



Earth Auger

Operator's Manual

MODEL

EA-410

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

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 and what they mean to you.

DANGER

The safety alert symbol accompanied by the word “DANGER” calls attention to an act or condition which **WILL** lead to serious personal injury or death if not avoided.

WARNING

The safety alert symbol accompanied by the word “WARNING” calls attention to an act or condition which **CAN** lead to serious personal injury or death if not avoided.

CAUTION

The safety alert symbol accompanied by the word “CAUTION” calls attention to an act or condition which may lead to minor or moderate personal injury if not avoided.



CIRCLE AND SLASH SYMBOL

This symbol means the specific action shown is prohibited. Ignoring these prohibitions can result in serious or fatal injury.











NOTE










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

IMPORTANT

The enclosed message provides information necessary for the protection 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
	Carburetor Adjustment - High Speed Mixture		Primer Bulb
	Carburetor Adjustment - Idle speed		Ignition ON/OFF
	Carburetor Adjustment - Low Speed Mixture		
	Choke Control "Cold Start" Position (Choke Closed)		Choke Control "Run" Position (Choke Open)

PERSONAL CONDITION AND SAFETY EQUIPMENT

WARNING

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

Eye protection that meets ANSI Z87.1 or CE requirements must be worn whenever you operate the unit.

Hand Protection

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

Hearing Protection

Wear hearing protection. ECHO recommends wearing hearing protection whenever unit is used.

Proper Clothing

Wear snug fitting, durable clothing;

- Pants should have long legs, shirts with long sleeves.
- DO NOT WEAR SHORTS,
- DO NOT WEAR TIES, SCARVES, JEWELRY, or clothing with loose or hanging items that could become entangled in moving parts.

Wear sturdy work shoes with nonskid soles;

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

Keep long hair away from engine and air intake. Retain hair with cap or net.

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.



WARNING

The ignition components of this machine generate an electromagnetic field during operation which may interfere with some pacemakers. To reduce the risk of serious or fatal injury, persons with pacemakers should consult with their physician and the pacemaker manufacturer before operating this machine. In the absence of such information, ECHO does not recommend the use of ECHO products by anyone who has a pacemaker.

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.

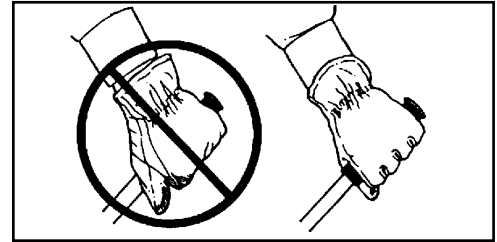
- Keep your body warm, especially the head, neck, feet, ankles, hands, and wrists.
- Maintain good blood circulation by performing vigorous arm exercises during frequent work breaks, and also by not smoking.
- Limit the hours of operation. Try to fill each day with jobs where operating the trimmer or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



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

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.
- 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.



WARNING

Moving parts can amputate fingers or cause severe injuries. Keep hands, clothing and loose objects away from all openings.

- **ALWAYS** stop engine, disconnect spark plug, and make sure all moving parts have come to a complete stop before removing obstructions, clearing debris, or servicing unit.
- **DO NOT** start or operate unit unless all guards and protective covers are properly assembled to unit.
- **NEVER** reach into any opening while the engine is running. Moving parts may not be visible through openings.



WARNING

Check fuel system for leaks due to fuel tank damage, especially if the unit is dropped. If damage or leaks are found, do not use unit, otherwise serious personal injury or property damage may occur. Have unit repaired by an authorized servicing dealer before using.

EMISSION CONTROL (EXHAUST & EVAPORATIVE)

EPA 2010 and Later

The emission control system for the engine is EM/TWC (Engine Modification and 3-way Catalyst) and for the fuel tank the Control System is EVAP (Evaporative Emissions) or N (for nylon tank). Evaporative emission may be applicable to California models only.

EMISSION CONTROL INFORMATION

ENGINE FAMILY: EHXS.0454KA DISPLACEMENT: 45.0cc
EMISSION COMPLIANCE PERIOD = 300 HOURS
THIS ENGINE MEETS U.S. EPA EXH REGS FOR MODEL YEAR **
REFER TO OWNER'S MANUAL FOR MAINTENANCE SPECIFICATIONS AND ADJUSTMENTS.

YAMABIKO CORP. **

EMISSION CONTROL INFORMATION

ENGINE FAMILY: EHXS.0454KA DISPLACEMENT: 45.0cc
EMISSION COMPLIANCE PERIOD = 300 HOURS
THIS ENGINE MEETS U.S. EPA EXH/EVP REGS FOR MODEL YEAR **
REFER TO OWNER'S MANUAL FOR MAINTENANCE SPECIFICATIONS AND ADJUSTMENTS.

YAMABIKO CORP. **

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

PRODUCT EMISSION DURABILITY (EMISSION COMPLIANCE PERIOD)

