

shindaiwa

350

415

450

500

CHAIN SAW

INSTRUCTION MANUAL

FOR YOUR OWN SAFETY, CAREFULLY READ
THIS INSTRUCTION MANUAL BEFORE USE.

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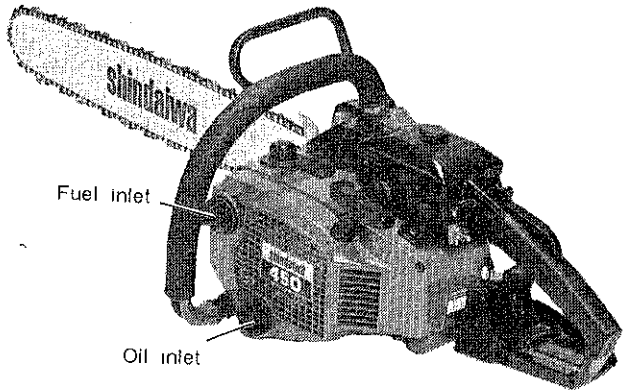
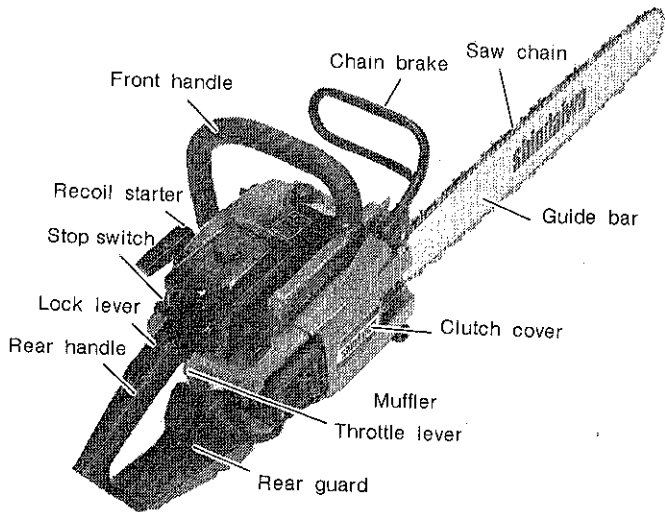
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DESIGNATION OF PARTS



SPECIFICATIONS

- Model 350
- Engine type 2 cycle air cooled gas engine
- Displacement 35.5 cc (37 x 33) (2.2 cu. in.)
- Fuel Gasoline – 25:1 (2 cycle oil)
- Carburetor Diaphragm (WALBRO) WA 115
- Ignition All transistor electronic ignition system
- Spark plug Champion CJ-8Y
- Starting Recoil starter
- Stopping Grounding (toggle switch)
- Power transmission Automatic centrifugal clutch
- Chain lubrication Automatic adjustable oiler
- Chain 3/8" pitch, gauge .050"
- Chain oil Motor oil SAE 10W-30
- Fuel tank capacity 0.34 liter (11.5 oz.)
- Oil tank capacity 0.25 liter (8.45 oz.)
- Handle Special anti-vibration handles (front and rear handles, independently vibration dampened)
- Safety devices Front guard, rear guard, throttle lock and chain stop and chain brake
- Weight (less bar and chain) 5.1 kg (11.2 lb.)
- Optional Special anti-icing air filter (for cold weather areas)

350				
Chain type	91SG (14")	91SG (16")	91SG (14")	91SG (16")
Guide bar	14" Hard nose bar	16" Hard nose bar	14" Sprocket nose bar	16" Sprocket nose bar

SPECIFICATIONS

Model	415
Engine type	2 cycle air cooled gas engine
Displacement	39.4 cc (39 x 33) (2.4 cu. in.)
Fuel	Gasoline — 25:1 (2 cycle oil)
Carburetor	Diaphragm (WALBRO) WA 101B
Ignition	All transistor electronic ignition system
Spark plug	Champion CJ-8Y
Starting	Recoil starter
Stopping	Grounding (toggle switch)
Power transmission	Automatic centrifugal clutch
Chain lubrication	Automatic adjustable oiler
Chain	0.325" pitch, gauge .050"
Chain oil	Motor oil SAE 10W-30
Fuel tank capacity	0.48 liter (16.2 oz.)
Oil tank capacity	0.27 liter (9.13 oz.)
Handle	Special anti-vibration handles (front and rear handles, independently vibration dampened)
Safety devices	Front guard, rear guard, throttle lock chain stop and chain brake
Weight (less bar and chain)	5.3 kg (11.7 lb.)
Optional	Special anti-icing air filter (for cold weather areas)

