

# Operator's Manual PAS-225/225SB/ 225VP/225VPB Pro Attachment Series™

# 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



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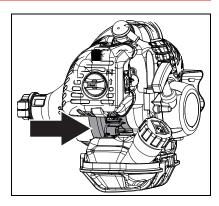
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# SERVICING INFORMATION

### **Parts and Serial Number**

Genuine ECHO parts and assemblies for your ECHO products are available only from an Authorized ECHO Dealer. When you do need to buy parts, always have the model number and serial number of the unit with you. Image shows serial number location. 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 ECHO Service Dealer. For the name and address of the Authorized ECHO Service Dealer nearest you, ask your retailer or call: 1-800-432-ECHO (3246). Dealer information is also available on our Web Site www.echo-usa.com. When presenting your unit for Warranty service/repairs, proof of purchase is required.

# **ECHO Consumer Product Support**

If you require assistance or have questions concerning the application, operation, or maintenance of this product, call the ECHO Consumer Product Support Department at 1-800-432-ECHO (3246) from 8:00 a.m. to 5:00 p.m. (Central Standard Time) Monday through Friday. Before calling, please know the model and serial number of your unit.

# **Product Registration**

Register your ECHO equipment online at www.echo-usa.com or by filling out the product registration sheet included in this manual. Registering your product confirms warranty coverage and provides a direct link to ECHO if we find it necessary to contact you.

### Additional Literature

In addition to finding information online, information is available from your Authorized ECHO 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.

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 COULD 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.

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.	Τ	Carburetor adjustment (high speed)
	Wear eye, ear and head protection.	T	Carburetor adjustment (idle speed)
	Wear hand and foot protection.	L	Carburetor Adjustment (low speed)
<u> </u>	Safety / alert	STOP	Stop
atellitutkits.	Hot surface	+	Fuel and oil mixture
	Do not allow flames or sparks near fuel.	Ignition ON OFF O	Ignition ON / OFF
3	Do not smoke near fuel.	•	Purge bulb
	Choke control RUN position (choke open)	1	Choke control COLD START position (choke closed)

Symbol	Description	Symbol	Description
	Keep feet away from blade.		Rotating cutting attachment
	Thrown objects		Wear face shield.
	Finger severing	علا	Wear slip resistant footwear.
15M-50 FT	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.
		Avoid kick out keep bystander ft.) away.	rs at least 15 m (50
		Beware thrown	objects.

Symbol	Symbol Description		Description
15m	(5oft)	Keep bystande away 15 m (50	rs and helpers ft.).

Note: Not all symbols will appear on your unit.



# **Personal Condition and Safety Equipment**

# **WARNING**

Cancer and Reproductive Harm www.P65Warnings.ca.gov

# WARNING

The muffler or catalytic muffler and surrounding cover may become extremely hot. If unit is equipped with muffler, 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 (not included) 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.

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### **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.

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- 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.



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- · 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.

# **A** DANGER

All overhead 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 gas-powered products 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 for instructions on Safe Operation.

### Clear The Work Area

- Always clear the work area of foreign objects such as rocks, broken glass, nails, wire, or string, and check for any hidden hazards. 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.
- Outside the 15 m (50 ft) zone, there is still a risk of injury from thrown objects.
- · Bystanders should be encouraged to wear eye protection.
- If you are approached, stop the engine and cutting attachment.

### 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 overreach.
- Keep cutting attachment below waist.
- Keep all body parts away from rotating cutting attachment.

### **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 ECHO 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.

- Do not attempt to modify this product. Serious injury can result from the use of any modified product.
- · Check unit for loose or missing nuts, bolts, and screws. Tighten or replace as needed.
- Inspect shield for damage and ensure that shield is properly installed, and that the cut-off knife is securely in place. Replace if either is damaged or missing.
- Check that the cutting attachment is firmly attached and in safe operating condition.
- Ensure that manufacturer-recommended flexible non-metallic line is installed in the trimmer head.
- Ensure that throttle trigger, throttle trigger lockout, and stop switch all work properly.
- · Check that handle and harness (if included) are installed and adjusted for safe, comfortable operation. See assembly section for proper adjustment.

# **WARNING**

Moving parts can amputate fingers or cause sever injuries. Keep hands, clothing and loose objects away from all openings.

- · Always stop unit, disconnect spark plug or remove battery and make sure all moving parts have come to a complete stop before assembling unit, removing obstructions, cleaning debris, or servicing unit.
- Do not connect spark plug lead to spark plug until unit is ready for
- Do not start or operate unit unless all guards and protective covers are properly assembled.
- Never reach into any opening while the unit is running.

- Position wiring safely to prevent snagging, separation of connectors, or breakage during operation. Gather excess wire, and secure with wiring clamp if provided on equipment, or tuck behind the air filter area. Do not place wiring directly against hot engine components.
- Check wiring and connectors for nicks, cuts, exposed wire, or other damage, and repair or replace as needed. Exposed wire, or connectors can cause shocks, sparks, and risk of fire or explosion, resulting in serious injury.
- · Check wire terminals for secure connections.

# WARNING

Periodically check fuel system (fuel lines, vent, grommet, fuel tank, and fuel cap) for leaks, especially if the unit is dropped. If damage or leaks are found, do not use unit, otherwise serious personal injury or property damage may occur. Have unit repaired by an Authorized Service Dealer before using.

# **EMISSION CONTROL**

### CARB and EPA Emission 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

EMISSION CONTROL INFORMATION ENGINE FAMILY: FERNS.0214EQ DISPLACEMENT: 21,2cc EMISSION COMPLIANCE PERIOD: 50Hours THIS ENGINE MEETS 2013 U.S.EPA EXH/EVP & CALIFORNIA EXH/EVP EMISSION REGULATIONS FOR S.O.R.E. REFER TO OWNER'S MANUAL FOR MAINTENANCE SPECIFICATIONS AND ADJUSTMENTS.

YAMABIKO CORP. MMM/YYYY



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).

### EMISSION CONTROL INFORMATION

ENGINE FAMILY: CEHXS.0214KL DISPLACEMENT: 21.2cc EMISSION COMPLIANCE PERIOD: 300Hours THIS ENGINE MEETS 2012 U.S. EPA EXHVEVP & CALIFORNIA EXH/EVP EMISSION REGULATIONS FOR S.O.R.E. REFER TO OWNER'S MANUAL FOR MAINTENANCE SPECIFICATIONS AND ADJUSTMENTS.

YAMABIKO CORP. MMM/YYYY [E]



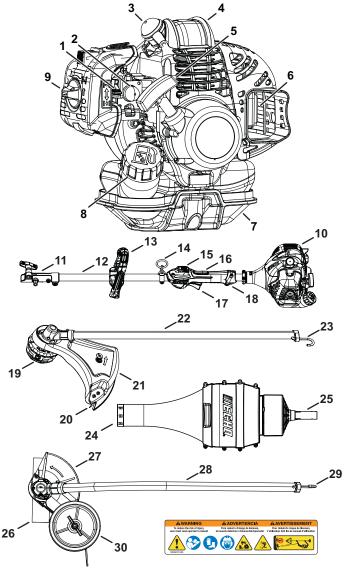
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# Product Emission Durability (Emission Compliance Period)

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) or etching(s) on your unit. Make sure they are legible, and that you understand and follow the instructions. If any cannot be read, replacements can be ordered from your dealer. Images shown below are for example only. Those on your unit might appear slightly different.



