



# 80SR

SUPERCHARGED

## Operator's Manual



**Electrostatic**  
Spraying Systems

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Toll-Free: 800-213-0518 • Fax: 706-769-8072  
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## **OPERATOR'S MANUAL**

### **MODEL 80SR**

Electrostatic Spraying Systems, Inc.

62 Morrison St. · Watkinsville, GA 30677-2749

U.S.A

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This manual was last updated May 2018.







## 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.

Our products 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 ESS products or service write or call us at:

**Electrostatic Spraying Systems, Inc.**  
**62 Morrison St.**  
**Watkinsville, Georgia 30677-2749, U.S.A.**  
**Phone: 706-769-0025**  
**Toll Free: 1-800-213-0518**  
**Fax: 706-769-8072**  
**support@maxcharge.com**

Please take time to read this manual before operating the ESS 80SR™. This manual contains important instructions for the operation of your equipment. It includes helpful suggestions to maximize productive use. Several safety precautions are also listed for your protection.

Your new sprayer has been thoroughly tested and calibrated at the factory. If you have any problems with it, please contact our customer service department immediately! ESS intends to support its customers with efficient, helpful, and friendly service. We will be glad to answer any questions you have concerning our equipment or service. We appreciate your business and are confident that Electrostatic Spraying Systems can meet your present and future spraying equipment needs.



<sup>1</sup> ESS Supercharged 80SR™, MaxCharge™, and the ESS logo are copyrights or registered trademarks of Electrostatic Spraying Systems, Inc.



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## OVERVIEW OF THE MODEL 80SR™ AIR-ASSISTED ELECTROSTATIC SPRAYER

The heart of the 80SR sprayer is the patented MaxCharge™ nozzle. ESS air-assisted electrostatic sprayers produce 35 to 40 micron electronically charged spray droplets that are carried to the plant canopy in a 5.5 to 7 cfm air stream through each nozzle.

Air, liquid, and electricity enter separately at the rear of the nozzle. A positive charge is applied to the electrode in the tip of the nozzle inducing a negatively charged liquid flow. Just before leaving the nozzle, the liquid is sheared by the air atomizing the liquid into many thousands of 35 to 40 micron droplets trapping the negative charge. The charged droplets leave the nozzle and are carried by the 5.5 to 7 cfm air flow to the plant canopy.

The charged droplets are attracted to the plant material by electrostatic forces, up to 75 times the pull of gravity and evenly coat all the plant surfaces: front, back, underside of leaves, and stems. The result is a uniform spray coverage on hidden areas deep inside the plant canopy where other sprayers miss.

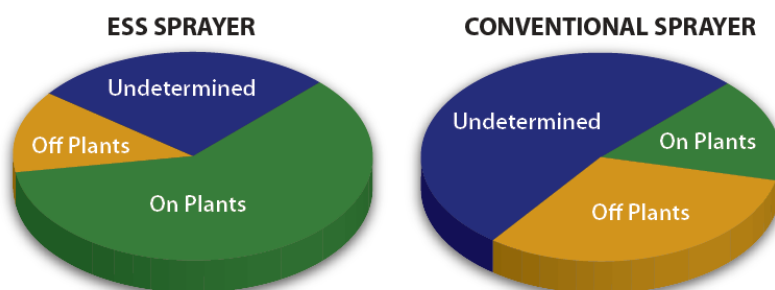
The MaxCharge™ nozzle is easy to clean and corrosion-proof. The interior ceramic outlet resists wear three times better than stainless steel outlets. These features combine to give the best spray coverage on the market.

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*

## WHERE DOES THE SPRAY GO?



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

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

**Imagine the environmental benefit!**






*Electrostatically charged droplets are strongly attracted to plant surfaces.*

# SAFETY INFORMATION

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## Operator Responsibility and Safety

-  Lack of attention to safety can result in accidents, personal injury, or death.
-  Always watch for safety hazards and correct problems promptly.
-  When using any equipment, obey all manufacturers' safety information and labeling.

### IMPORTANT!













***Read the Operator's Manual! Failure to do so is considered a misuse of the equipment.***

**It is the responsibility of the user to read the Operator's Manual to understand the safe and correct operating procedures for the sprayer and to maintain the sprayer according to the manufacturer's recommendations. It is the operator's responsibility to ensure that all who are using this equipment read this manual.**

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

## Equipment Safety








***Use the following safety tips as a general guide when using the 80SR sprayer:***

-  Before operating any equipment, become familiar with all safety guidelines, cautions, and warnings including those provided by the tractor manufacturer.
-  Do not allow children to operate the sprayer. Do not allow adults to operate the sprayer without providing them proper instruction.
-  Do not allow riders on the sprayer or tractor during operation or transport.
-  Keep the area of operation clear of all persons and animals.
-  Sprayer is equipped with a Power Take Off (PTO) driveline. Failure to take proper safety precautions could result in serious injury or death.
-  Keep hands, feet, hair, and clothing away from PTO driveline and other moving parts.
-  Do not operate machinery without all guards and shields in place.
-  Always disengage the PTO, stop tractor engine, and wait for all moving parts to stop before servicing, adjusting, or repairing the sprayer.
-  Do not apply chemicals when weather conditions favor drift from intended treatment area.
-  Never pump flammable or explosive liquids such as gasoline, fuel oil, kerosene, etc. through the ESS sprayer.
-  Turn off the sprayer whenever leaving it unattended.
-  Only unhitch the sprayer from the tractor on firm and level ground.

## CHEMICAL SAFETY

---

***Read and follow all instructions on the chemical manufacturer's label. Make note of the following requirements for:***

-  **Personal Protective Equipment (PPE)** to be worn when handling, mixing, and applying the chemical, including: protective clothing such as boots, gloves, apron, or hat; eye protection such safety glasses, goggles, or a face shield; and respiratory protection such as a mask, cartridge, or respirator.
-  **Directions for use.** This includes handling, mixing, and applying as well as storage and disposal of the chemical.
-  Environmental, physical, and/or chemical **hazards**.
-  **First aid** in case of chemical exposure.
-  **Mandatory waiting periods** between application time and worker reentry (i.e. 'Re-entry Interval' - REI) and crop harvest (i.e. 'Pre-harvest Interval' - PHI).
-  Proper visual and/or verbal **notification** to workers and/or the public regarding areas sprayed.
-  Always follow the prevailing laws of the area in which chemicals will be used.

### ***PLEASE NOTE:***

***Additional safety guidelines associated with specific operating and maintenance procedures are mentioned throughout this manual.***



## Safety Decals

ESS places several decals<sup>1</sup> on the 80SR to remind equipment operators of proper equipment use and possible safety hazards. Even if these decals are missing or hidden from view always follow safe practices when operating ESS machinery. Replace them if they become worn or damaged and can no longer be read.

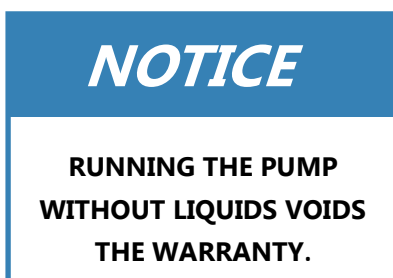
Please make sure to:

1. Note the original locations of the decals on the equipment.
2. Replace decals if they become worn or damaged and can no longer be read. Extra decals may be ordered from ESS or an authorized ESS dealer.

## List of Potential Decals Dependent on Destination

### Tank or Pump Notice

<b><i>NOTICE</i></b>	<b><i>NOTA</i></b>
<p><b>DO NOT RUN TANK OR LIQUID PUMP DRY</b></p> <p>The shaft seal on the liquid pump will fail if the unit is run without the liquid in the tank.</p>	<p><b>NO TRABAJE SIN LIQUIDO EN EL TANQUE O LA BOMBA</b></p> <p>El sello de la bomba se dañara si el equipo funciona sin liquido.</p>



*This notice is repeated several times in this manual. The decal is found on the front and rear of the spray tank.*

<sup>1</sup> ESS is currently redesigning the warning labels for the sprayers. There may be minor changes in the layout and/or wording of the warning decals on your sprayer

List of Potential Decals Dependent on Destination (continued)



Potential Location of Decals Dependent on Destination



Potential Location of Decals Dependent on Destination (continued)



## SPRAYER COMPONENTS

### Supercharger

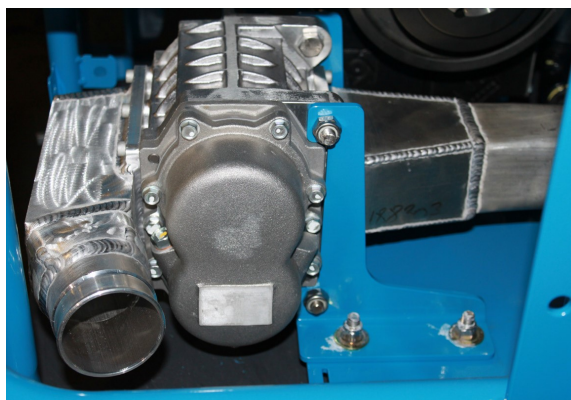
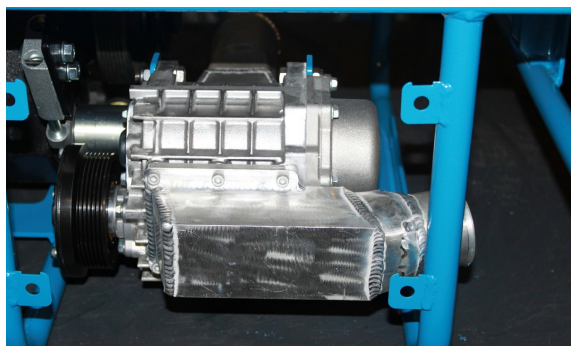
- The unit has a sealed gear and gearcase (no oil in air stream). It is lubricated for life; however, **the oil level should be checked every 500 hours to ensure it is within the hash marks on the dipstick. If it is not, add Kluber GH6-80oil; DO NOT CHANGE OIL. Failure to check oil will void your warranty.**
- **Maximum Temperature:** Please limit outlet gas temperature to 300°F (150°C) maximum or irreversible damage will occur to blower.
- **Blocked Ports:** Never run with a blocked inlet or outlet as excessive temperatures will be reached almost immediately. Irreversible damage will occur.
- Standard operational pressure is 10psi (0.7). **DO NOT EXCEED 12 PSI (0.8 bar) OR DAMAGE COULD OCCUR!**
- Never put fingers or any objects into ports when pump is turning.

### Additional Notes and Comments:

- The Supercharger contains permanently lubricated sealed ball bearings and timing gears. No maintenance is required or expected. There are no user serviceable parts inside the blower.
- The sealed blower gearcase contains Kluber GH6-80oil; MSDS sheet available upon request.
- **FREEZING:** Please do not allow the Supercharger to fill with water and freeze, as freezing water can damage it.
- **SPEEDS:** The Supercharger is designed for speeds not to exceed 10,000 rpm.

