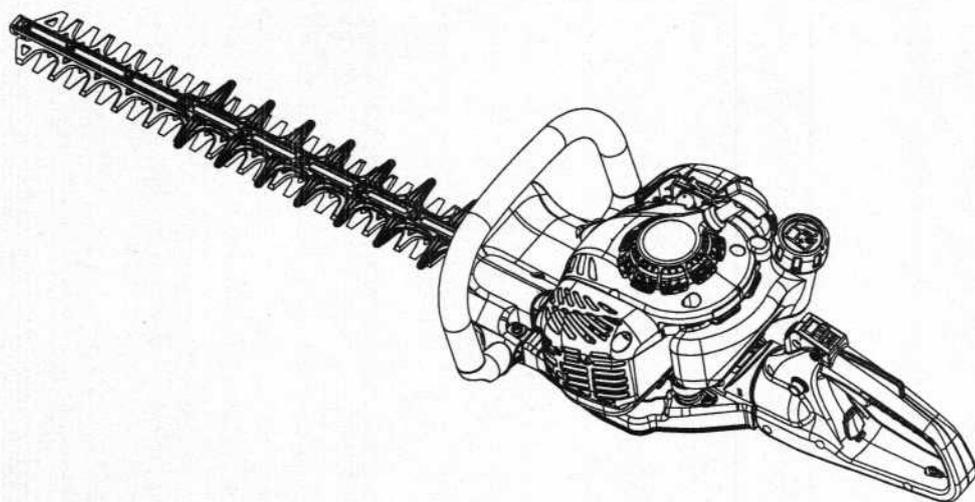


SHINDAIWA OWNER'S/OPERATOR'S MANUAL

DH235 HEDGE 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.

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shindaiwa[®]

Introduction

The Shindaiwa DH235 Hedge Trimmer 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 air-cooled engine technology, delivering exceptionally high power at remarkable 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 DH235 hedge trimmer and what is described here.

ECHO 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.

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 DH235 hedge trimmer, or if you do not understand something in this manual, your Shindaiwa dealer will be glad to assist you. You may also contact Shindaiwa at the address printed on the back of this manual.

Attention Statements



DANGER!

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



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 avoid damaging your unit.

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 understand owner's manual.



Wear eyes, ears and head protection.



Wear foot protection and gloves



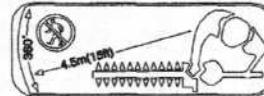
Finger severing.



Do not operate without guards in place.



Beware of high temperature areas.



Keep bystanders at least 4.5 meters (15 feet) away.



LOOK BEFORE YOU PUMP!

Ethanol Percentage

0% - 10% | 15% - 30% - 50% - 85%

USE E10 OR LESS FUEL

Do not use any fuel containing greater than 10 percent ethanol (E10) in this equipment. It may cause damage or failure and is prohibited by Federal Law.

For Details, see the "Fuel" Section of your Operators Manual

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General Safety Instructions

Work Safely

Shindaiwa hedge trimmers 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!



WARNING!

Never make unauthorized attachment installations.

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 judgement.



WARNING!

Minimize the Risk of Fire!

ALWAYS check unit for fuel leaks before use. Check for leaks around fuel tank cap while refueling. If fuel leaks are found immediately stop using the unit. Fuel leaks must be repaired before using unit.

ALWAYS move the unit to a place well away from a fuel storage area or other readily flammable materials before starting the engine.



WARNING!

The ignition components of this machine generate an electromagnetic field during operation which may interfere with some pacemakers. To reduce the risk of serious or fatal injury, persons with pacemakers should consult with their physician and the pacemaker manufacturer before operating this machine. In the absence of such information, ECHO does not recommend the use of Shindaiwa products by anyone who has a pacemaker.

WORK SAFELY!

Always wear close-fitting clothing. Gloves offer added protection and are strongly recommended. Do not wear clothing or jewelry that could get caught in machinery.

Never allow children to use the unit. Avoid operating near bystanders.

Always wear eye, ear, head, and hand protection while operating this unit!