- 1. Choke lever
- 2. Purge bulb
- 3. Spark plug
- 4. Top guard
- 5. Recoil starter handle
- 6. Spark arrester muffler or spark arrester muffler with catalyst
- 7. Fuel tank
- 8. Fuel tank cap
- 9. Air filter
- 10. Power head
- 11. Drive shaft coupler
- 12. Upper drive shaft assembly
- 13. Support handle - for left hand
- 14. Harness ring
- 15. Stop switch
- 16. Throttle trigger lockout
- 17. Throttle trigger
- 18. Throttle handle - for right hand
- 19. Nylon cutting attachment
- 20. Cut-off knife
- 21. Debris shield with cut-off knife
- 22. Trimmer drive shaft assembly
- 23. Storage hook
- 24. Blower pipe
- 25. Blower drive shaft assembly
- 26. Blade
- 27. Blade guard
- 28. Edger drive shaft assembly
- 29. Storage hook
- 30. Wheel

### **CONTENTS**

The ECHO 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 ECHO Dealer of damaged or missing parts. Use the contents list to check for missing parts.

### PAS-225/SB

- 1 Power head with upper drive shaft assembly
- 1 Trimmer attachment\*
- 1 Quick start guide
- 1 Warranty statement
- 1 Storage hook assembly\*

### PAS-225/VP/VPB

- 1 Power head with upper drive shaft assembly
- 1 Quick start guide
- 1 Warranty statement
- 1 Trimmer attachment
- 1 Power blower attachment or power edger attachment
- 1 Storage hook assembly
- 1 Nylon trimmer head
- 1 Shield with cut-off knife
- 1 Shield plate
- 3 5 x 16 mm screws (shield mount)
- 1 Adapter plate
- 2 Split pins\*\*
- \*\* Included with VP model only

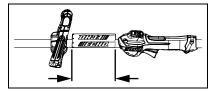
<sup>\*</sup>Included with PAS-225SB only

# **ASSEMBLY**

# Support Handle Installation

Note: Label shows minimum spacing for support handle location.

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



# Power Head Shaft to Lower Drive Shaft Assembly

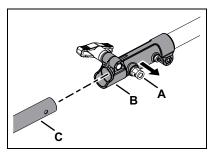
# WARNING

Perform assembly procedures only when the unit is not running. Assembling a running unit can result in serious personal injury.

- 1. Move STOP switch to OFF position.
- 2. Allow unit to cool.
- 3. Remove spark plug lead
- 4. Set power head/shaft assembly on a level surface.
- 5. Pull locater pin (A) out and turn counterclockwise one-guarter turn to lock-out position.
- 6. Remove storage hook and cap from attachment drive shaft (not shown).

Note: Your coupler may appear different than coupler shown. Earlier model power heads may have shorter couplers.

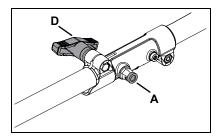
Place attachment drive shaft assembly into coupler (B). Rotate shaft (C) to make sure



inner lower drive shaft engages square upper drive shaft socket.

Note: Lower bearing housing and head assembly must be in line with engine. Some models have an assembly line decal to assist in assembly.

- Rotate locater pin (A) onequarter turn clockwise to engage lower shaft hole. Make sure locater pin is fully engaged by rotating lower drive shaft. Locater pin should snap flush in coupler. Full engagement will prevent further shaft rotation.
- Secure lower shaft assembly to coupler by tightening clamping knob (D).



### **Shield Installation**

Parts Required: Debris shield with cut-off knife, shield plate, three 5 x 16 mm screws, adapter plate.

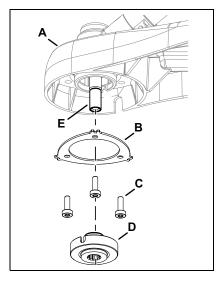
# **A WARNING**

Shield with cut-off knife is for use with the nylon line head only.

# **A** CAUTION

Wear gloves or personal injury could result:

- · Cut-off knife is sharp.
- Gear case and surrounding area could be hot.
- Align holes in shield (A) shield plate (B) and bottom of the gear case flange. Install three screws (C).
- 2. Place adapter plate (D) on PTO shaft (E).



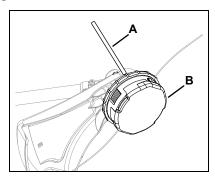
# **Nylon Line Head Installation**

Parts Required: Nylon line head

# **CAUTION**

Wear gloves or personal injury could result:

- · Cut-off knife is sharp.
- Gear case and surrounding area could be hot.
- Align notch in edge of shield and hole in adapter plate with notch in edge of gear housing and insert head locking tool to lock PTO (A).
- 2. Thread line head (B) onto PTO shaft by turning it counterclockwise until head is tight against adapter plate (D above).
- Remove head locking tool (A). 3.



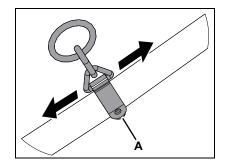
# **NOTICE**

Semi-automatic nylon line heads must be used only with debris shield with cut-off knife. Using nylon line heads with debris shield without cut-off knife can result in trimmer damage, caused by operation with excessive line length.

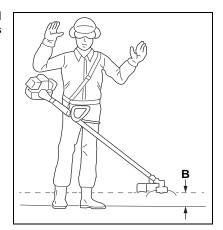
Note: Your nylon line head might appear different than nylon line head shown.

# **Balance and Adjust Unit**

- Loosen hanger clamp screw (A).
- 2. Put on harness.
- 3. Attach harness clip to hanger.



- 4. Slide hanger assembly forward or backward until unit balances with head or blade 200 mm ± 100 mm (8 in. ± 4 in.) from ground (B).
- 5. Tighten harness clamp screw.
- 6. Loosen handle clamp screws, and position handle for comfortable operation.
- 7. Tighten handle clamp 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 arrester 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 ECHO requirements are not approved for use in ECHO two-stroke or hybrid fourstroke 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 two-stroke and two or four-stroke hybrid engines.

Two-Stroke Oil - A two-stroke engine oil, such as ECHO branded twostroke oils, meeting ISO-L-EGD (ISO/CD 13738) and J.A.S.O. FD Standards must be used. ECHO branded two-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 two-stroke engine warranty.

# WARNING

Two-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 https://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

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

### **Handling Fuel**

# **▲** DANGER

Fuel is 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.
- Use caution when handling fuel. Mix and pour fuel outdoors where there are no sparks and flames. Slowly remove the fuel cap only after stopping the engine and allowing the unit to cool. Do not smoke while fueling or mixing fuel. Move the unit at least 3 m (10 ft.) from the fueling point 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

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

FUEL TO OIL MIX - 50:1 RATIO					
U	S	Me	tric		
Gas	as Oil Gas O				
gal.	fl. oz.	L	СС		
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 days or ninety days when a fuel stabilizer is added.

Stored two-stroke fuel may separate. Always shake fuel container thoroughly before each use.

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

# Operation with Blades

# **WARNING**

Metal blades are very sharp and can cause severe injuries, even if unit is off and blades are not moving. Avoid contact with blades. Wear gloves to protect hands.

# **WARNING**

Blade use demands specific brushcutter configuration.

Operation without specified shield, barrier bar or U-handle, and harness can result in serious personal injury. Follow installation instructions.

