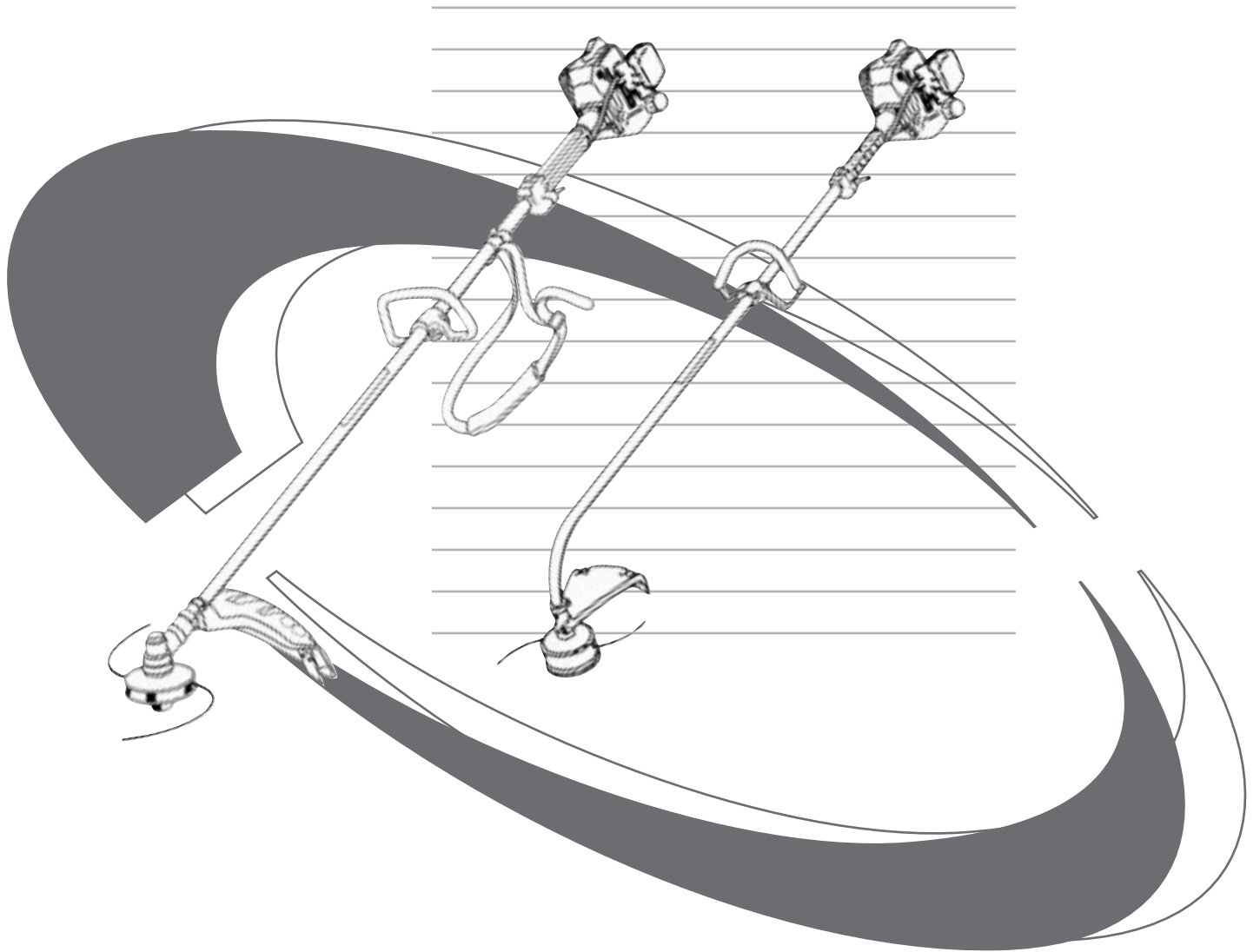


**MARUYAMA**

OPERATOR'S MANUAL

**String Trimmer**  
BST23, BST23C



Premium Outdoor Power Equipment  Maruyama. *Extraordinary.*

Completely read and understand this manual prior to using this product.



## Limited Warranty Statement

All Maruyama 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 shafts on trimmers and brushcutters and all ignition modules. **2 years** for residential, non-institutional, non-income producing use. **1 year** for industrial, commercial, institutional and income producing use. **6 months** for rental use. **Engine, refer to engine manufacturer's warranty statement. Maruyama engines are covered by this limited 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 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. **Emission-related parts are the carburetor assembly, the ignition coil assembly, the ignition rotor and the spark plug.** 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.

### **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 right 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. at 1-253-735-7368.

**Maruyama U.S., Inc.**  
P.O. Box 309  
Auburn, WA 98071-0309

**(253) 735-7368**  
**maruyama@maruyama-us.com**  
**www.maruyama-us.com**

Effective March 1, 1997

 **WARNING:** 

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

## Revised

# 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 nonroad engine. New 1997 and later model year small nonroad engines must be designed, built and equipped, at the time of sale, to meet the U.S. EPA regulations for small nonroad 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 nonroad engine for the period of time listed above provided there has been no abuse, neglect or improper maintenance of your small nonroad 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 nonroad 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:**

1997 and later model year small nonroad 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 nonroad 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 nonroad 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 nonroad engine owner, you should be aware, however, that Maruyama Manufacturing Company may deny you warranty coverage if your small nonroad engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.
- (c) You are responsible for presenting your small nonroad 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 **1-253-735-7368**.

## **COVERAGE**

Maruyama Manufacturing Company, Inc. warrants to the ultimate purchaser and each subsequent purchaser that your small nonroad 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 nonroad 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.

1997 and later model years, EPA requires manufacturers to small nonroad engines for two years. These warranty periods will begin on the date the small nonroad 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's regulations do not include a parts list, but 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 and the spark plug.**

## **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.

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# Introduction

Thank you for purchasing a Maruyama product.

Maruyama, its distributors, and dealers want you to be completely satisfied with your new product. Please feel free to contact your local Authorized Service Dealer for help with service, genuine Maruyama parts, or other information you may require.

Whenever you contact your Authorized Service Dealer or the factory, always know the serial number of your product. This number will help the Service Dealer or Service Representative provide exact information about your specific product. You will find the model and serial number located in a unique place on the product (Product Description on page 9).

For your convenience, write the product model name and serial number in the space below.

<b>Model Name</b> _____
<b>Serial No.</b> _____

Read this manual carefully to learn how to operate and maintain your product correctly. Reading this manual will help you and others avoid personal injury and damage to the product.

Although Maruyama designs, produces and markets safe, state-of-the-art products, you are responsible for using the product properly and safely. You are also responsible for training persons who you allow to use the product about safe operation.

The Maruyama warning system in this manual identifies potential hazards and has special safety messages that help you and others avoid personal injury, even death. DANGER, WARNING and CAUTION are signal words used to identify the level of hazard. However, regardless of the hazard, be extremely careful.

**DANGER** signals an extreme hazard that will cause serious injury or death if the recommended precautions are not followed.

**WARNING** signals a hazard that may cause serious injury or death if the recommended precautions are not followed.

**CAUTION** signals a hazard that may cause minor or moderate injury if the recommended precautions are not followed. Two other words are also used to highlight information. “Important” calls attention to special mechanical information and “Note” emphasizes general information worthy of special attention.

# Safety

## Operator Safety

1. Read and understand this Operator’s Manual before using this product. Be thoroughly familiar with the proper use of this product.
2. Never allow children to operate the Trimmer. It is not a toy. Never allow adults to operate the unit without first reading the Operator’s Manual.
3. Always wear eye protection that complies with ANSI (American National Standards Institute) Z87-1.



4. Always wear hearing protection.



5. Always wear heavy, long pants, a long sleeved shirt, boots and gloves. Do not wear loose clothing, jewelry, short pants, sandals, or go barefoot. Secure hair so it is above shoulder length.
6. Never operate this Trimmer when you are tired, ill, or under the influence of alcohol, drugs or medication.

7. Never start or run the engine inside a closed room or building. Breathing exhaust fumes can cause death.



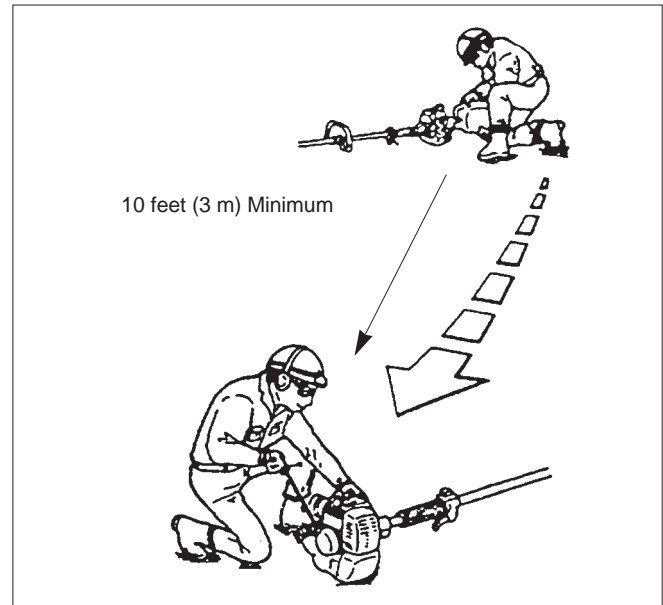
8. Keep handles clean of oil, fuel and dirt.

