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|  | |

**Mechanical Specifications**

**GENERAL DESCRIPTION – HORIZONTAL FAN COIL UNITS**

**CHY** – Horizontal Hideaway

**CBY** – Horizontal Telescoping Hideaway

**CPY** – Horizontal Hideaway with Plenum

**CXB** – Horizontal Cabinet

**CHF** – Horizontal Hideaway with SureFlow® System

**CBF** – Horizontal Telescoping Hideaway with SureFlow® System

**CPF** – Horizontal Hideaway with Plenum with SureFlow® System

**CXF** – Horizontal Cabinet with SureFlow® System

**PART 1 – GENERAL**

1.1 SUMMARY

A. This section includes fan coil units and accessories.

1.2 SYSTEM DESCRIPTION

A. [CBY Horizontal Telescoping Hideaway] [CHY Horizontal Hideaway] [CPY Horizontal Hideaway with Plenum] [CXB Horizontal Cabinet]

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] [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 that are horizontally mounted.

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.]

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 horizontal 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 removable stainless steel drain pan extending the entire width of the coil [with optional “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. CHY, CHF Horizontal Hideaway Units:

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

C. CPY, CPF 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. CXB, CXF Horizontal Cabinet Units:

1. The unit shall have a [stamped] [double deflection, aluminum finish] [double deflection, steel construction, painted to match cabinet] discharge grille.

2. Units shall have removable [bottom access panel with stamped return air grille] [solid bottom access panel with ducted rear return cabinet] and filter rack.

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

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

5. Bottom panel shall be interlocking with cabinet and fastened with tamper proof quarter-turn fasteners.

E. CBY, CBF Horizontal Telescoping Hideaway Units:

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

2. Unit shall have an adjustable height, hinged [bottom access panel with stamped return air grille] [solid bottom access panel with ducted rear return cabinet] and filter rack.

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

4. Bottom panel shall be painted with a [Bright White] [Arctic White] [Polar White] [Flat Black] [Ermine Gray] [Champagne Beige] [Toffee Brown] [color determined by Architect] powder-coat finish.

5. Bottom panel shall be fastened with tamper proof quarter-turn fasteners.

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, 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. [1] [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]

G. Combination Valves

a. Primary - [Combination supply valve, includes ball valve, union, P-T port and Y-Strainer with blowdown] [Combination return valve, includes ball valve, union, P-T port and fixed flow control] [Combination supply valve, includes ball valve, union, P-T port and Y-Strainer with blowdown and Combination return valve, includes ball valve, union, P-T port and fixed flow control] as specified on the equipment schedule

b. Secondary - [Combination supply valve, includes ball valve, union, P-T port and Y-Strainer with blowdown] [Combination return valve, includes ball valve, union, P-T port and fixed flow control] [Combination supply valve, includes ball valve, union, P-T port and Y-Strainer with blowdown and Combination return valve, includes ball valve, union, P-T port and fixed flow control] as specified on the equipment schedule

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 permanent split capacitor type for [115] [208] [230] [277] [220] volts, permanently lubricated ball bearings.

2. Alternate: 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.

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

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

E. Controls:

1. Controls Voltage:

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

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

a. [24V condensate overflow switch.]

b. [Thermostat]

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

ii. [line voltage thermostat]

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] volts, single phase, [60] [50] Hz electrical power, and all exposed wiring shall be in flexible conduit.

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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