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SECOND EDITION

OWNERS
Operating & Maintenance
MANUAL

HOMELITE®

Automatic Oiler
CHAIN SAWS

with Anti-Kickback Device*

*Patent Pending

WARNING: CHAIN SAWS CAN BE DANGEROUS. TO REDUCE DANGER FOLLOW ALL SAFETY PRECAUTIONS IN THIS OWNER'S MANUAL.

IMPORTANT: UNDERSTAND THE DANGERS OF KICKBACK FULLY BEFORE OPERATING (SEE PAGE 3).

SAFETY PRECAUTIONS FOR CHAIN SAW USERS

BASIC PRECAUTIONS FOR PERSONAL SAFETY

- Use safety footwear, snug-fitting clothing, and eye, hearing and head protection.
- Wear non-slip gloves to improve your grip. Do not wear scarfs, jewelry, or neckties which could be drawn into the engine or catch on the chain or underbrush.
- Always hold the chain saw with both hands when the engine is running. Use a firm grip with thumbs and fingers encircling the chain saw handles.
- GUARD AGAINST KICKBACK:
  a) Hold the chain saw firmly with both hands. Don't overreach. You cannot maintain good control of the saw if you cut above shoulder height.
  b) Don't let the nose of the guide bar contact a log, branch, the ground or any other obstruction. Keep the SAFE•T•TIP® anti-kickback device* properly mounted on the guide bar.
  c) Cut at high engine speeds.
  d) Keep the chain sharp. Don't operate with a loose chain. Maintain the correct tension of the chain as prescribed in this Owner's Manual.
- Guard against the effects of a long or continuous exposure to noise, such as involved in the operation of a chain saw. Hearing protection devices are available from your local Homelite dealer.
- Never operate a chain saw when you are fatigued.
- Keep all parts of your body away from the saw chain when the engine is running.

BASIC PRECAUTIONS WITH CHAIN SAWS

- Always carry the chain saw with the engine stopped, the guide bar and saw chain to the rear, and the muffler away from your body. When transporting your chain saw, use the appropriate guide bar scabbard.
- Always use caution when handling fuel. Move the chain saw at least 10 feet (3 m) from the fueling point before starting the engine.

*Pat. Pending

- Keep the handles dry, clean and free of oil or fuel mixture.
- Before you start the engine, make sure the saw chain is not contacting anything.
- Shut off the engine before setting down the saw. Do not leave the engine running unattended.
- Operate the chain saw only in well ventilated areas.
- Be sure that the chain stops moving when the throttle control is released.

BASIC PRECAUTIONS ABOUT MAINTENANCE

- Never operate a chain saw that is damaged, improperly adjusted, or is not completely and securely assembled. Be sure that the saw chain stops moving when the throttle control trigger is released.
- All chain saw service, other than items in the Owner's Manual maintenance instructions, should be performed by competent chain saw service personnel. (If improper tools are used to remove the flywheel or clutch, or if an improper tool is used to hold the flywheel in order to remove the clutch, structural damage to the flywheel could occur which could subsequently cause the flywheel to burst.)

BASIC PRECAUTIONS IN CUTTING/WORK AREA

- Do not operate a chain saw in a tree unless you have been specifically trained to do so.
- Keep bystanders and animals out of the work area.
- Never start cutting until you have a clear work area, secure footing, and a planned retreat path from the falling tree.
- Use extreme caution when cutting small size brush and saplings, because slender material may catch the saw chain and be whipped toward you or pull you off balance.
- When cutting a limb that is under tension, be alert for springback so that you will not be struck when the tension in the wood fibers is released.

CONTENTS

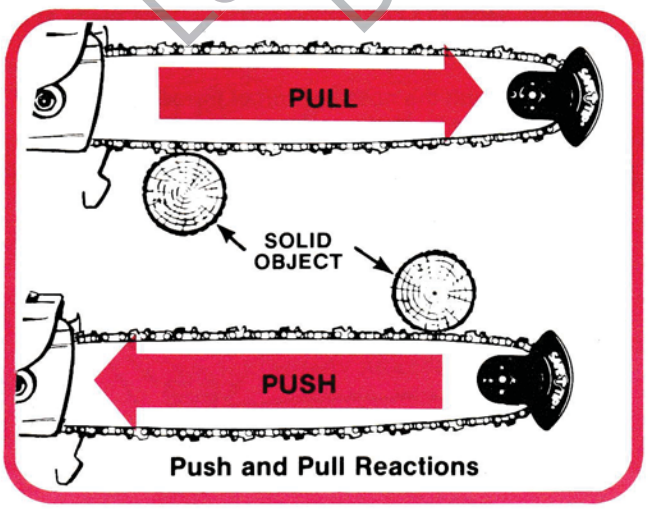
INTRODUCTION

KICKBACK, PUSH, AND PULL and how these reaction forces are best controlled.

WARNING
When properly installed per instructions in this owner's manual, the SAFE•T•TIP® Anti-Kickback device will prevent kickback from happening. Remember, however, that for the few occasions where you may wish to remove the anti-kickback device, you should rely on using the techniques described in this owner's manual to maintain control of the saw.

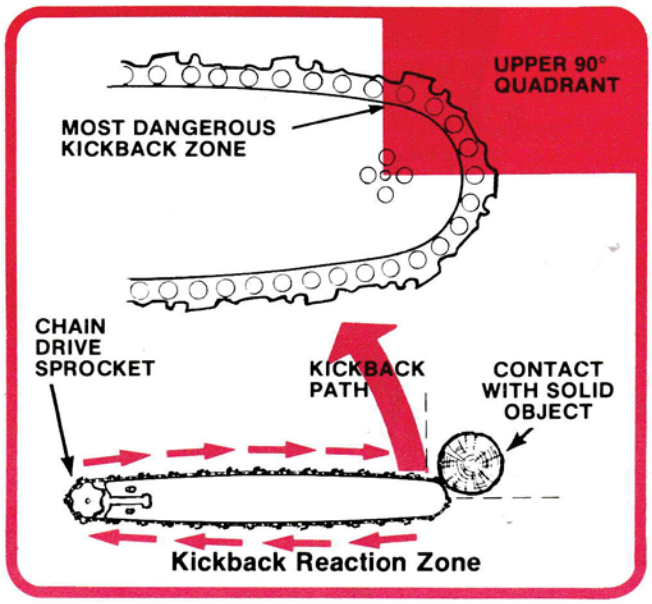
THE REACTION FORCES

In the operation of a chain saw, engine torque is transferred to the chain. This energy is then used to cut wood. But to every force (action) there is always a reaction force in the opposite direction. Thus, if the chain contacts wood or any other obstruction where the chain is moving away from the operator, the operator will feel the saw being pushed toward him. And, when the work contact is made on the underside of the bar where the chain is moving toward the operator, the person will feel the saw being pulled away from him.

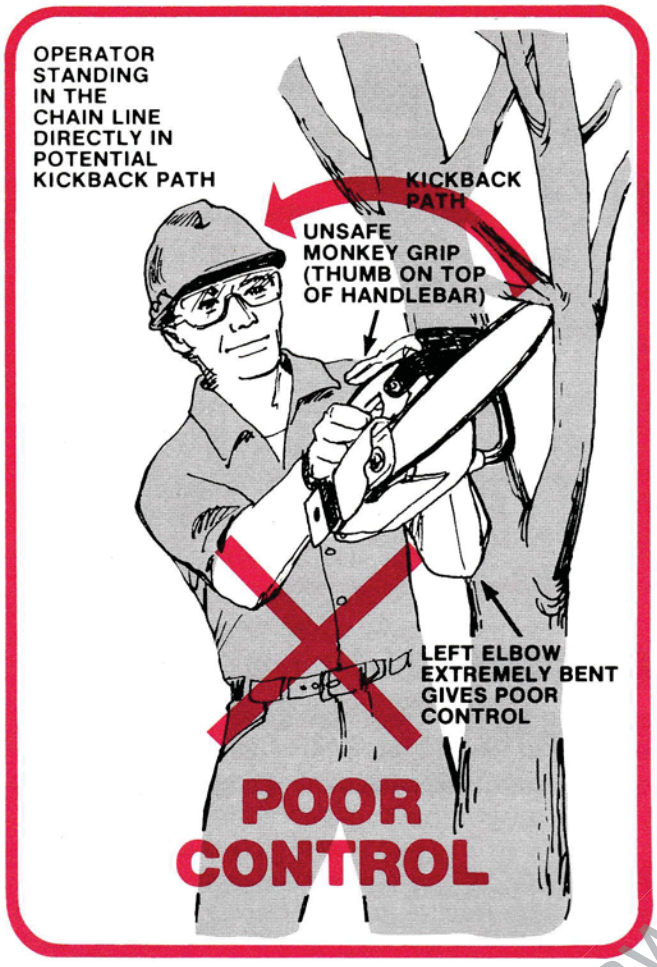


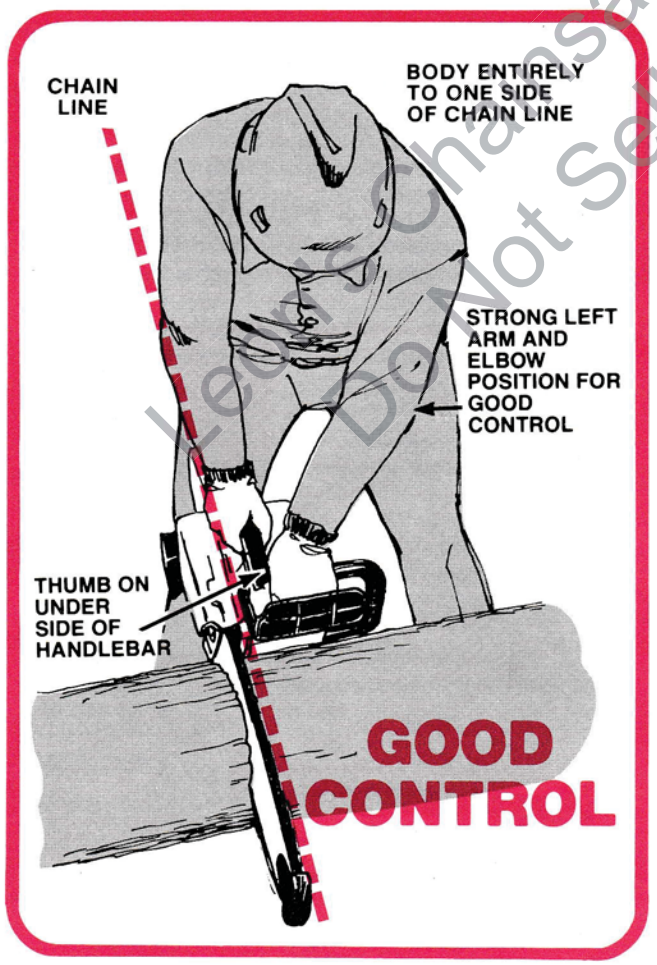
Push and Pull Reactions

KICKBACK is another reaction, the most dangerous of these reactive forces. It occurs only when solid contact with the moving chain is made at the upper quadrant of the bar nose. A violent kickback will occur any time the chain hits a solid object (or takes too large a cut) while rounding this top quadrant of the bar nose. For the instant that the chain is stopped cold, the engine drives the guide bar to rotate inside the chain loop. This results in a pinwheeling rotation of the chain, the saw, and the bar during which the bar nose *kicks back in an arc towards the operator.* This is **KICKBACK**, the most dangerous of the reactions which can cause loss of control. When properly installed on a saw, a SAFE•T•TIP anti-kickback device prevents kickback. But it is not a general insurance against "accidents" with a chain saw.



Kickback Reaction Zone





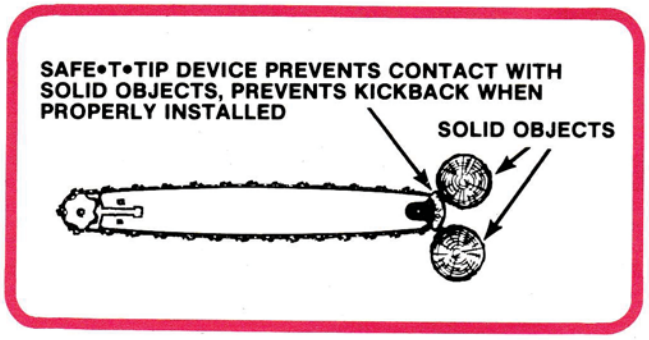
HOW TO MAINTAIN CONTROL

1. First of all, you must keep the front handlebar diameter in the webbing between the thumb and index finger of your left hand. This grip helps maintain control of the saw and limits the possibility that your hand will come in contact with the chain. See the illustrations of the correct and incorrect grips.

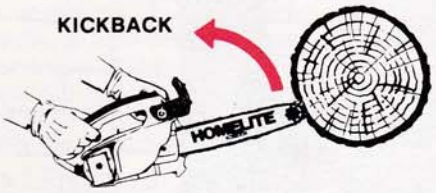
   Do not use a "Monkey Grip" because your hand can slip.
   Don't forget to wear your gloves.
2. Hold the front handlebar close to the balance point of the saw (or where you can best oppose and absorb the push, pull and kickback forces of the saw without having it twist out of your grip).
   Do not reverse right and left hand positions on the saw handles.
3. Get a good grip on the rear handle.
4. Maintain your balance on both feet, and do not reach above chest height with the saw engine, or reach so far forward that you could be drawn off balance by the saw's reactions.
5. Stand a bit to one side so that no point of your body is behind the chain line (in the line the saw will take if it kicks back).

HOW TO REDUCE THE CHANCE OF KICKBACK

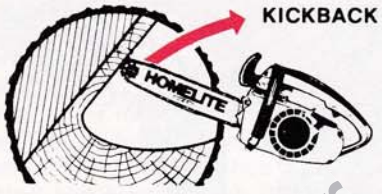
1. Avoid letting the nose section of the saw contact any object. Note: A SAFE•T•TIP® device, when properly installed on the bar nose, will prevent kickback.
2. Avoid use of the nose section of the saw for cutting. Cut well back on the straight section of the bar.
3. Be sure to keep your chain sharp and properly tensioned on the saw, because a loose or dull chain is apt to increase the chance of kickback.
4. Use extreme caution when cutting brush, hedges and other "whippy" material. Unless the saw has a properly installed SAFE•T•TIP device, cut only one piece at a time and make sure that the nose of the saw stays in the clear.
5. Never bore with the nose section of the saw unless you absolutely have to. If you really *must* make a boring cut with the nose, follow our instructions on page 17 for minimum risk of kickback.



Without the anti-kickback device on your saw you would have to beware of these situations.

