

Electric Battery (Backpack) Sprayer

Operator's Manual

MODEL:

DSHR - 1000 Serial Number (001001 & Up)



Read, understand and carefully follow safety instructions and the entire Operator's Manual before operating this Sprayer.



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 it easy to use and full of helpful operation tips and SAFETY INFORMATION. Save these instructions.

TABLE OF CONTENTS

INTRODUCTION2	OPERATION 1	3
SAFETY INSTRUCTIONS3	Set Up/Check Operation Area 1	3
Safety Symbols3	Spraying1	3
Equipment 3	After Spraying 1	.3
Parts 2	MAINTENANCE 1	4
Electrical System3	Maintenance Intervals 1	4
Personal Condition & Safety	Cleaning Sprayer 1	4
Equipment 5	Cleaning Battery 1	4
Operation Safety7	TROUBLESHOOTING 1	.5
DESCRIPTION 8	STORAGE 1	.5
DECALS 9	Long Term Storage 1	.5
SPECIFICATIONS10	SERVICING INFORMATION 1	5
ASSEMBLY 10	Parts 1	6
PRE-OPERATION11	Service 1	6
Charging11	Warranty Card1	6
Mixing Spray Material12	Addition or Replacement Manuals 1	6
Putting on Sprayer Pack 12	Ordering Instructions 1	6

Specifications, descriptions and illustrative material in this literature are as accurate as known at the time of publication, but are subject to change without notice. Illustrations may include optional equipment and accessories and may not include all standard equipment.

SAFETY INSTRUCTIONS FOR ELECTRIC BATTERY (BACKPACK) SPRAYER

WARNING A



DANGER

When using electric sprayers basic safety precautions should always be followed to reduce the risk of fire, electric shock, injury from spray materials (chemicals) and personal injury.

Read all of these instructions before attempting to operate this sprayer.

SAFETY SYMBOLS

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



This symbol accompanied by the words **WARNING** and **DANGER** calls attention to an act or condition that can lead to serious personal injury to operator and bystanders.



This symbol accompanied by the word CAUTION calls attention to a potentially hazardous situation, which if not avoided, may result in minor or moderate injury. CAUTION may be used to alert against unsafe practices associated with events that could lead to personal injury.



The circle with the slash symbol means whatever is shown within the circle is prohibited.

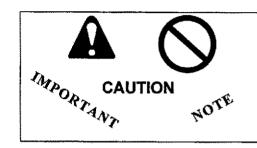
Equipment--

Check entire sprayer before operation:

- Check that the cap seal, check valve and all connections (tank, hose, handle, wand and nozzle) are tight and not damaged (frayed, cracked, swollen, etc.).
- Inspect charger cord and connector for damage.
- Follow all maintenance procedures specified in this manual.
 Keep unit and all associated equipment clean; properly serviced and maintained.

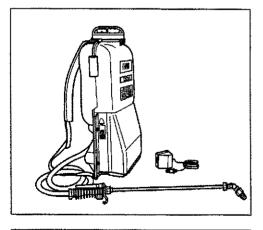
Parts --

- Do not use sprayer if any part is missing or damaged.
- Do not use any attachment, accessory or replacement part, unless it is recommended in this Operator's Manual or by ECHO, INC. Avoid risk of serious personal injury.
- Use only the ECHO 12V 7 AH Battery P/N 211127000 and Charger P/N 211211451 supplied with this unit.



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.







Store Sprayer Indoors --

When not in use the sprayer should be cleaned following Maintenance Instructions on page 14, and stored indoors in a dry and high or locked-up place out of the reach of children.

Electrical System --

WARNING A DANGER

When using electric sprayers, basic safety precautions should always be followed to reduce risk of fire, electric shock, and personal injury.

Hoses: Cords: Do not abuse electrical cords. Do not carry sprayer by the hose (A) or yank charger cord (B) when disconnecting charger from unit. Keep hose (A) away from heat, oil, grease and sharp edges.

