



# Operator's Manual M235 Multi-Tool

## WARNING

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

## WARNING



*Read and understand all provided literature before use. Failure to do so could result in serious injury.*

Note: This product complies with CAN ICES-2/NMB-2.

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# INTRODUCTION

Specifications, descriptions, and illustrative material in this literature are as accurate as possible. Specifications are subject to change without notice. Illustrations might include optional equipment and accessories, and might not include all standard equipment. Your equipment might appear slightly different than pictured equipment.



Read and understand all provided literature. Literature contains specifications and information for safety, operation, maintenance, storage, and assembly specific to this product. Scan QR codes for more information.



For additional literature, including safety manuals where applicable, or questions regarding terms used in this manual, visit:

<https://www.echo-usa.com/manuals>

OR

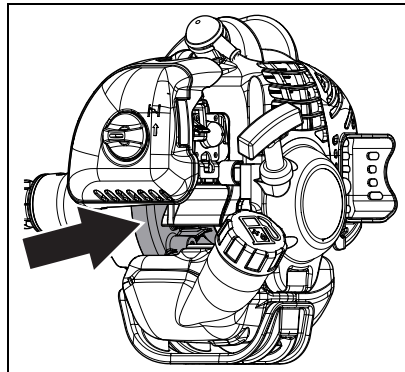


<https://www.shindaiwa-usa.com/manuals>

# SERVICING INFORMATION

## Parts and Serial Number

Genuine Shindaiwa Parts and Assemblies for your Shindaiwa products are available only from an Authorized Shindaiwa Dealer. When you do need to buy parts **always** have the Model Number and Serial Number of the unit with you. For future reference, write them in the space provided below.



Model No. \_\_\_\_\_ Serial No. \_\_\_\_\_

## **Service**

Service of this product during the warranty period must be performed by an Authorized Shindaiwa Service Dealer. For the name and address of the Authorized Shindaiwa Service Dealer nearest you, ask your retailer or call: 1-877-986-7783. Dealer information is also available on [www.shindaiwa-usa.com](http://www.shindaiwa-usa.com). When presenting your unit for Warranty service/repairs, proof of purchase is required.

## **Consumer Product Support**

If you require assistance or have questions concerning the application, operation or maintenance of this product you may call the Shindaiwa Consumer Product Support Department at 1-877-986-7783 from 8:00 am to 5:00 pm (Central Standard Time) Monday through Friday. Before calling, please know the model and serial number of your unit.

## **Product Registration**

To ensure trouble free warranty coverage it is important that you register your Shindaiwa equipment on-line at [www.shindaiwa-usa.com](http://www.shindaiwa-usa.com) or by filling out the product registration sheet included in this manual. Registering your product confirms your warranty coverage and provides a direct link between you and ECHO if we find it necessary to contact you.

## **Additional Literature**

In addition to finding information online, information is available from your Authorized Shindaiwa Service Dealer, or by contacting ECHO Incorporated, 400 Oakwood Road, Lake Zurich, IL 60047, 1-800-432-ECHO (3246).

## SAFETY

### Manual Safety Symbols and Important Information

Throughout this manual and on the product itself, you will find safety alerts and helpful, informational messages preceded by symbols or key words. The following is an explanation of those symbols and key words and what they mean to you.

#### **DANGER**

*The safety alert symbol accompanied by the word “DANGER” calls attention to an act or condition which WILL lead to serious personal injury or death if not avoided.*

#### **WARNING**

*The safety alert symbol accompanied by the word “WARNING” calls attention to an act or condition which CAN lead to serious personal injury or death if not avoided.*

#### **CAUTION**

*The safety alert symbol accompanied by the word “CAUTION” calls attention to an act or condition which might lead to minor or moderate personal injury if not avoided.*

#### **NOTICE**

*The enclosed message provides information necessary for the protection of the unit.*

Note: This enclosed message provides tips for use, care and maintenance of the unit.










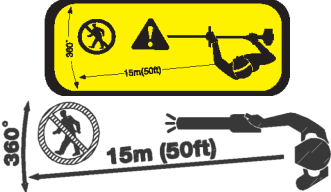


#### **CIRCLE AND SLASH SYMBOL**

This symbol means the specific action shown is prohibited. Ignoring these prohibitions can result in serious or fatal injury.

## International Symbols

Symbol	Description	Symbol	Description
	Warning, See Operator's Manual	<b>H</b>	Carburetor Adjustment - High Speed Mixture
	Wear Eye, Ear and Head Protection	<b>T</b>	Carburetor Adjustment - Idle Speed
	Wear Hand and Foot Protection	<b>L</b>	Carburetor Adjustment - Low Speed Mixture
	Safety / Alert		Stop
	Hot Surface		Fuel and Oil Mixture
	DO NOT Allow Flames or Sparks Near Fuel		Ignition ON / OFF
	DO NOT Smoke Near Fuel		Purge Bulb
	Choke Control "RUN" Position (Choke Open)		Choke Control "COLD START" Position (Choke Closed)
	Keep Feet Away From Blade		Rotating Cutting Attachment

Symbol	Description	Symbol	Description
	Thrown Objects		Wear Face Shield
	Finger Severing		Wear Slip Resistant Footwear
	Do not operate closer than 15 m (50 ft.) from electrical hazards. Keep bystanders at least 15 m (50 ft.) away.		Plan a retreat path from falling objects.
	DO NOT USE Line Head - blades Only		DO NOT USE BLADES - Line Head Only
	<p>AVOID KICKOUT Keep Bystanders At Least 15 m (50 ft.) Away</p>		
	<p>Beware Thrown Objects Wear Eye Protection</p>		
	<p>Keep Bystanders and Helpers Away 15 m (50 ft.)</p>		

Note: Not all symbols will appear on your unit.



## Personal Condition and Safety Equipment

### WARNING

**Cancer and Reproductive Harm**  
[www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

### WARNING



**The muffler or catalytic muffler and surrounding cover may become extremely hot. Always keep clear of exhaust and muffler area, otherwise serious personal injury might occur.**

### WARNING

**Users of this product risk injury to themselves and others if the unit is used improperly and/or safety precautions are not followed. Proper clothing and safety gear must be worn when operating unit.**

## Physical Condition

Your judgment and physical dexterity may not be good:

- If you are tired or sick
- If you are taking medication
- If you have taken alcohol or drugs

Operate unit only if you are physically and mentally well.



## Eye Protection

### WARNING

- ◆ Eye protection that meets ANSI Z87.1 or CE requirements must be worn whenever you operate the unit.
- ◆ For additional safety, a full-face shield can be worn over safety glasses or goggles to provide protection from sharp branches or flying debris.

## Hand Protection

Wear sturdy, no-slip, rubber work gloves to improve your grip on the handles. Gloves also provide protection against cuts and scratches, cold environments, and reduce the transmission of machine vibration to your hands.

## Hearing and Ear Protection

ECHO recommends wearing personal protective equipment whenever unit is used.

