



Reach-In Unit Coolers

H-IM-77D

June, 2006

Part No. 25005601

(Replaces H-IM-77C, February, 2005)

Installation and Operation Manual

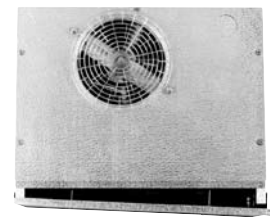
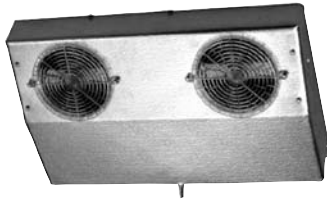


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General Information

Inspection

When the equipment is received, all items should be carefully checked against the bill of lading to make sure all crates and cartons have been received. All units should be carefully inspected for hidden damage when received. If any damage is found, it should be reported to the carrier immediately and a claim should be filed. The unit nameplate should be checked to make sure that the voltage agrees with the power supply available.

Installation

NOTE: Installation and maintenance are to be performed only by qualified personnel who are familiar with local codes and regulations, and experienced with this type of equipment.

CAUTION: Sharp edges and coil surfaces are a potential injury hazard. Avoid contact with them.

Installation and service of this equipment should be performed only by qualified and experienced commercial refrigeration mechanics. Correct application and installation of this equipment is necessary to obtain optimum performance and customer satisfaction. Install all equipment, piping and electrical in accordance with local and national codes and in conformance with good practice required for proper operation. Work safely! Prevent accidents!

The final step in any installation is to instruct the customer or user in the operation of the equipment. The customer should be shown how the equipment can be made to operate properly and efficiently. Maintenance requirements should be explained.

Expansion Valve

Install expansion valve and feeler bulb inside cabinet of the unit. Recommended valve sizes are given for each product family.

Drain Line

After installing the fan panel assembly, connect the drain line to the fitting provided on the unit. A plastic hose or metal drain line can be used. The drain line should be pitched sharply and exit the cabinet as quickly as possible. Traps in the drain line should be located in a warm ambient to prevent freeze-up.

If only a small portion of the drain line is located in the refrigerated area, a drain line heater will not be required. If a drain line heater is required, use approximately 15 watts per foot of pipe. Connect the heater wire to the terminals of the heater circuit (N and 3) at the terminal block in the junction box. The heater will then operate during the defrost cycle. All condensate water must be disposed of properly and should not be allowed to accumulate or cause a safety hazard.

Motors

Motors are lifetime lubricated and thermally protected. Check an inoperative motor by disconnecting and applying correct voltage across leads. If test fails, replace the motor.

Wiring

The nameplate on the unit is marked with the electrical characteristics to be used for wiring the unit. The unit must be grounded. All wiring should be done in accordance with applicable national and local codes.

Maintenance

Periodically inspect unit for grease and soil accumulation. Clean with warm water and soap. Do not use cleaners containing ammonia. Inspect the drain pan/fan panel occasionally for proper condensate drainage. Keep the drain opening clean.

WARNING: All power must be disconnected before cleaning drain pan/fan panel. It serves as a cover of hazardous moving parts. Operation of unit without pan in place constitutes a hazard.

WARNING: Refrigerant can be harmful if it is inhaled. Refrigerant must be used and recovered responsibly. Failure to follow this warning may result in personal injury or death.

ELECTRIC DEFROST TROUBLESHOOTING

Timer

If the system does not go through its proper sequence, check timer operation through a defrost cycle. Check for loose wires or terminals. Before replacing timer, check other components.

Operation of Paragon Timer

To set time of day grasp knob which is in the center of the inner (fail-safe) dial and rotate it in a counter-clockwise direction. This will cause the outer (24 hour) dial to revolve. Line up the correct time of day on the outer dial with the time pointer. Do not try to set the time control by grasping the other (24 hour) dial. Place pins in the outer dial at the time of day that defrost is required.

Operation of Grasslin Timer

To set the time, turn the minute hand clockwise until the time of day (and AM or PM) on the outer dial is aligned with the triangle marker on the inner dial. Do not rotate minute hand counter-clockwise. Move the white tab (tripper) on the outer dial outward at each desired initiation time. Each white tab (tripper) is a 15 minute interval and provides 15 minutes of defrost. For longer defrost duration, move additional tabs (following in time) from the initiation tab. For example, if a 45 minute defrost is to start at 7:00 AM, move the tabs outward that lie between 7:00 - 7:15, 7:15 - 7:30 and 7:30 - 7:45 on the AM side of the dial. The defrost will initiate at 7:00 AM and time terminate at 7:45 AM (if temperature termination does not occur first).

Fan Motor

If the motor does not operate or it cycles on thermal overload, remove motor leads from terminal block and apply correct voltage across the leads. If motor still does not operate satisfactorily, it must be replaced. Before starting the unit, rotate fan blades to make sure they turn freely and have sufficient clearance.

Fan Delay & Defrost Termination Control

This control is a single pole double throw switch. The red lead wire is wired to common. The black wire is wired in series with the fan motors. The brown wire is wired in series with the defrost termination solenoid in the timer. The brown and red contacts close and the black and red contacts open when the temperature is above 55°F. The black and red contacts close and the brown and red contacts open when the temperature is below 35°F.

On initial "pull down" of a warm box the fan will not start until the coil temperature reaches approximately 35°F. If the box is still comparatively warm (60°F) when the fan starts, then blowing this warm air over the coil may cause it to warm up to 55°F and thus stop the fan. Therefore, the fan may recycle on initial "pull down." This control cannot be adjusted.

If the fan motor fails to start when the control is below 35°F, disconnect the fan motor leads and check the motor as described for fan motors. Also check whether current is being supplied at "N" and "4" from the timer. The fan delay control must be below 35°F when checking for a closed circuit.

Defrost Heater

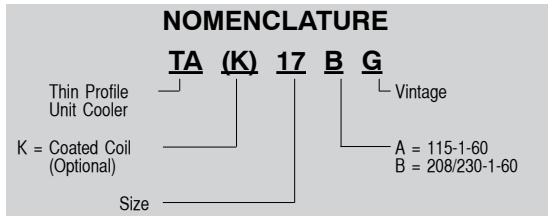
If unit shows very little or no defrosting and does not heat, disconnect heater and check to find if it is burned out. To test, apply correct voltage across heater or use continuity flashlight battery tester.

Drain Pan

If drain pan has an ice build-up, drain line may be frozen. The drain line should be pitched sharply and exit cabinet as quickly as possible. Sometimes location and ambient at the drain outside of cabinet may cause freeze-up. A drain line heater may be required to correct the freeze-up. Any traps in the drain line must be located in a warm ambient.

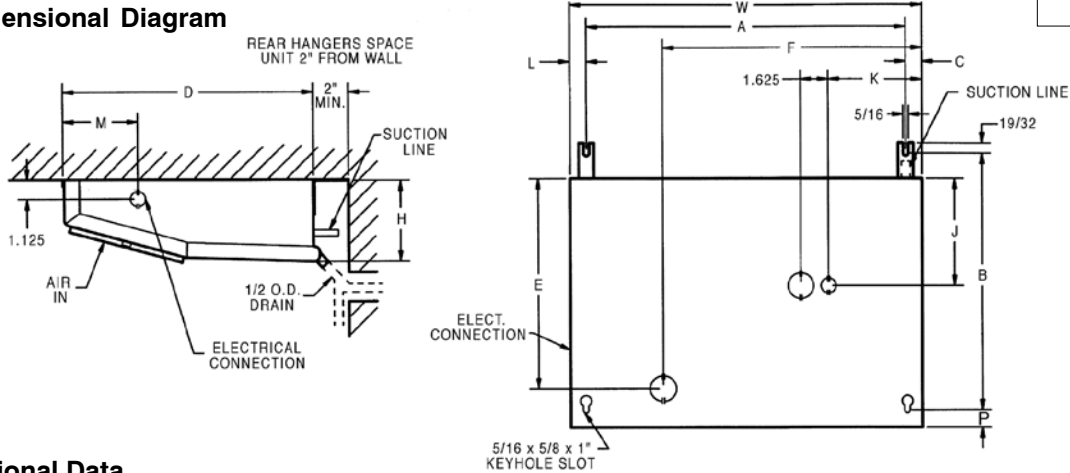
NOTE: After correcting faulty condition it is essential that the coil and unit be free of ice before placing unit back on automatic operation.