*Which is the left side?*

*In this manual, all references to left and right are with the viewer standing at the rear of the sprayer looking forward over the sprayer, as it would be mounted on the tractor.*





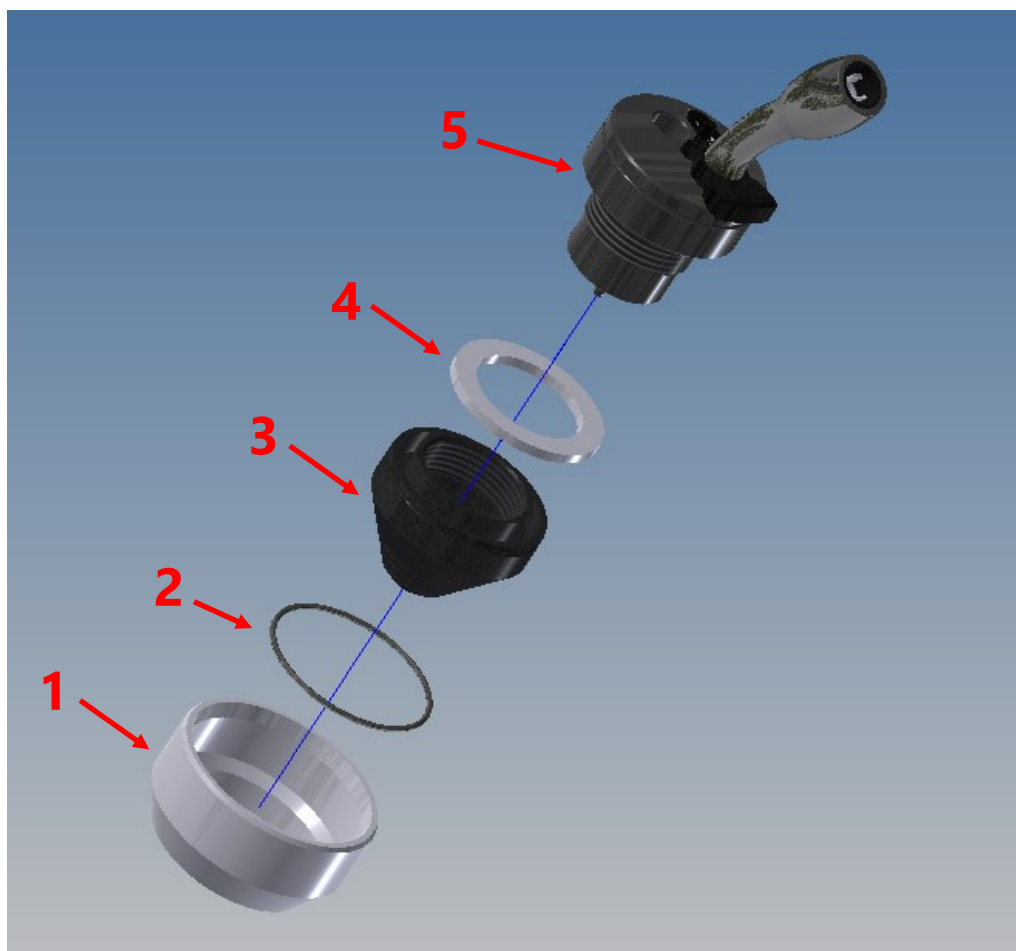
## Nozzles

ESS sprayers allow the operator maximum control when aiming nozzles. Adjustments to nozzles are often made to account for travel speeds, wind conditions, and crop structure and density.

Nozzles are mounted onto the air tube. Alternatively, as an added option, the nozzles may be attached to the air tube with flexible, stay in place hoses.

The wiring harnesses leading to the nozzles is located inside of a PVC covering to protect these parts from chemical and physical damage. The liquid is supplied through stainless steel tubes. The labeled diagram below identifies individual nozzle parts and the air, liquid, and electrical connections.

- |                               |                                |
|-------------------------------|--------------------------------|
| 1. Hood (P/N AP5798)          | 4. Insulator Ring (P/N AP5694) |
| 2. External O-ring (P/N 5770) | 5. Nozzle Base (P/N NB-5808)   |
| 3. Nozzle Cover (P/N NC-5789) |                                |



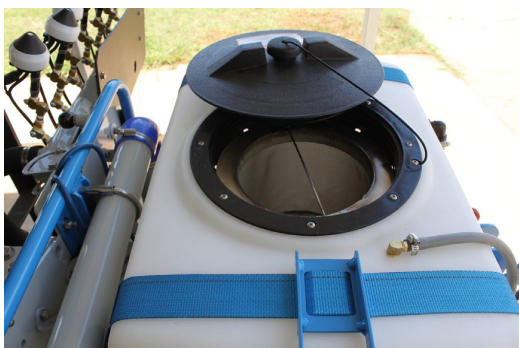
## Liquid Pump

The ESS 80SR sprayer comes equipped with a polypropylene or a stainless steel centrifugal pump. The pump has the following features:

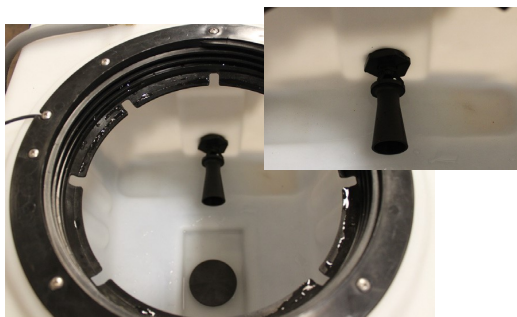
- Compatible with general use chemicals as well as with corrosive and abrasive chemicals.
- Port sizes
  - Polypropylene pump: 1<sup>1/2</sup>" NPT inlet, 1<sup>1/4</sup>" NPT outlet.
  - Stainless steel pump: 1<sup>1/4</sup>" NPT inlet, 1" NPT outlet.
- Maximum fluid temperature: 140°F (60°C)
- Pump shaft rotation: counter clockwise
- Pump construction materials:
  - Housing: polypropylene or stainless steel
  - Impeller: polypropylene
  - Pump seals: Silicon carbide

## Tank, Strainer, Hydraulic Agitator (optional)

The ESS 80SR sprayer is equipped with a 30 gallon (113 liter) polyethylene tank. A liquid level indicator is located on the front of the tank. The liquid strainer which fits into the top opening is designed to separate large particles from the spray liquid as it is poured into the tank. As the machine runs, a hydraulic agitator vigorously mixes liquid by recirculating it in the tank. This prevents the settling out of small particulates and minimizes product separation.



*Tank top opening with liquid strainer and tethered lid*



*View of hydraulic agitator from top opening of tank.  
Inset: close up view of hydraulic agitator  
(optional on some models)*

## NOTICE

**RUNNING THE PUMP DRY  
WILL DAMAGE THE SEALS AND  
VOID THE MANUFACTURER'S  
WARRANTY**



*Stainless steel centrifugal pump*



*Polypropylene centrifugal pump*



*Liquid level indicator on tank*

## Inline Liquid Strainer

The ESS 80SR is equipped with an inline strainer to prevent dirt and debris from clogging the nozzles.

## Liquid and Spray Control

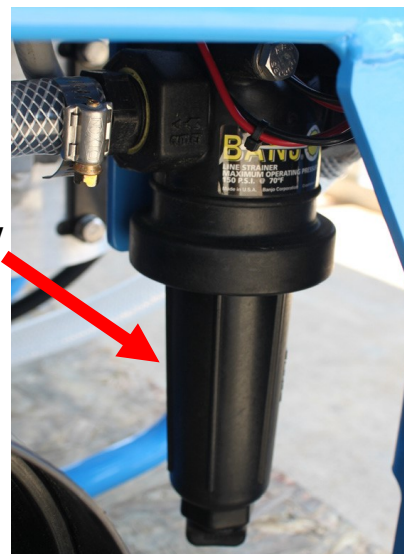
The liquid control assembly is located at the front right side of the sprayer. The gauge, located on the left side of the assembly, indicates liquid pressure.

Colored sections on the gauge indicate the following:

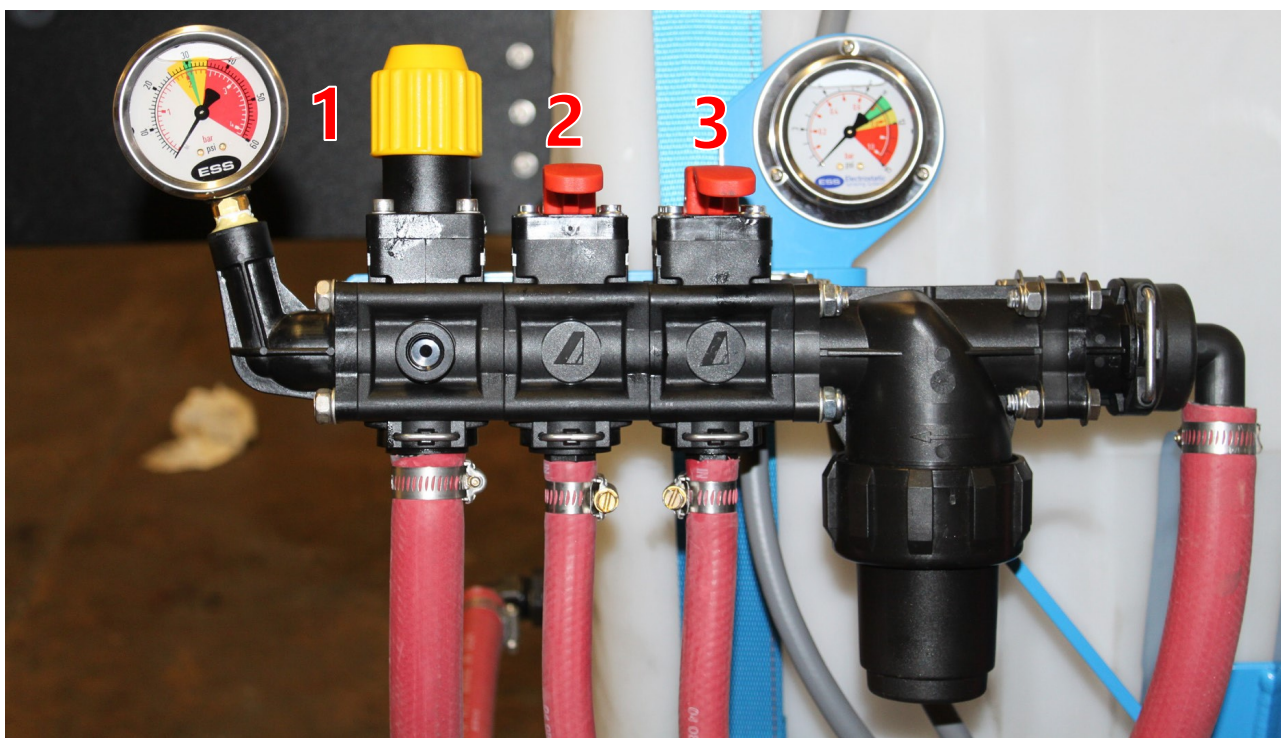
GREEN = optimal	YELLOW = suboptimal
WHITE = too low	RED = too high

Regularly monitor this gauge to ensure that, as you spray, you maintain the proper pressure for optimum sprayer performance.

*Strainer Bowl*



*Inline liquid filter*

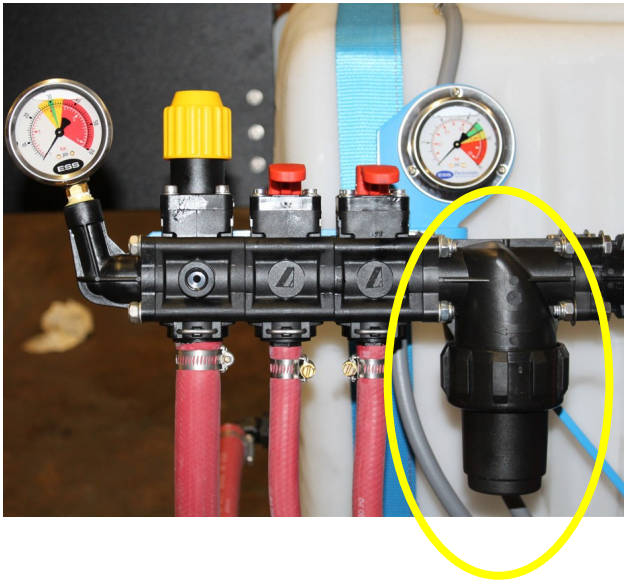


- TO ADJUST LIQUID PRESSURE AND TANK AGITATION: Turn the yellow proportional control valve knob (#1)
  - This valve adjusts liquid pressure by restricting flow back to the tank. Increasing pressure reduces tank agitation and reducing pressure increases tank agitation.
- TO TURN LIQUID ON OR OFF TO BOOM(S): lift up or push down on the left (#2 - controls left boom) and right (#3 - controls right boom) red boom spray control levers.
  - When the levers are vertical the spray booms are 'ON' (i.e. ball valves are open). When the levers are horizontal, as in the picture above, the spray booms are 'OFF'.
  - **PLEASE NOTE:** single boom ESS 80SR models will only have one lever. Double boom models will have two.