## Trimmer Safety

1. Make sure the Trimmer is assembled correctly and that the Cutting Attachment is correctly installed and securely fastened as instructed in the Assembly section.
2. Inspect the Trimmer before each use. Replace damaged parts. Check for fuel leaks. Make sure all fasteners are in place and tightened securely. Follow the maintenance instructions beginning on page 20.
3. Make sure the cutting head does not rotate at engine idle speed. Refer to Idle Speed Adjustment, page 20.
4. Inspect the cutting head and replace any parts that are cracked, chipped or damaged before using the Trimmer.

5. Make sure the cutting head shield is installed and positioned correctly before using the Trimmer.
6. Never use a cutting head or replacement parts that are not approved by Maruyama.
7. Maintain the Trimmer according to the recommended maintenance intervals and procedures in the Maintenance section on page 20.
8. Shut off the engine and be certain the cutting head has completely stopped rotating before inverting the Trimmer, performing maintenance on or working on the machine.
9. 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 Trimmer to your servicing dealer for repair.

6. Move the Trimmer at least 10 feet (3 m) away from the fueling location before starting the engine.



## Fuel Safety

1. Gasoline is highly flammable and must be handled and stored carefully. Use a container approved for fuel 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 Trimmer, or while using the Trimmer.
4. Do not overfill the fuel tank. Stop filling 1/4-1/2 inch (6 mm-13 mm) from the top of the tank.
5. Wipe up any spilled fuel before starting the engine.

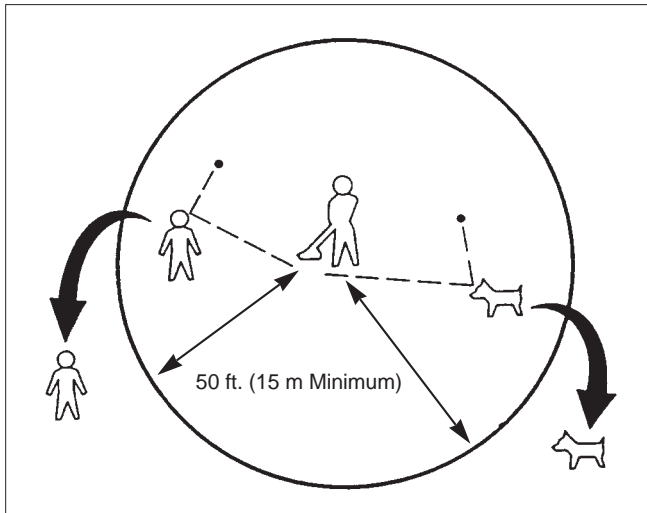
7. Do not remove the fuel tank cap while the engine is running, or right after stopping the engine.
8. Allow the engine to cool before refueling.
9. Drain the tank and run the engine dry before storing the unit.
10. Store fuel and Trimmer away from open flame, sparks and excessive heat. Make sure fuel vapors cannot reach sparks or open flames from water heaters, furnaces, electric motors, etc.

## Trimmer Operating Safety

1. **THIS TRIMMER CAN CAUSE SERIOUS INJURIES.** Read the instructions carefully. Be familiar with all controls and the proper use of the Trimmer.
2. Make sure the 3.5mm pin has been removed from the gearcase and boss adapter before you start the engine.



3. Inspect your work area before you begin. Remove objects such as broken glass, nails, wire and rocks which can become dangerous projectiles if thrown by the Trimmer. Remove string, rope or similar materials which can become entangled in the cutting head.
4. Keep children, bystanders and animals outside a 50 ft. (15 m) radius from the operator and Trimmer.



5. If you are approached while operating the Trimmer, stop the engine and cutting head rotation.
6. Never allow children to operate the Trimmer.
7. Use the Trimmer only in daylight or good artificial light.
8. Never operate the Trimmer without proper guards or other protective safety devices in place.
9. Always keep the Trimmer on the right side of your body.
10. Do not raise the cutting head above waist level.
11. Do not put hands or feet near or under any rotating parts. Keep clear at all times. Keep all parts of your body away from the rotating cutting attachment and hot surfaces such as the muffler.
12. Keep firm footing and balance. Do not overreach.
13. Use the right tool for the job. Do not use the Trimmer for any job that is not recommended by Maruyama.

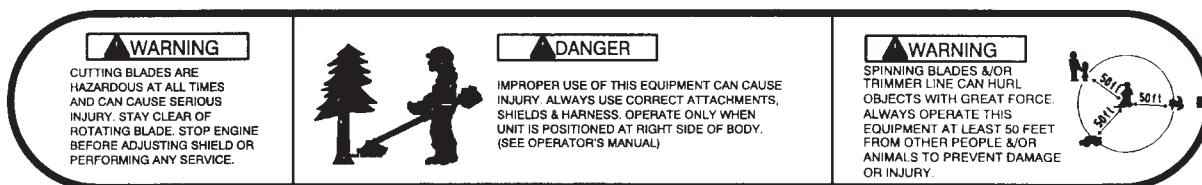
## Safety and Instruction Decals



Safety decals and instructions are easily visible to the operator and are located near any area of potential danger. Replace any decal that is damaged or lost.



