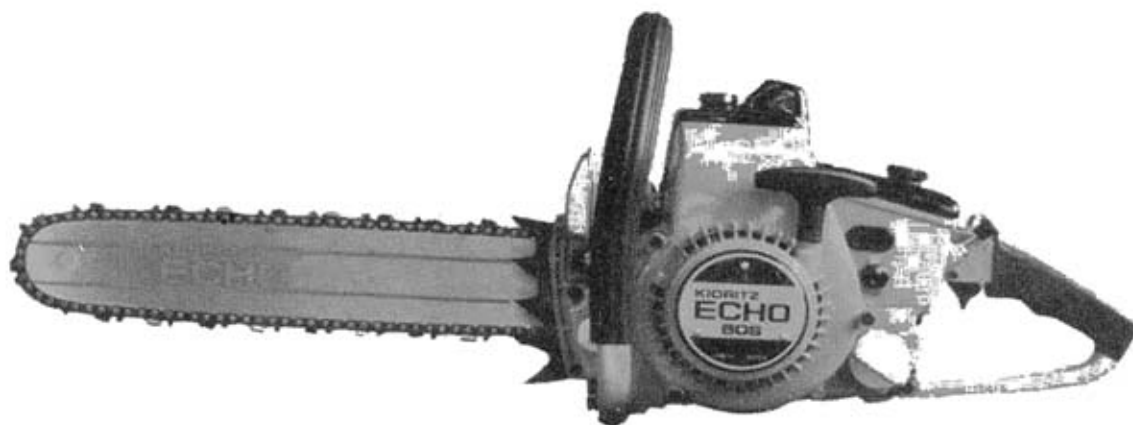


KIORITZ ECHO CHAINSAW

OPERATOR'S MANUAL

● MODEL CS-60S



898 519-0533 0



KIORITZ CORPORATION

RULES FOR SAFE OPERATION

1. Never operate a chain saw when you are fatigued.
2. Use safety footwear, snug-fitting clothing, and eye, hearing 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 with the chain saw. 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 thumbs 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 KIORITZ ECHO chain saws, Fire preventing muffler (fire arrester screen) is available as option parts, beside standard muffler, 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 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 specifically trained to do so.
18. 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. (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.

CONTENTS

1. Specifications.....	2
2. Designations of parts	3
3. How to fit the bar and chain.....	4
4. Fuel and lubricant.....	6
5. Starting the engine.....	7
6. To run and stop the engine	9
7. Felling and lumbering.....	10
8. Safety standard.....	11
9. Setting of the chain and maintenance of the bar.....	12
10. Maintenance and arrangement.....	16
11. Trouble shooting.....	23

(NOTE)

- Install the front handle before installing of guide bar and chain.
- Refer to instructions on page 25.

1. SPECIFICATIONS

● Engine

Type :	Air-cooled, 2-cycle, single-cylinder engine
Piston displacement :	61.5cc (3.753cu. in.)
Revolution :	Counter-clockwise as viewed from the magnet side
Magneto :	Flywheel magneto type
Ignition plug :	NGK BM-6A
Carburetor :	Tillotson diaphragm type HS 25A
Fuel :	Mixture of gasoline and mobile oil exclusively for 2-cycle engine at the ratio of 20 to 1
Cooling method :	Forced air cooling
Starting method :	Recoil starter
Lubricating method :	Manual/automatic combined lubrication
Chain oil :	Motor oil SAE #30 (Above 59°F) SAE #10 (Below 59°F)
Transmitting method :	Automatic centrifugal clutch

● Tank capacity

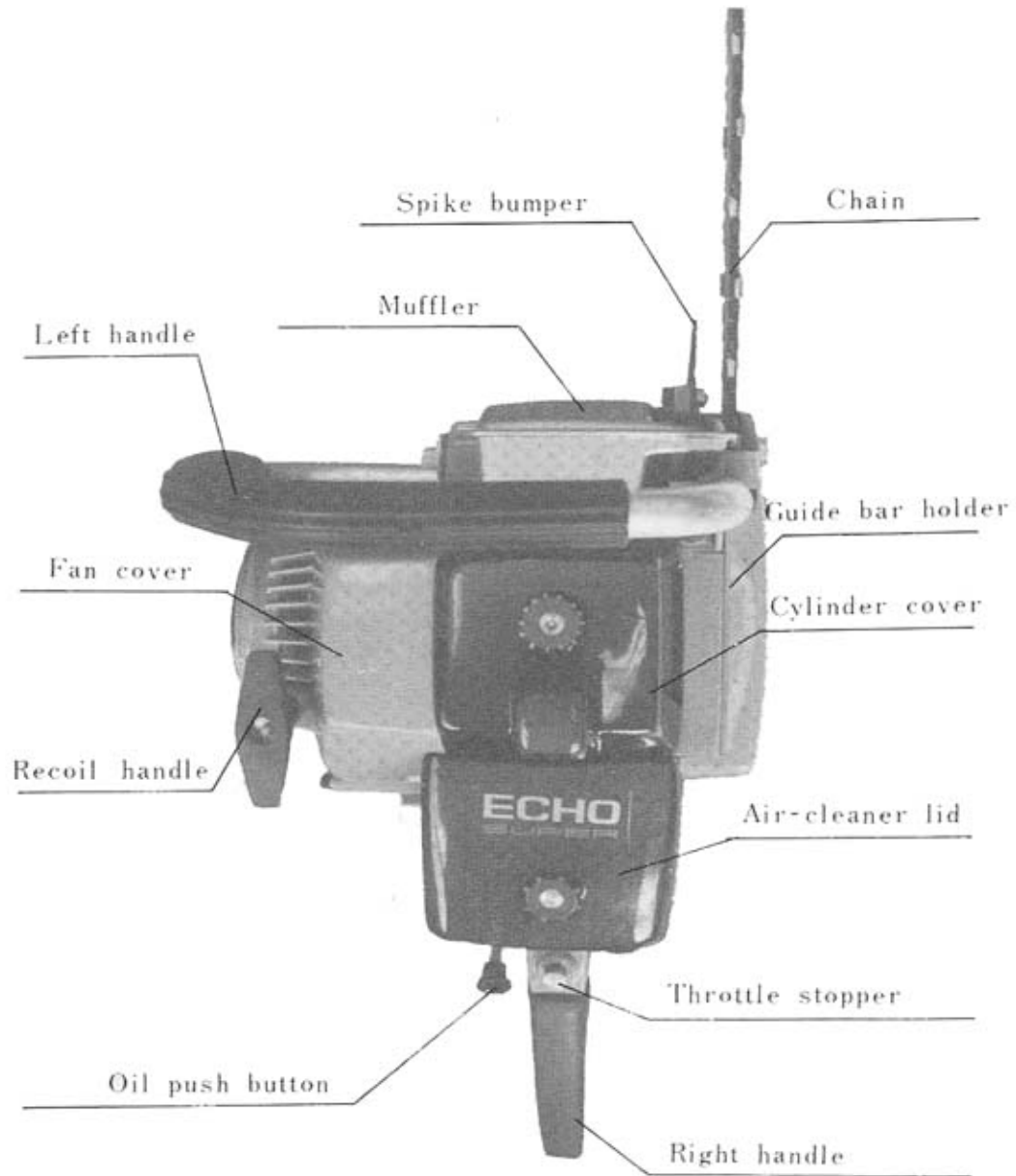
Fuel tank:	0.71 l (24.0 U.S. fl. oz.)
Oil tank:	0.30 l (10.1 U.S. fl. oz.)

