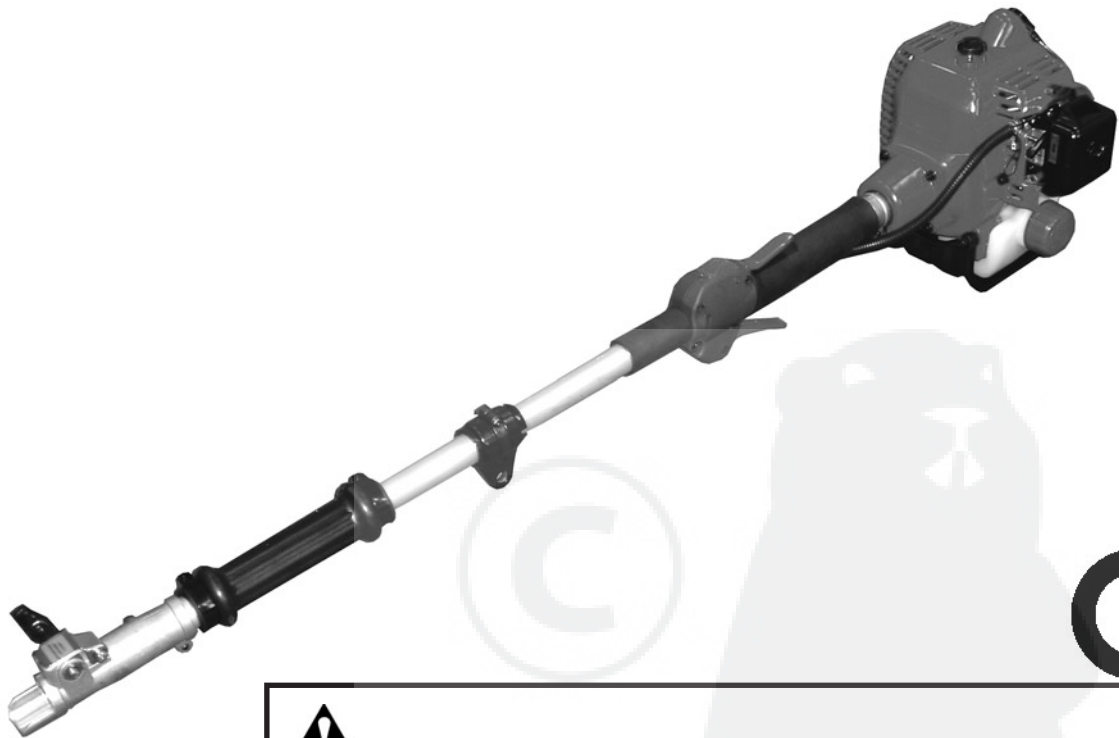


SHINDAIWA OWNER'S/OPERATOR'S MANUAL

230PH/230PHs MULTIPURPOSE ENGINE



WARNING!

Minimize the risk of injury to yourself and others!

Read this manual and the manuals provided with the Shindaiwa Splitboom Attachment series and familiarize yourself with its contents.

Always wear eye and hearing protection when operating this unit.

This machine is designed for cutting branches, grass, weeds, bushes, and trimming hedges with Shindaiwa Splitbooms SBA-TX24, SBA-P24, and SBA-AH2422.

Do not use this machine for other purposes.

Do not operate or service this machine unless you clearly understand this manual.

Keep this manual available at all times so that it may be referred to if questions arise regarding this unit's use.

shindaiwa

Part Number 65021-94311
Rev. 6/05

Introduction

The Shindaiwa 230PH/230PHs Multipurpose Engine is designed and built to deliver superior performance and reliability without compromise to quality, comfort, safety or durability. Shindaiwa's high-performance engines represent the leading edge of 2-cycle engine technology, delivering exceptionally high power with remarkably low displacement and weight. As an owner/operator, you'll soon discover for yourself why Shindaiwa is simply in a class by itself!

The procedures described in this manual are intended to help you get the most from your machine as well as 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 power tool, or if you do not understand something in this manual, your Shindaiwa dealer will be glad to assist you.

IMPORTANT!

The information contained in these instructions describes units available at the time of publication. While every attempt has been made to provide the latest information about your Shindaiwa product, there may be some differences between your 230PH/230PHs and what is described here. Shindaiwa Inc. reserves the right to make changes to products without prior notice and without obligation to make alterations to units previously manufactured.

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Attention Statements

Throughout this manual are special "attention statements" surrounded by boxes and preceded by the triangular Attention Symbol.



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!

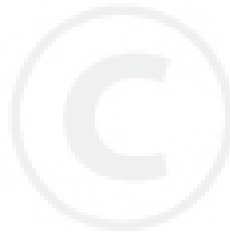
A statement preceded by the word "CAUTION" contains information that should be acted upon to prevent mechanical damage.

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.



Safety Precautions

A Multipurpose Engine has the potential to do serious damage if misused, abused or mishandled. To reduce the risk of injury, you must maintain control at all times, and observe all safety precautions during operation. **Never permit a person without training or instruction to operate this unit!**

IMPORTANT!

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

If you have any questions regarding your 230PH/230PHs Multipurpose Engine, or if you do not understand something in this manual, your Shindaiwa Dealer will be glad to assist you. For additional information, you may also contact Shindaiwa Inc. at the address printed on the back of this manual.



WARNING!

Do not make unauthorized modifications to this machine.

Warning Labels

Warning labels affixed to the machine are as follows:



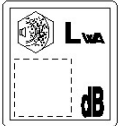
Read and follow this manual, make sure anyone using this unit does likewise. Failure to do so could result in serious personal injury or machine failure. Keep this manual for future reference.



