MANITOWOC ICE
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Service Bulletin

Subject: IP0420 Technical Specifications

AIR-COOLED & WATER-COOLED MODELS

60 HZ ONLY

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 - 12.0 amps Max Fuse Size - 20 amp	**Water-cooled Models** Min Circuit Amps - 11.3 amps Max Fuse Size - 15 amp	
Energy Use Kwh / 100 lbs	**Air-cooled Models** Half Dice: 5.9 Kwh Dice: 5.94 Kwh	**Water-cooled Models** Half Dice: 4.8 Kwh Dice: 5.1 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 IP0420W 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 IP0420W Models Only	Connection Size - 3/8" (10 mm) FPT (Female Pipe Thread)		
Potable Water Use	14.0-14.8 gallons per 100 lbs of ice (53-56 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)	22 in (546.1 mm)	24.5 in (546.1 mm)
Clearances	**Top**	**Sides**	**Back**
	12 in (305 mm)	12 in (305 mm)	5 in (127 mm)

Self Contained Air-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	9.9 - 10.4	10.4 - 12.2	13.1 -15.3	1.0 - 2.5
80°F 27°C	9.9 - 11.6	11.4 - 13.3	13.6 - 15.8	
90°F 32°C	10.7 - 12.5	13.6 - 15.8	13.8 - 16.1	
100°F 38°C	12.1 - 14.1	13.8 -16.1	14.3 - 16.6	
110°F 43°C	12.9 - 15.0	14.0 - 16.3	14.8 - 17.2	

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)	410 lbs (186 kgs)	335 lbs (152 kgs)
80°F 27°C	430 lbs (195 kgs)	431 lbs (195 kgs)	325 lbs (147 kgs)
90°F 32°C	400 lbs (181 kgs)	401 lbs (181 kgs)	320 lbs (145 kgs)
100°F 38°C	360 lbs (163 kgs)	361 lbs (163 kgs)	310 lbs (141 kgs)
110°F 43°C	340 lbs (154 kgs)	341 lbs (154 kgs)	300 lbs (136 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	140 - 210 psig (9.7 - 14.5 bar)	19 - 42 psig (1.3 - 2.9 bar)
70°F 21°C	145 - 220 psig (10.0 - 15.2 bar)	20 - 45 psig (1.4 - 3.1 bar)
80°F 27°C	170 - 225 psig (11.7 - 15.5 bar)	22 - 45 psig (1.5 -3.1 bar)
90°F 32°C	150 - 230 psig (10.3 - 15.9 bar)	24 - 50 psig (1.7 - 3.4 bar)
100°F 38°C	155 - 235 psig (10.7 - 16.2 bar)	26 - 50 psig (1.8 - 3.4 bar)
110°F 43°C	155 - 240 psig (10.7 - 16.5 bar)	28 - 52 psig (1.9 - 3.6 bar)

Operating Pressures - Harvest Cycle

Air Temperature Around the Unit	Discharge Pressure psig (bar)	Suction Pressure psig (bar)
50°F 10°C	95 - 110 psig (6.5 - 7.6 bar)	60 - 80 psig (4.1 - 5.5 bar)
70°F 21°C	95 - 110 psig (6.5 - 7.6 bar)	60 - 80 psig (4.1 - 5.5 bar)
80°F 27°C	100 - 115 psig (6.9 - 7.9 bar)	60 - 85 psig (4.1 - 5.9 bar)
90°F 32°C	105 - 120 psig (7.2 - 8.3 bar)	60 - 85 psig (4.1 - 5.9 bar)
100°F 38°C	105 - 120 psig (7.2 - 8.3 bar)	65 - 90 psig (4.5 -6.2 bar)
110°F 43°C	110 - 125 psig (7.6 - 8.6 bar)	66 - 90 psig (4.8 - 6.5 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	9.9 - 10.8	10.2 - 11.9	11.6 - 13.5	1.0 - 2.5
80°F 27°C	9.9 - 11.6	11.4 - 13.3	13.6 - 15.8	
90°F 32°C	10.7 - 12.5	13.6 - 15.8	13.8 - 16.1	
100°F 38°C	12.1 - 14.1	13.8 - 16.1	14.3 - 16.6	
110°F 43°C	12.9 - 15.0	14.0 - 16.3	14.8 - 17.2	

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	460 lbs (209 kgs)	425 lbs (193 kgs)	400 lbs (181 kgs)
80°F 27°C	450 lbs (204 kgs)	415 lbs (188 kgs)	390 lbs (177 kgs)
90°F 32°C	440 lbs (200 kgs)	405 lbs (184 kgs)	380 lbs (172 kgs)
100°F 38°C	430 lbs (195 kgs)	395 lbs (179 kgs)	370 lbs (168 kgs)
110°F 43°C	415 lbs (188 kgs)	385 lbs (175 kgs)	360 lbs (163 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	175 - 185 psig (12.0 - 12.8 bar)	40 - 18 psig (2.8 - 1.2 bar)
70°F 21°C	175 - 185 psig (12.0 - 12.8 bar)	40 - 20 psig (2.8 - 1.4 bar)
80°F 27°C	175 - 185 psig (12.0 - 12.8 bar)	40 - 20 psig (2.8 - 1.4 bar)
90°F 32°C	180 - 190 psig (12.4 - 13.1 bar)	42 - 22 psig (2.9 - 1.5 bar)
100°F 38°C	180 - 190 psig (12.4 -13.1 bar)	42 - 23 psig (2.9 - 1.6 bar)
110°F 43°C	185 - 195 psig (12.8 - 13.4 bar)	45 - 25 psig (3.1 - 1.7 bar)

Operating Pressures - Harvest Cycle

Air Temperature Around the Unit	Discharge Pressure psig (bar)	Suction Pressure psig (bar)
50°F 10°C	100 - 110 psig (6.9 - 7.6 bar)	70 - 80 psig (4.8 - 5.5 bar)
70°F 21°C	100 - 110 psig (6.9 - 7.6 bar)	70 - 85 psig (4.8 - 5.9 bar)
80°F 27°C	100 - 110 psig (6.9 - 7.6 bar)	70 - 85 psig (4.8 - 5.9 bar)
90°F 32°C	100 - 115 psig (6.9 - 7.9 bar)	70 - 85 psig (4.8 - 5.9 bar)
100°F 38°C	105 - 120 psig (7.2 - 8.3 bar)	70 - 85 psig (4.8 - 5.9 bar)
110°F 43°C	105 - 125 psig (7.2 - 8.6 bar)	70 - 90 psig (4.8 - 6.2 bar)

Condenser Water Usage

Cube Size	Ice Production	Water Usage
Dice	100 lbs (45.5 kgs)	141 gallons (535 liters)
Half Dice	100 lbs (45.5 kgs)	114.7 gallons (434 liters)

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