Thin Profile Air Defrost Unit Cooler



FOR FOOD SERVICE INSTALLATIONS
... seal any joint between unit cooler and cooler liner with a sealant listed by the National Sanitation Foundation, Standard 51

Dimensional Diagram



Dimensional Data

Model No.	Dimensions (in.)												Connections (in.)			Approx. Shipping Wt. (lbs.)
	A	B	C	D	E	F	H	J	K	L	M	W	Inlet	Suction	Drain	
10	14 5/8	14	15/16	13 1/2	10 1/2	11 3/8	4 1/2	8 7/8	2 1/2	15/16	4 3/8	16 1/2	3/8 OD	3/8 ID	1/2 OD	14
13	18 5/8	14	15/16	13 1/2	10 1/8	10 1/4	4 1/2	8 3/8	9 1/2	15/16	4 3/8	20 1/2	3/8 OD	3/8 ID	1/2 OD	17
17	22 1/8	15	15/16	14 1/2	11 1/8	12	4 1/2	9 3/8	11 1/4	15/16	4 3/8	24	3/8 OD	1/2 ID	1/2 OD	21
23	29 3/4	15	15/16	14 1/2	13	20 7/8	4 1/2	10 3/4	10 1/4	15/16	4 3/8	31 5/8	3/8 OD	1/2 ID	1/2 OD	28
30	38 1/8	15	15/16	14 1/2	13	29 3/4	4 1/2	10 3/4	9 3/4	15/16	4 3/8	40	3/8 OD	1/2 ID	1/2 OD	33
43	51 1/2	15	15/16	14 1/2	13	48 3/4	4 1/2	10 3/4	13 1/4	15/16	4 3/8	53 3/8	1/2 OD	5/8 ID	1/2 OD	44
55	51 1/2	15	15/16	14 1/2	13	49	6 3/4	10 3/4	11	15/16	4 3/8	53 3/8	1/2 OD	5/8 ID	1/2 OD	53

Expansion Valve Recommendations

Model Size	25°F Sat. Suction Temp.				20°F Sat. Suction Temp.			
	BTUH @ 10°F TD	R-22		BTUH @ 15°F TD	R-22			
		Alco	Sporlan		Alco	Sporlan		
10	1000	HFS-1/4HC	EFV-1/5C	1500	HFS-1/4HC	EFV-1/5C		
13	1300			1950				
17	1700			2550				
23	2300			3450				
30	3000			4500				
43*	4300	HFES-1/2HC	EFVE-1/2C	6450	HFES-1HC	EFVE-1C		
55*	5500			8250				

* Size 43 and 55 use external equalized valves.

Mounting

The thin profile air defrost unit cooler is designed for mounting from the top of the cooler. Drill holes for screws in accordance with mounting dimensions A and B given in Dimensional Data.

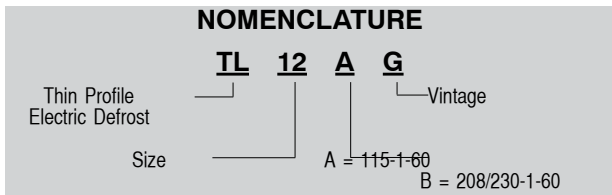
After unpacking the unit, remove the fan panel and arrange the rear brackets as shown in the drawing. Insert the screws for mounting the rear brackets into the top of the cooler cabinet. Slip the rear brackets, attached to the unit, between the screw head and cabinet and secure in place. Install the front mounting screws. For proper drainage, the unit should be installed level.



Replacement Parts

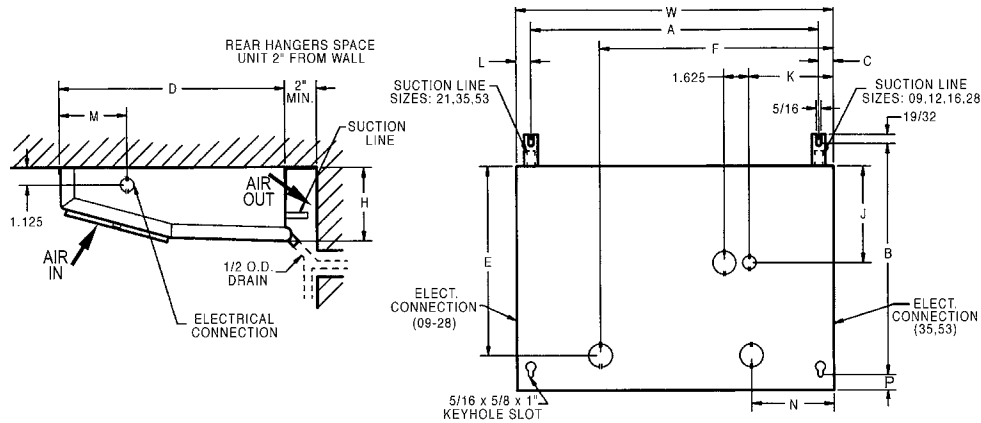
Description	All Sizes Part Number
115V Motor	25300701
208/230V Motor	25300801
Fan Blade	5101B
Fan Guard	5054D
Motor Mount	91179001

Thin Profile Electric Defrost Unit Cooler



FOR FOOD SERVICE INSTALLATIONS
 ... seal any joint between unit cooler and cooler liner with a sealant listed by the National Sanitation Foundation, Standard 51

Dimensional Diagram



Dimensional Data

Size	Dimensions (In.)													Connections (In.)			Approx. Ship Wt. (Lbs.)
	A	B	C	D	E	F	H	J	K	L	M	N	W	Coil Inlet	Suction	Drain	
09	14 ⁵ / ₈	14	15 ¹⁵ / ₁₆	13 ¹ / ₂	10 ¹ / ₂	11 ³ / ₈	4 ¹ / ₂	8 ⁷ / ₈	2 ¹ / ₂	15 ¹⁵ / ₁₆	4 ³ / ₈	-	16 ¹ / ₂	3 ³ / ₈ OD	3 ³ / ₈ ID	1 ¹ / ₂ OD	14
12	18 ⁵ / ₈	14	15 ¹⁵ / ₁₆	13 ¹ / ₂	10 ¹ / ₈	10 ¹ / ₄	4 ¹ / ₂	8 ³ / ₈	9 ¹ / ₂	15 ¹⁵ / ₁₆	4 ³ / ₈	-	20 ¹ / ₂	3 ³ / ₈ OD	1 ¹ / ₂ ID	1 ¹ / ₂ OD	19
16	22 ¹ / ₈	15	15 ¹⁵ / ₁₆	14 ¹ / ₂	11 ¹ / ₈	12	4 ¹ / ₂	9 ³ / ₈	11 ¹ / ₄	15 ¹⁵ / ₁₆	4 ³ / ₈	-	24	3 ³ / ₈ OD	1 ¹ / ₂ ID	1 ¹ / ₂ OD	23
21	22 ¹ / ₈	16 ¹ / ₂	15 ¹⁵ / ₁₆	16 ¹ / ₂	14 ¹ / ₂	18 ⁷ / ₈	6 ³ / ₄	11 ⁷ / ₈	17 ¹ / ₄	15 ¹⁵ / ₁₆	4 ³ / ₈	-	24	3 ³ / ₈ OD	1 ¹ / ₂ ID	1 ¹ / ₂ OD	24
28	29 ³ / ₄	15	15 ¹⁵ / ₁₆	14 ¹ / ₂	13	20 ³ / ₄	6 ³ / ₄	9 ³ / ₄	9 ⁷ / ₈	15 ¹⁵ / ₁₆	4 ³ / ₈	-	31 ⁵ / ₈	3 ³ / ₈ OD	1 ¹ / ₂ ID	1 ¹ / ₂ OD	27
35	35 ³ / ₄	16 ¹ / ₂	15 ¹⁵ / ₁₆	16 ¹ / ₂	14 ¹ / ₂	33 ¹ / ₄	6 ³ / ₄	11 ⁵ / ₈	18 ³ / ₈	15 ¹⁵ / ₁₆	6"	5 ¹ / ₈	38 ³ / ₈	1 ¹ / ₂ OD	5 ⁵ / ₈ ID	1 ¹ / ₂ OD	38
53	46 ¹ / ₂	16 ¹ / ₂	11 ¹ / ₈	16 ¹ / ₂	14 ¹ / ₂	44	6 ³ / ₄	11 ⁵ / ₈	30 ³ / ₈	1 ¹ / ₂	6"	5 ¹ / ₈	49 ¹ / ₈	1 ¹ / ₂ OD	7 ⁷ / ₈ ID	1 ¹ / ₂ OD	53

Mounting

This unit cooler is designed for mounting from the top of the cooler. Drill holes for screws in accordance with mounting dimensions given in Dimensional Diagram and Data.

After unpacking the unit, remove the fan panel and arrange the rear brackets as shown in the drawing. Insert the screws for mounting the rear brackets into the top of the cooler cabinet. Slip the rear brackets, attached to the unit, between the screw head and cabinet and secure in place. Install the front mounting screws. For proper drainage, the unit should be installed level.

Expansion Valve Recommendations

Model Size	-10°F. Suction 10° TD			-15°F. Suction 15° TD		
	BTUH 10° TD	R-404		BTUH 15° TD	R-404A	
		Alco	Sporlan		Alco	Sporlan
09	900	HFS ¹ / ₈ SZ	EFS ¹ / ₈ Z	1350	HFS ¹ / ₈ SZ	EFS ¹ / ₈ Z
12	1200			1800		
16	1600			2400		
21	2100	HFS ¹ / ₄ SZ	EFS ¹ / ₆ Z	3150	HFS ¹ / ₂ SZ	EFS ¹ / ₂ Z
28	2800			4200		
35*	3500	HFES ¹ / ₄ SZ	EFSE ¹ / ₄ Z	5250	HFES ¹ / ₂ SZ	EFSE ¹ / ₂ Z
53*	5300	HFES ¹ / ₂ SZ	EFSE ¹ / ₂ Z	7950	HFES1SZ	EFSE1Z

*Sizes 35 and 53 use external equalized valves.