Wear nonslip heavy-duty work gloves to improve your grip on this unit. Wear sturdy footwear with nonslip soles to provide good footing. Steel-toe safety boots are recommended. Wear snug-fitting clothes that also permit freedom of movement.



Never operate this tool or any other power equipment if you are tired, ill, or under the influence of alcohol, drugs, or any substance that could affect your ability or judgement.



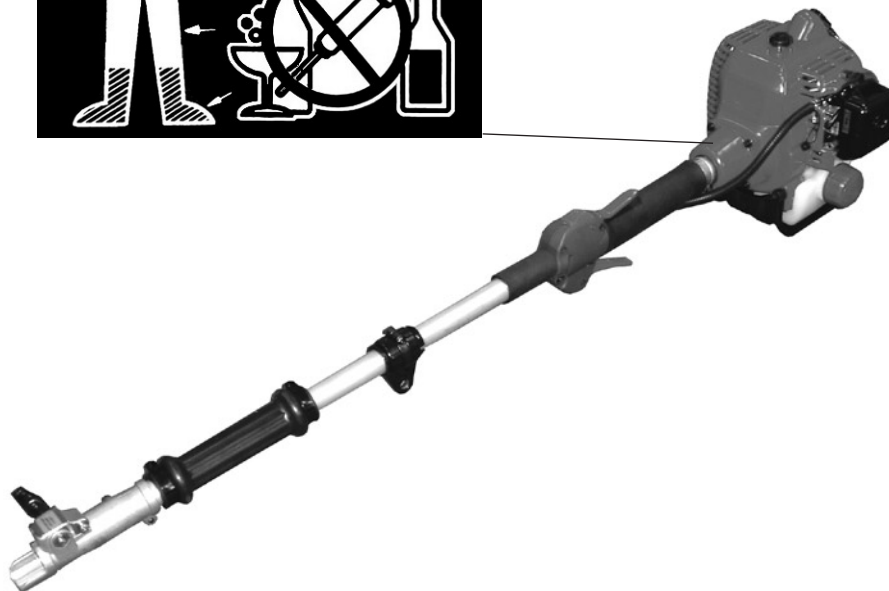
Sound Power Level
(measured in accordance
with 2000/14/EC).



Safety Labels

IMPORTANT!

Safety and Operation Information Labels: Make sure all information labels are undamaged and readable. Immediately replace damaged or missing information labels. New labels are available from your local authorized Shindaiwa dealer.



