MANITOWOC ICE
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Service Bulletin

Subject: IP0450 Technical Specifications

AIR-COOLED & WATER-COOLED MODELS

60 HZ ONLY

GENERAL SPECIFICATIONS			
Operating Temperatures	Minimum 35°F (2°C) Maximum 110°F (43°C)		
Refrigerant Charge (R-290)	**Air-cooled Models** 5.9 oz (170 g)	**Water-cooled Models** 5.3 oz (150 g)	
Electrical 115V/60 Hz/1 Ph	**Air-cooled Models** Min Circuit Amps - 11.9 amps Max Fuse Size - 20 amp	**Water-cooled Models** Min Circuit Amps - 11.2 amps Max Fuse Size - 15 amp	
Energy Use Kwh / 100 lbs	**Air-cooled Models** Half Dice: 5.8 Kwh Dice: 5.5 Kwh	**Water-cooled Models** Half Dice: 4.8 Kwh Dice: 4.9 Kwh	
Ice Making Water Inlet	Connection Size - 3/8” (10 mm) FPT (Female Pipe Thread)	Water Temperature - Minimum 40°F (4°C) Maximum 90°F (32°C)	Water Pressure - Minimum 20 psig (1.3 bar) Water Pressure -Maximum 80 psig (5.5 bar)
Ice Making Water Drain	Connection Size - 1/2” (13 mm) FPT (Female Pipe Thread)		
Condenser Water Inlet IP0450W Models Only	Connection Size - 3/8” (10 mm) FPT (Female Pipe Thread)	Water Temperature - Minimum 40°F (4°C) Maximum 90°F (32°C)	Water Pressure - Minimum 20 psi (1.3 bar) Water Pressure - Maximum 275 psi (18.9 bar)
Condenser Water Drain IP0450W Models Only	Connection Size - 3/8” (10 mm) FPT (Female Pipe Thread)		
Potable Water Use	14.7 gallons per 100 lbs of ice (55.6 liters per 45.5 kg of ice)		
Heat of Rejection	**Air Conditioning** 8800 BTU/hr (2219 kcal/hr)	**Peak** 10570 BTU/hr (2665 kcal/hr)	
Fan Cycle Control Settings	Cut-in (closed)- 200 psig ±5 / 13.8 bar ±0.3	Cut-out (open) - 150 psig ±5 / 10.3 bar ±0.3	
High Pressure Settings	Cut-in (closed) - 250 psig ±5 / 17.2 bar ±0.3	Cut-out (open) - 350 psig ±5 / 24.1 bar ±0.3	
Dimensions	**Height**	**Width**	**Depth**
	21.5 in (546.1 mm)	30 in (762 mm)	24.5 in (622.3 mm)
Clearances	**Top**	**Side**	**Back**
	8 in (203.2 mm)	8 in (203.2 mm)	5 in (127.2 mm)

Self Contained Air-cooled Ice Machines

Cycle Times

Freeze Time + Harvest Time = Total Cycle Time

Air Temperature Around the Unit	Freeze Time (Minutes) Water Temperature 50°F 10°C	70°F 21°C	90°F 32°C	Harvest Time
70°F 21°C	8.9 - 10.4	9.9 - 11.6	10.9 - 12.7	1.0 - 2.5
80°F 27°C	9.9 - 11.6	10.9 - 12.7	11.9 - 13.9	
90°F 32°C	10.7 - 12.5	12.1 - 14.1	13.1 - 15.3	
100°F 38°C	11.7 - 13.7	13.3 - 15.5	14.6 - 16.9	
110°F 43°C	13.2 - 15.1	14.1 - 16.5	15.1 -17.3	

Cycle times and pressures vary with operating condition.
Production and cycle times are for dice cube - Half dice cube cycle times can be 2 - 3 minutes faster, depending on water and ambient temperature

24 Hour Ice Production

Air Temperature Around the Unit	Water Temperature 50°F 10°C	70°F 21°C	90°F 32°C
70°F 21°C	470 lbs (213 kgs)	430 lbs (195 kgs)	395 lbs (179 kgs)
80°F 27°C	430 lbs (213 kgs)	395 lbs (179 kgs)	365 lbs (166 kgs)
90°F 32°C	400 lbs (181 kgs)	360 lbs (163 kgs)	333 lbs (152 kgs)()
100°F 38°C	370 lbs (160 kgs)	330 lbs (150 kgs)	305 lbs (138 kgs)
110°F 43°C	335 lbs (152 kgs)	330 lbs (141 kgs)	295 lbs (134 kgs)

Ice slab weight of one harvest cycle = 3.4 lbs to 3.9 lbs (1.5 kgs to 1.8 kgs).

