnetic Grip – The Bosch, Stabila and DeWalt products all have magnets, allowing the user to position in on metal studs, or other metal surfaces.

levels also all had some sort of magnet built in to allow them to be stuck to any steel surface.

The lasers also all had a standard 1/4–20 tripod mount, so any of the lasers I looked at could be attached to a standard camera tripod, which I think is one of the most useful ways to use a line generator level. If you wanted to hang a set of cupboards, for example, you can use a tripod to hold the level at the correct height to cast a line across the wall as a reference point. Instead of trying to hold a cupboard, a drill, and a level all at once, the level holds itself. The laser line will also go

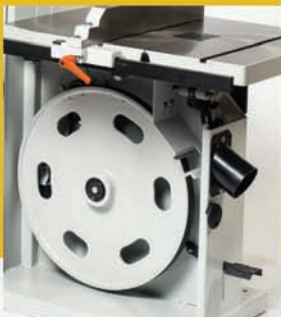
around corners and obstacles, so if you set the laser up strategically, you could do an entire kitchen without moving the level, ensuring your cupboards are at the same elevation from one wall to another.

The last feature that the levels shared in common (other than all using batteries) is the fact that you can select which line or lines are visible, depending on what task you are trying to perform. Each unit varied in how this was controlled, but each unit had some sort of mode selector switch, enabling me to select horizontal, vertical, or both lines.

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Can you see the difference?

One of the biggest differences between the units was the quality and brightness of the laser line. To examine the line quality and brightness, I set up all five levels side by side and aimed them down the length of my shop. If you've never used a laser level before, you might expect that you're going to get a pencil thin line all the way down the wall. There is normally some width to a laser line, but ideally it is minimal, and the edges of the line are sharp to give you a consistent reference point.

At 10 ft. away from the units, I could see some difference in both the quality of the line and the brightness, but nothing that would make any particular unit useless. For quality of line, the Stabila unit produced the sharpest and narrowest line, at just 1.2 mm. The DeWalt, Stanley, and Bosch units produced slightly wider lines at 2 mm, but were almost as crisp as the Stabila unit. The MasterCraft level produced a line about 1.5 mm wide, but the edges of the line were a little blurred. The Bosch, DeWalt, and Stanley units were the brightest, with very little difference between them. The Stabila unit was slightly dimmer, but still very acceptable. The MasterCraft unit was the dimmest, but even under the bright lights in my shop, I was able to see it easily.

At 28 ft. away from the units, some more differences started to pop up. For one thing, some of the lines got slightly wider. The DeWalt and Stanley units managed to maintain their width of 2 mm, but the Bosch unit widened out to 3 mm. The Stabila unit had expanded slightly from 1.2 mm to 2 mm, but it still produced the crispest line of all the units. The MasterCraft

Tripod Support – All the models tested could be supported with a standard tripod.

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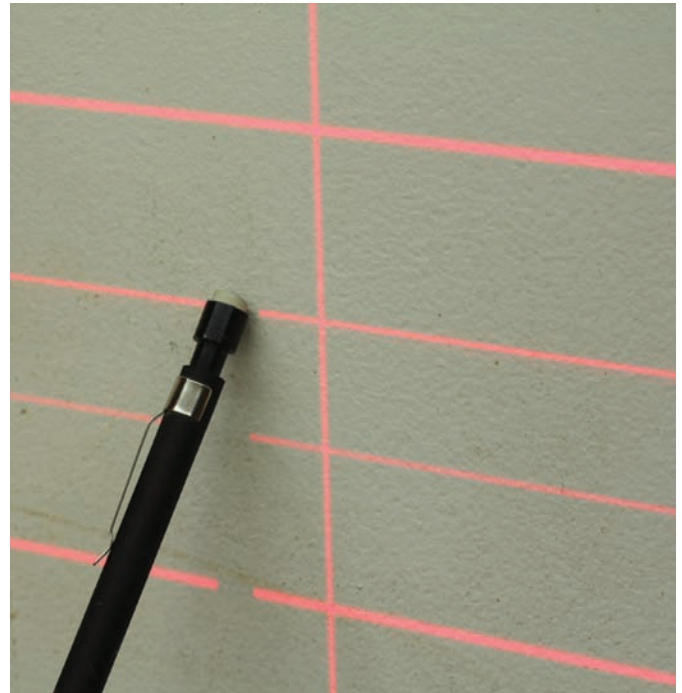


level, while still within its specified range of 10 m, produced a line about 10 mm wide at this distance, and quite blurry.

