



# Earth Auger

## *Operator's Manual*

**MODELS**

**EA-400**

**EA-500**

**WARNING**  **DANGER**



The muffler or catalytic muffler and surrounding cover may become extremely hot.

Always keep clear of exhaust and muffler area, otherwise serious personal injury may occur.



**WARNING**



The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.



**WARNING**  **DANGER**

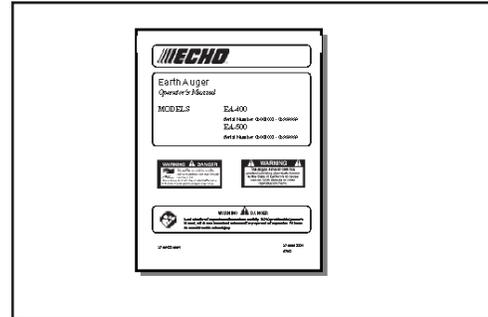
Read rules for safe operation and instructions carefully. ECHO provides this Operator's Manual, which must be read and understood for proper and safe operation. Failure to do so could result in serious injury.

## 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 . You will find this manual easy to use, and full of helpful operating tips and SAFETY messages.

## THE OPERATOR'S MANUAL

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



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Specifications, descriptions, and illustrative materials 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.

## SAFETY

### MANUAL SAFETY SYMBOLS AND IMPORTANT INFORMATION

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



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.

### INTERNATIONAL SYMBOLS

Symbol	Description/ Application	Symbol	Description/ Application
	*WARNING, See Operator's Manual		Hot Surface
	Wear Eye, Ear, And Head Protection		DO NOT allow flames or sparks near fuel.
	Wear Hand And Foot Protection		DO NOT smoke near fuel.
	Safety/Alert		Maintain Firm Grip With Both Hands On Auger During Operation
	Keep Feet And Legs Away From Auger		Never Operate Auger In an Area With Underground Electric, Gas, Water, Or Telephone Lines

Symbol	Description/ Application	Symbol	Description/ Application
	Emergency Stop		Fuel And Oil Mixture
<b>H</b>	Carburetor Adjustment - High Speed Mixture		Primer Bulb
<b>T</b>	Carburetor Adjustment - Idle speed		Ignition ON/OFF
<b>L</b>	Carburetor Adjustment - Low Speed Mixture		
	Choke Control "Cold Start" Position (Choke Closed)		Choke Control "Run" Position (Choke Open)

### PERSONAL CONDITION AND SAFETY EQUIPMENT

WARNING  DANGER

Earth Auger users risk injury to themselves and others if the auger is used improperly, or safety precautions are not followed. Proper clothing and safety gear must be worn when operating an auger.

## ***Physical Condition --***

Your judgment and physical dexterity may not be good:

- if you are tired or sick,
- if you are taking medication,
- if you have taken alcohol or drugs.

Operate unit only if you are physically and mentally well.

## ***Eye Protection --***

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

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

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

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

ECHO recommends wearing hearing protection whenever unit is used.

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

Wear snug fitting, durable clothing;

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

Wear sturdy work shoes with non-skid soles;

- DONOTWEAROPENTOEDSHOES,
- 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.

## ***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.

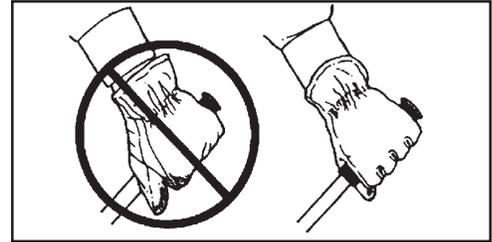


## ***Repetitive Stress Injuries***

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:

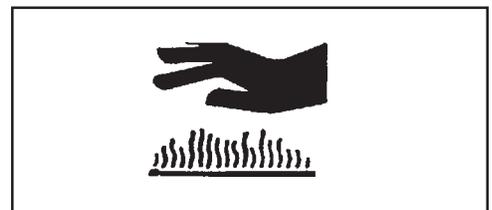
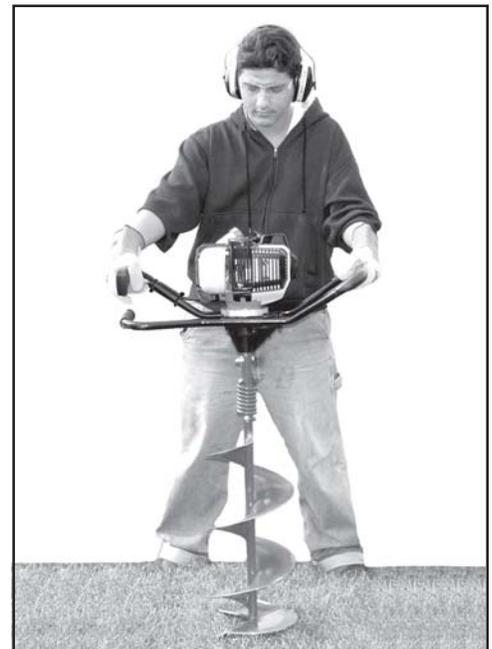
- Avoid using your wrist in a bent, extended, or twisted position. Instead try to maintain a straight wrist position. Also, when grasping, use your whole hand, not just the thumb and index finger.
- Take periodic breaks to minimize repetition and rest your hands.
- Reduce the speed and force with which 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.