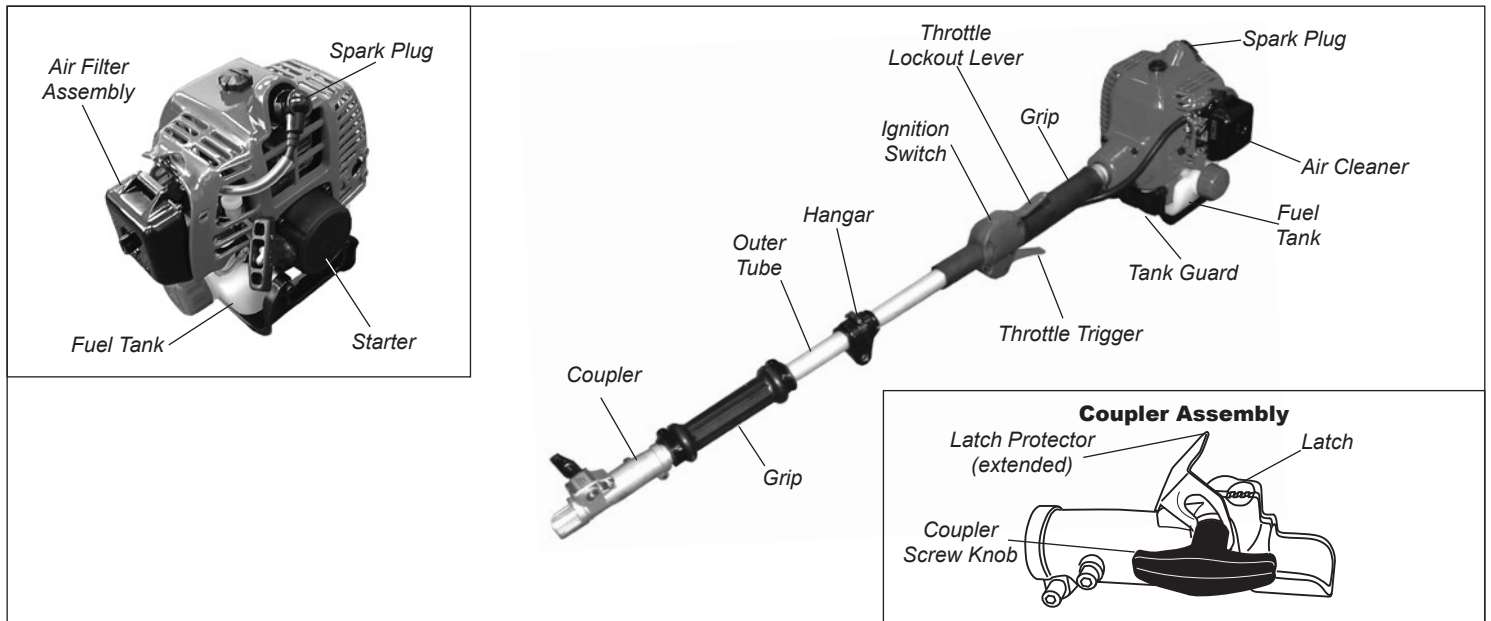
Operating Precautions



WARNING! Use Good Judgement

- Always maintain the Multipurpose Engine according to the this owner's manual and follow the recommended scheduled maintenance.
- Never modify or disable any of the unit's safety devices.
- Before starting the engine, make sure the cutter is not contacting anything.
- 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.
- Always use genuine Shindaiwa parts and accessories when repairing or maintaining this unit.
- Stop the unit immediately if it suddenly begins to vibrate or shake. Inspect for broken, missing or improperly installed parts or attachments.
- Do not operate the Multipurpose Tool Carrier with the muffler removed.
- Make sure there is always good ventilation when operating the Multipurpose Tool Carrier. Fumes from engine exhaust can cause serious injury or death. **Never run the engine indoors!**
- Make sure there are no missing or loose fasteners, and that the stop switch and throttle controls are working properly.
- Do not make unauthorized modifications or substitutions to the Multipurpose Engine.
- Never allow the engine to run at high RPM without a load. Doing so could damage the engine.
- When transporting the unit in a vehicle, tie it down securely to prevent damage and fuel spillage.
- 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.
- Keep the Multipurpose Engine as clean as possible. Keep it free of loose vegetation, mud, etc.
- Always hold the machine 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.
- Never permit a person without training or instruction to operate this machine.
- Keep the Multipurpose Engine as clean as possible. Keep it free of loose vegetation, mud, etc.

Product Description



Prior To Use

Using figure above as a guide, familiarize yourself with the Shindaiwa 230PH/230PHs Multipurpose Engine and its various components. Understanding your unit helps ensure top performance, longer service life, and safer operation.

Standard Equipment

Before assembling, make sure you have all the components required for a complete unit:

- Engine/outer tube assembly.
- Strap.
- Kit containing this owner's/operator's manual and tool kit for routine maintenance. Tool kits vary by model and may include a hex wrench, spark plug/screwdriver combination wrench, and spanner wrench.

Carefully inspect all components for damage.

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.



WARNING!

Do not make unauthorized modifications or alterations to your Multipurpose Engine or its components.

Technical Specifications

Model Name	230PH/EC1 – 230PHs/EC1
Engine Model	S230EC1
Engine Type	2-cycle, vertical cylinder, air cooled
Displacement.....	22.5 cc
Bore & Stroke	32 x 28 mm
Maximum Power Output.....	0.8 kW
Engine Speed at Idling	2,750 min ⁻¹
Engine Speed at Maximum Power Output.....	7,500 min ⁻¹
Dry Weight (less attachments)	3.9 kg
Length 230PH.....	1,020 mm
Length 230PHs.....	1,025 mm
Fuel Tank Capacity	550 cm ³
Fuel/Oil Ratio.....	50:1
Carburetor Type	Walbro WYL
Ignition System	1 Piece electronic, transistor controlled
Spark Plug.....	NGK BMR6A
Air Cleaner Type	Non-reversible flocked filter
Starting Method 230PH	Recoil Starter
Starting Method 230PHs	Low Effort Starter
Stopping Method.....	Slide Switch

With Shindaiwa SBA-TX24 Splitboom Attachment

Sound Pressure Level * (average data between at Idling and at Racing) Note 1.....	94 dB (A)
Sound Power Level ** (average data between at Idling and at Racing) Note 1	105 dB (A)
Vibration Level *** Note 1.....	(Idling [Left/Right]) 3.8/1.9 m/s ² (Racing [Left/Right]) 4.9/5.9 m/s ²
Sound Pressure Level * (average data between at Idling and at WOT) Note 2.....	98 dB (A)
Sound Power Level ** (average data between at Idling and at WOT) Note 2	107 dB (A)
Vibration Level *** Note 2.....	(Idling [Left/Right]) 2.8/3.2 m/s ² (WOT [Left/Right]) 5.6/4.6 m/s ²

* Sound Pressure Level: in accordance with EN ISO 11806 and EN 27917
 ** Sound Pressure Level: in accordance with EN ISO 11806 and ISO 10884
 *** Sound Pressure Level: in accordance with EN ISO 11806 and ISO 7916

Note 1: 8-tooth blade equipped
 Note 2: Trimmer head equipped

With Shindaiwa SBA-P24 Splitboom Attachment (10-inch Guide Bar Equipped)

Sound Pressure Level *	(Idling) 76 dB(A) (Racing) 97 dB (A)
Sound Power Level **	(Idling) 87 dB(A) (Racing) 109 dB (A)
Vibration Level ***	(Idling [Front/Rear]) 1.4/2.8 m/s ² (Racing [Front/Rear]) 3.4/5.7 m/s ²

* Sound Pressure Level: in accordance with ISO 11680-1
 ** Sound Power Level: in accordance with ISO 11680-1
 *** Vibration Level: in accordance with ISO 11680-1

With Shindaiwa SBA-AH2422 Splitboom Attachment

Sound Pressure Level *	(Idling) 76 dB(A) (Racing) 94 dB (A)
Sound Power Level **	(Idling) 86 dB(A) (Racing) 106 dB (A)
Vibration Level ***	(Idling [Front/Rear]) 2.3/2.0 m/s ² (Racing [Front/Rear]) 5.4/5.4 m/s ²

* Sound Pressure Level: in accordance with ISO 11680-1
 ** Sound Power Level: in accordance with ISO 11680-1
 *** Vibration Level: in accordance with ISO 11680-1

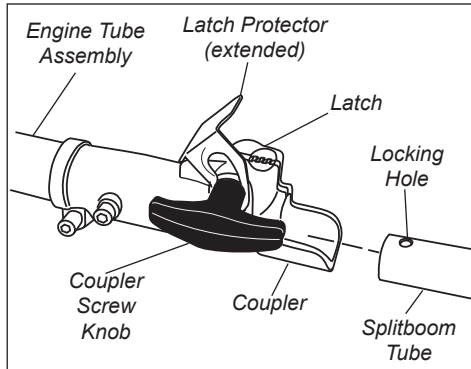
Installing a Splitboom

1. Place the 230PH/230PHs Multipurpose Engine and the Splitboom attachment on a clean flat surface so that both assemblies fit end to end. The 230PH/230PHs assembly should be facing up, and the Splitboom should be positioned with the locking hole in the tube end facing up.

