Joinery Tools: Biscuit Joiners & Pocket Hole Jigs

Joining flat panels to make a box is the ultimate and basic goal of a lot of woodworking. There are a lot of ways to get there, from nails to fancy locking sliding dovetails. All the methods work, and all are valid when used properly. The problem is that most of the techniques require a number of large machines with special bits or blades. We wanted to keep things simple and strong. So when it comes to case joinery, we think you should choose either a pocket-hole jig or a biscuit joiner.

The pocket-hole jig bores an angled hole (a pocket) in one half of your joint with a special bit included in the kit. The pocket is sized and shaped perfectly for a special screw designed for the jig. You put glue on your pieces, clamp them together and drive in the screw. Most people conceal the pockets by placing them on the underside or backside of their work and some people plug them with specially angled plugs.

The biscuit joiner simply cuts out a recess on the edge of the pieces you are joining. The recess is shaped and sized perfectly for a thin wafer of beech or birch, called a biscuit. Add glue to the recesses, add the biscuit and clamp up your work.

Both of these modern gizmos are accurate, fast and easy to master. They both cost about the same and both produce joints that are strong enough for most woodworking jobs.

Biscuit Joiner

Choosing a biscuit joiner is going to be limited by what's available at your home center – most stores will have one or two brands at most. If you're ambitious, you can find a couple more to choose from at a local Sears.

They aren't significantly different at the low end of the price scale – but the ones that show up for less than $100 are usually things I'd avoid. These have plastic fences or oddball ergonomics or are a brand we have never heard of (all those factors are danger signs). Once the price of the tool hits about $150 or so, it's a contender.

Biscuit joiners (left) cut a football-shaped recess in two parts to be joined. The biscuits fit into that recess and (with a little glue) hold the joint together. A pocket-hole jig (above) allows you to join two pieces of wood without clamping. The only real downside is the fact that you have to conceal the holes made by the stepped drill bit.

Using a biscuit joiner is simple, but you really have to pay attention because it's easy to make stupid mistakes without knowing it. Essentially, the tool is a small plunging circular saw. Press the tool against your work and it cuts one-half of a football-shaped recess. Press the tool against the mating part and it cuts the other half of the joint. Add glue and a biscuit and clamp things up.

It sounds easy, but I've seen a lot of beginners struggle with this tool. The biggest problem is that the tool is not aligned where it should be when you make that plunge cut. It's not really a matter of being a little off on the left or right – the process

A textbook way of holding a biscuit joiner. Note that Bob's hip is braced against the rear of the tool. He'll shift his body forward during the plunge cut and use his arms to steady the tool.

is forgiving enough to allow you to miss your mark by a surprisingly large margin.

Where most people trip themselves up is in getting the up and down part right. If the fence isn't firmly on the work, or you tip the tool a bit, or it sags a bit under its own weight one of the slots is going to be off. You also can be thrown off by the tool's base. If it rests against anything – and you think you're referencing off the fence instead – you're in for trouble.

I think most problems come from over-confidence. The tool is so easy to learn and seems so effortless that the user starts moving too quickly. Plus, there's the problem of our sensitive fingers. Our fingers can feel a misalignment or ridge of just a couple of thousandths of an inch when pieces are not assembled in perfect alignment. I'm not saying you should be worried about a couple of thousandths – sandpaper can take care of that. But every error (even small ones) is magnified by the fact that it's an easy error for our fingers to detect.

There are a couple of ways to make sure your work is accurate. When you use the fence to position the tool, the trick is to slow down the pace of your work and ensure the fence is positioned flat on your work. Once you have the fence flat on the work, you need to make sure the tool stays positioned correctly as you plunge it into the work. A little misdirected hand pressure here or there can spoil the alignment. Senior Editor Bob Lang is a *connoisseur* of biscuit joiners and keeps one hand on the handle, one hand on the trigger and braces the tool against his body. When he plunges, he shifts his weight forward rather than relying on his arms to do the job.

The other option is to use your hand like a clamp, squeezing the fence and handle to plunge the tool. Personally, I've always put my fingers on the fence to keep it registered on the work. This operation opens up a remote chance for injury, but it does keep the fence in place.

The other way to get around the problem of the fence is to take the fence off and use the base of the tool as the reference surface. This involves working off your work surface, which might not always be convenient or possible. Once you remove the fence, you'll realize that when these tools are used this way they center a slot in 3/4"-thick material. Some engineer or tool designer was really thinking that day!

An alternate way to plunge: Squeeze the fence and tool handle together to make the cut.

The other thing you'll find with biscuit joiners is that you have to take care of your biscuits. Keep them in their plastic tube or in a sealed plastic bag. Otherwise they tend to swell and become too thick to fit in their slots. And that really stinks when the glue is out and the assembly is halfway put together.

