

Minimum Electrical Bonding and Grounding

Lightning is a known highly destructive force. In the event of high energy from a lightning strike (which can be a direct strike or an indirect strike to nearby objects), CSST can momentarily be at a much higher or lower electrical potential than adjacent metal systems in the building such as heating ducts, copper pipes and wire and telecommunication wires. If this occurs, an electric spark may arc between the CSST and adjacent metal systems. This arcing can melt holes and cause leaks in the CSST.

According to the National Fuel Gas Code NFPA 54/ANSI Z223, “each above ground portion of a gas piping system which is likely to become energized shall be electrically continuous and bonded to a designed, permanent, low-impedance effective ground fault current path.” Parker requires that every above ground portion of the Parflex CSST System is electrically bonded and grounded in accordance with NFPA 70 (NEC® Section 250).

A permanent electrical connection to the earth must be made by bonding the CSST to the grounding system through the use of a bonding clamp and wire in accordance with the National Electric Code, Section 250 (NFPA 70). This bonding point must be in as close proximity to the electrical panel as possible; close proximity of the bonding point to the gas meter is also desirable if possible. The wire gauge for bonding must be sized, at a minimum, for the full amperage available through the electrical service (per NEC®) and no smaller than a 6 AWG copper wire. Bonding clamps used on the The Parflex System must be attached to a Parflex brass fitting (Figure 1), a steel manifold (Figure 2) or to a rigid pipe component connected to a Parflex fitting. The CSST portion of the gas piping system must not be used for the bonding attachment (Figure 3). CSST also must not be used as a grounding electrode or as the grounding path for appliance or electrical systems. The latest edition of the National Electric Code (NEC®) should be consulted for additional requirements and specific techniques for equipotential bonding and grounding.

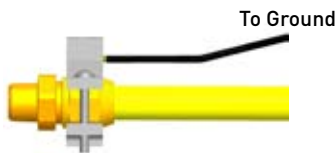


Figure 1: Proper bond attachment on fitting

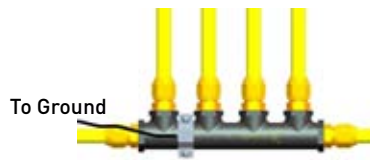


Figure 2: Proper bond attachment on manifold

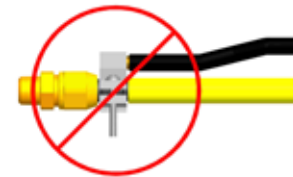


Figure 3: Unacceptable bond attachment on CSST

CSST must be routed as far as possible from all conductive materials in the building such as metal ducts, metal water pipes and electrical wires and cables. See Figure 4

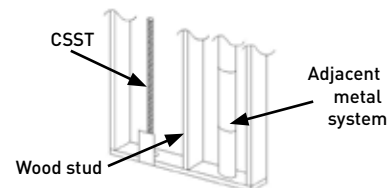


Figure 4: Routing CSST as far as possible from adjacent metal systems. Bonding and Grounding of adjacent metal is recommended.

Additional Recommended Equipotential Bonding

Equipotential bonding consists of making a low impedance electrical connection between the CSST and any adjacent metal structures to create a uniform electrical potential. Adjacent metal systems can include but are not limited to appliances, metal vents, flues, electrical wires and metal pipes. Bonding and grounding of all electrically conductive metal systems and metallic structural material is recommended.

In order to further increase protection of an entire building structure from potential lightning damage, the installer and user should consider the installation of a lightning protection system pursuant to NFPA 780 or other recognized standard, particularly those in geographical areas prone to lightning strikes.