

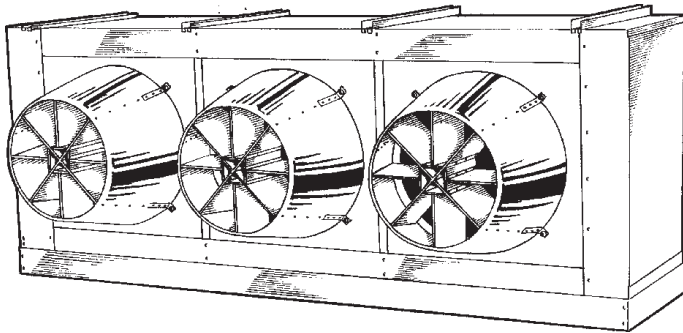
# BJBF Electric and Hot Gas Defrost Blast Freezers

## PRODUCT DATA & INSTALLATION

Bulletin B30-BJBF-PDI-12  
1064601

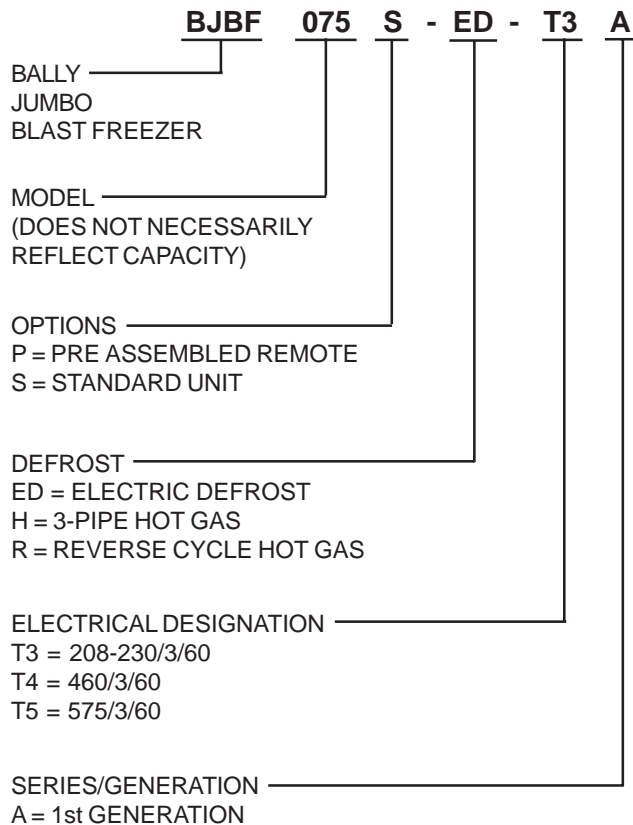
Medium and Low Temperature Applications -40 °F (-40°C) and Higher

Electrical Power: 208-230/3/60,  
460/3/60, 575/3/60



- Incoloy defrost heaters mounted in slots on both sides of cooling coils. (electric defrost models only)
- Drain pans on stainless steel hinges for easy access. (electric models only)
- Factory installed fan delay and defrost termination thermostat.
- Rugged high efficiency cast aluminum air foil fans.
- Hinged side panels allow easy access for refrigeration circuit and electrical compartment.
- Schrader fitting and external equalizer line.
- Rugged high efficiency steel bladed fans.
- Plug-in motors with moulded lead and connector.
- Unit is shipped upright for convenient handling and quick installation.
- Corrosion resistant, easy to clean vinyl coated fan guards.
- Electrical terminals with recessed connections for dependable operation.

### NOMENCLATURE



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# SPECIFICATIONS (60Hz)

## CAPACITY DATA

Model	Fin Spacing FPI	No. of Fans	Capacity* at 0" W.C. E.S.P.	Capacity* at 0.25" W.C. E.S.P.	Capacity* at 0.5" W.C. E.S.P.	Capacity* at 0.75" W.C. E.S.P.	Capacity* with Booster
BJBF075	6	2	74.91	71.57	69.73	66.58	66.40
BJBF090	6	2	91.23	88.22	84.79	80.81	80.26
BJBF105	6	2	104.03	100.52	96.42	91.71	92.91
BJBF120	6	2	113.55	109.62	104.98	99.67	101.76
BJBF130	6	3	127.41	122.98	118.23	112.38	113.73
BJBF150	6	3	145.25	140.02	135.02	127.41	130.10
BJBF170	6	3	158.51	152.54	147.13	138.29	142.43
BJBF069	5	2	68.82	66.58	64.13	61.26	60.95
BJBF084	5	2	84.76	81.94	78.80	75.18	75.33
BJBF099	5	2	97.60	94.32	90.52	86.24	87.01
BJBF114	5	2	110.71	106.96	102.48	97.44	99.03
BJBF122	5	3	118.11	114.14	109.76	104.44	105.31
BJBF142	5	3	136.14	131.36	126.08	119.33	121.78
BJBF163	5	3	150.27	144.75	138.68	131.45	134.78
BJBF063	4	2	61.59	63.76	57.42	54.92	54.50
BJBF078	4	2	76.46	73.92	71.18	67.94	67.83
BJBF092	4	2	89.30	86.32	82.95	79.07	79.11
BJBF108	4	2	99.65	96.32	92.43	87.95	88.95
BJBF111	4	3	107.17	103.53	99.64	94.91	95.33
BJBF132	4	3	124.76	120.48	115.76	110.04	111.32
BJBF153	4	3	139.29	134.31	128.78	122.27	124.68

SATURATED EVAP TEMP	CORRECTION FACTOR
20°F (-6.7°C)	1.00
10°F (-12.2°C)	.98
-0°F (-17.8°C)	.95
-10°F (-23.3°C)	.91
-20°F (-28.9°C)	.85
-30°F (-34.4°C)	.79
-40°F (40 °C)	.72

\* No allowance made for fan heat - add 3,410 BTUH (1,000 watt) per HP to room load for motor heat.  
Evaporators rated at 20°F S.S.T. & 10°F TD

