

LITTLE WONDER®

Gas Hedge Trimmer - Owner's Manual and Safety Instructions

Taille-haies à essence - Manuel de l'utilisateur et Consignes de sécurité

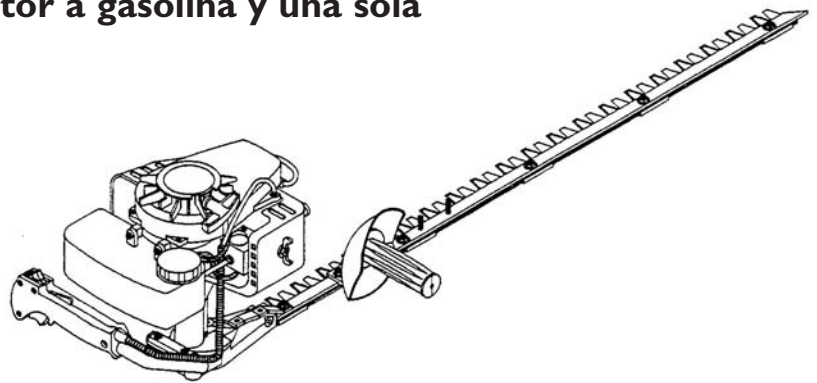
Podadora de arbustos con motor a gasolina - Manual del propietario e instructivo de seguridad

Single Edge Gasoline Hedge Trimmers

Taille-haies à un seul tranchant à essence

Podadoras de arbustos con motor a gasolina y una sola cuchilla

Model 2230S	30"
Model 2242S	42"
Modèle 2230S	30 po (76 cm)
Modèle 2242S	42 po (106 cm)
Modelo 2230S	30 pulg. (76 cm)
Modelo 2242S	42 pulg. (106 cm)

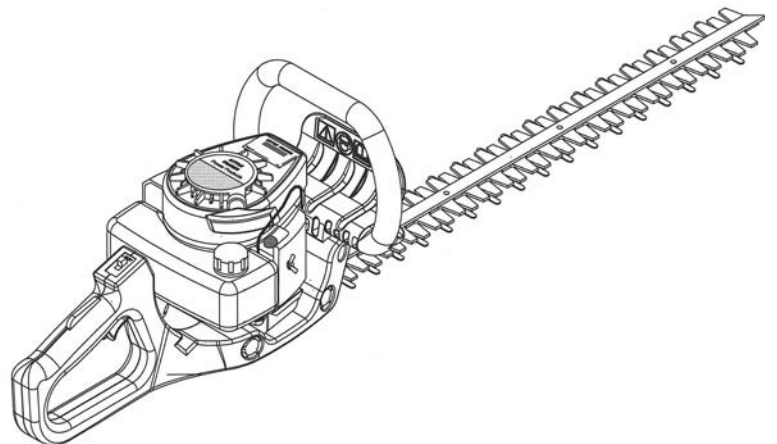


Double Edge Gasoline Hedge Trimmers

Taille-haies à double tranchant à essence

Podadoras de arbustos con motor a gasolina y dos cuchillas

Model 2119	19"
Model 2124	24"
Model 2130	30"
Modèle 2119	19 po (48 cm)
Modèle 2124	24 po (60 cm)
Modèle 2130	30 po (76 cm)
Modelo 2119	19 pulg. (48 cm)
Modelo 2124	24 pulg. (60 cm)
Modelo 2130	30 pulg. (76 cm)



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**Gas Hedge Trimmer -
Owner's Manual and Safety
Instructions**

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Important Information

A. Introduction

On behalf of everyone at **Little Wonder**, we would like to thank you for your purchase of a **Little Wonder** Gasoline Powered Hedge Trimmer. This professional trimming machine was designed to the highest standards to ensure you many hours of uninterrupted service.

This manual provides the information necessary for safe and efficient operation and service. For your safety, it is critically important that you read and understand this entire manual before operating your hedge trimmer.

Weight Specifications

Model	2119	2124	2130	2230S	2242S
Double Edge	x	x	x		
Single Edge				x	x
Weight, Dry	11.7 lb.	12.2 lb.	12.9 lb.	12.25 lb.	13.25 lb.

B. Service Information

Cutter Bar

Contact your local **Little Wonder** dealer.

Engine

Contact an authorized Echo dealer. Dealers are listed in the Yellow Pages under “Lawn and Garden Equipment Supplies”, “Lawn Maintenance” or “Lawn Mowers”.

C. Special Safety Information

⚠ WARNING - DANGER ⚠

ATTENTION: THIS SYMBOL POINTS OUT OUR IMPORTANT SAFETY INSTRUCTIONS

⚠ WHEN YOU SEE THIS SYMBOL ⚠

HEED ITS WARNING! STAY ALERT!

⚠ WARNING - DANGER ⚠

TO REDUCE THE POTENTIAL FOR ACCIDENTS, COMPLY WITH THE SAFETY INSTRUCTIONS IN THIS MANUAL. FAILURE TO COMPLY MAY RESULT IN SERIOUS PERSONAL INJURY AND OR EQUIPMENT AND

⚠ WARNING - DANGER ⚠

THE ENGINE EXHAUST FROM THIS PRODUCT CONTAINS CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

● Safety and Warnings ●

⚠ WARNING - DANGER ⚠

IMPROPER USE OR CARE OF THIS TRIMMER, OR FAILURE TO WEAR PROPER PROTECTION CAN RESULT IN SERIOUS INJURY.

