



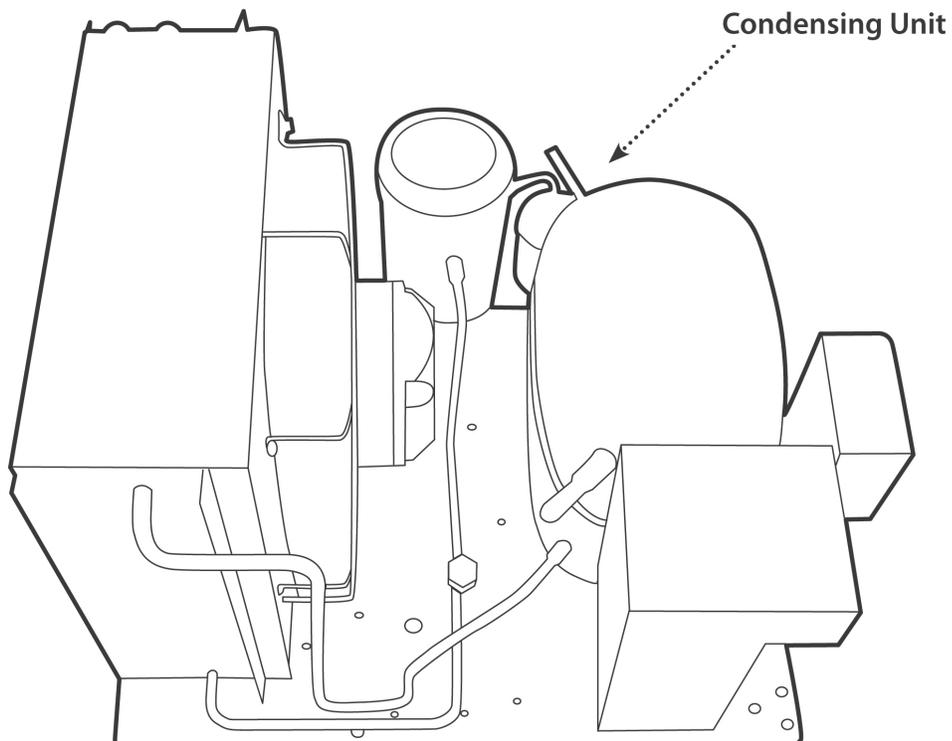
## Installation Manual

### SUPPLIES NEEDED FOR INSTALLATION

1. Double insulated refrigerant line set
2. 1/4" copper water supply
3. 1/4" condensate vinyl drain tube/tube clamps
4. Provide 120v 15A circuit for indoor evaporator, and 120v/230v 30A, single or three phase (dependent upon your condensing unit) for outdoor condensing unit. Check local codes.
5. 18-2 stat wire; to be used to extend temperature sensor, humidity sensor cable, and keyboard
6. Condensing unit pad
7. Double gang box with a blank plate

### CONDENSING UNIT SET UP

1. Place a (suggested model) on a firm level location (pad) for outdoor applications, or add 4 anti-vibration pads to each corner of the condensing unit for indoor use. Place in an area with adequate air flow.
2. Braze in suction and liquid lines to condensing unit.



## CONDENSING UNIT SET UP, continued

3. Run the recommended double insulated line set from the condensing unit to the evaporator opening (50 foot max).
4. Power from disconnect (recommended) 12-2/with ground to the condensing unit.
5. Check low pressure control for the correct 25 psi setting, with a 15 psi differential.

