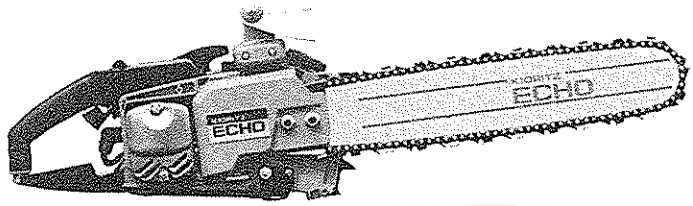
ECHO
CHAIN SAW

OPERATOR'S MANUAL

CS-452VL



For Indian

CAUTION

Read Rules for Safe Operation and Instructions Carefully

898 571-10131

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 (3m) from the fueling point before starting the engine.
   - Always store gasoline in approved container.
   - Handle at a clean and cleared place and away from fire.
   - Do not smoke while handling fuel.
   - Always stop the engine to refuel the tank.
   - Do not remove the fuel tank cap when engine is still warm or running
   - Do not refuel a hot engine. Wait until the engine has cooled down.
   - Avoid spilling fuel or oil. Spilled fuel should always be wiped up.
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 (spark 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 arrestor 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 Operator's 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:

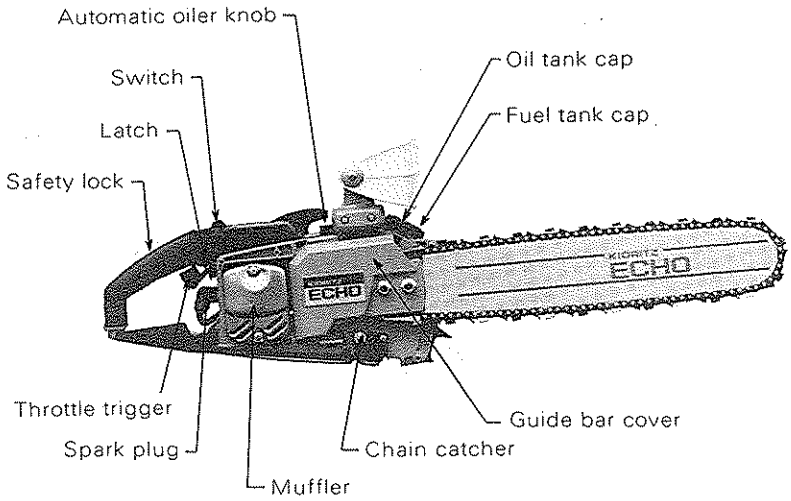
Hold the chain saw firmly with both hands. Don't over reach.
Don't let the nose of the guide bar contact a log, branch, ground or any other obstruction.
Cut at high engine speeds.
Don't cut above shoulder height.
Follow manufacturer's sharpening and maintenance instructions for the saw chain.

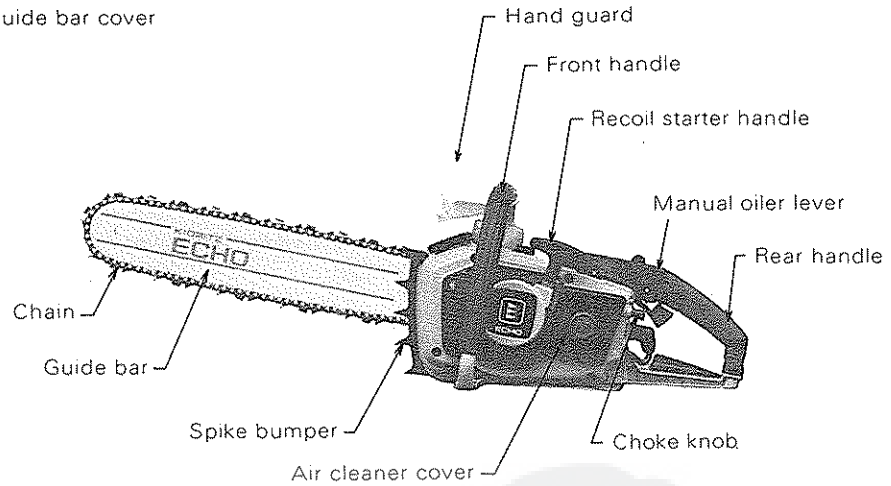
CONTENTS

TECHNICAL DATA

Dimension:	L x W x H (mm)	381 x 261 x 261 (15.0" x 10.3" x 10.3")			
Weight:	Power head, dry (kg)	6.0 (w/o chain and guide bar) : (13.2 lbs)			
Engine:	Type	Air cooled 2-stroke single cylinder			
	Displacement (cc)	44.3 (2.703 cu. in.)			
	Carburetor	Walbro diaphragm type			
	Magneto	Flywheel magneto, Breaker point system			
	Spark plug	NGK BM-6A or Champion CJ-8			
	Starter	Recoil starter			
	Power transmission	Automatic centrifugal clutch			
Fuel:	Mixture ratio	Regular grade gasoline 20 parts: 1 part ECHO brand motor oil (or an air cooled 2-stroke engine oil of a reputable brand name.)			
	Tank capacity (*l*)	0.5 (16.9 FL.OZ.US)			
Chain oil		Motor oil			
	Tank capacity (*l*)	0.25 (8.5 FL.OZ.US)			
Guide bar and chain:	Lubrication	Automatic and Manual			
	Chain pitch	3/8"			
	Gauge	.050"			
	Number of drive links	60	64	72	
	Guide bar type	40M50	43M50	50M50	
	Guide bar gauge	.050"			
Safety device:		Front hand guard Rear hand guard Safety throttle lock Chain catcher Anti-vibration device Chain brake (Option)			

Technical data may be changed without advance notice.

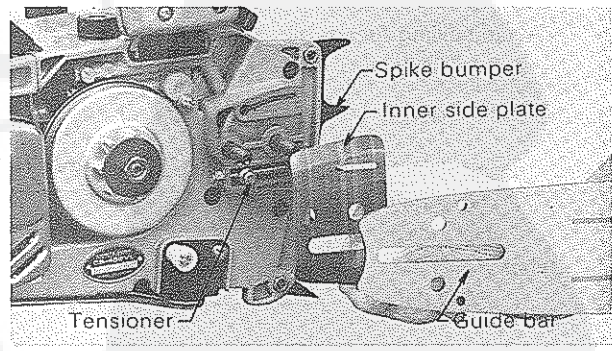




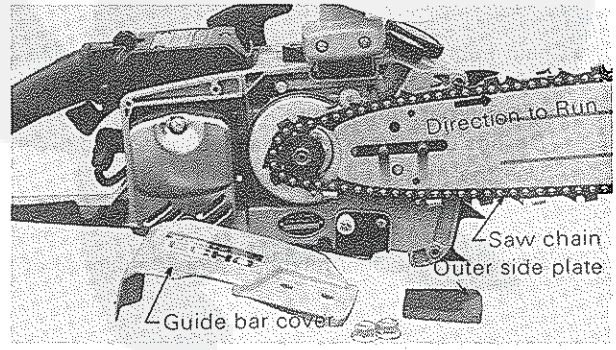
PREPARATION FOR USE

MOUNTING GUIDE BAR AND CHAIN

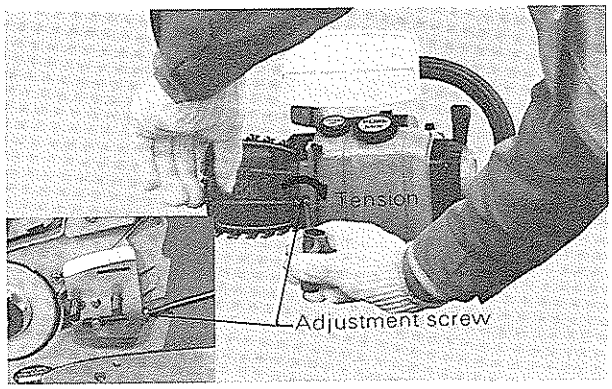
- Install spike bumper on power head with two bolts & nuts.
- Unscrew two nuts and remove guide bar cover, side plates and shipping spacer.
- Mount the inner side plate first.
  - There are two kinds of side plate, inner and outer. The one having a chain oil delivery port is the inner.
  - The chain oil delivery port is oblong and provided in the upper part of the inner side plate.
- When mounting it, do not mistake the front side for the back side or the upside for down.
- Mount bar and slide toward sprocket to make saw chain installation easier.

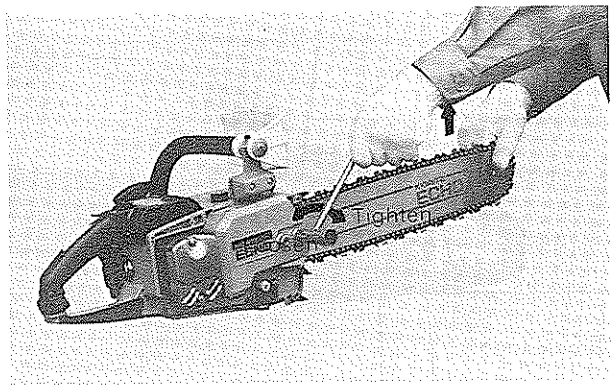


- Install saw chain as shown. (Ensure cutter links direction.)
- Fit tensioner to bar. Move tensioner as required. (Tensioner may be adjsted by turning adjusting screw. Refer to next page)
- Install outer side plate and guide bar cover.
- Fasten two nuts lightly. (Do not tighten up totally.)



- Lift guide bar and turn adjustment screw clockwise until chain comes in contact lightly with bottom of bar.
- Fasten two nuts firmly holding bar toward arrow as shown.
- Confirm chain can be pulled by hand.
- Retension chain if necessary.





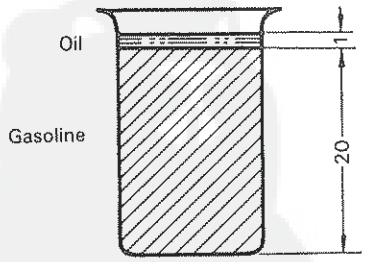
OPERATION

CHECK UP of Nuts and Screws

Check up on loose nuts and screws on the handle, fan cover and so on before using the chain saw every day.

FUEL AND LUBRICANT

- Fuel is a mixture of regular grade gasoline and the ECHO brand motor oil (or an air cooled 2-cycle engine oil of a reputable brand name).
- Mixture ratio is
  Gasoline 20 parts : Oil 1 part.



