650 has same Parts

Part No. 17053

Price $1.00

Printed in U.S.A.

HOMELITE®

750 PROFESSIONAL Chain Saw

OWNERS *Operating & Maintenance* MANUAL

This saw is designed for use by professionals. This Owner's Manual, accordingly, includes instructions to assist the professional in performing routine maintenance and adjustments.

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

section 1 PREPARATION

Contents

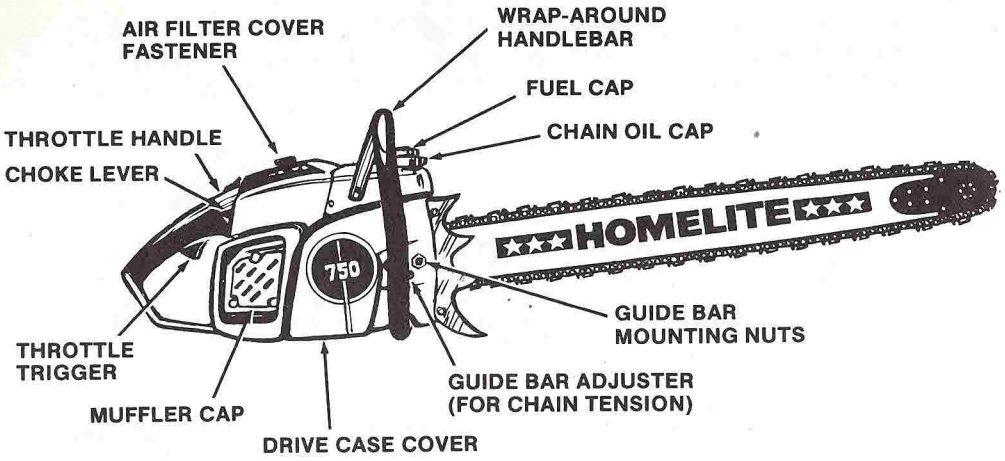
SAFETY PRECAUTIONS FOR CHAIN SAW USERS

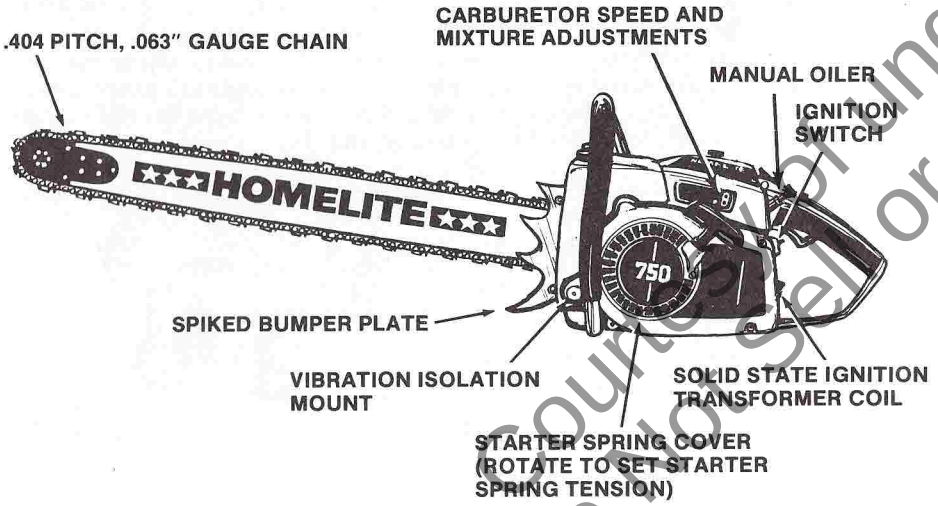
Although this booklet later on tells you how to use the saw safely and correctly, here are some of the important points to be kept constantly in mind:

1. **Use safety footwear, snug-fitting clothing, and eye, hearing and head protection devices. Do not wear scarfs, jewelry, or neckties which could be drawn into the engine or catch on the chain or underbrush.**
2. **Operate the chain saw only in well-ventilated areas.**
3. **Never operate a chain saw when you are fatigued.**
4. **Always use caution when handling fuel. Move the chain saw at least 10 feet (3m) from the fueling point before starting the engine.**
5. **Keep bystanders and animals out of the work area when starting or operating the chain saw.**
6. **Never start cutting until you have a clear work area, secure footing, and a planned retreat path from the falling tree.**
7. **Always hold the chain saw firmly with both hands when the engine is running. Use a firm grip with thumbs and fingers encircling the chain saw handles.**
8. **Keep all parts of your body away from the saw chain when the engine is running.**
9. **Before you start the engine, make sure the saw chain is not contacting anything.**
10. **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.**
11. **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.**
12. **Do not leave the engine running unattended.**
13. **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.**
14. **When cutting a limb that is under tension be alert for spring back so that you will not be struck when the tension in the wood fibers is released.**
15. **Keep the handles dry, clean and free of oil or fuel mixture.**
16. **Guard against kickback. Kickback is the upward motion of the chain saw which occurs when the saw chain at the nose of the guide bar contacts an object. Kickback can lead to dangerous loss of control of the chain saw.**

    TO AVOID KICKBACK:

    a) **Hold the chain saw firmly with both hands. Don't overreach. Don't cut above shoulder height.**
    b) **Don't let the nose of the guide bar contact a log, branch, ground or any other obstruction.**
    c) **Cut at high engine speeds.**
    d) **Follow manufacturer's sharpening and maintenance instructions for the saw chain. Maintain the correct chain tension. Don't operate with a loose chain.**
17. **All chain saw service, other than the items listed 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.)**





Before Starting Your New Saw

It will pay you to familiarize yourself with the saw and a few simple operating and maintenance principles. Maximum performance and life of this saw depend on your using it correctly right from the start. This manual tells you how to do this, and also how to maintain the saw and make emergency repairs.

The HOMELITE® 750 Chain Saw has a 6.84 cubic inch (112 cm^3) "third port", hemi-head 2-cycle engine with a fully adjustable diaphragm carburetor. It is equipped with a heavy-duty centrifugal clutch, an automatic chain oil system and sprocket for .404" pitch chain. For light-pull, kick-free cranking, a compression release valve is coupled to the throttle trigger controls to relieve the engine compression when the trigger is latched in the starting position.

The solid state capacitor discharge (CD) ignition system, which can supply up to 30,000 volts, has two electronically timed spark circuits—one with retarded timing for cranking speeds, and the other with normal timing for optimum performance at operating speeds.

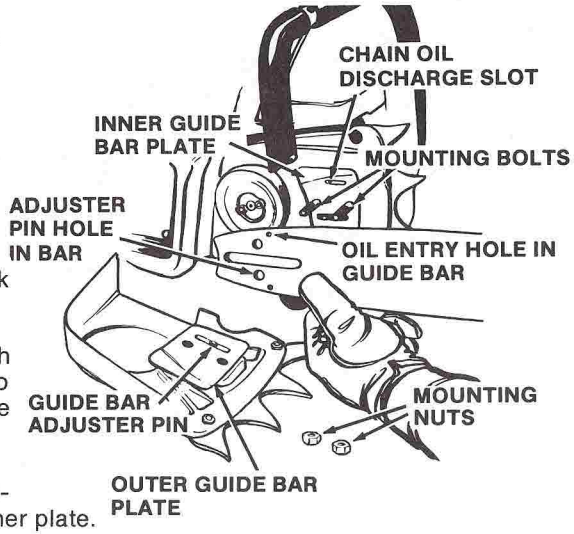
The spark arrestor located behind the muffler cap is accessible for cleaning and inspection.

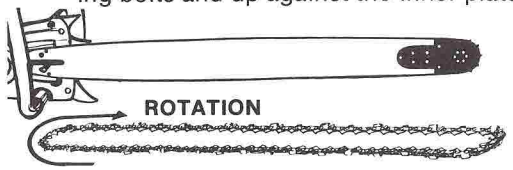
A pair of bumper spikes with mounting screws and nuts is supplied with the saw. Also supplied are a combination wrench, and a socket wrench for the spark plug.

Assembling Spikes, Bar and Chain and Drive Case Cover onto Engine

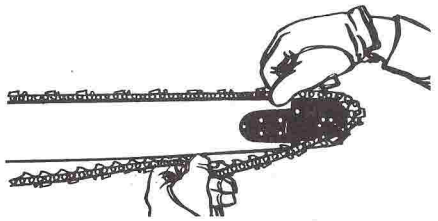
IMPORTANT: Wear gloves for protection against the sharp teeth whenever you are working on or near the saw chain.

1. Push the ignition switch to "STOP". Remove the two guide bar mounting nuts and lift the drive case cover off the mounting bolts. Note that the outer guide bar plate is screwed to the cover and the inner guide bar plate is screwed to the drive case.
2. Two spiked bumper plates and four sets of screws and hex lock nuts for mounting them are contained in a plastic bag. If the spikes are to be used, attach one to the drive case and one to the drive case cover. Torque the screws to 45 pound inches (52kg-cm).
3. Put the guide bar on the mounting bolts and up against the inner plate.



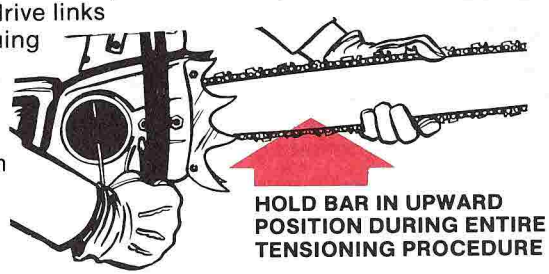


LAY OUT CHAIN IN A LOOP WITH TEETH FACING IN DIRECTION OF CHAIN ROTATION



4. Remove the chain from the carton, lay it out in a loop and check the teeth. The teeth should face in the direction of rotation which is away from the drive sprocket along the top edge of the bar.

5. Fit the chain over the clutch and onto the sprocket. Now, beginning at the top of the sprocket, feed the chain drive links into the top bar groove, continuing around the nose of the bar until the chain is on the bar.



HOLD BAR IN UPWARD POSITION DURING ENTIRE TENSIONING PROCEDURE

6. Pull the bar out in the direction of its nose to remove slack from the chain. If any drive links come out of the bar groove, put them back in the groove.
7. With a screwdriver, turn the guide bar adjuster screw in the drive case cover until it appears that the guide bar adjuster pin can engage the pin hole in the guide bar when the cover is fitted into place. As you slide the cover into place and up against the bar, make sure that this pin cleanly engages the hole and stays there. Hold in place . . . Put the hex nuts back on the bolts, but run them up only finger tight for the present time, as the bar must be free to slide during chain tension adjustment.

NOTE: Check assembly. Pull chain along bar by hand; make sure the drive links are riding in the bar groove.

Chain Tension

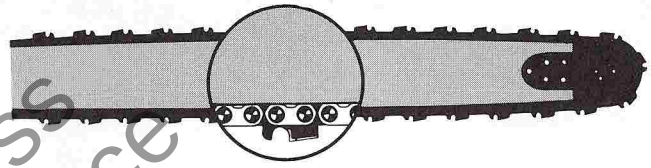
NOTE: Protect your hands from cuts when working on saw chain. Always use a rag or wear gloves.
Proper tension is extremely important. In order to avoid a false setting, the tensioning procedure must include the following steps.

