

BREEZAIRE PRODUCTS COMPANY

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WKS 4000 SERIES

(USA only)

--INSTALLATION INSTRUCTIONS--

Thank you for choosing a **BREEZAIRE** cooling unit. We believe our products are the best on the market and will provide many years of trouble free service.

Please take a few minutes and read this entire instruction before beginning the installation.

Before removing the cooling unit from the box, please inspect for damage which might have been incurred during shipping. If damage is found, notify the Freight Company immediately. *BREEZAIRE* is not responsible for any damages incurred during shipping.

MODEL _____ **SERIAL NUMBER** _____

INSTALLED BY _____ **DATE** _____

While great effort has been made to provide accurate guidelines, **BREEZAIRE** cannot warrant its units to properly cool a particular enclosure. Customers are cautioned that enclosure construction, unit location and many other factors can affect the operation and performance of the unit. Therefore the suitability of the unit for a specific enclosure or application must be determined by the customer and cannot be warranted by **BREEZAIRE**.

INSTALLATION INSTRUCTIONS FOR WKS 4000 SERIES COOLING UNITS

The **BREEZAIRE** WK Series cooling units are designed to, when installed in a properly constructed enclosure, provide a constant, selectable temperature between 48°F and 62°F while reducing the excess relative humidity to the proper 50% to 75%. **BREEZAIRE** cooling units are designed to lower the temperature, while removing *only* excessive moisture. In a properly constructed enclosure this process can raise the *relative* humidity. The unit does not add moisture to the enclosure. The unit does not include a heating system and will not warm the enclosure. The WKS Series is not intended to cool service cabinets, which are maintained at lower temperatures and opened or entered frequently.

The WKS Series cooling unit, is shipped as components, not a working cooling system. Only after a qualified refrigeration installer has properly connected these components, pressured tested, evacuated, charged with refrigerant and tested their installation, can the unit be considered a cooling system. Proper installation is critical to the performance, reliability and longevity of the system. For this reason, **BREEZAIRE can only warrant the quality of the WKS components.** The installation and proper operation must be warranted by the installer. Before installation is to begin, the purchaser and installer should carefully read the enclosed Limited Warranty.

ENCLOSURE CONSTRUCTION

To use the below SIZING GUIDE, the enclosure to be cooled must be built to the following minimum specifications. If the enclosure is not built to these specifications, consult your **BREEZAIRE** dealer for assistance in choosing the correct unit. **BREEZAIRE units are not warranted to cool a specific enclosure.**

All interior walls and floor should have a vapor barrier and a minimum of R-11 insulation. All exterior wall's insulation values should be a minimum of R-19. The ceiling should have vapor barrier and a minimum of R-19 insulation. The vapor barrier should be installed on the warm side of the insulation. There should be no glass windows or doors.

- ☞ All joints, door frames, electrical outlets or switches and any pipes or vents which go through the enclosure should be sealed to prevent air and moisture leakage into the room. Concrete, rock and brick are not insulation or moisture barriers.
- ☞ Doors into the enclosure should be of minimum size, insulated to R-11 and be tightly sealed with a high quality weather stripping. Be sure to seal the bottom of the door and the fill gap between the door's frame and wall before installing the cap molding.
- ☞ Enclosure lighting should be of low wattage, with a timer to insure lights are not left on when the enclosure is unoccupied. Recessed lighting should not be used as they will allow outside air to enter the enclosure.
- ☞ The ambient temperature surrounding the enclosure should not exceed the desired cellar's temperature by more than 25°F. No enclosure wall should receive direct sunlight or strong wind.

SIZING GUIDE & SPECIFICATIONS

This guide is to be used only for enclosures meeting the above construction requirements.