Sequence of Operation

Step "A" - Normal Refrigeration Cycle

1. Power is supplied to N and 4 terminals by the timer.
2. The fan delay and defrost termination thermostat is closed in the fan delay position and open in the defrost termination position.
3. The defrost heater is off.
4. The compressor operates in accordance with the demands of the refrigeration system temperature and/or pressure controls.
5. The unit cooler fan operates continually.
6. Frost builds up slowly on the evaporator.

Step "B" - Defrost Cycle

1. Defrosting of the evaporator is started automatically by the timer at predetermined times - typical settings of the timer would be 1 to 3 defrost periods per 24 hours.
2. The timer mechanically opens switch "A" which breaks the circuit to the compressor and evaporator fan motors, thereby shutting them off, and closes switch "B," thereby permitting current to flow to the heater.
3. The heater recessed in slots, gives up heat directly to the fins of the evaporator. This heat raises coil and refrigerant temperature to 32°F causing the frost to melt.
4. Frost on the evaporator is melted and defrost water drips into the heated drain pan and flows down the drain.
5. When frost has completely melted from the coil, the coil starts to warm up beyond 32°F.

Step "C" - Coil Re-Cooling Cycle

1. When the coil warms up to 55°F, the defrost termination thermostat closes which allows the current to flow to the solenoid in the timer, which then energizes and trips the timer switch back to its normal position (switch "A" closed, switch "B" open). The fan delay portion of this thermostat is now open.

2. The compressor now starts.
3. Then fan motors remain off because the fan delay thermostat is open. This prevents warm air from being blown into the refrigerated space.
4. The evaporator coil cools down approaching operating temperature. Superheated gas only passes to the compressor.

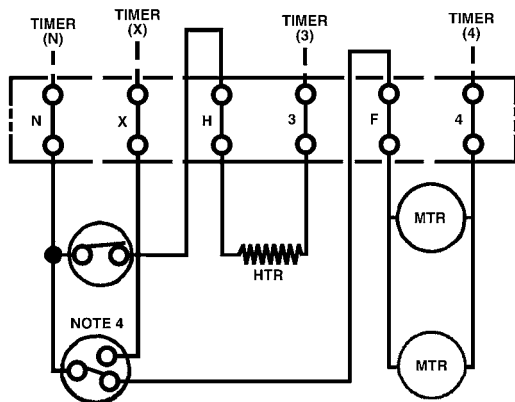
Step "D" - Return to Normal Refrigeration Operation

1. When the coil temperature reaches 35°F, the fan control switch closes. This allows current to flow to the fan motor and the unit is now back in operation as in Step "A."

IMPORTANT

1. On initial "pull down" of a warm box, the fan will not start until coil temperature reaches approximately 35°F. If box is still comparatively warm (60°F) when the fan starts, then blowing this warm air over the coil may cause it to warm up to 55°F and thus stop the fan. Therefore, fan may recycle several times on initial "pull down."
2. The timer has an adjustable fail-safe feature which will return the system to the refrigeration cycle at the end of a predetermined time (factory set at 24 minutes) if automatic control devices fail.
3. Frequent defrost periods are not necessary! The determining factor for number of defrosts per day is the frost load. When frost "build-up" results in a loss of refrigeration capacity, then a defrost is required. One to three defrosts per day are recommended.
4. A low temperature thermostatic expansion valve with pressure limiting feature is desirable for use with these units. Such a valve prevents feeding of refrigerant to the coil during the defrost cycle.

Typical Wiring Diagram for Thin Profile Electric Defrost Unit Cooler



Model Size	No. of Motors	Motor Amps.		Heater Amps.	
		A*	B*	A*	B*
09	1	0.8	0.4	4.13	2.07
12	2	1.6	0.8	5.22	2.61
16	2	1.6	0.8	6.09	3.04
21	1	1.0	0.5	9.57	4.78
28	3	-	1.2	-	5.7
35	2	-	1.0	-	7.0
53	3	-	1.5	-	8.5

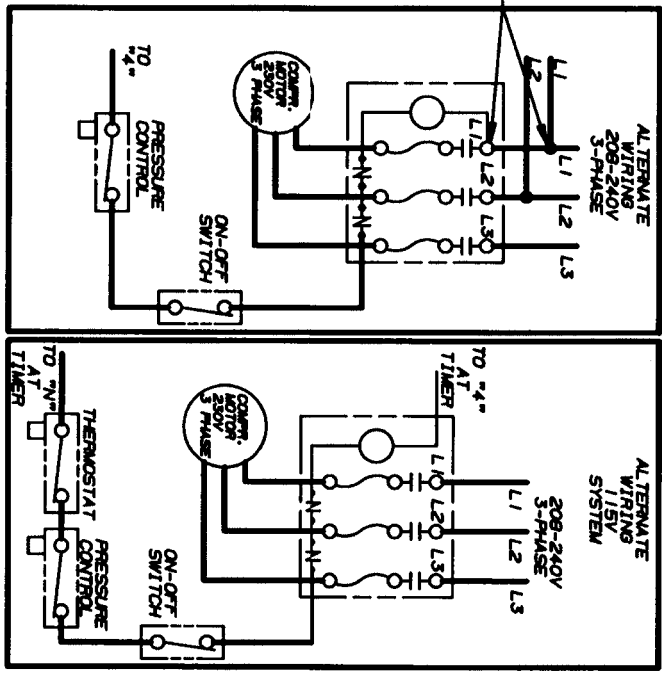
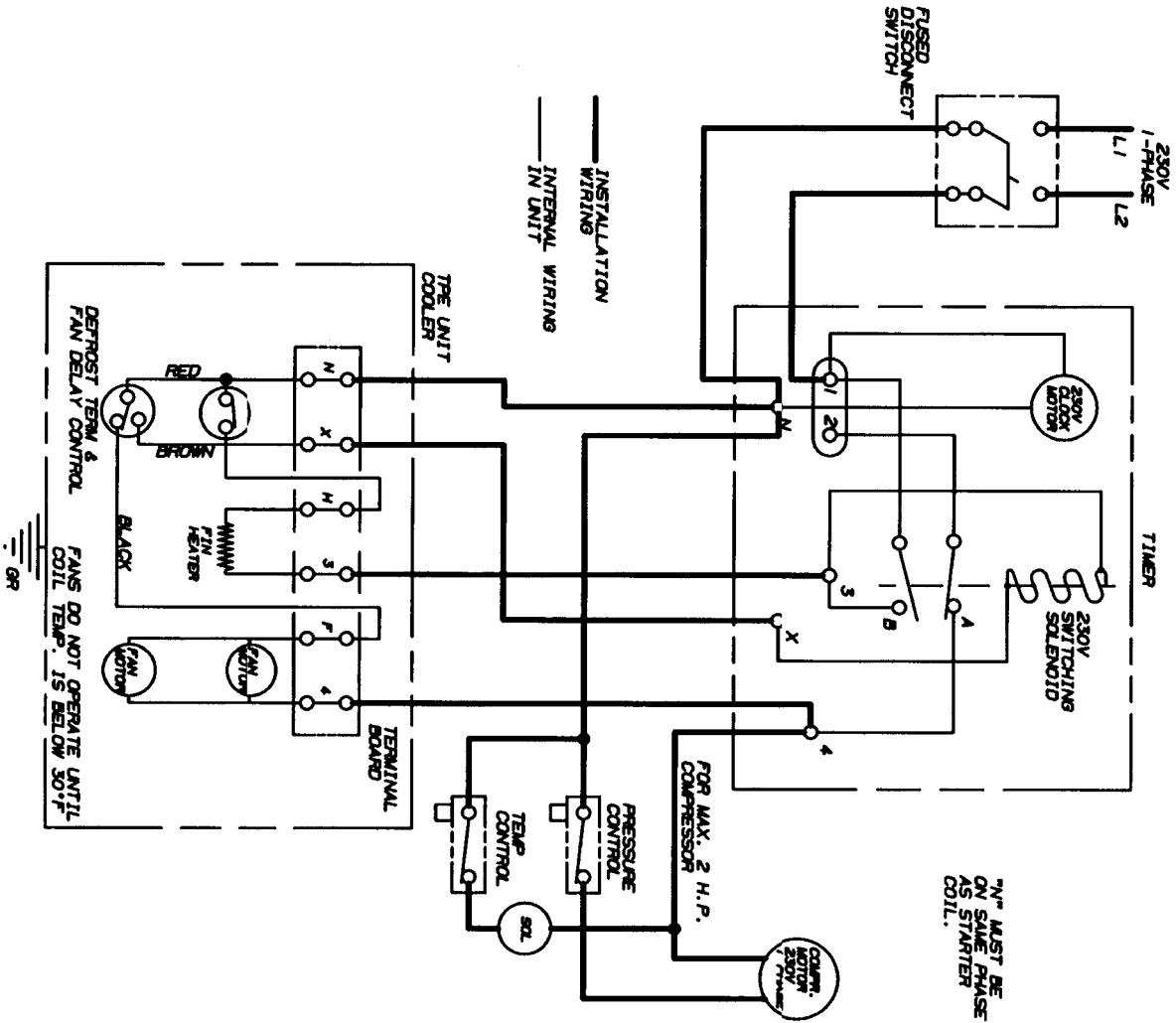
1. Use copper conductors only.
2. Unit must be grounded.
3. Timer-Paragon Model 8145-20 may be factory supplied, field installed, or field supplied and installed.
4. Fan delay and defrost termination - Red to N, Brown to X, Black to F. Fans will not operate until thermostat resets.
5. Heater limit: Red to N, White to H omitted on model 28; heater is connected directly to N.
6. *Indicates electrical code: A=115/60/1, B=208-230/60/1.



