

HYGIENIC AIR HANDLING UNITS

Typical CPA Specifications

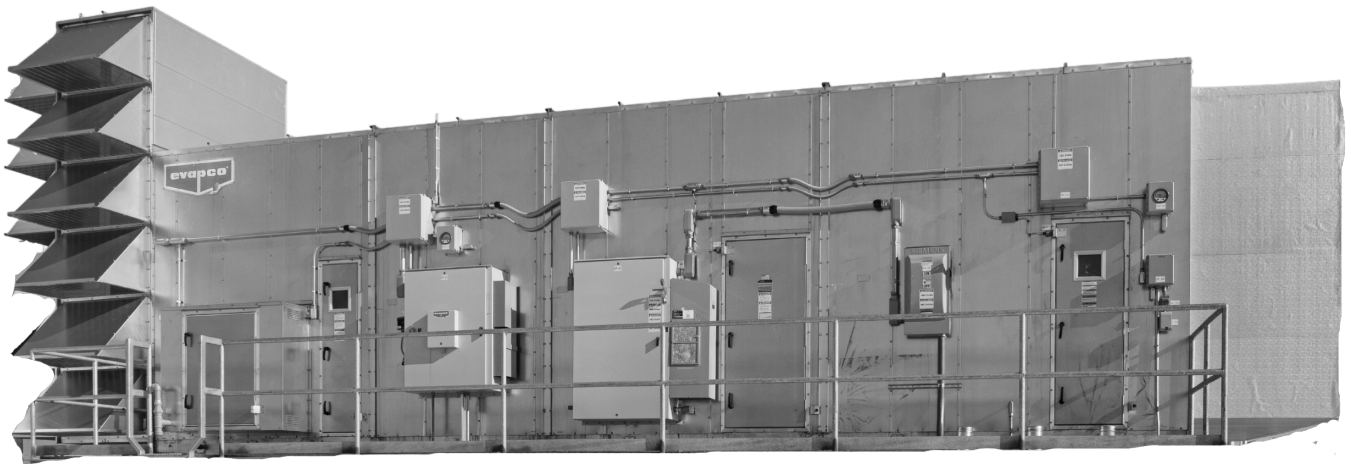


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Unit Construction

Casing

The exterior casing of the unit shall be constructed of 18 gauge, G235 galvanized steel, unpainted. The unit shall be insulated with 2" polyisocyanurate. All exterior seams are sealed air and watertight with an FDA approved sealant.

The interior of the unit shall consist of a watertight, sanitary inner liner constructed of 16 gauge, G235 galvanized steel which shall completely enclose the insulation.

The interior of the unit shall be completely watertight to allow for interior cleaning and sanitizing. The interior of the unit shall be completely sealed watertight using a food grade sealant.

The interior of the unit shall be constructed so that all casing fasteners are either internal to the casing or on the exterior of the unit. Interior casing fasteners shall be minimized.

Optional: 18 gauge 304 stainless steel interior or exterior

Optional: 2" polyisocyanurate insulation with foil-foam-foil wrap

Optional: 2.7" or 4" foam-in-place insulation

Roof

The roof shall be a minimum of 18 gauge, G235 galvanized steel, standing seam type construction, pitched away from the service doors for good water runoff. All exterior seams are sealed air and watertight with an FDA approved sealant. The interior liner of the roof shall match the interior casing of the unit. The interior of the unit shall be completely sealed watertight using a food grade sealant.

Drain Pans

Each section of the unit shall be complete with drain pans, which shall be a minimum of 16 gauge, G235 galvanized steel. Each drain pan shall be fully welded and individually tested to ensure they are leak free.

On all units with a cooling coil section, the drain pan under the cooling coil shall be constructed of 304 stainless steel.

The base of the unit shall be insulated with a minimum of 3" pour foam insulation with a galvanized steel underside sheathing, to protect the insulation.

The drain connection shall be designed so the pans drain out the bottom of the pan to maximize drainage with the drain connection which then extends out the side of the unit. No standing water shall be allowed.

Optional: 18 gauge 304 stainless steel drain pans throughout the unit

Optional: 16 gauge 304 stainless steel drain pans with hygienic fully welded floor

Optional: Drains out the bottom of the unit

Frame

The frame on all CPA units 16 and smaller shall be single channel 8" G235 galvanized steel fully welded frame. CPA sizes 20 to 48 shall be constructed of a double 8" channel, G235 galvanized steel fully welded frame. CPA sizes 56 and above shall have a double 12" channel, G235 galvanized steel fully welded frame.

Removable lifting lugs shall be provided at the base of the corners of each section of the unit. Larger / heavier sections may require heavy duty lifting lugs along all sides of the section.

Access Doors

Access doors shall be provided with an extruded aluminum full perimeter door frame. The frame extrusions shall be miter cut at the corners and assembled by mechanically staking the frame into concealed gussets made of extruded aluminum.

Each door shall be pressure injected with 2.5" of polyisocyanurate foam per cubic foot of door.

Each exterior door shall have a thermal panel type using a high density polyisocyanurate thermal break in both the door and frame construction.

