

Mechanical Specifications

General

Exposed metal surfaces are painted with air-dry beige, direct-to-metal, single-component paint. Each unit ships with full operating charges of refrigerant and oil. Molded neoprene isolation pads are supplied for placement under all support points. Startup and operator instruction by factory-trained service personnel are included.

Compressor and Motor

The unit is equipped with a semi-hermetic, direct-drive, 3600-rpm (3000 rpm @ 50 Hz) rotary compressor that includes a capacity control slide valve, oil sump heater, and differential pressure refrigerant oil flow system. Four pressure-lubricated, rolling-element bearing groups support the rotating assembly.

The motor is a suction gas-cooled, hermetically sealed, two-pole, squirrel cage induction-type.

Unit-Mounted Starter

The unit is supplied with a NEMA 1 type enclosure with top power-wiring access and three-phase, solid state overload protection. The starter is available in a Wye-Delta configuration, factory-mounted and fully pre-wired to the compressor motor and control panel. A factory-installed, factory-wired 600VA control power transformer provides all unit control power (120 VAC secondary) and CH530 module power (24 VAC secondary). Optional starter features include circuit breakers, ground fault circuit breakers, and mechanical, non-fused disconnects.

Evaporator and Condenser

Shells are carbon steel plate. The evaporator and condenser are designed, tested, and stamped in accordance with ASME Code for refrigerant-side/working-side pressure of 200 psig.

All tube sheets are made of carbon steel; tubes are mechanically expanded into tube sheets and mechanically fastened to tube supports. Evaporator tubes are 1.0-inch (25.4 mm) diameter and condenser tubes are 0.75-inch (19.05 mm) diameter. Both types can be individually replaced. Standard tubes are externally finned, internally enhanced seamless copper with lands at all tube sheets.

All water pass arrangements are available with grooved connections (150 or 300 psig waterside). All connections may be either right- or left-handed. Waterside shall be hydrostatically tested at 1.5X design working pressure.

Refrigerant Circuit

An electronically controlled expansion valve is provided to maintain proper refrigerant flow.

Unit Controls (CH530)

The microprocessor-based control panel is factory-installed and factory-tested. The control system is powered by a control power transformer, and will load and unload the chiller through adjustment of the compressor slide valve. Microprocessor-based chilled water reset based on return water is standard.

The CH530 microprocessor automatically acts to prevent unit shutdown due to abnormal operating conditions associated with low evaporator refrigerant temperature, high condensing temperature, and/or motor current overload. If an abnormal operating condition continues and the protective limit is reached, the machine should shut down.

The panel includes machine protection shutdown requiring *manual reset* for the following conditions:

- low evaporator refrigerant temperature and pressure
- high condenser refrigerant pressure
- low oil flow
- critical sensor or detection circuit faults
- motor current overload
- high compressor discharge temperature
- lost communication between modules
- electrical distribution faults: phase loss, phase imbalance, or phase reversal
- external and local emergency stop
- starter transition failure

The panel also includes machine protection shutdown with *automatic reset* for the following correctable conditions:

- momentary power loss
- under/over voltage
- loss of evaporator or condenser water flow

When a fault is detected, the control system conducts more than 100 diagnostic checks and displays results.

The display will identify the fault, indicate date, time, and operating mode at time of occurrence, and provide type of reset required and a help message. The diagnostic history will display the last ten diagnostics with their times and dates of occurrence.

Clear Language Display Panel

Factory-mounted to the control panel door, the operator interface has an LCD touch-screen display for operator input and information output. This interface provides access to the following information: evaporator report, condenser report, compressor report, ASHRAE Guideline 3 report, operator settings, service settings, service tests, and diagnostics. All diagnostics and messages are displayed in "clear language."

Data contained in available reports includes:

- Water and air temperatures
- Refrigerant levels and temperatures
- Oil pressure
- Flow switch status
- EXV position
- Head pressure control command
- Compressor starts and run-time
- Line phase percent RLA, amps, and volts

All necessary settings and setpoints are programmed into the microprocessor-based controller via the operator interface. The controller is capable of receiving signals contemporaneously from a variety of control sources, in any combination, and priority order of control sources can be programmed. The control source with priority determines active setpoints via the signal it sends to the control panel. Control sources may be:

- the local operator interface (standard)
- a hard-wired 4-20 mA or 2-10 VDC signal from an external source (interface optional; control source not supplied)
- Generic BAS (optional points; control source not supplied)
- LonTalk LCI-C (interface optional; control source not supplied)
- Trane Tracer Summit™ system (interface optional)