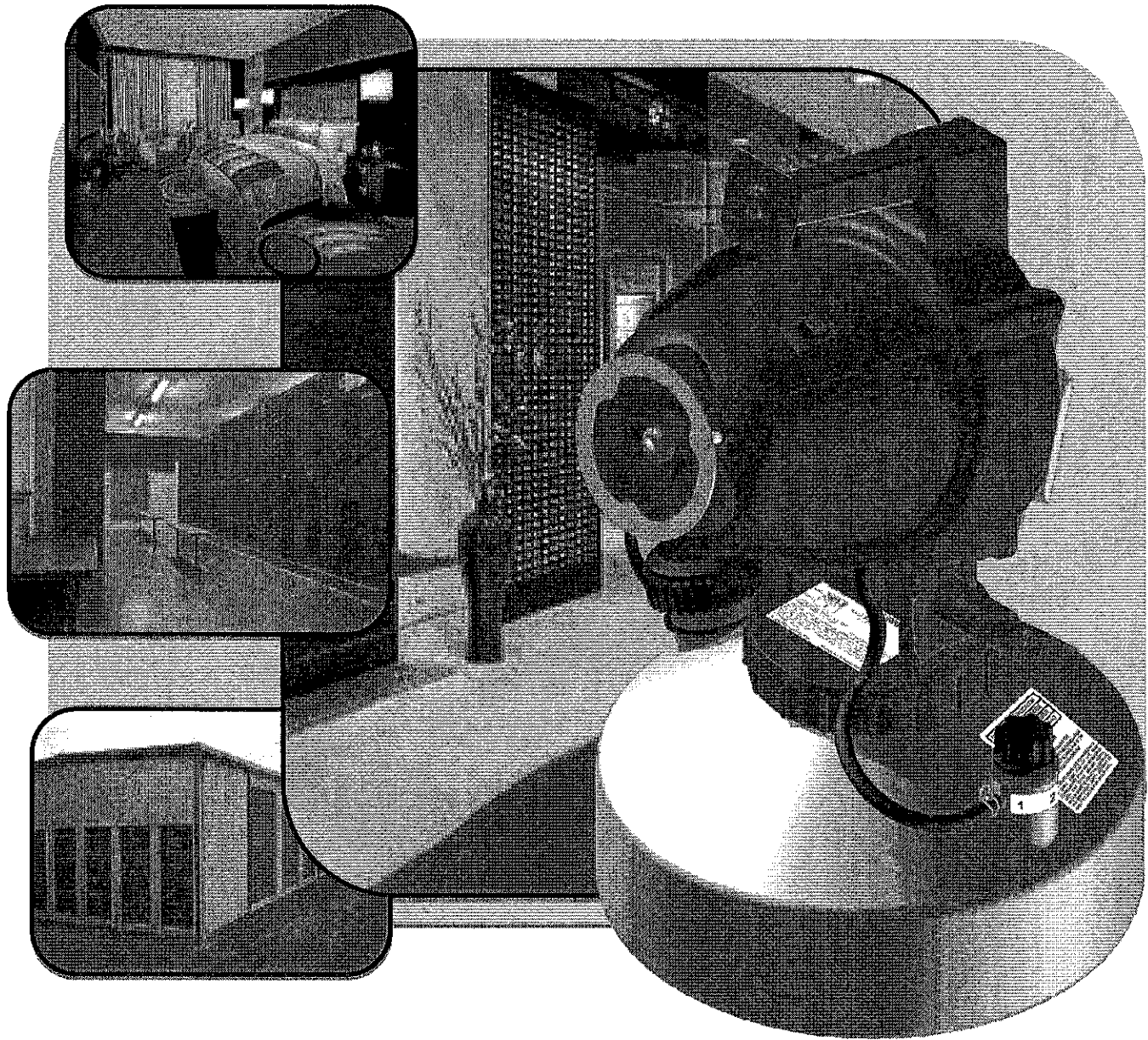


# ***Hurricane™ ES***

**"Electrostatic" ULV/Mist Sprayer**



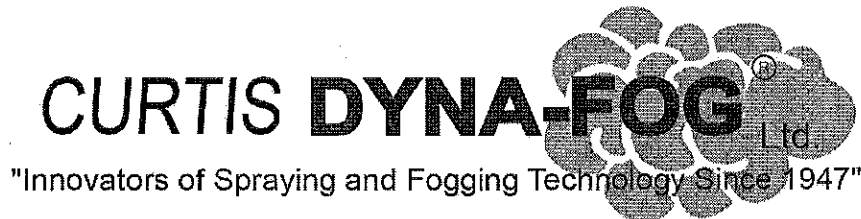
## **Owner's Manual**

Dear Valued Customer,

Thank you for purchasing our product. We take pride in the design, workmanship and service of all of our products. Designed by Curtis Dyna-Fog this machine represents one of the highest quality and most innovative hand-held spraying products ever produced. Using the latest in electrostatic technology, the **Hurricane ES** assures an efficient, uniform application of water-base products. If properly maintained, this machine will give years of high performance. During the research and design process, we focused heavily on creating an efficient, environmentally responsible machine. This is only possible with the help of many talented people and from suggestions from our customers. If you have any questions or suggestions concerning our products please contact us at the address shown below. All Curtis Dyna-Fog products are tested and calibrated at the factory. To ensure safe and responsible spray applications, please be sure to read and understand this manual before attempting to operate your machine.

-The Curtis Dyna-Fog Team

***Thank you for choosing Dyna-Fog®!***



by:

Curtis Dyna-Fog ®, Ltd.  
17335 US Hwy. 31 North PO Box 297  
Westfield, Indiana 46074 USA

Phone: 317.896.2561

Fax: 317.896.3788

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[info@dynafog.com](mailto:info@dynafog.com)

US and foreign patents pending

Dyna-Fog and Hurricane ES logo are copyrights and trademarks of Curtis Dyna-Fog, Ltd.

## **Warranty**

## Limited Warranty for Curtis Dyna-Fog Hand-Held Electric Models

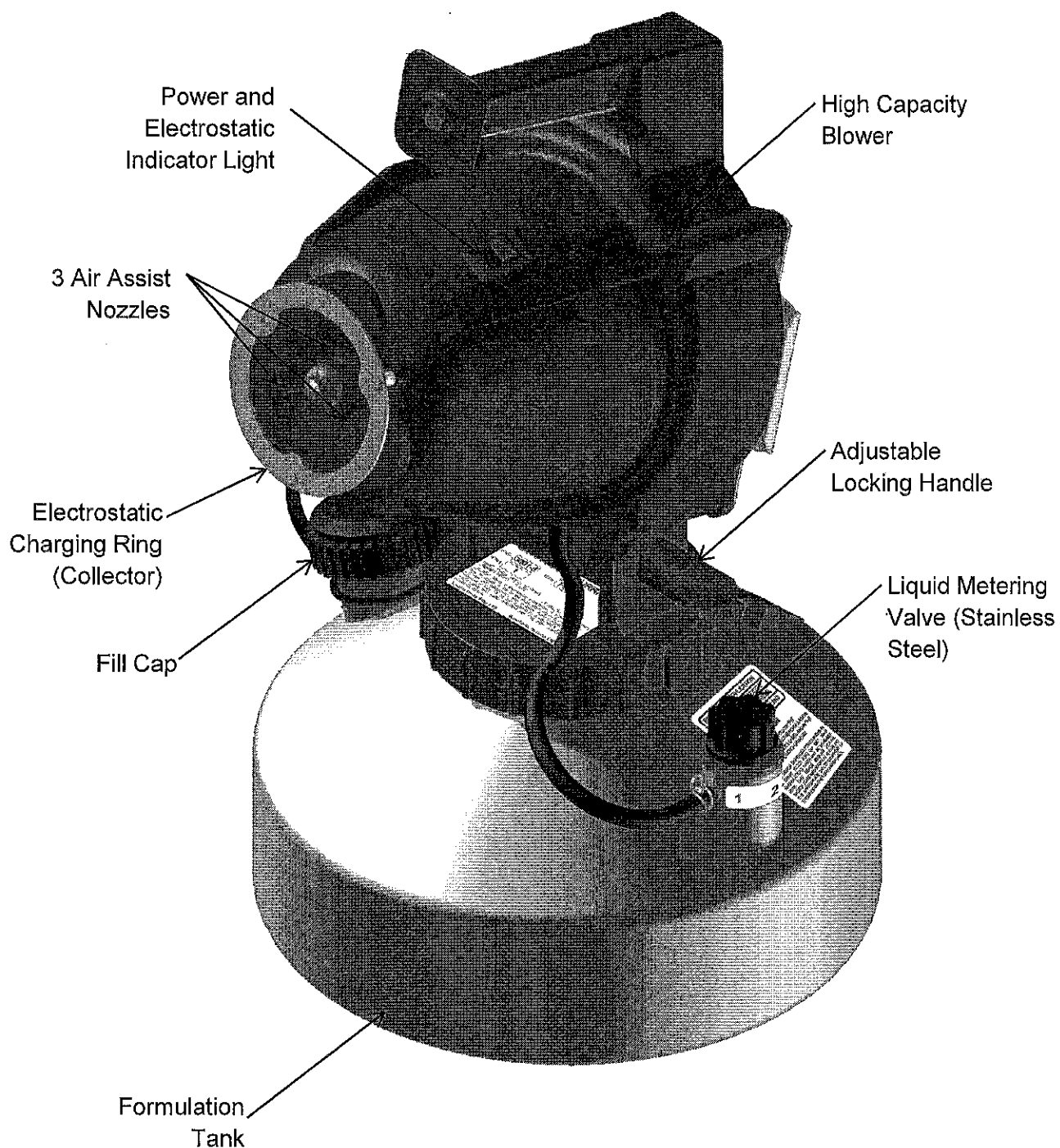
Curtis Dyna-Fog, Ltd. ("Seller") warrants that the machines it sells will be free of defects in workmanship and material under normal use and service (as described in the operating manual) for a period of one year (12 months). Seller's obligation under this Warranty is limited to replacing or repairing, free of charge (other than transportation charges or duties which shall be borne by Purchaser) any defective part or parts of the machine that were manufactured by the Seller which are returned to the Seller at Westfield, Indiana or are returned to the distributor from whom Purchaser purchased the machine if such distributor is an authorized repairing distributor. Components, such as blowers, not manufactured by the Seller will carry only the warranty of the manufacture of such component and Seller shall have no liability whatsoever for any defect in any component not manufactured by Seller. Correction in the manner provided above shall constitute a fulfillment of all liabilities of Seller in any respect to the machines. THE FOREGOING WARRANTY AND THE OBLIGATIONS AND LIABILITIES OF SELLER THEREUNDER ARE EXCLUSIVE AND IN LIEU OF AND PURCHASER HEREBY WAIVES ALL OTHER REMEDIES, WARRANTIES, GUARANTEES OR LIABILITIES, EXPRESS OR IMPLIED, ARISING BY LAW OR OTHERWISE (INCLUDING WITHOUT LIMITATION ANY OBLIGATIONS OF THE SELLER WITH RESPECT TO FITNESS, MERCHANTABILITY AND CONSEQUENTIAL DAMAGES) OR WHETHER OR NOT OCCASIONED BY SELLER'S NEGLIGENCE. THIS WARRANTY SHALL NOT BE EXTENDED, ALTERED OR VARIED EXCEPT BY A WRITTEN INSTRUMENT SIGNED BY SELLER AND PURCHASER. If a warranty card is not returned to Seller (or, in the case of purchases outside of the United States and Canada, to the importing distributor) or the online registration is not completed within thirty (30) days of purchase, proof of purchase must be provided to Seller (or, in the case of purchases outside of the United States and Canada, to the importing distributor) when submitting the machine for repair. If the date of purchase is not so established and a machine has been returned to the Seller, Seller will return to Purchaser, at Purchaser's expense, the machine unless payment arrangements are made for the repair of the machine at the Seller's then-current prices.

