# Preventive Maintenance

**Water Coil Maintenance**
(Direct ground water applications only)
If the system is installed in an area with a known high mineral content (125 P.P.M. or greater) in the water, it is best to establish a periodic maintenance schedule with the owner so the coil can be checked regularly. Consult the well water applications section of this manual for a more detailed water coil material selection. Should periodic coil cleaning be necessary, use standard coil cleaning procedures, which are compatible with the heat exchanger material and copper water lines. Generally, the more water flowing through the unit, the less chance for scaling. Therefore, 1.5 gpm per ton [2.0 l/m per kW] is recommended as a minimum flow. Minimum flow rate for entering water temperatures below 50°F [10°C] is 2.0 gpm per ton [2.6 l/m per kW].

**Water Coil Maintenance**
(All other water loop applications)
Generally water coil maintenance is not needed for closed loop systems. However, if the piping is known to have high dirt or debris content, it is best to establish a periodic maintenance schedule with the owner so the water coil can be checked regularly. Dirty installations are typically the result of deterioration of iron or galvanized piping or components in the system. Open cooling towers requiring heavy chemical treatment and mineral buildup through water use can also contribute to higher maintenance. Should periodic coil cleaning be necessary, use standard coil cleaning procedures, which are compatible with both the heat exchanger material and copper water lines. Generally, the more water flowing through the unit, the less chance for scaling. However, flow rates over 3 gpm per ton (3.9 l/m per kW) can produce water (or debris) velocities that can erode the heat exchanger wall and ultimately produce leaks.

**Hot Water Generator Coils**
See water coil maintenance for ground water units. If the potable water is hard or not chemically softened, the high temperatures of the desuperheater will tend to scale even quicker than the water coil and may need more frequent inspections. In areas with extremely hard water, a HWG is not recommended.

**Compressor**
Conduct annual amperage checks to insure that amp draw is no more than 10% greater than indicated on the serial plate data.

**Cabinet - “Indoor” Compressor Section**
Do not allow water to stay in contact with the cabinet for long periods of time to prevent corrosion of the cabinet sheet metal. Generally, cabinets are set up from the floor a few inches [7 - 8 cm] to prevent water from entering the cabinet. The cabinet can be cleaned using a mild detergent.

**Refrigerant System**
To maintain sealed circuit integrity, do not install service gauges unless unit operation appears abnormal. Reference the operating charts for pressures and temperatures. Verify that air and water flow rates are at proper levels before servicing the refrigerant circuit.

# Troubleshooting

### General

If operational difficulties are encountered, perform the preliminary checks below before referring to the troubleshooting charts.

- Verify that the unit is receiving electrical supply power.
- Make sure the fuses in the fused disconnect switches are intact.

After completing the preliminary checks described above, inspect for other obvious problems such as leaking connections, broken or disconnected wires, etc. If everything appears to be in order, but the unit still fails to operate properly, refer to the "DXM2 Troubleshooting Process Flowchart" or "Functional Troubleshooting Chart."

### DXM2 Board

DXM2 board troubleshooting in general is best summarized as verifying inputs and outputs. After inputs and outputs have been verified, board operation is confirmed and the problem must be elsewhere. Below are some general guidelines for troubleshooting the DXM2 control.

### Field Inputs

Conventional thermostat inputs are 24VAC from the thermostat and can be verified using a voltmeter between C and Y1, Y2, W, O, G. 24VAC will be present at the terminal (for example, between "Y1" and "C") if the thermostat is sending an input to the DXM2 board.

Proper communications with a thermostat can be verified using the Fault LED on the DXM2. If the control is NOT in the Test mode and is NOT currently locked out or in a retry delay, the Fault LED on the DXM2 will flash very slowly (1 second on, 5 seconds off), if the DXM2 is properly communicating with the thermostat.

### Sensor Inputs

All sensor inputs are 'paired wires' connecting each component to the board. Therefore, continuity on pressure switches, for example can be checked at the board connector. The thermistor resistance should be measured with the connector removed so that only the impedance of the thermistor is measured. If desired, this reading can be compared to the thermistor resistance chart shown in Table 18. An ice bath can be used to check the calibration of the thermistor.

