Grass Trimmer/Brush Cutter

Operator's Manual

MODEL **SRM - 231U**

Serial Number 06001001 - 06001337

WARNING DANGER

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

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 DANGER

Read rules for safe operation and instructions carefully. ECHO provides an Operator's Manual and a Safety Manual. Both must be read and understood for proper and safe operation.

X7502099300

X750003680
11/03

INTRODUCTION

Welcome to the ECHO family. This ECHO product was designed and manufactured to provide long life and on-the-job dependability. Read and understand this manual and the SAFETY MANUAL you found in the same package. You will find both easy to use and full of helpful operating tips and SAFETY messages.

THE OPERATOR'S MANUAL

Read and understand this manual before operation. Keep it in a safe place for future reference. Contains specifications and information for operation, starting, stopping, maintenance, storage and assembly specific to this product.

THE SAFETY MANUAL

Read and understand this manual before operation. Keep it in a safe place for future reference. Explains possible hazards involved with the use of Grass Trimmers and Brush Cutters and what measures you should take to make their use safer.

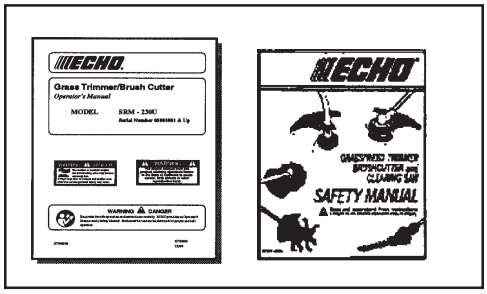


TABLE OF CONTENTS

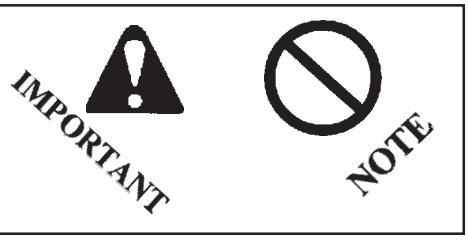
Specifications, descriptions and illustrative material in this literature are as accurate as known at the time of publication, but are subject to change without notice. Illustrations may include optional equipment and accessories, and may not include all standard equipment.

MANUAL SAFETY SYMBOLS AND IMPORTANT INFORMATION

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

This symbol accompanied by the words **WARNING** and **DANGER** calls attention to an act or condition that can lead to serious personal injury to operator and bystanders.

The circle with the slash symbol means whatever is shown within the circle is prohibited.



IMPORTANT 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.

SAFETY

DECALS

Locate these safety decals on your unit. The complete unit illustration, found in the "DESCRIPTION" section, will help you locate them. Make sure the decals are legible and that you understand and follow the instructions on them. If a decal cannot be read, a new one can be ordered from your ECHO dealer. See PARTS ORDERING instructions for specific information.

Shaft Decal
Spanish Decal

ADVERTENCIA **PELIGRO**

Esta unidad puede ser peligrosa y producir lesiones personales graves si no se usa en forma adecuada. Para reducir el riesgo de lesionarse, los operadores, los ayudantes y los espectadores deben leer y comprender el Manual Del Operador y los Manuales De Seguridad que se entregan escritos en español.

89017740630

English Translation

WARNING **DANGER**

This unit can be dangerous and cause serious injury if improperly used. To reduce injury risk to operator, helpers and bystanders, read and understand the Operator's and Safety Manuals, which are provided in Spanish.

Metal Debris Shield Decal

Hot Decal (near muffler)

P/N 89016006361

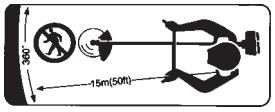
Shaft Decal

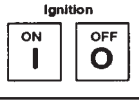
P/N 89016844830

WARNING ⚠ **DANGER**

- This unit can be dangerous and cause serious injury if improperly used. To reduce injury risk to operator, helpers and bystanders, read and understand the Operator's and Safety manuals.
- Blindness can occur from objects that are thrown or ricocheted even with shield in place. Operators, helpers and bystanders must wear ANSI Z87.1 approved eye protection.
- Always wear hearing protection when operating unit.
- Prevent accidental contact with unit and any cutting attachment. Maintain a 15M (50 ft.) radius, **DANGER ZONE** surrounding the operator. **ONLY** the operator, dressed in proper protective clothing should be in the **DANGER ZONE.**
- Beware of **KICKOUT (blade thrust)** when using blades. Special precautions are necessary for blade operation, see your Operator's and Safety Manuals. **ONLY** install ECHO approved blades on Brush Cutters (SRM) models equipped with proper blade shield, U-handles, harness, blade collar, nut and cotter pin.
- Blade/Cutting attachment does not stop immediately after releasing throttle. Keep hands and feet clear of blade/cutting attachment unless engine is shut off and cutting attachment is not moving.
- INSPECT BLADES BEFORE USE.
- DO NOT USE DAMAGED, CRACKED, BENT, DULL OR IMPROPERLY SHARPENED BLADES.
- Do not remove shields, modify the unit or install attachments or parts not approved by ECHO. Approved attachment information and replacement Operator's and Safety Manuals are available from your ECHO dealer or by writing: **ECHO, INCORPORATED, 400 OAKWOOD RD., LAKE ZURICH, IL 60047.**

INTERNATIONAL SYMBOLS

Symbol form/shape	Symbol description/application	Symbol form/shape	Symbol description/application
	"WARNING, SEE OPERATOR'S MANUAL		Hot Surface
	Wear eyes, ears and head protection		Fuel and oil mixture
	Finger Severing		Emergency stop
	Wear hand and foot protection		WARNING
	Keep bystanders and helpers away 15 m (50 ft.).		

Symbol form/shape	Symbol description/application	Symbol form/shape	Symbol description/application
H	Carburetor adjustment - High speed mixture		Primer Bulb
T	Carburetor adjustment - Idle speed		Ignition ON/OFF
L	Carburetor adjustment - Low speed mixture		Blade and string line capable
	Do not exceed 10,000 RPM.		Do not operate without guards and shields in place.
	Choke Control "Cold Start" Position (Choke Closed)		BEWARE - Thrown, Ricochet objects
	Choke Control "Run" Position (Choke Open)		

SAFETY INSTRUCTIONS

PERSONAL CONDITION AND SAFETY EQUIPMENT

WARNING ⚠ DANGER

Trimmer/Brush Cutter users risk injury to themselves and others if the trimmer/brush cutter is used improperly or safety precautions are not followed. Proper clothing and safety gear must be worn when operating a trimmer/brush cutter.

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

Wear eye protection that meets ANSI Z87.1 or CE requirements whenever you operate the trimmer.

Hand Protection

Wear no-slip, heavy duty work gloves to improve your grip on the Trimmer/Brush Cutter handles. Gloves also reduce the transmission of machine vibration to your hands.

Hearing Protection

ECHO recommends wearing hearing protection whenever unit is used.

Proper Clothing

Wear snug fitting, durable clothing;

- Pants should have long legs, shirts with long sleeves.
- DO NOT WEAR SHORTS,
- DO NOT WEAR TIES, SCARVES, JEWELRY.

Wear sturdy work shoes with non-skid soles;

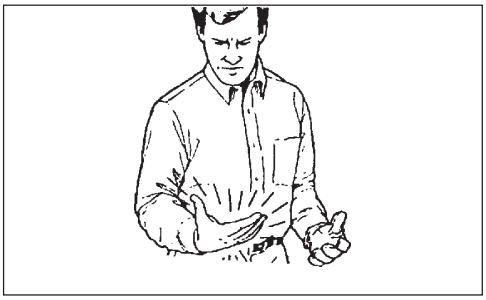
- DO NOT WEAR OPEN TOED SHOES,
- DO NOT OPERATE UNIT BAREFOOTED.

EXTENDED OPERATION/EXTREME CONDITIONS

Vibration and Cold

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 trimmer 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.

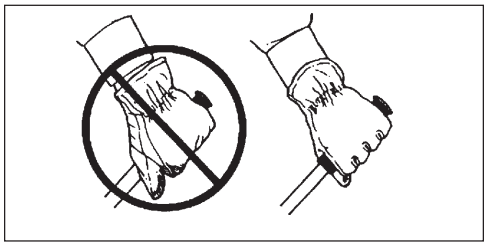


Repetitive Stress Injuries

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.