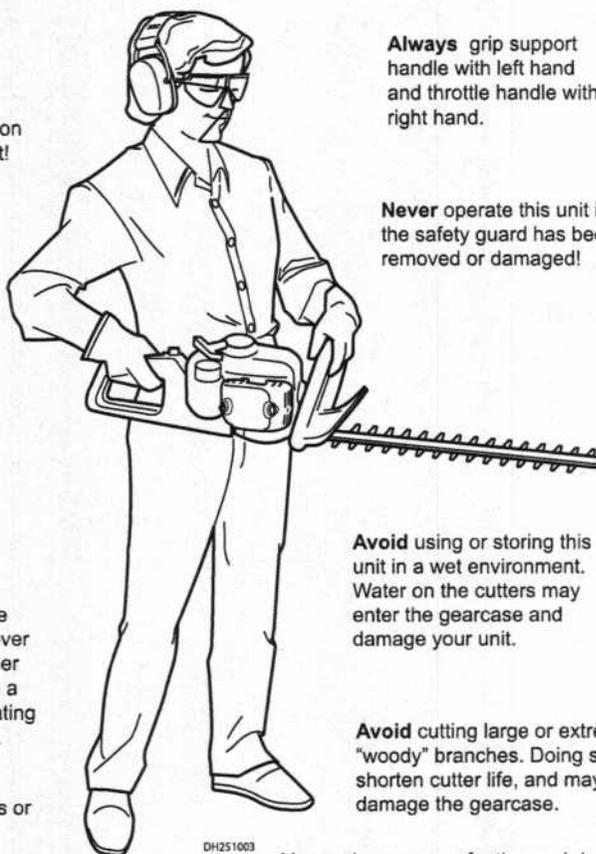
Always stop the engine before removing branches or debris from the cutters! Never allow the cutters to contact buildings or other hard objects!

Always stop the engine and install the blade cover before moving to another work site, and maintain a firm footing while operating or carrying the trimmer.

Never cut metal objects or wire with the blade.

Use extreme caution when operating near fences or electric wiring.

Figure 1



Always grip support handle with left hand and throttle handle with right hand.

Never operate this unit if the safety guard has been removed or damaged!

Avoid using or storing this unit in a wet environment. Water on the cutters may enter the gearcase and damage your unit.

Avoid cutting large or extremely "woody" branches. Doing so can shorten cutter life, and may also damage the gearcase.

Always keep proper footing and do not overreach. Maintain your balance at all times during operation.

DH251003

Operating Precautions

- Never transport the hedge trimmer or leave it unattended with the engine running. An engine that's running could be accidentally accelerated causing the blades to oscillate.
- Make sure that the blade cover is in place when transporting or storing the hedge trimmer.
- Always make sure that the cutter attachment and all handles and guards are properly installed and firmly tightened before operation.
- Inspect for broken, missing or improperly installed parts or attachments.
- Never use a cracked or warped cutter or cutter bar: replace it with a serviceable one and make sure it fits properly.
- Make sure there are no missing or loose fasteners, and that the stop switch and throttle controls are working properly.
- Make sure there is always good ventilation when operating the hedge trimmer. Fumes from engine exhaust can cause serious injury or death. Never run the engine indoors!



WARNING!

- Never smoke or light fires near the hedge trimmer. Keep the unit away from excessive heat. Engine fuel is very flammable and fire could lead to serious personal injury or property damage.
- Make sure the cutters are correctly adjusted before operating the hedge trimmer (see the section "Blades" for cutter adjustment procedures). Never attempt cutter adjustment with the engine running!
- Before starting the engine, make sure the cutter is not contacting anything.
- Always confirm safe operation when using the machine.
- Immediately stop the engine with the stop switch if the machine suddenly begins to vibrate or shake.
- Always stop the engine immediately and check for damage if you strike a foreign object or if the machine becomes tangled. Do not operate with broken or damaged equipment.
- When cutting a branch that is under tension, be alert for spring-back so that you will not be struck by the moving branch.
- If a cutter should bind fast in a cut, shut off the engine immediately. Push the branch or tree to ease the bind and free the cutter.
- Always stop the engine and allow it to cool before refueling. Avoid overfilling and wipe off any fuel that may have spilled.
- To reduce fire hazard, keep the engine and muffler free of debris, leaves, or excessive grease
- Keep a Solid Stance. Maintain footing and balance at all times. Do not stand on slippery, uneven or unstable surfaces. Do not work in odd positions or on ladders. Do not over reach.