	RIAL TO CUT	GRASS	WEED/ GRASS	WEED/ GRASS	BRUSH <12.7 MM (0.5 in.)	CLEARING <63.5 MM (2.5 in.)
Cutting Attachment		Nylon line Head / Pro head Maxi-Cut Head Head		3-tooth blade / 8-tooth blade	80-tooth blade	22-tooth blade
	Shield	Standard debris shield included with SRM, DSRM, T, PAS and DPAS trimmer attachments, or GT models (PRO Maxi- Cut Head is not rated for GT models)		and C m	odel brushc	pplied with U utters, blade S and DPAS chments
You must install these	Handle	with SRM, and DPAS (PRO Max	Jard handle included BRM, DSRM, T, PAS barrier bar supplied with U an model brushcutters, blade conversion kit or PAS and DF brushcutter attachments		with U and C ers, blade S and DPAS	
parts	Harness	Not required <sup>2</sup>		Harness model	<sup>3</sup> supplied v brushcutters conversion	
	Upper/ lower plate adapter and washer	Not required	Washer required, included with cutting attachment	include brushcutt	ed with U an	onversion kit brushcutter

	RIAL TO CUT	GRASS	WEED/ GRASS	WEED/ GRASS	BRUSH <12.7 MM (0.5 in.)	CLEARING <63.5 MM (2.5 in.)
You must install	Hex nut	Not required	Hex nut required, included with cutting attachment	Hex nut required, included with U and C model brushcutters, blade conversion kit or PAS and DPAS brushcutter attachments		utters, blade S and DPAS
these parts	Cotter pin	Not required	New cotter pin included with cutting attachment	New cotter pin included with U and C model brushcutters, blac conversion kit or PAS and DPA brushcutter attachments		utters, blade S and DPAS

<sup>&</sup>lt;sup>1</sup> ANSI standards require brushcutters be equipped with a support handle with barrier bar or restrictive harness.

# **WARNING**

Do not install blades on GT (curved shaft) model trimmers.

- Use only ECHO approved parts. Failure to use the correct parts can cause the blade to fly off. Serious injury to the operator and/or bystanders can occur.
- · Arbor diameter of upper blade plate must match arbor diameter of blades.
- For barrier bar or U-handle, follow instructions supplied with either blade conversion kit or U-handle kit, and verify blade is secured properly.
- A new cotter pin is required each time a blade is installed.
- · Shoulder harnesses may be used on all trimmers and brushcutters to reduce operator fatigue. Brushcutters over 7.5 kg (16.5 lb.) and U-handle brushcutters require a double shoulder harness.

Note: The barrier bar is used to restrict rearward movement of the unit. The barrier bar is not a handle and should not be gripped when using or carrying the unit.

<sup>&</sup>lt;sup>2</sup> Grass trimmers do not require a harness if dry weight is below 6.0 kg (13.2 lb). For grass trimmers having a dry weight of 6.0 kg (13.2 lb) to 7.5 kg (16.5 lb), a single-shoulder harness is required. A harness may be used as outlined in this Operator's Manual.

<sup>&</sup>lt;sup>3</sup> Brushcutters require a single shoulder harness, at a minimum, if the dry weight is below 7.5 kg (16.5 lb).

### Blade Selection

# **WARNING**

An improper or dull blade can cause serious personal injury. The type of blade used must be matched to the type and size of material cut. Blades must be sharp. Dull blades increase the chance of kick-out and injury to yourself and bystanders. Never use an edging blade, circular saw blade, or any other type of unapproved blade.

# NOTICE

Not all blades are compatible with all trimmers. Visit https://www.echo-usa.com or https://www.shindaiwa-usa.com to find compatible blades.

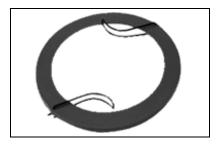
- **3-Tooth Grass/Weed Blade** may be used wherever the nylon line head is used. DO NOT use this blade for heavy weeds or brush.
- **8-Tooth Weed/Grass Blade** is designed for grass, garden debris and thick weeds up to 19 mm (0.75 in.) diameter. Do not use this blade for brush or heavy woody growth.
- **80-Tooth Brush Blade** is designed for cutting brush and woody growth up to 13 mm (0.5 in.) diameter.
- **22-Tooth Clearing Blade** is designed for dense thickets and saplings up to 64 mm (2.5 in.) diameter.

# WARNING

A trimmer/brushcutter with a metal blade can cause serious injuries if handled improperly.

Use care when carrying or handling the equipment to avoid contact with the cutting edges of the blade. Use the optional blade cover when unit is not in use.

Keep blades in protective packaging until ready to install. Store blades safely after removal to prevent injury from accidental contact.

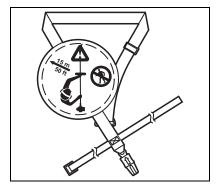


Use blade protectors to protect blade teeth during unit transportation.

### Use Shoulder/Waist Harness

ECHO recommends using a shoulder/waist harness for all trimmer / brushcutter use, not just blade operation. The harness suspends the trimmer from the operator's shoulder and reduces operator fatigue.

The harness also increases operator safety by reducing the possibility of blade contact with the operator's hands and feet by restricting trimmer movement.



Ensure the warning sign on the back of the shoulder harness can be read easily.

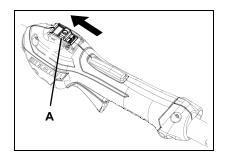
Note: In case of emergency, disconnect the trimmer from the harness.

# Starting Cold Engine

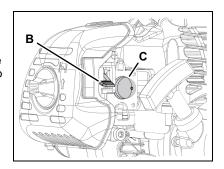
# **WARNING**

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.

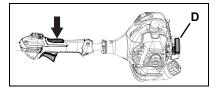
Move stop switch (A) forward, away from the STOP position.



- 2. Move choke lever (B) to COLD START position.
- Pump purge bulb (C) until fuel is visible and flows freely in the clear fuel tank return line. Pump bulb an additional four or five times.



4. 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 two to three pulls).

5. After engine fires (or two to three pulls), move choke 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 two to three pulls, repeat steps 2 - 5.

6. 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

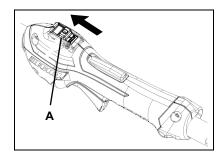
The starting procedure is the same as Cold Start instructions except do not close the choke, and do not hold throttle trigger fully depressed.

# WARNING

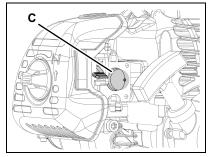
The attachment should not move at idle, otherwise serious personal injury may result.

Note: If attachment moves, readjust carburetor according to Carburetor Adjustment instructions in this manual or see your Authorized Service Dealer.

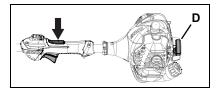
1. Move stop switch (A) forward, away from the STOP position.



2. Pump purge bulb (C) until fuel is visible in the clear fuel return line. Pump bulb an additional four or five times.



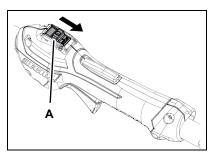
Lay the unit on a flat area and 3. keep movable attachment parts clear of all obstacles. Firmly grip throttle handle and throttle trigger lockout with left hand. Rapidly pull recoil starter handle/rope (D) until engine starts.



Note: If engine does not start after two to three pulls, use Cold Start Procedure.

# **Stopping Engine**

- Release throttle trigger and allow engine to return to idle before shutting off engine.
- 2. Move stop switch (A) back 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 Authorized Service Dealer repair stop switch before using unit again.

# **Applications**

# WARNING

Incorrect unit positioning can cause loss of control and serious personal injury. Always hold throttle handle with right hand and support handle with left hand, positioning unit on right side of body.

# WARNING

Do not install blades on GT (Curved Shaft) or T model trimmers.

# Operating Techniques - Nylon Line Head

Nylon line heads may be used for trimming, scything, edging, and scalping of grass and light weeds.

Units with Speed-Feed® line heads only: To advance trimmer line, tap trimmer head against the ground while the head is turning at normal operating speed.

### Trimming

Feed the spinning line into the material to be cut. Tilt the line head to one side to direct cutting debris away from you:

- Model SRM/PAS/SB/TX/C/T (Straight shaft, counterclockwise line **head rotation):** Tilt the cutting head down on the right side (muffler side) while cutting to direct cutting debris away from operator. Feed the line gradually into the material you wish to cut, avoiding contact with fences or other barriers.
- GT models: Tilt cutting head to the left while cutting to direct debris away from the operator.

