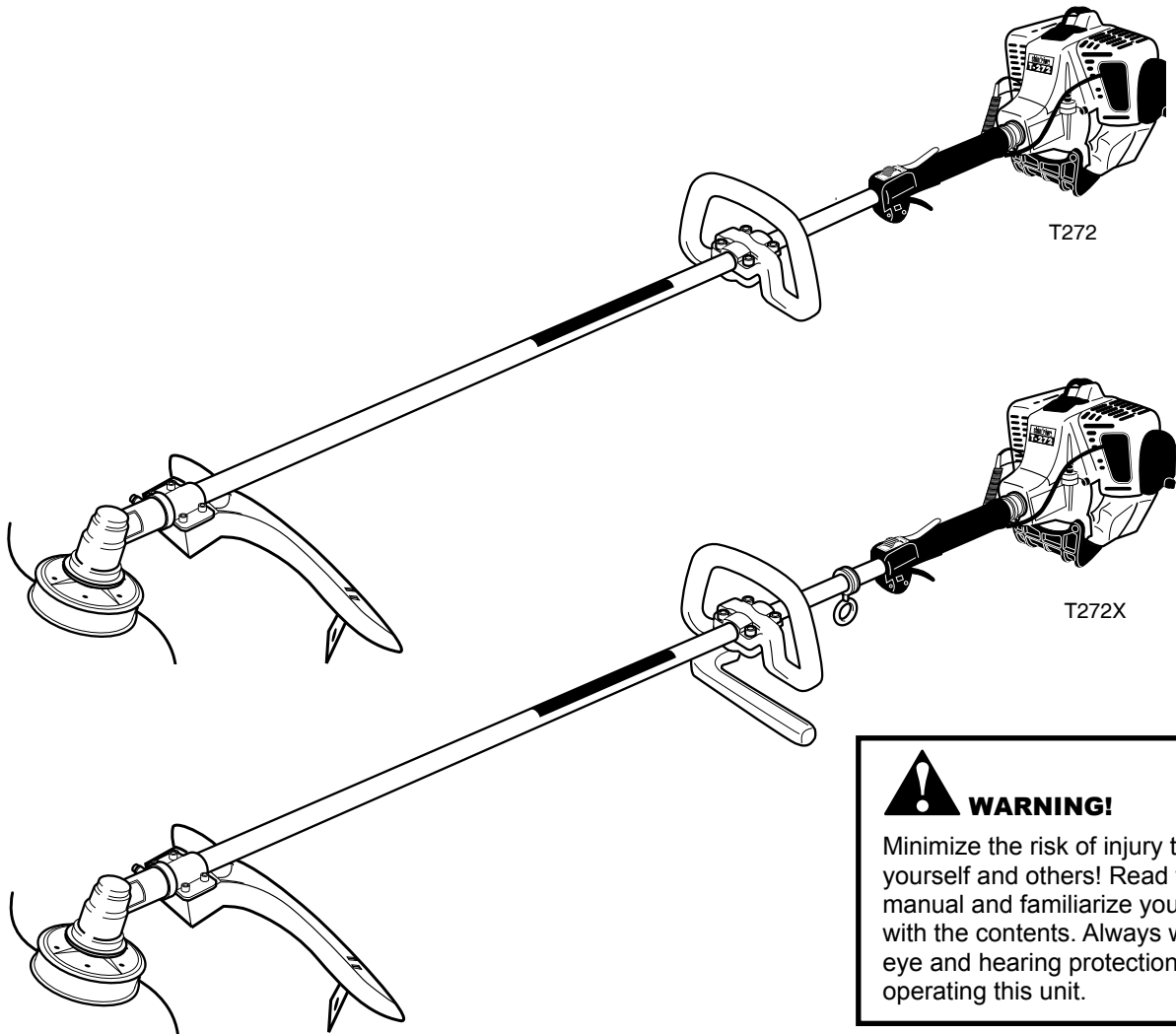


**SHINDAIWA OWNER'S/OPERATOR'S MANUAL**

# **T272 TRIMMER**

# **T272X TRIMMER**



**WARNING!**

Minimize the risk of injury to yourself and others! Read this manual and familiarize yourself with the contents. Always wear eye and hearing protection when operating this unit.

**shindaiwa**

Part Number 81647 Rev 1/07

## Introduction

The Shindaiwa 272-series hand-held Power Equipment has been designed and built to deliver superior performance and reliability without compromise to quality, comfort, or durability.

Shindaiwa high performance engines represent the leading edge of 2-cycle engine technology, delivering exceptionally high power from remarkably low displacement and weight. As an owner/operator, you'll soon discover for yourself why Shindaiwa is simply in a class by itself!

### IMPORTANT!

The information contained in this manual describes units available at the time of publication.

While every attempt has been made to give you the very latest information about your Shindaiwa product, there may be some differences between your 272-series unit and what is described here. Shindaiwa Inc. reserves the right to make changes to products without prior notification, and without obligation to make alterations to units previously manufactured.



### WARNING!

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

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## Attention Statements

Throughout this manual are special "attention statements".



### WARNING!

A statement preceded by the triangular attention symbol and the word "WARNING" contains information that should be acted upon to prevent serious bodily injury.

### CAUTION!

A statement preceded by the word "CAUTION" contains information that should be acted upon to prevent mechanical damage.

### IMPORTANT!

A statement preceded by the word "IMPORTANT" is one that possesses special significance.

### NOTE:

A statement preceded by the word "NOTE" contains information that is handy to know and may make your job easier.



Read and follow this operators manual. Failure to do so could result in serious injury.



Wear eye and hearing protection at all times during the operation of this unit.



Keep bystanders at least 50 feet (15 m) away during operation.



Beware of thrown or ricocheted objects.



Do not operate this unit with a blade unless the unit is equipped with a Shindaiwa-approved handlebar or barrier.



Always wear a harness when operating this unit with a blade. A harness is also recommended when using trimmer line.



If unit is used as a brushcutter, beware of blade thrust. A jammed blade can cause the unit to jerk suddenly and may cause the operator to lose control of the unit.

## General Safety Instructions

### Work Safely

Trimmers and brushcutters operate at very high speeds and can do serious damage or injury if they are misused or abused. *Never allow a person without training or instruction to operate your unit!*

### Stay Alert

You must be physically and mentally fit to operate this unit safely.



### WARNING!



Never operate power equipment of any kind if you are tired or if you are under the influence of alcohol, drugs, medication or any other substance that could affect your ability or judgment.

### IMPORTANT!

The operational procedures described in this manual are intended to help you get the most from your unit, and to protect you and others from harm. These procedures are guidelines for safe operation under most conditions, and are not intended to replace any safety rules and/or laws that may be in force in your area.

If you have questions regarding your 272-series unit, or if you do not understand something in this manual, your Shindaiwa dealer will be glad to assist you.

You may also contact Shindaiwa, Inc. at the address printed on the back of this manual.

## General Safety Instructions



### WARNING!

Never make unauthorized attachment installations.



### WARNING!

#### Use Good Judgment

**ALWAYS** wear eye protection to shield against thrown objects.

**NEVER** operate the engine when transporting the unit.

**NEVER** operate the engine indoors! Make sure there is always good ventilation. Fumes from engine exhaust can cause serious injury or death.

**ALWAYS** clear your work area of trash or hidden debris that could be thrown back at you or toward a bystander.

**ALWAYS** use the proper cutting tool for the job.

**ALWAYS** stop the unit immediately if it suddenly begins to vibrate or shake. Inspect for broken, missing or improperly installed parts or attachments.

**NEVER** extend trimming line beyond the length specified for your unit.

**ALWAYS** keep the unit as clean as practical. Keep it free of loose vegetation, mud, etc.

**ALWAYS** hold the unit firmly with both hands when cutting or trimming, and maintain control at all times.

**ALWAYS** keep the handles clean.

**ALWAYS** disconnect the spark plug wire before performing any maintenance work.

**ALWAYS**, if a blade should bind fast in a cut, shut off the engine immediately. Push the branch or tree to ease the bind and free the blade.

## The Properly Equipped Operator

Wear close-fitting clothing to protect legs and arms. Gloves offer added protection and are strongly recommended. Do not wear clothing or jewelry that could get caught in machinery or underbrush. **NEVER** wear shorts!

Wear hearing protection devices and a broad-brimmed hat or helmet.

Always wear eye protection such as goggles or safety glasses.

Always wear a shoulder strap or a harness when operating a unit equipped with a blade.

Always operate with both hands firmly gripping the unit.

When operating with a blade, make sure the handle is positioned to provide you with maximum protection from contacting the blade.

Keep away from the rotating trimming line or blade at all times, and never lift a moving attachment above waist-high.

Keep a proper footing and do not overreach—maintain your balance at all times during operation.

Wear appropriate footwear (non-skid boots or shoes): do not wear open-toed shoes or sandals. Never work barefooted!

Always make sure the appropriate cutting attachment shield is correctly installed.

Figure 1

## Be Aware of the Working Environment

Avoid long-term operation in very hot or very cold weather.

Make sure bystanders or observers outside the 50-foot "danger zone" wear eye protection.

Reduce the risk of bystanders being struck by flying debris. Make sure no one is within 50 feet (15 meters)—that's about 16 paces—of an operating attachment.

**50 FEET**

Be extremely careful of slippery terrain, especially during rainy weather.

If contact is made with a hard object, stop the engine and inspect the cutting attachment for damage.

Beware of a coasting blade when brushcutting or edging. A coasting blade can injure while it continues to spin after the throttle trigger is released or after the engine is stopped.