(By the way, whatever you do, do not listen to the joker who tells you that you can shrink the biscuits by microwaving them. That is – as far as I can tell – a sick joke. We zapped a bunch of them in our lunchroom microwave a few years ago and I officially became persona non grata when the biscuits scorched and filled the lunchroom with a nasty smell. Even when we tried nuking them for less time, nothing happened except the biscuits got warm and a little smelly. Anyway, you've been warned.)

With all these issues, why are we saying it's a good tool? Biscuit joiners have one big advantage over the pocket-hole jigs: they create an invisible joint. There is no hole or screw head visible. The overall work looks tidier inside and out. Usually you can hide your pocket holes inside your projects, but with biscuit joints you can put the joint almost anyplace.

If you never had to turn a corner, woodworking would be much easier. Glue alone will hold two pieces together if both surfaces are along the length of the grain. When one of the surfaces is the end of a piece, however, a glued butt joint will fail under very little force. To reinforce the glue joint, you can do one of two things; add a fastener such as a nail or screw, or cut parts of the wood away to make a joint. Most joints provide both long-grain gluing surfaces and hold the two pieces together mechanically. Dowels and biscuit joints fall somewhere in between. They aren't really joints, but they aren't fasteners either. The advantage to nails and screws is they not only strengthen the joint, they act as clamps to pull and hold the parts together as the glue dries.

The disadvantage to nails or screws is that most of the time you don't want to see any evidence of them in the finished product. If you can drive the fastener from a side that won't be seen in the finished

Some woodworkers prefer to work without the fence when they can. Here we're using the Workmate instead of the fence, to control the tool. If you go this route, make sure your work surface is flat and debris-free.

product, you won't have to worry about concealing the evidence. Pocket-hole screws let you do just that by coming in at an angle from behind the finished surface. We're recommending it as the first joinery system to be adopted in the "I Can Do That" series. It is simple, strong and there are few things that can go disastrously wrong. In addition, it will enable you to put a lot of things together without needing to buy clamps.

Dowels and biscuits are an alternative, but we aren't suggesting either of those for the beginner. In the first place, you would need to invest in several clamps to hold the joints while the glue dries. Every time you move on to a larger project, you will need to get more clamps. The second reason is that pocket screws are simple to lay out and put together, and will keep your work moving along. You can screw a joint together and go on to the next one without having clamps in your way or a long wait for the glue to dry. The third reason is half practical and half philosophical. Dowels and biscuits were developed to make adequate joints in a production setting. Many woodworkers try one or both when starting out, only to leave their doweling jigs and biscuit-joining machines gathering dust as their skills develop.

Because they are a reliable, quick and hidden fastener, the pocket hole screw can often be found in advanced woodworking projects. When your skills have developed to the point where you can cut a nice mortise and tenon or dovetail joint, you will likely still find a use for pocket holes as a utility joint.

The difference between a pocket hole screw and a regular screw is the angle of the hole and screw. The 15° angle lets the head of the screw be accessed from the side of the piece rather than the end. This leaves a large elliptical-shaped hole, but if you plan ahead, you will make these holes where they won't be seen once the joint is assembled. The drill bit used is called a step drill. The large diameter is 3/8" to allow access for the screw head and driver, and the end of the bit creates a pilot hole for the screw threads. Because the angle is steep, you need a special jig to control the angle and the depth of the hole.

Pocket Hole Jig

When you go shopping for a pocket-hole jig, your choices will be based mainly on price. What you need to come home with is the right drill bit and screws, a way to guide the bit while you drill the hole, a way to hold the guide to the wood while you drill, and a way to hold the two pieces together while you drive the screws. You will also need a #2 square-drive screwdriver. Most home centers will have a basic kit for around $50. You might also see a guide and drill bit combination for $20. The $20 kit doesn't include any clamps, and doesn't have a fence to align it to the end of the board you'll be drilling. The lack of an alignment fence makes this very frustrating to use, and when you add in the price of the clamps you'll need, you'll be close to the $50 mark.

The $50 kit is a step up, but isn't quite what you need. To use it you must clamp the work and the guide to your bench horizontally. This can be slow and tedious, and it puts your hands in an awkward position when drilling. What we recommend, if it's in your budget, is a system that holds the work piece vertically and that can be fastened to your bench with screws. You probably won't find this at your local home center, but it's easy to find

This setup costs a bit more than the least expensive ones available, and less than the most expensive. It contains everything you need to get started in pocket-hole joinery.

