CoolAIR Series BA – Split System Air Cooled A/C Unit

1.0 GENERAL

1.1 This specification covers the design and manufacture of AIR's CoolAIR Series BA split system, air cooled DX air conditioning unit.

1.2 CoolAIR units are recommended for cooling/heating only applications with no humidity control.

1.3 Features described herein are AIR's standard. However, AIR offers customization of our standard designs to our Customers, upon request.

1.4 AIR selects each mechanical component to specifically meet the required conditions of each unit. Where deviations between this specification and AIR's detailed technical proposal offered to the Customer exist, the proposal shall take precedence.

2.0 UNIT CASING

2.1 Units shall be a vertical configuration with upblast supply air discharge and rear return.

2.2 Unit panels shall be fabricated from 18 gauge, 304 stainless steel and include fasteners that allow for easy removal and replacement without alignment issues. Panels shall not be used to support any internal equipment. Access doors shall be gasketed and have toolless compression latches.

2.3 Fan section panels shall be 1" thick single wall construction with closed cell elastomeric foam insulation, non-condensing at ambient conditions of 90^{o}F and 80%RH.

2.4 Compressor section panels shall be single wall construction and uninsulated.

3.0 SUPPLY FANS

3.1 Units up to 15 tons shall be furnished with one fan. Units above 15 tons shall be furnished with dual fans.

3.2 Fan wheels shall be forward curved.

3.3 Fans shall be balanced per ANSI/AMCA 204-05, G6.3 level.

3.4 Fans shall have pillow block bearings with an L10 life of minimum 100,000 hours.

3.5 All fan pulleys, sheaves and belts shall have a 1.5 service factor.

3.6 Fans shall be constant speed, double width double inlet (DWDI). Single and dual fans shall be furnished with a single TEFC motor and motor starter.

3.7 Standard allowance for external duct static pressure loss is 1"w.g.

3.7.1 Static pressure loss through duct mounted heaters provided for field installation by AIR will be included within the internal static pressure allowance, provided the Customer provides the duct size for the heater installation at time of Request for Proposal.

3.7.2 Customer shall advise if external duct static pressure required exceeds 1"w.g. at time of Request for Proposal.

4.0 EVAPORATOR COILS

4.1 Evaporator coils shall have copper tubes and aluminum fins. Fin spacing shall not exceed 12 fins per inch. Fin thickness shall not be less than 0.0075". Tube thickness shall not be less than 0.016". Coils shall be in a vertical configuration.

4.1.1 Upon request, evaporator coils and all exposed copper shall be coated with ElectroFin E-Coat or Blygold PoluAl XT polyurethane coating. Application shall be by a qualified technician per manufacturer's recommendations.

4.2 Condensate drain pans shall be stainless steel and shall be sloped. Drain pans shall be readily accessible.

5.0 REFRIGERANT SYSTEM

5.1 Compressors shall be scroll design.

5.2 Compressors shall be furnished with oil sight glass, crank case heater, and high/low pressure switches.

5.3 System refrigerant shall be R-410a.

5.4 Each refrigerant circuit shall include suction and discharge service valves, liquid line filter drier with removable cores, liquid sight glass moisture indicator, and liquid line solenoid valve.

5.5 Each circuit shall be equipped with a pump down sequence before turning off the compressor.

5.6 Thermostatic expansion valves shall be provided for each circuit.

5.7 Refrigerant piping between the air handling unit and condensing unit shall be per AIR specification ENG-FieldPiping-01. The routing of the refrigerant piping shall be approved by the Customer to determine required piping length.

6.0 AIR COOLED CONDENSERS

6.1 Condensing unit casing shall be all stainless steel construction.

6.2 Condensing unit shall include direct drive propeller fan(s) with EC motor(s) and cast aluminum blades.

6.3 Condensing unit coils shall be copper tubes with aluminum fins. Fin spacing shall not exceed 10 fins per inch. Fin thickness shall not be less than 0.008".

