

Tennessee Baptist Disaster Relief Chainsaw Operation & Safety



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CHAINSAW OPERATION & SAFETY

The chainsaw is an indispensable labor saving aid, used by hundreds of Disaster Relief volunteers, firewood gatherers, home handy people, and professionals. While it makes light work of felling and cutting up trees, a chainsaw deserves to be treated with respect. Carelessly used, inadequately maintained, or incorrectly equipped, a chainsaw can be a lethal weapon.

Chainsaw Safety Features



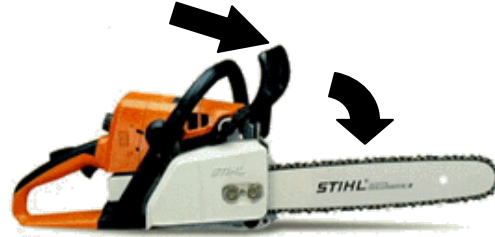
Front Hand Guard:

Activates the chain brake if moved forward. Resets the chain brake when moved backwards toward the front handle. Also designed to reduce the risk of your hand touching the saw chain if your hand slips off the front handle.



Chain Brake:

The chain brake is designed to stop the chainsaw if activated while the chainsaw is running, or it can act as a "parking brake" while the chainsaw is idling to help prevent the saw chain from moving.



Throttle Trigger Lockout:

Designed to prevent the accidental operation of the throttle. The throttle is locked in the idling position when the lockout is not pushed in by the operator's right hand.



Rear Hand Guard:

The lower part of the rear handle is designed to reduce injury by protecting the operator's hand in the event of the breaking of the chain.



CHAINSAW OPERATION & SAFETY

Chainsaw Safety Features continued

Chain Catcher: Located under the chain as far forward as is possible and designed to catch a broken or jumping chain.

Stop Switch: Used to stop the motor and located conveniently near the handle.

Muffler: Designed to decrease noise level and direct exhaust gases away from the operator. During operation, the muffler gets extremely hot, avoid touching it. Never use a saw without a muffler or with a damaged muffler, because of noise level and fire hazard.

Spark Arrestor: Because exhaust gases are hot, chainsaws are equipped with a spark-arresting screen to prevent sparks from shooting out of the muffler. Over a period of time, particles will clog up the screen. If the screen is not cleaned, it will restrict the exhaust resulting in loss of power. Follow instructions in the Owner's Manual when removing and cleaning screen. Be sure that your saw is equipped with this safety feature.

Vibration Isolator: Located between the engine unit and the handle unit. Reduces operator's exposure to vibration. Isolators should be periodically checked for cracks or damage.

Cutting Equipment: The cutting equipment consists of a guide bar and saw chain. There are several different manufacturers of guide bars and saw chains so the sizes and types vary.

Warning labels on a saw refer to kickback requirements. Saws complying with these requirements have a low kickback tendency as long as the recommended bar and saw combination is used. Bar and chain combination is vital to a chainsaw's kickback propensity. It is recommended that you use only approved combinations.

Straight Guide Bars: Guide bars come in various types and shapes. Nose radius design is very important. The smaller the radius, the smaller the kickback zone is with less opportunity for accidents. Also a smaller radius decreases kickback force. It is recommended to use bar with small nose radius.

Bow Guide Bar: Bow guide bars are accessories sold by retailers for use with chainsaws. Since bow guide bars have a much greater range in kickback, they are not recommended for general use. Only someone experienced and specialized should use a bow guide bar.

Saw Chains: Saw chains are available in many different designs. It is recommended that you use low kickback designed chains. Remember that no saw chain design eliminates the danger of kickback. Always use saw chains that offer the best kickback protection for your use. Ask for a full compliment, anti-kickback chain. It will have a full compliment of teeth with a large drag tooth so it will have a reduced tendency to kickback.

Full Compliment Chains--Complete set of teeth and the best type of chain for our purposes.

Skip Tooth Chains--Not recommended for our work. These chains will cause

kickback if not used properly.

CHAINSAW OPERATION & SAFETY

Personal Protective Equipment

Never operate a chainsaw when you are tired, angry, emotionally disturbed, or under the influence of drugs or medications that could affect your vision, alertness, coordination, or judgment. Cutting wood can be strenuous - - check with your doctor before undertaking this type of work.