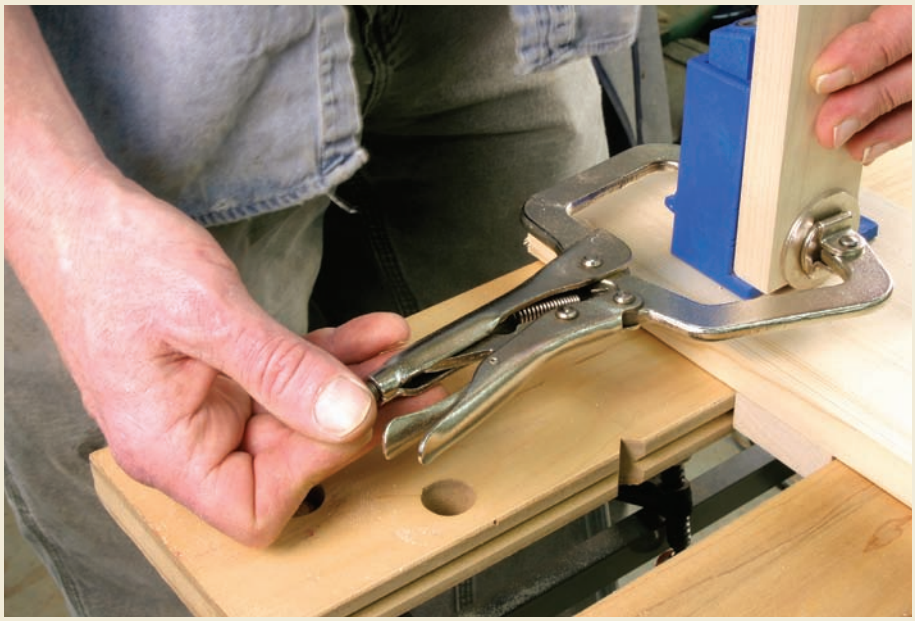
one online or through a catalog. We think the best choice for the beginner or the occasional user is the Kreg K3 standard pack. This includes all the bits and pieces mentioned above, and costs about $80.

Avoid any pocket-hole jigs that use a screw-type clamp to hold the work in place. The one we recommend uses the same locking pliers-style clamp to hold the work to the jig as you drill, and then to hold the two pieces together when you drive the screws. The more expensive kits have a lever-action clamp to hold the work in the jig, and a locking pliers-style clamp to hold the work together as you drive the screws. This is more convenient if you have a lot of parts to drill, or if you are working on panels more than 12" wide. With the Kreg K3, you can upgrade.

When you put the jig together, look for marks on the side of the part that holds the drill bushings that indicate the thickness of the stock you will be using. That should put the hole where you want it, exiting the end of the piece at or very close to the thickness of the stock. Next you need to adjust the clamp that holds the work on the jig. If you're using the locking-pliers clamp, fasten it to the jig, put a piece of wood in place and open the clamp. If it's too tight to clamp, loosen it up farther than you need to, close it and then tighten the screw until it makes contact with the wood. Open it back up, and tighten the screw another turn or two. The wood should be held firmly, but you should also be able to open and close the clamp without too much effort.

The last adjustment to make is to put the stop collar on the drill bit. When you drill the pocket hole, you need to control the depth so that the pointed end of the screw doesn't come out on the finished side of your work. With ¾"-thick material, a good place to start is with the end of the drill bit about ⅛" above the surface of the jig.

The screw will make its way through that last ⅛"; if you set the bit to go entirely through it can leave a little bump on the bottom that may keep the joint from coming together. Drop the bit in the jig, loosen the set screw on the collar, and slip the collar over the end of the bit. Lift the bit up about ⅛", letting the collar rest on the jig and tighten the set screw. Don't worry about being exact at this point. You will drill some test holes and make a practice joint to confirm your settings.

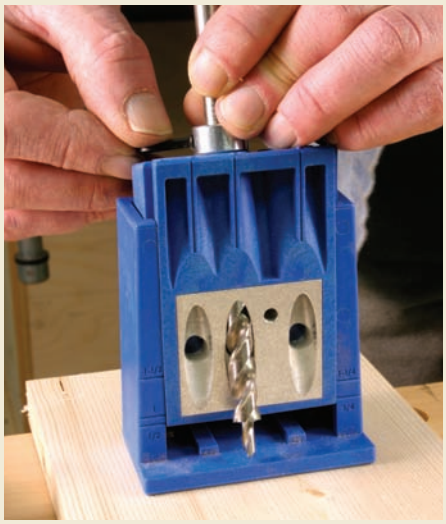


Adjust the clamp to hold the wood firmly in the jig without taking too much effort to set the clamp.

Place a piece of scrap wood in the jig and drill a hole, using the highest speed possible on your drill, checking to see that the stop collar doesn't slip on the drill bit and that the wood doesn't slip from under the clamp.