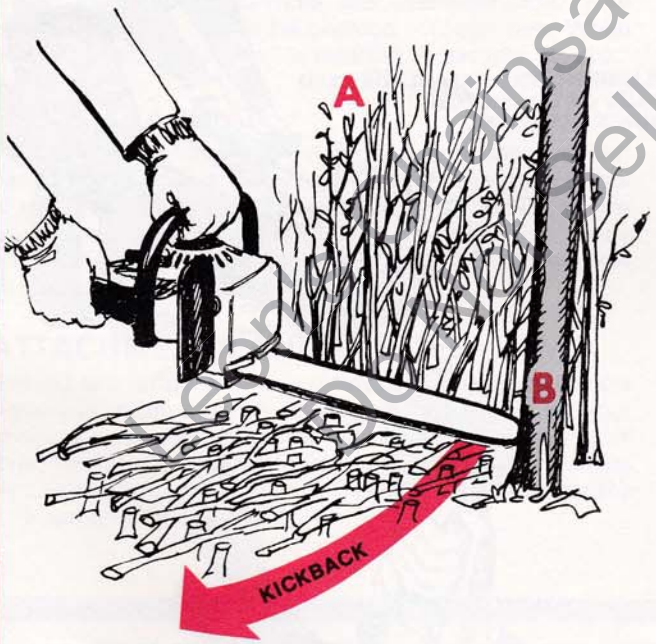


STARTING TO BORE WITH NOSE OF SAW



REINSERTING NOSE OF SAW INTO A PREVIOUS CUT

NOSE STRIKING ANY SOLID OBJECT (WILL CAUSE A KICKBACK)



CUTTING MORE THAN ONE PIECE OF WOOD AT A TIME (NOTE THAT CUTTING BRUSH (A) CAN PULL THE SAW SO THAT THE BAR NOSE COULD CONTACT AN OBJECT SUCH AS TREE (B) RESULTING IN A SECONDARY REACTION — KICKBACK.

CUTTING INTO THE GROUND (THIS HURTS YOUR CHAIN AND GUIDE BAR)

HERE ARE SOME SITUATIONS WHERE THE SAFE•T•TIP® ANTI-KICKBACK DEVICE ACTUALLY MAKES CUTTING FASTER AND EASIER AS WELL AS SAFER.

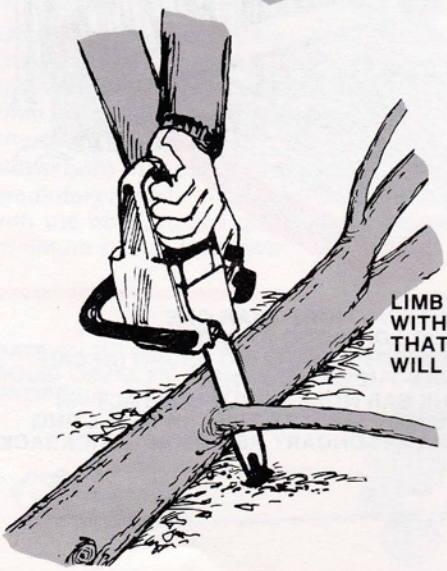
DEVICE RESTED AGAINST AN OBSTRUCTION TO PREVENT CHAIN DAMAGE

CUTTING IN CLOSE QUARTERS SUCH AS NEAR MASONRY WALL WITHOUT HAZARD OF KICKBACK.

CUTTING ONE TRUNK ONLY OF A DOUBLE-TRUNK SHADE TREE

PLUNGING THE SAW BLADE INTO PILES OF BRUSH FOR QUICK CLEAN-UP.

USE A SCYTHING TECHNIQUE TO CLEAR LIGHT BRUSH



LIMB AND BUCK WITHOUT FEAR THAT THE SAW WILL KICK BACK

Facts About XL®-2 and Super 2 Chain Saws

We strongly urge you to read the entire contents of this Owner's Manual even before you begin to asemble the unit. The Manual tells you how to operate and maintain your saw correctly, and how to make emergency repairs to your XL-2 or Super-2 chain saw. Proper preparation and maintenance go hand in hand with the satisfactory performance of your saw, so don't wait until something goes wrong with the saw to find out how to care for it.

The XL-2 has a 1.6 cubic inch (26.2 cm3) engine and is available with a choice of 12-inch or 14-inch capacity guide bar and chain. The Super 2 has a larger (1.9 cubic inche- 31.14 cm3) engine and is, therefore, available with a choice of 14-inch or 16-inch capacity bar and either type 37 or type 375 saw chain.* Otherwise the XL-2 and Super 2 saws are virtually identical in construction.

NOTICE

Model XL-2 and Super 2 chain saws are designed for operation using conventional guide bars only. Do not attempt to adapt the engine for use with a bow guide, or as a power head for any equipment other than guide bar and saw chains designed by Homelite for these models.

HEARING PROTECTORS

Long or continuous exposure to high noise levels, such as involved in the operation of a chain saw, may cause permanent hearing impairment or other possible effects. Hearing protection devices are available from your Homelite dealer or can be ordered through him. When ordering, specify "Homelite Hearing Protectors #92810."

HAND GUARD

Your saw has a hand guard designed to protect your left hand from the chain in the event you should lose control of the saw. The hand guard is an important safety device which should not be removed from your saw. See the instructions and pictures (on page 4) which show you how to maintain control of your saw.

ATTACHMENTS AND DEVICES

Should any attachments, cutting devices, or new configuration guide bars be developed and offered for your chain saw model, they will be listed forthwith in Homelite sales literature. Up-to-date information can be obtained by contacting our Manager of Customer Relations (at the address printed on back cover).

SPARK ARRESTOR

Your saw has a spark arrestor screen built into the muffler and a temperature screen integral with the exhaust cap. In certain states where the law requires use of a spark arrestor, it also requires the owner/operator to keep a spark arrestor in good condition (intact) in the exhaust system at all times. The spark arrestor is a very fine stainless steel mesh. Thus it is subject to warping, cracking and burning out. Replacement spark arrestor screens are available in blister packs as #D-93991, or in kit form as #A-69586-B.

PROTECTION FROM VIBRATION

It has been reported that vibrations from hand-held tools (chain saws, pneumatic hammers, grinders, sledge hammers, etc.) may contribute to a condition called Raynaud's Syndrome in certain individuals. Symptoms may include tingling, numbness and blanching of the fingers, usually apparent upon exposure to cold. Heredity factors, exposure to dampness and cold, diet, smoking and work practices are all thought to contribute to the development of these symptoms. It is presently unknown what, if any, vibrations or extended exposure may contribute to the condition.

This saw is classified in the "Occasional Use" category by many current regulations that differentiate between "professional" and "occasional use" saws. These varied regulations place limits on the amount of vibration which saws can transmit to the operator.

There are measures that can be taken by the operator to possibly reduce the effects of vibration:

a) Keep your body warm in cold weather. When operating the unit wear gloves to keep the hands and wrists warm. It is reported that cold weather is a major factor contributing to Raynaud's syndrome.
b) Refrain from smoking (another suspected contributing factor).
c) After each period of operation, exercise to increase blood circulation.
d) Take frequent work breaks. Limit the amount of exposure per day.
e) Keep the tool well maintained, fasteners tightened and worn parts replaced.

If you experience any other symptoms of this condition, immediately discontinue use and see your physician about these symptoms.

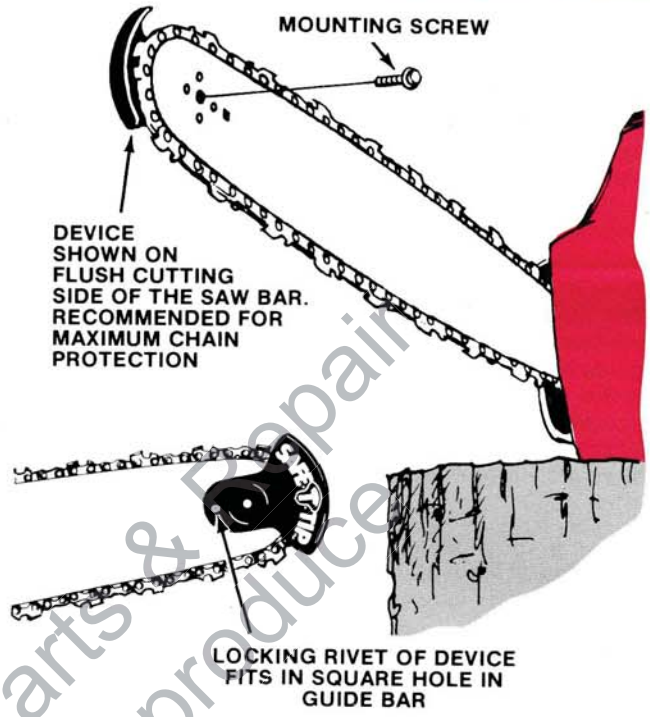
YOUR PHYSICAL CONDITION

Work relaxed but stay alert. Take a break from work whenever you begin to tire. Never operate when tired or under the influence of alcohol or any drugs which may affect your balance, coordination or judgement. If you have any serious ailments such as a heart condition, check with your doctor before doing any strenuous lifting, reaching, pushing, chopping, shoveling, etc. Always do any lifting job with your leg muscles, not your back.

*Models with narrow nose guide bars must use type R37 or R375 chain. These new chains can also be used with conventional bars in place of types 37 and 375.

SECTION 1 / PREPARING FOR USE

1. In addition to preventing chain contact with solid objects at the nose of the bar, the SAFE•T•TIP® device also helps keep the chain away from abrasive surfaces such as the ground. We recommend keeping the device on the righthand side of the bar, where it will be between the chain and the ground during FLUSH-WITH-THE-GROUND cutting.
2. The device has an 8-32x7/16 mounting screw. It requires a 5/16" wrench (or adjustable wrench) to achieve the recommended tightness of 35 to 45 inch-pounds (4-5 Nm). A tightness within this range can be achieved by the following method.
   a) Open or "chase" the threads of a new device by tightening and loosening the screw several times in the screw hole.
   b) Mount the device on the bar nose. (See illustration for details.) Tighten the screw with your fingers.
   c) From the finger-tight position, tighten the screw 3/4 to one full turn more with a wrench.

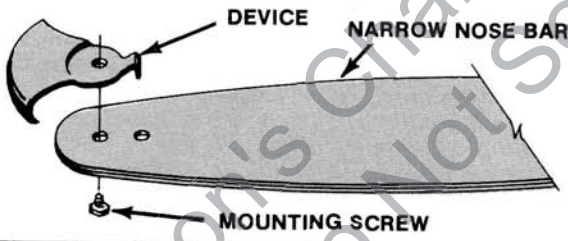


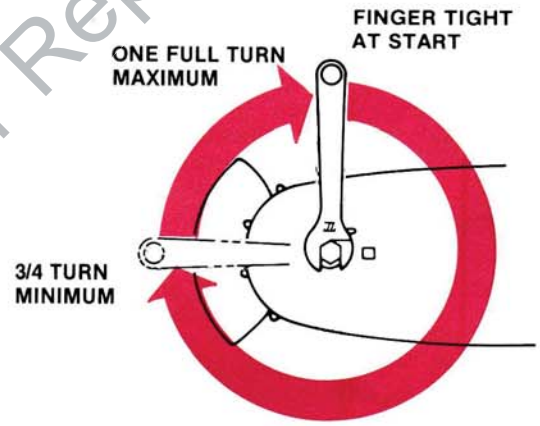
IMPORTANT NOTICE

Before each period of operation, tighten the mounting screw of the device as instructed below. These are specially hardened screws. If the screw cannot be installed tightly, replace both the screw and the device before further operation. Do not replace with ordinary screws.

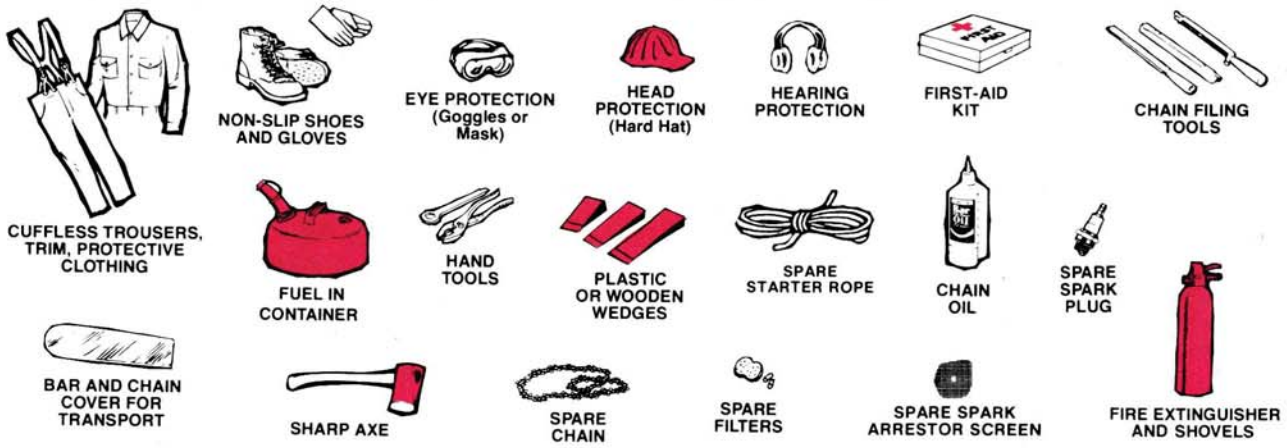
NOTE

Chasing the threads is not required for devices which fit our narrow nose guide bars. If your saw has a narrow nose bar, use only type R37 or R375 saw chain.



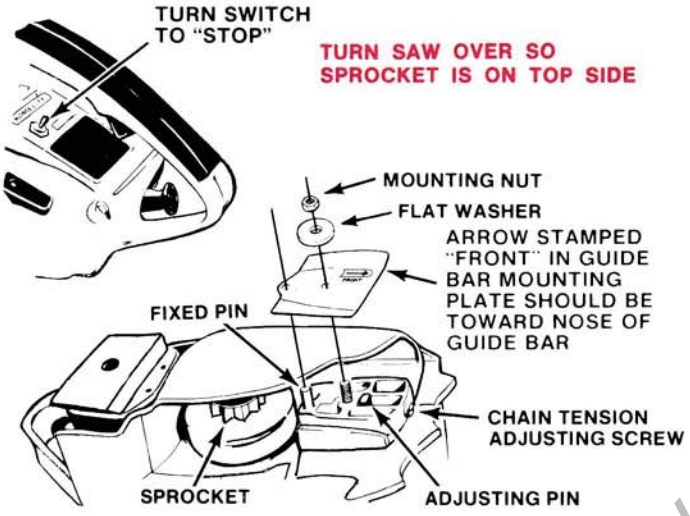


PROTECTIVE ARTICLES, EQUIPMENT & SUPPLIES

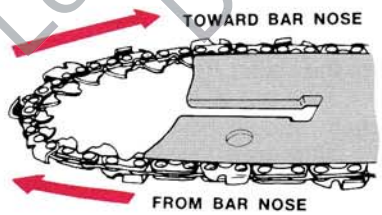


GUIDE BAR AND CHAIN ASSEMBLY

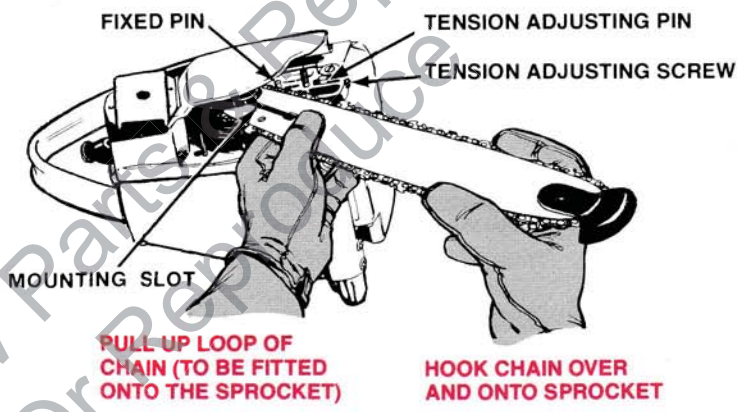
CAUTION: Always wear gloves to protect your hands when you are working on the saw chain and guide bar. Check that the switch is in the "STOP" position before you do any work on the saw.



