



# Hedge Clipper

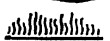
## *Operator's Manual*

**MODEL**

**HC-161**

**Serial Number 02001001 - 02999999**

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

## INTRODUCTION

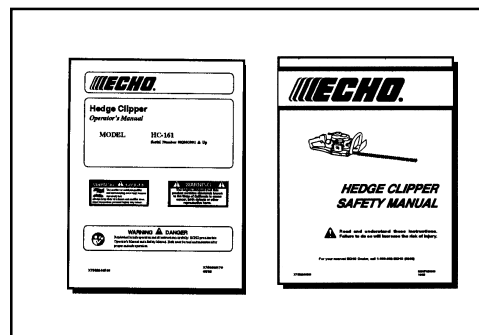
Welcome to the ECHO family. This ECHO product was designed and manufactured to provide long life and on-the-job-dependability. Read and understand this manual and the SAFETY MANUAL you found in the same package. You will find both easy to use and full of helpful operations tips and SAFETY messages.

## THE OPERATOR'S MANUAL

Read and understand this manual before operation. Keep it in a safe place for future reference. It 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. It 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	- Hedge Trimming .....	13
- The Operator's Manual .....	2	Maintenance .....	14
- The Safety Manual .....	2	- Skill Levels .....	14
Manual Safety Symbols and Important Information .....	3	- Maintenance Intervals .....	14
Safety .....	3	- Air Filter .....	15
- Decals .....	3	- Fuel Filter .....	15
- International Symbols .....	4	- Spark Plug .....	16
Safety Instructions .....	4	- Cooling System .....	16
- Personal Conditions and Safety Equipment .....	4	- Exhaust System .....	17
- Extended Operation/Extreme Conditions .....	5	- Carburetor Adjustment .....	18
- Equipment .....	5	- Lubrication .....	19
- Safe Operation .....	6	- Blade Stiffener Remove/Install .....	20
Emissions Control .....	6	- Sharpening Blades .....	21
Description .....	7	Troubleshooting .....	22
- Contents .....	7	Storage .....	23
Specifications .....	9	Servicing Information .....	24
Assembly .....	9	- Parts .....	24
Pre-Operation .....	10	- Service .....	24
- Fuel .....	10	- ECHO Consumer Product Support .....	24
Operation .....	11	- Warranty Card .....	24
- Starting Cold Engine .....	11	- Additional or Replacement Manuals .....	24
- Starting Warm Engine .....	12		
- Stopping Engine .....	12		

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**



**NOTE**

### IMPORTANT

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

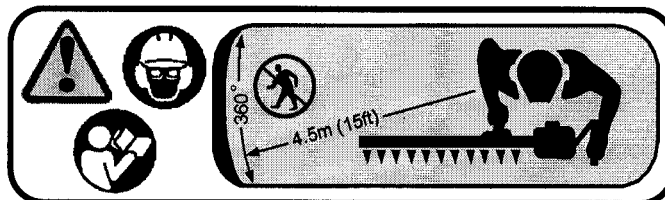
### NOTE

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

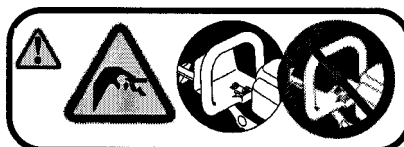
## SAFETY

### 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 X505000270



P/N X505000290

## INTERNATIONAL SYMBOLS

Symbol form/shape	Symbol description/application	Symbol form/shape	Symbol description/application
	Read and understand owners manual.		Fuel and oil mixture
	Wear eyes, ears and head protection		Finger Severing
	Emergency stop		Hot Surface
	Wear hand protection. Use two handed.		DO NOT smoke near fuel.
	Engine choke control.		Ignition ON/OFF
	Chain lubrication		Do not operate without guards in place.

Symbol form/shape	Symbol description/application	Symbol form/shape	Symbol description/application
	Carburetor adjustment - Low speed mixture		Carburetor adjustment - High speed mixture
	Safety/Alert		Carburetor adjustment - Idle speed
	Avoid all power lines. This unit is not insulated against electrical current.		Do not operate closer than 15 M (50 ft.) from electrical hazards.
	Plan retreat path from falling objects.		Primer bulb
	DO NOT allow flames or sparks near fuel.		Wear slip resistant foot wear.
	Keep bystanders at least 4.5 meters (15 feet) away.		

## SAFETY INSTRUCTIONS

### PERSONAL CONDITION AND SAFETY EQUIPMENT

#### WARNING 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.

#### *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.
- DONOTWEARSHORTS,
- DONOTWEARTIES,SCARFS,JEWELRY.

Wear protective hair covering to contain long hair.

Wear sturdy work shoes with nonskid soles;

- DONOTWEAROPENTOEEDSHOES,
- DONOTOPERATEUNITBAREFOOTED.

Wear no-slip, heavy duty work gloves.

