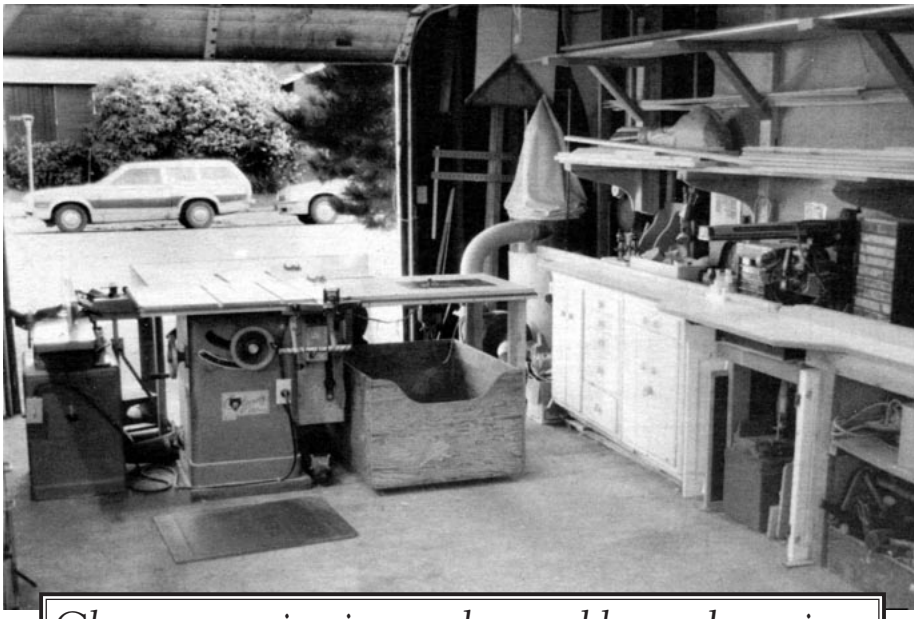
# The Two-Car-Garage Shop



*Clever organization and movable work stations can make the small shop work*

*by Jim Tolpin*

You can get by for years working out of the back of your truck. After all, most of the tools you need are close at hand, lying in little pools of rust-colored water in the cross-bed box. And you have all the space you need to cobble stuff together on the job site — right between the guys laying the flooring and the finish guys running the trim (and under the electrician hanging the chandelier, and the owner running around underfoot, and...). You can get by, yes, and you can also get crazy. Be good to yourself: Create a woodworking shop "subsidiary" back home.

In this oasis of sanity, you'll find more and more good excuses to be there. With a shaper you can produce your own architectural millwork, perhaps making built-up moldings for fireplace surrounds or fancy entryways. You'll have the capacity to make up components for built-in cabinets and to construct custom doors. And it will be a simple matter to bring a factory-made cabinet home for modifications or damage repair — no more waiting on the cabinet supplier.

In slow periods, you can even keep yourself and a few of your guys busy building a complete set of cabinets for a remodel job. And wonder of wonders, you'll finally have a decent place to sneak off to and build something nice for yourself and your family!

Here's what I look for in setting up a shop for myself, how I lay it out, and how I tool it up.

### The Space

You'd think the first thing you'd need to think about would be: "How big?" But it's not. The first thing you have to consider is this: "Is it legal?"

Unless you are living in the outlands, unfettered by close neighbors and strict zoning laws, you must check with the zoning maps and list of ordinances at the town hall to see if you're going to have a problem. You're going to be small, it's true, but you won't be invisible, and certainly not inaudible.

If it looks good so far, the next thing to consider is access. The nicest shop structure in the land isn't worth a 2-penny nail if you can't get a truck up to it, or if you can get a truck up to it but there's no way to turn it around. It's worth checking out before saddling yourself with a constant headache/backache.

Finally we get to talk about size. It is important to realize that bigger isn't necessarily better in the world of small woodworking shops. The average two-car garage, especially if it has an oversized wall height, is totally adequate for most small construction businesses. I've worked out of a 22x24-foot garage for years, producing more than a score of full cabinet packages for sizable new homes. Maybe I'm just used to it, but anything bigger than 24x32 feet feels too big, and encourages me to spread out too far, making me walk a lot more than I need to.

