

THIRD EDITION

Part No. 24821 (REV. 3)

Price **\$100**

Printed in U.S.A.

February, 1975

HOMELITE®

350 Automatic CHAIN SAW

Models 350, 350HG, 350SL.

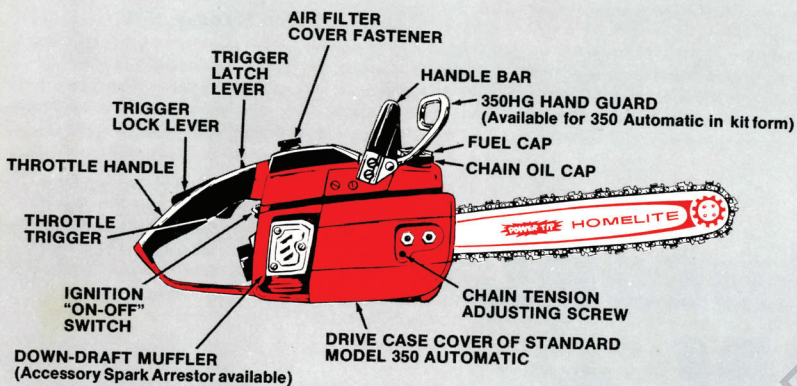


OWNERS MANUAL

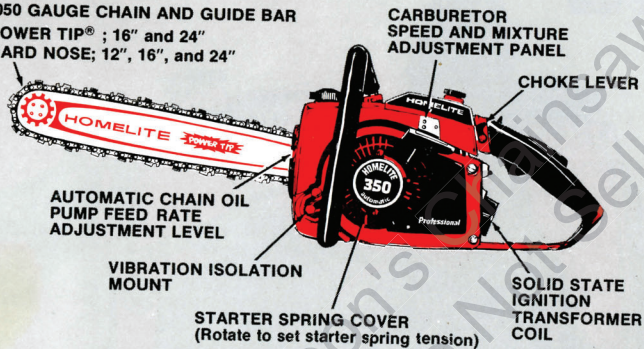
These saws are designed for use by professionals. This Owner's Manual, accordingly, includes instructions to assist the professional in performing routine maintenance and adjustment.

WARNING: CHAIN SAWS CAN BE DANGEROUS. FOR SAFE OPERATION FOLLOW ALL SAFETY PRECAUTIONS IN THE OWNER'S MANUAL.

section 1 PREPARATION



3/8 PITCH, .050 GAUGE CHAIN AND GUIDE BAR
 LENGTHS: POWER TIP®; 16" and 24"
 HARD NOSE; 12", 16", and 24"



MODEL 350HG AUTOMATIC DRIVE CASE COVER WITH AUTOMATIC CHAIN BRAKE AND HAND GUARD (Also available in kit form for field installation on standard 350 or 350HG Models)

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.)

Contents

SECTION ONE — PREPARATION	2
Safety Precautions for Chain Saw Users	2
New Saw Warranty	3
Care of Saw During the Working Day	4
Recommended Equipment and Supplies	4
Personal Attire	4
Chain Oil and the Automatic Oil Pump	5
Fueling the Saw	5
Assembling Bar, Chain and Drive Case Cover	6
Daily Attention to Chain and Guide Bar	7
Adjusting and Maintaining Correct Chain Tension	8
Transporting and Storing the Saw	8
SECTION TWO — BASIC OPERATING INFORMATION	9
Grip, Balance and Proper Control of the Saw	9
Starting and Stopping	9
SECTION THREE — WOOD CUTTING INFORMATION	10
Glossary of Woodcutting Terms	10
Work Area Precautions	10
Basic Cutting Techniques	11
Avoiding Kickback	11
Stressed Log and Limb Situations	12
Limbing, Trimming and Pruning	13
Notching and Felling	14
Boring with the Nose	15
SECTION FOUR — MAINTENANCE AND REPAIR OF THE CUTTING UNIT .. 16 (Chain, Bar, Clutch, Chain Brake and Oiler)	
Cutting Unit Maintenance Schedule	16
HOMELITE® Saw Chain	16
Filing the Cutters	17
Corrective Filing	17
List of Filing Errors	18
Repairing Worn or Damaged Saw Chain	18
Setting Depth Gauge Clearance	18
Guide Bar Maintenance and Repair	19
Clutch and Sprocket Repair	19
Chain Oiler Maintenance and Repair	20
Drive Case Cover and SL Chain Brake Maintenance and Repair	21
SECTION FIVE — MAINTENANCE AND REPAIR OF THE ENGINE	22
Maintenance Schedule	22
Air Filter and Carburetor Chamber	22
Fuel Tank and Fuel Line	23
Carburetor Adjustments	24
Spark Plug and Ignition	25
Starting Speed Adjustment & Throttle Control Interlock Repair	26
Vibration Isolation Mounts	27
Starter/Fan Housing	29
SECTION SIX — TROUBLE SHOOTING GUIDE	30

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® 350 Automatic Series of Chain Saws includes the "standard" 350 Automatic, the 350 HG Automatic and the 350 SL Automatic. The three models are identical except for the following special features of the HG and SL models: Models HG and SL have a downdraft muffler cap. The HG has a hand guard to protect the operator's left hand; the SL has a hand guard coupled to a chain brake in a special drive case cover assembly. Should the operator's hand slip off the handlebar into the guard of the model 350 SL Automatic, the chain will be braked to a stop in a split second. The hand guard and brake assemblies are available in kit form for installation on any model 350 Automatic Chain Saw. The clutch drum and sprocket for the 350 SL and chain brake-equipped saws is #A-12294-2. Clutch drum and sprocket A-12294 is specified for models without the chain brake feature.

The chain and bar and the engine are vibration isolated from the engine housing and the operating controls. The solid state capacitor discharge (CD) ignition system, has two electronically timed spark advance positions — one for smooth, sure fire starting, the other for high speed performance.

The throttle controls include a safety control interlock. When the trigger is in idle throttle position, the engine can be throttled up only by depressing the interlock at the same time as the trigger is squeezed.

NEW SAW WARRANTY

Our warranty for this HOMELITE® 350 Chain Saw is printed on the rear cover of this Owner's Manual. A three-part warranty/registration card for the engine is packaged with the saw. In addition, Homelite will repair or replace HOMELITE® SAW CHAIN free of charge if it is found defective either in material or workmanship.

Fill out all three parts of the card as fully as you can. Give the dealer his part and keep the part with the warranty for yourself. The other part is a questionnaire and registration card to be mailed postpaid to HOMELITE as soon as possible. We study your comments on this card. It is one way we have of improving our products, and is part of our research to better serve our customers.

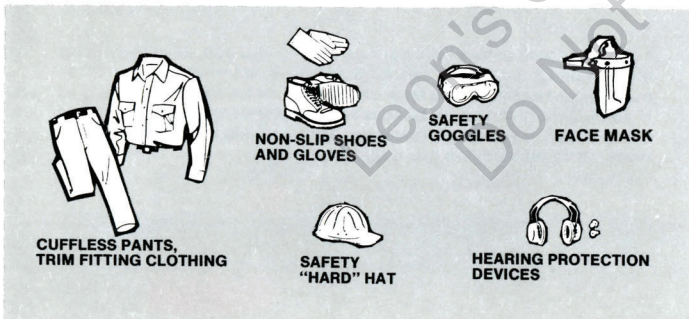
Care of Saw During the Working Day

Read the Preparation and Operating Sections of this manual carefully. In addition to being both correctly prepared and operated properly, your saw will require certain regular maintenance and adjustment on a daily or more frequent basis. You may also wish to adjust the idle speed or starting speed, or check for high-voltage at the ignition coil from time to time. Here are some of the most important instructions for keeping the saw in top shape.

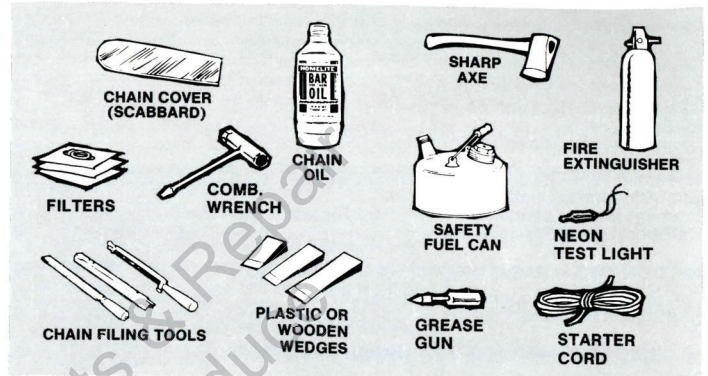
1. Maintain correct chain tension at all times. (see page 8.)
2. Sharpen the chain, then check the depth gauges with a jointer as soon as the saw cuts slowly or requires excessive feed pressure to cut. (see page 18.)
3. Clean the carburetor chamber and install a clean air filter as required during the working day. (see page 22.)
4. Adjust chain oiler output according to cutting requirements. More oil than supplied by the minimum output adjustment is required when cutting a) hardwood, deadwood, or seasoned wood, or b) large diameter wood; or when rip sawing (cutting with the grain) or boring. (see page 5.)
5. Grease nose sprocket of Power Tip® Guide Bar at completion of work period while bar is warm and the old grease still soft; also grease as required during the operating period. (see page 7.)
6. Remove and clean guide bar daily. Clean the bar mounting pad and oil discharge hole in the pad. (see page 7.)
7. Test operation of the 350SL chain brake before operating the saw. The brake mechanism and clutch drum should be kept free of sawdust and oil. (page 21.)
8. If idle adjustment is required, see page 24. If adjustment of the starting speed is required, see page 26.
9. When trouble-shooting failure to start, you can check the spark plug by installing a new one in its place; and with an inexpensive type NE-2 neon lamp (available from most radio/electronics supply houses and stores) you can check the ignition high voltage. (see page 25.)

NOTE: Section Four (Page 16) includes a maintenance schedule for the cutting unit.

Section Five (Page 22) includes a maintenance schedule for the engine.



Recommended Equipment and Supplies



Except in the immediate work area, always keep a scabbard over the guide bar and saw chain. Take along a supply of fuel mixture in safety type fuel cans, and oil for the chain oiler. If you are using a Power Tip® Guide Bar, include a needle nose type grease gun, as lubrication of the bar nose sprocket bearings is required not only during the working day, but also at the end of the day while the bar is still warm. Keep one or two spare air filters and fuel filters at hand. We also suggest your keeping a spare starter cord with you, as the cord can be replaced under field conditions.

Field maintenance and assembly tools should include the combination wrench, 5/16 and 7/16 socket wrenches, a narrow-blade screwdriver, slip jaw pliers, and touch-up tools for chain maintenance. A neon lamp (see details on page 25), can be used as an indicator light to check the ignition high-voltage.

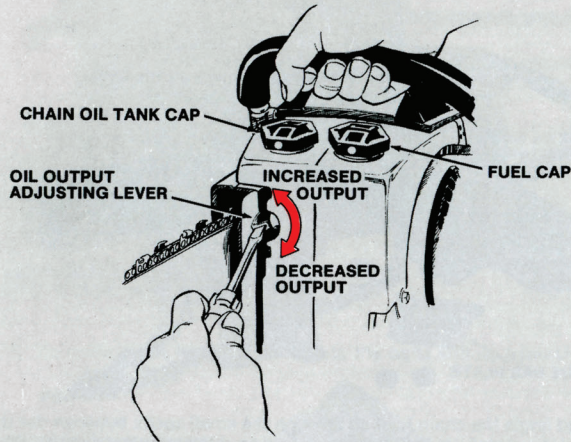
Always take along some plastic or wooden wedges (not hard metal wedges) for bucking and felling, and a sharp hatchet or single blade axe. Under dry woods conditions, a fire-extinguisher or shovel should also be available in case of a fire.

Personal Attire

Select trim-fitting garments that will not catch in the saw chain or underbrush. Wear cuffless pants and sturdy shoes with non-slip soles. Wearing non-slip gloves will not only improve your grip on the saw and keep your hands cleaner, but also protect your fingers when you are performing maintenance or repair work.

A hard hat is recommended for wearing whenever you are working under large trees or at construction sites. Safety lens type eyeglasses, goggles or face masks should be worn during saw operation. Persons using a chain saw regularly for many hours a day should be fitted for and wear hearing protecting devices — either ear plugs or the head set type.

Chain Oil and the Oil Pump



The chain oil tank cap and the chain oil output adjustment lever are called out in the illustration. The oil pump is a rotating/reciprocating positive displacement pump which pumps automatically. As the pump is driven by a worm on the crankshaft, its output varies with the engine speed. The oil cap contains a valve protected by a filter.

1. Unscrew the oil cap and fill the oil tank with an oil approved for automatic oil pump use as described below.

For best results, use HOMELITE® Bar and Chain Oil just as it comes from the container. This oil is formulated with "viscosity improvers" that keep it free-flowing even in cold weather, and give it the property of clinging to the chain to minimize "throw-off".

When HOMELITE® Bar and Chain Oil is not available, any brand of clean motor oil including reprocessed oil may be used as chain oil. SAE-30 weight oil should be selected for warm weather use. However, in extremely cold weather, SAE-30 weight oil should be diluted in the proportion of 1 part kerosene to 4 parts of oil to maintain its free-flowing properties. In cold climates you can also use a light weight oil, as SAE-10 or SAE-05.

