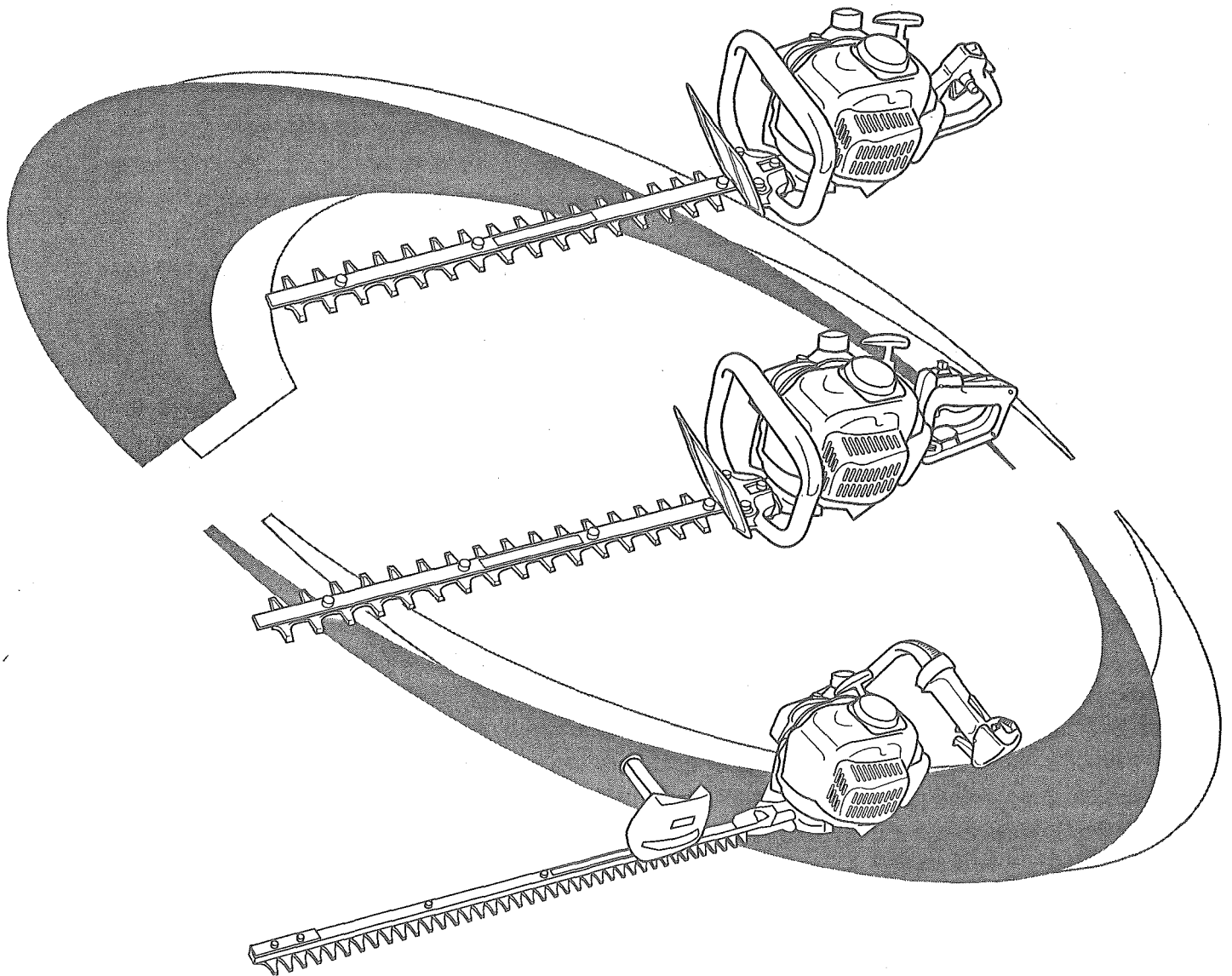


MARUYAMA

SINCE 1979
precisionusa.com
YOUR GOLF COURSE SUPERMARKET
800-345-1960

**OWNER'S
OPERATOR'S MANUAL**

**HT2321D, HT2321D-CA, HT2321DL,
HT2321DL-CA, HT2321D-R, HT2321DR-CA,
HT2321DL-R, HT2321DLR-CA,
HT2321, HT2321CA, HT2321L, HT2321LCA
HEDGE TRIMMER**



Premium Outdoor Power Equipment  *Maruyama. Extraordinary.*
Completely read and understand this manual prior to using this product.



Limited Warranty Statement

All Maruyama commercial/ industrial products are warranted to the original purchaser to be free from defects in material and workmanship from the date of purchase for the time periods listed as follows:

Lifetime for inner drive shaft on trimmers and brushcutters and all ignition modules.

3 years for residential, non-institutional, non-income producing use.

1 year for industrial, commercial, institutional, rental and income producing use.

Maruyama AE series engines and Kawasaki TEX45/TEX54 are covered exclusively for one additional year of industrial, commercial, institutional, rental and income producing use (total of 2 years).

All other engines refer to engine manufacturer's warranty statement.

Any part of a Maruyama product found to be defective within the applicable warranty period shall, at Maruyama's option, be repaired or replaced without charge. Warranty consideration is obtained by delivering any Maruyama product believed to be defective to an Authorized Maruyama Servicing Dealer within the applicable warranty period.

The purchaser shall not be charged for diagnostic labor that leads to the determination that a warranted part is defective, if the diagnostic work is performed at a Maruyama Dealer.

Any warranted part which is not scheduled for replacement as required maintenance, or which is scheduled only for regular inspection to the effect of "repair or replace as necessary" shall be warranted for the warranty period. Any warranted part, which is scheduled for replacement as, required maintenance shall be warranted for the period of time up to the first scheduled replacement point for that part. Maruyama Mfg. Co., Inc. is liable for damages to other engine components caused by the failure of a warranted part still under warranty.

The purchaser is responsible for the performance of the required maintenance, as defined by Maruyama Mfg. Co., Inc. in the Owner's/Operator's Manual.

EMISSION-RELATED PARTS WARRANTY: In addition to the above warranty coverage, Maruyama Mfg. Co., Inc. will repair or replace, free of charge, for the original purchaser and each subsequent purchaser any emission-related part or parts found to be defective in material and workmanship for two (2) years from original retail delivery date except catalytic converter. Catalytic converter is warranted one year from original retail delivery date. Emission-related parts are the carburetor assembly, the ignition coil assembly, the ignition rotor and the spark plug and catalytic converter. Any replacement part that is equivalent in performance and durability may be used in non-warranty maintenance or repairs, and shall not reduce the warranty obligations of Maruyama Mfg. Co., Inc.

Effective June 1, 2000

This warranty does not cover the following:

1. Maintenance items (excluding defects in materials and workmanship) including hoses, spark plugs, starter rope, air and fuel filters, clutch shoes, vibration isolators, throttle cables and all cutting attachments, etc.
2. Extra expenses including shipping and handling, travel, payment for lost time or pay and for any inconvenience and storage.
3. Alterations or modifications including aftermarket parts not authorized by Maruyama U.S., Inc.
4. Wear, accident, abuse, neglect, misuse, negligence, improper fuels, lubricants, fuel mixtures (when applicable), or failure to operate or maintain the product in accordance with instructions approved by Maruyama.

Repair or replacement as provided under this warranty is the exclusive remedy of the consumer. Maruyama shall not be liable for any incidental or consequential damages for breach of any express or implied warranty on these products except to the extent prohibited by applicable law. Any implied warranty of merchantability or fitness for a particular purpose on these products is limited in duration to the warranty period as defined in the limited warranty statement. Maruyama reserves the rights to change or improve the design of the product without notice and does not assume obligation to update previously manufactured products.

This warranty provides you with specific legal rights, which may vary from state to state.

