Hoshizaki America, Inc.

Modular Flaker

Models
F-2000MWH(-C)
F-2000MRH(-C)
F-2000MRH3(-C)
F-2000MLH(-C)

SERVICE MANUAL

"A Superior Degree of Reliability"

www.hoshizaki.com

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IMPORTANT

Only qualified service technicians should attempt to service or maintain this icemaker. No such service or maintenance should be undertaken until the technician has thoroughly read this Service Manual.

HOSHIZAKI provides this manual primarily to assist qualified service technicians in the service and maintenance of the icemaker.

Should the reader have any questions or concerns which have not been satisfactorily addressed, please call or write to the HOSHIZAKI Technical Support Department for assistance.

HOSHIZAKI AMERICA, INC.
618 Highway 74 South
Peachtree City, GA 30269

Attn: HOSHIZAKI Technical Support Department

Phone: 1-800-233-1940 Technical Service
(770) 487-2331
Fax: (770) 487-3360

NOTE: To expedite assistance, all correspondence/communication MUST include the following information:

- Model Number
- Serial Number
- Complete and detailed explanation of the problem

Please review this manual. It should be read carefully before the icemaker is serviced or maintenance operations are performed. Only qualified service technicians should service and maintain the icemaker. This manual should be made available to the technician prior to service or maintenance.

CONTENTS

I. SPECIFICATION

1. ICEMAKER

F-2000MWH

AC SUPPLY VOLTAGE	208-230/60/1 (3 wire with neutral for 115V)		
COMPRESSOR	240 V	10.8 RLA	96 LRA
GEAR MOTOR	120 V	5.6 FLA	0.54 HP
FAN MOTOR	120 V	0.51 FLA	8W
OTHER	120 V	0.03A	
MAXIMUM FUSE SIZE	30 A		
MAX. HACR BREAKER (USA ONLY)	30 A		
MAX. CIRC. BREAKER (CANADA ONLY)	30 A		
MINIMUM CIRCUIT AMPACITY	30 A		

APPROXIMATE ICE PRODUCTION PER 24 HR.
lbs./day (kg/day)
Reference without *marks

Ambient Temp.(°F)	WATER TEMP. (°F) 50	70	90
70	*2030 (921)	1955 (887)	1915 (869)
80	1875 (851)	1835 (832)	1795 (814)
90	1760 (798)	*1730 (785)	1685 (764)
100	1650 (748)	1615 (733)	*1500 (680)

SHAPE OF ICE	Flake	
ICE QUALITY	Approx. 70%, Ice (90/70°F, Conductivity 200 µs/cm)	
APPROXIMATE STORAGE CAPACITY	N/A	
ELECTRIC & WATER CONSUMPTION	90/70°F	70/50°F
ELECTRIC W (kWH/100 lbs.)	2510 (3.5)	2490 (2.9)
POTABLE WATER	207 (12)	243 (12)
WATER-COOLED CONDENSER gal./24HR (gal./100 lbs.)	1165 (67)	735 (36)
EXTERIOR DIMENSIONS (WxDxH)	30" x 27-1/2" x 34-7/16" (762 x 699 x 874mm)	
EXTERIOR FINISH	Stainless Steel, Galvanized Steel (Rear)	
WEIGHT	Net 310 lbs. (140 kg), Shipping 342 lbs. (155 kg)	
CONNECTIONS - ELECTRIC	Permanent - Connection	
- WATER SUPPLY	Inlet 1/2" FPT	Cond. Inlet 1/2" FPT
- DRAIN	Outlet 3/4" FPT	Cond. Outlet 1/2" FPT
ICE MAKING SYSTEM	Auger type	
HARVESTING SYSTEM	Direct Driven Auger (400 W Gear Motor)	
ICE MAKING WATER CONTROL	Float Switch	
COOLING WATER CONTROL	Automatic Water Regulator	
BIN CONTROL SYSTEM	Mechanical Bin Control (Proximity Sw.)	
COMPRESSOR	Hermetic, Model CS20-K6E-PFV	
CONDENSER	Water-cooled, Tube in tube type	
EVAPORATOR	Copper Tube on Cylinder	
REFRIGERANT CONTROL	Thermostatic Expansion Valve	
REFRIGERANT CHARGE	R-404A, 2 lbs. (910g)	
DESIGN PRESSURE	High 460 PSIG, Low 290 PSIG	
P.C. BOARD CIRCUIT PROTECTION	High Voltage Cut-off Relay	
COMPRESSOR PROTECTION	Internal Protector	
GEAR MOTOR PROTECTION	Manual Reset Circuit Breaker & Thermal Protector	
REFRIGERANT CIRCUIT PROTECTION	Auto-reset High Pressure Control Switch	
LOW WATER PROTECTION	Float Switch and Timer	
BIN CONTROL PROTECTION	Manual Reset Spout Control	
ACCESSORIES -SUPPLIED	Spare Fuse	
-REQUIRED	Ice Storage Bin	
OPERATING CONDITIONS	VOLTAGE RANGE	187-253 V
	AMBIENT TEMP.	45-100° F
	WATER SUPPLY TEMP.	45-90° F
	WATER SUPPLY PRESSURE	10-113 PSIG

We reserve the right to make changes in specifications and design without prior notice.

F-2000MWH-C

AC SUPPLY VOLTAGE	208-230/60/1 (3 wire with neutral for 115V)		
COMPRESSOR	240 V	10.8 RLA	96 LRA
GEAR MOTOR	120 V	5.6 FLA	0.54 HP
FAN MOTOR	120 V	0.51 FLA	8W
OTHER	120 V	0.03A	
MAXIMUM FUSE SIZE	30 A		
MAX. HACR BREAKER (USA ONLY)	30 A		
MAX. CIRC. BREAKER (CANADA ONL	30 A		
MINIMUM CIRCUIT AMPACITY	30 A		

APPROXIMATE ICE PRODUCTION PER 24 HR. lbs./day (kg/day)
Reference without *marks

Ambient Temp.(°F	WATER TEMP. (°F) 50	70	90
70	*1790 (812)	1725 (782)	1700 (771)
80	1670 (757)	1640 (744)	1615 (733)
90	1585 (719)	*1560 (708)	1535 (696)
100	1510 (685)	1485 (674)	*1375 (624)

SHAPE OF ICE	Cubelet	
ICE QUALITY	Approx.80%, Ice (90/70°F, Conductivity 200 µs/cm)	
APPROXIMATE STORAGE CAPACITY	N/A	
ELECTRIC & WATER CONSUMPTION	90/70°F	70/50°F
ELECTRIC W (kWH/100 lbs.)	2585 (4.0)	2555 (3.4)
POTABLE WATER	185 (12)	215 (12)
WATER-COOLED CONDENSER gal./24HR (gal./100 lbs.)	1190 (76)	765 (43)
EXTERIOR DIMENSIONS (WxDxH)	30" x 27-1/2" x 34-7/16" (762 x 699 x 874mm)	
EXTERIOR FINISH	Stainless Steel, Galvanized Steel (Rear)	
WEIGHT	Net 310 lbs. (140 kg), Shipping 342 lbs. (155 kg)	
CONNECTIONS - ELECTRIC	Permanent - Connection	
- WATER SUPPLY	Inlet 1/2" FPT	Cond. Inlet 1/2" FPT
- DRAIN	Outlet 3/4" FPT	Cond. Outlet 1/2" FPT
ICE MAKING SYSTEM	Auger type	
HARVESTING SYSTEM	Direct Driven Auger (400 W Gear Motor)	
ICE MAKING WATER CONTROL	Float Switch	
COOLING WATER CONTROL	Automatic Water Regulator	
BIN CONTROL SYSTEM	Mechanical Bin Control (Proximity Sw.)	
COMPRESSOR	Hermetic, Model CS20-K6E-PFV	
CONDENSER	Water-cooled, Tube in tube type	
EVAPORATOR	Copper Tube on Cylinder	
REFRIGERANT CONTROL	Thermostatic Expansion Valve	
REFRIGERANT CHARGE	R-404A, 2 lbs. (910g)	
DESIGN PRESSURE	High 460 PSIG, Low 290 PSIG	
P.C. BOARD CIRCUIT PROTECTION	High Voltage Cut-off Relay	
COMPRESSOR PROTECTION	Internal Protector	
GEAR MOTOR PROTECTION	Manual Reset Circuit Breaker & Thermal Protector	
REFRIGERANT CIRCUIT PROTECTIOI	Auto-reset High Pressure Control Switch	
LOW WATER PROTECTION	Float Switch and Timer	
BIN CONTROL PROTECTION	Manual Reset Spout Control	
ACCESSORIES -SUPPLIED	Spare Fuse	
-REQUIRED	Ice Storage Bin	
OPERATING CONDITIONS	VOLTAGE RANGE	187-253 V
	AMBIENT TEMP.	45-100° F
	WATER SUPPLY TEMP.	45-90° F
	WATER SUPPLY PRESSURE	10-113 PSIG

We reserve the right to make changes in specifications and design without prior notice.

F-2000MRH

AC SUPPLY VOLTAGE	208-230/60/1 (3 wire with neutral for 115V)			
COMPRESSOR	240 V	10.8 RLA	96 LRA	
GEAR MOTOR	120 V	5.6 FLA	0.54 HP	
FAN MOTOR REMOTE	120 V	3A	MAX	
OTHER	120 V	0.03A		
MAXIMUM FUSE SIZE	30 A			
MAX. HACR BREAKER (USA ONLY)	30 A			
MAX. CIRC. BREAKER (CANADA ONLY)	30 A			
MINIMUM CIRCUIT AMPACITY	30 A			

APPROXIMATE ICE PRODUCTION PER 24 HR. lbs./day (kg/day) Reference without *marks

Ambient Temp.(°F)	WATER TEMP. (°F) 50	70	90
70	*1990 (902)	1930 (875)	1880 (853)
80	1825 (828)	1775 (805)	1730 (785)
90	1685 (764)	*1675 (760)	1595 (723)
100	1550 (703)	1510 (685)	*1395 (633)

SHAPE OF ICE	Flake	
ICE QUALITY	Approx. 70%, Ice (90/70°F, Conductivity 200 µs/cm)	
APPROXIMATE STORAGE CAPACITY	N/A	
ELECTRIC & WATER CONSUMPTION	90/70°F	70/50°F
ELECTRIC W (kWH/100 lbs.)	2785 (4.0)	2770 (3.3)
POTABLE WATER gal./24HR (gal./100 lbs.)	201 (12)	239 (12)
EXTERIOR DIMENSIONS (WxDxH)	30" x 27-1/2" x 34-7/16" (762 x 699 x 874mm)	
EXTERIOR FINISH	Stainless Steel, Galvanized Steel (Rear)	
WEIGHT	Net 310 lbs. (140 kg), Shipping 342 lbs. (155 kg)	
CONNECTIONS - ELECTRIC	Permanent - Connection	
- WATER SUPPLY	Inlet 1/2" FPT	
- DRAIN	Outlet 3/4" FPT	
- REFRIGERATION CIRCUIT	Discharge line 1-1/16-12 UNF Fitting (#10 AEROQUIP)	
	Liquid line 5/8-18 UNF Fitting (#6 AEROQUIP)	
ICE MAKING SYSTEM	Auger type	
HARVESTING SYSTEM	Direct Driven Auger (400 W Gear Motor)	
ICE MAKING WATER CONTROL	Float Switch	
COOLING WATER CONTROL	N/A	
BIN CONTROL SYSTEM	Mechanical Bin Control (Proximity Sw.)	
COMPRESSOR	Hermetic, Model CS20-K6E-PFV	
CONDENSER	Air-cooled Remote Condenser unit URC-20F Recommended	
EVAPORATOR	Copper Tube on Cylinder	
REFRIGERANT CONTROL	Thermostatic Expansion Valve	
	Condensing Pressure Regulator on URC-20F	
REFRIGERANT CHARGE	R-404A, 14 lb. 9 oz. (6600g)	
	(Ice Maker: 6 lb. 14 oz., Cond. Unit: 7 lb. 11 oz.)	
DESIGN PRESSURE	High 460 PSIG, Low 290 PSIG	
P.C. BOARD CIRCUIT PROTECTION	High Voltage Cut-off Relay	
COMPRESSOR PROTECTION	Internal Protector	
GEAR MOTOR PROTECTION	Manual Reset Circuit Breaker & Thermal Protector	
REFRIGERANT CIRCUIT PROTECTION	Auto-reset High Pressure Control Switch	
LOW WATER PROTECTION	Float Switch and Timer	
BIN CONTROL PROTECTION	Manual Reset Spout Control	
ACCESSORIES -SUPPLIED	Spare Fuse	
-REQUIRED	Ice Storage Bin	
OPERATING CONDITIONS	VOLTAGE RANGE	187-253 V
	AMBIENT TEMP.	45-100° F
	WATER SUPPLY TEMP.	45-90° F
	WATER SUPPLY PRESSURE	10-113 PSIG

We reserve the right to make changes in specifications and design without prior notice.

F-2000MRH-C

AC SUPPLY VOLTAGE	208-230/60/1 (3 wire with neutral for 115V)			
COMPRESSOR	240 V	10.8 RLA	96 LRA	
GEAR MOTOR	120 V	5.6 FLA	0.54 HP	
FAN MOTOR REMOTE	120 V	3A	MAX	
OTHER	120 V	0.03A		
MAXIMUM FUSE SIZE	30 A			
MAX. HACR BREAKER (USA ONLY)	30 A			
MAX. CIRC. BREAKER (CANADA ONLY)	30 A			
MINIMUM CIRCUIT AMPACITY	30 A			

APPROXIMATE ICE PRODUCTION PER 24 HR. lbs./day (kg/day) Reference without *marks	Ambient Temp.(°F)	WATER TEMP. (°F) 50	70	90
	70	*1715 (778)	1660 (753)	1630 (739)
	80	1595 (723)	1560 (708)	1530 (694)
	90	1500 (680)	*1490 (676)	1435 (651)
	100	1410 (640)	1380 (626)	*1270 (576)

SHAPE OF ICE	Cubelet	
ICE QUALITY	Approx. 80%, Ice (90/70°F, Conductivity 200 µs/cm)	
APPROXIMATE STORAGE CAPACITY	N/A	
ELECTRIC & WATER CONSUMPTION	90/70°F	70/50°F
ELECTRIC W (kWH/100 lbs.)	2870 (4.6)	2860 (4.0)
POTABLE WATER gal./24HR (gal./100 lbs.)	179 (12)	205 (12)
EXTERIOR DIMENSIONS (WxDxH)	30" x 27-1/2" x 34-7/16" (762 x 699 x 874mm)	
EXTERIOR FINISH	Stainless Steel, Galvanized Steel (Rear)	
WEIGHT	Net 310 lbs. (140 kg), Shipping 342 lbs. (155 kg)	
CONNECTIONS - ELECTRIC	Permanent - Connection	
- WATER SUPPLY	Inlet 1/2" FPT	
- DRAIN	Outlet 3/4" FPT	
- REFRIGERATION CIRCUIT	Discharge line 1-1/16-12 UNF Fitting (#10 AEROQUIP)	
	Liquid line 5/8-18 UNF Fitting (#6 AEROQUIP)	
ICE MAKING SYSTEM	Auger type	
HARVESTING SYSTEM	Direct Driven Auger (400 W Gear Motor)	
ICE MAKING WATER CONTROL	Float Switch	
COOLING WATER CONTROL	N/A	
BIN CONTROL SYSTEM	Mechanical Bin Control (Proximity Sw.)	
COMPRESSOR	Hermetic, Model CS20-K6E-PFV	
CONDENSER	Air-cooled Remote Condenser unit URC-20F Recommended	
EVAPORATOR	Copper Tube on Cylinder	
REFRIGERANT CONTROL	Thermostatic Expansion Valve	
	Condensing Pressure Regulator on URC-20F	
REFRIGERANT CHARGE	R-404A, 14 lb. 9 oz. (6600g)	
	(Ice Maker: 6 lb. 14 oz., Cond. Unit: 7 lb. 11 oz.)	
DESIGN PRESSURE	High 460 PSIG, Low 290 PSIG	
P.C. BOARD CIRCUIT PROTECTION	High Voltage Cut-off Relay	
COMPRESSOR PROTECTION	Internal Protector	
GEAR MOTOR PROTECTION	Manual Reset Circuit Breaker & Thermal Protector	
REFRIGERANT CIRCUIT PROTECTION	Auto-reset High Pressure Control Switch	
LOW WATER PROTECTION	Float Switch and Timer	
BIN CONTROL PROTECTION	Manual Reset Spout Control	
ACCESSORIES -SUPPLIED	Spare Fuse	
-REQUIRED	Ice Storage Bin	
OPERATING CONDITIONS	VOLTAGE RANGE	187-253 V
	AMBIENT TEMP.	45-100° F
	WATER SUPPLY TEMP.	45-90° F
	WATER SUPPLY PRESSURE	10-113 PSIG

We reserve the right to make changes in specifications and design without prior notice.

F-2000MRH3

AC SUPPLY VOLTAGE	208-230/60/3		
COMPRESSOR	240 V	9.0 RLA	75 LRA
GEAR MOTOR	120 V	5.6 FLA	0.54 HP
FAN MOTOR REMOTE	120 V	3A	MAX
OTHER	120 V	0.03A	
MAXIMUM FUSE SIZE	20 A		
MAX. HACR BREAKER (USA ONLY)	20 A		
MAX. CIRC. BREAKER (CANADA ONLY)	20 A		
MINIMUM CIRCUIT AMPACITY	20 A		

APPROXIMATE ICE PRODUCTION PER 24 HR. lbs./day (kg/day) Reference without *marks

Ambient Temp.(°F)	WATER TEMP. (°F) 50	70	90
70	*2010 (912)	1950 (885)	1895 (860)
80	1845 (837)	1795 (814)	1750 (794)
90	1700 (771)	*1695 (769)	1610 (730)
100	1570 (712)	1525 (692)	*1410 (640)

SHAPE OF ICE	Flake	
ICE QUALITY	Approx. 70%, Ice (90/70°F, Conductivity 200 µs/cm)	
APPROXIMATE STORAGE CAPACITY	N/A	
ELECTRIC & WATER CONSUMPTION	90/70°F	70/50°F
ELECTRIC W (kWH/100 lbs.)	2865 (4.1)	2850 (3.4)
POTABLE WATER gal./24HR (gal./100 lbs.)	203 (12)	240 (12)
EXTERIOR DIMENSIONS (WxDxH)	30" x 27-1/2" x 34-7/16" (762 x 699 x 874mm)	
EXTERIOR FINISH	Stainless Steel, Galvanized Steel (Rear)	
WEIGHT	Net 326 lbs. (148 kg), Shipping 359 lbs. (163 kg)	
CONNECTIONS - ELECTRIC	Permanent - Connection	
- WATER SUPPLY	Inlet 1/2" FPT	
- DRAIN	Outlet 3/4" FPT	
- REFRIGERATION CIRCUIT	Discharge line 1-1/16-12 UNF Fitting (#10 AEROQUIP)	
	Liquid line 5/8-18 UNF Fitting (#6 AEROQUIP)	
ICE MAKING SYSTEM	Auger type	
HARVESTING SYSTEM	Direct Driven Auger (400 W Gear Motor)	
ICE MAKING WATER CONTROL	Float Switch	
COOLING WATER CONTROL	N/A	
BIN CONTROL SYSTEM	Mechanical Bin Control (Proximity Sw.)	
COMPRESSOR	Hermetic, Model CS20-K6E-TF5	
CONDENSER	Air-cooled Remote Condenser unit URC-20F Recommended	
EVAPORATOR	Copper Tube on Cylinder	
REFRIGERANT CONTROL	Thermostatic Expansion Valve	
	Condensing Pressure Regulator on URC-20F	
REFRIGERANT CHARGE	R-404A, 14 lb. 9 oz. (6600g)	
	(Ice Maker: 6 lb. 14 oz., Cond. Unit: 7 lb. 11 oz.)	
DESIGN PRESSURE	High 460 PSIG, Low 290 PSIG	
P.C. BOARD CIRCUIT PROTECTION	Fuse	
COMPRESSOR PROTECTION	Internal Protector	
GEAR MOTOR PROTECTION	Manual Reset Circuit Breaker & Thermal Protector	
REFRIGERANT CIRCUIT PROTECTION	Auto-reset High Pressure Control Switch	
LOW WATER PROTECTION	Float Switch and Timer	
BIN CONTROL PROTECTION	Manual Reset Spout Control	
ACCESSORIES -SUPPLIED	Spare Fuse	
-REQUIRED	Ice Storage Bin	
OPERATING CONDITIONS	VOLTAGE RANGE	187-253 V
	AMBIENT TEMP.	45-100° F
	WATER SUPPLY TEMP.	45-90° F
	WATER SUPPLY PRESSURE	10-113 PSIG

We reserve the right to make changes in specifications and design without prior notice.

F-2000MRH3-C

AC SUPPLY VOLTAGE	208-230/60/3			
COMPRESSOR	240 V	9.0 RLA	75 LRA	
GEAR MOTOR	120 V	5.6 FLA	0.54 HP	
FAN MOTOR REMOTE	120 V	3A	MAX	
OTHER	120 V	0.03A		
MAXIMUM FUSE SIZE	20 A			
MAX. HACR BREAKER (USA ONLY)	20 A			
MAX. CIRC. BREAKER (CANADA ONLY)	20 A			
MINIMUM CIRCUIT AMPACITY	20 A			

APPROXIMATE ICE PRODUCTION PER 24 HR. lbs./day (kg/day) Reference without *marks	Ambient Temp.(°F	WATER TEMP. (°F) 50	70	90
	70	*1725 (782)	1685 (764)	1650 (748)
	80	1615 (733)	1580 (717)	1545 (701)
	90	1515 (687)	*1525 (692)	1450 (658)
	100	1420 (644)	1390 (631)	*1275 (578)

SHAPE OF ICE	Cubelet	
ICE QUALITY	Approx. 80%, Ice (90/70°F, Conductivity 200 µs/cm)	
APPROXIMATE STORAGE CAPACITY	N/A	
ELECTRIC & WATER CONSUMPTION	90/70°F	70/50°F
ELECTRIC W (kWH/100 lbs.)	3000 (4.6)	2970 (4.1)
POTABLE WATER gal./24HR (gal./100 lbs.)	183 (12)	207 (12)
EXTERIOR DIMENSIONS (WxDxH)	30" x 27-1/2" x 34-7/16" (762 x 699 x 874mm)	
EXTERIOR FINISH	Stainless Steel, Galvanized Steel (Rear)	
WEIGHT	Net 310 lbs. (140 kg), Shipping 342 lbs. (155 kg)	
CONNECTIONS - ELECTRIC	Permanent - Connection	
- WATER SUPPLY	Inlet 1/2" FPT	
- DRAIN	Outlet 3/4" FPT	
- REFRIGERATION CIRCUIT	Discharge line 1-1/16-12 UNF Fitting (#10 AEROQUIP)	
	Liquid line 5/8-18 UNF Fitting (#6 AEROQUIP)	
ICE MAKING SYSTEM	Auger type	
HARVESTING SYSTEM	Direct Driven Auger (400 W Gear Motor)	
ICE MAKING WATER CONTROL	Float Switch	
COOLING WATER CONTROL	N/A	
BIN CONTROL SYSTEM	Mechanical Bin Control (Proximity Sw.)	
COMPRESSOR	Hermetic, Model CS20-K6E-TF5	
CONDENSER	Air-cooled Remote Condenser unit URC-20F Recommended	
EVAPORATOR	Copper Tube on Cylinder	
REFRIGERANT CONTROL	Thermostatic Expansion Valve	
	Condensing Pressure Regulator on URC-20F	
REFRIGERANT CHARGE	R-404A, 14 lb. 9 oz. (6600g)	
	(Ice Maker: 6 lb. 14 oz., Cond. Unit: 7 lb. 11 oz.)	
DESIGN PRESSURE	High 460 PSIG, Low 290 PSIG	
P.C. BOARD CIRCUIT PROTECTION	High Voltage Cut-off Relay	
COMPRESSOR PROTECTION	Internal Protector	
GEAR MOTOR PROTECTION	Manual Reset Circuit Breaker & Thermal Protector	
REFRIGERANT CIRCUIT PROTECTION	Auto-reset High Pressure Control Switch	
LOW WATER PROTECTION	Float Switch and Timer	
BIN CONTROL PROTECTION	Manual Reset Spout Control	
ACCESSORIES -SUPPLIED	Spare Fuse	
-REQUIRED	Ice Storage Bin	
OPERATING CONDITIONS	VOLTAGE RANGE	187-253 V
	AMBIENT TEMP.	45-100° F
	WATER SUPPLY TEMP.	45-90° F
	WATER SUPPLY PRESSURE	10-113 PSIG

We reserve the right to make changes in specifications and design without prior notice.

F-2000MLH

AC SUPPLY VOLTAGE	115/60/1		
GEAR MOTOR	120 V	5.6 FLA	0.54 HP
FAN MOTOR	120 V	0.51 FLA	8W
OTHER	120 V	0.03A	
MAXIMUM FUSE SIZE	15 A		
MAX. HACR BREAKER (USA ONLY)	15 A		
MAX. CIRC. BREAKER (CANADA ONLY)	15 A		
MINIMUM CIRCUIT AMPACITY	15 A		

APPROXIMATE ICE PRODUCTION PER 24 HR. lbs./day (kg/day) Reference without *marks	Ambient Temp.(°F)	WATER TEMP. (°F) 50	70	90
	70	*2280 (921)	1955 (887)	1915 (869)
	80	2010 (851)	1835 (832)	1795 (814)
	90	1900 (862)	*1730 (785)	1685 (764)
	100	1650 (748)	1615 (733)	*1370 (680)

SHAPE OF ICE	Flake	
ICE QUALITY	Approx. 70%, Ice (90/70°F, Conductivity 200 µs/cm)	
APPROXIMATE STORAGE CAPACITY	N/A	
ELECTRIC & WATER CONSUMPTION	90/70°F	70/50°F
ELECTRIC W (kWH/100 lbs.)	470 (0.6)	490 (0.5)
POTABLE WATER gal./24HR (gal./100 lbs.)	207 (12)	258 (12)
EXTERIOR DIMENSIONS (WxDxH)	30" x 27-1/2" x 34-7/16" (762 x 699 x 874mm)	
EXTERIOR FINISH	Stainless Steel, Galvanized Steel (Rear)	
WEIGHT	Net 216 lbs. (98 kg), Shipping 250 lbs. (113 kg)	
CONNECTIONS - ELECTRIC	Permanent - Connection	
- WATER SUPPLY	Inlet 1/2" FPT	
- DRAIN	Outlet 3/4" FPT	
- REFRIGERATION CIRCUIT	Suction line 1-1/16-12 UNF Fitting (#10 AEROQUIP)	
	Liquid line 5/8-18 UNF Fitting (#6 AEROQUIP)	
ICE MAKING SYSTEM	Auger type	
HARVESTING SYSTEM	Direct Driven Auger (400 W Gear Motor)	
ICE MAKING WATER CONTROL	Float Switch	
COOLING WATER CONTROL	N/A	
BIN CONTROL SYSTEM	Mechanical Bin Control (Proximity Sw.)	
CONDENSING UNIT	Required capacity for ice maker is 11600 BTU/h at discharge pressure 221 PSIG and suction pressure 22 PSIG with R404A refrigerant. Suction pressire needs to be less than 22 PSIG.	
EVAPORATOR	Copper Tube on Cylinder	
REFRIGERANT CONTROL	Thermostatic Expansion Valve Evaporator Pressure Regulator	
REFRIGERANT CHARGE	R-404A, 3.5 oz. (100g)	
DESIGN PRESSURE	High 460 PSIG, Low 290 PSIG	
P.C. BOARD CIRCUIT PROTECTION	High Voltage Cut-off Relay	
GEAR MOTOR PROTECTION	Manual Reset Circuit Breaker & Thermal Protector	
LOW WATER PROTECTION	Float Switch and Timer	
BIN CONTROL PROTECTION	Manual Reset Spout Control	
ACCESSORIES -SUPPLIED	Spare Fuse	
-REQUIRED	Ice Storage Bin	
OPERATING CONDITIONS	VOLTAGE RANGE	104-127 V
	AMBIENT TEMP.	45-100° F
	WATER SUPPLY TEMP.	45-90° F
	WATER SUPPLY PRESSURE	10-113 PSIG

We reserve the right to make changes in specifications and design without prior notice.

