



The following information is excerpted from the FlashShield™ Design & Installation Guide - January 2019. For the complete and most up-to-date FlashShield™ Design & Installation Guide, please visit the Gastite website at www.gastite.com.

Throughout the following information, the term FlashShield™ will apply to both FlashShield™ and FlashShield+™ except where FlashShield+™ is specifically referenced.

FlashShield™ INSTALLER INFORMATION & UPDATES

- 1) The XR3-series fitting is designed to work on Gastite and FlashShield CSSTs. However, CSST end prep varies by CSST product type. Reference the chart below for proper CSST end-prep and bushing replacement for the product you have selected.

Product	CSST End-Prep	Bushing Placement
Two-Step End Prep FlashShield CSST		
One-Step End Prep FlashShield+™ or Gastite CSST		

CSST & Fittings

- 2) **Licensed Installers Only.** Every installer of FlashShield™, FlashShield+™, or Gastite® must first meet all applicable qualifications in accordance with state and/or local requirements as established by the administrative authorities that enforce the plumbing or mechanical codes where gas piping is installed.
- 3) **Qualified Installers Only.** In addition to be licensed in the jurisdiction, FlashShield™, FlashShield+™, or Gastite® corrugated stainless steel tubing (CSST) flexible gas piping material must only be installed by an installer who has been successfully trained through the FlashShield™ and Gastite® training program.
- 4) **Check for Updates.** Installers must check with their local distributor or at www.gastite.com for technical bulletins or updated Design & Installation Guides for FlashShield™, FlashShield+™, or Gastite® every year.
- 5) **Proper Installation.** Sound engineering principles and practices must be exercised for the proper design of fuel gas piping systems, in addition to compliance with local codes. The installation instructions and procedures contained in this Design & Installation Guide must be strictly followed in order to provide a safe and effective flexible fuel gas piping system or system modification. All installations must pass inspections by the local official having authority prior to having the gas service turned on. All requirements of the local natural gas utility or propane supplier must also be met.

FlashShield™
Electrically Insulative
Polymer

Metallic Shield

Semi-conductive
Polymer

FlashShield+™

High Tensile
Polyester

Metallic Shield

Electrically
Insulative
Polymer

Semi-conductive
Polymer

FlashShield™ GENERAL USER WARNINGS

The installation of FlashShield™ Flexible Gas Piping must be performed by a qualified installer who has successfully completed the FlashShield™ training program. Certification training is available through qualified distributors, and at www.gastite.com. The installer must meet all qualifications and requirements to install gas piping as required by the local administrative authority. Improper installation or operation of a FlashShield™ Flexible Gas Piping system may result in fire, explosion or asphyxiation.

The complete FlashShield™ Design and Installation Guide (D&I Guide) provides the user with general guidance when designing and installing fuel gas piping using FlashShield™ Flexible Gas Piping. This guideline must be used in conjunction with all applicable building standards and codes. In the event that there is a conflict between this guideline and local code the more stringent requirement will take precedence.

⚠ WARNING: This product can expose you to chemicals including Lead and Nickel, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to: www.P65Warnings.ca.gov

The use of fuel gas can be dangerous. Special attention must be given to the proper design, installation, testing and application of the gas piping system. Sound engineering practices and principles must be exercised, as well as diligent adherence to the proper installation procedures to ensure the safe operation of the piping system. All installed systems must pass customary installation inspections by the local building official having authority prior to being placed into service.

Only the components provided or specified by Gastite, as part of the FlashShield™ flexible fuel piping system are to be used in the installation. Use of components from other flexible gas piping systems other than those specified as part of the FlashShield™ system is prohibited and may result in poor system performance and serious bodily injury or property damage. Where additions, repairs or replacements involve corrugated stainless steel tubing systems from manufacturers other than Gastite Division, the systems should be joined using standard pipe fittings at the interface.

The FlashShield™ D&I Guide cannot take into account all situations or locations in which FlashShield™ flexible gas piping will be installed. Accordingly, installers should also take into account guidance provided by the National Fuel Gas Code, ANSI Z223.1/NFPA-54, National Standard of Canada, Natural Gas and Propane Installation Code B149.1, the Uniform Plumbing Code, the International Code Series, the Federal Manufactured Home Construction and Safety Standards, 24 CFR Part 3280, the Manufactured Housing Construction and Safety Standards, ICC/ANSI 2.0 or the Standard on Manufactured Housing, NFPA 501. Gastite Division shall have no responsibility for any misinterpretation of the information contained in the FlashShield™ D&I Guide or any improper installation or repair work or other deviation from procedures recommended in the FlashShield™ D&I Guide, whether pursuant to local building codes or engineering specifications or otherwise.

