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Using Chainsaws on the Job Site

These cordless tools will help you cut your way out of tight spots and through thick timber

by Scott McBride

A big offcut. **The cantilevered joists for this bay were run long and must be cut back. If you cut from the top down with a circular saw, you risk splitting a piece off the bottom. To prevent this, use a chainsaw and cut up from the bottom several inches, then finish the cut from the top.**

To my constant amazement, chainsaws are usually written off by carpenters as "butcher" tools. Just mention chainsaws to most people, and they think of tree surgery or firewood. But mention them to me, and I think of putting in a bay window. I've used a minichainsaw for over 10 years now and believe it can be one of the most versatile and potent tools for the remodeler and stick builder.

I won't pretend that a chainsaw can substitute for a circular saw, but a chainsaw can make all the difference in tight spots or where the material you need to cut is too thick for your circular saw to handle. You can use a chainsaw to make cuts accurate to within ⅛ in. and to reach into places where no other saw can go. The chainsaw's speed, of course, is legendary. And to top it off, a gas-driven minisaw, weighing less than 9 lb., is the ultimate cordless power tool.

I've used a minichainsaw for over 10 years now and believe it can be one of the most versatile and potent tools for the remodeler and stick builder.

To use a chainsaw to advantage, there are three basic things you need to take into account: what cuts are better made with a chainsaw, how you can use the tool safely and efficiently (see sidebar facing page), and how you can keep it sharp and running right (see sidebar p. 42).

Rough-cutting planks and timbers—With a little practice you can get square, accurate cuts

Chainsaw safety

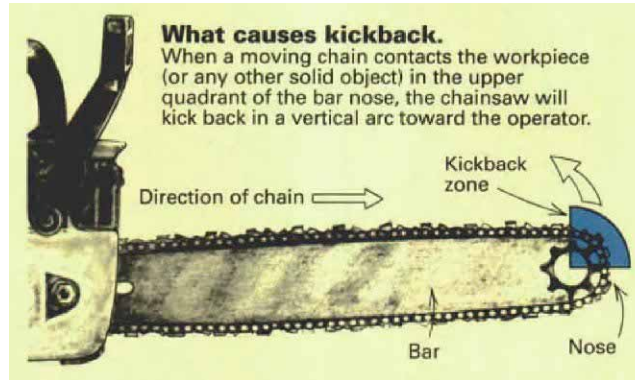
A chainsaw can gnaw into flesh and bone with astounding viciousness and speed. This is a tool you must take seriously. Knowing what you're doing is not enough. You must prepare yourself mentally for every cut and prepare your workpiece and work area for a safe operation. If your gut feels queasy about making a certain cut, take heed and alter your approach.

Prevent kickback—The chief cause of chainsaw injuries is kickback. When a moving chain contacts an object around the upper quadrant of the bar nose, it will kick back, which is why the upper quadrant of the bar nose is known as the kickback zone (see drawing below). The object encountered by the kickback zone may be something contacted accidentally, such as a tree branch, or it may be the work itself, if the bar nose is buried in the cut. If the object contacted is very hard, such as a nail, the kickback may be severe. Whereas a circular saw kicks straight back, a chainsaw bar will kick back in a vertical arc toward the operator so that wounds usually occur to the face and the shoulder.

The risk of kickback is particularly high in carpentry work. For one thing, you have to sight directly down the bar to achieve an accurate cut. When cutting firewood or anything where precision isn't a concern, you should always stand to one side of the cut to stay clear of the bar's path in the event of kickback. For another thing, in carpentry you're more likely to encounter nails and other metal objects embedded in the wood or lurking unseen behind it. Biting into metal can cause a nasty kickback.

To prevent kickback, first inspect the wood carefully around the line of your cut and make sure it's free of nails and other hazards. Second, clear the area where you will be standing of any construction debris—stumbling over an offcut or a tube of caulk can put the saw into a dire dance with skin and bone, yours or someone else's. Third, adopt a posture that gives you solid, secure footing—one that sets up your body to resist kickback. Usually you'll be working below waist height, so you can keep your left arm fully extended and still see the cut. Lock your left elbow, curl your thumb under the handlebar and bend your knees slightly, as shown in the photo on the facing page.