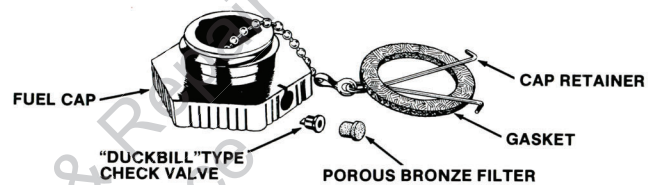
BUT, never use dirty oil or used oil in the chain oil system as it may damage the oil pump.

2. Every time you fuel the engine, you should fill the chain oil tank also.
3. Whenever you use the saw with the chain oil output adjusting lever set for maximum volume, stop the engine often enough (in between fuelings) to check that the oil tank has plenty of oil remaining. Maximum output occurs when the lever is turned fully counterclockwise (to the left).
4. Wipe down the saw any time you spill oil or other oily fluids on it. Be sure the saw handles are always clean.

Fueling the Saw

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

The fuel cap (see illustration) contains a check valve and protective filter, and lets air into the tank as fuel is withdrawn. This engine requires a fuel mixture containing oil.



And it is important not only that the proper gasoline and oils be selected, but also that they be mixed thoroughly in the proper proportions before being poured into the fuel tank.

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.)



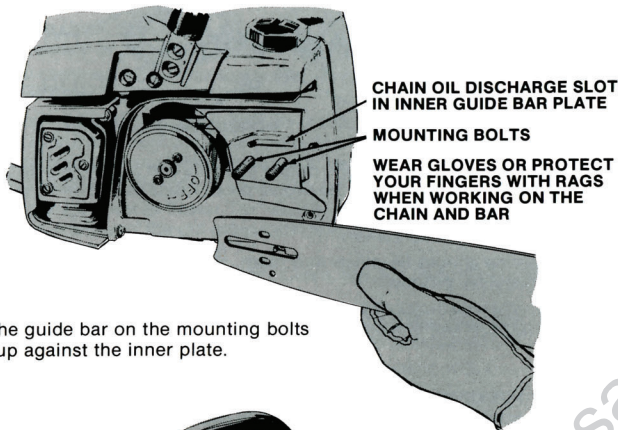
HOMELITE® SAE-30 2-cycle Motor Oil or any other good brand of 2-cycle SAE-30 motor oil: Use this oil in the ratio of one part oil to 16 parts of gasoline (1/2 pint per U.S. gallon of gasoline, or metric 6% oil).

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. Replace cap tightly. And, if any fuel was spilled on the saw, wipe it off immediately.

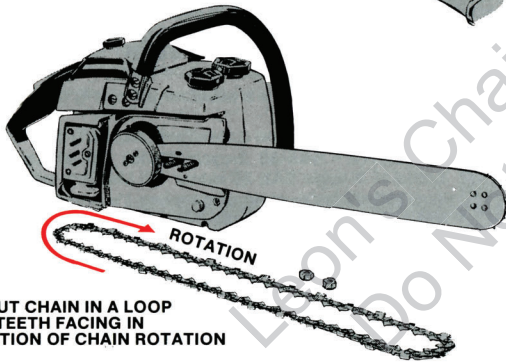
Assembling Guide Bar, Chain and Drive Case Cover onto Engine

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

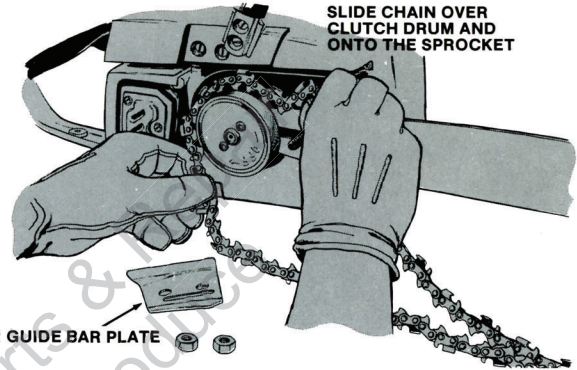
1. Turn the switch to "OFF". Remove the two hex nuts and lift the drive case cover off the guide bar mounting bolts.
2. Remove the outer guide bar plate, but leave the inner plate on the bolts.



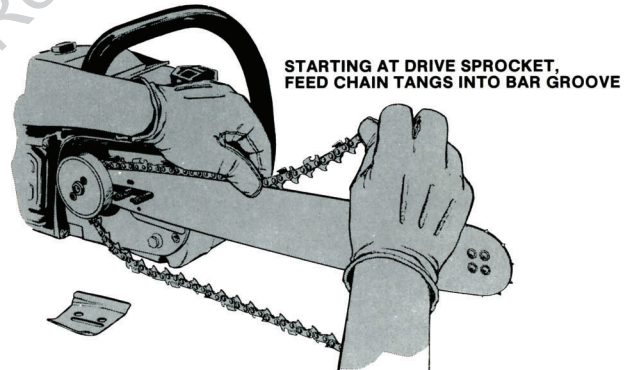
3. Put the guide bar on the mounting bolts and up against the inner plate.



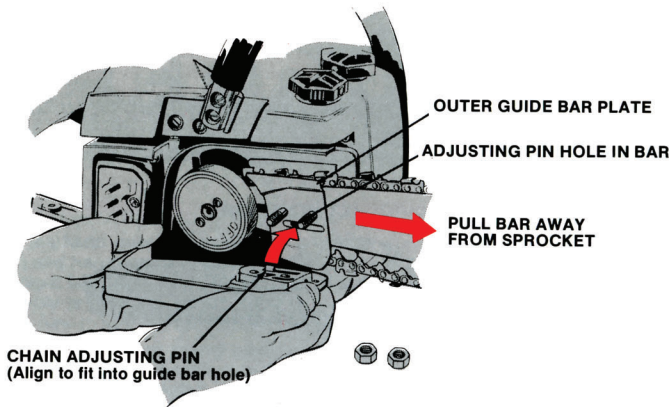
4. Remove the chain from the carton, lay it out in a loop and check the teeth. The teeth should face in the direction of chain rotation which is away from the sprocket along the top edge of the bar.



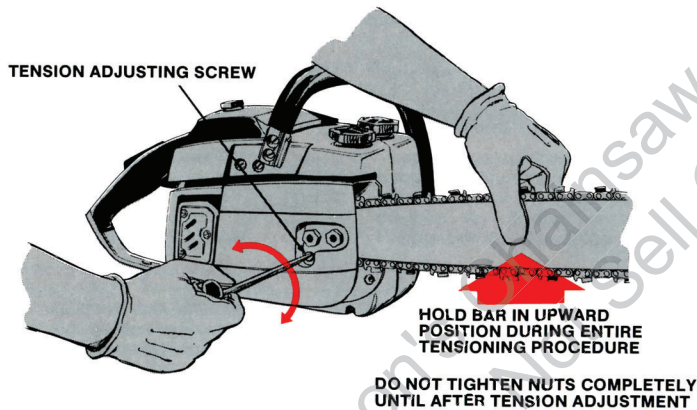
5. Loop and angle the chain to slide through the small space between the drive case and the clutch (at the 9 o'clock position relative to the clutch). Fit the chain over the clutch and onto the sprocket.



6. Now, beginning at the top of the sprocket, feed the chain drive links into the top bar groove, continuing on around the nose of the bar until the chain is on the bar.
7. Pull the bar out in the direction of its nose in order to remove slack from the chain. If any drive links have come out of the bar groove, put them back in the groove.



8. Put the outer guide bar plate back onto the bolts and up against the bar.



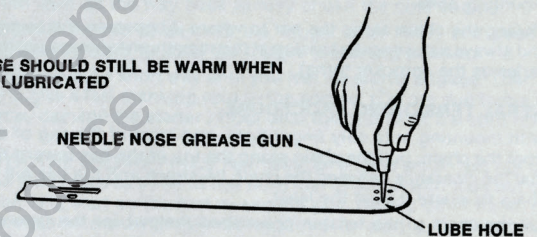
9. With a screwdriver, turn the tension adjusting screw in the drivecase cover so that the tension adjusting pin appears to be in line with the hole in the bar when cover is put in place. (If the cover contains a chain brake assembly, the bands go around the clutch drum.) And, as you now slide the cover onto the bolts and up against the bar, make sure that this pin cleanly engages the hole and stays there. Hold in place. . . . Put the hex nuts on the bolts. But run them up only with your fingers 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.

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.

BAR NOSE SHOULD STILL BE WARM WHEN NOSE IS LUBRICATED



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 1½ to 2 hours.

BAR NOSE SHOULD STILL BE WARM WHEN NOSE IS LUBRICATED.

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 (HOMELITE® A-69496) whenever necessary. Both the chain drive and nose sprockets should be replaced whenever a new chain is being installed. (See Section Four for details.)

Chain Tension

NOTE: Always use a rag or wear gloves for protection when working on saw chain.

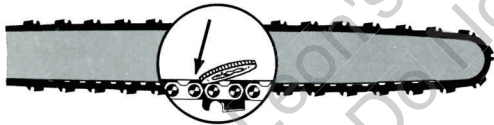
Proper tension is extremely important. In order to avoid a false setting, the tensioning procedure must include steps to control certain variables. These include:

1. Holding up the nose of the bar to take up any play between the bar and the mounting bolts.
2. Moving the chain along the bar to where it becomes the tautest on the bar, and always adjusting 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 tension prescribed (below) for the type of bar you are using.
3. "Snap" the chain to remove any kinks (pull away from bar and let go several times). If too much clearance develops, tighten up the tension. Tighten the nuts securely to lock the assembly at the proper tension.
4. 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.

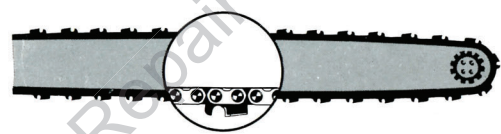
TENSION SETTINGS FOR HARD NOSE BARS



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.

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.

Transporting and Storing the Saw

When carrying the saw or transporting it in a vehicle, keep the guide bar and chain sheathed or the whole saw in a carrying case. 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 (as 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.

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.

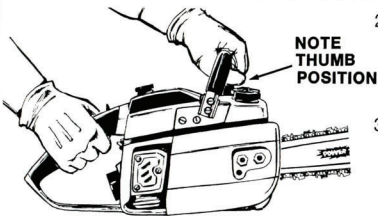
section **2** BASIC OPERATING INFORMATION

Grip, Balance, and Proper Control of Saw

Both the hand guard featured on the Model 350 HG and the automatic chain brake and hand guard on the Model 350 SL will help to protect the operator in the event he loses his grip on the front handlebar. Either type of hand guard assembly is available in kit form for installation on any Model 350 Automatic Chain Saw model not factory-equipped with the desired guard.

But, even with hand guard protection, the operator should always grip the handlebar and the throttle handle correctly as illustrated on this page and explained in the next paragraphs.

1. Wrap your fingers 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 controls.
3. There are four controls on the throttle handle: the throttle trigger, the trigger latch lever (used to set trigger position for starting speed), the trigger lock and the choke lever.

When in the latched position, the trigger latch lever holds the trigger in starting speed position. To latch the trigger, depress the trigger lock as you push the trigger latch lever forward. To unlatch the trigger you merely squeeze and immediately release the trigger. To throttle up to operating speed, the throttle lock must be held in the depressed position while the trigger is being squeezed.

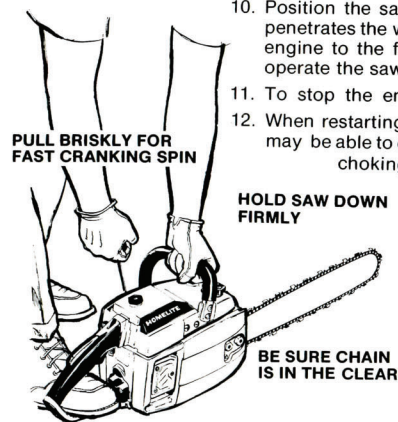
NOTE: Whenever you let go of the throttle handle and the trigger, the engine returns to idle throttle and cannot be throttled up until you again depress the lock and trigger.

4. The choke lever has three positions: All the way forward for open choke (no choke), all the way back for closed choke, and in between for half-choke.
5. The ignition switch has two positions: "ON" and "OFF". In the "OFF" position, the switch grounds out the primary circuit to prevent ignition spark.

Starting and Stopping

During starting, hold the saw down firmly (with one hand at the balance point of the handlebar) on a level surface with the bar and chain in the clear. Keep on the left side of the 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 saw chain.

1. Flip the ignition switch to "ON".
2. Pull the choke lever all the way back to fully choke the cold engine.
3. Grasp the throttle handle to depress the trigger lock lever, and push the trigger-latch lever forward to latch the trigger in starting position.
4. Pull the starter grip out a short way until you feel the starter engage. Then pull cord briskly to give a fast cranking spin to the engine. (Do not pull to the very end or you may damage the starter.) Hold onto the grip to let the cord rewind smoothly.
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 warm 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 (there is a detent at the half-way position) and continue cranking until the engine starts.
7. When engine starts and runs, keep it running at half-choke just long enough to warm it up. Then push the choke forward to the open position before it stalls out.
8. **NOW YOU ARE READY TO OPERATE.** Grasp the throttle handle with your right hand so the trigger lock lever is depressed. This will free up the throttle mechanism.
9. Squeeze and release the throttle trigger to return the engine to idle speed.
10. Position the saw for cutting. Just before the chain penetrates the wood, squeeze the trigger to open the engine to the full speed and power range. Do not operate the saw with throttle partly open.
11. To stop the engine, flip the switch to "OFF".
12. When restarting an engine which is still warm, you may be able to do so with either no choking or half-choking, and you may be able to start it with the throttle in idle position. If not, try again with throttle latched and with either partial or full choking.



