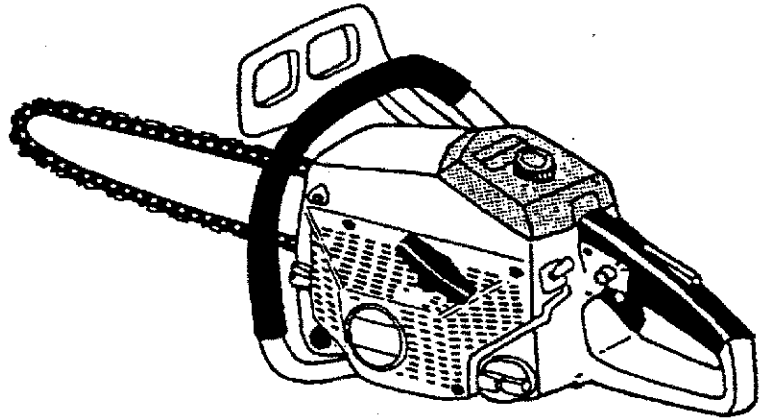


ECHO



OPERATOR'S MANUAL

**ECHO
CHAIN SAW
CS-5000**

CE



WARNING ⚠ DANGER
READ INSTRUCTIONS CAREFULLY AND
FOLLOW RULES FOR SAFE OPERATION.
FAILURE TO DO SO COULD RESULT IN
SERIOUS INJURY.



RULES FOR SAFE OPERATION

BEFORE OPERATING YOUR CHAIN SAW FOR THE FIRST TIME,
THOROUGHLY AND CAREFULLY READ THIS OPERATOR'S MANUAL.



1. Never operate a chain saw when you are tired.
2. Use safety footwear, snug-fitting clothing, protective gloves and eye, hearing and head protection devices. 
3. Always use caution when refilling. Always refill your saw in a well-ventilated place. Always stop the engine and let it cool down for a while before refilling. **CAUTION!** Fuel is a highly flammable product. Therefore be very careful when handling it. Never smoke when refilling and never handle fuel when close to a fire or a flame. Before restarting the engine, move the chain saw at least ten (10) feet or three (3) meters away from the fueling point.
4. Do not allow other persons to be near the chain saw when starting or cutting. Keep bystanders and animals out of the work area.
5. Do not start cutting until you have a clear work area, secure footing, and a planned retreat path from the falling tree.
6. Always hold the chain saw firmly with both hands when the engine is running. Use a firm grip with thumb and fingers encircling the chain saw handles.
7. Keep all parts of your body away from the saw chain when the engine is running.
8. Before you start the engine, make sure the saw chain is not contacting anything.
9. 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.
10. 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 trigger is released.
11. Always shut off the engine before setting it down.
12. 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.
13. 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.
14. Keep the handles dry, clean and free of oil or fuel mixture.
15. Operate the chain saw only in well ventilated areas.
16. Do not operate a chain saw while in a tree unless specially trained to do so.
17. All chain saw service, other than the items listed in the Operator's Manual should be performed by competent chain saw service personnel. (For example, if improper tools are used to remove the flywheel, 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.)
18. Guard against kickback. Kickback is the upward motion of the guide bar 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
 - Hold the chain saw firmly with both hands. Don't overreach.
 - Don't let the nose of the guide bar contact a log, branch, ground or any other obstruction.
 - Cut at high engine speeds.
 - Don't cut above chest height.
 - Follow manufacturer's sharpening and maintenance instructions for the saw chain.
 - Use devices such as low kickback chain, which may help to reduce the hazards associated with kickback.
19. When transporting your chain saw, use appropriate guide bar cover.
20. Always stop the engine and disconnect the spark plug lead before performing any assembly, adjustment, filling and maintenance operations on the saw chain.

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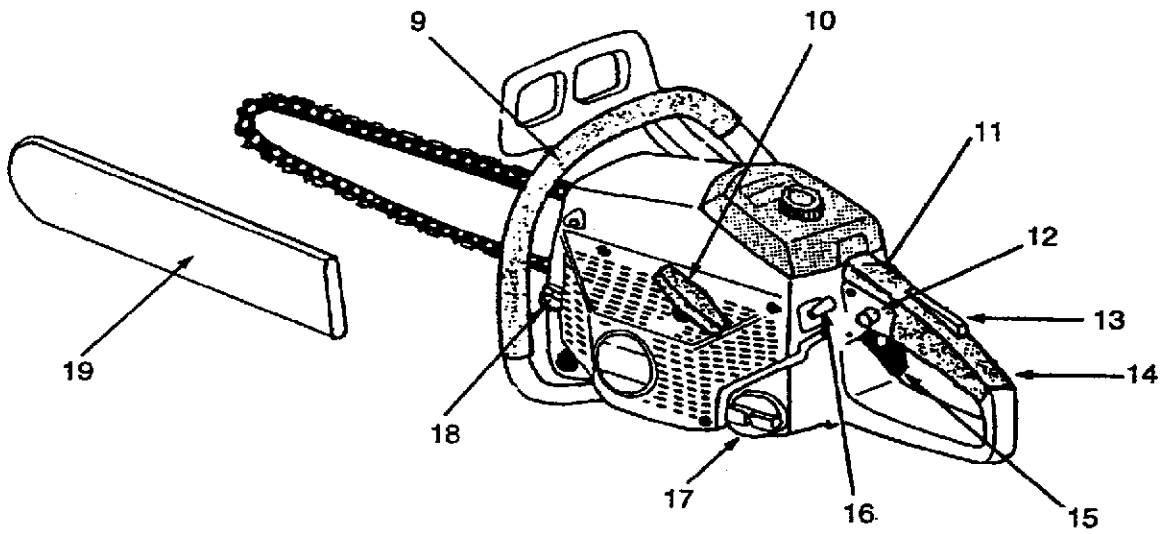
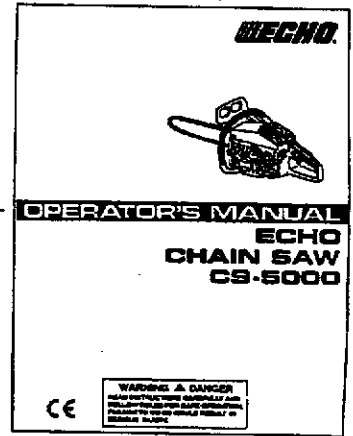
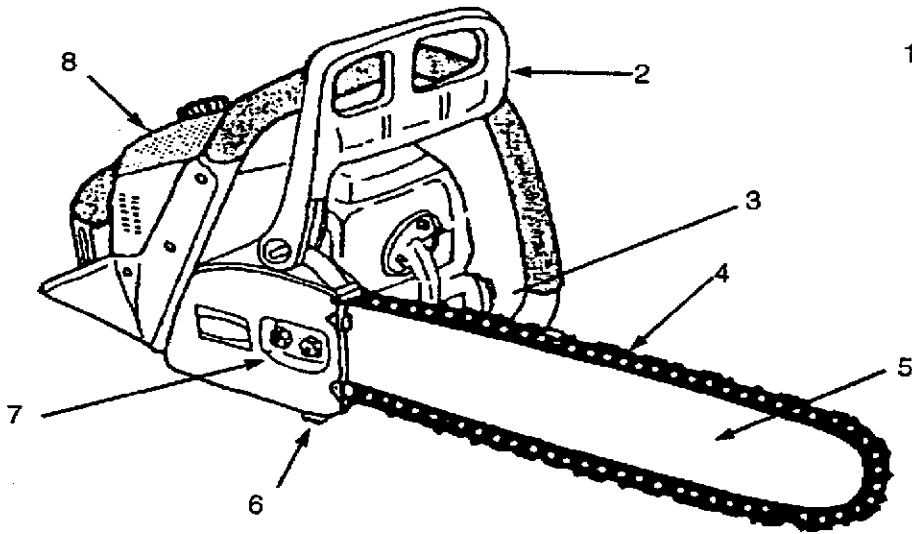
SPECIFICATIONS

External dimensions length x width x height	mm	410 x 225 x 280
Mass Saw without guide bar and chain, empty tanks	kg	5.1
Volume Fuel tank Tank for chain lubrication oil Fuel (Mixture ratio)	cm ³ cm ³	470 290 Regular grade petrol 25 parts : 1 part (4%) ECHO brand 2 stroke engine oil (or an air cooled 2 stroke engine oil of a reputable brand name). Motor oil (See page 7)
Oil (Chain oil)		
Cutting length All specified usable cutting lengths of guide bar	cm	38, 45, 50
Chain Specified pitch Specified gauge (thickness of drive links) Type of guide bar Guide bar gauge Type of chain Lubrication	inch inch inch	0.325 0.058 38 cm ECHO 0.058 Carlton K2L or Oregon 21BP Adjustable automatic oil pump
Sprocket Specified number of teeth		7

SPECIFICATIONS (continued)