The interior and exterior panels shall be constructed of 20 gauge, G-235 galvanized steel.

The doors shall be mounted to the frame by a minimum of two (2) stainless steel adjustable hinges.

Each door shall be complete with a minimum of three (3) 90 degree polycarbonate handles, operable from the interior and the exterior of the unit.

Out-swing doors will have a safety catch on positive pressure sections.

Optional: 20 gauge 304 stainless steel interior or exterior

Optional: Exterior doors will have test ports

Optional: Exterior doors will have windows (Standard on any burner or UVC access door)

Outside and Return Air Dampers

The dampers shall be parallel blade for return dampers and opposed blade for outside air or supply dampers. Dampers will include nylon bearings and stainless-steel spring-loaded side closures. The construction shall be a minimum of 16-gauge galvanized steel blades with a 12-gauge casing.

The dampers shall have a low leak rating of less than 6.5 CFM per square foot at 4" of differential static pressure.

NEMA 4 direct drive motors with feedback on a damper.

Optional: Stainless steel to match casing

Blowers

The blowers shall consist of a centrifugal airfoil plenum type blower.

The blower shall have a standard inlet screen. The blower wheel, inlet funnel, and support shall be of aluminum construction. The blower wheel shall be supported by two outboard bearings, self-aligning, ball bearing, pillow-block and shall be designed for a minimum of L10, 80,000 hours average life.

The blower shaft shall be ground and polished and shall be coated with a rust inhibitor. The overload service factor used for V-belt drive selection shall be not less than 1.25. The V-belt drive shall be of a standard capacity and furnished with reinforced rubber belts. Fixed sheaves shall be supplied and shall be of a cast iron type.

Optional: L10, 200,000 hours

Optional: The blower wheel shall be complete with a blower cage

Optional: The drive shall be complete with a belt guard

Optional: Direct drive blower with VFD

Optional: Stainless steel wheel

Optional: Hygienic blower mounting on tubes with direct drive blower

Motors

The motors shall be standard TEFC, premium efficiency, VFD ready duty. Motors have sealed bearings. If VFD is provided, motors will include grounding ring.

Optional: Stainless steel or washdown duty motor

Optional: Motor removal system with I-Beam and trolley

Heating Options

Steam Coils

The steam coil shall be constructed with stainless steel tubes and aluminum fins.

The coil shall be designed for a maximum operating pressure of 150 psi

The coil shall be designed for a maximum face velocity of 800 feet per minute.

Optional: Hygienic coil mounting on tubes

Optional: Face & bypass dampers for freeze protection

Optional: Copper tube / Copper fin coils

Hot Water or Glycol Heating Coils

The coil shall be constructed with stainless tubes and aluminum fins. Coil shall meet strength requirements of ASME/ANSI B31.5. Coils will have a design working pressure of 300 PSI. The coil shall be designed for a maximum face velocity of 800 feet per minute.

Optional: CRN certification for units going to Canada

Optional: Hygienic coil mounting on tubes

Hot Gas Heating Coil

The hot gas heating coil shall be constructed with stainless steel tubes and aluminum fins. Coil shall meet strength requirements of ASME/ANSI B31.5. Coils have a design working pressure of 300 PSI (1160 PSI for CO₂). The coil shall be designed for a maximum face velocity of 800 feet per minute.

Optional: CRN certification for units going to Canada

Optional: Hygienic coil mounting on tubes

Direct Fired Heating Section: When applicable

The unit shall be designed with a direct-fired heating section. The direct-fired burner shall have a cast iron header with stainless steel baffle plates.

The burner shall be designed for 2-5 PSI natural gas pressure. The controls shall be full modulating and be designed in accordance with Factory Mutual (FM) insurance guidelines. The gas train shall be complete with all safety devices and controls.

Optional: Burner bypass damper for lower turndown on CFM

Indirect Fired Heating Section

The unit shall be designed with an indirect fired heating section. The indirect fired burner shall be modulating. The heat exchanger, primary and secondary, shall be 300 series stainless steel and be complete with a drain connection. Proper disposal of condensate shall be by the installation contractor.

The burner shall be designed for 8-14" natural gas pressure at the inlet connection.

The controls shall be modulating and be designed in accordance with Factory Mutual (FM) insurance guidelines.

Optional: IRI insurance guidelines

The gas train shall be complete with all safety devices and controls. Burners are available with two-stage and modulating control. Turndown shall be 10 to 1 or 20 to 1.

Heat exchanger shall be complete with flue stack and termination cone (shipped loose for field mounting).

Heat exchanger shall adhere to manufacture's minimum airflow ratings and minimum temp rise for control.

Cooling Options

Recirculating/ Direct Expansion/ Flooded Cooling Coils

The coil shall be designed for refrigerant required for the application. Recirculating ammonia (1.2:1 to 1.3:1 feed rate), flooded ammonia, DX refrigerant coils (NH₃, CO₂, Freon) and recirculated CO₂.