## **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 operators of this equipment with the operator's manual, and instructions for safe operation.
- Review area to be augered. Beware of underground hazards such as electrical lines, gas lines, water mains, or cable and telephone lines.
- Never use ice auger without checking with local authorities for safe ice thickness in lakes, ponds, and rivers.
- Spectators and coworkers must be warned, and children and animals prevented from coming nearer than 3 m (10 ft.) while auger is in use.
- Before starting the unit, equip yourself, and any person helping you, with the required Protective Equipment and Clothing. Do not wear loose or baggy clothing while operating the auger.
- Do not allow children to operate auger at any time.
- Always keep hands, arms, legs, and feet clear of the rotating auger.
- Do not carry the auger between holes with the engine running.
- Always shut engine off before making any repairs.
- Always hold auger handles firmly with both hands during operation.
- Maintain stable footing and balance at all times. Do not stand on slippery, uneven, or unstable surfaces.
- Do not operate auger in any position other than upright.
- During operation, the muffler cover area will become very hot. Avoid contact during and immediately after operation. Allow engine and muffler to completely cool before performing any maintenance.



## EQUIPMENT

### WARNING DANGER

Use only ECHO approved attachments. Serious injury may result from the use of a non approved attachment combination. Read and comply with all safety instructions listed in this operator manual. ECHO, INC. will not be responsible for the failure of attachments or accessories which have not been tested and approved by ECHO.

- 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 auger is firmly attached and in safe operating condition.
- Ice blades are very sharp. Wear gloves when handling or replacing.
- Do not use any attachment, accessory, or replacement part unless it is recommended in the Operator's Manual.
- Have repairs done only by an authorized ECHO Service Dealer.

## EMISSION CONTROL

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

**IMPORTANT ENGINE INFORMATION**  
ENGINE FAMILY : 5EXHS.0434RA  
DISPLACEMENT : 42.7cc  
THIS ENGINE MEETS U.S. EPA PH1 EMISSION  
REGULATIONS FOR SMALL NON-ROAD ENGINES.  
REFER TO OWNER'S MANUAL FOR MAINTENANCE  
SPECIFICATIONS AND ADJUSTMENTS.



**KIORTZ CORP.** 

**Emission Control Label** (located on Engine) (EXAMPLE ONLY, information on label varies by FAMILY). Check the label on your unit for information specific to your model.

### PRODUCT EMISSION DURABILITY

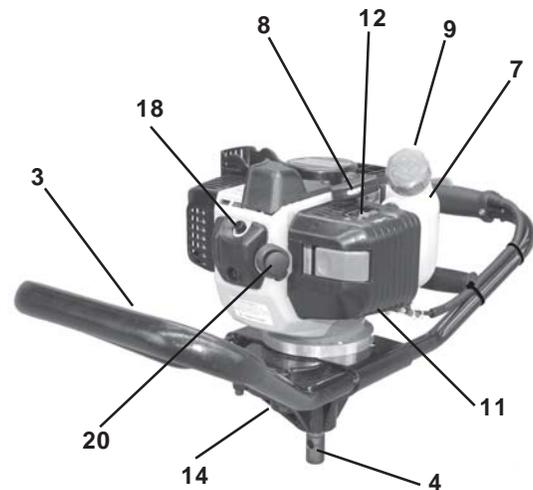
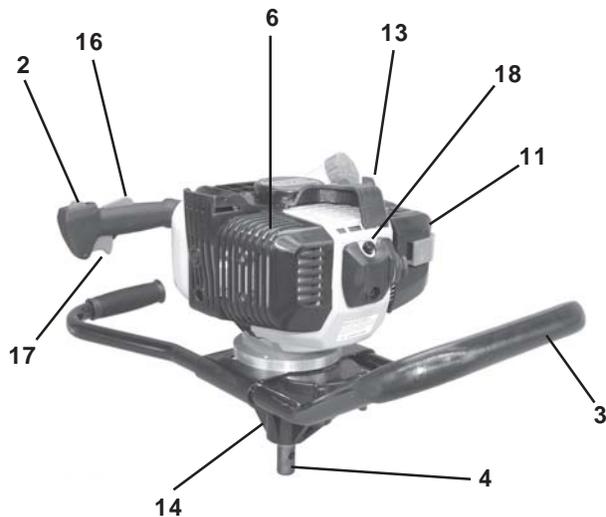
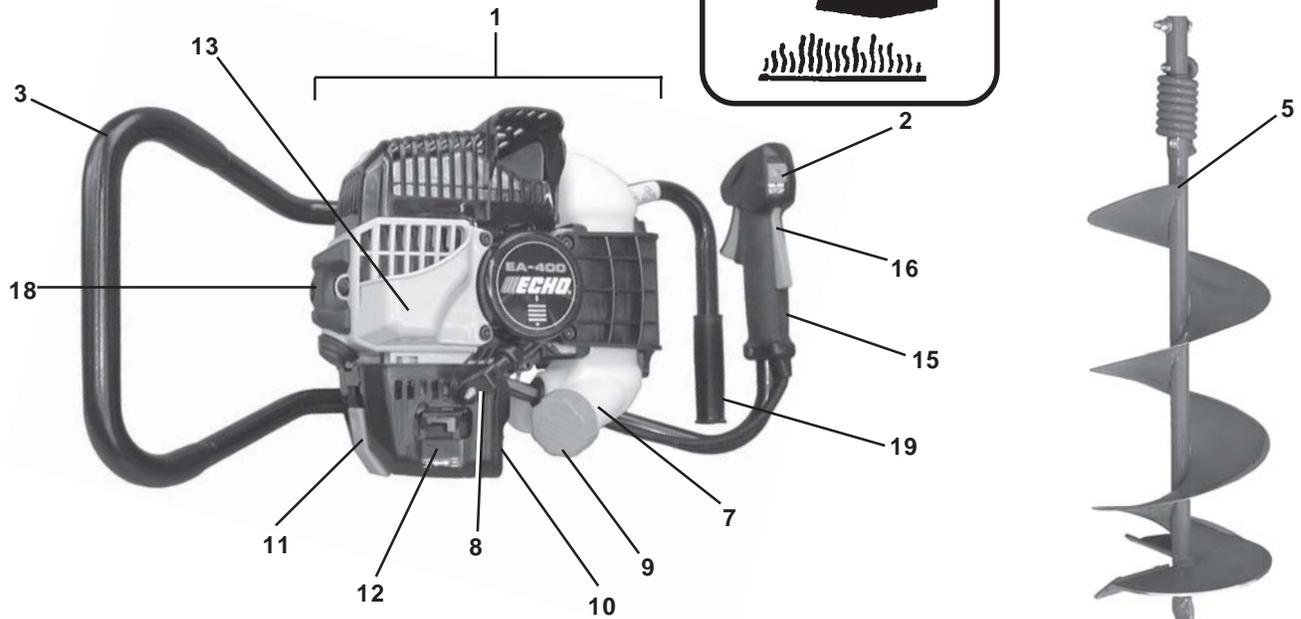
The 300 hour emission durability compliance period is the time span selected by the manufacturer certifying the engine emissions output meets applicable emissions regulations, provided that approved maintenance procedures are followed as listed in the Maintenance Section of this manual.