Battery:

WARNING I

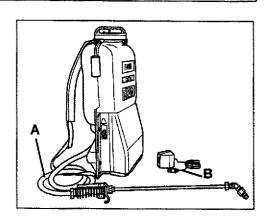
DANGER

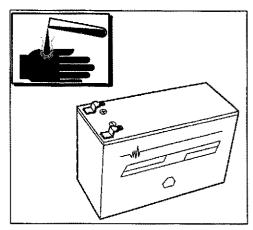
Never throw battery into a fire, it could explode. Keep battery away from spark or flame. Do not clean battery with any flammable substance. Do not take battery apart. Do not open or mutilate the battery(ies). Released electrolyte is corrosive and may cause damage to the eyes or skin. It may be toxic if swallowed. If battery acid gets on skin or clothing, rinse immediately with clean water and baking soda. If acid enters eye, rinse with clean water and baking soda and seek immediate help from a physician.

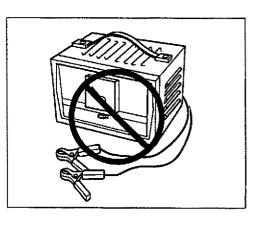
- Exercise care when handling the battery in order not to short the battery with conducting materials such as rings, bracelets, tools and keys. The battery or conductor may overheat and cause burns.
- If the battery will not accept a charge or is depleted requiring disposal, contact your local government authority for proper disposal codes and/or regulations.

WARNING A DANGER

Always use the battery and charger supplied with the unit or replacements approved by ECHO, INCORPORATED. Using the wrong charger, especially an auto battery charger, can result in battery damage or serious personal injury.





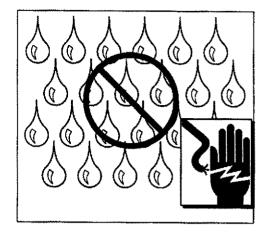


Moisture -

Do not charge sprayer in rain or in wet locations.

Do not use the sprayer in the rain or in damp or wet conditions, which increases the danger of electrical shock and causes slippery footing.

Do not place unit in damp or wet places, which could impair the unit's electrical insulation.



Fire --

WARNING A DANGER

Do not recharge battery in a confined or unvented area. Do not smoke, strike a match or cause a spark in the vicinity of the battery during charging. Serious operator injury may result.

Electrical motors and switches fire off sparks when turned on and off. Never use the sprayer or charger near any flammable substances such as lacquer, paint, benzine, paint thinner, gasoline, adhesives, or grain dust, etc.

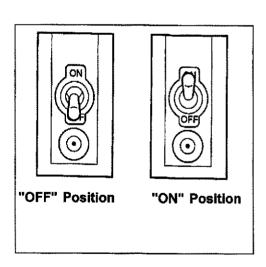


Unintentional Operation --

CAUTION: After use, with the switch turned off, the sprayer holds pressure in the hose and wand. After turning sprayer off, engage wand trigger to release pressure to prevent unintentional sprayer discharge.

Avoid unintentional operation of the sprayer. Do not carry the sprayer with the switch on. When moving the point of operation or taking a break, always switch unit to "OFF" and engage wand trigger to release pressure.

Always turn switch off whenever unit is not in use and when performing any type of maintenance such as cleaning the tank.



PERSONAL CONDITION AND SAFETY EQUIPMENT

Physical Condition --

Your judgment and physical dexterity may not be good:

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

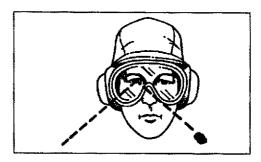
Operate unit only if you are physically and mentally well.





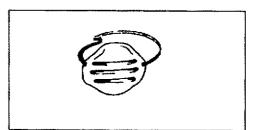
Eye Protection --

Eye protection goggles that meet ANSI Z87.1 should be worn whenever you operate the sprayer.



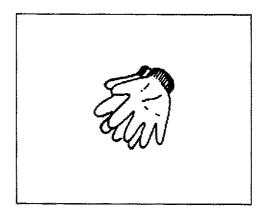
Breathing Protection --

Wear face mask that protects against chemicals (vapor, mist). Follow chemical manufacturer's recommendations for proper breathing protection.