**Table 18: Nominal resistance at various temperatures**

| Temp (ºC) | Temp (ºF) | Resistance (kOhm) | Temp (ºC) | Temp (ºF) | Resistance (kOhm) |
|---|---|---|---|---|---|
| -17.8 | 0.0 | 85.34 | 55 | 131.0 | 2.99 |
| -17.5 | 0.5 | 84.00 | 56 | 132.8 | 2.88 |
| -16.9 | 1.5 | 81.38 | 57 | 134.6 | 2.77 |
| -12 | 10.4 | 61.70 | 58 | 136.4 | 2.67 |
| -11 | 12.2 | 58.40 | 59 | 138.2 | 2.58 |
| -10 | 14.0 | 55.30 | 60 | 140.0 | 2.49 |
| -9 | 15.8 | 52.38 | 61 | 141.8 | 2.40 |
| -8 | 17.6 | 49.64 | 62 | 143.6 | 2.32 |
| -7 | 19.4 | 47.05 | 63 | 145.4 | 2.23 |
| -6 | 21.2 | 44.61 | 64 | 147.2 | 2.16 |
| -5 | 23.0 | 42.32 | 65 | 149.0 | 2.08 |
| -4 | 24.8 | 40.15 | 66 | 150.8 | 2.01 |
| -3 | 26.6 | 38.11 | 67 | 152.6 | 1.94 |
| -2 | 28.4 | 36.18 | 68 | 154.4 | 1.88 |
| -1 | 30.2 | 34.37 | 69 | 156.2 | 1.81 |
| 0 | 32.0 | 32.65 | 70 | 158.0 | 1.75 |
| 1 | 33.8 | 31.03 | 71 | 159.8 | 1.69 |
| 2 | 35.6 | 29.50 | 72 | 161.6 | 1.64 |
| 3 | 37.4 | 28.05 | 73 | 163.4 | 1.58 |
| 4 | 39.2 | 26.69 | 74 | 165.2 | 1.53 |
| 5 | 41.0 | 25.39 | 75 | 167.0 | 1.48 |
| 6 | 42.8 | 24.17 | 76 | 168.8 | 1.43 |
| 7 | 44.6 | 23.02 | 77 | 170.6 | 1.39 |
| 8 | 46.4 | 21.92 | 78 | 172.4 | 1.34 |
| 9 | 48.2 | 20.88 | 79 | 174.2 | 1.30 |
| 10 | 50.0 | 19.90 | 80 | 176.0 | 1.26 |
| 11 | 51.8 | 18.97 | 81 | 177.8 | 1.22 |
| 12 | 53.6 | 18.09 | 82 | 179.6 | 1.18 |
| 13 | 55.4 | 17.26 | 83 | 181.4 | 1.14 |
| 14 | 57.2 | 16.46 | 84 | 183.2 | 1.10 |
| 15 | 59.0 | 15.71 | 85 | 185.0 | 1.07 |
| 16 | 60.8 | 15.00 | 86 | 186.8 | 1.04 |
| 17 | 62.6 | 14.32 | 87 | 188.6 | 1.01 |
| 18 | 64.4 | 13.68 | 88 | 190.4 | 0.97 |
| 19 | 66.2 | 13.07 | 89 | 192.2 | 0.94 |
| 20 | 68.0 | 12.49 | 90 | 194.0 | 0.92 |
| 21 | 69.8 | 11.94 | 91 | 195.8 | 0.89 |
| 22 | 71.6 | 11.42 | 92 | 197.6 | 0.86 |
| 23 | 73.4 | 10.92 | 93 | 199.4 | 0.84 |
| 24 | 75.2 | 10.45 | 94 | 201.2 | 0.81 |
| 25 | 77.0 | 10.00 | 95 | 203.0 | 0.79 |
| 26 | 78.8 | 9.57 | 96 | 204.8 | 0.76 |
| 27 | 80.6 | 9.16 | 97 | 206.6 | 0.74 |
| 28 | 82.4 | 8.78 | 98 | 208.4 | 0.72 |
| 29 | 84.2 | 8.41 | 99 | 210.2 | 0.70 |
| 30 | 86.0 | 8.06 | 100 | 212.0 | 0.68 |
| 31 | 87.8 | 7.72 | 101 | 213.8 | 0.66 |
| 32 | 89.6 | 7.40 | 102 | 215.6 | 0.64 |
| 33 | 91.4 | 7.10 | 103 | 217.4 | 0.62 |
| 34 | 93.2 | 6.81 | 104 | 219.2 | 0.60 |
| 35 | 95.0 | 6.53 | 105 | 221.0 | 0.59 |
| 36 | 96.8 | 6.27 | 106 | 222.8 | 0.57 |
| 37 | 98.6 | 6.01 | 107 | 224.6 | 0.55 |
| 38 | 100.4 | 5.77 | 108 | 226.4 | 0.54 |
| 39 | 102.2 | 5.54 | 109 | 228.2 | 0.52 |
| 40 | 104.0 | 5.33 | 110 | 230.0 | 0.51 |
| 41 | 105.8 | 5.12 | 111 | 231.8 | 0.50 |
| 42 | 107.6 | 4.92 | 112 | 233.6 | 0.48 |
| 43 | 109.4 | 4.72 | 113 | 235.4 | 0.47 |
| 44 | 111.2 | 4.54 | 114 | 237.2 | 0.46 |
| 45 | 113.0 | 4.37 | 115 | 239.0 | 0.44 |
| 46 | 114.8 | 4.20 | 116 | 240.8 | 0.43 |
| 47 | 116.6 | 4.04 | 117 | 242.6 | 0.42 |
| 48 | 118.4 | 3.89 | 118 | 244.4 | 0.41 |
| 49 | 120.2 | 3.74 | 119 | 246.2 | 0.40 |
| 50 | 122.0 | 3.60 | 120 | 248.0 | 0.39 |
| 51 | 123.8 | 3.47 | 121 | 249.8 | 0.38 |
| 52 | 125.6 | 3.34 | 122 | 251.6 | 0.37 |
| 53 | 127.4 | 3.22 | 123 | 253.4 | 0.36 |
| 54 | 129.2 | 3.10 | | | |