6.3.1 Upon request, cupro-nickel tubes are available as an option.

6.3.2 Upon request, condenser coils and all exposed copper shall be coated with ElectroFin E-Coat or Blygold PoluAl XT polyurethane coating. Application shall be by a qualified technician per manufacturer's recommendations prior to assembly.

6.4 Upon request, condensing unit shall be furnished with non-fused disconnect switch and factory wired to the fan motor.

7.0 FILTERS

7.1 The filter rack shall be designed to house 2" deep filters.

7.1.1 Upon request, the filter rack may be designed to house 4" deep filters.

7.2 The filter rack shall be stainless steel construction. The filter access doors shall be gasketed and hinged. Filters shall be mounted in the rear of the unit and accessible from either side of the unit.

7.3 Filters shall be 2" thick and have a MERV 8 rating. Filters shall meet the requirements of the latest version of ASHRAE Standard 52.2.

7.3.1 Upon request, a differential pressure gauge shall be furnished across the filter bank, capable of displaying the filter pressure drop locally.

7.4 A dirty filter pressure drop allowance of 0.5" shall be added to the clean filter pressure drop for the purpose of A/C unit fan selection.

8.0 ELECTRIC HEATERS

8.1 Upon request, electric heaters shall be provided.

8.2 Heaters shall be shipped loose for duct mounting by the Customer in the field.

8.2.1 Upon request, duct mounted heaters shall be provided with a remote control panel.

8.3 Electric heaters shall be open coil type, furnished complete with all required safeties, including air flow differential pressure switch, primary over temperature protection, secondary over temperature protection, and over current protection.

9.0 ELECTRICAL/CONTROLS

9.1 The unit control panel shall be NEMA 12 rated, mounted on the unit casing.

9.2 The unit shall be furnished with a room mounted thermostat with digital temperature display.

9.3 Motor starter and control power transformers shall be installed within the unit control panel, such that the Customer needs only to bring a single power supply. Power supply may be 208-230v/3ph/60hz, 480v/3ph/60hz, or 575v/3ph/60hz, as requested by the Customer.

9.4 All terminals in the control compartments shall be finger safe and torqued to the terminal manufacturer's specifications utilizing the appropriate WIHA or equivalent torque screwdriver. No energized conductors or circuit parts shall be exposed when the door is opened.

9.5 The A/C unit control systems shall operate as follows:

9.5.1 On a rise in room temperature above set point, the thermostat shall stage the compressors to maintain room temperature set point.

9.5.2 On a fall in room temperature below set point, the thermostat shall stage the electric heater to maintain room temperature set point.

9.6 Upon request, the unit shall be furnished with a smoke detector shipped loose for field mounting in the supply duct by the Customer.

9.6.1 Power supply for the smoke detector shall be 120v, supplied by Customer independent of the A/C unit.

9.6.2 Each smoke detector shall be provided with two (2) Form C dry contacts. One contact shall be interlocked to shutdown A/C unit upon detection of smoke.

10.0 ADDITIONAL SERVICES

10.1 AIR provides startup and commissioning support for all AIR equipment by a factory certified technician.

10.2 AIR offers additional services for a turnkey mechanical solution, upon request:

10.2.1 Detailed engineering of the design, including mechanical, structural, and electrical.

10.2.2 Demolition of existing equipment and/or ductwork (as required).

10.2.3 Rental equipment for temporary cooling.

10.2.4 Furnish and installation of new AIR equipment, including chillers, pump packages, air conditioning units, deep bed activated carbon filtration units, activated carbon recirculation units, etc.

10.2.5 Furnish and installation of additional equipment not manufactured by AIR, required for a complete system.

10.2.6 Fabrication and installation of new ductwork and piping.

10.2.7 Architectural/structural modifications.

10.2.8 Web based parts supplier for all AIR and other HVAC equipment.

10.2.9 Permanent on-site maintenance contracts offering continuous support for AIR and other HVAC equipment.

END OF SPECIFICATION