1. Hold up the nose of the bar to take up any play between the bar and the mounting bolts.
2. Move the chain along the bar to where it becomes the tautest on the bar. Always adjust the tension at this maximum tautness position. (Tautness varies as the sprocket turns).

GENERAL TENSIONING PROCEDURE

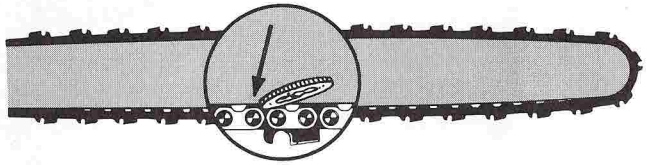
1. With mounting nuts only finger-tight, and most of the sag or slack removed from the chain, pull the chain along the top of the bar toward the nose. Note that the clearance between the chain tie-straps and the bar will fluctuate. Pull chain to where it sags the least.
2. Set the chain to the prescribed tension for the type of bar you are using (see below).
3. "Snap" the chain to remove any kinks (pull away from bar and let go several times). If too much clearance develops, readjust the tension.
4. While holding up the nose of the bar, tighten the nuts securely to lock the assembly at the proper tension.
5. In use, the clearance will increase as the chain warms and expands. Know these facts:
   a) A hot chain—so hot that you cannot hold it without discomfort while counting to 20—cannot be accurately adjusted because it will be contracting rapidly as you proceed. Always allow it to cool a few minutes before adjusting.
   b) An underoiled chain gets hot and stiff and is likely to kink up, becoming too tight on the bar. Keep the chain well oiled.
   c) A warm chain will sag more than when cold, but will return to the original clearance when it cools. Leave it alone unless so loose that the tangs are not in the bar groove at all.

TENSION SETTINGS FOR SPROCKET NOSE BARS



1. The "cold" tension should be "snug" or taut like a chalk line—as much as possible without your feeling any binding as you pull the chain along the bar by hand.
2. The chain will expand when warm and contract to the original setting as it cools. Under heavy duty cutting conditions the sag may progress to where no more than the points of the tangs stay in the bar.
3. For extra long duration cutting, the tension can be reset to where the warm chain hangs down about half the depth of the chain tangs at center of chain span. CAREFUL: Upon cooling, the chain will be too tight on the bar and should be readjusted before next use as in step 1.

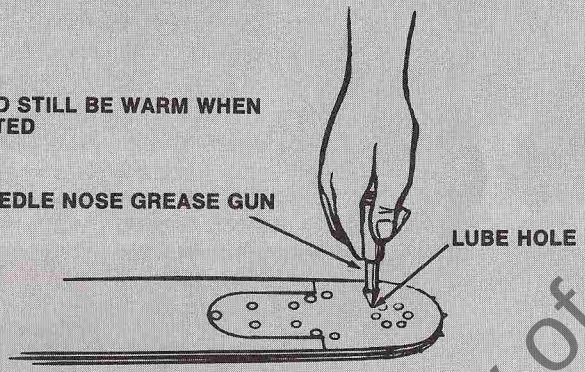
TENSION SETTINGS FOR HARD NOSE BARS



1. When "cold" tensioning, set to where the chain tie-straps do not quite touch bar rails at center of chain span, but do not hang away more than the thickness of a small denomination coin (or four business cards).
2. When "warm" adjusting, set to where the chain tangs hang about half way out of the bar at the center of the chain span. This leaves about a 1/8" gap (3,2mm) between tie-straps and bar rails.
3. Do not readjust warm chain unless tangs hang all the way out. Do not adjust overheated chain.
4. When starting out with cold chain condition, always recheck to see that tension is as in step 1.

Daily Attention to Chain and Guide Bar

1. At the end of each day of operation, remove the chain and guide bar. Clean the sawdust from the guide bar mounting pad, the clutch area and the clutch cover. Clean out the oil discharge hole in the guide bar mounting pad. Clean the chain groove in the guide bar. NOTE: When remounting the bar each day, reversing it top for bottom will equalize the wear.
2. The chain should be filed and cleaned, and then oiled.



3. Sprocket nose guide bars must be lubricated while still warm from use, at the end of each day of cutting. Using needle nose of Lube Gun #24258-1 filled with HOMELITE® ALL-TEMP *Multi-Purpose* GREASE (or our pre-packed lube gun), pump grease into the sprocket nose bearing through the small grease hole in the side of the bar nose. Keep pumping until the dirty grease is forced out and fresh grease oozes out of the nose. This removes sawdust, dirt and moisture from the bearing. If bar is lubricated when cold, the old grease may not come out. Sprocket nose bars in continuous use should be lubricated on-the-job every 1 1/2 to 2 hours.

A sprocket nose bearing is good as long as it turns freely with no roughness or binding. However,it can be replaced with a new sprocket nose assembly whenever necessary. Both the chain drive and nose sprockets should be replaced whenever a new chain is being installed. (See Section Four for details.)

Handling and Securing the Saw

Inspect your saw every day before use. Keep the fuel cap, oil cap and air filter cover on tightly; tighten any loose fasteners. Check condition of the fuel line, spark plug and spark plug ignition lead.

Transporting and Storing the Saw

When carrying the saw or transporting it in a vehicle, keep the guide bar and chain sheathed. This will protect people from contacting the chain and protect the chain from being damaged as well. Always keep the saw and other equipment tied down in a vehicle and not in the same compartment as passengers.

If no operating is to be done for more than a month or two, add a fuel stabilizing chemical (STA-BIL®, available from Knox Laboratories, Chicago Ill. 60616) to any fuel or gasoline to be stored, according to directions on the stabilizer can. Fill the saw tank with this stabilized fuel and idle the engine for a period of time to insure that this fuel is in the carburetor, fuel lines and engine. Then stop the engine by using the choke. Refill the tank.

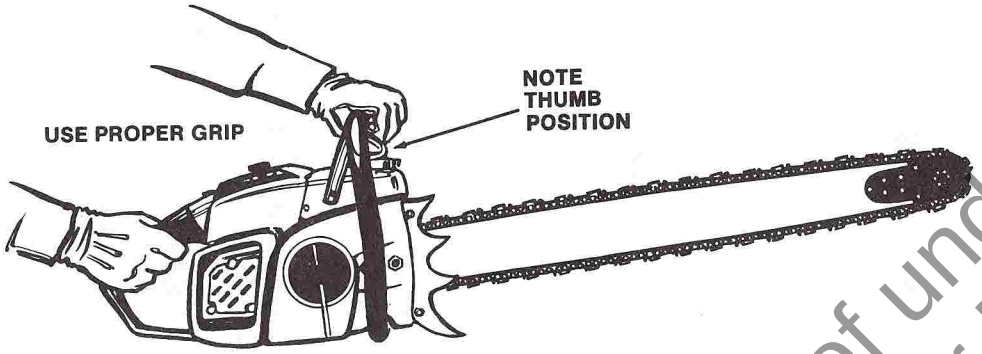
Remove the bar and chain and clean them. Oil the bar and wrap it in oiled paper. Submerge the chain in a can or jar of oil for storage. Clean the engine thoroughly and apply auto/wax to the painted exterior surfaces.

Store the engine and bar in a well-aired, cool and dry place away from de-icing salts, garden chemicals and fertilizer. Do not store where warm or damp air or corrosive particles in the air can attack the saw.

section 2 BASIC OPERATING INFORMATION

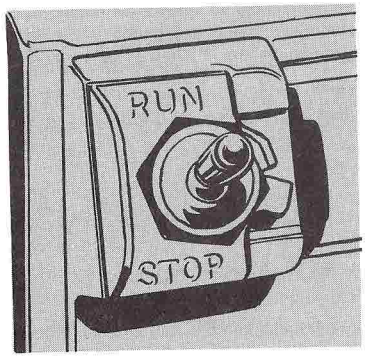
Grip and Balance

Whenever the engine is running, always grip the handlebar and throttle handle correctly as illustrated on this page and explained in the next paragraphs.



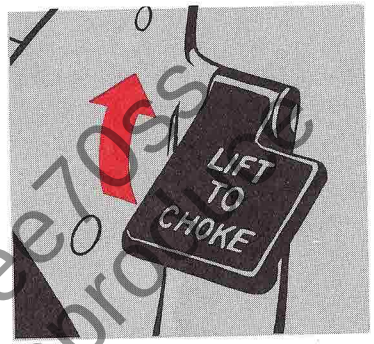
1. Wrap the fingers of your left hand around the handlebar, keeping the handlebar diameter IN THE WEBBING BETWEEN YOUR INDEX FINGER AND THUMB. This is the safest grip to help you maintain a hold on the handlebar if the saw jerks out of a cut or kicks back toward you unexpectedly.
2. Wrap your right hand around the throttle handle in the same manner as with the front handlebar, and adjust as necessary for operation of the saw controls.

Location and Operation of Engine Controls



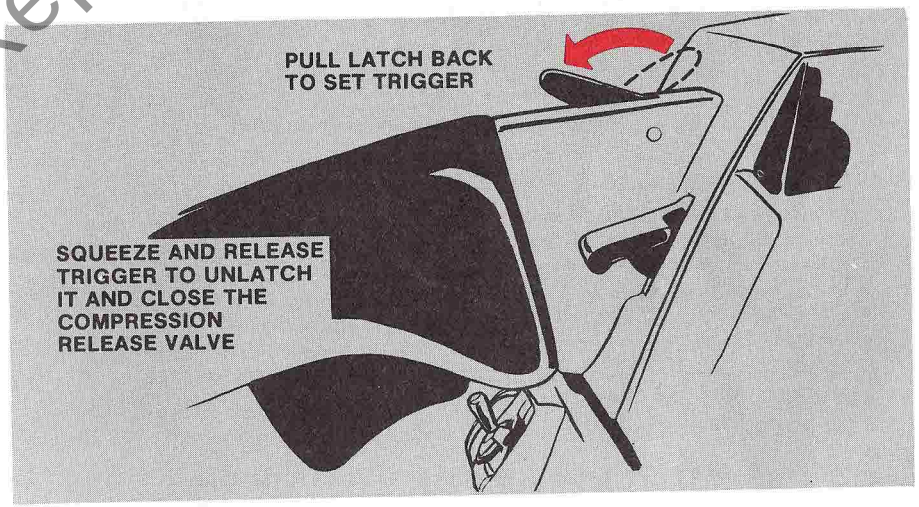
IGNITION SWITCH:

Switch is to the left of the throttle handle. Switch positions are marked "RUN" and "STOP". Flip switch to "RUN" when starting and operating. Flip the switch to "STOP" to stop the engine. In the "STOP" position, the switch grounds out the primary circuit to prevent ignition.



CHOKE LEVER:

Located on right side of throttle handle. Lift the lever to choke a cold engine. Push lever all the way down to open choke for full power operation. (Always operate with choke wide open.) Put lever in the half-way position to start a partially warmed up engine.

