Supersedes: New Release

Form: QWC4-CL3 (221)

QUANTECH		MODEL – QWC4

START-UP CHECKLIST

CUSTOMER: _____ JOB NAME: _____

ADDRESS: _____ LOCATION: _____

PHONE: _____ CUSTOMER ORDER NO: _____

QTC TEL NO: _____ QTC ORDER NO: _____ QTC 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 start-up instructions contained in the Installation, Operation, and Maintenance Manual (Form *QWC4-NM1*):

A. GENERAL:

The following basic checks should be made with the customer power to the unit switched off.

1. Review the Installation Checklist (Form *QWC4-CL1*). ..... ☐
2. Inspect the unit for installation damage that may have occurred. If damage is found, take action and/or repair as appropriate..... ☐
3. Water connection inlet and outlet are at proper locations, have hangers nearby that would support their weight and show no visible strain on chiller nozzles. ..... ☐
4. Wiring is complete (power feed terminations in the VSD), and all sources of electrical supply to the unit are taken from a single point of isolation per *QWC4-PW2*. ..... ☐
5. Confirm any field control wiring modifications are in accordance with Form *QWC4-PW2* ..... ☐
6. Verify the chiller is charged with refrigerant (pressures match R-134a/R-513A saturation for ambient temp). ..... ☐
7. Verify that the unit's protective ground terminal(s) are properly connected to a suitable grounding point. Ensure that all unit internal ground connections are tight. ..... ☐
8. Verify that the following isolation valves are open.
   a. Compressor discharge (optional) ..... ☐
   b. Condenser subcooler outlet (optional) ..... ☐
   c. Main oil supply inline ball valve ..... ☐
   d. Condenser pressure transducer ..... ☐
   e. Condenser gas to oil eductor ..... ☐
   f. Evaporator pressure transducer ..... ☐
   g. Evaporator oil return to eductor ..... ☐
   h. Oil return eductor to compressor ..... ☐
   i. Liquid injection to compressor (optional) ..... ☐
   j. Economizer pressure transducer ..... ☐
9. Verify the shipping anti-freeze solution has been drained from the VSD, and replaced with the proper amount of inhibited water coolant that shipped loose with the chiller. Refer to SECTION 7 - MAINTENANCE in the QWC4-NM1 for filling process. ..... ☐
10. Verify electrical connections in the VSD are tight, especially motor leads to terminals. ..... ☐
11. If the VSD provides an optional circuit breaker at the incoming power connection to the VSD, make sure the settings are properly set per the information on the next page.
12. Find your VSD model from the list below, and set the adjustments to the setting values in the following table. If your model is not listed below, look for it in the next table of drive model numbers with the ratings plug value.
    a. TVP1CMPRBW_-50B
    b. TVP1CMPRBW_-65B
    c. TVP1CMPRBW_-68B

(Continued on following page)

ADJUSTMENT	SETTING VALUE
Long Time Pickup IR~	G
Long Time Delay TLD(S) LONG	2
Short Time Delay ISD(XIR) SHORT	2
Ground Fault Pickup IG(XIN) GND	0.2
Ground Fault Delay TSD/ TG(MS) SHORT/GND	J

Find your model from the list below, check the ratings plug values in the first table, and set the setting values for the adjustments listed in the second table:

DRIVE MODEL NO.	RATINGS PLUG VALUE
TVP1CMPRBW_-50B	600
TVP1CMPRBW_-65B	600
TVP1CMPRBW_-68B	600

ADJUSTMENT	SETTING VALUES
Short Delay Pick-up	2
Short Delay Time	INST
Ground Fault Pick-up	1
Ground Fault Time	150

The settings for the circuit breaker should not be changed from the settings. The warranty will be voided if the breaker settings are changed.

13. Check the chiller for refrigerant leaks at joints or water piping leaks. ..... ☐
14. Make sure 9 liters of compressor oil were added to both circuits. ..... ☐
15. Make sure the control panel is free of foreign material (wires, metal chips, tools, documents, etc.). Check for signs of water or moisture. ..... ☐
16. Make sure the leaving liquid temperature sensor is coated with the heat conductive compound (P/N 013-00890-000), and is inserted to the bottom of the water outlet sensor well in the cooler. This sensor must always be fully inserted in the water outlet sensor well. ..... ☐
17. Make sure the flow switches are connected between Terminals 2 and 12 and 2 and 13 on Terminal Block 1TB in the control panel. ..... ☐
18. Check whenever the pump contacts are used, the coil of the pump starter should be suppressed with an RC suppressor (P/N 031-00808-000). ... ☐

B. START-UP

Panel Check

Only qualified individuals are permitted to service this product, and are to be knowledgeable of, and adhere to, all safe work practices as required by local codes. Use proper personal protection where and when required.

