# Owner's Manual
# ESS Model GPS-5

ESS Electrostatic Spraying Systems
62 Morrison St. · Watkinsville, GA 30677-2749
Toll-Free: 800-213-0518 · Fax: 706-769-8072
www.maxcharge.com

# OWNER'S MANUAL

# GPS-5

Electrostatic Spraying Systems, Inc.
62 Morrison St. · Watkinsville, GA 30677-2749

CE certification applied for


This manual last updated May 28, 2014

# 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 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 GPS-5™ sprayer. The manual contains important instructions for the safe operation of this equipment. It also includes helpful suggestions to maximize productive use of the GPS-5 sprayer. 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 sprayer 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.

We encourage you to make copies of the "Spray Gun Yearly Service" form in the back of this manual. Use this form every year you send your gun in for maintenance and when we service the gun, your warranty will renew for another year. The service will replace the nozzle base, replace air and liquid hoses inside gun housing, replace filters, and recalibrate the gun and thoroughly cleaning the entire spray gun.

**For your personal records**

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

**GPS-5**

_____
Model #

_____
Serial #

_____
Spray gun serial number

_____
Date of purchase.

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*Spraying with the GPS-5.*

# Overview of the ESS GPS-5 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 GPS-5 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.

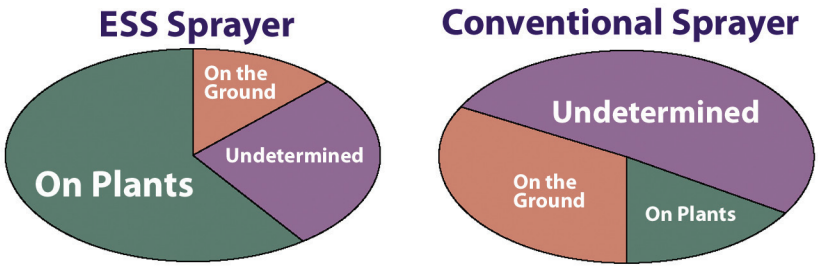
The MaxCharge™ nozzle is easy to clean and corrosion-proof. The interior ceramic outlet resists wear three times better than stainless steel outlets. These features combine to give the best spray coverage on the market. This quality product is virtually maintenance-free, and assures you of savings in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

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

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

*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 GPS-5 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 GPS-5 sprayer 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 GPS-5 sprayer. 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 sprayer when leaving it unattended.
- Store sprayer in a dry place. Do not expose to freezing temperatures.

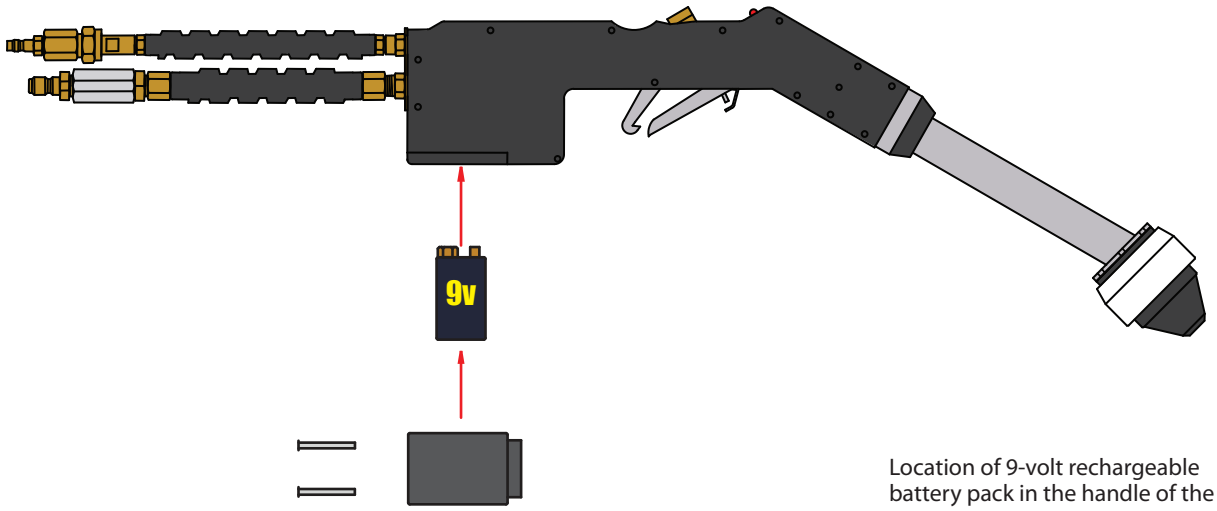
## CHEMICAL SAFETY PRECAUTIONS

**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 GPS sprayer.
- Always use a cartridge respirator, protective clothing and eye protection when spraying with the GPS-5.
- 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™ spray gun

For operator safety, the MaxCharge spray gun is powered by a low-voltage power supply. The rechargeable 9-volt batteries are in the handle of the GPS-5 spray gun. 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 spray gun.

Some owners report that they sometimes get a static shock when spraying in an enclosed area. ESS wants to emphasize that these static shocks, although sometimes unpleasant, are not at all dangerous to people. They are simply an unfortunate consequence of spraying with an electrostatic sprayer in an enclosed area. When you spray charged particles onto other objects, some of the charge gets on you, or else an opposite charge may be drawn up from the ground, depending on the circumstances.

Here are some things to do to minimize static discharges. First make sure that the sprayer is properly grounded. Your sprayer has a short chain attached to the bottom of its case. It is important that this chain touch the floor during use. If the chain is broken or missing, replace it.

Try misting the floor of the greenhouse or room with plain water before spraying.

Pay attention to the exact conditions in which the shocks happen. You may find that you can prevent them by keeping your finger on the metal trigger of the sprayer, rather than just holding its plastic body. If the shocks happen only when you subsequently touch a piece of equipment, try touching a painted or plastic part of it before you touch metal.

You could also try wearing a different type of shoe. Leather will conduct better than rubberized soles and may lessen the problem.

Avoid touching sensitive electronic equipment such as computers, printers, or cell phones while spraying . A static discharge could damage them.

## Safety decals

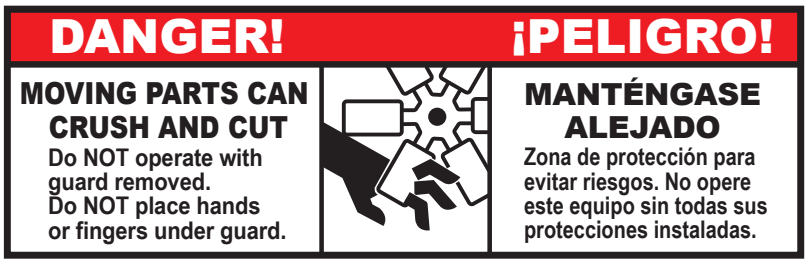
Appropriate safety decals are placed on ESS equipment in order to alert the operator to possible dangers. If decals are missing, please contact ESS immediately for replacement decals.


**READ AND FOLLOW THE CHEMICAL MANUFACTURER'S INSTRUCTIONS CAREFULLY.**

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


**CAUTION:**
The stainless steel tank operates under pressure.

*This decal describes important information on correct use of the tank and its agitator.*

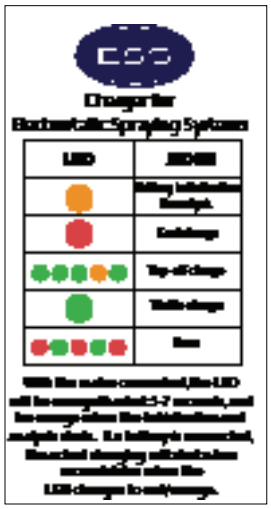



**DO NOT RUN THE SPRAYER WITHOUT ALL GUARDS IN PLACE.**
Serious injury can result.

*This decal is located on the belt guard. Do not operate your sprayer without this guard in place. If the decal is missing, please contact ESS immediately for a replacement decal.*


**REMEMBER TO DISASSEMBLE AND CLEAN THE FILTERS REGULARLY.**

*The performance of your GPS sprayer can suffer if the filters are not kept clean.*



*This label is placed on the charger of all sprayguns.*

# Features of the GPS-5 Sprayer

## Designed for the needs of larger commercial greenhouses and coffee growers


## About your GPS-5 sprayer

The GPS-5™ is a self-contained unit. The engine provides power to the compressor to produce pressurized air. This air passes through the radiator, is cooled, and follows two different routes from a black iron tee. One route goes to the hose reel and in the red hose of the twin-line hose. The other route goes to the tank pressure regulator and then to the tank. When the engine is on and the tank pressure regulator is set between 12-15 PSI, the tank is continuously pressurized and agitated to prevent separation and settling of the chemical. From the tank, the line goes to the hose reel and in the gray hose of the twin-line hose. The twin-line hose, which carries pressurized liquid and air lines feeds into the spray gun. The liquid combines with the pressurized air and atomizes into 40 micron VMD (volume mean diameter) drops. The droplets are electrostatically charged and sprayed from the nozzle assembly. Due to the electrostatic charge, the droplets are attracted to all plant surfaces in the direction that the handgun points, including the back of leaves and foliage deep within the canopy.