READ AND UNDERSTAND THE RULES FOR SAFE OPERATION AND ALL INSTRUCTIONS IN THIS MANUAL.

WEAR HEARING PROTECTION.

A. Safety Decals

An important part of the safety system incorporated in this trimmer are the warning and information decals found on various parts of the trimmer. These decals must be replaced in time due to abrasion, etc. It is your responsibility to replace the decals when they become hard to read. The location of these decals and their part numbers for ordering are shown below.

B. General Safety Rules

I. THIS MACHINE CAN CAUSE SERIOUS INJURIES. Read the instructions carefully for the correct handling, preparation, maintenance, starting and stopping of the machine. Be familiar with all controls and the proper use of the machine. Pay particular attention to all sections regarding safety.



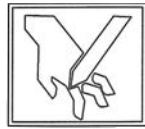
WARNING!



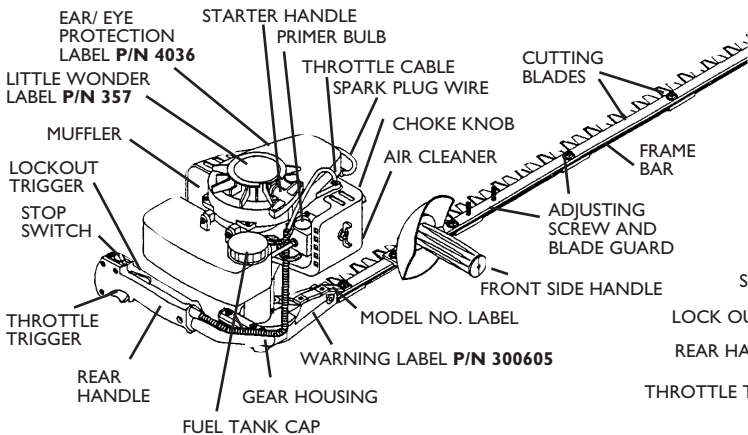
WEAR EYE AND EAR PROTECTION



READ AND UNDERSTAND OWNER'S MANUAL BEFORE USING! KEEP IN SAFE PLACE!



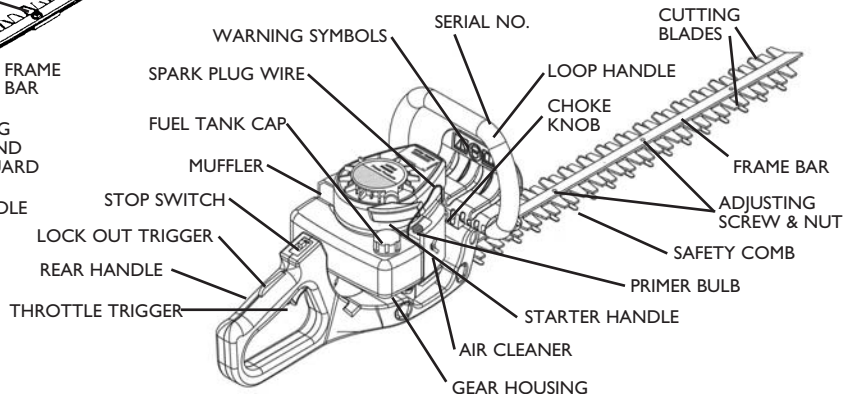
CUTTING HAZARD! KEEP BOTH HANDS ON HANDLES AND AWAY FROM BLADES!



⚠ WARNING - DANGER ⚠

IF TRIMMER IS USED IMPROPERLY OR SAFETY PRECAUTIONS ARE NOT FOLLOWED. THE USER RISKS SERIOUS INJURY TO THEMSELVES AND OTHERS.

READ AND UNDERSTAND THE FOLLOWING BEFORE ATTEMPTING TO OPERATE THIS HEDGE TRIMMER



- Always keep a firm grip on both handles while the blades are moving and/or the engine is running. On double edge units one hand grasps the front loop handle, while the other hand grasps the rear handle. On single edge units the right hand grasps the front side handle and the left hand grasps the rear handle. **BE AWARE!!** The blades coast after throttle trigger is released or engine is switched off. Make sure blades have come to a complete stop and engine is off before releasing a handle.
- Maintain a firm footing and good balance, do not overreach while trimming. Before you start to trim, check the work area for obstacles that might cause you to lose your footing, balance or control of the machine. While operating the machine always be sure of a safe and secure operating position especially when using steps or a ladder.
- Keep area clear of children, pets, and bystanders.
- Blades coast after throttle trigger is released or engine is switched off.
- Stop the engine before checking, maintenance or working on the machine.
- Never operate without guards, handles and safety devices in place.
- Never attempt to use an incomplete machine or one fitted with an unauthorized modification.
- To reduce fire hazard, keep engine and silencer free of debris, leaves, or excessive lubricant.
- Know how to stop the machine quickly in an emergency.

C. Warnings - Don'ts

Don't use trimmer with one hand, keep both hands on handles with fingers and thumbs encircling the handles, while blades are moving, and engine is running.

Don't overreach or stand on unstable support. Do not stand on the top of a ladder while trimming. Use proper equipment for reaching higher heights. Keep a good footing at all times.

Don't ever grasp cutting blades for any reason.

Don't operate the machine with a damaged or excessively worn cutting device.

Don't attempt to clear cut material while blades are moving, and the engine is running. Never try to remove jammed material before switching the engine off and making sure the blades have stopped completely.