● Saw

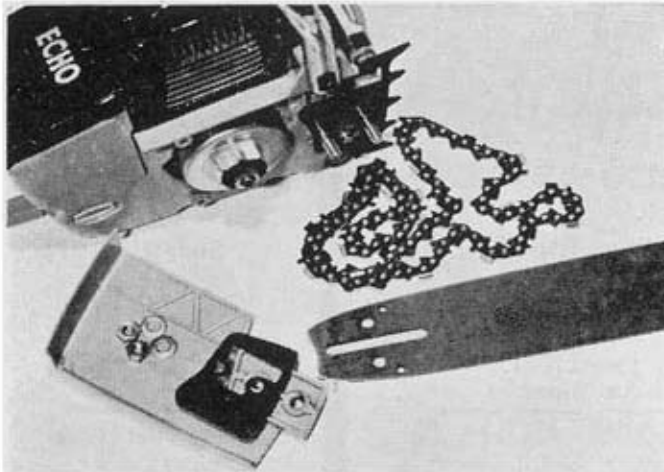
Chain :	chain pitch 3/8", Gauge 0.050"
Bar :	16" (20").....special orders

Weight (Power head dry):	(without bar and chain) 7.4 kg (16.3lb.)
--------------------------	---------------------------------------------

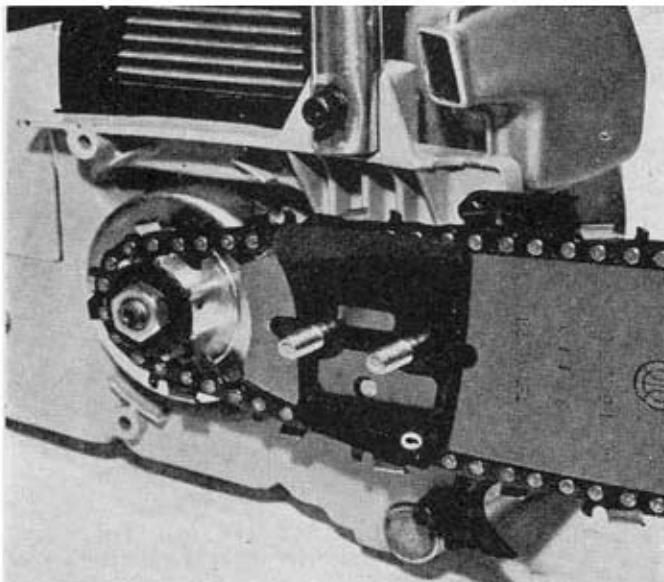
2. DESIGNATIONS OF PARTS



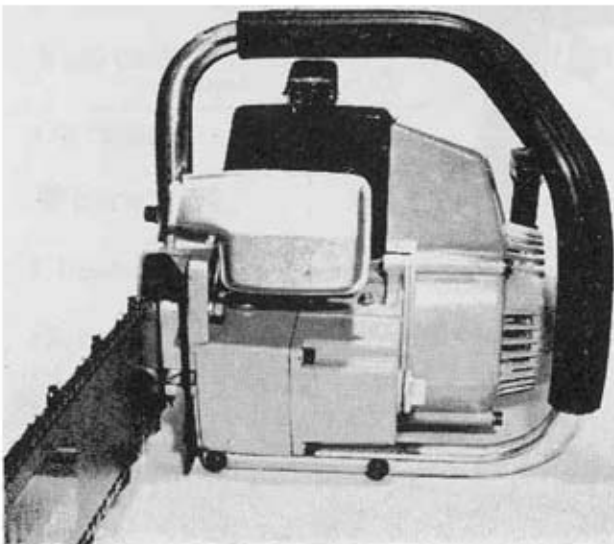
3. PREPARATION FOR OPERATION



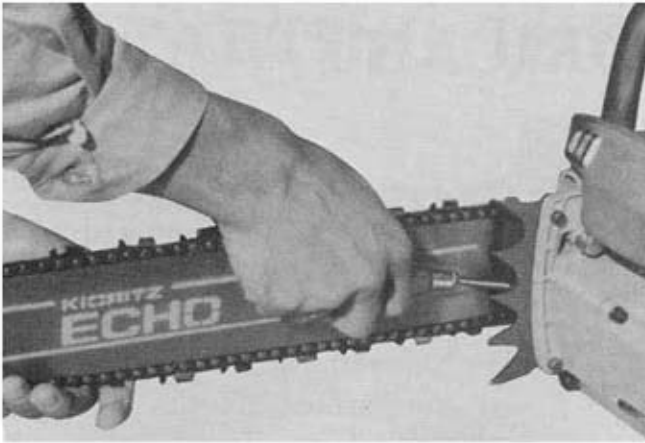
- * Take off the guide bar holder, one of the guide bar side plates nearer to you and a piece of wood placed between the side plates.
- * Leave the other side plate unremoved.



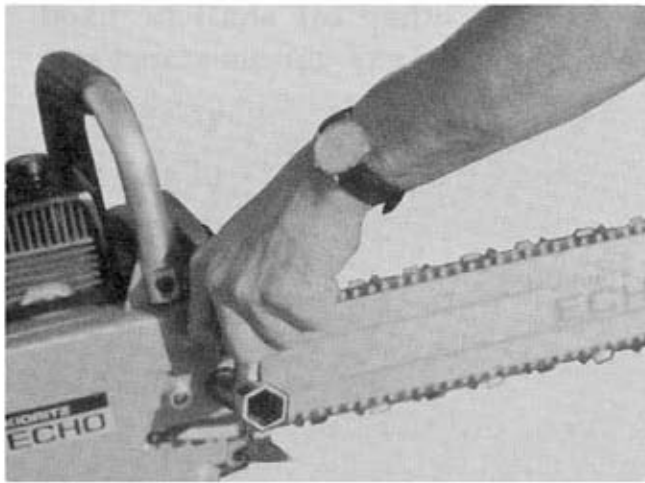
- * To set the bar, insert the chain tensioning lug into the bar hole.
- * Put the chain first on the sprocket and then on the bar end.
- * Pay attention to the direction of chain mounted.



- * After the bar and chain have been fit and the chain tensioning lug has been inserted into the bar hole, fit the guide bar side plate and guide bar holder.
- * Next tighten them lightly with hand by the use of the washer and nut.



* To tension the chain, hold up the bar end in one hand and turn the adjusting screw clockwise.



* To obtain proper tension of the chain, get the chain come into contact with the bar at the lower end of the latter and then return the adjusting screw for about 1/8 turn.

* Finally tighten up the two nuts with a double-ended wrench while holding the bar end slightly up.

Note :

It is important to tension the chain properly.

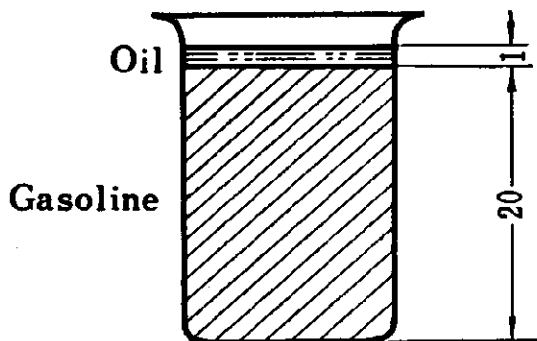
* If too tight, the bar and chain wear fast.

* If too loose, the chain comes off. It is dangerous.

When the chain is properly tensioned, there is no noticeable clearance at the bottom of the bar between the bar and the chain, and the chain can slide on the bar very smoothly.

4. FUEL AND LUBRICANT

Fuel



- * The fuel used for operating the Echo 60 is a mixture of gasoline and mobile oil for 2-cycle engine.
- * The gasoline and the mobile oil are mixed at the ratio of 20 to 1.
- * If mobile oil for 2-cycle engine is not available, use motor oil SAE #30. No other oil shall be used under any circumstances.

Note:

- * If the mixing ratio is different from 20 to 1, the use of the fuel may cause the engine to operate irregularly.
- * For the mixing ratio for gasoline and motor oil, see Page 25.

Lubricant

Lubricant well-supplied to the chain in operation will prevent the chain from getting stuck or worn unreasonably fast. It also plays an important role in lessening the friction between chain and bar.

* Lubricant to be used for the Echo 60 differs with season.