## Technical specifications

| | | | |
|---|---|---|---|
| **Nozzles** | **1** | **Dimensions** | **40" H × 22" W × 42" L (1 m. × 0.6m. × 1.1m.)** |
| **External air supply required** | **No** | | |
| **Electricity required** | **No** | **Tank Pressure** | **12 – 15 PSI (0.8 – 1.1 kg./cm2)** |
| **Standard hose length** | **150 ft. (45.7 m.)** | | |
| **Weight empty** | **230 lbs. (104.3 kg.)** | **Flow rate** | **4 gal./hr. (15.1 L../hr.)** |
| **Weight full** | **270 lbs. (122.5 kg.)** | **Drop size** | **40 microns** |
| **Shipping weight** | **350 lbs. (158.8 kg.)** | **Spray range** | **15 to 20 ft. (4.6 m. to 6.1 m.)** |
| **Main tank capacity** | **5 gal. (18.9 L.)** | | |
| **Air line pressure** | **50 to 60 PSI (3.5 kg./cm$^2$ to 4.2 kg./cm$^2$)** | **Available options** | **250 ft. (76.2 m.) hose 2 or 3-headed spray guns** |

# Operating instructions

**ALL OPERATORS must read this Owner's Manual completely and thoroughly before operating the GPS-5 sprayer. They must be familiar with all operating instructions and safety precautions.**

## Unpacking and assembling the sprayer

In the shipping box there should be:

one GPS-5 sprayer
one spray gun in a box,
one handle,
four wheels, and
one GPS-5 Parts Kit.

The sprayer is fastened to the shipping pallet with cable ties. Cut the ties to remove the sprayer. The GPS wagon has had its handle and wheels removed for shipping. To prepare the cart for operation, fasten the handles and wheels onto the wagon.

Carefully open the spray gun box, remove the spray gun, and unwrap the bubble wrap from the spray gun. Store the box and bubble wrap for future shipping. You will need this box to return the spray gun for its Yearly Service.

The Parts Kit contains a collection of small parts commonly needed to maintain and repair your GPS-5 sprayer as well as the battery charger for the spray gun, a spray gun shoulder pad, and the GPS-5 Owner's Manual. Please store your Parts Kit in a safe place for future use.

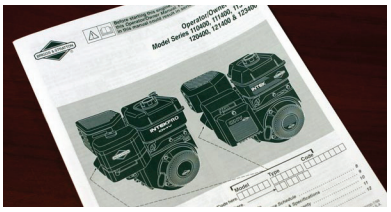
Among the items in the Parts Kit you will find one extra flow disk and one extra strainer. We call your attention to these parts because they are indeed very small and easy to overlook; however they are essential for your sprayer to run correctly. (See the section about the air filter for detailed instructions on cleaning and replacing the air filter. See the section on the liquid filter to clean or replace the flow disk and the strainer.)

A warranty registration card is bound into the manual after the Warranty page. After unpacking the sprayer, please take time to fill this card out and send it in to ESS. This will insure your warranty protection in the event anything happens to your sprayer or handgun.

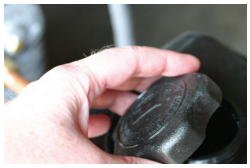
*The hardware to reattach the handle and wheels is in your Parts Kit box.*

## Before use

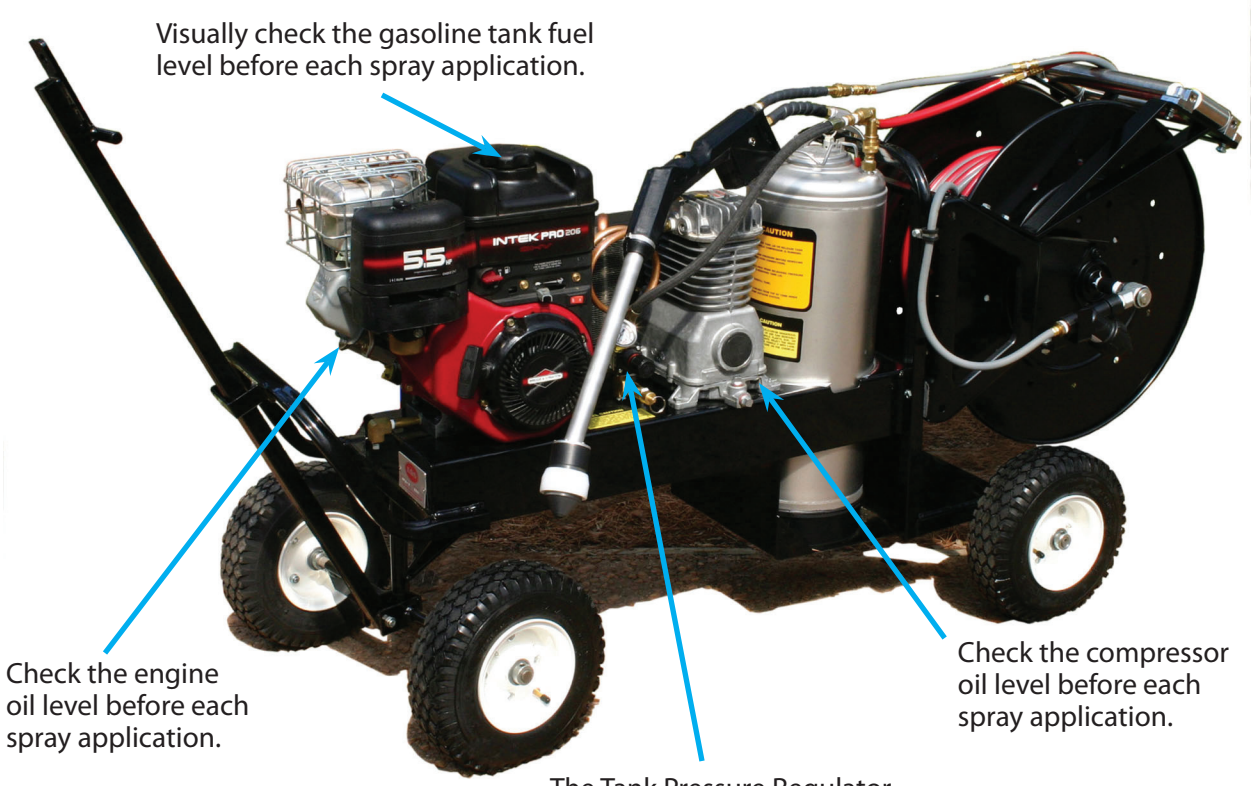
The engine and the air compressor have been filled with the proper lubricant at the factory. However, their lubricant levels must be checked before the GPS-5 is operated. If they need to be replenished, use 30 weight compressor oil in the compressor and 10W-30 oil in the engine.  Fill the gasoline engine tank with unleaded gasoline.



*Please consult the Briggs and Stratton gasoline engine manual for detailed instructions on operating and maintaining of the engine.*



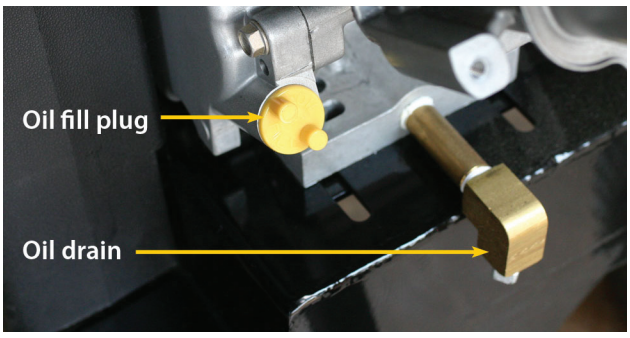
Visually check the gasoline tank fuel level before each spray application.



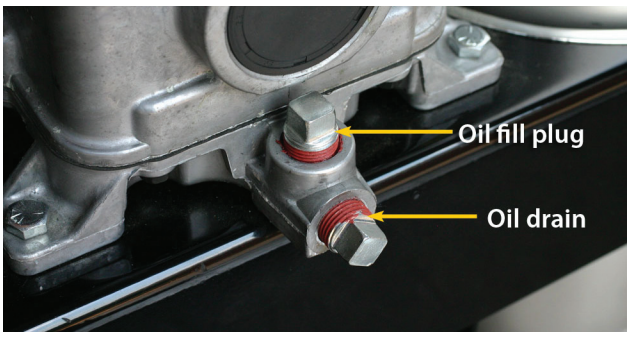

Check the engine oil level before each spray application.

The Tank Pressure Regulator controls the pressure in the tank. Set the tank pressure to 12-15 PSI.

Check the compressor oil level before each spray application.



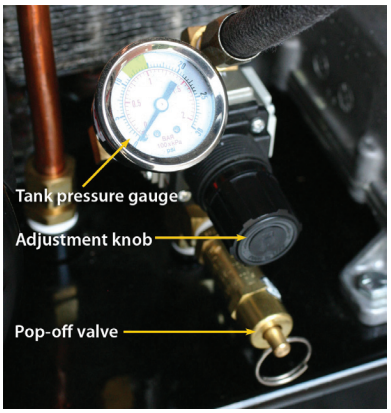

To check the engine  oil level, unscrew the yellow plastic plug. Oil level should be up to the lip of the fill hole.

