



**MistAway® Drum-Based Misting Unit – Gen 1.3  
Operations Manual**

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**Base Functionality**

- MistAway’s Drum-Based Misting Unit, Gen 1.3, is designed to atomize a dilute botanical insecticide (typically contained in a 55 gallon drum) through an installed nozzle circuit to control mosquitoes and other annoying insects.
- The capacity of the unit is dependent on the configuration of the nozzle circuit. A practical field maximum for one zone is about 75 nozzles (some in parallel) connected by 900 feet of tubing.
- The unit may be programmed to mist up to 24 times daily, with each mist cycle having its own independent duration. A typical program will consist of 2 to 3 mist cycles per day, each with a 45 – 60 second duration, for a daily total of 90 – 180 seconds.
- The unit will also mist in response to a signal from a handheld remote transmitter for a duration programmed by the user.

**Optional Equipment and Functionality**

- **Agitating Valve:** Each mist (including remote mists) will be preceded by an agitation cycle that will ensure thorough mixing of the drum contents prior to misting. In addition, there is a capability to program a once-daily agitation that is independent of any programmed or remote mist. The agitating valve also eliminates the possibility of a siphon emptying the drum contents.
- **Leak Detection:** In the event of a leak in the misting nozzle circuit, this option will shut-off the unit until the leak can be repaired.
- **Electronic Anti-Siphon Valve:** For units without agitation, addition of this valve eliminates the possibility of a siphon.
- **Wind Sensor:** Sensor input will inhibit a programmed mist if the wind speed is higher than a user-defined limit for a 5 minute period following the scheduled mist.
- **Zone Kit:** Kit will enable the unit to either independently manage areas with two different application schedules or effectively double the protected area that the unit would otherwise support.

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## Section 1 WARRANTY

MistAway Systems Inc. (MSI) warrants this Product, the MistAway Drum-Based Misting Unit, Gen 1.3, to be free from defects in material and workmanship as follows:

For a period of one (1) year from the date of original installation (whether or not actual use begins on that date), MSI will repair or replace defective parts, with new or refurbished parts, at its option, at no charge. This warranty does not include labor or other costs incurred for diagnosing, removing, installing, shipping, servicing or handling of either defective parts or replacement parts.

This warranty applies solely to equipment supplied by MSI and is in lieu of all other warranties, expressed or implied. No person, agent, dealer, or distributor is authorized or empowered to give any other warranty or to assume any other liability on behalf of MSI

### **Warranty Conditions:**

- This warranty is extended only to the original Purchaser and is not transferable.
- A purchase receipt or other proof of date of original purchase will be required before warranty service is rendered.
- Installation, use, care and maintenance must be normal and in accordance with instructions contained in the operating manual and MSI's service information. Failure to do so shall void this warranty.
- All claims for failure to conform to specifications or defects in material or workmanship under this warranty must be made promptly after discovery and, in any event, must be received by MSI not more than one year after the original purchase date.
- MSI reserves the right to inspect the equipment prior to any decision involving a warranty claim.
- MSI reserves the right to make warranted repairs at either the installed site or at MSI's location in Houston, TX. If MSI opts for repair at its own location, the Purchaser is responsible for shipping the item to MSI's Houston location at its expense.

### **Manufacturer's obligation under the warranty shall not apply to:**

- Any equipment, which has been damaged by negligence, misuse, abuse, neglect and/or improper adjustment, accident, vandalism, acts of God, acts of war, whether declared or undeclared, improper application, or any other contingency beyond the control of MSI
- Cosmetic damage
- Damage in transit
- Failures caused by products not supplied by MSI
- Failures, which result from faulty installation, set-up adjustments, improper operation, power line surge, improper voltage supply or damage from lightning
- Any equipment that has been repaired or altered without authorization from MSI or in a manner inconsistent with such authorization
- Any unit that has not been maintained in accordance with the operator's manual
- Normal wear on any item or piece of equipment
- Lost items

## Section 1 WARRANTY

The foregoing is MSI's only obligation and Purchaser's exclusive remedy for breach of warranty. Purchaser's failure to submit a claim as provided above shall specifically waive all claims for damages or other relief, including but not limited to claims based on latent defects. In no event shall Purchaser be entitled to special, direct, indirect, incidental, exemplary or consequential damages, expenses, injury, lost profits, lost savings, business interruption, loss of business information, or any other pecuniary loss arising out of the use of or inability to use the equipment. In any case, MSI's entire liability shall be limited to the amount Purchaser actually paid for the item.

Except as modified in writing signed by both parties, this warranty is and shall remain the complete and exclusive agreement between the parties with respect to warranties, superseding all prior agreements, oral or written, and all other communications between the parties relating to the subject matter of this agreement.

**Section 2**  
**Important Safety Instructions**

**To Protect Against Accidental Exposure to Insecticide**

**Permitted Insecticides and Handling**

- Use only insecticides that are labeled for use in automated misting systems, and use only as described in the label.
- Insecticides that state “Not for use in outdoor residential misting systems” may not be used under any circumstances.
- Once insecticide has been introduced, ensure 6” air gap between hose and drum bung is maintained when filling.
- Insecticide label and dilution statement should be securely attached to the unit reservoir in a weatherproof pouch.
- Strictly follow label instructions regarding storage and disposal of insecticide and container.