13. When you are through using the saw, or are going 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.

section 3 WOODCUTTING INFORMATION

GLOSSARY OF OPERATING TERMS

BACK CUT	The felling cut made in back side of tree toward the notch.
BARBER CHAIR	The stump of a tree having long wood fibers attached at the hinge section. Usually results from poor cutting practice.
BORING CUT	A blind cut made into the wood, principally with the nose of the bar.
BUCKING CUT	Usually any cuts made to section up a felled tree or log.
FELLING CUT	The back cut which causes the tree to fall.
FELLING NOTCH	A horizontal wedge cut-out made on side tree is to fall, the inside edge of the notch being 90° to line of fall.
HINGE WOOD	Wood left uncut between the notching and felling cuts; hinge holds tree on stump, guides it over.
KICKBACK	The rapid movement of the saw toward the operator after the chain along the top or nose of the bar has contacted the wood or some other object.
LEANER	A tree with an extreme lean, requiring special notching and hinging technique to avoid "barber chair" or splitting during felling.
"NO LOAD" SPEED	RPM developed by running the engine or saw at wide open throttle without applying any work load. CAUTION: letting engine run at full throttle without a load should be avoided as much as possible.
OVERBUCKING	Using bottom edge of bar to cut downward through a log.
UNDERBUCKING	Using top edge of bar to cut upward through a log.
SPRING POLE	Sapling bent and held down under tension by another fallen tree.
SAW KERF	The width of the saw blade or cutting chain including the set of the teeth; also the cut made by a saw blade or chain.

Work Area Precautions

When bucking and felling operations are being performed by two or more persons, at the same time, the felling operation should be separated from the bucking operation by a distance of at least twice the height of the trees being felled.

Trees should not be felled in a manner which will endanger any person, cause any property damage, block any road or strike any power line. If a tree must be felled across a road, contact local authority for permission before cutting and provide flagmen for proper traffic control. Any part of any tree which touches a power line must be considered dangerous. Do not touch the tree with the saw. If the saw is stuck in the tree, do not touch the saw. Notify the power company immediately. Keep the area clear of all bystanders until assistance arrives. Keep away from any fallen wires.



Prepare a safe exit path to the rear and diagonal to the line of fall. Hazardous trees, and broken or rotted trees and limbs, should be removed before cutting operations are begun. Lodged trees should be pulled down with mechanical equipment. Always prepare the immediate cutting area by cleaning out undergrowth likely to interfere with the operator and saw, and by removing any dead material which could cause a fire. Never restart a saw in a cut unless it is impractical or hazardous to remove it.

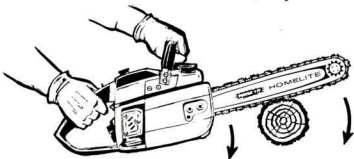
HELPING TREE TO FALL IN DIRECTION PLANNED



Basic Cutting Techniques

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

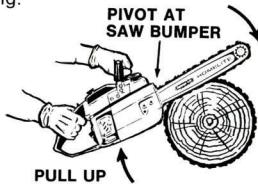
When cutting small logs and limbs, open the throttle fully just before letting the chain touch the wood. It is safest to cut with the saw bumper up against the wood. If you cut further out along the bar, the chain will have a tendency to pull you and the saw towards the work, so you must brace yourself against this slight pull. (The



SMALL LOGS CAN BE CUT RIGHT STRAIGHT THROUGH AS SHOWN.

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.

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.

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, as 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.")

Study the illustrations under "Stressed Log and Limb Situations," (page 12) 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.

Watch out for "spring poles" and other high stress conditions where a branch or tree could spring up or shift when the stress is relieved by cutting.



THIS IS A SPRING POLE BENT DOWN UNDER HIGH STRESS.



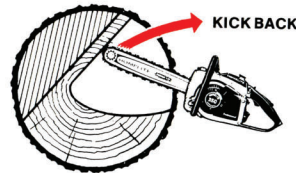
STAND ON UPHILL SIDE WHEN CUTTING BECAUSE LOG MAY ROLL. ALSO KEEP YOUR FEET AND BODY CLEAR OF A LOG SECTION WHICH MAY DROP OFF OR SETTLE WHEN CUT OFF.

The chain saw operator should keep on the uphill side on terrain where a tree is likely to slide or roll after it is felled.

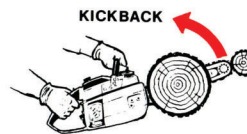
Avoiding Kickback

If you are cutting with the nose of the bar, you must be extra careful to protect against the possibility that saw may kick back. The saw will 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 incompletely 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.

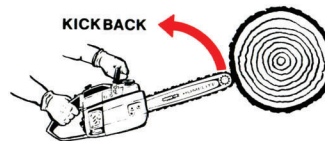
SITUATIONS CAUSING SAW BLADE TO KICK BACK TOWARD THE OPERATOR



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

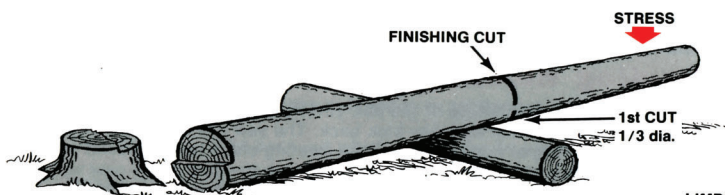
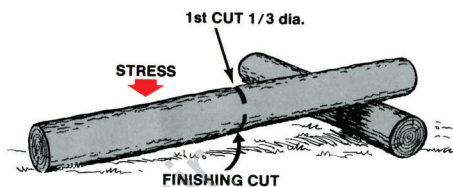


WHEN INCORRECTLY STARTING TO BORE

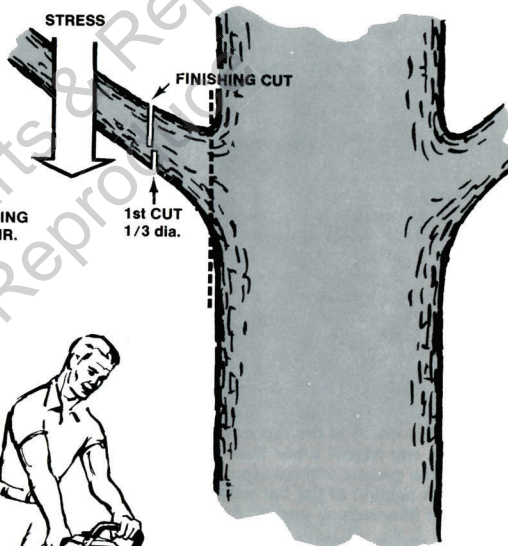
Stressed Log and Limb Situations

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, therefore, 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 below. NOTE: With large logs, insert only a plastic or wooden wedge into the cut to hold it open.

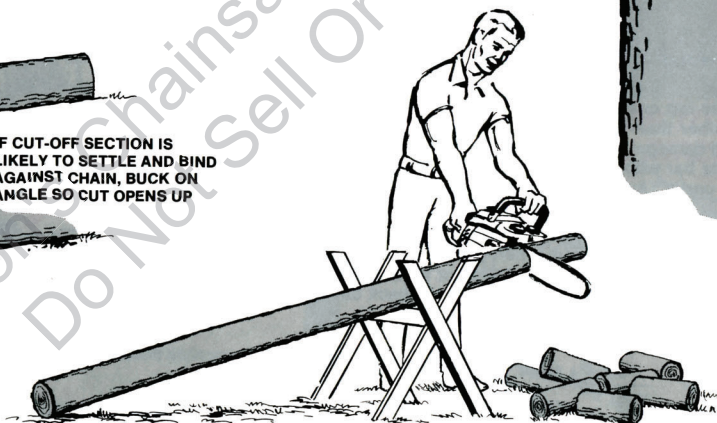
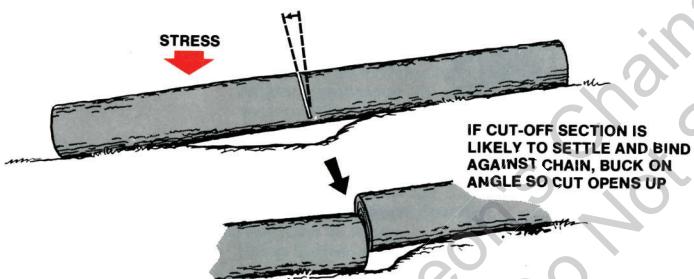
STRESSED LOG AND LIMB SITUATIONS REQUIRING TWO CUTS TO AVOID SPLITTING WOOD, STRIPPING BARK, OR PINCHING SAW BLADE.



LIMBS AND LOGS HAVING END SUSPENDED IN AIR.



STRESS



FIREWOOD LENGTH LOGS CUT FROM RAISED END: DON'T WORRY ABOUT STRESSES—NO NEED TO UNDERCUT.

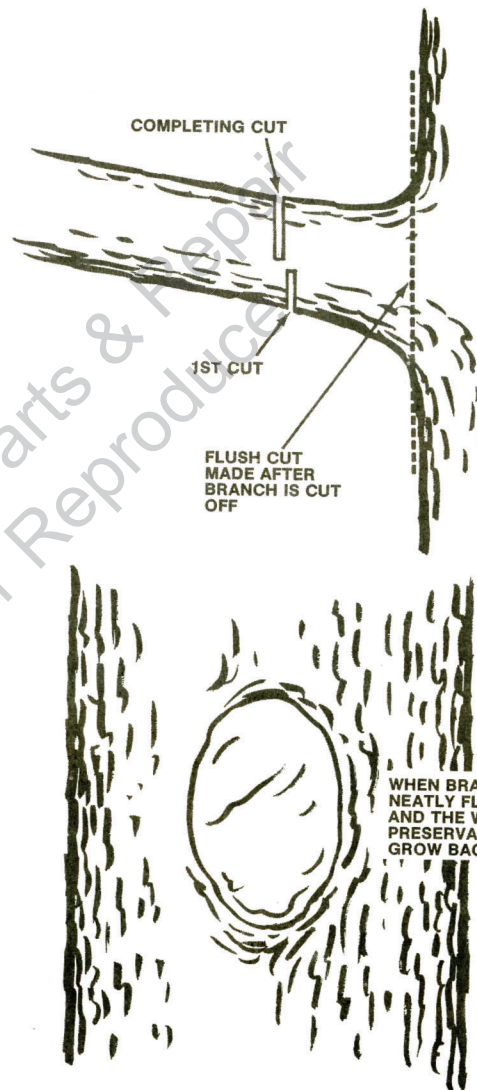
Limbing, Trimming and Pruning

When working aloft an operator should secure his position in the tree, then have the saw hoisted up to him on a rope. All other persons should remain away from the trunk a distance of twice the length of the longest branches. Branches under tension should be noted so that the operator can position himself where the branch will not strike him when cut off. The cutting of stressed branches should be done so that the saw will not be pinched in the cut. When pruning a tree, cut the branch off from 6 inches to a foot from the trunk in two cuts to avoid pinching of the saw and tearing of the bark. Then trim the stub off smoothly at the trunk and paint the wound so it will heal.

AS OFTEN AS POSSIBLE WHEN LIMBING, STAND ON THE OPPOSITE SIDE OF THE TRUNK FROM THE LIMBS YOU ARE CUTTING OFF.



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



WHEN BRANCHES ARE TRIMMED NEATLY FLUSH WITH THE TRUNK AND THE WOUND PAINTED WITH A PRESERVATIVE, THE BARK CAN GROW BACK OVER THE WOUND.

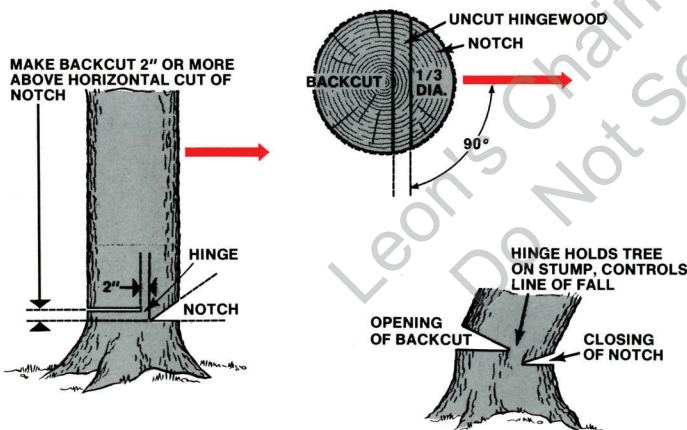
Notching and Felling Operations

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.