Operating Pressures - Freeze Cycle

Air Temperature Around the Unit	Discharge Pressure psig (bar)	Suction Pressure psig (bar)
50°F 10°C	135 - 200 psig (9.3 - 13.8 bar)	12 - 40 psig (0.8 - 2.8 bar)
70°F 21°C	145 - 205 psig (10.0 - 14.1 bar)	15 - 45 psig (1.0 - 3.1 bar)
80°F 27°C	155 - 210 psig (10.7 - 14.5 bar)	16 - 48 psig (1.1 - 3.3 bar)
90°F 32°C	195 - 220 psig (13.4 - 15.2 bar)	18 - 48 psig (1.2 - 3.3 bar)
100°F 38°C	230 - 270 psig (15.9 - 18.6 bar)	20 - 50 psig (1.4 - 3.4 bar)
110°F 43°C	240 - 280 psig (16.5 - 19.3 bar)	20 - 50 psig (1.4 - 3.4 bar)

Operating Pressures - Harvest Cycle

Air Temperature Around the Unit	Discharge Pressure psig (bar)	Suction Pressure psig (bar)
50°F 10°C	80 - 90 psig (5.5 - 6.2 bar)	50 - 70 psig (3.4 - 4.8 bar)
70°F 21°C	90 - 105 psig (6.2 - 7.2 bar)	65 - 80 psig (4.5 - 5.5 bar)
80°F 27°C	90 - 105 psig (6.2 - 7.2 bar)	70 - 85 psig (4.8 - 5.9 bar)
90°F 32°C	95 - 110 psig (6.5 - 7.6 bar)	70 - 85 psig (4.8 - 5.9 bar)
100°F 38°C	135 - 150 psig (9.3- 10.3 bar)	90 - 115 psig (6.2 - 7.9 bar)
110°F 43°C	136 - 155 psig (9.3 - 10.7 bar)	90 - 120 psig (6.2 - 8.3 bar)

Self Contained Water-cooled Ice Machines

Cycle Times

Freeze Time + Harvest Time = Total Cycle Time

Air Temperature Around the Unit	Freeze Time (Minutes)			Harvest Time
	Water Temperature			
	50°F 10°C	70°F 21°C	90°F 32°C	
70°F 21°C	11.7 - 13.5	13.9 - 15.9	15.9 - 18.2	1.0 - 2.5
80°F 27°C	12.3 - 14.1	14.5 - 16.5	16.4 - 18.7	
90°F 32°C	12.4 - 14.3	15.1 - 17.2	16.9 - 19.3	
100°F 38°C	12.6 - 14.4	15.5 - 17.7	17.4 - 19.9	
110°F 43°C	12.9 - 14.8	15.9 - 18.2	18.0 -20.5	

Cycle times and pressures vary with operating condition.
Production and cycle times are for dice cube - Half dice cube cycle times can be 2 - 3 minutes faster, depending on water and ambient temperature

24 Hour Ice Production

Air Temperature Around the Unit	Water Temperature		
	50°F 10°C	70°F 21°C	90°F 32°C
70°F 21°C	500 lbs (227 kgs)	430 lbs (195 kgs)	380 lbs (172 kgs)
80°F 27°C	480 lbs (218 kgs)	415 lbs (188 kgs)	370 lbs (168 kgs)
90°F 32°C	475 lbs (215 kgs)	400 lbs (181 kgs)	360 lbs (163 kgs)
100°F 38°C	470 lbs (213 kgs)	390 lbs (177 kgs)	350 lbs (159 kgs)
110°F 43°C	460 lbs (209 kgs)	380 lbs (172 kgs)	340 lbs (154 kgs)

Ice slab weight of one harvest cycle = 3.4 lbs to 3.9 lbs (1.5 kgs to 1.8 kgs).

Operating Pressures - Freeze Cycle

Air Temperature Around the Unit	Discharge Pressure psig (bar)	Suction Pressure psig (bar)
50°F 10°C	165 - 185 psig (11.4 - 12.8 bar)	16 - 40 psig (1.1 - 2.8 bar)
70°F 21°C	165 - 185 psig (11.4 - 12.8 bar)	17 - 40 psig (1.2 - 2.8 bar)
80°F 27°C	165 - 185 psig (11.4 - 12.8 bar)	18 - 45 psig (1.2 - 3.1 bar)
90°F 32°C	165 - 185 psig (11.4 - 12.8 bar)	18 - 45 psig (1.2 - 3.1 bar)
100°F 38°C	170 - 190 psig (11.7 - 13.1 bar)	20 - 45 psig (1.4 - 3.1 bar)
110°F 43°C	175 - 200 psig (12.1 - 13.8 bar)	20 - 48 psig (1.4 - 3.3 bar)

Operating Pressures - Harvest Cycle

Air Temperature Around the Unit	Discharge Pressure psig (bar)	Suction Pressure psig (bar)
50°F 10°C	90 - 100 psig (6.2 - 6.9 bar)	75 - 85 psig (5.2 - 5.9 bar)
70°F 21°C	90 - 100 psig (6.2 - 6.9 bar)	76 - 85 psig (5.2 - 5.9 bar)
80°F 27°C	95 - 110 psig (6.5 - 7.6 bar)	75 - 87 psig (5.2 - 6.0 bar)
90°F 32°C	95 - 110 psig (6.5 - 7.6 bar)	80 - 90 psig (5.5 - 6.2 bar)
100°F 38°C	135 - 150 psig (6.5- 7.6 bar)	81 - 90 psig (5.5 - 6.2 bar)
110°F 43°C	100 - 120 psig (6.9 - 8.3 bar)	85 - 95 psig (5.9 - 6.5 bar)

Condenser Water Usage

Ice Production	Water Usage
100 lbs (45.5 kgs)	140 gallons (530 liters)

Water Regulating Valve Set Point: 170 psig (11.7 bar).