



HOSHIZAKI AMERICA, INC.

SERVICE BULLETIN

SB94-0008

May 9, 1994

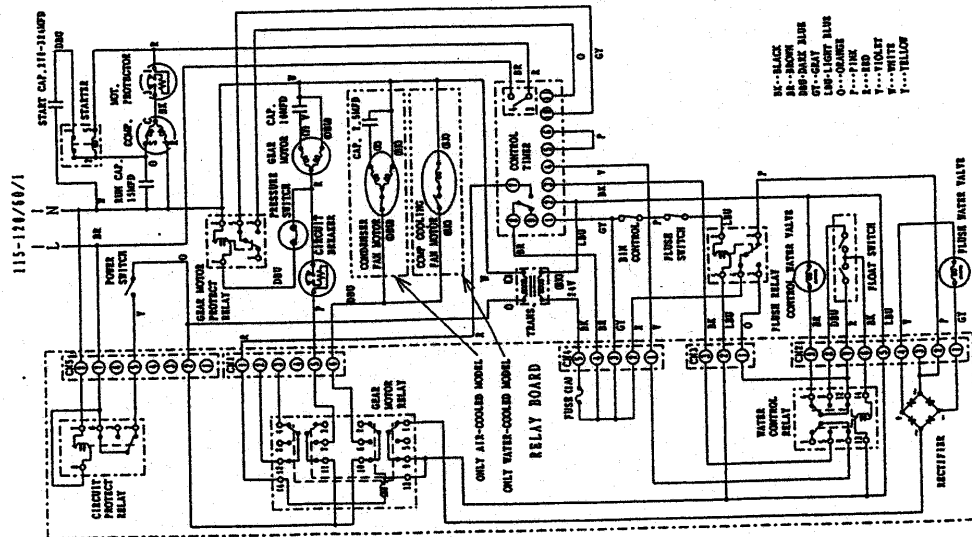
SUBJECT: SERVICE INFORMATION FOR R-22 UNITS

Utilize the following wiring diagrams and performance data to trouble shoot the new R-22 units.

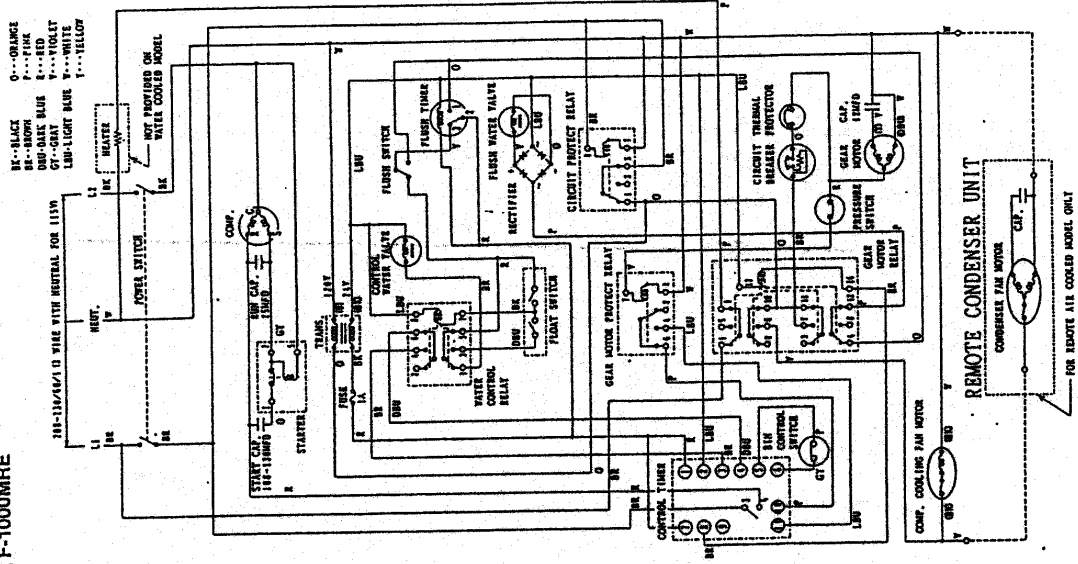
F-450BAE
F-650MAE, MWE
F-1000MAE, MWE, MRE

