Owner's Manual
SC-MB-e

ESS Electrostatic Spraying Systems

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OWNER'S MANUAL
SC-MB-e
SPRAYER

Electrostatic Spraying Systems, Inc.

62 Morrison St. · Watkinsville, GA 30677-2749

This manual last updated December 9, 2020

CONGRATULATIONS!

You have just purchased one of the most advanced spraying systems on the market today. Electrostatic Spraying Systems, Inc.[1] (ESS) is committed to providing you with powerful spraying systems that are easy to operate and maintain.

The ESS electrostatic sprayers are the result of the efforts and creativity of a variety of people. In addition to input from engineering, marketing, and manufacturing personnel, suggestions from our customers have been implemented into the design of our equipment. We would like to hear your ideas as well! If you have any suggestions or comments regarding the products or service of ESS write or call us at:

Electrostatic Spraying Systems, Inc.

62 Morrison Street
Watkinsville, GA 30667-2749
Phone: 706-769-0025
1-800-213-0518
Fax: (760) 769-8072
Email: support@maxcharge.com

Please take time to read this manual before operating your new ESS SC-MB-e Backpack Sprayer. This manual contains important instructions for the safe operation of this equipment. It also includes helpful suggestions to maximize productive use of the SC-MB-e. Essential cleaning instructions should be followed to maintain your spraying at peak efficiency. Please carefully read and follow all instructions for your own safety and the safety of those around you.

Thank you!
We appreciate your business, and we are proud that you have selected an ESS sprayer for your operation.

Your new sprayer has been thoroughly tested and calibrated at our factory. If you have problems with it, please get in touch with us immediately. We will be glad to answer any questions you have concerning our equipment or service. ESS strives to support its customers with efficient, helpful, and friendly service. We appreciate your business and sincerely hope that Electrostatic Spraying Systems can meet your present and future spraying equipment needs.

For your personal records

Please record the model and serial numbers of your new sprayer here.

SC-MB-e

_____
Base Serial Number

_____
Spraywand Serial Number

_____
Date of Purchase

[1] ESS SC-MB Sprayer, MaxCharge™ and the ESS logo are copyrights or registered trademarks of Electrostatic Spraying Systems, Inc.

Notes

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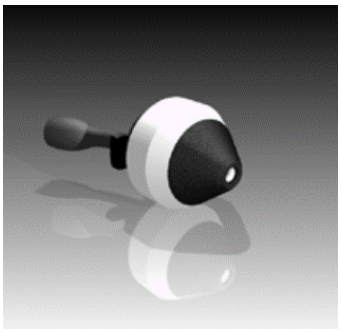
Your SC-MB-e sprayer may appear slightly different that the photographs and drawings in this manual. We at ESS are constantly listening to customer input and we make frequent improvements to our sprayer designs.

Overview of the ESS Model SC-MB-e Air Assisted Electrostatic Sprayer

Air-assisted electrostatic sprayers produce electrically charged spray drops that are carried to the target in a low pressure, gentle air stream. The heart of the SC-MB-e Sprayer is the patented MaxCharge™ nozzle.

Air and liquid enter the rear of the nozzle separately. Just before leaving the nozzle, the air hits the liquid stream to produce many thousands of tiny spray droplets that pass through the charging ring. An electrical charge is applied to the spray droplets by the charging ring. Then the charged spray droplets are blown out of the nozzle to move onto the target where they are attracted to the surfaces by electrostatic forces. The electrostatic charge induced by the MaxCharge™ nozzle is strong enough to allow the droplets to move in any direction necessary to cover any surfaces, even defying gravity to coat the underside of leaves and the back side of the target objects. The result is uniform spray coverage on hidden surfaces that other sprayers would typically miss. Air-assisted electrostatic sprayers give more than twice the deposition efficiency of hydraulic sprayers and non-electrostatic types of air-assisted sprayers. The user benefits in terms of significant reductions in application costs, as a result of the minute size of the droplets.



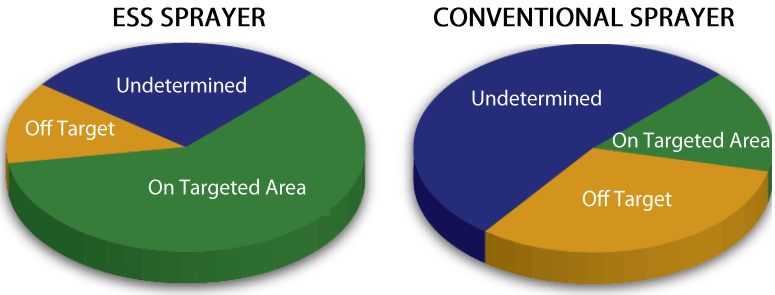
The Maxcharge™ spray nozzle is what makes ESS the industry leader in the production of electrostatic spraying equipment .

The MaxCharge™ nozzle is easy to clean and corrosion-proof. The interior ceramic outlet resists wear three times better than stainless steel outlets. These features combine to give the best spray coverage on the market. This quality product is virtually maintenance-free and assures you save in the application of chemicals.

The comparison of air-assisted electrostatic spraying versus conventional spraying is dramatic. Our sprayers optimize coverage for insect and disease control, as well as, food sanitization and safety.

Electrostatically charged droplets are strongly attracted to the underside of surfaces.

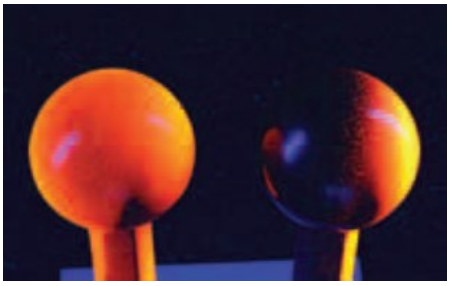
Where Does The Spray Go?



The University of California completed a series of tests to investigate what happens to spray liquid after it leaves the nozzle.

Conclusion: ESS technology places over 4 times the amount of spray onto the plant surface using 1/2 the amount of chemicals. Furthermore, they also reported that ESS sprayers send 2/3 less chemicals to the ground and into the air. Less chemical used overall, less waste, and less drift than conventional equipment.

Imagine the environmental benefit!



A Picture Worth A Thousand Words…

In this test, fluorescent dye has been sprayed on two round knobs. The left knob was sprayed with the electrostatic system ON; the right knob was sprayed with the same sprayer, but with the electrostatic system OFF. Note how even the coverage is on the electrostatic knob.

Safe Operation of the SC-MB-e Sprayer

OPERATORS RESPONSIBILITY

Read the Owner's Manual! Failure to do so is considered a misuse of the equipment. It is the responsibility of the user to read the Operator's Manual to understand the safe and correct operating procedures for the sprayer and to maintain the sprayer according to the manufacturer's recommendations. It is the operator's responsibility to ensure that all who are using this equipment read this manual.

The operator is responsible for inspecting the equipment and for repairing and replacing damaged or worn parts to prevent damage or excessive wear to other parts. It is also the operator's responsibility to deliver the machine for service or to replace defective parts which are covered by the standard warranty.

