Manitowoc®

Flake & Nugget Models

RFP/UFP/RNP/UNP Ice Machines

Technician's Handbook





Part Number STH108 6/21

Safety Notices

Read these precautions to prevent personal injury:

- Read this manual thoroughly before operating, installing or performing maintenance on the equipment. Failure to follow instructions in this manual can cause property damage, injury or death.
- Routine adjustments and maintenance procedures outlined in this manual are not covered by the warranty.
- Proper installation, care and maintenance are essential for maximum performance and trouble-free operation of your equipment.
- This equipment contains high voltage electricity and refrigerant charge. Installation and repairs are to be performed by properly trained technicians aware of the dangers of dealing with high voltage electricity and refrigerant under pressure. The technician must also be certified in proper refrigerant handling and servicing procedures. All lockout and tag out procedures must be followed when working on this equipment.
- This equipment is intended for indoor use only. Do not install or operate this equipment in outdoor areas.

As you work on this equipment, be sure to pay close attention to the safety notices in this handbook. Disregarding the notices may lead to serious injury and/or damage to the equipment.

⚠ Warning

Follow these electrical requirements during installation of this equipment.

- All field wiring must conform to all applicable codes of the authority having jurisdiction. It is the responsibility of the end user to provide the disconnect means to satisfy local codes. Refer to rating plate for proper voltage.
- This appliance must be grounded.
- This equipment must be positioned so that the plug is accessible unless other means for disconnection from the power supply (e.g., circuit breaker or disconnect switch) is provided.
- Check all wiring connections, including factory terminals, before operation. Connections can become loose during shipment and installation.

⚠ Warning

Follow these precautions to prevent personal injury during installation of this equipment:

- Installation must comply with all applicable equipment fire and health codes with the authority having jurisdiction.
- To avoid instability the installation area must be capable of supporting the combined weight of the equipment and product. Additionally the equipment must be level side to side and front to back.
- Remove all removable panels before lifting and installing and use appropriate safety equipment during installation and servicing. Two or more people are required to lift or move this appliance to prevent tipping and/or injury.
- Do not damage the refrigeration circuit when installing, maintaining or servicing the unit.
- Connect to a potable water supply only.
- This equipment contains refrigerant charge.

⚠ Warning

Follow these precautions to prevent personal injury while operating or maintaining this equipment.

- Legs must be installed and the legs must be screwed in completely.
- Some 50 Hz models may contain up to 150 grams of R290 (propane) refrigerant. R290 (propane) is flammable in concentrations of air between approximately 2.1% and 9.5% by volume (LEL lower explosion limit and UEL upper explosion limit). An ignition source at a temperature higher than 470°C is needed for a combustion to occur.
- Refer to nameplate to identify the type of refrigerant in your equipment.
- Only trained and qualified personnel aware of the dangers are allowed to work on the equipment.
- Read this manual thoroughly before operating, installing or performing maintenance on the equipment. Failure to follow instructions in this manual can cause property damage, injury or death.
- Crush/Pinch Hazard. Keep hands clear of moving components. Components can move without warning unless power is disconnected and all potential energy is removed.
- Moisture collecting on the floor will create a slippery surface. Clean up any water on the floor immediately to prevent a slip hazard.
- When using cleaning fluids or chemicals, rubber gloves and eye protection (and/or face shield) must be worn.

DANGER

Do not operate equipment that has been misused, abused, neglected, damaged, or altered/modified from that of original manufactured specifications. This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision concerning use of the appliance by a person responsible for their safety. Do not allow children to play with, clean or maintain this appliance without proper supervision.

⚠Warning

When installing, using, or servicing this equipment, follow these flammable refrigeration system requirements.

- Refer to the nameplate - The ice machine contains up to 150 grams of R290 (propane) refrigerant. R290 (propane) is flammable in concentrations of air between approximately 2.1% and 9.5% by volume. R290 (propane) may burn if exposed to a heat source above 470 °C. Refer to nameplate to identify the type of refrigerant in your equipment.
- To minimize the risk of ignition due to improper installation, replacement parts or service procedures, only refrigeration technicians with flammable refrigerant training who are aware of the dangers of dealing with high voltage electricity and refrigerant under pressure are allowed to work on this equipment.
- This equipment must be installed in accordance with the ASHRAE 15 Safety Standard for Refrigeration Systems

Warnings Continued On Next Page

⚠ Warning

When installing, using, or servicing this equipment, follow these flammable refrigeration system requirements. (Continued)

- This equipment cannot be installed in a corridor or hallway of a public building.
- Equipment installation must comply with local sanitation and fire regulations.
- When servicing this equipment, be sure to lock the circuit breaker, and display an in-service notice.
- This device contains a high-voltage power supply and refrigerant charge. Shorting wires to the cooling system piping may cause an explosion. Before servicing the system, be sure to disconnect all power to the system. Refrigerant leakage can result in serious injury or death from explosion, fire, or contact with refrigerant or lubricant mist.
- Do not damage the refrigeration circuit when installing, maintaining or servicing the unit.
- All replacement parts must be like components obtained from the equipment manufacturers authorized replacement part network.

Table of Contents

General Information

Model Numbers 13
Flake Air & Water-Cooled Models 13
Nugget Air & Water-Cooled Models 13
Manitowoc Cleaner/Descaler and Sanitizer 13
Ice Machine Heat of Rejection. 14
Ice Machine Warranty Information 15
Warranty Registration & Claim Procedures 15
Model/Serial Number. 15

Installation

Installation Requirements. 17
Potable Water Requirements. 18
Drain Connections 18
Ice Machine Clearance Requirements. 19
Cooling Tower Applications 19
Electrical Service. 20
Voltage. 20
Fuse/Circuit Breaker 20
Ground Fault Interrupter Circuit (GFIC) 20
Maximum Breaker/Minimum Circuit Amperage Chart. 21
RFP/RNP/UFP/UNP Air-cooled Models 21
RFP/RNP Water-cooled Models 21

Maintenance

Cleaning and Sanitizing 23
Exterior Cleaning. 23
Detailed Descaling and Sanitizing Procedure 23
Remedial Cleaning Procedure for Heavily Scaled Ice Machines. 28
Cleaning the Air filter and Condenser. 30
Removal from Service/Winterization 31

Sequence of Operation
Ice Making Sequence of Operation 33
UFP0200/UFP0350/UNP0200/UNP0300 Operation 33
RFP0320 & RNP0320 Operation 33
RNP0620/RFP0620/RNP1100 Operation 34
Thermostat Settings 36

Troubleshooting
UFP0200/UFP0350/UNP0200/UNP0300 Troubleshooting 39
Self-Contained Air-Cooled 39
RFP0320/RNP0320 Troubleshooting 45
Self-Contained Air-Cooled 45
RFP0620/RNP0620/RNP1100 Troubleshooting 51
Self-Contained Air-Cooled 51
Rotation Sensor Operation. 51
Refrigeration Troubleshooting. 57
Capillary Tube Models 57
Thermostatic Expansion Valve Models 58

Component Specifications
Bin Thermostat 59
Low Temperature Thermostat
Evaporator safety thermostat 59
High Pressure Cutout (HPCO) Control 59
Low Pressure Cutout (LPCO) Control. 59
Fan Cycle Control 60
Rotation Sensor. 61
Total System Refrigerant Charge 62
Filter-Driers 63
Suction Cleanup Filter-Drier. 63

Charts
Ice Production & Refrigerant Temperature 65
Flake Models 66
UFP200A 66
RFP0320A 67
UFP0350A 68
RFP0620A 69
RFP0620W. 70
Nugget Models 71
UNP0200A. 71
UNP0300A. 72
RNP0320A 73
RNP0620A 74
RNP0620W 75
RNP1100A 76

Diagrams

Wiring Diagrams 77
Flake Models 78
UFP0200A/UFP350A Air-Cooled 78
RFP0320A Air-Cooled 80
RFP0620A Air-Cooled 82
RFP0620W Water-Cooled. 84
Nugget Models 86
UNP0200A/UNP0300A Air-Cooled 86
RNP0320A Air-Cooled. 88
RNP0620A Air-Cooled. 90
RNP0620W Water-Cooled 92
RNP1100A Air-Cooled. 94
Compressor Start Component Wiring 96
UFP0200/UNP0200. 96
UNP0300/RFP0320/UFP0350/UNP0350/RFP0620 96
RFP0620/RNP0620/RNP1100 97
Refrigeration Tubing Schematics. 98
UNP0200/UFP0350 Air-cooled 98
RFP0320 Air-cooled 99
RFP0620 Air and Water-cooled 100
RNP1100 Air and Water-cooled. 101

Model Numbers

FLAKE AIR & WATER-COOLED MODELS

Flake Models		
Self Storage Air-Cooled	**Modular Air-Cooled**	**Modular Water-Cooled**
UFP0200A	–	–
UFP0350A	–	–
–	RFP0320A	–
–	RFP0620A	RFP0620W

NUGGET AIR & WATER-COOLED MODELS

Self Storage Air-Cooled	Modular Air-Cooled	Modular Water-Cooled
UNP0200A	–	–
UNP0300A	–	–
UNP0300A	–	–
–	RNP0320A	–
–	RNP0620A	RNP0620W
–	RNP1100A	RNP1100W

Manitowoc Cleaner/Descaler and Sanitizer

Manitowoc Ice Machine Cleaner/Descaler and Sanitizer are available in 16 oz. (473 ml) bottles. These are the only descaler and sanitizer approved for use with Manitowoc products.

Cleaner/Descaler Part Number		Sanitizer Part Number	
16 oz.	000000084	16 oz.	9405653
1 gal	N/A	1 gal.	9405813

Ice Machine Heat of Rejection

Series Ice Machine	Heat of Rejection BTU/Hour
UFP0200 - RFP0320	2400
UNP0200	2800
UNP0300 - UFP0350	5000
RNP0320	3075
RFP0620 - RNP0620	5200
RNP1100	7500

Ice Machine Warranty Information

For warranty information visit: www.manitowocice.com/Service/Warranty

- Warranty Coverage Information
- Warranty Registration
- Warranty Verification

Warranty coverage begins the day the ice machine is installed.

