



HOW-TO BOOKLET #3124

SELECTION & USE OF HAND & POWER TOOLS



TOOL & MATERIAL CHECKLIST

- | | | |
|---------------------------------|--------------------------------------|----------------------------------|
| <input type="checkbox"/> Hammer | <input type="checkbox"/> Screwdriver | <input type="checkbox"/> Handsaw |
| <input type="checkbox"/> Pliers | <input type="checkbox"/> Wrench | <input type="checkbox"/> Saw |
| <input type="checkbox"/> Clamps | <input type="checkbox"/> Jigsaw | <input type="checkbox"/> Drill |

Read This Entire How-To Booklet For Specific Tools and Materials Not Noted in the Basics Above.

A well-merchandised hardware store or home center has a wide array of hand and power tools for sale. You do not need them all but every homeowner or tenant does need several basic tools to handle the occasional household project or problem that arises. Actually, you will find that you will be continually purchasing tools as new projects dictate.

All tools are grouped by their use: striking, cutting, screwdriving, holding, turning, measuring, and leveling.

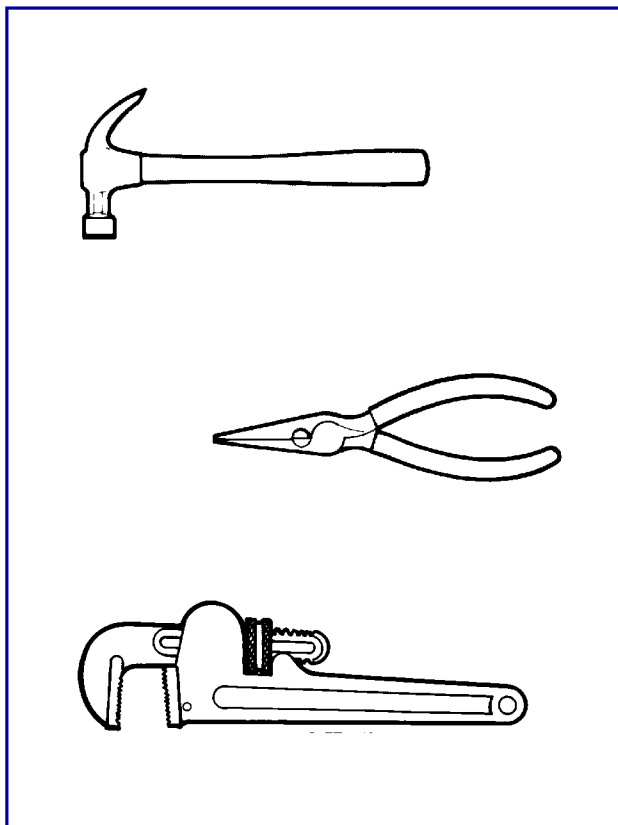
STRIKING TOOLS

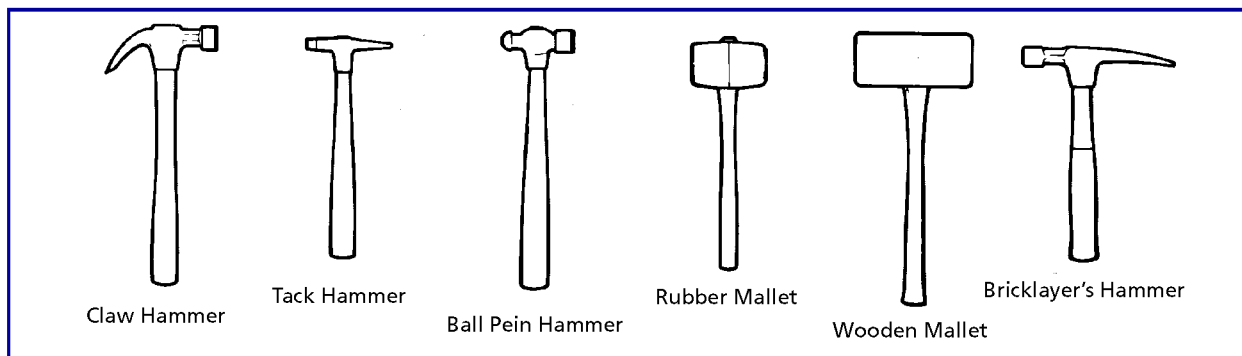
Hammers and other striking tools are perhaps the most used of all hand tools. They are made in various types and sizes for specific purposes. There are three hammers normally encountered in the life of the average do-it-yourselfer, that should be purchased in this order: a 13-ounce claw hammer with a composition grip; a tack hammer that is magnetized on one end; and a rubber or plastic mallet.