# Troubleshooting

**Outputs**
The compressor and reversing valve relays are 24VAC and can be verified using a voltmeter. For units with ECM blower motors, the DXM2 controls the motor using serial communications, and troubleshooting should be done with a communicating thermostat or diagnostic tool. The alarm relay can either be 24VAC as shipped or dry contacts for use with DDC controls by clipping the JW1 jumper. Electric heat outputs are 24VDC "ground sinking" and require a voltmeter set for DC to verify operation. The terminal marked "24VDC" is the 24VDC supply to the electric heat board; terminal "EH1" is stage 1 electric heat; terminal "EH2" is stage 2 electric heat. When electric heat is energized (thermostat is sending a "W" input to the DXM2 controller), there will be 24VDC between terminal "24VDC" and "EH1" (stage 1 electric heat) and/or "EH2" (stage 2 electric heat). A reading of 0VDC between "24VDC" and "EH1" or "EH2" will indicate that the DXM2 board is NOT sending an output signal to the electric heat board.

**Test Mode**
Test mode can be entered for 20 minutes by pressing the Test pushbutton. The DXM2 board will automatically exit test mode after 20 minutes.

**Advanced Diagnostics**
To properly troubleshoot advanced control features, and to aid in troubleshooting basic control features, a communicating thermostat or diagnostic tool must be used.

**Service Mode**
The Service Mode provides the installer with several functions for troubleshooting, including Manual Operation, Control Diagnostics, Control Configuration, and Fault History.

Manual Operation – The Manual Operation mode allows the installer to bypass normal thermostat timings and operating modes, to directly activate the thermostat inputs to the DXM2, activate the DXM2 Test mode, and directly control the ECM blower, internal flow center, and proportional valve.

Control Diagnostics – The Control Diagnostics menus allow the installer to see the current status of all DXM2 control switch inputs, values of all temperature sensor inputs, control voltage, ECM blower, internal flow center, and proportional valve operating status and parameters.

Dipswitch Configuration – The Dipswitch Configuration menus allow the installer to easily see the current DXM2 control configuration.

Fault History – In addition to the fault code, the DXM2 stores the status of all control inputs and outputs when a fault condition is detected. The fault history covering the last five lockout conditions is stored and may be retrieved from the DXM2. After a specific fault in the fault history is selected, the operating mode and time when the fault occurred are displayed, with options to select specific control status values when the lockout occurred.

Fault Temp Conditions – This option displays the DXM2 temperature and voltage values when the lockout occurred.

Fault Flow Conditions – This option displays the DXM2 ECM blower, pump, and valve operating parameters when the lockout occurred.

