

**OPERATOR'S MANUAL**

**ECHO  
CHAIN SAW  
CS-302**

5

898 571-0393 6

**CAUTION**

Read Rules for Safe Operation  
and Instructions Carefully

# RULES FOR SAFE OPERATION

1. Never operate a chain saw when you are fatigued.
2. Use safety footwear, snug-fitting clothing, and eye, hearing and head protection devices.
3. Always use caution when handling fuel. Move the chain saw at least 10 feet (3 m) from the fueling point before starting the engine.
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. Never 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 control 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. Don't operate the chain saw in such a condition as muffler or muffler screen is removed or the damaged muffler system kept un-repaired. For ECHO chain saws, Fire preventing mufflers (fire arrester screen) are available as optional parts, beside standard mufflers, for purpose of preventing the unforeseen risk of fire. Please do not fail to apply this fire arrester screen when working, surrounded by the inflammable objects like chips, dry grass, etc. during the summer or dry seasons.
16. Operate the chain saw only in well ventilated areas.
17. Do not operate a chain saw in a tree unless specially trained to do so.
18. All chain saw service, other than the items listed in the Operators Manual should be performed by competent chain saw service personnel. (e.g., 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.)
19. 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 over reach.

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 shoulder height.

Follow manufacturer's sharpening and maintenance instructions for the saw chain.

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**(NOTE) FRONT HANDLE INSTALLATION (Front hand guard is optional supply)**

○ As for this machine, FRONT HANDLE and HAND GUARD are delivered with separated. Install them before installing the guide bar and saw chain as follows.

- Remove guide bar cover (H). (Remove both nuts using box wrench supplied in the tool kit.)
- Insert bottom end of front handle (A) in position B.
- Rotate front handle to fit into the handle bracket at C.
- Set socket head bolts (D) and (F) with washers (L and K) finger tight in position C and B before tightening securely.
- Tighten socket head bolts (D) and (F) using allen wrenches as provided.
- Set guard holder (T) to front handle properly.

**(Note)**

Bottom of guard holder should be resting on the handle bracket C.

Ensure that the slot of guard holder is exactly ninety degrees (90°) to the handle, thereby ensuring that hand guard will be parallel to the handle.

For easy adjustment of guard holder, insert the head of a screwdriver etc. into the slot.

By widening the slot of guard holder position may be easily adjusted.

- Set conical spring washers (P), hand guard (Q) and hand guard spacer (R) to guard holder as illustrated and tighten socket head bolt (S) securely.

**(Note)**

Hand guard should be parallel with front handle.

Ensure to insert projection of spacer into grooves of guard holder.

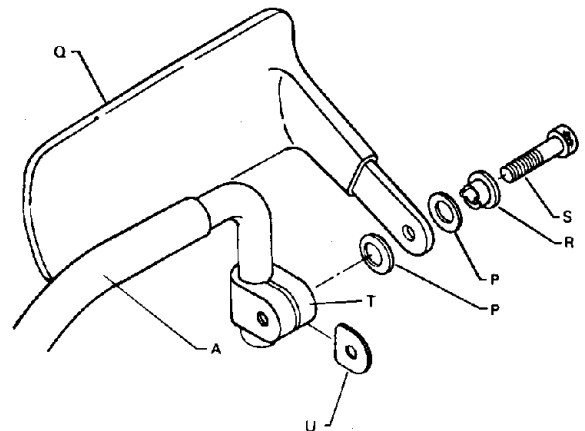
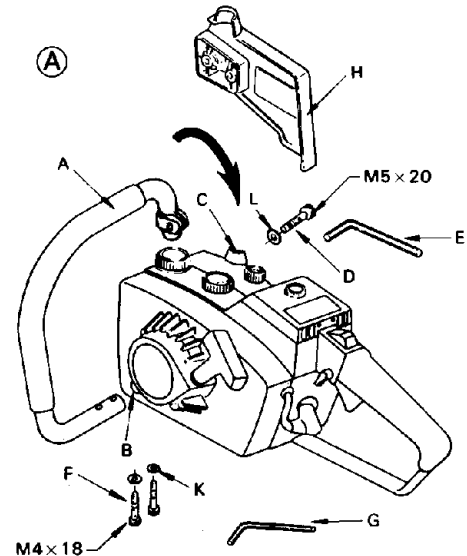
- |                       |                              |
|-----------------------|------------------------------|
| A: Front handle       | P: Conical spring washer     |
| D: H.S.H.bolt (M5-20) | Q: Front hand guard          |
| F: H.S.H.bolt (M4-18) | R: Hand guard spacer         |
| H: Guide bar cover    | S: H.S.H. bolt (M5-30w/sw.w) |
| K: Washer 4           | T: Guard holder              |
| L: Washer 5           | U: Spacer                    |

