



The AV11-MC Fan and Misting Control is a versatile, durable automatic device for controlling air circulation fans which can be equipped with optional misting for fan-assisted evaporative cooling. For both the ventilation design engineer and the livestock producer, the AV11-MC makes control of air circulation and fan-assisted mist cooling convenient, easy, and effective. The AV11-MC is a single-stage variable-speed thermostatic motor control with a minimum speed setting. The AV11-MC features a unique use of integrated temperature sensors that provide emulated humidity sensing which permits mist control based upon ambient humidity level.

To enjoy all the unique benefits of the AV11-MC, please read the following Instructions carefully. Call your Osborne Authorized Dealer or Osborne Customer Service before attempting installation, if all your questions are not fully answered below.

WARNING

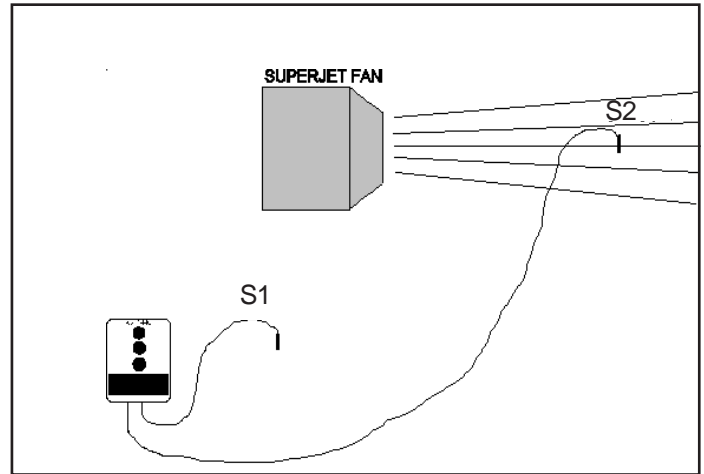
Failure to properly install the AV11-MC could result in non-warranted damage to the control and fan motors or in poor or unreliable ventilation performance.

1. PROPER LOCATION FOR THE AV11-MC CONTROL

- A. Install the AV11-MC in an open location with moving air. Convection cooling of the aluminum heat fins on the front of the case is required. Keep the heat fins clean and unobstructed to avoid overheating and malfunction of the control.
- B. Using the 6-foot cables, position the sensor bulbs in a location where room temperature is to be controlled. Up to 250 feet of additional sensor cable can be used to extend each sensor to remote locations. Sensor 1 (S1) must be positioned outside of the SuperJet fan air stream so that it can read the average room temperature. Sensor 2 (S2) must be positioned in the SuperJet fan air stream 8 to 10 feet down stream from the fan so that it will read the temperature caused by evaporative cooling of the water mist. (See Diagram 1.) Do not reverse these sensors or mist cooling will not be controlled correctly.

CAUTION

Do not mount sensor bulb on or near a metal surface. Do not route sensor cable parallel to current-carrying wires. Either practice could lead to control failure owing to electrical interference with sensor signal.



3. Secure the AV11-MC case with #8 fasteners (included) to a wall or post through the four corner mounting holes found by removing the front of the case.

WARNING

Do not drill through the water-resistant case. Such holes will void the warranty on the control.

2. ELECTRICAL CONNECTIONS

WARNING

Only a licensed electrician should make or change electrical power connections. Disconnect all electrical power before making or changing electrical power connections to the AV11-MC controller. Failure to disconnect electrical power creates an electrical shock hazard. Currents could be life threatening.

- A. Power supply to the control may be either 120 or 240 volt AC, single-phase, 60 Hertz.
- B. Power supply to the solenoid valve must be 120 volt AC, single-phase, 60 Hertz.
- C. Follow the wiring scheme, shown in Diagram 2, to connect the AV11-MC. For motor connections, see the diagram provided with each motor by the motor manufacturer.