Fault I/O Conditions – This option displays the status of the DXM2 physical and communicated inputs and the relay outputs when the lockout occurred.

Fault Configuration Conditions – This option displays the status of the DXM2 option selections when the lockout occurred.

Fault Possible Causes – This option displays a list of potential causes of the stored fault.

Clear Fault History – The Clear Fault History option allows the fault history stored in the non-volatile memory of the DXM2 to be cleared.

**DXM2 Troubleshooting Process Flowchart/Functional Troubleshooting Chart**
The "DXM2 Functional Troubleshooting Process Flowchart" is a quick overview of how to start diagnosing a suspected problem, using the fault recognition features of the DXM2 board. The "Functional Troubleshooting Chart" on the following page is a more comprehensive method for identifying a number of malfunctions that may occur, and is not limited to just the DXM2 controls. Within the chart are five columns:

- The "Fault" column describes the symptoms.
- Columns 2 and 3 identify in which mode the fault is likely to occur, heating or cooling.
- The "Possible Cause column" identifies the most likely sources of the problem.
- The "Solution" column describes what should be done to correct the problem.

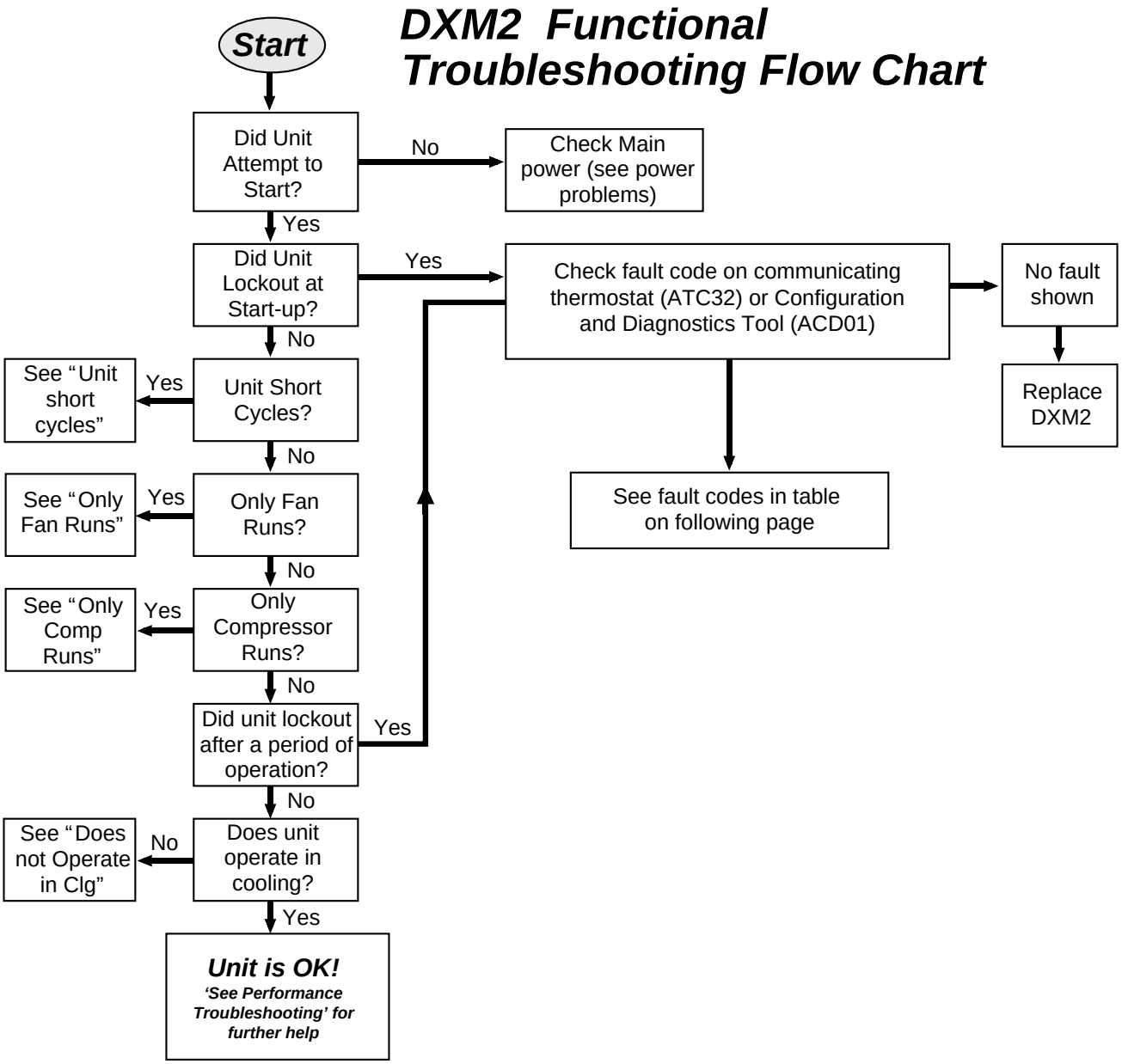
**⚠ WARNING! ⚠**

**WARNING!** HAZARDOUS VOLTAGE! DISCONNECT ALL ELECTRIC POWER INCLUDING REMOTE DISCONNECTS BEFORE SERVICING.
Failure to disconnect power before servicing can cause severe personal injury or death.

# DXM2 Process Flow Chart

**⚠ WARNING! ⚠**

**WARNING!** HAZARDOUS VOLTAGE! DISCONNECT ALL ELECTRIC POWER INCLUDING REMOTE DISCONNECTS BEFORE SERVICING.
Failure to disconnect power before servicing can cause severe personal injury or death.



# Functional Troubleshooting

| Fault | Htg | Clg | Possible Cause | Solution |
|---|---|---|---|---|
| **Main Power Problems** | X | X | Green status LED off | Check Line Voltage circuit breaker and disconnect |
| | | | | Check for line voltage between L1 and L2 on the contactor |
| | | | | Check for 24VAC between R and C on DXM |
| | | | | Check primary/secondary voltage on transformer |
| **HP Fault Code 2** High Pressure | | X | Reduced or no water flow in cooling | Check pump operation or valve operation/setting |
| | | | | Check water flow adjust to proper flow rate |
| | | X | Water temperature out of range in cooling | Bring water temp within design parameters |
| | X | | Reduced or no air flow in heating | Check for dirty air filter and clean or replace |
| | | | | Check fan motor operation and airflow restrictions |
| | | | | Dirty air coil- construction dust etc. |
| | | | | Too high of external static. Check static vs blower table |
| | X | | Air temperature out of range in heating | Bring return air temp within design parameters |