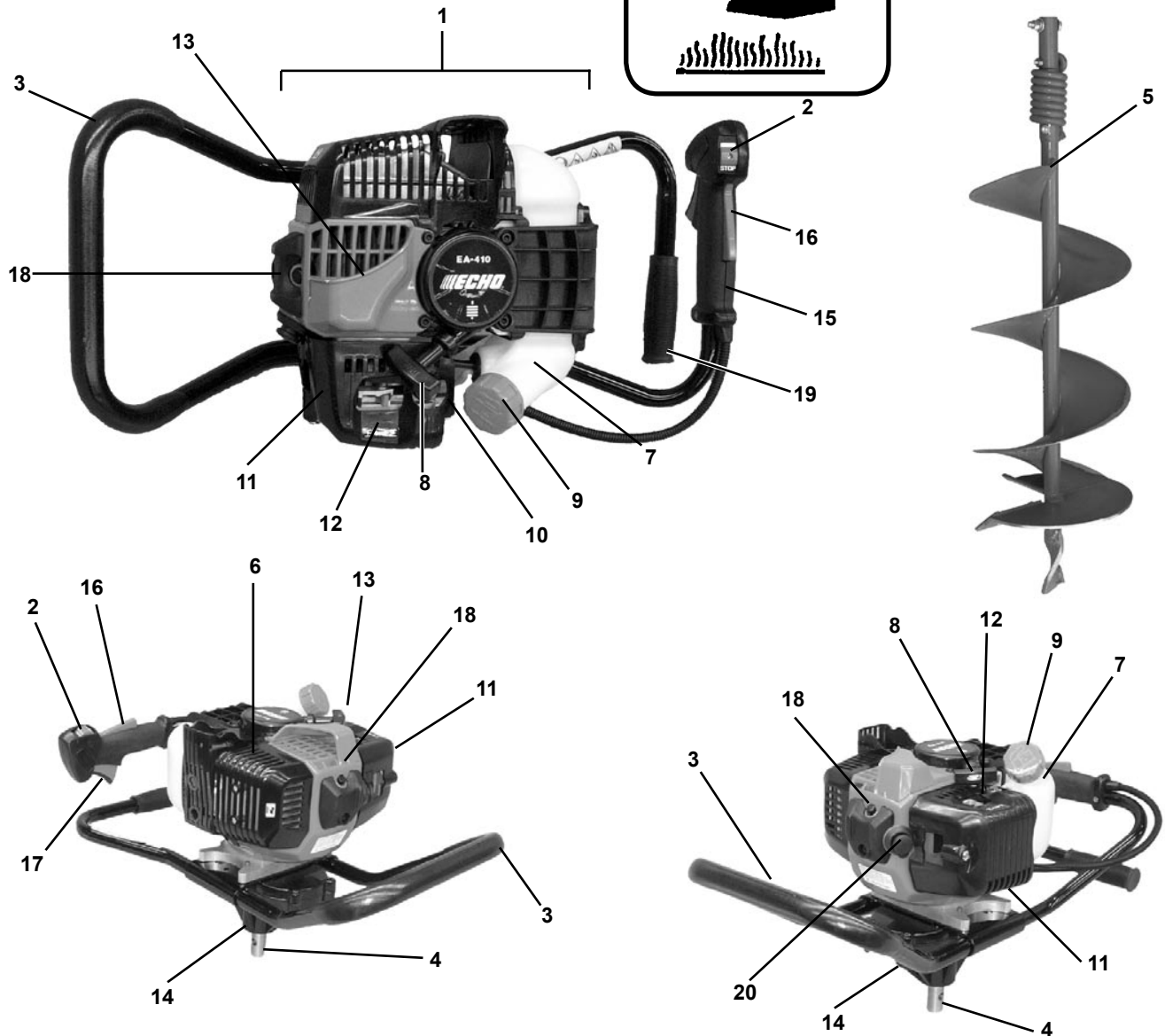
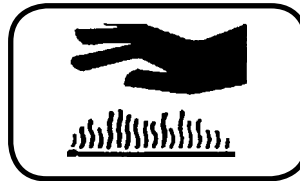
The 300 hour emission compliance period is the time span selected by the manufacturer certifying the engine emissions output meets applicable emissions regulations, provided that approved maintenance procedures are followed as listed in the Maintenance Section of this manual.

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 X505002310



Handle Decal

P/N X505000920



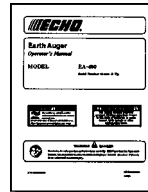
1. **POWER HEAD** - Includes the Engine, Clutch, Fuel System, Ignition System, Recoil Starter, and Auger Gear Case.
2. **STOP SWITCH** - "SLIDE SWITCH" mounted on top of the Throttle Trigger Housing. Move switch FORWARD to RUN, BACK to STOP.
3. **LOOP HANDLE** - Operator position includes Throttle Handle 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-410 Earth Auger Powerhead, Gear Case, and Loop Handles have been factory pre-assembled for your convenience. The EA-410 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



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

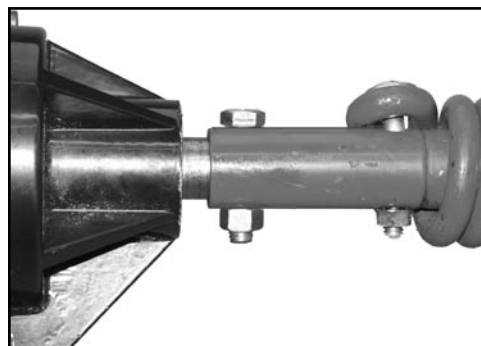
Tools Required: 6, 8, & 10 in. Earth Augers - (2) 9/16 in. Wrenches
2, 3, & 4 in. Earth Augers - Hex wrench.
8 & 10 in. Ice Augers - Hex wrench

Parts Required: Auger Blade Assembly - Includes: 6 - 10 in. Ear 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

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



WARNING

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



WARNING

Moving parts can amputate fingers or cause severe injuries. Keep hands, clothing and loose objects away from all openings. Always stop engine, disconnect spark plug, and make sure all moving parts have come to a complete stop before removing obstructions, clearing debris, or servicing unit.



WARNING

Operation of this equipment may create sparks that can start fires around dry vegetation. This unit is equipped with a spark arrestor and a spark arrestor may be required. The operator should contact local fire agencies for laws or regulations relating to fire prevention requirements.

NOTICE: Use of unmixed, improperly mixed, or fuel older than 90 days, (stale fuel), may cause hard starting, poor performance, or severe engine damage and void the product warranty. Read and follow instructions in the Storage section of this manual.

FUEL



WARNING

Alternative fuels, such as E-15 (15% ethanol), E-85 (85% ethanol) or any fuels not meeting ECHO requirements are **NOT** approved for use in ECHO 2-stroke gasoline engines. Use of alternative fuels may cause performance problems, loss of power, overheating, fuel vapor lock, and unintended machine operation, including, but not limited to, improper clutch engagement. Alternative fuels may also cause premature deterioration of fuel lines, gaskets, carburetors and other engine components.