## AIR FLOW DATA

MODEL	CFM at 0" W.C. E.S.P.	Throw Ft.	CFM at 0.25" W.C. E.S.P.	Throw Ft.	CFM at 0.5" W.C. E.S.P.	Throw Ft.	CFM at 0.75" W.C. E.S.P.	Throw Ft.	CFM with Booster	Throw Ft.
BJBF075	25300	72	23380	67	22320	64	20500	58	20400	133
BJBF090	24500	70	23140	66	21580	62	19780	56	19800	129
BJBF105	23760	68	22420	64	20860	59	19060	54	19520	127
BJBF120	23060	66	21740	62	20180	58	18400	52	19100	124
BJBF130	35580	68	33510	64	31290	60	28560	54	29190	126
BJBF150	34290	65	32250	61	30300	58	27330	52	28380	123
BJBF170	33090	63	31050	59	28800	55	26190	50	27600	120
BJBF069	25540	73	24120	69	22560	64	20740	59	20540	134
BJBF084	24820	70	23420	67	21860	62	20060	57	20140	131
BJBF099	24140	69	22780	65	21200	60	19420	55	19740	128
BJBF114	23480	67	22160	63	20580	59	18800	54	19360	126
BJBF122	36090	87	34050	65	31800	60	29070	56	29520	128
BJBF142	34920	66	32880	63	30630	58	27760	53	28800	125
BJBF163	33810	64	31770	60	29520	56	26850	51	28080	122
BJBF063	25780	73	27340	78	22780	65	20980	60	20680	134
BJBF078	25140	72	23720	68	22180	63	20360	58	20300	132
BJBF092	24520	70	23140	66	21580	62	19780	56	19800	129
BJBF108	23900	68	22500	64	21000	60	19200	55	19600	127
BJBF111	36690	70	34590	66	32340	61	29610	56	29850	129
BJBF132	35580	68	33540	64	31290	60	28560	54	29170	126
BJBF153	34560	66	35520	62	30240	58	27570	52	28560	124

W.C. = Water Column  
E.S.P. = External Static Pressure

## FAN MOTOR ELECTRICAL DATA

Model BJBF	Fan Motor Qty/HP	Type of Motor	208-230/3/60			460/3/60			575/3/60		
			Total F.L.A.	M.C.A.	M.O.P.	Total F.L.A.	M.C.A.	M.O.P.	Total F.L.A.	M.C.A.	M.O.P.
063 069 075 078 084 090 092 099 105 108 114 120	2/3	Standard TEFC	17.2/16.8	19.4	25	8.4	9.5	15	7.0	7.9	15
111 122 130 132 142 150 153 163 170	3/3	Standard TEFC	25.8/25.2	28.0	35	12.6	13.7	20	10.5	11.4	15

## DEFROST HEATER ELECTRICAL DATA

Model BJBF	Fan Motor No.	Total heater kW	208-230/3/60			460/3/60			575/3/60		
			Total Amperes	M.C.A.	M.O.P.	Total Amperes	M.C.A.	M.O.P.	Total Amperes	M.C.A.	M.O.P.
063 069 075	2	14.0	38.1/42.2	40/48	50/60	21.1	24	30	16.9	20	25
078 084 090	2	19.6	48/53.1	48/56	60/70	26.5	28	35	21.2	24	30
092 099 105	2	22.4	57.2/63.3	64/64	80/80	31.6	32	40	25.3	28	35
108 114 120	2	22.4	57.2/63.3	64/64	80/80	31.6	32	40	25.3	28	35
111 122 130	3	22.4	57.2/63.3	64/64	80/80	31.6	32	40	25.3	28	35
132 142 150	3	25.2	57.2/63.3	64/64	80/80	31.6	32	40	25.3	28	35
153 163 170	3	28.0	67/74.1	72/80	90/100	37.0	40	50	29.6	32	40

† Amperage draw on phase with maximum load. (Operating current only)

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

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

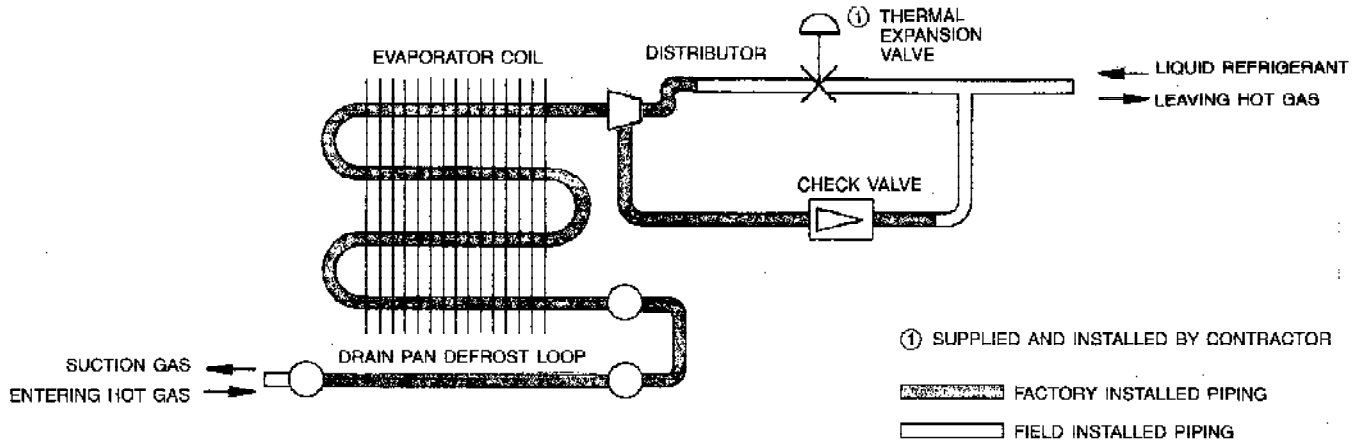
## REFRIGERANT CHARGE

MODEL BJBF			R-22		R-404A		R-502	
			lb	kg	lb	kg	lb	kg
063	069	075	34.2	15.5	32.9	15.0	37.6	17.1
078	084	090	45.6	20.7	43.9	19.9	50.1	22.8
092	099	105	57.0	25.9	54.8	24.9	62.7	28.5
108	114	120	68.4	31.1	65.8	29.9	75.2	34.2
111	122	130	60.8	27.6	58.5	26.6	66.9	30.4
132	142	150	76.0	34.5	73.1	33.2	83.6	38.0
153	163	170	91.2	41.5	87.7	39.9	100.3	45.6