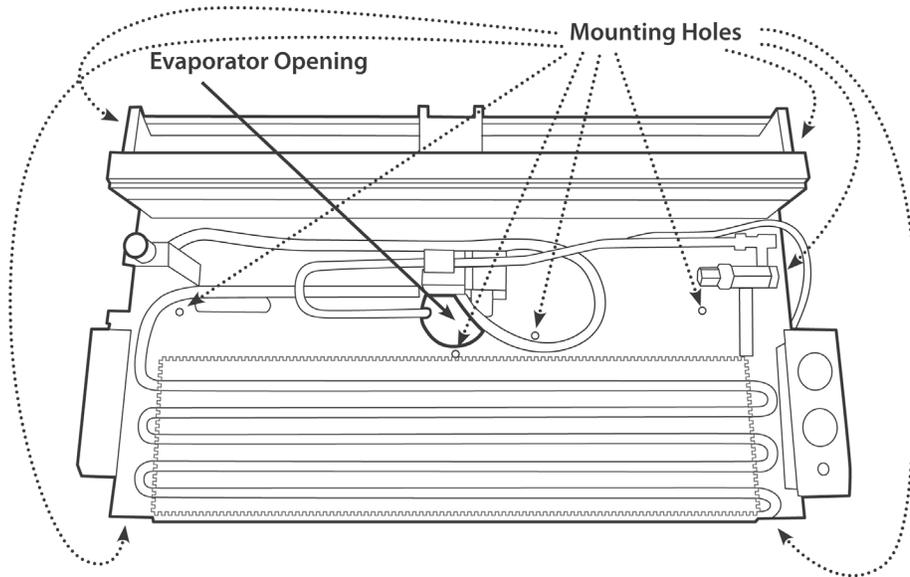
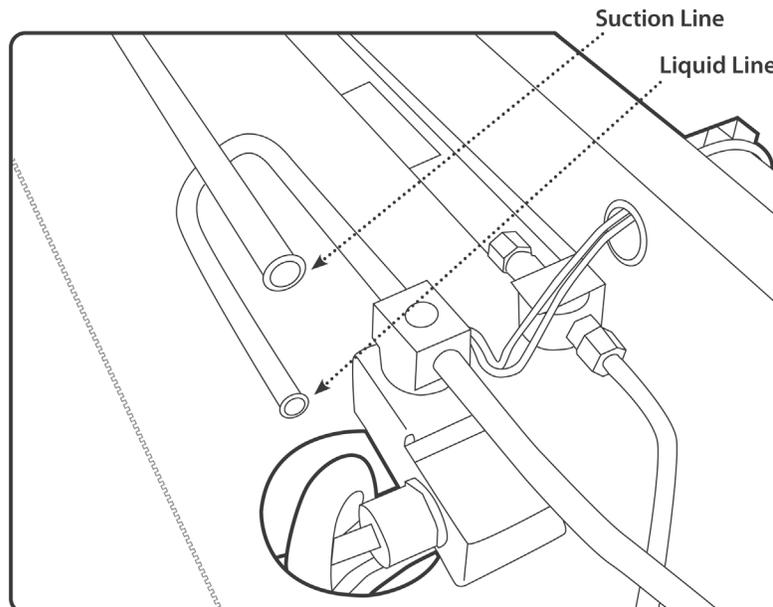