A 13-ounce claw hammer is much easier to handle than its 16-ounce cousin—it is much easier to swing over your head and is ideal for the do-it-yourselfer who is not constantly working on one project or another. However, if you plan to do a lot of hammering, go ahead and buy the 16-ounce claw hammer in addition to the lighter one.

To drive tacks, use a tack hammer. It is lightweight so it won't bend brads and tacks when they are driven. If you buy a tack hammer with a magnetized end, you can use the magnetized end to start brads and tacks into the work.

To drive chisels, use a rubber, plastic, or wooden mallet, not a metal hammer. Chisels have wooden or plastic handles that can be easily damaged by a metal hammer. Rubber, plastic, and wooden hammer heads are softer and are purposely manufactured for use as driving chisels.





CUTTING TOOLS

Many different tools are used to cut wood, metal and plastics. They include handsaws, planes, chisels, files, rasps, bits, and drills. Another cutting tool is abrasive paper, which is fully described in booklet #3102.

Handsaws. A crosscut saw cuts against the grain of the wood. Since the teeth of the saw are small and spaced fairly close together, a crosscut saw produces a smooth curve even when it is used for ripping wood. If your budget allows you to buy just one saw, this is the one to buy. You can use it effectively for most wood and light plastic sawing projects.

A **crosscut saw** has from 6 to 12 teeth per inch—the more teeth, the finer the cut. Each tooth is bent out from the saw blade in an alternating pattern: one tooth to one side, the adjoining tooth to the other side. A backsaw is a crosscut saw designed for sawing a perfectly straight line across the face of a piece of stock.

Ripsaws do what their name implies - rip through wood with the grain. You can generate lots of speed with a ripsaw because the chisel-like teeth are widely spaced, with 4 to 5-1/2 teeth per inch. When a ripsaw is used for cutting wood with the grain, the finish cut will be rough and will have to be smoothed with a rasp, plane, or sandpaper where smoothness is important.

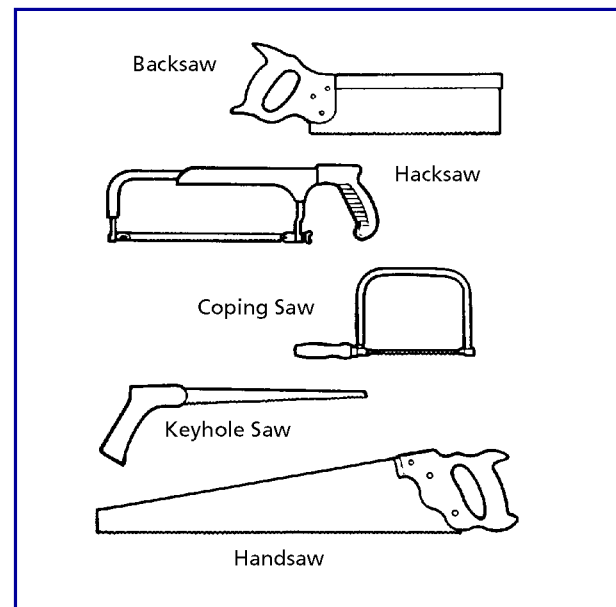
Metal—and some plastics—should be cut with a

hacksaw. Since metal has varying degrees of hardness, you can buy a variety of hacksaw blades to match the metal you need to cut with a hacksaw. Teeth in a hacksaw blade normally range from 18 to 32 points per inch - the more teeth, the smoother the cut. As a rule of thumb, use less teeth per inch for tough metals, and more teeth per inch for soft metals.