- —Fuel mixture at the ratio other than 20:1 may cause malfunction of the engine.Watch out for mixture ratio.
- —Pour 1/2 the gasoline into the safe container, add the oil and mix thoroughly.
  Now add the remainder of gasoline and mix again.
- —Disregard instruction on oil container.
- —Do not use motor oil at random choice.
- —Do not mix directly in engine fuel tank.
- —Avoid spilling fuel or oil. Spilled fuel should always be wiped up.

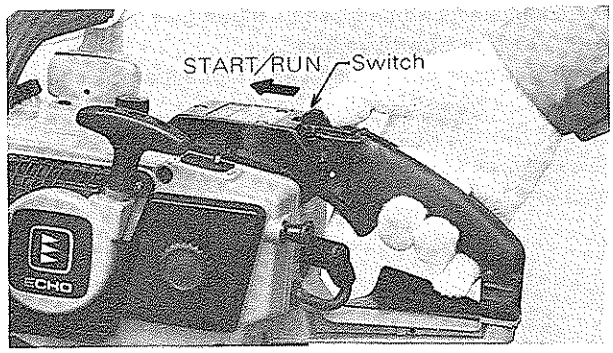
Fuel mix chart (Gallon vs metric-liter)

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

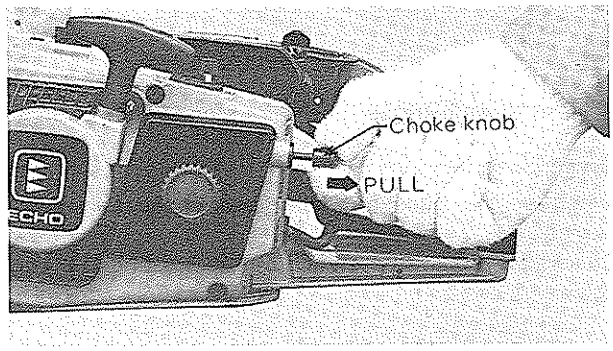
- Chain Lubricant
  Proper lubrication of the chain while in operation reduces to the minimum the friction between the chain and the guide bar, and assure a longer service life. Use motor oil of proper quality for this purpose.
  - —Do not use waste or reclaimed oil to avoid various oiler problems.
  - —Use the motor oil of the following grades:
    SAE NO. 30.....in summer
    SAE NO. 10.....in winter or when cutting resinous trees
  - —When refilling fuel mixture, supply chain oil at the same time.

STARTING THE ENGINE

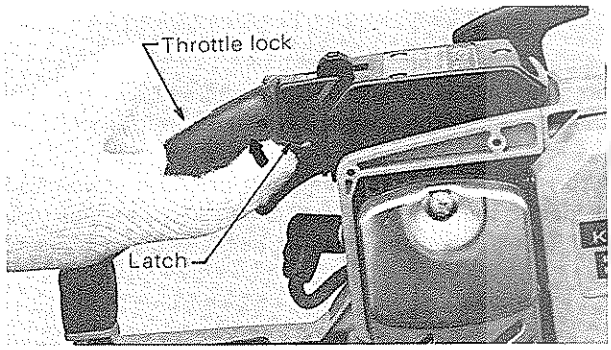
WHEN THE ENGINE IS COLD



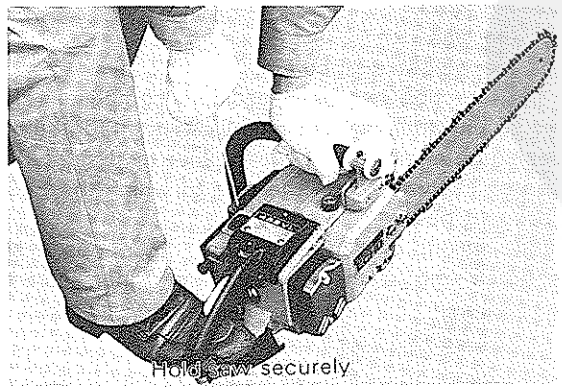
- Fill the fuel tank with fuel mixture.
- Fill the chain oil tank with lubricant.
- Slide stop switch to front.



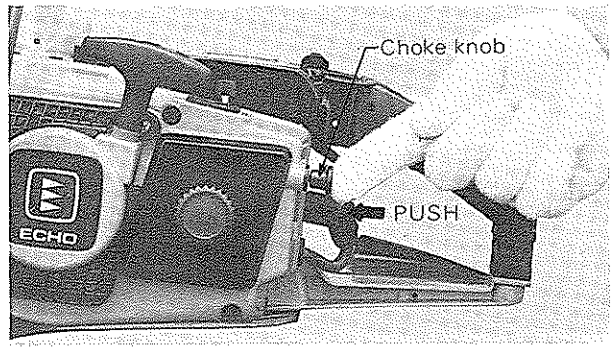
- Pull choke fully.



- Press throttle lock down and turn latch as shown.



- Securely hold the saw as shown and pull starter handle several times until first firing sound.
- Make sure bar and chain in the clear while starting the saw.



- Push choke in totally.
- Pull starter handle again.

- When engine starts, immediately grasp throttle trigger up, to release the latch.

[CAUTION]

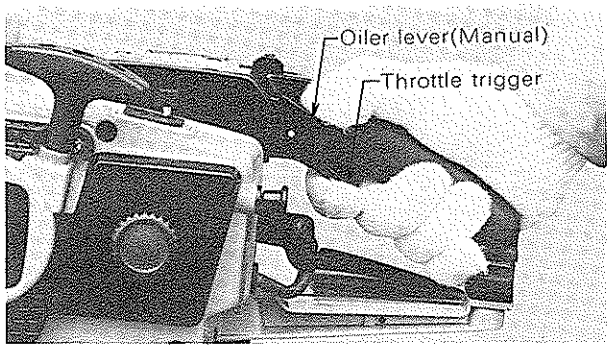
Be careful that chain runs when engine is started.
Never use the latch for cutting.
Use it only when starting the engine.

WHEN THE ENGINE IS WARM

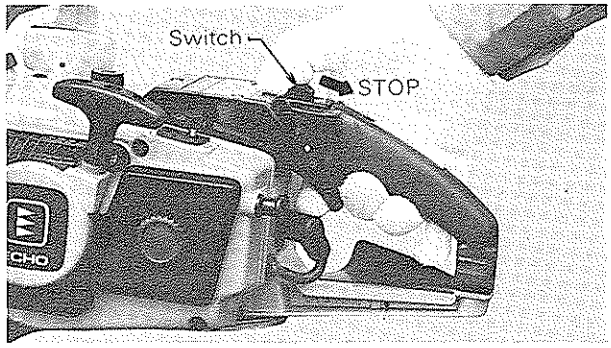
- Confirm fuel and chain oil in the tanks.
- Slide stop switch to front.
- Pull starter handle.
- Choke may be used if necessary but be sure to push it back on first firing sound.
- Push compression release lever forward until it locks.
- Warm engine may be started withrottle throttle latch.

RUNNING AND STOPPING THE ENGINE

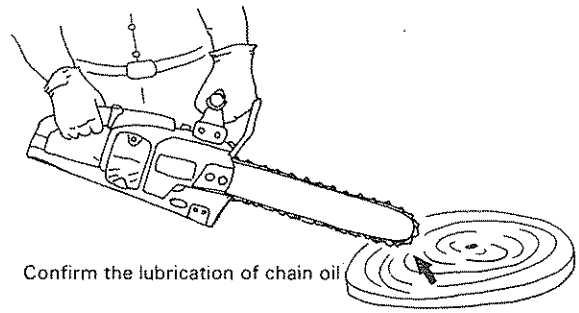
RUNNING



STOPPING



- When engine starts, keep idling for a few minutes.
- Pull throttle trigger gradually and increase revolution of the engine.
- The chain starts running when the engine speed reaches to 3,000 rpm approximately.
- Confirm proper acceleration and lubrication of chain and bar.
- Do not run the engine at high speed unnecessarily.
- Give several strokes to manual oiler lever and confirm function, too.



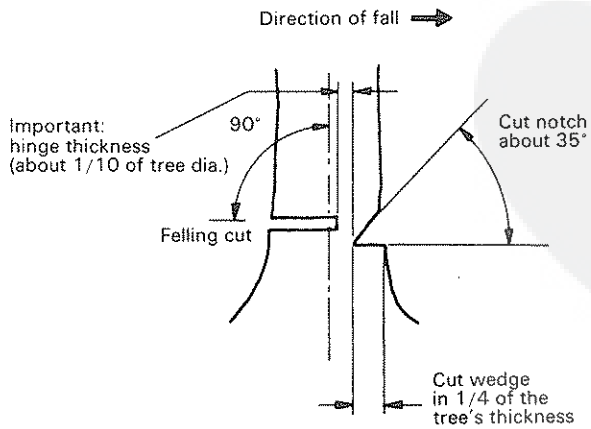
- Release throttle trigger and slide stop switch back.

[NOTE]
When engine does not stop, pull choke fully to stop engine.
Check and repair stop switch before starting the engine again.

METHOD OF CUTTING

- Read carefully the "RULES FOR SAFE OPERATION" on page 1.
- Familialize 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 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 and force a wedge into the cut to open it up. Never force the saw out of a jam.
- Do not force the saw into the cut. It will cut through a log surprisingly fast by applying light pressure. If you find you have to bear down on the saw to cut, your chain is dull, get it sharpened. 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 fine saw dust comes out instead of chips.

FELLING A TREE



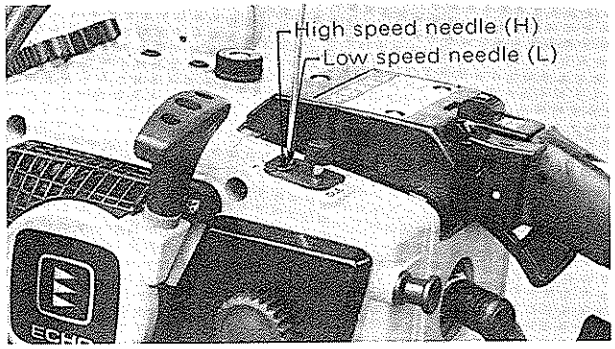
- Decide on the direction in which you wish to fell the tree.
  - Check the wind.
  - Check the lean.
  - Check the weight distribution.
- When the direction has been decided, completely clear the area around the tree and establish a good foothold.
- Also decide on a path of retreat for your own safety.
- Cut a notch in the tree on the side to which the tree is to be brought down.
- Then start making a felling cut from the opposite side of the notch and at the level slightly higher than the notch.