CAUTION!

Keep the open ends of the tubes clean and free of impurities.

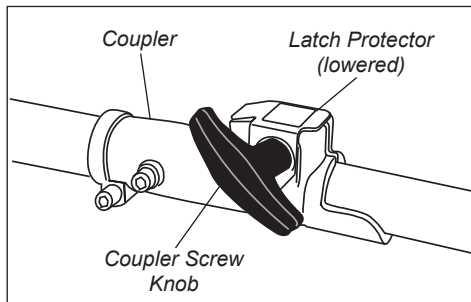
2. Slip off the protective covers from the ends of both tubes and loosen the coupler screw knob.
3. Insert the tube of Splitboom into the coupler with the tool decal facing up, until the line of the decal is flush with the end of the coupler. Twist the tool back and forth until you are sure it snaps in place by the coupler latch.



4. When the two tube halves are locked together, press down on the spring loaded latch protector and tighten the coupler screw.

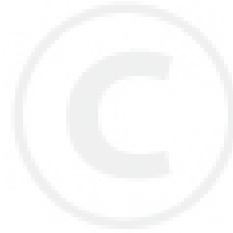
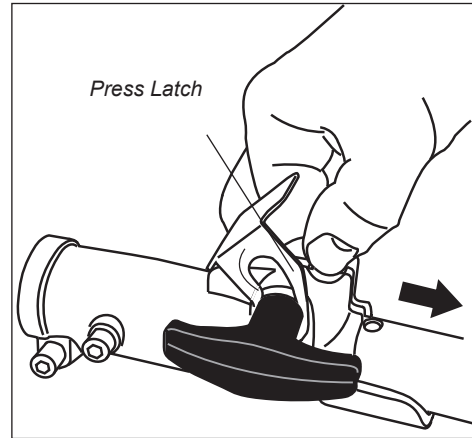
CAUTION!

Make sure there is no gap between the Latch protector and the Coupler.



Removing a Tool Attachment

1. With the unit on a clean flat surface, loosen the coupler screw. The spring loaded coupler protector should pop-up.
2. Press down on the latch with your finger or thumb. This releases the coupler lock.
3. Pull the Splitboom out of the coupler.



Mixing Fuel

WARNING!



Minimize the risk of fire, burns, and personal injury!

- **STOP** engine before refueling.
- **ALWAYS** allow the engine to cool before refueling.
- **ALWAYS** open the fuel cap slowly to allow any pressure build-up in the tank to release fuel vapor slowly.
- **ALWAYS** transport and store fuels in an approved container.
- Avoid overfilling and wipe-up all spilled fuel. Move the engine at least 3 meters from the fueling point, storage area, and other readily flammable materials before restarting.
- **ALWAYS** inspect the unit for fuel leaks before each use. During each refill, make sure there are no fuel leaks around the fuel cap and/or tank. If a fuel leak is evident, stop using the unit immediately. Fuel leaks must be repaired before using the unit.
- **NEVER** smoke or light any fires near the engine or fuel source.
- **NEVER** place any flammable material near the engine or muffler.
- **NEVER** operate the engine without the muffler and spark arrester in good working condition.

CAUTION!

This engine is designed to operate on a 50:1 mixture consisting of unleaded gasoline and a premium 2-cycle mixing oil only. Use of Non-approved mixing oils can lead to excessive maintenance costs and/or engine damage.

CAUTION!

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

Filling the Fuel Tank

IMPORTANT!

Mix only enough fuel for your immediate needs! If fuel must be stored longer than 30-days, it should first be treated with a stabilizer such as STA-BIL™ or equivalent product!

1. Use only fresh, clean unleaded gasoline with a pump octane rating of 87 or higher.
2. Mixing fuel with a Premium 2-cycle mixing oil designed for use with high-performance 2-cycle air-cooled engines.
3. Refer to the following examples of 50:1 fuel to oil mix quantities:

Gasoline Liters	2-cycle mixing oil milliliters
2.5 l	50 ml
5 l	100 ml
10 l	200 ml
20 l	400 ml

CAUTION!

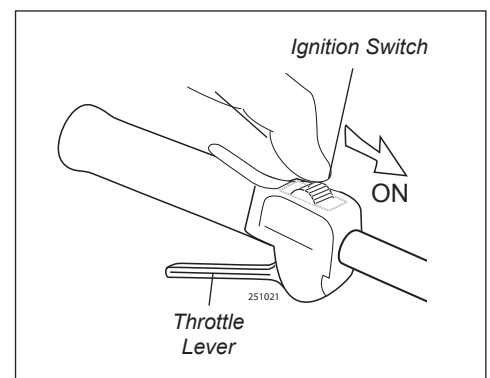
Never attempt to mix fuel in the unit's fuel tank. Always mix all fuels in a clean approved container.

1. Place the unit upright on the ground or on a sturdy work surface, and wipe any debris from around the fuel cap.
2. Remove the fuel cap.
3. Fill the tank with clean, fresh fuel.
4. Replace the cap, and wipe away any spilled fuel before starting the engine.

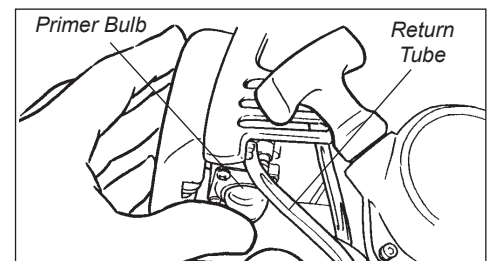
Starting the Engine

IMPORTANT!