## Breathing Protection

Operators who are sensitive to dust or other common airborne allergens may need to wear a dust mask to prevent inhaling these materials while operating unit. Dust masks can provide protection against dust, plant debris, and other plant matter such as pollen. Make sure the mask does not impair your vision, and replace the mask as needed to prevent air restrictions.

## Proper Clothing

Wear snug-fitting, durable clothing:

- Pants should have long legs, shirts should have long sleeves.
- DO NOT WEAR SHORTS.
- DO NOT WEAR TIES, SCARVES, JEWELRY, or clothing with loose or hanging items that could become entangled in moving parts or surrounding growth.
- Keep clothing buttoned or zipped, and keep shirt tails tucked in.
- Wear sturdy work shoes with nonskid rubber soles.
- DO NOT WEAR OPEN TOED SHOES.
- DO NOT OPERATE UNIT WITH BARE FEET.

Keep long hair away from engine and air intake. Retain hair with cap or net.

Heavy protective clothing can increase operator fatigue, which may lead to heat stroke. Schedule heavy work for early morning or late afternoon hours when temperatures are cooler.

## WARNING

***The components of this machine generate an electromagnetic field during operation, which can 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 this machine by anyone who has a pacemaker.***

### Extended Operation and Extreme Conditions

## CAUTION

***Prolonged exposure to cold and/or vibration can result in injury. Read and follow all safety and operation instructions to minimize risk of injury. Failure to follow instructions can result in painful wrist/hand/arm injuries.***

It is believed that a condition called Raynaud's Phenomenon, which affects the fingers of certain individuals, may be brought about by exposure to vibration and cold. Exposure to vibration and cold may cause tingling and burning sensations, followed by loss of color and numbness in the fingers. The following precautions are strongly recommended, because the minimum exposure, which might trigger the ailment, is unknown.

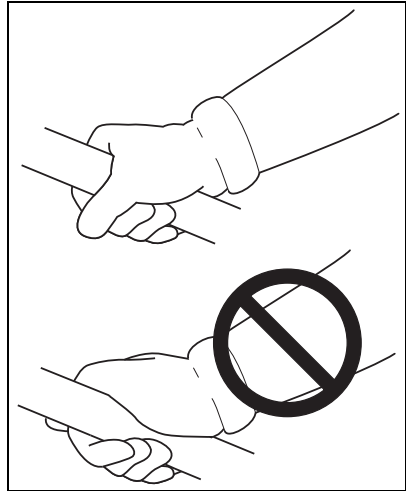
- Keep your body warm, especially the head, neck, feet, ankles, hands, and wrists.
- Maintain good blood circulation by performing vigorous arm exercises during frequent work breaks, and also by not smoking.
- Limit the hours of operation. Try to fill each day with jobs where operating the unit or other hand-held power equipment is not required.
- If you experience discomfort, redness, and swelling of the fingers followed by whitening and loss of feeling, consult your physician before further exposing yourself to cold and vibration.

## Repetitive Stress Injuries (RSI)

It is believed that overusing the muscles and tendons of the fingers, hands, arms, and shoulders may cause soreness, swelling, numbness, weakness, and extreme pain in those areas. Certain repetitive hand activities may put you at a high risk for developing a Repetitive Stress Injury (RSI). An extreme RSI condition is Carpal Tunnel Syndrome (CTS), which could occur when your wrist swells and squeezes a vital nerve that runs through the area. Some believe that prolonged exposure to vibration may contribute to CTS. CTS can cause severe pain for months or even years.

To reduce the risk of RSI/CTS, do the following

- Avoid using your wrist in a bent, extended, or twisted position. Instead try to maintain a straight wrist position. Also, when grasping, use your whole hand, not just the thumb and index finger.
- Take periodic breaks to minimize repetition and rest your hands.
- Reduce the speed and force with which you do the repetitive movement.
- Do exercises to strengthen the hand and arm muscles.
- Immediately stop using all power equipment and consult a doctor if you feel tingling, numbness, or pain in the fingers, hands, wrists, or arms. The sooner RSI/CTS is diagnosed, the more likely permanent nerve and muscle damage can be prevented.



## **!** DANGER

***All over head electrical conductors and communications wires can have electricity flow with high voltages. This unit is not insulated against electrical current. Never touch wires directly or indirectly, otherwise serious injury or death can result.***

## **!** DANGER

***Do not operate this product indoors or in inadequately ventilated areas. Engine exhaust contains poisonous emissions and can cause serious injury or death.***

### Read the Manuals

- Provide all users of this equipment with the Operator's Manual and Safety Manual for instructions on safe operation.

### Clear the Work Area

- Spectators and fellow workers must be warned, and children and animals prevented from coming nearer than 50 ft. (15 m) while the unit is in use.

### Keep a Firm Grip

- Always hold throttle handle and support handle with thumbs and fingers tightly encircling the handles.

### 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.

### Avoid Hot Surfaces

- During operation, the drive shaft housing and attachment bearing housing may become very hot, too hot to touch. Avoid contact during and immediately after operation.



## Equipment

### WARNING

***Use only SHINDAIWA attachments. Serious injury may result from the use of a non-approved attachment combination. ECHO, Incorporated will not be responsible for the failure of cutting devices, attachments or accessories which have not been tested and approved by ECHO. Read and comply with all safety instructions listed in this manual and safety manual.***

- ◆ Check unit for loose/missing nuts, bolts, and screws. Tighten and/or replace as needed.
- ◆ Inspect guards and shields for damage and to ensure that they are securely in place. Replace if damaged or missing.
- ◆ Check that the attachment is firmly attached and in safe operating condition.
- ◆ Check that handle and harness (if included) are adjusted for safe, comfortable operation. See Assembly Section for proper adjustment.

 **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.
- ◆ **DO NOT** start or operate unit unless all guards and protective covers are properly assembled to unit.
- ◆ **NEVER** reach into any opening while the engine is running. Moving parts may not be visible through openings.

## EMISSION CONTROL (EXHAUST & EVAPORATIVE)

### CARB and EPA Emissions Control Information

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 "B", "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 and fuel feed lines.