Replacement Parts

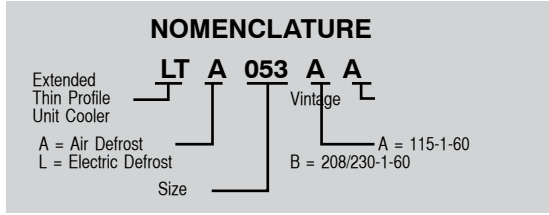
Part Description	115 Volt				208-230 Volt						
	09	12	16	21	09	12	16	21	28	35	53
Motor	25300701	25300701	25300701	25303201	25300801	25300801	25300801	25303301	25300801	25303301	25303301
Fan Blade	5101B	5101B	5101B	23100201	5101B	5101B	5101B	23100201	5101B	23100201	23100201
Fan Guard	5054D	5054D	5054D	H50328	5054D	5054D	5054D	H50328	5054D	H50328	H50328
Heater	4539N	4540N	4541N	4545N	4542N	4543N	4544N	4546N	H50097	24700701	24700702
Heater Clip	5543J	5543J	5543J	5543J	5543J	5543J	5543J	5543J	H50039	5543J	5543J
Defrost Control	5709L	5709L	5709L	5709L	5709L	5709L	5709L	5709L	5709L	5709L	5709L
Mount	91179001	91179001	91179001	23101401	91179001	91179001	91179001	23101401	91179001	23101401	23101401

Typical System Wiring Diagram with Thin Profile Electric Defrost Unit Cooler



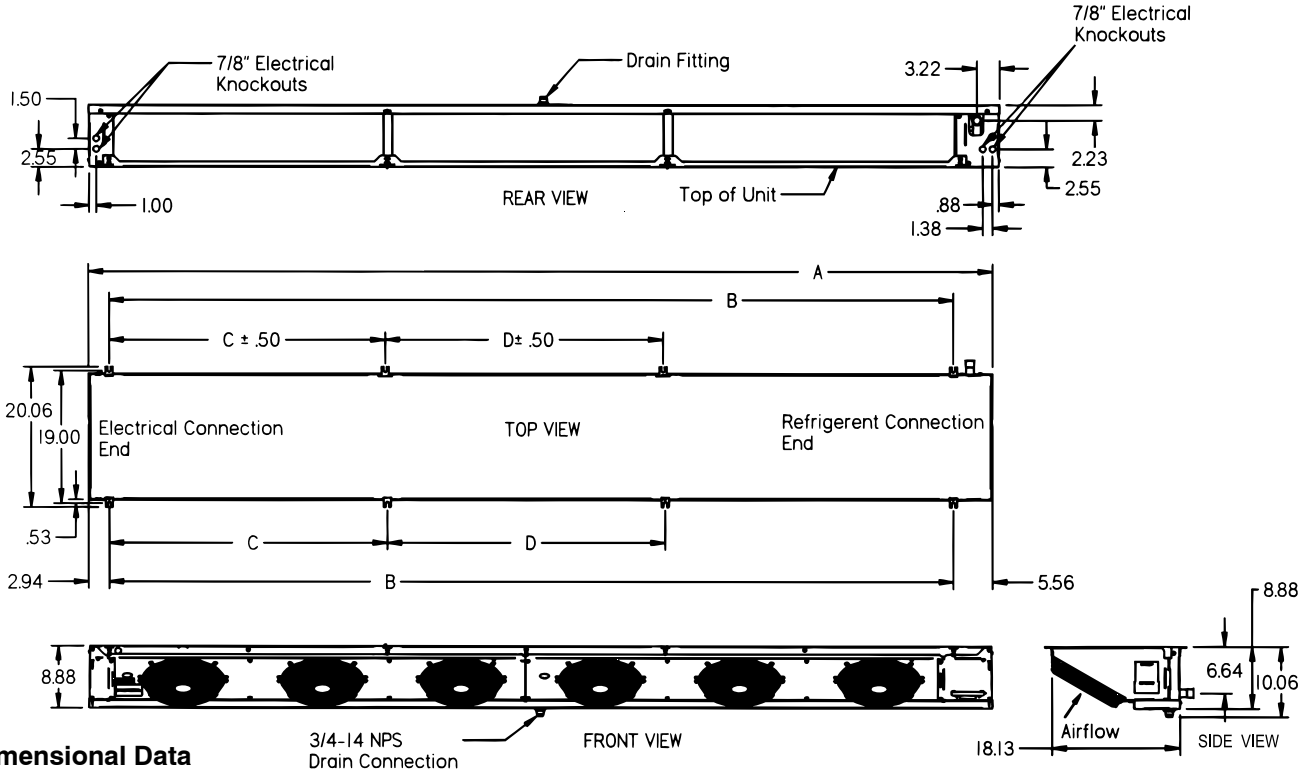
MAXIMUM TIMER CONTACT RATING
 SWITCH "A" 2 H.P.
 SWITCH "B" 40 AMP
 DELTROL 3106-3 1-1/2 H.P.

Extended Thin Profile Unit Cooler



FOR FOOD SERVICE INSTALLATIONS
... seal any joint between unit cooler and cooler liner with a sealant listed by the National Sanitation Foundation, Standard 51

Dimensional Diagram



Dimensional Data

Air Defrost LTA	Electric Defrost LTL	Number of Fans	Dimensions (Inches / mm)							
			A		B		C		D	
			Inches	mm	Inches	mm	Inches	mm	Inches	mm
053	046	2	49 3/8	1254	40 7/8	1038	---	---	---	---
079	068	3	69 1/8	1756	60 5/8	1540	---	---	---	---
102	093	4	88 7/8	2257	80 3/8	2042	40 7/8	1038	---	---
134	115	5	108 5/8	2759	100 1/8	2543	40 7/8	1038	---	---
172	133	6	128 3/8	3261	119 7/8	3045	40 7/8	1038	39 1/2	1003

Connections- Air Defrost

Model Size	Number of Fans	Connections (Inches)				Net Weight (Lbs.)
		Coil Inlet	Suction	External Equalizer	Drain	
LTA 053	2	1/2 OD	5/8 ID	1/4	3/4 MPT	48
LTA 079	3	1/2 OD	5/8 ID	1/4	3/4 MPT	69
LTA 102	4	1/2 OD	7/8 ID	1/4	3/4 MPT	85
LTA 134	5	1/2 OD	7/8 ID	1/4	3/4 MPT	108
LTA 172	6	1/2 OD	1 1/8 ID	1/4	3/4 MPT	124

Connections- Electric Defrost

Model Size	Number of Fans	Connections (Inches)				Net Weight (Lbs.)
		Coil Inlet	Suction	External Equalizer	Drain	
LTL 046	2	1/2 OD	5/8 ID	1/4	3/4 MPT	48
LTL 068	3	1/2 OD	5/8 ID	1/4	3/4 MPT	69
LTL 093	4	1/2 OD	7/8 ID	1/4	3/4 MPT	85
LTL 115	5	1/2 OD	7/8 ID	1/4	3/4 MPT	108
LTL 133	6	1/2 OD	1 1/8 ID	1/4	3/4 MPT	124

Nozzle Selection- Air Defrost

Number of Fans	Air Defrost LTA	Distributor Tube		Number of Circuits	Refrigerant	
		OD (Inches)	Length (Inches)		R404A	R22
2	053	3/16	21 1/2	2	L-1/2	L-1/3
3	079	3/16	21 1/2	2	L-1/2	L-1/3
4	102	3/16	21 1/2	4	L-3/4	L-1/2
5	134	3/16	21 1/2	4	L-1	L-3/4
6	172	3/16	21 1/2	5	L-1 1/2	L-1

Nozzle Selection- Electric Defrost

Number of Fans	Electric Defrost LTL	Distributor Tube		Number of Circuits	Low Temp. -30°F to 0°F SST		Medium Temp. +10°F to +25°F SST	
		OD (Inches)	Length (Inches)		R404A	R22	R404A	R22
2	046	3/16	21 1/2	3	L-3/4	L-1/2	L-1/2	L-1/3
3	068	3/16	21 1/2	3	L-3/4	L-1/2	L-3/4	L-1/2
4	093	3/16	21 1/2	5	L-1	L-3/4	L-1	L-3/4
5	115	3/16	21 1/2	5	L-1 1/2	L-1	L-1	L-3/4
6	133	3/16	21 1/2	5	L-1 1/2	L-1	L-1 1/2	L-1

Extended Thin Profile Unit Cooler (continued)

Replacement Parts



Motor / Fan Blade / Fan Guard

Part #	Description
25315501	Motor 115/1/60 Shaded Pole
25315601	Motor 208-230/1/60 Shaded Pole
22919001	Fan Blade 10"
23105001	Fan Guard - Wire
23105101	Motor Mount