Hand Protection --

Wear gloves that will protect against chemical spills Follow chemical manufacturer's recommendations for proper hand and skin protection.



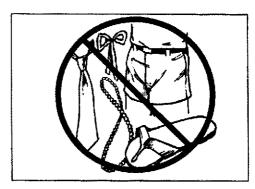
Proper Clothing --

Wear snug fitting, durable clothing;

- Pants with long legs, shirts with long sleeves.
- Wear protective hair covering to contain long hair.
- DO NOT WEAR SHORTS.

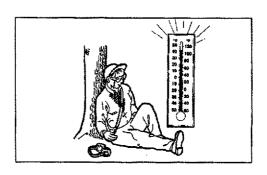
Wear sturdy work shoes with nonskid soles;

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



Hot Humid Weather ---

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



OPERATION SAFETY

Set-up/Check Operation Area

- Do not allow children or individuals whom have not read and understood this Operator's Manual to operate the sprayer.
- Review the area to be sprayed. Keep all people (especially children) and animals away; do not spray in an unventilated area; do not spray in windy conditions; point nozzle only at area to be sprayed; do not leave sprayer, mixing container or spray material unattended.
- Never spray onto the unit or the wire and battery in the bottom
- Never spray on outside receptacles.
- Never spray on power lines.

IMPORTANT: Before using sprayer, lightly oil cap gasket (A) and breather valve (B). Check that breather hole is clear of debris. Failure to do so may cause premature failure and leakage.

- Know how to stop the sprayer and relieve hose pressure quickly.



WARNING A DANGER



Never use with or near flammable materials, caustic acid or hot liquids, otherwise serious injury may result.

- Always follow all applicable laws and manufacturer's instructions for handling, mixing, using, storing and disposing of spray material.
- After use, clean and store sprayer according to directions in MAINTENANCE page 14, and STORAGE page 15.

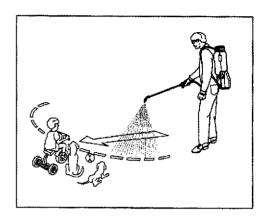
Keep a solid stance -

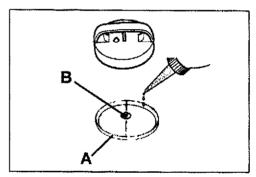
Maintain footing and balance at all times. Do not stand on slippery uneven or unstable surfaces. Do not use this sprayer on a roof top. Do not work in odd positions or on ladders, etc.. Do not overreach.

Avoid unintentional operation --

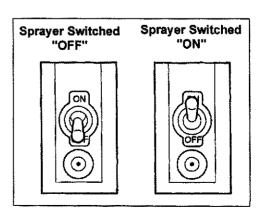
Don't move sprayer from point of operation with switch on. Be sure switch is off when sprayer is not in use, transporting sprayer or charging battery. Always release wand pressure after switching sprayer off to prevent unintentional spraying from hose line pressure.

CAUTION: Do not leave sprayer, mixing container or spray material unattended.











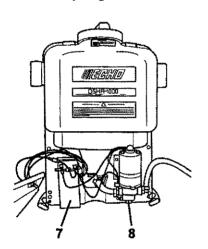
DESCRIPTION

The ECHO product you purchased has been factory pre-assembled, except for the wand, for your convenience.

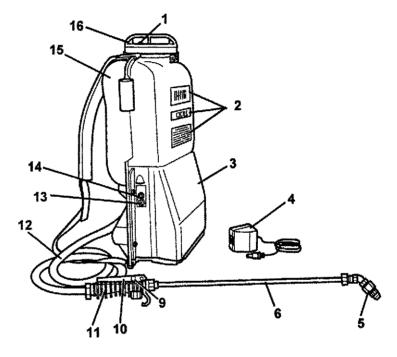
After opening the carton, check for damage. Immediately notify your retailer or ECHO Dealer of damaged or missing parts. For the name and location of an authorized ECHO Dealer near you call 1-800-432-3246. Use the contents list to check for missing parts.

