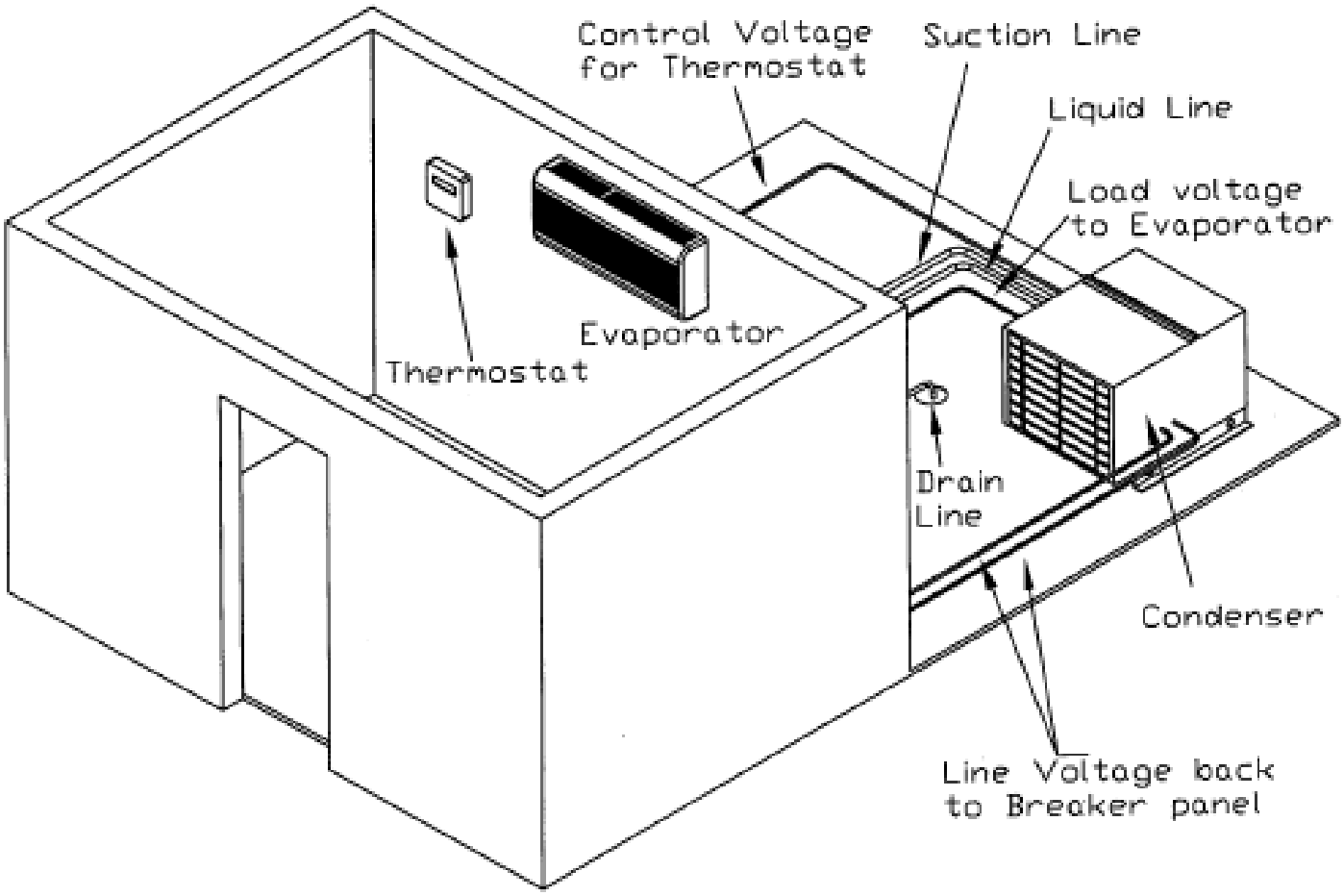


Ductless Split System

- Requires an HVAC technician to install and charge with R-22 refrigerant.
- Electric for evaporator is hard wired to condenser.
- Industrial grade unit for longer life span.
- Easy to install
- Indoor or outdoor condenser available
- Drain line, refrigerant and line sets, and electric supply required

Supplies and materials needed for installation

1. Refrigeration piping – sized to match condenser and distance, not to exceed 120 equivalent feet in length
   Insulation for suction line
2. Condenser pad
3. Required electrical services
   A. Dedicated service for condenser
   B. Dedicated service for evaporator (to and from condenser)
   C. 2-conductor low voltage from thermostat to condenser control panel
4. R-22 refrigerant for system
5. Miscellaneous hardware, brackets, sealant etc…
6. Tools and equipment needed to perform the installation

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. Crankcase pressure regulator
6. Filter drier
7. Sight glass
8. Access tee
9. Fan cycle control, mounted and wired.
10. Wiring diagrams
11. Installation instructions

Refrigerant Piping and Charging Instructions

Caution: This Refrigeration Equipment must be installed by a qualified technician

1. Select a suitable location for the evaporator with respect to air circulation, racking, drain, refrigerant and electrical lines. Provide adequate clearance for airflow and maintenance.

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. 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. 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. Install a line set sized according to Table 1. The evaporator and compressor may have different fitting sizes, so some field supplied reducers will be necessary. Insulate the suction line the entire length of the run. Maximum line length is 120 equivalent feet. Long sweep elbows are equivalent to 5 linear feet. Horizontal line runs should slope ½" per 10 ft. towards the condenser for proper oil return. Avoid sags or bends that will trap oil. For installations with vertical height differences greater than 20 feet, consult Tecumseh Engineer Assistance. Line lengths in excess of 100 linear feet may cause compressor damage and will void the warranty. The suction line downstream of the crankcase pressure regulator may be the same size as the compressor fitting to reduce the number of fittings required.