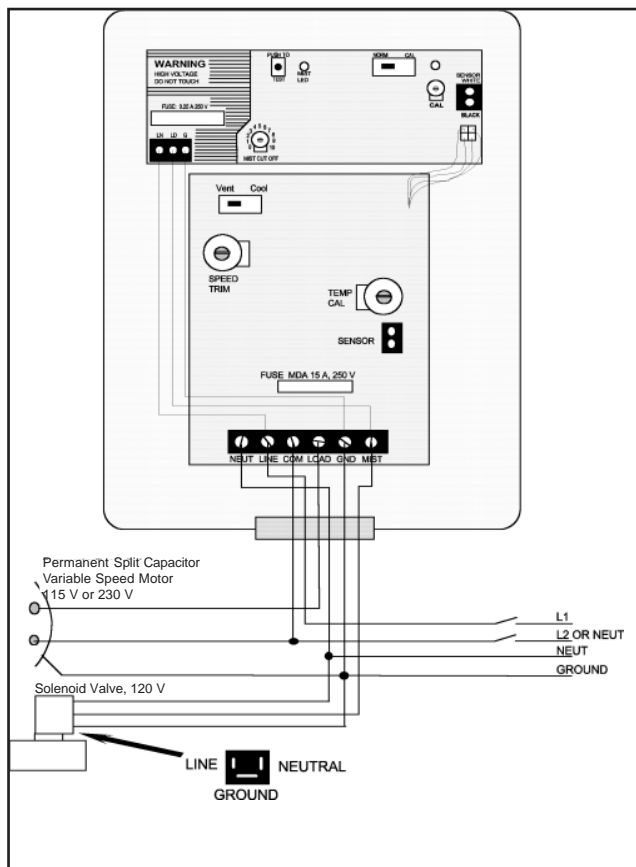
CAUTION

Check carefully for short circuit errors before applying electrical power. Short circuits can damage the AV11-MC and motor and could create an electrical shock hazard. Currents could be life threatening.

- D. Always install an approved fused disconnect switch between the power source and the AV11-MC. More than one disconnect may be required.
- E. Prevent the entry of water and corrosive gases into the AV11-MC. Keep case sealed. All wiring shall enter through the bottom end of the water-resistant case. Use water-tight connectors and drainable water traps on conduit to prevent water drainage or condensation from entry into AV11-MC.

WARNING
Damage to AV11-MC circuitry caused by entry of water and corrosive gases is not covered by warranty.

- F. Only permanent split-capacitor motors designed for solid-state speed control are controlled by the AV11-MC. Check with the motor manufacturer if motor type is unknown. If multiple motors are controlled, only motors of the same size should be connected to the AV11-MC.
- G. Only an Osborne RFF-2005 solenoid valve (120-volt AC, continuous-duty, normally closed, solenoid valve) or equivalent shall be used. The valve body must be electrically grounded.
- H. All wiring to the AV11-MC, fan motors, and solenoid valve must conform to national and/or local electrical codes.



3. CONTROL SPECIFICATIONS

- A. OPERATING VOLTAGE
105 to 125 or 220 to 240 volts AC, single phase, 60 Hertz
- B. CURRENT CAPACITY
Fan control: 11 amps maximum output current.
Mist control: 0.1 amp maximum output current
- C. CASE
Water-resistant NEMA 4X
- D. CONTROL RANGE
Adjustable from 35 to 95 °F (2 to 35 °C).
Setpoint Temperature adjusting dial at middle of control front.
- E. MINIMUM SPEED
Adjustable from about 20% to 100% of fan full speed.
Fan Minimum Speed adjusting dial at bottom of control front.
For fine adjustment, see Section 5.
- F. MISTING DIFFERENTIAL Adjustable from 6 to 26 °F (3 to 15 °C) above value set on Temperature dial.
Mist Cooling Offset adjusting dial at the top front of control case.
- G. MIST CUT OFF
Adjustable from 0 to 10 °F (0 to 5.6 °C) degrees of cooling, in the mist cooled air stream, required to maintain misting operation.
Mist Cut Off adjustment inside control on smaller circuit board.

MAXIMUM NUMBER OF MOTORS CONTROLLED*

HP	120V	240V
1/25	7	14
1/6	3	7
1/4	2	4
1/2	1	2

**Subject to derating table below.*

AV11-MC CURRENT CAPACITY DERATING FOR OPERATION ABOVE 80 °F

Temp	Derate	Temp	Derate
85 °F / 29.5 °C	5% less	100 °F / 37.8 °C	25% less
90 °F / 32.2 °C	10% less	105 °F / 40.6 °C	35% less
95 °F / 35.0 °C	20% less		

3. FACTORY PRESET OPERATION

- A. Temperature below set point:

Fan(s) is OFF.