Two other handsaws that eventually find their way into many do-it-yourselfers' tool kits are a **coping saw** and a **keyhole saw**. The coping saw is designed to make very intricate and delicate cuts into wood, most plastics, and light metals. The blades have from 10 to 20 teeth per inch - the more teeth, the finer the cut. The blades may be either flat like a hacksaw blade or round. The round blades are tagged "spiral" or "rounds."

Keyhole saws are so named because it is necessary to drill a tiny hole in the work to insert the saw before it can be used. Inside cuts are easy with a keyhole saw. The tool can also be used for straight saw cuts, but only if a crosscut or ripsaw is not handy. Its saw blades have from 8 to 10 teeth per inch.

Planes. With a sharp plane you can cut long thin ribbons of wood to make rough edges smooth, fit boards together snugly, and open and close doors smoothly. You can buy a variety of them: block planes, jack planes, smoothing planes, rabbet planes, spokeshaves, cabinetmaker's planes, low-angles and block planes. However, you need only



two planes for most home projects—a jack plane and a block plane—in that order.

Chisels. Wood and metal chisels are first cousins to planes. You can whittle, cut, smooth, and trim wood, metal, and plastic with them. And you can buy chisels to score and break stone, bricks, and concrete blocks.

A chisel set is a great bargain for most home repair chores. Most include four sizes of chisels: 1/4-, 1/2-, 3/4-, and 1-inch chisel widths. You can also buy wider and narrower chisels, along with cold and brick chisels for metal and masonry when the project calls for these specialty tools.

Files and Rasps. These metal tools are similar to planes and chisels. Their main purpose is to smooth wood, plastic, and metal: but usually after the material has been sawed, planed, or chiseled.

Some files have single rows of teeth. They are called single-cut files. Other files have two rows of teeth—one row crisscrossing the other one. These are called double-cut files. Files are of the follow-

ing four basic types:

- Bastard—used for rough cuts.
- Smooth-cut—used either initially on fairly rough material that doesn't require a bastard file or for smoothing material after you use the bastard file.
- Finish—for final smoothing.
- Rasp—for wood only. Although a rasp really isn't a file, it resembles a file with its very coarse and widely set teeth.

Your basic home repair kit should have an 8" or 12" smooth cut file and a wood rasp. You can buy "shoe" rasps that have a combination of four types of teeth—two on one side and two on the other side. Or you can buy rasps with just two different sets of teeth—one set on each side.

Bits and Drills. To make a hole, you will need a brace/bit or a power drill with a drill. Bits are for wood; drills are for metal and wood. Initially, a ratchet hand brace and an assortment of bits are sufficient. If you will be working with metal, invest in a power drill and an assortment of drills.

A hand brace is a crank that turns a bit which bores a hole. Hand braces are moderately priced. Be sure to purchase one that has the following features: an automatic chuck that perfectly centers bits and accepts square and round bits and drills; a ratchet to reverse the cranking direction, and handles with smooth ball bearings. You can also buy a crank drill that accepts trist drills but usually not auger bits. This tool has a gear-type wheel activated with a handle.

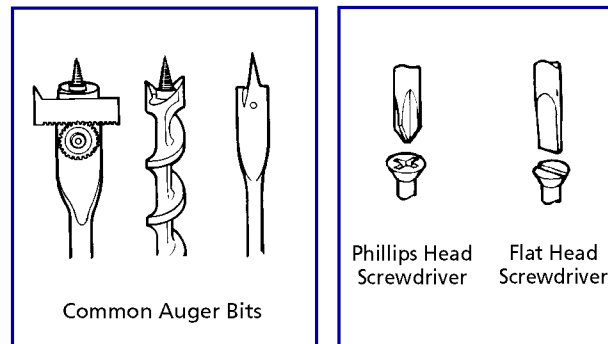
Auger bits look like corkscrews. They are sized by number from 4 to 18. Each number represents 1/16 inch difference in diameter. You can also buy different lengths of auger bits, ranging from 6 to 18 inches long. Longer bits called "electricians bits" are available. Drill bits or twist drills are for metal or wood—but are mainly used on metal. They usually have a round shank and can be locked in a combination chuck of a hand brace or the chuck of a power or

"Yankee" drill. A Yankee drill is hand driven by pushing up and down on the handle. It looks like a big screwdriver. The handle contains the drill bits inside.