**Nozzle Circuit Installation:**

- The nozzle circuit should be configured and installed so that insecticide does not drift off the property.
- Nozzles should be directed to spray towards the target area and away from swimming pools, water bodies, or eating and cooking areas.



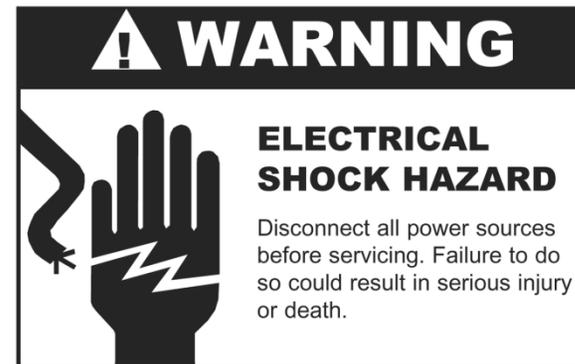
**Using the Unit**

- Do not allow the unit to mist in the presence of people, pets or food.
- Unit must be configured, installed and operated so that any insecticide application complies with all label directions, including application rate and prohibitions against offsite drift.
- The unit reservoir and controller should be locked.
- Unit and remote transmitter should be secured against access by children.
- DIP Switches on remote transmitter should be repositioned (from factory setting) to ensure that another transmitter will not activate unit.
- If a leak or siphon in nozzle circuit is suspected, discontinue use of unit until it is repaired.
- Unit must never be used for cooling.

**Section 2**  
**Important Safety Instructions**

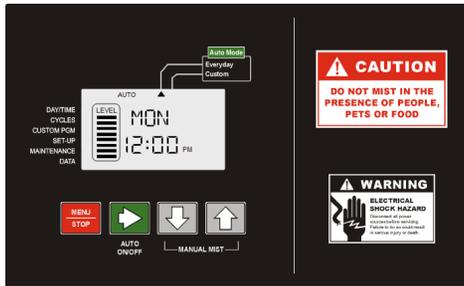
**To Protect Against Fire or Electric Shock**

- Ensure unit is positioned where it is free from flooding or exposure to irrigation system spray.
- Unit must be plugged into electrical outlet with ground fault interrupt protection. (GFI/GFCI)
- Extension cord must not be used.
- Disconnect unit from power source if replacing components.
- Replace fuses only with those of equivalent value.



## Section 3 Setting Up the Unit

### Using the Controller



- Pressing Green ► button will cycle through each of four System Modes. The ▲ at the top of the display points to the active System Mode.
  1. OFF – If equipped with agitation, unit will perform a daily agitation cycle. Otherwise it will sit idle.
  2. ON – Unit will allow Remote and MANUAL MISTs, but no AUTO MISTs.
  3. AUTO-EVERYDAY – Misting program runs daily. This is the most commonly used System Mode.
  4. AUTO-CUSTOM – Misting program runs only on days set in CUSTOM PGM menu.
- Pressing Red MENU/STOP button displays triangular cursor by DAY/TIME position on left side of display. Use ▲ or ▼ buttons to cycle through menu structure. Use Green ► button to select menu item and view or change data element within that item.
- Within a menu item, the convention is that the flashing data element can be changed with the ▲ or ▼ buttons. Move to the next data element with the Green ► button.
- Exit the menu item by pressing the MENU button. The unit will revert to previous System Mode in 3 minutes if the MENU button is not pressed.
- Clear any error code by pressing the Red MENU/Stop button for 5 seconds. The System Mode will return to its previous state (usually AUTO Everyday).
- To reset the controller to factory settings, unplug the unit, and hold down MENU and the ▲ buttons while plugging the unit back in. Mist Cycles, remote duration and number of nozzles must be reentered.

## Section 3 Setting Up the Unit

- 1. Position Drum**
  - On firm level surface
  - Free from flooding or sprinklers
  - Near GFCI outlet
- 2. Remove Lid Assembly and verify components**
  - Lid Assembly in plastic enclosure
  - Drum and pre-drilled lid
  - Remote transmitter (remote receiver and antenna inside enclosure)
  - Soft drum lid cover
  - Pump suction pipe and filter
  - Auto-Drain valve assembly
  - *Agitator j-tube and eductor (if “with Agitator”)*
  - 4 each - bolts, flat washers, lock washers, nuts
- 3. Assemble Unit**
  - Align chassis with four holes (large bung in front of controller)
  - Insert ½” pump suction line into pump
  - Insert ¼” black tubing of Auto Drain valve assembly into pump discharge
  - *If “with Agitator” unit, insert j-tube into 3/8” agitator valve fitting*
  - Secure chassis to lid using 7/16” wrenches: sequence - bolt, chassis, lid, flat washer, lock washer, nut
  - Position lid assembly on drum
  - Note: all holes oversized to ease assembly
- 4. Connect Nozzle Circuit**
  - To bulkhead fitting
  - Install optional zone kit according to instructions provided.
- 5. Connect Electric Power**
  - GFCI Outlet
  - 115 volts minimum. Confirm voltage with multi-meter.
  - 15 amp circuit required. Unit draws 9 amps when misting. Ensure total load of unit plus all other devices on circuit does not exceed breaker rating.

