



# **Tree Trimmer**

## *Operator's Manual*

**MODELS:**                      **SRS-2400      TYPE 1**  
                                      **SRS-2400      TYPE 1E**  
                                      **Serial Number 001001 & Up**



### **WARNING DANGER**

Read rules for safe operation and instructions carefully. ECHO provides an Operator's Manual, which must be read and understood for proper and safe operation. Failure to do so could result in serious injury.

## INTRODUCTION

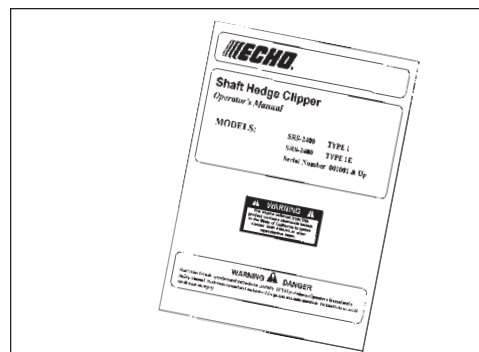
Welcome to the ECHO family. This ECHO product was designed and manufactured to provide long life and on-the-job-dependability. Read and understand this manual and the SAFETY MANUAL you found in the same package. You will find both easy to use and full of helpful operating tips and SAFETY messages.

### WARNING DANGER

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

## THE OPERATORS MANUAL --

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



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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 & 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.

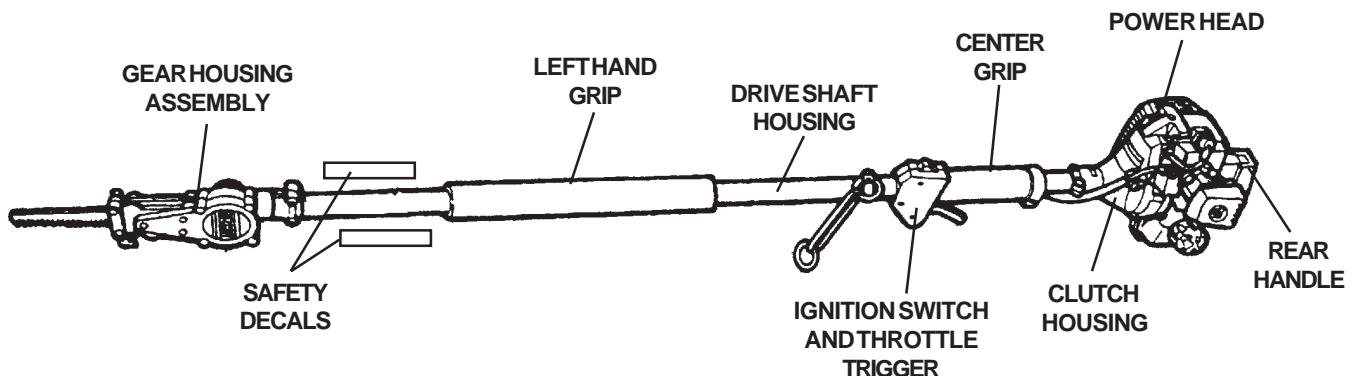
**NOTE** This enclosed message provides tips for use, care and maintenance of the unit.

## **SAFETY**

### **GENERAL DESCRIPTION**

#### **IMPORTANT**

See Description and Specification sections for full description and illustration of model variation in power head, and handle type.



## 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.

### SRS-2400 DRIVESHAFT



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

This unit is not designed to insulate against hazards associated with the contact of wires carrying electrical current.

To avoid possible injury/death due to electrical shock or other hazards, **DO NOT** operate unit if any wires (power, telephone, cable, etc.) are closer than 15 feet (4.5 meters) minimum distance, to any part of the unit or operator.

P/N 890178-54331



### SRS-2400 SHAFT



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

• This unit can be dangerous and cause serious injury or death if improperly used. Operators, helpers and bystanders can be severely injured by falling objects and contact with the cutting attachment. To reduce the risk of injury to operator, helpers and bystanders: **READ AND UNDERSTAND THE OPERATORS MANUAL. WEAR EYE PROTECTION** meeting ANSI Specification Z87.1, **HEAD PROTECTION** meeting ANSI Specification Z89.1 and **HEARING PROTECTION**. • Use only ECHO approved accessories. Keep bystanders and helpers at least 50 feet (15 meters) away.



## INTERNATIONAL SYMBOLS

Symbol form/shape	Symbol description/application	Symbol form/shape	Symbol description/application
	"WARNING, SEE OPERATOR" MANUAL		Fuel and oil mixture
	Wear eyes, ears and head protection		Finger Severing
	Emergency stop		Carburetor adjustment - Low speed mixture

Symbol form/shape	Symbol description/application	Symbol form/shape	Symbol description/application
	Hot Surface		Carburetor adjustment - High speed mixture
			Carburetor adjustment - Idle speed

## **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.

### **Blades**

#### **WARNING ! DANGER**

- Serious injury may result from the improper use of blades and the use of improper blades. Read and comply with all safety instructions listed in this manual.
- ECHO, INC.. will not be responsible for the failure of cutting devices which have not been tested and approved by ECHO for use with this unit.

- Check that the blade assembly is firmly attached and in safe operating condition.
- Only use ECHO approved blades.
- Do not hit rocks, stones, tree stumps and other foreign objects with the blade.
- Do not use to cut branches larger than 4-1/2" in diameter.
- Do not cut into the ground with the blade.
- If blade end strikes an obstruction, stop engine immediately and inspect blade for damage.
- Do not operate with a dull, bent, fractured or discolored blade.
- Remove all foreign objects from work area.

## **FUEL**

#### **WARNING ! DANGER**

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

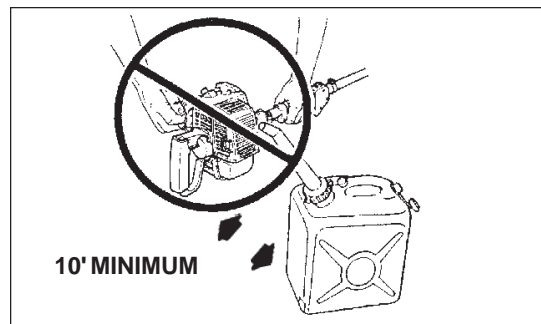
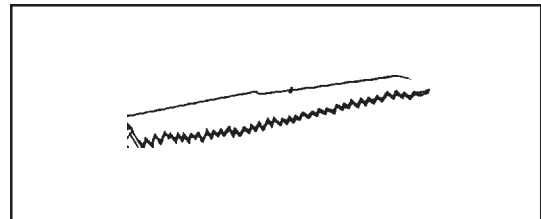
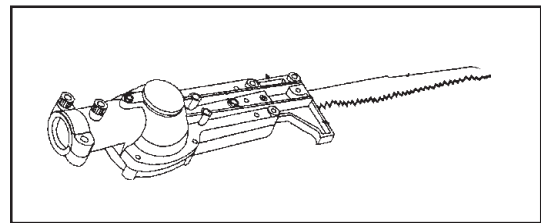
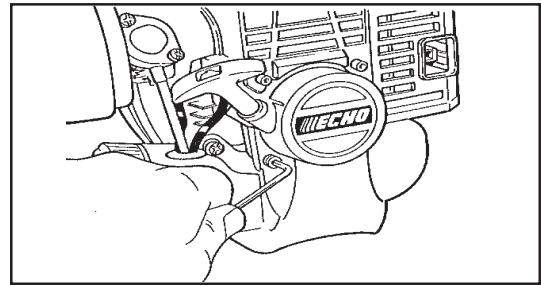
- Use an approved fuel container.
- DO NOT smoke near fuel.
- DO NOT allow flames or sparks near fuel.
- Fuel tanks/cans may be under pressure. Always loosen fuel caps slowly allowing pressure to equalize.
- NEVER refuel a unit when the engine is HOT!
- NEVER refuel a unit with the engine running.
- DO NOT fill fuel tanks indoors. ALWAYS fill fuel tanks out doors over bare ground.

### **After Refueling;**

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

### **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 & SAFETY EQUIPMENT

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

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

#### ***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 goggles that meet ANSI Z87.1 requirements were included with your trimmer. Wear these goggles whenever you operate the tree trimmer.

#### ***Face & Head Protection --***

When trimming overhead, wear head protection meeting ANSI Z89.1 with a full face shield.

#### ***Hand Protection --***

Wear no-slip, heavy duty work gloves to improve your grip on the tree trimmer handles. Gloves also reduce the transmission of machine vibration to your hands. Special vibration reducing gloves such as Echo's Pro-Comfort are designed to provide additional comfort.

#### ***Hearing Protection --***

Wear hearing protection. OSHA requires the use of hearing protection if this unit is used 2 hours per day or more. ECHO recommends wearing hearing protection whenever unit is used.