Engine ignition is controlled by a two position switch mounted on the throttle housing labeled, "I" for ON or START and "O" for OFF or STOP.



1. Slide the ignition switch to the "ON" position.

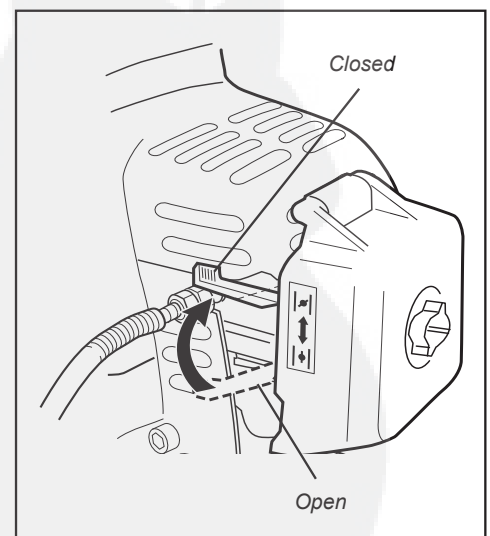


2. Press the primer bulb until fuel can be seen flowing in the transparent return tube.

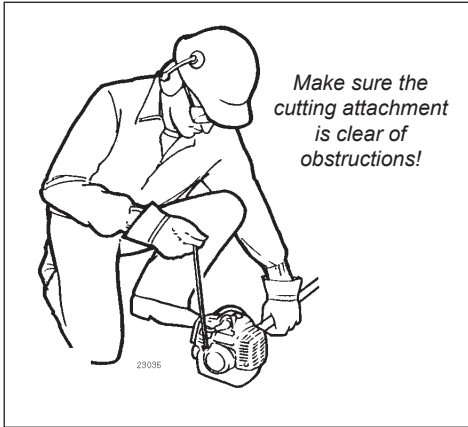
IMPORTANT!

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

3. Set the choke lever to the CLOSED position if engine is cold.



Starting the Engine (continued)



4. STARTING THE ENGINE

• Standard Starter System (230PH)

While holding the outer tube firmly with one hand, slowly pull the recoil starter handle until resistance is felt, then pull quickly to start the engine.

• Reduced Effort System (230PHs)

The 230PHs starter system uses a powerful spring to assist the operator when starting. Simply pull the starter handle in one smooth motion to engage the starter and start the engine.

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.

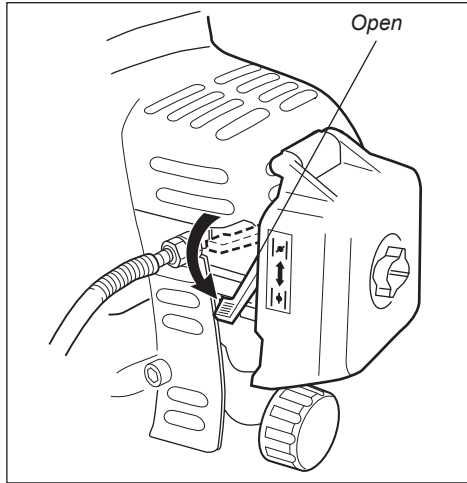
WARNING!

The cutting attachment may move when the engine is started. Keep away from the cutting attachment while starting the engine.

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

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.



WARNING!

Never start the engine from the operating position.

When the Engine Starts...

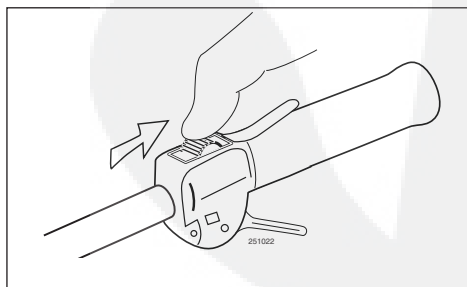
- After the engine starts, allow the engine to warm up at idle 2 or 3 minutes before operating the unit.
- After the engine is warm, pick up the unit and clip on the shoulder strap if so equipped.
- Advancing the throttle makes the cutting attachment oscillate faster; releasing the throttle permits the attachment to stop oscillating. If the cutting attachment continues to oscillate when the engine returns to idle, carburetor idle speed should be adjusted (see "Adjusting The Carburetor" on this page).

Stopping the Engine

WARNING!

The cutter attachment can continue moving after the engine is stopped!

- Cool the engine by allowing it to idle for two or three minutes.
- Slide the ignition switch to the "O" or STOP position.



Adjusting the Carburetor

WARNING!

The cutter attachment must never oscillate at engine idle speed. If the idle speed cannot be adjusted by the procedures described here, return the trimmer to your Shindaiwa dealer for inspection.

NOTE:

The mixture of the carburetor on this unit cannot be adjusted.

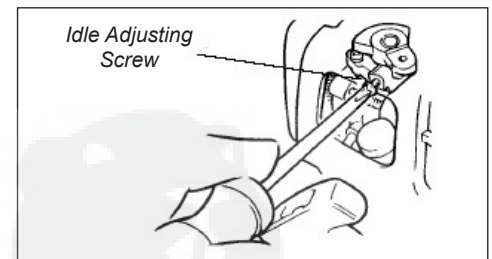
The engine must return to idle speed whenever the throttle trigger is released. Idle speed is adjustable and must be set low enough to permit the engine clutch to disengage the cutter attachment when throttle trigger is released.

Check and Adjust Idle Speed

- Start the engine and allow it to idle two or three minutes, or until it warms up.
- If the cutter attachment rotates at engine idle, reduce idle speed by turning the idle adjusting screw counter-clockwise as necessary.