Fuel Requirements

Gasoline - Use 89 Octane [R+M/2] (mid grade or higher) gasoline known to be good quality. Gasoline may contain up to 10% Ethanol (grain alcohol) or 15% MTBE (methyl tertiary-butyl ether). Gasoline containing methanol (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/FD Standards must be used. Echo brand premium Power Blend X TM Universal 2-Stroke Oil meets these standards. Engine problems due to inadequate lubrication caused by failure to use an ISO-L-EGD (ISO/CD 13738) and J.A.S.O. FC/FD certified oil, such as Echo premium Power Blend X TM, will void the two-stroke engine warranty.

IMPORTANT

Echo premium Power Blend X TM 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



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.

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.

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

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

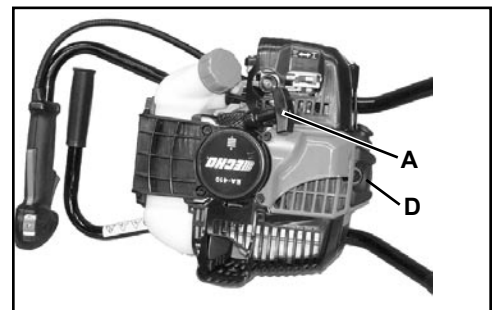
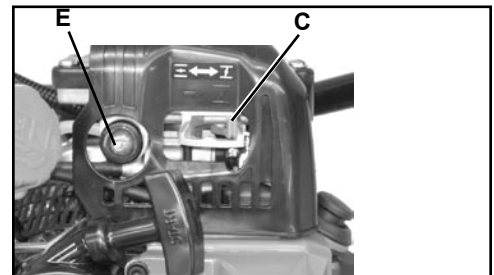
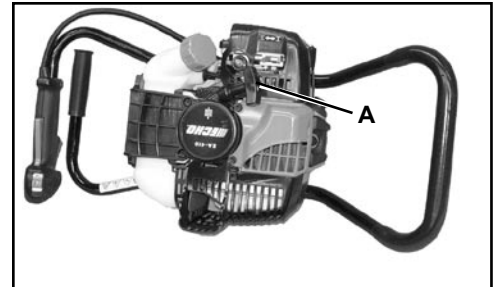
Stored fuel ages. Do not mix more fuel than you expect to use in thirty (30) days, ninety (90) days when a fuel stabilizer is added.

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 (H).
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 (I). 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

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.



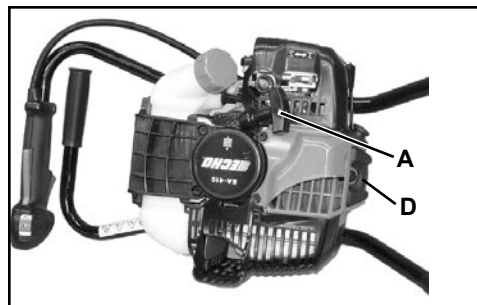
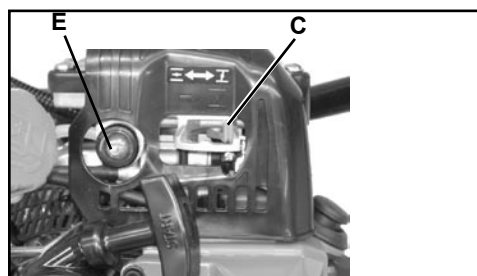
WARNING

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

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



WARNING

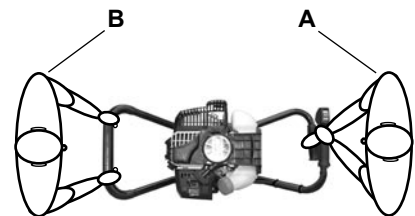
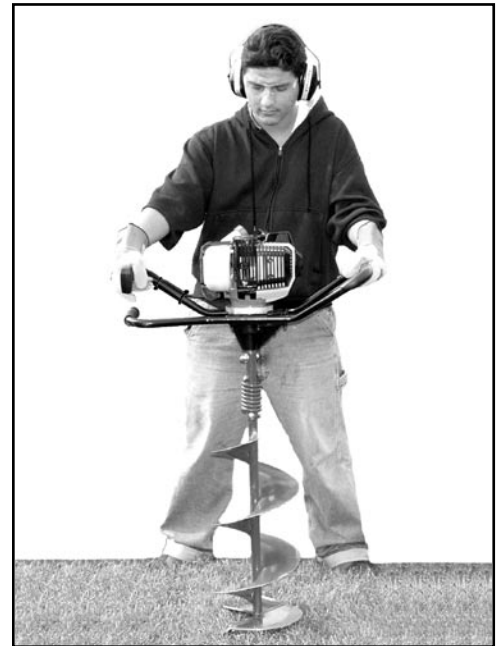
Engine exhaust IS HOT, and contains Carbon Monoxide (CO), a poison gas. Breathing CO can cause unconsciousness, serious injury, or death. Exhaust can cause serious burns. ALWAYS position unit so that exhaust is directed away from your face and body.

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

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



WARNING

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



WARNING

Moving parts can amputate fingers or cause severe injuries. Keep hands, clothing and loose objects away from all openings. Always stop engine, disconnect spark plug, and make sure all moving parts have come to a complete stop before removing obstructions, clearing debris, or servicing unit. Allow unit to cool before performing service. Wear gloves to protect hands from sharp edges and hot surfaces.

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

SKILL LEVEL

Level 1 = Easy to do. Common tools may be required.

Level 2 = Moderate difficulty. Some specialized tools may be required.

ECHO offers **REPOWER™** Maintenance Kits and Parts to make your maintenance job easier.