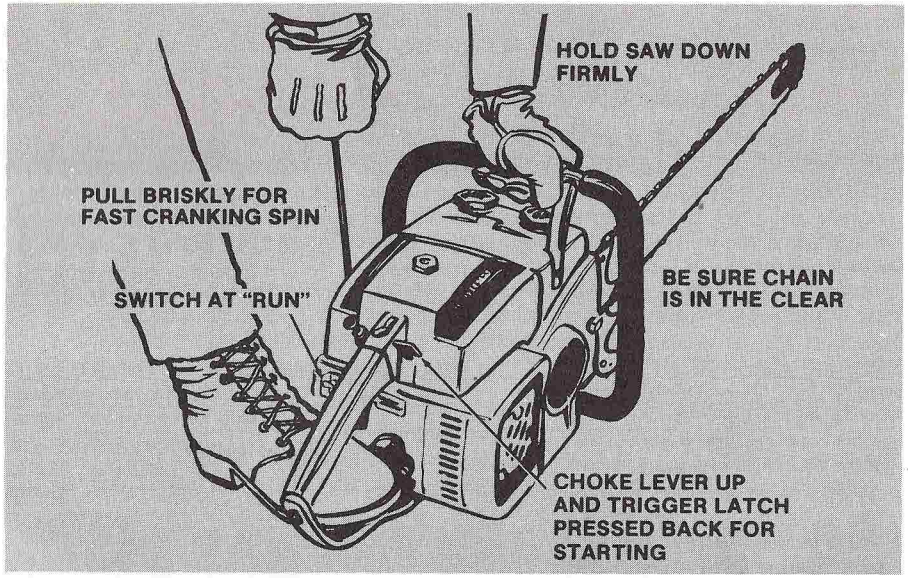


TRIGGER AND LATCH:

The trigger is on the underside and the latch is on the top side of throttle handle. For starting, pull latch all the way back. This opens the compression release valve to permit easy cranking, and also sets the trigger for preferred* starting speed. When the engine starts, squeeze the trigger until the latch returns to the original position, then release the trigger. (Releasing trigger closes the compression release valve.) This will free up the trigger for normal control of the throttle.

NOTE: If you forget to release the trigger after the initial squeeze, you can throttle up the engine but the compression release valve will stay open.

*The set screw in the throttle handle may be used to adjust the starting speed as described in Section 5.



During starting, hold the saw down firmly on a level surface with the bar and chain in the clear. Keep your left hand at the balance point of the handlebar. Keep on the left side of saw. Never lean across the saw or straddle the guide bar. Do not use any technique or stance which would bring your foot or leg near the chain.

Starting and Stopping

1. **Flip the IGNITION SWITCH to "RUN".**
2. **Lift the CHOKE LEVER all the way up.** (cold engine only.)
3. **Pull the TRIGGER LATCH LEVER all the way back.**
4. **Pull the STARTER GRIP out a short way until you feel the STARTER engage. Then pull the cord briskly to give a fast cranking spin to the engine.** (Do not pull to the very end of the cord or you may damage the starter.) Hold onto the grip to let the cord rewind smoothly. Letting go of the grip will cause fraying of the cord during rewinding.
5. **Crank until the engine fires.** Normally, an engine which has not been run for some time requires three to five pulls just to prime with fuel, but once primed will normally start on the first or second pull. On the other hand, considerable additional cranking may be required to start a cold engine in extremely cold weather.
6. **When the engine fires (coughs two or three times on one pull) but does not run, move the CHOKE LEVER to the HALF CHOKE POSITION and continue cranking until the engine starts.**
7. When engine starts and runs, push the choke down to the open position before the engine stalls out. Squeeze and release the trigger, then depress the trigger just enough to keep engine running.
8. Now idle the engine, take your stance, and position the saw for cutting. Just before the chain penetrates the wood, squeeze the trigger to open the engine to full speed and power.

NOTE: Never operate the saw with the throttle partly open.

9. To stop the engine, flip the switch to "STOP".
10. When restarting a still warm engine try to start without choking. If the engine has cooled, however, use either half choke or full choke to restart.
11. When through using the saw, and ready to lay it up for a period of time, slowly loosen both the fuel cap and oil cap. After waiting for the pressure to be relieved, tighten both caps.

Fueling the Saw

WARNING: This fuel tank may be under pressure. Always remove cap slowly.

This engine requires a fuel mixture containing oil. It is important not only that the proper gasolines and oils be selected, but also that they be mixed *thoroughly* in the proper proportions *before* being poured into the fuel tank.

The 42 ounce (1.24 L.) fuel tank is designed to give about 25 minutes continuous operating time per filling. This may be equivalent to an hour or more of actual working time with the saw.

The fuel cap (see illustration) contains the same type of check valve and protective filter as used in the chain oil cap. The caps let air into the tanks as fluid is withdrawn and must be maintained in operable condition.

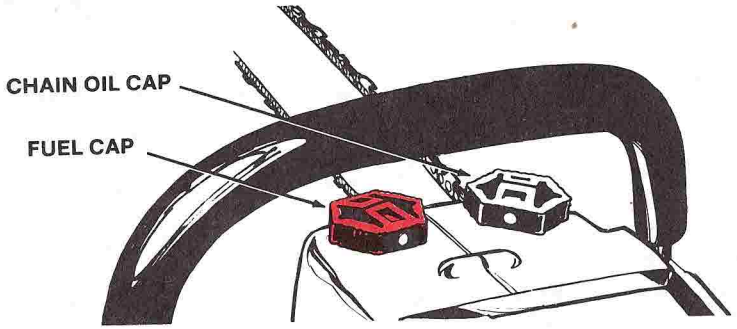
1. Select a clean fuel container.
2. The gasoline should be clean and fresh. Select a regular grade (90 octane rating) gasoline product.
3. Only 2-cycle type motor oil products should be used to make 2-cycle fuel. Here are the product options and mixing ratios:

PREMIUM HOMELITE® 32:1 Motor Oil (SAE-40): For best performance and longest possible service life, use this oil mixed in the ratio of one part oil to 32 parts of gasoline (1/4 pint oil per U.S. gallon of gasoline, or metric 3% oil.)

HOMELITE® SAE-30 2-cycle Motor Oil or any other good brand of 2-cycle SAE-30 motor oil: Use this oil in the ratio of one part oil to 16 parts of gasoline (1/2 pint per U.S. gallon of gasoline, or metric 6% oil).

4. Avoid use of multi-grade oil products (10W-30 for example) or any other oils formulated for 4-cycle engines.
5. To be sure of the correct mixture, always measure out the recommended quantities of gasoline and oil accurately. Pour half of the gasoline into the mixing container (never directly into the saw tank). Pour in all of the measured-out oil. Now add the remainder of the gasoline and agitate or stir vigorously for at least one minute.
6. Remove the engine fuel cap and fill the tank with fuel. (See warning notice above). Replace cap tightly. And, if any fuel was spilled on the saw, wipe it off immediately.

Tank Filler Caps



The chain oil cap, which is black, is on the right, or chain side of the saw. The chain oil cap has the words "CHAIN" and "OIL" cast into it. The fuel cap, which is red, bears the legend "MIX FUEL & OIL". To avoid any mix-up, the two caps are threaded differently.

CAUTION: Whenever opening up one of the tanks, always loosen the cap very slowly and wait for the tank pressure to be equalized before removing the cap.

Whenever you are laying up the saw after use, slowly crack both caps loose for a few seconds to equalize the pressure. Then tighten both caps fully.

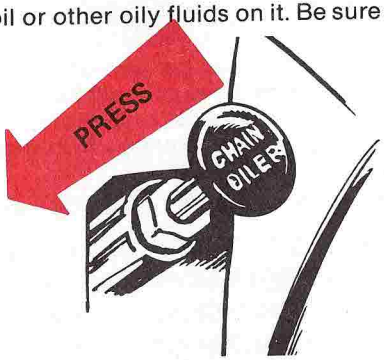
Each cap contains a "duckbill" type check valve protected by a porous filter. It is important that these valves and filters be in operating condition so that the proper pressure can be maintained in the tanks. An inoperative check valve will result in a vacuum condition in the tank. Vacuum in the fuel tank will show up as "lean operation" (low power, overheating, poor idling ability). Vacuum in the chain oil tank will reduce the output from the automatic chain oiler.

Chain Oil and the Oil Pump

1. Before operating the saw fill the chain oil tank with HOMELITE® Bar and Chain Oil, or any brand of clean motor oil (including reprocessed oil). HOMELITE® Bar and Chain Oil is formulated with viscosity improvers designed to keep it free-flowing in the oil pump regardless of temperature conditions. If you use ordinary motor oil either select SAE-30 as a standard weight and thin it with kerosene as required in cold climates, or select oil by SAE weight designation according to temperature conditions as follows:

TEMPERATURE—WEIGHT	DILUTION OF SAE-30 OIL WITH KEROSENE
Above 32° F (0° C) — SAE-30	No kerosene needed.
Below 32° F (0° C) — SAE-20	25% kerosene by volume.
Near 0° F (–18° C) — SAE-10 Below 0° F (–18° C) — SAE-05	30% or more; add kerosene until oil flows freely.

2. Wipe down the saw any time you spill oil or other oily fluids on it. Be sure the saw handles are always clean.
3. The 750 has two piston type chain oil pumps. One is automatic, the other manual. The manual oiler is actuated by "press-and-release" stroking of the manual oiler button to the left of the throttle control handle. The automatic oiler output varies according to the engine speed, and is designed to satisfy the bar and chain lubrication requirements under average cutting conditions.



4. The manual oiler should be used to satisfy the following conditions:
   a) To pre-load the bar groove with oil after installing a new or dry-cleaned chain.
   b) During extra long duration cuts, or extra-hard wood-cutting.
   c) When rip-cutting with the wood grain, or when boring with bar nose.
   d) When de-branching (trimming) logs where it is difficult to limit the rpm to that which is best for the chain and bar.
5. These instructions apply if you make frequent use of the manual oil pump:
   a) When using the manual pump, note the amount of thumb pressure required to pump oil. If the tank runs out of oil there will be no build-up of thumb pressure. After refilling of the tank, the pressure should build-up after about ten pumping strokes which are required for priming.
   b) If the tank is full of oil and you cannot get manual oil pump thumb pressure, the pump is inoperative and must be repaired before further use of the saw.
   c) Even when the manual oiler output is not required for chain lubrication, it is a good idea to stroke the manual pump occasionally to be sure there is oil in the tank for the automatic oiler.

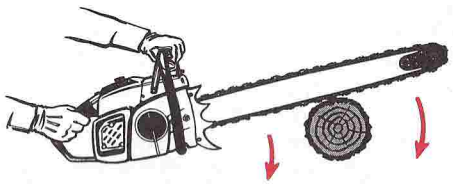
section 3 WOODCUTTING INFORMATION

Basic Cutting Techniques

CAUTION: Never let the chain at the top or nose section of the bar touch the ground or any object other than the log or branch being cut. Touching the ground will damage the chain, and accidental contact of the nose section of the bar with any object can cause kickback. (Study the illustrations under "Avoiding kickback.")