## 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.

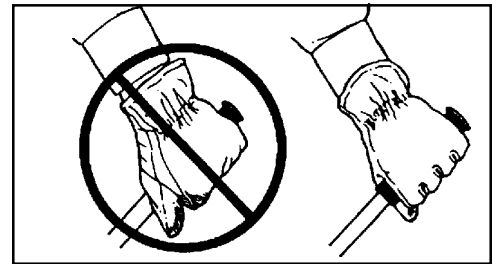
- Keep your body warm, especially the head, neck, feet, ankles, hands, and wrists.
- Maintain good blood circulation by performing vigorous arm exercises during frequent work breaks, and also by not smoking.
- Limit the hours of operation. Try to fill each day with jobs where operating the trimmer or 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.

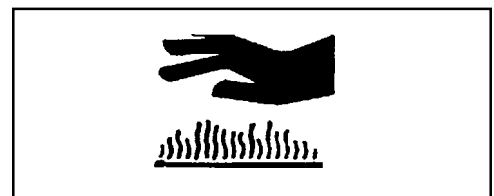


## EQUIPMENT

### 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.
- 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.
- 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.

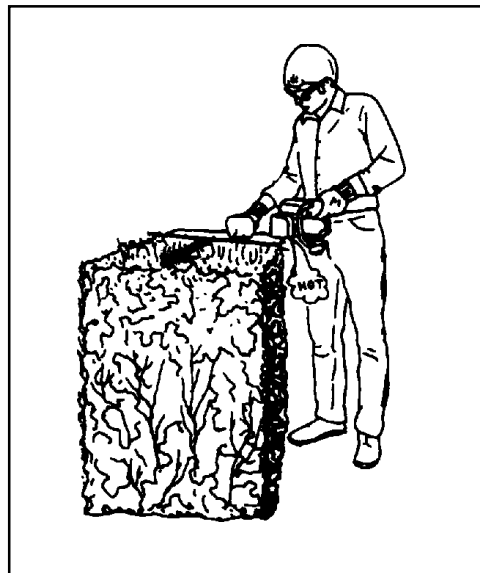
Provide all users of this equipment with the Operator's Manual and instructions for Safe Operation.

#### 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.



## EMISSION CONTROL

### California Tier 2

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

#### IMPORTANT ENGINE INFORMATION

ENGINE FAMILY: YEHXS.0214CA DISPLACEMENT: 21.2 cc  
EMISSION COMPLIANCE PERIOD: 300 HOURS  
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.

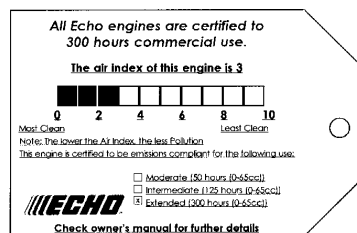


**KIORTZ CORP.**



#### 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.



**Emission Control Label** (located on Engine) (EXAMPLE ONLY, information on label varies by 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 California and/or U.S. EPA emissions regulations, provided that approved maintenance procedures are followed as listed in the Maintenance Section of this manual.

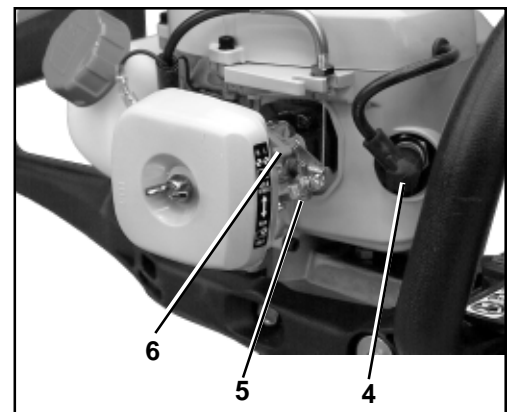
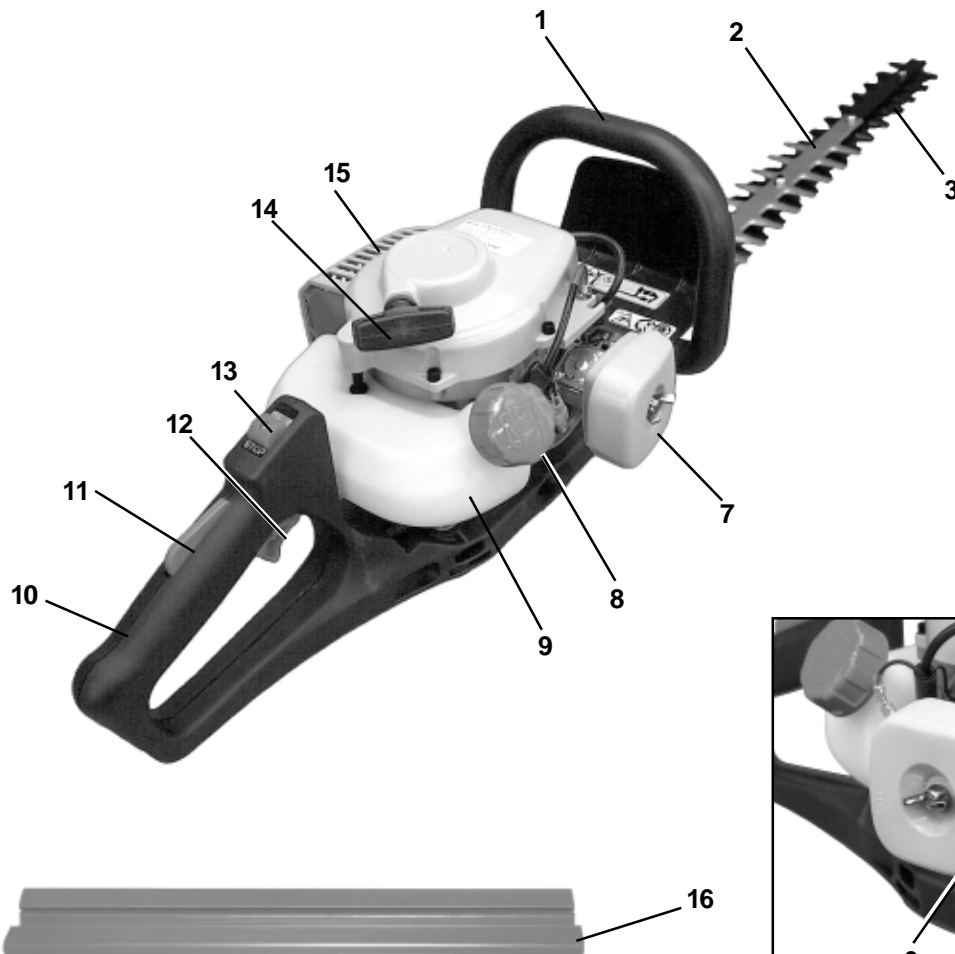
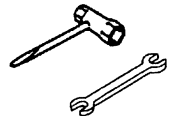
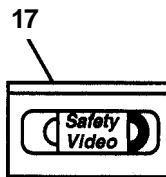
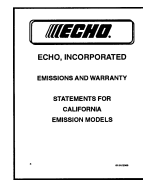
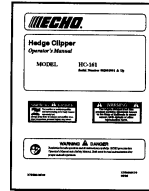
## DESCRIPTION