Be constantly alert for objects and debris that could be thrown either from the rotating cutting attachment or bounced from a hard surface.

When operating in rocky terrain or near electric wires or fences, use extreme caution to avoid contacting such items with the cutting attachment.

Figure 2

## Safety Labels

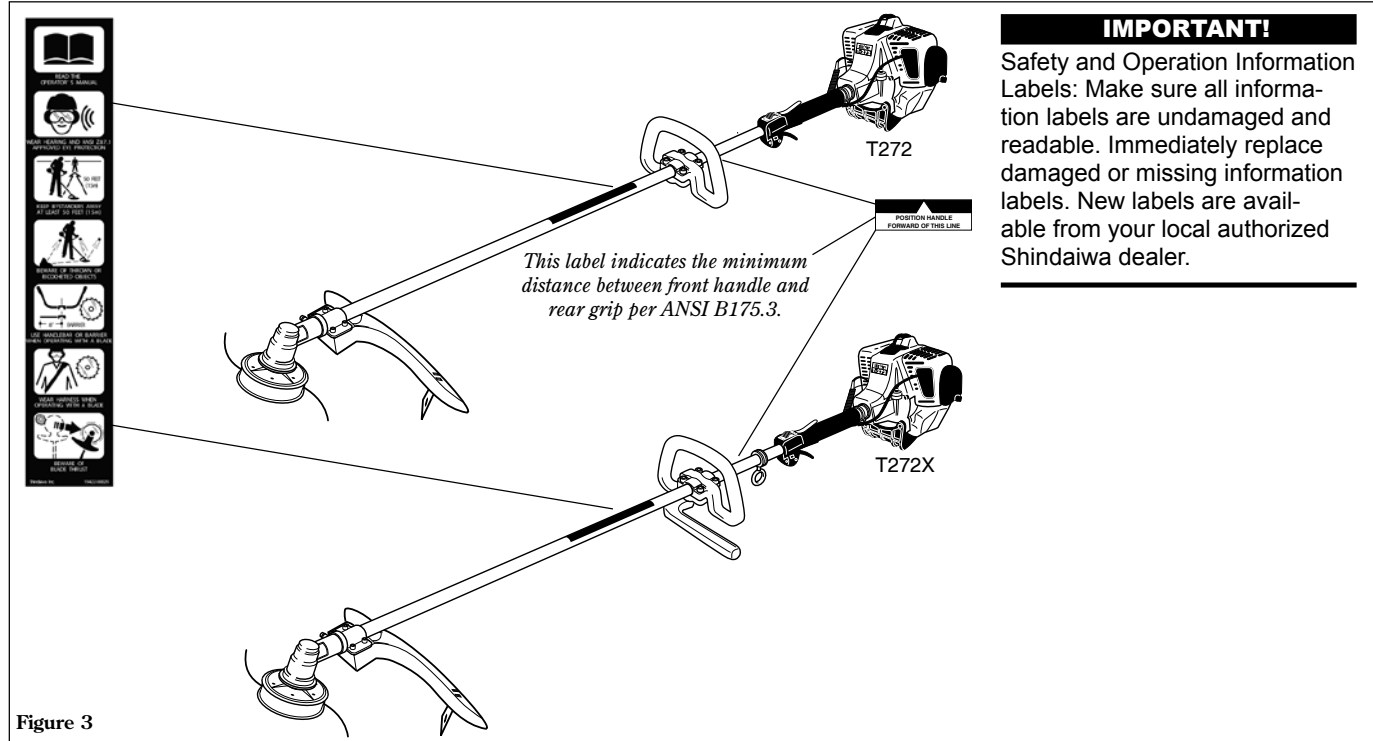


Figure 3

## Product Description

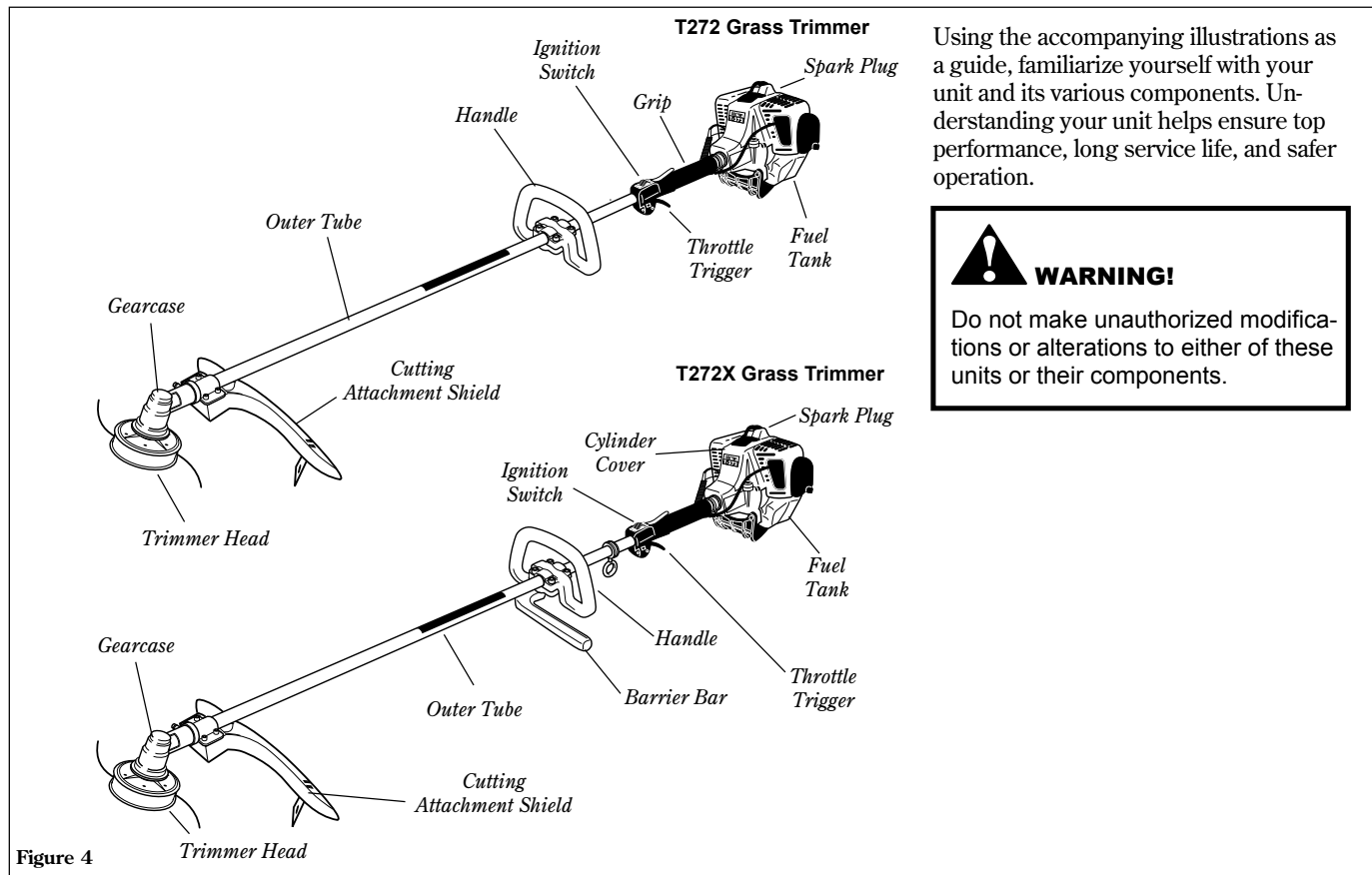


Figure 4

## Specifications T272X/C272

Engine Code.....	S272E Engine	Carburetion.....	Walbro diaphragm-type
Dry weight, T272 (less attachment) .....	6.7kg/14.7 pounds	Ignition.....	Fully electronic, transistor controlled
Dry weight, T272X (less attachment) .....	6.7kg/14.8 pounds	Spark Plug.....	Champion CJ8Y
Type.....	2-cycle, vertical cylinder, air cooled	Air Cleaner Type .....	Non-reversible heavy-duty filter element
Bore x Stroke.....	34 mm x 30 mm/1.3 in. x 1.2 in.	Starting Method .....	Recoil
Displacement.....	27.2cc/1.7 cu. in.	Stopping Method.....	Slide switch, grounding type
Maximum Power Output.....	1.1 kw/1.4 hp	Handle .....	Loop handle (T272) Loop handle with barrier bar (T272X)
Operating rpm Range .....	4,500-9,000 rpm (min <sup>-1</sup> )	EPA Emission Compliance Period**.....	Category A
Transmission Type .....	Automatic centrifugal clutch through bevel gears		
Fuel/Oil Ratio.....	50:1 with ISO-L-EGD or JASO FC class 2-cycle mixing oil*		
Fuel Tank Capacity .....	670ml/22.6 ounces		

\* Shindaiwa One meets or exceeds these specifications and is recommended for all Shindaiwa Products

\*\* The EPA emission compliance referred to on the emission compliance label located on the engine, indicates the number of operating hours for which the engine has been shown to meet Federal emission requirements. Category C = 50 hours (Moderate), B = 125 hours (Intermediate) and A = 300 hours (Extended).

Specifications are subject to change without notice.

This unit comes fully assembled with the exception of the cutting attachment shield and cutting attachment.

### Prior to Assembly

Before assembling, make sure you have all the components required for a complete unit and inspect unit and components for any damage.