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

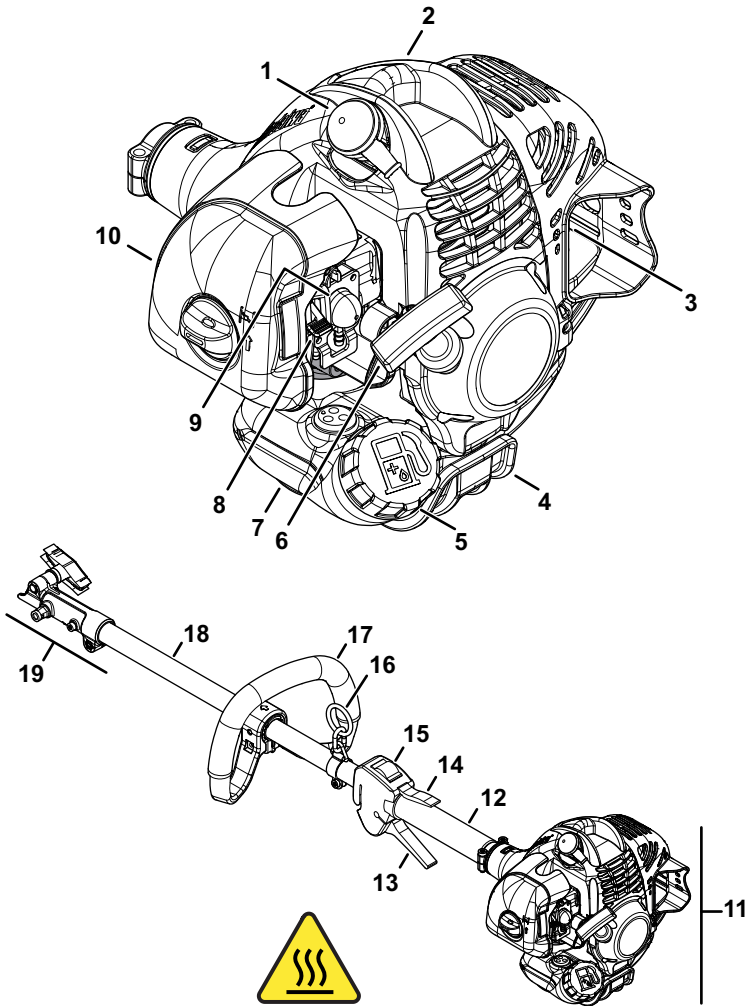


### Product Emission Durability (Emission Compliance Period)

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.

# DESCRIPTION

Locate the safety decal(s) on your unit. Make sure the decal(s) is legible and that you understand and follow the instructions on it. If a decal cannot be read, a new one can be ordered from your SHINDAIWA dealer. The safety label is for example only. Your label may appear slightly different.



1. Spark Plug
2. Top Guard
3. Spark Arrestor Muffler or Spark Arrestor Muffler with Catalyst
4. Fuel Tank Guard
5. Fuel Tank Cap
6. Recoil Starter Handle
7. Fuel Tank
8. Choke Lever
9. Purge Bulb
10. Air Cleaner
11. Power Head
12. Throttle Handle - For Right Hand
13. Throttle Trigger
14. Throttle Trigger Lockout
15. Stop Switch
16. Harness Hanger Set
17. Support Handle - For Left Hand
18. Upper Drive Shaft Assembly
19. Coupler Assembly

## **CONTENTS**

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The SHINDAIWA product you purchased has been factory pre-assembled for your convenience. Due to packaging restrictions, some assembly may be necessary.

After opening the carton, check for damage. Immediately notify your retailer or SHINDAIWA Dealer of damaged or missing parts. Use the contents list to check for missing parts.

- 1 Power Head and Drive Shaft Assembly
- 1 Operator's Manual
- 1 Warranty Statement



## ASSEMBLY

### Power Head Shaft to Lower Shaft Assembly

## ! WARNING

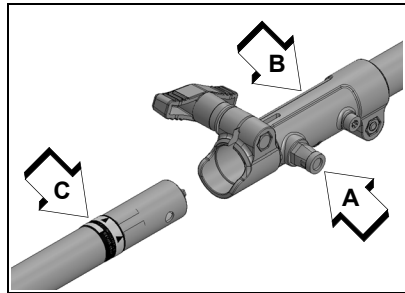
**Do not perform maintenance or assembly procedures with engine running.**

Parts Required: Multi-Tool Power Head, Shaft and Coupling

1. Set Power Head/Shaft Assembly on a level surface.
2. Pull locator pin (A) out, and turn counter-clockwise  $\frac{1}{4}$  turn to lock-out position.
3. Remove vinyl cap from attachment drive shaft.
4. Remove cardboard spacer, if necessary.

Note: Your coupler may appear different than coupler shown.

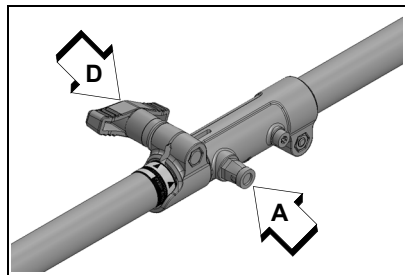
5. Carefully fit attachment drive shaft assembly into coupler (B) to decal assembly line (C), making sure that the inner lower drive shaft engages the square upper drive shaft socket.



Note: Earlier model power heads may have shorter couplings.

Note: Lower bearing housing and head assembly must be in line with the engine.

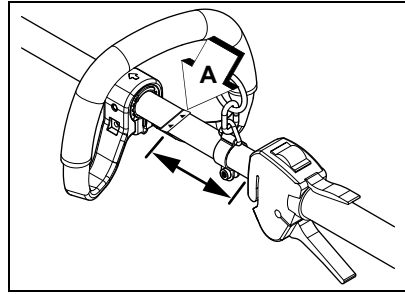
6. Rotate locator pin (A)  $\frac{1}{4}$  turn clockwise to engage lower shaft hole. Insure locator pin is fully engaged by twisting lower drive shaft. Locator pin should snap flush in coupler. Full engagement will prevent further shaft rotation.
7. Secure lower shaft assembly to coupler by tightening clamping knob (D).



## Support Handle Installation

Note: Label (A) shows minimum spacing for support handle location.

1. If necessary, position support handle for comfortable operation and securely tighten screws.



## 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 around dry vegetation. This unit is equipped with a spark arrestor to prevent discharge of hot particles from the engine. Metal cutters can also create sparks if the cutter strikes rocks, metal, or other hard objects. Contact local fire authorities for laws or regulations regarding fire prevention requirements.***

## Fuel

### **WARNING**

***Diesel fuels and alternative fuels, such as E15 (15% ethanol), E85 (85% ethanol) or any fuels not meeting Shindaiwa requirements are NOT approved for use in Shindaiwa 2-stroke or Hybrid 4-stroke gasoline engines. Use of diesel or 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. Diesel or alternative fuels may also cause premature deterioration of fuel lines, gaskets, carburetors and other engine components.***

### Fuel Requirements

**Gasoline** - Use fresh (purchased within the last 30 days from the pump) 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. Use of ECHO branded fuel is recommended to extend engine life in all air-cooled 2-stroke and 2/4-stroke hybrid engines.

**Two Stroke Oil** - A 2-stroke engine oil, such as Shindaiwa branded 2-stroke oils, meeting ISO-L-EGD (ISO/CD 13738) and J.A.S.O. FD Standards must be used. Shindaiwa branded 2-stroke oils meet these standards. 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 2-stroke engine warranty.