E: Allen wrench (For 5mm bolt)

G: Allen wrench (For 4mm bolt)

Correct tightening torque 5mm bolt : 26in. lb  
(29kg-cm)  
4mm bolt : 16in-lb  
(20kg-cm)

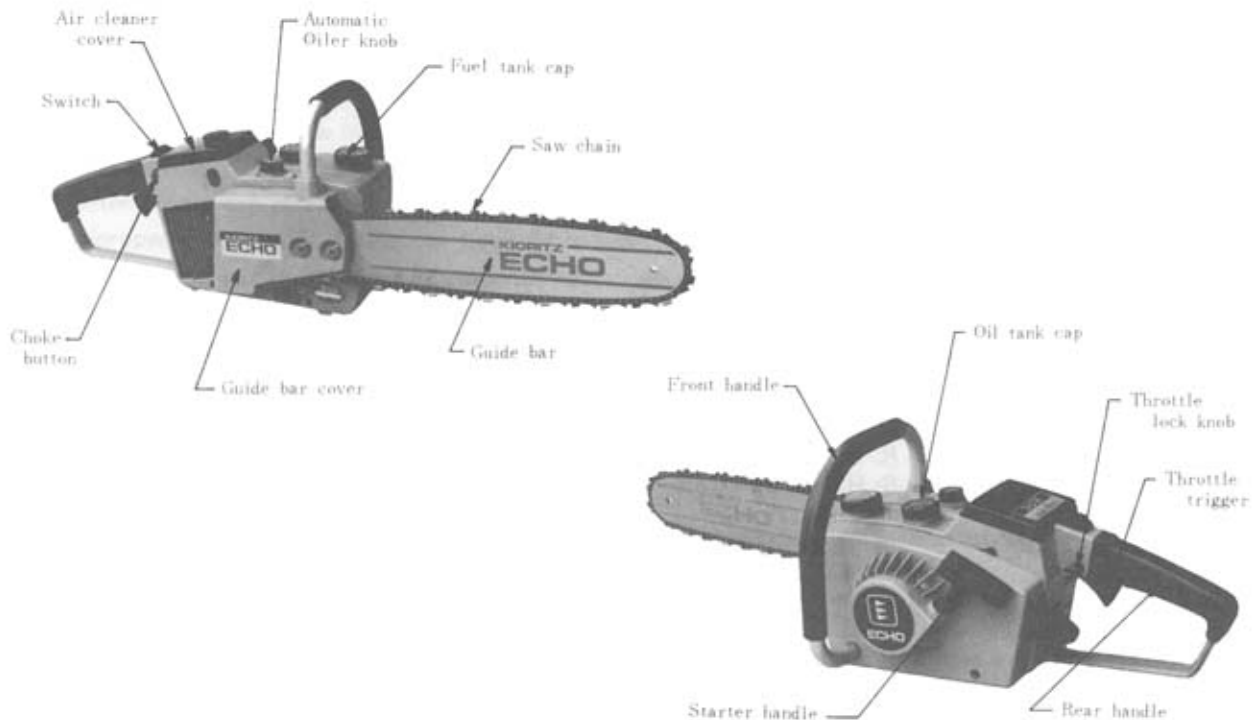
\* H.S.H.bolt : Hexagon Socket Head bolt.



## SPECIFICATIONS

Engine type:	Air-cooled, 2-cycle, single-cylinder engine
Piston displacement:	30.1 cc (37.0 mm bore x 28.0 mm stroke);
Direction of rotation:	Counterclockwise from magneto side
Magneto:	Flywheel magneto type
Ignition plug:	Champion CJ-8 or NGK BM-6A
Carburetor:	Walbro diaphragm type WA-5B
Fuel:	Gasoline-oil (20 : 1 ratio) 2-cycle engine oil
Fuel tank capacity:	0.33ℓ
Cooling system:	Forced-air
Starting system:	Recoil starter
Lubrication system:	Automatic oiler
Chain oil:	Motor oil SAE 30 (Summer), SAE 10 (Winter),
Oil tank capacity:	0.20ℓ
Chain:	Pitch 1/4 in. gauge 0.050 in.
Guide bar:	Length 30 cm (12 in) gauge 0.050 in
Weight:	4.5 kg (dry, without chain, guide bar)

## DESIGNATIONS OF PARTS

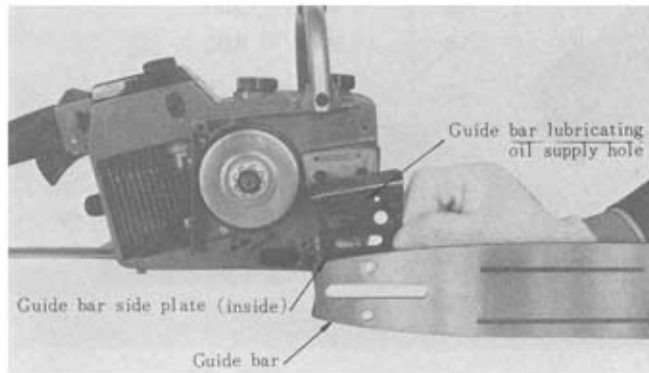


## MOUNTING GUIDE BAR AND CHAIN

- o Mount the guide bar side plate (inside) and then the guide bar.

