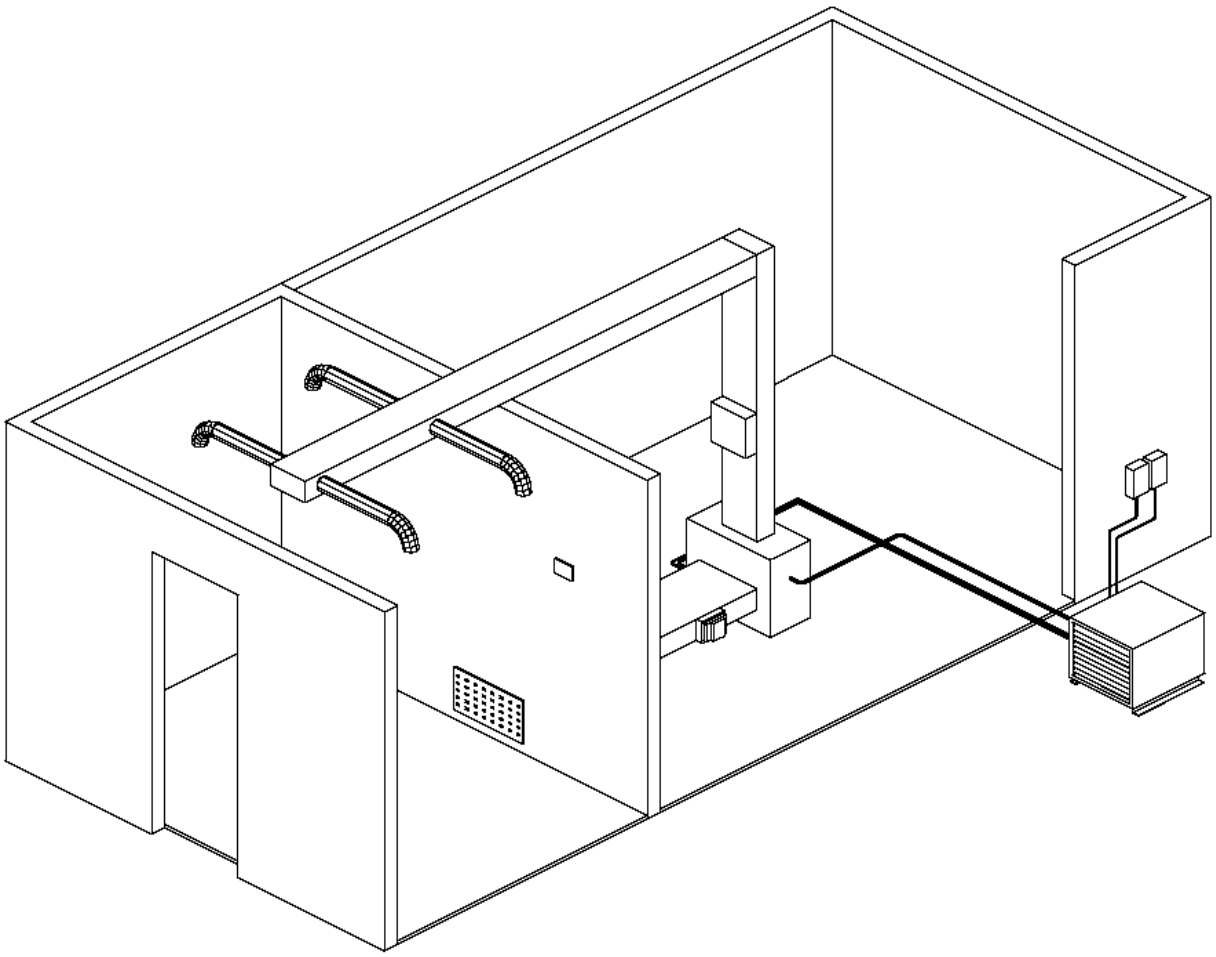


WineZone Air Handler System

- Requires a qualified HVAC technician to install and charge unit
- Can be charged with R-22, NU-22B, MO99, or R-427A refrigerants
- Electric connections for evaporator from fuse panel are hard wired to the condenser
- Industrial grade condensing unit for long life span
- Indoor and outdoor condensing units available
- Optional humidifier and dehumidifier accessories available for optimal climate control
- System is ducted for more quiet, aesthetically pleasing operation
- Field supplied ductwork, drain line, refrigerant, and electric connections required

Supplies and materials needed for installation

1. Insulated duct work with appropriate vapor barrier and ducting materials
2. Condenser pad
3. Required electrical services
    A. Dedicated service for condenser
    B. Dedicated service for air handler (to and from condenser)
    C. Service to air handler location for accessories.
    D. Low voltage wiring from condenser to thermostat and/or humidifier and duct heater. A 12-conductor 18-gauge wire is needed for complete system
4. R-22, NU-22B, MO99, or R-427A refrigerant for system
5. An accurate digital, thermocouple style thermometer (Laser or infrared is not recommended)
6. 1/4" copper hot water line for systems with humidification
7. Miscellaneous hardware, brackets, sealant, reducers, etc…
8. Tools and equipment needed to perform the installation
9. Additional refrigerant lines if line set exceeds 50 ft. in length

Supplies and Materials Furnished with Equipment

1. Condenser with pre-wired control panel
2. Pre-assembled outdoor upgrade kit, if ordered
3. Air handler modified for system
4. Thermostat
5. Humidifier if ordered
6. Duct heater, if ordered
7. 50 ft. line set
8. Crankcase pressure regulator and access port
9. Filter drier
10. Sight glass
11. Liquid line access tee for condenser fan cycle controls on units less than 8300 BTUS
12. Fan cycle control, mounted and wired
13. Wiring diagrams
14. Installation instructions with copy of Diagnostic Sheet
15. Warranty information with copy of Diagnostic Sheet

Warranty Activation Requirements

A **qualified service technician** must record **all** of the information on the Diagnostic Sheet to activate the unit warranty. The sheet must be complete with the order number and unit serial numbers so we may properly identify the unit and customer. WCI will review the diagnostic sheet and give suggestions for adjustment or repair if the information provided indicates the unit is operating outside design parameters. Return the completed diagnostic sheet to:

Wine Cellar Innovations
4575 Eastern Ave.
Cincinnati, OH 45226
Fax: 513-979-5280
Phone: 513-321-3733

Installation Instructions

Caution: A qualified technician must install this refrigeration equipment. Please read, understand, and follow all instructions in this manual prior to start up. Failure to install and adjust this refrigeration unit in compliance with these instructions will void the warranty.

This unit is suitable for use with R-22 and Icor International's NU-22B and other R-22 replacements such as Arkema's R-427A or DuPont's R-438A (MO99). We suggest using NU-22B for the following reasons:

- It is about 2% to 5% more efficient than R-22
- ASHRAE Designated and safety classified A1: Nontoxic/Nonflammable
- EPA Snap listed
- Non-Ozone Depleting with Low Global Warming Impact
- Compatible with all standard refrigeration oils so no oil change is necessary
- R-22 like properties over a broad range
- Low discharge temperatures
- Stocking distributors nationwide

The refrigerant oil in the unit must be replaced with a like volume of POE oil when using R-427A, R-438A and other blended refrigerants. Multiple oil changes are not necessary.

A temperature pressure chart for R-22, NU-22B, R-427A and MO99 can be found on page 33.

1. Select a suitable location for the evaporator with respect to air circulation, ductwork, drain, refrigerant and electrical lines. Before installing any unit, the installer must determine that the wall or ceiling can safely support the weight of the unit. Provide adequate clearance for maintenance. Check local codes for additional precautions.

2. Place the condenser at the desired location outside the wine cellar in a well-ventilated area or outdoors. **Indoor condensers must be placed in a space twice the volume of the wine cellar to prevent excessive condensing temperatures.** Check local codes for proper venting of mechanical rooms. Field supplied vibration absorbing mounting pads and insulated compressor jackets effectively reduce noise transmitted by the unit. Condenser face must be at least 8" from any obstruction and entering air must not exceed 110° F. When installing an outdoor condenser, be sure that it is located so that leaves or snow do not accumulate and block the airflow. This can be accomplished by setting the condenser on a concrete slab, blocks, etc. Place the unit so prevailing winds do not blow rain, snow and debris into the open ends of the outdoor cover. Avoid placing the outdoor condenser in direct sunlight, especially in warm climates. Condenser air directed toward or away from the dwelling may cause undesirable noise for owners and their neighbors. This must be considered when placing the unit outdoors.

3. Using a silver/phosphorus/copper alloy with between 5% and 15% silver, braze the refrigerant line set to the evaporator and condenser with nitrogen flowing through the lines to eliminate carbon deposit build up on the inside of the joints which could contaminate the refrigerant and restrict the drier and expansion valve. To do this, open the system service ports. This will purge the nitrogen holding charge in the system. Connect a nitrogen bottle to one valve and set pressure regulator to about 2 PSI. A small amount of nitrogen will flow out the other valve.

   You **must** install the line set according to **Table 1** on the following page. Failure to do so voids the warranty. The evaporator and/or condensing unit may have different fitting sizes than the line set, so field supplied reducers are necessary. Run the line set according to Table 1, and reduce at the condenser, evaporator, and crankcase pressure regulator where necessary.

Maximum line length is 80 equivalent feet. Long sweep elbows and any bends in soft copper are equivalent to 5 linear feet. Line lengths in excess of 80 equivalent feet may cause compressor damage and will void the warranty. Example: To determine maximum length of pipe. The line set will require 5 elbows to connect the evaporator and condenser.

Maximum line set	80 equivalent ft.
5 elbows x 5	-25 equivalent ft.
Maximum length of pipe:	55 linear ft.

Proper piping practices must be followed. The line set must be securely fastened to the building structure for its entire length. The suction line must be insulated the entire length of the run. Horizontal line runs must slope 1/2" per 10' towards the condenser for proper oil return. No dips, sags or other low spots that will trap refrigerant oil are permitted. This prevents starving and slugging the compressor with oil. We highly recommend using rigid copper for this reason. For systems with condensers more than 20 feet above the evaporator, reduce the suction line size by one. For example, 3/4" line changes to 5/8" for the **vertica**l section of the line only. The 4-6 ft. of suction line between the crankcase pressure regulator and the compressor **must** be the same size as the compressor fitting. **Never** install a line set larger in diameter than the condensing unit fitting sizes.

Table 1

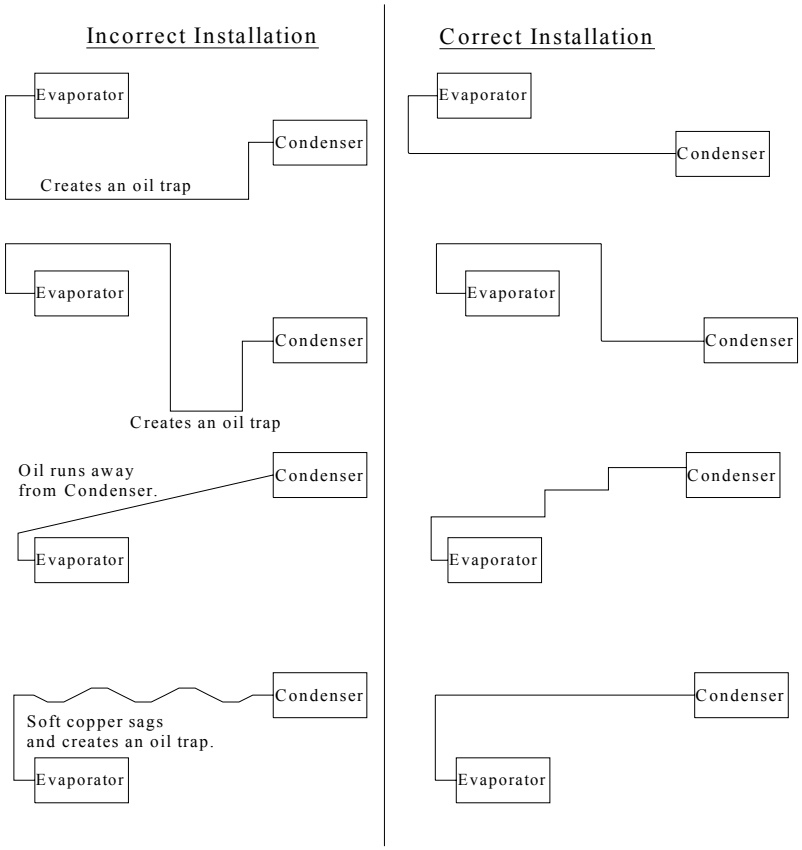
Unit	Liquid Line	Vapor Line	Vapor Line Between CPR and Compressor
WZAH 4600	1/4	1/2	1/2
WZAH 5800	3/8	1/2	1/2
WZAH 8300	3/8	3/4	7/8
WZAH 9500	3/8	7/8	7/8

Line set sizes differ from system component fitting sizes so field supplied reducers are necessary. Run the line set according to Table 1, and reduce at the condenser, evaporator, and crankcase pressure regulator.

For outdoor units, cut or drill a hole through the most convenient stationary side of the condenser cover large enough for the line set to easily pass through. Cut the hole above the height of the compressor. Do not run the line set through the bottom of the unit or the air grilles at either end. Do not run the line set through a panel that moves when the lid is opened.