- Engine and shaft assembly
- Cutting attachment shield
- Cutting attachment
- Kit containing cutting attachment shield bracket and hardware, this owner's/operator's manual and tool kit for routine maintenance. Tool kits vary by model and may include a hex wrench set, spark plug/screwdriver combination wrench and a spanner.

### IMPORTANT!

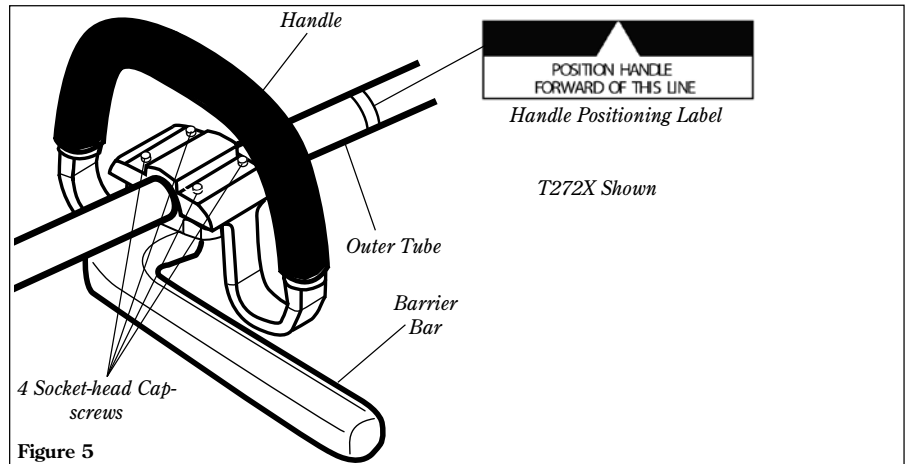
The terms "left," "left-hand," and "LH": "right," "right-hand," and "RH"; "front" and "rear" refer to directions as viewed by the operator during normal operation of this product.

## Assembly and Adjustments Handle T272/T272X

The handle is attached to the outer tube on the T272/T272X.

To Adjust the Handle.

1. Loosen the 4 socket-head capscrews on the handle. See Figure 5.
2. Position the handle forward of the Handle Positioning Label at the best position for operator comfort (usually about 10 inches ahead of the throttle housing).
3. Secure the handle by alternately tightening the four socket-head cap screws in a diagonal or "criss-cross" fashion.



## Adjusting Throttle Level Free Play T272/T272X

The throttle lever free play should be approximately 9/32 inch (7mm). See Figure 7. Make sure that the throttle lever operates smoothly without binding. If it becomes necessary to adjust the lever free play, follow the procedures and illustrations that follow.

1. Loosen the lock nut on the cable adjuster. See Figure 6.
2. Turn the cable adjuster in or out as required to obtain proper free play of 9/32 inch (7mm). See Figure 7.
3. Tighten the locknut.

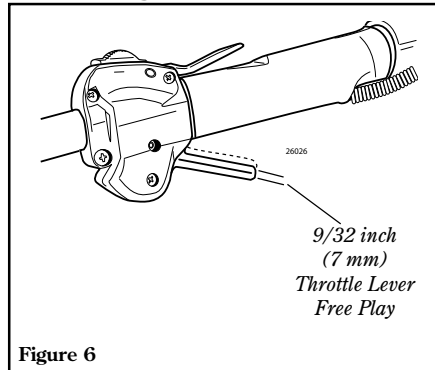


Figure 6

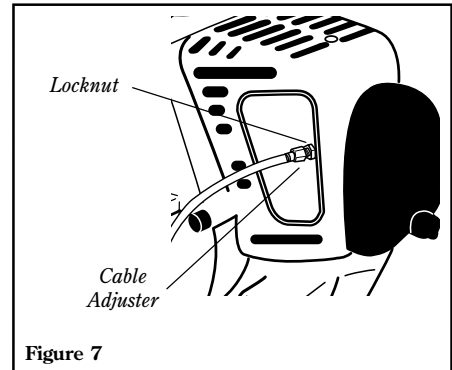


Figure 7

## Assembly and Adjustments Cutting Attachment Shield T272/T272X

### Install the Cutting Attachment Shield

1. Insert the cutting attachment shield between the outer tube and the cutting attachment mounting plate. See Figure 8.

#### NOTE:

It may be necessary to loosen the retaining nut and clamp screw to adjust cutting attachment shield mounting plate.

2. Fit the two shims and the bracket over the outer tube and loosely install the four socket-head screws. See Figure 8.

#### CAUTION!

Make sure the clamp screw and retaining nut are securely tightened before tightening the four socket head cap screws.

3. Tighten the four socket-head cap screws to secure the cutting attachment shield.

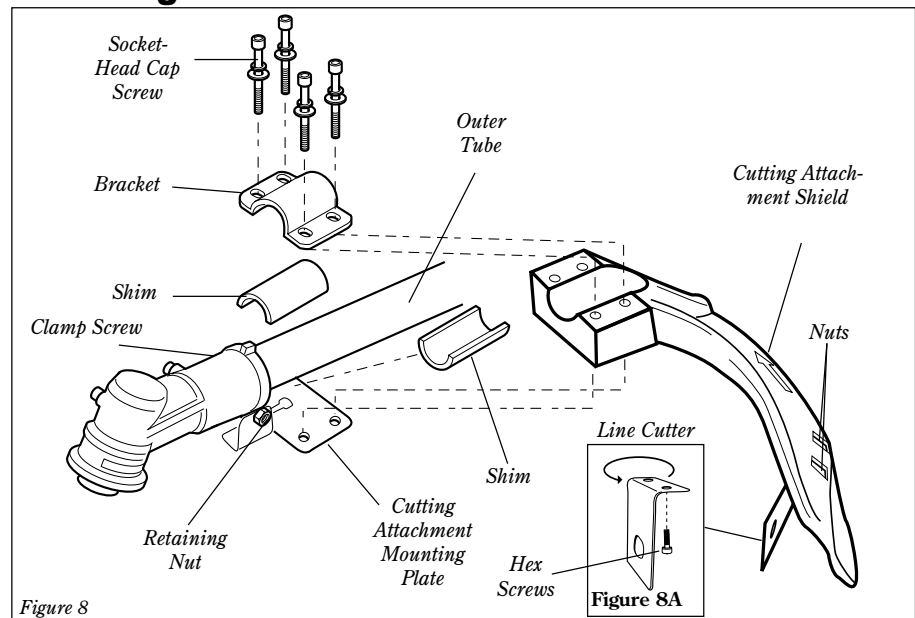


Figure 8



#### WARNING!

NEVER operate the T272 or T272X without the cutting attachment shield installed and tightly secured!



#### WARNING!

The line cutter is very sharp. Wear gloves to protect your hands when handling.

### To Change Position of Line Cutter

1. Remove the 2 hex screws with a 4mm hex wrench. See Figure 12A.
2. Rotate line cutter. See Figure 12A.
3. Reinstall the two hex screws and tighten them securely.

#### NOTE:

Be careful to not lose the 2 nuts in the cutting attachment shield.

## Installing a Trimmer Head T272

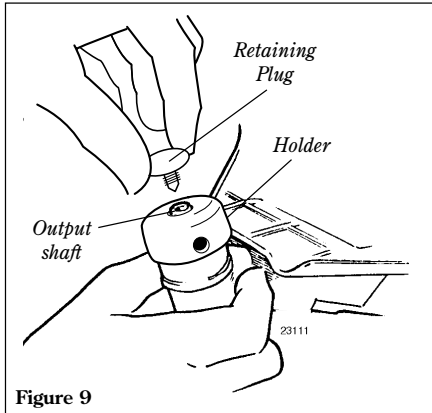


Figure 9

### Install the Trimmer Head.

1. Turn the trimmer over so that the gearcase output shaft faces UP.
2. Remove and discard the black plastic protective cap from the output shaft. See Figure 9.
3. Rotate the holder until the hole in the holder aligns with the notch on the gearcase. Use the long end of the hex wrench to lock the holder and output shaft. See Figure 10.

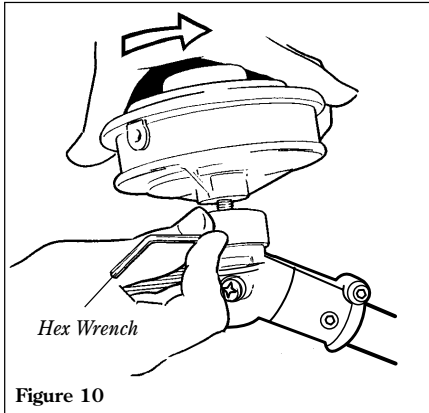


Figure 10

4. While holding the hex wrench, thread the trimmer head onto the output shaft, turning counter-clockwise. Using hand pressure only, tighten the trimmer head firmly on the output shaft.

### IMPORTANT!

The trimmer head has a left-hand thread. For removal turn the trimmer head clockwise.



### WARNING!

A standard grass trimmer with a loop handle should NEVER be operated with blade-type attachments. For blade use the trimmer must be fitted with a bicycle-type handlebar or a barrier bar that is located in front of the operator to reduce the risk of the operator from coming in contact with the cutting attachment (per ANSI B175.3). When using a blade, the unit must also be equipped with a harness or strap.

5. Remove the hex wrench.
6. Adjust the trimmer line length to reach no further than the line cutter on the cutting attachment shield. Trim to the correct length if necessary.

