



Mini-Spot BU Unit
Operating and Maintenance Instructions

INSTALLATION INSTRUCTIONS TO THE INSTALLER

A.) Hanging the unit.

B.)

- 1) Remove ceiling tile where unit is to be located and remove any adjacent tiles that would be helpful in handling the unit while positioning it in the ceiling.
- 2) Secure suitable type material (such as slotted angle) in place. The material should be capable of supporting the weight of the unit. Now attach all thread rods (3/8" field supplied) to angle. The rods should have double nuts. See diagram #1 for spacing of rods to ensure they will line up with hanger when unit is raised into the ceiling.
- 3) Next drill holes for hanger positioning screws. Hangers' positions are marked on the sides of the units. Do not mount hangers to the unit at this time. Note: if it is possible to remove one of the 4' T bar section from the ceiling, then the hangers can be mounted prior to lifting unit into ceiling.
- 4) Now raise unit into the ceiling. The use of a high jack is recommended, once unit is above the ceiling attach mounting brackets to unit and then attach all thread rods to hangers. Once all thread rods are attached to hangers raise unit several inches above the ceiling to allow placement of the grille into the ceiling grid. After grille is in place lower unit just far enough for the frame to form an airtight seal with the foam backing on the grille. The unit is now ready for electrical wiring or water piping.

C) Electrical

All field wiring should be done by a qualified electrician and should meet all local codes. Knockouts for the unit power, control wiring, and condenser fan are located in the top of the unit directly above the control section. A wiring harness for the remote condenser fan is supplied with the unit. The end of the harness with the stacons is attached to the control section of the unit. Connect the stacons to spade terminal on the main contact on the load side.

D) Condensate

A 3/4" mpt fitting is supplied on each side of the unit. Cap the fitting that will not be used.

E) Motor Speed

All 2 and 3 ton units are shipped with three speed motors. Changing the motor leads in the evaporator section of the unit may change the motor speed. Access to leads is through the access door on the control panel side of the unit. Leads will either be color coded or number coded.

On units with color-coded leads the colors represent the following speeds: On units with number coded leads the Number represents the following speeds

YELLOW	=	COMMON	=	1
RED	=	LOW SPEED	=	4
BLUE	=	MEDIUM SPEED	=	3
BLACK	=	HIGH SPEED	=	2

To change the speed of the unit first disconnect power to the unit. Disconnect speed now in used and cap this lead with suitable device. Reconnect lead from fan relay to speed desired.

Note 1: On units that have both humidifier and reheat the auxiliary relay is omitted and a jumper is installed between terminals (R) and (G).

Note 2: 140 degrees domestic hot water should be supplied to humidifier in order to satisfy rated capacity.

Note 3: a small plastic orifice installed between the solenoid valve and the evaporator pad regulates the water flow.

Note 4: the humidistat and dehumidistat can either be wall mounted or unit mounted.

SYSTEM SAFETIES

The unit has several inherent safety devices. High and Low pressure switches are an integral part of the refrigeration system. Should an unsafe high and or low-pressure condition exist the appropriate safety device will trip. Condensate overflow switches are installed on the drain pan of each unit. There are two switches and should the condensate level rise to an unsafe level the switches will cause the unit to shut down operation. This is accomplished by interrupting the low voltage power supply from the 24-volt transformer. Both compressor and fan motor have an internal automatic reset safety, which is the thermal type.

MAINTENANCE

Fan motor Lubrication: The condenser fan motor should be oiled once per year using a SAE#10 or SAE#20 non-detergent oil. There are oil ports at each end of the motor.

Condenser Coil: Clean coil with a stiff brush. Be careful of the coil fins due to the fact that they are razor sharp. After brushing use a vacuum or compressed air to clean away brushed off dirt.

Remote Condenser Coil: Clean coil as stated above or use low pressurized water or steam.

Condensate pan & Drain: Check and clean on a bi-monthly basis.