415				
Chain type	33LG (16")	33LG (18")	33LG (16")	33LG (18")
Guide bar	16" Hard nose bar	18" Hard nose bar	16" Sprocket nose bar	18" Sprocket nose bar

SPECIFICATIONS

Model	450
Engine type	2 cycle air cooled gas engine
Displacement	43.6 cc (41 x 33) (2.66 cu. in.)
Fuel	Gasoline — 25:1 (2 cycle oil)
Carburetor	Diaphragm (WALBRO)WA 101B
Ignition	All transistor electronic ignition system
Spark plug	Champion CJ-8Y
Starting	Recoil starter
Stopping	Grounding (toggle switch)
Power transmission	Automatic centrifugal clutch
Chain lubrication	Automatic adjustable oiler
Chain	0.325" pitch, gauge .050"
Chain oil	Motor oil SAE 10W-30
Fuel tank capacity	0.48 liter (16.2 oz.)
Oil tank capacity	0.27 liter (9.1 oz.)
Handle	Special anti-vibration handles (front and rear handles, independently vibration dampened)
Safety devices	Front guard, rear guard, throttle lock chain stop and chain brake
Weight (less bar and chain)	5.3 kg (11.7 lb.)
Optional	Special anti-icing air filter (for cold weather areas)

450				
Chain type	33LG (18")	33LG (20")	33LG (18")	33LG (20")
Guide bar	18" Hard nose bar	20" Hard nose bar	18" Sprocket nose bar	20" Sprocket nose bar

SPECIFICATIONS

Model	500
Engine type	2 cycle air cooled gas engine
Displacement	47.9cc(43 x 33) (2.92cu. in.)
Fuel	Gasoline – 25:1 (2 cycle oil)
Carburetor	Diaphragm (WALBRO) WA 101B
Ignition	All transistor electronic ignition system
Spark plug	Champion CJ-8Y
Starting	Recoil starter
Stopping	Grounding (toggle switch)
Power transmission	Automatic centrifugal clutch
Chain lubrication	Automatic adjustable oiler
Chain	0.325" pitch, gauge .050"
Chain oil	Motor oil SAE 10W-30
Fuel tank capacity	0.52 liter (17.6oz.)
Oil tank capacity	0.30 liter (10.1oz.)
Handle	Special anti-vibration handles (front and rear handles, independently vibration dampened)
Safety devices	Front guard, rear guard, throttle lock, chain stop and chain brake
Weight (less bar and chain)	5.3 kg (11.7 lb.)
Optional	Special anti-icing air filter (for cold weather areas)

500					
Chain type	33LG (16")	33LG (20")	72LP/DP (20")	33LG (24")	72LP/DP (24")
Guide bar	16" Sprocket nose bar	20" Sprocket nose bar	20" Sprocket nose bar	24" Sprocket nose bar	24" Sprocket nose bar

SAFETY REGULATIONS

IMPORTANT:

Read all instructions carefully before operating your new Shindaiwa chain saw. The following safety precautions should be observed by all users of chain saws:

1. Do not operate a chain saw when you are fatigued.
2. Use safety footwear; snug-fitting clothing; protective gloves; and eye, hearing and head protection devices.
3. 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 start cutting until you have a clear work area, secure footing, and a planned retreat path from the falling tree.
5. Before you start the engine, make sure that the saw chain is not contacting anything.
6. Carry the chain saw with the engine stopped, the guide bar and saw chain to the rear, and the muffler away from your body.
7. Keep chain properly adjusted and sharpened.
8. It is unsafe for young children and persons unfamiliar with its usage to operate any chain saw.
9. When repairing or servicing, use only recommended Shindaiwa replacement parts.
10. Do not operate this or any chain saw without a muffler.
11. Keep the handles dry, clean and free of oil or fuel mixture.
12. All chain saw service, other than the items listed in the owner's manual maintenance instructions, should be performed by trained Shindaiwa chain saw service personnel. (For example, if improper tools are used to remove the flywheel or if an improper tool is used to hold the flywheel in order to remove the clutch, structural damage to the flywheel could occur and could subsequently cause the flywheel to burst.)