IMPORTANT!

Use a tachometer, if one is available, to set engine idle. Standard idle speed is: 2,750 (± 250) min⁻¹.

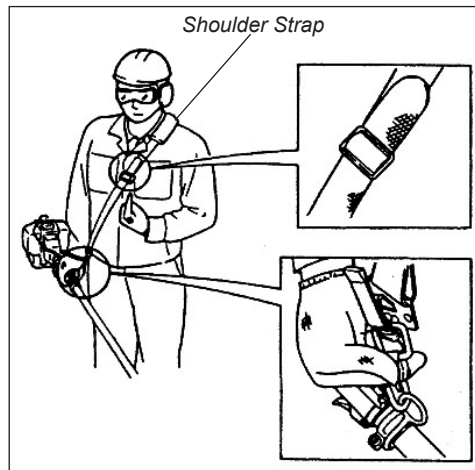


- If the engine is stalling and won't idle, increase idle speed by turning the idle adjustment screw clockwise.

Attaching the Shoulder Strap

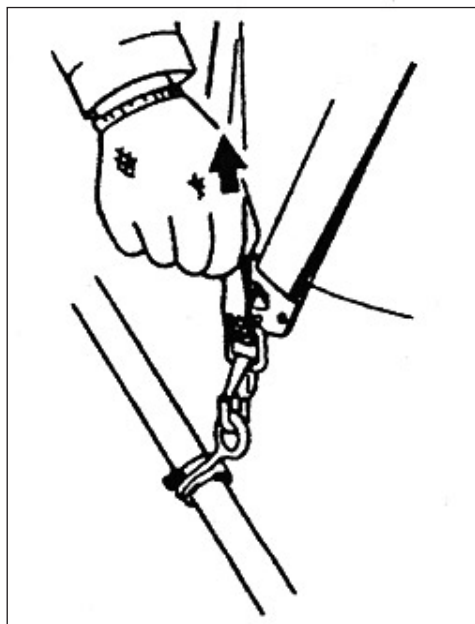
To Wear the Shoulder Strap

1. Hook the strap hook to the hanger on the outer tube.
2. Wear the shoulder strap so that the hook stays at your right hand side.
3. Adjust the length of the shoulder strap so that you can hold and operate the machine comfortably.



Emergency Release

In case of emergency, strongly pull the white tab at the hook. The machine will be released from the strap.



General Maintenance



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 accessories, cutting attachment, or replacement parts may not operate properly with your unit and may cause damage and lead to personal injury.

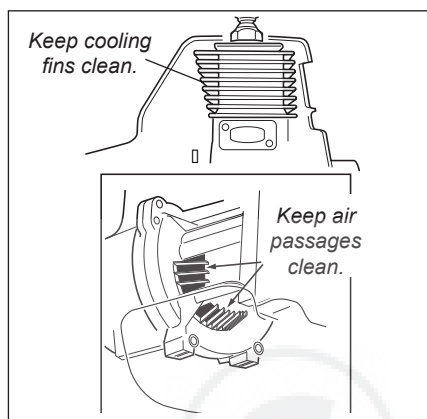
Spark Plug

Keep the spark plug and wire connections tight and clean.

Daily Maintenance

Prior to each work day, perform the following:

- Remove all dirt and debris from the engine, check the cooling fins and air cleaner for clogging, and clean as necessary.



- Carefully remove any accumulations of dirt or debris from the muffler and fuel tank. Check cooling air intake area at base of crankcase. Remove all debris. Dirt build-up in these areas can lead to engine overheating, fire, or premature wear.



WARNING!

Always wear gloves when working around the cutter assembly.

- Clean any debris or dirt from the cutting attachment.
- Check for loose or missing screws or components. Make sure the cutter attachment is securely fastened.
- Check the entire unit for leaking fuel or grease.
- Make sure nuts, bolts, and screws (except carburetor idle speed adjusting screws) are tight.

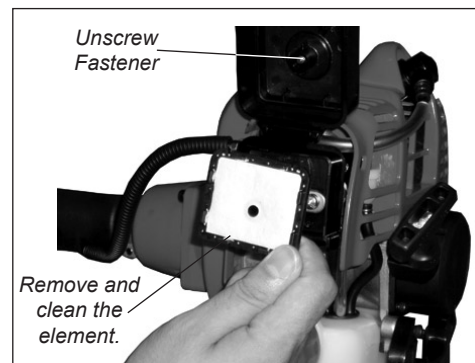
10-Hour Maintenance

Every 10 hours of operation (more frequently in dusty or dirty conditions):

- Remove the air cleaner element from the air cleaner housing and clean it thoroughly with 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.



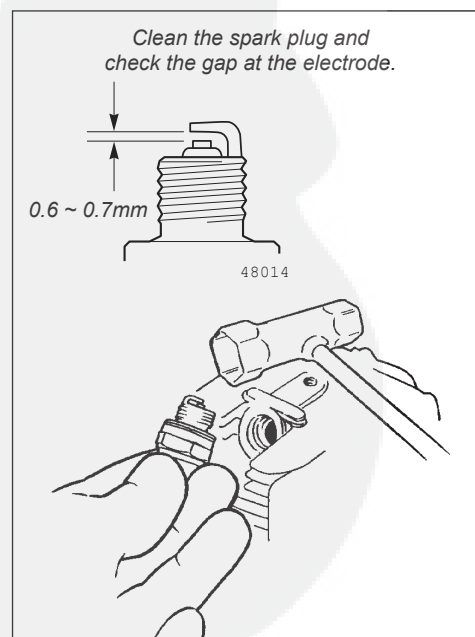
10/15-Hour Maintenance

Every 10 to 15 hours of operation:

- Remove and clean the spark plug. Adjust the spark plug electrode gap to 0.6 ~ .07 mm. If the plug must be replaced, use only a NGK BMR6A.