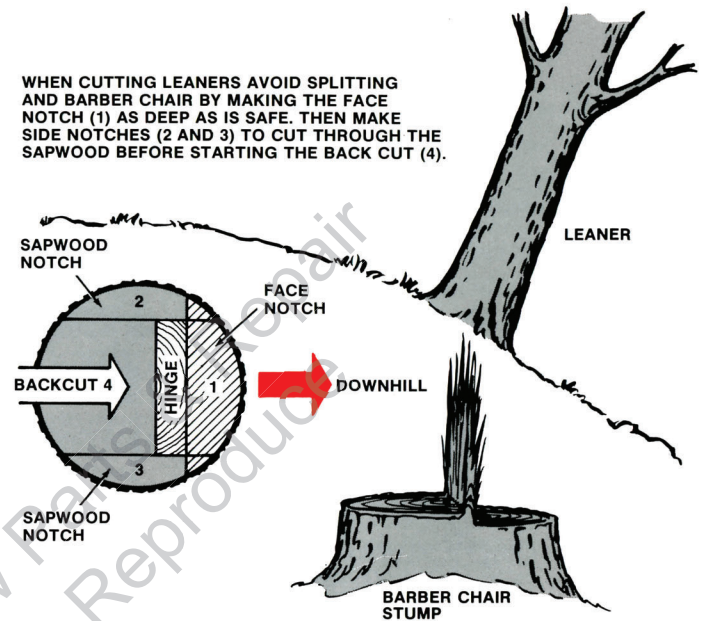
Also take into consideration whether the trunk is sound or hollow, or partially rotted. Watch for loose bark and dead limbs overhead, as they may come crashing down while you are working on the tree.

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.

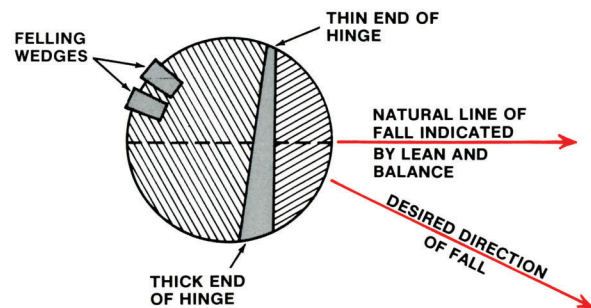


WHEN CUTTING LEANERS AVOID SPLITTING AND BARBER CHAIR BY MAKING THE FACE NOTCH (1) AS DEEP AS IS SAFE. THEN MAKE SIDE NOTCHES (2 AND 3) TO CUT THROUGH THE SAPWOOD BEFORE STARTING THE BACK CUT (4).



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).

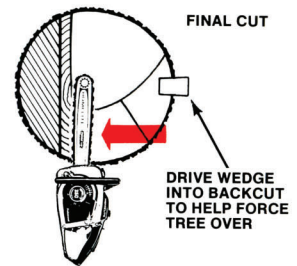
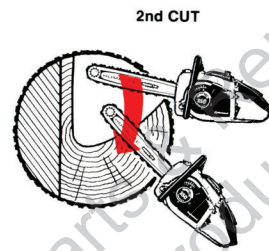
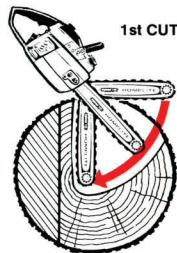
FELLING TREE ON DIFFERENT LINE FROM THE NATURAL LINE OF FALL



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**

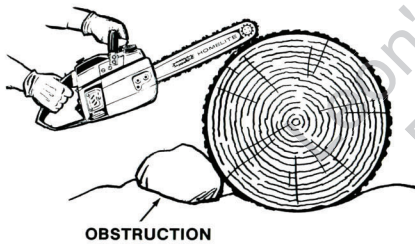


Boring with the Nose

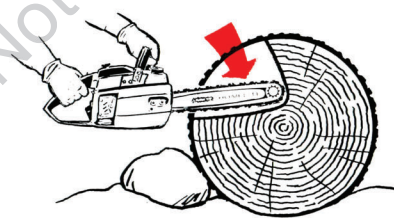
Boring requires extreme care and attention. Do not bore unless there is no other way to make the cut, as boring will wear the bar and chain faster than when you cut on the flat edge of the bar.

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.

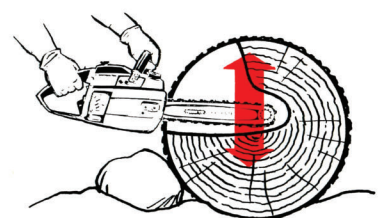
To minimize the danger of the saw kicking back, make first contact with the wood as far back from the bar nose as possible (see #1 of the boring illustration panel). Make an angular cut. When this is deep enough to become a guide, exert downward pressure to bring the bar gradually into line for boring.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



1 ANGLE THE BAR AND CUT INTO LOG AS IN #2.



2 GRADUALLY MAKE THE BAR COME LEVEL



3 BORE STRAIGHT INTO THE LOG. THEN CUT UPWARD OR DOWNWARD AS REQUIRED.

section 4 MAINTENANCE AND REPAIR OF THE CUTTING UNIT

(Chain, Bar, Clutch and Sprocket, Chain Oiler, Drive Case Cover)

	Ref. Page	Check Daily	Check Only as Nec.	Every Week 15 hours	100 hrs. check
1. Sharpen the Chain	17	✓			
2. Lower Depth Gauges Uniformly	18	✓			
3. Grease Guide Bar Nose Sprocket	7	✓			
4. Clean Bar Groove, Oil Discharge Hole, and Clutch Area.	19	✓			
5. Clean SL Chain Brake Mechanism	21	✓			
6. Test Proper Operation of SL Chain Brake	21	✓			
7. Check Chain Oiler Output	5		✓		
8. Adjust Chain Oiler Output	5		✓		
9. Check Filter and Valve in Oil Cap	20		✓		
10. Clean Oil Strainer	20		✓		
11. Change Worn Sprocket and Drum	19				✓
12. Dress Down Bar Rails, Remove All Burrs.	19			✓	
13. Reverse Guide Bar Top for Bottom on Saw	19			✓	
14. Clean and Lubricate Clutch Bearing	20				✓

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.

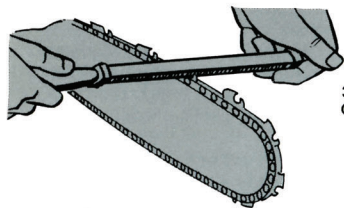
ALL YOU HAVE TO DO IS MAINTAIN THE CORRECT FILING ANGLE, HEIGHT AND PRESSURE AGAINST THE TOOTH.

For new 3/8 pitch chain, a 7/32 diameter "fast-cut" round file and holder (our Assembly A-92615) is required. When about half of the original tooth steel has been filed away, you should switch to 13/64" diameter file (92602) which you can use in the same holder. The reason for using a smaller size file on a "short-filed" tooth is the slight taper of the tooth's top plate which reduces the size of the tooth.

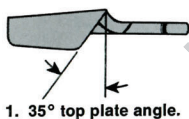
A chain filing vise holds the cutters rock-steady during filing; but you can do a satisfactory job "on the bar" if you tighten up the tension enough that the chain doesn't wobble, and do all of the filing at the mid-point of the bar. Wear gloves for protection. Be sure to file all cutters to the same 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

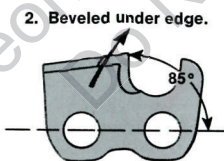
1. Hold file against cutter face at 35° angle (marked on file holder).
2. Keep file level — do not let it dip or rock.
3. File in one direction only — towards front corner of the tooth. Move file away from tooth face on return stroke.
4. Use light but firm pressure, mostly towards back of tooth. Avoid 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:**



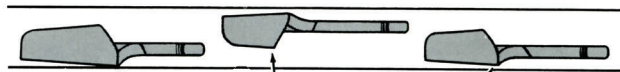
1. 35° top plate angle.



2. Beveled under edge.

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

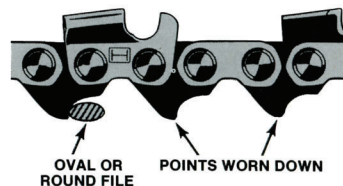
Corrective Filing



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. 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.



OVAL OR ROUND FILE POINTS WORN DOWN

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.)

Refile Any Teeth Having One or More of These Faults:



FORWARD HOOK

Chain will grab and jerk, producing rough cutting

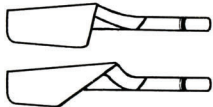
Caused by excessive downward filing pressure, or tip of file held too low on tooth.



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.

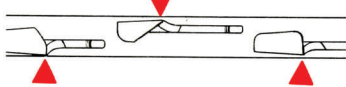
Caused by holding file at wrong angle or letting it drift or rock during the stroke.



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 motor.

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")

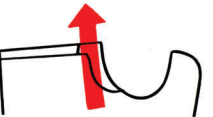
Caused by holding file with handle too low, or pressing back or down too hard on file.



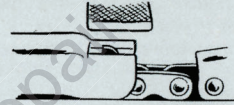
BLUNT CUTTING EDGES

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, or keeping file handle too high.



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.

DEPTH



TOP FILED FLAT AND THE FRONT HALF ROUNDED OFF



FILED FLAT BUT NOT ROUNDED OFF—TOO SQUARE TO SLIDE SMOOTHLY



POINTED OR ROUNDED OFF TOO MUCH—NOT ENOUGH FLAT SECTION LEFT AT TOP TO ACT AS A DEPTH GAUGE—GAUGE DIGS INTO WOOD AND DOES NOT CONTROL THICKNESS OF CHIPS

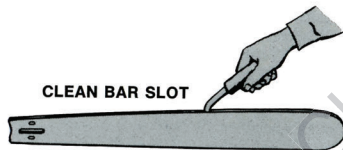
Guide Bar Maintenance and Repair

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.

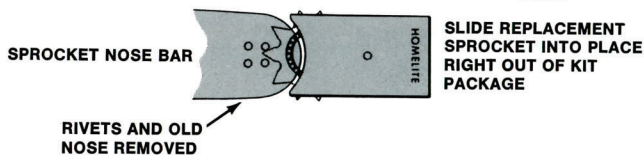
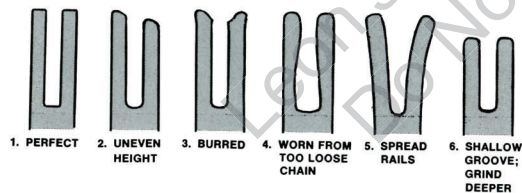
Examine the cleaned bar periodically. With a flat file, remove any burrs that occur along the bar rails, because burrs interfere with cutting. Check the illustrations of wear patterns of guide bar rails. Also check that the bar is straight and the rails uncracked and be sure that the groove is deep enough all the way around the bar that the chain drive tangs do not "bottom out". A blue discoloration along the bar rails indicates a) that the bar and chain need more oil, or b) that you have been bearing down too hard for too long on a dull chain 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 helps to equalize wear. 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.

OPERATING NOTE: Pinching in a cut, excessive boring with the bar nose, and operating with the chain too loose or too tight all result in excessive bar wear and damage.

SPROCKET NOSE GUIDE BARS are designed to allow replacement of the nose sprocket. NOTE: When saws are used for heavy wood cutting and land clearing, the sprocket nose requires lubrication every second or third fueling. To change the nose sprocket, drill through centers of the rivet heads and punch out the old rivets. Install the new sprocket assembly just as it comes from the replacement nose kit. When installing new rivets,peen the heads out smoothly with light taps, then strike several blows with flat head of the hammer until the rivets fill up the holes.



WEAR PATTERNS IN GUIDE BAR GROOVE AND BAR RAILS:

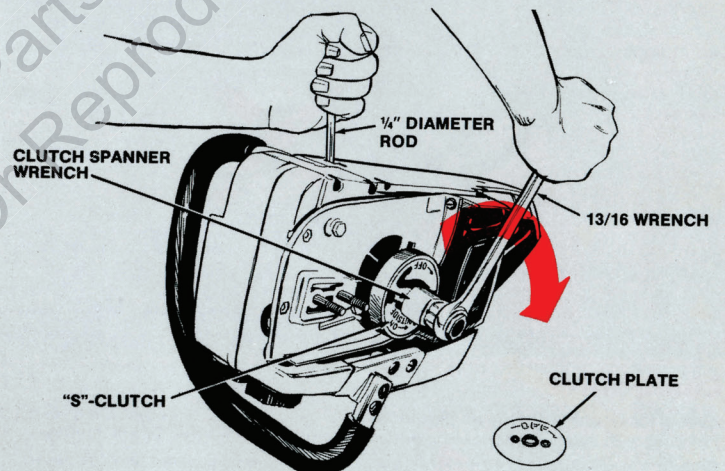


Clutch

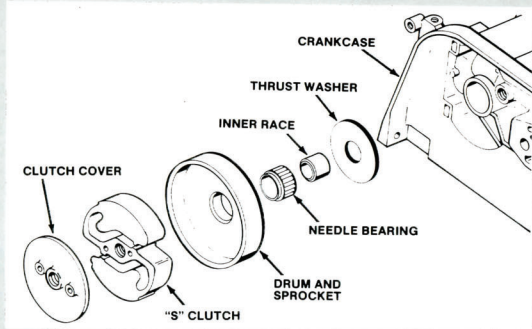
The clutch need not be removed except at intervals of 100 hours (after each 300 tankfuls of fuel consumed) unless it is not operating properly, or a new saw chain is to be installed. Always install a new clutch drum and sprocket whenever you install a new chain. If you put a new chain on an old sprocket, an out-of-pitch condition will exist until the chain drive links are pounded down to the pitch of the clutch. By that time, much of the life expectancy of the chain will have been lost. Whenever the clutch is disassembled, the clutch bearing should be cleaned, examined for wear, and relubricated with HOMELITE® ALL-TEMP Multi-Purpose GREASE (part no. 24551) or a lithium base grease.