Table 1

UNIT SIZE	LIQUID LINE	VAPOR LINE	Receiver Cap. AT 90% FULL
3000 BTU	1/4	3/8	3.4 LBS
4000 BTU	1/4	3/8	3.4 LBS
6000 BTU	1/4	1/2	7 LBS
8000 BTU	1/4	1/2	7 LBS
10000 BTU	5/16	5/8	8.4 LBS
13000 BTU	5/16	5/8	8.4 LBS
18000 BTU	3/8	3/4	13.8 LBS

Maximum length 120 equivalent feet

4. Install the crankcase pressure regulator, in the suction line only, approximately 4 to 6 ft. away from the compressor. Opening the compressor discharge line is not necessary. Do not install the regulator as a head pressure control. Follow the instructions included with the regulator. Do not place upside down or create an oil trap. Allow adequate clearance above valve for adjustment of pressure. Remove valve caps prior to brazing. Ensure proper flow direction and wrap with a wet rag to prevent over heating. Install valve core and replace valve caps after brazing.

5. For units less than 10,000 BTUH, install the access tee provided 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 a 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 that may have loosened during shipping.

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

8. Install electrical wiring according to the Electrical Requirements on page 5 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 nameplate refrigerant connected to the liquid line. Add approximately 2 lbs. of refrigerant. Do not start unit for the first time with full charge.

10. 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. When enough charge has been added, set the suction pressure at the compressor to 30 using the crankcase pressure regulator. 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. Slowly add refrigerant until the bubbles in the sight glass disappear. The condenser fan motor must be running to complete the charge.

11. After the system has run for about 10 minutes check the sight glass again. Under normal operation there should be no bubbles in the sight glass. If bubbles are present, the system is low on refrigerant. Add refrigerant to eliminate bubbles.

12. After the wine room has reached 55°, check the sight glass and gauge readings once again. Condenser leaving air temperature should be approximately 30° above ambient temperature. If a normal temperature drop of 6° to 10° is occurring with 55° entering air, then you have finished with this portion of the installation. If the required temperature drop is not occurring, move on to step 13.

Note: Backpressure on pressure regulator will be much greater than suction pressure at the compressor, increasing suction pressure decreases backpressure. Maintain approximately 30-PSI suction pressure during run cycle.

13. If the system does not have a temperature drop of 6° to 10° at the evaporator, the crankcase pressure regulator needs to be adjusted. To increase the ΔT, raise the suction pressure at the compressor. To reduce the ΔT, lower the suction pressure at the compressor. Remember that a suction pressure at the compressor no lower than 20 PSI is recommended here. Strive to keep suction pressure in the evaporator at 65 PSI or higher to prevent a freezing condition. This can be read at the OPR crankcase pressure regulator service port. When the normal temperature drop and safe working pressures occur, you have reached the proper setting for the system. Close the system and set the thermostat to 55°. Remember, where more humidity is required, the suction pressure at the compressor will be lower. For areas where more dehumidification is needed, the suction pressure at the compressor will be higher. Never exceed the maximum amp draw for the compressor. Most applications require suction pressures at the compressor between 25 and 35 PSI.

Each installation is unique. Variations in room design, application, local climate, and electrical supply can affect the system performance. Therefore some adjustments to the recommended settings may be necessary. Cool the room to 55° before making these adjustments.

The most common complaint is excessive temperature drop and low humidity in the cellar. If this is the case, first ensure the evaporator fan is working properly and unobstructed. If the fan is working properly and the temperature drop is too large, adjust the crankcase pressure regulator to a lower setting. 6 PSI is a good adjustment increment and is equal to one full turn of the OPR. Allow the unit to run for several minutes and recheck the temperature drop. Continue to do this until a temperature drop of 6° to 10° is achieved. Do not allow the suction pressure at the compressor to fall below 20 PSI.

Always monitor the compressor amp draw with an ammeter when adjusting the crankcase pressure to prevent over loading the compressor. Never allow compressor discharge temperatures to exceed 240° F.

Service and Maintenance

Service Parts	Maintenance Procedures	Period
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
Indoor unit	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
Outdoor unit	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

Electrical Requirements

1. Check Tecumseh rating plate for proper voltage, maximum fuse and wire size.
2. Line voltage for condenser connects to terminals #1 and #4 in the condenser control panel.
3. A 15 amp 220 volt power circuit for the evaporator connects to terminals A and B on TB2 in the **condenser** control panel. Load voltage for the evaporator fan motor will come from terminals D and E on TB2. No low voltage control wiring required at the evaporator.
4. Low voltage from R and Y on the thermostat connects to terminals H and G on TB2 in condenser control panel.
5. Each unit must be installed in accordance with the National Electric Code. Check local codes for additional precautions and ordnances to installation.

Field Wiring

Condensing unit

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 on evaporator terminal block.

Terminal E – 220 Load voltage to the evaporator fan motor. Attach to black or yellow wire on evaporator terminal block.

