

Hedge Clipper Operator's Manual

MODEL

HC-233 Serial Number 020

Serial Number 02001001 - 02999999 HC-234

Serial Number 02001001 - 02999999

WARNING A 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 A DANGER

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

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INTRODUCTION

Welcome to the ECHO family. This ECHO product was designed and manufactured to provide long life and on-the-jobdependability. 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 operations tips and SAFETY messages.





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.

THE OPERATOR'S MANUAL

contains specifications and information for operation, starting, stopping, maintenance, storage and assembly specific to this product.

THE SAFETY MANUAL

explains possible hazards involved with the use of Hedge Clippers and what measures you should take to make their use safer.



TABLE OF CONTENTS

Introduction	2
- The Operator's Manual	2
- The Safety Manual	2
Manual Safety Symbols and Important Information .	
Safety	3
- Decals	3
- International Symbols	
- Equipment	
- Fuel	
- Personal Condition and Safety Equipment	
- Safe Operation	7
- Extended Operation/Extreme Conditions	8
Description	
- Contents	9
- Emissions Control	9
Specifications	
Assembly	
Pre-Operation	
- Fuel	
- Equipment Check	
- Determine Operation Area	
Operation	15
- Starting Cold Engine	16
- Starting Warm Engine	17
- Stopping Engine	17
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- Hedge Trimming 18 Maintenance 19

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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. 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.



P/N 89016006361



P/N X505000270



P/N X5052242200



INTERNATIONAL SYMBOLS

Symbol form/shape	Symbol description/application	Symbol form/shape	Symbol description/application	Symbol form/shape	Symbol description/application	Symbol form/shape	Symbol description/application
	Read and understand owners manual.		Fuel and oil mixture	L	Carburetor adjustment - Low speed mixture	H	Carburetor adjustm - High speed mixtu
	Wear eyes, ears and head protection		Finger Severing	\triangle	Safety/Alert	Τ	Carburetor adjustm - Idle speed
STOP	Emergency stop		Hot Surface	4	Avoid all power lines. This unit is not insulated against electrical current.	X	Do not operate clo er than 15 M (50 fi from electrical ha ards.
	Wear hand protec- tion. Use two handed.		DO NOT smoke near fuel.	*	Plan retreat path from falling objects.	⊨	Primer bulb
	Engine choke control.	Ignition ON I OFF	lgnition ON/OFF		DO NOT allow flames or sparks near fuel.	غلا	Wear slip resista foot wear.
	Chain lubrication		Do not operate without guards in place.	· ·····	-127		nders at least 15 feet) away.

EQUIPMENT

Before operation a complete check of the unit must be performed;

- · 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.
- Never adjust blades when the engine is operating.
- Inspect hand guard for damage. Replace if damaged or missing.
- Check that the blade assembly is firmly attached and in safe operating condition. Dull, loose or damaged blades should not be used.
- · ECHO, INC. will not be responsible for the failure of cutting devices or accessories which have not been tested and approved by ECHO for use with this unit.





FUEL

WARNING A 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.







PERSONAL CONDITION AND SAFETY EQUIPMENT

WARNING A DANGER

Hedge Clipper users risk injury to themselves and others if the hedge clipper is used improperly and or safety precautions are not followed. Proper clothing and safety gear must be worn when operating a hedge clipper.



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 --

Eye protection that meet ANSI Z87.1 or CE requirements must be worn whenever you operate the Hedge Clipper.

Hand Protection --

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

Hearing Protection --

Wear 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.
- DONOT WEAR SHORTS,
- DONOTWEAR TIES, SCARFS, JEWELRY.

Wear protective hair covering to contain long hair.

Wear sturdy work shoes with nonskid soles;

- DONOT WEAR OPEN TOED SHOES,
- DONOT OPERATE UNIT BAREFOOTED.

Wear no-slip, heavy duty work gloves.

Hot Humid Weather --

Heavy protective clothing can increase operator fatigue which may lead to heat stroke. Delay heavy work until temperature drops.







