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**Mechanical Specifications**

**GENERAL DESCRIPTION – BELT DRIVE BLOWER COIL UNITS**

**HBD –** Horizontal Belt Drive

**VBA –** Vertical Belt Drive

**PART 1 – GENERAL**

1.1 SUMMARY

A. This section includes blower coil units and accessories.

1.2 SYSTEM DESCRIPTION

A. Belt Drive Blower Coil Units

B. [2-pipe cooling only] [2-pipe heating only] [2-pipe heat/cool] [2-pipe heat/cool auxiliary electric heat], [2-pipe cool total electric heat], [4-pipe heat/cool] [2-pipe R-410a DX cooling only] [2-pipe R-410a DX cooling only] [4-pipe R-410a DX cooling/ Hydronic Heat]

C. [Horizontal] [Vertical] cabinets

1.3 QUALITY ASSURANCE

A. [Each hydronic coil shall be factory tested for leakage at [350] [400] [450] psig air pressure with coil submerged in water.]

B. Base or “standard” units shall be ETL listed.

C. IEC certified as an ISO 9001:2015 quality management system and ISO14001:2015 environmental management system organization.

1.4 DELIVERY, STORAGE AND HANDLING

A. Unit shall be handled and stored in accordance with the manufacturer’s instructions.

**PART 2 – PRODUCTS**

2.1 MANUFACTURER

A. Basis of design shall be blower coils by International Environment Corporation.

2.2 CONFIGURATION

A. General:

1. Factory assembled belt drive blower coil units complete with coil, fan, motor, drive, drain pan, and all required wiring, piping and controls.

2. Cabinet shall be made of heavy 18 gauge galvanized steel.

3. Units shall be supplied with a duct collar for supply duct connection.

4. The interior surfaces shall be lined with [1˝ thick standard fiberglass] [1˝ foil faced] [1˝ closed cell] [1” standard fiberglass with solid double wall] [1“ standard fiberglass with perforated double wall] insulation. Insulation and adhesive shall meet NFPA-90A requirements for flame spread and smoke generation.

5. Adhesive shall be certified according to the GREENGUARD Indoor Air Quality (IAQ) Certification for Low Emitting Products. Reference Standard: GGPS.001 GREENGUARD IAQ Standard for Building Materials, Finishes, and Furnishings. Reference Standard: GGPS.002 GREENGUARD Children & SchoolsSM Standard.

6. Units shall have a removable, double-sloped stainless steel drain pan extending the entire width of the coil, with “tell tale” second drain connection. Primary drain connection shall be 3/4” male NPT and “tell-tale” connection shall be 1/2” male NPT stainless steel fittings. Primary and secondary drain connections shall be located on the same end as coil connections.

7. Stainless steel pans shall be externally coated with 2-part closed cell foam insulation.

8. Units shall have [2” pleated MERV 8] [1” pleated MERV 8] [two sets of 1” non-woven synthetic throwaway] [2” pleated MERV 11 with 2” pleated pre-filter] [4” pleated MERV 11] [4” pleated MERV 13] filter.

B. HBD Horizontal Belt Drive Units:

1. Units shall be supplied with a duct collar for supply duct connection.

2. Access panels on both sides of the cabinet shall be removable without tools.

3. Filter shall be removable from either side of the filter rack. Additional access shall be bottom filter access.

4. Units shall have holes for through-hanger rods located at top and bottom four corners of the cabinet.

5. [Cabinet shall be painted with an [Arctic White] [Polar White] [Flat Black] [Ermine Gray] [Champagne Beige] [Toffee Brown] [color determined by Architect] powder-coat finish.]

C. VBA Vertical Belt Drive Units:

1. Units shall be supplied with a duct collar for supply duct connection.

2. Access panels on both sides of the cabinet shall be removable with tool.

3. Filter shall be removable from either side of the filter rack. Additional access shall be top filter access.

2.3 CERTIFICATION

A. Safety Agency:

Units shall be listed by ETL indicating the units comply with the minimum requirements of the U.S. and Canadian national product safety standard, ANSI/UL Standard 1995, and with CAN/CSA C22.2 No. 236.

