

Wine Zone Ductless Split System

- Requires an HVAC technician to install and charge unit
- Can be charged with R-22, NU-22B, MO99, or R-427A refrigerants
- Electric connections for evaporator are hard wired to the condenser
- Industrial grade for longer life
- Indoor and outdoor condensing units available
- Field supplied drain line, refrigerant, and electric connections required

Supplies and Materials Needed for Installation

1. Condenser pad
2. Required electrical services
 - A. Dedicated service for condenser
 - B. Dedicated service for evaporator (to and from condenser)
 - C. 3-conductor low voltage wire from thermostat to condenser control panel
3. R-22, Nu-22B, MO99, or R-427A refrigerant for system
4. Miscellaneous hardware, brackets, sealant, reducers, etc...
5. An accurate digital probe style thermometer
6. Tools and equipment needed to perform the installation
7. Additional refrigerant line 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. Wall mounted evaporator modified for system
4. Thermostat
5. 50 ft. line set
6. Crankcase pressure regulator and access port
7. Filter drier
8. Sight glass
9. Liquid line access tee for condenser fan cycle controls on units less than 7200 BTUS
10. Fan cycle control, mounted and wired.
11. Wiring diagrams
12. Installation instructions with copy of Diagnostic Sheet
13. 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 22.

1. Select a suitable location for the evaporator with respect to air circulation, drain, refrigerant and electrical lines. Adequate air circulation requires a 36" clearance in front of the unit, do not place any obstruction (other than a manufacturer supplied grill cover) in front of the evaporator. Do not attempt to duct this evaporator. 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. The face of the evaporator should be within 6" of the front of the racking, if placed in double deep racking you must bring the evaporator forward so it is within 6" of the front of the rack.
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 void the warranty. Example: To determine maximum length of pipe. The line set will require 5 elbows to connect the evaporator and condenser.

$$\begin{array}{r}
 \text{Maximum line set} \quad \quad \quad 80 \text{ equivalent ft.} \\
 \underline{5 \text{ elbows} \times 5} \quad \quad \quad -25 \text{ equivalent ft.} \\
 \text{Maximum length of pipe:} \quad 55 \text{ linear ft.}
 \end{array}$$

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, 5/8" line changes to 1/2" and 3/4" changes to 5/8" for the **vertical** 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.

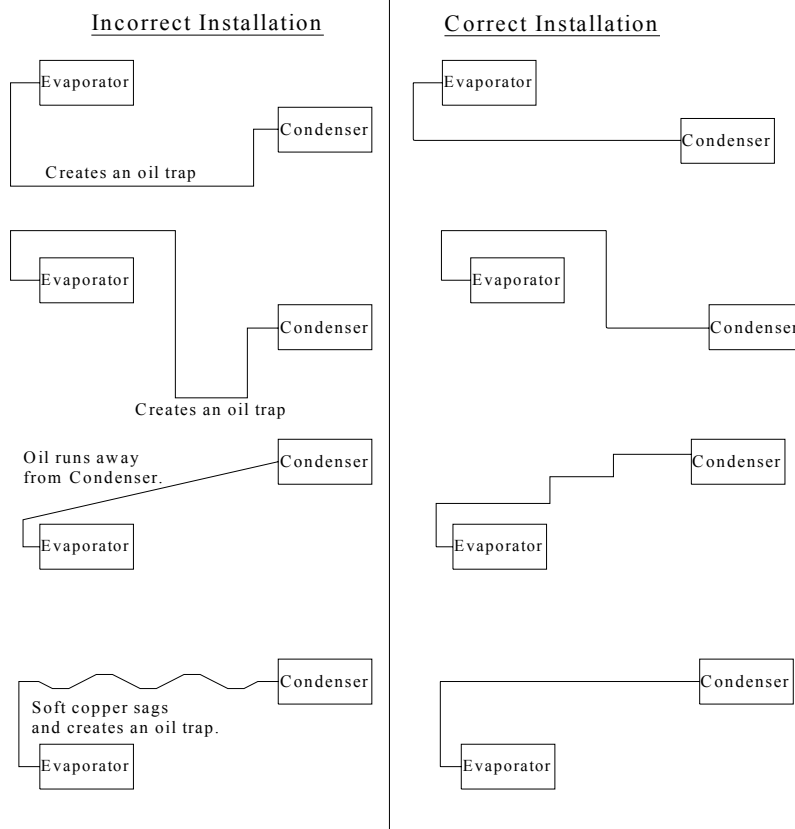
Table 1

Unit	Liquid Line	Vapor Line	Vapor Line Between OPR-6 and Compressor
WZDS 2800	1/4	1/2	1/2
WZDS 3800	1/4	1/2	1/2
WZDS 5700	3/8	1/2	1/2
WZDS 8800	3/8	3/4	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.

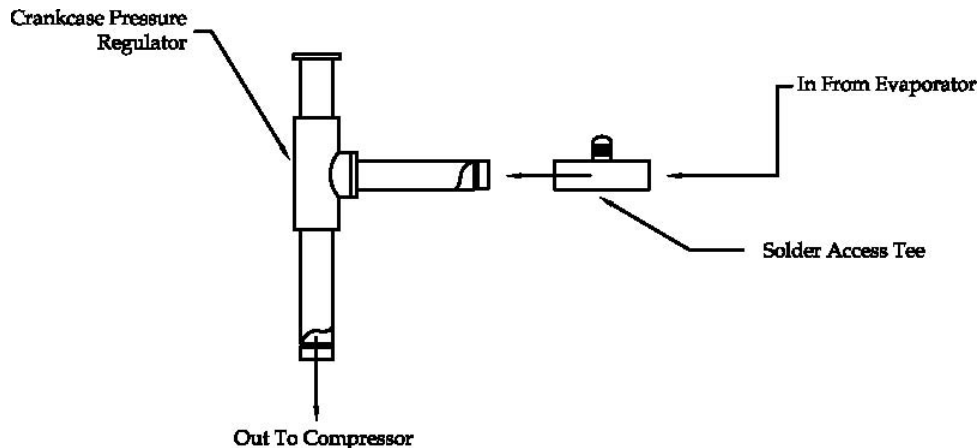
Sample Piping Configurations



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.