You must fill out the enclosed diagnostic sheet in order to activate the warranty for this unit. These instructions and the warranty have Diagnostic Sheets attached. Additional copies of the diagnostic sheet can be found at www.winecellarinnovations.com

Sample Piping Configurations

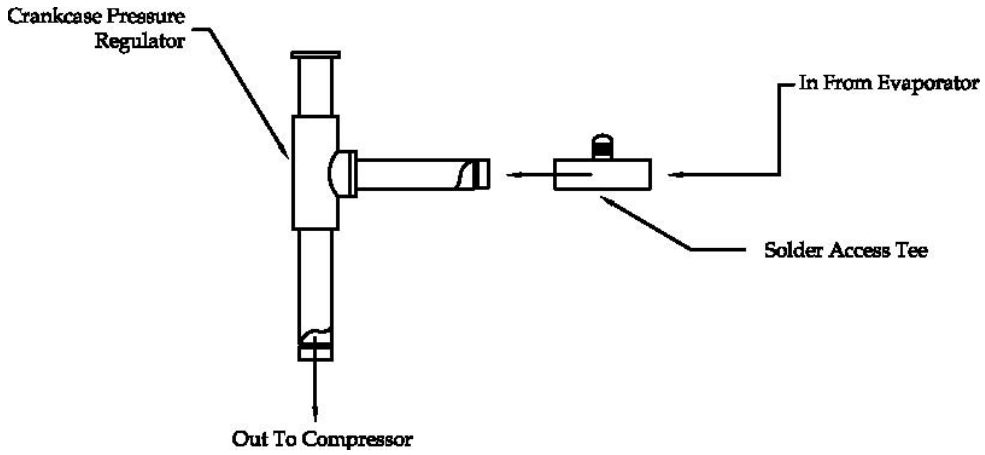


Rule of thumb: Once the suction line leaves the evaporator and turns downward, it cannot turn and go back up to get to the condenser. The only time a trap in the suction line is acceptable is at the bottom of a 20' or taller riser.

4. Install the crankcase pressure regulator in the suction line only, with approximately 4 to 6 ft. of suction line between the regulator and the compressor. A 4 to 6 ft. horizontal coil of suction line may be used to place the regulator inside the outdoor cover. Do not create an oil trap between the crankcase pressure regulator and the compressor inlet. **Do not** install the regulator as a head pressure control. Opening the compressor discharge line is not necessary. Follow the instructions included with the regulator. Do not place upside down. Allow adequate clearance above the valve for pressure adjustment. Remove valve caps and Schrader core prior to brazing. **Ensure proper flow direction and wrap with a wet rag to prevent over heating during brazing.** Install valve core and replace caps after brazing.

You must fill out the enclosed diagnostic sheet in order to activate the warranty for this unit. These instructions and the warranty have Diagnostic Sheets attached. Additional copies of the diagnostic sheet can be found at www.winecellarinnovations.com

Install the supplied solder access tee within 6" of the crankcase pressure regulator inlet. Use this service port to determine the evaporator suction pressure. The suction line temperature at the evaporator should be measured upstream of this access tee when completing the diagnostic sheet and for calculating superheat. Reducers are required to complete the crankcase pressure regulator installation for the WZAH8300.



5. If applicable, install the access tee for the condenser fan cycle control on the receiver flare fitting. Place the fan cycle control capillary tube on the access tee and tighten securely. Install the filter dryer and sight glass. Wrap with a wet rag to prevent over heating during brazing.

6. Perform leak test with dry nitrogen, but **never** expose the system to leak test pressures greater than 150 PSI. **Test all fittings including factory installed flare fittings on condenser and evaporator that may have loosened during shipping.** Leaks on unit(s) from a result of loose valves, interconnecting fittings, and/or field piping are not covered by the warranty. It is the installer's responsibility to locate and repair all leaks prior to start up.

7. Evacuate the system to 1000 microns for 1 hour.

8. Install electrical wiring according to the Electrical Requirements on page 11 and 12 and the appropriate wiring diagram. Follow all applicable codes.

9. After isolating the vacuum pump from the system, break the vacuum to a positive pressure using refrigerant connected to the liquid line. Add approximately 20 psi of refrigerant **vapor**. **Do not start unit for the first time with a full charge.** Adding more refrigerant prior to start up will damage the compressor. Always charge NU-22B and other blended refrigerants in liquid state.

10. **Apply power to units for 24 hours prior to start up to allow crankcase heater to warm the compressor and then start the unit**. Complete the charging process with the compressor running and add the balance of the charge into the suction line of the system. Liquid refrigerant should never enter the compressor directly. Use a metering device to prevent slugging when charging with liquid. When enough charge has been added you will be able to **adjust the suction pressure at the compressor** to 30 to 35 psi using the crankcase pressure regulator. The suction pressure in the evaporator will be higher than the suction pressure at the compressor. Decreasing the suction pressure at the compressor increases the suction pressure in the evaporator. Strive to maintain a 36° to 38° evaporator. Refer to the temperature pressure chart on page 33. One complete turn of the crankcase pressure regulator adjustment screw is approximately 6 psi. Most, but not all, systems will have a suction pressure at the compressor of 30 to 35 psi when properly charged and adjusted. The suction pressure at the compressor must not be below 20 psi and can be as high as the compressor amp draw will allow.

11. Set the condenser fan cycle control to pressures acceptable for R-22 in your geographic location. Factory settings are a cut in of 250 with a differential of 50, and are sufficient for most locations. **Never** adjust the

pressure control to bring on the condenser fan motor above 250 psi. Slowly add refrigerant until the bubbles in the sight glass disappear. The condenser fan motor must be running to complete the charge.

12. For R-22: After the system has run for 10 minutes check the sight glass again. During normal operation with R-22 there should be no bubbles in the sight glass. If bubbles are present, the system is low on refrigerant. Add refrigerant to eliminate the bubbles. Charge the system to approximately 10° of sub-cooling. To calculate sub-cooling for R-22 subtract the liquid line temperature from the saturation temperature corresponding to the head pressure. Measure the liquid line temperature between the receiver and filter drier with and an accurate, digital, thermocouple style thermometer.

    For Nu22B or other blended refrigerants: Some bubbles may be present with a full charge of a blended refrigerant. Charge the system to approximately 10° of sub-cooling. To determine sub-cooling for NU-22B or other blended refrigerants, subtract the liquid line temperature from the bubble temperature corresponding to the head pressure. Measure the liquid line temperature between the receiver and filter drier with an accurate, digital, thermocouple style thermometer.

13. Allow the wine room temperature to fall to 55°F. **Do not allow the suction saturation or dew temperature to fall below 32° in the evaporator as the cellar temperature approaches 55°F**. Adjust the crankcase pressure regulator as necessary.

    Check the super heat at the evaporator. Measure the suction pressure in the evaporator at the crankcase pressure regulator access port. From refrigerant pressure-temperature tables, determine the saturation temperature (for R-22) or the dew temperature for NU-22B or other blended refrigerant at the observed suction pressure. Measure the suction line temperature on the evaporator side of the crankcase pressure regulator. Subtract the saturation temperature (Dew temperature for blended refrigerants) from the measured suction line temperature. The difference is the superheat. Refer to the temperature pressure chart on page 33 in these instructions.

    The superheat should be 8° to 12°F. If the superheat is not in this range, the thermostatic expansion valve must be adjusted. To adjust the expansion valve, remove the seal cap from the bottom of the valve. Turn the adjustment screw clockwise to increase superheat and counterclockwise to decrease superheat. **Caution: There are 10 turns on the adjustment stem. When stop is reached while turning the superheat adjustment stem, any further turning will damage the valve.** One complete 360° turn changes the superheat approximately 3°-4°F. As much as 30 minutes may be required for the system to stabilize after the adjustment is made. Replace and hand tighten the seal cap. Adjusting the expansion valve may require further adjustment to the crankcase pressure regulator.

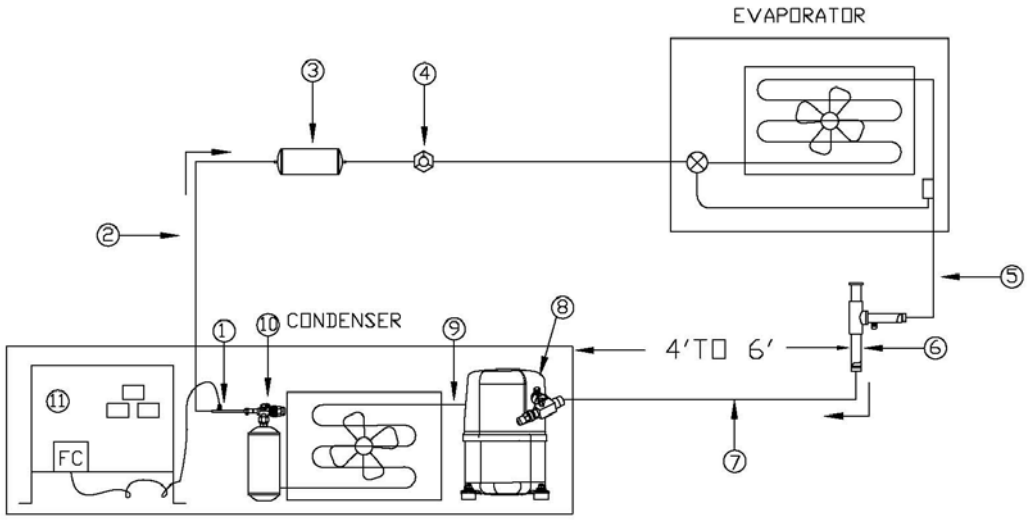
14. Perform the final check of the refrigeration unit. The cellar temperature must be between 53° and 58° F. Check the sight glass and gauge readings again. The minimum suction saturation or dew temperature in the evaporator is 32°. Strive to maintain a 36° to 38° evaporator. Refer to the temperature pressure chart on page 33. The super heat in the evaporator must be 8°-12° F (see step 12). The suction pressure at the compressor must not be below 20 psi. The suction line temperature at the compressor must be below 60°F. The hot gas line temperature must not exceed 210° F. The ΔT (the difference between return air and supply air temperatures) must be 6°-12° F. Never exceed the maximum amp draw (RLA) for the compressor. Adjust the TXV, crankcase pressure regulator, and charge as necessary. All measurements should be taken with the condenser fan motor running. All temperature readings should be taken with a digital probe style thermometer.

15. If the recommended system pressures and temperatures cannot be achieved, refer to the troubleshooting chart on page 31.

16. Clearly mark the unit to identify the refrigerant used.

17. **Cool the cellar to 55º, complete the Warranty Diagnostic Sheet and return it to Wine Cellar Innovations to activate your warranty.**

Piping Diagram



1. Access tee. Supplied with units up to 5800 BTUS only. Attach access tee to receiver tank service valve. Attach fan cycle control capillary with ¼" flare nut to the threaded port on the access tee.

2. Liquid line.

3. Filter-drier.

4. Sight glass with moisture indicator.

5. Suction line. Measure the suction line temperature at the evaporator as close to the evaporator as possible. Compare this sensible temperature to the saturation or dew temperature determined at the crankcase pressure regulator access port to determine superheat. See step #13 on page 7.

6. Crankcase Pressure Regulator. Adjusts the maximum suction pressure at the compressor (8). Measure the suction pressure in the **evaporator** at the access port on the evaporator (upstream) side of this regulator. See step #4 on page 5 for proper regulator installation. The minimum suction saturation or dew temperature in the evaporator is 32°. Strive to maintain a 36° to 38° evaporator. Refer to the temperature pressure chart on page 28. See step #10 on page 6.

7. Suction line. There must be 4 to 6 feet of suction line between the crankcase pressure regulator and the compressor inlet. On larger systems, the crankcase pressure regulator may be installed near, but not in, the accumulator inlet. Measure the suction line temperature at the compressor here. This temperature should be similar to the suction line temperature at the evaporator and must never exceed 60°F. See step #4 on page 5.

8. Compressor. Measure the suction pressure at compressor at the compressor low side service valve.

9. Compressor discharge. The vapor line between the compressor outlet and condenser coil inlet. Measure the discharge (hot gas) line temperature here, approximately 12" from the compressor outlet. This temperature must never exceed 210°F.

10. Receiver tank. Measure the head pressure at the receiver service valve.

11. Condenser control panel. Contains the fan cycle control and other system electrical components. Set the fan cycle control to bring the condenser fan on at 250 psi and turn the fan off at 200 psi.

Service and Maintenance

Service Parts	Maintenance Procedures	Period
Indoor air filter	Replace air filter.	Monthly
Condensate drain	Inspect drain pan. Wipe clean or vacuum as necessary. Check water flow. Clear out drain if necessary	Twice per year
Evaporator/condenser coil	Remove any dirt or debris stuck to coil. Wash evaporator coil as necessary. Wash condenser coil thoroughly with appropriate cleanser. Oil all motors unless sealed.	Once a year, by a qualified technician
Check refrigerant charge	Add refrigerant if necessary. Check safety devices and settings. Check fan cycle control settings.	Once a year, by a qualified technician

Air Handler

1. Receives 115 volts from TB1 in the condenser control panel.
2. Not a weather tight unit and must be installed indoor, away from the elements.
3. Requires field installed drain with trap. The drain may need to be insulated to prevent sweating in high ambient conditions or heated to prevent freezing in low ambient conditions.
4. An auxiliary drain pan is required for installations where water damage could result.
5. The unit jacket may need to be insulated for installations in areas of high temperature and/or humidity such as attics and garages. All unit penetrations such as drain, electric and line set connections must be sealed to prevent air from outside the cellar entering the air handler and/or ductwork. This includes the air handler filter slot.
6. The location structure must safely support the weight of the air handler, ductwork, and accessories. The unit should be pitched slightly (1/8") toward the condensate opening for proper drainage.
7. The air handler must be grounded in accordance with the National Electric Code. Check local codes for additional precautions and ordnances to installation.
8. See pages 26 and 27 for specs and drawings for each unit.
9. See page 10 for suggested duct sizes.