Another difference between the units, in terms of the line generated, is the degrees of field. What this refers to in simple terms is how wide an area the unit can cast a line over. So, imagine I am trying to cast a vertical line from floor to ceiling. If I set the level on the floor, I want my line to reach all the way to the ceiling. If I can move the level back infinitely from the wall I am projecting onto, then no problems will arise. However, each unit has a limited range, and remember the best line generators are only good for about 50 ft. Also, in a small room, I may not be able to back up far enough to accomplish this. The good news is that three units I tested – the Bosch,



What Type of Line? – All the versions came with a variety of options for line readout. Typically, horizontal, vertical and an option for both lines at the same time were standard.



Slightly Different Lines – For comparison (from top to bottom) the Bosch, Stanley, Mastercraft and DeWalt lines. The Stanley line is currently set to produce a 'cross', though any of the units can produce one. These lines are all generated from 10'. It's hard to tell, but the Mastercraft line is lighter than the others, although all are crisp lines.

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Stabila and DeWalt – all cast vertical lines up past 90°, going right over the top of the unit. With these units I could place one practically in front of a wall and still get a floor-to-ceiling line. I can also back these units into a corner and get a line part way down the wall behind them.

Protect its head

All of the units I tested, except the DeWalt, had some sort of locking mechanism when they were switched off. What this mechanism does is secure the delicate laser head to protect it against bumps and drops during transport. Basically, this type of laser employs gravity to act on a sensitive movement within the unit to find level. Should this mechanism get damaged, it will no longer be able to find level accurately, so it's important to protect your laser from any sort of impact. But accidents do happen, so having the head locked in place during transport helps to keep the unit safe.

The verdict

Picking the “Best Professional Value” was tricky. There were a couple of good contenders for that position, but I settled on the Stabila LAX300 (\$349) for that award. While I don't like the fact that the LAX300 is not the brightest unit, even under the bright lights in my shop, it was still quite easy to see. I like that the Stabila had the sharpest, narrowest line of all the units, and I think this is the most important feature of the unit. I also like the built in plumb bob. For large-scale

projects, I think the ability to cast a sharp line over a long distance is key for a professional user. I also like that when placed in a corner, the unit draws the vertical line right across the ceiling, and somewhat down the wall behind. For the same reasons I also picked the Stabila for the “Best in Class” award. Overall, the unit outperforms the others hands down.

The “Best Hobbyist Value” unit I tested was the Stanley unit. While far from the most expensive unit on the market, it gives the purchaser a lot of bang for his or her buck. The Stanley unit has nice crisp and bright lines, and also features two vertical lines, allowing the unit to work as a tile laser. This feature helps you to draw out a grid to lay floor tile. The unit could only cast a vertical line up to about 80 degrees, but it does have good range, which is also important. I think this unit still delivers the best value to a homeowner or occasional user, giving a nice blend of a mid-range price and features.



RICH KELLER
rich.keller@hotmail.com

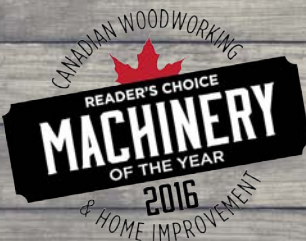
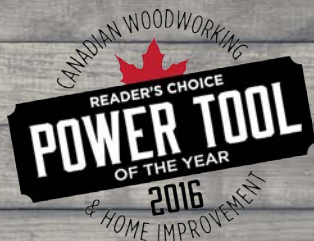


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Make Your Own Baseboard

If you're looking for a unique look or a specific function from your baseboards, it might be best to make your own. Some basic shop tools – jointer, planer, table saw and router table – are enough to make an astounding number of different styles of baseboard, and the techniques are not difficult.