Clutch trouble symptoms are: failure to disengage, slipping so much that the saw can't cut, and chattering during a cutting load. The troubles may include: scored, bent or cracked clutch drum; worn "S" clutch; softened "S" clutch as a result of slipping and overheating; dirt or oil between plate and drum; and a dry or worn out bearing assembly.

NOTE: Shut off the ignition switch before working on the saw.



To disassemble the clutch, remove the drive case cover, bar and chain. Clean all sawdust and grime from the clutch and the area housing it. Find the hole in the bottom of the engine back plate and rotate the rotor (flywheel) to align this hole with one of the two holes that are 180 degrees apart in the rim of the rotor. Lock the rotor and shaft from turning by inserting a 1/4" diameter rod through the hole to engage the rotor hole (see illustration). Using a 13/16 wrench and an A-23696-A clutch spanner wrench applied to the clutch plate, remove the plate by turning it (to the right) in the direction of the arrow on the cover. Now apply the same tools to remove the "S" clutch, turning this also to the right (L.H. thread). Now lift off the drum and sprocket, the bearing and inner race, and the large flat washer.



TO REASSEMBLE: After replacement of worn or damaged parts and relubrication of the clutch bearing and inner race, slip the flat washer on the shaft and then the inner race and bearing. Slide the drum and sprocket on over the bearing. Pick up the "S" clutch and hold it so the "S" shape reads correctly and not like this: "2". Spin the clutch to the left (counterclockwise, L.H. thread) onto the shaft.



RIGHT!



WRONG!

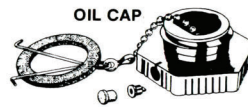
Again use the A-23696-A spanner wrench to lock it up tightly (125 pound inches or 144 kg-cm). Now, keeping the stamped arrow and the word "OFF" to the outside, spin the clutch plate on in the same direction (with the same spanner wrench) and tighten this to 115-135 pound inches (133-155 kg-cm). Remove the tool used to lock the rotor from turning.

Chain Oiler

Except for cleaning out the oil discharge hole daily, or often enough that it does not clog with sawdust, periodic maintenance of the oil system is not required. Should the oil output not be sufficient to oil the chain, suspect the following reasons:

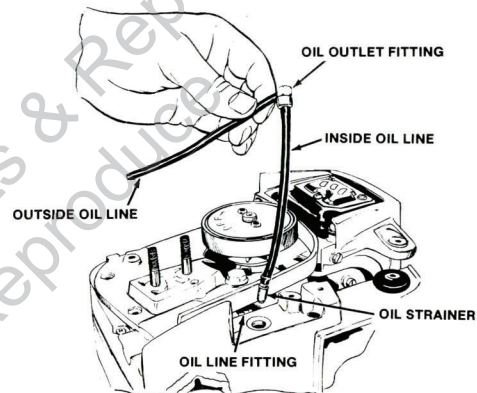
- Oil in cold weather needs to be diluted with kerosene.
- Filter and vent valve in oil cap are clogged.
- Oil strainer in tank is clogged.
- Oil line is leaking.
- Dirt in oil pump or pump seals leaking.

OIL CAP TEST AND REPAIR: Remove the chain from the guide bar and put the drive case cover back on the saw. Operate the engine for a 10 second burst and see how much oil is discharged. Then, loosen the oil cap 1/6 turn (from one hex



face of cap to the next is 1/6 turn) and compare the oil output after another 10 second burst with the first one. If you get more oil with the cap loosened, you need to clean or change the sintered bronze filter or the rubber valve (or both) in the cap. Pry out the filter and remove the valve. These parts are identical to the ones in the fuel cap.

OIL STRAINER CLOGGED: Hook the oil line and fish the line and strainer out through the oil filler hole. Remove the strainer. You can clean it in solvent and/or blow it clear. In an emergency pick it clean with a pin point.



LEAKING OR COLLAPSED OIL LINES: The oil line is composed of two sections. One section inside the tank is connected to the outlet fitting. The other section runs from the tank outlet fitting to the oil pump fitting.

To inspect or change the inside line, remove the two screws at the bottom of the handle bar and the two screws holding the handle bar mounting bracket to the tank. Remove the handlebar and bracket. Disconnect the oil line at the tank fitting. Unscrew the fitting and pull the fitting, inside line and strainer out through the hole. Change the line. When reinstalling, put some thread sealing compound on the fitting's threads. Position the fitting so the outlet points in an eight o'clock direction, and reconnect the outside line.

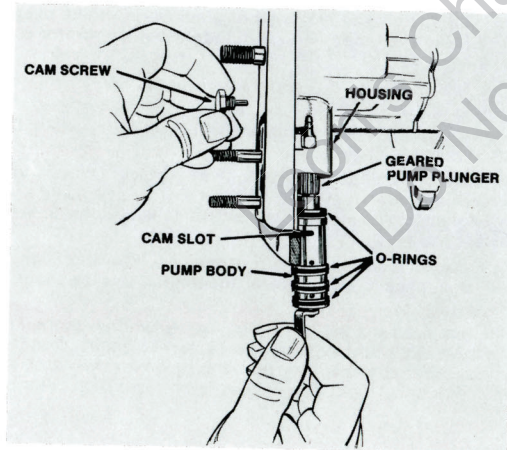


To change the outside line, refer to Section Five under the heading "Vibration Isolation Mounts" for details of disassembly required to lift the engine housing far enough off the engine for access to the oil line fitting at the oil pump housing. After changing the line, reassemble the housing to the engine (as in "Vibration Isolation Mounts," Section Five). Reinstall the handlebar and handlebar brackets.

OIL PUMP NOT PUMPING:

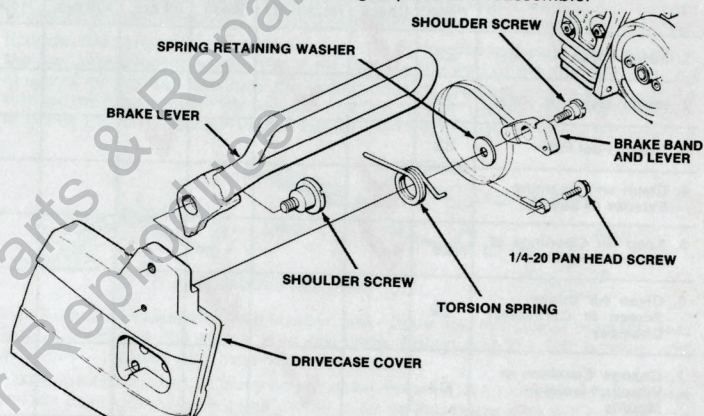
WARNING: For successful disassembly and reassembly of the oil pump, you need a good mechanical understanding of the pump construction and operation PLUS good eyesight. The pump gear and plunger must be aligned perfectly in the pump body and the body positioned perfectly in the housing so that the cam screw can fit the cam slots in both parts. This cam screw must not be put in with a wrench, but must be screwed in carefully with your fingers. If you nick the wall of the plunger cam section during assembly, you will ruin the pump. During insertion of the pump body and the cam screw, the engine should be placed clutch-side-up and inclined slightly so that the front is lower than the rear. This will keep the cam slots aligned during reassembly.

With the drive case cover, bar and chain removed, unscrew the large hex head cap screw located behind the clutch. Pull the oil pump assembly out of the housing. Clean the gear, plunger and body. You will probably find little wear on these parts. But the O-ring seals may be worn down and leaking. Change all of the seals. Oil the plunger and slide it into the body. Then oil the seals. Hold the body in position and turn it until the long cam slot faces the cam screw hole. Push the plunger all the way in and turn it until the cam groove appears to be centered in the cam slot. Slide the assembly carefully into the housing. Inspect through the screw hole to see that the cam slot and cam groove are aligned to accept the cam screw. Then install the cam screw, with only your finger. When you get it all the way home WITH NO INTERFERENCE you may tighten it in place with a wrench. Put the guide bar and drive case cover on the saw and test the chain oil output.



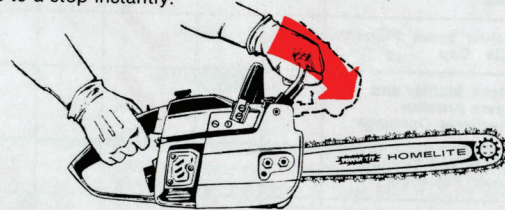
Drive Case Cover and Chain Brake

The chain tension device may require disassembly if any of the components become worn or damaged. The adjusting pin can be chewed up if the guide bar mounting nuts were tightened when the pin was not engaged perfectly in the bar. To disassemble the device, remove the two screws holding the gear cover to the drive case cover. Lift out the geared adjusting screw and pin, and the slotted head adjuster (gear). Replace worn or damaged parts and reassemble.



The chain brake mechanism contained in 350SL type drive case cover assemblies, must be kept clean as build-up of dirt and sawdust can affect its operation. This drive case cover should be removed at least once a day and all sawdust removed from the cover, drivecase surfaces and clutch. Prior to cutting, the operator should make an operational check of the brake system as follows:

1. Pull the hand guard back into the operating position.
2. Hold the saw down with the chain in the clear. Start and throttle up the engine until the chain is rotating.
3. With your left hand, push the hand guard all the way forward — The chain should brake to a stop instantly.



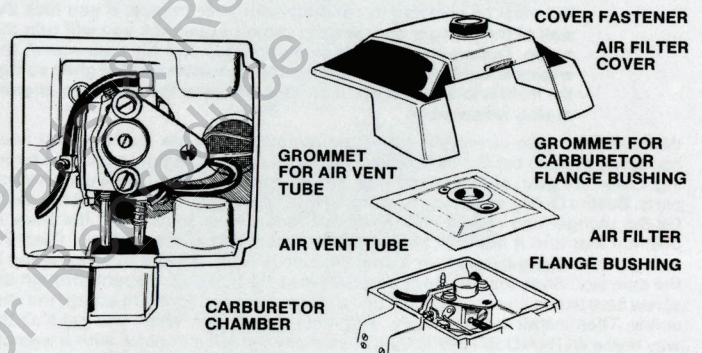
WARNING: The chain brake parts are subject to normal wear, but are protected by the drivecase cover. However, whenever the drivecase cover is removed, use extreme caution that the clutch drum does not become nicked or bent, and that the brake band does not become bent, as perfect fit of the spring around the drum is required.

section 5 MAINTENANCE AND REPAIR OF THE ENGINE

	Ref. Page	Daily Check	Only as Necessary	Every Week	Every 50 hrs.	Every 100 hrs.	Every Hour
1. Install Clean Air Filter	22	✓					
2. Install New Air Filter	22		✓				
3. Check Fuel Filter	23				✓		
4. Clean and Examine Exterior of Saw	29	✓					
5. Keep Air Openings of Fan Housing Clean	29	✓					
6. Clean Air Intake Screen in Carburetor Chamber	22			✓			
7. Change Cushions in Vibration Isolator Mounts	27		✓				
8. Adjust Carburetor	24		✓				
9. Adjust Starting Speed	26		✓				
10. Test Ignition High Voltage with Neon Lamp	25		✓				
11. Check and Clean Spark Plug	25		✓				
12. Adjust Spark Plug to .025" Gap	25		✓				
13. Clean Muffler and Spark Arrester Discharge Openings			✓				
14. Check and Tighten Loose Fasteners					✓		
15. Adjust Starter for Proper Rewind	29	✓					

The Air Filter and the Carburetor Chamber

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. Each time the filter is removed, you should inspect the carburetor chamber and the air intake screen in the floor of the chamber, also cleaning these whenever you see any sawdust or dirt accumulation.



NOTE: During disassembly and cleaning, you must have the carburetor choke closed. And you should block off or place your fingers over both the flange bushing and the small air vent tube of the carburetor so as not to let dirt enter them.

1. Close the choke. Give the cover fastener a half-turn to the left and remove the cover and the filter.
2. Cover the vent tube and the flange bushing while wiping, brushing or blowing the carburetor chamber 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 particles from the filter pores, the filter should be replaced after several months of use or more than 100 cleanings.
5. Always fit the vent tube and flange bushing carefully through their respective grommets in the air filter and align the filter carefully on the chamber. Secure the filter in place with the cover, by pressing down on the cover and giving the fastener a twist to the right. Never operate unless a clean filter is in place.

WINTER/SUMMER CHANGEOVER OF AIR SYSTEM

The rubber heat exchanger packaged with this saw is for use under snowy or extremely cold weather conditions. To change over, remove the rubber plug from the top of the cylinder shield and the air intake screen from the carburetor chamber. Snap the heat exchanger into place between the shield and the chamber. Air preheated by the cylinder will then flow through the heat exchanger to the carburetor, preventing snow and ice build-up and keeping the air filter from freezing. Save the regular screen and plug for warm weather changeover.

NOTE: Should the system fail to cool properly, first be sure that carburetor chamber and screen are clean and that the air hole in the cylinder shield is plugged off. If so, have the entire air system, including the cylinder cleaned by your dealer.

USE OF ACCESSORY AIR RESTRICTOR (KIT #A-70066)

The kit includes the air restrictor and three accordion rivets which are reusable. The air restrictor should be used only when the heat exchanger #12253 is being used in place of the plug which is for summer operation. The heat exchanger ducts the cylinder-warmed air blown by the rotor into the carburetor chamber to help prevent icing of the air filter in cold weather. The purpose of the air restrictor is to reduce the air intake stream enough to further elevate the operating temperature in below-freezing weather. The temperature ranges for use of the air restrictor and/or heat exchanger are as follows:

Down to 32°F (0°C) — Use only the heat exchanger.