Engine		
Type		Air cooled 2-stroke single cylinder
Carburetor		Diaphragm type
Magneto		Flywheel magneto, CDI system
Spark plug		CHAMPION RCJ-6Y
Starter		Recoil starter
Power transmission		Automatic centrifugal clutch
Size of engine		
Engine displacement	cm ³	49.3
Maximum engine power		
Maximum shaft brake power (ISO 7293)	kW	2.4
Engine speed		
Recommended maximum speed with cutting attachment	RPM	14,000
Recommended speed at idling	RPM	2,700
Fuel consumption (ISO 7923)		
Fuel consumption at maximum engine power	kg/h	1.2
Specific fuel consumption at maximum engine power	g/kWh	480
Sound pressure level (EN 27182)		
LpAav=	dB(A)	101.5
Sound power level (ISO 9207)		
LwAav=	dB(A)	106
Chain brake (ISO 6535)		
Mean braking time at racing speed	s	0.111
Vibration (ISO 7505)	m/s ²	10.9
Other devices		Front hand guard, Rear hand guard Throttle trigger lockout Chain catcher, Chain brake Anti-vibration device

DESCRIPTION

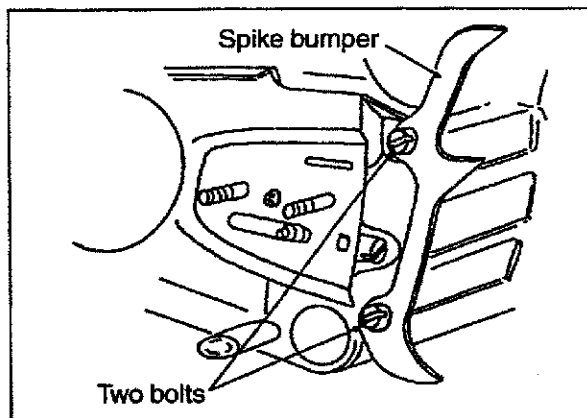


DESCRIPTION


1. **Operator's manual** - Included with unit. Read before operation and keep for future reference to learn proper, safe operating techniques.
2. **Front hand guard** - Guard between the front handle and the saw chain for the hand from injuries and aiding in control of the chain saw if the hand slips off the handle. This guard is used to activate the chain brake which is to stop the saw chain rotation.
3. **Silencer** -
4. **Saw chain** - Chain, serving as a cutting tool.
5. **Guide bar** - The part that supports and guides the saw chain.
6. **Chain catcher** - A safety protection designed to protect the operator's right hand from being hit by a chain which has broken or flown off the bar during.
7. **Clutch cover** - Protective cover to the guide bar, saw chain, clutch and sprocket when the chain saw is in use.
8. **Air cleaner cover** - Cover and seals air filter.
9. **Front handle (for the left hand)** - Support handle located at the front of the engine housing.
10. **Starter handle** - Pull handle slowly until starter engages, then quickly and firmly. When engine starts, return handle slowly. **DO NOT** let handle snap back or damage to unit will occur.
11. **Choke control knob** - Device for enriching the fuel/air mixture in the carburetor to aid cold starting.
12. **Throttle lock** - Device for temporarily setting the throttle in a partially open position to aid starting.
13. **Throttle trigger lockout** - A safety which must be depressed before trigger can be activated in order to prevent the accidental operation of the throttle trigger.
14. **Rear handle (for the right hand)** - Support handle located towards the rear of the engine housing.
15. **Throttle trigger** - Device activated by the operator's finger, for controlling the engine speed.
16. **Ignition switch** - Device for connecting and disconnecting the ignition system and thus allowing the engine to be started or stopped.
17. **Fuel tank cap** - Covers and seals fuel tank.
18. **Oil tank cap** - Covers and seals oil tank.
19. **Guide bar cover** - Removable device for covering the guide bar and saw chain during transport and other times when the chain saw is not in use.

PREPARATION FOR USE

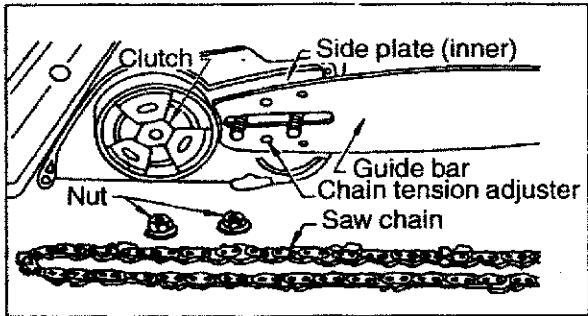
MOUNTING GUIDE BAR AND CHAIN



The unit is delivered with guide bar and saw chain separated. Install guide bar and chain as follows.

WARNING  **DANGER**
FOR YOUR OWN SAFETY, ALWAYS STOP THE ENGINE AND DISCONNECT THE SPARK PLUG LEAD BEFORE PERFORMING ANY OF THE FOLLOWING OPERATIONS.

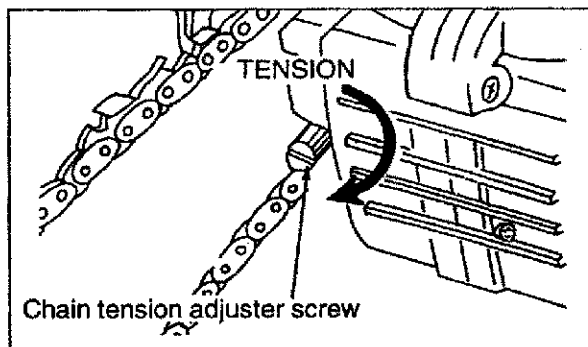
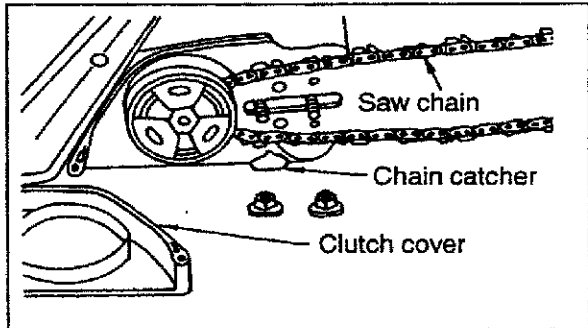
- Unscrew two nuts and remove clutch cover.
- Install the spike bumper on the front of machine. (Use two bolts.)



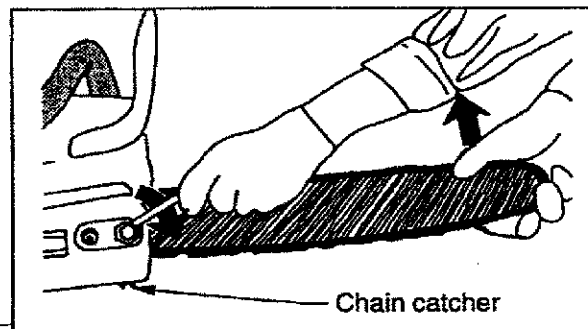
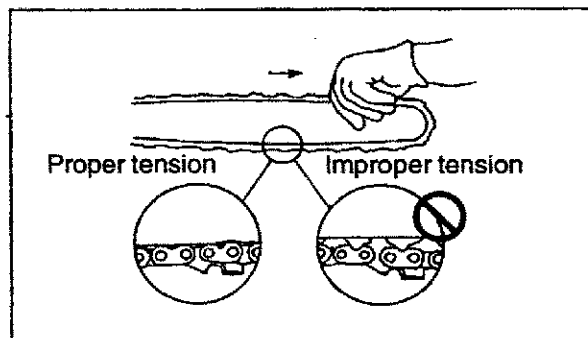
- Mount bar and slide toward clutch to make saw chain installation easier.
- Install saw chain as shown. (Ensure cutter links are pointing in the right direction)
- Ensure that chain tension adjuster fits into bar hole.
- Install the clutch cover tighten nuts finger tight.

CAUTION

1. All adjustments should be made cold.
2. Always wear gloves when working on chain.
3. Do not operate with a loose chain.



- Turn the adjuster screw clockwise until the chain touches the bottom of the bar.
- Hold the bar nose up and tighten the chain until there is no clearance between the bar and chain tie straps.
- Tighten both nuts with the bar nose held up to eliminate clearance.
- Pull the chain around the bar by hand. Loosen the adjustment if you feel tight spots.
- Start the engine and run at low speed. Stop and readjust if necessary.



CHAIN CATCHER

- A safety protection designed to protect the operator's right hand from being hit by a chain which has broken or flown off the during cutting.

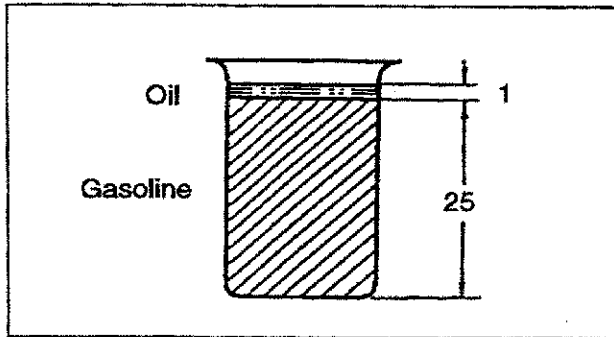
OPERATION

CHECK FOR LOOSE NUTS AND SCREWS

Check for loose nuts and screws on the handle, fan cover, etc. each time before using the chain saw.