Defrost Heater

Part #	Description	Voltage	No. Fans
24723002	Defrost Heater 1100W 230V	208-230/1/60	2
24723003	Defrost Heater 1650W 230V	208-230/1/60	3
24723004	Defrost Heater 2200W 230V	208-230/1/60	4
24723005	Defrost Heater 2750W 230V	208-230/1/60	5
24723006	Defrost Heater 3300W 230V	208-230/1/60	6
23305501	Heater Clip	N/A	3-7

Drain Fitting

Part #	Description
26925101	Drain Fitting Assembly

Cabinet Components

Part #	Description	No. Fans
40970201	Drain Pan	2
40970301	Drain Pan	3
40970401	Drain Pan	4
40970501	Drain Pan	5
40970601	Drain Pan	6
46834201	Fan Panel - 2 Fan	2, 4, 5
46834301	Fan Panel - 3 Fan	3, 5, 6
46844201	Beacon Fan Panel - 2 Fan	2, 4, 5
46844301	Beacon Fan Panel - 3 Fan	3, 6
40931201	Panel - Side Right (Piping End)	N/A
40931301	Panel - Front Access Right (Piping End)	N/A
40930901	Panel - Side Left (Electrical End)	N/A
40931001	Panel - Front Access Left (Electrical End)	N/A
40931401	Panel - Back Right (Piping End)	N/A
40931101	Panel - Back Left (Electrical End)	N/A
40931601	Panel - Beacon Access	N/A

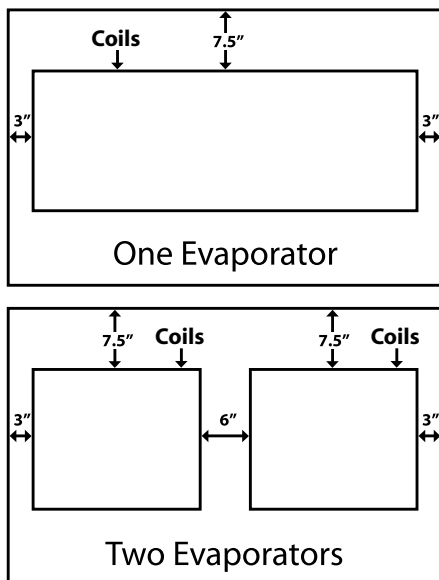
Electrical Components

Part #	Description
4145W	Terminal Strip - Electric Defrost Models
5709L	Defrost Termination Thermostat - sealed bimetal type
5709L	Fan Delay Thermostat - sealed bimetal type
2891040	Room Thermostat
5708L	Heater Limit Thermostat - sealed bimetal type

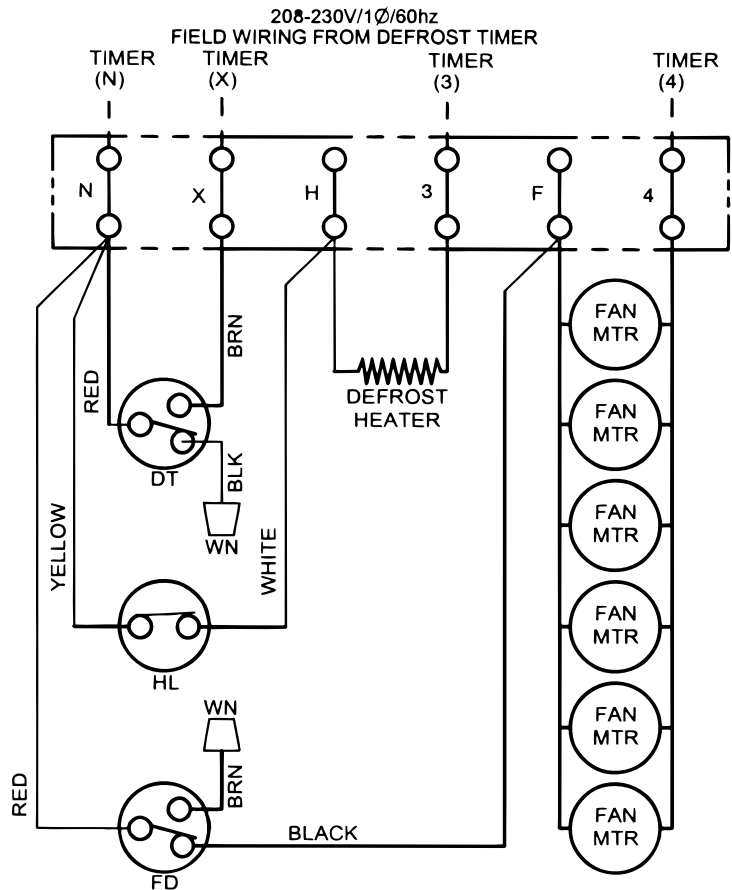
Mounting

This unit cooler is designed for mounting from the top of the cooler. Drill holes for screws in accordance with mounting dimensions given in Dimensional Diagram and Data.

After unpacking the unit, arrange the unit 7 1/2" from wall. Insert the screws for mounting the rear brackets into the top of the cooler cabinet. Slip the rear brackets, attached to the unit, between the screw head and cabinet and secure in place. Install the front mounting screws. For proper drainage, the unit should be installed level.



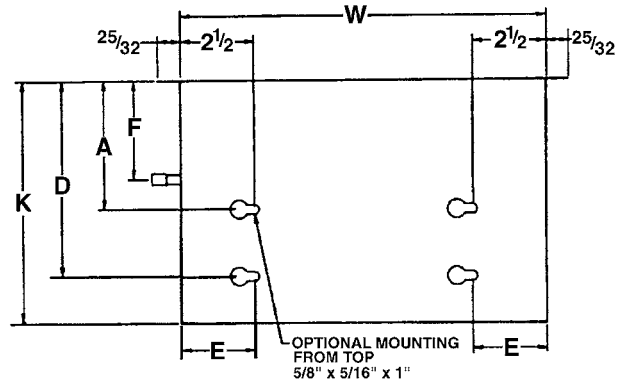
Wiring Diagram



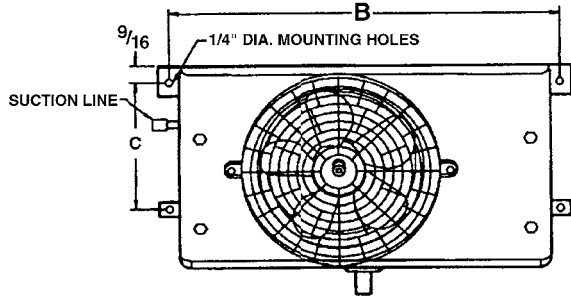
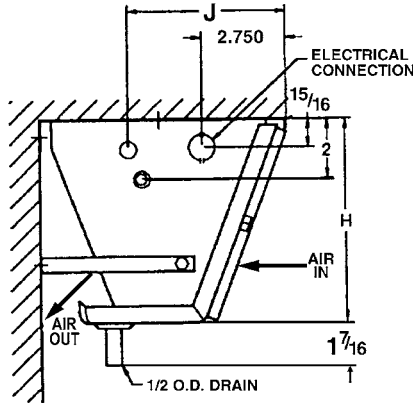
V Profile Unit Cooler

NOMENCLATURE
VA (K) 08 A G

V Profile Unit Cooler
 K = Coated Coil (Optional)
 A = 115-1-60
 B = 208/230-1-60
 Size
 Vintage



Dimensional Diagram



Dimensional Data

V Profile Model	Dimensions (In.)										Connections (In.)			Approx. Ship Wt. (Lbs.)
	A	B	C	D	E	F	H	J	K	W	Coil Inlet	Suction	Drain	
06	4 5/16	13 1/4	4 5/16	-	-	3 3/8	6 7/8	5 1/4	8 1/8	12 1/2	3/8 OD	3/8 ID	1/2 OD	9
08	4 5/16	13 1/4	4 5/16	-	-	3 3/8	6 7/8	5 1/4	8 1/8	12 1/4	3/8 OD	3/8 ID	1/2 OD	9
12	4 1/2	18 3/4	5 5/16	-	-	3 3/8	8	4 7/8	8 1/8	18	3/8 OD	3/8 ID	1/2 OD	14
17	5 1/4	14 3/4	5 1/4	9	2 1/2	4	9 3/4	6 13/16	10 1/2	14	3/8 OD	3/8 ID	1/2 OD	11

Expansion Valve Recommendations

V Profile Model	25°F. Evaporating Temp.			20°F. Evaporating Temp.		
	BTUH @ 10°F. TD	R-22		BTUH @ 15°F. TD	R-22	
		Alco	Sporlan		Alco	Sporlan
06	600	HFS 1/4 HC	EFV 1/5 C	900	HFS 1/4 HC	EFV 1/5 C
08	800			1200		
12	1200			1800		
17	1700			2550		



FOR FOOD SERVICE INSTALLATIONS
 ... seal any joint between unit cooler and cooler liner with a sealant listed by the National Sanitation Foundation, Standard 51



Replacement Parts

Description	V Profile Models	
	06, 08, 12	17
115V Motor	25300701	25303201
208/230V Motor	25300801	25303301
Fan Blade	5101B	23100201
Fan Guard	5054D	H50328
Motor Mount	91179001	23101401

Mounting

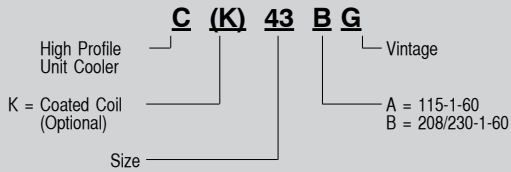
The V profile unit cooler is designed for mounting from the top or the back wall of the cooler. Drill holes for screws in accordance with mounting dimensions given in Dimensional Data.

