

# Owner's Manual ESS MaxCharge™ Spraygun



**Electrostatic**  
Spraying Systems

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[www.maxcharge.com](http://www.maxcharge.com)

## OWNER'S MANUAL

### ESS MAXCHARGE™ SPRAYGUN

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Electrostatic Spraying Systems, Inc.

62 Morrison St. · Watkinsville, GA 30677-2749

CE certification applied for

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## CONGRATULATIONS!

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

The products of ESS are the result of the efforts and creativity of many 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 also! 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 St.  
Watkinsville, Georgia 30677-2749  
Phone: 706-769-0025  
1-800-213-0518  
Fax: (760) 769-8072  
support@maxcharge.com

Please take time to read this manual before operating your new ESS Spraygun. The manual contains important instructions for the safe operation of this equipment. It also includes helpful suggestions to maximize productive use of the Spraygun. Essential cleaning instructions should be followed to maintain your sprayer at peak efficiency. Please carefully read and follow all instructions for your own safety and the safety of others around you.

Thank you!

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

Your new spraygun has been thoroughly tested and calibrated at the factory. If you have any 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 intends to support its customers with efficient, helpful and friendly service. We appreciate your business and sincerely hope that Electrostatic Spraying Systems, Inc. can meet your present and future spraying equipment needs.

Brandon Wells  
Primary Engineer,  
SC-EB with Spraygun.

### For your personal records

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

#### Spraygun

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Model #

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Serial #

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Spraygun serial number

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Date of purchase.

<sup>1</sup> ESS MaxCharge Spraygun, MaxCharge™, and the ESS logo are copyrights or registered trademarks of Electrostatic Spraying Systems, Inc.



## Notes



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*Your Spraygun may appear slightly different than the photographs and drawings in this manual. We at ESS are constantly listening to customer input and we make frequent improvements to our spraygun designs.*



## Notes



## Overview of the ESS Spraygun Air-assisted Electrostatic Sprayer

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

Air and liquid enter separately at the rear of the nozzle. Just before leaving the nozzle, the air hits the liquid stream to make 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 and move into the plant canopy where they are attracted to plant material by electrostatic forces. The electrostatic charge induced by the MaxCharge™ nozzle is strong enough to allow the droplets to move in any direction to cover all plant surfaces, even defying gravity to coat the underside of leaves and the back side of fruits and vegetables. The result is uniform spray coverage on hidden areas deep inside of the plant canopy where other sprayers miss.

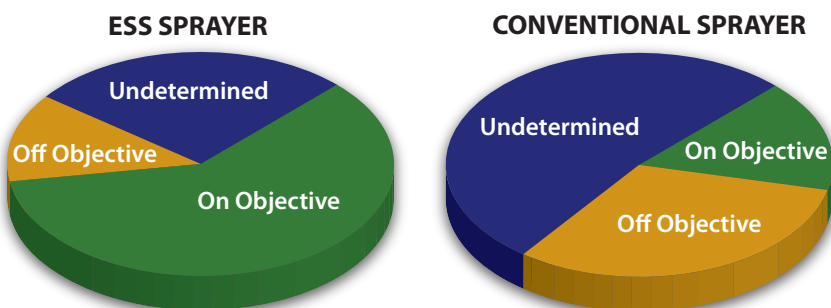
The MaxCharge™ nozzle is easy to clean and corrosion-proof. The interior ceramic outlet resists wear three times better than stainless steel outlets. These features combine to give the best spray coverage on the market. This quality product is virtually maintenance-free, and assures you of savings in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

The comparison of air-assisted electrostatic spraying versus conventional spraying is dramatic.



*Electrostatically charged droplets are attracted to plant 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 ½ the amount of chemicals. Furthermore, they also reported that ESS sprayers send ⅔ 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!**





## Safe operation of the Spraygun Sprayer

### OPERATOR'S RESPONSIBILITY

#### *Read the Owner's Manual.*

It is the responsibility of the user to read the Owner's Manual, to understand the safe and correct operating procedures which pertain to the operation of the product, and to maintain the product according to the Owner's Manual. It is the owner's responsibility to ensure that all who are using this equipment read this manual.

The user 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 the user's responsibility to deliver the machine for service or replacement of defective parts which are covered by the standard warranty.

### SAFETY PRECAUTIONS

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

- ♦ Read the Owner's Manual. Failure to read the manual is considered a misuse of the equipment.
- ♦ Use the Spraygun ONLY for its intended use as described in this manual.
- ♦ Before operating equipment, become familiar with all caution and warning decals affixed to the sprayer.
- ♦ Do not allow a child to operate the Spraygun. Do not allow adults to operate the sprayer without proper instruction.
- ♦ Keep the area of operation clear of all persons and animals.
- ♦ Do not apply chemicals when weather conditions favor drift from treated areas.
- ♦ Turn off the Spraygun when leaving it unattended.
- ♦ Store Spraygun in a dry place. Do not expose to freezing temperatures.