## DESCRIPTION

Locate these safety decals on your unit. Make sure the decals are legible and that you understand the symbols, and follow the instructions these symbols represent. If a decal cannot be read, a new one can be ordered from your ECHO dealer. See "Servicing Information - Parts" for more information.

### *Hot Decal (near muffler)*

P/N 89016006361



### *Handle Decal*

P/N X505000920



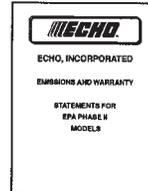
1. **POWER HEAD** - Includes the Engine, Clutch, Fuel System, Ignition System, Recoil Starter, and Auger Gear Case.
2. **STOP SWITCH** - "SLIDE SWITCH" mounted on top of the Throttle Trigger Housing. Move switch FORWARD to RUN, BACK to STOP.
3. **LOOP HANDLE** - Operator position includes Throttle Handle Assembly and loop handle. Helper position uses loop handle.
4. **PTO Shaft** - Power Take-Off Shaft provides power to Auger accessory.
5. **AUGER ASSEMBLY** - Connects to PTO Shaft. Auger Assembly is purchased separately as an accessory. See page 10 for list of auger accessories.
6. **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.
7. **FUEL TANK** - Contains fuel and fuel filter.
8. **RECOIL STARTER HANDLE** - Pull handle slowly until starter engages, then quickly and firmly. When engine starts, return handle slowly. DO NOT let handle snap back or damage to unit will occur.
9. **FUEL TANK CAP** - Covers and seals fuel tank opening.
10. **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.
11. **AIR CLEANER** - Contains replaceable filter element.
12. **CHOKE** - Located above air cleaner housing. Move lever to starting position  (close choke) and back to run position  (open choke).
13. **AIR DEFLECTOR** - Deflects hot engine cooling air away from operator.
14. **GEAR CASE** - Sealed Gear Case provides 30.2 to 1 reduction for best combination of power and auger speed. Requires no user maintenance.
15. **THROTTLE HANDLE ASSEMBLY** - Contains main operator controls- Throttle Trigger, Stop Switch, and Throttle Trigger Lockout.
16. **THROTTLE TRIGGER LOCKOUT** - Operation of the throttle trigger is prevented unless throttle trigger lockout lever is engaged.
17. **THROTTLE TRIGGER** - Spring loaded to return to idle when released. During acceleration press throttle trigger gradually for best operating technique.
18. **DECOMPRESSION BUTTON** - Push button to assist starting. Automatically resets after engine starts and runs.
19. **LOWER HAND GRIP** - Used for right-hand grip by Operator during two-man operation.
20. **SPARK PLUG** - Provides spark to ignite fuel mixture.

## CONTENTS

The EA-400/500 Earth Auger Powerhead, Gear Case, and Loop Handles have been factory pre-assembled for your convenience. The EA-400 Throttle Handle requires assembly. These units are designed for one-person use as an ice auger, and one or two-person use as an earth auger.

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.

- 1 - Power Head/Handle/Gear Case Assembly
- 1 - Operator's Manual
- 1 - Warranty Registration Card
- 1 - Limited Warranty Statement
- 1 - Echo Power Blend™ 2-stroke oil sample



## ASSEMBLY

### THROTTLE HANDLE ASSEMBLY

*Tools Required:* Screwdriver, cutting tool

*Parts Required:* Throttle Handle Assembly, screw, hex nut

1. Cut and remove one (1) white plastic shipping tie that secures handle assembly to packing materials.

#### NOTE

DO NOT cut or remove black plastic ties.