FUEL AND LUBRICANT

- Fuel is a mixture of regular grade petrol and a normal 2-stroke engine oil of a reputable brand name.
- Mixture ratio is:
Petrol 25 parts : Oil 1 part (4%)
 - Fuel mixture at a ratio other than 25 : 1 may cause malfunction of the engine.
 - Pour 1/2 of the petrol into a safe container, add the oil and mix thoroughly.
 - Now add the remainder of petrol and mix again.
 - Disregard instruction on oil container.
 - Do not use motor oil other than recommended above.
 - Do not mix directly in engine fuel tank.
 - Avoid spilling fuel or oil. Spilled fuel should always be wiped up.
- Handle petrol with care. It is highly inflammable.
 - Always store petrol in approved container.



- Fuel mix chart

Fuel mix chart (Gallon vs metric · liter)

IMPERIAL		METRIC	
PETROL	OIL	PETROL	OIL
GAL	FL. OZ.	LITERS	C.C.
1	6.4	4	160
2	12.8	8	320
5	32.0	20	800

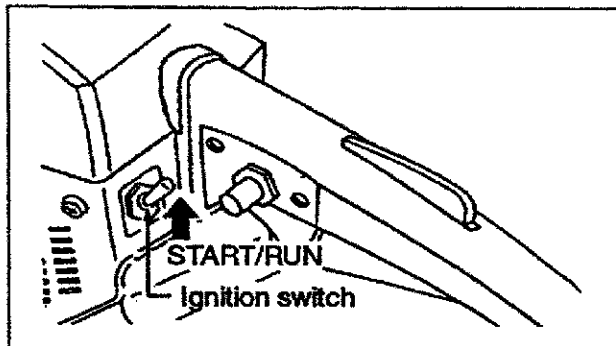
- Chain Lubricant

Proper lubrication of the chain while in operation reduces the friction between the chain and the guide bar to a minimum and assure a longer service life. Use motor oil of high quality for this purpose.

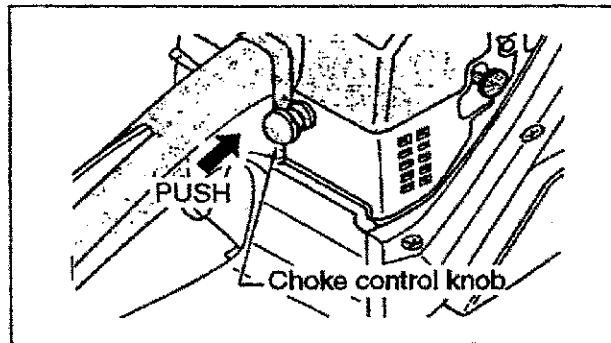
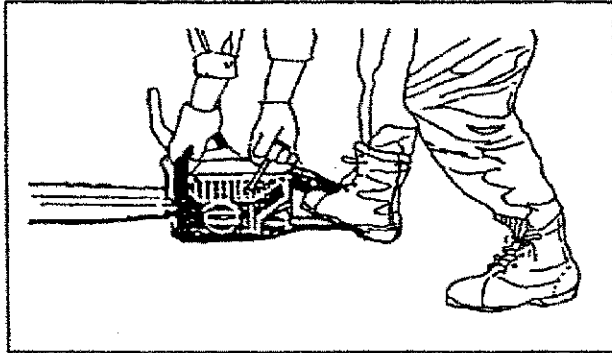
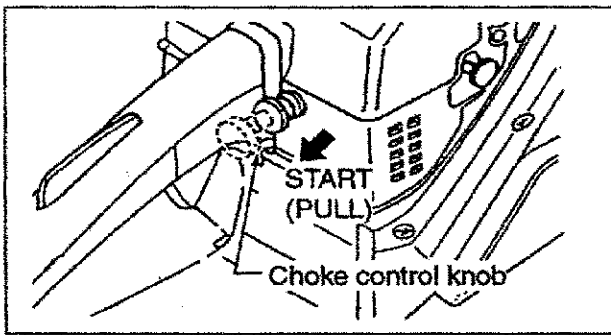
- Do not use waste or reclaimed oil to avoid various oiler problems.
- Use motor oil of the following grades:
SAE No. 30 ... in summer
SAE No. 10 ... in winter or when cutting resinous trees
- When refueling, also refill chain oil.

STARTING THE ENGINE

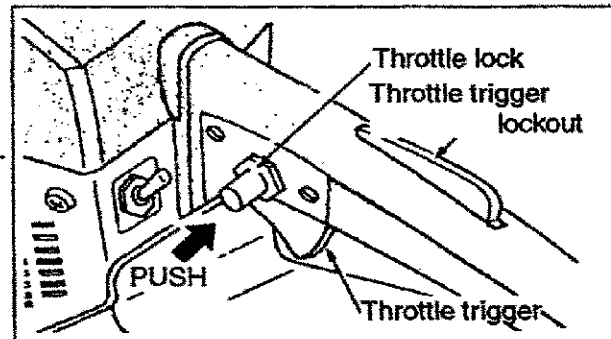
WHEN THE ENGINE IS COLD



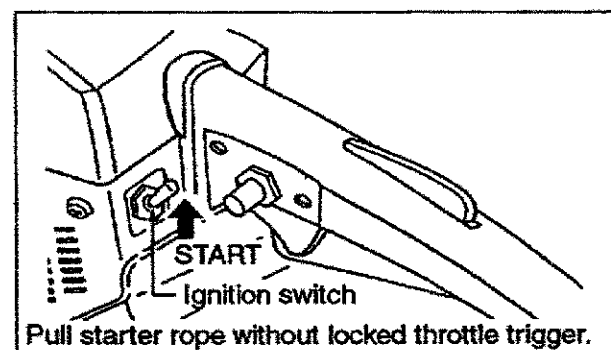
- Fill the fuel tank with fuel.
- Fill the chain oil tank with lubricant.
- Turn ignition switch up side.
- Pull choke control knob all the way out.



WHEN THE ENGINE IS HARD TO START



WHEN THE ENGINE IS WARM



- Securely hold the saw and pull starter handle several times until first firing sound.
- Make sure bar and chain are not touching anything when starting the saw.

- Push choke control knob all the way in.
- Pull starter handle again.

- Press throttle trigger lockout down while holding throttle trigger and push in throttle lock as shown.
- Pull starter handle.
- When engine starts, immediately squeeze throttle trigger up, to release the latch.

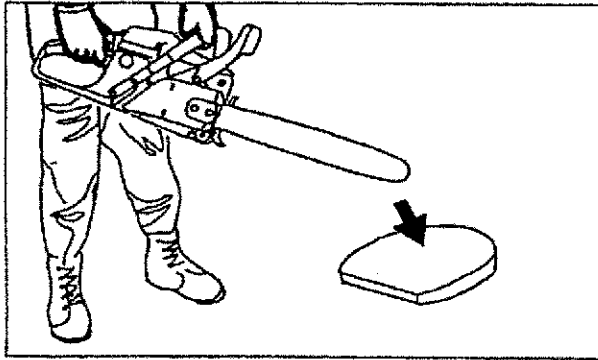
CAUTION

When using throttle lock, chain will go into motion as soon as the engine starts. Never use the throttle lock for cutting. Use it only when starting the engine.

- Ensure that there is fuel and chain oil in the tanks.
- Turn ignition switch up side.
- Pull starter handle.
- Choke may be used if necessary but be sure to push it back on first firing sound.

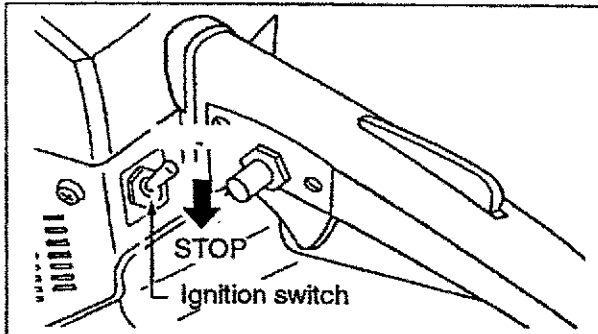
RUNNING AND STOPPING THE ENGINE

RUNNING



- After engine starts, allow it to idle for a few minutes.
- Squeeze throttle trigger gradually to increase engine revolution.
- The chain starts moving when the engine reaches 3,500 rpm approximately.
- Ensure proper acceleration and lubrication of chain and bar.
- Do not run the engine at high speed unnecessarily.
- Be sure that saw chain stops moving when throttle trigger is released.

STOPPING



- Release throttle trigger and turn ignition switch down.

NOTE

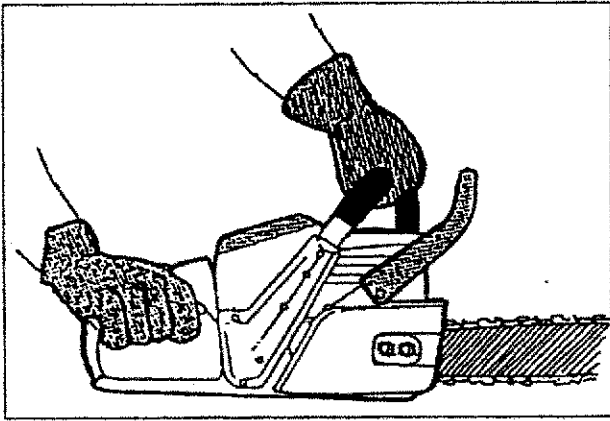
If the engine does not stop, pull choke control knob all the way out to stop engine. Check and repair ignition switch before starting the engine again.

