



CHILLER UNIT SPECIFICATION OM160-2GE

COOLING CAPACITY: 160 tons (1,920,000 BTU/H) { 546 kW } at 45° F { 7.2° C } leaving water temperature and 55° F { 12.8° C } returning water temperature. Chiller unit flow rate will be approximately 480 gpm { 109 m³h }. Condenser flow rate (each) is to be approximately 320 gpm { 73 m³h } entering at a maximum temperature of 90° F { 32° C }. All ratings are at a fouling factor of 0.0005

CONSTRUCTION & RATINGS: The chiller unit shall be constructed in accordance with ARI Standard 590-86 and shall comply with all applicable NEC and ASME codes for water cooled chillers.

COMPRESSORS: The chiller unit will have two, 80 ton {273 kW} Bitzer semi-hermetic compact screw compressors. Each compressor will be equipped with suction and discharge valves. Input voltage to the compressor motor will be 460-3-60. Power consumption of each compressor is approximately 65 kW each. Refrigerant to be used is R-407C .



CAPACITY CONTROL: Four steps of capacity control for each compressor will be achieved through the use of four unloaders on each compressor. These unloaders will be regulated by a temperature controller to maintain a consistent set point under changing load conditions. The unloaders will also allow the compressor to be started unloaded.

COOLER: The unit is equipped with a single plate style heat exchangers, each of 160 tons {546 kW} capacity. The plate heat exchanger has a single water and dual refrigerant circuits. Construction of the unit is of #316 stainless steel. The material used to braze the plates together is copper. Maximum test pressure for both circuits is 635 psig. Each plate will be individually insulated with 1/2" {13mm} thick closed cell insulation. Water flow through the plate will be 480 gpm { 109 m³h } at a pressure drop of 7.20 psi {0.50 bar }. We recommend that there be a 20% glycol mixture in the chillwater loop. A stainless steel drain pan will be mounted under the plates to catch any associated condensation.



CONDENSER: The unit is equipped with two shell and tube marine condensers. The shell is constructed of ASME spec SA-53 steel pipe. Shells are shot blasted and cleaned before assembly. Tubes are high performance enhanced surface seamless 90/10 Cupro-Nickel tubes to ASME spec SB-359. Tubes are roller expanded into double grooved tubesheets to assure tight joints. Tubesheets are 90/10 Cupro-Nickel to ASME spec SB-171 Alloy 706. Tube supports are quality steel plug welded to the shell. Heads are cast bronze with integral pass partitions, ASME spec SB-62. Gaskets are die-cut providing effective sealing between tubesheets and machined heads. The refrigerant side is constructed and tested in accordance with Section VIII, Division 1 of ASME Code for unfired pressure vessels. Shell side design pressure (refrigerant side) is 350 psig at 250° F. Tube side (water side) is 150 psig at 150° F. Every condenser is tested per ASME Code prior to shipment. Seawater connections are DN 80 Victaulic. Water flow to the condenser will be regulated by using two modulating valves per condenser. These valves will automatically maintain compressor head pressure at a point where the unit operates at its best efficiency by modulating the amount of seawater flow through the condenser. A pressure relief valve (set for 400 psig) on the shell is standard.



REFRIGERANT CIRCUIT: Each of the two refrigerant circuits shall include a liquid line ball valve, replaceable core liquid line filter drier with access fitting for refrigerant charging, combination moisture indicator and sight glass, refrigerant pressure transducers and thermal expansion valve. All suction lines will be covered with a minimum of 1/2" closed cell insulation. All refrigerant pressure transducers, switches and controls will be installed with isolation valves. The system will utilize Electronic Expansion Valves for precise refrigerant metering to the evaporators under all conditions.

CONTROL PANEL / ELECTRICAL BOX: The unit will have a NEMA 12 type enclosure for all of the electrical components. Each chiller stage will have a separate controller for operation of the compressor unloaders and for cycling of the two compressors. Compressors will automatically alternate in sequence to help equalize running hours.

Motor starters and circuit breakers will be provided for each compressor. A separate power inlet will be provided for each compressor.

Switches will be provided to start and stop the individual compressors. Indicator lights will be provided to indicate normal operating conditions for the unit along with any fault situations that may occur. Chillwater inlet and outlet temperatures will be display digitally.

DIMENSIONS: 102" {2591mm} long x 72" {1829mm} wide x 76" {1930mm} high