

# HOW TO USE AND CARE FOR YOUR HAND SAW



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**SEARS, ROEBUCK AND CO.**

# CHOOSING THE RIGHT SAW

## TOOTH SELECTION

### Teeth Style

All hand saw teeth are either Rip or Crosscut. Carpenters' saws always have all of one kind, or the other—but timber and special saws may combine the two types in one blade. Rip Teeth are for cutting with the grain—they track, one behind another, and their action is similar to cutting with a chisel. Crosscut Teeth, however, strike the work like an axe used to chop through a log—alternately, first from one side, then the other.

A Rip Saw will crosscut (but is likely to splinter the wood), and a Crosscut Saw will rip (but may bind). Best have one of each; second best is a Crosscut only (as most sawing is across grain—especially if handling plywoods).

### Number of Points

Saws generally have from 5 to 16 teeth per inch—and the more teeth there are the smaller the teeth will be. Smaller teeth mean slower, but finer cutting.

In classifying saws, *points per inch*, instead of teeth per inch, is used. The points always total one wave than the number of full teeth (see illustration).

## BLADE SELECTION

Blade length is measured along the cutting edge. For general use, choose Carpenters' saws (rip and crosscut) of a length that will allow your natural stroke to use the full blade, to within approx. 4 inches of each end.

Special jobs require special blade shapes. The Stiff Back blade (re-enforced along top edge) is for making very straight cut-offs—as in mitering and dovetailing. The slender, pointed Keyhole blade will cut circles and enter small mitering holes. The narrow Scroll blade will follow intricate curves. And the large curved Timber blade is suited to felling trees or cutting logs.

These 5 blades (Carpenter's, Stiff Back, Keyhole, Scroll and Timber) are the basic types. There are, however, many variations of these—all adapted to special tasks.



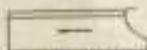
### BLADE TYPE



LENGTH  
CARPENTER'S



KEYHOLE



STIFF BACK

### SCROLL



TIMBER

Practically all hand saws have the teeth set (bent outward from the blade alternately to one side and the other) so that the cut will be wider than the blade (and lessen binding). The only other type (used on a few special saws) is a milled tooth — which is wider than the blade, and is not set.

#### HANDLE SELECTION

Handle selection is important. Various types of saws have handles of conventional shapes (as illustrated), best suited to holding the saw for its special type of work. There are, however, variations within these standard styles — and some handles will have better balance, better grip and better "feel" than others. Check these points, too!

#### QUALITY AND COST

Generally, better quality means higher price — but all of our saws give you more and better features than competitive brands. We can give more quality for the cost because of our exceedingly large production. When judging quality, consider all of these important factors:

**In a Blade:** The grinding, temper, finish — and the precision with which teeth are formed, sharpened and set. All good carpenter's type blades are ground and polished, or tempered so that they will "whip" and "sing" when shaken by the handle — have sharp, even teeth. Until recently Taper grinding was customary; but your finest hand saw blades are now Hollow Ground for even greater performance (p. 16).

**In a Handle:** The grip, finish, weight and strength. It is easy to judge the first three, but you must rely on the manufacturer for strength. Your better quality hand saws have Laminated Handles — the strongest and lightest that can be made.

Three carpenter's saws will satisfy 95% of all home workshop requirements. These are: A  $5\frac{1}{2}$  pt. (coarse) rip saw; An 8 pt. (medium) and a  $10\frac{1}{2}$  pt. (fine) crosscut saws. Several of the other basic types are also generally required.



# YOUR CROSSCUT SAW

## TOOTH DESIGN

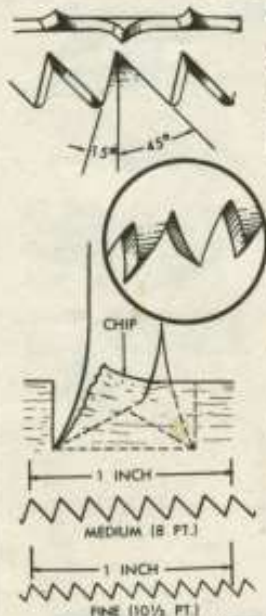
Cutting across wood grain is like cutting through a tightly compacted bundle of wires. True, the wood fibers aren't round and uniform; but each fiber, in turn, must be sliced — and wedge-shaped slices must be removed to make a path (kerf) for the blade to go through.

For this reason, crosscut teeth are like sharp, pointed knives, set (bent outward slightly at the points) and beveled (sloped) on their inner faces so that each will take a small angular cut as the blade travels. Any two teeth (being alternately set) cut from opposite sides — and will remove a small wedge-shaped "bite" of wood.

