



Rolling
**CLAMP
RACK**

31
Small Shop
Essentials



Know
Your Tools:
ROUTERS

JUNE/JULY 2016
ISSUE #102

CANADIAN Woodworking & HOME IMPROVEMENT

18 Crucial Home
Improvement Tools

6TH Annual
WORKING IN A
**SMALL
SHOP**
Issue

Sharpen Your Tools
with **Diamonds** p.40

Top Ten:
Router Safety
Tips p.12

Shop Profile:
40 Sq. Ft.
Bathroom
Shop p.44

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BY WAYNE WIEBE

Is there anything handier than rolling your collection of clamps directly to your assembly area, so they are all near your next glue-up? I didn't think so either.

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BY MATTHEW KINZEL

If all you could fit into your shop were 18 tools, which ones would you choose? Former professional contractor Matthew Kinzel shares his decisions with us.

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BY CARL DUGUAY

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Learn how our editor built the most versatile piece of equipment in his shop, and what 20 years of hindsight has taught him.

BY ROB BROWN



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This is our sixth annual "Working in a Small Shop" issue. Looking back on all the topics included in these issues I realized we've covered quite a lot of ground. From shops on wheels and shops in crawlspaces to working with sheet goods and small shop storage ideas, there's something in our small-shop back catalogue for everyone. Head to our website to read all the articles.

When building in a small space, tool and machinery selection, as well as broad knowledge of how to use them, is crucial. If something's going to take up valuable real estate, it better be useful. My router table has been incredibly valuable in my small shop. It can perform many different operations, can be set up quickly, didn't cost much to create and even doubles as an assembly table and outfeed surface when not in use. In this issue I share my ugly but trusty router table build of many years ago with you. I encourage you to create a nicer-looking version, though the functionality leaves very little to be desired. In another article, Carl Duguay writes about router tables in general and discusses the models that are available for purchase. Rounding out the discussion is a Know Your Tools column on routers and a Top 10 column titled Router Table Safety Tips. There are, strangely, only nine different tips there, but one was so important I mentioned it twice to drive the point home. Subtle, I know.

Also in this issue is an article on diamonds. They seem to be woodworkers' best friends too, at least when it comes to sharpening. Every small shop needs a quick and effective approach to sharpening, and Carl Duguay shares his. Speaking of effective, clamps are the backbone of every project, and Wayne Wiebe shows you how to build a rolling cart to better store and use the clamps in your collection. If your space is so small you have to start whittling down your tool collection, learn what former pro contractor Matt Kinzel hung onto after a dramatic downsize forced him to select his most productive 18 tools. And if you think his space must be tight, you'll want to learn how one hobby woodworker completes projects in his Vancouver condo bathroom. That's an impressive feat in ingenuity.

If you have a small shop that might inspire others to do more with the their space, please share it with me. Who knows ... you may end up being featured in our seventh annual "Working in a Small Shop" issue.

Rob Brown



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CANADIAN Woodworking & HOME IMPROVEMENT

Issue #102

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Errors & Omissions Excepted

letters

Great Spokeshave Article!

Bill Perry's article 'Tuning and Using a Spokeshave' (Oct/Nov 2010) is absolutely excellent – in both content and clarity. His article fully analyzed the essence of the spokeshave, which permitted me to tackle the difficulties of using this tool with confidence.

My sincere thanks and compliments.

Steve O.

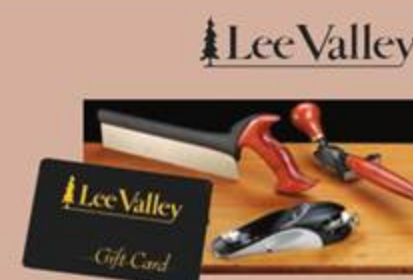
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shopnews



Osmo Polyx-Oil – Simple and Durable

My shop is dusty, and I certainly don't have room for a dedicated spray finishing room, but I still need to apply a finish to my projects. I picked up some of Osmo's Polyx-Oil a few months ago and prepped up a few test panels to see how it worked. I'm glad I did, as the resulting finish stood up to wear and stains quite well, had a nice colour and sheen to it and, best of all, it was very easy to apply. I wiped on a few coats with a rag before final assembly of a recent table, and had absolutely no problems with runs, sags or overspray. I also learned that if a scratch or some wear occurs down the road it's best to wipe some more of the finish on the area and let dry. I love it when things are simple. Visit www.osmo.ca for more information.

— Rob Brown



Banner Ads on Forum

I know you recently underwent a large forum software update, but I was wondering if the banner ads will be coming back. I use them for accessing the various sites I've come to know and love, as well as for checking out new sponsors. Thanks.

Bowtie66
via our forum

Yes, those ads will be back by the end of this week. I am glad to hear that you are making good use of them!

— Paul Fulcher

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- Spindle taper: B16 • Spindle travel: 4 1/4"
- Chuck size: 1/2" • Number of speeds: 1
- Max. stock width: 13 3/4", Thickness: 4"
- Max. chisel travel: 4 1/8"
- Max. mortising depth: 3"
- Max. distance column-to-chisel: 5 1/8"
- Chisel size range: 1/4"–1/2"
- Table size: 13 1/2" x 6" • Overall height: 29"
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- Collar size: 2.160"
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- Number of knives: 2 double-edged HSS
- Knife size: 12 1/2" x 2 3/32" x 1/8"
- Cutterhead speed: 10,000 RPM
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- Cutterhead diameter: 2 1/2"
- Maximum depth of cut: 1/8"
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- Fence size: 29 1/4" L x 4" H
- Approx. shipping weight: 259 lbs.



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- Table height: 35 3/8"
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- Arbor: 5/8" • Arbor speed: 3450 RPM
- Capacity: 3 1/4" @ 90°, 2 1/4" @ 45°
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- Cutterhead knives: 4 HSS, 8 1/8" x 1 3/16" x 1/8"
- Cutterhead speed: 4800 RPM
- Cutterhead diameter: 3"
- Max. depth of cut: 1/8"
- Max. rabbeting depth: 1/2"
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Best Build

Check out the "Best Build" sub-forum in our Woodworking section of our forum for our latest Best Build thread – a writing desk. This month's winner, Tibor Kelemen, receives a **Veritas Dual Marking Gauge** from Lee Valley.



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

Woods to Know

Aspen

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Free Plan

Router Work Station

With lots of storage and great functionality, this router table has it all.

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Photo by Rob Nichele

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Preparing a
Scraper



RIKON
10-326 Bandsaw Treasure...
A DIY Project



shopnews

Veritas Plow Plane Redesign

Veritas have recently redesigned their small plow plane. While it still excels at cutting grooves, rabbets and tongues, it now has the ability to cut decorative beading. As of February 26, 2016, the small plow planes have a modified skate profile, allowing them to use three sizes of PM-V11® beading blades (1/8", 3/16", 1/4"). The new beading blades are not compatible with small plow planes purchased prior to February 26, 2016. Recognizing that beading is a very desirable capability, we have developed an upgrade kit and a re-manufacturing process that will enable the new beading blades to function in plow planes purchased prior to February 26, 2016. Visit www.leevalley.com for more information.

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Andrew J. Wainwright

... on his design process, his respect for wood and being paid very well.

BY ROB BROWN



Coffee Table - Wainwright has been fascinated by tables that, in some vague manner, remind him of "critters". When clients asked him to build a coffee table he was able to play with this design idea. This table is made of cherry and ebonized maple.



Age: 44

Andrew J. Wainwright – Fine Woodwork
ajwfurniture.com

Location & size of studio: Kitchener, Ontario,
2000 square feet

Education: Honours BSc from University of
Waterloo, self-educated in woodworking.

How long have you been building furniture?

I've worked with wood most of my life, but about 15 years as a pro.

What sort of furniture do you specialize in?

Residential furniture.

Tell us a couple of interesting things about your personal life.

I spent a lot of time, from a young age, working in the bush on a family property in Southern Bruce County. This experience has made me feel very connected to wood. It has made me appreciate the value of wood a lot more too.

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

Something that paid very well.

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

A 12" machinist's ruler, pencil and 6" square.

Do you prefer hand tools or power tools?

There is a place for each of them in my work.

Solid wood or veneer?

Mostly solid; lately I've been using some "shopsawn" veneer.

Figured wood or straight-grain?

Although figured wood is spectacular, I find it can clash with the lines of a piece, so I mostly use straight-grained wood.

Inherited Vintage Stanley Sweetheart or freshoutofthebox Veritas?

Veritas.

Flowing curves or geometric shapes?

Curves all the way.

quotes

I don't tend to start work early, and I like to get routine business out of the way first. I prefer to arrange a few days each week where I can stay as late as I want. I find minimal time constraints and an uncluttered mind are best for creative and exacting work.



My favourite tools include my low-angle block plane, various routers, and my ancient 36" widebelt sander.



My design process might best be described as organic. Often a piece begins by my engaging with a particular design element, say a leg, and the rest of the piece follows. I will typically use this element on subsequent pieces, altering and refining the proportions. This I find deeply satisfying. I trust my eye to determine the subtle nuances, which create a pleasing shape or curve, and I think this has been deeply influenced by my time in nature.



Sometimes the juxtaposition of our native woods with exotic species can create interesting tensions in the design.



I usually start a design with sketches, but have learnt to quickly apply some sense of scale to them to make sure I'm drawing within reality. At the same time, I'll start mocking up prototypes of three-dimensional parts such as legs, as I'm not good at visualizing these from drawings. I'll then make a more formal drawing to detail joinery and dimensions. For curved work, I generally make full-size drawings on MDF for pattern making and to aid in laying out joinery. I'm not rule-bound by drawings and feel quite free to alter things as the piece unfolds, and I seek

clients that give me that latitude. And no, I don't draw in CAD.



I would counsel a young woodworker to make sure that they love what they are doing, and that they are doing it for themselves as much as anybody else, as it is a challenging path to take.



I'm not fond of formal work where the wood has been so stained, shaded and dyed it doesn't look real. I'm also not big on some of the current live-edge work, or reclaimed lumber pieces, which seem too heavy and unrefined for my eye.



I mostly do commissioned work. With the right clients, the interaction can be very satisfying. In the future, I would like to have the freedom to do some speculative work, to not be constrained by any practicalities.



There is a divide in the arts community between "craft" and "fine art", so there are few venues where such work is ever shown. I wish publicly funded art galleries would start showing our work. A reintroduction of industrial arts classes to our school system would be wise too. Without young blood much of my skill set will become lost knowledge.



Some of my favourite furniture makers include James Krenov, Michael Fortune, and Garret Hack. Krenov for



Curly Ash Dresser - Using curly ash harvested from a friends bush, Wainwright built this dresser with great care, as one day ash will become very scarce due to the Emerald ash borer. He was very careful with the proportions of the drawers, and also took a lot of time refining the sabre feet.

his philosophy, Fortune for his curves and Hack for his attention to detail.



Sometimes I fantasize that more people will be drawn to handmade work as it becomes less and less common. However, I suspect that for economic reasons, there will never be many people doing such work full-time. I believe it offers a unique contribution to our culture and hope it isn't lost.



I view the easy exchange of information that is possible via the internet as very helpful in allowing people to share ideas and knowledge over vast distances.



I'd say the most fulfilling part of my job is when a piece starts to come together and I stand back and look at it and say to myself, "Yes, I've realized my vision, this is what I wanted to express."

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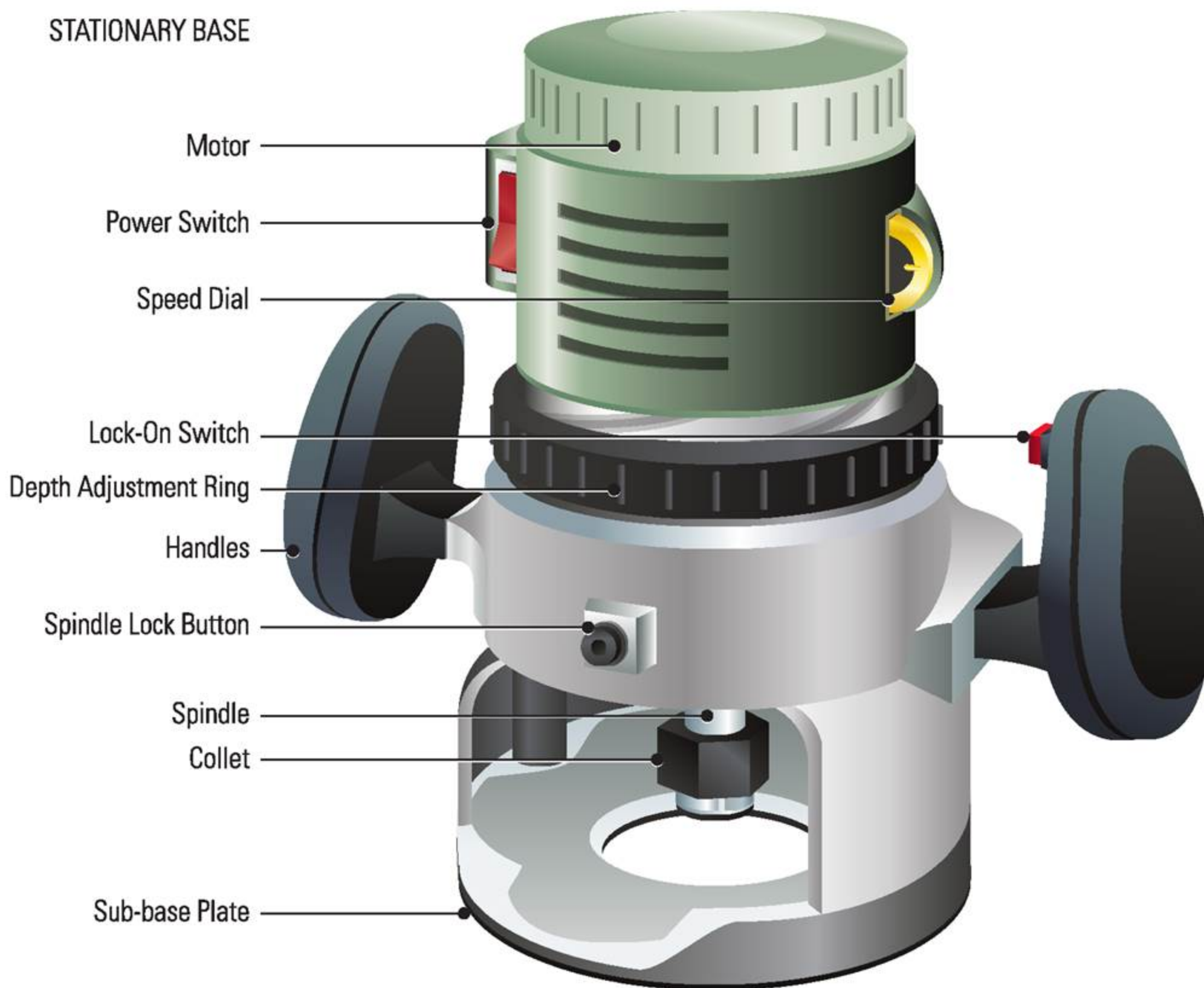
RELATED ARTICLES: Arthur Perlett (Oct/Nov 2015), Weldon Gray (Apr/May 2016),
SLIDESHOW: Visit our website to view a slideshow of Wainwright's work.

Routers

By Carl Duguay



STATIONARY BASE



With a **stationary** (aka fixed-base) router, the cutting depth remains constant while the router is in use. With a **plunge** router you can move the motor and router bit assembly up and down while the router is in use. A **combination** router consists of a motor and interchangeable stationary and plunge bases. Either style of router can be had in one of three motor sizes: up to 1 HP for **compact** (aka trim, laminate, or palm) routers; between 1 and 2-1/2 HP for **mid-sized** routers; and 3 HP and larger for **production** routers. Features that you'll want with any router include soft start, electronic feedback circuitry, easy-to-use micro-adjust depth control, spindle lock, and interchangeable sub-bases. For mid-sized and production routers look for models that have both 1/4" and 1/2" collets.

PLUNGE



COMBO



Get the Most Out of Your Router

Set Your Speed

Adjust router speed for the type of material and the size of the router bit being used. Typically, the larger the bit, the slower the speed. Consult a router speed chart if in doubt.

Learn to Climb Cut

Reduce tear-out by moving the router in the opposite direction of normal feed. On a router table only climb-cut when using a jig or power feeder.

Purchase Quality Bits As Needed

While bit sets may seem economical, many include bits you will seldom use. Buy bits when you need them, and select premium quality bits – they cost more, but they give better results and last longer than economy bits.

Turn it Upside-Down

A router table makes it easier and safer to use the router – particularly for small, narrow stock. You can do more precise routing, with better dust management. Build your own or buy a fully decked-out router table.

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Top 10 Router Table Safety Tips

Router tables are versatile workhorses but, as with all machines, require great respect and care. Learn what their limitations are and you will find router tables helpful and enjoyable.

BY ROB BROWN



1 Don't remove too much material per pass — This is possibly the most important safety tip. Router tables are very versatile, but the one thing they can't do is remove a lot of material in one pass. Kickback and poor cut quality are the result of pushing the limits. Making several passes, adjusting bit height or fence position, or removing the bulk of the waste with another machine (I use the table saw for this purpose quite often) are safer options.

2 Use a solid fence — Any movement in a router table's fence will at best ruin a workpiece or bit and, at worst, cause personal damage to the user. Ensure your fence is bombproof so that even very strong pressure will not cause fence movement. Add a clamp to either end of the fence when in doubt.

3 Use push sticks when necessary — Push sticks come in many shapes and sizes. Allowing fingers to come too close to the rotating blade is not safe. Push sticks also work well away from the bit when machining large, heavy pieces, as a push stick allows the user to better grip the workpiece. Dedicated, single-purpose push sticks can often be made.

