

Safe Operation of Chain Saws

Chain saws are useful and versatile tools. They are used by professional loggers to cut timber, by homeowners to trim around the home and to cut firewood, and even by artists to sculpt wood or ice. Although chain saws are useful tools, they can be dangerous if not operated correctly.

Many homeowners who use chain saws to cut firewood do not know how to operate saws safely. Cutting firewood—which includes felling, limbing, bucking, and trimming trees—can be hazardous if the chain saw operator is not well prepared.

Selecting A Chain Saw

Match the saw to the type of job you expect to do most often. Select a saw no larger nor smaller than you need. To be safe, select a saw with a chain brake. Refer to the selection guide on page 4.

Preparing For Use

Know how to operate the saw before you use it. Know the parts of a saw (Figure 1). Read and understand the operator's manual.

Observe an experienced operator in action before operating a chain saw. Then operate the saw yourself with supervision.

Use the following personal protective equipment when working with a chain saw (Figure 2).

- A hard hat to protect your head from limbs and branches.
- Safety glasses or goggles to prevent injury from flying wood chips.
- Ear muffs or ear plugs to protect ears from 100 decibel or higher engine noise when using a gasoline powered chain saw.

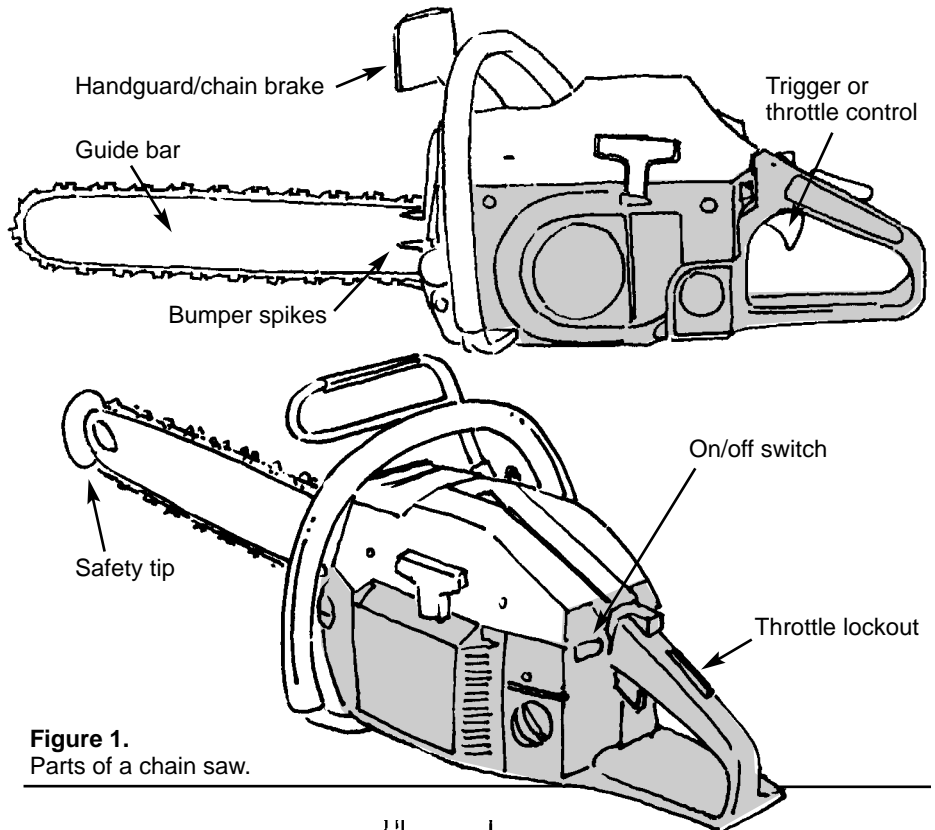


Figure 1.
Parts of a chain saw.

- Lightweight gloves to protect hands from abrasions and cuts.
- Trim-fitting clothing free of ragged edges which could become tangled in the saw or snag on limbs.
- Heavy work boots or shoes with high tops and steel toes.
- Chain saw chaps if you do a lot of cutting.

Make sure your saw is in top operating condition. Keep the chain properly sharpened. Follow manufacturer's recommendations for service and maintenance.