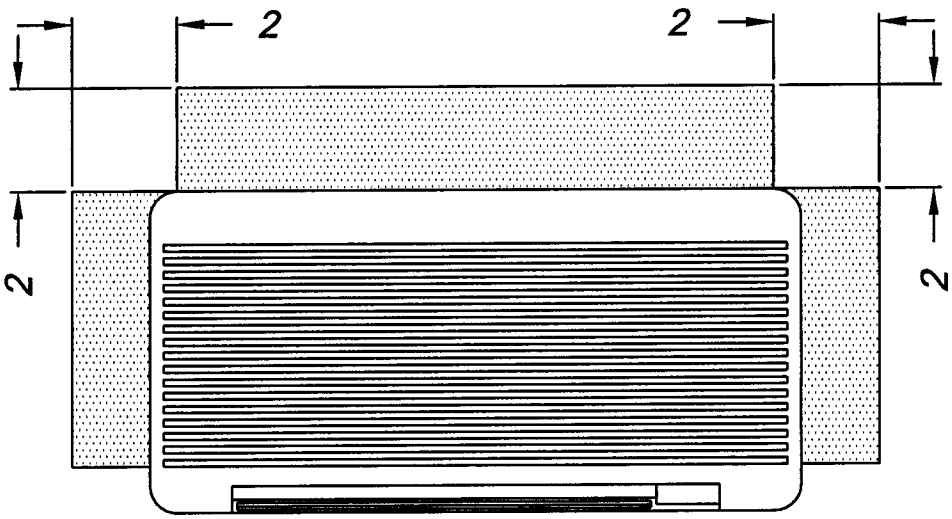
Terminal G – Thermostat Y

Terminal H – Thermostat R

System Ground Lug Above Terminal Boards

*Condensing unit requires two circuits with disconnects from the service panel.

INSTALLATION OF THE INDOOR UNIT

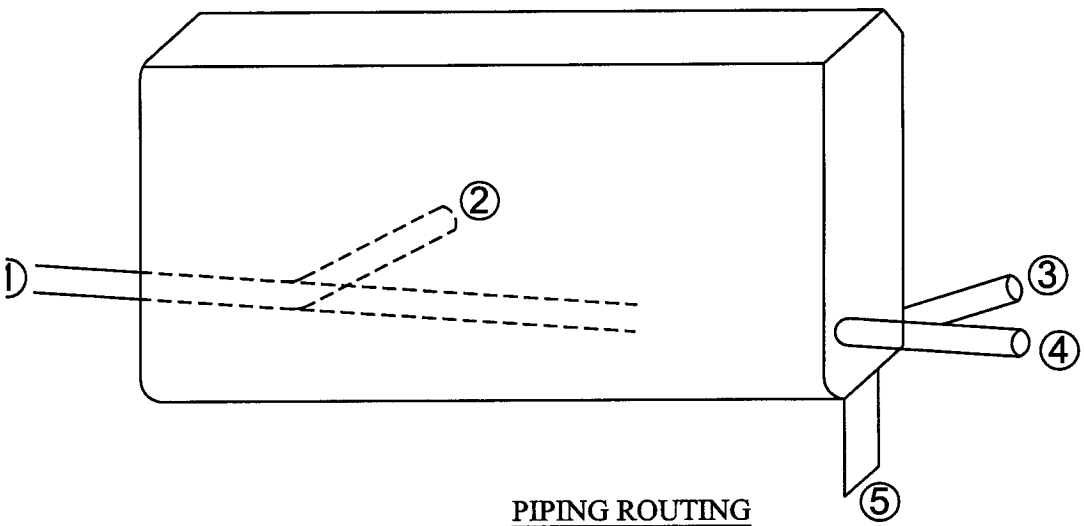


CLEARANCE

The indoor unit must be installed in such way so as to prevent short cycling of the discharge air with the return air. Please follow the installation clearance shown in the figure. Do not place the indoor unit in direct sunlight. Also, this location must be suitable for piping and drainage, and be away from doors or windows.

MOUNTING INSTALLATION PLATE

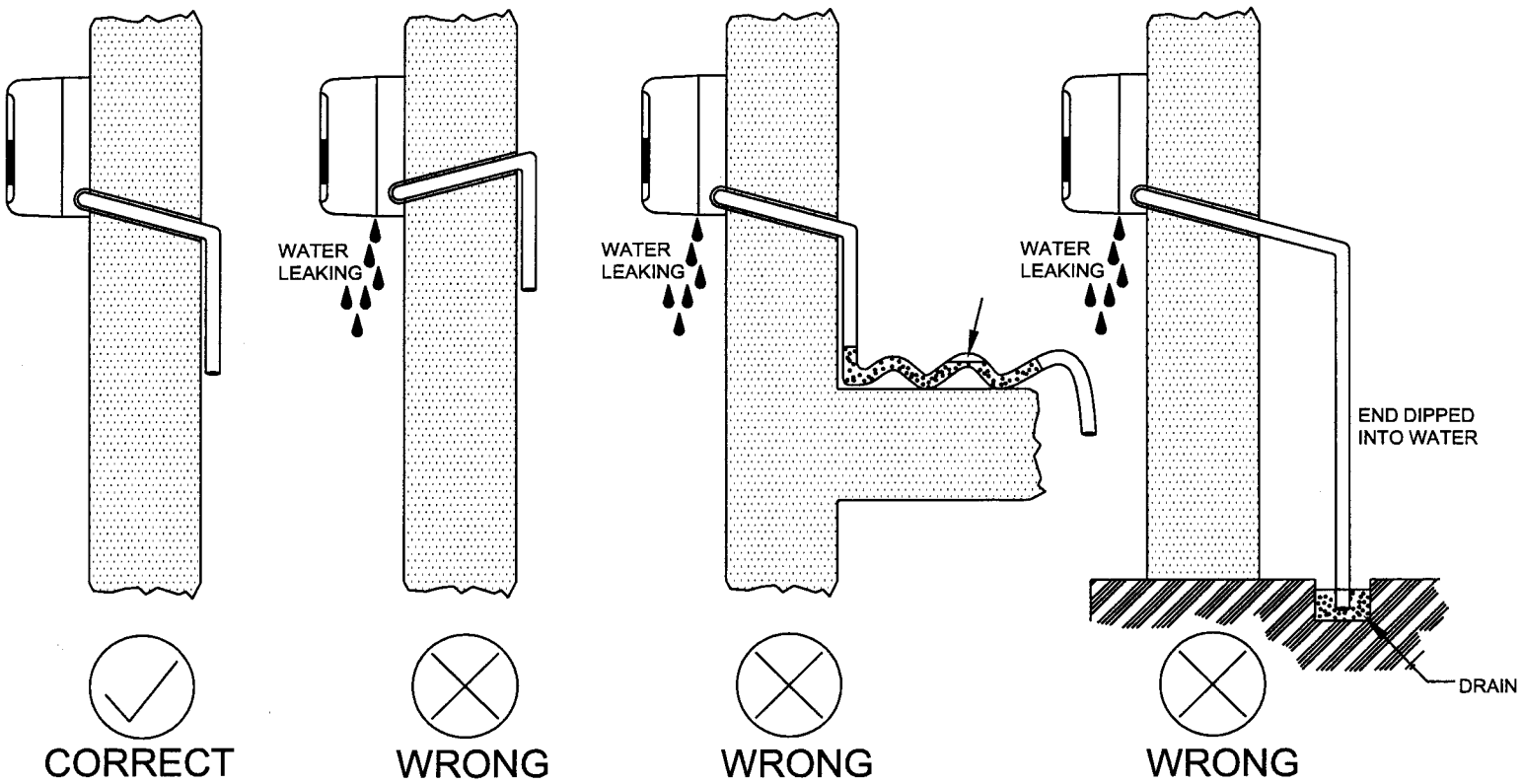
Ensure that the wall is strong enough to withstand the weight of the unit. Otherwise, it is necessary to reinforce the wall with plates, beams or pillars. Securely mount the plate to the wall. The plate must be level. In case the piping exits trough the wall, drill a 2 1/4" hole slightly lower on the outside of the wall.