Ducting Requirements

1. The ductwork is to be sealed with aluminum tape or painted with waterproof duct sealant

2. The ductwork must be wrapped with a minimum of 2" insulation with a suitable vapor barrier. Use of joist spaces and flex duct is not acceptable for return air ducts. Flex duct is acceptable for supply ducts only and must be sized appropriately. See the chart and notes below.

3. More insulation may be required on systems located in attics, garages or other areas with excessive temperatures and uncontrolled humidity. Consider using lined duct, then wrap with insulation. The unit jacket may need additional insulation to prevent condensation from forming on the air handler.

4. Use 6" x 14" boot sizes at a minimum for duct up to 8" in diameter. Larger diffusers should be used for ducts greater than 8" in diameter.

5. We recommend using filter grilles for returns, and removal of the filter slot included with the unit. If the unit filter slot is used, it must be sealed to prevent air from outside the cellar entering the return air.

6. There should be at least three feet of straight ductwork preceding the coil inlet. When the connecting return air duct is smaller than the coil inlet opening, the transition should be constructed so that the vertical and horizontal dimensions of the transition piece do not increase more than one inch for every seven inches of the length of the transition piece.

Unit- Air Handler	CFM- Fan Speed	Supply Trunk	Return Air Trunk	Round Supply Pipe to Metal Register	Metal Supply Register	Metal Return Air Filter Grille	Metal or Wood Return Air Grille	Round Supply Pipe to Wooden Register	Wooden Supply Register
WZAH4600-DVA04JAS	405-MED	12 X 8	14 X 8	2-8"	14 x 6	20 x 16	16 x 14 Or 30 x 8	4-7"	14 x 6
WZAH5800-DVA06JAS	585-MED	16 X 8	20 X 8	3-7" & 1-8"	14 x 6	20 x 20	18 x 18 Or 30 x 12	5-7"	14 x 6
WZAH8300-DVA08JAS	865-MED	20 X 8	26 X 8	5-8"	14 x 6	25 x 20	24 x 22 Or 30 x 18	5-8"	16 x 8
WZAH9500-DVA10JAS	1100-MED	24 X 8	30 X 8	4-9"	16 x 8	24 x 24	24 x 24 Or 30 x 20	6-8"	16 x 8

For non-standard duct sizes, choose supply ducts based on .08 ESP and return air ducts on .05 ESP.
For flex duct, increase the round pipe size by 1". If 7" rigid duct is indicated, use 8" flex, and so on.

The above table shows minimum guidelines only. Insufficient or poorly installed ductwork is the most common cause of poor system performance. Symptoms include, but are not limited to, reduced capacity, excessive noise, uncontrolled humidity, and nuisance freeze ups. **It is the installer's responsibility to ensure the ductwork, boots, registers and grilles are sized to adequately and quietly deliver the necessary air volume.**

This is a generic guide to registers and grilles. The manufacturer's specifications should be consulted to determine the number and size of supply registers and return air grilles. First decide if the supply registers and grilles will be metal or wooden before determining the number and size of the supply registers. Wooden registers are restrictive and often require more and larger registers be used. Refer to the chart above.

All ductwork must be sealed, insulated, and surrounded by a suitable vapor barrier, including the unit filter slot. Avoid facing the evaporator coil directly into the cellar through a sidewall. This allows undesirable mechanical noise directly into the cellar. We recommend facing the unit away from the cellar and attaching properly sized ductwork including a minimum of one 90° turn in the return air. Keep any turns or transitions at least 3 ft. upstream of the coil. **Every measure must be taken to ensure even airflow across the entire face of the evaporator coil.** Use of turning vanes may be necessary. Flexible duct connectors also effectively reduce noise transmitted by the unit.

Field Wiring for WZAH4600, WZAH5800, and WZAH8300

Condensing Unit Control Panel

Terminal Board 1

Terminal 1*- 230 line voltage from service panel for condenser
Terminal 2*- 230 line voltage from service panel for condenser
Terminal 3*- 115 line voltage from service panel for air handler fan motor
Terminal 4* -115 volt neutral from service panel for air handler fan motor
Terminal 5 - 115 volt neutral to air handler fan motor
Terminal 6 - 115 load voltage to air handler fan motor
System Ground Lug above Terminal Boards

*** Both the condenser and evaporator power circuits are run to the condenser. Two disconnects are required at the condenser. See condenser specifications for proper fuse size**.

Terminal Board 2

Terminal C - 24 VAC common
Terminal W1 - Heat, if used
Terminal G - Fan
Terminal A - Humidification
Terminal Y1 - Cool
Terminal Y2 - Dehumidification, if used
Terminal R - 24 VAC Power
HTR - 24 VAC to duct heater, if used
HUM - 24 VAC to humidifier, if used

Electrical Requirements

1. Check the Tecumseh rating plate for proper voltage, maximum fuse, and wire size.

2. Line voltage from service panel for both the condenser **and** evaporator to be **run to the condenser.** The condenser circuit connects to terminals #1 and #2 on TB1 in the condenser control panel.

3. Air handler requires a 115-volt 15-amp circuit to the condenser. The air handler line voltage will connect to terminals 3 and 4 on TB1 in the condenser control panel. The air handler fan motor will receive load voltage from terminals 5 and 6 on TB1 in the condenser control panel.

4. The humidifier requires a dedicated 115-volt receptacle.

5. Check the duct heater for proper voltage, maximum fuse, and wire size.

6. On WZAH4600 systems, the humidifier and duct heater may be powered from the same 115 volt circuit if local codes allow.

7. Terminal Board 2 is for low voltage control wiring for the thermostat, humidifier and duct heater.

8. All equipment must be installed according to the National Electric Code and all local codes and ordnances.

Field Wiring for WZAH9500

Condensing Unit Control Panel

Terminal Board 1

Terminal 1*- 230 line voltage from service panel for condenser
Terminal 3*- 230 line voltage from service panel for condenser
Terminal 5*- 115 line voltage from service panel for air handler fan motor
Terminal 6* -115 volt neutral from service panel for air handler fan motor
Terminal 7 - 115 volt neutral to air handler fan motor
Terminal 8 - 115 load voltage to air handler fan motor
System Ground Lug above Terminal Boards

*** Both the condenser and evaporator power circuits are run to the condenser. Two disconnects are required at the condenser. See condenser specifications for proper fuse size**.

Terminal Board 2

Terminal C - 24 VAC common
Terminal W1 - Heat, if used
Terminal G - Fan
Terminal A - Humidification
Terminal Y1 - Cool
Terminal Y2 - Dehumidification, if used
Terminal R - 24 VAC Power
HTR - 24 VAC to duct heater, if used
HUM - 24 VAC to humidifier, if used

Electrical Requirements

1. Check the Tecumseh rating plate for proper voltage, maximum fuse, and wire size.

2. Line voltage from service panel for both the condenser **and** evaporator to be **run to the condenser.** The condenser circuit connects to terminals #1 and #3 on TB1 in the condenser control panel.

3. Air handler requires a 115-volt 15-amp circuit to the condenser. The air handler line voltage will connect to terminals 5 and 6 on TB1 in the condenser control panel. The air handler fan motor will receive load voltage from terminals 7 and 8 on TB1 in the condenser control panel.

4. The humidifier requires a dedicated 115-volt receptacle.

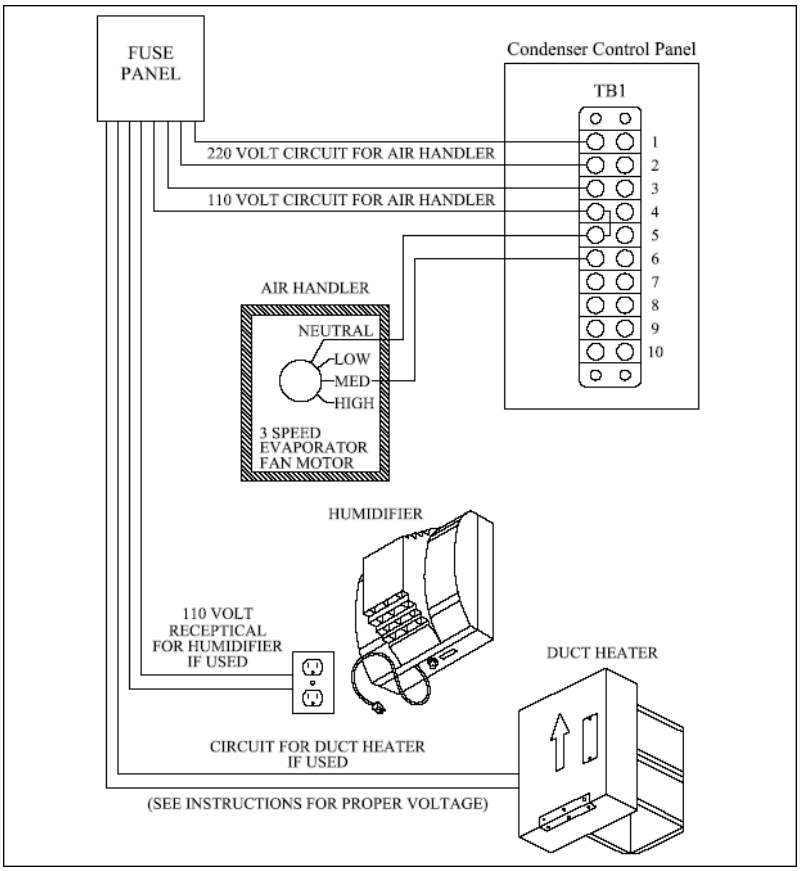
5. Check the duct heater for proper voltage, maximum fuse, and wire size.

6. On WZAH4600 systems, the humidifier and duct heater may be powered from the same 115-volt circuit if local codes allow.

7. Terminal Board 2 is low for voltage control wiring for the thermostat, humidifier and duct heater.

8. All equipment must be installed according to the National Electric Code and all local codes and ordnances.

Line Voltage for WZAH4600, WZAH5800, and WZAH8300



1. Run a 230-volt circuit from the service panel to terminals #1 and #2 on TB1 in the condenser control panel. Check the Tecumseh rating plate or page 25 for the proper fuse and wire size. Attach the ground wire to the lug in the upper left hand corner of the condenser control panel.

2. Run a 115-volt, 15-amp circuit from the service panel to terminals 3 and 4 on TB1 in the condenser control panel. Terminal 4 is for the neutral wire.

3. Two disconnects may be required at the condenser. Check local codes.

4. Load voltage for the air handler will come from terminals 5 and 6 on TB1 in the condenser control panel. Terminal 5 is for the neutral wire on the evaporator fan motor. Connect the hot wire to the medium speed tap on the evaporator fan motor.

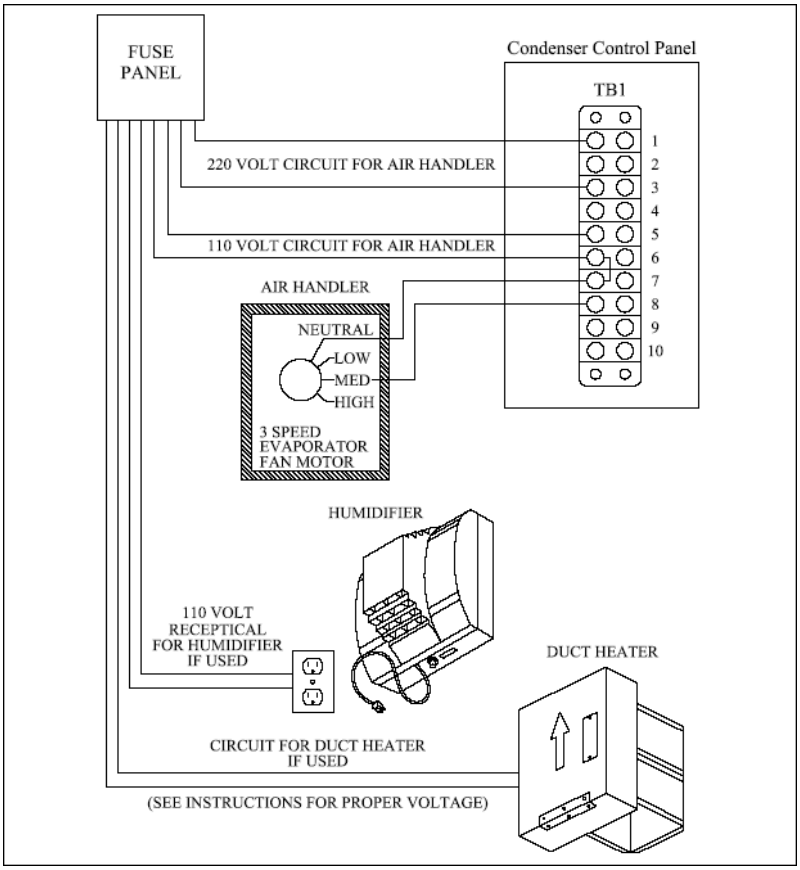
5. The humidifier, if used, requires a dedicated 115 volt receptacle.

6. The duct heater, if used, requires a dedicated circuit. See specifications for proper voltage and fuse size. On WZAH4600 system the humidifier and duct heater may be powered from the same 115 volt circuit if local codes allow.

7. Each unit must be installed in accordance with the National Electric code. Check local codes for additional precautions and ordnances to installation.

Note: A minimum of two (2) power circuits is required for a cooling only air handler system. 1-230 volt circuit for the condenser and 1-115 volt circuit for the air handler are necessary. More circuits are required for units with humidification and dehumidification. See instructions for proper voltage and fuse size.

