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KeepRite® REFRIGERATION

Slim Line KUC Unit Coolers 60Hz

PRODUCT DATA & INSTALLATION

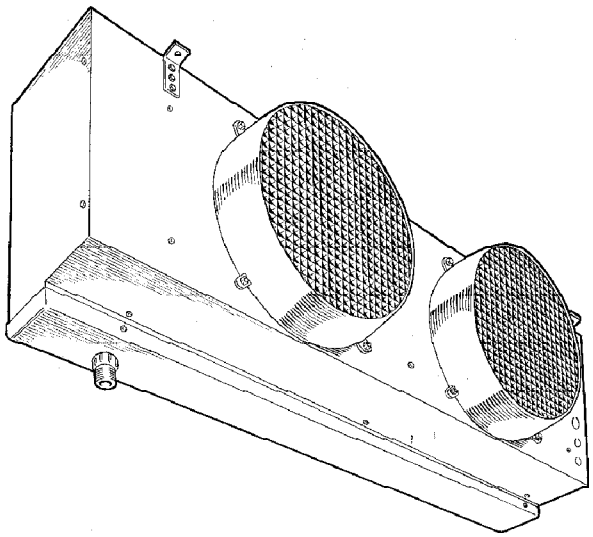
Bulletin K30-KUC-PDI-10

1043681

We are on the Internet
www.keepriterefrigeration.com

High, Medium and Low Temperature Applications -40 °F (-40 °C) and Above Air, Electric or Hot Gas Defrost (Reverse Cycle)

Electrical Power: 115/1/60, 208-230/1/60, 208-230/3/60



NOMENCLATURE

KUC B 102 D ED

KEEPRITE SLIM LINE UNIT COOLER

UNIT SERIES
B = 2nd GENERATION

BTU CAPACITY AT 10°F TD 60Hz
(÷100) E.G. 102 = 10,200

NUMBER OF FANS

ELECTRICAL CHARACTERISTICS
A = 115/1/60 (AIR DEFROST AND HOT GAS MODELS)
D = 208-230/1/60 (AIR DEFROST, HOT GAS AND ELECTRIC DEFROST MODELS

TYPE OF DEFROST
ED = ELECTRIC DEFROST
HG = HOT GAS DEFROST (REVERSE CYCLE)
BLANK = AIR DEFROST (HIGH TEMPERATURE)

- Heavy gauge textured aluminum cabinet construction resists scratches/corrosion and minimizes weight for shipment, installation and service.
- Easy access/quick disconnect fan, motor and mount assemblies.
- Attractive and durable high density polyethylene fan guards with built-in throw boosters.
- Field installed nylon drain pan fitting kit (thread or hose fitting) Air defrost only.
- Optional accessories include liquid suction heat exchanger, adjustable fan delay and defrost termination thermostat.
- Refrigerants R134a, R22, R407A, R407B, R407C, R502, R404A, R507.

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SPECIFICATIONS

TABLE 1 CAPACITY DATA

High Temp Model KUCB	41†	51†	62†	82†	102†	123†	153†	204†	255†	306†
Electric Defrost Model KUCB	41 DED	51 DED	62 DED	82 DED	102 DED	123 DED	153 DED	204 DED	255 DED	306 DED
Hot Gas Defrost Model KUCB	N/A	N/A	62† HG	82† HG	102† HG	123† HG	153† HG	204† HG	255† HG	306† HG
Capacity** @ 1 °F T.D.	410	510	620	820	1020	1230	1530	2040	2550	3060
Capacity** @ 10 °F T.D.	4100	5100	6200	8200	10200	12300	15300	20400	25500	30600
CFM	800	800	1600	1600	1600	2400	2400	3200	4000	4800
Refrigerant Charge*	1.5	1.9	2.4	2.8	3.8	4.7	5.5	7.5	9.3	11.0

† Insert "A" for 115/1/60, "D" for 208-230/1/60 entering service. Electric defrost "D" is 208-230/1/60.

* R-12 and R-22 at 0 °F S.S.T.; R-502 at -20 °F S.S.T. with coil 30% full.

** To calculate unit capacity, multiply capacity at 1 °T.D. by operating T.D. NOTE: Severity of coil frosting should be considered when selecting low temperature unit coolers. For operation in frosting conditions see correction chart (below) and multiply unit capacity by applicable factor.

EVAPORATOR TEMPERATURE CORRECTION FACTORS

Saturated Evaporator Temperature	20 °F	10 °F	-0 °F	-10 °F	-20 °F	-30 °F	-40 °F
	-6.7 °C	-12.2 °C	-17.8 °C	-23.3 °C	-28.9 °C	-22 °C	-40 °C
Correction Factor	1.00	.98	.95	.91	.85	.79	.72

ELECTRICAL DATA

FAN MOTORS

Model	No. of Fans	Electrical Code A 115/1/60			Electrical Code D 208-230/1/60		
		F.L.A.	M.C.A.*	M.O.P.	F.L.A.	M.C.A.*	M.O.P.
KUCB 41, 51	1	2.1	2.6	15	1.0	1.3	15
KUCB 62, 82, 102	2	4.2	4.7	15	2.0	2.3	15
KUCB 123, 153	3	6.3	6.8	15	3.0	3.3	15
KUCB 204	4	8.4	8.9	15	4.0	4.3	15
KUCB 255	5	10.5	11.0	15	5.0	5.3	15
KUCB 306	6	12.6	13.1	15	6.0	6.3	15