PIPING ROUTING

The refrigerant piping can be routed to the unit in a number of ways, by using the cut-out holes on the casing of the unit. Bend the pipes carefully to the required position in order to align with the holes. For the right hand and rear side out, hold the bottom of the piping and then twist them to the required direction (see figure). The condenser drain hose can be taped to the bottom of the pipes. Electric wiring can be run through the same hole, so only one hole is needed.

WATER DRAINAGE



CONDENSATE DRAIN

The indoor drain pipe must slope downward and have no traps. The drain may be taped to the bottom of the refrigerant lines. Requires an air gap to flow properly.

Hook the indoor unit onto the upper portion of the installation plate (Engage the two hooks at the rear top of the indoor unit with the upper edge of the installation plate). Ensure that the hooks are properly seated on the installation plate by moving it to the left and right.

ELECTRIC

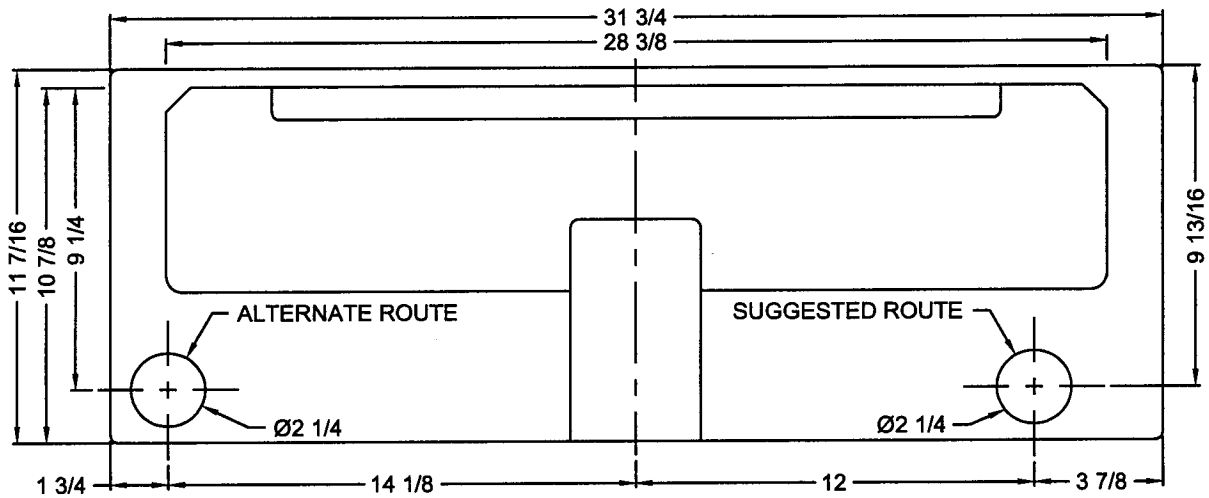
The blue and black wires or the blue and yellow wires on the evaporator terminal block recieve 220 Volts from terminals D & E on TB2 in the condenser control panel. Securely fasten the ground wire to the terminal with the green wire or green with a yellow stripe wire. A seperate 220 volt 15 amp circuit from service panel to terminals A & B on TB2 required. No low voltage wiring required at the evaporator.