Lack of attention to safety can result in reduction of efficiency, accident, personal injury, or death. Watch for safety hazards and correct deficiencies promptly. Use the following safety precautions as a guide when using the machine.

- Read the Owner's Manual. Failure to read the manual is considered a misuse of the equipment.
- Use the SC-MB-e sprayer ONLY for its intended use as described in this manual.
- Do not allow a child to operate the SC-MB-e sprayer. Do not allow adults to operate the sprayer without proper instruction.
- Use extra care when spraying on stairs. Do not place sprayer on stairs.
- Do not use without liquid bottle in place.
- Always empty liquid bottle after use and before transporting the sprayer.
- Store sprayer in a dry place. Do not expose to freezing temperatures.

CAUTION: SHOCK HAZARD

The SC-MB-e sprayer has been engineered to be very safe during normal operation. However, as with all line-powered electrical equipment and tools, certain safety procedures need to be followed:

- Use a GFCI (Ground Fault Circuit Interrupter) power outlet whenever possible.
- Always unplug by grasping the plug. Do not unplug by pulling on the chord.
- Never pull plug with wet hands.

CAUTION: HOT SURFACE

- The compressor becomes hot to the touch during normal use. Do not touch the SC-MB-e compressor after it has been running.
- Stay clear of the hot compressor when making adjustments inside the SC-MB-e case or switching bottles.
- The sprayer's compressor is equipped with a thermal overload switch. If it overheats, the compressor will stop running. Unplug the sprayer and let it stand for one hour with the door open. The unit should then be able to restart.

CHEMICAL SAFETY PRECAUTIONS

Read and follow all instructions on the chemical or pesticide manufacturer's label.

- Use protective clothing, eye protection and gloves when mixing chemicals to be sprayed with the SC-MB-e sprayer.
- Always use a respirator and eye protection when spraying with the SC-MB-e sprayer.
- Follow the chemical's manufacturer's recommendations in handling, mixing, applying, storing and disposing of chemicals.
- Be aware of poisoning symptoms and know the appropriate first aid.
- Know the length of time needed to pass before allowing people and pets to go back into the sprayed area.

Pacemaker Disclaimer:

If you have a pacemaker, we recommend that you do not operate an electrostatic sprayer, however, if you elect to do so, know that you are accepting any risk associated therewith.

Just to be clear, no one, with a pacemaker, has ever had a problem using our electrostatic sprayers. Several years ago a physician expressed concern, although his opinion was un-tested and not founded on any research. Since that time, we have taken the safest approach and recommended that those with pacemakers do not operate our electrostatic sprayers.

Image of Safety Decal Sticker

If you use a pacemaker, use our electrostatic sprayer at your own risk.

Safety Decals

Appropriate safety decals are placed on ESS equipment in order to alert the operator to possible dangers. If any decal is missing or damaged, please contact ESS immediately for a replacement decal.

PROTECT YOUR LUNGS
PROTECT YOUR EYES

This label is placed on top of the SC-MB-e Sprayer near the quick connect sockets.

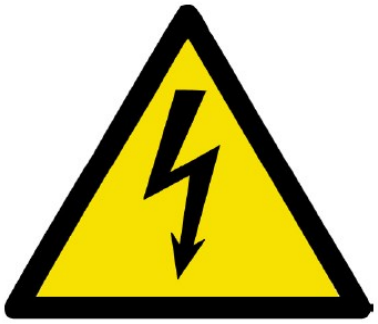
The SC-MB-e compressor becomes hot during normal operation.

DO NOT TOUCH

If you use a pacemaker, use our electrostatic sprayer at your own risk.

READ AND FOLLOW THE CHEMICAL MANUFACTURER'S INSTRUCTIONS CAREFULLY

It is extremely important for the owner/operators safety as well as the safety of other people in the vicinity that all chemical safety precautions are followed.



There will be a small shock when using our sprayers. To avoid this shock place your thumb on the bolt at the top of the spraywand.

ESS is currently redesigning all sprayer labels. Your sprayer may not have the same version of these decals. If you desire an updated decal, please contact Customer Service at 1-800-213-0518.

Troubleshooting

Sprayer will not turn on:
- ❑ Have the batteries been fully charged for the unit and the spraywand?
- ❑ Has the machine been turned on?
- ❑ Has the compressor overheated? Be careful, it may be hot. Let the sprayer cool with the case open. Try again in one hour.

Spray quality problems:
- ❑ Depress the trigger on the spraygun, and while spraying water, place your finger over the nozzle blocking the liquid and air. This will force air back through the spraygun and possibly clear any obstructions in the liquid line.
- ❑ Check that all hose "quick connections" are connected including hoses connected to spraygun, to the case and inside the case, to the tank.
- ❑ Is the nozzle cover dirty? Unscrew the nozzle cover and wash inside nozzle cover with water. With the nozzle cover removed, check to see if liquid port is clogged. Clean out with paper clip.
- ❑ Nozzle can freeze up when the ambient temperature is below 50°F.
- ❑ If the spraygun has a liquid filter, check if it is clogged. If clogged, remove and rinse clean. The spraygun, tank and hose should be cleaned and rinsed with water each day.
- ❑ Check to make sure that the pressure relief valve on the compressor has not been tripped and remains open.
- ❑ If your spraygun model has a liquid filter and a flow disc, check to make sure you have a "flow disc" in the liquid line. This is a small disc that is in the liquid line next to the filter. A spare flow disc comes with the parts kit.

Charging Light will not come on:
- ❑ If the red LED on the handle of the spraygun does not come on, it indicates that the spray is not receiving an electrostatic charge, or that the light has burned out.
- ❑ Make sure the batteries are charged. Fully charged 9v batteries will last for about 5 continuous hours of use. If in doubt, remove the cover from the spraygun battery compartment, and replace the two rechargeable 9-volt batteries with 2 regular 9-volt batteries.

Other Comments:
- ❑ Always refer to the "Troubleshooting Guide" in your manual.
- ❑ Be aware that with an electrostatic sprayer, the operator at times will experience a slight static build up, and the nozzle will drip at times due to to the accumulation of charged droplets.
- ❑ If you continue to experience problems, please contact your distributor.

This label is placed inside the SC-MB-e case for handy reference.

ESS

Charger for
Electrostatic Spraying Systems

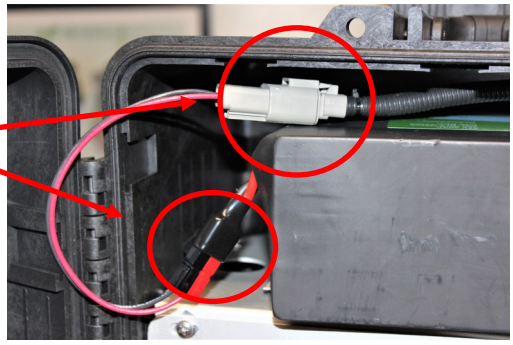
LED	MODE
●	Battery initialization & analysis
●	Fast charge
●●●●●	Top-off charge
●	Trickle charge
●●●●●	Error

With the mains connected, the LED will be orange the first 5-7 seconds, and be orange when the initialization and analysis starts. If a battery is connected, the actual charging will start a few seconds later when the LED changes to red/orange.