### Scything

Scything - Swing the cutting head in a level arc, gradually feeding the line into the material being cut. Move forward with each arc to cut a swath. Width of cutting swath depends on arc. Use a larger arc for a wider swath, or a smaller arc for a narrow swath. Keep line head tilted to direct cutting debris forward or away from you.

### **Edging and Scalping**

Both of these are done with the nylon line cutting head tilted at a steep angle. Scalping is removing top growth, leaving the earth bare. Edging is trimming the grass back where it has spread over a pavement or driveway. During both edging and scalping, hold the unit at a steep angle in a position where the debris, and any dislodged dirt and stone, will not come back towards you even if it ricochets off the hard surface.

### General

- Debris flows in direction of line head rotation. Change line head position to ensure debris flow is directed away from operator.
- · Keep cutting line away from wire fences to avoid entanglement.
- · Operate trimmer only with cutting head below knee height.

# **Operating Techniques - Metal or Plastic Blade**

Brush cutter blades may be used to cut and trim a wide variety of materials, refer to the blade selection section for determining the correct blade for the application.

### Scything (3-, 8-, and 80-tooth weed/grass, and brush blades)

- To cut large sections of field grass and weeds swing the cutting head in a level arc, gradually feeding the blade into the material being cut. Adjust throttle speed according to the work.
- Do not swing the main pipe with arms. Turn hips to swing the blade horizontally from right to left, and cut weeds on the left side of the blade.
- Do not scythe back and forth as the grass may scatter and kickback may occur easily.
- Tilt blade left by 5 to 10 degrees so that cut grasses will push left, making progress easier.
- Move forward with each arc to cut a swath.
- Width of cutting swath depends on arc. Use a larger arc for a wider swath, or a smaller arc for a narrow swath.
   Suggested cutting width is about 1.5 m (4.9 ft).
- When scything large brush up to 12.7 mm (0.5 in.) diameter from right to left, avoid cutting with highlighted section.





### Reaction Forces

# **WARNING**

- · The cutting attachment will continue to rotate even after the throttle is released, maintain control of the unit until it has come to a complete stop.
- · Blade thrust may occur when the spinning blade contacts an object that it does not immediately cut. Following proper cutting techniques will prevent blade thrust.
- · Blade thrust can be violent enough to cause the unit and/or operator to be propelled in any direction, and possibly lose control of the unit.
- Blade thrust can occur without warning if the blade snags, stalls or binds.
- · Blade thrust is more likely to occur in areas where it is difficult to see the material being cut.

### Push or Pull - Kickout

During normal use, operating a brushcutter with a circular metal blade can produce sudden strong reaction forces that are difficult to control. Strong reaction forces can cause a loss of balance or loss of control of the equipment, resulting in serious injury to operator and bystanders.

Understanding what causes these reactive forces may help you to avoid them, and can help you to maintain control of the equipment if you experience a sudden reaction during cutting. Reactive forces occur when the force being applied by the cutting teeth of a blade meet resistance, and some of the cutting force is directed back toward the equipment. The greater the cutting force or the amount of resistance, the greater the reactive force.

### **Push and Pull Forces**

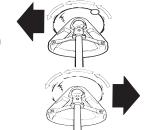
Push and pull forces are reactive forces that push the equipment directly toward the operator, or that pull the equipment directly away from the operator. These forces are the result of cutting on the sides of the blade. The direction of the force depends on the side of the blade being used, and the direction of blade rotation at the point of contact. The reactive force is in the opposite direction of blade rotation at the contact point, regardless of where the contact is being made. These types of reactive forces are also called "blade thrust." As shown in the illustration, a blade turning counterclockwise will cause the equipment to pull away from the operator if the point of cutting resistance is on the left side of the blade. If the point of cutting resistance is on the right side of the blade,



the equipment will push back toward the operator. In both examples, the reactive force is in the opposite direction of blade rotation at the contact point where resistance occurs.

### **Kickout**

Kickout is also a reactive force caused by resistance to cutting, but the direction of blade thrust is lateral (to the left or right of the blade), instead of forward or back toward the operator. In most cases, push, pull, and kickout can be reduced or eliminated by:



- · Using the correct blade for the cutting job.
- Using properly sharpened blades.
- Applying consistent, even force to the blade during the cut.
- · Avoiding obstacles and ground hazards.
- Using extra care when cutting harder materials such as extremely dry brush, saplings, and small trees.
- · Cutting from a stable, secure position.

### **Blade Cutting Problems**

Binding - Blades may bind in the cut if dull or forced. Binding can damage blade, and result in blade breakage or injury from fragments and flying debris. If a blade binds in a cut, do not try to get it out by applying up and down force to pry the cut open. Applying prying force to the blade can bend the blade, and result in blade failure and injury.



To free a blade that is bound in the cut, stop the engine, and support the trimmer or brushcutter to

keep stress off the blade. Push the tree away from the entry point of the cut to open the cut, and pull the blade directly away from the cut in a straightline motion. Use caution when releasing the tree to avoid being struck by spring-back or falling.

Inspect the blade for damage before proceeding. Sharpen teeth if dull, or replace blade if cracked, bent, missing teeth, or otherwise damaged.

To prevent binding:

- · Keep blades sharp.
- Avoid excessive pressure during cuts.
- · Do not exceed cutting capacity of blade.
- · Do not use blades with damaged or missing cutting teeth.
- Do not tilt blade when cutting.

### **Edger Operation Techniques**

# WARNING

- · The cutting attachment will continue to rotate even after the throttle is release. Maintain control of the unit until it has come to a complete stop.
- · Blade thrust may occur when the spinning blade contacts an object that it does not immediately cut. Following proper cutting techniques will prevent blade thrust.
- · Blade thrust can be violent enough to cause the unit and/or operator to be propelled in any direction, and possibly lose control of the unit.
- · Blade thrust can occur without warning if the blade snags, stalls or binds.
- Blade thrust is more likely to occur in areas where it is difficult to see the material being cut.

- 1. Before edging, water the area to soften the ground to make edging easier.
- 2. Before edging, check the area and remove all obstacles and objects that could be thrown.
- 3. Plan to edge regularly to make it easier to keep a neat edge and to avoid having to make more than one pass.

Note: Blade depth may have to be adjusted due to differences in height between the hard surface and the top of the grass.

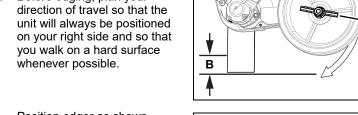
# WARNING

Never adjust blade height with engine running, otherwise serious personal injury could result.

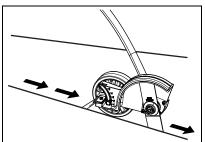
# CAUTION

Wear gloves or personal injury could result. Gear case and surrounding area may be hot.

- Loosen adjustment knob (A). 4. Move wheel up to increase cutting depth, or down to decrease cutting depth. A depth of (B) 13 mm (0.5 in.) is optimal. Tighten adjustment knob (A).
- Before edging, plan your 5. direction of travel so that the vou walk on a hard surface whenever possible.



Position edger as shown. 6.



# WARNING

Before edging, be sure to read and understand the entire Operator's Manual to avoid serious injury.

- When starting to edge, run the engine at full throttle, and lower the blade gently into the ground, being careful not to hit the concrete with the blade.
- Do not force the blade. Move only as quickly as the blade will allow. 8.

# WARNING

The complete unit, specifically the drive shaft assembly and muffler exhaust area become very hot during use. Avoid contact during and immediately after operation, otherwise serious personal injury





could result.