M.C.A. = Minimum Circuit Ampacity M.O.P. = Maximum Overcurrent Protection

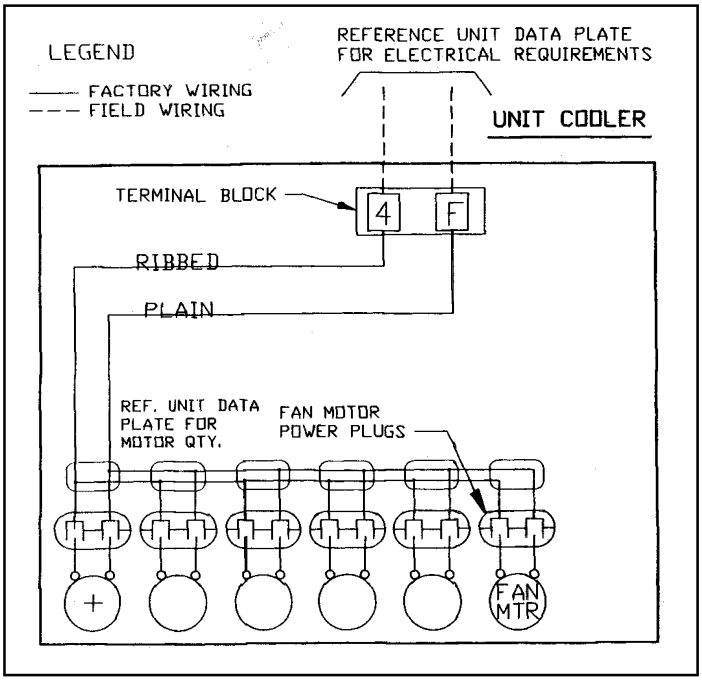
DEFROST HEATERS

Model	No. of Fans	208-230/1/60 Electrical Code D				208-230/3/60 Field Modifications			
		Total Htr. Watt (230 V)	Heater Amps (230 V)	M.C.A.*	M.O.P.	Total Htr. Watts (230 V)	Heater Amps (230 V)	M.C.A.*	M.O.P.
KUCB 41, 51	1	1310	5.7	7.1	15	1310	3.9	4.9	15
KUCB 62, 82, 102	2	2400	10.4	13.1	15	2400	7.1	8.9	15
KUCB123, 153	3	3550	15.4	19.3	25	3550	10.5	13.1	15
KUCB 204	4	4580	19.9	24.9	30	4580	13.5	17.0	20
KUCB 255	5	5670	24.7	30.8	35	5670	17.5	21.9	25
KUCB 306	6	6760	29.4	36.7	40	6760	20.1	25.1	25

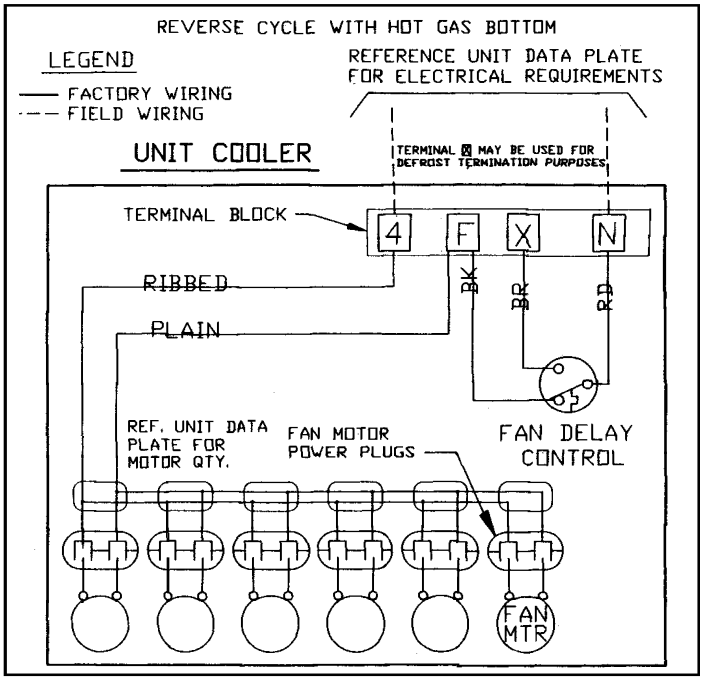
* Electrical wiring is to be sized in accordance with minimum circuit ampacity rating.

WIRING DIAGRAMS

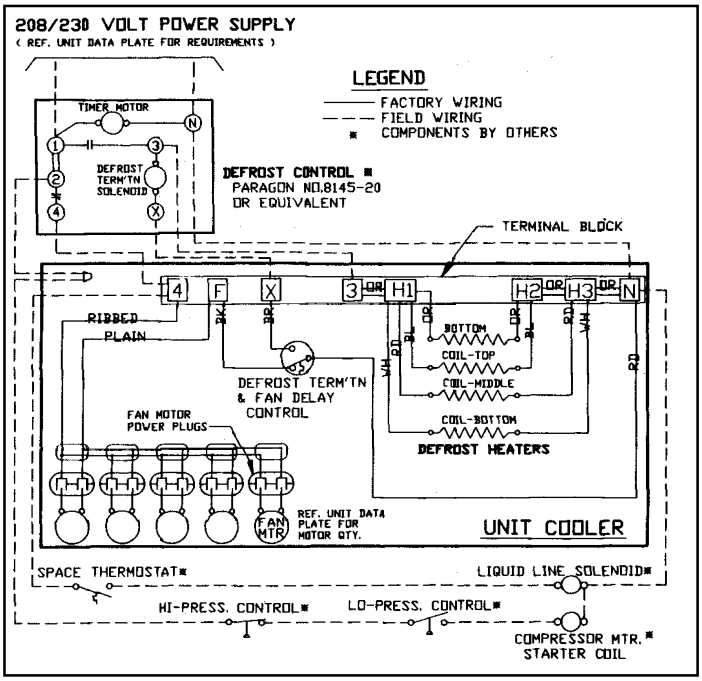
HIGH TEMP. (AIR DEFROST)
115/1/60 & 208-230/1/60



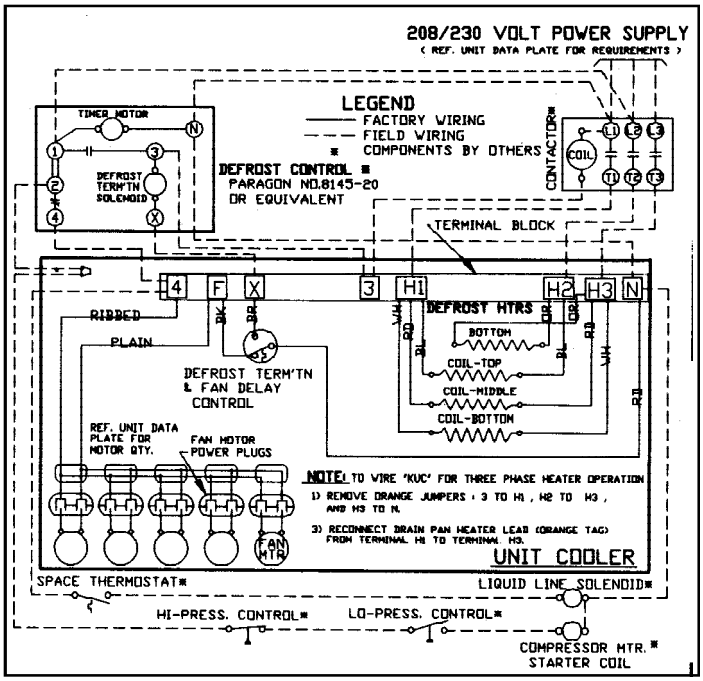
HOT GAS DEFROST (REVERSE CYCLE)
115/1/60 & 208-230/1/60