*\*Note: Instructions noted in italics are required for units supplied with Agitating valves.*

**Section 3**  
**Setting Up the Unit**

**6. Program System Setup**

- a. **Set Daylight Savings Time switch**
  - DAY/TIME Menu, DST
  - Set to ON if daylight savings in effect, OFF if not.
  - Press Green ► to advance.
- b. **Set Day and Time**
  - Set Day and Time. (note AM and PM)
  - Exit by pressing Menu button.
- c. **Set REMOTE MIST Duration**
  - SET-UP Menu, REM
  - Set duration in seconds.
- d. **Orient Remote Transmitter**
  - Set dip switches in remote transmitter. (See Section 4, Using the Remote)
  - SET-UP Menu, LRN
  - Depress Green ► button 5 secs, until LRN On and countdown starts.
  - Depress Remote Transmitter button until DONE is displayed.
- e. **Set MANUAL MIST Duration**
  - SET-UP Menu, MAN
  - Set duration in seconds.
- f. **Set # of nozzles**
  - SET-UP Menu, NOZ
  - If zone valve installed, repeat for NZ2
- g. **Set Independent Agitation Time and duration (if “with Agitator” Unit)**
  - SET-UP Menu, AGT
  - Set duration of agitation prior to programmed mists
  - Set time of once daily off-cycle agitation
  - Note: Agitation duration prior to remote or manual mist is always 15 seconds.
- h. **Set tank size**
  - SET-UP Menu, TNK
  - Set Tank size in gallons (5 – 250)

**Section 3**  
**Setting Up the Unit**

- i. **Establish optional Wind Sensor**
  - SET-UP Menu, SEN
  - If sensor installed, ON. Otherwise OFF
- j. **Set Max Wind Speed (wind sensor required)**
  - SET-UP Menu, WND
  - Set max wind speed

**7. Set Misting Schedule**

- a. **Set AUTO MIST Cycles**
  - CYCLES Menu.
  - 2 – 3 scheduled mists of 30 – 60 seconds in duration is common.
  - See Section 5, Managing Insecticide for field standard frequency, duration and mist times.
  - Blinking C# identifies each automatic mist cycle with current mist duration and mist time. Limit is 24 cycles per day.
  - Set mist duration and time (note AM/PM) for each desired scheduled mist.
- b. **Set AUTO MIST Days**
  - If you don't want to schedule mists for every day.
  - CUSTOM PGM Menu.
  - Set selected days to ON or OFF.
  - System Mode must be set to AUTO Custom.

**8. Partially fill drum and Set Level**

- Fill drum 1/2 full through large bung with water only
- MAINTENANCE Menu, LEVEL
- Press green ► button and use arrows to set level to full (8 bars)

**Section 3**  
**Setting Up the Unit**

- 9. Run Inspection Cycle**
- MAINTENANCE Menu, scroll to INS
  - Depress Green ► button 5 seconds
  - Unit will mist for 5 minutes or until stopped.
  - Confirm no leaks in nozzle circuit.
  - Confirm pump pressure is 240 psi. If not, insert flat head screwdriver into port on back left and adjust pump bypass until pressure is 240 psi. Reinsert plastic plug into port.
  - If zone valve installed, repeat using INS2. (Set pressure so that it does not exceed 240 psi in either zone.)
- 10. Add insecticide, top off drum, Reset LEVEL to full**
- Add insecticide through large bung with a funnel.
  - Top off drum with water. Maintain air gap of 6" between hose and fluid level.
  - Do not overfill. Stop filling when level is 4" from the top.
  - MAINTENANCE Menu, LEVEL
  - Press green ► button and use arrows to set level to full (8 bars)
- 11. Set System Mode**
- With the display showing day, time and level, press Green ► button to position the ▲ at top of display pointing to the active System Mode:
  - OFF - daily agitation cycle only
  - ON – remote and manual, but no programmed mist
  - AUTO Everyday – program runs daily. This is the usual mode.
  - AUTO Custom – program runs on days configured in CUSTOM PGM

**Section 3**  
**Setting Up the Unit**

- 12. Test by Activating Remote Mist**
- Clear area
  - Pres MIST button on transmitter
  - Unit will *Agitate (AGT)* and MIST.
- 13. Cover Unit**
- Close lid
  - Fit elastic at waterproof cover bottom under lip along edge of drum.

**Optional Leak Detection**

Leak Detection is a factory-installed option that enables the unit to detect a leak in the nozzle circuit.