LUMBERING

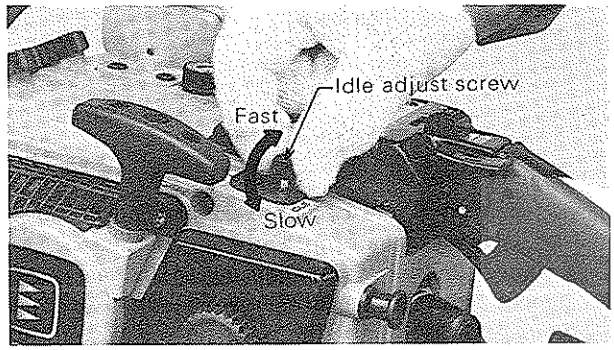
- Before lumbering, stabilize the felled tree. A tree on a slope may roll down as you limb it
- Keep the tree off the ground by a support so that the chain or bar will not be pinched.

MAINTENANCE AND CARE

CARBURETOR



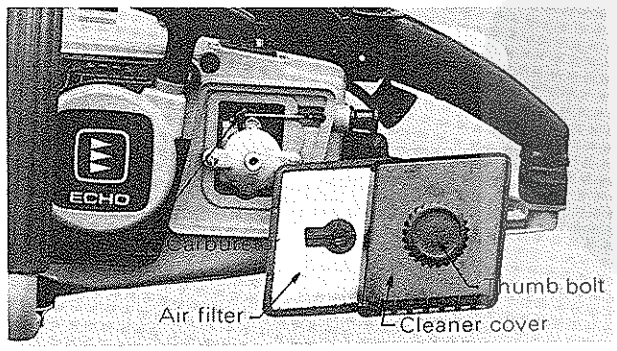
- Do not adjust the carburetor unless necessary.
- To adjust the carburetor, proceed as follows:
  - Low speed needle: (L) $1\frac{1}{8} \sim 1\frac{1}{8}$
  - High speed needle: (H) $\frac{3}{4} \sim 1$
  - Screw in the needles until lightly seated and return indicated turn. (above)



Idle adjusting screw.....(2500~3000RPM)

- Turn idle adjust knob clockwise until chain begins to turn, then back screw 1/2 turn.

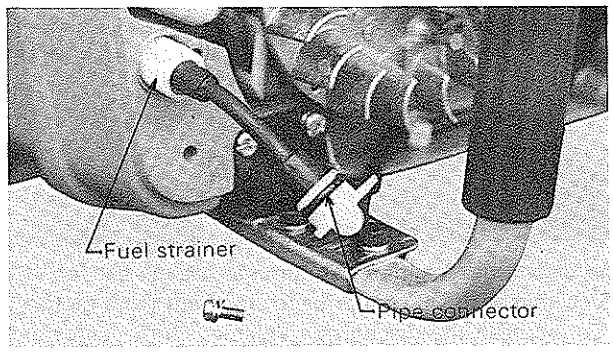
AIR FILTER



Check and clean at every use.

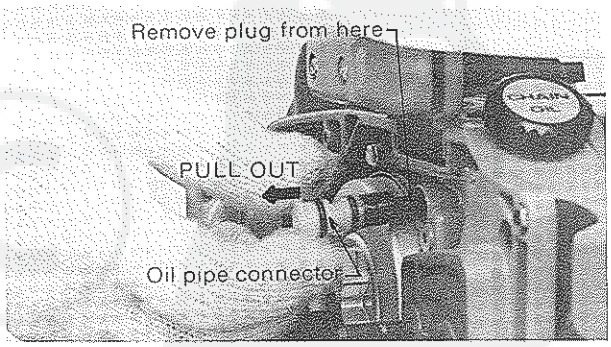
- Loosen thumb bolt to remove cleaner cover and air filter.
- Clean it in a non-inflammable solvent if necessary, and dry completely before installation.

FUEL STRAINER



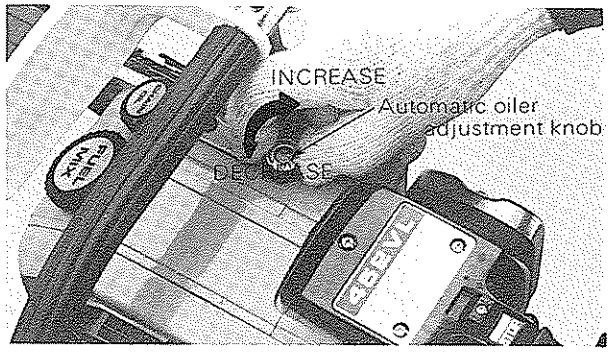
- Check periodically.
  - Do not allow dust to enter into fuel tank.
  - Clogged strainer will cause difficulty in starting engine or abnormalities in engine perfmances.
  - To clean, remove the fan cover and fuel strainer from the fuel pipe connector.
  - When the strainer is dirty, wash it in a non-inflammable solvent. Dry it completely.
  - When the inside of the fuel tank dirty, it can be cleaned by rinsing the tank out with gasoline.

OIL STRAINER



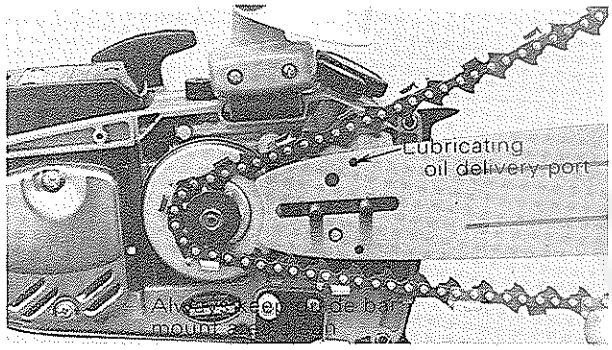
- Check periodically as follows.
  - Remove guide bar and side plate.
  - Remove setscrew placed near the centrifugal clutch, and pull out oil strainer with oil pipe connector.
  - Clean it in a noninflammable solvent as necessary. Then replace it with machine inclined to fit in the tank properly, and fit connector.

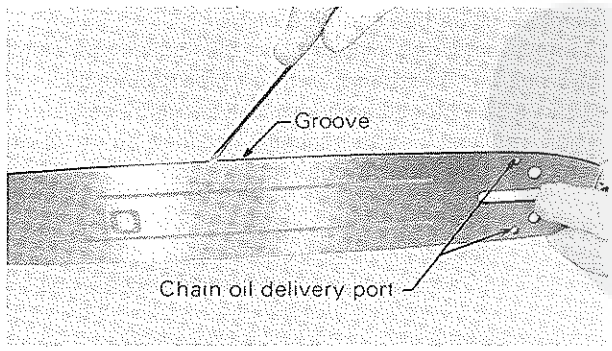
AUTOMATIC OILER



- The discharge volume of automatic oiler is set for 12 to 15 cc/min at 6500 rpm prior to shipment from factory.
  - To increase the discharge volume, turn adjustment knob clockwise.
  - When knob touches stopper and stops, this position delivers maximum volume.
  - Do not run the saw without chain lubrication or damage a chain and a bar.
  - If automatic oiler is set for full volume or if manual oiler is being used frequently, the oil tank will have to be refilled before refueling.
  - Do not turn adjustment knob beyond stopper.

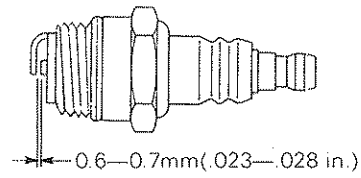
GUIDE BAR and OIL DELIVERY PORT





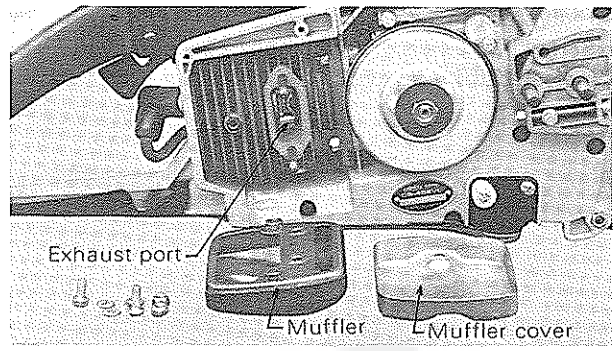
- Clean before you use the chain saw.
  - Clean the groove of the guide bar with, for example, a small screw driver.
  - Clean oil delivery port with a wire.
- Reverse guide bar periodically.
- Clean sprocket, clutch and bar mount area before installation of bar.

SPARK PLUG



- Check periodically.
  - The standard spark gap is 0.6—0.7 mm (.023—.028 in)
  - Correct the spark gap if it is wider or narrower than the standard gap.
  - When it is fouled, clean it before fitting to the engine.
- Fastening torque = 145—155kg.cm(125—135 in.lb)

MUFFLER AND EXHAUST PORT

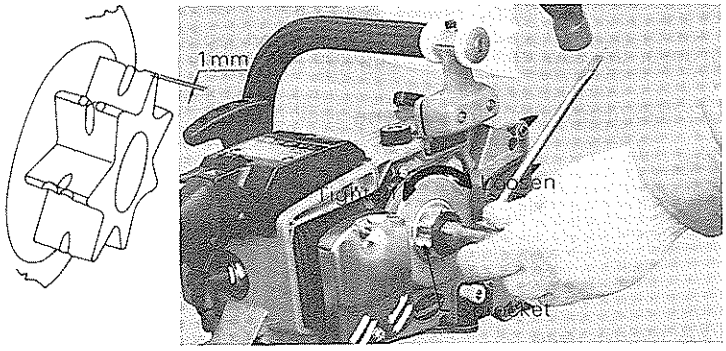


- Carbon deposit in the cylinder exhaust port and the muffler will cause the drop of the engine output.
  - Remove muffler cover and muffler. Clean carbon deposit from cylinder exhaust port with a wood stick.
  - Be careful not to scratch cylinder or piston when cleaning the cylinder exhaust port.

CYLINDER FINS

- Check and clean periodically.
  - Clogged fins result in poor engine cooling.
  - Remove the fan cover.
  - Clean the passage of air between the cylinder fins to let cooling air pass easily.
  - Clean the fan cover at the same time.