4 Use featherboards — When routing profiles on long pieces a featherboard not only ensures the profile will be smooth and even, it maintains pressure near the bit, so your hands can stay a safe distance from the cutter. A featherboard also reduces the chance of kickback.

5 Understand what climb-cutting is, and when it can be used — The general rule is no climb-cutting. This is great for the beginning to intermediate woodworker, though there are times when climb-cutting can be employed. For starters, when a workpiece is hand-held, this is probably not the time to start climb-cutting.

6 Use ear, eye, and lung protection — Beyond the obvious safety concerns, I find ear protection especially important while working on a loud router table, as it allows me to focus on the operation at hand, rather than be deafened by a painfully loud router motor.

7 Ensure the router table doesn't move during a cut — When using a router table, the workpiece is typically of small to medium size, but when dealing with larger, more cumbersome workpieces you may find yourself pressing into the router table's fence more forcibly. The very last thing you want is for the entire router table to move. If it's not heavy enough to stay put you can clamp it to something stationary.

8 Use infeed/outfeed supports if necessary — These third and fourth hands will help out greatly when routing longer pieces and allow your focus to remain near the cutting edge.

9 Understand the hazards of using large bits — Even though the RPM of a large bit may be the same as a smaller bit, a large bit's rim speed is much higher. Burning the workpiece, as well as potential personal danger, are more likely with larger bits. They also need more clearance around the fence, so make sure to use a split fence to eliminate the gap.

10 Only remove small amounts of material with each pass — This is an important tip, and if it doesn't sound familiar to you at this stage I suggest you reread this article, starting with tip #1.

Use sharp bits? Buy a shaper instead? What are your router table safety tips? Share them online, at the end of this article.

ROB BROWN

rbrown@canadianwoodworking.com



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The Ultimate Router Table Revisited

This router table was built 20 years ago and has stood the test of time, although over the years a few minor shortcomings have been realized. Learn how the original was built and how to tweak a new build so it's virtually perfect.

Photos by Rob Brown Illustration by Len Chruchill

When I designed it, I wanted to incorporate as much storage into the router table as possible so I added two banks of four drawers, as well as the larger storage underneath the drawers. I have used this router table for the past 20 years and love it. In this article I'm going to detail how you can build the ultimate router table by combining the basic design I started with, but improving on a few essential details.

I made the height of this table about 1/4" lower than my table saw so I could use it as an outfeed surface. It's worked great for this task, as it's very stable and strong. Unless you have a need for something different I would suggest doing the same.

If you have your mind set on purchasing a router table, in order to get to the fancier builds quicker, check out Carl Duguay's article "Purchasing a Router Table" in this issue.

Materials

I used 3/4" particle board for my router table and I'm glad I did. Particle board is quite heavy, which is good. The last thing you want is a light router table that moves across the floor during use. Plywood might be stronger, but it's also lighter, so use it just for the top surface. Speaking of the top, plastic laminate makes a great surface to protect against wear.

No need for beauty

Router tables are meant to be efficient, small-shop workhorses, not dining room furniture. I will admit that my router table might not be the best looking piece of shop furniture, but I'm perfectly fine with that. I'd rather spend a little less time and money on this project and have some left over for the next project that will see the inside of my home. If you really want a museum-quality router table you can substitute nicely veneered particle board sheet stock, and use solid wood for the drawer fronts and edging material. I didn't even use solid wood edging on this project, and after 20 years of use I don't regret it one bit.

Build the base

If you're looking for a router table to work a lot of extra large workpieces I would suggest making the overall depth of the router table's base 20", or possibly 24", though I have never wished I went wider than 16". Stability has never been an issue for me.

Rip the 4x8 sheet into three 16" wide lengths. Cut the gables, bottom, shelves, partitions and drawer dividers to finished length. Set up stops to ensure the gables are the same length, all eight drawer dividers are the same length and the bottom and two shelves are the same length. It's also a good idea to mark all your pieces with name and orientation.

Rabbets first

The first change I would make to my router table would have been to use rabbets and dadoes to secure all the joints in the base. I used biscuits and strengthened each joint with



Outfeed Support – When planning the dimensions of his router table Brown aimed for about 1/8" shorter than the height of his table saw out-feed table, so it could be used to support extra-long stock.



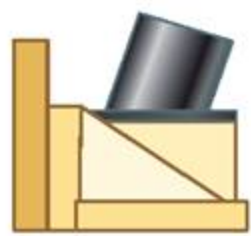
Keep it Simple – Though Brown would use dadoes and rabbets to join his next router table, the particle board edges he made the base from were left raw. After about a decade of use he applied a quick coat of paint to much of the outside of the router table to cover up all the marks and smeared glue.

screws. My base hasn't shown any signs of weakening, but for ease during assembly, as well as increased strength for years to come, don't do what I did.

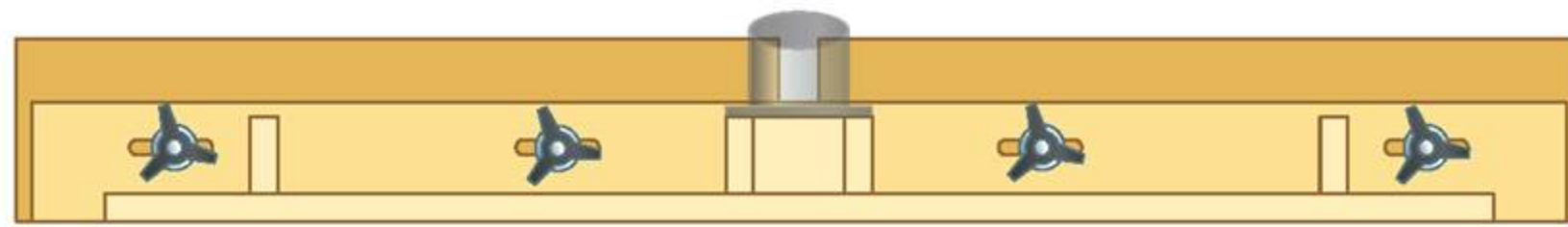
Set up your dado set to run a rabbet the same width as the particle board is thick. A few test passes and a few shims will have the width dialled in nicely now, so there's no fussing around when it comes time to machine the dadoes. With a sacrificial fence clamped to your rip fence, machine 1/8" deep rabbets in the tops and bottoms of the gables, as well as the tops of the partitions.

Dadoes are next

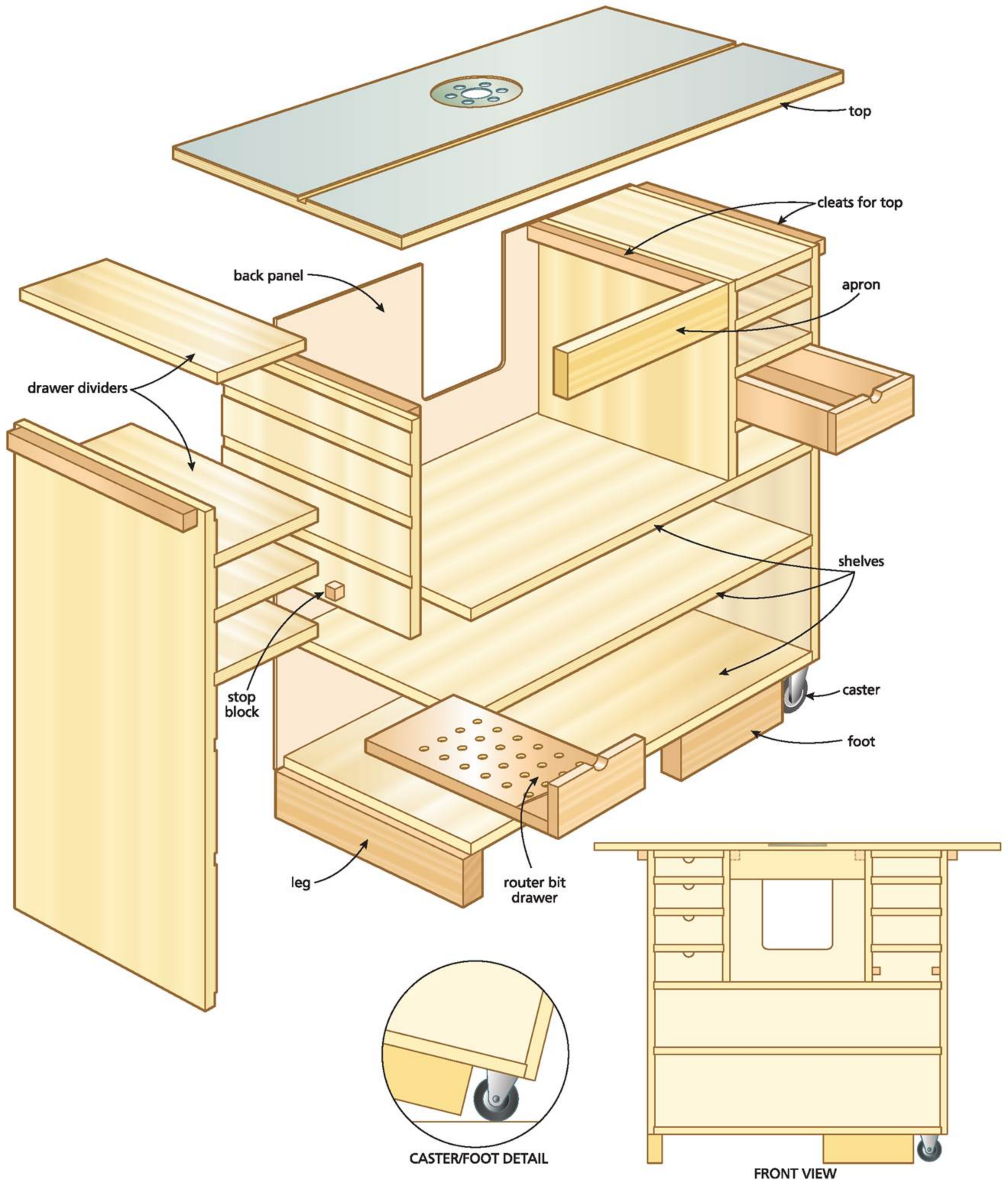
I find it nice to know when extreme accuracy is required, and when it's not. Some of the dadoes can be located "close enough", while others need to be positioned very accurately. We'll start with the tricky ones first. I would lay out all the dadoes with pencil lines before starting, then double-check every dado is positioned properly, before cutting any joints. Ensure you're taking the 1/8" of material that will fit into the dado into account when laying these joints out. The only joints that need to be located carefully are the "upper-shelf-to-gable" joints (determined by the actual length of the partition) and the "partition-to-upper-shelf" joint (determined by the actual length of the drawer dividers). Set up and run both sets of these dadoes now.



FENCE – SIDE VIEW



FENCE – BACK VIEW





Easy Access – So you can get at the router for bit height adjustments, and to remove the router, make a decent-sized cut-out in the back panel.

Dadoes that locate the drawer dividers and lower shelf don't need to be positioned overly accurate, since you will rip the drawer parts to whatever width is needed. You can machine the remaining dadoes in the gables now. One dado in each gable will accept the lower shelf, while the other three dadoes in each gable will accept the drawer dividers. While you're machining the dadoes in the gables to accept the drawer dividers, also run the partitions over the blade, as the setup will be the same.

Dry assembly

The best part about working with non-veneered particle board is you can skip the sanding. These parts are going to go together easily if the ends that are going to fit into a dado are slightly eased, so do that now. A dry assembly is a very good idea, as this isn't a simple assembly. While the base is dry-assembled, drill some countersunk pilot holes so you can drive a few screws during assembly. Screws are going to be more helpful towards the middle of the base, as clamps won't be able to reach in much more than 4" from the front or back edges. If any of the joints are not lining up you can glue 1/8" solid wood into the joint then re-machine the joints in the proper location. These mistakes don't need to be covered up when making shop fixtures, unless your shop's a museum.

Materials List

Part	Qty	T	W	L	Material
Gables	2	3/4	16	30	Particle Core
Bottom	1	3/4	16	29	Particle Core
Shelves	2	3/4	16	29	Particle Core
Partitions	2	3/4	16	14-1/8	Particle Core
Drawer Dividers	8	3/4	16	7-1/4	Particle Core
Lower Drawer Faces	2	3/4	3-1/2	6-15/16	Particle Core
Lower Drawer Bottoms	2	3/4	6-15/16	15-3/8	Particle Core
Lower Drawer Brackets	4	3/4	2	2	Particle Core
Lower Drawer Anti-Tip Cleats	2	3/4	3/4	2	Solid Wood
Lower/Middle Drawers	2	3/4	3	To Fit	Particle Core
Upper/Middle Drawers	2	3/4	2-1/2	To Fit	Particle Core
Upper Drawers	2	3/4	2	To Fit	Particle Core
Drawer Bottoms	6	1/4	To	Fit	1/4" Plywood
Apron	1	1	3	To Fit	Solid Wood
Back	1	1/4	31	30	1/4" Plywood
Side Foot	1	1-1/2	3	16	Solid Wood
Front/Back Feet	2	1-1/2	3	6	Solid Wood
Lower Cleats	2	1	1	15	Solid Wood
Upper Cleats	4	1	1	15	Solid Wood
Top	1	3/4	22	42	Plywood
Laminate for Top	2	1/16	23	43	Plastic Laminate
Solid Wood Edging for Top	4	1/4	7/8	To Fit	Solid Hardwood
Fence Base	1	7/8	4-1/2	42	Solid Hardwood
Fence Split Faces	2	7/8	5	21	Solid Hardwood
Fence Sub-Face	1	7/8	3-1/2	42	Solid Hardwood
Fence Brackets	2	7/8	3-1/2	4	Solid Hardwood
Fence Dust Base	3	7/8	1-3/4	To Fit	Solid Hardwood

Hardware List

Name	Qty	Size	Supplier
Casters	2		Miscellaneous
Knobs	4	1/4-20	Miscellaneous
Bolts	4	1/4-20 x 2"	Miscellaneous
Washer	4	1/4"	Miscellaneous

Final assembly

With enough clamps, lots of glue and your pneumatic nailer by your side, start with one of the "gable-to-upper-shelf" joints. I would strongly suggest assembling the router table base with the back edges of all these parts standing on a flat surface, as if the whole router table had been tipped over on its back. The first few pieces are going to be tricky, but things will get easier as you go. The

next step is to add the lower shelf, then the second gable. With some screws in each joint, add a clamp to the face and back of each joint and ensure the assembly is somewhat square. The bottom is added next, followed by a few more clamps to bring the gables together. Moving up top now, glue in the drawer dividers on one side of the base then add that partition. It will likely be easiest to install the uppermost drawer



Simple and Strong – Dadoes near the end of the sides accept short tongues in the backs. No need for hand-cut dovetails here.

divider after the partition has been installed. Clamps parallel with the dividers, as well as one pressing the partition into the upper shelf, are needed. Move to the drawer dividers on the other side to finish the assembly.

Back panel

Cut and install a 1/4" plywood back panel. It can sit flush on the backs of all the pieces that make up the base – no rabbet is needed. Make a cut-out in the back so you can easily access the router. There is no need to make this cut-out small, as a bit of extra room will come in handy. Pneumatic nails, screws and glue will keep this router table base square and strong for decades.

Drawers

I made the drawer sides and backs from plywood, and used particle board for the fronts. There's no problem with doing this, but I have no idea why I did it this way. Possibly because I didn't have enough particle board material left over, as most of the sheet I bought was already used up. Use whatever material you have on hand for the drawers. If money was no object I would go with 1/2" Baltic birch plywood. Some of the 3/4" plywood that will be used for the top will also work fine, as will particle board.

The upper six drawers can be constructed like most drawers. The lack of slides means the drawer should be about 1/16" narrower and shorter than the opening. A groove or rabbet in the inner surface of the drawer will house a bottom. If I was building these drawers again I would opt for a rabbet, as that would give me a little bit more room inside the drawer for storage.

The lower two drawers have no sides or backs and store a healthy selection of router bits. For these drawers I used a 3/4" thick bottom, rabbeted into a front, strengthened with a pair of super simple 90° glue blocks. A series of holes were laid out and drilled on my drill press. It sounds unnecessary, but once the holes were drilled I chucked the twist drill bit in my cordless drill and widened each hole ever so slightly by moving my drill while the bit is in the previously drilled hole. This allowed the router bits



Store Your Bits – The bottom two drawers have no sides or back, and the bottom is 3/4" thick. A series of holes can be drilled in the bottoms to keep often used bits nearby. Notice the 90° angled blocks which help secure the drawer fronts.

to be easily removed from the holes whenever needed. An anti-tip block was glued to the inside of each partition, about 13/16" above the upper shelf and 3" from the front edge. This stops the lower drawers from tipping as they are pulled outward.