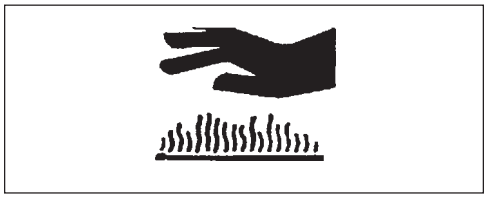


EQUIPMENT

WARNING DANGER

Use only ECHO approved attachments. Serious injury may result from the use of a non-approved attachment combination. ECHO, INC. 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 fuel lines, tank, and area around carburetor for fuel leaks. DO NOT operate unit if leaks are found.
- Inspect shield for damage and ensure 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.
- Check that front loop handle and shoulder strap/ or shoulder/ waist harness are adjusted for safe, comfortable operation. See Assembly Section for proper adjustment.
- Keep exhaust area clear of flammable debris. Avoid contact during and immediately after operation.



SAFE OPERATION

WARNING ⚠ DANGER

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

Provide Safety And Operating Instructions To All Operators

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

Keep A Firm Grip

- Hold the front and rear handles with both hands with thumbs and fingers 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.

EMISSION CONTROL

California Tier 2

The emission control system for this engine is EM/TWC (Engine Modification and Catalyst).

IMPORTANT ENGINE INFORMATION
ENGINE FAMILY: 3EHXS.0234KA DISPLACEMENT: 22.8 cc
EMISSION COMPLIANCE PERIOD : 300 HRS.
THIS ENGINE MEETS U.S. EPA PH 2 AND 2000 AND LATER CALIFORNIA EMISSION REGULATIONS FOR S.O.R.E.
REFER TO OWNER'S MANUAL FOR MAINTENANCE SPECIFICATIONS AND ADJUSTMENTS.
KOMATSU ZENOAH

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

PRODUCT EMISSION DURABILITY

The 300 hour emission durability 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.

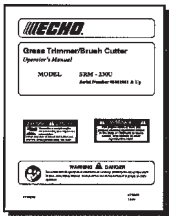
DESCRIPTION

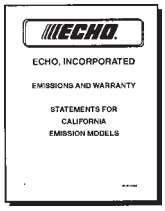
The ECHO product you purchased has been factory pre-assembled for your convenience. Due to packaging restrictions, shield installation and other assembly may be necessary.

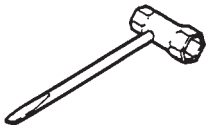
After opening the carton, check for damage. Immediately notify your retailer or ECHO Dealer of damaged or missing parts. Use the contents list to check for missing parts.

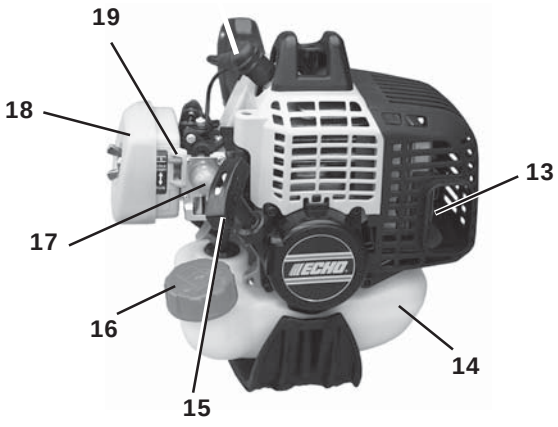
CONTENTS

__ 1- Power Head / Drive Shaft Assembly
__ 1- Plastic Bag (co-pack)
__ - 1, Operator's Manual
__ - 1, Safety Manual
__ - 1, Warranty Registration Card
__ - 1, Limited Warranty Statement
__ - 1, Plastic shield
__ - 1, Tool Bag
__ --1, wrench 17x19
__ --1, locking tool
__ - 1, Nylon Trimmer Head
__ - 1, Safety Glasses
__ - 1, Bottle 2-Stroke Oil
__ - 1, Plastic Bag
__ --1, shield plate
__ --3, 5mm x 16mm screws (shield mtg.)
__ --1, 4mm Hexagon Wrench
__ --1, 8mm x 55mm bolt
__ --1, flat washer
__ --2, cable clips
__ - 1, Plastic Bag
__ --3, 5mm x 15mm screws (shield mount)
__ --2, 5mm x 8mm screws (bracket to shield)
__ --4, 5mm nuts
__ --4, 5mm lockwashers
__ --1, metal shield
__ --1, bracket
__ - 1, Shoulder Harness w/hip pad





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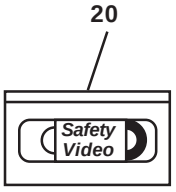
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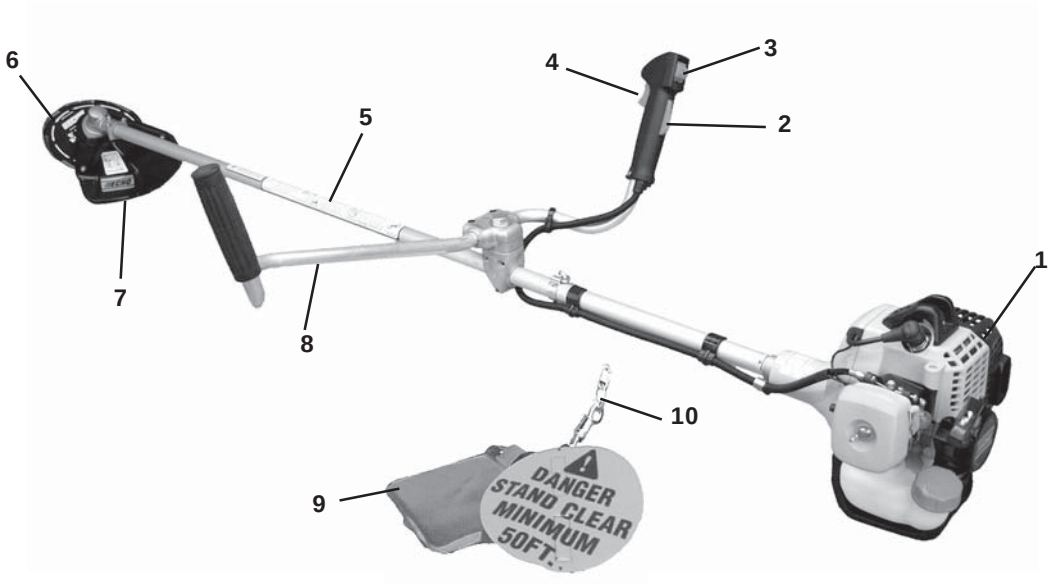
Safety
Video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DANGER
STAND CLEAR
MINIMUM
50FT.

1. **POWER HEAD** - Includes the Engine, Clutch, Fuel System, Ignition System and Recoil Starter.

2. **THROTTLE TRIGGER LOCKOUT** - This lever must be held during starting. Operation of the throttle trigger is prevented unless throttle trigger lockout lever is engaged.

3. **STOP SWITCH** - "SLIDE SWITCH" mounted on top of the Throttle Trigger Housing. Move switch FORWARD to RUN, BACK to STOP.

4. **THROTTLE TRIGGER** - Controls engine speed. Spring loaded to return to idle when released. During acceleration, press trigger gradually for best operating technique.

5. **DRIVE SHAFT ASSEMBLY** - Includes the Rear (right hand) Handle assembly, Gear Housing assembly, Front (loop, left hand) Handle assembly, steel drive shaft and Safety Decal.

6. **BLADE** - Circular blade for grass, weed or brush cutting applications. Harness, metal shield & U-handles required for blade operation.

7. **METAL BLADE SHIELD** - Required when unit is equipped with blades. Do not operate unit without shield.

8. **U-HANDLE** - Required for metal blade operation.

9. **HIP PAD** - Used to protect hip/leg and clothing when using U-handle equipped unit.

10. **SHOULDER HARNESS**- An adjustable strap that suspends the unit from the operator. Using the strap reduces operator fatigue.

11. **SPARK PLUG** - Provides spark to ignite fuel mixture.

12. **ARM REST** - Provides arm rest during operation and protects arm from the hot engine.

13. **SPARK ARRESTOR - CATALYTIC MUFFLER / MUFFLER** - The muffler or catalytic muffler controls exhaust noise and emission. The spark arrestor screen prevents hot, glowing particles of carbon from leaving the muffler. Keep exhaust area clear of flammable debris.

14. **FUEL TANK** - Contains fuel and fuel filter.

15. **RECOIL STARTER HANDLE** - Pull handle slowly until starter engages, then quickly and firmly. When engine starts, return handle slowly. DO NOT let handle snap back or damage to unit will occur.

16. **FUEL TANK CAP** - Covers and seals fuel tank opening.

17. **PRIMER BULB** - Pumping primer bulb before starting engine draws fresh fuel from the fuel tank priming the carburetor for starting. Pump primer bulb until fuel is visible and flows freely in the clear fuel tank return line. Pump bulb an additional 4 or 5 times.

18. **AIR CLEANER** - Contains replaceable filter element.

