

FREEZE DAMAGE PROTECTION

1-0. GENERAL

Cooney Freeze Block technology by Coilmaster shall be utilized as a freeze damage protection option for steam, hot water, and chilled water coils. The technology offers protection by sensing pressure and/or temperature variations occurring internally and externally to the coil.

2-0. TECHNOLOGY

Freeze Block utilizes intermediate expansion headers at each tube pass through the coil by brazing headers to return bends or directly brazing to 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 water or external air temperature.

3-0. EXPANSION HEADERS

a.) Fluid Coils and Standard Steam Coils

Expansion headers shall be constructed of 7/8" OD seamless UNS C12200, Type L (drawn) copper material with spun-closed ends. Brazed end caps shall not be used to close ends of headers. Headers are to be brazed directly to return bends specifically designed for accepting the installation of headers.

All expansion header joints are to be brazed with minimum 5% silver content (BCup-3) filler material to insure joint integrity. Expansion headers are to be installed on all return bends in the coil to give maximum protection to the tubes under freezing conditions.

b.) Steam Distribution Coils (with 1" outer tubes only)

Expansion headers shall be constructed of 1-3/8" OD seamless UNS C12200, Type L (drawn) copper material with spun-closed ends. Individual headers are to be installed on each row of tubes on the end of the coil opposite the connections (or end opposite the return connection, in the case of a coil supplied from both ends).

Brazed end caps shall not be used to close ends of headers. Headers are to be brazed directly to the outer tubes without additional fittings. All expansion header joints are to be brazed with minimum 5% silver content (BCup-3) filler material to insure joint integrity.

Expansion headers shall include a brass-body vacuum breaker near the top of the header to insure gravity-drain of condensate from the coil. Vacuum breaker shall be low-crack pressure type, removable from header for maintenance and/or replacement, and shall be installed at the factory.

4-0. FREEZE BLOCK VALVE

Valve body shall be constructed of uni-body brass bar stock, and utilizes a fine-mesh stainless steel screen to protect valve from fouling, insuring proper relief of pressure. SAE threads and an integral O-ring on the valve mate with a brass fitting that is brazed directly to the expansion header. Valve shall have hex head to facilitate ease of removal.

Freeze Block valves utilize a hermetically-sealed temperature actuator with an integral pressure spring in an in-line arrangement. Factory valves are designed to open at an air or water temperature of 35°F, or at an internal pressure of 300 psig (optional settings shall be available upon request). In the open position, the valve will discharge a small stream of water as the coil reaches the freezing point. Customer supplied drain pan or other means of draining the relief water eliminates damage to buildings.

Valves are designed to reseal after discharging to prevent flooding after thawing of coil. All valves are pre-assembled, installed on coil, and tested prior to shipping.