Johnson Controls	YCWL0056 - 0198 STYLE A 60HZ, YCWL0200 - 0611 STYLE A 50 HZ, STARTUP CHECKLIST	
STARTUP CHECKLIST	Supersedes 201.26-CL1 (409)	Form 201.26-CL1 (313)

STARTUP CHECKLIST

CUSTOMER: _____ JOB NAME: _____

ADDRESS: _____ LOCATION: _____

PHONE: _____ CUSTOMER ORDER NO: _____

JCI TEL NO: _____ JCI ORDER NO: _____ JCI CONTRACT NO: _____

CHILLER MODEL NO: _____ **UNIT SERIAL NO**: _____

The work (as checked below) is in process and will be completed by: _____ / _____ / _____
Month Day Year

The following work must be completed in accordance with installation instructions:

A. CHECKING THE SYSTEM PRIOR TO INITIAL START (NO POWER)

Unit Checks

1. Inspect the unit for shipping or installation damage ☐
2. Assure that all piping has been completed ..... ☐
3. Visually check for refrigerant piping leaks ..... ☐
4. Open suction line ball valve, discharge line ball valve, and liquid line valve for each system. ..... ☐
5. The compressor oil level should be maintained so that an oil level is visible or splashing in sight glass when fully loaded. At shutdown, the oil level should be between the bottom and middle of the oil equalizing sight glass. ☐
6. Assure water pumps are "ON". Check and adjust water pump flow rate and pressure drop across the cooler (see "Operational Limitations" in IOM). Verify flow switch operation. ..... ☐

NOTE

Excessive flow may cause catastrophic damage to the heat exchanger (evaporator).

7. Check the control panel to ensure it is free of foreign material (wires, metal chips, etc.)..... ☐
8. Visually inspect wiring (power and control). Wiring MUST meet N.E.C. and local codes. ..... ☐
9. Check tightness of power wiring inside the power panel on both sides of the motor contactors and overloads. ..... ☐
10. Check for proper size fuses in main and control circuits, and verify overload setting corresponds with RLA and FLA values in electrical tables. ..... ☐
11. Assure 120VAC Control Power to TB1 has 15 amp minimum capacity. ..... ☐
12. Be certain all water temp sensors are inserted completely in their respective wells and are coated with heat conductive compound. ..... ☐
13. Assure that evaporator TXV bulbs are strapped onto the suction lines at 4 or 8 o'clock positions or suction temps. sensors if EEVs are installed. ..... ☐

B. COMPRESSOR HEATERS (POWER ON - 24 HOURS PRIOR TO START)

Apply 120VAC and verify its value between terminals 5 and 2 of CTB2. The voltage should be 120VAC +/- 10%..... ☐

Power must be applied 24 hours prior to start-up

Each heater should draw approximately 0.5-1A.

C. POWER CHECKS
(POWER ON - UNIT SWITCHED OFF)

1. Apply 3-phase power and verify its value. Voltage imbalance should be no more than 2% of the average voltage. ..... ☐
2. Apply 120VAC and verify its value on the terminal block in the power panel. Make the measurement between terminals 5 and 2 of CTB2. The voltage should be 120VAC +/- 10%..... ☐
3. Program/verify the Cooling Setpoints, Program Setpoints, and Unit Options. Record the values below (see sections on Setpoints and Unit Keys in IOM for programming instruction) .

OPTIONS	
Display Language	
Sys 1 Switch	
Sys 2 Switch	
Chilled Liquid	
* Ambient Control	
Local/Remote Mode	
Control Mode	
Display Units	
* Lead/Lag Control	
* Fan Control	N/A
Manual Override	
Current Feedback	
** Soft Start	
** Unit Type	
** Refrigerant Type	
** Expansion Valve Type	
COOLING SETPOINTS	
Cooling Setpoint	
Range	
EMS-PWM Max. Setpoint	
PROGRAM	
Discharge Pressure Cutout	
Suct. Pressure Cutout	
Low Amb. Temp. Cutout	
Leaving Liquid Temp. Cutout	
Anti-Recycle Time	
Fan Control ON Pressure	N/A
Fan Differential OFF Pressure	N/A
Total # of Compressors	
* Number of Fans/System	N/A
* Unit/Sys Voltage	
Unit ID	