Remove the wood from the jig, place a screw in the hole, and drive it in. When the bottom of the screw head meets the bottom of the larger hole, you will feel it. Look at the end of the piece. The exit point of the screw should be close to the center of the board's thickness.

Next, you want to make sure that the end of the screw won't come out of the face of the piece you will be attaching. Hold the end of the piece of scrap with the screw in it against the face of the piece. There should be ⅛" or more between the point of the screw and the edge of the



Setting the depth of the stop collar is simple. With one hand, you can push the collar down on the jig and hold the tip of the bit about ⅛" above the jig. Use your other hand to tighten the set screw on the collar.

Use the high speed setting on your drill to make the pocket hole.

The screw should exit the end of the wood near the center of the board's thickness. Don't worry about getting it precisely placed. The next step will let you know if your setup will work.

Hold a piece of scrap against the piece with the screw in it. Check to see that the end of the screw is about 1/8" away from the surface.

wood. If there isn't, you need to adjust the stop collar on the drill bit. You're almost ready to make a joint, but first you need to adjust the locking-pliers assembly clamp.

Open the clamp and then close it on a piece of scrap the same thickness as the material you will be using for your joints. Adjust the clamping pressure in the same way you adjusted the clamp on the jig; open it up farther than you need to, tighten the screw until it makes contact with the wood, then open it up and tighten the screw another turn or two. When you use the locking-pliers clamp to hold two pieces together, keep the larger of the two pads on the finished face. This distributes the pressure along the surfaces you want to have lined up when you're done, and won't mar the work.

The most typical use for pocket screws is in a face-frame joint and the clamp is used to keep the pieces lined up, not to pull them together. If one piece meets the other at the end, hold them in line with your hand as you set the clamp. If they come together at any other point, you need to mark the location with your square, and hold the piece to the line as you clamp. Obviously, the end needs to be smooth and square for the joint to pull together and hold properly.

You need to decide where to locate the holes in the width of the piece, and that will depend on how wide the piece actually is. You want to use at least two holes if possible, as the parts could pivot on just one screw. If the material is 1½" to 2" thick, the middle of the board should be between the two closest-spaced holes on the jig. Once again, you don't need to be concerned about getting the board exactly centered; you only need to be close for the joint to work. If the work piece is wider than 4", use three or more screws. On wide pieces, the spacing between screw holes should be between 2" and 4". Don't waste your time measuring and marking exact locations, it's OK to do it by eye.

When you're ready to put the joint together, apply some glue to the end grain of the piece that the screws go in. As you practice, try varying the amount of glue that you use until you get just a small amount of squeeze out when you drive the screws. Using more glue than necessary will only create a mess to clean up, and can lead to some big problems when finishing. If you're driving the screws with a cordless drill, use the lowest speed available and the long driver bit that comes with the kit.

Line up the two pieces and set the clamp to hold them together.

You're not limited to face-frame joints with pocket screws. You can also join pieces on edge, but when you do this, you lose the ability to clamp them together with the locking pliers. Because the screw is being driven at an angle, it tends to push the pieces out of alignment so it helps to clamp them together while you tighten the screw.

One last thing – you really do need to use the pan-head screws that come with the jig. If you try using a screw with a countersunk head, it won't stop when it hits the bottom of the large diameter hole. The clamping action of this joint depends on the pan head stopping so that the threads can bite into the second piece of wood and pull it tight to the first piece.

The long driver bit that comes in the kit keeps the drill chuck away from the wood.

FASTENING TOOLS

Lots of furniture can be built using a hammer and screwdriver. Because these are two tools you'll never outgrow, you should select your first hammer and screwdriver with care.

A good wooden-handled hammer and a few nailsets can serve you for a lifetime. Avoid the fiberglass and metal hammers. They are not as forgiving on your joints (as in your shoulder and elbow).

Hammer and Nail Set

You'd think that there isn't much to be said about buying a hammer. It's just a metal rock on a stick, right? Well yes, but buying the wrong hammer will trip you up. Buy a hammer for making furniture, not some hammer for chipping rocks. We recommend a claw hammer that has a head that weighs 16 oz. and a wooden handle.

The all-metal and composite hammers work, but I find them less forgiving on your elbows and arms. I get sore a lot faster. The wooden hammers are, by and large, cheaper, too. And here's another bonus: You can sand off the junky, gloppy finish on the handle and finish it to your liking. Sanding it nicely up to #220 grit and then adding a coat of wax or linseed oil will result in a hammer that is a joy to pick up. Seriously. Most new woodworkers are loathe to modify or improve the wooden handles of the tools. Hello? That's why they're made of wood – so you can make them suit you.