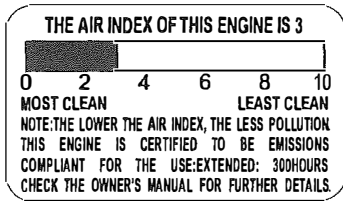
It is the Owner's and Dealer's responsibility to make sure the Warranty Registration Card is properly filled out and mailed to Maruyama U.S., Inc. Proof of purchase and registration will be required in order to obtain warranty service.

To locate an Authorized Maruyama Servicing Dealer nearest you, contact:

Maruyama U.S., Inc.
3570 Shelby Lane
Denton, TX76207
(940) 383-7400
maruyama@maruyama-us.com
www.maruyama-us.com

Effective June 1, 2000

⚠ WARNING: ⚠
The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.



CER230HT

FEDERAL EMISSION CONTROL WARRANTY STATEMENT YOUR WARRANTY RIGHTS AND OBLIGATIONS

The U.S. Environmental Protection Agency (EPA) and Maruyama Manufacturing Company, Inc. are pleased to explain the emission control system warranty on your small off-road engine. New 1997 and later model year small off-road engines must be designed, built and equipped, at the time of sale, to meet the U.S. EPA regulations for small off-road engines. The equipment engine must be free from defects in materials and workmanship which cause it to fail to conform with U.S. EPA standards for the first two years of engine use from the date of sale to the ultimate purchaser. Maruyama Manufacturing Company, Inc. must warrant the emission control system on your small off-road engine for the period of time listed above provided there has been no abuse, neglect or improper maintenance of your small off-road engine.

Emission durability of 300 hours.

Your emission control system may include parts such as the carburetor or fuel injection system, the ignition system, and catalytic converter. Also included may be hoses, belts, and connectors and other emission related assemblies.

Where a warrantable condition exists, Maruyama Manufacturing Company, Inc. will repair your small off-road engine at no cost to you, including diagnosis (if the diagnostic work is performed at an authorized dealer), parts, and labor.

MANUFACTURER'S WARRANTY COVERAGE:

The 1997 and later model year small off-road engines are warranted for two years. If any emission-related part on your engine is defective, the part will be repaired or replaced by Maruyama Manufacturing Company, Inc. free of charge.

OWNER'S WARRANTY RESPONSIBILITIES:

- (a) As the small off-road engine owner, you are responsible for the performance of the required maintenance listed in your owner's manual.
Maruyama Manufacturing Company, Inc. recommends that you retain all receipts covering maintenance on your small off-road engine, but Maruyama Manufacturing Company, Inc. cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance. Any replacement part or service that is equivalent in performance and durability may be used in non-warranty maintenance or repairs, and shall not reduce the warranty obligations of the engine manufacturer.
- (b) As the small off-road engine owner, you should be aware, however, that Maruyama Manufacturing Company may deny you warranty coverage if your small off-road engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.
- (c) You are responsible for presenting your small off-road engine to a Maruyama Manufacturing Company, Inc. service center as soon as a problem exists. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days.

If you have any questions regarding your warranty rights and responsibilities, you should contact Maruyama U.S., Inc. at 1-866-783-7400.

COVERAGE

Maruyama Manufacturing Company, Inc. warrants to the ultimate purchaser and each subsequent purchaser that your small off-road engine will be designed, built and equipped, at the time of sale, to meet all applicable regulations. Maruyama Manufacturing Company, Inc. also warrants to the initial purchaser and each subsequent purchaser that your small off-road engine is free from defects in materials and workmanship which cause the engine to fail to conform with applicable regulations for a period of two years.

The 1997 and later model years, EPA requires manufacturers to small off-road engines for two years. These warranty periods will begin on the date the small off-road engine is purchased by the initial purchaser. If any emission-related part on your engine is defective, the part will be replaced by Maruyama Manufacturing Company, Inc. at no cost to the owner.

Maruyama Manufacturing Company, Inc. shall remedy warranty defects at any authorized Maruyama Manufacturing Company, Inc. engine dealer or warranty station. Any authorized work done at an authorized dealer or warranty station shall be free of charge to the owner if such work determines that a warranted part is defective. Any manufacturer-approved or equivalent replacement part may be used for any warranty maintenance or repairs on emission-related parts, and must be provided free of charge to the owner if the part is still under warranty, Maruyama Manufacturing Company, Inc. is liable for damages to other engine components caused by the failure of a warranted part still under warranty.

EPA considers emission-related warranted parts to include all the parts listed below. These warranted parts are: the carburetor assembly, the ignition coil assembly, the ignition rotor, the spark plug, the catalytic converter, and the fuel tank.

MAINTENANCE REQUIREMENTS

The owner is responsible for the performance of the required maintenance as defined by the Maruyama Manufacturing Company, Inc. in the owner's manual.

LIMITATIONS

This Emission Control System Warranty shall not cover any of the following:

- (a) repair or replacement required because of misuse or neglect, lack of required maintenance, repairs improperly performed or replacements not conforming to Maruyama Manufacturing Company, Inc. specifications that adversely affect performance and/or durability, and alterations or modifications not recommended or approved in writing by Maruyama Manufacturing Company, Inc., and
- (b) replacement of parts and other services and adjustments necessary for required maintenance at and after the first scheduled replacement point.

CALIFORNIA EMISSION CONTROL WARRANTY STATEMENT YOUR WARRANTY RIGHTS AND OBLIGATIONS

The California Air Resources Board (CARB), and Maruyama Manufacturing Company, Inc. are pleased to explain the emission control system warranty on your 2010 small off-road engine. In California, new small off-road engines must be designed, built and equipped to meet the State's stringent anti-smog standards. Maruyama Manufacturing Company, Inc. must warrant the emission control system on your small off-road engine for the period of time listed above provided there has been no abuse, neglect or improper maintenance of your small off-road engine.

Your emission control system may include parts such as the carburetor or fuel injection system, the ignition system, and catalytic converter. Also included may be hoses, belts, and connectors and other emission related assemblies.

Where a warrantable condition exists, Maruyama Manufacturing Company, Inc. will repair your small off-road engine at no cost to you, including diagnosis, parts, and labor.

MANUFACTURER'S WARRANTY COVERAGE:

The 1995 and later small off-road engines are warranted for two years. If any emission-related part on your engine is defective, the part will be repaired or replaced by Maruyama Manufacturing Company, Inc.

OWNER'S WARRANTY RESPONSIBILITIES:

(a) As the small off-road engine owner, you are responsible for the performance of the required maintenance listed in your owner's manual.

Maruyama Manufacturing Company, Inc. recommends that you retain all receipts covering maintenance on your small off-road engine, but Maruyama Manufacturing Company, Inc. cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance

(b) As the small off-road engine owner, you should be aware, however, that Maruyama Manufacturing Company may deny you warranty coverage if your small off-road engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

(c) You are responsible for presenting your small off-road engine to a Maruyama Manufacturing Company, Inc. distribution center as soon as a problem exists. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days.

If you have any questions regarding your warranty rights and responsibilities, you should contact Maruyama U.S., Inc. at 1-866-783-7400.

Emission System Parts

Exhaust Emission

Carburetor
Muffler
Catalytic Converter
Ignition Coil / Magneto
Spark Plug
Air Filter
EGR Valve (piston)
Fuel Filter

Evaporative Emission

Fuel Tank

FOREWORD

This Owner's/Operator's Manual is designed to familiarize the operator with the various features and component parts of the equipment and to assist you with the operation and maintenance of your new Hedge Trimmer.

It is essential that any operator of this Hedge Trimmer product reads and understands the contents of this manual before using the Hedge Trimmer.

Important safety instructions will be identified by the following safety symbol:



Failure to comply with the instructions in this manual may result in serious injury or death.

