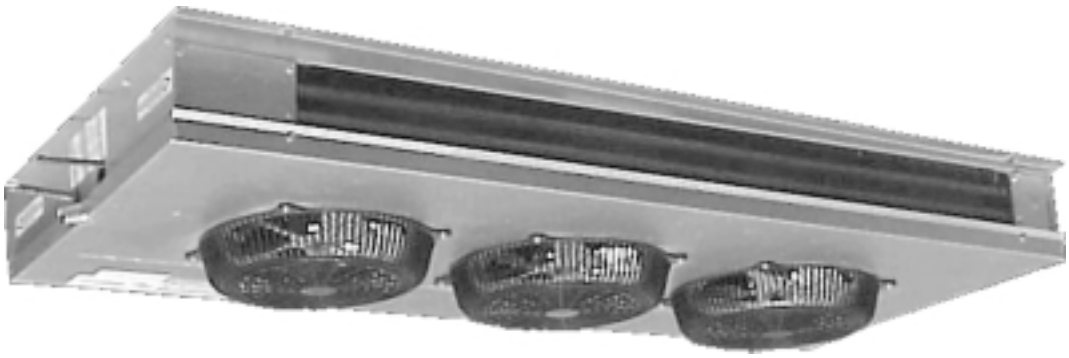
INSTALLATION AND MAINTENANCE MANUAL

Ceiling-Temp, Dual-Flo and Height Saver Unit Coolers

Bulletin No. IOM 119.1
January, 2002



Inspection

When the equipment is received, the number of crates and cartons should be checked against the bill of lading for possible shortages. Any damage should be noted immediately and a report given to the freight carrier and the factory. It is the customer's responsibility to file all freight claims with the carrier.

Installation

Installation and maintenance must be preformed by qualified personnel who are familiar with the local codes and regulations and who are experienced with this type of equipment. Unit name plates should be checked to make sure voltages are in agreement with the power available. Caution: Avoid contact with sharp edges and coil surface as they are potential hazards.

Location

Determine the best location for the unit cooler in the room to be refrigerated. Placement of the unit should be centered in the room and away from an open door to keep warm, outside air from being drawn into the unit.This dual discharge unit, draws air up through the fan blades and discharges out the coils length. Proper clearances should be maintained for proper air flow and service access to the unit as follows: 18" minimum between each coil and wall: 12" on each end of the unit. Before unit is raised into position all packaging should be removed making sure the unit is not set on the drain fitting or refrigerant connections. The unit should be supported on 5/16" minimum rod hangers at all mounting slots. To meet NSF requirements, the unit must be positioned flush with the ceiling and all gaps properly caulked.

Drain Line

The drain line should be pitched at a minimum of 4" per foot to allow proper drainage and should exit the room as soon as possible. The drain line should be insulated and sealed where it passes thru the wall and trapped outside the refrigerated area and protected from freezing. In rooms with temperatures below 34° F, the drain line should be heated and insulated.

Wiring

Wiring should be done in accordance with all national and local codes. Electric defrost units are supplied with a temperature sensing defrost termination switch which will terminate the defrost at a preset temperature. A fan delay switch is also provided to allow the coil to cool down prior to the fans restarting after the defrost cycle. The time clock should be adjusted to have a maximum 30 minute override to prevent overheating and steaming of the coils. Typically one to two defrosts per day are recommended however, the number of defrosts are ultimately dictated by the usage of the box and the actual amount of frost buildup on the coils.

Refrigerant Connections

Refrigerant connections should be installed in accordance with all applicable codes and using good refrigeration practices. A suction line trap must be installed prior to any risers in the suction line. Horizontal suction lines should be sloped to provide proper oil return to the compressor. Suction lines should be properly insulated to prevent sweating and higher return gas temperatures.

Evacuation

Proper evacuation is essential prior to charging of the system. This avoids many problems that may arise due to lack of detail in this step. After charging, the system should be checked through all cycles to ensure proper operation.