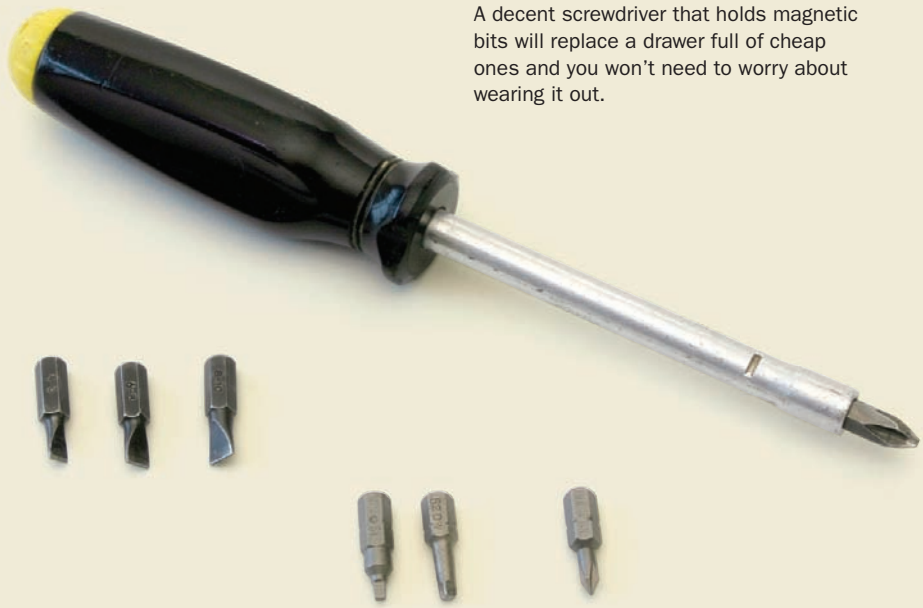
There are other things to look for, too. The business end of a hammer can be flat or slightly bellied. Go for the hammer with the bellied face – sometimes called a bell face. This results in fewer mis-strikes and allows you to drive the nail in much closer to flush than a flat-faced tool will.

Also, look at the claw. Does it stick straight out, almost straight out or does it curve down back toward the handle? If it doesn't curve much it's called a ripping hammer. These hammers are used for disassembling things – the claw is actually a crowbar. You want the claw to curve down – this gives you more leverage to remove a nail.

Using a hammer is straightforward, but keep these tips in mind. There are two basic grips. One is the power stroke. You grasp the end of the handle to get more bang when driving a nail. If you're after more control, choke up toward the middle

This is the power stroke with a hammer. When you build a deck, or really need to wallop something, grip the tool at the end of the handle. Sticking your thumb out will help steady the tool a bit.

By choking up on the handle you can gain some finesse and reduce the force (sometimes a good thing, really). Note again the position of my thumb.



A decent screwdriver that holds magnetic bits will replace a drawer full of cheap ones and you won't need to worry about wearing it out.

of the handle and extend your thumb. This will reduce the force you transmit into the nail (which can be a good thing) and it will help keep your strikes where you intended them to be.

Also, there's a lot of confusion about how to buy nails. Most places denote the length of a nail using the English pennyweight system. The origin of pennyweight is a mite murky, so let's stick to the facts. Pennyweight is denoted by *d*. So a two-penny nail is 2d. And a 2d nail is 1" long. For every penny you add, the nail gets 1/4" longer. So a 3d nail is 1 1/4" long. A 4d nail is 1 1/2" long. A 5d nail is 1 3/4" long. And so on.

You select your nail's length based on the thickness and density of the boards you are using. Here's how the old rule works:

1. Determine the thickness of your board in eighths of an inch. For example, a 1"-thick board would be 8/8. A 3/4"-thick board would be 6/8. And so on.

2. For a wood of medium density (walnut or cherry, for example), pick a nail where the pennyweight matches that thickness – an 8d nail for 1" stock. A 6d nail for 3/4".

3. For softwoods (white pine), select a nail that's one penny larger. For harder woods (maple), use one penny smaller. This seems complex at first, but it quickly becomes second nature.

Once you drive a nail into your work, you'll almost always want to *set* the nail so the head is slightly below the surface. Then, for nice pieces, you'll putty the hole. The tool to do this is a nail set, which is essentially a pointy steel rod. The shaft is knurled so you can hold onto the tool easily. The tips come in a variety of shapes and sizes. Because nail sets are inexpensive, buy a variety of sizes, mostly ones with small tips, which are suited for woodworking (as opposed to deck building). Get at least one nail set that has a cone-shaped tip. Some finishing nails have a matching depression on their heads and the cone-like tip helps secure the nail set as you strike it.

There are only a couple ofthings to remember about using a nail set: When you hold it, it's best to keep the edge of your hand against your work – don't suspend your hand in space as you grip the set. Grasp the nail set between your thumb and forefinger. Pound away until the nail head is 1/16" to 1/8" below the surface of the wood.