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

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, Bottle 2.6 oz. 2-Cycle Oil
- 1 - Blade Cover



1. **FRONT HANDLE WITH GUARD** - Comfortable, textured finish provides anti-slip grip for front hand. Guard protects hand from the blades. Warning decals are located on guard.
2. **STIFFENER** - Attaches to top of blades and guides material being cut into blades.
3. **BLADES** - Double reciprocating blades mounted to a blade support bar. Double sided blades, are capable of cutting on either side of the blade. All other models are single sided.
4. **SPARK PLUG** - Provides spark to ignite fuel mixture.
5. **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.
6. **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.
7. **AIR CLEANER** - Contains replaceable filter element.
8. **FUEL TANK CAP** - Covers and seals fuel tank opening.
9. **FUEL TANK** - Contains fuel and fuel filter.
10. **REAR HANDLE** - Contains the Stop Switch, Throttle Lockout, Rotation Lockout and Throttle Trigger.
11. **THROTTLE TRIGGER LOCKOUT** - This lever must be depressed before Throttle Trigger can be activated.
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. **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.
15. **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.
16. **BLADE COVER** - Used to cover blades during transportation or storage. Remove blade cover before using unit.
17. **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-161
Length	1133 mm (44.6 in.)
Width	240 mm (9.45 in.)
Height	200 mm (7.87 in.)
Weight, dry	5.7 kg (12.6 lb.)
Type of Engine	Air cooled, two-stroke, single cylinder, gasoline engine
Displacement	21.2 cc (1.29 cu.in.)
Bore	32.2 mm (1.27 in.)
Stroke	26.0 mm (1.02 in.)
Exhaust System	Spark Arrestor Muffler w/catalyst
Carburetor	Zama C1U
Ignition System	Flywheel Magneto, Capacitor 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	0.5 lit. (16.9 fl. oz)
Starter System	Automatic Recoil Starter
Clutch	Centrifugal Type
Gear Case Ratio	1:5.88
Cutter (Double Reciprocating Blade)	Double Edge
Length	615 mm (24.2in.)
Pitch	35 mm (1.4 in.)
Height	21 mm (0.83 in.)
Idle Speed (RPM)	2500 - 3000
Wide Open Throttle (RPM)	11,000 - 12,000

## ASSEMBLY

This model is factory assembled.