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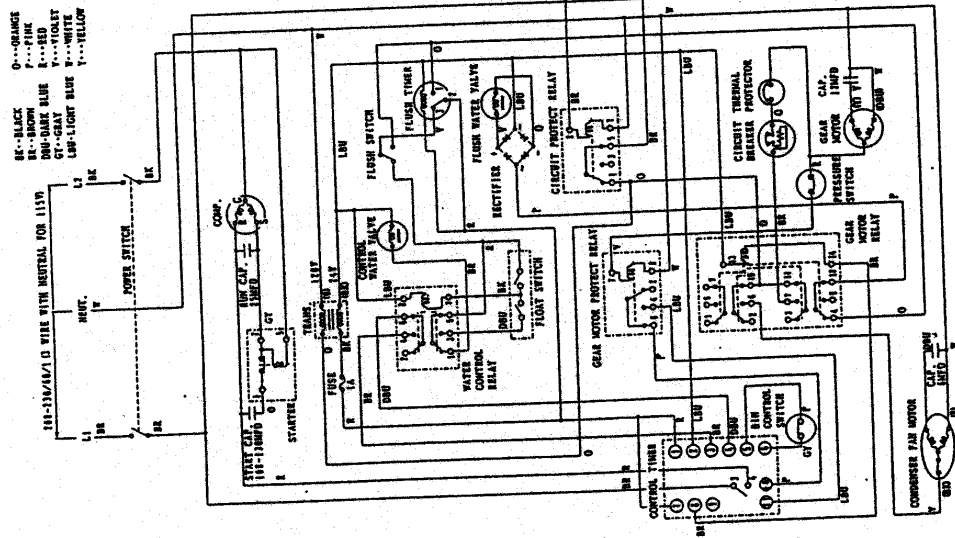
F-450BAE



F-1000MWE, F-1000MRE



F-1000MAE



F-450BAE

APPROXIMATE ICE PRODUCTION PER 24 HR.	Ambient	Water Temp. (° F)		
	Temp. (° F)	50	70	90
lbs./day (kg/day)	70	* 474 (215)	441 (200)	412 (187)
	80	419 (190)	403 (183)	379 (172)
	90	379 (172)	* 364 (165)	340 (154)
	100	337 (153)	322 (146)	311 (141)
APPROXIMATE ELECTRIC CONSUMPTION watts	70	* 750	770	760
	80	790	790	790
	90	810	* 810	805
	100	860	840	850
APPROXIMATE WATER CONSUMPTION PER 24 HR. gal./day (ℓ/day)	70	57 (215)	53 (200)	49 (187)
	80	50 (190)	48 (183)	46 (172)
	90	46 (172)	44 (165)	41 (154)
	100	40 (153)	39 (146)	37 (141)
EVAPORATOR OUTLET TEMP. ° F (° C)	70	-4 ~ 5 (-20 ~ -15)	-4 ~ 5 (-20 ~ -15)	-4 ~ 5 (-20 ~ -15)
	80	-2 ~ 7 (-19 ~ -14)	-2 ~ 7 (-19 ~ -14)	0 ~ 7 (-18 ~ -14)
	90	1 ~ 7 (-17 ~ -14)	1 ~ 9 (-17 ~ -13)	1 ~ 9 (-17 ~ -13)
	100	3 ~ 9 (-16 ~ -13)	3 ~ 11 (-16 ~ -12)	3 ~ 9 (-16 ~ -13)
HEAD PRESSURE PSIG (kg/cm ² G)	70	179 (12.6)	178 (12.5)	178 (12.5)
	80	208 (14.6)	211 (14.8)	211 (14.8)
	90	242 (17.0)	242 (17.0)	245 (17.2)
	100	277 (19.5)	277 (19.5)	277 (19.5)
SUCTION PRESSURE PSIG (kg/cm ² G)	70	20 ~ 21 (1.4 ~ 1.5)	20 ~ 21 (1.4 ~ 1.5)	20 ~ 21 (1.4 ~ 1.5)
	80	21 ~ 23 (1.5 ~ 1.6)	21 ~ 23 (1.5 ~ 1.6)	20 ~ 21 (1.4 ~ 1.5)
	90	21 ~ 23 (1.5 ~ 1.6)	21 ~ 23 (1.5 ~ 1.6)	23 ~ 24 (1.6 ~ 1.7)
	100	23 ~ 24 (1.6 ~ 1.7)	23 ~ 24 (1.6 ~ 1.7)	26 ~ 27 (1.8 ~ 1.9)