# Operating Blower

# **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. Blower housing might contain shredder blades and other sharp edges that can cause serious injuries if touched, even if engine is off and blades are not moving. Wear gloves to protect hands from sharp edges and hot surfaces.

# **WARNING**

Always wear safety glasses, hearing protection and a face filter mask or serious personal injury can result. Do not point the blower pipe in the direction of people or pets.

# **NOTICE**

Use reduced speed only when performing light-duty tasks or to comply with local noise regulations. Continuous low speed operation can allow fuel/oil residue to build-up on the piston and cause rapid build-up of carbon on the spark arrester screen, resulting in overheating and engine damage. To reduce harmful build-up, run engine at wide open throttle for at least five minutes every hour, and inspect/clean the spark arrester screen after approximately 40 hours of operation.

Read the Safety Section carefully.

# NOTICE

To avoid engine damage due to over-revving, do not block blower pipe.

- 1. Use only during appropriate hours.
- 2. Allow the engine to warm up at a fast idle for a few minutes.
- 3. Use lower speed to blow debris from hard surfaces.
- Additional speed may be necessary to clean debris, snow, etc. from lawns and flowerbeds.

Note: Never use a higher speed setting than necessary to perform a task. Remember, the higher the engine speed, the louder the blower noise. Minimize dust by using blower at lower speeds. Keep debris on your property. Be smart - be a good neighbor.

### **MAINTENANCE**

# WARNING

Moving parts can amputate fingers or cause severe injuries. Keep hands, clothing and loose objects away from all openings. Always stop unit, disconnect spark plug or remove battery, and make sure all moving parts have come to a complete stop before removing obstructions, clearing debris, or servicing unit. Allow the unit to cool before performing maintenance or adjustments. 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 of trouble-free service. Perform regular scheduled maintenance. If you are unsure about the task, or are not equipped with the necessary tools, we recommend that you take your unit to an Authorized Service Dealer for maintenance. To help you decide whether you want to do it yourself or have the Authorized Service Dealer do it, each maintenance task has been graded. If a task is not listed, see your Authorized Service Dealer for repairs.

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

### Skill I evels

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

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

Level 3 = See your Authorized Service Dealer.

Click HERE or go to http://www.echo-usa.com/products/maintenance-kit

or

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

### Maintenance Intervals

COMPONENT/SYSTEM	MAINTENANCE PROCEDURE	REQUIRED SKILL LEVEL
Daily or Before Use		
Air Filter	Inspect/Clean <sup>1</sup>	1
Choke Shutter	Inspect/Clean <sup>1</sup>	1
Fuel System	Inspect	1
Cooling System	Inspect/Clean	2
Recoil Starter Rope	Inspect/Clean <sup>1</sup>	1

COMPONENT/SYSTEM	MAINTENANCE PROCEDURE	REQUIRED SKILL LEVEL
Screws/Nuts/Bolts	Inspect/Tighten/ Replace <sup>1</sup>	1
Every Refuel		
Fuel System	Inspect <sup>2</sup>	1
3 Months		
Air Filter	Replace <sup>1</sup>	1
Fuel Filter	Inspect <sup>1</sup>	1
Fuel Cap Gasket	Inspect <sup>1</sup>	1
Spark Plug	Inspect/Clean/Replace <sup>1</sup>	1
Muffler Spark Arrester	Inspect/Clean/Replace <sup>1</sup>	2
Cylinder Exhaust Port	Inspect/Clean/De- carbon	2
Drive Shaft (flex cable models)	Grease <sup>3</sup>	2
Gear Housing	Grease <sup>4</sup>	2
Yearly		
Fuel Filter	Inspect/Replace <sup>1</sup>	1
Fuel Cap Gasket	Replace <sup>1</sup>	1

Note: Time intervals shown are maximum. Actual use and your experience will determine the frequency of required maintenance.

### Air Filter

### Level 1.

Parts required: Tune-up kit.

 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.

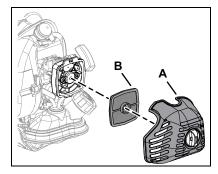
<sup>&</sup>lt;sup>1</sup> Replacement is recommended based on the finding of damage or wear during inspection.

<sup>&</sup>lt;sup>2</sup> Low evaporative fuel tanks do not require regular maintenance to maintain emission integrity.

<sup>&</sup>lt;sup>3</sup> Apply lithium-based grease every 25 hours of use.

<sup>&</sup>lt;sup>4</sup> Apply lithium-based-grease every 50 hours of use.

- 2. Remove air filter cover (A). Brush dirt from inside cover.
- 3. Replace air filter (B) if it is damaged, fuel soaked, very dirty, or the rubber sealing edges are deformed.
  - · Lightly brush debris from air filter
  - · Soak heavily soiled air filters in water/detergent solution to loosen dirt, then brush lightly.



- · Rinse with clean water and allow to dry completely before reuse.
- Install air filter in air filter case. 4.
- Install air filter cover. 5.

### **Fuel Filter**

Level 1.

Parts required: Tune-up kit.

# **DANGER**

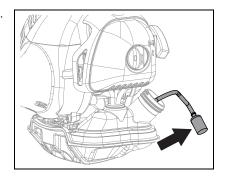
Fuel is flammable. Use extreme care when mixing, storing or handling, or serious personal injury could result.

Use a clean cloth 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.
- Install the new filter with the 4. 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 a non-certified replacement part.

### Spark Plug

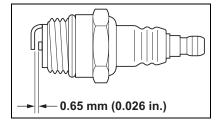
Level 2.

Parts required: Tune-up kit.

# NOTICE

Use only NGK BPM8Y spark plug (BPMR8Y in Canada) otherwise severe engine damage may occur.

- Remove spark plug and check for fouling, worn and rounded center electrode.
- Clean the plug or replace with a new one. Do not sandblast to clean.
- 3. Adjust spark plug gap by bending outer electrode.
- 4. Tighten spark plug to 130-170 kgf•cm (112-150 lbf•in).



### **Cooling System**

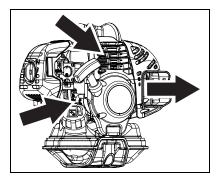
Level 2.

# 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:

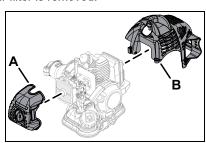
- · Air intakes are blocked, preventing cooling air from reaching the cylinder.
- · Dust and grass build up on the outside of the cylinder. This build up insulates the engine and prevents the heat from leaving.

Removal of cooling passage blockages or cleaning of cooling fins is considered normal maintenance.



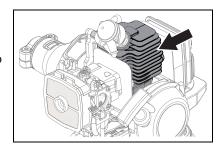
Any failure attributed to lack of maintenance is not covered under warranty.

- 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.
- 3. Remove air filter cover (A).
- 4. Remove engine cover (B).



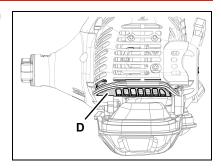
Do not use a metal scraper to remove dirt from the cylinder fins.

- Use a nylon or plastic bristle 5. brush to remove dirt from the cylinder fins.
- Remove ignition wires from clip for cleaning.



### MAINTENANCE

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



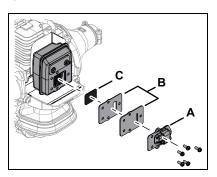
### **Exhaust System**

### **Spark Arrester Screen**

### Level 2.

Parts required: Spark arrester screen, gasket.

- Remove spark plug lead and engine cover.
- Place piston at Top Dead Center (TDC) to prevent carbon/dirt from entering cylinder.
- Remove spark arrester screen cover (A), gasket (B), and screen (C), from muffler body.



# **NOTICE**

When cleaning carbon deposits, be careful not to damage the catalytic element inside muffler.

