

Mechanical Specifications

High Capacity Fan Coil Units, Horizontal Belt Drive

Models FBC, FBHP and FBH

General

Furnish and install Horizontal Belt Drive High Capacity Fan Coil Units where indicated on the plans and in the specifications, with required mounting components and accessories. All units shall be capable of meeting or exceeding the scheduled capacities for cooling, heating and air delivery. Units shall be draw-through design (FBC, FBHP) with coils, fans, motor/drive and drain pan completely contained within the unit cabinet. Units shall be ETL certified for the United States and Canada in compliance with UL/ANSI Standard 1995 and CSA C22.2 No. 236-95.

Construction

All cabinet panels (FBHP, FBH) shall be fabricated of 18-gauge galvanized steel. Exposed cabinet panels shall be fabricated of not less than 18-gauge cold rolled steel. The side access panels have standard slotted head fasteners for quick removal. No coil or drain piping or electrical connections shall pass through any access panel. The bottom panel should be completely removable to provide extra access to all internal components during maintenance.

All plenum panels shall be insulated with ½" thick 2 lb density matt-faced fiberglass [½" thick foil faced fiberglass with scrim and taped edges to prevent any fibers from reaching the airstream] [½" thick elastomeric closed cell foam insulation]. Insulation shall conform to NFPA 90A for fire, smoke and melting, and comply with a 25/50 Flame Spread and Smoke Developed Index per ASTM E-84 or UL 723. Additionally, insulation shall comply with Antimicrobial Performance Rating of 0, no observed growth, per ASTM G-21.

All ducted units shall have a minimum 1" duct collar on the return and/or discharge.

Painted finish

All painted cabinet exterior panels shall be finished with a standard ivory epoxy powder coat paint. Optional colors can be selected from the Zehnder Rittling Color Chart. Liquid coat paint shall not be acceptable. Custom colors are also available with the submission of a color chip for color match.

Power

Units shall not exceed scheduled power consumption.

Fan assembly

Unit fan shall be dynamically balanced, forward curved, DWDI centrifugal type constructed of galvanized steel with aluminum blower wheel for corrosion resistance. All blower wheels shall have two set screws and shall be mounted on solid steel shafting rotating in ball bearings. All standard blower assemblies shall have resilient mounted cartridge type permanently lubricated ball bearings.

Fan motor and drive assembly

All fan motors shall be standard NEMA design motors of the horsepower listed in the equipment schedule. All motors shall be 1750 RPM, 60 hertz permanently lubricated open drip-proof single speed motors rated for continuous duty. All motors shall be reversible rotation type.

Three phase motors shall be “across-the-line” start type in 56 frame size up through two horsepower.

All motors shall be mounted on an adjustable base.

All motor wiring is to be terminated in a junction box, external to the unit casing.

All fan drive assemblies shall include an adjustable pitch motor sheave, a fixed pitch blower sheave, a standard cross section “V-belt” and keyed motor and blower shafts.

Prior to shipping, all motors shall be assembled, factory tested and installed in the unit.

Drain pan

Primary condensate drain pans shall be single wall, 18-gauge epoxy powder coat painted, galvanized steel for corrosion resistance and extend under the entire coil section. Drain pans shall be of one piece construction and be positively sloped in 2 directions for condensate removal. Drain pan access that requires removal of coils is not acceptable.

The primary drain pan shall be externally insulated with elastomeric closed cell foam insulation. The insulation shall carry no more than a 25/50 Flame Spread and Smoke Developed Rating per ASTM E-84 and UL 723 and an Antimicrobial Performance Rating of 0, no observed growth, per ASTM G-21. Internally sprayed insulation will not be acceptable.

- Option: Provide a primary drain pan constructed entirely of 20-gauge stainless steel for superior corrosion resistance.
- Option: Provide a condensate level switch to prevent unit from operating if the drain becomes blocked.

Coils

All cooling and heating coils shall optimize rows to meet the specified capacity. Coils shall have ½" OD seamless copper tubes and shall be mechanically expanded to provide an efficient, permanent bond between the tube and aluminum fin. Minimum copper tube thickness shall be 0.016".

Fins shall have high efficiency aluminum surface optimized for heat transfer, air pressure drop and carryover. Minimum fin thickness shall be 0.0045". Lanced fins shall not be acceptable.

All coils shall be tested at 350 PSIG air pressure under water, and rated for a maximum 300 PSIG working pressure at 200°F. Coils shall be circuited for counter flow to maximize unit efficiency.

Coil casing shall be fabricated from galvanized steel [stainless steel].

Heating coils shall be furnished in the re-heat position.

All water coils shall be provided with a manual air vent [automatic air vent] fitting to allow for coil venting.

Filters

Units (FBC, FBHP) shall be furnished with a minimum 2" pleated MERV 7 filter. Filters shall be tight fitting to prevent air bypass.

Electrical

Units shall be furnished with single point power connection. Provide an electrical junction box for motor and other electrical terminations.

- Option: Provide a service disconnect switch to isolate power from the unit during maintenance.

Primary internal wiring and testing shall be conducted at the factory. All units shall be shipped with wiring diagrams.

Electric heat

Furnish an electric resistance heating assembly as an integral part of the fan coil unit, with the heating capacity, voltage and kilowatts scheduled in the blow-through configuration.

The heater and unit assembly shall be listed for zero clearance and meet all NEC requirements, and be ETL listed with the unit as an assembly in compliance with UL/ANSI Standard 1995.

All heating elements shall be constructed of nickel chromium resistance wire with a maximum operating temperature of 1850°F. Electric heating elements shall be located in the reheat position and shall be non-accessible to room occupants, once ducted. All internal wiring shall be rated for 105°C minimum.

All heaters shall include over temperature protection consisting of an automatic reset primary thermal limit safety switch and back-up secondary thermal limit safety device. All heaters shall be single stage.

Separate fusing is provided for each element for increased protection.

Piping packages

Provide a standard factory assembled valve piping package to consist of a 2 or 3-way, on/off, motorized electric control valve and two ball isolation valves.

Control valves shall be piped normally closed to the coil. Maximum entering water temperature on the control valve shall be 200°F, and maximum operating pressure shall be 300 PSIG.

- Option: Unions shall be provided to allow easy removal of piping package from unit without the need for brazing or cutting pipe.

- Option: Provide 3-wire floating point modulating control valve (fail-in-place), in lieu of standard 2-position control valve with factory assembled valve piping package.
- Option: Provide proportional 0-10 VDC modulating control valve, in lieu of standard 2-position control valve with factory assembled valve piping package.
- Option: Provide high pressure close-off actuator for 2 or 3-way on/off control valve. Maximum close-off pressure is 75 PSIG.
- Option: Provide an adjustable flow control device for each piping package.
- Option: Provide a fixed flow control device for each piping package.
- Option: Provide pressure-temperature ports (P/T) for each piping package to allow measurement across the coil.

Piping packages shall be completely factory assembled including interconnecting pipe, factory tested for leaks and shipped loose for field installation.

Units shall be manufactured in accordance with ISO 9001:2008 standards established and maintained by Zehnder Rittling.