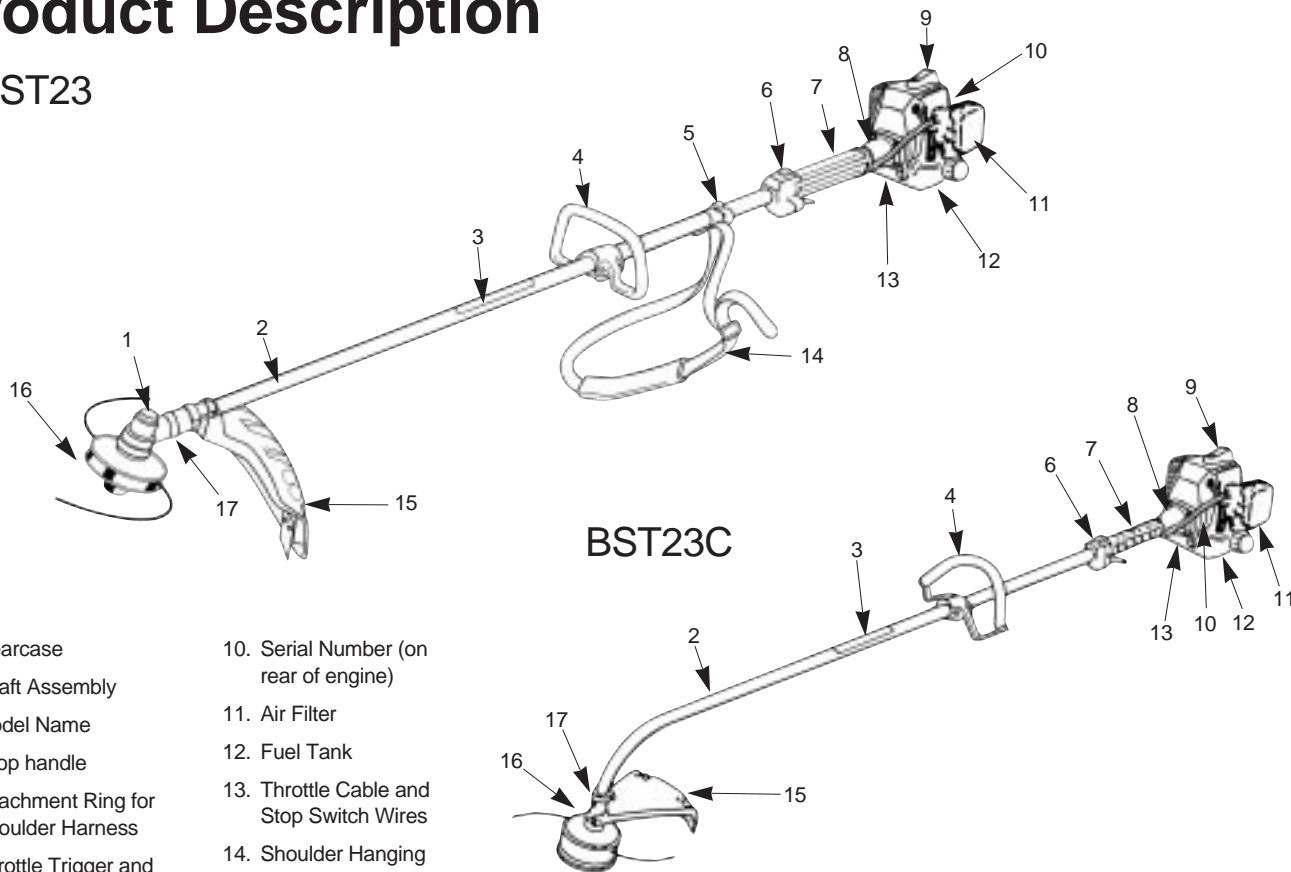
**ON SHAFT**  
**(Part No.221501)**



**ON SHAFT**  
**(Part No.221502)**

## Product Description

BST23

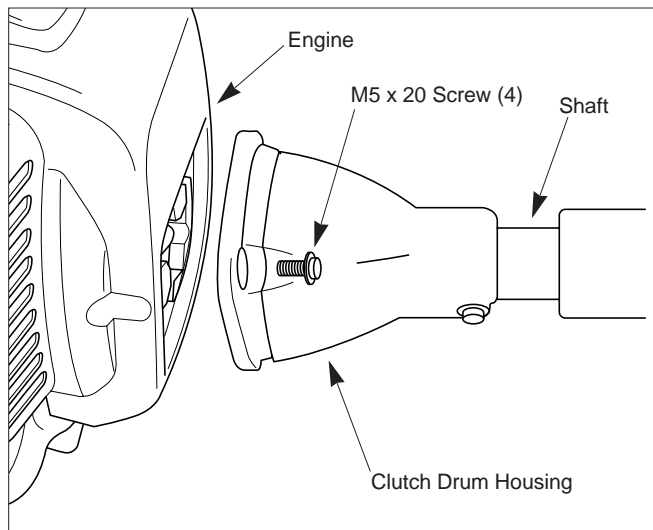


- |                                         |                                          |
|-----------------------------------------|------------------------------------------|
| 1. Gearcase                             | 10. Serial Number (on rear of engine)    |
| 2. Shaft Assembly                       | 11. Air Filter                           |
| 3. Model Name                           | 12. Fuel Tank                            |
| 4. Loop handle                          | 13. Throttle Cable and Stop Switch Wires |
| 5. Attachment Ring for Shoulder Harness | 14. Shoulder Hanging Strap               |
| 6. Throttle Trigger and Stop Switch     | 15. Trimmer head Shield                  |
| 7. Shaft Grip                           | 16. Trimmer head                         |
| 8. Clutch Drum Housing                  | 17. Bearing Case                         |
| 9. Engine                               |                                          |

# Assembly

## Assembling Engine and Drive Shaft Assembly

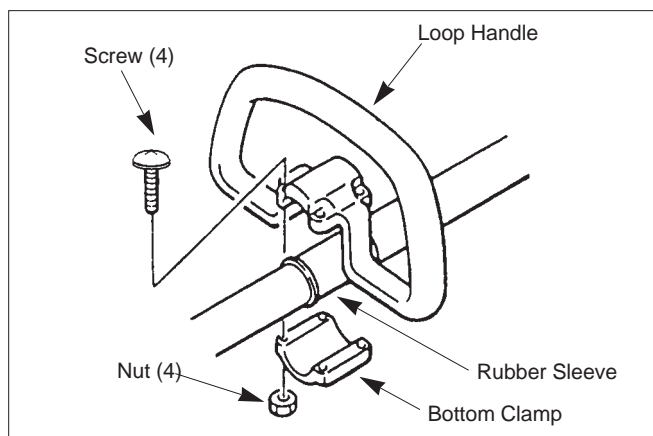
The drive shaft, clutch drum housing and gearcase are assembled. Attach the clutch drum housing to the engine using the four M5 x 20 screws supplied with the unit.



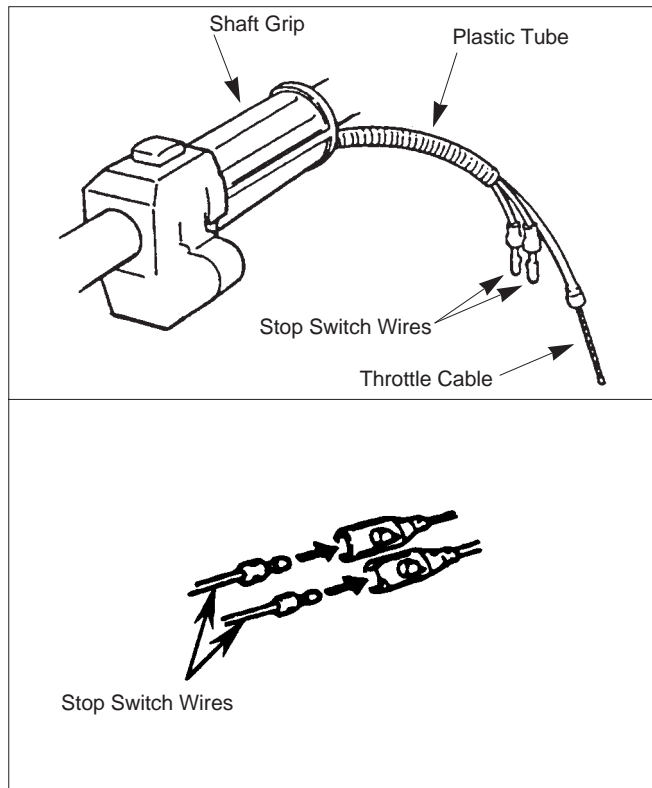
1. Slip the rubber sleeve around the shaft approximately 9 inches (22.8 cm) from the end of the stop switch/throttle trigger assembly for an initial handle position.
2. Rotate the rubber sleeve so the split is to one side.
3. Place the loop handle and the bottom clamp over the rubber sleeve.
4. Install the four screws and nuts. Leave the screws finger-tight.
5. Reposition the loop handle up or down the drive shaft to the most comfortable position, but no closer than 9 inches (22.8 cm) from the end of the stop switch.
6. Tighten the screws and nuts.

## Loop Handle Installation

The loop handle kit contains a package of four screws and nuts, a rubber sleeve and the bottom clamp for the loop handle.

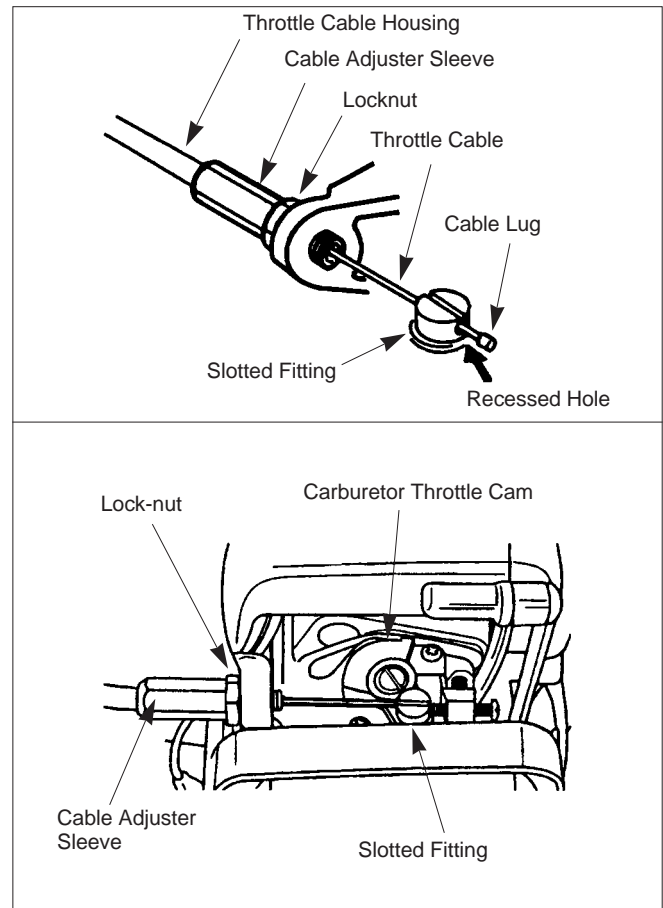


## Connecting Stop Switch Wires



1. Install the plastic tube (packed with the drive shaft assembly) around the throttle cable and stop switch wires.
2. Plug the stop switch wires into the matching connectors from the engine. Note that wire polarity is not important.

## Connecting Throttle Cable



1. Insert the throttle cable through the cable adjuster sleeve on the carburetor bracket. Make sure the end of the cable housing is seated positively in the sleeve.
2. Position the slotted fitting on the carburetor so the recessed hole for the cable lug is away from the cable adjuster sleeve.
3. Rotate the carburetor throttle cam clockwise and slip the throttle cable through the slot in the slotted fitting, making sure the cable lug drops into the recessed hole.
4. Operate the throttle trigger a few times to make sure that it works correctly.
5. Adjust the cable adjuster sleeve so the stop on the carburetor throttle cam just contacts the throttle stop when the throttle trigger is fully depressed.
6. When the throttle cable is adjusted correctly, tighten the locknut.