*ELECTRIC DEFROST
208-230/1/60

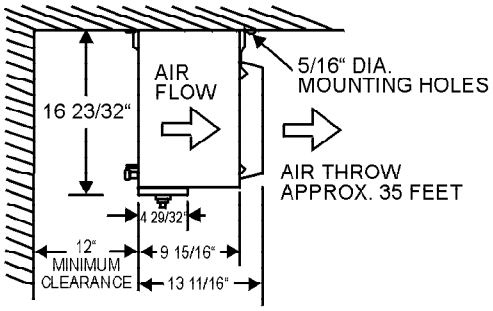


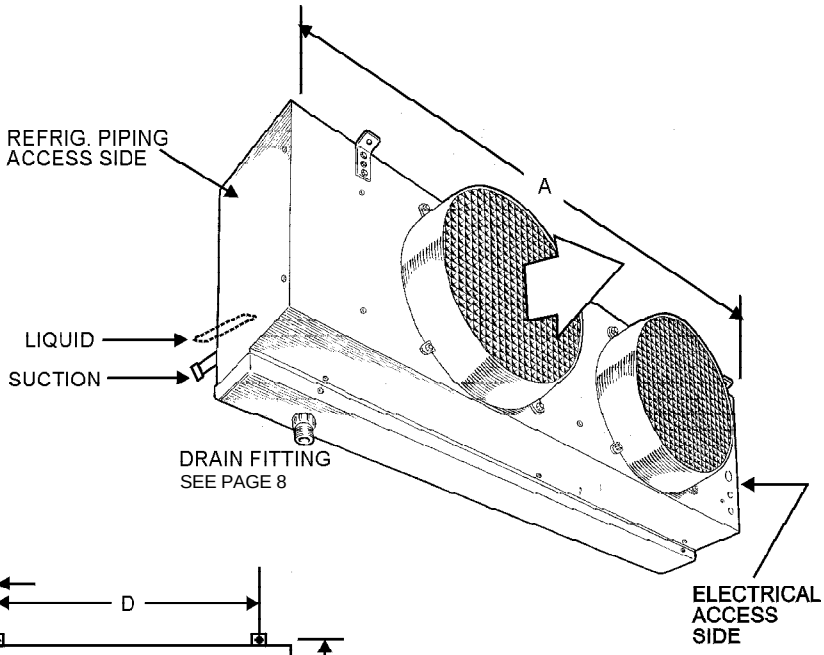
* ELECTRIC DEFROST
208-230/3/60 FIELD CONVERSION

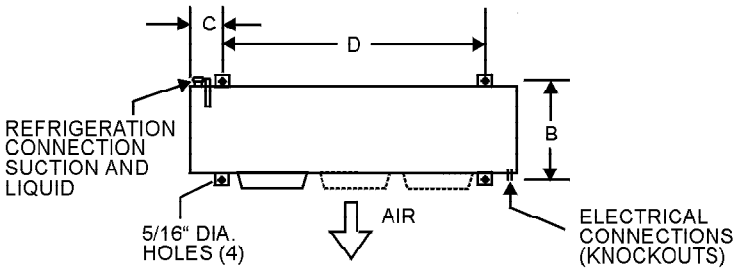


*NOTE: On multiple wired evaporators ensure the time clock can handle the extra heater and fan motor amperage load. The defrost termination control should be wired in series and the maximum load on the fan delay thermostat is 10.0 amps. MCA. (Use fan contactor on anything higher).Consult your local KeepRite sales representative for the wiring method most suitable to your application.

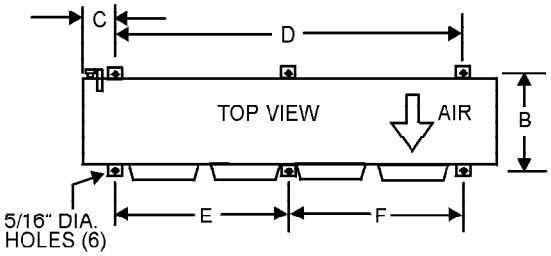
DIMENSIONAL DATA



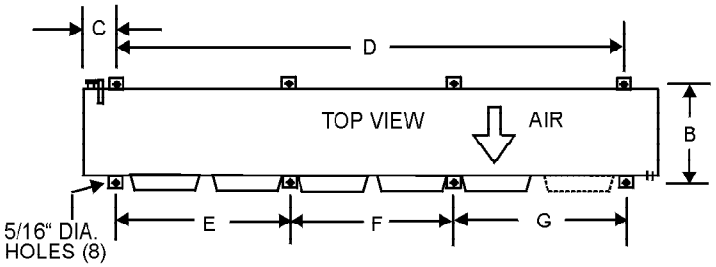




1, 2 AND 3 FAN



4 FAN



5 AND 6 FAN

DIMENSIONAL DATA

Air Defrost Model KUCB		41†	51†	62†	82†	102†	123†	153†	204†	255†	306†
Electric Defrost Model KUCB		41 DED	51 DED	62 DED	82 DED	102 DED	123 DED	153 DED	204 DED	255 DED	306 DED
Hot Gas Defrost Model KUCB		N/A	N/A	62† HG	82† HG	102† HG	123† HG	153† HG	204† HG	255† HG	306† HG
Liquid Conn. (O.D. Sweat)	In. (mm)	1/2 (12.7)	1/2 (12.7)	1/2 (12.7)	1/2 (12.7)	1/2 (12.7)	1/2 (12.7)	1/2 (12.7)	1/2 (12.7)	1/2 (12.7)	1/2 (12.7)
Suction Conn. (O.D. Sweat)	In. (mm)	5/8 (15.9)	5/8 (15.9)	5/8 (15.9)	5/8 (15.9)	7/8 (22.2)	7/8 (22.2)	7/8 (22.2)	1 1/8 (28.6)	1 1/8 (28.6)	1 3/8 (34.9)
Overall Length A	In. (mm)	28 7/8 (733)	28 7/8 (733)	48 7/8 (1241)	48 7/8 (1241)	48 7/8 (1241)	68 7/8 (1749)	68 7/8 (1749)	88 7/8 (2257)	108 7/8 (2765)	128 7/8 (3273)
Mounting Dimension B	In. (mm)	11 3/4 (298)	11 3/4 (298)	11 3/4 (298)	11 3/4 (298)	11 3/4 (298)	11 3/4 (298)	11 3/4 (298)	11 3/4 (298)	11 3/4 (298)	11 3/4 (298)
Mounting Dimension C	In. (mm)	5 1/2 (140)	5 1/2 (140)	5 1/2 (140)	5 1/2 (140)	5 1/2 (140)	5 1/2 (140)	5 1/2 (140)	5 1/2 (140)	5 1/2 (140)	5 1/2 (140)
Mounting Dimension D	In. (mm)	20 3/4 (527)	20 3/4 (527)	40 3/4 (1035)	40 3/4 (1035)	40 3/4 (1035)	60 3/4 (1543)	60 3/4 (1543)	80 3/4 (2051)	100 3/4 (2559)	120 3/4 (3067)
Mounting Dimension E	In. (mm)	- -	- -	- -	- -	- -	- -	- -	40 23/32 (1034)	40 23/32 (1034)	40 23/32 (1034)
Mounting Dimension F	In. (mm)	- -	- -	- -	- -	- -	- -	- -	40 1/32 (1017)	20 (508)	40 (1016)
Mounting Dimension G	In. (mm)	- -	- -	- -	- -	- -	- -	- -	- -	40 1/32 (1017)	40 1/32 (1017)
Aprox. Shipping/Net weight	Lbs. (kg)	53/31 (24/14)	63/32 (29/15)	89/48 (40/22)	91/51 (41/23)	101/53 (46/24)	118/74 (54/34)	125/78 (57/35)	160/107 (73/49)	208/135 (94/61)	236/155 (107/70)

† Insert "A" for 115/1/60, "D" for 208-230/1/60 entering service. Electric defrost "D" is 208-230/1/60.