- B. Temperature rises to set point:

Fan(s) comes on at **full speed** for 5 seconds, then slows to *Fan Minimum Speed* setting. Adjust *Fan Minimum Speed* dial as needed.

- C. Temperature rises beyond set point: Fan(s) speed increases proportionally with temperature to maximum speed at 5 °F (2.8 °C) above *Setpoint Temperature* setting.
- D. Temperature rises above set point temperature + *Mist Cooling Offset*: Control continues operating fan(s) and waits for 45 minutes. After 45 minutes, the control turns on the solenoid valve for 1 minute. If the temperature at Sensor 2 is less than the temperature at Sensor 1 by the value set by the *Mist Cut Off* adjustment, the control maintains the valve on. If the difference between the sensor temperatures falls below the *Mist Cut Off* value, the valve turns off, and the control will wait for 45 minutes again.
- E. Temperature falls: Reverse of A, B, C, and D.

4. FIELD CONTROL ADJUSTMENTS

The AV11-MC is factory preset to shut off fan(s) at temperatures below the *Setpoint Temperature* setting.

- A. If the ventilation design requires the fan(s) remains ON at MINIMUM speed below the set point, then proceed as follows:

WARNING

Only a licensed electrician should complete the following steps.

1. **WARNING: Disconnect electric power to the AV11-MC at the safety switch or breaker box.**
 2. Remove AV11-MC cover and locate circuit boards on interior.
 3. Locate the small switch at the top left-hand corner of the larger circuit board (See Diagram 2). Move slide switch, using a small insulated or non-conducting tool, to the “VENT” position.
 4. Replace the cover. The AV11-MC will now cause the fan(s) to operate CONTINUOUSLY at the *Fan Minimum Speed* value when temperature drops below the set point. Adjust the *Fan Minimum Speed* value as needed.
- B. Each fan motor (or set of fan motors of equivalent horsepower) to be controlled must be “matched” to the AV11-MC control for best operation after system installation is completed.

WARNING

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1. **WARNING: Disconnect power to the AV11-MC at the safety switch or breaker box.**
2. Open AV11-MC to reveal control circuit boards. Move the slide switch located near the top left hand corner of the large circuit board to the VENT position.
3. Turn the *Setpoint Temperature* (middle) knob on the front panel to a setting above 95 °F.
4. Set the *Fan Minimum Speed* (bottom) knob on the front panel between the 1 and 2 settings.
5. VERY CAREFULLY reconnect AC power to the AV11-MC with the circuit board exposed.

WARNING

Do not touch the back of the circuit board or allow any contact between open wiring! Possible shock and personal injury may result and/or the control circuit can be seriously damaged by accidental contact to ground from careless handling during this procedure!

6. VERY CAREFULLY adjust the white shaft that extends from the back of the circuit board (*Speed Trim*) until the fan motor(s) slows down, but maintains enough speed to keep the shutters open and air moving. Motor RPM should be between 550 and 700 RPM at this setting, but an exact RPM setting is not necessary. Pause for the motor speed to stabilize after each adjustment.
7. DISCONNECT AC POWER as in Step 1.
8. Move the slide switch located near the top left hand corner of the large circuit board to the COOL position if you wish the fan(s) to stop below the set-point temperature. If you wish the fan(s) to continue to run at minimum speed below the set-point temperature, the slide switch should remain in the VENT position.
9. Replace the AV11-MC cover onto the junction box. Reconnect AC power.
10. Set the *Fan Minimum Speed* knob to zero if in COOL mode or at desired speed if in VENT mode.
11. Adjust desired *Setpoint Temperature* setting for the building. In COOL mode, the AV11-MC should now run at desired minimum speed before shutting off at set point. In VENT mode, an acceptable, non-stalling minimum fan speed should be maintained even at the lowest *Fan Minimum Speed* setting. Adjust *Fan Minimum Speed* to higher speeds as needed to relieve temporary increases in ventilation load on the building.
12. If the AV11-MC fails to power the fans, DISCONNECT THE AC POWER, then check the control circuit fuses, before returning the control to Osborne Customer Service for repair. An extra fuse has been included for your convenience.