For additional assistance, contact any local authorized Maruyama dealer or Maruyama U.S., Inc., 3570 Shelby Lane Denton, TX76207

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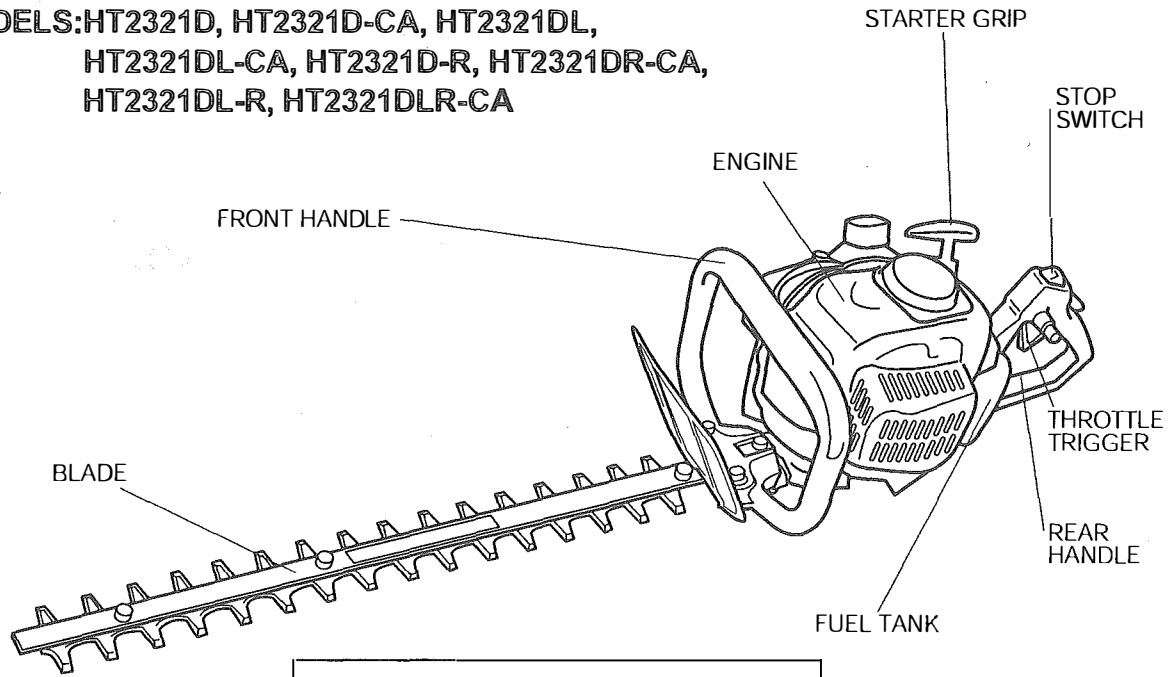
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SPECIFICATIONS

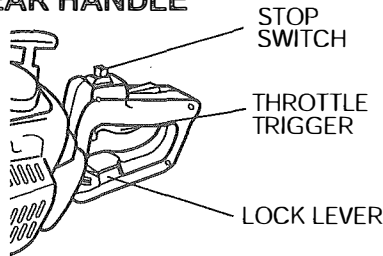
Model	HT2321D HT2321D-CA	HT2321DL HT2321DL-CA	HT2321 HT2321CA	HT2321L HT2321LCA	HT2321D-R HT2321DR-CA	HT2321DL-R HT2321DLR-CA
Dimensions L x W x H	1030 x 245 x 220 mm (40.5 x 9.6 x 8.7 in.)	1060 x 245 x 220 mm (41.7 x 9.6 x 8.7 in.)	1040 x 255 x 235 mm (40.9 x 10.0 x 9.2 in.)	1030 x 245 x 235 mm (54.7 x 10.0 x 9.2 in.)	1030 x 245 x 225 mm (40.5 x 9.6 x 8.9 in.)	1060 x 245 x 225 mm (41.7 x 9.6 x 8.9 in.)
Dry Weight	5.7 kg (12.5 lbs.)	6.0 kg (13.2 lbs.)	5.9 kg(13.0 lbs.)	6.4 kg(14.1 lbs.)	5.8 kg(12.8 lbs.)	6.1 kg(13.5 lbs.)
Blade Length	24 in	30 in	30 in	40 in	24 in	30 in
Rear Handle	Fixed			Rotational		
Engine Model	CER230HT					
Engine Displacement	22.5 cm ³					
Fuel Tank Capacity	0.5 ℓ (0.53 qts.)					
Carburetor	Walbro Diaphragm Type					
Ignition System	Solid State					
Spark Plug:						
Make	NGK					
Type	BPM8Y					
Electrode Gap	0.6 ~ 0.7 mm (0.024 ~ 0.028 in.)					
Fuel Mixture:	50:1					
	Using Maruyama 50:1 2-Cycle Engine Oil or any Quality two-cycle engine oil designed for use in air-cooled, high performance two-cycle engines.					

PRODUCT DESCRIPTION

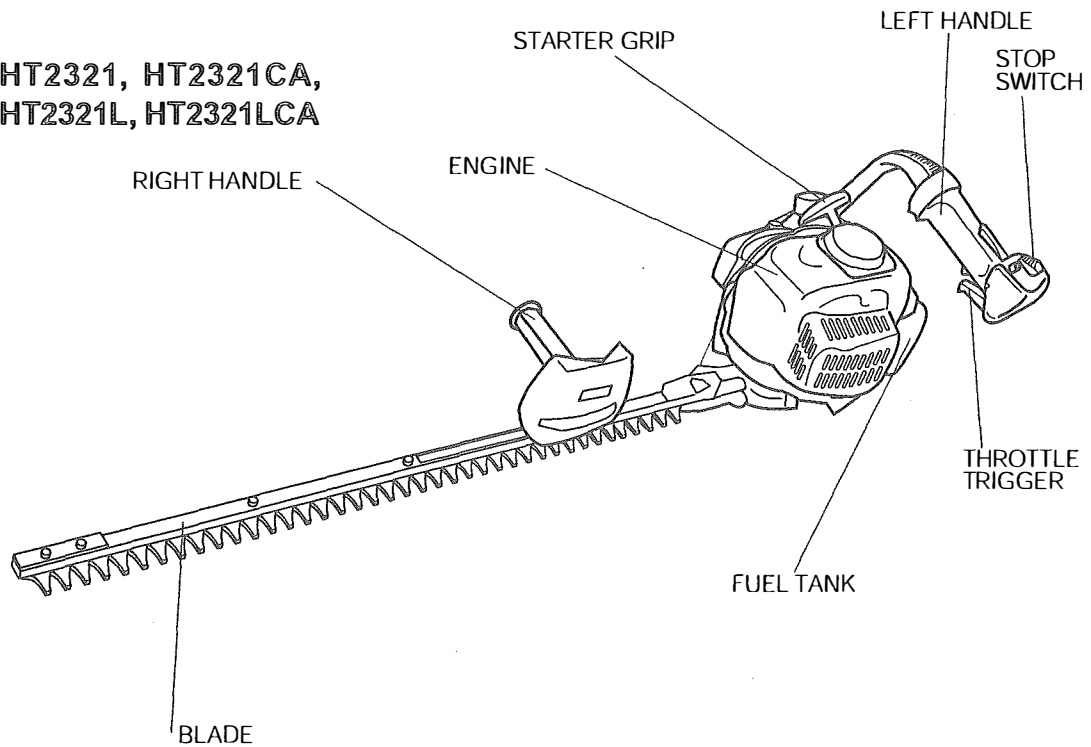
**MODELS: HT2321D, HT2321D-CA, HT2321DL,
HT2321DL-CA, HT2321D-R, HT2321DR-CA,
HT2321DL-R, HT2321DLR-CA**