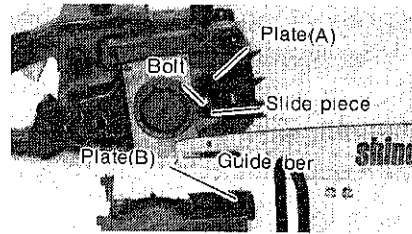
13. Guard against kickback. Kickback is the upward motion of the guide bar that occurs when the saw chain at the nose of the guide bar contacts an object. Kickback can lead to dangerous loss of control of the chain saw.
- To reduce kickback:
- a) Hold the chain saw firmly with both hands.
 - b) Do not overreach.
 - c) Do not let the nose of the guide bar contact a log, branch ground, or any other obstruction.
 - d) Cut at high engine speeds.
 - e) Do not cut above shoulder height.
 - f) Follow manufacturer's sharpening and maintenance instructions for the saw chain.
 - g) Use devices, such as a low-kickback chain, chain brakes, and special guide bars, that reduce the hazards associated with kickback.
14. When transporting your chain saw, use the appropriate guide bar scabbard.
15. 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.
16. 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.
17. Keep all parts of your body away from the saw chain when the engine is running.
18. Do not operate a chain saw that is damaged, is improperly adjusted, or is not completely and securely assembled. Be sure that the saw chain stops moving when the throttle control trigger is released.
19. Shut off the engine before setting it down.
20. 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.

21. When cutting a limb that is under tension, be alert for springback so that you will not be struck when the tension in the wood fibers is released.
22. Operate the chain saw only in well-ventilated areas.
23. Do not operate a chain saw in a tree unless you have been specifically trained to do so.
24. Open fuel cap slowly to release any possible build-up of pressure. Do not refuel a hot saw. Allow to cool if possible.

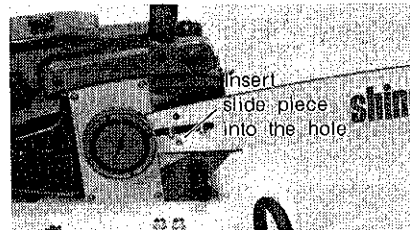
MOUNTING GUIDE BAR AND SAW CHAIN

1. Insert the guide plate (A) into bolt first, then install guide bar.

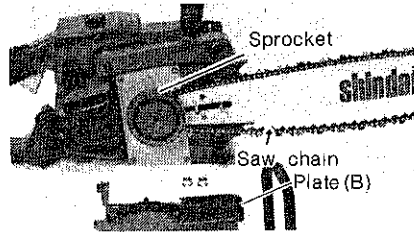
To install guide bar, insert the plate (A) and guide bar slot over bar studs.



2. Fit saw chain first from sprocket side, then into guide bar groove toward bar tip.



3. Insert the plate (B) as it is attached to clutch cover over bar studs, then secure it temporarily with 2 nuts. Now saw chain adjustment operation begins.

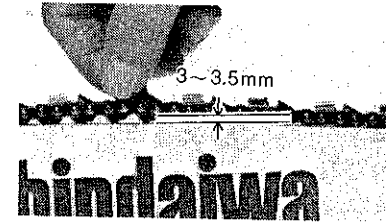


SAW CHAIN ADJUSTMENT

Correct saw chain tension is essential to achieve maximum performance for chain life, cutting ability, and safety. Whenever using a new chain, it is advisable to soak it in oil overnight before use and to check the chain tension from time to time because it can stretch after initial operation.

1. Proper Chain Tension:

To properly adjust tension, first lift bar nose to remove slack between bar mounting slot and bar studs. For hard nose bars, adjust until a slight pulling pressure on chain at mid-bar will leave 3–3.5 mm ($\pm 1/8''$) gap between bar rail and chain side plate. (See photo)



For sprocket nose bars, adjust slightly tighter, still allowing chain to pull around bar freely.

