

## **1 General**

### **1.1 REFERENCES**

- .1 Air-Conditioning and Refrigeration Institute (ARI)
  - .1 ARI 210/240, Standard for Unitary Air Conditioning and Air-Source Heat Pump Equipment.
- .2 American National Standards Institute/National Fire Protection Association (ANSI/NFPA)
  - .1 ANSI/NFPA 90A, Installation of Air Conditioning and Ventilating Systems.
- .3 American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE)
  - .1 ASHRAE Standard 15, Safety Standard for Refrigeration Systems.
- .4 Canadian Standards Association (CSA International)
  - .1 CAN/CSA-C273.3, Performance Standard for Split-System Central Air-Conditioners and Heat Pumps.
  - .2 CAN/CSA-C656, Performance Standard for Single Package Central Air Conditioners and Heat Pumps.
- .5 Environment Canada, (EC)/Environmental Protection Services (EPS)
  - .1 EPS 1/RA/2, Code of Practice for Elimination of Fluorocarbons Emissions from Refrigeration and Air Conditioning Systems.
  - .2 Environment Canada, Ozone-Depleting Substances Alternatives and Suppliers List.
- .6 ETL Listing Laboratories (ETL).

### **1.2 SHOP DRAWINGS AND PRODUCT DATA**

- .1 Submit shop drawings in accordance with Sections 01 33 00 - Submittal Procedures.
- .2 Indicate:
  - .1 Capacities.
  - .2 ARI Ratings.
  - .3 Sound Power levels.
  - .4 Installation instructions.
  - .5 Start-up Instructions.
  - .6 O&M, Instructions.

## **2 Products**

### **2.1 GENERAL**

- .1 Furnish and install split system air source or water source heat pumps, as indicated on the plans. Equipment shall be completely assembled, piped and internally wired, capacity and characteristics are listed in the schedule and as shown on the plans.
- .2 Heat pumps: EPS 1/RA/2, CSA approved and carry ARI or CSA certification seal.

### **2.2 REFRIGERANTS**

- .1 Type of Refrigerant: R410A.

### **2.3 AIR SOURCE HEAT PUMP**

- .1 General:
  - .1 Factory-assembled package containing fan, air-to-refrigerant coil, compressor, 4-way reversing valve, controls for use with R410A on drawings and/or schedule.
- .2 Performance: as indicated.
  - .1 Certified in accordance with CAN/CSA-C655.
- .3 Basic unit:
  - .1 Compressor: welded hermetic type with internal vibration isolation. Controls to

- prevent compressor short cycling.
- .2 Refrigerant piping: factory assembled, tested charged with R410A sealed, with capillary metering device, thermal expansion valve, pilot operated refrigerant reversing valve, high pressure and low temperature safety cut-outs.
- .3 Provide for field connection of water and electrical services.
- .4 Unit power type: 208V/1Ph/60Hz.
- .5 Refrigerant lines to accommodate compression fit line sets, be equipped with shutoff valves for line isolation, and Schrader valves for refrigerant charging and vacuum.
- .6 Unit to be contained in slim profile single piece steel casing, with electrostatically coated rust-resistant primer.
- .7 Air cooled condenser fan(s) to be integrated onboard.
- .8 Unit to have an onboard microprocessor unit which communicates heating/cooling calls with the indoor unit, and manages functions within the outdoor unit including:
  - .1 Compressor Start/Stop/ Pumpdown.
  - .2 Reversing Valve Operation.
  - .3 Condenser Fan operation and optimal cycling.
  - .4 Electric heater operation (if equipped).
  - .5 Alarm code display (via board mounted LED).
- .9 Unit to be hot-gas defrost capable - to be optimally started.

### **3 Execution**

#### **3.1 INSTALLATION**

- .1 Install where indicated and in accordance with manufacturer's instructions.
- .2 Install outdoor units at ground level on RC housekeeping pad.
- .3 Secure with hold-down bolts.
- .4 Make piping connections.
- .5 Nothing to obstruct ready access to components or to prevent removal of components for servicing.
- .6 The Contractor shall fully comply with the system installation requirements outlined in the 'Department of Fisheries and Oceans Halocarbon Management Procedure' found in attached Appendix 'A'. The requirements are inclusive of providing the appropriate registration information, Halocarbon inventory, and the work must be completed by a licensed tradesperson who holds a Refrigeration Code of Practice Certificate, and has formally reviewed the Federal Halocarbon regulation. The Contractor will bear any costs related to non-compliance with these regulations (ie. fines).

#### **3.2 START-UP AND COMMISSIONING**

- .1 Manufacturer to certify installation.
- .2 Manufacturer to be present during start-up and certify performance.
- .3 Manufacturer to provide verbal, and written instructions to operating personnel.
- .4 Submit written report to Departmental Representative.

**END OF SECTION**