SAFE OPERATION

Determine Operation Area

- Do not operate this product indoors or in inadequately ventilated areas.
- Review the area to be trimmed. Look for hazards that could contribute to unsafe conditions. Do not operate if any wires (power, telephone, cable, etc.) are closer than 4.5 m (15 ft.) to any part of the operator or unit.
- Spectators and fellow workers must be warned, and children and animals prevented from coming nearer than 4.5 m (15 ft.) while the Hedge Clipper is in use.
- Provide all users of this equipment with the Operator's Manual and instructions for Safe Operation.

Operation

Use Proper Clothing & Equipment

• Before starting the unit, equip yourself and any other personworking within the 4.5 m (15 ft.) Safety Zone with the required Protective Equipment and clothing.

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.

Keep a Firm Grip

• Hold the front and rear handles with both hands, with thumbs and fingers tightly encircling the handles.







Avoid Hot Surfaces

• During operation, the muffler or catalytic muffler and surrounding cover may become extremely hot. Avoid contact during and immediately after operation. Always keep exhaust area clear of flammable debris. Allow the engine and muffler to completely cool before performing any maintenance activity.



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 armexercises 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 repetitivemovement.
- 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.









DESCRIPTION

The ECHO product you purchased has been factory pre-assembled for your convenience.

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 Hedge Clipper Assembly
- __1 Operators Manual
- __1 Safety Manual
- ____1 Warranty Statement
- ___ 1 Warranty Registration Card
- ___1 Plastic Bag
- _____ 1, T-Wrench 13 x 19
- ______ 1,8 mm x 10 mm Open end Wrench
- ___ 1 Blade Cover



EMISSION CONTROL

California Tier 2

The emission control system for this engine is EM (Engine Modification).



Emission Control Label (located on Engine) (EXAMPLE

ONLY, information on label varies by FAMILY).

AIR INDEX TAG

The Air Index Tag indicates, for purposes of consumer awareness, how this product's emissions compare to other products under the standards enacted by the California Air Resources Board.



PRODUCT EMISSION DURABILITY

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

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- 1. **OPERATORS MANUAL** Read and understand this manual before operation. Keep manual in a safe location for future reference, i.e., operation, maintenance, storage and specifications.
- 2. **SAFETY MANUAL** Read and understand this manual before operation. Keep manual in a safe location of safe operating techniques.
- 3. **BLADES** Double reciprocating single side blades mounted to a blade support bar.
- 4. **RIGHT FRONT HANDLE WITH GUARD** Rubber non-slip grip, guard protects hand from the blades. Warning decals are located on guard.
- 5. **SPARK PLUG** Provides spark to ignite fuel mixture.
- 6. **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.
- 7. **CHOKE** The choke control lever is located on the front of the air cleaner case. Move choke lever to "COLD START" to close the choke for Cold Starting. Move choke lever to "RUN" position to open choke.
- 8. AIR CLEANER Contains replaceable filter element.
- 9. FUEL TANK CAP Covers and seals fuel tank opening.
- 10. FUEL TANK Contains fuel and fuel filter.
- 11. REAR HANDLE Contains the Stop Switch, Throttle Lockout, Rotation Lockout and Throttle Trigger.
- 12. **THROTTLE TRIGGER** Spring loaded to return to idle when released. Trigger Lockout must be depressed fully and Rotation Lock must be engaged before Throttle Trigger will move. During acceleration, depress gradually for best operating technique.
- 13. **STOP SWITCH -** "SLIDE SWITCH" mounted on top of the rear handle. Move switch FORWARD to RUN, BACK to STOP.
- 14. THROTTLE TRIGGER LOCKOUT This lever must be depressed before Throttle Trigger can be activated.
- 15. **SPARKARRESTOR-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.
- 16. **RECOIL STARTER HANDLE** Pull handle slowly until recoil starter engages, then quickly and firmly. DO NOT pull rope all the way out or allow the handle to snap back, damage to the starter will occur.
- 17. BLADE COVER Used to cover blades during transportation or storage. Remove blade cover before using unit.
- 18. **SAFETY VIDEO** (Not included with unit) P/N 99922202800 English version only is 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	HC-233	HC-234		
Length	1045 mm (41.1 in.)	1280 mm (50.4 in.)		
Width	250 mm (9.84 in.)			
Height	220 mm (8.66 in.)			
Weight, dry	5.8 kg (12.8 lb.) 6.1 kg (13.4 lb.)			
Type of Engine	Air cooled, two-stroke, sing	le cylinder, gasoline engine		
Displacement	22.8 cc (1	.39 cu.in.)		
Bore	32.2 mm	(1.27 in.)		
Stroke	28.0 mm	(1.10 in.)		
Exhaust System	Spark Arrestor N	/luffler w/catalyst		
Carburetor	Walbro WY	/J w/purge		
Ignition System	Flywheel Magneto, Capa	acitor discharge ignition		
Spark Plug	BPM-7Y (Gap 0.65 mm (0.026 in.)			
Fuel	Mixed Fuel - gasoline and 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	0.55 lit. (18.6 fl. oz)			
Starter System	Automatic Recoil Starter			
Clutch	Centrifugal Type			
Gear Case Ratio	1:5.125			
Cutter	Single Edge			
Length	827 mm (32.6 in.) 1072 mm (42.2 in			
Pitch	35 mm (1.4 in.)			
Height	23 mm (0.91 in.)			
ldle Speed (RPM)	2500 - 3200			
Wide Open Throttle (RPM)	11,000 - 12,000			