WARRANTY REGISTRATION & CLAIM PROCEDURES

Scan the QR code with your smart device or enter the link in a web browser to access:

- Warranty registration
- Warranty information
- Warranty labor claim form

WWW.MANITOWOCICE.COM/SERVICE/WARRANTY#WARRANTY-REGISTRATION

Model/Serial Number

These numbers are required when requesting information from your local Manitowoc Distributor, or Manitowoc Ice. The model and serial number are listed on the MODEL/SERIAL NUMBER DECAL affixed to the ice machine.

THIS PAGE INTENTIONALLY LEFT BLANK

Installation

Installation Requirements

The location selected for the ice machine must meet the following criteria. If any of these criteria are not met, select another location.

- Air temperature - Minimum 50°F (10°C), Maximum 110°F (43°C)
- The location must be free of airborne and other contaminants.
- The location must not be near heat-generating equipment or in direct sunlight.
- The location must be capable of supporting the weight of the ice machine and a full bin of ice.
- The location must allow enough clearance for water, drain and electrical connections in the rear of the ice machine.
- The location must not obstruct airflow through or around the ice machine.
- The ice machine and bin must be level.
- Routine adjustments and maintenance procedures outlined in this manual are not covered by the warranty.

Potable Water Requirements

- Plumbing must conform to local codes.
- Water temperature: Minimum 37°F (3°C), Maximum 90°F (32°C).
- Do not connect the ice machine to a hot water supply. Be sure all hot water restrictors installed for other equipment are working. (Check valves on sink faucets, dishwashers, etc.)
- If water pressure exceeds maximum pressure (80 psig [552 kPa] obtain a water pressure regulator.
- A water shut-off valve is required to clean the ice machine.
- A union for both the ice making and condenser water lines is required.
- Water inlet lines require insulation to prevent condensation.
- When local code requires, a back flow preventer must be installed on the water inlet line.

Drain Connections

- Drain lines must have a 1.5 inch drop per 5 feet of run (2.5 cm per meter), and must not create traps.
- The floor drain must be large enough to accommodate drainage from all drains.
- Bin drain termination must have an air gap.
- Separate insulated bin and water-cooled condenser drain lines are required.
- The bin and ice machine drains must be run separately.

Ice Machine Clearance Requirements

All Models Clearance Requirements	
Back	5” (12.7 cm)
Sides/Top	8” (20.3 cm)

RCUF Units	Remote Condensing Unit
Front/Back	24” (61.0 cm)
Sides/Top	6” (15.2 cm) 24 inches clearance on top and sides is recommended for serviceability

NOTE: Allowance must be made for removal when the ice machine is built-in. Removal of the top panel is required for cleaning and sanitizing.

Cooling Tower Applications

A water cooling tower installation does not require modification of the ice machine. The water regulator valve for the condenser continues to control the refrigeration discharge pressure.

It is necessary to know the amount of heat rejection, and pressure drop through the condenser and water valves (inlet and outlet) when using a cooling tower on an ice machine.

- Water entering the condenser must not be lower than 37°F (3°C) or exceed 90°F (32°C).
- Water flow through the condenser must not exceed 5 gal. (19 L) per minute.
- Allow for a pressure drop of 7 psi (48 kPa) between the condenser water inlet and the outlet of the ice machine.
- Water exiting the condenser must not exceed 110°F (43°C).
- Water entering the condenser must not exceed 150 psi (10 bar).

Electrical Service

⚠ Warning

All wiring must conform to local, state and national codes.

VOLTAGE

The maximum allowable voltage variation is ± 10% of the rated voltage on the ice machine model/serial number plate at compressor start-up.

FUSE/CIRCUIT BREAKER

A separate fuse/circuit breaker must be provided for each ice machine. Circuit breakers must be H.A.C.R. rated (does not apply in Canada).

⚠ Warning

The ice machine must be grounded in accordance with national and local electrical codes.

GROUND FAULT INTERRUPTER CIRCUIT (GFIC)

A GFCI/GFI circuit protection is not recommended with our equipment. If a GFCI/GFI is required by code a GFCI/GFI breaker rather than outlet must be used to avoid intermittent nuisance trips.

Maximum Breaker/Minimum Circuit Amperage Chart

NOTE: Due to continuous improvements, this information is for reference only. Please refer to the ice machine serial number tag to verify electrical data. Model/Serial tag information overrides information listed on these pages.

RFP/RNP/UFP/UNP AIR-COOLED MODELS

Series Ice Machine	Voltage Phase Cycle	Air-Cooled		
		Max Fuse/ Circuit Breaker	Min Circuit Amps	Total Circuit Amps
Series Ice Machine	**Voltage Phase Cycle**	**Air-Cooled**		
		Max Fuse/ Circuit Breaker	**Min Circuit Amps**	**Total Circuit Amps**
UNP0200	115/1/60	15 Amp	N/A	7.5
UFP0200	115/1/60	15 Amp	N/A	7.5
UFP0350	115/1/60	15 Amp	N/A	10.0
UNP0300	115/1/60	15 Amp	N/A	10.0
RNP0320	115/1/60	20 Amp	12.8	—
RFP0320	115/1/60	20 Amp	12.8	—
RNP0620	115/1/60	25 Amp	16.3	—
RFP0620	115/1/60	25 Amp	16.3	—
RNP1100	208-230/1/60	20 Amp	14.2	—

RFP/RNP WATER-COOLED MODELS

Series Ice Machine	Voltage Phase Cycle	Water-Cooled	
		Max Fuse/ Circuit Breaker	Min Circuit Amps
RNP0620	115/1/60	25 Amp	15.4
RFP0620	115/1/60	25 Amp	15.4
RNP1100	208-230/1/60	20 Amp	13.7

THIS PAGE INTENTIONALLY LEFT BLANK

Cleaning and Sanitizing

Maintenance procedures covered in this manual are not covered by the warranty.

⚠ Caution

Use only Manitowoc approved Ice Machine Cleaner/Descaler (part number 000000084) and Sanitizer (part number 9405653). Do not mix Cleaner/Descaler and Sanitizer solutions together. It is a violation of Federal law to use these solutions in a manner inconsistent with their labeling. Read and understand all labels printed on bottles before use.

⚠ Warning

Wear rubber gloves and safety goggles (and/or face shield) when handling ice machine Cleaner or Sanitizer.

EXTERIOR CLEANING

Remove dust and dirt off exterior surfaces with mild household dish-washing detergent and warm water. Wipe dry with a clean, soft cloth.

DETAILED DESCALING AND SANITIZING PROCEDURE

This procedure must be performed once every 6 months.

- All ice must be removed from the bin
- The ice machine and bin must be disassembled descaled and sanitized
- The ice machine produces ice with the cleaner/descaler and sanitizer solutions
- All ice produced during the descaling and sanitizing procedure must be discarded

Detailed Descaling and Sanitizing Procedure

Use Ice Machine Cleaner/Descaler part number 000000084.

Use Ice Machine Sanitizer part number 9405653.

Step 1 Remove front and top covers and set the toggle switch to the OFF position.

Step 2 Remove all ice from the bin.

Step 3 Turn off the ice making water supply and drain water from evaporator and reservoir.

Step 4 Remove the top cover from water reservoir.

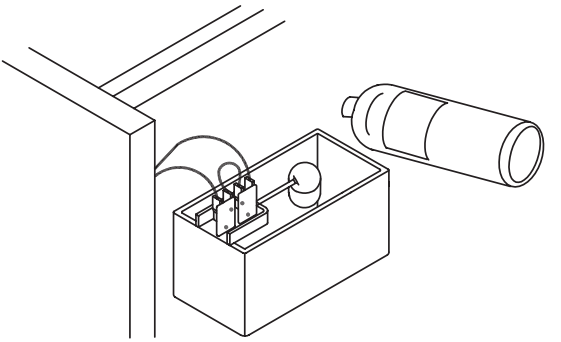
Step 5 Follow the chart and premix cleaner and water.

Amount of Water	Amount of Cleaner/Descaler Part Number 000000084
1 gallon (4 Liters)	3 ounces (90 ml)

Step 6 Fill the evaporator and reservoir with descaling solution.

Important

Prop Float Up to Prevent Low Water Level Shutdown



Step 7 Move the toggle switch to the ON position. The ice machine will make ice with the descaling solution and deposit the ice in the bin. Add the remaining descaler/water solution as the water level in the reservoir drops.

NOTE: Do not allow the descaler/water solution level to drop below the minimum water level. The ice machine will discontinue the cycle if the water float switch opens.

Step 8 After all of the descaler/water solution has been added turn on the ice making water supply. Continue the freeze cycle for 10 minutes to remove the solution from the water circuit.

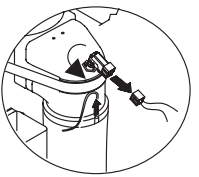
Step 9 Place the toggle switch in the OFF position and turn off the ice making water supply.

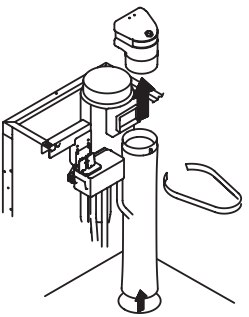
Step 10 Remove the following components for hand descaling and sanitizing for RFP and RNP models.

A. Remove water reservoir cover.

B. Remove microswitch and bin thermostat from the ice chute.

C. Remove retainer, ice chute elbow and ice chute.





D. Hand descale the removed part(s) in a properly mixed solution of descaler and water.

Solution Type	Water	Mixed With
Descaling	1 gal. (4 L)	16 oz (500 ml) Cleaner/Descaler Part Number 000000084

E. Use a soft-bristle brush or sponge (NOT a wire brush) to carefully clean the parts.

F. Use the solution and a brush or sponge to clean all disassembled components and the inside of the bin.

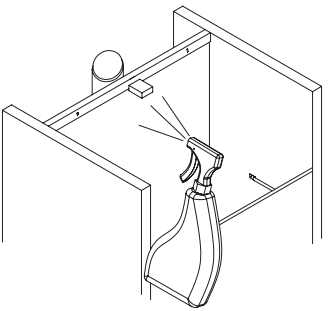
G. Rinse all cleaned parts with clear potable water.