| | X | X | Overcharged with refrigerant | Check superheat/subcooling vs typical operating condition table |
| | X | X | Bad HP switch | Check switch continuity and operation - Replace |
| | X | | Frozen water heat exchanger | Thaw heat exchanger |
| | X | X | Bad HPWS Switch | Replace HPWS Switch |
| **LP/LOC Fault-Code 3** Low Pressure/Loss of Charge | X | X | Insufficient charge | Check for refrigerant leaks |
| | X | | Compressor pump down at start-up | Check charge and start-up water flow |
| **LT1 Fault - Code 4** Water Low Temperature | X | | Reduced or no water flow in heating | Check pump operation or water valve operation/setting |
| | | | | Plugged strainer or filter - clean or replace |
| | | | | Check water flow adjust to proper flow rate |
| | X | | Inadequate anti-freeze level | Check antifreeze density with hydrometer |
| | X | | Improper low temperature setting (30°F vs 10°F) | Clip LT1 jumper for antifreeze (10°F) use |
| | X | | Water temperature out of range | Bring water temp within design parameters |
| | X | X | Bad thermistor | Check temp and impedance correlation per chart |
| **LT2 Fault - Code 5 Low Air Temperature (Air Handler)** | | X | Reduced or no air flow in cooling | Check for dirty air filter and clean or replace |
| | | | | Check fan motor operation and airflow restrictions |
| | | | | Too high of external static - check static vs blower table |
| | | X | Air temperature out of range | Too much cold vent air - bring entering air temp within design parameters |
| | | X | Improper low temperature setting (30°F vs 10°F) | Normal airside applications will require 30°F only |
| | X | X | Bad thermistor | Check temp and impedance correlation per chart |
| **Condensate Fault-Code 6 High Condensate Level (Air Handler)** | X | X | Blocked drain | Check for blockage and clean drain |
| | X | X | Improper trap | Check trap dimensions and location ahead of vent |
| | | X | Poor drainage | Check for piping slope away from unit |
| | | | | Check slope of unit toward outlet |
| | | | | Poor venting - check vent location |
| | | X | Moisture on sensor | Check for moisture shorting to air coil |
| | X | X | Plugged air filter | Replace air filter |
| | X | X | Restricted return air flow | Find and eliminate rectriction - increase return duct and/or grille size |
| **Over/Under Voltage-Code 7** (Auto Resetting) | X | X | Under voltage | Check power supply and 24VAC voltage before and during operation |
| | | | | Check power supply wire size |
| | | | | Check compressor starting. Need hard start kit? |
| | | | | Check 24VAC and unit transformer tap for correct power supply voltage |
| | X | X | Over voltage | Check power supply voltage and 24VAC before and during operation. |
| | | | | Check 24VAC and unit transformer tap for correct power supply voltage |