### **WARNING**

***2-Stroke engine oil contains petroleum distillates and other additives that may be harmful if swallowed. Heated oil can release vapors that can cause flash fire, or ignite with explosive force. Read and follow the oil manufacturer's instructions, and observe all safety warnings and precautions for handling flammable liquids. For more detailed safety and first aid information, visit [www.echo-usa.com](http://www.echo-usa.com) for a copy of the Material Safety Data Sheet.***

- ◆ **KEEP OUT OF REACH OF CHILDREN.**
- ◆ **If swallowed, do not induce vomiting. CALL PHYSICIAN OR A POISON CONTROL CENTER IMMEDIATELY.**

- ◆ **WEAR SAFETY GLASSES** when mixing or handling.
- ◆ **AVOID** repeated or prolonged skin contact.
- ◆ **AVOID** inhaling oil mists or vapors.

## NOTICE

*Shindaiwa branded 2-stroke oils may be mixed at 50:1 ratio for application in all Shindaiwa engines sold in the past, regardless of ratio specified in those manuals.*

### 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 3 m (10 ft.) from refueling location before starting the engine.**

## DANGER

**Gasoline vapor is heavier than air, and can travel along the ground to nearby sources of ignition such as electrical motors, pilot lights, and hot or running engines. Vapors ignited by an ignition source can flash back to the fuel container, resulting in an explosion, fire, serious or fatal injuries, and extensive property damage.**

**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.

Fuel to Oil Mix – 50:1 Ratio			
US		Metric	
Gas	Oil	Gas	Oil
gal.	fl. oz.	L	cc
1	2.6	5	100
2	5.2	10	200
5	13	25	500

**NOTICE**

*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**

- Empty the fuel tank prior to storing the unit. 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.

**NOTICE**

*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.*

**NOTICE**

*Stored 2-stroke fuel may separate. ALWAYS shake fuel container thoroughly before each use.*

**NOTICE**

*Used oil and gasoline, and soiled towels are hazardous waste materials. Disposal laws vary by locality.*

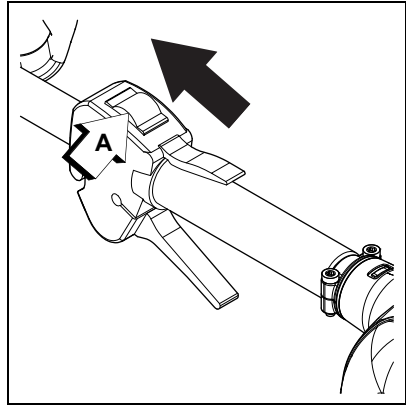
## Starting Cold Engine

### WARNING


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

#### 1. Stop Switch

Move stop switch (A) away from the STOP position.

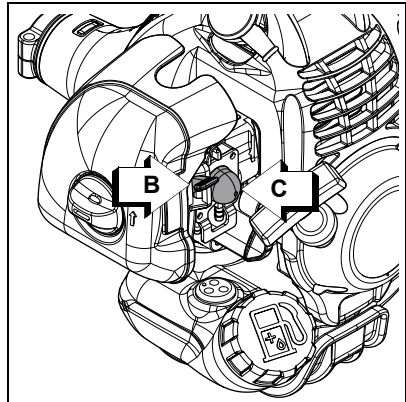


#### 2. Choke

Move choke (B) to COLD START (  ) position.

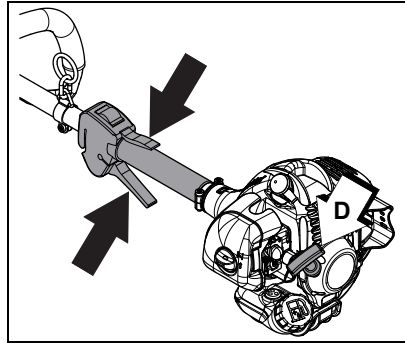
#### 3. Purge Bulb

Pump purge bulb (C) until fuel is visible and flows freely in the clear fuel tank return line. Pump bulb an additional 4 or 5 times.



#### 4. Recoil Starter

Lay the unit on a flat area and keep movable attachment parts clear of all obstacles. Firmly grasp throttle handle and throttle trigger lockout with left hand and fully depress throttle trigger to wide open position. Rapidly pull recoil starter handle/rope (D) until engine fires (or maximum five [5] pulls).



#### 5. Choke

After engine fires (or 5 pulls), move choke (B) to the RUN ( | ↓ | ) position. Firmly grasp throttle handle and throttle trigger lockout with left hand and fully depress throttle trigger to wide open position. Pull starter handle/rope until engine starts and runs. Release throttle trigger and allow unit to warm up at idle for several minutes.

**Note:** If engine does not start with choke in “Run” position after 5 pulls, repeat instructions 2 - 5.

#### 6. Throttle Trigger

After engine warm-up, grip throttle handle and support handle. Depress the throttle trigger lockout, and gradually depress throttle trigger to increase engine RPM to operating speed.

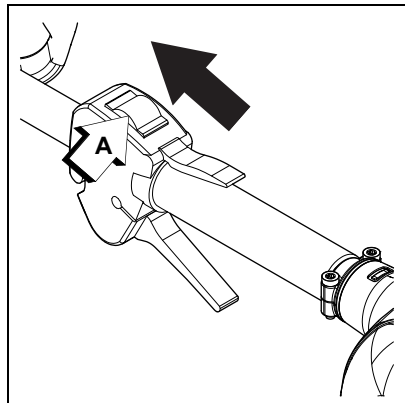
## Starting Warm Engine

The starting procedure is the same as Cold Start except DO NOT close the choke, and do not depress throttle trigger to wide open position.

***The attachment should not move at idle, otherwise serious personal injury may result.***

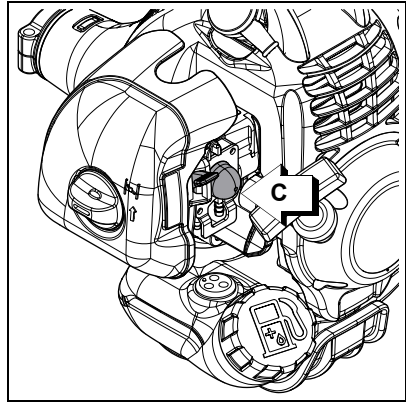
#### 1. Stop Switch

Move stop switch (A) away from the STOP position.



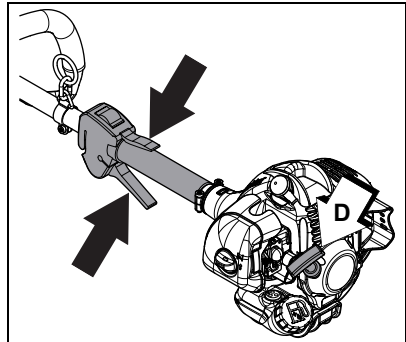
## 2. *Purge Bulb*

Pump purge bulb (C) until fuel is visible and flows freely in the clear fuel tank return line. Pump bulb an additional 4 or 5 times.