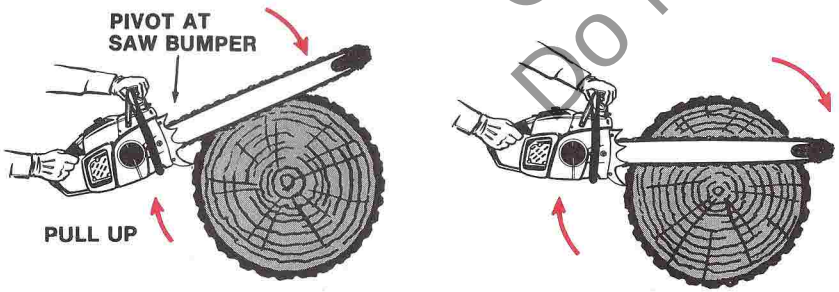
ALWAYS DO ALL OF THE CUTTING AT FULL THROTTLE. CUTTING AT PARTLY OPEN THROTTLE WILL ALLOW THE CLUTCH TO SLIP AND BURN.

When cutting small logs and limbs, open the throttle fully just before letting the chain touch the wood. It is safest to cut with the saw bumper up against the wood. If you cut further out along the bar, the chain will have a tendency to pull you and the saw towards the work, so you must brace yourself against this slight pull. (The reverse will be true if you are using the top of the bar to snip small limbs or underbuck logs.) Exert light feed pressure to cut straight through the wood, but be ready to release the throttle to idle the saw the moment the chain breaks into the clear. Do not let the saw run wide open without a cutting load, as this unnecessarily wears the chain, bar, and engine.



SMALL LOGS CAN BE CUT RIGHT STRAIGHT THROUGH AS SHOWN.

When bucking large logs or felling trees, place the saw bumper up against the work so that you can pivot it at the bumper for best control and easy feeding.



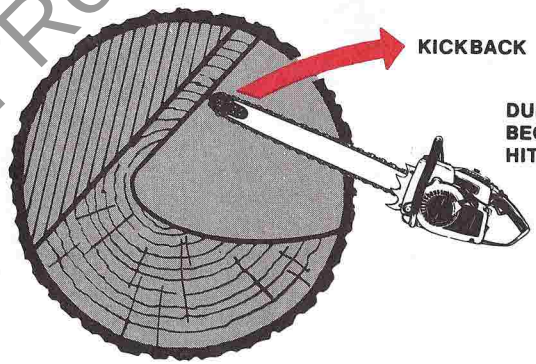
PIVOTING THE SAW THROUGH THE WOOD WORKS BETTER FOR LARGE LOGS.

Study the illustrations under "Stressed Log and Limb Situations," (page 10) to learn how to avoid pinching the chain. When bucking large diameter logs insert soft plastic or wooden wedges to help hold the cut open. When felling trees, drive these soft wedges into the back cut after the chain and bar have cut far enough into the wood for clearance with the wedges. The wedges will hold the back cut open and help to jack the tree over in the desired direction.

Avoiding Kickback

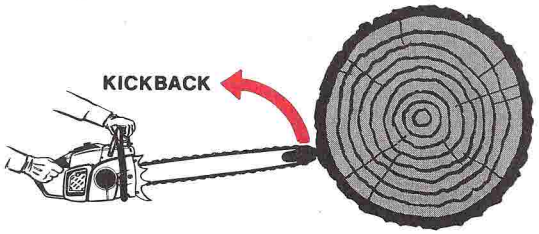
If you are cutting with the nose of the bar, you must be extra careful to protect yourself against the possibility that saw may kick back. The saw may kick back any time the top section or upper nose section of the rotating chain hits any solid object such as the bottom of an incompleted previous cut, the side of the saw kerf as blade is being withdrawn, or wood when you are trying to start a boring cut, or other material next to the log you are cutting.

SITUATIONS CAUSING SAW BLADE TO KICK BACK TOWARD THE OPERATOR



DURING REINSERTION INTO A PREVIOUSLY BEGUN CUT, WHEN TOP OR NOSE OF BLADE HITS BOTTOM OR SIDE OF THE KERF (the cut)

WHEN NOSE STRIKES SOME OBJECT SUCH AS ANOTHER LOG

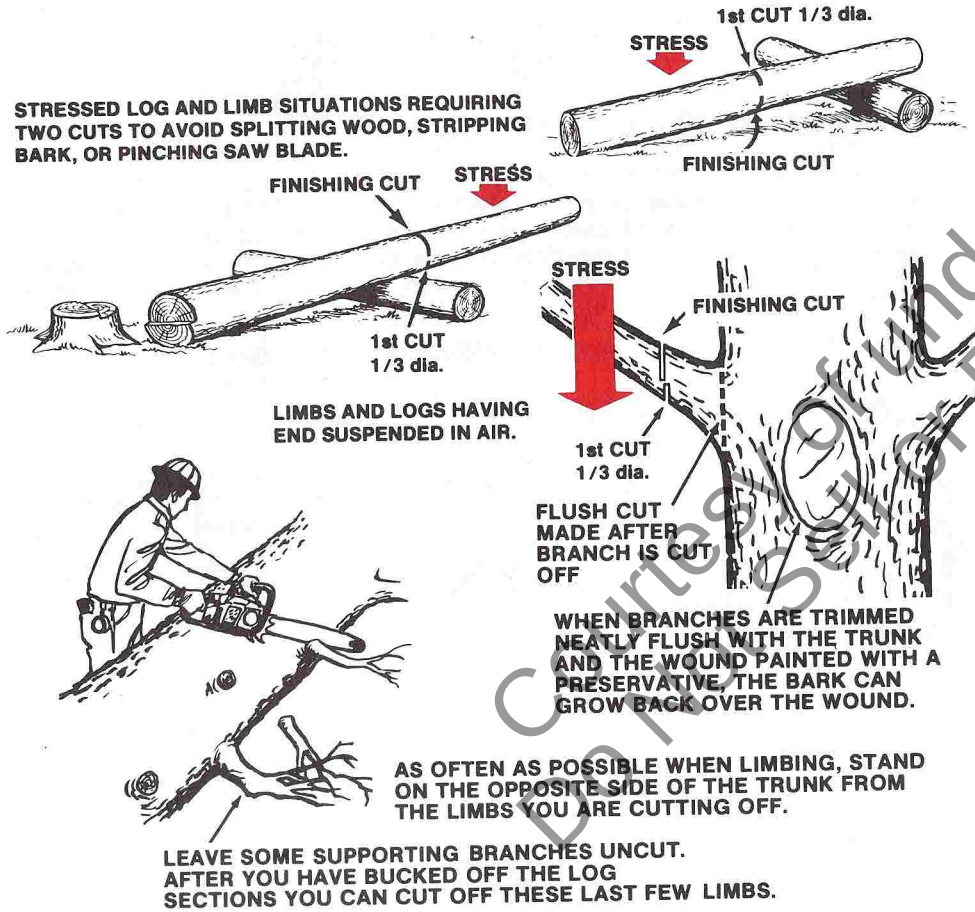


WHEN INCORRECTLY STARTING TO BORE

Stressed Log and Limb Situations

Remember wood is heavy and that it bends or flexes. As you cut through a log, you weaken it at the cut and it will bend *there* unless it is lying flat on the ground and under no stress. To avoid closing of the cut and pinching of the saw blade, you must cut a stressed log or limb in such a way that the cut will open instead of closing on the bar. In addition, you may wish to avoid splitting the wood or stripping off the bark. This can all be done as shown.

NOTE: With large logs, insert only a plastic or wooden wedge into the cut to hold it open. Never use a hard metal wedge.



Limbing, Trimming and Pruning

During tree harvesting, it may be necessary to remove limbs or branches from trees that are to be left standing. These operations should be done neatly so the wounds can heal. Branches under tension should be noted so the operator can stand where he will not be struck by the falling wood. The proper cutting sequence should be used to avoid pinching of the saw in the cut or tearing of the bark. Cut the branch off from 6 inches to a foot from the trunk in two cuts (as illustrated). Then trim the stub off smoothly flush to the trunk so the bark can grow back to seal the wound. Paint the wound with a preservative. Do not use paint which contains lead.

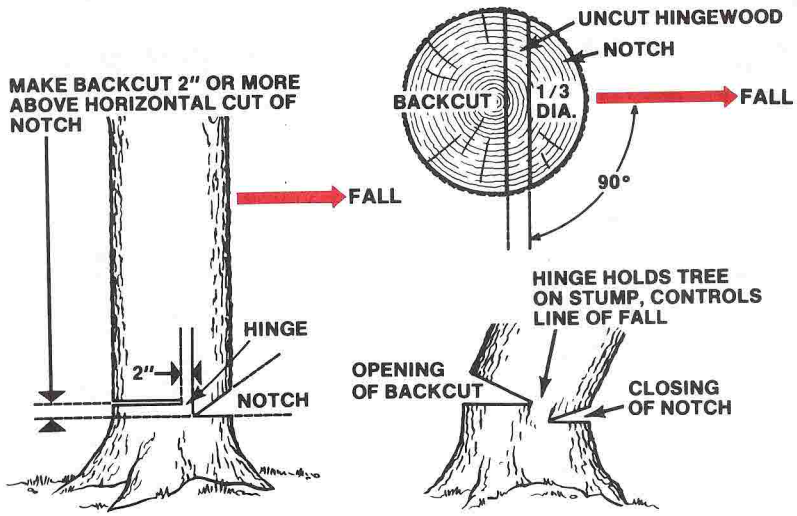
Notching and Felling Operations

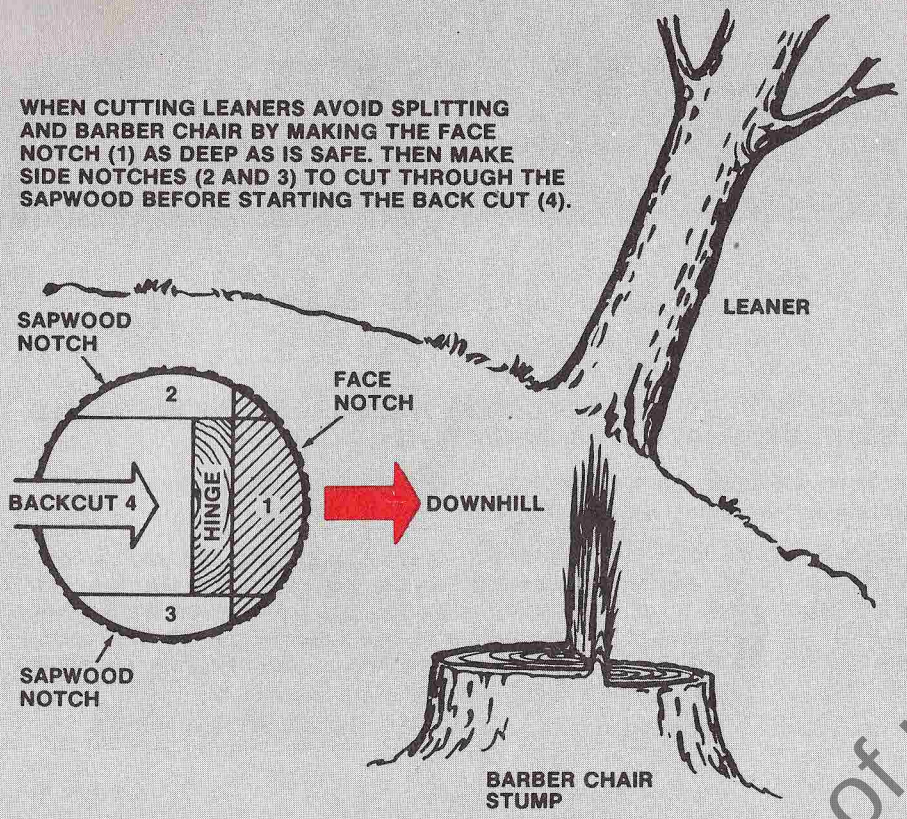
Consider the factors of wind direction and velocity, the natural lean and balance of the tree, and the location of large limbs. All of these things influence the direction in which the tree would naturally fall. Do not try to fell a tree along a line different from its natural line of fall until you have had considerable experience in felling trees which present little problem as to direction of fall.

