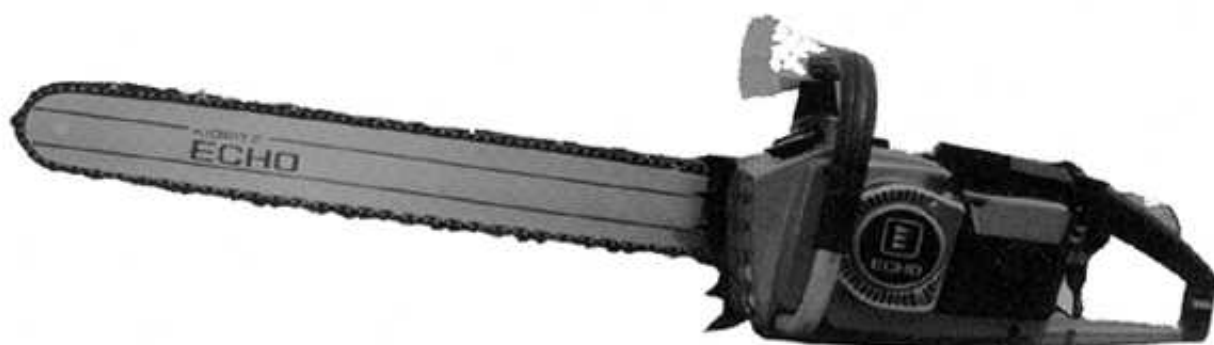


KIORITZ ECHO CHAINSAW

OPERATOR'S MANUAL

● MODEL CS-602VL
CS-702VL



898519 1023 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.

C O N T E N T S

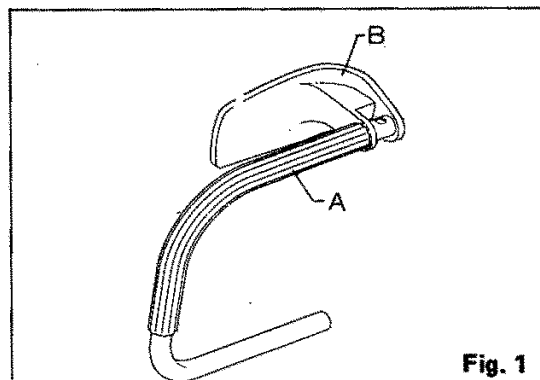
1. Specifications	1
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(NOTE)

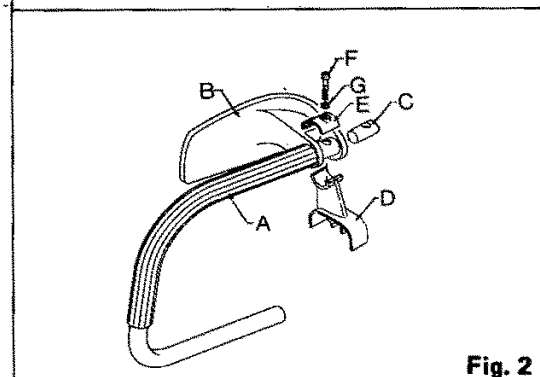
Install the front handle and hand guard before installing chain and guide bar.

FRONT HANDLE and HAND GUARD INSTALLATION

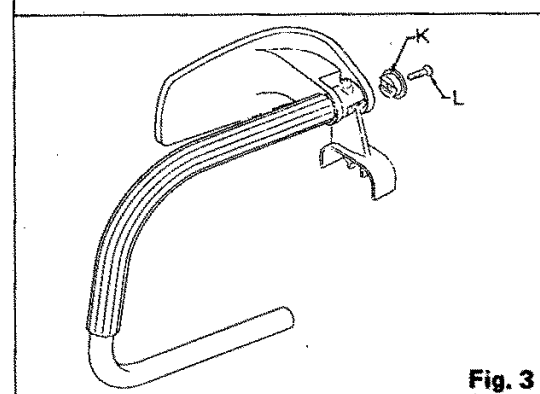
1. Install HAND GUARD (B) to FRONT HANDLE (A). See Fig. 1.



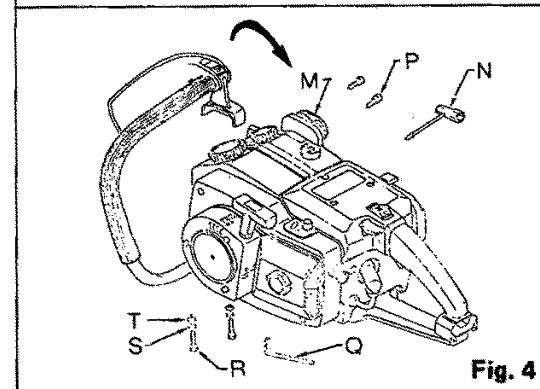
2. Install INSERT (C) into FRONT HANDLE (A). Install FRONT HANDLE (A) and HAND GUARD STOPPER (E) to FRONT HANDLE SUPPORTER (D) with SPRING WASHER (G) and SCREW (F). Tighten SCREW (F) with fingers and confirm SCREW (F) is sitting internal thread of FRONT HANDLE SUPPORTER (D) first. See Fig. 2.



3. Engage HAND GUARD HOLDER (K) with INSERT (C) and tighten SCREW (L). See Fig. 3.



4. Place pre-assembled front handle on bottom part of the machine, and move it to the direction which arrow shows in the Fig. 4 to set FRONT HANDLE SUPPORTER (D) to CUSHION RUBBER (M).

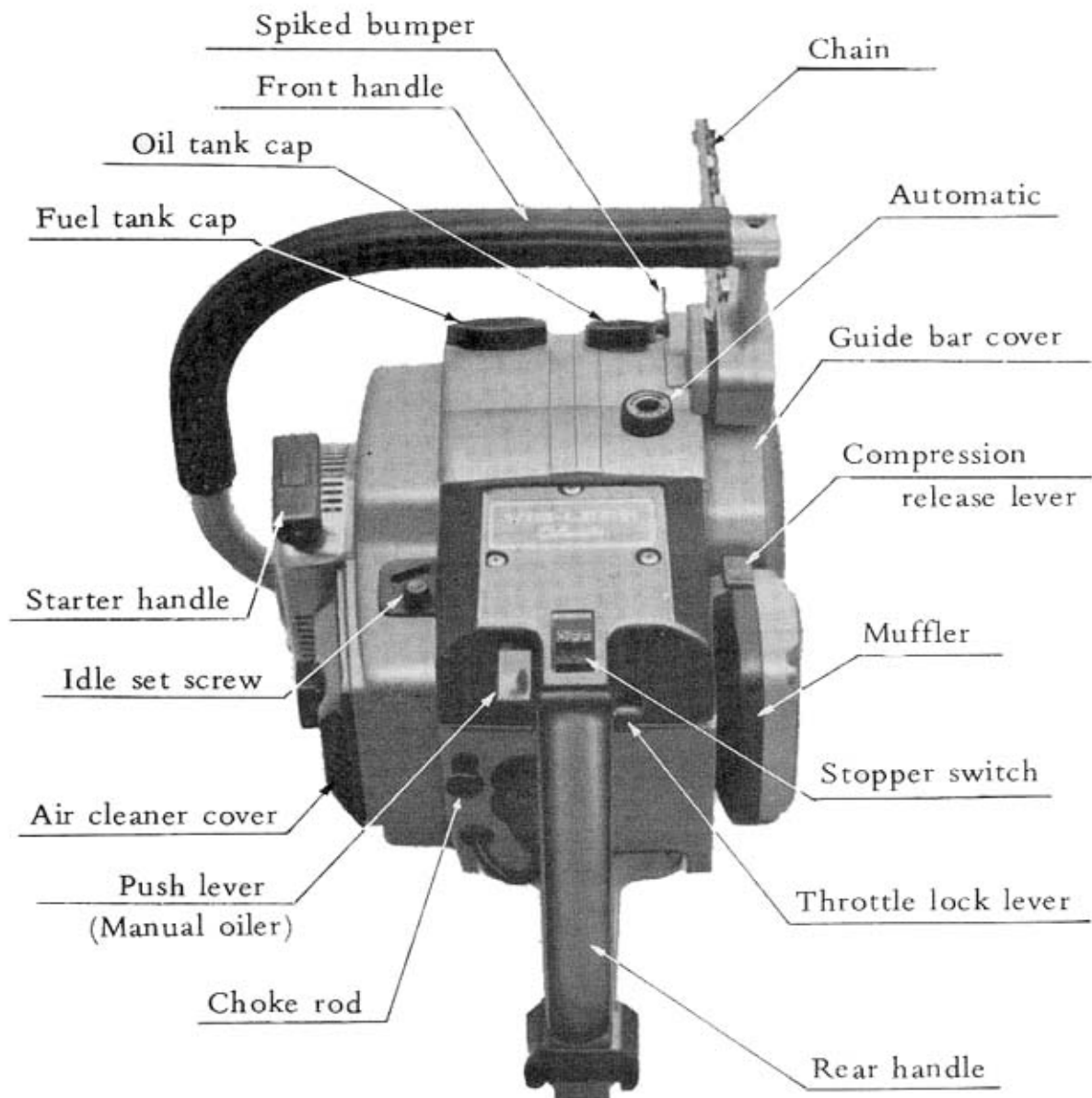


- Tighten two SCREWS (P) with WRENCH (N). See Fig. 4.
- Insert SPRING WASHERS (S) and WASHERS (T) to SCREWS (R). Tighten SCREWS (R) with WRENCH (Q).
- Tighten SCREW (F) with WRENCH (Q).