This label is placed on the charger of all spraywands.

PREPARATION INSTRUC-

Steps for Preparation:



1. Open the suitcase when the device is used for the first time.
2. Connect the quick disconnects on the battery to the suitcase.
3. Place the battery inside the suitcase.
4. Close the suitcase after the connection is complete.

5. Connect one end of the spraywand power cord to the power output port and connect the other end to the power input port.
6. Connect the quick connector at one end of the air hose (thick hose) / liquid hose (thin hose) to the corresponding connector on the spraywand.

To connect or disconnect the air or liquid connections on the spraywand, pull back the outer sleeve of the socket to release

Be sure that the red dots line up before inserting the line into the wand.

DO NOT TWIST THE CONNECTIONS.

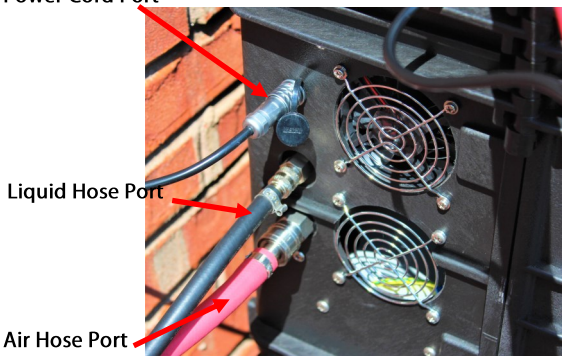
7. Connect the quick connector at the other end of the air hose (thick hose) / liquid hose (thin hose) to the corresponding connector on the suitcase.

8. Connect the power cord to the corresponding suitcase power port on the side of the case.

9. Add disinfectant to the tank.

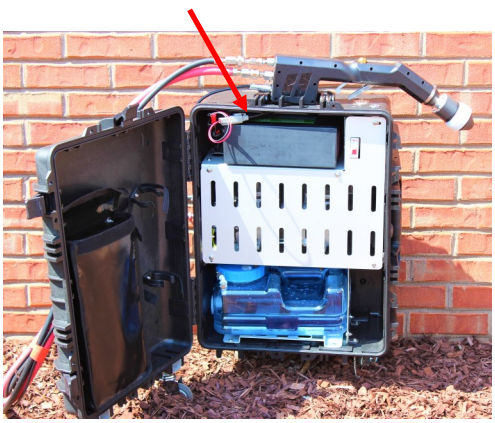
Note:
If the small brass/stainless steel rings are visible once the socket is placed on the quick connect plug, the connection is not secure.

Be sure to connect the quick connect and the socket securely.



DO NOT BLOCK any of the vents or the Air Intake Filter. Doing so will cause the SC-MB-e compressor to overheat and trip the thermal overload switch.

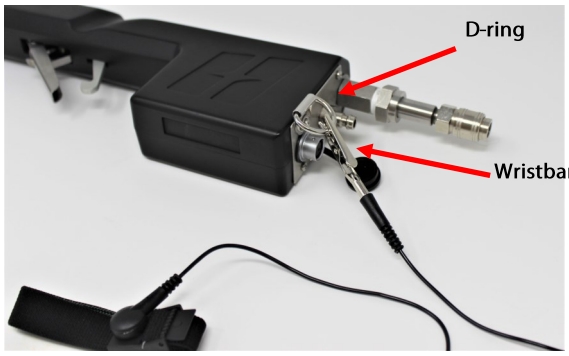
Battery Placement



Anti-Static Wristband

With any electrostatic sprayer, it is essential to have good grounding, so that the charge can be transmitted to the droplets efficiently. It is not necessary, but many users find it beneficial to use an "anti-static" wrist strap, attached to the D-ring at the base of the spraywand, to help secure better grounding. With the anti-static wrist strap, the spraywand has an extra measure of grounding as well as the potential for more consistent and more effective charges on the droplets. The anti-static wrist band also helps to eliminate small electrostatic discharges back to the user.

Anti-static Wristband



Cautions:

Do not operate the SC-MB-e in standing water

Do not immerse the SC-MB-e compressor

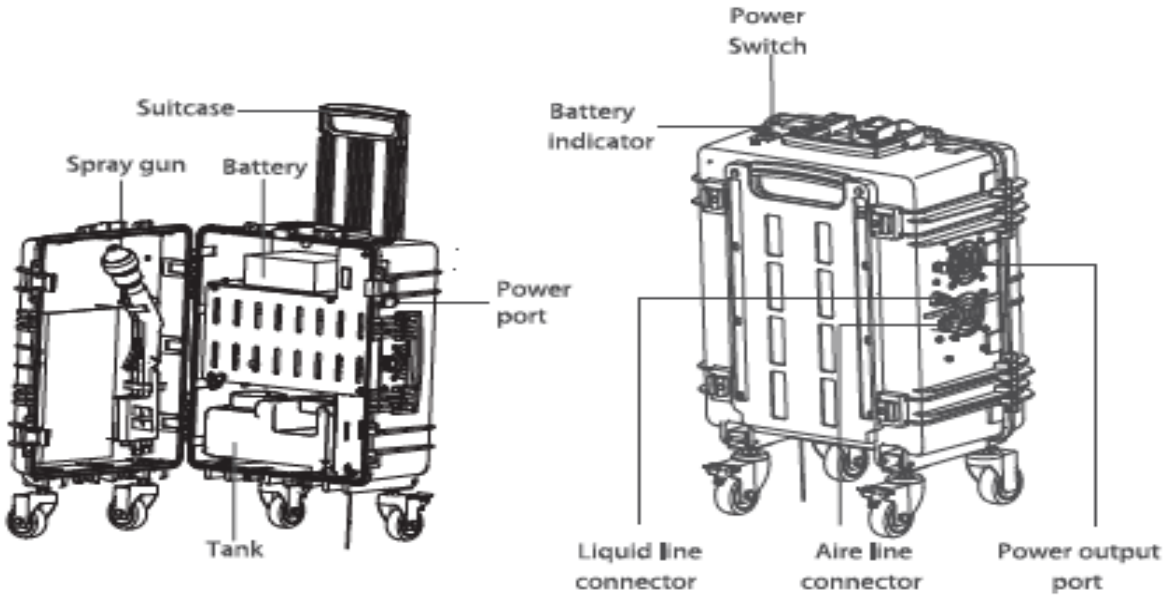
Make sure the device is closed before connecting to the power source.

Be sure to keep the suitcase closed when spraying to prevent mist from entering the compressor and causing a short circuit.

The SC-MB-e compressor becomes hot enough to burn during normal operation.

DO NOT TOUCH .

Diagram of the SC-MB-e Sprayer



Pre-Spray Check

1. Inspect Nozzles

Check nozzle cover to make sure it is on hand tight (do not overtighten or use a wrench). Make sure the hood is seated firmly to the nozzle base and against the external o-ring.