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 WZDS8800.



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 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 22. 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 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.

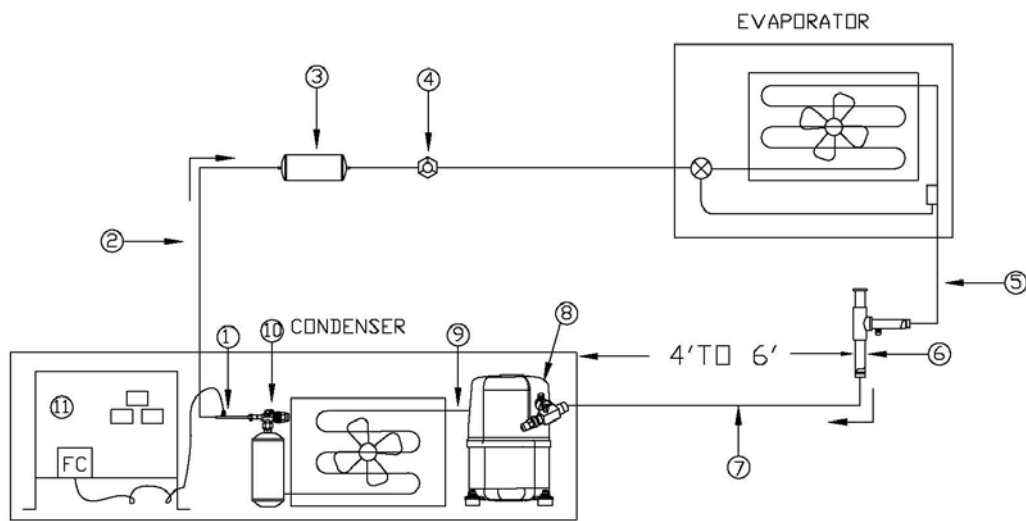
13. Allow the wine room temperature to fall to 55°F. **Do not allow the suction saturation or dew temperature to fall below 32° in the evaporator as the cellar temperature approaches 55°F.** Adjust the crankcase pressure regulator as necessary.

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 22 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.

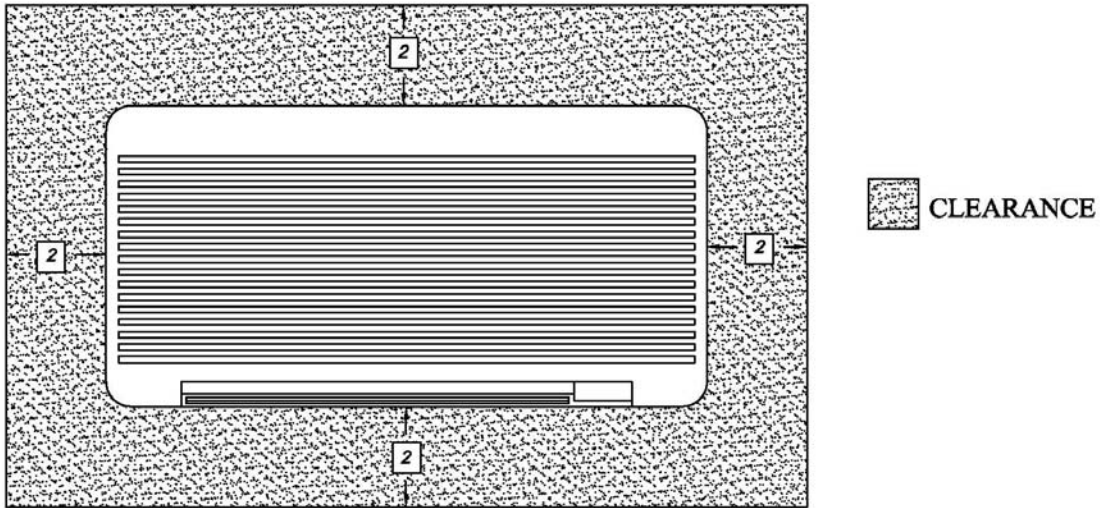
14. Perform the final check of the refrigeration unit. The cellar temperature must be between 53° and 58° F. Check the sight glass and gauge readings again. The minimum suction saturation or dew temperature in the evaporator is 32°. Strive to maintain a 36° to 38° evaporator. Refer to the temperature pressure chart on page 22. 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 20.
16. Clearly mark the unit to identify the refrigerant used.
17. **Cool the cellar to 55°, complete the Warranty Diagnostic Sheet, and return it to Wine Cellar Innovations to activate your warranty.**

Piping Diagram



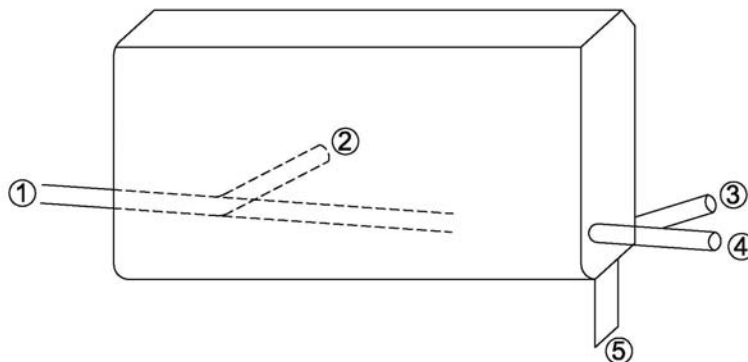
1. Access tee. Supplied with units up to 5700 BTUS only. Attach access tee to receiver tank service valve. Attach fan cycle control capillary with ¼" flare nut to the threaded port on the access tee.
2. Liquid line.
3. Filter-drier.
4. Sight glass with moisture indicator.
5. Suction line. Measure the 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 22. 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.