### 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 and while spraying with the Spraygun.
- ♦ Always use a cartridge respirator, protective clothing and eye protection when spraying with the Spraygun
- ♦ Follow the chemical manufacturer's recommendations in handling, mixing, applying, storing and disposing of chemicals.
- ♦ Be aware of decontamination methods in case a person, clothing, or equipment is accidentally sprayed.
- ♦ 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.

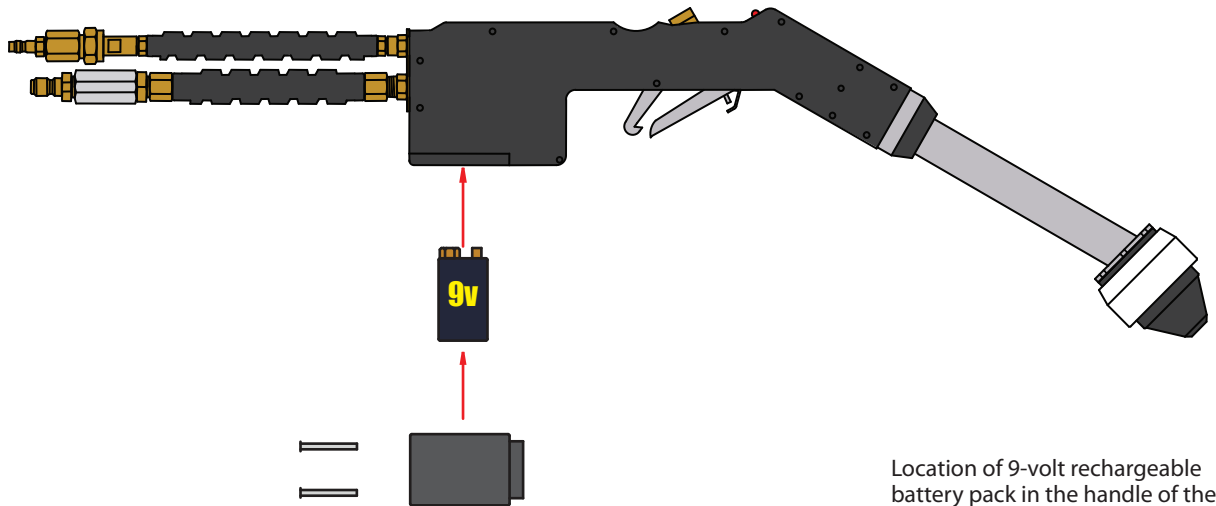




## About the low-voltage system of the MaxCharge Spraygun

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For operator safety, the MaxCharge spraygun is powered by a low-voltage power supply. The rechargeable 9-volt batteries are in the handle of the Spraygun. The electrostatic charge imparted to the spray is not strong enough to harm people. Some people report feeling a “tingle” or a slight stinging sensation when the spray from the nozzle falls on their bare skin.



Location of 9-volt rechargeable battery pack in the handle of the spraygun.

## Operating Instructions

**All operators must read this Owner's Manual completely and thoroughly before operating the Spraygun. They must be familiar with all operating instructions and safety precautions.**

### After spraying:

1. Disengage trigger.
2. Turn engine off.
3. Disconnect air and liquid spraygun quick connects.
4. Disassemble liquid filter assembly; set aside.
5. Put liquid quick connect plug (which is still threaded in 1/8 inch NPT body) into liquid quick connect socket; water will begin to run out of quick connect plug; allow 4 liters (1 gallon) to run through to clean lines.
6. Unplug liquid quick connect plug from liquid quick connect socket to stop flow of liquid.
7. Clean liquid filter assembly.
8. Reassemble liquid filter assembly.
9. Reconnect quick connects.
10. Turn engine on.
11. Engage trigger and allow remaining liter (approximately 1 quart) of water to run through to clean spraygun; allow air to flow for 30 seconds more to reduce possibility of corrosion.
12. Turn engine off.
13. Disconnect spraygun quick connects.
14. Disconnect the air hose from the air compressor.
15. Apply silicone spray or similar lubricating oil to all quick connects.
16. Clean the nozzle assembly.



*Sil-Glyde is an excellent silicone-based protective lubricant. You may purchase it directly from ESS. S/N # 3174*

## Spraygun Maintenance Schedule

Please observe the recommended maintenance schedule for your Spraygun in order to preserve spray quality and the working life of the unit. If you use heavy wettable powders to spray or if you operate the Spraygun in a dusty environment, you may need to clean liquid and air filters more often than these recommendations. Visually inspect the nozzle and trigger assembly often and clean as necessary.

Clean the liquid filter assembly	After every spray application
Clean the nozzle	When spray pattern is different than when the Spraygun was new
Recharge batteries in spraygun	When charging indicator does not light during operation (about every 8 operational hours)**
Replace batteries in spraygun	When batteries no longer hold a sufficient charge to complete a ten-hour work session or show other signs of battery deterioration

\*\* Whichever comes first



# REFERENCE SECTION

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## Quick connects

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There are four sets of quick connects (plug and socket) on the sprayer:

- Compressor (air) outlet
- spraygun air inlet
- spraygun liquid inlet

### To disconnect the quick connects:

1. Slide the sleeve on the quick connect socket up.
2. While holding the sleeve up, pull the socket off the quick connect plug.

