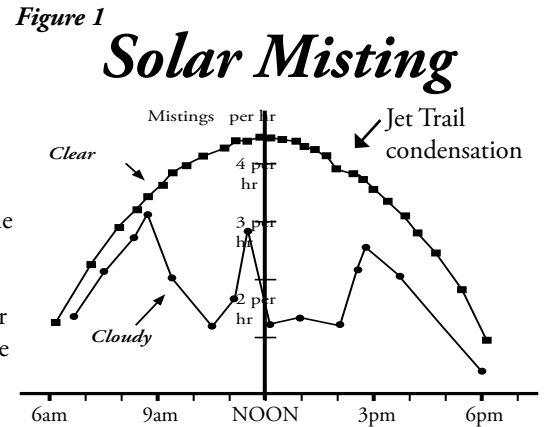


1. Performance

The Solar 3B will **automatically adjust misting with changes in sunlight...rain or shine!!!**

When the Solar 3B automatically adjusts misting, growers report several benefits: less disease and increased yields; reduced rooting time; water and chemicals conserved; and drier work areas with less runoff and groundwater pollution. Growers also have **more time for other activities**. The **variable Solar Misting** diagram to the right shows two days in April; one clear day and one day with 1/2" of rain. The Solar 3B smoothly increased and decreased misting on the clear day as the sunlight changed. On the rainy day, the Solar 3B automatically reduced misting to once per hour at noon. On a clear day, Solar Misting will automatically adjust the misting by a factor of 4 to 10. This automatic adjustment of the misting to match the drying effect of the sun is the source of the benefits of **variable solar misting**.



2. Installation

A) Mount controller in dry area at eye level so that switches may be easily set.

B) Connect 120VAC to controller using standard electrical practices. The electrical schematic in Figure 2 will aid in this step and in wiring the solenoid valves. Apply power to the controller. The **24VAC LED** should light. If not, then check the fuse in the controller and that you have properly applied power.

C) Connect the valves to the controller using 18 gage or larger stranded wire. Connect one common wire to the **Common terminal** on the controller and connect this common wire to all the valves. From each of the valves, bring one return wire to the controller and connect these return wires to the appropriate **terminals labeled Zones 1, 2 and 3**.

D) Test the valves and wiring by using the **manual ON** rocker switch for each zone on the controller. Activate only one zone at a time. When each **manual On** rocker switch is pushed on, then the LED light will activate near each output terminal. This LED light indicates that 24VAC is present between the output terminal and the **Common terminal**. If the valve is not energized, then check your wiring. If the LED light does not activate, then check the fuse.

E) Mount the LX5 Solar Sensor where it will see light conditions similar to the plants. If artificial lights or movable shade cloth are used, then mount the sensor under the lights or movable shade cloth. If white wash or fixed curtains are used, then the LX5 Solar Sensor is to be mounted outside or above the fixed shade cloth and compensating adjustments easily made to the **Repeat Intervals** of the controller. Usually, the LX5 Solar Sensor should be mounted vertically. With changes of seasons, angular adjustment of the solar sensor may be useful for fine tuning the misting.

In sunny climates, it may be useful to mount the LX5 Solar Sensor so that it may be rotated east/west toward 1pm or 2 PM position of the sun, if experience shows the need for peak misting after Solar Noon. Also, this east/west rotation is one of two ways to delay misting in the morning and extend to the afternoon.

In snowy climates, it maybe useful to mount the LX5 Solar Sensor so that it may be rotated to the south to catch more of the weak winter sunlight and rotated more upright in the spring.

F) Connecting the LX5 Solar Sensor to the Solar 3B. Use shielded wire 22 gage to 14 gage. The signal from the LX5 Solar Sensor is precise but small. Either solder (best) the connections inside the LX5 sensor housing or use the silicone-filled connectors as shown in Figure 3. These connections are important to prevent moisture from causing corrosion after 2 or 3 years of operation.

Connect the shielded wires to the terminals of the Solar 3B which are labeled "Solar +" and "Solar -". See Figure 4. The shield should be grounded at the controller. When the LX5 Solar Sensor is properly connected, then the **Test Day** LED will light and the **Solar Count** LED will begin to change slowly. If not, then reverse the shielded wiring connections to the "Solar +" and "Solar -" terminals. If the **Test Day** LED still does not light, then use a voltmeter and test for .010 to .450 milli-volts DC. If working at night, then place a flashlight or other bright light over the Solar Sensor while looking for these voltages.

G) Optional thermostat input to the Solar 3B. For fog systems, a thermostat may be useful to increase fog when temperature becomes very high. Connect a thermostat with mercury contacts to the terminals shown in Figure 4. Thermostat must NOT deliver voltage.

Installation is Complete.

Figure 2 shows electrical schematic of Solar 3B.

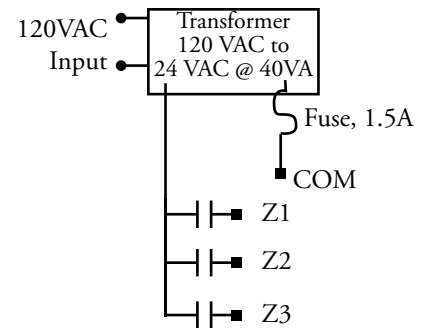


Figure 3 shows wiring connections between LX5 Solar Sensor and shielded wire using silicone-filled connectors.