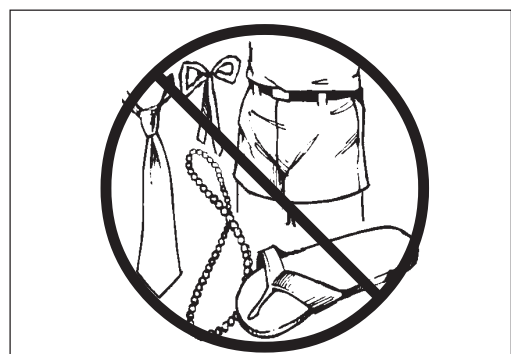
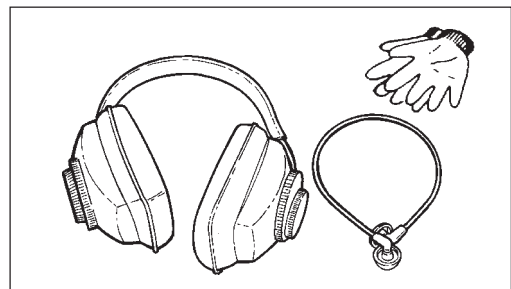
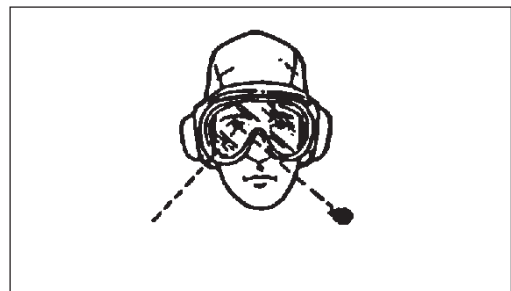
#### ***Proper Clothing --***

Wear snug fitting, durable clothing;

- Pants should have long legs, shirts with long sleeves.
- **DONOTWEARSHORTS,**
- **DONOTWEARTIES,SCARVES,JEWELRY.**

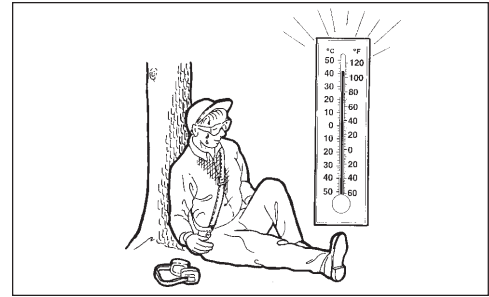
Wear sturdy work shoes with non-skid soles;

- **DONOTWEAROPENTOE SHOES,**
- **DONOTOPERATEUNITBAREFOOTED.**



## ***Hot Humid Weather --***

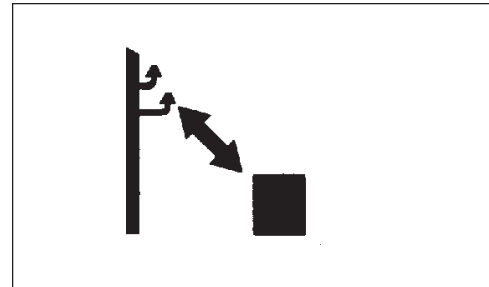
Heavy protective clothing can increase operator fatigue which may lead to heat stroke. Schedule heavy work for early morning or late afternoon hours when temperatures are cooler.



## **SAFE OPERATION**

### ***Determine Operation Area***

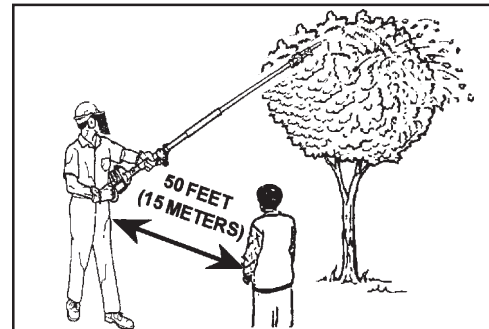
- Review the area to be trimmed. Look for hazards that could contribute to unsafe conditions. DO NOT operate unit if any wires (power, telephone, cable, etc.) are closer than 15 feet (4.6 meters) to any part of the operator or unit.
- Spectators and fellow workers must be warned, and children and animals prevented from coming nearer than 50 ft. (15 meters) while the Tree Trimmer is in use.



### ***Operation***

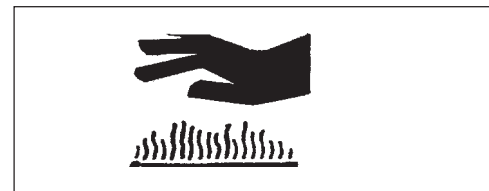
#### **Use Proper Clothing & Equipment**

- Before starting the unit, equip yourself and any other person working within the 50 ft. (15M) Safety Zone with the required Protective Equipment and clothing.



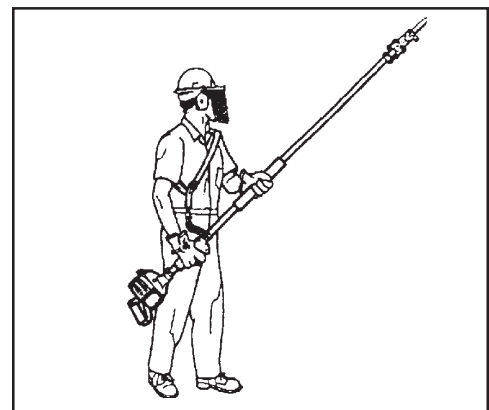
#### **Avoid Hot Surfaces**

- During operation, the complete unit, especially the drive shaft housing, power head, muffler area and gear box may become very hot, too hot to touch. Avoid contact during and immediately after operation.



#### **Keep A Firm Grip**

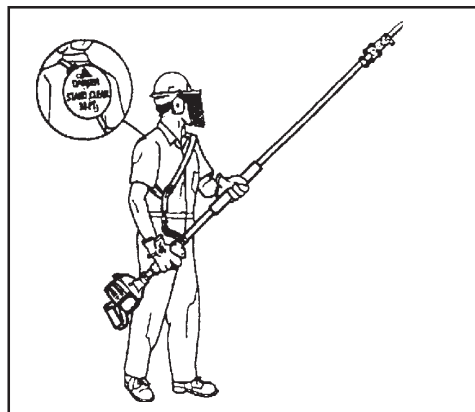
- Hold the front and center or rear and center handles with both hands with thumbs and fingers tightly encircling the handles



#### **Keep A Solid Stance**

- Maintain footing and balance at all times. Do not stand on slippery, uneven or unstable surfaces. Do not work in odd positions or on ladders. Do not over reach.

- Check that shoulder strap is adjusted for safe, comfortable operation.  
See Assembly for proper adjustment.

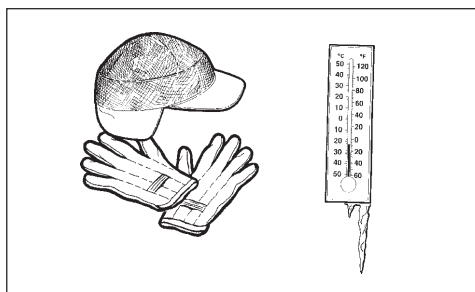


## EXTENDED OPERATION/EXTREME CONDITIONS

### 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.

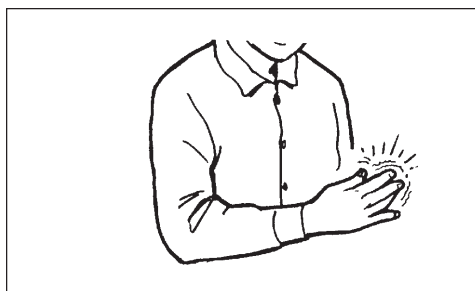


### Repetitive Stress Injuries --

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.
- See 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.



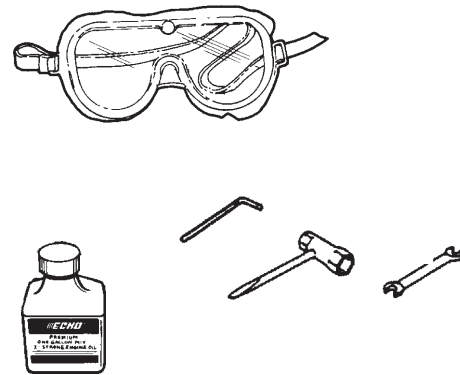


- Power Head
- Drive Shaft Assembly
- Gear Box w/blade
- Shaft Extension (2.5 ft.)
- Plastic Bag
  - Operator's Manual
  - Warranty Registration Card
  - Warranty Statement
- Plastic Bag
  - 8mm x 10mm wrench
  - screwdriver (combination screwdriver/spark plug socket)
  - 3mm hex wrench
  - spare blade w/sheath
- Safety Goggles
- 2-Stroke Oil Bottle (2.6 oz.)
- Shoulder Harness

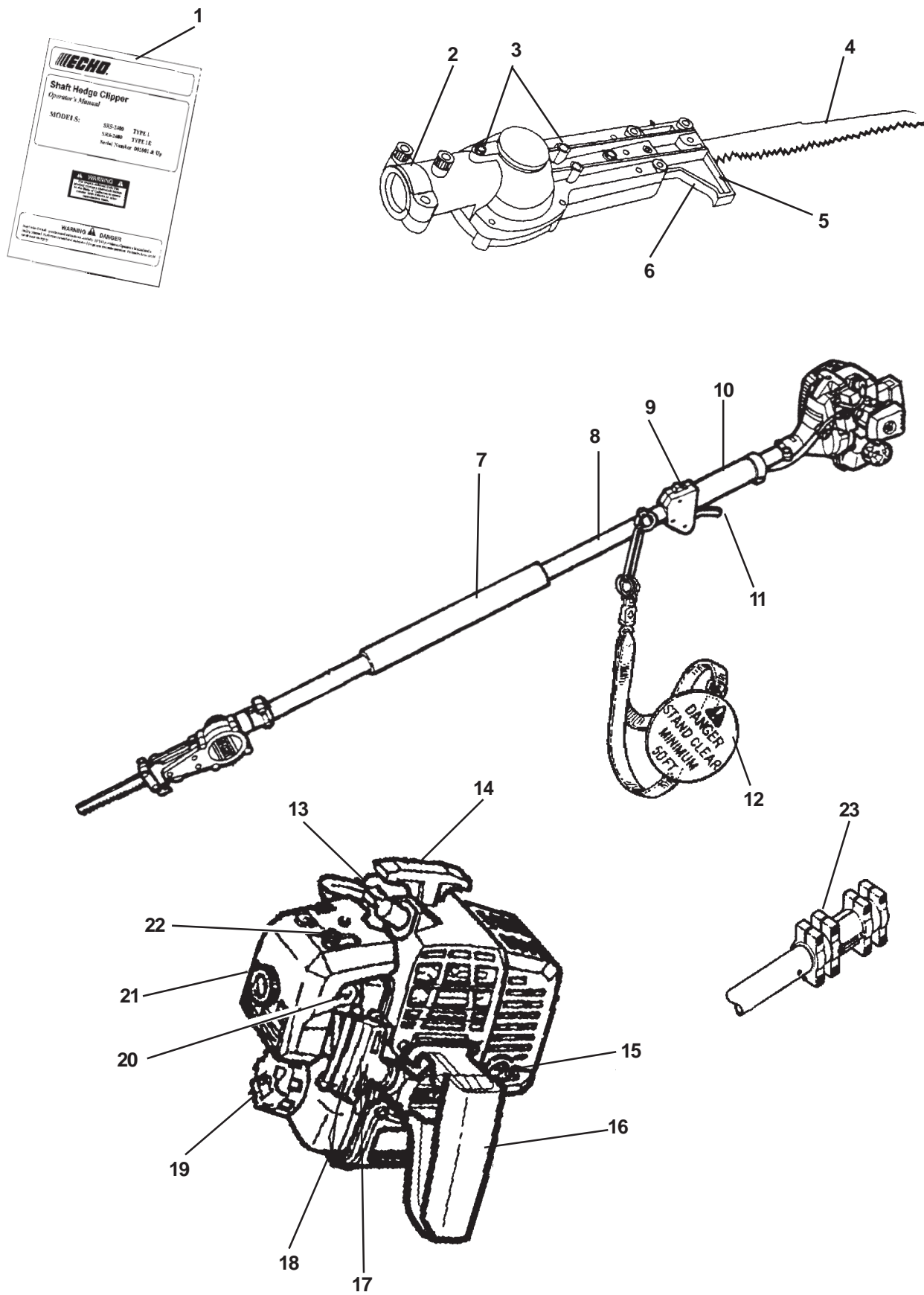
The emission control system for this engine is EM (Engine Modification).