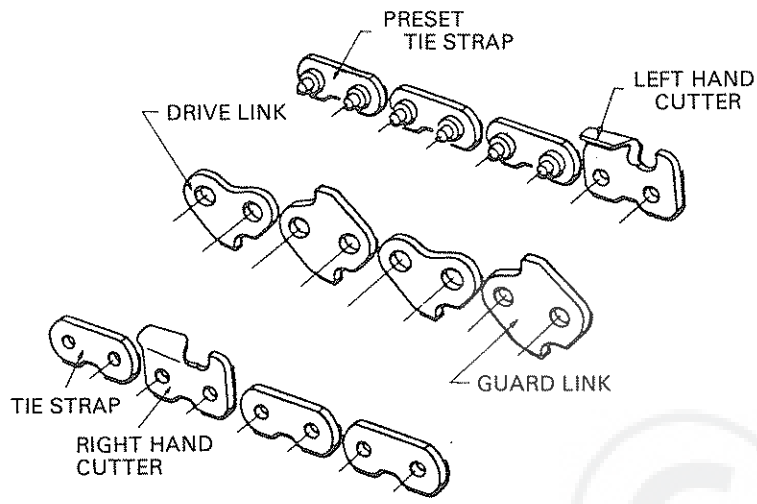
SPROCKET



- The damaged sprocked causes premature damage or wear of saw chain.
  - When the sprocket has worn out 1.0 mm or more, replace it.
- The nut is fitted with a left hand thread.

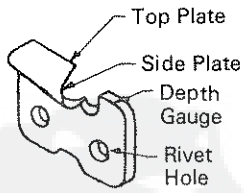
SETTING THE CHAIN

NOMENCLATURE OF PARTS.

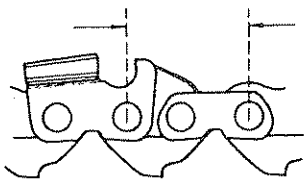


- Guard links reduce the potential of kickback.

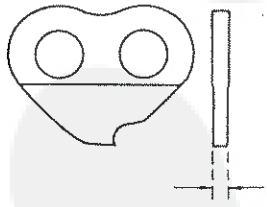
CUTTER PART NAMES



Pitch = One half of this distance

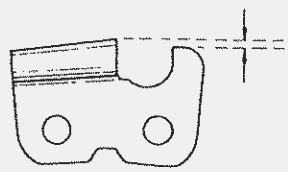


Gauge



- Gauge is nominal dimension of guide bar groove and link width.

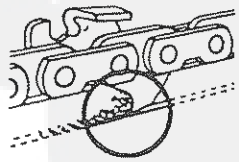
Depth gauge setting

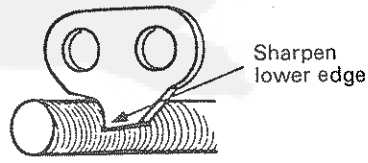


- Depth gauge controls the cutting depth of the chain.

The important matters for saw chains sre as follows.

- Keep the cutters sharp at all times.
- Keep the left the right cutters properly aligned.
  - Note that blunt or irregular cutters will result in poor cutting performance, increased vibration of chains and premature breakage of the chain saw.
- Drive link serves to remove sawdust from the groove of the guide bar. Therefore, keep the lower edge of the drive link sharp as indicated by the arrow.



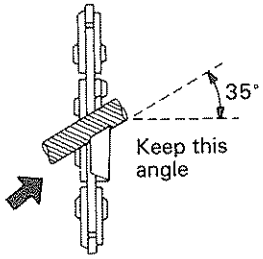


– When setting of the chain is finished, soak it in oil and wash away filings completely before using.
– When chain has been filed on the bar, supply sufficient oil on it, rotate the chain slowly to wash away the filings before using sgain.
– If the chain saw is operated with filings clogged in the groove, the saw chain and the guide bar will be damaged prematurely.
– If the saw chain becomes soiled with resin, for instance, clean it up with kerosene and soak it in oil.

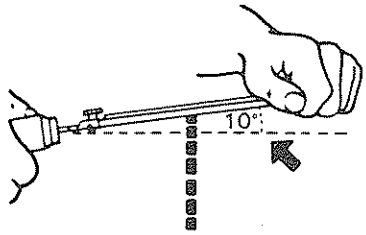
SETTING SAW CHAINS (FOR OREGON 72LP)

For setting saw chains, round file (5.5 mm⌀: 7/32") and flat file are used.

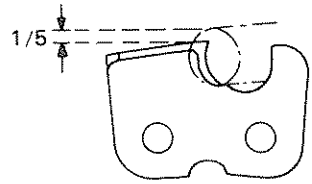
- To keep correct position and correct angle, use the file holder (Sure Sharp).
  – Round file (P-No. 897510-00230) and flat file (P-No. 897511-00230) are option.
  – Please inquire as to the details of file holder, if necessary.



PUSH FILE AS SHOWN

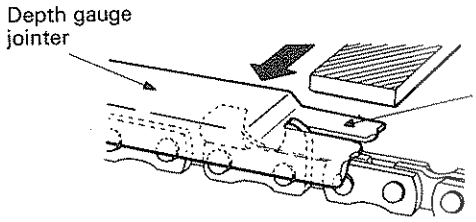


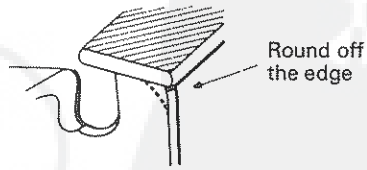
LOW FILE HANDLE 10°



ONE FIFTH OF FILE DIAMETER REMAINS ABOVE CUTTER EDGE.

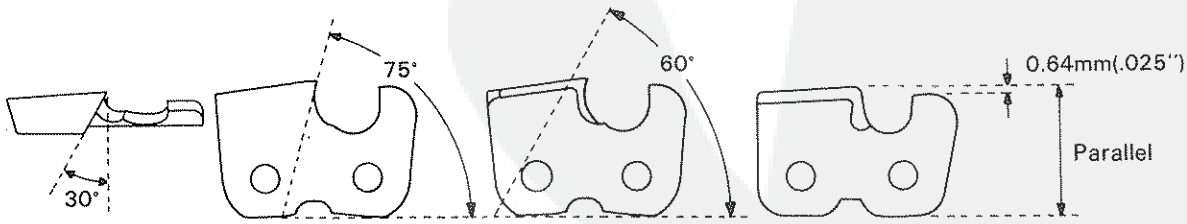
- Place the depth gauge firmly on guide bar so that depth gauge protrudes. Then file top of depth with flat file until flat with top of the gauge.
  – Round off the front edge without fail.





- Cutters, filed properly are as follows.

(Top plate angle) (Side plate angle) (Top plate cutting angle) (Depth gauge)

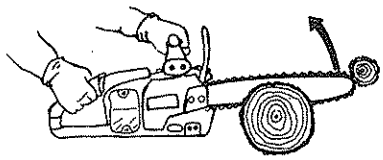


[NOTE]
Top plate angle becomes 30° when filed properly. (File angle 35°, and lowered file holder 10°)
These angles are refered to Oregon 72LP.
To sharpen other type chain, follow chain manufacturer's instruction.

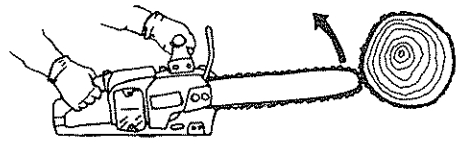
CORRECT USE OF CHAIN BRAKE (OPTIONAL SUPPLY AT EXTRA COST)

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.

Kickback Motion:

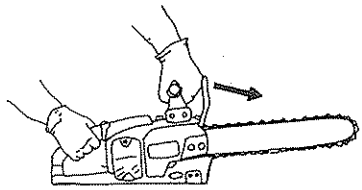


- When the bar nose hits the other tree etc.



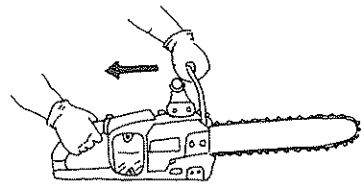
- Improper thrust cutting.

Function:



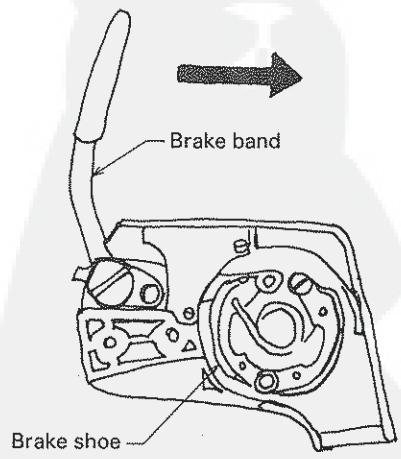
- When the lever is pushed forward, chain brake instantly works to stop the chain.

Release:



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

- Chain brake ass'y is available as optional supply at extra cost, when ordering it give following number.
  433100-1013 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 side plate and adjust tension of saw chains.



[NOTE]
- For practice, while cutting a small tree, push the lever forward to function the brake.
- At all times, confirm whether the brake works properly before every cutting work.
- If wood chips are clogged, function of the brake deteriorates a little. Keep the device always clean.
- Do not recklessly elevate revolution of the engine by squeezing the throttle trigger while the chain brake is at work.
- Chain brake is the device used only in emergency. Do not use them at random unless really necessary.
- Never check the function of brake in the area of fuel-air mixture.