- 4. Clean carbon deposits from muffler components.
- 5. Replace screen if it is cracked, plugged, or has holes burned through.
- 6. Assemble components in reverse order.

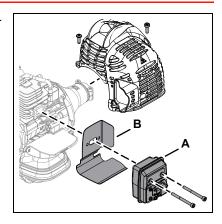
### **Exhaust Port Cleaning**

### Level 2.

Parts required: Heat shield (as needed).

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).



# 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.

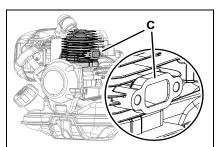
- Use a wood or plastic scraping tool to clean deposits from cylinder exhaust port (C).
- 4. Inspect heat shield, and replace if damaged.
- 5. Install heat shield and muffler.
- 6. Tighten muffler mounting bolts (or nuts) to 90-110 kgf•cm (80-95 lbf•in).
- Install engine cover and attach spark plug lead.
- 8. Start engine, and warm to operating temperature.
- Stop engine, re-tighten mounting bolts (or nuts) if required.



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 335 m (1,100 ft.) above sea level (ASL) (96.0 kPa). To maintain proper engine operation and emission compliance above 335 m (1,100 ft.) ASL the carburetor may need to be adjusted by an authorized service dealer.

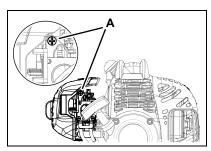
# NOTICE

If the engine is adjusted for operation above 335 m (1,100 ft.) ASL, the carburetor must be re-adjusted when operating the engine below 335 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.
- Check idle speed and reset if necessary. If a tachometer is available, idle speed screw (A) should be set to the specifications found on the Specifications page of this manual. Turn idle speed screw (A) clockwise to increase idle speed; counterclockwise to decrease idle speed.



# WARNING

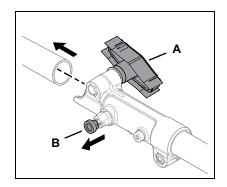
When carburetor adjustment is completed, the cutting attachment should not move at idle, otherwise serious personal injury could result.

# **Upper Drive Shaft Lubrication**

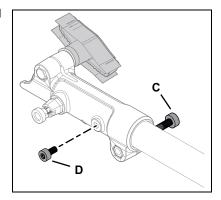
### Level 1.

Parts required: Lithium-based grease.

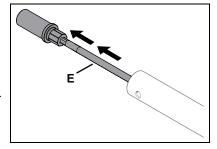
- Loosen clamping knob (A).
- 2. Pull locater pin (B) and rotate one-quarter turn counterclockwise to lockout position.
- Remove attachment. 3.



- Loosen clamping screw (C) and 4. remove set screw (D).
- Remove coupler from upper 5. drive shaft assembly.



- 6. Slide upper flex cable (E) out of upper drive shaft assembly, wipe clean, and apply a thin coating of lithium-based grease.
- 7. Slide upper flex cable (E) back into upper drive shaft assembly.
- Slide coupler onto upper drive 8. shaft assembly until fully seated.



- Align set screw hole in coupling with hole in upper drive shaft assembly.
- 10. Install and tighten set screw (D).

- 11. Tighten clamping screw (C).
- 12. Assemble the attachment.

### **Gear Case and Lower Drive Shaft Lubrication**

### Level 1.

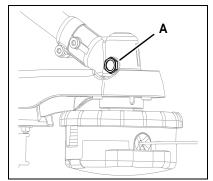
Parts required: Lithium-based grease.

### **Gear Case**

# NOTICE

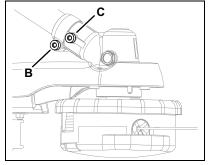
Gear cases without a grease plug do not require lubrication.

- Clean all loose debris from gear case.
- Remove grease plug (A), if equipped, and check level of grease.
- 3. Add grease if necessary. Do not over-fill.

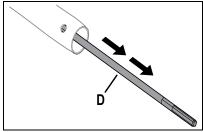


### **Lower Drive Shaft**

 Loosen screw (B) and remove locating screw (C). Pull gear case and shield from drive shaft housing.



- Pull flexible cable (D) from the drive shaft housing, wipe clean and apply 15 ml (0.5 oz.) of grease.
- Slide the flexible cable (D) back in the drive shaft housing. Do not get dirt on the flex cable.
- 4. Install the gear case and shield assembly.



# **Nylon Line Replacement**

# **CAUTION**

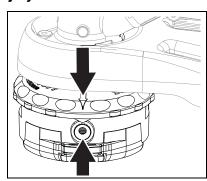
Wear gloves or personal injury may result:

- Cut-off knife is sharp.
- · Gear case and surrounding area may be hot.

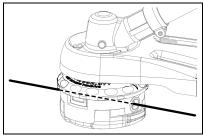
# WARNING

Never use wire or wire-rope that can break off and become a dangerous projectile. Serious injury can occur.

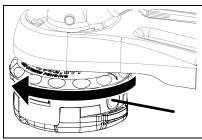
- Cut one piece of line to 6 m (20 ft.) length. Use 2.4 mm (0.095 in.) or 2.0 mm (0.080 in.) diameter.
- 2. Align arrows on top of knob with openings in eyelets.



Insert one end of trimmer line into an eyelet, and push line equal distance through trimmer head



Hold trimmer head while turning knob clockwise to wind line onto spool until about 130 mm (5 in.) of each line remains exposed.



# **NOTICE**

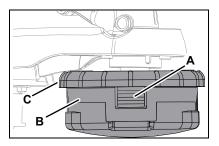
When the wear indicators located at the bottom of the Speed-Feed® head are worn smooth, or if holes appear, replacement of the cover or the entire Speed-Feed® head reauired.



# **Nylon Line Head Disassembly Instructions**

Note: For normal use, Speed-Feed® head disassembly is not necessary. However, if circumstances require disassembly, follow these instructions:

- 1. Press top of locking tabs (A) on both sides of Speed-Feed® head to release cover (B) from knob (C).
- 2. Remove cover (B) from knob (C).



# **Sharpening Metal Blades**

# WARNING

Metal blades are very sharp and can cause severe injuries, even if unit is off and blades are not moving. Avoid contact with blades. Wear gloves to protect hands.

Several styles of metal blades are approved for use on the brushcutter. The 8-tooth blade can be sharpened during normal maintenance. The clearing blade and 80-tooth blade require professional service.

Before sharpening, closely inspect blade for cracks (look at the bottom of each tooth and the center mounting hole closely), missing teeth and bending. If any of these problems are discovered, replace the blade.

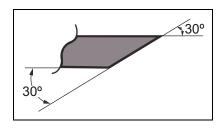
When sharpening a blade, always remove the same amount of materials from each tooth to maintain balance. A blade that is not balanced will cause unsafe handling due to vibration and can result in blade failure.



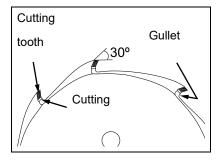
# NOTICE

If an electric grinder is used, use care not to overheat teeth, do not allow tips/tooth to glow red or turn blue. Do not place blade in cooling water. This will change the temper of the blade and could result in blade failure.

File each tooth at a 30 degree angle a specific number of times, e.g., four strokes per tooth. Work your way around the blade until all teeth are sharp.



- 2. Do not file the gullet (radius) of the tooth with the flat file. The radius must remain. A sharp corner will lead to a crack and blade failure.
- After sharpening teeth, check each tooth radius for evidence of a square (sharp) corner. Use the round (rat tail) file to renew the radius.



### **Edger Lubrication**

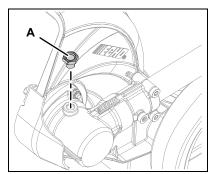
Level 1.