2. Preparing the Tank Mix

If you will be spraying wettable powders it is a good idea to use a compatibility agent with the water and tank mix. Compatibility agents are chemicals mixed with the water that make mixing easier and keep heavy concentrations uniformly in suspension. Check with your local chemical supplier for some that are available.

If you intend to use wettable powders in your sprayer, be sure that the solution is extremely well-dissolved, as it can very easily clog your sprayer.

Simply depress the latch on the pull handle to extend the Pull Handle fully. To stow the handle again de-press the latch again and push the Pull Handle in.

The Air & Liquid Delivery System

Extended Pull Handle

On/Off Switch

The Air Compressor

The air compressor produces compressed air which atomizes and propels the liquid. It runs on a 24v Life Ion Battery, when fully charged you can spray for up to 1.5 hours. The On/Off switch is on the top of the suitcase. Check the fans on the side of the case for any debris build up.

Steps for Operation

1. Turn on the power switch.
2. The charging indicator glows red to indicate the electrostatic charging system is working.
3. Engage the trigger to spray.
4. To shut down– disconnect quick connector on tank, continue to spray for 1 minute; once there is no longer any liquid being sprayed out, release the trigger and turn off the power switch.

NOTE: the air in the lines need to be emptied before operation, so engage the trigger for 5-10 seconds, or until you can see the mist coming out of the spraywand.

NOTE: At times, there could be a drip effect from the nozzle. The drip results from the accumulation of tiny electrostatically charged droplets wrapping back and coating the spraywand nozzle. The nozzle is NOT leaking. To help with this, we have included a terry cloth tube that can go around the nozzle and collect any drips.

You will need to put this cloth on the nozzle before you turn your sprayer on.

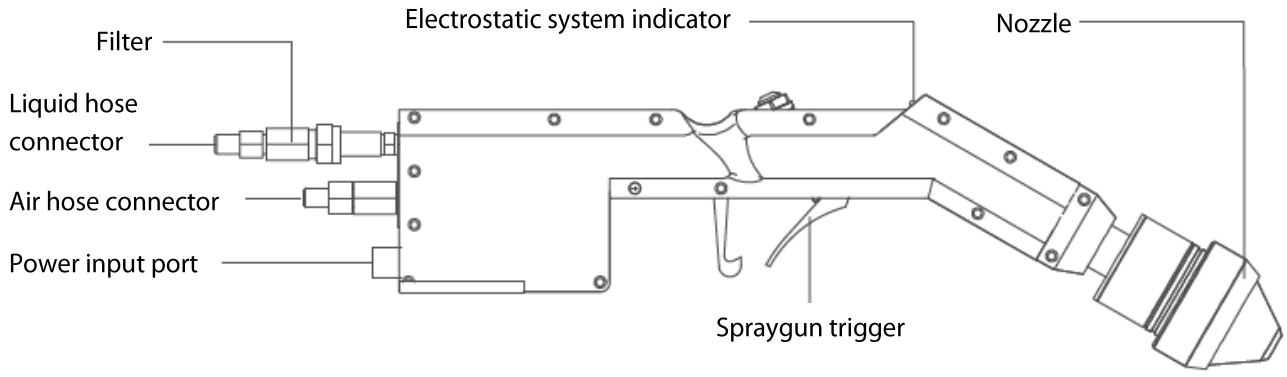
Alternatively, some users hold a towel in their hand and periodically wipe the nozzle cover dry.

Terry Cloth Tube

Towel Method

SPRAYWAND POWER CONNECTION

The spraygun is powered by a battery installed in the backpack. One end of the spray gun power wire is connected to the power output port, the other end is connected to the power input port.



Spraywand

The spraywand is held by the operator during spraying. Activation of the trigger causes liquid to spray. The Spraywand has the following user-serviceable parts: the liquid filter assembly (optional) and the nozzle assembly. Nothing inside the Spraywand shell is user-serviceable. **Do not open the spraywand shell; doing so will void the warranty on the spraywand.**

NOTE

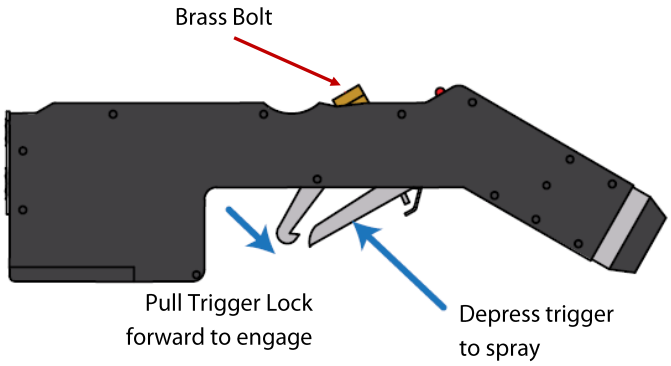
Cleaning the Spraywand

Always rinse the spraywand out with clean soapy water after ever day's spraying. That is the most important thing you can do to ensure trouble free operation of your SC-MB-e sprayer. By cleaning after each and every working day you will avoid the long-term chemical buildup that eventually causes clogs, poor spray patterns and shortens nozzle life.

Establish maintenance intervals to disassemble and clean the nozzle. Your nozzle maintenance schedule will vary depending on the types of chemicals used and adherence to pre-and post-spray checks. In general it is sufficient to thoroughly clean nozzles after 50 hours. If heavy loads of wettable powders are used, the cleaning schedule should be sooner.

Trigger

The trigger turns the spray on and off. It can be continously held for operation or it can be locked in place. When the sprayer is turned on air will continously flow through the spraywand.



To Engage/Disengage the Trigger:

1. Depress the trigger up towards the body of the spraywand to start spraying.
2. To keep spraying, either keep holding the trigger or lock it in place by pulling up the lock and hooking the trigger.
3. To stop spraying when the trigger is not locked, let go of the trigger.

To Clean the Trigger:

1. Remove the brass bolt, by unthreading it, be careful not to lose the spring, plunger, copper washer, and small brass bushing inside the trigger. Note how they fit inside so they may be replaced properly.
2. Check inside the trigger for blockage. Clean out any debris with compressed air, warm soapy water.
3. Replace the spring and plunger. Rethread the brass bolt into the top of the spraywand until tight.

Hose

To maintain optimal use of your sprayers hose, please remember the following;

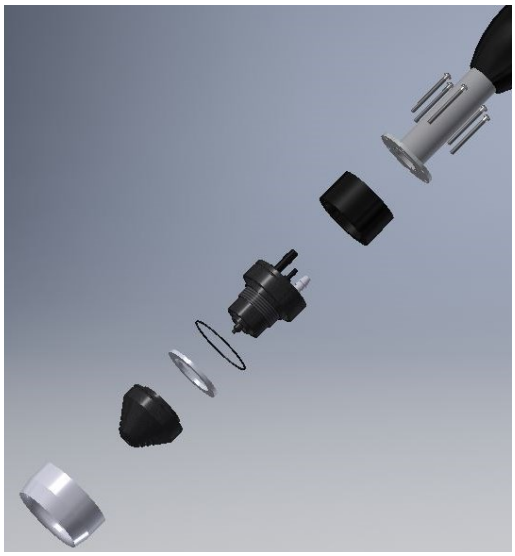
- Do not kink or cut the hose
- Inspect the hose regularly for cuts, ruptures, tears or breaks.
- Do not pull the case around with the hose.
- Use the handles to move the case from one place to another.