Beyond adequate size, the other things I look for in the home shop are adequate entry, ample natural light, decent ventilation, and unobstructed floor space. In general, I've found that basement shops don't meet any of these criteria very well.

One other thing I always look for in my shops is a soft floor; in other words, wood. Concrete slabs are cold on the feet, hard on the back, and devastating to chisels (which defy both physics and the law of averages and invariably land precisely on their freshly sharpened edge). I don't recommend working on them.

My modification to make a slab floor livable is to simply lay down a vapor barrier, install leveled 2x4 sleepers, and put down plywood underlayment. The resulting enclosed space is ideal for running electrics to the tool stations, vacuum lines for the dust collector, and copper pipe for compressed air. Add insulation if you want to pamper yourself.

### Utilities

I probably don't have to tell you that you are going to need a substantial, and preferably isolated, power feed to your shop. It's not much fun having to wait for the dryer to end its cycle before you can turn on the table saw and dust collector. And you don't want to hear the screams of little children when your drill motor interferes with their Nintendo game.

To maintain tranquility in your household, I recommend running a separate 100-amp service to the shop. Provide at least two 220-volt circuits, and be sure to isolate light circuits from utility outlets (you don't want to be in the dark if an outlet gets overloaded). Ground all the metal tool cabinets, as well as the outlet grounds and the 220 fourth wire, to a grounding rod. Have a certified electrician check out the wiring to make sure it meets code.

If you are rich, you can also install electric heat. Otherwise, you'll likely do as the rest of us and put in a wood stove. But be careful! Wood doesn't have to be inside the stove to catch fire. External "combustion zones" vary with wood type; be sure to pay attention to yours and be ever vigilant in keeping wood out of it. My local fire bug told me that it can take as little as 22 seconds for a piece of wood within that zone to catch on fire.

This is one very good reason to have running water in the shop. Another good reason is to have your own place to wash up (and, ideally, your own restroom facilities). If you don't know why this is such a great idea, just ask your spouse!

### Floor Layout

The first thing a visiting woodworker asks when he sees my shop is: "Where are the workbenches?" That's my cue to get smug and say: "I don't need them." And I don't, at least not the traditional idea of a workbench. Mine are all knockdown, and their components spend a lot of time hanging out of the way on the walls, as do many of my other tools, jigs, knockdown