NOTE: There are two guide bar side plates: inside and outside.

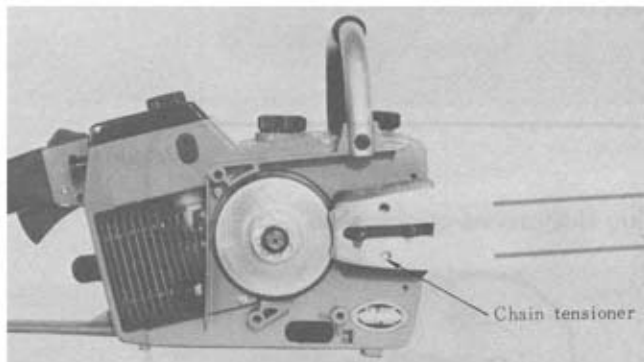
The one having a guide bar lubricating oil supply hole is the inside guide bar side plate.



- o Mount the guide bar. Place the chain tensioner in the hole of the guide bar.
- o Mount the chain on the sprocket first, then proceed to the other end on the guide bar placing drive links into the guide bar groove.

NOTE:

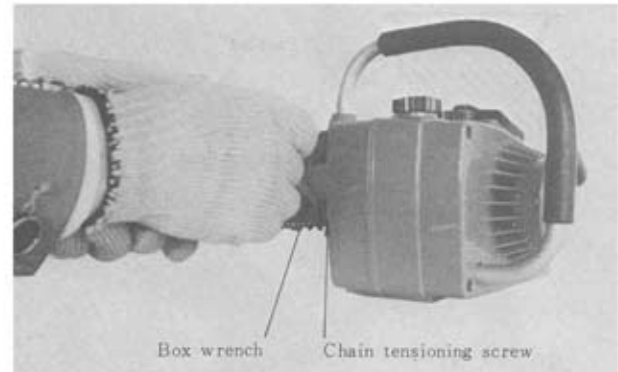
- o Ensure the cutting edges of the chain teeth point toward the bar nose or rounded end of the bar.



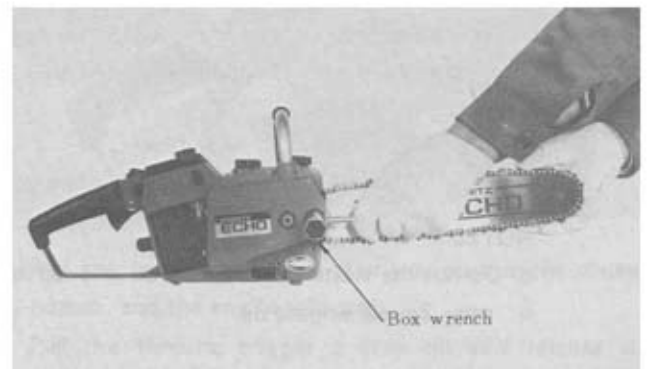
- o Mount the guide bar side plate and guide bar cover.
- o Fasten them with nuts lightly.

- o Now tension the chain:

Lift the bar nose and start tensioning the chain by turning the chain adjusting screw clockwise.



- o Keep tensioning to get a proper chain tension. It is obtained when the chain comes into contact with the bottom rails of the guide bar.
- o After the chain is properly tensioned, tighten nut with the box wrench firmly, lifting the nose of the guide bar slightly upwards.



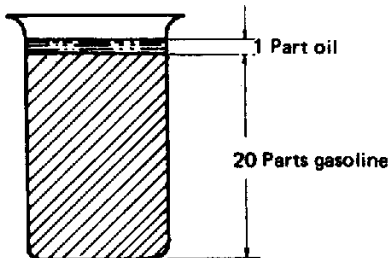
NOTES:

- o Chain tensioning is one of the important cares in the chainsaw operation.
- o Too tightly tensioned chain will cause premature wear of the chain and the guide bar.
- o Too loosely tensioned chain may run off the guide bar.
- o Under proper tension, the chain provides no noticeable clearance between itself and the bottom rails of the guide bar, and should be smoothly slid over the guide bar by hand.  
When you do that, protect your hands by wearing, for example, gloves against possible injury.

# FUEL AND LUBRICANT

## FUEL MIXING INSTRUCTIONS

- o This chainsaw has a 2cycle engine, it uses a gasoline-oil fuel mixture. Mixture ratio is 20 : 1 as shown in the figure and the table.