Above 15°CSAE #30

Below 15°C, or in the case of resinaceous treesSAE #10

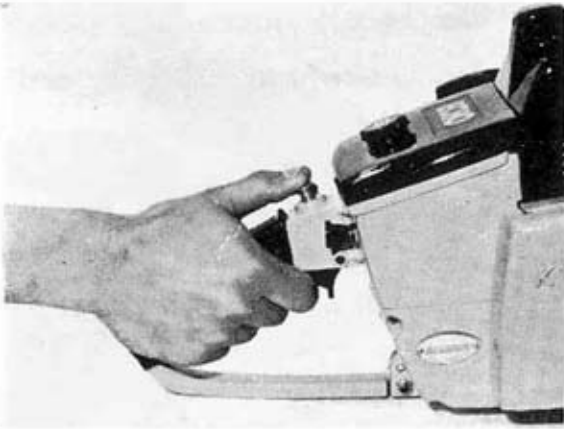
Note:

Never use discarded oil or reclaimed oil, for it may cause various troubles.

Fuel mix chart

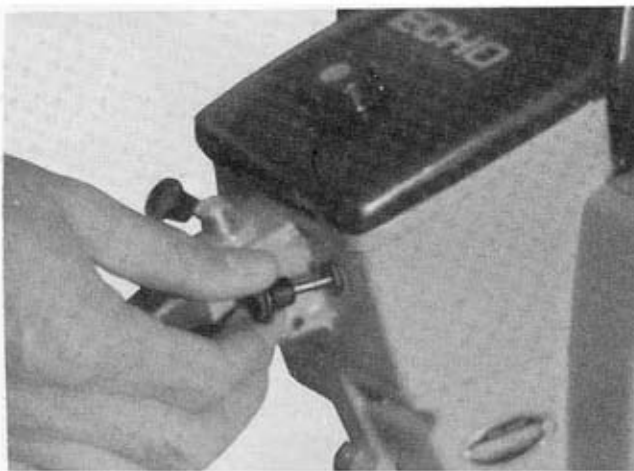
US		IMPERIAL		METRIC	
GAS	OIL	GAS	OIL	GAS	OIL
GAL.	FL.OZ.	GAL.	FL.OZ.	LITERS	C.C.
1	6.4	1	8	4	200
2	12.8	2	16	8	400
5	32.0	5	40	20	(1 Liter) 1,000

5. STARTING THE ENGINE



(When the engine is cool)

- * Put the mixed fuel and lubricating oil into the respective tanks.
- * Lock the throttle stopper.
- * How to lock the throttle stopper is to pull the throttle trigger and then push the stopper.



- * Pull the choke button.
- * Start the engine after setting it securely with your foot so that it may not move when the recoil is pulled.



- * Pull the recoil 5 to 6 times, and you will hear the first combustion noise. Then return it by pushing the choke button.
- * Next, pull the recoil, and the engine is started. Then pull the throttle trigger a little, and the stopper will be unlocked.



(When the engine is warm)

*If the engine is warm, pull the recoil instead of using the choke and throttle, and the engine will be started

*If the engine is not started, pull the recoil by using only the throttle and not using the choke.



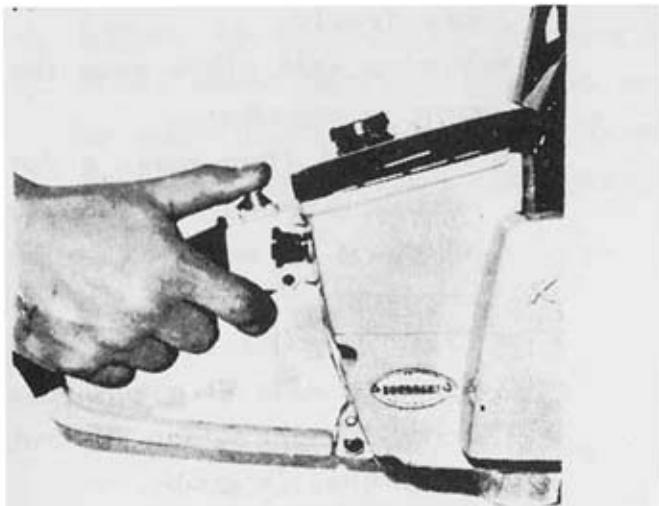
6. TO RUN AND STOP THE ENGINE



- * After the engine is started, keep it running at a low speed for 5 to 6 minutes.
- * After running the engine slow, pull the throttle gradually to run it fast.

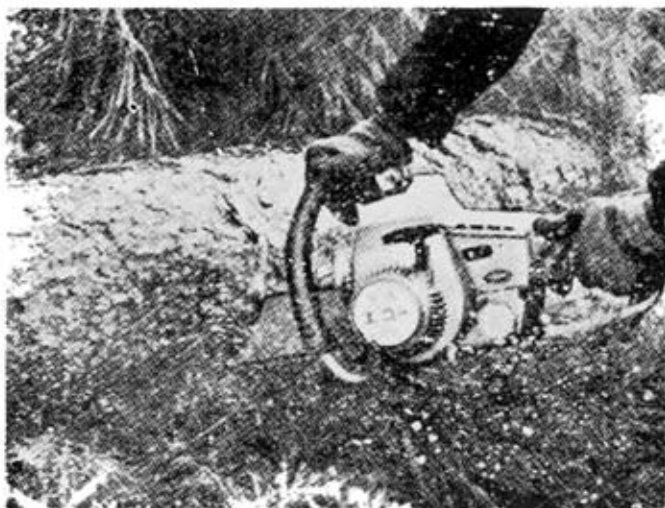


- * When the engine revolutions has reached 3,000 r.p.m., the chain begins to rotate.
- * When the chain has started rotating, push the oil push button to lubricate it.

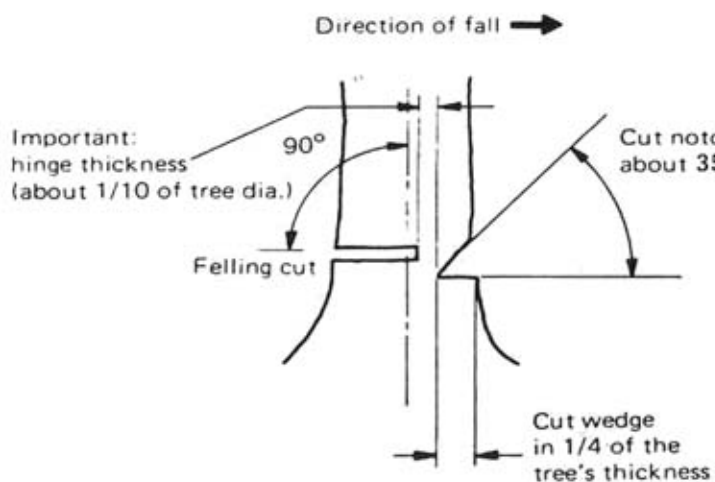


- * To stop the engine, set the throttle trigger at low speed and keep pushing the throttle stopper until the engine stops.

7. FELLING LUMBERING



FELLING A TREE



- * It is advisable to get used to your chain saw before cutting trees actually.
- * For this purpose try cutting a felled timber several times.
- * When cutting a tree, open the throttle fully and place the spike against the tree to be felled, and the chain saw will do the rest. It is unnecessary to forcibly press the chain saw to cut a tree.

(Felling)

- * Decide the direction in which the tree is felled.
- * Then remove all obstacles around the tree to enable you to operate the chain saw freely.
- * Find a safe place near the tree in advance.
- * To fell a tree, make a cut on that side of the tree to which it is intended to be felled.
- * Then cut the tree at the opposite side at a position a little higher than the cut preliminarily made.



(Lumbering)

- * When lumbering, be careful about the stability of the felled tree. It may roll down on a steep slope.
- * Hold the felled tree off the ground by using a support as much as possible, and take care not to have the chain or bar caught in the cut.