THERMOSTATIC EXPANSION VALVE SELECTION
AIR DEFROST

AIR DEFROST			ALCO VALVE MODEL			SPORLAN VALVE MODEL		
MODEL	T.D. F	CAPACITY BTUH	REFRIGERANT R22	REFRIGERANT R502/404A/507	REFRIGERANT R134a	REFRIGERANT R22	REFRIGERANT R502/404A/507	REFRIGERANT R134a
KUCB 41	10	4,100	HFES-1/4-HC	HFES-1/4-SC	HFES-1/2-MC	EGVE-1/3-VC	EGSE-1/4-SC	EGJE-1/4-JC
	15	6,150	HFES-1/2-HC	HFES-1/2-SC	HFES-3/4-MC	EGVE-1/2-VC	EGSE-1/2-SC	EGJE-1/2-JC
KUCB 51	10	5,100	HFES-1/2-HC	HFES-1/4-SC	HFES-1-1/2-MC	EGVE-1/2-VC	EGSE-1/2-SC	EGJE-1/2-JC
	15	7,650	HFES-1/2-HC	HFES-1/2-SC	HFES-3/4-MC	EGVE-3/4-VC	EGSE-1/2-SC	EGJE-1/2-JC
KUCB 62	10	6,200	HFES-1/2-HC	HFES-1/2-SC	HFES-3/4-MC	EGVE-1/2-VC	EGSE-1/2-SC	EGJE-1/2-JC
	15	9,300	HFES-1-HC	HFES-1/2-SC	HFES-3/4-MC	EGVE-3/4-VC	EGSE-1-SC	EGJE-1-JC
KUCB 82	10	8,200	HFES-1/2-HC	HFES-1/2-SC	HFES-3/4-MC	EGVE-3/4-VC	EGSE-1/2-SC	EGJE-1/2-JC
	15	12,300	HFES-1-HC	HFES-1-SC	HFES-1-MC	EGVE-1-VC	EGSE-1-SC	EGJE-1-JC
KUCB 102	10	10,200	HFES-1-HC	HFES-1/2-SC	HFES-3/4-MC	EGVE-3/4-VC	EGSE-1-SC	EGJE-1-JC
	15	15,300	HFES-1-1/2-HC	HFES-1/2-SC	HFES-1-MC	EGVE-1-1/2-VC	EGSE-1-SC	EGJE-1-JC
KUCB 123	10	12,300	HFES-1-HC	HFES-1/2-SC	HFES-1-MC	EGVE-1-VC	EGSE-1-SC	EGJE-1-JC
	15	18,450	HFES-1-1/2-HC	HFES-1-1/4-SC	HFES-1-1/2-MC	EGVE-1-1/2-VC	EGSE-1-1/2-SC	EGJE-1-1/2-JC
KUCB 153	10	15,300	HFES-1-1/2-HC	HFES-1/2-SC	HFES-1-MC	EGVE-1-1/2-VC	EGSE-1-SC	EGJE-1-JC
	15	22,950	HFES-2-HC	HFES-1-1/2-SC	HFES-1-3/4-MC	EGVE-1-1/2-VC	EGSE-1-SC	EGJE-1-1/2-JC
KUCB204	10	20,400	HFES-1-1/2-HC	HFES-1-1/4-SC	HFES-1-1/2-MC	EGVE-1-1/2-VC	EGSE-1-1/2-SC	EGJE-1-1/2-JC
	15	30,600	HFES-2-1/2-HC	HFES-1-SC	HFES-2-1/2-MC	EGVE-3-VC	EGSE-2-SC	EGJE-2-JC
KUCB 255	10	25,500	HFES-2-HC	HFES-1-1/2-SC	HFES-1-3/4-MC	EGVE-2-VC	EGSE-2-SC	EGJE-1-1/2-JC
	15	38,250	HFES-2-1/2-HC	HFES-3-1/2-SC	HFES-4-MC	EGVE-3-VC	SSE-3-SC	SJE-2-1/2-JC
KUCB 306	10	30,600	HFES-2-1/2-HC	HFES-1-SC	HFES-2-1/2-MC	EGVE-3-VC	EGVE-2-SC	SJE-2-JC
	15	45,900	HFES-3-HC	HFES-3-1/2-SC	HFES-4-MC	SVE-4-VC	SSE-4-SC	SJE-3-JC

Selections Based on 100°F Liquid.

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THERMOSTATIC EXPANSION VALVE SELECTION
ELECTRIC & HOT GAS DEFROST

R404A - R507	SPORLAN VALVE FOR KUCB (Electric or Hot Gas Defrost)									
EVAP	KUCB 41		KUCB 51		KUCB 62		KUCB 82		KUCB 102	
TEMP	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #
+20/+25°F	4,100		5,100		6,200		8,200		10,200	
+10°F	4,018	EGSE-1/4-SC	4,998	EGSE-1/4-SC	6,076	EGSE-1/2-S	8,036	EGSE-1/2-SC	9,996	EGSE-1-SC
0°F	3,895		4,845		5,890		7,790		9,690	
-10°F	3,731		4,641		5,642		7,462	EGSE-1/2-ZP	9,282	
-20°F	3,485	EGSE-1/4-ZP	4,335	EGSE-1/2-ZP	5,270	EGSE-1/2-ZP	6,970		8,670	EGSE-1-ZP
-30°F	3,239		4,029		4,898		6,478	EGSE-1-ZP	8,058	
-40°F	2,952	EGSE-1/2-ZP	3,672		4,464		5,904		7,344	
EVAP	KUCB 123		KUCB 153		KUCB 204		KUCB 255		KUCB 306	
TEMP	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #
+20/+25°F	12,300		15,300		20,400		25,500		30,600	
+10°F	12,054	EGSE-1-SC	14,994	EGSE-1-SC	19,992	EGSE-1-1/2-SC	24,990	EGSE-2-SC	29,988	SSE-3-SC
0°F	11,685		14,535		19,380		24,225		29,070	
-10°F	11,193		13,923	EGSE-1-ZP	18,564	EGSE-1-1/2-ZP	23,205		27,846	
-20°F	10,455	EGSE-1-ZP	13,005		17,340		21,675	EGSE-2-ZP	26,010	SSE-3-ZP
-30°F	9,717		12,087	EGSE-1-1/2-ZP	16,116	EGSE-2-ZP	20,145		24,174	
-40°F	8,856		11,016		14,688		18,360		22,032	