SCREWDRIVERS

Although there are many types and sizes, screwdrivers do just one job - they drive and draw screws. It is best to resist the temptation to use them as paint paddles, backscratchers, ice picks, hole punchers, and fingernail files.

The two basic screwdriver types no do-it-yourselfer should be without are the standard blade and Phillips head. Screwdrivers are manufactured with wooden handles, metal handles, and plastic handles. They have long blades, or offset blades for use in tight corners. Some models even have attachments that convert them into socket wrenches. The longer the screwdriver blade and the larger the handle, the more torque or twisting power you can apply to the screwdriver.



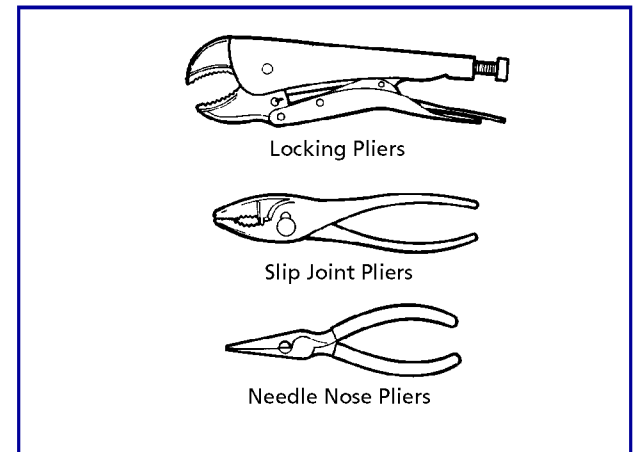
Remember to always fit the blade of the screwdriver to the slot of the screw. Do not use over- or under-sized blades, or the wrong blade in the wrong screwhead, such as a standard blade in a Phillips head or crosshead screw. If the blade is too big or small for the screw slot, you can damage the slot so the screw can't be either driven or drawn. If the blade is too wide, and it sticks out around the screw slot, the blade can damage the material surrounding the screw.

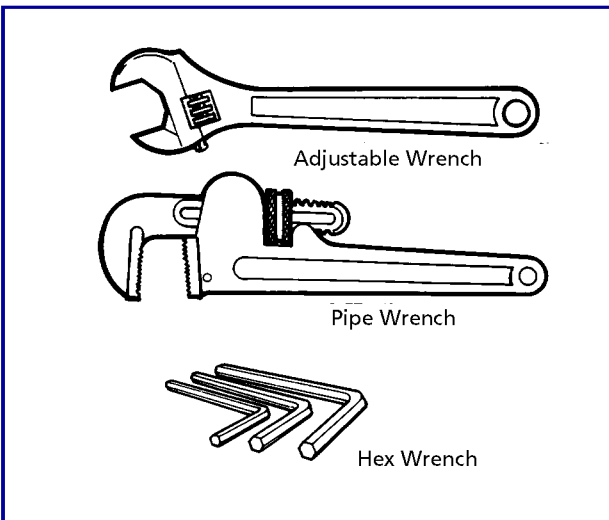
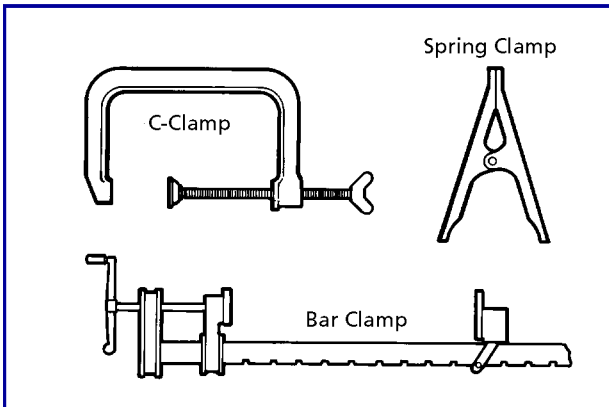
HOLDING TOOLS

Pliers, vises and clamps, squeeze, hold or twist materials into the shapes you want. Pliers are like extensions of your fingers with the gripping power of metal. You can find a variety of pliers for sale in all different shapes and sizes. Start with the following three models, all of which are relatively inexpensive: locking pliers, slip joint pliers, and needlenose pliers with a wirecut feature. Needlenose pliers with insulated handles are best for electrical repairs.