Expansion Valve

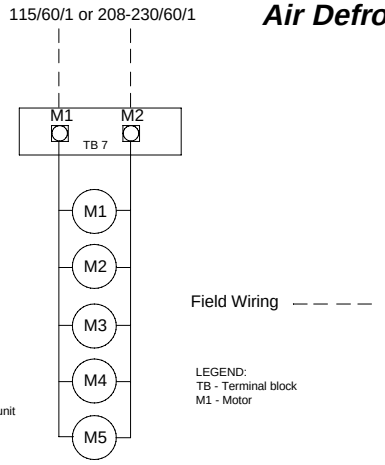
Expansion valves are to be installed in accordance with the valve manufacturer's recommendations. The external equalizer line must be connected. Proper location of the sensing bulb is extremely important to the performance of the coil. Good thermal contact to the suction line is essential. On solder type valves, a wet cloth wrapped around the valve during installation will help protect it from overheating and damage during the installation process. Superheat settings should be checked after the system has balanced out at the desired room temperature. On systems sized for a 10° to 12° F TD, the valve should be adjusted to maintain 4° to 6° F superheat. Higher evaporator TD will allow a higher superheat setting. On multiple evaporator systems, the piping should be arranged such that the flow from any valve cannot affect the bulb of an other.

General Maintenance

General maintenance involves an occasional cleaning of dirt accumulation on the fans, fan guards and coils. The motors are life lubricated and do not require any regular maintenance.

TYPICAL WIRING DIAGRAMS

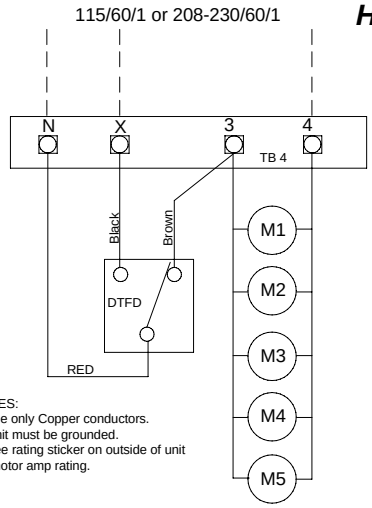
Air Defrost



NOTES:
1. Use only Copper conductors.
2. Unit must be grounded.
3. See rating sticker on outside of unit for motor amp rating.

LEGEND:
TB - Terminal block
M1 - Motor

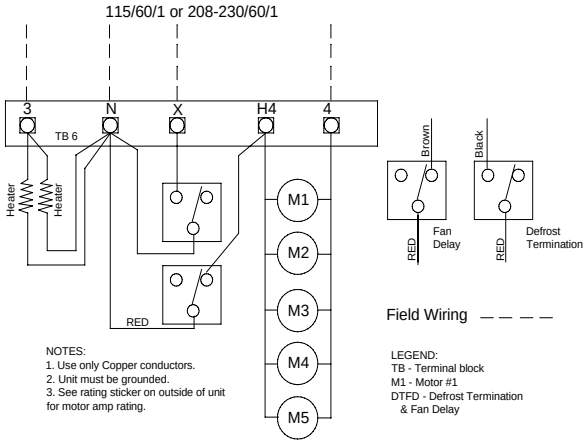
Hot Gas Defrost



NOTES:
1. Use only Copper conductors.
2. Unit must be grounded.
3. See rating sticker on outside of unit for motor amp rating.

LEGEND:
TB - Terminal block
M1 - Motor #1
DTFD - Defrost Termination & Fan Delay

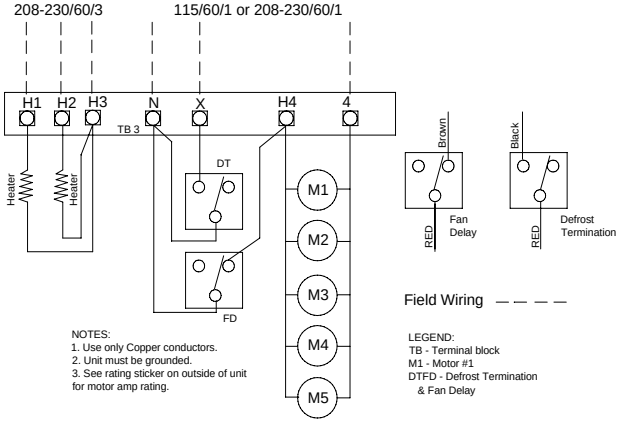
Electric Defrost 230/1



NOTES:
1. Use only Copper conductors.
2. Unit must be grounded.
3. See rating sticker on outside of unit for motor amp rating.