THIS ENGINE MEETS U.S. EPA PH1 AND 1995-1998 CALIFORNIA EMISSION REGULATIONS FOR ULGE ENGINES. REFER TO OWNER'S MANUAL FOR MAINTENANCE SPECIFICATIONS AND ADJUSTMENTS.

**Emission Control Label** (located on Engine) (EXAMPLE ONLY, information on label varies by FAMILY).



 <b>LIMITED WARRANTY REGISTRATION CARD</b> (Copy of Limited Warranty Statement included with Operator's Manual)		5. WHEN WILL YOUR QUESTION BE TO AN ECHO PRODUCT?	
		<input type="checkbox"/> EQUIPMENT/USE 11. <input type="checkbox"/> PRODUCT 12. <input type="checkbox"/> OTHER EQUIPMENT/USE <input type="checkbox"/> EQUIPMENT 13. <input type="checkbox"/> MAINTENANCE 14. <input type="checkbox"/> PARTS <input type="checkbox"/> PARTS	
PLEASE PRINT		15. <input type="checkbox"/> EQUIPMENT/USE 16. <input type="checkbox"/> EQUIPMENT 17. <input type="checkbox"/> OTHER 18. <input type="checkbox"/> EQUIPMENT/USE 19. <input type="checkbox"/> EQUIPMENT/USE 20. <input type="checkbox"/> EQUIPMENT/USE	
BUSINESS/OWNER/RENTAL OR BUSINESS:			
ADDRESS:			
CITY:	STATE:	ZIP CODE:	
PHONE:	DAYTIME ( ) ( ) ( ) ( ) ( ) ( )	EQUIPMENT/USE:	
PROPERTY OF (OWNER/ADDRESS):	DATE OF PURCHASE ( ) ( ) ( ) ( ) ( ) ( )	EQUIPMENT/USE ( ) ( ) ( ) ( ) ( ) ( )	
DEALER NAME:	DATE ( ) ( ) ( ) ( ) ( ) ( )	EQUIPMENT/USE ( ) ( ) ( ) ( ) ( ) ( )	
WARRANTY CLASS:	SERIAL NUMBER OF TYPE:	EQUIPMENT/USE:	
DEALER SIGNATURE:	DEALER SIGNATURE PRINTABLE:		



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. **GEARHOUSINGASSEMBLY**
3. **GEARHOUSING GREASE PORTS** - Remove 13mm bolts to apply lithium grease according to recommended Maintenance Intervals.
4. **BLADE** - Reciprocating saw tooth - cuts up to 4-1/2 inch diameter wood.
5. **FRONT CUTTING GUIDE** - When pressed against branch steadies unit.
6. **HOOK** - Used to pull cut branches from tree.
7. **GRIP, LEFT HAND, FRONT** - Cushioned grip for Left Hand.
8. **DRIVE SHAFT ASSEMBLY** - Contains the Flexible Drive Cable and includes safety decals.
9. **IGNITION SWITCH "SLIDE SWITCH"** mounted on top of the Throttle Trigger Housing. Move switch FORWARD to RUN, BACK to STOP.
10. **GRIP, CENTER** - A cushioned grip for the right hand during normal reach trimming or left hand when operating in extended reach mode.
11. **THROTTLE TRIGGER** - Spring loaded to return to idle when released. During acceleration, depress gradually for best operating technique. DO NOT hold trigger while starting.
12. **SHOULDER HARNESS** - An adjustable strap that suspends the unit from the operator.
13. **SPARK PLUG** - Provides spark to ignite fuel mixture.
14. **ARMREST** - Provides armrest during operation and protects arm from the hot engine.
15. **MUFFLER/SPARK ARRESTOR** - The muffler controls the exhaust noise while the spark arrestor prevents hot, glowing particles of carbon from leaving the muffler where they could possibly start a fire. Built in accordance with SAEJ335, this product is approved for use on U.S. Forest Land and within the states of California, Maine, Oregon and Washington if the spark arresting screen is in place and in good repair.
16. **HANDLE, REAR, RIGHT HAND** - A cushioned handle for right hand use during extended reach mode.
17. **STARTER HANDLE** - Pull handle slowly until 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.
18. **FUEL TANK** - Contains fuel and fuel filter.
19. **FUEL TANK CAP** - Covers and seals fuel tank opening.
20. **PURGE BULB** - Before starting and after filling the fuel tank, pump purge bulb 3-4 times or until a steady stream of fresh fuel is visible through the "clear" fuel return line.
21. **AIR CLEANER** - Contains replaceable filter element.
22. **CHOKE CONTROL** - The choke control lever is located on the top of the choke case. Pull choke knob UP to close the choke for Cold Starting. Push the knob DOWN for the "RUN" position.
23. **EXTENSION ASSEMBLY** - Extends operator reach an additional 2-1/2 feet. The Aggressor (SRS) is designed to accept only ONE of these extensions.

## SPECIFICATIONS

<b>MODEL</b>	<b>SRS-2400</b>
Length	2345 mm (92.3 in.)
Width	220 mm (8.7 in.)
Height	220 mm (8.7 in.)
Weight (dry) *	5.4 kg (11.8 lb.)
Engine Type	Air cooled, two-stroke, single cylinder gasoline engine
Bore	34.0 mm (1.339 in.)
Stroke	26.0 mm (1.04 in.)
Displacement	23.6 cc (1.44 cu. in.)
Exhaust	Spark Arrestor Muffler
Carburetor	Diaphragm, horizontal-draught, w/purge
Ignition System	CDI (capacitor discharge ignition)
Spark Plug	NGK BPM-7Y, NGK BPM-7Y or Champion CJ-7Y Gap 0.65 mm (0.026 in.)
Fuel	Mixed (Gasoline and Two-stroke Oil)
Fuel/Oil Ratio	50:1 ECHO High 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	50:1 ECHO High Performance, two-stroke air cooled engine oil
Fuel Tank Capacity	0.4 lit. (14.2 US fl. oz.)
Starter System	Automatic Rewind Starter
Clutch	Centrifugal Type
Drive Shaft (Lubrication)	1/4" Flex Cable (All purpose lithium based grease every 25 hours of use)
Gear Case Lubrication	All purpose lithium based grease every 50 hours of use
Saw Blade Cutting Capacity	114 mm (4-1/2 in.)
Handle	Front & Rear - Rubber Grip, Middle - Rubber grip w/throttle trigger
Shoulder Harness	Optional
Idle Speed	2600 - 3100 RPM
Wide Open Throttle Speed	11,000 - 12,000 RPM

\* With out shoulder harness and cutter

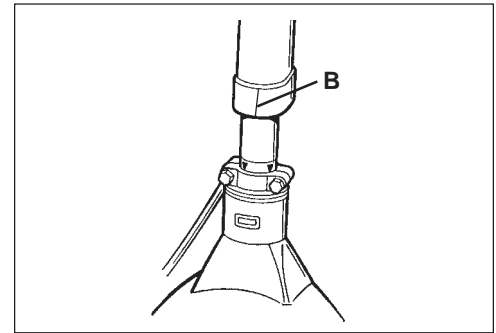
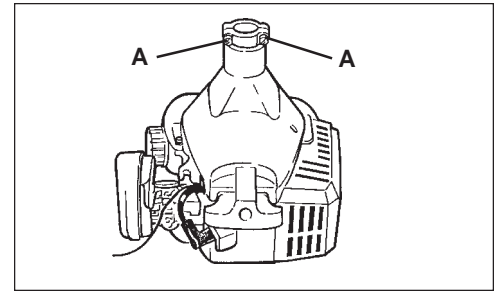
## ASSEMBLY

### DRIVE SHAFT/POWER HEAD

*Tools Required:* 8mm x 10mm Open End Wrench, 4 mm Allen Wrench

*Parts Required:* Power head, Drive shaft Assembly

1. Stand power head upright on a level surface.
2. Loosen, the two (2) bolts (A) at engine drive shaft clamps.
3. Carefully fit drive shaft assembly to engine making sure that inner drive shaft engages into clutch mount..
4. Turn drive shaft housing so that line (B) on housing is centered between the two arrows on shaft.
5. Tighten bolts.



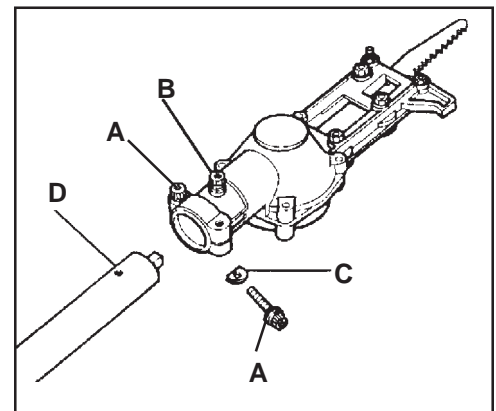
### GEAR HOUSING

1. Loosen gear housing bolts (A) and remove location bolt (B).
2. Slide gear housing onto drive shaft. Be sure flexible drive cable engages gear.