Also take into consideration whether the trunk is sound or hollow, or partially rotted. Watch for loose bark and dead limbs overhead, as they may come crashing down while you are working on the tree. They are called widow makers.

If the tree is not badly out of balance, cut a notch 1/3 the diameter of the trunk. Always form this notch by making the lower cut before the upper cut. The inside line of the notch should be made at a right angle (90°) to the intended line of fall (as illustrated), and the outside width of the notch about 1/5 the diameter of the trunk. Make the back cut at least 2" higher than the notch and leave a hinge of uncut wood to guide the tree over (see hinging note). If there is any chance that the tree might not go over in the direction planned, or may rock back and bind the saw, STOP CUTTING before completing the back cut. Drive the soft wedges into the back cut to jack the tree up toward the intended direction of fall. Then drive the wedges in more deeply to force the tree over.

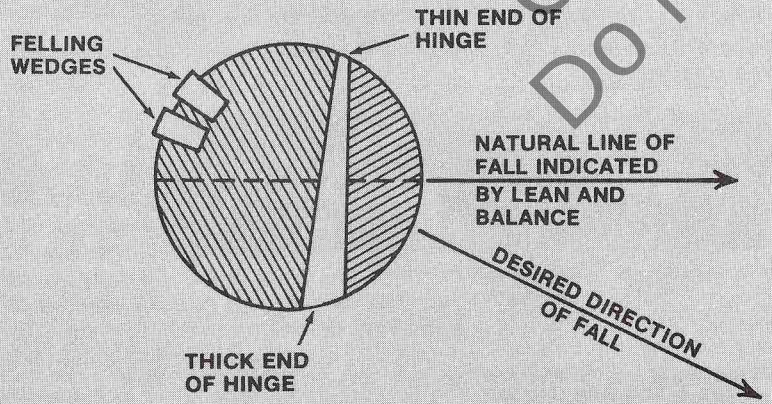
HINGING NOTE: The hinge wood is what controls the fall of the tree. If the hinge wood has the same thickness from end to end (back cut is parallel to the inside cut of the notch), the tree should fall at a right angle (90°) to the notch. If the hingewood faces are not parallel, the tree will be influenced to fall more in the direction of the thicker end of the hinge. As illustrated, this can be done purposely to control the tree to fall in the desired direction instead of the natural line of fall. If hingewood is not left to control the fall, the tree may fall in any direction and might twist off the stump.





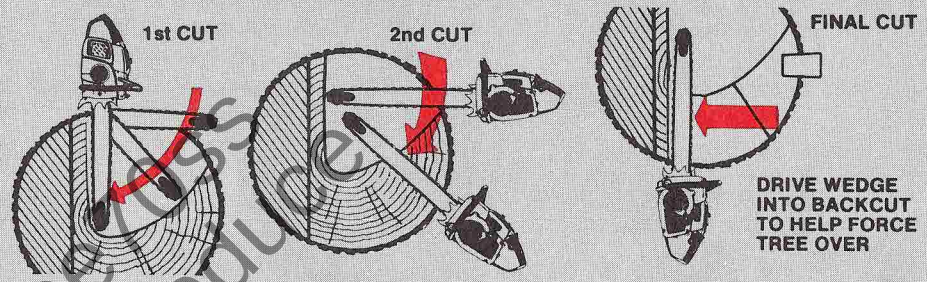
When trees are considerably out of balance or have a great deal of lean, they may split during felling unless the proper technique for cutting leaners is used. To cut a leaner, first notch the face on the downhill side as deeply as you can safely go with no possibility that the tree will split or pinch the saw. Then notch through the sapwood on both sides of the trunk (at same height as face notch) before starting the back cut (see illustration).

FELLING TREE ON DIFFERENT LINE FROM THE NATURAL LINE OF FALL



Trees larger in diameter than can be cut all the way across with the saw's bar and chain, can be both notched and back-cut in a series of cuts. Start the notching cut from one side and draw the saw through to the other end of the notch. Start the back cut on one side of the trunk, pivoting the blade through to form the desired hinge section. Then remove the saw and reverse its position for the second cut. Throttle up and reinsert the saw carefully in the first cut, then cut around the back of the tree. Finally, cut forward toward the notch to complete the hinge, and be sure to drive in soft wedges before the tree is ready to fall.

SEQUENCE USED TO FELL TREES UP TO TWICE BAR LENGTH IN DIAMETER

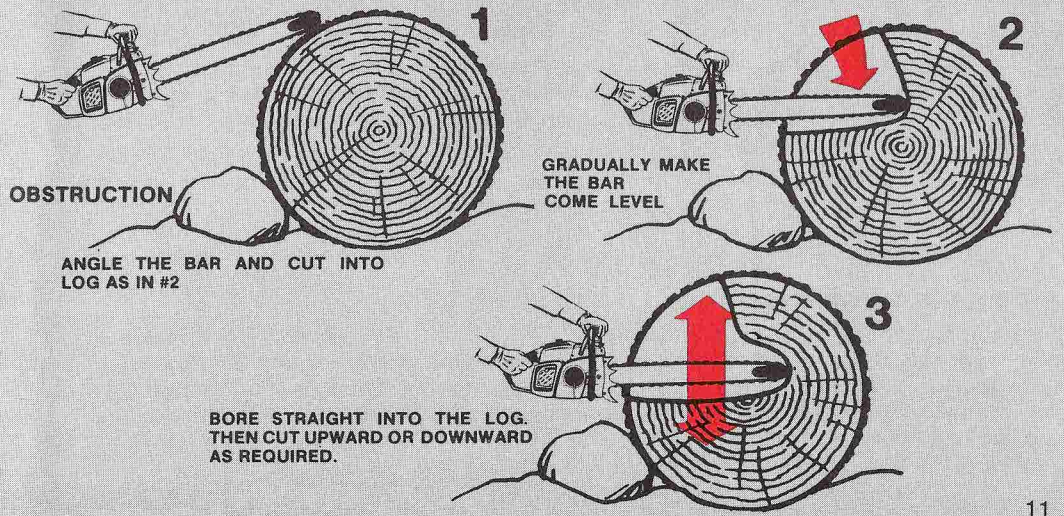


Boring with the Nose

Boring requires extreme care and attention. Do not bore unless there is no other way to make the cut, as boring will wear the bar and chain faster than when you cut on the flat edge of the bar. Be alert for possible kickback.

Boring may be necessary when the ground, a rock or a tree prevents you from placing the saw where you need to. It is also employed in cutting "blind holes" such as those in fenceposts, or the cut-outs for log cabin windows.

To minimize the danger of the saw kicking back, make first contact with the wood as far back from the bar nose as possible (see #1 of the boring illustration panel). Make an angular cut. When this is deep enough to become a guide, exert downward pressure to bring the bar gradually into line for boring. Then bore into the wood. When the saw has bored through to the depth of the bar, you can cut upward or downward through the wood as required.



section 4 MAINTENANCE AND REPAIR OF THE CUTTING UNIT

	Ref. Page	Check Daily	Check Only as Nec.	Every Week 15 hours
1. Sharpen the Chain	12	✓		
2. Lower Depth Gauges Uniformly	14	✓		
3. Grease Guide Bar Nose Sprocket	5	✓		
4. Clean Bar Groove, Oil Discharge Hole, and Clutch Area.	15	✓		
5. Check Chain Oiler Output	17		✓	
6. Dress Down Bar Rails, Remove All Burrs.	15			✓
7. Reverse Guide Bar Top for Bottom on Saw	15	✓		

HOMELITE® Saw Chain

Your saw has a fast-cutting chain with a sprocket which matches it in pitch. When the chain is to be replaced, always install a new sprocket of matching pitch because a worn sprocket would be out-of-pitch and damage the new chain.

Not only for fastest cutting, but also for maximum life of the chain and all saw parts, always keep the chain in such good, sharp condition that bearing down hard to make the cut is unnecessary. When the sawdust turns from chips into a fine powder and you find yourself pressing hard to feed the chain, STOP IMMEDIATELY and file the chain.

FILING EQUIPMENT

Uniformity and accuracy are necessary for success in filing saw chain. These are easiest to obtain with the aid of a file holder which has the required 35° top filing angles marked on it, and also holds the file at the correct height (1/10 of file diameter above top plate of tooth) to produce the required side plate angle and beveled cutting edge.

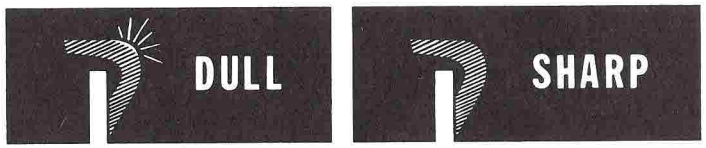
ALL YOU HAVE TO DO IS MAINTAIN THE CORRECT FILING ANGLE, HEIGHT AND PRESSURE AGAINST THE TOOTH.

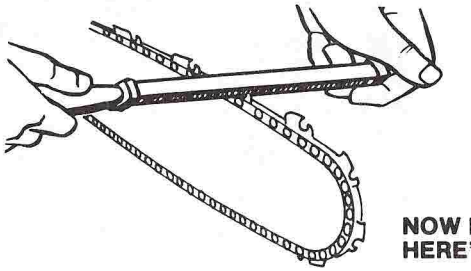
For new .404" pitch (and optional 3/8 pitch) chain, a 7/32 diameter "fast-cut" round file and holder (our assembly DA-92615) is required.

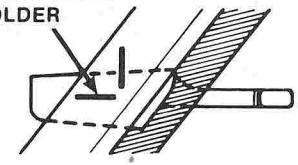
A chain filing vise holds the cutters rock-steady during filing: but you can do a satisfactory job "on the bar" if you tighten up the tension enough that the chain doesn't wobble, and do all of the filing at the mid-point of the bar. Wear gloves for protection. Be sure to file all cutters to the same length. If you replace damaged cutters, file them back to the same length as the rest of the cutters so that each cutter has the same biting chance.

How to File Cutters

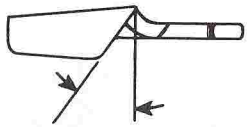
1. Hold file against cutter face at 35° angle (marked on file holder).
2. Keep file level — do not let it dip or rock.
3. File in one direction only — towards front corner of the tooth. Move file away from tooth face on return stroke.
4. Use light but firm pressure, mostly towards back of tooth. Avoid heavy downward filing pressure. The holder will keep 10% of the file above the top plate, automatically producing a beveled hollow-ground under edge.
5. Put a few firm strokes on every tooth, filing all cutters on one side of the chain, then all cutters on the other. Rotate file in holder occasionally.
6. A sharp edge will not reflect light. Examine the edge to see if the dulled area has been removed.