## Installing Trimmer Head Shield

### WARNING

#### POTENTIAL HAZARD

- Foreign objects can be thrown by Trimmer.

#### WHAT CAN HAPPEN

- Contact with thrown objects can cause personal injury.

#### HOW TO AVOID THE HAZARD

- Never operate the Trimmer without the trimmer head shield in place.

### CAUTION

#### POTENTIAL HAZARD

- The cutoff blade is sharp.

#### WHAT CAN HAPPEN

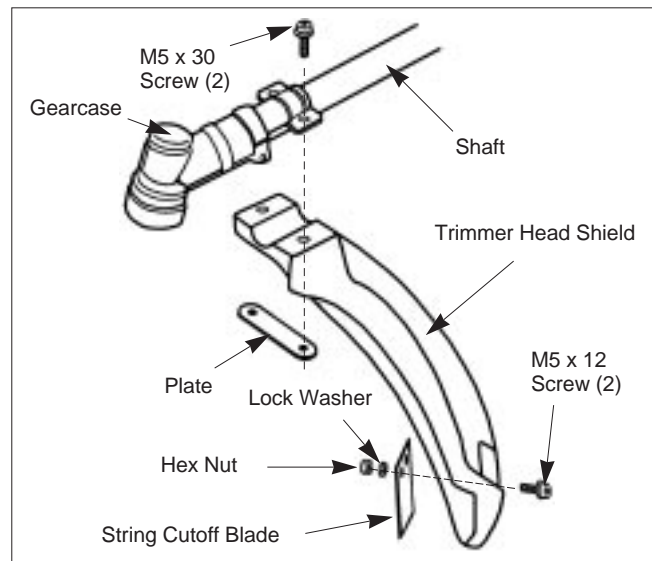
- Contact with cutoff blade could cause serious cuts or personal injury.

#### HOW TO AVOID THE HAZARD

- Keep hands, feet and clothing away from cutoff blade.

### [Model: BST23]

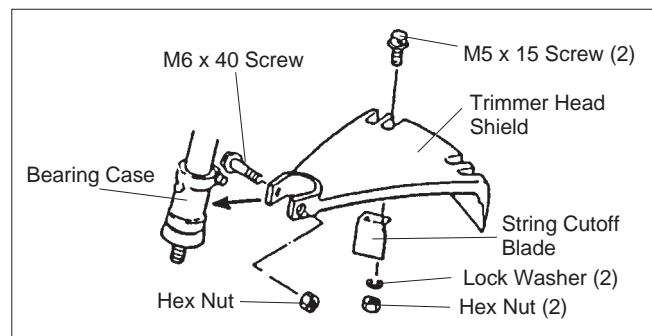
1. Fasten the string cutoff blade to the trimmer head shield with two M5 x 12 screws, lock washers and hex nuts as shown.



2. Attach the trimmer head shield to the shaft with the two M5 x 30 screws and plate as shown.

### [Model BST23C]

1. Fasten the string cutoff blade to the trimmer head shield with two M5 x 15 screws, hex nuts and lock washers as shown.
2. Push the trimmer head shield onto the bearing case. Install the M6 x 40 screw and nut, tighten ONLY AS NEEDED.

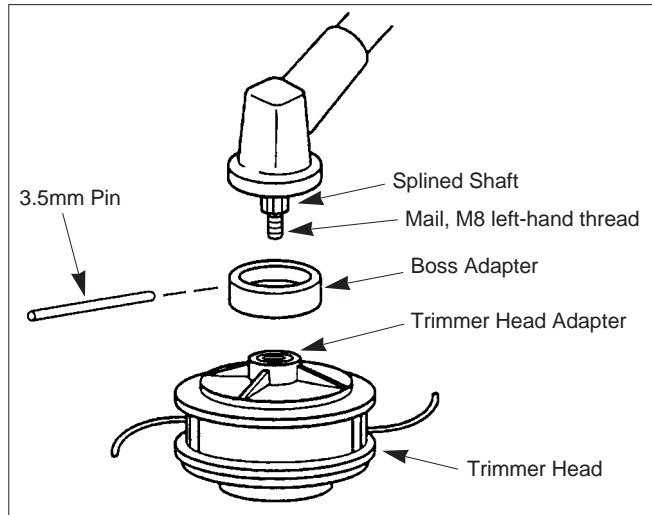


## [Model: BST23]

### Installing Trimmer Head

**IMPORTANT:** Make sure the trimmer head is for **LEFT-HAND ROTATION** (counterclockwise) as viewed from the operator's position, and that the trimmer head adapter is a female, M8 x 1.25 left-hand thread.

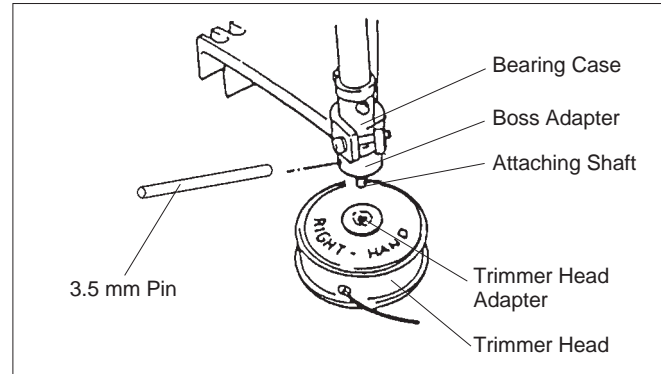
**IMPORTANT:** The boss adapter must be, installed on the splined shaft between the gearcase and the trimmer head as shown.



1. Install the boss adapter onto the splined shaft out of the gearcase.
2. Align the hole in the boss adapter with the hole in the gearcase.
3. Insert the 3.5mm pin into the holes in the boss adapter and gearcase to lock the splined shaft.
4. Thread the trimmer head adapter onto the splined shaft, then tighten the trimmer head firmly by hand.

## [Model: BST23C]

**IMPORTANT:** Make sure the trimmer head is for **RIGHT-HAND ROTATION** (clockwise) as viewed from the operator's position, and that the trimmer head adapter is a female, M8 x 1.25 right-hand thread.



1. Align the hole in the boss adapter with the guide slot in the bearing case.
2. Insert the 3.5 mm pin into the hole and guide slot in the boss adapter and bearing case to lock the attaching shaft.
3. Thread the trimmer head adapter onto the attaching shaft, then tighten the trimmer head firmly by hand.

### **⚠ CAUTION**

#### **POTENTIAL HAZARD**

- **If the trimmer head is not adequately tightened, it can come loose from the Trimmer during use.**

#### **WHAT CAN HAPPEN**

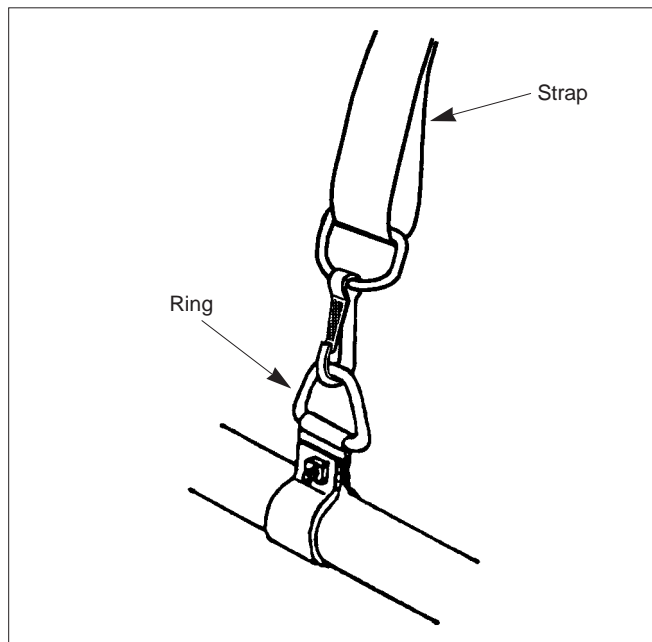
- **This may cause damage to property or personal injury.**

#### **HOW TO AVOID THE HAZARD**

- **Make sure the trimmer head is securely fastened to the splined shaft in the gearcase.**

## [Model: BST23] Attaching Strap

Snap the strap hook into the ring on the drive shaft.



## Before Operation

### Oil and Fuel

#### **⚠ DANGER**

##### **POTENTIAL HAZARD**

- In certain conditions gasoline is extremely flammable and highly explosive.

##### **WHAT CAN HAPPEN**

- A fire or explosion from gasoline can burn you, others, and cause property damage.