#### IMPORTANT

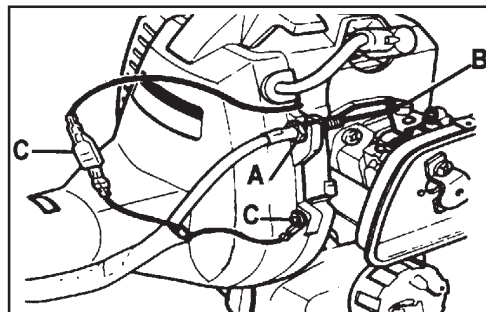
Flat side of washers (C) must be against drive shaft.

3. Align location hole in gear housing with drive shaft location hole (D).
4. Tighten location bolt (B) and gear housing bolts (A).



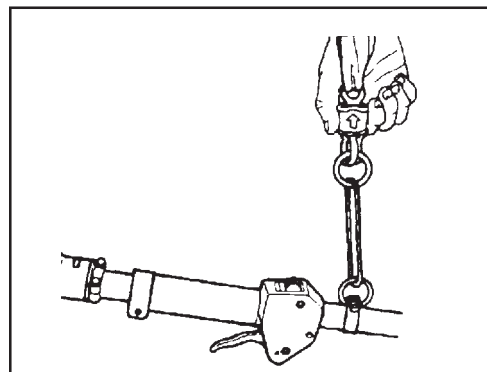
## THROTTLE CABLE AND IGNITION LEADS

1. Close choke and remove air filter cover.
2. Loosen nut (A) and place threaded cable housing in bracket slot. If there are flat washers between the two nuts, place one on each side of the bracket. Finger tighten nut (A).
3. Place inner cable in slot of carburetor swivel (B) and tighten nut (A).
4. Check to make sure throttle operates freely, opens completely and returns to idle.
5. Connect ignition leads (C). SRS-2400 has one spade terminal pair and one ring terminal which attaches under fan cover screw.
6. Re-install air cleaner cover.



## SHOULDER HARNESS

1. Place shoulder harness over your head and place on you left shoulder. Adjust straps so the quick-release latch rests just below the waist on our right side.
2. Attach tree trimmer to strap.
3. Adjust strap hook placement on drive shaft housing as necessary for balance and comfort.



### WARNING DANGER

In case of an emergency, pull the quick-release collar to disconnect the tree trimmer from the harness.

## AGGRESSOR EXTENSION ASSEMBLY

### WARNING DANGER

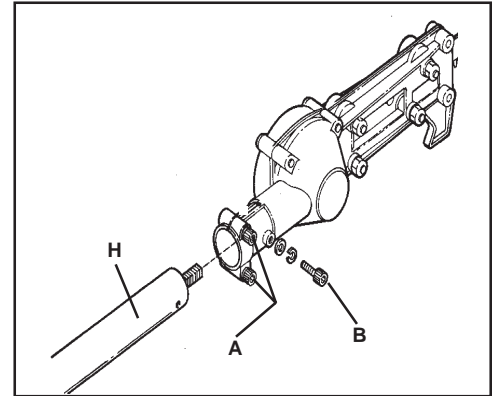
The aggressor (SRS) is designed to accept only one 2-1/2 foot extension. Use of more than one extension can result in balance and control problems leading to possible personal injury to operator and bystanders.

## Installation

### WARNING DANGER

Install blade guard or remove blade before working on unit. Blade is extremely sharp, wear heavy gloves to protect your hands when handling it.

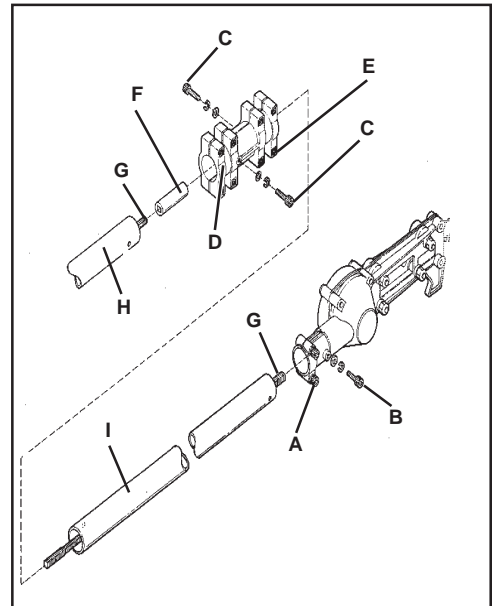
1. Stop engine.
2. Loosen two (2) clamping screws (A); remove center locating screw (B), and pull gear housing assembly from the drive shaft housing (H).



### NOTA

Prevent the flexible drive cable from sliding out of the drive shaft housing. If the cable does slide free, clean dirt from cable and re-lubricate with lithium based grease prior to re-assembly.

3. Remove the two (2) locating screws (C) from the coupler assembly (D).
4. Loosen the eight coupler clamping screws (E).
5. Place shaft connector (F) on end of flex drive cable (G) extending out of the drive shaft housing (H).
6. Slide coupler assembly (D) onto end of the drive shaft housing.
7. Align coupler assembly locating hole with hole in drive shaft housing. Install and tighten the locating screw.
8. Place extension (I) into coupler assembly and hold in place.
9. Align coupler assembly locating hole with hole in extension. Install and tighten the locating screw.
10. Install gear housing assembly onto end of extension. Make sure the flex drive cable engages the drive socket in the gear housing. Align the gear housing with the blade cutting teeth down. Tighten the locating screw.
11. Tighten all clamping screws in the coupler assembly and gear housing.



## PRE-OPERATION

### FUEL

#### Fuel Requirements

**Gasoline** - Use 89 Octane [ $\frac{R+M}{2}$ ] 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 methanol (wood alcohol) is **NOT** approved.

**Two-Stroke Oil** - A two-stroke engine oil meeting proposed ISO-L-EGD Standard (ISO/CD 13738), must be used. Echo brand Premium 50:1 oil meets this proposed standard. Engine problems due to inadequate lubrication caused by failure to use an ISO-L-EGD approved 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 EPA Phase I/California Emission Defect Warranty Explanation.)

**Mixing** - Follow directions on the oil container.

#### 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 tank outdoors over bare ground.

#### After Refueling;

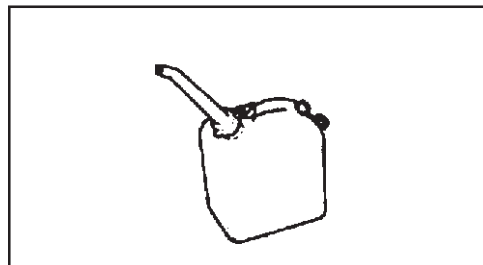
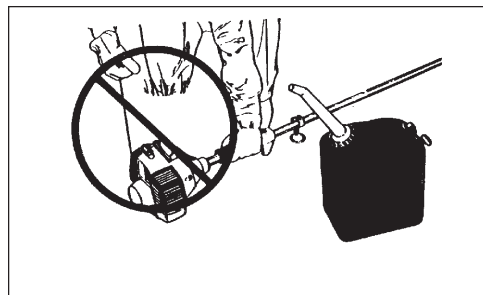
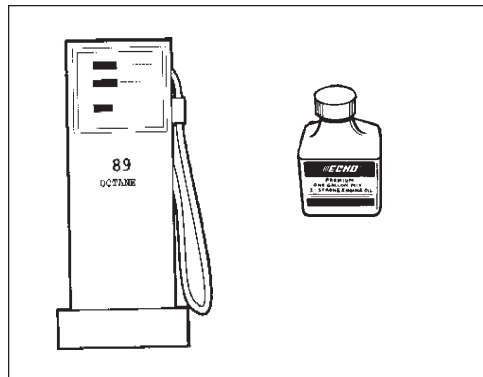
- Wipe any spilled fuel from the unit.
- Move at least 10 ft. (3 M) from refueling location before starting the engine.

#### 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

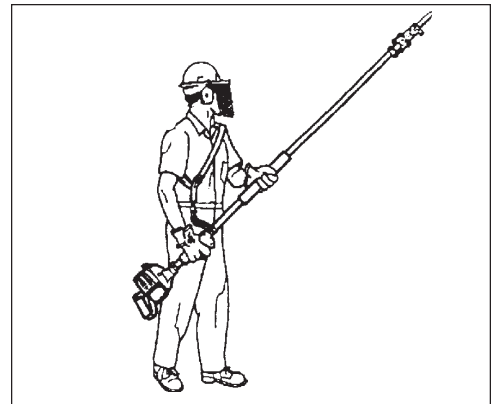
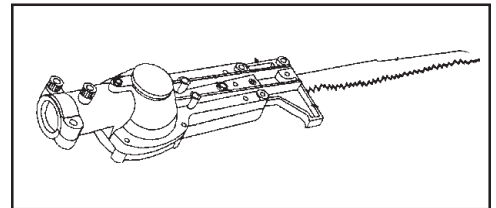
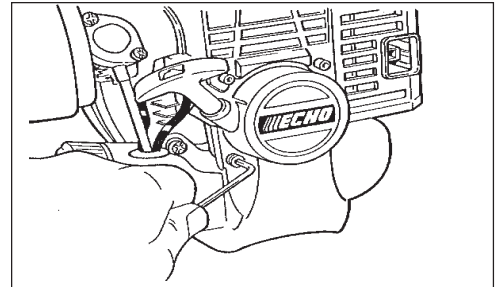
Stored two-stroke fuel may separate. ALWAYS shake fuel container thoroughly before each use.

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

## EQUIPMENT CHECK

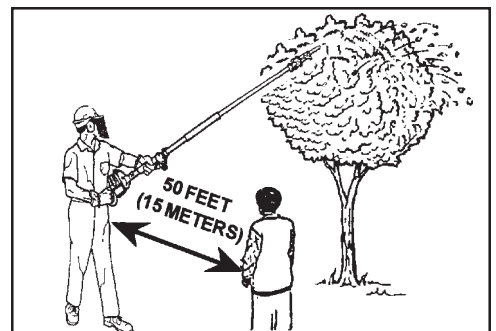
Before operation a complete check of the unit must be performed;

- 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.
- Check that the blade assembly is firmly attached and in safe operating condition. Dull, loose or damaged blades should not be used.
- Check that shoulder strap is adjusted for safe, comfortable operation. See Assembly for proper adjustment.