## 3. *Recoil Starter*

Lay the unit on a flat area and keep movable attachment parts clear of all obstacles. Firmly grip throttle handle and throttle trigger lockout with left hand. Rapidly pull recoil starter handle/rope (D) until engine fires.

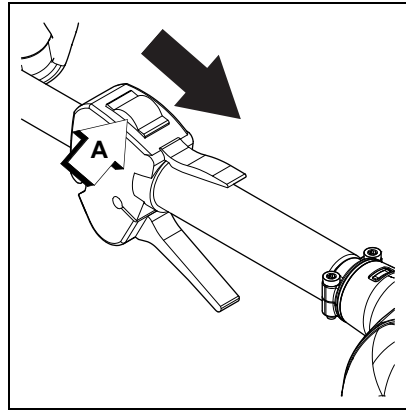


**Note:** If engine does not start after 5 pulls, use Cold Start Procedure.



## Stopping Engine

1. *Throttle*  
Release throttle trigger and allow engine to return to idle before shutting off engine.
2. *Stop Switch*  
Move stop switch (A) to STOP position.



### **! WARNING**

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

## MAINTENANCE

### **! 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. Allow unit to cool before performing service. Wear gloves to protect hands from sharp edges and hot surfaces.***

### **! WARNING**

***Operating a poorly maintained unit can result in serious injuries to operator or bystanders. Always follow all maintenance instructions as written, otherwise serious personal injury can result.***

Your unit is designed to provide many hours of trouble free service. Regular scheduled maintenance will help your unit achieve that goal. If you are unsure or are not equipped with the necessary tools, we recommend that you take your unit to a Servicing Dealer for maintenance. To help you decide whether you want to DO-IT-YOURSELF or have the Dealer do it, each maintenance task has been graded. If the task is not listed, see your Dealer for repairs.

**NOTICE**

*The use of emission control components other than those specifically designed for this unit is a violation of federal law.*

**Skill Levels**

**Level 1** = Easy to do. Common tools may be required.

**Level 2** = Moderate difficulty. Some specialized tools may be required.

**Level 3** = See your dealer.

Click [HERE](#) or go to <http://www.echo-usa.com/products/maintenance-kit>

or

HERE <https://www.shindaiwa-usa.com/you-can.aspx>

**Maintenance Intervals**

COMPONENT/SYSTEM	MAINTENANCE PROCEDURE	REQUIRED SKILL LEVEL
<b>Daily or Before Use</b>		
Air Filter	Inspect/Clean *	<b>1</b>
Choke Shutter	Inspect/Clean *	<b>1</b>
Fuel System	Inspect	<b>1</b>
Cooling System	Inspect/Clean	<b>2</b>
Recoil Starter Rope	Inspect/Clean *	<b>1</b>
Screws/Nuts/Bolts	Inspect/Tighten/Replace *	<b>1</b>
<b>Every Refuel</b>		
Fuel System	Inspect <sup>3</sup>	<b>1</b>
<b>3 Months</b>		
Air Filter	Replace *	<b>1</b>

COMPONENT/SYSTEM	MAINTENANCE PROCEDURE	REQUIRED SKILL LEVEL
Fuel Filter	Inspect *	1
Fuel Cap Gasket	Inspect *	1
Spark Plug	Inspect/Clean/Replace *	1
Muffler Spark Arrestor	Inspect/Clean/Replace *	2
Cylinder Exhaust Port	Inspect/Clean/De-carbon	2
Drive Shaft (Flex Cable Models)	Grease <sup>1</sup>	2
Gear Housing	Grease <sup>2</sup>	2
<b>Yearly</b>		
Fuel Filter	Inspect/Replace *	1
Fuel Cap Gasket	Replace *	1

**IMPORTANT NOTE** - Time intervals shown are maximum. Actual use and your experience will determine the frequency of required maintenance.

### **MAINTENANCE PROCEDURE NOTES:**

<sup>1</sup> Apply lithium based grease every 25 hours of use.

<sup>2</sup> Apply lithium based grease every 50 hours of use.

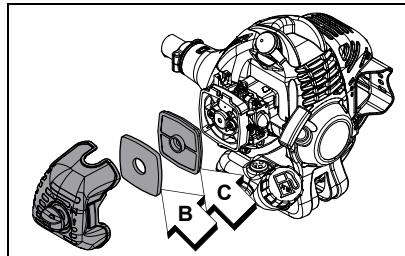
\* Replacement is recommended based on the finding of damage or wear during inspection.

## **Air Filter**

### **Level 1.**

Parts Required: Tune-Up Kit.

1. Close choke (COLD START [↵]) position). This prevents dirt from entering the carburetor throat when the air filter is removed. Brush accumulated dirt from air cleaner area.
2. Remove air filter cover. Brush dirt from inside cover.
3. Remove foam pre-filter (B) and air filter (C) and clean as indicated below:
4. Foam Pre-filter.
  - Clean foam filter in water/detergent solution and rinse with clean water.



- Wrap the filter in a clean, dry cloth and squeeze (do not wring) dry. Allow to dry completely before reuse. Do not oil.

Air Filter

- Lightly brush debris from filter. Replace filter if it is damaged, fuel soaked, very dirty, or the rubber sealing edges are deformed.

5. Assemble components in reverse order.

**Fuel Filter**

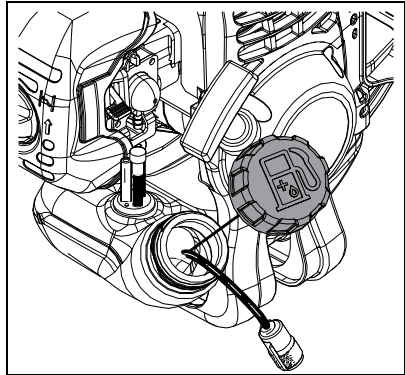
**Level 1.**

Parts Required: Tune-Up Kit.

**! DANGER**

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

1. Use a clean rag to remove loose dirt from around fuel cap and empty fuel tank.



**NOTICE**

***Do not damage fuel line while removing fuel filter from tank or line.***

2. Pull the fuel filter from the tank.
3. Do not remove the wire coil clamp to remove the fuel filter. Pinch the fuel filter with the fingers on one hand and the fuel line with the other hand. Pull and twist slightly to separate.
4. Install the new filter with the reverse action.

Note: Federal EPA regulations require all model year 2012 and later gasoline powered engines produced for sale in the United States to be equipped with a special low permeation fuel supply hose between the carburetor and fuel tank. When servicing model year 2012 and later equipment, only fuel supply hoses certified by EPA can be used to replace the original equipment supply hose. Fines up to \$37,500 may be enforced for using an un-certified replacement part.

## Spark Plug

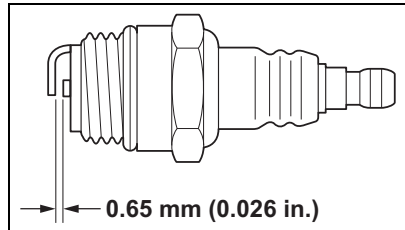
### Level 2.