Contents List

- 1 Spraver Assembly
- 1 Operator's Manual
- 1 Warranty Statement
- 1 Warranty Registration Card



- 1- Wand Assembly
- 1- Charger



- 1. BREATHER VALVE - rubber seal in cap with a small hole that allows air pressure to push on spray material in tank, and allows vapors to escape.
- 2. DECALS - supplies important safety instructions for using the sprayer.
- 3, BASE - contains battery and motor.
- 4. CHARGER - charges battery.
- 5. NOZZLE - controls and adjusts type of spray.
- 6. WAND - carries and directs spray material from handle to the nozzle.
- 7. BATTERY - supplies electricity to operate motor; contained inside base.
- 8. MOTOR - pumps spray material to nozzle; contained inside base.

- 9. LOCK - allows continuous spraying.
- 10. LEVER - controls starting and stopping of spraying.
- 11. HANDLE - allows operator to control direction of spray and operation of lever.
- 12. HOSE - carries spray material from tank to handle.
- 13. CHARGING JACK - receptacle for charger
- 14. ON/OFF SWITCH allows electricity from battery to start and stop motor.
- 15. TANK - hold spray material (liquid spray, chemicals)
- 16. CAP contains breather and secures spray material in tank.

DECALS, WARNING/INFORMATIONAL

Locate these safety decals on your unit. The complete unit illustration found in the "DESCRIPTION" section, will help you locate them. Make sure the decals are legible and that you understand and follow the instructions on them. If a decal cannot be read, a new one can be ordered from your ECHO dealer. See PARTS ORDERING instructions for specific information.

WARNING A DANGER

Carefully read and understand the Operator's Manual supplied with this unit prior to filling, using, and/or cleaning this sprayer. This sprayer is operated with liquid under pressure. Failure to observe safety precautions or follow instructions for operating and cleaning, can cause tank, hose and other parts to be weakened and/or rupture under pressure. This can cause SERIOUS INJURY from high pressure discharge of liquids or forcible ejection of parts. DO NOT use flammable materials in this sprayer. Materials could ignite or explode, causing SERIOUS INJURY. DO NOT use hot water, caustic materials or acids. Either can cause corrosion and/or weaken hoses, rubber or plastic components and gaskets. DO NOT use sprayer if hose is frayed, cracked or show signs of swelling or damage. ALWAYS read and understand the directions supplied by manufacturer/packager of product to be sprayed. ALWAYS wear goggles that meet ANSI Z87.1 specifications and protective clothing when using sprayer. ALWAYS use ECHO REPLACEMENT PARTS. Use of improper parts may lead to failure and serious injury. ALWAYS KEEP SPRAYER AND SPRAY MATERIALS OUT OF THE REACH OF CHILDREN. DO NOT direct discharge at people or animals. For use only with 12 volt battery, Echo Part #21127000, and Echo Charger, Part #211211451. To reduce risk of electrical shock: DO NOT expose motor/battery compartment to water. *Check and tighten all connectors and fasteners before using this sprayer.

TANK

WARNING

Risk of injury to person. Do not touch - liquid may be corrosive. If contact with battery acid occurs, follow instructions in Operator's Manual. Connect the red lead to "+", the black lead to "-".

Replace only with 15A max. fuse.

BATTERY

IMPORTANT

DO NOT operate without liquid in the chemical tank. Damage to the pump will occur.REMOVE all liquids from tank, pump, and hose before storage. Damage may occur due to freezing or corrosion. Before using: oil cap gasket, check valve and check that breather hole is clear of debris. Failure to do so may cause premature failure and leakage.