MAINTENANCE INTERVALS

COMPONENT/SYSTEM	MAINTENANCE PROCEDURE	SKILL LEVEL REQ'D	DAILY OR BEFORE USE	EVERY REFUEL	3 MONTHS OR 90 HOURS	YEARLY 600 HOURS
Air Filter	Inspect/Clean	1	I / C *		R*	
Choke Shutter	Inspect/Clean	1	I / C			
Fuel Filter	Inspect/Replace	1			I *	I / R *
Fuel Cap Gasket	Inspect/Replace	1			I *	R *
Fuel System	Inspect/Replace	1	I (1)	I (1)		
Spark Plug	Inspect/Clean/Replace	1			I / C / R *	
Cooling System	Inspect/Clean	2	I / C			
Muffler Spark Arrestor	Inspect/Clean/Replace	2			I / C / R *	
Cylinder Exhaust Port	Inspect/Clean/Decarbon	2			I / C	
Gear Housing	Grease	2			I	
Recoil Starter Rope	Inspect/Clean	1	I / C *			
Screws/Nuts/Bolts	Inspect/Tighten/Replace	1	I *			

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

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

MAINTENANCE PROCEDURE NOTES:

(1) Low evaporative fuel tanks DO NOT require regular maintenance to maintain emission integrity.

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

AIR FILTER

Level 1.

Tools required: 25 - 50mm (1 - 2 in.) cleaning brush

Parts required: REPOWER™ Tune-Up Kit

NOTE

Always brush dirt and debris away from air cleaner area prior to cleaning air filter.

1. Brush dirt off air cleaner area. Keep dirt away from engine and air intake grid.
2. Remove air filter cover. Brush dirt from inside cover and away from edges of air filter.
3. Check air filter seal for tight fit with air filter case.
4. Remove air filter from case. Use care to prevent dirt and debris from falling into air filter case.
5. Inspect filter element and seal. Replace filter if any of these problems are present:
 - Air filter seal does not fit tightly against case
 - Air filter seal is distorted, worn, or damaged
 - Air filter element has holes or other damage
 - Air filter element is saturated with dirt
 - Air filter element is soaked with fuel mix
6. If air filter is in good condition and can be cleaned and reused, lightly brush debris from air filter element, or blow filter element clean using low pressure (40 psi or less) compressed air directed at inside of filter.

IMPORTANT

When using compressed air, always direct air stream at inside surface of filter so dust and debris will be blown out of filter. Keep air nozzle 6 - 8 inches away from filter to prevent damage to filter.

7. Install air filter in case, and replace cover.

NOTICE

Actual replacement interval for air filter depends on operating conditions. Operation in dustier applications requires more frequent cleaning and replacement. Continued operation with a damaged or excessively dirty filter will allow dirt and debris to enter engine, and result in poor performance, rapid engine wear, and premature engine failure.



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.

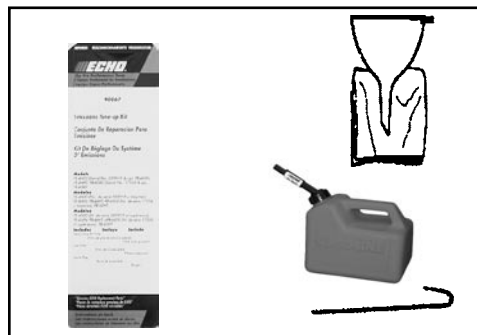
Parts required: REPOWER™ Tune-Up Kit



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.



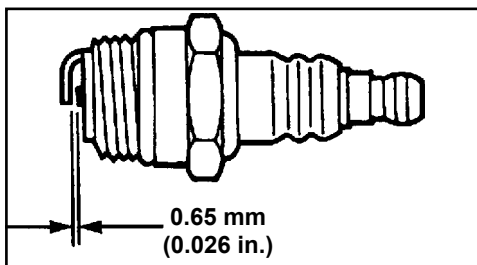
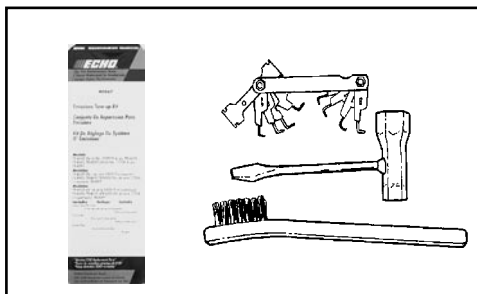
SPARK PLUG

Level 2.

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

Parts Required: REPOWER™ Tune-Up Kit

1. Remove spark plug and check for fouling, worn and rounded center electrode.
2. Clean the plug or replace with a new one. DO NOT sand blast to clean. Remaining sand will damage engine.
3. Adjust spark plug gap by bending outer electrode.
4. Install Spark Plug, and tighten to 150-170 kgf • cm (130-150 in. • lbf).



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

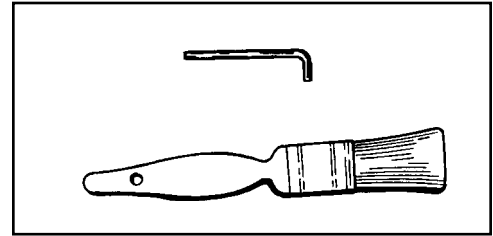
To maintain proper engine operating temperatures, cooling air must pass freely through the cylinder fin area. This flow of air carries combustion heat away from the engine.

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

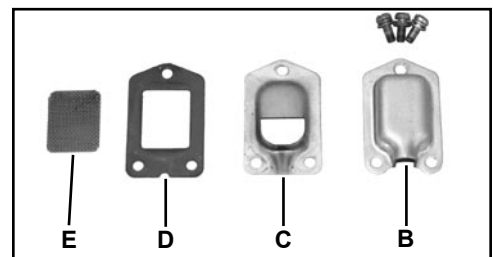
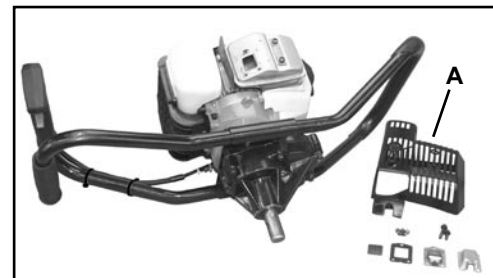
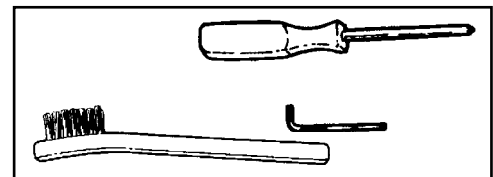
Spark Arrestor Screen

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.