**HT2321D-R, HT2321DR-CA,
HT2321DL-R, HT2321DLR-CA
REAR HANDLE**



**MODELS: HT2321, HT2321CA,
HT2321L, HT2321LCA**



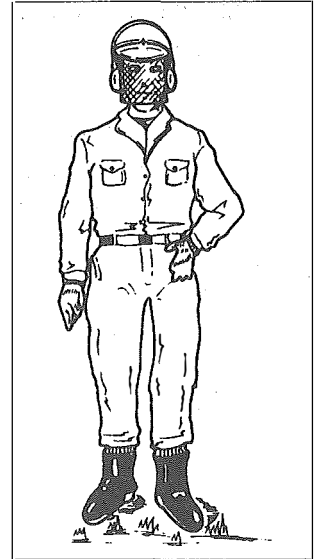


WARNING

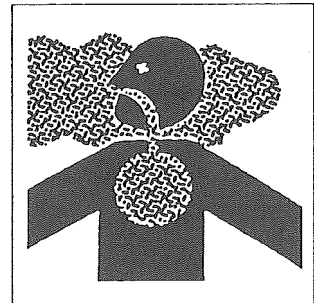


Operator safety

1. Read and understand this Owner's/Operator's Manual before using this product. Be thoroughly familiar with the proper use of this product.
2. Always wear eye protection that complies with ANSI (American National Standards Institute) Z87-1.
3. Wear hearing protection.
4. Always wear heavy long pants, boots and gloves. Do not wear loose clothing, jewelry, short pants, sandals or go barefoot. Secure hair so it is above shoulder length.



5. Never operate this Hedge Trimmer when you are tired, ill, under the influence of alcohol, drugs or medication.
6. Never start or run the engine inside a closed room or building. Breathing exhaust fumes can cause death.



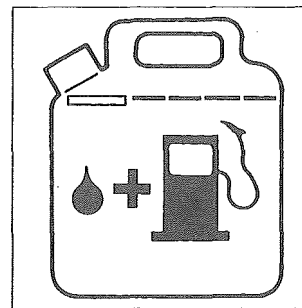
7. Keep handle clean of oil, fuel and dirt.

Power Hedge Trimmer safety

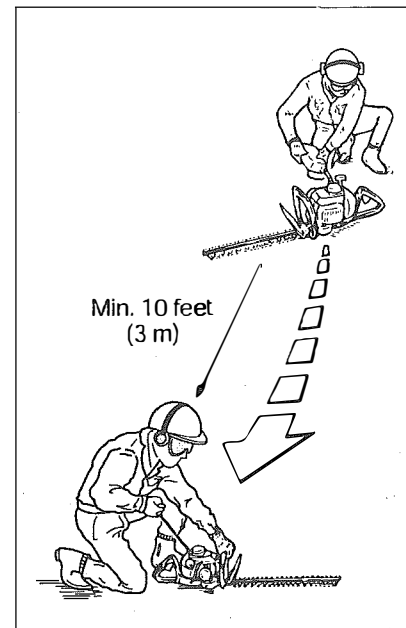
1. Shut off the engine and wait until the cutting blades have completely stopped moving before checking, maintaining or working on the Hedge Trimmer.
2. Inspect the Hedge Trimmer before each use. Replace damaged parts. Check for fuel leaks. Make sure all fasteners are in place and tightened securely.
3. Inspect the Hedge Trimmer cutting blades and guide. Replace any parts that are cracked, chipped, or damaged before using the Hedge Trimmer.
4. Never use replacement parts that are not approved by Maruyama U.S., Inc.
5. Maintain the Hedge Trimmer in accordance with the recommended maintenance intervals and procedures in the maintenance section, pages 18 to 21.
6. If running problems or excessive vibration occur, stop immediately and inspect the unit for the cause. If the cause cannot be determined or is beyond your ability to correct, return the Hedge Trimmer to your servicing dealer for repair.
7. Never use the Hedge Trimmer if handles are damaged or handle fasteners are loose. Always make sure all fasteners (nuts and bolts) are installed and properly tightened.
8. Never use a machine that has been modified so that it no longer corresponds with the original design.
9. Do not attempt to repair the Hedge Trimmer unless you are qualified to do so.
10. When transporting or storing the Hedge Trimmer always install the blade shield.

Fuel safety

1. Gasoline is highly flammable and must be handled and stored carefully. Use a container approved for storing gasoline and/or fuel/oil mixture.
2. Mix and pour fuel outdoors and where there are no sparks or flames.
3. Do not smoke near fuel or the Hedge Trimmer or while using the Hedge Trimmer.
4. Do not overfill the fuel tank. Stop filling 1/4 - 1/2 inch (6mm-13mm) from the top of the tank.
5. Wipe up any spilled fuel before starting the engine.



6. Move the Hedge Trimmer at least 10 feet (3 m) away from the fueling location before starting the engine.
7. Do not remove the Hedge Trimmer fuel tank cap while the engine is running or immediately after stopping the engine.
8. Allow the engine to cool before refueling.
9. Empty the fuel tank before storing the Hedge Trimmer. Fuel should be emptied after each use. Fuel left in the tank may leak during storage.
10. Store fuel and Hedge Trimmer away from open flame, sparks and excessive heat. Make sure fuel vapors cannot reach sparks or open flames from water heaters, furnaces, electric motors, etc.



Power Hedge Trimmer operating safety

1. **THIS HEDGE TRIMMER CAN CAUSE SERIOUS INJURIES.**
Read the instructions carefully. Be familiar with all controls and the proper use of the Hedge Trimmer.
2. Never allow children to operate the Hedge Trimmer. It is not a toy.
3. Keep the area of operation clear of all persons, particularly small children and pets.
4. The Hedge Trimmer blades are extremely sharp. Do not put hands or feet near or under any moving parts. Keep body clear at all times.
5. Use the Hedge Trimmer only in daylight or good artificial light.
6. Inspect your work area before you begin. Remove string, rope or similar materials which can become entangled in the Hedge Trimmer blades.
7. Avoid hidden hazards. Watch for hidden objects within your working area, such as chain link fencing, cables, wires, telephone and power lines.
8. Never operate the Hedge Trimmer without proper guards or other protective safety devices in place.
9. Keep a firm footing and balance. Do not over-reach. Do not operate the Hedge Trimmer while standing on a ladder or similar temporary support.
10. Use the right tool for the job. Do not use the Hedge Trimmer for any job that is not recommended by the manufacturer.

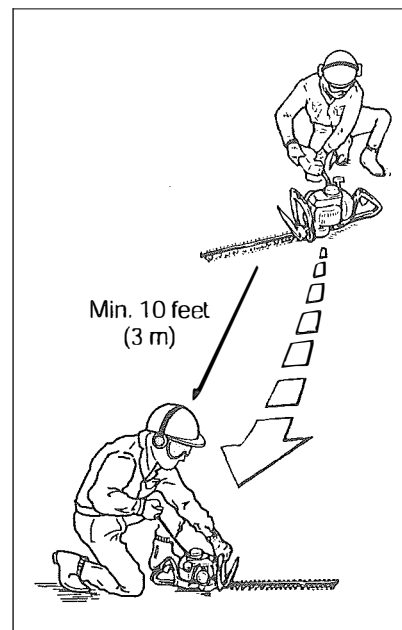
11. While operating the Hedge Trimmer be always sure of a safe and secure operating position. Do not over reach.
12. To reduce fire hazard keep engine and muffler free of debris, leaves, and dry materials. Always wipe away spilled fuel and excessive lubricant before starting.
13. Always use two hands to operate the Hedge Trimmer.
14. Always be aware of your surroundings and stay alert for possible hazards that you may not hear due to the noise of the machine.
15. Know how to stop the machine quickly in emergency. (See to stop the engine in STARTING AND STOPPING PROCEDURE SECTION.)