8. SAFETY STANDARD

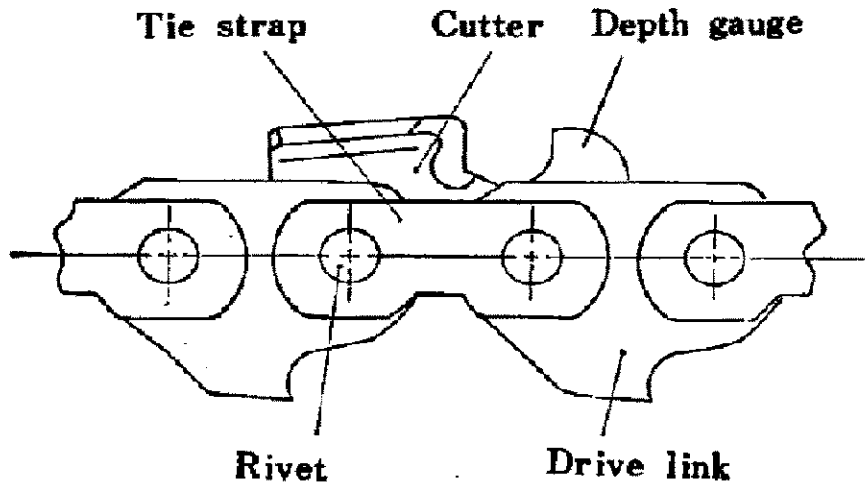
As felling and lumbering are operations attended with danger the following points shall never be neglected.

1. Hold the chain saw with both your hands at all times.
2. Refrain from smoking when feeding fuel or operating the chain saw.
3. Nobody shall come near the operator at work as much as possible.
4. Adjust the chain after stopping the engine.
5. When more than two persons are to work together, they shall be sufficiently spaced apart from each other.
6. Stop the engine when the operator changes the position.

9. SETTING OF THE CHAIN AND MAINTENANCE OF THE BAR

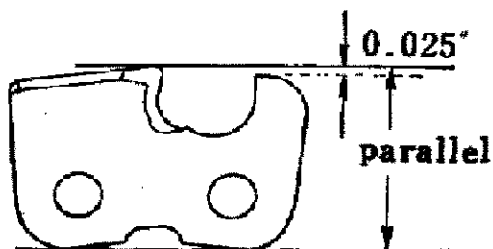
Designations of parts

Chain parts are named as follows :



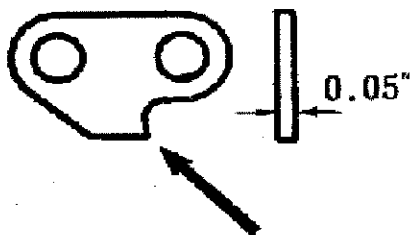
* The chain pitch for the Echo 60 is 9.525mm (3/8").

* Do not use a chain with the pitch larger than this.



* The depth gauge is intended for limiting the thrust at the time of cutting.

* The right and left cutters shall be kept always sharp and well balanced.



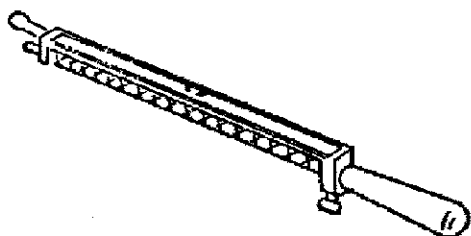
* The driving link serves to eliminate the sawdust from the bar groove. For this purpose the lower end shall be kept always sharp.

Setting of the chain

What are important about the chain are the following:

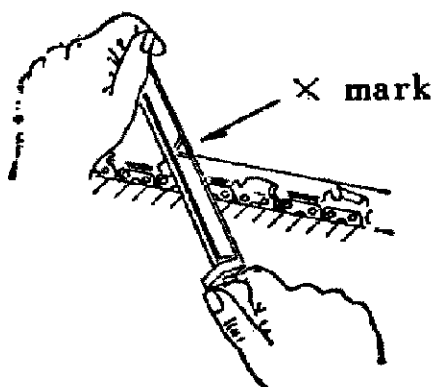
- 1) The cutters shall be always sharp.
- 2) The right and left cutters shall be even.

If they are not sharp or uneven, the operating efficiency decreases and they are greatly vibrated by the chain to damage the machine unreasonably fast.



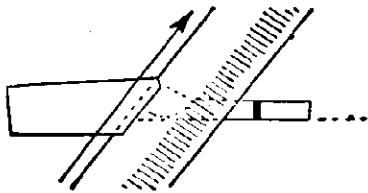
(Correct way of setting the chain)

- * The chain may be set by the use of a 5.5mm ($7/32''$) round file or flat file.
- * When the cutters have become smaller as setting progress, a $3/16''$ round file may be used instead of a $7/32''$ round file.

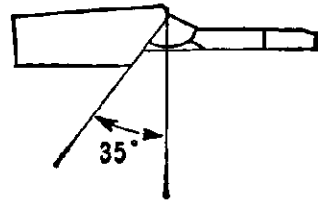


- * Fit the file to the file holder.
- * How to use the file is to put the file holder on the cutter and apply the file only when you push it.
- * Do not apply it when you pull it toward you.

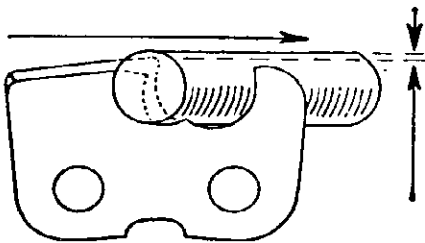
1)



35° is the standard

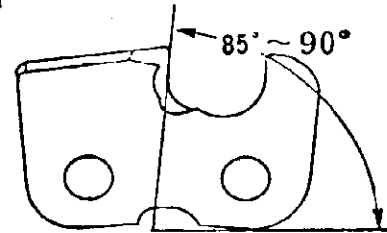


2)

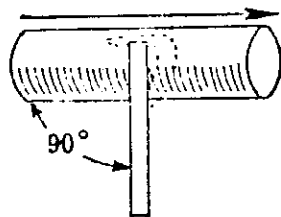


Put it up for a distance equal to 1/10 the length of the file.

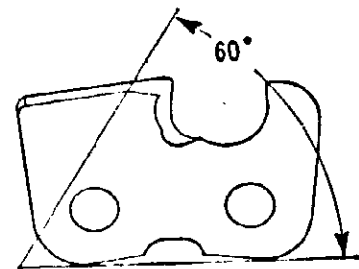
In case of chain pitch $\frac{3}{8}$ "



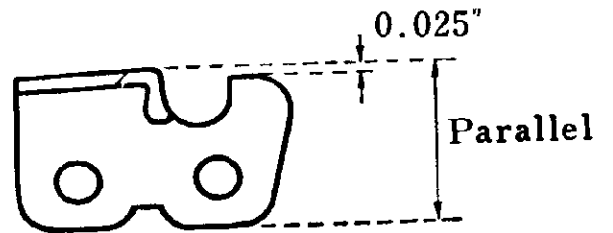
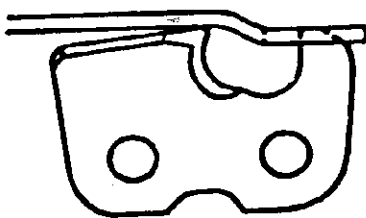
3)



Make it horizontal.



4)



Cleaning of the chain

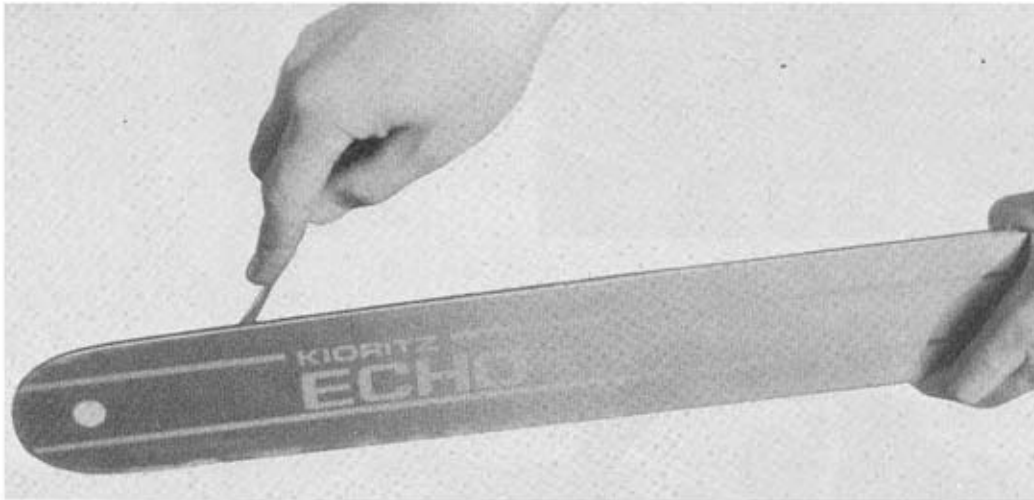
*If the chain is stained, clean it with petroleum and put oil on it.