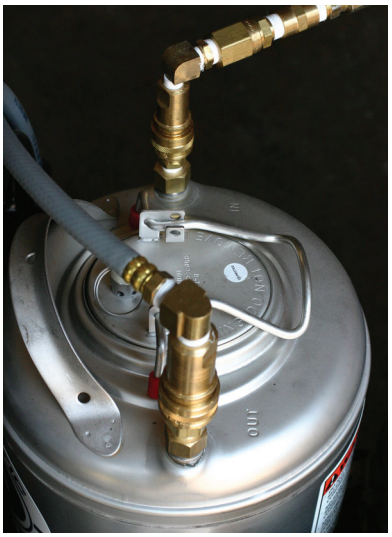



To check the compressor oil, remove the 7/16" plug. Oil level should be up to the lip of the hole.

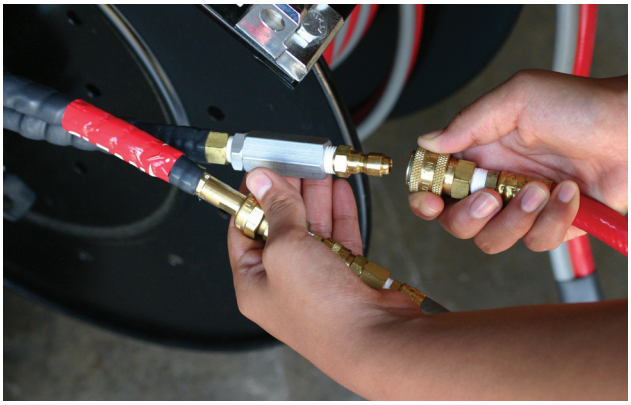
### To set the tank pressure:

Start engine. Pull the adjustment knob's black plastic cover to unlock it. Turn left (counter-clockwise) to decrease pressure; turn right (clockwise) to increase pressure. Set the pressure between 12 to 15 PSI (marked in light green). Push the black plastic cover in to lock the new setting.



The Tank Quick Connects connect the tank to the incoming airline and outgoing liquid line.



The Spray Gun Quick Connect Plugs attach to the Spray Gun Quick Connect Sockets.

## Steps for operation

**Engine/Compressor Pre-spray check**

1. Check oil level in engine; add oil if needed
2. Check gas level in engine tank; add gas if needed
3. Check oil level in compressor; add oil if needed
4. Prepare the tank mix. Open tank. Pour mix in. Close tank
5. To start the engine, Turn the engine ON. Set the Run/Choke Control to CHOKE (far right) and the Engine Speed Control to FAST (to the right) before pulling the starter cord. After the engine engages, move the Run/Choke control to Run (towards the left).
6. Set the tank pressure to 12-15 PSI.
7. Connect the air line hose to the air connection from the compressor to air leader on the spray gun.
8. Connect the liquid line hose from the tank to the liquid leader on the spray gun.
9. Aim spray gun and engage the trigger; lock trigger if desired. Spray with even, sweeping strokes.
   NOTE: It may take about a few moments for air to clear the lines before liquid sprays regularly without air bubbles.

## After spraying:

1. Disengage trigger.
2. Turn engine off.
3. Open stainless steel tank; clean its interior and exterior; fill tank with 5 liters (1.25) gallons of clean water; close tank
4. Disconnect air and liquid spray gun quick connects.
5. Disassemble liquid filter assembly; set aside.
6. 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.
7. Unplug liquid quick connect plug from liquid quick connect socket to stop flow of liquid.
8. Clean liquid filter assembly.
9. Reassemble liquid filter assembly.
10. Reconnect quick connects.
11. Turn engine on.
12. Engage trigger and allow remaining liter (approximately 1 quart) of water to run through to clean spray gun; allow air to flow for 30 seconds more to reduce possibility of corrosion.
13. Turn engine off.
14. Disconnect spray gun quick connects.
15. Disconnect the air hose from the air compressor.
16. Apply silicone spray or similar lubricating oil to all quick connects.
17 Clean the nozzle assembly.
18. Check compressor air filter; clean if needed.


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

# GPS-5 maintenance schedule

Please observe the recommended maintenance schedule for your GPS-5 sprayer 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 GPS-5 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.

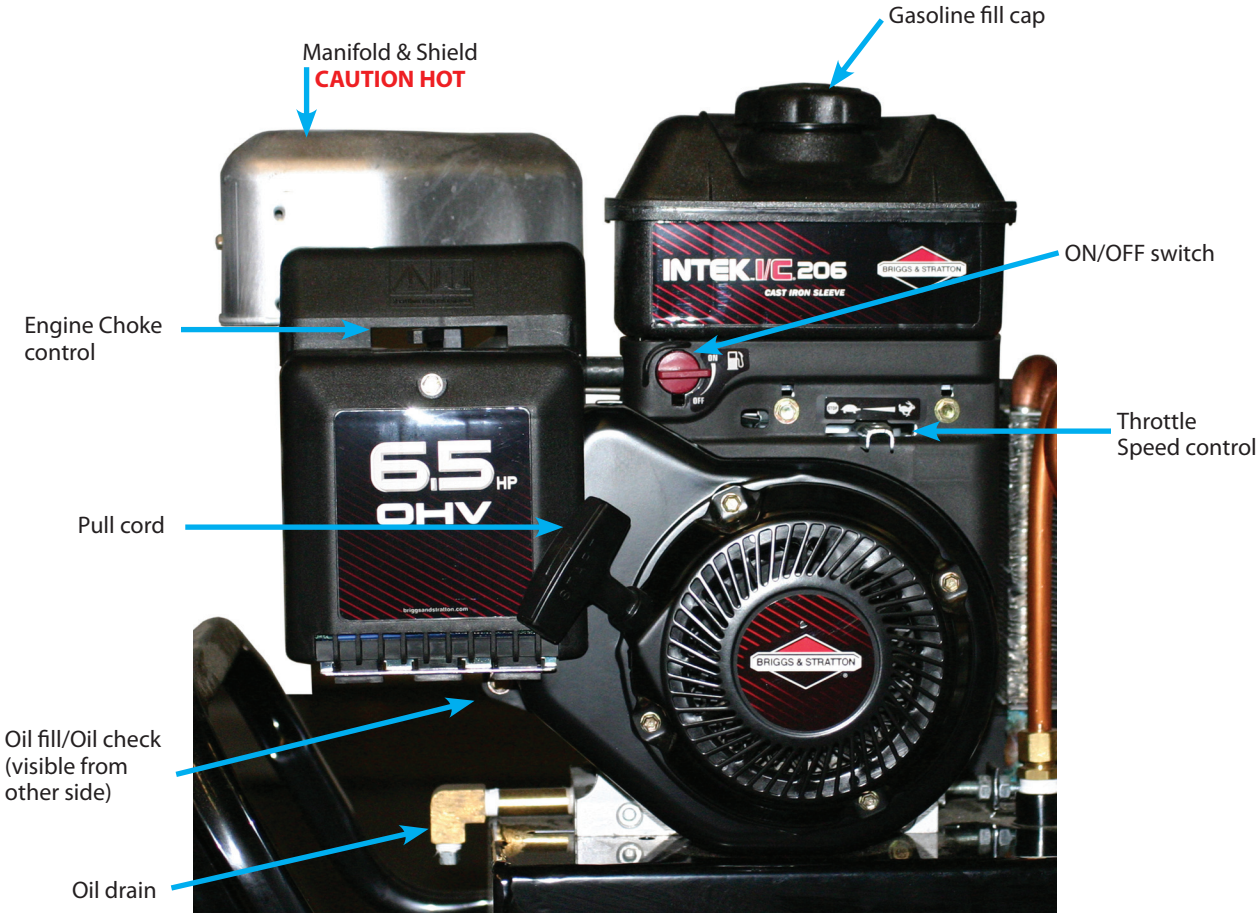
| | |
|---|---|
| Check engine oil level and add oil as needed | Before every spray application |
| Check compressor oil level and add oil as needed | Before every spray application |
| Clean the liquid filter at hose reel and spray gun | After every spray application |
| Clean the nozzle | When spray pattern is different than when the GPS-5™/GPS-5™ was new |
| Recharge batteries in spray gun | When charging indicator does not light during operation (about every 8 operational hours)** |
| Replace batteries in spray gun | When batteries no longer hold a sufficient charge to complete a ten-hour work session or show other signs of battery deterioration |
| Service air cleaner cartridge in engine | Every 25 operational hours OR every season** |
| Change engine oil | After first 5 operational hours, then every 50 operational hours OR every season** |
| Clean and replace air filter in compressor | Every 75 operational hours OR if dirty** |
| Clean spark plug in engine | Every 100 operational hours OR every season** |
| Change compressor oil | Every 100 operational hours OR if dirty** |
| Check and tighten bolts | Every month |
| Check compressor air intake filter; clean as needed | After every spray application |

** Whichever comes first

# REFERENCE SECTION

## Engine

The GPS-5™ uses a 6.5 horsepower Briggs & Stratton gasoline engine to power the air compressor. Before each spray operation, the gas and oil levels should be checked. Use lead-free gasoline and 10W-30 detergent oil. Follow the Maintenance Schedule on page 9 for periodic engine maintenance procedures.




**To start engine:**

1. Turn ON.
2. Set the Engine Choke control to Choke (to the far right).
2. Set the Throttle Speed control to Fast (to the far right; indicated by a rabbit icon.).
3. Pull the starter cord.
4. After the engine engages, move the Engine Choke control to run (far left).