## DETERMINE OPERATION AREA

- Before starting the unit, equip yourself and fellow workers in the 50' safety zone with the required protective equipment and clothing.
- Review the area to be trimmed. Look for hazards that could contribute to unsafe conditions.
- Spectators, children and animals must be prevented from coming nearer than 50 ft. (15M) while the trimmer is in use.



## OPERATION

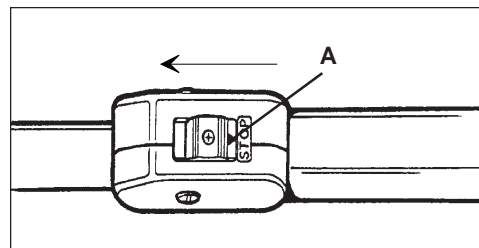
### STARTING COLD ENGINE

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

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

#### 1. **Ignition Switch - Start/Run.**

Move Ignition Switch button (A) forward away from the STOP position.

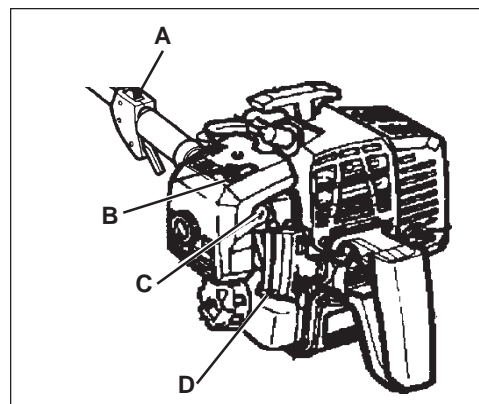


#### 2. **Close Choke - Cold Start.**

Pull choke knob (B) up to the Cold Start Position.

#### 3. **Purge - Pump Bulb.**

Pump purge bulb (C) until fuel is visible in the "Clear" fuel return line.

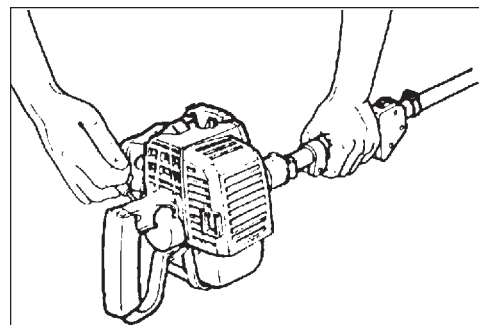


#### 4. **Start - Pull Rope.**

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

#### 5. **Open Choke - Run.**

Push the choke lever back or push the choke knob down to the OPEN - RUN position. Restart engine if necessary and allow to warm up running at idle for several minutes.



## STARTING WARM ENGINE

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

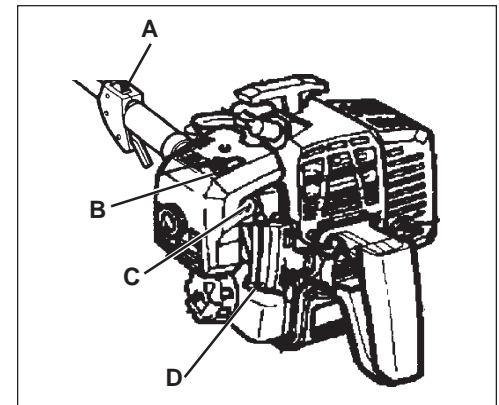
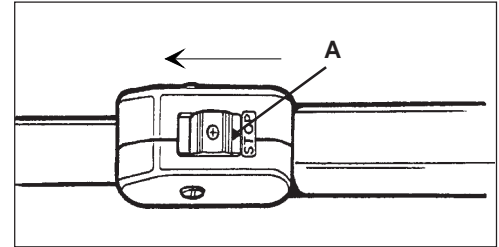
### NOTE

If engine does not start after 4 pulls, use Cold Start Procedure.

### WARNING DANGER

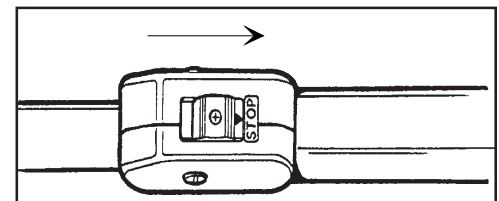
Trimmer Blade should not move at idle. If blade moves readjust carburetor according to carburetor adjustment instructions in this manual or see your ECHO Dealer, otherwise serious personal injury may result.

1. **Ignition Switch - Start/Run.** Move Ignition Switch button (A) away from the STOP position.
2. **Purge - Pump Bulb.** Pump purge bulb (B) until fuel is visible in the "Clear" fuel return line.
3. **Start - Pull Rope.** Lay the trimmer on a flat clear area and pull the starter handle (C) until the engine fires.



## STOPPING ENGINE

1. **Release Throttle.** Allow engine to idle for a minute.
2. **Ignition Switch - Stop.** Move ignition switch button backward to STOP position.

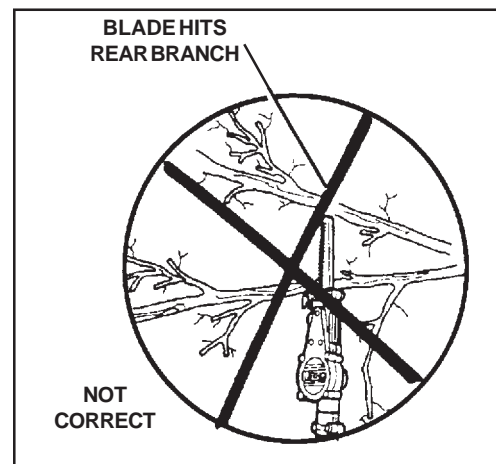
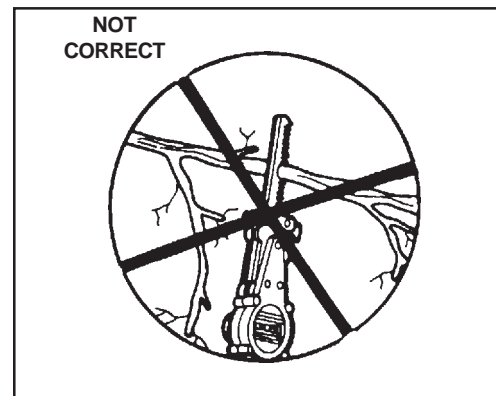
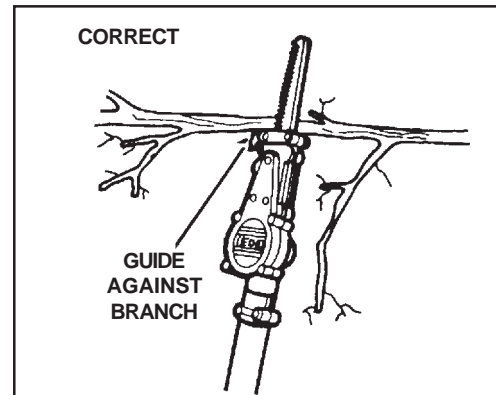


### WARNING DANGER

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

The SRS-2400 Tree Trimmer is designed for light to medium trimming of limbs and branches up to 4.5" in diameter. follow these tips for successful operation.

- Plan cut carefully. Check direction branch will fall.
- Long branches should be removed in several pieces.
- Do not stand directly beneath branch being cut.
- When ready to cut:  
Hold "front cutting guide" against branch. This will prevent whipping of the branch. **DO NOT** use back and forth sawing action.
- Look out for branch immediately behind the branch being cut. If blade hits rear branch damage to blade will occur.
- Accelerate to full throttle.
- Apply cutting pressure.
- Ease cutting pressure when nearing end of cut to maintain control.
- Undercutting should be used to prevent bark tearing.
- Use "hook" (bottom of "front cutting guide") to pull cut branches from tree.
- **DO NOT** use for felling or bucking.



## MAINTENANCE

### SKILL LEVELS

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.

**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 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	Before Use	Every Refuel	Daily or Every 4 Hours	3 Months or 100 Hours	6 Months or 300 Hours	Yearly or 600 hours	Date Maintenance Performed
Air Filter	Clean	•		•				
	Replace				•			
Fuel Strainer	Clean/Replace				•			
Fuel Line	Inspect				•			
Choke System	Inspect/Clean/Replace		•					
Cooling System	Inspect	•		•				
	Clean	•		•				
Muffler Spark Arrestor	Inspect				•			
	Clean				•			
Drive Shafts	Grease			(1)				
Gear Housing	Grease				•			
Starter Rope	Inspect/Clean	•						
Fuel Leaks	Inspect	•						
	Repair	•						
Spark Plug	Clean				•			
	Replace					•		
Ignition System	Clean/Replace	No Maintenance required for coil and flywheel						
Screws/Nuts/Bolts	Inspect/Tighten/Replace	•						

### IMPORTANT

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

(1) Grease flexible drive cable every 25 hours. and/or on a weekly schedule.

## AIR FILTER

### Level 1.

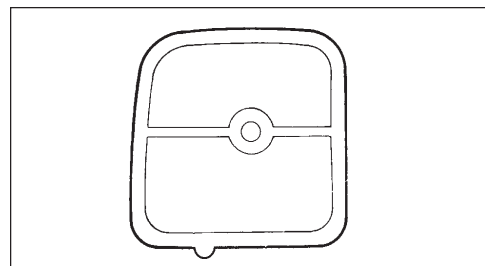
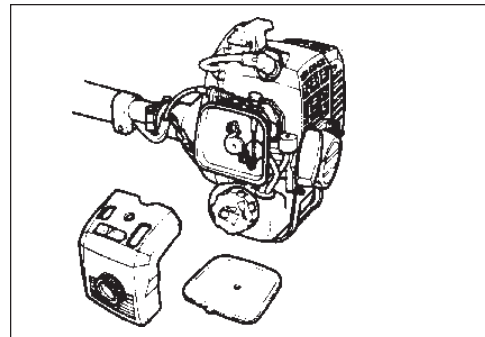
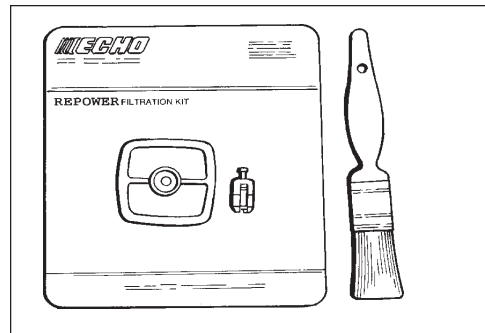
*Tools required:* Cleaning brush, 1" or 2" medium bristle paint brush.