## PRE-OPERATION

### FUEL

#### *Fuel Requirements*

**Gasoline** - Use 89 Octane [ $\frac{R+M}{2}$ ] (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. 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 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*

### **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

### NOTE

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

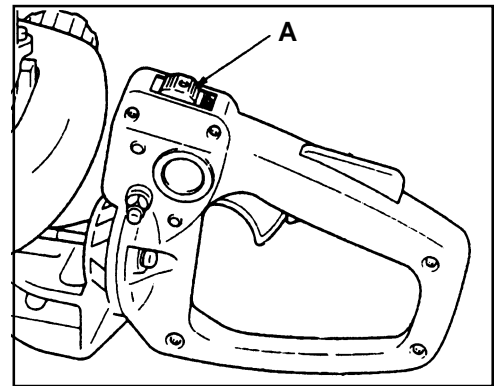
### NOTE

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

## STARTING COLD ENGINE

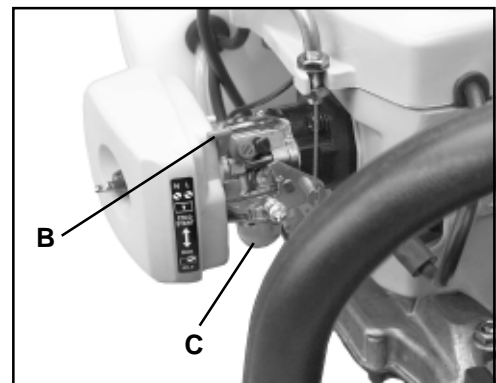
### 1. *Stop Switch*

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



### 2. *Choke*

Move choke (B) to the Cold Start (CLOSED) position.

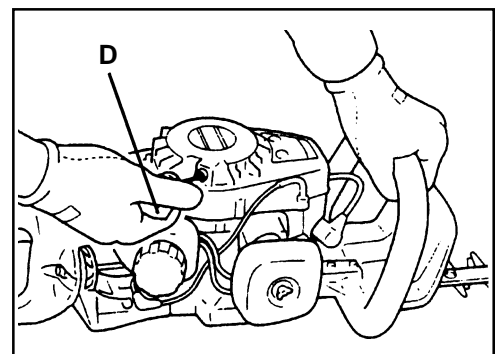


### 3. *Primer*

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.

### 4. *Recoil Starter*

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

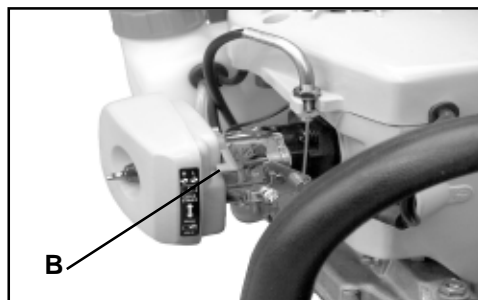


## 5. *Choke*

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

### **WARNING** **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**

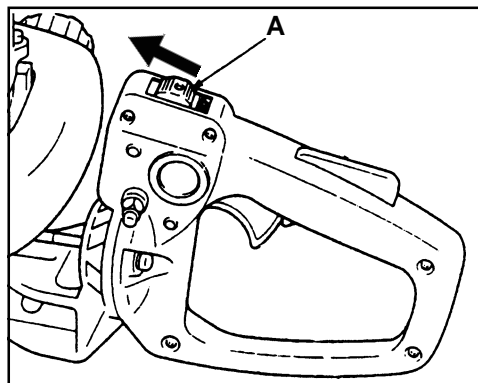
The starting procedure is the same as Cold Start except DO NOT close the choke.

### **WARNING** **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.

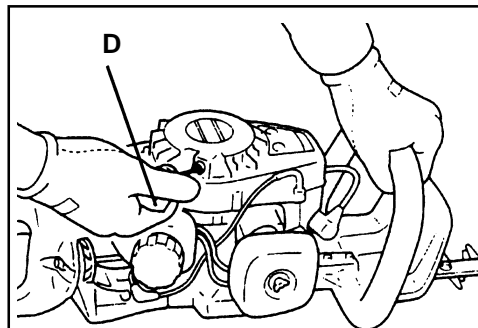
## 1. *Stop Switch*

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



## 2. *Recoil Starter*

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



### **NOTE**

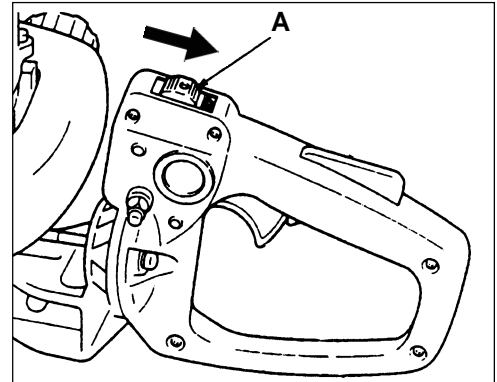
If engine does not start after 5 pulls, use Cold Start Procedure.

## STOPPING ENGINE

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



## HEDGE TRIMMING

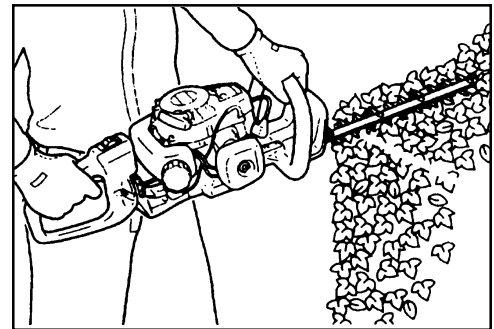
### **NOTE**

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.

### **WARNING** **DANGER**

Never remove hands from unit when blades are moving.