Exhaust Port Cleaning

Level 2.

Tools required: 4 & 5 mm Hex Wrench, Wood or plastic scraper

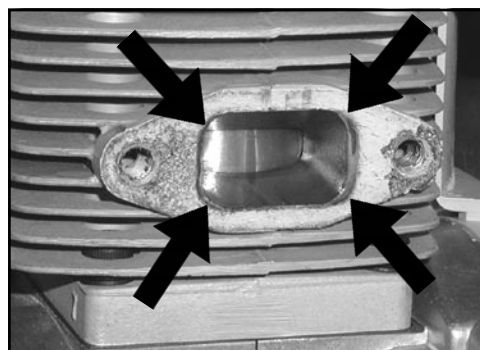
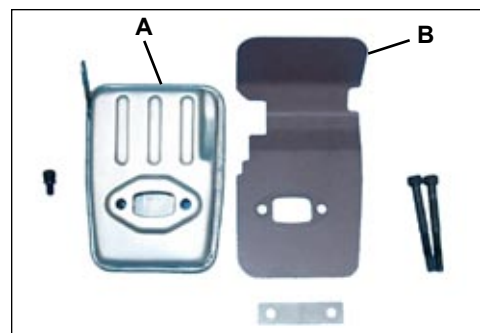
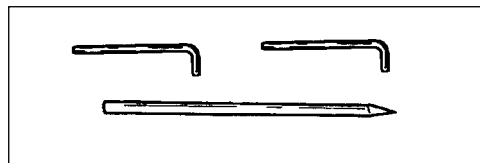
Parts Required: As needed: Heat Shield

1. Remove spark plug lead from spark plug, and remove muffler cover (2 screws).
2. Place piston at top dead center. Remove muffler (A) and heat shield (B).
3. Use a wood or plastic scraping tool to clean deposits from cylinder exhaust port.

IMPORTANT

Never use a metal tool to scrape carbon from the exhaust port. Do not scratch the cylinder or piston when cleaning the exhaust port. Do not allow carbon particles to enter the cylinder.

4. Inspect heat shield, and replace if damaged.
5. Install heat shield and muffler.
6. Tighten muffler mounting bolts (or nuts) to 95-130 in•lbf (110-150 kgf•cm).
7. Attach spark plug lead and install muffler cover.
8. Start engine, and warm to operating temperature.
9. Stop engine, and re-tighten mounting bolts (or nuts) to specifications.



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 Operation

This engine has been factory adjusted to maintain satisfactory starting, emission, and durability performance up to 1,100 feet above sea level (ASL) (96.0 kPa). To maintain proper engine operation and emission compliance above 1,100 feet ASL the carburetor may need to be adjusted by an authorized ECHO service dealer.

IMPORTANT

If the engine is adjusted for operation *above* 1,100 feet ASL, the carburetor must be re-adjusted when operating the engine *below* 1,100 feet ASL, otherwise severe engine damage may result.

Level 2.

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

Parts required: None.

NOTE

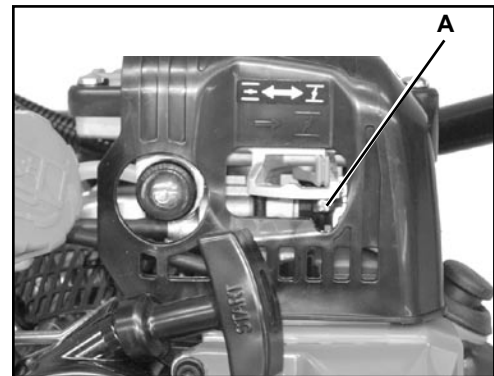
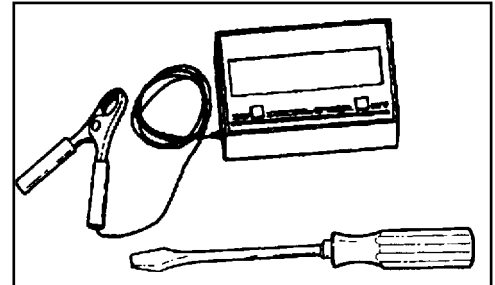
Every unit is run at the factory and the carburetor is set in compliance with emission regulations. This carburetor does not have acceleration and high speed adjustment needles.

1. Check idle speed and reset if necessary. Idle speed screw (A) should be set to the specifications found on page 24, "Specifications" of this manual. Turn idle screw (A) clockwise to increase idle speed; counter-clockwise to decrease idle speed.



WARNING

When carburetor adjustment is completed, the cutting attachment should not 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



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

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.



