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OWNERS Operating & Maintenance MANUAL

**HOMELITE
JACOBSEN**

XL[®]

Automatic Oiler

CHAIN SAW

with



ANTI-KICKBACK
DEVICE*



*Pat. Pending

WARNING: Chain Saws can be dangerous. To reduce danger follow all safety precautions in the owners manual before using the saw.

NOTICE: Kickback is the most dangerous of the reactions with which the chain saw operator must contend. Kickback and the other reaction forces are discussed in this manual on page 3.

HOMELITE TEXTRON

Homelite Division of Textron Inc.

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) Throttle* up before letting the chain contact the wood. Do all cutting at full throttle.
 - 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.

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INTRODUCTION

KICKBACK, PUSH, AND PULL

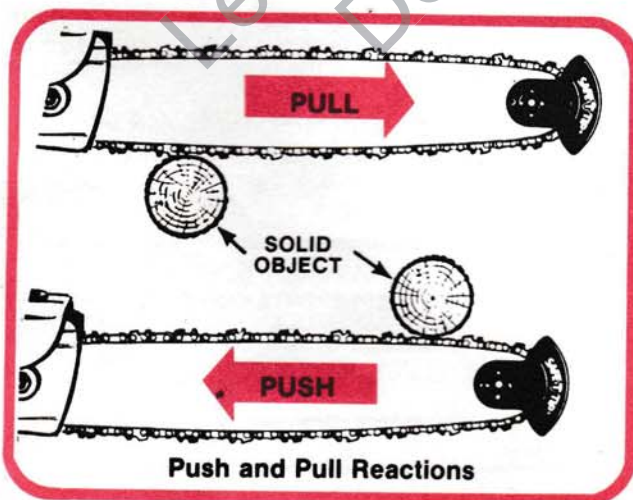
and how these reaction forces are best controlled

WARNING

Your saw came with a **SAFE•T•TIP®** anti-kickback device installed on the guide bar. Remember that, for the few occasions where you may wish to work temporarily with this kickback preventive device removed, you must rely on using the techniques described in this owner's manual to maintain control of the saw. The saw's kickback-reducing **RAKER III™** saw chain will also help you to maintain control, but only the **SAFE•T•TIP** device can prevent kickback from happening.

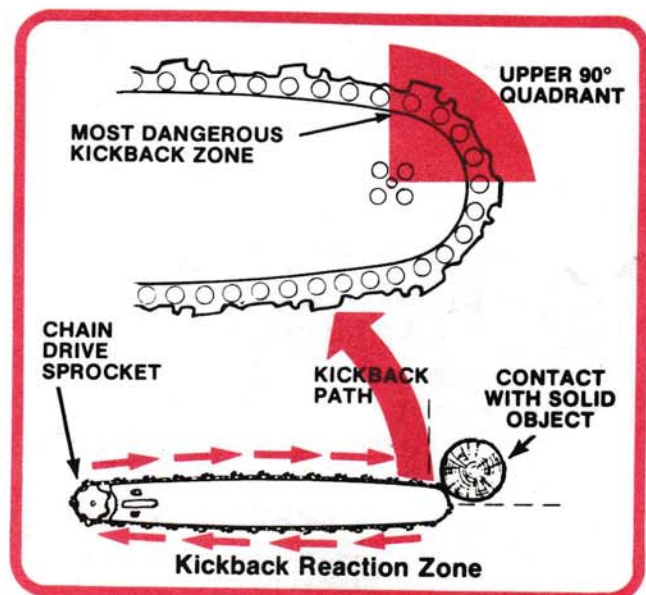
THE REACTION FORCES

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.



THE **SAFE•T•TIP** DEVICE DOES NOT PREVENT OR REDUCE PUSH AND PULL REACTION.

KICKBACK is another reaction, the most dangerous of these reactive forces. It occurs only when solid contact with 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.



OPERATOR
STANDING
IN THE
CHAIN LINE
DIRECTLY IN
POTENTIAL
KICKBACK PATH



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" (thumb on top) 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.

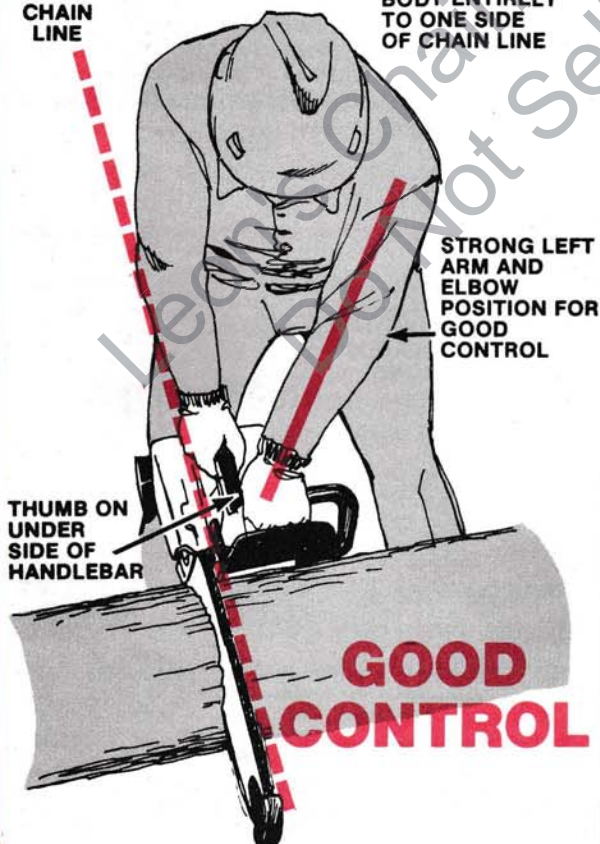
3. Get a good grip on the rear handle.
4. Maintain your balance on both feet, and do not reach above chest height with the saw engine, or reach so far forward that you could be drawn off balance by the saw's reactions.
5. Stand a bit to one side so that no point of your body is behind the chain line (in the line the saw will take if it kicks back).

HOW TO REDUCE THE CHANCE OF A KICKBACK

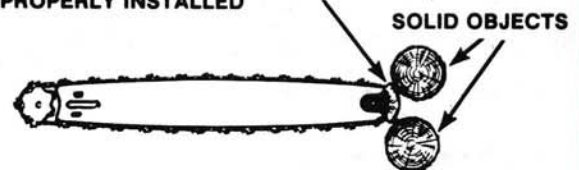
1. Avoid letting the nose section of the saw contact any object. Note: A SAFE•T•TIP® anti-kickback device, when properly installed on the bar nose, will prevent kickback.
2. Avoid use of the nose section of the saw for cutting. Cut well back on the straight section of the bar.
3. Be sure to keep your 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.

CHAIN
LINE

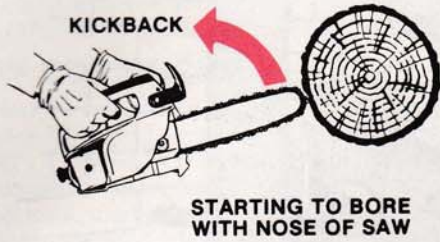
BODY ENTIRELY
TO ONE SIDE
OF CHAIN LINE



SAFE•T•TIP DEVICE PREVENTS CONTACT WITH SOLID OBJECTS, PREVENTS KICKBACK WHEN PROPERLY INSTALLED



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



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.)

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.

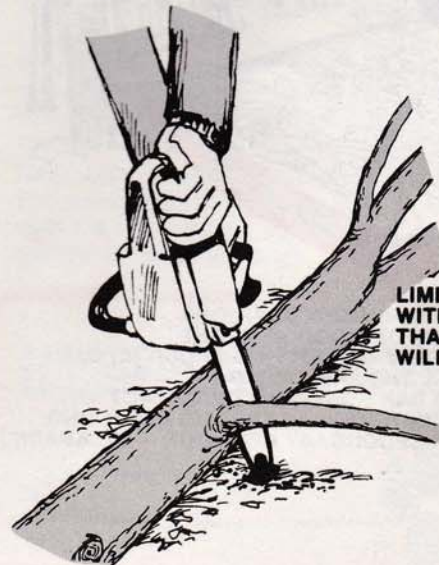


CUTTING ONE TRUNK ONLY OF A DOUBLE-TRUNK SHADE TREE

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 YOUR MODEL XL CHAIN SAW

READ OWNERS MANUAL

This Owner's Manual tells how to operate and maintain your Model XL® chain saw. You are urged to read the entire contents of this manual even before you begin to assemble the unit. Proper preparation and maintenance go hand-in-hand with the satisfactory operation of your saw. So you should keep this manual handy.

FACTORY EQUIPMENT

The guide bar sizes (cutting lengths) for the Model XL chain saws are 10-inch, 12-inch and 14-inch. All bars are equipped with a SAFE•T•TIP anti-kickback device. The 375" pitch Homelite® saw chain is type R37ME-50. This is a semi-chisel tooth low kick chain called Raker III™ Chain. Your saw also has a hand guard. Check out your new saw carefully. If either the SAFE•T•TIP device or the handguard is missing DO NOT OPERATE THE SAW. Return it to the dealer.

WARNING

Do not use bars of sizes other than those listed above, or accept any replacement guide bar which does not accept the SAFE•T•TIP device. Do not adapt the engine to a bow guide or use it to power any attachments or devices not listed for the Model XL Chain Saw in Homelite sales literature.

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. Hereditary factors, exposure to cold and dampness, 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 extent of 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:

- 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.
- Refrain from smoking (another suspected contributing factor).
- After each period of operation, exercise to increase blood circulation.
- Take frequent work breaks. Limit the amount of exposure per day.
- Keep the tool well maintained, fasteners tightened and worn parts replaced.

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

HAND GUARD

Your saw has a factory-installed hand guard. For your protection, do not remove this hand guard. The guard can be pivoted out of the way for fueling of the saw.