**The T272 should now be completely assembled and ready for use with a trimmer head.**

## Installing a Trimmer Head T272X

### NOTE:

The T272X is shipped with Holder A, the blade retainer (safety clip), Holder B, shaft bolt, and bolt guard installed. The shaft bolt is a LEFT-HAND thread. Remove it by turning CLOCKWISE!

1. With the gearcase output shaft facing up, rotate the gearshaft and holder A until the hole in holder A aligns with the matching hole in the gearcase flange, and then lock the holder to the gearcase by inserting the long end of the hex wrench through both holes. See Figure 11-A.
2. Using the combination spark plug/screwdriver wrench, remove the shaft bolt, bolt guard, holder B and the safety clip. (The bolt guard, shaft bolt and safety clip are not used with a trimmer head). See Figure 11-A.
3. Install Holder B on the gearcase shaft. The splined hole on Holder B must engage with the gearcase shaft.
4. Using the hex wrench to secure Holder A, install and hand-tighten the trimmer head (counter-clockwise to install). See Figure 11-B.
5. Remove the hex wrench from the gearcase and holder.

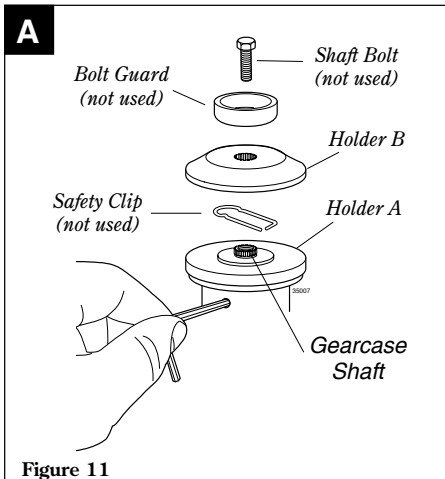
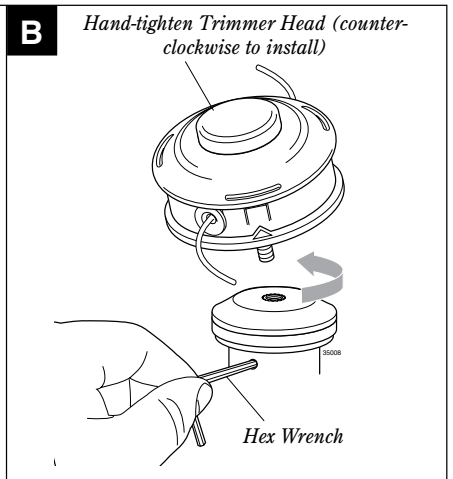


Figure 11



### WARNING!

A standard grass trimmer unit with loop handle should NEVER be operated with blade-type attachments. For blade use, the trimmer must be fitted with a bicycle-type handlebar or barrier bar that is located in front of the operator to reduce the risk of the operator coming in contact with the cutting attachment. (Per ANSI B175.3). When using a blade, the unit must also be equipped with a harness or strap.

**The T272X should now be completely assembled and ready for use with a trimmer head.**



## Assembly and Adjustments Installing a Blade T272X

### NOTE:

The T272X is shipped with Holder "A," the safety clip, Holder "B," shaft bolt, and bolt guard installed. The shaft bolt is a LEFT-HAND THREAD AND IS REMOVED IN A CLOCKWISE ROTATION!

1. With the gearcase output shaft facing up, rotate the gearshaft and holder "A" until the hole in holder "A" aligns with the matching hole in the gearcase flange, and then lock the holder to the gearcase by inserting the long end of the hex wrench through both holes. See Figure 12.
2. Remove the shaft bolt, bolt guard and holder B. See Figure 12.
3. Slide the safety clip off center on the gearcase shaft. See Figure 12-A.
4. Slide the blade over the safety clip and onto the flange on Holder "A." See Figure 12-B
5. Lock the blade on the shaft by centering the safety clip. See Figure 12-C.

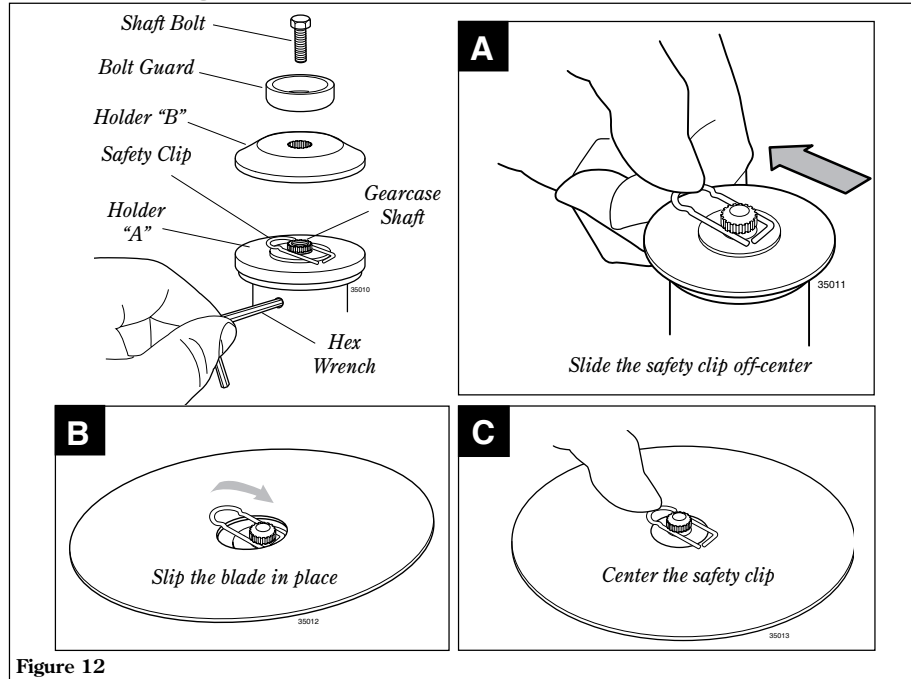


Figure 12

### CAUTION!

Install the blade so its printed surface is visible to the operator when the brushcutter is in the normal operating position.



### WARNING!

The blade must fit flat against the holder flange. The blade mounting hole must be centered over the raised boss on blade holder A.

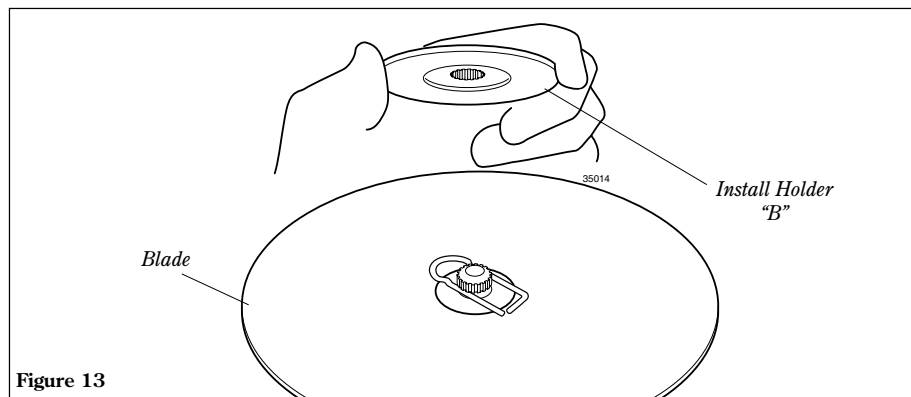


Figure 13

### NOTE:

When installing certain blades, it may be necessary to temporarily remove the safety clip.

6. Install Holder "B" on the gearcase shaft. See Figure 13.

### IMPORTANT!

The machined recess in Holder "B" must completely surround the safety clip, and both holders must be flat against the surface of the blade.

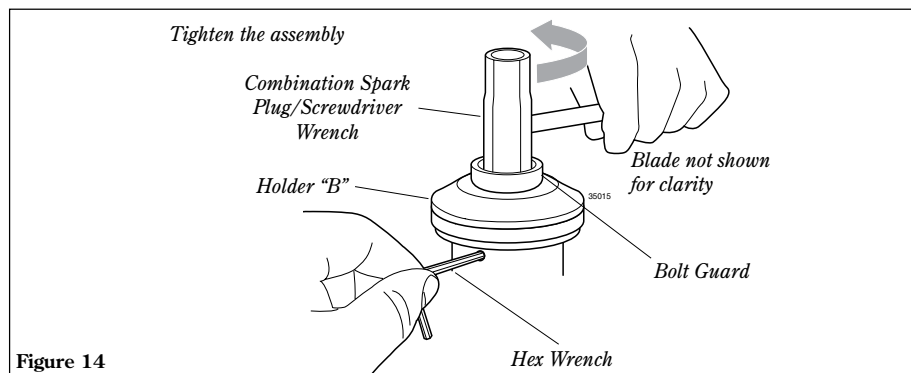


Figure 14



### WARNING!

Never operate the brushcutter without the safety clip installed and both holders tightly secured and flat against the blade surface!

The T272X should now be completely assembled to operate with a blade.



## Mixing Fuel

### CAUTION!

Some types of gasoline contain alcohol as an oxygenate. Oxygenated gasoline may cause increased operating temperatures. Under certain conditions, alcohol-based gasoline may also reduce the lubricating qualities of some 2-cycle mixing oils. Never use any type of gasoline containing more than 10% alcohol by volume! Generic oils and some outboard oils may not be intended for use in high-performance 2-cycle type engines, and should never be used in your Shindaiwa engine.

### CAUTION!

This engine is designed to operate on a 50:1 mixture consisting of unleaded gasoline and ISO-L-EGD or JASO FC class 2-cycle mixing oil only. Use of non-approved mixing oils can lead to excessive carbon deposits.