### To connect the quick connects:

1. Slide the sleeve of the quick connect socket up.
2. While holding the sleeve up, push the socket onto the quick connect plug.
3. Release the sleeve.
4. Pull on the socket body to ensure that it is properly seated and cannot be pulled off the plug when the sleeve is down.

## The air connection

The end of the air line hose connects to the air leader of the spraygun. The air leader of the spraygun is below the liquid leader and is easily recognizable because its connector is larger than the liquid connector – it is not possible to connect the air hose to the liquid leader. The air line hose is red.

## The liquid connection

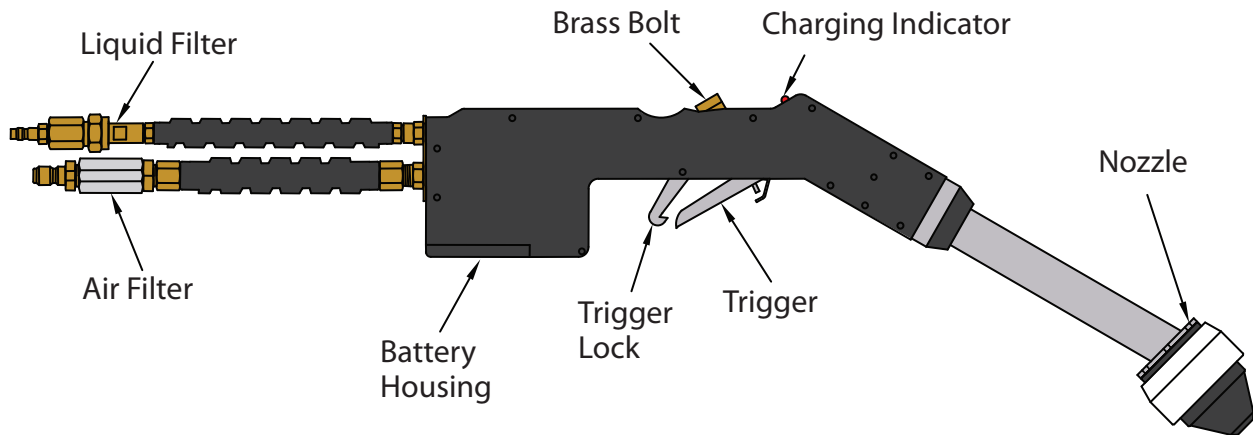
The liquid line is gray and only long enough to allow the user to move freely with the spraygun.



## Spraygun

The Spraygun is held by the operator during spraying. Activation of the trigger causes liquid to spray. The Spraygun has the following user-serviceable parts: the air filter, the liquid filter assembly, the nozzle assembly, and the batteries. Except for the batteries, which are accessed by removing the battery cover, nothing inside the Spraygun shell is user-serviceable. **Do not open the spraygun shell;** doing so will void the warranty on the spraygun.

**NOTE**

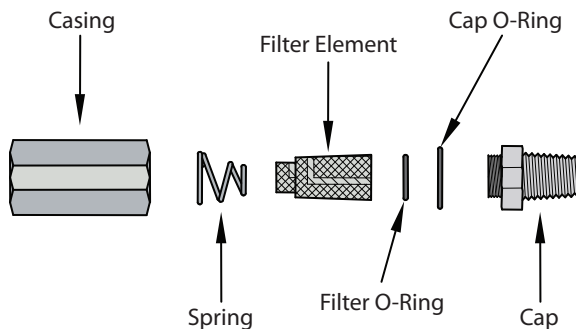


*The Spraygun*

## Air filter

**Note: Sprayguns manufactured after March 2009 do not require an air filter on the Spraygun air leader.**

For units manufactured before March 2009, there is an in-line air filter located outside the base of the Spraygun in the air hose. It filters dirt out of the air lines. It's easy to tell the Air Filter from the Liquid Filter Assembly because the Air Filter is in a silver-colored casing. Replacement parts for the air filter assembly are available as a kit. The kit includes a filter, and large and small o-rings. Order using ESS part number 231.



*The Air Filter Assembly*

### To clean the air filter:

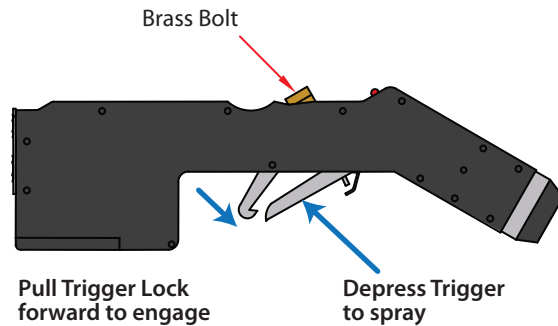
1. Unthread the casing from the cap using a  $\frac{3}{4}$ " wrench on both parts. Be careful not to lose the spring or the air filter inside of the casing.
2. Check inside each part for debris. Clean any dirt out with compressed air or warm, soapy water.
3. Reassemble the air filter, making sure to put it together as shown above.