CAP

SPECIFICATIONS

MODEL DSHR - 1000

Depth 7-1/2 inches (19.05 cm)

Width 18-1/2 inches (47 cm)

Height 25 inches (63.5 cm)

Weight, dry (w/o battery)

Electrical

Motor Type D.C. Motor

Battery Type Compact, sealed lead rechargeable

Battery Weight 16.4 lb. (6.75 kg)

Battery Voltage 12V Battery Capacity 7 AH

Tank

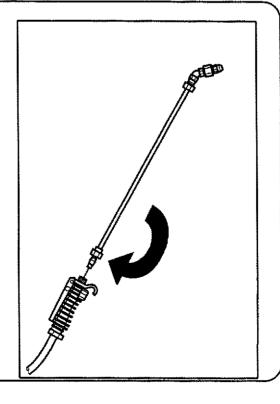
Capacity 5 gal.

Nozzle

Discharge Volume 1 gpm Discharge Pressure 60 P.S.I.

ASSEMBLY

1. Assemble wand to grip. Thread nut clockwise until tight.



PRE-OPERATION

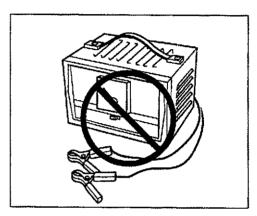
NOTE: The battery is preassembled in the sprayer for your convenience. Follow instructions under "Pre-Operation" for charging the battery before use.

Charging --

WARNING A DANGER

Always use the battery and charger supplied with the unit or replacements approved by ECHO, INCORPORATED. Using the wrong charger, especially an automotive battery charger, can result in battery damage or serious personal injury.

IMPORTANT: Charge the battery before and after use. Do not charge sprayer in rain or wet locations. Avoid charging battery when temperature or humidity is high. Do not charge battery for more than 48 hours, it will reduce the life of the battery. After extended, heavy use or after 4 or 5 years of average use, battery will have to be recharged more and more often and will need to be replaced.



WARNING A DANGER

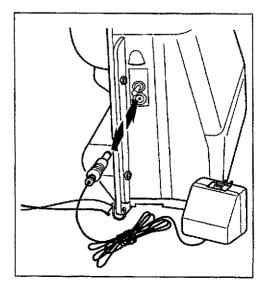
Do not recharge battery in a confined or unvented area. Do not smoke, strike a match or cause a spark in the vicinity of the battery during charging. Operator injury may result.

NOTE: It is normal for the battery and charger to be warm during charging.

Before charging battery.

- 1. Set charger to 12 V, and 8 hour charge setting.
- 2. Carefully plug charger cord into charging jack below switch.
- 3. Plug Charger into 120 V AC electrical outlet.

IMPORTANT: Set charger to 12V to avoid damage to electrical system.



NOTE: Charge Indicator Lamp shows that charging has started. When charger is set to "8 Hour" position the indicator lamp will glow steadily and battery will charge for 8 hours. After 8 hours charger will shut off and lamp will go out. When charger is set to "Trickle" the indicator lamp will continuously blink indicating slow charge is taking place. Continuous trickle charging will not damage or prematurely wear out the battery. Charging an already fully charged battery in the "8 Hour" position will not damage battery.

4. "Complete" charging depends upon amount of use. Charging time requirement vary from 5 - 48 hours.

IMPORTANT: Do not continuously repeat 8 hour charge mode for longer than 48 hours, otherwise, premature battery wear may result.

MIXING SPRAY MATERIAL

WARNING A DANGER

Never use with or near flammable materials, caustic acids or hot liquids, otherwise serious injury may result.

Always follow all applicable laws and manufacturer's instructions for handling, mixing, using, storing and disposing of spray material.

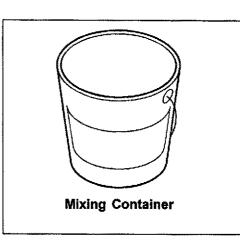
IMPORTANT: Make sure tank and mixing container are clean to prevent contamination from harming plants or animals.

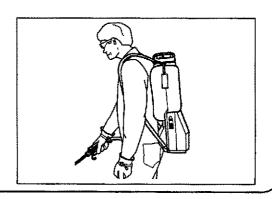
After use, clean and store sprayer according to directions in MAINTENANCE page 14, and STORAGE page 15.