LEGEND:
TB - Terminal block
M1 - Motor #1
DTFD - Defrost Termination & Fan Delay

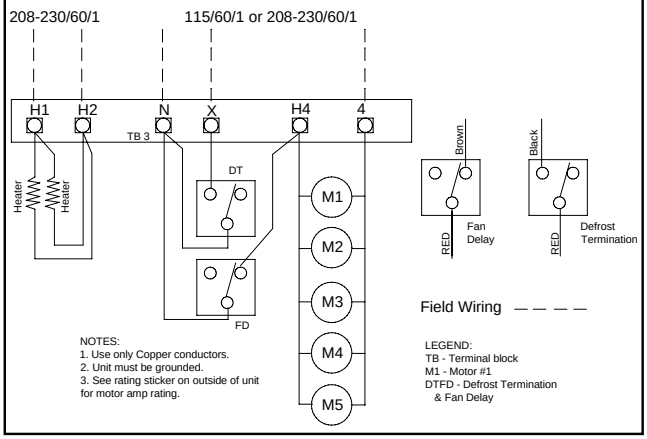
Electric Defrost 230/3



NOTES:
1. Use only Copper conductors.
2. Unit must be grounded.
3. See rating sticker on outside of unit for motor amp rating.

LEGEND:
TB - Terminal block
M1 - Motor #1
DTFD - Defrost Termination & Fan Delay

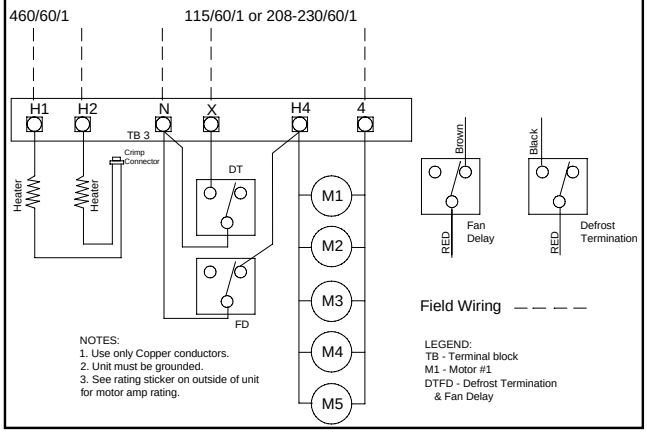
Electric Defrost 230/1 (Optional)



NOTES:
1. Use only Copper conductors.
2. Unit must be grounded.
3. See rating sticker on outside of unit for motor amp rating.

LEGEND:
TB - Terminal block
M1 - Motor #1
DTFD - Defrost Termination & Fan Delay

Electric Defrost 460/1 (Optional)



NOTES:
1. Use only Copper conductors.
2. Unit must be grounded.
3. See rating sticker on outside of unit for motor amp rating.

LEGEND:
TB - Terminal block
M1 - Motor #1
DTFD - Defrost Termination & Fan Delay

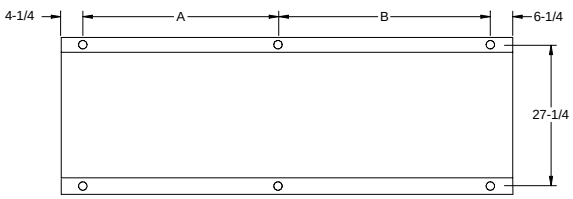
REPLACEMENT PARTS - LISTING BY PRODUCT MODEL NUMBER

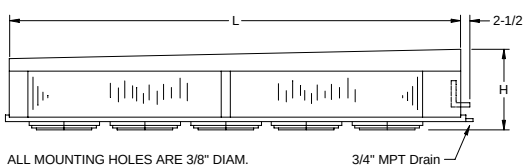
MODEL NUMBER	DESCRIPTION	PART NUMBER
ALL MODELS	DEFROST CONTROL, DEFROST TERMINATION, (TIMER RESET) 2 WIRE	103079010
ALL MODELS	DEFROST CONTROL, FAN DELAY, 2 WIRE	103079009
CTE\DFE MODELS 34-48, 34-58, 34-65, 36-53, 36-62, 36-69 **HSE MODELS** 55, 63, 71,50, 60, 66	DEFROST HEATERS, CORE,1037 WATTS, 55" LENGTH, 208-230/460 V. (2 REQ'D)	208579001
CTE\DFE MODELS 44-72, 44-84, 44-95, 46-77, 46-90, 46-100 **HSE MODELS** 74, 86, 94, 79, 91, 103	DEFROST HEATERS, 1490 WATTS, 79" LENGTH, 208-230/460 V. (2 REQ'D)	208579002
CTE\DFE MODELS 54-115, 44-152 54-145, 64-173, 56-125, 46-140 56-160, 66-218 **HSE MODELS** 116, 130, 144, 174, 125,143,163,219	DEFROST HEATERS, 1943 WATTS, 103" LENGTH, 208-230/460 V. (2 REQ'D)	208579003