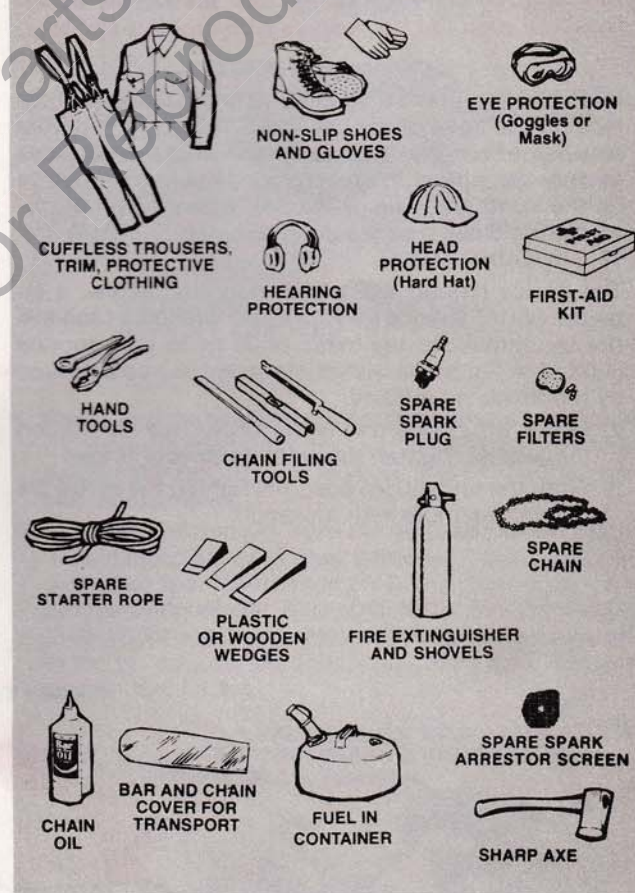
HEARING PROTECTORS

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."

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 clogging, cracking and burning out. Replacement spark arrestor screens are available in blister packs as #D-93991, or in kit form as #A-94139.

PROTECTIVE ARTICLES, EQUIPMENT & SUPPLIES



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.

SECTION 1 / PREPARING FOR USE

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.

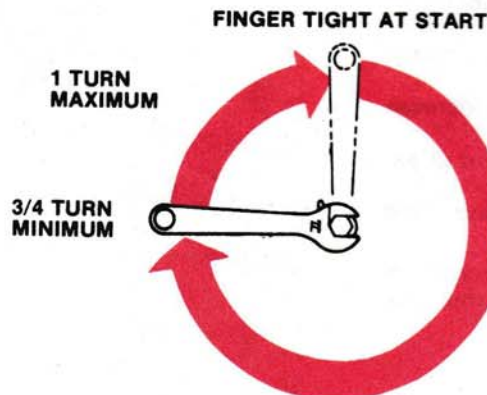
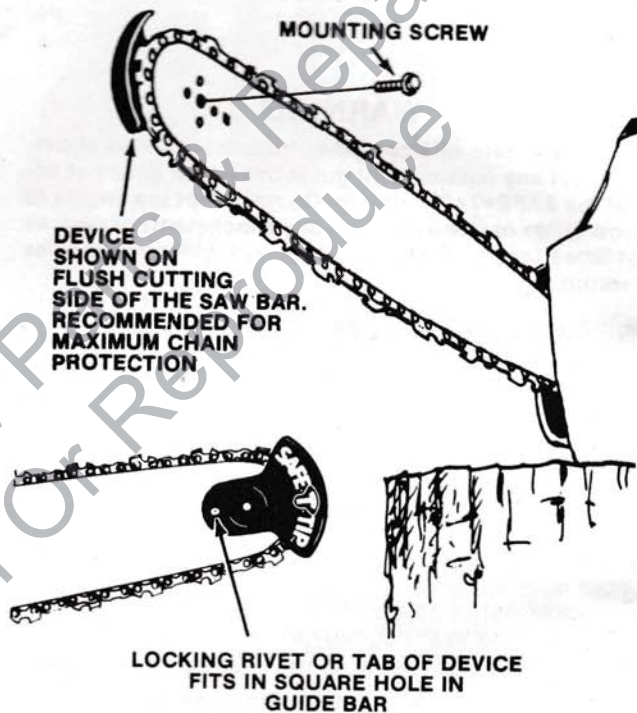
INSTALLING ANTI-KICKBACK DEVICE

IMPORTANT NOTICE

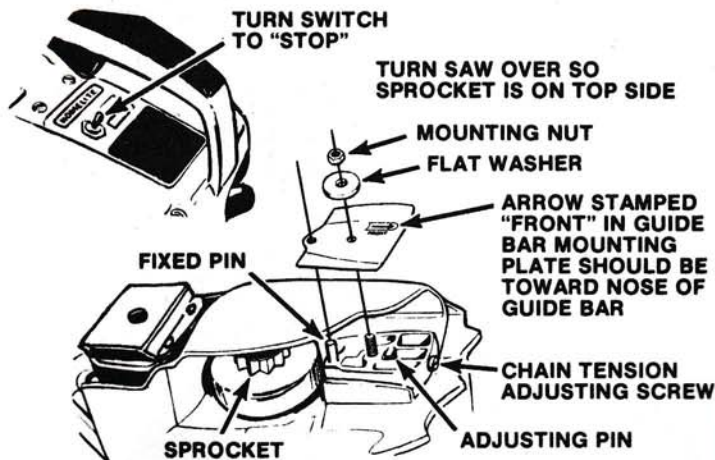
Although the guide bar comes with a SAFE•T•TIP® device already installed, we call attention to your need to check tightness of the mounting screw before each day of operation. You will also need to reinstall the device after guide bar maintenance has been performed.

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.

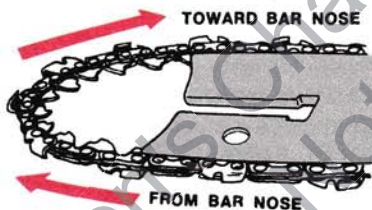
1. In addition to preventing chain contact with solid objects at the nose of the bar, the SAFE•T•TIP® device also helps keep the chain away from abrasive surfaces such as the ground. We recommend keeping the device on the righthand side of the bar, where it will be between the chain and the ground during FLUSH-WITH-THE-GROUND cutting.
2. The device has an 8-32 x 7/16 mounting screw. It requires a 5/16" wrench (or adjustable wrench) to achieve the recommended tightness of 35 to 45 inch-pounds (4-5Nm). A tightness within this range can be achieved by the following method.
 - a) Mount the device on the bar nose. (See illustration for details). Tighten the screw with your finger.
 - b) From the finger-tight position, tighten the screw 3/4 to one turn more with a wrench.



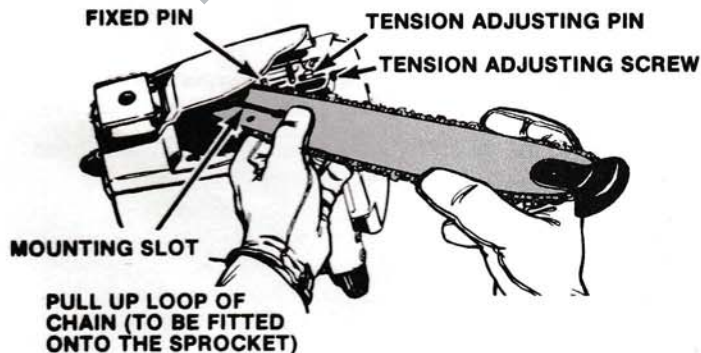
GUIDE BAR AND CHAIN ASSEMBLY



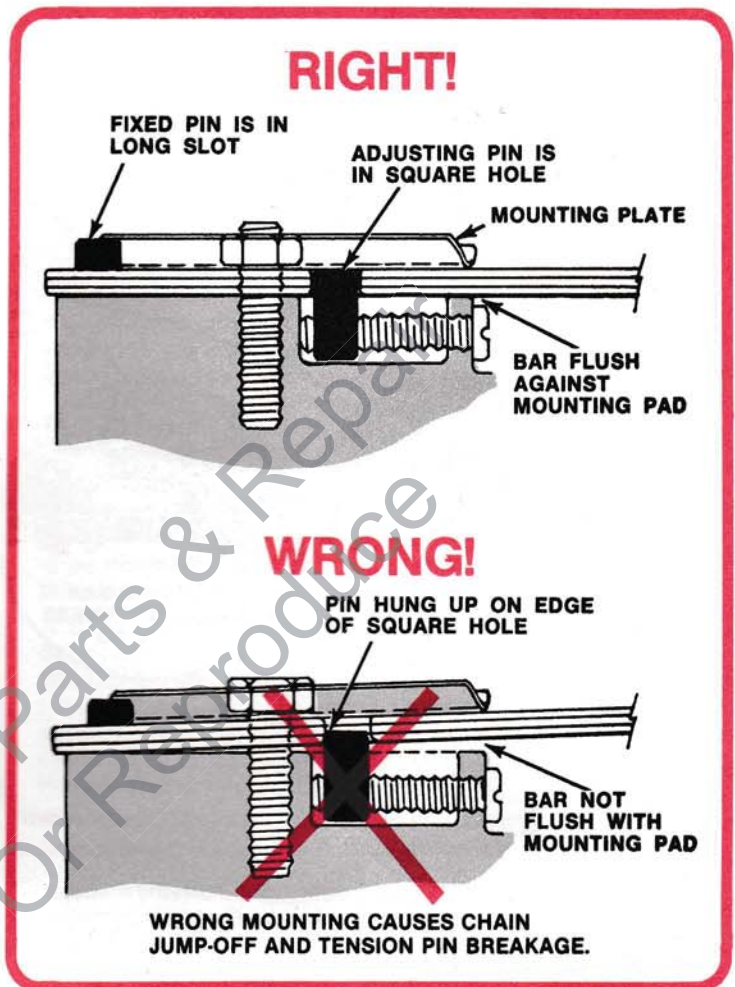
1. Always put the switch to "STOP" before you do any work on the saw.
2. Turn the saw over (see illustration). Remove the mounting nut, flatwasher, and the guide bar mounting plate.
3. Lay out the saw chain in a loop and straighten any kinks. The cutters should face in the direction of chain rotation (see illustration). If they face backwards, flop the loop over.
4. Feed the chain tangs into the bar groove. Pull the chain so there is a loop at the back of the bar. Hold chain in place on the bar and hook the loop over and onto the sprocket. Fit the bar flush against the mount so the fixed pin, mounting stud and movable tension pin are all in the long slot of the bar.



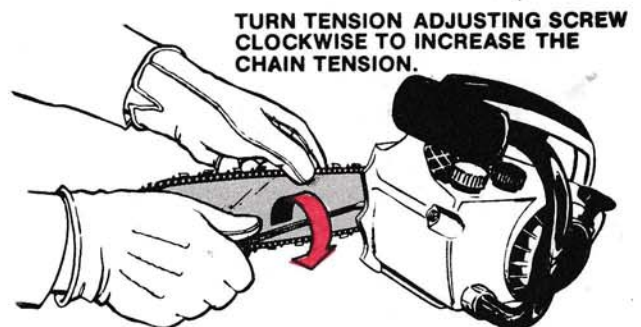
5. Hold the bar flush against the mount. Put the guide bar mounting plate, flat washer and nut back on the stud.