Wear proper clothing and equipment that is intended to protect you from potential hazards such as hearing loss, thrown objects, and possible lacerations. Personal safety equipment cannot prevent an accident, but it can minimize injury. Never wear loose fitting clothing or jewelry that could become tangled in the saw or debris.

Recommended Safety Equipment

- Complete Protective Helmet:** A lightweight helmet with built-in earmuffs and a face shield is recommended. The main advantage is having everything needed in one piece of equipment rather than three. Earmuffs are designed to reduce the risk of hearing injuries and being attached to the helmet better secures the helmet to your head. Stay visually alert at all times since earmuffs shield you from other noises such as the sounds of trees breaking or shouts from fellow workers. The helmet is intended to reduce the risk of injuries from objects that may fall from a tree. The face shield protects the face from dust, saw chips, and small branches. Wearing safety goggles is also highly recommended. Earplugs should always be used if earmuffs are not available.
- Heavy-duty Gloves:** Special gloves are available with the left glove being reinforced to help reduce injuries should your left hand inadvertently touch a rotating saw. 80% of the injuries are to the left hand.
- Protective Chaps or Pants:** The Kevlar material, used in the chaps or pants, consists of several layers of fabric that potentially jams/stops the chain of a running saw if it accidentally comes in contact with the leg.
- Boots:** Most people will wear heavy-duty leather boots, but special work boots with reinforced front and upper sides along with steel toes are available.
- First Aid Kit:** A good industrial grade first aid kit should always be available during chainsaw activities. In addition to the first aid kit, it should be supplemented with items like 3 or 4 clean bath towels, duct tape, ice chest with ice, bottled drinking water, large clear plastic bags, Styrofoam drinking cups, and heavy duty rubber gloves.

CHAINSAW OPERATION & SAFETY

Personal Protective Equipment continued

First Aid Comments

In the event that a major accident should occur, the bath towels can be used to apply direct pressure to the wound. Since this is going to require extra pressure the heavy-duty rubber gloves can be worn. Since pressure bandages should never be removed in the field, the duck tape can help hold them in place.

In the event of an amputation, the limb can be covered with a towel and wet with the cold bottled drinking water. The limb covered with wet towel can be placed in a plastic bag; this can be placed in the second bag with ice and sent to the hospital with the injured individual. Make sure it is marked with the time of the accident and the bag contains the amputated limb.

Styrofoam cups can be used to cover an eye or an injury like a limb stuck into the body. If it is necessary to cover one eye, always cover both eyes. By covering both eyes you reduce the eye movement in both eyes, and the injured person will have less pain. Bottled drinking water can be used to wash out eyes that are full of sawdust and other debris.

Avoid Health Problems

There are a few health related problems associated with chainsaw use of which you should be aware.

Carbon Monoxide Poisoning: Carbon monoxide is a colorless, odorless, tasteless byproduct of an internal combustion engine and is always present in exhaust fumes. Never use a gasoline-powered chainsaw indoor, in a trench, or any other confined area with poor ventilation where exhaust fumes are not ventilated.

Hearing Loss: A normally muffled chainsaw engine produces enough noise to damage hearing with long or continuous exposure. Always wear hearing protectors and remember to stay visually alert.

Vibration Injury: Prolonged use of vibrating hand tools can cause blood vessel or nerve damage in the fingers, hands, or wrists of some people prone to circulation disorders. Symptoms such as numbness, loss of feeling, tingling, pain, loss of strength, change in skin color or texture, or other abnormal sensations could result. Consult with your physician to determine the possible effects of vibration on you. If you become fatigued or weak, discontinue use of the saw immediately.

Thrown Objects: When an engine is running at cutting speed, the chainsaw rotates about 40-50 mph. It is capable of throwing objects such as sawdust, small pieces of wood, etc., with great force. Always wear protective goggles and headgear.

CHAINSAW OPERATION & SAFETY

Chainsaw Maintenance

Perform maintenance BEFORE using the chainsaw, NOT afterwards.

1. Using a wrench remove the sprocket cover, guide bar, and chain.
2. Clean the grill on the fan housing and starter rope area with a soft brush or compressed air.
3. Clean the fins using a soft brush and/or compressed air. The fins are the “radiator” on the saw, help keep the temperature down, and extend the life of the engine.
4. Clean the air filter.
 - Sponge filter--This sponge will be covered with oil and dirt. It can be cleaned with gasoline and dried completely and re-oiled and replaced. If it is very dirty, it needs to be replaced.
 - Paper Filter--This filter can be cleaned using compressed air by blowing from the inside out. If extremely dirty and oily, it should be replaced.