- C. The AV11-MC requires adjustment to effectively cool the air without raising the humidity to excessive levels. The **Mist Cut Off** adjustment determines the minimum temperature difference between the two control sensors that is required to operate the mist cooling. When the temperature difference between the room temperature and the mist-cooled air temperature falls below the **Mist Cut Off** setting, a high humidity or ineffective cooling situation is indicated, and the control will stop misting for a short time.

WARNING
Only a licensed electrician should complete the following steps.

1. **WARNING: Disconnect electric power to the AV11-MC at the safety switch or breaker box.**
 2. Open AV11-MC to reveal control circuit boards.
 3. Locate the **Mist Cut Off** potentiometer near the bottom center of the smaller circuit board. Use a small screwdriver to adjust the **Mist Cut Off** potentiometer to the desired setting. This setting determines the number of degrees of cooling that is required for the misting to continue. If the room air is too damp and excessive water is sprayed onto the floor and objects in the room, adjust the **Mist Cut Off** to a higher value. If the room air is dry and more cooling is required, adjust the **Mist Cut Off** to a lower value. If the **Mist Cut Off** is set to zero, the misting will operate continuously when the room temperature is above the setting of the **Setpoint Temperature** dial plus the setting of the **Mist Cooling Offset** dial, regardless of the humidity in the room.
 4. Replace the AV11-MC cover onto the junction box. Reconnect AC power.
 5. Adjust the **Mist Cooling Offset** dial to the number of degrees above the **Setpoint Temperature** dial setting at which you desire the mist cooling to begin.
- D. Operation of the misting system may be tested through the following procedure.

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1. **WARNING: Disconnect electric power to the AV11-MC at the safety switch or breaker box.**
2. Open AV11-MC to reveal control circuit boards.
3. VERY CAREFULLY reconnect AC power to the AV11-MC with the circuit board exposed.

WARNING
Do not touch the back of the circuit board or allow any contact between open wiring! Possible shock and personal injury may result and/or the control circuit can be seriously damaged by accidental contact to ground from careless handling during this procedure!

4. Adjust the **Setpoint Temperature** dial and the **Mist Cooling Offset** dial on the control front to their minimum settings.
5. VERY CAREFULLY press and hold the **Push to Test** switch inside the control near the top center of the smaller circuit board. The water valve should open and water begin spraying from the nozzles.
6. DISCONNECT AC POWER as in step 1.
7. Replace the AV11-MC cover onto the junction box. Reconnect AC power.
8. Adjust the **Setpoint Temperature** dial and the **Mist Cooling Offset** dial on the control front to their minimum settings.
9. If the AV11-MC fails to operate the water valve, DISCONNECT THE AC POWER, then check the control circuit fuses, before returning the control to Osborne Customer Service for repair. An extra fuse has been included for your convenience.

WARRANTY

OSBORNE INDUSTRIES, INC. warrants to the original purchaser that its *AGRI AIDE* ventilation products which prove to be defective in material or workmanship within one by the warranty of the motor manufacturer.

Year of the date of purchase (10 years on fiberglass parts, limited to normal use) will be repaired or replaced at OSBORNE's option free of charge F.O.B., OSBORNE's nearest Sales Office. Exceptions to this warranty are electric motors, which are covered

WHAT IS NOT COVERED BY THIS WARRANTY
The Warranty does not cover: (1) Installations not made in accordance with installation instructions; (2) Operation of the product which varies substantially from our operating instructions; (3) Malfunctions resulting from misuse, negligence, alteration, accident or failure to perform normal required maintenance; (4) Loss of time, inconvenience, loss of use of the product, or other consequential damages; (5) Products not purchased from **OSBORNE** or one of its authorized dealers.

The above constitutes our sole warranty for *AGRI AIDE* ventilation products. THERE IS NO WARRANTY OF MERCHANTABILITY AND THERE ARE NO WARRANTIES, WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. **OSBORNE** reserves the right to change models, designs, and specifications at any time without notice or obligation to improve previous products in use.