- Mix spray material following manufacturer's direction, using a separate, approved, clean mixing container.
- 2. Carefully pour mixed spray material into tank.
- Carefully wipe up any spilled material. Rinse or dispose of cleaning cloth according to the chemical manufacturer's directions.

Putting on Sprayer—

1. Place harness over shoulders. Adjust straps as necessary.





OPERATION

WARNING

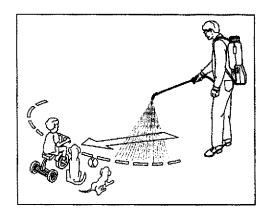


DANGER

Read and understand all safety information under SAFETY INFORMATION before operating the sprayer.

Set-up/Check Operation Area

Review area to be sprayed. Keep all people (especially children) and animals away; do not spray in an unventilated area; do not spray in windy conditions; point nozzle only at area to be sprayed; do not leave sprayer, mixing container or spray material unattended.



Spraying

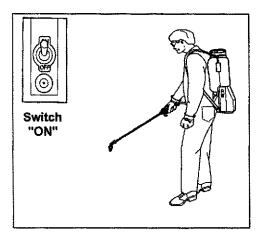
WARNING A DANGER



Do not use this sprayer before reading and understanding the SAFETY INSTRUCTIONS in this Operator's Manual.

IMPORTANT: Do not operate sprayer without liquid in tank. Pump will be damaged.

1. Aim nozzle, turn switch on, squeeze handle lever. For continuous operation, slide button lock forward.



After Spraying

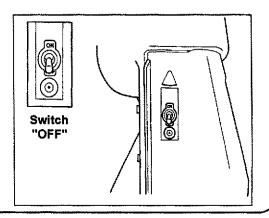
WARNING A DANGER



Do not leave sprayer, mixing container or spray material unattended.

- 1. Turn switch off. Engage wand trigger to release pressure.
- 2. Clean sprayer (see MAINTENANCE page 14).
- 3. Store sprayer safely (see STORAGE page 15).

CAUTION: After use wash face and hands with soap and water to remove chemicals from skin.



Maintenance

Cleaning Sprayer —

1. Store unused spray material in an approved container following manufacturer's directions.

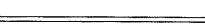
IMPORTANT: Do not use hot water to clean sprayer: seals and other parts could be damaged.

- 2. Flush tank and system with cool, clean water, using mild detergent or chemical neutralizing agent. Spray for several minutes.
- 3. Flush entire system, using cool, clean water. Spray for several minutes.
- 4. Clean cap gasket and breather valve.

Cleaning Battery —

IMPORTANT: Before using, lightly oil cap gasket (A) and check valve (B).

5. Store safely according to instructions in STORAGE page 15.



WARNING A DANGER

Never throw battery into a fire. It could explode. Keep battery away from spark or flame. Do not clean battery with any flammable substance. Do not take battery apart. If battery acid gets on skin or clothing, rinse immediately with clean water and baking soda. If acid enters the eye, rinse with clean water and baking soda and seek immediate help from physician.

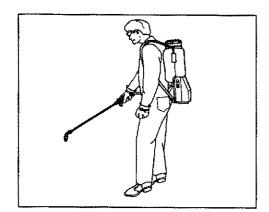
1. Clean battery with a clean, damp cloth.

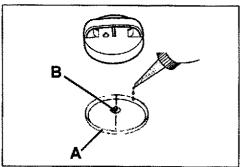
Adjusting Pump Pressure —

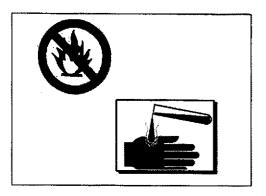
Pump pressure is set at 60 P.S.I. Pressure can be adjusted from $40 \sim 100$ P.S.I.