A combination woodworking and metal vise is a good investment. It attaches to a workbench or table top with a screw-type clamp. It may be removed quickly and easily so you can take it along to another job location.

Clamps are basically used to clamp glued pieces together until the glue hardens, but they may be substituted as holding devices for almost any job. The workhorse is the C-clamp, which is available in a wide range of sizes - including clamp opening and depth of throat. Bar clamps, which use either metal bars or galvanized steel water pipe for length, are essential woodworking tools. Spring clamps, which look like large metal clothespins, are ideal for furniture repairs and for gluing veneer to base or solid wood.





TURNING TOOLS (WRENCHES)

Your basic tool kit should contain the following two wrenches: an adjustable wrench and a hex wrench, also known as an Allen wrench. Allen wrenches usually come in a package with assorted sizes of wrenches.

Pipe wrenches—you will need two—are the tool to buy for plumbing repair jobs. They can be expensive, however. Open-end socket wrenches may be purchased as you need them.

MEASURING AND LEVELING TOOLS

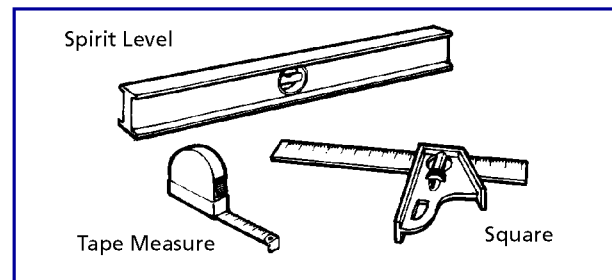
You will need a spirit level, rule, and square for almost any home repair or carpentry job. Do not skimp; be sure to buy quality tools. If a project is mismeasured, not level or plumb, or not square, you will end up paying the high price of having to redo the job.

Levels are sold in a wide range of lengths, from a small 2 inches up to 6 feet or more. The frame may be wood or metal; the metal models are usually extruded aluminum and are lightweight. The vials inside that show level or plumb are generally plastic. The liquid in the vials is alcohol with a built-in bubble.

Rules are wooden, and they usually fold into 6-inch long units. **Tapes** are thin strips of steel that roll into a metal housing automatically. Since they are fairly inexpensive, it is a good idea to have both in your basic kit. Folding rule features to look for include an extension - this is a strip of brass that slides into the first 6 or 8 inches of the rule.

A 25-inch steel tape is a good length for the homeowners. The wider the tape, the better. A wide tape can be extended and won't buckle and twist as easily as a narrow tape. Since the tape is flexible, you can use it to measure rounds, half-rounds, contours, and other odd-shaped materials and projections.

There are two types of squares: combination and carpenter's. If you can afford to, you can buy both types at the outset. If not, the combination square is probably the better buy because it is small, easy to handle, and can perform most squaring operations.



POWER TOOLS

At this point, you may be wondering which power tools are the best to buy. It is strongly recommended that you purchase just two power tools at the outset: a 3/8-inch variable speed portable electric drill, and a variable speed portable saber saw (jigsaw) or a circular saw. With just these two power tools, you can handle nearly all home maintenance and repair jobs. However, if you are planning any serious wood-working projects, you will want to add a portable router to your tool collection. Complete information on the selection and use of an electric drill or router can be found in booklets #3099 Router Know-How and #3100 Drill Know-How.

A **jigsaw** is a power tool that can make inside cuts in materials without a starting hole. You just tip the saw into the material and let the saw do the rest. However, for more accuracy you should first drill a pilot or starting hole for the jigsaw blade. A jigsaw can do many different cuts, including scrolls, curves, gingerbread, straight cuts, angles, and so on. You can also buy an assortment of blades which will let you cut metal, plastic, and masonry.

Circular saws can make many of the same cuts that its saber saw counterpart can, only much faster. When shopping for one of these, look for a 7 1/4-inch model with an automatic blade guard, a saw blade depth adjustment, an adjustable baseplate so you can make bevels, and a ripping fence accessory.