*Parts required:* . 90030REPOWER 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:
  - properly 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. See Carburetor Adjustment Section.



## FUEL FILTER

### Level 1.

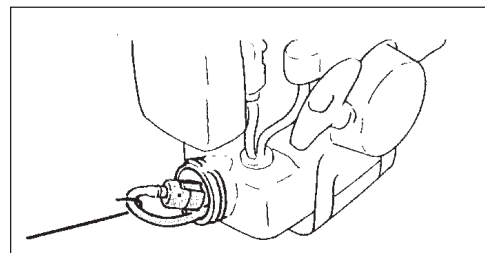
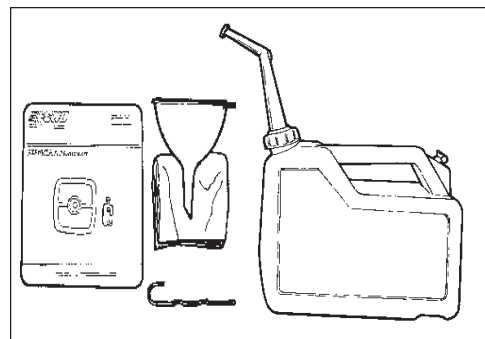
*Tools required:* Fuel line hook. 8"-10" (203-254 mm) length of wire with one end bent into a hook. Clean rag, funnel, and an approved fuel container.

*Parts Required:* 90030REPOWER AIR & FUEL FILTER KIT.

### WARNING DANGER

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

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



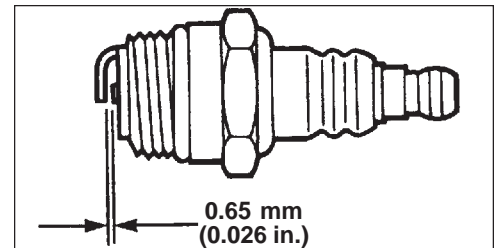
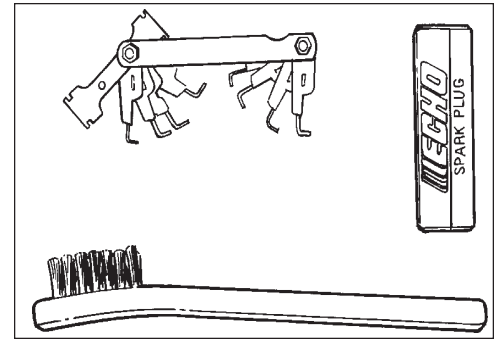
## SPARK PLUG

### Level2.

*Tools Required:* Spark Plug socket wrench and screw driver, Feeler gauge. Preferably a wire gauge.

*Parts Required:* Spark Plug, Champion CJ-7Y or NGK BPM-7A

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.



## COOLING SYSTEM CLEANING

### Level3.

*Tools required:* Phillips Screwdriver, 3 mm Allen wrench, 4 mm Allen wrench, Pointed Wood Stick, Cleaning Brush, 1"-2" medium bristle paint brush.

*Parts Required:* None.

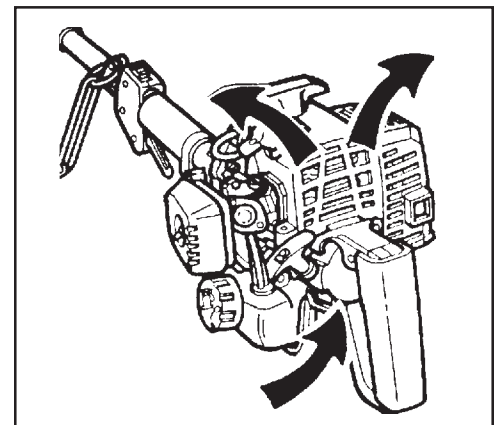
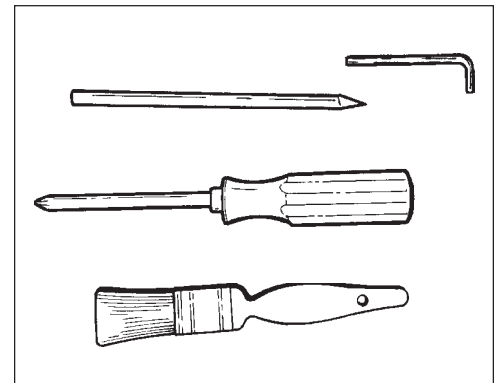
#### IMPORTANT

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.



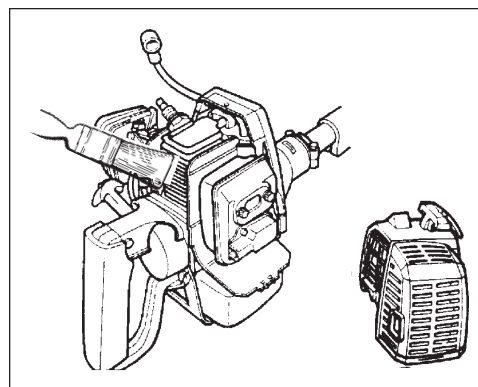
1. Remove spark plug lead and throttle cable end from the carburetor swivel.
2. Remove the four screws that retain the cover. Two at the top of the starter, two on either side of the front. Lift the cover from the engine and lay to the front of the hedge clipper.

## NOTE

The throttle cable remains assembled to the cover and the spark plug lead and grommet remain installed.

## NOTE

When installing the cover, be certain the tab of the metal deflector shield is in the slot of the cover.

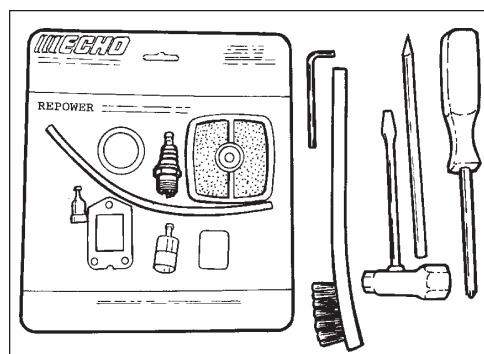


## EXHAUST SYSTEM

### Level 3.

**Tools Required:** Phillips Screwdriver. Srench. 10mm Open end wrench. Soft metal brush. Wooden carbon scraper. 3mm Allen Wrench, 4mm Allen Wrench.

**Parts Required:** 90029REPOWER MAINTENANCE KIT.



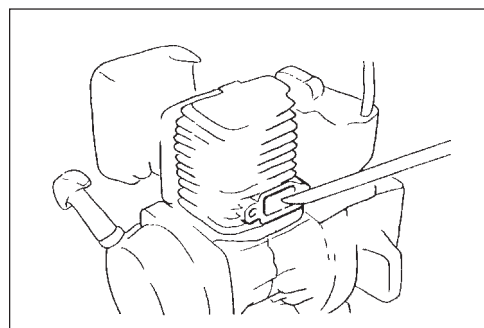
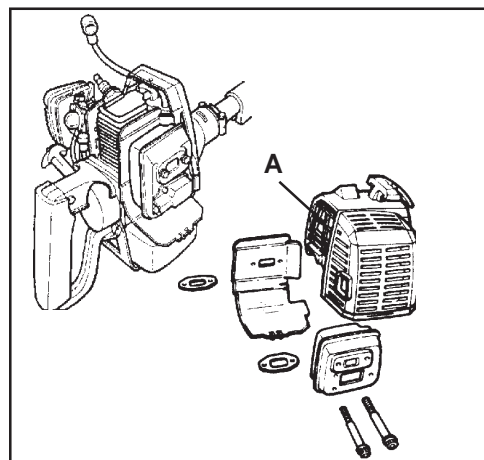
### Exhaust Port

1. Remove engine cover (A). See “Cleaning Cooling System” pages 27 & 28 for step by step instructions.
2. Remove two socket head cap screws. Lift muffler and gaskets away from engine.
3. Place piston at Top Dead Center (TDC) to prevent carbon/dirt from entering cylinder.

## IMPORTANT

DO NOT use a metal tool to remove carbon deposits. Use extreme care not to scratch piston.

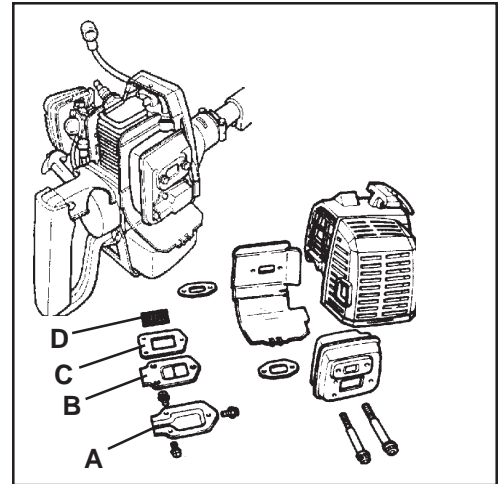
4. Inspect exhaust port for carbon buildup and clean using a wooden stick.
5. Check that all loose carbon is removed from port.
6. Re-assemble using new gaskets.





## Spark Arrester Screen

1. Remove spark arrestor screen cover (A), screen holder (B), gasket (C) and screen (D) from muffler body.
2. Clean carbon deposits from screen and muffler components.
3. Replace screen if it is cracked, plugged or has holes burned through.