F-2000MLH-C

AC SUPPLY VOLTAGE	115/60/1		
GEAR MOTOR	120 V	5.6 FLA	0.54 HP
FAN MOTOR	120 V	0.51 FLA	8W
OTHER	120 V	0.03A	
MAXIMUM FUSE SIZE	15 A		
MAX. HACR BREAKER (USA ONLY)	15 A		
MAX. CIRC. BREAKER (CANADA ONLY)	15 A		
MINIMUM CIRCUIT AMPACITY	15 A		

APPROXIMATE ICE PRODUCTION PER 24 HR. lbs./day (kg/day)
Reference without *marks

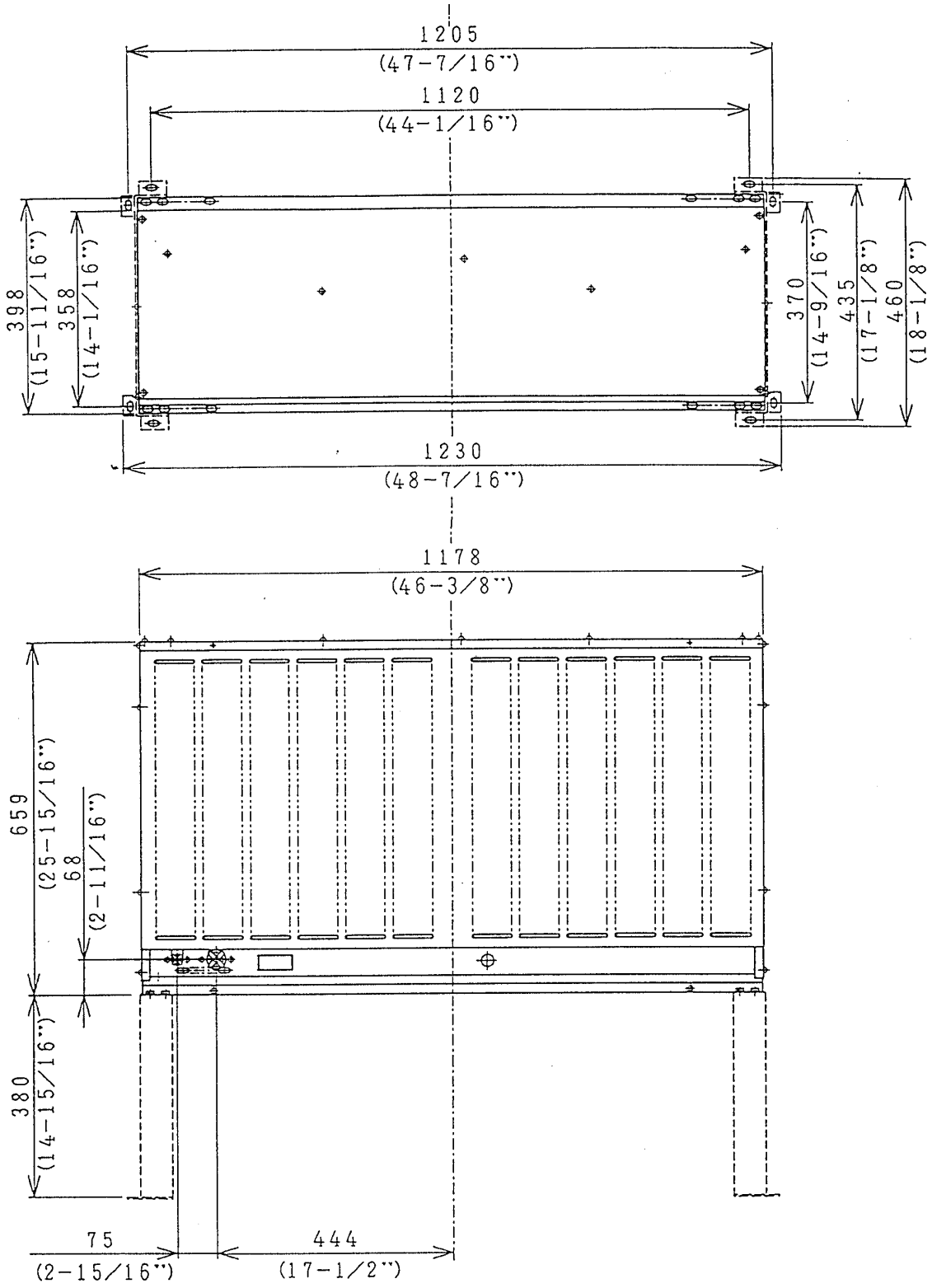
Ambient Temp.(°F)	WATER TEMP. (°F) 50	70	90
70	*1965 (891)	1680 (762)	1660 (753)
80	1755 (796)	1615 (732)	1585 (719)
90	1565 (710)	*1540 (699)	1515 (687)
100	1500 (680)	1475 (669)	*1245(680)

SHAPE OF ICE	Cubelet	
ICE QUALITY	Approx. 80%, Ice (90/70°F, Conductivity 200 µs/cm)	
APPROXIMATE STORAGE CAPACITY	N/A	
ELECTRIC & WATER CONSUMPTION	90/70°F	70/50°F
ELECTRIC W (kWH/100 lbs.)	470 (0.7)	490 (0.6)
POTABLE WATER gal./24HR (gal./100 lbs.)	185 (12)	235 (12)
EXTERIOR DIMENSIONS (WxDxH)	30" x 27-1/2" x 34-7/16" (762 x 699 x 874mm)	
EXTERIOR FINISH	Stainless Steel, Galvanized Steel (Rear)	
WEIGHT	Net 216 lbs. (98 kg), Shipping 250 lbs. (113 kg)	
CONNECTIONS - ELECTRIC	Permanent - Connection	
- WATER SUPPLY	Inlet 1/2" FPT	
- DRAIN	Outlet 3/4" FPT	
- REFRIGERATION CIRCUIT	Suction line 1-1/16-12 UNF Fitting (#10 AEROQUIP)	
	Liquid line 5/8-18 UNF Fitting (#6 AEROQUIP)	
ICE MAKING SYSTEM	Auger type	
HARVESTING SYSTEM	Direct Driven Auger (400 W Gear Motor)	
ICE MAKING WATER CONTROL	Float Switch	
COOLING WATER CONTROL	N/A	
BIN CONTROL SYSTEM	Mechanical Bin Control (Proximity Sw.)	
CONDENSING UNIT	Required capacity for ice maker is 11600 BTU/h at discharge pressure 221 PSIG and suction pressure 22 PSIG with R404A refrigerant.	
	Suction pressire needs to be less than 22 PSIG.	
EVAPORATOR	Copper Tube on Cylinder	
REFRIGERANT CONTROL	Thermostatic Expansion Valve	
	Evaporator Pressure Regulator	
REFRIGERANT CHARGE	R-404A, 3.5 oz. (100g)	
DESIGN PRESSURE	High 460 PSIG, Low 290 PSIG	
P.C. BOARD CIRCUIT PROTECTION	High Voltage Cut-off Relay	
GEAR MOTOR PROTECTION	Manual Reset Circuit Breaker & Thermal Protector	
LOW WATER PROTECTION	Float Switch and Timer	
BIN CONTROL PROTECTION	Manual Reset Spout Control	
ACCESSORIES -SUPPLIED	Spare Fuse	
-REQUIRED	Ice Storage Bin	
OPERATING CONDITIONS	VOLTAGE RANGE	104-127 V
	AMBIENT TEMP.	45-100° F
	WATER SUPPLY TEMP.	45-90° F
	WATER SUPPLY PRESSURE	10-113 PSIG

We reserve the right to make changes in specifications and design without prior notice.

2. CONDENSER UNIT

URC-20F



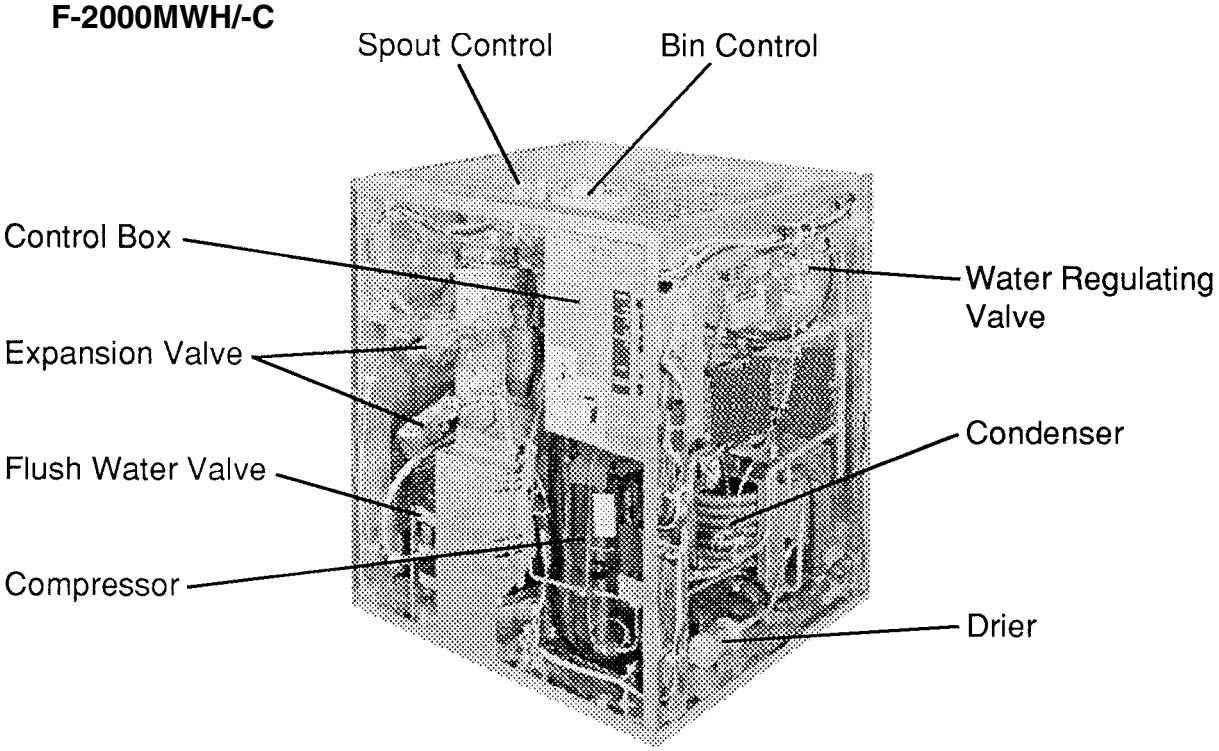
SPECIFICATIONS

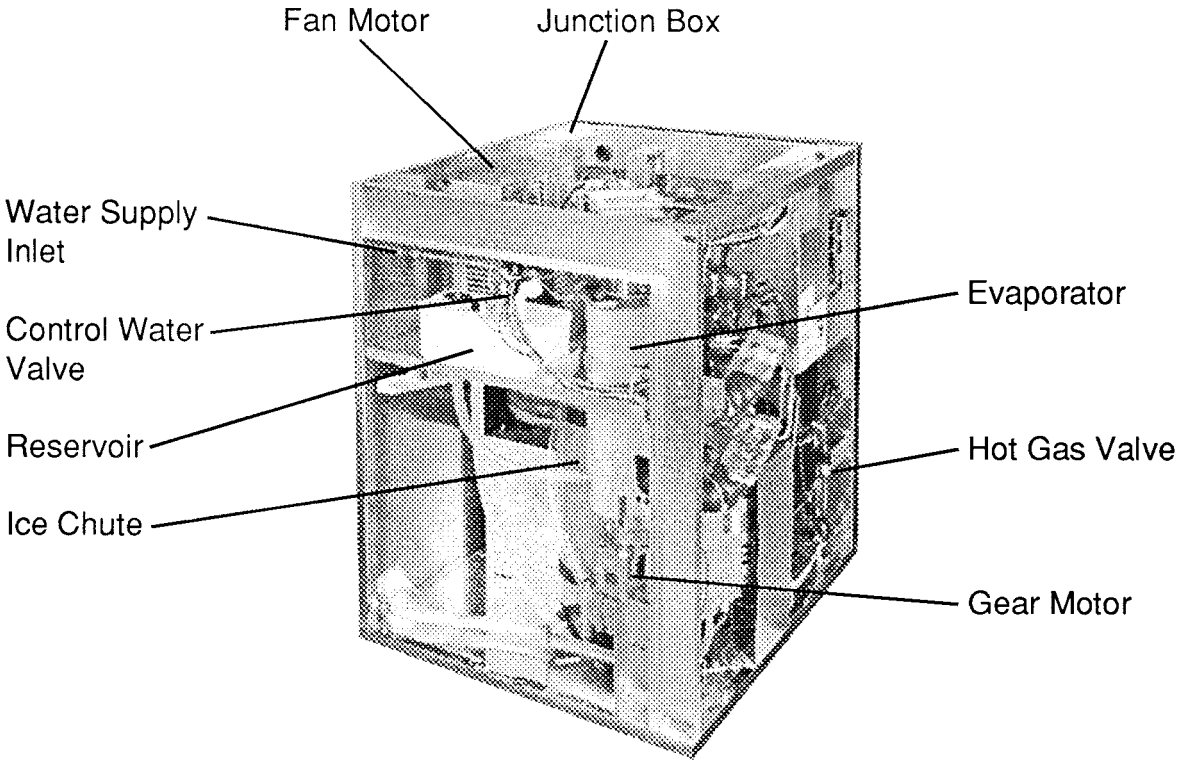
MODEL: URC-20F	
EXTERIOR	Galvanized Steel
DIMENSIONS (W x D x H)	46-3/8" x 15-11/16" x 25-15/16" (1178 x 398 x 659 mm)
REFRIGERANT CHARGE URC-20F	R404A 7 lbs. 11 oz. (3500 g)
WEIGHT	Net 104 lbs. (47 kg) Shipping 115 lbs. (52 kg)
CONNECTIONS REFRIGERANT ELECTRICAL	One Shot Couplings (Aeroquip) Permanent Connection
CONDENSER	Air-cooled
HEAD PRESSURE CONTROL	Condensing Pressure Regulator
AMBIENT CONDITION	Min. -20°F - Max. +122°F (-29°C to +50°C) Outdoor use