Fuel mix chart (Gallon vs metric-liter)

US		IMPERIAL		METRIC	
GAS	OIL	GAS	OIL	GAS	OIL
GAL.	FE.OZ.	GAL.	FE.OZ.	LITERS	C.C.
1	6.4	1	8	4	200
2	12.8	2	16	8	400
5	32.0	5	40	20	(1 Liter) 1,000

## CAUTION:

- o Make sure the mixing ratio is 20 : 1. Use at other ratios will cause engine trouble.
- o Use only 2cycle engine oils.
- o Observe gas-oil mixture ratio shown in the above chart.
- o Disregard instruction on oil containers.
- o Do not mix directly in engine fuel tank.
- o Do not use multi-viscosity oils.

## CHAIN LUBRICANT

Proper lubrication to the chain while in operation will reduce to the minimum the friction between the chain and the guide bar, and will assure a longer service life. Use motor oil for this purpose. As follows:

- SAE #30 ..... in summer
- SAE #10 ..... in winter, or when you cut resinous trees

## NOTES:

- o Do not use waste or reclaimed oil in order to avoid various oiler problems.
- o only 2cycle engine oil.

## CAP INDICATION

Fuel/oil tanks are indicated by the following illustrations on the caps.



FUEL TANK CAP

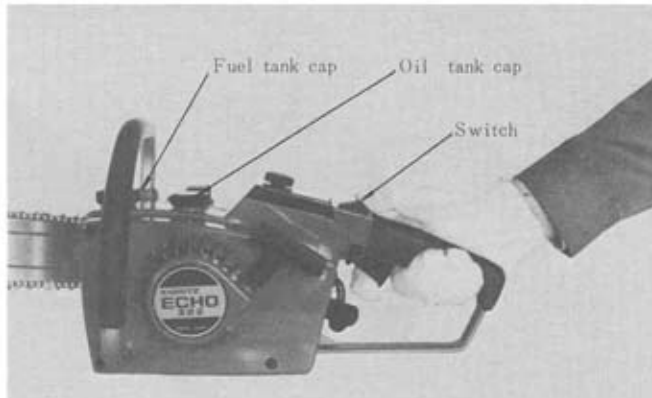


OIL TANK CAP

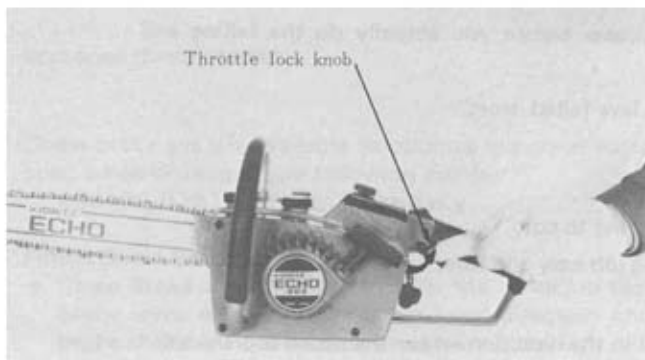
## STARTING THE ENGINE

### WHEN THE ENGINE IS COOL

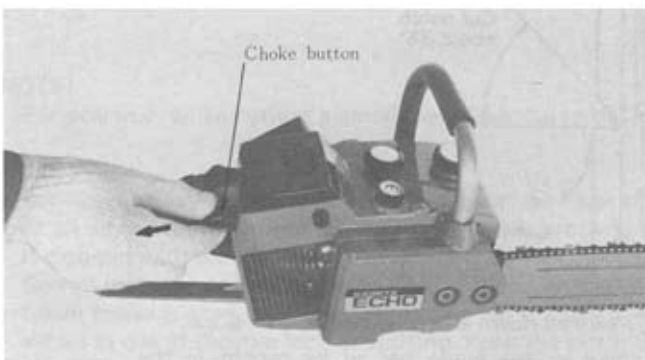
- o Fill the fuel tank with the mixed fuel. Fill chain oil tank with lubricating oil.
- o Push the switch forward.



- o Push up the throttle lock knob and lock the throttle trigger.



- o Pull out the choke button.



- o Pull the recoil starter rope. Secure the chainsaw as shown when you pull the recoil starter rope.



- o When you pull the recoil starter rope a few times, you may hear the first firing sound. Then push in the choke button.



- o Pull the recoil starter rope after you push in the choke button, and the engine will start.
- o Pull the throttle trigger a little bit and release it. The throttle lock then disengages and the engine enters idling.

### WHEN THE ENGINE IS WARM

- o When the engine is warm, you may start it by pulling the recoil starter rope with the switch positioned at ON, even without using the choke button.
- o If the engine does not start in a few tries, follow the same procedures as to start the cool engine.