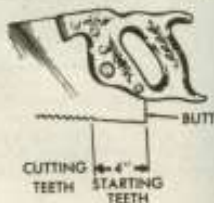
Each tooth is sloped  $15^\circ$  on the front side and  $45^\circ$  on the back side — the total angle of the point is  $60^\circ$ . The steeper front angles cause the teeth to "bite" in on the down-stroke (on which the most cutting is done), while the lesser back angles allow the saw to "coast", and pull back easily (while still doing some cutting).

## POINTS TO INCH — BLADE LENGTH

Fewer points per inch means the teeth are larger — which is better for green and/or



Fine teeth start a cut more easily than coarse ones. Also, a crosscut is always started at the butt, under the handle — because the saw can be better controlled at that point. The best quality, coarser-tooth saws therefore have a span of finer starting teeth directly under the handle. Therefore, our Hollow Ground blades with 8 (or fewer) points per inch have 4 inches of 10-point starting teeth at the butt.



very coarse-fiber woods. Finer teeth, however, cut smoother — and, since the angle of set is usually proportioned to tooth size, cut narrower kerfs. For average use, 8 to 10 point saws are best. Blade lengths vary from 20 inches up; but the 26-inch blade is best for average height adults, for quick, easy bench or sawhorse use. The shorter blades (called Panel Saws) are more easily wielded for cutting lumber already erected.

## .... and How To Use It —

**Mark Correctly** — using a try square, as shown — or, if edge isn't true, measure carefully — and mark both the top and front edge with a sharp pencil.

**Support the Wood** — either on sawhorses, in a bench vise, or in any convenient manner — so that the shorter (cut-off) end will be free. Never support wood at each side of cut as this would allow it to sag and bind the saw.

**Start Slowly** — using the "heel" or butt of the blade (under the handle). Hold the teeth against the wood with the blade at a flat angle to the wood. Use thumb knuckle of free hand to hold blade steady. Draw the saw slowly back, without using pressure. Repeat — until groove is deep enough to guide saw. Then, remove thumb to a safe distance and take a few short, quick strokes to deepen groove — before beginning full-length strokes.

**Hold Saw Correctly** — at an angle of 45° to wood surface — after starting. Also, keep it straight up and down. This is easiest if you take the position shown, with cutting arm, shoulder and eyes all in line with the cut. You can check for vertical straightness with a try square, as shown.



CUTTING



# YOUR RIP SAW

## TOOTH DESIGN

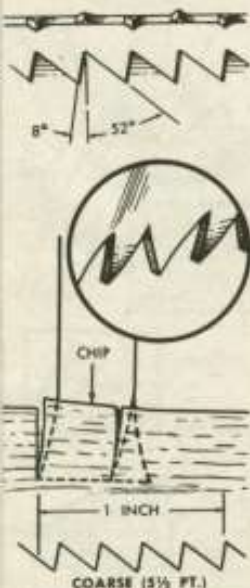
Cutting with the grain is like cutting hard cheese. You could slice the wood; but it is easier to scrape out a path (kerf) for the saw.

Therefore, rip teeth are like chisels, one after another—each designed to gouge out and carry away a small "chunk". They are set (bent slightly out at the tips) alternately to clear a kerf slightly wider than the blade.

Each tooth is sloped  $8^\circ$  on the front side and  $52^\circ$  on the back side—the total angle of the tooth is  $60^\circ$ . Because the saw must clear away its chips, the very steep front sides of the teeth act as pushers—all cutting is done on the down-stroke, and the high backs let the teeth "float" back for an easy return stroke.

## POINTS TO INCH — BLADE LENGTH

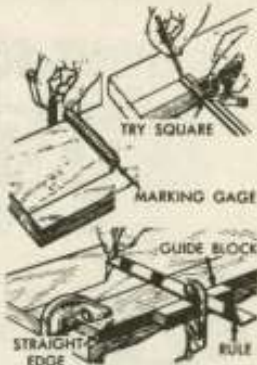
As with crosscut saws, larger teeth (fewer points to the inch) take bigger, faster, rougher cuts. However,  $5\frac{1}{2}$ -point saws so nearly satisfy all requirements that this number has become standard for most rip saws. For the same reason, a 26-inch blade length has become standard—though other lengths can occasionally be found.



... and How To Use It



**Mark Carefully**—to obtain a straight, true guide line. If work edge is true, a marking gage (as shown) is best—or you can use a try square and sharp pencil. If work edge is crooked, either take careful measurements, or use a straight edge with a guide block and ruler (as shown), or one of the first two tools. Mark both top and front edge with a sharp line.