### **WARNING** **DANGER**

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.

## 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.

**Level 3** = 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	I	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 Maintenance required for coil and flywheel				
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 15 - 25 hours of operation.

## AIR FILTER

### Level 1.

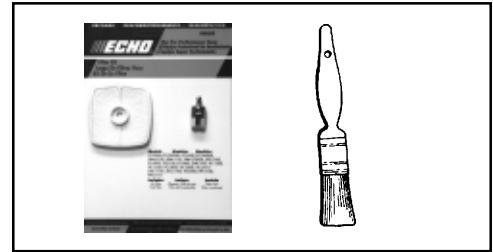
*Tools required:* 25 or 50 mm (1 or 2 in.) medium bristle paint brush

*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.

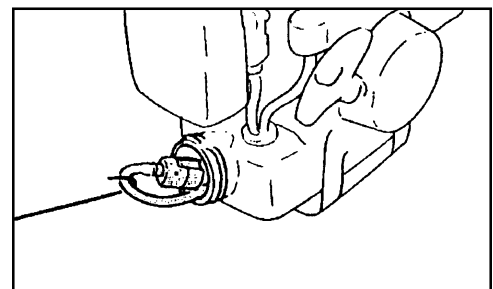
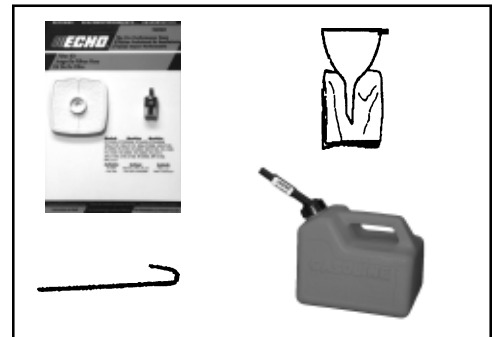
*Tools required:* 200-250 mm (8-10 in.) length of wire with one end bent into a hook. Clean rag, funnel, and an approved fuel container

*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.



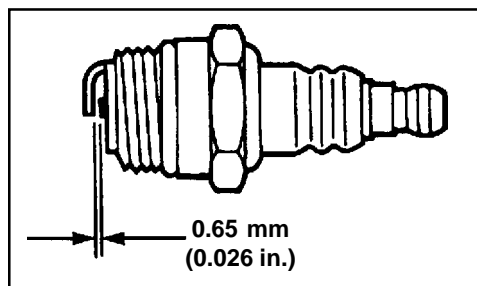
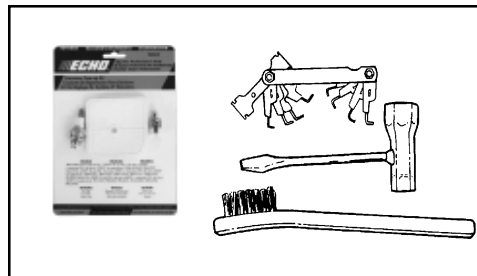
## SPARK PLUG

### Level2.

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

*Parts required:* 90064REPOWER™ Tune-Up Kit

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

### Level2.

*Tools required:* 3 mm Allen wrench, 25 or 50 mm (1 or 2 in.) medium bristle paint brush

*Parts required:* None if you are careful.

#### IMPORTANT

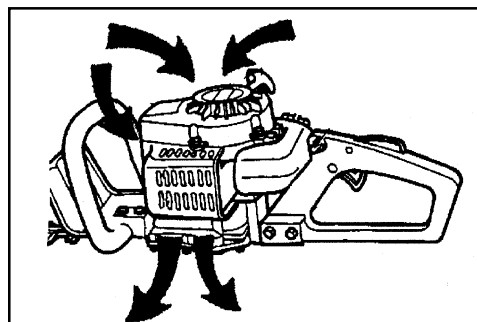
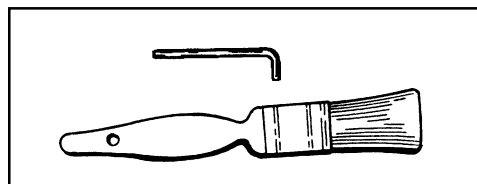
To maintain proper engine operating temperatures, cooling air must pass freely through the cylinder fin area. This flow of air carries combustion heat away from the engine.

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.

1. Remove spark plug lead and spark plug (A).
2. Remove (4) starter cover hex socket bolts and starter.





3. Disconnect the throttle cable from carburetor swivel.
4. Remove bottom left and bottom right hex socket bolts.
5. Carefully pull cylinder cover forward disengaging muffler gasket tabs (B) and stop switch lead (C) and lay aside. The throttle cable remains assembled to cylinder cover.
6. Loosely install spark plug to keep debris out of the cylinder. Use brush to remove dirt from cylinder fins.