# Functional Troubleshooting (cont.)

| Fault | Htg | Clg | Possible Cause | Solution |
|---|---|---|---|---|
| **Unit Performance Sentinel-Code 8** | X | | Heating Mode LT2>125°F | Check for poor air flow or overcharged unit |
| | | X | Cooling Mode LT1>125°F OR LT2< 40°F | Check for poor water flow, or air flow |
| **Swapped Thermistor Code 9** | X | X | LT1 and LT2 swapped | Reverse position of thermistors |
| **ECM Fault - Code 10 (Air Handler)** | X | X | Blower does not operate | Check blower line voltage |
| | | | | Check blower low voltage wiring |
| | | | Blower operating with incorrect airflow | Wrong unit size selection |
| | | | | Wrong unit family selection |
| | | | | Wrong motor size |
| | | | | Incorrect blower selection |
| **Low Air Coil Pressure Fault (ClimaDry) Code 11** | | X | Reduced or no air flow in cooling or ClimaDry | Check for dirty air filter and clean or replace |
| | | | | Check fan motor operation and airflow restrictions |
| | | | | Too high of external static - check static vs blower table |
| | | | Air temperature out of range | Too much cold vent air - bring entering air temp within design parameters |
| | | | Bad pressure switch | Check switch continuity and operation - replace |
| **Low Air Coil Temperature Fault - (ClimaDry) Code 12** | | X | Reduced airflow in cooling, ClimaDry, or constant fan | Check for dirty air filter and clean or replace |
| | | | | Check fan motor operation and airflow restrictions |
| | | | | Too high of external static - check static vs blower table |
| | | | Air temperature out of range | Too much cold vent air - bring entering air temp within design parameters |
| | | | Bad thermistor | Check temp and impedance correlation per chart |
| **IFC Fault Code 13 Internal Flow Controller Fault** | X | X | No pump output signal | Check DC voltage between A02 and GND - should be between 0.5 and 10 VDC with pump active |
| | | | Low pump voltage | Check line voltage to the pump |
| | | | No pump feedback signal | Check DC voltage between T1 and GND. Voltage should be between 3 and 4 VDC with pump OFF, and between 0 and 2 VDC with the pump ON |
| | | | Bad pump RPM sensor | Replace pump if the line voltage and control signals are present at the pump, and the pump does not operate |
| **ESD - ERV Fault (DXM Only) Green Status LED Code 3** | X | X | ERV unit has fault (Rooftop units only) | Troubleshoot ERV unit fault |
| **No Fault Code Shown** | X | X | No compressor operation | See 'Only Fan Operates' |
| | X | X | Compressor overload | Check and replace if necessary |
| | X | X | Control board | Reset power and check operation |
| **Unit Short Cycles** | X | X | Dirty air filter | Check and clean air filte r |
| | X | X | Unit in 'Test Mode' | Reset power or wait 20 minutes for auto exit |
| | X | X | Unit selection | Unit may be oversized for space - check sizing for actual load of space |
| | X | X | Compressor overload | Check and replace if necessary |
| **Only Fan Runs** | X | X | Thermostat position | Insure thermostat set for heating or cooling operation |
| | X | X | Unit locked out | Check for lockout codes - reset power |
| | X | X | Compressor overload | Check compressor overload - replace if necessary |
| | X | X | Thermostat wiring | Check thermostat wiring at DXM2 - put in Test Mode and jumper Y1 and R to give call for compressor |