- Use only fresh, clean unleaded gasoline with a pump octane of 87 or higher.
- Mixed with 50:1 Shindaiwa ISO-L-EGD or JASO FC class 2-cycle mixing oil at a gasoline/ratio of 50:1 (1 gallon of gasoline to 2.6 ozs mixing oil). Shindaiwa One meets or exceeds these requirements.



Oil is a registered JASO FC classified oil and also meets or exceeds ISO-L-EGD performance requirements. Shindaiwa One is recommended for use in all Shindaiwa low emissions engines. Shindaiwa One also includes a fuel stabilizer.

### Examples of 50:1 mixing quantities

- 1 gallon of gasoline to 2.6 oz. mixing oil
- 5 liters of gasoline to 100 ml. mixing oil

### IMPORTANT!

Mix only enough fuel for your immediate needs! If fuel must be stored longer than 30 days and **Shindaiwa ONE** oil with fuel stabilizer is not used, it should first be treated with a fuel stabilizer such as StaBil™.

## Filling the Fuel Tank



### WARNING!

#### Minimize the risk of fire!

- ALWAYS stop the engine and allow it to cool before refueling. Avoid overfilling and wipe off any fuel that may have spilled.
- Wipe all spilled fuel and move the engine at least 10 feet (3 meters) from the fueling point and source before restarting!

- NEVER start or operate this unit if there is a fuel leak.
- NEVER start or operate this unit if the carburetor, fuel lines, fuel tank and/or fuel tank cap are damaged.
- Never smoke or light any fires near the engine or fuel source!
- Never place any flammable material near the engine muffler!
- Never operate the engine without the muffler and spark arrester in good working condition.

1. Place the unit on a flat, level surface.
2. Clear any dirt or other debris from around the fuel filler cap.
3. Remove the fuel cap, and fill the tank with clean, fresh fuel.
4. Reinstall the fuel filler cap and tighten firmly.

## Starting the Engine

### NOTE:

Engine ignition is controlled by a two-position on-off switch mounted on the throttle body. This switch is typically labeled "I" for ON and "O" for OFF.

#### IGNITION SWITCH ON

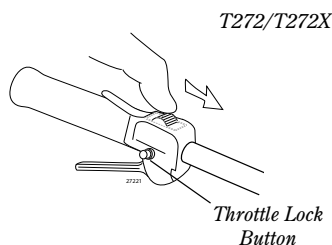


Figure 15

1. Slide the ignition switch to the "ON" position. See Figure 15.
2. Set the throttle lever to the "fast idle" position as follow:
  - a. Squeeze the throttle lever toward the handgrip on the shaft tube.
  - b. Depress and hold the throttle lock button.
  - c. While depressing the throttle lock button, release the throttle lever. See Figure 15.

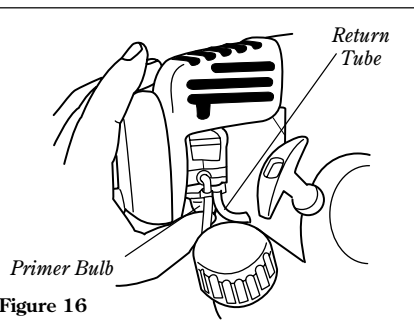


Figure 16

3. Press the primer bulb until fuel can be seen flowing in the transparent return tube. See Figure 16.

### IMPORTANT!

The primer system only pushes fuel through the carburetor. Repeatedly pressing the primer bulb will not flood the engine with fuel.

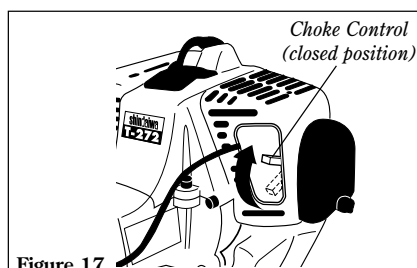


Figure 17

4. Set the choke lever to the CLOSED position if engine is cold. See Figure 17.

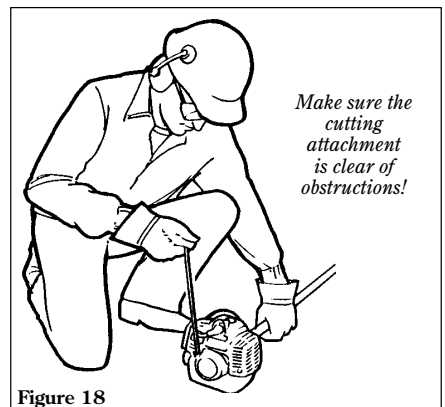


Figure 18

5. While holding the outer tube firmly with your left hand, use your right hand to pull the recoil starter handle until resistance is felt, then pull quickly to start the engine. See Figure 18.

### CAUTION!

Do not pull the recoil starter to the end of the rope travel. Pulling the recoil starter to the end of the rope travel can damage the starter.

## Starting the Engine (continued)



### WARNING!

The cutting attachment may rotate when the engine is started!

- When the engine starts, slowly move the choke lever to the "OPEN" position. See Figure 19. (If the engine stops after the initial start, close the choke and restart.)

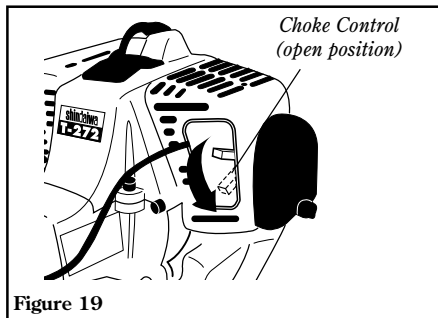


Figure 19



### WARNING!

Never start the engine from the operating position.

- Operating the throttle will automatically disengage the fast idle setting.

### IMPORTANT!

If the engine fails to start after several attempts with the choke in the closed position, the engine may be flooded with fuel. If flooding is suspected, move the choke lever to the open position and repeatedly pull the recoil starter to remove excess fuel and start the engine. If the engine still fails to start, refer to the troubleshooting section of this manual.

## When the Engine Starts

- After the engine starts, allow the engine to warm up at idle 2 or 3 minutes before operating the unit.
- After the engine is warm, pick up the unit and clip on the shoulder strap or harness if so equipped. See page 11.
- Advancing the throttle makes the cutting attachment turn faster; releasing the throttle permits the attachment to stop turning. If the cutting attachment continues to rotate when the engine returns to idle, carburetor idle speed should be adjusted (see below).

## Stopping the Engine

T272/T272X

IGNITION  
SWITCH  
OFF

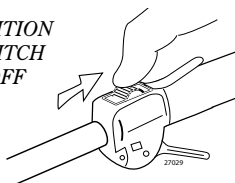


Figure 20

Idle the engine briefly before stopping (about 2 minutes), then slide the ignition switch to the "O" (OFF) position. See Figure 20.

## Engine Idle Adjustment

The engine must return to idle speed whenever the throttle lever is released. Idle speed is adjustable, and must be set low enough to permit the engine clutch to disengage the cutting attachment when the throttle is released.

### Idle Speed Adjustment



### WARNING!

The cutting attachment must NEVER rotate at engine idle! If the idle speed cannot be adjusted by the procedure described here, have the unit inspected at an authorized Shindaiwa dealer.

- Place the unit on the ground, then start the engine and allow it to idle for 2-3 minutes until warm.

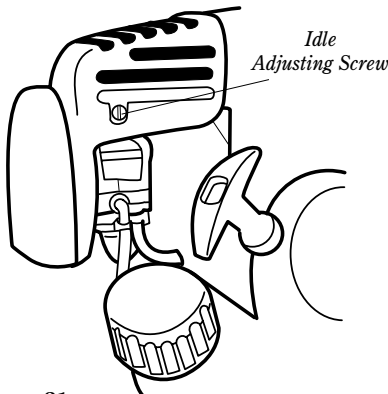


Figure 21

- If the attachment rotates when the engine is at idle, reduce the idle speed by turning the idle adjustment screw counter-clockwise. See Figure 21.

- If a tachometer is available, the engine idle speed should be final adjusted to 3,000 ( $\pm 250$ ) rpm ( $\text{min}^{-1}$ ).

### NOTE:

Carburetor fuel mixture adjustments are pre-set at factory on units with emission control systems and cannot be serviced in the field.

## Check Unit Condition

**NEVER** operate the unit with the cutting attachment shield or other protective devices (harness, ignition switch, blade retention clip, etc.) removed!



### WARNING!

A cutting attachment shield or other protective device is no guarantee of protection against thrown objects. **YOU MUST ALWAYS GUARD AGAINST FLYING DEBRIS!**

Use only authorized Shindaiwa parts and accessories with your Shindaiwa trimmer or brushcutter. Do not make modifications to the unit without the written approval of Shindaiwa, Inc.

**ALWAYS** make sure the cutting attachment is properly installed and firmly tightened before operation.

**NEVER** use a cracked or warped cutting attachment: replace it with a serviceable one.

**ALWAYS** make sure the cutting attachment fits properly into the appropriate cutter holder. If a properly installed attachment vibrates, replace the attachment with a new one and re-check.

**ALWAYS** stop the engine immediately and check for damage if you strike a foreign object or if the unit becomes tangled. Do not operate with broken or damaged equipment.