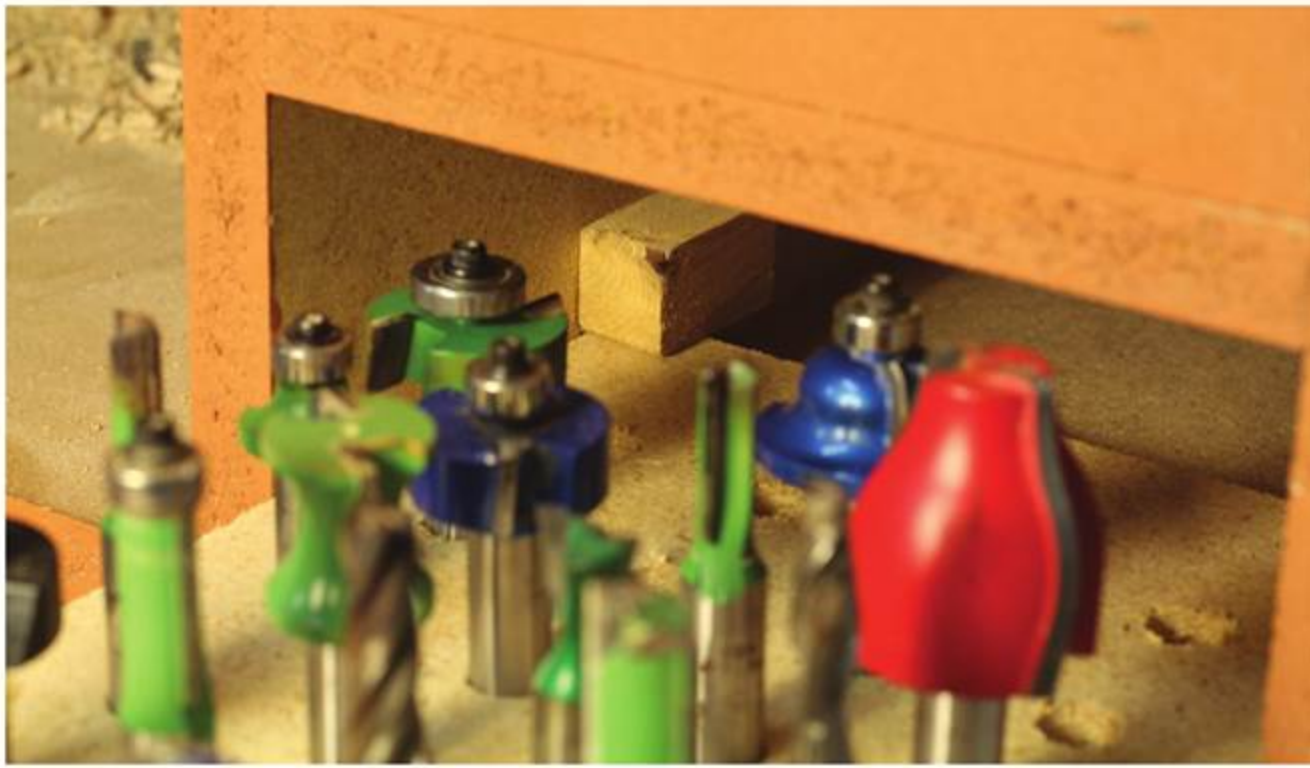
Simple pulls work fine, though I clamped two finished drawers together, with their upper edges facing towards each other, and drilled 1-1/2" diameter holes with my drill press. Simple and cheap.

The top

The top needs to be strong and flat. I started with a piece of 3/4" plywood and covered its four edges and two faces with durable plastic laminate. A small step up would be to opt for solid wood edging after both surfaces were covered in laminate.

Run a groove in the top to accept a mitre gauge. The fit must be perfect, so take your time to get this right. Don't go any deeper than is necessary to accept the bottom rail of the mitre gauge, as this will weaken the top. I would have thought a groove in the top would have weakened the top too much, but after a lot of use I don't think it's a problem. If you wanted to be extra safe you could screw a few pieces of solid hardwood to the underside of the top, perpendicular to the mitre gauge groove. I think it works fine without the extra structural additions because the top is fastened to the base with the four 15" long hardwood cleats, which add a lot of strength and rigidity.

Mill the four cleats to fix the top to the base. When in doubt, make these cleats larger. The most important thing to keep in mind at this stage is to secure the top to the base so it is flat. I first used a straightedge to get an idea of how flat and even the top of the base was. Starting at one side of the router table's base I screwed one cleat to the base so the upper surface of that cleat was flush with the uppermost point of the base. Using the straightedge to make sure it was flush with the uppermost point of the base, I added a second cleat to the opposite side of the base. These two cleats should be parallel with each other,



Anti-Tip – The sides of the upper six drawers keep them from tilting when they're opened. Because the bottom two drawers don't have sides, Brown added a small block just above the drawer bottom so the drawer wouldn't tip when opened.

and their upper surfaces should be flush with the upper surface of the base. I then fixed the top to the first two cleats and ensured the top was flat. The last two cleats were then positioned against the partitions, and lightly pressed up against the underside of the top and screwed in place. At this point you should remove one of the cleats, add glue to its side and screw it back in place. Repeat this with the other three cleats so they are strong and will stay in place. If, on the off-chance, the top goes out of flat in the future, you can add spacers between the cleats and top.



A Flat Top – Notice the angled gap between the drawer bank and the top. Even though the router table's base isn't perfectly square and flat, the top needs to be. The height of the cleats on either side of both drawer banks can be adjusted to secure the top to the base so the top is perfectly flat.

At this point I cut and installed an apron between the two banks of drawers, directly under the top. A few screws through the partition into the apron, as well as an L-bracket screwed to each end, is enough. The apron helps support the top between the drawer banks while a heavy workpiece is being machined.

Now that the top is fixed in place, it's time to rout the area where the router's base plate will go and drill a few holes. I simply traced the shape of the base plate, and location of the holes, onto the top. First I drilled the bolt clearance holes so bolts could be used to secure my router to

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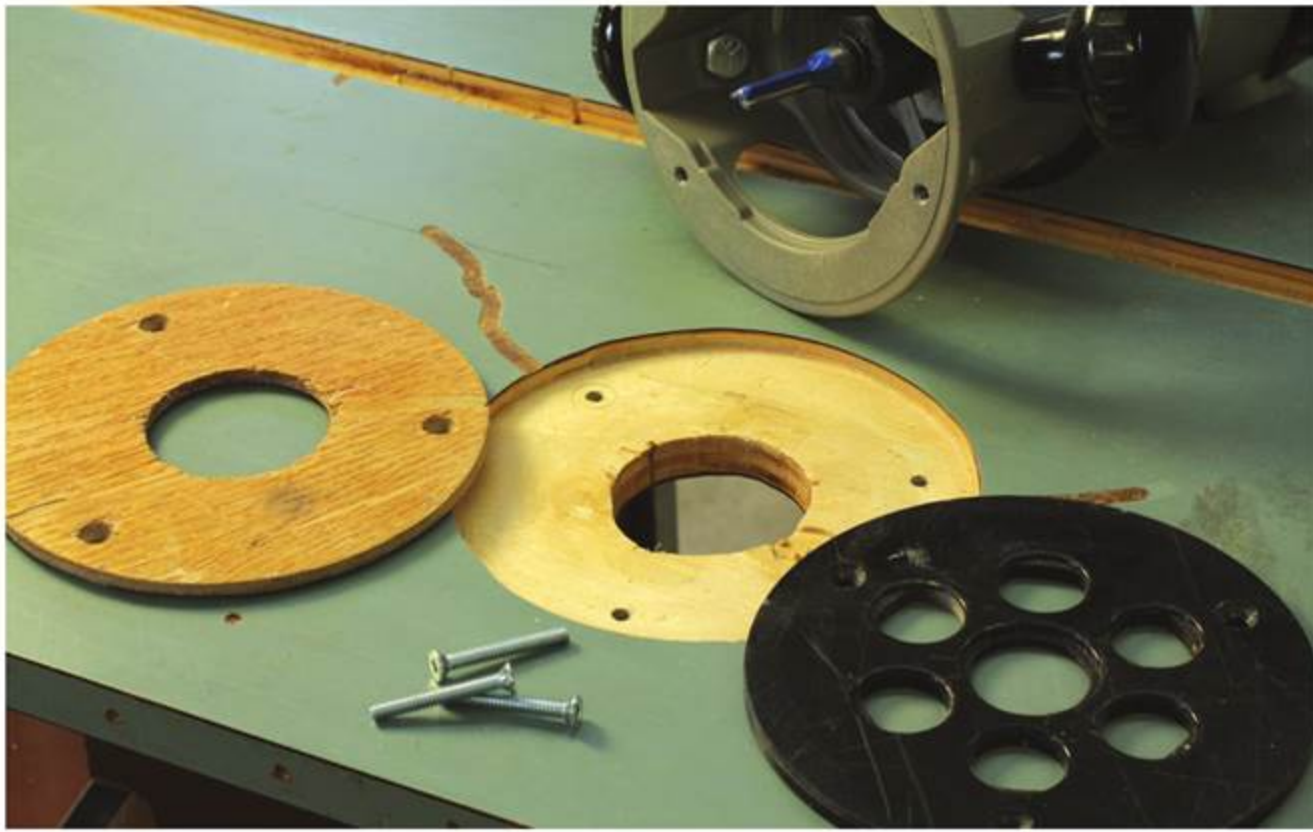


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Base Plate Recess – Use your base plate to trace the bolt locations, the center clearance hole and the outer perimeter of the plate onto the top. After you have drilled the bolt clearance holes and center hole, use your router and a straight bit to create the recess for the base plate to fit. The router table just gets sandwiched between the router base plate and the router base during operation. The shop-made base plate on the left is used with larger diameter router bits.

the underside of my top. I also cut a 1-1/2" diameter hole in the center of the recess so router bits could protrude up through the top. To remove the waste I used a straight bit in my plunge router to hog out the material to the exact depth of the base plate.

Moving a Heavy Object – The foot is about 1/16" taller than the caster, so when the opposite end of the router table is lifted up the caster comes into contact with the ground and the router table can be moved around your shop.



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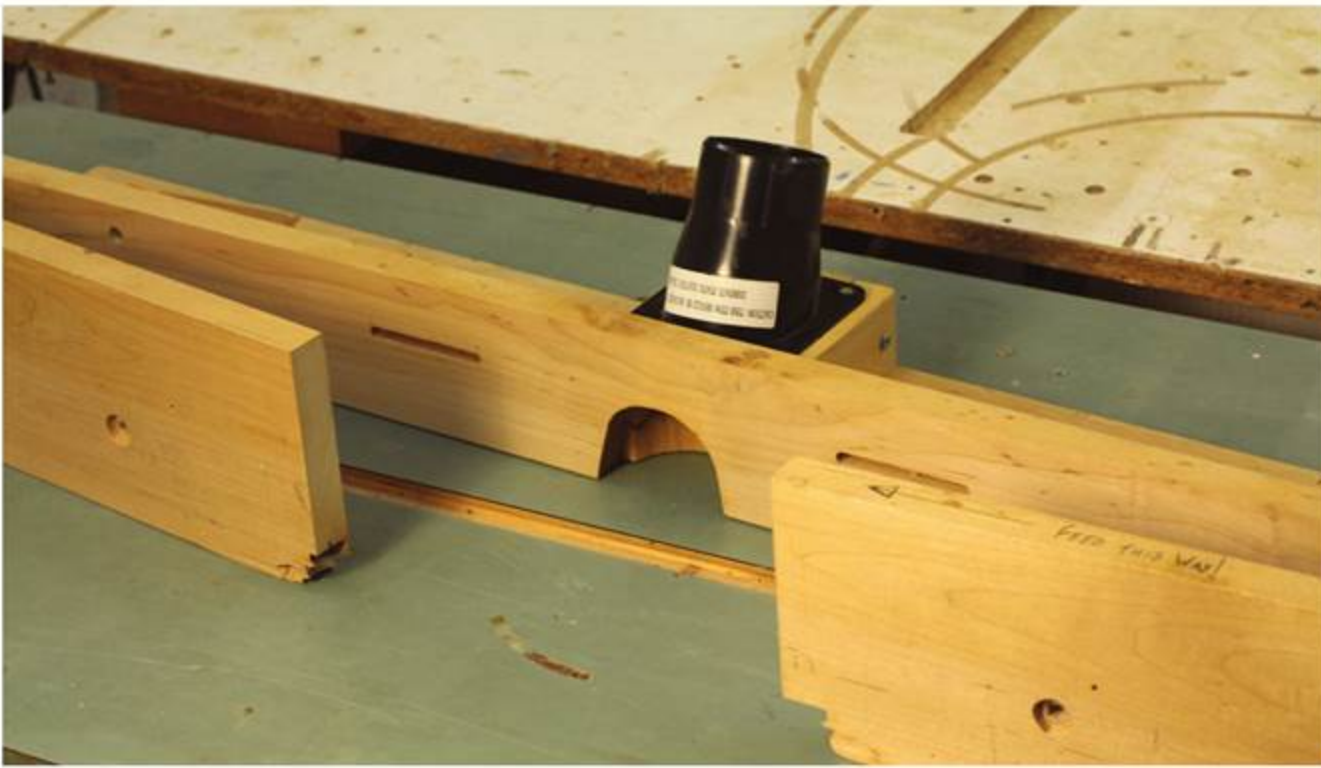
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A Strong Fence – Brown used solid maple to create a strong, adjustable fence. The split face of the fence can be slid open or closed depending on the width of the router bit being used. The fence is shown with the split faces removed for clarity. Notice the circular notch cut into the sub-fence and the base, for chip extraction clearance.

Feet to stand on

The three wooden feet keep the router table from moving around during use, and are self-levelling, but since this router table is heavy I came up with a simple solution to moving it around my shop. I flipped the router table upside down and attached a caster under two corners at one end of the base. Don't cheap out on casters, as only quality casters are strong enough for this task. I used rotating casters, though fixed casters would also work fine. The feet were to be about 1/16" taller



A Square Hole – So the bolt doesn't spin when the tri-winged handles are tightened, Brown cut a square notch in the first 1/4" of the hole and used bolts with square notches under their heads.

than the casters. I used 2x4 material for each foot, but any wood will work. I positioned the long foot flush with the outer edge of the base and glued and screwed it in place. Towards the end with the casters I added two more feet: one along the front and back edge of the bottom panel. Both of these feet were placed so the casters would miss them by about 1/2" when the casters rotated. You can also use fixed casters. When turned right side up, the router table would balance nicely on the three feet. When the end opposite the casters was lifted the casters would come into contact with the ground and the router table can be moved around fairly easily.

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Because there is a lot of weight being transferred through the lower portion of the gable I glued a cleat to the inner corners of both "gable to bottom" joints.

The fence

One of the most important aspects of a router table is the fence. It needs to be strong, remain secured in place during use, be high enough for all operations, and have the ability to create a gap near where the spinning bit is located.

Break out the fence parts to final size, but don't split the face into two parts yet. So the split faces can slide left and right, four grooves must be routed into the sub-face – two grooves for each split face. With a plunge router and edge guide cut the 1/4" wide x 2" long grooves with multiple passes. The grooves should be centered on the height of the sub-face. At the center point of the base and sub-face you'll need to create a cut-out so the bit doesn't cut into the base and sub-face and shavings have somewhere to go during use. Run a rabbet in the sub-face and join the base to it. To ensure they're joined at 90°, glue a few wooden brackets in place.

Position the face against the rest of the fence and mark the location of the center of the four grooves on the back of the face. Drill four clearance holes in the face, then remove some material from the front of the face so the bolt will sit completely beneath the outer surface of the face. I used bolts with square necks, so I could create a square notch in the clearance holes in order to keep the bolts from spinning during use. You

can now split the face in half and install the two halves on the rest of the fence. The fence gets clamped to the top of the router table during use.

Finally, add a wooden dust collection shroud and plastic attachment to the fence. It works pretty well with the collection hose attached, but I generally only use it for larger runs.

Bells and whistles

As time went on I added a bunch of screws to the outside of the router table, as well as the partitions, in order to store a wide variety of shop items. I also found myself using four different screwdrivers quite often while working on my router table, so I made a wooden block with four holes in it and screwed it to one of the partitions.



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ONLINE INFO: Related Articles: Working with Sheet Goods in a Small Shop (June/July 2013), Router Work Station (Apr/May 2007), Purchasing a Router Table (June/July 2016). **VIDEO:** Visit our website to view a video about how Brown built and uses his fence with his router table.

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Rolling CLAMP STORAGE

Every woodworker loves clamps, but how should they be stored so they're right beside each and every glue-up? In a dedicated storage rack on wheels, of course!

BY WAYNE WIEBE

As a woodworker, I quickly learned that you can never have too many clamps. In the past, a woodworker may have had six types or so, but with new technology it seems there is a clamp for everything. The result in my workshop? Clamps all over the place.

Over the years, as I was working on projects, I found I was walking back and forth between various areas of my shop looking for the clamps I needed for the job at hand. I was wasting too much time and energy, and in some cases I never did find what I was after. I decided it was time to build a clamp storage device that would hold all of my small clamps and was portable enough to move to my workstation when I was clamping and out of way when I was not.

Take inventory

My first task was to go through every box, drawer, cupboard and hiding place and collect all my small-to-medium-sized clamps. I laid them out on my work bench and started to organize them into types, sizes and how I use them so I could start on the design. I found I have approximately 12 types of clamps, not including pipe clamps.

The majority of the clamps are "C" clamps and range in size from 2" to 8". Some are wide-mouth for deeper clamping ability. I thought it would be best to hang these on a pipe so that I could see the sizes and take hold of them easily. I had the same theory for the small bar clamps, but found that the movable end always fell to the end of the clamp. This made the hanging theory more difficult so I decided just to fasten those to pieces of wood at the end of the cabinet. I use pinch clamps and three-way clamps on a lot of projects so decided cubby holes would be best for those. It's always nice to have some smaller pipe clamps (24") around so a long cubby hole was needed for these. Finally, there are specialty clamps that don't get used that often, but you want to know where they are, so two drawers was a necessity. All my requirements had been identified – I just had to figure out how to pull it all together.

How heavy?

When I looked at all of the clamps laying there, the first challenge that came to mind was dealing with the weight of



Small Clamp Storage – The upper two cubby holes are great for storing small, and often used, clamps.

the clamps and cabinet material. This unit was going to be 200–300 pounds. I had to ask myself if I would actually be able to move this thing. I had another portable unit in my shop so I loaded everything onto and into it. Wow! Fortunately, it didn't go through the floor but it did move. It was obvious that a more heavy duty caster was required. I used a 3" caster, but with the benefit of hindsight a 4" caster would have been even better, and I may upgrade mine.