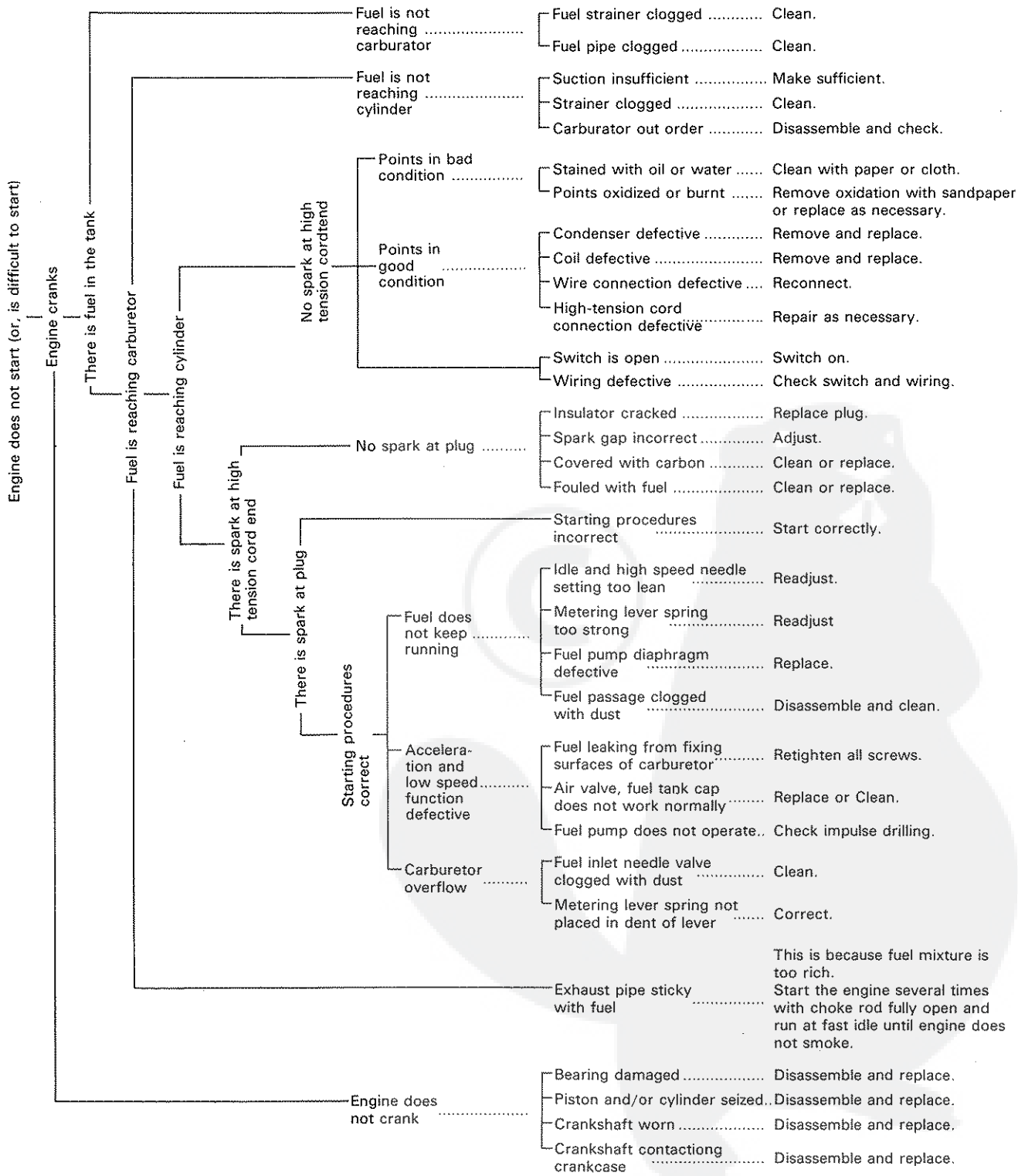
TROUBLE SHOOTING

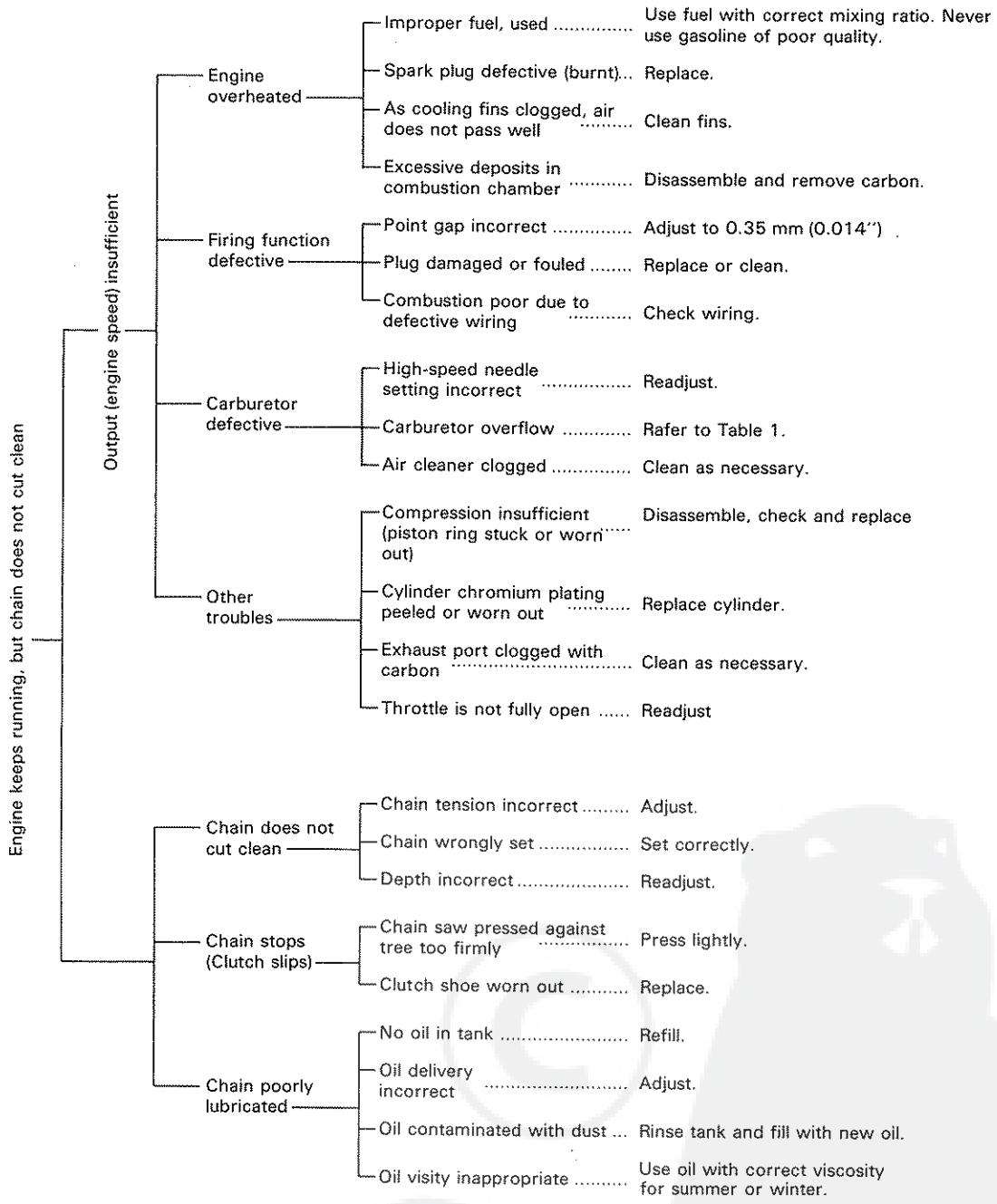
FAILURES such as difficulty in starting engine, irregularity in functions and abnormality in cutting performances can normally be prevented completely if a little attention is paid in advance.
Such failures can be readily disposed of even by a beginner.
In the following we wish to give essential points in countering failures of the chain saw and the 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 fuel is supplied fuently, 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.

The details of TROUBLE SHOOTING refer to Table 1 and 2. ● Refer to the chart to locate the problem and repair as necessary.

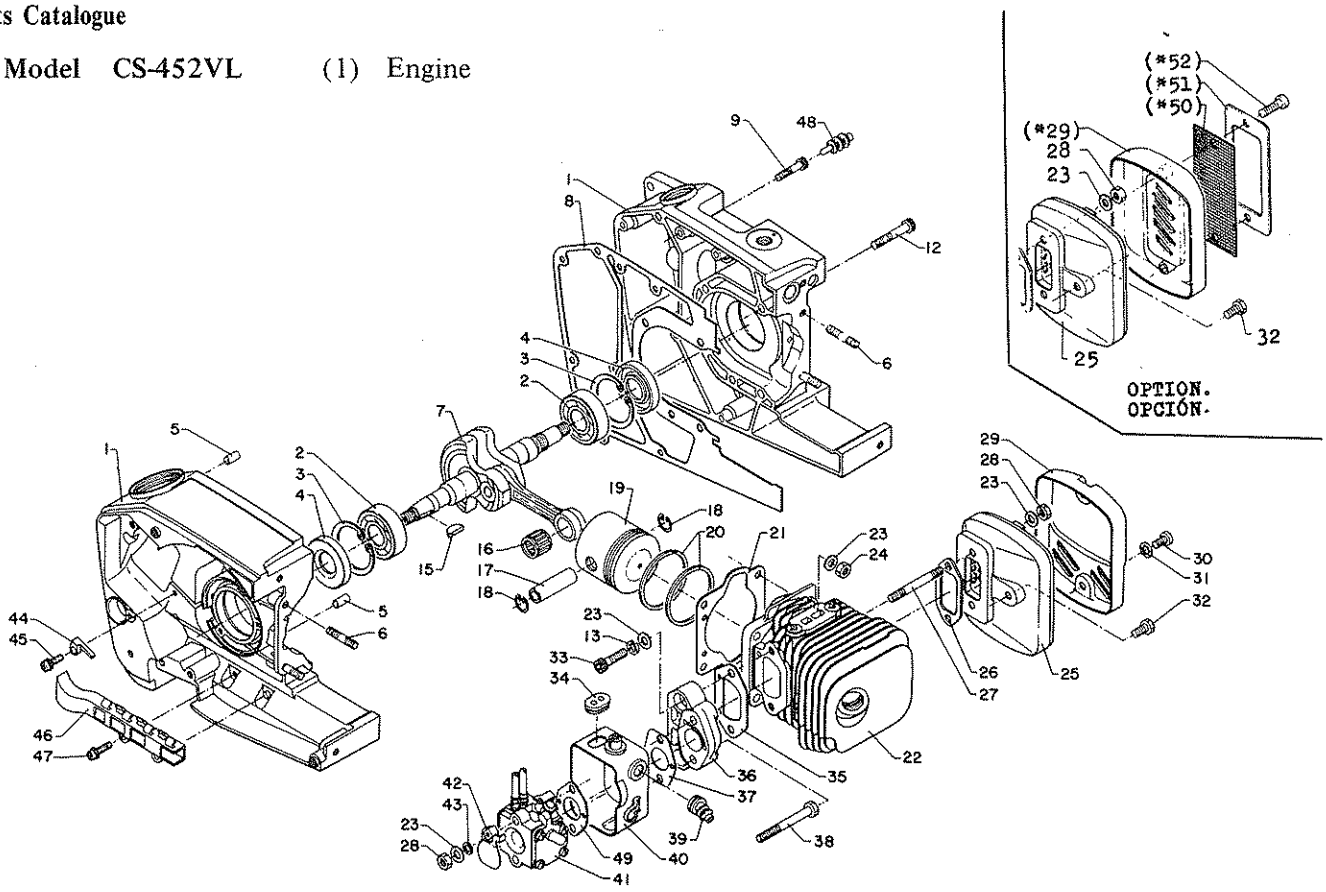




STORAGE AFTER USE

- 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 plastic sheet.
- Drain fuel tank, pull starter slowly a few times to drain fuel from carburetor.
- Pour a little amouht 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.