Installation of the Indoor Unit

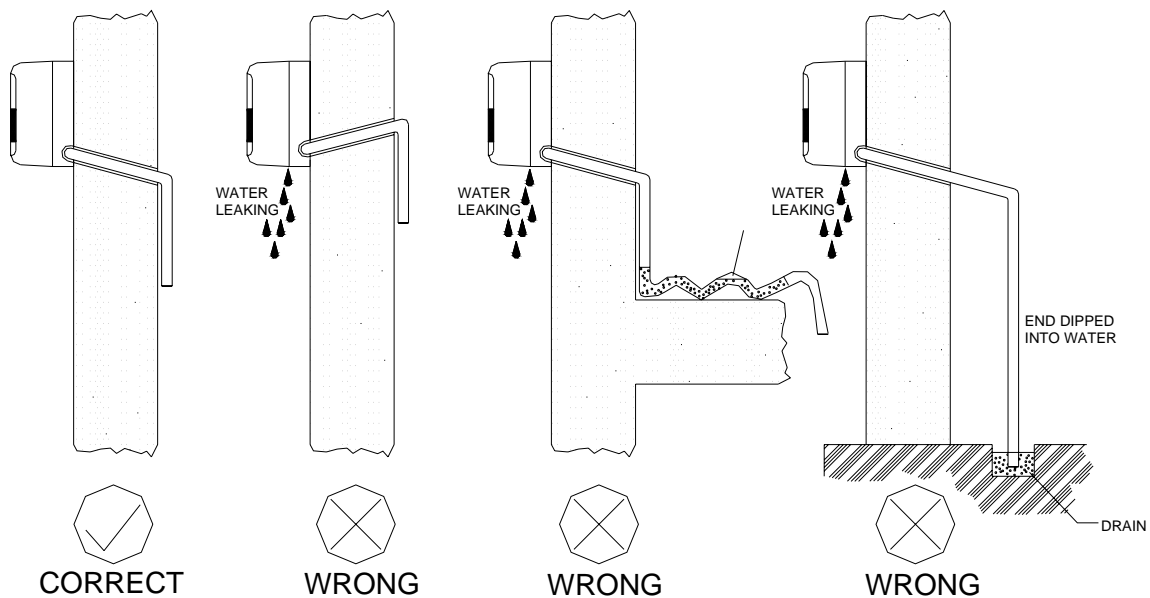


Firmly secure the evaporator mounting plate on a wall strong enough to withstand the weight of the unit. The plate must be level and allow for the clearances shown in the figure above. The evaporator must be installed in such a way as to prevent short cycling of the discharge air with the return air. Adequate air circulation requires a 36" clearance in front of the unit; do not place any obstruction (other than a manufacturer supplied grill cover) in front of the evaporator. The face of the evaporator should be within 6" of the front of the racking, if placed in double deep racking you must bring the evaporator forward so it is within 6" of the front of the rack. Do not place the unit in direct sunlight, or above a door or window. Do not attempt to duct this evaporator. The location must also be suitable for refrigerant piping and condensate drainage. The evaporator discharge air must not blow on the thermostat.

The refrigerant piping can be routed to the unit in a number of ways. Numbers 1, 4, and 5 in the diagram below indicate cutouts in the unit casing. Using the cutouts will leave the refrigerant piping, condensate drain, and electric exposed in the cellar and should be avoided. Numbers 2 and 3 indicated below, are for piping routes that will leave the refrigerant lines, drain and electric concealed, and should be used for the most attractive installation. A single, 2 1/4" or 2 1/2" hole will accommodate the passage of the line set, drain and electric through the wall. Slope the hole downward through the wall and fasten the drain line to the **bottom** of the line set for proper drainage. These hole locations are indicated on the mounting plate drawings as well. The refrigerant piping may be gently bent or twisted to use any of the indicated pipe routes.



When the line set will be run on the inside of the wall before the drywall is hung, use the alternate route (route number 2). For installations where the line set will be accessible on the backside of the wall, use the suggested route (route number 3). Routes 1, 4, and 5 will leave the refrigerant piping, electric, and drain exposed.



The indoor drainpipe must slope downward and have no traps. The drain may be fastened to the **bottom** of the refrigerant lines. The drain requires an air gap to flow properly. A drain port is provided on each end of the evaporator drain pan, for your convenience. Remember to place the drain cap on the unused drain port.

Place the two hooks at the rear top of the evaporator to hang the unit from the upper edge of the mounting plate. Ensure the hooks are properly seated on the mounting plate by sliding the unit to the left and right. Secure the bottom of the unit to the mounting plate with the gray plastic button.

The face of the evaporator casing can easily be removed. The screws are concealed under plastic covers on the bottom leading edge of the unit, under the air discharge louver. Remove the covers to expose the screw heads and remove the screws. Pull out and lift the bottom of the evaporator casing to uncover the electric hook up.

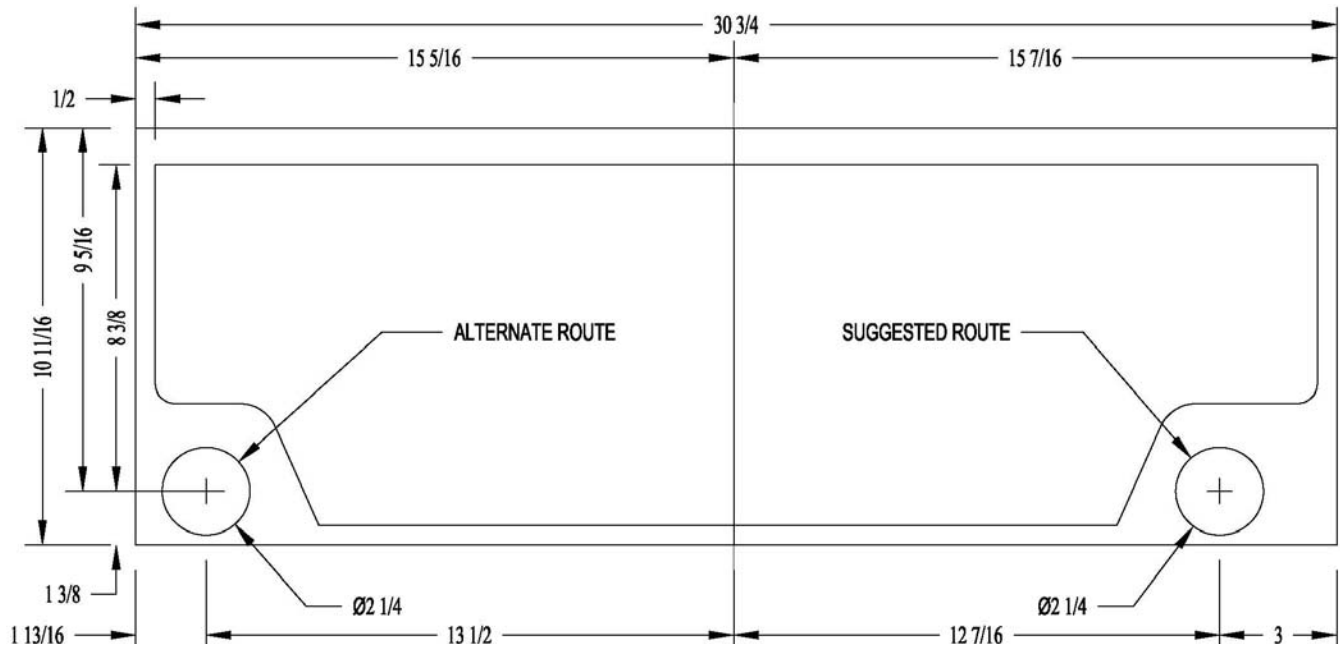
After installation, properly seal the hole(s) where the refrigerant, drain and electric lines penetrate the wall or ceiling. Failure to do so may result in uncontrolled condensation and water damage.