Line Voltage for WZAH9500



1. Run a 230-volt circuit from the service panel to terminals #1 and #3 on TB1 in the condenser control panel. Check the Tecumseh rating plate or page 25 for the proper fuse and wire size. Attach the ground wire to the lug in the upper left hand corner of the condenser control panel.

2. Run a 115-volt, 15-amp circuit from the service panel to terminals 5 and 6 on TB1 in the condenser control panel. Terminal 6 is for the neutral wire.

3. Two disconnects may be required at the condenser. Check local codes.

4. Load voltage for the air handler will come from terminals 7 and 8 on TB1 in the condenser control panel. Terminal 7 is for the neutral wire on the evaporator fan motor. Connect the hot wire to the medium speed tap on the evaporator fan motor.

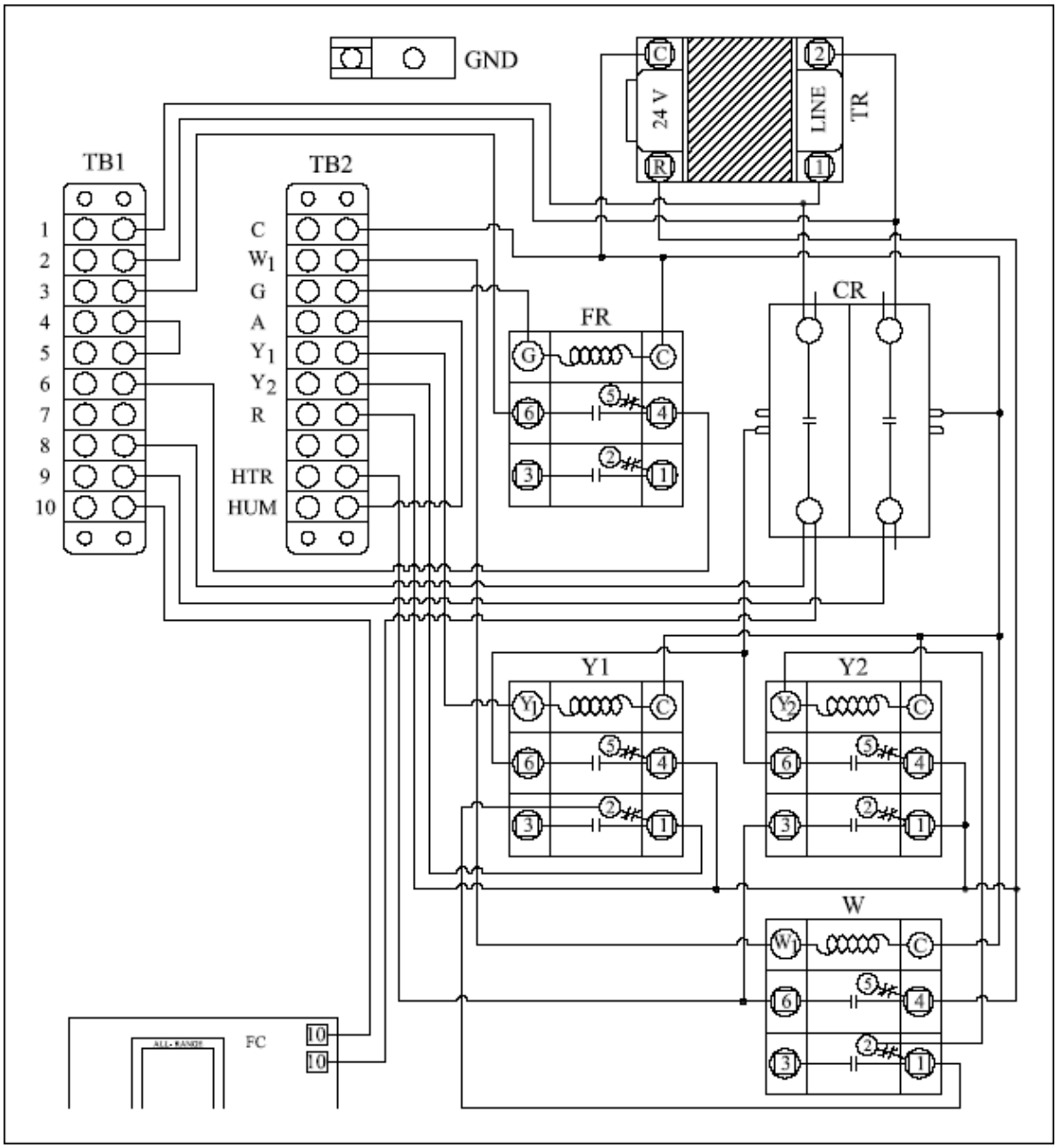
5. The humidifier, if used, requires a dedicated 115 volt receptacle.

6. The duct heater for the WZAH9500, if used, requires a 230 volt 20 amp dedicated circuit.

7. Each unit must be installed in accordance with the National Electric code. Check local codes for additional precautions and ordnances to installation.

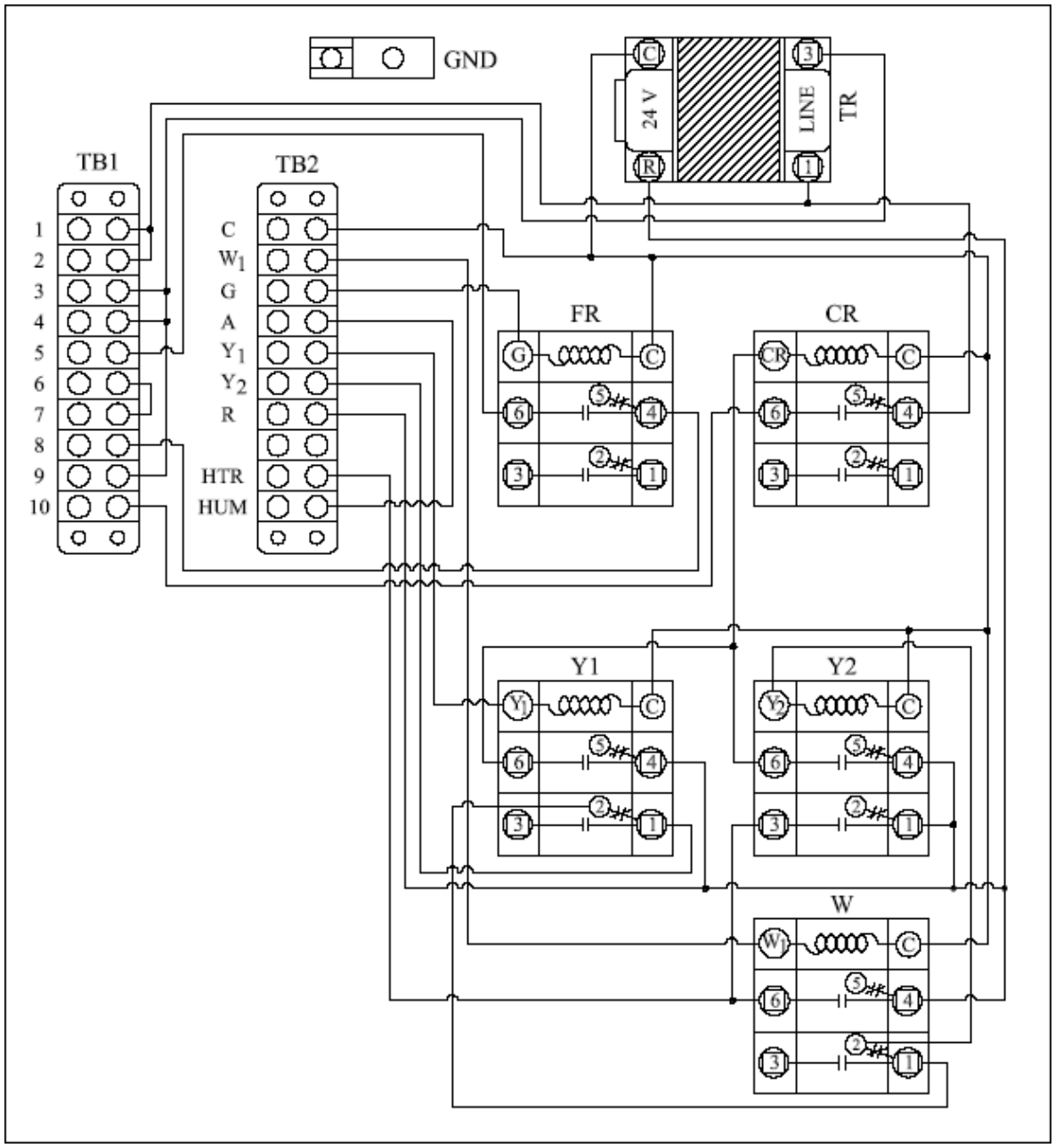
Note: A minimum of two (2) power circuits is required for a cooling only air handler system. 1-230 volt circuit for the condenser and 1-115 volt circuit for the air handler are necessary. Additional, dedicated circuits are required for units with humidification and dehumidification.

WZAH4600, WZAH5800, and WZAH8300 Condenser Control Panel



	Legend		TB1		TB2
CR	Compressor relay	**1**	230V line voltage from service panel	**C**	24 VAC common
FR	Evaporator fan relay	**2**	230V line voltage from service panel	**W1**	Heat
FC	Cond. fan cycle control	**3**	115V line voltage from service panel	**G**	Fan
GND	Ground	**4**	115V neutral from service panel	**A**	Humidification
TB1	Terminal Board 1	**5**	115V neutral to evaporator	**Y1**	Cool
TB2	Terminal Board 2	**6**	115V load voltage to evaporator	**Y2**	Dehumidification
R	Transformer	**7**		**R**	24 VAC power
W	Heat relay	**8**	Compressor		
Y1	Cooling relay	**9**	Compressor	**HTR**	Duct Heater
Y2	Dehumidification relay	**10**	Condenser fan motor	**HUM**	Humidifier

WZAH9500 Condenser Control Panel



	Legend		TB1		TB2
CR	Compressor relay	**1**	230V line voltage from service panel	**C**	24 VAC common
FR	Evaporator fan relay	**2**		**W1**	Heat
FC	Cond. fan cycle control	**3**	230V line voltage from service panel	**G**	Fan
GND	Ground	**4**		**A**	Humidification
TB1	Terminal Board 1	**5**	115V line voltage from service panel	**Y1**	Cool
TB2	Terminal Board 2	**6**	115V neutral from service panel	**Y2**	Dehumidification
R	Transformer	**7**	115V neutral to evaporator	**R**	24 VAC power
W	Heat relay	**8**	115V load voltage to evaporator		
Y1	Cooling relay	**9**		**HTR**	Duct Heater
Y2	Dehumidification relay	**10**		**HUM**	Humidifier

Thermostat Installation

Mount the WineZone thermostat in the cellar approximately 5 feet above the floor in an area of good air circulation of average cellar temperature. Do not install it where it will be affected by the evaporator supply air, lighting, wall switches, concealed pipes or chimneys, or warm exterior walls, sunlight, etc. Use quality 18-gauge thermostat wire. Read and follow the manufacturer's installation instructions. Carefully read and understand the instructions supplied with the thermostat before attempting to operate or install this thermostat. The following thermostat installation instructions are a summary of the install and set up for using this thermostat with a WineZone system. For detailed installation and trouble shooting instructions please refer to the manufacturer's instructions included with the thermostat.

Install the Wallplate

1. Position the wallplate on the wall with the directional arrow pointing up and the terminal blocks facing outward.
2. Pull equipment wires through the wallplate wiring passage.
3. Use a level to determine the best horizontal wallplate mounting position.
4. Mark positions of screw holes (two at minimum) with a pencil and remove wallplate.
5. Drill holes at pencil-marked locations (3/16" for drywall, 7/32" for plaster).
6. Insert the wall anchors in the holes, tapping them into place.
7. Mount the wallplate onto the wall and insert screws through the mounting holes. Assure that all loose wires come through the center opening of the wallplate.
8. Cap off any unused wire and terminate properly according to local building codes.

Attach Wires to Thermostat Wallplate

1. Select the terminal designations that correspond to the system type. Follow the table below:

   Warning: Disconnect power before beginning installation.

   Caution: Copper wire only. Insulate or wire-nut all unused leads.

   Use care to avoid electrostatic discharge to thermostat.

   Note 1: Do not connect wire to A if a humidifier is not installed.

   Note 2: Do not connect wire to Y2 or W1 if a duct heater is not installed.

Conventional Terminal Letters	
C	Unswitched side, 24 VAC
W1	Stage 1 Heat
W2	Not used
G	Fan
A	Humidity
E	Not used
Y1	Stage 1 Cool
Y2	Dehumidify
RH	Power for Heating Switched Side, 24 VAC
RC	Power for Cooling, Switched Side 24 VAC
SC	Sensor Common, if used
S1	Indoor remote sensor, if used
S2	Not used
S3	Not used

2. Using a small flathead screwdriver, loosen the screws on the terminal blocks that correspond to the system type.

3. Strip the insulation of each wire at a proper length (about 1/4")

4. On the wallplate, insert wires into the terminal blocks that correspond to the system type, then re-tighten each screw for each terminal.

   Note: Do not over-tighten or use excessive force.

5. Assure that no uninsulated wires are exposed: Cap off and place a wire nut on any unused wires. Assure that the attached wires fit into the cavity on the back of the thermostat.

Connect Power to the Thermostat Wallplate

Power Options

The T12000 Series will operate on 24 VAC power and/or two AA batteries (both are recommended). Using 24 VAC with AA battery back up is highly recommended.

