Think Water!

## START-UP CHECKLIST FOR MULTIAQUA MAC120HE CHILLERS

### A. PRELIMINARY INFORMATION

JOB NAME_____

LOCATION_____

INSTALLING CONTRACTOR_____

DISTRIBUTOR_____

START-UP PERFORMED BY_____

START-UP DATE _____

OUTDOOR AIR TEMPERATURE: DEGREES F_____

LIQUID SOLUTION STORAGE TANK SIZE IN GALLONS_____

**EQUIPMENT INFORMATION:**

**CHILLER:**

MODEL #_____SERIAL #_____

CIRCUIT #1

**COMPRESSOR:** MODEL #_____

SERIAL # _____

CIRCUIT #2

**COMPRESSOR:** MODEL #_____

SERIAL # _____

#1 CONDENSER FAN MOTOR #_____

#2 CONDENSER FAN MOTOR #_____

B. **INDOOR EQUIPMENT TOTAL TONNAGE:** _____

### C. PRELIMINARY EQUIPMENT CHECK

IS THERE ANY SHIPPING DAMAGE? (YES or NO)

IF SO, WHERE_____

WILL THIS DAMAGE PREVENT UNIT START-UP? (YES or NO)

DOES THE CHILLER CONTAIN A LOW AMBIENT ICM 325 CONTROLLER? (YES OR NO) IF YES, SEE **NOTE 1**

DOES THE PRIMARY VOLTAGE AND PHASE MATCH THE UNIT'S NAMEPLATE RATING? 208-230 AND 380-460 (YES or NO) **SEE NOTE 2**

ON THE MAC120HE-01 (208/230 VAC SINGLE PHASE CHILLER), ENSURE THERE ARE TWO INDEPENDENT PRIMARY VOLTAGE CIRCUITS CONNECTED TO THE CHILLER. MATCHING THE PHASING OF L1 AND L2 ON BOTH CIRCUITS ARE CRUCIAL.

HAS THE PRIMARY VOLTAGE CIRCUIT PROTECTION(S) BEEN SIZED AND INSTALLED PROPERLY? (YES or NO)

IS THE PHASING OF THE PRIMARY VOLTAGE CORRECT? (YES or NO)

IS THERE AN ELECTRICAL SUBPANEL FEEDING THE CHILLER? (YES OR NO)

WHAT IS THE BREAKER SIZE FEEDING THE SUBPANEL? _____

WHAT IS THE WIRE SIZE FEEDING THE SUBPANEL? _____

WHAT IS THE MAIN ELECTRICAL PANEL'S MAIN BREAKER SIZE? _____

WHAT IS THE DISTANCE FROM THE MAIN ELECTRICAL PANEL TO THE SUBPANEL? ___

PRIMARY VOLTAGE BREAKER SIZES TO CHILLER ON CIRCUIT 1? _____

PRIMARY VOLTAGE BREAKER SIZES TO CHILLER ON CIRCUIT 2? _____

ARE THE PRIMARY VOLTAGE WIRES TO THE UNIT SIZED, PHASED AND INSTALLED PROPERLY? (YES or NO)

NO SUBPANEL

PRIMARY VOLTAGE WIRE SIZES CIRCUIT 1: _____

PRIMARY VOLTAGE WIRE SIZES CIRCUIT 2: _____

WHAT IS THE DISTANCE FROM THE MAIN ELECTRICAL PANEL TO THE CHILLER? _____

DOES THE CONTROL TRANSFORMER'S HIGH VOLTAGE TAPS CORRESPOND TO ACTUAL LINE VOLTAGE? (YES OR NO)

IF NOT, CHANGE THE PRIMARY TAP SO IT CLOSELY MATCHES THE ACTUAL LINE VOLTAGE.

ACTUAL CONTROL VOLTAGE: _____-
**SEE NOTE 3**

HAS THE GROUND WIRE BEEN CONNECTED? (YES or NO)

ARE ALL CONTROL AND HIGH VOLTAGE TERMINALS TIGHT? (YES or NO)

LEAK CHECK THOROUGHLY**:** COMPRESSOR FITTINGS, CONDENSER FITTINGS, TXV, BRAZED PLATE HEAT EXCHANGER AND ALL REFRIGERANT AND LIQUID SOLUTION PIPING. SOME ITEMS MAY HAVE BEEN DAMAGED DURING SHIPPING.

**LIQUID SOLUTION PUMP**

MODEL # OF COOLING LIQUID SOLUTION PUMP_____

SERIAL#_____

NAME PLATE AMP RATING_____

DOES THE SYSTEM'S LIQUID SOLUTION CONTAIN A MINIMUM 10% PROPYLENE GLYCOL? (YES OR NO) **SEE NOTE 4**

WHAT IS THE PERCENTAGE OF PROPYLENE GLYCOL IN SYSTEM? _____

HAS ALL AIR BEEN VENTED FROM THE CHILLER'S LOOP? (YES OR NO)

IS THE LIQUID SOLUTION PUMP INTERNAL TO THE CHILLER? (YES OR NO)

HAS THE LIQUID SOLUTION PIPING BEEN CHECKED FOR LEAKS? (YES OR NO)

**D. UNIT START-UP**

**BEFORE RECORDING THE READINGS REQUESTED BELOW, ENSURE THE CHILLER HAS BEEN OPERATING FOR A MINIMUM OF 15 MINUTES.**

**LIQUID SOLUTION PUMP.** ENSURE THESE READINGS ARE WITHIN THE SPECIFICATIONS OF THE PUMP

IS THE ROTATION OF THE LIQUID SOLUTION PUMP CORRECT? (YES OR NO)

ACTUAL SYSTEM GPM_____

STATIC HEAD (PSI) ON THE SYSTEM_____

LIQUID SOLUTION PUMP DISCHARGE PRESSURE: PSI_____

LIQUID SOLUTION PUMP SUCTION PRESSURE: PSI_____

SINGLE PHASE CHILLERS.