The more power your saw has, the more powerfully it can kick back, which is a very good reason for using a chainsaw with as little power as possible. Minisaws are now sold with safety devices to prevent kickback, such as chain brakes or safety bars. Older models may not have these features. Also, you can decrease the severity of kickback by using chain that's engineered for low kickback potential. This chain is now standard on many minisaws, and you should ask your dealer about one when buying a saw or ordering a new chain,



Make plunge cuts carefully—Plunge-cutting is inherently dangerous because it's performed with the nose of the bar rather than with the edge. Saws come with a guard that's clamped to the upper quadrant of the bar nose. The guard covers the kickback zone and must be removed to make plunge cuts. Be sure to put the guard back on when you're done plunge-cutting. And whatever you do, don't attempt plunge-cutting until you're well practiced and confident in using the saw in a conventional way.

To begin a plunge cut, press the lower quadrant of the bar nose into the work. Hold the saw at an angle so that the upper quadrant of the bar nose—the kickback zone—clears the work as it passes through. If the cutting action at the bar nose shifts from the lower quadrant to the upper quadrant, the saw will suddenly stop pulling and will kick back. So take care not to let that happen.

Practice safe technique—If you're a beginner, get familiar with your saw in a safe, controlled environment. Start off on a longish medium-size log or timber. Prop it up 12 in. or so above the ground and secure it. Don't try holding it with your foot. After warming up the saw for a minute, practice by cutting off small pieces from the top down and from the bottom up. As you'll discover, cutting from the top down causes the saw to pull away from you while cutting from the bottom up causes it to push toward you. Notice that sawdust flows in a direction opposite to the thrust of the saw, and tearout occurs mainly on the side toward which the sawdust is flowing.

Protect your ears and eyes—Because a carpenter sometimes works at eye level and cuts wood that's generously sprinkled with metal, it's even more important to wear eye protection on the job site than in the woods. When working close to the bar or in line with it, wear a full face shield.

Because a chainsaw will make more racket than any other power tool you own, you had better protect your ears. I prefer the squishy little roll-up earplugs; they're a lot more comfortable than the headphone type, and they don't interfere with goggles and headgear. —*S. M.*

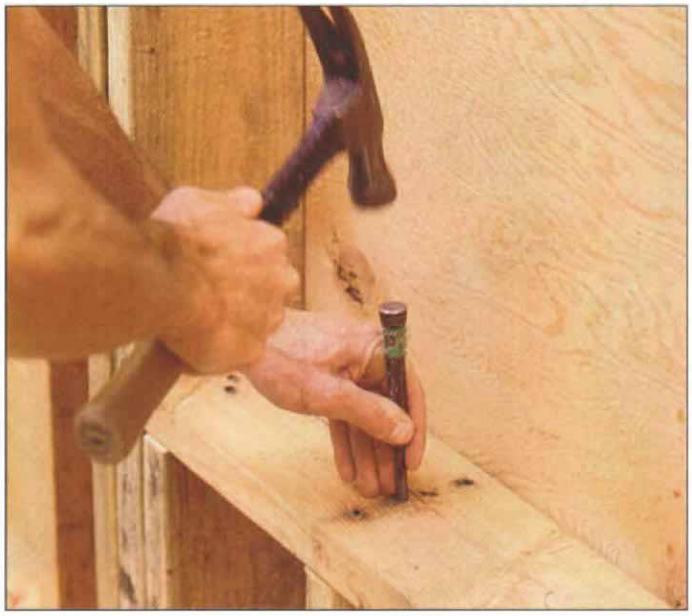
on material too thick for your circular saw—posts, lintels, beams and landscape ties. Lay out the cut on two adjoining faces, throttle the motor up to full speed and approach the work with the lower edge of the bar at a 45° angle to the workpiece so that it will follow both lines out from the corner. Use a smooth, steady stroke. The process has more in common with good handsaw technique (see "Using a Handsaw," p. 60, this issue) than with using a circular saw.

If the timber is heavy enough to resist the tugging of the chain, or if it's secured in place, you can use the middle of the bar. But if you think the workpiece might move, you'll have to hold the powerhead, or body, snug against the work to support it and roll into the cut with the lower edge of the bar. In this case the front of the powerhead acts like the shoe of a jigsaw. Cutting this way, however, obscures one of the cutlines, so you'll have to gauge squareness by feel.