Maintenance of the bar

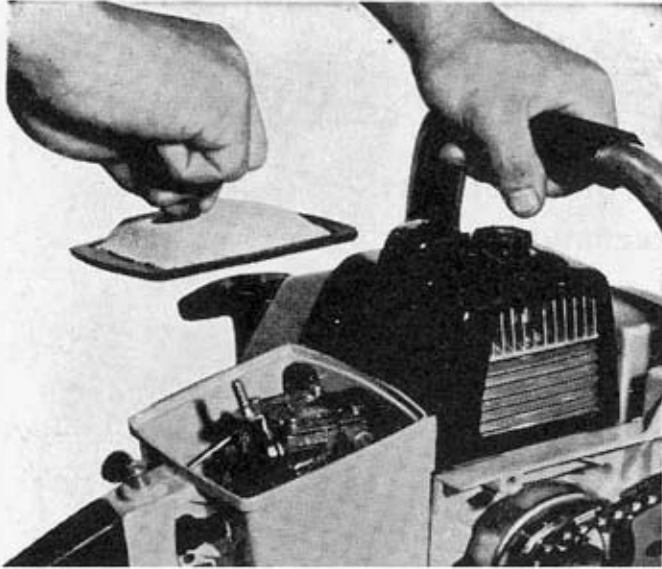
*Keep the bar groove always clean.

*Pay particular attention to the oil inlet part.

*Bars shall be used placed alternately.



10. MAINTENANCE AND ADJUSTMENT

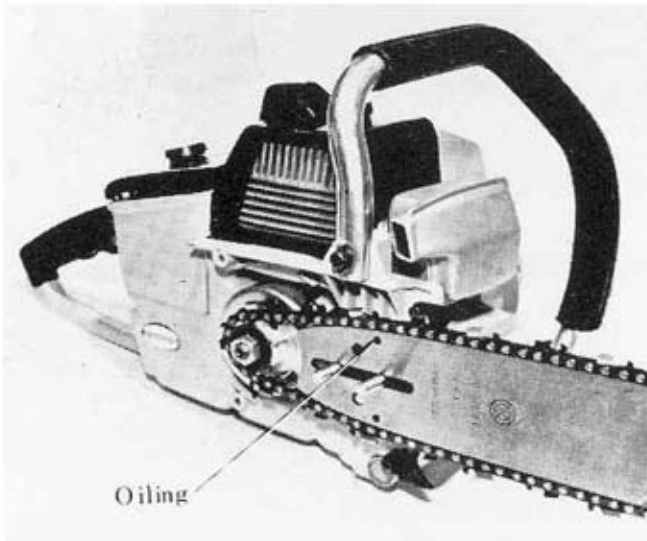


(Cleaning of air cleaner)···

·····Clean it every day.

*It may be taken off by holding the center of the rubber and pulling it.

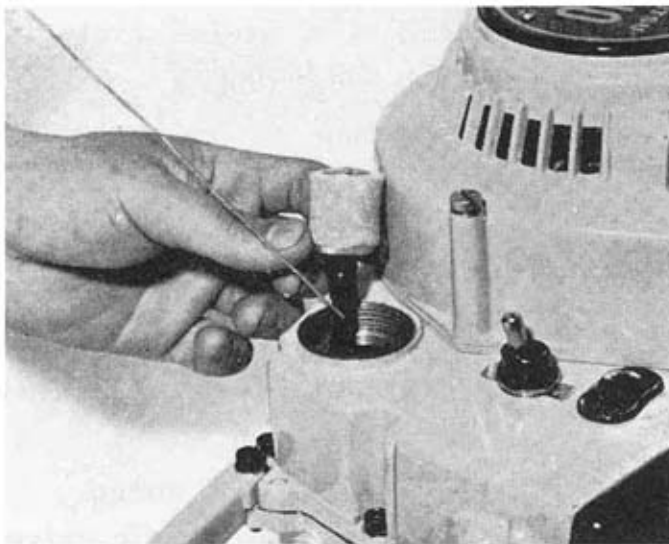
*To clean it, wipe off dust lightly or wash it with gasoline.



*If oil does not come out well, check the hole for oiling the bar.



0.024~0.028"



(Inspection of screws and nuts).....Check them every morning before the machine is used.

* Check and ascertain if the screws at the handle and fan cover carburetor are loose before using the machine.

(Ignition plug).....Check it regularly.

* The clearance between the electrodes of the ignition plug shall be 0.024~0.028in.

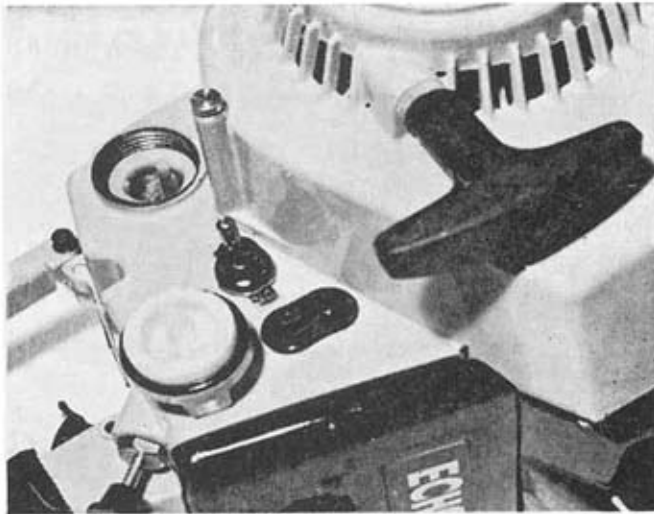
* If it is too wide or too narrow, adjust it correctly.

* Set the ignition plug after making it free of carbon and dust by careful cleaning.

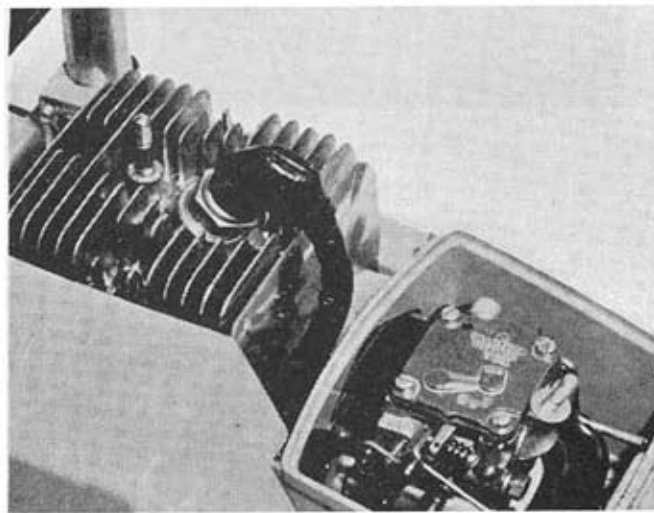
(Fuel tank filter)..... Check it regularly.

* If the filter is blocked with dirt, it may cause troubles to the engine at starting or in operation.

* Pull out the fuel tank filter from the fuel feeding inlet by using wire.

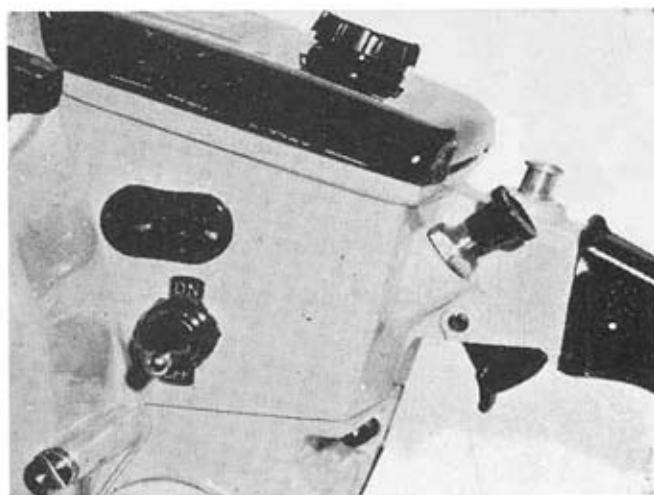


* Take out the fuel filter from the fuel pipe and clean it well with gasoline or replace it.