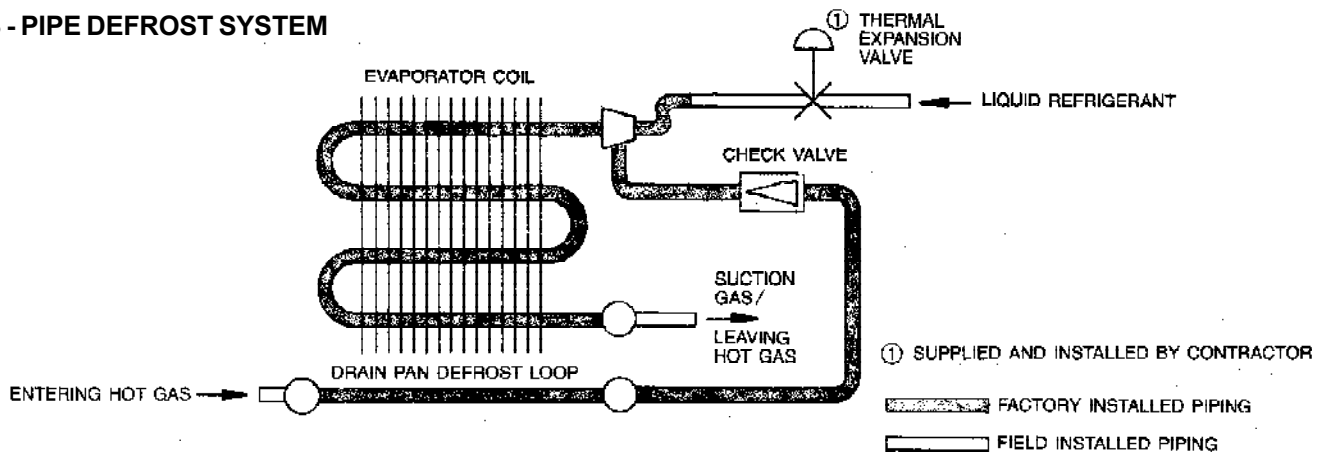
Refrigerant charge with 30% full coil @ 20 °F S.S.T. (R-22), -20 °F S.S.T. (R-404A, R-502)