H. Mix a solution of sanitizer and water.

Solution Type	Water	Mixed With
Sanitizer	3 gal. (11 L)	2 oz (60 ml) sanitizer Part Number 94-0565-3

I. Use the sanitizer/water solution and a sponge to sanitize all removed components and the inside of the bin. Do not rinse the sanitized parts.

NOTE: Descale, rinse and spray sanitizer on all interior and exterior areas of the evaporator discharge spout on UFP and UNP models.



Step 11 Reassemble all components removed in step 10 into the ice machine.

Step 12 Refer to chart and premix water and sanitizer.

Amount of Water	Amount of Sanitizer
1 Gallons (4 L) Water	1/2 ounce (15 ml)

Step 13 Fill the evaporator and reservoir with sanitizer/water solution.

Important

Prop Float Up to Prevent Low Water Level Shutdown

Step 14 Move the toggle switch to the ON position. The ice machine will make ice with the sanitizer/water solution and deposit the ice in the bin. Add the remaining sanitizer/water solution when the water level in the reservoir drops.

NOTE: Do not allow the sanitizer/water level to drop below the minimum water level. The ice machine will discontinue the cycle if the water float switch opens.

Step 15 After all of the sanitizer/water solution has been added to the reservoir, turn on the ice making water supply.

Step 16 Continue the freeze cycle for 30 minutes and then discard all ice produced.

Remedial Cleaning Procedure for Heavily Scaled Ice Machines

Perform this procedure if you have some or all of these symptoms.

- Excessive grinding, popping or squealing noises from the evaporator
- Grinding noise from gearbox
- Ice machine trips speed sensor

NOTE: A Cleaning/Sanitizing Procedure must be performed after this procedure.

Procedure to Clean Heavily Scaled Flake Ice Machines

Step 1 Remove front and top covers and set the toggle switch to the OFF position.

Step 2 Remove all ice from the bin.

Step 3 Turn off the ice making water supply.

Step 4 Remove the top cover from water reservoir.

Step 5 Refer to chart and premix cleaner/descaler with lukewarm water in a non-metallic container.

Model	Water Reservoir Capacity	Mix Cleaner/Descaler and Water Use Ice machine cleaner/ descaler, part number 000000084 only	
		Cleaner	Water
UNP0200 UFP0200 UFP0350 UNP0300	14 oz (400 ml)	9 oz (266 ml)	5 oz (148 ml)
RNP0320 RFP0320 RNP0620 RFP0620	17 oz (500 ml)	11 oz (325 ml)	6 oz (177 ml)
RNP1100	34 oz (1 L)	23 oz (680 ml)	11 oz (325 ml)

Step 6 Remove all water from the evaporator and water reservoir. Add the entire descaler/water solution and re-install the reservoir cover.

Leave the descaler/water solution in the evaporator for a minimum of 4 hours.

Step 7 Remove all descaler/water solution from the evaporator and water reservoir.

Step 8 Perform the detailed descaling and sanitizing procedure.

CLEANING THE AIR FILTER AND CONDENSER

⚠Warning

Disconnect electric power to the ice machine at the electric service switch before cleaning the condenser. The condenser fins are sharp. Use care when cleaning them.

Air-Cooled Condenser

Clean the condenser at least every six months. Follow the steps below.

1. Some models have a washable filter. Clean the filter with a mild soap and water solution.
2. Shine a flashlight through the condenser to check for dirt between the fins. Blow compressed air through the condenser fins from the inside or use a commercial condenser coil cleaner. Follow the directions and cautions supplied with the cleaner.
3. Straighten any bent condenser fins with a fin comb.
4. Carefully wipe off the fan blades and motor with a soft cloth. Do not bend the fan blades. If the fan blades are excessively dirty, wash with warm, soapy water and rinse thoroughly.

⚠Warning

If you are cleaning the condenser fan blades with water, cover the fan motor to prevent water damage.

Removal from Service/Winterization

⚠ Caution

If water is allowed to remain in the ice machine in freezing temperatures, severe damage to some components could result. Damage of this nature is not covered by the warranty.

Follow the procedure below.

1. Disconnect the electric power at the circuit breaker or the electric service switch.
2. Turn off the water supply.
3. Disconnect and drain the incoming ice-making water line at the rear of the ice machine.
4. Disconnect drain tubing and drain water into container and discard.
5. Make sure water is not trapped in any of the water or drain lines.
6. Water cooled - Use compressed air to remove all water from the condenser.

THIS PAGE INTENTIONALLY LEFT BLANK

Sequence of Operation

Ice Making Sequence of Operation

NOTE: Flake ice machines use an auger to remove ice from the evaporator. Occasional noises (creaks, groans, squeaks, or pops) are a normal part of the ice making process.

UFP0200/UFP0350/UNP0200/UNP0300 OPERATION

The ice machine will not start until:

A. The rocker switch is moved to “ON”.

B. Ice does not contact the bin thermostat bulb.

C. The water reservoir is full of water.

Placing the toggle switch in the ON position starts the gear motor and refrigeration system. The float valve controls the water inlet valve and water level. The freeze cycle ends when ice contacts the bin thermostat. The ice machine will restart when ice no longer contacts the bin thermostat.

RFP0320 & RNP0320 OPERATION

When the toggle switch is placed in the “ON” position the following controls must be in the closed position before the ice machine will start:

A. Bin Thermostat

B. Ice Chute Safety Switch

C. Low Water Level Switch

D. High Pressure Cut-out Switch

E. Low Pressure Cut-Out Switch

Placing the toggle switch in the ON position starts the gear motor and an 8 minute compressor time delay. The compressor starts and the float valve controls the water inlet valve and water level. The freeze cycle ends when ice contacts the bin thermostat. The ice machine remains off until ice no longer contacts the bin thermostat.

RNP0620/RFP0620/RNP1100 OPERATION

When the toggle switch is placed in the ON position the following controls must be in the closed position before the ice machine will start:

A. Bin Thermostat

B. High Pressure Cut-out Switch

C. Ice Chute Safety Switch

D. Low Pressure Switch

E. Low Water Level Switch

Placing the toggle switch in the ON position starts the gear motor. After 8 minutes of correct rotation, the time delay ends and the compressor starts. The ice machine will continue to make ice until ice contacts the bin thermostat. The ice machine remains off until ice no longer contacts the bin thermostat.

Ice Production/Quality Check

QUALITY CHECK

Ice quality varies with ambient and water temperatures, and is measured by the amount of water in the ice. Generally speaking, higher incoming water temperature results in lower ice quality. Lower water temperature results in higher ice quality.

ICE PRODUCTION CHECK

NOTE: Ice production checks that are within 10% of the charted capacity are considered normal due to variances in air and water temperatures. Actual temperatures will seldom match the chart exactly.

1. Run the ice machine a minimum of 10 minutes to allow the system to stabilize.
2. Catch the ice in a non-perforated container for 7 minutes and 12 seconds or for more accuracy 14 minutes and 24 seconds.
3. Weigh the container and ice, then deduct the weight of the container.
4. Convert ounces to pounds.
5. Example: 3 lbs. 12 oz. converts to 3.75 lbs.
6. (12 oz. ÷ 16 oz. =.75 lb.)
7. Determine the 24-hour ice production capacity.
    A. 7 minutes 12 seconds = Multiply the total ice weight by 200.
    B. 14 minutes 24 seconds = Multiply the total ice weight by 100.

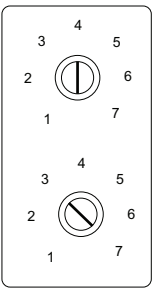
Thermostat Settings

Bin Thermostat:

The bin thermostat sensing bulb is located in the ice chute on modular models and in the bin thermostat holder on the right side of the bin on self storage models. The bin thermostat turns the ice machine on and off as the level of ice in the bin changes. Use the indicator on the ice machine label as the initial setting and adjust as required.

Evaporator Low Temperature Safety Thermostat:

The evaporator low temperature safety thermostat protects the ice machine if the evaporator temperature is too cold. Refer to chart for correct setting.



Bin Thermostat
Small Numbers = Less ice in bin
Large Numbers = More ice in bin
Start at Chart Setting, then adjust as required

Evaporator Low Temperature Safety Thermostat
Refer to chart for setting
Incorrect settings will cause ice machine to shut off prematurely

Thermostat Setting Chart

NOTE: Settings are for reference only. Factory setting is indicated on control label and overrides information listed on this page.

Model	Bin Thermostat Setting	Evaporator Thermostat Setting
UNP0200	5	6
UFP0200	5	5
UNP0300	5	6
RFP0320	3	7
RNP0320	5	6
UFP0350	5	7
RNP0620	2	--
RFP0620	3	--
RNP1100	3	--

THIS PAGE INTENTIONALLY LEFT BLANK

Diagnostic troubleshooting for the ice machine involves following flowcharts that are dependent on symptoms of the failed machine.

Follow the flowcharts for the failure symptom and model you are working on.

NOTE: Refer to the sequence of operation to determine where in the sequence the ice machine has failed. An example would be an ice machine that energizes the gear motor, but the compressor does not energize. Following the electrical flowchart will quickly and easily eliminate non issues.