Should you notice anything wrong with your hose, please contact ESS to have this hose replaced.

Nozzle Assembly

It is very important to follow all the maintenance and cleaning procedures to ensure that the electrostatic sprayer will function properly. Although the MaxCharge™ nozzle will outperform all electrostatic spray technology on the market, regular cleaning will ensure peak operating performance.

The nozzle assembly is located at the end of the spraywand wand. It is composed of a nozzle body, internal o-ring, Teflon ring, cover, external o-ring, and a hood (See labeled drawing). To access the nozzle components, just unscrew the nozzle cover by hand.



To Clean the Nozzle Assembly

1. Slide the hood over the nozzle cover.
2. Unscrew the cover from the nozzle base and remove the teflon ring. Clean any debris from around the nozzle tip.

   NOTE: There is a small o-ring in the nozzle around the base of the tip take caution that it doesn't fall off. If it does, clean it and press back into place. Also, take care not to damage the nozzle tip when the cover is removed.
3. Soak the ring, cover and hood in a mild detergent solution. Use a small brush (soft or mild bristle) to clean the inside of the cover and the hold through it. Also, be sure to clean the hood. It is important to clean inside the hood and the two cavities. Rinse thoroughly.
4. Scrub the nozzle base with the detergent solution using a soft bristle brush. Clean the ceramic outlet. Be sure to thoroughly clean the base cavity and take care not to damage the nozzle tip. Rinse and make sure the small o-ring is in place.
5. Reassemble nozzle by placing the teflon ring on the base and screwing the cover on **hand tight**. Next slide the hood over the nozzle and seat it securely against the external o-ring. Wipe clean the exterior of all hoses and fittings connected to the nozzle.

The electrode cover should be hand tight. Never use pliers or other tools to tighten it. The insulating ring should be loose.

NOTE: There will be a drip effect from the nozzle. The drip results from the accumulation of tiny electrostatically charged droplets wrapping back and coating the spraywand nozzle.

Spraying with your ESS Sprayer

Note: When using unfamiliar equipment or chemicals, always test on a small area before treating the entire surface. Do not use a chemical with the ESS sprayer if the label prohibits use in low-volume sprayers. This unit is for heavy-duty use. During operation the hose will heat up naturally, therefore, be aware of heat and periodically allow for breaks if it gets too hot.

Spray Technique

As with spray painting, the goal is to achieve even coverage over the surface. The ESS MaxCharge™ spraywand is designed to help you do just that. By propelling the chemical spray with a gentle air flow, you can stay well away from the target surface and let the electrostatic attraction do the rest of the work.

Please Note: The spray droplets are very, very fine (about 40 microns each). If you are used to working with a conventional sprayer, you may make the mistake of thinking the target is not wet enough because you do not see large beads of liquid. In fact, after a pass with the SC-MB-e's MaxCharge™ spraywand, the surface of the target should just barely glisten with moisture. The fine droplets will evaporate quickly.

Tips to achieve the best possible coverage with the ESS SC-MB-e sprayer.

1. Before each job, ensure that your sprayer is in good working order (see the pre-spray checklist on page 15 of this manual)
2. The optimal spraying distance is at least 18 inches away from the target surface, however 36 to 48 inches may provide a more even coating. This allows the fine mist produced by the MaxCharge™ nozzle room to develop into a spray cloud that will be attracted to the target surface.
3. Hold the spraywand at right angle to the target surface. Starting at the highest point and using Zig-Zag horizontal strokes about 1 meter (3 ft.) wide, spray down to the lowest point.
4. You can use vertical strokes if it suits the area better. Just make sure to work in a methodical pattern and let your stroke overlap the previous stroke by about 50%.
5. When moving to the next section, allow it to overlap the previous section by a few inches. Do not leave a gap.
6. The target surface should just barely glisten with the spray. Do not over saturate the surface; if you see runs or puddles it means you are wasting chemicals. Do check to make sure the newly-sprayed surface is very slightly damp.
7. Be careful to keep the spraywand barrel as level as possible. If you allow the nozzle to point down too much, it may drip occasionally.
8. Unlike spray painting, you do not have to stop the spray on every return stroke. Just engage the trigger lock and concentrate on the regular pattern of spraying.
9. Periodically check to make sure the red light is illuminated on the spraywand.

Note:
If you lift the spraywand above chest height, it will most likely start to sputter or even stop spraying.

A Note About Operating Temperatures

The Maxcharge nozzle should always be operated at temperatures above 10° Celsius (50° Fahrenheit). When the ambient temperature is colder than this, the evaporative cooling caused as the spray is atomized will freeze the nozzle opening.

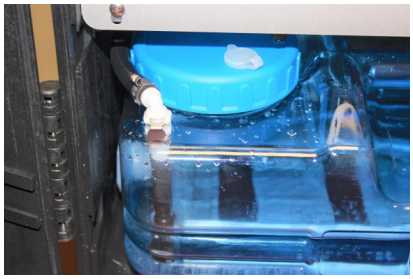
Nozzle freeze-up can also occur when the liquid to be sprayed is colder than 10° C (50°F).

IMPORTANT

Water temperature must be at least 10° C (50° F). When the liquid and air meet in the nozzle, the temperature of the liquid decreases. As a result, water at temperatures below 10° C (50° F) may freeze and clog the nozzle

Post-Spray Check

After each spray it is essential that hoses and spraywand be flushed with clean soapy water. This will help prevent chemical build-up that can clog lines and nozzles.



To Clean the SC-MB-e After Operation:

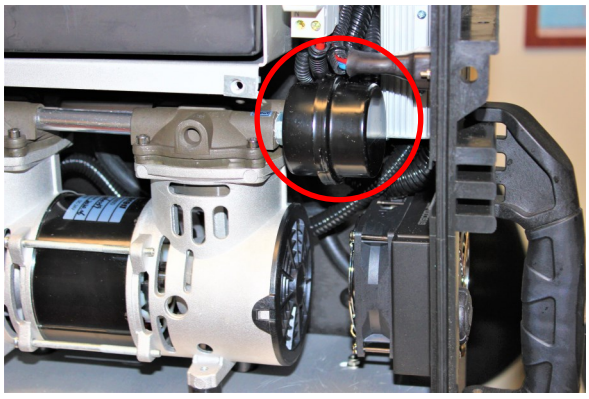
1. Clean the exterior of the sprayer with a damp cloth.
2. Clean the liquid bottle.
3. Fill the liquid bottle with $^1/_2$ liter of clean water.
4. Turn on the air compressor to flush the line with most of the water. Turn off the air compressor.
5. Disconnect the quick connect plug from the twin line hose, then connect it into the spraywand liquid line leader.
6. Turn on the air compressor and engage the trigger to flush the spraywand lines with the remaining water. Check the nozzle for a good spray pattern while flushing. Allow air to flow for 30 seconds after the water has been sprayed.
7. Apply silicone spray or similar lubricating oil to all quick connect fittings.