Stay upright

Balance was the next issue. The rack had to be wide enough that it would not tip over, but not so long that it would be hard to manoeuvre. I figured out the overall length of pipe I needed to hang all the C clamps and how they had to be spaced on the rack to accommodate the various sizes of clamp. There are three rows on one side and two on the other. There is also some room left in case I buy some new ones. The final dimensions are 30" long, 24" wide and 37" high without the casters. This allows for two cubby holes on top for small clamps. Below these are two drawers and one large cubby hole for short pipe clamps. This last cubby hole is lined with plastic laminate to reduce bruising



Strong Casters – Though Wiebe only used 3" casters on his clamp rack, he suggests a 4" caster might be even better. The weight of the rack can easily add up to well over 200 pounds.



Deep Drawers – The space in the middle of the clamp rack is wasted unless you make two deep drawers. The weight of the clamps will ensure the drawers, even when both are fully extended, will not tip the unit over.



Pipe Dreams – 3/4" pipe makes a great addition to this rack. Clamps are easily stored and accessed and the pipe is very durable and strong.



End Cleats – Wiebe stores his F-clamps on wood cleats attached to one end of the rack.

and scratching when the clamps are moved in and out.

Start building

The main body of the rack is built with G2S Birch plywood. All joints are put together with 1/8" deep dadoes, so 1/4" has to be added to some of the measurements. I was not concerned about cosmetics, so everything was glued and screwed. By using screws, I could dry-fit everything.

A few words on solid wood edging. Once the parts were cut to size and assembled, I applied the solid wood edge strips to the edges of the parts where required with glue and a fine nailer. I made sure to start with the strips just barely wider than the plywood, and applied it flush with one face so I only have to flush up one face of the edging with the plywood. There are also many other ways to do this. You could glue the edging in place with the unit dry-assembled. Once the edging was dry, you could trim it flush and ease the edges before final assembly. A third option would be to apply the edging to the parts before final assembly, with appropriate setbacks where the dadoes are. The edges of the edging could then be trimmed flush with the plywood before final assembly.

I installed the drawer slides and plastic laminate in the cubby holes before it was all put back together. The drawer faces, handles, pull supports and bar

clamp pieces are also made from cherry. The drawer material in my clamp rack is solid wood but could also be Baltic birch plywood. Joints are the same as the main body but dovetails are also an option, if desired.

The clamp bar is 3/4" black pipe used

for gas fitting. In hindsight, I should have used at least one 1/2" pipe at the top for smaller clamps as they just fit over the 3/4" pipe. The same pipe is used for the pull. The pipes sit in 3/4" recessed holes in the plywood and are set far enough back from the main structure

Materials List

Part	Qty	T	W	L
Bottom	1	3/4	23-3/4	32
Gables	2	3/4	23-3/4	36-7/8
Main Dividers	2	3/4	28-3/4	36-7/8
Cubby Divider	1	3/4	8-7/8	10-1/2
Cubby Bottom	1	3/4	10-1/2	28-1/2
Solid Edging	As Req'd	1/8	13/16	As Req'd
Drawer Sides	4	3/4	6	28
Drawer Front / Back	4	3/4	6	To Fit
Drawer Bottoms	2	1/2	To	Fit
Drawer Face	2	3/4	7-1/2	11
F-Clamp Cleats	As Req'd	7/8	To	Fit
Handle Cleats	2	7/8	4	6

Hardware List

Name	Qty	Size	Details	Supplier
Casters	4	4"	2 fixed, 2 rotating	Misc
Pipe	As Req'd	1/2" / 3/4"		Misc
Plastic Laminate (optional)	As Req'd	To Fit	For inside lower pipe clamp storage area	
Drawer Slides	2	24"		Misc
Drawer Handles	2			Misc

to prevent the clamps from contacting the plywood (approx. 4"). If you wanted some flexibility down the road you could install the pipes with flanges after the case was assembled. This would also make assembly easier.

The horizontal spacing between bars will depend on the size of clamps being stored and I have mine set up so that the clamps are between quarter and half open. You should also have the two upper bars down far enough so the clamps do not sit up past the top of the cabinet. This allows you to lay a piece of plywood flat on top of the rack if you would like. The top should be secured so that it does not tip and can be used for moving larger pipe clamps to the work area.

I added a horizontal surface below each drawer, as well as one at the bottom of the pipe clamp storage area. This makes the unit more rigid and allows for

easy installation of the drawer sliders. In addition, if you ever want to remove the drawers, you will have two more cubby holes for long clamp storage.

Assembly

During dry-assembly I was able to practise the order in which pieces are assembled, as well as drill any pilot holes for screws. Varnishing some of the pieces before final assembly can also save time and headaches. Starting with the bottom and one gable, then adding a main divider, the drawer and cubby hole pieces, the second main divider, the 3/4" storage pipe, then the final gable I assembled the unit. Parts like the drawers, handle and F-clamp cleats were added once the unit was dry.

The end result is a very stable clamp rack that is easy to move to the work area, stores a wide variety of clamps and

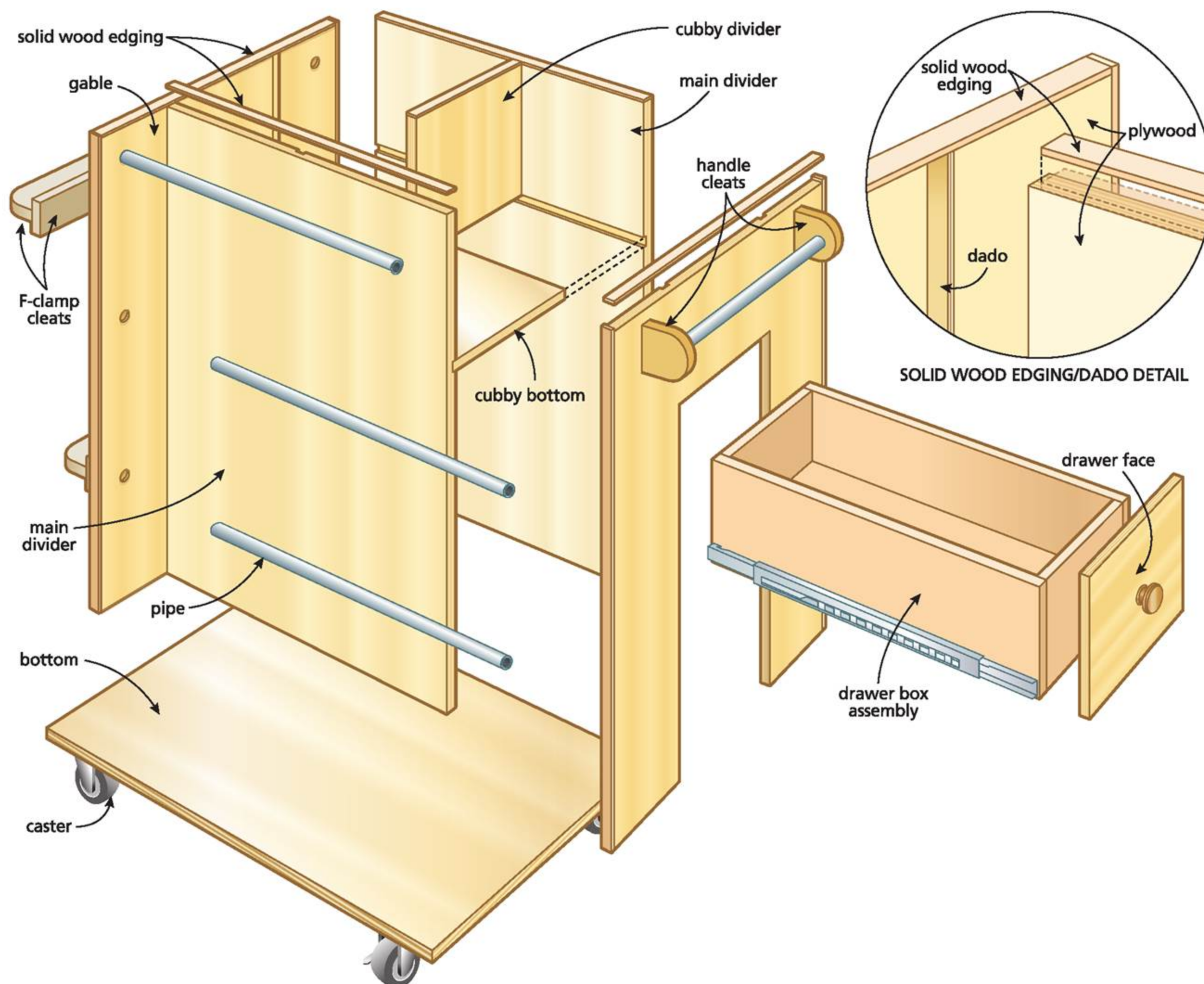
makes them all easy to access. This is a great project for a beginner to intermediate woodworker looking for a bit of a challenge as it requires a good deal of planning, reasonable precision in cutting the plywood pieces and dados, construction of drawers and a systematic order in putting it all together. I'm off to buy a few more clamps.

WAYNE WIEBE
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18 Crucial HOME IMPROVEMENT TOOLS



Many DIYers don't have a huge shop with dedicated space for everything they will ever need. If you want to focus on just the necessities when it comes to basic home improvement tools, this list is for you.

BY MATTHEW KINZEL

I had feared this day for a long time. Behind the thrill of every garage sale find or Kijiji score lingered the unsettling truth that one day I, too, would be selling my tools. After much soul-searching, my wife and I had decided to scale down our lives to fit within an apartment – the time had come to significantly downsize. My shop was being slashed from 600 to 25 square feet. With a space too small for any work save carving, my future would be limited to renovation projects. What follows is a list of my staple tools that see use on almost all my significant home renovation projects.

I have no specific brand allegiances, and collect tools from many different companies. Manufactures are only mentioned if they clearly have a product that stands out or they have pioneered within a certain area. Few of the tools I purchase are top-tier, but they are all solid designs suitable for professional work. I am a big advocate of buying quality once. If I can't afford a good tool I will do without, borrow, or rent.

Power Tools

Portable Table Saw — If someone has the room, I will always recommend going for a 2 HP-plus cast-iron contractor or cabinet saw outfitted with an induction motor. By comparison, portable saws are noisy, relatively unstable, and do not work as well with jigs and fixtures. But for those of us who must store our saws in a utility closet, or transport them to job sites, the portable table saw is an effective option. My preference for finish carpentry is a smaller professional model that has a maximum rip capacity of 16–18", like those offered by Bosch and Dewalt. While you do sacrifice some cutting capacity compared to a larger portable, these saws are just as powerful and yet light enough to be easily transported up stairs and over irregular ground by yourself.

Impact Driver — I was a slow convert to cordless drill ownership and still recommend a quality corded 3/8" drill for the occasional user or tool junkie on a budget. While I like the convenience of cordless tools, the difference between a corded drill and cordless model was not that significant for me — that was until the cordless impact driver arrived on the market. Small, light, powerful and with a quick-change chuck, nothing is better for driving screws. With the pricing of a drill/impact driver kit being so close to that of a cordless drill, it makes sense to invest a bit extra into the increased performance offered by the impact driver. When choosing your brand, consider what other cordless tools you may wish to purchase in the future. The ability to swap batteries back and forth is invaluable. When you buy your first cordless tools, you are buying into a manufacturer's system.

Circular Saw — A staple tool for framing and rough finish work such as deck building. Outfitting it with a finish quality blade and cutting guide can take its utility to another level, and allow you to break down sheet goods as efficiently as with a cabinet saw. While I would not be without my standard 7-1/4" workhorse, my little cordless circular saw gets much more use. Though it doesn't replace a full-size model for framing your basement, its light weight and portability have made it my go-to saw.

Mitre Saw — Its precision and repeatability when cutting makes the mitre saw essential for any significant volume of trim work. While the allure of a 12", double-compound, sliding piece of engineering magnificence is powerful, I suggest some serious reflection on what your needs for cut capacity are. I love a light saw and my 12" non-slider has always been sufficient for my work. You can always flip the odd board or use your circular saw for the odd cut. More important than a big saw is a stable stand. Avoid complexity and look for a model with a large footprint. Dewalt and Ryobi both make simple, solid stands.

Reciprocating Saw — An essential tool for any renovation work requiring demolition. The less you have to use one the better, but when you do it's essential. A smaller 9-amp model from one of the major manufacturers is sufficient for occasional use. This is another saw that becomes much more convenient as a cordless tool. With no cord to sort out, I leave it on the shelf ready to go and use it for many random jobs such as lopping off a piece of pipe or pruning trees.





Random Orbit Sander — Of the many varieties of sanders available, there are two, positioned at either end of the sanding spectrum, which I consider essential. For general work, the 5" random orbital sander is simple to use and allows anyone to easily achieve a smooth, finished surface.

Belt Sander — The 3" belt wide sander is a tempestuous beast, requires practice to master, and has as much potential to destroy as it does beautify. That being said, its speed at removing stock has made it my favourite sander for large smoothing jobs, and in the right hands it can be used to scribe material quickly to even the most irregular wall surfaces.

Router — Routers can be purchased in a multitude of sizes. My choice for renovation work is a standard, fixed base, 1-3/4 HP model. This size is small enough for comfortable hand routing but still large enough to throw into a router table. Most models come with the option of using either 1/4" or 1/2" bits, which is very handy, although whenever possible I buy my bits 1/2" to minimize the possibility of shaft breakage. I believe in buying specialty bits only as you need them, although there are some profiles that are used so often that it makes sense to always have them on hand.



Router bits

- **1/4" Round-Over and Chamfer Bits:** These two bits allow you to create a finished edge on counter tops, posts, handrails, and many other applications.
- **Flush Trimming Bit:** These are essential for laminate work and other situations where you need to trim two surfaces flush.
- **Assorted Straight Bits:** I have a variety of sizes ranging from 1/4" to 3/4" for cutting out waste, grooves, and rabbets.
- **Slot Cutting Bit:** This bit is not only useful for cutting slots for glass, solid panels and basic joinery; it also allows your router to function as a biscuit joiner for square stock.

Pocket Hole Jig — When you are working without a shop, the ability to create strong joints quickly, without an army of clamps, and with little mess is invaluable. I favour a bench-mounted version like the Kreg K3, but a smaller more portable version works fine as long as it registers easily to the side of a board and includes a quick-release clamping mechanism.



Hand Tools

Three-Step Sturdy Steps — For me, keeping a clean and organized workspace has always been a formidable challenge. Once I began to work in other people's homes, I was forced to find some solutions to address my chaotic ways. To this end, I have found having a pair of three-step sturdy steps to be invaluable. They function as an exceptionally stable base for a cutting table or mitre saw stand, but the real magic is found below. One can easily store a project's worth of trim and offcuts on the bottom steps — I have gone as far as to cut plywood shelves to rest on the steps for storing fasteners. Another added benefit, unlike shop-built saw-horses, is that once the trim is done you can safely stand on them when it is time to paint.



Photo by Matthew Kinzel

Collins Spring Clamps — Having the ability to preassemble your mitres prior to installation is the key to creating tight joints, despite the irregularities inherent in finished walls. These clamps hold the joints tight for pinning or while the glue dries. When buying these clamps, it is well worth the extra expense to purchase the pliers that complement them.



Photo by Matthew Kinzel

Stainless Steel Prybar —

There are a multitude of prybars available in the hardware store, but only one style is suitable for removing trim without damaging the materials or finished surface. They are also very handy to use as wedge/shim and for procedures such as levelling a cabinet or supporting the outside edge of a door during installation.

Picquic Screwdriver —

Apart from the fact that it's made in Canada, what sets the full-size Picquic screwdriver apart from the rest is that its 3" hex bits are compatible with the quick-change chuck on a cordless impact driver.



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Block Plane — Even in a world chock full of sanders and finish quality blades, there is still a place for the faithful hand plane in a renovator's tool kit. A block plane allows you to shave a tight door without filling the house with sawdust or to chamfer an edge without burning an electron. Whenever I use a hand plane on a renovation job, it feels like I'm taking an extra coffee break.

Japanese Pull Saws — A fine-tooth Japanese pull saw is perfect for the precise notching of trim, flush-cutting of plugs, and finishing off of plunge cuts started with power saws. To complement my finishing saw, I have an aggressive Japanese pull saw that rips through subfloor, particle board, and other materials. Many of these models feature a blade that folds into the handle to protect the teeth while they are bouncing around in your tool bag with a framing hammer.

Chisels — Leave your heirloom quality chisels in the shop and buy a cheap set with plastic handles for renovation work — they will take a beating. You don't want to wince every time you hit a nail or have to beat a chisel with a steel hammer. I have found the standard four-piece set ranging from 1/4"–1" meets most of my on-site needs, but I do also have a 1-1/2" that is great for any timberwork or framing.

Card Scraper — While often regarded as a workshop tool, the card scraper is very well suited for renovation work. For small smoothing jobs it avoids the mess of sawdust. The ease of sharpening it also makes it well suited to aggressive scraping of paint or glue.

6" Combination Square — The flexibility of the combination square makes it by far the most versatile measuring tool in my tool bag. Its uses include marking of 45° and 90° angles, setting blade heights, measuring depth and marking a rip line down the length of a board. I have both a 6" and 12" model, but it is the smaller one that lives in my tool belt.



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Why It's Essential: With the MD502 you can make raised panel doors quickly and efficiently. Set-up is straight-forward, and the cutters produce smooth, clean cuts without chattering and tear out.

www.agecuttingtools.com



Arbortech Contour Sander

The Arbortech Contour Sander is your answer for sanding and finishing projects with irregular shapes and profiles. The true random orbital action will provide a smooth and even finish without burning or digging in. The interchangeable grits allow the user to quickly move through the stages of rough sanding to final polishing.