**To stop engine:**

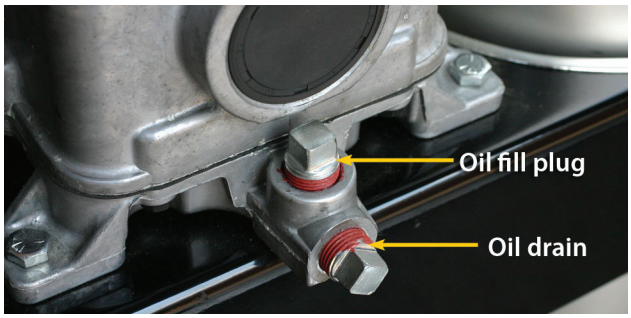
1. Move Throttle Speed control towards the turtle icon (slow) at the left.
2. Turn ON/OFF switch to OFF.

NOTE

Note: Do not use choke to stop engine, as a backfire or engine damage may result.

## Compressor

The compressor produces pressurized air which is used to atomize and propel the liquid spray. The oil level should be checked before each spray application. Use only 30-weight compressor oil in the compressor. Follow the Maintenance Schedule on page 10 for periodic engine maintenance procedures.



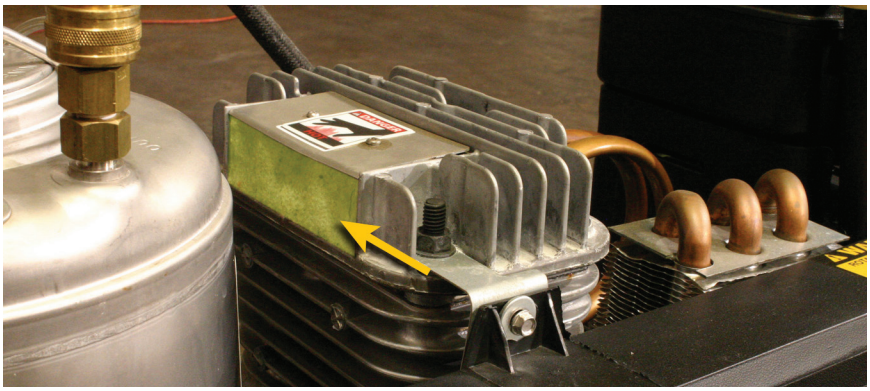

To check the compressor oil, remove the 7/16" oil fill plug. Oil level should be up to the lip of the hole.


**NOTE:**

*The GPS-5 engine and compressor become hot during normal use.*

### Compressor air filter

The compressor has an air intake filter located on the front side of the compressor. This filter should be checked regularly. If it gets clogged, it will cause the compressor to overheat. Take note of the conditions you are spraying in. The filter will need to be cleaned more often if it's dusty.



*Location of the compressor air intake filter.*

To clean the compressor air filter:

Make sure the compressor has cooled down.

Remove filter from the compressor.

Use compressed air to clean the filter, blowing from the inside surface to the outside.

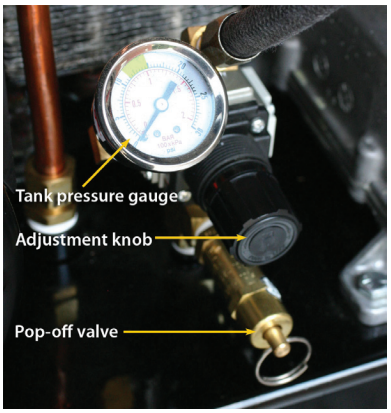
Replace the filter in its holder, felt side in.

When the filter can no longer be cleaned effectively with compressed air, replace it. A spare filter is in your parts kit..

The replacement compressor air filter is available from ESS. Order S/N #4218.

*Cleaning the compressor air filter with compressed air.*

## Tank pressure regulator




The tank pressure regulator controls the amount of pressure in the tank pressure line. Optimum tank pressure is 12-15 PSI.

**To set the tank pressure:**

Start engine. Pull the adjustment knob's black plastic cover to unlock it. Turn left (counter-clockwise) to decrease pressure; turn right (clockwise) to increase pressure. Set the pressure between 12 to 15 PSI (marked in light green). Push the black plastic cover in to lock the new setting.

**Note:** For best results, set the pressure from a lower pressure to a higher pressure. If the pressure is set too high, adjust the regulator below the desired pressure then adjust it up to the desired pressure.

## Pop-off valve

The GPS-5™ has a 100 PSI spring-loaded pop-off valve which is connected to the tank pressure regulator. The valve relieves pressure greater than 100 PSI to protect the sprayer from being damaged by extreme air pressure.

If the pop-off valve blows, **shut off the sprayer immediately**. Determine the cause of the out-of-range air pressure and repair. Replace the pop-off valve (ESS S/N 62).

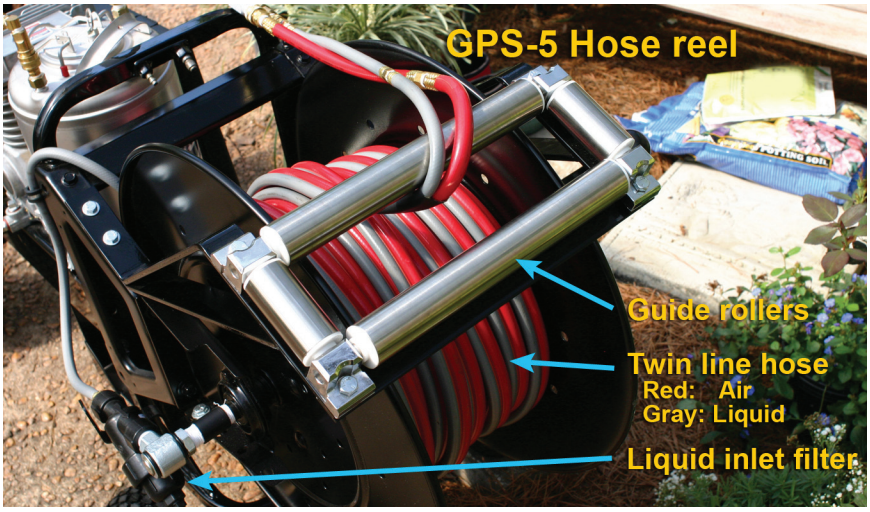
## Tongue handle

The tongue handle can be pulled by hand or attached to a small motorized vehicle for towing. In order to pull the sprayer, the vehicle must have a hole on the back of its chassis frame for a pin. Place a pin through the hole in the tongue handle and through the hole in the vehicle to pull the sprayer.

Keep safety in mind and use common sense when towing the GPS-5. Do not allow passengers to ride the GPS-5. Do not exceed a safe speed for the conditions and terrain. Use caution on turns and sharp curves as the sprayer may tip over.

**NOTE: ESS will not be held responsible for accidents that occur as a result of hazardous operations.**

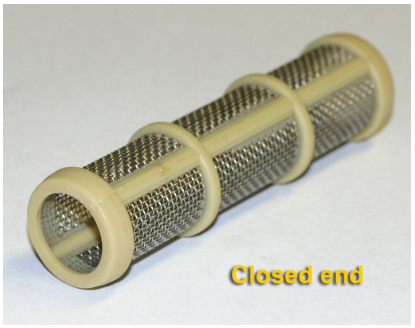
# Hose reel and liquid inlet filter




The hose reel contains the twin line hose running from the main unit to the handgun. Air (red hose) and liquid (gray hose) are plumbed into the hose reel from the compressor and liquid tank. There is a filter attached to the liquid inlet on the hose reel. The filter consists of a strainer, O-ring (installed on cap) , and bowl-shaped cap. Periodically check and clean this filter to clear any debris that accumulates there. Replace the O-ring when it become worn.

The cap turns counter-clockwise (to the left) to open and clockwise (to the right) to close.


*Liquid inlet filter*


**How to tell the cap end of the strainer**
It's important to replace the strainer in the correct direction. Carefully examine the ends of the strainer. If you can see the terminus of the interior plastic ribs, that's the "open" end. If there is a smooth plastic ring, that is the "closed" end. Place the closed end into the filter cap (Remember: CLOSED to CAP).

## Stainless steel tank

The GPS-5 has a 5-gallon (18.9 liter) stainless steel tank. When the compressor is operating and the tank pressure gauge is set between 12-15 PSI, the liquid in the tank is continuously agitated. This helps prevent separation and settling of the chemical mixture.

There is a pressure release valve lever on the tank lid that allows the operator to release pressure in the tank before opening. When the lever is horizontal, the tank is pressurized; when the lever is vertical, the tank is not pressurized and can be safely opened. When the GPS-5 is running, you will hear a small amount of air escaping from the tank lid even when the lid is fastened and latched. This is due to agitation and is normal.


Latched and pressurized


Open (after being depressurized)

CAUTION:
TANK CONTENTS UNDER PRESSURE
Stand back when opening the Pressure release valve.

Note: Do not operate the sprayer when the tank lid is not securely closed. Chemicals may splash out onto the operator if the tank is open during operation

### To open the tank:

1. Slowly open the Pressure release valve by turning it counter-clockwise (left). This depressurizes the tank.
2. Pull the tank lid's latch up.
3. Holding on to the latch, rotate the tank lid 90° clockwise.
4. Pull out the tank lid. Notice the direction of the tank lid in relationship to the tank opening.

### To close the tank:

1. Slide the lid into the tank opening, using the same direction as when it was removed.
2. Rotate the lid 90° counterclockwise.
3. While pulling the lid up to seal it against the tank opening, push down on the lid latch until it is parallel with the tank lid and seals tightly.
4. Close the Pressure release valve by turning it clockwise.