UFP0200/UFP0350/UNP0200/UNP0300 Troubleshooting

SELF-CONTAINED AIR-COOLED

Normal Operation

When the toggle switch is placed in the “ON” position the following controls must be in the closed position before the ice machine will start:

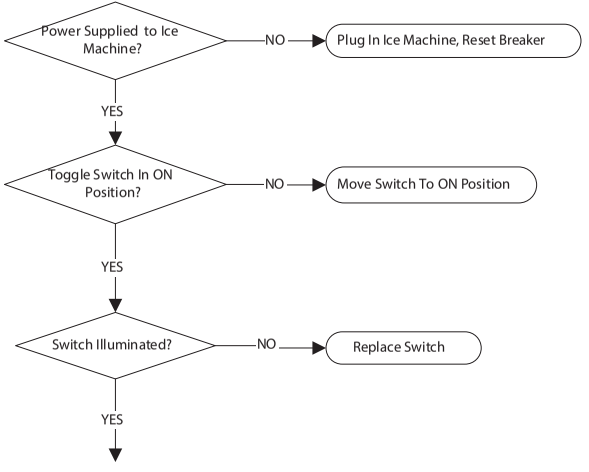
A. Bin Thermostat

B. Low Evaporator Temperature Thermostat

C. Low Water Level Switch

NOTE: Placing the toggle switch in the ON position starts the gear motor and refrigeration system. The float valve controls the water inlet valve and water level. The freeze cycle ends when ice contacts the bin thermostat. The ice machine will restart when ice no longer contacts the bin thermostat.

Electrical Flowchart - UFP0200/UFP0350/UNP0200/UNP0300 AIR & WATER



YES
Bin Thermostat Closed?
NO
Ice Contacting Thermostat?
Yes
Remove Ice - Allow To Warm And Retest
No
Adjusting Closes Thermostat?
Yes
Verify New Setting Cycles Machine On/Off
No
Replace Thermostat
YES
Evaporator Safety Thermostat Closed? RF0266 LPCO
NO
Evaporator Cold?
Yes
Allow Evaporator To Warm And Retest
No
Adjusting Closes Thermostat?
Yes
Verify New Setting Cycles Machine On/Off
No
Replace Thermostat
YES

YES
Reservoir Full Of Water?
NO
Power To Water Inlet Valve?
No
Water Level Switch Closed?
No
Replace Switch or Float Assembly
Yes
Repair Wiring
Yes
Restore Water Supply / Replace Water Inlet Valve
YES
Low Water Level Switch Closed?
NO
Replace Switch or Float Assembly
YES

Gear Motor Runs?
NO
YES
Line Voltage To Gear motor?
Yes
No
Repair Wiring
Remove Auger From Evaporator
Gear Motor Runs?
No
Replace Gear Motor
Yes
Ice In Evaporator?
Yes
Thaw Evaporator
No
Rebuild Evaporator
Line Voltage To Compressor Relay Coil?
NO
YES
Wiring From Gearmotor Intact?
Yes
Replace Gear Motor
No
Repair Wiring

YES
Relay Closed?
NO
Replace Relay
YES
Line Voltage To Compressor?
NO
Repair Wiring
YES
Verify:
Compressor Overload is Closed Start Components Function
Fan Cycling Control Functions
Condenser Fan Motor Functions
Water cooled only:
Water Regulating Valve Functions

RFP0320/RNP0320 Troubleshooting

SELF-CONTAINED AIR-COOLED

When the toggle switch is placed in the “ON” position the following controls must be in the closed position before the ice machine will start:

A. Bin Thermostat

B. Ice Chute Safety Switch

C. Low Water Level Switch

D. High Pressure Cut-out Switch

E. Low Pressure Cut-Out Switch

Placing the toggle switch in the ON position starts the gear motor and an 8 minute compressor time delay. The compressor starts and the float valve controls the water inlet valve and water level. The freeze cycle ends when ice contacts the bin thermostat. The ice machine remains off until ice no longer contacts the bin thermostat.

Electrical Flowchart - RFP0320/RNP0320

Yes
Bin Thermostat Closed?
NO
YES
Ice Contacting Thermostat?
No
Yes
Remove Ice - Allow To Warm And Retest
Adjusting Closes Thermostat?
No
Yes
Replace Thermostat
Verify New Setting Cycles Machine On/Off
Low Pressure Switch Closed?
NO
YES
Evaporator Cold?
No
Yes
Allow Evaporator To Warm And Retest
Refrigerant Pressure Below Cut-out?
No
Yes
Replace LPCO
Repair Refrigerant Leak, Evacuate, Recharge
Chute Switch Closed?
NO
Yes
Ice Contacting Actuator?
No
Yes
Remove Ice And Retest
Actuator Functions?
No
Yes
Adjust Or Replace Actuator
Replace Switch

YES
Reservoir Full Of Water?
NO
YES
Low Water Level Switch Closed?
NO
Replace Switch or Float Assembly
YES
Power To Water Inlet Valve?
No
Water Level Switch Closed?
No
Replace Switch or Float Assembly
Yes
Repair Wiring
Yes
Restore Water Supply / Replace Water Inlet Valve

Yes
Gear Motor Runs?
NO
YES
Line Voltage To Gear motor?
Yes
No
Repair Wiring
Disconnect Evaporator From Gear Motor
Gear Motor Runs?
No
Replace Gear Motor
Yes
Ice In Evaporator?
Yes
Thaw Evaporator
No
Rebuild Or Replace Evaporator
Line Voltage To Compressor Time Delay?
NO
YES
Gear Motor Centrifugal Switch Closed?
Yes
Repair Wiring
No
Replace Gear Motor

Yes
10 Minute Time Delay Expired?
NO
Wait 8 Minutes - Do Not Install Compressor Time Delay Jumper
Yes
Line Voltage To Compressor Contactor Coil?
NO
Install Compressor Time Delay Jumper
YES
Contactor Closed?
NO
Replace Contactor
YES
Line Voltage To Compressor?
NO
Repair Wiring
YES
Verify:
Compressor Overload is Closed
Start Components Function
Fan Cycling Control Functions
Condenser Fan Motor Functions
Water cooled only:
Water Regulating Valve Functions
Power To Contactor Coil?
No
Repair Wiring
Yes
Replace Time Delay Relay

RFP0620/RNP0620/RNP1100 Troubleshooting

SELF-CONTAINED AIR-COOLED

Normal Operation

When the toggle switch is placed in the ON position the following controls must be in the closed position before the ice machine will start:

A. Bin Thermostat

B. High Pressure Cut-out Switch

C. Ice Chute Safety Switch

D. Low Pressure Switch

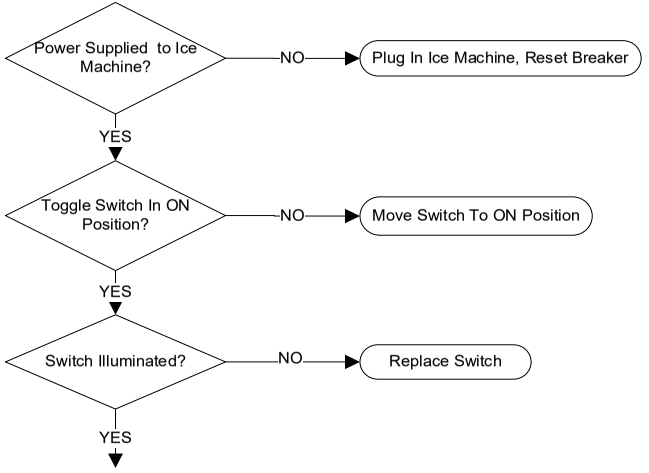
E. Low Water Level Switch

NOTE: Placing the toggle switch in the ON position starts the gear motor. After 8 minutes of correct rotation the time delay ends and the compressor starts. The ice machine will continue to make ice until ice contacts the bin thermostat. The ice machine remains off until ice no longer contacts the bin thermostat.

ROTATION SENSOR OPERATION

Light	Definition
Yellow Blinking	Time Delay Period
Yellow Solid	Normal Operation Sensing
Red Blinking 2 Flashes Per Second	Time Delay Period - First 1 To 7 Faults
Red Solid	Lockout - 8 Consecutive Faults Due To A Speed Fault Remove/Restore Power To Reset
Red Blinking Slowly	Lockout - 8 Consecutive Faults Due To A Short Circuit
See “Rotation Sensor” on page 61 for sequence of operation	

Electrical Flowchart – RNP0620/RFP0620/RNP1100
AIR & WATER



Yes
Bin Thermostat Closed?
NO
Ice Contacting Thermostat?
Yes
Remove Ice - Allow To Warm And Retest
No
Adjusting Closes Thermostat?
Yes
Verify New Setting Cycles Machine On/Off
No
Replace Thermostat
YES
Low Pressure Control Closed?
NO
Evaporator Cold?
Yes
Allow Evaporator To Warm And Retest
No
Refrigerant Pressure Below Cut-out?
Yes
Repair Refrigerant Leak, Evacuate, Recharge
No
Replace LPCO
YES
High Pressure Control Closed?
NO
Resets?
Resets & Trips
Clean Condenser, Check Fan Motor Check Fan Cycle Control
No
Refrigerant Pressure Above Cut-out?
Yes
Clean Condenser, Check Fan Motor, Check FCC & Refrigeration System
No
Replace HPCO
YES

YES
Chute Switch Closed?
NO
Yes
Ice Contacting Actuator?
Yes
Remove Ice And Retest
No
Actuator Functions?
Yes
Replace Switch
No
Adjust Or Replace Actuator
YES
Reservoir Full Of Water?
NO
No
Water Level Switch Closed?
No
Replace Switch or Float Assembly
Yes
Repair Wiring
Yes
Power To Water Inlet Valve?
Yes
Restore Water Supply / Replace Water Inlet Valve
YES
Low Water Level Switch Closed?
NO
Replace Switch or Float Assembly
YES

Yes
Gear Motor Runs?
NO
YES
Line Voltage To Gear motor?
No
Repair Wiring
Yes
Disconnect Evaporator From Gear Motor
Gear Motor Runs?
No
Replace Gear Motor
Yes
Ice In Evaporator?
Yes
Thaw Evaporator
No
Rebuild Or Replace Evaporator
8 Minute Time Delay Expired?
NO
Wait 10 Minutes - Do Not Install Compressor Time Delay Jumper
YES