19. **CHOKE** - Adjusts Fuel/Air ratio for starting or running engine. The choke control is located at the top of the air filter case. Move choke lever to "Cold Start" () to close choke for cold starting. Move choke lever to "Run" () position to open choke.

20. **SAFETY VIDEO** - (Not included with unit) P/N 99922202540 English version and P/N 99922203508 Spanish version are available at a cost of $5.00 from ECHO, INC. or any authorized ECHO dealer. The video overviews safety precautions and proper operating techniques and is supplemental to the Safety Manual. Read and understand the Safety Manual for complete information on safe operation.

SPECIFICATIONS

MODEL	**SRM-231U**
Length	1795 mm (70.7 in.)
Width	700 mm (27.68 in.)
Height	455 mm (17.9 in.)
Weight (dry) w/Cutter Head	5.72 kg (12.6 lb.)
Engine Type	Air cooled, two-stroke, single cylinder gasoline engine
Bore	32.2 mm (1.27 in.)
Stroke	28.0 mm (1.10 in.)
Displacement	22.8 cc (1.39 cu. in.)
Exhaust	Spark Arrestor Muffler w/catalyst
Carburetor	Zama diaphragm model RB-K66 w/purge pump
Ignition System	Flywheel magneto, transistor control ignition type
Spark Plug	NGK BPM-8Y (Gap 0.65 mm (0.026 in.)
Fuel	Mixed (Gasoline and Two-stroke Oil)
Fuel/Oil Ratio	50:1 Ratio using ECHO Hi-Performance, two-stroke air cooled engine oil
Gasoline	89 Octane Unleaded. Do not use fuel containing methyl alcohol, more than 10% ethyl alcohol or 15% MTBE.
Oil	ECHO Hi-Performance, two-stroke air cooled engine oil
Fuel Tank Capacity	0.58 lit. (19.6 US fl. oz.)
Starter System	Automatic Rewind Starter
Clutch	Centrifugal Type
Vibration Isolated System	Rubber cushion on engine mount (heavy duty). Rubber grip on front handle.
Operating Rod	25.0 mm aluminum Tube
Drive Shaft	6.35 mm (1/4 in.) flexible shaft
Gear Case Ratio	1:1.4 Reduction
Rotating Direction	Counter Clockwise; viewed from top
Cutter Head	Nylon line head (2-line) with .095 Crossfire™ Line capacity 6m (20 ft.)
Handle*	U-Handle
Shoulder Harness	Standard
Idle Speed	2750 - 3250 RPM
Wide Open Throttle Speed (W.O.T.) with Nylon Line Head	8000 - 10,000 RPM
Wide Open Throttle Speed (W.O.T.) with Blade	9000 - 11,500 RPM

* Install and use U-Handle when operating any model with blade.

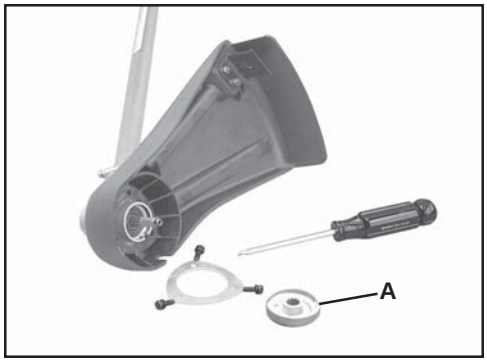
ASSEMBLY

PLASTIC SHIELD INSTALLATION
(For Nylon Line Operation)

Tools Required: Screwdriver.

Parts Required: Plastic Shield, Shield Plate, three (3) 5mm x 16mm screws.

NOTE
The plastic shield is for use with the Nylon Line Head only. Install Metal Shield when using plastic or metal blades.

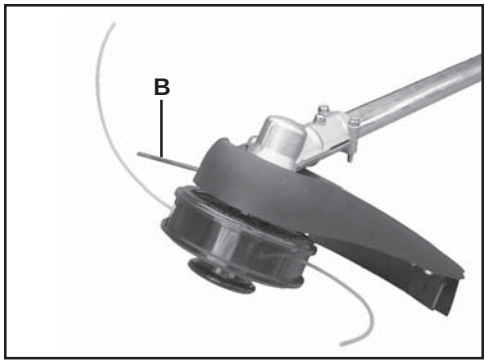


1. Remove blade and metal shield, if installed.
2. Place plastic shield on bottom of bearing housing flange.
3. Place shield plate on plastic shield, align holes. Install three (3) screws from bottom through plate and shield into gear case.
4. Install adapter plate (A) onto PTO shaft.

NYLON LINE HEAD INSTALLATION
(Use with Plastic Shield)

Tools Required: Head Locking Tool,

Parts Required: Nylon Line Head.



1. Be sure upper adapter plate remains on PTO shaft.
2. Align locking hole in upper plate with notch in edge of gear housing and insert head locking tool (B).
3. Thread line head onto shaft by turning it counter clockwise until head is tight against upper plate.
4. Remove locking tool.

ACCESSORY INSTALLATION

NOTE
Refer to Operation with Blades page 15 for correct Accessory / Blade equipment requirements.

WARNING DANGER

You must install a U-Handle/Metal Shield before operating this unit using metal blades, otherwise serious injury may result.

METAL SHIELD INSTALLATION

Tools Required: 8mm x 10mm Open End Wrench, Screwdriver.

Parts Required: Metal Shield, Bracket, 3 - 5mm x 15mm screws w/captivated flat and lockwasher (metal shield to gear housing), 2 - 5mm x 8mm screws, 4 - 5mm nuts, 4 - 5mm lockwashers (bracket to shield and bracket to gear housing).

1. If necessary, remove nylon line head and plastic shield.

2. Loosely attach bracket (A) to shield (B) and attach to bottom of gear housing (C) with screws and nuts provided. Tighten all attaching hardware.

Install Blade

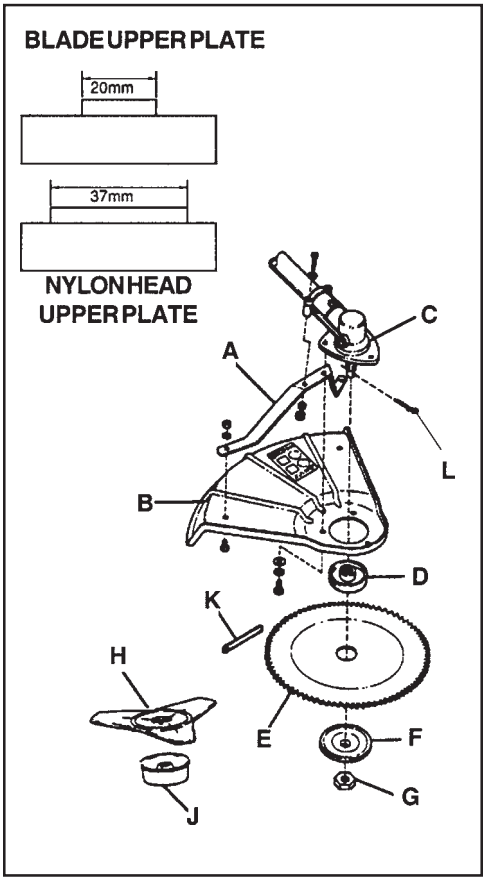
Tools Required: Locking Tool, scrench.

Parts Required: 1 - 20mm Upper Fixing Plate, Grass Blade (69600120330), Brush Blade (69500120330) or Tri-Cut Blade w/Glide Cup (99944200030), 1 - Lower Fixing Plate, 1 - 10mm L.H. Nut, 1 - 2x22mm Split Pin.

3. Install upper plate (D) on splined shaft. Blade installation requires use of upper Plate (D) with 20mm pilot. Upper plate with 37mm pilot should be retained for use with nylon line head.

4. Place Blade (E) over upper plate pilot, install the lower Plate (F) and 10mm LH nut (G). Tri-Cut Blade (H) is installed with Glide Cup (J).

5. Insert Locking Tool (K) through hole in upper plate and notch in gear housing to prevent splined shaft from turning. Tighten nut and secure with Split Pin (L).