### NOTES:

- o When you start the engine with the choke pulled out, be sure to push it back when you hear the first firing sound.

## RUNNING AND STOPPING THE ENGINE

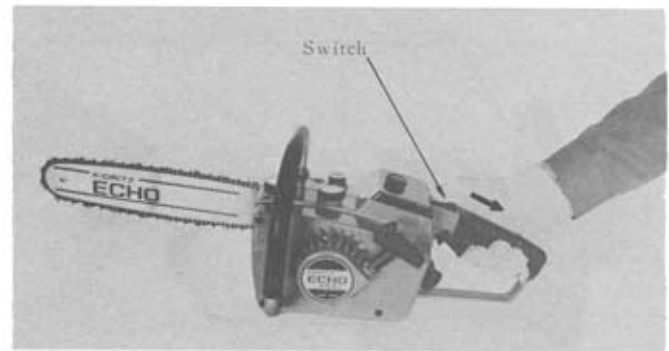
### RUNNING

- o When the engine starts, keep it idling for 5–6 minutes.
- o After idling pull the throttle gradually and increase the engine speed.
- o The chain will start running when the engine reaches about 3,000 rpm.



### STOPPING

- o Push back the switch as indicated on it by arrow to stop the engine.

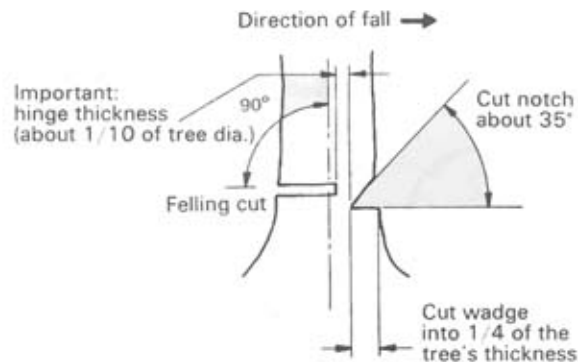


## FELLING AND LUMBERING

- o It is important to familiarize yourself with the chainsaw before you actually do the felling and lumbering.
- o For this, we suggest you use the chainsaw to cut a few felled trees.

### FELLING

- o Determine the direction of the fall of the tree you are going to cut.
- o Remove all obstacles around the tree to make the felling job easy and safe.
- o Find a shelter in advance for emergency.
- o Make a notch in the tree as shown. The tree should fall in the direction where the notch is provided.
- o Cut the tree from the opposite side to the notch. The cut should be at the level slightly higher than the notch.



### LUMBERING

- o Secure the felled tree to lumber. If not secured, the log may roll down when you work on a slope.
- o Use a sleeper under the felled tree and avoid the chain or the guide bar to be caught in the cut.



## CORRECT USE OF CHAIN BRAKE (OPTIONAL SUPPLY AT EXTRA COST)

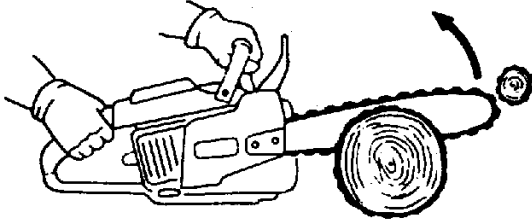
Most hazardous is the KICK-BACK motion of the guide bar such that, in an instant the tip of the bar touches a wood or the like, guide bar is kicked back.

Chain brake reduces the possibility of injury due to kick back.

If your chain saw equipped with chain brake, always check that chain brake works properly before each day use.

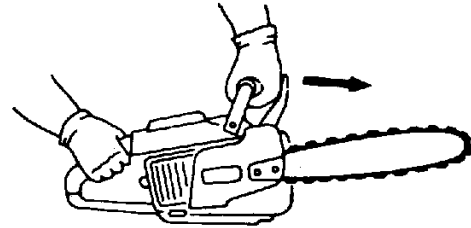
### CHAIN BRAKE

Kickback Motion:

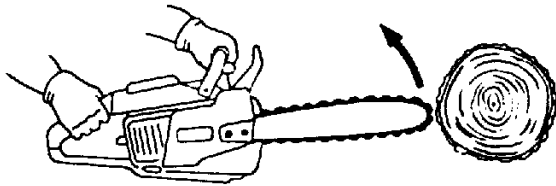


- When the bar nose hits another tree etc.

Function:

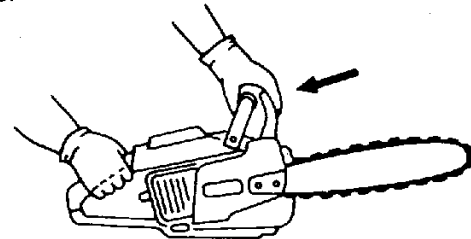


- When the lever is pushed forward, chain brake instantly works to stop the chain.