**Keep Workpiece Flat**—and firmly supported so it won't wobble. The use of two sawhorses is shown—other supports can be improvised. Never support just one side of the cut, unless board is so very wide that the supported side is broad enough to be flat and firm.

**Start Slowly**—with a slow backstroke—without pressure—and using the thumb knuckle of your free hand to guide the blade. Some prefer to start at the heel, like in cross-cutting (p. 5); others prefer to use the end of the blade (where the teeth are generally a little shorter and will not cut as deep) while holding saw almost vertical.



In either case, repeat backstroke until groove made will guide the blade, remove thumb to a safe distance—then take a few quick strokes to deepen groove, before starting full strokes.



**Hold Saw Correctly**—at an angle of 60° to wood surface—after starting. Keep your sight in line with the mark, and move backward as the saw advances down the cut.



**Keep Kerf Open**—by using a wedge (as shown), if the cut is a long one and blade shows a tendency to bind.

# HINTS FOR

# EASIER SAWING

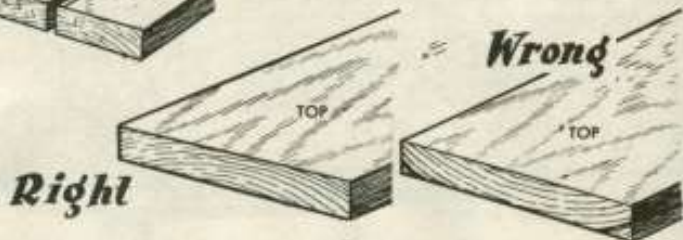


## SAW IN THE WASTE MATERIAL

Never saw on the line (it's harder to keep straight and spoils your measurement). Saw to one side, in the waste material. If you plan to plane or sand the edge, leave a slight space between your line and the saw kerf.

## CROSSCUT WITH CROWN OF GRAIN UP

Note the end grain — and turn board so that convex (crown) sides of the annular rings are at top. If turned the other way, the saw — at end of cut — is likely to chip off the final ring, instead of cutting through it.





## GUARD AGAINST SPLINTERING

One way to avoid splintering at end of cut is to support the cut-off piece, and to use very short, light strokes for the cut through. Still better, cut into all surfaces so that the cut through comes at an internal portion of the work.



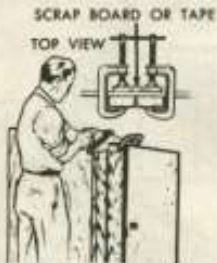
## HOW TO STRAIGHTEN YOUR CUT

If your saw leaves the line, a very slight twist (turning handle toward direction desired) will turn the cut toward the line again. Don't slant the blade while twisting it.



## CUTTING PLYWOOD OR WALLBOARD

Use a crosscut saw — the finer the tooth, the better. Always cut with finish side toward you. For a true, straight cut use two guide boards as illustrated. To eliminate splintering, clamp a scrap board to the back side — or use masking tape (this is less effective, however).



## BACK AND DOVETAIL SAWS

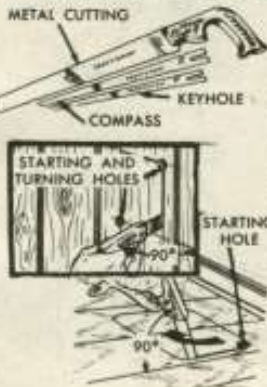
Both have short, stiff blades (re-enforced at the back edge to keep blade straight for accurate mitering and grooving) — and fine crosscut teeth.

The Back Saw is mostly used with a miter box. Always start cut with a slow back-stroke, with handle slightly raised — then level off as the cut deepens.

The finer-toothed Dovetail Saw has a shorter, lower, thinner blade — for free-hand grooving and jointing. It is best started by making a straight deep knife cut, then slicing away a bit on the waste side (as shown) to make a shoulder by which the blade can be guided. A guide strip can be clamped to the blade to limit the depth of cut.



## INTERCHANGEABLE SMALL-BLADE SAWS



Keyhole, Compass and Metal-Cutting blades are usually detachable (as an adjustable handle position is desirable) — and are available as interchangeable blades with one handle. The pointed (8 to 12-inch) Keyhole blade and the wider (10 to 14-inch) Compass blade both have 10 to 12-point crosscut teeth; while the heavier (14 to 20-inch) Metal Cutting blade has 12 to 16-point hardened rip-type teeth.