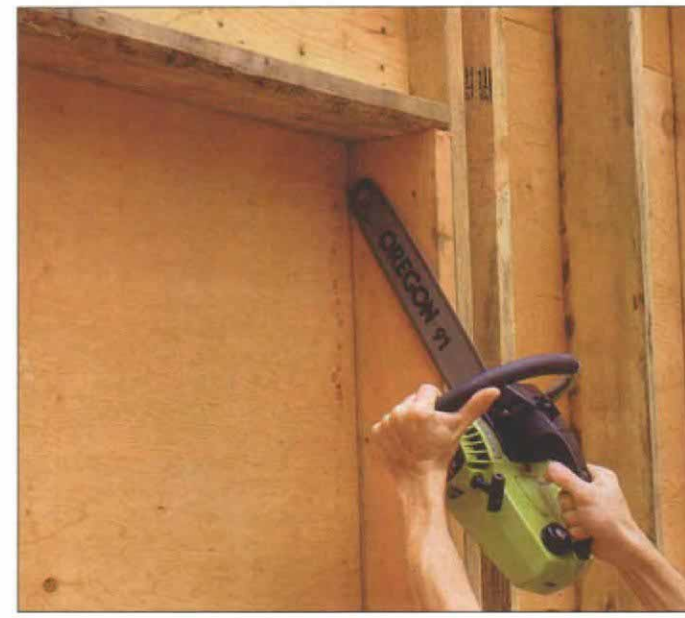
Chainsaws are great for breaking lumber down into rough lengths, to be retrimmed later with a circular saw. Say your lumber pile is down on the sidewalk, and you need a 6-ft, header from the stack of 20-footers below. You carry the minisaw down, nip off the header at 6 ft. 1 in. and then trim it back on the deck.

Another example: You lay down a set of cantilever joists for a 45° angle bay, all the same length, intending to trim them back with a worm-drive saw. The middle joists have only a few extra inches, but the joists in the angled part of the bay stick out several feet beyond where they need to be cut. If you cut these straight down with the worm-drive saw, you risk splitting a piece off the bottom edge due to the excessive outboard weight. To prevent this, use the same technique used by tree surgeons to remove a limb safely—chainsaw up from the bottom a few inches, then finish the cut from the top down (photo facing page). With the bulk of the weight removed, you

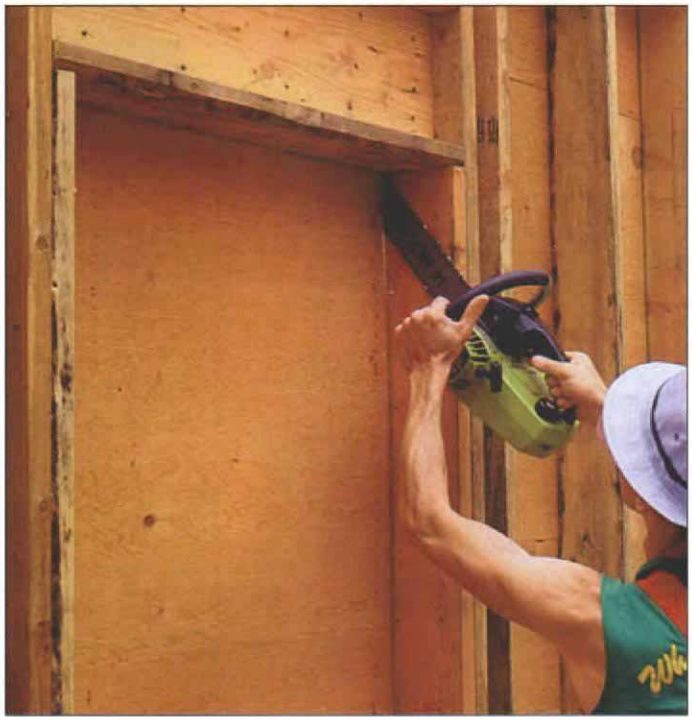
Drawings: Bob Goodfellow



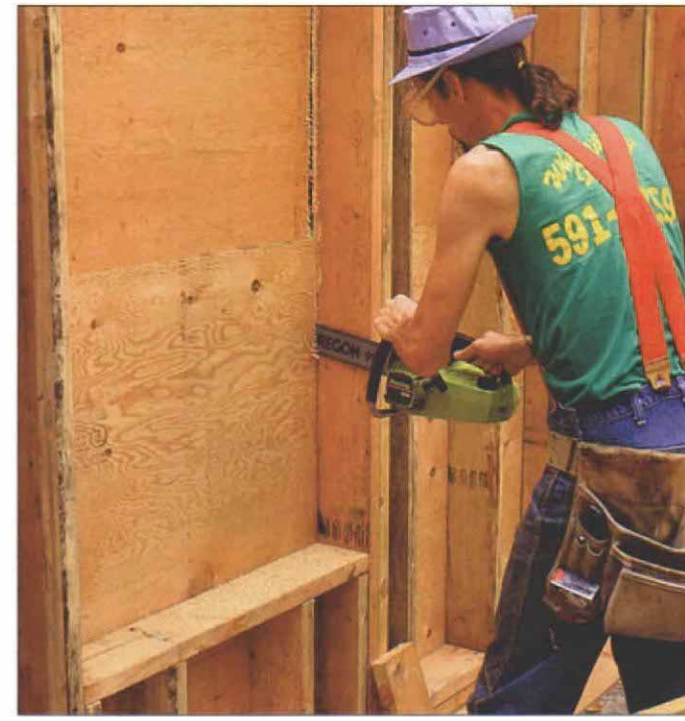
1. Set the nails. **A ¼-in. pin punch is used *to* drive framing nails below the surface and out of the chainsaw's path.**