2. Remove mounting screw and hex nut from throttle handle assembly, and slide throttle handle onto mounting bar.
3. Align hole in throttle handle assembly with hole in bar.
4. Secure throttle handle to bar with screw and hex nut.
5. Tighten securely.



## AUGER INSTALLATION

**Tools Required:** 6, 8, & 10 in. Earth Augers - (2) 9/16 in. Wrenches  
2, 3, & 4 in. Earth Augers - Hex wrench.  
8 & 10 in. Ice Augers - Hex wrench

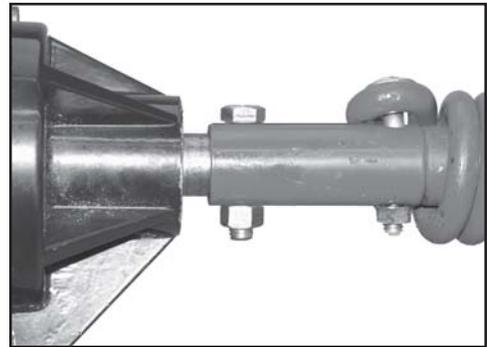
**Parts Required:** Auger Blade Assembly - Includes:

6 - 10 in. Earth Auger: 3/8-16 x 1-1/2" Bolt, 3/8-16 Hex Nut  
2 - 4 in. Earth Augers: 3/8-16 x 1-1/4" Socket Head Screw  
8 - 10 in. Ice Augers: 3/8-16 x 1-1/4" Socket Head Screw

1. Carefully place engine on a flat surface with muffler side down.
2. Remove assembly hardware from auger.
3. Slide auger assembly onto gear case PTO shaft.
4. Align PTO shaft mounting hole with auger mounting hole.
5. Secure auger to PTO shaft with hardware provided, and tighten securely.

### NOTE

6, 8, & 10 in. Earth Augers hardware style shown in illustration.  
2, 3, & 4 in. Earth augers and 8 & 10 in. Ice Augers use socket head screws only.



## AUGER EXTENSION

**Tools Required:** (2) 9/16 in. Wrenches/ Hex Wrench

**Parts Required:** Auger Extension, 12 or 18 in. Includes assembly hardware.

### WARNING DANGER

The muffler and area around the muffler may be extremely hot.  
Avoid contact with this area, otherwise serious injury may result.

### WARNING DANGER

Never operate auger with handles above chest height, otherwise you could lose control, resulting in serious personal injury.

1. Drill hole into ground 15 to 20 in. deep. Stop engine, and clean off auger mounting bolt hardware.
2. Remove auger mounting hardware. Lift engine off auger, and set aside. The engine should be supported on the ground by the handles and PTO shaft.
3. Remove extension hardware.
4. Slide extension onto auger shaft, align holes, and install mounting hardware. Tighten securely.
5. Install engine on extension shaft, and secure with hardware removed in step 2. Tighten securely.



## OPERATION

### FUEL

#### *Fuel Requirements*

**Gasoline** - Use 89 Octane [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 Power Blend™ Universal 2-Stroke 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 Power Blend™, will void the two-stroke engine warranty. (Emission related parts only are covered for two years, regardless of two-stroke oil used, per the statement listed in the Emission Defect Warranty Explanation.)

#### **IMPORTANT**

Echo premium Power Blend™ Universal 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.

#### *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 or RUNNING!
- DO NOT fill fuel tanks indoors. ALWAYS fill fuel tanks outdoors over bare ground.
- DO NOT overfill fuel tank. Wipe up spills immediately.
- Securely tighten fuel tank cap and close fuel container after refueling.
- Inspect for fuel leakage. If fuel leakage is found, do not start or operate unit until leakage is repaired.
- Move at least 3m (10 ft.) from refueling location before **starting** the engine.

#### Mixing Instructions

1. Fill an approved fuel container with half of the required amount of gasoline.
2. Add the proper amount of 2-stroke oil to gasoline.
3. Close container and shake to mix oil with gasoline.
4. Add remaining gasoline, close fuel container, and remix.

#### **Fuel to Oil Mix - 50:1 Ratio**

U.S.		METRIC	
GAS	OIL	GAS	OIL
Gallons	Fl. oz.	Liter	cc.
1	2.6	4	80
2	5.2	8	160
5	13	20	400

#### **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.

#### **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, airtight container. Store in a well-ventilated, unoccupied building, away from sparks and flames.