(Cylinder fin).....Check it regularly.

* If the cylinder fin is blocked with dirt, it will decrease the cooling effect. So check it periodically and keep clean.



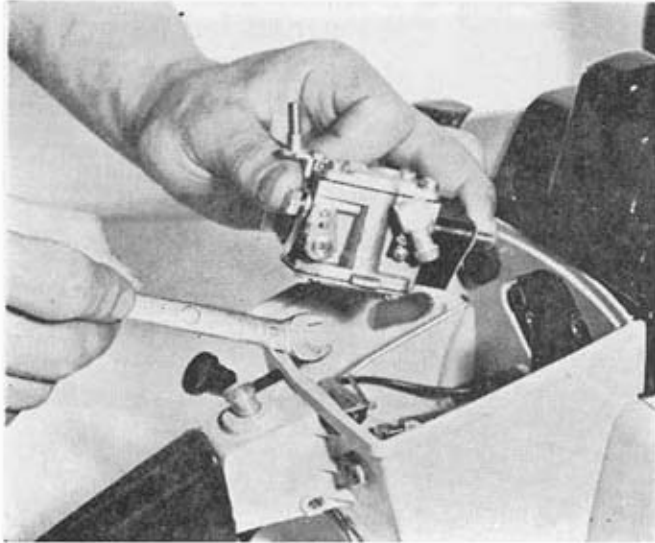
(Carburetor).....when it requires readjustment.

* Needle valve for the carburetor shall be adjusted to:

$\frac{1}{2}$ ~ 1 at high speed.

$\frac{1}{2}$ ~ $1\frac{1}{2}$ at low speed.

* To adjust the needle valve, turn the screws clockwise slowly and return them after they are fully closed. Adjustment is made by how much they are returned then.



- * Take off the carburetor from the machine body.
- * Clean the carburetor carefully before overhauling it.
- * Overhaul shall be done on clean paper and not on cloth.

Note:

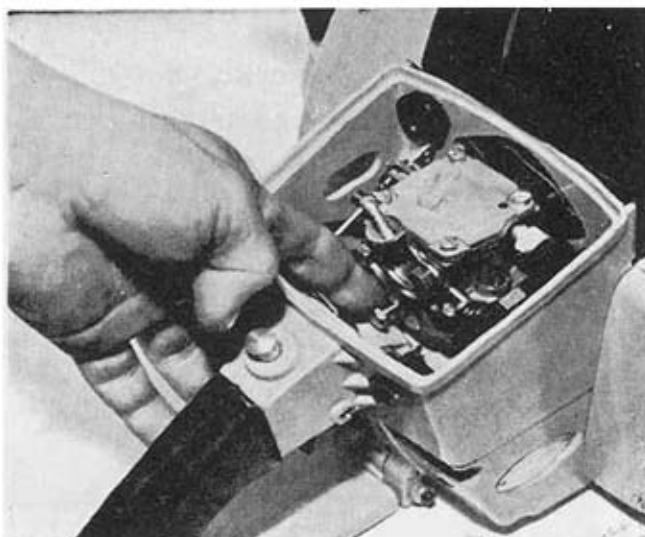
The carburetor is an expensive and highly delicate thing. It is advisable that you have it overhauled at a near-by shop instead of doing it yourself at the field.

(Automatic oiler).....When it requires readjustment

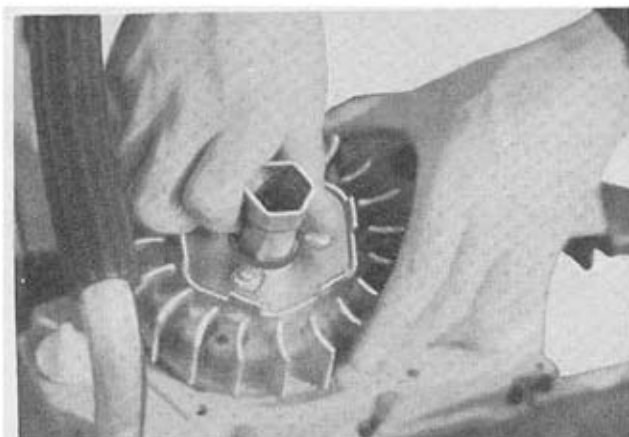
- * The discharge of automatic oiler is adjusted as follows at the factory before it is delivered:

6,000r.p.m. about 15cc 0.915 cu. in.

- * For oiling in quantities greater than this, use a hand-pump together.
- * To adjust oiling, turn the adjusting nut counter-clockwise for increasing it and clockwise for decreasing it.



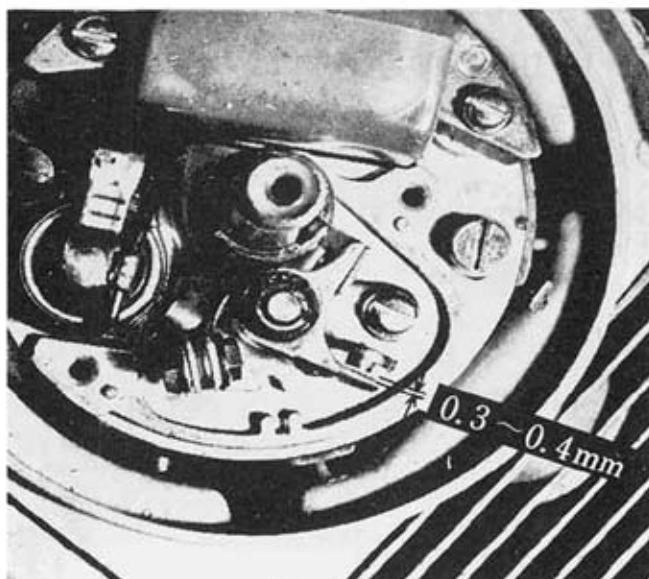
* As the range for adjusting is slight, do it with sufficient care.



(Magneto) When it requires readjustment.

* Take off the fan cover, recoil starter and nut for fastening the rotor.

* Pull out the rotor by means of a tool serving the purpose. Never pull it out by beating.



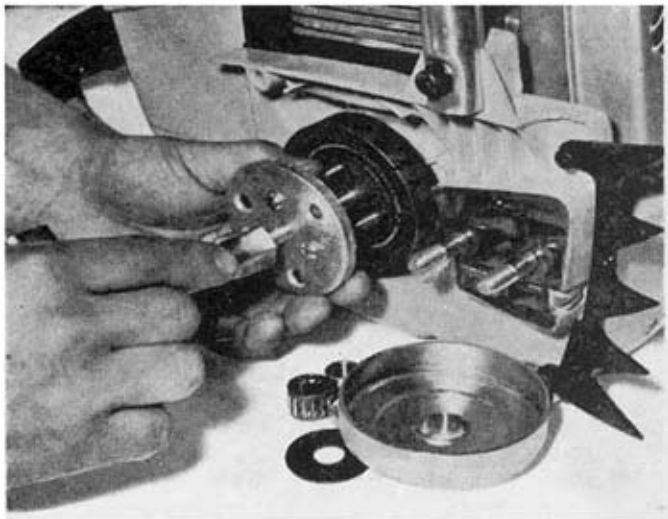
* Take off the point cover, and inspect the breaker point clearance to see if it is kept 0.0138in as required.

* When adjusting the point, of contact be careful not to allow it to be stained with oil and other foreign matters.

Note:

It is recommendable that you ask a near-by shop for point adjustment.