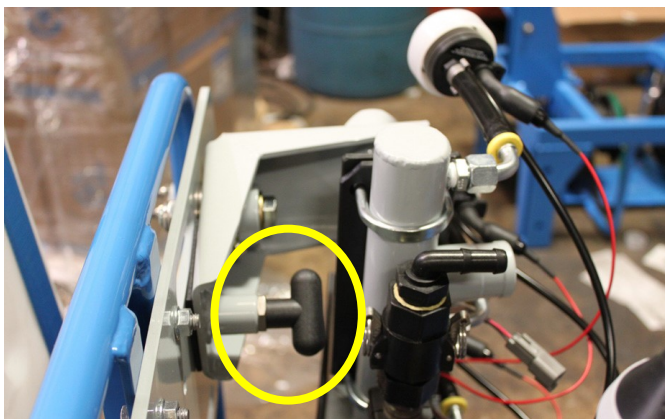
## Secondary Line Strainer Assembly

Your sprayer will either be equipped with individual strainers at the flow disk, as shown on page 23, or equipped with a line strainer as shown below. To clean the line strainer remove bowl and clean the mesh filter. See pictures below.



## Boom Adjustments

The newest versions of ESS 80SR offer several easily adjustable boom variations to meet many spraying needs. Double boom models are adjusted by simply pulling the spring-loaded pin and shifting the boom to the desired angle. Once adjustments have been made, ensure that the pin has properly seated.



*Boom adjustment pin*

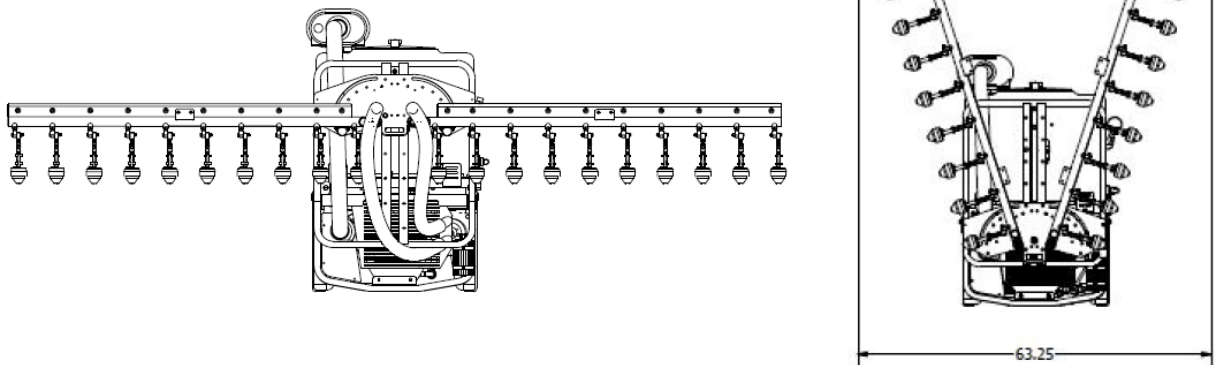




## Boom Design Options

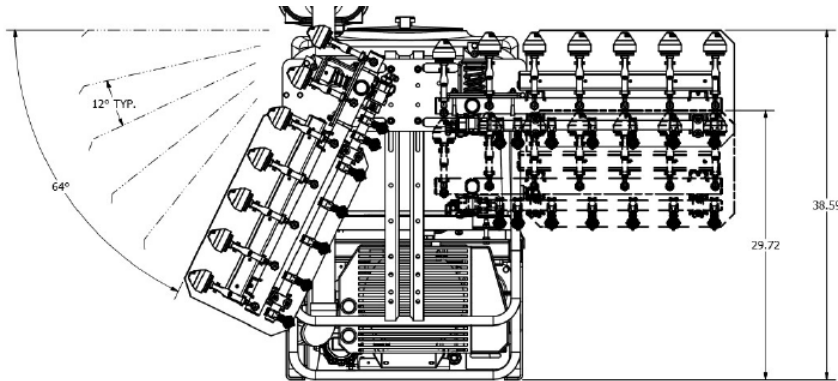
### Double Boom (horizontal to vertical)

- 20 nozzles
- Angle adjustment in 18° increments (horizontal to vertical)



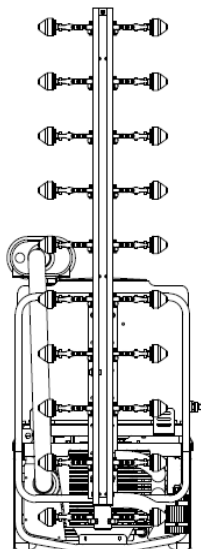
### Double Boom (grape sprayer)

- 14 nozzles
- Angle adjustment in 12° increments (horizontal to 64°)



### Single Boom (vertical)

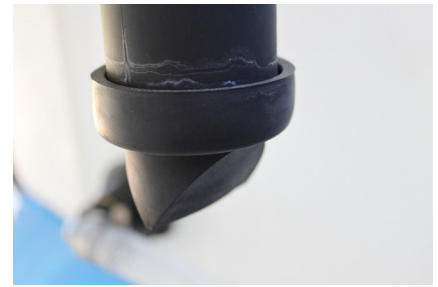
- 16 - 20 nozzles



## Air Filter, Air-Cleaner, and Heat Exchanger

While the unit is running, inspect the restriction service indicator on the filter housing. If indicator shows red, reset while equipment is running to verify accuracy. If indicator continues to show red, replace the primary filter. Replace safety filter after every second primary filter (located in front of primary filter). Before replacing filters, clean the inside of the housing thoroughly as to not introduce debris into the air system. Due to the sensitive nature of the supercharger, cleaning the filter rather than replacing it will void the warranty. Examine the pre-cleaner drop tube before every work session. Empty the drop tube by squeezing the ends together. Collected dust and dirt will fall to the ground.

The unit utilizes an air-to-air heat exchanger to cool the compressed air produced by the supercharger. It is important to keep the component clean, as it requires unobstructed air flow to function properly. Use a high pressure air supply to clean the heat exchanger. Be mindful not to damage the cooling fins.



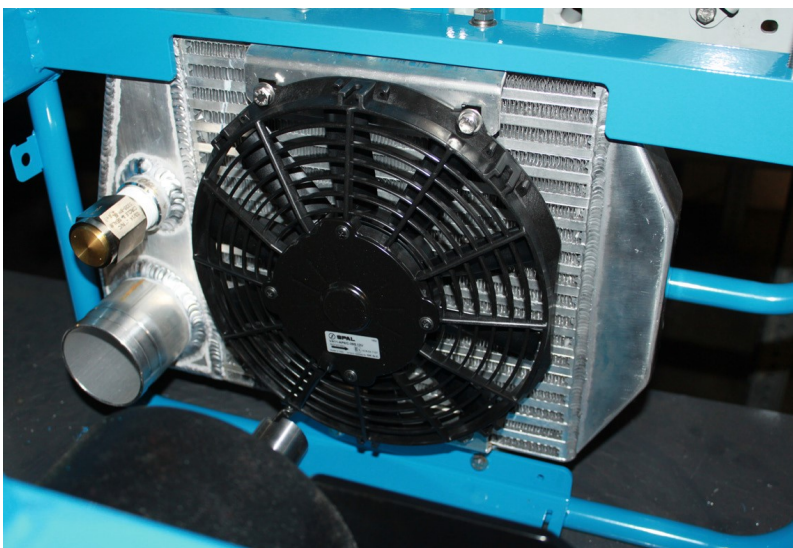
*Close-up of the pre-cleaner drop tube*



*Restriction service indicator*



*Air filter location*



*Heat exchanger*

## NOTICE

**RELY ON THE RESTRICTION SERVICE INDICATOR FOR THE MOST EFFICIENT AND ECONOMICAL USE OF THE FILTER.**

**FILTERS THAT APPEAR VERY DIRTY MAY STILL CONTAIN A GREAT AMOUNT OF SERVICE LIFE.**

## USING THE SPRAYER FOR THE FIRST TIME

The ESS 80SR sprayer is fully assembled and tested at Electrostatic Spraying Systems before it is shipped. After testing, the unit may be partially disassembled for shipment. When you have unloaded the sprayer, some components may require reassembly before operation.

### Installing the ESS Supplied Driveline

Your sprayer comes with an ESS supplied Bondioli & Pavesi driveline. This driveline connects the tractor PTO shaft to the sprayer input shaft. To prevent damaging the sprayer it is necessary to follow specific installation steps. In addition to reading the instructions below in this ESS 80SR operator manual, please make sure to read the Bondioli & Pavesi manual supplied with the driveline prior to beginning installation.



**WARNING! DO NOT STAND BETWEEN TRACTOR AND SPRAYER WHILE TRACTOR IS BEING BACKED TO HITCH.**



**WARNING! ADDITIONAL BALLAST MAY BE NEEDED ON THE FRONT OF THE TRACTOR FOR STABLE OPERATION AND TRANSPORT OF THE SPRAYER. SEE TRACTOR OPERATOR'S MANUAL FOR RECOMMENDED WEIGHTS.**



**READ THE MANUAL SUPPLIED WITH YOUR BONDIOLI & PAVESI DRIVELINE BEFORE INSTALLING.**

#### INSTALLATION STEPS:

##### FIRST: Determine proper driveline length

First, determine if the driveline is the correct length. Begin by mounting the sprayer on the tractor's 3-point hitch per the tractor operator manual, but **DO NOT** install the driveline at this time. Due to normal tractor equipment and implement variations the driveline may need to be shortened per the following steps:

##### NEXT: Shorten the driveline (if needed)

- 1. Determine shortest distance the driveline will span:** Raise the sprayer until the tractor PTO shaft and the sprayer shaft are level. This represents the shortest distance the driveline will span.
- 2. Determine tractor to sprayer distance:** Measure the distance from the groove on the tractor PTO shaft to the groove on the sprayer input shaft. Record this number.
- 3. Determine driveline length:** Lay the fully collapsed driveline out on a flat, even surface and measure the distance from the center of the implement yoke retaining pin to the retaining ring (i.e. groove to groove). Record this number.

## NOTICE

***If the measurement taken in Step 3 is less than that of step 2, the driveline WILL NOT HAVE TO BE CUT. Otherwise, proceed to Step 4.***

- 4. Determine length to cut:** Subtract the measurement from Step 2 (tractor to sprayer distance) from the measurement from Step 3 (length of driveline) and add 1 inch (25 mm) to insure there is adequate driveline movement allowance. This is the length of the driveline that will need to be cut. PLEASE NOTE: this length must be cut from BOTH sides of the driveline to shorten it for proper use.

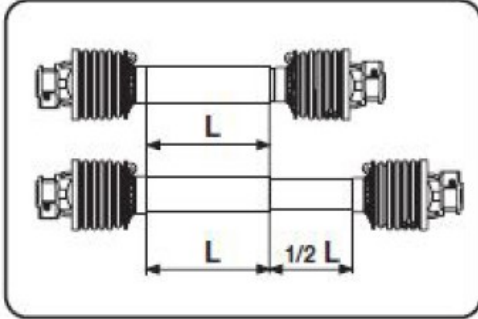
## NOTICE

**FAILURE TO USE THE ESS SUPPLIED DRIVELINE WILL VOID THE WARRANTY**



## NOTICE

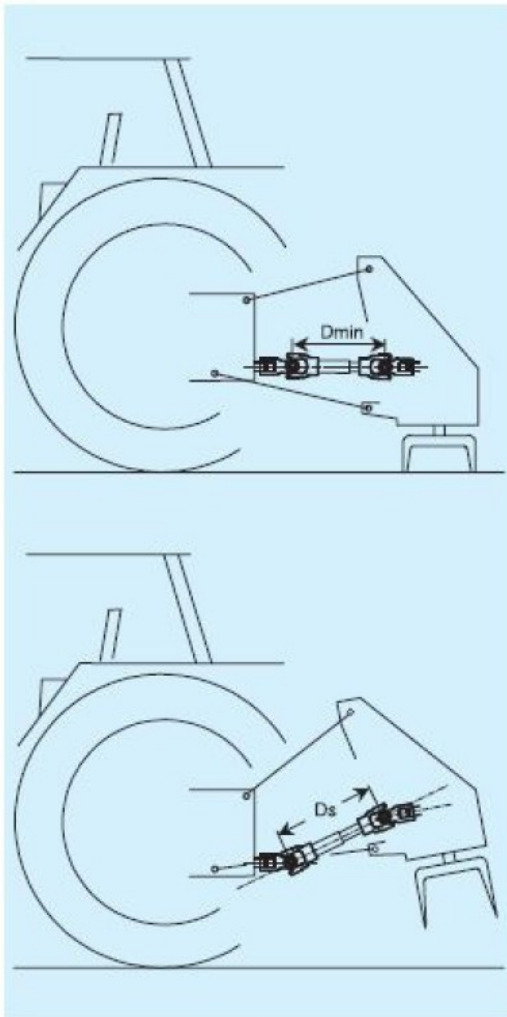
*Telescoping tubes must always overlap by at least 1/2 of their length in normal operation and at least 1/3 of their length in all working conditions. VERIFY THIS BEFORE CUTTING DRIVELINE.*



**5. Shorten the driveline:** Refer to the Bondioli & Pavesi manual (which comes fastened to the driveline) for instructions on the proper technique for cutting the driveline.