TOTAL HEAT OF REJECTION

5000 BTU/h (AT 90° F /WT 70° F)

Note: The data without *marks should be used for reference.

F-650MAE

APPROXIMATE ICE PRODUCTION PER 24 HR.	Ambient Temp. (° F)	Water Temp. (° F)		
		50	70	90
lbs./day (kg/day)	70 80 90 100	* 685 (311) 640 (290) 590 (268) 545 (247)	635 (288) 595 (270) * 540 (245) 490 (222)	588 (267) 553 (251) 511 (232) 463 (210)
APPROXIMATE ELECTRIC CONSUMPTION	70 80 90 100	* 980 1020 1050 1080	980 1020 * 1050 1090	980 1020 1050 1100
watts				
APPROXIMATE WATER CONSUMPTION PER 24 HR.	70 80 90 100	82 (311) 71 (290) 71 (268) 65 (247)	76 (288) 71 (270) 65 (245) 59 (222)	71 (267) 66 (251) 61 (232) 55 (210)
gal./day (L/day)				
EVAPORATOR OUTLET TEMP.	70 80 90 100	3~14 (-16~-10) 7~14 (-14~-10) 7~18 (-14~-8) 7~14 (-14~-10)	3~14 (-16~-10) 7~14 (-14~-10) 7~18 (-14~-8) 7~14 (-14~-10)	3~14 (-16~-10) 7~14 (-14~-10) 7~14 (-14~-10) 7~14 (-14~-10)
° F (° C)				
HEAD PRESSURE	70 80 90 100	171 (12.0) 206 (14.5) 228 (16.0) 263 (18.5)	171 (12.0) 206 (14.5) 228 (16.0) 263 (18.5)	171 (12.0) 206 (14.5) 228 (16.0) 263 (18.5)
PSIG (kg/cmG)				
SUCTION PRESSURE	70 80 90 100	21 (1.5) 24 (1.7) 26 (1.8) 32 (2.2)	24 (1.7) 28 (1.8) 26 (1.8) 32 (2.2)	24 (1.7) 28 (1.9) 29 (2.0) 32 (2.2)
PSIG (kg/cmG)				
TOTAL HEAT OF REJECTION		6830 BTU/h (AT 90° F/WT 70° F)		

Note: The data without *marks should be used for reference.

