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**Mechanical Specifications**

**GENERAL DESCRIPTION – HIGH PERFORMANCE FAN COIL UNITS**

**HHY –** Hi-Performance Hideaway

**HPY –** Hi-Performance Hideaway with Plenum

**HLY –** Hi-Performance Cabinet

**HXY –** Hi-Performance Horizontal Cased

**VEY –** Hi-Performance Vertical Cased

**HHF –** Hi-Performance Hideaway with SureFlow™ System

**HPF –** Hi-Performance Hideaway with Plenum with SureFlow™ System

**HLF –** Hi-Performance Cabinet with SureFlow™ System

**HXF –** Hi-Performance Horizontal Cased with SureFlow™ System

**VEF –** Hi-Performance Vertical Cased with SureFlow™ System

**PART 1 – GENERAL**

1.1 SUMMARY

A. This section includes fan coil units and accessories.

1.2 SYSTEM DESCRIPTION

A. Hi-Performance Fan Coil Unit

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] [SureFlow™ 1x2-pipe (1 pipe required for supply and return] [SureFlow™ 2x4-pipe (2 pipes required, one for heating and one for cooling supply and return)] [SureFlow™ 1x2-pipe (1 pipe required for supply and return) with electric heat]

C. [Concealed] [Exposed] cabinets

1.3 QUALITY ASSURANCE

A. Fan coils shall be Certified and Listed in accordance with AHRI Standard 440-2019.

B. [Each hydronic coil shall be factory tested for leakage at [350] [400] [450] psig air pressure with coil submerged in water.] [IEC performs hydronic coil testing for leakage air pressure with coil submerged in water where applicable.]

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

D. 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 fan coils by International Environmental Corporation.

2.2 CONFIGURATION

A. General:

1. Factory assembled Hi-Performance horizontal and vertical fan coil units complete with coil, fan, motor, drain pan, and all required wiring, piping and controls.

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

3. The interior surfaces shall be lined with [1/2˝ thick standard fiberglass] [1/2˝ thick Premium IAQ fiberglass] [1/2˝ foil faced] [1/4˝ closed cell] insulation. Insulation and adhesive shall meet NFPA-90A requirements for flame spread and smoke generation.

4. 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.

5. Units shall have a stainless steel drain pan extending the entire width of the coil [with “tell tale” second drain connection]. Drain pan shall comply with ASHRAE 62.1-2019.

6. [Stainless steel pans shall be externally coated with 2-part closed cell foam insulation.] [Option anti-microbial inhibitor shall be applied internally.]

B. HHY, HHF Horizontal Hideaway Units:

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

C. HPY, HPF Horizontal Hideaway with Plenum Units:

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

2. A heavy gauge steel plenum shall enclose the blower/motor assembly with bottom or rear return as indicated on the plans.

3. Units shall have [non-woven synthetic throwaway] [framed permanent washable non-metallic] [pleated MERV 8] filter.

4. Unit shall have [front supply/rear return, bottom filter access] [front supply/rear return, side filter access] [front supply/bottom return, bottom filter access].

5. [Valve package enclosure with rear facing valve package]

D. HLY, HLF Horizontal Cabinet, Low Static Units:

1. The unit shall have a double deflection, steel construction, painted to match cabinet, integral discharge grille.

2. Units shall have a hinged, bar type, aluminum finish, return air grille and filter holder.

3. Units shall have [non-woven synthetic throwaway] [framed permanent washable non-metallic] [pleated MERV 8] filter.

4. 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.

E. HXY, HXF Horizontal Cased, High Static Units:

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

2. Units shall be fitted with return air filter rack and collar for return duct connection.

3. Units shall have [non-woven synthetic throwaway] [framed permanent washable non-metallic] [pleated MERV 8] filter.

4. [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.]

F. VEY, VEF Vertical Cased Units:

1. Unit case top shall be supplied with a collar for supply duct connection.

2. Units shall be configured for bottom-return or front-return as indicated on the plans.

3. Units shall be fitted with return air filter rack.

4. Units shall have [non-woven synthetic throwaway] [framed permanent washable non-metallic] [pleated MERV 8] filter.

5. [Units shall be supplied with 6” legs.]

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:

Fan coil capacities are certified and listed 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 sheet] [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, galvanized end sheets. Coil fins shall be mechanically bonded to copper tubes. [SureFlow™ coils shall be designed for use with a circulator matched for SureFlow™ applications.]