**6. Attach reassembled driveline** to tractor PTO shaft and sprayer input shaft and check fit. Note one end of the driveline shield tube is marked with a tractor symbol to indicate the end that attaches to the tractor.

**7. Install the driveline shield restraint chains** per the manual supplied with your Bondioli & Pavesi driveline.



*Proper driveline angle*

## NOTICE

**DRIVELINE ANGLES SHOULD NOT EXCEED 25 DEGREES**



*Driveline shield restraint chain installed*



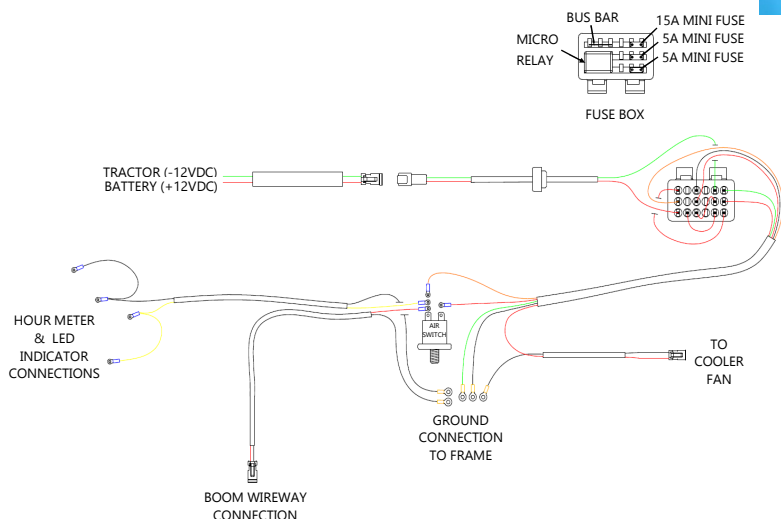
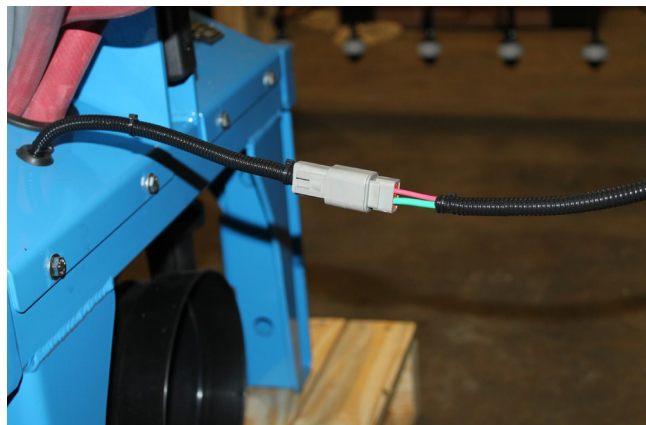
*Driveline holding cable*



## GENERAL OPERATING INSTRUCTIONS

### Connecting the Electrical Power Supply

In order to supply electricity to the unit harness, attach the red wire (+) directly to the tractor positive terminal post. Connect the ground wire directly to the tractor ground post. Failure to ground the system properly can cause premature failure of the power supplies. To complete installation, connect the battery harness to the unit harness using the appropriate ends.



### NOTICE

**THIS IS A 12-VOLT SYSTEM.  
USING A 24-VOLT SYSTEM  
WILL DAMAGE THE  
ELECTRONICS.**

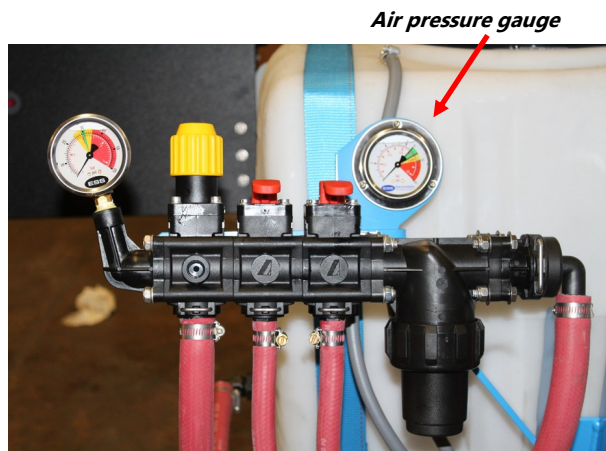
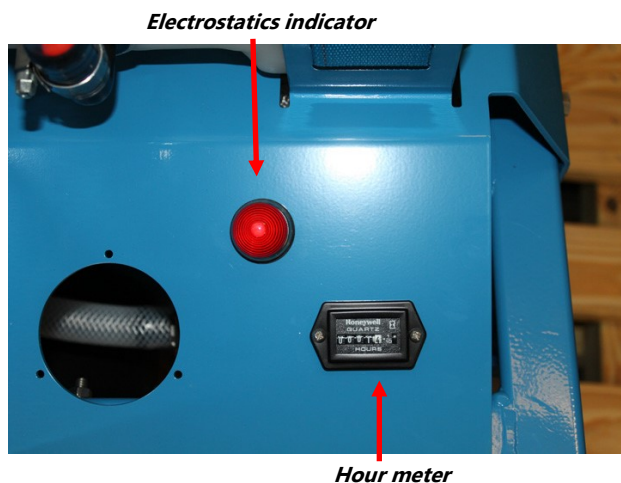
### NOTICE

**DO NOT EXCEED 12 PSI  
(0.8 bar) OR DAMAGE TO  
THE SUPERCHARGER M  
AY OCCUR.**

### Setting the Air Pressure

With the tractor just above idle speed, engage the power take-off. Increase tractor RPM until the air pressure gauge registers 10-12 PSI (0.7-0.8 Bar) This pressure is best for most applications.

**NOTE: Never turn on tractor with the PTO system engaged.**



## Setting the Liquid Pressure

Fill the liquid tank with water. Wettable powder chemicals should be pre-mixed before adding to the tank; liquid chemicals may be added directly to the sprayer tank. Follow all instructions on the chemical or pesticide manufacturer's label.

Located at the front of the sprayer, on the liquid control bracket, is a throttling valve which restricts the return flow of liquid to the tank. This will affect the liquid pressure output to the spray boom. Opening (turning counter-clockwise) the throttling valve will decrease pressure and closing it (turning clockwise) will increase pressure. Liquid pressure at the factory will be set between 30-40 PSI in order to achieve a typical, yet adjustable (based upon your application), 150 ml/minute flow rate ( $\pm 10\%$ ) out of each nozzle.

This adjustment, in combination with varying flow disk orifices, gives the operator infinite liquid flow adjustability. If additional flow rates are desired, contact ESS before adjusting.

## Adjusting the Nozzles

Use the graduated cylinder found in the sprayer parts kit to check the flow from each nozzle before spraying. Any flashing or small pieces of debris that have broken loose during testing or in transportation should be cleaned out at this time. Follow the procedure outlined in the Cleaning and Maintenance section.

Determine the average of the liquid volume readings over the entire sprayer to determine the nozzle flow rate to use when applying chemicals. Refer to the Calibration and Field Operation section for determining gallons per acre (GPA) based on your measured nozzle flow. Utilizing the hose assembly on the nozzle, direct the spray pattern towards the target as desired. For normal spray applications, the nozzles should be at least 18 inches (50 cm) from the plant canopy. Nozzles can be angled side to side if necessary to achieve minimum spray distance. In some conditions it may be necessary.

## Operating the Electrostatics

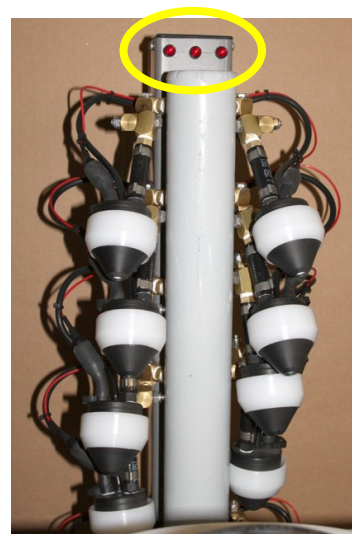
When the air supply reaches 4 PSI a pressure switch is triggered and only then will electricity be supplied to the spray boom to charge the nozzles. The bank of LED lights on the spray boom wireway will indicate each operating power supply. If an LED does not illuminate it may be an indication that there is a fault with the power supply. If replacement is necessary refer to the parts section of this manual for ordering information.

Following the procedure in the Testing Nozzle Charges section below, set the voltage meter (provided with your sprayer) to measure the current in the micro-amp ( $\mu\text{A}$ ) range. Check the charge level of all nozzles.

Readings will vary from 9 to 18  $\mu\text{A}$  depending upon conditions. A reading of 0.00  $\mu\text{A}$  indicates a nozzle that is not receiving voltage. A low reading from 2 to 6  $\mu\text{A}$  indicates that the nozzle has some debris present and needs to be cleaned. If all the nozzles read low, the sprayer is not grounded properly.

## NOTICE

**OPERATING THE SPRAYER WITHOUT WATER IN THE TANK WILL CAUSE DAMAGE TO THE CENTRIFUGAL PUMP SEALS! THIS TYPE OF DAMAGE IS NOT COVERED BY THE WARRANTY.**



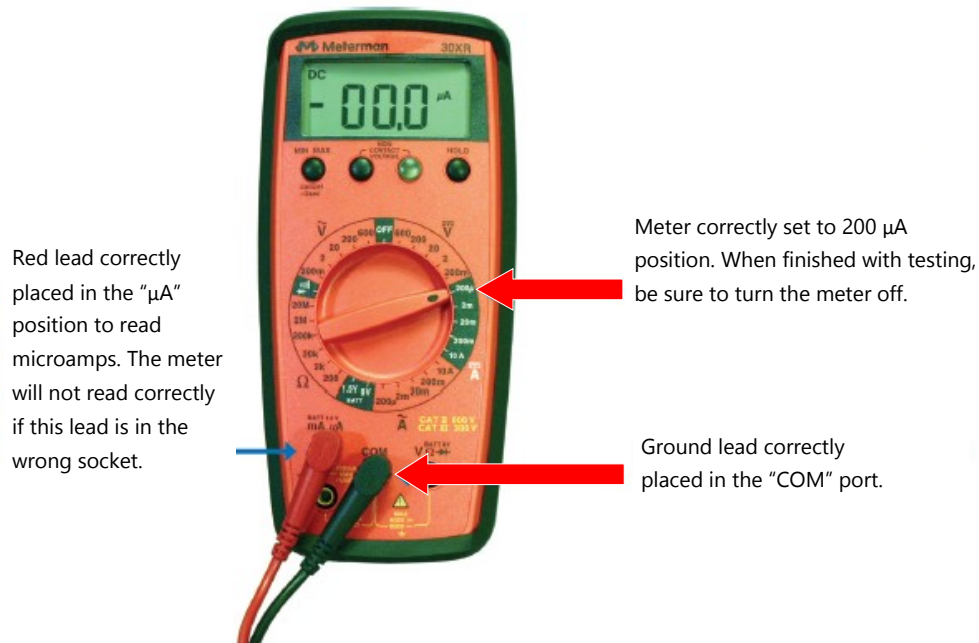
*Single boom power supply indicators*



*Grape boom power supply indicator*

## Testing Nozzle Charges

Use the image below to ensure that the meter is properly set to measure the current of the spray cloud in micro-amps ( $\mu\text{A}$ ).