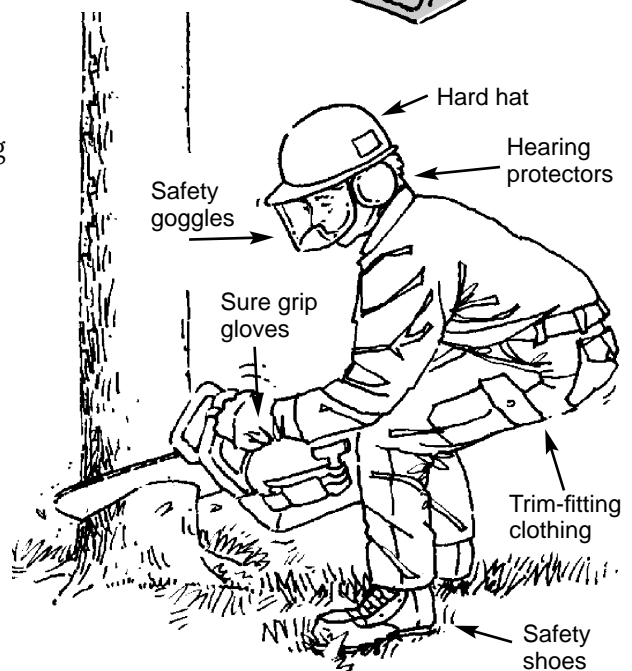


Figure 2. Personal protective equipment.

Fueling The Saw

Gasoline is an extremely flammable fuel. Use extreme caution when handling gasoline or fuel mix. Do not smoke or bring any fire near the fuel.

Fuel your chain saw in well-ventilated areas, outdoors only (Figure 3). Always shut off the engine and allow it to cool before refueling. Relieve fuel tank pressure by loosening fuel cap slowly. If the chain saw is a 2-cycle engine, make sure fuel/oil mixture is correct.

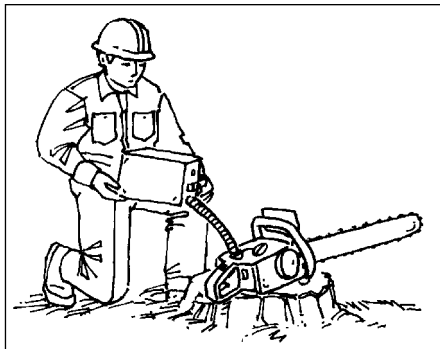


Figure 3. Fueling a saw.

Select bare ground for fueling and move at least 10 feet from fueling spot before starting the engine. Wipe off any spilled fuel before starting.

Check for fuel leakage while refueling and during operation. If you find a fuel or oil leak, do not start or run the engine until you fix the leak and wipe away the spilled fuel.

Starting The Saw

Consult your operator's manual for safe and specific starting instructions.

Do not drop start. This method is very dangerous because you may lose control of the saw.

Place the chain saw on a clean, flat surface as close to the work area as possible. Set your feet firmly. Hold the saw steady with your foot placed in the rear handle bracket or as recommended in the owner's manual. Pull the crank with short, quick starts.

Felling A Tree

Take safety precautions prior to cutting the tree. Size up the tree. Notice such factors as wind direction and the way the tree is leaning. If it is leaning, try to fell the tree in that direction when the wind is not blowing against it. If you are an inexperienced cutter, try to fell trees only when you are absolutely sure which way the tree will fall. Examine trees for loose, dead limbs before cutting. Falling limbs can cause injuries and fatalities.

Make a safe work area by cleaning the ground around the base of the tree of limbs, underbrush, and other obstructions. Be sure to have an open pathway from the tree for an escape route when the tree begins to fall (Figure 4).

Be sure that the intended direction of fall has enough clearance for the tree to fall completely to the ground. A lodged tree can be very dangerous.

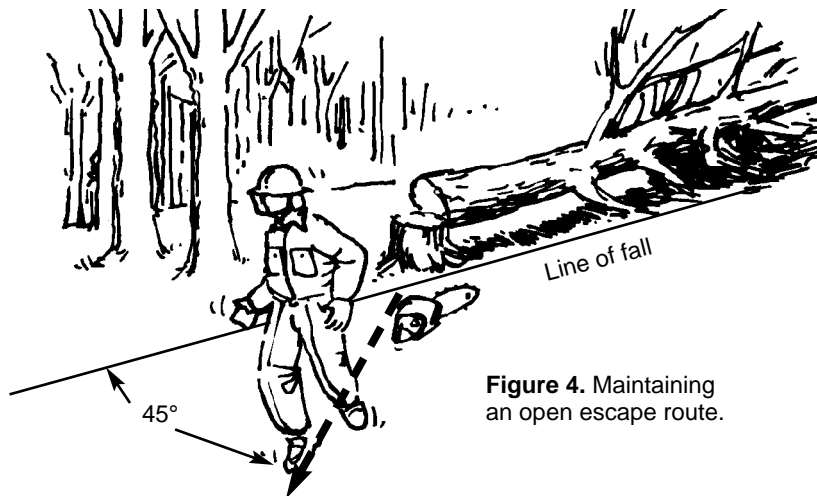


Figure 4. Maintaining an open escape route.