1. Throw the switch into the "STOP" position to insure that the engine will not start while you are working on the saw.
2. Although not illustrated here, the SAFE•T•TIP® anti-kickback device may be assembled on the guide bar at this stage, or you may wait until the last step. Follow SAFE•T•TIP instruction booklet.
3. Place engine on work surface so guide bar mounting pad and sprocket are face up. Turn tension adjusting screw until adjusting pin is at rear of slot in mounting pad.
4. Remove the mounting nut and flat washer, and the guide bar mounting plate from the mounting pad of the engine.

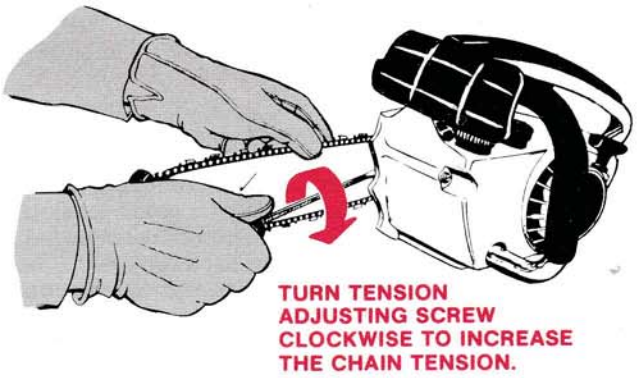


5. Unpack bar and chain. Straighten any kinks in the chain and lay it out in a loop. Cutting edges should face in direction of chain rotation which is from bar nose toward sprocket along bottom edge of bar.
6. Put the chain tangs into the bar groove and pull the chain so there is a loop at mounting end of bar. Holding chain in place on bar, hook the loop over and onto the chain drive sprocket. Fit the bar into place so that the fixed pin and the mounting stud and the tension pin fit into the long mounting slot of the bar.
7. Check that the bar is flush against the mounting pad. Check that the pin fits cleanly into the slot — Hold bar in the flush position and put the guide bar plate, flat washer and mounting nut back onto the saw.
8. Check that the bar and pins are still in place. Then turn down the nut with a wrench until the bar is quite snug



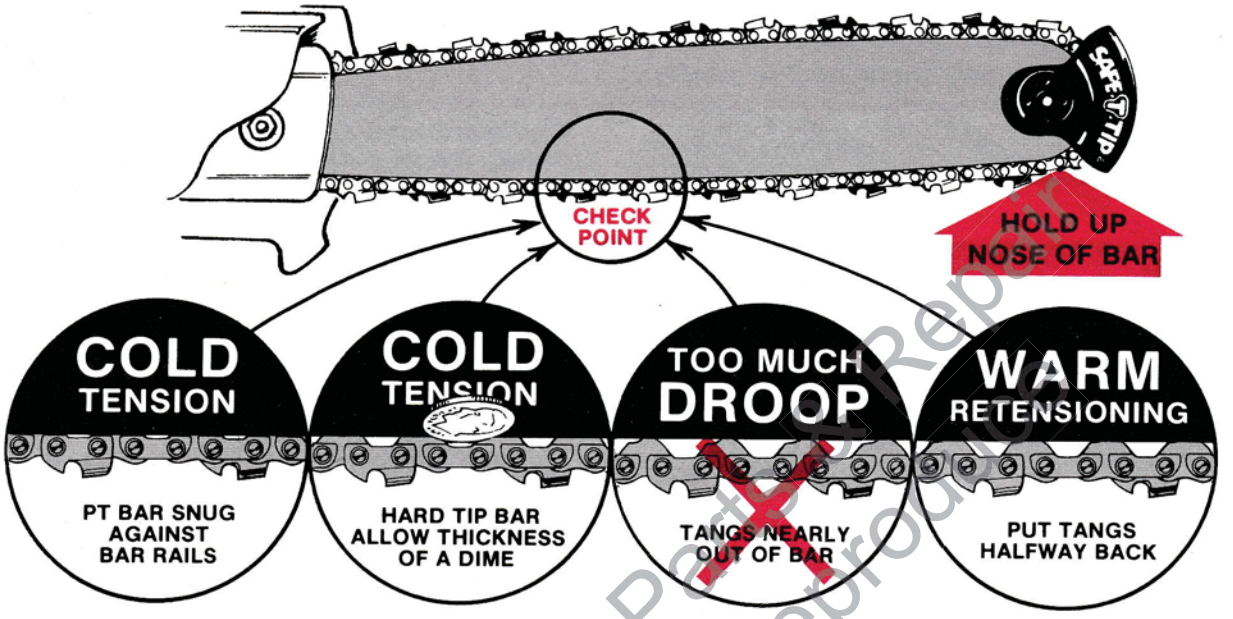
against the pad (and adjusting pin cannot come out of the slot). Leave the bar free enough to slide when the tension adjusting screw is turned.

9. Turn the tension adjusting screw clockwise to move the bar away from the sprocket. Keep turning until nearly all of the chain slack is taken up. Turn saw to the *right-side-up* position before adjusting the chain tension.



CHAIN TENSION

(Remember: Wear gloves)



AFTER WARM RETENSIONING ALWAYS RESET PROPER TENSION AFTER CHAIN HAS BECOME "COLD."

1. Mounting nuts should be finger-tight. Turn the adjuster screw clockwise to remove slack in the chain. Tighten until the chain tie-straps come up close to the bottom bar rails.
2. With your gloved hand "snap" the chain several times by pulling up and letting go of the chain. As this removes some of the stiffness, the chain may hang or droop from the bar.

NOTE

From now on during the tensioning, hold up the nose of the bar until the mounting nut has been tightened. This is to take up play between the bar slot and the mounting bolt.

Steps 3 through 6 are for tensioning a cold bar and chain.

3. The proper tension is according to the type of bar nose.
   a) Sprocket nose (PT series) bar: Increase tension until there is no clearance (zero droop) between the chain and bar. Pull chain along bar as you increase the tension. If you feel any binding, that is too tight.
   b) Hard nose (GW series) bar: Increase tension until the amount of clearance or "droop" between the bar rails and the chain tie-straps is no more than the thickness of a dime or penny.
4. While holding up the bar nose, tighten the mounting nut to lock the bar at proper tension.
5. Pull chain around bar by hand to check that assembly is correct. Start engine. Hold the saw free of obstructions and let the chain turn at slow speed for a few seconds. Set saw down and reset tension if droop develops.
6. For the first few tankfuls of fuel make light cuts only. Watch the tension. When the chain tangs hang more than halfway out of the bar, shut down and retension. New chain stretches rapidly due to the combination of limbering up, warming up, and friction wear of both the bar and chain surfaces.

Steps 7 and 8 are for retensioning a warm chain.

7. During operation, the chain will expand as it warms up. Once worn in, however, it will return almost to the original setting when it cools. Shut down immediately whenever the chain droops to where the tangs are hanging almost out or all the way out of the bar rails.
8. Warm chain should have the tension increased to where the tangs are drawn halfway into the bar groove. Hot chain cannot be tensioned accurately and should be allowed to cool.

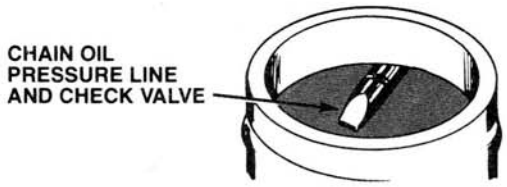
CAUTION

After being tensioned while warm, chain may be too tight upon cooling. Check the "cold tension" before next use.

9. Tighten the mounting nuts when the tension has been set. Then you need not hold up the bar nose.

CHAIN OIL AND THE OIL PUMP

1. The chain oil and fuel mix tanks are identified in raised letters on the left side of the saw. The fuel cap is RED. The chain oil cap is BLACK. Be sure to fill the chain oil tank with oil every time you fuel the saw, but always below the check valve.



NOTE

Constant jiggling in a vehicle, or upside-down storage of a saw having a full tank of chain oil, can force oil back through the oil pressure line into the cylinder. This oil may lock the engine hydraulically, preventing cranking. To avoid this occurrence, be sure to fill the oil tank only to just below the oil pressure line and check valve. This assembly can be seen in the neck of the oil tank. Whenever the engine refuses to turn over, remove the spark plug to break the hydraulic lock. Then crank the engine several times to dispel the oil. Clean the spark plug thoroughly before you reinstall it.

Wipe down the saw if any oil or fuel is spilled on it. Keep the saw handles clean.

2. Type of oil:
   HOMELITE® bar and chain oil should be used just as it comes from the containers, as it is formulated with "viscosity improvers" which render it free-flowing even at below zero temperatures. It has the property of clinging to the chain to minimize "throw-off".

   Any brand of clean motor oil including reprocessed oil may be used as a substitute chain oil. However, in extremely cold weather, SAE 30 weight oil should be diluted in the proportion of 1 part kerosene to 4 parts of oil to restore free-flowing properties. Never use dirty oil or used oil in the chain oiler system as it may damage the oil pump.

WARNING

Do not use water based synthetic chain oil products in this chain saw. They tend to clog the internal mechanisms of the automatic oil pump and give less protection than petroleum based oils.

NOTE

The saw chain should appear moist with oil in the area of the connecting links.

FUELING THE SAW

CAUTION

Select bare ground for fueling. DO NOT SMOKE or bring any flame or sparks near fuel. Move at least 10 feet (3 m) from the fueling spot before cranking the engine.

WARNING

This fuel tank may be under pressure. Remove cap slowly.

1. **Recommended Fuel Ingredients:**
   a) Unleaded gasoline is preferable as leaded gasoline will result in spark plug fouling at a faster rate.
   b) Your 2-cycle engine is lubricated by oil mixed with gasoline. We recommend the exclusive use of a Homelite® high quality 2-cycle engine oil. Any Homelite 2-cycle engine oil, when mixed with gasoline according to the instructions on the oil package, will provide complete lubrication protection for your new saw.
   c) All Homelite 2-cycle engine oils contain an anti-oxidant fuel stabilizer. Under average conditions, fuel mixed with Homelite oils will stay fresh up to 12 months.
   d) If Homelite oils are not used, we recommend stabilization of fuel with an anti-oxidant fuel stabilizer, such as Sta-bil, a product of Knox Laboratories, Chicago, Ill. 60616. Unstabilized fuel will stay fresh for only up to three months and should not be used after that time.
   e) If other than Homelite oils are used, mix in the ratio of 16 parts gasoline to 1 part 2-cycle oil (1 gallon: 8 oz.) regardless of the ratio given by the manufacturer of the oil.

WARNING

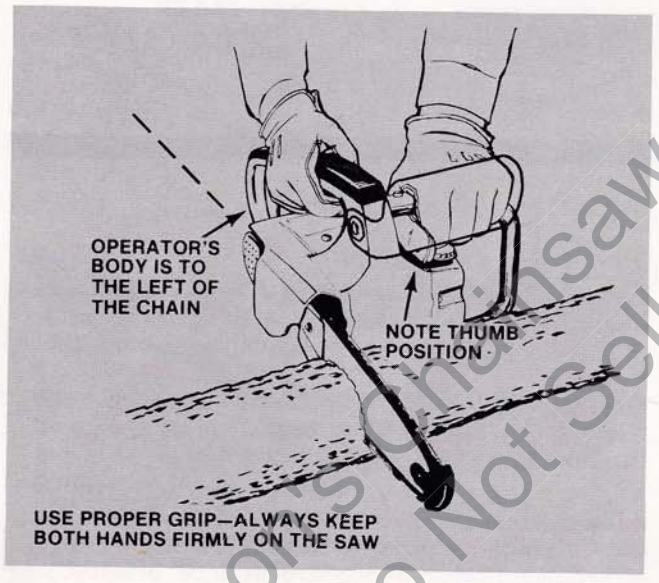
Never mix fuel directly in the saw tank. Always use clean fuel cans for both mixing and storage of fuel. Do not use glass bottles (which can shatter or explode) or plastic jugs (which were not intended for gasoline storage and might contaminate the fuel).

2. **How to Mix Fuel Thoroughly:**
   a) Measure out the quantities of gasoline and oil to be mixed.
   b) Put some of the gasoline into the mixing can.
   c) Pour in all of the oil and agitate contents by stirring or by shaking the can.
   d) Pour in all of the gasoline. Again stir or agitate — this time for at lease one minute.
3. **Disapproved Fuel Ingredients:**
   a) GASOHOL. Alcohol draws moisture. Then "peroxides" and acids form in the fuel and the engine parts.
   b) MULTI-GRADE OILS or any other oils not expressly labelled for 2-cycle engine use. Products formulated for 4-cycle engines usually contain additives which are either harmful or of no value in 2-cycle engine service.

SECTION 2 / HOW TO START, STOP AND HOLD THE SAW CORRECTLY

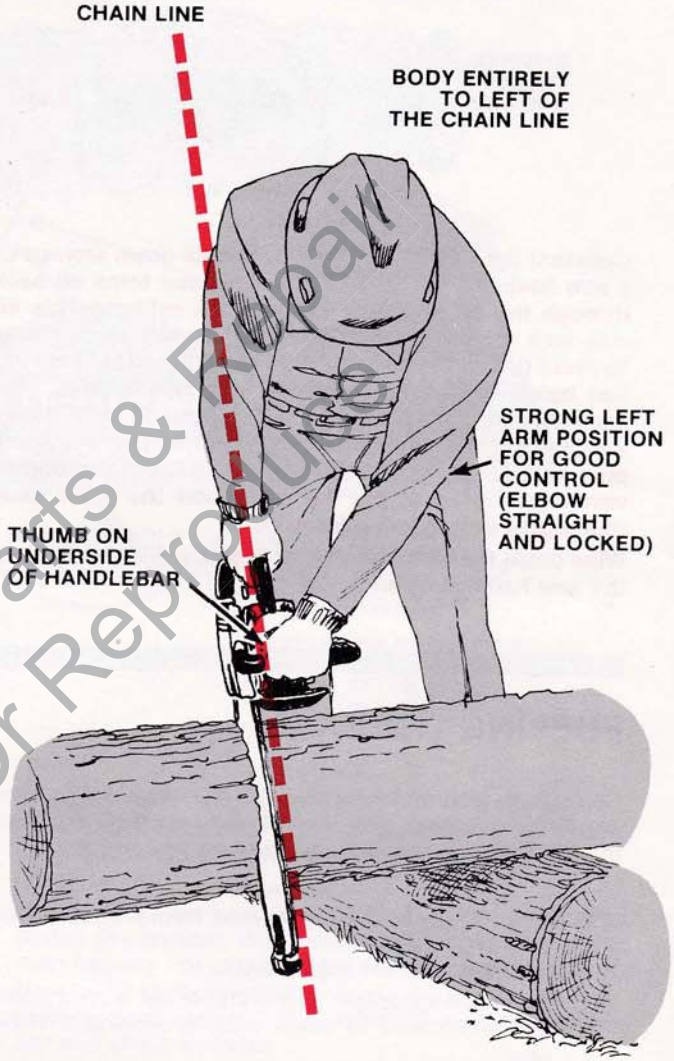
PROPER GRIP AND HOLD ON SAW DURING OPERATION

1. Wear non-slip gloves for maximum grip and protection. Using the proper grip, hold onto the saw firmly with both hands when the engine is running.
2. Always hold the saw with your left hand on the front handlebar, and your right hand on the throttle control handle. The grip maintained on the handlebar with your left hand is of utmost importance. The only grip with which you can maintain control of the saw in the event it should jerk or kick back toward you is the one (illustrated) where you wrap your fingers around the handlebar, keeping the handlebar diameter in the webbing between your index finger and thumb.
3. Your *right* hand wraps naturally around the throttle control handle in the correct manner described in Step 2. You have the option of using either trigger of the Twin Trigger® dual control system. The front trigger should be depressed to control the throttle while you are starting the saw. The rear trigger is usually the one chosen for cutting, as it gives you more leverage.