#### **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.

## STARTING COLD ENGINE

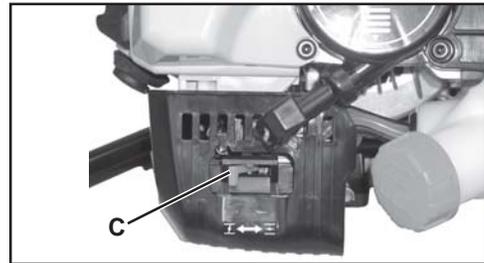
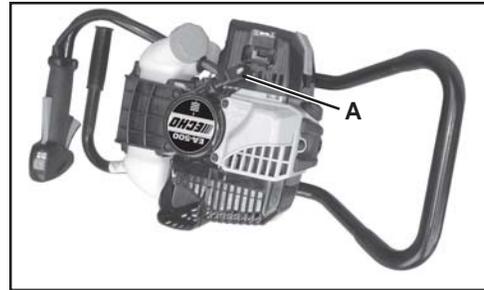
1. Place auger on flat surface, recoil starter handle (A) up.
2. *Stop Switch.*  
Move stop switch button (B) forward, away from the STOP position.
3. *Choke Lever*  
Move choke lever (C) to Cold Start Position (↵).
4. *Decompression Button*  
Press decompression button (D) once.
5. *Primer*  
Pump primer bulb (E) until fuel is visible and flows freely in the clear fuel tank return line. Pump bulb an additional 4 or 5 times.
6. *Recoil Starter*  
Hold loop handle securely with one hand, and pull the recoil starter handle (A) until engine fires (5 or 6 pulls). Do not hold engine by the throttle grip handle. DO NOT depress throttle trigger when starting.
7. *Choke Lever*  
Move the choke lever to the OPEN - RUN position (⇄). Restart engine if necessary and allow to warm up at idle for several minutes.

### NOTE

After engine starts, engine decompression button will automatically reset for normal operation.

### WARNING DANGER

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



## STARTING WARM ENGINE

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

### WARNING DANGER

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

1. *Stop Switch*  
Move stop switch button (B) forward, away from the "STOP" position.
2. *Primer*  
Pump primer bulb (E) until fuel is visible in the "Clear" fuel return line. Pump bulb an additional 4 or 5 times.
3. *Decompression Button*  
Press decompression button (D) once.
4. *Recoil Starter.*  
Lay the unit on a flat, clear area, and pull the recoil starter handle (A) until the engine fires.

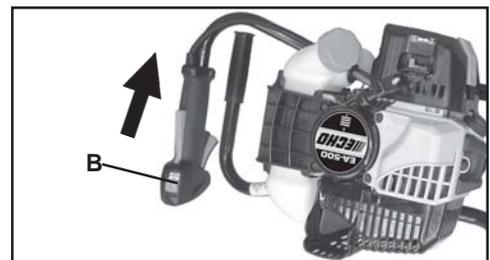
#### NOTE

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



## STOPPING ENGINE

1. *Release Throttle.*  
Allow engine to return to idle before shutting off engine.
2. *Stop Switch*  
Move stop switch button (B) backward to "STOP" position.



### WARNING DANGER

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

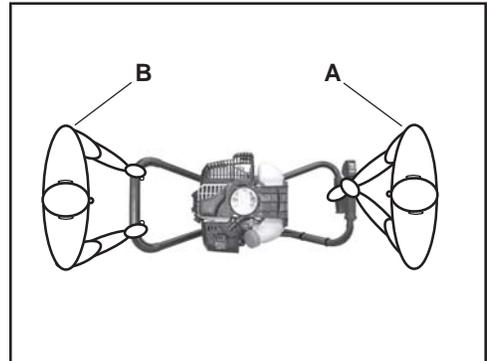
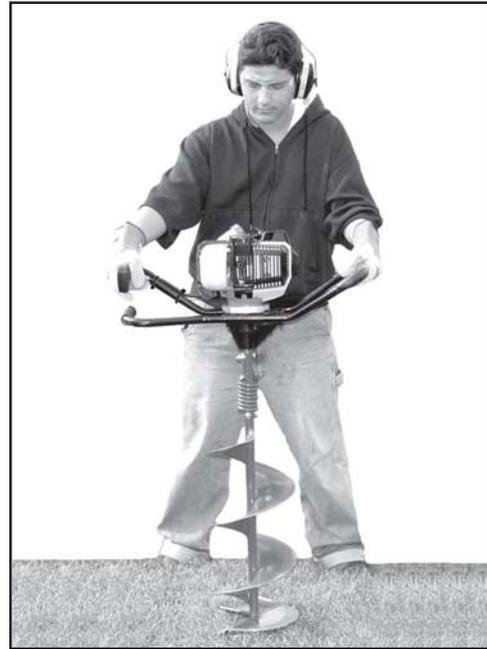
## DRILLING

1. After starting engine, position auger upright at desired drilling point.
2. Position feet for a stable stance, away from auger blades.
3. Firmly grip Throttle Handle Assembly and loop bar handle with right and left hands.
4. Slowly squeeze throttle trigger to engage clutch and rotate auger. Apply light downward pressure on handles to drill hole. Periodically, raise the auger to help clear drilling debris from the hole.
5. Overloading the auger during drilling may cause it to stop turning. When this occurs, lift the auger to reduce the drilling load on the engine, and allow drilling debris to be augered out of the hole. Resume drilling.

### IMPORTANT

While drilling, the auger may twist suddenly and forcefully if it contacts large rocks, roots, or other hidden obstacles. Release throttle trigger immediately, and lift auger out of hole. Clear the obstacles to prevent damage, and then resume drilling.

6. Drilling holes six inches in diameter or larger may be easier if two people hold the handles on opposite sides.
7. Two-man Operation - The operator (A), guides the auger while gripping the Throttle Handle Assembly and lower hand grip. The helper (B), assists by guiding auger while gripping loop handle on opposite side of auger.
8. Do not place excessive body weight on the unit. Allow auger to drill with a shaving action using light downward pressure.
9. Do not use an ice auger in earth, or an earth auger in ice. A different style of auger is required for each type of drilling.
10. Do not operate unit in excessively rocky ground.