BEFORE OPERATION

FUELING

WARNING! The following precautions will lessen the risk of fire.

1. Do not smoke near fuel.
2. Mix and pour fuel outdoors and where there are no sparks or flames.
3. Always shut off the engine before refueling. Never remove the Hedge Trimmer fuel tank cap while the engine is running or immediately after stopping the engine.
4. Always open the fuel tank cap slowly to release any possible pressure inside the tank.
5. Do not overfill the fuel tank. Stop filling 1/4-1/2 inch (6mm-13mm) from the top of the tank.
6. Tighten the tank fuel cap carefully but firmly after refilling.
7. Wipe up any spilled fuel before starting the engine.
8. Move the Hedge Trimmer at least 10 feet (3m) away from the fueling location and fuel storage container before starting the engine.



FUEL: MIXING GASOLINE AND OIL

IMPORTANT The engine used on this Hedge Trimmer is of a 2-cycle design. The internal moving parts of the engine, i.e., crankshaft bearings, piston pin bearings and piston to wall contact surfaces, require oil mixed with the gasoline for lubrication. Failure to add oil to the gasoline or failure to Mix oil with the gasoline at the appropriate ratio Will cause major engine damage and will void your warranty. For your fuel premix, use Maruyama Premium 2-Cycle Oil Mix, or equivalent ISO-L-EGD & JASO FC oil with a minimum 89 octane high Quality gasoline. Maruyama 2-cycle oil is specially formulated to meet the requirements of high-performance, low-emission air-cooled 2-cycle engines. Use of other oils may lead to service issues which may Not be covered by your warranty.

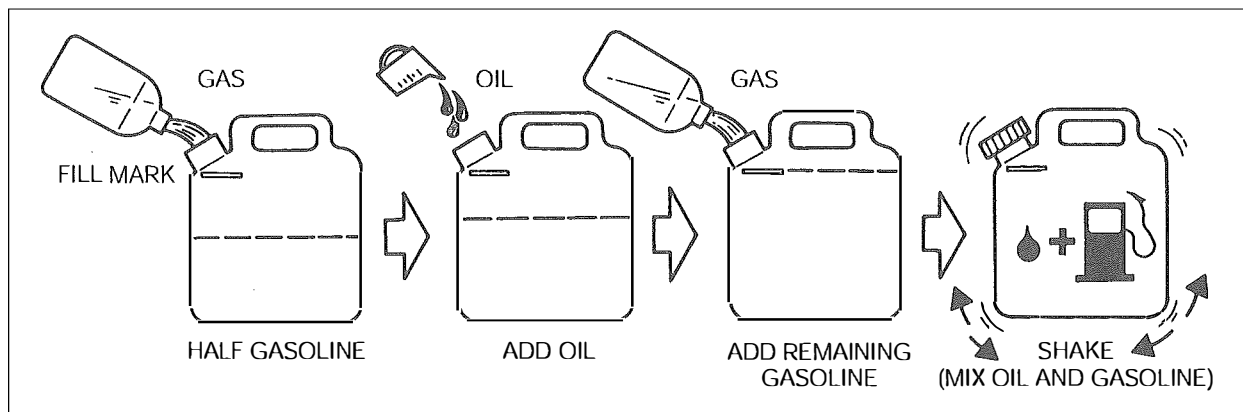
FUEL MIXTURE: When using genuine Maruyama 50:1 2-Cycle Oil, or a quality oil designed for 2-cycle air-cooled engines, oil ratio is 50 parts gasoline to 1 part oil or 50:1.

CAUTION! If Maruyama oil is not used, never use a mixing ratio less than 50:1 regardless of the oil package mixing instructions. Ratios less the 50:1, (for example, 60:1, 80:1, 100:1), reduce the amount of lubrication to the internal moving parts of the engine and can cause damage.

FUEL MIXTURE CHART:

Gasoline	Maruyama 50:1 2-Cycle Oil	Gasoline	Maruyama 50:1 2-Cycle Oil
1 gallon	2.6 oz.	1 litre	20ml
2 1/2 gallons	6.4 oz.	2 litre	40ml
5 gallons	12.8 oz.	5 litre	100ml

MIXING INSTRUCTIONS: Always mix fuel and oil in a clean container approved for gasoline. Mark the container to identify it as fuel mix for the Hedge Trimmer. Use regular unleaded gasoline and fill the container with half the required amount of gasoline. Pour the correct amount of oil into the container then add the remaining amount of gasoline. Close the container tightly and shake it momentarily to evenly mix the oil and the gasoline before filling the fuel tank on the Hedge Trimmer.



When refilling the Hedge Trimmer fuel tank, clean around the fuel tank cap to prevent dirt and debris for entering the tank during cap removal. Always shake the premix fuel container momentarily before filling the fuel tank.

Always use a spout or funnel when fueling to reduce fuel spillage. Only fill the tank to within 1/4-1/2 inch (6mm-13mm) from the top of the tank. Avoid filling to the top of the tank filler neck.

NOTE:

1. Never mix gasoline and oil directly in the Hedge Trimmer fuel tank.

CAUTION!

1. Do not use National Marine Manufacturer's Association (NMMA) or BIA certified oils. This type or 2-cycle engine oil does not have the proper additives for air-cooled, 2-cycle engines and can cause engine damages.
2. Do not use automotive motor oil. This type of oil does not have the proper additives for air-cooled, 2-cycled engines and can cause engine damage.

ADJUSTING THE CUTTING BLADES



CAUTION-DO NOT TOUCH THE SHARPENED EDGES OF THE CUTTING BLADES. THE CUTTING BLADES ARE EXTREMELY SHARP AND DANGEROUS AT ALL TIMES. ALWAYS WEAR GLOVES TO HELP PROTECT YOUR HANDS AND FINGERS FROM INJURY.

Before operating the Hedge Trimmer it is necessary to check the adjustment of the cutting blades. Blades that are too loose may vibrate, and will not provide a clean, smooth cut.

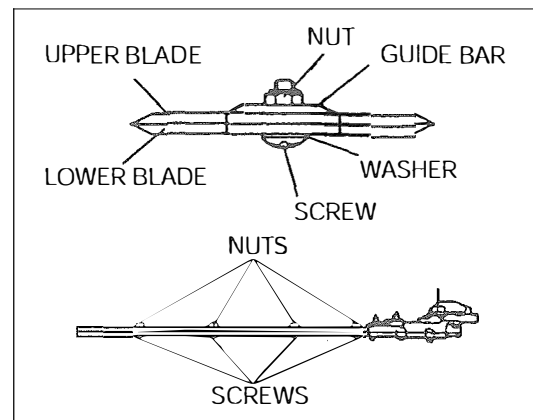


CAUTION-BLADES THAT ARE TOO TIGHT CAN CAUSE OVERLOADING WHICH MAY DAMAGE THE EQUIPMENT.

To adjust the cutting blades, refer to the illustrations and locate the screws.

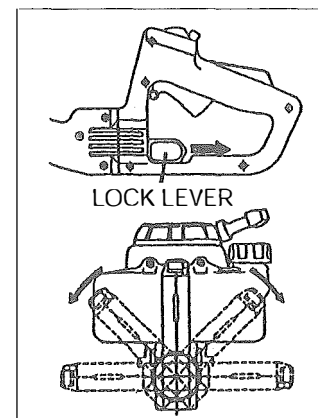
Loosen the nuts.

Gently turn the screws in until snug, then turn the screws back out one-fourth to a half. While holding the screws in place, tighten the nuts. Liberally coat the cutting blades with light oil. Start the engine and operate the Hedge Trimmer at full speed for at least one minute. Stop the engine, and when the blades are motionless, touch the blades with your hand. The blades should be warm, but if they are too hot to touch, loosen the screws 1/8 turn.