After you determine the direction of fall and have an escape route, then cut the tree as follows:

- Cut through trees less than 6 inches in diameter with one cut.
- On larger trees cut an open face notch (70° to 90°) on the fall side of the trunk (Figure 5). This will allow the tree to fall all the way to the ground without the hinge breaking.

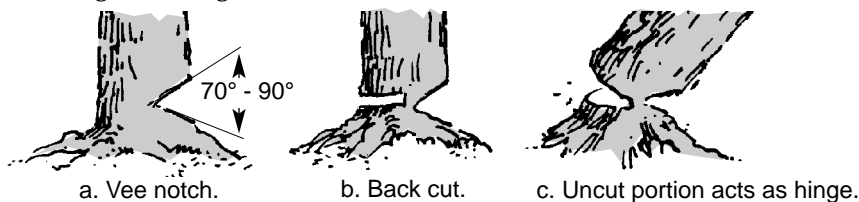


Figure 5. Notching a tree.

- Make the felling or back cut on opposite side of trunk 2 inches above the point of the notch and parallel to the ground. The tree should begin to fall when you are several inches from the inner face of the notch. The uncut portion will act as a hinge in controlling the fall of the tree.

If the saw begins to bind from a closing cut, this indicates an error in judgment. When you first notice the saw beginning to bind up, remove the saw. If you cannot remove the saw, do not struggle with it. Shut off the engine, and figure out a way to use wedges to remove the saw.

Wedges are the most dependable means of helping to direct a tree fall. Using two wedges rather than one is best. Two wedges allow better control and ensure a forward fall of the tree.

Controlling tree fall comes with experience. Get advice and help from an experienced person before attempting a difficult fall.

Limbing A Tree

The next job is to remove the limbs. This can be extremely hazardous because of the cluttered work area. Many serious injuries occur during the limbing operation. Here are some safety tips:

- Begin limbing at the base of the trunk. Cut the limbs on top of the trunk first (Figure 6). Cut these limbs as far up the top side of the trunk as possible before removing those resting on the ground.

- Do not hold a running saw with one hand and clear limbs with the other. Shut off the saw and put it down until limbs have been cleared.

- Always set the chain brake when engine is running but you are not cutting with the saw.

- You may need to cut bottom branches resting on the ground to improve working conditions as work progresses. Beware that the tree may sag or roll as a new branch is cut. The likelihood of the tree rolling increases as more branches are removed. Be alert for any movement and be ready to move away quickly if necessary.



Figure 6. Cutting limbs on top first.

Bucking Logs

Bucking is cutting the trunk of the felled tree into desired lengths. The hazards that may result in accidental injury while cutting up a log are unexpected log roll and kickback. Here are a few safety tips:

- Always be sure of your footing. By keeping yourself in a well-balanced position at all times, you will react to unexpected log movement easier and with less chance of injury.

- Work on the uphill side of the log. Since a log rolls downhill, working on the uphill side provides the greatest degree of safety.

- Raise and chock trunk when possible to prevent rolling. Use a sawhorse to do this if possible.

- Bucking procedures differ depending on how the log is supported (Figure 7). When the log is flat on the ground, cut it from the top; then roll it