Yes
Line Voltage To Compressor Contactor Coil?
NO
YES
Contactor Closed?
NO
YES
Line Voltage To Compressor?
NO
YES
Repair Wiring
Replace Contactor
Install Compressor Time Delay Jumper
Power To Contactor Coil?
No
Yes
Repair Wiring
Replace Rotation Sensor/Time Delay Relay
Verify:
Compressor Overload is Closed
Start Components Function
Fan Cycling Control Functions
Condenser Fan Motor Functions
Water cooled only:
Water Regulating Valve Functions

Refrigeration Troubleshooting

CAPILLARY TUBE MODELS

If the gear motor and/or compressor are not energized refer to Electrical Troubleshooting Refer to Operational Pressure Charts for normal pressures and temperatures				
	Low on Refrigerant	Overcharge of Refrigerant	Non Condensible in System	Restricted Capillary Tube
Discharge Temperature	Low	High	High	Low
Suction Temperature	Low	High	High	Low
Evaporator Inlet Temperature	Normal	Low	High	Low
Evaporator Outlet Temperature	High	Normal	High	Low
Compressor Discharge Line Temperature Normal Range = > 165° @ 70° - 210° @ 110° > 74°C @ 21°C - 99°C @ 43°C)	High Increases with run time	Normal	High Increases with run time	High Increases with run time

THERMOSTATIC EXPANSION VALVE MODELS

If the gear motor and/or compressor are not energized refer to Electrical Troubleshooting Refer to Operational Temperature Charts for normal Temperatures					
	Low on Refrigerant	Overcharge of Refrigerant	Non Condensible In System	Liquid Line Restriction, Suction Line Restriction, Or Expansion Valve Starving	Flooding Expansion Valve or Loose Sensing Bulb (when used)
Discharge Temperature	Low	High	High	Low	High
Suction Temperature	Low	High	High	Low	High
Evaporator Inlet Temperature	Normal	Normal or Low	High	Normal	Normal or High
Evaporator Outlet Temperature	High	Normal	High	High > 12° Differential between Inlet and Outlet	< 10° Differential between Inlet and Outlet
Discharge Line Temperature	High	Normal	High Increases With Run Time	High Increases With Run Time	Low Decreases With Run Time

Component Specifications

BIN THERMOSTAT

Model	Setting	Cut-Out	Cut-In
UFP0200 / UNP0200 UNP0300 / UFP0350	5	37°F ±1 3°C ±.1	43°F ±1 6°C ±.1
RFP0320 / RNP0320 RFP0620 / RNP0620 RNP1100	3	35°F ±1 1.6°C ±.1	41°F ±1 5.0°C ±.1

LOW TEMPERATURE THERMOSTAT
EVAPORATOR SAFETY THERMOSTAT

Model	Setting	Cut-Out	Cut-In
UFP0200 / UNP0300	5	-1°F ±1 -17.2°C ±.1	39°F ±1 4°C ±.1
UNP0200 / UNP0300 RNP0320	6	-3°F ±1 -19.5°C ±.1	39°F±.1 4°C ±.1
RFP0320 / UFP0350	7	-8°F ±.1 -22°C ±.1	39°F±.1 4°C ±.1

HIGH PRESSURE CUTOUT (HPCO) CONTROL

Model	Cut-Out	Cut-In
RNP0320 / RFP0620 RNP0320 RNP0620 RNP1100	325 psig ±10 (2250 kPa ±69) 22.5 bar ±.69	200 psig ±10 (1379 kPa ±69) 13.79 bar ±.69 Auto Reset

LOW PRESSURE CUTOUT (LPCO) CONTROL

Model	Cut-Out	Cut-In
UFP0200 / RNP0320 RNP0620 / RFP0620 RNP1100	7 psig ±2 (.5 bar ±.2)	36 psig ±2 (2.5 bar ±.2)

FAN CYCLE CONTROL

Model	Cut-Out (Open)	Cut-In (Close)
UFP0200 / UNP0200 UNP0300 / RNP0320 RFP0320 / UFP0350 RNP0620 / RFP0620 RNP1100	215 ±5 (14.8 bar ±.3)	232 ±5 (16 bar ±.3)

ROTATION SENSOR

RFP0620 / RNP0620 / RNP1100

Light	Definition
Yellow Blinking	Time Delay Period
Yellow Solid	Normal Operation Sensing
Red Blinking 2 Flashes Per Second	Time Delay Period - First 1 To 7 Faults
Red Solid	Lockout - 8 Consecutive Faults Due To A Speed Fault Remove/Restore Power To Reset
Red Blinking Slowly	Lockout - 8 Consecutive Faults Due To A Short Circuit

Operation:

1. At start up, the sensor starts an 8 minute compressor time delay period.
2. After 8 minutes the sensor energizes the compressor contactor and ignores rotation for 20 seconds.
3. After 8-minutes, 20 seconds the auger rotation must not fall below 4 rpm or exceed 13 rpm; normal rotation is 9-10 RPM. When the auger rotation is less than 4 rpm or more than 13 rpm the sensor de-energizes the compressor contactor, starts an 8 minute time delay period and flashes the red led. When the 8 minute delay period ends the compressor will restart.
4. If the rotation sensor detects 8 consecutive RPM out of range failures the sensor locks out the compressor contactor and energizes the red led. The rotation sensor must be reset by cycling power off/on.

NOTE: Verify all electrical connections are secure and free of corrosion whenever rotation sensor lockouts exist.

TOTAL SYSTEM REFRIGERANT CHARGE

This information is for reference only. Model/Serial plate information overrides information listed in this table.

Model	Refrigerant Charge
Flake Models	
UFP0200A	100 Grams
UFP0350A	148 Grams
RFP0320A	148 Grams
RFP0620A	140 Grams
RFP0620W	148 Grams
Nugget Models	
UNP0200A	100 Grams
UNP0300A	148 Grams
RNP0320	148 Grams
RNP0620A	140 Grams
RNP0620W	148 Grams

FILTER-DRIERS

The size of the filter-drier is important. The refrigerant charge is critical. Using an improperly sized filter-drier will cause the ice machine to be improperly charged with refrigerant.

Important

Driers are covered as a warranty part. The drier must be replaced any time the system is opened for repairs.

SUCTION CLEANUP FILTER-DRIER

Contaminated systems must have a suction line filter-drier installed to remove contaminations. An access valve must be installed on the inlet side of the suction filter to allow pressure drop readings to be obtained.

Suction Line Clean-Up Filter		
Model	**Drier Size**	**End Connection Size**
All Models	UK-165S	5/8 in.

THIS PAGE INTENTIONALLY LEFT BLANK

Charts

Ice Production & Refrigerant Temperature

These charts are used as guidelines to verify correct ice machine operation.

Accurate collection of data is essential to obtain the correct diagnosis.

- Zero out manifold gauge set before obtaining temperature readings to avoid mis-diagnosis.
- Discharge and suction temperature are highest at the beginning of the cycle. Allow system to stabilize for a minimum of 10 minutes, then verify the temperatures are within the range indicated.
- Water temperature will affect suction and discharge temperature - 50°F (10°C) water temperature will result in temperatures on the lower end of the ranges specified. 90°F (32°C) water temperatures will result in temperatures on the upper end of the range specified.

Flake Models

UFP200A

SELF CONTAINED AIR-COOLED

Characteristics vary depending on operating conditions.

ICE PRODUCTION *	
Air Temperature Water Temperature	**24 hour Ice Production**
70°F/50°F 21°C/10°C	257 lbs 116 kgs
90°F/70°F 32°C/21°C	198 lbs 90 kgs

OPERATING TEMPERATURES *		
Air Temperature Entering Condenser	**Freeze Cycle**	
	Discharge Temperature	**Suction Temperature**
70°F 21°C	150-160 65-71	55-60 13-15
90°F 32°C	165-170 74-76	68-71 20-24
100°F 40°C	176-180 80-82	78-82 25-28

* Preliminary Data

RFP0320A

SELF CONTAINED AIR-COOLED

Characteristics vary depending on operating conditions.

ICE PRODUCTION *	
Air Temperature Water Temperature	**24 hour Ice Production**
70°F/50°F 21°C/10°C	370 lbs 168 kgs
90°F/70°F 32°C/21°C	286 lbs 130 kgs

OPERATING TEMPERATURES *		
Air Temperature Entering Condenser	**Freeze Cycle**	
	Discharge Temperature	**Suction Temperature**
70°F 21°C	162-168 72-75	16-25 -9 - -4
90°F 32°C	166-170 74-76	18-25 -8 - -4
100°F 40°C	178-184 81-84	22-28 -5 - -2

* Preliminary Data

UFP0350A

SELF CONTAINED AIR-COOLED

Characteristics vary depending on operating conditions.

ICE PRODUCTION *	
Air Temperature Water Temperature	**24 hour Ice Production**
70°F/50°F 21°C/10°C	398 lbs 181 kgs
90°F/70°F 32°C/21°C	328 lbs 149 kgs

OPERATING TEMPERATURES *		
Air Temperature Entering Condenser	**Freeze Cycle**	
	Discharge Temperature	**Suction Temperature**
70°F 21°C	185-195 85-90	50-54 10-12
90°F 32°C	185-195 85-90	51-54 10-12
100°F 40°C	210-214 99-101	65-67 18-19

* Preliminary Data

RFP0620A

SELF CONTAINED AIR-COOLED

Characteristics vary depending on operating conditions.

ICE PRODUCTION *	
Air Temperature Water Temperature	**24 hour Ice Production**
70°F/50°F 21°C/10°C	747 lbs 339 kgs
90°F/70°F 32°C/21°C	506 lbs 230kgs

OPERATING TEMPERATURES *		
Air Temperature Entering Condenser	**Freeze Cycle**	
	Discharge Temperature	**Suction Temperature**
70°F 21°C	175-180 79-82	20-22 -6 - -5
90°F 32°C	200-205 93-96	24-26 -4 - -3
100°F 40°C	212-215 100-101	26-28 -3 - -2

* Preliminary Data

RFP0620W

SELF CONTAINED WATER-COOLED

Characteristics vary depending on operating conditions.