Detailed instructions on maintaining each of the SC-MB-e's components follow in the next sections.

Cleaning the Air Filter

To clean the air filter, detach the filter cap by turning counter clockwise. Remove the filter and lightly blow it out with air.

Do not use water or saturate the filter with liquids.



1.) Location of the Air Filter

2.) Paper Air Filter

It is important to inspect the filter for deterioration. When handling, if the filter begins to break apart or crumble, replace immediately. Call ESS for a replacement.

BATTERY CHARGING OPERATION

The SC-MB-e battery cannot be charged while inside the suitcase. Please use a Bienno charger to charge the battery outside of the case.

Please note:

- Only use 29.4V, LiFE PO4compatible chargers to charge the battery. The charging current should be 2A to 4A. If you need a charger, please contact us.
- Fully charge the battery before first use. This depends on the output of the charger but is typically between 3-5 hours.
- Note that the LED light on the battery does NOT indicate the state of charge. A red LED light means the battery is under constant current (CC) charging and green LED means constant voltage (CV) charging. Always charge for at least 5 hours to ensure full capacity.
- LiFe PO4 does note suffer "memory effect" so please keep the battery fully charged for daily use. Cell balancing only occurs when the battery is fully charged (top-end balancing).
- Do not charge the battery in temperatures below 0°C. This can cause damage to the cells.

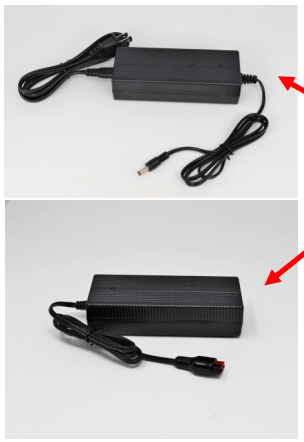
BATTERY CHARGE LENGTH

Bienno; 2-hour standard

Tracer large; high tech; 2 hours

Tracer small; high tech; 55 minutes

BP2-e battery: 2.5 - 3 hours



Bienno Charger

Connecting Bienno Charger to Battery

Notice: you may have either charger version shown below. Attach the charger to the appropriate connector on the battery.

Resetting the Breaker

If the SC-MB-e fails to operate when the "ON" button is depressed, confirm that the battery is connected. If its connected, confirm that is fully charged. If the battery is fully charged, disconnect it and remove it from the SC-MB-e Sprayer. Locate the breaker inside the case next to the battery.

If it is tripped, then rest the breaker by flipping it to down into the off position, and then back up into the on position. Reinstall the battery, reconnecting the red and black connectors to the matching ones in the SC-MB-e Sprayer.

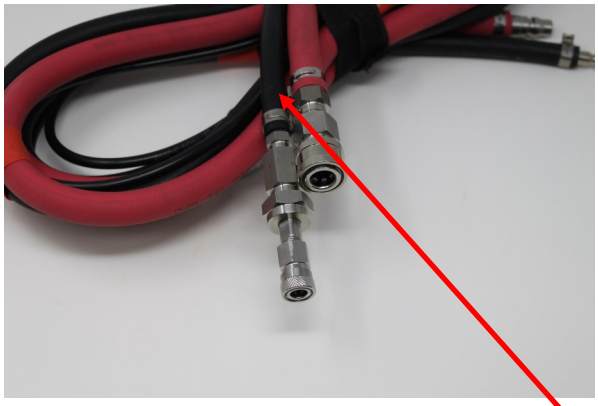
If the breaker is not tripped, or it trips again when the "ON" switch is depressed, please contact ESS Customer Service.

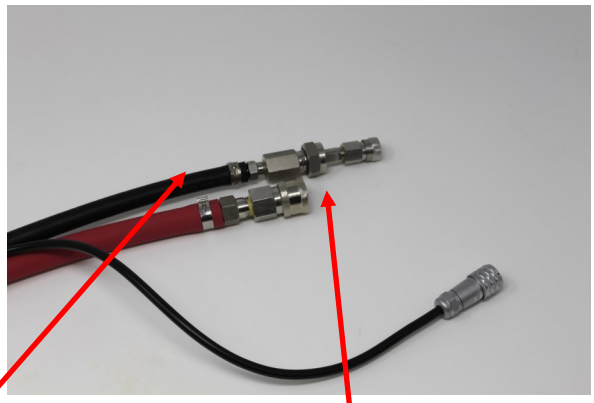
Breaker

Liquid Filter

The liquid filter for the SC-MB-e is located in the liquid hose (black) that connects to the gun.

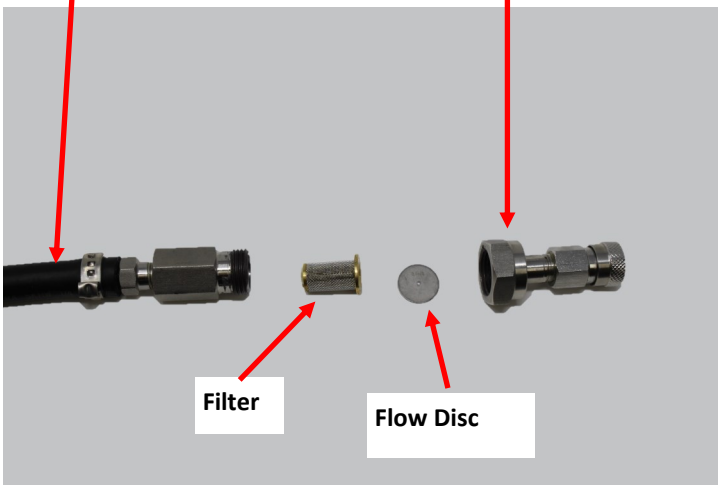
We advise that you periodically inspect the filter and flow disk, and that you clean or replace them as needed.