Don't override safety features.

Don't allow children or incapable people to operate this trimmer.

Don't operate this hedge trimmer while under the influence of alcohol or drugs.

Don't attempt to repair this hedge trimmer. Have repairs made by a qualified dealer or repairman. See that only original **Little Wonder** parts are used.

D. Warnings - Do's

Always read and follow all instructions.

Always stay alert. Watch what you are doing and use common sense. Do not operate unit when fatigued.

Always dress properly. Do not wear loose clothing or jewelry, they might get caught in moving parts. Use sturdy proper fitting, non-slip gloves. Gloves reduce the transmission of vibration to your hands. Prolonged exposure to vibration can cause numbness and other ailments. Wear non-skid foot wear to ensure secure and proper footing.

Always wear ear and eye protection. Eye protection must meet ANSI Z 87.1. To avoid hearing damage we recommend hearing protection be worn whenever using the equipment.

Always keep both hands on both handles when trimmer is running. Severe injuries can result if you try to use the hedge trimmer with only one hand or with an insecure grip.

Always keep children, pets, and incapable persons away.

Always use trimmer properly. Cut only types and size of growth described in the Trimming section of this manual. Overloading or abusing your hedge trimmer can cause premature failure and can result in injury. Use common sense.

Always keep a safe distance between two or more operators when working together simultaneously.

Always inspect your unit before each use and ensure that all handles, guards, safety devices and fasteners are secure, operating, and in place.

Always maintain and examine your trimmer with care. Follow maintenance instructions given in manual.

Always store trimmer in a sheltered area (a dry place) not accessible to children. The hedge trimmer as well as fuel should not be stored in a house.

Always be aware of your surroundings and stay alert for possible hazards that you may not hear due to the noise of the machine.

Always fit the cutting device guard when transporting or storing the machine.



WARNING - DANGER



IF TRIMMER IS USED IMPROPERLY OR SAFETY PRECAUTIONS ARE NOT FOLLOWED, THE USER RISKS SERIOUS INJURY TO THEMSELVES AND OTHERS.

READ AND UNDERSTAND THE FOLLOWING BEFORE ATTEMPTING TO OPERATE THIS HEDGE TRIMMER.



WARNING - DANGER



HANDLE FUEL WITH CARE. IT IS HIGHLY FLAMMABLE. FUELING A HOT ENGINE OR NEAR AN IGNITION SOURCE CAN CAUSE A FIRE AND RESULT IN SERIOUS PERSONAL INJURY AND/ OR PROPERTY DAMAGE.

● Assembly Instructions ●

E. ⚠ Engine/ Fuel Warnings - Don'ts

Don't fuel, refuel or check fuel while smoking or near an open flame or other ignition source. Stop engine and be sure it is cool before refueling.

Don't leave the engine running while the trimmer is unattended. Stop engine before putting the trimmer down or while transporting from one place to another.

Don't start, run this trimmer indoors, or in an improperly ventilated area as poisonous carbon monoxide and other gases are emitted.

Don't run engine when electrical system causes spark outside the cylinder. During periodical checks of the spark plug, keep plug a safe distance from cylinder to avoid burning of evaporated fuel from cylinder.

Don't check for spark with spark plug or plug wire removed and grounded. Use an approved tester. Sparks can ignite fumes.

Don't crank engine with spark plug removed. If the engine is flooded, open the choke (push choke knob in) and pull recoil until engine starts. If this fails read and follow section IV. E. of this manual.

Don't run engine when the odor of gasoline is present or other explosive conditions exist.

Don't operate the unit if gasoline is spilled. Clean up spill completely before starting engine.

Don't refuel indoors or in an improperly ventilated area.

Don't operate your trimmer if there is an accumulation of debris around the muffler, and cooling fins.

Don't touch hot mufflers, cylinders or cooling fins as contact may cause serious burns.

F. ⚠ Engine/ Fuel Warnings - Do's

Always use fresh gasoline in the fuel mixture. Stale gasoline can cause leakage.

Always pull starter cord slowly until resistance is felt. Then pull cord rapidly to avoid kickback and prevent arm or hand injury.

Always operate engine with spark arrestor installed and operating properly. The use of spark arrestor mufflers is required by law in the state of California (Section 4442 of the California Public Resources Code), as well as in other states or municipalities. Federal laws apply on federal lands.

This spark ignition system meets all requirements of Canadian Interference-causing Equipment Regulations.

Always handle fuel with care; it is highly flammable. Never add fuel to a machine with a running or hot engine. Do not inhale fuel fumes as they are toxic.

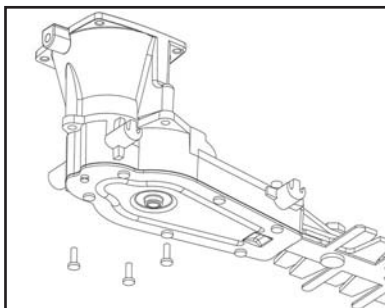


Figure 1

⚠ WARNING - DANGER ⚠

BLADES ARE EXTREMELY SHARP! TO AVOID INJURY WHEN UNPACKING THE HEDGE TRIMMER, DO NOT GRASP THE BLADES.

⚠ WARNING - DANGER ⚠

IMPROPER ASSEMBLY OF THIS TRIMMER CAN RESULT IN SERIOUS INJURY. MAKE SURE TO FOLLOW ALL INSTRUCTIONS CAREFULLY.