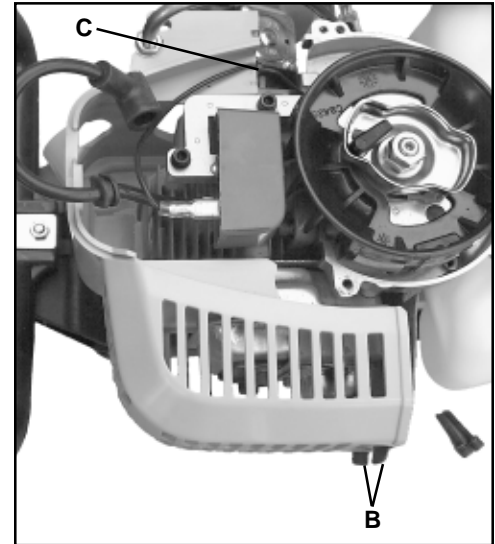
### IMPORTANT

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

7. Install cylinder cover, throttle cable, starter cover, spark plug and spark plug lead.

### NOTE

When installing the cylinder cover, be certain the muffler gasket tabs are locked into the muffler grill slots and the stop switch lead is seated in the rubber grommet.



## 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.

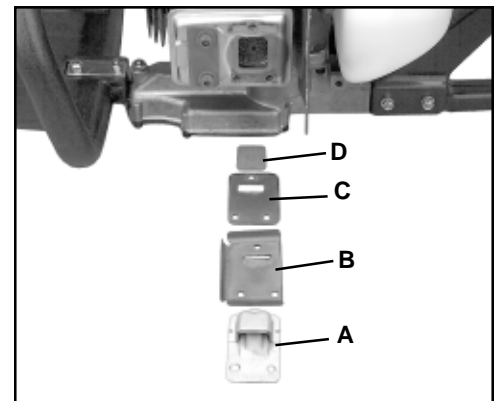
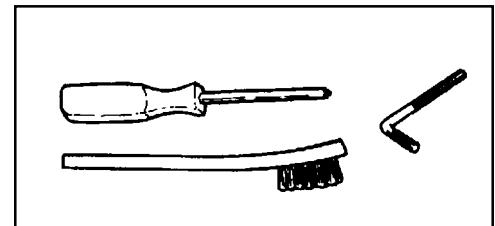
**Tools required:** 3 mm Allen wrench, Cross Head Screwdriver, Soft metal brush

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

1. Remove engine cover. See "Cleaning Cooling System" pages 16 & 17 for step by step instructions.
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.

## NOTE

When installing the cylinder cover, be certain the muffler gasket tabs are locked into the muffler grill slots and the stop switch lead is routed through the relief slot.

## 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.

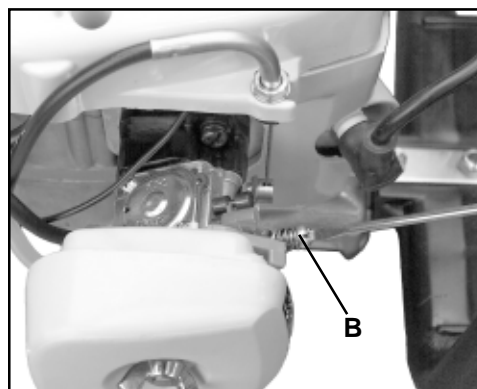
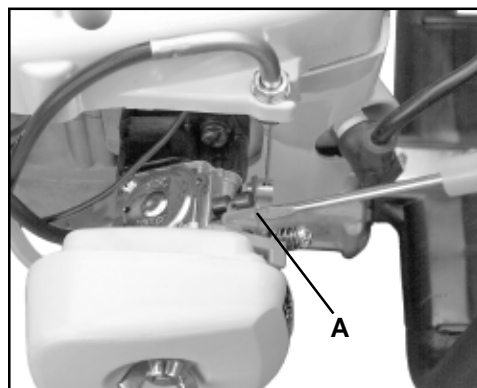
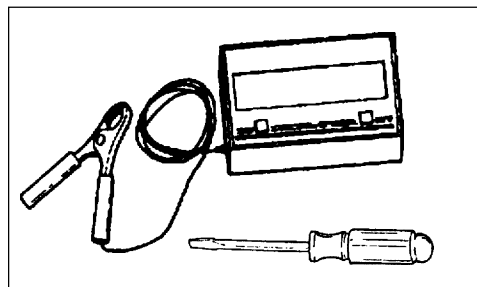
*Tools required:* Screwdriver, Tachometer (ECHO P/N 99051130017).

*Parts required:* None.

## NOTE

Every unit is run at the factory and the carburetor is set in compliance and emission regulations. In addition, the carburetor is equipped with a HI needle adjustment limiter that prevents settings outside acceptable limits.

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. Stop engine. Turn red HI speed needle (A) CCW (counter clockwise) to stop.
4. Idle Speed Adjustment.
  - Start engine and turn "idle" speed adjustment screw (B) CW until the blades begin to turn, then turn the screw CCW until blades stop turning. Turn screw CCW an additional 1/4 turn.
5. Accelerate to full throttle for 2-3 seconds to clear excess fuel from engine then return to idle. Accelerate to full throttle to check for smooth transition from idle to full throttle. If engine stops or stalls after full warm up return the unit to your authorized ECHO dealer for repair.
6. Check HI speed RPM at W.O.T. (Wide Open Throttle). HI speed RPM should be set to specifications found on page 9 "Specifications" of this manual.
7. Check idle speed and reset if necessary. If a tachometer is available, idle speed should be set to the specification found on page 9 "Specifications" of this manual.