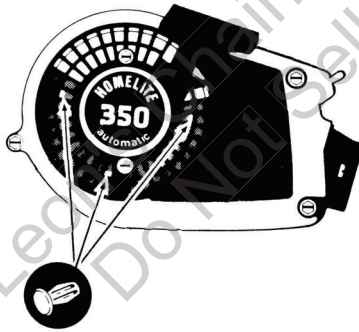
32°F (0°C) or below — Use both the heat exchanger and the air restrictor.

NOTE:

Do not use the air restrictor without the heat exchanger. Do not use air restrictor above 32°F. The heat exchanger never has to be replaced with the summer plug unless vapor lock is experienced.

INSTALLATION OF THE AIR RESTRICTOR

Register the air restrictor on the air intake of the fan housing and secure with the three accordion rivets at the points illustrated. When removing the restrictor save both restrictor and rivets for the next period of use.



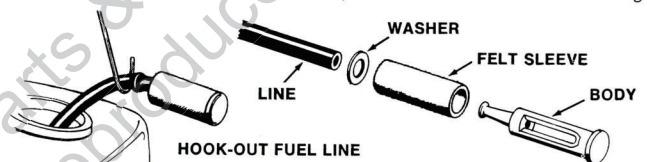
Fuel Tank and the Fuel Line

The fuel cap contains a check valve protected by a porous bronze filter. This valve lets air into the tank. If it clogs up, the saw will either start up and lose power, or refuse to start. Whenever this occurs, see if the engine will start up and run



with good power after you have temporarily loosened the fuel cap 1/6 turn. If the saw does not have its power restored, shut it off. Remove the fuel cap assembly, pick out the bronze filter and remove the check valve. After cleaning out the vent passages with air or solvent, install a new check valve and a clean bronze filter.

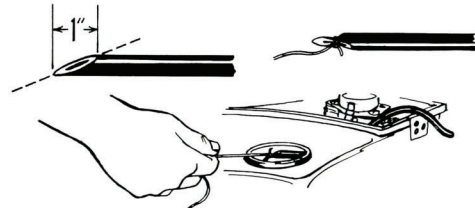
If, under the conditions described above, the performance is not improved when the fuel cap is loosened, the FELT FILTER on the end of the fuel line may be clogged, or the fuel line may be kinked shut or cracked and leaking air. To remove the filter, remove the fuel cap and fish for the "rubber" fuel line with your finger or a hook (as shown in the sketch). Pull the line and filter out through the



filler hole and disassemble the washer, filter body and felt sleeve from the line. Slide a clean new felt sleeve onto the body. Retain with the flat washer, and push the body back into the end of the line.

A deteriorated, kinked, or leaky line must be replaced. A kinked or collapsed line will not pass fuel. A leaking line will let in air so that the engine will run hot and race without a load, but have no power to carry a load. To change the line, remove the air filter cover and the air filter and proceed as follows:

- Disconnect the fuel line at the carburetor inlet fitting. Pull the line and filter up through the fuel filler opening. Pull the line out of the tank.
- Cut one end of the new line on the bias. Tie some strong linen cord or fishing line tightly around the biased section of the line (see illustration). Thread the



cord through the fuel line hole in the tank and bring the end out through the fuel filler hole. Lubricate the line so that it will slide through the hole. Pull the cord to draw the line into and through the hole. Adjust line in hole so that 3-3/4" to 4-1/4" (95-108 mm) of line remain inside the carburetor chamber. Cut the biased end off square and install the fuel filter assembly on it (per the above paragraph). Drop line and filter back into the tank. Curve the line around the front of the carburetor body and connect it to the inlet fitting.

Carburetor Adjustment

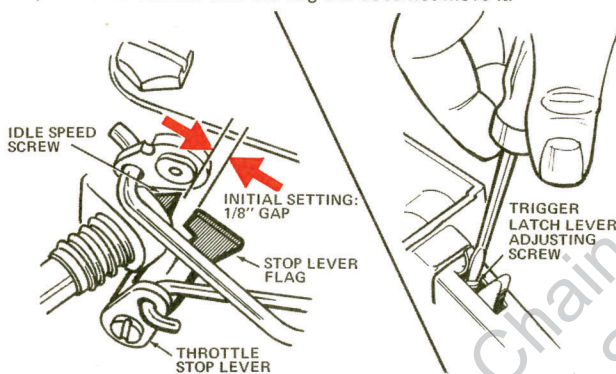
The instructions in paragraphs A, B, and C apply to all model 350 saws having a fully adjustable HDC-23 or HR-1A carburetor.

If you have an early model 350 containing an HDC-16 or HDC-21 carburetor which was never made fully adjustable, you should follow instructions only in paragraphs A & B with this exception: Keep the HI SPEED needle closed (all the way clockwise) instead of setting as recommended for fully adjustable carburetors. Disregard paragraph C.

A. INITIAL ADJUSTMENTS

(Make only if engine will not start. Otherwise proceed to paragraph B.)

1. Remove air filter and cover so that you can see carburetor and adjustments.
2. Slowly and gently close (clockwise) both the HI and LO NEEDLES. Then open the HI NEEDLE 1-3/8 turns and the LO NEEDLE 1-1/4 turns to the left (CCW).
3. Turn the IDLE SPEED SCREW to the left until you can see that it no longer touches the flag of the throttle stop lever. Turn the screw back to the right until it just makes contact with the flag but does not move it.



4. Latch the throttle trigger latch in position for starting. This should result in a 1/8" gap between the flag and the IDLE SPEED SCREW (see illustration). If necessary, turn the adjusting screw in the trigger latch lever as required to adjust to a 1/8 inch gap.
5. Unlatch trigger. Now turn IDLE SPEED SCREW two turns to right (clockwise).

NOTE: As now adjusted, you should have no trouble starting the saw unless there is some other trouble such as faulty spark plug or ignition, wrong fuel, etc.

CAUTION: The chain will rotate when the engine is started.

6. Tension the saw chain correctly on the bar and be sure that it is lubricated properly. Put the air filter and the cover back on the engine. Follow instructions in your owner's manual to start the saw. Latch the trigger before cranking. When engine runs, unlatch the trigger and idle the engine.

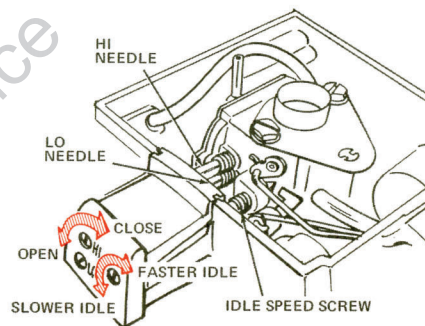
B. ADJUSTMENT OF IDLE MIXTURE AND SPEED (Throttle closed)

1. After warming up the engine at part throttle for three minutes, clear it out with a 3-second burst at full throttle. Then idle the engine.
2. If the chain rotates, turn the IDLE SPEED SCREW to the left (CCW) until the chain stops.
3. Turn the LO NEEDLE slowly to the right (CW) to find the fastest engine speed. If this adjustment causes chain rotation, repeat step 2 to stop the chain from turning. Then repeat the beginning of step 3.

NOTE:

If smooth, dependable idling cannot be obtained without chain rotation, have the centrifugal clutch assembly checked.

4. Latch the trigger to check the starting speed setting. If the chain rotates rapidly with the trigger latched, the setting is a bit too high. To lower the starting speed setting, stop engine and turn the trigger latch adjusting screw to the left as required. Do not set starting speed lower than necessary to prevent chain rotation during starting.



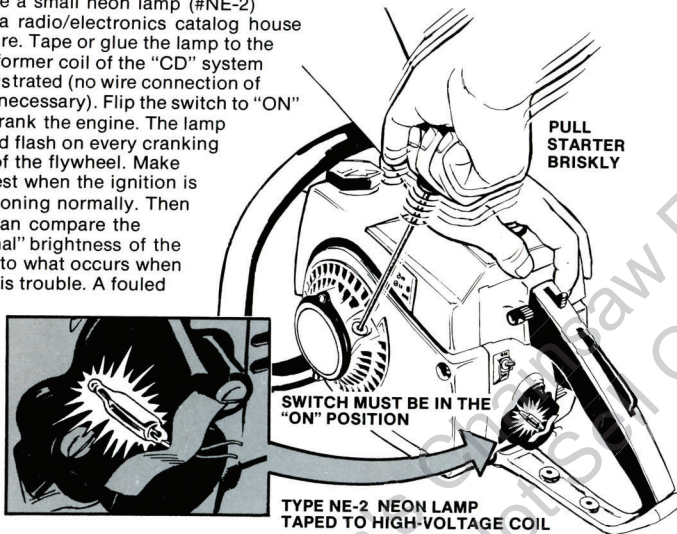
C. HIGH SPEED ADJUSTMENT AT NO LOAD (for fully adjustable carburetors only). (Throttle wide open)

1. With the HI NEEDLE set 1-3/8 turns open, check for smooth acceleration by opening the throttle wide for three seconds. If the saw stumbles or "4-cycles," turn the HI NEEDLE to the right (CW) 1/8 turn at a time until smooth acceleration is obtained.
2. Make a saw cut to check that adequate power is available.
3. Continue making 1/8 turn adjustments to the right (CW) until the saw shows a power drop when asked to cut. (This indicates a too lean mixture setting).
4. From the setting in step 3, turn the HI NEEDLE 1/4 turn to the left (CCW). Check the cutting ability of the saw again. (This should be your best HI NEEDLE setting for your particular altitude, temperature and humidity conditions.)
5. Re-check for smooth idling as instructed under "Adjustment of Idle Mixture and Speed."

Spark Plug and Ignition

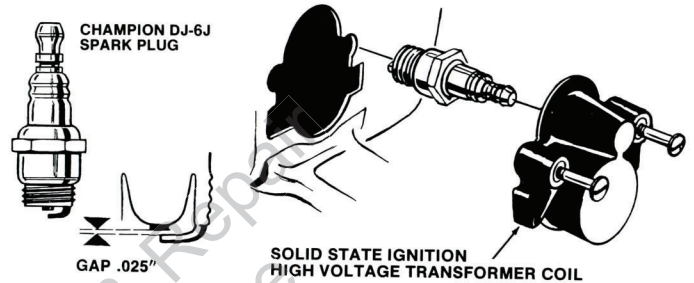
When the engine will not start, always check first that the tank is full of fresh, clean fuel mix. Then check for spark ability. The test described below will indicate whether both the spark plug and the "CD" ignition system are in working order. When there is a failure, you can determine whether it is the spark plug or the "CD" system if you repeat the test after installing a clean, new and properly gapped plug — If it is not the plug which failed, it must be the "CD" system. Your dealer can check this out for you and make any necessary parts replacements.

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 "ON" and crank the engine. The lamp should flash on every cranking turn of the flywheel. 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 fouled



plug, faulty high-voltage coil, or electronic failure of the "CD" system components will be indicated by dim flashing, no flashing, or irregular flashing (misfires).

To remove the spark plug, first remove the high-voltage coil, held by two screws. Then unscrew the plug. The 2-cycle electrode type spark plug of proper heat range specified for this engine is the Champion DJ-6J (our part #65130-S). At the time of installation, check that the electrode gap is .025" (0.64 mm). When the engine is cold, torque the plug to 150 pound-inches (173 kg-cm). But to avoid



a too tight situation after a hot engine cools off, torque only to half this amount if installing the plug in a warm engine.

The tinted panel at the bottom of this page describes what spark plugs often look like after a period of use. Compare the appearance of the plug removed from your engine to these examples and you will learn the conditions under which your saw has been operated.

Used plugs can often be restored to proper operation by reconditioning. Remove any matter bridging the electrodes or bridging between the insulated core and the metal body. File the electrodes so the firing end of the center electrode is butted square and charr, and the side electrode has smooth, bare 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 would crack the porcelain insulation. Now, clean the plug thoroughly.

WARNING: Never use sand blast-cleaned spark plugs in this engine, because it is nearly impossible to wash off all the sand particles.

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:

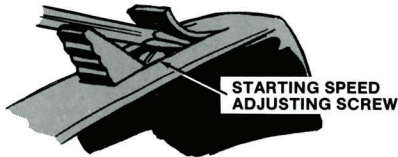
Dry, black or light gray to tan appearance.	This is a normal appearance of plug after considerable service.
Sooty, oily black carbon on bottom and electrodes.	Engine has been getting too much fuel or too much oil in the fuel; or ignition voltage may be low; or wrong heat range plug has been used.
White to light gray powdery deposits, or burnt gray blistered look of the center electrode porcelain insulator. Center electrode appears melted and insulator burned.	Engine running too hot. There may be an air leak, either in the fuel system or in the engine seals.
Yellow ash deposit. Core bridging with carbon or other deposits.	Caused by additives in gasoline or oil, use proper ingredients when mixing fuel. Engine in need of overhaul due to prolonged usage; or wrong oil or incorrect fuel mixture.

Starting Speed Adjustment and Throttle Control Interlock Repair

The starting speed was adjusted at the factory for a speed of 3000 rpm with the trigger latched in starting position. However, readjustment may become necessary to compensate for wear of the interlock contact surfaces or slight bending of the throttle rod, or a slight difference in the starting speed after some parts have been replaced. Disassembly and cleaning will be required if the mechanism becomes "sticky" in operation.