ASSEMBLY

This model is factory assembled.

PRE-OPERATION

FUEL

Fuel Requirements

Gasoline - Use 89 Octane $\begin{bmatrix} \frac{R+M}{2} \end{bmatrix}$ (mid grade or higher) gasoline known to be good quality. Gasoline may contain up to 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. <u>FC</u> 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. <u>FC</u> certified oil, such as Echo Premium 50:1 Two-stroke Oil, will void the two-stroke engine warranty. (Emission related parts <u>only</u> are covered for two years, regardless of two-stroke oil used, per the statement listed in the California 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 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





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.



EQUIPMENT CHECK

Before operation a complete check of the unit must be performed;

- 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.
- Never adjust blades when the engine is operating.
- Inspect hand guard for damage. Replace if damaged or missing.
- Check that the blade assembly is firmly attached and in safe operating condition. Dull, loose or damaged blades should not be used.



DETERMINE OPERATION AREA

- Before starting the unit, equip yourself and fellow workers in the 4.5 m (15 ft.) safety zone with the required protective equipment and clothing.
- Review the area to be trimmed. Look for hazards that could contribute to unsafe conditions. Do not operate if any wires (power, telephone, cable, etc.) are closer than 4.5 m (15 ft.) to any part of the operator or unit.
- · Spectators, children and animals must be prevented from coming nearer than 4.5 m (15 ft.) while the Hedge Clipper is in use.



OPERATION



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





• During operation, the muffler or catalytic muffler and surrounding cover may become extremely hot. Avoid contact during and immediately after operation. Always keep exhaust area clear of flammable debris. Allow the engine and muffler to completely cool before performing any maintenance activity.

NOTE

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



MECHO.





STARTING COLD ENGINE

1. Stop Switch - START/RUN. Move stop switch (A) away from the STOP position.

- 2. Choke COLD START. Move choke (B) to the Cold Start (CLOSED) position.
- 3. Primer-PUMPBULB. Primer - Pump 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.

Lay the hedge clipper on a flat clear area and pull the recoil starter







- 5. Open Choke RUN.
 - Move choke (B) to the RUN (OPEN) position. Restart engine if necessary and allow unit to warm up at idle for several minutes.

WARNING

4. Start-PULLROPE

handle (D) until engine fires.



DANGER

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

6. 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.



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

1. Stop Switch - START/RUN Move stop switch (A) away from the STOP position.





2. Start - Pull Rope

Lay the hedge clipper on a flat clear area and pull the recoil starter handle (D) until the engine fires.

NOTE

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

STOPPING ENGINE

- 1. Release Throttle. Allow engine to idle for a minute.
- 2. Stop Switch STOP. Move stop switch (A) to STOP position.