Screwdrivers

One of the easiest mistakes to make when buying tools is to snap up a bargain thinking you are getting all the tools you will ever need in one decisive move. This is especially true with screwdrivers. In the tool aisle there will always be a great deal on a complete set of screwdrivers. If you aren't sure what you need, and what the difference is between a good quality tool and a poor one, it's tempting to spend $20 for a set of screwdrivers, especially when a single screwdriver might cost $7 or $8.

You will need the ability to drive and remove several different sizes and types of screws, but you don't want to buy a cheap set and you don't want to spend a small fortune buying a bunch of individual tools. What makes the most sense is to invest in a good-quality handle that will hold different driver bits. Look for one that holds the same short bits that are used for driving screws with a cordless drill. The one in the picture has been in use for more than 10 years, and stores extra bits in the handle. It replaced a drawer full of miscellaneous screwdrivers.

The tip of any screwdriver is the part that takes all the abuse from the twisting forces exerted on it. The screwdrivers that come in sets won't last very long. If you buy an inexpensive set, you will soon find yourself the owner of several screwdrivers with damaged tips (the ones you need to use most often) and a few good ones you likely won't ever need. When you try to use the good ones you have left you will find they are a little smaller than they should be to fit the screw. This in turn will damage these drivers (or the screws) and eventually you will have fifteen or twenty tools that are only useful for prying open paint cans.

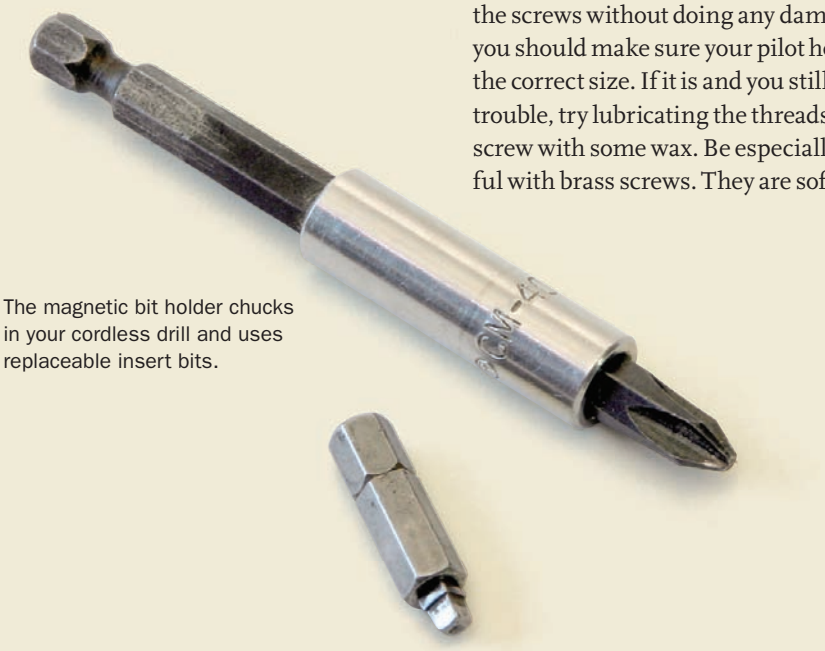
If you're using individual bits, damaging one bit or needing a new size or type

This selection of bits will fill most of your woodworking needs; small, medium and large slotted, #1 and #2 square drive, and #1 and #2 Phillips.

The square drive holds so well that the screw will hang on the end of the bit.

has a quick, inexpensive solution. You should pick up a set of bits of different sizes and types, but once again you should avoid the temptation of buying a cheap set that includes everything you'll ever need in favor of a quality set of the few you will really need.

The one size you will need most often is the #2 Phillips. The crossed recess of this bit is much easier to use than the common slotted screw because the driver will center itself in the screw head and won't slip sideways as you turn it. If you have a choice when buying screws for assembling woodwork, get Phillips, not slotted heads. Drywall screws are more brittle than woodscrews, but work fine in most cases and cost less.



The magnetic bit holder chucks in your cordless drill and uses replaceable insert bits.

The downside to the Phillips head is that the end of the bit will eventually wear out. When a Phillips-head screw is fully tight, the bit slips out of the recess in the screw head. This helps you keep from over tightening or stripping the screw, but it is hard on the driver. Get several extra bits of this size.