DIAGRAM #1

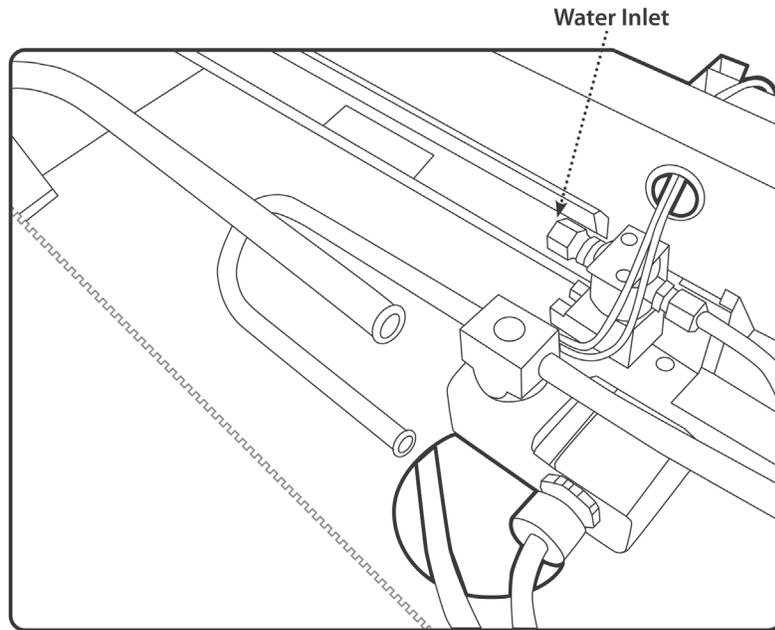
## EVAPORATOR SET UP

1. Locate a suitable ceiling mount location, as close to the middle of the room as possible. Allow for at least 24 inches from the back of the evaporator (coil side) to the back wall for adequate air distribution.
2. Run the wire harness (14-2/ground) and 18-6 stat wire through the appropriate holes in the ceiling cap.
3. Run the 1/4" drainline from the pump in the evaporator through the ceiling cap and out to a suitable location. Heat tape any portion susceptible to freezing.
4. Bring in power (14-2/with ground) to an approved box and connect to wire harness outside evaporator.
5. Attach template to the ceiling. Remove the stainless steel outer enclosure from the base of the unit. Attempt to locate any mounting holes below ceiling joists for secure attachment with (#8) wood screws. Use moly bolts for all other mounting locations. Attach base securely to the ceiling. (diagram 1) Minimum 7 mounts.

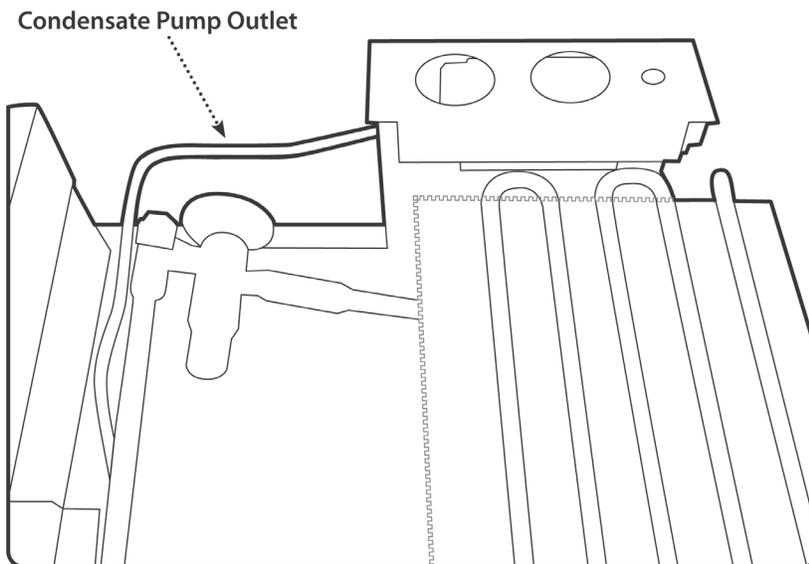


## EVAPORATOR SET UP, continued

6. Wrap the TXV and refrigeration solenoid with ESP Heat block (#HB34) or comparable product. Braze the refrigerant solenoid to the liquid line. Remove the txv bulb and braze in the suction line to the line exiting the condenser. Re-attach the bulb when cool.



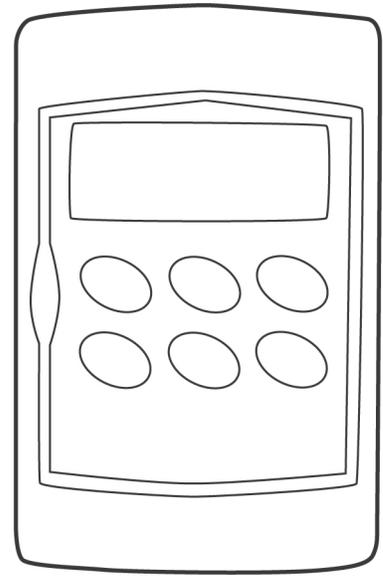
7. Locate the nearest water supply. Shut off water supply to the line and braze in the CPS water supply compression adapter. Connect the water filter to the fitting and run 1/4" copper from the filter thru the evaporator ceiling opening and cap, and attach to the water solenoid inlet.



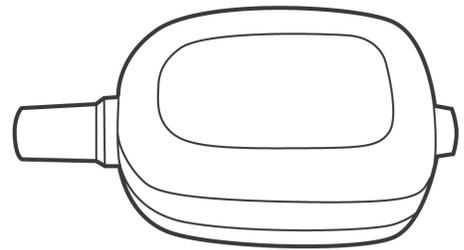
8. Attach the 1/4" vinyl hose drain tube to the outlet of the green condensate pump.
9. For indoor applications, run 1/4" vinyl condensate drain tube from the evaporator to a suitable location
10. Do not replace cover until unit test is complete.