R22	SPORLAN VALVE FOR KUCB (Electric or Hot Gas Defrost)									
EVAP	KUCB 41		KUCB 51		KUCB 62		KUCB 82		KUCB 102	
TEMP	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #
+20/+25°F	4,100		5,100		6,200	EGVE-1/2-VC	8,200		10,200	
+10°F	4,018	EGVE-1/3-VC	4,998	EGVE-1/2-VC	6,076		8,036	EGVE-3/4-VC	9,996	EGVE-1-VC
0°F	3,895		4,845		5,890	EGVE-3/4-VC	7,790		9,690	
-10°F	3,731		4,641		5,642		7,462	EGVE-3/4-ZP40	9,282	
-20°F	3,485	EGVE-1/2-ZP40	4,335	EGVE-3/4-ZP40	5,270	EGVE-3/4-ZP40	6,970		8,670	EGVE-1-ZP40
-30°F	3,239		4,029		4,898		6,478	EGVE-1-ZP40	8,058	EGVE-1-1/2-ZP40
-40°F	2,952	EGVE-3/4-ZP40	3,672		4,464		5,904		7,344	
EVAP	KUCB 123		KUCB 153		KUCB 204		KUCB 255		KUCB 306	
TEMP	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #
+20/+25°F	12,300		15,300		20,400		25,500		30,600	
+10°F	12,054	EGVE-1-VC	14,994	EGVE-1-1/2-VC	19,992	EGVE-1-1/2-VC	24,990	EGVE-2-VC	29,988	EGVE-3-VC
0°F	11,685		14,535		19,380		24,225		29,070	
-10°F	11,193		13,923	EGVE-1-1/2-ZP40	18,564		23,205	EGVE-2-ZP40	27,846	SVE-3-ZP40
-20°F	10,455	EGVE-1-1/2-ZP40	13,005		17,340	EGVE-2-ZP40	21,675	EGVE-3-ZP40	26,010	
-30°F	9,717		12,087	EGVE-2-ZP40	16,116		20,145		24,174	SVE-4-ZP40
-40°F	8,856		11,016		14,688		18,360	SVE-3-ZP40	22,032	

R134a	SPORLAN VALVE FOR KUCB (Electric or Hot Gas Defrost)									
EVAP	KUCB 41		KUCB 51		KUCB 62		KUCB 82		KUCB 102	
TEMP	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #
+20/+25°F	4,100		5,100		6,200		8,200		10,200	
+10°F	4,018	EGJE-1/4-JC	4,998	EGJE-1/2-JC	6,076	EGJE-1/2-JC	8,036	EGJE-1-JC	9,996	EGJE-1-JC
0°F	3,895		4,845		5,890		7,790		9,690	
EVAP	KUCB 123		KUCB 153		KUCB 204		KUCB 255		KUCB 306	
TEMP	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #
+20/+25°F	12,300		15,300		20,400		25,500	EGJE-2-JC	30,600	
+10°F	12,054	EGJE-1-JC	14,994	EGJE-1-JC	19,992	EGJE-1-1/2-JC	24,990		29,988	SJE-2-JC
0°F	11,685		14,535		19,380		24,225	EGJE-1-1/2-C	29,070	

Selections Based on 100°F Liquid.

THERMOSTATIC EXPANSION VALVE SELECTION
ELECTRIC & HOT GAS DEFROST

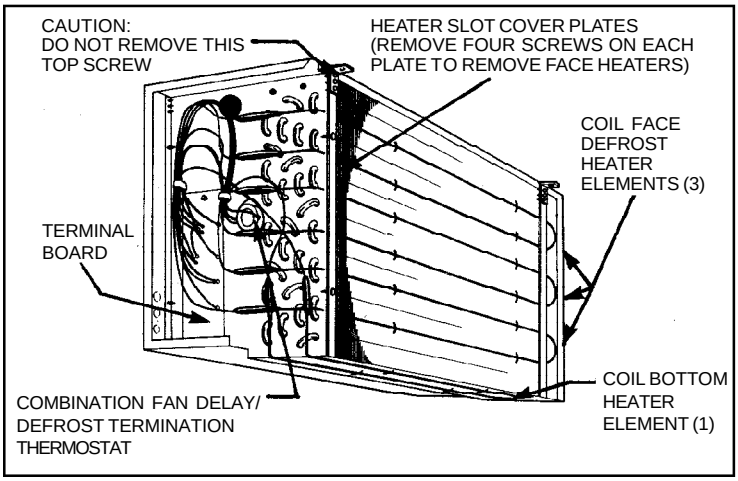
R404A - R507	ALCO VALVE FOR KUCB (Electric or Hot Gas Defrost)									
EVAP	KUCB 41		KUCB 51		KUCB 62		KUCB 82		KUCB 102	
TEMP	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #
+20/+25°F	4,100		5,100		6,200		8,200		10,200	
+10°F	4,018	HFES-1/4-SC	4,998	HFES-1/4-SC	6,076	HFES-1/2-SC	8,036	HFES-1/2-SC	9,996	HFES-1/2-SC
0°F	3,895		4,845		5,890		7,790		9,690	
-10°F	3,731	HFES-1/4-SZ	4,641		5,642		7,462	HFES-1/2-SZ	9,282	
-20°F	3,485		4,335	HFES-1/2-SZ	5,270	HFES-1/2-SZ	6,970		8,670	HFES-1-SZ
-30°F	3,239	HFES-1/2-SZ	4,029		4,898		6,478	HFES-1-SZ	8,058	
-40°F	2,952		3,672		4,464		5,904		7,344	HFES-1-1/4-SZ
EVAP	KUCB 123		KUCB 153		KUCB 204		KUCB 255		KUCB 306	
TEMP	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #
+20/+25°F	12,300		15,300		20,400		25,500		30,600	
+10°F	12,054	HFES-1-SC	14,994	HFES-1-SC	19,992	HFES-1-1/4-SC	24,990	HFES-1-1/2-SC	29,988	HFES-2-SC
0°F	11,685		14,535		19,380		24,225		29,070	
-10°F	11,193	HFES-1-SZ	13,923	HFES-1-1/4-SZ	18,564	HFES-1-1/2-SZ	23,205	HFES-2-SZ	27,846	HFES-2-SZ
-20°F	10,455		13,005		17,340		21,675		26,010	
-30°F	9,717	HFES-1-1/4-SZ	12,087	HFES-1-1/2-SZ	16,116	HFES-2-SZ	20,145	HFES-3-1/2-SZ	24,174	HFES-3-1/2-SZ
-40°F	8,856		11,016		14,688		18,360		22,032	

