



LRC Wine Units Installation Bulletin RM/WM/HS/DQ/LPQ

Unit Assembled By: _____
Expansion Valve Adjusted to _____psig By: _____

Receipt and Inspection

Inspect items against Bill of Lading. Check carefully for concealed damage prior to accepting equipment. Any damages or shortages must be reported immediately to the carrier and LRC. Damages are the responsibility of the delivering carrier. An RMA (returned merchandise authorization) must be requested from LRC prior to return of any equipment.

Cautions

Installation

Proper installation is necessary for optimum performance and customer satisfaction. Only experienced and qualified personnel who are familiar with local codes and regulations should install and maintain equipment. Equipment, piping, and electrical installation must adhere to local and national codes as well as conform to good practices to ensure proper operation.

PLEASE NOTE: Use caution around equipment as sharp edges and coil surfaces can cause injury.

Condensing Unit Sizing and Configuration

This evaporator should be mated with an equivalent capacity condensing unit. The use of an oversized (or "extra capacity" over the evaporator rating) condensing unit is not recommended. The evaporator is equipped with a constant pressure expansion valve. When extra capacity is present in the system the evaporator will flood back refrigerant to the condensing unit leading to coil freeze up as well as possible compressor failure.

It is also recommended that a suction line accumulator be used to reduce the chance of liquid floodback to the compressor during off design conditions.

Room Construction

LRC wine room evaporator units should only be installed in areas where a vapor barrier has been installed. Failure to install a vapor barrier can and will result in the growth of mold and mildew in the walls and can lead to health problems and expensive remediation.

**LRC DOES NOT RECOMMEND THE INSTALLATION OF A WINE UNIT IN A ROOM
WITHOUT A VAPOR BARRIER UNDER ANY CIRCUMSTANCES.**

Ducting (HS Unit Only)

The HS Unit is designed to handle 50 feet of ducting (1 inch of static pressure drop) of the same diameter as the hose spuds on the unit. If runs will be shorter or contain many branches then the system performance should be watched carefully during startup. If the duct run is to be longer than 50 feet use larger diameter ducting to keep the maximum static pressure losses to 1 inch total. The system is capable of being operated with the fan motor speed reduced via a speed control to bring the system performance into balance. Please note that if the fan speed is reduced the evaporator capacity will be reduced correspondingly.

In addition please remember that the unit is moving air through insulated ducting. Thermal losses should be considered in the total capacity calculation. A minimum of R-8 insulation on the ducting should be used. For areas with high humidity and where the dewpoint can be in the range of 47-50 degrees it is recommended to use extra insulation. Extra capacity should be allocated if the unit and/or ducts are located in high temperature attic areas.

Configuration of Fans

Fan – the fan may be operated in 2 different ways:

1. The fans are cycled with the thermostat. This is the recommended method both operation and energy consumption point of views. Be careful to have the temperature sensing probe in a prominent location within the room. If it is in a return duct the lack of airflow will lead to erroneous readings.
2. The fan is run all the time (not recommended). In this mode it is important to ensure that the fan is turned off every 1-2 hours for a drain cycle. The high static nature of the fan will trap water in the drain pan and can lead to the overflow of the drain pan internal to the unit. A drain (or burp) cycle is important to remove the water from the drain pan area.

Multiple units – if multiple units are to be installed on a single system the units (fans/liquid line solenoid valves) should be cycled on and off together. Cycling the units independently will result in the system failure. Consult the factory if multiple units on one system are going to be cycled independently – further controls will be required to prevent system failure.

Expansion Valve

The unit is equipped with a constant pressure expansion valve. This is done to keep the evaporator at a constant temperature during low load conditions to prevent wide humidity swings. If necessary to adjust connect a gauge set to the lines preferably close to the evaporator as possible. Set the valve pressure to the pressure that most closely corresponds to 38-40 deg F. This pressure setting gives a coil dew point of 55-60% humidity. To adjust the valve access the expansion device either through the access hole (HS models) or by reaching into the area where the valve is located (be sure to turn off all power to the unit before locating the valve). Turn the top hex nut (5/16 in) clockwise to raise the suction pressure and counter-clockwise to reduce the suction pressure.

R22 refrigerant should have the valve set to 61-65 psig.

R134a refrigerant should have the valve set to 27-33 psig.