HOOK CHAIN OVER AND ONTO THE DRIVE SPROCKET. THEN FIT BAR ONTO THE MOUNT.

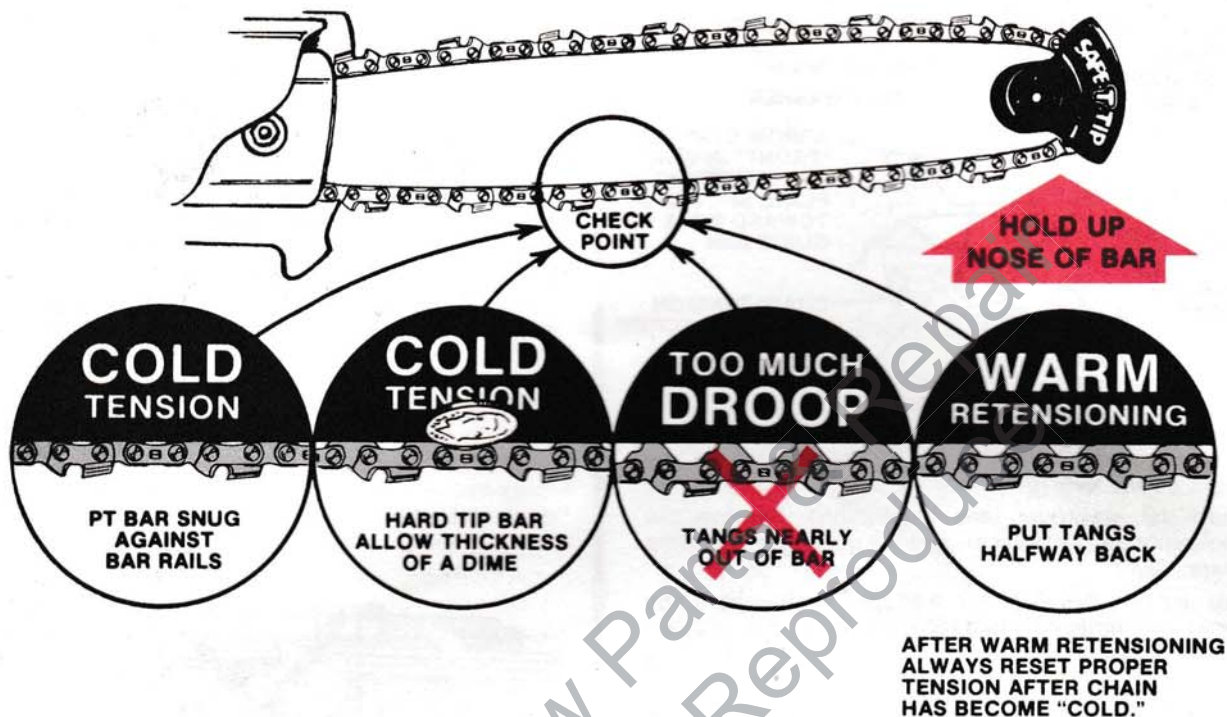


6. Check that the bar and pins are still in place. Turn down the nut with a wrench until bar is snug, but not tight against the mount. (Bar must be free to move for tension adjustment.)
7. Turn the saw upright. Turn the adjusting screw clockwise to move bar away from sprocket. Take up enough slack that the chain tangs enter the groove between bottom rails of the bar. (DO NOT CINCH CHAIN TIGHT!) Check the chain. If any tangs have come out of the bar groove, put them back. Now the chain tension should be set.



CHAIN TENSION

(Remember: Wear gloves)



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 track (HT 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 SYSTEM

1. Approved chain oils:

- Homelite® Bar and Chain Oil.** Recommended because it is designed for chains and chain oilers. Our bar and chain oil is formulated for performance over a wide temperature range with no dilution required.
- Any SAE-30 weight engine oil product that is clean. Even reprocessed oils are satisfactory as long as clean. Above 40° F. (4.4° Celsius) SAE-30 oil will flow freely through the automatic oil pump. However, in temperatures cold enough to cause thickening of SAE-30 weight oil, either switch to a lighter weight oil such as SAE-20 or SAE-10, or dilute SAE-30 oil with enough (up to 25%) kerosene that it will flow freely.

2. Disapproved oils:

Used, dirty or otherwise contaminated oils.

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.

3. How often to fill the chain oil tank:

Fill it at the start. Then refill every time engine is fueled.

4. How to check the oil system:

The rate of oil discharged depends on the engine speed. The higher the RPM, the more oil is pumped. No oil is pumped during idling of the engine. When saw is new, shut off every few minutes and look at the chain. The chain should always be quite moist in the area of the connecting links.



CHAIN OIL PRESSURE LINE AND CHECK VALVE. DO NOT FILL TANK ABOVE VALVE LEVEL.

NOTES

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

Do not set saw on surfaces which you wish to keep unstained. Although oil system pressure is relieved after shut-down, seepage due to gravity may continue.

Set saw down only on its base, and do not fill chain oil tank above the pressure line (see illustration). Upside-down storage of an overfilled saw, and constant jiggling during transport can force oil back through the pressure line to lock the saw hydraulically. Suspect a hydraulic lock if you cannot turn the engine over with the starter. To break the lock, remove and clean the spark plug. Crank the engine several times to dispel the oil in the cylinder. Reinstall the spark plug and start the engine.

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

A SAFE•T•TIP® anti-kickback device mounted on the bar nose can be used to check the flow of oil to the chain: Shut off the engine with the switch. Wipe the device absolutely clean. After running the chain, no longer than five seconds at full throttle, shut off the engine and see how much oil has been thrown off onto the SAFE•T•TIP device. The surface should be quite moist.

FUELING THE SAW

WARNING

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

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.

1. Recommended Fuel Ingredients:

- Unleaded gasoline is preferable as leaded gasoline will result in spark plug fouling at a faster rate.
- 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.
- 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.
- 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.
- 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:

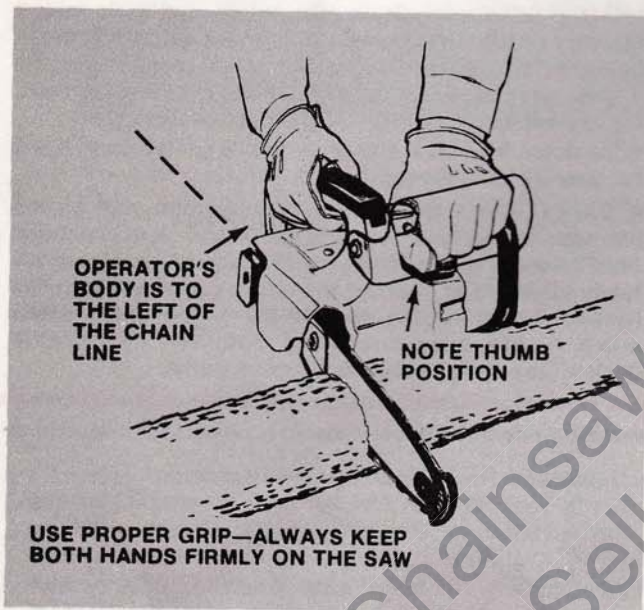
- Measure out the quantities of gasoline and oil to be mixed.
- Put some of the gasoline into the mixing can.
- Pour in all of the oil and agitate contents by stirring or by shaking the can.
- Pour in all of the gasoline. Again stir or agitate — this time for at least one minute.

3. Disapproved Fuel Ingredients:

- GASOHOL.** Alcohol draws moisture. Then "peroxides" and acids form in the fuel and the engine parts.
- 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.

PROPER GRIP AND STANCE

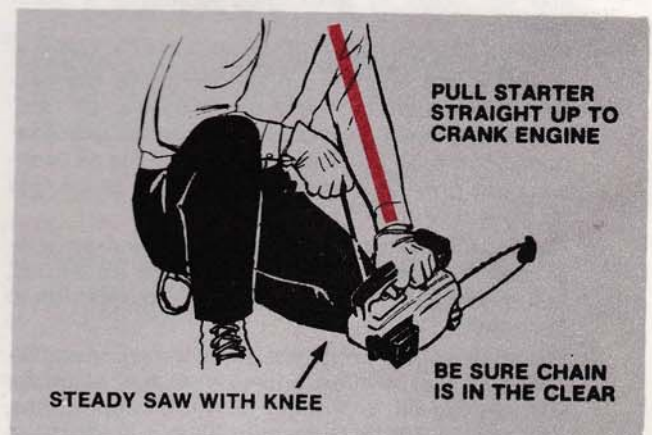
1. Wear non-slip gloves for maximum grip and protection. Using the proper grip, hold onto the saw firmly with both hands when the engine is running.
2. Always hold the saw with your left hand on the front handlebar, and your right hand on the throttle control handle. The grip maintained on the handlebar 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.



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 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

NOTE

You can expect some fluid, particularly chain oil, to seep from the saw during transport or lay up. Do not put saw on surfaces you wish to keep unsoiled.

Steps 1 through 9 are for Starting a Cold Engine.

1. Push switch to the "RUN" Position.
2. Push choke lever all the way up. Full choke (see illustration) is needed for a cold engine.
3. Hold saw down and open the throttle (see illustration).
4. Pull the starter grip a short way until you feel the starter engage, then pull straight up, briskly for a fast cranking spin. (Do not pull to the end of the rope, because this can damage the starter.) To reduce rope fray, hold onto grip during rewinding.
5. Crank until the engine fires. This should take three to five pulls the first time, then one or two pulls after that, except in very cold weather where the required extra rich mixture must be supplied by more cranking.
6. Put choke to half choke position before the next crank as soon as engine fires. (Firing is when the engine goes *pop — pop — pop.*) Any engine which has fired at full choke will start at half choke.
7. When the engine starts, go to *open choke* before it stalls out.