TOP VIEW - 2-MAN AUGER OPERATION

### WARNING DANGER

Never operate auger with handles above chest height, otherwise you could lose control, resulting in serious personal injury.

### WARNING DANGER

During operation, the muffler or catalytic muffler and surrounding cover become hot. Always keep exhaust area clear of flammable debris during use, otherwise serious property damage or personal injury may result.

## MAINTENANCE

Your ECHO Auger is designed to provide many hours of trouble-free service. Regularly scheduled maintenance will help your unit achieve that goal. To help you decide whether you want to do it yourself, or have the ECHO Dealer do it, the skill level required for each maintenance task has been graded. 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. The various part numbers required for each task are listed below the task headings on the following pages. If a task is not listed, see your ECHO Dealer for repairs. See your Echo dealer for all parts.

### SKILL LEVELS

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

### MAINTENANCE INTERVALS

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

**MAINTENANCE PROCEDURE LETTER CODES: I = INSPECT, R = REPLACE, C = CLEAN**

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

**MAINTENANCE PROCEDURE NOTES:**

\* All recommendations to replace are based on the finding of damage or wear during inspection..

## AIR FILTER

### Level 1.

*Tools required:* 25 or 50 mm (1 or 2 in.) Cleaning brush

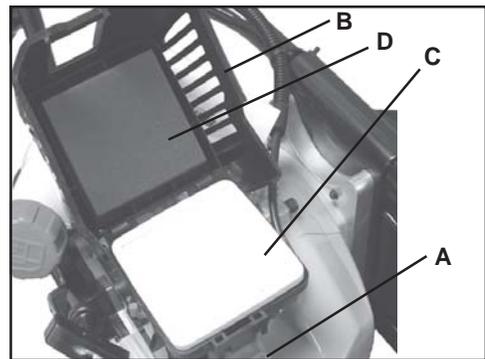
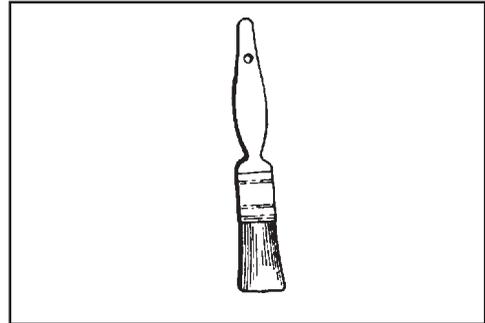
*Parts required:* Air Filters

1. Close choke (Cold Start Position ). This prevents dirt from entering the carburetor throat when the air filters are removed. Brush accumulated dirt from the air cleaner area.
2. Unsnap the air filter cover latch(A), and open the air filter cover (B).
3. Clean the foam filter in water/detergent solution. Wrap the foam filter in a clean cloth and squeeze (do not wring) dry. Do not oil foam filter. Lightly brush debris from felt filter.

#### NOTICE

If elements are fuel soaked, very dirty, deformed, or torn, replace, otherwise engine damage may occur.

4. If elements can be cleaned and reused, be certain they:
  - still fit the cavity in the air cleaner cover.
  - are installed with the original side out.



## FUEL FILTER

### Level 1.

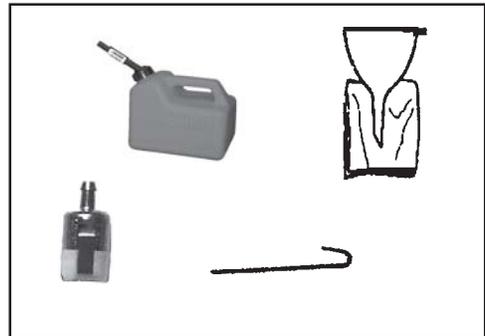
*Tools required:* 200- 250 mm (8 - 10 in.) length of wire with one end bent into a hook, clean rag, funnel, and an approved fuel container.

*Parts required:* Fuel Filter

### WARNING DANGER

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

1. Use a clean rag to remove loose dirt from around fuel cap and empty fuel tank.
2. Use the “fuel line hook” to pull the fuel line and filter from the tank.
3. Remove the filter from the line and install the new filter.



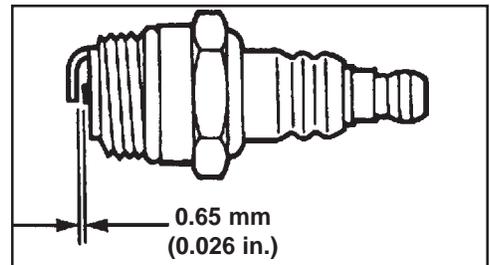
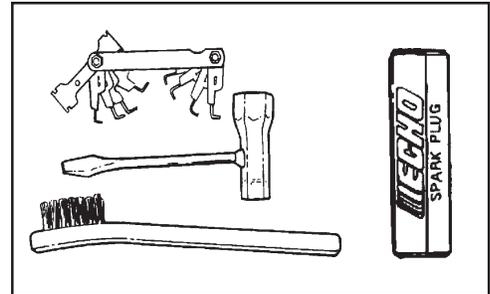
## SPARK PLUG

### Level 2.

*Tools Required:* Spark plug wrench, feeler gauge, soft metal brush.

*Parts Required:* RCJ-6Y Spark Plug, P/N15901731730

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. Install Spark Plug, and tighten to 150-170 kg/cm (130-150 in. lb.).