1. SPECIFICATIONS

● Engine	CS-602VL	CS-702VL
Type:	Air-cooled, 2-cycle, single-cylinder engine	
Piston displacement: (bore x stroke)	59.8 cc (46 x 36 mm) (3.6 cu. in.) (1.811" x 1.417")	70.7 cc (50 x 6 mm) (4.3 cu.in.) (1.97" x 1.42")
Revolution:	Counter-clockwise as viewed from the magneto side	
Magneto:	Flywheel magneto type	
Ignition plug:	NGK BM-6A	
Carburetor:	Tillotson diaphragm Type HS-94A	Tillotson diaphragm Type HS-166A
Fuel:	Mixture of gasoline and 2-cycle Air cooled engine oil (20 gasoline : 1 Oil)	
Cooling system:	Forced air cooling	
Starting system:	Recoil starter	
Lubricating system:	Manual and automatic oiler	
Chain oil:	KIORITZ chain oil	
Transmitting system:	Automatic centrifugal clutch	
● Tank capacity		
Fuel tank:	0.75 liter / 1.62 U.S. pt.	
Oil tank:	0.3 liter / 0.75 U.S. pt.	
● Saw		
Chain:	Chain pitch 3/8", Chain gauge 0.050"	
Bar:	20K50 50M50	24K50 60M50
Weight:	7.5 kg (dry) (chain and guide bar excluded)	

2. PARTS DESIGNATION

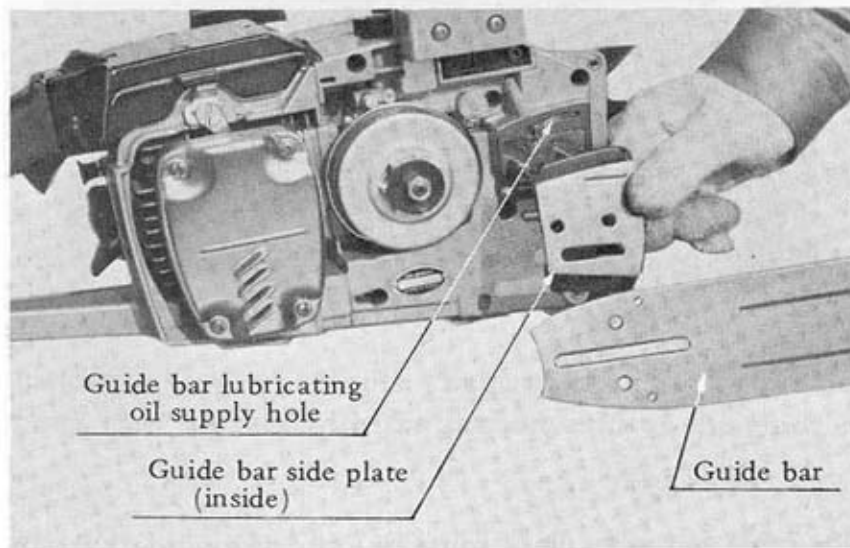


3. HOW TO FIT THE BAR AND CHAIN

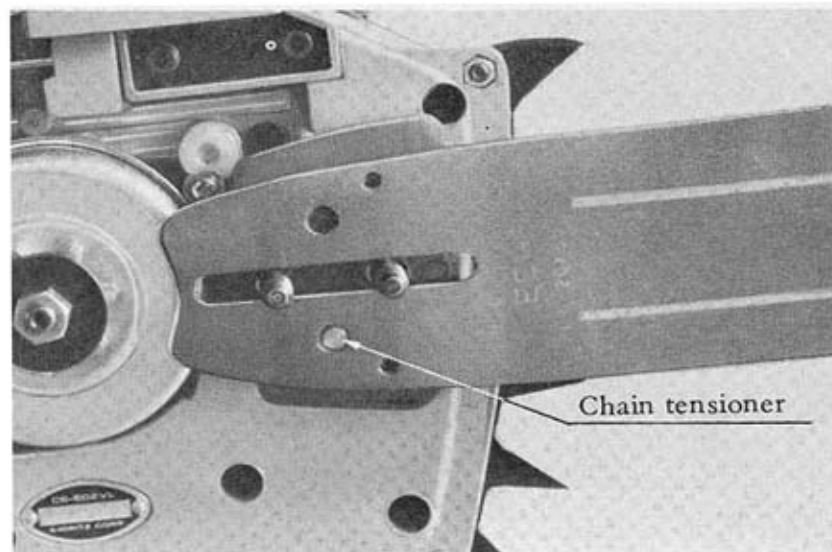
- o Remove the guide bar holder, a guide bar side-plate and a wood-piece from the assembly.
- o Mount the guide bar side plate (inside) and then the guide bar.

Notes:

- o There are two guide bar side plates: inside and outside.
- o The one in which a guide bar lubricating oil supply hole is provided is the inside guide bar side plate.



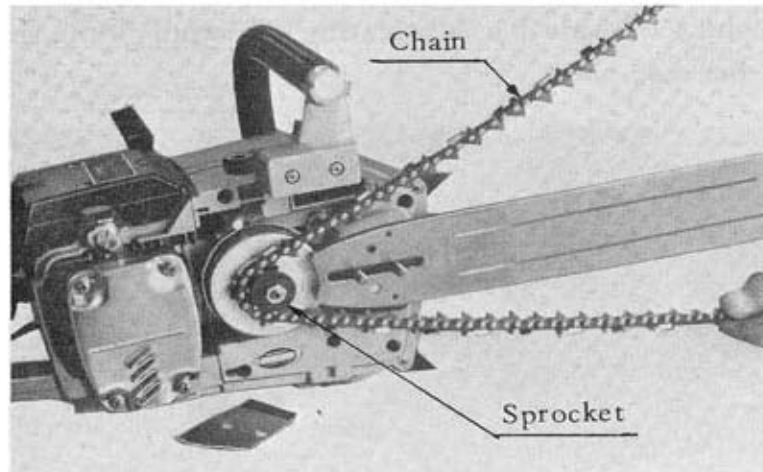
- o Mount the guide bar. Place the chain tensioner in the hole of the guide bar.



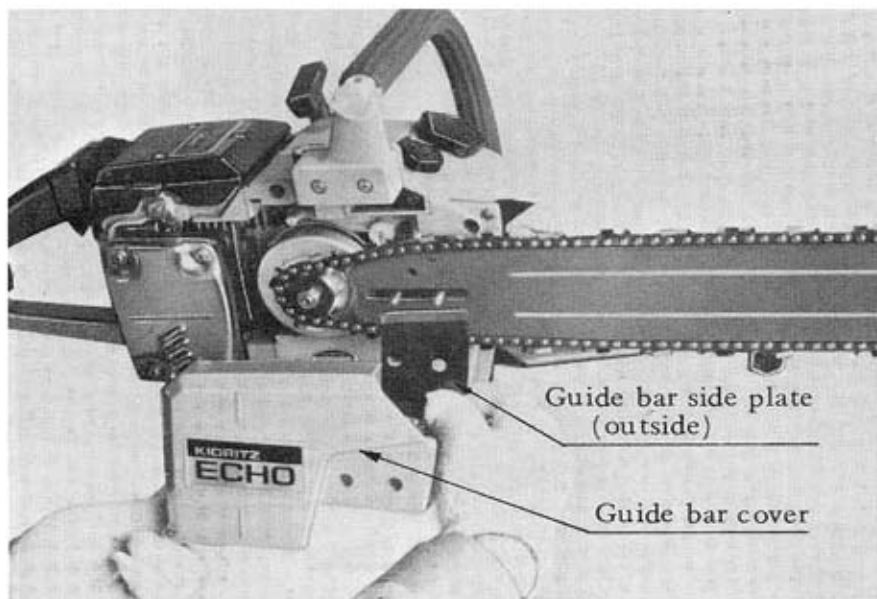
- o Mount a part of the chain on the sprocket first, then proceed to the other end on the guide bar placing chain tangs into the guide bar groove.

Notes:

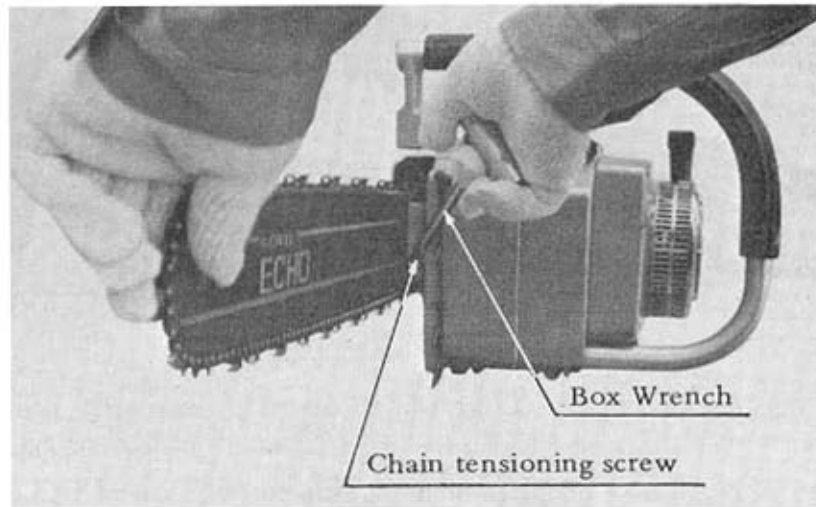
- o Ensure the cutting edges of the chain teeth point toward the bar nose or rounded end of the bar.