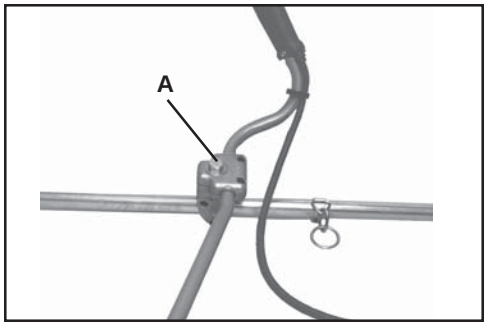


U-HANDLE INSTALLATION

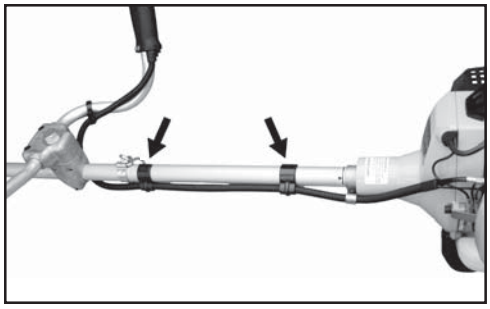
Tools Required: 8mm x 10mm Open End Wrench, Screwdriver, 3mm and 4mm Hex Wrench, Pliers

Parts Required: U-Handle

1. Install upper U-Handle and bracket on lower bracket and secure with one (1) 8mm x 55mm bolt (A) and large circular washer.

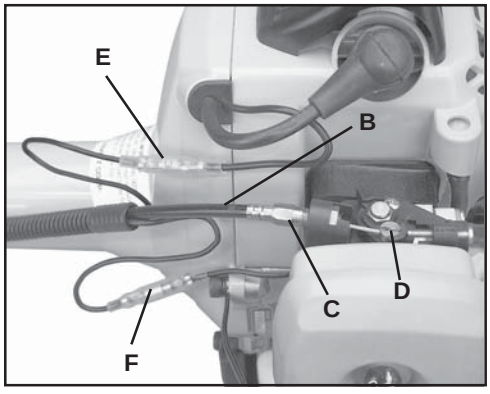


2. Route throttle linkage and ignition lead assembly along shaft and clip as shown.



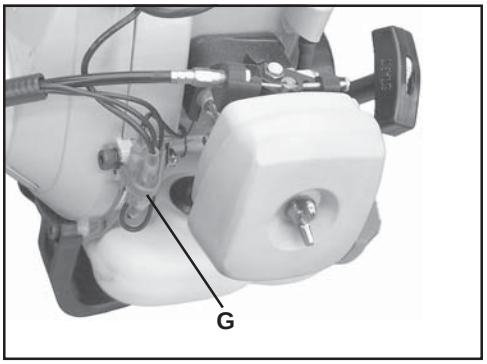
3. Place throttle linkage (B) through adjustment fixture (C) and install wire end into large carburetor throttle swivel hole (D). Check throttle for freedom of movement and that wide open throttle / low idle extremes are adjusted properly. The throttle linkage must be adjusted by moving the adjustment fixture (C). Consult with your Echo Dealer for correct adjustment procedure.

4. Connect ignition leads (E) and (F).



5. Install throttle linkage into bracket clamp and pinch tight with pliers. Bend bracket up and flush against drive shaft.

6. Bundle and secure ignition leads against engine housing with clip (G).



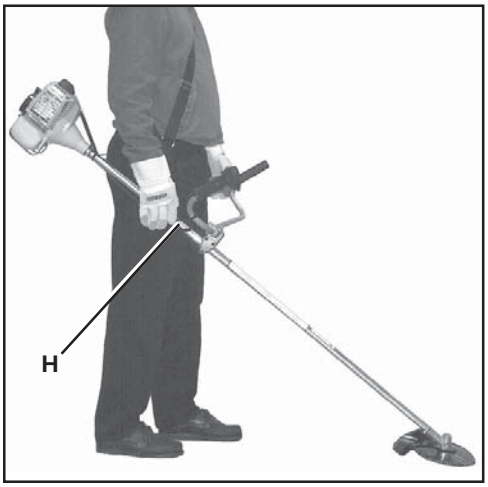
7. Balance unit.

   a. Loosen harness hook (H).

   b. Put on harness and attach unit to harness.

   c. Slide harness hook (H) up or down until unit balances with cutting attachment approximately 2 - 3 in. from ground.

   d. Tighten harness hook screw.



PRE - OPERATION

OPERATION WITH BLADES

WARNING ⚠ DANGER

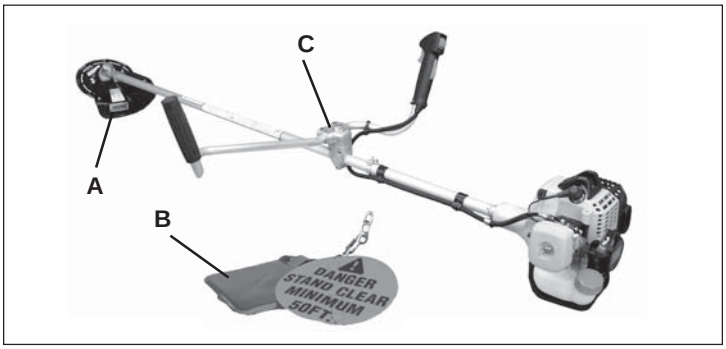
You must install a U-Handle/Metal Shield before operating this unit using metal blades, otherwise serious injury may result.

Preparing the Trimmer/Brush Cutter for Blade Use

WARNING ⚠ DANGER

Blade use **DEMANDS** specific Brush Cutter configuration. Operation without specified shield and harness can result in serious personal injury.

Plastic, Nylon, and Metal blades require (Metal Shield [A], Shoulder Harness [B], and U-Handle Assembly [C].



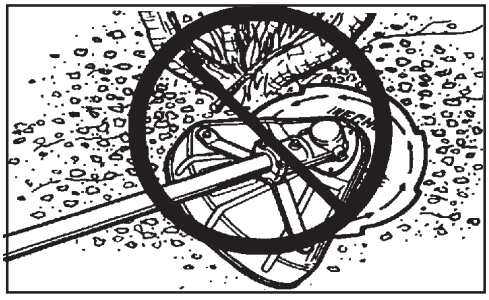
Choosing the Correct Blade

WARNING ⚠ **DANGER**

The type of Blade used **MUST** be matched to the type and size of material cut. An improper or dull blade can cause serious personal injury. Blades **MUST** be sharp. Dull blades increase the chance of kick-out and injury to yourself and bystanders.

Plastic/Nylon Blades may be used where ever the nylon line head is used. DO NOT use this blade for heavy weeds or brush!

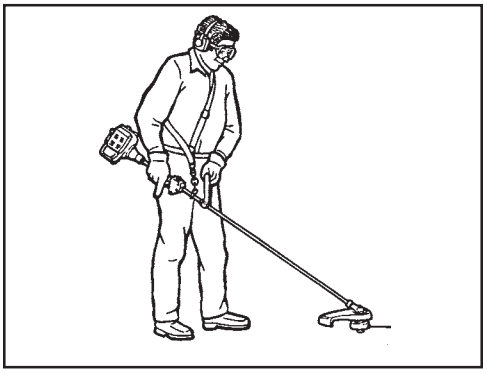
8 Tooth Weed/Grass Blade (P/N 69600120331) is designed for grass, garden debris and thick weeds. DO NOT use this blade for brush or heavy woody growth, 19 mm (3/4 in.) diameter or larger.



Brush/Clearing Blade (P/N 69500120330) is designed for cutting brush and woody growth up to 76 mm (3 in.) diameter.

Use Shoulder/Waist Harness (P/N 99944200200) Use of the Shoulder/Waist Harness is recommended for **ALL** Trimmer/Brush Cutter use, not just Blade operation. The Shoulder/Waist Harness when used in a trimming operation with nylon line head suspends the trimmer from the operator's shoulder and reduces operator fatigue.

During blade operation, the same fatigue reduction is achieved. Safety to the operator is also enhanced by reducing the possibility of blade contact with the operator's hands and feet by restricting trimmer movement.



FUEL

Fuel Requirements

Gasoline - Use 89 Octane [R+M/2] (mid grade or higher) gasoline or gasohol known to be good quality. Gasohol may contain up to 10% Ethyl (grain) alcohol or 15% MTBE (methyl tertiary-butyl ether). Gasohol containing methyl (wood) alcohol is **NOT** approved.

Two Stroke Oil - A two-stroke engine oil meeting ISO-L-EGD (ISO/CD 13738) and J.A.S.O. FC Standards, must be used. Echo brand Premium 50:1 oil meets these standards. Engine problems due to inadequate lubrication caused by failure to use an ISO-L-EGD and J.A.S.O. FC certified oil, such as Echo Premium 50:1 Two-stroke Oil, will void the two-stroke engine warranty. (Emission related parts only are covered for two years, regardless of two-stroke oil used, per the statement listed in the Emission Defect Warranty Explanation.)

IMPORTANT
Echo Premium 2-Stroke Oil may be mixed at 50:1 ratio for application in all Echo engines sold in the past regardless of ratio specified in those manuals.