II. GENERAL INFORMATION

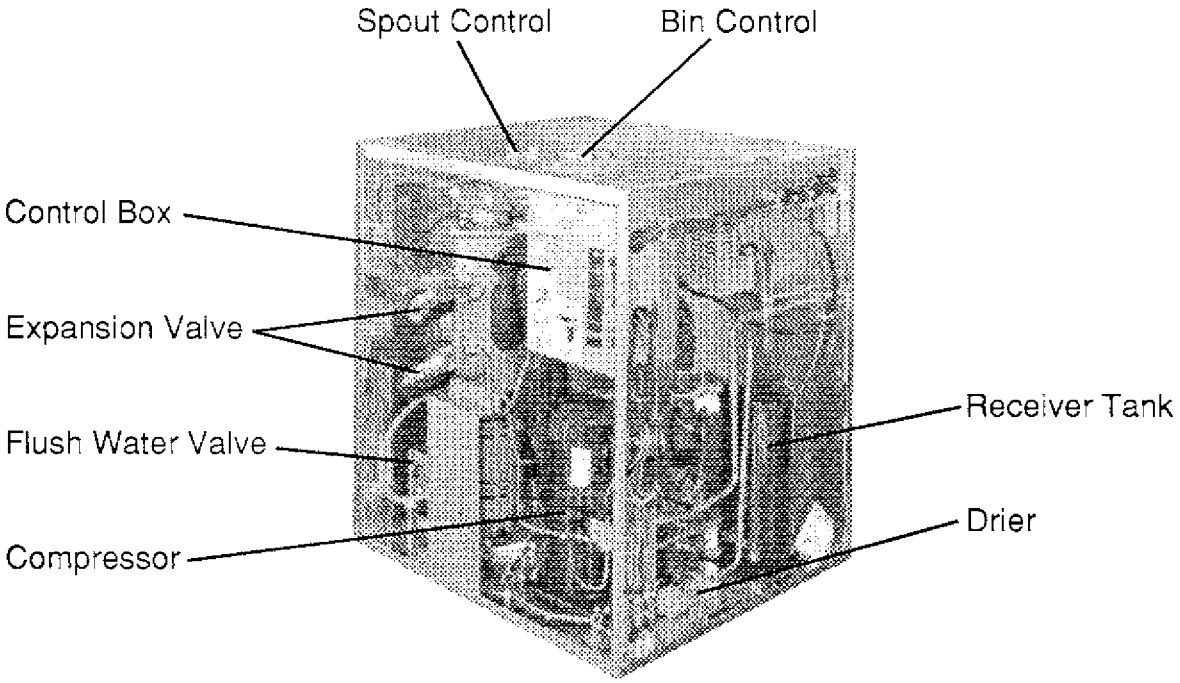
1. CONSTRUCTION

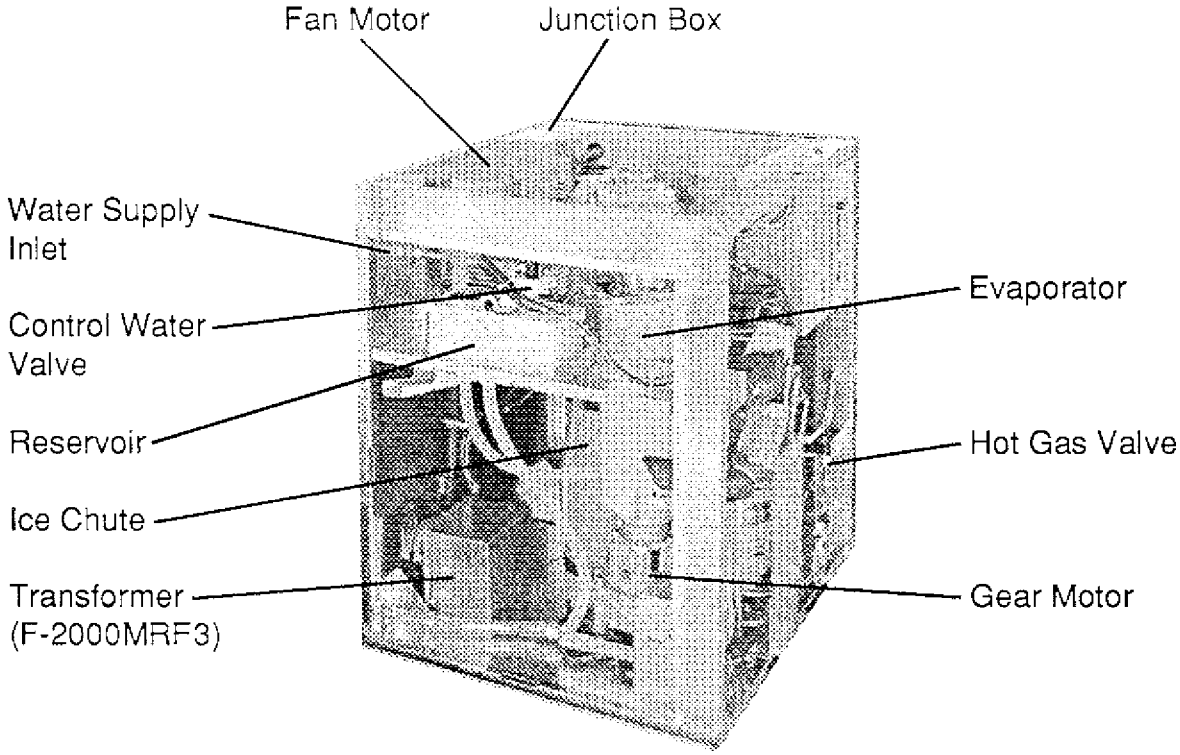
F-2000MWH/-C



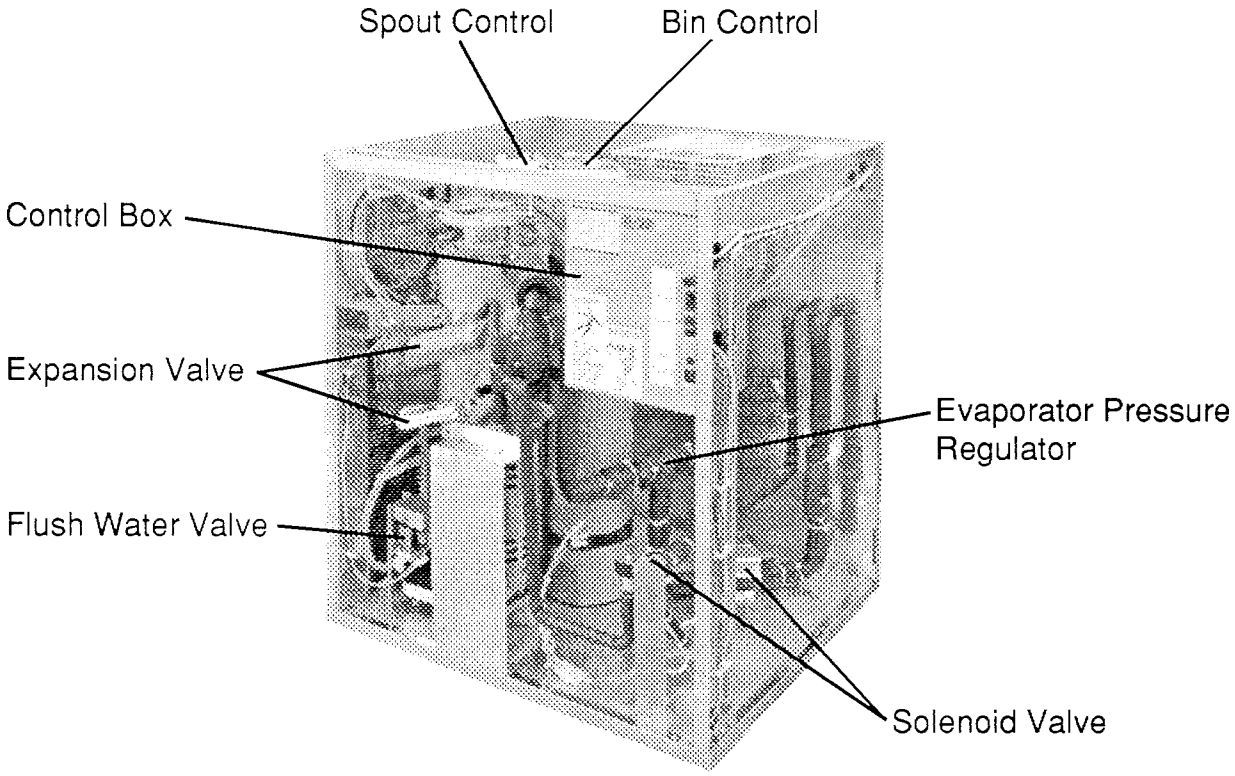


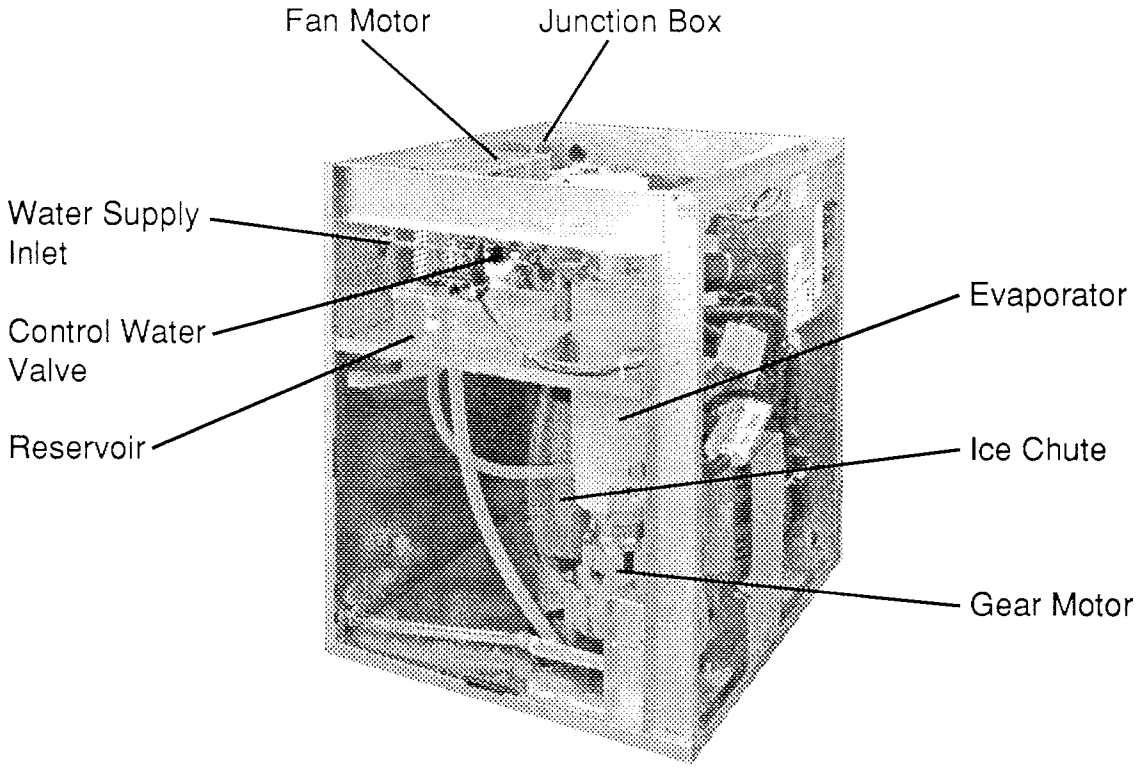
F-2000MRH/-C, F-2000MRH3/-C





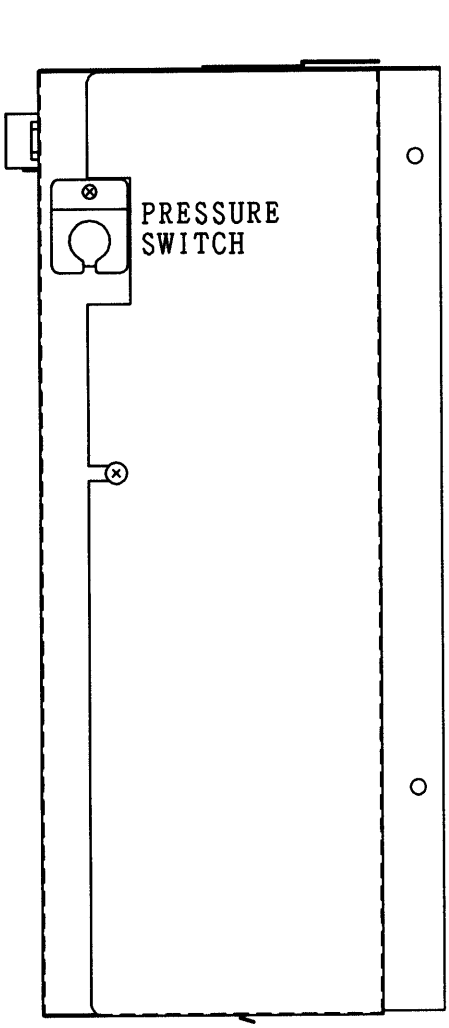
F-2000MLH/-C

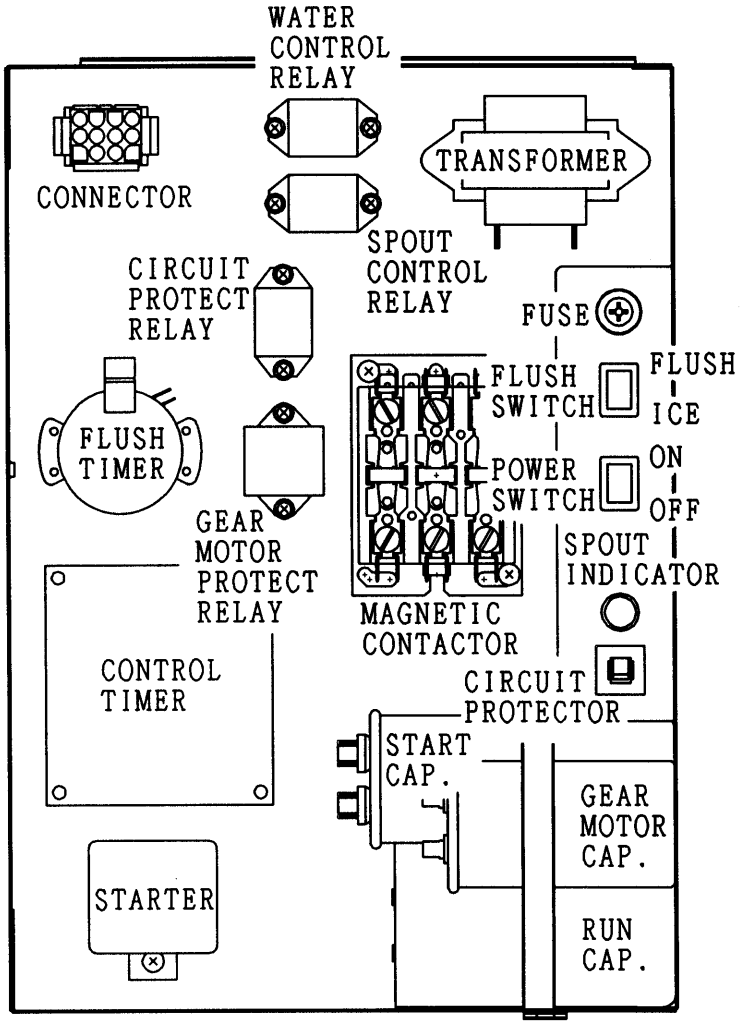

Spout Control
Bin Control
Control Box
Expansion Valve
Flush Water Valve
Evaporator Pressure Regulator
Solenoid Valve


Fan Motor
Junction Box
Water Supply Inlet
Control Water Valve
Reservoir
Evaporator
Ice Chute
Gear Motor

2. CONTROL BOX LAYOUT

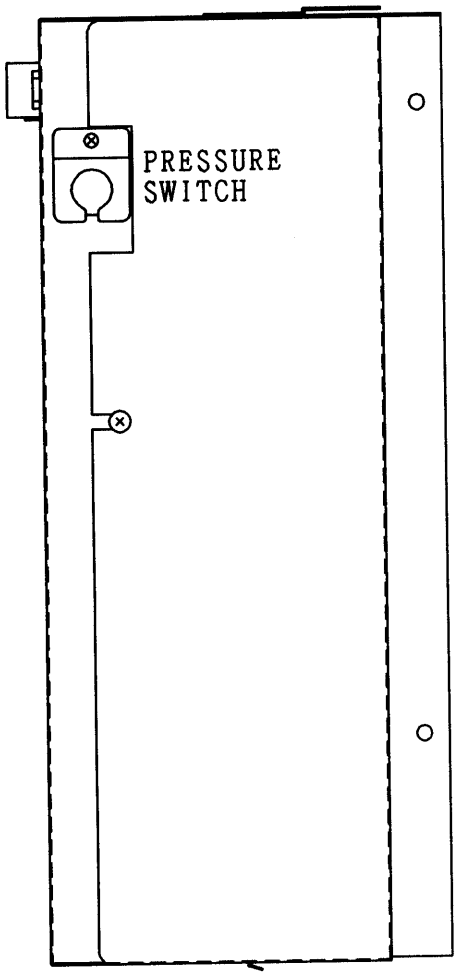
F-2000MWH/-C, F-2000MRH/-C

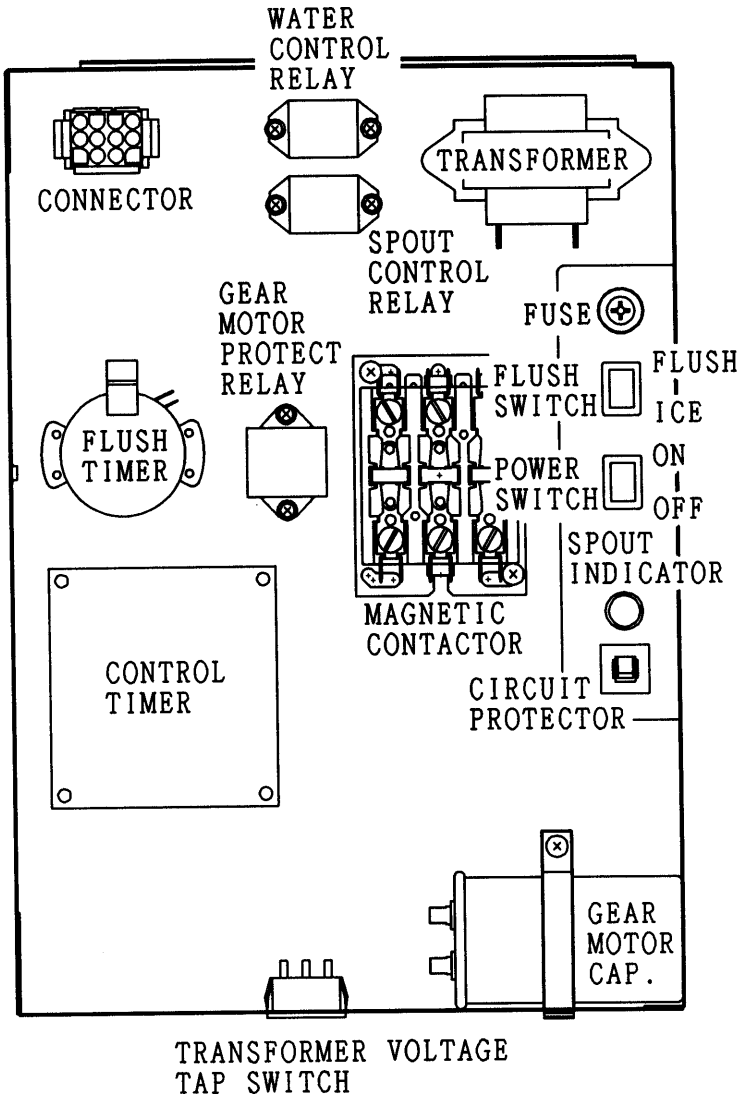




Note: The above component names are identical with the Wiring Label, but not with the Parts List.

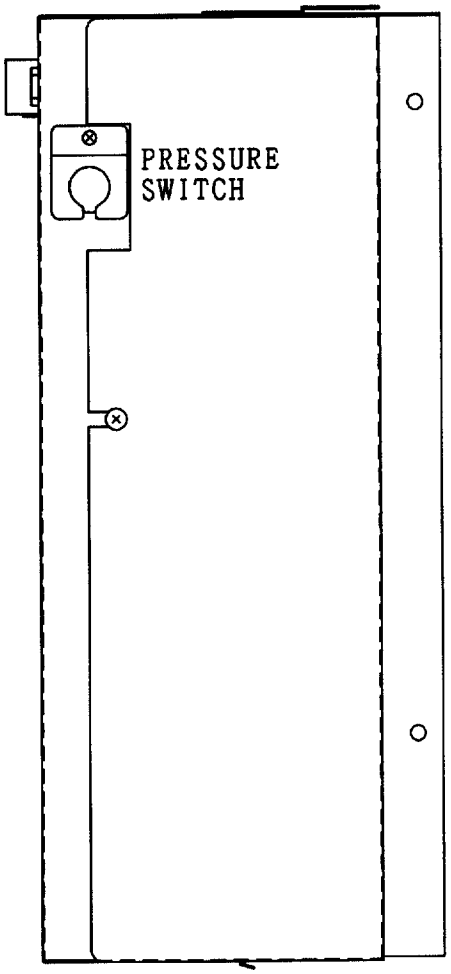
F-2000MRH3/-C

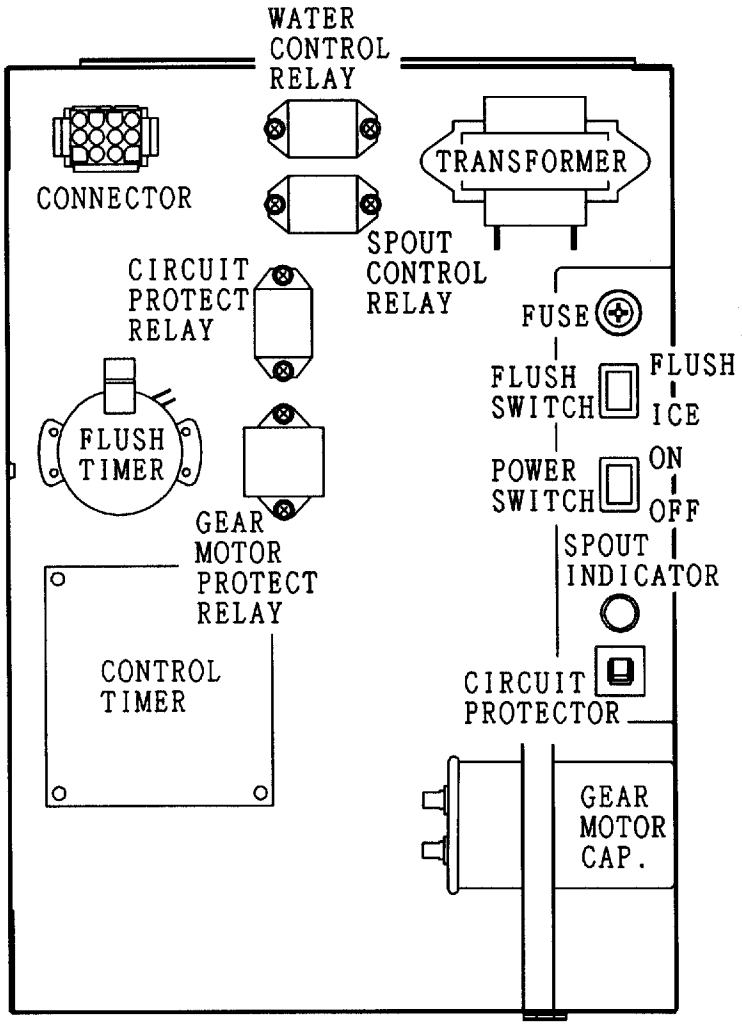




TRANSFORMER VOLTAGE
TAP SWITCH

F-2000MLH/-C

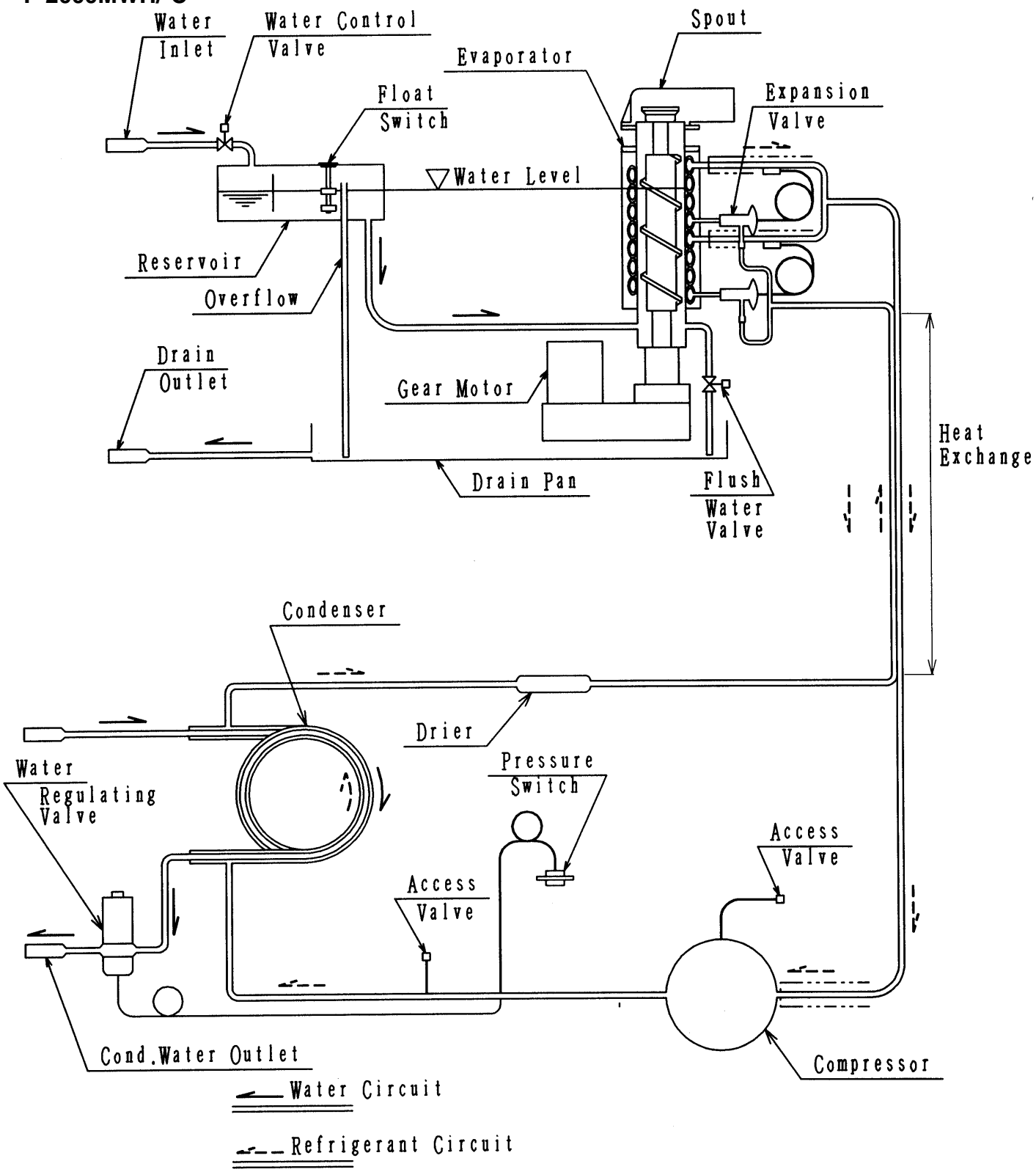

PRESSURE
SWITCH


WATER
CONTROL
RELAY
CONNECTOR
TRANSFORMER
SPOUT
CONTROL
RELAY
CIRCUIT
PROTECT
RELAY
FUSE
FLUSH
SWITCH
FLUSH
ICE
FLUSH
TIMER
POWER
SWITCH
ON
OFF
GEAR
MOTOR
PROTECT
RELAY
SPOUT
INDICATOR
CONTROL
TIMER
CIRCUIT
PROTECTOR
GEAR
MOTOR
CAP.

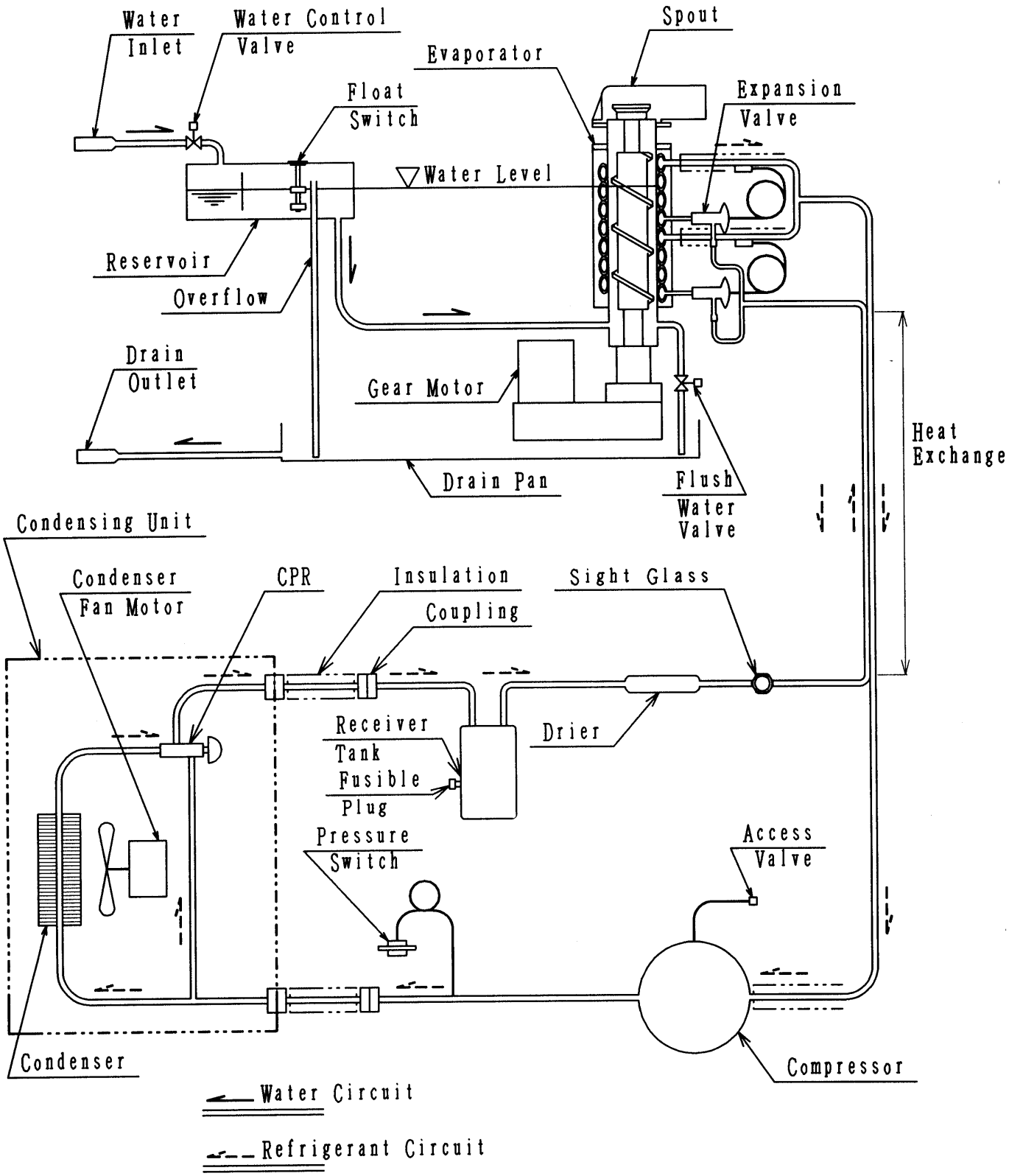
III. TECHNICAL INFORMATION

1. WATER CIRCUIT AND REFRIGERATION CIRCUIT

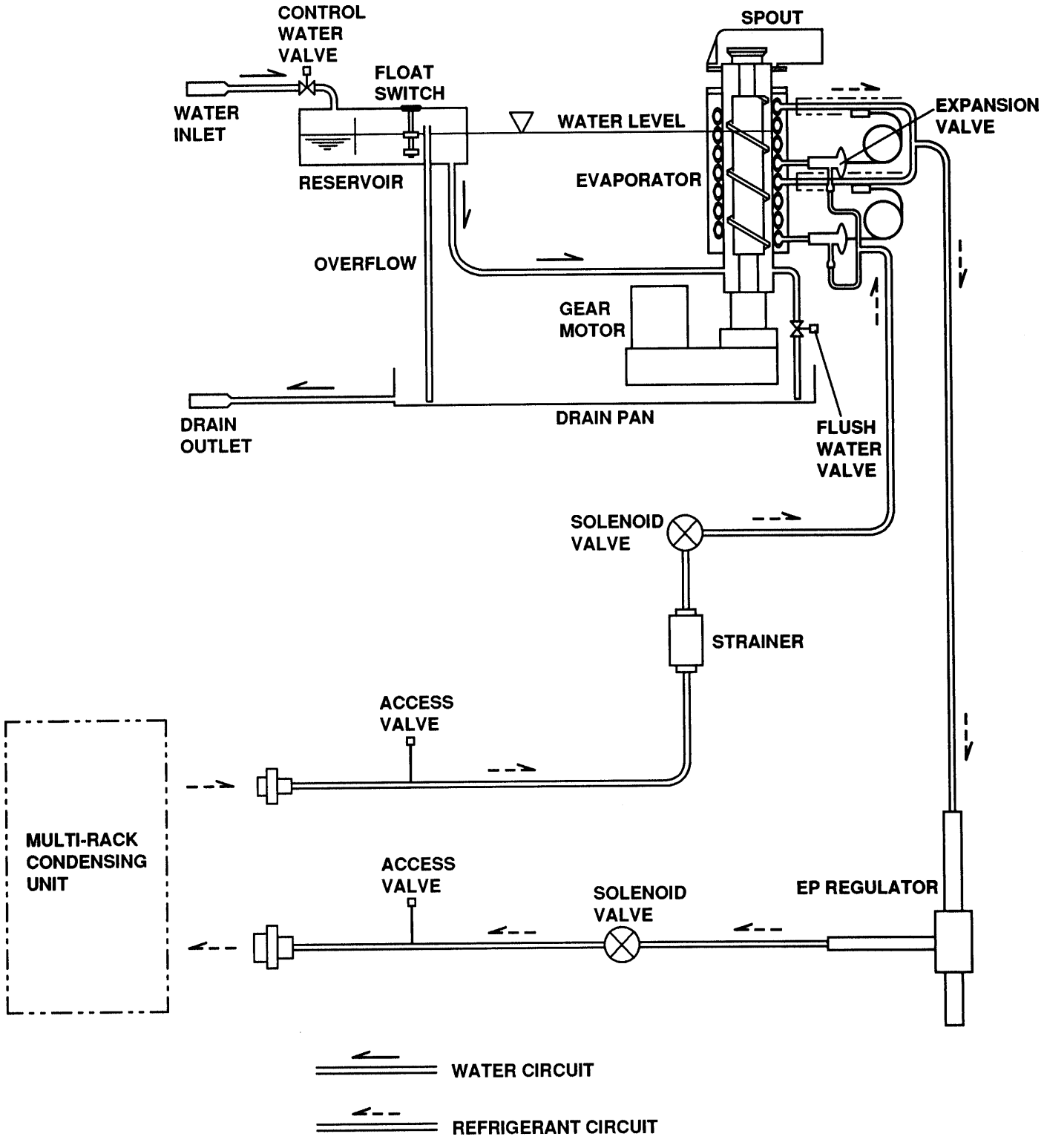
F-2000MWH/-C



F-2000MRH/-C, F-2000MRH3/-C



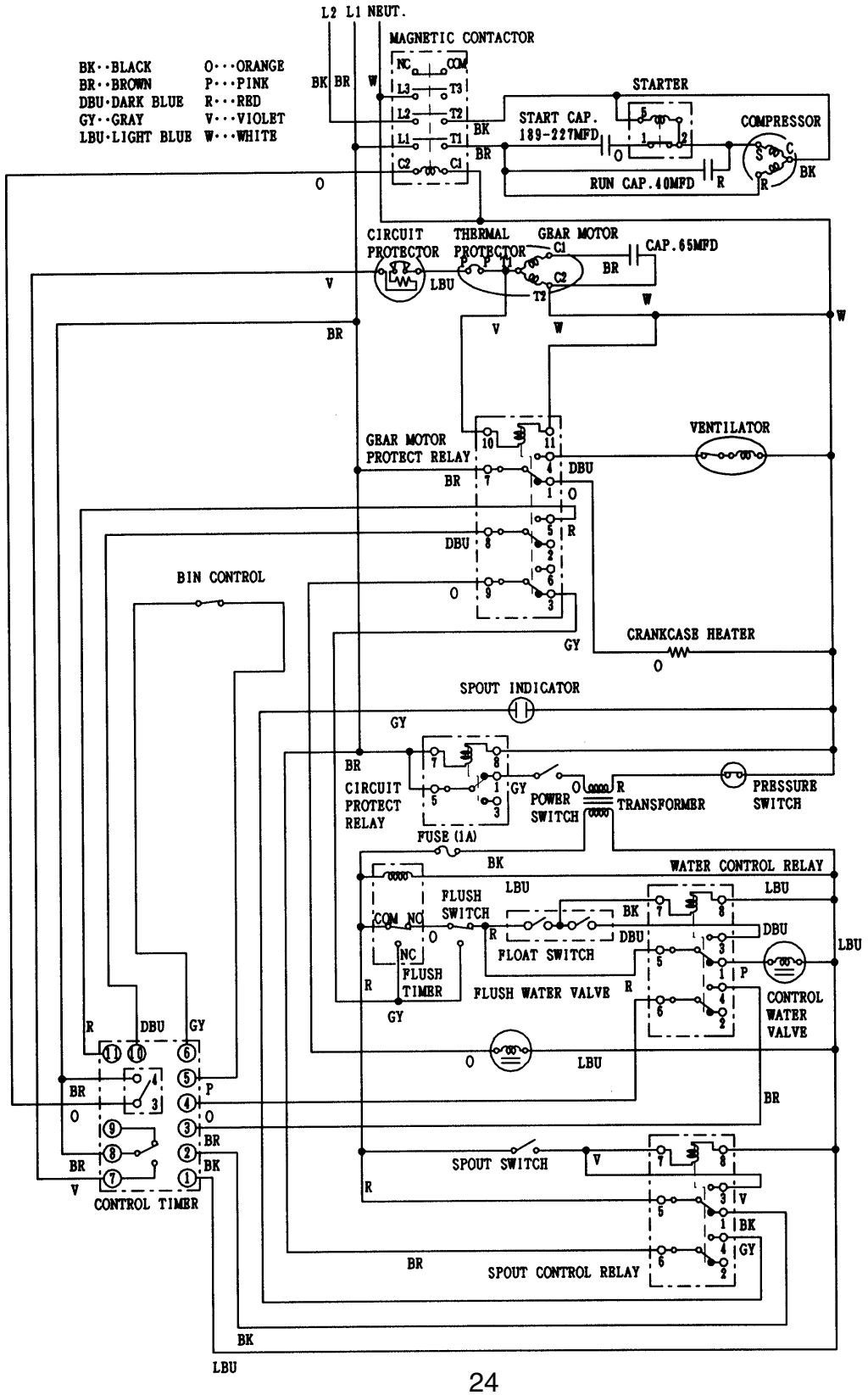
F-2000MLH/-C


CONTROL WATER VALVE
FLOAT SWITCH
WATER INLET
WATER LEVEL
SPOUT
EXPANSION VALVE
RESERVOIR
EVAPORATOR
OVERFLOW
GEAR MOTOR
DRAIN OUTLET
DRAIN PAN
FLUSH WATER VALVE
SOLENOID VALVE
STRAINER
ACCESS VALVE
MULTI-RACK CONDENSING UNIT
ACCESS VALVE
SOLENOID VALVE
EP REGULATOR
WATER CIRCUIT
REFRIGERANT CIRCUIT