BY ROB BROWN

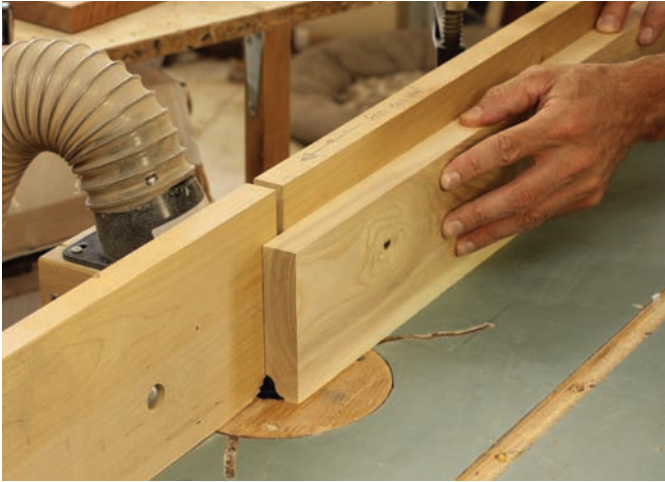
When it comes to adding baseboards to your home, creating custom solid wood baseboards isn't the easiest option, but it will give you a lot of design options and create a stunning look in the right room. The benefits of making your own baseboards include being able to use less-common species, creating custom sizes and styles, as well as making a baseboard that will work seamlessly with custom built-ins.

You can also use the techniques in this article to create custom mouldings for your furniture, or for window and door trim and other mouldings around the house.

Additional tooling options

In addition to the basic tooling I'm using here, there are many other options when making baseboards. You can purchase moulding heads for the table saw, then run long lengths of wood over the cutters. You can also use a spindle moulder to help you create moulding. It operates similar to a router, but is a bit more appropriate when large quantity runs are needed. You can also find attachments that can fit on planers.

Photos by Rob Brown



Simple Approach – Making one pass over a router bit will produce simple baseboards quite quickly.

Just feed the material into the machine and out come dressed mouldings. It's possible to use traditional moulding hand planes to shape baseboards, but it will make an already large job even bigger. Unless you're either only doing a small room, or you love hard work, I'd stick with power tools.

Even though I use a table saw to dimension the stock, and even remove waste from mouldings, another function of a table saw is to cut coves. By attaching a pair of fences for the workpieces to run between, then gradually raising the blade about 1/16" each pass, you can end up with nice coves. The resulting surface needs a lot of smoothing, so this might not be for machining 300 linear feet of baseboards.

Featherboards are very helpful when creating baseboards. They help keep constant pressure on the workpieces and greatly reduce the chance of kickback. You can clamp featherboards to the horizontal work-surfaces and fences of your table saw and router table, in order to maintain even downward and sideways pressure.

Four basic approaches

There are four basic approaches to making baseboards.

Simple/One Step is when a piece of wood is dressed then has one pass with a router bit to achieve the final look. **Simple/Two Steps** is when waste is removed from a board on a table saw, then passed over a router bit. The third approach – **Applied Cap Moulding** – is when you create a small moulding with one or multiple passes, then rip it from the workpiece and glue it to a flat board. The final, and most complex approach, is called **Stacked**; this is when you create two or more boards with routed or shaped edges and glue them together.

Once you understand how these different approaches produce a wide variety of baseboards you can mix and match the different techniques, as your imagination and tooling are the only limits to what can be accomplished.