After unpacking the unit, secure top of unit to ceiling or back wall and arrange the rear brackets as shown in the drawing. Mount the rear brackets to wall, if applicable, to the installation.

For proper drainage, the unit should be installed level.

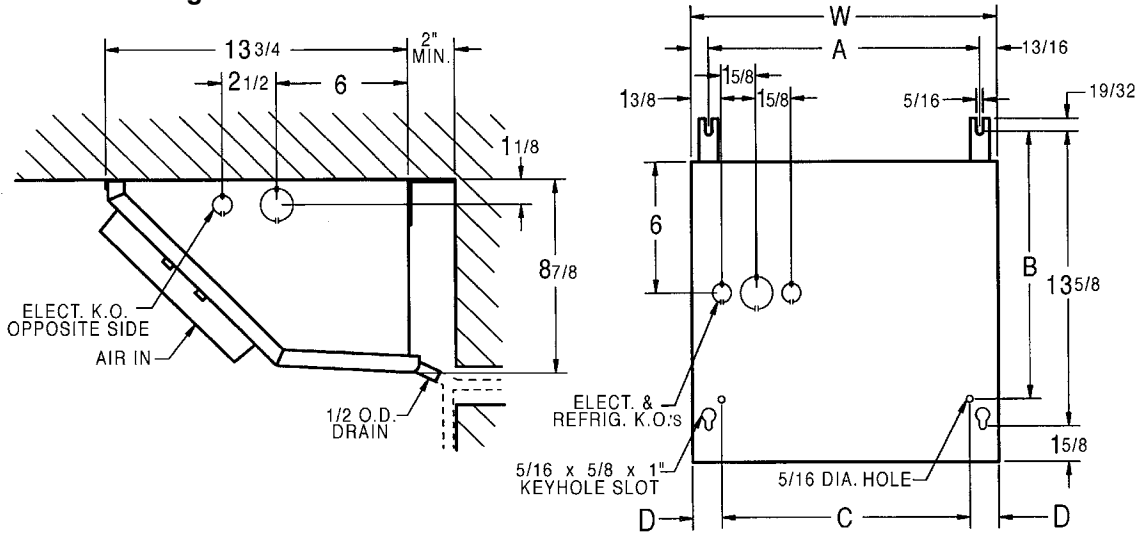
High Profile Unit Cooler

NOMENCLATURE



FOR FOOD SERVICE INSTALLATIONS
... seal any joint between unit cooler and cooler liner with a sealant listed by the National Sanitation Foundation, Standard 51

Dimensional Diagram



Dimensional Data

Model No.	Dimensions (In.)					Connections (In.)			Approx. Ship Wt. (Lbs.)
	A	B	C	D	W	Coil Inlet	Suction	Drain	
13	12 5/8	12 3/8	11 7/16	1 3/8	14 1/4	3/8 OD	3/8 ID	1/2 OD	16
17	15 5/8	12 3/8	14 7/16	1 3/8	17 1/4	3/8 OD	1/2 ID	1/2 OD	17
23	21 5/8	12 3/8	21 1/16	7/8	22 3/4	3/8 OD	1/2 ID	1/2 OD	22
30	26 1/8	12 3/8	25 13/16	1	27 3/4	3/8 OD	1/2 ID	1/2 OD	27
43	36 5/16	-	-	-	38	1/2 OD	1/2 ID	1/2 OD	40

Expansion Valve Recommendations

Model Size	25°F Sat. Suction Temp.				20°F Sat. Suction Temp.			
	BTUH @ 10°F TD	R-22		BTUH @ 15°F TD	R-22			
		Alco	Sporlan		Alco	Sporlan		
13	1300	HFS-1/4HC	EFV-1/5C	1950	HFS-1/4HC	EFV-1/5C		
17	1700			2550				
23	2300			3450			EFV-1/3C	
30	3000			4500	HFS-1/2HC			
43*	4300	HFES-1/2HC	EFVE-1/2C	6450	HFES-1HC	EFVE-1C		

* Size 43 uses external equalized valve.

Mounting

Using dimensions given in Dimensional Diagram and Data, install mounting screws for rear hangers and slide hanger slots onto screws before tightening. Open cabinet and install screws through top, front mounting holes to ceiling of box.



Replacement Parts	
Description	All Sizes Part Number
115V Motor	25303201
208/230V Motor	25303301
Fan Blade	23100201
Fan Guard	H50328
Motor Mount	23101401

Standard & Reverse Air Flow Wall Mullion Unit Cooler

NOMENCLATURE

XXX K 13 A G

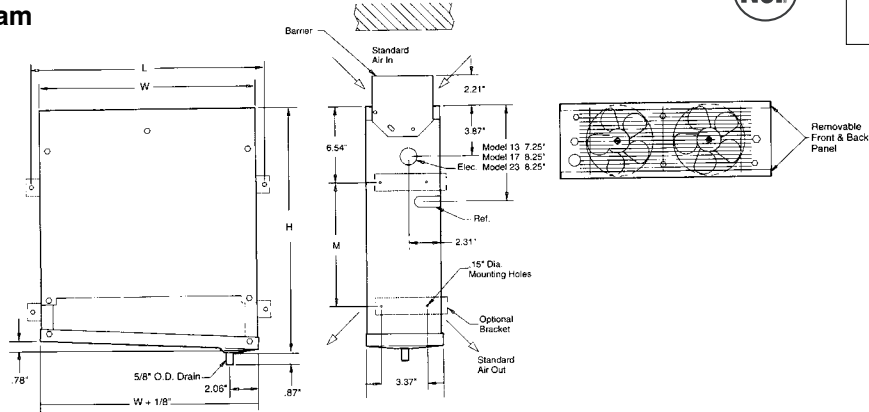
KM = Standard Air Flow
 RAM = Reverse Air Flow
 K = Coated Coil Size

Vintage
 A = 115-1-60
 B = 208/230-1-60



FOR FOOD SERVICE INSTALLATIONS
 ... seal any joint between unit cooler and cooler liner with a sealant listed by the National Sanitation Foundation, Standard 51

Dimensional Diagram



Dimensional Data

Standard or Reverse Flow Models	Dimensions (In.)				Connections (In.)			Approx. Shipping Wt. (Lbs.)
	H	L	M	W	Coil Inlet	Suction	Drain	
13	17 ³ / ₄	16 ⁷ / ₈	12 ¹ / ₄	15 ⁵ / ₈	³ / ₈ OD	³ / ₈ OD	⁵ / ₈ OD	19
17	19 ³ / ₄	16 ⁷ / ₈	14 ¹ / ₄	15 ⁵ / ₈	³ / ₈ OD	³ / ₈ OD	⁵ / ₈ OD	20
23	19 ³ / ₄	23 ¹ / ₄	14 ¹ / ₄	22	³ / ₈ OD	¹ / ₂ OD	⁵ / ₈ OD	28

Expansion Valve Recommendations

Model Size	25°F Sat. Suction Temp.		20°F Sat. Suction Temp.			
	BTUH @ 10°F TD	R-22		BTUH @ 15°F TD	R-22	
		Alco	Sporlan		Alco	Sporlan
13	1300	HFS-1/4HC	EFV-1/5C	1950	HFS-1/4HC	EFV-1/5C
17	1700			2550		
23	2300			3450	EFV-1/3C	

Mounting

The standard flow mullion unit draws air in at the top and discharges out the bottom. The reverse flow mullion draws air in at the bottom and discharges out the top. The unit may be mounted in a mullion or against a back or side wall.

When mounting to the mullion of under counter refrigerators, mounting holes are located on both ends of the unit for attaching to "customer furnished" mounting brackets.

When wall mounted, four "L" type brackets and eight stainless steel sheet metal screws are provided to attach the brackets to side panels.

IMPORTANT: A minimum of 2 inches must be provided between the top of the unit and the top of the cabinet.

A top barrier is supplied and must be used if combustible material is above the unit. On reverse flow models the barrier may be used to direct the air straight out or up at a 45° angle. Holes and slots are provided to adjust the barrier. If noncombustible material is used above the unit, the barrier may be discarded if desired.

Knockouts are provided for bringing the refrigerant piping through either end of the cabinet. An electrical knockout is provided into an internal junction box.