USE PROPER GRIP—ALWAYS KEEP BOTH HANDS FIRMLY ON THE SAW

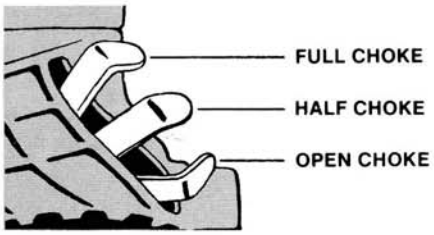
4. During starting, hold the saw down firmly on a level surface with the bar and chain in the clear. Never straddle the guide bar or lean across the saw. As illustrated, put your left knee snugly against the engine just behind the front handlebar to help steady the saw. Grip the throttle control handle and depress the front trigger with your left hand. Pull the starter rope with your right hand.

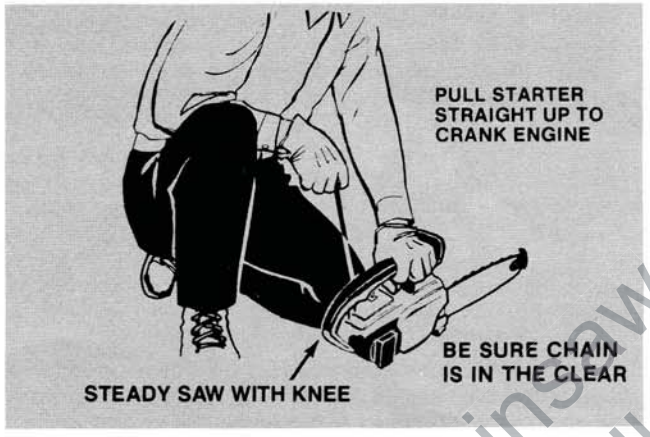


5. Always keep your weight well balanced on both feet when cutting. Since you will be exerting moderate pressure to cut, guard against loss of balance by being ready to hold up on the saw as it cuts through the material. However, throttle up to full speed before letting the chain contact the wood. AND do not throttle down before the cut has been completed. Never cut at part throttle, because the clutch is not fully engaged at intermediate speeds and will slip and burn. As soon as the cutting load is removed, you should release the throttle trigger to slow the engine back to idle speed. Letting an unloaded engine race is harmful to it.

STARTING AND STOPPING

1. Flip the ignition to the "RUN" position.





2. Push the choke lever all the way up (for a richer mixture required for a cold engine).
3. Hold the saw down and open the throttle per previous instructions beginning on page 12.
4. Pull the starter rope out a short way until you feel the starter engage. Then pull rope briskly to give a fast cranking spin. (Do not pull rope to the very end or you may damage the starter.) Hold onto the grip during rewinding so the rope will not snap back and become frayed.
5. Crank until the engine fires. Normally, an engine that has not been run for some time requires three to five pulls just to prime with fuel before it can fire. On the other hand, a recently run engine will usually start up on the first or second pull. However, *in cold weather,* initial priming will take more pulls because an extremely rich mixture is needed.
6. A cold engine will often fire (go pop...pop...pop) and then stop. This is enough to warm it so that you should push the choke lever *halfway down* before continuing to crank.
7. When the engine starts, keep it running at half-choke to warm it up, but flip the choke lever all the way down before it gets so much fuel that it stalls out. Note: Any engine which has fired several times at *full choke* will start at *half choke*.
8. Now you are ready to operate. Grasp the throttle handle with your right hand so that you can use one finger on the trigger to hold the throttle open. Grasp the front handlebar with your left hand. (Use correct grip—see page 12.) Let the engine idle. Pick up the saw and position yourself for cutting.
9. Flip the switch to "STOP" position to stop the engine.
10. To restart a warm engine (or any engine which has fired a few times) crank at half choke. After short shutdowns, the engine may be warm enough to be restarted without choking and with the throttle control at idle setting.
11. Choking a warm engine may be necessary after an engine has been in the hot sun or in a car trunk, or has been shut down for five to ten minutes after being run. These things cause vapor to form in the carburetor. It can be cleaned out and the saw started as follows: Crank alternately at full choke and half choke until the engine fires. Then run at half choke when engine starts. Allow no more than 30 seconds before opening the choke fully. If required, repeat above sequence until engine clears itself and runs properly.

IMPORTANT

When you are through using the saw, relieve tank pressures by loosening the CHAIN OIL and FUEL MIX caps. Then retighten the caps. For extended periods of non-use, prepare the saw for storage as recommended in Section 5.

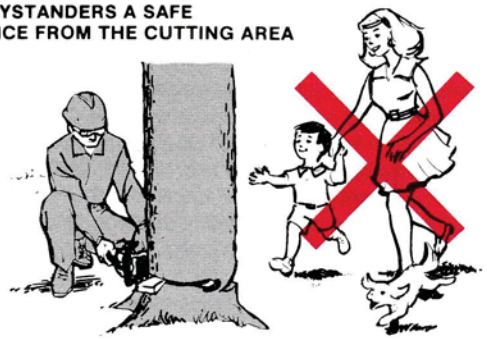
SECTION 3 / THE WORKING AREA

WORK AREA PRECAUTIONS

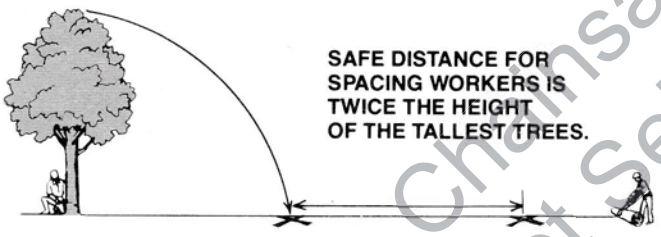
Cut only wood or materials made from wood; no sheet metal, no plastics, no masonry, no non-wood building materials.

Do not allow children to operate your saw, EVER. Allow no person to use this chain saw *who has not read this Owner's Manual* or received adequate instructions for the safe and proper use of this chain saw.

KEEP BYSTANDERS A SAFE DISTANCE FROM THE CUTTING AREA

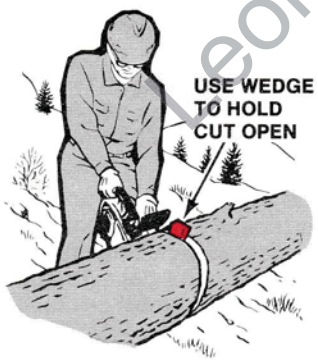


Everyone—helpers, bystanders, children and animals, and other operators—must be kept a safe distance from the cutting area. During felling operations, the safe distance should be at least twice the height of the largest trees in the felling area. During bucking operations, space buckers and limbers adequately so they cannot interfere with each other. Only one person should be working on a tree.



SAFE DISTANCE FOR SPACING WORKERS IS TWICE THE HEIGHT OF THE TALLEST TREES.

OPERATOR HAS POOR CONTROL OF SAW IF HE OVERREACHES OR CUTS ABOVE CHEST HEIGHT.



USE WEDGE TO HOLD CUT OPEN

STAND ON UPHILL SIDE WHEN CUTTING BECAUSE LOG MAY ROLL.

During bucking operations always cut from the uphill side so that the cut-off section of the log will not roll over you. You can be pulled off balance if you have your weight all on one leg, so be sure to stand with both feet on solid ground. Make sure that cut-off wood will not fall on your toes or on your head. Do not cut straight overhead for this reason. In fact, we advise limiting your cutting to chest height, because a saw held higher than this is difficult to control against kickback forces. Limbing from off-the-ground positions, such as in trees or from ladders, is extremely dangerous. Ladders can slip—you can fall. Unless you have had specific training in cutting aloft, leave cutting aloft to experienced tree men.

WHEN LIMBING, STANDING WITH THE LOG BETWEEN YOU AND THE WORK OFFERS MAXIMUM SAFETY.

CUTTING ALOFT OR FROM LADDERS IS EXTREMELY DANGEROUS.

LEAVE SOME SUPPORTING BRANCHES UNCUT. AFTER YOU HAVE BUCKED UP THE LOG SECTIONS YOU CAN CUT OFF THESE LAST FEW LIMBS

In areas near roadways or power lines, do not operate until you have permission from the authorities. When working near roads, you must post flagmen to control traffic. If you accidentally knock down a power line or discover one that is down, DO NOT GO NEAR IT, but notify the power company as soon as you are able. A downed power line is a good illustration of why woodsmen should pair up and always keep within calling distance of one another. In the event of trouble such as this, one man can stand guard while the other summons help.

DON'T GO NEAR DOWNED POWER LINES. SEND SOMEONE TO NOTIFY THE POWER COMPANY. STAND BY TO WARN OTHERS TO KEEP CLEAR.

KEEP WITHIN CALLING DISTANCE OF OTHERS IN CASE HELP IS NEEDED.

When the diameter of the wood is large enough for a wedge to be inserted in the cut behind the saw chain, use a wedge to hold the cut open when there is a danger of pinching the saw blade. When felling large trees, wedges should also be used to control the fall. Never use hard metal wedges which could damage the saw chain.

Clear your working area of all materials likely to trip you, snag the saw, catch fire from the hot exhaust, or block your safe retreat from a falling tree.

Before cutting limbs or felling trees, inspect the area to be sure the wood will not strike buried pipelines or damage property.

HANDLING AND SECURING THE SAW

ALL EQUIPMENT MUST BE SECURED IN VEHICLES WITH STRAPPING OR TIE-DOWNS. PERSONNEL SHOULD NOT BE TRANSPORTED IN THE SAME COMPARTMENT AS EQUIPMENT AND FUEL SUPPLIES.

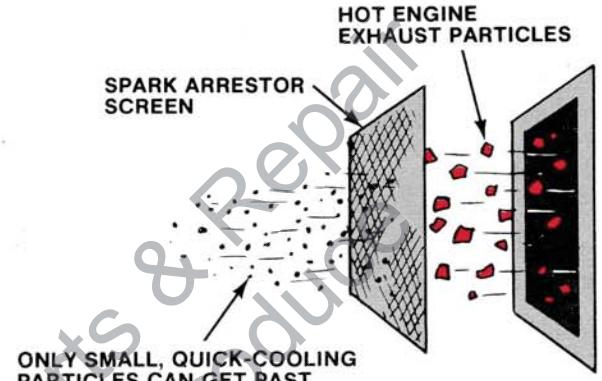
Inspect your saw every day before use. Keep the fuel cap, oil cap and air filter cover on tightly. Check condition of the fuel line, spark plug and spark plug wire. DO NOT OPERATE IF THE ENGINE BACKFIRES OR THE SAW LEAKS FUEL. Have your saw serviced by an authorized serviceman. Be sure to keep your saw chain in proper condition on the saw. Remember that a dull or loose chain snags more easily than a sharp, snug chain. Touch up the chain after two hours of steady cutting and sharpen it thoroughly after 8-10 hours of use. (See Chain and Bar Maintenance in Section 5.) If chain is damaged by abrasives or hits a stone or nail, put on a spare chain immediately and have the damaged chain repaired and sharpened.

If there is anything wrong with the saw have it fixed before further operation. The idle speed adjustment should be maintained so that the chain stops moving after the engine is brought back to idle. Adjust the idle speed whenever necessary (see Section 5).

NOTE

Do not disassemble the rotor (flywheel). Special techniques are required (on the dealer level) for safe removal and installation of the rotor.

Always use a muffler on your saw and keep it in good repair. A faulty muffler (or open exhaust) can cause hearing damage and is also a fire hazard. Be sure to use a spark arrestor on your muffler under dry woods conditions, and always when required by the law or local authorities. In some states, a spark arrestor is required by law and it is the operator's legal responsibility to see that it is in good condition at all times. Check the muffler and spark arrestor at regular intervals. Careful! Never touch a hot muffler.



A SPARK ARRESTOR IS ONLY ABOUT 90% EFFICIENT IN PREVENTING FIRES. LOCAL AUTHORITIES MAY CLOSE THE FOREST DURING EXTREMELY DRY PERIODS.

UNUSUALLY HAZARDOUS CONDITIONS

Do not fell trees or go underneath them during periods of high wind or heavy precipitaion. Take no chances during periods of extreme hazard. You can wait to do your cutting after the hazard has ended.

Do not use saws to cut down trees having an extreme lean or large trees that have rotten limbs, loose bark, or hollow trunks. Have these trees pushed or dragged down with power equipment. Then you can cut them up.

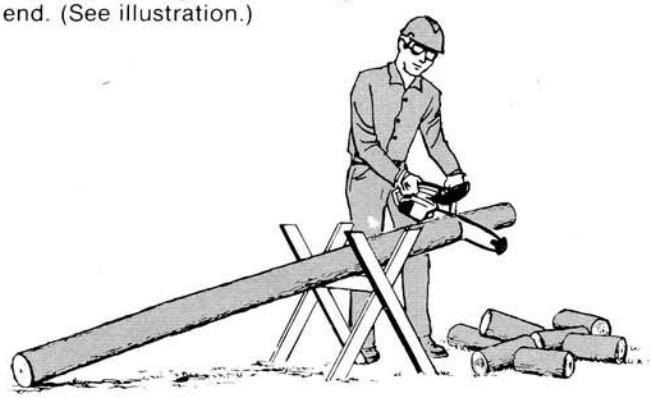
Work only when visibility and light are adequate for you to see perfectly what you are doing.

SECTION 4 / TECHNIQUES OF CUTTING

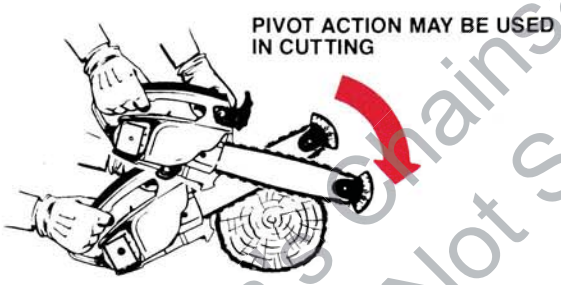
When you are going to cut wood—DO IT RIGHT!

BUCKING, LIMBING AND PRUNING TECHNIQUES

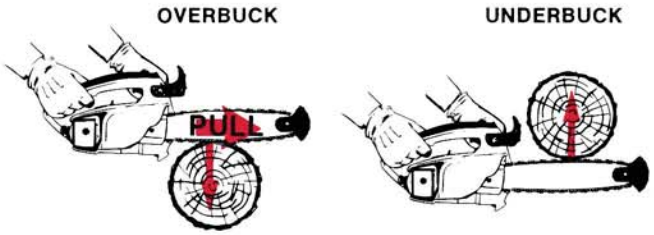
For your first cutting experience, set up a small log so that one end is off the ground. Practice your overbucking technique by cutting firewood length sections off the raised end. (See illustration.)