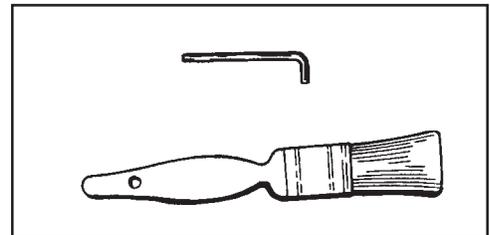


## COOLING SYSTEM

### Level 2.

*Tools required:* Air compressor and safety nozzle, or: 4 mm Hex wrench, 25 - 50 mm (1 - 2 in.) cleaning 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 debris 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 and cleaning of cooling fins is considered "Normal Maintenance." Any failure attributed to lack of maintenance is not warranted.

1. Periodically blow dirt and debris off cooling fins with a compressor and safety nozzle, or;
2. Remove engine and muffler covers, and brush off dirt and debris using the medium bristle brush.



## EXHAUST SYSTEM

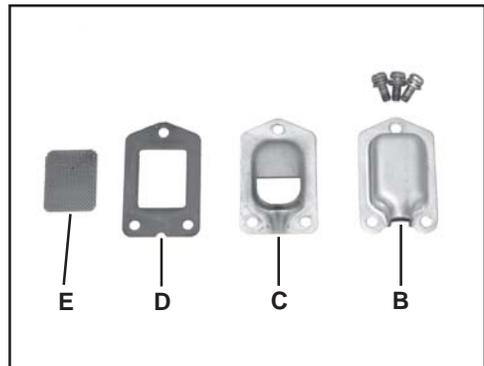
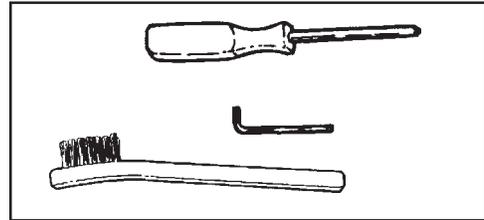
### *Spark Arrestor Screen*

#### Level 2.

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

*Parts Required:* Spark Arrestor Screen, Gasket

1. Remove muffler cover (A).
2. Place piston at Top Dead Center (TDC) to prevent carbon/dirt from entering cylinder.
3. Remove spark arrestor screen cover (B), screen holder (C), gasket (D), and screen (E), from muffler body.
4. Clean carbon deposits from muffler components.
5. Replace screen if it is cracked, plugged, or has holes burned through.
6. Assemble components in reverse order.



### *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 to maintain this engine within the emissions durability period. ECHO strongly recommends that you return your unit to your ECHO dealer for this important maintenance service.

## CARBURETOR ADJUSTMENT

### *Engine Break-In*

New engines must be operated a minimum duration of two tanks of fuel break-in before carburetor adjustments can be made. During the break-in period your engine performance will increase and exhaust emissions will stabilize. Idle speed can be adjusted as required.

### *High Altitude Adjustment*

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

### **Level 2.**

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

*Parts required:* None.

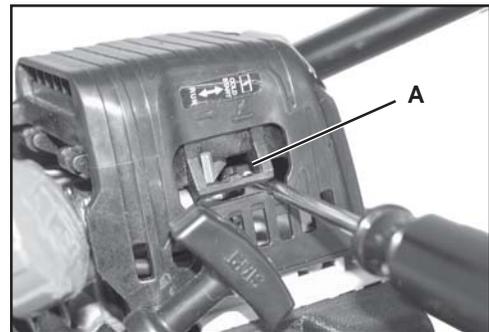
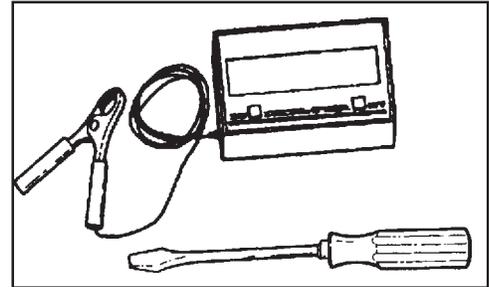
#### **NOTE**

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

1. Check idle speed and reset if necessary. Idle speed screw (A) should be set to the specifications found on page 22, "Specifications" of this manual. Turn idle screw (A) clockwise to increase idle speed; counter-clockwise to decrease idle speed.

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

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



## 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 near cylinder plug hole, otherwise serious personal injury may result.

## STORAGE

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

**WARNING**  **DANGER**

During operation the muffler or catalytic muffler and surrounding cover become hot. Always keep exhaust area clear of flammable debris during transportation or when storing, otherwise serious property damage or personal injury may result.

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

1. Store unit in a dry, dust free place, out of the reach of children.

**WARNING**  **DANGER**

Do not store in enclosure where fuel fumes may accumulate or reach an open flame or spark.

2. Place the stop switch in the "STOP" position.
3. Remove accumulation of grease, oil, dirt, and debris from exterior of unit and accessory augers.
4. Perform all periodic lubrication and services that are required.
5. Tighten all the screws and nuts.
6. **Drain** the fuel tank **completely**, and pull the recoil starter handle several times to remove fuel from the carburetor.
7. Remove the spark plug and pour 7 cc (1/4 oz.) of fresh, clean, two-stroke engine oil into the cylinder through the spark plug hole.
  - A. Place a clean cloth over the spark plug hole.
  - B. Pull the recoil starter handle 2-3 times to distribute the oil inside the engine.
  - C. Observe the piston location through the spark plug hole. Pull the recoil starter 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).