Model CS-452VL (1) Engine



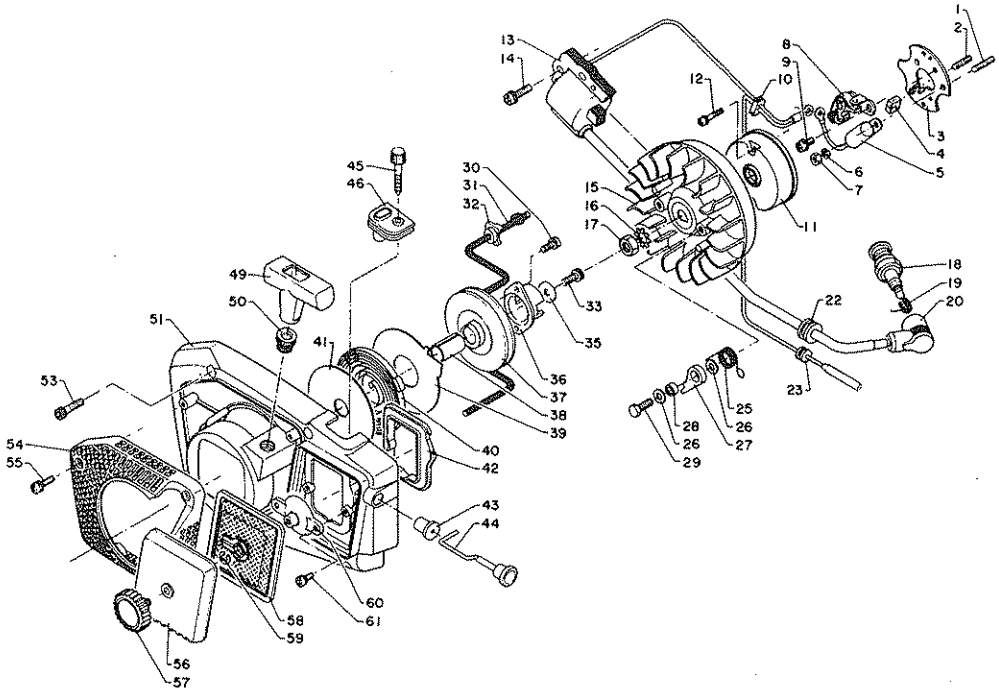
Key No.	Part No.	Q'ty	Part Name
1 – 1	100 200-1013 1	1	Crankcase set
2	900 810-0620 2	2	Ball bearing
3	900 702-0003 5	2	Circlip (CR-35)
4	100 213-0283 0	2	Oilseal (ISM 15356)
5	100 215-0283 0	2	Knock pin
6	100 214-0083 0	4	Cylinder stud
7	100 100-0343 0	1	Crankshaft
8	100 242-1013 0	1	Crankcase packing
9	900 162-0402 0	8	Bolt 4x20
12	900 162-0503 0	4	Bolt 5x30
15	100 142-0031 0	1	Key (M)
16	100 012-1233 0	1	Roller bearing
17	100 013-0343 0	1	Piston pin
18	100 015-0012 0	2	End ring
19	100 010-1013 0	1	Piston
20	100 011-0343 0	2	Piston ring
21	101 010-0343 0	1	Cylinder packing
22	101 000-1013 0	1	Cylinder (ass'y)
23	900 600-0000 5	4	Washer
24	900 500-0000 5	4	Nut
25	145 605-0343 2	1	Muffler (ass'y)
26	145 510-0343 0	1	Muffler gasket
27	101 025-0343 0	2	Muffler stud
28	433 020-0083 0	4	Lock nut
29	145 613-0343 1	1	Muffler lid

Key No.	Part No.	Q'ty	Part Name
1 – 30	900 220-0501 6	2	Screw
31	900 610-0000 5	2	Washer (TWA-5)
32	900 100-0501 0	1	Bolt 5x10
33	900 105-0502 0	2	Bolt 5x20
34	129 010-0343 0	1	Grommet
35	130 010-0343 1	1	Carburetor packing (A)
36	130 005-0343 4	1	Carburetor bed
37	130 016-0343 0	1	Carburetor packing (B)
38	130 021-0343 0	2	Carburetor bolt
39	178 210-0343 0	1	Rubber bush
40	130 306-0343 1	1	Carburetor case
41	123 000-1013 0	1	Carburetor
42	178 515-0343 0	1	Choke shutter
43	178 516-0083 0	1	Washer
44	159 112-1013 0	1	Clip
45	900 242-0401 0	1	Screw
46	159 105-1013 0	1	Cord guide
47	900 242-0401 4	1	Screw
48	100 278-1013 0	4	Dust proof plug
49	130 022-1013 0	1	Carburetor packing (C)
(*29)	145 861-0343 0	1	Muffler lid
(*50)	145 862-0343 1	1	Spark arresting screen
(*51)	145 863-0343 1	1	Screen retainer
(*52)	900 220-0501 6	2	Screw

Remarks:

(*29)·(*50)·(*51) & (*52) Spark arresting parts (Option)

Model CS-452VL (2) Starter and Magneto



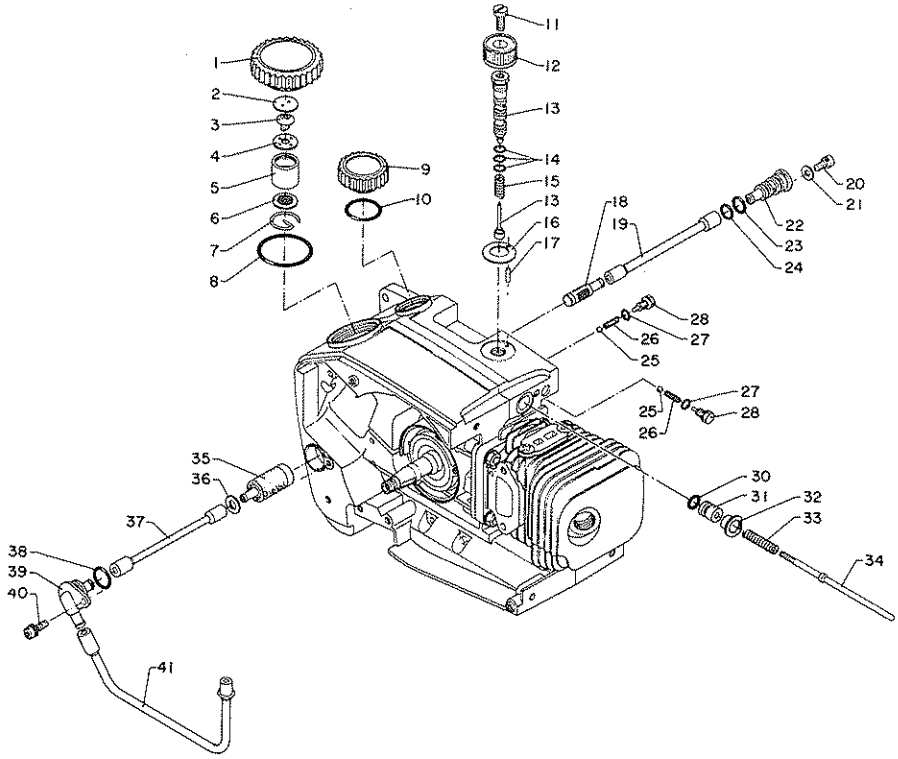
Key No.	Part No.	Q'ty	Part Name
2 –	154 000-1013 0	1	Magneto ass'y
1	100 262-0343 0	1	Stud bolt, (L)
2	100 257-0343 0	1	Stud bolt, (S)
3	154 132-1013 0	1	Stator plate
4	154 134-0343 0	1	Oiler
5	154 127-0343 0	1	Condenser
6	900 605-0000 4	2	Spring washer
7	900 500-0000 4	2	Nut
8	154 101-0343 0	1	Contact point
9	900 242-0400 8	1	Screw
10	154 114-0343 0	1	Rubber bush (B)
11	154 112-0343 2	1	Breaker cover
12	900 242-0301 8	2	Screw
13	154 126-1013 0	1	Ignition coil
14	900 242-0502 0	2	Screw
15	154 200-1013 0	1	Flywheel
16	900 611-0000 8	1	Lock washer (TWB-8)
17	900 500-0000 8	1	Nut
18	159 010-0033 0	1	Spark plug (BM-6A)
(*18)	159 010-1013 0	1	Spark plug (BMR-6A)
19	159 011-0343 2	1	Spark plug connector
20	159 012-0343 3	1	Spark plug cap
22	154 110-0343 0	1	Rubber bush
23	154 111-0343 0	1	Rubber bush
25	177 234-0283 1	2	Ratchet spring
26	900 600-0000 5	4	Washer
27	177 218-0283 0	2	Ratchet
28	177 217-0343 0	2	Ratchet spacer
29	900 100-0501 8	2	Bolt 5x18
30	900 241-0401 0	2	Screw

Key No.	Part No.	Q'ty	Part Name
2 – 31	177 226-0283 0	1	Starter rope
32	177 246-0283 2	1	Starter clip
33	900 162-0501 4	1	Bolt 5x14
35	177 214-0283 0	1	Washer
36	177 243-0283 3	1	Pawlcatcher
37	177 215-0283 4	1	Recoil drum
38	177 216-0283 2	1	Bushing
39	177 242-0343 0	1	Side plate (B)
40	177 220-0283 4	1	Rewind spring
41	177 221-0283 0	1	Side plate (A)
42	130 320-0343 1	1	Carburetor cover packing
43	178 810-0343 0	1	Rubber bushing
44	178 501-0343 1	1	Choke rod
45	178 007-0343 0	1	Idling set screw
46	178 212-0343 0	1	Grommet
49	177 228-1233 0	1	Starter grip
50	177 227-0023 0	1	Rope guide
51	101 507-1013 0	1	Fan cover
53	900 162-0502 0	4	Bolt 5x20
54	100 616-1013 0	1	Dust filter
55	900 242-0401 2	3	Screw
56	130 313-0343 0	1	Air cleaner cover
57	130 406-1023 0	1	Thumb bolt
58	130 305-0343 0	1	Air cleaner
59	900 700-0000 4	1	E-ring
60	130 405-0343 0	1	Cleaner set plate
61	900 242-0400 8	2	Screw
	177 200-1013 0	1	Starter ass'y