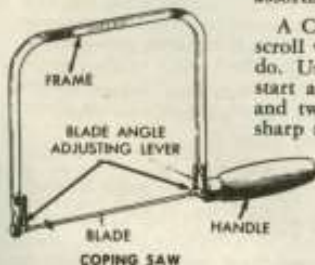
The smaller the blade, the "tighter" the curve it will cut; but a drilled hole is needed to turn a right angle (as shown), or to start an inside cut. Always keep cutting edge at 90° to work surface, twisting handle to right or left to guide blade around a curve. Use slow, even strokes.



## SCROLL AND COPING SAWS

The terms "Scroll" and "Coping" are practically interchangeable — though some distinguish the Scroll saw as one with a deeper frame (for cutting further in from an edge). Both use very narrow blades (either with a peg or a loop end — depending on frame construction) that are stretched by the spring-steel frame. Crosscut and rip teeth in various points-to-the-inch are available (usually in assortments).

A Coping Saddle (illustrated) is useful for scroll work — though any type of support will do. Use a starting hole (in the scrap), or start at an edge. Hold blade at 90° to work and twist handle to make turns. Corners too sharp to turn can be cut out afterward.

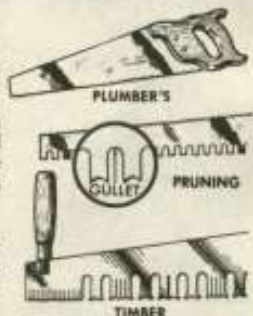


## OTHER SPECIAL SAWS

Plumber's Saws are short (16 to 20-inch) blades with hardened (10 to 15-point) metal-cutting teeth.

Pruning Saws have variously shaped blades (some are curved) — but are distinguished by their teeth (see illustration) which are rip-type with deep gullets (space between each pair), designed for green-wood cutting.

Timber Saws have either *Champion* or *Lance* type teeth — both of which have large gullets and consist of rip and crosscut teeth in sequence.





USING SAW JOINTER



JOINTING WITH FILE



BEFORE



AFTER



FILE TO CENTER FILE GULLETS  
OF FLAT TO EQUAL DEPTH



## GENERAL

Saw sharpening must be done carefully, or not at all. If the teeth are so worn that their original shapes are gone, best have the saw re-toothed by a professional. Even an amateur can do a good sharpening job, however, by following these 5 steps:

**NOTE** { If only light touch-up sharpening is needed, skip the first two steps.

## FIRST, JOINT THE TEETH

Regardless of tooth type, the first step is jointing. This is done chiefly to make all teeth even in height — secondly, to make the tips flat as a guide for filing.

Preferably use a Saw Jointer, a tool made to hold a mill file so it will contact the teeth squarely. Or you may use a mill file alone — but care must be taken to hold it flat to produce a straight, true job, and to avoid rounding the teeth at the sides.

Joint with light strokes until file touches all teeth — take off as little as possible. If some teeth are very high, joint only these, shape them (below) — then re-joint all teeth together. A bright light reflected off the tips will let you see when your job is done.

## SECOND, SHAPE THE TEETH

Shaping is done only when teeth have been jointed, and serves two purposes: To make all gullets the same depth; and to make all teeth

the same shape. Use original tooth shapes as a guide (usually, some of the teeth have remained whole to serve as patterns).

Place your saw between two straight-edge boards in a vise, and let the tops of the boards mark the depth that gullets are to be. Use a slim-taper triangle file of correct size (see Table, p. 15), hold it level and at 90° to the blade — and cut on the forward stroke only, lifting it for the return. Use the boards to determine gullet depth, and the jointed flats to guide shaping of the teeth (you cut to exact center of each flat from each side — to leave a sharp ridge at the top of each tooth). While deepening each gullet, press toward the tooth that needs the most cutting down.



### THIRD, SET THE TEETH

Teeth are set (bent outward at the tips) in alternate directions. Two rules are important: *First, never let the set go deeper than 1/2 the way down from the top of a tooth.* This rule applies whether the teeth are coarse or fine. If the set goes deeper it is almost certain to spring, crimp or crack the blade — or to break out the tooth. *Second, set (bend) all the teeth exactly the same amount* — otherwise the saw will cut crooked.