Do not attempt to clean the mouth of the carburetor in the field, since a small element of dirt will stop up the carburetor. When you start a saw and accelerate the motor and it dies out, it is an indicator that there is dirt in the carburetor.

5. Clean the sprocket cover.
6. Clean and check the brake mechanism. When the brake is off, the clutch plate spins freely. If the chain moves when the saw is idling, it usually means the clutch is dirty or springs are broken in the clutch.
7. Check the guide bar for wear and dirt in the groove. Check for a burr on the edge of the guide bar on the cutting edge and on the top of the guide bar an inch or so from the nose or tip. Make sure all oil holes are clean. A flat file can be used to remove any burr on the bar.

Before replacing the guide bar, make sure the oil hole on the motor housing is clean. It is located about the top of the guide bar about half way between the clutch and the end of the motor housing.
8. Check the chain for wear and damage before replacing.
9. Replacing guide bar. Screw the adjustment screw in and locate the prong that fits into the adjustment hole in the guide bar. If this prong is bent or broken the chain will not stay adjusted. Place the prong into the bar hole, and holding the bar install chain and the sprocket cover. If in doubt on how to install the chain, get instruction from Crew Chief or Blue Cap before proceeding.

The bar should be replaced upside down rotating each time the chainsaw is sharpened to allow even wear on the guide bar.

10. Holding the tip of the guide bar up finger tighten the nuts, and adjust the chain with the screw. In general, the longer the guide bar, then the tighter the chain should be. A chain should be snug and you should be able to pull about 3/4 of the bar guide tooth out of the bar groove. When adjusted satisfactorily, tighten the nuts holding the sprocket cover. If a bar has a grease hole at the tip or nose, use a grease gun with a special attachment to grease it. Use standard wheel bearing grease.

CHAINSAW OPERATION & SAFETY

Chainsaw Maintenance continued

11. Fill the chain oil reservoir with oil.

Use chainsaw chain oil rather than regular 30 weight motor oil. Standard oil is usually too thin and will be slung off a chain before it can lubricate the complete bar. Good lubrication on the chain and guide bar will extend the life of both.

12. Since saws should be stored with the gas removed, fill with a clean, freshly mixed gas oil mixture as specified by the owner's manual. In this case it is usually better to use the manufacturers recommended brand of oil to mix with the gas. A lot of the saw manufacturers now recommend 93-octane gas for their saws.

Sharpening the Chain

Most of the sharpening in the field will be done by hand. Remember the chain is sharp and should be handled with gloves.

Use a round file that is made for sharpening the chain. Hold the body of the saw with your body and sharpen the chain starting on the top of the bar. You will push the file from right to left through the tooth keeping the same angle (normally 30 to 35 degrees) using three or four good strokes (do not sharpen on the return or inward movement). On really dull chains it may be necessary to do 8 to 10 strokes on each tooth. After completing each tooth on this side of the chain, have someone hold the motor housing for you and sharpen the other side of the chain.

When the cutting tooth is about half gone, you may need to reduce the height of the drag tooth. Use a flat file to reduce the height of the leading edge of the tooth and keep the same general shape. The drag tooth determines the size of the sawdust chip being removed. The chip should be a pretty good size; it should not be like dust.

If a saw cuts on a curve through a log it means that the chain is sharper on one side than the other side. It is very hard to correct this by hand, and the chain should be machine sharpened. A number of companies make machine sharpeners that work on the bench top. You may want to purchase a couple of extra chains for your saw and change as they become dull. If kept out of the dirt and grit, a good chain should cut many hours with a minimum amount of sharpening before it will need to be returned to the shop.

CHAINSAW OPERATION & SAFETY

Fueling & Starting a Chainsaw

- Use the fuel mix recommended by the manufacturer.
- NEVER FUEL A HOT CHAINSAW; let it cool first.
- Always fuel in a clear area away from debris. If your fuel can has no spout, use a funnel. Wipe the saw clean of any spilled fuel after fueling.

There are only two safe ways to start a chainsaw:

Starting on the ground---

1. Move 10 feet or more away from the fueling area.
2. Place the saw on a clear, debris-free area.
3. Hold the saw firmly on the ground by putting your foot through the rear handle (or knee on top of it) and by holding the handle by the left hand. Pull the starter rope with the right hand. The chain should not be moving while the saw is idling.