## CONTROLLER DISPLAY SET UP

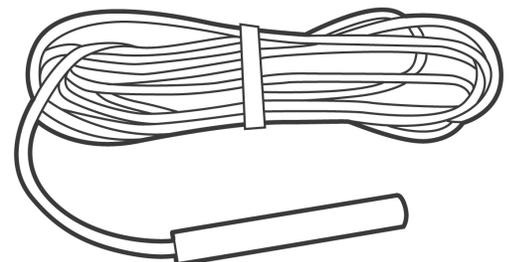
1. Install double gang box and cut out the blank plate to accept the Bacchus Temp/Humidity Keyboard (VH620). The keyboard can be mounted inside or outside of the room. Run 18-2 stat wire from the monitor back to the evaporator above the ceiling opening, and attach to the yellow and green lead wires indicated. The keyboard can be mounted up to 75 feet from the microprocessor inside the evaporator.
2. Mount the humidity sensor (XH10P) to a discreet side wall location @ 6ft. from the floor. Bring the two lead wires from the sensor, and attach to the + and – lead wires indicated. White lead to the #2 terminal, and Red lead to the #1 terminal on the sensor. Do not mount in the air discharge (coil side) of the evaporator.
3. Mount the temp sensor adjacent to the humidity sensor, and run the lead wires back to the wire harness. It is best to place both sensors in a location where they cannot be touched by the end user, and are not in the air discharge of the evaporator.
4. Check supply voltage before connecting to the controller/power board.
5. Do not expose to water or moisture: use the controller only within the operating limits avoiding sudden temperature changes with high atmospheric humidity to prevent formation of condensation.
6. Warning: disconnect all electrical connections before any kind of maintenance
7. Ensure that the wires for probes leads and the power supply are separated and are not intertwined or crossed
8. The microprocessor has been preprogrammed for 55F degrees, and 50% RH. To change either setting:
  - E. Depress the up ^ and down v keys together for more than three seconds to unlock the keyboard
  - F. Push the Temp or Humidity Set Key and immediately release
  - G. Use the up ^ and down v keys to change the value
  - H. Push the appropriate set key again, and wait 10 seconds
  - I. Depress the up ^ and down v keys to lock the keyboard
9. There is no reason to change any besides temperature or humidity set point depending upon the end users preference.



**VH620 Keyboard**



**XH10P Humidity Sensor**



**18NBI**

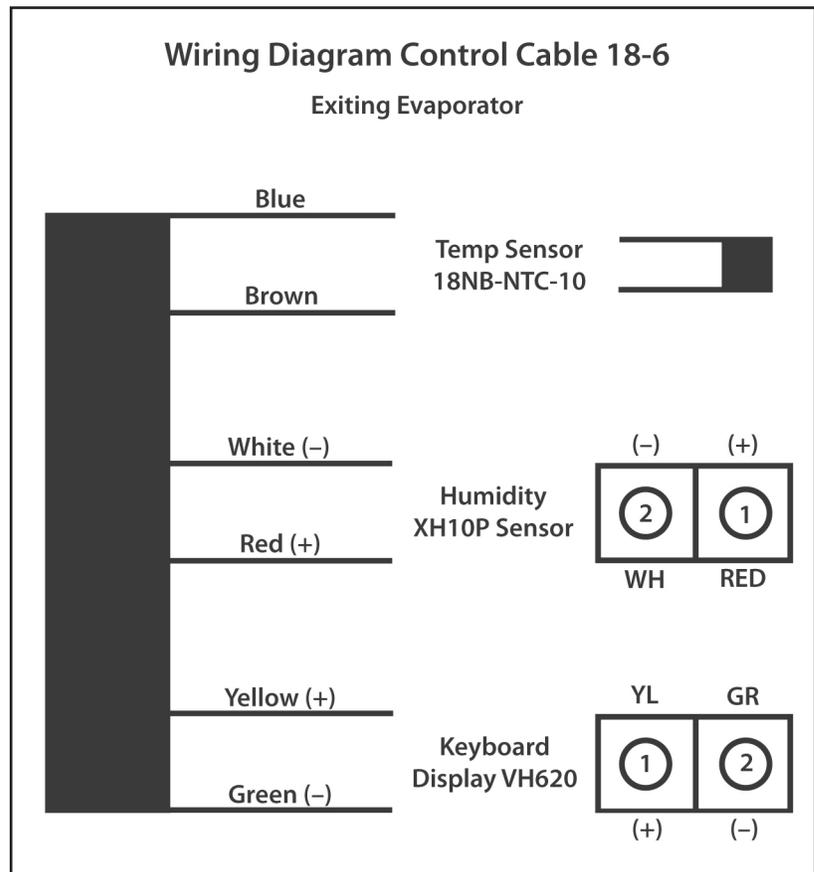
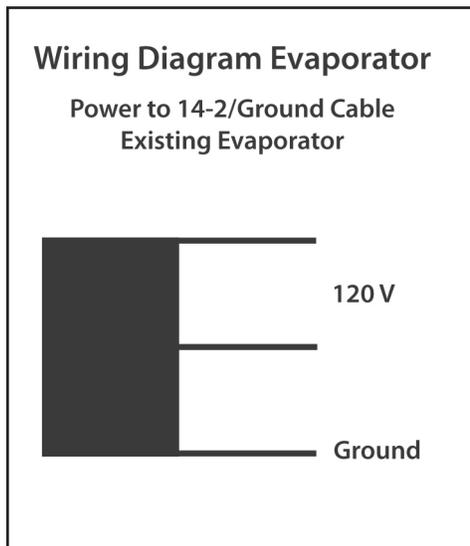
## 10. Alarm Signaling