Settings other than the above may result in relative humidity levels outside the normal 50-65% range. Do not operate the unit with an oversize condensing unit. If the unit is operated in this manner the coil may freeze and cause low humidity in the wine room and/or lack of airflow leading to over temperature conditions in the room.

Control Logic

For most applications the standard refrigeration pump down approach to control will work just fine. The condensing unit is equipped with an adjustable low pressure switch that is set for 25-30 degrees (equivalent pressure) below the set point. The controller then controls the 115vac solenoid valve on the evaporator. When the unit is running the pressure/temperatures will be within range. When the temperature setting is satisfied then the liquid line solenoid valve will close. After the refrigerant in the evaporator boils off the suction pressure will begin to pump down. When the suction pressure goes below the set point on the low pressure switch then the condensing unit will shut down. When the room temperature rises above the set point the solenoid valve opens, and the coil is flooded with refrigerant and the pressure rises above the reset point and the system starts back on line. The control system should be programmed to keep the liquid line solenoid (and therefore the compressor) from cycling within 3 minutes. This is to keep the system from short cycling.

Configuration of Condensing Unit

Low pressure switch setting should be approximately 25-30 psi below the set point.

It is assumed that a standard equipment setup on the condensing unit will be used. Sight glass, receiver, liquid line filter and high pressure switch. For long runs or installation of the condensing unit in areas that can see large swings of temperature it is recommended that a head pressure control valve and an accumulator be used for system reliability.

Airflow Considerations

The wine room evaporators are designed to be located in the room to be cooled. For the RM unit it is permissible to duct the incoming and exiting air several feet. However care should be taken to make sure that the ducting does not restrict the airflow or the system may not perform properly. For WM/DQ models ducting is not recommended.

Nominal system temperatures should be a 38 degree evaporator with the leaving air temperature at the duct spud of 48 degrees (with a 55 degree room). For rooms that do not have a 55 degree set point the temperature across the air handler should be 7 -8 degrees F. Higher temperature splits are indicative of too much airflow. Lower temperatures are indicative of too little airflow.

For installations where the maximum humidity is desired to be maintained to a specific level the expansion valve may be adjusted up or down to achieve the desired level. In cases where the expansion valve is adjusted please ensure that the coil temperature does not drop to below 32 Deg F or coil freeze up may result.

Drain Line

Equipment must be installed level or with a slight angle toward the drain connection (maximum of ½ inch from end to end). Plastic or metal drain lines should be installed with a minimum pitch of

1/4" per foot slope. All condensate water must be disposed of properly in accordance with local codes and ordinances. Do not allow condensate water to accumulate or become a safety or biological hazard.

NOTE: On HS units a "P" trap (such as those used on sinks) must be installed. The P Trap should have a minimum of 2 inches of drop to act as a seal to the vacuum in the evaporator. In cases of multiple units attached to a common drain line a vent should be used to prevent the other units from affecting the condensate drainage from the other units.

Motors

Motors are lubricated for life and are thermally protected. Verify an inoperative motor by checking the voltage across the leads. If the motor fails to operate, replace the motor.

Wiring

The nameplate contains the units electrical characteristics. The unit **MUST** be properly grounded and all wiring should be in accordance with applicable local and national codes.

Maintenance

The wine unit evaporator is not equipped with a air filter due to the remote nature of the installations. LRC recommends that an air filter be installed in an easily accessible area to minimize the dirt and lint build up on the coil.

The unit should be periodically inspected for lint and soil accumulation. The time frame for inspections should be on a 1 month basis during initial system installation and commissioning. Based on the results seen in that particular installation the interval may be adjusted to reflect actual installation conditions. In the event that the coil needs to be cleaned do not use cleaners containing ammonia – failure of the refrigeration system may result. Inspect drain pan and fan areas for proper condensate drainage.

Replacement Parts

LRC Coil Co. recommends the use of authorized factory parts to maintain this unit. The use of non factory parts can lead to possible safety or performance issues. Contact LRC Coil for replacement parts. Please be prepared to provide complete model and serial numbers when ordering parts.

Defrost/Drain Cycle

The unit does not require a defrost cycle since by design the coil does not go below freezing. However if the fan is always left on a drain cycle must be included in the daily operation to ensure that the drain pan can empty of water. At least 1 time per 2 hours the fan should be cycled off for at least 1 minute to allow time for water to drain from the unit.