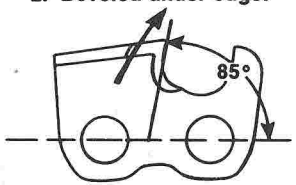


**NOW EXAMINE YOUR FILING JOB—
HERE'S WHAT YOU SHOULD GET:**



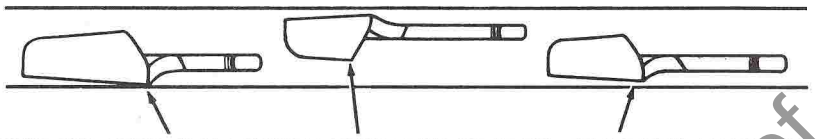
1. 35° top plate angle.

2. Beveled under edge.

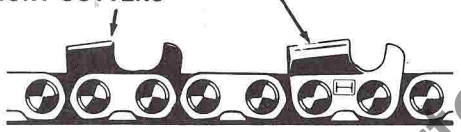


3. Side plate 85° to line of chain travel.

Corrective Filing

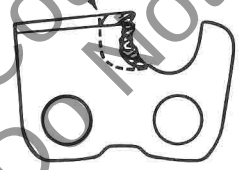


IF SOME CUTTERS ARE LONGER THAN THE OTHERS, FILE THEM BACK TO THE LENGTH OF THE SHORT CUTTERS

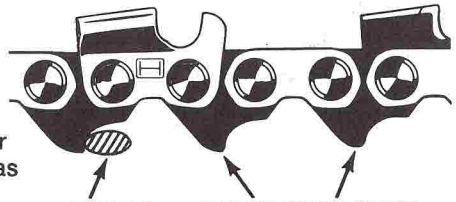


When teeth have hit hard objects such as stones, nails, etc., or cut dirt, sand, etc., the damaged area must be filed away before the tooth will cut or have the proper set. NOTE: *All* cutters must be filed equally back to this point. This can be done by hand, but it is less expensive and easier to have it done on an electric chain grinder at your dealer or HOMELITE® factory service office (see "Yellow Pages"). This is an extra advantage since it "trues" the chain to original factory shape.

FILE BACK PAST DAMAGED AREA



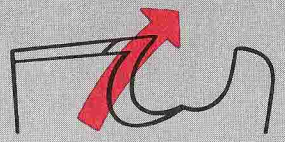
Chain drive tangs must have sharp points to clean sawdust from the bar groove, and bar groove must be deep enough for the tangs to clear bottom all the way around bar. (Every fourth or fifth tang resharpened will do the job as the chain wears.)



OVAL OR ROUND FILE

POINTS WORN DOWN

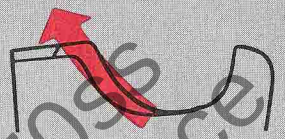
Refile Any Teeth Having One or More of These Faults:



FORWARD HOOK

Chain will grab and jerk, producing rough cutting

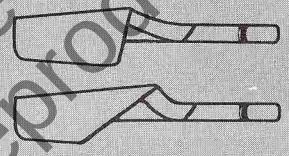
Caused by excessive downward filing pressure, or tip of file held too low on tooth.



BACK SLOPE

Chain resists entering wood (scrapes instead of cutting wood). Causes excessive heat and wear to bar and chain.

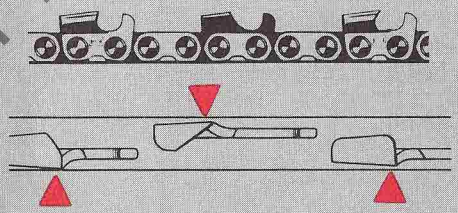
Caused by lowering handle end of file or holding file too high on the tooth.



IMPROPER TOP PLATE ANGLES

Blunt chain requires too much feed pressure. This top plate angle causes chain to bind, produces a rough cut, robs power from saw, and increases bar groove wear.

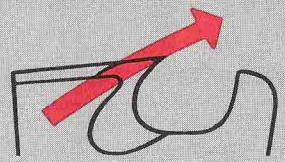
Caused by holding file at wrong angle or letting it drift or rock during the stroke.



CUTTERS FILED AT NON-MATCHING ANGLES

Chain will not cut at its best. May cut off line or "run" to one side, drag may slow down engine.

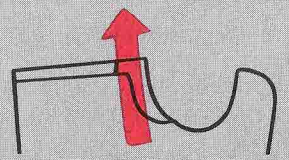
Caused by letting pressure and filing angle vary from tooth to tooth or one side filed with different angles and lengths than the other.



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.



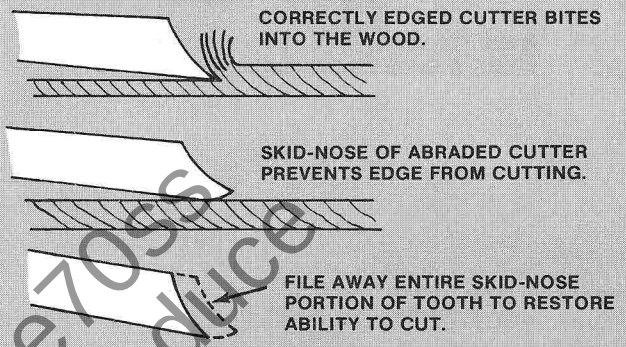
BLUNT CUTTING EDGES

Although edge is durable it won't cut properly; scrapes wood, robs power and produces dust instead of chips.

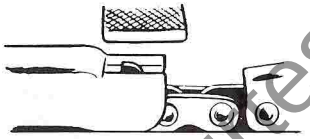
Caused by holding file too high on face of tooth.

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.



How and When to Set Depth Gauge Clearance



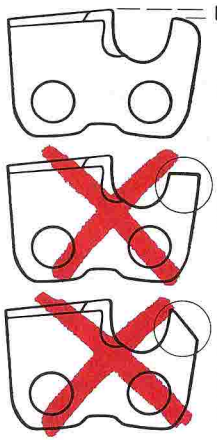
Every second or third time the teeth are sharpened, or if a large amount of steel is removed from the cutters, the depth gauges should be jointed to correct depth.

A SUGGESTED DEPTH FOR THIS SAW AND CHAIN IS:

HARD WOOD TO MIXED HARD/SOFTWOOD DIET	.025" (factory setting of new chain)
STRICTLY SOFTWOOD DIET	.030"

Use a depth gauge jointer and a safe-edge (no teeth on edge) flat file. Fit the jointer over the chain so that the slotted end of the jointer points toward the bar nose and the depth gauge projects up through the slot. File the depth gauge flush with the top of the jointer. File all gauges to this height.

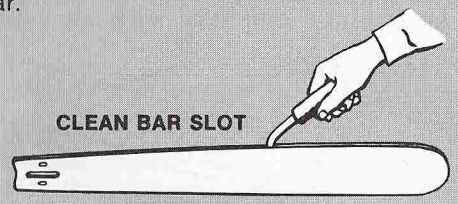
If the gauges are too high, the chain teeth will not get a good bite; if too low, the teeth will take too large a bite, causing the chain to grab and jerk. If some gauges are higher than others, the chain will cut off line, favoring the side having the lowest gauges.



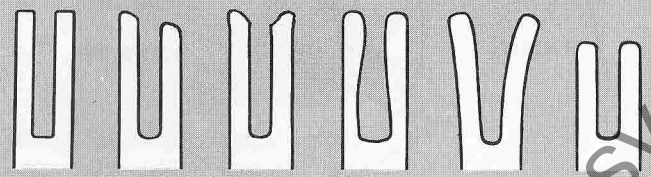
Guide Bar Maintenance and Repair

The bar should be cleaned periodically. Using a putty knife or stiff wire, clean the packed sawdust out of the chain groove. Also clean out the chain oil holes, as a clogged hole will block oil flow to the chain. Dealers in some areas have facilities for repair of damaged or worn bars. If your bar is not in good condition, have it repaired or replaced.

Examine the bar rails. If burred, file the rails smooth. Small straight cracks in the rails probably will not affect performance, but a rail with a hooked crack must be repaired. A blue discoloration along the bar rails indicates a) that the bar and chain should have been fed more oil, or b) that you have been bearing down too hard for too long trying to make a dull chain cut, or c) that the rails have been pinched together at this point. (You can carefully pry the groove open with a screwdriver.) Rotating the bar top-for-bottom on the saw every day or two helps to equalize the wear.

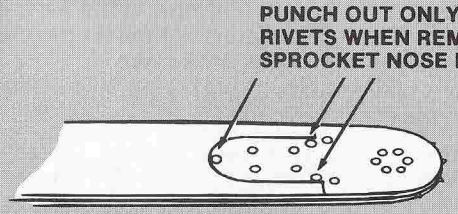


WEAR PATTERNS IN GUIDE BAR GROOVE AND BAR RAILS:

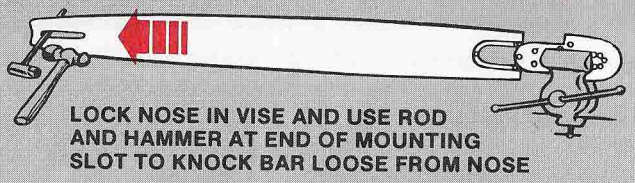


REPLACEMENT SPROCKET NOSE FOR .063" POWER TIP® GUIDE BARS: Replacement noses are available with either .404" pitch or 3/8 pitch nose sprockets. Be sure to select the nose assembly which has the same pitch as the saw drive sprocket. The replacement nose comes with three aluminum rivets and is ready for use as soon as installed. Clean the bar thoroughly. Then remove the old nose and install the replacement as follows:

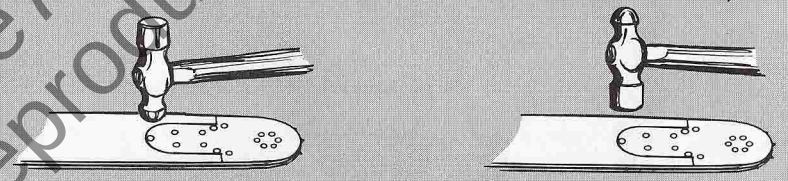
1. Drill through the centers of the three rivets called out in the illustration (do not remove the other rivets) and punch them out of the holes.



2. Clamp the bar nose right over the rivet heads in a vise, and strike the end of the guide bar mounting slot with a rod and hammer to free up and remove nose.



3. Slide the replacement nose into place until the rivet holes in bar and nose line up.
4. Insert the three rivets and place bar on a supporting surface. Peen the rivet heads smoothly with light taps of the ball head of the hammer, then strike several blows with the flat head of the hammer until the rivets fill up the holes.



5. Assemble bar and chain on the saw, and run-in for one minute or more at slow speed without cutting. Making a few light boring cuts with the nose will also help set the proper wear pattern for the nose sprocket and bearing.