# REFRIGERANT PIPING SCHEMATICS

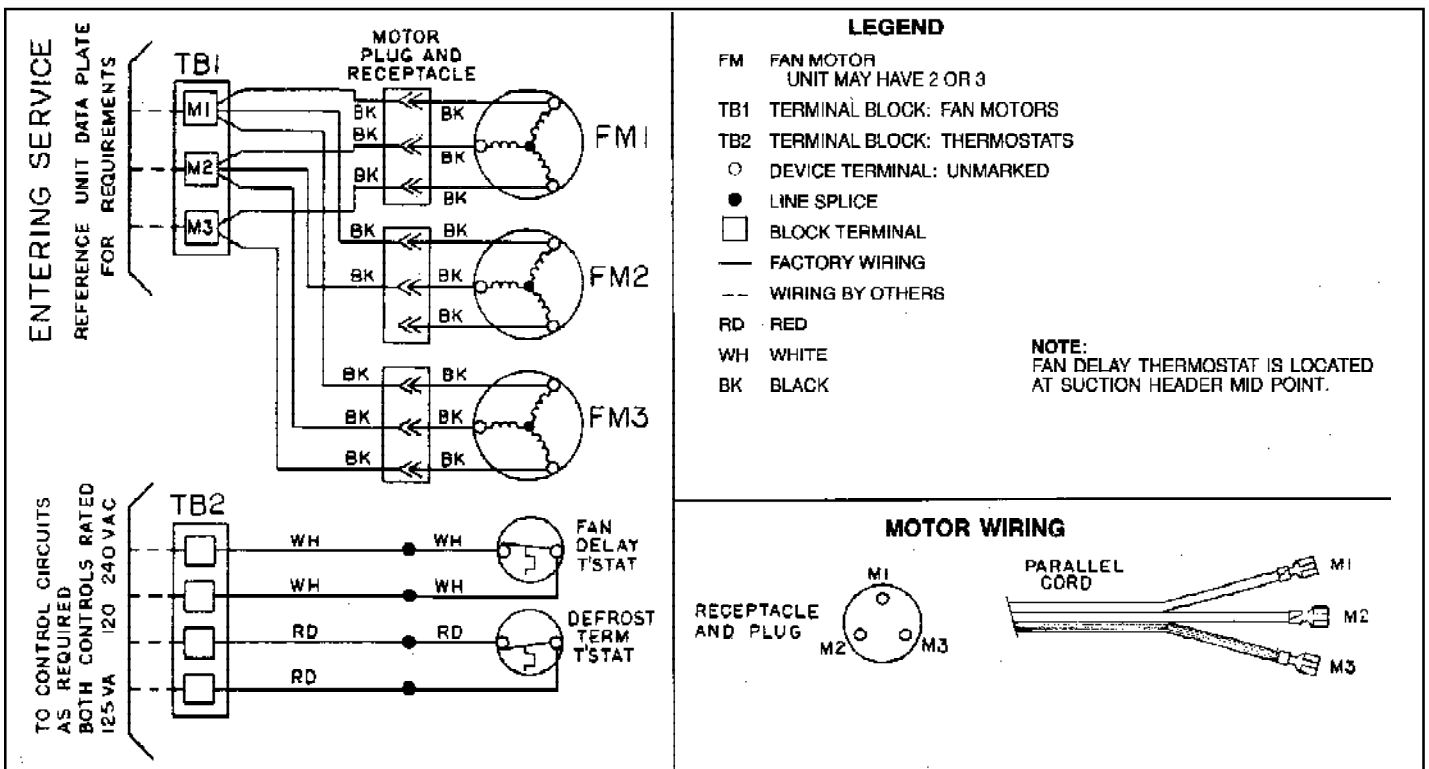
## REVERSE CYCLE DEFROST SYSTEM



## 3 - PIPE DEFROST SYSTEM

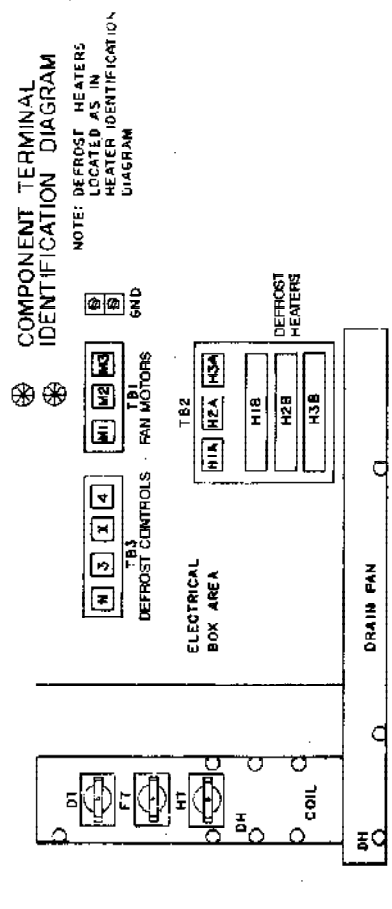
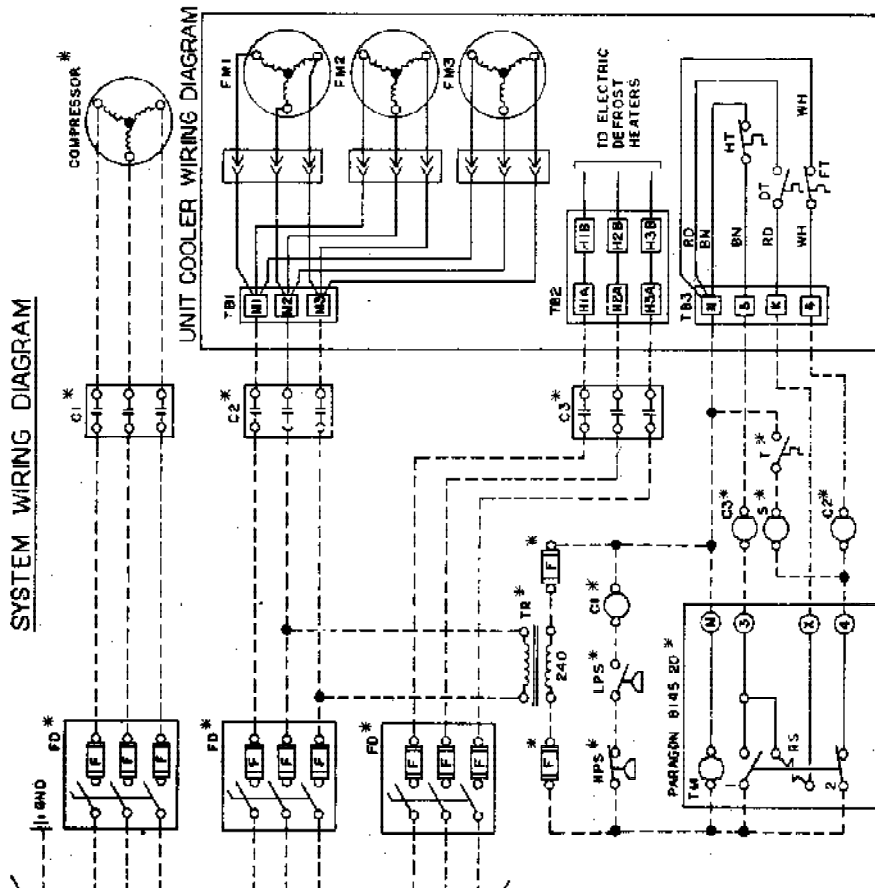


## WIRING DIAGRAM - BJBH HOT GAS DEFROST

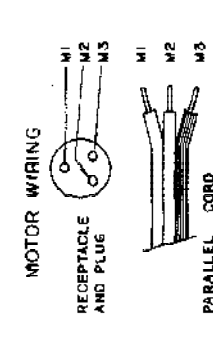
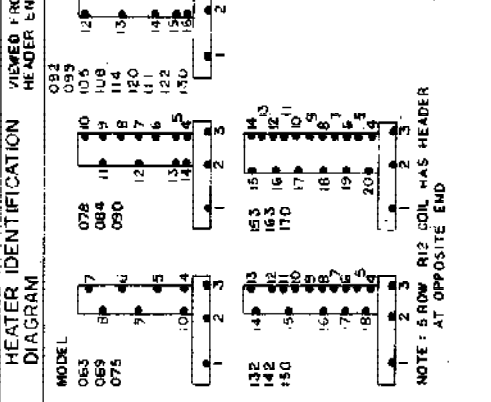
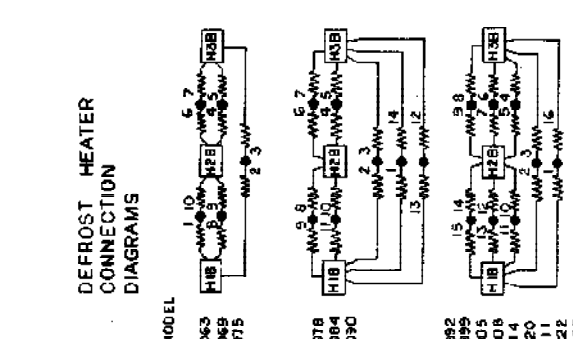


# WIRING DIAGRAM - BJB ELECTRIC DEFROST

ENTERING SERVICE SEE DATA PLATE FOR REQUIREMENT

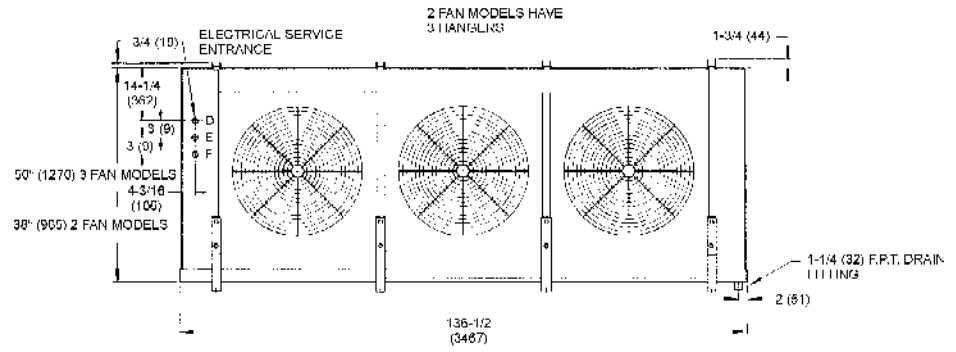
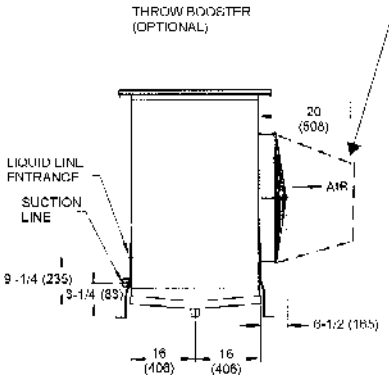
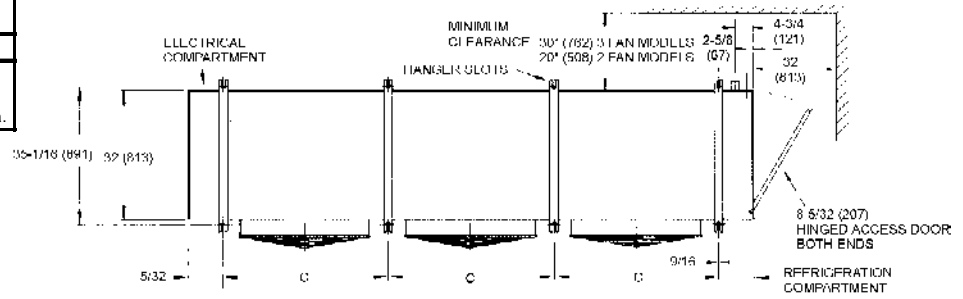