R22	ALCO VALVE FOR KUCB (Electric or Hot Gas Defrost)									
EVAP	KUCB 41		KUCB 51		KUCB 62		KUCB 82		KUCB 102	
TEMP	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #
+20/+25°F	4,100		5,100		6,200		8,200		10,200	
+10°F	4,018	HFES-1/4-HC	4,998	HFES-1/2-HC	6,076	HFES-1/2-HC	8,036	HFES-1/2-HC	9,996	HFES-1-HC
0°F	3,895		4,845		5,890		7,790		9,690	
-10°F	3,731		4,641		5,642	HFES-1/2-HZ	7,462		9,282	
-20°F	3,485	HFES-1/2-HZ	4,335	HFES-1/2-HZ	5,270		6,970	HFES-1-HZ	8,670	HFES-1-HZ
-30°F	3,239		4,029		4,898	HFES-1-HZ	6,478		8,058	
-40°F	2,952		3,672		4,464		5,904		7,344	HFES-1-1/2-HZ
EVAP	KUCB 123		KUCB 153		KUCB 204		KUCB 255		KUCB 306	
TEMP	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #
+20/+25°F	12,300		15,300		20,400		25,500		30,600	
+10°F	12,054	HFES-1-HC	14,994	HFES-1-1/2-HC	19,992	HFES-1-1/2-HC	24,990	HFES-2-HC	29,988	HFES-2-HC
0°F	11,685		14,535		19,380		24,225		29,070	
-10°F	11,193	HFES-1-HZ	13,923		18,564		23,205		27,846	HFES-2-1/2-HZ
-20°F	10,455		13,005	HFES-1-1/2-HZ	17,340	HFES-2-HZ	21,675	HFES-2-1/2-HZ	26,010	
-30°F	9,717	HFES-1-1/2-HZ	12,087		16,116		20,145		24,174	HFES-3-HZ
-40°F	8,856		11,016	HFES-2-HZ	14,688	HFES-2-1/2-HZ	18,360		22,032	

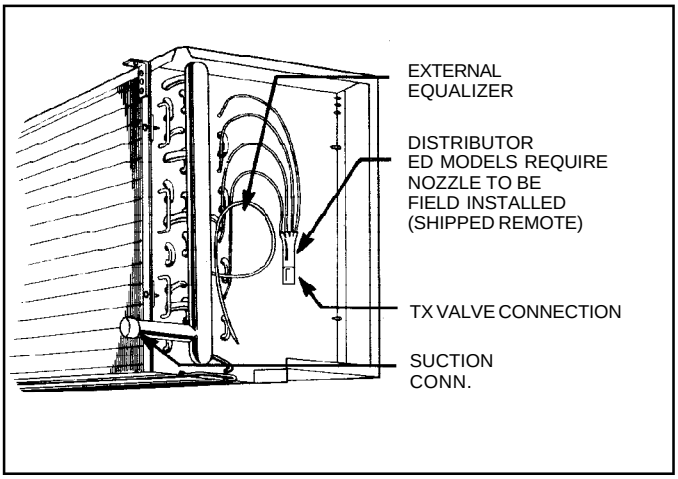
R134a	ALCO VALVE FOR KUCB (Electric or Hot Gas Defrost)									
EVAP	KUCB 41		KUCB 51		KUCB 62		KUCB 82		KUCB 102	
TEMP	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #
+20/+25°F	4,100		5,100		6,200		8,200		10,200	
+10°F	4,018	HFES-1/2-MC	4,998	HFES-1/2-MC	6,076	HFES-3/4-MC	8,036	HFES-3/4-MC	9,996	HFES-1-MC
0°F	3,895		4,845		5,890		7,790		9,690	
EVAP	KUCB 123		KUCB 153		KUCB 204		KUCB 255		KUCB 306	
TEMP	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #	BTUH	VALVE #
+20/+25°F	12,300		15,300		20,400		25,500	HFES-1-3/4-MC	30,600	
+10°F	12,054	HFES-1-MC	14,994	HFES-1-1/2-MC	19,992	HFES-1-3/4-MC	24,990		29,988	HFES-2-1/2-MC
0°F	11,685		14,535		19,380		24,225	HFES-2-1/2-MC	29,070	

Selections Based on 100°F Liquid.

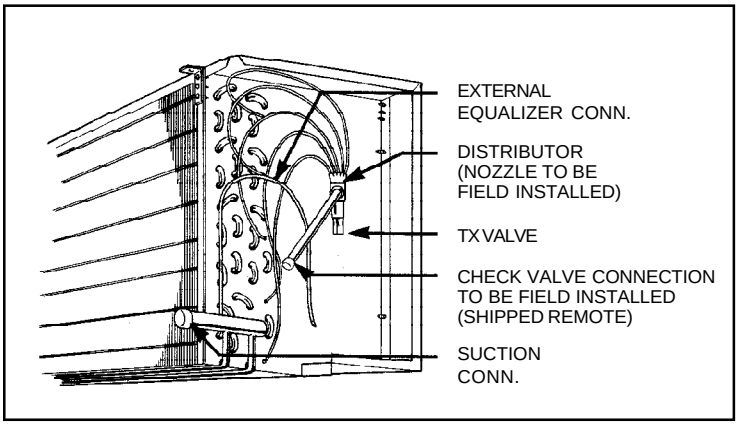
ELECTRICAL VIEW



PIPING VIEW

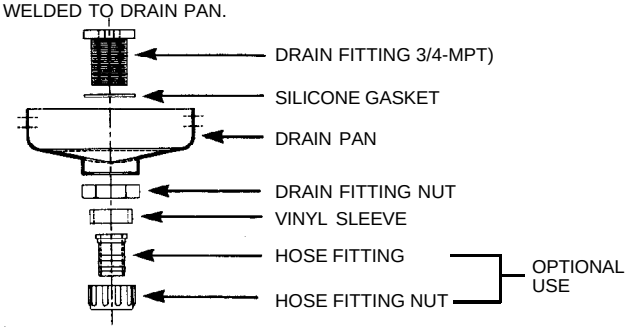


HOT GAS (REVERSE CYCLE ONLY)



DRAIN PAN

DRAIN FITTING KIT ONLY SUPPLIED ON AIR-DEFROST MODELS. ELECTRIC DEFROST AND HOT GAS MODELS USE 3/4-FPT COUPLIN WELDED TO DRAIN PAN.



REFER TO DRAIN LINE INSTRUCTIONS

NOZZLE SELECTION

STANDARD NOZZLES FACTORY INSTALLED FOR ALL AIR DEFROST MODELS	
MODEL NUMBER	NOZZLE (Factory Installed)
KUCB41A	L-1/2
KUCB51A	L-3/4
KUCB62A	L-3/4
KUCB82A	L-1
KUCB102A	L-1 1/2
KUCB123A	L-1 1/2
KUCB153A	L-2
KUCB204A	L-3
KUCB255A	E-4
KUCB306A	E-4

Standard Nozzle for all refrigerants. Based on 25°F S.S.T. @ 10°F TD.