**Note:** Do not operate the sprayer when the tank lid is not securely closed. Tank agitation is powerful and liquid may splash out if the lid is not sealed.

The tank should be thoroughly cleaned immediately after each use by triple-rinsing the tank; a commercially available tank cleaner like Nutra-Sol may be used and is recommended when the GPS-5 is used to spray wettable powders on a regular basis.


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

# Quick connects

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

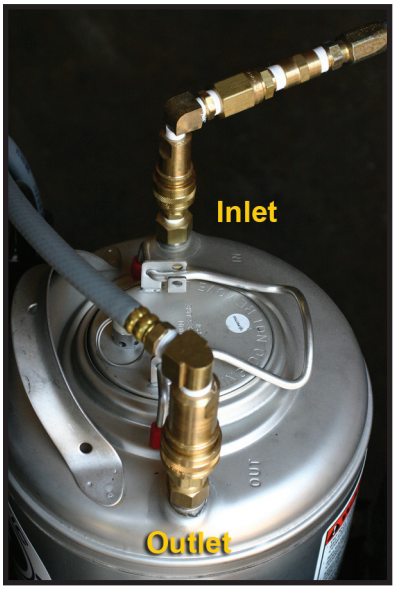
tank inlet
tank (liquid) outlet,
spray gun air inlet
spray gun liquid inlet

**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 Tank's inlet and outlet plugs are clearly marked,.*

## The air connection

The quick connect for the air connection is on the top of the air hose storage rack. The other end of the air line hose connects to the air leader of the spray gun. The air leader of the spray gun 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.

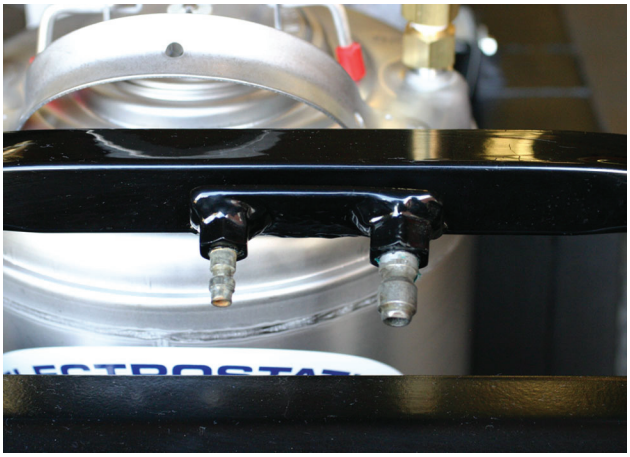
*Don't worry about connecting the air or liquid to the wrong hose – the liquid plug/socket is smaller than the air plug/socket. It's not possible to cross-connect them.*

## The liquid connection

The quick connect for the liquid line is on the bottom of the backpack tank and connects the liquid leader of the spray gun. The liquid line is gray and only long enough to allow the user to move freely with the spray gun.

## How to store the hose quick-connects when not in use

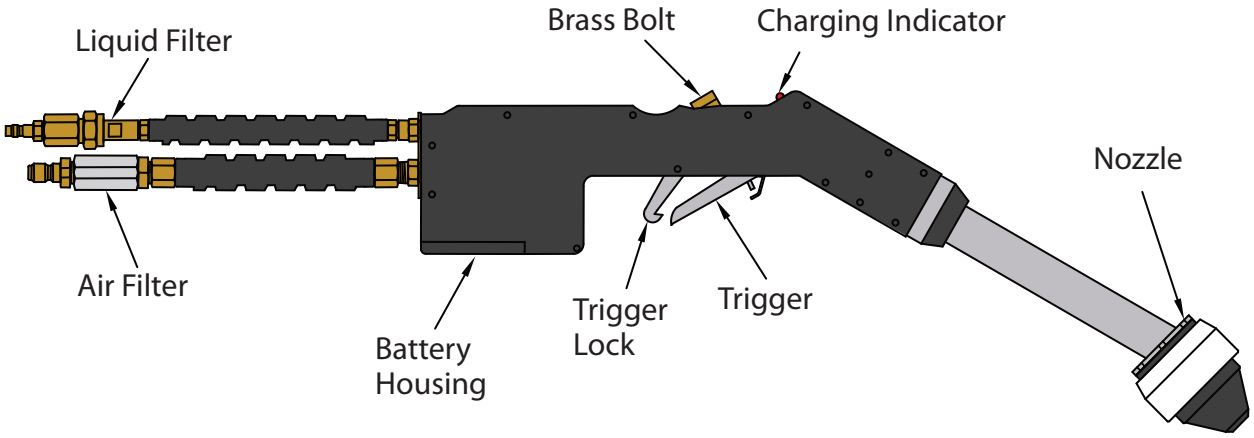
The quick-connect sockets and plugs used on your GPS-5 sprayer are precision components and should be kept clean. When not attached to the spray gun leaders, the socket ends of the twin-line hose should be attached to the plugs provided on the GPS frame. This will ensure that the quick-connect plugs are not damaged while the GPS-5 is being moved.



## Spray gun

The spray gun is held by the operator during spraying. Activation of the trigger causes liquid to spray. The Spray gun 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 Spray gun shell is user-serviceable. **Do not open the spray gun shell**; doing so will void the warranty on the spray gun.

NOTE

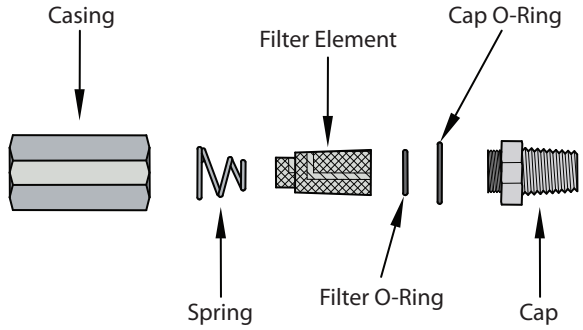



*The Spray Gun*

## Air filter

**Note: GPS-5 units manufactured after March 2009 do not require an air filter on the spray gun air leader.**

For GPS-5 units manufactured before March 2009, there is an in-line air filter located outside the base of the spray gun 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.



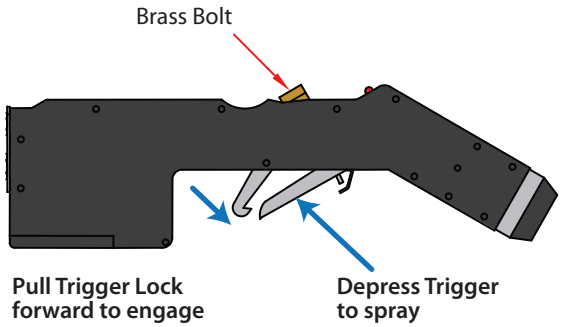

*The Air Filter Assembly*

**To clean the air filter:**

1. Unthread the casing from the cap using a ¾" 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

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:

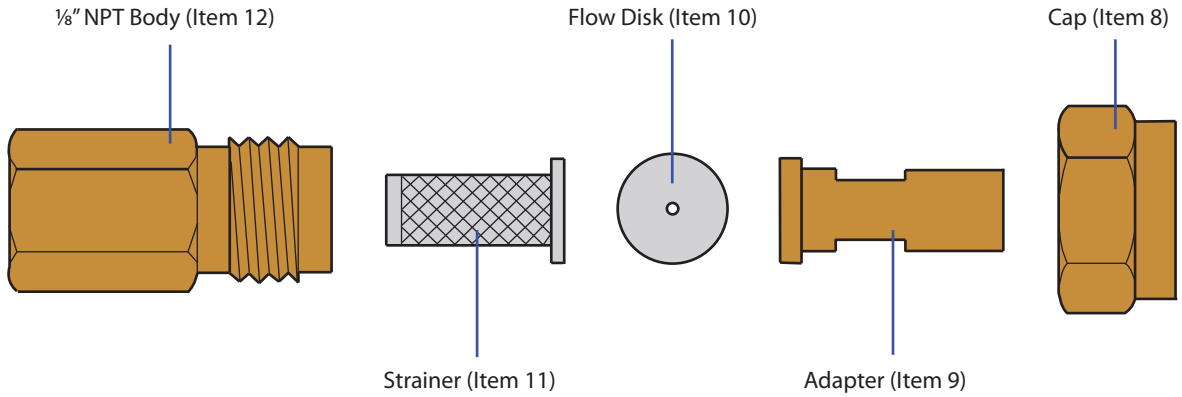
1. Depress the trigger up towards the body of the spray gun to start spraying.
2. To keep spraying, either keep holding the trigger or lock it in place by pulling up the lock and hooking the trigger.
3. To stop spraying when the trigger is not locked, let go of the trigger.

## To clean the trigger:

1. Unthread the brass bolt on the top of the spray gun with a ⅝" 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 spray gun until tight.

## Liquid filter assembly

The liquid filter assembly is located outside the base of the spray gun. It is composed of these parts: a ⅛" 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 GPS-5 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 13⁄16" wrench on the cap (Item 8) and an 11⁄16" wrench on the ⅛" NPT body (Item 12), unthread them.