Gastite Division makes no representation or warranty, and nothing contained in the FlashShield™ D&I Guide shall imply that the guide contains the best or the only approved method for installing corrugated stainless steel piping systems or that the D&I Guide's contents are appropriate for all circumstances.

In the event that there is a conflict between this guideline and local code the more stringent requirement will take precedence. Performance of accessory devices, such as pressure regulators and shut off valves should be reconfirmed by contacting the accessory device manufacturer and receiving the latest technical data on sizing, installation and performance.

A FlashShield™ Flexible Gas Piping system offers advantages over other gas delivery systems because of its corrugated design. In contrast to rigid steel pipe, FlashShield™ does not require intermediate joints in most installations because the tubing is capable of being installed in one continuous run, reducing not only the total number of joints, but also the potential for leaks at joints. FlashShield's flexibility also affords more installation options because an installer can avoid existing obstacles, and it eliminates the repetitive measuring, cutting, threading and joint assembly that is common with installation of rigid steel piping systems. FlashShield™ flexibility offers even further safety advantages in geographic areas that are prone to seismic activity because the tubing is able to move as the ground or the structure shifts.

While FlashShield™ provides significant advantages over more rigid gas delivery systems, its flexible design may make it more likely than steel pipe to be punctured by a nail or other sharp objects, or damaged by other extraordinary forces such as lightning strike, depending on the circumstances.

Corrosive substances: Steel piping, brass fittings and valves can be corroded by various chemical substances which may be present on a jobsite or in a structure. Chlorinated compounds can cause pitting and crevice corrosion of stainless steel. Ammonia and other nitrogenous compounds can cause stress corrosion cracking of brass. FlashShield's jacket system provides protection from many harmful substances and should remain intact over the lengths of stainless steel tubing to maintain this protection.

While not exhaustive, the list below provides guidance of substances which should not come into contact with stainless steel or brass. If there is a question about the suitability of a certain substance in the environment, the user should refer to the ingredient list or contact the manufacturer.

Chlorinated compounds (chloride, chlorite, chloric, chlorous, chloro, chlorate):

- Some household soaps*
- Masonry cleaner (Muriatic acid)
- Soldering flux
- Bleach
- Pool chemicals
- Ice melt
- Soils, soil water, concrete

Ammonia and ammonium containing compounds:

- Household cleaners
- Fertilizers

Nitrogenous compounds, such as amines:

- Herbicides, pesticides, fungicides, insecticides

* Some household soaps that contactors have used to make leak check solution may contain chlorides which can cause corrosion to metallic components. Only use leak test solution which are labeled as non-corrosive, for gas piping systems.

Caution: Tube ends are sharp, use care when handling

LIMITATIONS OF THE GUIDELINES for FlashShield™

The FlashShield™ Design and Installation Guide is intended to aid the professional gas installer in the design, installation and testing of fuel gas piping systems using corrugated stainless steel tubing (CSST) for residential housing, commercial and industrial buildings. It would be impossible for this guideline to anticipate and cover every possible variation in building configurations, construction styles, appliance loads and code restrictions. Therefore, there will be applications that will not be covered by this guideline. For applications that go beyond the scope of this guideline, the installer should exercise sound engineering principles and practices and/or contact Gastite for engineering assistance.

The techniques outlined within this guideline are recommended practice for generic applications. These practices must be reviewed for compliance with all applicable local fuel gas and building codes. In the event that there is a conflict between this guide and local code, the more stringent requirement will take precedence.

Using components from other flexible gas piping systems other than those specified as part of the FlashShield™ system is prohibited and may result in poor system performance and serious bodily injury or property damage. Additional information pertaining to gas piping systems is available from your local gas utility or propane supplier. **Please visit the Gastite web site at www.gastite.com for additional updates and technical bulletins.**

FlashShield™ INSTALLATION CHECKLIST DESCRIPTION

Corrugated Stainless Steel Tubing (CSST) has been design certified by the Canadian Standards Association since 1990 for use as a fuel gas piping system. Gastite./FlashShield™ CSST has been tested per ANSI LC1/CSA 6.26 as required for approval and as an approved gas piping material in the National Fuel Gas Code-NFPA 54 & 58, the International Fuel Gas Code-ICC, and with the Uniform Plumbing Code-IAPMO, and Natural Gas & Propane installation code B149.1.

FlashShield™ STANDARDS, LISTINGS AND CODES

The FlashShield™ corrugated stainless steel tubing system complies with the following standards, listings and model codes.