## Trigger

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The trigger turns the spray on and off. It can be continuously held for operation or it can be locked in place.



### To engage/disengage the trigger:

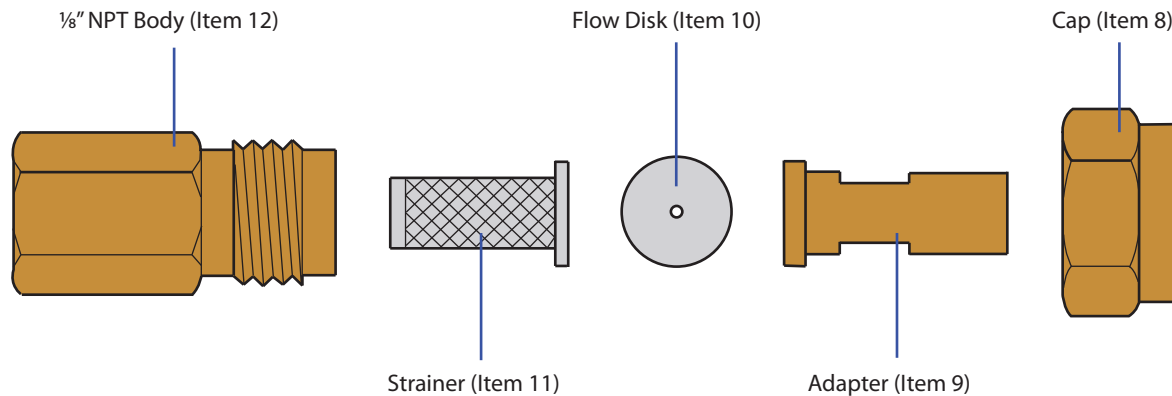
1. Depress the trigger up towards the body of the spraygun to start spraying.
2. To keep spraying, either keep holding the trigger or lock it in place by pulling up the lock and hooking the trigger.
3. To stop spraying when the trigger is not locked, let go of the trigger.

### To clean the trigger:

1. Unthread the brass bolt on the top of the spraygun with a  $\frac{5}{8}$ " socket wrench. 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 or warm, soapy water.
3. Replace the spring and plunger; rethread the brass bolt into the top of the spraygun until tight.

## Liquid filter assembly

The liquid filter assembly is located outside the base of the spraygun. It is composed of these parts: a  $\frac{1}{8}$ " NPT body (Item 12), a strainer (Item 11), a flow disk (Item 10), an adapter (Item 9) and a cap (Item 8). The strainer is the active filtering element in the volume of liquid that flows through the line. There is an extra flow disk and an extra strainer in the Parts Kit in case the originals are lost or damaged.



*Liquid Filter Assembly*

### To disassemble, clean and reassemble the liquid filter (see labeled drawing above):

1. Using a  $\frac{13}{16}$ " wrench on the cap (Item 8) and an  $\frac{1}{16}$ " wrench on the  $\frac{1}{8}$ " NPT body (Item 12), unthread them.

Note: When you disassemble the liquid filter assembly, notice how the parts fit together in order to reassemble them properly. Be careful not to lose any parts, particularly the flow disk (Item 10) which is inside the cap. The sprayer will not function correctly without the flow disk.

2. Remove the strainer (Item 11) from the  $\frac{1}{8}$ " NPT body.
3. If the  $\frac{1}{8}$ " NPT body contains residue, clean it with compressed air or clean water.
4. Clean the strainer with compressed air or clean water. If residue still remains in the 50 mesh screen, disassemble the strainer. Unscrew the top brass part from the bottom brass part. The 50 mesh screen slides off the brass body and can be cleaned with compressed air or clean water. If residue still remains, soak the 50 mesh screen and screw the top brass part back on the lower brass part.
5. If the flow disk is still in the cap, remove it. Check the aperture of the flow disk for blockage. If there is any, clean it with compressed air or water. Replace the flow disk so that the numbers on the disk face the strainer.
6. Replace the strainer in the  $\frac{1}{8}$ " NPT body.
7. Rethread the  $\frac{1}{8}$ " NPT body and the cap.

## 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 spraygun wand. It is composed of a nozzle body, internal o-ring, Teflon ring, cover, external o-ring, and a hood (see labeled drawing at right). To access the nozzle components, just unscrew the nozzle cover by hand.

### Cleaning the spraygun

Always rinse the spraygun out with clean soapy water after every day's spraying. That is the most important thing you can do to ensure trouble free operation of your MaxCharge spraygun. 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 every 50 hours. If heavy loads of wettable powers are used, the cleaning schedule should be sooner.