##### **HOW TO AVOID THE HAZARD**

- Use a funnel and fill the fuel tank outdoors, in an open area, when the engine is cold. Wipe up any gasoline that spills.
- Do not fill the fuel tank completely full. Add gasoline to the fuel tank until the level is 1/4" to 1/2" (6 mm to 13 mm) below the bottom of the filler neck. This empty space in the tank allows gasoline

to expand.

- Never smoke when handling gasoline, and stay away from an open flame or where gasoline fumes may be ignited by a spark.
- Store gasoline in an approved container and keep it out of the reach of children.
- Never buy more than a 30-day supply of gasoline.

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 fuel tank cap while the engine is running or just right after stopping the engine.

#### **⚠ WARNING**

##### **POTENTIAL HAZARD**

- Gasoline contains gasses that can build up pressure inside a gas tank.

##### **WHAT CAN HAPPEN**

- Fuel can be sprayed on you when removing gas cap.

##### **HOW TO AVOID THE HAZARD**

- Remove fuel cap slowly to avoid injury from fuel spray.

4. Always open the fuel tank cap slowly to release any possible overpressure inside the tank.
5. Do not overfill the fuel tank. Stop filling 1/4-1/2 inch (6 mm-13 mm) from the top of the tank.
6. Tighten the fuel tank cap carefully but firmly after refilling.
7. Wipe up any spilled fuel before starting the engine.
8. Move the Trimmer/Brushcutter at least 10 feet (3 m) away from the fueling location and fuel storage container before starting the engine.

## Recommended Oil Type

Only use a two-cycle engine oil formulated for use in high-performance, air-cooled two-cycle engines. Maruyama brand 2-cycle oil is formulated for use in high-performance, air-cooled two-cycle engines.

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

**Do not use automotive motor oil. This type of oil does not have the proper additives for air-cooled, 2-cycle engines and can cause engine damage.**

## Recommended Fuel Type

Use clean, fresh lead-free gasoline, including *oxygenated* or *reformulated* gasoline, with an octane rating of 85 or higher. To ensure freshness, purchase only the quantity of gasoline that can be used in 30 days. Use of lead-free gasoline results in fewer combustion chamber deposits and longer spark plug life. Use of premium grade fuel is not necessary or recommended.

## Use of Fuel Additives

**IMPORTANT: NEVER USE METHANOL, GASOLINE CONTAINING METHANOL, GASOLINE CONTAINING MORE THAN 10% ETHANOL, PREMIUM GASOLINE, OR WHITE GAS BECAUSE ENGINE FUEL SYSTEM DAMAGE COULD RESULT.**

**DO NOT USE FUEL ADDITIVES OTHER THAN THOSE MANUFACTURED FOR FUEL STABILIZATION DURING STORAGE SUCH AS MARUYAMA'S STABILIZER/CONDITIONER OR A SIMILAR PRODUCT. MARUYAMA'S STABILIZER/CONDITION-**

**ER IS A PETROLEUM DISTILLATE BASED CONDITIONER/STABILIZER.**

**MARUYAMA DOES NOT RECOMMEND STABILIZERS WITH AN ALCOHOL BASE SUCH AS ETHANOL, METHANOL OR ISOPROPYL. ADDITIVES SHOULD NOT BE USED TO TRY TO ENHANCE THE POWER OR PERFORMANCE OF MACHINE.**

## Mixing Gasoline And Oil

**IMPORTANT: The engine used on this Trimmer/Brushcutter is of a 2-cycle design. The internal moving parts of the engine, i.e., crankshaft bearings, piston pin bearings and piston to cylinder 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 which will void your warranty.**

**For your fuel premix, only use a quality oil designed for 2-cycle air cooled engines. Maruyama 50:1 2-cycle Oil is formulated to meet the requirements of high-performance, air-cooled two-cycle engines.**

## Fuel Mixture

The fuel: oil ratio is 50 parts gasoline to 1 part oil or 50:1.



**Note: 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	50:1 2-cycle oil
1 gallon	2.6 oz.
2 gallons	5.1 oz.
5 gallons	12.8 oz.
1 litre	20 ml
5 litre	100 ml

## Mixing Instructions

**IMPORTANT: Never mix gasoline and oil directly in the Trimmer/Brushcutter fuel tank.**

1. Always mix fuel and oil in a clean container approved for gasoline.
2. Mark the container to identify it as fuel mix for the Trimmer/Brushcutter.
3. Use regular unleaded gasoline and fill the container with half the required amount of gasoline.
4. Pour the correct amount of oil into the container then add the remaining amount of gasoline.
5. Close the container tightly and shake it momentarily to evenly mix the oil and the gasoline before filling the fuel tank on the Trimmer.
6. When refilling the Trimmer fuel tank, clean around the fuel tank cap to prevent dirt and debris from entering the tank during cap removal.
7. Always shake the premix fuel container momentarily before filling the fuel tank.
8. Always use a spout or funnel when fueling to reduce fuel spillage.
9. Fill the tank only to within 1/4-1/2 inch (6 mm-13 mm) from the top of the tank. Avoid filling to the top of the tank filler neck.

## Starting And Stopping

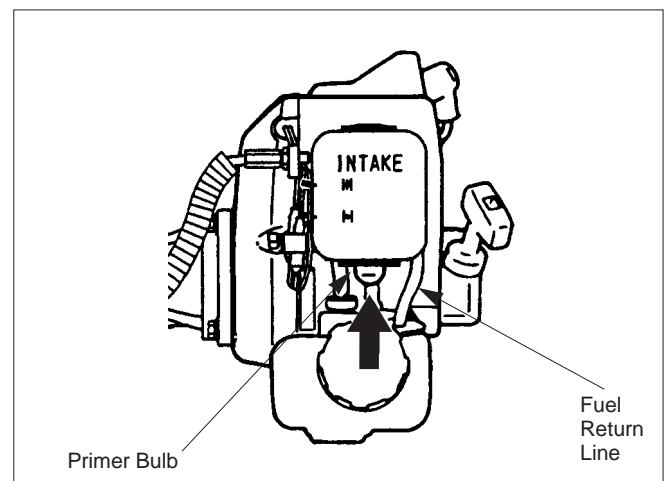
### Before Starting The Engine

1. Fill the fuel tank as instructed in the Before Operation section of this manual.
2. Rest the Trimmer on the ground.
3. Make sure the cutting attachment is clear of any broken glass, nails, wire, rocks or other debris.
4. Keep all bystanders, children and animals away from the working area.

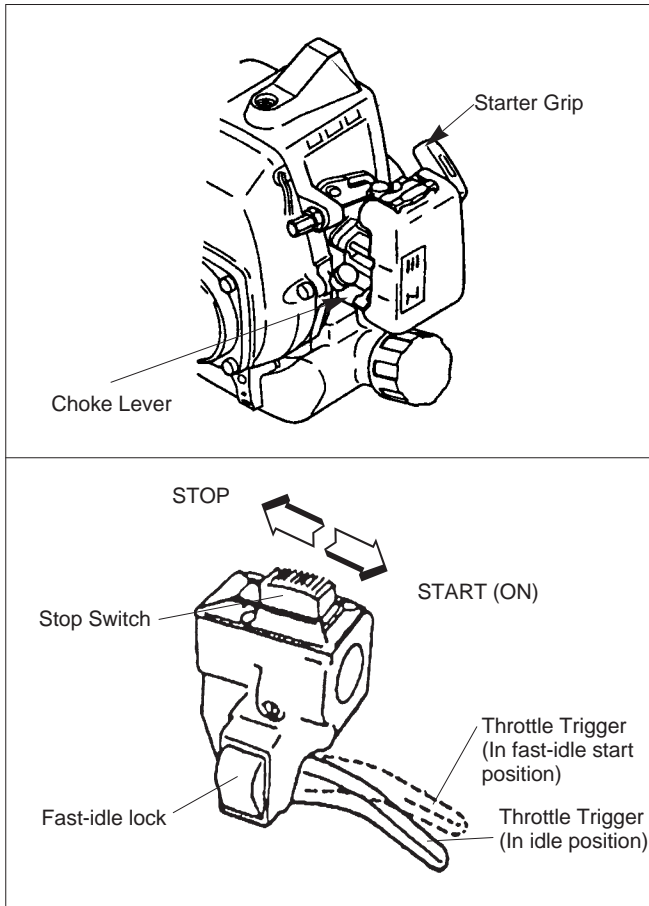
### Cold Starting Procedure

This Trimmer is equipped with a fuel primer and a choke system. To start a “cold” engine properly, perform the following procedure:

1. Pump the primer bulb at the bottom of the carburetor until fuel can be seen flowing through the fuel return line to the fuel tank.  
(Flowing fuel should be almost clear, not foamy or full of bubbles.)



2. Move the choke lever to the closed (| \ |) position and move the stop switch to the “ON” position.



3. Lock the throttle trigger in the fast-idle start position, then pull the starter grip.

### **⚠ CAUTION**

- **Don't disassemble recoil starter by yourself. For service, Please contact to appointed dealer.**

4. After the engine starts, move the choke lever to the open (| † |) position, then squeeze and release the throttle trigger to allow it to return to the idle position.

