



For halocarbon refrigerants and medium /low temperature applications

General :

Units are leak and pressure tested at 350 psig high side, 250-psig low side, then evacuated and charged. All Air-Cooled Chillers are site charged with Refrigerant but are pre charged with oil at factory.

Construction

Reliability for Process Industries ...

Process industries work 24 x 7 all 365 days unlike comfort applications wherein human comfort is the only question a chiller has to satisfy.

The Process chiller has work to keep the process parameters under control save which there are all chances the process may not be able to achieve its final formation as required.

Starcore Refrigeration Ltd. has designed a chiller keeping these necessities in mind

Range :

70 KW to 500 KW at operating anti frozen temperatures of 0 to -30 DegC both Direct Expansion and Flooded Options available.

Standard Component Supply

- Helical Rotary Screw Compressor with single or twin screws
- Shell and tube Chillers built in accordance with TEMA standards
- Condenser coils. Built to last
- High Efficiency/Performance Option with oversized heat Exchangers
- Remote Input Options
- Remote Output Options
- Wye-Delta Compressor Start Type
- Condenser Corrosion Protection
- TEAO Condenser Fan Motors
- High Ambient Option
- Circuit Breaker
- Neoprene Isolators
- Flange Kit

Shell and Tube Evaporators :

The evaporator is a tube-in-shell heat exchanger design with internally and externally finned copper tubes roller expanded into the tube sheet. The evaporator is designed, tested and stamped in accordance with ASME for a refrigerant side working pressure of 200 psig. The evaporator is designed for a waterside working pressure of 150 psig.

Each shell includes a vent, a drain and fittings for temperature control sensors and is insulated with 3/4-inch to 4 inches depending on the required K factor. Optimized for R134a, R22, R404 A high-efficiency duties.

- Designed to match screw compressors.
- Meets high efficiency demands as well as severe environmental standards.
- Tubes ensure safe oil return, even for the most viscous oils.
- Excellent partial load performance.
- Compact measures – maximum length < 4 m (13 ft).
- Integrated square support version avoiding need for additional mounting feet.
- Different baffle distances for different temp applications.
- Stainless steel tube versions available for specific applications.

Condenser and Fans :

Air-cooled condenser coils have aluminum fins mechanically bonded to internally finned seamless copper tubing. The condenser coil has an integral sub cooling circuit. Condensers are factory proof and leak tested at 506 psig.

Direct-drive vertical discharge condenser fans are dynamically balanced. Three phase Condenser fan motors with permanently lubricated ball bearings and internal thermal overload protection are provided. Standard units will start and operate between 4 to 45Degc ambient.

Compressor and Oil Flow System :

The rotary screw compressor is semi hermetic, direct drive, 3600 rpm, 60 Hz, [3000 rpm, 50 Hz], with capacity control slide valve, a load/unload valve, rolling element bearings, differential refrigerant pressure oil pump and oil heater. The motor is a suction gas cooled, hermetically sealed, two-pole squirrel cage induction motor. Oil separator and filtration devices are integral with the compressor for medium temperatures and provided separate for low temperature applications. Check valves in the Compressor discharge and lube oil system and solenoid valves in the lube system are also provided.

Refrigeration Circuits :

Each unit depending on its capacity can have one or two refrigerant circuits, with one or two rotary screw compressors per circuit. Each refrigerant circuit includes a compressor suction and discharge service valve, liquid line shutoff valve, removable core filter, liquid line sight glass with moisture indicator, charging port and an electronic expansion valve. Fully modulating compressors and electronic expansion valves provide variable capacity modulation over the entire operating range.

Control Engineering :

All unit controls are housed in an outdoor rated weather tight enclosure. All controls, including sensors, are factory mounted and tested prior to shipment. Microcomputer controls provide all control functions including start-up and shut down, leaving antifrogen temperature control, compressor and electronic expansion valve modulation, fan sequencing, anti-recycle logic, automatic lead/lag compressor starting and load limiting.

The unit control automatically takes action to avoid unit shutdown due to abnormal operating conditions associated with low refrigerant pressure, high condensing pressure and motor current overload. Should the abnormal operating condition continue until a protective limit is violated, the unit would be shut down? Unit protective functions include loss of chilled water flow, evaporator freezing, low refrigerant pressure, high refrigerant pressure, reverse rotation, compressor starting and running over current, phase loss, phase imbalance, phase reversal, and loss of oil flow. A digital display indicates chilled water setpoint and leaving chilled water temperature as standard. Standard power connections include main three phases power to the compressors, condenser fans and control power is all single phase at 230 Volts.

Unit Controls :

- Human Interfaces
- Adaptive Safety Controls
 - Motor current draw
 - Evaporator pressure
 - Condenser pressure
 - Compressor slide valve modulation,
 - Electronic expansion valve modulation
 - Fan staging.
- External Auto/Stop
- Chilled Water flow
- External Interlock
- Chilled Water Pump Control
- Chilled Water Temperature Reset

Chiller Inputs :

- Chiller Enable/Disable
- Chilled Liquid Set point (Cool Set point)
- Current Limit Set point (Capacity Limit)
- Ice Making (Chiller Mode)

Chiller Outputs :

- On/Off
- Active Set point
- Average Percent RLA (Actual Capacity)
- Active Current Limit Set point
- Leaving Chilled Water Temperature
- Entering Chilled Water Temperature
- Alarm Descriptor
- Chiller Status
- Evaporator Water Pump Request
- Evaporator Refrigerant Temperature
- Evaporator Refrigerant Pressure
- Condenser Refrigerant Temperature
- Condenser Refrigerant Pressure
- Outdoor Air Temperature
- Condenser Air Flow
- Compressor Running
- Maximum Capacity Status
- Current Per Line
- Voltage Per Phase
- Oil Temperature Per Compressor
- Compressor Starts
- Compressor Run Time



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