Why It's Essential: The contour random sander in many cases will eliminate the need to "sand-by-hand." The unit is compatible with any 4 or 4 1/2" angle grinder. A screw and flange is included within the kit, allowing the end-user to punch out / secure their own non-adhesive sanding discs. RRP \$89

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Festool's TS 55 Plunge Cut Track Saw sets a whole new standard for portable circular saws. With its accuracy and versatility, a better comparison would be to the most advanced table saws, miter saws or panel saws available. Add in its incredible portability and unbelievable ease of use, and you have a precision-cutting solution like no other.

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www.festoolcanada.com



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The Starlock Mounting System is the new standardized system for mounting blades and other accessories on oscillating tools. Accessories that feature the Starlock design can be mounted on Fein, Bosch, Makita, Hitachi, Metabo, Milwaukee, and Einhell oscillating power tools (an adaptor will be required for Dewalt tools). Due to its three-dimensional geometry and remarkable rigidity, the Starlock system provides faster blade change-over, and it delivers 100% power transmission between the power tool and the blade.

Why It's Essential: The Starlock system gives you better tool performance, quicker blade exchange, and compatibility with a wider range of oscillating tools.

www.fein.com



Laguna Tools IQ CNC

Laguna's IQ bench-top CNC router is ideal for prototyping and smaller production runs. Featuring a work envelope of 24" x 36", hand-held controller and an industrial-grade liquid-cooled electrosproind (RPM: 6,000-24,000). Motor specs: 3HP 220 Volt, 30 Amp and Single Phase. Gantry clearance is 6" with ball screw on all axis.

Why It's Essential: IQ CNC provides an affordable and easy-to-use CNC router. Despite its smaller footprint, it has the same accuracy and cut quality of larger CNC machines. It can run for hours to increase production needs which can benefit hobbyists or professionals.

www.lagunatools.com



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Plus Bonus 5 for 5 - 6' Whip Hose, Wet Film Gauge, 19 pc Cleaning Kit, Extra Turbine

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Why It's Essential: The Heat Dissipation feature results in a longer life for your turbine. The additional power allows the user to apply heavier coatings and thicker viscosity finishes faster. All this can be done with less time spent on preparation of materials.

www.fujispray.com

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Why It's Essential: Every Axiom AutoRoute CNC machine offers precision ball screws, prismatic guides, robust steel frames, and interlocking aluminum tables with integrated MDF spoil boards. Whether you're a

DIYer attempting to modernize your home-shop, or an industrial fabricator enhancing your demanding commercial environment.

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Supermax Tools Open Stand Drum Sander

Perfect for the small shop or woodworking enthusiast, the SuperMax 19-38 Drum Sander reduces the tedium of hand sanding, speeds up the sanding process, and produces more consistent results! The simple alignment feature requires only one nut to adjust and align the very wide conveyor. To prevent any damaging, burning and gouging, the speed will vary according to the load. The self-cooling drum system forestalls overheating and extends the abrasives' life.

Why It's Essential: The 19-38 drum sander is a 5 star awarded sander that provides consistent finish, even with varying grain and density. It's a great asset to have in a workshop and a safe bet for quality woodworking.

Price : \$2,099

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Work Sharp Guided Sharpening System

This Guided Sharpening System is a Work Sharp's complete benchtop sharpening and honing tool created for both novice and master sharpeners. The WSGSS-C can be used with every knife you own; the abrasive follows the curve of the blade thanks to Pivot-Response Technology for a consistent edge along the blade. According to your skill level and type of blade you want to sharpen, you can lock the pivot for straight blades, or activate for curved blades.

Why It's Essential: Sharp tools make for better work woodworking. This portable, versatile, affordable and professional sharpening system helps you obtain a sharp and consistent edge, no matter the curve of the blade.

Price : \$72.99

1-800-830-0124

www.elitetools.ca



General International 1 ½ HP Portable Two-Stage Dust Collector



The 10-805CF offers all the benefits of a 2-stage dust collector with the portability needed for most small shops. The cyclone design separates large chips into the 30 gallon collector drum before sending finer dust to the 1 Micron canister filter for capture in the heavy duty see-through bag.

Why It's Essential: The totally portable 10-805CF is equipped with a 1-1/2 HP 110V 11amp motor, putting out 770 CFM, and is supplied with a convenient remote controller for convenient operation from anywhere in your shop.

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General International 13" Heavy-Duty Benchtop Planer

This 13" segmented head planer is powered by an industrial quality 2 HP 15 amp 120V motor for smooth planing results. With fold up tables and inset lifting handles for easier portability, the unit is equipped with a large adjustment handle, easy to read thickness indicator and a safety switch with lock-out key.



Why It's Essential: The 30-060HC is an affordable bench-top planer that is sturdy enough for everyday use and provides professional quality results. The head is equipped with 26 reversible two-sided carbide inserts making it a valuable addition to any small shop.

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Grizzly 9" Benchtop Bandsaw

There is so much to like about this little 9" bandsaw, it had to be on our list of essential machines for the small shop. Its compact size, portable weight (42 lbs.), and handy top-mounted carry handle make it easy to store and it's quick to set up on the workbench when needed.

Why It's Essential: The G0803 is also loaded with a lot of "big bandsaw" features, such as an LED worklight, quick-release blade tension, ball-bearing roller guides, and convenient push-stick storage—making it the perfect entry-level bandsaw when you don't have the floor space available for a larger floor-model unit.

Retail Price: \$189.95
www.grizzly.com



Grizzly 15" Heavy-Duty Planer

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Why It's Essential: With its introductory price of \$895, the G0815 is the perfect way to step up to a big-time planer—without paying thousands of dollars to do it!

www.grizzly.com



TradeMaster 3-1/2" 5-Amp Circular Saw With Mitre Base

The compact TM11051 circular saw, with its powerful worm drive gear motor, can cut a host of materials including solid wood, chip-board, plywood, plastic, aluminum, ceramic tiles, and stone. Its light weight and ergonomically designed handle make the TM11051 easy to use, and the laser guide helps you make accurate cuts. The specially designed mitre base ensures you get clean, accurate cuts with every pass, and the 3-1/2" blade provides up to 1-1/8" depth of cut.

Why It's Essential: Designed for lighter work and applications that involve thinner materials, the TM11051 is a smart choice for home improvement and craft projects, and for a variety of finish carpentry applications.

www.homehardware.ca



DEWALT Tough Music System

DEWALT introduces the ToughSystem Music player providing premium three-dimensional sound in a player that is durable, easy to use, and integrates with the portable ToughSystem tool and accessory storage solution. This Music player blasts out premium quality sound and offers remote control access up to 100 feet with Bluetooth technology connectivity from any Bluetooth-enabled smartphone or music device.

Why It's Essential: To solve low battery issues on DEWALT powertools, or on phones and music devices, the player also features multiple charging options like a 12V/20V DEWALT Li-ion built-in battery charger as well as a 1A USB charger.

\$249 at Home Depot and other home improvement stores
www.dewalt.com



Porter Cable Cordless 20V Brushless Nailer

The 18 GA Brad Nailer has a fastener length capacity of 5/8" to 2" and a magazine capacity of 100 nails. The nailer is capable of driving up to 1300 nails per charge using a 4.0Ah PORTER-CABLE battery (sold separately), and up to 450 nails per charge** using a 1.5Ah PORTER-CABLE battery (included in kitted offering).

Why It's Essential: Weighing only 5.1 lbs without a battery, this lightweight and balanced tool contains a rubber over-mold ergonomic handle that provides maximum comfort and control during use. The Brad Nailer includes several tool-free features including a tool-free jam release, tool-free depth adjustment wheel, and a tool-free stall release lever.

\$299 Available at Lowe's and Amazon.ca
www.portercable.com



Stanley Inspection Camera

Introducing the STANLEY Inspection Camera - this camera rotates 90-degrees to allow users to adjust the display for the best viewing position. The high-resolution viewing screen features an LED light with eight brightness and contrast settings to provide maximum visibility in dark environments.

Why It's Essential: With an 8-mm wide camera head and a camera wand that's 1-meter in length, the STANLEY Inspection Camera slips into most small spaces and will extend to reach behind most surfaces. The IP67 camera wand is water and dust resistant and includes three AAA batteries.

\$149.00 Available at home improvement stores and Amazon.ca
www.stanleytools.ca



King 17" Variable Speed, Wood/Metal Bandsaw



This full-featured, bandsaw is ideal for the shop that does both metal and wood fabrication. Its variable frequency drive and digital readout insures proper speed control for cutting virtually any material. The cast iron wheels, ball bearing blade guides and rack and pinion blade guard system offer accurate travel & height adjustment. Dual 4" dust ports, quick release tensioning and work light, round out the exceptional features of this versatile saw.

Why It's Essential: Today's small shop demands multi-function machines. For cutting wood, plastic, metal and virtually all other materials, the KC-1700WM-VS provides fingertip speed control, accuracy and stability for any job. It is truly your "do-everything" bandsaw.

www.kingcanada.com

PowerForce/King Canada Extension Cords

New extension cords perfect for the shop or jobsite. These 12 Gauge/3 conductor cords are ultra-flexible and stay that way at low temperatures (-40°C to 60°C temperature rating). The two lighted ends glow amber to show power at one end, and green at the other to indicate it is grounded. Available in a variety of high visibility colors in both single and triple tap ends.

Why It's Essential: Whether you are a contractor or homeowner, good quality extension cords are vital for the safe and efficient operation of power tools, benchtop tools, appliances and electric motors. Best of all, these are suitable for indoor and outdoor use.

www.kingcanada.com



Osborne Country Bench Leg



Creating the perfect farm table is sometimes only half of the project. The real trick is creating the perfect bench to match the new table design. The Country Bench Leg (Part #1329) is a perfect solution to your bench seating needs and it matches our Husky Dining Table Leg (Part #1109) perfectly. It offers a simplistic, yet stylish look and feel.

Why It's Essential: Instead of purchasing machinery for turned legs, purchase your legs through Osborne Wood Products! We offer a wide variety of turned legs that are essential to small shops that do not have the room or budget for a turning lathe.

www.osbornewood.com

SawStop Jobsite Saw

The SawStop Jobsite Saw is the lightest and most portable SawStop yet. Using technology proven over a decade, with thousands of finger saves, the Jobsite Saw detects contact with skin and stops the blade in less than five milliseconds. The Jobsite Saw also showcases multiple pioneering innovations that increase accuracy, save time and improve results.

Why It's Essential: Table saw injuries are far too common – and the consequences can be life-changing. SawStop's patented safety feature turns a likely amputation into a mere scratch.

\$1,299 USD

www.sawstop.ca/jobsite



DustFX 1 HP HEPA Dust Collector

The CWI-DCP005H offers a superb blend of performance and protection for the small to medium size workshop. The motor generates 700 CFM and 5.6" of static water lift and has a balance machined cast aluminum impeller for improved performance. The DCP005H comes with a HEPA filter that captures 99.6% of all dust particles 0.3 to 0.5 micron and 100% of all dust particles 1 micron and larger, and a lower reusable cloth bag with a viewing window to monitor dust collection levels. A quick release spring tension aluminum bag clamp makes it easy to empty the bag.

Why It's Essential: This machine is loaded with high performance features. It can be run off of any 115 Volt circuit, and takes only 15" x 26" of floor space.

www.cwimachinery.com



Leigh RTJ400 Router Table Dovetail Jig



THROUGH DOVETAILS



HALF-BLIND DOVETAILS



BOX JOINTS

The RTJ400 Router Table Dovetail Jig is designed exclusively for use on a router table, now found in most shops. It offers fast and accurate routing of through and half-blind dovetails, and two sizes of box joints, with no jig adjustments. With the accessory kit the RTJ400 makes 9 sizes of through dovetails, 3 sizes of half-blind dovetails and 4 sizes of box joints. It's light in weight, easy to store, comes with cam-action speed-clamps, quick reference instructions on jig, a fully illustrated user guide and more.

The most versatile router table dovetail jig on the market. Features quick and easy set up, patented technology, 16" width capacity for larger projects, and a CNC machined template for precise measure.

www.leighjigs.com

DustFX 1400 CFM Air Cleaner

The CWI-DAC1400 features a two stage filtering process that cleans 98% of 5 micron dust particles and 85% of 1 micron particles. It features a washable electrostatic outer filter, dual exhaust diffusers, three different speed levels, and a remote control for start/stop with a built-in timer for 2 to 8 hour settings. The DAC1400 will clean an average 20" x 20" shop 16 times per hour, yet it only consumes 335 watts of power. Four hooks are included so you can suspend the unit from the ceiling.

Why It's Essential: Air cleaners take care of the dust created by hand sanding and from smaller powered tools like sanders and routers that aren't connected to stationary dust collectors.

www.cwimachinery.com



SandX Benchtop Oscillating Spindle Sander

The CWI-S220 is powered by a 1/2 HP 7.5 amp motor. It features a 14.5" x 14.5" cast iron table that can tilt up to 45 degrees, and uses 5 different sized sanding spindles from 1/4" to 2", along with four interchangeable table inserts. An optional 3" spindle is also available. Spindles are either 5.5" or 6" long. The frame of the machine is a solid steel welded stand with a storage compartment for the spindles. A 2.5" dust collection port with a 4" adaptor enables connection to a shopvac or small dust collector.

Why It's Essential: Nothing makes sanding convex and concave curves easier, and more effective, than an oscillating spindle sander.

www.cwimachinery.com



Stallion 3 HP Left Tilt Table Saw

The CWI-T1003L Stallion cabinet saw features a 3 HP 220 volt motor for excellent power in the cut. To support this strong motor is a heavy cast iron trunnion mounted to the steel cabinet with a cast iron base for stability. The 27" x 44" cast iron top also has a steel extension wing to create a massive 27" x 80" working area. Also included are a large metal tool storage drawer and two steel legs for extra stability. The Stallion "T" style fence provides very accurate cuts up to 50" to the right of the saw blade.

Why It's Essential: The CWI-T1003L provides the optimal blend of power, strength, and features that hobbyist and professional woodworkers need.

www.cwimachinery.com



Scorpion 6" Jointer with Stinger Carbide Helical Head

The CWI-J100HC has a powerful 1 HP motor and convenient paddle style lockable on/off switch which drives the new STINGER 5 row carbide helical cutterhead. The Stinger head uses four sided carbide knives set on a shear angle for the ultimate in cutting performance. The 56" machined cast iron bed is easily adjustable for flatness by the machined dovetail ways and locking adjustment screws, while the huge 4" by 29" cast iron machined fence has set stops at 135, 90, and 45 degrees. Front facing hand wheels make for easy table height adjustment, and a heavy duty flared enclosed welded steel stand has a handy storage compartment.

Why It's Essential: The 5 row Stinger helical cutterhead produces fewer knife marks on wood surfaces and virtually zero tear out even on wood with the most figured grain.

www.cwimachinery.com



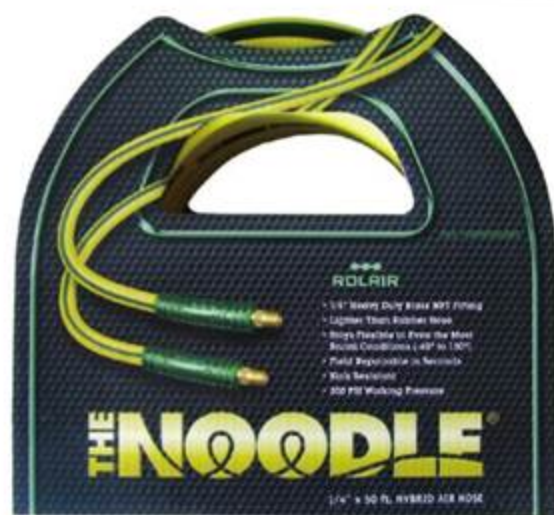
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Make Sharpening Easier with

Diamond Stones

Sharp tools make woodworking easier. One of the easiest and quickest ways to do the job is with diamond stones.

BY CARL DUGUAY

There are a number of different techniques for sharpening and honing your cutting tools: sandpaper, oil stones, natural water stones, synthetic water stones, ceramic stones, diamond stones, diamond paste, honing compounds, dry power sharpeners, wet power sharpeners, bench grinders, and belt grinders. Many woodworkers combine several techniques into their edge tool maintenance regime. It's no wonder that the myriad sharpening options can be so intimidating to novice woodworkers. In this article I outline a simple, easy-to-use system that provides consistently excellent results.

What's in a name?

Novice woodworkers are often baffled by the difference between sharpening and honing. Essentially, they are two sides of the same coin. Sharpening is what we do to remove nicks or chips from a cutting edge, to re-establish the original bevel angle, or to change the bevel angle. If you need to restore an edge or change a bevel angle, it's much quicker to use a powered sharpener as they remove material quicker. However, to remove small nicks and scratches you can go straight to a bench stone, starting with a coarse grit (in the 45 micron range) and finishing with a finer grit (in the 25 to 15 micron range). Depending on the type of work you're doing, the cutting tool might be sharp enough at this stage. The sharpened edge will not pare end grain very well at all, but if you're working with the grain you may have some luck. Try the edge and see how it performs. If you feel you need a sharper edge you can continue to hone the blade further with different stones.

Most of the time you'll want a super-sharp cutting edge, as you'll get crisper and cleaner surfaces. This is where honing, which has more to do with enhancing and maintaining an already sharp edge, comes in. Honing is accomplished on finer stones (around 9 micron or smaller) often followed by stropping with some kind of polishing compound. In fact, most of the time, when your cutting tools get dull, all you need to do is



Curved Cutting Edge – Because a blade is often first sharpened on a grinding wheel, the resulting bevel on the blade has a slight curve to it.



Sharpened, But Not Honed – The blade that made these cuts in end-grain pine has been sharpened up to 9 microns, but not honed at all. Though further work will definitely leave you with a sharper blade there's a chance this is as far as you need to go.

hone them. This removes small scratches from the cutting edge that occur during regular use. In the end, it really doesn't matter how you refer to the process – what does matter is that you get the results you want.

Why diamonds?