## CARBURETOR ADJUSTMENT

### *Type 1E Models*

#### **Level 2.**

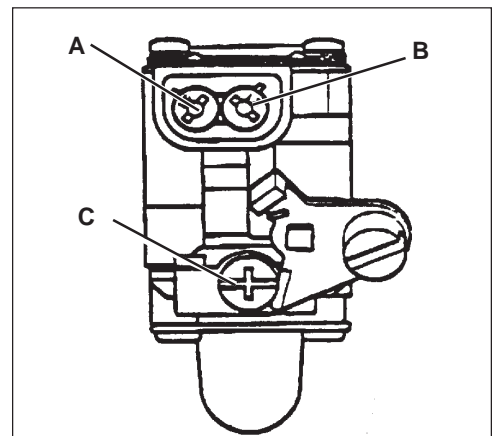
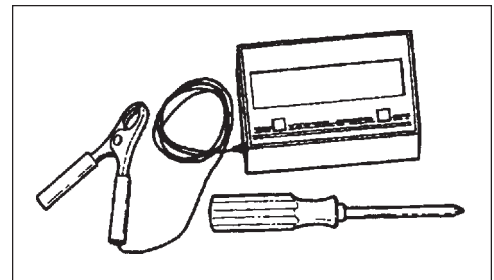
*Tools required:* Screwdriver, Tachometer (ECHO P/N 99051130017).

*Parts required:* None.

#### **NOTE**

Every unit is run at the factory and the carburetor is set in compliance with EPA Phase 1 and California Emission Regulations. In addition, the carburetor is equipped with HI (A) and LO (B) needle adjustment limiters that prevent settings outside acceptable limits.

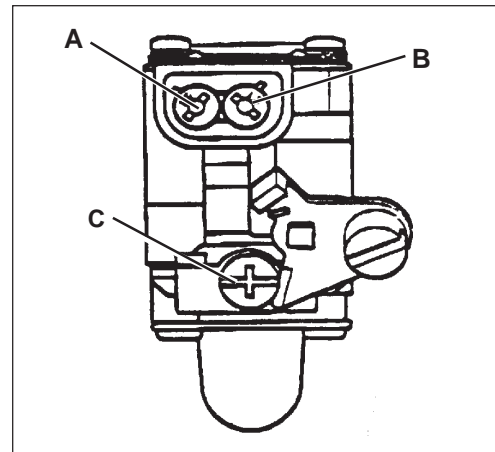
1. Before adjusting the carburetor, clean or replace the air filter and spark arrestor screen.
2. Start engine and run for several minutes to reach operating temperature.
3. Stop engine. Turn HI (A) speed needle CCW (counter clockwise) to stop. Turn LO (B) speed needle midway between full CCW and CW (clockwise) stops.
4. Idle Speed Adjustment.  
-Start engine and turn idle (C) speed adjustment screw 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 hesitates, turn LO (B) needle CCW an additional 1/8 turn and repeat acceleration. Continue adjusting until smooth acceleration results.
6. Check HI (A) speed RPM at W.O.T. (Wide Open Throttle). HI speed RPM should be set to specifications found on page 12 "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 12 "Specifications" of this manual.

## WARNING DANGER

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



## CARBURETOR ADJUSTMENT

### Type 1 Models

Tools Required: Screwdriver, Tachometer (ECHO P/N 90051130017)

#### NOTE

If carburetor has limiter caps follow "Carburetor Adjustment" procedures for Type 1E models on previous page.

### Idle Speed Adjustment

Turn idle (A) speed adjustment screw CW (clockwise) until cutting attachment begins to turn, then turn screw out CCW (counter clockwise) until attachment stops turning. Turn screw out CCW an additional 1/4 turn.

## WARNING DANGER

Blade must not move when unit is idling, otherwise serious personal injury may result.

### Basic Setting

1. Stop engine and turn both LO (B) and HI (C) needles in, CW until they stop and are lightly seated.

#### IMPORTANT

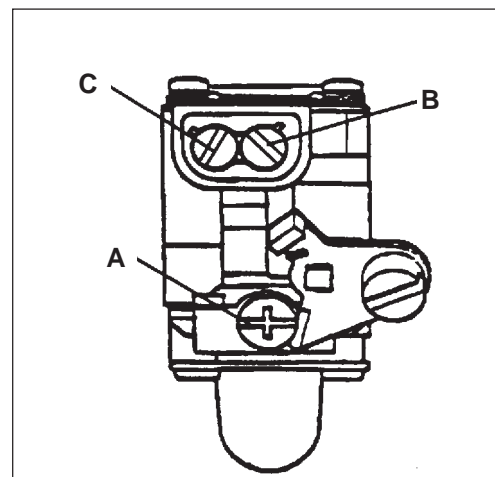
**DO NOT** over tighten needles. Forcing them to tighten will damage the carburetor.

2. Turn LO (B) needle out, CCW 1-1/4 turns. Turn HI (C) needle out CCW 2-3/4 turns.

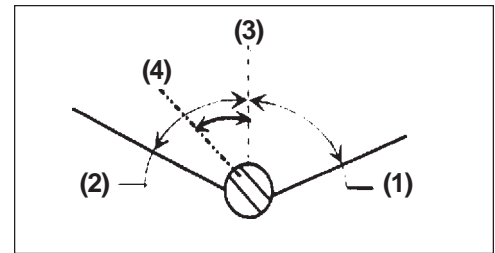
### Fine Tuning

(Requires Accurate Tachometer ECHO P/N 99051130017)

1. Start engine and allow to warm to operating temperature (minimum 2 - 3 minutes) varying engine speed from idle to full throttle.



2. Always begin fine tuning with LO (B) needle.
  - a. Lean drop-off - With engine idling, turn lo needle slowly CW (in) to lean drop-off point (1). RPM will increase, then abruptly drop-off. Note this position.
  - b. Rich drop-off - With engine idling, slowly turn LO needle CCW (out) to rich drop-off point (2). RPM will increase then gradually slow and drop-off. Note this position.
  - c. Final setting - Set needle at mid point between lean rich drop-off points (3).
  - d. Turn 1/8 turn CCW (out) making mixture slightly richer (4).
3. High speed adjustment.  
Adjust HI (C) needle with tachometer to achieve the specifications found on page 12 "Specifications" of this manual.
4. Check idle speed and reset if necessary. Using a tachometer, idle speed should be set to the specification found on page 12 "Specifications" of this manual.



## WARNING DANGER

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

## BLADE REPLACEMENT

The blade must be replaced when cracked, bent, broken or when the drive pin hole is worn.

## WARNING DANGER

Never try to replace blade with engine running. This blade is VERY sharp, wear heavy gloves to protect your hands when handling it. Wear eye protection meeting ANSI specification Z87.1.

### Blade Removal

*Tools Required:* 4mm Hex Wrench

- Loosen three captive socket head bolts (B) in the aluminum blade cover (A). Remove blade cover from gear box.
- Move the connecting rod and blade to their most forward travel position. Lift blade from drive pin (C).
- Remove dirt and contaminated grease from the blade and guides. Coat felt wipers and guide with fresh EP2 lithium base grease.

#### IMPORTANT

If blade was broken, make certain all pieces are removed before new blade is installed.

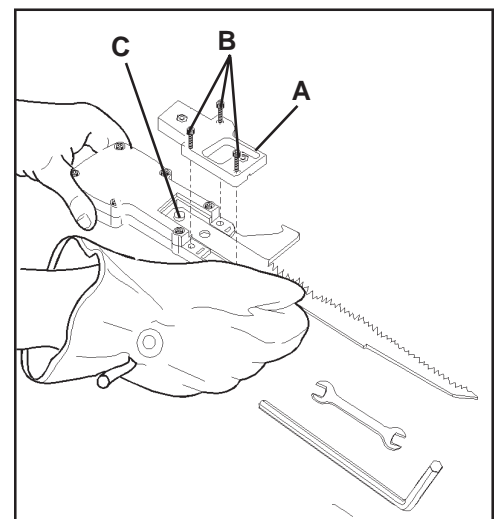
### Blade Installation

- Align hole in blade with pin on rod (C) and lay new blade in guides

#### IMPORTANT

Make sure the blade teeth are facing downward towards the hook portion of the gear housing.

- Install aluminum blade cover (A). Tighten three bolts.

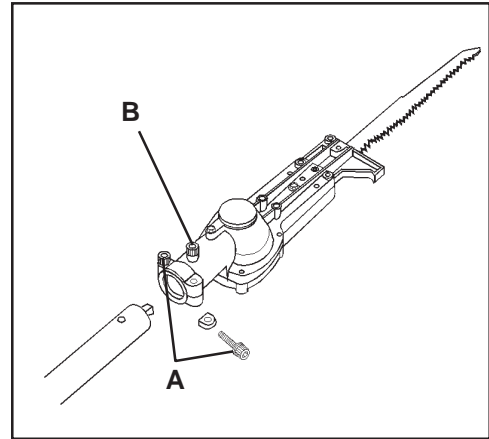


## LUBRICATION

### *Drive Shaft*

*Tools Required:* 4mm Hex Wrench

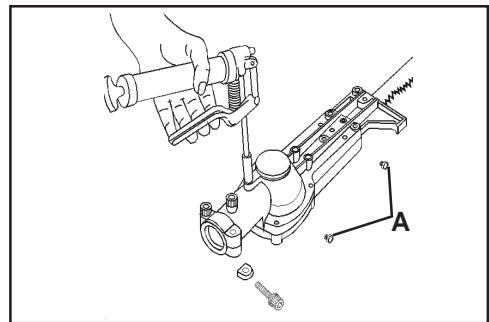
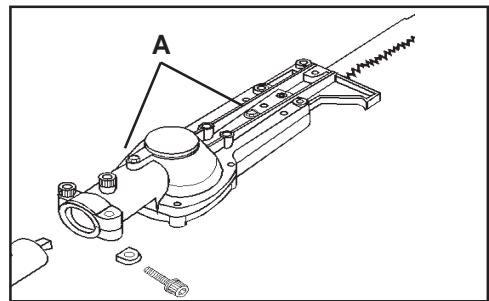
1. Loosen two gear box mounting screws (A) and remove location screw (B) - slide gear box from end of housing.
2. Wrap shop cloth around end of housing pull flex cable through it cleaning old grease from cable.
3. Inspect cable for damage and wear.
4. Coat flex cable with clean EP2 lithium base grease and push back in housing.
5. Install gear box (see page 14 for installation).