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## Main Components Diagram- *Hurricane ES*

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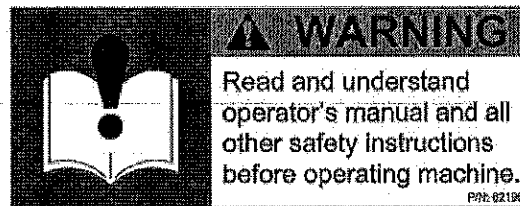


## Safety Precautions

*(It is the Operator's responsibility to read and understand the Cautions and Warnings in this manual before attempting to operate the machine.)*

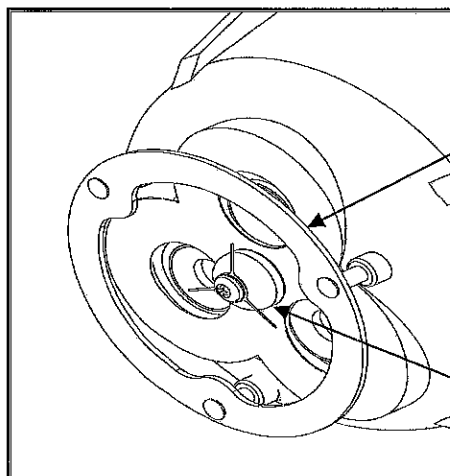


**Important:** The Hurricane ES has been designed and engineered to be very safe during normal operation. As with all AC powered equipment, certain safety precautions should be taken. Please read the following **WARNINGS** before operating the machine. **UNDERSTAND THESE SAFETY PRECAUTIONS BEFORE OPERATING MACHINE. FAILURE TO PROPERLY FOLLOW THESE PRECAUTIONS MAY LEAD TO A FIRE, EXPLOSION, OR ELECTRICAL SHOCK HAZARD.**



### WARNING

**Always have the machine serviced by a professional, qualified representative. Never attempt to service the machine or access its internal components while it is plugged into an electrical outlet.**




Charging Ring (Collector)

**To avoid electrostatic shock, do not touch the metal charging ring or 3-prong electrode located at the nozzle while the machine is operating.**


3-Prong Electrode (Emitter)

FIGURE 1

## Safety Precautions (continued)



### CAUTION



### WARNING

This machine contains an electrostatic device that may interfere with sensitive medical devices such as pacemakers, defibrillators, or similar devices. DO NOT operate this machine or stand within 10 feet (3 meters) if you use any such medical devices. Contact your physician prior to operation if you are unsure if this machine will interfere with your medical device. Always use a three (3) prong grounded extension cord (see label on cord and in operation manual) in addition, always maintain contact with the handle during operation to ensure proper grounding.

**California Warning:** This machine may contain brass parts that contain lead, a chemical known to the State of California to cause cancer and birth defects, or other reproductive harm. DO NOT place your hands in your mouth after handling or using this machine. DO NOT place brass parts in your mouth. Wash your hands thoroughly after handling or using this machine.

P/N: 62191

This machine contains an electrostatic device that may interfere with sensitive medical devices such as pacemakers, defibrillators, or similar devices. DO NOT operate this machine or stand within 10 feet (3

meters) if you use any such medical devices. Contact your physician prior to operation if you are unsure if this machine will interfere with your medical device.

110-125 VOLT AC.		220-250 VOLT AC.	
GAUGE	LENGTH	GAUGE	LENGTH
16/3	50 FT (15 M)	16/3	100 FT (30 M)
14/3	100 FT (30 M)	12/3	250 FT (75 M)
10/3	250 FT (15 M)		

### IMPORTANT

Only use extension cords that are approved by Underwriters Laboratory, CSA, ETL or equivalent. The Following size extension cords must be used with the operating voltage and length shown.

Always hand carry the machine during operation so that your hand remains in contact with the grounding strip located beneath the carrying handle. Leaving the machine operating unattended can enable a buildup of electrostatic charge that can cause a static shock/spark. *Note: Objects in the vicinity of the machine may develop an electrostatic charge during operation)*

This machine contains an electrostatic device that may cause an electrical shock if not properly grounded. Always use a three (3) prong grounded extension cord at the ratings shown in the table when using an extension cord. In addition, always maintain contact with the handle during operation to ensure proper grounding.

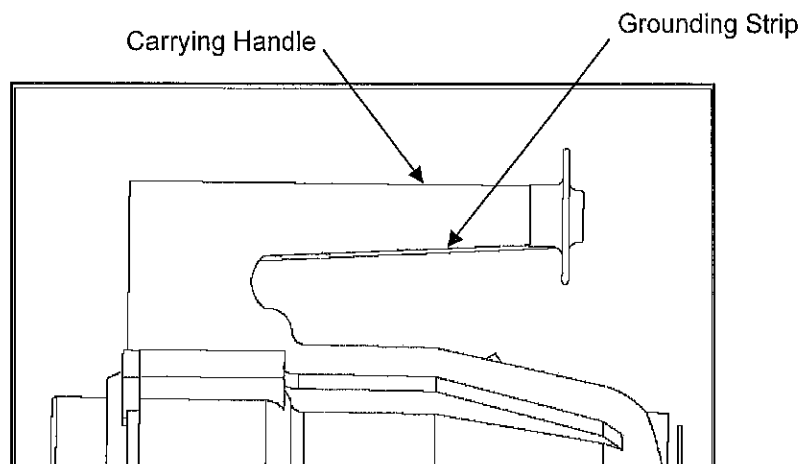


FIGURE 2

**California Warning:** This machine contains lead, a chemical known to the State of California to cause cancer and birth defects, or other reproductive harm. DO NOT place your hands in your mouth after handling or use of the machine. DO NOT place any brass parts in your mouth. Wash your hands thoroughly after handling or using this machine.

## Safety Precautions (continued)

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### WARNING

*READ AND UNDERSTAND THESE SAFETY PRECAUTIONS BEFORE OPERATING MACHINE. FAILURE TO PROPERLY FOLLOW THESE PRECAUTIONS MAY LEAD TO A FIRE, EXPLOSION, OR ELECTRICAL SHOCK HAZARD.*

**1. Electric Power.** This machine uses electrical power at common commercially available voltages. When directly contacted, such voltages are hazardous to human life. All precautions commonly applicable to the use of the electric power general are applicable to the use of this machine. This machine is designed to operate from three wire power systems where one of the wires is a safety ground. Use a GFCI (Ground Fault Circuit Interrupter) power outlet whenever possible. Do not disconnect the safety ground or use extension cords or "cheater" plugs to connect this machine to a two-wire system. This defeats the purpose of the safety ground and may result in a hazardous electrical shock condition. ***This machine must be used with a 3-prong grounded extension cord plugged into a grounded electrical supply.***

When making adjustments on the machine, use an area or workbench that is dry and not electrically conductive. Dry, natural wood and plastics are generally non-conductive at the working voltages of this machine. Metals are usually conductive. Do not probe inside the machine.