- Determine whether leak detection is installed on the unit by navigating to the DATA Menu and cycling through the variables by pressing the green ► button . If you see values labeled FL, TL and TOL, then the option is installed.
- Adjust the tolerance for leak detection to be either more or less forgiving in recognizing a problem.
  - The default tolerance is 75% That is, Gen 1.3 will not detect and annunciate a leak until the Actual Volume is more than 175% of the Calculated Volume.
  - Setting the TOL value in the DATA Menu to a higher number makes the unit more tolerant of a leak. Setting the TOL value lower makes the unit more sensitive. 100% is the allowed maximum.
  - To change the value, go to the DATA Menu, TOL. Press Green ► button for 5 seconds, then use the arrow keys to adjust the value.
- Disable leak detection by 1) unplugging the unit from the socket, 2) unplugging the 6 pin connector on the back of the controller, and 3) plugging the unit back into the socket.

## Section 4

### Using the Remote

#### MIST Button

- Activates a REMOTE MIST for the duration defined in the SET-UP menu.
- An agitation cycle will precede the REMOTE MIST.
- If a Zone Kit is installed, refer to instructions included with the zone kit to configure how the remote transmitter works.

#### STOP MIST Button

- The STOP MIST button stops the current operation of the unit. It will not change the System Mode from ON or AUTO to OFF.

#### SKIP NEXT MIST Button

- The SKIP NEXT MIST button enables the next programmed AUTO MIST to be skipped. The controller will display "SKIP."
- While the unit is flashing SKIP, it will still respond to a Remote or MANUAL MIST.
- When an AUTO MIST has been skipped, the unit will return to the normal display, with a flashing "sunshine" icon in the lower right corner of the display.
- You may only skip one mist at a time. That is, pushing the SKIP NEXT MIST button multiple times will not cause multiple AUTO MIST cycles to be skipped.
- Clear skip by holding down the ▲ button on the controller for 3 seconds.

## Section 4

### Using the Remote

#### Orienting the Remote Transmitter

- The unit must be programmed to recognize a specific remote transmitter.
- Prior to this step, the DIP Switches on the transmitter should be repositioned (from factory setting) to ensure that another transmitter will not activate unit.



Switches are located on back side of transmitter, on side opposite the antenna, under a small plastic cover. Use the end of a pen to change the position of one or more of the switches.

- In the LRN Menu, under SET-UP, hold down Green ► button for 5 seconds and wait for countdown to begin. Press and hold any button on the remote transmitter. When DONE flashes in the display, the transmitter is programmed.

## Section 5 Managing the Insecticide

### Conventional Insecticide Formulations

- **Use only insecticides that are labeled for use in automated misting systems and use only as described on the label. Insecticides that state “Not for use in outdoor residential misting systems” may not be used under any circumstances.**
- There are only a few insecticide formulations that contain label language specific for use in automated misting systems.
- The active ingredients found in these formulations are either natural pyrethrins or permethrin, which is a closely related synthetic. They also contain a synergist, piperonyl butoxide, which makes them more effective than they would otherwise be.
- These formulations have been designed for misting and are suitable in MistAway’s systems because 1) they are water-based and contain only trace amounts of hydrocarbons, 2) they have been engineered to disperse evenly throughout the batch tank or drum when diluted with water, and 3) they have been formulated to avoid or minimize plant burn.

### Exempt or “Green” Insecticide Formulations

- There are also a small number of insecticide formulations that are applied in misting systems that are exempt from registration with the U.S. EPA.
- Generally, the ingredients found in these formulations are essential oils from plants. In order to dilute and disperse them in a volume of water, an emulsifying agent must be added.
- Be aware that these concentrates are very chemically aggressive, particularly to plastics. Their use in misting systems significantly increase maintenance requirements and maintenance frequency.

Visit [www.mistaway.com](http://www.mistaway.com) for a list of approved insecticides and mixing guidance.

## Section 5 Managing the Insecticide

### Adding Insecticide to Gen 1.3

- Use only insecticides that are labeled for use in automated misting systems and strictly follow label instructions in adding insecticide to the drum:
- **Example:** A 5% pyrethrin formulation, contains label language for use in Residential Backyards to *“Mix 64 fl. Oz of concentrate in 55 gallons of water to yield a solution of 0.046% Pyrethrins and 0.23% Piperonyl Butoxide.”*
- The insecticide label will contain both recommended and maximum concentrations. It is against regulations to mix the insecticide to a concentration that exceeds the stated limit.
- Concentrations less than recommended on the label are permissible, although there is a threshold below which the material will not be effective.

### Mist Schedule and Duration

- It is important to note that there are differences of opinion among misting professionals as to what schedule and duration is optimal in any given circumstance. These reflect differences in factors such as relative mosquito pressure, species and activity, conducive conditions, etc.
- While these differences do exist, a common schedule is comprised of two scheduled mists per day:
  - A mist of 45 seconds in the hours around dawn (after the sprinkler system has finished).
  - Another mist of 45 seconds sometime in the hours between 9PM and 1:00 AM.
  - Use of a remote mist, with a duration of 45 seconds, just prior to spending time in the area in the early evening.
- In this common schedule, the automated mists are timed to occur when there is unlikely to be activity on the property. Their timing also avoids afternoon winds and the daylight activity of beneficial insects like bees and butterflies.