- Improper thrust cutting.

Release:



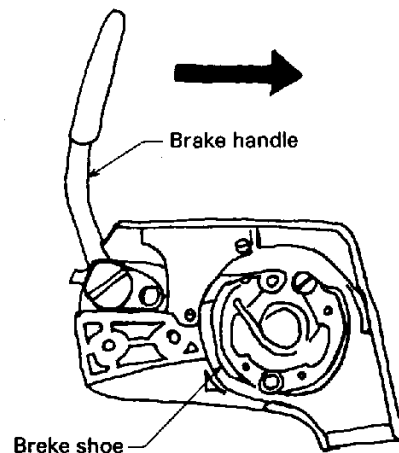
- When the lever is fully pulled toward the operator, brake is released.

- Chain brake ass'y is available as optional supply at extra cost, when orderig it give following number.

433102-0393 1 ; Chain brake ass'y  
(w/ Guide bar cover)

- Fitting Chain Brake :

- Chain Brake should be fitted under the condition that brake lever is fully pulled in arrowed direction and brake shoes are contracted, as shown in the fig.
- According to the order of fitting bar and chains firstly fit the guide bar aide plate and adjust tension of saw chains.



#### [NOTE]

- For practice, while cutting a small tree, push the lever lever

#### [NOTE]

- For practice, while cutting a small tree, push the lever forward to engage the brake.
- At all times, confirm whether the brake works properly before eeah 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 in brake position.  
And after staarting the engine,release the brake immidiately.
- Never test the brake in an area where gasoline fumes are present.

# CORRECT DIRECTIONING AND POSITIONING OF FILE

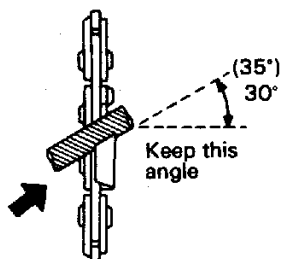
## SETTING OF SAW CHAIN

For setting saw chains, round file (4 mm  $\phi$ : 5/32") and flat file are used.

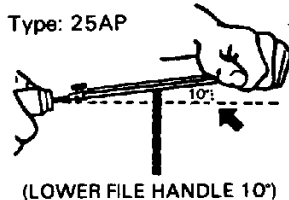
- To keep correct position and correct angle, use the file holder (Sure Sharp).
  - Round file (P-No. 897510-03930) and flat file (P-No. 897511-00230) are optional.
  - Please inquire about the file holder, if desired.
- File the cutters as below.

These instructions are for the Oregon 25AP saw chain.

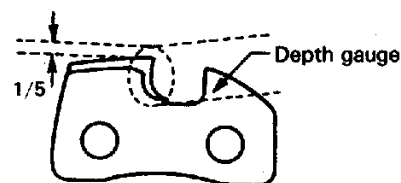
To sharpen other type chain, follow chain manufacturer's instruction.



**PUSH FILE AS SHOWN**  
(As for 24AP chain, when filed at file angle 35°, and lowered file holder 10°, top plate angle becomes 30°.)