WARNING!

Hedge Trimmer blades are very sharp. Touching them may lead to severe personal injury. Avoid touching blades whenever possible, and always wear gloves to protect hands

CAUTION!

- Always maintain the hedge trimmer according to this owner's manual and follow the recommended scheduled maintenance.
- Never modify or disable any of the hedge trimmer's safety devices. Doing so may cause damage and lead to personal injury
- Always use genuine Shindaiwa parts and accessories when repairing or maintaining this machine.
- Do not make unauthorized modifications to the hedge trimmer or its components.
- Keep the cutters sharp and properly adjusted.
- Never allow the engine to run at high without a load. Doing so could damage the engine.
- When transporting the hedge trimmer in a vehicle, tie it down securely to prevent fuel spillage or damage to the machine.
- Always stop the engine and allow it to cool before refueling. Avoid overfilling and wipe off any fuel that may have spilled.
- Never place flammable material close to the engine muffler and never run the engine without the spark arrestor screen in place.
- Always clear your work area of trash or hidden debris to help ensure good footing.
- Keep the hedge trimmer as clean as possible. Keep it free of loose vegetation, mud, etc.



WARNING!

Inspect support and throttle handles for damaged or loose attachments before use. **NEVER** operate a hedge trimmer with damaged or loose handles.

Safety Equipment and Labels

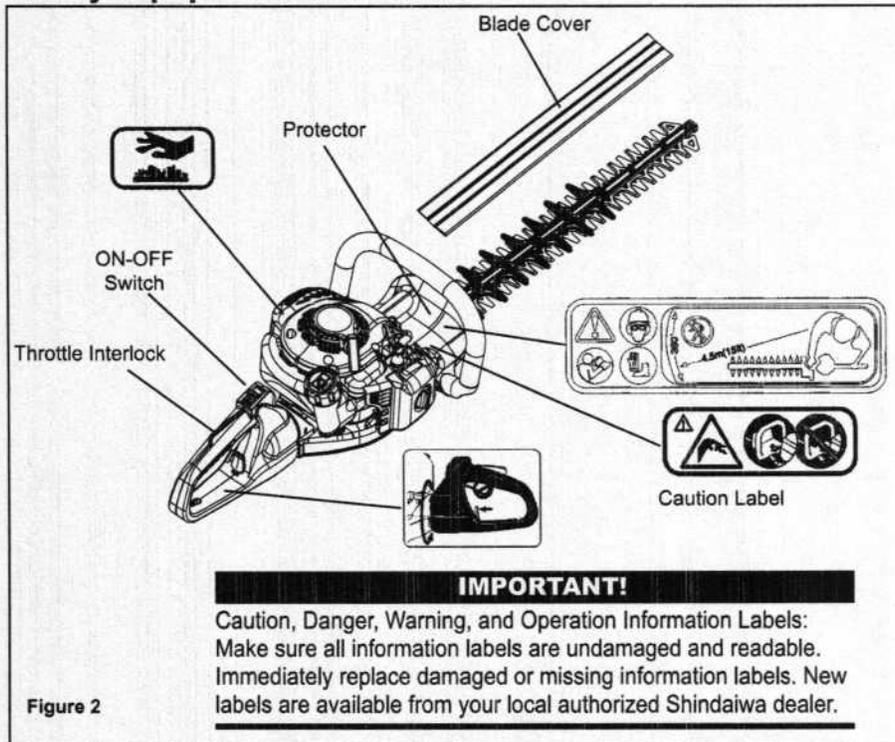


Figure 2

Specifications

Model	DH235
Engine Type	2-cycle, horizontal cylinder, air cooled
Engine Bore x Stroke	32.2mm x 26mm (1.27 x 1.02 in)
Engine Displacement	21.2cc (1.29 in ³)
Unit Weight, Less Fuel	4.97 kg (11.0 lb)
Unit Dimensions (LxWxH)	1194 x 272 x 195 mm (47.0 x 10.7 x 7.7 in)
Fuel Tank Capacity	0.37 liter/ 12.5 oz.
Fuel/oil ratio	50:1 with *ISO-L-EGD or JASO FD class engine Oil
Carburetor	Diaphragm type
Ignition	Fully electronic, CDI controlled
Spark Plug	NGK BPM8Y
<i>Electrode Gap</i>	0.6 mm/ 0.024 in.
<i>Torque</i>	16.7 - 18.6 N·m / 148-165 in·lbf
Air Cleaner	Dry element