CAUTION:

Loosely tensioned chain can cause unexpected accidents and lead to excessive bar and chain wear. Always check before use.

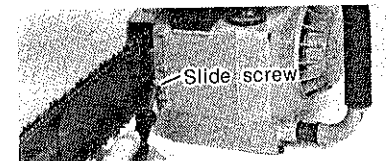


2. To Adjust:

- a) Loosen clutch cover nuts (2 pieces) about one turn.



- b) Turn slide screw with screw driver. Turn to right (clockwise) to tighten, and left (counter-clockwise) to loosen.



FILLING FUEL AND CHAIN OIL

1. Fuel Mixture:

Always use a gas/oil ratio of 25:1.

2. Chain Oil:

This oil performs an essential role to reduce guide bar and chain wear, and to facilitate smooth cutting. Always use clean oil and refill when refueling.

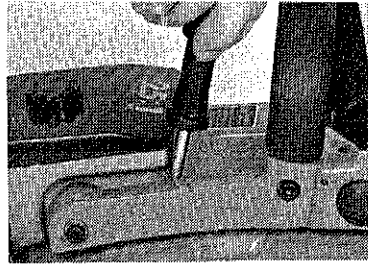
NOTE:

During cold weather, it may be necessary to thin chain oil by mixing one part oil to one part kerosene to improve lubrication.

3. Automatic Oiler:

The automatic oiler is designed to operate only when the chain is operating.

To adjust the automatic oiler, which leaves the factory at a half-open setting, turn to the left (counter-clockwise) to increase flow and to the right (clockwise) to decrease flow. A temporary increase in flow may be necessary in cutting hardwood or large diameter softwood.



STARTING AND STOPPING

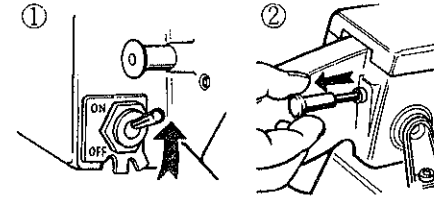
CAUTION:

Before starting, clear a safe work area. When the engine starts, the chain will rotate, so be prepared!

1. Starting:

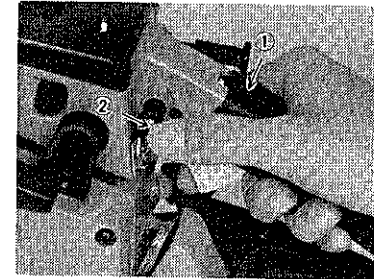
a. When engine is cool —

- 1) Turn switch "ON"
- 2) Pull choke lever all the way out.
- 3) Depress lock lever ①, then push starting throttle lock ② into throttle lever.



b. When engine is warm —

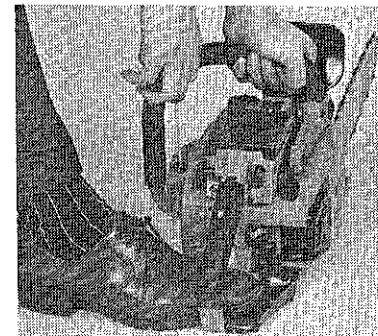
- 1) Set switch "ON"
- 2) Depress lock lever, then push starting throttle lock into throttle lever.



NOTE:

Throttle lever cannot be pulled without depressing lock lever ① in upper handle. When throttle is released, idle speed is resumed, and chain rotation stops.

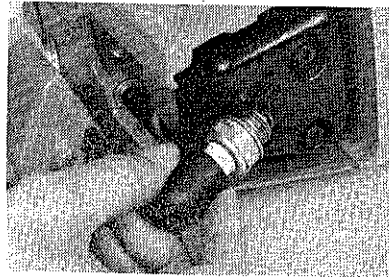
- 3) Pull recoil starter rope while holding the chain saw firmly and placing your right foot into rear handle as shown in the photo. Pull cord slowly until engaged, then rapidly after you can feel the increased resistance.



