

Central Office

1311 U.S. Route 302 – Berlin

Suite 600

Barre, VT 05641-2351

www.vtfiresafety.org

(phone) (802) 479-7561 or 800-640-2106

(fax) (802) 479-7562

Interim Bonding Requirements For CSST Gas Pipe

Richard Schlieder, Chief of Licensing

Bruce Martin, Assistant State Fire Marshal

Numerous questions have been posed recently regarding bonding and grounding requirements for Corrugated Stainless Steel Tubing (CSST), commonly used as interior gas piping in residential and commercial properties. Safety concerns have been prompted by incidents where arcing and perforation of CSST have been caused by direct or nearby lightning strikes.

The major manufacturers of CSST have addressed this issue by requiring their products to be directly bonded to the building electrical system by means other than the equipment grounding conductor. This is to specifically address concerns of arcing induced by proximate lightning strikes, and differs from traditional bonding requirements for metal piping systems. Most manufacturers now require a bonding attachment near the service entrance to the building with a 6 AWG copper wire.

CSST is listed for use as an approved gas piping material (ANSI LC 1), when installed in accordance with all provisions of its listing. Product manufacturers provide Design and Installation Guides (D & I) addressing proper installation, including bonding and grounding. Earlier versions concerned energy levels for fault currents from the premise wiring system, and not from lightning. In many cases, bonding was achieved through the use of equipment grounding conductors.

CSST manufacturers are currently working towards a common approach to provide the required bonding of their products. In the interim, all installations of CSST must provide bonding as required in the most recent manufacturers technical directives or Design and Installation Guides, or by installing a #6 AWG copper wire connected to the black iron or copper components of the CSST system, and attached to the bonding network in the main electrical panel. This must be accomplished by a Vermont licensed electrician.

An additional important consideration for any gas piping system includes the use of a dielectric fitting to isolate interior gas piping from any underground gas piping. Both NFPA 54, The National Fuel Gas Code (2003- Section 6.13.2) and NFPA 70, the National Electrical Code (2005- Section 250.52(A)(7)(B) prohibit the use of gas piping as a grounding electrode.

Information on specific CSST products may be obtained from the following:

Wardflex: <http://www.wardmfg.com/>

Tracpipe: <http://tracpipe.com/>

Gastite: <http://gastite.com/>

Parflex: <http://www.parflex.com/parflexsystem/>

Tru-Flex <http://tru-flex.com/>



IA18

NEER® Grounding Fittings

IA18

Ground Clamps

Type GC


Bronze

Use:
Ground clamps for bare copper conductor. Can be used on water pipes, conduits, or pipe electrodes. Made of cast bronze alloy. For insulated or bare conductor wire, copper AWG #2 through #10. Clamp is reversible.

Material/Finish:

Bronze
Steel Screws

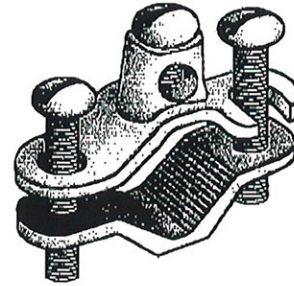
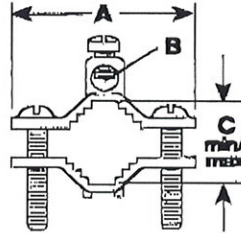
Third Party Certification:

 GC-1 through GC-4
UL Listed: E-163167

Applicable Third Party Standards:

UL Standard: 467
NEMA: FB-1
Fed. Spec: W-F-406D,
Type 5, Class 7, Style S

Trade Size (inches)	Catalog Number	Dimensions in Inches		
		A	B	C
1/2-1	GC-1Z	2.28	0.33	0.70-1.89
1 1/4-2	GC-2	3.62	0.33	1.36-2.97
2 1/4-4	GC-4	6.38	0.33	2.73-5.94
4 1/4-6	GC-6	8.50	0.30	2.66-7.75



Type GC-1

Type GC

Zinc

Use:
Ground clamps for bare copper conductor. For insulated or bare conductor wire, copper AWG #2 through #8. Clamp is reversible.

Material/Finish:

Casting—Zinc Die Cast
Screws—Steel

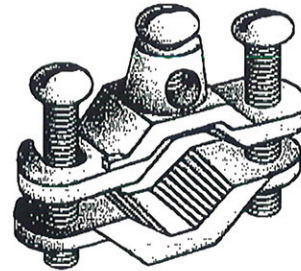
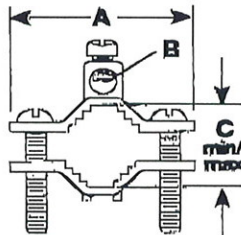
Third Party Certification:

 UL Listed: E37337
 CSA Certified: LR14489

Applicable Third Party Standards:

UL Standard: 467
CSA Standard: C22.2 No. 18
NEMA: FB-1
Fed. Spec: W-F-406D,
Type 5, Class 7, Style S

Trade Size (inches)	Catalog Number	Dimensions in Inches		
		A	B	C
1/2-1	GC-5	2.22	0.30	0.55-1.56
1/2-1	GC-5B	2.22	0.30	0.55-1.56



Type GC-5

Note:
GC-5 is listed for use with 1/2" through 1" trade size copper water pipe, steel galvanized water pipe and metal gas pipe. UL requires the UL logo be removed on our GC-5B because we provide plating of a material or color different from natural zinc.