2. WIRING DIAGRAMS

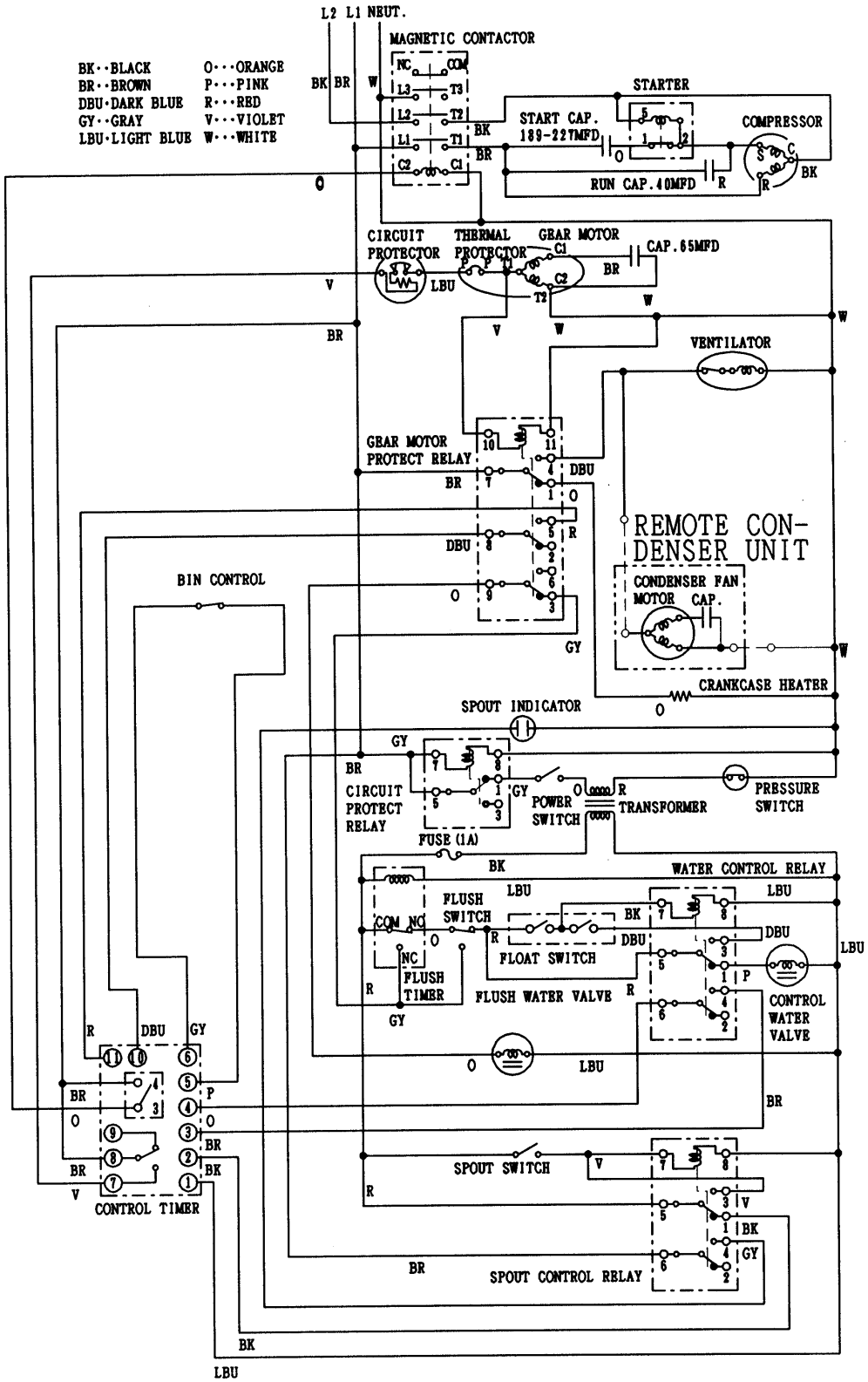
F-2000MWH/-C

208-230/60/1 (3WIRE WITH NEUTRAL FOR 115V)



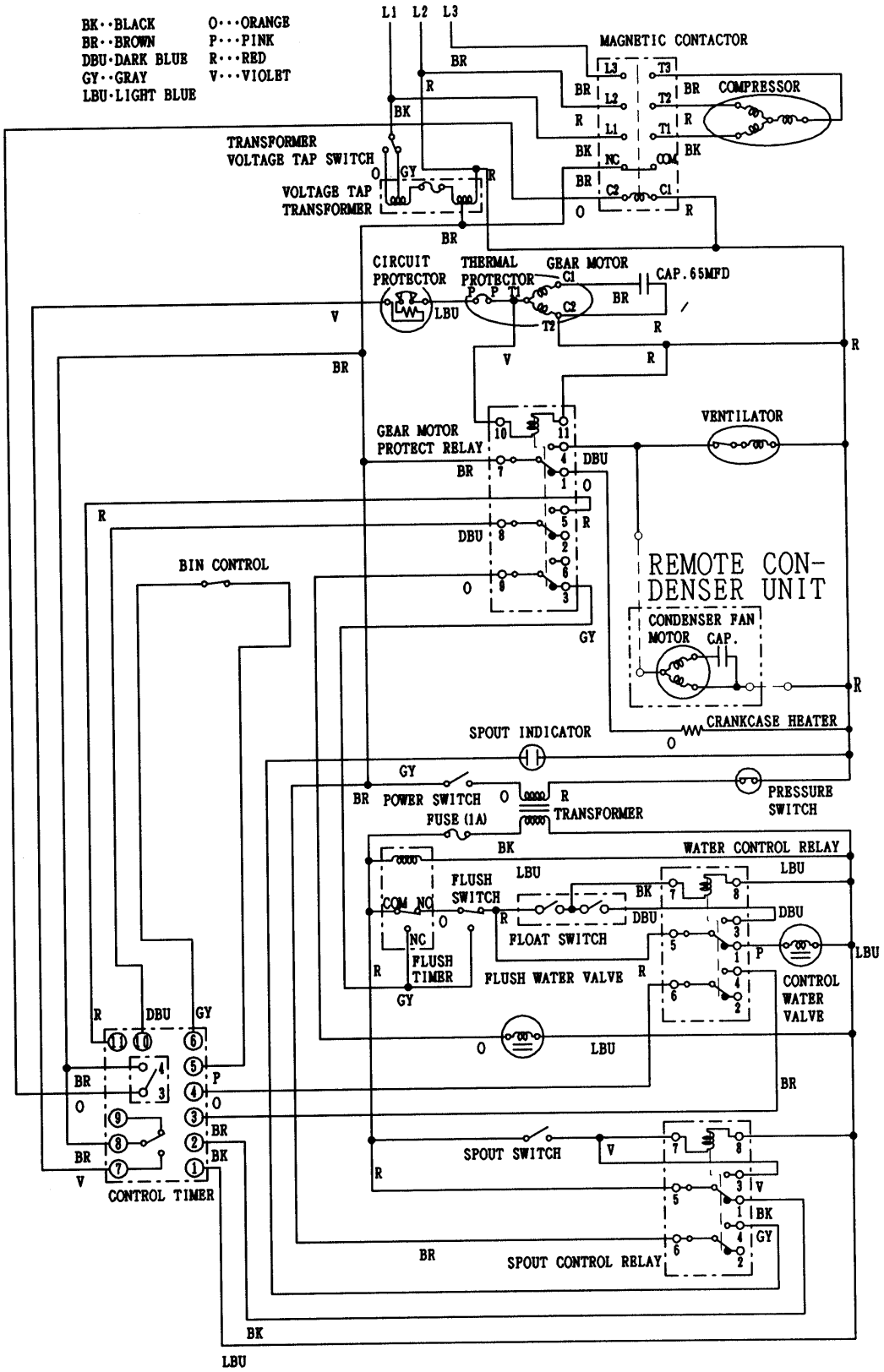
F-2000MRH/-C

208-230/60/1 (3WIRE WITH NEUTRAL FOR 115V)



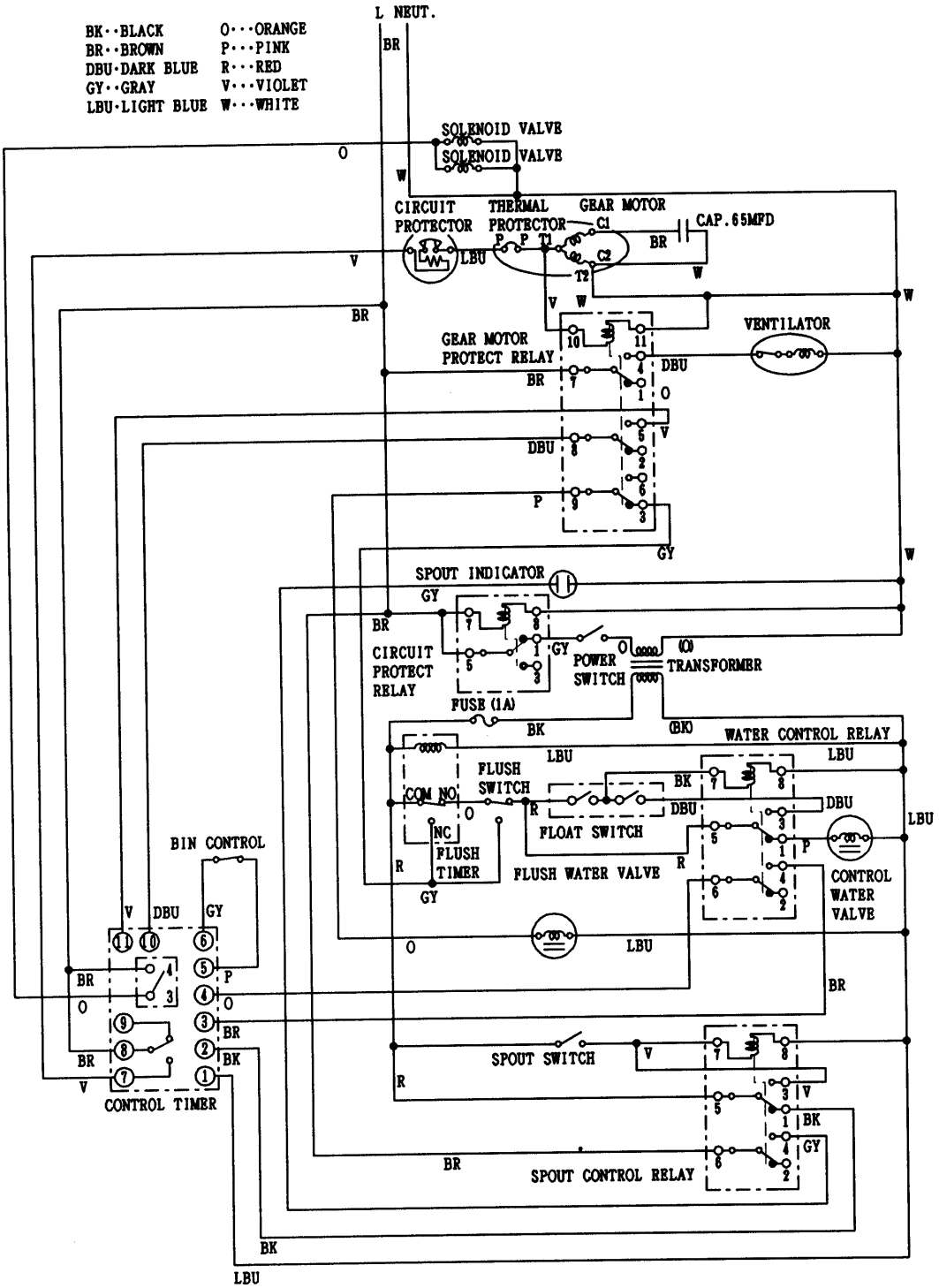
F-2000MRH3/-C

208-230/60/3



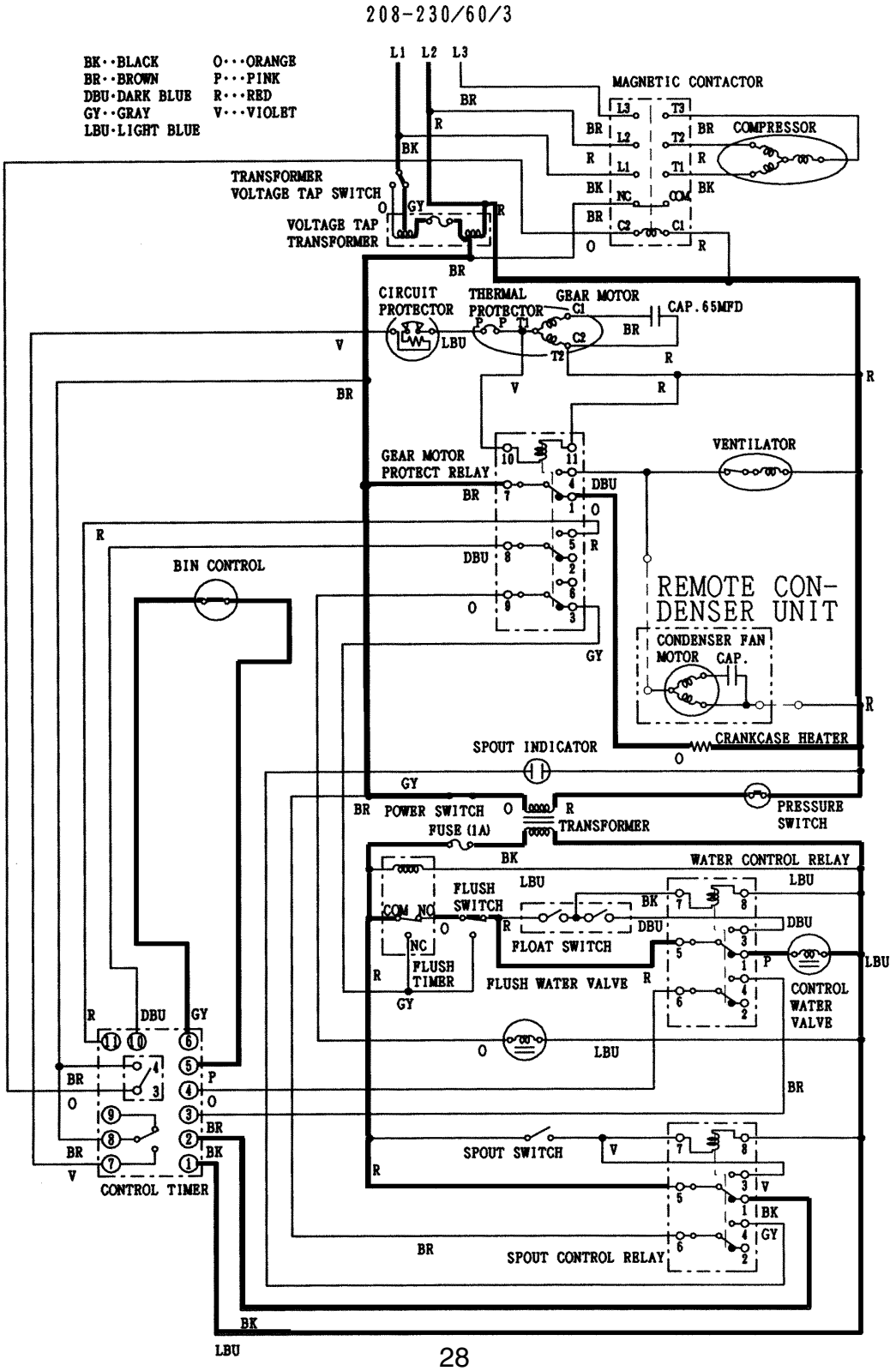
F-2000MLH/-C

115/60/1

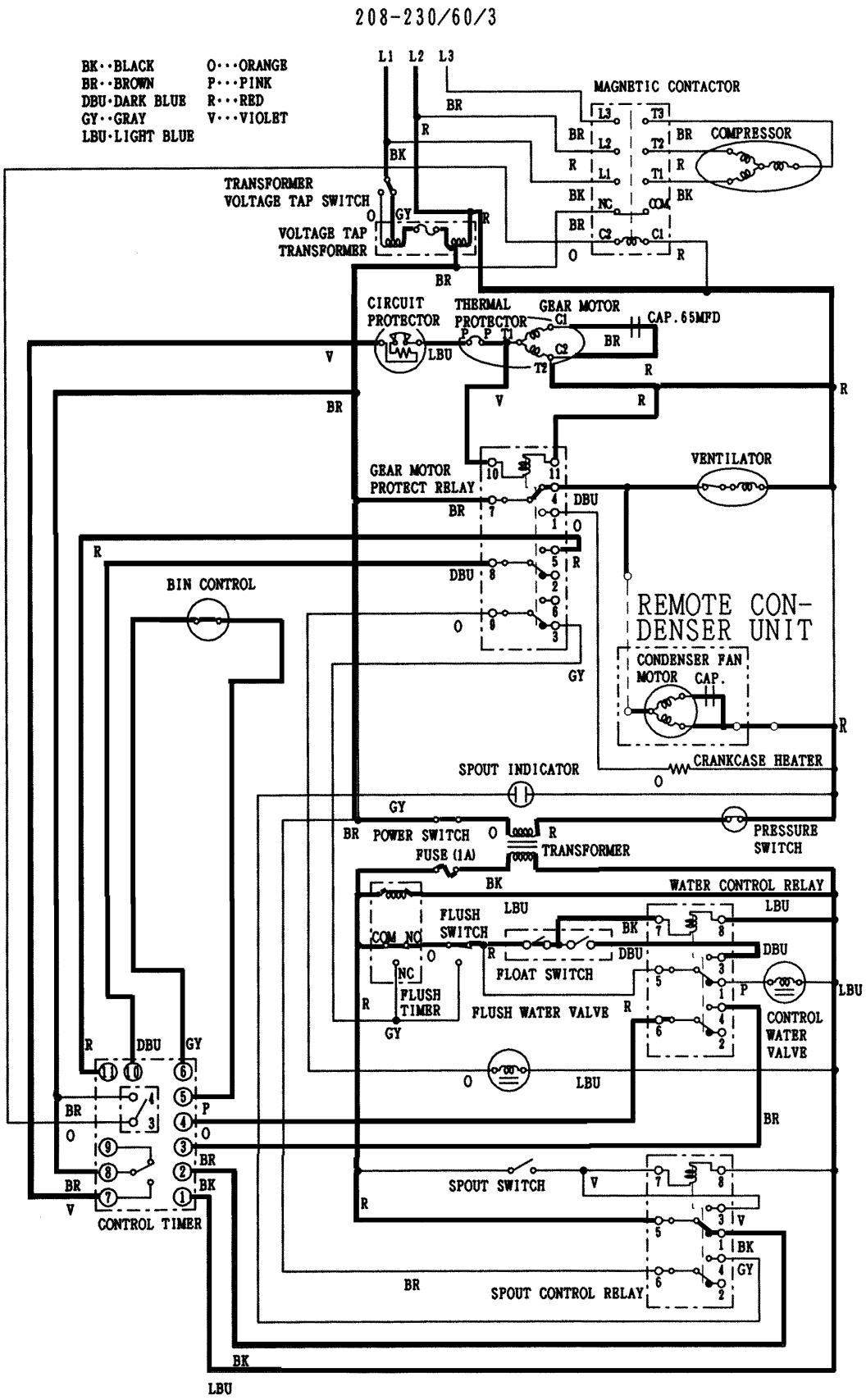


3. SEQUENCE OF ELECTRICAL CIRCUIT

[a] When Power Switch is moved to “ON” position and Flush Switch to “ICE” position, water starts to be supplied to Reservoir.

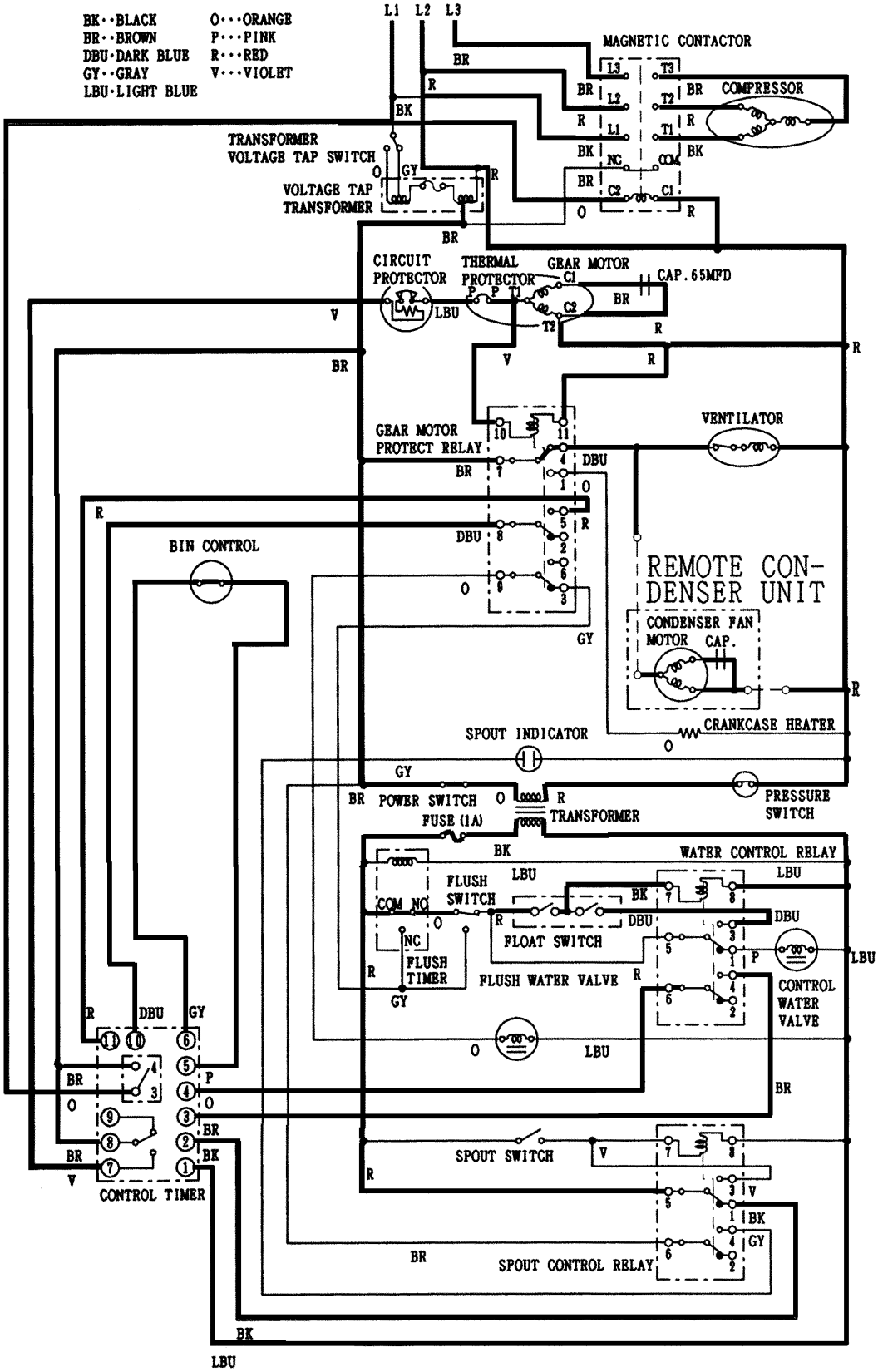


[b] When Reservoir has been filled, Gear Motor starts immediately.



