

1.2 LIMITATIONS OF MANUAL

This document is intended to aid the user in the design, installation and testing of WARDFLEX®/WARDFLEX®II Corrugated Stainless Steel Tubing to distribute fuel gas in residential housing units and commercial structures. It would be impossible for this guideline to anticipate and cover every possible variation in housing configurations and construction styles, appliance loads and local restrictions. Therefore, there may be applications which are not covered in this guide. For applications beyond the scope of this guide, contact Ward Manufacturing's Engineering Department. The techniques included within this guide are recommended practice for generic applications. These practices must be reviewed for compliance with all applicable local fuel gas and building codes. Accordingly, where local gas or building codes impose greater requirements than this manual, you should adhere to the local code requirements. This system and related components should be used only as fuel gas piping where the operating gas pressure does not exceed 25 PSI.

In CANADA the installation of CSA-CGA certified WARDFLEX®/WARDFLEX®II flexible gas tubing for natural and propane gas piping systems must be in accordance with the applicable sections of the current CAN/CGA-B 149.1 or .2 installation codes, and the requirements or codes of the local utility or other authority having jurisdiction. All gas components used in conjunction with the gas tubing must be certified for use in Canada.

1.3 LISTING OF APPLICABLE CODES & STANDARDS (See www.wardflex.com for More Information)

Standards

- ANSI LC 1, CSA 6.26 Fuel Gas Piping Systems Using Corrugated Stainless Steel Tubing (CSST)

Listings

- CSA - Canadian Standard Association Certificate #1004880
- IAPMO - International Association of Plumbing and Mechanical Officials - File Number 3353
- UL - Classified Mark File #R18357
- ICC - International Codes Council ESR-1879 & PMG 1100
- FM - Factory Mutual 3011939

Code Compliance

- BOCA - National Mechanical Code
- ANSI/CABO 2.0 - One and Two Family Dwelling Code
- ICC - International Mechanical Code
- NFPA 54- National Fuel Gas Code
- NFPA 58- Standard for the Storage and Handling of Liquefied Petroleum Gases
- SBCCI - Southern Building Code Congress International
- UMC - Uniform Mechanical Code
- C/UPC TM - California/Uniform Plumbing Code
- Canada Natural Gas and Propane Codes B149.1 and B149.2



IMPORTANT - READ ENTIRE MANUAL

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2.0 DESCRIPTION OF SYSTEMS AND COMPONENTS

2.1 SYSTEM DESCRIPTION

2.1.1 WARDFLEX®/WARDFLEX® II SYSTEM DESCRIPTION

WARDFLEX®/WARDFLEX® II Tubing:

The WARDFLEX® Corrugated Stainless Steel Tubing (CSST) Piping System has been engineered, tested and certified to meet the performance requirements of American National Standard for Fuel Gas Systems Using Corrugated Stainless Steel Tubing, ANSI LC-1. As such is acceptable for use with all recognized fuel gases, including natural gas and propane (LPG).

- Manufactured using a 304 alloy stainless steel per ASTM A240.
- Fully annealed; increasing flexibility, facilitating installation in tight locations, and reduced product memory to avoid rapid uncoiling when unbanned from spools.
- The CSST is jacketed with a non-metallic coating to ease installation when running through studs, joists, and other building components.
- Jacketing material includes UV inhibitors making it suitable for outdoor installations.
- Jacket utilizes flame retardants making it ASTM E84 compliant.
- Coating is marked at 2 foot intervals allowing for quick measurements.
- WARDFLEX® is certified for working pressures up to 5 PSI in accordance with ANSI LC-1, by CSA International.

WARDFLEX® II Tubing:

The WARDFLEX® II Corrugated Stainless Steel Tubing (CSST) Piping System has been engineered, tested and certified to meet the performance requirements of American National Standard for Fuel Gas Systems Using Corrugated Stainless Steel Tubing, ANSI LC-1. As such is acceptable for use with all recognized fuel gases, including natural gas and propane (LPG).

- Manufactured using a 304 alloy stainless steel per ASTM A240.
- Fully annealed; increasing flexibility, facilitating installation in tight locations, and reduced product memory to avoid rapid uncoiling when unbanned from spools.
- The CSST is jacketed with a non-metallic coating to ease installation when running through studs, joists, and other building components.
- Jacketing material includes UV inhibitors making it suitable for outdoor installations.
- Coating is currently NOT ASTM E-84 compliant.
- Coating is marked at 2 foot intervals allowing for quick measurements.
- WARDFLEX® is certified for working pressures up to 5 PSI in accordance with ANSI LC-1, by CSA International.

2.2 COMPONENTS

2.2.1 WARDFLEX®/WARDFLEX® II CORRUGATED STAINLESS STEEL TUBING (CSST)

COMPONENT	MATERIAL	DESCRIPTION								
WARDFLEX® WARDFLEX® II Corrugated Stainless Steel Tubing (CSST)	Tubing: 304 Stainless Steel Jacket: Polyethylene	TUBING Size	Item	10A	15A/15C	20A/20C	25A/25C	32A/32C	38A/38C	50A/50C
		WARDFLEX® WARDFLEX® II	Size (in.)	3/8"	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"
		Equivalent Hydraulic Diameter (EHD)	EHD	15	19	25	30	37	48	62
		Inner Dia. - I.D.	In.	0.452	0.591	0.787	0.984	1.26	1.59	2.12
			(mm)	(11.50)	(15.00)	(20.00)	(25.00)	(32.00)	(40.40)	(53.80)
		Wall Thickness - t Note WARDFLEX® II	In.	0.008	.008/.010	0.010	0.010	0.010	0.012	0.012
			(mm)	(0.20)	(.20/.25)	(0.25)	(0.25)	(0.25)	(0.30)	(0.30)
		WARDFLEX® Outside Diameter of Coating – O.D. (MAX)	In.	0.663	0.828	1.088	1.321	1.636	2.136	2.676μμ
			(mm)	(16.80)	(21.00)	(27.60)	(33.50)	(41.50)	(54.30)	(68.00)
		WARDFLEX® II Outside Diameter of Coating – O.D. (MAX)	In.	N/A	0.832	1.096	1.329	1.644	2.138	2.678
			(mm)		(21.10)	(27.80)	(33.80)	(41.80)	(54.30)	(68.00)
		WARDFLEX® Available Lengths	(ft)	50*, 100*, 250*, 500*, 1000	50*, 100*, 250*, 500*, 1000	50*, 100*, 180*, 250, 500	50*, 100*, 180*, 250, 500	50*, 100*, 250	50, 100, 150	50, 100, 150
WARDFLEX® II Available Lengths	(ft)	N/A	50*, 100*, 250*, 500	50*, 100*, 250*, 500	50*, 100*, 250, 500	50*, 100*, 250, 400	50, 100, 150	50, 100, 150		

*Custom Lengths Available
Upon Request.