| Message | Cause                    | outputs  |
|---------|--------------------------|--|
| "P1"    | Thermostat probe failure | compressor and heating outputs off (on dehumidification system only) |
| "P3"    | Humidity probe failure   | humidity regulation off  |
| "HA"    | High temp alarm          | outputs unchanged  |
| "LA"    | Low temperature alarm    | outputs unchanged  |
| "HHA"   | High humidity alarm      | outputs unchanged  |
| "HLA"   | Low humidity alarm       | outputs unchanged  |

In the instance of any of these alarms, call Bacchus Tech Services, or your installation contractor

## POWER TO THE EVAPORATOR

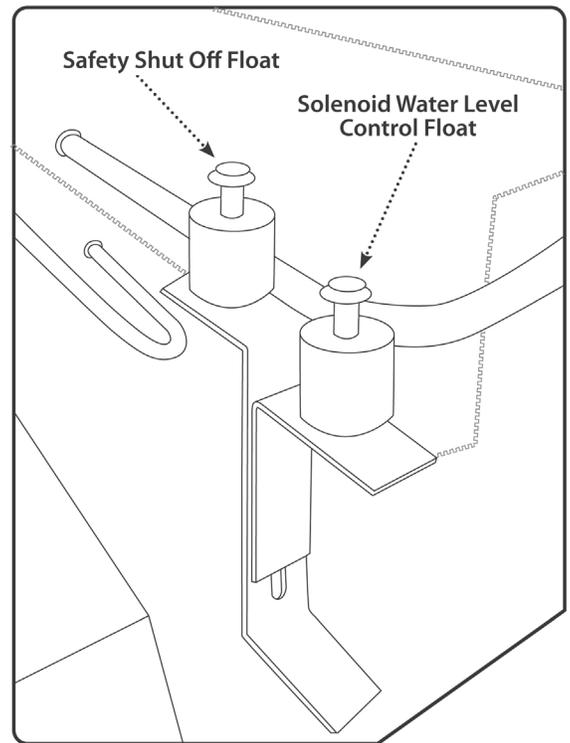
1. Bring in 14-2 conductor wire with ground to the evaporator, and connect to the 14-2 with ground wire harness exiting the evaporator . Make sure the line has adequate amp rating for the circuit.



## CHARGING THE SYSTEM

1. Evacuate and pressure test the system. This can be accomplished by charging with nitrogen to 75 lbs and checking your gauges for any sign of a leak. Evacuate the system to 500 microns.
2. Charge the system with R134A until the sight glass goes clear. It is very important not to overcharge this system. As soon as the bubbles in the sight glass disappear, discontinue charging. Overcharge will result in an ice block in the evaporator.
3. Adjust the TXV to 12-14 degrees of superheat. Take your suction pressure and temperature reading at the condenser, and add two pounds to it for the pressure drop. Take the difference between actual temperature and your reading from a PT chart to calculate.
4. System Start up. Before replacing stainless steel enclosure cover, power up the system to make sure water solenoid is opening correctly. The misting nozzle will be open. Remove power and replace the cover. Power up the evaporator, and let the system pull down. At temp set point the refrigerant solenoid will close and the system will pump down and shut off the condensing unit.
5. Check level of safety float.