Simple/One Step

This is the easiest way to create baseboards and is often used if someone has a lot of inexpensive material available, possibly from a tree they had milled. After jointing and dressing all



Something to Work Towards – When using the 'Simple/Two Step' approach, Brown makes a short pass with the bit to give him an exact profile to work towards. He then sets up his table saw to remove some of the waste before running all the workpieces over the table saw, then past the router bit.

the necessary stock, set up the router bit in your router table, adjust any necessary featherboards and infeed/outfeed support stands and run the material past the bit. You can create the final profile with multiple passes if needed. Doing so will take longer, but will leave a smoother profile.

Simple/Two Steps

This approach is very similar to the first one, but is used when the amount of material being removed by the bit is quite large and even doing it in two passes would be hard on the router, the router bit or yourself. Router bits are not great at removing large amounts of material. Some bits rout a deep profile; if this is the case for you, I would consider using a table saw to remove as much of the waste as possible. A table saw, whether with a standard rip blade or a dado blade, can quickly remove waste and leave the router bit to create just the final profile.

The first step in this approach, once the material has been dimensioned, is to set up the bit and make a pass in the first inch or two of one of the workpieces. This will give you a very accurate shape to work towards when setting up your table saw to remove waste. Sometimes it's best to make one pass with a dado blade, but other profiles call for multiple passes to be made with a standard rip blade. If you do remove a solid piece of waste, make sure it doesn't get trapped between the blade and rip fence, as it will kick out of the back of the saw. Plan your cuts so the waste is on the opposite side of the blade. The closer you get with this step, the easier your work will be with



Simple/Two Step – After removing the waste on the table saw, Brown makes the final pass on the router table to create the baseboards.

the router table. Having said that, there's no need to get carried away – a few passes is almost always enough. Also be sure to not remove so much of the face and edge of the workpiece that it won't sit square against the router table's surface and fence, or the profile will not be even down the length of the board.

With some of the waste removed, head to the router table and create the final profile. This should often be done with a couple of passes to create a smooth cut. Featherboards are going to be even more important when it comes to creating large, smooth profiles.



Multiple Passes – Making one pass to remove most of the material, then making a second pass to remove the last 1/16" or so will often give you the smoothest final surface. Here, Brown made the complete first pass then machined the first 4" or so of the second pass.

Applied Cap Moulding

If you want a baseboard that has a profiled upper edge, with the majority of the baseboard flat, you can use this approach. Run a small-to-medium-sized moulding, rip it off with your table saw, then apply it to the edge of a flat board. This is usually done with profiles that are a bit on the complex side, but not over the top. One thing you can do in this case is attach the profiled cap moulding to a piece of 3/4" plywood. This works especially well when the baseboard will be painted, but you can do this with the same species if a stain or clear coat will be applied to the baseboards.

The hardest part of using this approach is gluing the cap moulding to the flat stock so it's square and even. I clamp scrap blocks to the back of the lower, flat section, as they keep the back of the cap moulding flush with the back of the flat section during glue-up. It can still be a lot of work to first create the moulding, then glue it nicely to the flat section, so this is not a great approach for use throughout a large area of your home. It works great for rooms with built-ins, as you can create the same baseboards for the walls that will go in front of the built-in unit, bringing the entire project together nicely.

Stacked

This is the most complex and time-consuming approach to creating your own baseboards, but it can leave you with a truly stunning finished look. The multiple layers add a lot of depth, and since each layer can be adorned with just about any profile of your choosing, the sky is the limit. I'm a believer that "less is more", but everyone has their own personal tastes.

The key to this approach is planning. I would recommend starting with some scrap softwood lumber and see what you come up with. Once they're together, multiple profiles take on a much different look, and the last thing you want is to do a lot of work in order to create awful looking baseboards.

Start with the largest portion of the baseboard and shape it to the profile you want. Generally speaking, once the largest portion is done you will add more pieces to it, building it

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Cap Moulding is Ready – After a few different setups to form this moulding, then ripping it on the table saw, this moulding is ready to be attached to a flat board.