IF YOU HAVE ANY QUESTIONS, CONTACT YOUR LOCAL DEALER OR OUR FACTORY AT (215) 357-5110.

Your **Little Wonder** hedge trimmer has been assembled for you at the factory. Before operating be sure all fasteners are secure, and all guards and safety devices are in place and operating properly.

A. Double Edge Models

If the engine needs to be reinstalled:

1. Install the engine by first aligning the hex drive on the trimmer gear housing with the hex socket of the engine's clutch drum.
2. Slide the engine with the attached engine adapter over the gear housing stem until it is seated all the way down on the gear housing.
3. Align the three threaded holes of the engine adapter with the mounting holes of the gear housing.
4. Use three 8-32 x 5/8 screws with the attached dual action spring washers. See Figure 1.
5. Release the throttle trigger and make sure the throttle returns to the idle position, when the carburetor level rests on the idle screw. Throttle movement should be smooth and unobstructed.

B. Single Edge Models

1. Remove the cutter bar assembly, the engine with handle and throttle assembly, the side handle, and hardware bag from their boxes.

P/N	Description	Qty.
972	1/4-20 Lock Nut	2
300102	Handle Support Channel	2
300113	Spacer Tube	2
300111	Shock Absorber	4
300112	Support Plate	1
300505	1/4-20 x 2 21/2	2
3036-B	1/4-28 Flange Locknut	2

2. Place the front side handle over the two 1/4-28 studs protruding from the frame bar in front of the gear housing. The handle grip **must** be pointing away from the cutting blades as illustrated (Figure 1). On Model 2230S use the set of studs which places the handle in the most comfortable position for you. Place the thread protectors over the set of studs that you choose not to use at this time to protect the threads. Secure the handle in place using two 1/4-28 flange locking nuts provided. The nuts should be tightened enough to keep the handle from moving but not so tight as to crush the plastic.

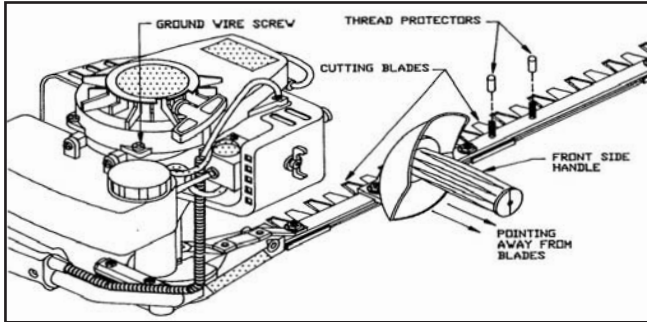


Figure 1

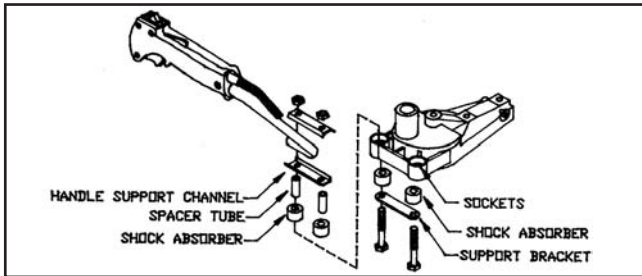


Figure 2

If the engine needs to be reinstalled:

1. Install the engine by first aligning the hex drive on the trimmer gear housing with the single sided hex socket in the engine.
2. Slide the engine over the 1" diameter stem containing the hex drive on the gear housing until it is seated all the way down on the gear housing. Tighten the 7/8" Phillips Pan Head Screw (Pg. 12, Key #22).
3. Press shock absorbers into sockets on the gear housing followed by the spacer tubes. Secure the handle and tubing support channel, spacer, and bracket with the 1/4-20 hex bolts and locking nuts supplied.
4. With the stop switch in the stop position, and the engine not running, check the throttle for proper operation. Grasp rear handle with left hand, depressing the lockout trigger until it stops when the carburetor lever hits the carburetor case. Release the throttle trigger and make sure the throttle returns to the idle position, when the carburetor level rests on the idle screw. Throttle movement should be smooth and unobstructed.

C. Break-In Procedure

There are no special requirements for engine break-in. After normal operation and two (2) tanks of fuel, engine break-in is complete.

If adjustments are necessary, follow Special Carburetor Adjustment Procedures on this supplementary Operator's Information Sheet. All other adjustments and maintenance procedures are in the complete Owner's Manual.

Operation

⚠ WARNING - DANGER ⚠

THE OPERATOR OF THIS HEDGE TRIMMER IS RESPONSIBLE FOR ACCIDENTS OR HAZARDS OCCURRING TO HIMSELF, OTHER PEOPLE OR THEIR PROPERTY.

⚠ WARNING - DANGER ⚠

FUEL IS EXTREMELY FLAMMABLE. HANDLE IT WITH CARE. KEEP AWAY FROM IGNITION SOURCES. DO NOT SMOKE WHILE FUELING YOUR EQUIPMENT.

A. Fuel Mixture

Your Little Wonder Single Edge Hedge Trimmer is powered by an Echo Model SV-4B(H) Type IE, and Double Edge Hedge Trimmer is powered by an Echo Model SV-4B(H2) Type IE. Both models have two stroke, air cooled engines which require a fuel mixture of gasoline and 2-stroke oil.

1. Important Engine Information

This unit is certified to operate on approved two-stroke fuel (a mixture of 2-stroke oil and gasoline/ gasohol).