## To Test your Spray Charge with the Multimeter

1. Turn the meter on and set it to the 200  $\mu\text{A}$  range.
2. Ground the multimeter's black lead to the spray bar or by pinching the metal probe between the forefinger and thumb of your hand.
3. Hold paddle on the red lead about 1 inch (2.4 cm) from the tip of nozzle outlet while it is spraying and the electrostatics are turned on. Read the charge on the meter.

Ideally the spray charge will be above 10  $\mu\text{A}$ . In the image above the nozzle spray has an excellent reading of 26  $\mu\text{A}$ . For optimal performance, clean any nozzles that are below 9  $\mu\text{A}$  by following the procedures outlined in the Cleaning and Maintenance section.



## NOTICE

**MAKE SURE TO TEST YOUR  
NOZZLE LIQUID CHARGES AT  
STANDARD OPERATING LIQUID  
AND AIR PRESSURES.**

## Shutting Down the Sprayer

It is important to shut the sprayer down correctly so that the liquid lines will be purged of chemical.



First turn off the liquid flow by shutting off the liquid control lever. Let the air flow purges the remaining liquid from the supply lines in the boom. Wait a few seconds until the nozzles quit spraying. They may spit intermittently, but this is normal. When the liquid has cleared from the boom supply lines, idle down the PTO drive. Then shut down the tractor.

Follow the section on Draining and Flushing the Sprayer (see pages 21 and 22) for additional post-use maintenance.

## CLEANING AND MAINTENANCE

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 other electrostatic spray technology on the market, regular cleaning will ensure peak operating performance. The sprayer can be washed down with a pressure washer prior to any individual component being cleaned. As a precaution, apply silicone electrical grease to all connections that will be exposed to pressure washing and avoid directing wash at electrical fixtures and connections. This will prevent water damage to the electrical connections.

### Cleaning Nozzles

The nozzles are mounted on the air tube using the connecting hose. This allows the operator to aim the nozzles in directions that are appropriate for travel speeds and wind conditions. The wiring harnesses are mounted inside a PVC protective covering that protects parts from chemical and physical damage.

Disassemble the nozzle by unthreading the electrode cover. Pull the hood off. The diagram on the next page identifies the nozzle components and the air, liquid, and electrical connections.

Simple cleaning of the nozzle interior and exterior with soap and water after each day of use is the most important thing you can do to ensure trouble free operation. Cleaning each day avoids long-term chemical buildup that eventually causes clogs, poor spray patterns and shortens nozzle life. After each day's use, remove the nozzle cover and clean any debris from around the nozzle tip.

Clean the ceramic outlet and all interior and exterior surfaces. It is important to clean inside the hood and the two cavities. Wipe clean the exterior of the wires and all hoses and fittings connected to the nozzle. Put dielectric silicone grease on any electrical components.



***Apply enough dielectric silicone grease to coat the metal pin and socket connections of the nozzles. Also use dielectric silicone grease to protect the low-voltage circular connectors.***



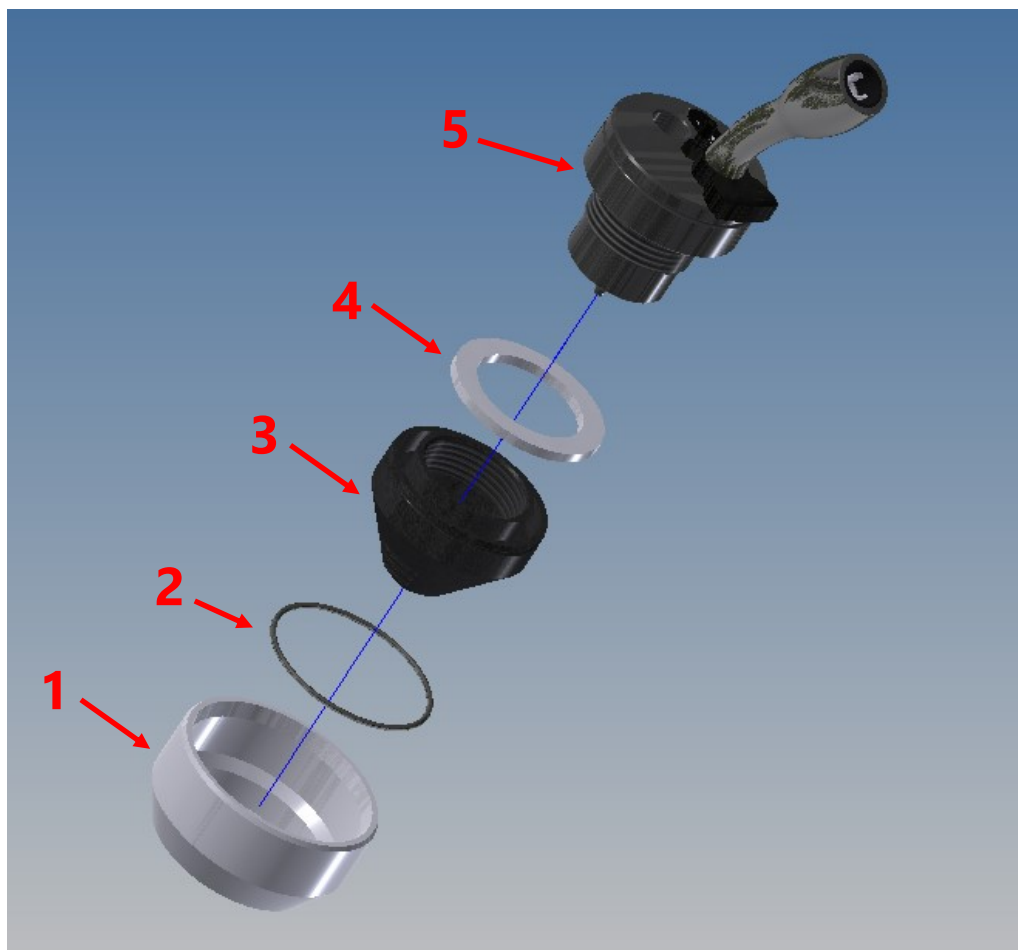
After cleaning, make sure the internal (located in the nozzle base) and external o-rings are still in place. Put the insulator ring back on the nozzle base and screw the nozzle cover back. Replace the hood, pushing it up against the external o-ring.

## ***NOTICE***

**THE NOZZLE COVER SHOULD BE HAND TIGHT. NEVER USE PLIERS OR OTHER TOOLS TO TIGHTEN IT.**

### **Nozzle Parts (and part numbers)**

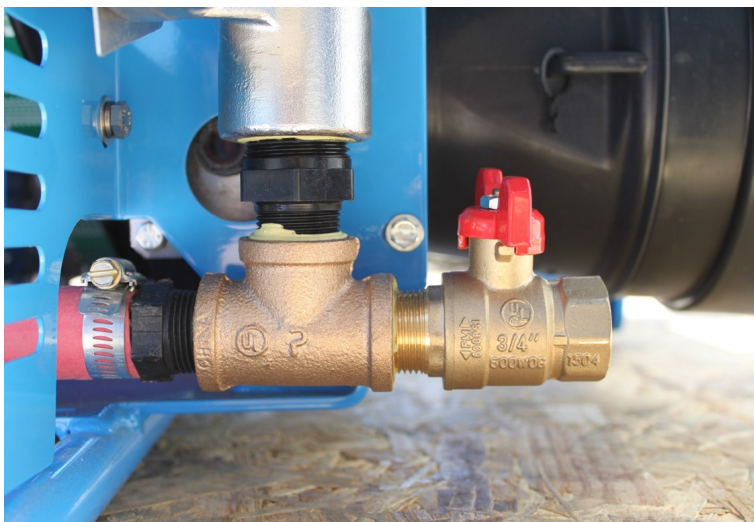
- |                               |                                |
|-------------------------------|--------------------------------|
| 1. Hood (P/N AP5798)          | 4. Insulator Ring (P/N AP5694) |
| 2. External O-ring (P/N 5770) | 5. Nozzle Base (P/N NB-5808)   |
| 3. Nozzle Cover (P/N NC-5789) |                                |



## Draining the Sprayer

To drain the 80SR unit, locate the lever that leads to the drain hose. Turn the lever in line with the outlet to open the drain and a right angle to close it.

After properly disposing of the remaining spray solution, flush the 80SR sprayer thoroughly with a mixture of water and chemical neutralizer. Repeat drain procedure as necessary. Return valve to spraying position, as shown in the image below, when done.



*Tank drain front underside of sprayer*

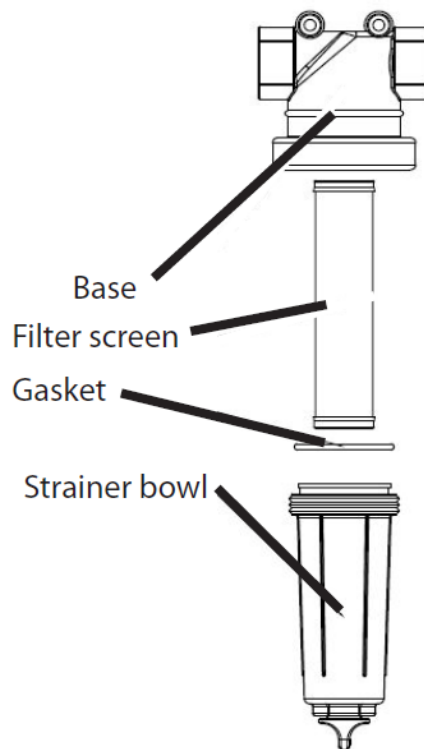
## Draining and Cleaning the Inline Liquid Filter

To drain the line strainer, remove the plug from the bottom of the bowl. When it has finished draining, replace the plug and return the valve to the "open" position.

To clean the inline liquid filter, disassemble the main strainer and clean the screen. Take care not to lose the gasket on the strainer bowl.



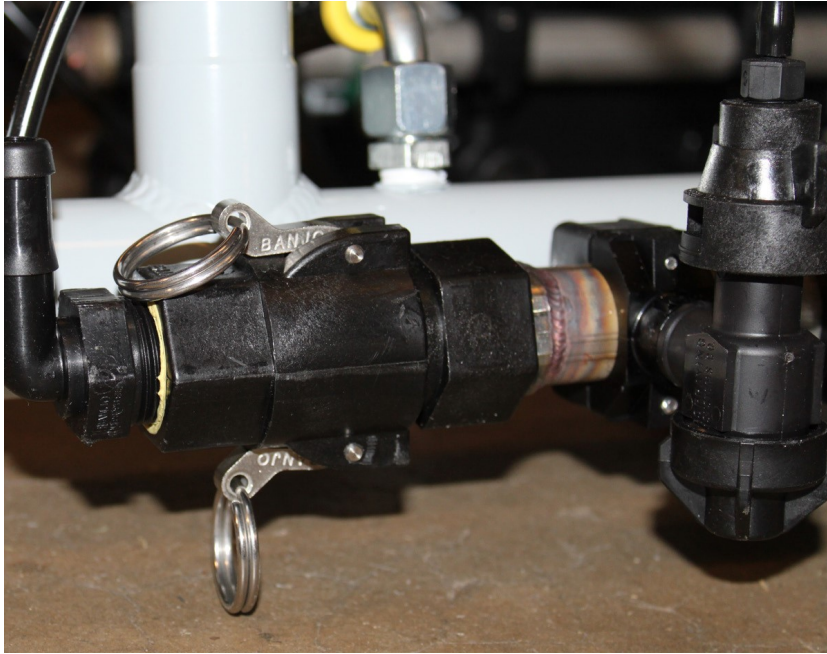
*Strainer drain plug*



*Main strainer assembly*

## Draining the Wet Boom

The sprayer is equipped with cam-lock couplings on the end(s) of the wet boom. These can be used for draining or flushing the liquid system.