Tricky Clamping – Alignment blocks on the top and bottom surfaces of the flat material help keep the cap moulding flush during clamping.



Planning is Key – Before turning any machines on, Brown places his router bits against some scrap wood to get an idea of how the final profile will look.



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Triple Bead – This triple bead bit is easy to use as it only requires one pass, and it does a lot to dress up a flat surface of a board.

up until it's complete. Work off your initial test baseboard and do your best to set up the profiles as close as possible. This stacking approach can include all the other three previous techniques I've discussed.

One of the last things you want at this stage is to get a lot of squeeze-out between the mating parts when you glue them together. To combat this, machine a simple groove along the entire length of the back of the smaller piece. This groove should be as close to the visible edge of the workpiece, without weakening any part of the baseboard. Usually about 1/4" away works fine, but every situation is different. This groove will capture excess glue before it spills out onto the visible face of the mating piece, saving you lots of time, a huge headache and ugly glue stains on your hard work.

When it comes time to start gluing parts together, you have to make sure you can align them consistently so the baseboards are all the same. Screwing a series of small wooden cleats to the underside of both the main section, and the smaller section, is a great way to keep their bottom edges aligned. They can be tricky to bring together, but if you add a small chamfer to the leading edge of each block it will make it easier to bring the parts together.



Glue Groove

– A small groove, machined on the table saw, will capture any glue squeeze-out during glue-up. Machine it as close to the edge of the board as possible, without weakening the edge too much.



Lots of Options – You can even create shaped pieces, glue them together, then add that glue-up to the face of a stacked baseboard.

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Alignment Blocks – Simple blocks, attached staggered on the bottoms of both pieces being glued together, keep the parts flush during glue-up. Machine the blocks with slight chamfers on their leading edges to allow the two workpieces to come together more easily.

Designing baseboards

I usually already know the basic look I want – colonial, modern, etc. – so I start experimenting with some appropriate router bits to see what I can come up with. I don't actually turn any machines on just yet; putting bits up against the end grain of some lumber and pencilling on their profile is enough for now. Once I have what looks to be a nice profile complete I flick the "on" switch and see how well my idea looks in real life. Often some adjustments are made. Sometimes a whole new approach is taken. After a lot of trial and error I come up with something that looks appropriate.

You can also start by looking at some baseboards at your local lumberyard, or online. If you really don't have any idea where to start this is usually the best approach. You don't necessarily want to copy the exact profiles you come across, but they do offer a good first step.

General tips

Having a wide selection of router bits will go a long way to giving you the flexibility to create a nice baseboard. A selection of rounds and



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Designing Baseboards – Rather than taking the time to install a bit, and run the profile, you can get a quick look at how the profile will turn out by sketching the profile on the end-grain of the scrap workpiece. You can do this with all the bits you plan on using before you create any sawdust.

hollows, common shapes and straight bits is nice to have, and a few additional bits can be purchased if necessary.

Baseboards are generally fairly long, so a lot of open space in your shop is

likely going to be necessary. And because the boards are also going to be heavy and hard to handle, a shop helper to tail machines makes the process a lot easier.

If you're using expensive primary



Remove the Bearing – By removing the bearing you can machine larger fillets or slightly change the overall shape being routed. Just be sure to not rout into the central post that remains.

Wide Selection – Having a healthy selection of router bits on hand during the design process goes a long way to creating nice baseboards. Some bits do a single job, while others can be set up to create multiple profiles.

material you might be able to use cheaper secondary wood when working with the stacked technique. It is possible to glue shaped mouldings onto secondary wood, then cover that secondary wood with the show species, but I'd only recommend going to this trouble if the main species you're using is very valuable and costly.

Many router bits have bearings on them. While they obviously need to be in place for freehand routing, there are times when removing the bearing is necessary while using the bits in a router table. You can't run the workpiece into the center section of the bit that has the threads to secure the bearing, but you can sometimes enlarge the fillet or get a slightly different finished profile without a bearing in place.