CAUTION:
 Don't pull rope to its full length and do not let your hand slip off the rope when it is under tension.
 Starting can be easily attained by pulling vigorously from the engaged position.

4) When engine fires or coughs, press choke in to the original off position and pull recoil starter again. Use caution as chain will rotate during engine starting. After brief removing of engine to clear carburetor, saw will idle with throttle lock off. If saw fails to start after a few pulls, follow above procedures from the beginning. If saw still will not start, flooding may have occurred so check as follows:

(a) Check spark by removing spark plug and shorting against cylinder while pulling recoil starter rope.



Make sure switch is "ON".

(b) Inspect to see if spark plug is fouled when removing plug.

If fouled: 1) Expel fuel by hand cranking several times without spark plug. 2) Wipe off excess fuel from plug and replace before starting engine.

NOTE:
 1. Make sure switch is "ON" before starting.
 2. Return choke to the original position when saw first fires after starting with full choke. (Otherwise flooding will result and engine won't start.)
 3. Upon starting, allow to idle for 1 to 2 minutes for warm-up.

2. Stopping:

Turn switch "OFF" after idling at low speed for 1 to 2 minutes.

CAUTION:
 1. Do not mix fuel or refuel saw around fire or flame.
 2. Don't smoke while refueling or mixing fuel.
 3. Always use a mixing ratio of 25:1.
 4. Don't use dirty or reclaimed oil.

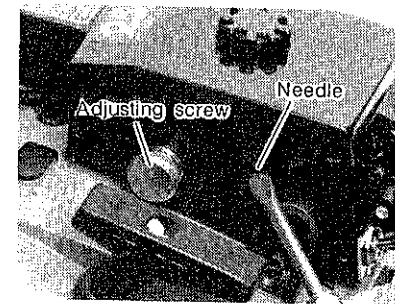
CARBURETOR ADJUSTMENT

With engine running, adjust carburetor using the following procedures:

1. Idle Screw Adjustment —

Turn idle adjusting screw so that stable operation can be obtained at 2,800 to 3,200 rpm.

Note: Turning adjusting screw clockwise increases rpm. (Saw chain will not turn at above rpm.)



2. Low Speed (L) and High Speed (H) Adjustment —

Standard opening:

- L 1 1/4 turns
- H 1 1/4 turns

"Standard opening" means number of turns from the fully closed position turning needle gently counter-clockwise.

3. Adjustments for Low Speed (L) Adjusting Screw —

After adjusting according to number 2, continue to turn gently either to right or to left so that engine rotation may be speeded up. Continuing to turn will result in engine rpm decrease. Return to the position just before this slow-down and set at this point.

Next, as idle speed is considerably higher than in the case of number 1 setting, reset idle adjusting screw so that engine idles at 2,800 to 3,200 rpm. By repeating this procedure two to three times, optimum low speed idle adjustment can be obtained.

4. High Speed (H) Adjustment —

When using a new saw, operate it as it was set on factory shipment. After about 10 hours of operation, adjust the needle (H) at the standard setting (1 1/4 turns).

CAUTION:

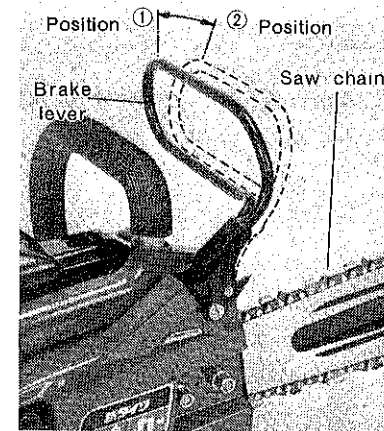
1. Do not run engine at full throttle with no load. (Except for brief periods during carburetor adjustment.) Damage can occur if saw is run at maximum RPM 13,000 plus with no load for a sustained period.
2. Do not close H (Hi) needle less than one (1) turn from the fully closed position. This can create an excessively lean mixture and piston seizure can occur.

CHAIN BRAKE

Models 350, 415, 450 and 500 are equipped with chain brake. If kickback should occur, chain brake will stop saw chain rotation when brake lever hits operator hand.