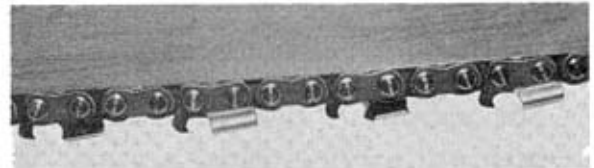
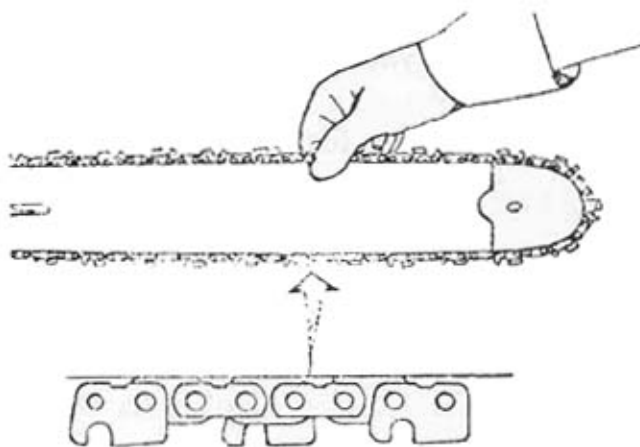
- o Mount the guide bar side plate (outside) and the guide bar cover.
- o Fasten them with flanged nuts lightly.



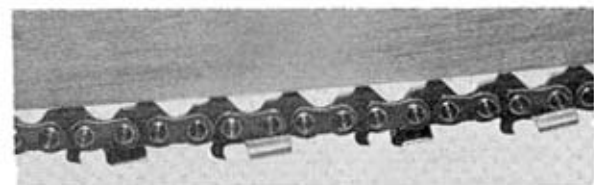
- o Tension the chain: hold up the bar end by the hand, and turn the adjusting screw clockwise.
- o It is important to tension the chain properly. Mesh the chain with the bar at the bar bottom and turn the adjusting screw out about 1/8 turn.



- o Keep tensioning to get a proper chain tension. It is obtained when the chain comes into contact with the bottom end of the guide bar.

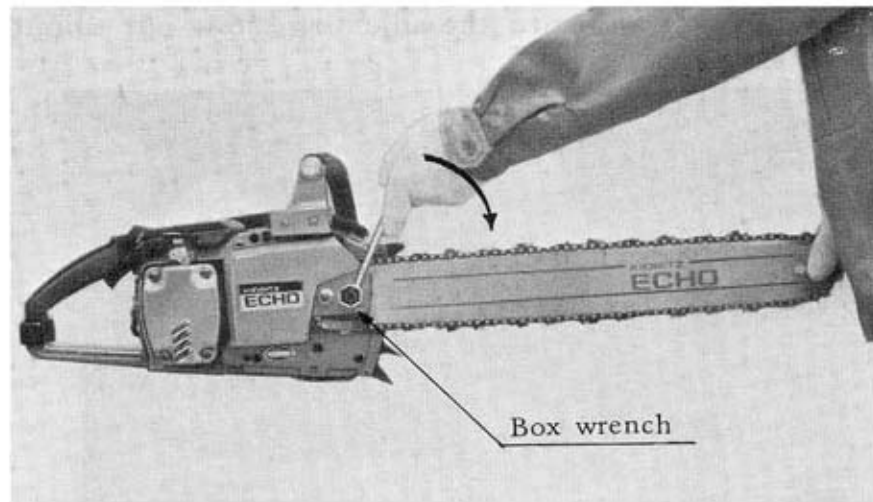


A. Chain is properly tensioned



B. Chain is improperly tensioned

- o After the chain is properly tensioned, tighten two nuts with the box wrench firmly, as the guide bar end slightly lifted.

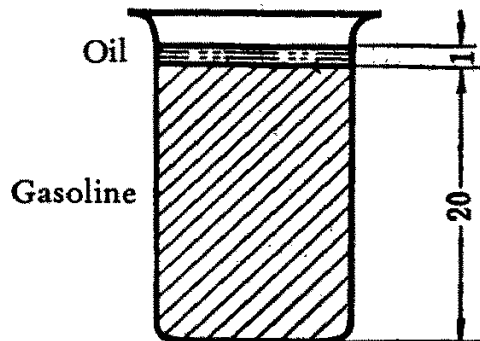


Notes:

- 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 end of the guide bar, and yet 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.

4. FUEL AND LUBRICANT

Fuel



- o The fuel used for operating the Echo 602.702VL is a mixture of gasoline and Kioritz Echo Oil.
- o The gasoline-oil ratio is 20 to 1.

Notes:

- o Make sure that the mixing ratio is 20 to 1. Any other ratio will cause engine troubles.
- o Kioritz Echo Oil is not obtainable, use motor oil for 2-cycle engines.
- o Do not use any oil other than Kioritz Echo Oil or motor oil for 2-cycle engines.

Table for preparing Gasoline-Oil Mixture

Gasoline (ℓ)	Oil (ℓ)	:	Gasoline (ℓ)	Oil (ℓ)
1.0	0.05	:	6.0	0.30
2.0	0.10	:	7.0	0.35
3.0	0.15	:	8.0	0.40
4.0	0.20	:	9.0	0.45
5.0	0.25	:	10.0	0.50

Lubricant

Appropriate lubrication to the chain in operation will minimize the friction between the chain and bar, and will assure a longer service life. Use Kioritz chain oil.

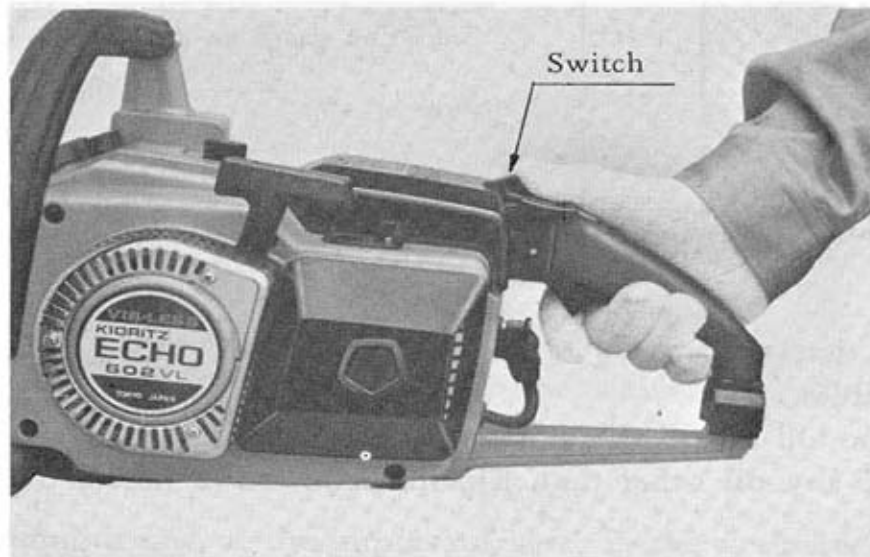
Notes:

- o Do not use waste or reclaimed oil to avoid various troubles.
- o If Kioritz chain oil is unavailable at your nearby store, use motor oil of the following grade:
 - SAE # 30 in summer
 - SAE # 10 in winter (or when cutting resinous trees)

5. STARTING THE ENGINE

When the engine is cool

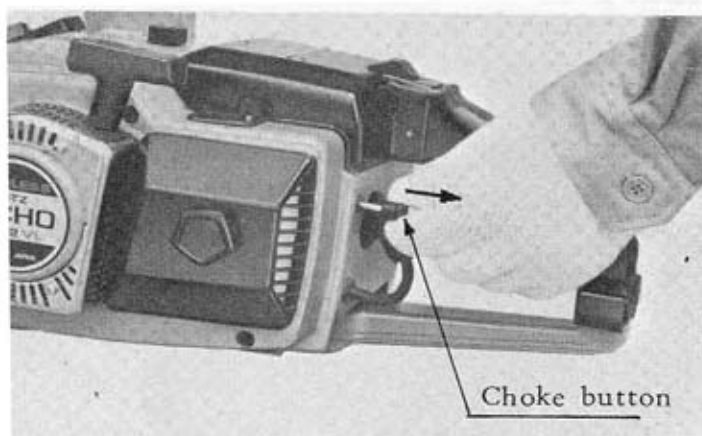
- o Fill the fuel tank with the mixed fuel and the oil tank with lubricating oil.
- o Push the switch forward.