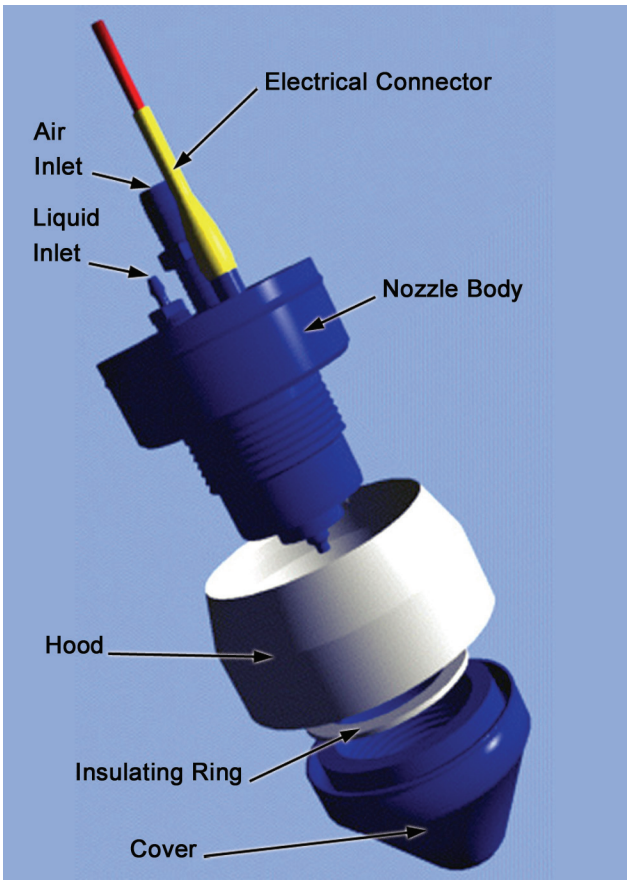
Note: When you disassemble the liquid filter assembly, notice how the parts fit together in order to reassemble them properly. Be careful not to lose any parts, particularly the flow disk (Item 10) which is inside the cap. The sprayer will not function correctly without the flow disk.

2. Remove the strainer (Item 11) from the ⅛" NPT body.
3. If the ⅛" 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 ⅛" NPT body.
7. Rethread the ⅛" 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 spray gun 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 spray gun**
Always rinse the spray gun 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 GPS-5 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 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.**

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 spray gun. 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).


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

## Pre-spray check

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.

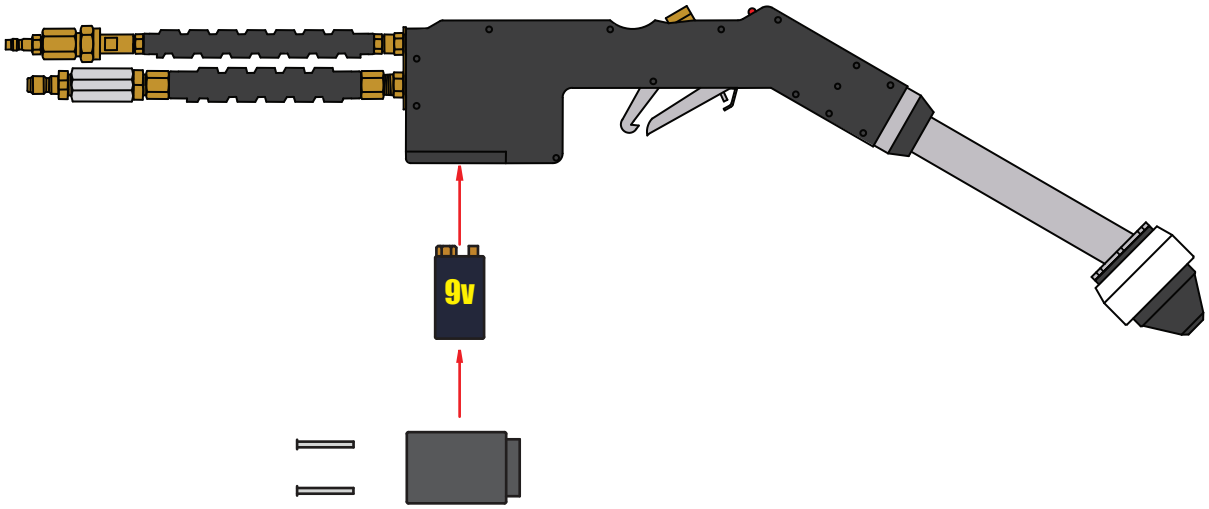
## Post-spray check

After each spray it is essential that hoses and spray gun 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.

# Batteries

The nozzle charging operates on two 9-volt rechargeable batteries which are located in the base of the spray gun. In average conditions, the batteries will last 10 to15 hours of operation on a charge. They should be recharged when the charging indicator on top of the spray gun shell doesn't glow when air is going through the spray gun. 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-hydride rechargeable batteries. Order the GPS-5's replacement battery pack from ESS.

Remember to charge the spray gun batteries after every work session!




**To change the batteries:**

1. Unscrew the two 6-32 x ½" 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 ½" Phillips head machine screws back in to secure the battery cover.
5. Charge the spray gun before attempting to use it.

## Yearly spray gun service

Electrostatic Spraying Systems, Inc. offers and recommends yearly services on ESS spray guns. For a nominal fee plus the cost of replacement parts, ESS will thoroughly clean the spray gun, replace any worn parts and recalibrate the electronics and nozzle. The Yearly Service also extends the spray gun 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 spray gun services. Then package the spray gun securely since it can be damaged in shipment. Ship the spray gun in its original packing material if possible. If the original packing is not available, wrap the spray gun 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 spray gun 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 spray gun 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 Spray Gun Service "turns back the clock" – the original 1-Year Warranty on the spray gun is renewed for another year!

Yet another good reason to send your spray gun 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 spray gun 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 GPS-5's MaxCharge spray gun, 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 GPS-5 sprayer.

1. Before each job, ensure that your sprayer is in good working order (see the pre-spray checklist on page 8 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 spray gun 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 spray gun 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 spray gun.

**Let the MaxCharge™ Spray gun do the work!**
There's no need to stick the tip of the spray gun 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.

## Preparing a tank mix

The tank mix depends on two factors: water requirement and dosage. Water requirement is the amount of water needed to cover the given treatment area. Dosage is the amount of chemical which should be applied in a given treatment area.

First determine the water requirement for your sprayer over a known area. An easy way to determine water requirement is to spray a trial application with water. Put a gallon of clean water in the ESS SC-1 tank and thoroughly spray a known area. After spraying the known area, determine how much water was used from the amount left in the tank. This is the water requirement for the given area. Next measure the known area to determine how many square feet were sprayed. Write down both values for future reference.

_____ (gallons) Water Requirement

for _____ (size of known area in ft²)

Next determine the dosage. This is the amount of chemical you wish to dispense in a given area. Appropriate dosage depends upon chemical label recommendations, disinfection or sanitization goals, level of pest or disease infestation, past experience with particular chemicals, and other variables.

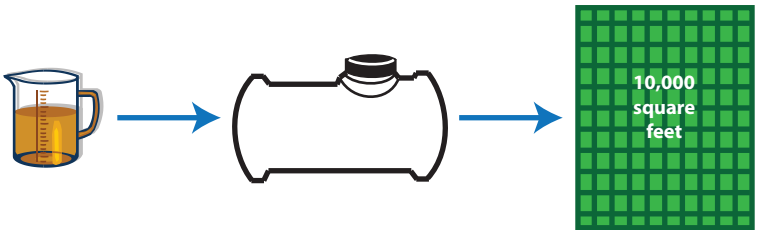
Because electrostatic spraying is a much more effective spraying method, ESS recommends that you experiment to find the optimum chemical concentration. Start spraying using the same chemical rate used in the past with either hydraulic or air assisted sprayers. For example, if in the past you have used 2 ounces of chemical in a hydraulic sprayer to spray a known area; then mix 2 ounces of chemical to the water required by the GPS-5 to spray the same known area. In other words, the same amount of chemical is sprayed out in the area but with much less water.

### DO NOT OVERFILL THE TANK

*ESS recommends that the tank not be filled past the full level mark, since the force of agitation may cause liquid to escape through the air bleed hole in the tank lid.*

### Example:

You have two greenhouses covering 10,000 square feet that are sprayed using a conventional hydraulic sprayer. In the past you mixed 6 ounces of chemical to 25-50 gallons of water in order to spray both house at full rate.




With your new ESS sprayer you need to find out how much water is needed to spray the known area. The amount of water required to spray both houses is the amount of water in which you mix the 6 ounces of chemical in. Depending on the crop sprayed, you will use approximately 1to 2 gallons of water with the ESS sprayer to cover 10,000 square feet. This applies to all chemicals, even wettable powders**.**

After becoming familiar with the sprayer spraying at full rate, you can start reducing the amount of chemical used for each spray. Keeping the amount of water in the tank constant, cut the amount of chemical mixed in by 15 to 25% for each spray until a desirable kill is no longer achieved. If you are planning to cut rates then it is very important to scout your crop to determine spray efficiency.

## Chemical compatibility

It's sometimes desirable to spray a mixture of two different chemicals at the same time. It is good practice to conduct a jar test to determine if the chemicals to be mixed are compatible. If they are not, then investigate alternative chemicals or use a compatibility agent to maintain the chemicals in suspension. It is also a good idea to treat the water with a pH agent.