2. Start at the top. **Using the lower quadrant of the bar nose, the author plunges the chainsaw through the plywood.**



3. Going up. **After plunging the saw well into the plywood, the author cuts up to the corner before cutting downward.**



4. Coming down. **To minimize tearout on the outside, most of the cutting is done with the bottom edge of the bar.**

can trim neatly back to the actual cutline with your circular saw.

Cutting compound angles—The same basic technique used for square cutting applies to compound-angle cutting. Say you're making a cheek cut on a hip or valley jack rafter. The cutline on the edge of the rafter is at one angle, and the cutline on the face of the rafter is at another. If the edge-cut angle is less than 45°, the angle will be too sharp, and the cross section of the cut will be too deep for a circular saw to handle. So I get out my chainsaw. After marking out the cut, stand the board upright and position your eye so that the edge cut and the face cut appear as a single straight line, as shown in the drawing on the facing page.

Cutting this way means that your head and shoulder are in the path of the bar if the saw kicks back. So you have to take extra precautions. Secure the rafter stock by spiking it to a post and make sure there are no nails in the area of the cut. Spread your legs for solid footing, lock your arms and drop the saw smoothly through the cut without twisting it.

Cutting plywood and flakeboard—One of the best uses for chainsaws is cutting out sheathed-over door and window openings. From the inside, plunge through the sheathing at a corner and follow down and across along the outline of the framing (photo sequence above). To minimize tearout on the outside when cutting plywood, do most of the cutting with the bottom edge of the bar. This will pull the wood fibers inward to be sheared off against the framing. Look out for nail heads. I carry a ¼-in. dia. pin punch for setting framing nails below the surface.

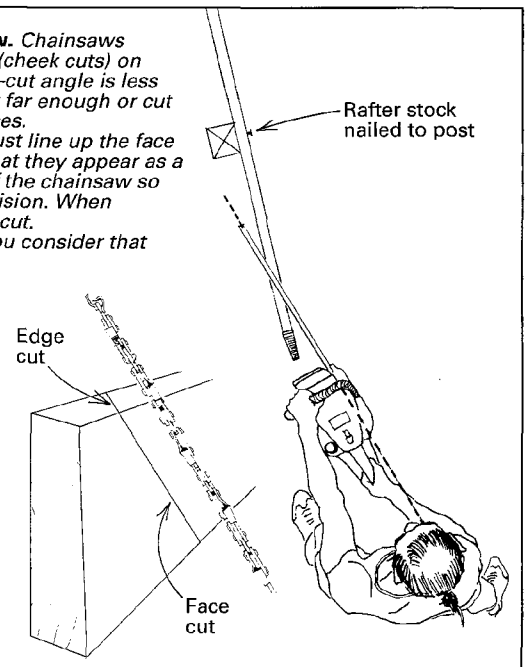
Crosscutting plywood with a chainsaw can produce some serious tearout. To reduce it to a minimum, maintain as low an angle as possible between the work and the bar.

Blind-cutting—Chainsaws are unsurpassed for cuts that have to stop short. A common example

Cutting jack rafters with a chainsaw. *Chainsaws work well for cutting compound angles (cheek cuts) on hip or valley jack rafters where the edge-cut angle is less than 45°. A typical circular saw won't tilt far enough or cut deeply enough under these circumstances.*

To cut rafters with a chainsaw, you must line up the face cut and the edge cut with your eye so that they appear as a single line and then introduce the bar of the chainsaw so that it also lines up along this plane of vision. When everything coincides, you can make the cut.

