MANITOWOC ICE
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# Service Bulletin

**Subject: IP1000 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** 16 oz (450 g) | **Water-cooled Models** 16 oz (450 g) | |
| **Electrical** | **Air-cooled Models** | **Water-cooled Models** | **Energy Use Kwh / 100 lbs** |
| 208-230V/60 Hz/1 Ph | Min Circuit Amps - 10 amp<br>Max Fuse Size - 15 amp | Min Circuit Amps - 9.3 amp<br>Max Fuse Size - 15 amp | Half Dice: 3.6-4.3 Kwh<br>Dice: 3.6-4.65 Kwh |
| 208-230V/60 Hz/3 Ph | Min Circuit Amps - 6.4 amp<br>Max Fuse Size - 15 amp | Min Circuit Amps - 5.7<br>Max Fuse Size - 15 amp | |
| **Ice Making Water Inlet** | Connection Size -<br>3/8" (10 mm) FPT<br>(Female Pipe Thread) | Water Temperature -<br>Minimum 40°F (4°C)<br>Maximum 90°F (32°C) | Water Pressure - Minimum<br>20 psig (1.3 bar )<br>Water Pressure - Maximum<br>80 psig (5.5 bar ) |
| **Ice Making Water Drain** | Connection Size - 1/2" (13 mm) FPT (Female Pipe Thread) | | |
| **Condenser Water Inlet**<br>IP1000W Models Only | Connection Size -<br>3/8" (10 mm) FPT<br>(Female Pipe Thread) | Water Temperature -<br>Minimum 40°F (4°C)<br>Maximum 90°F (32°C) | Water Pressure - Minimum<br>20 psi (1.3 bar )<br>Water Pressure - Maximum<br>275 psi (18.9 bar ) |
| **Condenser Water Drain**<br>IP1000W Models Only | Connection Size - 3/8" (10 mm) FPT (Female Pipe Thread) | | |
| **Potable Water Use** | 13.7-15.9 gallons per 100 lbs of ice (52-60 liters per 45.5 kg of ice) | | |
| **Heat of Rejection**<br>208-230VV/60 Hz/1 Ph | Air Conditioning<br>13980 BTU/hr<br>(3525 kcal/hr) | Peak<br>16030 BTU/hr<br>(4042 kcal/hr) | |
| **Heat of Rejection**<br>208-230V/60 Hz/3 Ph | Air Conditioning<br>12285 BTU/hr<br>(3098 kcal/hr) | Peak<br>14110 BTU/hr<br>(3558 kcal/hr) | |
| **Fan Cycle Control Settings** | Cut-in (closed)-<br>200 psig ±5 / 13.8 bar ±0.3 | Cut-out (open) -<br>150 psig ±5 / 10.3 bar ±0.3 | |
| **High Pressure Settings** | Cut-in (closed) -<br>250 psig ±5 / 17.2 bar ±0.3 | Cut-out (open) -<br>350 psig ±5 / 24.1 bar ±0.3 | |
| **Dimensions** | **Height** | **Width** | **Depth** |
| | 21.5 in (546.1 mm) | 30 in (762 mm) | 30 in (762 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) | | | Harvest Time |
|---|---|---|---|---|
| | Water Temperature | | | |
| | 50°F 10°C | 70°F 21°C | 90°F 32°C | |
| 70°F 21°C | 9.8 - 11.4 | 10.4 - 12.7 | 13.0 - 14.2 | 1.0 - 2.5 |
| 80°F 27°C | 10.3 - 12.2 | 12.5 - 13.9 | 12.2 - 14.7 | |
| 90°F 32°C | 11.9 - 12.7 | 13.2 - 14.3 | 13.6 - 15.1 | |
| 100°F 38°C | 12.5 - 13.5 | 14.0 - 15.1 | 14.8 - 17.8 | |
| 110°F 43°C | 13.0 - 15.7 | 15.3 - 18.1 | 18.0 - 19.5 | |

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 | 940 lbs 426 kgs | 870 lbs 395 kgs | 942 lbs 426 kgs |
| 80°F 27°C | 860 lbs 390 kgs | 840 lbs 381 kgs | 770 lbs 349 kgs |
| 90°F 32°C | 810 lbs 367 kgs | 780 lbs 354 kgs | 740 lbs 336 kgs |
| 100°F 38°C | 780 kbs 354 kgs | 730 lbs 331 kgs | 650 lbs 295 kgs |
| 110°F 43°C | 750 lbs 340 kgs | 670 lbs 304 kgs | 600 lbs 272 kgs |

Ice slab weight of one harvest cycle = 7.5 lbs to 8.2 lbs (3.4 kgs to 3.7 kgs).

