YORK® A JOHNSON CONTROLS COMPANY	YK Centrifugal Chiller Quality Control Checks	
Technical Data	Supersedes: 160.49-TD4 (196)	Form 160.73-TD3 (206)

Every YK Centrifugal Chiller is subjected to a rigorous Quality Control inspection and test procedure during manufacturing. Detailed checklists contain inspection requirements for a large number of key process operations and observations. Each item must be initialed and dated by the worker and/or inspector. Each checklist follows the components to completion and goes into the QC file for future reference before the unit is shipped to the customer. Each test and inspection is backed by written procedures and standards.

The major inspections and tests are:

HEAT EXCHANGERS

- Heat exchangers are designed and tested in full conformance to the ASME Boiler and Pressure Vessel Code, Section VIII, Division 1.

- Evaporator and condenser refrigerant side hydrostatic strength test at 1.3 x DWP *after tubing* using **liquid refrigerant**. Shell side is dried using air after test. (This is the most common method used).

  OR

  Evaporator and condenser refrigerant side hydrostatic strength test at 1.3 x Design Working Pressure (DWP) *before tubing* **using water** followed by 1.1 x DWP test *after tubing* **using air**. Shell side is dried using air after test. (This is the alternate method used).

- Evaporator and condenser waterside hydrostatic strength test at 1.5 x DWP. Hold at pressure and examine for leaks. Tube side is dried using air after test.

COMPRESSOR

- All external cast compressor parts are given a hydrostatic strength test at 1.5 x DWP. Hold pressure for one minute.

- All external cast compressor parts are then leak tested at DWP using air under water. Hold pressure while observing for leaks.

- A compressor casting is annually given a hydrostatic strength test at 3 x DWP to remain qualified for the UL label.

- Each gear is 100% inspected at the supplier.

- Each impeller is statically and dynamically balanced, then overspeed tested at 120% of its maximum design RPM.

MOTOR – (Performed by Motor Manufacturer)

- Rotor balanced in accordance with NEMA Standard MG1.

- Stator high potential tested (dielectric strength) at 1.2 x (twice rated voltage plus 1000) volts for a duration of one second, per NEMA Standard MG1.

- Megger reading after high potential test performed on motors 400 HP or larger.

- No-load readings of current and speed at normal voltage and frequency per NEMA standard MG1, “Routine Tests,” including current input at rated frequency with rotor at standstill.

COMPLETE SYSTEM

- High Potential Testing: System wiring is high potential tested for electrical integrity through the Optiview control panel (and Solid State Starter and Variable Speed Drive options).

- Chiller Air Run Testing: Each chiller is air run-in for thirty (30) minutes during which time:

  ***NOTE**: An air run-in test will not be performed if motors are field supplied or if the chillers are high voltage.*

  - Current is measured in each line and voltage across each phase.

  - Pre-rotation vane assembly is tested through its actuator to prove operation from fully closed to wide open vanes.

  - Panel Functional Test: Optiview control panel is operated and functions are tested. Instrument readings are logged at 10 minute intervals.

  - Oil pump motor is operated and lubrication system tested and observed for leaks. Observe operation of shaft seal.

  - Compressor oil pressure is checked.

  - Vibration Testing: Vibration readings are taken on the compressor/motor driveline assembly in the horizontal, vertical, and axial directions.

  - The compressor operation is observed for any abnormal noises or temperatures during start-up, operation, and coastdown.

  - Proximity sensor (where applicable) is calibrated and the reference position is logged on tag located in control panel.

- After the air run-in test, the oil filter is removed and inspected for any sign of unusual wear within the compressor. A new oil filter is installed.

- Chiller Leak Testing: Pressurize entire system to DWP with air. Leak test using soap and water. Any leaks are repaired and the test is repeated.

- Vacuum Hold Testing: Each system is finally evacuated to 500 microns and held for one hour, during which time the pressure must not rise at a rate greater than 150 microns for the one-hour period. If the pressure rise is unacceptable, the test is repeated. If still unacceptable, repeat the refrigerant/air mixture leak test above.