1. Chain Brake Operation—

- a. Chain brake will release saw chain when in vertical position. (Position 1)
- b. Chain brake will actuate and lock saw chain when brake lever is in forward tilted position. (Position 2)
- c. When you want to release brake, pull brake lever back to vertical position (Position 1)



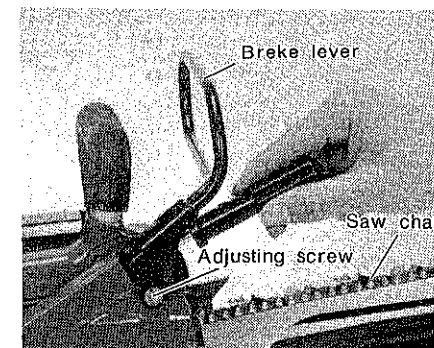
NOTE:

Upon actuating chain brake you should release throttle lever.

2. Chain Brake Adjustment —

- 2-1. Models 350, 415 and 450 : Lay down brake lever to Position 2.
 - 2-2. Model 500: keep brake lever upright at position 1.
- Adjust adjusting screw with straight blade screwdriver (-) as follows.

- a. Tighten adjusting screw so that saw chain will not rotate by hand when brake lever is raised in vertical position. (Position 1)
- b. Loosen and adjust adjusting screw about 2 to 4 times from this position so that saw chain is rotatable with lever in vertical position. (At this point make



sure that brake band is not contacting clutch drum.)

NOTE:

Always stop engine during chain brake adjustment

c. After adjustment of chain brake, start engine and make brake actuating test and adjust as necessary.

- 1) For fast stopping time — turn adjusting screw to the right.
- 2) For slow stopping time — turn adjusting screw to the left.

3. Maintenance of Chain Brake —

- a. Always keep chain brake clean, free of sawdust and debris.
- b. Periodically check that brake band does not interfere with clutch drum when chain brake is not actuated. (If there is interference, adjust in accordance with number 2.)

CAUTION:

1. Never start and operate engine with chain brake actuated (chain stopped).
2. Always carry chain saw by its front handle (never carry by chain brake lever).
3. Be sure that brake lever is in vertical position (set state) during assembly and removal of chain brake.
4. The purpose of the chain brake is to minimize kickback danger, not to protect from careless usage.
5. Readjust carburetor if its adjustment was made while chain brake was actuated.

CUTTING

1. Before Starting —

- a. Understand safety procedures.
- b. Clear a safe work area.
- c. One should wear safety helmet, protective wear for hands and feet, and clothing fitting but comfortable clothes.
- d. When moving from place to place, stop engine for safety.
- e. Always keep saw chain tensioned properly and inspect often.
- f. Check for loose bolts and nuts before use.

2. Efficient Operation —

Wood can be cut most efficiently by light pressure and with saw rpm in the 8,000 — 9,000 rpm range at full throttle.

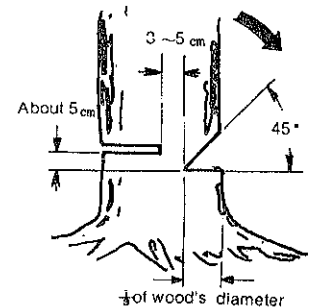
NOTE:

High pressure against wood lowers engine rpm, increases fatigue, and lowers cutting performance, resulting in considerable efficiency loss.

3. Felling a Tree —

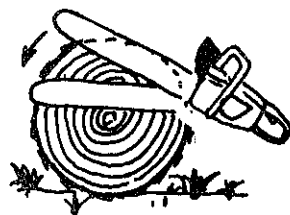
- a. Determine the direction of fall, considering size, shape and lean of tree.
- b. Clean around area for safe operation.
- c. Cut a notch about 1/3 of the diameter of the tree.
- d. The felling cut is horizontally made on the side opposite the notch and at level about 5 cm (2") above the bottom notch. The remaining wood between notch cut and felling cut (about 3 to 5 cm — or 1" to 2") will act as a hinge and tree will fall in the direction of the notch. If pinching of the bar should occur during cutting, remove chain saw (with engine stopped) by the use of a wedge.
- e. When tree begins to fall, stop engine and give a signal to others in the area.