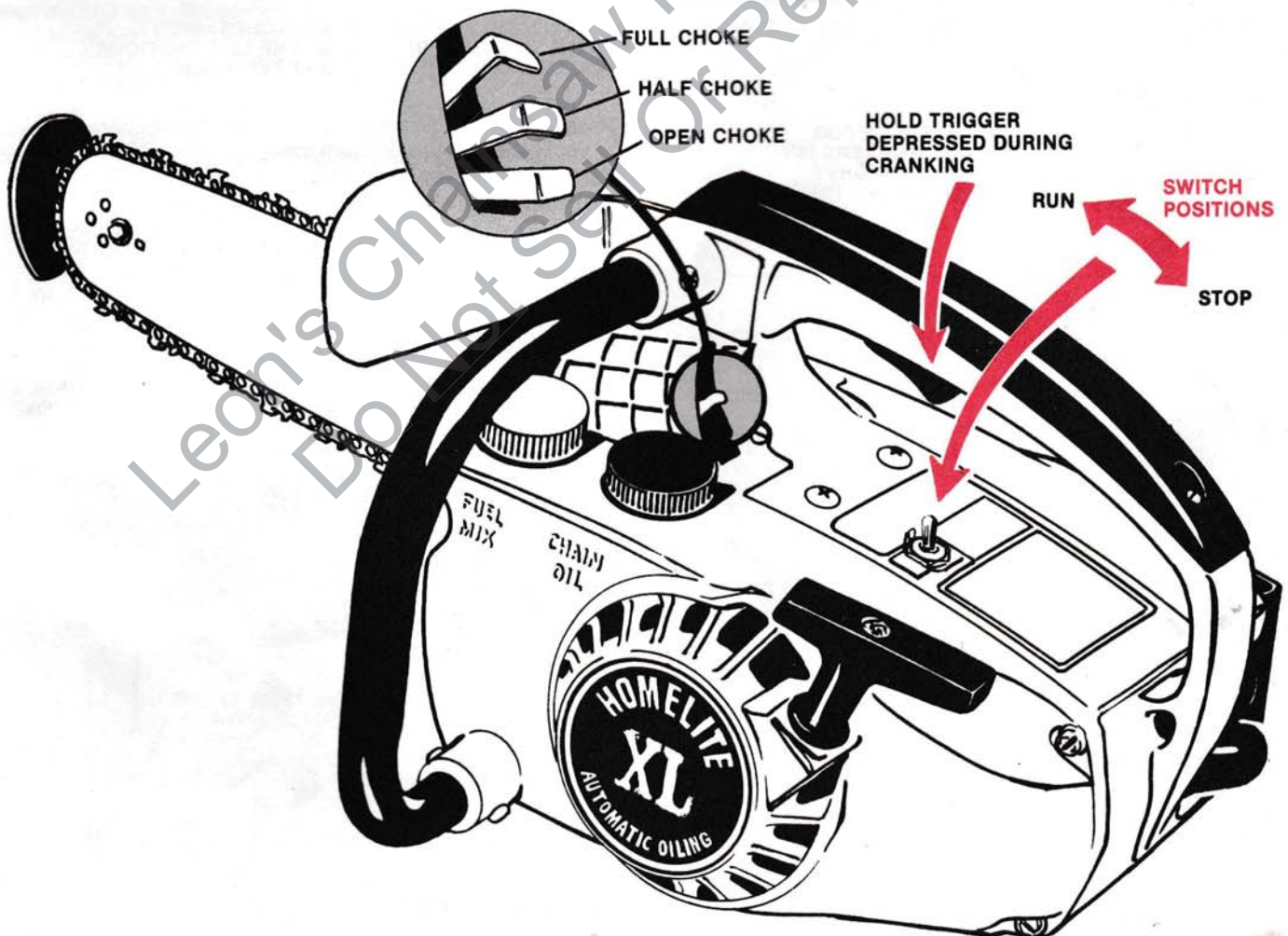
8. Now you are ready to pick up the saw. Use the proper grip and hold on the handles, described above.
9. Flip the switch to "STOP" position when you wish to stop the engine.

Special Starting Situations

10. **Restarting a recently run engine:** The engine may still be warm enough to start at idle throttle without choking. If not, hold throttle open and go to half-choke. Use full choke if necessary.
11. **Breaking a vapor lock:** This is when heat turns fuel in the fuel line and carburetor into a vapor. It occurs when the saw has been exposed to the heat of the sun or a car trunk, or after a 5 to 10 minute shut-down on a hot day. To break the lock and start the saw, crank alternately at full choke and half-choke until the engine fires. Then start and run the engine at half-choke. Allow no more than 30 seconds before opening the choke fully. Repeat sequence, if required, 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 4.



SECTION 2 / THE WORKING AREA

WORK AREA PRECAUTIONS

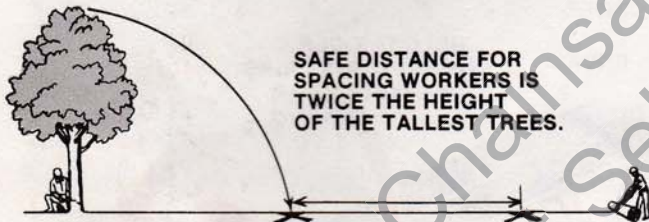
Cut only wood or materials made from wood; no sheet metal, no plastics, no masonry, no non-wood building materials.

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.



A WEDGE TO HOLD THE CUT OPEN CAN BE USED ONLY ON LARGE DIAMETER LOGS.

STAND ON UPHILL SIDE WHEN CUTTING BECAUSE LOG MAY ROLL.

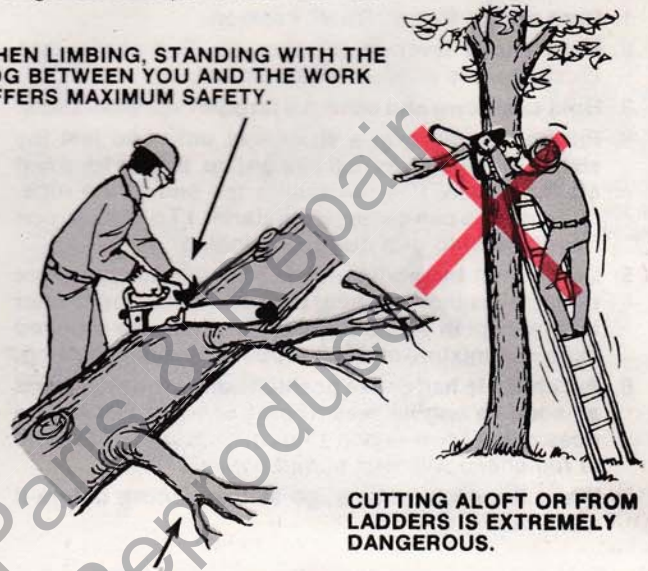
During bucking operations always cut from the uphill side so that the cut-off section of the log will not roll over you. You can be pulled off balance if you have your weight all on one leg, so be sure to stand with both feet on solid ground. Make sure that cut-off wood will not fall on your toes or on your head. Do not cut straight overhead for this



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

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.

UNUSUALLY HAZARDOUS CONDITIONS

Do not fell trees or go underneath them during periods of high wind or heavy precipitation. 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.

HANDLING AND SECURING THE SAW

WARNING

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 4).

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 servicemen. 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 4.) 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.

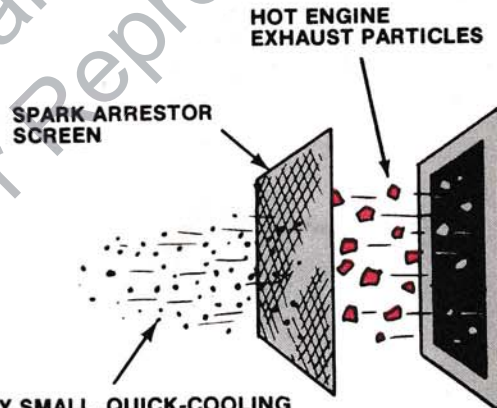
NOTE

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



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.

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.



ONLY SMALL, QUICK-COOLING PARTICLES CAN GET PAST THE SCREEN.

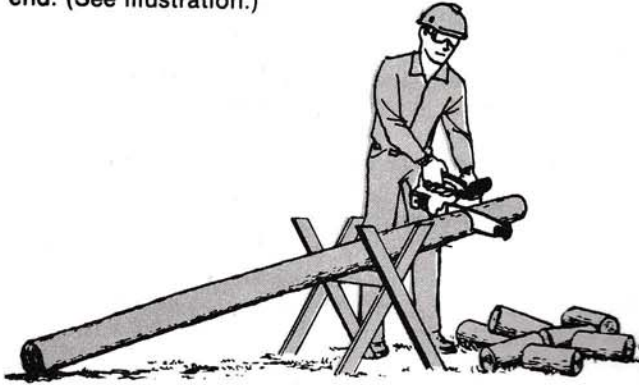
A SPARK ARRESTOR IS ONLY ABOUT 90% EFFICIENT IN PREVENTING FIRES. LOCAL AUTHORITIES MAY CLOSE THE FOREST DURING EXTREMELY DRY PERIODS.



SECTION 3 / TECHNIQUES OF CUTTING

BUCKING, LIMBING AND PRUNING

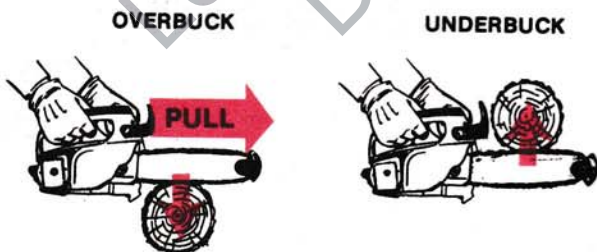
For your first cutting experience, set up a small log so that one end is off the ground. Practice your overbucking technique by cutting firewood length sections off the raised end. (See illustration.)



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.