F-650MWE

APPROXIMATE ICE PRODUCTION PER 24 HR.	Ambient Temp. (° F)	Water Temp. (° F)		
		50	70	90
lbs./day (kg/day)	70 80 90 100	* 644 (292) 633 (287) 620 (281) 606 (275)	600 (272) 586 (266) * 564 (256) 551 (250)	553 (251) 540 (245) 527 (239) 511 (232)
APPROXIMATE ELECTRIC CONSUMPTION	70 80 90 100	* 1030 1030 1030 1030	1030 1030 * 1040 1040	1030 1030 1040 1050
watts				
APPROXIMATE WATER CONSUMPTION PER 24 HR.	70 80 90 100	399 (1.51) 417 (1.58) 438 (1.66) 454 (1.72)	486 (1.84) 505 (1.91) 528 (2.00) 560 (2.12)	927 (3.51) 1027 (3.87) 1091 (4.13) 1181 (4.47)
gal./day (m ³ /day)				
EVAPORATOR OUTLET TEMP.	70 80 90 100	7~14 (-14~-10) 7~14 (-14~-10) 7~14 (-14~-10) 7~14 (-14~-10)	7~14 (-14~-10) 7~14 (-14~-10) 7~14 (-14~-10) 7~14 (-14~-10)	7~14 (-14~-10) 7~14 (-14~-10) 7~14 (-14~-10) 7~14 (-14~-10)
° F (° C)				
HEAD PRESSURE	70 80 90 100	214 (15.0) 214 (15.0) 214 (15.0) 214 (15.0)	214 (15.0) 214 (15.0) 214 (15.0) 214 (15.0)	214 (15.0) 221 (15.5) 221 (15.5) 221 (15.5)
PSIG (kg/cmG)				
SUCTION PRESSURE	70 80 90 100	28 (1.8) 26 (1.8) 28 (1.9) 28 (1.9)	29 (2.0) 29 (2.0) 30 (2.1) 30 (2.1)	29 (2.0) 30 (2.1) 32 (2.2) 33 (2.3)
PSIG (kg/cmG)				
WATER FLOW FOR CONDENSER		47 gal/h (AT 100° F/WT 90° F)		
PRESSURE DROP OF COOLING WATER LINE		Less than 7 PSIG		
HEAT OF REJECTION FROM CONDENSER		5545 BTU/h (AT 90° F/WT 70° F)		
HEAT OF REJECTION FROM COMPRESSOR		1110 BTU/h (AT 90° F/WT 70° F)		

Note: The data without *marks should be used for reference.

F-1000MAE

APPROXIMATE ICE PRODUCTION PER 24 HR.	Ambient Temp. (° F)	Water Temp. (° F)		
		50	70	90
lbs./day (kg/day)	70 80 90 100	*1000(453) 920(417) 850(385) 780(353)	910(412) 845(383) *780(353) 710(322)	840(380) 790(358) 720(326) 680(308)
APPROXIMATE ELECTRIC CONSUMPTION	70 80 90 100	* 1060 1120 1150 1200	1060 1120 * 1150 1220	1060 1150 1200 1250
watts (115/230V)				
APPROXIMATE WATER CONSUMPTION PER 24 HR.	70 80 90 100	120(453) 110(417) 102(385) 92(346)	109(412) 101(383) 93(353) 85(322)	101(380) 95(358) 86(326) 81(308)
gal./day (ℓ/day)				
EVAPORATOR OUTLET TEMP.				
° F (° C)	70 80 90 100	14(-10) 16(-9) 16(-9) 16(-9)	14(-10) 16(-9) 16(-9) 16(-9)	14(-10) 16(-9) 16(-9) 16(-9)
HEAD PRESSURE	70 80 90 100	171(12.0) 199(14.0) 220(15.5) 256(18.0)	171(12.0) 199(14.0) 220(15.5) 256(18.0)	171(12.0) 199(14.0) 220(15.5) 256(18.0)
PSIG (kg/cm ² G)				
SUCTION PRESSURE	70 80 90 100	24(1.7) 28(2.0) 31(2.2) 36(2.5)	24(1.7) 28(2.0) 31(2.2) 36(2.5)	24(1.7) 28(2.0) 31(2.2) 36(2.5)
PSIG (kg/cm ² G)				
TOTAL HEAT OF REJECTION				
		8200 BTU/h (AT 90° F/ WT 70° F)		

Note: The data without *marks should be used for reference.