Evaporator Electric

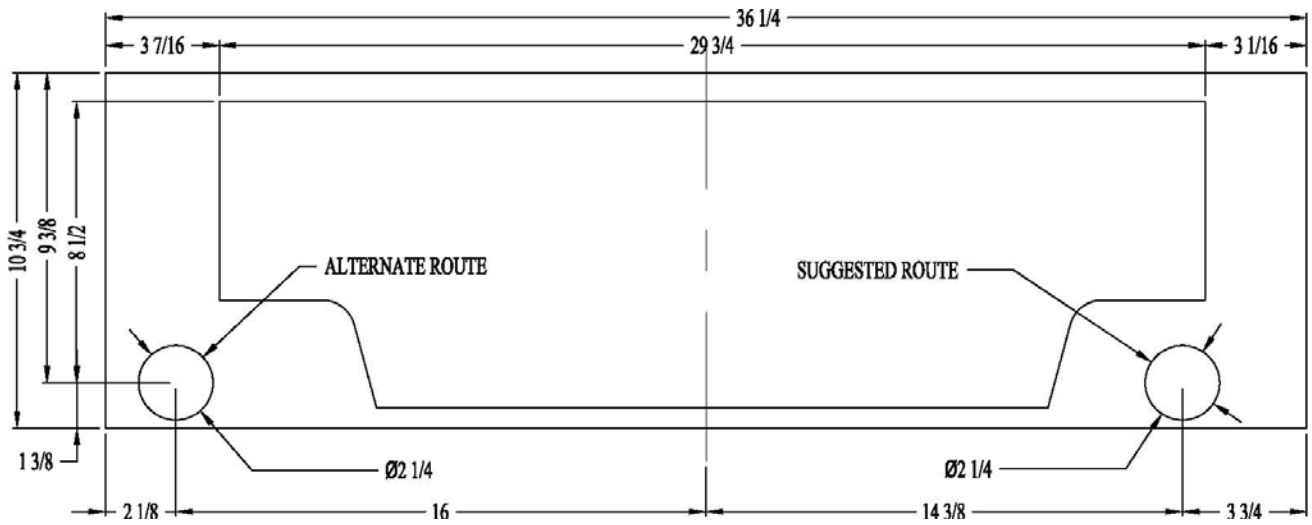
Securely fasten the ground wire to the terminal with the green or green and yellow striped wire. The other two wires on the evaporator terminal block receive 220 volts from terminals D & E on TB2 in the condenser control panel. A separate 220 volt 15 amp circuit from the service panel to terminals A & B on TB2 is required. No low voltage wiring is required at the evaporator.

Again, the evaporator will require a separate breaker in the service panel, a 220-volt 15-amp circuit. Run the wire from the service panel to terminals A & B on TB2 in the **condenser** control panel. Run the wire from terminals D & E to the evaporator fan motor.