Extension cords must be properly sized and rated for the voltage, current, and LENGTH of an individual cord. Consult the nameplate current and voltage rating of your machine and the marked rating of the extension cord. A single extension cord only should be used. When two or more extension cords are placed in series, the rated current carrying capacities of the cords may no longer be valid. If an extension cord gets warm to the touch, discontinue its use and obtain a cord with a higher current rating. Improper extension cords are not only hazardous, but may result in poor machine performance due to excessive voltage drop.

**2. Formulations.** Many formulations are combustible; that is, they all can be caused to burn. This is true of even high flash point or "no" flash point formulations (fine particle dust in a grain mill has "no" flash point). A combustible liquid vapor can more easily be ignited because it more readily forms a uniform mixture with the air, which contains the oxygen needed for combustion. However, fine particles of combustible liquids or solids suspended in the air very closely spaced are capable of propagating flame from one to another once ignition starts. A good analogy is the grain mill explosion. Although the fine particle dust in a grain mill has "no" flash point, the phenomena of the grain mill explosion is an all too common occurrence. While a high flash point or a "no" flash point liquid formulation will ignite far less readily than a low flash point liquid; and for this reason is strongly advocated, the high or "no" flash point formulation can ignite if the proper conditions exist. These conditions are basically two: 1) a sufficient volume of liquid in the form of fine particles suspended in the air; and 2) A sufficiently high energy source of ignition



## 2.1 Safety Precautions (continued)

---

**3. Aerosol Concentration.** It has been fully established that an acceptable level of liquid in the atmosphere is one gallon per 50,000 cubic feet (2.7 liters per 1,000 cubic meters). There is a safety margin of at least 5 to 1 in this figure.

**4. Aerosol Ignition.** If a combustible atmosphere is established or a combustible deposit is laid down, a source of ignition may cause a fire. Sources of ignition can be gas or oil pilot lights or sparks from electrical controls. Therefore, it is strongly recommended that all such sources be eliminated by extinguishing all pilot lights and turning off all unnecessary electric power. To avoid danger of fire or explosion in an enclosed space, the enclosed volume fogging time and required formulation volume should be carefully calculated. *While operating the machine, always carry the machine by the carrying handle to ensure that you are properly grounded.*

**5. Proper and Improper Use.** The following rules apply to the operation of this machine:

## 2.2

### DO

Read the entire manual before operating the machine and pay particular attention to all **CAUTIONS AND WARNINGS.**

- **Only use water-base formulations with this machine**
- Store formulation in its original labeled container.
- Only use a 3-prong grounded extension cord which is properly rated for voltage, current, and length and which is free from nicks, cracks, and other signs of prior abuse. For lengths up to 100 feet, (30.5 meters) cords with No. 12 AWG wire are usually adequate.
- Turn off sprayer before unplugging. Unplug by grasping the plug. Do not pull on cord to unplug. Do not unplug machine with wet hands.
- Replace damaged or worn electric cord immediately.
- Turn the flow valve **CLOCKWISE** to the **OFF** position after each spray application while the motor is still operating to allow clearing of the lines. This will also prevent a possible siphon effect if the unit is ever accidentally knocked over with the valve remaining open.
- Always comply with any requirements for protective clothing, goggles, gloves, facial masks, or respirator required by the formulation label.
- Ensure that formulation is applied only in strict compliance with the formulation label as well as local, state, and federal regulations.

## Safety Precautions (continued)

---

### DO NOT

**Do not** spray flammable liquids near open flame or other source of ignition.

**Do not** use oil-base or flammable formulations with this machine.

**Do not** use a machine that is broken or damaged in any way.

**Do not** alter the machine by adding or removing parts.

**Do not** restrict the motor blower inlet area.

**Do not** tamper with the output nozzle or 3-prong electrode and charging ring (Collector).

**Do not** allow the machine to operate unattended.

**Do not** stand in water or hold over water while operating machine.

**Do not** allow the power cord or extension cord to be submersed in water

**Do not** use outdoors when it's raining.

**Do not** apply more than one gallon of formulation per 50,000 cubic feet (2.7 liters per 1,000 cubic meters enclosed space). Exceeding this concentration is both hazardous and wasteful.

**Do not** touch the 3-prong electrode while the machine is operating

## SPECIFICATIONS

### Description:

The Hurricane ES™ machine is an electrostatic "Cold Fog" ULV/Mister that utilizes a 3-nozzle air-assist design. This device is intended for applications of **Water-Base** formulations. The body and tank are made of high-density chemical resistant polyethylene. The applicator is useful for dispensing most chemicals which are labeled for aerosol or mist applications such as disinfectants, deodorizers, germicides, insecticides, etc., in locations such as hospitals, schools, nursing homes, greenhouses, stables, warehouses, homes, and farm buildings. The particle sizes generated range from 10 to 50 microns VMD, obtained using water. Machine output and particle size are dependent upon the viscosity of the liquid being dispensed. See table 2 for particle size vs. valve setting (flow rate).

**Hurricane™ ES Model 3001-5 (120 VAC)**

**Hurricane™ ES Model 3001-6 (240 VAC)**

#### Motorized Blower:

High efficiency Motor/Blower  
Brush Life: Approximately 1000 hours

#### Electrostatic Power Supply:

120 or 240 Volt AC,

#### Current Draw:

120V AC	220V AC
6.85 Amps	3.40 Amps
50/60 Hz	50/60 Hz

#### Nozzle Type:

Professional grade electrostatic, 3 nozzle, air assist  
(Vortical type)

#### Droplet Size:

10-50 Microns VMD (adjustable)

#### Flow Rate:

0-9.5 oz/min (0-281 ml/min) using water

#### Spray throw distance\*: 30-50 feet (9-15 meters)

\*Distance is based on indoor use and will vary depending on droplet size and formulation type. Smaller droplets (i.e. 20 Microns) can carry much greater distances than larger droplets.

#### Tank Capacity:

1 US Gallon (3.78 liters)

#### Tank Material:

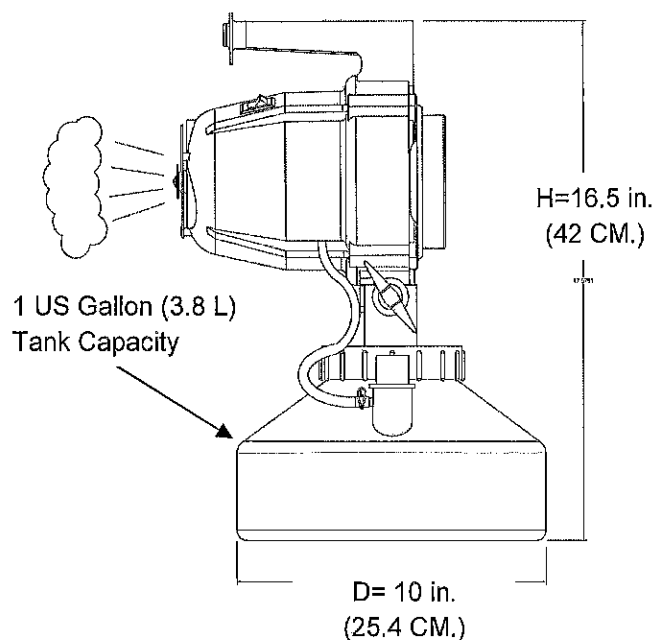
High Density Polyethylene

#### Weight Empty:

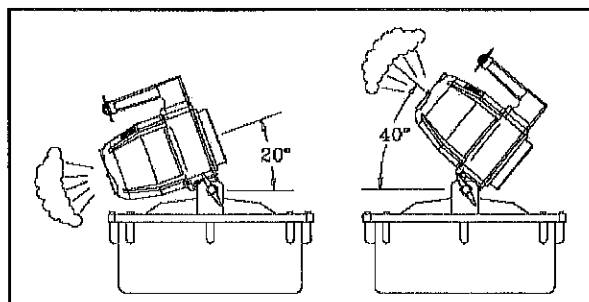
7.5 lbs. (3.4 kg)

#### Shipping Information:

16.5" L X 12.5" W X 18.5" H  
42 cm X 32 cm X 47 cm  
Weight: 9.5 lbs (4.3 KG)



**FIGURE 3**



## 4.0

### Principles of Operation- *Hurricane ES*

This machine consists of a motor/blower assembly, high voltage power supply, charging ring and electrode, blower housing, a nozzle, formulation tank and metering valve. The blower is a two-stage centrifugal compressor driven by a universal motor operating at a speed of 20,000 rpm. The blower moves a large amount of air through the nozzle system. The nozzle has six (6) stationary fins, which direct the air to create a swirling effect of the air mass as it leaves the nozzle. In the center of this exiting swirling air, a liquid supply spout tube injects formulation. The liquid is delivered to the nozzle by a negative pressure at the nozzle caused by the exiting air mass. The flow rate is controlled by a one turn precision metering valve located at the formulation tank. Generally, the sizes of the output droplets increase with increasing flow rates and with increasing viscosity of the liquid being dispensed.