SYMBOL	DESCRIPTION
C	CONTACTOR
DH	DEFROST HEATER
DT	DEFROST TERMINATION THERMOSTAT
F	FUSE
FD	FUSED DISCONNECT
FM	FAN MOTOR
HPS	HIGH PRESSURE SWITCH
LPS	LOW PRESSURE SWITCH
S	SOLENOID
T	ROOM THERMOSTAT
TB	TERMINAL BLOCK
TR	TRANSFORMER
TM	TIMER MOTOR
RS	RELEASE SOLENOID
○	DEVICE TERMINAL UNMARKED
●	DEVICE TERMINAL MARKED
□	LINE SPLICE
*	BLOCK TERMINAL
-	COMPONENTS BY OTHERS
---	FACTORY WIRING
---	WIRING BY OTHERS
HT	HEATER THERMOSTAT
FT	FAN DELAY THERMOSTAT



## ELECTRIC DEFROST MODEL

Electrical Service Entrance Knockouts		
	2 Fan Models	3 Fan Models
Motors - D	7/8" (22) Dia.	7/8" (22) - 1 3/32" (28) Dia.
Controls - E	7/8" (22) Dia.	7/8" (22) Dia.
Heaters - F	1 3/32" (28) - 1 23/64" (35) - 1 23/32" (44) Dia.	1 3/32" (28) - 1 23/64" (35) - 1 23/32" (44) Dia.



All Dimensions (mm)