BREEZAIRE Model	Enclosure Volume	Electrical	Dimensions (inches)	Weight
WKS4000 Fan/Coil <small>(Figure 1)</small>	1000 cu.ft.	1.5 Amps	14.25w x 19.75h x 12.375d	45 lbs
WKS4000 Condenser <small>(Figure 2)</small>		7.5 Amps	14.25w x 19.75h x 12.375d	55 lbs

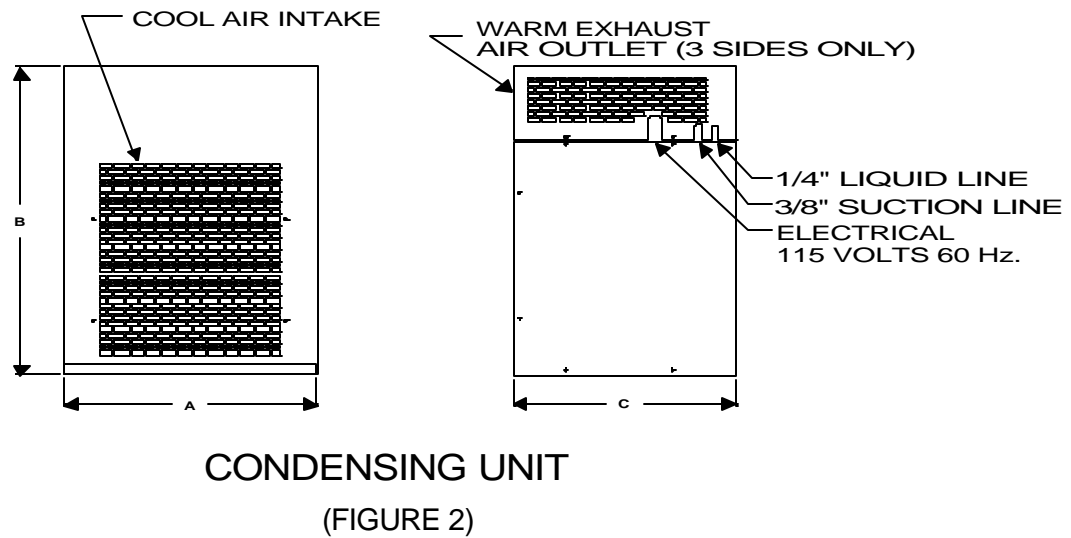
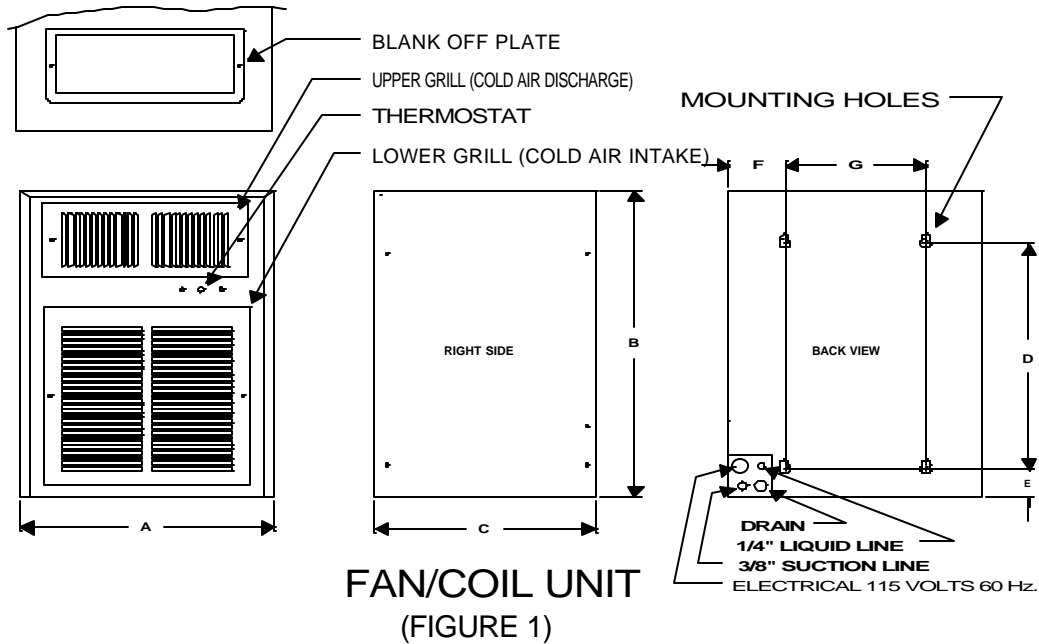
Note: All units are 115 Volt, 60 Hz

INSTALLATION

BREEZAIRE recommends the use of a licensed refrigeration technician to install the WKS systems. Installation of the unit's line set through a fire rated wall must be done in accordance with your local building inspector and building codes.