WARNING DANGER

- READ CAREFULLY THE "RULES FOR SAFE OPERATION".
- FAMILIARIZE YOURSELF WITH YOUR CHAIN SAW BEFORE YOU START ACTUAL CUTTING.
- FOR THIS PURPOSE, IT MAY BE WISE TO PRACTICE BY CUTTING SOME SMALL LOGS OR LIMBS SEVERAL TIMES.
- RACING THE ENGINE WITH THE CHAIN JAMMED WILL BURN OUT YOUR CLUTCH. IF THE CHAIN SHOULD BECOME JAMMED AND THE SAW CAN NOT BE REMOVED FROM THE CUT, DO NOT FORCE IT OUT. STOP THE SAW, FORCE A WEDGE INTO THE CUT TO OPEN IT UP. NEVER FORCE THE SAW WHEN IT IS JAMMED.
- DO NOT FORCE THE SAW INTO THE CUT. IT WILL CUT THROUGH A LOG SURPRISINGLY FAST BY APPLYING ONLY LIGHT PRESSURE. IF YOU FIND YOU HAVE TO BEAR DOWN ON THE SAW TO CUT, YOUR CHAIN IS DULL. HAVE IT SHARPENED BEFORE CONTINUING. A DULL CHAIN IS UNSAFE AND WILL CAUSE EXCESSIVE WEAR TO THE CUTTING ATTACHMENTS. A GOOD WAY TO TELL WHEN THE CHAIN IS DULL IS WHEN LINE SAW DUST COMES OUT INSTEAD OF CHIPS.
- DO NOT OVERREACH OR STAND ON AN UNSTABLE SUPPORT - KEEP GOOD FOOTING AND BALANCE AT ALL TIMES.
- DO NOT ALLOW EITHER PEOPLE OR ANIMALS INTO THE WORK AREA.
- MULTIPLE OPERATORS - KEEP A SAFE DISTANCE BETWEEN TWO OR MORE OPERATORS WHEN WORKING TOGETHER SIMULTANEOUSLY.
- DRESS PROPERLY - WEAR SAFETY SHOES, SNUG-FITTING CLOTHING, GLOVES, AND EYE, EAR AND HEAD PROTECTION DEVICES.

CUTTING INSTRUCTION

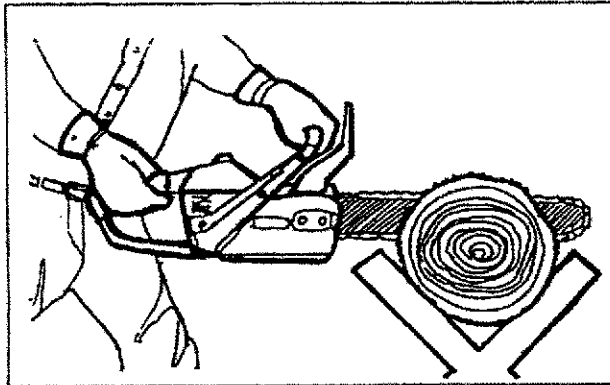
GENERAL



In all circumstances the operation of the chain saw is a one-man job. It is difficult at times to take care for your own safety, so don't assume the responsibility for a helper as well. After you have learned the basic techniques of using the saw, your best aid will be your own good common sense.

The accepted way to hold the saw is to stand to the left of the saw with your left hand on the front handle bar and your right hand on the rear handle so you can operate the throttle trigger with your right index finger.

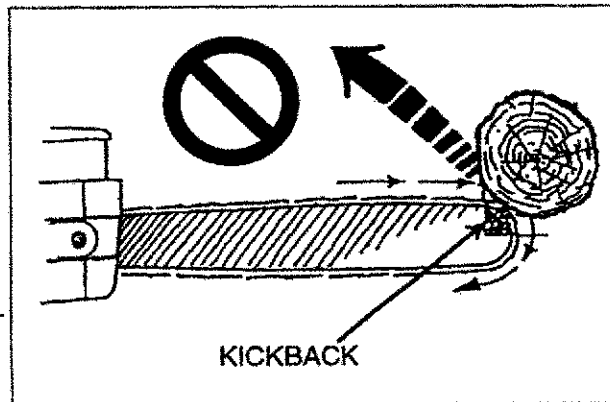
Before attempting to fell a tree, cut some small logs or limbs. Become thoroughly familiar with the controls and the responses of the saw.



Start the engine, see that it is running properly. Squeeze the trigger to open the throttle wide open and start the cut. If the chain is properly sharpened, the cutting should be relatively effortless. It is not necessary to press down hard to make the saw cut. Pushing the saw too hard will slow the engine and cutting will actually be more difficult.

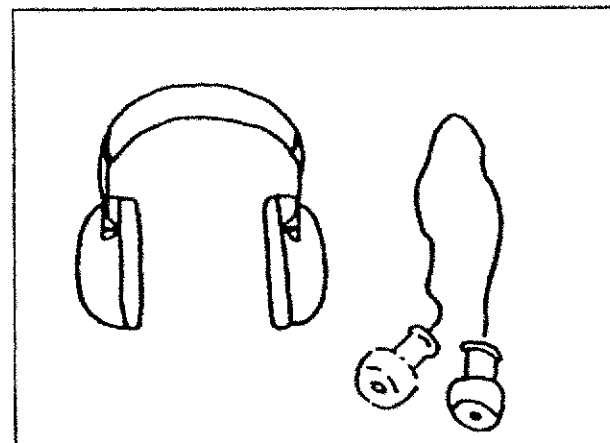
Some material may adversely affect the housing of your Echo chain saw.

(Example palm Tree Acid, fertilizer etc.) To avoid housing deterioration, carefully remove all packed saw dust around clutch and guide bar area and wash with water.



CAUTION

Do not let the tip of the bar touch anything while the engine is running. At cutting speed the chain is moving, at a high rate of speed. Should the tip contact a limb or log while the chain is moving, the tip will be pushed upward with considerable force. This is known as kickback. Avoid it!



CAUTION

Wear suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.

FELLING A TREE

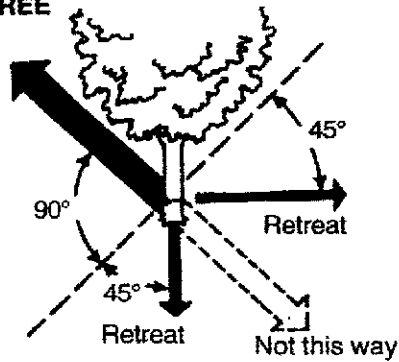


Figure A Side view

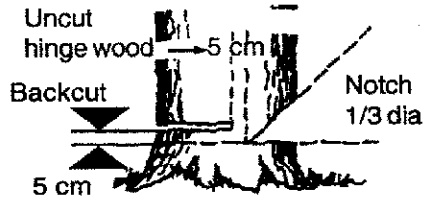


Figure B Top view

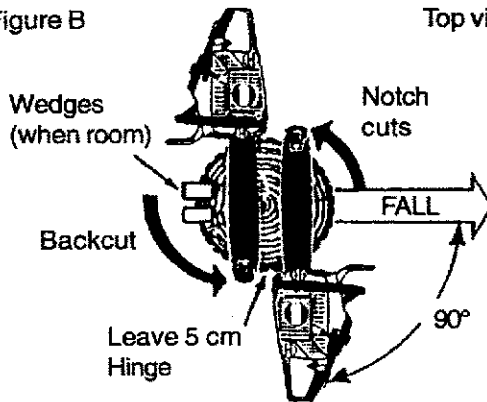
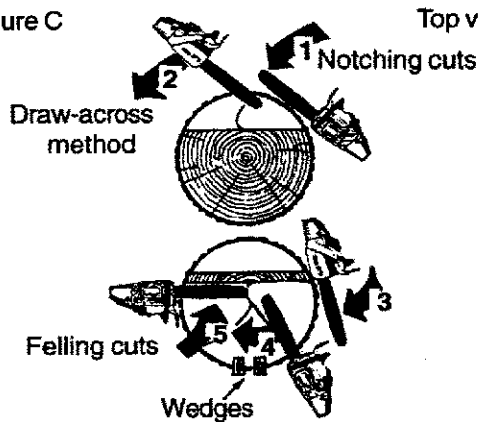


Figure C Top view



LIMBING



A falling tree can seriously damage anything it may hit - a car, a house, a fence, a powerline, or another tree. There are ways to make a tree fall where you want it, so first decide where that is! Before cutting, clear the area around the tree. You will need good footing while working and you should be able to work the saw without hitting any obstacles. Next, select a path of retreat. When the tree begins to fall you should retreat away from the direction of fall at a 45 degree angle to avoid the trunk kicking back over the stump.