**Section 5**  
**Managing the Insecticide**

**Replenishing Insecticide Concentrate in Gen 1.3**

- The Gen 1.3 controller stores a “virtual volume” representing the amount of dilute insecticide remaining in the drum. Each time the unit mists, this “virtual volume” is reduced by a calculated estimate of the volume of dilute insecticide that was misted through the nozzle circuit. When the “virtual volume” equals 0, EMP (Empty) is displayed on the controller, and it is time to replenish the insecticide.
- **Follow these steps to replenish the dilute insecticide in the drum:**
  1. **Remove the waterproof fabric cover from the drum top and remove the 2” cap on drum bung.**
  2. **Fill the drum half full with water, add insecticide concentrate, and then top off the drum.**
    - Maintain an air gap of 6” between the tip of hose and the fluid level in the drum at all times.
    - Use a funnel to add insecticide concentrate – strictly following label instructions. See Dosing and Replenishment Frequency Calculator at [www.mistaway.com](http://www.mistaway.com) for further information.
    - Stop filling when the fluid level is 4” from the top. Replace cap on drum bung.
  3. **Reset level indicator in the controller.**
    - EMP(Empty) continues to appear in the display. Navigate to MAINTENANCE Menu, scroll to LEVEL. Depress Green ► button 5 seconds to enter routine.
    - Use ▲ or ▼ buttons to set level to full (8 bars)
    - Ensure the ▲ icon at top of display, indicating System Mode, is pointing to the desired mode, usually, AUTO Everyday.
  4. **Replace fabric cover on drum top.**
  5. **Dispose of the empty bottle:** Strictly follow label instructions regarding disposal of the empty bottle. Most will require triple rinsing and puncturing the bottle.

**Section 5**  
**Managing the Insecticide**

**Replenishment Frequency**

- There are a number of factors that influence consumption of the insecticide and timing for replenishment:
  - Number of nozzles installed
  - Minutes of scheduled misting per day
  - Number and duration of remote mists
  - Volume of the drum
- The replenishment frequency for a common misting program can be read from the table below. Locate the row that most closely corresponds to the number of nozzles that are installed and locate the column that most closely reflects the average daily mist duration (including remote activated mists.) The value in the table where the selected row and column intersects reflects the number of days the insecticide will last.
- By example, a 40 nozzle system misting an average of 2 minutes per day would consume the drum in 55 days.
- To change assumptions about any of these variables, please visit [www.mistaway.com](http://www.mistaway.com) and download the Replenishment Frequency Calculator.

**Days Until Empty Table**  
55 Gallon Drum  
Nozzle Flow Rate: 45 ml/min

Nozzles	90sec per day	2 min per day	3 min per day
20	151	109	73
30	101	73	49
40	76	55	36
50	61	44	29
60	50	36	24
70	43	31	21

## Section 6

### Maintenance and Winterization

#### With Each Refill

- Remove any debris that has collected on drum lid to prevent it from falling into the drum and fouling the intake filter or nozzle circuit.
- Clean filter on pump intake line. Remove filter from intake line. Use wire brush and hose to remove debris.

#### Each Year/Winterization\*

- 1. Flush pump (and agitation valve if equipped) and nozzle circuit with clean water:**
  - a. Fill 5 gallon bucket with fresh water and position next to unit.
  - b. Lift drum lid (with mounted assembly) from drum and rotate/reposition so that pump intake line is submerged inside 5 gallon bucket.
  - c. Activate an extended manual mist. The agitation cycle will flush the agitation valve (if there is one) and the mist cycle will flush the pump and nozzle circuit. If zone kit, run mists on both zones to flush both nozzle circuits.
  - d. \*Remove intake line (and agitation j-tube if equipped) from bucket, disconnect nozzle circuit line, and activate a dry (i.e., suction line not in any fluid) manual mist to clear water from valve and pump.
  - e. \*While unit is running dry, lift left side of unit to clear water from agitation valve and leak detection assembly (if installed).
  - f. Reposition drum lid and assembly back on drum.
- 2. \*Unplug unit and wrap power cord around assembly.**
- 3. Replace waterproof cover.**
- 4. \*Purge fluid remaining in nozzle circuit with compressed air.**
  - a. Remove the tip from the last nozzle on the end of each run.
  - b. Use portable air compressor with adapter (MistAway Part # 20052) to purge fluid from nozzle circuit.

## Section 7

### Troubleshooting and Error Codes

#### Unit not automatically misting

##### Potential Causes

- System Mode is set to OFF or ON and should be set to AUTO-EVERYDAY or AUTO-CUSTOM. See Section 3, Setting Up the Unit.
- No AUTO MIST cycles defined. See Section 3, Setting Up the Unit.
- Unit expecting input from wind sensor, but no wind sensor is installed. Set SEN to OFF. See Section 3 Setting Up the Unit.
- GFCI is tripped or there is no power to the unit.

#### Unit will not respond to remote

##### Potential Causes

- System Mode is set to OFF. Reset System Mode to an AUTO mode or ON. See Section 3, Setting Up the Unit.
- Remote mist duration is set to OFF. See Section 3, Setting Up the Unit
- Unit does not recognize remote transmitter. See Orient the Remote Transmitter in Section 3, Setting Up the Unit
- Dead batteries in remote transmitter. Replace batteries and retry.
- Other signals are interfering with reception. Change DIP switches in remote transmitter (see Section 4, Using the Remote.)
- Remote transmitter or receiver has failed. Replace.

