

ELECTRICAL BONDING - Pro-Flex® CSST

In accordance with the NFPA 54 Section 7.13, Tru-Flex Metal Hose Corp., requires proper bonding of the Pro-Flex® gas-piping systems in a structure to the structure's electrical grounding system. This must be performed by a qualified person recognized by the local jurisdiction as capable of performing such work. These requirements are for all Pro-Flex® CSST installations.

Direct bonding of Pro-Flex® CSST is required as part of the installation of all new CSST natural and LP gas piping systems whether or not the connected gas equipment is electrically powered. This requirement is provided as part of the manufacturer's instructions for single-family and multi-family dwellings. Bonding for commercial applications should be designed by qualified persons knowledgeable in electrical system design and the local electrical code.

Pro-Flex® CSST installed inside or attached to the exterior of a building structure shall be electrically continuous and direct bonded to an effective ground-fault current path. The gas piping systems shall be considered to be direct bonded when installed in accordance with the following guidelines:

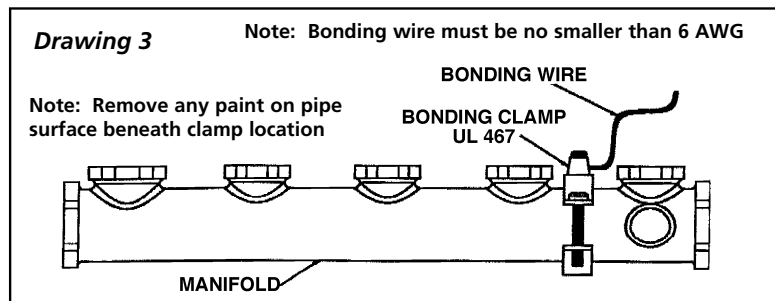
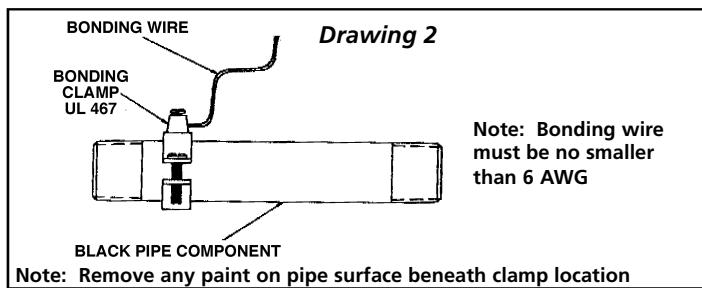
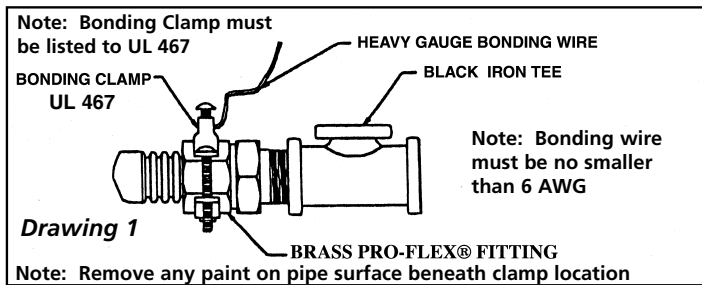
- A bonding jumper is permanently and directly connected to the electrical service grounding system. This can be achieved through a connection to the electrical service equipment enclosure, the grounded conductor at the electrical service, the grounding electrode conductor (where of sufficient size) or to the one or more grounding electrodes used.
- A single bond connection is made to the building gas piping downstream of the utility meter or second stage regulator (LP systems), but near the gas service entrance of the structure, or downstream of the gas meter of each individual housing unit within a multi-family structure. (A bonding connection shall not be made to the underground, natural gas utility service line or the underground supply line from a LP storage tank)
- The bonding conductor shall be no smaller than a 6 AWG copper wire or equivalent. Bonding/grounding clamps shall be attached in an approved manner in accordance with NEC and the listing of the clamp. Bonding/grounding clamps shall be listed to UL 467. The point of attachment for the bonding conductor shall be accessible. This bond is in addition to any other bonding requirements as specified by local codes.
- For attachment to the CSST gas piping system, a single bonding clamp must be attached to either a Pro-Flex® brass fitting, a steel manifold or to any rigid pipe between the meter and the first CSST fitting in the system. *The corrugated stainless steel tubing portion of the gas piping system shall not be used as the point of attachment of the bonding conductor at any location along its length under any circumstances. See drawings 1,2 and 3.*

Proper bonding and grounding may reduce the risk of damage and fire from lightning strikes. Lightning is a highly destructive force. Even a nearby lightning strike that does not strike a structure directly can cause metallic systems (such as wiring, piping and ductwork) in the structure to become energized. If these systems are not properly bonded, the difference in potential between the systems may cause the charge to arc from one system to another and cause damage to the CSST. Bonding instructions set forth above should reduce the risk of arcing and its related damages.

ELECTRICAL BONDING - Pro-Flex® CSST

Depending upon conditions specific to the location of the structure in which the Pro-Flex® system is being installed, including but not limited to whether the area is prone to lightning activity, the owner of the structure should consider whether a lightning protection system is necessary or appropriate. Lightning protection systems are beyond the scope of this manual, but are covered by NFPA 780, the Standard for the Installation of Lightning Protection Systems, and other standards.

As with all Pro-Flex® guidelines, the techniques outlined within this manual/bulletin are subject to all local fuel gas and building codes.



***LIGHTNING SAFTY WARNING** PROPERLY BONDING and grounding the Corrugated Stainless Steel Tubing (CSST) system may reduce the risk of damage and fire from lightning strike. Lightning is a highly destructive force. Even a nearby lightning strike that

does not strike a structure directly can cause systems in the structure to become electronically energized. Differences in potential between systems may cause the charge to arc between systems. Such arching can cause damage to CSST, including holes. Bonding should reduce the risk of arching and related damage. The building owner should confirm that a qualified person has properly bonded the CSST gas system to the grounding electrode system of the premises.



Tru-Flex Metal Hose Corp. (Pro-Flex® CSST flexible gas piping)
 2391 South State Road #263 • P.O. Box 247 • West Lebanon, Indiana 47991-0247
 Phone: 800-255-6291 • Fax: 765-893-4114
 E-mail: truflex@tru-flex.com