One of the major reasons I like diamond stones is that they are so durable. Drop a diamond stone onto a concrete floor, or drop something on top of the stone, and it's very unlikely to break. The same can't be said for water or oil stones. Neither do I have to worry about damaging the surface of the stone by inadvertently digging into it with the tip or cutting edge of a tool, or chipping an

edge by knocking it with a tool. And, best of all, they'll never dish out.

Diamond stones also cut very fast. In my experience they cut faster than water stones of an equivalent grit. Use them not only with tools made of high-speed steel, but tungsten carbide tools as well. Ultimately this means you can sharpen more types of materials and get back to your work sooner.

The amount of use a stone gets will influence how long it lasts, but they do last a long time. My current set gets used on average every second week, and four

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Jul 22 - 24, 2016
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and a half years on, they continue to cut wonderfully. A long service life makes them very economical, even though they typically cost more up-front than water stones.

Diamond stones are also virtually maintenance-free. While you can use them without a lubricant, I typically use water. You could also use a lapping fluid specifically designed for diamond stones, which serves the same purpose as water, but won't rust the metal substrate. I don't use products like WD40 and mineral oil as they have too high a viscosity, and actually cause you to use more pressure than is necessary. After using the stone I simply wipe it clean and dry. Occasionally you'll get some gunk build-up on the surface, which you can easily remove with a polymer eraser.

What stones to choose?

Diamond stones have been on the market for quite some time, with three major brands dominating the field – DMT, Trend, and M-Power. Each offers a range of products and price points.

All three of these manufacturers use mono-crystalline diamonds, which are comprised of single crystals. Some diamond sharpening products are made with polycrystalline diamonds that consist of multiple particle crystals. These, apparently, have a tendency to break down more readily than mono-crystalline diamonds.



Quick Tune-Up – This well-used router bit was sharpened on a small diamond stone for about 15 seconds and will produce much better results now.

Diamond bench stones are available single-sided or double-sided. The double-sided stones have a different grit on either side. Some have a non-continuous surface – a series of recesses (small round depressions or narrow channels), which serve to collect the swarf produced during the sharpening process. Other stones have a continuous diamond surface that tends to work better with narrow or pointed tools, which might get caught in the recesses.

The stones come in sizes comparable to water stones, including 2 × 6", 3 × 8", 4 × 10", and 3 × 12". The stones are available in grits from 180 (70 micron), the coarsest, up to 8000 (3 micron) the finest.

Most companies also offer a range of other diamond sharpening formats for other cutting tools such as knives, gouges, carving tools, router bits and insert bits. Formats include credit-card-sized plates, rectangular files, tapered files and tapered cones.

Get practical: a simplified sharpening system

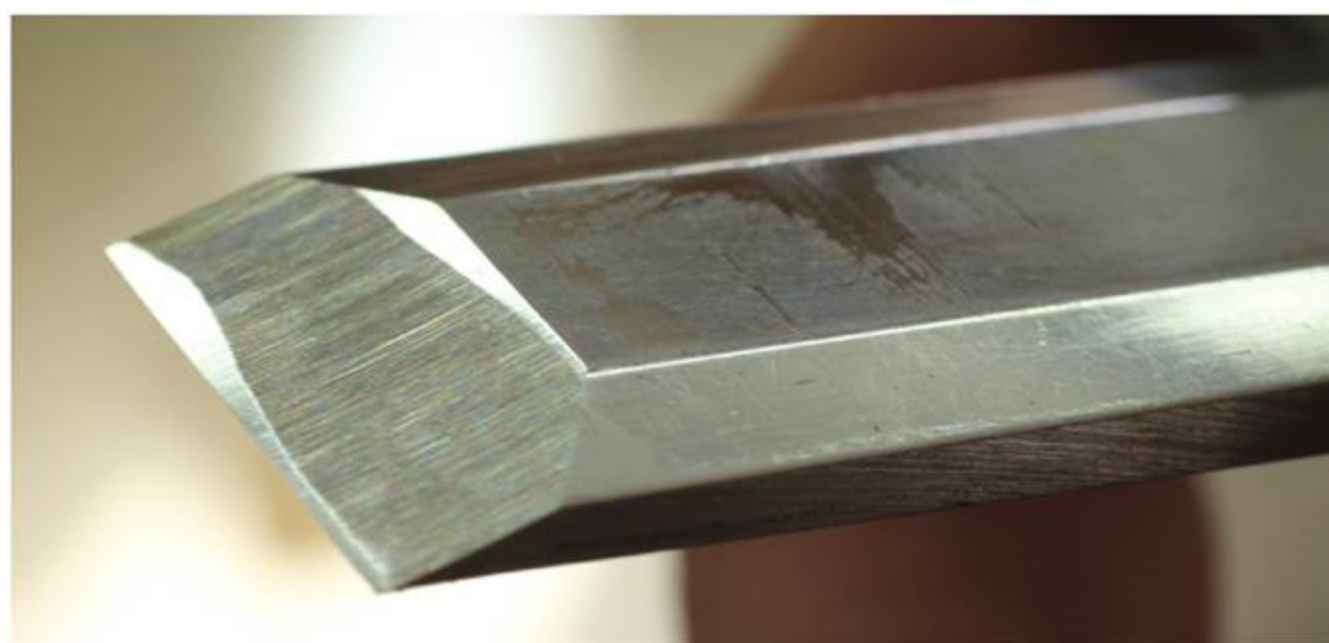
Over the past couple of decades I've tried all manner of sharpening techniques. While I've been able to get good results from most of them, I inevitably settled on a three-part sharpening



Small and Handy – For everything from router bits to pocket knives to carving knives, a small diamond stone works wonders.



Well Set Up – A small selection of stones, jigs and sharpening accessories, like the products pictured here, is enough to obtain great results on many shop cutting edges.



Two Flats – When a grinding wheel is used to shape the bevel of the edge, and the edge is then further sharpened on a stone, two small flats appear. The important one is at the tip of the edge, and can be very small. Further sharpening and honing will enlarge the flats.

system, with diamond bench stones at the core. I use a Trend stone that is coarse (300-grit/50 micron) on one side and fine (1000-grit/15 micron) on the other side, and a single-sided extra-extra fine DMT stone (8000-grit/3 micron).

I supplement the diamond stones with a Tormek power grinder when I need to re-establish a bevel angle, and 3M micro-abrasive adhesive-backed film (.5 micron) for final honing. I attach the 3M film to plate glass.

Regardless of whether you get single- or double-sided, continuous or non-continuous surface stones, you'll want to include at least three grits in your sharpening setup: coarse, medium, and fine. If you feel the need for something even finer at the end of the first three steps, you can add a super-fine grit to your process.

A coarse grit diamond stone makes quick work of the back of a chisel or blade, especially if, like me, you only flatten 3/4" or so back from the cutting edge. A bit of time with a medium grit will make the back look nice, and a tad more time with a fine grit stone will make it look splendid.

Because I use a Tormek grinder my cutting blades are hollow ground. This means there are only two contact points to hone, rather than the full surface of the bevel, as you would need to do for a flat-ground blade. Honing is considerably quicker. The only times I use the Tormek are when I need to reform the existing bevel or if the tip of a tool gets damaged. After grinding I usually go straight to the 1000-grit stone and only make enough strokes to remove the scratch pattern at the tip of the edge left by the grinding wheel.

I then move to the 8000-grit, again only taking enough strokes to establish the bevel. Finally, I take half a dozen or so long strokes on the 3M abrasive film.



Helping Hand – Seasoned woodworkers often sharpen a tool's edge free-hand, but there's absolutely no shame in using a jig to help you out with this task. You will get consistent, predictable results with a jig.



Sharpening Jigs
– With many jigs on the market, in a wide price range, you can find a jig that will fit your needs. This Veritas Mk. II honing guide will help you with a wide range of sharpening chores.

When I feel the edge becoming somewhat dull, I go back to the 8000-grit stone first, and then the abrasive film. With a bit of experience you'll be able to judge whether you can sufficiently hone the blade on your finest stone or if you need to drop back to your medium stone.

If you're new to the craft of woodworking, or feel uncomfortable with the process of sharpening, I recommend that you use a honing guide. This guarantees the bevel will be flat. Establishing a consistent bevel-angle freehand can be difficult as it's all too easy to rock the tool and round over the bevel. However, you can dispense with the guide when doing the final polishing on the 3M film if you wish. A vise-type honing guide works reasonably well, although if you've a wide range of cutting tools with various angles, or flat-grind your tools with a secondary micro-bevel, then the Veritas Mk II is the better choice. It takes all the guesswork out of sharpening and ensures perfectly consistent results.

The kind of work you do, how meticulously you do the work, and how quickly you want to get back to work, all have an impact on your conception of how sharp your tools need to be, and how much effort you'll be willing to put into your sharpening. If you are looking to maximize the time you spend working wood and minimize the time spent keeping tools sharp, then diamond sharpening might just be the way to go.



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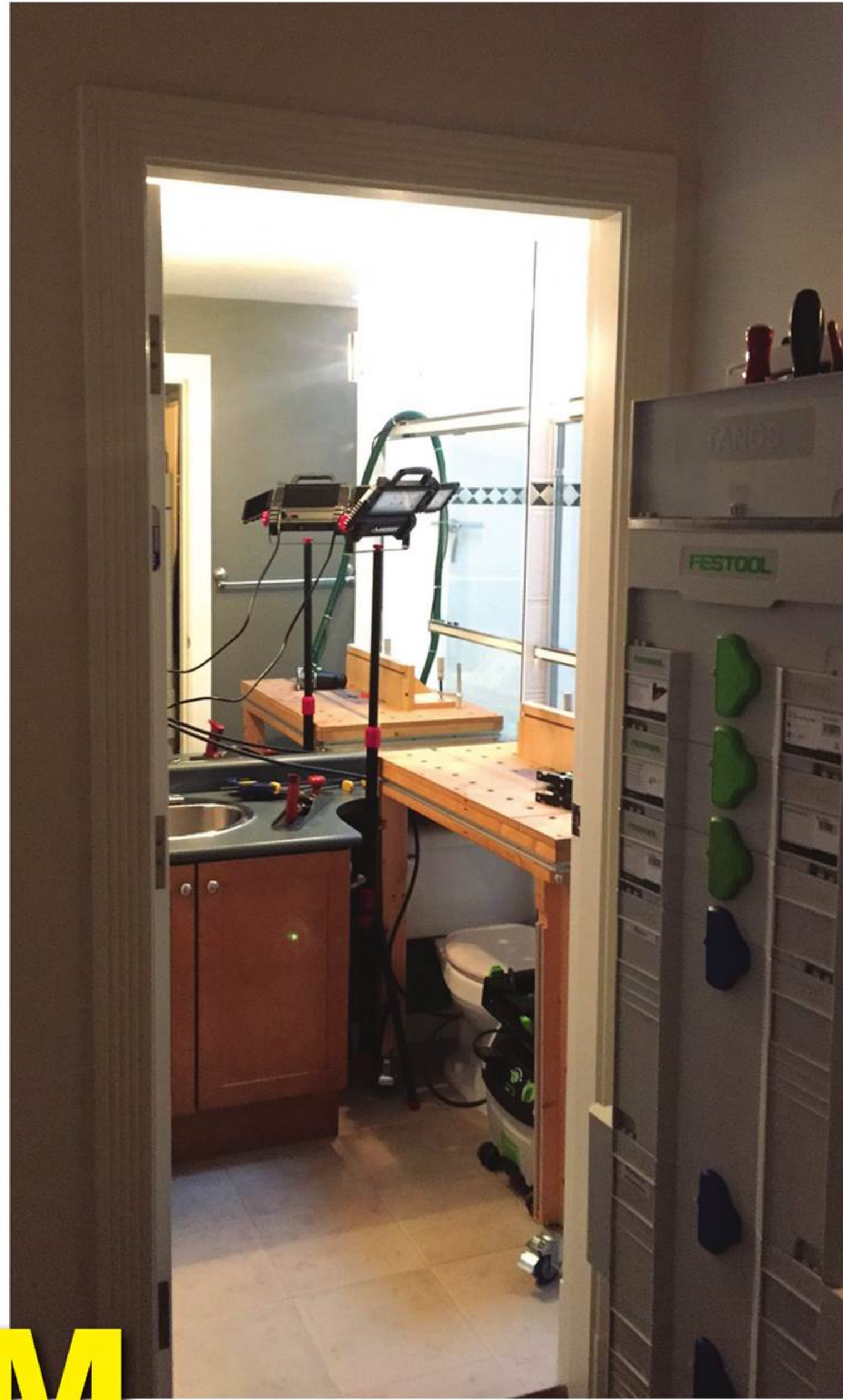
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Add a 40 SQ. FT. BATHROOM SHOP

If you've ever wondered if it's possible to build furniture in your bathroom, here's your answer. Learn how one Vancouver condo owner creates small woodworking projects in his ultra-small bathroom workshop.



BY GREG FORREST

My workshop is 40 square feet. No, I didn't forget a zero; I could only dream of a 400 square foot shop. Just 40, and that includes the bathtub ... yes, my workshop is also my bathroom.

How did I end up woodworking in my bathroom? For starters, I live in a downtown Vancouver apartment, so space is at a premium. It's just my wife and I, so our living space is adequate. But workshop space? Not so much. So what does one do when they want to do some woodworking in an apartment? Get creative.

In order to have any hope of containing the inevitable dust and noise, a closed room was needed. This only left one choice in our apartment – a small bathroom off of the loft bedroom. And small it is! A couple inches less than 5 x 8' puts it just under 40 square feet wall to wall. To put it in perspective, that's only about 2 square feet more than a sheet of plywood.

Keep your projects small

You're probably wondering how it's possible to get any work done in such a small space. I certainly won't be making any bed frames or large bookcases, but it's still possible to turn out some finished projects in the space. A box? A birdhouse? A cutting board? A small planter? No problem. I even managed to make a 6' tall, 2' wide shelving unit, although I did have to do the final assembly in the loft.

A few challenges

What are the challenges in woodworking in an apartment bathroom? Besides space, there are the obvious dust and noise concerns for sure. Hand-planing with a lightweight workbench is not ideal, but because of the small space I can push it up against the vanity to counter the forces and keep the bench in place. One drawback I didn't think of was heat. Running a shop vacuum in a small space for extended periods when sanding puts out a lot of heat. If I have some extended sanding to do I'll put the vacuum outside the door to keep the heat out.

The biggest drawback I didn't think of is the inward opening door. This limits the space for tools and materials to keep the door swing area clear. Maybe one day I'll convert it to an outward-opening door.

Keep the noise down

I'm a bit lucky in the fact that being at the top corner of the building this room shares no walls, floor, or ceiling with our neighbors, so noise is not an issue. If you're considering opening up shop in your condo bathroom, and you want to keep your neighbours happy, I would suggest a common sense approach. First, don't make lots of noise at night. That one is simple. Secondly, make friends with your neighbours and don't be afraid to give them a gift once in a while or help them with a small project. Neighbours have a hard time getting mad at you when you're working on projects for them.

Control the dust

As for the dust that every woodworker faces, I manage it a few different ways. The most obvious one is hand tools.



Double-Duty Workbench – Forrest's router table doubles as his workbench. Though it isn't the sturdiest of benches, when it's pressed up against the vanity counter it stays in place surprisingly well.



Watch the Door – One of the biggest space hogs is the bathroom door, shown in the lower, right of this photo. An outswing door is great to have if you're planning on spending some shop time in your bathroom.



Hand Tools – Quieter, multifunctional and smaller, hand tools solve a lot of problems when it comes to working in a condo.

Planes, chisels, spokeshaves and handsaws are all used in my shop. Festool tools have great dust collection, especially their dust producing sanders. Besides, with big expensive stationary tools not being an option, it's easier to justify spending more on the tools that I can use. The exhaust fan helps with dust too. It creates a small pressure difference to keep the dust from spreading to the rest of the apartment. When finishing a project it can exhaust the fumes while the finish dries in a nice warm space too. My other dust management trick is the space, or lack thereof. I can vacuum every square inch of floor, walls and ceiling in five minutes. Sometimes a small shop is an advantage.

Quick setup

Since this is a bathroom first and a workshop second, there needed to be an efficient way to convert between the two. My workbench has heavy-duty locking casters so it can easily be



Work With What You Have – Everything has a use. A towel rack makes a great temporary clamp storage area. With a little ingenuity, lots of often-used shop items could be stored within arm's reach, so while you're working in a small space you wouldn't have to take more than a step or two to reach anything.



On the Move – Keeping your tools portable is important, as they will travel between the bathroom shop and the closet a lot. Dedicated storage, like Festool Systainers, will keep the process much simpler.

moved from the bathroom to the closet where it's stored. Most tools are stored in this closet as well, while the less frequently used tools live in our storage locker. Stacks of Systainers fit on top of and below the workbench maximizing the available storage space. Setup is usually only 5–10 minutes, while takedown and cleanup is 15–20 minutes. It will never be an efficient production shop, but the setup/takedown time is not a significant issue. If I'm feeling a bit lazy, or waiting for a glue-up to set, I can just wheel the bench out into the loft area with whatever is on top of it for an overnight work break. Once set up, everything is within reach. I don't have to run all over a large shop to get things done. Switching out tools is just a step out the door.

Tool selection is crucial

My two most used tools for prepping boards are my jigsaw and Veritas shooting plane. Originally I thought the shooting plane was a bit of a luxury as my jack plane got the job done, but a dedicated shooting plane is an absolute pleasure to use. Generally I cut close to the line with the jigsaw, then perfect it with the plane. Joinery depends on the project, but the space doesn't limit my options much. Hand-cut dovetails? Festool Domino? A utilitarian project with glued and pinned butt joints (yes, I even have a compressor—in a Systainer of course)? No problem in the bathroom workshop. My workbench was built to accept a router plate so I have router table capabilities, and I have a smaller handheld router as well. Routers are notorious dust producers (even Festool hasn't solved this issue completely), but then again there's only so far the dust can go.