Muffler Type	Spark arrestor muffler or spark arrestor muffler with catalyst
Starting Method	Recoil type
Stopping Method	Slide switch, grounding type
Blade Length	710 mm (27.9 in)
Cutting Length	624 mm (24.5 in)
Blade Type	Double-blade cutting action: double edged blade
Clutch Type	Centrifugal clutch, dry-type
Gear Type	Spur gears
Gear Lubrication	Lithium-based grease
Standard Equipment	Throttle handle with integral controls, anti-vibe mountings, support handle with guard, spark plug wrench and blade cover
Engine Speed	3,300 RPM
Clutch Engagement Speed	4,700 RPM
Wide Open Throttle Speed (W.O.T.)	10,850 RPM

Specifications are subject to change without notice.

Emission Control (Exhaust & Evaporative)

EPA 2010 and Later and/or C.A.R.B. TIER III

The emission control system for the engine is EM (engine modification) and, if the second to last character of the Engine Family on the Emission Control Information label (sample below) is "C", "K", or "T", the emission control system is EM and TWC (3-way catalyst). The fuel tank/fuel line emission control system is EVAP (evaporative emissions). Evaporative emissions for California models are only applicable to fuel tanks.



An Emission Control Label is located on the engine. (This is an EXAMPLE ONLY; information on label varies by engine FAMILY).

PRODUCT EMISSION DURABILITY (EMISSION COMPLIANCE PERIOD)

The 50 or 300 hour emission compliance period is the time span selected by the manufacturer certifying the engine emissions output meets applicable emissions regulations, provided that approved maintenance procedures are followed as listed in the Maintenance Section of this manual.

Unit Description

Familiarize yourself with your machine and its various components. Understanding your machine helps ensure top performance, long service life, and safer operation.

Prior to use

Before using this product, please make sure you have all the components required for a complete unit:

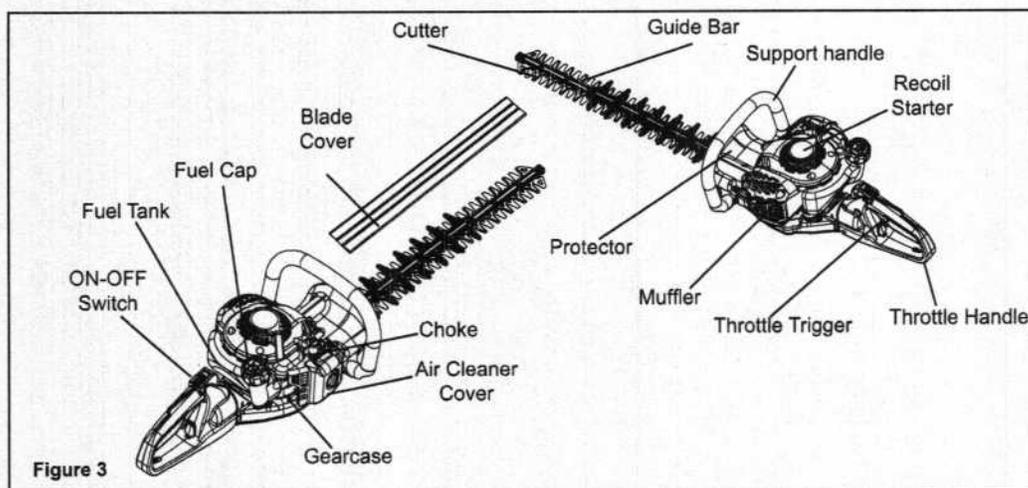
- Engine assembly and gearcase/cutter assembly
- Operator's Manual
- Blade Cover
- Emission Control Warranty Statement

Carefully inspect all components for damage.