Remember: Falling direction is not always the one desired!

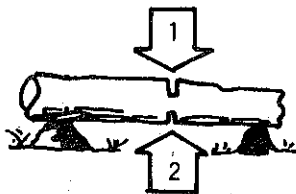


4. Bucking and Limbing –

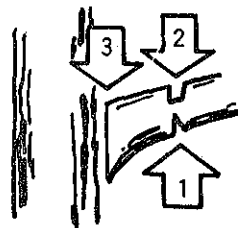
a. For wood lying on the ground, use caution as to its stability. On a slope, always stand and work uphill to the log. Start cutting from the top of the log. Cut with repeating level action using saw spike as a fulcrum. Do not cut into dirt!



b. When cutting a log supported on both ends, begin from the top side by cutting down, 1/3 of the way through the log, and finish by coming up from the bottom. This prevents pitching of the guide bar.



c. Limbing of standing tree. Cut 1/3 from the underside first, then cut through from the top. Thus easy limbing can be attained by cutting the remaining part flush with the trunk of the tree.



ROUTINE MAINTENANCE

1. Saw Chain –

Saw chain sharpness is essential in determining its performance. When cutter in worn state, sharpen it at once. Cutting with a dull chain increases fatigue and greatly lowers cutting performance. When dirty from grease or pitch, wash with gasoline and immerse in oil to prevent rust.

2. Guide Bar –

Always clean the saw bar groove and oil hole. When they are clogged with chips, remove them.

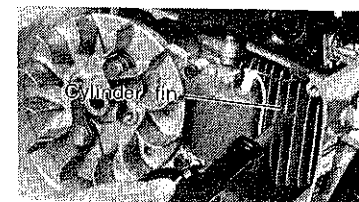
For distribution of wear (and increased life), occasionally turn bar over.

3. Air Cleaner –

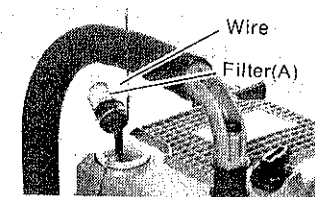
Remove air cleaner by pinching both ends lightly, being careful not to drop dust in carburetor, and rinse with gasoline or solvent. When blowing with air, blow from inside filter. After cleaning, it can be used at once.

4. Periodical Inspection and Maintenance –

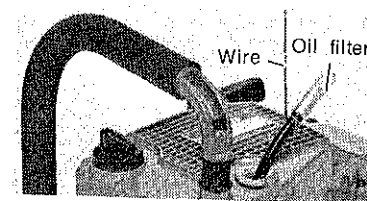
Cylinder Fin Cleaning. Dirt or dust clogged fins can cause engine overheating. Clean between cylinder fins. When heavily clogged, cleaning should be made after removing recoil case.



Fuel Filter. Take off filter by use of a wire hook through tank opening. Remove both filter elements and rinse them well with gasoline.

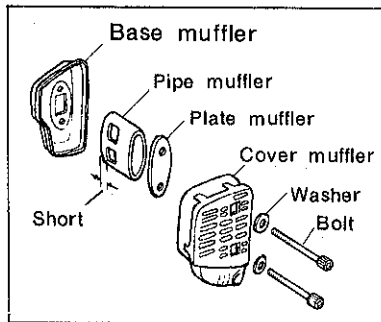
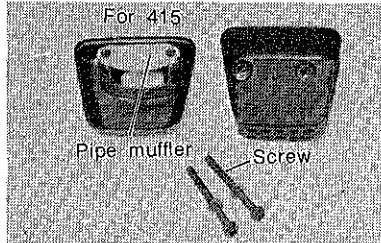


Oil Filter. Take out oil filter from oil tank in procedure as used for fuel filter. Then wash in gasoline after removal from hose.