A second method of starting---

1. Hold handle tightly between legs.
2. Hold handle bar in left hand.
3. With right hand, pull starter rope.

NEVER start the saw while holding it off the ground, or by “drop-starting” it.

Transporting the Saw

- Put the chainsaw guard (case) on the saw when not in use.
- Always carry the saw at your side with the cutting bar and chain to the rear to the outside.
- Never carry a chainsaw in the passenger area of a vehicle.
- If you must carry a running saw a short distance, put the chain brake on.

CHAINSAW OPERATION & SAFETY

Suggested Tools

“T” Wrench

This is a special chainsaw tool that has the wrench and a slot blade screwdriver built together.

Small Screwdrivers

Slot and Phillips: needed to adjust carburetor.

Files

Round and flat: the round is for sharpening the chain and the flat to remove burrs from bar and to file the drag tooth. The flat can be used to sharpen the axes and lobbers.

Wedges

A good toolbox will have a couple of wedges of metal, plastic, and wood. Wedges are an indispensable aid for directional tree felling or to hold a cut that may bind or pinch.

Axe

A good single bit axe will be needed for trimming and clearing the work area.

Solid Socket Peavie

This tool is 3 to 4 foot long handle with a steel spike on end and a duckbill movable hook on the side to roll and position logs. A 3 to 4 foot Peavie is recommended for a 6 to 16 inch log.



Solid Socket

Lopping Shears

A good pair of lopping shears that will cut up to 1 ½ inch limbs will help in trimming brush and small limbs.

Bow saw or Pruning saw

A small saw will speed in clearing brush and small items that are too small to use the chainsaw on.

Mallet or hammer

Needed to drive wedges.

Fire Extinguisher and Shovel

Use to extinguish fires.

Use caution in dry conditions.

A chainsaw can generate sparks hot enough to ignite dry grass and wood chips.

CHAINSAW OPERATION & SAFETY

Preparation for Cutting a Tree

There are two main things to consider before cutting a tree, the general work area and the tree itself.

Checking the Work Area

It is important to check the work area for hazards before you start falling or cutting.

- Check that there are no other persons, children or animals in the work area. Make sure that those with you, unless acting as an instructor or assistance, are not within two tree lengths of the tree being felled. This distance should be increased if felling is downhill.
- Check for hazards in the area such as electrical or telephone/cable lines. Seek advice from local authorities if you have any questions. If any road, railway, or public access way is within two tree lengths of your work area, contract local authorities to find out what precautions are required to prevent harm to other people or property.
- Check for buildings, equipment, fences, pipes, or other items within two tree lengths of the direction of fall of the tree.

With this assessment done, you're now ready to look at the tree to be felled or cut up.

Assessing Trees to be Felled

- Where possible, plan to fall the tree so that it clears any obstruction and falls into a clear open space.
- Check for any dead or broken limbs or any debris that may be dislodged and fall into the work area as the tree falls. This is a common problem with old trees and causes many serious accidents every year. View the tree from different angles so that you do not miss anything.
- Look for branches interlocking with branches of other trees. These can break off as the tree falls and drop into the work area. They can also pull the tree away from the desired direction of fall, or cause other trees to uproot and fall.
- Note any vines, which may affect the direction of fall.
- Look for any rot around the base of the tree where felling cuts are to be made. This may affect the direction of fall.
- Look at the lean of the tree, the location of the heaviest branches, and the general crown weight; you'll be able to select the direction of fall.
- Wind can affect the fall direction and must be considered along with the other points. Do not try to cut trees in high winds or poor weather.
- If wedges or other felling aids will be required, have them ready.

CHAINSAW OPERATION & SAFETY

Preparation for Cutting a Tree continued

Preparing the Site

Having reviewed the tree, and where the tree will fall, you are now ready to prepare the work site.

- If there are any low branches that may get in the way as you make the felling cuts, cut them off.
- Be careful not to use the tip of the guide bar while clearing around the tree. Work so that the tree is between you and the saw guide bar if possible.
- Clear an adequate work area around the base of the tree and provide an escape route diagonally to the rear.
- Look forward in the direction of the fall and identify any hazards such as stumps, logs, or ground structures that may cause the fallen tree to kick backwards or sideways on impact.
- If you have identified hazards such as materials that may fall into the work area, your assistants should take up a position where they can clearly see the hazard and can signal to you if there is danger as you make the felling cut.