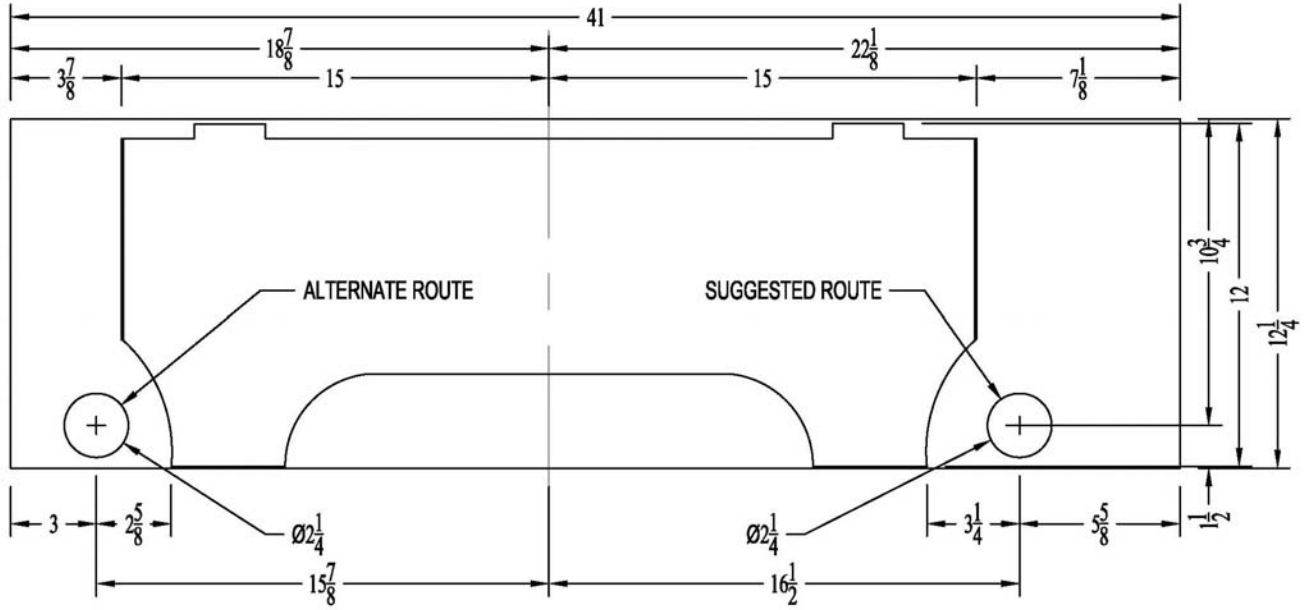
Mounting Plate for 2800 Evaporators



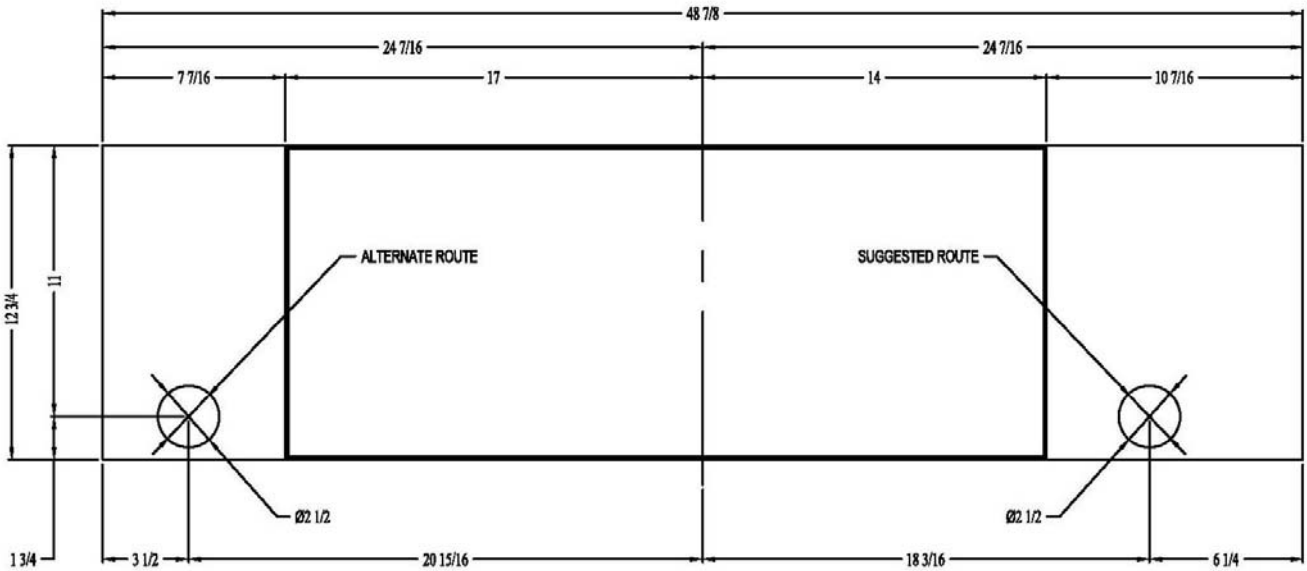
Mounting Plate for 3800 Evaporators



Mounting Plate for 5700 Evaporators

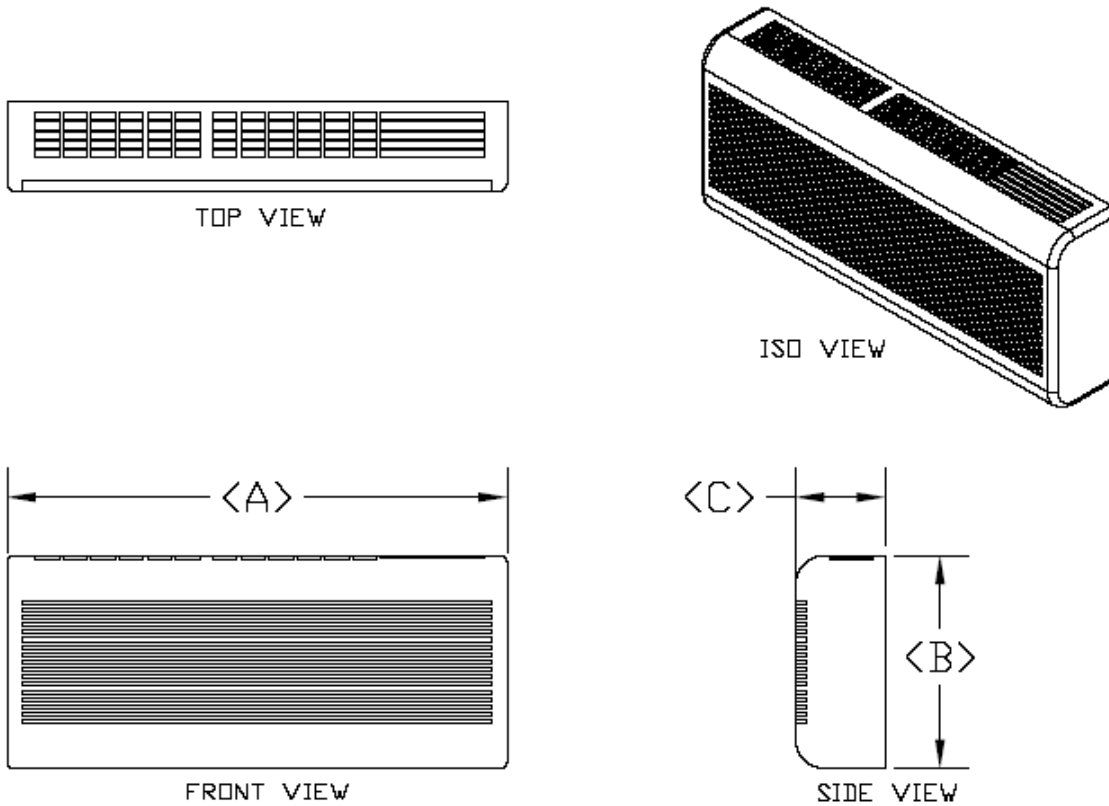


Mounting Plate for 8800 Evaporators



The holes shown are the best locations to route the refrigerant lines, condensate drain, and electric. For installations where the line set will be accessible on the backside of the wall, use the suggested route. When that is not possible, and the line set will be run inside the wall before the drywall is installed, use the alternate route. This will leave the flare connections exposed so they can be connected after the walls are finished.