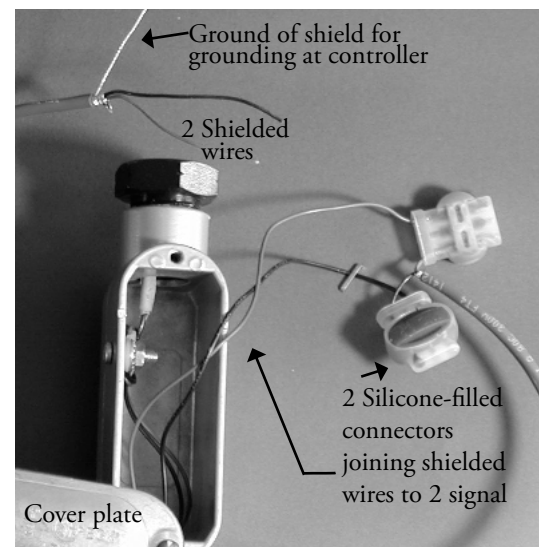
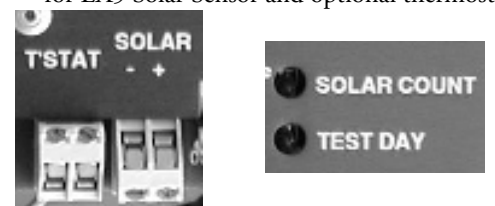


Figure 4 shows connections and LED indicators for LX5 Solar Sensor and optional thermostat.



3. Programming

FIGURE 5

A) Solar Off - Figure 5 shows that the Solar 3B is in the Solar ON mode. This Solar ON mode is the normal mode for the Solar 3B. If the Solar OFF switch is pushed-ON, then the controller will operate as a Sec/Min 24 hours a day. You may use this mode if you do not have time to install the solar sensor.

B) TOGGLE-to-Cycle - Figure 5 shows the TOGGLE-to-Cycle switch is the off mode (normal mode). If you want to trigger the controller to mist all valves once for the programmed number of seconds and then stop, toggle this switch to the right and then back to the left. This triggered mist cycle will clear the internal accumulators so that automatic misting will NOT occur immediately after the triggered mist cycle.

C) NIGHT-TIME REPEAT - Figure 5 shows the Solar 3B is set to mist all 3 valves every 6 (4+2) hours.

D) TEST DAY - Figure 5 shows that the TEST DAY light is off. Either it is night, the solar sensor is NOT connected or the solar sensor is connected backward (check step 2F Installation step). The TEST DAY light MUST be ON to get the benefits of Solar Misting as shown in Figure 1.

E) Solar Count- Figure 5 shows the Solar Count LED. If the controller is in the Solar ON mode and the TEST DAY light is on, then the Solar Count LED will begin to turn-on and turn-off. Each time the Solar Count LED changes, the Solar 3B has accumulated 1 Solar Count toward the REPEAT INTERVAL for Valve 1, 2 and 3. This Solar Count LED can be VERY HELPFUL when first setting the REPEAT INTERVAL.

Figure 5



FIGURE 6

F) Dark Days/Normal Days - Figure 6 shows the Solar 3B is set to the Normal Days mode. This is the normal mode for the Solar 3B. For times of the year (winter) and parts of the country (i.e. Michigan and Oregon), you may want to use the Dark Days mode so that solar signal more strongly amplified in the Solar 3B.

G) Shorten Day 1 & 2- Figure 6 show that Shorten Day 1 & 2 are shut off. If they are turned on, they will have the effect shown in Figure 7. At Level 1, the day is shortened from sunrise and sunset to that shown. At Level 2, the day is shortened even more. At Level 1+2, the day would be shortened even more. This feature is useful in high humidity environments like south Florida, where misting early in the morning or late afternoon may cause disease.

Figure 6



Figure 7 - Shorten Day

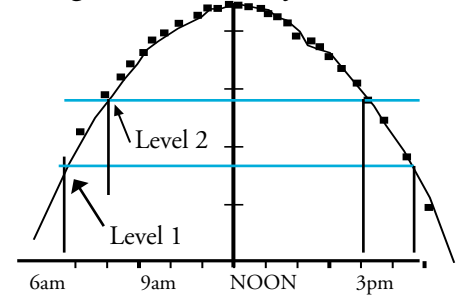


Figure 8 - SEC ON & REPEAT INTERVAL



H) SEC ON- Figure 8 shows that the SEC ON for Zone 1 is set for 11 (8+2+1) seconds. Any duration from 1 to 127 seconds may be chosen. If the SECx10 switch is pushed-ON in Figure 6, then the duration of the SEC ON will be 11x10 or 110 seconds.

I) Manual ON- Figure 8 shows that Zone 1 does NOT have its Manual ON mode chosen. If you want to turn on a valve to test it, push-ON the Manual ON switch for that zone. That zone will continue to run until the Manual ON switch is pushed-OFF as shown in Figure 8.

J) REPEAT INTERVAL- Figure 8 shows that the REPEAT INTERVAL for any zone may be set to repeat in MINUTES or in SOLAR UNITS. The normal (SOLAR UNITS) mode is selected in Figure 8. The zone is shown to repeat every 12 (8+4) solar units. Remember that each solar unit is marked by the Solar Count LED changing from on-to-off or off-to-on.

NOTE: If the TEST DAY light is not ON and the Solar OFF mode is selected, then the REPEAT INTERVAL will be converted to MINUTES even though the SOLAR UNITS switch is pushed-ON.

Programming complete