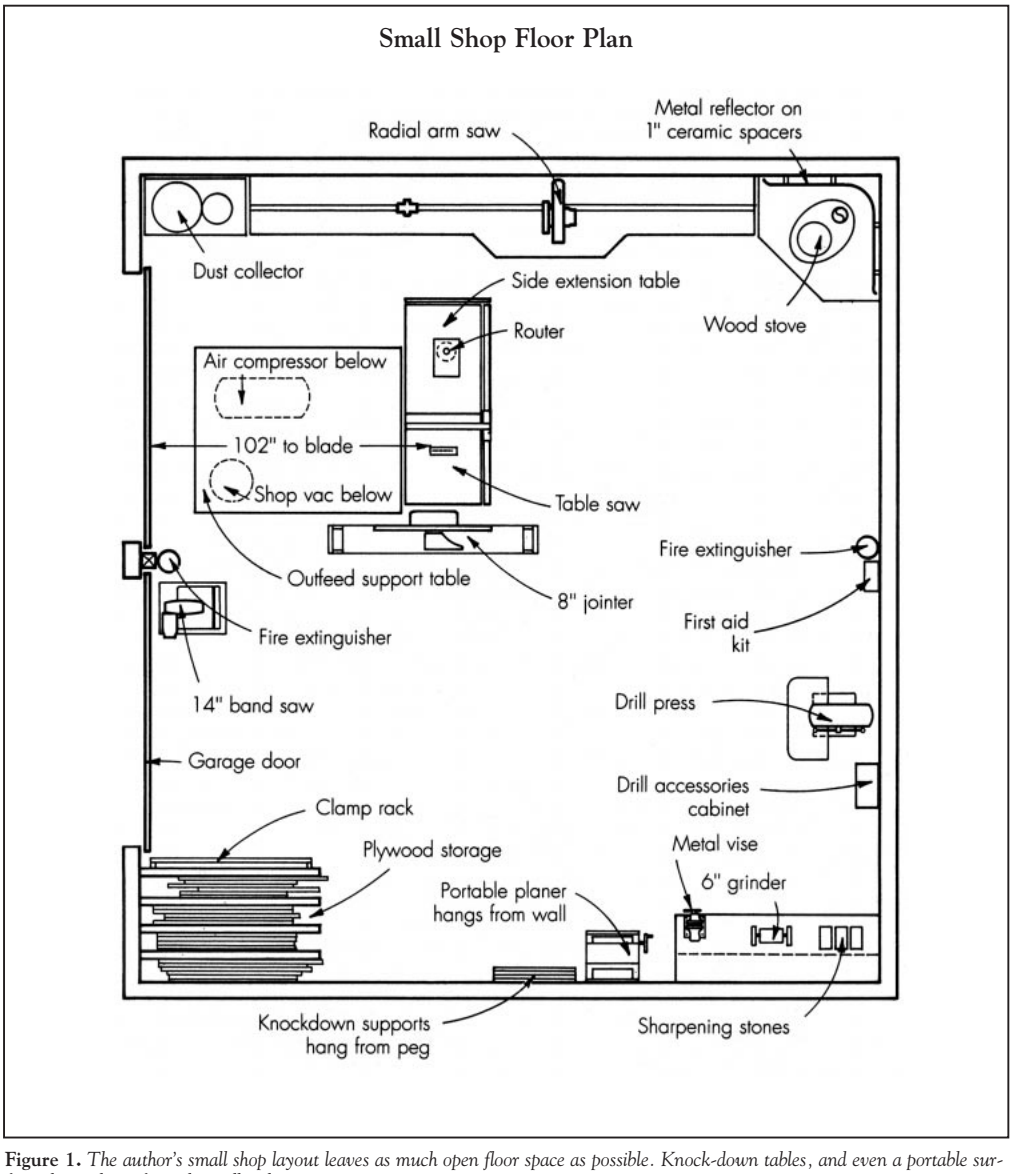



**Figure 1.** *The author's small shop layout leaves as much open floor space as possible. Knock-down tables, and even a portable surface planer, hang from the walls when not in use.*

"sawhorses," and just about anything else that doesn't absolutely have to occupy floor space.

My basic premise in setting up a small shop space is to create as much open space as possible, ruthlessly minimizing the amount of space taken up by tooling and work surfaces. Over the years, I've appreciated more and more how an open shop layout allows material to flow easily through the milling processes, while leaving ample room to assemble projects.

To create this open-shop environment, I group the table saw, radial arm saw, and jointer together; replace traditional fixed workbenches with knockdown versions; put other stationary tools on wheels (or even hang them from the ceiling); and build mobile tool and material carts that can be wheeled out of the way when not in use. The layout shown in Figure 1 represents a typical two-car-garage shop.

## Stationary Tooling

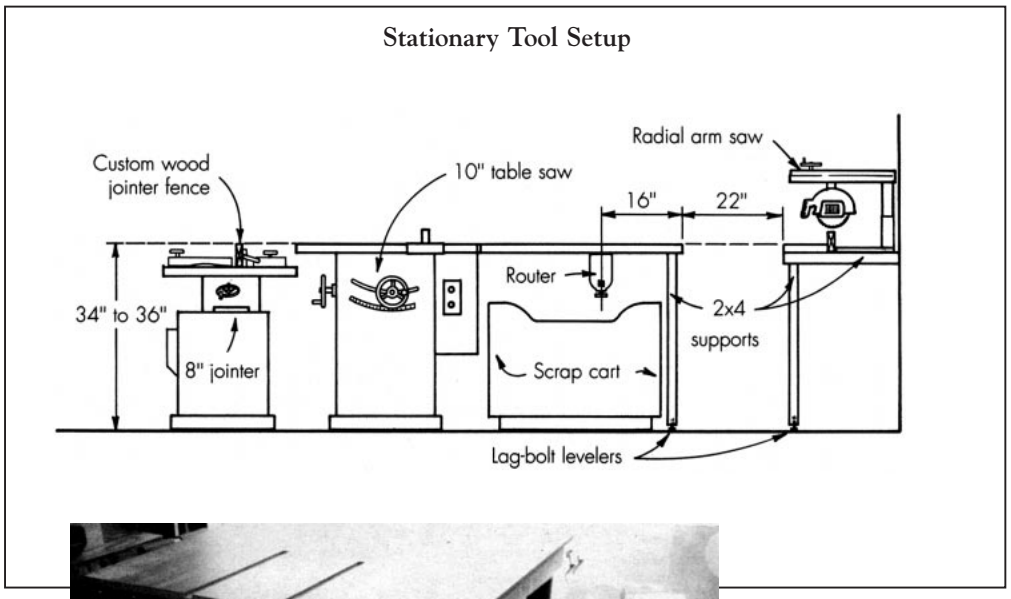
The heart of my shop is the table saw/jointer and radial arm saw stations. Nearly all the millwork and sizing operations are performed in this quadrant of the shop. A lot of thought and effort went into the positioning of these tools to produce the most efficient use of space without compromising their ease of operation.