### Operating Pressures - Freeze Cycle

| Air Temperature Around the Unit | Discharge Pressure psig (bar) | Suction Pressure psig (bar) |
|---|---|---|
| 50°F 10°C | 145 - 205 psig (10.0 - 14.1 bar) | 17 - 37 psig (1.2 - 2.6 bar) |
| 70°F 21°C | 150 - 205 psig (10.3 - 14.1 bar) | 18 - 37 psig (1.2 - 2.6 bar) |
| 80°F 27°C | 155 - 210 psig (10.7 - 14.5 bar) | 19 - 40 psig (1.3 - 2.8 bar) |
| 90°F 32°C | 195 - 215 psig (13.4 - 14.8 bar) | 19 - 40 psig (1.3 - 2.8 bar) |
| 100°F 38°C | 230 - 260 psig (15.9 - 17.9 bar) | 22 - 42 psig (1.5 - 2.9 bar) |
| 110°F 43°C | 235 - 270 psig (16.2 - 18.6 bar) | 27 - 45 psig (1.9 - 3.1 bar) |

### Operating Pressures - Harvest Cycle

| Air Temperature Around the Unit | Discharge Pressure psig (bar) | Suction Pressure psig (bar) |
|---|---|---|
| 50°F 10°C | 80 - 100 psig (5.5 - 6.9 bar) | 55 - 65 psig (3.8 - 4.5 bar) |
| 70°F 21°C | 80 - 105 psig (5.5 -7.2 bar) | 56 - 65 psig (3.8 - 4.5 bar) |
| 80°F 27°C | 85 - 110 psig (5.9 - 7.6 bar) | 55 - 68 psig (3.8 - 4.7 bar) |
| 90°F 32°C | 100 - 120 psig (1.2 - 2.8 bar) | 68 - 74 psig (4.7 - 5.1 bar) |
| 100°F 38°C | 110 - 160 psig (1.4 - 2.9 bar) | 72 - 81 psig (5.0 - 5.6 bar) |
| 110°F 43°C | 115 - 170 psig (1.4 - 3.1 bar) | 75 - 85 psig (5.2 - 5.9 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 | 9.5 - 10.4 | 10.5 - 11.6 | 11.6 - 12.7 | 1.0 - 2.5 |
| 80°F 27°C | 9.9 - 10.8 | 11.0 - 12.1 | 11.9 - 12.9 | |
| 90°F 32°C | 10.0 - 10.9 | 11.2 - 12.3 | 12.0 - 13.1 | |
| 100°F 38°C | 10.1 - 11.0 | 11.4 - 12.5 | 12.1 - 13.3 | |
| 110°F 43°C | 10.3 - 11.2 | 11.5 - 12.7 | 12.2 - 13.5 | |

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 | 1000 lbs 454 kgs | 930 lbs 422 kgs | 870 lbs 395 kgs |
| 80°F 27°C | 980 lbs 444 kgs | 910 lbs 413 kgs | 860 lbs 390 kgs |
| 90°F 32°C | 960 lbs 435 kgs | 890 lbs 404 kgs | 830 lbs 376 kgs |
| 100°F 38°C | 950 kbs 431 kgs | 870 lbs 395 kgs | 810 lbs 367 kgs |
| 110°F 43°C | 940 lbs 426 kgs | 850 lbs 385 kgs | 780 lbs 354 kgs |

Ice slab weight of one harvest cycle = 7.5 lbs to 8.2 lbs (3.4 kgs to 3.7 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 (12.1 - 12.8 bar) | 17 - 32 psig (1.2 - 2.2 bar) |
| 70°F 21°C | 175 - 185 psig (12.1 - 12.8 bar) | 18 - 32 psig (1.2 - 2.2 bar) |
| 80°F 27°C | 175 - 185 psig (12.1 - 12.8 bar) | 21 - 34 psig (1.4 - 2.3 bar) |
| 90°F 32°C | 180 - 190 psig (12.4 - 13.1 bar) | 22 - 34 psig (1.5 - 2.5 bar) |
| 100°F 38°C | 180 - 190 psig (12.4 - 13.1 bar) | 22 - 36 psig (1.5 - 2.5 bar) |
| 110°F 43°C | 180 - 190 psig (12.4 - 13.1 bar) | 22 - 36 psig (1.9 - 3.1 bar) |

### Operating Pressures - Harvest Cycle

| Air Temperature Around the Unit | Discharge Pressure psig (bar) | Suction Pressure psig (bar) |
|---|---|---|
| 50°F 10°C | 70 - 120 psig (4.8 - 8.3 bar) | 45 - 60 psig (3.1 - 4.1 bar) |
| 70°F 21°C | 70 - 120 psig (4.8 - 8.3 bar) | 45 - 60 psig (3.1 - 4.1 bar) |
| 80°F 27°C | 75 - 125 psig (5.2 -8.6 bar) | 48 - 62 psig (3.3 - 4.3 bar) |
| 90°F 32°C | 75 - 125 psig (5.2 -8.6 bar) | 52 - 65 psig (3.6 - 4.5 bar) |
| 100°F 38°C | 80 - 130 psig (5.5 - 9.0 bar) | 54 - 68 psig (3.7 - 4.7 bar) |
| 110°F 43°C | 80 - 130 psig (5.5 - 9.0 bar) | 58 - 70 psig (4.0 - 4.8 bar) |

### Condenser Water Consumption

| Ice Production | Water Usage |
|---|---|
| 100 lbs (45.5 kgs) | 120 gallons (454 liters) |

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