## Flushing and Cleaning the Sprayer

Nutra-Sol cleaner is an excellent neutralizer of chemical deposits in your tank and liquid lines. The use of this product 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).

Chemical build up and clogging can drastically affect the performance of the unit. Therefore it is imperative that the flow discs and screens are checked and cleaned regularly. These are easily accessed by twisting the cap (P/N 18494) on the regulator assembly one quarter turn, being cautious not to lose the flow disc. After cleaning, reassemble in the orientation below. Note the flow disc should have numbers facing away from the strainer, in the direction of the liquid flow.



***ESS recommends the use of NUTRA-SOL, a chemical neutralizer.***

***(P/N 1566)***





## Parts for the Wet Boom Assembly

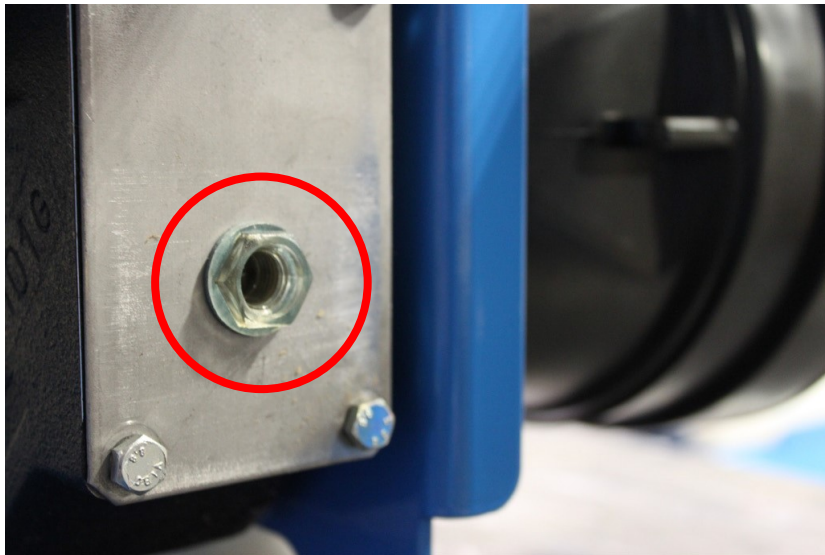
If you need to order any parts listed please call our office at 706-769-0025.  
You can also place an order by fax at 706-769-8072 or email at [orders@maxcharge.com](mailto:orders@maxcharge.com).

Please let us know if you have any further questions or concerns.

ITEM	PART NUMBER	DESCRIPTION
1	797	Hose Barb - 1/8" HB x 1/8" MPT - Nylon - Black
2	18494	Quick Cap, 1/8 NPT
3	19388	Flow Disk Seal, Viton
4	17417 (or) 17418	Flow Disk #16 - SS (or) Flow Disk #18 - SS
5 (Option A, capped)	18498	90° Elbow Clamp Diaphragm Body- .75" Pipe
5 (Option B, with shut-off)	18755	3/4" Elbow Diaphragm with Manual Shutoff
6	18721	Strainer, Plastic, #50
7	17417 (or) 17418	Flow Disk #16 - SS (or) Flow Disk #18 - SS
8	18494-2	Gasket, Rubber
9 (available in Option B)	18668	Manual Diaphragm Shut-off Valve

## Gear Multiplier

Check oil in gearbox regularly. Add SAE90EP (extreme pressure) gear oil through the top fill port until the oil level reaches the middle of the sight glass (shown below).



*Gearbox sight glass (circled)*

## Air Filter Maintenance

1. Check the primary air filter before each use.<sup>1</sup>
  - If the restriction-service indicator shows "red", reset the indicator and operate the sprayer at full RPM level. If it returns to "red," replace the primary air filter with a new one.  
***DO NOT attempt to clean the filter; you must replace it.***
2. Replace any filter that has holes or leaks.
3. Change the secondary safety filter with every other primary air filter change.<sup>1</sup>

**When replacing filters extreme care should be taken to ensure that no dust or debris is introduced into the intake system.**



<sup>1</sup> Order air system filters from ESS or an ESS authorized distributor.

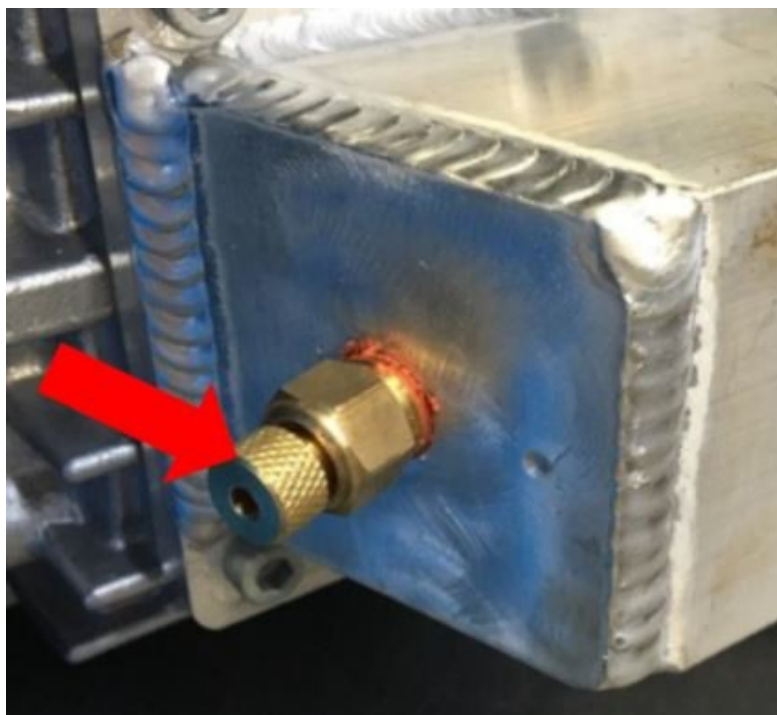
## Preparing the Supercharger for Storage

This is an option that only became available after May 2017.

The 80SR intake manifold is equipped with an access valve (see picture below) to facilitate lubricating the supercharger for off-season storage. Any type of marine or small engine fogging oil can be used. Prior to disconnecting the sprayer from the tractor, remove the left-hand access cover and loosen the valve screw (see arrow). Start the tractor then engage the PTO, leaving the tractor at idle speed. Insert the extension tube into the hole in the valve screw and spray fogging oil into the intake manifold for 5 seconds.

**CAUTION!! SUPERCHARGER BELT AND PULLEY WILL BE MOVING!!**

Tighten the valve screw then allow sprayer to continue running for 3-5 minutes. Disengage the PTO and turn off the tractor. Reinstall the side access cover.



## Belt Adjustment

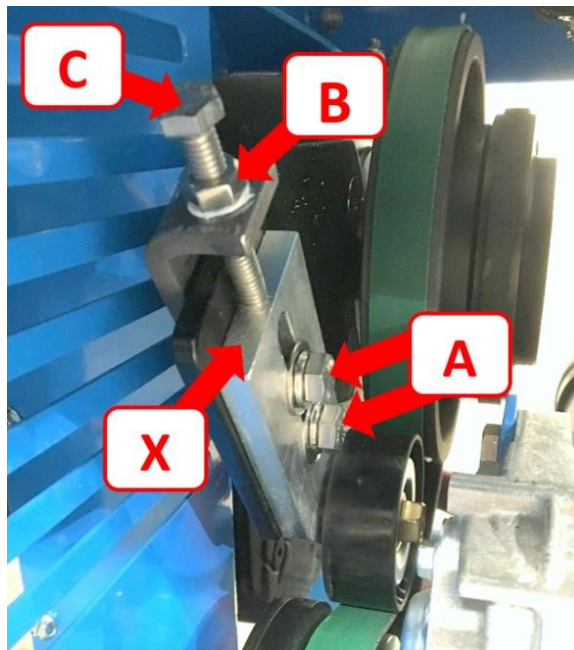
If you should need to replace or adjust the supercharger or pump drive belts, be aware of how each is tensioned. Refer to the pictures below for the location of each tensioning device. The supercharger belt tension is maintained by a manually adjusted idler pulley assembly (see picture). It is preset at the factory but may need to be adjusted periodically over the life of the belt. The following procedures should be followed for tightening or replacing the supercharger drive belt:

### To Tighten The Belt:

1. Disconnect the PTO shaft from the tractor.
2. Remove left and right side shields and shield in front of supercharger.
3. Make or scribe a mark along the top of the pulley bracket "X". This will be a reference to properly retention a new belt. Loosen the (2) retaining bolts "A" then loosen jam nut "B".
4. Tighten bolt "C" one-half turn to re-tension the belt. Tighten (2) bolts "A" then jam nut "B".
5. Reinstall all shields.

### To Replace the Belt:

1. Disconnect the PTO shaft from the tractor.
2. Remove left and right side shields.
3. Loosen the (2) bolts on the pump to release tension on the belt. Remove the pump belt.
4. Loosen the (2) retaining bolts "A" then loosen jam nut "B". Finally loosen bolt "C" to release tension on the belt.
5. Slip the old belt off the supercharger pulley and gear box drive pulley. Discard belt.
6. Reinstall the new belt. Ensure all belt ribs align with the pulley grooves.
7. Tighten bolt "C" until the top of the pulley bracket is aligned with mark "X", which denotes the pulley position for the correct initial belt tension. Tighten (2) bolts "A" then jam nut "B".
8. Reinstall pump belt and follow the tightening procedure in this manual.
9. Reinstall all shields.

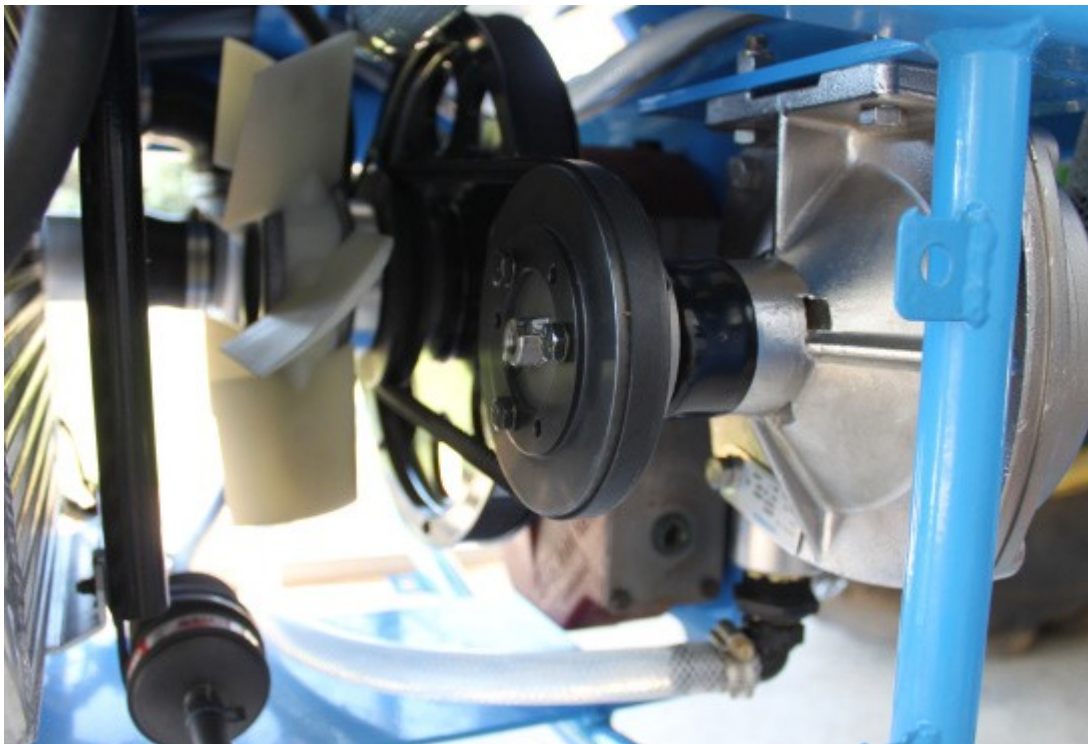
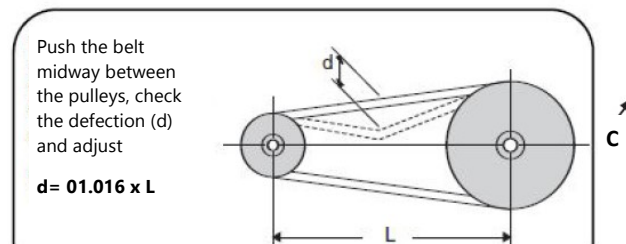




## Pump Belt Tension and Removal of Belt

The pump belt tension is set by adjusting the pump position on the frame mounting plate (shown below). Loosen the two 3/8 inch bolts attaching the pump plate to the frame and pull the pump outward to tighten the belt.