Ductless Split Wall Mount Evaporator

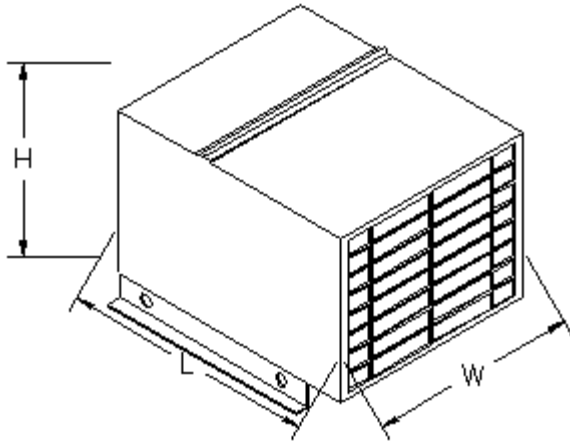


Specifications for Standard Ductless Split Evaporator

System	dB	Evaporator	Dimensions In Inches			Liquid Fitting	Suction Fitting	Drain Fitting	Power Supply	Max. Fuse
			A	B	C					
WZDS2800	41	09ACXW	30 3/4	10 3/4	7 5/8	1/4 MF	3/8 MF	5/8 PVC	208-230/60/1	15
WZDS3800	41	12ACXW	36 1/4	10 3/4	8	1/4 MF	1/2 MF	5/8 PVC	208-230/60/1	15
WZDS5700	41	18ACXW	41	12 1/4	8	3/8 MF	5/8 MF	5/8PVC	208-230/60/1	15
WZDS8800	45	36ACXW	48 7/8	12 3/4	9 5/8	3/8 MF	3/4MF	5/8 PVC	208-230/60/1	15

Field supplied reducers required. **You must install a line set according to Table 1 on page 4. Never install a line set larger in diameter than the condenser fitting size. A minimum of 2" clearance required on all sides.**

Condenser Specifications

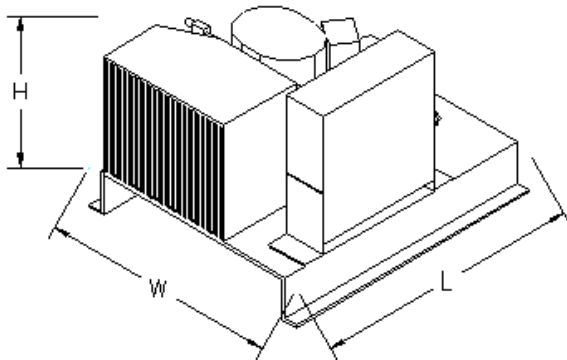


Outdoor Condenser

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
WZDS2800/OC	52	27	20	20	1/4 MF	1/2 MF	130	208-230/60/1	4.9	15
WZDS3800/OC	56	27	20	20	1/4 MF	1/2 MF	132	208-230/60/1	6.1	15
WZDS5700/OC	55	27	24.5	22	3/8 MF	1/2 MF	151	208-230/60/1	8.0	15
WZDS8800/OC	58	27	24.5	22	3/8 MF	7/8 SW	200	208-230/60/1	13.4	20



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 Fitting	Wt. In lbs	Power Supply	Min Circuit Amps	Max Fuse
WZDS2800/IC	52	25	20	19.75	1/4 MF	1/2 MF	104	208-230/60/1	4.9	15
WZDS3800/IC	56	25	20	19.75	1/4 MF	1/2 MF	106	208-230/60/1	6.1	15
WZDS5700/IC	55	28	24.5	19.75	3/8 MF	1/2 MF	120	208-230/60/1	8.0	15
WZDS8800/IC	58	28	24.5	19.75	3/8 MF	7/8 SW	169	208-230/60/1	13.4	20

Field Wiring

Condensing unit Control Panel

Terminal Board One

- Terminal 1 – *220 Line voltage for the condenser
- Terminal 4 – *220 Line voltage for the condenser
- (See condenser specifications for proper fuse size)

Terminal Board Two

- Terminal A – *15 amp 220 volt circuit from service panel for the evaporator
- Terminal B – *15 amp 220 volt circuit from service panel for the evaporator
- Terminal D – 220 Load voltage to the evaporator fan motor. Attach to blue wire in evaporator
- Terminal E – 220 Load voltage to the evaporator fan motor. Attach to black or yellow in evaporator
- Terminal G – Thermostat Y
- Terminal H – Thermostat R
- Terminal J – Thermostat C

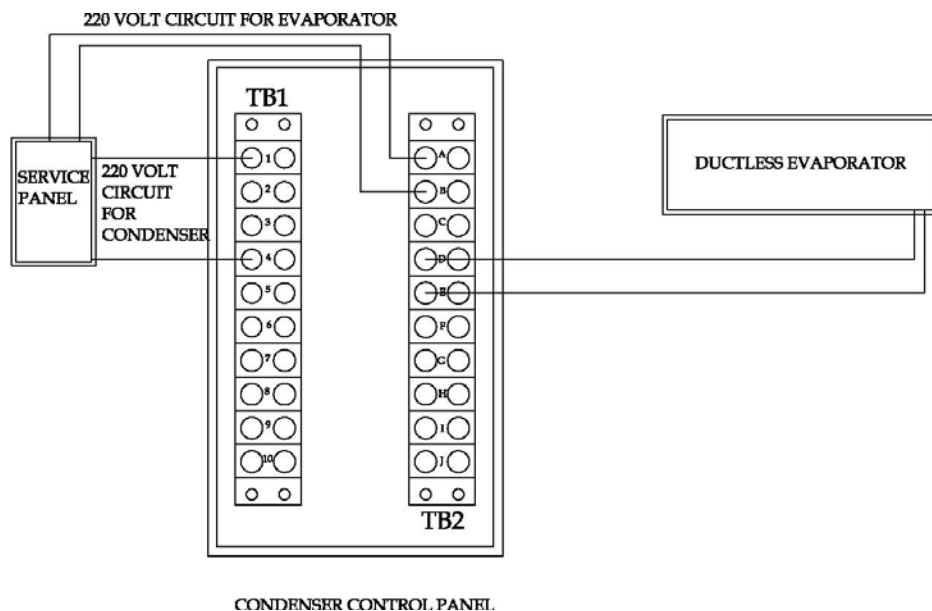
System Ground Lug Above Terminal Boards

****--Both the condenser and evaporator power circuits are run to the condenser. Two disconnects are required at the condenser**