**ESS does not recommend the use of wetting agents or spreader-stickers.**

### How to conduct a jar test

Needed:

- Solutions of chemicals in approximate dilutions
- Jar with lid
- Gloves and Safety Glasses

After mixing solutions of the desired chemicals, place them in a large jar, cap it securely, and shake vigorously. Carefully observe the interaction between the chemical compounds. If the water becomes milky or cloudy, the combined solution may plug the nozzles. Let the jar sit for one to two hours. If there is precipitate on the bottom of the jar, then seek another combination of chemicals.

## 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 deceases. As a result, water at temperatures below 10° C (50° F) may freeze and clog the nozzle.*

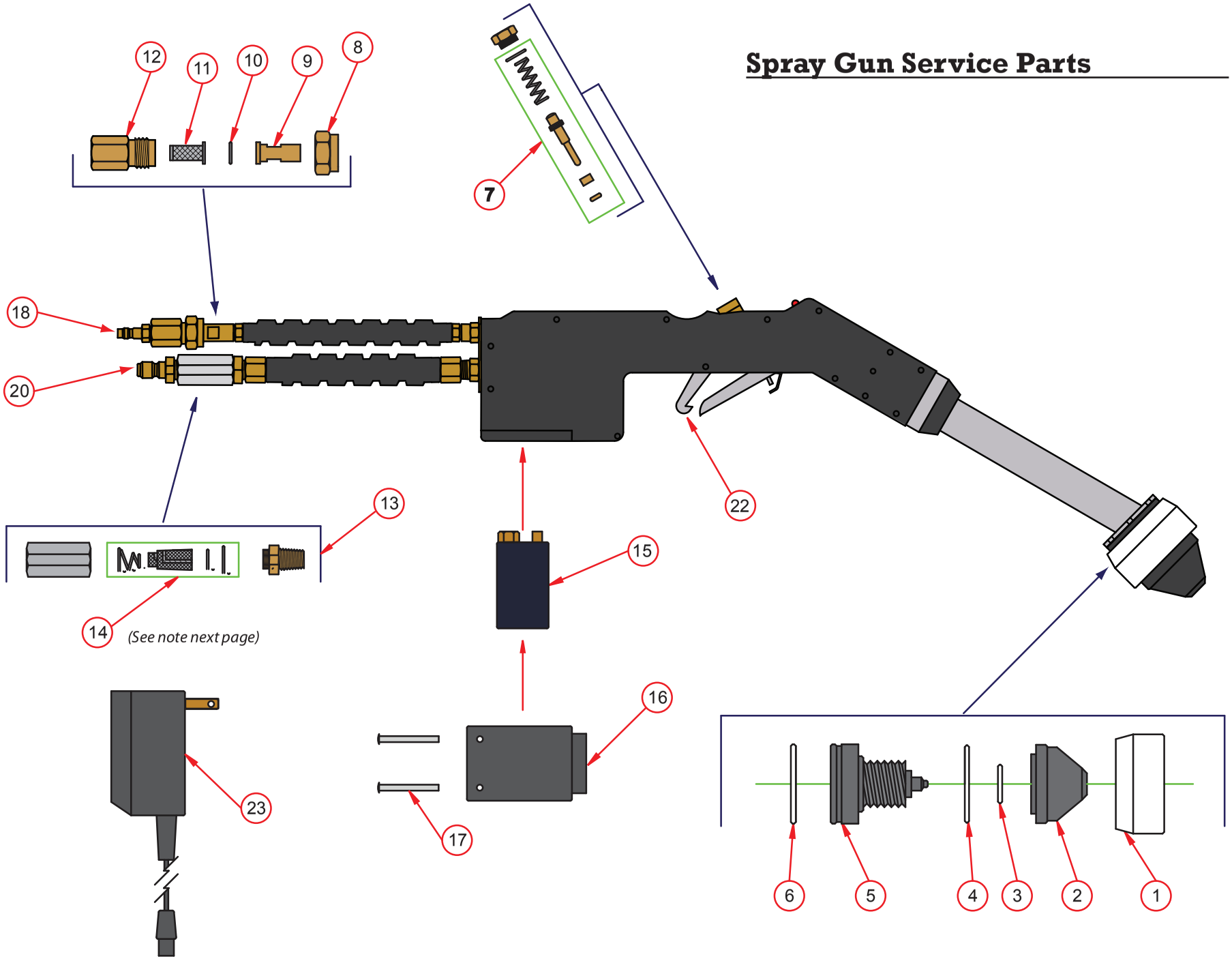
## NOTES

# 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 Spray Gun 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 | • Clogged Liquid Filter | • Clean the Liquid Filter Assembly (See the *Liquid Filter Assembly* section of this manual) |
| | • Liquid fittings are loose | • Make sure the Liquid Filter Assembly is installed correctly.; |
| | • Air fittings are loose or damaged | • 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 |
| | • Clogged Air Filter | • Clean the Air Filter (See The *Air Filter Assembly* section of this manual) |
| | • Dirty Trigger | • Clean the Trigger (See the *To Clean the Trigger* section of this manual) |
| No spray from nozzle or the spray from nozzle is erratic or spits | • Debris in the nozzle | • Clean nozzle according to instructions |
| | • Spray is freezing due to evaporative cooling | •Make sure that water temperature is at least 50° (10°C) |
| | • Liquid filters are clogged | • Clean the Liquid Filter Assembly (See the *Liquid Filter Assembly* section of this manual) |
| | • Low liquid level in the tank | • Refill tank |
| | • Loose liquid or air fitting | • Inspect hose quick connects at case and at spray gun leader. Make sure that all liquid fittings and air fittings are properly seated. |
| | • Dirty Trigger | • Clean the Trigger (See the *To Clean the Trigger* section of this manual) |
| | • Overtightened nozzle cover | • Loosen cover. It should only be finger-tight |
| Charging indicator (LED) blinks or goes is out during operation | • Batteries are exhausted | Recharge batteries If problem persists, replace battery pack |
| | • Dirty nozzle | • Clean nozzle according to instructions |
| Gasoline engine will not start | | Please see the Briggs & Stratton Owner's Manual |

# Spray Gun Service Parts



# GPS-5 service parts

## Spray gun

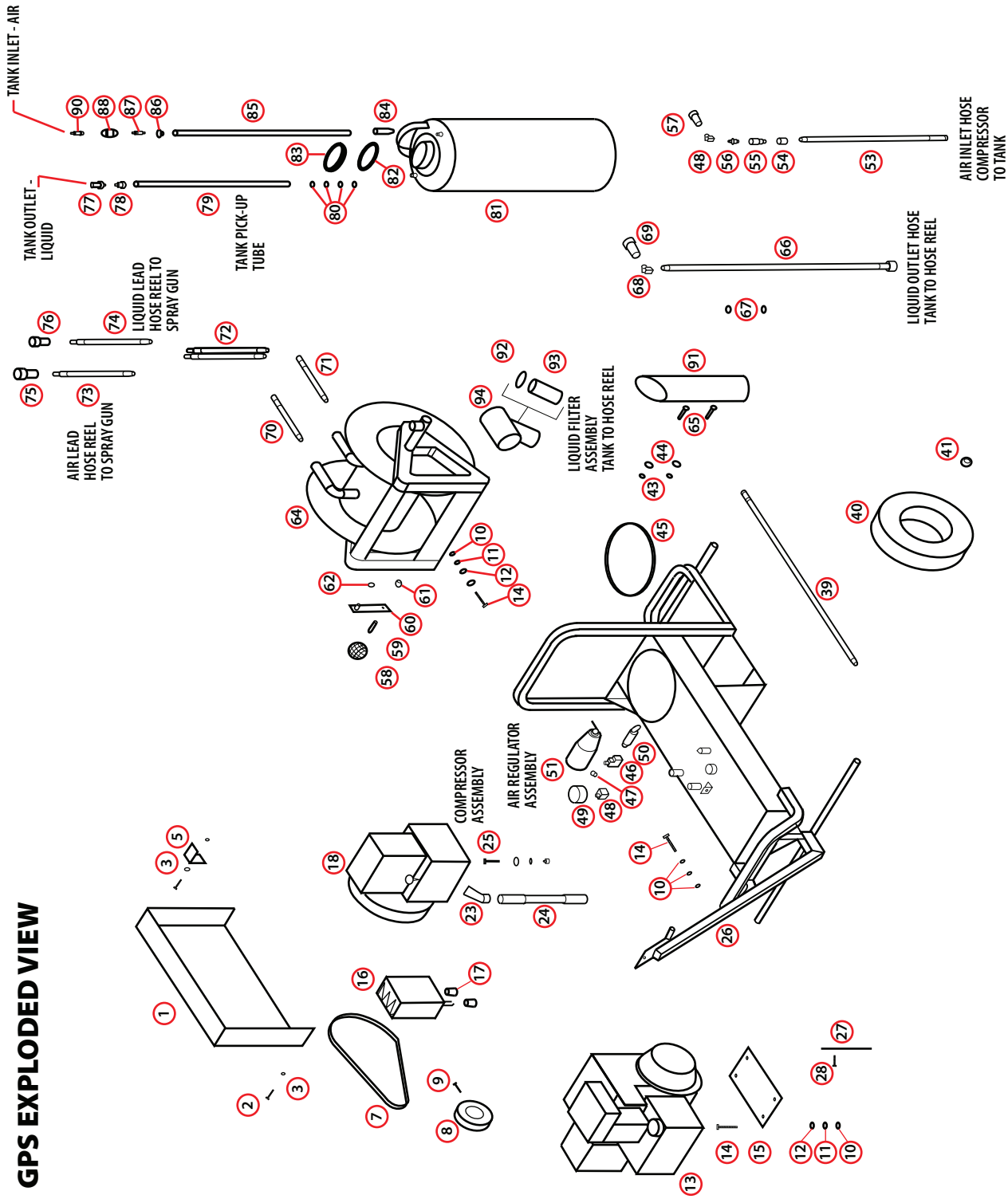
| ITEM NUMBER | ESS PART NUMBER | DESCRIPTION | QUANTITY ORDERED |
|---|---|---|---|
| 1 | AP-5795 | Hood | 1 |
| 2 | NC 5764 | Nozzle Cover | 1 |
| 3 | 5771 | O-Ring, Internal | 1 |
| 4 | AP-5694 | Teflon Ring | 1 |
| 5 | NB-5983 | Nozzle Body, Greenhouse | 1 |
| | | Note: *Must Send Spray Gun In For Repair* | |
| 6 | 5770 | O-Ring, External | 1 |
| 7 | 3731 | Repair Kit, Trigger | 1 |
| 8 | 767 | Cap, Flow Regulator | 1 |
| 9 | 768 | Adapter, ⅛"-27 FPT | 1 |
| 10 | 1755 | Orifice Disk (Flow Disk) | 1 |
| 11 | 437 | Strainer, #50 Mesh | 1 |
| 12 | 770 | Body, ⅛"-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, Spray Gun Shell | 1 |
| 17 | 316 | Screw, #6-32 × ⅜" Long, Phillips, SS | 2 |
| 18 | 239 | QC Plug, ⅛", ⅛" MPT, Brass (Spray Gun Liquid) | 1 |
| 19 | AS-1748 | Spray Gun Leader Assembly, Liquid | 1 |
| 20 | 240 | QC Plug, ¼", ¼" MPT, Brass (Spray Gun) | 1 |
| 21 | AS-1749 | Spray Gun 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 spray gun will not spray or charge efficiently