Setting can be done with a pin punch and anvil, but this requires tedious accuracy. It is easier and better done with a Saw Set. The Saw Set can be adjusted to bend each tooth just the right amount — and at just the correct depth. To use the Set, first count the number of teeth per inch and set the anvil pointer of the Set to the same number. This regulates the amount of set. If saw is to be used only on very hard dry wood, reduce the amount of set by moving the pointer to a higher num-



TWO TYPES OF SETS



SETTING ANVIL POINTER

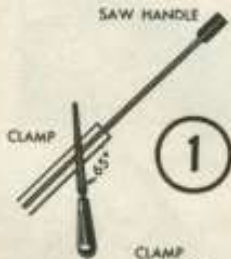


GAGE SCREW



CROSSCUT FILING

SAW HANDLE



STAND HERE

CLAMP

STAND HERE



SAW HANDLE



ber. Or, move it to a lower number if a greater set (for green or soft lumber) is desired. Next, adjust the gage screw (under the Set plunger) so that the saw blade will pass easily between the end of the screw and the anvil.

Now start at one end, work from one side only—and set every other tooth. On crosscut saws, bend teeth in the direction which will place the thin cutting edges on the outer side (bevels on inner side). On rip saws, direction doesn't matter but don't reverse original set if it remains. Reverse saw in vise, and set the remaining teeth in the same manner, bending them in opposite direction.

#### FOURTH, FINISH FILING

Filing restores the keen cutting edges. Use correct file (see Table). Start by placing the saw in a vise, as in Jointing—and joint the teeth very lightly to make small flats on the tips to guide your filing ( $\frac{1}{2}$  of each flat is removed from each side, just as in Shaping).

#### Crosscut Saws

Take the first position (shown). Select the first front-end tooth that is set toward you and place the file in the gullet at the left of this tooth. Swing file handle to the left until blade seats against teeth at each side of it. Hold file level—or with handle slightly elevated (some prefer a slight outward slope for better clearing of chips). If the bevels on the teeth are all there, your file will now be at a  $65^\circ$  angle to the blade, and the file will be tilted forward as shown. Hold it exactly like this while filing. If bevels are worn away, use light pressure while filing to end up with file at correct angles.



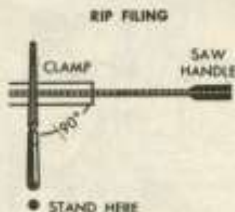
Take long, steady, forward strokes—lift file for the return. File until  $\frac{1}{2}$  of both flats (on each of the two teeth) are gone. File in every other gullet in this manner to finish the one side of saw—then reverse the saw, assume second position illustrated, and file in all the remaining gullets in the same way. Do not deepen the gullets. Finished teeth should have needle sharp tips and sharp cutting (outer) edges.

### Rip Saws

Use same procedure as for crosscut saws—but note the different file angles as illustrated. Finished teeth should have clean straight edges at tops and sides—no side bevels.

### FIFTH, DRESS THE TEETH

Lay the saw blade flat on the bench and run a hand oilstone very lightly, once or twice, over the sides of the teeth—from one end to the other. Turn blade and repeat on other side. Touch all the teeth equally.



## SAW FILE TABLE

No. Points	Files Recommended	No. Points	Files Recommended
5, 5½	7" Taper, regular	10	5" or 6" Extra Slim
6	7" or 8" Slim	11	5" Extra Slim or 6" Double Ext. Slim
7	6" or 7" Slim	12	4½" or 5" Extra Slim
8	6" Slim, 7" Extra Slim, or 8" Double Ext. Slim	13-14	4½" Extra Slim or 5" Double Ext. Slim
9	6" Extra Slim or 7" Double Ext. Slim	15-16	4" Double Ext. Slim



### CARE OF SAWS

A blade that runs crooked can sometimes be corrected by dressing it lightly (p. 15) on the side toward which it runs.

A blade with minor kinks can be straightened, as illustrated, with a wood block. Use lump pumice and water to remove rust.

Best protect your blade by wiping it (after each use) with a soft cloth dipped in light oil. Always hang saw on a hook to protect the teeth.

## Hollow Grinding...

### First Real Improvement In 50 Years!

Until Sears pioneered this new, important change in saw manufacturing, the better blades were all Taper Ground—to provide a thinner back, thinner at the tip. This helped to keep the blade free in the kerf—but the necessary thickening of the blade toward the handle end reduced clearance in the much used area near the handle.

Actually, most of your sawing is done at the central portion of the blade—not at the tip. Sears craftsmen realized this and found the only real answer by developing the Hollow Ground blade. This provides back thinness where it is needed—all through the portion of the blade that you use. Now you can have a truly free, easy running saw!

### Plus Superior Laminated Handle

Sears 9-ply, pressure-welded, laminated handle is many times stronger than ordinary wood handles—but retains all advantages of feel and balance (sometimes lost when other substitutes are used).



**4-STAR CRAFTSMAN  
SAWS WITH  
THESE FEATURES  
ARE YOUR BEST  
BUY.**