1. Position yourself and the saw for cutting. Hold the saw near the log and throttle up to full speed just before letting the chain touch the wood. Then exert moderate feed pressure to help the chain cut the wood. The chain must always be running at full throttle speed when it is contacting the wood, or you will burn out the clutch.
2. If desired you can pivot the saw blade back and forth during cutting. This often helps to speed up the cutting a bit.



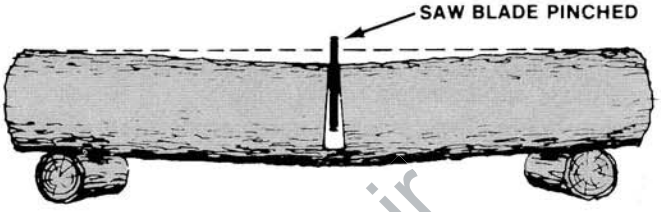
3. You will notice a slight amount of *pull* reaction during cutting. So be ready for the moment the saw breaks through the wood and *pull* ceases. You must be ready to stop pushing down on the saw and hold the saw nose up. The moment the chain breaks clear, release the throttle trigger so the engine will not overspeed.



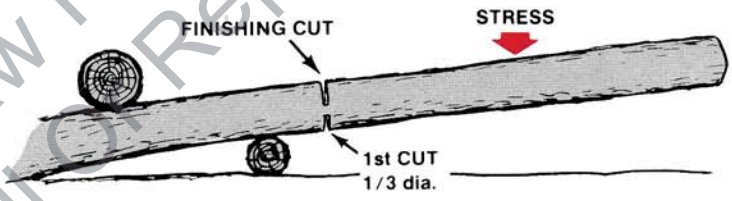
4. When you have mastered the overbucking technique, try underbucking to see what it feels like.

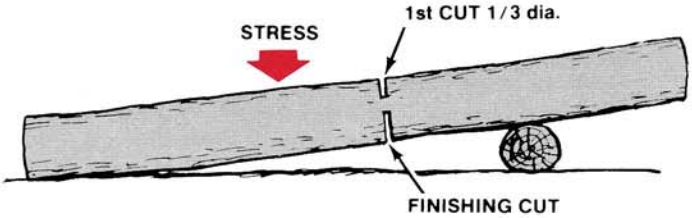
   Place the saw blade under the log. Throttle up and exert upward pressure to cut clear through. Now you are ready to learn when to overbuck and when to underbuck in order to avoid pinching the chain in the wood.

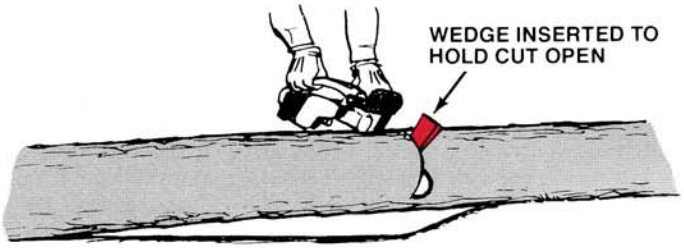
CUTTING VARIATIONS ACCORDING TO THE STRESS FACTORS



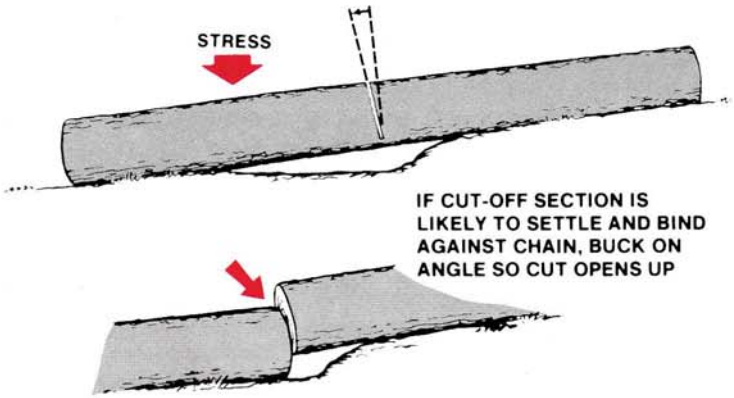
When the piece to be cut is supported on the ends, but not along the point where you want to cut, it will bend as you make your cut. If you are overbucking a log that will bend downward at the cut, your saw will be pinched if you cut more than 1/3 the log diameter. So overbuck 1/3, then remove the saw and finish with an underbucking cut from the bottom of the log. This 1/3-2/3 cutting technique helps to avoid pinching of the saw and splitting of wood that is under stress. With small diameter wood, you can make the whole cut by underbucking as long as you don't care if the wood splits. The reverse of the above is true when the lie is such that the log will bend upward at the cut. In this case, underbuck 1/3 through, and then overbuck so that the cut will open up instead of closing on the saw blade.



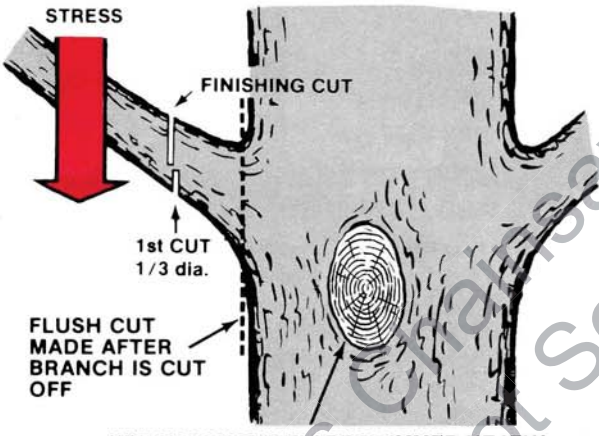




Sometimes it is impossible to avoid pinching (with just standard cutting techniques) or difficult to predict which way a log will bend when cut. You can do this to prevent pinching: If the wood diameter is large enough for you to insert a soft bucking wedge without touching the chain, you should use the wedge to hold the cut open. Sometimes a pocket in the ground will allow the cut section of log to settle, resulting in a pinch. The wedge is also useful here, but in this case you can cut on a slight angle (as illustrated) so that any settling of the log will result in increasing the gap between the cut log sections.



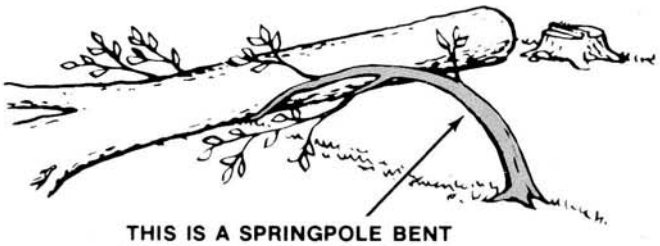
When pruning shade trees it is important not to make the flush cut next to the main limb or trunk until you have lopped off the limb further out to reduce the weight. This prevents stripping the bark from the main member. Unless the branch to be pruned is supported by another branch, the stress will be downward (see illustration). Underbuck the branch 1/3 through, then overbuck to drop the branch off. Now make your finishing cut smoothly and neatly against the main member so the bark will grow back to seal the wound.



WHEN BRANCHES ARE TRIMMED NEATLY FLUSH WITH THE TRUNK, THE BARK CAN GROW BACK TO SEAL THE WOUND.

SPRINGPOLES

A springpole is any log or branch or sapling which is bent under tension by other wood so that it will spring back if the wood holding it is cut or removed. Watch out for springpoles. They are potentially dangerous.



THIS IS A SPRINGPOLE BENT DOWN UNDER HIGH STRESS.

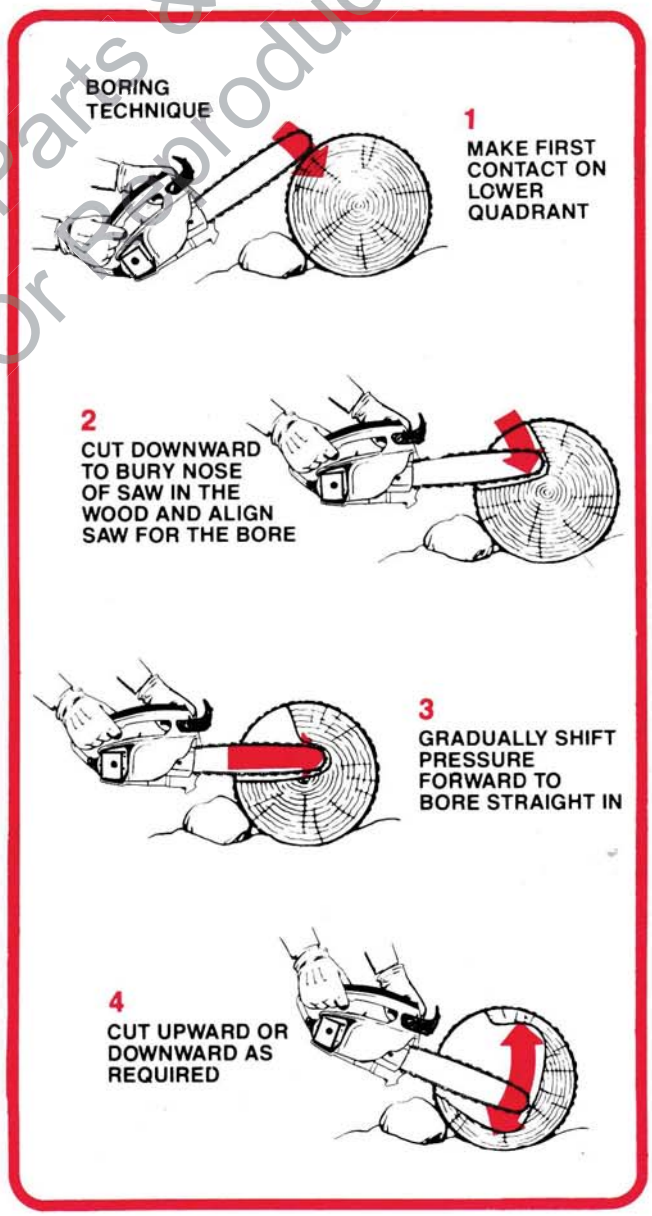
BORING WITH THE NOSE SECTION

KICKBACK DANGER

There is a great possibility that the saw will kick back during the start of the boring cut.

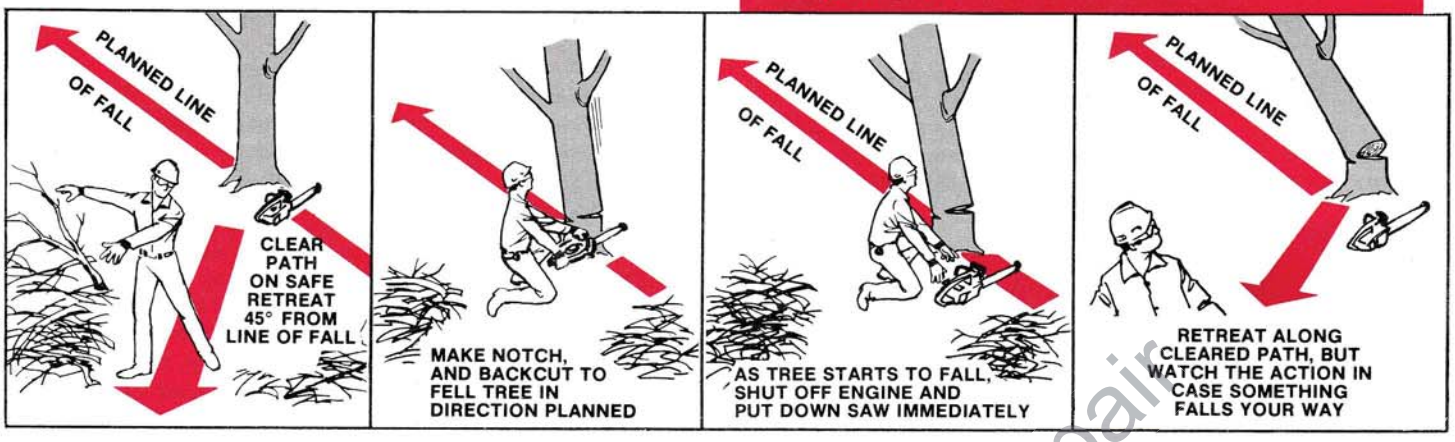
Boring should be attempted only by experienced operators because it requires extreme care and attention to proper technique. Do not bore unless there is no other way to make a cut. Boring is usually resorted to in order to avoid an obstacle or when it is necessary to make blind holes such as cut-outs for log cabin windows. The SAFE•T•TIP® anti-kickback device must be removed for a boring cut. Boring increases the chance of kickback and also wears the chain and bar at an accelerated rate.

Study the panel illustrating a boring operation. As shown, the danger will be minimized if you can make first contact *on the underside of the bar* as far back from the bar nose as you can get. Then cut *downward* into the wood until the tip is buried in the cut. Gradually bring the saw level, then bore through the wood to the full length of the blade. Now you can cut either upward or downward through the wood as shown in the panel.



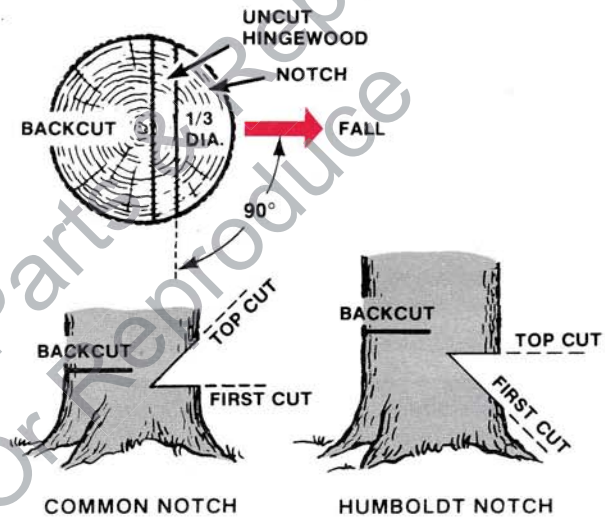
TREE FELLING TECHNIQUES

CAUTION
If the saw gets caught or hung up in a tree during felling, leave the saw and save yourself. The saw can be replaced and you cannot!

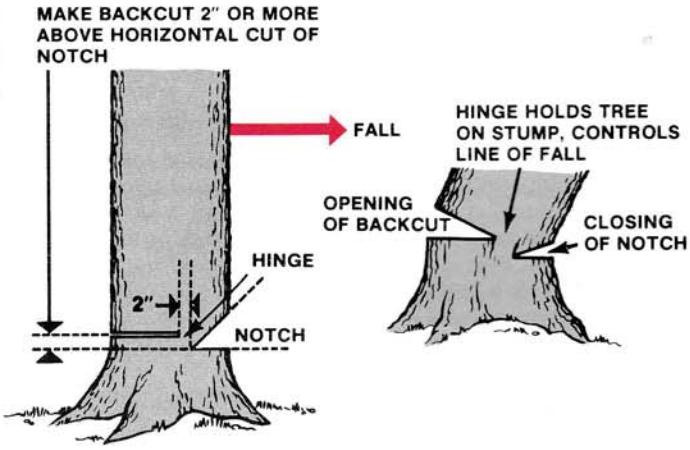


1. Pick your escape route (or routes in case the intended route is blocked). Clean the immediate area around the tree, and make sure there are no obstructions in your planned path of retreat.
2. Consider the factors of wind direction and velocity, the natural lean and the balance of the tree, and the location of large limbs. These things influence the direction in which the tree will fall. Do not try to fell a tree along a line different from its natural line of fall until you have had considerable experience in felling trees which present no problem as to where they will fall.
3. Take into consideration whether the trunk is sound or so rotted inside as to snap and crash while being cut. Also look for broken or dead branches (widow makers) AND don't go below any widow makers.
4. In tight situations where a mistake in the direction of fall could ruin other trees or destroy property, attach a tether line to the tree as illustrated.

