HEATCRAFT

STEAM COIL SPECIFICATION

1.0 GENERAL

Non-distributing steam coils can be used in applications where freeze protection is not a concern. These should be used when entering air temperatures are a minimum of 40°F taking into consideration any outside air dampers being in the incorrect position. Non-distributing type coils should be used only with on-off steam control valves. Steam distributing coils should be used with modulating control valves or if the possibility of near freezing entering air conditions may be seen by the coil.

1.1 CERTIFICATION

Acceptable coils are to have ARI Standard 410 certification and bear the ARI symbol. Coils exceeding the scope of the manufacturer's certification and/or the range of ARI's standard rating conditions will be considered provided the manufacturer is a current member of the ARI Air-Cooling and Air-Heating Coils certification program and the coils have been rated in accordance to ARI Standard 410. Manufacturer must be ISO 9002 certified.

1.2 STEAM COIL DESIGN PRESSURES AND TEMPERATURES

Coils shall be designed to withstand 150 psi maximum operating pressures and a maximum steam temperature of 366°F for standard duty copper tube coils. Optional high pressure construction will include cupronickel tubes and headers to increase maximum operating pressure to 350 psi and maximum operating temperature to 450 degrees .

1.3 FACTORY TESTING REQUIREMENTS

Coils shall be submerged in water and tested with a minimum of 315 psi air pressure for standard copper tube coils. A 500 psig hydrostatic and shock test is required for high pressure cupronickle construction. Coils must display a tag with the inspector's identification as proof of testing.

1.4 FINS

Coils shall be of plate fin type construction providing uniform support for all coil tubes. Stainless steel fins shall be constructed of 304 & 316 stainless. Carbon steel fins shall be constructed of ASTM A109-83. Coils are to be manufactured with die-formed aluminum, copper, stainless steel or carbon steel fins with self-spacing collars which completely cover the entire tube surface. The fin thickness shall be 0.0075 +/- 5% unless otherwise specified. Manufacturer must be capable of providing self-spacing die-formed fins 4 through 14 fins/inch with a tolerance of +/- 4%.

1.5 TUBING

Tubing and return bends shall be constructed from UNS 12200 seamless copper conforming to ASTM B75 and ASTM B251 for standard pressure applications. High pressure construction shall use seamless 90/10 Cupronickel Alloy C70600 per ASTM B111. Stainless steel tubes shall be ASTM A249. Carbon steel tubes shall be W&D - ASTM A214 & seamless - ASTM A179. Copper tube temper shall be light annealed with a maximum grain size of 0.040 mm and a maximum hardness of Rockwell 65 on the 15T scale. Tubes are to be mechanically expanded to form an interference fit with the fin collars. Tubes shall have a nominal thickness of 0.020 inch unless otherwise specified.

1.6 FREE FLOATING CORE

Coils to utilize free floating core assembly to allow for thermal expansion and contraction of tubes during coil operation.

1.7 CLEANING

Prior to brazing, residual manufacturing oils and solid contaminants shall be removed internally and externally by completely submersing the coil in a degreaser which is chemically compatible with the coil material.

1.8 HEADERS

Headers shall be constructed from UNS 12200 seamless copper conforming to ASTM B75 and ASTM B251 for standard pressure applications. High pressure construction is to incorporate seamless 90/10 Cupronickel Alloy C70600 per ASTM B111. Stainless steel will be constructed of 304L & 316L (ASTM-A312) Sch-5 or Sch-10.

Carbon steel headers shall be constructed from Sch-10 (ASTM-A135A) or Sch-40 (ASTM A53A) pipe. Steam coil return headers are to be equipped with factory-installed 1/2" fpt air vent connection placed at the highest point available on face of the header. Tube-to-header holes are to be intruded inward such that the landed surface area is three times the core tube thickness to provide enhanced header to tube joint integrity. All core tubes shall evenly extend within the inside diameter of the header no more than 0.12 inch. End caps shall be die-formed and installed on the inside diameter of the header such that the landed surface area is three times the header wall thickness.

1.9 CONNECTIONS

Standard construction fluid connections are male pipe thread (MPT) and constructed from red brass conforming to ASTM B43 or Schedule 40 steel pipe as a minimum. Stainless steel will be 304L or 316L (ASTM-A240) Sch-40 or Sch-80. Carbon steel will be A53A Sch-40, A106A Sch-40 or Sch-80 or A53B Sch-80 pipe.

1.10 BRAZING

High temperature filler metals shall be used for all brazed joints. Filler metal containing at least 5% silver will be used when joining the header to the core tubes. If flux has been used during the brazing process the coil must be steam-cleaned to remove residual fluxes from all internal and external surfaces.

1.10.1 WELDING

Gas shielded arc welding is used for welded vessels constructed of stainless steel. Gas welding is used for welded vessels constructed of carbon steel.

1.11 CASING

Casings and endplates shall be made from 16 gauge galvanized steel, meeting ASTM A527 unless otherwise noted. Stainless steel cases shall be constructed of 14 & 16 gauge 304 or 304L & 316 or 316L Stainless Steel 2B Finish (ASTM A240). Carbon steel cases shall be plain steel case (A36). Double-flanged casings on top and bottom of finned height are to be provided to allow stacking of the coils. All sheet metal brakes shall be bent to 90 degrees +/- 2 degrees unless specified otherwise. Coils shall be constructed with intermediate tube/support sheets fabricated from a heavy gauge sheet stock. One intermediate/tube support shall be provided for each 48" of finned length. Coils over 144" in finned length shall have 4 intermediate/tube supports. Coils up to 120" finned length should be pitched by manufacturer in case toward condensate connection, a minimum of 1/8" per foot of finned length. Coils over 120" in finned length should be pitched in field to assure proper condensate removal.

1.12 DELIVERY

Manufacturer is to offer a standard delivery time of 11-15 days or less with emergency delivery options of 48 hours, 5 days, or 10 days to minimize system downtime in critical areas.

1.13 INSTALLATION

Coils to be installed in accordance with manufacturer's instructions and any applicable piping codes.