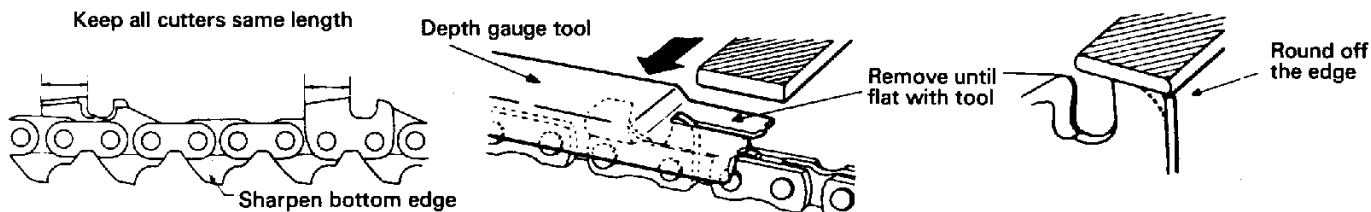


**HOLD FILE HOLDER LEVEL**

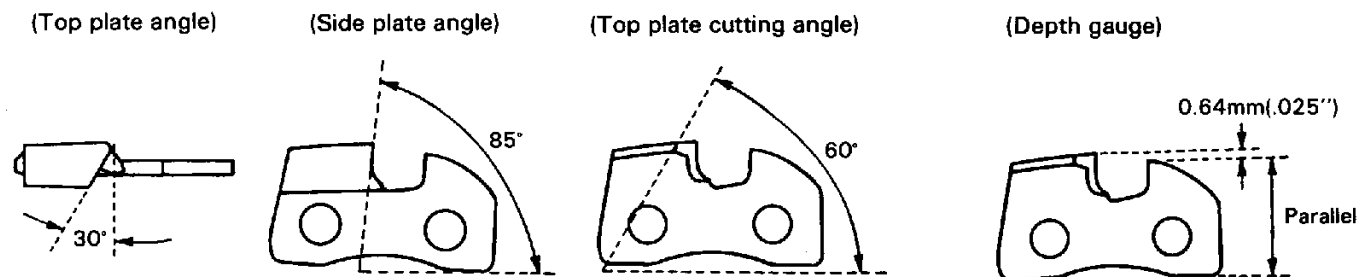


**ONE FIFTH OF FILE DIAMETER REMAINS ABOVE CUTTER EDGE**

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



- Properly filed cutters are shown below.

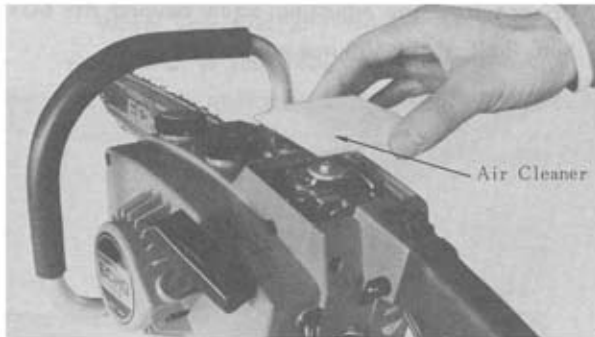


- When setting of the chain is finished, soak it in oil and wash away filings completely before using.
- When chain has been filed on the bar, supply sufficient oil to it, rotate the chain slowly to wash away the filings before using again.
- If the chain saw is operated with filings clogged in the groove,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

## MAINTENANCE AND CARE

### AIR CLEANER

- o Clean it daily.
- o Pull up to remove.
- o Brush off dust lightly or wash the cleaner in gasoline.
- o When you wash it in gasoline, dry completely before you put it back in place.



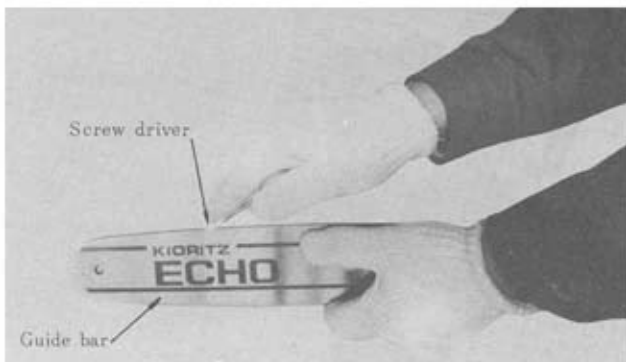
### LUBRICATING OIL SUPPLY HOLE

- o Clean the hole daily
- o Clean the guide bar lubricating oil plug area, too.



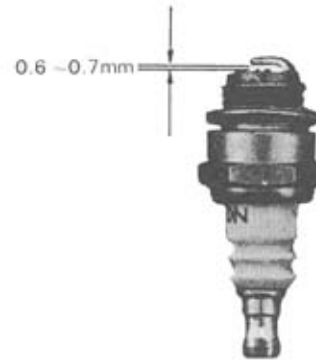
### GUIDE BAR

- o Clean it daily before you use the chainsaw.
- o Clean the groove in the guide bar by, for example, a small screw driver.



### IGNITION PLUG

- o Check periodically.
- o The standard spark gap is 0.6–0.7 mm (.023–.027 in.)
- o Adjust the spark gap if wider or narrower than the standard gap
- o Remove carbon dust if deposited and clean if dirty.



### FUEL FILTER

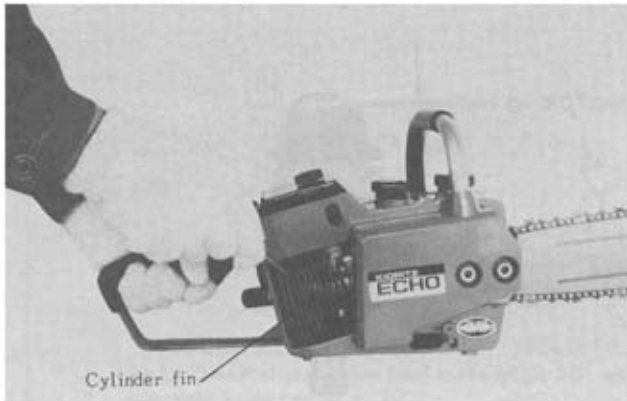
- o Check periodically.
- o Clogged filter will cause engine trouble such as hard starting.
- o Beware, not to allow dust to enter into fuel tank.
- o When the inside of the fuel tank gets dirty, it can be cleaned by washing with gasoline.
- o Dry completely.