### *Gear Housing*

*Tools Required:* Grease Gun, 13 mm Spanner

1. Remove blade and clean dirt and contaminated grease from blade area. Follow Blade Replacement Instructions on page 27.
2. Remove two 13 mm bolts (A) from backside of housing.
3. Hold grease gun against holes in gear housing and apply 2 pumps of grease in each hole. Remove excess grease. Do not over fill.



## STARTER ROPE REPLACEMENT

### Level 3.

*Tools required:* SAFETY GOGGLES, Screwdriver, 3mm Allen Wrench.

*Parts Required:* 35 in. (890 mm) ECHO Starter Rope, Lithium based grease.

1. Remove four (4) screws holding starter assembly and rear handle on engine. Remove rear handle and starter.

### WARNING DANGER

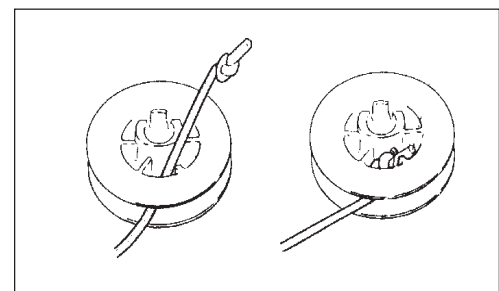
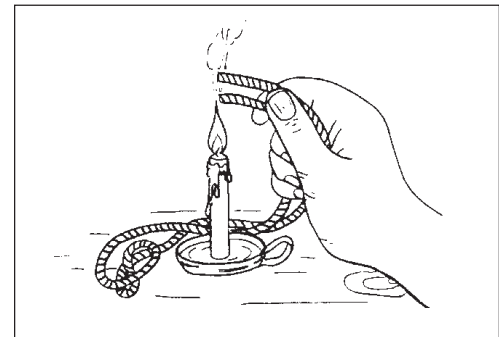
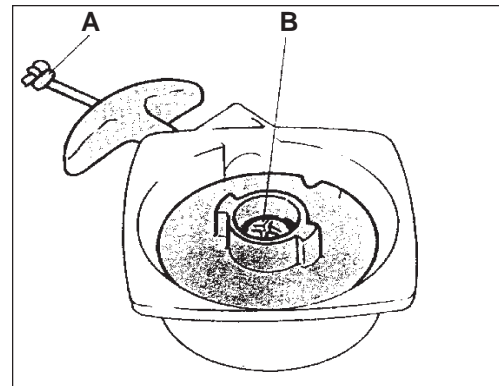
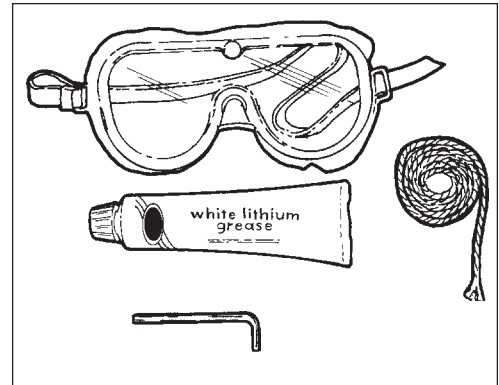
The spring inside the starter is under tension. DO NOT remove screw (B) until spring tension is relieved.

2. Hold starter drum in place and cut off or untie knot (A). Allow the drum to slowly turn until all spring tension is relieved.
3. Remove screw (B), turn drum slightly clockwise and lift carefully and slowly away from spring.

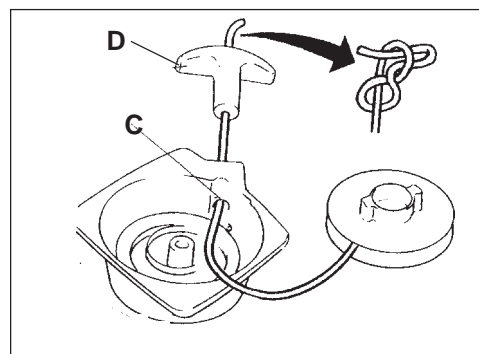
### IMPORTANT

The spring must not come out with the drum. If resistance is felt when lifting the drum, STOP! See your Authorized ECHO Service Dealer for help.

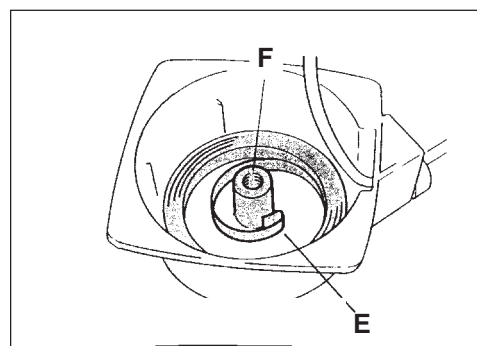
4. Remove the old starter rope and prepare the new rope by first heating both ends to prevent fraying.
5. Pass one end of the rope through the opening of the drum and tie a knot. Press knot and end of rope in cavity of drum.



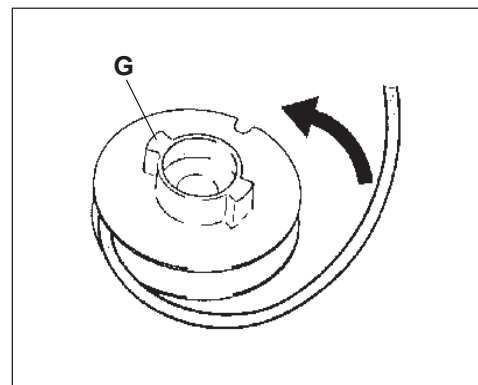
6. Thread the rope through the eyelet in the housing (C) then through the starter handle (D). Follow the illustration and tie another knot in the free end of the rope. Pull the knot into the handle.



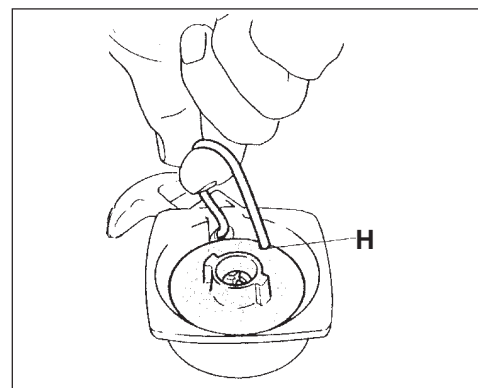
7. Check that the hook (E) on the end of the spring touches the post (F). Lightly grease the top of the spring and the post.
8. Hold the drum pawl (G) side up and wind the rope on the drum counterclockwise, four (4) turns.



9. Install drum. The loop in the spring must engage the slot in the drum. Replace the screw and washer.



10. Hold the rope in the notch (H) and rotate the drum counterclockwise several turns.
11. Hold the drum to prevent it from rewinding, pull the excess rope taut with the handle and allow to rewind slowly.
12. Pull rope several times to check spring tension. If rope does not rewind fully, repeat step 10.
13. Pull rope out all the way. Drum must be able to turn an additional 1/2 turn counter clockwise. If drum does not turn, see your Authorized ECHO Service Dealer.
14. Install starter and rear handle and test.



## STORAGE

### *Long Term Storage (over 30 days)*

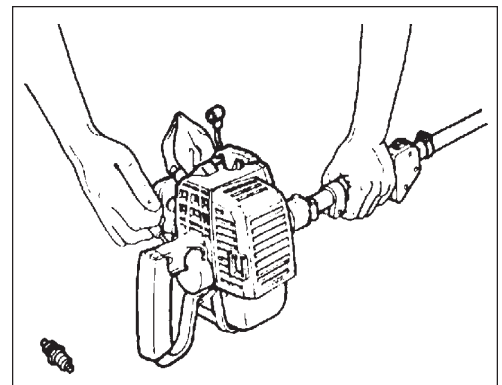
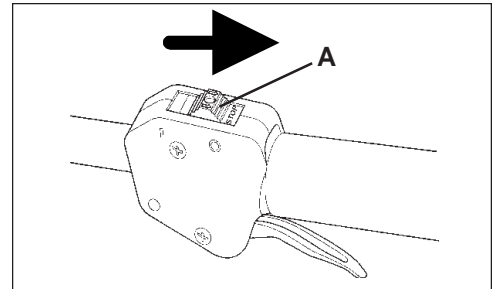
Do not store your unit for a prolonged period of time (30 days or longer) without performing protective storage maintenance which includes the following:

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 or serious personal injury may result.

2. Place the ignition (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 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 spark plug cable).



## SERVICING INFORMATION

### PARTS

Genuine ECHO Parts and ECHO Re Power 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, Type number and Serial Number of the unit with you. You can find all three numbers on the engine housing. For future reference, write them in the space provided below.

Model No. \_\_\_\_\_ Type 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.

### 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

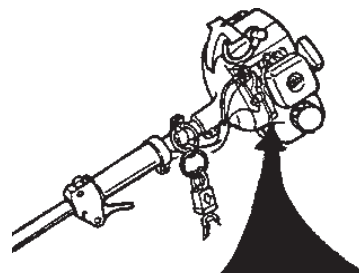
**Operator's and Parts Manuals** are available for purchase from your ECHO dealer or directly from ECHO. [See ordering instructions below.]

### ORDERING INSTRUCTIONS

To obtain a Parts Catalog or Operator's Manual send 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.

#### Available Parts Catalog

SRS-2400 Type 1/1E S/N 001001 & Up 99922202877



## DEALER?

Call

**1-800-432-ECHO**

<b>ECHO LIMITED WARRANTY REGISTRATION CARD</b> (Copy of Limited Warranty Statement included with Operator's Manual)	
<b>PLEASE PRINT</b>	
PURCHASER'S NAME (HOMEOwner OR BUSINESS)	
ADDRESS	
CITY	STATE ZIP CODE
PHONE	DAYTIME <input type="checkbox"/> EVENING <input type="checkbox"/> FAX <input type="checkbox"/> BUSINESS
BUSINESS NAME (IF APPLICABLE)	
BUSINESS ADDRESS	
CITY	STATE ZIP CODE
YOUR ECHO SERIAL NUMBER (TYPE/NO.)	
CUSTOMER SIGNATURE	
SELLER SIGNATURE (IF APPLICABLE)	
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