The coil shall be constructed using stainless steel tubes and aluminum fins. Coil shall meet strength requirements of ASME/ANSI B31.5. Coils will have design working pressure of 300 PSI (650 PSI for recirc CO₂ or 1160 PSI for DX CO₂). All coils shall be charged with nitrogen prior to shipment.

The coil shall be designed for a maximum face velocity of 600 feet per minute.

Optional: CRN certification for units going to Canada

Optional: Hygienic coil mounting on tubes

Chilled Water or Glycol Cooling Coils

The coil shall be constructed with stainless steel tubes and aluminum fins. Coil shall meet strength requirements of ASME/ANSI B31.5. Coils will have design working pressure of 300 PSI. All coils shall be charged with nitrogen prior to shipment.

The coil shall be designed for a maximum face velocity of 600 feet per minute.

Coil drain and vent connections shall be in the field piping, by others.

Optional: CRN certification for units going to Canada

Optional: Hygienic coil mounting on tubes

Filtration

Prefilters

Prefilters shall be MERV 8 or higher, pleated filters, with synthetic media. The filters are designed for upstream service. The unit shall be supplied with one initial set of filters. The prefilters shall be held in individual stainless-steel Sani-clean filter frames with "P" type filter clip. Filters to have a max velocity of 625 FPM.

Optional: Aluminum or stainless-steel washable filters

Optional: Extra set of filters

Optional: Filter gauge (Dial indicating indicating manometer or Dwyer 605 filter gauge with PLC communication)

Final Filters

The final filters shall be a MERV 14 or higher, microfine glass wet laid paper with aluminum separators. The filters shall be of a cartridge filter. The filters are designed for upstream service. The unit shall be supplied with one initial set of filters. The filters shall be held in individual stainless-steel Sani-clean filter frames with "P" type filter clip. Filters to have a max velocity of 625 FPM. Filters will include a dial indicating manometer.

Optional: MERV 17 HEPA filters (Requires 500 FPM or less) (The filter frame will match interior casing construction)

Optional: Extra set of filters

Optional: Dwyer 605 filter gauge with PLC communication

Outside Air Inlet Hood

The unit includes an outside air inlet hood constructed of G235 galvanized steel. The hood shall be complete with a bird screen. The hood shall be shipped separate from the unit. Typical hood velocities are 700 FPM or less but can be adjusted to the environment.

Optional: Insect screen

Integral Exhaust Section

Direct drive exhaust fans located within the casing of the CPA unit.

Each of the fans shall be constructed of with a cast aluminum hub and adjustable polypropylene blades. Fans are direct drive.

Service for the integral exhaust fans shall be accomplished through full sized walk-in access doors (no internal hatches shall be allowed).

Each fan shall be driven by a TEAO fan direct drive motor. Motors shall be VFD duty if used for pressure or economizer control.

Each fan shall have low leakage double gravity backdraft damper. Material to match inner liner and exterior casing material.

Desiccant Dehumidification Section

The dehumidification section shall consist of a rotor (wheel) of media impregnated with a silica gel desiccant. The wheel shall consist of a process section (where the moisture is removed from the air stream) and a regeneration section (where the moisture is removed from the air stream).

The regeneration section will include drains that need to be trapped and piped to the proper drain. Note – condensate may be caustic due to heat source or particles in the process airstream. Heat tracing the drain line is recommended in cold climates.

The section will include a heated regeneration section with a heat source to remove the moisture from the wheel. The heat source shall be direct fired natural gas (optional steam, electric, or indirect fired natural gas).

Electric Controls

Each unit shall be supplied with an Allen Bradley PLC control system.

- All control panels shall be UL labeled
- Allen Bradley Compact Logix PLC control system
- Allen Bradley PanelView standard with a display on the main unit panel
- Main control panel, painted steel, NEMA 4, control transformer and terminal blocks
- Non-fused disconnect switches mounted in the control panel
- Siemens fused disconnect with class J fuses for arc-flash protection
- Outside air and recirculated air controls providing a fixed amount of outside air
- Temperature sensors
- Humidity sensors
- Magnetic motor starters mounted in the control panel
- Natural gas heating controls

Optional: Allen Bradley Compact 5380 Series

Optional: Panel View standard with a larger display on the main panel

Optional: Dual control panel for voltage segregation

Optional: Stainless steel control panels

Optional: VFD drives for main blower

Optional: Remote control panels which can include:

- Blower on/off switch
- Blower indicating light
- Burner indicator light
- Dirty filter light
- Panel View

Optional: Discharge air ammonia detector

Optional: Smoke detectors

Optional: LED interior service lights (120V service by other)

Optional: Service receptacles (120V service by others)

Optional: Room pressurization control

Optional: Exhaust motor starters or VFD's

Other Options

The following are some of the many options, which are available for the CPA units:

- Service vestibule – provided with full access (60" wide minimum) the full length of the unit (service vestibule includes a heater and summer ventilation)
- Service platforms with handrail all around (60" wide for control panel access - ladder or stairs provided by others)
- Surge drum ladder/catwalk systems
- RVS, ASME surge drums mounted on top of the unit (bare vessel, all valves and piping by others)
- Shrink wrap unit for shipping
- UVC lights mounted on cooling coil

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