### OIL STRAINER

- o Check periodically.
- o Clogged strainer will cause trouble in the lubricating system and in engine performance.
- o Beware, not to allow dust to enter into oil tank.
- o When the inside of the tank gets dirty, strainer can be cleaned by washing with gasoline.
- o Dry completely.

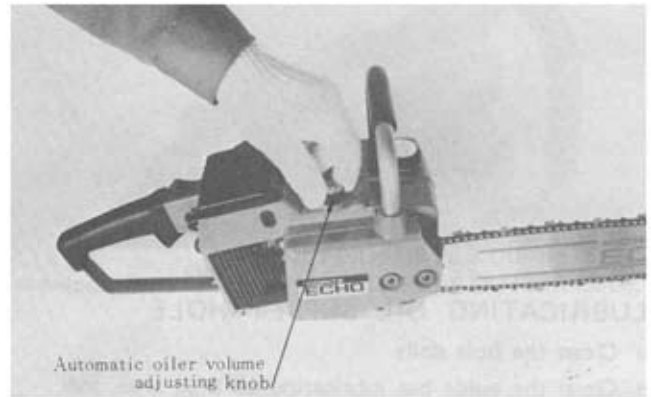
## CYLINDER FINS

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



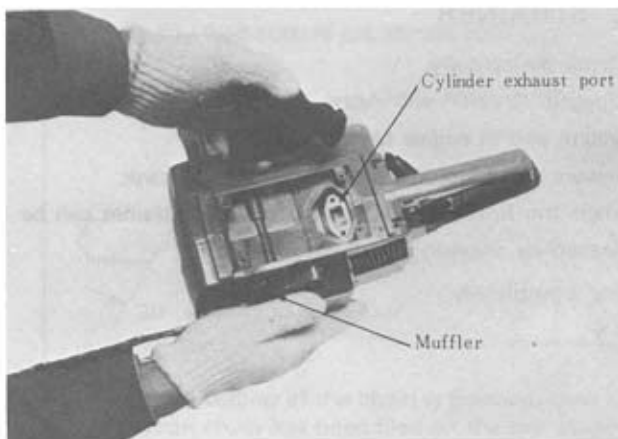
## AUTOMATIC OILER

- o The discharge volume of the automatic oiler is adjusted prior to shipment from factory to 10–14 cc/6000 RPM.
- o To reduce discharge volume, turn the adjusting screw counter-clockwise. Turn it clockwise to increase volume.
- o Do not turn the adjusting screw beyond the Max. or Min. limit of the Volume adjustment.



## MUFFLER

- o Carbon deposit in the cylinder exhaust port and muffler will cause lowering engine power output and sparking from the muffler.
- o Remove the muffler and clean the cylinder exhaust port. Be careful not to damage the cylinder.

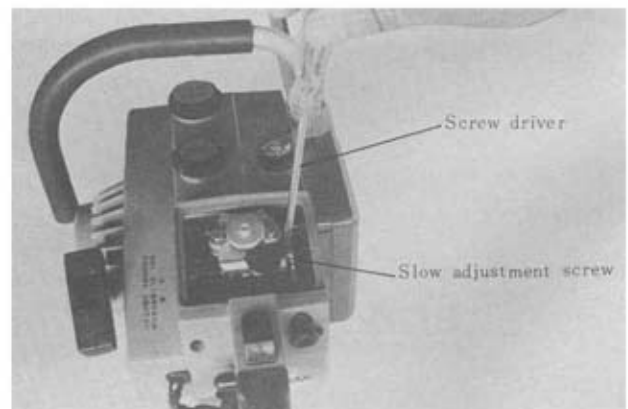


### NOTE:

- o Use wood or non-ferreous material to prevent damage to hard chrome plating.

## CARBURETOR

- o Do not adjust the carburetor unless necessary.
- o To adjust the carburetor, proceed as follows.
  - Low-speed needle valve (L) ..... 3/4 to 1 turn
  - High-speed needle valve (H) ..... 3/4 to 1 turnTurn the corresponding adjusting screw lightly clockwise to fully closed position and return the screw by the number of turns indicated above.
  - Idle adjusting screw ..... 2,500–3,000 rpmTurn the adjusting screw to such a degree that the centrifugal clutch will rotate lightly.
- o If you have trouble with the carburetor, we suggest you to see your authorized Echo dealer.



## CAUTIONS

- o When you do regular maintenance and carburetor adjusting, follow instructions thoroughly.
- o When there is any trouble with your chainsaw, do not try to repair it yourself. Have your nearby authorized Echo dealer do it for you.
- o Since the fuel is gasoline, watch out for fire.

## TROUBLE SHOOTING

When you find any trouble in your chainsaw, check for the possible cause in the following tables and, if required, disassemble the chainsaw.