WARNING!

Do not make unauthorized modifications or alterations to this machine or any of its components or accessories.



Mixing Fuel



WARNING!

Alternative fuels, such as E15 (15% ethanol), E-85 (85% ethanol) or any fuels not meeting Shindaiwa requirements are **NOT** approved for use in Shindaiwa gasoline engines. Use of alternative fuels may cause performance problems, loss of power, overheating, fuel vapor lock, and unintended machine operation, including, but not limited to, improper clutch engagement. Alternative fuels may also cause premature deterioration of fuel lines, gaskets, carburetors and other engine components.

Fuel Requirements

Gasoline - Use 89 Octane [R+M/2] (mid grade or higher) gasoline known to be good quality. Gasoline may contain up to 10% Ethanol (grain alcohol) or 15% MTBE (methyl tertiary-butyl ether). Gasoline containing methanol (wood alcohol) is **NOT** approved. Shindaiwa brand Power Fuel™ is 93 octane, ethanol-free fuel premixed with Shindaiwa Red Armor® engine oil at 50:1 ratio. Use of Shindaiwa Power Fuel™ is recommended to extend engine life in all air-cooled 2-stroke and 2/4-stroke hybrid engines.

2 Stroke Mixture Oil - A 2-stroke engine oil meeting ISO-L-EGD (ISO/CD 13738) and J.A.S.O. M345/FD standards must be used. Shindaiwa One™ 2-Stroke Oil is strongly recommended as it meets this standard and is specifically formulated for use in all Shindaiwa 2-stroke engines. Engine problems due to inadequate lubrication caused by failure to use an ISO-L-EGD (ISO/CD 13738) and J.A.S.O. M345/FD certified oil will void the engine warranty.

For increased engine protection, Shindaiwa recommends using Shindaiwa Red Armor™ engine oil to protect the engine from harmful carbon build up, maintain engine performance, and increase engine life. Shindaiwa Red Armor™ engine oil exceeds ISO-L-EGD and J.A.S.O. M345/FD performance requirements.

IMPORTANT!

Shindaiwa One™ 2-Stroke oil or Red Armor™ engine oil may be mixed at 50:1 ratio for application in all Shindaiwa engines sold in the past, regardless of ratio specified in those manuals.

IMPORTANT!

Stored fuel ages. Do not mix more fuel than you expect to use in thirty (30) days, ninety (90) days when a fuel stabilizer is added. Use of unmixed, improperly mixed, or stale fuel, may cause hard starting, poor performance, or severe engine damage and void the product warranty. Read and follow instructions in the Long Term Storage section of this manual.

Examples of 50:1 mixing quantities

Fuel to Oil Mix - 50:1 Ratio			
U.S.		METRIC	
GAS	OIL	GAS	OIL
Gallons	Fl. oz.	Liter	cc.
1	2.6	4	80
2	5.2	8	160
5	13	20	400

Handling Fuel



DANGER

Fuel is **VERY** flammable. Use extreme care when mixing, storing or handling or serious personal injury may result.

- Use an approved fuel container.
- **DO NOT** smoke near fuel.
- **DO NOT** allow flames or sparks near fuel.
- Fuel tanks/cans may be under pressure. Always loosen fuel caps slowly allowing pressure to equalize.
- **NEVER** refuel a unit when the engine is **HOT** or **RUNNING**!
- **DO NOT** fill fuel tanks indoors. **ALWAYS** fill fuel tanks outdoors over bare ground.
- **DO NOT** overfill fuel tank. Wipe up spills immediately.
- Securely tighten fuel tank cap and close fuel container after refueling.
- Inspect for fuel leakage. If fuel leakage is found, do not start or operate unit until leakage is repaired.
- Move at least 3m (10 ft.) from refueling location before starting the engine.

Mixing Instructions

1. Fill an approved fuel container with half of the required amount of gasoline.
2. Add the proper amount of engine oil to gasoline.
3. Close container and shake to mix oil with gasoline.
4. Add remaining gasoline, close fuel container, and remix.