Mixing Instructions

1. Fill an approved fuel container with half of the required amount of gasoline.
2. Add the proper amount of 2-stroke oil to gasoline.
3. Close container and shake to mix oil with gasoline.
4. Add remaining gasoline and remix.
5. Install fuel container cap and wipe any spilled fuel from container and surrounding area.

Handling Fuel

WARNING ⚠ 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!
- NEVER refuel a unit with the engine running.
- DO NOT fill fuel tanks indoors. ALWAYS fill fuel tanks outdoors over bare ground.
- Securely tighten fuel cap after refueling.
- Inspect for fuel leakage. If fuel leakage is found, do not start or operate unit until leakage is repaired.

IMPORTANT
Spilled fuel is a leading cause of hydrocarbon emissions. Some states may require the use of automatic fuel shut-off containers to reduce fuel spillage. Contact your ECHO dealer for ordering information.

After refueling

- Wipe any spilled fuel from the unit.
- Move at least 3 m (10 ft.) from refueling location before starting the engine.

After use

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

Storage

Fuel storage laws vary by locality. Contact your local government for the laws affecting your area. As a precaution, store fuel in an approved, air tight container. Store in a well ventilated, unoccupied building, away from sparks and flames. Do not store fuel longer than 30 days.

IMPORTANT
Stored fuel ages. Do not mix more fuel than you expect to use in thirty (30) days, ninety (90) days when a fuel stabilizer is added.

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

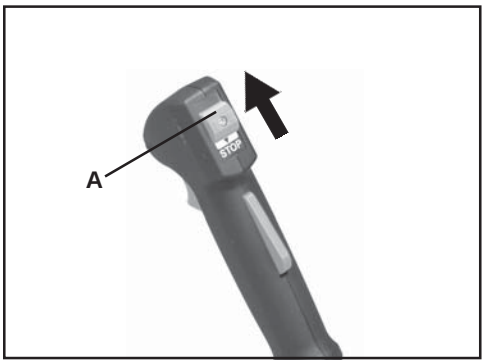
OPERATION

STARTING COLD ENGINE

WARNING DANGER

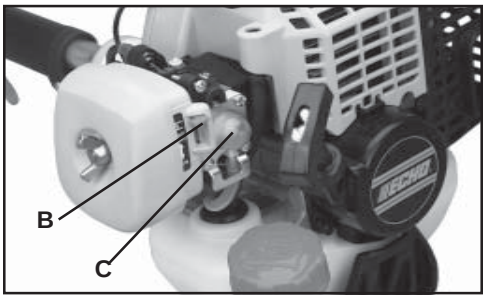
The cutting attachment should not rotate at idle. If attachment rotates, readjust carburetor according to "Carburetor Adjustment" instructions in this manual or see your ECHO Dealer, otherwise serious personal injury may result.

NOTE
Refer to Grass Trimmer/Brush Cutter Safety Manual for proper and safe techniques.



1. *Stop Switch*
   Move stop switch button (A) forward, away from the STOP position.

2. *Choke Lever*
   Move choke lever (B) to Cold Start ( ) Position.



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

NOTE
Lightly place knee on drive shaft to stabilize unit during starting. Do not apply excessive downward force or damage to unit can occur.

4. *Recoil Starter*
   Lay the unit on a flat, clear area. Firmly grasp right hand grip and throttle trigger lockout with left hand, and fully depress throttle trigger to wide open position. Rapidly pull the recoil starter handle/rope (D) until engine fires (or maximum 5 pulls).

5. *Choke*
   After engine fires (or 5 pulls) , move choke lever back to Run ( ) position. Hold throttle trigger and throttle trigger lockout fully depressed, and pull recoil starter 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 4 and 5.

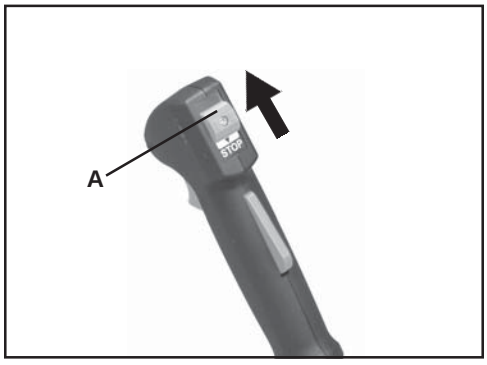
6. *Throttle Trigger*
   After engine warm-up, gradually depress throttle trigger to increase engine RPM to operating speed.

STARTING WARM ENGINE

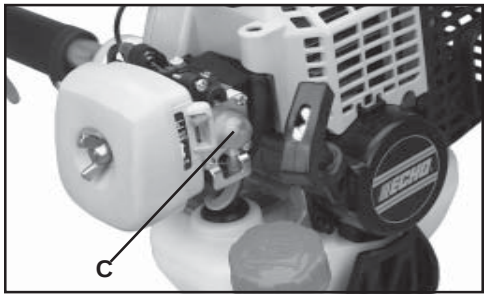
The starting procedure is the same as Cold Start except DO NOT close the choke, and do not depress throttle trigger to wide open position.

NOTE
If engine does not start after 5 pulls, use Cold Start Procedure.

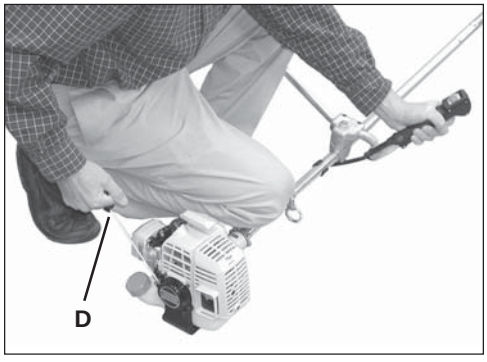
WARNING DANGER
When engine starts, the cutting attachment may rotate even with the throttle trigger in idle (released) position.



1. *Stop Switch*
   Move stop switch button (A) away from the STOP position.



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

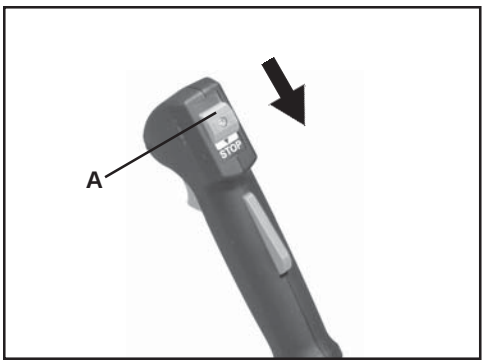


3. *Recoil Starter*
   Lay the unit on a flat, clear area and pull the recoil starter handle (D) until the engine fires.

STOPPING ENGINE

1. *Throttle*
   Release throttle and allow engine to return to idle before shutting off engine.

2. *Stop Switch*
   Move stop switch button (A) backward to STOP position.



WARNING DANGER

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

MAINTENANCE

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

SKILL LEVELS

Level 1 = Easy to do. Most required tools come with unit.
Level 2 = Moderate difficulty. Some specialized tools may be required.
Level 3 = Experience required. Specialized tools are required. ECHO recommends that the unit be returned to your ECHO dealer for servicing.

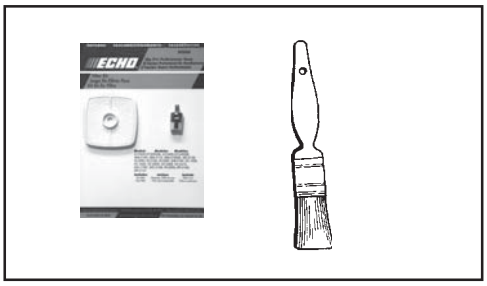
ECHO offers **REPOWER™** Maintenance Kits and Parts to make your maintenance job easier. Below each task heading are listed the various part numbers required for that task. See your ECHO dealer for these parts.

MAINTENANCE INTERVALS

COMPONENT/ SYSTEM	MAINTENANCE PROCEDURE	REQ'D SKILL LEVEL	DAILY OR BEFORE USE	EVERY REFUEL	3 MONTHS OR 90 HOURS	6 MONTHS OR 270 HOURS	YEARLY 600 HOURS
Recommended Echo Dealer Maintenance Procedures							
Cylinder Exhaust Port	Inspect/Clean/Decarbon	**3**			**I / C**		
Do-It-Yourself Maintenance Procedures							
Air Filter	Inspect/Clean/Replace	**1**	**I / C**		**R***		
Choke	Inspect/Clean	**2**	**I / C**				
Fuel Filter	Inspect/Replace	**1**			**I**		**I / R ***
Fuel System, leaks	Inspect/Replace	**1**	**I ***	**I**	**I**		
Cooling System	Inspect/Clean	**2**	**I / C**				
Muffler Spark Arrestor	Inspect/Replace	**2**			**I / R ***		
Drive Shaft (Flex Cable Models)	Grease	**2**			**I (1)**		
Gear Housing	Grease	**2**			**I (2)**		
Recoil Starter Rope	Inspect/Clean	**1**	**I / C ***				
Spark Plug	Inspect/Clean	**2**			**I / C**	**R ***	
Screws/Nuts/Bolts	Inspect/Tighten/Replace	**1**	**I / R ***				

MAINTENANCE PROCEDURE LETTER CODES: I = INSPECT, R = REPLACE, C = CLEAN
IMPORTANT NOTE - Time intervals shown are maximum. Actual use and your experience will determine the frequency of required maintenance.
MAINTENANCE PROCEDURE NOTES:
(1) Apply ECHO® LUBE™ every 25 hours of use.
(2) Apply ECHO® LUBE™ every 50 hours of use.
***** All recommendations to replace are based on the finding of damage or wear during inspection..

