Manitowoc® **SERVICE COMMUNICATOR**

Subject: Manitowoc Ice Machines on Non Manitowoc Condensers

QuietQube® Models

The following information refers to Manitowoc's traditional remote condensers only. This information does not apply to QuietQube® ice machines and CVD condensing units. QuietQube® head sections are only approved for use with a Manitowoc CVD condensing unit. Manitowoc will not approve or warrant any application of a QuietQube® head section with a "Rack System" or any other type or make of condensing unit.

Traditional Remote Condenser

Manitowoc warrants only complete new and unused remote packages. Warranty on the refrigeration system will be void if a new ice machine head section is connected to existing (used) tubing or condensers.
If the design of the condenser meets our specifications, Manitowoc's only approval is for full warranty coverage on the Manitowoc manufactured part of the system. Manitowoc does not test all condensers in conjunction with the ice machine, **Manitowoc will not endorse, recommend, or approve the condenser, and will not be responsible for its performance or reliability.** Performance may vary from Sales specifications.

SIZING THE CONDENSER
The selling parties are responsible for verification that their condenser is correctly sized for the application. It can be very difficult at a later date to determine if a condenser was sized to our specifications. Manitowoc suggests that the selling parties obtain a copy of the specifications from the condenser manufacturer. This will allow the selling parties and customer to verify the application is correct. A misapplication that causes a failure in the ice machine is not covered by the warranty.

HEAD PRESSURE CONTROL VALVE
A fan cycling control can not be used to maintain discharge pressure. Unacceptable performance will result.
Any remote condenser connected to a Manitowoc ice machine must have the Manitowoc OEM head pressure control valve (P/N 83-6809-3) installed on the condenser package. Manitowoc **will not accept** substitute "off the shelf" head pressure control valves.

FAN MOTOR
The condenser fan must be **on** during the complete ice machine freeze cycle (do not cycle on fan cycle control). It will also remain on for the entire harvest cycle, which is normal. The ice machine has a condenser fan motor circuit for use with a Manitowoc condenser. It is recommended that this circuit be used to control the condenser fan(s) on the multi-circuit condenser to assure it is on at the proper time. **Do not exceed the rated amps for the fan motor circuit listed on the ice machine's serial tag.**

INTERNAL CONDENSER VOLUME
The multi-circuit condenser internal volume must not be less than or exceed that used by Manitowoc.
Do not exceed internal volume and try to add refrigerant to compensate, compressor failure will result.

Continued On Reverse Side

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CONDENSER ΔT

ΔT (delta T) is the difference in temperature between the condensing refrigerant and entering air. The ΔT should be 15 to 20°F (-9.4 to -6.6°C) at the beginning of the freeze cycle (peak load conditions) and drop down to 12 to 17°F (-11.1 to -8.3°C) during the last 75% of the freeze cycle (average load conditions).

QUICK CONNECT FITTINGS

The ice machine and line sets come with quick connect fittings. It is recommended that matching quick connect fittings be installed in the multi-circuit condenser, and that a vapor "holding" charge (5 oz.) of the proper refrigerant be added to the condenser before the line set is connected to the condenser.

Heat of Rejection/Internal Volume Chart

Ice Machine Model	Refrigerant		Heat of Rejection		Internal Condenser Volume (cu ft)		Design Pressure	Quick Connect Stubs-Male Ends		Head Pressure Control Valve
	Type	Charge	Average Btu/hr	Peak Btu/hr	Min	Max		Discharge	Liquid	
Q450	R-404A	6 lbs	7000	9,600	0.020	0.035	500 psig safe working Pressure 2,500 psig burst pressure	coupling P/N 83-6035-3	coupling P/N 83-6034-3	Manitowoc P/N 83-6809-3 **no substitutes**
Q600	R-404A	8 lbs	9,000	13,900	0.045	0.060				
Q800	R-404A	8 lbs	12,400	19,500	0.045	0.060		mounting flange P/N 83-6006-3	mounting flange P/N 83-6005-3	
Q1000	R-404A	9.5 lbs	16,000	24,700	0.065	0.085				
Q1300	R-404A	14 lbs*	24,000	35,500	0.085	0.105				
Q1600	R-404A	17 lbs*	36,000	50,000	0.130	0.170				
Q1800 Tecumseh Compressor	R-404A	17 lbs*	36,000	50,000	0.130	0.170				
Q1800 Copeland Compressor	R-404A	18 lbs*	36,000	50,000	0.130	0.170				
Q1800E Energy Efficient	R-404A	18 lbs*	24,000	36,000	0.130	0.170				

* Amount reflects additional R-404A refrigerant added to nameplate charge for 50' to 100' (15m to 30m) line sets, to ensure proper operation at all ambient conditions. Q1300 has 1.5 lbs. additional R-404A. Q1600, Q1800 & Q1800E has 2.0 lbs. additional R-404A.