IMPORTANT!

Spilled fuel is a leading cause of hydrocarbon emissions. Some states may require the use of automatic fuel shut-off containers to reduce fuel spillage.

After use

- DO NOT store a unit with fuel in its tank. Leaks can occur. Return unused fuel to an approved fuel storage container.

Storage - Fuel storage laws vary by locality. Contact your local government for the laws affecting your area. As a precaution, store fuel in an approved, airtight container. Store in a well-ventilated, unoccupied building, away from sparks and flames.

IMPORTANT!

Stored fuel may separate. ALWAYS shake fuel container thoroughly before each use.

Filling the Fuel Tank



WARNING!

Minimize the Risk of Fire

- NEVER smoke or light fires near the engine.
- ALWAYS stop the engine and allow it to cool before refueling.
- ALWAYS Wipe all spilled fuel and move at least 3 meters (10 feet) from the fueling point and source before starting.
- NEVER place flammable material close to the engine muffler.
- NEVER operate the engine without the muffler and spark arrester screen in place and in good working condition.

FUEL IS HIGHLY FLAMMABLE.

- ALWAYS store gasoline in a container approved for flammable liquids.
- ALWAYS inspect the unit for fuel leaks before each use. During each refill, check that no fuel leaks from around the fuel cap and/or fuel tank. If fuel leaks are evident, stop using the unit immediately. Fuel leaks must be repaired before using the unit.
- ALWAYS move the unit at least 3 meters (10 feet) away from a fuel storage area or other readily flammable materials before starting the engine.

1. Place the unit on a flat, level surface.
2. Clear any dirt or other debris from around the fuel filler cap.

CAUTION!

Slowly remove the fuel cap only after stopping the engine

3. Remove the fuel cap, and fill the tank with clean, fresh fuel.
4. Reinstall the fuel filler cap and tighten firmly.
5. Wipe away any spilled fuel before starting engine.

Starting Procedure

IMPORTANT!

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.



WARNING!

The attachment will operate immediately when the engine starts and could result in loss of control and possible serious injury. Keep movable parts of the attachment away from objects that could become entangled or thrown.



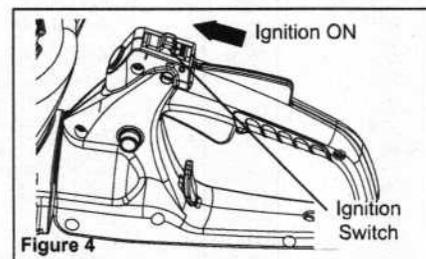
WARNING!

Never start the engine from the operating position. The cutting attachment will move when the engine accelerates!

NOTE:

The blade cover is used for transportation and storage. Remove blade cover before using the unit.

1. Move the ignition stop switch to the "I" or ON position. See Figure 4.



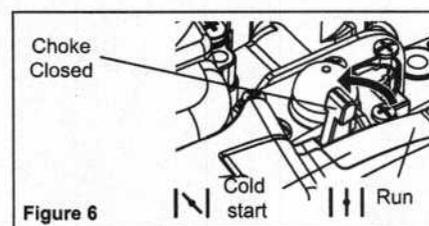
2. Prime the carburetor by repeatedly depressing the carburetor primer bulb until clear fuel can be seen flowing through the transparent primer bulb.

IMPORTANT!

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

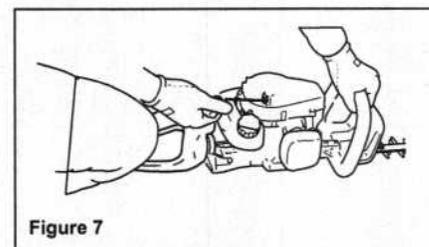


3. (Cold engine only) Choke the engine by moving the choke lever backward to the "closed" position. See Figure 6.



Cranking the Engine

1. Place the unit on the ground. Grip the support handle with your left hand and the starter handle with your right hand (shown).
2. After engine fires, move choke to the RUN (OPEN) position and restart engine if necessary.



CAUTION!