Begin the cut on the side to which the tree is to fall.

Cut a notch about 1/3 of the way into the tree as shown.

The position of this notch is important since the tree will try to fall "into" the notch (See figure A). The felling cut is made on the side opposite the notch.

Make the felling cut placing spiked bumper approximately 5 cm above the bottom of the notch and stop cutting at approximately 5 cm to the inner edge of the notch (See figure B) in order to leave the uncut portion of the wood as a hinge. Do not try to cut through to the notch with the felling cut.

The remaining wood between the notch cut and felling cut (about 5 cm) will act as a hinge when the tree falls, guiding it in the desired direction.

When the tree starts to fall, kill the engine, place the saw on the ground and make your retreat quickly.

To fell big trees with a diameter exceeding twice the bar length, start the notching cuts from one side and draw the saw through to the other side of the notch.

Start the back cut on one side of the tree with spiked bumper engaged, pivoting the saw through to form the desired hinge on that side.

Then remove the saw for the second cut. Insert the saw in the first cut, very carefully so as not to cause kickback.

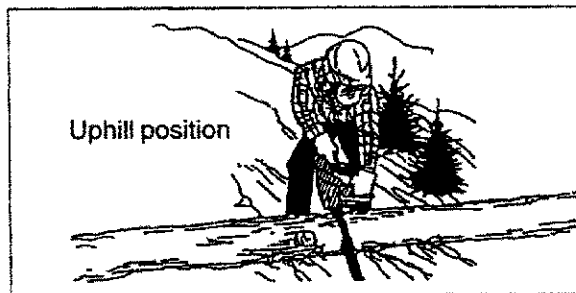
The final cut is made by drawing the saw forward in the cut to reach the hinge (See figure C).

Limbing a fallen tree is much the same as bucking. Never limb on the tree that you are standing. When limbing, caution is the word. Be careful of the tip touching other limbs. Always use both hands.



Don't cut above chest height or with the bar in a vertical position. If the saw should kick back you may not have good enough control to prevent possible injury.

BUCKING



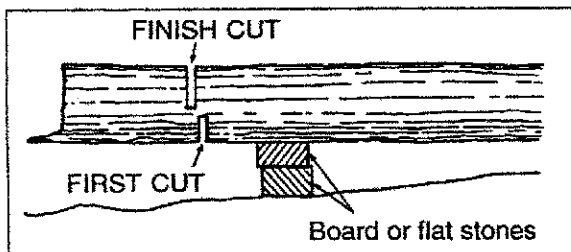
Bucking is the sawing of a log or fallen tree into smaller pieces.

There are a few basic rules which apply to all bucking operations.

Keep both hands on the handles at all times.

Support logs if possible.

When cutting on a slope or hillside, always stand uphill.

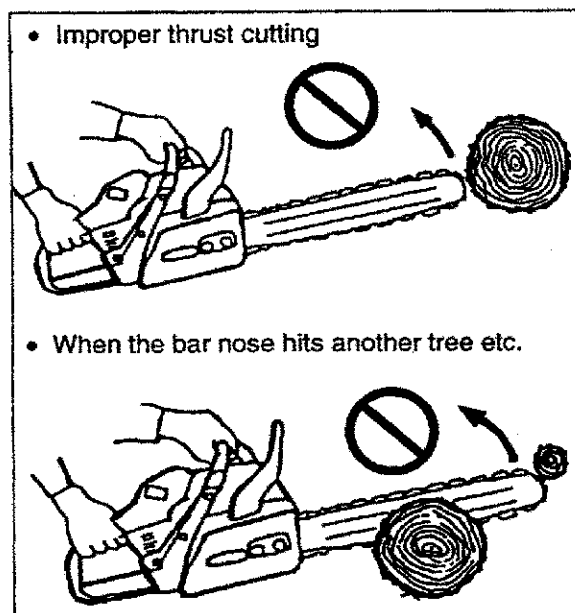


Keep in mind that the wood is heavy and that it will bend and pinch the saw if improperly supported.

The trunk will weaken at the point where you make the cut unless the tree is lying on perfectly flat ground or supported as shown.

If you make the cut with the tree on the ground, don't let the saw's chain dig into the earth. It is harmful for the saw, and you stand a good chance of being struck by flying debris. To cut the trunk, use the bucking and two-cut sequence shown. The first cut should be no deeper than one-third the trunk diameter.

KICKBACK



WARNING: KICKBACK IS DANGEROUS

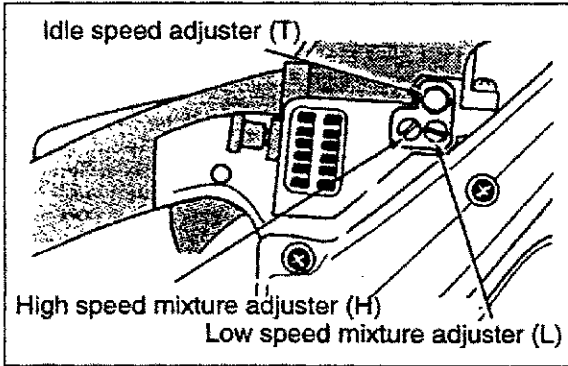
Kickback is generated when the rotation of the chain is arrested for some reason. The most dangerous effect of this action occurs when the nose of the bar contacts another object, the chain is momentarily stopped and all the energy of engine throws the bar upwards and backwards towards the operator.

The chain saw industry and government agencies have attempted to prescribe various safety devices, but the best protection is to avoid kickback.

Comply with the Safety Precautions as listed on pages 1 of this manual.

MAINTENANCE AND CARE

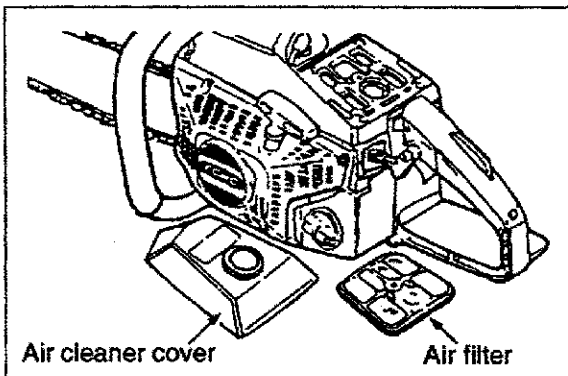
CARBURETOR



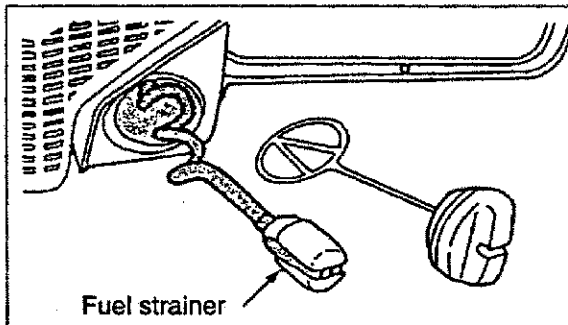
CAUTION

Always make sure that the high speed adjuster (H) has been back screwed more than 1 turn.

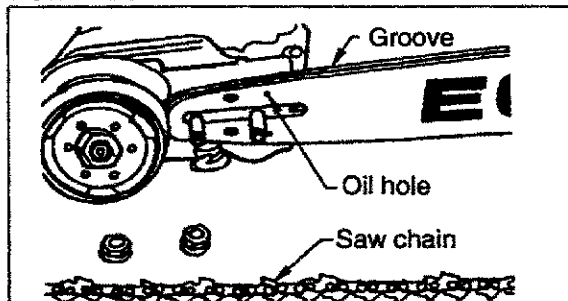
AIR FILTER



FUEL STRAINER



GUIDE BAR



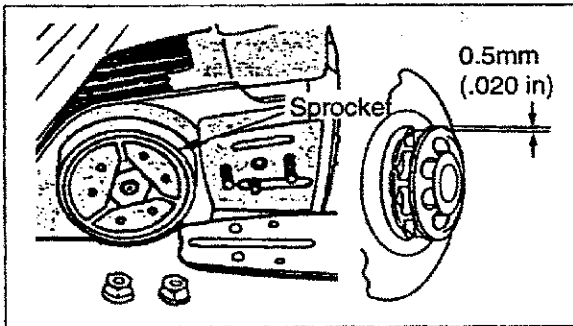
- High speed mixture adjuster (H) allows adjustment of the maximum engine speed.
- Low speed mixture adjuster (L) allows adjustment of the carburetion at idle speed as well as its acceleration from idle to full throttle. For the above two needles, screwing in turns the mixture to the "Lean" side, unscrewing them turns the mixture to the "Rich" side.
- Idle speed adjuster (T) allows adjustment of the engine speed at idling.
- Do not adjust the carburetor unless necessary.
- To adjust the carburetor, proceed as follows
 - Low speed mixture adjuster (L): 1 ~ 1-1/2 turns open
 - High speed mixture adjuster (H): 1 ~ 1-1/2 turns open
 - Screw in the needles until lightly seated and then turn counterclockwise as indicated above.
- Turn idle speed adjuster (T) clockwise until chain begins to rotate, then back screw 1/2 turn.