CAUTION!

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



50-Hour Maintenance

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

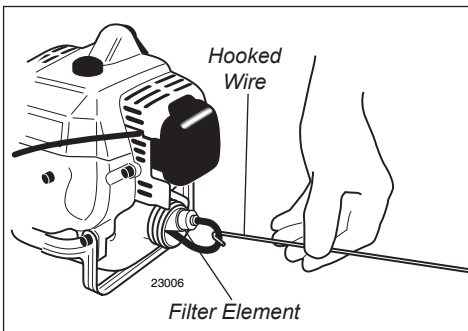
- Remove and clean the cylinder cover and clean dirt and debris from the cylinder cooling fins.

Servicing The Fuel Filter

- Use a hooked wire to extract the fuel filter from inside the fuel tank. Inspect the fuel filter element for signs of contamination. Replace it with a new one if required. Before reinstalling the filter, inspect the fuel line. If you find damage or deterioration, remove the unit 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.



Muffler Maintenance



WARNING!

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

If carbon deposits are severe or if no performance improvement is noted, your unit should be returned to your Shindaiwa dealer for inspection.



WARNING!

Operating the engine without a muffler or with a muffler that is damaged or improperly installed can increase engine noise sufficiently to cause hearing loss.

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 and apply a light coating of oil to all metal surfaces.
- Drain all the fuel from the fuel tank.

IMPORTANT!

All stored fuels should be stabilized with a fuel stabilizer such as STA-BIL™.

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 7 grams 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 and reassemble the element.
- Store the unit in a clean, dust-free area.

Troubleshooting Guide

ENGINE DOES NOT START

What To Check	Possible Cause	Remedy
<p>Does the engine crank?</p> <p>YES ↓</p>	<p>NO →</p> <p>Faulty recoil starter.</p> <p>Fluid in the crankcase.</p> <p>Internal damage.</p>	<p>Consult with an authorized servicing dealer.</p>
<p>Good compression?</p> <p>YES ↓</p>	<p>NO →</p> <p>Loose spark plug.</p> <p>Excess wear on cylinder, piston, rings.</p>	<p>Tighten and re-test.</p> <p>Consult with an authorized servicing dealer.</p>
<p>Does the tank contain fresh fuel of the proper grade?</p> <p>YES ↓</p>	<p>NO →</p> <p>Fuel incorrect, stale, or contaminated; mixture incorrect.</p>	<p>Refill with clean fresh unleaded gasoline with a pump octane of 87 or higher, mixed with Premium 2-cycle mixing oil at a 50:1 gasoline/oil ratio.</p>
<p>Is fuel visible and moving in the return line when priming?</p> <p>YES ↓</p>	<p>NO →</p> <p>Check for clogged fuel filter and/or vent.</p>	<p>Replace fuel filter or vent as required.</p>
<p>Is there spark at the spark plug wire terminal?</p> <p>YES ↓</p>	<p>NO →</p> <p>The ignition switch is in "O" (OFF) position.</p> <p>Shorted ignition ground.</p> <p>Faulty ignition unit.</p>	<p>Move switch to "I" (ON) position and re-start.</p> <p>Consult with an authorized servicing dealer.</p>
<p>Check the spark plug.</p>	<p>→</p> <p>If the plug is wet, excess fuel may be in the cylinder.</p> <p>The plug is fouled or improperly gapped.</p> <p>The plug is damaged internally or of the wrong size.</p>	<p>Crank the engine with the plug removed, replace the plug, and re-start.</p> <p>Clean and re-gap the plug to 0.6-0.7mm. Re-start.</p> <p>Replace the plug with a NGK BMR6A. Re-start.</p>



Troubleshooting Guide (continued)

LOW POWER OUTPUT

What To Check	Possible Cause	Remedy
Is the engine overheating?	Operator is overworking the unit. Carburetor mixture is too lean. Improper fuel ratio. Fan, fan cover, cylinder fins dirty or damaged. Carbon deposits on the piston or in the muffler.	Cut at a slower rate. Consult with an authorized servicing dealer. Refill with clean fresh unleaded gasoline with a pump octane of 87 or higher, mixed with Premium 2-cycle mixing oil at a 50:1 gasoline/oil ratio. Clean, repair or replace as necessary. Consult with an authorized servicing dealer.
Engine is rough at all speeds. May also have black smoke an/or unburned fuel at the exhaust.	Clogged air cleaner element. Loose or damaged spark plug. Air leakage or clogged fuel line. Water in the fuel. Piston seizure. Faulty carburetor and/or diaphragm.	Clean or replace the air filter. Tighten or replace the plug with a NGK BMR6A. Re-start. Repair or replace fuel filter and/or fuel line. Refill with fresh fuel/oil mixture. Consult with an authorized servicing dealer.
Engine is knocking.	Overheating condition. Improper fuel. Carbon deposits in the combustion chamber.	See above. Check fuel octane rating; check for presence of alcohol in the fuel . Refuel as necessary. Consult with an authorized servicing dealer.