ENSURE THE PHASING IS THE SAME ON L1 AND L2 BETWEEN CIRCUIT 1 AND 2

ACTUAL LINE VOLTAGE CIRCUIT 1: L1 TO L2 _____

ACTUAL LINE VOLTAGE CIRCUIT 2: L1 TO L2_____

ACTUAL AMPERAGE CIRCUIT 1: L1_____

ACTUAL AMPERAGE CIRCUIT 1: L2_____

ACTUAL AMPERAGE CIRCUIT 2: L1_____

ACTUAL AMPERAGE CIRCUIT 2: L2_____

THREE PHASE CHILLERS.

ENSURE THE PHASING IS CORRECT AND THE COMPRESSOR IS ROTATING IN THE CORRECT DIRECTION.

ACTUAL LINE VOLTAGE: L1 TO L2 _____

ACTUAL LINE VOLTAGE: L1 TO L3 _____

ACTUAL LINE VOLTAGE: L2 TO L3 _____

ACTUAL AMPERAGE: L1_____

ACTUAL AMPERAGE: L2_____

ACTUAL AMPERAGE: L2_____

**LIQUID SOLUTION CONTROLLER**

**CIRCUIT #1**

LIQUID SOLUTION COOLING SETPOINT: DEGREES F _____

LIQUID SOLUTION COOLING DIFFERENTIAL: DEGREES F_____

**CIRCUIT #2**

LIQUID SOLUTION COOLING SETPOINT: DEGREES F _____

LIQUID SOLUTION COOLING DIFFERENTIAL: DEGREES F_____

**LIQUID SOLUTION CIRCUIT**

CHILLER'S LIQUID SOLUTION ENTERING TEMPERATURE: DEGREES F_____

CHILLER'S LIQUID SOLUTION LEAVING TEMPERATURE: DEGREES F_____

**COMPRESSORS:** ENSURE THESE READINGS ARE WITHIN THE SPECIFICATIONS OF THE COMPRESSOR

CIRCUIT #1

L1: ACTUAL VOLTAGE _____ACTUAL AMPERAGE_____

L2: ACTUAL VOLTAGE _____ACTUAL AMPERAGE_____

L3: ACTUAL VOLTAGE _____ACTUAL AMPERAGE_____

**L3 IS ONLY USED ON 3-PHASE CHILLERS ONLY**

CIRCUIT #2

L1: ACTUAL VOLTAGE _____ACTUAL AMPERAGE_____

L2: ACTUAL VOLTAGE _____ACTUAL AMPERAGE_____

L3: ACTUAL VOLTAGE _____ACTUAL AMPERAGE_____

**L3 IS ONLY USED ON 3-PHASE CHILLERS ONLY**

**REFRIGERANT CIRCUITS**

CIRCUIT #1

LIQUID LINE TEMPERATURE: DEGREES F_____

LIQUID LINE PRESSURE: PSI _____

SUCTION LINE TEMPERATURE: DEGREES F_____

SUCTION LINE PRESSURE: PSI _____

SUBCOOLING_____SUPERHEAT_____

CIRCUIT #2

LIQUID LINE TEMPERATURE: DEGREES F_____

LIQUID LINE PRESSURE: PSI _____

SUCTION LINE TEMPERATURE: DEGREES F_____

SUCTION LINE PRESSURE: PSI _____

SUBCOOLING_____SUPERHEAT_____

TOTAL REFRIGERANT VOLUME: CIRCUIT 1_____ CIRCUIT 2_____

**CONDENSER FAN MOTORS** ENSURE THESE READINGS ARE WITHIN THE SPECIFICATIONS OF THE MOTOR

#1

L1: ACTUAL VOLTAGE _____ACTUAL AMPERAGE_____

L2:ACTUAL VOLTAGE _____ACTUAL AMPERAGE_____

#2

L1:ACTUAL VOLTAGE _____ACTUAL AMPERAGE_____

L2:ACTUAL VOLTAGE _____ACTUAL AMPERAGE_____

**NOTE 1**
IF UNIT CONTAINS A FACTORY INSTALLED LOW AMBIENT KIT, ENSURE THE ICM325 CONTROLLER'S CUT OUT AND HARD START SETTINGS HAVE BEEN ADJUSTED, PER THE MANUAL, FOR A BALL BEARING MOTOR. ADJUSTMENTS MAY HAVE TO BE MADE DEPENDING ON THE UNIT'S ENVIRONMENT.

**NOTE 2**
ASSURE THAT INCOMING POWER VOLTAGE TO CHILLER IS WITHIN RATED UNIT VOLTAGE RANGE.
MAXIMUM DEVIATION FROM SPECIFIED RATED CHILLER VOLTAGE IS +- 5%.
IF THERE IS OVER A 5% VOLTAGE IMBALANCE, DO NOT ATTEMPT TO START CHILLER! CALL LOCAL POWER COMPANY FOR ASSISTANCE.

**NOTE 3**
ENSURE CONTROL VOLTAGE DOES NOT EXCEED 27 VAC OR RUN BELOW 22 VAC.

**NOTE 4**
THE CHILLER SHALL NOT BE OPERATED WITH LESS THAN 10% PROPYLENE GLYCOL IN THE LIQUID SOLUTION. DOING SO WILL VOID ALL WARRANTY ON THE CHILLER. ENSURE THE TOTAL AMOUNT OF GLYCOL IN THE SYSTEM WILL PROTECT THE LIQUID SOLUTION FROM FREEZING DURING THE LOWEST AMBIENT TEMPERATURE IN YOUR AREA.



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