ROTATIONAL REAR HANDLE (HT2321D-R, HT2321DL-R, HT2321DR-CA, HT2321DLR-CA)

Rear handle is adjustable to five different positions by pulling the lock lever and turn the rear handle. Pull the lock lever directly in line with the handle (following the arrow in fig), then turn the rear handle. It is extremely important that the handle is completely located and correctly locked in the selected position.





Do not adjust the rear handle to any other position than specified five positions.
(Throttle lever does not work when the rear handle is unlocked)



Stop the engine before change the rear handle position.
Make sure the rear handle is locked before start the engine.



During operation, hold the rear handle with upright regardless the blade direction.





Select the proper handle position to be always sure of a safe and secure operating position.

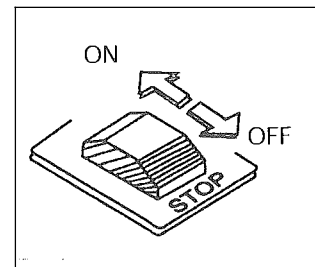
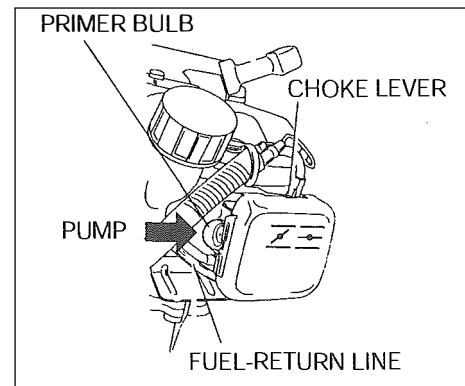
STARTING AND STOPPING PROCEDURE

Before Starting The Engine: Fill the fuel tank as instructed in the BEFORE OPERATION section of this manual. Rest the Hedge Trimmer on the ground. Make sure that the cutting blades are clear of branches, shrubs, debris, etc. Keep all bystanders, children and animals away from the working area.

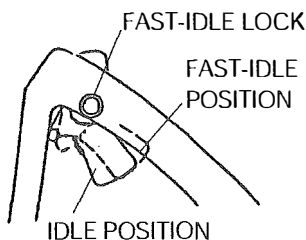
STARTING THE ENGINE

The carburetors on MARUYAMA engines contain a choke system.

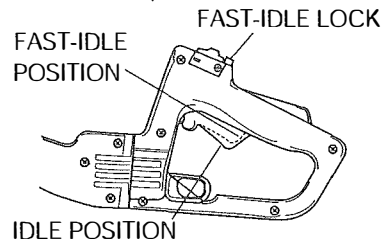
1. Push and release the fuel primer bulb located on the bottom of the carburetor until air bubble free fuel is seen flowing through the clear fuel return hose back to the fuel tank.
2. Move the choke lever to the closed position “”. When the engine is warm, move the choke lever to the open position “”.
3. Set the engine stop switch to the “ON” position.
4. Lock the throttle trigger in the fast-idle start position.



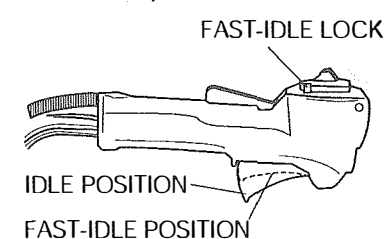
HT2321D, HT2321D-CA,
HT2321DL, HT2321DL-CA



HT2321DL-R, HT2321DLR-CA,
HT2321D-R, HT2321DR-CA



HT2321, HT2321CA,
HT2321L, HT2321LCA



Before starting the engine, place the machine on the ground and make sure the blade is free from branches and stones.

5. Grasp the starter grip and slowly pull the starter cord out until you feel some resistance, then pull the cord quickly and powerfully. Pull the starter grip until the engine starts. After the engine is started, move the choke lever to the open position, then squeeze and release the throttle trigger to allow it to return to the idle position.
6. After starting, allow the engine to run a few minutes to warm it up before using.

NOTE:

1. Do not pull the starter cord out completely.
2. Do not release the starter cord from the fully extended position.
3. Do not start the engine without rear handle locked. (HT2321D-R, HT2321DL-R, HT2321DR-CA, HT2321DLR-CA)

To Stop The Engine:

1. Release the throttle trigger.
2. Slide the stop switch to the "STOP" position.

CARBURETOR ADJUSTMENT

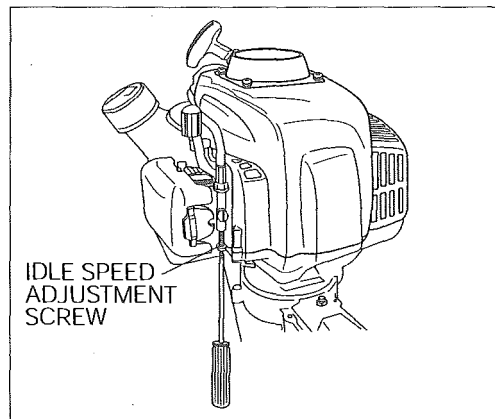
This Hedge Trimmer is equipped with non-adjustable fuel mixture carburetor. The engine idle speed is the only adjustment to the Operator.

The cutting blades may be moving during idle speed adjustment. Wear the recommended personal protective equipment and observe all safety instructions. Keep hands and body away from blade area.

Engine Idle Speed:

When the throttle trigger is released the engine should return to an idle speed which is 2700-3300 rpm or just below clutch engagement speed. The cutting blades must not move and the engine should not stall (stop running) at engine idle speed.

The engine idle speed is adjusted by rotating the idle speed screw on the carburetor. Turning the idle speed screw in (clockwise) increases engine speed while turning the screw out decreases engine speed.



If idle speed adjustment is necessary and after adjustment the cutting blades move or the engine stalls, **stop using the Hedge Trimmer immediately!**

Contact your local authorized Maruyama Dealer for assistance and servicing.

OPERATING THE POWER HEDGE TRIMMER



CAUTION—Read the **WARNING** on page (10) concerning the proper use of the Hedge Trimmer.

The MARUYAMA Hedge Trimmer is designed for cutting and trimming foliage and small branches up to 1/4 inches (6mm) in diameter. Although the MARUYAMA Hedge Trimmer is capable of cutting larger diameter branches, wear and tear of the machine would be proportionally increased.



CAUTION—Always wear gloves and protective clothing when operating the Hedge Trimmer.

If the cutting blades become jammed, stop the engine immediately. Make certain all moving parts have stopped and disconnect the spark plug before inspecting the equipment for damage. Never use a Power Hedge Trimmer that has chipped, cracked, or broken cutting blades.

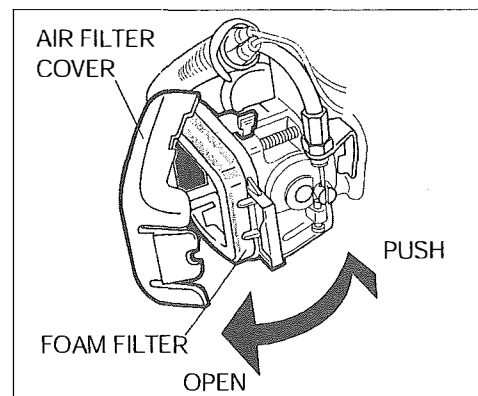
REGULAR MAINTENANCE

Maintenance, replacement or repair of emission control devices and systems may be performed by any repair establishment or individual; however, warranty repairs must be performed by a dealer or service center authorized by Maruyama Manufacturing Company, Inc. with Maruyama U.S., Inc. The use of parts that are not equivalent in performance and durability to authorized parts may impair the effectiveness of the emission control system and may have a bearing on the outcome of a warranty claim.