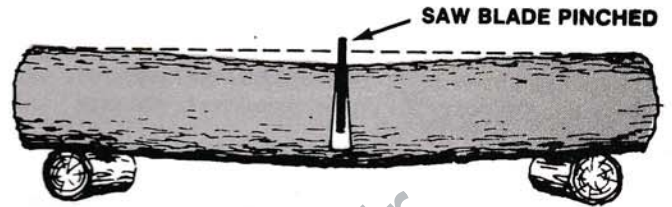


3. You will notice a slight amount of *pull* reaction during cutting. So be ready for the moment the saw breaks through the wood and *pull* ceases. You must be ready to stop pushing down on the saw and hold the saw nose up. The moment the chain breaks clear, release the throttle trigger so the engine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

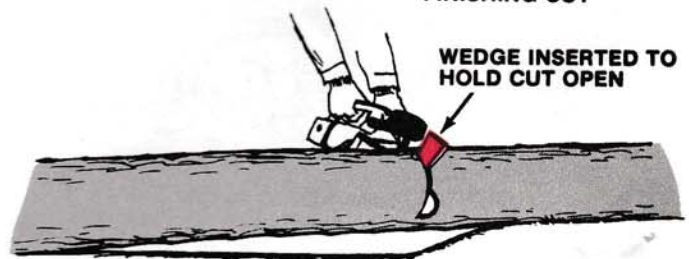
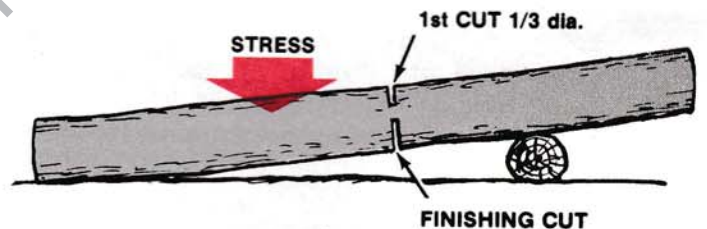
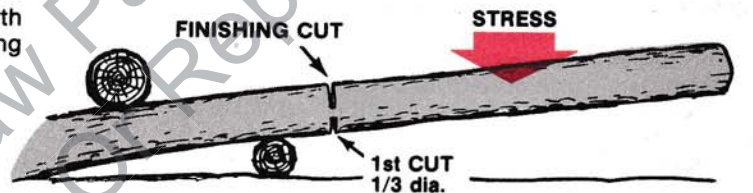


4. When you have mastered the overbucking technique, try underbucking to see what it feels like. Place the saw blade under the log. Throttle up and exert upward pressure to cut clear through. Now you are ready to learn when to overbuck and when to underbuck in order to avoid pinching the chain in the wood.

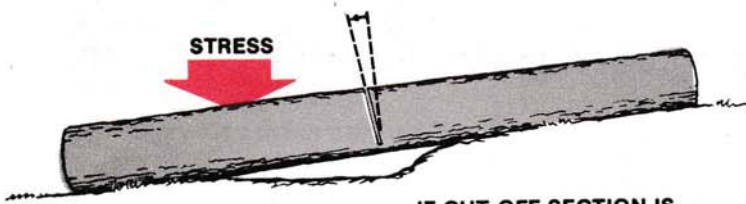
CUTTING VARIATIONS ACCORDING TO THE STRESS FACTORS



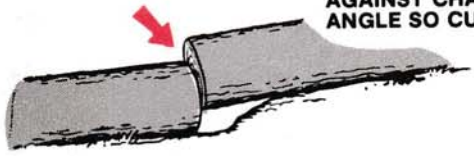
When the piece to be cut is supported on the ends, but not along the point where you want to cut, it will bend as you make your cut. If you are overbucking a log that will bend downward at the cut, your saw will be pinched if you cut more than 1/3 the log diameter. So overbuck 1/3, then remove the saw 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 log 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.



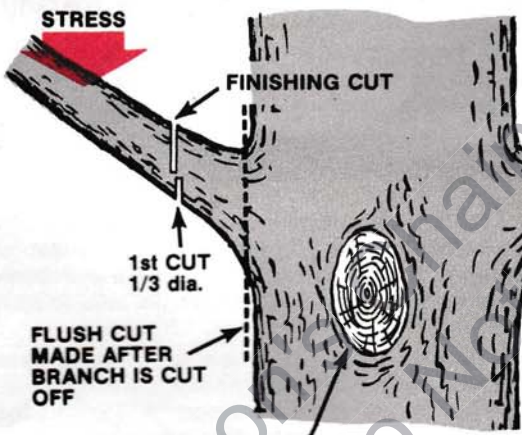
IF CUT-OFF SECTION IS LIKELY TO SETTLE AND BIND AGAINST CHAIN, BUCK ON ANGLE SO CUT OPENS UP



NOTE

If you misjudge the lie of the log and the saw is pinned in the cut, or if you have inserted a wedge and the bar is trapped: roll the log to remove the saw; or use leverage to raise the log to free the blade; or remove the engine from the bar and use another saw or an axe to free the bar and chain.

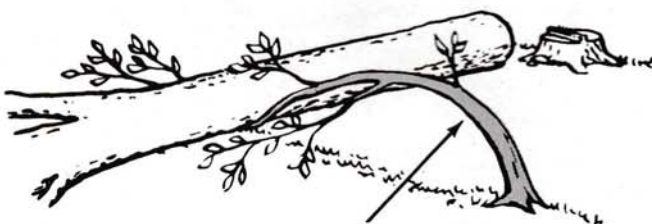
When pruning shade trees it is important not to make the flush cut next to the main limb or trunk until you have lopped off the limb further out to reduce the weight. This prevents stripping the bark from the main member. Unless the branch to be pruned is supported by another branch, the stress will 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. Although it may not prevent kickback from happening, the Raker III™ chain on your saw may help you to keep control by reducing the force of a kickback reaction.

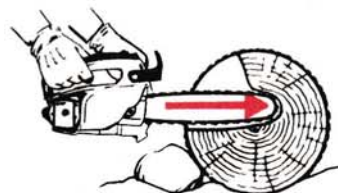
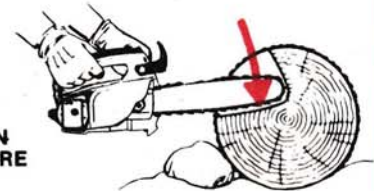
Study the panel illustrating a boring operation. As shown, the danger will be minimized if you can make first contact on the underside of the bar as far back from the bar nose as you can get. Then cut downward into the wood until the tip is buried in the cut. Gradually bring the saw level, then bore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

BORING TECHNIQUE



1 MAKE FIRST CONTACT ON LOWER QUADRANT

2 CUT DOWNWARD TO BURY NOSE OF SAW IN THE WOOD AND ALIGN SAW FOR THE BORE



3 GRADUALLY SHIFT PRESSURE FORWARD TO BORE STRAIGHT IN

4 CUT UPWARD OR DOWNWARD AS REQUIRED

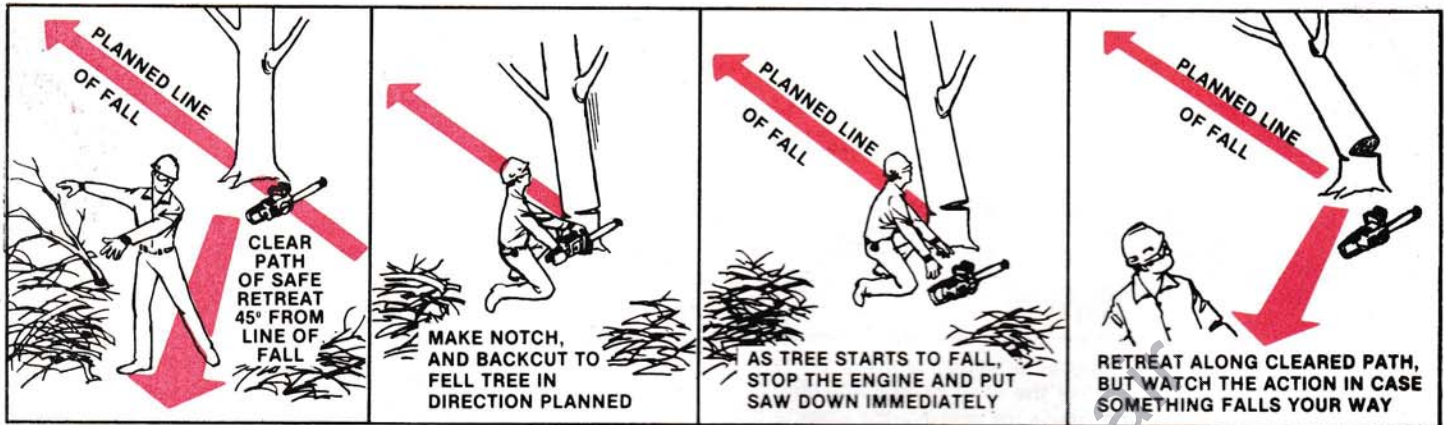


REPLACE THE SAFE•T•TIP® ANTI-KICKBACK DEVICE TO PREVENT INJURY DUE TO KICKBACK

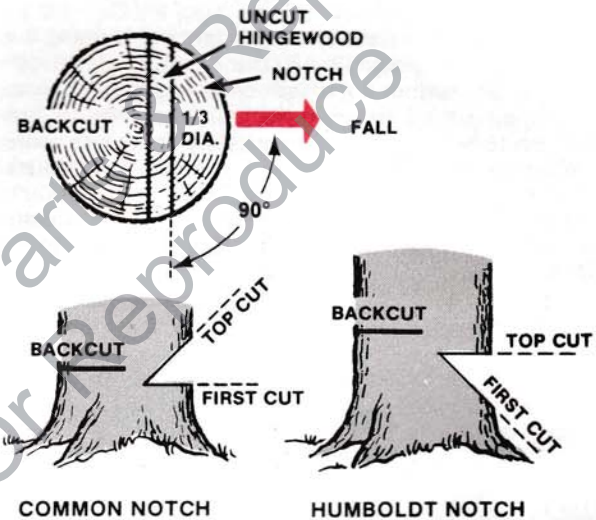
TREE FELLING TECHNIQUES

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 force and direction of the wind, the lean and 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.



COMMON NOTCH

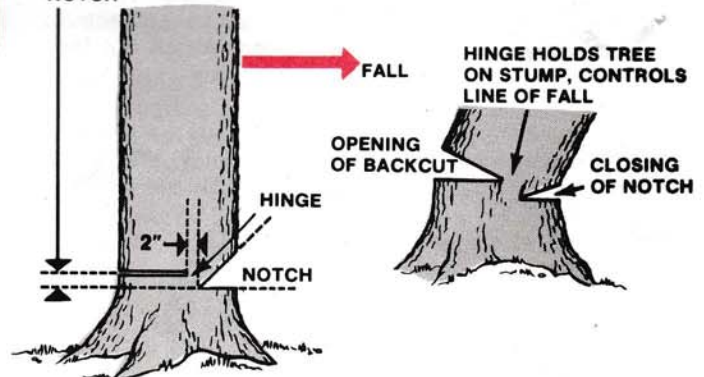
HUMBOLDT NOTCH

HELPING TREE TO FALL IN DIRECTION PLANNED



6. The backcut is always made level and horizontal and at a minimum of 2 inches (5 cm) above the horizontal cut of the notch. 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!