2. Fuel Statement

Gasoline - Use 89 Octane [R+M/2] gasoline or gasohol known to be good quality. Gasohol may contain up to 10% Ethanol (grain alcohol) or 15% MTBE (methyl tertiary-butyl ether). Gasohol containing methanol (wood alcohol) is NOT approved.

3. Two-Stroke Oil

A two-stroke engine oil meeting proposed ISO-L-EGD Standard (ISO/CD 13738), must be used. LW brand Premium 50:1 oil meets this proposed standard. Engine problems due to inadequate lubrication caused by failure to use an ISO-L-EGD approved oil, such as LW Premium 50:1 Two-stroke Oil, **will void the two-stroke engine warranty.** (Emission related parts only are covered for two years, regardless of two-stroke oil used, per the statement listed in the EPA Phase I/California Emission Defect Warranty Explanation.)

B. Mixing Fuel

1. Pour 1/2 of the gasoline into a safe container. **DO NOT** mix fuel in the engine fuel tank.
2. Add the oil to the gasoline and mix.
3. Add the remaining gasoline and remix.
4. Install fuel cap and wipe spilled fuel from container and area.
5. **Important**, two stroke fuel separates and ages. Do not mix more than you will use in a month. Shake fuel container to thoroughly mix fuel before each use. Do not attempt to run your engine on gasoline only, use the proper fuel mixture.

C. Starting a Cold Engine

The trimmer has a Start/Stop ignition switch which must be used for starting and stopping the engine.

1. Place the hedge trimmer flat on the ground, or another stable surface. Slide the ignition switch to the START position.
2. Pull choke knob out to COLD START (closed) position.
3. Push primer bulb 3 to 4 times, or until fuel is visible in the clear fuel return line.
4. Pull starter rope until engine sputters. Use short pulls, 1/2 to 2/3 of the rope length.



WARNING - DANGER



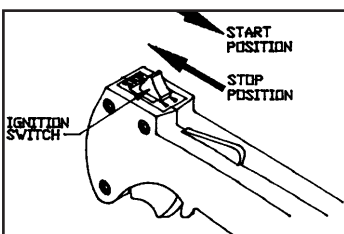
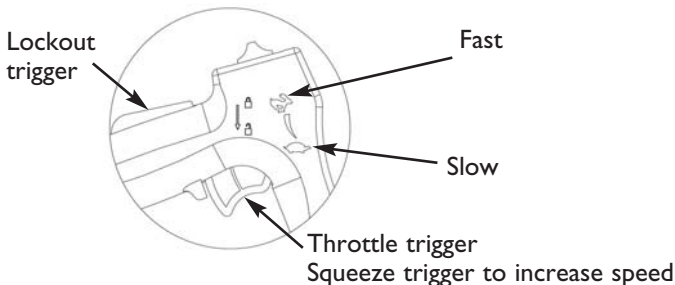
AVOID ACCIDENTAL BLADE ENGAGEMENT.

DO NOT SQUEEZE TRIGGER WHEN STARTING.

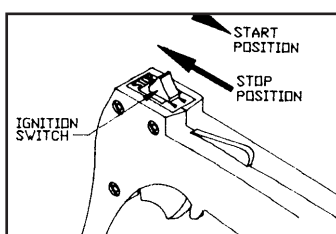
**MAINTAIN ENGINE'S PROPER IDLE SPEED
ADJUSTMENT (2500 - 2700 RPM)
MAX FULL THROTTLE ENGINE SPEED IS
10,500 - 11,000 RPM**

5. Push choke knob in to the RUN position.
6. Restart engine and allow it to warm up for 2-3 minutes.
7. With both hands on the handles, squeeze throttle trigger gradually, to increase the engine speed and engage the blades.

NOTE: Allow engine to warm up 2-3 minutes before use. Failure to do so will cause engine damage.



Single Edge Trimmer



Double Edge Trimmer

D. Starting a Warm Engine

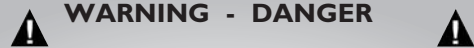
1. Slide ignition switch to START position.
2. Push choke knob in to RUN (open) position.
3. If there is no fuel in the clear return line, push primer bulb 3-4 times or until fuel is visible in the line.
4. Pull starter rope using short pulls, 1/2 to 2/3 of the rope length.
5. If engine fails to start in 4 pulls, use cold start procedure.
6. With both hands on the handles, squeeze throttle trigger gradually to increase the engine speed and engage the blades.

E. Starting a Flooded Engine

1. Remove the cap from the spark plug and unscrew the plug with a spark plug wrench. If the end of the spark plug is wet, the engine may be flooded.
2. Use a paper towel or clean rag to dry the end of the spark plug.
3. Reinstall the spark plug and cap.
4. Push the choke knob in (open position) and pull starter rope three to four times.
5. Now pull the choke knob out (closed position) and pull the starter rope until the engine sputters.
6. Finally, push the choke knob in (open position) and pull the starter rope to start the engine.

F. Stopping the Engine

1. Release the throttle trigger and allow engine to idle.
2. Slide ignition switch to the STOP position.
3. Make sure blades have come to a complete stop before releasing either handle.



WARNING - DANGER



**IF ENGINE DOES NOT STOP WHEN SWITCH IS
PUT IN THE STOP POSITION, RELEASE THE
THROTTLE TRIGGER, ALLOW ENGINE TO
IDLE.**

**PUT THE TRIMMER DOWN, AND PULL THE
CHOKE KNOB OUT TO COLD STOP,
(CLOSED) POSITION.**

G. Trimming

⚠ WARNING - DANGER ⚠

BLADES COAST AFTER RELEASING THROTTLE OR STOPPING ENGINE.