Parts Required: Tune-Up Kit.

## NOTICE

*Use only NGK BPMR8Y spark plug otherwise severe engine damage may occur.*

1. Remove spark plug and check for fouling, worn and rounded center electrode.
2. Clean the plug or replace with a new one. DO NOT sand blast to clean. Remaining sand will damage engine.
3. Adjust spark plug gap by bending outer electrode.
4. Tighten spark plug to 150-170 kgf•cm (130-150 lbf•in).



## Cooling System

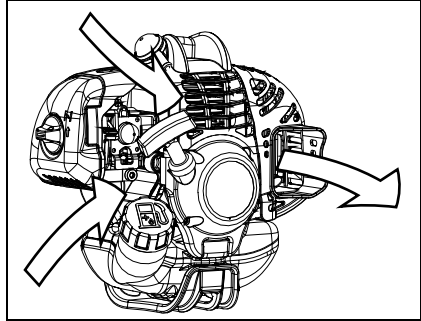
Level 2.

### NOTICE

To maintain proper engine operating temperatures, cooling air must pass freely through the cylinder fin area. This flow of air carries combustion heat away from the engine.

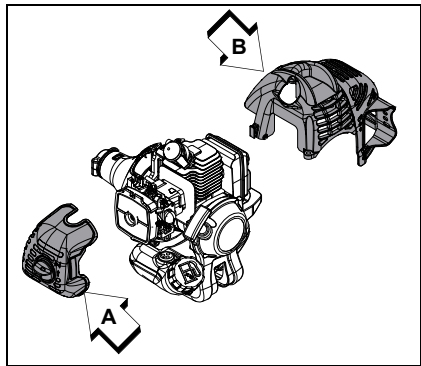
Overheating and engine seizure can occur when:

- Air intakes are blocked, preventing cooling air from reaching the cylinder.
- Dust and grass build up on the outside of the cylinder. This build up insulates the engine and prevents the heat from leaving.



Removal of cooling passage blockages or cleaning of cooling fins is considered "Normal Maintenance." Any failure attributed to lack of maintenance is not warranted.

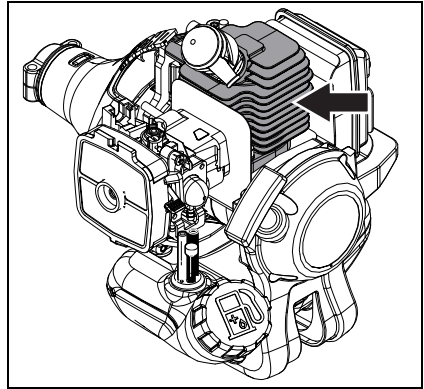
1. Remove spark plug lead.
2. Close choke (COLD START [↔]) position). This prevents dirt from entering the carburetor throat when the air filter is removed. Remove air cleaner cover (A).
3. Remove engine cover (B).



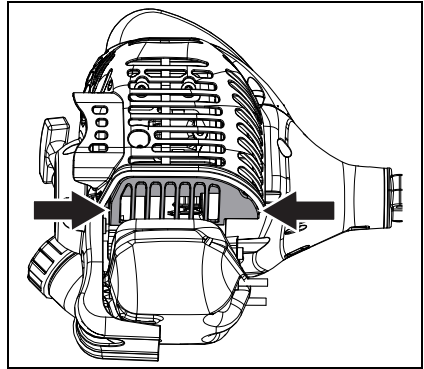
### NOTICE

DO NOT use a metal scraper to remove dirt from the cylinder fins.

4. Use a brush to remove dirt from the cylinder fins.
5. Remove ignition wires from clip for cleaning.



6. Remove grass and leaves from the grid between the recoil starter and fuel tank.
7. Assemble components in reverse order.



## Exhaust System

### Spark Arrestor Screen

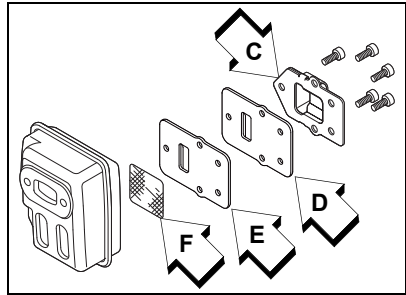
#### Level 2.

Parts required: Spark Arrestor Screen, Gasket(s)

1. Remove spark plug lead and engine cover.
2. Place piston at Top Dead Center (TDC) to prevent carbon/dirt from entering cylinder.
3. Remove spark arrestor screen cover (C), gaskets (D), (E), and screen (F), from muffler body.
4. Clean carbon deposits from muffler components.

Note: When cleaning carbon deposit, be careful not to damage the catalytic element inside muffler.

5. Replace screen if it is cracked, plugged, or has holes burned through.
6. Assemble components in reverse order.

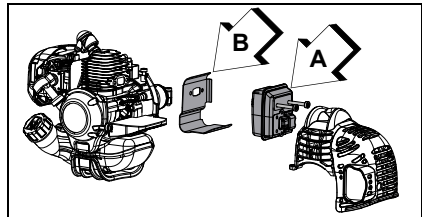


### Exhaust Port Cleaning

#### Level 2.

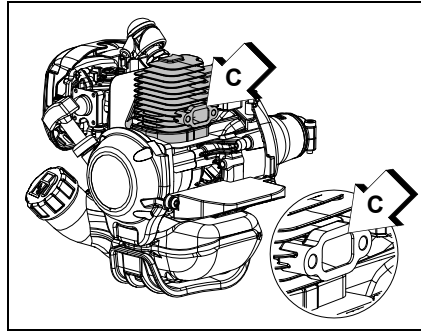
Parts Required: Heat Shield (as required).

1. Remove spark plug lead from spark plug, and remove engine cover.
2. Place piston at top dead center. Remove muffler (A) and heat shield (B).





- Use a wood or plastic scraping tool to clean deposits from cylinder exhaust port (C).



## NOTICE

*Never use a metal tool to scrape carbon from the exhaust port. Do not scratch the cylinder or piston when cleaning the exhaust port. Do not allow carbon particles to enter the cylinder.*

- Inspect heat shield, and replace if damaged.
- Install heat shield and muffler.
- Tighten muffler mounting bolts (or nuts) to 90-110 kgf•cm (80-95 lbf•in).
- Install engine cover and attach spark plug lead.
- Start engine, and warm to operating temperature.
- Stop engine, and re-tighten mounting bolts (or nuts) to specifications.

## Carburetor Adjustment

### Level 2.

### Engine Break-In

New engines must be operated a minimum duration of two tanks of fuel break-in before carburetor adjustments can be made. During the break-in period your engine performance will increase and exhaust emissions will stabilize. Idle speed can be adjusted as required.