Wiring 24 VAC Common

Single-Transformer system. Connect the common side of the transformer to the "C" screw terminal of the thermostat wallplate. Assure that the metal jumper connects "RC" and "RH." Connect power side to the RC/RH and assure that the jumper remains in place

Install Batteries and Remove Tab

1. Insert two AA batteries (included) into the back compartment of the thermostat.
2. Remove the plastic insulator tab from the back side of the thermostat. IMPORTANT: The insulator tab must be removed before setting the real-time clock.

Set the Clock, Month, Day

When power is first applied to the thermostat, it will activate the clock display. It is recommended that the time and day are entered before performing advanced configuration. On the touchscreen area, press the Clock key and use the up and down arrows to set the hour mode, clock hour, minutes, year, month, and numerical date. Press Done to finish.

Verify System Setting is Turned Off

1. Press any part of the touchscreen area to enter the Home Display.
2. Press System to enter system mode
3. Press System repeatedly until "Off" flashes, then press Done.
4. Press Fan key to enter fan mode.
5. Press Fan repeatedly until "Auto" flashes, then press Done.

Perform Advanced Configuration

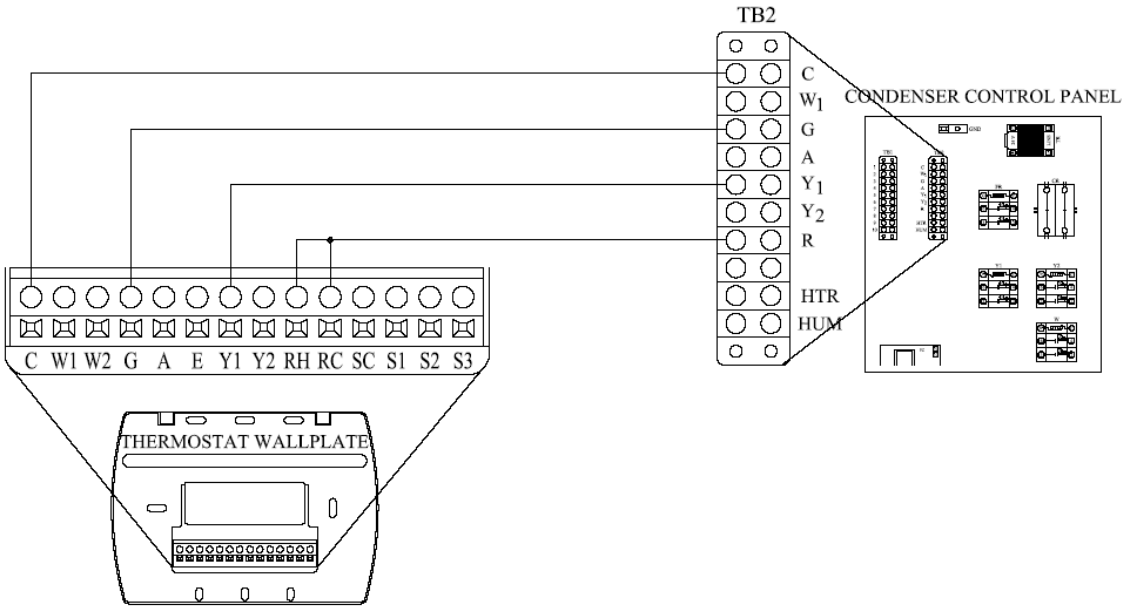
Perform advanced configuration before attaching the thermostat to the wallplate. Advanced configuration is done by simultaneously pressing the lower left and lower right touchscreen area for about 5 seconds, which gives user access to Service Menus. Use the following table to set each desired Service Menu item. Advanced configuration allows the user to configure the thermostat to match the system type and to customize several thermostat settings. System type for WineZone systems is 1 Stage Cool/1 Stage Electric Heat. Changed values are automatically retained. Press Done only if you wish to exit Advanced Configuration. Service menu availability is dependent upon system type and upon system configuration.

Menu	Feature	Options	Default	Recommended Setting
100	Schedule Format	0-3	1	0= Nonprogrammable
101	Daylight Saving Time	0,1	0	1= Enabled (2007 U.S. Format)
110	System Type	1-13	1	1= 1 Heat/1 Cool conventional
120	Fan Control (heating)	0,1	0	1= Electric furnace (thermostat controls heating fan)
150	Backlight	0,1	0	0= Backlight temporarily on
170	Remote Sensor	0-5	0	0= No sensor 1= Indoor sensor (if used)
180	Heat Pump Compressor Lockout	0-45	0	0= No sensor
190	Heat Pump Auxiliary Lockout	0-60	0	0= None
230	Furnace Filter Change Reminder	0; 30; 60; 90; 120; 365	0	0= Off

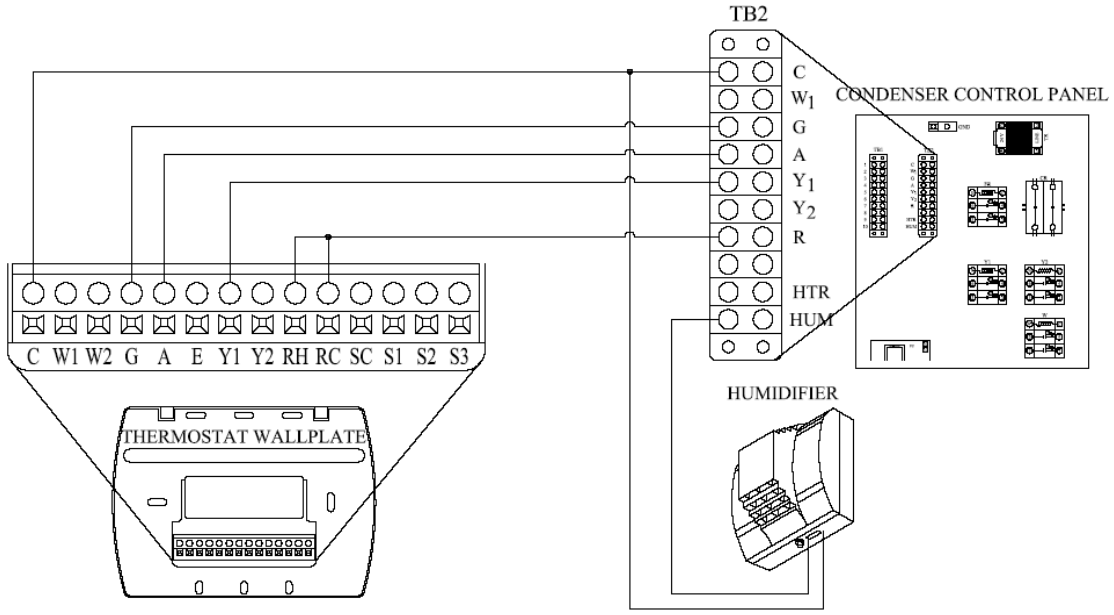
240	Number of Program Periods	2; 4	4	4= 4 Events per day
250	Clock Format	12 or 24	12	12= 12-hour clock mode
260	Temperature Format F or C	0,1	1	1= Fahrenheit
270	Fan Off Delay Heat	0-99	0	20= 20 Seconds
280	Fan Off Delay Cool	0-99	0	20= 20 Seconds
290	Range Low	50-90	50	50, Choose the lowest selectable setpoint
300	Range High	50-90	90	68, choose the highest selectable setpoint
310	Setback Low	Off, 50-82	55	0= Off
320	Setback High	Off, 58-90	90	0= Off
330	Zone Temp Offset	+/-9	0	0= No offset
340	Keypad Lockout	0-3	0	0= No Key pad lockout
341	Enable Pin Access	0,1	0	0= Disable
350	Fan Mode Enable	1-3	3	3= On or Auto: allows user to select
360	System Mode Enable	0-3	1	1= Off, Heat, Cool. Auto
370	Economizer/Outside Air Damper	0-4	0	0= Off
380	Minimum Deadband Adjustment	3-10	3	3= Selects change over deadband value between heating and cooling modes to prevent short cycling
390	Pre-Occupancy Purge	0-3	0	0= Select to energize fan for selected number of hours (0-3) prior to all occupied events.
395	Maximum Override Time Limit	0, 1-4	3	3= 3 Hours
400	Cycles Per Hour Cooling Stage 1	0-6	3	3= Defines number of cycles per hour for cooling
420	Cycles Per Hour Heating Stage 1	0-12	5	5= Defines number of cycles per hour for heating
460	Heat Recovery Rate	0-18	5	0= Disable ramp recovery
470	Cool Recovery Rate	0-18	5	0= Disable ramp recovery
480	Minimum Off Time	1-10	4	4= 4 Minutes off time for both heat and cool output
490	Humidity Control Enable *****	0-3	0	Selects how humidity will be controlled. When dehumidify is enabled the Y2 terminal becomes dehumidify. Note: If option 3 is selected, Service Menu 491 becomes available. 0= Disable (Humidity not displayed on touchscreen). 1= Dehumidify 2= Humidify 3= Dehumidify and Humidify
491	Humidity Deadband	10-50	10	10= 10% RH deadband between humidify and dehumidify
500	Programmable/Intermittent Fan	0-2	0	0= Disable
510	Power Harvesting	0-3	0	0= No power harvesting available
520	Default Display Icons	0-4	0	0= Time, Temp, SP
530	Revision	-	-	Not Adjustable
540	Factory Default Reset	0,1	0	0=Disable
600	System Test Main Output (Cool)	0-2	0	0= Disable
610	System Test Main Output (Heat)	0-3	0	0= Disable
620	System Test Fan Output	0,1	0	0= Disable
630	System Test Emergency Output	0,1	0	0= Disable emergency output
640	System Test Economizer	0,1	0	0= Disable economizer output

***IMPORTANT! Some humidity control must be selected to view the humidity on the thermostat. If no humidity options are installed, DO NOT connect wires to terminals A or Y2. Only connect wire to A if a humidifier is installed. Only connect wire to Y2 if a duct heater is installed.**

Low Voltage Wiring, Cooling Only

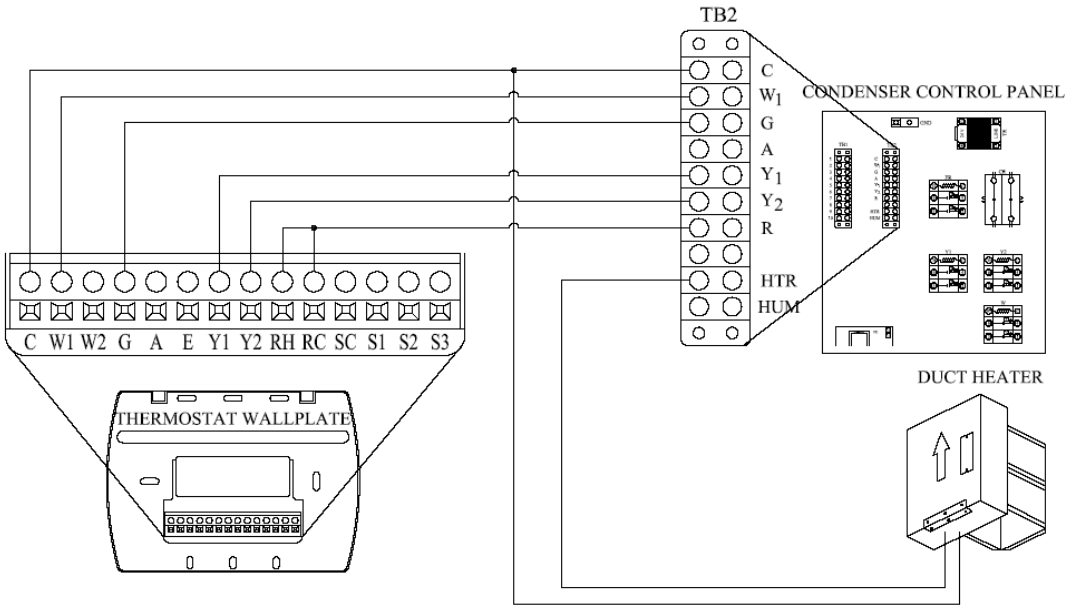


Low Voltage Wiring, Cooling and Humidification

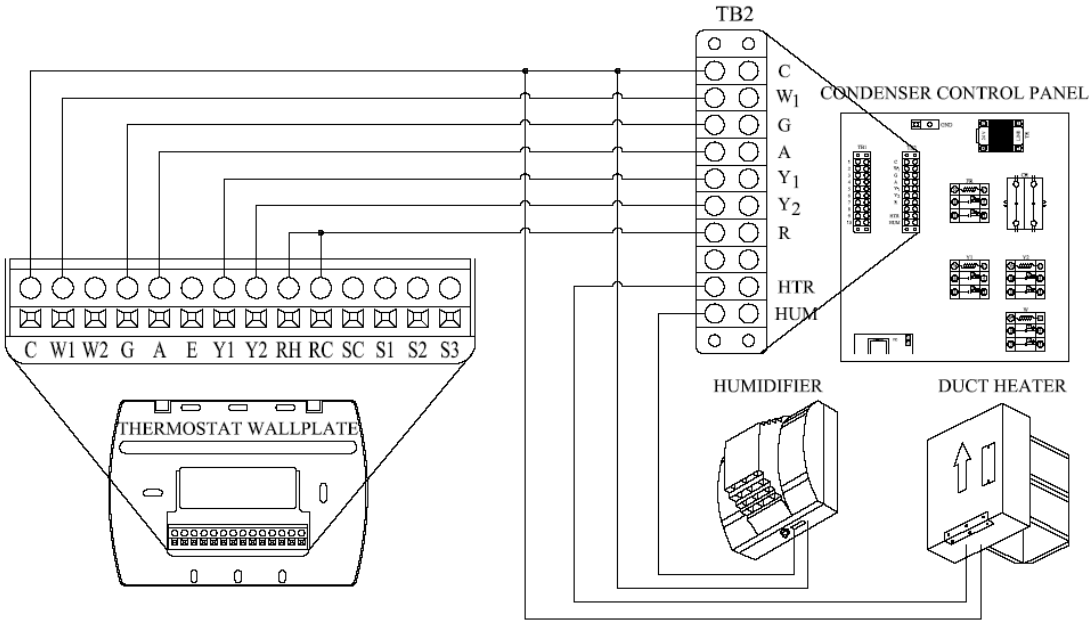


Caution: Ensure the power is off before attempting to make wiring connections. Failure to due so may result in equipment damage and/or bodily injury.