### 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 care 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 hole 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 spraygun nozzle.





You may wish to purchase Nutra-Sol Tank Cleaner from ESS (S/N# 1566), which cuts hard water scale and chemical deposits from the electrode and internal component of the spraygun. The regular use of Nutra-Sol will keep your equipment operating at peak performance. The recommended mixing ratio is 4 ounces in 12.5 gallons of water (113 grams in 47 liters of water).

## **Pre-spray check**

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### **I. Inspect Nozzles**

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

### **II. 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. Some brand name additives are COMPLIMENT™, UNITE®, and BALANCE™. Check with your local chemical supplier for others that are available.

## **Post-spray check**

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After each spray it is essential that hoses and spraygun be flushed with clean soapy water. This will help prevent chemical build-up that can clog lines and nozzles. Also, it is recommended that the nozzle exterior (black portion of nozzle) and nozzle hoods be cleaned with soapy water at this time.

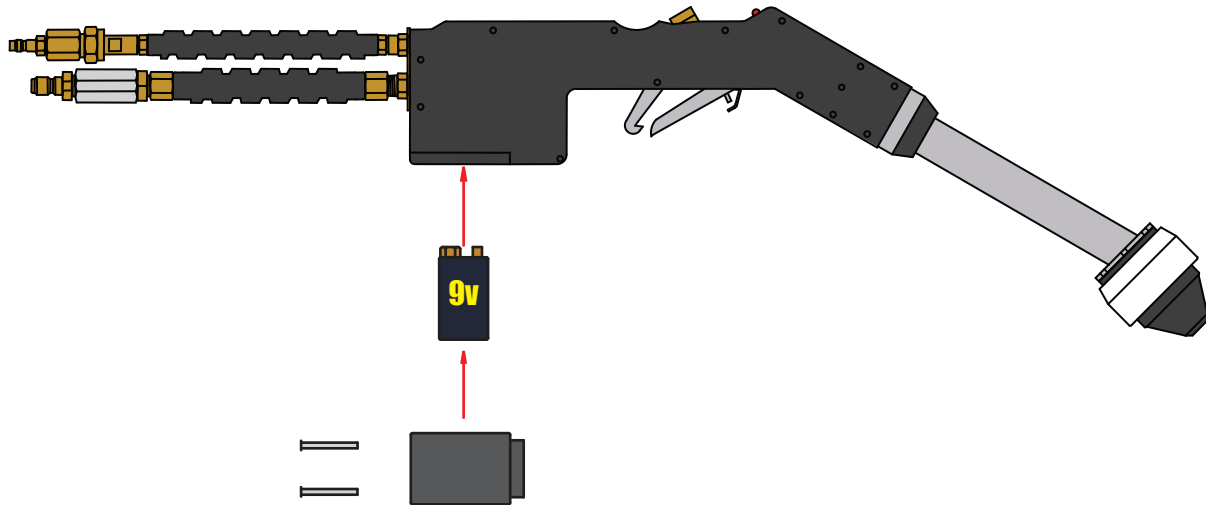


**ESS recommends the use of NUTRA-SOL cleaner which can be purchased from ESS.**  
Order S/N#1566.

## Batteries

The nozzle charging operates on two 9-volt rechargeable batteries which are located in the base of the spraygun. In average conditions, the batteries will last 10 to 15 hours of operation on a charge. They should be recharged when the charging indicator on top of the spraygun shell doesn't glow when air is going through the spraygun. After approximately 800 to 1000 hours of service the battery pack will no longer be able to hold an adequate charge and will need to be replaced. Replace with nickel-hydrate rechargeable batteries. Order the spraygun's replacement battery pack from ESS.

Remember to charge the spraygun batteries after every work session!



### To change the batteries:

1. Unscrew the two 6-32 x 1/2" Phillips head machine screws which hold the battery cover in place.
2. While holding the leads in one hand, gently disconnect the batteries from the leads. Be careful not to tear the leads off the wires or to tear the lead wires out of the power supply.
3. Connect the fresh battery pack to the leads.
4. Replace the battery cover. Screw the two 6-32 x 1/2" Phillips head machine screws back in to secure the battery cover.
5. Charge the spraygun before attempting to use it.

## Yearly spraygun service

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

Contact ESS at (706) 769-0025 to schedule spraygun services. Then package the spraygun securely since it can be damaged in shipment. Ship the spraygun in its original packing material if possible. If the original packing is not available, wrap the spraygun in bubble wrap, place it in a strong cardboard box and surround the gun handle with foam packing. Include a return shipping address and a telephone number. A form is provided for you at the back of this manual

Ship the spraygun via UPS or Parcel Post to:

Electrostatic Spraying Systems, Inc.  
62 Morrison Street  
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 spraygun will be returned via UPS, COD, or return shipping costs may be invoiced, contingent upon credit approval. ESS also accepts Visa, and MasterCard.