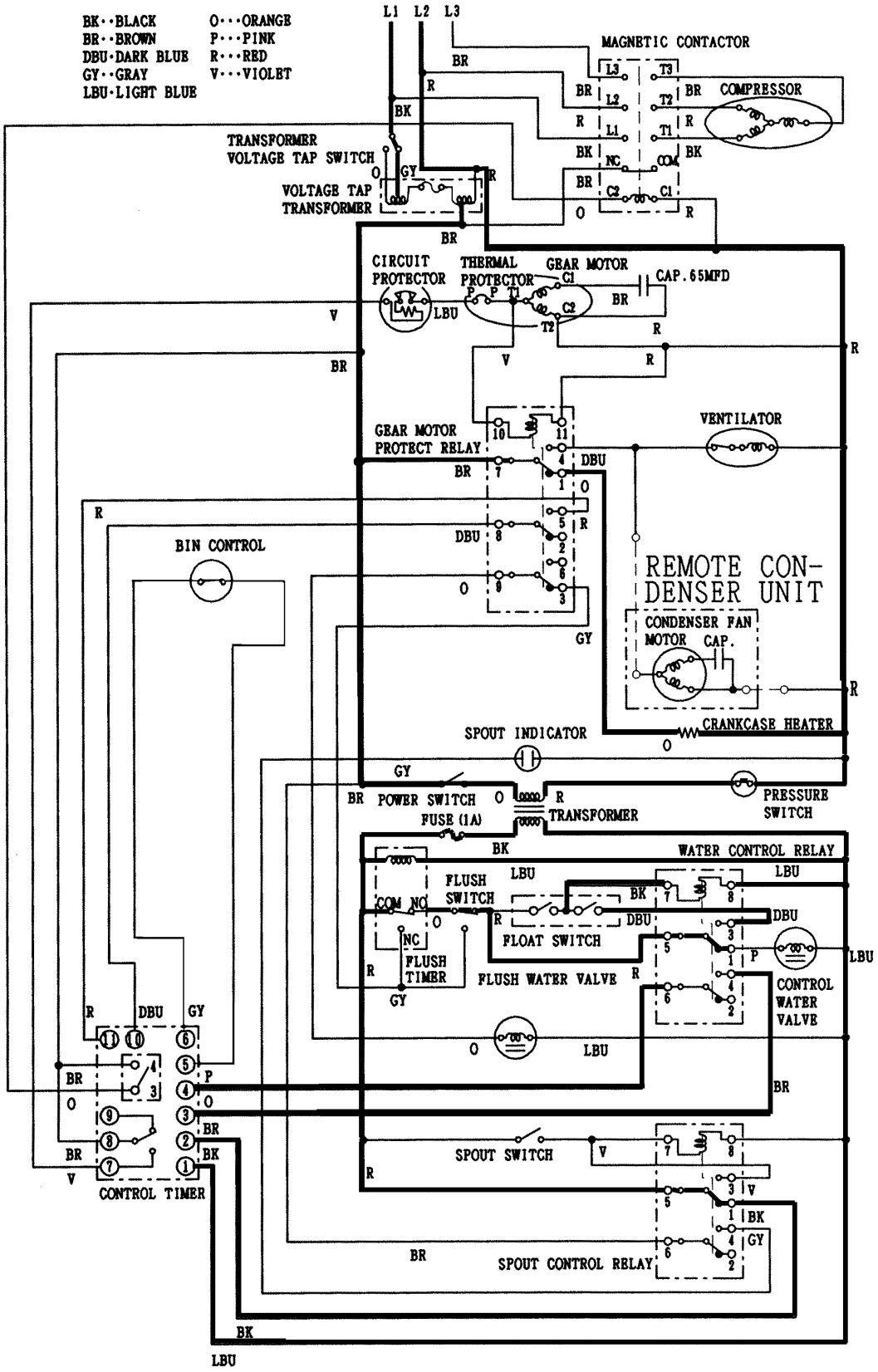
[c] Compressor starts [F-2000MLH/-C only, two solenoid valves open] about 60 sec. after Gear Motor starts.

208-230/60/3

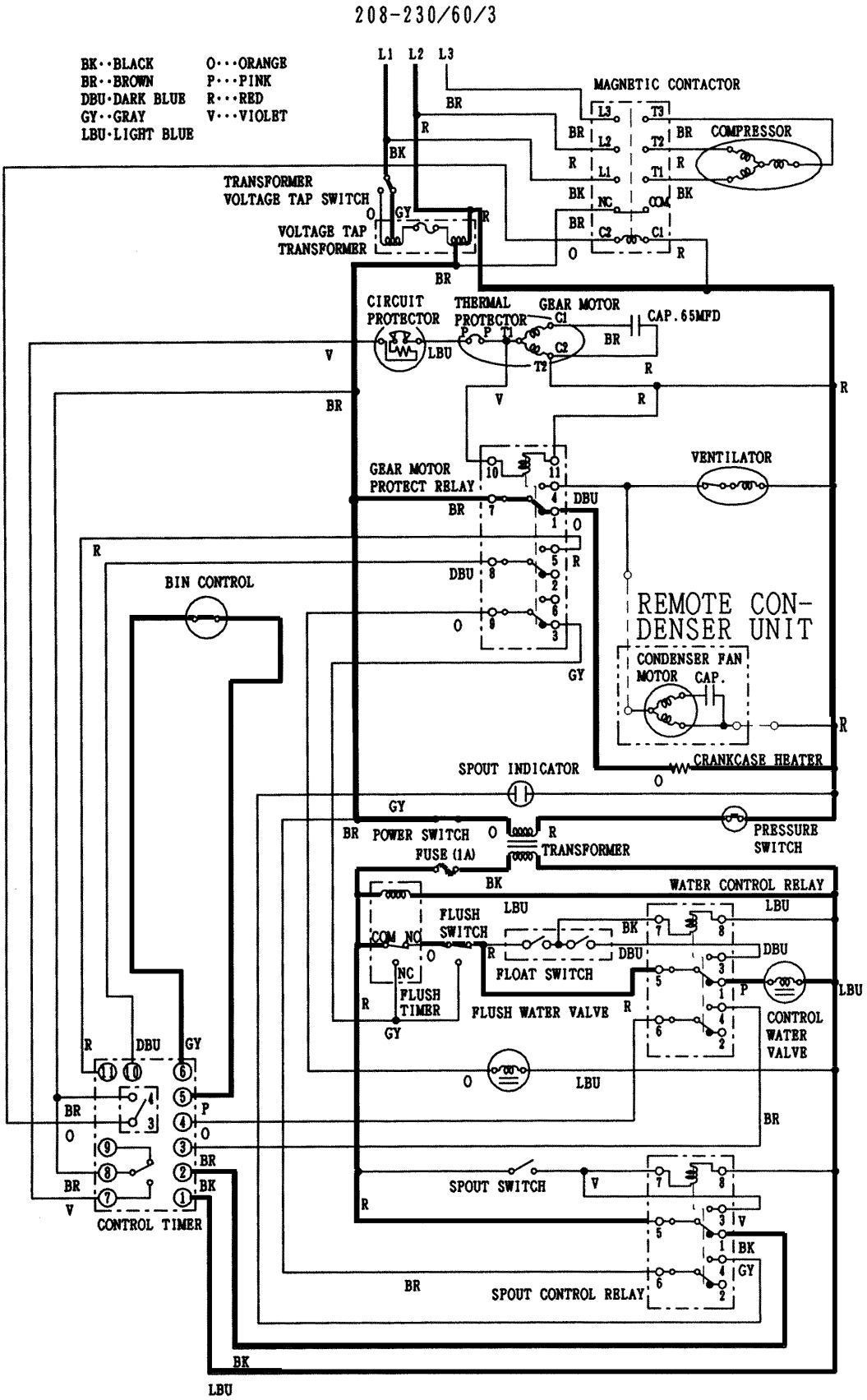


[d] Bin Control operates, and about 6 sec. later, Compressor and Gear Motor stop simultaneously. (F-2000MLH/-C, two solenoid valves close.)

208-230/60/3

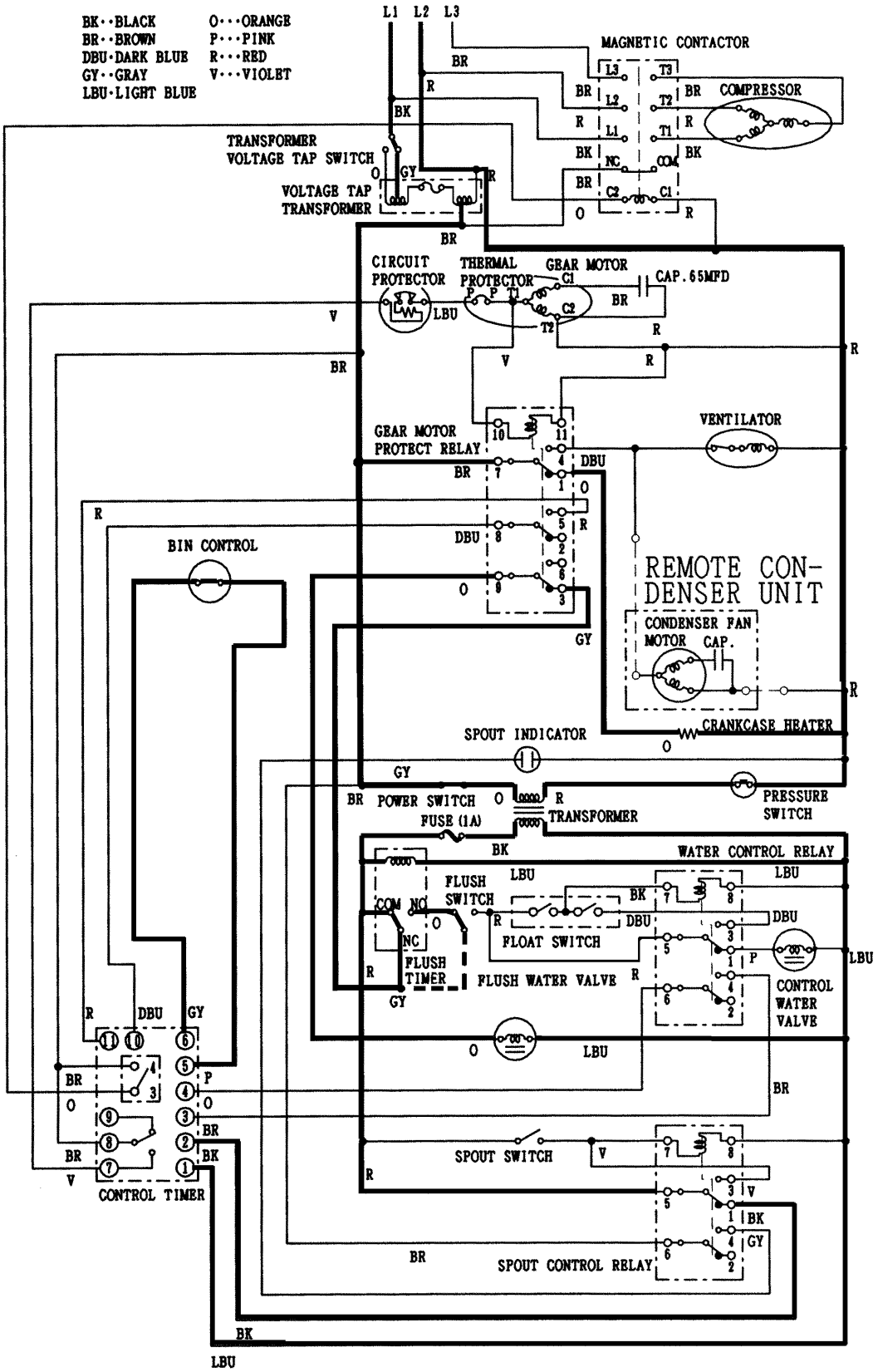


[e] Low Water (Except Water-cooled Model where Compressor will operate intermittently)



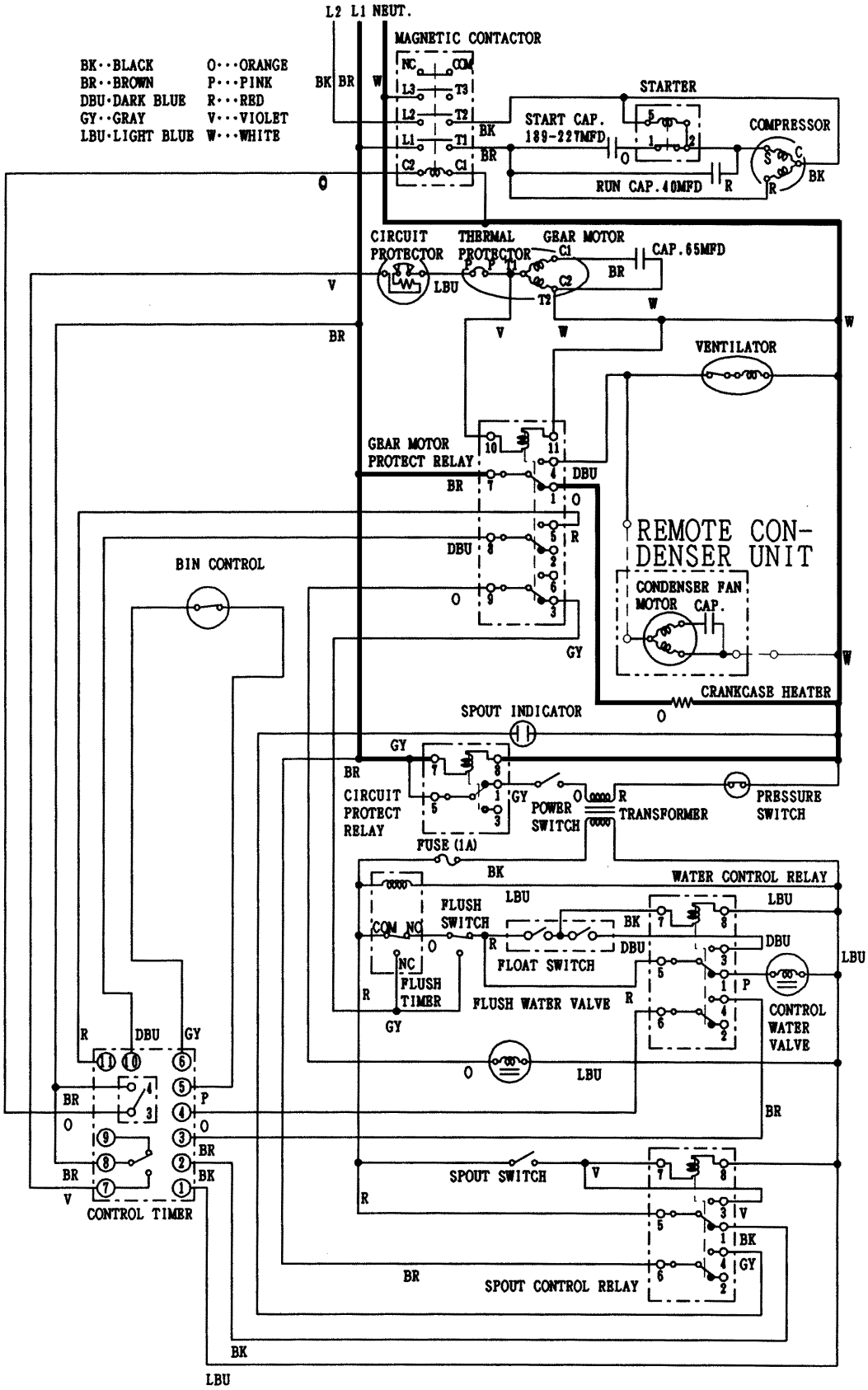
[f] When Flush Timer operates (for 15 min. every 12 hours) or when Flush Switch is moved to “FLUSH” position, Flush Water Valve opens and flushes Reservoir and Evaporator.

208-230/60/3



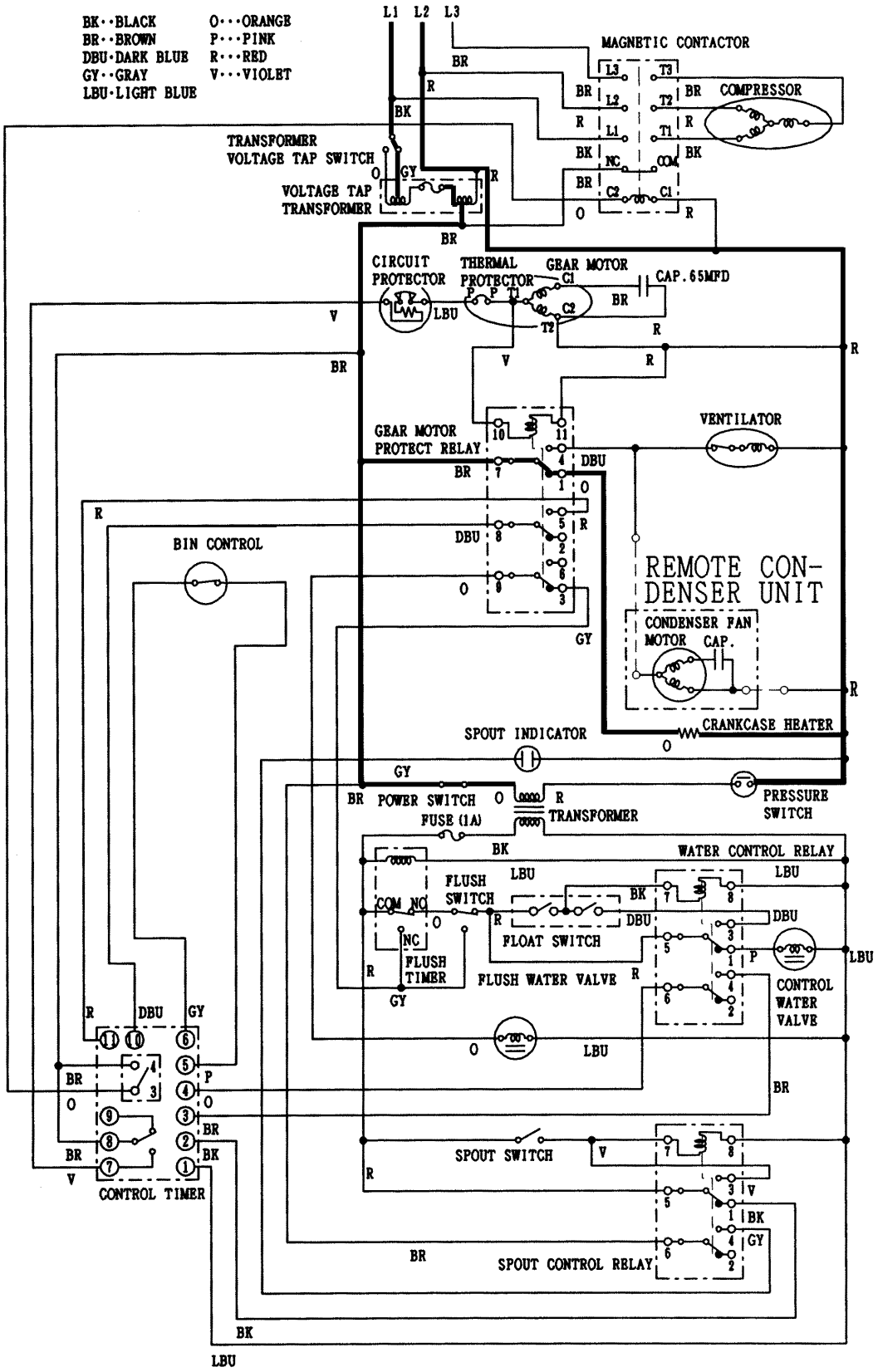
[g] For single-phase machines, when 208-230V are supplied to Circuit Protect Relay, it protects the circuit from being miswired. If the power supply is properly connected, the contact of Circuit Protect Relay does not move even when the coil is energized.

208-230/60/1 (3WIRE WITH NEUTRAL FOR 115V)

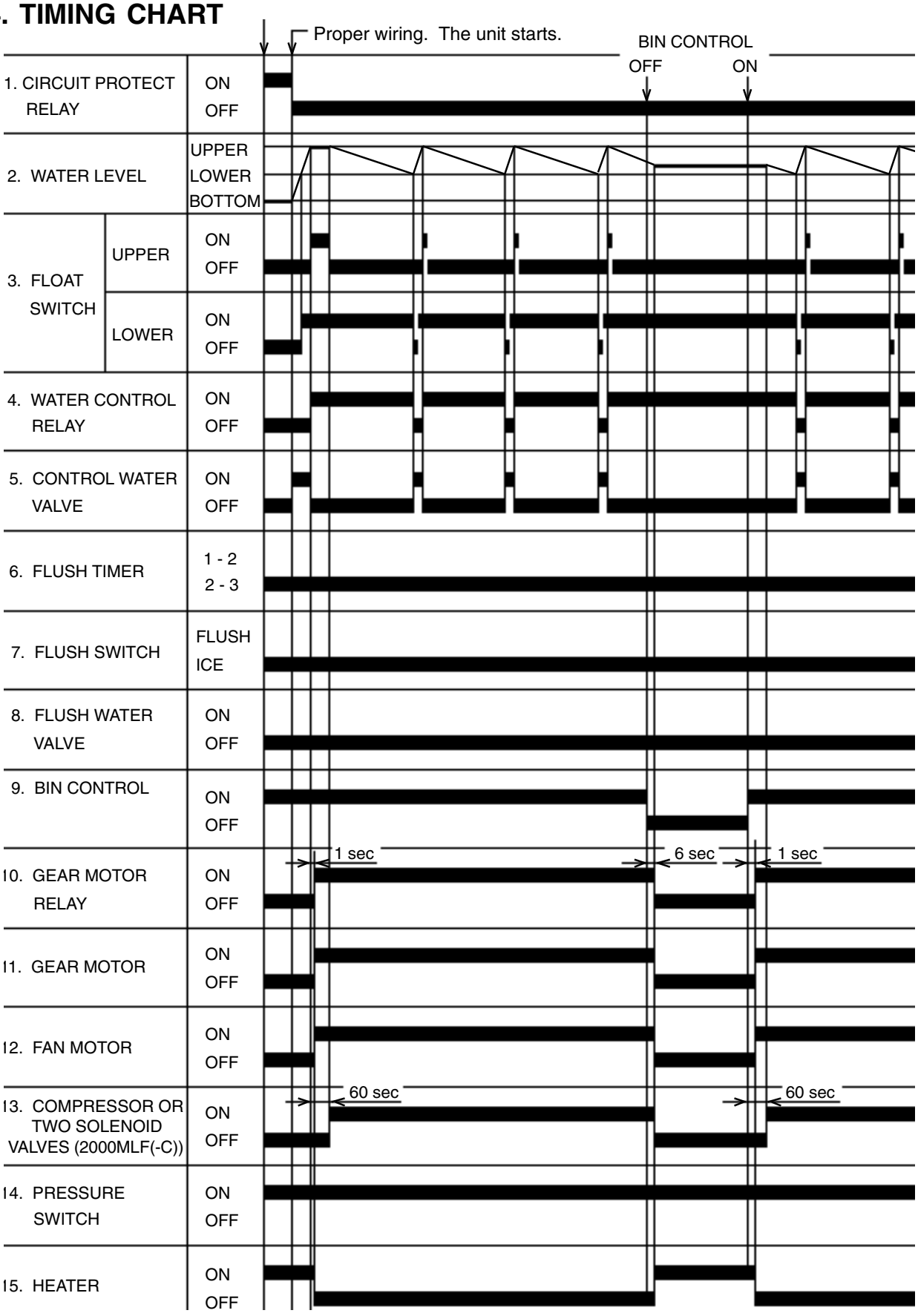


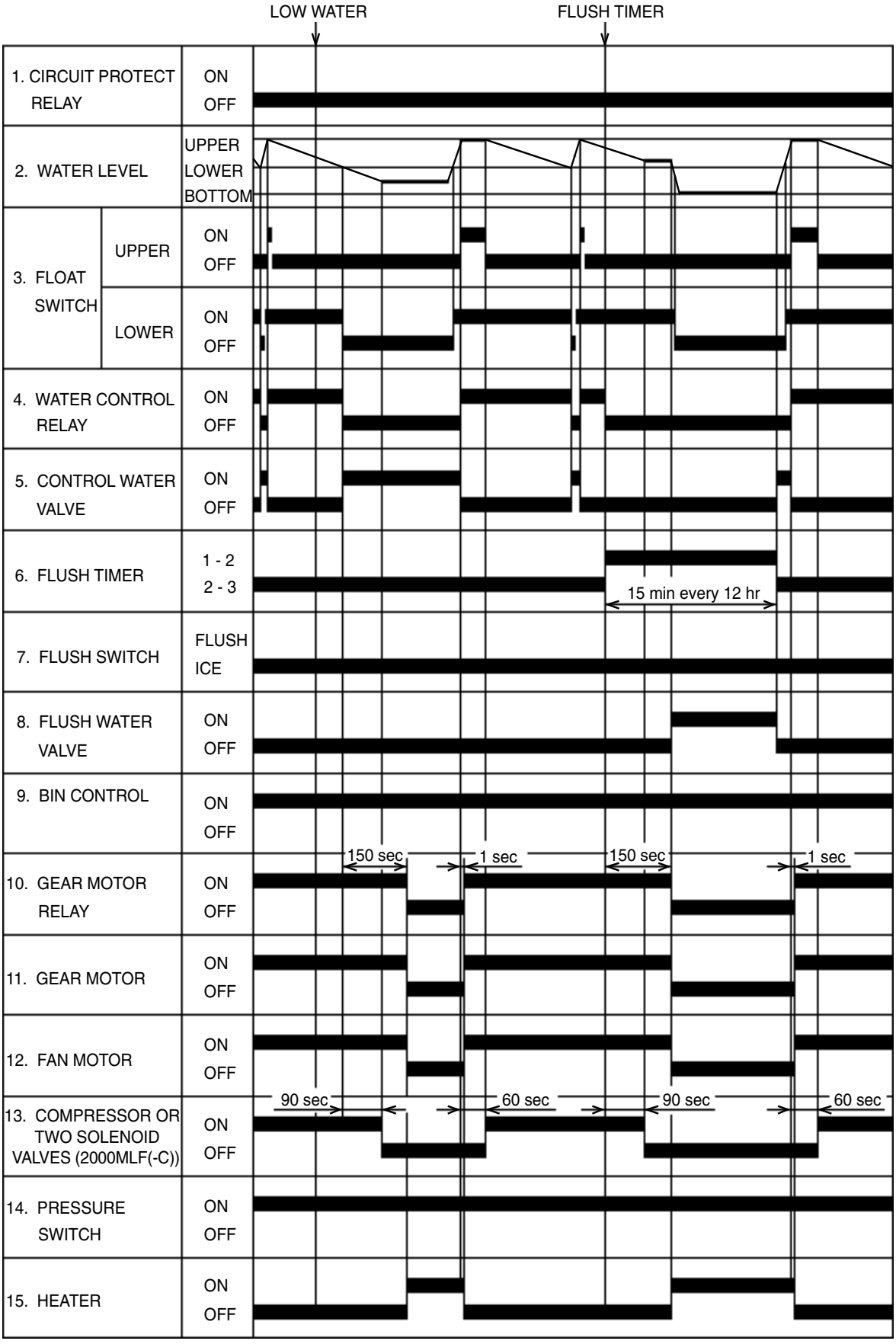
[h] When Pressure Switch opens, power supply to the control board is cut off causing the Compressor and Gear Motor to turn off immediately.