Replacement Parts

Part Description	Standard Down Flow	Reverse Up Flow
115V Motor	25300701	25300701
208/230V Motor	25300801	25300801
Fan Blade	5102C	5117C
Fan Guard (13-17)	5076E	5076E
Fan Guard (23)	5077E	5077E
Motor Mount	91179001	91179001
Drain Pan (13-17)	74422002	74422002
Drain Pan (23)	74436002	74436002

Wall Mount Back Bar Unit Cooler

NOMENCLATURE

BB L S 10 A G

Back Bar Unit Cooler

Revision

A = 115-1-60
B = 208/230-1-60

Size

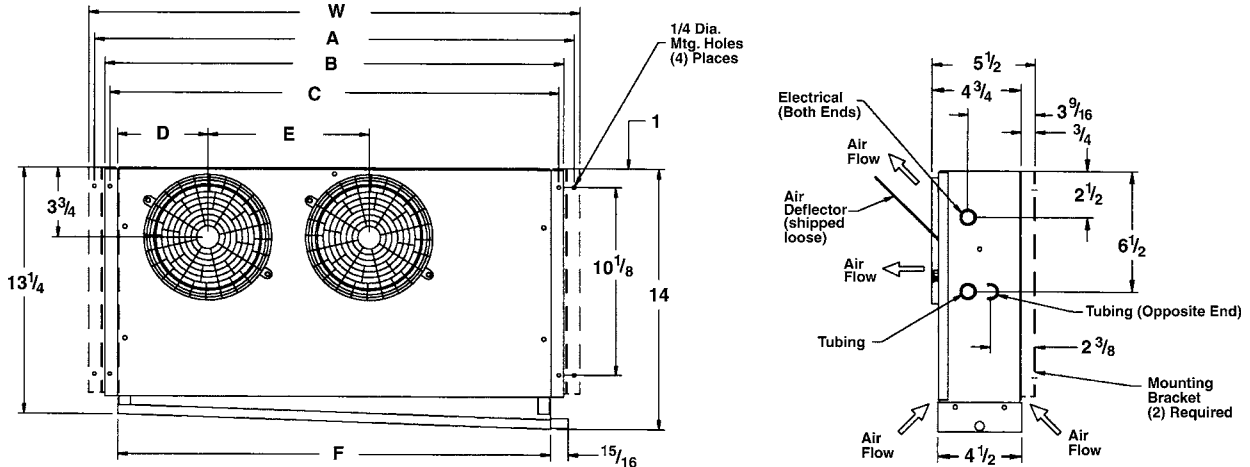
L = Low Temp Unit
M = Med. Temp Unit

Blank = Std. Unit
S = Slave Unit
M = Master Unit



FOR FOOD SERVICE INSTALLATIONS
... seal any joint between unit cooler and cooler liner with a sealant listed by the National Sanitation Foundation, Standard 51

Dimensional Diagram



Dimensional Data

Model BB	BTUH 10°F TD	CFM	Motor Data		Dimensions (In.)							Approx. Ship Wt. (Lbs.)
			Qty.	HP	W	A	B	C	D	E	F	
L10	1,000	90	1	1/150	19 ³ / ₄	19 ¹ / ₈	18	17 ¹ / ₂	7 ¹ / ₁₆	-	16 ⁵ / ₈	17
M11	1,100	90	1	1/150	19 ³ / ₄	19 ¹ / ₈	18	17 ¹ / ₂	7 ¹ / ₁₆	-	16 ⁵ / ₈	16
L15	1,500	180	2	1/150	26 ¹ / ₄	25 ⁵ / ₈	24 ¹ / ₂	24	4 ¹³ / ₁₆	8 ⁵ / ₈	23 ¹ / ₈	20
M16	1,600	180	2	1/150	26 ¹ / ₄	25 ⁵ / ₈	24 ¹ / ₂	24	4 ¹³ / ₁₆	8 ⁵ / ₈	23 ¹ / ₈	19

NOTE: All units have 3/8 O.D. suction, 1/2 O.D. sweat inlet connection and 1/2 O.D. drain.

Expansion Valve Recommendations

Low Temp Model	-10°F Sat. Suction Temp.			-15°F Sat. Suction Temp.		
	BTUH @ 10°F TD	R-404A		BTUH @ 15°F TD	R-404A	
		Alco	Sporlan		Alco	Sporlan
BBL10	1000	HFS-1/8SZ	EFS-1/8Z	1500	HFS-1/8SZ	EFS-1/8Z
BBL15	1500			2250	HFS-1/4SZ	EFS-1/6Z

Med Temp Model	25°F Sat. Suction Temp.			20°F Sat. Suction Temp.		
	BTUH @ 10°F TD	R-22		BTUH @ 15°F TD	R-22	
		Alco	Sporlan		Alco	Sporlan
BBM11	1100	HFS-1/4HC	EFV-1/5C	1870	HFS-1/4HC	EFV-1/5C
BBM16	1600			2720		



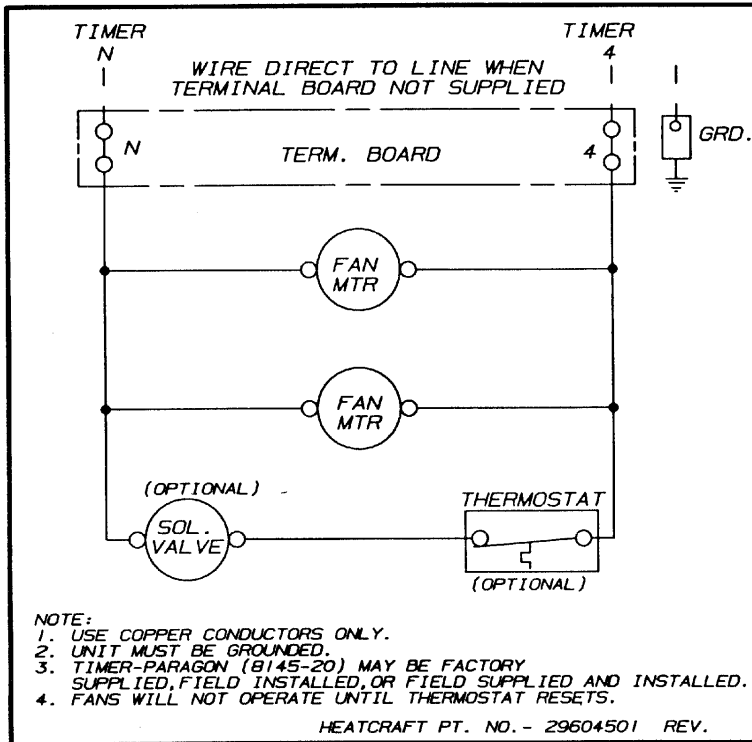
Replacement Parts

Description	All Sizes Part No.
115V Motor	25300701
208/230V Motor	25300801
Fan Blade	5101B
Fan Guard	5054D
Motor Mount	91179001

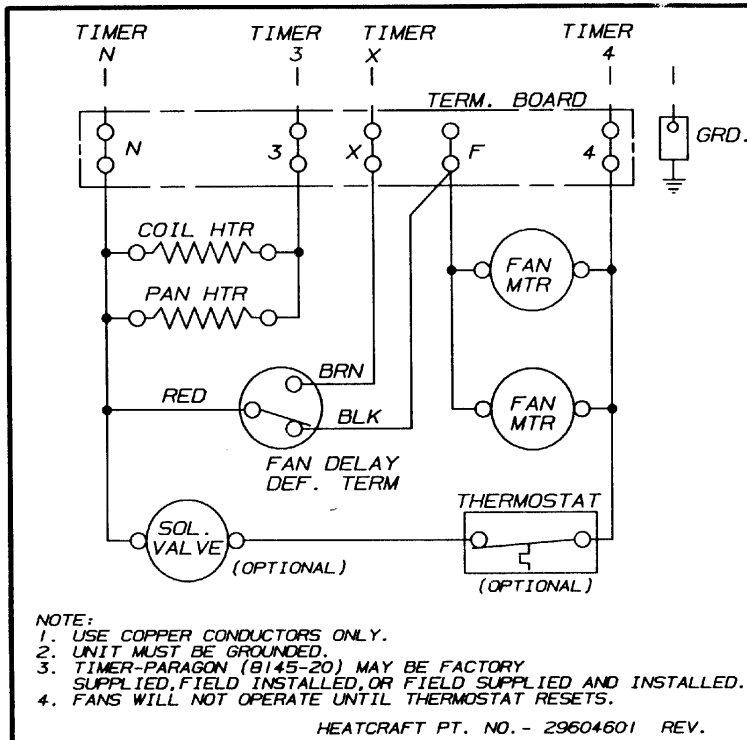
Mounting

The Wall Mount Back Bar Unit Cooler is a low height unit designed for undercounter applications. Air is drawn in at the bottom of the unit and discharged out the front. Two mounting angles are included with the unit and should be installed to space the unit 3/4" off the wall. Air deflector(s) are included and can be mounted over the top half of the fan guard to direct the air up. The deflector may be left off if total horizontal air movement is desired. If used, the deflector can be field formed to direct the air where needed. Locating holes and screws are provided.