**NEVER** allow the engine to operate at high RPM's without a load. Doing so could damage the engine.

**NEVER** operate a unit with worn or damaged fasteners or attachment holders.

**NEVER** cut with dull blades. Doing so will increase the risk of blade thrust and may also damage your equipment.

## Shoulder Strap T272X

### IMPORTANT!

Adjust the shoulder strap or harness so the shoulder pad rests comfortably on the off-side shoulder and the cutting path of the cutting attachment is parallel to the ground. Make sure all hooks and adjustment devices are secure.

### T272

#### NOTE:

Although a shoulder strap accessory is not required for use with a grass trimmer, a shoulder strap can increase operator comfort during extended periods of operation.

*Shoulder Strap  
recommended for  
use with grass  
trimmers*



Figure 22

## Using a T272X with a Blade



### WARNING!

Always wear a shoulder strap when operating this unit with a blade. A shoulder strap is also recommended when using trimmer line.

#### NOTE:

Using a shoulder strap when operating this unit with a blade allows you to maintain proper control of the unit and reduces fatigue during extended operation.

## Cutting Grass—Units Equipped with a Trimmer Head

Your Shindaiwa T272 or T272X Grass Trimmer may be equipped with one of several Shindaiwa trimmer head models, each with features for specific applications and/or operational requirements.

For proper operation, always refer to the instructions accompanying the trimmer head being used. Available trimmer head styles include:

- **Semi-automatic.** Trimmer line is indexed when the operator taps the trimmer head on the ground during operation.
- **Manual.** The operator indexes line manually while the grass trimmer is stopped.
- **Fixed.** The operator must stop the unit and add new lengths of trimmer line manually.
- **Flail.** This device, designed for clearing weeds and light brush, features three nylon blades attached to the head by pivots.

### CAUTION!

Do not push the rotating line into trees, wire fences or any material that could tangle or break line ends.

### Engine Operating Speeds

Operate the unit at full throttle while cutting grass.



### WARNING!

Operation at low rpm ( $\text{min}^{-1}$ ) can lead to premature clutch failure.

### Trimming and Mowing Grass



Figure 23

Hold the grass trimmer so the trimmer head is angled slightly into the area to be cut. To ensure maximum trimmer-line service life, cut only with the tip of the trimmer line. Cut grass by swinging the unit's trimmer head from left to right. Keep the trimmer head horizontal. See Figure 23.

### Edging

Tilt the handle about  $100^\circ$  to the right (from horizontal) and move forward, holding the trimmer vertical as shown in Figure 24.



Figure 24

## Using A Brushcutter Blade T272X



### WARNING!

- Before working with a blade-equipped unit, always inspect and clean the area of objects that could interfere with or damage the blade.
- Never use a blade near sidewalks, fence posts, buildings or other objects that could cause injury or damage.
- Never use a blade for purposes other than those for which it was designed.
- Whenever you strike a hard object with a blade, always stop the brushcutter and carefully inspect the blade for damage. **NEVER OPERATE THE UNIT WITH A DAMAGED BLADE!**
- A blade-equipped unit must be equipped with a bicycle-type handlebar or barrier bar as well as a harness or shoulder strap.
- Always make sure the cutting attachment shield is properly installed before operating this unit.

The blade rotates counter-clockwise. For best performance and to minimize being stuck by debris, move the blade from right to left while advancing on your work.

Position the blade so cuts are made between the blade's 7 o'clock and 11 o'clock positions (as viewed from above). **DO NOT** cut between the 11 o'clock and 5 o'clock positions. See Figure 25.

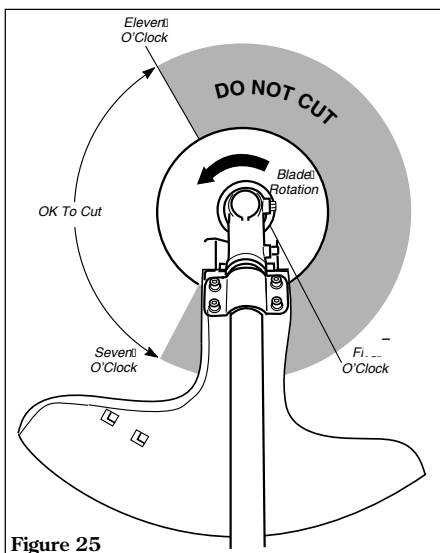


Figure 25

### Blade Thrust

'Blade thrust' is a sudden sideways or backward motion of the brushcutter. Such motion may occur when the blade jams or catches on an object such as a sapling tree or tree stump. **BE CONSTANTLY ALERT FOR BLADE THRUST AND GUARD AGAINST ITS EFFECTS!**

### Brushcutter Handlebar



### WARNING!

- When cutting wood with a blade, feed the blade slowly.  
***Never strike or "slam" the spinning blade against the wood.***
- **DO NOT** use 2-tooth or non-Shindaiwa approved 4-tooth cutting blades with Shindaiwa trimmers and brushcutters.

A brushcutter's handlebar helps prevent the operator from moving forward or the unit moving rearward; thus preventing inadvertent bodily contact with the blade. **ALWAYS KEEP THE HANDLEBAR SECURELY IN PLACE ON THE UNIT!**

### Shoulder Strap

A shoulder strap provides additional protection against blade thrust. Plus, a shoulder strap gives significant support and comfort to help ensure safe and efficient operation.

When operating a blade equipped trimmer, make sure the shoulder strap is adjusted properly to the operator using the unit.

### Engine Operating Speeds

Operate the unit at full throttle while cutting. Best fuel efficiency is obtained by releasing the throttle when swinging back after a cut.

- To prevent possible engine damage, do not allow the brushcutter to operate at high speeds without a load.
- Avoid cutting at low engine speeds. Doing so can lead to rapid clutch wear. In addition, slow-speed operation tends to cause grass and debris to wrap around the cutting attachment.

### Vertical cuts

Hold the trimmer with the blade at a 90° angle to the ground so the blade's bottom edge rotates toward the operator. Move the blade from top to bottom through the cut, and cut *only* with the bottom edge of the blade. See Figure 25.



### WARNING!

When making vertical cuts, never allow the blade to exceed waist height.

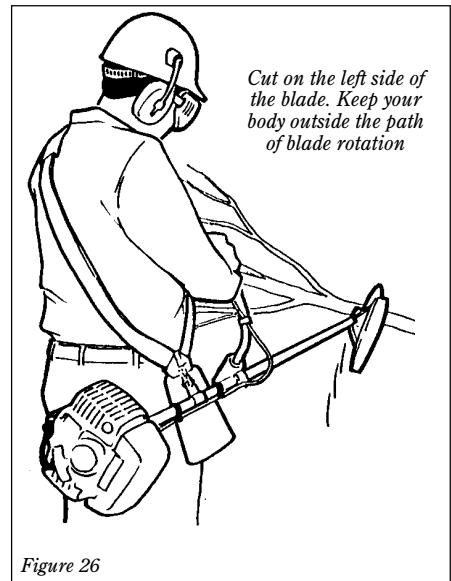


Figure 26

## General Maintenance

### IMPORTANT!

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 SHINDAIWA CORPORATION 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.



### WARNING!

Before performing any maintenance, repair or cleaning work on the unit, make sure the engine and cutting attachment are completely stopped. Disconnect the spark plug wire before performing service or maintenance work.



### WARNING!

Non-standard parts may not operate properly with your unit and may cause damage and lead to personal injury.

### NOTE:

Using non-standard replacement parts could invalidate your Shindaiwa warranty.

### Blades

Keep blades sharp and check blade condition frequently. If a blade's performance changes suddenly, stop the engine and check the blade for cracks or other damage. Replace a damaged blade IMMEDIATELY!



### WARNING!

- Never repair a damaged blade by welding, straightening, or by modifying its shape. An altered blade may break during operation, resulting in serious personal injury.
- DO NOT use 2-tooth or NON-Shindaiwa approved 4-tooth cutting blades on Shindaiwa trimmers or brushcutters.
- Blades are **not** interchangeable between Shindaiwa edgers and trimmer/brushcutter models. Operating any unit with a blade or attachment not approved for that unit can be hazardous and may cause serious injury.

### Spark Plug

Keep the spark plug and wire connections tight and clean.

### Fasteners

Make sure nuts, bolts, and screws (except carburetor adjusting screws) are tight.

## Daily Maintenance

Prior to each work day, perform the following:

- Check for loose or missing screws or components. Make sure the tool and cutting attachment are securely fastened.

- Check the entire unit for leaking fuel or grease.
- Remove dirt or debris from the engine, check the cooling fins and air cleaner for clogging and clean them as necessary.

- Carefully remove any accumulation of dirt or debris from the muffler or the fuel tank. Dirt build-up in these areas could cause the engine overheating, induce premature wear, or create a fire hazard.

## 10-Hour Maintenance

### Every 10 hours of operation

(more frequently in dusty or dirty conditions):

Remove the air cleaner element. See Figure 27. Clean or replace as necessary. To clean element: Wash it thoroughly in soap and water. Let it dry before reinstalling the element.

### CAUTION!

Do not operate the unit if the air cleaner or element is damaged, or if the element is wet.

*Remove and clean or replace the element*

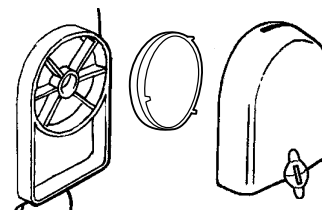


Figure 27

## 10/15-Hour Maintenance

### Every 10 to 15 hours of operation:

Remove and clean the spark plug. Adjust the spark plug electrode gap to 0.024-inch (0.6 mm). If the spark plug must be replaced, use only a Champion CJ8Y or equivalent spark plug of the correct heat range. (For electro magnetic compliance (EMC) use an NGK BMR6A resistor plug.) See Figure 27.