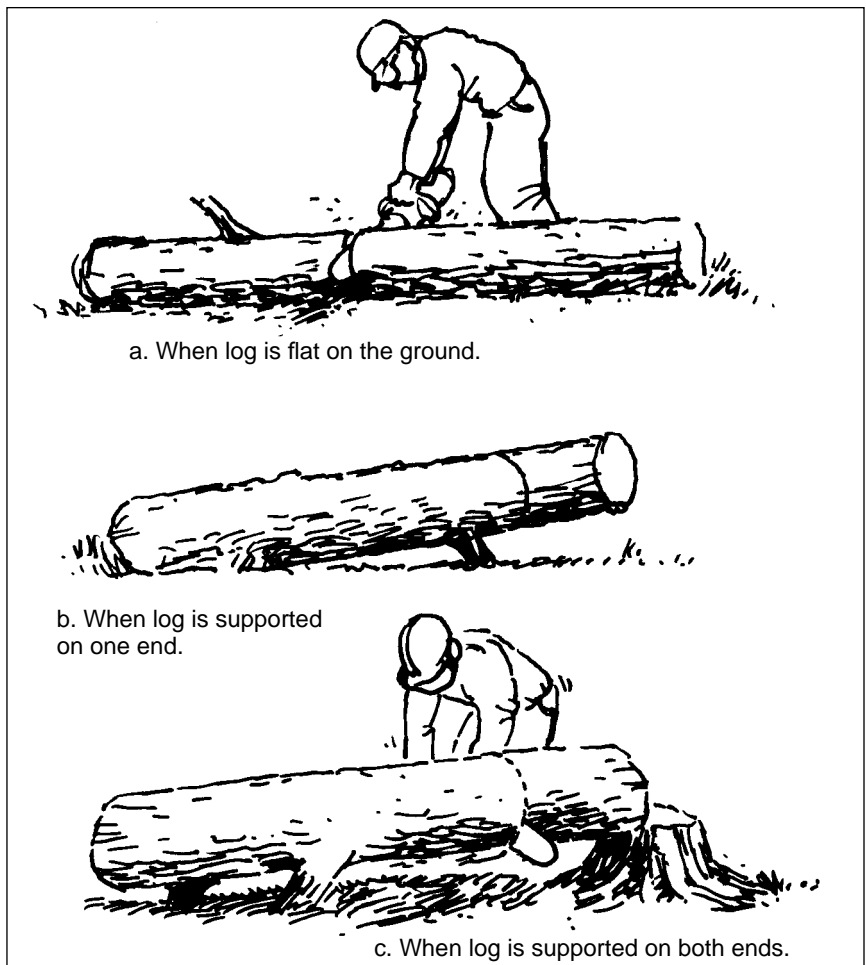


Figure 7. Bucking a tree.

over and cut from the opposite side until free. Avoid sawing into the ground. When the log is supported on one end, cut one-third of diameter from underside to avoid pinching and splintering; then cut two-thirds diameter from top. On a log which is supported at both ends, make first cut from top one-third of the diameter. Cut the remaining wood upward from the bottom.

When cutting firewood lengths, you can use several methods. One method is to make cuts about three-fourths of the way through for each length of firewood. Since the log is not cut completely through, several lengths will stay to-

gether and the log will remain rigid until all major sawing is completed. When you have made all cuts from one side, roll the log over and complete the cuts.

Splitting Wood

Splitting wood is a skill that must be learned and that will improve with practice. Having the proper tools makes the job easier. Tools used to split firewood include a splitting ax, a sledge-hammer, a splitting maul, and wedges.

The quickest way to split small, easy to split pieces is with an ax. An ax can get stuck, however, in larger, hard to split pieces. A splitting maul is a combination ax and maul, with a wedge on one end and hammer on the other. Use the wedge end just as you would an ax. The broader wedge keeps the blade from jamming as easily in the wood. The hammer side can be used to pound on any wedges you may need to use. You may need a sledge hammer for larger pieces that are extremely difficult to split.

Splitting wood serves several purposes. It breaks wood into smaller pieces which are easier to handle and helps wood to dry and season for proper burning. Splitting wood also provides excellent exercise and a diversion from other activities.

Selection Guide

| Type | Guide Bar | Use |
|--------------------------|---------------------|---|
| Mini or lightweight saws | 8 to 15 inches | Light and occasional use for limbing, cutting small logs, and felling small trees. |
| Midweight saws | 15 to 20 inches | Frequent log cutting and felling of small trees. A 16-inch bar is a very common size and is used by occasional users and professionals. |
| Heavyweight saws | more than 20 inches | Professional use. Not generally recommended for homeowners. |

References

Chain Saw Safety, Consumer Information Guide. 1982. U.S. Consumer Product Safety Commission, Washington, D.C.

Jennings, B., and J. Langston. 1985. *Chain Saw Safety.* EL674. Arkansas Cooperative Extension Service, Little Rock, AK.

Mayfield, W. 1980. *Tips On Avoiding Chain Saw Injury.* Circular ANR-221. Alabama Cooperative Extension Service, Auburn University, AL.



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