This all sounds simple enough until you consider that holding the saw as I just described violates the first rule of chainsaw safety: Keep your face and shoulder out of the plane of cut because that is where the saw will go if it kicks back. But lining up like this is the only way I know to produce a check cut that fits precisely. As a result, I use extra caution when I'm cutting this way. I spike the rafter stock to a post or some other solid object, leaving the end to be cut sticking well out in midair. Then I check the stock carefully for nails. I give myself plenty of working room, especially behind me. I keep my arms firmly locked and my legs spread, and I drop the saw through the cut, without twisting. —S. M.



is removing a section of bottom plate from a door opening without cutting the subfloor (top photo, right). A similar situation, often found in remodeling, is framing an opening into an existing wall without destroying the sheathing and, especially, the siding. To frame the opening, one or more regular studs will have to be cut mid-span and turned into cripple studs. Make the cut 1½ in. below the opening to allow for the thickness of the rough sill. It's a blind cut because you can't see the backside of the cut.

This job is most often done with a reciprocating saw. But in trying to get that last little sliver up against the back of the sheathing, the tip of the reciprocating-saw blade invariably smacks into the wall. This results in a bent blade, and the kickback is liable to bruise your knuckles or, better yet, thrill you with a direct hit on the funny bone.

Enter the chainsaw. It can cut down to the sheathing and stop without difficulty. The only danger is hitting a nail. Experience teaches you to listen for the telltale clackety-clack of a chain hitting steel, and you can stop cutting before doing too much damage to the cutters.

In new construction, after a session of plumbing and lining wall frames, many of the braces will be left sticking up above the plates. To keep them from interfering with the framing above, I use my chainsaw to nip the ends off flush with the plate. To keep from loosening the brace, I use the top edge of the bar. This is called push-cutting because the thrust of the moving chain pushes the saw away from the work. Cutting with the lower edge of the bar is called pull-cutting because the saw wants to pull away from the operator while in use.

Hewing, notching and shaping—Chainsaws are highly effective for many of the rough hewing and shaping jobs that have been traditionally performed with hatchet and chisel. Setting a twisted beam on top of two posts is an example. One end of the beam or the other will not have a firm bearing, so it needs to be fudged. By gingerly sweeping back and forth with the lower edge of the bar, a parallel, flat edge can be produced on the cock-eyed end of the beam in seconds.

The lower quadrant of the bar nose can be used for dishing. How many times have you found anchor bolts set too low to clear the top of the mudsill? Mortising with a chisel is messy and time-consuming, but a chainsaw will scoop out a nice, neat crater for the nut in the time it takes to tell about it (bottom photos, right).

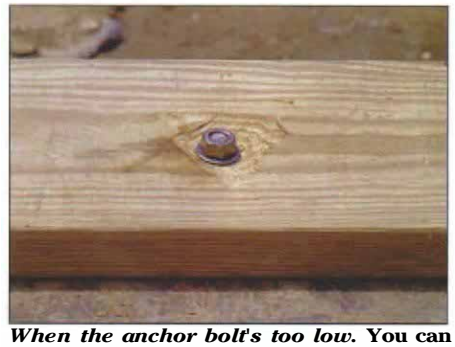
Another use for chainsaws when sheathing is to flush up irregularities in the framing surface. For instance, members that intersect exterior walls, such as plates and ridge beams, are sometimes run too far through. To grind down the protruding end grain, I gently sweep it with the lower quadrant of the bar nose.

When large amounts of wood need to be removed, such as when beveling a stairwell header for additional headroom, I make scoring cuts with the chainsaw every couple of inches. The intervening chunks can be busted off easily with a hammer, and you can fine-tune with a hatchet or by sweeping with the bar.

The wide ⅜-in. kerf on the chainsaw has its uses, too. When building an open deck, I flash up under the siding and out over the deck joists about 6 in. To keep water from running back under the flashing, I make a shallow chainsaw kerf in the tops of the joists about 3 in. away from the house. The kerf catches the water and diverts it downward.

My chainsaw even comes in handy for finish work. When scribing trim or paneling to irregular surfaces, it's sometimes necessary to make a long, tapering undercut. You can whittle off the wood with a knife or a carving gouge, or you can clamp the piece to a board and relieve the back with deft sweeps of your minisaw. Guess which is quicker. The same technique

Removing the bottom plate. **Chainsaws easily remove a doorway's bottom plate.**



When the anchor bolt's too low. **You can use a chainsaw to scoop out a crater for the nut when you're bolting down mudsills.**

Chainsaw maintenance

There are two golden rules for chainsaw maintenance: Keep the air filter clean and the chain reasonably sharp. Carpenters must pay even closer attention to their air filters than do wood cutters for two reasons. First, carpenters are often working in dirty conditions with little ventilation. Second, because they're cutting abrasive materials like plywood, as well as the occasional nail, they just won't be able to keep the chain razor sharp. That means fewer flakes and more powder, which will quickly clog an air filter.

Clean the air filter often—Check the air filter every tune you refuel. Screen-type air filters can be blown clean with compressed air. Foam filters must be rinsed in kerosene, then dried and oiled before reinstallation.