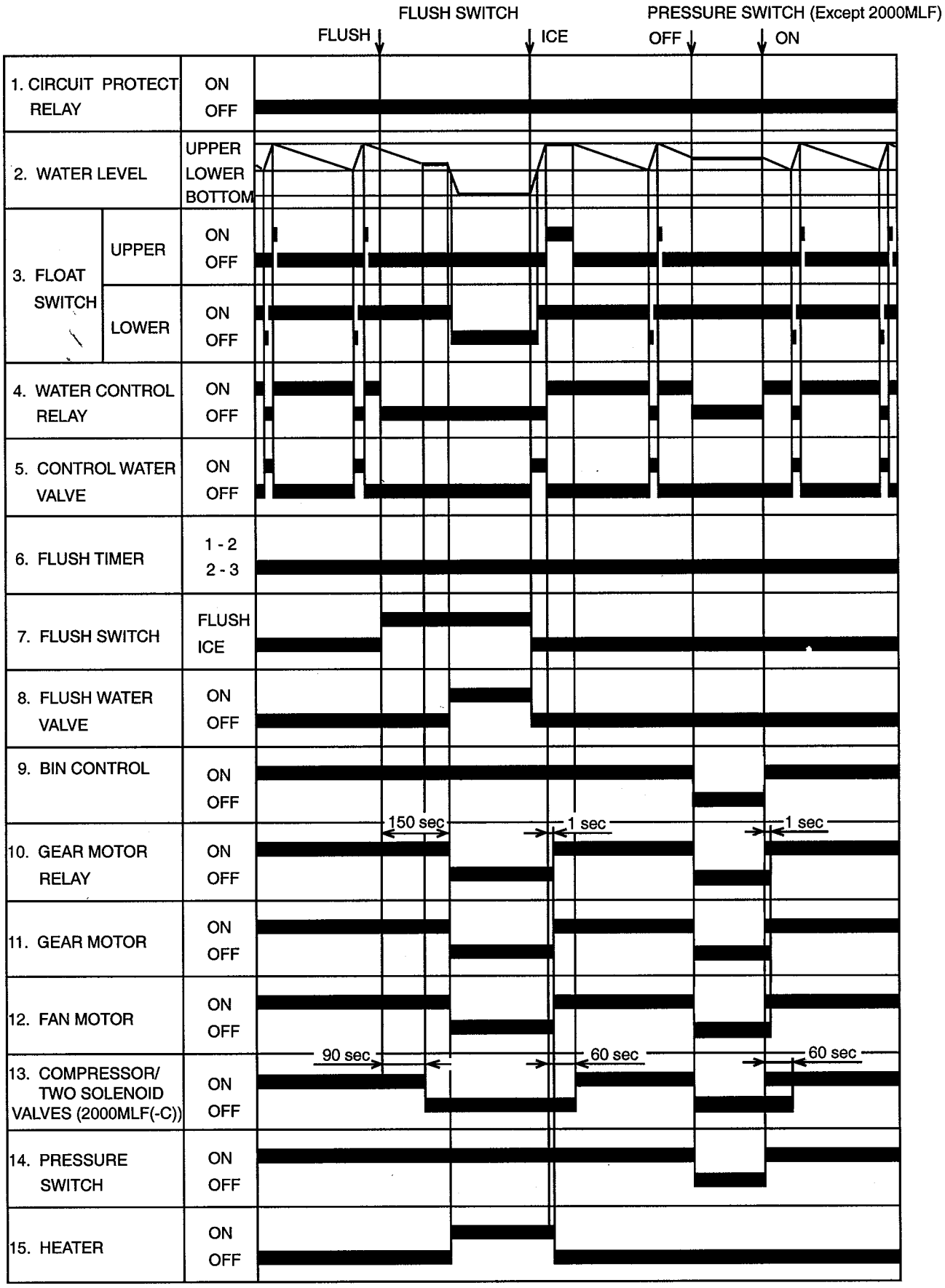
208-230/60/3

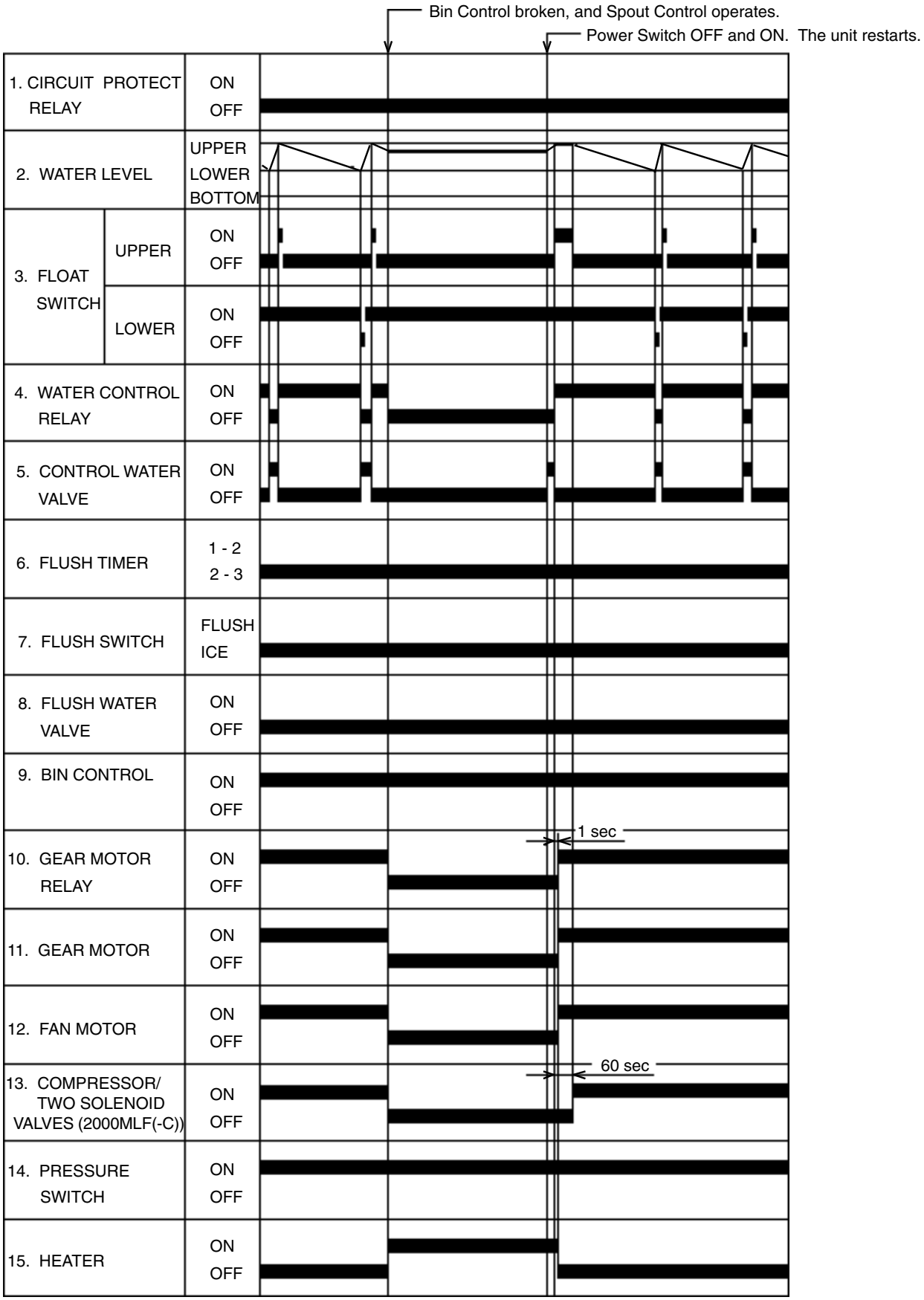


4. TIMING CHART




LOW WATER
FLUSH TIMER
1. CIRCUIT PROTECT RELAY
ON
OFF
2. WATER LEVEL
UPPER
LOWER
BOTTOM
3. FLOAT SWITCH
UPPER
LOWER
ON
OFF
4. WATER CONTROL RELAY
5. CONTROL WATER VALVE
6. FLUSH TIMER
1 - 2
2 - 3
15 min every 12 hr
7. FLUSH SWITCH
FLUSH
ICE
8. FLUSH WATER VALVE
9. BIN CONTROL
10. GEAR MOTOR RELAY
150 sec
1 sec
11. GEAR MOTOR
12. FAN MOTOR
13. COMPRESSOR OR TWO SOLENOID VALVES (2000MLF(-C))
90 sec
60 sec
14. PRESSURE SWITCH
15. HEATER


FLUSH SWITCH
PRESSURE SWITCH (Except 2000MLF)
FLUSH
ICE
OFF
ON
1. CIRCUIT PROTECT RELAY
ON
OFF
2. WATER LEVEL
UPPER
LOWER
BOTTOM
3. FLOAT SWITCH
UPPER
LOWER
ON
OFF
4. WATER CONTROL RELAY
5. CONTROL WATER VALVE
6. FLUSH TIMER
1 - 2
2 - 3
7. FLUSH SWITCH
FLUSH
ICE
8. FLUSH WATER VALVE
9. BIN CONTROL
10. GEAR MOTOR RELAY
11. GEAR MOTOR
12. FAN MOTOR
13. COMPRESSOR/ TWO SOLENOID VALVES (2000MLF(-C))
14. PRESSURE SWITCH
15. HEATER
150 sec
1 sec
1 sec
90 sec
60 sec
60 sec


Bin Control broken, and Spout Control operates.
Power Switch OFF and ON. The unit restarts.
1. CIRCUIT PROTECT RELAY
ON
OFF
2. WATER LEVEL
UPPER
LOWER
BOTTOM
3. FLOAT SWITCH
UPPER
ON
OFF
LOWER
ON
OFF
4. WATER CONTROL RELAY
ON
OFF
5. CONTROL WATER VALVE
ON
OFF
6. FLUSH TIMER
1 - 2
2 - 3
7. FLUSH SWITCH
FLUSH
ICE
8. FLUSH WATER VALVE
ON
OFF
9. BIN CONTROL
ON
OFF
1 sec
10. GEAR MOTOR RELAY
ON
OFF
11. GEAR MOTOR
ON
OFF
12. FAN MOTOR
ON
OFF
60 sec
13. COMPRESSOR/ TWO SOLENOID VALVES (2000MLF(-C))
ON
OFF
14. PRESSURE SWITCH
ON
OFF
15. HEATER
ON
OFF

16. SPOUT CONTROL RELAY	ON OFF	

5. PERFORMANCE DATA

F-2000MWH

APPROXIMATE	Ambient	Water Temp. (F)					
ICE PRODUCTION	Temp. (F)	50		70		90	
PER 24 HR.	70	2030	*(921)*	1955	*(887)*	1915	*(869)*
	80	1875	*(851)*	1835	*(832)*	1795	*(814)*
	90	1760	*(798)*	1730	*(785)*	1685	*(764)*
lbs./DAY (kg/day)	100	1650	*(748)*	1615	*(733)*	1500	*(680)*
APPROXIMATE ELECTRIC	70	2490	--	2510	--	2545	--
CONSUMPTION	80	2490	--	2510	--	2545	--
	90	2490	--	2510	--	2545	--
watts	100	2490	--	2510	--	2545	--
APPROXIMATE WATER	70	981	*(3.71)*	1266	*(4.79)*	2057	*(7.79)*
CONSUMPTION PER 24 HR.	80	1023	*(3.87)*	1319	*(4.99)*	2163	*(8.19)*
(TOTAL)	90	1062	*(4.02)*	1374	*(5.20)*	2278	*(8.62)*
gal. / day (m^3/day)	100	1105	*(4.18)*	1442	*(5.46)*	2513	*(9.51)*
EVAPORATOR OUTLET TEMP.	70	11	*(-12)*	11	*(-12)*	11	*(-12)*
°F (°C)	80	11	*(-12)*	11	*(-12)*	11	*(-12)*
	90	11	*(-12)*	11	*(-12)*	11	*(-12)*
	100	11	*(-12)*	11	*(-12)*	11	*(-12)*
HEAD PRESSURE	70	262	*(18.4)*	263	*(18.5)*	265	*(18.6)*
	80	262	*(18.4)*	263	*(18.5)*	265	*(18.6)*
	90	262	*(18.4)*	263	*(18.5)*	265	*(18.6)*
PSIG (kg/sq.cmG)	100	262	*(18.4)*	263	*(18.5)*	265	*(18.6)*
SUCTION PRESSURE	70	26	*(1.8)*	27	*(1.9)*	28	*(2.0)*
PSIG (kg/sq.cmG)	80	26	*(1.8)*	27	*(1.9)*	28	*(2.0)*
	90	26	*(1.8)*	27	*(1.9)*	28	*(2.0)*
	100	26	*(1.8)*	27	*(1.9)*	28	*(2.0)*
WATER FLOW FOR CONDENSER		97 gal/h (AT 100°F /WT 90°F)					
HEAT OF REJECTION FROM CONDENSER		15530 BTU/h (AT 90°F /WT 70°F)					
HEAT OF REJECTION FROM COMPRESSOR		2910 BTU/h (AT 90°F /WT 70°F)					

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

We reserve the right to make changes in specifications and design without prior notice.

F-2000MWH-C

APPROXIMATE ICE PRODUCTION PER 24 HR. lbs./DAY (kg/day)	Ambient Temp. (F)	Water Temp. (F) 50	70	90
	70	1790 *(812)*	1725 *(782)*	1700 *(771)*
	80	1670 *(757)*	1640 *(744)*	1615 *(733)*
	90	1585 *(719)*	1560 *(708)*	1535 *(696)*
	100	1510 *(685)*	1485 *(674)*	1375 *(624)*
APPROXIMATE ELECTRIC CONSUMPTION watts	70	2555 --	2585 --	2640 --
	80	2555 --	2585 --	2640 --
	90	2555 --	2585 --	2640 --
	100	2555 --	2585 --	2640 --
APPROXIMATE WATER CONSUMPTION PER 24 HR. (TOTAL) gal. / day (m^3/day)	70	978 *(3.70)*	1281 *(4.85)*	1985 *(7.51)*
	80	1019 *(3.86)*	1327 *(5.02)*	2067 *(7.82)*
	90	1051 *(3.98)*	1376 *(5.21)*	2155 *(8.16)*
	100	1087 *(4.11)*	1429 *(5.41)*	2364 *(8.95)*
EVAPORATOR OUTLET TEMP. °F (°C)	70	10 *(-12)*	10 *(-12)*	12 *(-11)*
	80	10 *(-12)*	10 *(-12)*	12 *(-11)*
	90	10 *(-12)*	10 *(-12)*	12 *(-11)*
	100	10 *(-12)*	10 *(-12)*	12 *(-11)*
HEAD PRESSURE PSIG (kg/sq.cmG)	70	262 *(18.4)*	263 *(18.5)*	266 *(18.7)*
	80	262 *(18.4)*	263 *(18.5)*	266 *(18.7)*
	90	262 *(18.4)*	263 *(18.5)*	266 *(18.7)*
	100	262 *(18.4)*	263 *(18.5)*	266 *(18.7)*
SUCTION PRESSURE PSIG (kg/sq.cmG)	70	27 *(1.8)*	27 *(1.9)*	28 *(2.0)*
	80	27 *(1.8)*	27 *(1.9)*	28 *(2.0)*
	90	27 *(1.8)*	27 *(1.9)*	28 *(2.0)*
	100	27 *(1.8)*	27 *(1.9)*	28 *(2.0)*
WATER FLOW FOR CONDENSER		92 gal/h (AT 100°F /WT 90°F)		
HEAT OF REJECTION FROM CONDENSER		15530 BTU/h (AT 90°F /WT 70°F)		
HEAT OF REJECTION FROM COMPRESSOR		2910 BTU/h (AT 90°F /WT 70°F)		

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

We reserve the right to make changes in specifications and design without prior notice.

F-2000MRH

APPROXIMATE ICE PRODUCTION PER 24 HR. lbs./DAY (kg/day)	Ambient Temp. (F)	Water Temp. (F) 50		70		90	
	70	1990	*(902)*	1930	*(875)*	1880	*(853)*
	80	1825	*(828)*	1775	*(802)*	1730	*(785)*
	90	1685	*(764)*	1675	*(760)*	1595	*(723)*
	100	1550	*(703)*	1510	*(685)*	1395	*(633)*
APPROXIMATE ELECTRIC CONSUMPTION watts	70	2770	--	2770	--	2775	--
	80	2775	--	2780	--	2780	--
	90	2785	--	2785	--	2805	--
	100	2825	--	2840	--	2860	--
APPROXIMATE WATER CONSUMPTION PER 24 HR. gal. / day (l/day)	70	239	*(902)*	232	*(875)*	225	*(853)*
	80	219	*(828)*	213	*(802)*	208	*(785)*
	90	202	*(764)*	201	*(760)*	191	*(723)*
	100	186	*(703)*	181	*(685)*	167	*(633)*
EVAPORATOR OUTLET TEMP. °F (°C)	70	12	*(-11)*	12	*(-11)*	12	*(-11)*
	80	12	*(-11)*	12	*(-11)*	12	*(-11)*
	90	12	*(-11)*	12	*(-11)*	14	*(-10)*
	100	14	*(-10)*	14	*(-10)*	14	*(-10)*
HEAD PRESSURE	70	221	*(15.5)*	221	*(15.5)*	221	*(15.5)*
	80	230	*(16.1)*	230	*(16.1)*	230	*(16.1)*
	90	238	*(16.8)*	238	*(16.7)*	238	*(16.7)*
PSIG (kg/sq.cmG)	100	274	*(19.3)*	274	*(19.3)*	274	*(19.3)*
SUCTION PRESSURE PSIG (kg/sq.cmG)	70	25	*(1.8)*	25	*(1.8)*	25	*(1.8)*
	80	26	*(1.8)*	26	*(1.8)*	26	*(1.8)*
	90	26	*(1.8)*	26	*(1.8)*	26	*(1.8)*
	100	29	*(2.0)*	29	*(2.0)*	29	*(2.0)*
CONDENSER VOLUME		214 in^3					
HEAT OF REJECTION FROM CONDENSER		16475 BTU/h (AT 90°F /WT 70°F)					
HEAT OF REJECTION FROM COMPRESSOR		2870 BTU/h (AT 90°F /WT 70°F)					

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

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F-2000MRH-C

APPROXIMATE ICE PRODUCTION PER 24 HR. lbs./DAY (kg/day)	Ambient Temp. (F)	Water Temp. (F) 50		70		90	
	70	1715	*(778)*	1660	*(753)*	1630	*(739)*
	80	1595	*(723)*	1560	*(708)*	1530	*(694)*
	90	1500	*(680)*	1490	*(676)*	1435	*(651)*
	100	1410	*(640)*	1380	*(626)*	1270	*(576)*
APPROXIMATE ELECTRIC CONSUMPTION watts	70	2860	--	2860	--	2865	--
	80	2865	--	2865	--	2865	--
	90	2870	--	2870	--	2880	--
	100	2890	--	2900	--	2910	--
APPROXIMATE WATER CONSUMPTION PER 24 HR. gal. / day (l/day)	70	206	*(778)*	200	*(753)*	195	*(739)*
	80	191	*(723)*	188	*(708)*	184	*(694)*
	90	180	*(680)*	179	*(676)*	173	*(651)*
	100	169	*(640)*	166	*(626)*	153	*(576)*
EVAPORATOR OUTLET TEMP. °F (°C)	70	12	*(-11)*	12	*(-11)*	12	*(-11)*
	80	12	*(-11)*	14	*(-10)*	14	*(-10)*
	90	14	*(-10)*	14	*(-10)*	14	*(-10)*
	100	14	*(-10)*	14	*(-10)*	14	*(-10)*
HEAD PRESSURE PSIG (kg/sq.cmG)	70	220	*(15.5)*	220	*(15.5)*	220	*(15.5)*
	80	227	*(15.9)*	227	*(15.9)*	227	*(15.9)*
	90	233	*(16.4)*	233	*(16.4)*	233	*(16.4)*
	100	266	*(18.7)*	266	*(18.7)*	266	*(18.7)*
SUCTION PRESSURE PSIG (kg/sq.cmG)	70	26	*(1.8)*	26	*(1.8)*	26	*(1.8)*
	80	26	*(1.8)*	26	*(1.8)*	26	*(1.8)*
	90	27	*(1.9)*	27	*(1.9)*	27	*(1.9)*
	100	29	*(2.1)*	29	*(2.1)*	29	*(2.1)*
CONDENSER VOLUME		214 in^3					
HEAT OF REJECTION FROM CONDENSER		17690 BTU/h (AT 90°F /WT 70°F)					
HEAT OF REJECTION FROM COMPRESSOR		2955 BTU/h (AT 90°F /WT 70°F)					

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

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F-2000MRH3

APPROXIMATE ICE PRODUCTION PER 24 HR. lbs./DAY (kg/day)	Ambient Temp. (F)	Water Temp. (F) 50		70		90	
	70	2010	*(912)*	1950	*(845)*	1895	*(860)*
	80	1845	*(837)*	1795	*(814)*	1750	*(794)*
	90	1700	*(771)*	1695	*(769)*	1610	*(730)*
	100	1570	*(712)*	1525	*(692)*	1410	*(640)*
APPROXIMATE ELECTRIC CONSUMPTION watts	70	2850	--	2850	--	2855	--
	80	2855	--	2860	--	2860	--
	90	2865	--	2865	--	2875	--
	100	2890	--	2890	--	2910	--
APPROXIMATE WATER CONSUMPTION PER 24 HR. gal. / day (l/day)	70	241	*(912)*	234	*(845)*	228	*(860)*
	80	222	*(837)*	216	*(814)*	210	*(794)*
	90	204	*(771)*	203	*(769)*	194	*(730)*
	100	188	*(712)*	183	*(692)*	169	*(640)*
EVAPORATOR OUTLET TEMP. °F (°C)	70	14	*(-10)*	14	*(-10)*	14	*(-10)*
	80	14	*(-10)*	14	*(-10)*	14	*(-10)*
	90	14	*(-10)*	14	*(-10)*	16	*(-9)*
	100	16	*(-9)*	16	*(-9)*	16	*(-9)*
HEAD PRESSURE PSIG (kg/sq.cmG)	70	219	*(15.4)*	219	*(15.4)*	219	*(15.4)*
	80	230	*(16.2)*	230	*(16.2)*	230	*(16.2)*
	90	241	*(16.9)*	241	*(16.9)*	241	*(16.9)*
	100	271	*(19.0)*	271	*(19.0)*	271	*(19.0)*
SUCTION PRESSURE PSIG (kg/sq.cmG)	70	25	*(1.8)*	25	*(1.8)*	25	*(1.8)*
	80	26	*(1.8)*	26	*(1.8)*	26	*(1.8)*
	90	27	*(1.9)*	27	*(1.9)*	27	*(1.9)*
	100	29	*(2.0)*	29	*(2.0)*	29	*(2.0)*
CONDENSER VOLUME		214 in^3					
HEAT OF REJECTION FROM CONDENSER		16890 BTU/h (AT 90°F /WT 70°F)					
HEAT OF REJECTION FROM COMPRESSOR		2860 BTU/h (AT 90°F /WT 70°F)					

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

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F-2000MRH3-C

APPROXIMATE ICE PRODUCTION PER 24 HR. lbs./DAY (kg/day)	Ambient Temp. (F)	Water Temp. (F) 50		70		90	
	70	1725	*(782)*	1685	*(764)*	1650	*(748)*
	80	1615	*(733)*	1580	*(717)*	1545	*(701)*
	90	1515	*(687)*	1525	*(692)*	1450	*(658)*
	100	1420	*(644)*	1390	*(631)*	1275	*(578)*
APPROXIMATE ELECTRIC CONSUMPTION watts	70	2970	--	2975	--	2980	--
	80	2980	--	2985	--	2990	--
	90	2995	--	3000	--	3040	--
	100	3080	--	3125	--	3165	--
APPROXIMATE WATER CONSUMPTION PER 24 HR. gal. / day (l/day)	70	207	*(782)*	202	*(764)*	198	*(748)*
	80	194	*(733)*	190	*(717)*	186	*(701)*
	90	182	*(687)*	183	*(692)*	174	*(658)*
	100	170	*(644)*	167	*(631)*	153	*(578)*
EVAPORATOR OUTLET TEM °F (°C)	70	12	*(-11)*	12	*(-11)*	14	*(-10)*
	80	14	*(-10)*	14	*(-10)*	14	*(-10)*
	90	14	*(-10)*	14	*(-10)*	14	*(-10)*
	100	14	*(-10)*	14	*(-10)*	14	*(-10)*
HEAD PRESSURE PSIG (kg/sq.cmG)	70	222	*(15.6)*	222	*(15.6)*	222	*(15.6)*
	80	225	*(15.8)*	225	*(15.8)*	225	*(15.8)*
	90	228	*(16.0)*	228	*(16.0)*	228	*(16.0)*
	100	262	*(18.4)*	262	*(18.4)*	262	*(18.4)*
SUCTION PRESSURE PSIG (kg/sq.cmG)	70	25	*(1.7)*	25	*(1.7)*	25	*(1.7)*
	80	25	*(1.8)*	25	*(1.8)*	25	*(1.8)*
	90	26	*(1.8)*	26	*(1.8)*	26	*(1.8)*
	100	29	*(2.0)*	29	*(2.0)*	29	*(2.0)*
CONDENSER VOLUME	214 cu in						
HEAT OF REJECTION FROM CONDENSE	16750 BTU/h (AT 90°F /WT 70°F)						
HEAT OF REJECTION FROM COMPRESS	3000 BTU/h (AT 90°F /WT 70°F)						