The recoil starter can be easily damaged by abuse!

- Always engage the starter before attempting to crank the engine.
- Never pull the starter cord to its full length.
- Always rewind the starter cord slowly.

When the motor starts...

1. Allow unit to warm up at idle for several minutes.

If the engine does not start

- Repeat the appropriate starting procedure for a cold or warm engine.
- If the engine still fails to start, use the procedures for "Starting a flooded engine."

WARNING!
The cutting attachment will move when the engine accelerates!

Starting a Flooded Engine

Starting A Flooded Engine

1. Slide the ignition switch to the "I" (ON) position.
2. Open the choke, put the throttle lever in the full throttle position, then clear excess fuel from the combustion chamber by cranking the engine several times.
3. If the engine still fails to start or fire, refer to the troubleshooting flow chart at the end of this manual.

Operation



WARNING!

Moving parts can amputate fingers or cause severe injuries. Keep hands, clothing and loose objects away from all openings. Always stop engine, disconnect spark plug, and make sure all moving parts have come to a complete stop before removing obstructions, clearing debris, or servicing unit.



WARNING!

Engine exhaust IS HOT, and contains Carbon Monoxide (CO), a poison gas. Breathing CO can cause unconsciousness, serious injury, or death. Exhaust can cause serious burns. ALWAYS position unit so that exhaust is directed away from your face and body..



WARNING!

Operation of this equipment may create sparks that can start fires. This unit is equipped with a spark arrestor to prevent discharge of hot particles from the engine. Metal blade use also can create sparks if the blade strikes rocks, metal, or other hard objects. Contact local fire authorities for laws or regulations regarding fire prevention requirements.

- Squeezing the throttle increases engine speed, causing the clutch to engage and operate the cutters.
- Releasing the throttle decreases engine speed, causing the cutters to slow, and then stop altogether as the clutch disengages.
- Use a sweeping motion when cutting, and vary throttle settings often.
- Avoid cutting material larger than .5 in (1.3 cm) in diameter.

Stopping the Engine

1. Cool the engine by allowing it to idle for 2–3 minutes.
2. Move the ignition switch to the "O" or STOP position. See Figure 8.



WARNING!

If engine does not stop when stop switch is moved to STOP position, close choke - COLD START position - to stall engine. Have your Shindaiwa dealer repair stop switch before using hedge trimmer again.

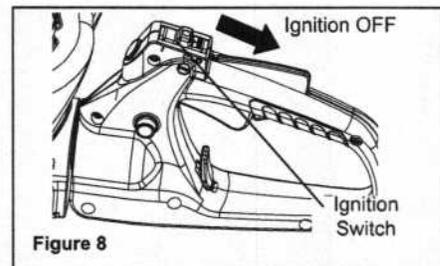


Figure 8

Rotating operation

This model is equipped with a rotating rear handle that can be turned 90° to either side of vertical operating position to help reduce operator fatigue and improve precision trimming.



WARNING!

Always stop the engine before rotating the handle! Failure to do so could result in serious injury.

To operate:

1. Fully release throttle trigger.
2. Push handle release lever.
3. Rotate the handle 90° in the desired direction and release the lever. Make sure that the handle is fully locked into position before use.

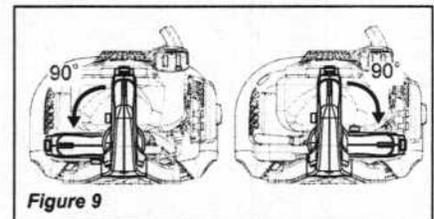


Figure 9

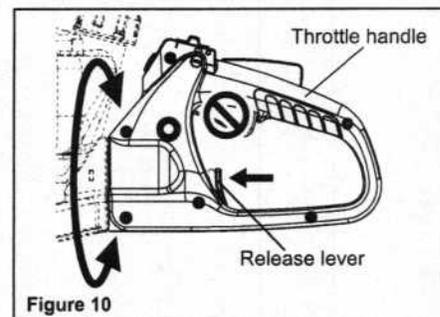


Figure 10

NOTE:

The throttle trigger will not operate when the rear handle is not fully locked into position.