

KBH, KBV Engineering Specification & Configuration

GENERAL

Furnish and install Krueger model KBH and KBV Belt Drive Blower Coil Units where indicated on the plans and specifications. Units shall be completely factory assembled and tested and shipped as one piece except where noted.

All units shall be capable of meeting or exceeding the scheduled capacities for cooling, heating and air delivery. All unit dimensions for each model and size shall be considered maximums.

All units shall be of "draw-thru" design with coils, fans, motor/drive and drain pan completely contained within the unit cabinet.

Electric heat to be in the blow-thru configuration. Units shall be cETL listed in compliance with UL/ANSI Std. 1995.

All unit coils shall meet or exceed the scheduled cooling and heating capacity, selected and rated in accordance with AHRI 410.

CONSTRUCTION

All units shall be fabricated of minimum 18 gage galvanized steel, able to withstand a 125 hour salt spray test per ASTM B-117. Panels shall be die-formed "multi-bend" construction for optimum strength and rigidity. All exterior panels shall be (single wall insulated with 1 inch thick fiberglass insulation) (foil faced-insulated with 1" thick, 1.6 pound per cubic foot density scrim reinforced foil faced insulation), rated for a maximum air velocity of 5000 f.p.m. In addition to using adhesive complying with NFPA 90A, the insulation shall incorporate a secondary mechanical fastener attached to the unit casing wall (weld pin). Adhesive as the only method of fastening the insulation to the casing is not acceptable. Maximum thermal conductivity shall be 0.24. Insulation must meet all requirements of ASTM C1071 (including C665), UL181 for erosion, and carry a 25/50 rating for flame spread/smoke developed per ASTM E-84, UL723 and NFPA 90A. All units shall have minimum 1" duct collars on discharge and return.

All access panels shall be fully insulated and attached with (standard) (hinged with lift and turn) fasteners on at least two opposite sides. No single access panel shall be larger than 30" x 36" for safety and ease of handling. No coil or drain piping or electrical connections shall pass through any access panel.

Each unit shall be furnished with a one-piece heavy gage (IAQ galvanized steel) (IAQ stainless steel) (galvanized steel) drain pan with welded corner construction.

All units shall be provided with 9/16" diameter hanger rod holes in the top and bottom panels for "through-bolt" type suspension installation. (Rubber-in-shear) (spring) type unit mounting vibration isolators shall be provided by the unit manufacturer.

FAN ASSEMBLY

All units shall be furnished with standard selection double inlet forward curved centrifugal blowers statically and dynamically balanced for smooth operation. All blower wheels shall have two set screws and shall be mounted on solid steel shafting rotating in ball bearings with a minimum design average life (L50) of 100,000 hours. All standard blower assemblies shall have resilient mounted cartridge type permanently lubricated ball bearings.

FAN MOTOR & 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 (ODP) (ODP E+) 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. Three horsepower and larger shall be standard "T" frame with rigid mount.

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 pulley, a fixed pitch blower pulley and a standard cross section "V-belt". All fan drives shall be selected at a minimum service factor of 1.2.

COILS

All unit coils shall be rated in accordance with ARI 410.

All coils shall be 1/2" O.D. seamless copper tubes with collared aluminum fins. All tubes shall be mechanically expanded to provide an efficient bond between tube and fin. All water coils shall be provided with a manual air vent fitting to allow for coil venting. Valve core type vent fittings shall not be accepted.

All chilled water, hot water, and direct expansion (DX) coils shall have aluminum fins and 0.016" tube wall thickness. All steam coils shall have 0.025" tube wall thickness.

All steams coils shall be suitable for temperatures about 35°F and 15 PSIG maximum operating pressure.

All coils shall be hydrostatically tested with air under water at 450 PSIG minimum pressure and rated for a maximum of 300 PSIG working pressure at 200°F.

DX coils shall be tested to 450 PSIG pressure and factory sealed and charged with a minimum of 5 PSIG nitrogen or refrigerated dry air. DX coils shall be provided with a fixed orifice refrigerant distributor. A field furnished and installed thermal expansion valve (TXV) can be mounted directly to the refrigerant distributor.

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COIL OPTIONS

Coil casing shall be fabricated from stainless steel.

Provide automatic air vents, in lieu of manual air vents.

Tube wall thickness shall be 0.025" on chilled water, hot water, and direct expansion coils.

FILTER RACK ASSEMBLY

All units shall be furnished with a flat filter rack with hinged access on both sides designed to accept a 2" nominal standard sized filters. All units shall be provided with nominal 2" (throwaway) (pleated) filters factory installed. One complete set of spare (throwaway) (pleated) filters shall be provided for each unit.

FILTER OPTIONS

Unit shall have a high efficiency filter rack suitable for a 2" (30%) and a 4" (60-65%) (80-85%) (90-95%) pleated filter.