0.3 ~ 0.4mm (0.0138")

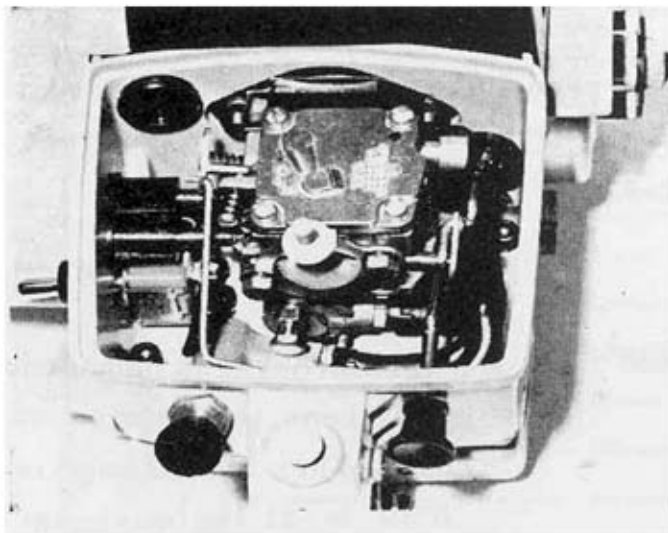


(Centrifugal clutch)

* Loosen the nut fastening the clutch, and take off the outer ring.

The nut is threaded left-handed.

* The nut may be taken off by giving it a shock and turning it clockwise.



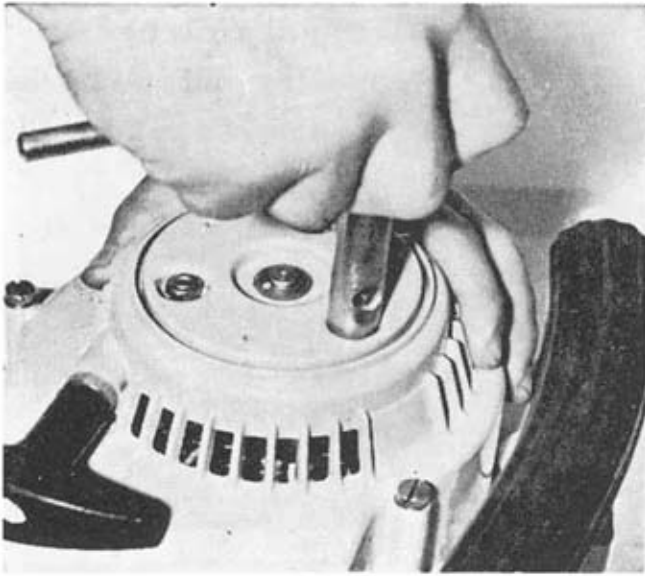
* Pull off the centrifugal clutch by means of a tool for serving this particular purpose.

* Before re-assembling remove old grease from the outer ring and apply a small quantity of new heat resisting grease on it.

(Fuel tank air valve)

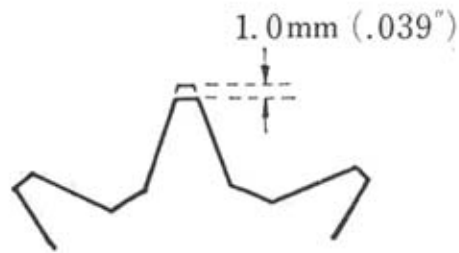
* The check valve is made of rubber. So it shall be removed with special care not to damage it.

* Keep the check valve clean from dirt.



(Recoil starter)

- * If the recoil starter is not normally operating, overhaul, inspect and replace it in the following procedure.
- * Loosen the three nuts for fastening the recoil, and remove the recoil handle and then take out the whole recoil starter from the fan cover.
- * When re-assembling, fix the whole recoil starter to the fan cover securely.
- * Next, wind the rope around the recoil drum and turn the recoil starter three times. Then pass it as it is through the rope guide and connect it to the handle.