F-1000MRE

APPROXIMATE ICE PRODUCTION PER 24 HR.	Ambient Temp. (° F)	Water Temp. (° F)		
		50	70	90
lbs./day (kg/day)	70 80 90 100	* 920(418) 860(394) 820(372) 760(345)	840(380) 810(367) * 750(340) 690(313)	760(345) 720(327) 700(317) 630(286)
APPROXIMATE ELECTRIC CONSUMPTION	70 80 90 100	* 1210 1220 1240 1250	1210 1220 * 1250 1250	1220 1220 1250 1250
watts (115/230V)				
APPROXIMATE WATER CONSUMPTION PER 24 HR.	70 80 90 100	110(418) 104(394) 98(372) 91(345)	101(380) 97(367) 90(340) 83(313)	91(345) 86(327) 83(317) 75(286)
gal./day (ℓ/day)				
EVAPORATOR OUTLET TEMP.				
° F (° C)	70 80 90 100	18(-8) 18(-8) 18(-8) 20(-7)	18(-8) 18(-8) 20(-7) 20(-7)	18(-8) 18(-8) 20(-7) 20(-7)
HEAD PRESSURE	70 80 90 100	193(13.6) 196(13.8) 202(14.2) 238(16.8)	193(13.6) 196(13.8) 202(14.2) 238(16.8)	193(13.6) 196(13.8) 202(14.2) 238(16.8)
PSIG (kg/cm ² G)				
SUCTION PRESSURE	70 80 90 100	26(1.8) 26(1.8) 26(1.8) 33(2.3)	26(1.8) 26(1.8) 26(1.8) 33(2.3)	26(1.8) 26(1.8) 26(1.8) 33(2.3)
PSIG (kg/cm ² G)				
HEAT OF REJECTION FROM CONDENSER		8300 BTU/h (AT 90° F/ WT 70° F)		
HEAT OR REJECTION FROM COMPRESSOR		1270 BTU/h (AT 90° F/ WT 70° F)		
CONDENSER VOLUME		93 cu in		

Note: The data without *marks should be used for reference.

F-1000MWE

APPROXIMATE ICE PRODUCTION PER 24 HR.	Ambient Temp. (° F)	Water Temp. (° F)		
		50	70	90
lbs./day (kg/day)	70	* 930(421)	830(376)	750(340)
	80	910(412)	820(371)	730(331)
	90	890(403)	* 810(367)	720(326)
	100	870(394)	800(362)	710(322)
APPROXIMATE ELECTRIC CONSUMPTION	70	* 1050	1050	1050
	80	1050	1050	1050
	90	1050	* 1050	1050
	100	1050	1050	1050
APPROXIMATE WATER CONSUMPTION PER 24 HR.	70	495(1.87)	625(2.37)	1085(4.11)
	80	515(1.95)	675(2.56)	1145(4.34)
	90	530(2.00)	705(2.67)	1185(4.49)
	100	550(2.08)	725(2.74)	1240(4.69)
EVAPORATOR OUTLET TEMP.	70	18(-8)	18(-8)	18(-8)
	80	18(-8)	18(-8)	18(-8)
	90	18(-8)	18(-8)	18(-8)
	100	18(-8)	18(-8)	18(-8)
HEAD PRESSURE	70	215(15.1)	215(15.1)	215(15.1)
	80	215(15.1)	215(15.1)	215(15.1)
	90	215(15.1)	215(15.1)	215(15.1)
	100	215(15.1)	215(15.1)	215(15.1)
SUCTION PRESSURE	70	30(2.1)	30(2.1)	32(2.2)
	80	30(2.1)	30(2.1)	32(2.2)
	90	30(2.1)	30(2.1)	32(2.2)
	100	30(2.1)	30(2.1)	32(2.2)
WATER FLOW FOR CONDENSER		48 gal/h (AT 100° F/ WT 90° F)		
PRESSURE DROP OF COOLING WATER LINE		Less than 7 PSIG		
HEAT OF REJECTION FROM CONDENSER		6800 BTU/h (AT 90° F/ WT 70° F)		
HEAT OR REJECTION FROM COMPRESSOR		1270 BTU/h (AT 90° F/ WT 70° F)		

Note: The data without *marks should be used for reference.