Electrical Requirements

1. Check the Tecumseh rating plate for proper voltage, maximum fuse, run load amperage, 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 #4 on TB1 in the condenser control panel. The evaporator circuit connects to terminals A and B on TB2 in the condenser control panel.
3. Evaporator requires a 220-volt 15-amp circuit to the condenser. The evaporator line voltage will connect to terminals A and B in the condenser control panel. The evaporator fan motor will receive load voltage from terminals D and E on TB2 in the condenser control panel.
4. Low voltage wire from the thermostat goes to the condenser control panel only. No low voltage connections are required at the evaporator. Low voltage control wiring runs from the thermostat to the condenser control panel.
5. All equipment must be installed according to the National Electric code and all local codes and ordinances.

Line Voltage



1. Run a 220-volt circuit from the service panel to terminals #1 and #4 on TB1 in the condenser control panel. Check the Tecumseh rating plate or page 14 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 220-volt, 15-amp circuit from the service panel to terminals A and B on TB2 in the condenser control panel.
3. Two disconnects (not pictured) may be required at the condenser. Check local codes.
4. Load voltage for the ductless evaporator will come from terminals D and E on TB2 in the condenser control panel. Connect these wires to the small terminal block with the evaporator fan motor wires attached. Attach the ground wire to the terminal with the green or green and yellow striped wire.
5. Each unit must be installed in accordance with the National Electric code. Check local codes for additional precautions and ordinances to installation.

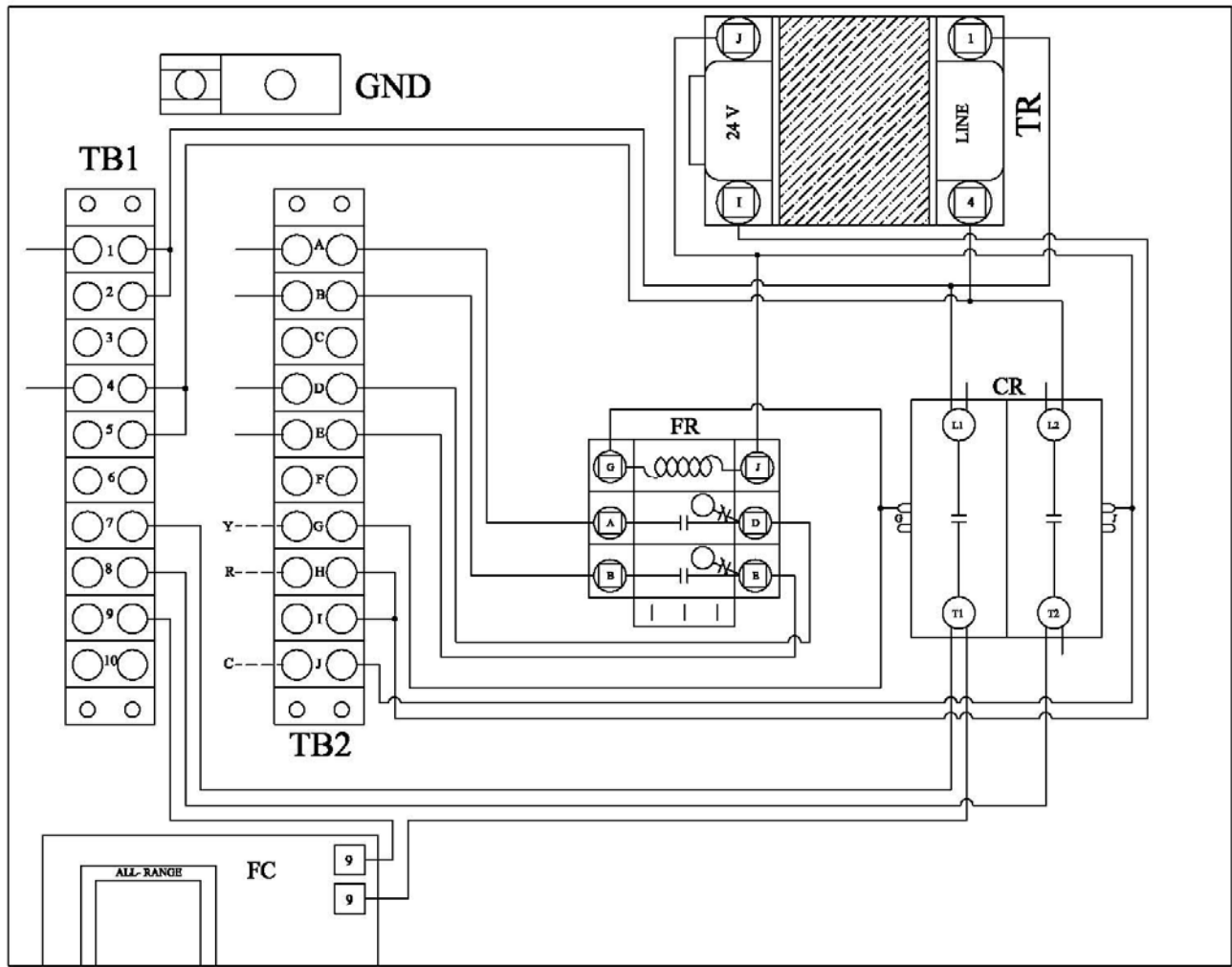
Thermostat Installation

Mount the Honeywell FocusPRO5000 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, etc. The thermostat terminal R connects to terminal H on TB2 in the condenser control panel. Thermostat terminal Y connects to terminal G on TB2 in the condenser control panel. Thermostat terminal C connects to terminal J on TB2 in the condenser control panel. Use quality 18-gauge thermostat wire. Read and follow the manufacturer's installation instructions. We recommend you enter the Installer Setup in the Honeywell Installation Guide and choose the following settings:

- #1 System type to 4 for Cool only
- #9 Stage 1 compressor cycle rate to 3
- #14 Temperature display to 0 for Fahrenheit
- #15 Compressor protection to 5
- #28 Cool temperature range stop to 53°

Turn the system to cool and set the temperature to 55°. The Fan (Auto/On) button is not functional. The fan switch can remain in either setting and the unit will cycle properly.