If the engine stops running before you move the choke lever to the open (| † |) position:

- A. Go ahead and open the choke.
- B. Make sure the throttle trigger is set to the fast-idle start position.
- C. Pull the starter grip until the engine starts.

## **Hot Restart**

To start an engine that is already warmed up (hot restart), or if the ambient temperature exceeds 68°F (20°C):

1. Pump the primer bulb at the bottom of the carburetor until fuel can be seen flowing through the fuel return line to the fuel tank.
2. Move the choke lever to the open (| † |) position and move the stop switch to the “ON” position.
3. Leave the throttle trigger in the idle position and pull the starter grip.
4. If the engine fails to start after three to four pulls, follow the instruction in the Cold Starting Procedure section above.

If the engine fails to start after you follow the above procedures, contact an authorized Maruyama dealer.

## **To Stop The Engine:**

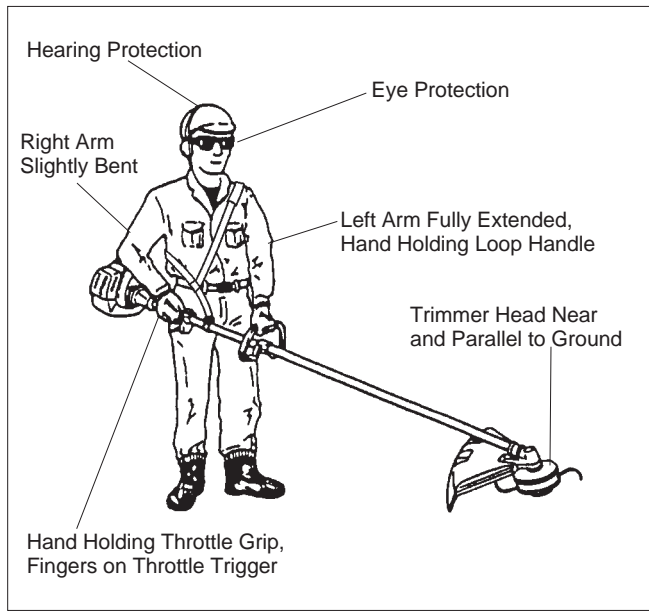
1. Release the throttle trigger.
2. Slide the stop switch to the “STOP” position.

## **Trimmer Operation**

### **⚠ CAUTION**

- **Read the Safety instructions on page 6 concerning proper use of the String Trimmer.**

## Trimmer Operating Position



Before using the Trimmer, check the following:

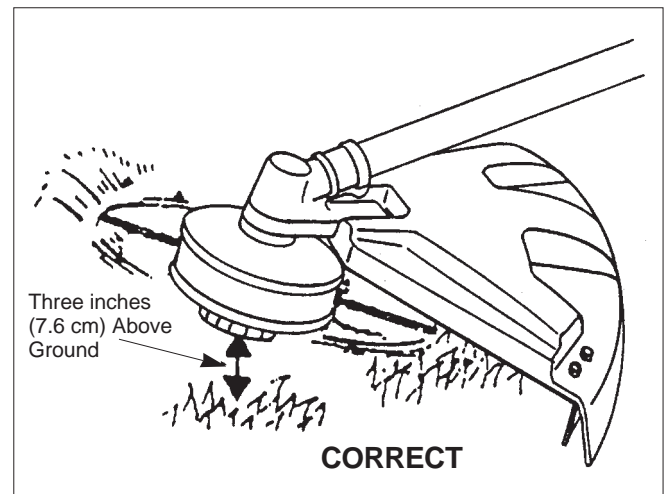
1. The Trimmer should be on the operator's right side.
2. The operator's right hand should be holding the shaft grip, with his or her fingers on the throttle trigger. The right arm should be slightly bent.
3. The left hand should be holding the loop handle with the fingers and thumb fully enclosed around the grip. The left arm should be extended. Reposition the loop handle up or down the drive-shaft if necessary for a comfortable position.
4. The Trimmer weight should be evenly distributed between the arms. The trimmer head should be near and parallel to the ground.
5. Accelerate and hold the engine at cutting speed before entering the material to be cut.
6. Always release the throttle trigger and allow the engine to return to idle speed when not cutting.
7. Stop the Trimmer engine when moving between work sites.

## CAUTION

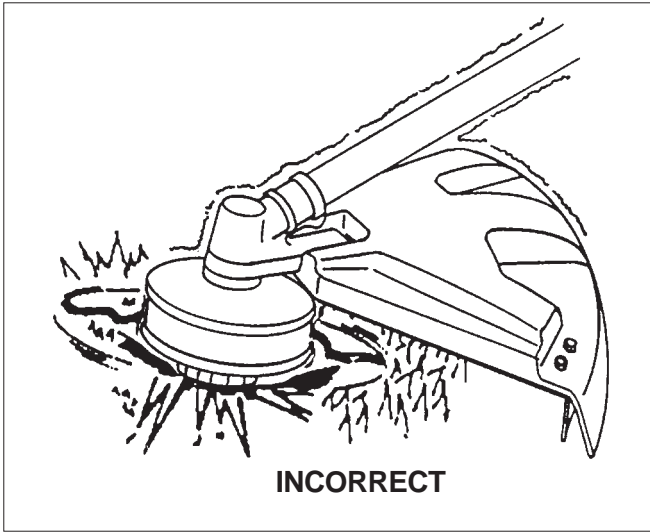
- Always wear gloves and protective clothing when operating the String Trimmer.
- If the trimmer head becomes jammed, stop the engine immediately.
- Make certain all moving parts have stopped and disconnect the spark plug before inspecting the equipment for damage.
- Never use a String Trimmer that has chipped, cracked or broken trimmer head.

## Cutting with Nylon Trimmer Line

- The tip of the line does the cutting. The line should stay extended while cutting.

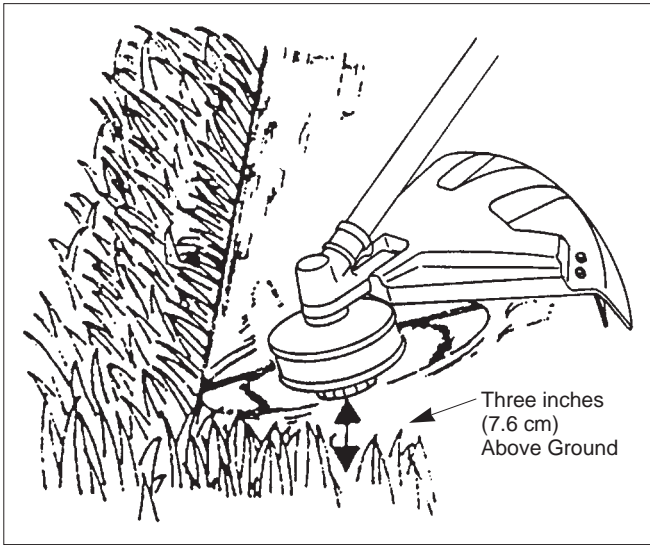


- Do not force the line into the material. Forcing the line will cause it to slap against the material, increasing line usage and causing poor cutting results.



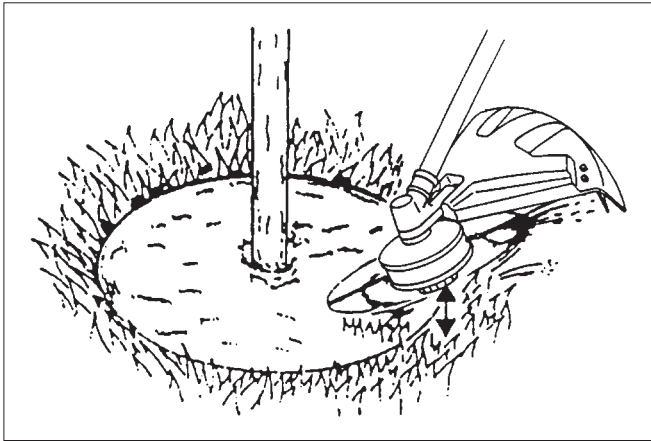
**Trimming**

Hold the bottom of the trimmer head about 3 in. (7.6 cm) above the ground and at an angle. Allow only the tip of the line to make contact.