The radial arm and table saws' cutting surfaces, as well as the top of the jointer fence, are all at the same height and leveled with each other (see Figure 2, next page). This allows the jointer fence to provide additional support for stock being crosscut on the table saw, while the radial arm's extension table provides secondary support for router operations (the router is mounted under the table saw's side extension table). In addition, the extension tables provide surfaces for other tools, such as a wood vise; and the mounted router can make use of the table saw's rip fence as a guide fence.

After carefully positioning the table saw and radial arm saw, I added two accessories that have made the greatest contribution to efficiency in my little shop. With an Excalibur fence system (Excalibur, 210 8th St. So., Lewiston, NY 14092; 800/387-9789) on the table saw, and a Biesemeyer sliding stop (Biesemeyer, 216 S. Alma School Rd., Suite 3, Mesa, AZ 85210; 800/782-1831) on the radial arm saw, I found I could literally throw away my tape measure (see Figure 3, next page). Whenever I cut a component to an indicated mark on the table saw's fence, a mating component set against the Biesemeyer stop, set to the same measurement, produces a perfect fit. I continue to be astonished at the speed and precision these tools bring to the work-life of my home workshop.

## Other Stationary Tools

There are only three other tools that demand permanent floor space



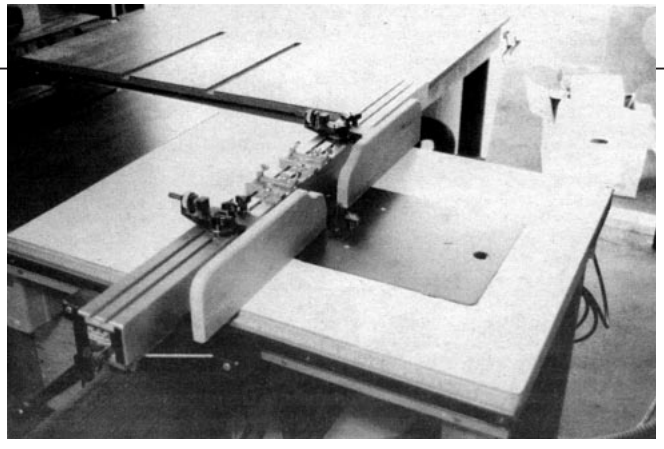



**Figure 2.** *The jointer, table saw, and radial arm saw are grouped together in the author's shop. The table saw and radial arm saw tables are at the same height, making it easy to slide materials from one surface to another. The top of a custom wooden jointer fence, also at the same height, acts as a material support on the left side of the table saw. The router, mounted under the table saw side table, makes use of the table saw fence (left).*