The #1 Phillips is smaller, and you won't use it as often as the #2. Usually it is only used for attaching hardware, not in building. There is a wood screw called a trim head screw with a very small head that comes in either a #1 Phillips drive, or a #1 square drive. If you have the choice, go with the square drive. Like its big brother, the #1 Phillips is susceptible to damage and once the bit is torn up, it will start damaging the screws. If you are attaching hardware and can't drive the screws without doing any damage you should make sure your pilot hole is the correct size. If it is and you still have trouble, try lubricating the threads of the screw with some wax. Be especially careful with brass screws. They are softer than the tip of the screwdriver and are easily damaged. Try driving in a steel screw of the same size first to cut the threads, and lubricate the brass screws. There is a large, #3 size of Phillips head, but it isn't likely you will need one unless you are working with large diameter screws. If you have a large screw, and your #2 bit has a sloppy fit in the screw head, you need to head to the store and get a #3 driver bit. Square-drive screws won't slip out of the recess when the screw is tightened, and generally work better than Phillips. A square-drive screw will hang on to the tip of the driver by itself so it's easier to use if you have to reach in a tight spot. You can apply more force to the square drive without it slipping or damaging the screw head. Pocket-hole screws use a #2 square drive, and the trim-head screws mentioned earlier use a #1 square drive. With either of these applications, don't use Phillips-head screws if you have a choice. Square-drive woodworking screws can be hard to find at your local home center, but they are readily available from online and catalog sources. Many woodworkers prefer the square drive for all applications, but you will still need to have other bits on hand. Slotted screws used to be called common screws because the vast majority of screws were made with that type of head. The technology to manufacture other types was developed after the 1930s. The newer types are much easier to use, and less likely to damage either the screw or the screwdriver in use. There's an excellent chance that you will come across them, so having the appropiate bits on hand is a good idea. If you have a cordless drill, you'll probably use it for driving screws as well as drilling holes. A magnetic bit holder will make your life much easier. It's a lot easier to handle and holds better in the drill chuck than the smaller individual bits. In addition, the magnet will hold the screw to the driver, making it much easier to place the screws where you want them. When you drive screws with your drill, adjust the clutch settings so that the clutch engages at the point where the screw is tight. This will keep you from driving screws in too far or stripping the threads. It will also extend the life of your drill.

WORKHOLDING

Your accuracy will be greatly increased if you can immobilize your wood as you work it. And that's why you need some kind of bench and clamps. Here is a bare-bones but workable setup.

Workmate

You need a surface to work on, but it doesn't have to be fancy or even permanent. A couple of sawhorses and a solid door is a primo break-down work surface but I think the case can be made that you can build almost anything on a Workmate.

These wonders of engineering and marketing have dominated home garages since they were introduced in the early 1970s. (If you want to read a fascinating history of the Workmate, pick up a copy of Scott Landis' *The Workbench Book*.) The workmate is going to cost you anywhere from $50 to $100 (or hit the garage sales; they're everywhere). And for your money you're going to get a workstation that can be positioned at two heights: Kinda low, which is great for sawing and kinda high, which is good for everything else. Plus you get a big workholding kinda-sorta vise. It's not going to do the job of a big metal woodworking vise, but with the plastic dogs provided with the Workmate, you'll be able to clamp most things.

One nice thing about a Workmate is that it folds up reasonably flat so you can stow it away or throw it in your trunk. Plus, it's not something you'll ever outgrow. Even if you become a professional cabinetmaker and have $100,000 in tools you'll still find a good use for your Workmate.

There are some off-brands out there. We haven't used them. They might be fine; they might not. You're on your own there.