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 hedge clipper again.





HEDGE TRIMMING

NOTE

This unit is designed to cut shrubs and hedges with branches no larger than 6 mm(1/4 in.) in diameter.

- 1. Hold trimmer firmly and squeeze throttle trigger to accelerate engine.
- 2. Tilt trimmer so cutting teeth are angled slightly toward the hedge or shrub and proceed to cut.



Never remove hands from unit when blades are moving.





The engine continues running even when the blades have stopped due to an obstruction. If this occurs, stop the engine, disconnect ignition cable and remove the obstruction.

NOTE

Refer to the Hedge Clipper Safety Manual for additional proper and safe Trimming Techniques.



MAINTENANCE

Your ECHO Hedge Clipper is designed to provide many hours of trouble free service. Regular scheduled maintenance will help your Hedge Clipper 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-YOUR-SELF or have the ECHO Dealer do it, each maintenance task has been graded. If the task is not listed, see your ECHO Service Dealer for repairs.

SKILL LEVEL

- **Level 1** = Easy to do. Most required tools come with unit.
- **Level 2** = Moderate difficulty. Some specialized tools may be required.
- **Level3** = Experience required. Specialized tools are required. ECHO recommends the unit be returned to your ECHO dealer for servicing.

ECHO offers **REPOWER[™]** Maintenance Kits and Parts to make your maintenance job easier. Just 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	Before Use	Every Refuel	3 Months or 90 Hours	6 Months or 270 Hours	Yearly
Air Filter	Inspect/Replace	I/C		R		
Fuel Strainer	Inspect/Replace			I		R
Fuel Line	Inspect/Replace	I		I		
Carburetor	Inspect/Replace				I/C	R (1)
Choke System	Inspect/Replace	Ι	I			
Cooling System	Inspect/Clean	I/C				
Muffler Spark Arrestor	Inspect/Clean/Replace			I/C		
Cylinder Exhaust Port	Inspect/Clean/Decarbon			I/C		
Gear Housing	Grease	I (2)				
Recoil Starter Rope	Inspect/Clean	I				
Fuel Leaks	Inspect/Repair	I	I			
Spark Plug	Clean			I/C	R	
Ignition System	Clean/Replace	No	Maintenar	nce required f	or coil and flyw	/heel
Screws/Nuts/Bolts	Inspect/Tighten/Replace	I				

I = INSPECT, R = REPLACE, C = CLEAN

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

(1) Replacement will be required for Commercial use yearly. For Consumer use, cleaning every 6 months is required.
 (2) Apply Echo Lube[™] every 10 hours of operation.



AIR FILTER

Level 1.

Tools required: 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.

NOTE

Carburetor adjustment may be needed after air filter cleaning/ replacement.

FUEL FILTER

Level 1.

Tools required: 203-254 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



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.









WARNING

DANGER

Catalytic mufflers operate at extremely high temperatures. Muffler area must be kept clean. Do not perform maintenance on the muffler until engine and muffler are completely cool, otherwise serious personal injury may occur.

SPARK PLUG

Level 2.

Tools required: T-wrench, Feeler gauge, Soft metal brush

Parts required: 90064 REPOWER[™] Tune-Up Kit

- 0.65 mm (0.026 in.)
- 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 SYSTEM CLEANING

Level 2.

Tools required: 4 mm Allen wrench, 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 in the crankcase 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 crankcase cooling passage blockages or cleaning of cooling fins is considered "Normal Maintenance". Any failure attributed to lack of maintenance is not warranted.





22 ///**EEHD**。

- 1. Remove spark plug lead and spark plug (A).
- 2. Remove (2) muffler cover hex socket bolts and muffler cover.
- 3. Remove bottom front center hex socket bolt.
- 4. Pull cylinder cover (B) forward away from the engine.
- 5. Loosely install spark plug to keep debris out of the cylinder. Use brush to remove dirt from cylinder fins.

IMPORTANT

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

6. Install cylinder cover, muffler cover, spark plug and spark plug lead.

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.

EXHAUST SYSTEM

Spark Arrestor Screen

Level 2.