MAKE BACKCUT 2" OR MORE ABOVE HORIZONTAL CUT OF NOTCH



5. If the tree is not badly out of balance or leaning over (See "Felling Leaners"), cut a notch about 1/3 the diameter of the trunk on the side the tree is to fall. Make the cuts of the notch 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.

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 require removing the SAFE•T•TIP® anti-kickback device. They 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.

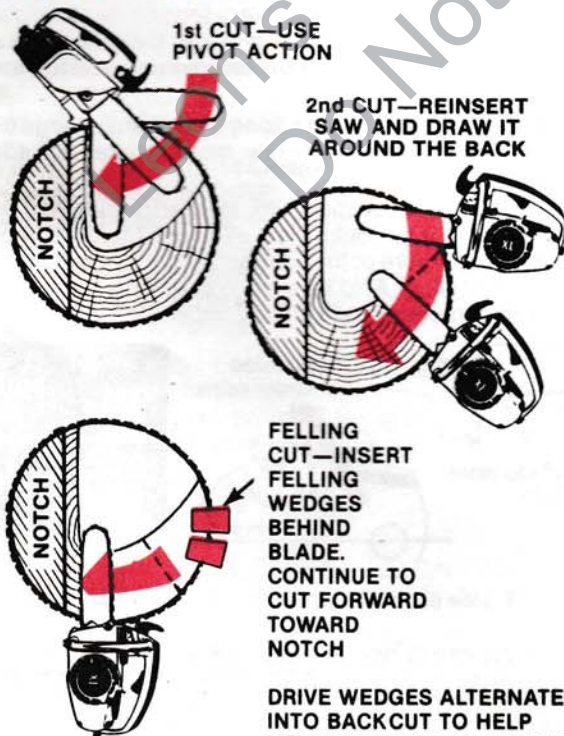
Then remove and reverse the saw for the second cut. Insert the saw in the first cut, very carefully so as not to cause kickback, and cut back toward and around the back of the trunk. Complete the back cut by cutting towards the notch to complete the hinge section. Always replace the SAFE•T•TIP® Anti-Kickback Device to prevent injury due to kickback.

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.



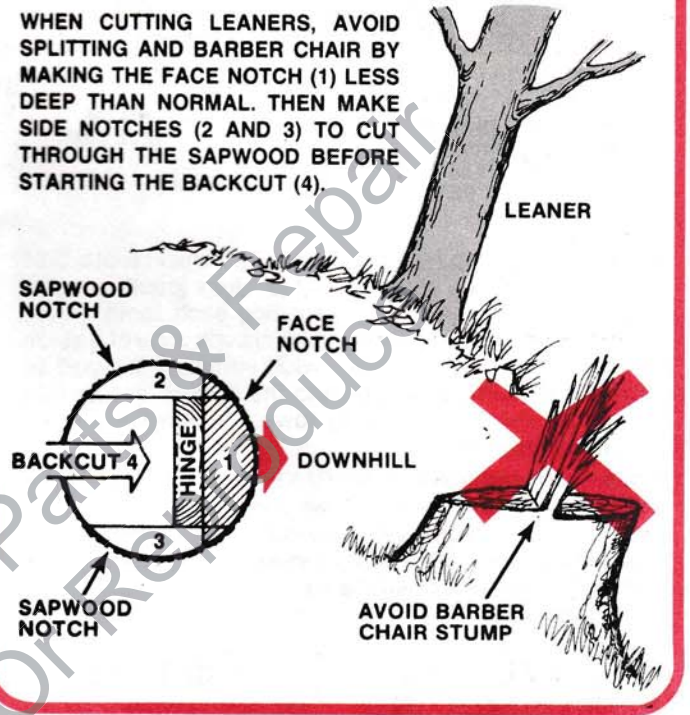
FELLING LEANERS

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

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

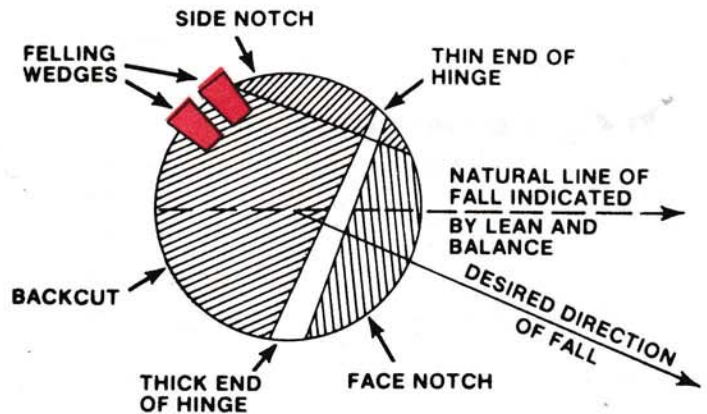
1. Make the directional control face notch shallower than usual.
2. Make shallow notches on both sides of the tree to cut through the outer layer (sapwood).
3. Now make your back cut to leave a parallel hinge.

WHEN CUTTING LEANERS, AVOID SPLITTING AND BARBER CHAIR BY MAKING THE FACE NOTCH (1) LESS DEEP THAN NORMAL. THEN MAKE SIDE NOTCHES (2 AND 3) TO CUT THROUGH THE SAPWOOD BEFORE STARTING THE BACKCUT (4).



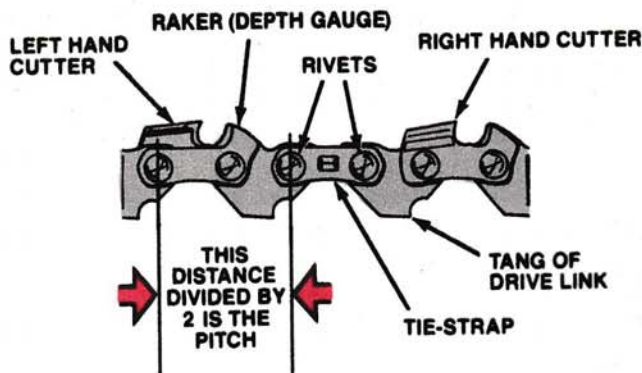
CHANGING THE DIRECTION OF FALL (from the natural line of fall)

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.



SECTION 4 / MAINTENANCE & ADJUSTMENT

HOMELITE® RAKER III™ SAW CHAIN



Kickback-reducing type R37ME-50 semi-chisel tooth, 3/8" pitch, Raker III saw chain has three rakers (depth gauges) instead of just one gauge preceding each tooth. When chain contact is made within the kickback zone of a guide bar nose, the three rakers provide sufficient support to prevent the cutters from pulling themselves deeply into the wood. Thus the tendency toward a violent kickback reaction is reduced.

For smooth and fast cutting, RAKER III chain needs to be maintained properly. Shut down the saw for filing whenever the sawdust turns from chips to a fine powder and you have to bear down hard to make the saw cut. Follow our instructions for filing the cutters and maintaining the rakers at proper depth.

TOOLS FOR FILING RAKER III TYPE R37ME-50 CHAIN

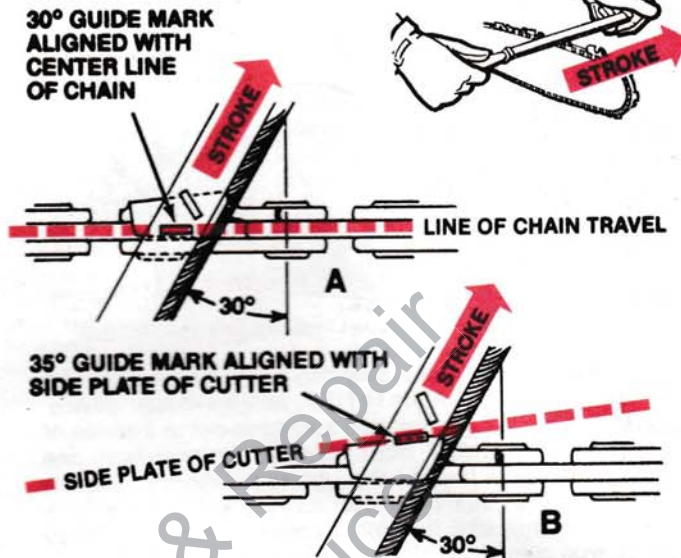
Our file holder (#DA-92617) comes with a 5/32" diameter (4 mm) round file. Late production models of this file holder have both 35° and 30° guide marks. The 30° marks should be used when filing RAKER III chain. If you have an earlier model #DA-92617 holder having only 35° marks, you can modify your technique, per our instructions, to obtain the required 30° top plate filing angles.

After repeated sharpenings, when the teeth are reduced to a bit less than half their original length, replace the 5/32" diameter file (in the same holder) with a 1/8" diameter (3.2 mm) file. The smaller diameter file is necessary because the teeth taper to a lower height towards the rear.

You will need .020" (0.5 mm) depth gauge filing tool (#D92630-B), the filing slot of which is wide enough for the three rakers of RAKER III chain. The rakers should be filed and shaped with a 6" 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



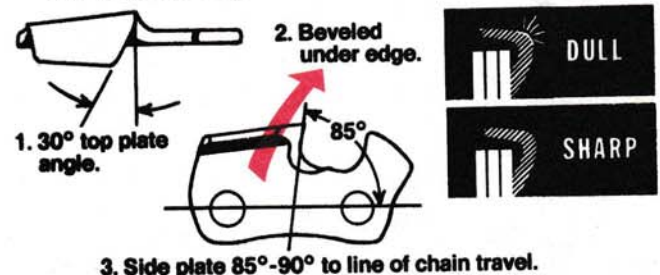
only when all cutters are uniform. Each cutter then gets a chance to cut.

1. Any top plate filing angle from 30° to 35° will work well as long as every cutter is filed to the selected angle. However, the angle recommended for best results is 30°. We show two diagram for achieving a 30° angle.

Diagram A shows a 30° guide mark aligned with the center line of the chain to produce a 30° angle.

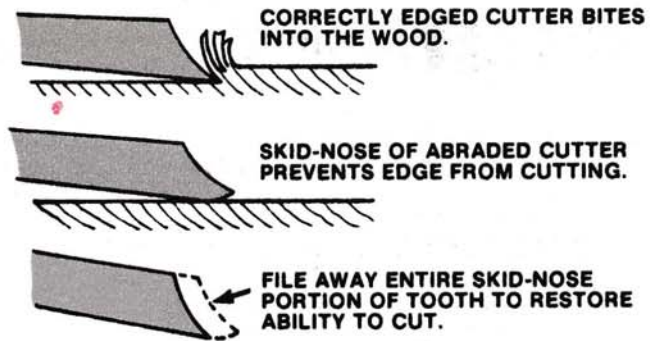
Diagram B shows a 35° guide mark aligned with the side plate line of the cutter to produce a 30° angle.

