|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |

|  |
| --- |
| Project Information |
| Project Name: |  |
| Submitting Contractor: |  |
| Engineer: |  |
| Manufacturer’s Rep: |  |

 |
|  |

**Mechanical Specifications**

**GENERAL DESCRIPTION–VERTICAL FAN COIL UNITS**

**LHA –** Vertical Lowboy Hideaway

**LHW –** Vertical Lowboy Tall Hideaway

**LXA –** Vertical Lowboy Cabinet

**LXW –** Vertical Lowboy Tall Cabinet

**LHF –** Vertical Lowboy Hideaway with SureFlow® System

**LXF –** Vertical Lowboy Cabinet with SureFlow® System

**PART 1 – GENERAL**

1.1 SUMMARY

A. This section includes fan coil units and accessories.

1.2 SYSTEM DESCRIPTION

A. Vertical Fan 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] [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 floor 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 Environment Corporation.

2.2 CONFIGURATION

A. General:

1. Factory assembled 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˝ 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 combination condensate drain pan and fan deck constructed of 16-gauge stainless steel extending the entire width of the coil.

6. Stainless steel pans shall be externally coated with 2-part closed call foam insulation.

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

8. Units shall be supplied with [no][1”][2.5”] leveling legs.

B. LHA, LHW, LHF Floor Hideaway Units:

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

C. LXA, LXW, LXF Floor Exposed Units:

1. Top panel shall be supplied with a [stamped] [double deflection, aluminum finish] [double deflection, steel construction, painted to match cabinet] supply grille.

2. Front panel shall be fastened with tamper proof quarter-turn fasteners.

3. Cabinet shall be free standing with [two access doors] [no access doors].

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.

5. Access door with tamper proof quarter turn fasteners

2.3 CERTIFICATION

A. Safety:

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] [copper] fins, 12 fins per inch spacing. 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, 60Hz permanent split capacitor type for [115] [208] [230] [277] volts, permanently lubricated, with ball bearings.

2. Alternate: Motors shall be 3-speed, single phase, 60 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] volts, permanently lubricated, with 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. Control Voltage:

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

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, 60Hz electrical power, and all exposed wiring shall be in flexible conduit.

H. Options and Accessories:

1. Unit shall be equipped with sheath electric heaters for total or auxiliary electric heat as specified on the equipment schedule (LHW, LXW only).

a. Heaters shall be protected by an automatic reset safety cutout switch and a fusible link.

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

c. Heaters shall be single phase [120] [208] [240] [277] 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.]

4. [Factory installed outside air damper shall be [motorized] [controlled manually].] [Outside air damper not supplied.]

|  |  |
| --- | --- |
| A picture containing drawing  Description automatically generated |  |
|  |
| 5000 West I-40 Service Road |
| Oklahoma City, OK 73128 |
| IEC Part Number: I100-90034478 | P: 405.605.5000 |
| MS-033 Revision 6 (11/2022) | F: 405.605.5001 |
| ©2020-2022 International Environmental Corporation (IEC®) | [www.iec-okc.com](http://www.iec-okc.com) |