Low Voltage Wiring, Cooling, Dehumidification, and Heat



Low Voltage Wiring, Cooling, Humidification, Dehumidification, and Heat



Caution: Ensure the power is off before attempting to make wiring connections. Failure to due so may result in equipment damage and/or bodily injury.

Mount the T12000 Onto the Wallplate

1. Position the thermostat slightly above the mounted wallplate, then secure the hooks on the backside of the thermostat to hinge pockets on the wallplate. **Note: The top of the thermostat should slip into the hinge pockets easily. Do not use excessive force.**
2. Align the pins on the back side of the thermostat with the terminal blocks on the wallplate.
3. Gently bring down the thermostat onto the wallplate so the pins on the back of the thermostat fit into the terminal blocks on the wallplate.

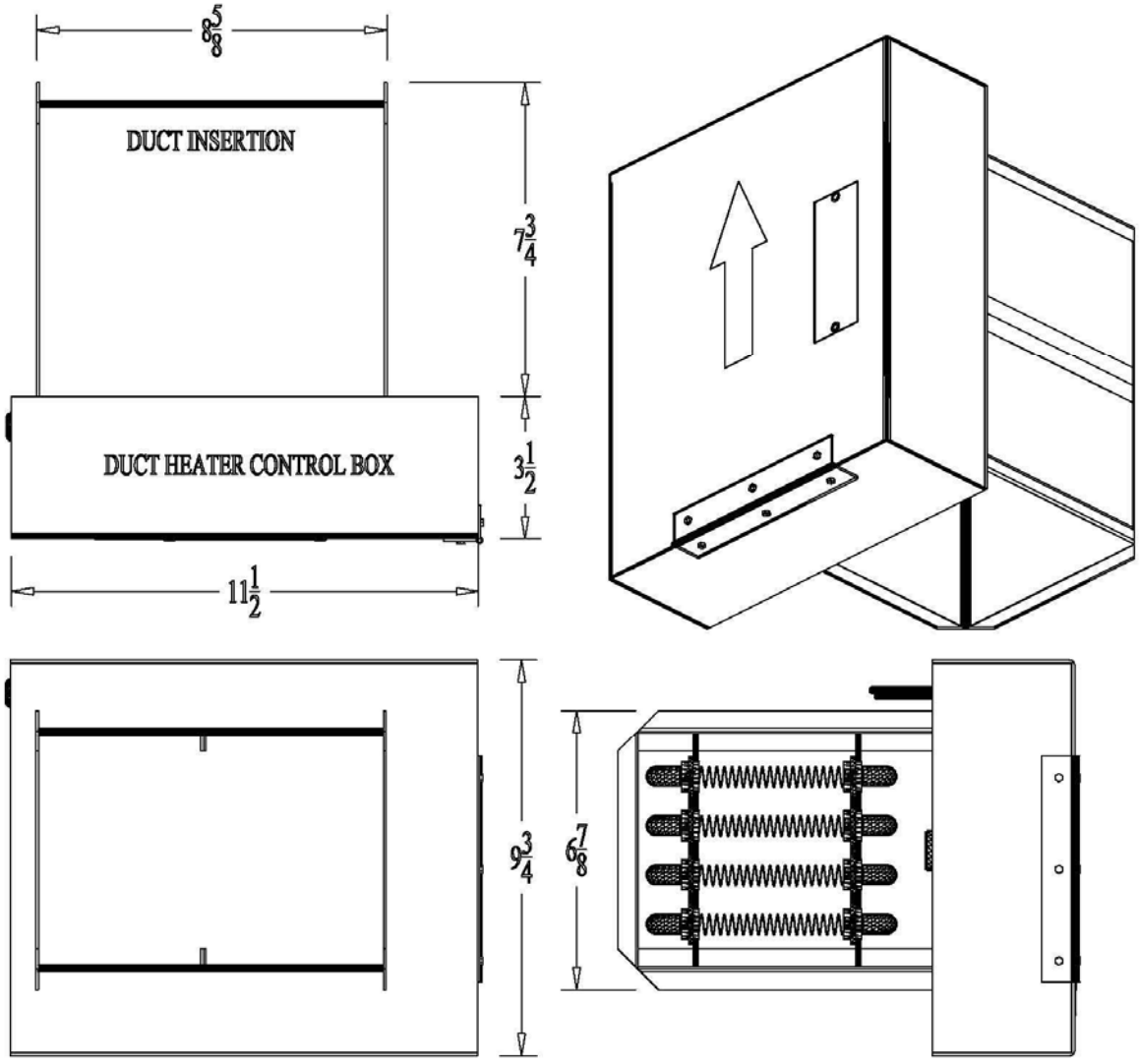
Verify Thermostat Operation

Press the desired button until the preferred selection blinks. Press Done to select and save the selection.

1. Set the system to Off. Nothing should operate, including the Fan.
2. Set the fan to Auto
3. Set the system to On. Press the up and down arrows to adjust the temperature. Adjust the temperature setpoint above the cellar temperature displayed on the touchscreen.
4. Set the Fan to On. The indoor fan should come on.
5. Set the Fan to Auto. The indoor fan should go off.
6. Adjust the temperature setpoint below the cellar temperature displayed on the touchscreen. The condenser and indoor fan should come on.
7. If a humidifier is installed, adjust the Humidity setpoint above the humidity displayed on the touchscreen. The humidifier should come on. Set the humidity setpoint below the humidity displayed on the touchscreen. The humidifier should go off.
8. If a duct heater is installed, adjust the Dehumidify setpoint below the humidity displayed on the touchscreen and verify the duct heater **does not** come on. The duct heater should never come on during a call for cooling. Adjust the Dehumidify setpoint above the humidity displayed on the touchscreen.
9. Adjust the temperature setpoint above the cellar temperature displayed on the touchscreen. The condenser and indoor fan should go off. Nothing should be running.
10. Set the Humidity setpoint above the humidity displayed on the touchscreen. The humidifier and air handler should come on.
11. Adjust the Dehumidify setpoint below the humidity displayed on the touchscreen. The humidifier should go off. The condenser, duct heater and indoor fan should come on.
12. Set the temperature to 55°, the Humidity to 60% and Dehumidify to 70%.
13. Repeat these steps in the Heat and Auto System modes as necessary. The condenser should never come on during a call for heat. The duct heater should never come on during a call for cooling.

You must fill out the enclosed diagnostic sheet in order to activate the warranty for this unit. These instructions and the warranty have Diagnostic Sheets attached. Additional copies of the diagnostic sheet can be found at www.winecellarinnovations.com

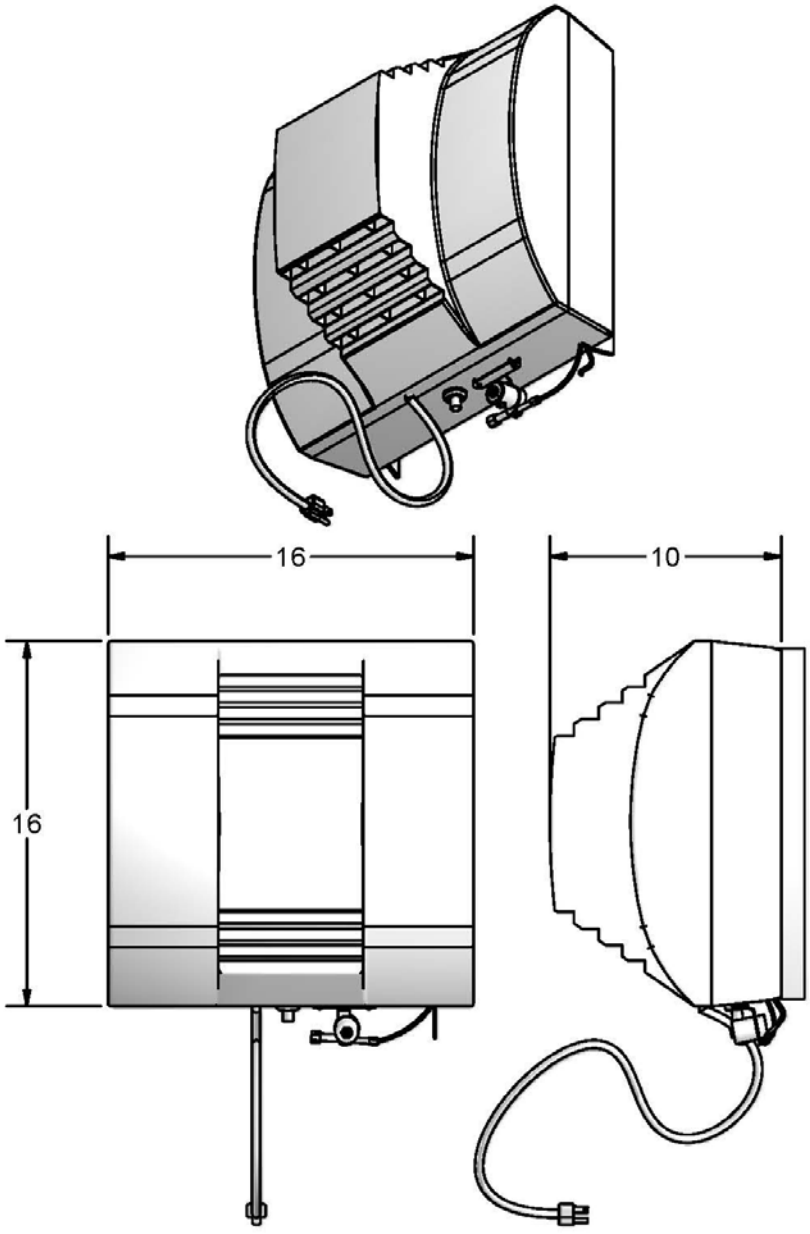
Reheat Element for Air Handler Systems



Unit	Output in Kw	Amps	Power Supply	Max. Fuse
WZAH4600	1.25	10.8	115/60/1	15
WZAH5800	1.5	6.2	240/60/1	15
WZAH8300	2.25	9.4	240/60/1	15
WZAH9500	2.75	11.4	240/60/1	20

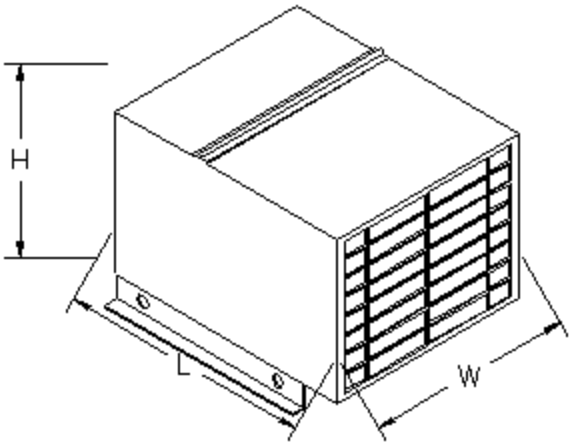
1. At least 4’ downstream from air source or elbow. If closer than 4’, it may require turning vanes, baffles, or other devices to ensure an even distribution of air over the face of the heater.
2. At least 2’ before an elbow or may require devices as in #1.
3. Transitions to and from a duct heater should be limited to 20% of the duct area per linear foot.
4. Always mount in the side of a vertical or horizontal duct. Never mount from top or bottom of a horizontal duct.
5. All duct materials must be suitable for 250° F operation
6. Low voltage connects to terminals HTR and C on TB2 in the condenser control panel.
7. Thoroughly seal with silicon to supply duct.
8. Follow manufacturer’s instructions.

Humidifier for Air Handler Systems



1. Requires a dedicated 115 volt receptacle
2. Mount and thoroughly seal on metal duct only, preferably the return air duct
3. Recommend use with hot water supply
4. Low voltage connects to terminals HUM and C on TB2 in the condenser control panel.
5. Aprilaire humidistat supplied with unit is not used.
6. Requires trap in drain line upstream of air gap. ½" ID vinyl tubing recommended.
7. Follow manufacturer's instructions.

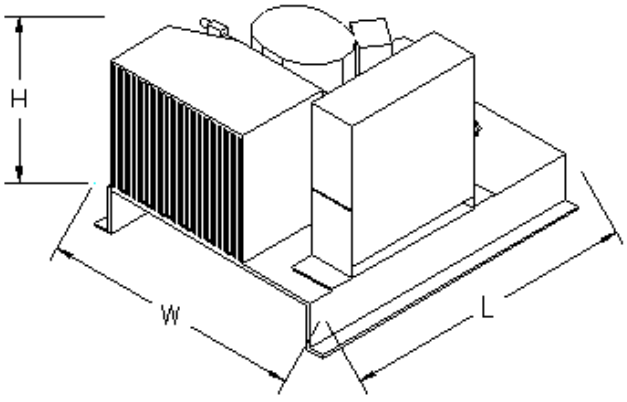
Condenser Specifications



Outdoor Condenser

Field supplied reducers required. **You must install a line set according to Table 1. Never** install a line set larger in diameter than the condenser fitting size.
Minimum of 12" clearance required on each side of unit. Minimum of 36" clearance required above unit.