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

MOUNTING PLATE FOR 3,000-8,000 BTU UNITS

POSSIBLE ROUTES FOR REFRIGERANT LINES, DRAIN, AND ELECTRIC

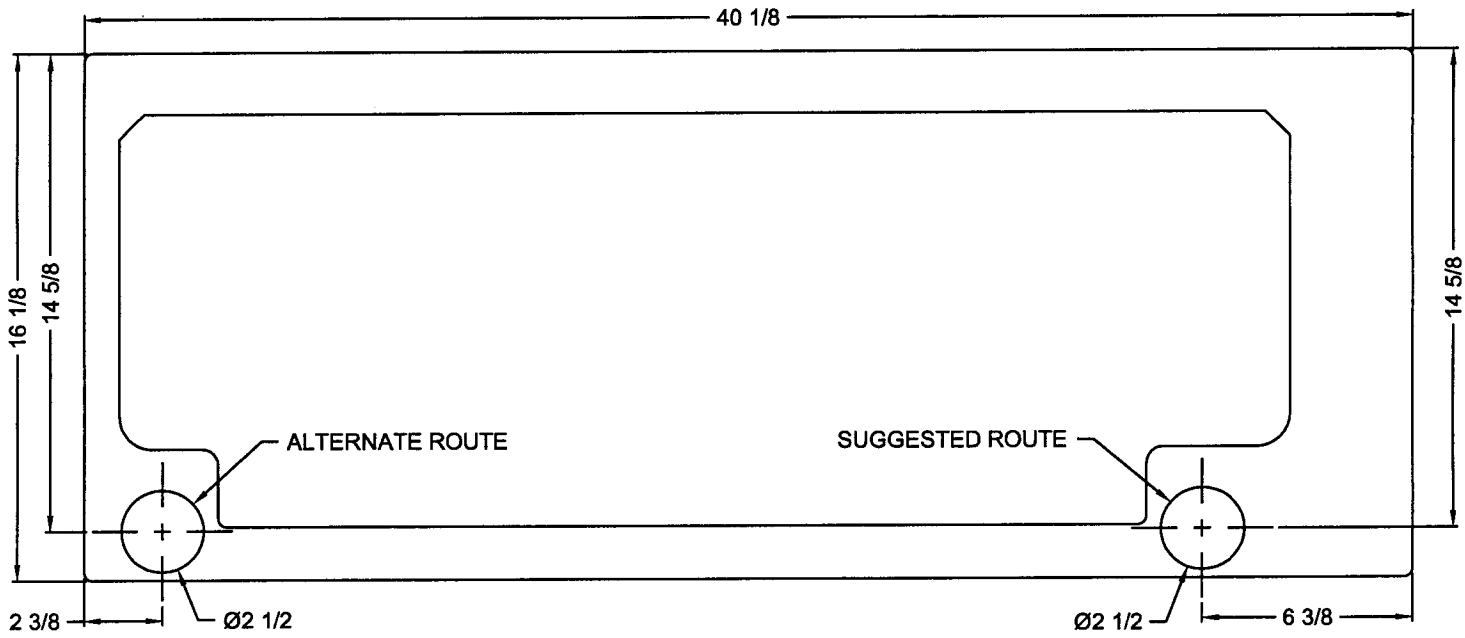
(ONLY ONE HOLE NEEDED)



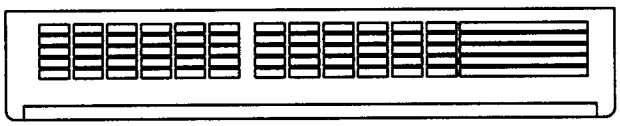
MOUNTING PLATE FOR 10,000-18,000 BTU UNITS

POSSIBLE ROUTES FOR REFRIGERANT LINES, DRAIN, AND ELECTRIC

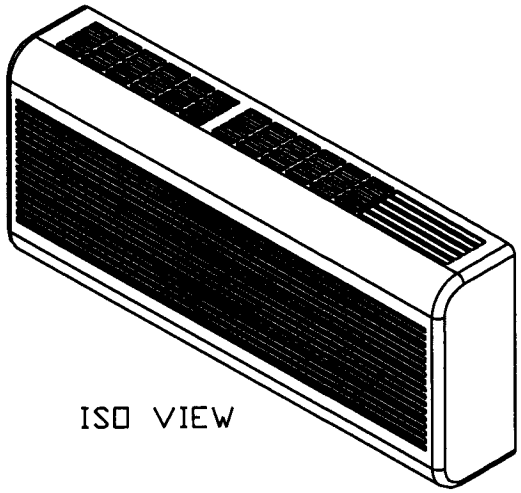
(ONLY ONE HOLE NEEDED)