WZDS Condenser Control Panel



Legend		TB1		TB2	
CR	Compressor relay	1	220V line voltage from service panel	A	220V line voltage from service panel
CCH	Crankcase heater	2	CCH	B	220V line voltage from service panel
FR	Evaporator fan relay	3		C	
FC	Fan cycle control	4	220V line voltage from service panel	D	220V load voltage to evaporator
- - - -	Field wiring	5	CCH	E	220V load voltage to evaporator
GND	Ground	6		F	
TB	Terminal board	7	Compressor	G	Thermostat Y
TR	Transformer	8	Compressor	H	Thermostat R
		9	Condenser fan motor	I	24V hot
		10		J	24V common

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 3800	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 5700	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 8800	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

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

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, free of traps, 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 58° 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 8° to 12°.
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 53° and 58° F. The evaporator temperature must never fall below 32°.
12. Add refrigerant to maintain approximately 10° of sub-cooling.
13. Make sure the difference between the return air and supply air temperatures (ΔT) is 6° to 12°.
14. Check the discharge (hot gas) line temperature midway between the compressor outlet and condenser coil inlet. It should never exceed 210°.
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.

Service and Maintenance
Maintenance Procedures

<u>Service Parts</u>	<u>Maintenance Procedures</u>	<u>Period</u>
Indoor Air Filter	1. Remove any dust on filter with vacuum cleaner or warm water and gentle detergent. Rinse and dry thoroughly before placing in unit.	Monthly
Evaporator	1. Clean dirt and debris from grille or panel with a soft cloth, soap, and water.	As necessary
	2. Inspect evaporator coil, gently remove, brush off dirt and debris	As necessary
	3. Check drain pan. Wipe or vacuum clean as necessary. Check water flow; blow out drain as necessary.	Monthly
Condenser	1. Wash condenser coil with appropriate cleanser and garden hose. Check safety devices. Check refrigerant charge. Check system operation	Twice per year By qualified technician

Trouble shooting

<u>Fault</u>	<u>Cause</u>	<u>Solution</u>
Unit does not run	1. Blown fuse or circuit breaker	Replace fuse/reset breaker
	2. Room at set point	Lower set point
	3. Thermostat not calling for cooling	Lower set point
	4. Faulty thermostat or wiring	Check low voltage wiring, replace thermostat
Unit runs but does not cool	1. Lack of air flow	Check filter, make sure louvers and fan are unobstructed. Clean evaporator if necessary
	2. Unit low on charge	Add refrigerant
	3. Crankcase pressure set too high/low	Adjust crankcase pressure regulator
	4. Compressor not running	Check compressor and starting components
	5. Unit undersized	Call a qualified technician
Evaporator coil freezes	1. Air filter dirty	Clean air filter
	2. Coil and/or fan wheel dirty	Clean the coil and/or fan wheel
	3. Temperature set point too low	Set thermostat to 55°
	4. Fan cycle cut out set too low	Adjust fan cycle control cut in to 250 psi
	5. System low on charge	Add refrigerant
	6. Crankcase pressure regulator faulty or set improperly	Raise suction pressure in evaporator; reduce suction pressure at compressor. Step #10
	7. Thermostatic expansion valve faulty or improperly set	Adjust TXV. See step #12
Water leaking from unit	1. Condensate drain clogged	Clear out drain
	2. Evaporator coil frozen	See above
	3. Hole behind evaporator not sealed	Seal both sides of wall around line set, wiring, and drain
Evaporator fan runs but compressor does not	1. Compressor and/or starting components faulty	Call a qualified technician

Compressor runs but evaporator fan motor does not	1. Blown fuse or circuit breaker	Replace fuse/reset breaker
	2. Faulty fan motor	Replace fan motor
	3. Faulty fan relay	Replace fan relay
Compressor short cycles	1. Evaporator blows on thermostat	Move thermostat
	2. Unit low on charge	Add refrigerant
	3. Condensing fan motor/capacitor faulty	Replace condenser fan motor and/or capacitor
	4. Compressor and/or starting components faulty	Replace compressor and/ starting components
Super heat in evaporator too high	1. Unit low on charge	Add refrigerant
	2. Thermostatic expansion valve out of adjustment or faulty	Adjust TXV, see step #12 Replace TXV
Super heat in evaporator too low	1. Unit over charged	Reclaim refrigerant
	2. Evaporator coil frozen	See above
	3. Evaporator fan motor not running	See above
	4. Thermostatic expansion valve out of adjustment or faulty	Adjust expansion valve, see step #12, replace valve
Hot gas line temperature exceeds 210° or Suction pressure in evaporator too low or	1. Thermostatic expansion valve out of adjustment or faulty	Check TXV operation. Lower superheat, see step #12
	2. Crankcase pressure regulator out of adjustment or faulty	Check crankcase pressure regulator operation. Reduce suction pressure at compressor, see steps #10, #12
Suction line temperature at compressor too high	3. Unit low on charge	Add refrigerant
Humidity in cellar too low	1. Cellar vapor barrier not sufficient	Install proper vapor barrier
	2. Crankcase pressure regulator improperly set	Adjust crankcase pressure regulator. Raise suction pressure in evaporator
Condenser fan motor short cycles	1. Condenser fan motor pressure control improperly set	Adjust condenser fan motor pressure control to cut in at 250 psi with 50 psi differential
	2. Low ambient condition exists	Normal

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.

	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.

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