CHARGING PROCEDURE

Before charging make sure that no air was allowed to enter the system. If pre charged tubing was not used evacuate the system completely and check for leaks. When charging the unit do not use liquid refrigerant in the suction side. Charge with vapor refrigerant only. A manual shut-off valve is provided between the receiver and expansion valve. By shutting off this valve charging the system can be accomplished faster. Be sure to open the valve when charging is completed.

Note: The low-ambient refrigerant control valve will bypass whenever the head pressure is lower than 220 psig. This is normal.

AIR COOLED UNITS- REFRIGERANT LINE SIZING

Unit tonnage	Circuit	Liquid Drain Line	Hot Gas Line
1	1	1/2"	1/2"
2	1	5/8"	7/8"
3	1	5/8"	7/8"

- 1) Each circuit will have a liquid drain line and a hot gas line.
- 2) The liquid line is an oversized liquid line that runs between the condenser and receiver (unit). Its size allows vapor in the receiver to return to the condenser against the flow of liquid refrigerant.
- 3) On horizontal runs the hot gas line should be pitched downward in the direction of flow 1/2" for every ten feet (10 ft)
- 4) On vertical rises the hot gas line should be trapped every twenty feet (20 ft)
- 5) Refrigerant lines should be properly supported to avoid pulsation vibrations.
- 6) Avoid running refrigerant lines in areas where low noise levels are required.

AIR COOLED UNITS – REFRIGERANT CHARGE

The tables below indicate the amount of refrigerant required per circuit to adequately operate the unit. Please note; if you are charging the unit in a warm ambient condition not all of the recommended charge is needed to operate the unit at that condition. However, all the recommended charge must be used in order for the equipment to operate properly the year round.

1) Basic Unit charges

Unit tonnage	Circuits	Charge per circuit (lbs)
1	1	5
2	1	8
3	1	11

2) Interconnection pipe charge

For split-systems you need to consider the refrigerant charge being held in the interconnection piping (liquid drain line, hot gas line). The amount of charge held in the hot gas line is minimal. Therefore, we will consider only the liquid line for calculation purposes.

Liquid line size copper tubing	Charge per circuit
1/2" O.D.	.7 lbs/10 ft
5/8" O.D.	1.2 lbs/10 ft
7/8" O.D.	2.4 lbs/10 ft

3) Total Charge

To calculate the total charge, add one (1) the basic unit charge and two- (2) piping charge. Remember the amounts given above are per circuit

IMPORTANT

If your unit is equipped with a
CANISTER HUMIDIFIER:

The canister must be changed approximately one to two times per year.

Please call

1-800-625-SKIL

For parts and information.

Please have your model number ready:

For 208/230 volts, use model #102

For 460 volts, use model #104

GENERAL

The information contained in this manual has been prepared to assist in the proper installation, operation and maintenance of the air conditioning system. Improper installation, or installation not made in accordance with these instructions, can result in unsatisfactory operation and/or dangerous conditions, and can cause the related warranty not to apply.

Read this manual and any instructions packaged with separate equipment required to make up the system prior to installation. Retain this manual for future reference. To achieve unit design operation efficiency and capacity, the indoor cooling coils listed in the condensing unit specification sheet should be used.

CHECKING PRODUCT RECEIVED

Upon receiving unit, inspect if for any shipping damage. Claims for damage, either apparent or concealed, should be filed immediately with the shipping company. Check condensing unit electrical characteristics and accessories to determine if they are correct. Check system components (evaporator coil, condensing unit, evaporator blower, etc. to make sure they are properly matched.

Remove shipping bracket under compressor if supplied. With the thermostat in the "Off" position, turn the power on to the furnace and the condensing unit. Before starting condensing unit allow 12 hours time to elapse, giving the crankcase heater (if provided) time to drive refrigerant from the compressor, thus preventing damage during start-up. Start the condensing unit and the furnace with the thermostat. Make sure the indoor air handler is operating.