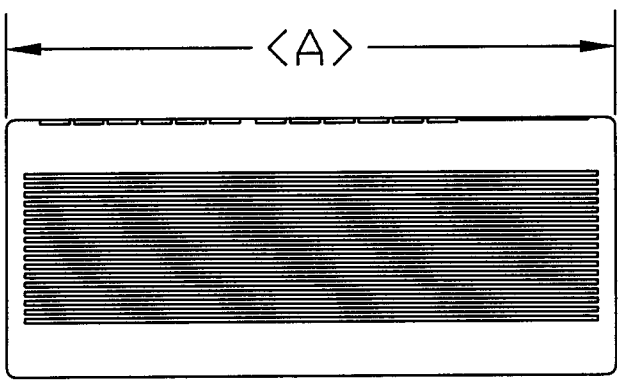
STANDARD WALL MOUNT EVAPORATOR FOR DUCTLESS SPLIT REFRIGERATION SYSTEMS



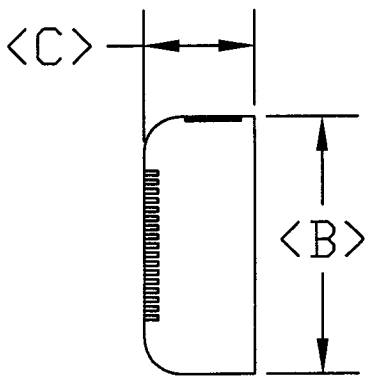
TOP VIEW



ISO VIEW



FRONT VIEW



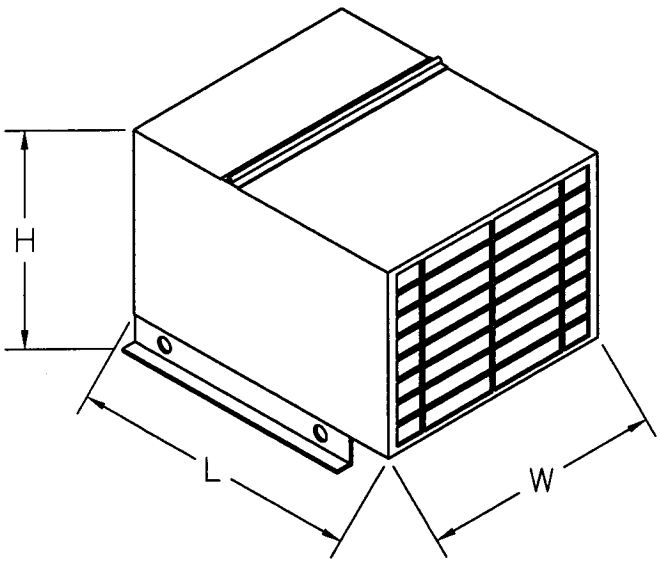
SIDE VIEW

Standard Evaporator for Split Refrigeration Systems

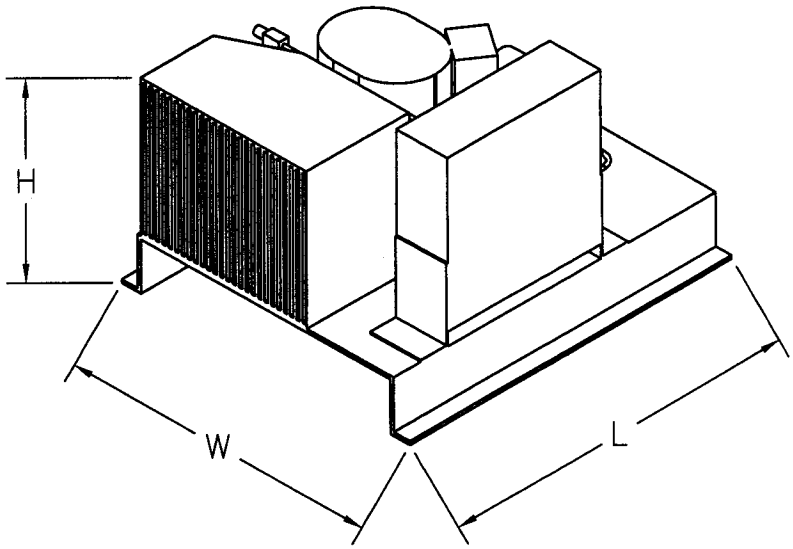
Model#	BTU	Dimensions in inches			Liquid Line	Suction Line	Drain Line	Shipping Weight	Power Supply	Running Amps	Max. Fuse
		A	B	C							
SPL3	3000	31 3/4	11 7/16	7 1/8	1/4 MF	1/2 MF	5/8 PVC	23 lbs.	220-240/1/60	0.16	15
SPL4	4000	31 3/4	11 7/16	7 1/8	1/4 MF	1/2 MF	5/8 PVC	23 lbs.	220-240/1/60	0.16	15
SPL6	6000	31 3/4	11 7/16	7 1/8	1/4 MF	1/2 MF	5/8 PVC	23 lbs.	220-240/1/60	0.16	15
SPL8	8000	31 3/4	11 7/16	7 1/8	1/4 MF	1/2 MF	5/8 PVC	23 lbs.	220-240/1/60	0.16	15
SPL10	10000	40 1/8	14 5/8	7 1/8	1/4 MF	5/8 MF	25/32 PVC	34 lbs.	220-240/1/60	0.19	15
SPL13	13000	40 1/8	14 5/8	7 1/8	1/4 MF	5/8 MF	25/32 PVC	34 lbs.	220-240/1/60	0.19	15
SPL18	18000	40 1/8	14 5/8	7 1/8	3/8 MF	3/4 MF	25/32 PVC	35 lbs.	220-240/1/60	0.51	15

Field supplied reducers required. Run line sets according to table 1.

Condenser Specifications for Ductless Split Units



Outdoor Condenser



Indoor Condenser

Indoor Condenser for Split Refrigeration Systems

Model #	BTU	Dimensions in inches L	W	H	Liquid Line	Suction Line	Shipping Weight	Power Supply	Min. Circuit Amps	Max. Fuse Size
IDC3	3000	27	24 1/2	14 3/8	1/4 MF	1/2 MF	71	208-230/60/1	4.9	15
IDC4	4000	27	24 1/2	16 3/4	1/4 MF	1/2 MF	73	208-230/60/1	6.1	15
IDC6	6000	27	24 1/2	18	3/8 MF	1/2 MF	85	208-230/60/1	7.5	15
IDC8	8000	27	24 1/2	17	3/8 MF	5/8 MF	101	208-230/60/1	9.5	15
IDC10	10000	27	24 1/2	19 3/4	3/8 MF	7/8 SW	134	208-230/60/1	13.4	20
IDC13	13000	29 1/2	37	23	3/8 MF	7/8 SW	183	208-230/60/1	17.4	25
IDC18	18000	29 1/2	37	23	3/8 MF	7/8 SW	180	208-230/60/1	19.5	35