## WARNING DANGER

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


## LUBRICATION

### Blades

#### Level 1.

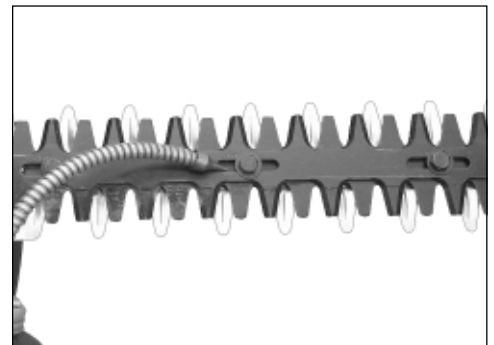
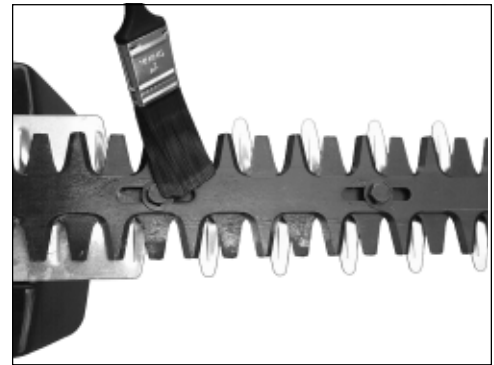
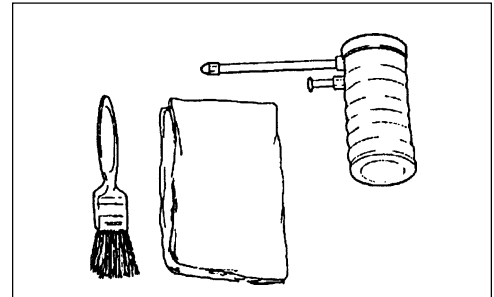
*Tools required:* Clean rag, 25 or 50 mm (1 or 2 in.) medium bristle paint brush

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

**WARNING**  **DANGER**

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.

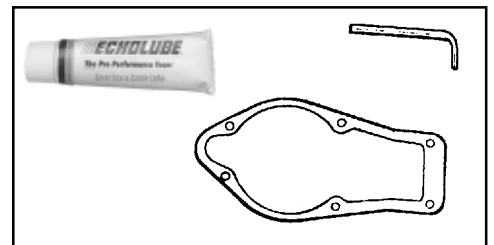


### Gear Box Assembly

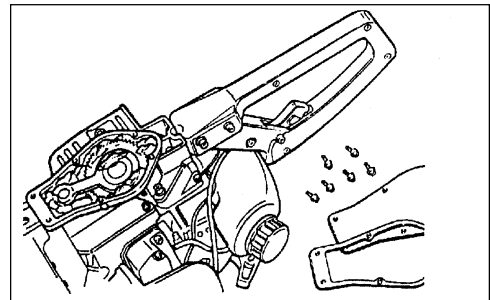
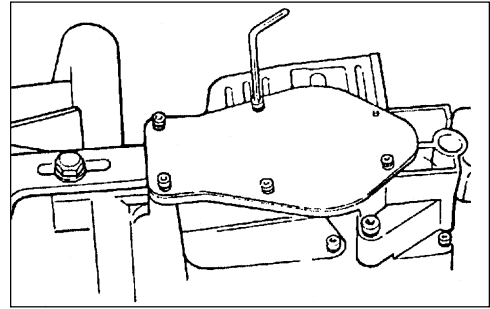
#### Level 2.

*Tools required:* 3 mm Hexagon wrench

*Parts Required:* Gear Box Gasket, P/N61041405360, ECHO<sub>®</sub> LUBE™ (P/N 91014) or Lithium Based Grease.



1. Clean debris and dirt from gear box area. Remove the six (6) socket head cap screws retaining the gear box cover plate.
2. Remove cover plate and discard gasket.
3. Add grease as required, **DO NOT** over fill. Leave room for the grease to expand during operation.



## BLADE STIFFENER REMOVE/INSTALL

### Level 2.

*Tools required:* (2) 13 mm Open End

*Parts Required:* None

### WARNING



### DANGER

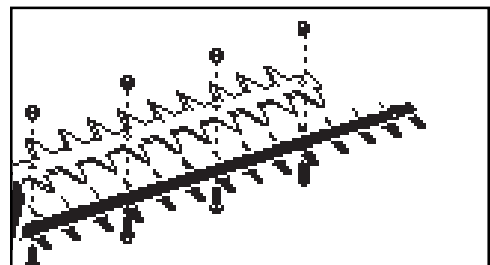
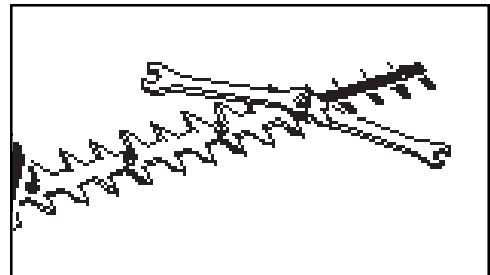
Hedge Clipper blades are very sharp. Wear gloves to protect hands.