- Check before every use.
- Loosen three screws and remove air cleaner cover and filter.
- Brush off dust lightly, or wash it in gasoline if necessary. Dry it completely before installation.

- Check periodically.
 - Do not allow dust to enter fuel tank.
 - Clogged strainer will cause difficulty in starting engine or abnormalities in engine performance.
 - Pick up the fuel strainer through fuel inlet port with a piece of steel wire or the like.
 - When the strainer is dirty, wash it in gasoline.
 - When the inside of the fuel tank is dirty, it can be cleaned by rinsing the tank out with gasoline.

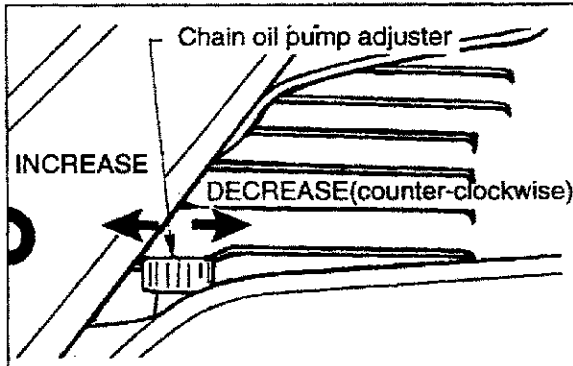
- Clean before using.
 - Clean the groove of the guide bar with, for example, a small screw driver.
 - Clean oil holes with a wire.
- Reverse guide bar periodically.
- Clean sprocket, clutch and bar mount area before installing of bar.

SPROCKET



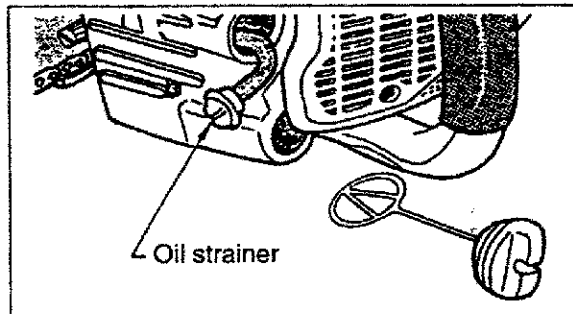
- A damaged sprocket will cause premature damage or wear of saw chain.
 - When the sprocket has worn out 0.5 mm (.020 in.) or more, replace it.
- Check sprocket when you install new saw chain. Replace it if worn.

AUTOMATIC OILER



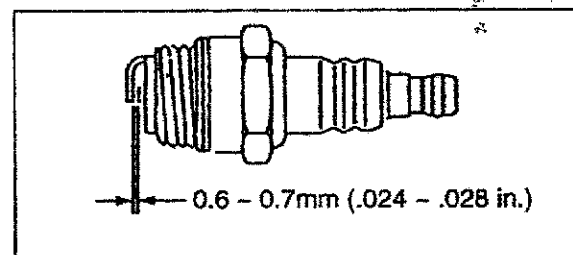
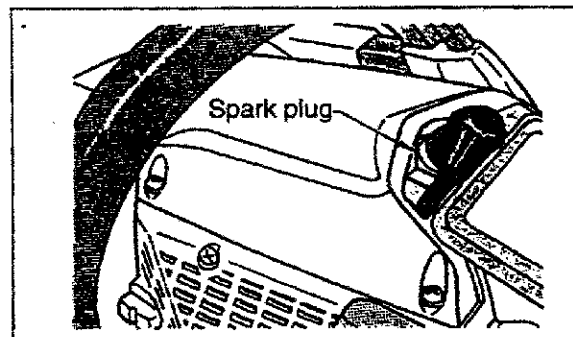
- The discharge volume of the automatic oiler is adjusted 8 cc/min approx. at 7,000 rpm, prior to shipment from factory.
 - To increase the delivery volume, turn the adjusting screw counterclockwise. When the screw touches stopper and stops, this position indicates maximum discharge volume. (15 cc/min at 7,000 rpm).
 - Do not turn the adjusting screw beyond the maximum or minimum, limit of volume adjustment.

OIL STRAINER



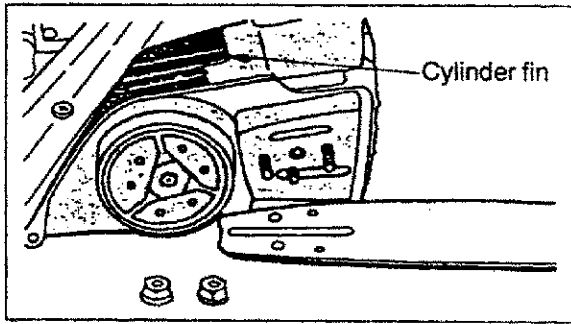
- Check periodically.
 - Do not allow dust to enter into oil tank.
 - Clogged oil strainer will affect the normal lubricating system.
 - Pick it up through oil filling hole with a piece of steel wire or the like.
 - If the strainer is dirty, wash it in gasoline.
 - When the inside of the tank gets dirty, it can be cleaned by rinsing the tank out with gasoline.

SPARK PLUG



- Check periodically.
 - The standard spark gap is 0.6 - 0.7 mm (.024 - .028 in.)
 - Correct the spark gap if it is wider or narrower than the standard gap.
- Fastening torque = 145 - 155 kgf cm (125 - 135 in-lb)

CYLINDER FINS



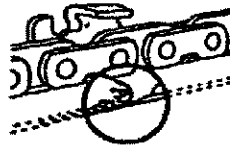
- Check periodically.
- Clogged fins result in poor engine cooling.
- Remove dirt and dust from between fins to let cooling air pass easily.

SETTING THE CHAIN

WARNING  **DANGER**
FOR YOUR OWN SAFETY: ALWAYS STOP THE ENGINE AND DISCONNECT THE SPARK PLUG LEAD BEFORE PERFORMING ANY MAINTENANCE OR FILLING OPERATION OF SAW CHAIN.

Important points for proper maintenance of saw chain.

- Keep the cutters sharp at all times.
- Keep the left and the right cutters properly aligned.
 - Please note that blunt or irregular cutters will result in poor cutting performance, increased vibration of chains and premature breakage of the saw chain.



- Drive link serves to remove sawdust from the groove of the guide bar. Therefore, keep the lower edge of the drive link, indicated by the arrow, sharp.



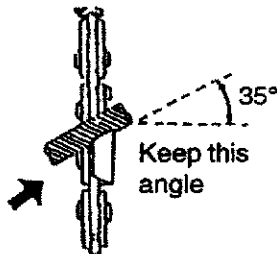
- When setting of the chain is finished, soak it in oil and wash away filings completely before using.
- When chain has been filed on the bar, supply sufficient oil to it, rotate the chain slowly to wash away the filings before using again.

- If the chain saw is operated with filings clogged in the groove, the saw chain and guide bar will be damaged prematurely.
- If the saw chain becomes soiled with resin, for instance, clean it with kerosene and soak it in oil.

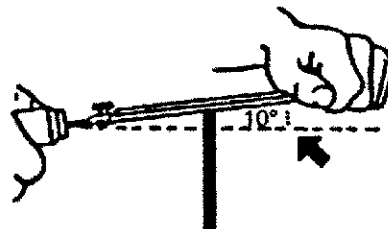
For setting saw chains, round file and flat file are used.

- To keep correct position and correct angle, use the file holder (Sure Sharp).

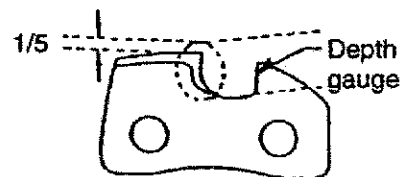
- Round file and flat file are optional (3/16" (4.8 mm) Round file).
- Please inquire about the file holder, if desired.



PUSH FILE AS SHOWN

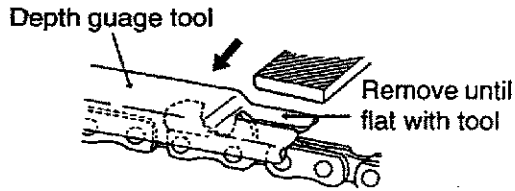


LOWER FILE HANDLE 10°

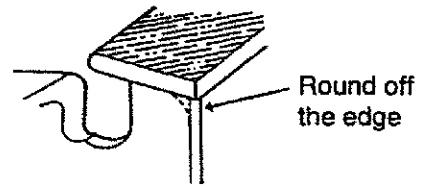


ONE FIFTH OF FILE DIAMETER REMAINS ABOVE CUTTER EDGE

- Place the depth gauge tool firmly on guide bar so that depth gauge protrudes. Then file top of depth gauge with flat file until flat with top of the depth gauge tool.

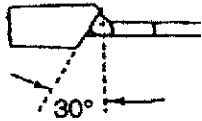


- Be sure to round off the front edge of the depth gauge.

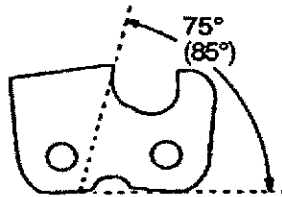


- Properly filed cutters are shown below.