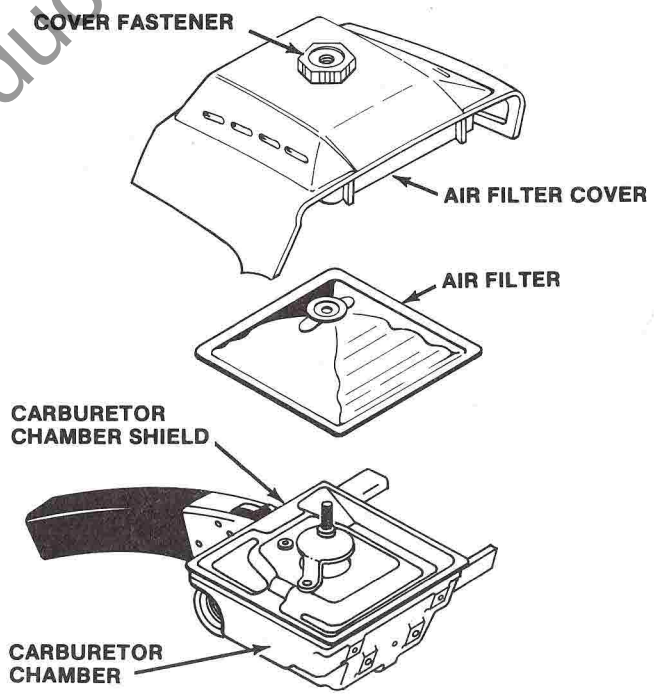
section 5 ADJUSTMENTS AND REPAIRS REQUIRING ONLY LIGHT DISASSEMBLY

	Ref. Page	Daily Check	Only as Necessary	Every Week	Every 50 hrs.
1. Clean the Air Filter	16	Twice			
2. Install New Air Filter	16		✓		
3. Check Fuel Filter	8				✓
4. Clean and Examine Exterior of Saw		✓			
5. Keep Air Openings of Fan Housing Clean	18	✓			
6. Adjust Carburetor	17		✓		
7. Adjust Starting Speed	17		✓		
8. Test Ignition High Voltage with Neon Lamp	18		✓		
9. Check and Clean Spark Plug	18		✓		
10. Adjust Spark Plug to .025" Gap.	18		✓		
11. Clean Muffler and Spark Arrester Discharge Openings			✓		
12. Check and Tighten Loose Fasteners		✓			
13. Adjust Starter for Proper Rewind	19		✓		

The Air Filter

The air filter should be cleaned twice each full day of operation, or more frequently as required to preserve engine power when operating conditions are extremely dusty. When the air filter is dirty, the engine will lack power because it is being deprived of both air and fuel.

NOTE: During disassembly and air filter cleaning, you must have the carburetor choke closed.

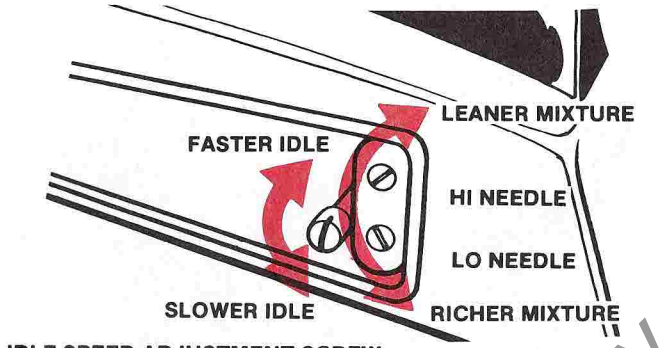


1. Close the choke. Give the cover fastener a half-turn to the left and remove the air filter cover and the filter. If there is any dirt or dust on the choke plate, invert the engine before brushing the choke area clean.
2. Cover the air intake tube opening while you wipe the top surface of the carburetor chamber shield clean.
3. Clean the air filter by tapping it against a clean surface. Occasionally, give it a thorough cleaning in detergent and water or a non-oily solvent and let it dry thoroughly before use. You may find it practical to keep some spare filters on hand for instant changing.

4. As cleaning never removes all of the dirt or wood slivers from the filter pores, the filter should be replaced after several months of continuous service or more than 100 cleanings.
5. Always fit the filter carefully in place on the chamber. Then secure it in place with the cover by pressing down on the cover while giving the cover fastener a twist to the right. Never operate the engine unless a clean filter is in place.

Carburetor Adjustment

The carburetor on this saw is fully adjustable for both idling and high speed performance. It is seldom necessary to make major adjustments. Minor trimming to adapt the saw to altitude and other local conditions is all that is usually necessary. Carburetor adjustment cannot restore performance lost because of low compression, faulty spark plug, or faulty fuel or air intake. In any event, always be sure the air filter is clean before you make carburetor adjustments.



IDLE SPEED ADJUSTMENT SCREW

INITIAL ADJUSTMENT

1. Slowly and gently turn both the HI and LO NEEDLES to the right (clockwise) until both of these mixture adjustment needles are closed against their seats.

CAUTION: Close needles gently. Jamming the needles into their seats will render the carburetor unserviceable.

2. Open (counterclockwise) both needles one turn. (The correct setting of these needles is usually one turn plus or minus 1/8 turn).

WARNING: As the chain will be rotating during the remainder of the adjustment sequence, be sure that it is unobstructed.

3. Start and idle the saw. Slowly turn the IDLE SPEED SCREW to the right (clockwise) until the chain begins to move; then turn it slowly in the other direction until the chain stops.

IDLE ADJUSTMENT

1. With the adjustments as now set, turn the LO NEEDLE to the left (counterclockwise) or to the right (clockwise) to obtain the highest engine speed possible. This setting will supply the correct idle mixture.
2. Use the IDLE SPEED SCREW if necessary to re-adjust the idle speed. The chain should not turn during idling, but the idle should be fast enough for smoothness and dependable starting.

HIGH SPEED ADJUSTMENT

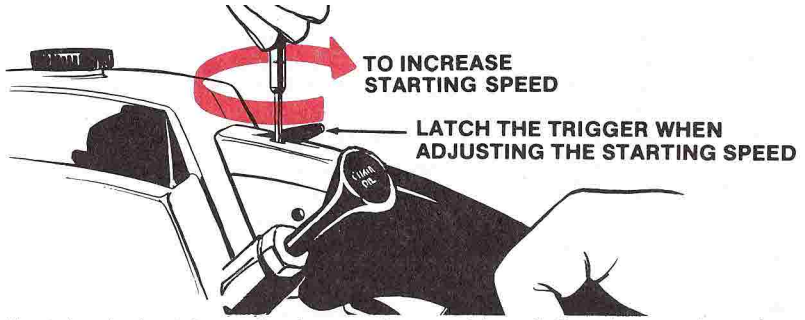
1. Let the saw idle for a few minutes until it reaches operating temperature.
2. Without cutting wood, rev up the engine to maximum rpm by holding the throttle wide open. Adjust the HI NEEDLE to left (CCW) until the engine "4-cycles" (makes a rough, misfire sound). This sound should smooth out when the chain is in the wood.

CAUTION: Engine damage may result if the carburetor is set for a clean running sound while in a no load condition.

3. If you have to push on the saw to make it run smooth in the wood, the carburetor is set too rich. Adjust the HI NEEDLE to the right (CW). Test the saw again under load.
4. Acceleration should be tested under a no load condition. If the saw accelerates smoothly, no further adjustments should be made. However, if the saw hesitates during acceleration, it may be necessary to open up the LO NEEDLE (CCW) slightly and readjust the IDLE SPEED SCREW.

ADJUSTMENT OF STARTING SPEED

The starting speed (with trigger latched for starting and compression release valve opened) should never be so fast as to cause chain rotation during starting. As the clutch is designed to first engage the chain at 3000 rpm, you have a range from idle speed (2400-2600 rpm) to just a bit lower than clutch engaging speed (2900-3200 rpm) within which to set the starting speed. Set it anywhere in between where you can obtain consistent starting.



2. To adjust, latch the trigger in the starting position, follow instructions (page 9) for starting the saw. Adjust to desired speed range. Stop and restart the engine several times to be sure consistent starts can be obtained and that the chain does not rotate during starting. If the saw is hard to start when it is very cold, readjust for a slightly faster starting speed.

CHECKING DELIVERY OF CHAIN OIL OR FUEL

Identical check valves and filters are contained in the chain oil and fuel filler caps. A filler cap which fails to bleed air into the tank as fluid is withdrawn will cause reduced flow. This can be checked during brief operation of the saw (limit throttle bursts to 15 seconds each) first with the cap loosened just enough to let air slip past it into the tank, then with cap tightened fully.

If loosening of the oil cap results in increased flow of oil to the chain, or if the engine has normal power and speed only when the fuel cap is on loosely, the check valve or filter in the cap assembly must be removed and either cleaned or replaced.

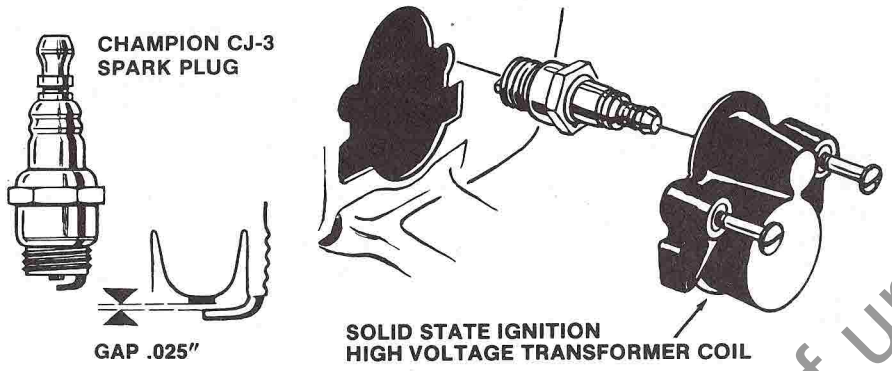
Spark Plug and Ignition

SPARK PLUG MAINTENANCE

The proper replacement spark plug is a Champion CJ-3 (Homelite number 70210-S).

The test for spark (to be described later) will test the ability of the spark plug as well as that of the entire ignition system to fire a good spark.

If the spark plug is suspected of being faulty, try a new one in its place. If the new one works, discard the old one. However, the condition of the old plug tells a story about your engine:



For spark plug removal, first remove the high-voltage transformer coil, held to the rear of the saw by two screws. Then unscrew the plug. Used plugs can often be restored to usable condition. Remove any matter bridging the electrodes or shorting between the insulated core and the metal body. File the electrodes so the firing end of the center electrode is butted squarely and sharply, and the side electrode has smooth metal surfaces with the original cross section and sharp firing edges restored. Gap the electrodes to .025" (0,64 mm) by bending the side electrode. Do not bend the center electrode as this may crack the porcelain insulation. Now, clean the plug thoroughly.

WARNING: Never use sand-blast or power-brush-cleaned spark plugs in this engine because it is nearly impossible to wash off all the abrasive particles. It is preferable to hand-file, hand-brush or "hydro-hone" the electrodes.