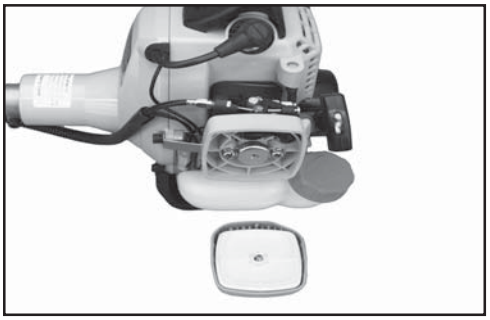
AIR FILTER



Level 1.

Tools required: Cleaning brush, 25 or 50 mm (1 or 2 in.) medium bristle paint brush.

Parts required: 90008 REPOWER™ AIR & FUEL FILTER 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 the air cleaner area.

2. Remove the air cleaner cover. Clean and inspect the element for damage. If element is fuel soaked and very dirty, replace.

3. If element can be cleaned and reused, be certain it:
   -still fits the cavity in the air cleaner cover.
   -is installed with the original side out.

FUEL FILTER

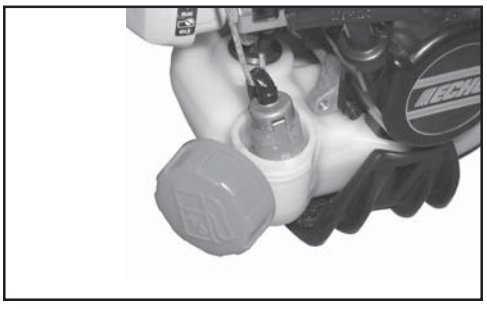
Level 1.

Tools required: Fuel line hook, 200-250 mm (8 -10 in.) length of wire with one end bent into a hook. Clean rag, funnel, and an approved fuel container.

Parts required: 90008 REPOWER™ AIR & FUEL FILTER KIT.

WARNING DANGER

Fuel is **VERY** flammable. Use extreme care when mixing, storing or handling.



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

2. Use the "fuel line hook" to pull the fuel line and filter from the tank.

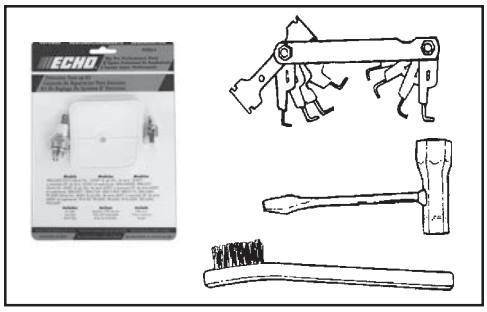
3. Remove the filter from the line and install the new filter.

SPARK PLUG

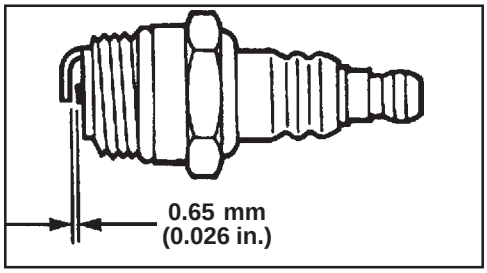
Level 2.

Tools Required: T-Wrench (combination socket wrench & screw driver supplied with unit) Feeler gauge, preferably a wire gauge. Soft Metal Brush.

Parts Required: REPOWER™ Tune-Up Kit P/N 90074



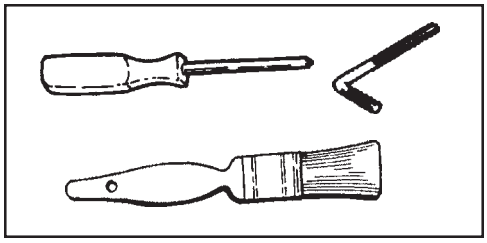
1. Remove spark plug and check for fouling, worn and rounded center electrode.
2. Clean the plug or replace with a new one. DO NOT sand blast to clean. Remaining sand will damage engine.
3. Adjust spark plug gap by bending outer electrode.
4. Tighten spark plug to 145-155 kg/cm (125-135 in. lb.).



COOLING SYSTEMS CLEANING

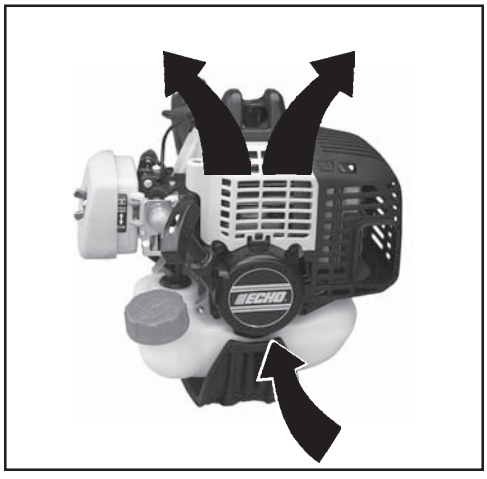
Level 2.

Tools required: Cross Head Screwdriver, 4 mm Hex Wrench, Cleaning Brush, 25 or 50 mm (1 or 2 in.) medium bristle paint brush.



Parts Required: None if you are careful.

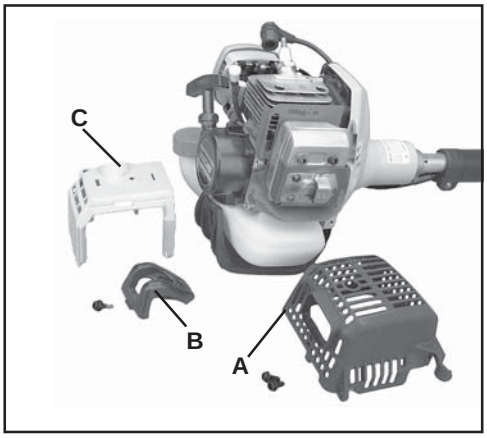
IMPORTANT
To maintain proper engine operating temperatures, cooling air must pass freely through the cylinder fin area. This flow of air carries combustion heat away from the engine.



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.

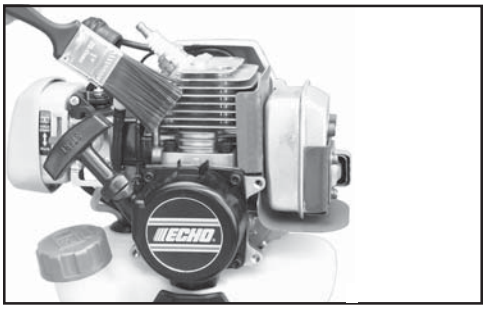
Removal of cooling passage blockages or cleaning of cooling fins is considered “Normal Maintenance”. Any failure attributed to lack of maintenance is not warranted.

1. Remove spark plug lead.
2. Remove two (2) muffler cover screws and muffler cover (A).
3. Remove screw and arm rest (B).
4. Remove engine cover (C).

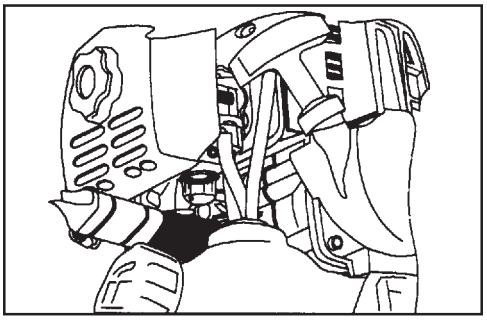


IMPORTANT
DO NOT use a metal scraper to remove dirt from the cylinder fins.