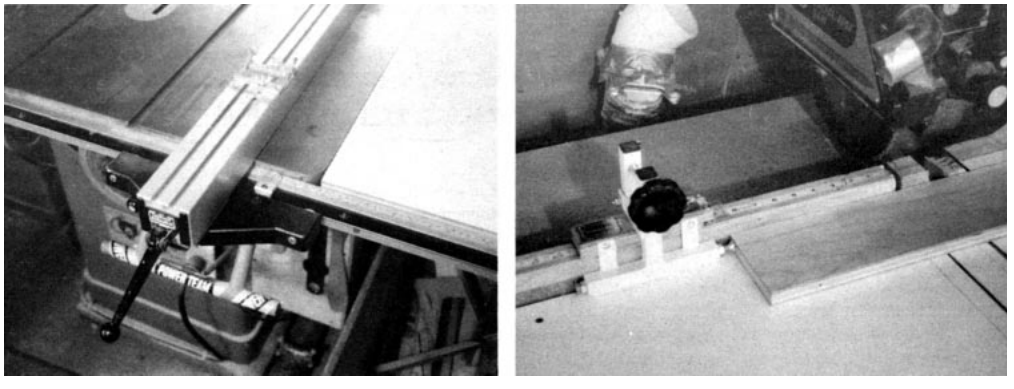


**Figure 3.** *To speed up cutting operations, the author added a precision T-square fence on the table saw (left) and an accurate sliding stop on the radial arm saw (right). These allow cutting without using a tape measure.*

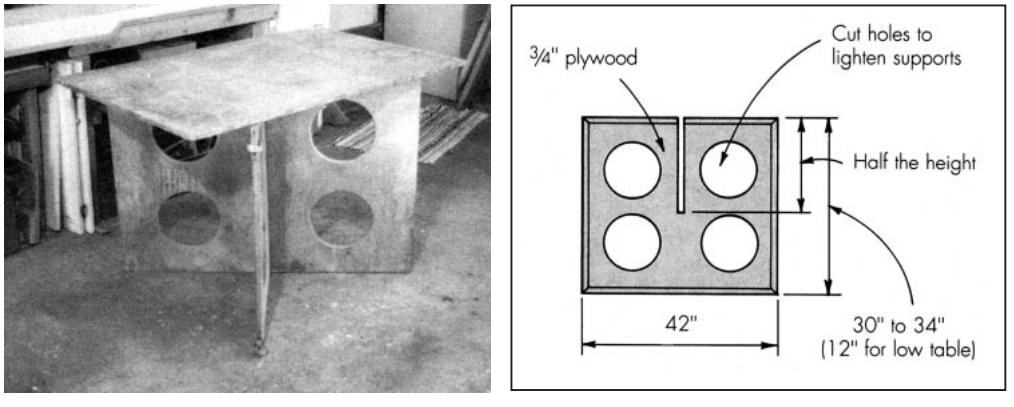



**Figure 4.** *Lightweight, knockdown plywood supports make it easy to set up work stations at different heights (left). When not in use, the supports hang on the wall. At right is the pattern the author uses to make the supports.*

in my shop: the drill press, band saw, and dust collector. If I did more molding work, I believe a shaper would probably oust the band saw. For my purposes, the extension table-mounted, three-horse Makita router (Makita USA Inc., 14930 Northam St., La Mirada, CA 90638-5753; 714/522-8088) works well.

While the band saw lives on wheels, and can be moved around the shop to get it out of the way, the drill press and dust collector are set in fixed positions. The dust collector is placed into a corner of the shop where it is outside the material flow; the drill press is located where it can be used in milling operations without encroaching on assembly or finishing processes.

### Shop-Built Fixtures

As I've mentioned above, there are a variety of fixtures that, once built, contribute immensely to the efficiency with which one can work in a small home-shop. Extension tables for the table and radial arm saws allow one man to handle large pieces of stock easily and efficiently. A knockdown, multipurpose work platform doubles as a large workbench and as an assembly or material platform while demanding almost no space from the shop when not in use. And a variety of rolling carts provide efficient means of moving tools, stock, and scrap through the production processes.

The extension tables are built up from 2x4s, 1x4s, and sheets of 3/4-inch plywood. I use lag bolts as levelers to aid in setting all the tables to the same height. When you build these, make sure that if you cover the surface of the table saw's extension tables with laminate, the *undersides* are laminated as well, to prevent uneven absorption of moisture from the air, and subsequent warpage. Finally, be sure to make the fence for the radial arm saw perfectly straight to ensure consistently accurate crosscuts.

The workbench/platform is made by sandwiching a framework of 1x2s between two sheets of 1/2-inch plywood. The lifts are cut out of 3/4-inch plywood and slotted to interlock with each other (see Figure 4). You can make several pairs of lifts for various tasks. A pair at 12 inches supports the platform during cabinet assembly, and a pair at 30 to 34 inches raises the platform to a comfortable workbench height. I cut holes in the lifts to lighten them and to provide a convenient way to hang them up out of the way when they're not in use. ■

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