See Table 6 for Dimensions

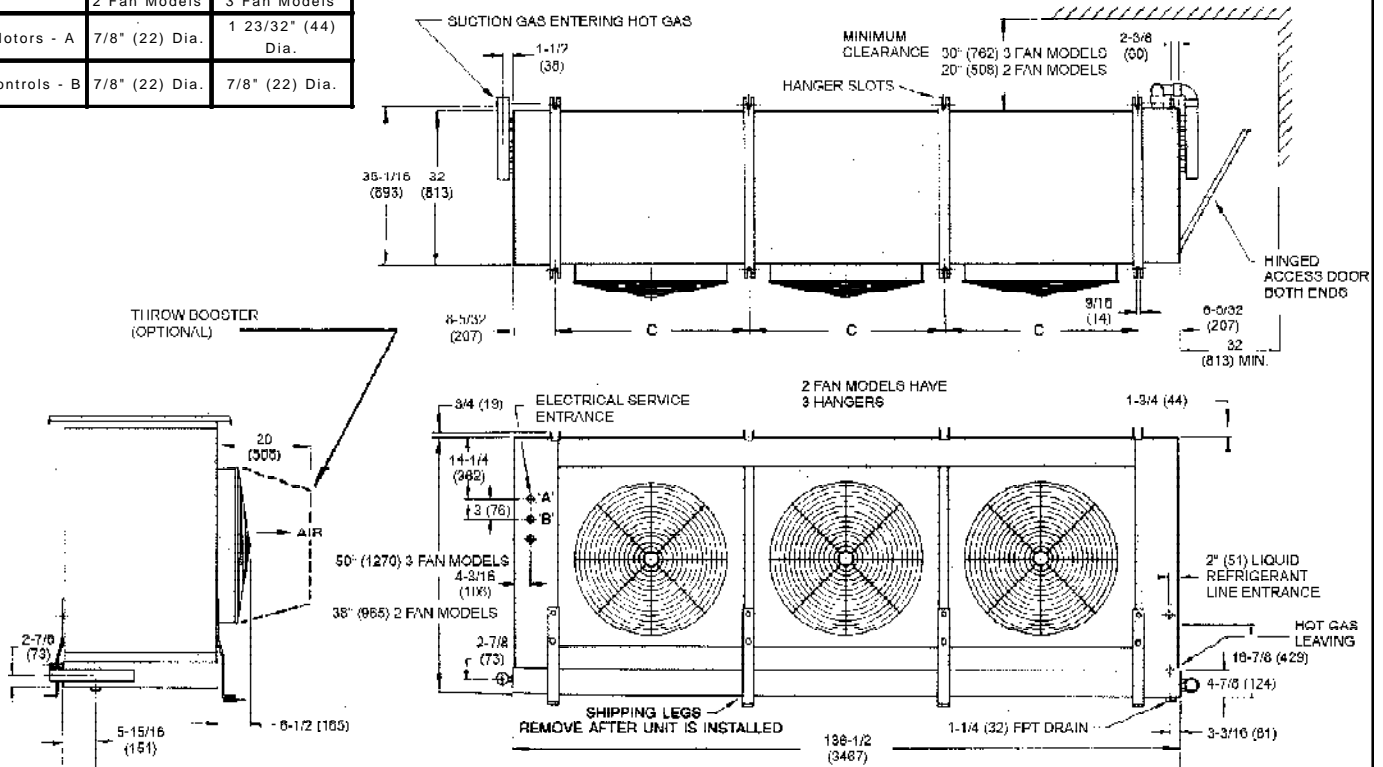
**TABLE 6 DIMENSIONS AND WEIGHTS**

MODEL	HEIGHT		HANGERS		REFRIGERANT CONNECTIONS (1)		UNIT WEIGHT	
	Inches	mm	C		LIQUID R-404A, R-22 R-502	SUCTION R-404A, R-22 R-502	Lb.	kg
			Inches	mm				
BJBF 075	38	965	60 1/16	1526	1 3/8	2 1/8	1030	467
BJBF 090	38	965	60 1/16	1526	1 3/8	2 1/8	1100	499
BJBF 105	38	965	60 1/16	1526	1 3/8	2 1/8	1200	544
BJBF 120	38	965	60 1/16	1526	1 3/8	2 1/8	1300	590
BJBF 130	50	1270	40 1/16	1018	1 3/8	2 1/8	1425	646
BJBF 150	50	1270	40 1/16	1018	1 3/8	2 1/8	1550	703
BJBF 170	50	1270	40 1/16	1018	1 3/8	2 1/8	1650	748
BJBF 069	38	965	60 1/16	1526	1 3/8	2 1/8	1030	467
BJBF 084	38	965	60 1/16	1526	1 3/8	2 1/8	1100	499
BJBF 099	38	965	60 1/16	1526	1 3/8	2 1/8	1200	544
BJBF 114	38	965	60 1/16	1526	1 3/8	2 1/8	1300	590
BJBF 122	50	1270	40 1/16	1018	1 3/8	2 1/8	1425	646
BJBF 142	50	1270	40 1/16	1018	1 3/8	2 1/8	1550	703
BJBF 163	50	1270	40 1/16	1018	1 3/8	2 1/8	1650	748
BJBF 063	38	965	60 1/16	1526	1 3/8	2 1/8	1030	467
BJBF 078	38	965	60 1/16	1526	1 3/8	2 1/8	1100	499
BJBF 092	38	965	60 1/16	1526	1 3/8	2 1/8	1200	544
BJBF 108	38	965	60 1/16	1526	1 3/8	2 1/8	1300	590
BJBF 111	50	1270	40 1/16	1018	1 3/8	2 1/8	1425	646
BJBF 132	50	1270	40 1/16	1018	1 3/8	2 1/8	1550	703
BJBF 153	50	1270	40 1/16	1018	1 3/8	2 1/8	1650	748

(1) O.D. in inches

## REVERSE CYCLE DEFROST MODEL

Electrical Service Entrance size		
	2 Fan Models	3 Fan Models
Motors - A	7/8" (22) Dia.	1 23/32" (44) Dia.
Controls - B	7/8" (22) Dia.	7/8" (22) Dia.



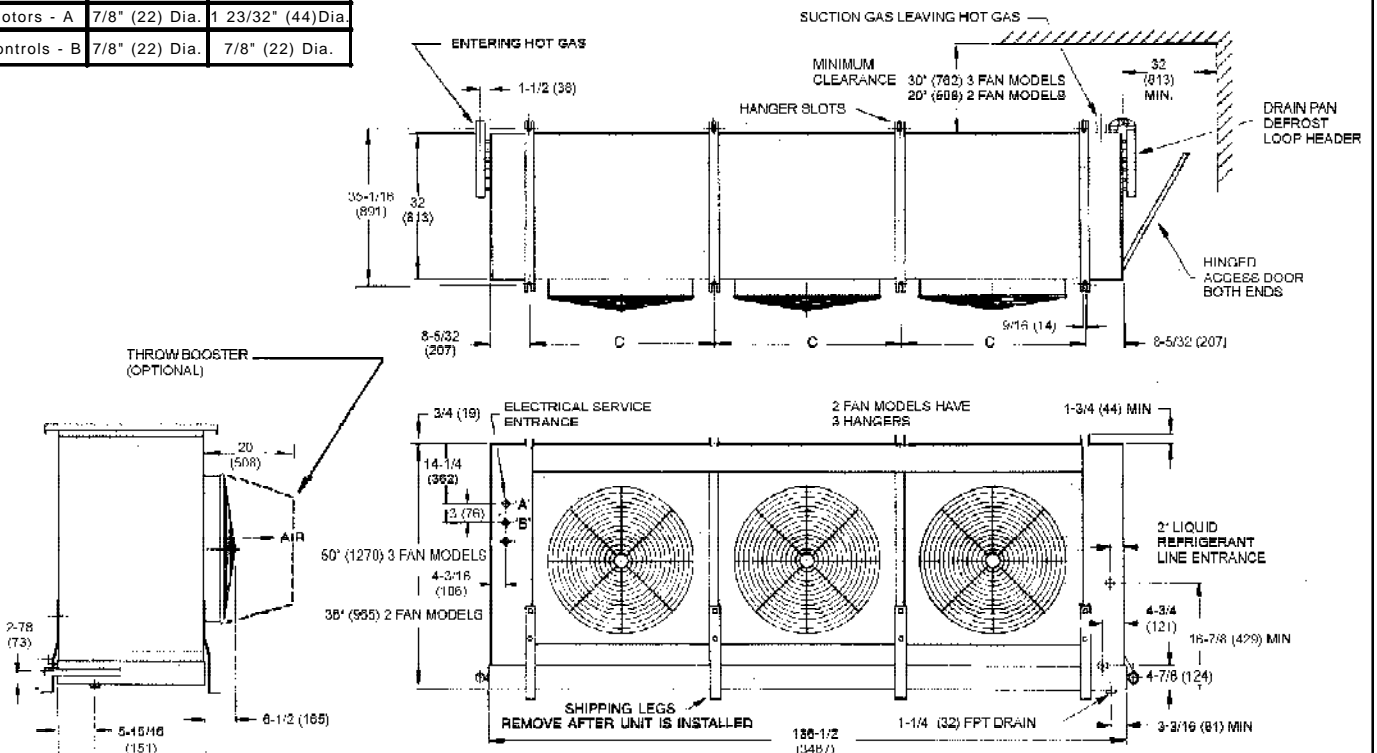
All Dimensions (mm)

See Table 6 for Dimensions

### Electrical Service Entrance size

	2 Fan Models	3 Fan Models
Motors - A	7/8" (22) Dia.	1 23/32" (44) Dia.
Controls - B	7/8" (22) Dia.	7/8" (22) Dia.

## 3 - PIPE DEFROST MODEL



All Dimensions (mm)