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

MODELS-----EA-410

Length -----	585 mm (23 in.)
Width -----	270 mm (10.6 in.)
Height -----	370 mm (14.6 in.)
Weight -----	9.8 kg (21.6 lb.)
Engine Type -----	Air cooled, two-stroke, single cylinder gasoline engine
Bore -----	40.0 mm (1.58 in.)
Stroke-----	34.0 mm (1.34 in.)
Displacement -----	42.7 cc (2.61 cu. in.)
Exhaust-----	Spark arrestor muffler or spark arrestor muffler with catalyst
Carburetor-----	Walbro diaphragm model w/purge pump
Ignition System -----	Flywheel magneto, capacitor discharge (CDI)
Spark Plug -----	NGK BPM-7A, (Gap 0.65 mm (0.026 in.)
Fuel -----	Mixed (Gasoline and Two-stroke Oil)
Fuel/Oil Ratio -----	50 : 1 Power Blend X™ ISO-L-EGD (ISO/CD 13738) and J.A.S.O. M345- <u>FC/FD</u> , two-stroke, air-cooled engine oil.
Gasoline-----	Use 89 Octane unleaded. Do not use fuel containing methyl alcohol, more than 10% ethyl alcohol or 15% MTBE. Do not use alternative fuels such as E-15 or E-85.
Oil-----	Power Blend™ Premium Universal 2-Stroke Oil
Fuel Tank Capacity -----	1.0 lit. (33.8 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-----	2,500 RPM
Clutch Engagement Speed-----	3,600 RPM
Wide Open Throttle Speed (W.O.T.) -----	9,800 - 11,500 RPM

AUGER ACCESSORIES

*Earth Augers**

<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

*Extension Shafts**

99944900210	18" Extension Shaft - 7/8" Diameter
99944900220	12" Extension Shaft - 7/8" Diameter

*Earth Auger Replacement Blades**

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	2" Replacement Point - Earth Auger
99944900370	1" Replacement Point - Earth Auger

*Ice Augers**

99944900275	Replacement Point - Ice Auger
99944900280	8" Ice Auger - Dual Blade
99944900290	10" Ice Auger - Dual Blade

*Ice Auger Replacement Blades**

99944900300	8" Replacement Blade - Ice Auger
99944900310	10" Replacement Blade - Ice Auger

Auger Adaptor

99944900335	Auger Adapter for 1" Auger mount
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* All auger accessories include required assembly hardware.

WARRANTY STATEMENTS

ECHO LIMITED WARRANTY STATEMENT FOR PRODUCT SOLD IN USA AND CANADA BEGINNING 01/01/2010

ECHO'S RESPONSIBILITY

ECHO Incorporated's Limited Warranty, provides to the original purchaser that this ECHO product is free from defects in material and workmanship. Under normal use and maintenance from date of purchase, ECHO agrees to repair or replace at ECHO's discretion, any defective product free of charge at any authorized ECHO servicing dealer within listed below application time periods, limitations and exclusions. **THIS LIMITED WARRANTY IS ONLY APPLICABLE TO ECHO PRODUCTS SOLD BY AUTHORIZED ECHO DEALERS. IT IS EXTENDED TO THE ORIGINAL PURCHASER ONLY, AND IS NOT TRANSFERABLE TO SUBSEQUENT OWNERS EXCEPT FOR EMISSION RELATED PARTS.** Repair parts and accessories replaced under this warranty are warranted only for the balance of the original unit or accessory warranty period. Any damage caused by improper installation or improper maintenance is not covered by this warranty. All parts or products replaced under warranty become the property of ECHO, Inc. This warranty is separate from the Emission control warranty statement supplied with your new product. Please consult the Emission Control Warranty Statement for details regarding emission related parts. For a list of Authorized ECHO Dealers refer to WWW.ECHO-USA.COM or call 1-800-432-ECHO.

OWNER'S RESPONSIBILITY

To ensure trouble free warranty coverage it is important that you register your ECHO equipment on-line at WWW.ECHO-USA.COM or by filling out the warranty registration card supplied with your unit. Registering your product confirms your warranty coverage and provides a direct link if we find it necessary to contact you.

The owner shall demonstrate reasonable care and use, and follow preventative maintenance, storage, fuel and oil usage as prescribed in the operator's manual. Should a product difficulty occur, you must, at your expense, deliver or ship your ECHO unit to an authorized ECHO servicing dealer for warranty repairs (within the applicable warranty period), and arrange for pick-up or return of your unit after the repairs have been made. For your nearest authorized ECHO servicing dealer, call ECHO's Dealer Referral Center, at 1-800-432-ECHO or you can locate an ECHO servicing dealer at WWW.ECHO-USA.COM. Should you require assistance or have questions concerning ECHO's Warranty Statement, you can contact our Consumer Product Support Department at 1-800-673-1558 or contact us through the web at WWW.ECHO-USA.COM.

PRODUCT WARRANTY PERIOD

RESIDENTIAL APPLICATION

- **5 YEAR WARRANTY** - All units for residential, or non-income producing use will be covered by this limited warranty for **five (5) years** from date of purchase.

EXCEPTIONS:

- For two-stroke engine powered products, the electronic ignition module, flexible drive cables, SRM solid drive shafts, and TC tines are warranted for the **life*** of the product on parts only.
- Cutting attachments such as, but not limited to, bars, chains, sprockets, blades, and nylon trimmer heads for residential or non-income producing use will be covered for failures due to defects in material or workmanship for a period of **60 days** from original product purchase date. Any misuse from contact with concrete, rocks, or other structures is not covered by this warranty.
- ECHO's Rapid Loader String Head carries a lifetime warranty on the line locking system, parts only; no labor. Refer to your operator's manual for string head installation and maintenance instructions.
- All SB-Series and PRO ATTACHMENT SERIES Split Shaft attachments carry the same warranty duration as the units they are designed to fit.

COMMERCIAL APPLICATION

- **1 YEAR WARRANTY** - All Chain Saws, QuikVent Saws, and Cut-Off Saws for commercial, institutional, agricultural, industrial, or income producing use will be covered by this limited warranty for one **(1) year** from the date of purchase.
- **2 YEAR WARRANTY** - All other units for commercial, institutional, agricultural, industrial, or income producing use will be covered by this limited warranty for two **(2) years** from the date of purchase.

EXCEPTIONS:

- For two-stroke engine powered products, the electronic ignition module, flexible drive cables, SRM solid drive shafts and TC tines, are warranted for the **life*** of the product on parts only.
- Cutting attachments such as, but not limited to, bars, chains, sprockets, blades, and nylon trimmer heads for commercial, institutional, agricultural, industrial, rental, or income producing will be covered for failures due to defects in material or workmanship for a period of **30 days** from original product purchase date. Any misuse from contact with concrete, rocks, or other structures is not covered by this warranty.
- ECHO's Rapid Loader String Head carries a lifetime warranty on the line locking system, parts only; no labor. Refer to your operator's manual for string head installation and maintenance instructions.
- All SB-Series and PRO ATTACHMENT SERIES Split Shaft attachments carry the same warranty duration as the units they are designed to fit.