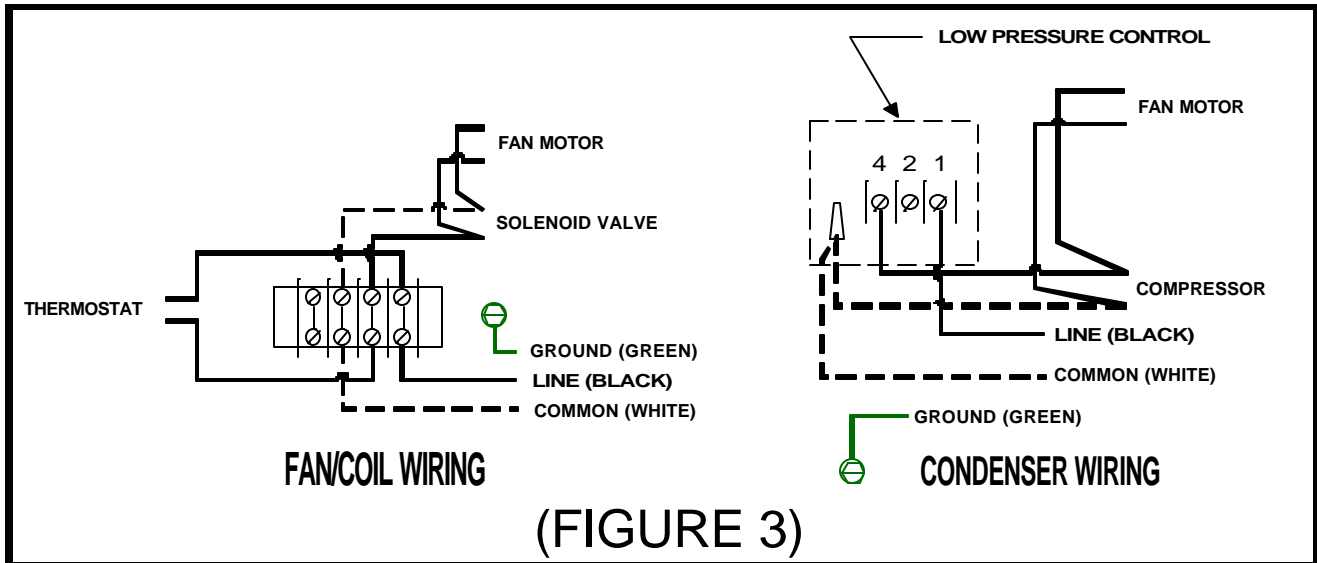
- ☞ ***If your installation cannot be performed in accordance with these instructions contact your dealer.***
- ☞ The unit must be installed in the upright position and are not designed to have duct systems attached to either unit. Do not drill any holes into the cooling unit. This may damage the unit, promote rust, and will void the warranty.
- ☞ Before installing the unit, inspect it again for any shipping damage. The WKS systems consist of two components, the fan/coil unit (Figure 1) and the condensing unit (Figure 2). The condensing unit includes the compressor, condenser coil, fan assembly, receiver tank and two service ports. The fan/coil unit includes an internal, adjustable thermostat (48° to 62°F), solenoid valve, expansion valve, evaporator coil, and fan assembly. The sight glass and strainer/dryer are separate pieces supplied with the unit.
- ☞ **Mounting the fan/coil unit:** The fan/coil unit should be mounted within six inches of the ceiling and as close to the horizontal center of the wall as possible. If the unit must be mounted below the mid point of the wall, exchange the upper front grill with the blank off plate on the top of the unit. (Figure 1) Airflow to and from the unit must be unobstructed for a minimum of 3 feet. The unit is mounted to the wall using the four slotted holes in the rear plate. The top holes should be approximately 10" from the ceiling. Mount the unit to a solid part of the wall using 1/4" lags or bolts. If necessary, attach two horizontal furring strips, at least 1" thick, solidly to the studs and attach the unit to the furring strips. Provisions must be made for passing the tubing set, wiring and drain tube through the wall.
- ☞ **Mounting the condensing unit:** Remember, unit installation location is not only important inside the wine cellar, but just as important is where the condensing unit's warm exhaust air is being rejected. This is a mechanical piece of equipment, it will make noise and produce heat from the warm exhaust air outlets (Figures 2). Place the condensing unit on a solid foundation in a location with at least 1-foot of clearance on all sides and the warm exhausting air to be unobstructed for at least 3 feet. This location should be an area where the temperature is not higher than 90°F or lower than 20°F. (Note: Condensing units mounted in areas with higher temperatures will degrade the performance of entire unit.) Inappropriate locations for mounting the condensing unit includes laundry rooms, closets, bathrooms, garages, crawl spaces, attics and humid basements. The condensing unit should be elevated to avoid any possible flooding and shaded from direct sun light. Remove the screws and the upper cover. Do not open the access valves.
- ☞ **Plumbing the system:** The two units are connected by a 1/4 inch "liquid line" copper tube, and a 3/8 inch "suction line" copper tube. (Figure 1) The line-set should have a maximum calculated length of 100 ft. for each line. Reduce the line-set length by 10 feet for every 90° bend. [Calculated Length = Linear length + 10 ft. for every 90° bend] (Note: Enclose both the suction [Gas] and discharge [Liquid] lines in one flexible insulation jacket to promote heat exchange and prevent condensation from forming on the lines.) Remove the cores from the access valves before soldering tubing to the valves. **Caution: hold charging valve assembly body with an appropriate wrench when removing or tightening the cap or opening and closing the valve.** The sight glass and strainer/dryer are separate pieces supplied with the unit. The sight glass and strainer/dryer should be connected to the condensing unit's liquid line as close as possible to unit.