After the nozzles shear the formulation into billions of droplets, the droplets are dispersed into the atmosphere. As the droplets exit the nozzles they pass through an "electrostatic ion field". This field is created using the combination of a high voltage power supply, an emitting electrode and charging ring (Collector). The result is billions of electrostatically charged droplets that gravitate to neutral objects to form a uniform coverage. The various components are identified in the fluid systems and major components diagrams.

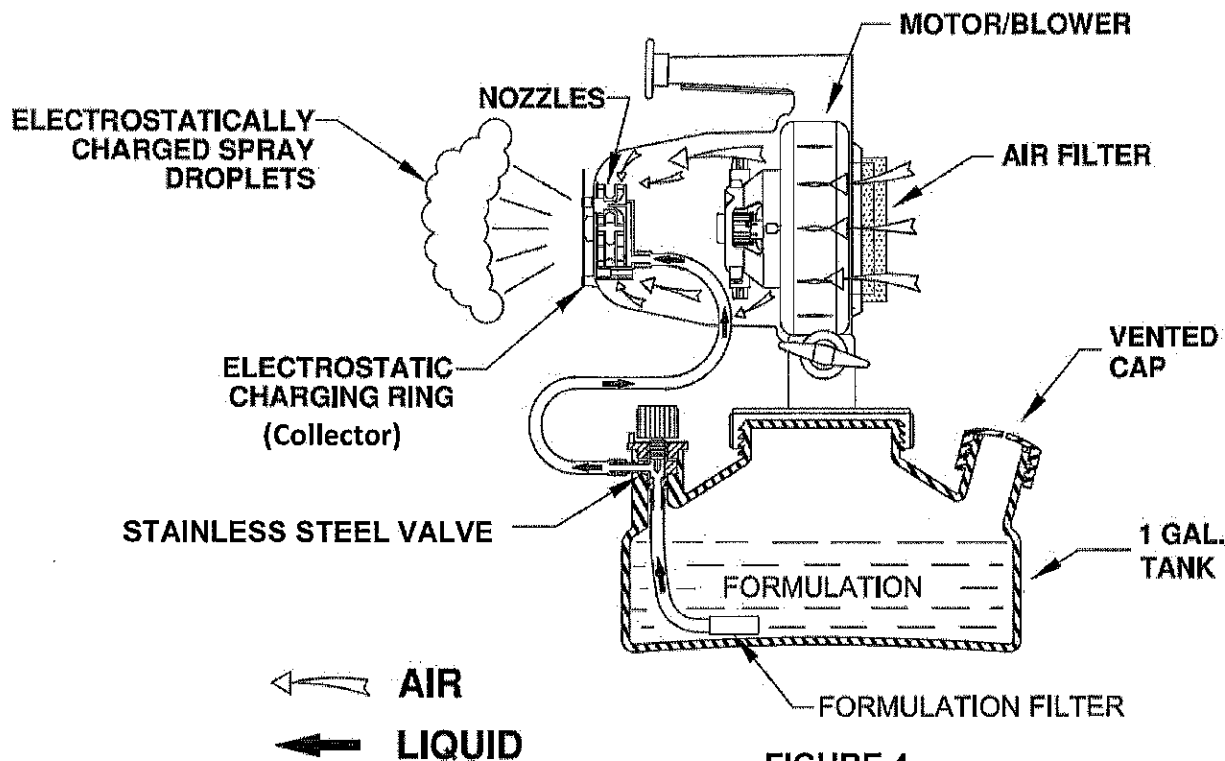


FIGURE 4

## 5.0

### Flow Rates, Droplet Sizes and Applications

Liquid flow rate of the Hurricane ES is created by the suction caused by the design of the 3-nozzles. The Flow rate is regulated by adjusting the metering valve. The liquid flow rate can be increased by rotating the metering valve knob counterclockwise and decreased by rotating it clockwise. There are three flow indicator marks on the side of the tank that designate position 1, position 2 and position 3. Flow rates are shown for these respective positions below. All flow rate information is based on using water with a temperature of 70 degrees F (21 C). Increasing the liquid thickness (viscosity) will decrease flow rate and can increase droplet size. This is because thicker, more viscous liquids are more difficult to atomize. As a rule, thinner liquids with a lower viscosity atomize easier and flow at higher rates. Refer to the table below for approximate flow rates and droplet sizes at the various valve settings. Droplet sizes are shown in microns VMD (Volume-Median Diameter). The VMD is an industry standard and represents the "middle point" of the spray droplet spectrum of the liquid being applied.

**Important:** To maximize electrostatic efficiency, only use **Water-Base** formulations with the Hurricane ES. **Warning:** Never use oil-base or flammable formulations with this machine! To prevent damage to sensitive objects or surfaces like wood finishes, carpeting, upholstery, etc...do not over apply the formulation being sprayed. If in doubt, always perform a spray test on a small area to check the effects prior to doing the actual spray treatment.

#### 5.1 Insect Control

Depending on the target insect, droplets are generally generated in the 10-30 Micron range so that even with some evaporation and settling time, the droplets remain in the correct range for optimal air born suspension and insect impaction. In dry climates evaporation will tend to cause droplets to "shrink". Therefore it may be necessary to increase flow rate to get adequate coverage. The smaller the droplet size the greater the number of droplets that are created. For example: If 1 milliliter of spray is dispersed as 20 Micron droplets, there will be 239 million droplets produced. For the same spray mixture using 100 micron droplets, only 1.91 million will be produced. The large quantity of droplets greatly increases the chances of contact being made with the insect.

According to the WHO Pesticide Evaluation Scheme, the time required for a droplet to fall 10 meters is defined in Table 1 below.

Droplet Size (Microns)	Time to fall 10 meters	Droplet Density (no/cm3)
1	93.7 hours	19120.0
5	3.7 hours	152.0
10	56 minutes	19.2
20	14 minutes	2.38
50	135 seconds	0.150
100	36 seconds	0.0192

**TABLE 1**

The recommended droplet for Mosquito control is 10-20 Microns. For Fly control approximately 30 Microns. For Bedbugs, spiders and other crawling insects where a slight residual is desired, 20-40 Microns droplets are affective depending on insect type and type of formulation being used.

## Flow Rates, Droplet Sizes and Applications (cont'd)

### 5.2 Odor Control

Depending on the type of environment and odor source, droplets for controlling odors can be in the 20-30 Micron range and even larger if a "residual affect" can be tolerated.

### 5.3 Disinfecting

Disinfectants are designed to be applied to non-living objects to destroy microorganisms. Typically a disinfectant for objects or surfaces is more effective when applied in the 30-50 micron range. However, smaller size droplets in the 10-20 micron range can be effective when targeting microorganisms suspended in the air.

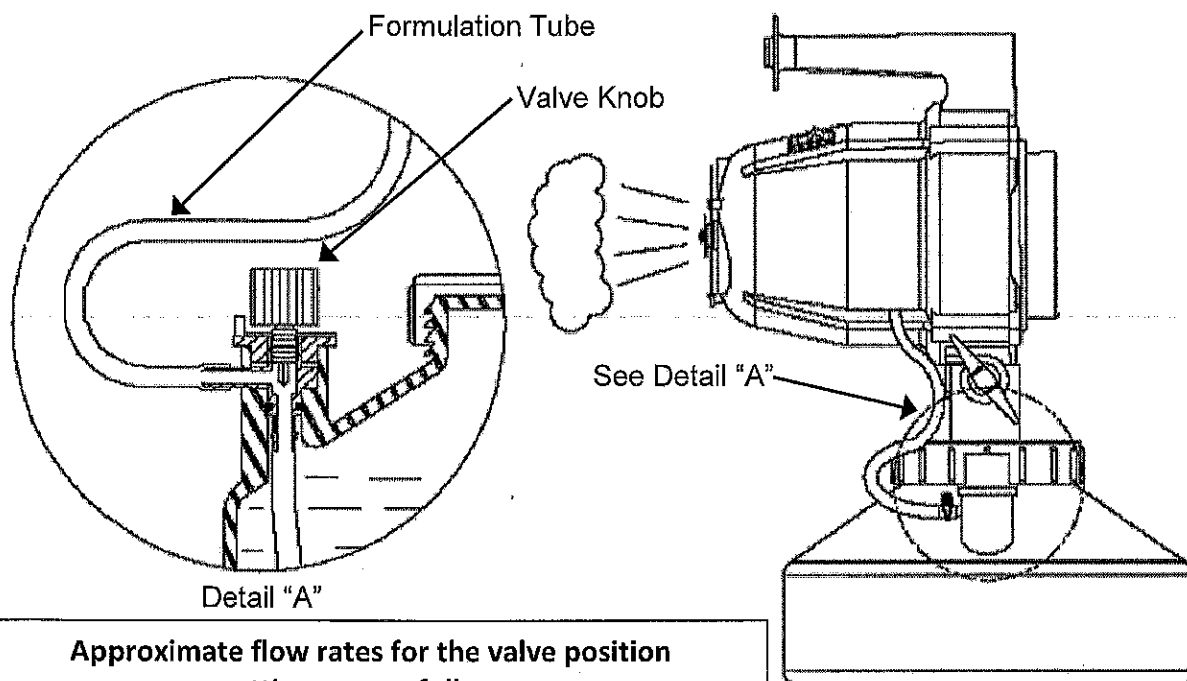


FIGURE 5

Approximate flow rates for the valve position settings are as follows:

Position (VMD)	Flow rate*	Droplet Size
1	6 oz/min (177 ml/min)	10-20
2	7.5 oz/min (222 ml/min)	20-30
3	9.5 oz/min (281 ml/min)	30-50

\*Flow rates shown are approximate and will vary depending on liquid viscosity and temperature.