INLET DAMPER SECTION

Where shown on the plans, the unit manufacturer shall furnish a fully insulated mixing box section (factory assembled and installed inlet damper section) to be mounted next to the unit on base rail (unit and mixing box).

The mixing box section shall include heavy gage formed steel blade dampers in a heavy gage steel frame with extruded vinyl blade seals and flexible metal jamb seals. Damper drive linkage shall be factory furnished and installed by the unit manufacturer. A field furnished and installed damper actuator can be mounted directly to the damper shaft.

ELECTRICAL CONTROL

The unit fan motor shall be completely factory wired to an external electrical enclosure. Each unit shall include fan control package with 24 volt control voltage. Each unit shall include motor circuit fusing, contactor, control circuit transformer and terminal strip for connection of field wiring.

A main incoming power non-fused disconnect switch shall be factory furnished and wired by the unit manufacturer for single point power connection.

ELECTRIC HEAT SECTION

Where shown on the plans, the unit manufacturer shall furnish an electric resistance heating assembly with the heating capacity, voltage and stages as shown in the schedule. The heater assembly shall be designed and rated for installation to the blower coil unit in the blow-thru configuration without the use of duct extensions or transitions between the unit and the heater assembly. The heater assembly shall be factory assembled to the air handling unit and completely factory wired. The heater/unit assembly shall be listed for zero clearance meeting all N.E.C. requirements and be cETL listed in compliance with UL/ANSI Standard 1995.

All heating elements shall be open coil design using Ni-Chrome wire mounted in ceramic insulators and housed in an insulated heavy gage galvanized steel housing. All elements

shall terminate in a machine staked stainless steel terminal secured with stainless steel hardware. The element support brackets shall be spaced no greater than 3-1/2" on center. All internal wiring shall be rated for 105°C minimum.

All heaters shall include over temperature protection. All heaters shall include a non-adjustable airflow switch. An incoming line power distribution block shall be provided. The power distribution block shall be designed to accept incoming power wiring capable of carrying 125% of the calculated load current.

In addition to the above, electric heaters shall include the following options:

- Main incoming power disconnect (non-fused).
- Main fusing.
- Magnetic contactors wired for disconnecting operation.
- Fan control package with heater interlock contacts (required for single point power connection).

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| <p>1. SERIES: (XXX)
 KBH - Horizontal Blower Coil
 KBV - Vertical Blower Coil</p> <p>2. ARRANGEMENT: (X)
 1 - Fan Arr. 1 (Upblast Rear)
 2 - Fan Arr. 2 (Upblast Front)
 3 - Fan Arr. 3 (Horizontal Top Front)
 4 - Fan Arr. 4 (Horizontal Bottom Front)
 7 - Fan Arr. 7 (Horizontal Top Rear) *KBV Only</p> <p>3. INLET: (X)
 0 - None
 1 - High Efficiency Rack
 2 - Mixing Box with Linkage</p> <p>4. MIXING BOX DAMPER LOCATION: (XX)
 00 - None
 BR - Bottom and Rear Inlet
 TB - Top and Bottom Inlet
 TR - Top and Rear Inlet</p> <p>5. SIZE: (XX)
 08 - Size 8
 12 - Size 12
 16 - Size 16
 20 - Size 20
 30 - Size 30
 40 - Size 40</p> <p>6. MOTOR: (XX)
 <i>(See Krueger's selection software.)</i></p> <p>7. MOTOR HAND: (X)
 L - Left-hand Motor
 R - Right-hand Motor</p> <p>8. CONDUIT: (X)
 0 - None
 C - Conduit</p> <p>9. DISCONNECT SWITCH: (X)
 0 - None
 D - Disconnect Switch</p> <p>10. FAN CONTROL PACKAGE: (X)
 0 - None
 F - Fan Control Package</p> <p>11. AUTO SWITCH: (X)
 0 - None
 H - Hand-Off Auto Switch</p> <p>12. SPARE BELTS: (X)
 0 - None
 1 - 1 Spare Belt
 2 - 2 Spare Belts
 3 - 3 Spare Belts</p> | <p>13. COIL 1: (X)
 A - 3 Row Cold Water
 B - 4 Row Cold Water
 C - 6 Row Cold Water
 D - 3 Row DX, Single Circuit
 E - 4 Row DX, Single Circuit
 F - 6 Row DX, Single Circuit
 G - 1 Row Hot Water
 H - 2 Row Hot Water
 I - 1 Row Steam
 J - 2 Row Steam
 K - 3 Row with Changeover
 L - 4 Row with Changeover
 M - 6 Row with Changeover</p> <p>14. COIL 1 FPI: (XX)
 08 - 8 FPI
 10 - 10 FPI
 12 - 12 FPI
 14 - 14 FPI</p> <p>15. COIL 1 HAND: (XX)
 LL - Coil 1 Left Hand, Coil 2 Left Hand
 LR - Coil 1 Left Hand, Coil 2 Right Hand
 RL - Coil 1 Right Hand, Coil 2 Left Hand
 RR - Coil 1 Right Hand, Coil 2 Right Hand</p> <p>16. COIL 1 AUTO AIR VENT: (X)
 0 - None
 1 - Auto Air Vent</p> <p>17. COIL 1 CASING: (X)
 0 - Galvanized Casing
 1 - Stainless Steel Casing</p> <p>18. COIL 1 TUBE WALL: (X)
 0 - 0.016"
 1 - 0.025"</p> <p>19. COIL 2: (X)
 0 - None
 A - 3 Row Cold Water
 B - 4 Row Cold Water
 C - 6 Row Cold Water
 D - 3 Row DX, Single Circuit
 E - 4 Row DX, Single Circuit
 F - 6 Row DX, Single Circuit
 G - 1 Row Hot Water
 H - 2 Row Hot Water
 I - 1 Row Steam
 J - 2 Row Steam</p> <p>20. COIL 2 FPI: (XX)
 00 - None
 08 - 8 FPI
 10 - 10 FPI
 12 - 12 FPI
 14 - 14 FPI</p> |
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BLOWER COILS