If the condensing unit is mounted higher than the fan/coil unit, a P-trap must be installed in the suction and discharge lines at the condensing unit. The fan/coil unit is equipped with a 1/2 inch OD plastic fitting for removal of condensate. Connect a 1/2 inch I.D. vinyl hose to the fitting and route the hose to an appropriate drain. Ensure the 1/2 inch I.D. vinyl hose has an air break installed within 2 to 10 inches from unit connection and/or in accordance with local building codes. A condensate pump is required if the vinyl drain hose has any vertical rise, significant horizontal or near horizontal run.



<i>BREEZAIRE</i> Models	Dimensions (inches)						
	(A)	(B)	(C)	(D)	(E)	(F)	(G)
WKS 4000 Fan/Coil (Figure 1)	14.25	19.75	12.375	14.5	1.875	3.125	7.875
WKS 4000 Condenser (Figure 2)	14.25	19.75	12.375	N/A	N/A	N/A	N/A

- ☞ **Wiring the system:** Wire the system in accordance with local code and the wiring diagrams. Electrical connections are made to the terminal strip in the fan/coil and the condensing unit. (Figure 3) Both the fan/coil and condensing unit requires a standard 110-volt, 60 Hz properly grounded electrical source. Each circuit must be rated for minimum amperes in accordance with sizing guide.



WARNING: THE COMPLETED SYSTEM MUST BE PRESSURED TESTED FOR A MINIMUM OF 6 HOURS AND THEN EVACUATED TO HOLD A 250 MICRON VACUUM, AFTER THE PUMP IS TURNED OFF, FOR A MINIMUM OF 15 MINUTES. (NOTE: THIS COULD TAKE 6 HRS TO ACHIEVE) ANY LEAKS DISCOVERED AFTER REFRIGERANT CHARGING IS THE SOLE RESPONSIBILITY OF THE INSTALLER.

- ☞ **Charging the system:** After all components have been connected, reinstall the access valve cores and open the valves. With electrical power connected to the fan/coil unit energizing the solenoid valve, pressure test the complete system for a minimum of six hours. If no leaks are found, leave the fan/coil and solenoid valve energized, evacuate the system through both the liquid and suction service ports for a minimum of six hours. Replace the insulation and cover on the fan/coil unit.