2. Keep the file level with the top plate of the tooth. Do not let the file dip or rock.
3. Stroke only towards the front corner of the tooth. Lift file away from the steel on each return stroke.
4. Use light but firm pressure — mostly towards back of tooth and very little downward. With the correct angle and pressure maintained by you, the file holder will produce the desired edge.
5. Put a few firm strokes on every tooth. File all left hand cutters on one side. Then move to the other side and file the right hand cutters. Occasionally rotate the file in the holder.
6. Check your filing job in strong light. A sharp edge does not reflect light. Put a few more strokes on edges which reflect light.
7. If you are not satisfied with the performance of your chain after it has been filed, examine it for "skid-nose" and one or more of the common chain faults illustrated in this section. Also be sure to check the depth of the rakers frequently as instructed under "Raker Clearance."

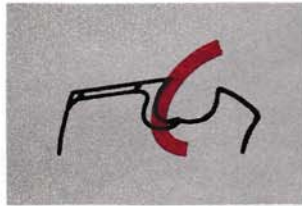


FILING OUT SKID-NOSE WEAR PATTERN

A sharp edge does not alone make for good cutting. You have to put the edge on the outside of the tooth. "SKID-NOSE" describes the edge area of teeth which have hit hard objects such as nails and stones, or have been abraded by mud and sand on the wood. The skid-nose rides the wood, keeping the sharp edge from biting in. The friction at the skid-nose area overheats the 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 your chain "trued" to proper cutter length, contour, and edge by your servicing dealer on an electric chain grinder.



REFILE ANY TEETH HAVING ONE OR MORE OF THESE FAULTS



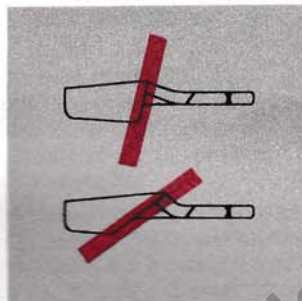
Forward Hook

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



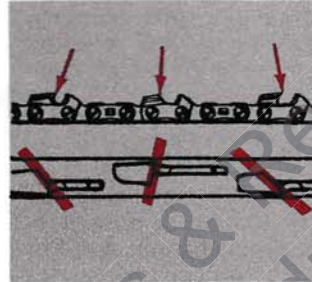
Back Slope

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.



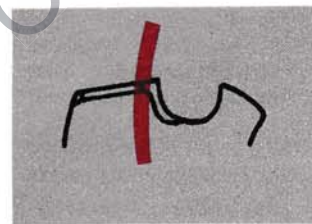
Cutters Filed at Non-Matching Angles or Lengths

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

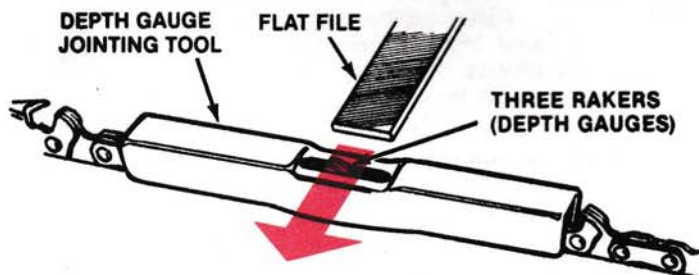
Although edge is durable, it won't cut properly. Scrapes wood, robs power, and produces dust instead of chips. Caused by holding file too high on face of tooth.

RAKER CLEARANCE

WARNING

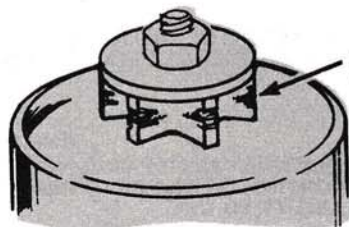
Whenever the **SAFE•T•TIP®** anti-kickback device is not present on the bar nose, the kickback-reducing ability of **RAKER III™** saw chain may be defeated by any one or all of the following conditions: a) rakers filed lower than recommended, b) chain tension too loose, and c) forward hook (misfiling) of cutters.

1. The rakers should be maintained at a clearance between .020" (0.5 mm) and .018" (4.6 mm). Depth gauge tool #D92630-B can be used for checking the raker clearances as well as filing them uniformly.



2. Every time the chain is filed, check one or two sets of rakers. Locate the set to be checked along the flat portion of the bar rails. Fit the tool over the chain so that a set of rakers projects up into the filing slot in the tool (see illustration). Put one or two strokes across the filing face of the tool with a 6" flat file. If you take off any metal from the rakers, they are too high, and all sets of rakers on the chain should then be filed to .020".
3. If the rakers are too high (less than .018" clearance) the teeth will get only a shallow bite. If they are too low, the chain will cut too deeply into the wood and the saw will grab and jerk. If all rakers are not filed to the same clearance you will get the same poor results as from non-uniform cutters. Non-uniformity causes slow cutting and the saw often goes off line.
4. After the rakers have been filed, they should be contoured to their original pattern. When doing this with the flat file fit the depth gauge tool over the tooth on an angle to protect the cutting edge.

REPLACING WORN CHAIN AND SPROCKET



CHAIN WEAR PATTERN ON SPROCKET TEETH

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 every day 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 bar with any of the following faults should be replaced, because the repair of your type and size bar would be either impossible or uneconomical.

- 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.
- Bent guide bar — If only slightly bowed, the bar might be rebent straight. But compound twists or sharp bends call for replacement.
- Cracked or broken rails.
- Spread rails—Peening will not satisfactorily close the rails of the laminated bar.

Power Tip Bar Only

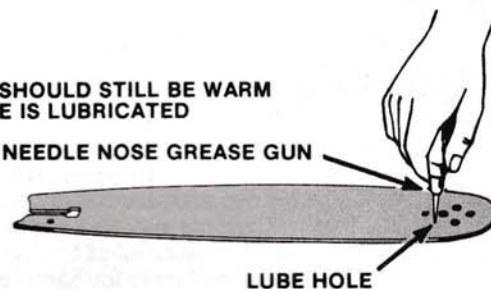
If the nose sprocket fails and the rest of the bar is in good condition, your servicing dealer can install a new nose sprocket assembly in your old bar.

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 daily, 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 (DA-52713-A) 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 the side of the bar near the nose. Pump grease through the lube hole until the dirty grease is forced out and fresh grease appears.

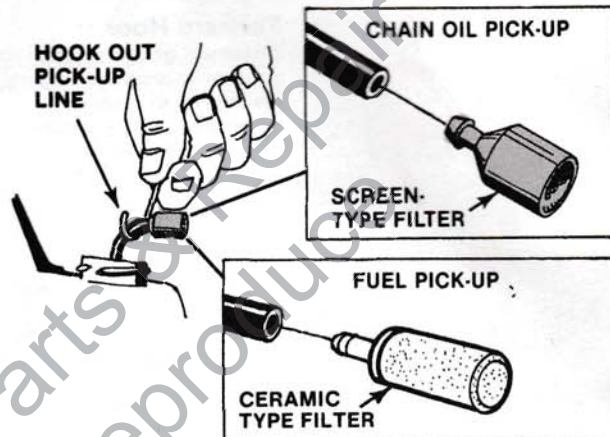
BAR NOSE SHOULD STILL BE WARM WHEN NOSE IS LUBRICATED

NEEDLE NOSE GREASE GUN

LUBE HOLE

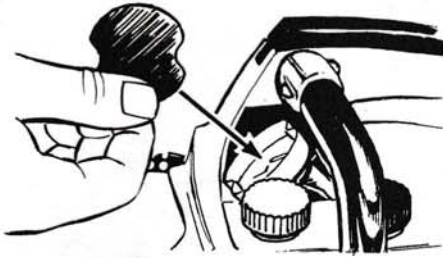


MAINTENANCE OF TANKS AND PICK-UPS



- 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.
- 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.
- A leaking or clogged oil pick-up causes insufficient oiling. If flow is insufficient (see check, page 11), change the oil pick-up filter or clean it by picking or blowing the wire mesh clean. Be sure the line is not kinked or cracked.
- Symptoms of fuel starvation are a lack of engine power and faltering on a cutting load. A fuel system check can be made by your servicing dealer, or you can make the check for yourself:
 - Loosen fuel cap just enough to leak air. If this restores performance to the saw, have the tank vent changed. (Valve is just inside neck of tank.) If performance is not improved, change the fuel pick-up filter.
 - 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).
- To change the fuel filter, disconnect the pick-up from the line and pull off the felt sleeve. This sleeve is not cleanable. Install a new sleeve on the metal body, push the pick-up back onto the line and drop the assembly into the tank.

AIR FILTER MAINTENANCE



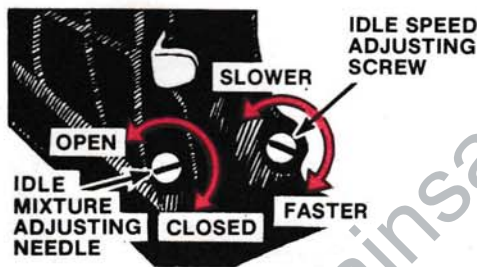
PUT BOTTOM TAB OVER STARTER CASTING, THEN SNAP INTO PLACE

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 readjustments from time to time to achieve the desired idling characteristics.

WARNING

Do not operate saw 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 adjustment.