AIR FILTER

Maintenance Interval: The air filter should be cleaned daily or more often when working in extremely dusty conditions and replaced after every 100 hours of operation.

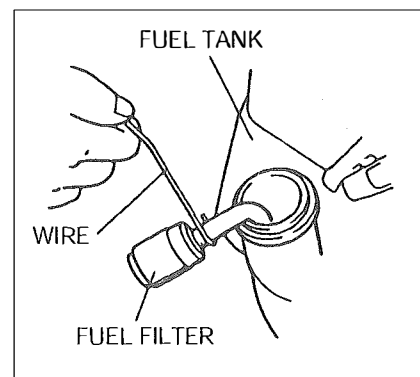
Maintenance: Push and open the air filter cover. Remove the foam filter. Clean the filter with warm, soapy water. Let the filter completely dry. Lightly apply SAE 30 motor oil to the foam filter and squeeze out all excess oil. Reassemble the filter and filter cover.



FUEL FILTER

Maintenance Interval: The fuel filter should be replaced after every 100 hours of operation.

Maintenance: The fuel filter is attached to the end of the fuel pick-up hose inside the fuel tank. To replace the fuel filter, first make sure the fuel tank is empty. Remove the fuel cap. Using a wire hook, gently pull the fuel filter out through the fuel filter opening. Grasp the fuel hose next to the fuel filter fitting and remove the filter but do not

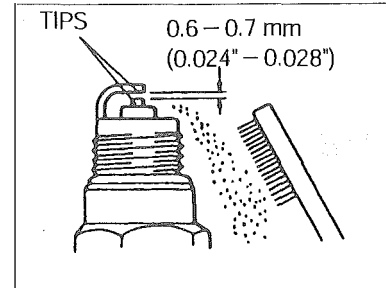


release the hose. While still holding on to the fuel hose, attach the new fuel filter. Drop the fuel filter back into the fuel tank. Make sure that the fuel filter is not stuck in a corner of the tank and that the fuel hose is not doubled over (kinked) before refueling.

SPARK PLUG

Maintenance Interval: The spark plug should be removed from the engine and checked after each 25 hours of operation and replaced after every 100 hours of operation.

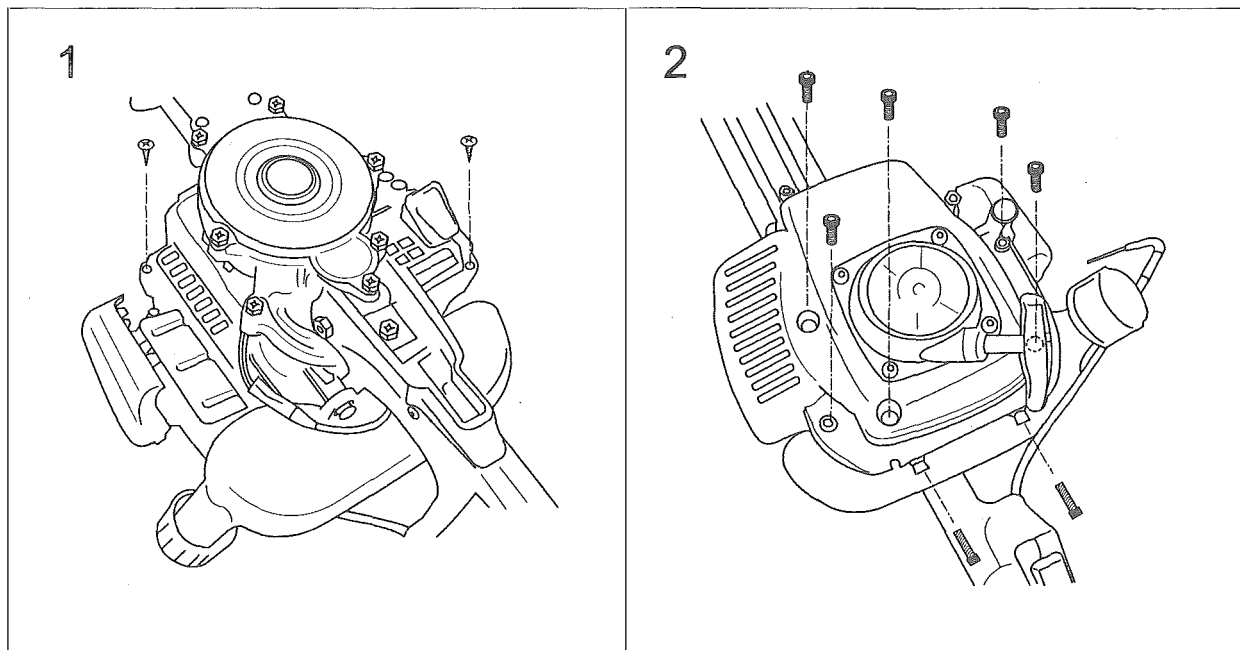
Maintenance: With the engine at ambient (room) temperature, twist the high tension lead boot on the spark plug back and forth a couple of times to loosen boot then pull the boot off of the spark plug. Remove the spark plug. The electrodes can be cleaned with a stiff brush. Adjust the electrode air gap to 0.6–0.7 mm (0.024–0.028 in.). Replace the spark plug if it is oil-fouled, damaged or if the electrodes are worn down. **Do not overtighten the spark plug when installing.** The tightening torque is 10.7–16.6 Nm (95–148 in. lbs.). Reinstall the cylinder and muffler covers.

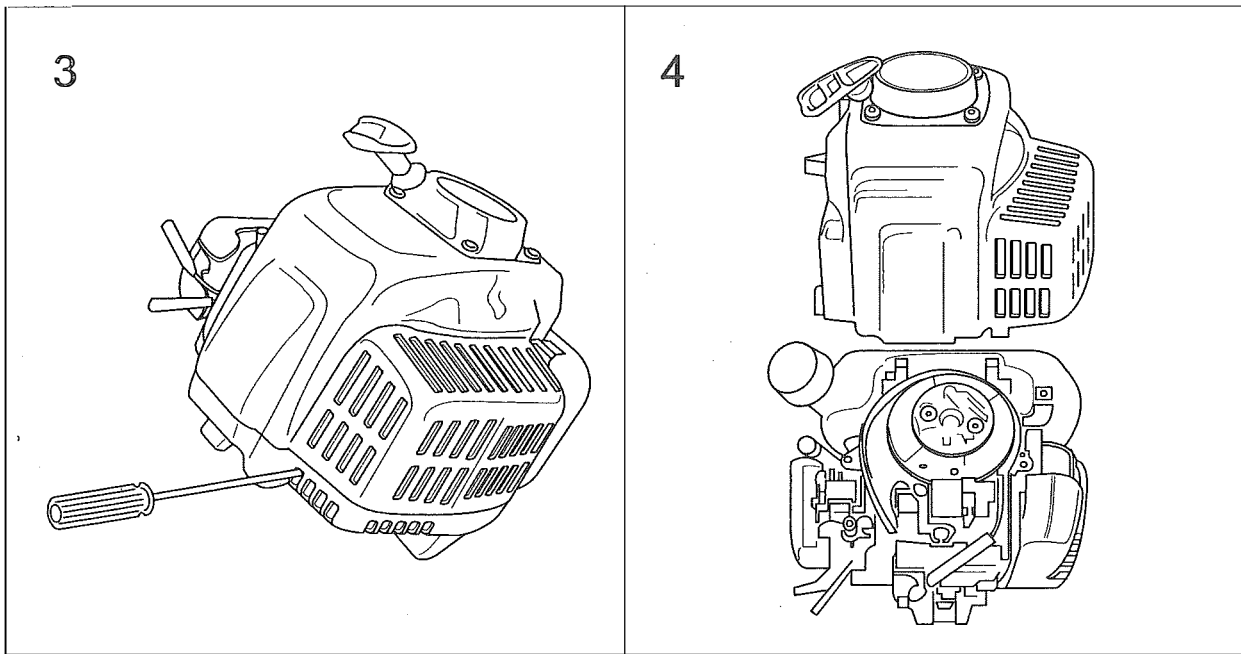


CYLINDER COOLING FINS

Maintenance Interval: The cylinder cooling fins should be cleaned after every 25 hours of operation or once a week whichever comes first. Air must flow freely around and through the cylinder cooling fins to prevent engine overheating. Leaves, grass, dirt and debris buildup on the fins will increase the operating temperature of the engine which can reduce engine performance and shorten engine life.