With electrical power connected to both the condensing unit and the fan/coil, slowly feed refrigerant (R12 or R414B) into the suction service port. As the suction pressure rises to 30 psi the condensing unit will start. Continue feeding refrigerant while maintaining a pressure above 15 psi to prevent the compressor from short cycling. When the system is correctly charged the suction pressure should correspond to an evaporating temperature 35°F when the enclosure temperature is at 55°F. Feed refrigerant until the sight glass is clear of bubbles if using R12. If R414B is being used there may be some bubbles in the sight glass.

Allow the system to operate for several hours and than check the refrigerant level in the sight glass again. Additional refrigerant may be required as the temperature of the enclosure is lowered to approximately 55° or the ambient temperature at the condensing unit rises above the temperature at which the unit was charged.

OPERATION

On initial start-up the cooling unit will reduce the temperature of the enclosure slowly. The unit may run constantly or cycle off for short periods. The time required to reach the desired temperature will vary, depending on the enclosure construction and contents.

The thermostat is factory set to approximately 55°F. Unless the temperature falls below that which is desired, do not change the thermostat setting for at least 3 days.

After initial cool down, the "on-off" cycle should be relatively constant. The percentage of "off" time will depend on enclosure construction, contents, and the temperature surrounding the enclosure. If it is necessary to adjust the temperature of the enclosure; adjust the thermostat to a colder temperature while the unit is running and to a warmer temperature while the unit is off.

MAINTENANCE

The **BREEZAIRE** cooling unit requires very little maintenance. At least once every three months the condenser coil should be inspected and vacuumed to prevent any air blockage. Use a vacuum with a brush attachment to remove the lint or dirt that may reside between the aluminum fins.

(WARNING)

If the condenser coil becomes blocked preventing proper air flow the unit will over heat causing a loss in cooling efficiency and will result in failure of the unit not covered under warranty.

ENCLOSURE PROBLEMS

BREEZAIRE is extremely proud of the quality and reliability of its products. Experience has shown that of the small number of problems encountered, the large majority are due to improper unit selection or enclosure construction.

Should the cooling system be suspected of malfunctioning, check the temperature of the air being exhausted from the condenser's warm exhaust air outlets. (Figure 2) If it is warm, the unit is working. A further check may be made by comparing the air temperature entering the lower grill on the fan/coil unit with that leaving the top smaller grill. (Figure 1) If the air leaving the unit is at least 6°F less than the air temperature entering, the unit is working properly.

In situations where the ambient relative humidity is very low, the desired enclosure relative humidity may not be achieved without adding moisture. To add moisture to the enclosure only use slow, natural evaporation from a small porous water container. Do not use a humidifier.

In some cases, improper placement or installation may cause the unit's performance to be degraded. **The condensing unit must have a constant supply of fresh air, less than 85° F.** If the condensing unit is located in a confined area with poor ventilation, the unit will not be able to reject the heat it is removing from the enclosure and a malfunctioning unit will be suspected.

Obstruction to the free flow of fresh air into or out of the condensing unit for any reason can cause the unit to heat rather than cool the enclosure.

Proper sealing of the enclosure through the use of a vapor barrier and weather stripping cannot be over emphasized. The cooling system will not be able to maintain the proper conditions if fresh, moisture-laden air is constantly being introduced into an improperly sealed enclosure.

Symptoms of this condition are; unit runs all the time with only a slight reduction in enclosure temperature and/or water overflows from the unit.

One way of discovering gross air leaks is to stand inside the enclosure with the lights off, allow your eyes to adapt to the dark and look for light showing through cracks in the walls or around the door. Also close the door on a piece of paper, if you can pull the paper through the door seal, it means air and moisture are also entering into your enclosure.

Because of the temperature difference between the inside and outside, very small cracks can allow large amounts of outside air into the enclosure. Please beware that moisture can pass through solid concrete, brick, paint, paper and wood.

Often a newly constructed room contains fresh wood, paint, concrete and other building materials. These materials contain large amounts of moisture. When placed into operation in this type of environment, the system will work harder to remove this extra moisture resulting in increased "ON TIME". This condition can cause symptoms similar to a poorly sealed enclosure, but will gradually go away.