



23 73 00 – Air Handling Units, Custom & Semi-Custom

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A. General Guidelines:

1. Installation of air handling units within the building envelope in mechanical/equipment rooms is preferred.
2. Where existing conditions or other factors require that air handling units be located on a roof, a covered service area or integral service corridor or vestibule should be specified for the unit.
3. In instances where air handling equipment must be located on a roof, it shall be located or screened from public view if at all possible. Discuss screening options with the owner as required by the project.
4. Location of fresh air intakes shall be considered early in design with regard to prevailing wind locations and contaminant sources (loading docks, exhausts, vents etc.) to prevent entrainment of contaminants and reentering the building at intake. Air intakes should not be at or below ground level if at all possible.

B. Custom Air Handling Units - Indoor

1. Approved Manufacturers:
 - a. Hakkon
 - b. Ingenia
 - c. Ventrol
 - d. Air Enterprise
 - e. Or Owner Approved for Specialty Applications
2. The AHU cabinet shall have minimum 2" insulated double-wall construction, 16 (minimum) gauge exterior galvanized steel and 22 (minimum) gauge internal galvanized steel.
3. The floor Plate shall be 3/16" minimum aluminum with all seams continuously welded.
4. Access doors shall be full height and a minimum width of 18" (24" preferred). Doors shall be fully gasketed and of the same construction, materials and finishes as the cabinet. Provide windows which are at a minimum 10" X 10" or 12" diameter double pane safety vision in all access doors.



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5. All drain pans shall be insulated double walled 304 stainless steel construction. Drain pans shall extend a minimum of 4" upstream and a minimum of 18" downstream of the cooling coil.
6. Fans shall be non-overloading type and selected for additional 15% airflow capacity.
7. VFD's shall be used to control air volume. It is preferred that the AHU manufacturer provide the VFD with the unit. Refer to BSU Guideline Section 26 2923. All VFD controlled motors shall have internal grounding bushings.
8. The use of multiple fans or fanwalls is permitted, however this arrangement should be discussed with the owner early in design.
9. All units shall have factory leakage and deflection tests. Units shall not leak more than 1% air flow at 10 inch wc shall not deflect more than L/200 where "L" is the unsupported span length within completed casings. Tests must be submitted to the engineer/owner's representative prior to shipment. Discuss with the owner if a factory visit to witness the tests is warranted.
10. Coils
 - a. Coil tube shall be copper and have 5/8 inch diameter, wall thickness of 0.035 inch and 0.095 inch thick aluminum fins. 8 fins per inch maximum.
 - b. Preheat coils shall be designed for inlet water temp of 140 (max.) degrees. Integral face and bypass coils are preferred over pumped preheat coils.
 - c. Chilled water coils shall be designed for 44 deg F entering water temperature. The use of glycol shall be avoided.
 - d. Face velocity of chilled water coils shall be designed for a maximum of 450 fpm.
 - e. Provide stainless steel coil frame for cooling coil and heat recovery wheel and galvanized steel frame for heating coils.
11. All dampers shall be low leakage type with blade seals. Outside air dampers shall be insulated. Intakes shall be designed to prevent the intake of rain and snow. Acceptable dampers are TAMCO 1000.
12. Air Handling Units shall be selected with low sound power output. Units shall not cause sound in adjacent spaces to exceed those established in Chapter 47 of ASHRAE 2007 Handbook – HVAC Applications or latest equivalent. Units shall not cause objectionable sound discharged from louvers to exterior spaces. Sound must be mitigated from its source with perforated panels or sound attenuators.



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13. UV lights should be designed for the cooling coil section of the unit.
 - a. Acceptable UV Light manufacturers:
 - 1) Steril-Aire
 - 2) UV Solar Solutions
 - 3) UVDI
 - b. All wiring in sections exposed to UV light shall have protective plastic covering.
 - c. Windows in cooling coil section shall have protective film.

14. Air Handling Units shall be provided with Duro Dyne IP-4 test ports or equal for testing and balancing in each section between each component of the air handling unit.

15. Units with outside air quantities of 50% or greater at minimum heating air flows shall include an energy recovery wheel.
 - a. Acceptable Energy Recovery Wheel manufacturers:
 - 1) SEMCO
 - 2) Thermotech Enterprises
 - 3) Innergytech

C. Exterior or Rooftop Custom Air Handling Units

1. Wall thickness will be a minimum of 4" with fiberglass insulation or 2-1/2" with foam injected insulation.
2. Unit will have a separate sloped roof designed for a snow load and must be specifically designed for exterior applications.
3. AHU's shall be designed with a full thermal break. Exceptions shall be noted on the submittals.
4. Units shall meet all of the additional design guidelines for Indoor Custom Air Handling Units.



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D. Warranty

1. Units shall have complete parts and labor warranty for a minimum of 12 months from date of acceptance. Discuss with owner if an extended warranty period is recommended.