As an additional benefit, Yearly Spraygun Service "turns back the clock" – the original 1-Year Warranty on the spraygun is renewed for another year!

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



## Spraying with your ESS sprayer

*Note: When using unfamiliar equipment or chemicals, always test on a small area before treating the entire crop or surface. Do not use a chemical with the ESS sprayer if the label prohibits use in low-volume sprayers.*

### Spray Technique

As in spray painting, the goal is to achieve even coverage over the surface. The ESS MaxCharge spraygun 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 MaxCharge spraygun, the surface of the target should just barely glisten with moisture. The fine droplets will evaporate quickly.

Here are some tips to achieve the best possible coverage with the ESS spraygun

1. Before each job, ensure that your sprayer is in good working order (see the pre-spray checklist on page 10 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 gives the fine mist produced by the MaxCharge nozzle room to develop into a chaotic cloud that will be attracted to the target surface.
3. Hold the spraygun at right angles 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. Try to have each stroke overlap the previous stroke by about 50%.
4. You can use vertical strokes if it suits the area better. Just make sure to work in a methodical pattern and let your strokes overlap.
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 spraygun barrel as level as possible. If you allow the nozzle to point down too much, it may drip occasionally.
8. Unlike spray painting, you don't 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 spraygun.



### Let the MaxCharge™ Spraygun do the work!

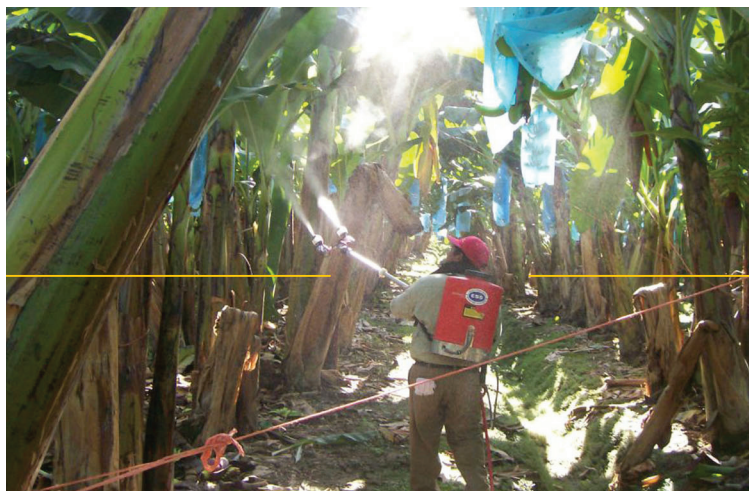
There's no need to stick the tip of the spraygun into the plant canopy. The electrostatically charged spray will blow into the plant canopy and the droplets will even change direction to find a dry surface to cling to.



## Siphoning

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The sprayer's design relies on siphoning of the liquid from the backpack tank. If your spraygun is held above your head, the liquid will not spray properly. To get the best performance from your sprayer, hold the spraygun no higher than your shoulder.





## Alternate Sprayer Sprayguns

HG-27.5-3RP27.5" (69.9 cm)	Plastic	3
HG-32.0-3RAS32.0" (81.3 cm)	Aluminum	3
HG-32.0-2RAS32.0" (81.3 cm)	Aluminum	
2HG-6.5-2RP6.5" (16.5 cm)	Plastic	2
HG-14.5-1RP14.5" (36.8 cm)	Plastic	1
HG-6.5-1RP 6.5" (16.5 cm)	Plastic	1
HG-3.25-1RP3.25" (8.3 cm)	Plastic	1



## Spraying with optional sprayguns

Sprayguns with multiple nozzles are available as optional equipment for your sprayer.



*Triple- and double- headed sprayguns are available as optional equipment for your sprayer.*

Whenever you use a multi-head spraygun, there are trade-offs in the amount of liquid sprayed out and the distance covered. A two-headed spraygun will deliver more liquid, the spray swath will be wider, however, the distance the spray can travel will be reduced.

For example, a single-nozzle spraygun sprays 170 mL/minute and sprays 15 to 20 feet\* (4.6 m. to 6.1 m.). A two-headed spraygun, with all other conditions the same, will deliver 200 mL/minute and only reach 12 to 15 feet (3.7 m. to 4.6 m.).

	Volume (mL/min)	Spray distance	Can you hold the spraygun above your head?
Single nozzle 161 cover #59 flow disk	170 mL/min.	15 to 20 ft.	Yes
Double-headed 161 cover #59 flow disk	100 mL/min. per nozzle (average)	12 to 15 ft.	No
Double-headed 140 cover #59 flow disk	100 mL/min. per nozzle (average)-	15 to 18 ft.	Yes
Triple-headed 140 cover #59 flow disk	103 mL/min. per nozzle (average)	10 ft.	No
Triple-headed 161 cover #59 flow disk	Not recommended does not work	0	No

Please let your ESS sales representative recommend the nozzle cover/flow disk combination that will be best for your particular crop.

\* All spray distance tests are conducted with no wind blowing.