Adjustment for Starting

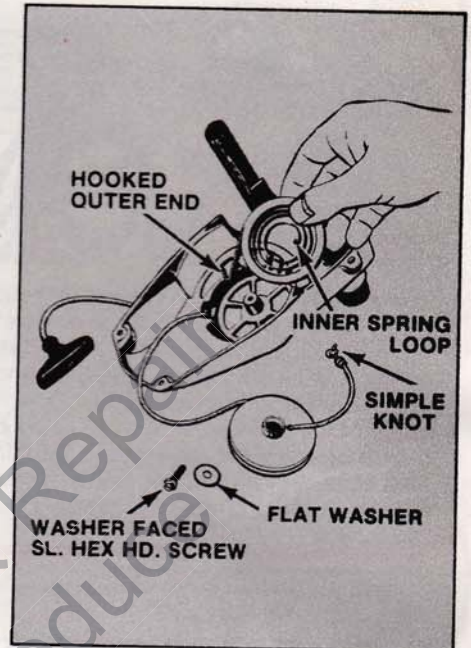
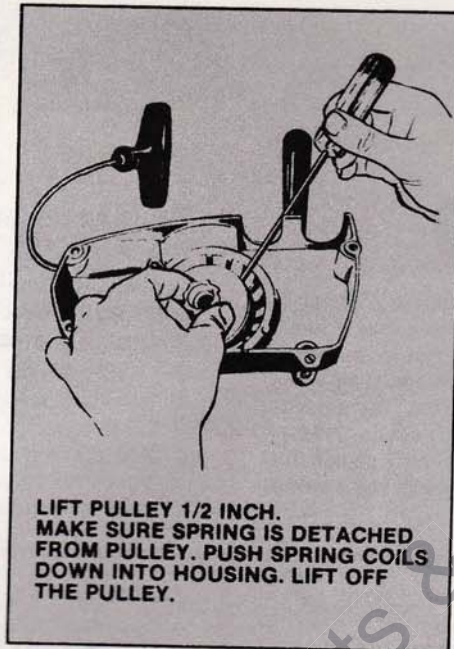
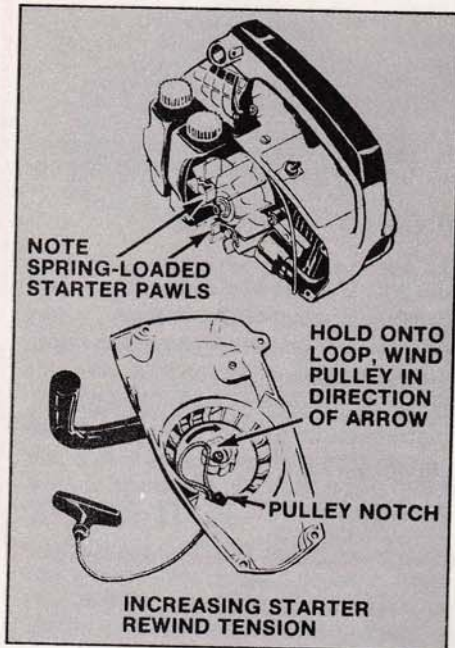
1. No adjustments are required for starting a cold engine at full throttle (trigger depressed) or for operating.
2. Adjustment for proper idle speed and mixture may be required if a hot or warm engine cannot be started at idle throttle or if the engine idles roughly or refuses to accelerate.
 - a) Turn the *idle mixture adjustment needle* slowly clockwise until it gently closes against its seat (do not force). Then open it 1 1/4 turns.
 - b) Turn the *idle speed screw* clockwise 1/2 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 for the proper idle setting, and then adjust the mixture for that setting. Any time you adjust the idle speed, always readjust the *idle speed 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 (or screws) at 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

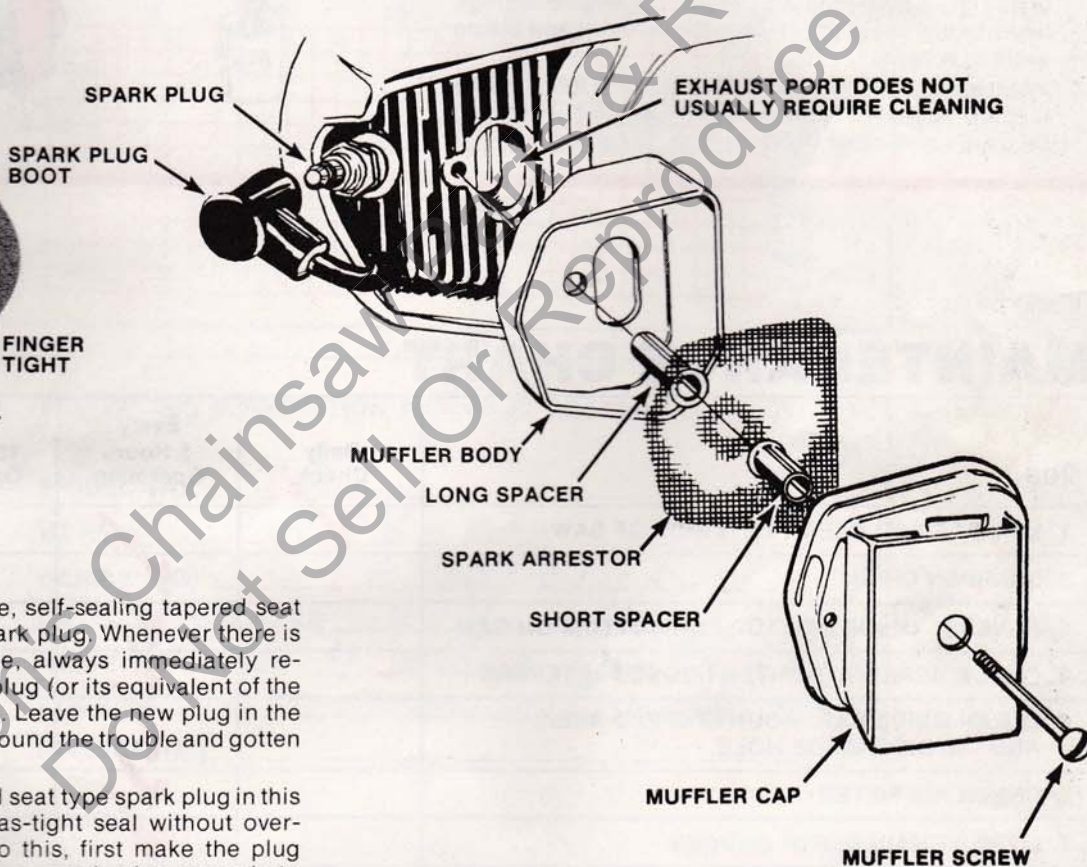
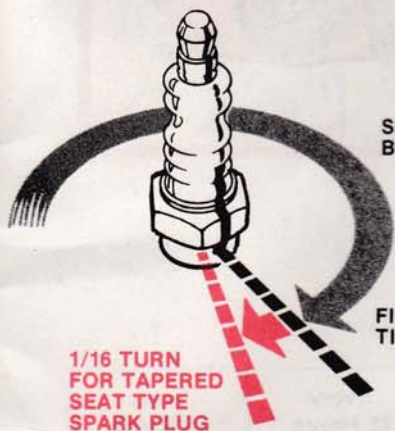
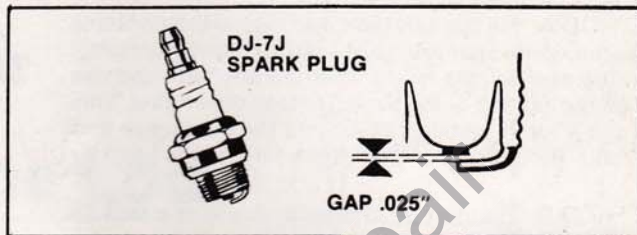
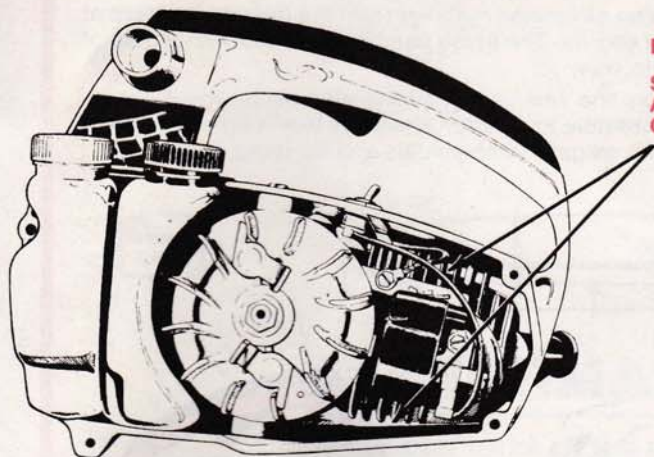
in its own retainer goes open-side-towards-starter housing. Integrally banded springs should be placed (as illustrated) and the coils pushed into the housing. The unretained and unbanded type should have the outer loop hooked to the post and then be wound into the housing a coil at a time. Be very careful 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 hole 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

EVERY 50 HOURS OF OPERATION:

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



1. The engine has 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.
2. When installing the tapered seat type spark plug in this engine, you must get a gas-tight seal without over-tightening the plug. To do this, first make the plug finger tight and then use a spark plug wrench to tighten 1/16 turn more.
3. 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 (as discussed on page 5), 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.
4. 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" (0.64mm) by bending the side electrode toward the center electrode.

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.

OFF-SEASON STORAGE

1. Remove bar and chain and clean them thoroughly. Let chain dry and store in a small container of engine oil to prevent rust. Oil the dried bar and wrap it in oiled paper.

2. Prepare the engine internally for storage by either method A or method B:

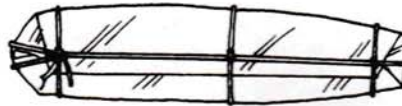
METHOD A: Fill the saw tank with fuel which contains an anti-oxidant stabilizer (See fuel mixing instructions). Run the saw on this mixture for ten seconds and use the choke instead of the switch to stop the engine. This will put a lot of stabilized fuel into the crankcase and cylinder. Refill the saw tank right to the top to keep air out.

METHOD B: Drain as much fuel from the saw tank as possible, then start and run the engine until it runs dry and quits. Remove the spark plug to pour in a teaspoonful of a rust inhibitor product or a detergent oil. Install the spark plug and crank the engine enough times to distribute the oil over the cylinder and piston walls as a vapor.

3. All local regulations for the safe storage of fuel supplies must be observed. Non-stabilized fuel supplies should be used up in other equipment or discarded.

4. Clean all foreign material from the outside surfaces of the engine. The finish can be preserved with a coat of auto wax.

5. Store the saw in a well-ventilated place where it is inaccessible to children and away from corrosive agents such as garden chemicals and de-icing salts.



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"				✓
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.

PERFORMANCE LOG

Keep track of the use made of your saw by recording the number of times saw is refueled.

5	10	15	20	25	30	
						60
						90
						120
						150
						180
						210
						240
						270
						300
						330

FILL IN THIS INFORMATION FOR YOUR RECORD

MODEL NO. X-1
 UT NO. 1068 = A
 SERIAL NO. PF 307073-1
 DATE OF PURCHASE 6-11 86
 NAME OF DEALER Horse VETTS
 ADDRESS South Dayton NY
 INVOICE NO. _____

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