Drain Pan

The unit is equipped with an internal drain pan. In the event that the unit is installed over an occupied area or above sensitive contents LRC recommends that a secondary drain pan be installed. For assistance with secondary drain pans contact the Factory.

Controls –

Simple Thermostat – Wire thermostat to the solenoid valve and fan motor. The condensing unit and fan will cycle on it's own adjustable low pressure switch (pump down type of system).

For installations where the unit is located in an area that could suffer major damage in the event of a drain pan overflow it is recommended that a secondary drain pan be utilized with a water sensor in series with the fan or a remote control device to signal a problem with the unit.

Note on Temperature Controls: For Fan always on conditions it is best to put the temperature probe of the controller into the return air duct for best results. For systems where the fan and/or condensing unit cycles with the thermostat a sensor is better placed in the room in a location that will allow good airflow. LRC does not recommend the use of a wine bottle filled with water with a probe inside. This type of sensing system can cause wide swings of the wine room air temperature in order to stay within the resolution of the temperature controller. These swings can be drastic enough to cause damage to the wine over time.

Code	Description	Min	Max	Unit of Measure	Default	Factory rec.
/C	ambient probe calibration	-.127	127	C/F	0	Default
/2	measurement stability	1	15	-	4	Default
/4	selection of probe to display	0	1	-	0	Default
/5	selection C/F	0	1	-	0	1
rd	control differential	0	19	C/F	2	1
r1	min. set allowed	-50	127	C/F	-50	40
r2	max set allowed	-50	127	C/F	60	65
r3	enable alarm	0	1	-	0	Default
r4	automatic variation of setpoint	-20	20	C/F	3	0
c0	compressor start delay	0	15	min.	0	Default
c1	min. time between 2 starts	0	15	min.	0	4
c2	min. compressor off	0	15	min.	0	4
c3	min. compressor on	0	15	min.	0	4
c4	duty cycle safety relay	0	100	min.	0	Default
cc	contious cycle duration	0	15	hours	4	Default
c6	alarm bypass	0	15	hours	2	Default
d0	type of defrost	0	3	-	0	2
d1	interval between 2 defrosts	0	199	hours/min	8	0
dt	end defrost temp.	-50	127	C/F	4	-50
dP	max. defrost duration	1	199	min./s	30	Default
d4	defrosting at insturment on	0	1	-	0	Default
d5	defrost delay	0	199	min.	0	Default
d6	display off during defrost	0	1	-	1	0
dd	post defrost dripping time	0	15	min.	2	0
d8	alarm bypass after defrost	0	15	hours	1	Default
d9	defrost priority over comp. times	0	1	-	0	Default
dC	time bias	0	1	-	0	Default
A0	alarm/fan differential	0	19	C/F	0	Default
AL	shift low temp. alarm threshold	0	127	C/F	0	Default
AH	shift high temp. alarm threshold	0	127	C/F	0	100
Ad	temp. alarm delay	0	199	min.	0	Default
A4	digital input configuration	0	4	-	0	Default
A7	alarm input detection	0	199	min.	0	Default
F0	fan operation mode	0	1	-	1	0
F1	fan on temp.	-50	127	C/F	5	Default
F2	fans off with compressor	0	1	-	1	Default
F3	fans off during defrost	0	1	-	1	Default
Fd	fans time-out post dripping	0	15	min.	1	Default
H0	serial address	0	199	-	1	Default
H1	enable defrost/malfunction relay	0	1	-	1	Default
H2	disable keypad	0	1	-	1	Default
H4	disable buzzer	0	1	-	0	Default
L1	control setpoint	-50	127	C/F	4	Default

Shaded areas are left at default setting

to access the parameters press set key for (5) sec. menu displays select (PS) and enter (22) press set key to confirm.

LRC Coil Company Warranty

We're proud of the workmanship that goes into every LRC product. Because of our exacting design and manufacturing standards, and our thorough testing prior to shipping, we unconditionally guarantee our products to be free from manufacturing defects for one year.

Note: You must contact the factory at (562) 944-1969 with regard to all warranty issues. Failure to contact LRC prior to servicing the equipment may void the warranty.