## 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).

## Troubleshooting Guide

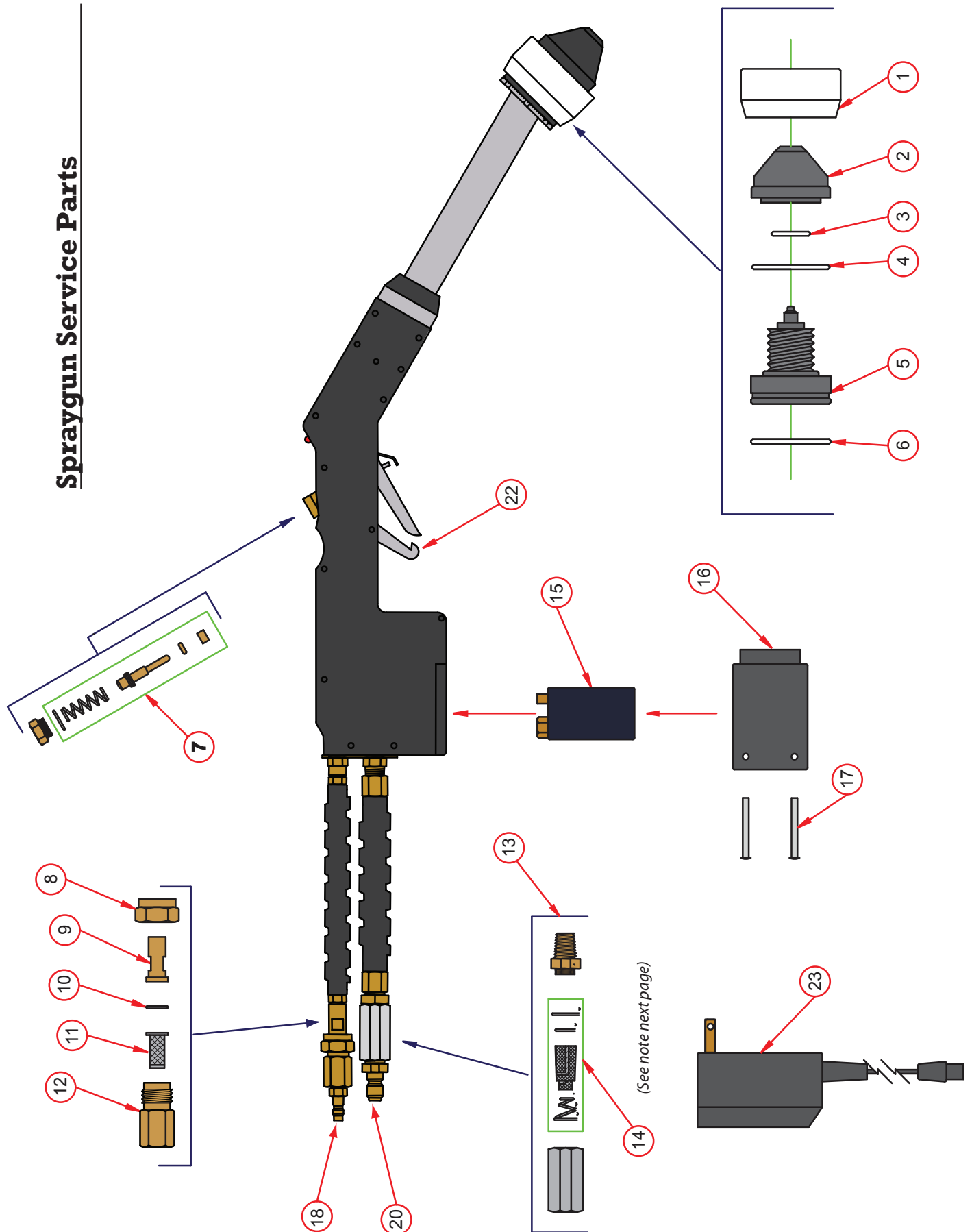
When you encounter the problems listed below, use the suggested trouble-shooting methods. If you cannot solve the problem or have a problem with the Spraygun that is not addressed in this manual, contact ESS at (706) 769-0025.