KEEP A FIRM GRIP WITH BOTH HANDS WHILE BLADES ARE MOVING AND/ OR ENGINE IS RUNNING.

DO NOT STAND ON THE TOP OF A LADDER WHILE TRIMMING.

MAKE SURE YOUR LADDER OR OTHER SUPPORT IS STABLE AND ON FIRM GROUND.

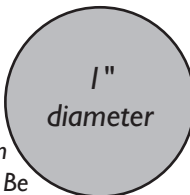
KEEP A SURE FOOTING. DO NOT OVERREACH.

IF YOUR TRIMMER BECOMES JAMMED, RELEASE THROTTLE AND STOP ENGINE. MAKE SURE BLADES HAVE STOPPED COMPLETELY, THEN REMOVE THE OBSTRUCTION.

1. **WARNING!** Read and follow all safety instructions in the manual before attempting to use this trimmer.
2. Only after you are familiar with your hedge trimmer and all of its controls and the functions should you start the engine.
3. Once the engine is started grasp the handles securely, the left hand should grasp the rear handle and the right hand should grasp the front side handle on single edge trimmers. On double edge trimmers, one hand grasps the front loop handle, while the other hand grasps the rear handle.
4. Squeeze the throttle to accelerate the engine and engage the blades.
5. Tilt the trimmer so the cutting teeth are angled slightly toward the hedge or shrub and proceed to cut. Use overlapping sweeping motions away from your body to achieve a safe and even cut.
6. This unit is designed to cut any type of hedge or shrub; however,

THICKNESS OF CUT SHOULD NOT EXCEED 1 INCH IN DIAMETER.

Misuse of this Hedge Trimmer will void the warranty. ie: Cutting hedges or shrubs over 1" in diameter or foreign objects such as wires, rocks, or fences. Before trimming check work area for foreign objects such as wires, cords, glass, fences, or rocks. Be sure to remove any foreign objects from the work area. Failure to properly maintain this hedge trimmer will void the warranty.

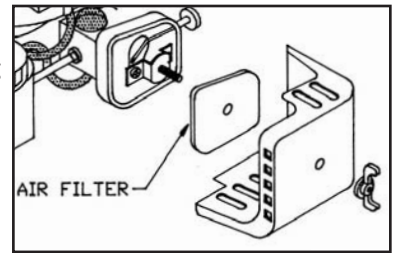


A. Lubrication

1. A few drops of a light #10 oil should be placed on the back edge of each blade guard at each adjusting screw approximately after every 4 hours of normal operation.
2. To obtain trouble free trimming, it is necessary to keep the blades lubricated and clean. The gum that collects and builds up on the blades can be removed with a 50-50 mixture of kerosene and #10 oil. As petroleum products can shorten the life of some plastics it is necessary to remove excess oil-kerosene mixture from the plastic parts.
3. When blades are replaced, or any other time that the bottom cover plate is removed, the grease level should be checked for proper amount (approximately 3/4 full in the area of the gears) and a new gasket (P/N319) should be used to insure proper seating of the cover plate. Grease level should be checked and adjusted after every 50 hours of use. Use only Lubrico M3-3K-9K (P/N 16-78A) grease in the gear housing.

B. Engine

1. Air Filter
 - a. Clean the air filter before each use. Remove wing nut and air filter cover.
 - b. If filter is excessively dirty or no longer fits properly, replace it.
 - c. Re-install filter to inside cover making sure it is seated properly.
 - d. Re-install cover onto air cleaner case and secure with wing nut.



2. Cooling Fins

Remove dirt and debris from around cooling fins and exhaust before each use. Proper air circulation is essential for engine performance and life.

C. Long Term Storage (over 60 days)

1. Store your trimmer in a dry and dust free space, out of the reach of children.
2. Place the ignition switch in the stop position.
3. Clean the engine and blades thoroughly and coat the blades with #10 oil to prevent rust.
4. Perform all required maintenance and service found in this manual.
5. Drain the fuel tank and pull the starter rope several times to remove the fuel from the carburetor.
6. Remove the spark plug and pour 1/4 oz. of fresh, clean, two-stroke engine oil into the cylinder via the spark plug hole. Cover the hole with a rag and pull the starter rope 2-3 times.
7. While looking through the spark plug hole pull the starter rope until the piston reaches the top of its stroke and stop.
8. Install the spark plug, but leave the ignition cable disconnected.

⚠ WARNING - DANGER ⚠

DO NOT STORE IN AN AREA WHERE FUEL FUMES MAY ACCUMULATE AND REACH A FLAME OR SPARK.