ICE PRODUCTION *	
Air Temperature Water Temperature	**24 hour Ice Production**
70°F/50°F 21°C/10°C	676 lbs 307 kgs
90°F/70°F 32°C/21°C	660 lbs 299 kgs

OPERATING TEMPERATURES *		
Air Temperature Entering Condenser	**Freeze Cycle**	
	Discharge Temperature	**Suction Temperature**
70°F 21°C	190-192 88-89	16-18 -8 - -7
90°F 32°C	196-198 91-92	19-20 -7 - -6
100°F 40°C	206-210 97-99	19-22 -7 - -5

* Preliminary Data

Nugget Models

UNP0200A

SELF STORAGE AIR-COOLED

Characteristics vary depending on operating conditions.

ICE PRODUCTION *	
Air Temperature Water Temperature	**24 hour Ice Production**
70°F/50°F 21°C/10°C	231 lbs 97 kgs
90°F/70°F 32°C/21°C	164 lbs 74 kgs

OPERATING TEMPERATURES *		
Air Temperature Entering Condenser	**Freeze Cycle**	
	Discharge Temperature	**Suction Temperature**
70°F 21°C	160-170 71-76	54-56 12-13
90°F 32°C	176-180 80-82	66-68 19-20
100°F 40°C	188-190 86-88	72-74 22-23

* Preliminary Data

UNP0300A

SELF STORAGE AIR-COOLED

Characteristics vary depending on operating conditions.

ICE PRODUCTION *	
Air Temperature Water Temperature	**24 hour Ice Production**
70°F/50°F 21°C/10°C	330 lbs 150 kgs
90°F/70°F 32°C/21°C	275 lbs 125 kgs

OPERATING TEMPERATURES *		
Air Temperature Entering Condenser	**Freeze Cycle**	
	Discharge Temperature	**Suction Temperature**
70°F 21°C	185-190 85-88	30-38 -1-3
90°F 32°C	188-190 86-88	44-48 6-9
100°F 40°C	218-220 103-104	60-66 15-19

* Preliminary Data

RNP0320A

SELF CONTAINED AIR-COOLED

Characteristics vary depending on operating conditions.

ICE PRODUCTION *	
Air Temperature Water Temperature	**24 hour Ice Production**
70°F/50°F 21°C/10°C	308 lbs 140 kgs
90°F/70°F 32°C/21°C	236 lbs 107 kgs

OPERATING TEMPERATURES 8		
Air Temperature Entering Condenser	**Freeze Cycle**	
	Discharge Temperature	**Suction Temperature**
70°F 21°C	162-168 72-75	16-25 -9 - -4
90°F 32°C	166-170 74-76	18-25 -8 - -4
100°F 40°C	196-200 91-93	22-28 -5 - -2

* Preliminary Data

RNP0620A

SELF CONTAINED AIR-COOLED

Characteristics vary depending on operating conditions.

ICE PRODUCTION *	
Air Temperature Water Temperature	**24 Hour Ice Production**
70°F/50°F 21°C/10°C	591 lbs 268 kgs
90°F/70°F 32°C/21°C	451 lbs 204 kgs

OPERATING TEMPERATURES *		
Air Temperature Around Ice Machine °F/°C	**Freeze Cycle**	
	Discharge Temperature	**Suction Temperature**
70°F 21°C	184-186 84-85	18-20 -7 - -6
90°F 32°C	198-202 92-94	22-24 -5 - -4
100°F 40°C	224-228 106-109	26-28 -3 - -2

* Preliminary Data

RNP0620W

WATER-COOLED

Characteristics vary depending on operating conditions.

ICE PRODUCTION *	
Air Temperature Water Temperature	**24 Hour Ice Production**
70°F/50°F 21°C/10°C	598 lbs 271 kgs
90°F/70°F 32°C/21°C	583 lbs 264 kgs

OPERATING TEMPERATURES *		
Air Temperature Around Ice Machine °F/°C	**Freeze Cycle**	
	Discharge Temperature	**Suction Temperature**
70°F 21°C	180-182 82-83	16-17 -9 - -8
90°F 32°C	184-186 84-86	16-17 -9 - -8
100°F 40°C	190-192 88-89	17-18 -8 - -7

Condenser Water Consumption @ 89°F/70°F	
109	Gallons/100 lbs. of Ice
413	Liters/45 kgs. of Ice

* Preliminary Data

RNP1100A

AIR-COOLED

Characteristics vary depending on operating conditions.

ICE PRODUCTION *	
Air Temperature Water Temperature	**24 Hour Ice Production**
70°F/50°F 21°C/10°C	1078 lbs 489 kgs
90°F/70°F 32°C/21°C	825 lbs 374 kgs

OPERATING TEMPERATURES *		
Air Temperature Around Ice Machine °F/°C	**Freeze Cycle**	
	Discharge Temperature	**Suction Temperature**
70°F 21°C	184-186 84-86	30-32 -1 - 0
90°F 32°C	208-212 98-100	34-36 1-2
100°F 40°C	234-236 112-113	40-42 4-6

* Preliminary Data

Diagrams

Wiring Diagrams

The following pages contain electrical wiring diagrams. Be sure you are referring to the correct diagram for the ice machine you are servicing.

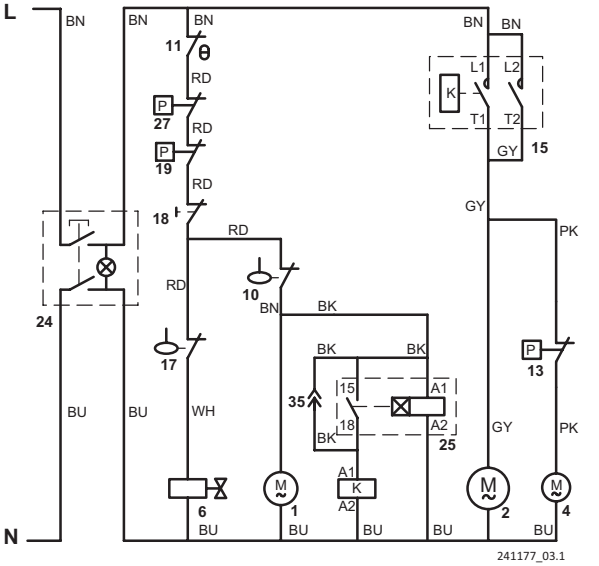
⚠Warning

Always disconnect power before working on electrical circuitry.

Flake Models

UFP0200A/UFP350A AIR-COOLED

Refer to Nameplate for Voltage Rating



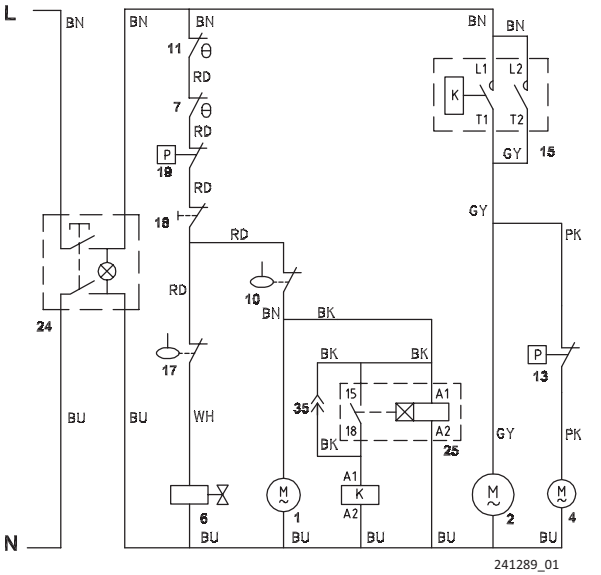
See page 96 for compressor start component wiring.

Wiring Diagram Legend UFP0200A/UFP0350A Air-cooled

1	Gear motor
2	Compressor
4	Condenser fan motor
6	Water inlet valve
10	Low water level safety
11	Bin thermostat
13	Fan cycle control
15	Contactor
17	Water level switch
18	Chute Safety switch
19	High Pressure Safety Switch
24	On/Off Switch
25	Compressor Delay Timer
27	Low pressure safety switch
35	Compressor Time Delay Bypass
Wire Color Designation	
WH	White
BU	Blue
GY	Grey
BN	Brown
BK	Black
RD	Red
PK	Pink

RFP0320A AIR-COOLED

Refer to Nameplate for Voltage Rating



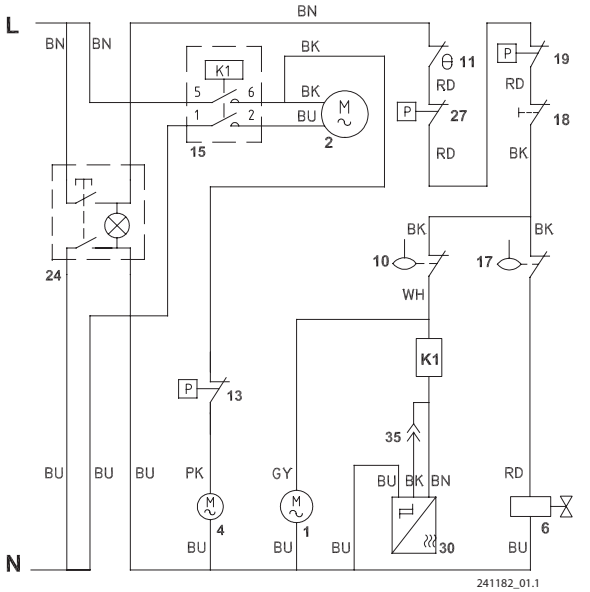
See page 96 for compressor start component wiring.