# Performance Troubleshooting

| Symptom | Htg | Clg | Possible Cause | Solution |
|---|---|---|---|---|
| **Insufficient Capacity/ Not Cooling or Heating Properly** | X | X | Dirty filter | Replace or clean |
| | X | | Rduced or no air flow in heating | Check for dirty air filter and clean or replace |
| | | | | Check fan motor operation and airflow restrictions |
| | | | | Too high of external static - check static vs blower table |
| | | X | Reduced or no air flow in cooling | Check for dirty air filter and clean or replace |
| | | | | Check fan motor operation and airflow restrictions |
| | | | | Too high of external static - check static vs blower table |
| | X | X | Leaky duct work | Check supply and return air temperatures at the unit and at distant duct registers if significantly different, duct leaks are present |
| | X | X | Low refrigerant charge | Check superheat and subcooling per chart |
| | X | X | Restricted metering device | Check superheat and subcooling per chart - replace |
| | | X | Defective reversing valve | Perform RV touch test |
| | X | X | Thermostat improperly located | Check location and for air drafts behind stat |
| | X | X | Unit undersized | Recheck loads & sizing check sensible clg load and heat pump capacity |
| | X | X | Scaling in water heat exchanger | Perform Scaling check and clean if necessary |
| | X | X | Inlet water too hot or cold | Check load, loop sizing, loop backfill, ground moisture |
| **High Head Pressure** | X | | Reduced or no air flow in heating | Check for dirty air filter and clean or replace |
| | | | | Check fan motor operation and airflow restrictions |
| | | | | Too high of external static - check static vs blower table |
| | | X | Reduced or no water flow in cooling | Check pump operation or valve operation/setting |
| | | | | Check water flow adjust to proper flow rate |
| | | X | Inlet water too hot | Check load, loop sizing, loop backfill, ground moisture |
| | X | | Air temperature out of range in heating | Bring return air temp within design parameters |
| | | X | Scaling in water heat exchanger | Perform Scaling check and clean if necessary |
| | X | X | Unit over charged | Check superheat and subcooling - reweigh in charge |
| | X | X | Non-condensables insystem | Vacuum system and reweigh in charge |
| | X | X | Restricted metering device | Check superheat and subcooling per chart - replace |
| **Low Suction Pressure** | X | | Reduced water flow in heating | Check pump operation or water valve operation/setting |
| | | | | Plugged strainer or filter - clean or replace |
| | | | | Check water flow adjust to proper flow rate |
| | X | | Water temperature out of range | Bring water temp within design parameters |
| | | X | Reduced air flow in cooling | Check for dirty air filter and clean or replace |
| | | | | Check fan motor operation and airflow restrictions |
| | | | | Too high of external static - check static vs blower table |
| | | X | Air temperature out of range | Too much cold vent air - bring entering air temp within design parameters |
| | X | X | Insufficient charge | Check for refrigerant leaks |

# Performance Troubleshooting (cont.)

| Symptom | Htg | Clg | Possible Cause | Solution |
|---|---|---|---|---|
| **Low Dischage Air Temperature in Heating** | X | | Too high of air flow | Check fan motor speed selection and airflow chart |
| | X | | Poor performance | See “Insufficient Capacity” |
| **High Humidity** | | X | Too high of air flow | Check fan motor speed selection and airflow chart |
| | | X | Unit oversized | Recheck loads and sizing check sensible clg load and heat pump capacity |
| **Only Compressor Runs** | X | X | Thermostat wiring | Check G wiring at heat pump. Jumper G and R for fan operation. |
| | X | X | Fan motor relay | Jumper G and R for fan operation. Check for Line voltage across blower relay contacts. |
| | | | | Check fan power enable relay operation (if present) |
| | X | X | Fan motor | Check for line voltage at motor. Check capacitor |
| | X | X | Thermostat wiring | Check thermostat wiring at or DXM2. Put in Test Mode and then jumper Y1 and W1 to R to give call for fan, compressor and electric heat. |
| **Unit Doesn't Operate in Cooling** | | X | Reversing Valve | Set for cooling demand and check 24VAC on RV coil. |
| | | | | If RV is stuck, run high pressure up by reducing water flow and while operating engage and disengage RV coil voltage to push valve. |
| | | X | Thermostat setup | For DXM2 check for “O” RV setup not “B”. |
| | | X | Thermostat wiring | Check O wiring at heat pump. DXM2 requires call for compressor to get RV coil “Click.” |
| **Modulating Valve Troubleshooting** | X | X | Improper output setting | Verify the AO-2 jumper is in the 0-10V position |
| | | | No valve output signal | Check DC voltage between AO2 and GND. Should be O when valve is off and between 3.3v and 10v when valve is on. |
| | | | No valve operation | Check voltage to the valve |
| | | | | Replace valve if voltage and control signals are present at the valve and it does not operate |