Parts required: Lithium-based grease.

### **Gear Case**

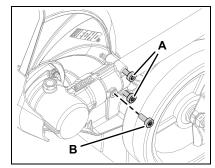
Note: Grease gear case every 15 - 25 hours of use.

- Clean all loose debris from gear case.
- Remove plug (A) and check level of grease. Grease should fill gear case to bottom of grease plug hole.
- Add grease if necessary using squeeze-type tube. Do not use high pressure grease gun. Do not over-fill.

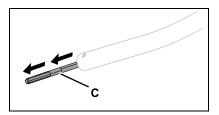


### **Drive Shaft**

 Loosen screws (A) and remove center locating screw (B). Pull gear case and shield from drive shaft housing.



- Pull flexible cable (C) from the drive shaft housing, wipe clean and apply 15 ml (0.5 oz.) of grease.
- Slide the flexible cable back in the drive shaft housing. Do not get dirt on the flex cable.
- 4. Install the gear case housing and shield assembly.
- 5. Install and tighten screws.



### **Edger Blade Replacement**

Level 1.

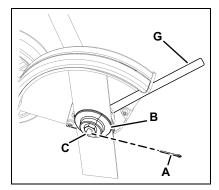
Parts required: Blade, new split pin.

Note: Replace blade when it is bent, damaged, or worn shorter than 152.4 mm (6 in.).

# CAUTION

Wear gloves or personal injury could result. Gear case and surrounding area might be hot.

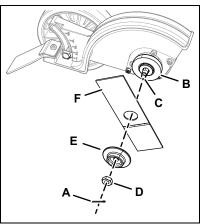
- 1. Remove split pin (A).
- Align hole in inner blade adapter (B) with notch in gear case, and insert locking tool (G) to prevent PTO shaft (C) from rotating.



- 3. Remove blade nut (D) by turning clockwise. Remove outer blade adapter (E), and blade (F).
- 4. Install and center blade (F) on inner blade adapter (B).
- Install outer adapter (E) and nut (D). Tighten nut (D) firmly, turning counterclockwise.

Note: Never reuse old split pin.

6. Install new split pin (A) to secure nut, and bend both legs of pin counterclockwise around PTO shaft (C).



### TROUBLESHOOTING

Fuel vapors are 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.

ENGINE PROBLEM TROUBLESHOOTING CHART				
Problem	Check	Status	Cause	Remedy
				Clean or replace.
	Fuel at carburetor.	No fuel at carburetor.	Fuel filter or fuel line obstructed.	See your Authorized Service Dealer.
		No fuel at cylinder.	Carburetor	See your Authorized Service Dealer.
				Open choke.
Engine	Fuel at cylinder.	Muffler wet with fuel.	Fuel mixture too rich.	Clean or replace air filter.
starts hard.				Adjust carburetor.
or Engine does not				See your Authorized Service Dealer.
start.	Spark at		Stop switch OFF.	Turn switch to ON.
	end of plug wire.		Electrical problem.	See your Authorized Service
			Interlock switch.	Dealer.
		No spark.	Incorrect gap.	
		NO Spain.	Covered with carbon.	Adjust to 0.65 mm (0.026 in.).
			Fouled with fuel.	Clean or replace
			Spark plug defective.	spark plug.

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

### STORAGE

### **Transportation**

- · Shut engine off before transporting.
- Secure unit to prevent fuel spillage and damage.

### **Short-Term Storage**

- · Shut engine off.
- Store unit in a dry, dust-free place, out of the reach of children

### Long-Term Storage (Over 30 Days)

Explosion hazard. Fuel fumes can accumulate and explode if exposed to an open flame or spark. Store in a well ventilated area.

Do not store your unit for a prolonged period of time (30 days or longer) without performing protective storage maintenance.

- 1. Move stop switch to STOP position.
- 2. Clean exterior of unit.
- 3. Perform required maintenance.
- 4. Tighten all fasteners.

# WARNING

Burn hazard. 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.

# DANGE

Fire hazard. Fuel is flammable. Burning fuel will cause bodily injury or death. Wear protective equipment. Use care when mixing, storing or handling.

5. Drain fuel tank completely.

- 6. Press purge bulb six to seven times to remove remaining fuel from carburetor then drain tank again.
- 7. Close choke, start and run the engine until it stops due to lack of fuel.
- 8. Allow engine to cool.
- Remove spark plug lead from spark plug. 9.
- Remove spark plug from cylinder.
- 11. Pour 7 mL (0.25 fl. oz.) of two-stroke engine oil into cylinder through spark plug hole.
- 12. Pull recoil starter handle two to three times to distribute oil inside engine.
- 13. Observe 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.
- Install spark plug.
- 15. Connect spark plug lead to spark plug.
- 16. Store unit in a dry, dust-free place, out of the reach of children.

Hedge trimmer blades are sharp. Avoid touching blades whenever possible, and always wear gloves to protect hands. Touching blades could lead to severe personal injury.

Always store and transport hedge trimmers in a stable, horizontal position. Support gear case and cutting blades to prevent excessive flexing, which may cause damage to these components. Always install blade cover when transporting or storing unit.

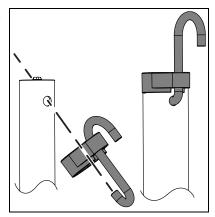
- 17. **Hedge trimmers only:** Apply clean oil to the entire length of the blade. Be certain the blade bolts are lubricated.
- Hedge trimmers only: Install blade guard on blades.

Some tree sap and resins are corrosive and can damage guide bars, saw chains and sprockets.

19. Power pruners only: Wash the guide bar and sprocket areas after each use, then coat metal parts with oil.

# **Storage Hook Installation**

- Insert small end of hook into locating hole on attachment shaft.
- 2. Slide plastic cap onto end of attachment shaft.



### **SPECIFICATIONS**

MODEL	PAS-225	
PAS (power head only)		
Length	1,020 mm (40.2 in.)	
Width	244 mm (9.6 in.)	
Width (with barrier bar)	326 mm (12.8 in.)	
Height	245 mm (9.6 in.)	
Weight - without fuel	3.5 kg (7.7 lb.) without barrier bar 4.2 kg (9.3 lb.) with barrier bar	
SB / VP / VPB (power he	ad and trimmer attachment)	
Length	1,813 mm (71.4 in.)	
Width	244 mm (9.6 in.)	
Height	328 mm (12.9 in.)	
Weight - with guard (without fuel, cutting attachment, and harness)	4.9 kg (10.8 lb.)	
VPB (power head, trimmer, and blower attachment)		
Length (with blower attachment)	1,590 mm (62.6 in.)	
Width (with blower attachment)	244 mm (9.6 in.)	
Height (with blower attachment)	242 mm (9.5 in.)	