Service

A. Troubleshooting

Problem	Cause	Remedy
1. Blades don't cut cleanly.	Blades are dull or not adjusted properly.	Have blades sharpened and adjusted.
2. Blades don't move when throttle is depressed.	Engine is not seated properly on the gear housing. Blades are adjusted too tight.	Re-install engine following the assembly instructions. (pg. 4) Re-adjust blades following service instructions. (pg. 9)
3. Engine fails to start	ON/OFF switch is in OFF position. No fuel in tank. Fuel strainer clogged. Fuel line clogged. Spark plug shorted or fouled. Spark plug is broken (cracked porcelain or electrodes broken). Ignition lead wire shorted, broken or disconnected from spark plug. Ignition inoperative (no spark from lead wire).	Move switch to ON. Fill Tank. Replace Strainer. Clean fuel line. Install new sparkplug. Replace sparkplug. Replace lead wire or attach to sparkplug. Contact your nearest authorized dealer.
4. Engine hard to start.	Water in gasoline or stale fuel mixture. Too much oil in fuel mixture. Engine under or over choked. Carburetor out of adjustment. Gasket leaks (carburetor or cylinder base gasket).	Drain entire system and refill with fresh fuel. Drain and refill with correct mixture. If flooded by over chocking, proceed according to instructions in operation section. If under choked, move choke lever to closed position and crank two or three times. See "Carburetor Adjustment" Replace gaskets. (pg. 10) Contact your nearest authorized dealer. Remove and clean. See "Carburetor Adjustment". (pg. 10) Clean or replace spark plug - set gap to 0.6-0.7 mm (.024 .028in.).
5. Engine misses.	Weak spark at sparkplug	Contact your nearest authorized dealer.
6. Engine lacks power.	Air cleaner clogged. Carburetor out of adjustment. Muffler clogged. Clogged exhaust ports. Clogged spark arrestor Poor compression.	Clean air cleaner. See "Carburetor Adjustment". Clean carbon from muffler. Remove muffler, rotate engine until the piston is at top of cylinder. With a wooden scraper or blunt tool, remove all carbon from exhaust ports. Be careful not to scratch or damage piston or cylinder walls. Blow out all loose carbon with compressed air. Install muffler and gasket. Clean Contact your nearest authorized dealer.
7. Engine overheats.	Insufficient oil in fuel mixture. Air flow obstructed.	Mix fuel as described in starting instructions. Clean flywheel, cylinder fins and screen.
8. Engine noisy or knocking.	Loose flywheel. Spark plugs incorrect heat range. Worn bearings, piston ring or cylinder walls.	Tighten flywheel nut. Replace with plugs specified for engine. Contact your nearest authorized dealer.
9. Engine stalls under load.	Carburetor adjustment too "lean". Engine overheats.	See "Carburetor Adjustment". Remove dust and dirt from between cylinder fins.

B. Engine Specifications

Dry Weight	2.5 kg — 5 lbs., 10 ounces	Fuel	Premixed two stroke fuel
Type of Engine	Air Cooled, Two stroke, Single-Cylinder, Gasoline Engine	Fuel Oil Ratio	50:1 ratio with ECHO or Little Wonder oil
Rotation	Counterclockwise, viewed from TOP	Gasoline	Unleaded, 89 octane or higher
Bore	32.2 mm (1.268 in.)	Displacement	21.2 cc (1.294 cu. in.)
Stroke	26.0 mm (1.04 in.)	Exhaust System	Spark arrester muffler
Spark Plug	NGK BPM7Y, Champion RCJ-7Y or RCJ-8Y The spark plug gap is 0.65 mm (0.026"). Refer to Owner's Manual, for service Procedure	Carburetor	ZAMA diaphragm model CIU type.
		Ignition System	RPM at idle 2800 ± 250 RPM There are no adjustments required for the ignition

C. Service Maintenance Guide

Area	Maintenance	Frequency
Air Filter	Clean Replace	Daily or every 4 hrs. use Every 3 mths. or 100 hrs. use
Fuel Filter	Inspect / Replace	Monthly
Spark Plug	Clean Replace	Every 3 mths. or 100 hrs. use 6 months or 300 hrs. use
Carburetor	Check / Rebuild Replace	6 months or 300 hrs. use Yearly or 600 Hrs. use †
Cooling System	Inspect / Clean	Before Use
Muffler (Spark Arrestor)	Inspect / Clean	Monthly
Gear Housing	Check Grease	Every 50 hours of use
Blades	Inspect / Clean / Lubricate	After Use
Fuel Leaks	Inspect / Repair	Before Use
Fasteners	Inspect / Tighten / Replace	Before Use
Labels	Inspect / Replace	Before Use
Handles	Inspect / Replace	Before Use
Guards / Safety Devices	Inspect / Replace	Before Use
Fuel Line	Inspect / Replace	Monthly
Starter Rope	Inspect / Replace	Monthly
Fuel Strainer	Replace	Every 3 mths. or 100 hrs. use
Choke	Check	With each re-fueling
Ignition System	Clean Replace	No maintenance For coil and flywheel

† Replacement will be required for commercial use after 600 hours. For customer use, cleaning every six months is required. Cleaning includes rebuild kits.

IMPORTANT: Time intervals shown are maximum. Actual use and your experience will determine the frequency of required maintenance.

D. Blade Adjustment and Comb

Orientation

The care and adjustment of the blades is very important to the efficient operation of the trimmer and especially to the long life of the engine.

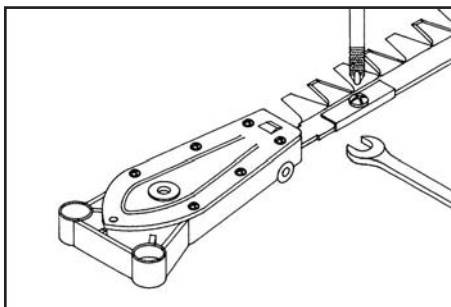
1. Place trimmer in vise, clamping on the frame bar. Be careful! Blades are sharp!
2. Using a 7/16" wrench, loosen all blade locknuts and unscrew the large head screws by two turns.
3. Starting with the screw nearest the gear housing, tighten the screw until the blade guard of the single edge trimmer or the protective comb of the double edge trimmer

can just be moved with finger pressure and a .0015" (1 1/2 thou.) feeler blade just slips under the blade guard or comb. Tighten the locknuts while holding the screw stationary in its correct adjusted position.