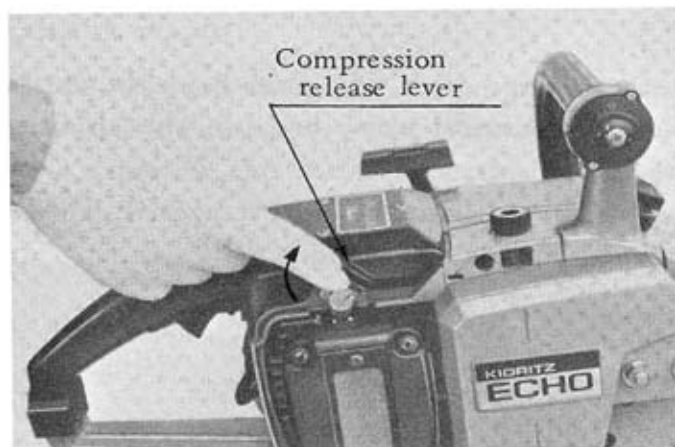
- o Push up the throttle lock knob and lock the throttle trigger.



- o Pull out the choke button as indicated by the arrow.



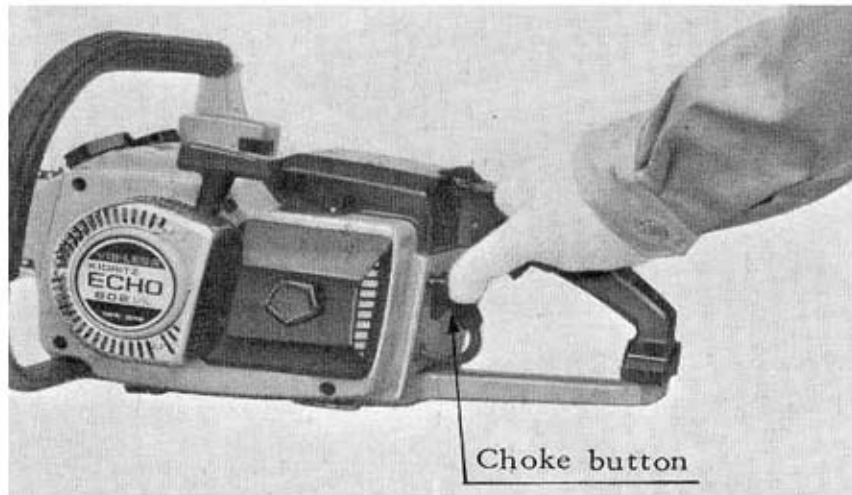
- o Push the decompressor lever in the direction of arrow mark.



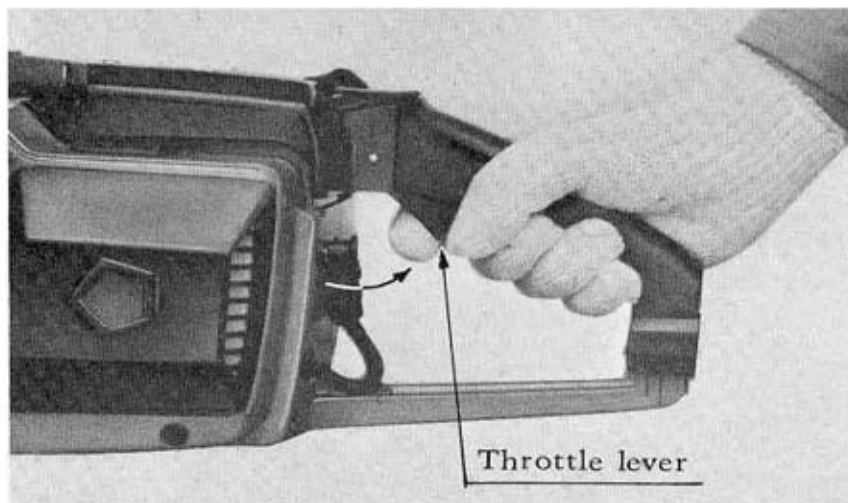
- o Pull the recoil starter rope. Secure the chainsaw as shown when you pull the recoil starter rope.



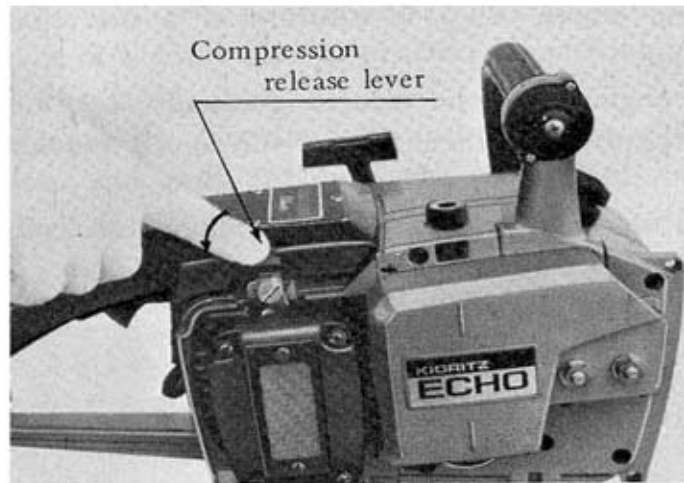
- o When you pull the recoil starter rope a few times, you may hear the first firing sound. Then push back the choke button as indicated by the arrow.



- o Pull the recoil starter rope after you push back the choke button, and the engine will start. Be careful now, because the chain will start running when the engine starts.
- o Pull the throttle trigger a little bit and release it. The throttle lock then disengages and the engine enters idling.



- o Thus, the decompressor will be disconnected.



When the engine is warm

Lock the throttle trigger, move the decompression lever in the direction of the arrow, and pull the starter rope to start the engine. If the engine will not start, pull the rope in the same procedure as in the case where the engine is cool.

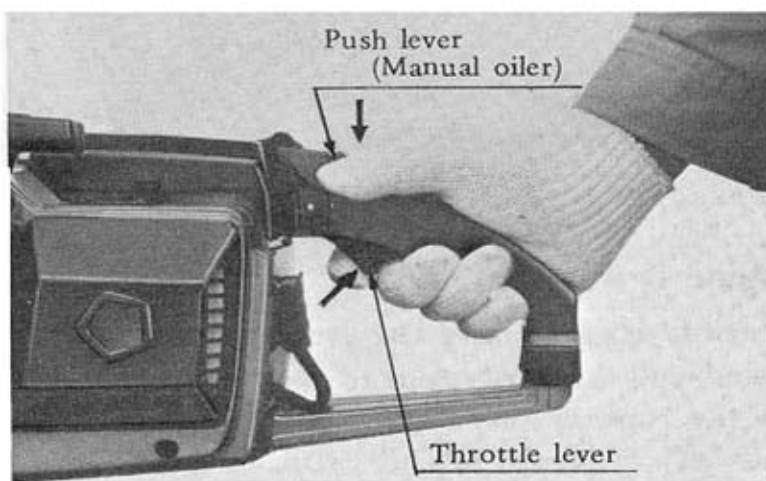


Notes:

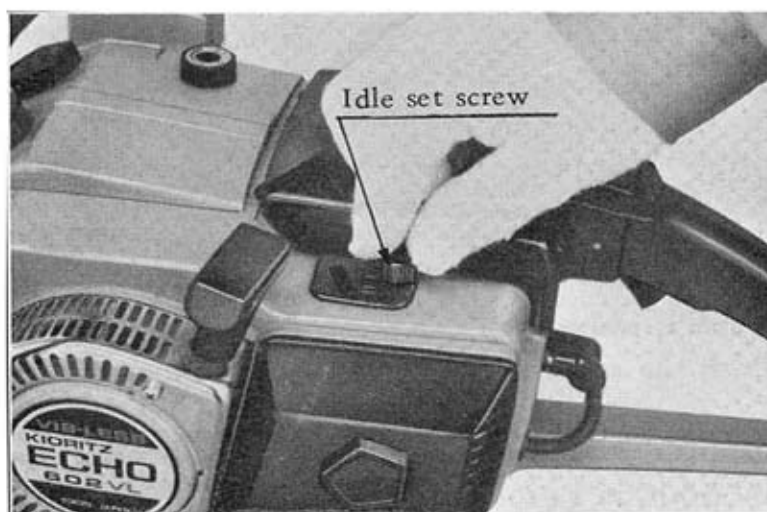
- o When the engine is warm, you can start it without using the throttle and the choke. Push the spot switch, move the decompression lever, and pull the rope.
- o When you start the engine with the choke pulled, always put the choke in the original position as soon as you hear the first firing sound.

6. RUNNING AND STOPPING THE ENGINE

- o When the engine starts, keep it running at a low speed for 5 or 6 minutes.
- o After idling the engine, pull the throttle gradually to run it faster.
- o The chain starts turning when the engine speed reaches about 3,000 r.p.m.
- o When the chain starts turning, press the manual oiler push button two or three times for lubrication.



- o When idling the engine, adjust the engine speed by turning a knob located on the air cleaner. Turn it to clockwise to make the engine run fast, or to counterclockwise to make it run slow.
- o Push back the switch as indicated on it by arrow to stop the engine.



7. FELLING AND LUMBERING

- o Familiarize yourself with your chainsaw before you start actual cutting.
- o To this end, it is a good idea to practice by cutting a felled tree several times.
- o To cut a tree, open the throttle fully and place the spike against the tree, and the chain saw will cut into the tree. You need not press the chainsaw firmly against the tree.