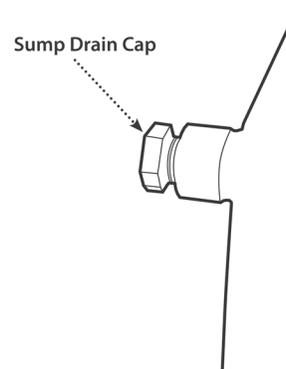
Breakers. We recommend a 30a fused disconnect.



## MAINTENANCE AND TROUBLESHOOTING

Have your system checked each year by a certified refrigeration technician. He should:

1. Clean the indoor and outdoor coils
2. Change the water filter on the Humidification models, and change out the humidification mister head
3. Drain the Stainless steel sump (diagram #3), and clean it if necessary. This will prevent any possible mold build up .
4. Check the operation of the condensate pump, and make sure the water misting fitting is acting properly, by allowing water to flow thru it. Clean with vinegar if clogged and change the water filter.
5. Check the electronic controller for any alarm conditions
6. Check the refrigerant level and system operating pressures.
7. Clean the water solenoid on a yearly basis, and change it out every two years. Warning: If the water solenoid sticks open, overflow can result.



## TROUBLESHOOTING

Alarm conditions on the electronic controller Call BCS Tech Services at 937-665-0424

|                                 |  |
|---------------------------------|--|
| Unit will not reach temperature | Call your installation contractor to Determine proper refrigerant charge. Dirty condenser? |
| Unit has shut off               | Call BSC tech services or field Service; could be bad Compressor, fans, controller or Pump |

### ALARM SIGNALING

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### DIMENSIONAL /ELECTRICAL

|                                   | BCS1000<br>Cond. Unit     | BCS1000<br>Evap           | BCS1500<br>Con. Unit    | BCS1500<br>Evaporator     | BCS2000<br>Con. Unit    | BCS3000<br>Con. Unit   |
|-----------------------------------|---------------------------|---------------------------|-------------------------|---------------------------|-------------------------|------------------------|
| Dimensions                        | 17"D x 13.3"W<br>x 11.8"H | 18"D x 29.25"W<br>x 6.5"H | 19"D x 16.2"W<br>x 14"H | 18"D x 29.25"W<br>x 6.5"H | 19"D x 21"W<br>x 16.5"H | 25" D x 20"W<br>x 16"H |
| Weight                            | 51 lbs.                   | 49 lbs.                   | 62 lbs.                 | 51 lbs.                   | 81 lbs.                 | 135 lbs.               |
| Refrigerant<br>connection         | 3/8" suc.<br>1/4" dis.    | 3/8" sw                   | 3/8" suc<br>1/4" dis    | 3/8" sw x<br>1/2" sw      | 3/8" suc<br>5/16" dis   | 1/2" suc<br>3/8" dis   |
| Water Supply<br>connection        |                           | 1/4"<br>compression       |                         | 1/4"<br>compression       |                         |                        |
| Condensate<br>connection          |                           | 1/4" mpt                  |                         | 1/4" mpt                  |                         |                        |
| compressor<br>HP/voltage          | 1/2 hp 115v               |                           | .65 hp 115v             |                           | 1 hp 115v               | 1 1/2 hp<br>208/230-1v |
| Electrical                        |                           |                           |                         |                           |                         |                        |
| compressor rla                    | 10A                       |                           | 11A                     |                           | 8A                      | 12.1A                  |
| compressor lra                    | 53A                       |                           | 51A                     |                           | 43A                     | 49A                    |
| cond. Unit MFS                    | 20A                       |                           | 30A                     |                           | 15A                     | 17.6A                  |
| cond. Unit mca                    | 13.4A                     |                           | 13.4A                   |                           | 11.3A                   | 12.1A                  |
| BTU capacity 40F<br>suc, 110 amb. | 4857                      |                           | 6250                    |                           | 10200 (100f amb)        | 12,185                 |



Phone: 937-665-0424

Fax: 937-890-6664