A Little Extra Space – When a project is too large to be assembled inside his bathroom shop, Forrest brings the parts into the main area of his condo for a quick assembly. Blankets, sheet goods and plastic to protect the floor will go a long way in keeping the peace within the household.

Overall I'm happy with my decision to start woodworking in an unconventional space. Sure, I won't be turning out large furniture projects, but there are lots of projects that are totally feasible. If I had more space I would love to have the ability to re-saw and plane boards with power tools. Sometimes hand-planing a board to the desired thickness by hand gets a bit old. In the end, though, I still get the same satisfaction in turning a pile of boards into a finished project as someone with a large dedicated workshop.



GREG FORREST
gregforrest@gmail.com

After leaving a career as an automotive technician for a desk job Greg missed working with his hands. Since a project car wouldn't fit in the bathroom, woodworking was the next best choice of hobbies.

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Choosing a ROUTER TABLE

Enhance your productivity, precision and safety with the purchase of a router table. Learn which of the three general styles best suits the work you do.

BY CARL DUGUAY

While you can do a lot with a hand-held router, you will have a greater degree of accuracy, ease, efficiency and safety if you're using a router table. The list of processes you can accomplish with a router table includes grooving, slotting,

dadoing, rabbeting, moulding, edge treatments, template and pattern work, raised panels, mortising, box joinery and dovetailing.

One of the major advantages of a router table is that you're not dealing with the weight and vibration that comes with a hand-held router. Instead, both your hands are free to manipulate the stock. Routing small, narrow stock

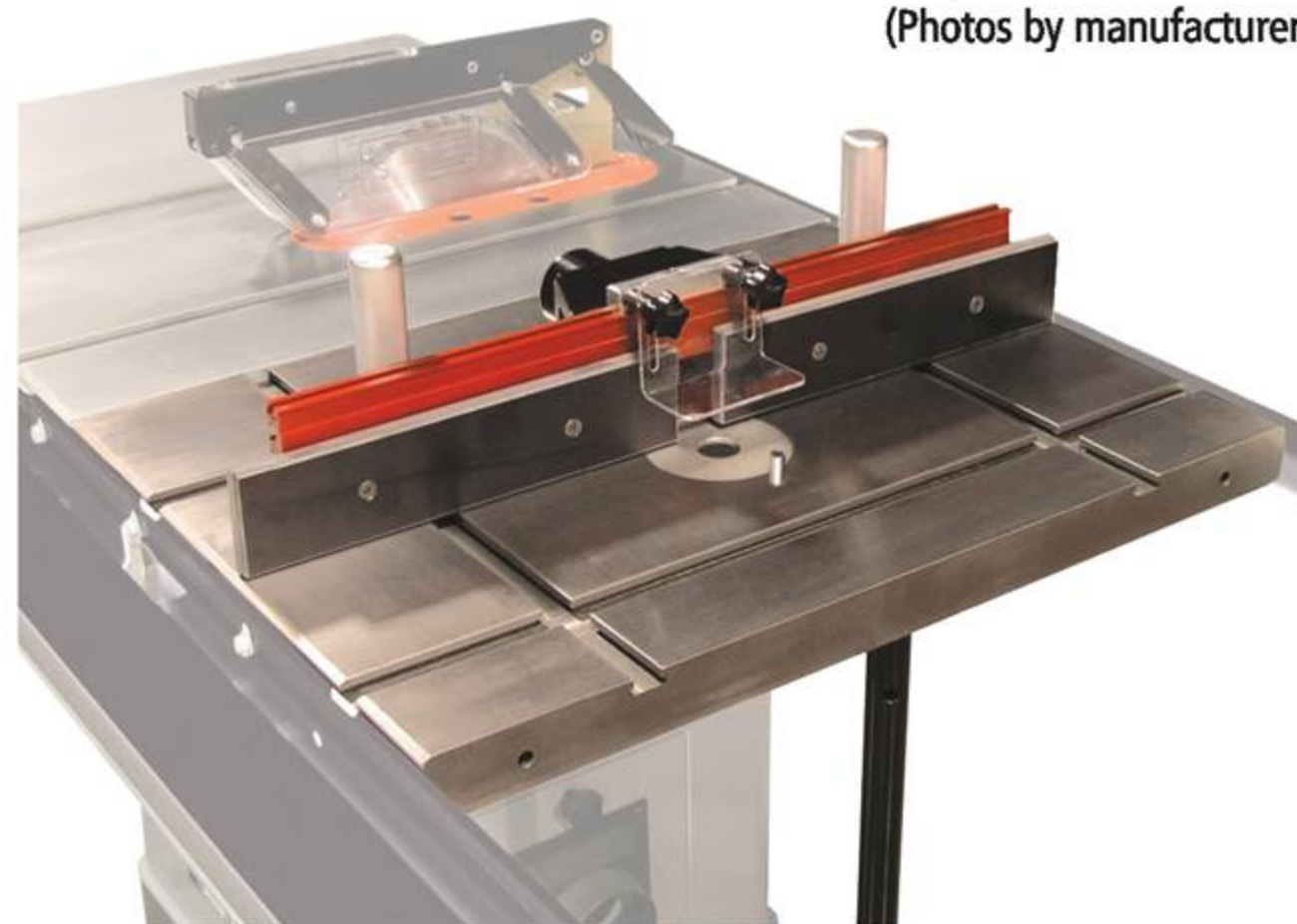
free-hand is especially onerous and dangerous. However, on a router table, with the use of a push stick, featherboard, or jig, it's considerably easier. Likewise, you can undertake repetitive tasks with less time and effort. You'll also be able to use large diameter bits that are unsafe to use in a hand-held router. And, for many routing operations, you'll find it easier to align the router bit to lines marked on the stock.

Three main styles

Router tables come in three styles – bench-top, stationary, and mounted (typically between the front and rear rails of a table saw). A table-saw-mounted router is an ideal choice for really small shops as it doesn't take up much extra



Three Main Types – Bench-top (left), stationary (center) and mounted (right) are the three main types of router table. Bench-top router tables are nice when space is very tight, but are generally smaller and less robust. Stationary ones are quite popular, but take up more room. Mounted router tables, like this King Canada version, are generally attached to a table saw and are quite solid and durable. (Photos by manufacturers)



floor space. Bench-top models are also great space savers, particularly for anyone who won't be doing a lot of routing, as they can be easily stored under a workbench. And, of course, bench-top models are portable. If shop floor space isn't an issue and you want to maximize your routing potential, then choose a stationary router table.

If you have the time and skill set, and would like to save some money, building your own table is a reasonable option. Otherwise, consider buying a table – particularly if you

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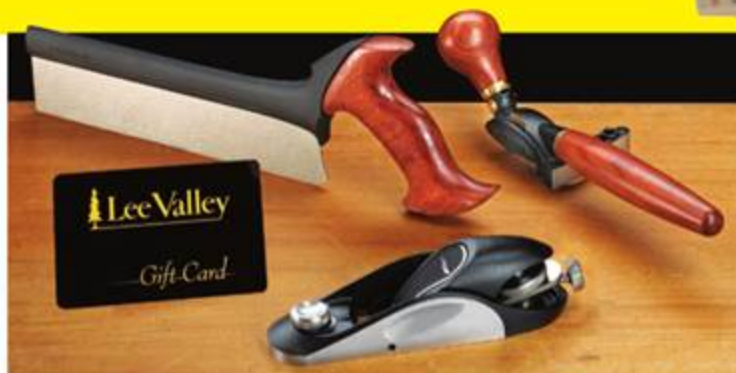
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Great Add-On – For anyone who does a lot of cross-grain work, a great addition to the Festool CMS router table is their sliding table and fence. (Photo by Festool)



Split Fence – A split fence allows the opening near the bit to be adjusted. Benefits include safer routing, increased workpiece support during the cut and better dust extraction.



A Strong Fence – One of the most important aspects of a good router table is a solid, square, easily adjusted fence. Look for comfortable handles that are easy to use and lock the fence in place well.

are new to the craft. You'll be up and running in no time. Regardless of whether you build or buy, the style of table you choose will depend on a variety of factors, including shop size, how much routing you'll be doing, the type of routing you expect to be doing, and your budget.

As with any shop machine, you want to purchase a router table that will last for years, and provide consistently good performance. Here are some features to consider that will make your purchasing decision easier.

Flat, rigid table top

You want a top that is flat to begin with, doesn't deflect once a router is mounted under the top, and remains rigid over time. Otherwise, you'll find it difficult to obtain consistently precise and accurate results. In general, a heavier top is less prone to sagging and helps reduce vibration. Choices, from least to most rigid, include MDF (covered with plastic laminate), phenolic resin, and metal (aluminum, steel or cast iron).

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Easy to Access – Whether for simplicity, or safety, an easy-to-reach on/off switch is very nice to have.

Likewise, ensure that the base plate to which the router is attached is rigid and flat. The plate needs to rest perfectly level with the table top and not shift in use. Leveling screws embedded into the underside of the tabletop make it easy to adjust the base plate. Alternately, you can use a router lift instead of a base plate.

If you plan to use the same router for both hand-held and table-mounted routing, ensure that the process of installing and removing the router from the table and base plate is quick and easy. If you do opt for a stationary table, and you install a router lift, bite the bullet and purchase a second router that



Easy Changes – Whether or not bits can be changed from above the table's surface isn't a deal breaker, but it does make life easier. You may even find that removing a router from the table is the easiest way to go about changing bits, but it really differs between products.

you can leave permanently attached to the table. It makes life a whole lot easier.

Ensure the tabletop has an integrated mitre track. It will enable you to use a mitre gauge, mitre sled as well as some types of featherboards and accessories.

Fence square to the table

As on a table saw or jointer, the router table fence is indispensable. It has to be dead square to the top, quick and easy

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to adjust, and yet remain immobile when locked in place. A taller fence offers greater stock support for when pieces are machined on their edge. Because the fence is adjusted so frequently, it's important that the fence locks are easy to adjust.

A fence that has two movable sub-fences, called a split fence, allows for better chip collection than a continuous fence. Split fences also help to reduce tear-out because they act like a zero clearance insert on a table saw, reducing the open space on either side of the bit. Also, supporting stock close to the router bit makes it safer when routing stock.

Some fences have T-slots integrated into the top or face of the fence. These enable you to mount various accessories, including hold-downs, stops, featherboards and micro adjusters.

Accessible power switch

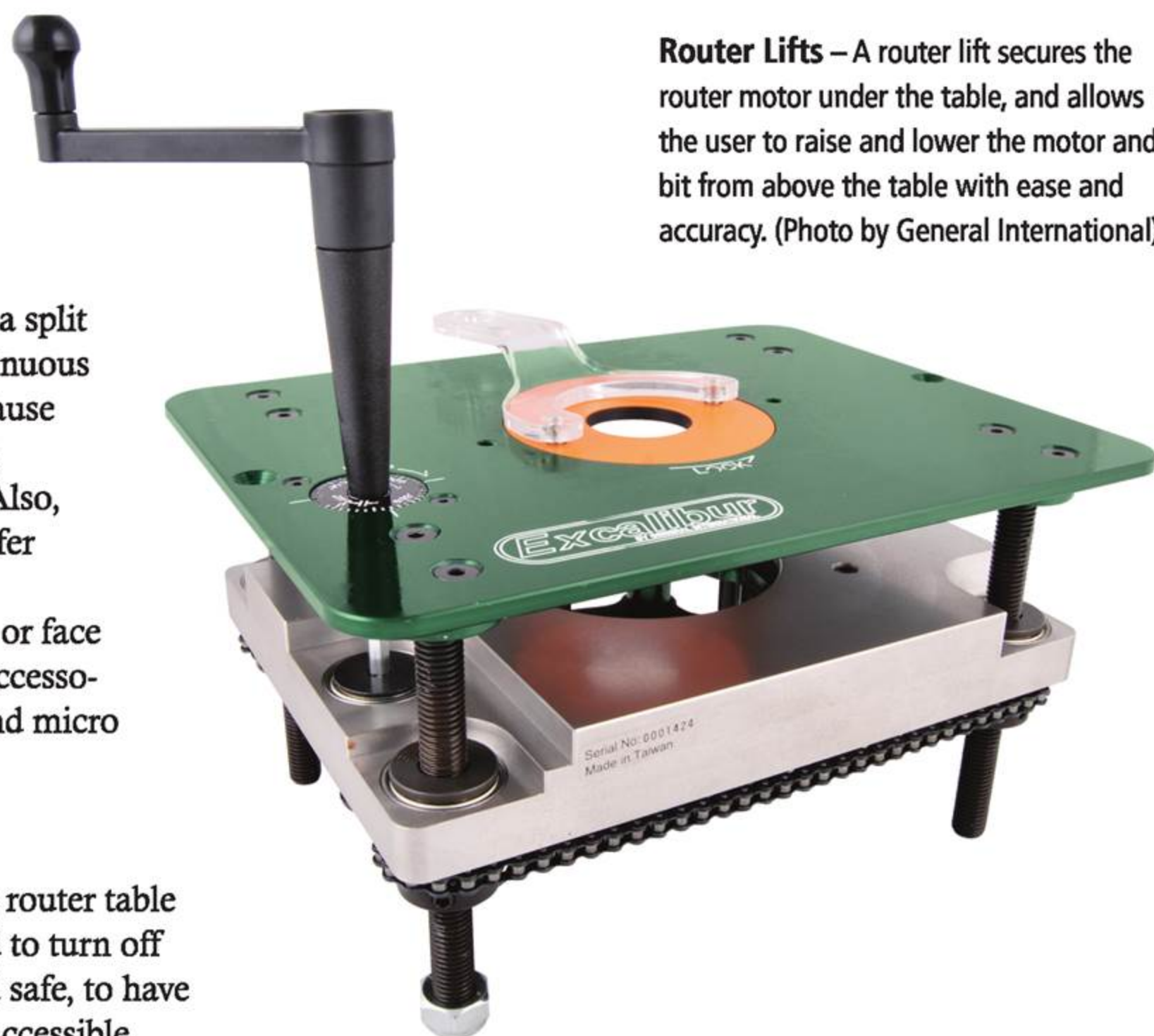
You really don't want to have to reach under the router table to access the power switch – especially if you need to turn off the power quickly. It's much more convenient, and safe, to have a remote power switch located somewhere easily accessible. A large paddle-style switch mounted to the base can be easily reached or activated with your hand or knee pressure.

Quick and easy bit height adjustment

Probably the most frequent setup operation a woodworker will perform on the router table is raising and lowering a bit followed by changing router bits. If you mount the router on a base plate, you will have to reach underneath the tabletop to adjust the bit height, and you will have to lift the router and base plate out of the table to change bits. Some routers allow for above-table height adjustment, though you may still have to reach under the table to depress a spindle lock if the router has one, or to release the motor clamp. You may also find that the collet doesn't fully extend above the top, making it awkward to remove the collet nut.



Have Casters, Will Travel – If you will need to move your router table around the shop regularly, casters will be your best friend. On this model the leveller feet enable the user to ensure the router table is level and doesn't rock, no matter what location it is in.

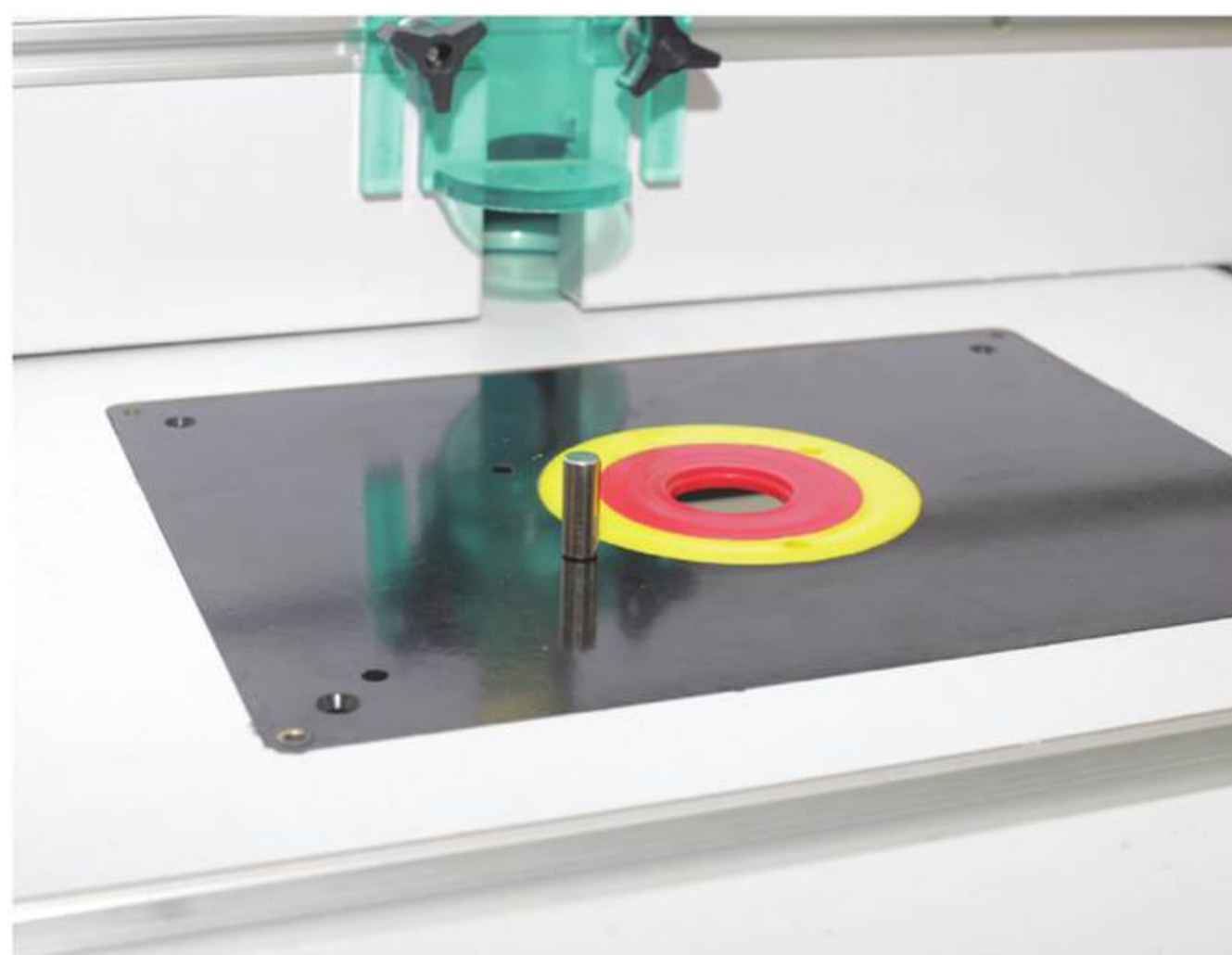


Router Lifts – A router lift secures the router motor under the table, and allows the user to raise and lower the motor and bit from above the table with ease and accuracy. (Photo by General International)

An alternative to a base plate is a router lift. It consists of a carriage to hold the router motor, a ratcheting mechanism to raise and lower the carriage, and a base plate. A removable crank handle, inserted into the base plate, enables you to make very precise height adjustments. It's pretty much the ultimate in height adjustment and easy bit changing.