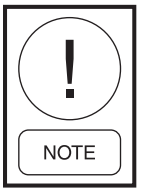
* Not on All Models

** Viewable Only

4. Put the unit into Service Mode (as described under the Control Service and Troubleshooting section) and cycle each condenser fan to ensure proper rotation. . ☐
5. Prior to this step, turn system 2 OFF and system 1 ON (refer to Option 2 under Unit Keys section for more information on system switches). Connect a manifold gauge to system 1 suction and discharge service valves. ..... ☐

   Place the Unit Switch in the control panel to the ON position. As each compressor cycles ON, ensure that the discharge pressure rises and the suction pressure decreases. If this does not occur, the compressor being tested is operating in the reverse direction and must be corrected. After verifying proper compressor rotation, turn the Unit Switch to "OFF,"

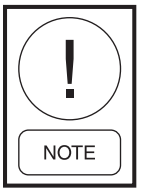
The chilled liquid setpoint may need to be temporarily lowered to ensure all compressors cycle ON.



This unit uses scroll compressors which can only operate in one direction. Failure to observe this will lead to compressor failure.

6. Turn system 1 OFF and system 2 ON (refer to Option 2 under Unit Keys sections for more information on system switches).

   Place the Unit Switch in the control panel to the ON position. As each compressor cycles ON, ensure that the discharge pressure rises and the suction pressure decreases. If this does not occur, the compressor being tested is operating in the reverse direction and must be corrected. After verifying proper compressor rotation, turn the Unit Switch to OFF.



The chilled liquid setpoint may need to be temporarily lowered to ensure all compressors cycle ON.

D. CHECKING SUPERHEAT AND SUBCOOLING

The subcooling temperature of each system can be calculated by recording the temperature of the liquid line at the outlet of the condenser and subtracting it from the liquid line saturation temperature at the liquid stop valve (liquid line saturation temp. is converted from a temperature/pressure chart).

Example:

Liquid line pressure = 325 PSIG converted to temp.	101 °F
Minus liquid line temp.	-86 °F
Subcooling =	15 °F

The subcooling should be adjusted to 15 °F at design conditions.

1. Record the liquid line pressure and its corresponding temperature, liquid line temperature and subcooling below: ..... ☐

	SYS 1	SYS 2	
Liq Line Press =	———	———	PSIG
Saturated Temp =	———	———	°F
Liq Line Temp =	———	———	°F
Subcooling =	———	———	°F

After the subcooling is verified, the suction superheat should be checked. The superheat should be checked only after steady state operation of the chiller has been established, the leaving water temperature, and the unit is running in a fully loaded condition. Correct superheat setting for a system is 10°F - 15°F (5.56°C - 8.33 °C) 18" (46 cm) from the heat exchanger.

Superheat should typically be set for not less than 10°F with only a single compressor running on a circuit. The superheat is calculated as the difference between the actual temperature of the returned refrigerant gas in the suction line entering the compressor and the temperature corresponding to the suction pressure as shown in a standard pressure/temperature chart.

Example:

Suction Temp =	46 °F
minus Suction Press 105 PSIG converted to Temp	-34 °F
Superheat =	12 °F

When adjusting the expansion valve (TXV only), the adjusting screw should be turned not more than one turn at a time, allowing sufficient time (approximately 15 minutes) between adjustments for the system and the thermal expansion valve to respond and stabilize.

Assure that superheat is set at a minimum of 10°F (5.56 °C) with a single compressor running on each circuit.

2. Record the suction temperature, suction pressure, suction saturation temperature, and superheat of each system below:

	SYS 1	SYS 2	
Suction Temp =	———	———	PSIG
Suction Pressure =	———	———	°F
Saturation Temp =	———	———	°F
Superheat =	———	———	°F

E. LEAK CHECKING

Leak check compressors, fittings, and piping to ensure no leaks. ..... ☐

If the unit is functioning satisfactorily during the initial operating period, no safeties trip and the compressors cycle to control water temperature to setpoint, the chiller is ready to be placed into operation.

Form 201.26-CL1 (313)
Issue Date: March 28, 2013
Supersedes:201.26-CL1 (409)