Air Defrost Wiring, Model BBM



Electric Defrost Wiring, Model BBL



Dual Aire Unit Cooler

NOMENCLATURE

U K 009 0 B

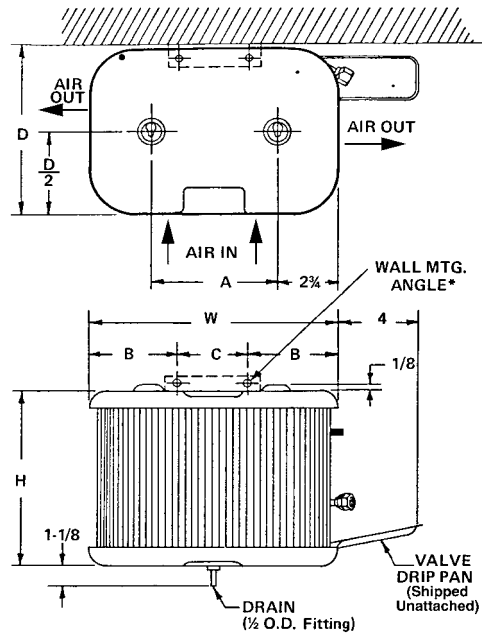
U - Dual Aire
K - Coated Coil

Design Revision

Size _____

0 = 115/60/1
1 = 208-230/60/1
A = 110/50/1
C = 220/50/1

Dimensional Diagram



Recognized Component
Underwriter's Lab., Inc.

NSF

FOR FOOD SERVICE INSTALLATIONS

... seal any joint between unit cooler and cooler liner with a sealant listed by the National Sanitation Foundation, Standard 51

Dimensional Data

Dual Aire Models	Dimensions (In.)						Connections (In.)			Approx. Ship Wt. (Lbs.)
	H	W	D	A	B	C	Coil Inlet	Suction	Drain	
009	8 1/2	11 1/2	8 7/8	6	4	3 1/2	1/2 FN	3/8 ID	1/2 OD	8
012	8 1/2	17 1/2	8 7/8	12	4	9 1/2	1/2 FN	3/8 ID	1/2 OD	10
015	9 1/2	17 1/2	10 7/8	12	4	9 1/2	1/2 FN	3/8 ID	1/2 OD	12

Expansion Valve Recommendations

Model Size	25°F Sat. Suction Temp.			20°F Sat. Suction Temp.		
	BTUH @ 10°F TD	R-22		BTUH @ 15°F TD	R-22	
		Alco	Sporlan		Alco	Sporlan
009	850	HFS-1/4HC	EFV-1/5C	1,275	HFS-1/4HC	EFV-1/5C
012	1,150			1,725		
015	1,500			2,250		

Mounting

1. Drill holes in ceiling or backwall and insert #10 screws to within 1/16" of surface.
2. Attach expansion valve drip pan to drain pan of unit.
3. Check all screws for tightness.
4. Hang unit using keyhole slots, adjusting mounting screws as necessary. Tighten screws from inside of cabinet. Remove drain pan to reach screws.

WARNING:

All power must be disconnected before cleaning drain pan. It also serves as cover of hazardous moving parts, and operation of unit without pan in place constitutes a hazard.



Replacement Parts

Description	Replacement Part for Size:		
	009	012	015
Drain Pan	66974002	66958002	66980002
Valve Drip Pan	66982001	66982001	66982001
Fan Panel	66970001	66956001	66976001
Motor (115/1)	5025S	5025S	5026S
(208-230/1)	5026T	5026T	5026T
Top Panel	66973001	66957001	66979001
Fan (115/1)	5124A	5126A	5127A
(208-230/1)	92726001	92726002	5127A
Motor Mount	91746001	91746001	91746001

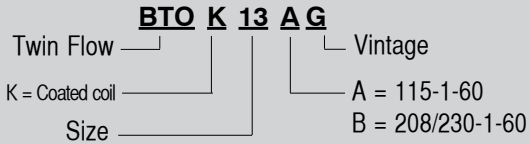
*Optionally available are molded harness for motor connection in the following lengths:

30" (4318K001)

48" (4318K002)

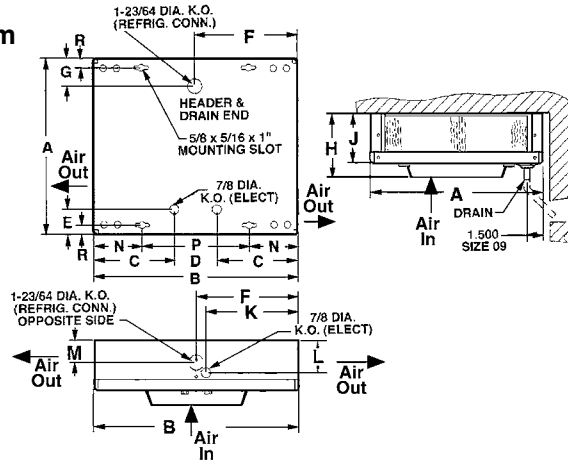
Twin Flow Air Defrost Unit Cooler

NOMENCLATURE



FOR FOOD SERVICE INSTALLATIONS
 ... seal any joint between unit cooler and cooler liner with a sealant listed by the National Sanitation Foundation, Standard 51

Dimensional Diagram



Dimensional Data

Twin Flow Model	Dimensions (In.)												Fan		Approx. Ship Wt. (Lbs.)
	A	B	C	D	E	F	G	H	J	K	L	M	Qty.	Dia.	
09	16 ¹ / ₈	19 ¹ / ₈	7 ⁹ / ₁₆	4	2 ⁵ / ₁₆	9 ⁹ / ₁₆	2 ³ / ₄	4 ⁷ / ₈	4 ¹ / ₂	8 ⁵ / ₈	2 ¹ / ₂	2 ⁵ / ₈	1	5 ¹ / ₂ "	12
13	16 ¹ / ₈	19 ¹ / ₈	7 ⁹ / ₁₆	4	2 ⁵ / ₁₆	9 ⁹ / ₁₆	2 ³ / ₄	4 ⁷ / ₈	4 ¹ / ₂	8 ⁵ / ₈	2 ¹ / ₂	2 ⁵ / ₈	2	5 ¹ / ₂ "	14
18	16 ¹ / ₈	19 ¹ / ₈	7 ⁹ / ₁₆	4	2 ⁵ / ₁₆	9 ⁹ / ₁₆	2 ³ / ₄	5 ³ / ₄	4 ¹ / ₂	8 ⁵ / ₈	2 ¹ / ₂	2 ⁵ / ₈	1	8"	15
25	18 ¹ / ₈	26 ¹ / ₈	11 ¹ / ₁₆	4	2 ⁵ / ₁₆	13 ¹ / ₁₆	2 ³ / ₄	6 ³ / ₄	5 ¹ / ₂	12 ¹ / ₈	3 ¹ / ₂	2 ⁵ / ₈	2	8"	23
35	18 ¹ / ₈	26 ¹ / ₈	11 ¹ / ₁₆	4	2 ⁵ / ₁₆	13 ¹ / ₁₆	2 ³ / ₄	6 ³ / ₄	5 ¹ / ₂	12 ¹ / ₈	3 ¹ / ₂	2 ⁵ / ₈	2	8"	24
45	21 ¹ / ₈	29 ¹ / ₈	8 ³ / ₁₆	7 ³ / ₄	3 ⁷ / ₁₆	19 ⁵ / ₈	3 ¹ / ₂	9 ¹ / ₄	8	13 ⁵ / ₈	5 ¹⁵ / ₁₆	4 ¹ / ₄	2	8"	34
55	21 ¹ / ₈	29 ¹ / ₈	8 ³ / ₁₆	7 ³ / ₄	3 ⁷ / ₁₆	10 ⁵ / ₈	3 ¹ / ₂	8 ¹ / ₂	8	13 ⁵ / ₈	5 ¹⁵ / ₁₆	4 ¹ / ₄	1	12"	34

NOTE: All units have 1/2 I.D. suction, 1/2 O.D. sweat inlet connection and 1/2 O.D. drain.

Expansion Valve Recommendations

Model Size	25°F. Sat. Suction Temp.			20°F. Sat. Suction Temp.		
	BTUH @ 10°F. TD	R-22		BTUH @ 15°F. TD	R-22	
		Alco	Sporlan		Alco	Sporlan
09	900			1350		
13	1300	HFS-1/4HC	EFV-1/5C	1950	HFS-1/4HC	EFV-1/5C
18	1800			2700		
25*	2500	HFES-1/4HC	EFVE-1/3C	3750	HFES-1/2HC	EHFE-1/3C
35*	3500			5250		
45*	4500	HFES-1/2HC	EFVE-1/2C	6750	HFES-1HC	EFVE-1C
55*	5500			8250		

*Sizes 25, 35, 45 & 55 use external equalized valves.



Replacement Parts

Twin Coil Models	Motor		Fan Blade	Fan Guard	Motor Mount
	115V	208/230V			
09	25300701	25300801	5101B	5054D	91179001
13	25300701	25300801	5101B	5054D	91179001
18	25303201	25303301	23100201	H50328	23101401
25	25303201	25303301	23100201	H50328	23101401
35	25303201	25303301	23100201	H50328	23101401
45	25303201	25303301	23100201	H50328	23101401
55	5036S	5036T	5110E	5055F	40003001

Mounting

The Twin Flow unit cooler is designed for mounting from the top of the cooler. Drill holes for bolts or screws according to dimensions given in Dimensional Diagram and Data. Double keyhole slots are provided so screws may be installed first and then the unit positioned over the screw head and slid left or right, then tighten screws to secure the unit.



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