**Important:** Always spray responsibly. This device is designed to dispense formulations in a SPRAY (Cold Fog). Many of the formulations which may be dispensed with this machine require registration with or approval by various government agencies. Always calibrate your machine to the proper flow rate in accordance with the formulation labels recommended rate prior to doing any spray application.

POSITION	APPLICATION
1	INSECTICIDE
2	DEODORIZER
3	DISINFECTANT

#### CAUTION

READ AND FOLLOW THE INSTRUCTIONS ON THE FORMULATION MANUFACTURER'S LABEL AND IN THE OPERATION MANUAL.

THIS DEVICE DISPENSES FORMULATIONS IN A SPRAY (COLD FOG) OR MIST. MANY FORMULATIONS WHICH MAY BE DISPENSED WITH THIS DEVICE REQUIRE FEDERAL AND/OR STATE REGISTRATION. ALWAYS USE THE APPROPRIATE SAFETY EQUIPMENT AS SPECIFIED ON THE FORMULATION LABEL.

TABLE 2

## 6.0

### Maintenance

---

1. Periodically clean the formulation tank using a hot water/detergent solution. Fully open the machine valve and operate the machine for 3 to 5 minutes, flushing the solution through the valve, lines and nozzle.
2. Examine the electrical cord for evidence of damage and replace any damaged cord immediately.
3. If it becomes necessary to disassemble the Machine for cleaning, be careful not to damage the taper of the valve stem, as this will affect the flow positions/calibration of the machine.
4. Clean the Air Intake Filter after every application. If the filter gets saturated (wet and dripping) while the machine is working, stop the machine and clean the filter.
5. After 700-800 hours of operation, carefully remove the blower assembly and examine the brushes and the commutator bars of the blower motor. If the brushes are worn out or show signs of damage, have the Blower Assembly replaced by a qualified service center.
6. After every 25 hours, inspect the three-pronged electrode for damage and wear. The electrode is made of an extremely durable exotic metal. If the electrode becomes damage, it may be necessary to replace it. Each machine is shipped with one spare electrode (Electrode P/N-62172).

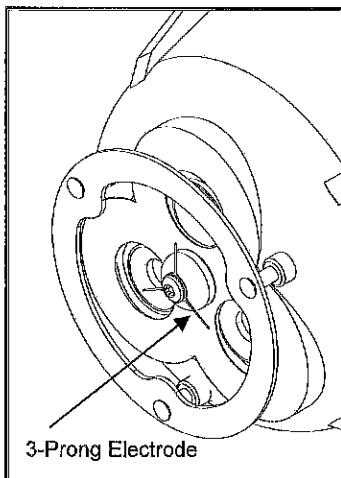


Always disconnect the main power cord before attempting to service the machine.

## 6.1

### Replacing the 3-Prong Electrode

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**FIGURE 6**



Always disconnect the main power cord before attempting to service the machine.

**Step 1)** Depending on various operating conditions, after several hours of operation the 3-prong electrode may begin to show signs of wear. Visually inspect the electrode after every 25 hours of operation and look for signs of wear around the edges. If the electrode becomes worn or damaged, proceed to step 2.

**Step 2)** Using a Phillips screwdriver, loosen the center mounting screw by rotating it counterclockwise. Remove the screw and the damaged or worn electrode.

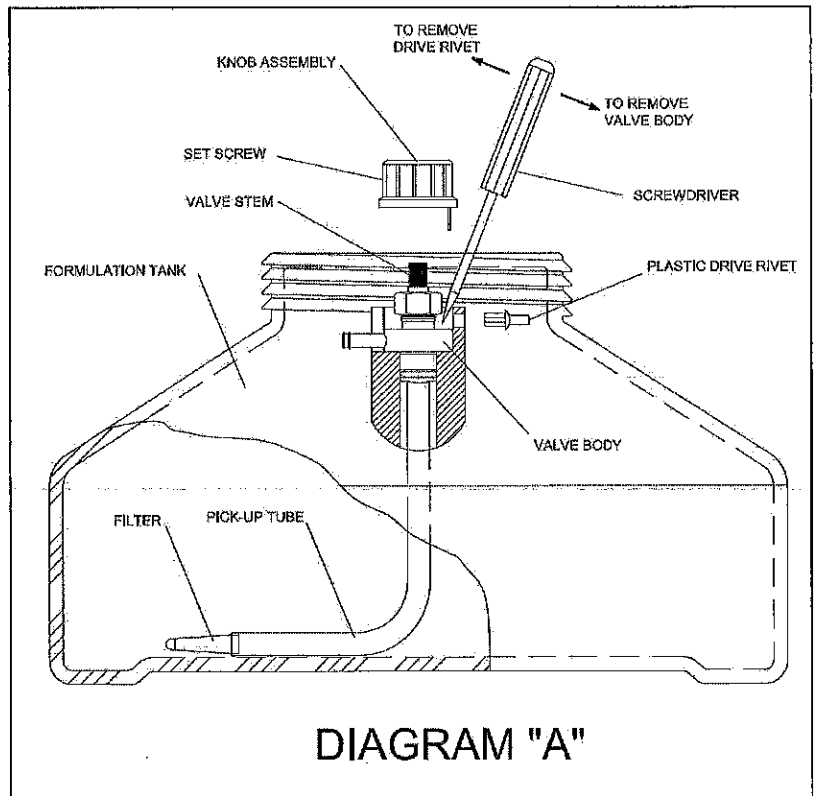
**Step 3)** Install a new electrode (1 spare electrode was shipped with your machine, P/N-62172) making sure that the "3-Prongs" are pointed toward the center of each nozzle and re-install the Phillips head screw. Do not over tighten the screw.

## Removing the Metering Valve (Accessing the Formulation Filter for Cleaning)

### Steps for removing the metering valve and formulation filter

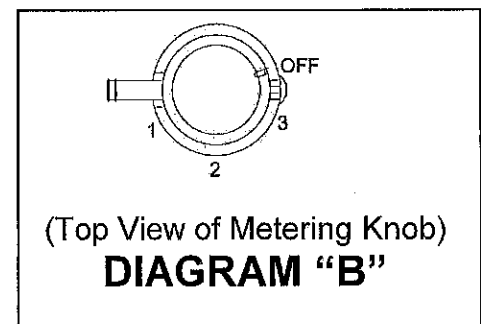
- 1) Using the 5/16 allen wrench provided with your Hurricane ES, loosen the set screw located in the knob assembly, and remove the knob assembly.
- 2) Using a flat blade screw driver, push the plastic drive rivet out of the formulation tank (See diagram "A").
- 3) Using the flat blade screwdriver, gently pry the valve body assembly out of the formulation tank cavity.

**Note:** The formulation pick-up tube and filter will be attached to the valve body assembly. Pull these items completely out of the formulation tank and clean with warm soapy water.



### Steps for re-installing the metering valve and formulation filter

- 1) After cleaning, place the valve body assembly back into its cavity in the formulation tank. Make sure that the valve body is seated completely down inside the cavity of the plastic tank. Use a small hammer to press the drive rivet back into the formulation tank. The drive rivet serves as a stop for the valve assembly as well as a retainer to keep the valve assembly from coming out of formulation tank.
- 2) Once you have the drive rivet back in place, turn the valve stem clockwise until it stops. When the valve is totally shut (in the "OFF" position) place the knob assembly onto the valve stem. Position the knob assembly so that the tab comes in contact with the drive rivet (see diagram "B"). Tighten the set screw in the knob assembly with the 5/64 allen wrench. Be careful not to over tighten the set screw.
- 3) After the knob assembly is tightened, apply a small amount of sealant to the head of the set screw. Applying a non-conductive sealant will help to prevent the possibility of receiving a static discharge/shock when touching this part of the knob.