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

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F-2000MLH

APPROXIMATE	Ambient	Water Temp. (F)					
ICE PRODUCTION	Temp. (F)	50		70		90	
PER 24 HR.	70	2280	*(921)*	1955	*(887)*	1915	*(869)*
	80	2010	*(851)*	1835	*(832)*	1795	*(814)*
	90	1760	*(798)*	1730	*(785)*	1685	*(764)*
lbs./DAY (kg/day)	100	1650	*(748)*	1615	*(733)*	1370	*(680)*
APPROXIMATE ELECTRIC	70	490	--	470	--	470	--
CONSUMPTION	80	490	--	470	--	470	--
	90	490	--	470	--	470	--
watts	100	490	--	470	--	470	--
APPROXIMATE WATER	70	258	*(921)*	234	*(887)*	230	*(869)*
CONSUMPTION PER 24 HR.	80	225	*(851)*	220	*(832)*	215	*(814)*
(TOTAL)	90	211	*(798)*	207	*(785)*	202	*(764)*
gal. / day (m^3/day)	100	198	*(748)*	194	*(733)*	180	*(680)*
EVAPORATOR OUTLET TEMP.	70	12	*(-11)*	12	*(-11)*	12	*(-11)*
°F (°C)	80	12	*(-11)*	12	*(-11)*	12	*(-11)*
	90	12	*(-11)*	12	*(-11)*	14	*(-10)*
	100	14	*(-10)*	14	*(-10)*	14	*(-10)*
HEAD PRESSURE	70	190	*(18.4)*	256	*(18.5)*	297	*(18.6)*
	80	190	*(18.4)*	256	*(18.5)*	297	*(18.6)*
	90	190	*(18.4)*	256	*(18.5)*	297	*(18.6)*
PSIG (kg/sq.cmG)	100	190	*(18.4)*	256	*(18.5)*	297	*(18.6)*
SUCTION PRESSURE	70	16	*(1.8)*	21	*(1.9)*	22	*(2.0)*
PSIG (kg/sq.cmG)	80	16	*(1.8)*	21	*(1.9)*	22	*(2.0)*
	90	16	*(1.8)*	21	*(1.9)*	22	*(2.0)*
	100	16	*(1.8)*	21	*(1.9)*	22	*(2.0)*

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

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F-2000MLH-C

APPROXIMATE ICE PRODUCTION PER 24 HR. lbs./DAY (kg/day)	Ambient Temp. (F)	Water Temp. (F) 50		70		90	
	70	1965	*(891)*	1680	*(762)*	1660	*(753)*
	80	1755	*(796)*	1615	*(732)*	1585	*(719)*
	90	1565	*(710)*	1540	*(699)*	1515	*(687)*
	100	1500	*(680)*	1475	*(669)*	1245	*(565)*
APPROXIMATE ELECTRIC CONSUMPTION watts	70	490	--	470	--	470	--
	80	490	--	470	--	470	--
	90	490	--	470	--	470	--
	100	490	--	470	--	470	--
APPROXIMATE WATER CONSUMPTION PER 24 HR. (TOTAL) gal. / day (m^3/day)	70	235	*(891)*	201	*(762)*	199	*(753)*
	80	210	*(796)*	193	*(732)*	190	*(719)*
	90	188	*(710)*	185	*(699)*	182	*(687)*
	100	180	*(680)*	177	*(669)*	149	*(565)*
EVAPORATOR OUTLET TEMP. °F (°C)	70	12	*(-11)*	12	*(-11)*	12	*(-11)*
	80	12	*(-11)*	12	*(-11)*	12	*(-11)*
	90	12	*(-11)*	12	*(-11)*	14	*(-10)*
	100	14	*(-10)*	14	*(-10)*	14	*(-10)*
HEAD PRESSURE PSIG (kg/sq.cmG)	70	190	*(18.4)*	256	*(18.5)*	297	*(18.6)*
	80	190	*(18.4)*	256	*(18.5)*	297	*(18.6)*
	90	190	*(18.4)*	256	*(18.5)*	297	*(18.6)*
	100	190	*(18.4)*	256	*(18.5)*	297	*(18.6)*
SUCTION PRESSURE PSIG (kg/sq.cmG)	70	16	*(1.8)*	21	*(1.9)*	22	*(2.0)*
	80	16	*(1.8)*	21	*(1.9)*	22	*(2.0)*
	90	16	*(1.8)*	21	*(1.9)*	22	*(2.0)*
	100	16	*(1.8)*	21	*(1.9)*	22	*(2.0)*

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

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IV. ADJUSTMENT OF COMPONENTS

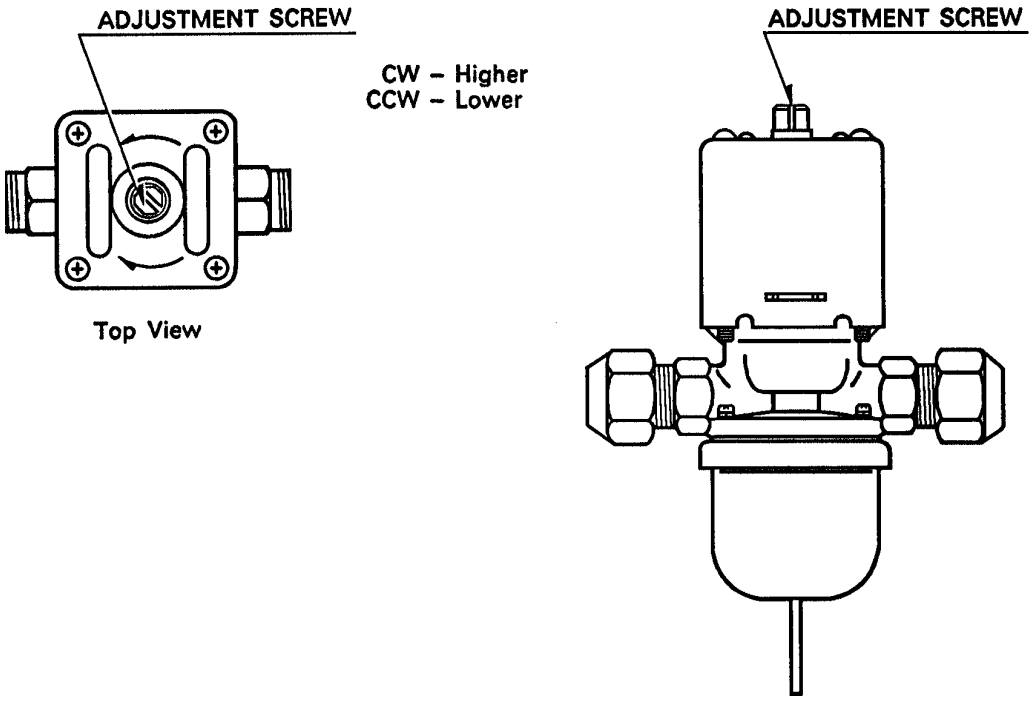
1. ADJUSTMENT OF WATER REGULATING VALVE - WATER-COOLED MODEL ONLY

The Water Regulating Valve or also called "WATER REGULATOR" is factory-adjusted. No adjustment is required under normal use. Adjust the Water Regulator , if necessary, using the following procedures.

1) Attach a pressure gauge to the high-side line of the system. Or prepare a thermometer to check the condenser drain temperature.

2) Rotate the Adjustment Screw by using a flat blade screwdriver, so that the pressure gauge shows 260 PSIG (R-404A models/-F type), or the thermometer reads 100 -104°F, in 5 minutes after the icemaking process starts. When the pressure exceeds 230, 215, or 260 PSIG, or the condenser drain temperature exceeds 104°F, rotate the Adjustment Screw counterclockwise.

3) Check that the pressure or the condenser drain temperature holds a stable setting.



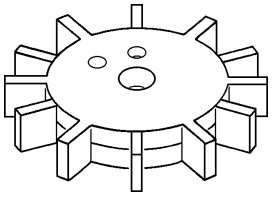
2. ADJUSTMENT OF FLAKE SIZE

To adjust the flake size, change the number of the Cutter Heads on the top of the Auger, according to the following procedures:

1) Remove the Bolt.

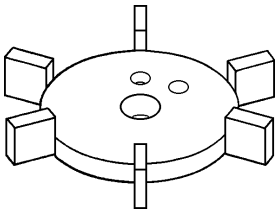
2) Take off the upper Cutter Head of the two (coarse flakes) or set the upper Cutter Head on the lower (fine flakes). The unit is shipped from the factory with two Cutter Heads.

FINE



[two Cutter Heads]

COARSE



[one Cutter Head]

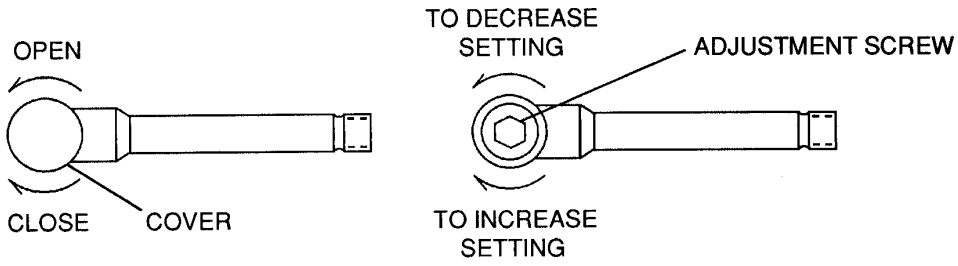
3) Secure the Cutter Head(s) by the Bolt.

3. ADJUSTMENT OF EVAPORATOR PRESSURE REGULATOR (E.P.R) - F-2000MLH/-C ONLY

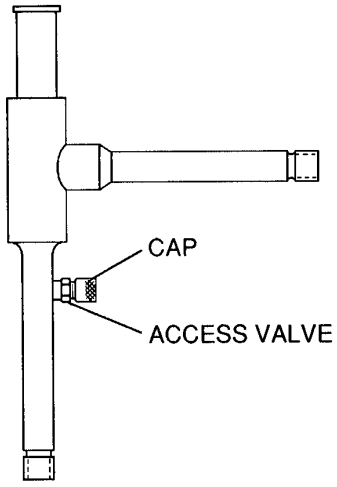
The Evaporator Pressure Regulator (E.P.R) prevents the evaporator pressure from dropping below the pressure setting of 22 PSIG (R-404A model (-F type). Adjust the setting, if necessary, according to the following instructions:

1) Remove the Cap from the E.P.R. Access Valve, and connect a pressure gauge (The E.P.R. needs no adjustment if the pressure gauge shows 22 PSIG for F-2000MLH/-C.)

2) Remove the Cover from the E.P.R., and rotate the Adjustment Screw by a hexagon wrench until the pressure gauge shows 22 PSIG (F-2000MLH/-C). Rotate clockwise to increase the pressure setting, and rotate counterclockwise to decrease the pressure setting.



TOP VIEW



SIDE VIEW

V. SERVICE DIAGNOSIS
1. NO ICE PRODUCTION

PROBLEM	POSSIBLE CAUSE		REMEDY
[1] The icemaker will not start.	a) Power Supply	1. OFF position.	1. Move to ON position.
		2. Loose connection.	2. Tighten.
		3. Bad contacts.	3. Check for contintinuity and replace.
		4. Blown fuse.	4. Replace.
	b) Power Switch (Control Box)	1. Off position.	1. Move to ON position.
		2. Bad contacts.	2. Check for continuity and replace.
	c) Fuse (Control Box)	1. Blown out.	1. Check for short circuit and replace.
	d) Circuit Protect Relay	1. Miswiring.	1. Check power supply voltage and wire properly.
	e) Flush Timer	1. Flushing out.	1. Wait for 15 minutes.
		2. Bad contacts.	2. Check for continuity and replace.
	f) Flush Switch	1. FLUSH position.	1. Move to ICE position.
		2. Bad contacts.	2. Check for continuity and replace.
	g) Transformer	1. Coil winding opened.	1. Replace.
	h) Control Water Valve	1. Coil winding opened.	1. Replace.
	i) Shut-off Valve	1. Closed.	1. Open.
		2. Water failure.	2. Wait till water is supplied.
	j) Plug and Receptacle (Control Box)	1. Disconnected.	1. Connect.
		2. Terminal out of Plug or Receptacle.	2. Insert Terminal back in position.
	k) Spout Control	1. Bin Control Broken.	1. Check Bin Control. Turn OFF Power Switch and turn it ON again.
[2] Water does not stop, and the icemaker will not start.	a) Water Control Relay	1. Contact fused.	1. Replace.
		2. Coil winding opened.	2. Replace.
	b) Float Switch	1. Bad contacts.	1. Check for continuity and replace.
		2. Float does not move freely.	2. Clean or replace.
	c) Flush Water Valve	1. Valve seat clogged and water leaking.	1. Clean or replace.
	d) Hoses	1. Disconnected.	1. Connect.
[3] Water has been supplied, but the icemaker will not start.	a) Water Control Relay	1. Bad contacts.	1. Check for continuity and replace.
	b) Bin Control	1. Bad contacts.	1. Check for continuity and replace.
		2. Activator does not move freely.	2. Clean Axle and its corresponding holes or replace Bin Control.

PROBLEM	POSSIBLE CAUSE		REMEDY
	c) Gear Motor Protector (Circuit Breaker)	1. Tripped.	1. Find out the cause, get rid of it, and press Reset Button on Circuit Breaker.
	d) Gear Motor Relay	1. Coil winding opened.	1. Replace.
		2. Bad contacts.	2. Check for continuity and replace.
	e) Control Timer (Printed Circuit Board)	1. Broken.	1. Replace.
	f) Gear Motor Protect Relay	1. Coil winding opened.	1. Replace.
		2. Bad contacts.	2. Check for continuity and replace.
[4] Gear Motor starts, but Compressor (for Solenoid Valves) will not start (open) or operates (opens) intermittently	a) Pressure Switch [Except F-2000MLH/-C]	1. Dirty Air Filter or Condenser.	1. Clean.
		2. Ambient or condenser water temperature too warm.	2. Get cooler.
		3. Condenser water pressure too low or off. (Water-cooled model only)	3. Check and get recommended pressure.
		4. Water Regulating Valve set too high. (Water-cooled model only)	4. Adjust it lower.
		5. Fan not rotating.	5. See "3. [1] a) Fan Motor."
		6. Refrigerant overcharged.	6. Recharge.
		7. Refrigerant line or components plugged.	7. Clean and replace drier.
		8. Bad contacts.	8. Check for continuity and replace.
		9. Loose connections.	9. Tighten.
	b) X2 Relay on Control Timer	1. Bad contacts.	1. Replace. Check for continuity and replace.
		2. Coil winding opened.	2. Replace Timer.
	c) Starter [Except three phase model and F-2000MLH/-C]	1. Bad contacts.	1. Check for continuity and replace.
		2. Coil winding opened.	2. Replace.
		3. Loose Connections.	3. Tighten.
	d) Start Capacitor or Run Capacitor [Except three phase model and F-2000MLH/-C]	1. Defective.	1. Replace.

PROBLEM	POSSIBLE CAUSE		REMEDY
	e) Compressor [Except F-2000MLH/-C]	1. Loose connections.	1. Tighten.
		2. Motor winding opened or grounded.	2. Replace.
		3. Motor Protector tripped.	3. Find out the cause of overheat or overcurrent.
	f) Power Supply	1. Circuit Ampacity too low.	1. Install a larger-sized conductor.
	g) Solenoid Valve [F-2000MLH/-C only]	1. Continues to leak.	1. Check and replace.
[5] Gear Motor and Compressor start (for F-2000MLH/-C, two Solenoid Valves open), but no ice is produced	a) Refrigerant Line	1. Gas Leaks	1. Check for leaks with a leak detector. Reweld leak, replace drier and charge with refrigerant. The amount of refrigereant is marked on Nameplate or Label.
		2. Refrigerant line clogged.	2. Replace the clogged component.
	b) Shut-off Valves on Condensing Unit [F-2000MLH/-C only]	1. Closed.	1. Open.

2. LOW ICE PRODUCTION

PROBLEM	POSSIBLE CAUSE		REMEDY
[1] Low ice production	a) Refrigerant Line	1. Gas leaks.	1. See "1. [5] a) Refrigerant Line."
		2. Refrigerant line clogged.	2. Replace the clogged component.
		3. Overcharged. [Except F-2000MLH/-C]	3. Recharge.
	b) High-side Pressure Too High	1. Dirty Air Filter or Condenser. [Except F-2000MLH/-C]	1. Clean.
		2. Ambient or condenser water temperature too warm. [Except F-2000MLH/-C]	2. Get cooler.
		3. Condenser water pressure too low or off. [Water-cooled model only]	3. Check and get recommended pressure.
		4. Fan rotating too slow.	4. See "3 [1] a) Fan Motor."
		5. Water Regulating Valve clogged. [Water-cooled model only]	5. Clean.
		6. Condensing unit out of order. [F-2000MLH/-C only]	6. Check condensing unit.
	c) Expansion Valve (not adjustable)	1. Low-side pressure too low.	1. Replace.
		2. Low-side pressure too high.	2. See if Expansion Valve Bulb is mounted properly, and replace the valve if necessary.
	d) Evaporator Pressure Regulator [F-2000MLH/-C only]	1. Evaporator Pressure Regulator set too high or too low.	1. Check Evaporator Pressure Regulator, and adjust or replace it if necessary.

3. OTHERS

PROBLEM	POSSIBLE CAUSE		REMEDY
[1] Abnormal noise	a) Fan Motor	1. Bearing worn out.	1. Replace.
		2. Fan blade deformed.	2. Replace fan blade.
		3. Fan blade does not move freely.	3. Replace.
	b) Compressor [Except F-2000MLH/-C]	1. Bearings worn out, or cylinder valve broken.	1. Replace.
		2. Mounting pad out of position.	2. Reinstall.
	c) Refrigerant Lines	1. Rub or touch lines or other surfaces.	1. Replace.
	d) Gear Motor (Ice Making)	1. Bearing or Gear worn out / damaged.	1. Replace.
	e) Evaporator	1. Too much pressure loss.	1. Replace.
		2. Scale on inside wall of Freezing Cylinder.	2. Remove Auger. Use "SCALE AWAY" or "LIME-A-WAY" solution to clean periodically. If the water is found hard by testing, install a softener.
	f) Evaporator Pressure Regulator [F-2000 MLH/-C only]	1. Low-side pressure too low.	1. Check Evaporator Pressure Regulator, and adjust or replace it if necessary.
[2] Overflow from Reservoir (Water does not stop.)	a) Water Supply	1. Water pressure too high.	1. Install a pressure Reducing Valve.
	b) Control Water Valve	1. Diaphragm does not close.	1. Clean or replace.
	c) Float Switch	1. Bad contacts.	1. Check for continuity and replace.
[3] Gear Motor Protector operates frequently.	a) Power Supply Voltage	1. Too high or too low.	1. Connect the unit to a power supply of proper voltage.
	b) Evaporator Assy	1. Bearings or Auger worn out.	1. Replace Bearing or Auger.
	c) Bin Control	1. Bad contacts.	1. Check for continuity and replace.
		2. Activator does not move freely.	2. Clean Axle and its corresponding holes or replace Bin Control.

VI. REMOVAL AND REPLACEMENT OF COMPONENTS

IMPORTANT

Ensure all components, fasteners and thumbscrews are securely in place after the equipment is serviced.

IMPORTANT

1. The Polyolester (POE) oils used in R-404A units can absorb moisture quickly. Therefore it is important to prevent moisture from entering the system when replacing or servicing parts.
2. Always install a new filter drier every time the sealed refrigeration system is opened.
3. Do not leave the system open for longer than 15 minutes when replacing or servicing parts.

1. SERVICE FOR REFRIGERANT LINES

[a] REFRIGERANT RECOVERY [EXCEPT F-2000MLH/-C]

The icemaker unit is provided with two Refrigerant Access Valves - one on the low-side and one on the high-side line. Using proper refrigerant practices recover the refrigerant from the Access Valves and store it in an approved container. Do not discharge the refrigerant into the atmosphere.

[b] REFRIGERANT RECOVERY [F-2000MLH/-C ONLY]

The refrigerant charge on the F-2000MLH/-C is provided from the external Compressor Rack Assembly. In the event that service is required on the F-2000MLH/-C, close the Suction and Liquid Line Shut-off Valves located at the rear of the unit. Attach the Service Manifold Hoses to the high side, low side and Evaporator Pressure Regulator (E.P.R.) access ports to purge or evacuate the unit. To recharge the system, simply open the Suction and Liquid Line Shut-off Valves after evacuating the F-2000MLH/-C.

[c] EVACUATION AND RECHARGE [R-404A]

1) Attach Charging Hoses, a Service Manifold and a Vacuum Pump to the system. Be sure to connect Charging Hoses to both High-side and Low-side Access Valves.

IMPORTANT

The vacuum level and vacuum pump may be the same as those for current refrigerants. However, the rubber hose and gauge manifold to be used for evacuation and refrigerant charge should be exclusively for POE oils.

2) Turn on the Vacuum Pump. Never allow the oil in the Vacuum Pump to flow backward.

3) Allow the Vacuum Pump to pull down to a 29.9" Hg vacuum. Evacuating period depends on pump capacity.

4) Close the Low-side Valve and High-side Valve on the Service Manifold.

5) Disconnect the Vacuum Pump, and attach a Refrigerant Service Cylinder to the High-side line. Remember to loosen the connection, and purge the air from the Hose. See the Nameplate for the required refrigerant charge. Hoshizaki recommends only virgin refrigerant or reclaimed refrigerant which meets ARI Standard No. 700-88 be used.

6) A liquid charge is recommended for charging an R-404A system. Invert the Service Cylinder. Open the High-side, service manifold Valve.

7) Allow the system to charge with liquid until the pressures balance.

8) If necessary, add any remaining charge to the system through the Low-side. Use a throttling valve or liquid dispensing device to add the remaining liquid charge through the Low-side access port with the unit running.

9) Close the two Refrigerant Access Valves, and disconnect the Hoses and Service Manifold.

10) Cap the Access Valves to prevent a possible leak.

2. BRAZING

DANGER

1. Refrigerant R-404A itself is not flammable at atmospheric pressure and temperatures up to 176° F.

2. Refrigerant R-404A itself is not explosive or poisonous. However, when exposed to high temperatures (open flames) R-404A can be decomposed to form hydrofluoric acid and carbonyl fluoride both of which are hazardous.

3. Always recover the refrigerant and store it in an approved container. Do not discharge the refrigerant into the atmosphere.

4. Do not use silver alloy or copper alloy containing Arsenic.

5. Do not use R-404A as a mixture with pressurized air for leak testing. Refrigerant leaks can be detected by charging the unit with a little refrigerant, raising the pressure with nitrogen and using an electronic leak detector.

Note: All brazing-connections inside the bin are clear-paint coated. Sandpaper the brazing connections before unbrazing the components. Use a good abrasive cloth to remove coating.

3. REMOVAL AND REPLACEMENT OF COMPRESSOR - EXCEPT F-2000MLH/-C

IMPORTANT

Always install a new Drier every time the sealed refrigeration system is opened. Do not replace the Drier until after all other repair or replacements have been made.

1) Turn off the power supply, and remove the panels.

2) Remove the terminal Cover on the Compressor, and disconnect the Compressor Wiring.

3) Recover the refrigerant and store it in an approved container, if required by an applicable law.

4) Remove the Discharge, Suction, and Access Pipes from the Compressor using brazing equipment.

WARNING

When repairing a refrigerant system, be careful not to let the burner flame contact any electrical wires or insulation.

5) Remove the Bolts and Rubber Grommets.

6) Slide and remove the Compressor. Unpack the new Compressor package. Install the new Compressor.

7) Attach the Rubber Grommets of the prior Compressor.

8) Sandpaper the Discharge, Suction and Access Pipes.

9) Place the Compressor in position, and secure it using the Bolts.

10) Remove plugs from the Discharge, Suction and Access Pipes.

11) Braze the Access, Suction and Discharge lines (Do not change this order), while purging with nitrogen gas flowing at the pressure of 3 - 4 PSIG.

12) Install the new Drier.

13) Check for leaks using nitrogen gas (140 PSIG) and soap bubbles.

14) Evacuate the system, and charge it with refrigerant. See the Nameplate for the required refrigerant charge and type.

15) Connect the Terminals to the Compressor, and replace the Terminal Cover in its correct position.

16) Replace the panels in their correct position, and turn on the power supply.

4. REMOVAL AND REPLACEMENT OF DRIER - EXCEPT F-2000MLH/-C

IMPORTANT

Always install a new Drier every time the sealed refrigeration system is opened. Do not replace the Drier until after all other repair or replacements have been made.

1) Turn off the power supply, and remove the panels.

2) Recover the refrigerant and store it in an approved container, if required by an applicable law.

3) Remove the Drier using brazing equipment.

4) Install the new Drier with the arrow on the Drier in the direction of the refrigerant flow. Use nitrogen gas at the pressure of 3 - 4 PSIG when brazing the tubings.

5) Check for leaks using nitrogen gas (140 PSIG) and soap bubbles.

6) Evacuate the system, and charge it with refrigerant. For the water-cooled models, see the Nameplate for the required refrigerant charge and type. For the remote air-cooled models, see the label on the Control Box.

7) Replace the panels in their correct position, and turn on the power supply.

5. REMOVAL AND REPLACEMENT OF EXPANSION VALVE

IMPORTANT

Sometimes moisture in the refrigerant circuit exceeds the Drier capacity and freezes up at the Expansion Valve. Always install a new Drier every time the sealed refrigeration system is opened. Do not replace the Drier until after all other repairs or replacements have been made.

1) Turn off the power supply, and remove the panels.

2) For F-2000MLH/-C, close the Shut-off Valves to the Compressor Rack Assembly.

3) Recover the refrigerant and store it in an approved container, if required by an applicable law.

4) Remove the Expansion Valve Bulb at the Evaporator outlet.

5) Remove the Expansion Valve Cover, and remove the Expansion Valve using brazing equipment.

6) Braze the new Expansion Valve with nitrogen gas flowing at the pressure of 3 - 4 PSIG.

WARNING

Always protect the valve body by using a damp cloth to prevent the valve from overheating. Do not braze with the valve body exceeding 250°F.

7) Install the new Drier [except F-2000MLH/-C].

8) Check for leaks using nitrogen gas (140 PSIG) and soap bubbles.

9) Evacuate the system. Charge it with refrigerant [except F-2000MLH/-C]. For the water-cooled models, see the Nameplate for the required refrigerant charge and type. For the remote air-cooled models, see the label on the Control Box.

10) Attach the Bulb to the suction line and make it level. Be sure to secure the Bulb using a band and to insulate it.

11) Place the new set of Expansion Valve Covers in position.

12) For F-2000MLH/-C, open the Shut-off Valves to the Compressor Rack Assembly.

13) Replace the panels in their correct position, and turn on the power supply.