#### Unit displays NOZ00 and will not mist

##### Cause

- NOZzle count in SET-UP Menu not set. See Section 3, Setting Up the Unit.

**Section 7**  
**Troubleshooting and Error Codes**

**Leak Detection ERR2\*\*– Flowmeter value is zero after MIST**

**Potential Causes**

- Failed pump or motor or controller.
- Clogged pump intake filter
- Clogged or failed flowmeter.

**Diagnostic Steps**

- Run manual mist and observe the pressure gauge and mist volume:
  - If no mist, but you can hear motor noise then pump has probably failed or intake filter is completely clogged. If no motor noise, either motor or controller has failed.
  - If unit is misting, flowmeter has clogged or failed. Remove and clean flowmeter and retry.

*\*\* Applies only to units equipped with optional leak detection capability.*

**Section 7**  
**Troubleshooting and Error Codes**

**Leak Detection ERR3\*\* – MIST volume greater than expected**

**Potential Causes**

- Leak in nozzle circuit.
- System Setup does not reflect installed system – 1) more nozzles installed than entered, 2) actual nozzle flow rate is much greater than estimated nozzle flow rate in the controller 3) the tolerance in the error calculation is too small.

**Diagnostic Steps**

- Confirm system setup: nozzle count (NOZ in SETUP Menu) equals nozzles installed, nozzle flow rate (NFR in DATA Menu) is reasonable (35 – 50 ml/min) and tolerance (TOL in DATA Menu) is 75% or greater.
- Look for leaks in the nozzle circuit.
- Note about Slow/Small Leaks: During the hours between mists, fluid can leak out of a fitting, that is potentially buried underground, and drain the nozzle circuit. The next time the unit mists, the nozzle circuit must be refilled completely and this may be a large enough additional volume to cause ERR3. Small leaks are notoriously difficult to troubleshoot because it takes an extended period for the nozzle circuit to drain and cause ERR3 to be displayed. That is, the error condition does not occur while the user is on site troubleshooting the issue.

*\*\* Applies only to units equipped with optional leak detection capability.*

## Section 8

### Frequently Asked Questions

#### Why does this machine have to be plugged into a GFI circuit?

- As an outdoor electrical appliance that is often exposed to the elements, for protection of both the installer and end-user it is required that the unit is plugged into an electrical outlet that has Ground Fault Interrupt (GFI or GFCI) protection.

#### What happens if the power to the unit is turned off and back on?

- When electrical power is restored to the unit, the digital controller will return into the same mode the unit was operating in prior to the power being turned off.
- For example, if the unit was in AUTO-EVERYDAY mode prior to the power being powered off, it will return to AUTO-EVERYDAY mode when the power is restored.
- The controller features a “Super Capacitor” that stores enough electrical power to run the internal clock for up to six weeks in the event power to the unit is turned off. There is no battery for the clock.
- All programmed settings are maintained regardless of how long the unit has gone without power.

#### Can I set unique AUTO MIST times/durations for each day of the week?

- No. While you may use the CUSTOM-PGM menu to turn specific days of the week ON or OFF, each day set to ON will mist according to the AUTO MIST cycles defined under the CYCLES menu. You cannot customize mist times for each day.

#### If I press “STOP MIST” on the remote, does that set the system Mode to OFF?

- No. When STOP MIST is pressed on the remote, or the STOP button is pressed on the controller, the unit simply halts whatever current activity it is executing, be it misting, agitating, etc. The System Mode remains unchanged.

## Section 8

### Frequently Asked Questions

#### The manual mentions a zone kit. What is a zone kit, and how do I know if I have one?

- A zone kit is primarily composed of a solenoid valve attached to the unit that enables the system to sequentially mist through two different nozzle circuits, either to double the capacity of the unit or to manage two different application schedules.
- Units with zone kits may be visually identified by the presence of a 3-port valve mounted outside the plastic housing. “Zone 1” is connected to the fitting on the top of the solenoid valve, and “Zone 2” to the lower fitting.
- For units with zone kits, the controller is also slightly different in the SET-UP menu.
- The number of nozzles setting “NOZ” is replaced by “NZ1” and “NZ2”, representing the number of nozzles in Zone 1 and Zone 2 respectively.

#### When should I set the Daylight Savings Time switch (DST) to ON or OFF?

- DST, which is found under the DAY/TIME menu, is a feature added for convenience of the user.
- If DST is changed from OFF to ON, two events happen automatically:
  1. The clock is advanced forward one hour
  2. The time for each mist cycle, as defined in the CYCLES menu, is advanced forward one hour.
- The reverse of the above occurs when DST is changed from ON to OFF.
- DST ON is the setting that would be used in the summer months.