21. COIL 2 AUTO AIR VENT: (X)

- 0 - None
- 1 - Auto Air Vent

22. COIL 2 CASING: (X)

- 0 - Galvanized Casing
- 1 - Stainless Steel Casing

23. COIL 2 TUBE WALL: (X)

- 0 - 0.016"
- 1 - 0.025"

24. ELECTRIC HEAT CASING: (X)

- 0 - None
- U - Blow Through Uninsulated
- W - Blow Through Double Wall

25. ELECTRIC HEAT VOLTAGE: (X)*(See Krueger's selection software.)***26. ELECTRIC HEAT KW: (XX)***(See Krueger's selection software.)***27. ELECTRIC HEAT HAND: (X)**

- 0 - None
- L - Left-hand
- R - Right-hand

28. MAGNETIC CONTACTOR: (X)

- 0 - None
- M - Magnetic Contactor

29. FUSING PER STEP: (X)

- 0 - None
- F - Fusing per Step

30. DOOR DISCONNECT: (X)

- 0 - None
- K - Door Interlocking Fused Disconnect
- L - Door Interlocking Non-Fused Disconnect

31. MAIN FUSING: (X)

- 0 - None
- M - Main Fusing

32. DRAIN PAN: (X)

- 1 - IAQ Galvanized Drain Pan
- 2 - Flat Galvanized Drain Pan
- 3 - IAQ Stainless Steel Drain Pan
- 4 - Flat G90 with Secondary Drain Connection
- 5 - IAQ SS with Secondary Drain Connection

33. FILTER: (X)

- 0 - None
- 1 - 2" Throwaway
- 2 - 2" 30% Pleated (MERV 7)
- 3 - 2" 30% Pleated (MERV 7), 4" 65% Pleated (MERV 11)
- 4 - 2" 30% Pleated (MERV 7), 4" 85% Pleated (MERV 14)
- 5 - 2" 30% Pleated (MERV 7), 4" 95% Pleated (MERV 15)

34. SPARE FILTER: (X)

- 0 - None
- A - 2" Throwaway Spare Filter
- B - 2" 30% Pleated Spare (MERV 7)
- C - 4" 65% Pleated Spare (MERV 11)
- D - 4" 85% Pleated Spare (MERV 14)
- E - 4" 95% Pleated Spare (MERV 15)
- F - (2) - 2" Throwaway Spare Filter
- G - (2) - 2" 30% Pleated Spare (MERV 7)
- H - (2) - 4" 65% Pleated Spare (MERV 11)
- J - (2) - 4" 85% Pleated Spare (MERV 14)
- K - (2) - 4" 95% Pleated Spare (MERV 15)
- L - (3) - 2" Throwaway Spare Filter
- M - (3) - 2" 30% Pleated Spare (MERV 7)
- N - (3) - 4" 65% Pleated Spare (MERV 11)
- P - (3) - 4" 85% Pleated Spare (MERV 14)
- Q - (3) - 4" 95% Pleated Spare (MERV 15)

35. BASE RAILS: (X)

- 0 - None
- B - Base Rails

36. FOIL OPTIONS: (X)

- 0 - None
- F - Foil Insulation

37. HINGE DOORS: (X)

- 0 - None
- S - Hinged Doors with Lift and Turn Fasteners
- D - DW Hinged Doors with Lift and Turn Fasteners

38. VIBRATION: (X)

- 0 - None
- R - Rubber in Shear
- S - Spring

39. FLOAT: (X)

- 0 - None
- R - Condensate Float Switch

KBH - KBV

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