Table height adjustment and mobility

The ideal height of a router table is one that enables you to work comfortably and safely. A table with leveling feet will not only enable you to customize the height, but you'll



Starting Pin – Some router tables, like this Craftex version, are equipped with a removable pin. If you're using these router tables without a fence you can position the edge of the workpiece against the pin and rotate the workpiece into the spinning bit. This is safer than starting the cut completely freehand. (Photo by Busy Bee Tools)

How Big? – Mid-sized routers work well for smaller runs and bits that remove less material, but larger production routers are great for larger bits and heavy usage.



be able to adjust the top so that it is level and doesn't rock. Casters are important if you will be constantly moving the table about the shop.

The right router

Even though this list ends with routers, they are arguably the most important component of a router table system. The right router for your router table will depend, in large part, on the

kind of work you do, and the style of router table you choose. If you will be working on small projects, almost exclusively with small router bits, or buying a bench-top table, then a mid-size router (1-1/2 to 2-1/2 HP) would be sufficient. Otherwise, install a production router (3 HP or larger). It will run cooler than a mid-size router and have the power to run even the largest panel-raising bits.

A router table's ease of use, versatility, and accuracy will transform your woodworking, and is sure to become one of the most useful machines in your shop.



CARL DUGUAY

cduguay@canadianwoodworking.com

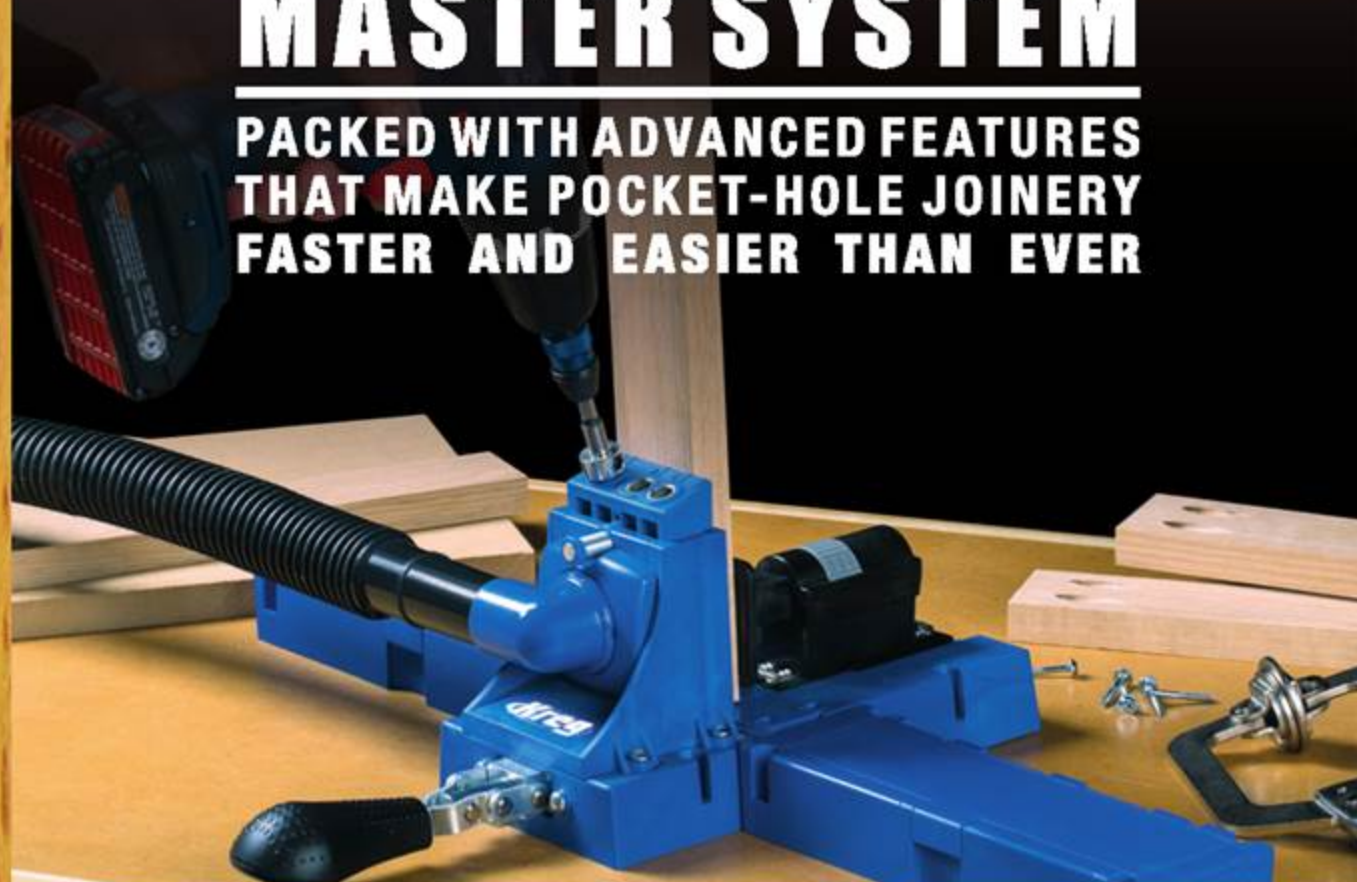
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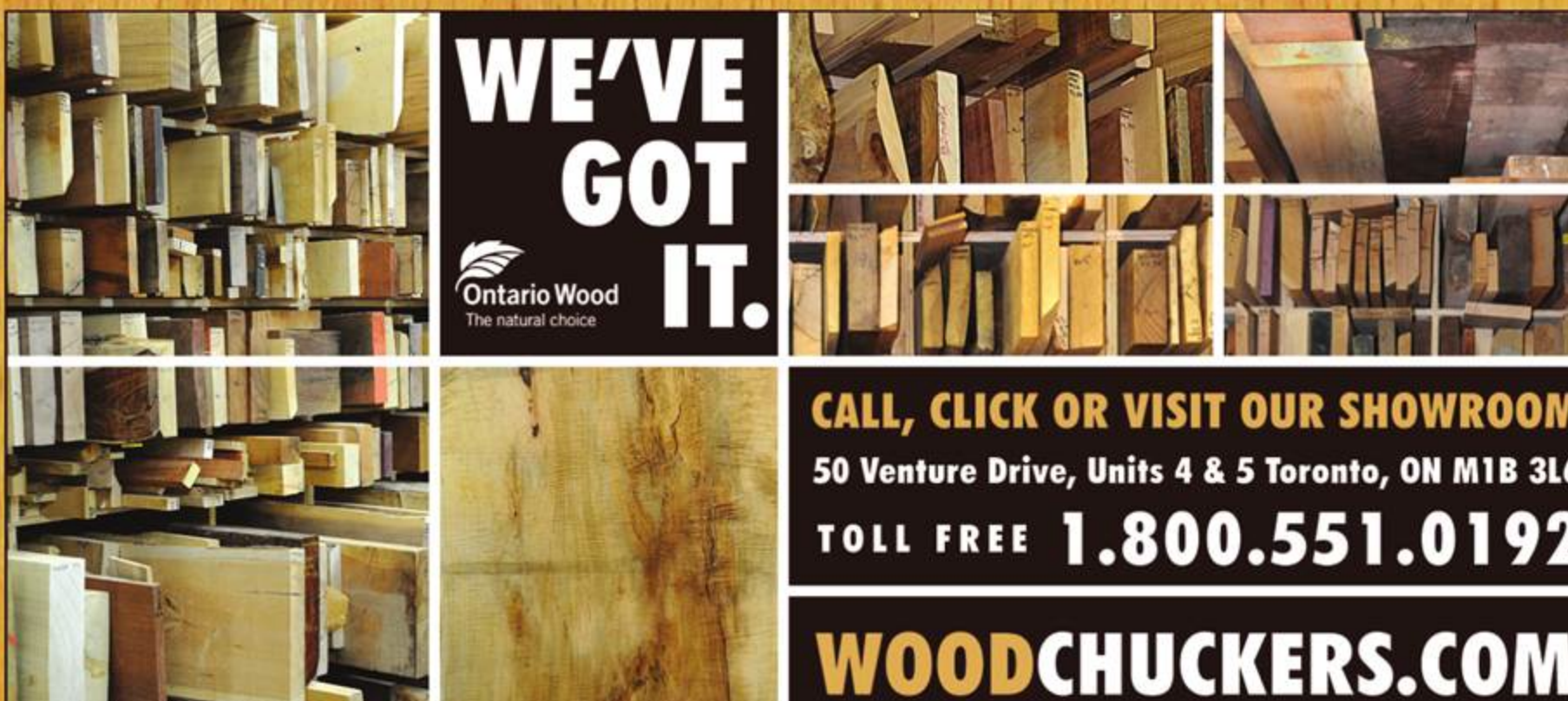


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Simple Tools

BY DON WILKINSON

When woodworker-slash-writer-types like myself write about tools, they invariably talk about the so-called celebrity glamour tools; the table saw, lathe, or planer. If they get stuck they may even talk about the router. WooWee! Good stuff.

You may have noticed that I referred to these writers as being, “like” myself. Not me! That’s kid stuff. Too easy. The table saw’s been done to death. Everything that could possibly be said about it has been said a thousand times over. It’s not like there have been any cutting-edge breakthroughs in table saw design in the past ... say ... EVER!

What no one ever talks about are the simple little tools that we all use on a daily basis but never think about until your wife or son-in-law “borrows” it and forgets to put it back. Your favourite 32 oz. Estwing hammer she used to tenderize her meatloaf ... like that would ever help. Or maybe a well-honed chisel used to open a paint can, or the Veritas block plane your grandson used to plough roads in the sandbox for his Matchbox trucks. (In case you’re thinking about trying it, a Veritas block plane is the perfect width for making roads for a Matchbox truck. Almost as if it was designed for that exact purpose. And that’s with room for shoulders on both sides. But not ditches. If you want ditches you really should move up to a Jack Plane.)

Then there are the really big tools that almost never get written about. Things like a Wood-Mizer bandsaw mill for making full size Lincoln-Logs to build your very own life-size log cabin. Or how about that greatest of all tools ... the Canadarm. I’ve wanted one of those babies ever since I saw one used on the Columbia shuttle in 1981, but my wife

says I already have enough toys and I’m not allowed to get one.

But back to the more commonly found household tools. Take, for instance, the lowly pencil. If you think about it, the pencil is a rather brilliant piece of machinery. First off – and this is a little-known fact you’ll never hear anywhere else – with the exception of the metal ferrule holding the eraser, every single bit of the average pencil is 100 percent edible. It’s not good for you and probably tastes terrible but you can eat the thing. You likely won’t find anyone to kiss you afterwards, but after all, you’re sitting in a cold shop reading this all alone anyway so what does that matter?

Secondly, in case you weren’t aware, the lead in your pencil is not actually lead; it’s a mix of graphite and clay. The wood is called something like incest cedar and is completely renewable because it’s basically worthless for anything else but pencils.

And to top it all off is the fascinating reason why most pencils are painted yellow. It’s somewhat racist and I don’t wish to offend anyone but what the heck, if you’re not offended yet, I’m not doing my job. The reason pencils are painted yellow is to commemorate the fact that the best graphite comes from a mine located on the Russian border with China. You work it out.

The last tool I wish to talk about is the Robertson screwdriver. If you ask any American what he thought was the best screwdriver ever made, he’d probably state incorrectly but with great authority: the Phillips. And then he’d probably shoot you.

His reasons would be two-fold (and wrong). Number one, it’s American,

therefore it has to be the best. And number two, he’s probably never even heard of the Robertson but he does know the American square-drive. He hates them too because they don’t work very well. Now, there is a reason the square-drive doesn’t work as well and it has very little to do with what you call them. It seems that the Canadian-made Robertson has a slight taper to the bit. Because of this taper, and something to do with physics (and possibly a little bit of magic) the screw grips the bit tightly, thus preventing what is known in other screw types as cam-out. Or more succinctly: “%\$@#&*\$ screw.”

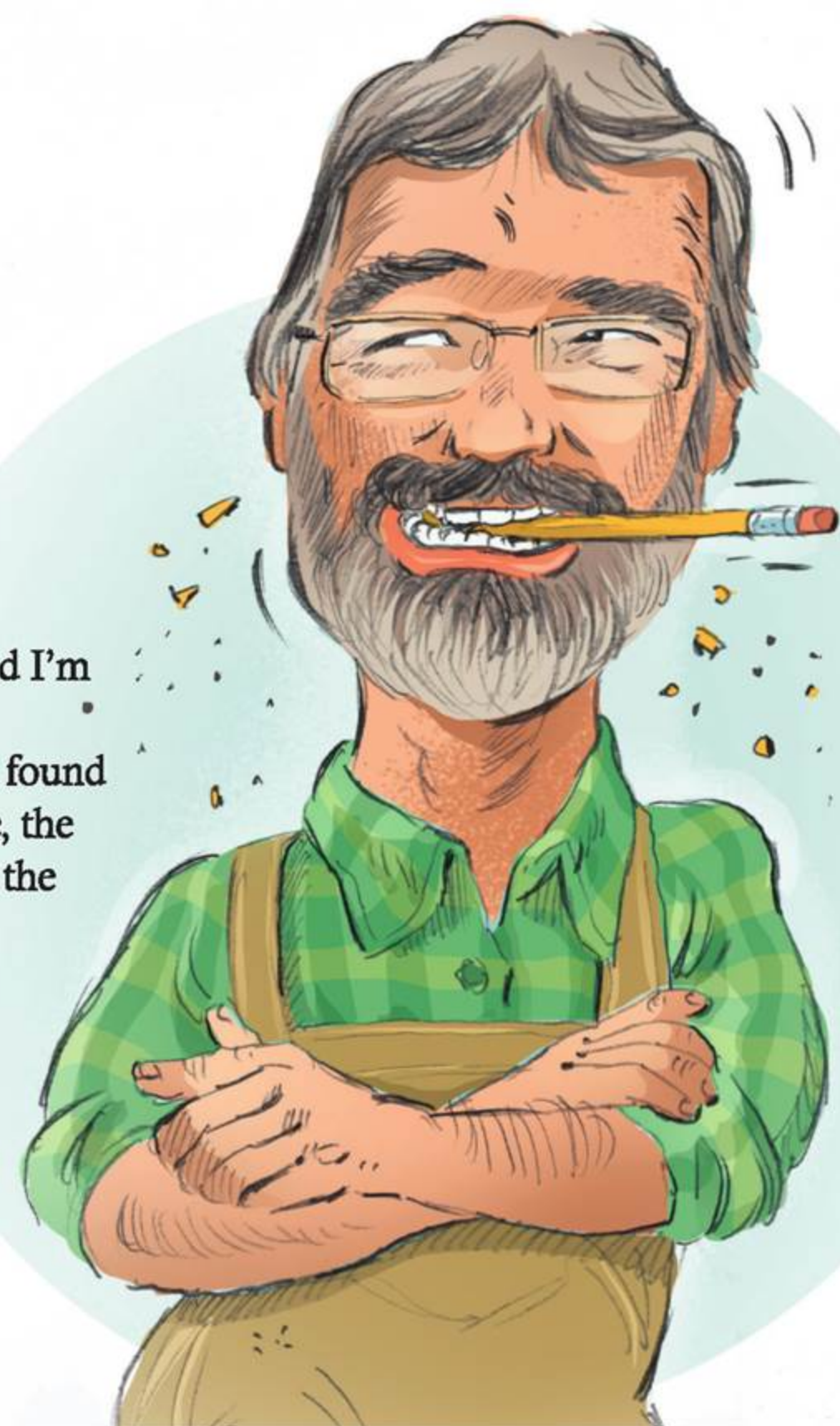
Because the American square-drive doesn’t have any taper, or even any magic for that matter, it simply doesn’t work as well as the Robertson. So they hate it. Class dismissed.

If you have any questions and don’t care if the response is at all accurate, you can always email me anywhere but at the address at the bottom of the page.

DON WILKINSON
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Illustration by Mike Del Rizzo



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Table**

A mirror set of bedside tables were designed and built to go beside a bed Wainwright previously made. It was tricky to hand-cut the dovetails, as they had to be 3 degrees off square to coincide with the angle of the drawer fronts.

Turn to page 8 to read a collection of Wainwright quotes, and learn how you can view an online slideshow of his work.