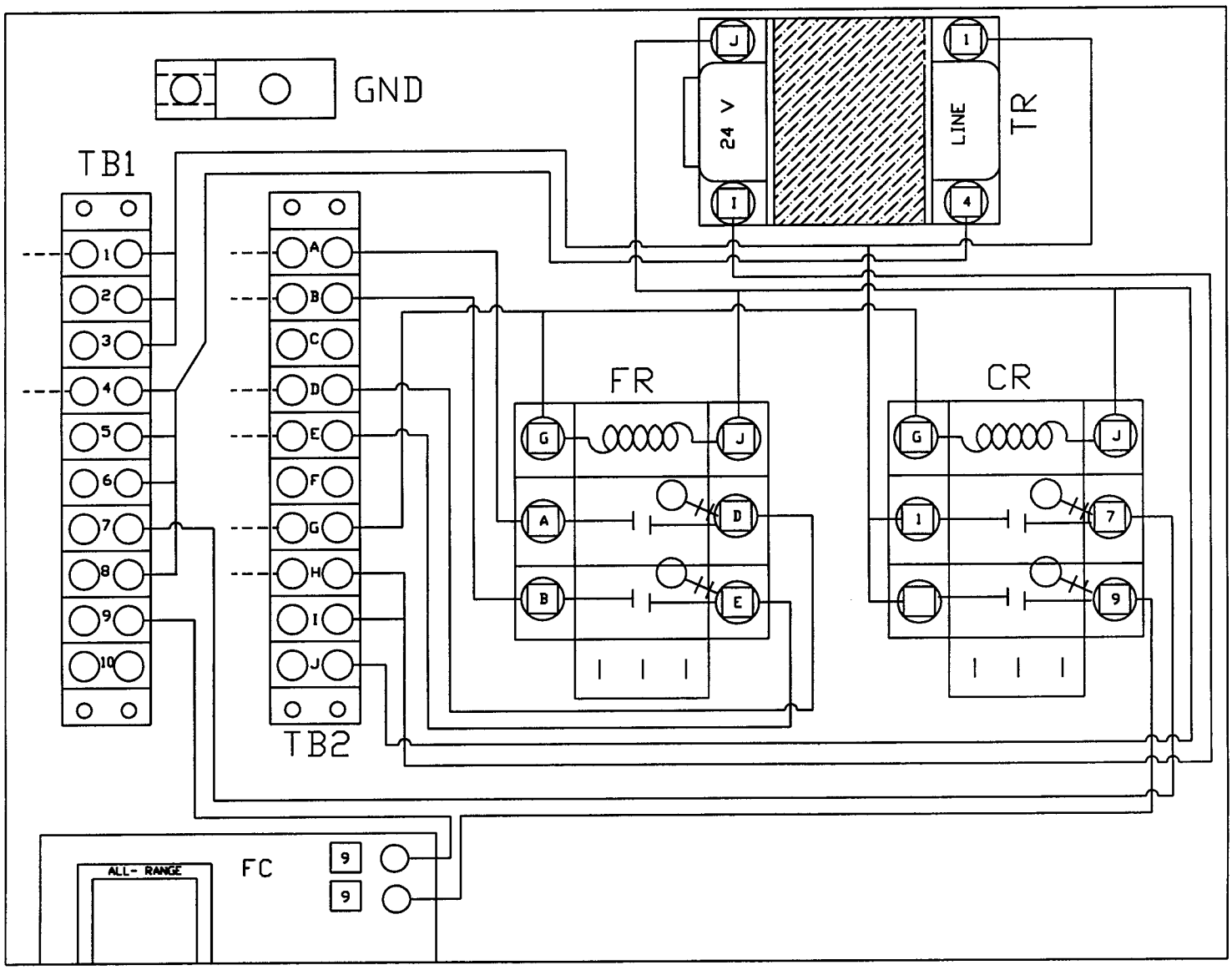
Field supplied reducers required. Run lines for the system based on table 1.

Outdoor Condenser for Split Refrigeration Systems

Model #	BTU	Dimensions in inches L	W	H	Liquid Line	Suction Line	Shipping Weight	Power Supply	Min. Circuit Amps	Max. Fuse Size
ODC3	3000	27	20	20	1/4 MF	1/2 MF	112	208-230/60/1	4.9	15
ODC4	4000	27	20	20	1/4 MF	1/2 MF	114	208-230/60/1	6.1	15
ODC6	6000	27	24 1/2	22	3/8 MF	1/2 MF	134	208-230/60/1	7.5	15
ODC8	8000	27	24 1/2	22	3/8 MF	5/8 MF	150	208-230/60/1	9.5	15
ODC10	10000	27	24 1/2	22	3/8 MF	7/8 SW	183	208-230/60/1	13.4	20
ODC13	13000	29 1/2	37	27 1/2	3/8 MF	7/8 SW	266	208-230/60/1	17.4	25
ODC18	18000	29 1/2	37	27 1/2	3/8 MF	7/8 SW	263	208-230/60/1	19.5	35

Field supplied reducers required. Run lines for the system based on table 1.