* STANDARD NOZZLES SUPPLIED LOOSE BY THE FACTORY			
T.D.	8°F to 12°F		
**Temp. Range	30° to -20° F	-10° to -30° F	20°F to -15° F
REFRIGERANT			
MODEL No.	R-12, R134a	R-502, R-404a, R-507	R-22
KUCB41 ED	L - 3/4	L - 1	L - 1/2
KUCB51 ED			
KUCB62 ED	L -1	L - 1-1/2	L - 3/4
KUCB62 HG	J - 1	J - 1-1/2	J - 3/4
KUCB82 ED	L - 1-1/2	L -2	L - 3/4
KUCB82 HG	J - 1-1/2	J - 2	J - 3/4
KUCB102 ED	L - 2	L - 2-1/2	L - 1
KUCB102 HG	J - 2	J - 2-1/2	J - 1
KUCB123 ED	L - 2	L - 3	L - 1-1/2
KUCB123 HG	J - 2	J - 3	J - 1-1/2
KUCB153 ED	L - 3/4	L - 4	L - 1-1/2
KUCB153 HG	G - 3	G - 4	G - 1-1/2
KUCB204 ED	L - 4	L - 6	L - 2
KUCB204 HG	G - 4	G - 5	G - 2
KUCB255 ED	E - 5	E - 8	E - 3
KUCB255 HG			
KUCB306 ED	E - 6		
KUCB306 HG			

ALTERNATE NON-STANDARD NOZZLE SELECTIONS			
T.D.	8°F to 12°F		
**Temp. Range	20°F to -40°F	-30°F to -40°F	-16°F to -40°F
REFRIGERANT			
MODEL No.	R-12, R134a	R-502, R-404A, R-507	R-22
KUCB41 ED	L - 1	L - 1	L - 3/4
KUCB51 ED	L - 1-1/2	L - 1-1/2	L - 3/4
KUCB62 ED	L - 1-1/2	L - 1-1/2	L - 1
KUCB62 HG	J - 1-1/2	J - 1-1/2	J - 1
KUCB82 ED	L - 2	L - 2-1/2	L - 1-1/2
KUCB82 HG	J - 2	J - 2-1/2	J - 1-1/2
KUCB102 ED	L - 3	L - 4	L - 1-1/2
KUCB102 HG	J - 3	J - 4	J - 1-1/2
KUCB123 ED	L - 3	L - 4	L - 2
KUCB123 HG	J - 3	J - 4	J - 2
KUCB153 ED	L - 4	L - 5	L - 2
KUCB153 HG	G - 4	G - 5	G - 2
KUCB204 ED	L - 5	L - 8	L - 3/4
KUCB204 HG	G - 5	G - 8	G - 3
KUCB255 ED	E - 6	E - 8	E - 3
KUCB255 HG			
KUCB306 ED	E - 8	E - 10	E - 4
KUCB306 HG			

If correct nozzle is not available, the proper orifice size can be drilled in the field using the following chart	
NOZZLE ORIFICE No.	DRILL SIZE IN.
1/2	.070
3/4	.086
1	.0995
1-1/2	.120
2	.1406
2-1/2	.157
3	.172
4	.199
5	.211
6	.242
8	.266
10	.281

* 3 Nozzles one for each refrigerant type are included in a cloth bag supplied only with Electric and Hot Gas Defrost models.

** S.S.T.

INSTALLATION INSTRUCTIONS

APPLICATION

KUC Unit Coolers are designed for use with R12, R22, R407A, R407B, R407C, R502, R134a, R404A, or R507 refrigerants. At room temperatures above 34°F (and evaporating temps no lower than 2 °F) positive coil defrosting (Electric or Hot Gas) is not required. (The air flowing through the coil will accomplish the defrost). At room temperatures of 34°F and below (to -30°F) positive defrosting is required (either Electric (ED) or Hot Gas (HG) in model nomenclature). These models require the use of (1) Time Clock (to initiate and terminate the defrost cycle). (2) Fan-Delay thermostat (to prevent evaporator fans from starting up right after defrost and blowing water on to fan blades, guards and floor) and (3) Defrost Termination Control (to prevent unnecessary prolonged heating and steaming of the coil once all the ice and frost has melted).

The coil must not be exposed to any abnormal atmospheric or acidic environments. This may result in corrosion to the cabinet and possible coil failure (leaks). (Consult manufacturer for optional baked on phenolic protective coatings).

INSTALLATION

The installation and start-up of KeepRite Unit Coolers should only be performed by qualified refrigeration mechanics. This equipment should be installed in accordance with all applicable codes, ordinances and local by-laws.

INSPECTION

Inspect all equipment before unpacking for visible signs of damage or loss. Check shipping list against material received to ensure shipment is complete.

IMPORTANT: Remember, you, the consignee, must make any claim necessary against the transportation company. Shipping damage or missing parts, when discovered at the outset, will prevent later unnecessary and costly delays.
If damage or loss during transport is evident, make claim to carrier, as this will be their responsibility, not the manufacturer's.
Should carton be damaged, but damage to equipment is not obvious, a claim should be filed for "concealed damage" with the carrier.

IMPORTANT: The electrical characteristics of the unit should be checked at this time to make sure they correspond to those ordered and to electrical power available at the job site.

Save all shipping papers, tags and instruction sheets for reference by installer and owner.

LOCATION

The unit location in the room should be selected to ensure uniform air distribution throughout the entire space to be refrigerated. Be sure that the unit does not draw air in, or blow directly out, through an opened door and that the product does not obstruct the free circulation of air. Allow a minimum of 24" clearance at each end and behind the unit.
Slim Line Unit Coolers draw air through the coil and discharge air from the fan side.

Consideration should be given to the coil location in order to minimize the piping run length to the condensing unit and floor drain.

EXPANSION VALVE (TX) SELECTION

All units require the use of an externally equalized expansion valve. (A 1/4" O.D. equalizer line has been provided on the coil) TX valves should **not** be selected strictly by their nominal ton rating. (This rating is based at a specific pressure differential and entering liquid temperature). Since applications will differ it is suggested the following selection procedure be followed.

1. Determine actual unit cooler BTUH (divide by 12,000 to convert to tons). The nominal rating is based at 10 ^{O}F T.D. (Room Temp. minus Evap. Temp.). Note that a higher / lower operating T.D.will increase / decrease this capacity rating by their direct ratio. (Example: 10,000 BTUH at 10^{O} T.D. has capacity of 15,000 at 15^{O} T.D. and 5,000 BTUH at 5^{O} T.D.).

2. Determine the pressure drop across the valve by substracting the suction (evaporating) pressure from the high side liquid pressure. Note: Also substract the distributor pressure loss (use approx. 25 psig for R12, R134a and 35 psig for R22, R502, R404A, R407A, R407B, R407C, R507).

3. Estimate entering liquid temperature. Temperatures lower than 100 ^{O}F increase valve capacity ratings. Refer to valve manufacturer's specs for details.