Liquid Hose

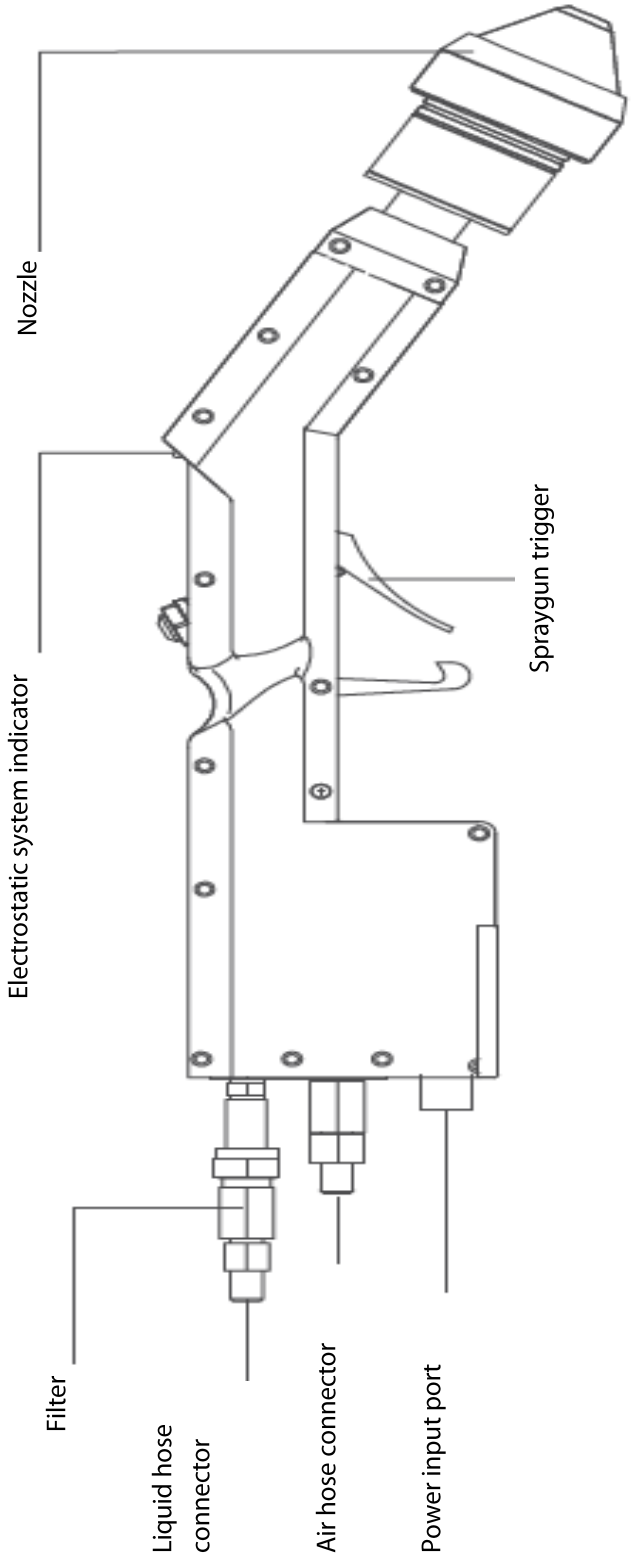
Large Nut

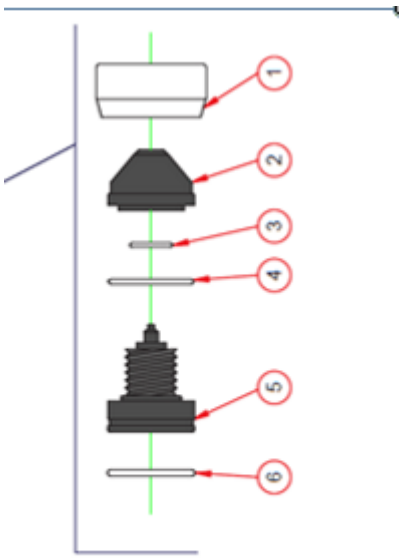


To change the filter and flow disk:

- Loosen the large nut on the liquid hose.
- Remove the old filter.
- Slide the large nut down over the body of the hose quick connect to remove the flow disc.
- Slide the large nut back into place, and place a new flow disk and filter in place.
- Tighten the large nut of the liquid hose quick connect back into place on to the liquid hose.

Spraywand Service Parts





Note: Use of flow disk is crucial to the operation of the spraywand. If the wrong size flow disk, or no flow disk is used, the spraywand will not spray or charge efficiently.

Troubleshooting Guide

When you encounter the problems listed below, use the suggested troubleshooting methods. If you can not solve the problem. Or have a problem with the spraywand that is not addressed in this manual, contact ESS at (706) 769-0025, or toll free 1-800-213-0518.

Sprayer Will Not Turn On:

- Is your sprayer battery charged?

  Recharge the battery for 3 to 6 hours.

- Is your sprayer button on?

  Turn the sprayer button on.

- Has the compressor overheated?

  Be careful, it may be hot. Let the sprayer cool with the case open and try again in 1 hour.

- Did you fuse burn out?

  Please refer to Page 14 section "Changing the Fuse" one hour.

Spray Quality Problems:

Depress the trigger on the spraywand and while spraying water, place your finger over the nozzle blocking the liquid and air. This will force air back through the spraywand and possibly clear any obstructions in the liquid line

Check that all the "quick connections" are connected including the hoses connected to the spraywand, to the case, and the nalgene bottle.

Is the nozzle cover dirty? Unscrew the nozzle cover and wash inside nozzle cover and wash inside cover with water. With the nozzle cover removed, check to see if liquid port is clogged. Clean out with paper clip or small wire.

Is the liquid ambient temperature too cold? The nozzle can freeze up when the ambient temperature is less than 50 ° F.

Is the trigger mechanism dirty? See page 8 for trigger assembly and cleaning. Trigger may require replacing the trigger plunger mechanism.

Charging Light Will Not Come On:

If the red LED light on the handle of the spraywand does not come one, it is indicating that the spray is not receiving an electrostatic charge, or on rare occasions that the light is burned out

Extra Spraywand Troubleshooting Tips

Electrostatic Spraying Systems

Troubleshooting the spraywand when it will not spray

1. It is assumed that:
    a. The user has already re-checked all quick connect fittings to make sure that they are connected properly, and
    b. The user has cleaned the liquid filter, if the spraywand has one.
2. If the user has another spraywand and/or hoses available, swap out the spraywand or hoses so as to quickly isolate and determine if the clog is in the hose or in the spraywand.
3. If the user does not have an extra spraywand or hose, then start with the following solutions:
    a. Unscrew the nozzle cover and insert a wire, the size of a paper clip, into the small center orifice in the nozzle. Try to dislodge any debris.
    b. Unscrew the large brass cap on top of the spraywand with the appropriate wrench and/or socket set.
        i. Once the cap is removed carefully remove the trigger plunger with needle nose pliers. Take care not to lose any parts from the plunger mechanism during removal.
        ii. Once the trigger plunger is removed, either replace with a new plunger or clean the old plunger thoroughly and re-insert.
        iii. There is a video available for viewing on how to replace the trigger plunger.
    c. If the spraywand is a **"first generation"** spraywand it will have a liquid filter and flow disc directly connected to the back of the spraywand.
        i. Remove the liquid filter with two wrenches, check for debris, and clean thoroughly before replacing.
        ii. Also, remove the flow disc, check for blockage, and clean thoroughly before replacing. With a small pin, make sure orifice is open.
    d. If the spraywand is a **"second generation"** spraywand, then the flow disc is not removable, and is found inside the brass or stainless-steel connection, inside the hose.
        i. With wrenches, remove the brass or stainless-steel connector, and look inside the connection to see if the orifice is clogged or blocked. Clean with a small "pin" or replace if there is extreme blockage.
4. If none of the above solutions have solved the liquid flow issues, then the problem is in the quick connections, or inside the spraywand.
    a. Both ends and all quick connections of the liquid hose can be submerged in a cleaning solution, containing warm water, soap, vinegar, degreaser, etc. After soaking the quick connections re-attached to the spraywand and see if the obstruction has dissolved.
    b. The blockage may be in the quick connection found on the sprayer suitcase. Carefully try to clean any debris or obstruction in the quick connection.
        i. If possible, and a spare quick connection is available, replace the quick connection on the side or top of the suitcase.
5. If all else has failed to solve the problem, the blockage is probably inside the spraywand. Only a trained technician or someone who is very mechanically detailed oriented should attempt to open the spraywand shell and attempt to find the blockage, or maybe replace the liquid hose inside the spraywand.
    a. If the user can get a small amount of liquid to come through the spraywand, keep spraying with warm water along with soap or some type of dissolvent.
6. Finally, if all the above fail, send the spraywand into the factory for cleaning and repairs.