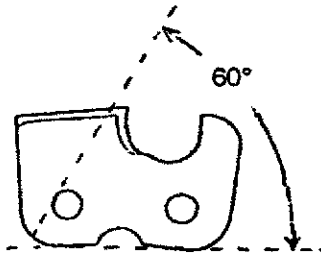
(Top plate angle)



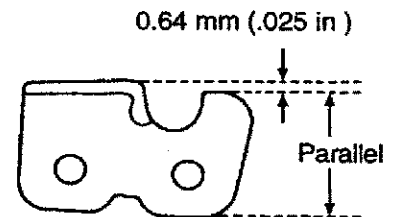
(Side plate angle)



(Top plate angle)



(Depth gauge)



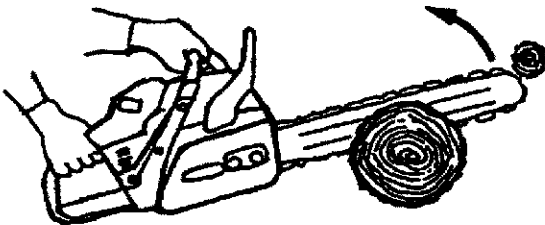
NOTE

These angles are referred to as Oregon 21BP or Carlton K2L. To sharpen other follow chain manufacture's instruction.

CORRECT USE OF CHAIN BRAKE

KICK-BACK Motion

- When the bar nose hits another tree etc.

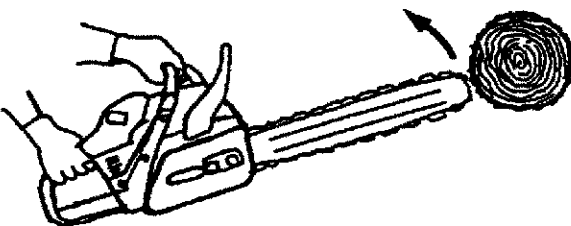


Most hazardous is the KICK-BACK motion of the guide bar such that, in an instant the tip of the bar touches a wood or the like, the guide bar is kicked back.

A chain brake reduces the possibility of injury due to kick back.

If your chain saw is equipped with chain brake, always check that chain brake works properly-several times a day.

- Improper thrust cutting



CHECKING THE BRAKE

- The brake must be checked several times a day.
- Hold the saw firmly by the handles and accelerate the engine to a fast idle.
- Slowly operate the front hand guard while holding the saw firmly on the ground. When the front hand guard trips, the chain should stop. Immediately release the throttle trigger.

CAUTION

Do not allow the saw to tip forward in order to avoid damage to the chain.

If the chain does not stop immediately return the saw to your authorized Echo dealer for repair.

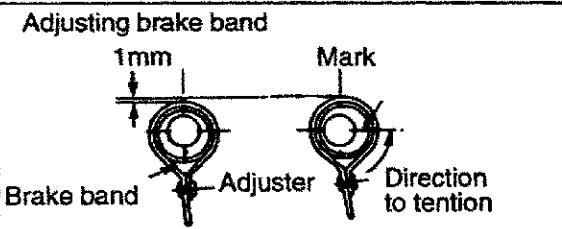
CAUTION

- When locking throttle trigger by throttle lock during starting, keep the brake in brake position.
- After starting the engine, squeeze the throttle trigger slightly to release locking and pull front hand guard towards the operator (chain brake RELEASED position) immediately.
- Do not increase engine speed while the chain brake is engaged.
- Use the chain brake in an emergency. Do not use it unless absolutely necessary.

ADJUSTING THE BRAKE BAND

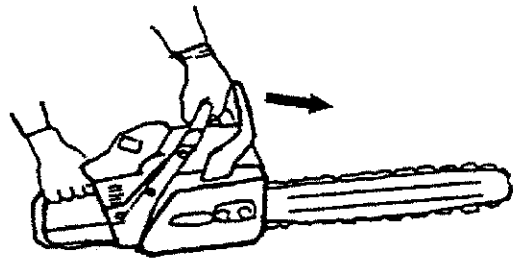
When the brake band is worn or elongated, adjust the location of adjuster cam as follows. Remove sprocket guard.

- Remove the cover and side plate.
- Turn adjuster position to set its peak to the correct tensioning location.
- Ensure that the clutch drum can be turned freely by hand when the brake handle is in the cutting position (released position).



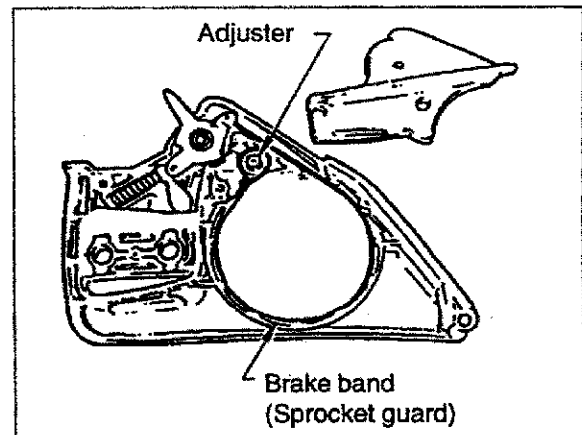
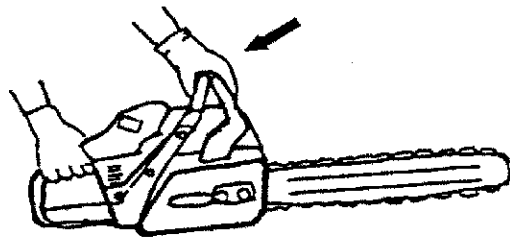
• FUNCTION

When front hand guard is pushed forward, chain brake works to stop the saw chain.



• RELEASE

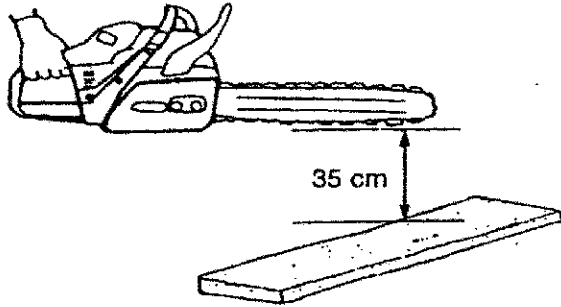
When reset front hand guard is fully pulled towards the operation, chain brake is released.



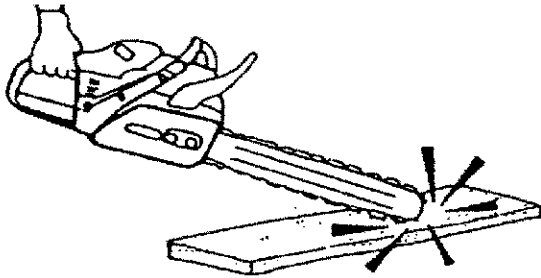
NOTE

- For practice, while cutting a small tree, push the lever toward to engage the brake.
- At all times, confirm whether the brake works properly before each work.
- If clogged with wood chips, function of the brake deteriorates a little. Always keep the device clean.
- Do not increase engine revolution while the chain brake is engaged.
- Chain brake is used only in emergencies. Do not use it unless absolutely necessary.
- When in use of throttle lock at starting, keep the chain brake position. And after starting the engine, release the brake immediately.
- Never test the brake in an area, where petrol fumes are present.

END OF THE GUIDE BAR may be placed at the height of about 35 cm.



Rear handle should be gripped lightly with the right hand.



AUTOMATIC CHAIN BRAKE

The automatic chain brake stops the operation of the saw chain in such a manner that kick-back action produced at the end of the guide bar automatically actuates the chain brake.

To make sure that the automatic chain brake operates properly, proceed as follows:

- 1) Stop the engine of the chain saw.
- 2) Operate the front and rear handles with hands (grip them lightly), so that the guide bar may be placed at the height of about 35 cm as shown in Fig.
- 3) Softly detach the left hand from the front handle, and touch the end of the guide bar against the wood or the like placed below so that the machine receives an impact. (*at this time the rear handle should be gripped lightly with right

PRECAUTION

When checking the operation of the automatic chain brake, use a soft surface substance like wood to provide the impact so the saw chain is not damaged.

TROUBLE SHOOTING

FAILURES such as difficulty in starting engine, irregular running and abnormality in cutting performances can normally be prevented completely if a little attention is paid in advance. Such failures can be readily disposed of even by a beginner.

In the following we wish to give essential points in repairing failures of the chain saw through a trouble shooting table.

When the engine does not function properly, check the following 3 points systematically in particular:

- Whether compression of the engine is adequate or not.
- Whether the fuel system is in good condition and the fuel flow freely.

- Whether the electrical system is in good condition and the spark plug sparks correctly, or not.

When there is serious trouble with your chain saw, do not try to repair at random yourself, but have your chain saw distributor or dealer do it for you!

They are skilled at repairing chain saws and will provide you with full satisfaction.

The details of **TROUBLE SHOOTING** refer to Table 1 and 2.

- Refer to the chart to locate the problem and repair as necessary.