### CAUTION!

Before removing the spark plug, clean the area around the plug to prevent dirt and debris from getting into the internal engine parts.

0.024"  
(0.6mm)

*Clean the spark plug and check the gap at the electrode.*

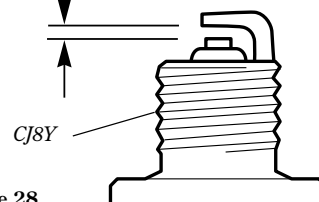
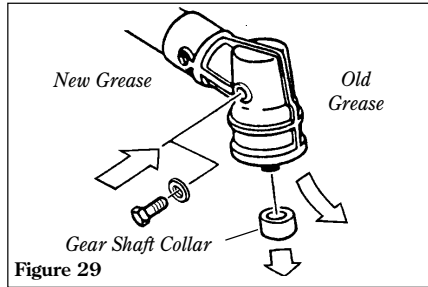


Figure 28

## 50-Hour Maintenance

**Every 50 hours of operation** (more frequently in dusty or dirty conditions):

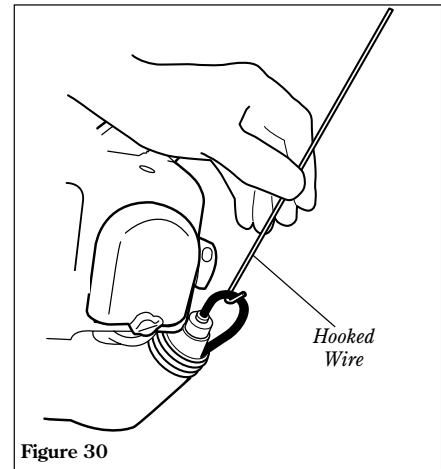
- Remove and clean the cylinder cover and clean grass and dirt from the cylinder fins.
- Remove the cutting attachment, cutting attachment holder and gear shaft collar. Remove the filler plug from the side of the gearcase and press new grease into the gearcase until the old grease is pushed out. Use only lithium-base grease such as Shindaiwa Gear Case Lubricant or equivalent. See Figure 29.



- Use a hooked wire to extract the fuel filter from inside the fuel tank. See Figure 30. Remove and replace the filter element. Before reinstalling the filter, inspect the condition of the fuel line. If damage or deterioration are noted, the unit should be removed from service until it can be inspected by a Shindaiwa-trained service technician.

### CAUTION!

Make sure you do not pierce the fuel line with the end of the hooked wire. The line is delicate and can be damaged easily.



## 135-Hour Maintenance

**Every 135 hours of operation**, remove and clean the muffler.



### WARNING!

Never operate this unit with a damaged or missing muffler or spark arrester! Operating with missing or damaged exhaust components is a fire hazard and could also damage your hearing.

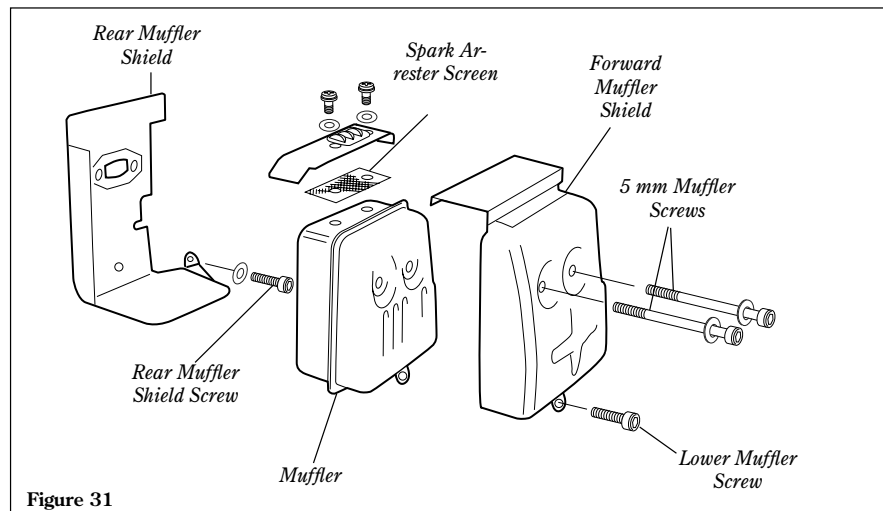
1. Remove the spark plug boot.
2. Remove the four 4 mm engine cover screws (two in the back and two in the front of the cover) and lift the cover from the engine.
3. Remove the two 5 mm muffler screws. Remove the lower muffler screw, then lift the muffler assembly from the engine.
4. Separate the muffler from the forward muffler shield, while observing the orientation of the components. See Figure 31.

5. Remove the spark arrester screen and clean with a stiff bristle brush.
6. Gently tap the muffler on a wood surface to dislodge any loose carbon.
7. Inspect the cylinder exhaust port for carbon buildup.

### IMPORTANT!

If you note excessive carbon buildup, consult with an authorized servicing dealer.

8. Reassemble the muffler in the reverse order of disassembly.




## Long Term Storage

Whenever the unit will not be used for 30 days or longer, use the following procedures to prepare it for storage:

- Clean external parts thoroughly.
- Drain all the fuel from the fuel tank.

### IMPORTANT!

All stored fuels should be stabilized with a fuel stabilizer such as STA-BIL™, if  oil with fuel stabilizer is not used.

To remove the remaining fuel from the fuel lines and carburetor and with the fuel drained from the fuel tank.

1. Prime the primer bulb until no more fuel is passing through.
2. Start and run the engine until stops running.
3. Repeat steps 1 and 2 until the engine will no longer start.

### CAUTION!

Gasoline stored in the carburetor for extended periods can cause hard starting and could also lead to increased service and maintenance costs.

- Remove the spark plug and pour about 1/4 ounce of 2-cycle mixing oil into the cylinder through the spark plug hole. Slowly pull the recoil starter 2 or 3 times so oil will evenly coat the interior of the engine. Reinstall the spark plug.
- Before storing the unit, repair or replace any worn or damaged parts.
- Remove the air cleaner element from the carburetor and clean it thoroughly with soap and water. Let dry before reinstalling the element.
- Store the unit in a clean, dust-free area.

## Blade Sharpening

When the blade's cutting edges become slightly dull, they can be resharpened with a few strokes of a file.

In order to keep the blade in balance, all cutting edges must be sharpened equally.

### Shindaiwa Tornado™ Blade

To sharpen the cutters on a Shindaiwa Tornado Blade, use a 7/32-inch round file. File the leading edge of each tooth to a razor edge. The top plate of each tooth should angle back 30°.



### WARNING!

Sharpen the cutting teeth only. DO NOT alter the contour of the blade in any way.

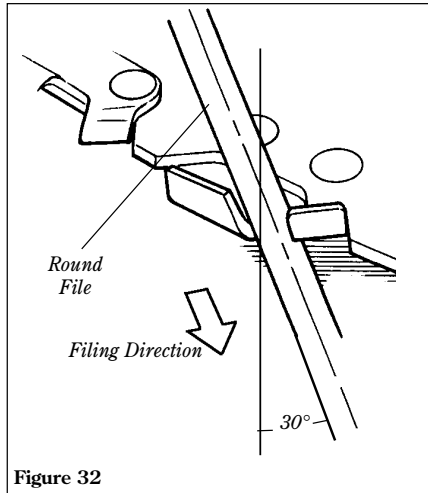


Figure 32

### Multiple-tooth Circular Blade

Use a round file to maintain a radius of 0.04 to 0.06" (1 to 1.5 mm) at the base of each tooth. Cutting edges must be offset equally on each side.

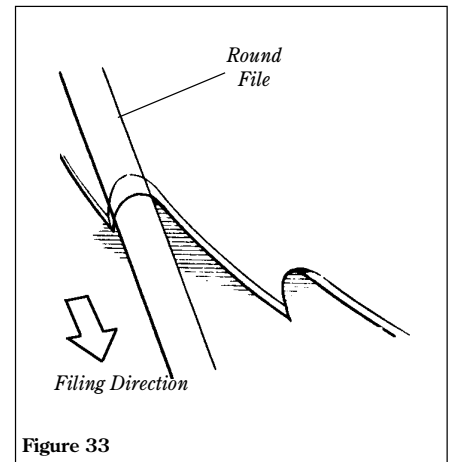


Figure 33



## Troubleshooting Guide

### ENGINE DOES NOT START

What To Check	Possible Cause	Remedy
Does the engine crank?	<b>NO</b> → Faulty recoil starter. Fluid in the crankcase. Internal damage.	Consult with an authorized servicing dealer.
<b>YES</b> ↓ Good compression?	<b>NO</b> → Loose spark plug. Excess wear on cylinder, piston, rings.	Tighten and re-test. Consult with an authorized servicing dealer.
<b>YES</b> ↓ Does the tank contain fresh fuel of the proper grade?	<b>NO</b> → Fuel incorrect, stale, or contaminated; mixture incorrect.	Refill with fresh, clean unleaded gasoline with a pump octane of 87 or higher mixed with 2-cycle air cooled mixing oil that meets or exceeds ISO-L-EGD and/or JASO FC classified oils at a 50:1 gasoline/oil ratio.
<b>YES</b> ↓ Is fuel visible and moving in the return line when priming?	<b>NO</b> → Check for clogged fuel filter and/or vent.	Clean as required; restart.
<b>YES</b> ↓ Is there spark at the spark plug wire terminal?	<b>NO</b> → The ignition switch is in "O" (OFF) position. Shorted ignition ground. Faulty ignition unit.	Move switch to "I" (ON) position and re-start. Consult with an authorized servicing dealer.
<b>YES</b> ↓ Check the spark plug.	If the plug is wet, excess fuel may be in the cylinder.  The plug is fouled or improperly gapped.  The plug is damaged internally or of the wrong size.	Crank the engine with the plug removed, reinstall the spark plug, and re-start.  Clean and re-gap the spark plug to 0.024 inch (0.6 mm). Re-start.  Replace the spark plug with a Champion CJ8Y or equivalent spark plug of the correct heat range. Adjust the spark plug electrode gap to 0.024-inch (0.6 mm).