Maintenance: With the engine at ambient (room) temperature, remove the two tapping screws (FIG.1). Remove the four socket head screws on the plate, and remove the plate. Remove the three socket head screws (FIG.2). Push the pawl, and pull the fan cover (FIG.3, 4). Clean all dirt and debris from the cooling fins and from around the cylinder base. Reinstall fan cover and plate.

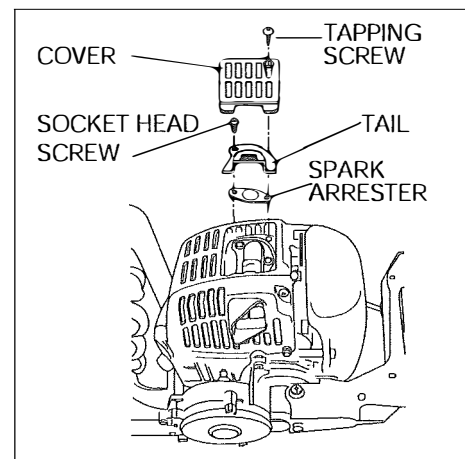




SPARK ARRESTER

Maintenance Interval: The spark arrester should be inspected and cleaned after every 25 hours of use. Replace the screen if it cannot be thoroughly cleaned or if it is damaged.

Maintenance: With the engine at ambient (room) temperature, Remove the tapping screw, and remove the cover. Remove the two socket head screws holding the tail and spark arrester to the muffler. Remove and clean the tail, gasket and spark arrester with a safety solvent and a stiff brush. If any part cannot be thoroughly cleaned, it must be replaced. Reinstall the spark arrester and tail onto the muffler, then reinstall and tighten the two socket head screws. Reinstall the cover.



EXHAUST MUFFLER

Maintenance Interval: The muffler should be inspected and cleaned after each 100 hours of use.

Maintenance: Remove the engine cover (See Cylinder cooling fins). Remove the spark arrester (See spark arrester maintenance), clean the muffler with a stiff brush. Reinstall the spark arrester and onto muffler, then reinstall and tighten the two socket head screws. Reinstall the fan cover and tighten the three socket head screws. Hook the pawl, and reinstall the cylinder cover then tighten the two socket head screws and the two tapping screws. Reinstall the plate and tighten the four socket head screws.

IMPORTANT: Don't use solvent for cleaning inside of muffler, because of the catalytic converter in muffler. Be careful not to allow any dirt or debris to fall into the exhaust port, as this can cause engine damage.

LUBRICATION : GEARCASE AND BLADES

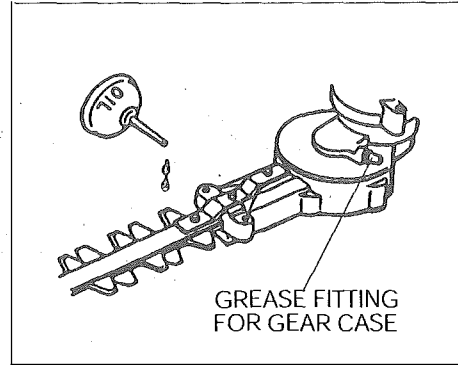
The gearcase has a felt wick located at the blade opening. As the Hedge Trimmer is used, the grease within gearcase becomes very soft. The reciprocating blades constantly draw small amounts of grease between the blade contact surfaces for additional lubrication. If the gearcase is not lubricated at the recommended intervals, a gearcase failure will occur due to a lack of lubrication.

Gearcase failures due to improper maintenance are not covered by Maruyama warranty.

The gearcase and blades should be lubricated after each 10 hours of use.

NOTE: If the Hedge Trimmer is used under severe conditions such as high ambient temperatures (above 75°F) or for extended continuous periods of operation, the gearcase and blades must be lubricated every 2 hours.

Lubricate the gearcase at the grease fitting with a good quality #2 lithium-base grease. Lubricate the blades using a light (#10 wt.) oil.

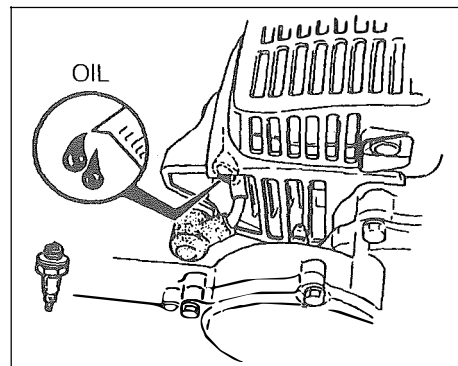


GENERAL CLEANING AND TIGHTENING

The Hedge Trimmer will provide maximum performance for many, many hours if it is maintained properly. Good maintenance includes regular checking of all fasteners for correct tightness, and cleaning of the entire machine. Pitch and gum deposits should be removed from the cutting blades daily. Adjustment of the cutting blade tension should be checked regularly. Refer to page (15) for instructions to adjust cutting blades.

STORAGE

For long-term storage of the Hedge Trimmer, empty the fuel tank into a suitable fuel storage container. Pump the primer bulb on the carburetor until all fuel is discharged through the clear fuel return hose. Run the engine to remove any fuel that may remain in the carburetor. Perform all regular maintenance procedures and any needed repairs. Remove the spark plug and squirt a very small amount of oil into the cylinder. Pull the starter cord once.



CAUTION: Oil may squirt out of the spark plug opening while pulling the starter cord. Protect your eyes and keep your face away from the spark plug opening. Slowly pull the starter cord to bring the piston to the top of the cylinder (TDC). Reinstall the spark plug. Liberally lubricated the blades with a light (#10 wt.) oil. Store the Hedge Trimmer in a dry place away from excessive heat, sparks or open flame.

Maintenance Period

	Maintenance	Daily	Every 20 hours	Every 50 hours	Every 100 hours
	Check and replenish fuel	●			
	Check for fuel leakage	●			
	Check bolts, nuts and screws for tightness or missing	●			
	Tighten bolts and nuts			●	
■	Clean air filter element		●		
	Clean spark plug and adjust electrode gap			●	
■	Remove dust and dirt from cylinder fins			●	
●	Remove carbon deposits in exhaust port			●	
●	Clean spark arrester			●	
	Replace fuel filter				●
●	Remove carbon deposits on piston head and combustion chamber				●
●	Remove carbon deposits in transfer ports				●
	Replace fuel tube, fuel tank cap gasket	It is recommended to replace every 3 years			

●: Service to be performed by an authorized Maruyama engine dealer.

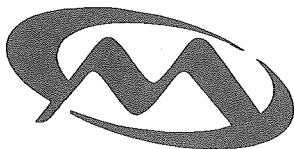
■: Service more frequently under dusty conditions.

NOTE:

The service intervals indicated are to be used as a guide.

Service to be performed more frequently as necessary depending on operating condition.

Use Maruyama standard 50:1 two-cycle engine oil.



Maruyama U.S., Inc.
3570 Shelby Lane
Denton, TX 76207 U.S.A
P.O. Box 2107
Denton, TX 76202 U.S.A
Phone 940-383-7400
Fax 940-383-7466

www.maruyama-us.com
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