CAUTION

Always stop the engine and disconnect the spark plug lead before performing any assembly or repair (except for carburetor adjustment) operation.

Table 1

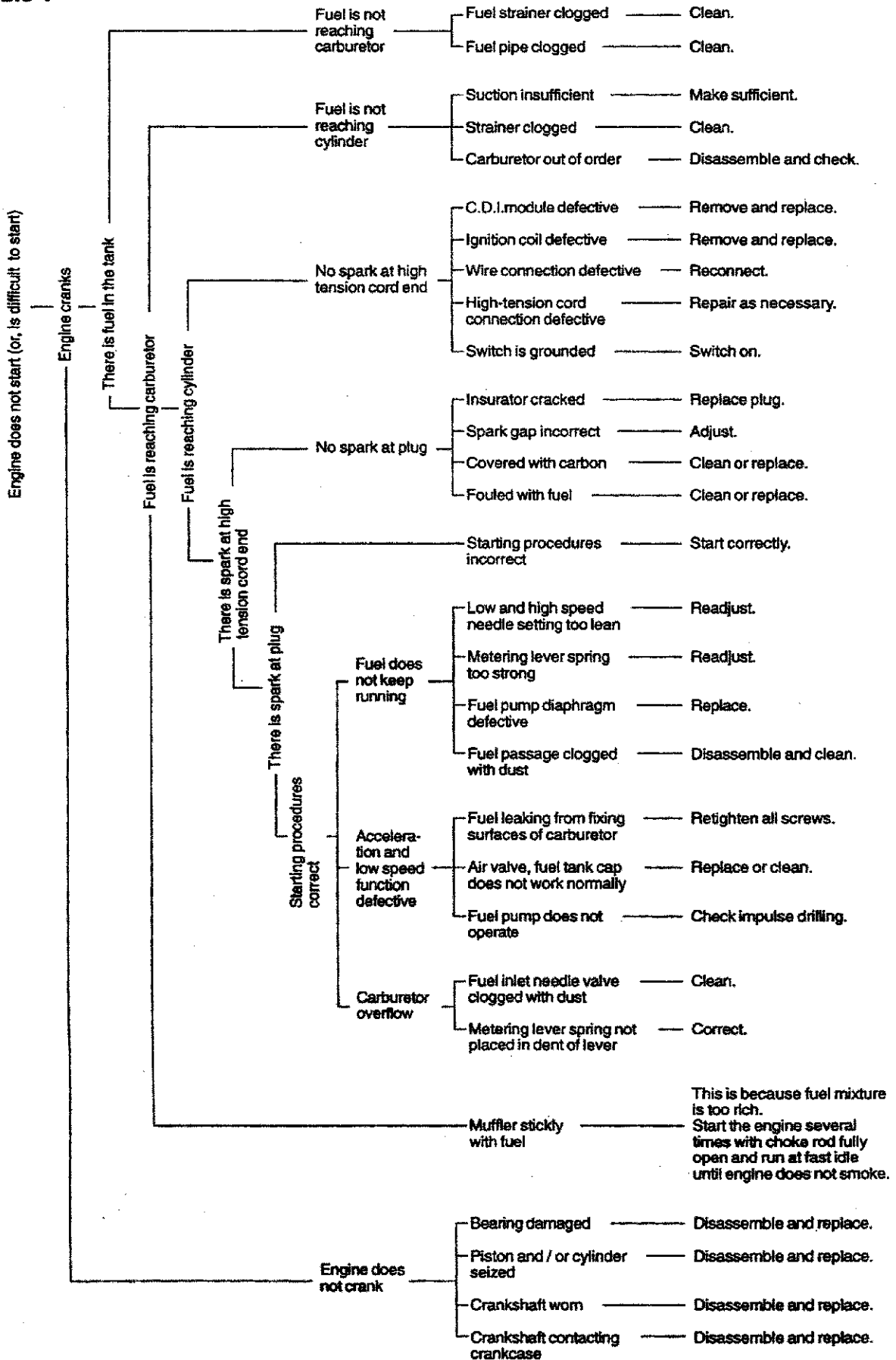
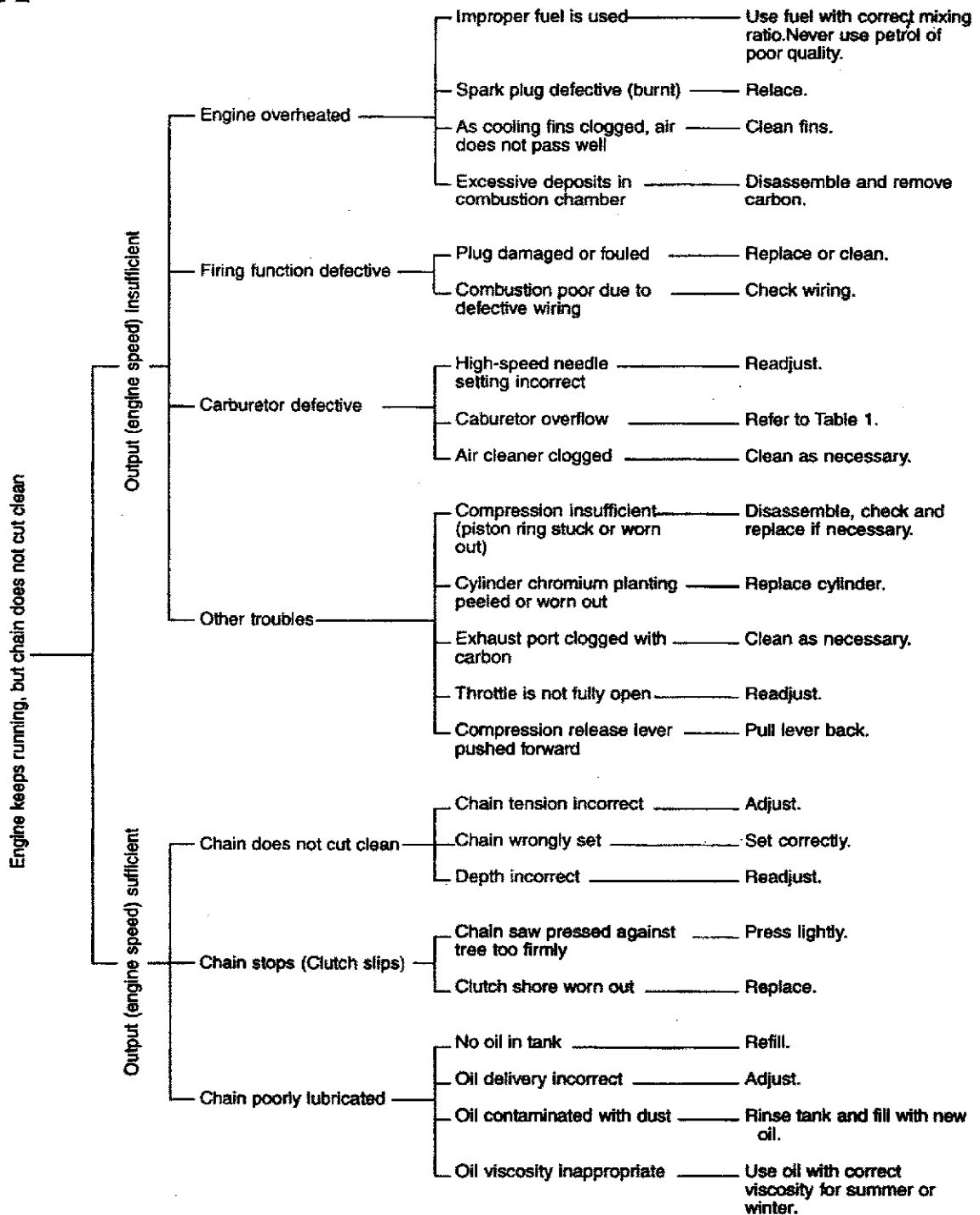


Table 2















STORAGE AFTER USE

- Inspect and adjust every part of the chain saw.
 - Completely clean every part, and repair, if necessary.
 - Apply thin coating of oil on metal parts to prevent rust.
 - Remove chain and guide bar, apply them sufficient oil coating and wrap them up in pastic sheet.
- Drain fuel tank, pull starter slowly a few times to drain fuel from carburettor.
- Always store fuel in approved container.
- Pour a little amount of clean motor oil into spark plug hole, pull starter and then manually crank the engine until the TOP DEAD CENTER.
- Store in a dry area, free from dust.
- **Cover the chain and the guide bar with the guide bar cover before putting them in storage.**

NOTE

For future reference, you should keep this operator's manual.

SYMBOLS FOR OPERATOR CONTROLS AND OTHER DISPLAYS

Symbol form / shape	Symbol description / application	Symbol form / shape	Symbol description / application
	'Warning' See instruction handbook		Fuel and oil mixture
	Wear eyes, ears and head protection		Chain oil fill
	Emergency stop		Carburetor adjustment - Low speed mixture
	Warning! Kickback may occur!		Carburetor adjustment - High speed mixture
	Chain brake operation!		Carburetor adjustment - Idle speed
	Chain oiler adjustment		Safety alert



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Printed in Japan
9908An 794 ES