Troubleshooting Guide (continued)

ADDITIONAL PROBLEMS

Symptom	Possible Cause	Remedy
Poor acceleration.	<ul style="list-style-type: none"> Clogged air filter. Clogged fuel filter. Lean fuel/air mixture. Idle speed set too low. 	<ul style="list-style-type: none"> Clean or replace the air filter. Replace the fuel filter. Consult with an authorized servicing dealer. Adjust: 2,750 (±250) min⁻¹.
Engine stops abruptly.	<ul style="list-style-type: none"> Switch turned off. Fuel tank empty. Clogged fuel filter. Water in the fuel. Shorted spark plug or loose terminal. Ignition failure. Piston seizure. 	<ul style="list-style-type: none"> Reset the switch and re-start. Refuel. See page 8. Replace fuel filter. Drain; replace with clean fuel. See page 8. Clean or replace spark plug with a NGK BMR6A. Tighten the terminal. Replace the ignition unit. Consult with an authorized servicing dealer.
Engine difficult to shut off.	<ul style="list-style-type: none"> Ground (stop) wire is disconnected, or switch is defective. Overheating due to incorrect spark plug. Overheated engine. 	<ul style="list-style-type: none"> Test and replace as required. Replace spark plug with a NGK BMR6A. Idle engine until cool.
Cutting attachment moves at engine idle.	<ul style="list-style-type: none"> Engine idle too high. Broken clutch spring or worn clutch spring boss. Loose attachment holder. 	<ul style="list-style-type: none"> Set idle: 2,750 (±250) min⁻¹. Replace spring/shoes as required, check idle speed. Inspect and re-tighten holders securely.
Excessive vibration.	<ul style="list-style-type: none"> Warped or damaged attachment. Loose coupler. Bent main shaft/worn or damaged bushings. 	<ul style="list-style-type: none"> Inspect and replace attachment as required. Tighten coupler securely. Inspect and replace as necessary.
Attachment will not rotate.	<ul style="list-style-type: none"> Shaft not installed in powerhead or gearcase. Broken shaft. Damaged gearcase. 	<ul style="list-style-type: none"> Inspect and reinstall as required. Consult with an authorized servicing dealer.

DECLARATION OF CONFORMITY

We hereby declare the Shindaiwa Engine Brushcutter,
Model SBA-TX24 (SBA-TX24/EU with 230PH/EC1, SBA-TX24/EU with 230PHS/EC1).

meets the following respective requirements.

Council Directives:

89/336/EEC as amended

98/37/EC as amended

2000/14/EC as amended

2004/26/EC as amended

Standard taken:

EN 292 parts 1&2

ISO 11806

CISPR 12

Measured sound power level: 110dB(A)

Guaranteed sound power level: 111dB(A)

Technical documentation is kept by:

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Engineering Research and Development DIV.

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14th April, 2005



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DECLARATION OF CONFORMITY

We hereby declare the Shindaiwa Articulated hedge Trimmer,
Model SBA-AH2422 (SBA-AH2422/EU with 230PH/EC1, SBA-AH2422/EU with 230PHS/EC1).

meets the following respective requirements.

Council Directives:

89/336/EEC as amended

98/37/EC as amended

2000/14/EC as amended

2004/26/EC as amended

Standard taken:

EN 292 parts 1&2

ISO 11680-1

CISPR 12

Measured sound power level: 106dB(A)

Guaranteed sound power level: 108dB(A)

Technical documentation is kept by:

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DECLARATION OF CONFORMITY

We hereby declare the Shindaiwa Pole Pruner,
Model SBA-P24 (SBA-P24/EU with 230PH/EC1, SBA-P24/EU with 230PHS/EC1).

meets the following respective requirements.

Council Directives:

89/336/EEC as amended

98/37/EC as amended

2000/14/EC as amended

2004/26/EC as amended

Standard taken:

EN 292 parts 1&2

ISO 11680-1

CISPR 12

Measured sound power level: 109dB(A)

Guaranteed sound power level: 111dB(A)

Technical documentation is kept by:

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T. Yoshitomi

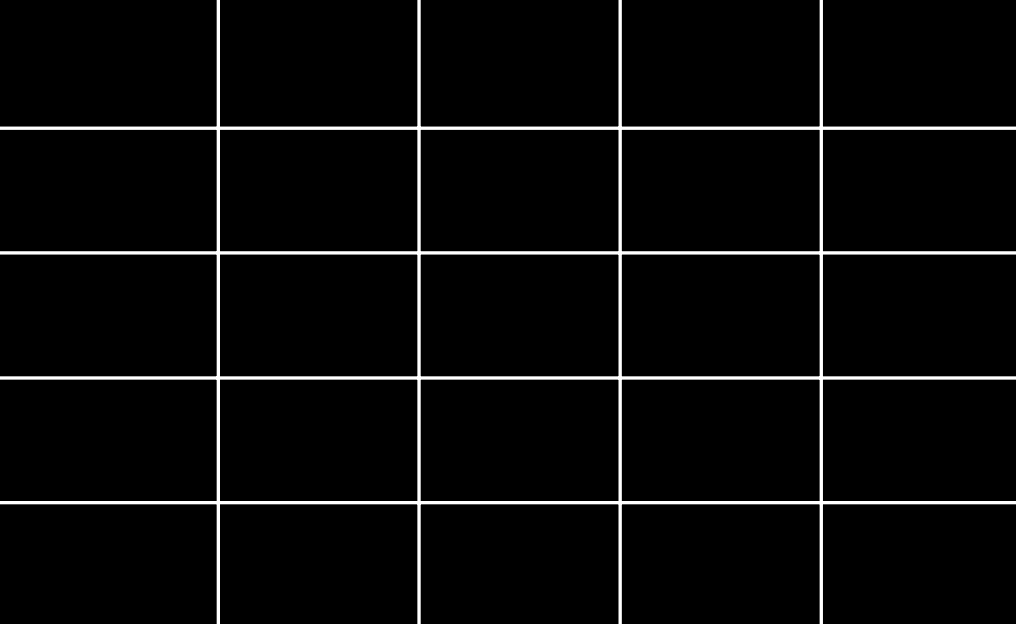
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