RENTAL APPLICATION - 90 DAYS WARRANTY

- Units for rental use will be covered against defects in material and workmanship for a period of 90 days from the date of purchase.

* ECHO's liability under the "Lifetime" coverage is limited to furnishing parts specified under the PRODUCT WARRANTY PERIOD section of this warranty statement for "**Life**" free of charge for a period of ten (10) years after the date of the complete unit's final production.

PURCHASED REPAIR PARTS, SHORT BLOCKS AND ACCESSORIES

- 90-day residential, or non-income producing warranty
- 30-day commercial, institutional, agricultural, industrial, income producing, or rental application warranty

ATTENTION TWO-STROKE ENGINE POWER PRODUCT OWNERS

This ECHO two-stroke engine power product is a quality-engineered unit which has been manufactured to exact tolerances to provide superior performance. To help ensure the performance of the unit, it is required to use two-stroke oil which meets the ISO-L-EGD Standard per ISO/CD 13738 and JASO M345/FC/FD Standards. **ECHO Power Blend™ Two-Stroke Oil** is a premium two-stroke oil specifically formulated to meet ISO-L-EGD (ISO/CD 13738) and JASO M345/FC/FD Standards. The use of two-stroke oils designed for other applications, such as for outboard motors or lawnmowers can result in severe engine damage, and will void your two-stroke engine limited warranty.

THIS WARRANTY DOES NOT COVER DAMAGE CAUSED BY:

- Lack of lubrication or engine failure, due to the use of two-stroke oils that do not meet the ISO-L-EGD (ISO/CD 13738) and JASO M345/FC/FD Standards. Engine problems due to inadequate lubrication caused by failure to use an ISO-L-EGD compliant and JASO M345/FC/FD registered oil, will void the two-stroke engine limited warranty. **ECHO Power Blend™ Two-Stroke Oil** meets the ISO-L-EGD and JASO M345/FC/FD Standard. Emission related parts are covered for 5 years residential use or 2 years commercial use regardless of two-stroke oil used, per the statement listed in the EPA or California Emission Defect Warranty Explanation.
- Damage caused by use of gasohol, containing methanol (wood alcohol), or gasoline containing less than 89 octane. Only use gasoline which contains 89 octane or higher. Gasohol which contains a **maximum** 10% ethanol (grain alcohol) or 15% MTBE (methyl/tertiary/butyl/ether) is also approved. The prescribed mixing ratio of gasoline to oil is listed on the ECHO oil label and covered in your operator's manual.
- Engine damage caused by use of ether or any starting fluids.
- Damage caused by tampering with engine speed governor or emission components, or running engines above specified and recommended engine speeds as listed in your operator's manual.
- Operation of the unit with improperly maintained/removed cutting shield or removed/damaged air filter.
- Damage caused by dirt, pressure or steam cleaning the unit, salt water, corrosion, rust, varnish, abrasives, and moisture.
- Defects, malfunctions or failures resulting from abuse, misuse, neglect, modifications, alterations, normal wear, improper servicing, or use of unauthorized attachments.
- Incorrect storage procedures, stale fuel, including failure to provide or perform required maintenance services as prescribed in the operator's manual. Preventative maintenance as outlined in the operators manual is the customer's responsibility.
- Failures due to improper set-up, pre-delivery service or repair service by anyone other than authorized ECHO servicing dealer during the warranty period.
- Certain parts and other items are not warranted, including but not limited to: lubricants, starter cords, and engine tune-ups.
- Use of spark plugs other than those meeting performance and durability requirements of the OEM spark plug listed in the Operator's Manuals.
- Overheating or carbon scoring failures due to restricted, clogged exhaust port or combustion chamber, including damage to spark arrester screen.
- Adjustments after the first (30) thirty days and beyond, such as carburetor adjustment and throttle cable adjustment.
- Damage to gears or gear cases caused by contaminated grease or oil, use of incorrect type or viscosity of lubricants, and/or failure to comply with recommended grease or oil change intervals.
- Damage caused by loading SHRED 'N' VAC® beyond recommended capacity.
- Damage caused by pump or sprayer running dry, pumping or spraying caustic or flammable materials, or lack of or broken strainers.
- Additional damage to parts or components due to continued use after operational problem or failure occurs. Should operational problem or failure occur, the product should not be used, but delivered as is to an authorized ECHO servicing dealer.

It is a dealer's and/or customer's responsibility to complete and return the warranty registration card supplied with your ECHO product or by visiting WWW.ECHO-USA.COM. Your receipt of purchase including date, model and serial number must be maintained and presented to an authorized ECHO servicing dealer for warranty service. Proof of purchase rests solely with the customer. Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you. Some states do not allow the exclusion or limitation of incidental or consequential damages, so you may also have other specific legal rights which vary from state to state. This limited warranty is given by ECHO Incorporated, 400 Oakwood Rd., Lake Zurich, IL 60047.

DISCLAIMER OF IMPLIED WARRANTIES

This limited warranty is in lieu of all other expressed or implied warranties, including any warranty of FITNESS FOR A PARTICULAR PURPOSE OR USE and any implied warranty of **MERCHANTABILITY** otherwise applicable to this product. ECHO and its affiliated companies shall not be liable for any special incidental or consequential damage, including lost profits. There are no warranties extended other than as provided herein. This limited warranty may be modified only by ECHO.