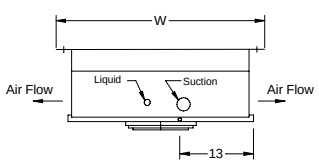
SPECIFY DRAIN CONNECTION LOCATION WHEN ORDERING CTA / CTE DRAIN PANS, BOTTOM OR SIDE.

ALL 3 FAN MODELS	DRAIN PAN, 58-1/2 LENGTH, SPECIFY DRAIN CONNECTION LOCATION	208609001
ALL 4 FAN MODELS EXCEPT AS FOLLOWS	DRAIN PAN, 82-1/2 LENGTH, SPECIFY DRAIN CONNECTION LOCATION	208610001
CTA\DFA MODELS 46-190, 48-210, **CTE\DFE MODELS** 44-128, 46-140 **HSA MODELS** 193, 212 **HSE MODELS** 130, 143	DRAIN PAN, 106-1/2 LENGTH, SPECIFY DRAIN CONNECTION LOCATION	208611001
ALL 5 FAN MODELS	DRAIN PAN, 106-1/2 LENGTH, SPECIFY DRAIN CONNECTION LOCATION	208612001
ALL 6 FAN MODELS	DRAIN PAN, 106-1/2 LENGTH, SPECIFY DRAIN CONNECTION LOCATION	208613001
ALL MODELS	FAN BLADE, 10" DIAM., 31° PITCH, CCW, HUBLESS	1031CW
	FAN GUARD, BLACK PLASTIC, 12"	119647000
	HEATER SAFETY SWITCH, 2 WIRE	103079003
	MOTOR, SHADED POLE, 16 WATT, 1550 RPM, 115 V.	103104007
	MOTOR, SHADED POLE, 16 WATT, 1550 RPM, 230 V.	103104008
	MOTOR, MOUNT	103096003
ALL MODELS (OPTIONAL)	MOTOR, PSC, 16 WATTS, 1550 RPM, 115 V., (5 MFD CAPACITOR NOT INCLUDED)	107933001
	MOTOR, PSC, 16 WATTS, 1550 RPM, 230 V., (2 MFD CAPACITOR NOT INCLUDED)	107933002
ALL MODELS (OPTIONAL)	CAPACITOR, 5 MFD, FOR 16 WATT 115 V. PSC MOTOR	202163007
	CAPACITOR, 2 MFD, FOR 16 WATT 230 V. PSC MOTOR	202163009

MODEL NUMBER	DIMENSIONS (in)					CONNECTIONS (in.)[1]		
	A	B	H	L	W	LIQUID	SUCTION	DRAIN
ALL 3 FAN MODELS	24	24	8	58-1/2	28-3/4	1/2 OD	7/8 OD	3/4 MPT
ALL 4 FAN MODELS EXCEPT AS FOLLOWS	36	36	8-3/4	82-1/2	28-3/4	1/2 OD	7/8 OD	3/4 MPT
CTA\DFA MODELS 46-190, 48-210 **CTE\DFE MODELS** 44-128, 46-140 **HSA MODELS** 193, 212 **HSE MODELS** 130, 143	48	48	10-1/4	106-1/2	28-3/4	1/2 OD	1-1/8 OD	3/4 MPT
ALL 5 FAN CTA/CTE MODELS	48	48	10-1/4	106-1/2	28-3/4	1/2 OD	1-1/8 OD	3/4 MPT
ALL 6 FAN CTA/CTE MODELS	48	48	10-1/4	106-1/2	28-3/4	1/2 OD	1-1/8 OD	3/4 MPT







[1] *All models require externally equalized TXV.*