You are now ready to start cutting the tree.

CHAINSAW OPERATION & SAFETY

Cutting with the Saw

It's important that you hold the saw correctly and adopt the proper stance. It's also necessary to know the different types of cutting action.

Holding the Saw

- Place your left hand on the front handle and ensure the handle is gripped between thumb and finger, with your thumb under the handle. The use of a chainsaw glove or good leather gloves is recommended. Your right hand should grip the rear handle with your index finger on the throttle trigger.
- Maintain control of the saw while the motor is running by keeping a firm grip with both hands. Never use the saw with one hand as you can easily lose control of it.
- Keep your feet firmly planted slightly apart in a balanced position. Do not over-reach. Move feet closer to the cutting position.
- Hold the saw close to your body with the saw body close to the cut for better control. Slightly bent arms will improve your control over the saw.
- Position yourself to the side of the intended cut to lessen the chance of injury from kickback.
- Start the cut at high speed and maintain engine speed as you cut.
- When the cut is almost finished, reduce speed to avoid sudden finish with loss of balance, or the guide bar and chain hitting the ground or other objects.
- Regularly check chain tension and ensure that the chain is correctly sharpened

Types of Cutting Action

There are three main types of cutting action. You need to understand the differences in order to avoid accidents or dangerous situations.

The Down Cut

This cut uses the bottom of the chain. It is the safest and easiest cut as the chain action draws the saw toward the cut and away from the operator. This is called traction.

The Up Cut

This cut uses the upper part of the chain. The chain's reactive force will push the saw away from the cut and towards you. There is a risk of kickback if the saw is pushed far enough away from the cut for the nose of the bar to be used. This is called recoil.

The Boring or Plunge Cut

This cut starts by using the bottom portion of the nose of the bar and then the upper portion as the cut proceeds. Because of the possibility of kickback, this cut should be used by only by a trained or experienced operator. (See pages 21-22 of the attached STIHL® *Chainsaw Safety Manual* for illustrations and step-by-step instructions.)

CHAINSAW OPERATION & SAFETY

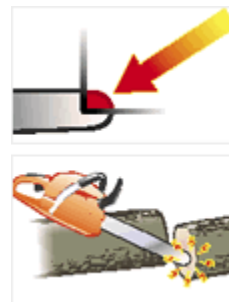
Cutting with the Saw continued

Avoiding a Kickback

Kickback is a potential danger whenever you use your saw. You need to know why it occurs and how to reduce it.

Kickback occurs when the upper part of the bar nose contacts a solid object or is pinched. Kickbacks can also occur when the bar nose hits hidden limbs, the ends of logs, or light and obscured material. This causes a reactive force that may throw the guide bar in an uncontrolled arc toward you, and it can result in serious injury.

A pinched bar nose, a loose chain, or a low setting on the depth gage can also cause kickbacks when performing a boring/plunge cut.



Kickbacks can occur in any plane you are cutting, horizontal, a felling cut, a plunge/boring cut or while trimming.

How to Reduce Kickback

- Using proper operating techniques will reduce the likelihood of kickbacks.
- Hold the saw firmly with both hands.
- Make sure your left thumb is wrapped firmly under the front handle and you are wearing a protective glove.
- Be aware of the location of the guide bar at all times.
- Do not let the guide bar nose come in contact with any object.
- Be especially careful when cutting small limbs or light materials that may catch in the chain.
- Do not overreach or cut above shoulder height.
- Use extreme caution when re-entering a cut.
- Cut only one log at a time.
- Correctly maintain your saw.
- Make sure there is no loose-fittings bolts, nuts, or screws on the saw.
- Ensure all safety devices are operating on the saw.
- Ensure that the operator is wearing all personnel safety equipment.
- Make sure the chain is tensioned, sharpened, and depth gauges set to the manufacturer's specifications.

CHAINSAW OPERATION & SAFETY

Felling Trees

Felling is more than cutting down a tree. It must also be brought down as close as possible to the place intended without damaging other trees or anything else. Avoid cutting in adverse weather conditions such as dense fog, heavy rain, bitter cold, high winds, etc. Watch out for obstacles, holes, and ditches. Be extremely cautious when working on slopes or uneven ground. Carefully consider all conditions, which may affect the intended direction of the fall:

Inclination of tree

Shape of tree

Snow load on crown

Wind direction

Obstacles within tree range, other trees, power lines, roads, building, etc.