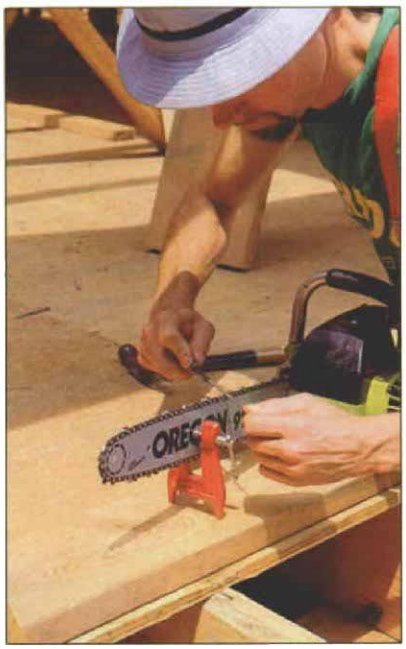
Clean everything—Cleaning a saw completely from time to time is a good idea. Slack off on the chain and remove the clutch cover, the chain and the bar. Scrape off most of the gunk with your finger. Then brush or blow off the remaining dirt and wipe down everything with a rag dipped in kerosene. Don't drive any dirt into the port where the chain oil is delivered to the bar. Keep the carburetor shroud on during heavy cleaning to protect the delicate carburetor parts.

The carburetor should be dusted off occasionally. Blow or brush it gently while holding the saw in an inverted position so that dirt can't fall into the air-intake orifice.

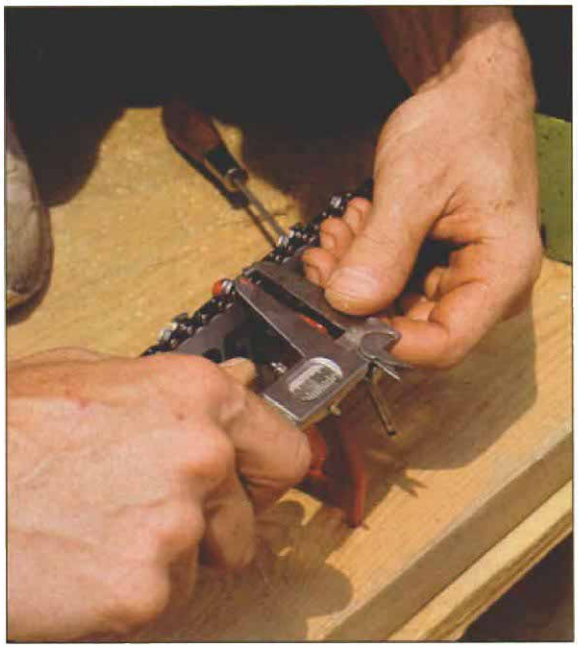
Clean the chain by soaking it in kerosene, then hang it up to dry. Wipe the bar clean and use the edge of your raker gauge to plow gunk out of the groove. The raker gauge is a sharpening tool I'll describe later. Clean the little port at the base of the bar that delivers oil from the powerhead into the groove. If you have a sprocket-nose bar, pump a shot of grease into each of the two little holes in the bar tip until it oozes out at the run of the groove. Before remounting the chain, squirt it. with a nice bead of household oil. Reassemble everything and adjust the chain tension.

Tensioning the chain—The chain should be just snug enough to make full contact along the lower edge of the bar. To adjust chain tension, loosen the bar nut and turn the screw at the base of the bar in or out. Then lift the front end of the bar as you retighten the bar nut; otherwise, the bar tends to slip upward a little during use, throwing off the adjustment.

For the bar and the chain, use a specially formulated oil or a light (SAE20) motor oil. Under normal wood-cutting use, the oil reservoir



***A chainsaw sharpening vise* has tangs that you can drive into a 2x4.**



***Calipers come in handy* for measuring the length of the cutters, which should all be uniform.**

***A raker gauge* is a jig that ensures rakers are filed to the correct height.**

applies to building decks when you have to scribe posts, girders, rails and lattice frames to rock outcroppings.

Chainsaws vs. nails–There's a myth that one contact with a nail will ruin the chain on your saw. If you stubbornly chew your way through a 16d spike, that may be so, but a chain with properly shaped cutters will endure several minor collisions with nails and a lot of grit before needing to be sharpened. In fact, a slight dulling will actually improve control, since trying to guide a razor-sharp chain along a pencil line is a little like flying an F-16 down Fifth Avenue in New York City.