4. Select valve from the valve manufacturer selection charts for the appropriate refrigerant, evaporating temp and pressure drop.

5. Ensure appropriate nozzle has been installed in the distributor before installing valve. After following the manufacturer's installation instructions and after the room has reached the desired temperature the valve superheat should be checked. This will confirm that the evaporator is operating properly and performing to maximum efficiency. The superheat should be around 5 to 6 ^{O}F for a 10 to 12 ^{O}F T.D. Too high or low a super heat will result in unsatisfactory system performance and possible compressor problems.

NOZZLE INSTALLATION

All Air Defrost unit cooler models (**not** ED or HG) have the nozzles factory installed in the liquid distributor. All ED (Electric Defrost) and HG (Hot Gas Defrost) models require the nozzles to be field installed. Three sizes are packaged in a bag and are placed in the distributor end compartment. For correct selection (based on applicable refrigerant and temperature application) refer to the nozzle selection table on P. 8. The nozzle retainer clip (in distributor) must be removed before inserting nozzle. Re-install clip ensuring nozzle is properly in place.

MOUNTING

Mounting brackets with 5/16" dia holes are provided for flush mounting to the ceiling. For details refer to dimensional data on page 4. Ensure adequate clearance (at least 12") is provided behind the coil as well as each side (to enable access to the electrical and refrig. compartments).

Ensure that the ceiling is level since the drain pan has been sloped for drainage during the defrost cycle.

DRAIN LINE

The drain line should be run from the drain connection, sloping at least 1/4" per foot. A trap outside the room will allow proper draining through the tubing. Connection should be made to proper drainage facilities that comply with local regulations.

To prevent freeze-up when the temperature of the refrigerated space is 32 °F or lower, the drain line should be heated along its run inside the cold room. The heated drain line should be insulated. It is recommended that the heater be energized at all times. A heat input of 20 watts per foot in a 0 °F room and 30 watts per foot in a -20 °F room is usually satisfactory.

The drain pan may be mounted with the drain fitting at either end (remove and relocate pan). See page 8 for drain fitting details.

Ensure that the drain pan has sufficient slope for proper drainage (prevention of ice build up/blockage in pan).

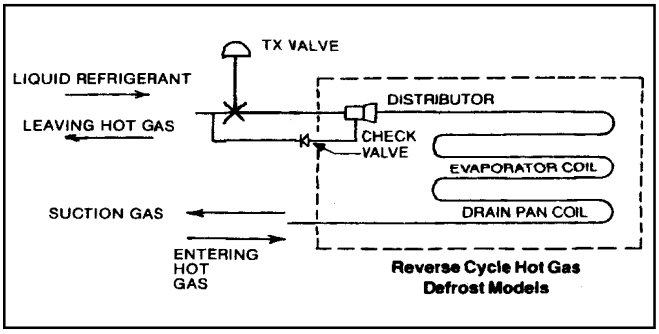
PIPING

Refrigerant line sizes are important and may not be the same size as the coil connections. Consult "Recommended refrigerant line sizes" charts for proper line sizing.

Refrigerant piping and control system should be designed to prevent possible liquid slugging (from oil or refrigerant) of the compressors on start-up after the defrost cycle. On Hot Gas Defrost Systems the suction accumulator should be at least 2.5 times the coils operating charge.

Liquid lines must be sized properly and have efficient sub-cooling to avoid erratic expansion valve operation.

See Dimensional data for line locations. For Reverse Cycle Hot Gas models see sketch below for typical unit piping. These models include a check valve (unmounted) packaged along with the nozzle in the refrig. connection compartment end panel.



WIRING

Wire system in accordance with governing standards and local codes. See data and wiring diagrams on pages 2 and 3 for wiring arrangement. Electrical wiring is to be sized in accordance with minimum circuit ampacity rating.

For ease of identifying the proper wiring terminal, unit wiring is color coded and terminal block connections are identified.

When **fan delay thermostats** (combination fan delay and defrost termination) are installed, on start-up, the fans do not operate until the coil temperature is reduced to approximately 26 °F. It is normal for the fans to cycle a few times until the room temperature is brought down. At higher evaporating temperatures this control may not close and therefore should either be by-passed or replaced with an adjustable type. (set for a higher temperature cut-in point).

SYSTEM CHECK

Before Start-Up:

1. All wiring should be in accordance with local codes.
2. Refrigerant lines should be properly sized.
3. Off cycle defrost and electric defrost systems should include a liquid line solenoid valve and suction accumulator.
4. Thorough evacuation and, dehydration has been performed.
5. The suction, discharge, and receiver service valves must be open.
6. The system should include a liquid line drier moisture indicator and suction filter.
7. Pour enough water into the drain pan to allow a good check on drainage and seal the trap.

After Start-Up:

1. If necessary, temporarily by-pass fan delay control (to run fans until room temp is lowered).
2. Check the compressor oil level to ensure the correct oil charge.
3. Be sure that the expansion valve is properly set to provide the correct amount of superheat.
4. Heavy moisture loads are usually encountered when starting the system for the first time. If the coil temperature is below freezing, this will cause a rapid build-up of frost on the coil. During the initial pull-down frost build-up should be watched and the coil defrosted manually, as required.

MAINTENANCE

The unit should be periodically inspected for any dirt or build-up on the fin surface and cleaned if necessary with a soft whisk or brush. Also ensure coil and pan does not have any excessive ice build-up from improper defrost operation. When replacing heater elements first remove heater slot covers and heater clips. (See page 5 for detailed view).

SERVICE PARTS LIST

DESCRIPTION	PART NUMBER	
FAN MOTOR 115V	1043336	
FAN MOTOR 208/230V	1043766	
MOTOR MOUNT	1043304	
FAN BLADE	1043667	
MOLDED FAN GUARD \ WIRE FAN GUARD	1043305 \ 1046145	
*FAN DELAY/DEFROST TERM. CONTROL	1043725	
DRAIN FITTING KIT	1043544-001	
DEFROST HEATERS (ELECTRIC DEFROST MODELS ONLY): MODEL	**COIL FACE HEATERS (3 REQ'D)**	**COIL BOTTOM HEATER (1 REQ'D)**
KUCB 41/51 DED	270W 501321-001	500W 1043603-001
KUCB 62/82/102 DED	500W 501321-002	900W 1043603-002
KUCB 123/153 DED	750W 501321-003	1300W 1043603-003
KUCB 204 DED	960W 501321-004	1700W 1043603-004
KUCB 255 DED	1190W 501321-005	2100W 1043603-005
KUCB 306 DED	1420W 501321-006	2500W 1043603-006
HEATER RETAINER (WIRE CLIP)	505377	
TERMINAL BOARDS:		
HIGH TEMP (AIR DEFROST) MODELS	1043529	
ELECTRIC DEFROST MODELS	1043538	
HOT GAS MODELS	1043543	

* NOT USED ON HIGH TEMP (AIR DEFROST) MODELS