### High Altitude Operation

This engine has been factory adjusted to maintain satisfactory starting and durability performance up to 330 m (1,100 ft.) above sea level (ASL) (96.0 kPa). To maintain proper engine operation and emission compliance above 330 m (1,100 ft.) ASL the carburetor may need to be adjusted by an authorized service dealer.

## NOTICE

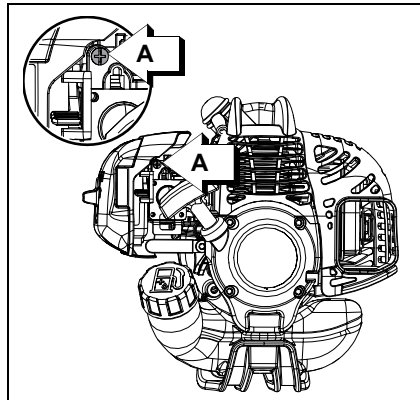
*If the engine is adjusted for operation above 330 m (1,100 ft.) ASL, the carburetor must be re-adjusted when operating the engine below 330 m (1,100 ft.) ASL, otherwise severe engine damage may result.*

Note: Every unit is run at the factory and the carburetor is set in compliance with emission regulations. Carburetor adjustments, other than idle speed, must be performed by an authorized dealer.

## WARNING

- ◆ The cutting attachment may be moving during carburetor adjustments.
- ◆ Wear your protective equipment and observe all safety instructions.
- ◆ For units equipped with a clutch, be sure the cutting attachment stops moving when the engine idles.
- ◆ When the unit is turned off, make sure the cutting attachment has stopped before the unit is set down.

1. Check idle speed and reset if necessary. If a tachometer is available, idle speed screw (A) should be set to the specifications found on "Specifications" page of this manual. Turn idle screw (A) clockwise to increase idle speed; counterclockwise to decrease idle speed.



## WARNING

***When carburetor adjustment is completed, the cutting attachment should not move at idle, otherwise serious personal injury may result.***

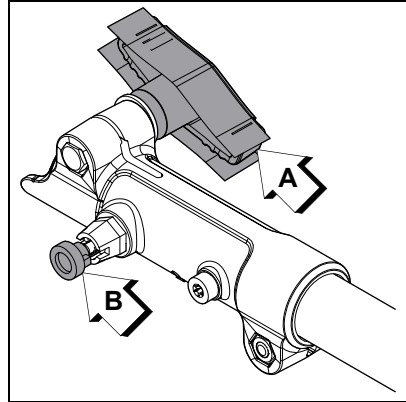
## Lubrication

### Level 1.

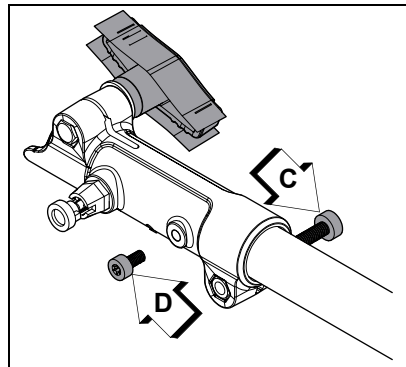
Parts Required: Lithium Based Grease.

### Drive Shaft Upper

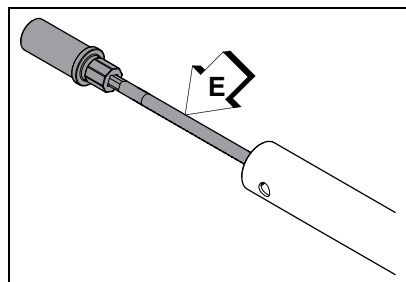
1. Loosen clamping knob (A)
2. Pull locator pin (B) and rotate  $\frac{1}{4}$  turn counterclockwise to lockout position.
3. Remove attachment.



4. Remove coupler from upper drive shaft assembly by loosening clamping screw (C) and removing set screw (D).



5. Remove upper flex cable (E), wipe clean, and apply a thin coating of 15 ml (0.5 oz.) of grease.
6. Install cable. Make sure that the flex cable fully engages into the clutch square drive socket.



7. Slide coupler on upper drive shaft until fully seated, and align set screw hole in coupling with hole in upper drive shaft.
8. Install and tighten set screw (D), and tighten clamping screw (C).

## TROUBLESHOOTING

ENGINE PROBLEM TROUBLESHOOTING CHART				
Problem	Check	Status	Cause	Remedy
Engine starts hard or Engine does not start	Fuel at carburetor	No fuel at carburetor	Fuel strainer or fuel line obstructed	Clean or replace See your dealer
	Fuel at cylinder	No fuel at cylinder	Carburetor	See your dealer
		Muffler wet with fuel	Fuel mixture too rich	OPEN choke Clean or replace air filter Adjust carburetor See your dealer
	Spark at end of plug wire	No spark	STOP switch OFF - Electrical problem - Interlock switch	Turn switch to ON See your dealer
	Spark at plug		Incorrect gap - Covered with carbon - Fouled with fuel - Plug defective	Adjust to 0.65 mm (0.026 in.) Clean or replace plug
Engine runs, but dies or Engine does not accelerate properly	Air filter	Air filter dirty	Normal wear	Clean or replace
	Fuel filter	Fuel filter dirty	Contaminants or residue in fuel	Replace filter or replace fuel
	Fuel vent	Fuel vent plugged	Contaminated fuel	Clean or replace

ENGINE PROBLEM TROUBLESHOOTING CHART				
Problem	Check	Status	Cause	Remedy
Engine runs, but dies	Spark plug	Plug dirty or worn	Normal wear	Clean and adjust or replace
	Carburetor	Improper adjustment	Vibration	Adjust
or				
Engine does not accelerate properly	Cooling system	Cooling system dirty or plugged	Extended operation in dirty or dusty locations	Clean
	Spark arrestor screen	Spark arrestor screen plugged	Normal wear	Replace
Engine does not crank	N/A		Internal engine problem	See your dealer

## **DANGER**

***Fuel vapors are extremely flammable and can cause fire and/or explosion. Never test for ignition spark by grounding spark plug near cylinder plug hole, otherwise serious personal injury can result.***

## STORAGE

## **WARNING**

***During operation the muffler or catalytic muffler and surrounding cover become hot. Always keep exhaust area clear of flammable debris during transportation or when storing, otherwise serious property damage or personal injury may result.***

### Long Term Storage (Over 30 Days)

Do not store your unit for a prolonged period of time (30 days or longer) without performing protective storage maintenance which includes the following:

1. Store unit in a dry, dust free place, out of the reach of children.


**DANGER**

***Do not store in enclosure where fuel fumes may accumulate or reach an open flame or spark.***

2. Place the stop switch in the "OFF" position.
3. Remove accumulation of grease, oil, dirt and debris from exterior of unit.
4. Perform all periodic lubrication and services that are required.
5. Tighten all the screws and nuts.
6. Drain fuel tank completely. Press purge bulb 6-7 times to remove remaining fuel from carburetor then drain the tank again. Close choke, start and run the engine until it stops due to lack of fuel.
7. Allow engine to cool. Remove the spark plug lead from the spark plug. Remove the spark plug. Pour 7 cc (0.25 oz.) of fresh, clean, two-stroke engine oil into the cylinder through the spark plug hole.
8. Pull the recoil starter handle 2-3 times to distribute the oil inside the engine.
9. Observe the piston location through the spark plug hole. Pull the recoil handle slowly until the piston reaches the top of its travel and leave it there.
10. Install the spark plug. Connect the spark plug lead to the spark plug.