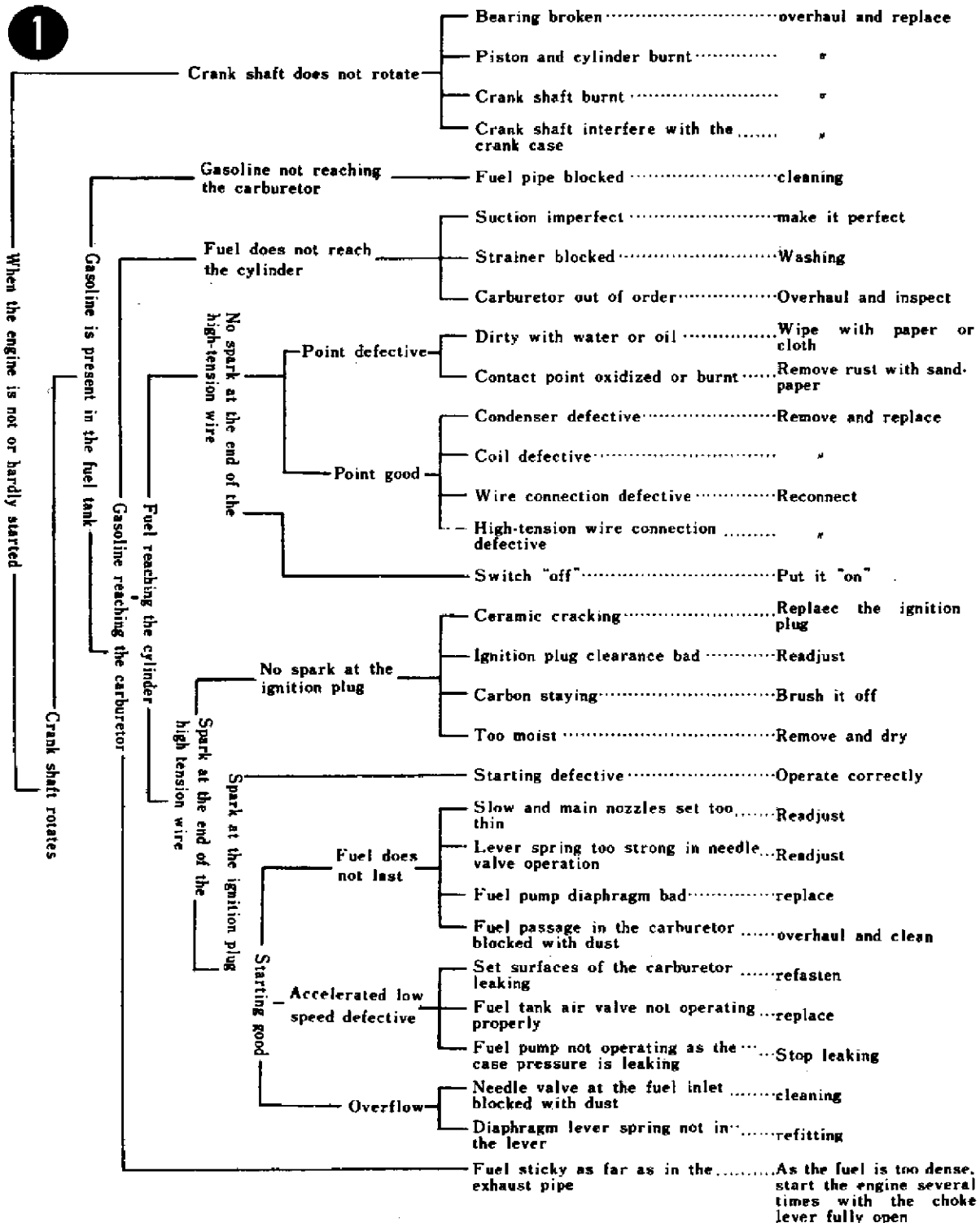


(Sprocket) Regular inspection

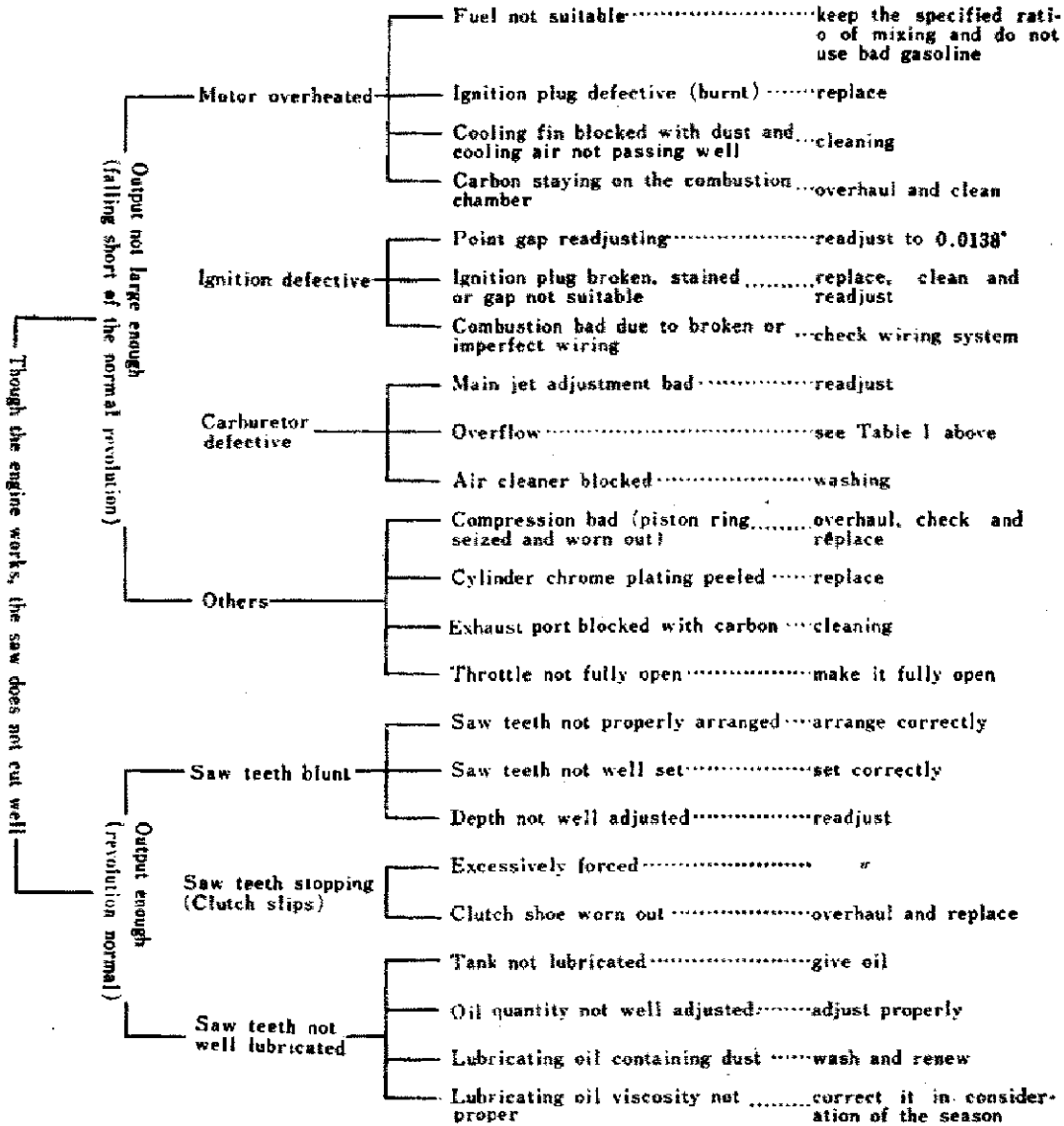
- * If the sprocket is damaged, it quickens the damage of chain. When the damage is .039 in at the maximum, replace it with new.

11. TROUBLE SHOOTING

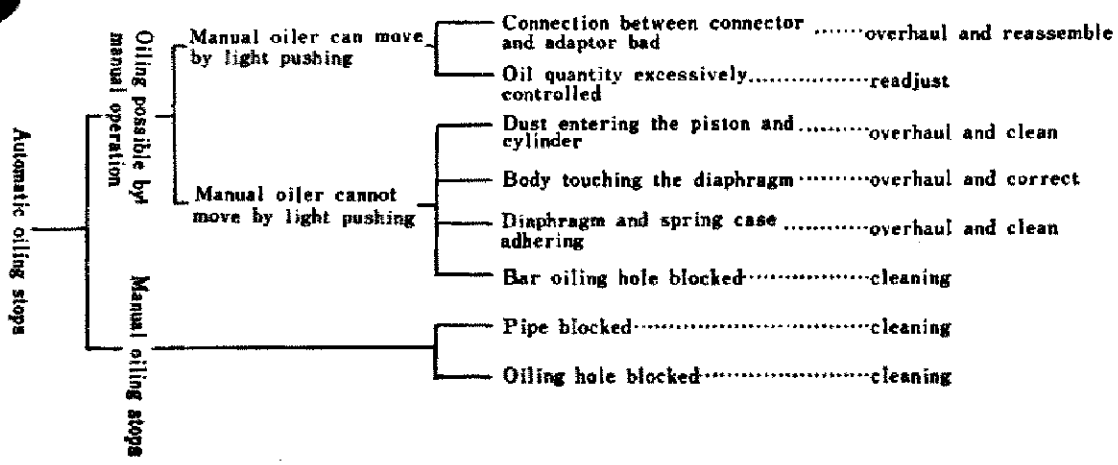
When there is any trouble about the chain saw, find the cause referring to the following tables and overhaul the machine.



2



3



FRONT HANDLE INSTALLATION

1. Set **FRONT HANDLE (A)** to bracket at upper side of guide bar mount, and rotate **FRONT HANDLE (A)** to fit into front handle mount at bottom of saw. See Fig. 1.

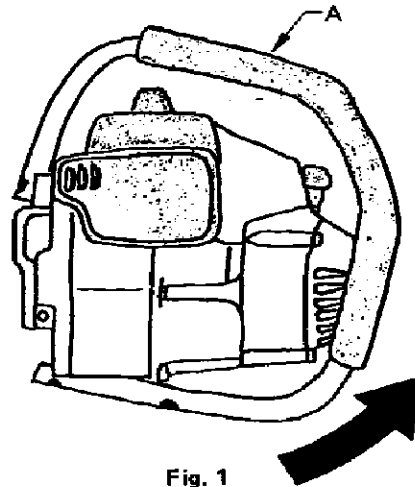


Fig. 1

2. Fit **SPRING WASHER (C)** and **WASHER (D)** on three **SOCKET HEAD SCREW (B)** and secure finger tight. See Fig. 2.

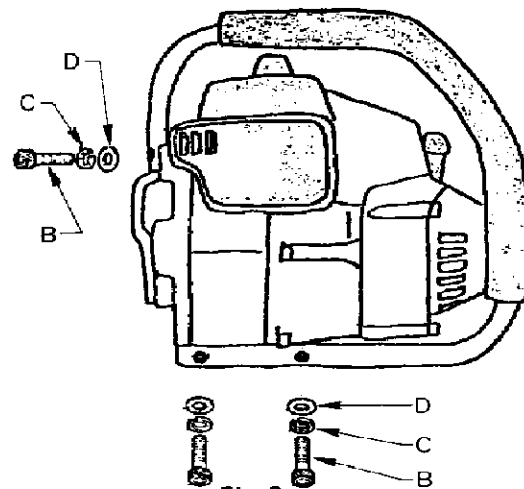


Fig. 2

3. Tighten three screws with **ALLEN WRENCH (E)**. See Fig. 3.

- A: FRONT HANDLE
- B: SOCKET HEAD SCREW
- C: SPRING WASHER
- D: WASHER
- E: ALLEN WRENCH

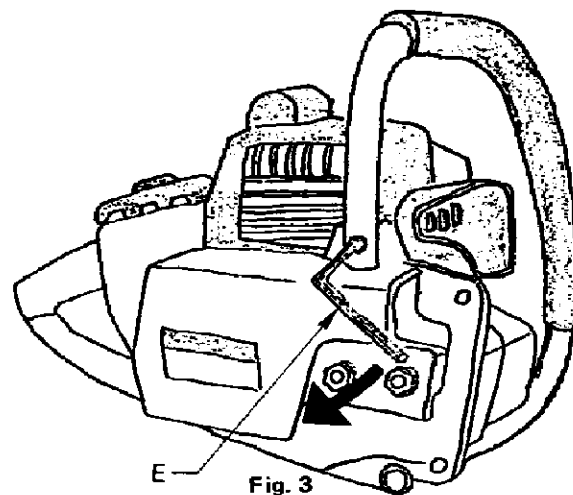


Fig. 3