- Always observe general condition of tree. Look for decay and rot in trunk, which will make it more likely to snap and start to fall before you expect. Look for dry branches that may break and hit you while working.
- Keep animals and people a distance of at least twice the tree length away while felling.
- Clear all shrubs and branches from around the tree.
- Prepare a path of retreat diagonally from felling direction.

Basic Rules for Felling Trees

There are three essential parts you need to consider when felling any tree over 12 inches in diameter. They are:

Scarf

The scarf is important because it controls the direction of the fall and allows the tree to fall freely in the chosen direction, minimizing splitting or slabbing.

The top cut is made at a 45-degree angle between one quarter and one third of the tree's diameter. The cut must accurately face the desired direction of fall and finish level. The bottom cut must be made level to meet the top cut and form a clean uniform "V" right across the diameter of the tree when the cut section is removed.

Hingewood

This is equal to one-tenth of the tree's diameter and is left uncut as the back cut is brought towards the scarf. This wood acts as a hinge and controls the tree's direction of fall, prevents the tree from twisting or breaking sideways when falling, and prevents the tree from falling backwards if the back cut closes.

CHAINSAW OPERATION & SAFETY

Felling Trees continued

Basic Rules for Felling Trees continued

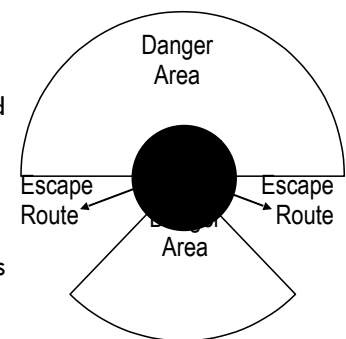
Back cut

The back cut cleans out the wood from the backside of the tree to leave the hingewood and allow the tree to fall. The back cut is made level and always above the “V” of the scarf. As a guide, it should be at least one-tenth the diameter of the tree above the scarf but never less than 2 inches and a maximum of 10 inches for large trees.

If you have any doubt as to the lean of a tree, insert a holding wedge in the cut as soon as practicable and drive it home as the cut proceeds.

The back cut is taken up until there is an even amount of hinge wood about one-tenth of the tree’s diameter and parallel to the scarf. The cut must never be taken up to or beyond the scarf cut as the hingewood is eliminated and there is no control over the direction of the fall.

Once the back cut has been made and the tree begins to fall, remove the saw from the cut and switch it off. Move into the planned escape route. Watch for falling limbs, etc. Watch for the tree kicking back or bouncing as it hits ground.



Using Wedges

High-density plastic wedges and a mallet or suitable driving tool are required

Remove the bark from the wedge position so that solid wood is exposed and the wedge is immediately effective.

Drive the wedge home as the felling cuts proceed so that maximum assistance is obtained from the wedge’s leverage.

Don’t attempt to drive a plastic wedge into a closed cut as splitting or shattering of the wedge can cause facial injuries.

Remember that wedges are limited in changing the direction of a fall. The scarf and hingewood usually sets the direction of the fall, provided you have correctly assessed the tree.

CHAINSAW OPERATION & SAFETY

Cutting a Tree

Trunk diameter less than guide bar length:

Make the upper notch cut on the side of the tree facing the direction the tree is to fall. Look through scarf as you saw the lower cut to prevent sawing too deeply into trunk. The notch should be deep enough to create a hinge of sufficient width and strength. The notch opening should be wide enough to direct the fall of the tree as long as possible. The notch should be 1/4 deep at a 45-degree angle.

- Saw the felling cut from the other side of the tree between one to two inches above the edge of the notch.
- Never saw completely through the trunk. Always leave a hinge. The hinge guides the tree to prevent the loss of control over felling direction.
- Insert a wedge or felling lever (a tool like a Peavie) in the cut well before the tree becomes unstable and starts to move. This will prevent the guide bar from binding in the felling cut if you have misjudged the felling direction.
- Saw with a pulling chain (bottom of guide bar).

Trunk diameter greater than guide bar length:

If a tree is too large to use only one cut for the back cut, the back cut will be done in two cuts.

- Assess the lean and weight of the tree and cut the scarf in the normal manner.
- Select the side of the tree on which the first part of the back cut will be made. If the tree has a rot or something in the crown that will dislodge as the tree falls, make the first part of the back cut from that side.
- Take the first back cut up to the hingewood. Place and tap in a holding wedge in the cut.
- Saw the second part of the back cut up to the hingewood using the top of the bar. This method helps to maintain the hingewood across the full width of the stump.
- Always finish the second cut from the safe side.