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 as indicated on the drawings.

B. Valves:

1. For installation in a [2-pipe] [4-pipe] system, unit shall be equipped with:

A. Valve size shall be [1/2”] [3/4”], as shown on the drawings. [Heating valve size shall be ½”.][SureFlow™ valve size shall be ¾”.]

B. [2] [4] manual ball valves for service

C. [1] [2] motorized control valve, 300 psig service(non-SureFlow™ application):

a. Primary - [25 psid close-off paddle-type] [150 psid normally closed ball-type] [150 psid normally open ball-type] [35 psid floating] [35 psid proportional] with quick-release actuator.

b. Secondary - [25 psid close-off paddle-type] [150 psid normally closed ball-type] [150 psid normally open ball-type] [35 psid floating] [35 psid proportional] with quick-release actuator.

D. [1] [2] low watt SureFlow™ circulator:

a. Circulator shall be rated at 200 psig with fluid temperatures between 40⁰F and 190⁰F.

b. Circulator shall include spring-type check valve with minimum 10”W.G. resistance.

c. Circulator shall be line voltage and factory wired.

d. Shall include a support bracket for factory mounted circulators, condensate baffle and removable cartridge that includes all moving parts.

2. Valve package shall be equipped with specialty devices as indicated on the drawings.

A. Coil connections – [unions at the coil] [standard factory arrangement]

B. Flow Controls (non-SureFlow™ only)

a. Primary - [Return fixed flow control shall be specified on the equipment schedule.] [Circuit setter pressure ports] [Circuit setter P-T ports] [Not supplied]

b. Secondary - [Return fixed flow control shall be specified on the equipment schedule.] [Circuit setter pressure ports] [Circuit setter P-T ports] [Not supplied]

C. Hoses (non-SureFlow™ only) - [24” braided stainless hoses manufactured of EPDM with integral internal Kevlar fabric reinforcement. Hoses shall be rated to fire and smoke standard per ASTM E 84-00 and (NFPA 255, ANSI/UL 723 & UBC 8-1).] [Not supplied]

D. Service Fittings

a. Primary - [Supply P-T port] [Return P-T port] [Supply and Return P-T port ] [Pressure port] [Not supplied]

b. Secondary - [Supply P-T port] [Return P-T port] [Supply and Return

P-T port] [Pressure port] [Not supplied]

E. Strainer

a. Primary - [Y- Strainer] [Y-Strainer with blowdown] [Not supplied]

b. Secondary - [Y- Strainer] [Y-Strainer with blowdown] [Not supplied]

F. Balance Valve

a. Primary - [Return line only] [3-way bypass] [Not supplied]

b. Secondary - [Return line only] [3-way bypass] [Not supplied]

C. Fans:

1. Fans shall be direct-drive, 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. Shall be easily removable.

D. Motors:

1. Motors shall be 3-speed, single phase, [60] [50] Hz constant-torque ECM motors with means for [potentiometer field adjustment of each speed] [variable 0-10V input] [4 speed solid state potentiometer field adjustment], for [115] [208] [230] [277] [220] volts, permanently lubricated ball bearings.

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

3. Motors shall have internal thermal overload protection with automatic reset.

E. Controls:

1. Controls Voltage:

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

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

a. [24VAC condensate overflow switch.]

b. [Thermostat]

i. 24VAC [digital thermostat] [Wi-Fi] [7-day programmable] [BACnet] [Thermostat control by others]

c. [3-speed, 4-position fan switch on a wall plate for field installation.]

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. [Pipe temperature sensor shall control the sequence of the thermostat, as indicated on the drawings.]] [ A 4-pipe system shall be capable of providing heating and cooling on demand.]

G. Electrical Requirements

1. Standard unit shall operate on [115] [208] [230] [277] [220] volts, single 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 fusible link. Single power source fusing shall be factory installed.

b. Heater capacity shall be as specified on the equipment schedule.

c. Heaters shall be single phase [120] [208] [240] [277] [220] volts as specified on the equipment schedule.

d. For auxiliary electric heat, unit controls shall include an aquastat to verify system mode.

2. [Service switch with lock-out & tag-out features shall be factory installed. Circuit shall be [non-fused] [fused].] [No Service Switch furnished]

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

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