5. If the tree is not badly out of balance, cut a notch about 1/3 the diameter of the trunk. This notch whether standard or "Humboldt" is made in the side the tree is to fall. And the cuts of the notch are made so they intersect at a right angle to the line of fall. This notch should be cleaned out to leave a straight line. To keep the weight of the wood off the saw always make the lower cut of the notch before the upper cut. We illustrate a common notch made with a horizontal cut and an angular cut above it. A "Humboldt" notch, with the horizontal notch on top, is made when trees are to be cut for saw log processing.



6. The backcut is always made level and horizontal and at a minimum of 2 inches (51 mm) above the horizontal cut of the notch. As a guide to placing the back cut above the notch, figure 10% of the trunk diameter as the proper height. Be very careful to make a level back cut, as a slanted back cut can cause the tree to split or "barber chair" (see illustration).
7. *You must never cut through to the notch.* Always leave a band of wood uncut between the notch and back cut. This is called "hinge" or "hingewood." It controls the fall of the tree and prevents slipping or twisting or shoot-back of the tree off the stump. If the tree starts over in the wrong direction, or if the saw gets caught or hung up during the fall, leave the saw and save yourself!



8. On large diameter trees, it is proper to stop the back cut before it is deep enough for the tree to either fall or settle back on the stump. Then, soft wooden or plastic wedges (not hard metal) are inserted behind the saw so they do not touch the chain. The wedges can be driven in, little by little, to help jack the tree over.

9. Trees larger than the saw can cut in one cut, can be both notched and back-cut in a series of cuts, as illustrated. Start the notching cuts from one side and draw the saw through to the other side of the notch. Start the back cut on one side of the tree, pivoting the saw through to form the desired hinge on that side.

   Then remove and reverse the saw for the second cut. Insert the saw in the first cut, very carefully so as not to cause kickback, and cut back toward and around the back of the trunk. Complete the back cut by cutting towards the notch to complete the hinge section.

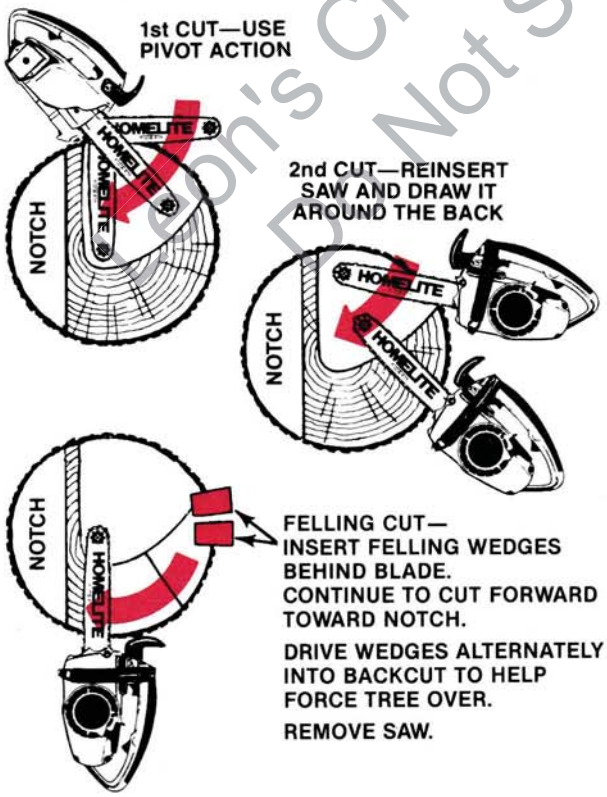
NOTE

Insert your felling wedges in the back cut. Remove the saw before tree is ready to fall and drive the wedges in to fell the tree.

NORMAL SEQUENCE USED TO FELL VERY LARGE TREES (UP TO TWICE BAR LENGTH IN DIAMETER)

DANGER

The chance of a kickback is very great during this series of cuts because the bar nose is inside the work.

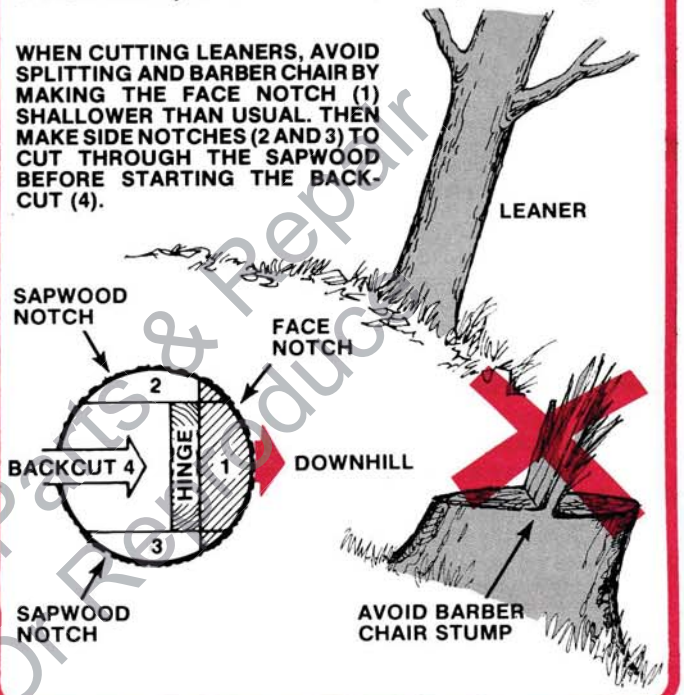


FELLING LEANERS

This variation is designed to prevent splitting and "barber chair" of leaners.

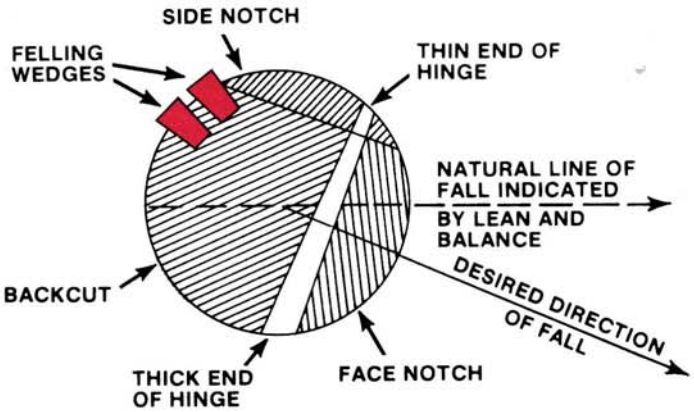
All standard felling techniques apply to leaning trees except as follows:

1. Make the directional control face notch shallower than usual.
2. Make shallow notches on both sides of the tree to cut through the outer layer (sapwood).
3. Now make your back cut to leave a parallel hinge.

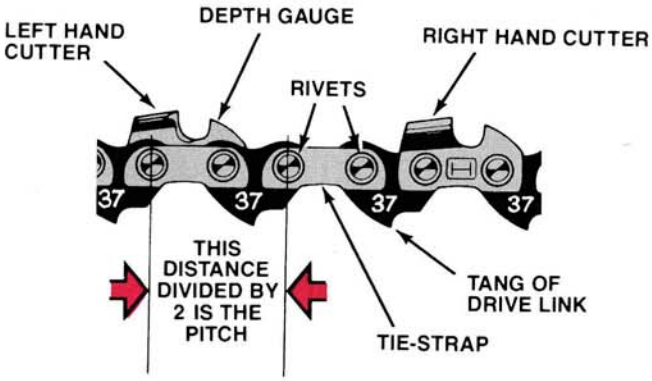


CHANGING THE DIRECTION OF FALL
(from the natural line of fall)

1. Where you would leave a parallel hinge (hingewood of equal thickness on both sides) the hinge is left thicker on the side *toward* which you want the tree to swing (away from the natural line of fall).
2. Place your wedges in the back cut *between the back-center and the narrow side* of the hinge. Drive in the wedges to force the tree over in the direction desired.



HOMELITE® SAW CHAIN



Saw chain is identified by a number stamped on either its tie-straps or its drive links. See note (page 8) for chain to use on a narrow nose bar. For wider nose (HT and PT series) bars, you may select any chain stamped "375" or "37." Do not use chains of other number series such as "25" or "38" as they will be of either the wrong pitch for your sprocket, or the wrong configuration for your saw. Whichever replacement chain you choose, be sure to use our sprocket and drum assembly #A-70221-A which fits all "37" and "375" chains.

WARNING

Do not use any type or brand of chain designed for use with an automatic chain sharpening device. The saws in this owners manual lack such a device, and are unequipped for use with these types of chain.

FILING EQUIPMENT

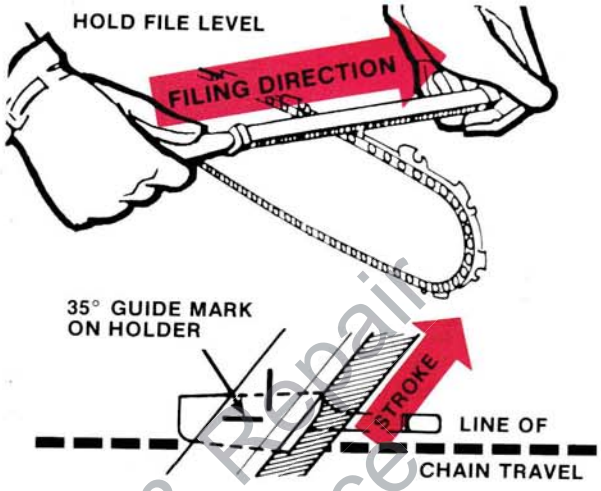
Purchase our assembly #DA-92617 which consists of a file holder and a 5/32" (4mm) diameter "fast-cut" round file (#92604). When about half to 5/8 of the tooth steel has been filed away, you should switch to a 1/8" (3.2 mm) diameter file (#92605). The 1/8 diameter file fits into the same file holder. The reason for switching to a smaller diameter file on "short-filed" teeth is that they are reduced in height due to their tapered top plate configuration.

You will also need a depth gauge tool (.020" or 0.5 mm, #3-92630) and a flat file (#92609).

HOW TO FILE THE CUTTERS

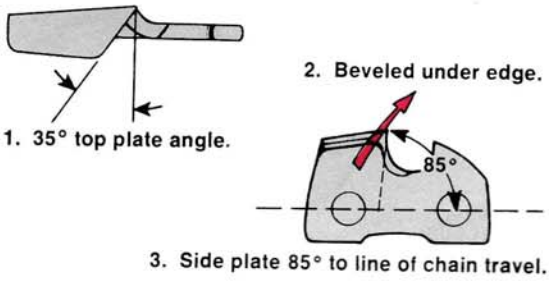
If you do not have a chain filing vise you can do a satisfactory job "on the bar" if you tighten the chain tension enough that the chain doesn't wobble. And, do all of your filing at the mid-point of the bar. Wear gloves for protection. Be sure to file all cutters to the same length. This must be done because of the taper of the teeth; if some cutters are shorter than others only the longer cutters will get a chance to cut. Also be careful to file all cutters to the specified angles, as fast cutting can be obtained only when all cutters are uniform. Each cutter then gets a chance to cut.

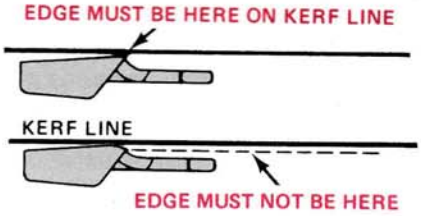
1. Hold file against cutter face at a 35° angle. (It is marked on the holder.)
2. Keep the file level with the tooth top plate. Do not let file dip or rock.
3. File in one direction only — towards front corner of the tooth. Move file away on the return stroke.



4. Use light but firm pressure, mostly towards back of cutter. Avoid heavy downward pressure (which causes a hook). The holder will keep 10% to 20% of the file diameter above the cutting edge IF YOU LET IT. This will produce the desired hollow-ground, beveled underedge automatically.
5. Put a few firm strokes in every tooth, filing all cutters on one side, then those on the other side of the chain. Rotate file in holder occasionally.
6. Examine your filing job in strong light. A sharp edge will not reflect light and a dull edge will. However, sharpening does not alone make a good cutting tooth. An abraded tooth, for instance, may still not cut until you have removed the worn or rounded off portion of the steel so that the sharp cutting edge is the highest part of the chain. In other words; the *edge* and not the *flat plate* of the cutter has to contact the wood first (see "Filing Out Skid-Nose Wear Pattern", page 21).

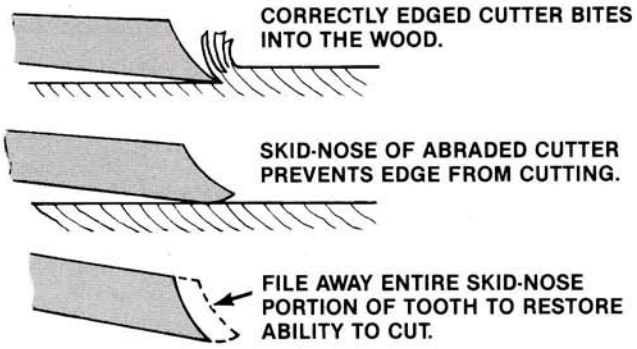
NOW EXAMINE YOUR FILING JOB — HERE'S WHAT YOU SHOULD GET:



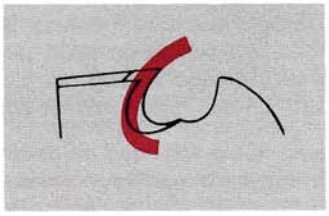


FILING OUT "SKID-NOSE" WEAR PATTERN

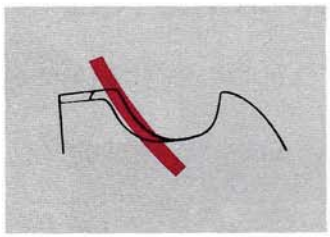
"SKID-NOSE" describes the edge area of teeth which have hit hard objects such as stones, nails, etc., or cut dirt, sand, etc. The "skid-nose" rides the wood surface keeping the sharp edges out of the wood. The friction at the "skid-nose" area overheats the cutter steel, and the chain gets "soft". The only way to restore the chain to good condition is to file away all of the "skid-nose" steel. And, then to adjust all cutters to the same length. As this may be tedious to do by hand-filing, consider having it done by your servicing dealer on an electric grinder.



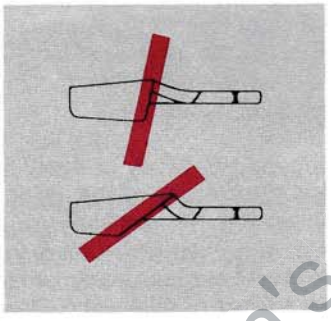
REFILE ANY TEETH HAVING ONE OR MORE OF THESE FAULTS



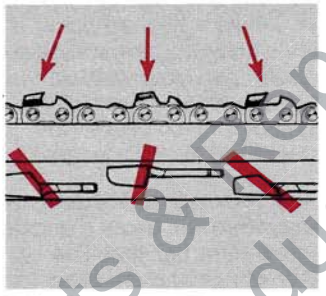
Forward Hook
Chain will grab and jerk. Producing rough-cutting. Caused by excessive downward filing pressure, or tip of file held too low on tooth.