## SPECIFICATIONS

<b>MODELS</b> -----	<b>EA-400/EA-500</b>
Length -----	584 mm (23 in.)
Width -----	267 mm (10.5 in.)
Height -----	368 mm (14.5 in.)
Weight -----	9.75 kg (21.5 lb.)
Engine Type -----	Air cooled, two-stroke, single cylinder gasoline engine
Bore <b>EA-400</b> -----	40.0 mm (1.58 in.)
Bore <b>EA-500</b> -----	44.0 mm (1.73 in.)
Stroke -----	34.0 mm (1.34 in.)
Displacement <b>EA-400</b> -----	42.7 cc (2.61 cu. in.)
Displacement <b>EA-500</b> -----	51.7 cc (3.16 cu. in.)
Exhaust -----	Spark Arrestor Muffler
Carburetor -----	Walbro diaphragm model w/purge pump
Ignition System -----	Flywheel magneto, capacitor discharge (CDI)
Spark Plug -----	Champion RCJ-6Y, (Gap 0.65 mm (0.026 in.))
Fuel -----	Mixed (Gasoline and Two-stroke Oil)
Fuel/Oil Ratio -----	50:1 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 -----	Power Blend™ Premium Universal 2-Stroke Oil
Fuel Tank Capacity -----	1.10 lit. (37.2 US fl. oz.)
Starter System -----	Automatic Recoil Starter
Clutch -----	Centrifugal Type
Vibration Isolation System -----	Cushioned left and right hand grips
PTO Shaft -----	22 mm (.875 in.) Diameter
Gear Case Ratio -----	30.2:1 Reduction
Auger Capacity -----	51mm - 254 mm (2 in. - 10 in.)
Rotation -----	Clockwise, viewed from top
Handle -----	Cushioned Bow w/Grip
Idle Speed -----	2,800 - 3,200 RPM
Wide Open Throttle Speed (W.O.T.) -----	9,000 - 10,000 RPM

## AUGER ACCESSORIES

<i>Earth Augers*</i>	<u>Part Number</u>	<u>Description</u>
	99944900150	2" Earth Auger w/point
	99944900160	3" Earth Auger w/point
	99944900170	4" Earth Auger w/point
	99944900180	6" Earth Auger w/point & Spring
	99944900190	8" Earth Auger w/point & Spring
	99944900200	10" Earth Auger w/point & Spring
<hr/>		
<i>Extension Shafts*</i>	99944900210	18" Extension Shaft - 7/8" Diameter
	99944900220	12" Extension Shaft - 7/8" Diameter
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<i>Earth Auger Replacement Blades*</i>	99944900230	4" Replacement Blade - Earth Auger
	99944900240	6" Replacement Blade - Earth Auger
	99944900250	8" Replacement Blade - Earth Auger
	99944900260	10" Replacement Blade - Earth Auger
	99944900270	Replacement Point - Earth Auger
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<i>Ice Augers*</i>	99944900280	8" Ice Auger - Dual Blade
	99944900290	10" Ice Auger - Dual Blade
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<i>Ice Auger Replacement Blades*</i>	99944900300	8" Replacement Blade - Ice Auger
	99944900310	10" Replacement Blade - Ice Auger
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<i>Auger Adaptor</i>	99944900335	Auger Adapter for 1" Auger mount

\* All auger accessories include required assembly hardware.

## SERVICING INFORMATION

### PARTS

Genuine ECHO Parts and ECHO REPOWER™ Parts and Assemblies for your ECHO products are available only from an Authorized ECHO Dealer. When you do need to buy parts **always** have the Model Number and Serial Number of the unit with you. You can find these numbers on the engine housing. For future reference, write them in the space provided below.

Model No. \_\_\_\_\_ SN. \_\_\_\_\_

### SERVICE

Service of this product during the warranty period must be performed by an Authorized ECHO Service Dealer. For the name and address of the Authorized ECHO Service Dealer nearest you, ask your retailer or call: 1-800-432-ECHO (3246). Dealer information is also available on our Web Site. When presenting your unit for Warranty service/repairs, proof of purchase is required.

### ECHO CONSUMER PRODUCT SUPPORT

If you require assistance or have questions concerning the application, operation or maintenance of this product you may call the ECHO Consumer Product Support Department at 1-800-673-1558 from 8:30 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 REGISTRATION

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

### ADDITIONAL OR REPLACEMENT MANUALS

**Safety Manuals** in English/Spanish or English/French are available, free of charge, from your ECHO dealer or at [www.echo-usa.com](http://www.echo-usa.com).

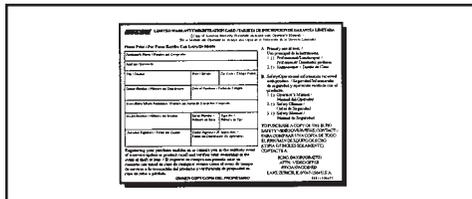
**Operator's and Parts Manuals** are available by:

- Downloading free from [www.echo-usa.com](http://www.echo-usa.com)
- Purchasing from your Echo Dealer.
- Manuals are available by sending a written request stating the model number and serial number of your Echo unit, part number of the manual, your name and address, and mail to the address below.



**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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