STARTING SPEED ADJUSTMENT:

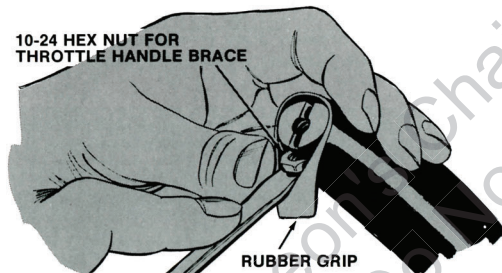
1. With a screwdriver blade, lift the flap (of the rubber grip) in front of the trigger latch. Note the slotted head adjustment screw in the trigger latch.



2. To increase the starting speed setting, turn this screw to the right (see illustration), a little at a time, until the desired speed is reached.

INTERLOCK MECHANISM CLEANING AND REPAIR:

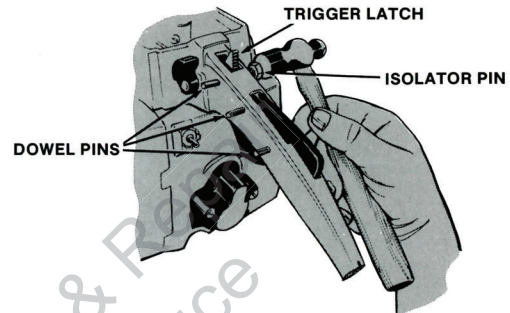
1. Following details in "Isolation Mounts" (page 27), remove the throttle handle brace and either of the two vibration isolator pins at the rear of the saw. This pin is to be used as a knock-out pin and assembly fixture.
2. The rubber grip is spot-cemented to the throttle handle. Free up the grip at both ends with a screwdriver. A 10-24 hex nut is captivated by the grip in the



bottom rear of the handle. Depressing the controls as necessary, slide the grip over the controls and off the handle.

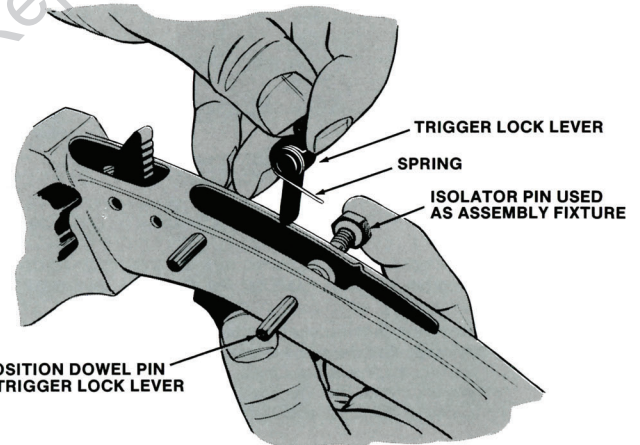
3. The interlock parts are held in place by three dowel pins. The top pin holds the trigger latch and spring. The middle pin holds both the trigger and the trigger lock. The rear pin holds the trigger lock lever and spring. To work on the trigger or trigger lock mechanism, you should remove the middle pin first and then the rear pin. The trigger latch can be left in place unless it is to be worked on.

4. Working from the right side to the left side of the handle, use the isolator pin and a light hammer to tap the handle dowel pin or pins out of position. Remove the parts.



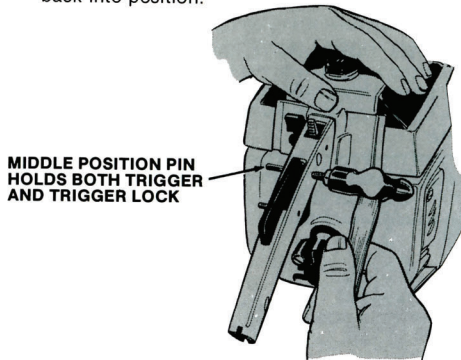
NOTE: To remove the trigger, use a screwdriver blade to detach the throttle rod from the hole in the trigger.

5. Clean, inspect and replace any worn parts.
6. Assemble and hold the spring on the trigger lock lever (as illustrated). Note

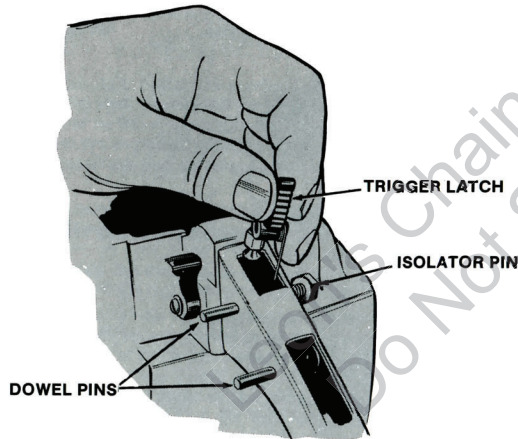


the lug cast inside the handle. Using the isolator pin, assemble temporarily so the end of the spring rides over this lug and the end of the lock lever protrudes through the trigger slot at bottom of the handle. Tap the dowel pin back into position in the handle, and remove the isolator pin.

- Position the trigger in the handle slot. Taking care not to bend the throttle rod, hook the rod to the trigger. Align the trigger and the trigger lock into position and hold with the isolator pin while tapping the middle dowel pin back into position.



- If the trigger latch was removed, assemble and hold the spring on it in the position illustrated. Then pin it back into place.

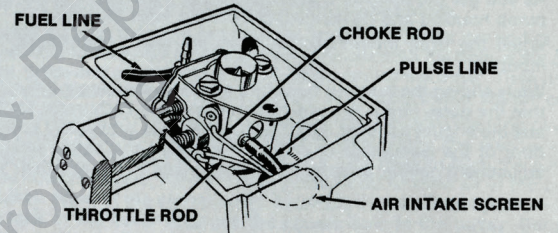


- Test the operation of the trigger, trigger lock, and the trigger latch.
- Insert the 10-24 hex nut into the handle slot. Slide the handle grip back onto the grip and adjust it so the controls operate freely. Recement the grip to the handle on both sides with "Permatex" or EC-847 Cement (our part #22788). When reassembling the throttle handle brace (with three 10-24 x 3/4 hex washer head screws torqued to 45 pound inches or 52 kg-cm), be sure to retain the air deflector under the brace at the front.

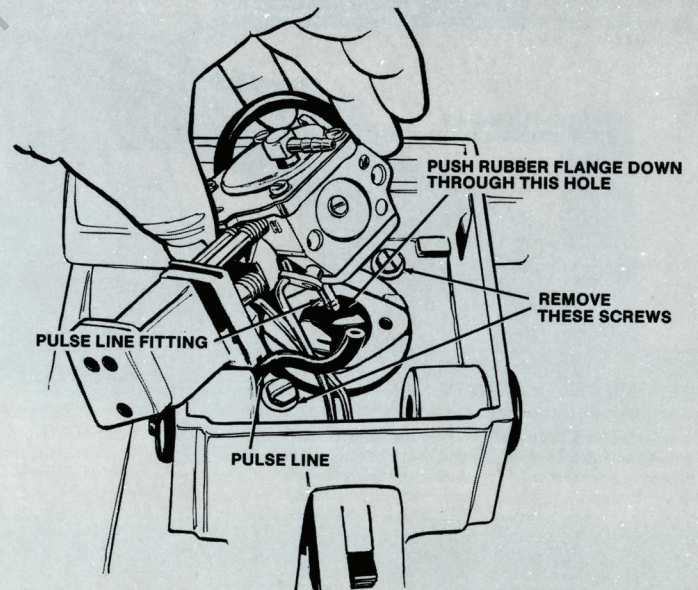
Vibration Isolation Mounts

Whenever the vibration isolators become worn so that vibrations are transmitted to the throttle handle and handle bar, the isolators should be changed.

- Remove the air filter cover and the filter. Also remove the drive case cover and the guide bar.
- Remove the throttle handle brace, held by three 10-24 x 3/4 hex washer head screws (one at rear and two at front). Lift out the air deflector, held by the two front screws.

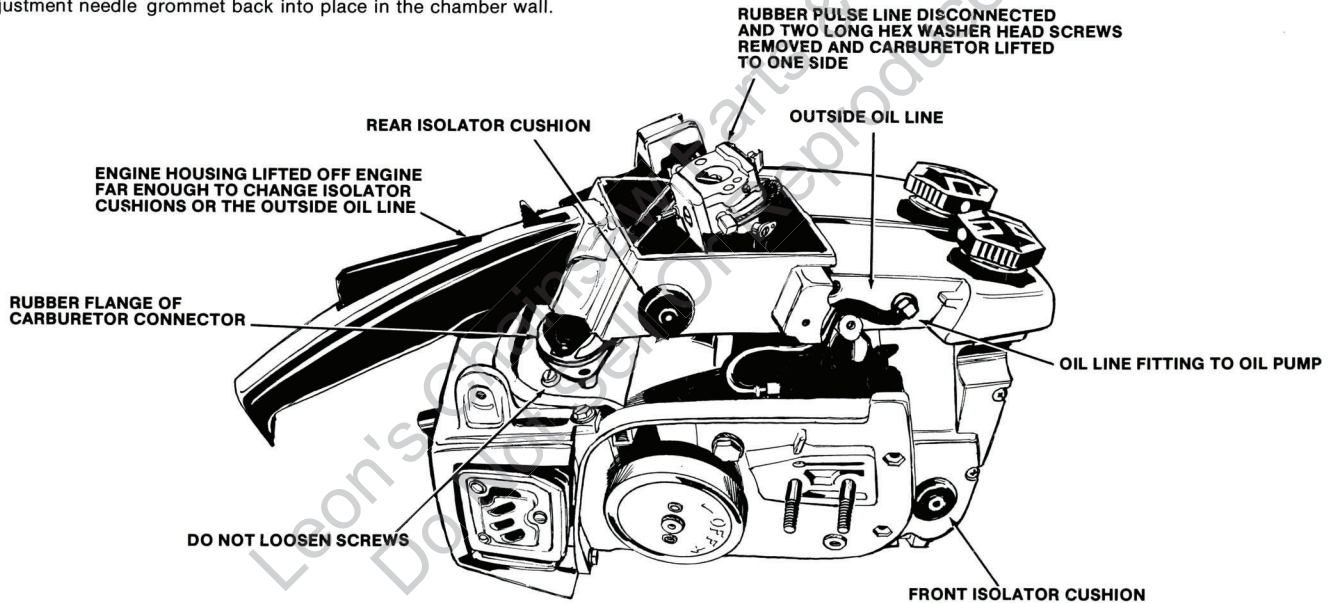


- Take out *only* the two long hex washer head screws securing the carburetor. Disconnect the "rubber" pulse line from the fitting at the rear of the carburetor. Lifting and angling the carburetor so as not to bend or disconnect the choke and throttle rods, lift the large grommet out of the slots in the chamber wall. Remove the two screws at the floor of the carburetor chamber.



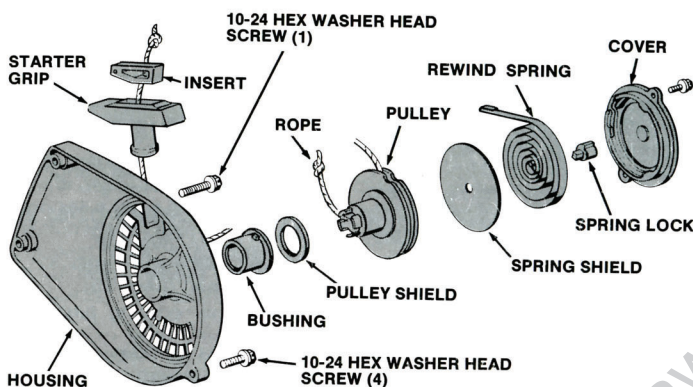
4. Remove the four isolator pins (two at front of saw and two at rear).
5. Lift upward on the throttle grip and gently start to slide the engine housing free of the power head.
6. When the housing is elevated a bit at the rear you can change the two rear isolators.
7. As you get the housing a little further off the engine, reach in over the oil pump housing and disconnect the oil line from the fitting.
8. When the front mount section is in the clear, change the front isolator mounts.
9. While sliding the housing back into position, reconnect the oil line. Be sure that the pulse line is not pinched between the carburetor connector flange and the engine housing. Install the two screws previously removed from the floor of the carburetor chamber. Reposition the carburetor and slide the adjustment needle grommet back into place in the chamber wall.

10. Check position of the pulse line. Run it around the rear of the chamber and over both control rods before reconnecting it to the carburetor.
11. Fasten the air filter spring plate, flange bushing and carburetor to the carburetor connector and connector flange with the two 10-24 x 1 1/4 carburetor mounting screws. Torque these screws to 45 pound inches (52 kg-cm). Reinstall the four isolator pins, tightening these each to 80 pound inches (92 kg-cm).
12. Position the air deflector and the throttle handle brace to the fuel tank with two 10-24 x 3/4 screws, and the brace to the throttle grip with another of the same screws. Tighten all three screws to 45 pound inches (52 kg-cm). After checking the assembly, reinstall the air filter and the cover, and the guide bar, chain and clutch.