# Troubleshooting Form

CLIMATEMASTER
Geothermal Heating & Cooling

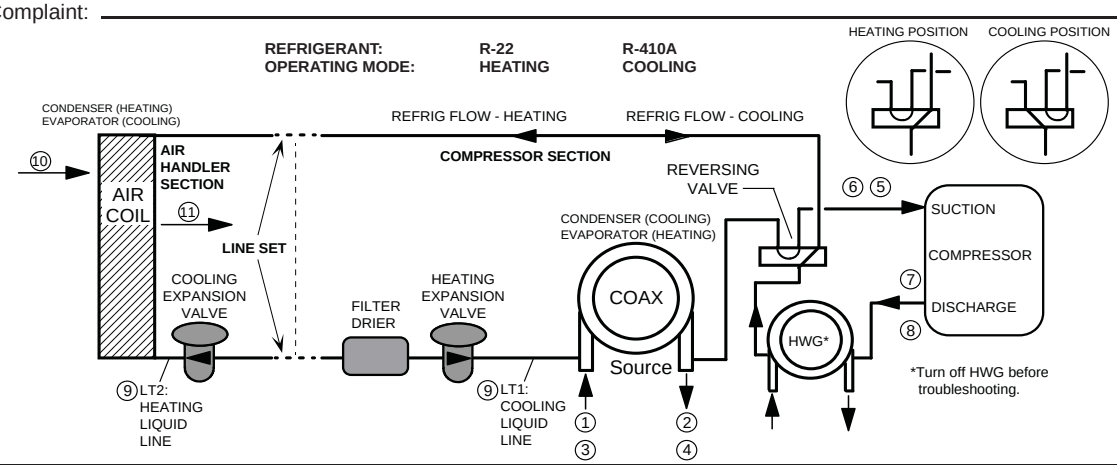
## Split Water-to-Air Troubleshooting Form

RP930
111414

Customer: _____ Loop Type: _____ Startup Date: _____

Model #: _____ Serial #: _____ Antifreeze Type & %: _____

Complaint: _____




| | Description | Heating | Cooling | Notes |
|---|---|---|---|---|
| | **Water Side Analysis** | | | |
| 1 | Water In Temp. | | | |
| 2 | Water Out Temp. | | | Temp. Diff. = |
| 3 | Water In Pressure | | | |
| 4 | Water Out Pressure | | | |
| 4a | Pressure Drop | | | |
| 4b | GPM | | | |

**Heat of Extraction (Absorption) or Heat of Rejection:**

**HE or HR (Btuh) =** _____ **Enter HE or HR:** _____

_____ **Flow Rate (GPM) x** _____ **Temp. Diff (deg F) x** _____ **Fluid Factor**

**Fluid Factor:**
**500 (Water); 485 (Antifreeze)**

| | | | | |
|---|---|---|---|---|
| | **Refrigerant Analysis** | | | |
| 5 | Suction Temp. | | | |
| 6 | Suction Pressure | | | |
| 6a | Saturation Temp. | | | |
| 6b | Superheat | | | |
| 7 | Discharge Temp. | | | |
| 8 | Discharge Pressure | | | |
| 8a | Saturation Temp. | | | |
| 8b | Subcooling | | | |
| 9 | Liquid Line Temp | | | |
| 10 | Return Air Temp. | | | |
| 11 | Supply Air Temp. | | | Temp. Diff. = |
| | Voltage | | | |
| | Compress Amps | | | |

**Line Set**

Length: _____ Ft.

Liquid: _____ In. Dia

Suction: _____ In. Dia

Note: Never connect refrigerant gauges during startup procedures. Conduct water-side analysis using P/T ports to determine water flow and temperature difference. If water-side analysis shows poor performance, refrigerant troubleshooting may be required. Connect refrigerant gauges as a last resort.