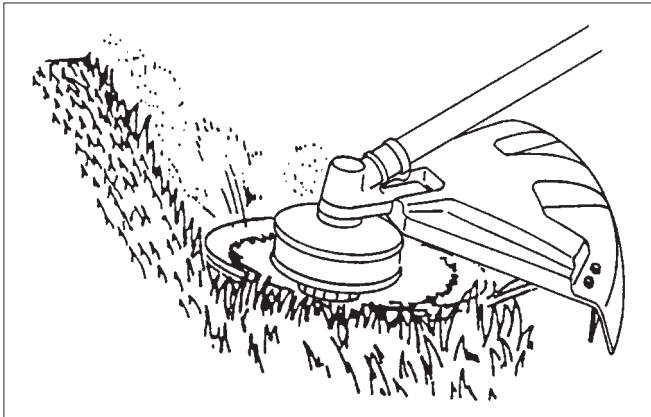
**Scaling**

To remove unwanted vegetation, hold the trimmer head about 3 in. (7.6 cm) above the ground and at an angle. Allow the tip of the line to strike the ground cutting the vegetation off at the surface.



**Mowing**

Keep the line parallel to the ground and use a gentle side-to-side motion.



**Brushcutter Operation**

**⚠ WARNING**

**POTENTIAL HAZARD**

- Foreign objects can be thrown by Brushcutter.

**WHAT CAN HAPPEN**

- Contact with thrown objects can cause personal injury.

**HOW TO AVOID THE HAZARD**

- Never operate the Brushcutter without the blade shield in place.

**⚠ CAUTION**

- Read the Safety instructions on page 6 concerning proper use of the Brushcutter.

# 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. 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.

## Idle Speed Adjustment

This Trimmer is equipped with non-adjustable fuel mixture carburetor. The engine idle speed is the only adjustment for the operator.

### WARNING

- **Idle speed adjustment should be checked each time the unit is operated.**

### WARNING

#### POTENTIAL HAZARD

- **Engine must be running to make some carburetor adjustments.**
- **When engine is running, cutting head is rotating and other parts are moving.**

#### WHAT CAN HAPPEN

- **Contact with rotating cutting head or other moving parts could cause serious personal injury or death.**

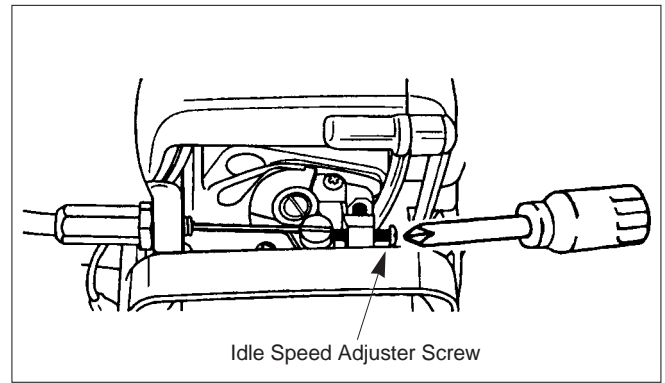
#### HOW TO AVOID THE HAZARD

- **Keep hands, feet and clothing away from cutting head and other moving parts.**
- **Keep all bystanders and pets away from unit while making carburetor adjustments.**

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

When the throttle trigger is released, the engine should return to an idle speed between 2700 and 3300 RPM, or just below the clutch engagement speed. The cutting head must not rotate and the engine should not stall (stop running) at engine idle speed.

To adjust the engine idle speed, rotate the idle speed adjustment screw on the carburetor.



- Turn the idle speed screw in (clockwise) to increase the engine idle speed.
- Turn the screw out (counterclockwise) to decrease the engine idle speed.

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

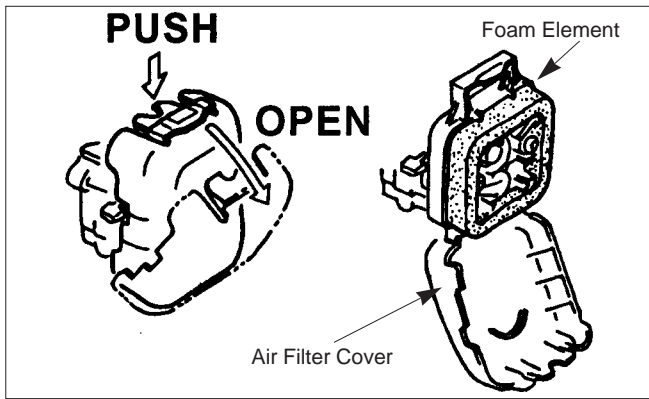
Contact your local authorized Maruyama Dealer for assistance and servicing.

## Air Filter

### Maintenance Interval

- The air filter should be cleaned **daily**, or more often when working in extremely dusty conditions.
- Replace after every 100 hours of operation.

## Air Filter Cleaning



1. Open the air filter cover.
2. Remove the foam element from the air filter body.
3. Clean the foam element with warm, soapy water. Let the element dry completely.
4. Apply a light coat of SAE 30 motor oil to the foam element and squeeze out all excess oil.
5. Reassemble the foam element to the air filter body.
6. Reinstall the air filter cover.

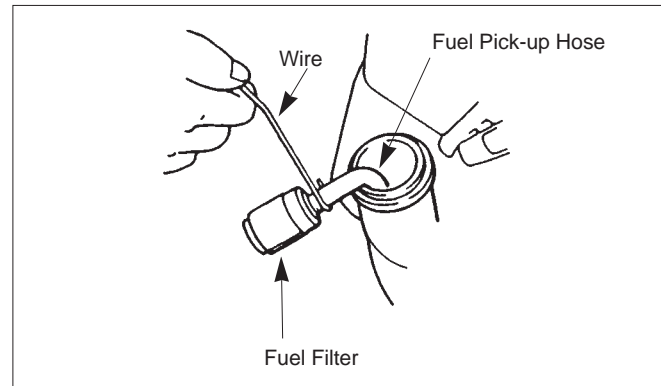
## Fuel Filter

### Maintenance Interval

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

### Fuel Filter Replacement

The fuel filter is attached to the end of the fuel pick-up hose inside the fuel tank.



To replace the fuel filter:

1. Make sure the fuel tank is empty.
2. Remove the fuel cap.
3. Using a wire hook, gently pull the fuel filter out through the fuel filler opening.
4. Grasp the fuel hose next to the fuel filter fitting and remove the filter, but do not release the hose.
5. While still holding on to the fuel hose, attach the new fuel filter.
6. Drop the new fuel filter back into the fuel tank.
7. 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.

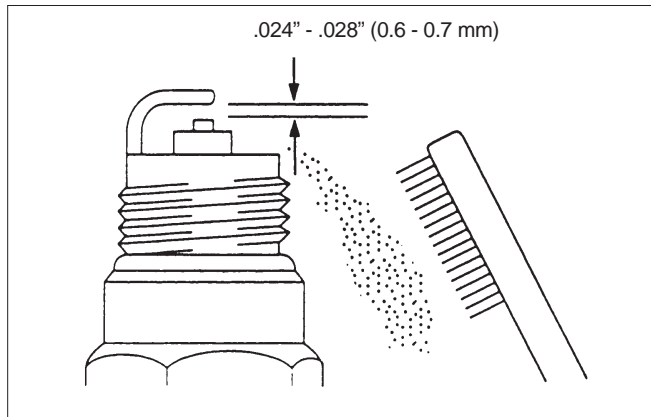
## Spark Plug

### Maintenance Interval

- The spark plug should be removed from the engine and checked after each 25 hours of operation.
- Replace the spark plug after every 100 hours of operation.

### Spark Plug Maintenance

1. Twist the high tension lead boot on the spark plug back and forth a couple of times to loosen the boot, then pull the boot off of the spark plug.
2. Remove the spark plug.
3. Clean the electrodes with a stiff brush.
4. Adjust the electrode air gap to .024-.028 in (0.6-0.7 mm).



5. Replace the spark plug if it is oil-fouled, damaged, or if the electrodes are worn down.
6. Do not overtighten the spark plug when installing. The tightening torque is 95-148 in. lbs. (10.7-16.6 N·m).

## Cylinder Cooling Fins

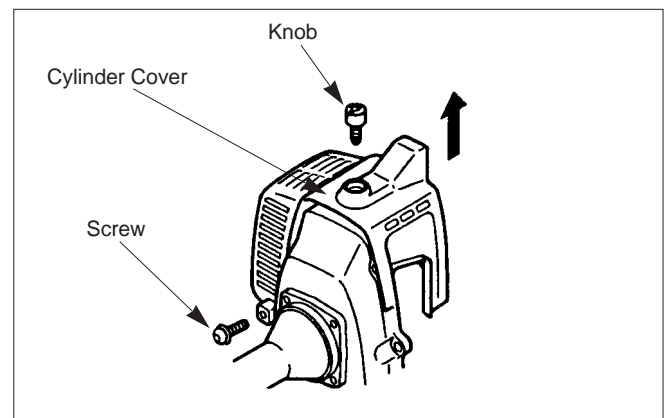
### Maintenance Interval

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.

### Cooling Fin Cleaning

1. With the engine at ambient (room) temperature, remove the screw and knob.



2. Lift off the cylinder cover.
3. Clean all dirt and debris from the cooling fins and from around the cylinder base.
4. Reinstall the cylinder cover.