Model	dB	Length In inches	Width in inches	Height in inches	Liquid Line Fitting	Suction Line Fitting	Wt. In lbs	Power Supply	Min Circuit Amps	Max Fuse
WZAH4600	56	27	20	20	1/4 MF	1/2 MF	114	208-230/60/1	6.1	15
WZAH5800	55	27	24.5	22	3/8 MF	1/2 MF	135	208-230/60/1	8.0	15
WZAH8300	58	27	24.5	22	3/8 MF	7/8 SW	183	208-230/60/1	13.4	20
WZAH9500	59	29.5	37	27.5	3/8 MF	7/8 SW	266	208-230/60/1	17.4	25

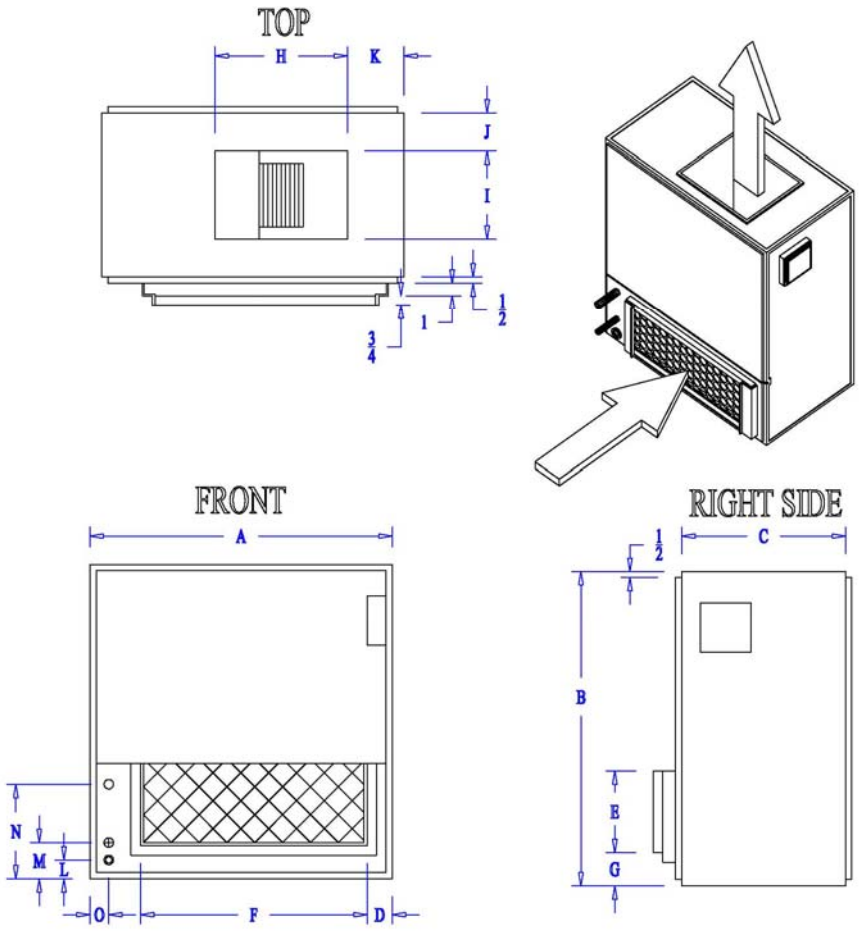


Indoor Condenser

Field supplied reducers required. **You must install a line set according to Table 1. Never** install a line set larger in diameter than the condenser fitting size.
Minimum of 12" clearance required on each side of unit.

Model	dB	Length in inches	Width in inches	Height in inches	Liquid Line Fitting	Suction Line	Wt. in lbs	Power Supply	Min Circuit Amps	Max Fuse
WZAH4600	56	25	20	16.75	1/4 MF	1/2 MF	103	208-230/60/1	6.1	15
WZAH5800	55	27	24.5	17	3/8 MF	1/2 MF	115	208-230/60/1	8.0	15
WZAH8300	58	27	24.5	19.75	3/8 MF	7/8 SW	164	208-230/60/1	13.4	20
WZAH9500	59	29.5	37	23	3/8 MF	7/8 SW	213	208-230/60/1	17.4	25

Vertical Air Handler



Cabinet Dimensions

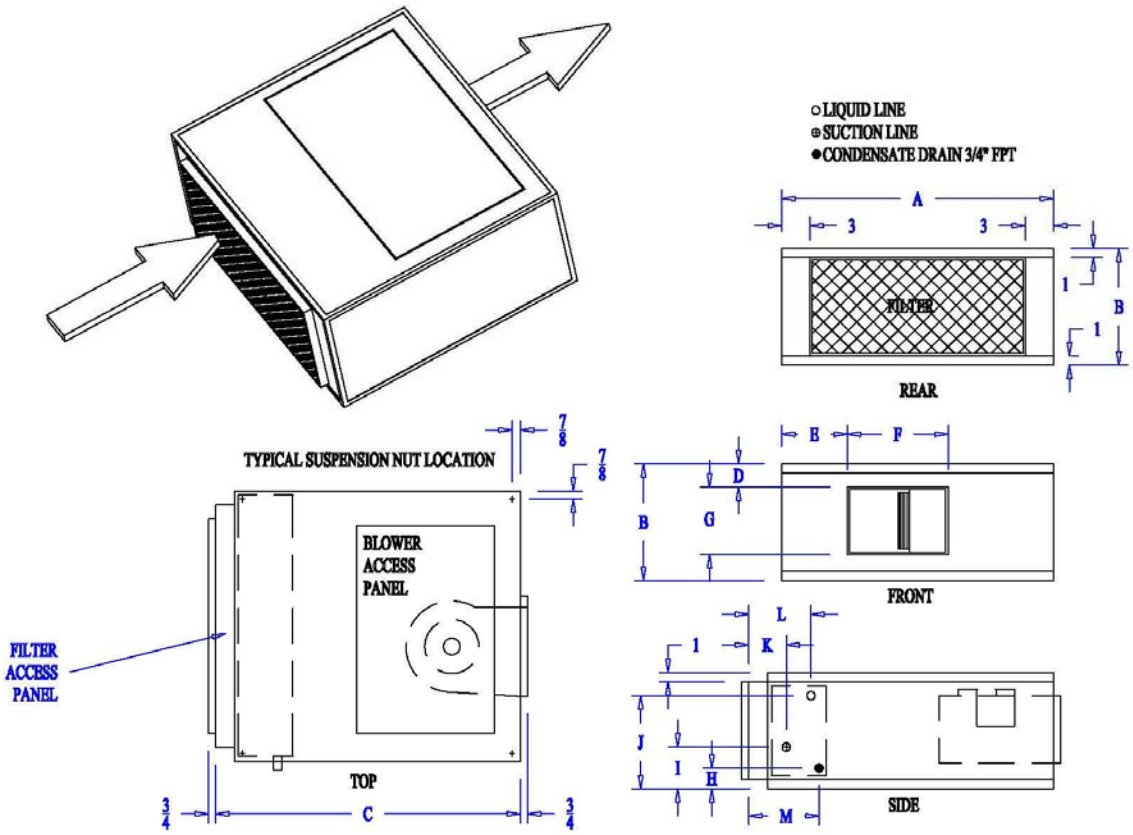
System	Air Handler Model #	Cabinet			Return Opening				Blower Opening			
		A	B	C	D	E	F	G	H	I	J	K
WZAH4600	DVA04JAS	24	25	13	2	6.5	18	2.5	10.5	7	3	4.5
WZAH5800	DVA06JAS	24	29	13	2	10	18	2.5	10.5	8.5	3	4.5
WZAH8300	DVA08JAS	24	33	13	2	14.25	18	2.75	10.5	8.5	3	4.5
WZAH9500	DVA10JAS	29	34.75	14	2	14.25	23	2.75	11.75	8.5	2.75	5.5

Vertical Air Handler Specifications

Air Handler Model #	Liquid Line OD Sweat	Suction Line OD Sweat	Drain Line	Shipping Weight	Power Supply	Motor HP//Amp	Max. Fuse Size	7/8 Filter Size
DVA04JAS	1/4	5/8	3/4 FPT	68 lbs	115/60/1	1/10//1.2	15	8 x 19.25
DVA06JAS	1/4	5/8	3/4 FPT	75 lbs	115/60/1	1/6//3.7	15	11.5 x 19.25
DVA08JAS	3/8	5/8	3/4 FPT	84 lbs	115/60/1	1/4//3.7	15	15.5 x 19.5
DVA10JAS	3/8	5/8	3/4 FPT	103 lbs	115/60/1	1/3//4.9	15	15.5 x 24

Field supplied reducers required. **You must install a line set according to Table 1. Never** install a line set larger in diameter than the condenser fitting size. Unit access panel is on the front of the unit over the return opening. The back of the unit is removable for access too. **1" clearance required on all sides.**

Horizontal Air Handler



Cabinet Dimensions

System	Air Handler Model #	Cabinet			Blower Opening				Return Opening
		A	B	C	D	E	F	G	
WZAH4600	DHB04JAR	29	12.5	32.5	2.5	7	10.75	7.25	23 x 10.5
WZAH5800	DHB06JAR	25	14.5	32.5	3	5	10.75	8.75	19 x 12.5
WZAH8300	DHB08JAR	31.5	14.5	32.5	3	8.25	10.75	8.75	25.5 x 12.5
WZAH9500	DHB10JAR	38	14.5	34	3	10.25	11.75	8.75	32 x 12.5

Horizontal Air Handler Specifications

Air Handler Model #	Liquid Line OD Sweat	Suction Line OD Sweat	Drain Line	Shipping Weight	Power Supply	Motor HP//Amp	Max. Fuse Size	7/8 Filter Size
DHB04JAR	1/4	5/8	3/4 FPT	102 lbs	115/60/1	1/10//1.2	15	11.75 x 24.4
DHB06JAR	1/4	5/8	3/4 FPT	103 lbs	115/60/1	1/6//3.7	15	14 x 20.75
DHB08JAR	3/8	5/8	3/4 FPT	125 lbs	115/60/1	1/4//3.7	15	13.5 x 27
DHB10JAR	3/8	5/4	3/4 FPT	140 lbs	115/60/1	1/3//4.9	15	13.4 x 33.75

Field supplied reducers required. **You must install a line set according to Table 1. Never** install a line set larger in diameter than the condenser fitting size. Installer field configures unit to top or bottom access and left or right coil connections. **1" clearance required on all sides.**

DVX CFM vs. External Static Pressure For Vertical Air Handlers						
Model	**Fan Speed**	**.10 ESP**	**.20 ESP**	**.30 ESP**	**.40 ESP**	**.50 ESP**
DVA04JAS	High	515	485	455	415	370
	Medium	405	385	355	320	275
	Low	280	265	245	225	190
DVA06JAS	High	755	725	690	650	605
	Medium	585	570	550	530	495
	Low	490	480	470	225	430
DVA08JAS	High	950	900	930	760	710
	Medium	865	815	760	710	665
	Low	700	685	665	640	600
DVA10JAS	High	1270	1215	1170	1120	1070
	Medium	1100	1060	1030	1010	970
	Low	930	905	890	880	860

DHX CFM vs. External Static Pressure For Horizontal Air Handlers						
Model	**Fan Speed**	**.10 ESP**	**.20 ESP**	**.30 ESP**	**.40 ESP**	**.50 ESP**
DHB04JAR	High	590	570	555	525	490
	Medium	420	410	395	380	350
	Low	315	300	280	255	225
DHB06JAR	High	805	770	720	665	610
	Medium	615	610	585	550	510
	Low	520	515	500	485	455
DHB08JAR	High	1040	1000	950	900	845
	Medium	875	860	835	795	750
	Low	670	665	660	655	635
DHB10JAR	High	1290	1245	1200	1155	1110
	Medium	1105	1080	1060	1035	1000
	Low	930	915	895	885	860

The shaded areas in the tables above do not apply. Calculate supply duct sizing at .08" ESP and return air duct sizing at .05" ESP. .10 ESP is the absolute minimum for supply duct sizing.

You must fill out the enclosed diagnostic sheet in order to activate the warranty for this unit. These instructions and the warranty have Diagnostic Sheets attached. Additional copies of the diagnostic sheet can be found at www.winecellarinnovations.com

Water-Cooled Condensing Units

Water leaving the condenser should not exceed 95°F. This prevents mineral deposits and early condenser replacement. For normal operation, the water valve must be set to maintain a head pressure no higher than 265 PSIG. If the supply water pressure is above 80 PSIG a pressure reducer must be installed ahead of the condenser for the water valve to function properly. Installation with water towers or evaporative coolers and closed loop systems should have bleed valves and sediment traps to prevent fouling the condenser with suspended matter. Do not connect water-cooled condensers to potable or city water. All pumps, unions, shut off valves and other plumbing fittings are field supplied. Check all applicable local codes for proper and safe plumbing piping and connection. All water-cooled condensers are indoor units. Do not install where freezing temperatures may occur. All condensers have a 3/8" NPT water valve inlet fitting and a 3/8" minimum supply pipe size.