## Troubleshooting Guide (continued)

### LOW POWER OUTPUT

What To Check	Possible Cause	Remedy
Is the engine overheating?	Operator is overworking the unit.	Shorten trimmer line. Cut at a slower rate.
	Carburetor mixture is too lean.	Consult with an authorized servicing dealer.
	Improper fuel ratio.	Refill with fresh, clean unleaded gasoline with a pump octane of 87 or higher mixed with 2-cycle air cooled mixing oil that meets or exceeds ISO-L-EGD and/or JASO FC classified oils at a 50:1 gasoline/oil ratio.
	Fan, fan cover, cylinder fins dirty or damaged.	Clean, repair or replace as necessary.
	Carbon deposits on the piston or in the muffler.	Consult with an authorized servicing dealer.
Engine is rough at all speeds. May also have black smoke and/or unburned fuel at the exhaust.	Clogged air cleaner element.	Service the air cleaner.
	Loose or damaged spark plug.	Tighten or replace. Replace the spark plug with a Champion CJ8Y or equivalent spark plug of the correct heat range. Adjust the spark plug electrode gap to 0.024-inch (0.6 mm).
	Air leakage or clogged fuel line.	Repair or replace fuel filter and/or fuel line.
	Water in the fuel.	Refill with fresh, clean unleaded gasoline with a pump octane of 87 or higher mixed with 2-cycle air cooled mixing oil that meets or exceeds ISO-L-EGD and/or JASO FC classified oils at a 50:1 gasoline/oil ratio.
	Piston seizure.	Consult with an authorized servicing dealer.
	Faulty carburetor and/or diaphragm.	Consult with an authorized servicing dealer.
Engine is knocking.	Overheating condition.	See above.
	Improper fuel.	Check fuel octane rating; check for presence of alcohol in the fuel (pg. 9). Refuel as necessary.
	Carbon deposits in the combustion chamber.	Consult with an authorized servicing dealer.

## Troubleshooting Guide (continued)

ADDITIONAL PROBLEMS		
Symptom	Possible Cause	Remedy
<div>Poor acceleration.</div>	Clogged air cleaner element.	Clean the air cleaner element.
	Clogged fuel filter.	Replace the fuel filter.
	Carburetor mixture too lean.	Consult with an authorized servicing dealer.
	Idle speed set too low.	Adjust: 3,000 ( $\pm 250$ ) rpm ( $\text{min}^{-1}$ )
<div>Engine stops abruptly.</div>	Switch turned off.	Reset the switch and re-start.
	Fuel tank empty.	Refuel.
	Clogged fuel filter.	Replace filter.
	Water in the fuel.	Refill with fresh, clean unleaded gasoline with a pump octane of 87 or higher mixed with 2-cycle air cooled mixing oil that meets or exceeds ISO-L-EGD and/or JASO FC classified oils at a 50:1 gasoline/oil ratio.
	Shorted spark plug or loose terminal.	Clean and replace spark plug, tighten the terminal.
	Ignition failure.	Consult with an authorized servicing dealer.
<div>Engine difficult to shut off.</div>	Piston seizure.	Consult with an authorized servicing dealer.
	Ground (stop) wire is disconnected, or switch is defective.	Test and replace as required.
	Overheating due to incorrect spark plug.	Replace the spark plug with a Champion CJ8Y or equivalent spark plug of the correct heat range. Adjust the spark plug electrode gap to 0.024-inch (0.6 mm).
	Overheated engine.	Idle engine until cool.
<div>Cutting attachment moves at engine idle.</div>	Engine idle too high.	Set idle: 3,000 ( $\pm 250$ ) rpm ( $\text{min}^{-1}$ )
	Broken clutch spring or worn clutch spring boss.	Replace spring/shoes as required, check idle speed.
<div>Excessive vibration.</div>	Warped or damaged cutting attachment.	Inspect and replace as necessary.
	Loose coupler.	Tighten coupler securely.
	Bent main shaft/worn or damaged bushings.	Inspect and replace as necessary.

*The following statement only applies to United States and its territories*

## **Shindaiwa Corporation**

### **Federal Emission Design And Defect Limited Warranty Utility And Lawn And Garden Engines**

Shindaiwa Corporation warrants to the initial purchaser and each subsequent owner, that this utility equipment engine (herein engine) is designed, built and equipped to conform at the time of initial sale, to all applicable regulations of the U.S. Environmental Protection Agency (EPA), and that the engine is free of defects in materials and workmanship that would cause this engine to fail to conform with EPA regulations during its warranty period. This emission warranty is applicable in all States, except the State of California.

For parts listed under PARTS COVERED, the dealer authorized by Shindaiwa Corporation will, at no cost to you, make the necessary diagnosis, repair, or replacement of any defective emission-related component to ensure that the engine complies with applicable U.S. EPA regulations.

#### **MANUFACTURERS WARRANTY COVERAGE**

When sold within the U.S., this engine's emission control system is warranted for a period of two (2) years from the date this product is first delivered to the original retail purchaser.

#### **OWNER'S WARRANTY RESPONSIBILITIES**

As the engine owner, you are responsible for the performance of the required maintenance listed in your owner's manual. Shindaiwa Corporation recommends that you retain all receipts covering maintenance on your engine, but Shindaiwa Corporation cannot deny a warranty claim solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

As the engine owner, you should however be aware that Shindaiwa Corporation may deny your warranty coverage if your engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications. You are responsible for presenting your engine to the nearest dealer authorized by Shindaiwa Corporation when a problem exists.

If your Shindaiwa Dealer is unable to answer questions regarding your warranty rights and responsibilities, you should then contact your Shindaiwa Distributor.

For the name and telephone number of the Shindaiwa Distributor in your area, please call Shindaiwa Inc. at (503) 692-3070 between the hours of 8:00 AM and 5:00 PM Pacific Standard Time.

#### **PARTS COVERED**

Listed below are the parts covered by the Federal Emission Design and Defect Warranty. Some parts listed below may require scheduled maintenance and are warranted up to the first scheduled replacement of that part. The warranted parts include:

1. Carburetor Internal Components
  - Valve Assembly-throttle, Jet, Metering Diaphragm
2. Ignition System Components
  - Ignition Coil
  - Flywheel Rotor

The emission control system for your particular Shindaiwa engine may also include certain related hoses and connectors.

#### **LIMITATIONS**

The Federal Emission Design and Defect Warranty shall not cover any of the following:

- (a) conditions resulting from tampering, misuse, improper adjustment (unless they were made by the dealer or service center authorized by Shindaiwa Corporation during a warranty repair), alteration, accident, failure to use the recommended fuel and oil, or not performing required maintenance services,
- (b) the replacement parts used for required maintenance services,
- (c) consequential parts used for required maintenance services,
- (d) diagnosis and inspection fees that do not result in eligible warranty service being performed, and
- (e) any non-authorized replacement part, or malfunction of authorized parts due to use of non-authorized parts.

#### **MAINTENANCE AND REPAIR REQUIREMENTS**

You are responsible for the proper use and maintenance of the engine. You should keep all receipts and maintenance records covering the performance of regular maintenance in the event questions arise. These receipts and maintenance records should be transferred to each subsequent owner of the engine. Shindaiwa Corporation reserves the right to deny warranty coverage if the owner has not properly maintained the engine. Shindaiwa Corporation will not deny warranty repairs, however, solely because of the lack of repair, maintenance or failure to keep maintenance records.

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 SHINDAIWA CORPORATION 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.

If other than the parts authorized by Shindaiwa Corporation are used for maintenance replacements or for the repair of components affecting emission control, you should assure yourself that such parts are warranted by their manufacturer to be equivalent to the parts authorized by Shindaiwa Corporation in their performance and durability.

#### **OBTAINING WARRANTY SERVICE**

All repairs qualifying under this limited warranty must be performed by a dealer authorized by Shindaiwa Corporation

If any emission-related part is found defective during the warranty period, it is your responsibility to present the product to an authorized Shindaiwa dealer. Bring your sales receipts showing the date of purchase for this engine. The dealer authorized by Shindaiwa Corporation will perform the necessary repairs or adjustments within a reasonable amount of time and furnish you with a copy of the repair order. All parts and accessories replaced under this warranty become the property of Shindaiwa Corporation. To locate an authorized Shindaiwa dealer near you, contact your Shindaiwa Distributor. For the name and telephone number of the Shindaiwa Distributor in your area, please call Shindaiwa Inc. at (503) 692-3070 between the hours of 8:00 AM and 5:00 PM Pacific Standard Time.

#### **THIS WARRANTY IS ADMINISTERED BY**

Shindaiwa Inc.  
11975 S.W. Herman Rd.  
Tualatin OR. 97062  
(503) 692-3070

## This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

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Specifications subject to change without notice.