## 7.0

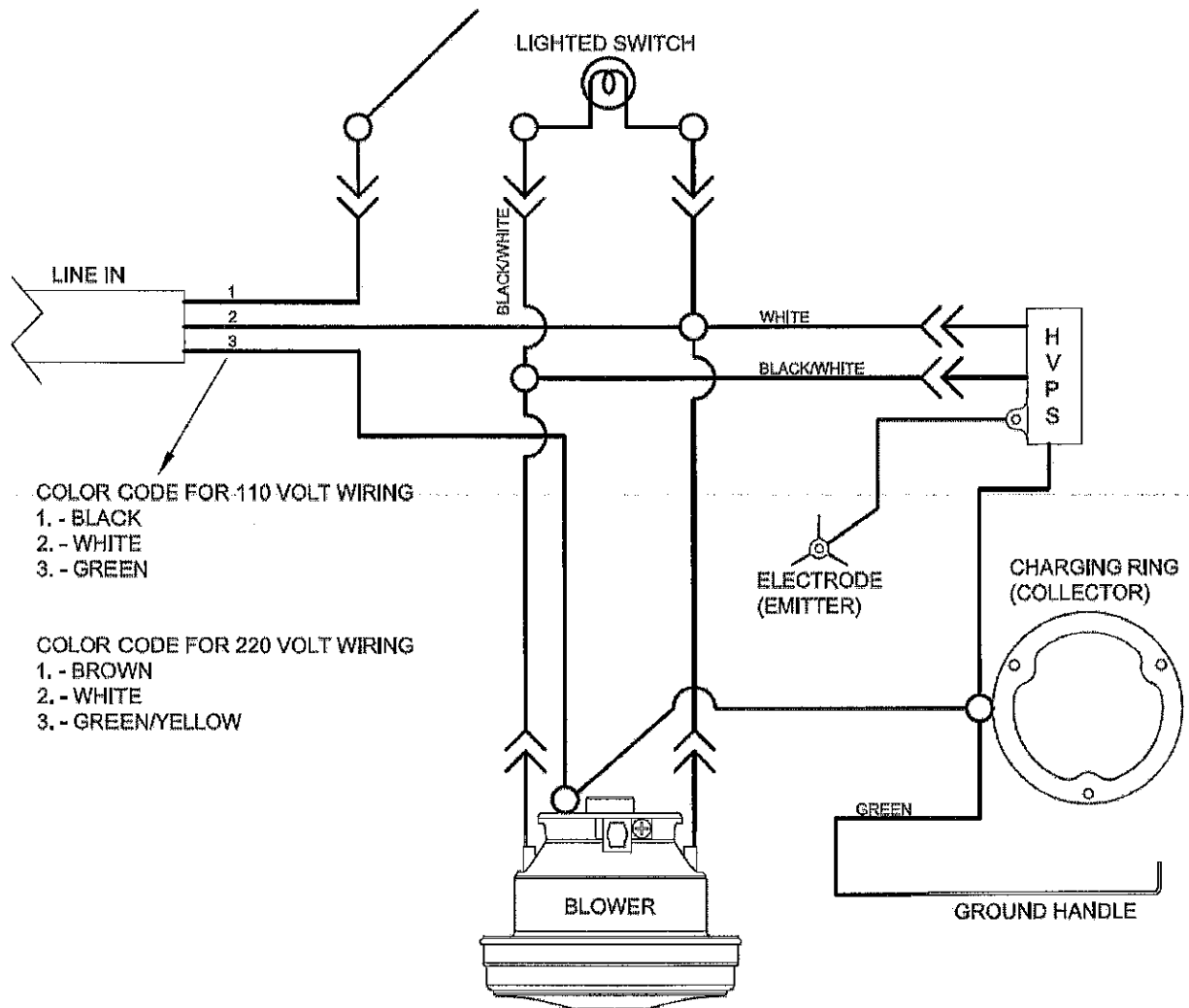
### Troubleshooting

**Important:** When dealing with any service or repair issue that requires accessing the inside of the blower housing, always have the machine serviced by a qualified factory representative. Call 317-896-2561 for a qualified service center near you.

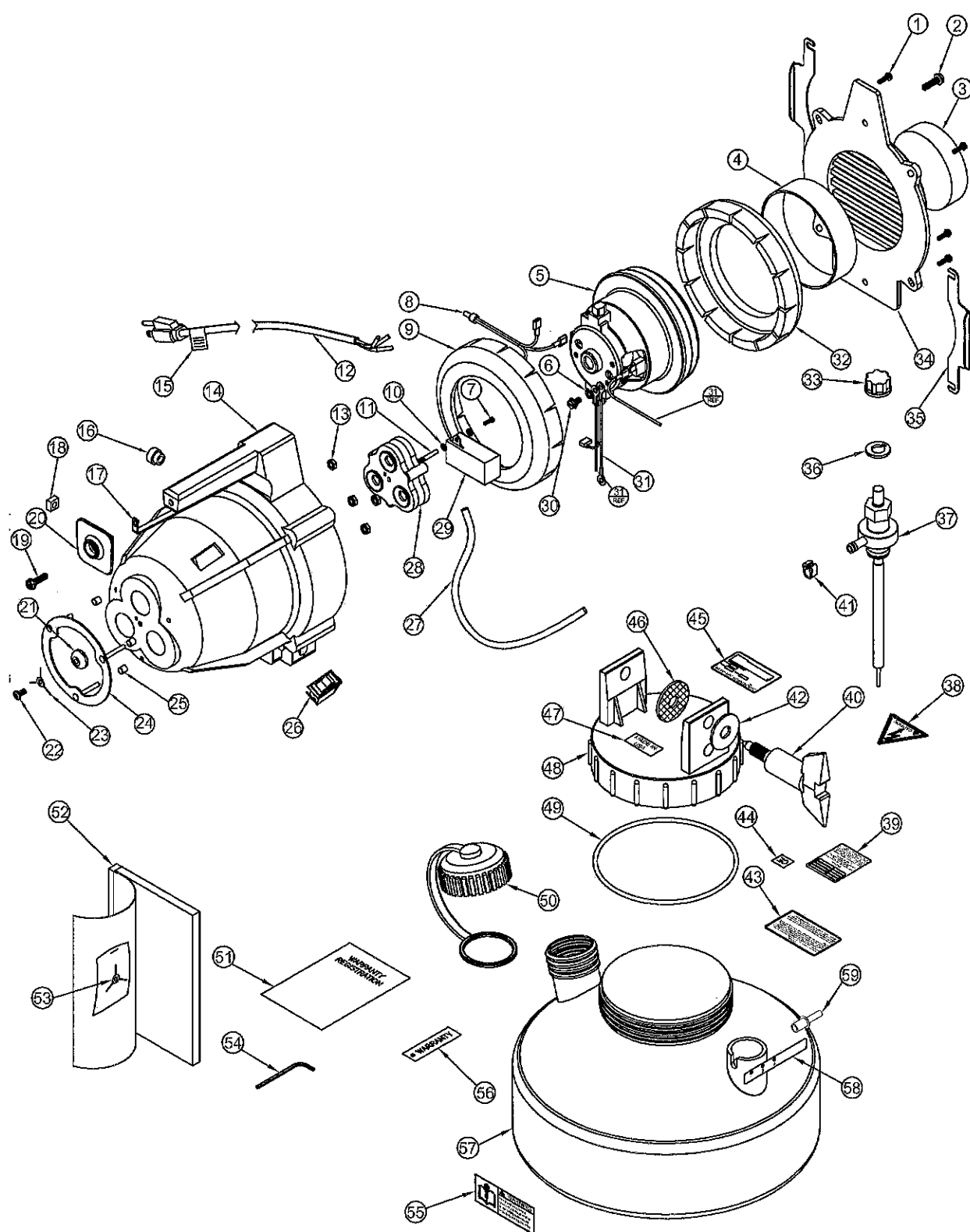
Symptom	Possible Cause	Corrective Action
No liquid is flowing from the nozzles or spray is sporadic	<ul style="list-style-type: none"> <li>• Clogged liquid filter</li> <li>• Tubing connections are loose or tubing is cracked</li> <li>• Air is entering the liquid system</li> <li>• Liquid level in tank</li> </ul>	<ul style="list-style-type: none"> <li>• Remove the metering valve from the tank (see Fig. )</li> <li>• Inspect all tubing connection and replace tubing if necessary</li> <li>• Look for "bubbles" in the liquid carrying tubing indicating the source of the air entry point and tighten connection or replace tubing</li> <li>• Refill tank</li> </ul>
Low air flow from nozzles	<ul style="list-style-type: none"> <li>• Clogged air intake filter</li> </ul>	<ul style="list-style-type: none"> <li>• Remove foam air filter at rear of housing and wash using soap and warm water</li> </ul>
Unit will not operate when switch is in the "On" position (lighted on/off switch not glowing).  Blower is not running.	<ul style="list-style-type: none"> <li>• No power at electrical receptacle</li> <li>• Bad blower/motor assembly</li> <li>• Defective on/off switch</li> <li>• Loose wiring connections on blower</li> </ul>	<ul style="list-style-type: none"> <li>• Check power cord connections and inspect cord for damage. Replace power cord if necessary.</li> <li>• Replace the blower motor and motor gaskets</li> <li>• Replace switch</li> <li>• Have unit serviced by a qualified representative</li> </ul>
Spray is dripping from the front of the machine	<ul style="list-style-type: none"> <li>• Too high of flow rate</li> </ul>	<ul style="list-style-type: none"> <li>• Reduce the metering valve setting</li> </ul>
Static shock occurs when touching Charging Ring, (Collector) or 3-prong electrode (Emitter), or metal surfaces near the metering valve. Also, static can build up on metal objects in close proximity of the machine during operation.	<ul style="list-style-type: none"> <li>• Static discharge- the machine is designed to create this charge so this is a normal function. Move any metal container holding flammable items out of the vicinity of the machine.</li> </ul>	<ul style="list-style-type: none"> <li>• Do not touch charging ring or electrode during operation. Always carry the machine by the handle to ensure that you are properly grounded.</li> </ul>