Model	Condenser	Length in inches	Width in inches	Height in inches	Liquid Line Fitting	Suction Line Fitting	Line Set Size	Wt.	Power Supply	Water Usage GPM	Cond. Coil Pressure Drop PSIG	Min Circuit Amps	Max. Fuse
WCC 4600	AKA9457 EXDXW	25	20	15	1/4 MF	1/2 MF	1/4 x 1/2	97	208-230/60/1	1	.85	5.4	15
WCC 5800	AKA9479 EXDXW	25	20	15	1/4 MF	1/2 MF	1/4 x 1/2	112	208-230/60/1	1.5	1.5	6.9	15
WCC 8300	AWG4520 EXNXW	27	20	19.75	1/4 MF	1/2 MF	3/8 x 1/2	124	208-230/60/1	2.9	5.7	8.6	20
WCC 9500	AWG4524 EXNXW	27	20	19.75	3/8 MF	1/2 MF	3/8 x 5/8	140	208-230/60/1	3.2	6.2	16.4	25

Field supplied reducers required. **You must install a line set according to Table 1. Never** install a line set larger in diameter than the condenser fitting size. **Minimum of 12" clearance required on each side of unit.**

All performance data based on 90°F condenser ambient, 65°F return gas, 75°F condenser inlet water and 210 PSIG head pressure.

UNIT LISTINGS

Tecumseh condensing units are UL Listed #SA2372

All ductless split wall mount evaporators are ETL Listed #9900387 and conform to UL STD 1995 and Certified to CAN/CSA STD C22.2 No. 236

All Heatcraft ductless split ceiling mount evaporators are UL Listed #SA1525 648L and conform to ANSI/NSF7

All air handlers are ETL and conform to ANSI/UL-1995 and are certified to CAN/CSA C22.2 No.236.

All outdoor covers are UL listed #2L13

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Installation Check List

1. Ensure the electric voltage, breaker, and wire size are correct for all electrical components.
2. Ensure the crankcase pressure regulator and access tee have been properly installed with 4-6 feet of suction line between the regulator and the compressor inlet. Make sure the arrow on the crankcase pressure regulator is pointing in the correct direction and the tee is installed on the upstream (evaporator) side of the regulator. This access tee will be used to measure the suction pressure at the evaporator.
3. Make sure the line set is less than 80 equivalent feet in length, the proper diameter and contains no oil traps.
4. Make sure the line set has passed a leak test and has been evacuated to 1000 microns.
5. Check the evaporator drain and make sure it is clear of obstructions, is trapped and has sufficient slope.

Quick Start Procedure

Caution: A qualified technician must install this refrigeration equipment. The following quick start procedure is not a substitute for proper installation techniques and procedures. Please read, understand, and follow all instructions in this manual prior to start up. Failure to install and adjust this refrigeration unit in compliance with the installation instructions will void the warranty.

1. Break the vacuum to a positive pressure of approximately 20 PSI. **DO NOT** start the unit for the first time with a full charge.
2. Apply power to the unit for 24 hours to allow the crankcase heater to warm the compressor.
3. Start the unit.
4. Slowly add charge to system through the compressor suction access port. **DO NOT** allow liquid refrigerant to directly enter the compressor. Use a metering device to prevent liquid from directly entering the compressor. Always charge blended refrigerants in liquid state.
5. Adjust the condenser fan cycle control to bring on the fan at 250 PSI and turn it off at 200 PSI.
6. Adjust the crankcase pressure regulator to maintain 30 to 35 PSI at the compressor.
7. Continue to add refrigerant until the sight glass is clear.
8. Allow the unit run and cool the room below 58º F. Adjust the crankcase pressure regulator as necessary to prevent the suction pressure in the evaporator from falling below 60 PSI. Measure the suction pressure at the evaporator at the suction line access port installed upstream of the crankcase pressure regulator.
9. Block a portion of the condenser coil to make the condenser fan run continuously and maintain 200 to 210 PSI head pressure if the condenser ambient is not high enough to make the condenser fan run continuously.
10. Compare the saturation temperature corresponding to the suction pressure at the evaporator to the sensible suction line temperature at the evaporator. Adjust the thermostatic expansion valve as necessary to ensure a superheat of 8º to 12º.
11. Adjust the crankcase pressure regulator to maintain approximately 65 PSI (R-22) or 56 PSI (NU-22B) in the evaporator when the return air temperature is between 53º and 58º F. The evaporator temperature must never fall below 32 º.
12. Add refrigerant to maintain approximately 10 º of sub-cooling.
13. Make sure the difference between the return air and supply air temperatures (ΔT) is 6º to 12º.
14. Check the discharge (hot gas) line temperature midway between the compressor outlet and condenser coil inlet. It should never exceed 210º.
15. Check the compressor amp draw. It should never exceed the RLA on the condensing unit rating plate.
16. Remove any blockage from the condenser coil and disconnect refrigerant gauges.
17. Clearly mark the unit to identify the refrigerant used.
18. Record the collected values on the Diagnostic Sheet and submit it to Wine Cellar Innovations for review.

TROUBLE SHOOTING

FAULT	CAUSE	SOLUTION
Unit does not run	Blown fuse or breaker	Replace fuse/reset breaker
	Room at set point	Reduce temperature setting
	Thermostat not calling for cooling	Reduce temperature setting
	Short cycle time delay active	Wait five minutes
Unit runs but does not cool	Lack of air flow	Check filter, make sure registers and grilles are unobstructed
		Set fan speed to HI
		Clean evaporator if necessary
		Ensure duct work is sufficient
	Unit low on refrigerant	Call a qualified technician
	Crankcase pressure set too high/low	Call a qualified technician
	Compressor not running	Call a qualified technician
	Unit undersized	Call a qualified technician
Evaporator coil freezes	Air filter dirty	Replace the air filter
	Coil and/or fan wheel dirty	Clean the evaporator and/or fan wheel
	Supply or return air duct blocked	Clear/open registers and grilles
	Set point temperature too low	Raise set point to 55º F.
	Fan on wrong speed	Set fan speed to MED
	Fan cycle control cut out set too low	Adjust fan cycle control settings
	Insufficient duct work	Call a qualified technician
	System low on refrigerant	Call a qualified technician
	Crankcase pressure regulator faulty or set improperly	Call a qualified technician
Water leaking from unit	Condensate drain clogged	Blow out drain
	No trap in condesate drain	Install trap in drain line
	Evaporator coil frozen	See above
Water dripping from duct work	No insulation or not insulated well enough	Properly insulate duct work
	Insulation vapor barrier insufficient	Remove insulation and re-insulate with foil or plastic batted insulation
Evaporator fan runs but compressor does not	Unit calling for humidification	Normal
	Compressor and/or starting components faulty	Call a qualified technician
Compressor runs but evaporator fan motor does not	Blown fuse or breaker	Replace fuse/reset breaker
	Faulty fan motor/capacitor	Call a qualified technician
	Faulty fan relay	Call a qualified technician
Compressor short cycles	Unit low on refrigerant	Call a qualified technician
	Condensing fan motor faulty	Call a qualified technician

	Compressor and/or start components faulty	Call a qualified technician
Humidifier does not run	Blown fuse or breaker	Replace fuse/reset breaker
	Humidifier not plugged in	Plug in humidifier
	Thermostat not wired correctly	Call a qualified technician
	Thermostat configuration incorrect	Call a qualified technician
	Humidification relay faulty	Call a qualified technician
Dehumidification does not come on	Thermostat calling for cooling or heat	Wait for cellar temperature to satisfy, check again
	Blown fuse or breaker	Replace fuse/reset breaker
	Thermostat not wired correctly	Call a qualified technician
	Thermostat configuration incorrect	Call a qualified technician
	Dehumidification relay faulty	Call a qualified technician
Humidity in cellar too high/low	Humidifier not working	See above
	Dehumidification not working	See above
	Return air duct leaks	Seal the ducting
	Humidifier connected to cold water	Connect humidifier to hot water source
	Cellar vapor barrier not sufficient	Install proper vapor barrier. Seal around all openings into cellar
	Improper doors/windows in cellar	Use exterior grade doors and windows use proper seals and sweeps
	Insufficient duct work	Call a qualified technician
	Crankcase pressure regulator improperly set	Call a qualified technician
	Fan on wrong speed	Set fan speed to MED
Unit over cools cellar	Blown fuse or breaker	Replace fuse/reset breaker
	Faulty time delay	Call a qualified technician
	Faulty duct heater or relay	Call a qualified technician
	Thermostat wired for dehumidification with no duct heater installed	Remove wire from Y2 and W1 or install duct heater
Condenser fan motor short cycles/fails to run	Unit low on charge	Call a qualified technician
	Improper fan cycle control settings	Call a qualified technician
	Low ambient condition exists	This is normal
	Fan cycle control faulty	Call a qualified technician

A **qualified service technician** must record all of the information on the diagnostic sheet **before** calling for technical assistance. The technician **must** be able to identify the unit with the order number and serial numbers to receive accurate trouble shooting assistance. All recommendations for repair or adjustment will be based on the information provided by the **service technician**. Any incorrect recommendations based on incorrect or insufficient data are not covered by the warranty.

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	NU-22B	R-22	MO99	R-427A
	PSIG	PSIG	PSIG	PSIG
°F	DEW	SATURATION	DEW	DEW
0	18.0	24.0	33.2	17.5
2	19.5	25.7	34.7	19.1
4	21.1	27.4	36.3	20.7
6	22.7	29.1	37.9	22.3
8	24.3	31.0	39.6	23.8
10	26.1	32.8	41.3	25.4
12	27.8	34.8	43.1	27.2
14	29.7	36.8	45.0	29.0
16	31.6	38.8	46.9	30.9
18	33.5	40.9	48.9	32.8
20	35.5	43.1	50.9	34.7
22	37.6	45.3	53.0	36.8
24	39.7	47.6	55.2	38.9
26	41.9	50.0	57.5	41.1
28	44.2	52.4	59.8	43.4
30	46.6	55.0	62.2	45.7
32	49.0	57.5	64.6	48.2
34	51.5	60.2	67.2	50.7
36	54.0	62.9	69.8	53.3
38	56.6	65.7	72.4	56.0
40	59.3	68.6	75.2	58.7
42	62.1	71.5	78.0	61.5
44	65.0	74.5	81.0	64.2
46	67.9	77.6	84.0	67.1
48	71.0	80.8	87.0	70.2
50	74.1	84.1	90.2	73.3
52	78.0	87.4	93.5	76.6
54	81.0	90.8	96.8	79.9
56	84.1	94.3	100.3	83.3
	Bubble	SATURATION	Bubble	Bubble
60	103.0	101.6	124.5	109.6
62	106.8	105.4	128.6	113.7
64	110.7	109.3	132.7	117.8
66	114.7	113.2	136.9	122.1
68	118.8	117.3	141.3	126.4
70	123.0	121.4	145.7	130.8
72	127.2	125.7	150.2	135.4
74	131.6	130.0	154.9	140.1
76	136.1	134.5	159.6	144.8
78	140.7	139.0	164.5	149.7
80	145.3	143.6	169.4	154.6
82	150.1	148.4	174.5	159.8
84	155.0	153.2	179.7	165.0
86	160.0	158.2	185.0	170.3
88	165.1	163.2	190.4	175.8
90	170.4	168.4	195.9	181.2
92	175.7	173.7	201.5	187.0
94	181.1	179.1	207.3	192.7
96	186.7	184.6	213.2	198.6
98	192.4	190.2	219.2	204.7
100	198.2	195.9	225.3	210.8
102	204.1	201.8	231.5	217.2
104	210.1	207.7	237.9	223.6
106	216.3	213.8	244.4	230.2
108	222.6	220.0	251.1	236.9
110	229.0	226.4	257.8	243.6
112	235.6	232.8	264.8	250.6
114	242.2	239.4	271.8	257.7
116	249.0	246.1	279.0	264.9
118	256.0	253.0	286.3	272.3
120	263.1	260.0	293.8	279.7
125	281.4	278.0	313.0	299.1
130	300.6	296.9	333.2	319.4

Superheat - Use Dew Column for blended
Subtract the saturation or dew temperature corresponding to the suction pressure in the evaporator from the suction line temperature to determine superheat.

Adjust thermostatic expansion valve to maintain 8-12° superheat.

Adjust crankcase pressure regulator to maintain approximately 36- 38° suction saturation temperature in evaporator

Sub-cooling - Use Bubble Column for blended
Subtract the liquid line temperature from the saturation or bubble temperature corresponding to the head pressure to determine sub-cooling.

Always charge blends in liquid state.

Charge to 10° sub-cooling when using blended refrigerants. The sight glass may show some bubbles.

Charge to a full sight glass with R-22.

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DIAGNOSTIC SHEET for customer order **#_____**

In order for your warranty to be activated, your technician must supply the following data upon installation of the unit. The condenser fan motor must be running and the return air temperature must be between 53° and 58°F when recording this data.
Fax completed diagnostic sheet to: 513-979-5280

Refrigerant: _____

Condenser Model # _____
Condenser Serial # _____

Evaporator Model # _____
Evaporator Serial # _____

Voltage at compressor: _____
Compressor amp draw: _____

Line set size: _____X_____
Line set length: _____
Number of elbows in suction line, including all 45 and 90 degree bends in soft copper: _____

Suction pressure in evaporator: _____
Suction pressure at compressor: _____
Head pressure: _____

Suction line temperature at evaporator: _____
Suction line temperature at compressor: _____
Discharge (hot gas) line temperature: _____
Liquid line temperature: _____
Condenser ambient temperature: _____

Return air temperature, see above: _____
Supply air temperature: _____

This area to be filled out for air handler installations only:

Supply trunk size: _____
Number and size of supply registers: _____@_____
Return air trunk line size: _____

Customer name: _____
For the property located at: _____
_____
Warranty card filled out by: _____
Date _____
Company: _____
Telephone #_____Fax#_____E-Mail_____

Wine Cellar Innovations 4575 Eastern Avenue Cincinnati, OH 45226 800-229-9813