To determine when the chain needs sharpening, keep an eye on the saw chips. A fully sharp chain will produce large, clean flakes. When it's fully dull, it will make powder. As long as it's spitting mostly chips with some granular sawdust, it's sharp enough for carpentry.

Hitting a nail hard can stretch the chain. If this happens, check the chain's tension, and if need be, adjust it as described above.

Cutting dirty materials—Setting up scaffolding and erecting concrete forms are two areas where the speed and the cordlessness of a gas chainsaw save time and headaches. But scaffolding planks and formboards are often covered with dirt or, even worse, cement, so keep a hook scraper handy to clean around the line of the cut. The edge of your speed square will also work for this in a pinch. A wet surface will clean up a lot easier than a dry one, so if there's a hose handy, spray down the wood.

Not only are dirt and cement abrasive, but the glue in plywood is abrasive. If you do a lot of formwork, you might consider buying a carbide-impregnated chain for your saw. The initial cost is high—about 2½ times that of regular chain-but the extended life and reduced downtime might be worth it.

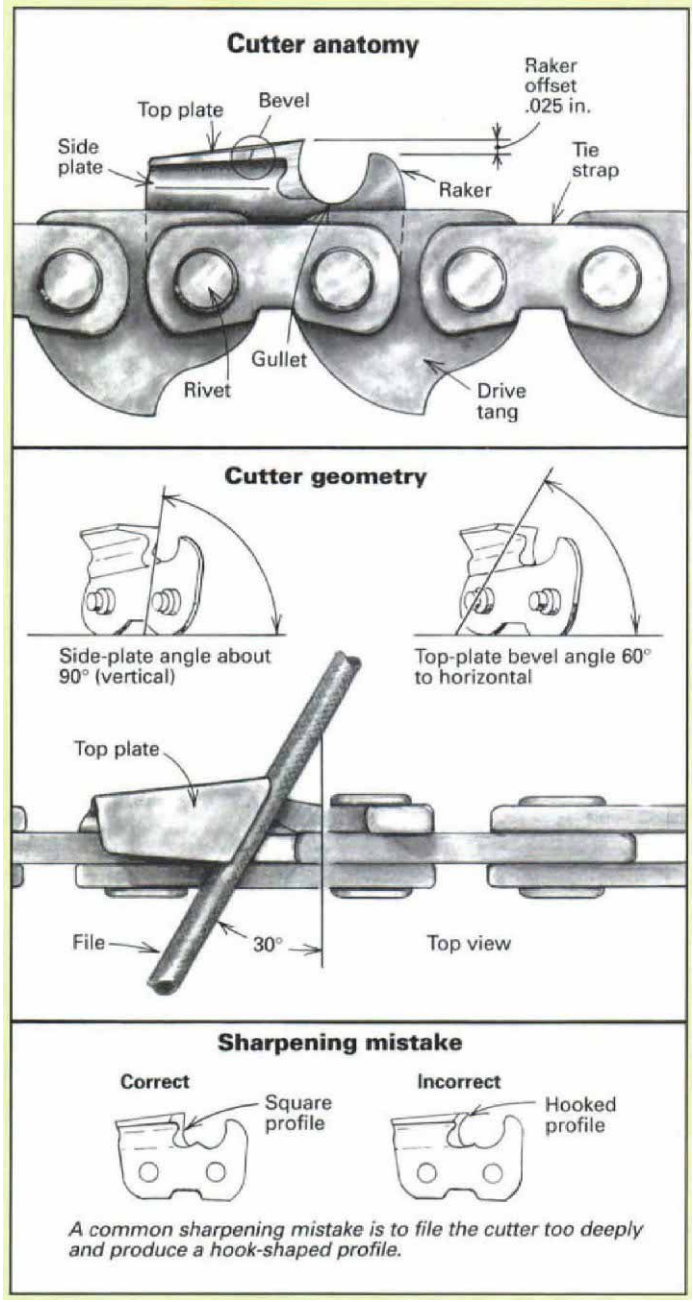
Selecting a chainsaw—Commercial minis are designed for tree surgeons, who need a light saw that can stand up to constant use. You're most likely to find commercial-grade saws at outdoor-equipment dealers. One mail-order house that specializes in commercial-grade chainsaws and related equipment is Bailey's (P. O. Box 550, Laytonville, Calif. 95454; 800-3224539).

Homeowner (consumer-grade) saws are for pruning and for firewood cutting. You'll find

heats up and thins the oil. The intermittent nature of carpentry use means that you'll be working with a cold saw most of the time, so you need a thin oil that will get out on the bar quickly. To check the chain for proper lubrication, turn the engine off and pull the chain about ½ in. away from the bar. The drive tangs should have a nice, shiny film.