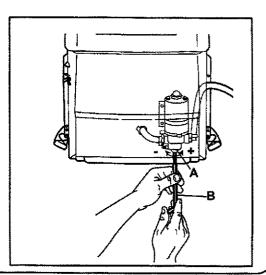
To adjust pressure ----

- 1. Turn switch off and relieve hose pressure.
- 2. Remove contents from chemical tank.
- 3. Lay unit horizontal with decals facing up. Access motor pressure adjustment screw through hole located at the bottom of the sprayer.





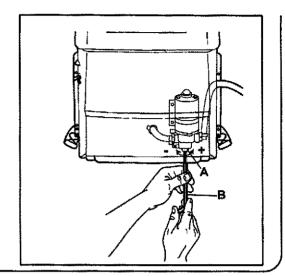




- Turn adjusting screw (A) using 5/64" Allen Wrench (B) to change pressure settings. Turn screw clockwise to increase pressure. One turn clockwise will increase pressure from 60 P.S.I. to a maximum 100 P.S.I. Turn screw counter clockwise to decrease pressure. Decreasing pressure adjustments from original setting is as follows:
 - -1/4 turn counter clockwise 50 55 P.S.I.
 - -1/2 turn counter clockwise 45 50 P.S.I.
 - -3/4 turn counter clockwise 40 45 P.S.I.
 - 1 turn counter clockwise approx. 40 P.S.I.

NOTE: As pressure is decreased sprayer will start to pulsate.

IMPORTANT: Do not turn adjustment screw more than one full turn counter clockwise from original setting, otherwise, it may come loose from the motor.



TROUBLESHOOTING

Problem Cause Spray uneven or not fine enough Clog(s)/damaged part(s)

Check filter in tank, pump or wand

Motor damaged

Sprayer leaks or drips from

bottom of tank

Hose clamp loose or

Broken

Sprayer leaks Loose or broken

Connectors

Sprayer won't spray

Tank empty

Clog(s)/damaged part(s)

Loose or broken connectors

Battery weak

Motor damaged

Pump will not run Pressure in hose already at maximum

> Fuse blown Battery dead

Clean system/replace part(s)

Tighten/replace

Fill tank

Correction

Replace motor

Tighten/replace

Tighten/replace

Clean system/replace parts

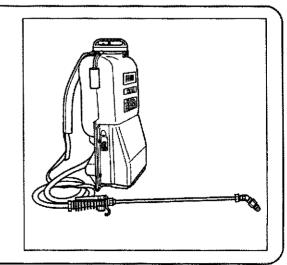
Charge/replace Replace

Engage wand trigger Return to your ECHO Dealer

Return to your ECHO Dealer

STORAGE

- 1. Clean sprayer following MAINTENANCE Instructions on page
- 2. Oil cap seal gasket and cap breather valve.
- 3. Store indoors in a cool dry and high or locked up place out of reach of children.



SERVICING INFORMATION

Parts --

Genuine ECHO Parts and ECHO 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. For future reference, write them in the space provided below.

Model No	SN.
----------	-----

Service --

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

Warranty Card ---

This card is our means of registering all original owners of ECHO equipment. The card plus proof of purchase provides you the assurance that authorized warranty work will be done. It also provides a direct link between you and ECHO if we find it necessary to contact you,

Additional or Replacement Manuals --

<u>Operators and Parts Manual</u> are available for purchase from your ECHO dealer or directly from ECHO. {See ordering instructions below}.

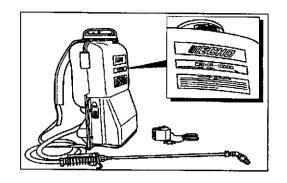
Ordering Instructions

To obtain a Parts Catalog or Operator's Manual, send a check or money order for \$2.00 per Parts Catalog or \$1.50 per Operator's Manual made payable to ECHO, INCORPORATED. State on a sheet of paper model number and serial number of the ECHO unit you have, part number of the manual (if known), your name and address and mail to address above.

Available Parts Lists:

DSHR-1000

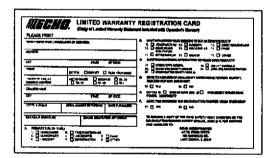
Part Number 99922202789



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