Arzel® Zoning Technology

Troubleshooting Guide

200MPS Series Panels

1) <u>VOLTAGE TEST</u>

a) 24 Volt <u>AC</u>

i) Check AC voltage at 24-VAC R & C terminals, no less than **24 Volts A/C** should be present from Arzel supplied Transformer
(40 VA for 2, 3, and 4 zone panels)
(100 VA for 6 and 8 zone panels)

b) 24 Volt <u>DC</u>

i) Generate a call for "Fan On" at zone 1 only, and set all other zones to "Auto Fan" and "Off". (This will energize all but one solenoid and put the board under its heaviest load)

ii) With board under full load, there should be no less than **24 Volts DC** between (SOLENOID " + ") and (BYPASS " **D** ") terminals

iii) If 24 Volts AC is present at **24VAC** terminals and **DC Volts** is less than **24**, the board will need replaced

2) **<u>TESTING BOARD "OUTPUT" *(EQUIPMENT FUNCTION)* RELAYS.</u>**

a) Turn **"Power" switch "ON"** (Red LED On) and call for heat from one or more thermostats;

i) **Is the Red "W1" LED lit at the HVAC Output terminal?**

(1) **<u>Yes!</u>**

(a) Check for continuity between the "R" and "W1" terminals at the "HVAC OUTPUT" terminal strip on Arzel board (wires removed).

(b) If no continuity, the board must be replaced.

(c) If continuity is present, the board is OK and the problem is with the HVAC equipment or a faulty wire between panel and equipment.

(i) Turn panel Power switch "OFF" and Check voltage (A/C) between HVAC Output "R" & "W" terminals (wires connected).

(ii) **No Voltage** indicates problem with equipment control power or wiring.

(2) **<u>No!</u>** **Check** for 24v ac between "W1" and "C" terminals at the calling zone terminals.
("W1" with an "O" is an illegal call and will be ignored)

(a) **24 vac present** -- If the "W1" LED is lit at the zone calling, replace the board
(Check to make sure that the Master Zone Control function switch is "Off")

(b) **No 24vac present** --Problem is with the Thermostat or wiring from thermostat to the Arzel panel.

ii) Repeat the above procedure for any function demand that does not work properly, i.e. Cooling (Y, G), Fan (G).

3) **DAMPER OPERATION.**
   a) To verify proper pressure or vacuum to a damper, insert a tee in the tube connected to that damper actuator and read with a Magnahelic or Digital gauge. (Normal press/vac reading will be approximately 30 in. to 40 in. wc. Or (1 to 2) psi)
   b) To close a damper it must see a positive pressure of at least 25" wc.
      i) An open-ended "Airflow Indicator" connected from the bottom of the indicator to the solenoid port should show pressure by lifting the ball to the top of the indicator.
   c) To open a damper it must see a vacuum of at least -25" wc.
      i) An open-ended "Airflow Indicator" connected from the top of the indicator to the solenoid port should show vacuum by lifting the ball to the top of the indicator.

4) **SOLENOID TESTING**
   a) With Zone 1 calling for Fan (G) and all other zones off;
      i) 24 V **DC** should be present between solenoid terminals (+) and (2, 3, & 4)
         (1) An open-ended "Airflow Indicator" connected from the bottom of the indicator to the solenoid port should show pressure by holding the ball to the top of the Indicator. (Solenoids are energized (pressure) to close dampers)
      ii) 0 V **DC** should be present between solenoid terminals (+) and (1)
         (1) An open-ended "Airflow Indicator" connected from the top of the indicator to the solenoid port should show vacuum by holding the ball to the top of the cylinder. (Solenoids are de-energized (vacuum) to open dampers)
   b) Ohm Test
      i) Disconnect solenoid lead from its **numbered** terminal connection only.
      ii) Set Ohmmeter @ 1K or higher, read across the loose lead and " + " terminal.
      iii) Ohms should be between **850** and **950 ohms**
   c) Low Pressure and/or vacuum readings at all zones (dampers not moving fully open and/or closed)
      i) Test each solenoid individually for "Bleed Through" by removing the vacuum hose (n/o port) and plugging the tube, if remaining zones commence to operate properly the solenoid is faulty.

5) **AIR SIDE INTEGRITY CHECK**
   a) Use the Arzel " Air Flow Indicator " to determine if and what zones are leaking air through tubing or damper actuators. Refer to instructions sent with the "Air Flow Indicator".
   b) To check individual damper actuators for leakage
      i) Disconnect tube from actuator and remove damper from duct
      ii) Move damper blade to the closed position
      iii) Hold finger over tube port.
      iv) Move damper blade to the open position with finger still over port
      v) The pressure build up in the actuator should impede the opening motion for as long as you continue to push in the open direction.
      vi) If the pressure subsides and the damper easily moves to the open position, the actuator is leaking and the damper must be replaced.
      vii) If the pressure holds, the damper is OK and the leak is in another damper or a tube has come loose from a fitting.

6) Bypass Operation and Remedies
   a) Air surging noise with smaller zone open.
      i) Bypass most likely oversized, (Refer to Arzel Bypass Sizing Chart).
      ii) Blower speed is set to high for system capacity
         (a) Check and adjust CFM output of blower (400 cfm / ton).

If all else Fails, Call the Arzel Tech Support Hot Line
1-800-611-8312
www.arzelzoning.com