SC-MB Spraywand Service Parts List

Item Number	ESS Part Number	Description	Quantity Ordered
1	5795	Hood	1
2	5764	Nozzle Cover	1
3	5771	O,Ring, Internal	1
4	5694	Teflon Ring	1
5	5777	Nozzle body, Greenhouse	1
		Note: Must send Spraywand in for Repair	
6	5770	O-ring, External	1
7	3731	Repair kit, Trigger	1
8	4512	9v (Battery, Alkaline, 9v	1
9	118	Battery Cover, Spraywand Shell	1
10	316	Screw, #6-32 x 3/8 long, Phillips SS	1
11	239	QC Plug, 1/8" MPT, Brass (Spraywand Liquid)	1
12	240	QC Plug, 1/4", 1/4" MPT, Brass (Spraywand)	1
13	6518	Trigger Pawl	1
14	4430	Battery Charger	1
15	1748	Spraywand Leader Assembly Liquid	1
16	3238	Liquid Line Leader Assembly	1

62 Morrison St. · Watkinsville, Georgia 30677-2749
706-769-0025 ·1-800-213-0518 ·Fax: 706-760-8072
Email: support@maxcharge.com · www.maxcharge.com

ESS WARRANTY:

Electrostatic Spraying Systems, Inc. warrants to the original purchaser of any Electrostatic Spraying Systems equipment shall be free from defects in material and workmanship for a period of one year after date of delivery.

Disclaimer of Implied Warranties and Consequential Damages

Electrostatic Spraying Systems' obligation under this warranty, to the extent allowed by law, is in lieu of all warranties, implied or expressed, including implied warranties of merchantability and fitness for a particular purpose and any liability for incidental and consequential damages with respect to the sale or use of the items warranted. Such incidental and consequential damages shall include, but not limited to: transportation , charges other than normal freight charges cost of installation other than cost approved by Electrostatic Spraying Systems, Inc., duty taxes, charges for normal service or adjustments, or any other loss of income, expenses due to loss, damage, detention or delay in the delivery of equipment or parts resulting from acts beyond the control of Electrostatic Spraying Systems, Inc.

THIS WARRANTY SHALL NOT APPLY:

1. To vendor items which carry their own warranties such as, but not limited to, engines, air compressors, and liquid pumps. Electrostatic Spraying Systems, Inc. shall supply replacement parts at list price pending the warranty investigation of the vendor item. Vendor items parts such as air compressors, liquid pumps, solenoids, and other such items must be returned before warranty credit.
2. If the unit has been subject to misapplication, abuse, misuse, negligence, fire or other accident.
3. If parts not made or supplied by Electrostatic Spraying Systems, Inc. have been used in connection of the unit, if, in the sole judgement of Electrostatic Spraying Systems, Inc. such parts affect its performance, stability or reliability.
4. If the unit has been altered or repaired in a manner which, in the sole judgement of Electrostatic Spraying Systems, Inc. such alteration or repair affects its performance, stability or reliability. This shall include but not be limited to opening of the spraywand shell by anyone not authorized by Electrostatic Spraying systems, Inc. to do so.
5. **To normal maintenance, service and replacement items such as, but not limited to, engine lubricant, filters, or to parts that normally deteriorate. Belts, 9V rechargeable batteries, and exterior finishes due to use and exposure are also not covered under the warranty.**

NO EMPLOYEE OR REPRESENTATIVE OF
ELECTROSTATIC SPRAYING SYSTEMS, INC.
IS AUTHORIZED TO CHANGE THIS WARRANTY
IN ANY WAY OR GRANT ANY OTHER WARRANTY
UNLESS SUCH CHANGE IS MADE IN WRITING
AND IS SIGNED BY A CORPORATE OFFICER OF
ELECTROSTATIC SPRAYING SYSTEMS, INC.

YEARLY SPRAYWAND SERVICE

Electrostatic Spraying Systems, Inc. offers and recommends yearly services on ESS spraywands. For a nominal fee plus the cost of replacement parts, ESS will thoroughly clean the spraywand, replace any worn parts and recalibrate the electronics and nozzle. The Yearly Service also extends the spraywand warranty for anther year. Consistent yearly service by ESS will increase spraying performance and prolong the life of the spraywand.

Contact ESS at (706) 769-0025 to schedule spraywand services. The package the spraywand securely since it can be damaged in shipment. Ship the spraywand it its original packing material if possible. If the original packing is not available, wrap the spraywand in bubble wrap, place it in a strong cardboard box and surround the fun handle with foam packing. Include a return shipping address and a telephone number.

A form is provided for you at the back of the manual

Ship the spraywand via UPS or Parcel Post to:

Electrostatic Spraying Systems, Inc.

62 Morrison ST.

Watkinsville, GA 30677

Yearly service will be conducted within one day of receipt by ESS. If any parts need to be replaced, the owner will be contacted for authorization before replacement. The spraywand will be returned via UPS, COD, or return shipping costs may be invoiced, contingent upon credit approval. ESS also accepts Visa and Master Card.

As an additional benefit, the Yearly Spraywand Service "turns back the clock". The original 1 Year Warranty on the spraywand is renewed for another year.

Yet another good reason to send your spraywand in to ESS for factory-authorized service!

SPRAYWAND RETURN FORM

When returning a spraywand for warranty or repair services to ESS, please pack it securely and include the following form with the your spraywand. We require you to fill out all information completely. With many changes to companies our records may not have the correct contact information. We at ESS want to expedite the process quickly but communication is the key to a quick repair.

Spraywand Serial Number: _____

RETURNED FROM:

Company: _____

Contact Person: _____

Phone number: _____

Email Address: _____

Shipping Address: _____

_____

_____

Mailing Address: _____

(if different) _____

_____

Date last serviced: _____

Problems with the Spraywand or is this just a yearly service?

_____

_____

_____

_____

Method of Payment:

☐ Account (must be an approved account)

☐ COD

☐ Credit Card (Visa) (Master Card) (American Express)

Card Number:_____ CCV: _____

Card Holders Name:_____ Expiration Date_____

Full Mailing Address: _____

_____

_____