6. REMOVAL AND REPLACEMENT OF WATER REGULATING VALVE - WATER-COOLED MODELS ONLY.

IMPORTANT

Always install a new Drier every time the sealed refrigeration system is opened. Do not replace the Drier until after all other repair or replacements have been made.

1) Turn off the power supply, remove the panels, and close the Water Supply Line Shut-off Valve.

2) Recover the refrigerant and store it in an approved container.

3) Disconnect the Capillary Tube using brazing equipment.

4) Disconnect the Flare-connections of the valve.

5) Remove the screws and the valve from the Bracket.

6) Install the new valve, and braze the Capillary Tube.

7) Install the new Drier.

8) Check for leaks using nitrogen gas (140 PSIG) and soap bubbles.

9) Connect the Flare-connections.

10) Evacuate the system, and charge it with refrigerant. See the Nameplate for the required refrigerant charge and type.

11) Open the Water Supply Line Shut-off Valve, and turn on the power supply.

12) Check for water leaks.

13) See “IV. 1. ADJUSTMENT OF WATER REGULATING VALVE.” If necessary, adjust the valve.

14) Replace the panels in their correct position.

7. REMOVAL AND REPLACEMENT OF CONDENSING PRESSURE REGULATOR (C.P.R.) - REMOTE AIR-COOLED MODELS ONLY

IMPORTANT

Always install a new Drier every time the sealed refrigeration system is opened. Do not replace the Drier until after all other repairs or replacements have been made.

1) Turn off the power supply.

2) Remove the panels from the remote condenser unit.

3) Recover the refrigerant and store it in an approved container.

4) Remove the C.P.R. using brazing equipment.

6) Braze the new C.P.R. with nitrogen gas flowing at the pressure of 3 - 4 PSIG.

WARNING

Always protect the valve body by using a damp cloth to prevent the valve from overheating. Do not braze with the valve body exceeding 250°F.

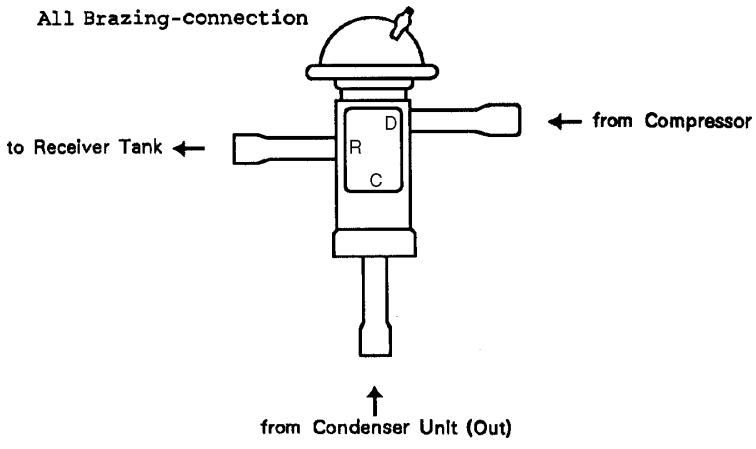
7) Install the new Drier in the icemaker.

8) Check for leaks using nitrogen gas (140 PSIG) and soap bubbles.

9) Evacuate the system. Charge it with refrigerant. See the label on the Control Box in the icemaker.

9) Replace the panels in their correct position.

10) Turn on the power supply



8. REMOVAL AND REPLACEMENT OF EVAPORATOR ASSEMBLY

1) Turn off the power supply. For F-2000MLH/-C, close the Shut-off Valves to the Compressor Rack Assembly.

2) Remove the panels.

3) Move the Flush Switch to the “FLUSH” position.

4) Turn on the power supply and drain out all water from the water line.

5) Turn off the power supply.

6) Remove the Band connecting the Spout with the Chute Assembly.

7) Remove the three Thumbscrews and take off the Spout from the Evaporator.

CUTTER

8) Remove the Bolt and lift off the Cutter.

9) Remove the Rubber O-ring and the Nylon Ring at the top of the Evaporator.

EXTRUDING HEAD

10) Remove the three Socket Head Cap Screws and lift off the Extruding Head.

11) Replace the Bearing inside the Extruding Head if it exceeds the wear tolerance of 0.02” or is scratched.

Note: Replacing the Bearing requires a bearing press adaptor. If it is not available, replace the whole Extruding Head.

AUGER

12) Lift off the Auger. If the area in contact with the Bearing is worn out or the Blade scratched, replace the Auger.

EVAPORATOR

Note: Skip the following steps 10) through 12) when the Evaporator does not need replacement.

13) Recover the refrigerant and store it in an approved container, if required by an applicable law.

IMPORTANT

Always install a new Drier every time the sealed refrigeration system is opened. Do not replace the Drier until after all other repair or replacements have been made.

14) Remove the Bulb of the Expansion Valve.

15) Disconnect the brazing-connections of the Expansion Valve and the Copper Tube-Low Side from the Evaporator, using brazing equipment.

16) Remove the two Truss Head Machine Screws and the Bracket securing the Evaporator.

17) Disconnect the three Hoses from the Evaporator.

18) Remove the four Socket Head Cap Screws securing the Evaporator with the Bearing-Lower.

19) Lift off the Evaporator.

BEARING-LOWER AND MECHANICAL SEAL

20) The Mechanical Seal consists of two parts. One moves along with the Auger, and the other is fixed on the Bearing-Lower. If the contact surfaces of these two parts are worn or scratched, the Mechanical Seal may cause water leaks and should be replaced.

21) Remove the O-ring on the Bearing-Lower.

22) Remove the four Bolts and the Bearing-Lower from the Gear Motor. Replace the Bearing inside the Bearing-Lower, if it exceeds the wear tolerance of 0.02” or is scratched.

Note: Replacing the Bearing requires a bearing press adaptor. If it is not available, replace the whole Bearing-Lower.

GEAR MOTOR

23) Remove the Coupling-Spline on the Gear Motor Shaft.

24) Remove the Barrier on the top of the Gear Motor.

25) Remove the three Socket Head Cap Screws securing the Gear Motor.

26) Assemble the removed parts in the reverse order of the above procedure.

WARNING

Be careful not to scratch the surface of the O-ring, or it may cause water leaks. Handle the Mechanical Seal with care not to scratch nor to contaminate its contact surface.

27) When replacing the Evaporator;

(a) Braze the new Evaporator with nitrogen gas flowing at a pressure of 3 - 4 PSIG.

(b) Replace the Drier [except F-2000MLH/-C]

(c) Check for leaks using nitrogen gas (140 PSIG) and soap bubbles.

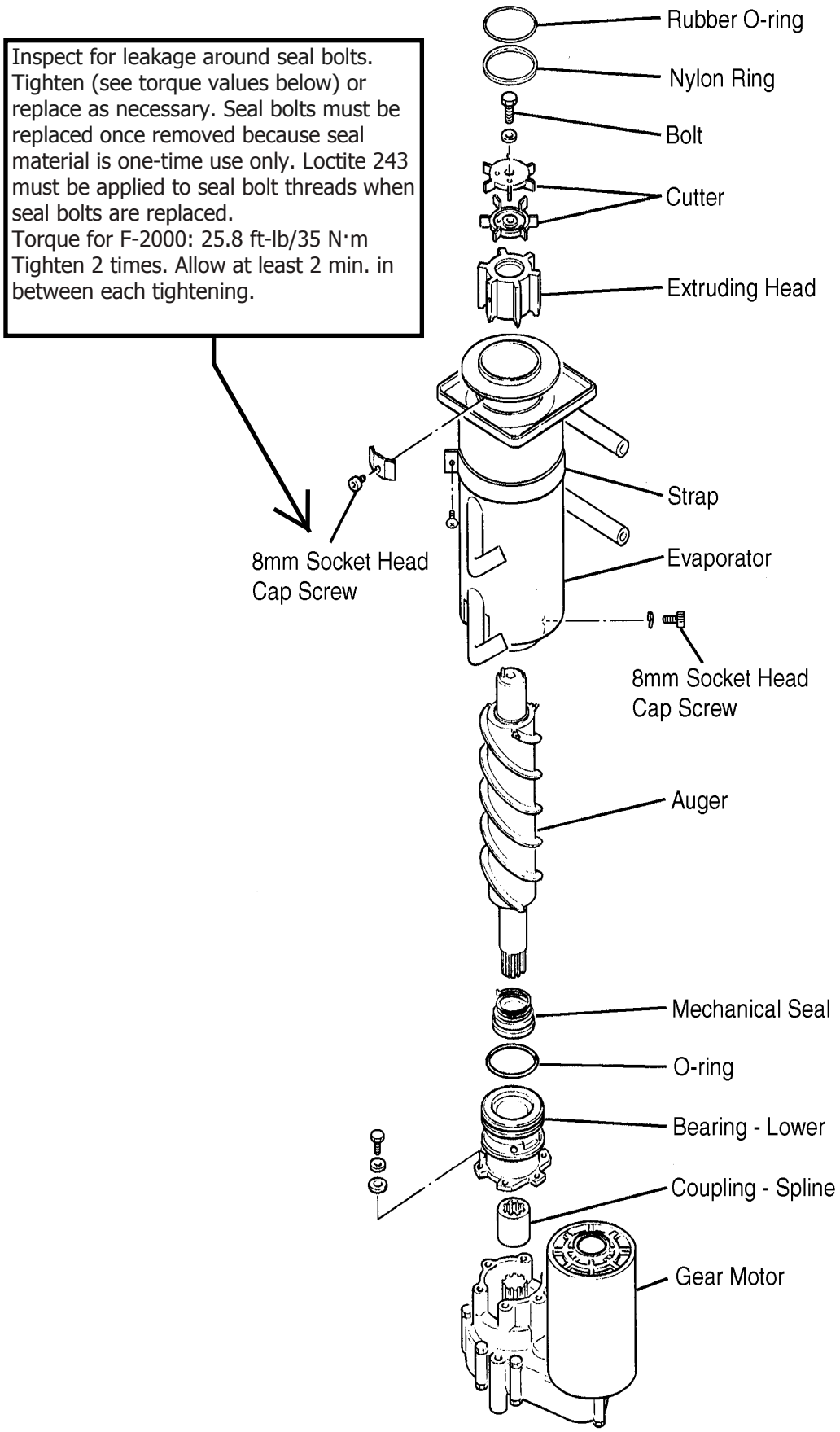
(d) Evacuate the system. Charge it with refrigerant [except F-2000MLH/-C]. For the water-cooled models, see the Nameplate for required refrigerant charge and type. For the remote air-cooled models, see the label on the Control Box.

28) Move the Flush Switch to the “ICE” position.

29) Replace the panels in their correct position.

30) For F-2000MLH/-C, open the Shut-off Valves to the Compressor Rack Assembly.

31) Turn on the power supply.


Inspect for leakage around seal bolts. Tighten (see torque values below) or replace as necessary. Seal bolts must be replaced once removed because seal material is one-time use only. Loctite 243 must be applied to seal bolt threads when seal bolts are replaced.
Torque for F-2000: 25.8 ft-lb/35 N·m
Tighten 2 times. Allow at least 2 min. in between each tightening.
Rubber O-ring
Nylon Ring
Bolt
Cutter
Extruding Head
Strap
8mm Socket Head Cap Screw
Evaporator
8mm Socket Head Cap Screw
Auger
Mechanical Seal
O-ring
Bearing - Lower
Coupling - Spline
Gear Motor

9. REMOVAL AND REPLACEMENT OF FAN MOTOR

1) Turn off the power supply and remove the panels.

2) Remove the wire connectors from the Fan Motor leads.

3) Remove the Fan Motor Bracket and Fan Motor.

4) Install the new Fan Motor.

5) Replace the panels in their correct position, and turn on the power supply.

10. REMOVAL AND REPLACEMENT OF CONTROL WATER VALVE

1) Turn off the power supply, remove the panels and close the Water Supply Line Shut-off Valve.

2) Disconnect the terminals from the Control Water Valve.

3) Loosen the Fitting Nut on the Control Water Valve Inlets, and remove the Control Water Valve.

4) Remove the Water Supply Hose from the Control Water Valve.

5) Install the new Control Water Valve.

6) Assemble the removed parts in the reverse order of the above procedure.

7) Open the Water Supply Line Shut-off Valve.

8) Check for water leaks.

9) Replace the panels in their correct position, and turn on the power supply.

11. REMOVAL AND REPLACEMENT OF FLUSH WATER VALVE

1) Turn off the power supply, remove the panels and close the Water Supply Line Shut-off Valve.

2) Remove the Clamp and disconnect the Flush Water Valve.

Note: Water may still remain inside the Evaporator. Be sure to drain the water into the Drain Pan.

3) Disconnect the Terminals from the Flush Water Valve.

4) Remove the Flush Water Valve from the Frame or Bracket.

5) Remove the Drain Pipe from the Flush Water Valve.

6) Connect the Drain Pipe to the new Flush Water Valve, and place the valve in position.

7) Connect the Hose to the Flush Water Valve and secure it with the Clamp.

8) Pour water into the Reservoir, and check for water leaks on the Flush Water Valve.

9) Open the Water Supply Line Shut-off Valve, and turn on the power supply.

10) Move the Flush Switch to the “ICE” position.

11) Check for water leaks.

12) Move the Flush Switch to the “FLUSH” position, and make sure water is flushing.

13) Move the Flush Switch to the “ICE” position.

14) Replace the panels in their correct position.

12. REMOVAL AND REPLACEMENT OF SOLENOID VALVE - F-2000MLH/-C ONLY

1) Turn off the power supply.

2) Close the Shut-off Valves to the Compressor Rack Assembly.

3) Remove the panels.

4) Recover the refrigerant and store it in an approved container.

5) Remove the screw and the Solenoid.

6) Disconnect the Solenoid Valve using brazing equipment.

7) Install the new valve.

WARNING

Always protect the valve body by using a damp cloth to prevent the valve from overheating. Do not braze with the valve body exceeding 250°F.

8) Check for leaks using nitrogen gas (140 PSIG) and soap bubbles.

9) Evacuate the system.

10) Cut the leads of the Solenoid allowing enough lead length to reconnect using closed end connectors.

11) Connect the new Solenoid leads.

12) Attach the Solenoid to the valve body, and secure it with a screw.

13) Replace the panels in their correct position.

14) Open the Shut-off Valves to the Compressor Rack Assembly.

15) Turn on the power supply.

13. REMOVAL AND REPLACEMENT OF EVAPORATOR PRESSURE REGULATOR (E.P.R.) - F-2000MLH/-C ONLY

1) Turn off the power supply.

2) Close the Shut-off Valves to the Compressor Rack Assembly.

3) Remove the panels.

4) Recover the refrigerant and store it in an approved container.

5) Remove the E.P.R. using brazing equipment.

6) Braze the new E.P.R. with nitrogen gas flowing at a pressure of 3 - 4 PSIG.

WARNING

Always protect the E.P.R. by using a damp cloth to prevent the E.P.R. from overheating. Do not braze with the E.P.R. exceeding 250°F.

7) Insert the Valve Core into the Access Valve.

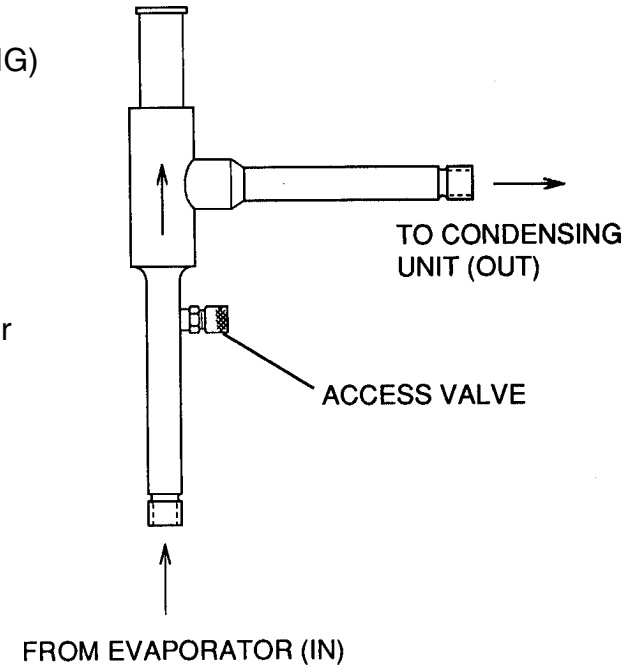
8) Check for leaks using nitrogen gas (140 PSIG) and soap bubbles.

9) Evacuate the system.

10) Replace the panels in their correct position.

11) Open the Shut-off Valves to the Compressor Rack Assembly.

12) Turn on the power supply.



14. REMOVAL AND REPLACEMENT OF BY-PASS VALVE - F-2000M_H/-C SERIES ONLY [EXCEPT F-2000MLH/-C]

CAUTION

Always use a capillary tube of the same diameter and length when replacing the by-pass lines; otherwise the performance may be reduced.

IMPORTANT

Always install a new Drier every time the sealed refrigeration system is opened. Do not replace the Drier until after all other repair, or replacements have been made.

1) Turn off the power supply.

2) Remove the Front Panel.

3) Recover the refrigerant and store it in an approved container.

4) Remove the screw and the Solenoid.

5) Disconnect the By-pass Valve using brazing equipment.

6) Install the new valve.

CAUTION

Always protect the valve body by using a damp cloth to prevent the valve from overheating. Do not braze the valve body exceeding 250°F.

7) Install the new Drier.

8) Check for leaks using nitrogen gas (140 PSIG) and soap bubbles.

9) Evacuate the system, and charge it with refrigerant. For the water-cooled models, see the Nameplate for the required refrigerant charge and type. For the remote air-cooled models, see the label on the Control Box.

10) Cut the leads of the Solenoid allowing enough lead length to reconnect using closed end connectors.

11) Connect the new Solenoid leads.

12) Attach the Solenoid to the valve body, and secure it with a screw.

13) Replace the panels in their correct position.

14) Turn on the power supply.

VII. CLEANING AND MAINTENANCE INSTRUCTIONS

IMPORTANT

Ensure all components, fasteners and thumbscrews are securely in place after any maintenance or cleaning is done to the equipment.

1. PREPARING THE ICEMAKER FOR LONG STORAGE

WARNING

When shutting off the icemaker for an extended time, drain out all water from the water line and remove the ice from the Storage Bin. The Storage Bin should be cleaned and dried. Drain the icemaker to prevent damage to the water supply line at sub-freezing temperatures, using air or carbon dioxide. Shut off the icemaker until the proper ambient temperature is resumed.

[Remote Air-cooled Models]

1) Run the icemaker with the Water Supply Line Shut-off Valve closed.

2) Open the Drain Valve and blow out the water inlet line by using air pressure.

3) Turn off the power supply.

4) Remove the Front Panel.

5) Move the Flush Switch on the Control Box to the “FLUSH” position.

6) Turn on the power supply, and then drain out all water from the water line.

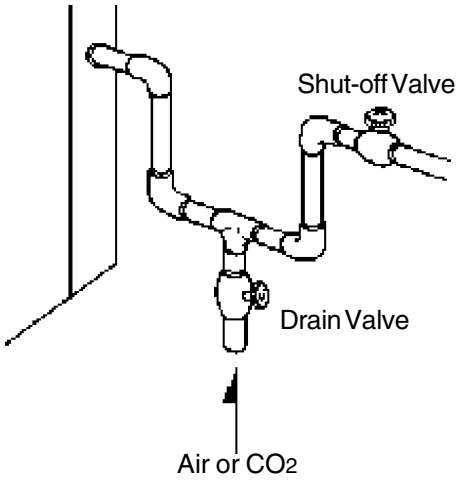
7) Turn off the power supply.

8) Turn off the Power Switch on the Control Box.

9) Replace the Front Panel in its correct position.

10) Close the Drain Valve.

11) Remove all ice from the Storage Bin, and clean the bin.



[Water-cooled Models]

1) Turn off the power supply and wait for 3 minutes.

2) Turn on the power supply and wait for 20 seconds.

3) Close the Water Supply Line Shut-off Valve.

4) Open the Drain Valve and quickly blow the water supply line from the Drain Valve to drain water in the Condenser.

5) Follow the above steps 3) through 11) in [Remote Air-cooled Models].

2. CLEANING INSTRUCTIONS

IMPORTANT

Ensure all components, fasteners and thumbscrews are securely in place after any maintenance or cleaning is done to the equipment.

WARNING

1. HOSHIZAKI recommends cleaning this unit at least once a year. More frequent cleaning, however, may be required in some existing water conditions.

2. To prevent injury to individuals and damage to the icemaker, do not use ammonia type cleaners.

3. Always wear liquid-proof gloves for safe handling of the cleaning and sanitizing solution. This will prevent irritation in case the solution comes into contact with skin.

<STEP 1>

Dilute the solutions with water as follows.

Cleaning solution: 4.8 fl. oz. of recommended cleaner Hoshizaki “Scale Away” or “LIME-A-WAY” (Economics Laboratory, Inc.) with 0.8 gal. of water. This is a minimum amount. Make more solution, if necessary.

Sanitizing solution: 2.5 fl. oz. of a 5.25 % sodium hypochlorite solution (chlorine bleach) with 5 gal. of water.

IMPORTANT

For safety and maximum effectiveness, use the solution immediately after dilution.

<STEP 2>

Use the cleaning solution to remove lime deposits in the water system.

1) Turn off the power supply.

2) Close the Water Supply Line Shut-off Valve.

3) Remove all ice from the Storage Bin.

4) Remove the Front Panel and the Top Panel.

5) Move the Flush Switch to the “FLUSH” position.

6) Turn on the power supply and drain out all water from the water line.

7) Turn off the power supply.

8) Remove the Control Water Valve by releasing the Fitting Nut. Do not lose the Packing.

9) Remove the Cover of the Reservoir.

10) Fill the Reservoir with the cleaning solution.

11) Replace the Cover of the Reservoir and the Control Water Valve in their correct positions.

Note: This unit is designed to start operating when the Reservoir is filled with water.

12) Move the Flush Switch to the “ICE” position.

13) Replace the Top Panel and the Front Panel in their correct positions.

14) Allow the icemaker to sit for about 10 minutes before the operation. Then, turn on the power supply, and make ice using the solution until the icemaker stops icemaking.

15) Remove the Front Panel.

16) Move the Flush Switch to the “FLUSH” position to drain the cleaning solution.

17) Move the Flush Switch to the “ICE” position.

18) Replace the Front Panel in its correct position.

<STEP 3>

Use 3/4 gal. of the sanitizing solution to sanitize the icemaker.

1) Close the Water Supply Line Shut-off Valve.

2) Remove the Control Water Valve by releasing the Fitting Nut.

3) Remove the Cover of the Reservoir.

4) Fill the Reservoir with the sanitizing solution.

5) Replace the Cover of the Reservoir and the Control Water Valve in their correct positions.

6) Move the Flush Switch to the “ICE” position.

7) Replace the Top Panel and the Front Panel in their correct positions.

8) Allow the icemaker to sit for about 10 minutes before the operation. Then, turn on the power supply, and make ice using the solution until the icemaker stops icemaking.

9) Remove the Front Panel.

10) Move the Flush Switch to the “FLUSH” position to drain the sanitizing solution.

11) Move the Flush Switch to the “ICE” position.

12) Replace the Front Panel in its correct position.

13) Open the Water Supply Line Shut-off Valve, and supply water to the Reservoir.

14) Turn off the power supply when the Gear Motor starts.

15) Drain out all water from the water line. See 4) through 7) in STEP 2.

16) Move the Flush Switch to the “ICE” position.

<STEP 4>

Use the sanitizing solution to sanitize removed parts.

1) Remove the Thumbscrew securing the Bin Control Switch on the Chute Assembly.

2) Remove the Band connecting the Spout with the Chute Assembly, and take out the Chute Assembly from the icemaker.

3) Remove the Gasket at the bottom of the Ice Chute and another at the Spout.

4) Remove the three Ties and the Insulation of the Chute.

5) Remove the six Wing Nuts and two Baffles.

IMPORTANT

When installing the Baffles, make sure that the bent surface (the one without the studs) faces the Activator so that the bent surface can guide the ice to the center of the Activator.

6) Remove the two Thumbscrews, the Plate and the Gasket at the top of the Ice Chute, and then remove the Bin Control Assembly by sliding it slightly toward the Spout and lifting it off.

7) Disassemble the Bin Control Assembly by removing the two Snap Pins, Shaft and Activator.

8) Remove the two Thumbscrews, Spout Switch Cover, Spout Switch and Actuator.

9) Remove the three Thumbscrews and the Spout.

10) Remove the Rubber O-ring and Nylon O-ring at the top of the Cylinder.

11) Soak or wipe the removed parts.

12) Rinse these parts thoroughly.

IMPORTANT

If the solution is left on these parts, they will rust.

13) Replace the removed parts and the panels.

14) Turn on the power supply and run the icemaker.

15) Turn off the power supply after 30 minutes.

16) Pour warm water into the Storage Bin to melt all ice, and then clean the Bin Liner with the solution.

17) Flush out any solution from the Storage Bin.

18) Turn on the power supply and start the automatic icemaking process.

IMPORTANT

1. After cleaning, do not use ice made from the sanitizing solution. Be careful not to leave any solution in the Storage Bin.

2. Follow carefully any instructions provided with the bottles of cleaning or sanitizing solution.

3. Never run the icemaker when the Reservoir is empty.

3. MAINTENANCE INSTRUCTIONS

IMPORTANT

1. This icemaker must be maintained individually, referring to the instruction manual and labels provided with the icemaker.

2. To have the optimum performance of this icemaker, the following consumable parts need periodic inspection, maintenance and replacement:

   Extruding Head
   Housing
   Gear Motor
   Auger
   Mechanical Seal

   These parts should be inspected at least once a year or every 10,000 hours of operation. Their service life, however, depends on water quality and environment. More frequent inspection and maintenance are recommended.

   Consult with your local distributor about inspection and maintenance service. To obtain the name and phone number of your local distributor, call Hoshizaki Technical Support at 1-800-233-1940 in the USA.

1) Stainless Steel Exterior

To prevent corrosion, wipe the exterior occasionally with a clean and soft cloth. Use a damp cloth containing a neutral cleaner to wipe off oil or dirt build up.

2) Storage Bin and Scoop

- Wash your hands before removing ice. Use the plastic scoop provided (Bin accessory).
- The Storage Bin is for ice use only. Do not store anything else in the bin.
- Keep the scoop clean. Clean using a neutral cleaner and rinse thoroughly.
- Clean the bin liner using a neutral cleaner. Rinse thoroughly after cleaning.

3) Condenser (Except water-cooled model)

Check the Condenser once a year, and clean if required by using a brush or vacuum cleaner. More frequent cleaning may be required depending on the location of the icemaker.