### PAS-225/SB/VP/VPB

MODEL	PAS-225
Weight (with blower attachment, without fuel and harness)	5.6 kg (12.3 lb.)
VP (power head, trimmer,	and edger attachment)
Length (with edger attachment)	1736 mm (68.3 in.)
Width (with edger attachment)	347 mm (13.7 in.)
Height (with edger attachment)	311 mm (12.2 in.)
Weight (with edger attachment, without fuel, cutter, and harness)	5.7 kg (12.6 lb.)
PAS / SB / VP / VPB	
Engine Type	Air-cooled, two-stroke, single cylinder gasoline engine
Bore	32.2 mm (1.27 in.)
Stroke	26.0 mm (1.02 in.)
Displacement	21.2 cc (1.29 in <sup>3</sup> .)
Exhaust	Spark arrester muffler or spark arrester muffler with catalyst
Carburetor	Diaphragm with purge pump
Ignition System	Flywheel magneto, capacitor discharge ignition type
Spark Plug	NGK BPM8Y (BPMR8Y in Canada) Gap 0.65 mm (0.026 in.)
Fuel	Mixed (gasoline and two-stroke oil)
Fuel/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 E-15 or E-85.
Oil	ISO-L-EGD (ISO/CD 13738) and J.A.S.O. M345- FD, 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
Drive Shaft	6.35 mm (0.25 in.) flexible shaft
Vibration Reduction System	Rubber cushion on engine mount

MODEL	PAS-225
Handles	Front - D-loop type with rubber anti-vibration grip Rear - Throttle handle with rubber grip
Idle Speed	3,000 RPM
Clutch Engagement Speed	4,200 RPM
Wide Open Throttle Speed	10,000 RPM

MODEL	Curved Shaft Edger
Shaft Length	790 mm (31.1 in.)
Attachment Width	235 mm (9.25 in.)
Attachment Height	290 mm (11.42 in.)
Weight with blade	2.35 kg (5.17 lb)
Drive Shaft (flex type)	6.35 mm (0.25 in.)
Rotating Direction	Clockwise; viewed from right side
Blade Length	197 mm (7.75 in.)
Gear Case Ratio (with metal blade shield)	2.07 : 1
Gear Case Ratio (with plastic blade shield)	1.62 : 1
Shield	Open, anti-clog

MODEL	Speed-Feed <sup>®</sup> Trimmer
Shaft Length	834 mm (32.8 in.)
Attachment Width	177 mm (6.9 in.)
Attachment Height	236 mm (9.29 in.)
Weight (with line head, without fuel)	1.07 kg (2.3 lb.)
Drive Shaft (flexible)	6.35 mm (0.25 in.)
Gear Case Ratio	1.62:1
Direction of Rotation	Counterclockwise viewed from the top
Cutter Head	Speed-Feed <sup>®</sup> nylon line head
Line Capacity	6 m (20 ft.)

MODEL	Power Blower
Length	635 mm (25.01 in.)
Width	231 mm (9.10 in.)
Height	212 mm (8.35 in.)
Weight	1.80 kg (3.96 lb.)

MODEL	Power Blower	
Drive Shaft (flexible)	6.35 mm (0.25 in.)	
Maximum Air Speed	129 - 142 MPH *	
Maximum Air Volume	347 - 383 ft <sup>3</sup> /min. *	
Sound Level at 50 ft. dB(A) scale per ANSI B175.2	71 dB(A)	
* Specifications are for a variety of power heads. Individual unit performance may vary.		

### **ECHO Optional Attachments**

# WARNING

Use only ECHO attachments for these models. Serious injury may result from the use of non ECHO attachment combinations. Read and comply with all safety instructions listed in this manual and attachment manual.

ECHO Incorporated will not be responsible for the failure of cutting devices, attachments or accessories which have not been tested and approved by ECHO for use with these units.

Recommended Optional Attachments		
Articulating Hedge Trimmer	99944200596	
Brushcutter	99944200601	
Curved Shaft Edger	99944200470	
Curved Shaft Edger	99944200503	
Hedge Trimmer	99944200486	
Power Blower	99944200490	
Tiller/Cultivator	99944200513	
Power Pruner™	99944200532	
Speed-Feed® 400 Trimmer	99944200540	
Speed-Feed® 400 Trimmer	99944200501	
Rapid Loader™ Curved Shaft Trimmer	99944200615	
Pro-Torque Trimmer	99944200545	
Extension 0.91 m (3.0 ft.)*	99944200536	
* For use with: Articulating Hedge Trimmer, Hedge Trimmer, and Power		

Pruner™ attachments only.

### PRODUCT REGISTRATION

### Thank you for choosing ECHO Power Equipment

Please go to <a href="http://www.echo-usa.com/Warranty/Register-Your-ECHO">http://www.echo-usa.com/Warranty/Register-Your-ECHO</a> to register your new product on-line. It's **FAST** and **EASY!** NOTE: Your information will never be sold or misused by ECHO Incorporated. Registering your purchase enables us to contact you in the unlikely event of a service update or product recall, and verifies your ownership for warranty consideration.

If you do not have access to the Internet, you can complete the form below and mail to:

ECHO Incorporated, Product Registration, PO Box 1139, Lake Zurich, IL 60047.

# $/\!\!/\!\!/\!\!/$ Product registration card : Tarjeta de registro : carte d'enregistrement du produit

ONLINE OPTION: Register online and save a stamp! You will be alerted of product updates and/or be sent new ECHO product information and special offers. Simply go to:
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lease Print : Por Favor Enscriba Con Letra De Molde : En Lettre Carré S.V.P.

Purchaser's Name : Nombre del Comprador : Nom de l'acheteur

ahorre una estampilla! Le alertaran sobre actualizaciones del producto y/o se le enviara información sobre los nuevos productos ECHO y las ofertas especiales. Simplemente visite: OPCIÓN POR INTERNET: ¡Registrese en la pagina web www echo-usa com

OPTION EN LIGNE: Enregistrer en ligne et épargner un finnnel Vous serez informé sur les nouveaux produits ECHO et les mises à jour de produit ainsi que les offres spéciales. Simplement visitez le: www.echo-usa.com

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Ì	Primary use of tool: L Professional L Homeowner L Kental Equip.
Ď	Jso primario de la herramienta: ☐ Profesional ☐ Dueño de casa ☐ Alquiler
ň	Jsage principal :   Professionnel   Residential   Location
	Do you wish to receive periodic ECHO product information and special offers
A	by e-mail?

Address : Dirección : Adresse			by e-mail? ☐ Yes ☐ No
			¿Desea usted recibir información periódica y ofertas especiales por c tronico sobre el producto ECHO? □ Yes □ No
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	Province		Did you visit the ECHO website before purchasing your product?
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			Avez-vous visité le site d'ECHO avant de procurer votre produit?

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facteur (facteurs) vous a influencé le plus?	rformance	bilité 🔲 Expérience 🔲 (	☐ Ami/Famille ☐ Marque ☐ ☐	ECHO INC., 400 Oakwood Rd., Lake Zurich, IL 60047	800.432.ECHO WWW.ECHO-USA.COM
One	□ B		□	ECHO	1.800.4
Model Number: Numero del Modelo: No. de modéle 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 Ami/Famille Marque	ownersinjo in the event of loss. En registrar su compra nos permite estar en contacto con usted en caso de cualquier evento como el aviso de tiempo de servicio o la revocación del producto y verificación, de propiedad en caso de robo o pérdida.	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 étes le propriétaire en cas de vol ou de perte.

X7572270206 02-2012 CHO INC., 400 Oakwood Rd., Lake Zurich, IL 60047

Marchand

Qualité

Performance ☐ Amigo/Familia

Garantie

☐ Distribuidor ☐ Warranty

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

☐ Friend/Family ☐ Funcionamientó

☐ Reliability

☐ Precio Brand

☐ Dealer Ouality

☐ Prior Experience

What factor(s) most influenced your purchase?

₽ □ □ Performance

ino 🗆

□ Price

Calidad Garantía

Experiencia Anterior

☐ Confiabilidad

☐ Marca

# **NOTES**

T99814001001 - T99814999999 T99913001001 - T99913999999 U36213001001 - U36213999999 U36314001001 - U36314999999 U45714001001 - U45714999999 U54914001001 - U54914999999 U55013001001 - U55013999999 U67813001001 - U67813999999 U67914001001 - U67914999999 U68013001001 - U68013999999 U68114001001 - U68114999999 U75113001001 - U75113999999 U75214001001 - U75214999999 U95212001001 - U95212999999 U95313001001 - U95313999999 U99214001001 - U99214999999 V03412001001 - V03412999999 V03312001001 - V03312999999



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