To remove the belt, push the pump inward then slip the belt off the pulleys and over the fan. Follow instructions in reverse order to replace the belt. Tension should be set per the table below.

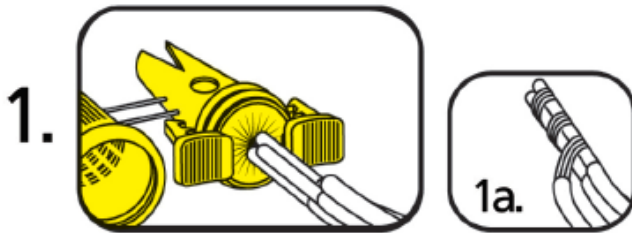


## Repairing Power Supply Wires

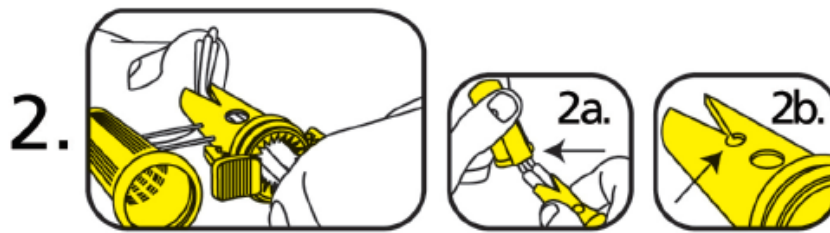
### Option 1: Using Blazing Wire Connectors

The red or black power supply wiring will occasionally break during normal field operation. The wiring can be repaired easily in the field. ESS recommends using Blazing Wire Connectors™; several are provided in your Spare Parts Kit. These connectors are waterproof and vibration-proof. Although you will need a pocket knife or wire stripper, no other tools are necessary to repair a broken wire.

Here are the instructions from: [www.blazingproducts.com/products/connectors/LV9/instructions.html](http://www.blazingproducts.com/products/connectors/LV9/instructions.html)



Strip wires **1"** and group bare wire ends together. Do **not** pre-twist **solid** wire. You **must** pre-twist **stranded** wire. If using both wire types, you must wrap stranded wire around untwisted solid wires (see illustration 1a).



Insert wires through flexible sealing fingers and bend bare wire ends together into one "V-Channel." When connecting heavy solid wires, use bending sleeve/depth gauge on outer sleeve of connector (see illustration 2a). For larger connections (e.g. three #12 wires, or equivalent, or more), bend wires into the V Channel with round hole at bottom (see illustration 2b); pull folded group of wired downward into this hole at bottom of "V."



Separate connector, removing plastic "link" or leg from **inner sleeve**. Push inner sleeve into pre-filled outer sleeve until **double-locked**. Ensure that bending sleeve does not come down over either latch. Pre-filled silicone fully waterproofs the connection. Do not reuse.

Artwork reproduced courtesy of Blazing Products, Inc.  
[www.blazingproducts.com](http://www.blazingproducts.com)

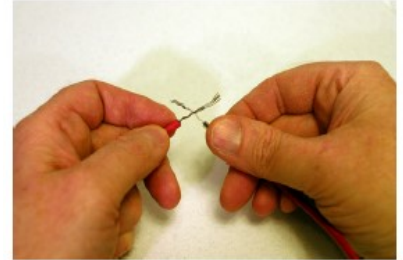
## Option 2: Soldering

If you do not have one of the black high voltage connectors, you will need to repair the broken wiring harness with more traditional methods.

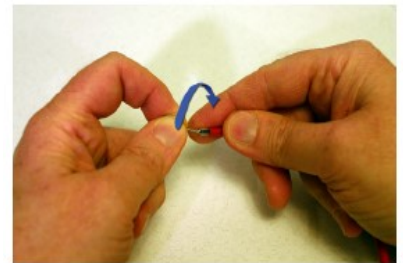
**Please note:** *It is important to use the heavy-walled heat shrink tubing (part # 6601) for repairs.* Do not use the thin-walled heat-shrink tubing or electrical tape. These thinner insulating materials will break down under the harsh duty conditions your sprayer operates in. An imperfect repair will cause electrical current to “leak” and lower the performance of the nozzle charging system.

First, strip back the ends of the broken wires by cutting the red outer casing, then carefully cut the inner casing to expose the wire itself.

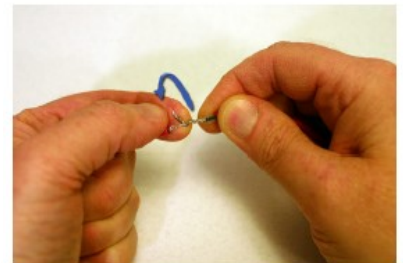
Cross the wire ends in an “X” shape.



Now, twist the right end away from you. Make sure you have good contact between the bare wires. Twist as tightly as you can.

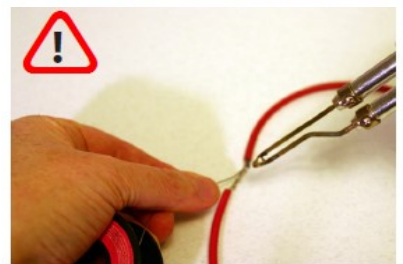


Now, work with the left wire end. Twist it toward you. By reversing the twisting direction, you will make a stronger connection and the wire ends will be less likely to pull apart. Again, twist as tightly as you can.

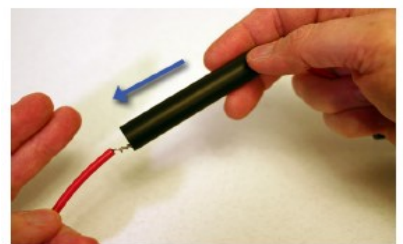


If you have soldering equipment available, solder the wires together.

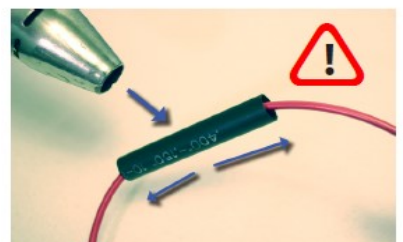
**Caution!** Always be careful with heated tools like soldering irons.



Remembering to use the thick-walled heat shrink tubing, slip the tubing over the open end of the wire and position it so that the bare wire is in the middle of the heat shrink tubing.



Use a heat gun or small butane torch to shrink the shrink tubing. Apply heat evenly, starting at the middle of the tube and working outward. Just before you finish shrinking the tubing, apply glue inside it to seal your repaired connection from moisture. **Caution!** Always be careful with heated tools like heat guns.



## SPRAYER MAINTENANCE WARNINGS

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Please take special note of the following maintenance precautions as they could adversely affect your sprayer performance, sprayer parts life, and warranty guarantees.

### **Failure to disengage PTO or failure to use ESS-supplied driveline:**

- ALWAYS disengage the PTO before turning off the tractor.
  - If you fail to disengage the PTO before turning off the tractor, the motor has the potential to spin the supercharger in reverse. This can cause serious damage to the unit!
- ALWAYS use the driveline supplied with this sprayer.
  - This driveline is equipped with an overrunning clutch to help prevent supercharger damage due to PTO backlash.
- **PLEASE NOTE: Failure to use the ESS supplied driveline will void the supercharger warranty.**

### **Exposure to extreme heat:**

- Unchecked constant sprayer usage in excess of eight (8) hours per day could result in issues that may damage the supercharger.
- Operating the sprayer in temperatures over 100 °F (37 °C) will require more frequent attention to the maintenance listed above.

### **Water contamination:**

- When cleaning the unit, DO NOT spray water directly at the air cleaner assembly.

### **Warranty information:**

- **PLEASE NOTE: You must fill out the warranty registration form online in order for the equipment to be covered by the warranty. Please visit <http://maxcharge.com/registration/> to complete the registration.**



## MAINTENANCE SCHEDULE

### Daily

- ☐ Inspect and confirm that gearbox oil is at the middle of the sight glass.
- ☐ Verify that heat exchanger and oil cooler are free of debris and that air can pass through unobstructed.
- ☐ Check belts for wear or damage.
- ☐ Check restriction-service indicator at operating RPM.
- ☐ Check liquid filters in all flow assembly and main tank strainer.
- ☐ Verify that all power supply indicators are illuminated while unit is running at operating RPM.
- ☐ Test nozzle charges.



*AGS Dielectric silicone grease  
P/N 3174*

### Before each spray season

- ☐ Apply dielectric silicone grease to all wiring harness pin assemblies and all nozzle electrical connections upon reassembly.
- ☐ Drain and replace the gearbox oil every 500 hours.
- ☐ Thoroughly clean all nozzles with Nutra-Sol™ by following the procedure outlined in the Cleaning and Maintenance section.
- ☐ Thoroughly inspect all wiring harnesses and red high voltage wiring for cuts or abrasions that show black streaks. This is evidence of electrical arcing. Replace any wires that may show signs of cuts, abrasions or joints as this may indicate arcing. Follow the procedure outlined in the Repairing Power Supply Wires section.
- ☐ Inspect the centrifugal pump for evidence of leaking. If leaking is noticed order a seal repair kit from ESS or authorized ESS distributor.
- ☐ Verify correct belt tension on supercharger and on pump.
- ☐ Follow all procedures covered in the daily maintenance section.
- ☐ Inspect supercharger and pump belts for signs of fraying or cracking or wearing down of belt teeth. Replace belt(s) if wear is evident.



*It's important to keep your MaxCharge™  
nozzles clean and working efficiently.*

## Troubleshooting Guide

Observed Problem	Potential Solutions	How to Resolve
Air pressure is low	PTO speed too low	Increase tractor RPM.
	Air fittings are loose	Check fittings for air leaks. Spray fittings with soapy water– tighten ones that bubble.
	Air fittings are too tight causing washers or seals to be pinched crushed	Check fittings for damage. Replace damaged seals.
	Hoses unattached	Inspect for loose hoses and reattach.
	Hoses are cracked or cut	Inspect for failed air lines. Replace damaged lines.
Spray from nozzle is erratic or spits	Debris is in the nozzles and/or flow disks	Clean nozzle according to Operator's Manual.
	Liquid filters are clogged	Clean main filter and liquid filters in the flow setups.
	Low liquid level in the tank	Increase liquid level in tank above two or three gallons.
	Loose liquid fitting near nozzle	Inspect to see if black hose is pulled from back of nozzle. Reattach hose.
	Liquid control lever in 'OFF' position	Verify that liquid control lever is in the 'ON' position.
Liquid will not turn on or off	Damaged liquid control lever	Verify that liquid has reached flow disk assemblies.
	Chemical blockage in the liquid line	Refer to "Flushing the Sprayer."
	Liquid control lever in "OFF" position	Verify that liquid control lever is in the "ON" position to open ball valve.
Charging indicator (LED) light is out		
	LED bulb is blown	First, test to see if liquid is producing a charge reading using a multimeter. If it is you may need to replace the LED bulb.