1. Verify that the voltage supply corresponds to the unit requirement, and is within the limits as specified in SECTION 4 - TECHNICAL DATA in Form *QWC4-NM1.* ..... ☐
2. Make sure the unit switch at the bottom of the keypad is in the OFF (O) position. ..... ☐
3. Apply 3-phase power to the chiller. Turn on the optional panel circuit breaker, if supplied. ..... ☐
4. Verify the control panel display is illuminated. To prevent the compressors from starting, make sure that the SYSTEM SWITCHES key is off for both systems. ..... ☐
5. Use a clamp-on ammeter to make sure the both compressor heaters are turned on. Heater current draw is approximately 3A. ..... ☐
6. Confirm that the compressor overload current settings have been correctly adjusted by the factory. These are not normally required to be reset. Use the VSD DATA key on the control panel, navigate to the COMP1 MOTOR OVERLOAD = ### AMPS and COMP2 MOTOR OVERLOAD = ### AMPS screens. The values should match the values on the overload setting label, which is located inside of the VSD cabinet. If the values do not match, an adjustment is required inside the VSD cabinet by qualified service personnel.. ☐
7. Record the overload settings below:

   System 1: _____Amps

Setting the motor overload potentiometers incorrectly may cause damage to the equipment.

8. Press the STATUS key. If the following UNIT WARNING message appears, immediately contact QuanTech Product Technical Support to request the password to reprogram the serial number, and any other important factory programmed information that was lost. . ..... ☐
9. If the unit is equipped with SC-EQ, set up per *450.50-N1 Section 2*..... ☐

UNIT WARNING: INVALID SERIAL NUMBER
ENTER UNIT SERIAL NUMBER

(Continued on following page)

Programmed Options

Program the required options in the control panel for the desired operating requirements, then record the values below. Refer to the PROGRAM key in SECTION 6 - OPERATION in Form *QWC4-NM2* for more information:

1. Display Language = _____
2. Chilled Liquid Mode = _____
3. Local/Remote Mode = _____
4. Display Units = _____
5. Remote Temp Reset = _____
6. Remote Current Reset =_____
7. Compressor Selection = _____
8. Operating Mode (Heat Pump) = _____

Programmed Operating Values

Program the required operating values into the microprocessor. then record them below. Refer to the PROGRAM key in SECTION 6 - OPERATION in QWC4-NM1 for low and high limits, and default values.

1. Chilled Liquid Leaving Temperature Cutout =_____°F (°C)
2. Motor Current Limit = _____% FLA
3. Pulldown Motor Current Limit = _____% FLA
4. Pulldown Motor Current Limit Time =_____MIN
5. Motor Temp Unload = _____°F (°C)
6. Unit ID Number = _____
7. Condenser Liquid Ref Level = _____

Liquid Control Setpoint

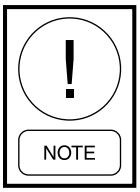
Program the chilled and condenser liquid (optional heat pump) setpoints and ranges, then record them below:

1. Leaving Chilled Liquid Temp Setpoint = _____°F (°C)
2. Leaving Chilled Liquid Temp Control Range = _____°F (°C)
3. Maximum Leaving Chilled Liquid Remote Temp Reset = _____°F (°C)
4. Leaving Condenser Liquid Temp Setpoint = _____°F (°C)
5. Leaving Condenser Liquid Temp Control Range = _____°F (°C)
6. Maximum Leaving Condenser Liquid Remote Temp Reset = _____°F (°C)

Date/Time and Daily Schedule

1. Program the date and time by making sure that the CLK Jumper JP2 on the control board is in the ON position. Press the DATE/TIME key to set the date and time. ..... ☐
2. Program the daily and holiday start/stop by pressing the SCHEDULE key. ..... ☐

C. CHILLER SYSTEM



After completion of the following checks when the system is running correctly, stop the unit, switch all applicable switches ON, and restart the unit.

1. Ensure power is on the chiller to energize the compressor heaters 24 hours prior to start-up. .. ☐
2. Ensure the SYSTEM SWITCHES key is OFF for both systems. ..... ☐
3. Turn the unit switch to the ON position. ..... ☐
4. If the chilled and condenser liquid pumps are manually operated, start the pumps. The control center will not allow the chiller to start unless flow is established through the unit. If the pumps are wired to the control center, override the contact to start the pumps to verify the flow. ..... ☐
5. Throttle back flow to make sure the flow switch opens with a loss of flow. If the pump is turned off during chiller operation, it is recommended that auxiliary pump contacts be placed in series with the flow switch for additional protection. ..... ☐
6. Evaluate cooler and condenser water flow indication compared to design information found on the sales order. If shell pressure drop is used, it should be within +/- 15% of the rating information. ..... ☐
7. If the chilled water and condenser pump run contacts on the chiller were overridden to check flow, remove overrides. Pumps will get start command when chiller initiates run. ..... ☐
8. Press the SYSTEM SWITCHES key, and turn on the System SWITCH. There may be a few seconds delay before the compressor starts because of the anti-recycle timer. Be ready, when the compressor starts, to switch the UNIT switch to the OFF position immediately, if any unusual noises or other adverse conditions develop. ..... ☐

(Continued on following page)

9. When the compressor starts, press the relevant System Pressures key to verify that oil differential pressure develops immediately. If oil pressure does not develop, the automatic controls will shut down the compressor. Under no circumstances should a restart attempt be made on a compressor, which does not develop oil pressure immediately. Switch the UNIT switch to the OFF position.. ..... ☐
10. Adjust condenser refrigerant liquid level setpoint to a value that covers the subcooler top and provides proper evaporator performance with the chiller running steady. ..... ☐
11. After the chiller is at full load at Design Leaving Chilled Liquid Temperature, capture the operating data to print or save to text file. ..... ☐