# GPS EXPLODED VIEW



# Service parts

## GPS-5

| ITEM NUMBER | ESS PART NUMBER | DESCRIPTION | QUANTITY ORDERED |
|---|---|---|---|
| 1 | 29 | BELT GUARD | 1 |
| 2 | 2683 | SCREW, #12 x 7/8" LONG, SELF-DRILLING, TEK, SS | 4 |
| 3 | 6217 | ¼" F/W | 4 |
| 5 | 1925 | BRACKET, BELT GUARD | 1 |
| 7 | 17202 | V-BELT, A45, ZP | 1 |
| 8 | 17203 | SHEAVE, BK-28, ZP | 1 |
| 9 | 35 | KEY | 1 |
| 10 | 75 | HEX NUT, 5/16"-18, ZP | 13 |
| 11 | 73 | LOCKWASHER, 5/16", ZP | 13 |
| 12 | 74 | FLATWASHER, 5/16", ZP | 17 |
| 13 | 27 | ENGINE, 5 HP, BRIGGS & STRATTON | 1 |
| 14 | 1907 | HHCS, 5/16"-18 x 2" LONG, ALL-THREAD, ZP | 5 |
| 15 | 244 | GPS ENGINE BACK-UP PLATE | 1 |
| 16 | 242 | RADIATOR, 5/8" DIA TUBE X 6 PASS | 1 |
| 17 | 1152 | ADAPTER, 3/8" FPT X 1/2" SWEAT, COPPER | 3 |
| 18 | 1904 | COMPRESSOR | 1 |
| 23 | 1809 | ADAPTOR, COMPRESSION, 3/8" MPT × ½" TUBE | 1 |
| 24 | 1905 | COPPER COOLING COIL | 1 |
| 25 | 72 | HHCS, 5/16"-18 x 1 1/2" LONG, G5, ZP | 4 |
| 26 | AW1815 | MAIN FRAME WELDMENT, EPS/GPS | 1 |
| 27 | 1903 | GROUND CHAIN | 1 |
| 39 | 1914 | HOSE ASSY, EPS/GPS, AIR, TEE TO REEL | 1 |
| 40 | 748 | TIRE | 4 |
| 41 | 4 | SHAFT COLLAR, 5/8" ID, 1/2" WIDE | 8 |
| 43 | 247 | HEX NUT, 1/4"-20, ZP | 2 |
| 44 | 70 | LOCKWASHER, 1/4", ZP | 2 |
| 45 | 51 | TRIM RING | 1 |
| 46 | 1234 | TEE, 1/4" NPT, STREET, BRASS | 1 |
| 48 | 67 | ELL, 1/8" NPT, STREET, 90 DEG, BRASS | 2 |
| 49 | 440 | GAUGE, PRESSURE, 1/8" NPT, 0-30 PSI | 1 |
| 50 | 62 | POP-OFF VALVE, 1/4" MPT | 1 |
| 51 | 1182 | REGULATOR, AIR 1/4" NPT | 1 |
| 53 | PP1575 | HOSE, 1/4" ID, FABRIC COV, 1/4" MPT x 1/4" MPT, 20" LONG | 1 |
| 54 | 111 | COUPLING, 1/4" NPT, HEX, BRASS | 1 |
| 55 | 1149 | CHECK VALVE, 1/4" NPT | 1 |
| 56 | 1067 | REDUCING NIPPLE 1/4" MPT x 1/8" MPT, BRASS | 1 |
| 57 | 248 | TANK INLET QUICK CONNECT SOCKET | 1 |
| 58 | 833 | HANDLE BALL, BLACK PLASTIC | 1 |
| 59 | 1745 | STUD, ALL THREAD, 3/8"-16 x 1 1/2" LONG, STEEL | 1 |
| 60 | 1916 | HANDLE, HOSE REEL | 1 |
| 61 | 586 | LOCK NUT, STOVER, TOP, 3/8"-16,ZP | 1 |
| 62 | 73 | LOCKWASHER,5/16, ZP | 2 |
| 63 | 71 | HHCS, 5/16"-18 x 1" LONG, ZP | 1 |
| 64 | 1911 | HOSE REEL | 1 |
| 65 | 1738 | CARRIAGE BOLT, 1/4" -20 x 1 1/2" LONG, ZP | 2 |
| 66 | 1912 | HOSE ASSY, EPS/GPS/J, LIQUID, TANK TO REEL | 1 |
| 67 | 181 | WIRE TIE, NYLON, 4" LONG | 4 |
| 68 | 156 | ELL, 1/4" NPT, STREET, 90 DEG, BRASS | 1 |
| 69 | 450 | TANK OUTLET QUICK CONNECT SOCKET | 1 |

# Service parts cont'

## GPS-5

| ITEM NUMBER | ESS PART NUMBER | DESCRIPTION | QUANTITY ORDERED |
|---|---|---|---|
| 70 | 417 | HOSE ASSY, AIR LEADER | 1 |
| 71 | 419 | HOSE ASSY, LIQUID LEADER | 1 |
| 72 | 252 | TWIN LINE HOSE | 1 |
| 73 | 1924 | HOSE ASSY, AIR REEL TO GUN | 1 |
| 74 | 1922 | HOSE ASSY, LIQUID REEL TO GUN | 1 |
| 75 | 92 | HANDGUN AIR QUICK CONNECT SOCKET | 1 |
| 76 | 90 | HANDGUN LIQUID QUICK CONNECT SOCKET | 1 |
| 77 | 447 | TANK OUTLET QUICK CONNECT SOCKET | 1 |
| 78 | 1248 | 5/16" FJIC x 1/4" MPT ADAPTER | 1 |
| 79 | 198 | LONG PICK-UP TUBE | 1 |
| 80 | 266 | O-RING | 4 |
| 81 | 395 | TANK, 5 GAL, SS | 1 |
| 82 | 1664 | O-RING, TANK LID | 1 |
| 83 | 398 | TANK LID | 1 |
| 84 | 449 | TANK FILTER | 1 |
| 85 | 1933 | HOSE, 1/4" ID, POLYFIBER | 1 |
| 86 | 1662 | HOSE CLAMP, WORM, SIZE 4, SS | 1 |
| 87 | 2392 | PICK-UP TUBE, SHORT | 1 |
| 88 | 1247 | ROOK ADAPTER | 1 |
| 89 | 1239 | NIPPLE, 1/8" NPT, CLOSE, BRASS | 1 |
| 90 | 234 | QC PLUG, 1/8", 1/8" FPT, BRASS, (TANK INLET) | 1 |
| 91 | 245 | HOLSTER | 1 |
| 92 | 6579 | O-RING, LIQUID FILTER | 1 |
| 93 | 6097 | FILTER SCREEN | 1 |
| 94 | 5146 | LIQUID INLET FILTER (INCLUDES SCREEN AND O-RING) | 1 |

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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 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 spray gun 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

# Spray gun repair/Yearly service return form

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

Spray Gun Serial Number: _____

Returned from:

Company: _____

Contact person: _____

Phone number: _____

Shipping address: _____

_____

_____

Mailing address: _____

(if different) _____

_____

Date last serviced: _____

Problems with the Spray gun (if any):

_____

_____

_____

_____

_____

_____

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

**ESS recommends sending your spray gun via a carrier with tracking.**

Method of Payment:

- ☐ Account (must be an approved account)
- ☐ COD
- ☐ Credit Card:
  VISA MASTERCARD

Card Number: _____

Expiration Date: _____

Card Holder's Name: _____
PRINT

_____
SIGN