3000 - 10000 CONDENSER CONTROL PANEL

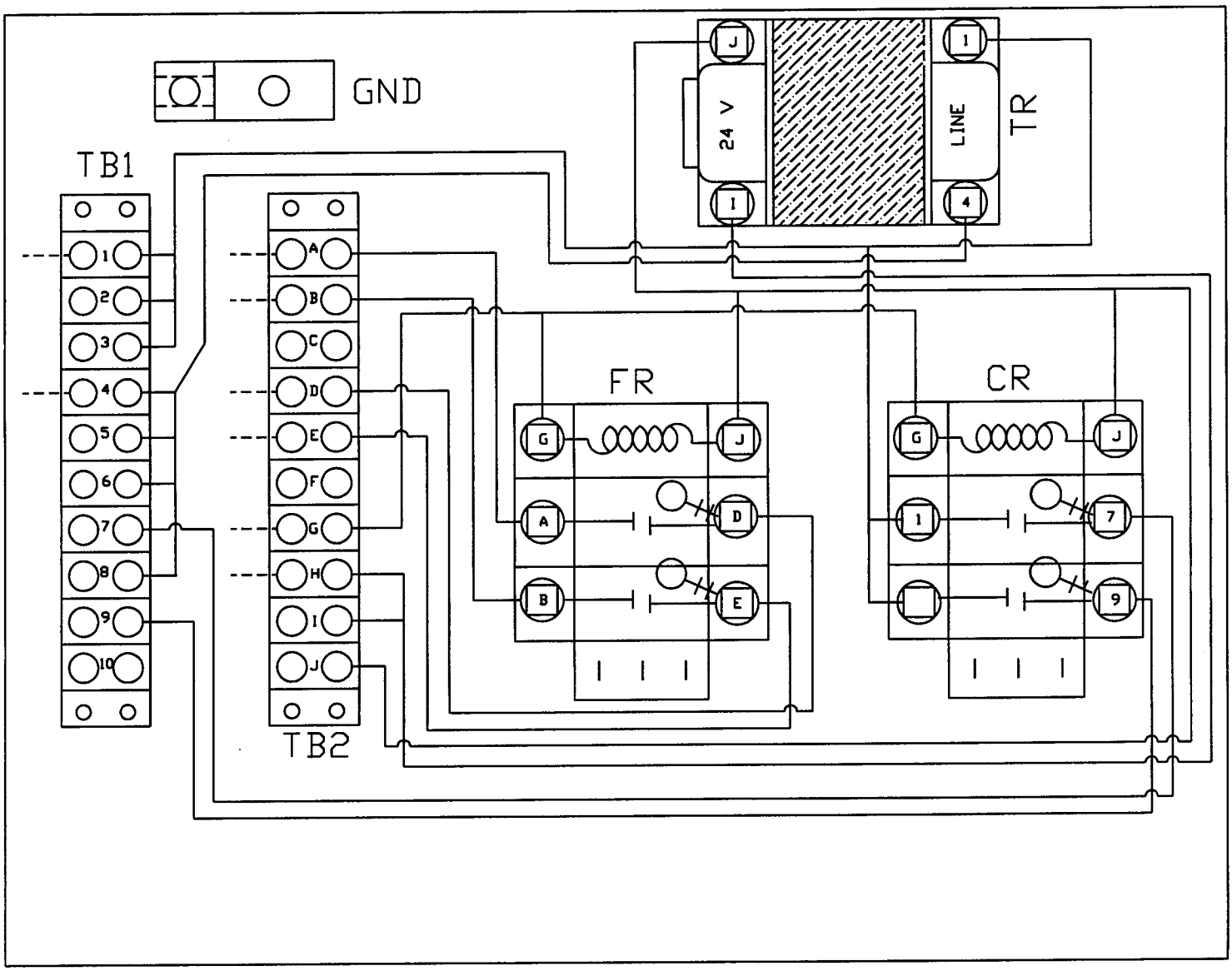


LEGEND 10000 BTUH DS	
SYMBOL	DESCRIPTION
CCH	CRANKCASE HEATER
CF	COND. FAN
COMP	COMPRESSOR
CR	COMPRESSOR RELAY
DPC	DUAL PRESSURE CONTROL
EF	EVAPORATOR FAN
FC	FAN CYCLE CONTROL
FR	EVAPORATOR FAN RELAY
GND	GROUND
TR	TRANSFORMER
▭	FACTORY JUMPERS
----	FIELD WIRING

TB1		TB2	
1	220V LINE VOLTAGE FROM SERVICE PANEL	A	220V LINE VOLTAGE FROM SERVICE PANEL
2	CCH	B	220V LINE VOLTAGE FROM SERVICE PANEL
3		C	
4	220V LINE VOLTAGE FROM SERVICE PANEL	D	220V LOAD VOLTAGE FOR EVAPORATOR
5	CCH	E	220V LOAD VOLTAGE FOR EVAPORATOR
6		F	
7	COMPRESSOR	G	THERMOSTAT Y
8	COMPRESSOR	H	THERMOSTAT R
9	CONDENSER FAN MOTOR	I	24V HOT
10		J	24V COMMON

220V COMPRESSOR 220V EVAPORATOR

13000 - 18000 CONDENSER CONTROL PANEL



LEGEND 10000 BTUH DS	
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TR	TRANSFORMER
⊓	FACTORY JUMPERS
----	FIELD WIRING

TB1		TB2	
1	220V LINE VOLTAGE FROM SERVICE PANEL	A	220V LINE VOLTAGE FROM SERVICE PANEL
2	CCH	B	220V LINE VOLTAGE FROM SERVICE PANEL
3		C	
4	220V LINE VOLTAGE FROM SERVICE PANEL	D	220V LOAD VOLTAGE FOR EVAPORATOR
5	CCH	E	220V LOAD VOLTAGE FOR EVAPORATOR
6		F	
7	COMPRESSOR	G	THERMOSTAT Y
8	COMPRESSOR	H	THERMOSTAT R
9	CONDENSER FAN MOTOR	I	24V HOT
10		J	24V COMMON

220V COMPRESSOR 220V EVAPORATOR

Trouble shooting

Fault	Cause	Solution
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	Call a qualified technician
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	Call a qualified technician
	3. Crankcase pressure set too high/low	Call a qualified technician
	4. Compressor not running	Call a qualified technician
	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	Call a qualified technician
	5. System low on charge	Call a qualified technician
	6. Crankcase pressure regulator faulty or set improperly	Call a qualified technician
Water leaking from unit	1. Condensate drain clogged	Clear out drain
	2. Evaporator coil frozen	See above
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	Call a qualified technician
	3. Faulty fan relay	Call a qualified technician
Compressor short cycles	1. Evaporator blows on thermostat	Move thermostat
	3. Unit low on charge	Call a qualified technician
	4. Condensing fan motor/capacitor faulty	Call a qualified technician
	5. Compressor and/or starting components faulty	Call a qualified technician
Humidity in cellar too low	1. Cellar vapor barrier not sufficient	Install proper vapor barrier
	2. Crankcase pressure regulator improperly set	Call a qualified technician