## **Troubleshooting Guide (continued)**

<b>Observed Problem</b>	<b>Potential Solutions</b>	<b>How to Resolve</b>
Charging indicator (LED) light is out (cont.)		
	Bad or loose ground wire	Ensure that green ground wires are connected to battery and sprayer.
	Bad power supply	Inspect power supply for electrical output. Replace if needed.
	Wire has been cut or broken	Inspect for cut or damaged wires. Replace if needed.
Nozzle charging is low or zero on ALL nozzles		
	Bad or loose ground wire	Check that the green ground wires are connected to battery and sprayer.
	Bad power supply	Inspect power supply for electrical output. Replace if needed.
	Blown fuse	Replace power supply fuse inside control box/or in power supply harness.
	No input power	Inspect for 12 volt DC current to power supplies.
	Bad multimeter or multimeter leads	Inspect meter for blown fuse or leads that have been cut or shorted. Change batteries.
	Dirty nozzles	Clean nozzles according to Operators Manual.
Liquid pressure too high		
	Throttle valve setting incorrect	Adjust pressure down by opening throttle valve.
	Blocked liquid return line	Inspect for clogged return line to tank.

## CALIBRATION AND RATES

### Field Operation

The 80SR is an ultra low volume sprayer, and tank mixes must be adjusted accordingly. To determine how many gallons of liquid will be sprayed per acre. You must first determine the ground speed, tractor gear, & RPM. Then, using the Calibration Guide (on the next page) or by measuring the amount of liquid sprayed in a measured space determine the gallons per acre.

Remember you can adjust the nozzle output by using the throttle valve to increase, or decrease the liquid pressure, and by changing the flow disks. Optimum results will be obtained by maintaining the nozzle output between 120 ml and 150 ml per minute.

Determine the required amount of active ingredient per acre either by using the manufacturer's label as a guide, or by using the same amount of active ingredient used per acre to spray with conventional spray equipment. Determine the number of acres to be sprayed and mix the correct amounts of active ingredient with the corresponding amount of liquid. When spraying powders premix the ingredients and then add to the tank. Liquids may be added directly to the tank.

**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*

*Safety glasses*

**After mixing solutions of the desired chemicals, place them in a 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.**





## Calibration Guide

Q. How long will it take to spray 1 hectare?

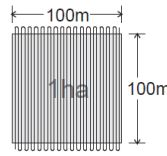
Assuming the row spacing is 3 meters and the tractor speed is 5km/h

First, find the total length of the rows you have to cover.

$$1 \text{ hectare} = 10,000 \text{ m}^2$$

$$\frac{10,000 \text{ m}^2}{3\text{m}} = \frac{10,000 \text{ m} \times \text{m}}{3\text{m}}$$

$$= 3333.33 \text{ m}$$



If the tractor goes 5 km/h, how many minutes will it take to travel 3333.33 meters

Set up the ratio:

$$\frac{5000}{60} = \frac{3333.33}{x}$$

$$(5000)(x) = (3333.33)(60)$$

$$5000x = 200,000$$

$$x = 40$$



It will take 40 minutes to spray  
1 hectare at 5 km/h

Q. How many liters will it take to spray 1 hectare?

Determine your sprayer's rate of liquid flow by measuring the output of all 14 nozzles.

	120 mL/min.
	125 mL/min.
	120 mL/min.
	130 mL/min.
	125 mL/min.
	120 mL/min.
	120 mL/min.
	125 mL/min.
	120 mL/min.
	125 mL/min.
	120 mL/min.
	130 mL/min.
	120 mL/min.
	120 mL/min.
<hr/>	
	1725 mL/min.

Your sprayer's total output is 1725 mL/min.

If it takes 40 minutes to spray 1 hectare then

$$40 \text{ min} \times 1725 \text{ mL} = 69,000 \text{ milliliters}$$

$$= 69 \text{ liters}$$

It will take 69 liters to spray 1 hectare

Q. How much can I spray in 8 hours?

In 8 hours of uninterrupted spraying, you could spray 12 hectares.

$$\frac{8 \text{ hours} \times 60 \text{ minutes}}{40 \text{ minutes}} = 12 \text{ hectares}$$

Q. How many hectares can I spray with one tank?

Your sprayer's main tank is 150 gallons or (567.75 L) and it takes 69 liters to spray 1 hectare.

$$\frac{567.75\text{L}}{69 \text{ L/ha}} = 8.23$$

You can spray 8.23 hectares per tank

Q. How long can I spray with one tank?

If it takes 40 minutes to spray 1 hectare, then

$$8.23 \text{ ha} \times 40 \text{ min.} = 329.2 \text{ minutes}$$

or, in hours:

$$\frac{329.2}{60} = 5.49$$

60

Five hours and 30 minutes

### Conversion Table

1 Gal = 3.785 L	1000 mL = 1 L
1Acre = 43560 ft <sup>2</sup>	1 mph = 1.61 km/h

## Ordering Sprayer Parts:

Every 80SR sprayer is shipped with a spare parts kit (contents listed below) that contains an assortment of small parts that may be needed during initial setup and operation. These parts are ones that may be broken during normal operation and would need immediate replacement to continue spraying. The kit also contains the owner's manuals, charging meter, and graduated cylinder for calibration of the sprayer.

Note: ESS will overnight ship nozzles or power supplies during the first year warranty period if necessary.

### **80SR Supercharger New Model**

<b>Part Number</b>	<b>Quantity</b>	<b>Part Description</b>
1055	2	Connector Ring - Male - 16-14 ga - #8
12182	4	Connectors - Black - LV9500
1285	1	Graduated Cylinder
1321	12	Wire Tie - Nylon - 15" Length x $\frac{3}{16}$ "
14271	3	Nylon Brush
1464	1	Box-Tackle-Over/Under
1566	1	Tank Cleaner—Nutra Sol
1662	5	Hose Clamp –Worm-Size 4 SS
17417	6	Flow Disk #16
17418	20	Flow Disk #18
17572	1	Filter Element for Donaldson PSD
17840	1	ESS Wrench— $\frac{9}{16}$ x $\frac{13}{16}$ x $\frac{7}{16}$
17841	1	ESS Wrench— $\frac{11}{16}$ x $\frac{3}{4}$ x $\frac{7}{16}$
18198	1	Lifetime Seal for Stainless Steel Pump
18410	2	Mini Blade Fuse, 5A
18494	3	Teejet Quick Cap, $\frac{1}{8}$ NPT
18497	3	Teejet Straight Clamp Diaphragm, .75"
18497-2	20	Diaphragm
18507	1	Banjo $\frac{3}{4}$ " Cam Lock Cap
18721	12	Strainer, Plastic #50
18898	1	Belt, 6-Rib Multi-V
18922	1	Mini Blade Fuse, 15A
18943	1	Belt, 3VX325
19388	5	Flow Disk Seal, Viton
209	120	Hose— $\frac{1}{8}$ " ID x $\frac{1}{4}$ " OD—Vinyl Black
3174	1	Dielectric Silicon Grease—4oz. Tube
396	96	Hose— $\frac{1}{4}$ " Grey
5770	5	O-Ring—Viton #031
5771	5	O-Ring-Buna N, for Nozzle Base
7064	2	Hose Barb— $\frac{1}{8}$ " HB x $\frac{1}{8}$ " MPT— Nylon Black
7892	1	Air Pressure Switch—NO— 4PSI— Two Lugs
797	5	Hose Barb— $\frac{1}{8}$ " HB x $\frac{1}{8}$ " MPT—Nylon Black
9981	2	Coupling Ring, Size 11 Shell
AP5694	5	Insulator Ring
AS18986	3	Hose Assembly
AS2572	1	Multimeter Assembly
AS3608	5	Wire Assembly— High Voltage—Female

## Ordering Sprayer Parts:

### 80SR Supercharger: Rotrex (previous model)

<u>Part Number</u>	<u>Quantity</u>	<u>Part Description</u>
12181	4	Low Voltage Connector, Yellow
1285	1	Graduated Cylinder
1321	12	Wire Ties, 15"
AS1391	3	Hose Assembly, Row Crop Nozzle
14271	3	Nylon Brushes
1566	1	Tank Cleaner, Nutra-Sol
1662	5	Hose Clamp, Worm, Size 4, SS
18117	1	Gearbox to blower Powergrip 6T2 Cogged Belt
18156	1	Gearbox to pump belt 3Vx315
17572	1	Filter Element for Donaldson PSD D080020
209	1	Hose, $\frac{1}{8}$ " x $\frac{1}{4}$ " OD, Vinyl, Black, 120" length
AS2572	1	Multimeter assembly
2578	2	Fuse, 5 Amp. AGC. 1 $\frac{1}{4}$ x $\frac{1}{4}$
3174	1	Dielectric Silicon Grease, 4 oz. tube
AS3608	5	High voltage wire assembly
396	1	Hose, $\frac{1}{4}$ " ID, Gray, 96" length
4705	6	Outside— Nozzle Swivel Gasket
4706	3	Internal— Nozzle Swivel Gasket
4890	2	Flow Regulator Body
AP5694	5	Insulator ring
5770	5	External Nozzle O-Ring
5771	5	Internal Nozzle Base O-Ring
6601	1	Heat Shrink, 0.400-0.150, w/ Adhesive, 18" length
7064	20	Nozzle Base Liquid Inlet Hose Barb
7476	5	Ell, $\frac{3}{16}$ " HB x $\frac{3}{16}$ " HB White Nylon
767	2	Flow Regulator Cap
7853	3	$\frac{3}{16}$ " HB x $\frac{1}{8}$ " MPT, BR
7857	5	Tee, $\frac{3}{16}$ " HB x $\frac{3}{16}$ " HB x $\frac{1}{8}$ " HB, White Nylon
7858	5	Reducing barb, $\frac{1}{8}$ " HB x $\frac{3}{16}$ " HB, White Nylon
7875	1	Hose, $\frac{3}{16}$ " ID, Blue Conductive 120" length
1321	12	Wire tie—nylon 15" long
17552	1	Rotex Traction fluid, 1 Liter bottle
17553	1	Rotrex In-Line oil filter
17990	2	30 gallon tank decal
1055	2	Connector ring, male 16-14 gallon, #8 standard
18721	1	Flow Regulator Mesh Filter (blue)
17417	Varies	#16 Flow Disk
17417	Varies	#18 Flow Disk
7892	1	Air Pressure Switch, NO, 4 PSI, Two Lugs
8246	1	Silicone Carbide Seal Kit—Hypro Pump
9981	2	Coupling Ring Size 11 Shell
AP5694	5	Insulator Ring
AS18986	3	Hose Assembly

## Ordering Sprayer Parts (continued)

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<b><u>Part Number</u></b>	<b><u>Quantity</u></b>	<b><u>Part Description</u></b>
AS2572	1	Multimeter Assembly
AS3608	5	Wire Assembly— High Voltage—Female
17417	Varies	#16 Flow Disk
17417	Varies	#18 Flow Disk
7892	1	Air Pressure Switch, NO, 4 PSI, Two Lugs
8246	1	Silicone Carbide Seal Kit—Hypro Pump
9981	2	Coupling Ring Size 11 Shell

**The items in red ARE NOT included in the parts kits, they are listed for easy reference, and are used in both models of the 80SR.**

<b><u>Part Number</u></b>	<b><u>Quantity</u></b>	<b><u>Part Description</u></b>
9904	1	Gearbox M5 1:7 Multiplier
18155	1	Stainless Centrifugal Liquid Pump
17507	1	Liquid Pressure Gauge 0-60PSI
NC-5775	Varies	Nozzle Cover Assembly

## NOTES:

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## **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 from the shipment date from the ESS factory, except in the case of the supercharger, which shall carry an extended warranty period for two years from the shipment date from the ESS factory, or 1000 hours of usage, whichever comes first. The ESS warranty form must be filled out online for verification of purchase.

Please visit <http://maxcharge.com/registration/> to register.

***All warranty claims must be filed with ESS within 60 days after the respective warranty period has expired, whether it be one year, two years, or 1000 hours as the case may be.***

### **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,

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 judgement of Electrostatic Spraying Systems, Inc. such parts affect its performance, stability or reliability.
4. If the unit has been altered or repaired in a manner which, in the sole judgement of Electrostatic Spraying Systems, Inc. such alteration or repair affects its performance, stability or reliability. This shall include but not be limited to opening of the handgun shell by anyone not authorized by Electrostatic Spraying Systems, Inc. to do so.
5. All drivelines and all input bearing and input seal failures on gearboxes
6. **If the supercharger care and maintenance is not followed to the satisfaction of Electrostatic Spraying Systems, Inc., as outlined on the "Supercharger Information" warning on page ii of this manual.**
7. **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.**