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ECHO INCORPORATED EMISSION CONTROL WARRANTY STATEMENT FOR ECHO AND SHINDAIWA BRANDS

The Environmental Protection Agency (EPA) and the California Air Resources Board (C.A.R.B.) and ECHO Incorporated (ECHO Inc.) are pleased to explain the emission control system warranty on your 2010 and later equipment/small off-road engine (SORE). New equipment/SORE must be designed, built and equipped to meet stringent EPA and C.A.R.B. anti-smog standards. ECHO Inc. must warrant the emission control system on your equipment/SORE for the periods of time listed below, provided there has been no abuse, neglect or improper maintenance of your equipment/SORE. Your emission control system may include parts such as: carburetor, fuel-injection system, ignition system, catalytic converter/muffler, fuel tank, fuel feed lines, fuel cap assembly, spark plug, air filters, and other associated components. Where a warrantable condition exists, ECHO Inc. will repair your equipment/SORE at no cost to you including diagnosis, parts and labor. The Emission Control System warranty is extended to the original owner including all subsequent owners.

MANUFACTURER'S WARRANTY COVERAGE:

The emission control system is warranted for 2 years or the length of the ECHO Inc. warranty, whichever is longer. If any emission-related part on your equipment is defective, the part will be repaired or replaced by ECHO Inc. or its Authorized Service Representative.

OWNER'S WARRANTY RESPONSIBILITIES:

As the equipment/SORE owner, you are responsible for the performance of the required maintenance listed in your Operator's Manual. ECHO Inc. recommends that you retain all receipts covering maintenance on your equipment/SORE however, ECHO Inc. cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance. As the equipment/SORE owner, you should be aware that ECHO Inc. may deny you warranty coverage if your equipment/SORE or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

You are responsible for presenting your equipment/SORE to an ECHO Inc. authorized service representative as soon as a problem exists. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days. If a warrantable condition exists and there is no Authorized Dealer within 100 miles, ECHO Inc. will pay to ship the unit to the nearest authorized dealer. If you have questions regarding your warranty coverage, you should contact ECHO Inc. at 1-800-673-1558, web site WWW.ECHO-USA.COM or contact Shindaiwa at 1-877-986-7783, web site WWW.SHINDAIWA.COM.

WHAT DOES THIS WARRANTY COVER?

ECHO Inc. warrants that your equipment/SORE was designed, built and equipped to conform with applicable EPA and C.A.R.B. emissions standards and that your equipment/SORE is free from defects in material and workmanship that would cause it to fail to conform with applicable requirements for 2 years or the length of the ECHO Inc. warranty, whichever is longer. The warranty period begins on the date the product is purchased by an end user.

HOW WILL A COVERED PART BE CORRECTED?

If there is a defect in a part covered by this warranty, any ECHO Inc. Authorized Service Dealer will correct the defect. You will not have to pay anything to have the part adjusted, repaired or replaced. This includes any labor and diagnosis for warranted repairs performed by the dealer. In addition, engine parts not expressly covered under this warranty but whose failure is a result of a failure of a covered part will be warranted.

WHAT PARTS ARE COVERED?

Any applicable emission related part not scheduled for "required maintenance" will be repaired or replaced within the warranty period. The repaired or replaced part will be warranted for the remaining ECHO Inc. warranty period.

Any warranted part that is scheduled only for regular inspection in the written instructions supplied is warranted for the warranty period stated above. Any such part repaired or replaced under warranty will be warranted for the remaining ECHO Inc. warranty period.

Any emission related part scheduled for replacement during "required maintenance" is warranted for the period of time prior to the first scheduled replacement point for that part. Any such part repaired or replaced under warranty shall be warranted for the remainder of the period prior to the first scheduled replacement point for that part.

Any manufacturer-approved replacement part may be used in the performance of any warranty maintenance or repairs on emission related parts, and must be provided without charge if the part is still under warranty.

Any replacement part that is equivalent in performance and durability may be used in non-warranty maintenance or repairs, and shall not reduce the warranty obligations of the manufacturer.

Throughout the equipment/SORE warranty period, ECHO Inc. will maintain a supply of warranted parts sufficient to meet the expected demand for such parts.

SPECIFIC EMISSION RELATED WARRANTED PARTS:

- Electronic Ignition System
- Catalytic Converter / Muffler Assembly
- Choke
- Fuel Tank
- Air Filter
- Spark Plug
- Carburetor (complete assembly or replaceable components)
- Fuel-Injection Assembly (or replaceable components)
- Fuel Cap Assembly
- Fuel Feed Line (and associated clamps/connectors as applicable)

WHAT IS NOT COVERED?

Any failure caused by abuse, neglect, improper maintenance, unapproved modifications, use of unapproved add-on parts/modified parts or unapproved accessories.

This Emission Control Warranty is valid only for the U.S.A., it's Territories, and Canada.

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SERVICING INFORMATION

PARTS/SERIAL NUMBER

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, Type 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.

WARRANTY REGISTRATION

To ensure trouble free warranty coverage it is important that you register your ECHO equipment on-line at www.echo-usa.com or by filling out the warranty registration card supplied with your unit. Registering your product confirms your warranty coverage and provides a direct link between you and ECHO if we find it necessary to contact you.

ADDITIONAL OR REPLACEMENT MANUALS

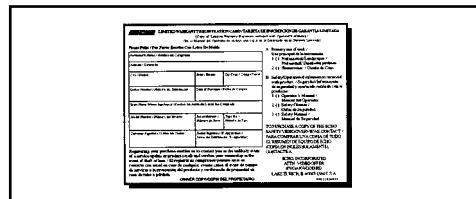
Replacement Operator, Safety Manuals, and Parts Catalogs are available from your ECHO dealer or at www.echo-usa.com or by contacting ECHO Inc., 400 Oakwood Road, Lake Zurich, IL 60047 (800-673-1558). Always check the ECHO Web Site for updated information.

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



**DEALER?
CALL
1-800-432-ECHO
OR
www.echo-usa.com**

**CONSUMER PRODUCT
SUPPORT
1-800-673-1558
8:30 - 4:30 MON - FRI C.S.T.**



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