5. Use brush to remove dirt from the cylinder fins.



6. Remove grass and leaves from the grid between the recoil starter and fuel tank.

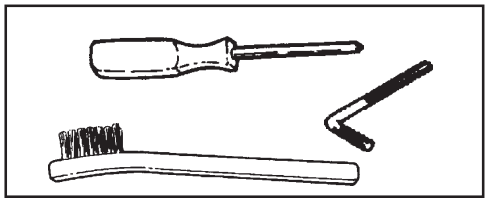


7. Assemble components in reverse order.

EXHAUST SYSTEM

Spark Arrestor Screen

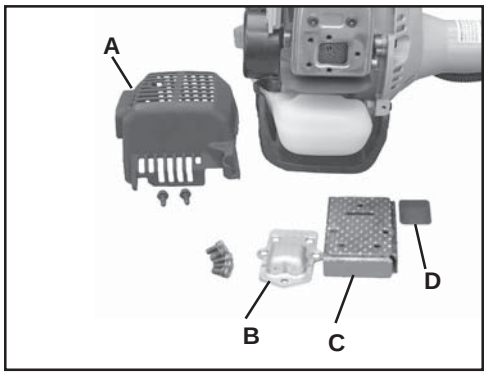
Level 2.



Tools Required: Cross Head Screwdriver, Soft Metal Brush, 4 mm Hex Wrench

Parts Required: Spark Arrestor Screen, P/N 14586240630, Gaskets, P/N V104000360, V104000032

1. Remove two (2) muffler cover screws and muffler cover (A).
2. Place piston at Top Dead Center (TDC) to prevent carbon/dirt from entering cylinder.
3. Remove spark arrestor screen cover (B), gasket (C), and screen (D) from muffler body.
4. Clean carbon deposits from muffler components.



NOTE
When cleaning carbon deposits, be careful not to damage the catalytic body.

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

Cylinder Exhaust Port

Level 3

IMPORTANT
The cylinder exhaust port must be inspected and cleaned of excess carbon every 3 months or 90 hours of operation in order to maintain this engine within the emissions durability period. ECHO strongly recommends that you return your unit to your ECHO dealer for this important maintenance service.

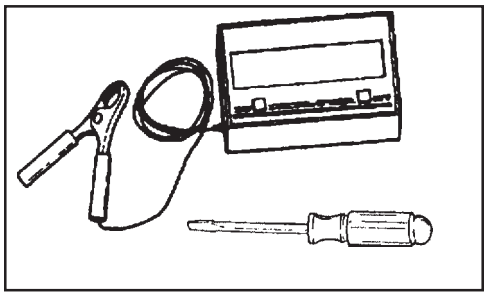
CARBURETOR ADJUSTMENT

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 Adjustment

High altitude adjustment is not required for proper operation of this engine.



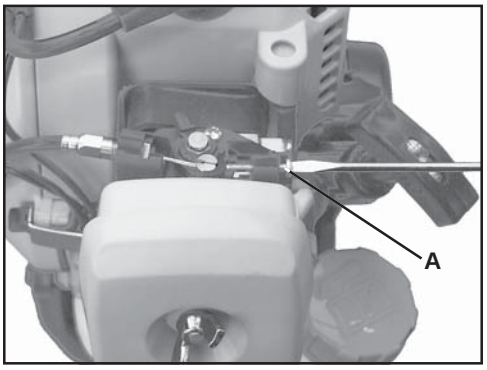
Level 2.

Tools required: Screwdriver, Tachometer (ECHO P/N 99051130017).

Parts required: None.

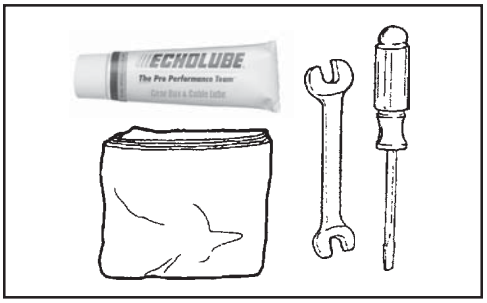
NOTE
Every unit is run at the factory and the carburetor is set in compliance with emission regulations. This carburetor does not have acceleration and high speed adjustment needles.

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 page 11 "Specifications" of this manual. Turn idle screw (A) clockwise to increase idle speed; counter clockwise to decrease idle speed.



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

LUBRICATION



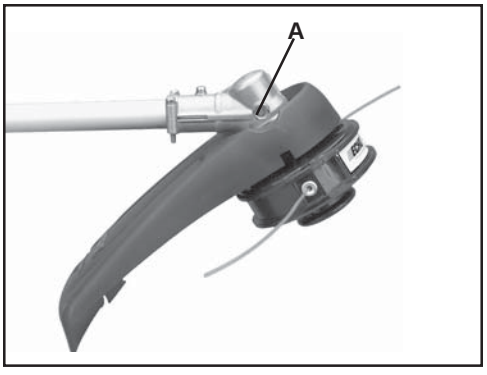
Level 1.

Tools Required: 8 mm Open End Wrench, Screwdriver, Clean Rag.

Parts Required: ECHO® LUBE™ 8 oz. (P/N 91014) or Lithium Base Grease.

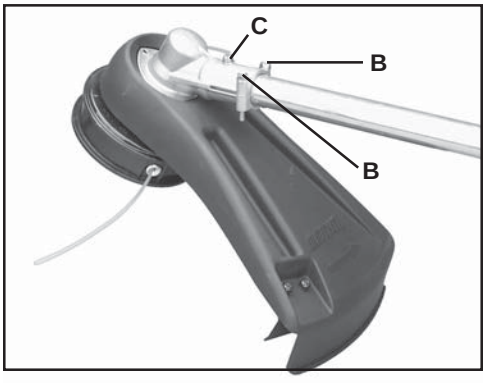
Gear Housing

1. Clean all loose debris from gear box.
2. Remove plug (A) and check level of grease.
3. Add grease if necessary, DO NOT over-fill.



Drive Shaft

1. Loosen two (2) screws (B) and remove center locating screw (C). Pull gear box and shield from drive shaft housing.
2. Pull flexible cable from the drive shaft housing, wipe clean and recoat with a thin coating[15 ml (1/2 oz.)] of ECHO® LUBE™ grease.
3. Slide the flexible cable back in the drive housing. DO NOT get dirt on the flex cable.
4. Install the gear housing and shield assembly.



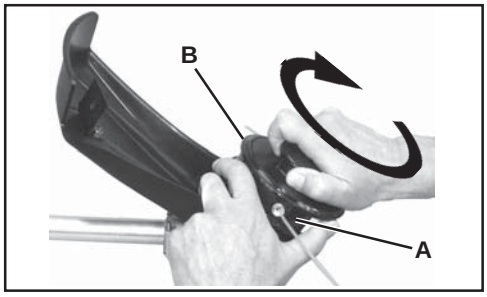
NYLON LINE REPLACEMENT

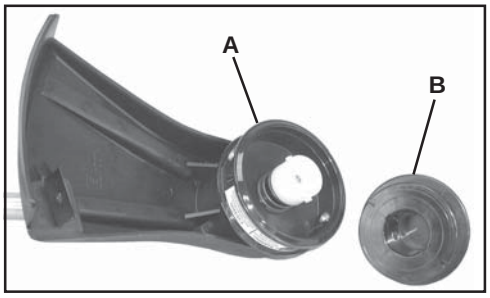
Level 1.

Parts Required: ECHO 0.095" Nylon Trimmer Line 6 m (20 ft.) long.

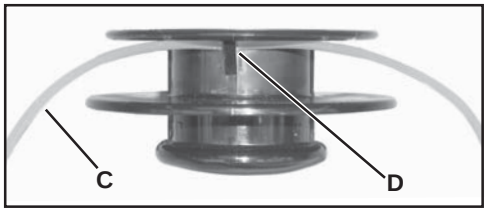
1. Shut engine off. Lay unit on the ground with head assembly up.

2. Hold drum (A) and firmly turn spool (B) CW (clockwise) until it disengages from the inner drive. Pull spool from drum. DO NOT push in on spool when turning.

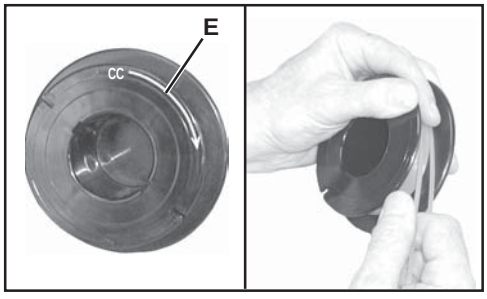




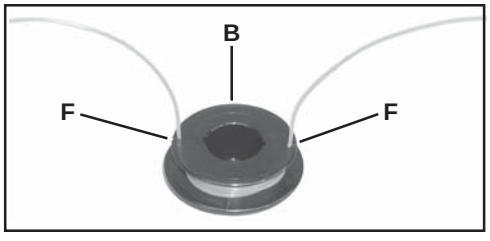
3. Use one piece of new nylon line (C) 6 m (20 ft.) long and thread through the molded loop (D) on the spool. Pull line tight and adjust so one end is 15 cm (6 in.) longer than the other.