## SPECIFICATIONS

For units with the following serial numbers:

U12015001001 - U12015999999

U57715001001 - U57715999999

MODEL	M235
Length	1,033 mm (40.7 in.)
Width	251 mm (10.0 in.)
Height	237 mm (9.3 in.)
Weight (dry)	4.44 kg (9.8 lb.)
Engine Type	Air cooled, two-stroke, single cylinder gasoline engine.
Bore	32.2 mm (1.27 in.)
Stroke	26 mm (1.02 in.)
Displacement	21.2 cc (1.29 in. <sup>3</sup> )

MODEL	M235
Exhaust	Spark arrestor muffler or spark arrestor muffler with catalyst.
Carburetor	Diaphragm with purge pump.
Ignition System	Flywheel magneto, capacitor discharge ignition type.
Spark Plug	NGK BPR8Y- Gap 0.65 mm (0.026 in.)
Fuel	Mixed (gasoline and two-stroke oil)
Fuel to Oil Ratio	50:1
Gasoline	Use 89 Octane unleaded. Do not use fuel containing methyl alcohol, more than 10% ethyl alcohol or 15% MTBE. Do not use alternative fuels such as E15 or E85.
Oil	ISO-L-EGD (ISO/CD 13738) and J.A.S.O. M345- <u>FD</u> , two-stroke, air-cooled engine oil.
Fuel Tank Capacity	0.42 L (14.2 US fl. oz.)
Starter System	Automatic rewind starter
Clutch	Centrifugal type
Vibration Reduction Systems	Rubber cushion on engine mount
Operation Rod	25 mm (1.0 in.) diameter aluminum tube
Drive Shaft	6 mm (0.24 in.) diameter flexible shaft
Handle Front Rear	D-loop type with rubber anti-vibration grip Throttle handle with rubber grip
Idle Speed	3,000 RPM
Clutch Engagement Speed	4,300 RPM
Wide Open Throttle Speed (W.O.T.)	9,000 RPM

## SPECIFICATIONS

For units with the following serial numbers:

U70615001001 - U70615999999

MODEL	M235
Length	1,021 mm (40.2 in.)
Width	251 mm (10.0 in.)
Height	242 mm (9.5 in.)
Weight (dry)	4.5 kg (9.9 lb.)
Engine Type	Air cooled, two-stroke, single cylinder gasoline engine.
Bore	32.2 mm (1.27 in.)
Stroke	26 mm (1.02 in.)
Displacement	21.2 cc (1.29 in. <sup>3</sup> )
Exhaust	Spark arrestor muffler or spark arrestor muffler with catalyst.
Carburetor	Diaphragm with purge pump.
Ignition System	Flywheel magneto, capacitor discharge ignition type.
Spark Plug	NGK BPMR8Y- Gap 0.65 mm (0.026 in.)
Fuel	Mixed (gasoline and two-stroke oil)
Fuel to Oil Ratio	50:1
Gasoline	Use 89 Octane unleaded. Do not use fuel containing methyl alcohol, more than 10% ethyl alcohol or 15% MTBE. Do not use alternative fuels such as E15 or E85.
Oil	ISO-L-EGD (ISO/CD 13738) and J.A.S.O. M345- <u>FD</u> , two-stroke, air-cooled engine oil.
Fuel Tank Capacity	0.38 L (12.8 US fl. oz.)
Starter System	Automatic rewind starter
Clutch	Centrifugal type
Vibration Reduction Systems	Rubber cushion on engine mount
Operation Rod	25 mm (1.0 in.) diameter aluminum tube
Drive Shaft	6 mm (0.24 in.) diameter flexible shaft



<b>MODEL</b>	<b>M235</b>
Handle Front Rear	D-loop type with rubber anti-vibration grip Throttle handle with rubber grip
Idle Speed	3,000 RPM
Clutch Engagement Speed	4,300 RPM
Wide Open Throttle Speed (W.O.T.)	9,000 RPM

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**PRODUCT REGISTRATION**

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Purchaser's Name : Nombre del Comprador : Nom de l'acheteur	
Address : Dirección : Adresse	
City : Ciudad : Ville	State : Estado : Province
	Zip Code : Código Postal : Code Postal
E-Mail Address : Dirección De Correo Electrónico : Courrier Électronique	
Phone Number : Número De Teléfono : Téléphone	Date of Purchase : Fecha de la Compra : Date de l'achat
Where Purchased : Nombre del Almacén donde fue Comprado : Lieu d'achat	
Model Number : Numero del Modelo : No. de modèle	Serial Number : Numero de Serie : No. de série

Registering your purchase enables us to contact you in the unlikely event of a service update or product recall and verifies your purchase. It also allows us to contact you in the unlikely event of a service update or product recall and verifies your purchase. It also allows us to contact you in the unlikely event of a service update or product recall and verifies your purchase. L'enregistrement de votre achat nous permettra de vous contacter dans le cas improbable de modifications des instructions d'entretien ou de rappel du produit et vérifier que vous êtes le propriétaire en cas de vol ou de perte.

Primary use of tool:  Professional  Homeowner  Rental Equip.  
 Uso primario de la herramienta:  Profesional  Dueño de casa  Alquiler  
 Usage principal:  Professionnel  Résidentiel  Location  
 Do you wish to receive periodic Shindaiwa product information and special offers by e-mail?  Yes  No  
 ¿Desea usted recibir información periódica y ofertas especiales por correo electrónico sobre el producto Shindaiwa?  Yes  No  
 Souhaitez-vous recevoir périodiquement de l'information sur les produits Shindaiwa et les offres spéciales par courrier électronique?  Oui  Non  
 Did you visit the Shindaiwa website before purchasing your product?  Yes  No  
 Visité usted la página web Shindaiwa antes de comprar su producto?  Si  No  
 Avez-vous visité le site d'Shindaiwa avant de procurer votre produit?  Oui  Non

What factor(s) most influenced your purchase?

Performance  Dealer  
 Reliability  Price  
 Friend/Family  Prior Experience  Quality  
 Funcionamiento  Precio  Brand  Warranty  
 Confiabilidad  Experiencia Anterior  Garantía

¿Qué factor(es) influyó más en su compra?

Precio  Distribuidor  
 Amig/Familia  Calidad  
 Marchand  Performance  
 Fiabilité  Expérience  
 Ami/Famille  Marque

Quel facteur (facteurs) vous a influencé le plus?

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