## 8.0

### Electrical Schematic Diagram for 110V and 220V



# Hurricane ES Exploded Parts Diagram



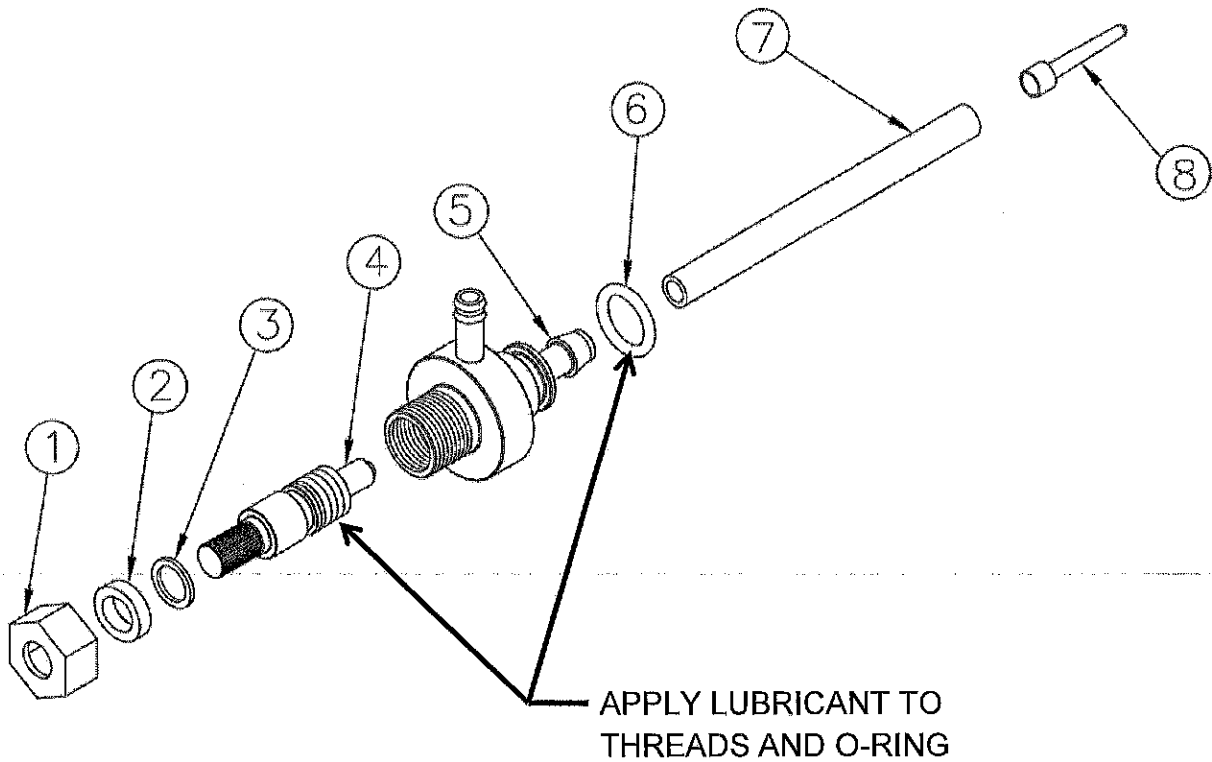
## 9.1

### Hurricane ES Exploded Parts List

ITEM	QTY	PART NUMBER	ITEM DESCRIPTION
1	5	62161	SCREW, 10 X ¾ HIGH-LOW THR.
2	1	62160	SCREW, 10-16 X 1.25 SHWH.
3	1	62124	FILTER, AIR 3.875 DIA.
4	1	62144-1	SPACER, PVC, MOTOR
5	1	62147-1	MOTOR, BLOWER AY.120V PANASONIC
	1	62147-3	REPLACEMENT BRUSH KIT (110V)
	1	62147-2	MOTOR, BLOWER AY., 240V, PANASONIC
	1	62147-4	REPLACEMENT BRUSH KIT (220V)
6	1	138530	WASHER, LOCK, #8, INTO, SST
7	1	65228	SCREW, 6-32 X 1/2, PHCR, SST
8	1	62189-1	WIRE AY., BLACK
9	1	62366	GASKET, FOAM, DIE CUT (.187 THK.)
10	1	138527	WASHER, LOCK, #6, INTO, SST.
11	1	62187	STANDOFF, POWER SUPPLY, ES
12	1	62189-2	WIRE AY., POWER, WHITE, 110V
	1	62189-4	WIRE AY., POWER, WHITE, 220V.
13	4	62212	NUT/WASHER, #10-24
14	1	62148	HOUSING (MACHINED)
15	1	86855	TAG, EXTENTION CORD INFORMATION
16	1	20180-3	STRAIN RELIEF (110V)
	1	20180-4	STRAIN RELIEF (220V)
17	1	62143	GROUND STRIP
18	1	62367	NUT, 3/8 – 16 SQUARE
19	1	62053-1	HAND STOP, SLOTTED
20	1	62162	SCREW 10-12 X 3/4 SHWH
21	1	62186	BUTTON, ELECTRODE SUPPORT
22	1	62441	SCREW, #10-3/4", BUTTON
23	1	62172	ELECTRODE, 3-PRONG
24	1	62170	RING/STUD AY.
25	3	62171	SPACER, NYLON, .196 ID X .312 OD X .25 LONG
26	1	86819-1	SWITCH, LIT ROCK, 110V
	1	86819-2	SWITCH, LIT ROCK, 220V
27	1	62227-3	TUBE, BLUE, 3/16 ID. X 5/16 OD.
28	1	62045-34-1	NOZZLE AY., YELLOW MOD.

29	1	62173-1	POWER SUPPLY, 110V
	1	62173-2	POWER SUPPLY, 220V
30	1	9425089	SCREW, #8-32 X 3/8, HEX, SLOTTED
31	1	62189-3	WIRE AY., GREEN
32	1	62366-1	GASKET, FOAM, DIE CUT (.375 THK.)
33	1	62211	KNOB AY., FORMULATION
34	1	62002-54	HOUSING CLOSURE, BLUE
35	2	62233	BRACKET, SUPPORT, REAR HOUSING
36	1	62139	WASHER, KNOB
37	1	62195-2	VALVE AY., STAINLESS STEEL
38	1	62197	LABEL, WARNING, ELECTRIC SHOCK
39	1	62194	LABEL, CAUTION
40	1	62010-54	LOCKING HANDLE
41	1	21158-1	CLAMP, 5/16, PLASTIC
42	1	62128	WASHER, LOCKING HANDLE
43	1	62191	LABEL, WARNING/CAUTION
44	1	39056	LABEL, CE
45	1	62151-13	LABEL, ID, 120V
	1	62151-14	LABEL, ID, 240V
46	1	62083	WASHER, FRICTION
47	1	63409	LABEL, MADE IN USA
48	1	62131-1	CLEVIS, BLOWER (BLUE)
49	1	10000-343	O-RING
50	1	62135-1	CAP AY., TANK (BLUE)
51	1	20496	WARRANTY REGISTRATION TAG.
52	1	62149	MANUAL, HURRICANE ES
53	1	62172	ELECTRODE, 3-PRONG
54	1	62497	WRENCH, ALLEN, 5/64
55	1	62196	LABEL, WARNING, READ THE MANUAL
56	1	20495	WARRANTY TAG, 1 YEAR
57	1	62130-12	TANK, HURRICANE ES (MACHINED)
58	1	62198	LABEL, FLOW RATE INDICATOR
59	1	58652	RIVET, DRIVE, .187 X .6L (NATURAL)

## Hurricane ES Stainless Steel Metering Valve Assemble (P/N: 62195-2)

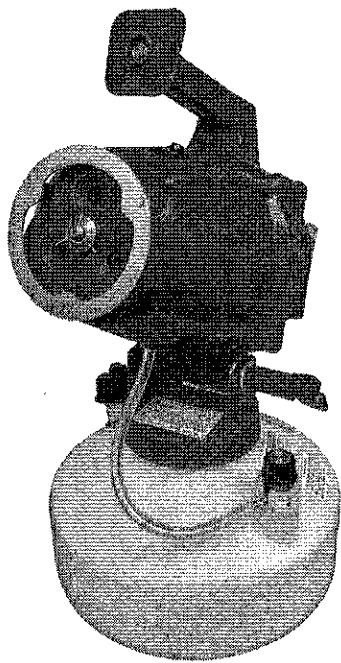


Item	Part Number	Description
1	32692	Nut, Packing
2	32690	Washer, Packing
3	32691	Washer, Brass
4	62319-2	Stem, Metering Valve, Stainless Steel
5	62180-1	Valve Body, Stainless Steel
6	10100-110	O-Ring
7	62227-1	Tube, Blue, 3/16 ID. X 5/16 OD.
8	80408	Filter, Long tapered, 130 Microns

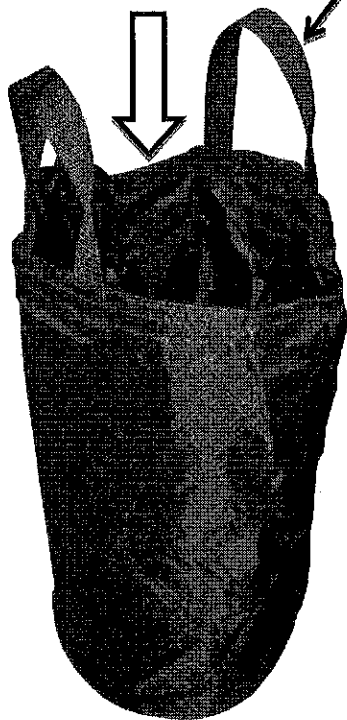
### 10.0

## Hurricane ES Carrying and Storage Bag

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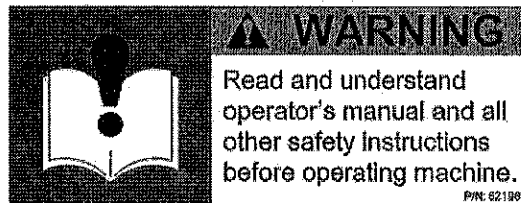
Large pouch for storing  
extension cord, owner's  
manual, tools, etc...