Sharpening on the job site—A saw shop will sharpen your saw chains ($3 or $4 per chain in my area), or you can sharpen them at home on a bench-mounted grinder. (A good grinder sells for about $230.) But there are times when I don't have a spare chain, and the one I'm using needs sharpening, so I keep a file in my truck. Filing on the job site is done directly on the saw, without removing the chain from the bar. First, increase the chain tension to help hold the cutters still while you file. Some operators straddle the powerhead with their thighs for stability, but I find it easier to use a little vise made just for that purpose (left photo, facing page). I use lipstick to mark my starting point on the chain loop when I file. Use a 5/32-in. or ⅛-in. dia. file for ⅜-in. low-profile chain. Though filing jigs are available, learning to sharpen freehand will encourage you to touch up the chain often.

Remember that all cutters should be the same length. Because the top plate slopes down toward the back of the cutter (drawing right), uniform length will mean uniform height. A cheap caliper is good for checking cutter length (middle photo, facing page). Second, consider the angle of the top plate as you look down



A common sharpening mistake is to file the cutter too deeply and produce a hook-shaped profile.

on it-35° is standard, but a 30° angle or less will hold up better for carpentry.

Looking at the cutter from the side, check two angles. The first, the side-plate angle, should be about 90° (the silhouette of the front edge of the side plate should be roughly vertical). The second angle is the top-plate bevel, analogous to the bevel on a chisel. It does the cutting, and it should be 60°. I check the top-plate bevel with a magnifying glass or feel it with my thumb. A common sharpening mistake is to produce a hook-shaped profile with a reduced side-plate angle and a long, thin top-plate bevel. It's caused by filing too deeply or using too small a file. This shape will dull quickly and will crumble at the first taste of steel.

If the cutter looks and feels sharp, but it's not cutting, the rakers are probably too high. The rakers are little prongs that regulate the amount of wood that gets shaved off by the top plate.

To regulate the height, position the opening in the raker gauge over the raker, registering on the top plates of the cutters ahead and behind it. Any metal above the gauge gets filed off (right photo, facing page). This produces a vertical offset between the cutting edge and the raker. The offset is matched to the pitch of the chain and the power of the motor. Filing the rakers too low will make the chain cut too aggressively and will overload the engine.

The raker offset is stamped on each gauge. The correct offset for minisaws is about .025 in. To prevent the rakers from digging into the wood, round off their leading corners with a file. —*S. M.*

these at hardware stores and home centers. For carpentry work, both pro-minis and homeowner types will do, but spending more for a commercial-grade minisaw is unnecessary. I've used a consumer-grade minisaw for five years now, a Poulan 2000 with a 14-in. bar. It's never been in the shop, and it's done everything I've asked of it.

You can get away with a consumer-grade chainsaw in carpentry because the tool gets used intermittently for special cuts and for troubleshooting. In addition, the wood that carpenters cut is generally softwood, and the actual amount of fiber being severed is minimal compared to tree cutting.

Gas or electric?—I own a couple of electric chainsaws but hardly ever use them. I just can't see the point of hassling with a cord.

Electrics are quieter than gas chainsaws, but to my ears their high-pitched, screechy whine is more unpleasant than a gas saw's throaty bass.

Commercial-duty electrics cost from $300 to $425. Top-quality gas minisaws cost from $250 to $300. A consumer-grade gas mini will cost between $130 and $180. Pound for pound, gas and electric saws are about equally powerful. The only real attraction of the electric chainsaw in my book is its lack of exhaust. If I'm cutting indoors without good ventilation, I might use an electric, though it's more likely I would fall back on my reciprocating saw instead. There's only room for so many tools in a truck. □

Scott McBride is a contributing editor of Fine Homebuilding *and a carpenter in Sperryville, Va. Photos by Kevin Ireton.*

FOR FURTHER READING

Barnacle Parp's New Chainsaw Guide **by Walter Hall (Mother Earth News, P. O. Box 10941, Des Moines, Iowa 50340; 800-888-9098. 1985, 287 pp., $12.95 softcover).**

Chainsaws: Buying, Using, Maintaining, Repairing **by Robert A. Oulette (Tab Books, Inc., 1981. Out of print).**

Chainsaw Savvy: A Complete Guide **by Neil Soderstrom (Morgan & Morgan, 145 Palisade St., Dobbs Ferry, N. Y. 10522. $12).**

"Chainsaws Come Out of the Woods," *FHB* #61, pp. 81-85.