Felling

- o Decide on the direction to knock down a tree.
- o Remove all obstacles around the tree to operate the chainsaw easily and safely.
- o For your safety, find a shelter nearby.
- o Make a cut in the tree on the side to which the tree is to be brought down.
- o Then make another cut in the opposite side at a level a little higher than the one previously made.



Lumbering

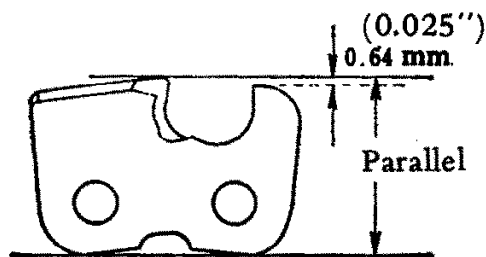
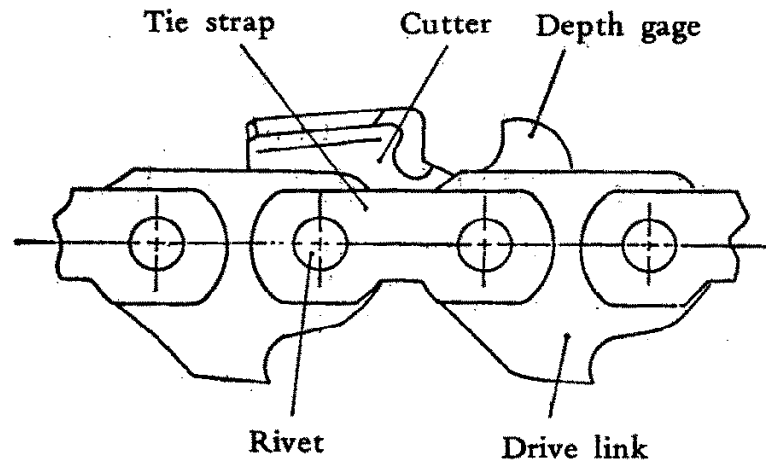
- o Before lumbering, stabilize the felled tree: the tree on a slope may roll down as you cut off the branches.
- o Keep the tree off the ground by a support so that the chain or bar is not caught in the cut.



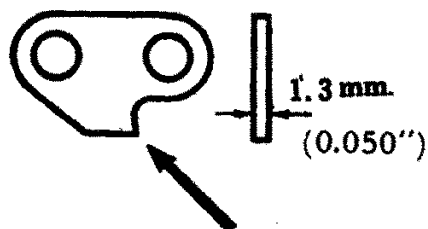
8. SETTING THE CHAIN AND SEVICING THE BAR

Parts designation

- o Each part of the chain is designated as shown in the figure below.
- o The chain pitch for the Echo 602.702VL is 9.525 mm (3/8").
- o Do not use a chain with a pitch other than the above-mentioned.



- o The depth gages limit the cutter depth at the time of cutting.



- o The drive links help remove sawdust from the bar grooves. Therefore, sharpen the lower end corner of each link.

Setting the chain

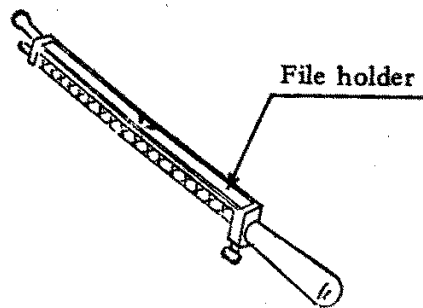
It is important to:

1. Keep the cutters always sharp.
2. Align the right and left cutters.

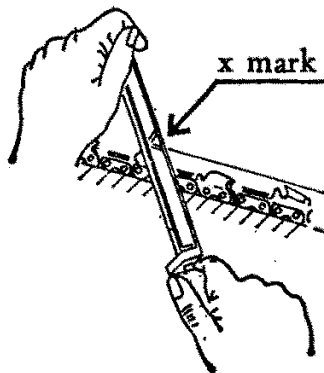
If they are blunt, irregular, or misaligned, the cutting efficiency will drop, the chain vibrations will increase, and the machine will result in a premature damage.

Correct setting procedure

- o Use a 5.5 mm (7/32") round file or a flat file to set the chain.
- o If the cutters have become smaller after being set many times, a 5 mm (3/16") round file may be used instead of a 5.5 mm (7/32") one.
- o Fix the file on the file holder.

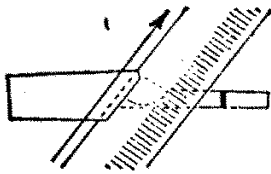


- o Place the file on a cutter and push it to file.
- o Keep the file off the cutter when you pull it back.

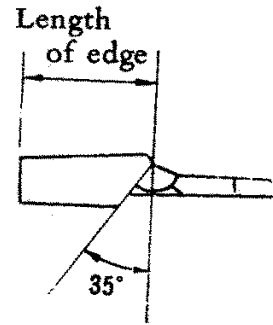


(Correct direction and position of file)

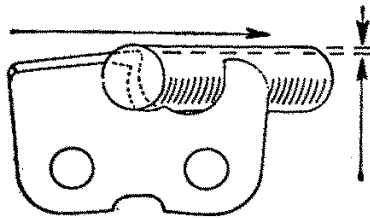
1) Upper edge setting angle (35°)



Standard angle
is 35°

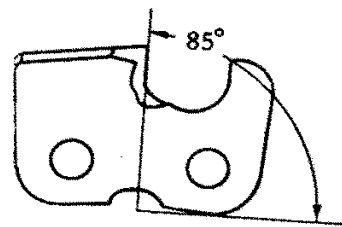


2) Lateral edge setting angle (85°)

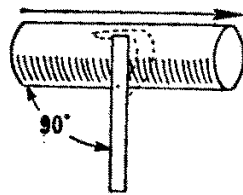


Use the file,
maintaining a
space of one
tenth the file
diameter, as
illustrated.

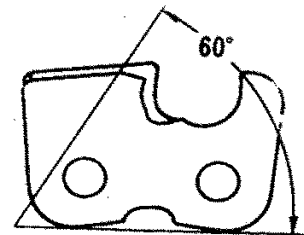
Chain pitch: $3/8''$



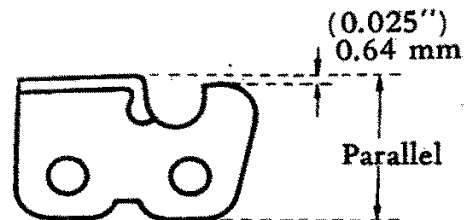
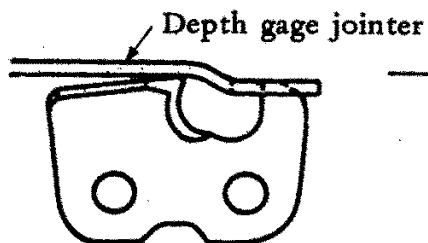
3) Upper edge end angle (60°)



Maintain the
file horizontal



4) Depth gage



Cleaning the chain

- o When the chain is stained with resin or other foreign material, clean the chain with petroleum and apply oil to it.

Servicing the bar

- o Keep the bar grooves clean.
- o Keep the oil inlet hole clean.
- o Use the bar inside out at regular intervals.

9. ENGINE MAINTENANCE

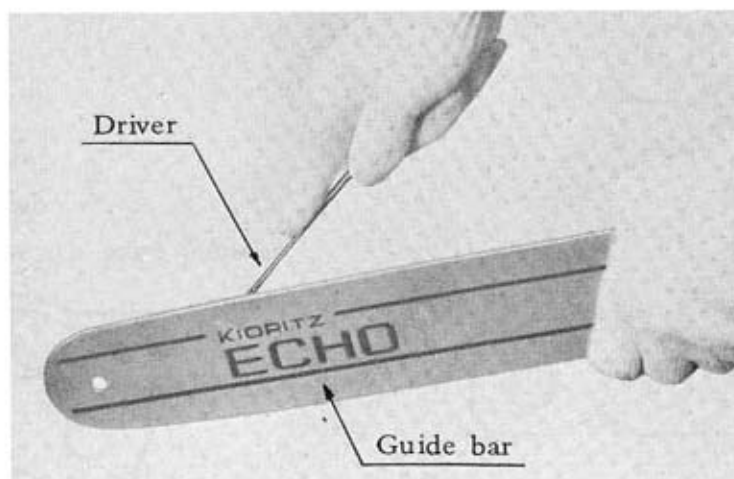
Cleaning the air cleaner Clean it every day.

- o The air cleaner can be taken off by pulling the rubber placed in the center.
- o Wipe off dust lightly, or wash the cleaner in gasoline.
- o When you wash the cleaner in gasoline, dry it completely before you put it back in place.



Inspection of screws and nuts
..... Check them every day before you use the machine.

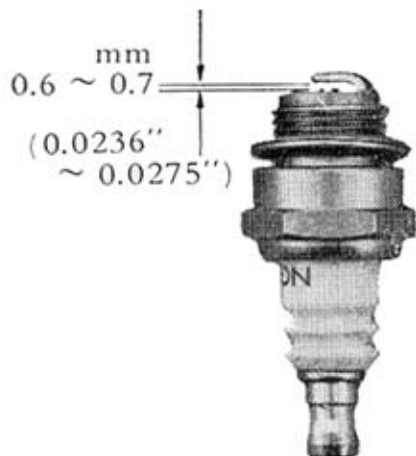
- o Check for any loose screws and nuts of the handles, fan cover and carburetor.