Tools required: 4 mm Allen wrench, Cross Head Screwdriver, Soft metal brush



Parts Required: Screen P/N 14586240630, Gasket Lid P/N 14586642031







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

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 breakin 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 (ECHOP/N 99051130017).

Parts required: None.

NOTE

Every unit is run at the factory and the carburetor is set in compliance and California Emission Regulations. This carburetor does not have acceleration and high speed adjustment needles.

- 1. Before adjusting the carburetor, clean or replace the air filter and spark arrestor screen.
- 2. Start engine and run for several minutes to reach operating temperature.
- 3 Check idle speed and reset if necessary. If a tachometer is available, idle speed screw (A) should be set to the specification found on page 12 "Specifications" of this manual. Turn idle screw (A) clockwise to increase idle speed; counter-clockwise to decrease idle speed.

WARNING



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









LUBRICATION

Blades

Level 1.

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

Parts Required: 20W Engine Oil (lubrication), 50-50 mixture of kerosene and 20W oil (cleaning).



Hedge Clipper Blades are very sharp. Wear gloves to protect hands.

- 1. Disconnect spark plug wire from spark plug.
- 2. Brush loose debris from blade and coat both sides of blade with the 50-50 cleaning mixture.
- 3. Allow cleaning mixture to soften the remaining gummy residue then wipe it from the blade.
- 4. Apply clean oil to the entire length of the blade. Be certain the blade bolts are lubricated.
- 5. Wipe excess oil from the blade before putting the unit back in service.

Gear Box Assembly

Level 2.

Tools required: Grease Gun, Clean Rag

Parts Required: Echo Lube[™] (P/N 91015) or Lithium Based Grease.

- 1. Clean dirt from grease fitting.
- 2. Apply 1-2 pumps of grease into fitting, **DO NOT** over fill. Leave room for the grease to expand during operation.















TROUBLESHOOTING

Problem					
Engine starts hard Engine does not start					
			Cause	Remedy	
Engine Cranks	Fuel at carburetor	No fuel at carburetor	Fuel strainer clogged Fuel line clogged Carburetor	Clean Clean See your ECHO dealer	
	Fuel at cylinder	No fuel at cylinder	Carburetor	See your ECHO dealer	
		Muffler wet with fuel	Fuel Mixture is too rich	Open choke Clean/replace air filter Adjust carburetor See your ECHO dealer	
	Spark at end of plug wire	No spark at end of plug wire	Stop switch off Electrical problem Interlock switch	Turn switch on See your ECHO dealer See your ECHO dealer	
	Spark at plug	No spark at plug	Spark gap incorrect Covered with carbon Fouled with fuel Spark plug defective	Adjust 0.65mm (0.026in.) Clean or replace Clean or replace Replace plug	
Engine does not crank			Internal engine problem	See your ECHO dealer	
Engine Dies or accelerates poorly		Air filter dirty Fuel filter dirty Fuel vent plugged Spark plug Carburetor Cooling system plugged Spark arrestor screen plugged	Clean or replace Replace Replace Clean and adjust/replace Adjust Clean Clean		

WARNING



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

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STORAGE

WARNING A 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 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



Do not store in enclosure where fuel fumes may accumulate or reach an open flame or spark, otherwise serious personal injury may result.

- 2. Place the stop switch (A) in the "OFF" position.
- 3. Remove accumulation of grease, oil, dirt and debris from exterior of unit.
- 4. Perform all periodic lubrication and services that are required.
- 5. Tighten all the screws and nuts.
- 6. **Drain** 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 1/4 oz. (1/2 tablespoon) 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).
- 9. Install blade cover on blades.





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.

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 8:00 am to 5:00 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.

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

<u>Safety Manuals</u> 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 above.

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

Available Parts Catalog

HC-233/234

Serial Number 02001001 - 02999999

P/N99922203320



400 Oakwood Road Lake Zurich, IL 60047

www.echo-usa.com



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

CONSUMER PRODUCT SUPPORT 1-800-673-1558 8 - 5 Mon - Fri C.S.T.