Wiring Diagram Legend RFP0320A Air-cooled

1	Gear motor
2	Compressor
4	Fan motor
6	Water inlet valve
7	Evaporator Safety Thermostat
10	Low water level switch
11	Bin thermostat
13	Fan cycle control
15	Contactor
17	Water level switch
18	Chute safety switch
19	High pressure safety switch
24	On/Off switch
25	Compressor time delay
35	Compressor time delay by-pass
Wire Color Designation	
WH	White
BU	Blue
GY	Grey
BN	Brown
BK	Black
RD	Red
PK	Pink

RFP0620A AIR-COOLED

Refer to Nameplate for Voltage Rating



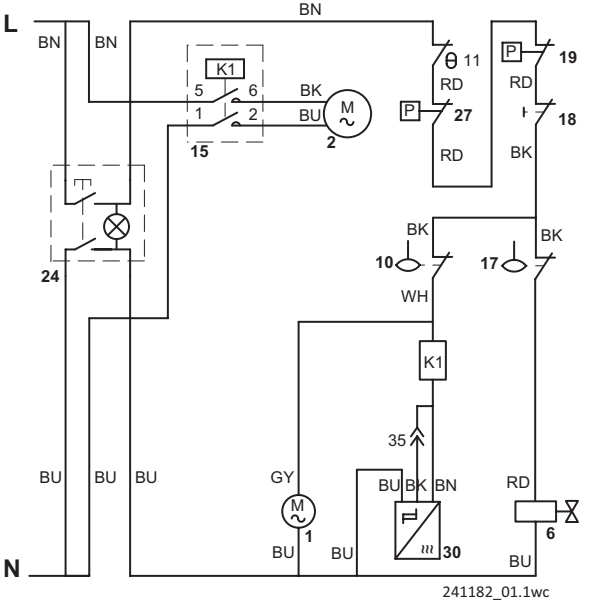
See page 96 for compressor start component wiring.

Wiring Diagram Legend RFP0620A Air-cooled

1	Gear motor
2	Compressor
4	Fan motor
6	Water inlet valve
10	Low water level switch
11	Bin thermostat
13	Fan cycle control
15	Contactor
17	Water level switch
18	Chute safety switch
19	High pressure safety switch
24	On/Off switch
27	Low pressure safety switch
30	Rotation sensor
35	Compressor time delay by-pass
Wire Color Designation	
WH	White
BU	Blue
GY	Grey
BN	Brown
BK	Black
RD	Red
PK	Pink

RFP0620W WATER-COOLED

Refer to Nameplate Voltage Rating



See page 96 for compressor start component wiring.

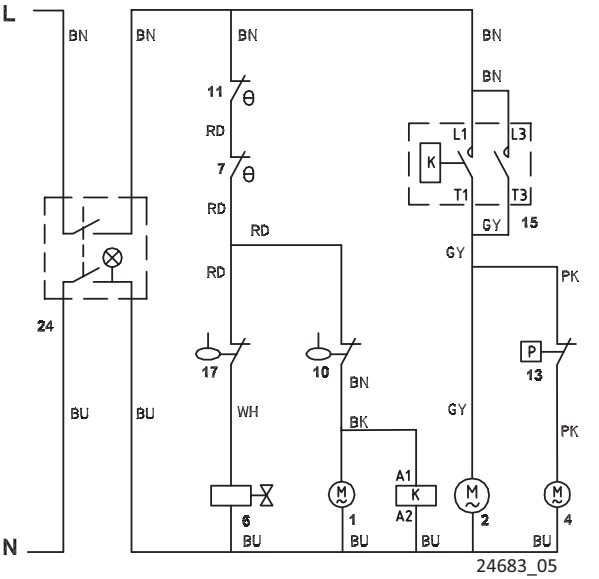
Wiring Diagram Legend RFP0620W Water-cooled

1	Gear motor
2	Compressor
6	Water inlet valve
10	Low water level switch
11	Bin thermostat
15	Contactor
17	Water level switch
18	Chute safety switch
19	High pressure safety switch
24	On/Off switch
27	Low pressure safety switch
30	Rotation sensor
35	Compressor time delay by-pass
Wire Color Designation	
WH	White
BU	Blue
GY	Grey
BN	Brown
BK	Black
RD	Red
PK	Pink

Nugget Models

UNP0200A/UNP0300A AIR-COOLED

Refer to Nameplate for Voltage Rating



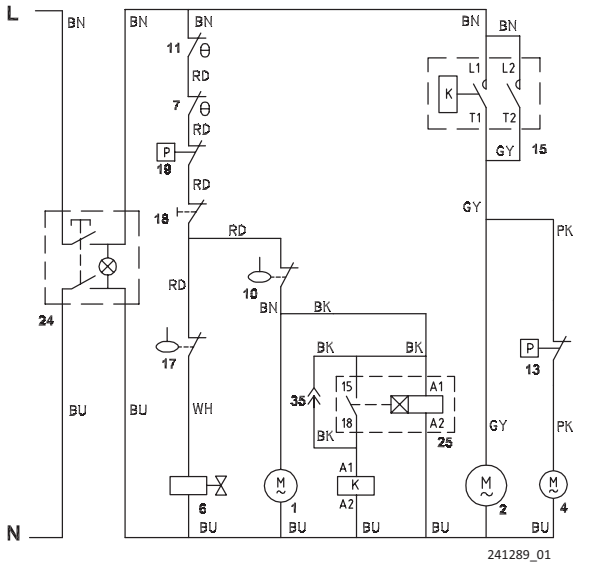
See page 96 for compressor start component wiring.

Wiring Diagram Legend UNP0200A/UNP0300A Air-cooled

1	Gear Motor
2	Compressor
4	Condenser fan motor
6	Water Inlet valve
7	Evaporator low temperature safety thermostat
10	Low water level safety
11	Bin thermostat
12	High temperature limit (snap disc)
13	Fan cycle control
15	Contactor
17	Water level switch
21	Compressor relay
24	On/Off switch
Wire Color Designation	
WH	White
BU	Blue
GY	Grey
BN	Brown
BK	Black
RD	Red
PK	Pink

RNP0320A AIR-COOLED

Refer to Nameplate for Voltage Rating



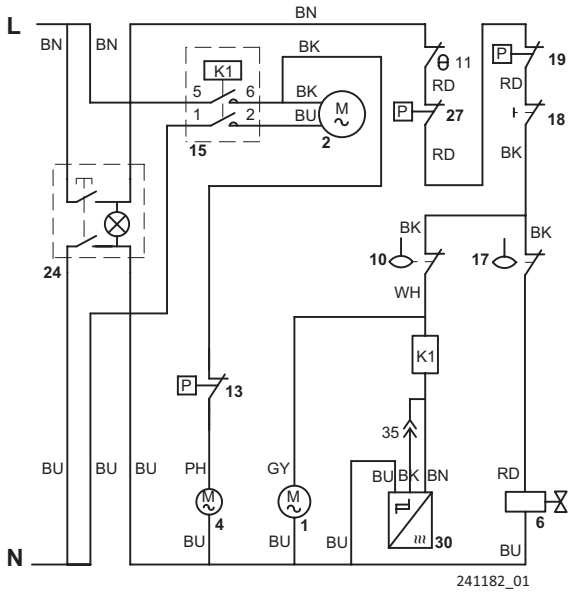
See page 96 for compressor start component wiring.

Wiring Diagram Legend RNP0320A Air-cooled

1	Gear Motor
2	Compressor
4	Condenser fan motor
6	Water inlet valve
7	Evaporator low temperature safety thermostat
10	Low water level safety
11	Bin thermostat
13	Fan cycle control
15	Contactor
17	Water level switch
18	Ice chute safety switch
19	High pressure cut out
24	On/Off switch
25	Compressor time delay
35	Compressor time delay by-pass
Wire Color Designation	
WH	White
BU	Blue
GY	Grey
BN	Brown
BK	Black
RD	Red
PK	Pink

RNP0620A AIR-COOLED

Refer to Nameplate for Voltage Rating



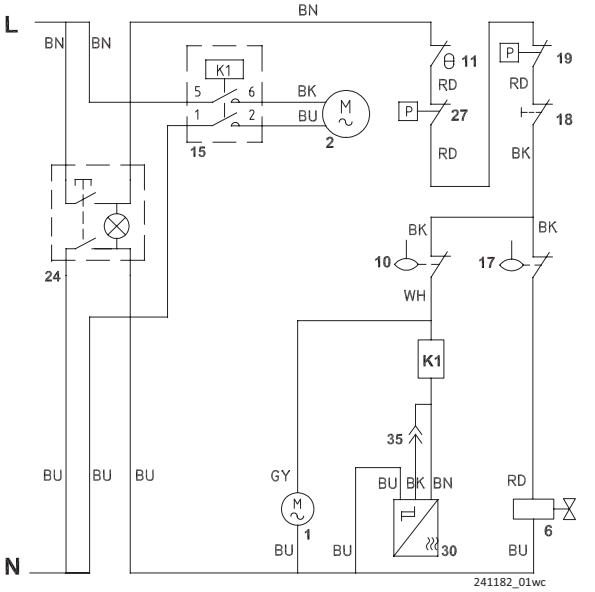
See page 96 for compressor start component wiring.

Wiring Diagram Legend RNP0620A Air-cooled

1	Gear Motor
2	Compressor
6	Water inlet valve
10	Low water level safety
11	Bin thermostat
13	Fan cycle control
15	Contactor
17	Water level switch
18	Ice chute safety switch
19	High pressure cut out
24	On/Off switch
27	Low pressure cut out
30	Rotation sensor
35	Compressor time delay by-pass
Wire Color Designation	
WH	White
BU	Blue
GY	Grey
BN	Brown
BK	Black
RD	Red
PH	Pink

RNP0620W WATER-COOLED

Refer to Nameplate for Voltage Rating



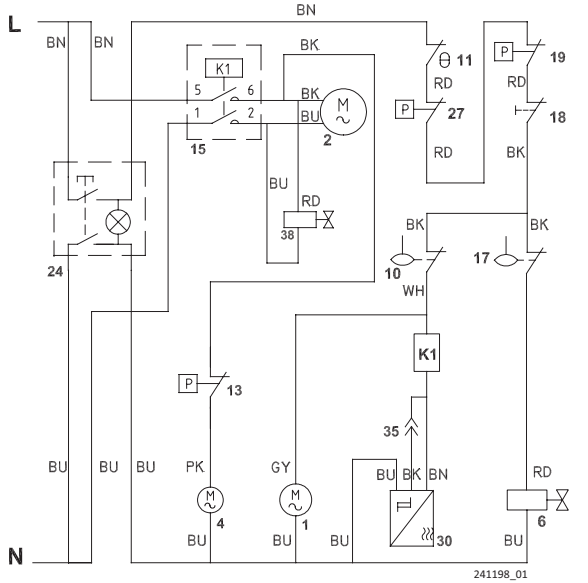
See page 96 for compressor start component wiring.