CHAINSAW OPERATION & SAFETY

Cutting a Tree continued

Hazards and difficulties when cutting trees

Felling uphill

Beware that the tree may slide back or kick up in to the work area once it hits the ground. Do not turn your back on the fall, watch the path and progress of the tree as it falls.

Felling across a slope

Make sure you are not in the path of a rolling tree. Move back along the escape route away from the falling tree.

Spurs (trees with no tops)

Make the scarf slightly deeper but not over half the diameter. Place a wedge in the back cut as soon as practical to ensure the correct direction of the fall, since there is no crown to assist in tipping the tree.

Trees scarfed and back cut but not on the ground

These are of two types and require professionals to assess and correct. They may require heavy equipment to correct. These trees are dangerous and can not be left in this condition.

The first is when a tree is cut but tree sits back on the back cut and does not fall. If wedges can be driven in the back cut they might help tip the tree, a machine can be used to push a tree over or a second cut can be made one diameter above the first cut in a different direction of fall. Anyway, this is a very hazardous condition and should not be tried by an inexperienced person.

The second condition is when a cut tree is prevented from falling to the ground because it is lodged in another tree. Bring a suitable machine to assist or contact an experienced logger, who will be familiar with methods of dealing with the situation.

CHAINSAW OPERATION & SAFETY

Trimming & Cutting a Tree on the Ground

Cutting trees or limbs under tension involves special hazards and must be done with care and planning. If the cut is made improperly, or you are in the wrong position, the tree may spring back at you causing severe injuries.

The cut should be made at the tree's breaking point (the point where the tree would break if it was bent further), normally, where the bend is the most pronounced. At the breaking point, the forces are mainly trying to push the tree outward. If you are not cutting at the breaking point, the longest section of the stem, besides trying to push outwards, will also try to push along the trunk after it is broken. That makes the forces harder to predict and increases the danger.

1. Position yourself inside the bend.
2. Start to cut a "V" cut on your side, inside the bend. Cut up to 1/4 of the trunk diameter. Watch closely to make sure the saw does not get pinched.
3. Remaining on the inside of the bend, move saw over to opposite side.
4. Cut slowly to reduce tension.
5. To avoid pinching the saw when the cut is first made, it is recommended to 'V' cut in small steps.

Trees that are actually on the ground can be trimmed with relative safety. Beware of a tree suspended by its branches as one large branch may hold the tree up. Cutting this branch can result in the tree rolling on top of you.

When a tree is held up off the ground, trim the large branches from the outside in by making a couple of cuts to test the stability.

- Always work on the uphill side of a tree on a slope
- Use enough guide bar when trimming to lessen the chance of nose of bar contact and the resulting kickback.
- Watch the limbs that are under tension. These can spring back and inflict severe injury. Stand on the side away from the tension and release the tension with two cuts, first on your side and then on the other side of the limb.
- Examine the tree and determine if any position is liable to roll, drop or swing when the cut is completed.
- Do not crosscut logs that are suspended more than 5 feet above ground. Cutting above this height means the saw is being used above shoulder level. Log control can also be lost as logs twist or roll.
- If it is not obvious what is holding a tree on a slope or roof, you should assume that it might move at any time. Work out of the dangerous areas. Make sure others are not endangered if the cut log rolls down the slope or off the roof.
- Make sure that you have a firm footing and avoid standing on any loose material. Clear a sufficient area to operate in and a path to escape if danger occurs.

CHAINSAW OPERATION & SAFETY

Debris

- Drag limbs butt first.
 - Wear gloves.
 - Use protective goggles.
 - Wear proper boots.
 - Be alert for poison oak or ivy.
 - To toss limbs, stand limb up with heavy end down. Using your free hand as a guide, lift and toss.
 - Know your physical limitations and rest when necessary.
 - Be alert for obstacles that may cause
 - Be alert for downed power lines.
 - Always be cautious keeping safety in mind.
 - In ice storm situations, ALWAYS wear a hard hat.
- tripping while dragging limbs.
- Use a fuller limb as a platform to load smaller branches to drag.
 - Stay away from chainsaw operators as they are cutting.
 - Use wheelbarrows to carry logs when possible.
 - Rake and fork finer debris.
 - Be aware that pine trees have sap that may get on clothing and hands.