Symptom	Possible Problem(s)	Corrective Action
Air pressure of spray appears low	<ul style="list-style-type: none"><li>• Clogged Liquid Filter</li><li>• Liquid fittings are loose</li><li>• Air fittings are loose or damaged</li><li>• Dirty Trigger</li></ul>	<ul style="list-style-type: none"><li>• Clean the Liquid Filter Assembly (See the <i>Liquid Filter Assembly</i> section of this manual)</li><li>• Make sure the Liquid Filter Assembly is installed correctly;</li><li>• Make sure that the Air Filter is installed correctly. Inspect for loose hoses or failed air lines – Spray fittings with soapy water – tighten ones that bubble replace if necessary</li><li>• Clean the Trigger (See the <i>To Clean the Trigger</i> section of this manual)</li></ul>
No spray from nozzle or the spray from nozzle is erratic or spits	<ul style="list-style-type: none"><li>• Debris in the nozzle</li><li>• Spray is freezing due to evaporative cooling</li><li>• Liquid filters are clogged</li><li>• Loose liquid or air fitting</li><li>• Dirty Trigger</li><li>• Overtightened nozzle cover</li></ul>	<ul style="list-style-type: none"><li>• Clean nozzle according to instructions</li><li>• Make sure that water temperature is at least 50° (10°C)</li><li>• Clean the Liquid Filter Assembly (See the <i>Liquid Filter Assembly</i> section of this manual)</li><li>• Inspect hose quick connects at case and at spraygun leader. Make sure that all liquid fittings and air fittings are properly seated.</li><li>• Clean the Trigger (See the <i>To Clean the Trigger</i> section of this manual)</li><li>• Loosen cover. It should only be finger-tight</li></ul>
Charging indicator (LED) blinks or goes is out during operation	<ul style="list-style-type: none"><li>• Batteries are exhausted</li><li>• Dirty nozzle</li></ul>	<ul style="list-style-type: none"><li>Recharge batteries If problem persists, replace battery pack</li><li>• Clean nozzle according to instructions</li></ul>





## Spraygun Service Parts



# Mountain Man Service Parts

## Spraygun

ITEM NUMBER	ESS PART NUMBER	DESCRIPTION	QUANTITY ORDERED
1	AP-5795	Hood	1
2	NC 5764	Nozzle Cover	1
3	5771	O-Ring, Internal	1
4	AP-5694	Teflon Ring	1
5	NB-5983	Nozzle Body, Greenhouse	1
		<i>Note: Must Send Spraygun In For Repair</i>	
6	5770	O-Ring, External	1
7	3731	Repair Kit, Trigger	1
8	767	Cap, Flow Regulator	1
9	768	Adapter, 1/8"-27 FPT	1
10	1755	Orifice Disk (Flow Disk)	1
11	437	Strainer, #50 Mesh	1
12	770	Body, 1/8"-27 FPT, Greenhouse	1
13	227	Filter, Air, In-Line	1
14	231	Repair Kit, Air Filter (NOTE: for models manufactured pre-March 2009)	1
15	4512	Battery, Alkaline, 9 V	2
16	118	Battery Cover, Spraygun Shell	1
17	316	Screw, #6-32 x 3/8" Long, Phillips, SS	2
18	239	QC Plug, 1/8", 1/8" MPT, Brass (Spraygun Liquid)	1
19	AS-1748	Spraygun Leader Assembly, Liquid	1
20	240	QC Plug, 1/4", 1/4" MPT, Brass (Spraygun)	1
21	AS-1749	Spraygun Leader Assembly, Air	1
22	6518	Trigger Pawl	1
23	4430	Battery Charger	1

## Flow disk chart

UNIT STYLE	TANK SIZE	ORIFICE NUMBER	ESS PART PART NUMBER
XT	3 GALLON TANK	#20	765
XT	1 QUART BOTTLE	#40	766
GPS	4 GALLON TANK	#30	1755
EPS	4 GALLON TANK	#30	1755
TRG	4 GALLON TANK	#30	1755
J SERIES	15 GALLON TANK	#30	1755
BP-2.5	2.5 GALLON TANK	#59	4350
BP-4	4 GALLON TANK	#59	4350

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





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

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Electrostatic Spraying Systems, Inc. warrants to the original purchaser of any Electrostatic Spraying Systems equipment that the equipment shall be free from defects in material and workmanship for a period of one year after date of delivery. The electrostatic power supply warranty form must be returned for verification of date of purchase.

### 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 be 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, loss of crops 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 item 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 judgment 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 judgment 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 spraygun 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 normal deterioration of such things as, but not limited to, belts and exterior finish, due to use and exposure.**

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.



## Notes



## Spraygun repair/Yearly service return form

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When returning a spraygun for warranty or repair services to ESS, please pack it securely and include the following form with your spraygun.

Spraygun Serial Number: \_\_\_\_\_

Returned from:

Company: \_\_\_\_\_

Contact person: \_\_\_\_\_

Phone number: \_\_\_\_\_

Shipping address: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Mailing address: \_\_\_\_\_

(if different) \_\_\_\_\_

\_\_\_\_\_

Date last serviced: \_\_\_\_\_

Problems with the Spraygun (if any):

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Method of Payment:

☐ Account (must be an approved account)

☐ COD

☐ Credit Card:

VISA    MASTERCARD    AMEX

Card Number: \_\_\_\_\_

Expiration Date: \_\_\_\_\_

Card Holder's Name: \_\_\_\_\_

PRINT

\_\_\_\_\_  
SIGN

**Send to:**  
**Electrostatic Spraying**  
**Systems, Inc.**  
**62 Morrison St.**  
**Watkinsville, GA 30677-2749**

**ESS recommends sending  
your spraygun via a carrier  
with tracking.**