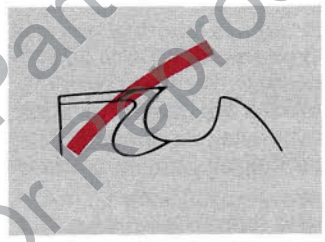
Back Slope
Chain resists entering wood. Scrapes instead of cutting. Causes excessive heat and wear to bar and chain. Caused by lowering handle end of file or holding file too high on tooth.



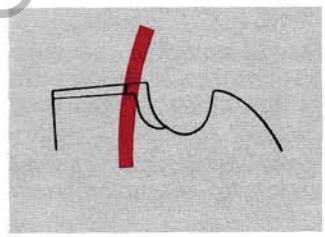
Improper Top Plate Angles
Blunt angle requires too much feed pressure to cut. Too sharp an angle causes binding. Produces a rough cut, robs power from saw, and increases bar wear. Caused by holding file at wrong angle or letting it drift or rock during the stroke.



Cutters Filed at Non-Matching Angles or Lengths
Chain will not cut at its best. May cut off line or "run" to one side. Drag will slow down engine. Caused by letting filing angle or pressure vary from tooth to tooth, or filing one side of chain differently from the other.

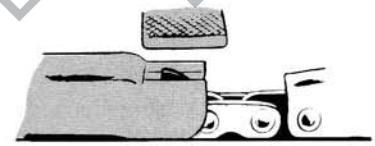


Thin Feathered Edges
When they almost immediately break off, you have a dull chain. Usually found on chain filed with a hook (see "Forward Hook"). Caused by pressing down too hard on file.

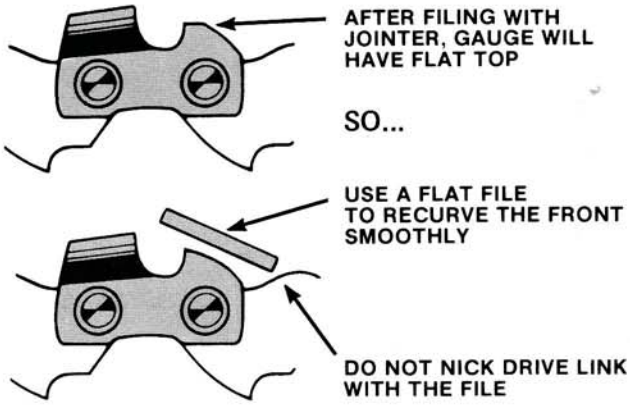


Blunt Cutting Edges
Although edge is durable, it won't cut properly. Scrapes wood, robs power, and produces dust instead of chips. Caused by holding file too high on face of tooth.

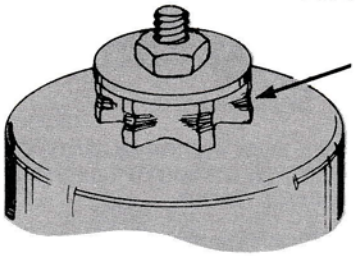
HOW AND WHEN TO SET DEPTH GAUGE CLEARANCE



Every second or third time the teeth are sharpened, or if a large amount of steel is removed from the cutters, the depth gauge should be checked for correct depth. Use a depth gauge tool and a flat file. Fit the tool over the chain so that the slotted end points towards the bar nose and the depth gauge projects up through the slot. File the depth gauge flush with the top of the tool. File all gauges to this height. If the gauges are too high, the chain teeth will not get a good bite. If too low, the teeth will take too large a bite, causing the chain to grab and jerk. If some gauges are higher than others, the chain will cut off line, favoring the side having the lowest gauges.



REPLACING WORN CHAIN AND SPROCKET



Sprockets and saw chains of the same nominal pitch normally stay in pitch with each other as they wear together. When the saw chain is being replaced, however, a chain-damaging mismatch may exist unless a new sprocket is installed to match the chain. While changing the sprocket, drum and bearing assembly, your servicing dealer will also check the condition of the clutch plate for you.

GUIDE BAR

After each day of use, reverse the guide bar on the saw so that the rails which were on the bottom will be on the top. This distributes the wear for maximum bar life. The bar should also be cleaned everyday of use and checked for wear and damage.

Feathering or burring of the bar rails is a normal process of bar wear. Such faults should be smoothed with a file or stone as soon as they occur, because they slow down your cutting. Also check that the bar rails are parallel (of equal height). If not, file or grind them parallel. Pinched rails can be opened by prying them apart carefully with a screwdriver.

A new bar will be repaired if the following faults occur, because the repair of your type and size bar would be either impossible or uneconomical.

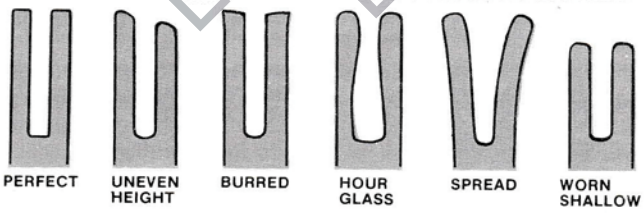
a) Wear inside the bar rails, called "hourglass" because of its cross section shape—It comes from too little chain tension and permits the chain to flop over sideways.

b) Bent guide bar—If only slightly bowed, the bar might be rebent straight. But compound twists or sharp bends call for replacement.

c) Cracked or broken rails.

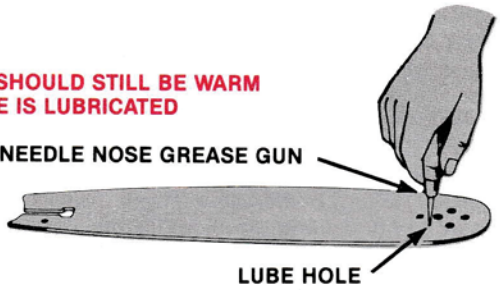
d) Spread rails—Peening will not satisfactorily close the rails of the laminated bar.

WEAR PATTERNS IN GUIDE BAR GROOVE AND BAR RAILS:



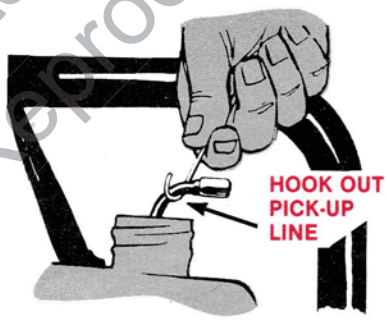
If the nose sprocket fails and the rest of the bar is in good condition, your servicing dealer can install a new nose sprocket assembly in your old bar.

The original grease plus oil that comes off the chain may be enough to keep the nose sprocket lubricated. However, it is advisable to change the grease, from time to time, to remove the old grease which may be packed with sawdust and dirt. Homelite dealers sell a grease-packed needle nose lube gun (as part #D-92680) for sprocket nose bars. You can also use needle nose lube gun (#24258-1) with



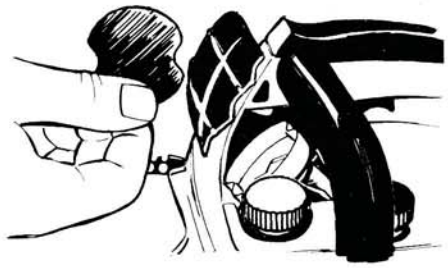
Homelite® All-Temp Multi-purpose Grease (#17193) or a good quality lithium base grease. The bar nose should always be warm (from recent operation) when the grease is changed. If the old grease is cold and hard, it cannot be pumped out. A small lube hole is provided on each side of the bar near the nose. Pump grease through one of these lube holes until the dirty grease is forced out and fresh grease appears.

MAINTENANCE OF TANKS AND PICK-UPS

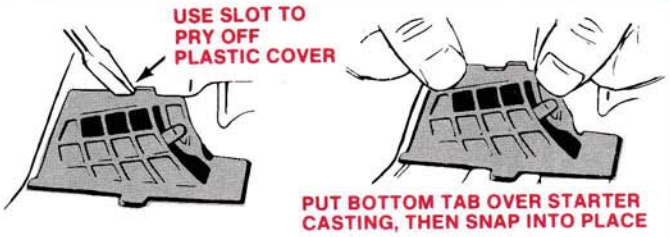


1. The regular maintenance period is *yearly or every 50 operating hours.* However, trouble can result at any time from dirt, sawdust, moisture, or stale fuel.
2. To remove the pick-up from either the chain oil or the fuel tank, remove cap. (Slowly—Let pressure equalize.) Hook the pick-up line with a piece of clean wire. Draw the line and pick-up out through the filler hole. Remove the pick-up from the line.
3. Change the chain oil pick-up. Or clean it by picking or blowing the wire mesh clear.
4. Pull the felt sleeve off the fuel pick-up body. (The felt is not cleanable). Install a new sleeve on the metal body and push the pick-up onto the line.
5. Drop assembled clean pick-up back into the tank.
6. A leaking or clogged oil pick-up causes insufficient oiling. Symptoms of fuel starvation (engine lacks power and falters or a cutting load) require checking. A fuel check can be made by your servicing dealer. However, you can make these checks for yourself:
   a) Loosen fuel cap just enough to leak air. If this restores performance to the saw, have the tank vent changed (this vent valve is just inside neck of tank).
   b) Check for split ends, kinks, cracks and deterioration of fuel pick-up line all the way to the carburetor. Note: Peroxides in stale fuel attack rubber fuel lines. We recommend use of fresh, treated fuel (see page 11).

AIR FILTER MAINTENANCE



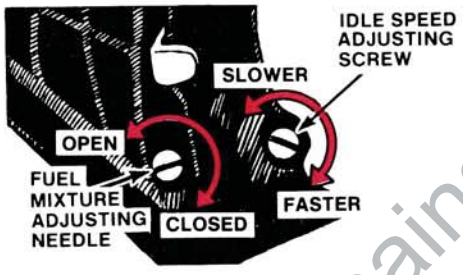
The spongy element removes dirt from the air. When it clogs up, the saw will smoke excessively and lose power. The filter should be changed when dirty, but in an emergency, can be cleaned in detergent and water or a cleaning solvent and allowed to dry. The normal life expectancy of the element is 10 to 15 hours of operation. However, extremely dirty operating conditions may cause the filter to clog in four or five hours. You should keep some spares on hand for quick-changing.



To Inspect and Clean or Change the Air Filter

1. Refer to the illustrations. Use the slot at the top of the black plastic filter cover to pry off the cover.
2. Clean the area around the filter before removing filter.
3. Fit clean filter in place carefully.
4. Before operating, reinstall plastic cover as follows: Start cover on by putting choke lever through the slot and placing tabbed bottom and rear edges into position. Press cover into place. WARNING: Never run the engine without the filter.

CARBURETOR ADJUSTMENT



The carburetor is an all-position, diaphragm type. Should tuning of the carburetor for high-speed performance be required, we recommend that it be done by your authorized servicing dealer.

The following adjustments may require readjustment from time to time to achieve the desired idling characteristics.

WARNING

Do not operate if chain does not stop rotating when engine is idled. Adjust idle as instructed below. If idle cannot be adjusted properly, have saw fixed by your authorized servicing dealer.

The first adjustment is the *idle speed screw*. This screw is used to adjust the idle speed. It does this by holding the throttle shutter partly open to let fuel and air be drawn through the carburetor for idling.

The second adjustment is the *idle mixture adjustment needle*. This needle adjusts the amount of fuel to get the correct mixture required for idling.

Always clean or change the air filter before attempting any carburetor adjustments.

Adjustment for Starting

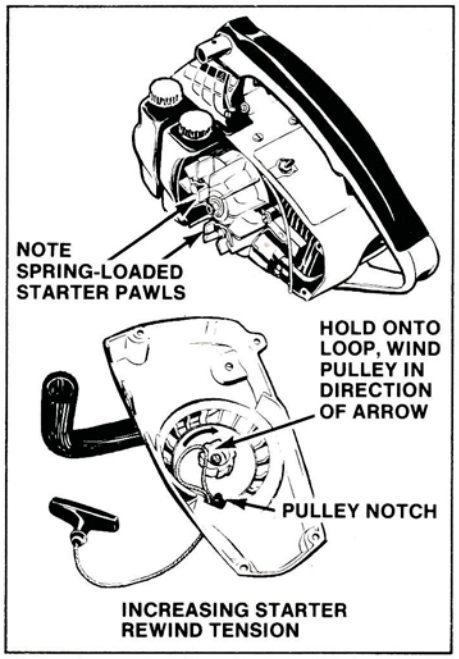
1. No adjustments are required for starting a cold engine at full throttle (trigger depressed) or for operating.
2. Adjustment for proper idle speed and mixture may be required if a hot or warm engine cannot be started at idle throttle or if the engine idles roughly or refuses to accelerate.
   a) Turn the *idle mixture adjustment needle* slowly clockwise until it gently closes against its seat. (DO NOT FORCE.) Then open it 1¼ turns.
   b) Turn the *idle speed screw* clockwise ½ turn at a time and keep trying to start the engine each time, until it does start and will keep idling.

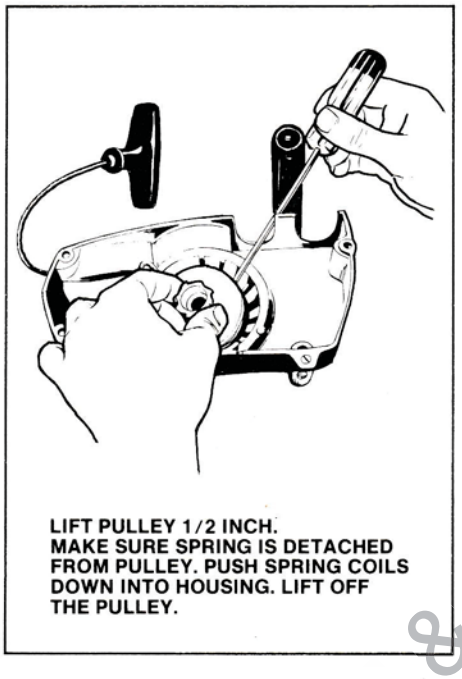
Adjustments After Engine Is At Operating Temperature.

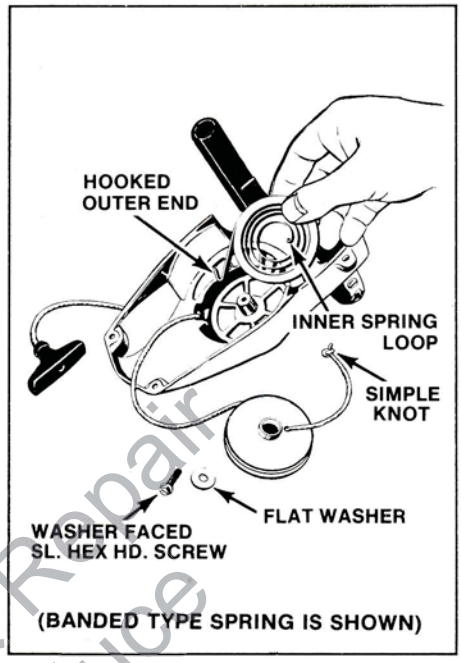
The saw should be started up and a few cuts made to warm it up. Then idle the saw and make the following adjustment:

1. Turn *idle mixture needle* slowly in one direction, then the other. Leave set where the engine idles the fastest.
2. If this idle speed is too slow, the engine will falter. Turn the *idle speed screw* slowly clockwise to increase the speed until the engine no longer falters at idle.
3. If the speed (in Step 1) is so fast that the chain rotates rapidly or takes too long to stop rotating after the engine is throttled back to idle, turn the *idle speed screw* counterclockwise until the chain stops turning (but no slower than this setting).
4. What you have done in the above steps is to adjust the throttle from the proper idle setting, and then adjust the mixture for *that* setting. Any time you adjust the idle speed always readjust the *idle mixture needle* for the best mixture as in Step 1.