Remarks:

(*18) Anti Radio Interference spark plug (option part)

Model CS-452VL (3) Automatic Oiler and Fuel pipe

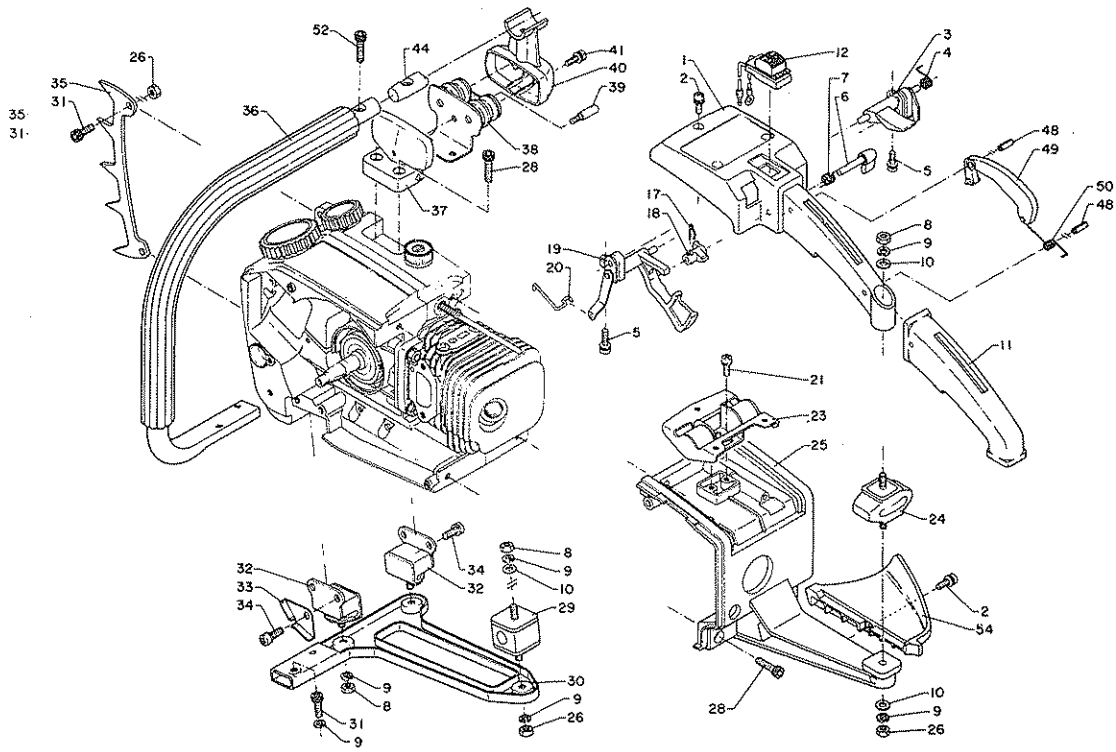


Key No.	Part No.	Q'ty	Part Name
3 – 1	131 001-0343 1	1	Fuel tank cap ass'y
2	131 031-0343 0	1	Spaser
3	131 314-0033 0	1	Check valve
4	131 015-0343 0	1	Check valve holder
5	131 030-0393 0	1	Suppoter, tank cap spacer
6	131 035-0343 1	1	Filter
7	131 032-0393 0	1	Clip
8	900 720-0002 9	1	O-ring (P-29)
9	436 000-0393 0	1	Oil tank cap
10	900 720-0001 6	1	O-ring
11	437 016-0343 0	1	Dial set Screw
12	437 039-0343 0	1	Dial
13	437 002-0343 1	1	Cylinder & Plunger
14	437 020-0283 0	3	O-ring (S-5)
15	437 019-0283 0	1	Auto oiler spring
16	437 036-0343 0	1	Flat spring
17	900 330-1509 8	1	Needle roller
18	436 205-0283 2	1	Oil straner
19	132 010-0343 1	1	Oil inner pipe
20	900 242-0401 0	1	Screw
21	437 232-1013 0	1	Washer
22	437 212-1013 0	1	Oil pipe connector
23	900 720-0000 9	1	O-ring (P-9)
24	900 720-0000 8	1	O-ring (P-8)
25	437 012-0033 0	3	Ball valve

Key No.	Part No.	Q'ty	Part Name
3 – 26	437 013-0033 0	3	Valve spring
27	437 122-0343 0	2	O-ring
28	437 121-1013 0	2	Oil pump adapter
30	900 720-0000 6	1	O-ring (P-6)
31	707 015-1023 0	1	Pump piston
32	707 022-0343 1	1	Spring retainer
33	437 111-0343 1	1	Pump spring
34	707 010-1013 0	1	Pump rod
35	131 200-0523 0	1	Fuel strainer
36	900 600-0000 6	1	Washer
37	132 010-1053 0	1	Fuel pipe (inner)
38	900 720-0001 2	1	O-ring (P-12)
39	132 011-0283 2	1	Fuel pipe connector
40	900 242-0401 4	1	Screw

Remarks:

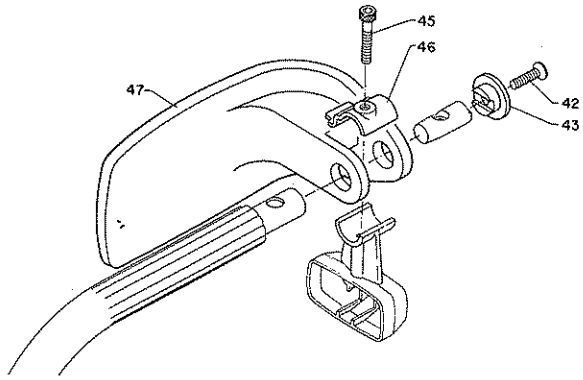
Key No. 3-1 Comprising Key No. 2 ~ 7



Key No.	Part No.	Q'ty	Part Name
4 – 1	351 110-1103 0	1	Right handle
2	900 242-0401 4	3	Screw
3	707 005-0343 0	1	Push lever
4	707 017-0343 0	1	Spring, push lever
5	900 242-0401 4	2	Screw
6	178 008-0343 0	1	Lock lever
7	178 013-0343 0	1	Throttle spring
8	900 500-0000 5	1	Nut
10	900 600-0000 5	2	Washer
11	351 111-1103 0	1	Right handle rubber
12	163 400-1233 0	1	Stop switch
17	178 045-1063 0	1	Lock pin
18	178 012-1103 0	1	Throttle lock
19	178 005-1103 0	1	Throttle trigger
20	178 011-0343 0	1	Throttle connecting rod
21	900 241-0501 2	1	Screw
22	162 010-0343 1	1	Earth cord
23	351 105-1013 0	1	Cushion rubber (F-L)
24	351 107-0343 0	1	Cushion rubber (R-L)
25	101 514-1013 0	1	Cylinder cover
26	433 022-0283 0	1	Lock nut
28	900 162-0502 0	6	Bolt 5x20
29	351 609-0343 0	1	Cushion rubber (L-L)
30	351 613-0343 1	1	Left handle supporter (L)
31	900 105-0501 2	1	Bolt 5x12

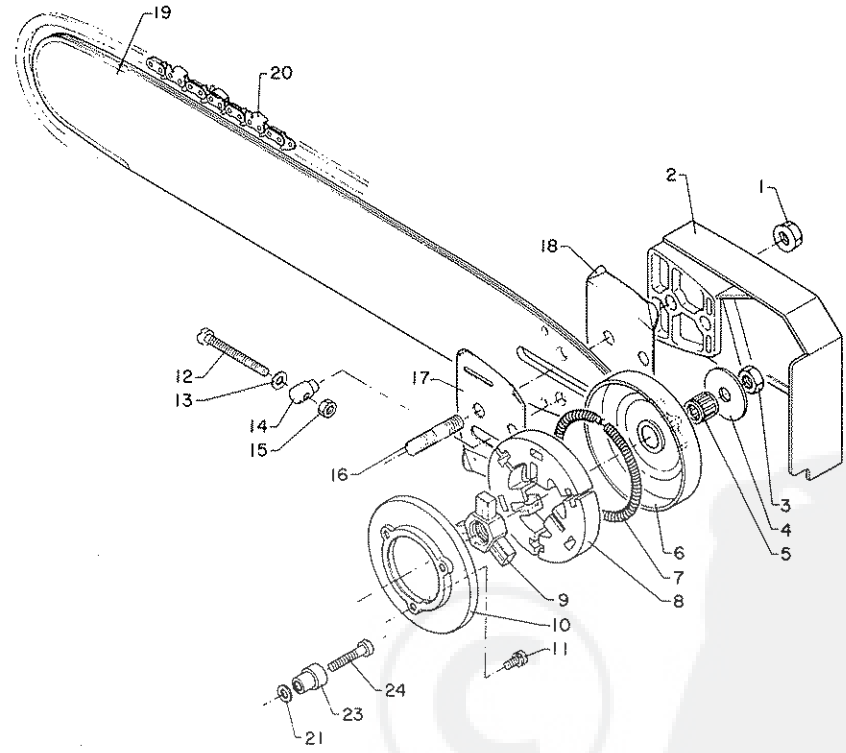
Key No.	Part No.	Q'ty	Part Name
4 – 32	351 607-0343 0	2	Cushion rubber (L-L)
33	100 276-1013 0	1	Wind proof plate
34	900 241-0501 2	4	Screw
35	880 210-0343 0	1	Spike bumper
36	351 606-1013 1	1	Left handle
37	351 631-1013 0	1	Cushion rubber holder
38	351 605-1013 0	1	Cushion rubber (L-U)
39	351 637-1013 0	1	Stopper
40	351 614-1013 0	1	Left handle supporter
41	900 242-0401 0	2	Screw
44	351 617-1053 1	1	Handle spacer
48	900 340-4001 3	2	Spring pin
49	178 090-1103 1	1	Safety lock
50	178 091-1053 1	1	Safety lock spring
52	900 162-0502 5	1	Bolt 5x25
54	351 133-1013 0	1	Hand guard