Inspection of the chain and bar
..... Check them every day before you use the machine.

- o Set the chain every day.
- o Clean the bar grooves.
- o Turn the bar inside out every day.

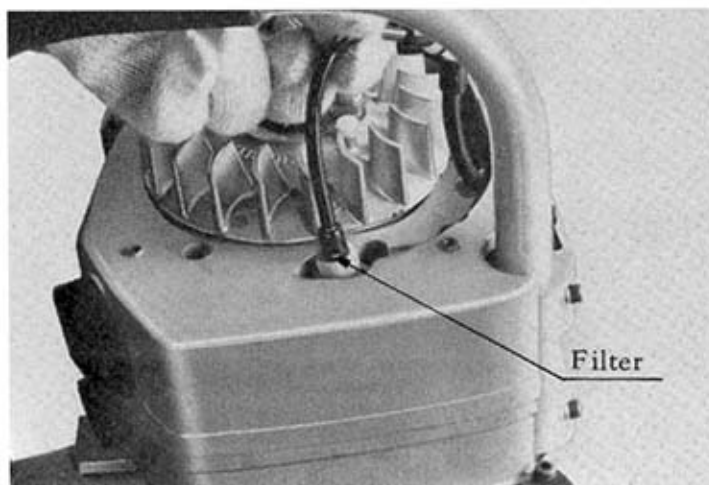
Ignition plugCheck it periodically.



- * The spark plug gap must be 0.024"~ 0.028".
- * If the gap is too wide or narrow, adjust it.
- * When the plug is stained with carbon or other material, remove the plug and clean it.

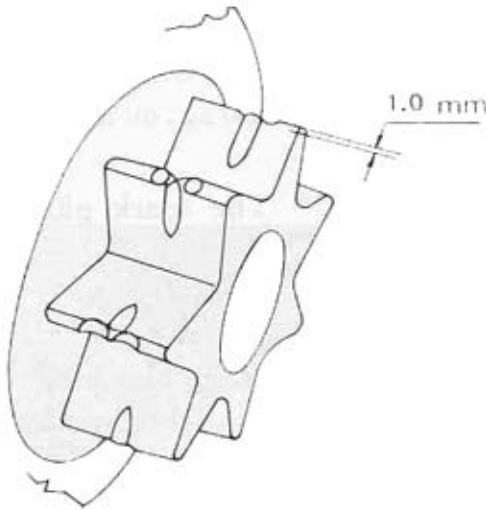
Fuel tank filterCheck it periodically.

- o Clogged filter will cause difficult starting and other engine troubles.
- o To clean the filter, remove the fan cover, the cleaner from the fuel pipe coupling.
- o Wash the filter in gasoline. If it is heavily clogged, replace it with new one.



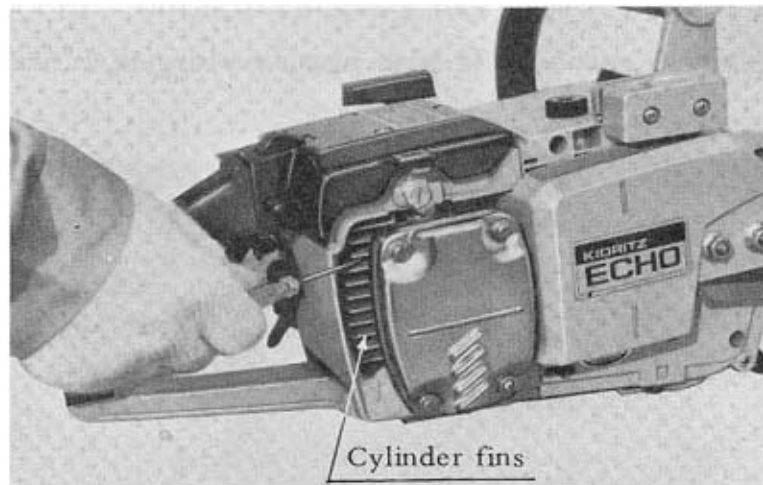
SprocketCheck it periodically.

- o Worn-out sprocket will cause the chain a premature damage.
- o If the wear becomes 0.00984" max, replace it with a new sprocket.



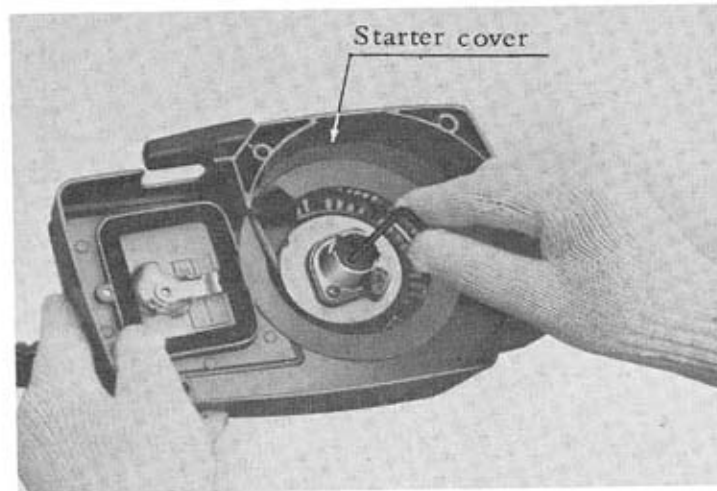
Cylinder finsCheck them periodically.

- o Clogged fins will reduce cooling of the engine.
- o Whenever clogged, remove the fan cover and right handle to clean the fins.



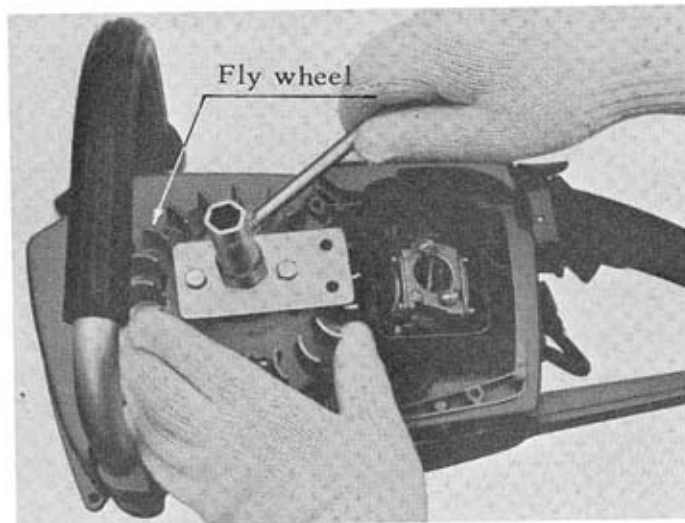
Recoil starterCheck it periodically.

- o When the recoil starter fails to function normally, dismantle it in the following order. Check it and replace defective parts, if any:
- o Remove the fan cover.
- o Loosen the recoil fastening screws.

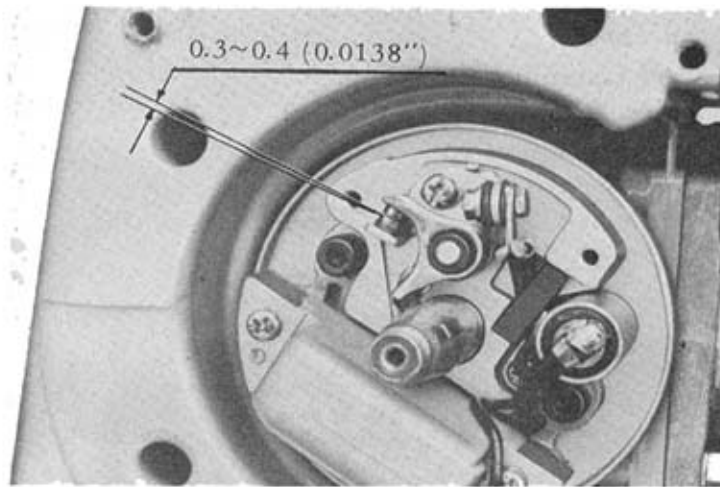


MagnetoCheck it periodically.

- o Remove the fan cover.
- o Remove the rotor. Use the puller. Never try to strike the rotor out.



- o Remove the point cover, and check if the breaker point gap is 0.0138".
- o When you adjust the point, be careful not to stain it with oil or any other material.



Automatic oilerCheck it periodically.

- o when the chainsaw is shipped from the factory, the automatic oiler is already adjusted to deliver 20 – 25 cc (maximum delivery: 1.225 ~ 1.530 cu.in.) of oil when the engine runs at 6,000 r.p.m.