1. Disconnect spark plug wire from spark plug.
2. Hold blade bolt head under blade assembly. Remove blade locknut from top side turning counter clockwise.
3. Repeat step 2 for remaining blade nuts.
4. Remove and replace blade stiffener.

### NOTE

Locking ability of Hedge Clipper blade nuts will diminish each time they are removed. Replace blade nuts if threading resistance is not felt when installing locknuts.

5. Install and tighten blade bolts securing cutters to frame bar.
6. Loosen blade bolt 1/2 turn then install locknut while holding blade bolt in place.
7. Repeat step 6 for remaining blade nuts.



## SHARPENING BLADES

### Level 2.

*Tools required:* Flatfile, Screwdriver

*Parts required:* None

### WARNING DANGER

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

1. Disconnect spark plug wire from spark plug.
2. Remove blade stiffener (See "Blade Stiffener Remove/Install" on page 20).
3. File each edge carefully. Follow the original shape of the blade.

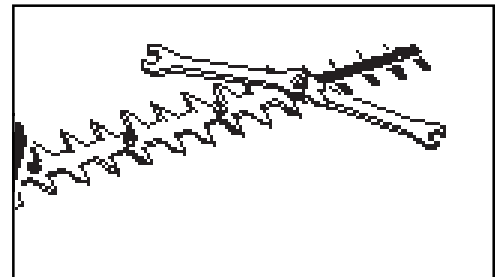
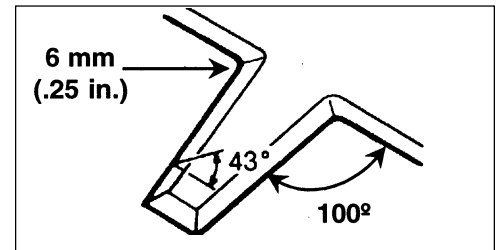
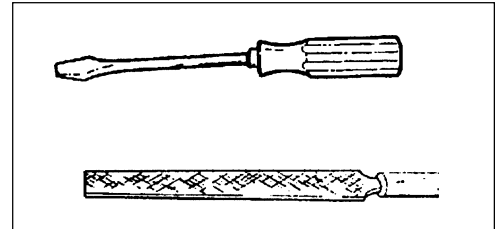
#### IMPORTANT

If a power grinder is used **DO NOT** allow blade to over heat.

4. Assemble blade stiffener using new blade nuts if required. Tighten blade bolts securing cutters to frame bar.
5. Loosen blade bolt 1/2 turn then install locknut while holding blade bolt in place.
6. Lubricate blades. See "Blade Lubrication Instructions," on page 19.

#### IMPORTANT

Blades should only be removed and reinstalled by an Authorized ECHO Servicing Dealer, otherwise premature wear or internal damage may occur.



## 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	Cooling system dirty/plugged	Extended operation in dirty/dusty locations	Clean
	Spark Arrestor Screen	Spark arrestor screen plugged	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 by grounding spark plug against cylinder, 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 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, otherwise serious personal injury may result.

2. Place the stop switch in the "OFF" position.
3. Remove accumulation of grease, oil, dirt and debris from exterior of unit.
4. Perform all periodic lubrication and services that are required.
5. Tighten all the screws and nuts.
6. **Drain** 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 table-spoon) 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. 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 8:30 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.

### WARRANTY CARD

This card is our means of registering all original owners of ECHO equipment. The card plus proof of purchase provides you the assurance that authorized warranty work will be done. It also 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](http://www.echo-usa.com).

**Operator's and Parts Manuals** are available by:

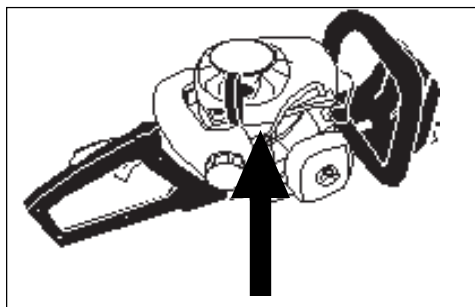
- Downloading free from [www.echo-usa.com](http://www.echo-usa.com)
- Purchasing from your Echo Dealer.
- Sending a check or money order for \$2.00 per Parts Catalog or \$1.50 per Operator's Manual made payable to ECHO, INCORPORATED. State on a sheet of paper the model number and serial number of the 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

HC-161 Serial Number 002001001 UP

P/N 99922203287



### DEALER?

Call

**1-800-432-ECHO**

or

**[www.echo-usa.com](http://www.echo-usa.com)**

### CONSUMER PRODUCT SUPPORT

**1-800-673-1558**

**8:30 - 4:30 Mon - Fri C.S.T.**



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