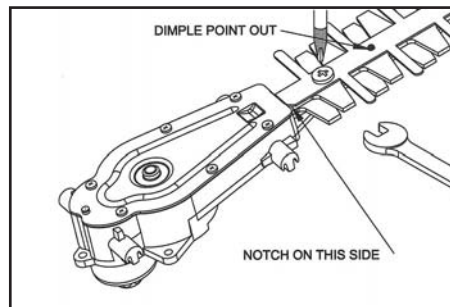
4. Repeat Step 3 on the screws in turn until all are correctly adjusted.

5. Orientation of the comb is very important. The comb has staggered teeth for better cutting performance. Correct comb orientation is shown below.

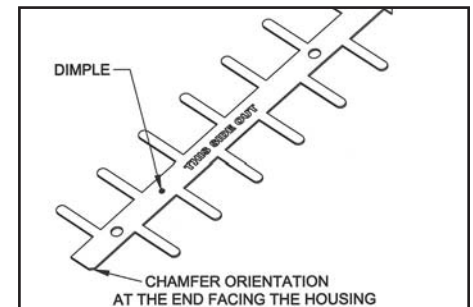
NOTE: Correct blade adjustment can only be achieved on clean, oiled blades.



Single Edge



Double Edge



Comb Orientation

E. Carburetor Adjustment

I. General

NOTE: The diaphragm carburetor has three external adjustments. Each adjustment affects the others.

The idle speed adjustment screw controls the throttle opening at idle position.

The low (LO) speed adjustment screw controls the volume of fuel mixture at low engine speed. It also controls the supplementary fuel required to obtain smooth progression from idling to high speed.

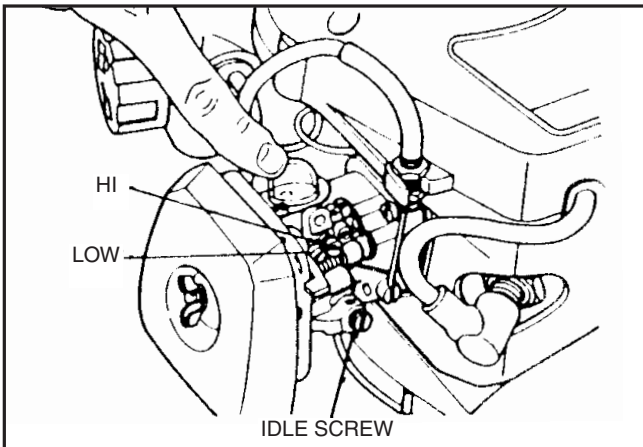
The high (HI) speed adjustment screw controls the volume of fuel mixture at full throttle.

2. Carburetor Adjustment

Every unit is run at the factory and the carburetor is set in compliance with EPA Phase I / California Emission Regulations. In addition, the carburetor is equipped with HI and LO needle adjustment limiters that prevent settings outside acceptable limits. Limiter caps must remain or be replaced on both the HI and LO carburetor adjusting screws. There is no limiter cap on the idle screw.

NOTE: The needle screws have a sharp point. To avoid damage to the carburetor, do not use excessive force.

- a. Before adjusting carburetor clean or replace air filter and muffler, "Spark Arrestor Screen".
- b. Make sure the cutting attachment such as hedge clipper blades are properly adjusted.



- c. Start engine and run several minutes to bring to operating temperature. Flash choke twice during warm-up to clear any air from the fuel system.

NOTE: The Idle speed screws may have to be re-adjusted to keep engine from stalling. The Engine must be at normal operating temperature to adjust properly.

- d. Stop engine. Turn HI speed needle counter-clockwise to stop. Turn LO speed needle midway between full clockwise stop and counter-clockwise stop.

e. Idle Speed Adjustment

Units with Cutting Attachments.

Turn "idle" speed adjustment screw CW (clockwise) until cutting attachment begins to turn, then turn screw out CCW (counter clockwise) until attachment stops turning. Turn screw out, CCW, an additional 1/4 turn.

- f. Start unit and accelerate to full throttle for 2-3 seconds to clear any excess fuel in the engine, then return to idle. Accelerate engine to full throttle to check for smooth transition from idle to high speed. If engine hesitates turn LO needle CCW 1/8 turn and repeat acceleration. Continue adjustment until smooth acceleration results.
- g. Check idle speed and reset if necessary as described in "item e" above. If a tachometer is available idle speed should be set as specified in the Owner's Manual.

Important: Do not run the engine at full throttle or with no load for more than 5-6 seconds to avoid engine damage.

Note: This hedge trimmer is equipped with a speed limiting carburetor (the high speed circuit has a by-pass system). With this feature the engine will continue to run even with the high speed adjusting screw turned all the way in. Although the engine will continue to run, it will only produce full power with the HI adjusting screw opened to about 3/8 to 1/2 turn.

⚠ WARNING - DANGER ⚠

KEEP HANDS AWAY FROM THE BLADES WHILE SERVICING THE HEDGE TRIMMER. BE SURE TRIMMER IS SECURED AND BLADES ARE GUARDED WHILE MAKING ADJUSTMENTS.

F. Notes