4. Hold the spool, opening toward you. Place index finger between the two strands and wind line, tightly and evenly, in direction of arrow (E) marked "CC".

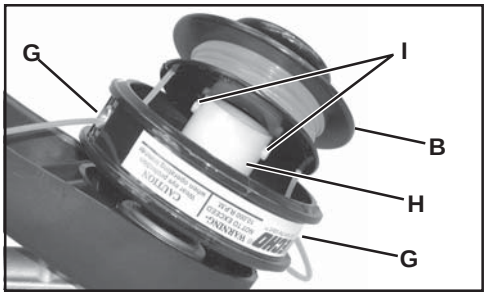


5. Stop when approximately 15-20 cm (6-8 in.) line (C) remains and place ends of line in notches (F) in spool (B).

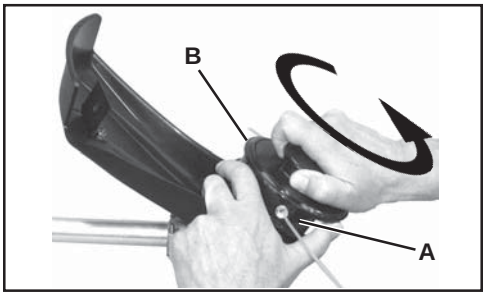


6. Feed ends of line through housing eyelets (G) and place spool (B) over drive (H). Align pegs (I) on drive with notches in spool, and push spool into drum.

7. Pull on both lines until they come free from notches (F) in spool.

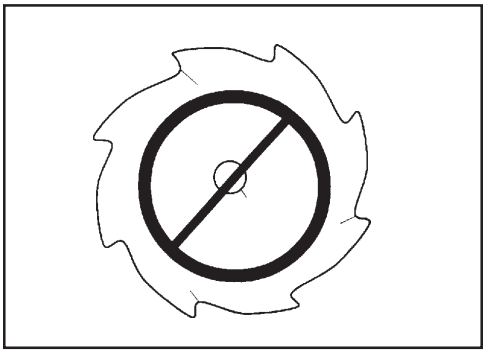


8. Hold drum (A) firmly and turn spool (B) CCW (counterclockwise) until it stops. DO NOT push in on spool when turning.



9. Pull both lines out and trim to cut-off knife length.

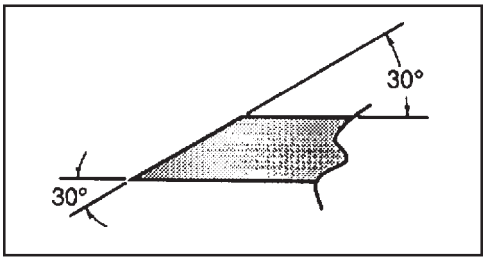
SHARPENING METAL BLADES



Three styles of metal blades are approved for use on the ECHO Brush Cutter. 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.

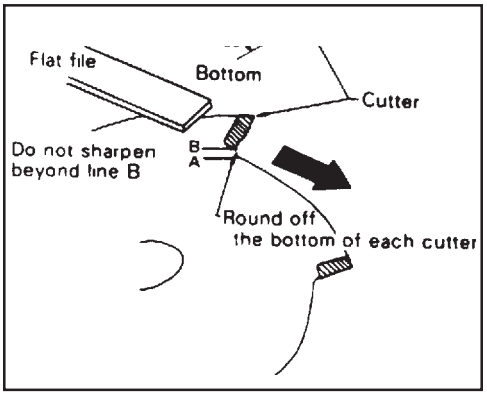
When sharpening a blade, always remove the same amount of materials from each tooth to maintain balance. A blade that is not balanced will cause unsafe handling due to vibration and can result in blade failure.



Tool required: Flat file (preferred). Electric grinder if special care is used. Round (rat tail) file for gullet (radius).

1. File each tooth at a 30 degree angle a specific number of times, eg. 4 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.



IMPORTANT
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.

3. After sharpening teeth, check each tooth radius for evidence of a square (sharp) corner. Use the round (rat tail) file to renew the radius.

TROUBLESHOOTING

ENGINE PROBLEM TROUBLESHOOTING CHART

Problem	Check	Status	Cause	Remedy
Engine cranks - starts hard/ doesn't start	Fuel at carburetor	No fuel at carburetor	Fuel strainer clogged Fuel line clogged Carburetor	Clean or replace Clean or replace See your Echo dealer
	Fuel at cylinder	No fuel at cylinder	Carburetor	See your Echo dealer
		Muffler wet with fuel	Fuel Mixture too rich	Open choke Clean/replace air filter Adjust carburetor See your Echo dealer
	Spark at end of plug wire	No spark	Stop switch off Electrical problem Interlock switch	Turn switch to ON See your Echo dealer See your Echo dealer
	Spark at plug	No spark	Spark gap incorrect Covered with carbon Fouled with fuel Plug defective	Adjust to .65mm (0.026 in.) Clean or replace Clean or replace Replace plug
Engine runs, but dies or does not accelerate properly	Air filter	Air filter dirty	Normal wear	Clean or replace
	Fuel filter	Fuel filter dirty	Contaminants/residues in fuel	Replace
	Fuel vent	Fuel vent plugged	Contaminants/residues in fuel	Clean or replace
	Spark Plug	Plug dirty/worn	Normal wear	Clean and adjust or replace
	Carburetor	Improper adjustment	Vibration	Adjust
	Cooling System	Excessive dirt/debris	Extended operation in dirty/dusty locations	Clean
	Spark Arrestor Screen	Screen cracked, plugged, or perforated	Normal wear	Replace
Engine does not crank	N/A	N/A	Internal engine problem	See your Echo dealer

WARNING DANGER

Fuel vapors are **extremely** flammable and may cause fire and/or explosion. **Never** test for ignition spark near an open spark plug opening, otherwise serious personal injury may result.

STORAGE

WARNING DANGER

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.

WARNING 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 "STOP" 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** the fuel tank **completely** and pull the recoil starter handle several times to remove fuel from the carburetor.
7. Remove the spark plug and pour 7 cc (1/4 oz.) of fresh, clean, two-stroke engine oil into the cylinder through the spark plug hole.

   A. Place a clean cloth over the spark plug hole.

   B. Pull the recoil starter handle 2-3 times to distribute the oil inside the engine.

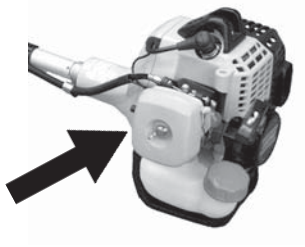
   C. Observe the piston location through the spark plug hole. Pull the recoil handle slowly until the piston reaches the top of its travel and leave it there.
8. Install the spark plug (do not connect ignition cable).

SERVICING INFORMATION

PARTS

Genuine ECHO Parts and ECHO REPOWER™ 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. You can find these numbers on the engine housing. For future reference, write them in the space provided below.

Model No. _____ SN. _____



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. When presenting your unit for Warranty service/repairs, proof of purchase is required.

DEALER?
Call
1-800-432-ECHO
or
www.echo-usa.com

ECHO CONSUMER PRODUCT SUPPORT

If you require assistance or have questions concerning the application, operation or maintenance of this product you may call the ECHO Consumer Product Support Department at 1-800-673-1558 from 8:30 am to 4:30 pm (Central Standard Time) Monday through Friday. Before calling, please know the model and serial number of your unit to help your Consumer Product Support Representative.

CONSUMER PRODUCT SUPPORT
1-800-673-1558
8:30 - 4:30 Mon - Fri C.S.T.

WARRANTY REGISTRATION

You may register your Echo equipment using the warranty registration card or register on-line at www.echo-usa.com. Registering provides a direct link between you and ECHO if we find it necessary to contact you.

ADDITIONAL OR REPLACEMENT MANUALS

Safety Manuals in English/Spanish or English/French are available, free of charge, from your ECHO dealer or at www.echo-usa.com.

Operator's and Parts Manuals are available by:

- Downloading free from www.echo-usa.com
- Purchasing from your Echo Dealer.
- Sending a check or money order for $2.00 per Parts Catalog or $1.50 per Operator's Manual made payable to ECHO, INCORPORATED. State on a sheet of paper the model number and serial number of the ECHO unit you have, part number of the manual (if known), your name and address and mail to address below.

Safety Videos are available from your Echo dealer. A $5.00 shipping charge will be required for each video.

Available Parts Catalog

SRM-231U Serial Number 06001001 - 06999999 Part Number 99922203476

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