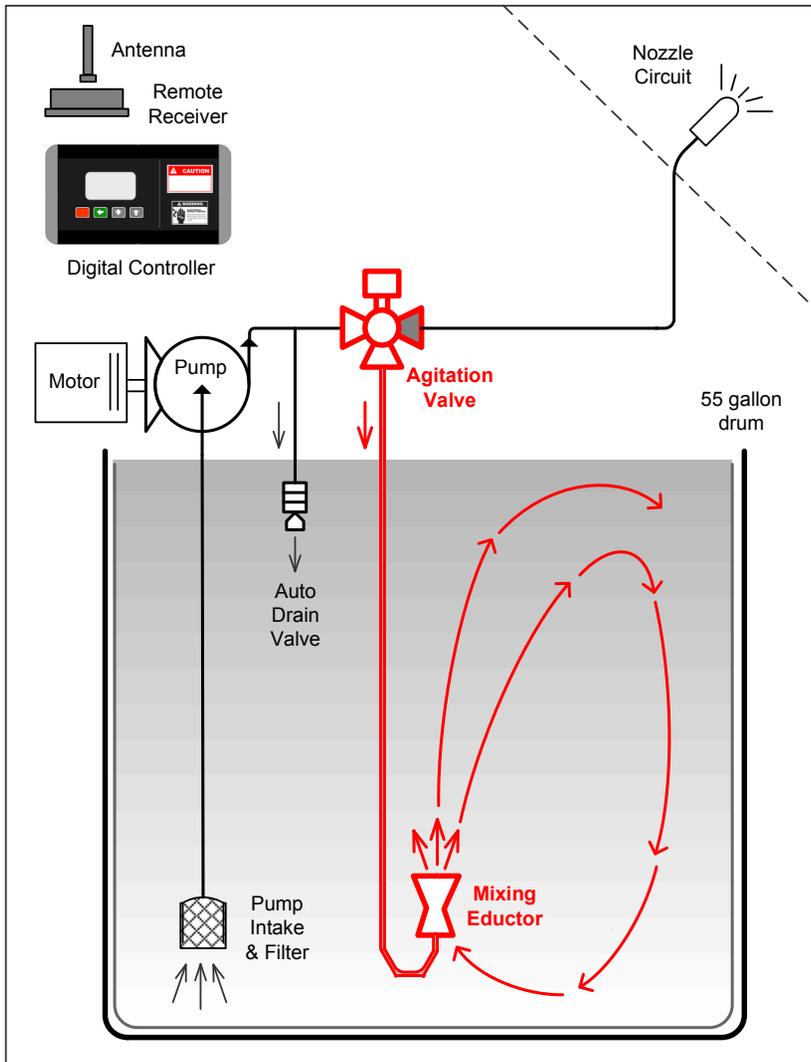
#### What is the symbol that looks like a “sunshine” flashing in the lower right corner of the display?

- The small “sunshine” indicates that the previous mist was skipped for one of three reasons:
  1. The user triggered a SKIP NEXT MIST with the remote, and the most recent AUTO MIST was skipped. The next AUTO MIST will be executed as programmed.
  2. The Maximum Daily Mist time has been reached.
  3. The (optional) wind sensor blocked the previous AUTO MIST

## Appendix A Unit Component Description

### Schematic

The operations of the Gen 1.3 are managed by a digital controller and a number of electro-mechanical components. Information about mist schedules, duration, and agitating the insecticide are entered into the controller by the user.



## Appendix A Unit Component Description

### Components – Mounted to Chassis on Drum Lid

- **Digital Controller** – accepts user input, displays unit operating mode and status, controls electromechanical components.
- **Remote Receiver & Antenna** – receives signal from handheld remote transmitter
- **Pump & Motor** – atomizes drum contents through nozzle circuit. Pump pressure typically set to 240 psi.
- **Agitating Valve (optional)** – One path through the valve routes fluid to the nozzle circuit. The other path recirculates fluid in the drum through j-tube mixing assembly.
- **Plastic Housing & Cover** – protects components from the elements. The cover may be locked to the housing to secure access to the controller. The housing contains ports to the nozzle circuit tubing as well as to an optional Zone Kit. On units with an agitating valve, a pressure gauge is mounted into the plastic housing.

### Components – Inside Drum

- **Pump Intake Line and Filter** – Pump intake positioned near bottom of drum. Filter ensures debris is not drawn into pump and nozzle circuit.
- **J-tube Mixing Assembly** (on units with optional Agitating Valve) – To ensure thorough mixing, during agitation, fluid is pushed through a j-shaped tube assembly at the bottom of the drum.
- **Auto-Drain Valve** – ensures rapid increase in nozzle circuit pressure on pump startup and rapid decrease on shutdown.

### Other Components

- **Remote Transmitter** – 3-button remote enables the user to start a mist, stop a mist and skip the next scheduled mist.
- **Unit Cover** – Weatherproof fabric cover provides protection of the unit from the elements.

## Appendix B Controller Menus

### DAY/TIME Menu

Set the Day of the Week and the Time of Day and Daylight Savings Time switch.

### CYCLES Menu

Configure the mist time and duration of each of 24 possible Auto Mist Cycles (Each with unique duration and time of day.)

