

1-0. GENERAL

Steam distributing coils (tube-within-a-tube design) should be used for applications where freeze protection is a concern, and entering air temperatures are below 40° F. Supply steam pressure for steam distributing coils should be a minimum of 5 psig for proper operation and freeze protection.

Modulating control valves should be used with steam distributing coils. Non-distributing type coils should be used only with on-off control valves.

1-1. CERTIFICATION

All steam coils are to be AHRI performance certified and shall bear the AHRI symbol. Coils outside the scope of AHRI's standard rating conditions or the manufacturer's certification program will be acceptable since the manufacturer is a current member of the AHRI coil certification program, and coils will be rated in accordance with AHRI Standard 410.

1-2. TUBES

Tubes and return bends shall be constructed from seamless UNS C12200 copper conforming to ASTM B224 and ASTM E527. Properties shall be O50 light annealed, with a maximum grain size of 0.040 mm.

Tubes are to be mechanically expanded into fins (secondary surface) for maximum heat transfer. Minimum wall thickness for steam coils shall be .025 for performance longevity.

Materials are to be 5/8" diameter x (0.025, 0.035, 0.049) wall thickness, or 1" diameter x (0.035, 0.049) wall thickness.

1-3. FINS

Secondary surface (fins) shall be of the plate-fin design using aluminum or copper, with die-formed collars. Fin design to be flat, waffle, or sine-wave in a staggered tube pattern to meet performance requirements.

Collars will hold fin spacing at specified density, and cover the entire tube surface. Aluminum properties are to be Alloy 1100 per ASTM B209, with O (soft) temper; copper is to be Alloy 11000 per ASTM B152-06 with soft (anneal) temper. Fins are to be free of oils and oxidation.

1-4. HEADERS

Headers are to be constructed of seamless UNS C12200, Type L (drawn) copper material sized to match specified connection size. Type K (drawn) copper headers and Schedule 40 steel headers shall be offered as optional materials.

Headers for steam distributing coils shall have die-formed end caps brazed on the inside of the headers.

Headers for standard steam coils shall have finished integral spin-closed ends.

All end closures to be designed to withstand test pressure.

Steam distributing coils shall utilize a header-within-a-header design to facilitate freeze protection.

1-5. CONNECTIONS

Connection material shall be copper, or Schedule 40 steel or red brass pipe. The type of connection is to be sweat type, MPT or FPT, grooved, or flanged as required.

Connections shall be sized to accommodate supply steam and condensate loads. Steam distributing coil connection locations shall be such that steam is distributed adequately among all tubes, and that condensate is removed from all tubes to insure freeze protection.

1-6. CASING

Coil casing material shall be of G90 galvanized steel, 16 gauge minimum. Heavier material, stainless steel, copper, or aluminum casings are to be provided as required.

All tube sheet holes are to be oversized to allow for free thermal expansion and contraction of tubes during operation. Intermediate tube supports are to be provided on all coils 50" and longer fin length. Coil casings on top and bottom of coils are to have double-flange construction, allowing for vertical stacking of coils.

1-7. BRAZING

All coils are to be brazed with minimum 5% silver content (BCup-3) filler material to insure joint integrity. Low-fume, flux-coated bronze braze-weld material is to be used for ferrous to non-ferrous joints.

Guide specifications for Coilmaster Steam Coils continues on page 2. >>

1-8. PRESSURE TESTING

Coils shall be tested at 550 psig using dry nitrogen, submerged under water. Dual-operator verification shall determine that all coils are leak-free.

1-9. FREEZE DAMAGE PROTECTION

Steam coils shall be available with Cooney Freeze Block by Coilmaster as an option for freeze damage protection. Freeze Block technology utilizes intermediate expansion headers at each tube pass through the coil by brazing headers to return bends or tubes. Each expansion header will have a corresponding in-line, brass bar-stock relief valve installed that will open to relieve pressure.

This occurs when expansion of the internal fluid reaches a maximum pressure, or the valve senses a minimum internal condensate or external air temperature. Valves are designed to reseal after discharging to prevent flooding after thawing of coil.

Vacuum breakers shall be factory installed near the top of each expansion header to insure gravity-drain of condensate from the coil.

1-10. OPERATING PRESSURES AND TEMPERATURES

Steam coils shall be designed to withstand 150 psig saturated steam supply pressures with appropriate wall thicknesses.

1-11. INSTALLATION

Coils are to be installed according to manufacturer's instructions and applicable piping codes. Piping systems shall be designed to allow for proper supply steam to coils, and condensate removal from coils.