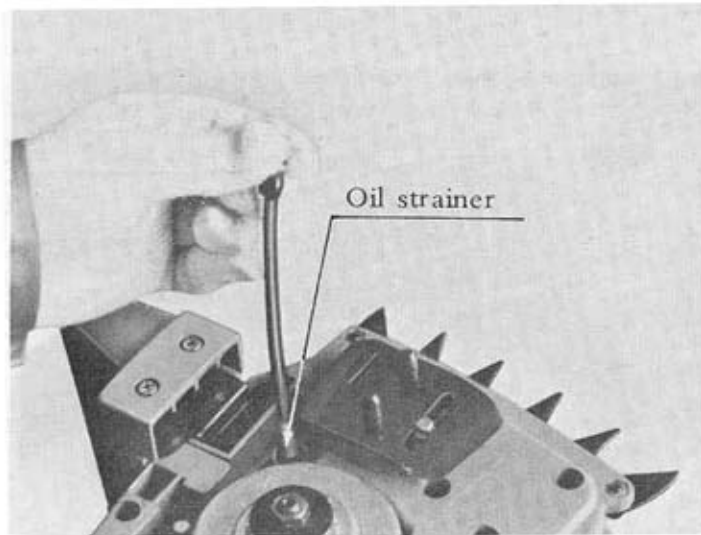
Notes:

- o Turning the adjusting screw clockwise decreases the amount of oil delivery. Do not turn the adjusting screw beyond the stopper, because more than 1 complete turn will stop oil delivery.



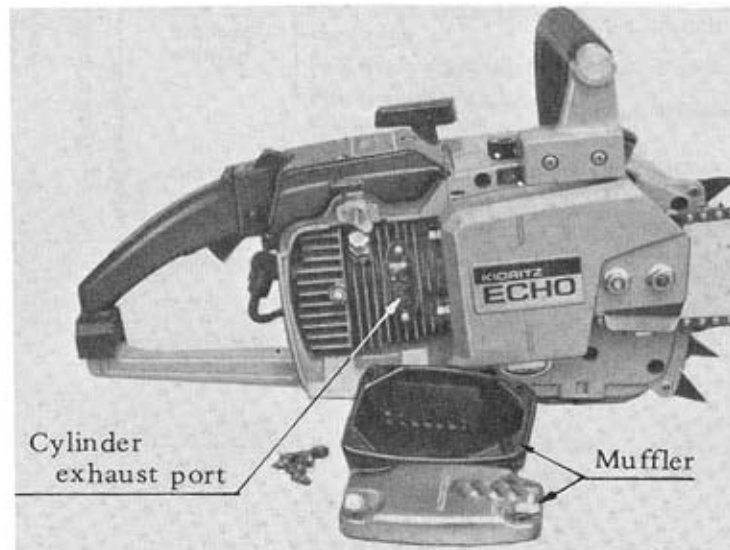
Oil strainer Check it periodically.

- o When you remove the oil strainer, remove the blank plug located on the centrifugal clutch and pull the oil strainer lightly with a 5 mm (3/16") screw.
- o If clogged with sawdust, wash it in gasoline.



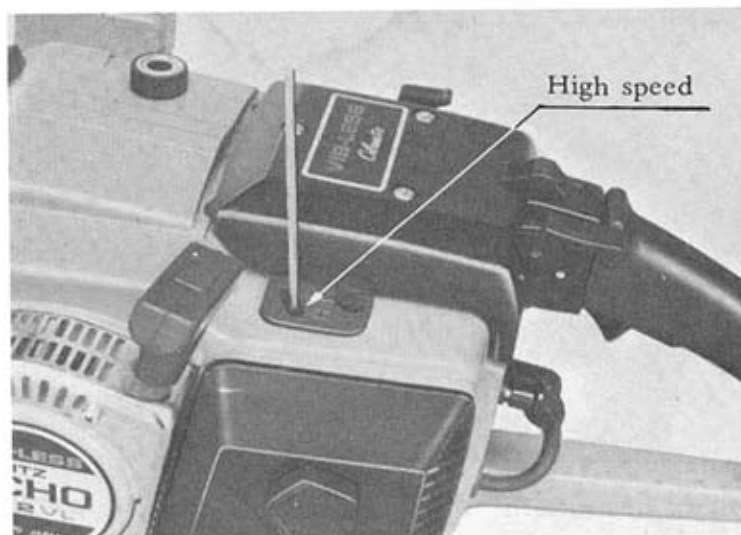
Muffler Check it periodically.

- o If carbon deposits in the cylinder exhaust port and the muffler, the engine output drops and the muffler emits sparkles.
- o If so, disassemble the muffler and remove carbon. Do not damage the cylinder



Carburetor
.....When the carburetor does not function properly,
adjust the needle valve as follows:

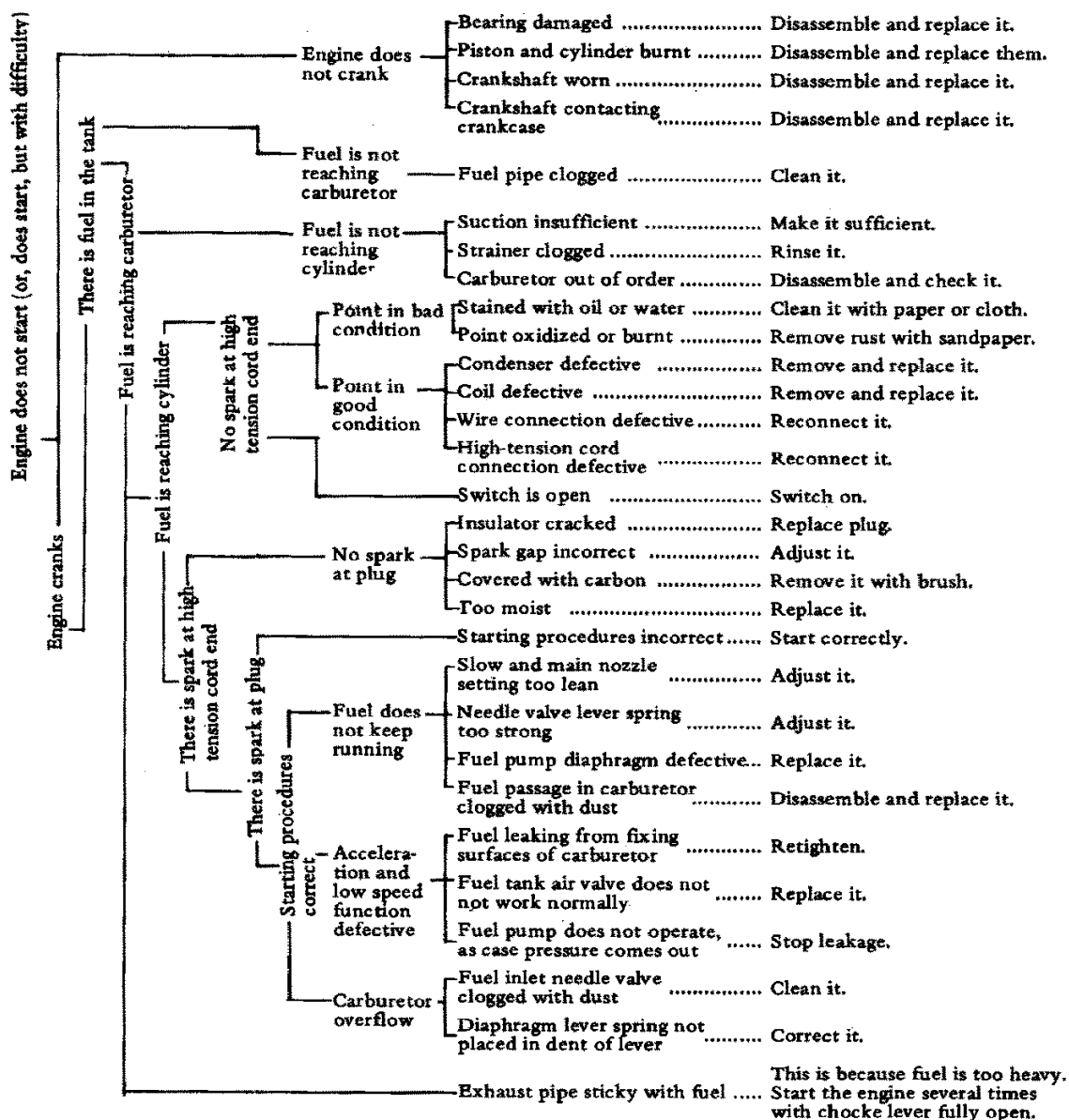
- o Turn the adjusting screw clockwise slowly so that the needle valve is in the fully closed position.
For high speed running, open the screw 3/4 turn and for low speed, one turn.