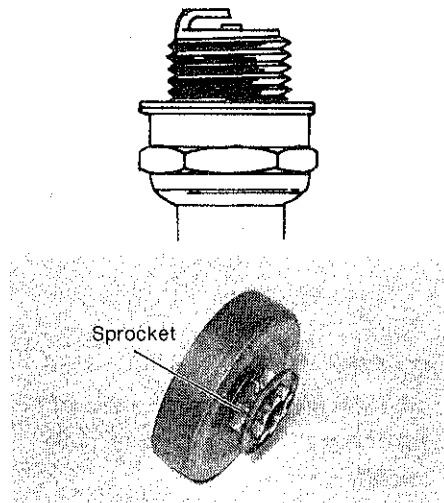
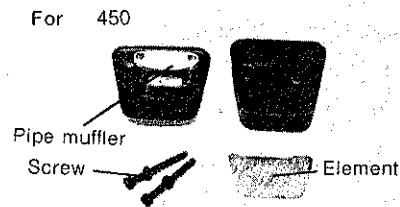
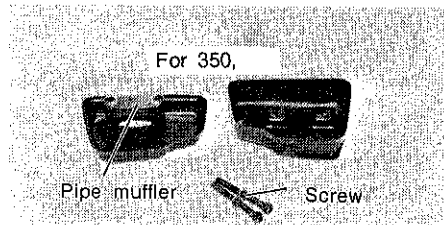
Carbon Removal from Muffler.

Disassemble muffler by releasing two screws. Remove carbon build-up. Use caution to replace parts in proper order.



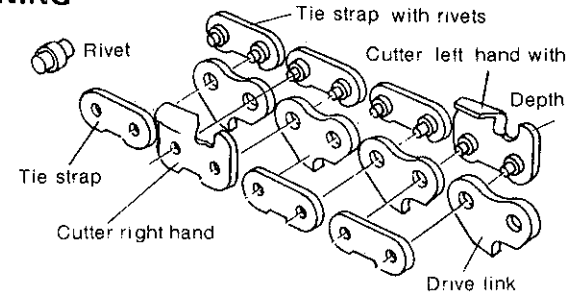
Spark Plug Inspection. Remove spark plug and clean it, then adjust the gap. Optimum clearance — 0.6 mm (.024"). Always use Champion CJ-8Y.

Sprocket Inspection. Check sprocket (which drives chain behind clutch drum) after removing clutch cover. If there is any wear on sprocket, replace with a new one.



SAW CHAIN SHARPENING

1. Designation —



2. Function —

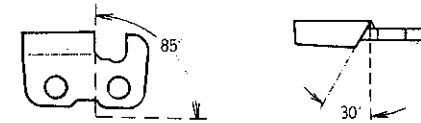
- The depth gauge controls depth or amount of cut for each tooth.
- Right and left cutters both should always be sharpened to uniform angle and depth.
- Drive links and saw chain together function to discharge sawdust.

3. Points of Sharpening —

- Sharpen all cutters and align right and left cutter angles to meet these specifications:

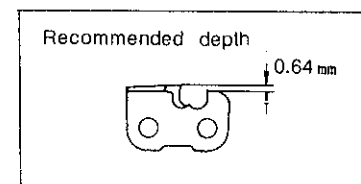
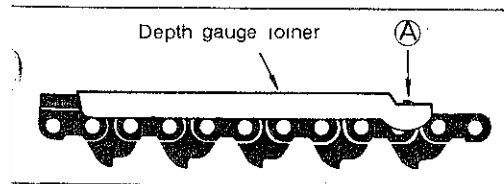
4. How to Sharpen —

- Sharpen right and left cutter angles uniformly to 30° with the round file. Unequal filing can cause erratic sawing and vibration. File in the direction as indicated with arrow.



5. After Sharpening —

- When sharpening is completed, place the depth gauge joiner on all cutters shown in the figure. File out (A) portion if it is higher than the joiner. Round the filed depth gauge as shown in the illustration.



Good Sharpening Examples:

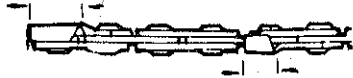


Wrong Filing Examples:

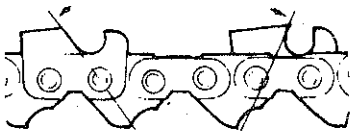
1. Unequal cutter angles



2. Unequal cutter lengths



3. Inconsistent contour (caused by filing too low or too high)



4. Unequal depth gauges