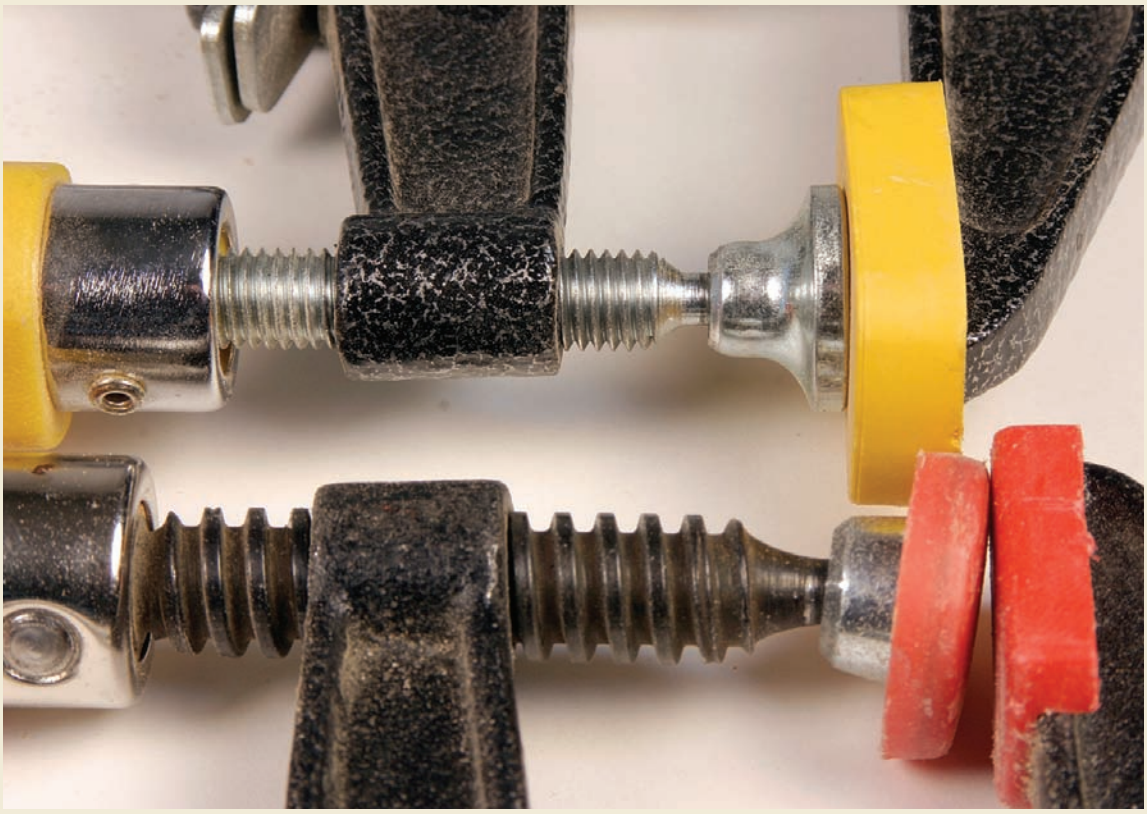
You won't outgrow your Workmate – I've always had one in my shop. It's a bench, vise and (don't tell) a big stepstool. The new ones are good, but if you can find an older one, you'll have found a friend for life.

Clamps

You need some clamps to hold your work while you cut it or drill it and to hold parts together while the glue sets or you drive a nail or screw. People spend a fortune on clamps, and someday you might also do the same. But to get started, we think you need only about six clamps.

F-style clamps are so named because they look kind of like an *F*. Usually they have a wooden or plastic handle. The typi-

These two F-style clamps are absolutely your best friends when working wood. They hold things in place as you cut and shape them.



The threads on the clamp (bottom) are Acme threads. This is a durable, lifetime clamp. The cheesy threads on the clamp (top) above will strip out eventually.

cal and most useful of all F-style clamps has a bar that is about 12" long with a throat (the distance from the bar to the tip of the clamping pad) of about 3".

How do you pick a good F-style clamp? Good question. I hate – let me repeat that, hate – cheap, cheesy clamps. They usually aren't much less expensive than the good stuff, but they are much less useful and durable. Even if you abandon woodworking, you'll probably keep your F-style clamps to hold stuff for household repairs.

The teeth on the left are on the cheaper clamp. They're coarser and are only on a small portion of the bar. The teeth on the right are finer and there are more of them.

So how do you separate the good clamps from the bad? The first place to look is at the metal screw between the handle and the pad. Look closely. Think of the threads like mountains and valleys. Some screws will have threads with a pronounced flat or plateau at the top of each mountain. Some will have a sharp peak. Likewise, the mating valleys can be either flat or pointy.

The flat-topped threads are commonly called *Acme* threads and are far superior. They are more durable. They don't seem to get gummed up as much. They generally work faster. They are also more expensive, but they're worth it.

The other thing to look for on the clamps is the *teeth* or serrations that are cut into the bar. Cheap clamps will have teeth that are short and spaced far apart. Good clamps will have finely milled teeth that are generally bigger. I know all this stuff sounds minor, but it really makes a difference. Also, some clamps come with plastic pads on each head; some don't. Don't walk out of the store without pads for your clamps, otherwise you'll mar the work.

The F-style clamps will hold your work down as you cut, drill and shape it, though they also can be used for holding pieces together when you're gluing things.

For most assembly tasks, you're also going to want bar clamps. These are remarkably similar to F-style clamps in that they have the same issues with their threads and their teeth. The other factor is the bar itself. Many woodworkers use pipe clamps for assembly chores. Pipe clamps are made from plumber's pipe. You screw the clamp parts onto the threads of the pipe – instant clamp of any length.

Other bar clamps come with a bar made of aluminum or some other metal. Now a lot of people are going to talk to you about how much these bars flex under clamping pressure. Truth is, they do all flex. But here's what's important: If the bars of any clamp are flexing so much that they're distorting your assembly, then there's something wrong with your assembly, not your clamps. A well-cut joint will close with just a little clamp pressure. If you're using your clamps to make up for a poor joint, you'll be sorry later – the wood always wins in the end.

So don't get too worked up about the bar material. Pick a bar clamp that fits your budget and has quality screw threads and teeth on the bar. You'll be fine.