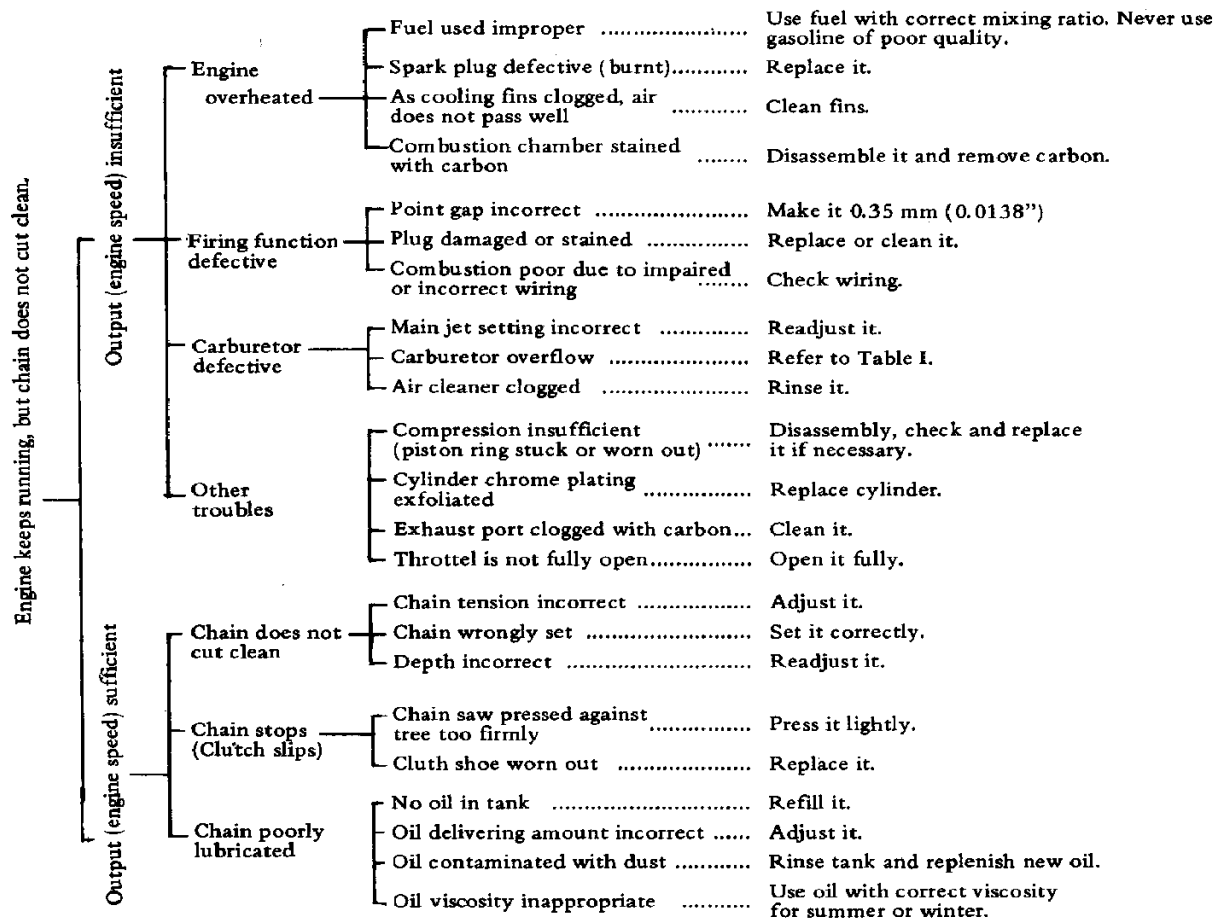


10. TROUBLE SHOOTING

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

1



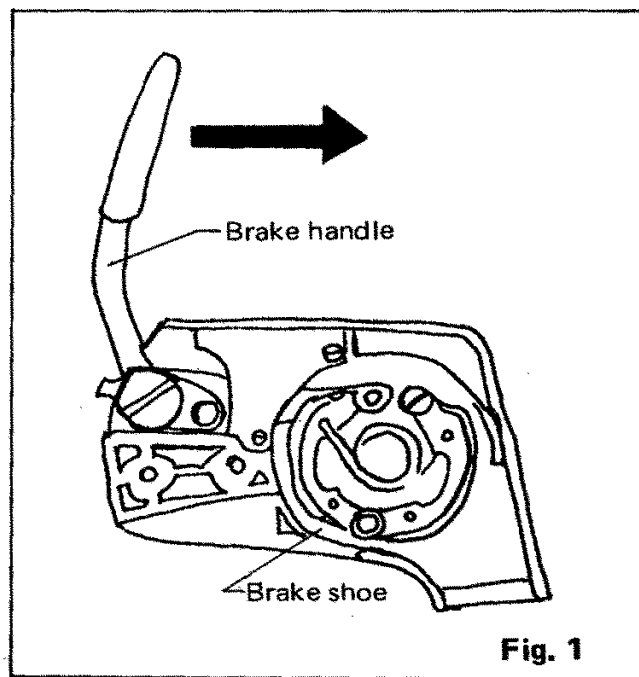


11. CHAIN BRAKE ASSY (Optional supply at extra cost)

- Chain Brake is one of the Safety Devices, which protects operator against injury due to malfunction of saw chains. 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. Chain Brake is the device to stop the motion of saw chains instantaneously in such event. Chain brake Ass'y is available as option, when ordering it give the parts number.

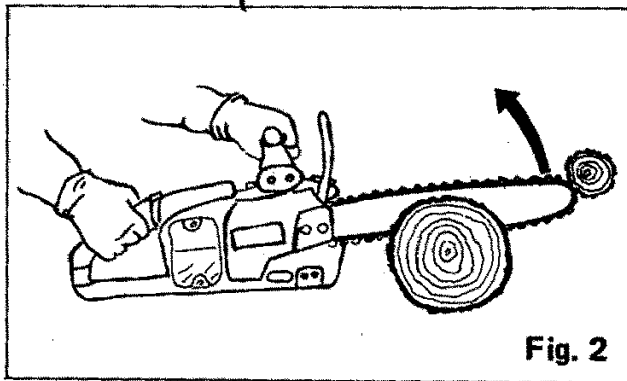
433100-1023 2: Chain brake ass'y (w/guide bar cover)

- Fitting Chain Brake Ass'y
 - (1) Chain Brake should be fitted under the condition that brake levers is fully pulled in arrowed direction and brake shoes are contracted, as shown in the figure.
 - (2) According to the order of fitting bar and chains, see page 3 ~ 6, firstly fit the guide bar side plate and adjust tension of saw chains.
 - (3) Fasten the fitting nuts of guide bar with box wrench, and then make sure that chains can be slid smoothly along the guide bar groove.

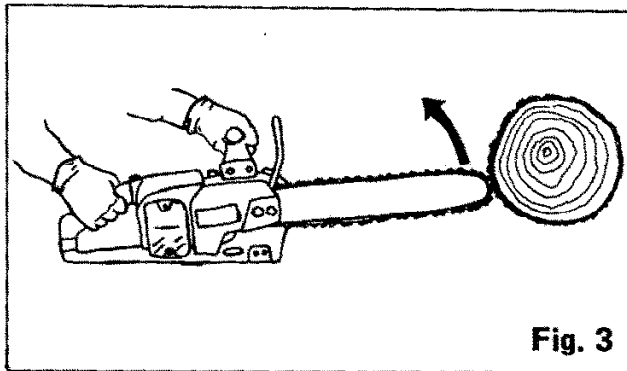


Chain brake Ass'y

- Example when guide bar is kicked back.

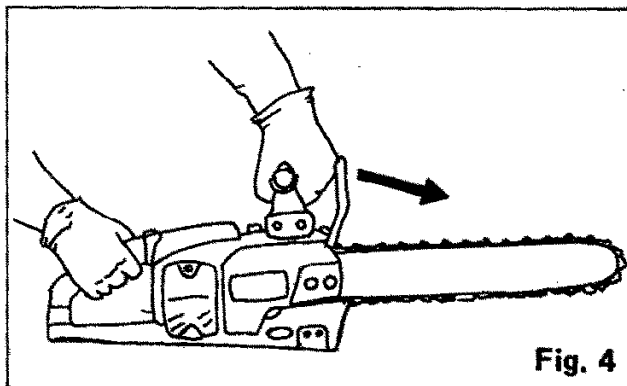


- (1) When the tip of the bar touches a wood.

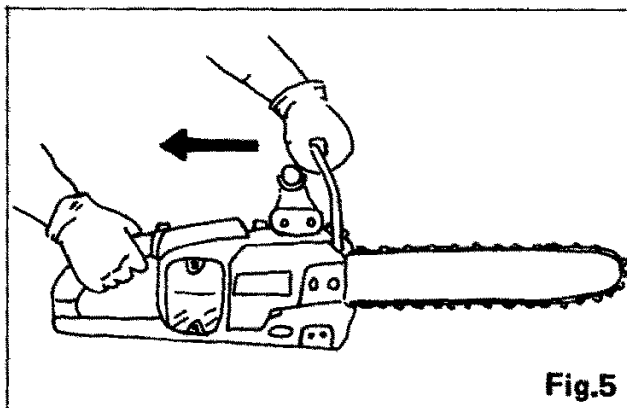


- (2) When plunge-cutting is done improperly.

- Function and Resetting of Chain Brake:



- (1) When the brake lever is pushed down forwardly, chain brake works to stop motion of saw chains.



- (2) When pulling back the lever full in arrowed direction as shown in the Fig., chain brake can be reset.

○ **Operation:**

For exercise, while cutting a small wood, push down the lever forwardly to work brake.

Before operating the chain saw, make sure that the chain brake works properly.

○ **Cautions in Handling Chain Brake:**

Please pay attentions to the following points so as to work the chain brake properly.

- If sawdust is clogged, function of the brake deteriorates slightly. Keep it clean at all times.
- Don't elevate revolution of engine by squeezeing throttle lever recklessly, as so doing may deteriorate function of brake and cause damages.
- As chain brake is used only in emergency, don't use it at random when not necessary.