### CUSTOM PGM Menu

Configures the days of the week for Auto Misting in the AUTO-CUSTOM PGM mode. (Turn each day OFF or ON.)

### SET-UP Menu

- REM** Set the duration for mists triggered by the remote transmitter. (Values from OFF to 120 seconds)
- LRN** Program unit to recognize a specific remote transmitter. Hold down Green ► button for 5 seconds and then press a button on the remote transmitter. When DONE flashes in the display, the transmitter is programmed.
- MAN** Set the duration for mists triggered by a Manual Mist (pressing ▲ and ▼ buttons simultaneously.)
- NOZ** Set the Number of nozzles in the circuit attached to the unit. If Zone Kit installed, there are separate displays for NZ1 and NZ2.
- AGT** Set duration of agitation prior to programmed mists and set time of once daily off-cycle agitation. On units without an agitating valve, the duration should be set to 0. (Note: Agitation duration prior to Remote or Manual Mist is hard-coded at 15 seconds.)
- TNK** Set reservoir size in gallons (5 – 250)
- SEN** Turn (optional) wind sensor ON or OFF
- WND** Set max wind speed (above which wind sensor reading inhibits mist.)

## Appendix B Controller Menus

### MAINTENANCE Menu

- LEVEL** Set the tank level in the controller display from 1 to 8 bars. In operation, the indicated level will decrease as insecticide is misted. Hold Green ► button for 5 seconds, then ▲ and ▼ buttons to set.
- INS** Inspect Nozzle Circuit. Runs pump for 5 minutes. Hold Green ► button for 5 seconds to trigger. If Zone Kit installed, separate inspection menus, INS1 and INS2.

### DATA Menu

- TMC** Total Mist Cycles since last reset.\*
- TMM** Total Mist Minutes since last reset.\*
- MMC** Manual Mist Cycles since last reset.\*
- RMC** Remote Mist Cycles since last reset.\*
- TMH** Total Mist Hours on unit. May not be reset.
- FL\*\*** Actual volume pumped out of tank during last mist (mL).
- TF\*\*** Calculated target volume in milliliters (mL) of last mist. Target Volume = (Mist Duration in seconds) \* (Number of Nozzles) \* (Nozzle Flow Rate NFR) / 60.
- SPD** Wind speed as read by sensor.
- TOL\*\*** Error tolerance for nozzle circuit flow rate. Default is 75%. Controls sensitivity of leak detection. (Set as per NFR).
- NFR** Flow rate of average nozzle in circuit, in milliliters per minute. Used in tank level indicator, Empty shut-off and leak detection calculations. Default is 38 mL/min. Set by pressing Green ► button for 5 seconds, then ▲ and ▼ arrows to adjust, then Green ► button to save.
- HLD** Duration that Agitating Valve or Anti-Siphon Valve remains open to nozzle circuit after pump shuts off. Used to control “at-rest” pressure maintained in circuit. (Set as per NFR).

\* Reset by pushing Green ► button until value shows zero.

\*\* Visible only on units equipped with optional leak detection capability.

## Appendix C Operating Displays

### Controller Displays

- AGT** Unit is agitating contents of drum.
- EMP** Empty. Unit has calculated zero remaining volume in tank.
- HOLD** Anti-siphon or agitation valve is being held open at end of mist cycle to allow pressure in nozzle circuit to decay and close nozzles quickly.
- INS** Unit is in Inspection Mode and will mist for 5 minutes or until stopped.
- MST** Unit is misting.
- NOZ00** Unit stopped operating because the number of nozzles is set to 0. Clear by pressing Red STOP button for 5 seconds.
- ERR2\*\*** No fluid pumped out of tank when tank level calculated as above Empty. Potential problems: pump intake or nozzle circuit clog, pump or motor failure. Clear by pressing Red STOP button for 5 seconds..
- ERR3\*\*** Probable leak in nozzle circuit. Volume of fluid pumped out of tank during previous mist was greater than expected. Clear by pressing Red STOP button for 5 seconds.
- SKIP** Unit will skip next programmed mist, having received signal from remote transmitter to SKIP NEXT MIST. Clear by holding down the ▲ arrow button for 3 seconds.
- SUS** Wind sensor reading higher than user-set max and is suspending programmed mist.
-  The previous mist was skipped because SKIP NEXT MIST was triggered by the remote or the wind sensor blocked an Auto Mist.

*\*\* Visible only on units equipped with optional leak detection capability.*

## Appendix D Manual Operations

There are a number of operations that can be performed while standing at the unit:

- **STOP** - Pressing Red MENU/STOP button will immediately stop any current operation of the unit, but will not change the System Mode from AUTO to OFF. (To change the System Mode to OFF, use the Green ► Auto/On/OFF button to cycle through each of four System Modes. The ▲ at the top of the display points to the active System Mode.
- **MANUAL MIST** - Pressing the ▲ and ▼ arrows simultaneously (2 seconds) will activate a mist cycle for the duration programmed in the SET-UP menu.
- **INSPECT** - Unit will mist for 5 minutes or until stopped. Navigate to INS in the MAINTENANCE Menu. Press the Green ► button for 5 seconds.