## Spark Arrester

### **⚠ WARNING**

#### **POTENTIAL HAZARD**

- **Muffler surface becomes hot when Trimmer/Brushcutter is in operation and remains hot for some time after the engine is shut off.**

#### **WHAT CAN HAPPEN**

- **Contact with hot muffler surfaces could cause a burn.**

#### **HOW TO AVOID THE HAZARD**

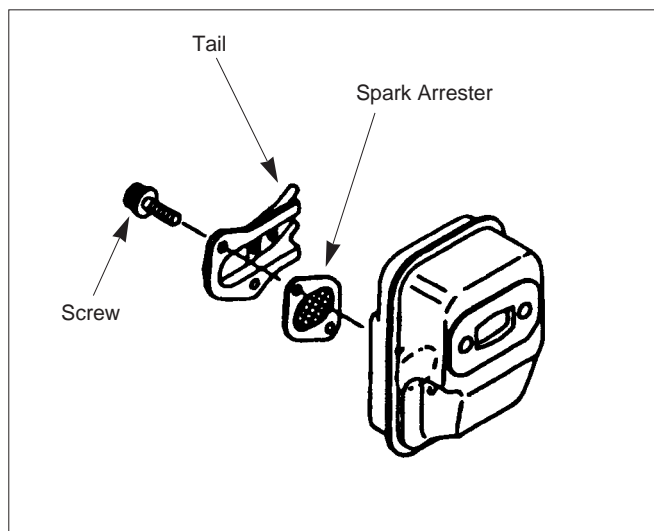
- **Make sure the muffler is cool before inspecting and cleaning the spark arrester.**

## 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.

## Spark Arrester Maintenance

1. With the engine at ambient (room) temperature, Remove the cylinder cover.
2. Remove the two screws holding the tail and spark arrester to the muffler.

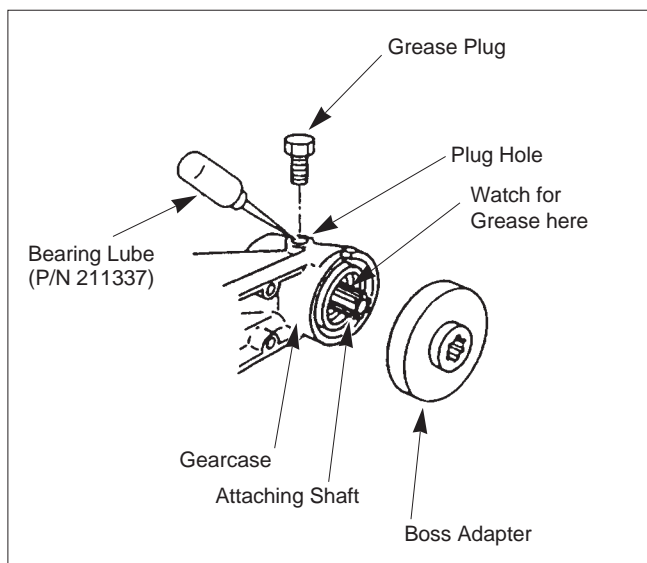


3. Remove and clean the tail and spark arrester with a safety solvent and a stiff brush. If any part cannot be thoroughly cleaned, it must be replaced.
4. Reinstall the spark arrester and tail onto the muffler, then reinstall and tighten the two screws.
5. Reinstall the cylinder cover.

## Gearcase

### Maintenance Interval

The gearcase should be checked for lubrication after each 30 hours of use.



### Gearcase Lubrication

Remove the cutting attachment and the boss adapter. Clean any dirt and debris from the area between the boss adapter and the gearcase. Remove the grease plug from the side of the gearcase.

While rotating the attaching shaft, inject lithium-base bearing lube (P/N 211337) through the plug hole until the gearcase is full. Reinstall the boss adapter and grease plug.



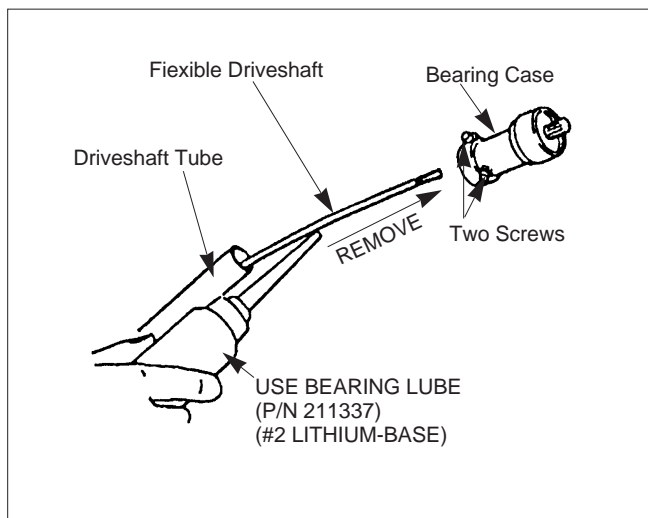
## [Model: BST23C]

### Maintenance Interval

The flexible driveshaft should be lubricated after each 30 hours of operation.

### Driveshaft Lubrication

Loosen the two screws on the bearing case and remove the bearing case. The inner flexible driveshaft is easily removed by gripping the end securely and pulling it from the driveshaft tube. Lubricate the entire length the flexible driveshaft and insert it into the driveshaft tube. Twist the flexible shaft while pushing to insure that it seats correctly into the driveshaft coupler. Re-install the bearing case onto the driveshaft tube and tighten the two screws.

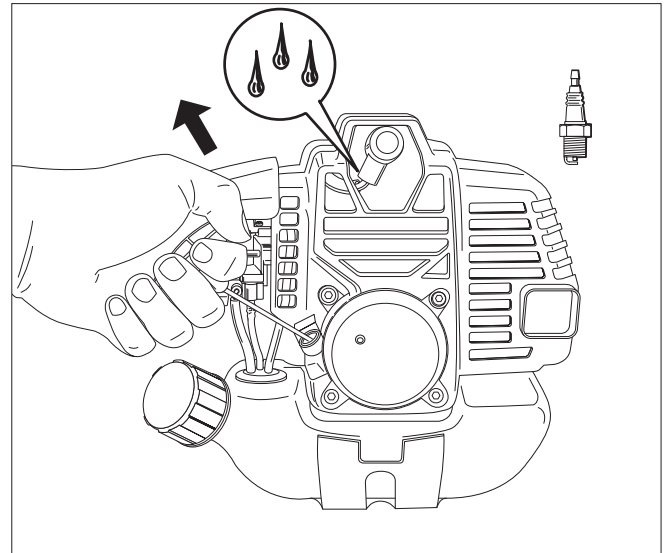


## Storage

For long term storage of the Trimmer:

1. Empty the fuel tank into a suitable fuel storage container.
2. Pump the primer bulb on the carburetor until all fuel is discharged through the clear fuel return hose.
3. Run the engine to remove any fuel that may remain in the carburetor.

4. Perform all regular maintenance procedures and any needed repairs.
5. Remove the spark plug and squirt a very small amount of oil into the cylinder.



### ⚠ CAUTION

#### POTENTIAL HAZARD

- Oil may squirt out of the spark plug opening when you pull the starter grip.

#### WHAT CAN HAPPEN

- Oil can cause eye injuries.

#### HOW TO AVOID THE HAZARD

- Protect your eyes and keep your face away from the spark plug opening.

6. Pull the starter grip once.
7. Reinstall the spark plug.
8. Store the Trimmer in a dry place away from excessive heat, sparks or open flame.

# Troubleshooting

Problem	Cause	Action
Engine Will Not Start	STOP switch set to off position Empty fuel tank Primer bulb wasn't pushed enough Engine flooded	Move switch to on position Fill fuel tank Press primer bulb until fuel flows through fuel return line Use warm engine starting procedure
Engine Will Not Idle	Idle speed set incorrectly	Set idle speed
Engine Lacks Power or Stalls When Cutting	Throttle wire has come loose Dirty air filter	Tighten throttle wire Clean or replace air filter

If further assistance is required, contact your local authorized Maruyama service dealer.

# 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	●			
	Check engine idle speed adjustment	●			
■	Clean air filter element		●		
	Tighten bolts and nuts			●	
	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				●
	Replece 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.

# Specifications

	<b>BST23</b>	<b>BST23C</b>
Weight 1	10.1 lbs (4.6 Kg)	9.7 lbs (4.4 Kg)
Engine Displacement	22.5 cm <sup>3</sup>	
Anti Vibration	Engine mount	Loop Handle Grip
Carburetor	Walbro Diaphragm Type	
Ignition System	Solid State	
Fuel Tank Capacity	0.58 qts. (0.55 ℓ)	
Gas to Oil Ratio	50:1	
Spark Plug	NGK BPM6Y	
Spark Plug Gap	.024 -.028 in (0.6 - 0.7 mm)	

1. Dry weight without Cutting head and strap.



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