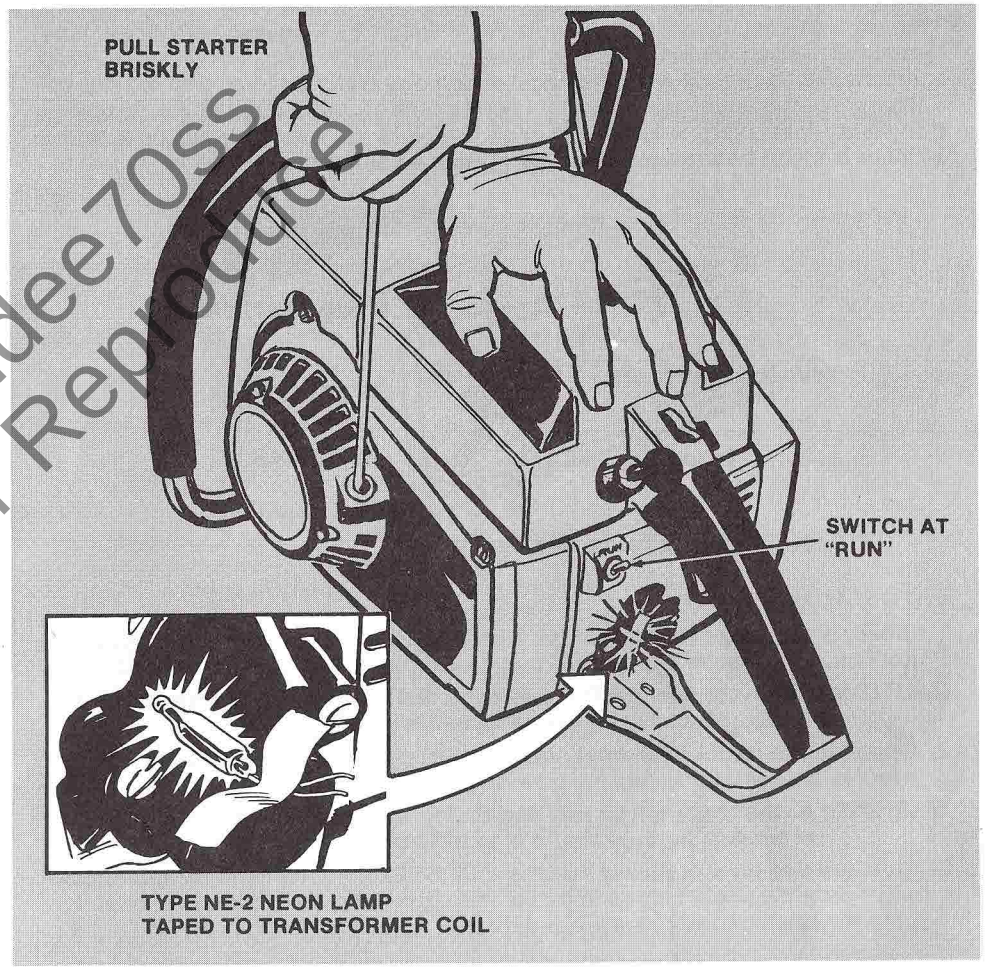
GENERAL IGNITION TROUBLE-SHOOTING PROCEDURE

When the engine will not start, always check first that the tank is full of fresh fuel mix. Then check for spark ability. The test described below will indicate if both the spark plug and the "CD" (capacitor discharge) ignition system are in working order. To narrow down the trouble, repeat the test after you have changed to a new and properly gapped spark plug—If it is not the spark plug, the failure is elsewhere in the system.

Secure a small neon lamp (#NE-2) from a radio/electronics catalog house or store. Tape or glue the lamp to the transformer coil of the "CD" system as illustrated (no wire connection of lamp necessary). Flip the switch to "RUN" and crank the engine. The lamp should flash on every cranking turn of the flywheel.

(NOTE: Make this test when the ignition is functioning normally. Then you can compare the "normal" brightness of the flash to what occurs when there is trouble.) A dirty plug, faulty high-voltage transformer coil, or electronic failure of the "CD" system components will be indicated by dim flashing, no flashing, or irregular flashing (misfires).

If the system fails the above test for spark, the troubles, in the order of probability, are: a) discontinuity of leads, and connections, or the ignition switch; b) transformer coil failure; c) ignition timing module failure.



Starter/Fan Housing Maintenance and Repair

No regular maintenance is required beyond cleaning of the air intake. This can be done by unsnapping and removing the black plastic housing screen and snapping

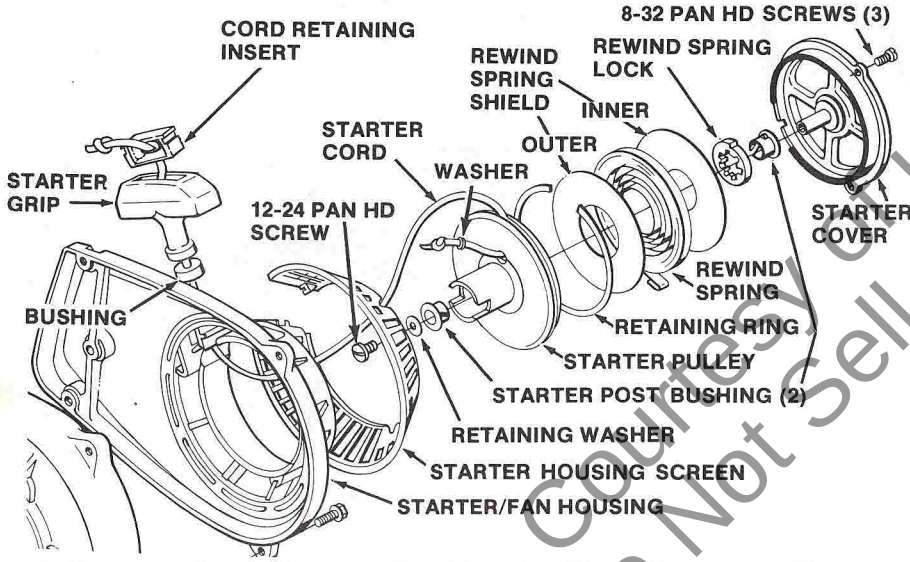
it back into place after cleaning. The cord, spring and pulley assembly in the starter cover can be repaired with no need to remove the fan housing.

1. Whenever there is insufficient rewind spring tension to draw the grip into place against the housing, the tension may need to be reset. To do this, hold the cover from turning and remove the three pan head cover screws. Turn the cover to the right (clockwise) to wind up the cord until the grip is drawn up to the housing. Now, turn the cover 3 to 4 more turns to the right (including, if necessary, a half turn to make the name "750" right-side-up).

CAUTION: Never set more than 5 turns tension.

Hold the cover from turning and check that the grip is now pulled into place when the starter rewinds the cord. Reinstall the three screws and torque them to 35 pound inches (40 kg-cm).

2. To remove the cover assembly in order to make cord or spring repairs, hold the cover from turning and remove the three screws. Then let the cover turn until the spring tension is relieved and you can pull the cover off the housing. (NOTE: If the outer hook of the spring catches against the housing to stop the cover from turning, pull the cover out far enough for the hook to clear the housing, then let the cover unwind.)

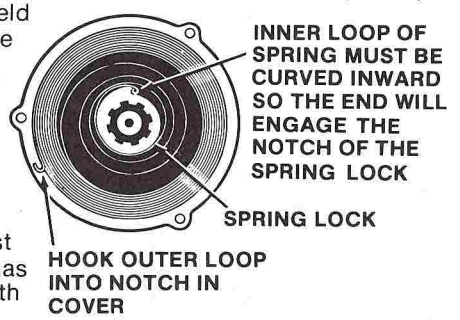


3. To replace the cord, remove the old cord, cutting it if necessary. Tie a simple knot as tightly as you can, right at one end of the new cord. Dip this knot in nail polish or model cement to set it and allow to dry. Slip the small washer on the cord all the way up to the knot. Thread the unknotted end through the cord hole near the hub and pull the end out through the pulley slot. Pull the knot up tightly against the cord hole. Thread the cord through the cord insert hole in the fan housing. Put the starter grip and the cord retaining insert on the cord. Knot and set this end of the cord as you did the other and pull the insert into place in the grip.

4. To disassemble the starter cover for access to the spring and related parts, remove the 10-24 x 1/2 screw in the pulley hub. Remove the retaining washer and slide the pulley off the starter post. The two plastic bushings in the hub should be replaced if worn. Lift the spring lock off the post. Remove the retaining ring from the groove in the spring housing. Remove the outer spring shield. Unhook the outer spring loop from the notch in the housing wall. Remove the spring and the inner shield.

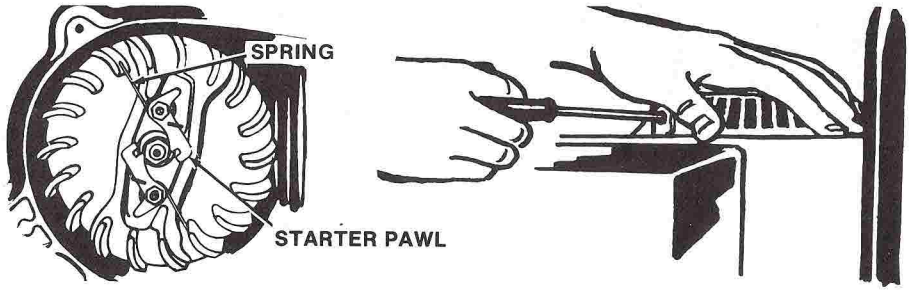
5. To service starter parts, clean all parts thoroughly in a petroleum base solvent. Allow the spring to drip dry. Rub a small amount of HOMELITE® ALL-TEMP Multi-Purpose grease or a lithium base grease onto the side edges of the spring coils. (DO NOT USE MUCH GREASE and do not oil the spring. Oil attracts dirt.) Now, apply a light film of oil to the starter post and begin to reassemble the starter cover.

6. Put the inner shield in the cover. Hold the spring so that the long outer loop end is at the top and points to the left; engage the hook of the outer end in the housing notch and fit the spring into place in the cover. If the inner spring loop was straightened out, bend it back in a smooth curve so that the end loop will engage the notch of the spring lock, which should now be fitted into place (see illustration). Put the outer spring shield in place and retain it by snapping the large retaining ring into position. Assemble the spring lock over the post and onto its register in the housing. Next, assemble the two starter post bushings in the pulley (make sure "keys" on bushings line up with the notches in pulley). Slide the pulley onto the post and test to be sure that the splined section has engaged the spring lock. Retain with the washer and 10-24 x 1/2 screw previously removed. Torque this screw to 45 pound inches (52 kg-cm).



NOTE: Before disposing of an unserviceable starter spring, tape or tie the coils together so they cannot fly apart and injure someone.

7. Hold the starter cover hub-side-up. Wind the cord snugly onto the pulley in a clockwise direction. Set the cover into place in the starter fan housing; pull out the starter grip a short way and let it rewind to spread the pawls so the pulley hub can slide between them into place. Turn the cover to the right 2 to 3 turns (clockwise) to set the required spring tension. Before reinstalling the three cover screws (as in step 1), snap the black plastic starter screen into place between the housing and the cover.



CAUTION: Whenever you are mounting the starter/fan housing assembly on the engine, be sure to position the housing carefully and press it lightly against the engine. Pull the starter grip out slowly until the toothed hub pushes the pawls out of the way and the housing drops flush into place against the engine. Then secure with the five 10-24 x 5/8 screws. Tighten the screws to 45 pound inches (52 kg-cm).

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