See Table 6 for Dimensions

# DIMENSIONS AND WEIGHTS

HOT GAS DEFROST MODEL	HEIGHT		HANGERS		REFRIGERANT CONNECTIONS (1)		HOT GAS CONNECTIONS				UNIT WEIGHT	
	Inches	mm	C		LIQUID	SUCTION	3-PIPE		REVERSE		Lb.	kg
			Inches	mm	R-404A, R-22, R-502	R-404A, R-22, R-502	ENT.	LVG.	ENT.	LVG.		
BJBF 075	41	1041	60 1/16	1526	1 3/8	2 1/8	1 3/8	2 1/8	2 1/8	1 3/8	1055	479
BJBF 090	41	1041	60 1/16	1526	1 3/8	2 1/8	1 3/8	2 1/8	2 1/8	1 3/8	1125	510
BJBF 105	41	1041	60 1/16	1526	1 3/8	2 1/8	1 3/8	2 1/8	2 1/8	1 3/8	1225	556
BJBF 120	41	1041	60 1/16	1526	1 3/8	2 1/8	1 3/8	2 1/8	2 1/8	1 3/8	1325	601
BJBF 130	53	1346	40 1/16	1018	1 3/8	2 1/8	1 5/8	2 5/8	2 5/8	1 5/8	1450	658
BJBF 150	53	1346	40 1/16	1018	1 3/8	2 1/8	1 5/8	2 5/8	2 5/8	1 5/8	1575	714
BJBF 170	53	1346	40 1/16	1018	1 3/8	2 1/8	1 5/8	2 5/8	2 5/8	1 5/8	1675	760
BJBF 069	41	1041	60 1/16	1526	1 3/8	2 1/8	1 3/8	2 1/8	2 1/8	1 3/8	1055	479
BJBF 084	41	1041	60 1/16	1526	1 3/8	2 1/8	1 3/8	2 1/8	2 1/8	1 3/8	1125	510
BJBF 099	41	1041	60 1/16	1526	1 3/8	2 1/8	1 3/8	2 1/8	2 1/8	1 3/8	1225	556
BJBF 114	41	1041	60 1/16	1526	1 3/8	2 1/8	1 3/8	2 1/8	2 1/8	1 3/8	1325	601
BJBF 122	53	1346	40 1/16	1018	1 3/8	2 1/8	1 5/8	2 5/8	2 5/8	1 5/8	1450	658
BJBF 142	53	1346	40 1/16	1018	1 3/8	2 1/8	1 5/8	2 5/8	2 5/8	1 5/8	1575	714
BJBF 163	53	1346	40 1/16	1018	1 3/8	2 1/8	1 5/8	2 5/8	2 5/8	1 5/8	1675	760
BJBF 063	41	1041	60 1/16	1526	1 3/8	2 1/8	1 3/8	2 1/8	2 1/8	1 3/8	1055	479
BJBF 078	41	1041	60 1/16	1526	1 3/8	2 1/8	1 3/8	2 1/8	2 1/8	1 3/8	1125	510
BJBF 092	41	1041	60 1/16	1526	1 3/8	2 1/8	1 3/8	2 1/8	2 1/8	1 3/8	1225	556
BJBF 108	41	1041	60 1/16	1526	1 3/8	2 1/8	1 3/8	2 1/8	2 1/8	1 3/8	1325	601
BJBF 111	53	1346	40 1/16	1018	1 3/8	2 1/8	1 5/8	2 5/8	2 5/8	1 5/8	1450	658
BJBF 132	53	1346	40 1/16	1018	1 3/8	2 1/8	1 5/8	2 5/8	2 5/8	1 5/8	1575	714
BJBF 153	53	1346	40 1/16	1018	1 3/8	2 1/8	1 5/8	2 5/8	2 5/8	1 5/8	1675	760

(1) O.D. in inches



# INSTALLATION INSTRUCTIONS

## INSPECTION

Careful inspection of all parts when received for loss or damage in transit is very 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.

Ensure that the electrical characteristics are as ordered. Save all 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. Make sure that the fan does not blow directly out or pull in through an opened door and that the product does not obstruct the free circulation of air.

When installing the unit adjacent to a wall, sufficient clearance must be provided to allow free air movement to the coil.

Clearance must be provided at each end of the unit to allow access to refrigerant piping and electrical compartment.

See dimensional drawings for clearance requirements.

## INSTALLATION

**Note: These units draw air through the coil and discharge air from the fan side**

BJBF Blast Freezers are supplied with shipping legs to allow units to be shipped in an upright position. Units are lifted into place with shipping skid attached to mounting legs.

Slotted hanger brackets take 1/2" (12.7mm) hanger rods. For fast, convenient mounting, install washer and nuts on hanger rods prior to lifting units. Rods may be lifted into slots and are held securely in place by tangs on hangers.

After unit coolers are hung in place, remove shipping legs from units by removing the two 5/16" (8mm) bolts from each shipping leg.

**Note:** Shipping legs must be removed to allow hinged drain pan to open.

## DRAIN LINE

If unit cooler is mounted flush to ceiling, the staggered height hanger will provide a positive pitch for drainage of condensate and defrost melt water.

If units are suspended below the ceiling, the installer should provide adequate pitch to the unit by adjusting the location of the hanger rod nuts.

**Note:** Check for adequate drainage by pouring water into the drain pan.

Insulated copper tube should be run from the drain connection, sloping at least 4" (102mm) per foot. A trap outside of the room will prevent warm air entering through the tubing. Connection should be made to proper drainage facilities that comply with local regulations.

It is necessary to heat the drain line to prevent condensate from freezing in the drain line. Electric heating cable or electric tape (by others) is used for this purpose. The drain line heater should be connected for continuous operation; it is also recommended that the drain line be insulated. A heat output of 20 watts per lineal foot of 1" (25mm) drain line in a 0°F (-18 °C) room is usually satisfactory. 115 volt cable and tape is available in hardware and automotive supply stores. Two 115 volt heaters (by others) of the same wattage may be wired for use on 230 volt systems.

## ELECTRICAL

Wire system in accordance with governing standards and local codes. See wiring diagrams for unit cooler wiring diagram and typical system wiring schematic.

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

The defrost termination thermostats, fan delay thermostats and defrost heater safety thermostats are factory supplied and factory wired to a terminal block. See component identification diagram on wiring diagram for electrical compartment arrangement.

A hinged end panel provides quick access to the electrical compartment.

# INSTALLATION INSTRUCTIONS

## AFTER START UP

1. Check the oil level to be sure the oil charge is correct.
2. On the initial start up, the fans do not start until coil temperature is pulled down to approximately 26 °F (-3 °C)  
Also, it is normal for the fans to cycle a few times until the room temperature is pulled down.
3. Make sure that the expansion valve is properly set so that the coil frosts evenly all the way through.
4. Heavy moisture loads are usually encountered when starting the system for the first time. This will cause a rapid build-up of frost on the unit cooler. During the initial pull down, we suggest that the frost build-up be watched and defrosted manually as required.