Starter/Fan Housing Maintenance

No regular maintenance beyond cleaning of the air intake openings is required. However it may be necessary to add a turn or two of starter spring tension if the cord fails to rewind all the way to the housing. Removal of the starter/fan housing is not required for disassembly or assembly of the cord, spring and pulley.



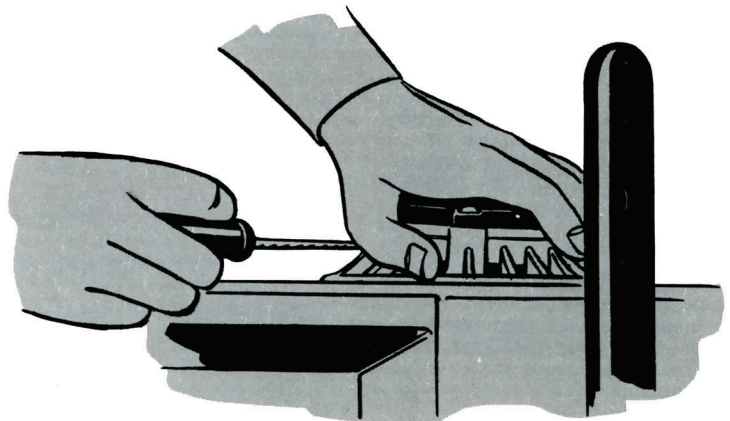
1. To add spring tension, place the starter housing starter-cover-up. Hold the cover from turning and remove the two pan washer head screws in the cover. Turning the cover to the right (clockwise) 180° at a time, set the tension to where the grip stays in place against the housing when cord is allowed to rewind. Then reinstall the two screws, tightening them to 32 pound-inches (37 kg-cm).
 2. To repair or replace the starter spring (in the starter cover) remove the two cover screws, let the cover rotate (counterclockwise) until the spring tension is relieved. Then lift off the cover. Remove the plastic spring shield and the spring lock. Unhook the outer loop of the spring from the notch in the rim of the starter cover and lift out the spring carefully.
- CAUTION:** Tape or tie the spring coils together before disposal so they will not fly apart. If the old spring is to be reinstalled, coils should not be oiled, as oil attracts dirt. However, rubbing a very small amount of **HOMELITE® ALL-TEMP Multi-Purpose GREASE** or a lithium base grease onto the sides of the coiled spring will provide the correct amount of lubrication. Fit the spring into the cover. Drop in the spring lock and snap the plastic spring shield into place over the spring.
3. To replace a worn oilite bushing or starter cord insert in the starter/fan housing, press out the worn part and press in the replacement part.
 4. To install a new starter cord, remove the pulley from the housing and remove the old cord. Push one end of the new cord through the square hole of the pulley hub insert, and pull the end out through the long notched hub. Tie a

simple knot tightly in this end of the cord and trim the end to within 1/8" (4mm) of the knot. Heat the knot to set it, or coat it with acetone type cement. Pull the other end of the cord to draw the knot tightly into the hub recess. Push the free end of the cord through the elongated slot and hole in the back side of the pulley and pull it through between the pulley sheaves.

NOTE: At this point, if the cord insert or the oilite bushing in the starter/fan housing are to be replaced, remove the fan housing from the saw. Then press out the worn parts and press in the replacements.

Push the cord through the cord insert in the housing. Thread the end of the cord through the starter grip from the bottom, then through the hole in the grip insert. Knot, dress and set this end of the cord as you did the other. Then draw the knotted end into the insert and assemble the insert in the starter grip.

5. To complete the assembly, slide the black plastic washer onto the long pulley hub. Oil the oilite bearing in the housing. Drop the pulley and washer into place in the housing. Pull out the cord so that it runs straight from the pulley through the housing insert. Turn the pulley clockwise to wind all of the cord onto the pulley. Now, fit the starter cover assembly in place and rotate it until the spring lock in the cover engages the square hole in the pulley. Set the proper amount of rewind tension and secure cover in place as in paragraph 1.
6. If the starter/fan housing was removed from the saw, use care in reassembling as follows: Position housing and press it lightly against the engine. Pull the starter grip out slowly until the toothed hub pushes the starter pawls out of the way and the housing drops flush into place against the engine. Then secure with two 10-24 x 3/4" hex washer head screws at the rear and one 10-24 x 1 1/4" hex washer head screw at the front. Tighten all three of these screws to 45 pound inches (52 kg-cm).



section **6** TROUBLE SHOOTING

ENGINE CANNOT BE STARTED

- Switch off.
Turn switch to "ON"
- Tank dry; or bad fuel
Fill tank with fresh clean, properly mixed fuel (page 5).
- Spark plug not firing
Install new plug; gap to .025" (page 25) or clean and regap plug.
- Ignition misfiring or not developing high voltage, or plug fouled.
Test with neon test lamp and new spark plug (page 25). If no voltage, have system checked by dealer.
- Fuel not getting to carburetor
Remove air filter and see whether carburetor barrel is moist. If not moist, see below:
See that the choke is closing. Check for plugged fuel filter (page 23).
Check for kinked or split fuel line (page 23).
If no fuel is getting to the carburetor. See your dealer.
- Starting speed adjusted too low.
See if engine will start with the throttle held open. If it does, adjust throttle trigger latch mechanism for correct starting speed. (page 26).
- Low compression
If engine cranks much too easily or with little resistance, have engine checked for internal problems.

ENGINE STARTS, RACES WITHOUT LOAD, QUITS UNDER LOAD

- Lean high speed adjustment.
Adjust carburetor (page 24).
- Air leak in fuel system
Check fuel line (page 23). Check for leak between carburetor and engine intake.
- Engine seals leaking or crankcase leaking air.
Dealer can make a pressure test to find the leak.
- Fuel cap not venting properly
Test by operating with cap loosened 1/6 turn (page 23).
Clean or replace cap check valve and filter (page 23).
- Faulty carburetor fuel pump; or pulse line deteriorated or pulled closed.
Dress pulse line so it stays open (see page 27 under "Vibration Isolation Mounts" for proper positioning details.)
- Dirt in carburetor passageways.
Have carburetor cleaned by dealer.

ENGINE SMOKES EXCESSIVELY, LACKS SPEED AND POWER.

- Rich diet
Install clean air filter (page 22).
- Rich diet
Close the HI-speed needle (p.24).
- Rich diet
Use properly mixed, fresh fuel (page 5).
- Carburetor inlet needle stuck open or inlet lever set too high, or inlet needle and seat leaking.
Have dealer clean inlet needle and check lever setting.

ENGINE CANNOT IDLE SMOOTHLY

- Improper idle adjustment
 - a) Wrong speed
Are you adjusting for the fastest idle at which the chain does not rotate? (page 24).
 - b) Correct speed but wrong mixture setting.
Idle stop screw may be set too fast and LO speed needle too lean. Adjust correctly (page 24).
- Damaged LO needle and seat.
If LO needle appears damaged, or seat enlarged, have new carburetor installed.
- Fuel supply system, or carburetor leaking air.
Check fuel line (page 23). Check possibility of misfit between carburetor and intake flange.
- Dirt in carburetor
Have cleaned by dealer.
- Air leaking through engine walls or seals, or through misaligned or cracked rubber carburetor output flange connector.
Check for leaking engine seals or cracks in castings. Your dealer can pressure test both carburetor and engine for leakage.
- Faulty clutch assembly
Clean clutch parts. Check for broken, cracked or out-of-round drum (page 19).
Clean and inspect clutch bearing. Replace if worn, or pack with grease and reinstall (page 19).
- Ignition misfiring at low speed.
Tape neon lamp to high-voltage coil insulation (page 25) and check for misfires with engine idling. If system fires erratically, have it checked by dealer.

ENGINE RUNS TOO HOT

- Wrong fuel mixture, ingredients.
Mix fuel thoroughly (page 5) using only recommended oils and gasolines. Do not use stale "winter" formula gasoline in hot weather.
- Wrong type or heat range spark plug.
Install Champion DJ-6J (p.25).
- Wrong spark plug gap.
Clean electrodes; gap to .025" or 0,64 mm (page 25).
- Clogged air cooling passages or surfaces.
Clean the air intake slots in fan housing. Install clean air filter and clean out carburetor chamber. (page 22).
- Air deflector not put back after repair work.
Remove the throttle handle brace; put air deflector in position and reassemble (page 27).
- "Lean" operation.
Check all possible sources of air leaks or fuel blockage (see "Engine Quits Under Load" in this section).

SAW FLOODS

- Dirt under carburetor inlet needle valve, or inlet lever set too high; or spring has slipped off dimple of lever.
Have carburetor checked and repaired by dealer.

ENGINE MISFIRES

- Engine choked or partly choked.
Operate with choke fully open after engine is warm (page 9).

ENGINE RUNS AFTER SWITCH IS TURNED "OFF"

- Faulty switch or no switch lead continuity.
Check switch terminals and wires. Check switch with ohmmeter or test light.
- Spark plug fouled or bridged. Engine deposits near firing center acting as a glow plug.
Remove and clean plug (page 25). Inspect area near spark plug hole and remove any visible deposits or flashing material.

NOT ENOUGH OIL FOR CHAIN LUBRICATION

- Oil feed adjustment at the minimum setting.
Turn lever clockwise to increase feed rate (page 5).
- Sawdust clogging oil discharge. Remove bar; clean oil entry hole and slot in guide bar mounting pad (page 7).
- Pump seals leaking
Remove pump piston and change "O" rings (page 21).

CLUTCH SLIPS OR GRABS

- Cutting at less than full throttle has worn or glazed the clutch.
Repair clutch as required. Cut at full throttle (page 9).
- Clutch worn, dirty, scored, bent or cracked.
Repair or replace (page 19).
- "S" clutch on backwards
Remove and install correctly (page 20).

- Chain and bar problems including wrong tension, burned rails, faulty chain maintenance, etc.
Read and follow chain and bar assembly and tensioning instructions (page 6) and chain and bar maintenance instructions (p.16).

CHAIN CHATTERS OR BUCKS, OR GRABS AND CUTS ROUGHLY

- Tension too loose
Readjust (page 8).
- Depth gauges too low, or not shaped properly.
Contour gauges correctly (page 18). Sharpen teeth to raise gauge heights relative to teeth (p.18).
- Worn drive sprocket
Replace (page 19).
- Incorrect filing angles, particularly a hooked side plate.
Refile (page 18).

CHAIN DOES NOT CUT FAST

- Dullness
Sharpen (page 16).
- Wrong filing angles
Refile (page 17).
- Gauges too high
Lower gauges after sharpening cutters (page 18).
- Cutters non-uniform in either angles or length.
Correctly refile (page 18).
- Too much chain tension
Adjust tension (page 8).
- Chain binding on pinched or spread or burred bar rails.
Repair bar and smooth out burrs (page 19).

- Abrasion damage to cutters
File back past abraded or de-chromed areas of teeth. Refile all cutters to same length. (p.17).
- Bar groove worn inside; chain rides to one side and bar rail hangs up in the cut.
Replace bar. Maintain proper chain tension on new bar (pages 8 & 19).

CHAIN DULLS RIGHT AFTER SHARPENING

- Cutters filed to feathered edge
Refile (page 18).
- Too much top plate angle or side plate hook.
Refile (page 18).
- Chain was overheated because of running too tightly, abrasion damage, or too little oil.
Replace chain. Check oil pump output (page 5). Maintain proper tension (page 8).

CHAIN GETS TOO LOOSE ON BAR

- New chain is wearing in. Too much pressure put on saw to cut.
Keep adjusting. It will stop stretching. Sharpen chain properly (page 17).
- Burred bar rails
Smooth rails (page 19).
- Not enough oil for heavy duty cutting.
Clean oil discharge hole in guide bar pad. Adjust oiler for more oil (page 5).
- Not enough tension
Let chain cool. Adjust for warm chain condition.

- Chain bluntly filed, abraded or just plain dull.
Refile (page 18).

CHAIN TIGHTENS ON THE BAR

- Extreme overheating
See causes and remedies under "Chain Gets Too Loose on Bar".

CHAIN RIDES HIGH IN BAR GROOVE

- Sawdust-packed groove
Clean out groove. Repair every fourth chain drive link (page 19).
- Bar rails worn down.
Have bar regrooved for drive link clearance, or replace bar (p.19).

SAW DOES NOT CUT STRAIGHT

- Teeth damaged on one side of chain.
Sharpen damaged cutters to remove entire damaged area, then sharpen the other cutters to the same length (page 17).
- Unequal filing angles or lengths of cutters
All cutters must have the same angles and lengths (page 18).
- Some depth gauges higher than the others, or different in finished contour.
Lower all gauges to the same height and shape them for smooth feeding (page 18).

Warranty

We warrant each product manufactured by Homelite to be free from defects in material or workmanship under normal use and service. Our obligation under this warranty is limited to replacing free of charge any defective part which within thirty (30) days after delivery of the unit to the original retail purchaser is returned to us, with transportation charges prepaid, at a Homelite branch office or to a dealer whom we have authorized to make the replacement.

This warranty does not apply to any trade accessories, nor to any engine not manufactured by Homelite which is separately warranted by the engine manufacturer.

THIS WARRANTY IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, AND ANY OTHER OBLIGATION OR LIABILITY WHATEVER ON THE PART OF HOMELITE AND IN NO EVENT SHALL HOMELITE BE LIABLE FOR ANY SPECIAL OR CONSEQUENTIAL DAMAGES.



A **textron** DIVISION, PORT CHESTER, N.Y. 10573