If using less common species and creating your own custom baseboards interests you, I suggest giving this a try. Start by practising on some cheap lumber and see if you can come up with a pleasing look. When you're happy with the look, practising on a small room in your home will allow you to get a sense of how involved it is, before tackling your entire house.

Have you ever made custom baseboards? Share your experience and results at the end of this article, on our website.



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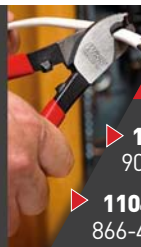
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Carl's House – Part 2

BY DON WILKINSON

As I sit here on my deck in my robe sipping my first cup of coffee of the day and enjoying the occasional scream or cry of pain emanating from my neighbour Carl's house, I realize that I really enjoy Februarys. The warm gentle breeze wafting down the mountainside ruffles the surface of my coffee before it gently rips the shingles off Carl's roof and sends them flitting through the air like so many demented starlings.

To say Carl's house is a work in progress is like saying the complete restoration of Rome's Coliseum would be a work in progress ... but hopefully cheaper. Carl's *projet-du-mois* (project of the month) is replacing his few remaining shingles. Needless to say, Carl knows absolutely nothing about roofing other than it's something that's supposed to be over his head, which he's clearly in, and it's supposed to keep most of the weather out, which it clearly doesn't.

Carl had begun his latest project the same way he begins all his projects – and most of his conversations with me – by asking if I could help him. Once again I had to disappoint the poor boy and assure him I knew absolutely nothing about roofing. I felt it in my best interest not to inform him I was once a roofer in a former life. His little face screwed up in disappointment; he then went on to ask if I could loan him a “climbing thingee.” I decided to loan him the ladder with the really wide outriggers.

I also suggested he might wish to borrow a hammer to assist in fastening the new shingles to his roof in some manner. I then foolishly suggested he use

a chalk line as well so at least a few of the shingles would be laid down in a reasonably straight row. Then I had to explain it was used to “snap a line.” My word choice proved to be a mistake when he soon returned asking for more string because the chalk line ran out after “snapping” his very first line.

After Carl finally left with the majority of my tools, I poured another cup of coffee, picked up my book and sat down for a peaceful afternoon immersed in the peaceful exploits of the Canadian Army during the Battle of the Somme. Every chapter or so I would hear an “Oh! Crap!” followed by a brief slithering noise, then a short moment of silence preceding a muffled thump. Several seconds would pass before I would hear a painful, and slightly breathless, gasp – “I'm alright” – emanating from the Pachysandra bush.

It took three or four flights off the roof before What's-Her-Name no longer bothered to rush to the door to check on him every time he thudded to the ground. I noticed, however, that she had at least opened a window to listen for his painful assurances that he was still amongst the living. I was beginning to think it might have been a mistake to loan Carl a ladder capable of raising him more than, say, three feet off the ground. At least not

without sending him to Ladder Climbing University first. The BC Government probably has just such a school for its employees.

After hearing Carl thump to the ground for the third or fifth time, I became curious as to how even he could possibly fall off such a gently sloped roof. Heck, a rubber ball would have had a tough time rolling off that roof. I discovered part of the problem as I walked around the corner of the house and saw Carl's ladder technique. Apparently, my first mistake was to believe he was even capable of using a ladder because in his great cluelessness he had placed the ladder upside-down. According to Carl, with the ladder upside down, the wide part with the outriggers allowed him to stretch sideways much further without going through the whole bother of climbing down and moving the ladder over. It seems that Carl was afraid of climbing up and down but was fine with leaning. I grabbed the ladder just as it began another inevitable slide and ordered Carl down.

It seemed that if I was going to keep Carl as a neighbor – and, Lord, I have no idea why I might want to – I was going to have to come out of retirement and teach poor dim Carl how to re-roof his house.

DON WILKINSON
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Illustration by Mike Del Rizzo





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Ian Laval

Jewelry Cabinet

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Turn to page 12 to read a collection of Ian's quotes.