Wiring Diagram Legend RNP0620W Water-cooled

1	Gear Motor
2	Compressor
6	Water inlet valve
10	Low water level safety
11	Bin thermostat
15	Contactor
17	Water level switch
18	Ice chute safety switch
19	High pressure cut out
24	On/Off switch
27	Low pressure cut out
30	Rotation sensor
35	Compressor time delay by-pass
Wire Color Designation	
WH	White
BU	Blue
GY	Grey
BN	Brown
BK	Black
RD	Red
PK	Pink

RNP1100A AIR-COOLED

Refer to Nameplate for Voltage Rating



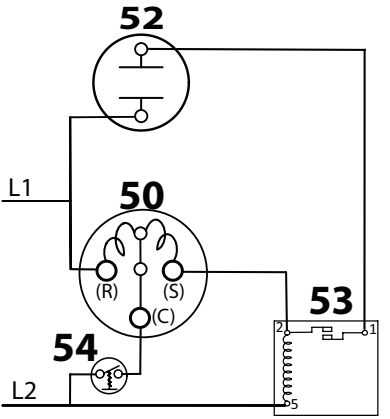
See page 96 for compressor start component wiring.

Wiring Diagram Legend RNP1100A Air-cooled

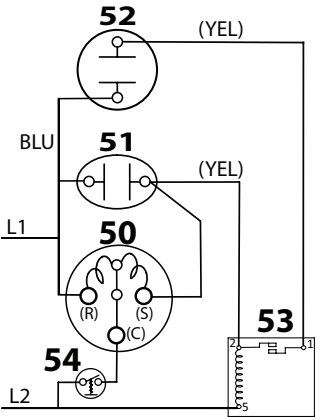
1	Gear Motor
2	Compressor
4	Condenser fan motor
6	Water inlet valve
10	Low water level safety
11	Bin thermostat
13	Fan cycle control
15	Contactor
17	Water level switch
18	Ice chute safety switch
19	High pressure cut out
24	On/Off switch
27	Low pressure cut out
30	Rotation sensor
35	Compressor time delay by-pass
38	Solenoid
Wire Color Designation	
B	White
BL	Blue
G	Grey
M	Brown
N	Black
R	Red
RS	Pink

Compressor Start Component Wiring

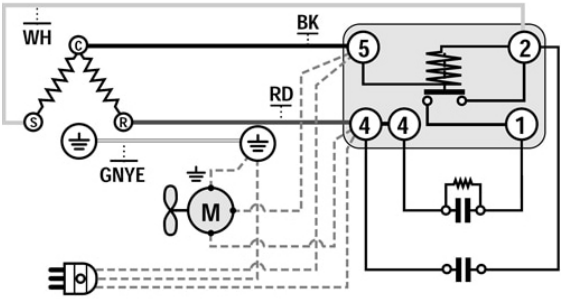
UFP0200/UNP0200



UNP0300/RFP0320/UFP0350/UNP0350/RFP0620

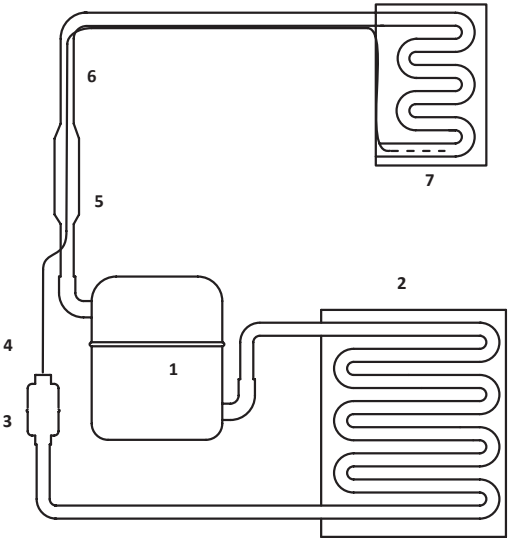


RFP0620/RNP0620/RNP1100



Refrigeration Tubing Schematics

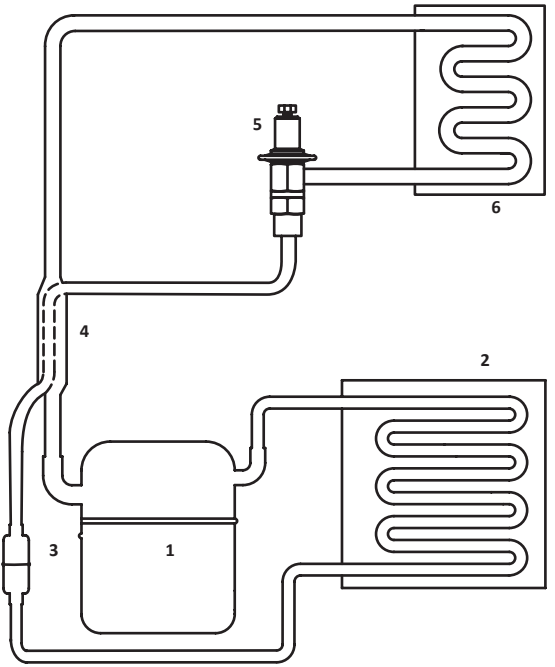
UNP0200/UFP0350 AIR-COOLED



Tubing Diagram Legend

1	Compressor
2	Condenser
3	Liquid Line Drier
4	Capillary tube
5	Accumulator
6	Heat Exchanger
7	Evaporator

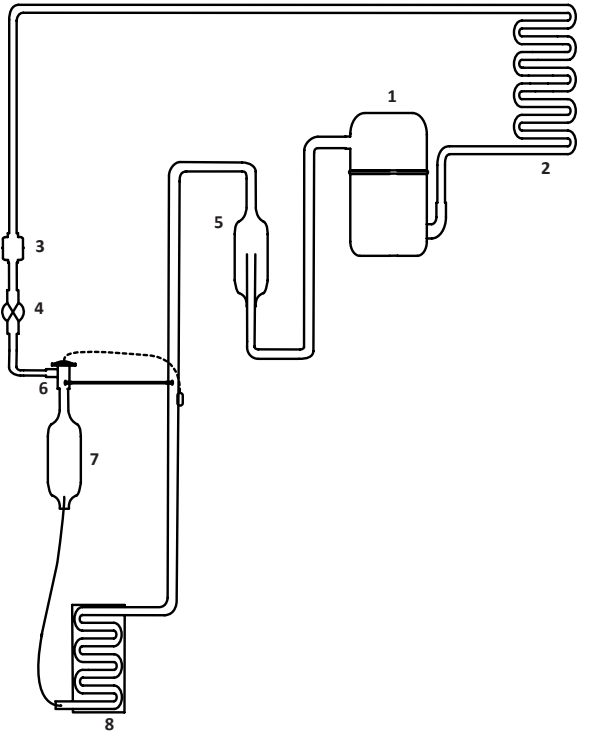
RFP0320 AIR-COOLED



Tubing Diagram Legend

1	Compressor
2	Condenser
3	Liquid Line Drier
4	Heat Exchanger
5	Automatic Expansion Valve
6	Evaporator

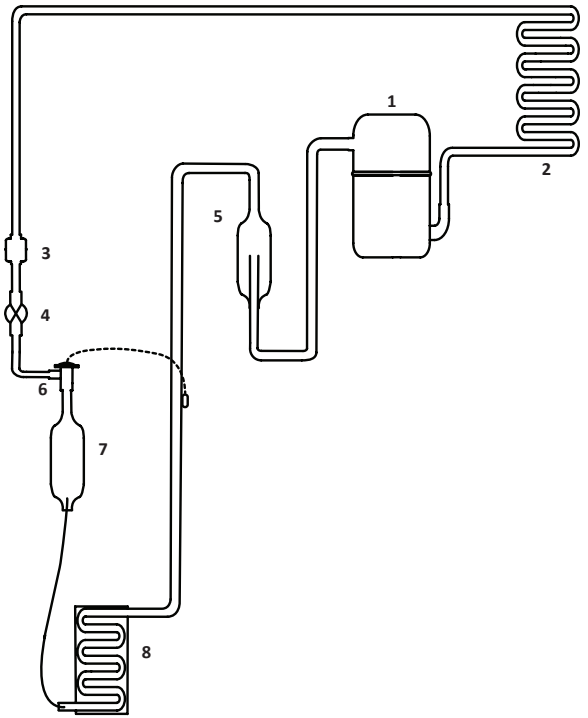
RFP0620 AIR AND WATER-COOLED



Tubing Diagram Legend

1	Compressor
2	Condenser (Air or Water-cooled)
3	Liquid Line Drier
4	Liquid Line Solenoid Valve
5	Suction Accumulator
6	Thermostatic Expansion Valve
7	Liquid Accumulator
8	Evaporator

RNP1100 AIR AND WATER-COOLED



Tubing Diagram Legend

1	Compressor
2	Condenser
3	Liquid Line Drier
4	Liquid Line Solenoid Valve
5	Suction Accumulator
6	Thermostatic Expansion Valve
7	Liquid Accumulator
8	Evaporator

THIS PAGE INTENTIONALLY LEFT BLANK

MANITOWOC ICE
2110 SOUTH 26TH STREET
MANITOWOC, WI 54220

800-545-5720
WWW.MANITOWOCICE.COM

©2021 Manitowoc Ice Inc. except where explicitly stated. All rights reserved.

Part Number STH108 6/21