Model CS-452VL (4) Handle (Hand guard)



Key No.	Part No.	Q'ty	Part Name
4 – 42	900 214-0502 0	1	Screw
43	351 833-1013 0	1	Hand guard holder
45	900 162-0503 0	1	Bolt 5×30
46	351 834-1013 0	1	Hand guard stopper
47	351 826-1013 0	1	Hand guard

(5) Clutch and Guide bar

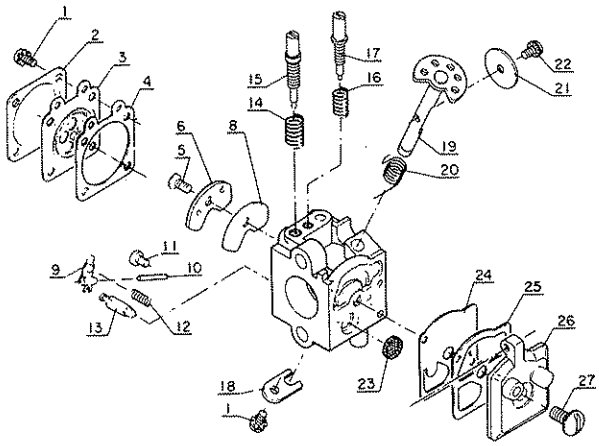


Key No.	Part No.	Q'ty	Part Name
5 – 1	433 019-1233 0	2	Flange nut
2	433 010-0343 1	1	Guide bar cover
3	100 129-0343 0	1	Locknut (L-h)
4	175 015-0343 0	1	Clutch washer
5	100 012-1233 0	1	Roller bearing
6	175 005-1103 0	1	Clutch case
7	175 018-0283 1	1	Clutch spring
8	175 017-0283 0	3	Clutch shoe
9	175 016-0343 0	1	Clutch boss
10	100 618-0343 1	1	Dust seal plate
11	900 220-0401 0	3	Screw
12	433 016-0283 0	1	Adjusting screw
13	100 247-0283 0	1	Washer
14	433 014-0283 0	1	Tensioner
15	433 022-0283 0	1	Lock nut (5mm)

Key No.	Part No.	Q'ty	Part Name
5 – 16	433 011-1233 0	2	Stud bolt
17	433 013-1233 1	1	Side plate (inner)
18	433 012-1233 1	1	Side plate (outer)
19	430 211-1013 0	1	Guide bar (40M50)
20	431 011-1013 0	1	Chain (72LP-60E)
21	900 600-0000 5	1	Washer
23	433 006-1283 0	1	Chain catcher
24	900 220-0502 5	1	Screw

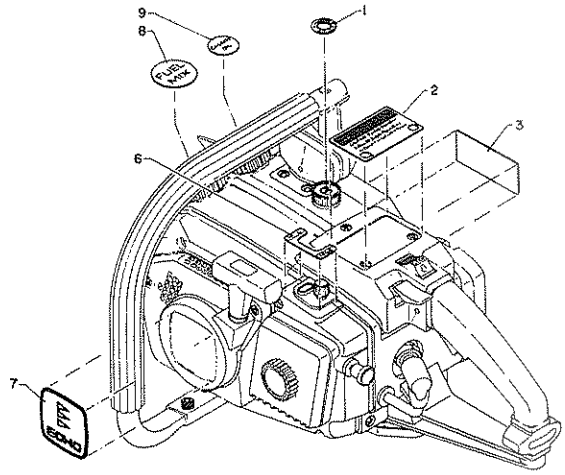
Remarks: Key No. 19.20 (optional)

Model CS-452VL (6) Carburetor



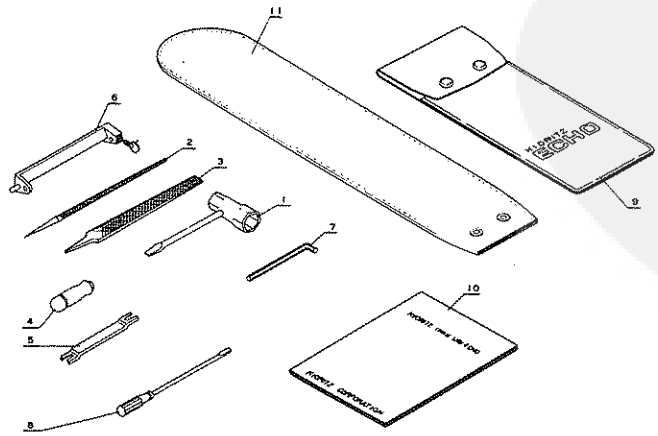
Key No.	Part No.	Q'ty	Part Name
6 –	123 000-1013 0	1	Carburetor ass'y
1	·123 144-0393 0	5	Screw
2	·123 142-0393 0	1	Metering diaphragm cover
3	·123 141-0393 0	1	Metering diaphragm
4	·123 140-0393 0	1	Metering diaphragm gasket
5	·123 167-0523 0	1	Circuit plate screw
6	·123 166-1053 0	1	Circuit plate
8	·123 164-1053 0	1	Circuit plate gasket
9	·123 123-0393 0	1	Metering lever
10	·123 138-0393 0	1	Metering lever pin
11	·123 139-0393 0	1	Metering lever pin screw
12	·123 122-0653 0	1	Metering lever spring
13	·123 137-0393 0	1	Inlet needle valve
14	·123 119-0393 0	1	H.S. adjust spring
15	·123 120-1013 0	1	High speed needle
16	·123 121-0393 0	1	Idle needle adjust spring
17	·123 118-1013 0	1	Idle needle
18	·123 127-0393 0	1	Throttle shaft clip
19	·123 117-1013 0	1	Throttle shaft
20	·123 113-1013 0	1	Throttle return spring
21	·123 116-1013 0	1	Throttle valve
22	·123 114-0393 0	1	Shutter screw
23	·123 126-0393 0	1	Inlet screen
24	·123 112-0393 0	1	Pump diaphragm
25	·123 125-0393 0	1	Pump gasket
26	·123 124-1013 0	1	Pump cover
27	·123 110-0393 0	1	Pump cover screw

(7) Model plate



Key No.	Part No.	Q'ty	Part Name
7 – 1	890 022-0343 0	1	Oil label
2	890 151-1013 0	1	Caution label
3	890 021-0393 1	1	"ECHO" Name plate
6	890 041-0343 0	1	Fuel adjust label
7	890 012-1013 2	1	Name plate
8	890 147-1023 0	1	Fuel label
9	890 153-0393 0	1	Oil label

(8) Tools



Key No.	Part No.	Q'ty	Part Name
8 –	896 000-1013 0	1	Tool set
1	895 410-0283 0	1	Wrench 13x19
2	897 510-0023 0	1	Round file
3	897 511-0023 0	1	Flat file
4	897 512-0023 0	1	File grip
5	897 514-0023 1	1	Depth gauge
6	897 600-0033 0	1	File holder
7	895 610-0013 0	1	L-wrench (4mm)
8	895 811-0013 0	1	Screw driver (125mm)
9	898 510-0283 0	1	Tool bag
10		1	Instruction manual
11	898 513-1013 0	1	Chain cover

Remarks:

* Key No. 1.7.8.9.10. are standard tools supplied with the chain saw. Others are optional parts, to be supplied on special order.

KIORITZ CORPORATION

5-1, SHIMORENJAKU 7-CHOME, MITAKA, TOKYO 181
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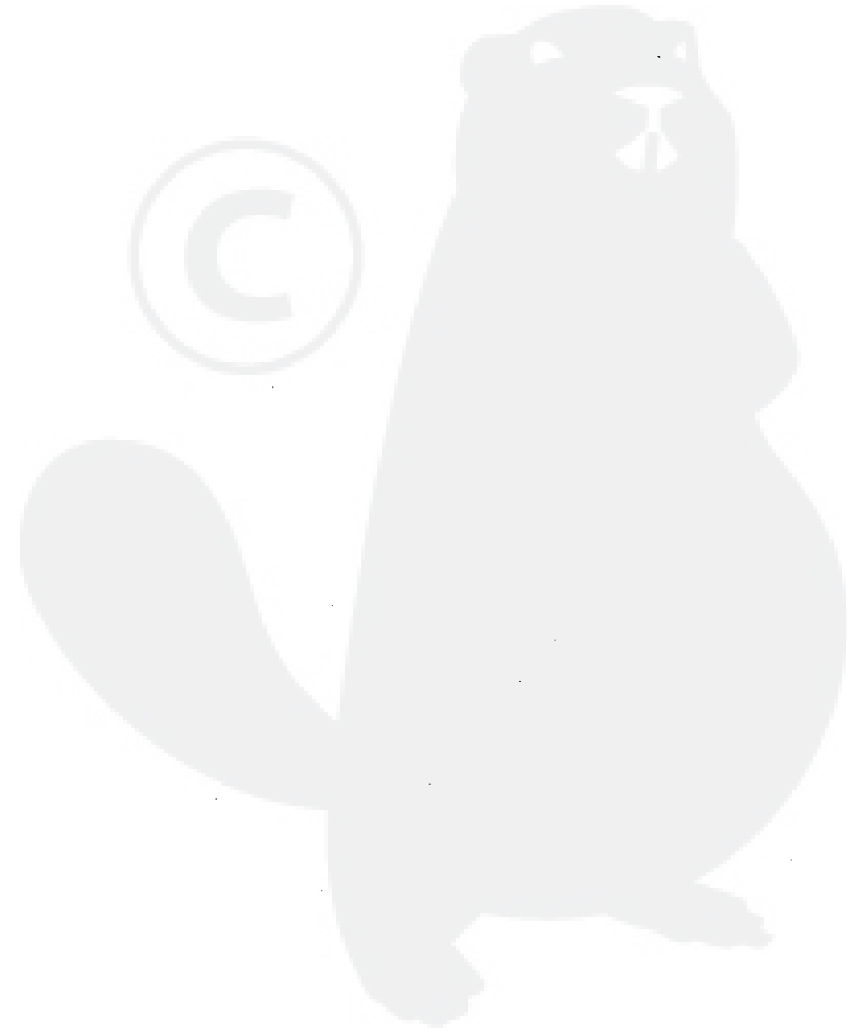

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