## MAINTENANCE

1. Periodic checking and cleaning of the coil surface when necessary should be done, using a whisk or brush. Drain pans are hinged to provide convenient access to the inside coil surface.
2. Motors are the permanently lubricated type and require no further lubrication.

## REFRIGERATION SYSTEM

Refrigerant line sizes are important and should be the same size as the coil connections, or larger, depending on the length of run. Consult recommended refrigerant line sizes charts ( Refrigeration Engineering Manuals or other recognized sources of information) when sizing refrigerant lines.

Refrigerant piping and control systems should be designed to prevent possible liquid slugging of the compressors on start-up after the defrost cycle.

Select an externally equalized expansion valve best suited to the coil and the application on the basis of the manufacturer's ratings. Install the expansion valve in the refrigeration piping compartment.

A 1/4" (6mm) O.D. equalizer line has been provided for the externally equalized expansion valve connection.

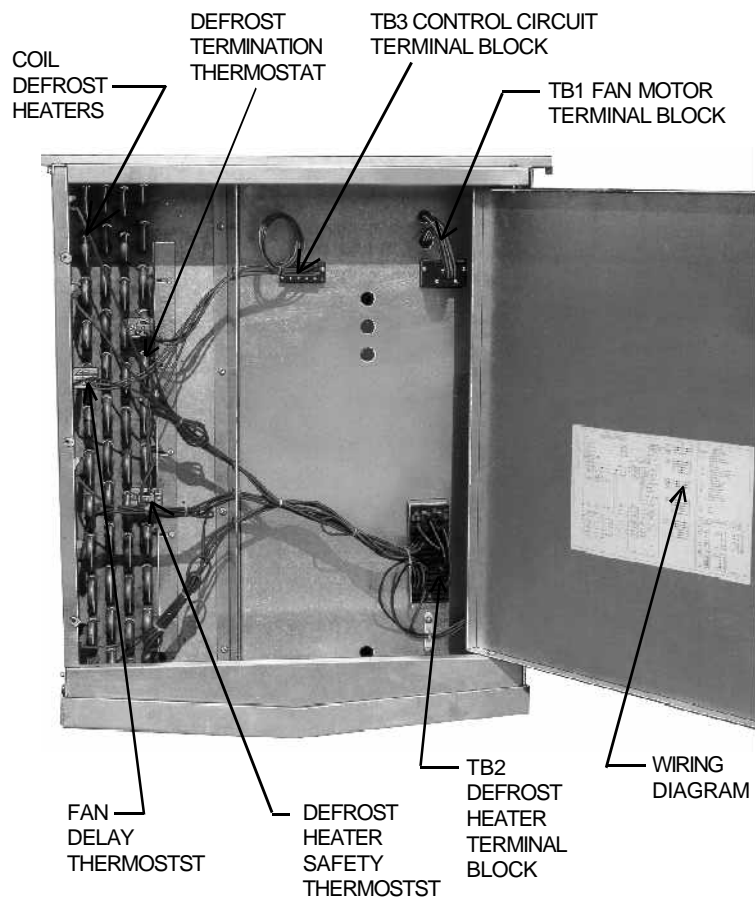
A Schrader valve fitting is supplied at the suction gas header to provide convenient pressure readings.

The refrigerant distributor is sized and installed at the factory and is supplied with a factory sized nozzle.

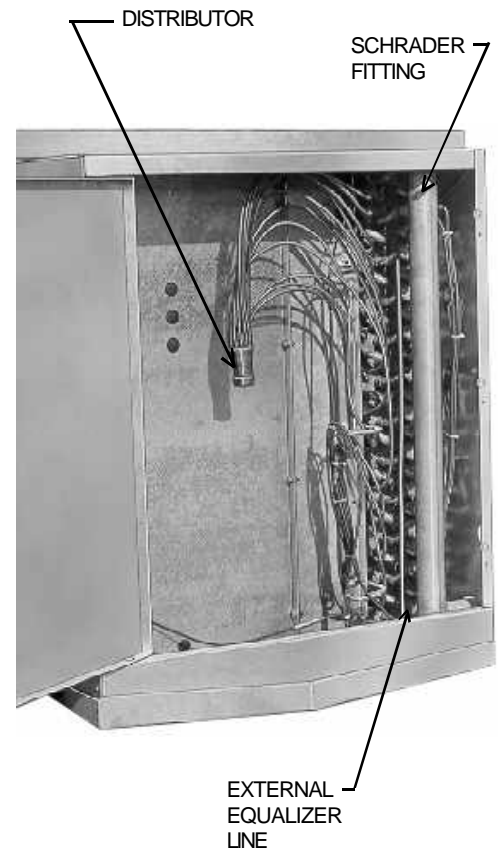
A hinged end panel provides quick access to the refrigeration piping compartment.

## SYSTEM CHECK

1. All wiring should be in accordance with local codes.
2. All refrigerant lines should be properly sized and checked for any possible leaks.
3. Be sure system is charged with the proper refrigerant.
4. Make sure that the expansion valve thermal bulb is securely strapped to the suction line.
5. The system should include a liquid line drier and strainer.
6. The suction, discharge and receiver service valves must be open.
7. Check that the fans turn freely and turn in clock wise rotation.
8. Pour enough water into the drain pan to allow a good check on drainage and seal the trap.



**FIGURE 2 - ELECTRICAL COMPARTMENT**



**FIGURE 3 - REFRIGERATION COMPARTMENT**

## SERVICE PARTS LIST

FAN MOPTORS	PART NUMBER
3 HP TEAO 208-230/3/60	1040346
3 HP TEAO 460/3/60	1040347
3 HP TEAO 575/3/60	1040348
FAN BLADE 30"	1040321
FAN MOTOR TERMINAL BLOCK TB1	1040160
DEFROST CONTROL TERMINAL BLOCK TB2	1040161
DEFROST HEATER TERMINAL BLOCK TB3	1040162
FAN DELAY THERMOSTAT	1040240
DEFROST TERMINATION THERMOSTAT	1040239
<b>COIL DEFROST HEATERS</b>	
208-230/3/60	1040167
460/3/60	1040166
575/3/60	1040165
<b>DRAIN PAN DEFROST HEATERS</b>	
208-230/3/60	1040167
460/3/60	1040166
575/3/60	1040165
THROW BOOSTER	1041036

## SERVICE LOG

DATE	COMMENTS

## PROJECT INFORMATION

System	
Model Number	Date of Start-Up
Serial Number	Service Contractor
Refrigerant	Phone
Electrical Supply	Fax



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