STARTER REPAIRS







The starter has few parts and can be disassembled and repaired under field emergency conditions as when the rope breaks.

1. Remove the guide bar and chain.
2. Remove the screw through the top of the handlebar and the four screws through the starter/fan housing to the engine housing. Lift the starter/fan housing and the handlebar off the engine. Remove the plastic air filter cover.
3. TO ADD MORE SPRING TENSION: If the grip does not rewind all the way to the housing and stay in place, it may need another turn of tension. Note the rounded notch in the edge of the pulley. Pull out the grip about one foot and hold the pulley from rewinding. Turn the pulley to locate the notch at the rope entry hole in the housing. Hook up a loop of rope between the housing and the pulley. Grasp the loop and wind one turn tension (or more if necessary) in a clockwise direction. Hold pulley from turning. Pull the rope back out through the hole.
4. To replace starter rope or repair starter spring: Unscrew the starter screw and remove the flat washer.

WARNING

Put on safety glasses and gloves before removing the pulley.

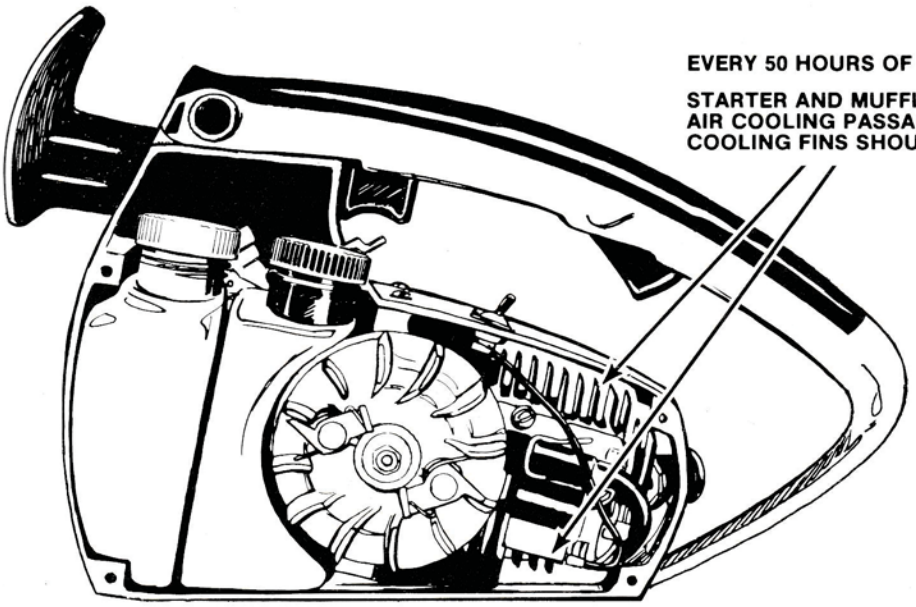
5. Grasp the toothed pulley hub and pull the pulley out of position about a half-inch or the width of your finger. Using a thin bladed screwdriver, insert it between the pulley and the housing to free the pulley from the spring. Push the spring coils into the housing.

CAUTION

If you lift the pulley too far out before detaching the spring, the coils may fly apart. They are relatively difficult to rewind. Coils which are to be scrapped should be uncoiled before being discarded.

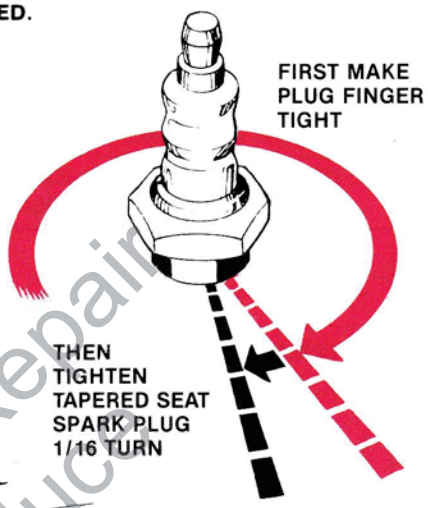
6. Replace the recoil spring if broken or bent.
7. Various types of starter spring assemblies may be encountered. All types are to be installed so that the outer spring loop engages the post in the recess of the starter housing. The type of spring which is coiled in its own retainer goes open-side-towards-starter housing. Integrally banded springs should be placed (as illustrated) and the coils pushed into the housing. The unretained and unbanded type should have the outer loop hooked to the post and then be wound into the housing a coil at a time. Be very careful not to let the coils fly apart. They should be tied or taped together while out of the housing.
8. Clean the pulley post and the pulley.
9. To replace the rope cut old rope and remove it. Push new rope through rope and draw the end out through the pulley slot. Tie a simple knot tightly in the other end. Coat it with acetone type cement to set the knot and trim the rope neatly up to the knot. When dry, pull the rope to draw the knot through the hole. Run the rope through the hole in the housing, thread the starter grip onto the rope and knot this end. Draw the knot into the grip.
10. Grease the pulley post lightly (not too much grease) and drop the pulley into place over the post. Pull rope out to the end to straighten it, then wind pulley counterclockwise to wind rope onto it.
11. Test for spring engagement by pulling rope out and letting it rewind. If it does not rewind all the way, pull rope out and hold pulley from turning. Pull up a loop of rope between housing and pulley (use the notch) and wind 1 turn extra tension onto the pulley by holding rope and using it to turn the pulley clockwise. Hold pulley from turning, and pull rope out until it runs straight through the housing hole onto the pulley. Let pulley rewind. If grip does not rewind up to the housing, repeat this procedure to add one more turn at a time until grip draws into place against the housing.
12. Secure pulley with the flat washer and screw. Press the housing lightly against the rotor while pulling the starter rope a short distance and letting it rewind until the housing clicks flush against the engine cover. You may then safely secure it with the four screws previously removed. Fasten the handlebar to the engine cover with one screw at the top.

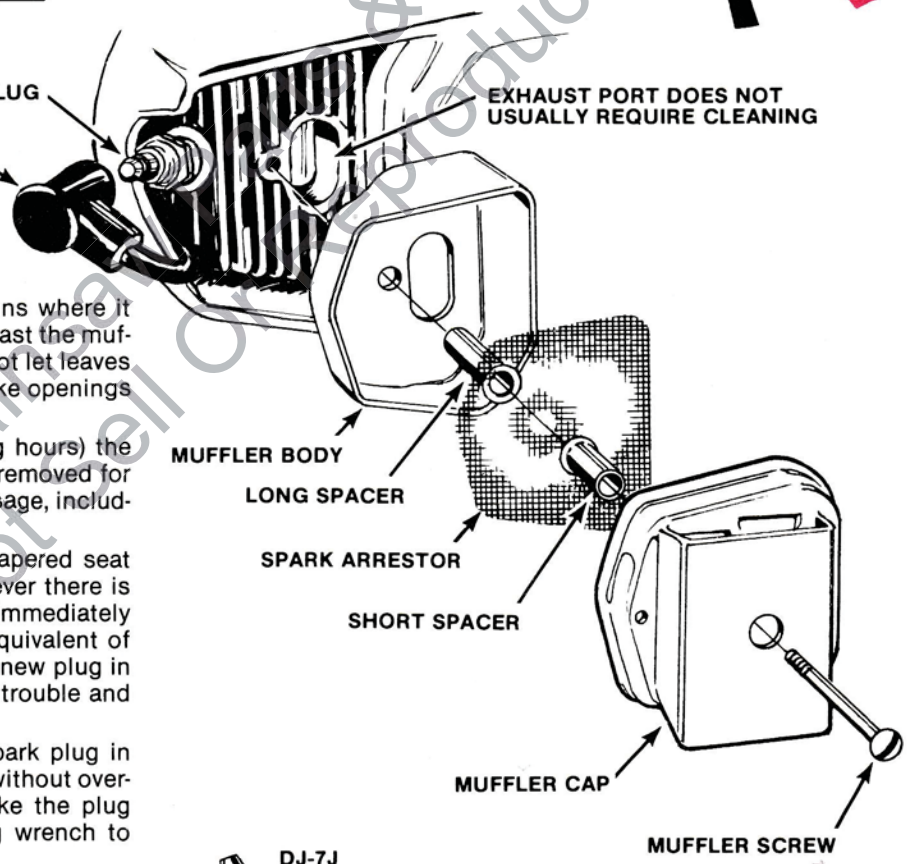
SPARK PLUG, COOLING AND EXHAUST SYSTEM



EVERY 50 HOURS OF OPERATION:

STARTER AND MUFFLER SHOULD BE REMOVED. AIR COOLING PASSAGES AND CYLINDER COOLING FINS SHOULD BE CLEANED.

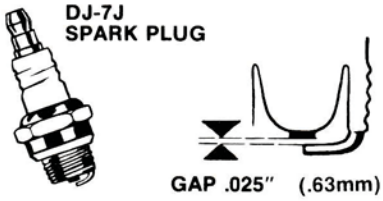




1. The fan blows air between the cylinder fins where it takes on engine heat and then blows out past the muffler. This is how the engine is cooled. Do not let leaves and sawdust build up either at the air intake openings in the starter or around the muffler.
2. Occasionally, (perhaps every 50 operating hours) the muffler and starter assemblies should be removed for a thorough cleaning of the cooling air passage, including the slots formed by the cylinder fins.
3. The engine as a miniature, self-sealing tapered seat type Champion #DJ-7J spark plug. Whenever there is trouble starting the engine, always immediately replace it with a new DJ-7J plug (or its equivalent of the same type and heat range). Leave the new plug in the saw at least until you have found the trouble and gotten the saw started.
4. When installing the tapered seat type spark plug in this engine, you must get a gas-tight seal without overtightening the plug. To do this, first make the plug finger tight and then use the spark plug wrench to tighten 1/16 turn more.
5. The most frequent cause of ignition trouble is spark plug fouling. This can be due to a build-up of hard engine deposits, but is often due to soft deposits or merely wetness caused by a) flooding, b) improper fuel of some nature, c) wrong adjustment of the carburetor idle mixture or prolonged idling of the engine, and d) wrong spark plug gap setting.

NOTE

Cleaning by hand-brushing or hydro-honing followed by a rinse in solvent is recommended. Power-brushing or sandblasting are not recommended, as these methods drive into the plug harmful particles which cannot be removed with solvent.



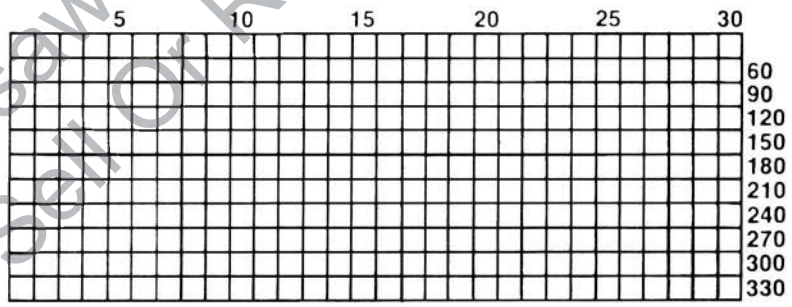
6. Fouled plugs often can be restored, first by cleaning and then by resetting the firing gap. The metal electrodes should be filed or scraped down to the bare metal, then gapped to .025" (0.63mm) by bending the side electrode toward the center electrode.

MAINTENANCE CHART

JOB	Daily Check	Every 5 Hours Operation	Every 15 Hours Operation	Every 50 Hours Operation
1. EXAMINE AND CLEAN EXTERIOR OF SAW	✓			
2. SHARPEN CHAIN		✓		
3. REVERSE GUIDE BAR TOP FOR BOTTOM ON SAW		✓		
4. CHECK SCREWS, TIGHTEN LOOSE FASTENERS		✓		
5. CLEAN GUIDE BAR, MOUNTING PAD AREA, AND OIL DISCHARGE HOLE		✓		
6. CHECK AIR FILTER		✓		
7. LOWER CHAIN DEPTH GAUGES		✓		
8. CHECK FUEL FILTER			✓	
9. CLEAN SPARK PLUG AND GAP TO .025" (0.63mm)				✓
10. DISASSEMBLE MUFFLER, AND CLEAN MUFFLER AND CYLINDER EXHAUST PORT.				✓
11. CLEAN CYLINDER FINS, AIR INTAKE AND ENGINE COOLING PASSAGEWAYS.				✓

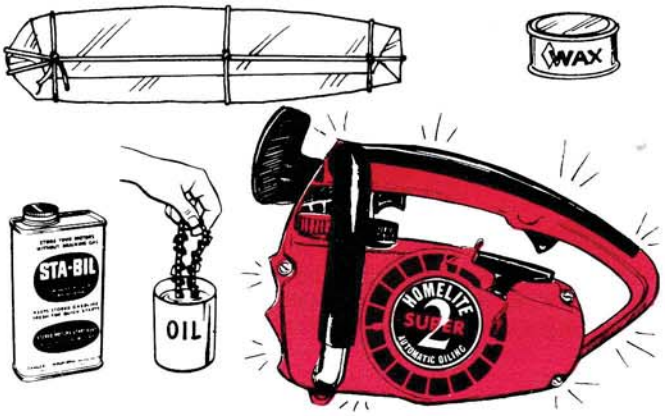
NOTE: Figure that each hour of operating time requires 4 tankfuls of fuel.

MARK ONE SQUARE EACH REFILLING. DIVIDE TOTAL BY 3 FOR ROUGH ESTIMATE OF OPERATING TIME.



STORING YOUR SAW

Chemicals and moisture in the atmosphere will attack an unprotected saw. Remove the chain and store in a container of oil. Clean the guide bar and wrap it in oiled paper or an oily rag. Add a fuel stabilizer, such as STA-BIL®, to fuel according to directions on the stabilizer can. Fill fuel tank to the top. Run engine for a few seconds on this mixture and stop engine by pushing the choke lever all the way up (instead of using the switch). Disconnect spark plug wire so engine cannot be started accidentally. Apply auto wax to painted exterior surfaces of the engine. Store engine and bar in a cool dry place, away from garden chemicals, fertilizers and de-icing salts. NOTE: If fuel stabilizer is not available, or the saw must be stored in an area constituting a fire hazard, the fuel tank must be completely emptied of fuel prior to storage.



FILL IN THIS INFORMATION FOR YOUR RECORD

MODEL NO. _____

UT NO. _____

SERIAL NO. _____

DATE OF PURCHASE _____

NAME OF DEALER _____

ADDRESS _____

INVOICE NO. _____

FORESTRY PRODUCTS DIVISION
P.O. BOX 7047
14401 CAROWINDS BOULEVARD
CHARLOTTE, NORTH CAROLINA 28217

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