P/N- 62188  
Bag, Machine Carrying/Storage



## Hurricane ES Labels



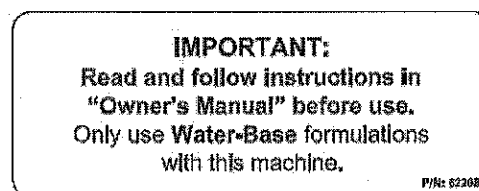
**Label, Warning, Read the Manual  
(P/N:62196)**



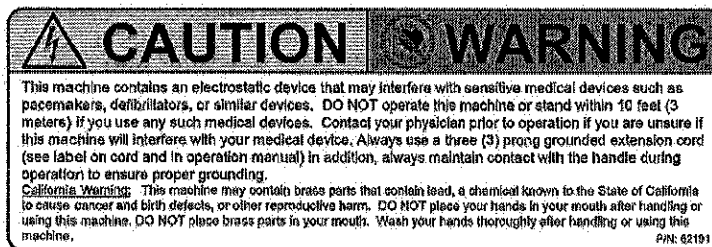
**Label, Flow Caution  
(P/N:62194)**



**Label, Caution  
(P/N:62197)**



**Label, Read Manual (P/N:62208)**



**Label, Warning, Electrostatic  
(P/N:62191)**



**Label, Flow Rate  
Indicator (P/N:62198)**

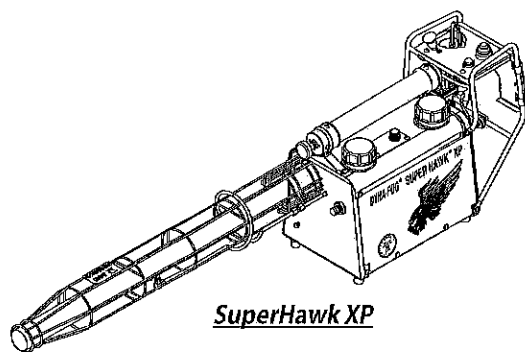


## NOISE LEVEL COMPARISON CHART

	TYPICAL SOUND	TYPICAL MUSIC	SPL, Db	
	Chest wall vibrates, choking, giddiness		150	
	Jet taking off, 25 meters		140	
	Threshold of pain			
	Artillery, 100 yards	Cannon (peaks)	130	
	Pneumatic chipper			
	Riveter, nearby		120	
	Loud car horn, nearby	Very loud rock (peaks)		
		Very loud classical (peaks)	110	
<b>Pain Threshold</b>	Inside N.Y. subway	Very loud classical (avg.)	100	
		Loud classical music		
	Heavy truck		90	
<b>Hearing Protection Recommended</b>	Inside motor bus	Moderately loud classical		
	Noisy traffic, corner		80	
	Noisy office	Soft popular music		
			70	
	Business office	Soft classical music		
	Conversational Speech		60	
	Private office	Very soft music	50	
	Background noise, city home			
			40	
	Background noise, suburb			
	Library		30	
	Background, country night			
	Whisper, leaves rustling		20	
	Good recording studio			
			10	
	Threshold of hearing		0	

**< HURRICANE ES**

# Dyna-Fog Offers a Complete Assortment of Sprayers and Foggers



**SuperHawk XP**

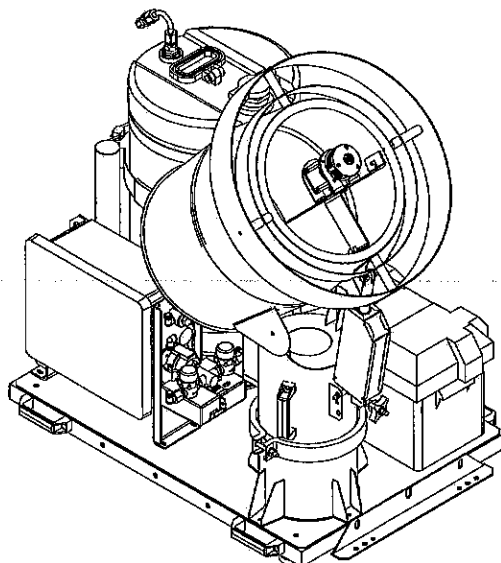
## **PULSE-JET POWERED THERMAL FOGGERS:**

From 0-120 GPH (0-453 LPH) output. Our complete line include different models like the Superhawk, Golden Eagle, Trailblazer, Falcon, Patriot, Blackhawk, Mister III, SilverCloud and Model 1200. Portable or Truck mounted machines. Different models are available for Oil base or Water base formulations.

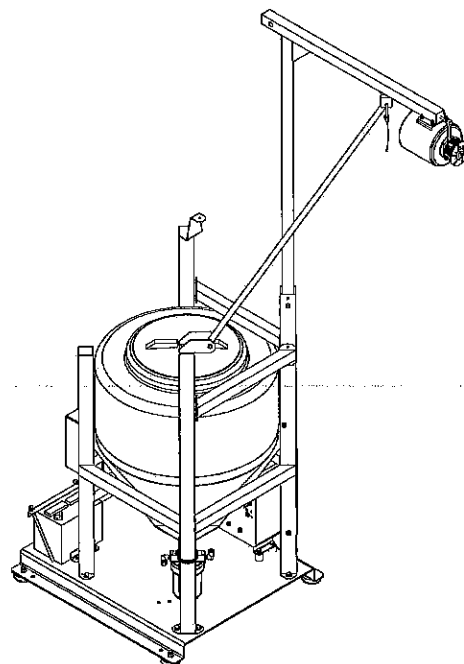
## **ELECTRIC ROTARY ATOMIZERS:**

**DYNA-JET L30:** State-of-the-Art, Electric Rotary Atomizer ULV Aerosol Generator. 12 VDC, Light Weight, Truck mounted Machine with FMI pump. Optional Syncroflow Available.

**DYNA-JET L15:** Drift Sprayer for migratory pest control like Locust. Flow Rate from 0 to 2 L/min. Optional Radar Syncroflow.



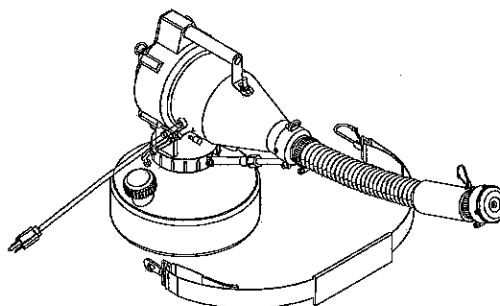
**Dyna-Jet L-30**



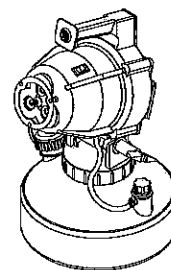
**Dyna-Jet L-15**

## **ELECTRIC HAND-HELD ULV/MIST GENERATORS:**

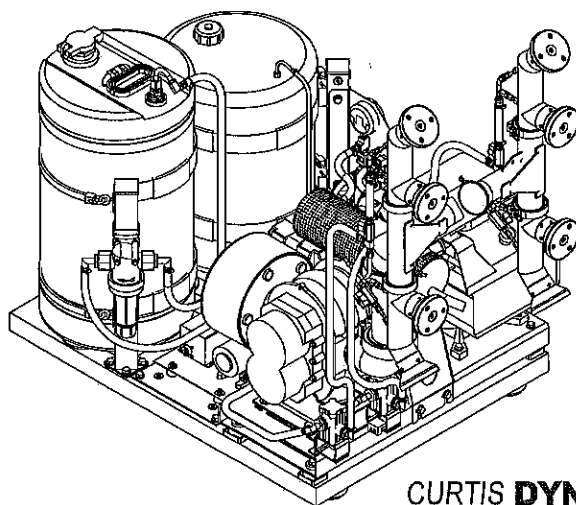
A Full line of electric cold fog applicators with 1-3 gallon tanks, available in 115 and 230 VAC.



**Cyclone Ultra-Flex**



**Hurricane ES**



**LV-8**

## **COMBUSTION ENGINE DRIVEN ULV AEROSOL GENERATORS:**

Truck mounted Units powered by 8, 9, 11, 18 and 20 HP four cycle, OHV Gasoline Engines. Diesel versions also available. One, two, four and eight nozzle configurations. Patented full remote control of boom functions (rotation of turntable and angle of nozzles) available on certain models. Your choice of Gear, Piston or Diaphragm pumping system. Pressurized system versions available for specific international markets. Optional Automatic flow control "Syncroflow" also available with Radar or GPS speed sensing. 25 cc and 40 cc two cycle portable models are also available.

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