B. Capacities:

Blower coil capacities are tested in accordance with AHRI Standard 440-2019.

2.4 MATERIALS

A. Coils:

1. All coils shall have 1/2˝ copper tubes, [manual] [automatic air] vent(s), and [aluminum fins, galvanized end sheets] [aluminum fins, galvanized end sheet and anti-corrosion epoxy coating] [aluminum fins, stainless steel end sheets] [copper fins, stainless steel end sheets], 10 fins per inch spacing. Coil fins shall be mechanically bonded to copper tubes.

2. Copper tubes must comply with ASTM B-75.

3. Fin thickness shall be 0.0045˝

4. Tube thickness shall be 0.016˝.

5. Coil rows shall be indicated on the drawings.

B. Blowers:

1. Blowers shall be belt-driven, double-width fan wheels with forward-curved blades.

2. Blower wheels shall be statically and dynamically balanced.

3. Scrolls and fan wheels shall be constructed of galvanized steel.

4. Blower housing shall be isolated from the cabinet and motor.

5. Bearings shall be ball bearing type (no sleeve bearings allowed), permanently lubricated and sealed for life. Bearings shall be isolated from the blower housing by rubber mounts set into heavy gauge metal support system.

6. Shaft shall be of solid steel (no hollow shafts allowed), keyed to drive components.

C. Drive:

1. Drive shall consist of variable pitch motor pulley, fixed diameter blower sheave with keyed shaft and drive belt.

2. Drive shall be designed for 120% of rated fan horsepower.

D. Motors:

1. Motors shall be single speed, single-phase, [[120] [208] [240] [277] volts, 60 Hz] [[220] [240] 50 Hz] permanent split capacitor type, open drip proof, resilient mounted NEMA frame motor.

1. Alternate: Motors shall be single speed, three-phase, [[208] [240] [480] [575] volts, 60 Hz] [380 volts, 50 Hz], open drip proof, rigid base mounted, NEMA frame motor.

1. Alternate: Motor shall be single speed, three phase [208] [240] [480] volts, 60 Hz, Premium Efficiency Inverter Duty rated.

2. Motors shall be connected with quick connect electrical plugs.

3. Motor shall have internal thermal overload protection with automatic reset or fused overload protection.

4. Motor service access shall be on same side as coil connections.

5. Motor shall be mounted on adjustable base for belt tensioning and alignment.

E. Controls and Safeties:

1. Control Voltage:

a. Unit shall be equipped with [24VAC control] [control by others].

2. Control Package shall be equipped with specialty devices listed below:

a. [Condensate overflow switch] [No condensate overflow switch supplied.]

F. Operating Characteristics:

1. [A 2-pipe system shall be capable of providing heating or cooling as determined by the operating mode of the central water supply system. [Field-supplied and installed pipe temperature sensor shall control the sequence of the thermostat, as indicated on the drawings.]] [A 2-pipe electric heat system shall be capable of providing heating and cooling on demand.] [A 4-pipe system and 2-pipe electric heat unit shall be capable of providing heating and cooling on demand.]

G. Electrical Requirements

1. Standard unit shall operate on [115] [208] [230] [277] [220] [240] [380] [480] [575] volts, [single] [three] phase, [60] [50] Hz electrical power.

H. Options and Accessories:

1. [Unit shall be equipped with nichrome wire strip electric heaters for total or auxiliary electric heat as specified on the equipment schedule.

a. Heaters shall be protected by an automatic reset safety cutout switch and a manual reset backup. Single power source fusing shall be factory installed.

b. Heater capacity, voltage and stages shall be as specified on the equipment schedule.

c. Units with electric heat shall include electric heat contactor(s) and fuse(s). Heat controls shall include transformer and terminal strip for thermostat connection.]

2. [Unit shall be furnished with unit-mounted, factory-installed and interlocking fused disconnect switch. Fuses shall comply with NFPA 70E/IP20.] [No interlocking disconnect switch supplied.]

3. [24 VAC bipolar ionizer] [No bipolar ionizer]

3. [Outside air mixing box] [No outside air mixing box supplied]

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