STANDARDS

ANSI LC1/CSA 6.26 – Fuel Gas Piping Systems Using Corrugated Stainless Steel Tubing (CSST)
ANSI LC1/CSA 6.26 – 25 PSI operating pressure rating
ANSI LC1/CSA 6.26 – Arc Resistant (AR) Jacket Rating
ICC-ES PMG LC1027 - Protective Jacketed CSST, A Minimum 36-Coulomb Charge Transfer

LISTINGS

- CSA – CSA International - Certificate No. 2728525
- ICC – International Code Council – Evaluation Report Number PMG-1019, PMG-1066, PMG-1155
- IAPMO – International Association of Plumbing and Mechanical Officials – File Number 3250, Report #0239

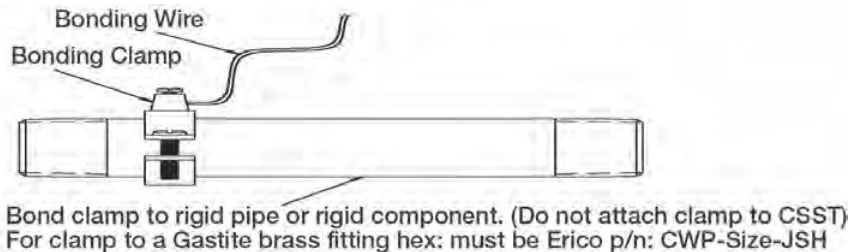
CODE COMPLIANCE

- ICC – International Code Series
- Canada – National Gas & Propane Installation Code B149.1
- NFPA – National Fuel Gas Code (NFPA 54)
- UMC – Uniform Mechanical Code
- UPC – Uniform Plumbing Code

While every effort has been made to prepare the FlashShield™ D&I Guide in accordance with all regional model codes in effect at its printing, Gastite cannot guarantee that the local administrative authority will accept the most recent version of these codes. It is the ultimate responsibility of the installer to determine suitability and acceptance of any building component including gas piping. Gastite assumes no responsibility for labor or material for installations made without prior determination of local code authority acceptance.

ELECTRICAL BONDING OF FlashShield™ CSST

- a) There are no additional bonding requirements for FlashShield™ imposed by the manufacturer's installation instructions. FlashShield™ is to be bonded in accordance with the National Electrical Code NFPA 70 Article 250.104, Canadian Electrical Code, CSA-C22.1, in the same manner as the minimum requirements for rigid metal piping. However, installers must always adhere to any local requirements that may conflict with these instructions.
- b) If the authority having jurisdiction requires that all CSST systems shall be bonded, the gas piping system shall be considered to be direct and bonded when installed in accordance with the following:
 - A single bond clamp attachment to rigid pipe or rigid component at any point within the gas piping system
 - Bond clamp attachment downstream of individual gas meter or 2nd stage regulator for propane systems, and in accessible location
 - Metallic contact is required (remove paint or plating on steel pipe)
 - Bonding clamp listed to UL 467



- Bonding conductor is #6 AWG copper (minimum) or equivalent, and not exceeding 75 feet in length
 - The shortest practical bond wire length will improve the effectiveness of the direct bond
- The bonding conductor is permanently and directly connected to the electrical service grounding electrode system of the premises. This connection can be made at either:
 - Bonding buss
 - Grounding electrode conductor
 - Grounding electrode
- Any additional grounding electrodes used shall be bonded to the electrical service grounding electrode system
- Direct bonding to be performed by a person qualified to do so per local ordinances
- The bonding conductor shall be installed and protected in accordance with:
 - National Electrical Code, NFPA 70, (NEC)
 - Canadian Electrical Code, CSA-C22.1, (CEC)

FlashShield™ APPROVAL: CONDITIONS AND REQUIREMENTS

A flexible gas piping system using FlashShield™ CSST must be installed in accordance with all local building codes and the manufacturer's instructions. The following checklist is designed to assist the local administrative authority to perform an inspection of a fuel gas piping system using corrugated stainless steel tubing.

- 1) FlashShield™ flexible gas piping may only be installed by a qualified installer who has successfully completed the manufacturer's certification training program. A manufacturer's certification card is required to purchase and install FlashShield™ flexible gas piping.
- 2) FlashShield™ CSST routed in a location which is concealed, constrained and within 3 inches of a potential threat must be protected against damage using protection devices listed in the manufacturer's Design and Installation Guide.
- 3) FlashShield™ CSST should not be connected to moveable appliances. Connections to moveable appliances such as ranges and clothes dryers should be accomplished with a flexible appliance connector.
- 4) Regulators are suitable for multi-poise mounting. When using a vent-limiting device however, the regulator must be mounted in a horizontal upright position.
- 5) The external protective jacket system shall remain intact on the CSST.
- 6) For installations buried underground, under concrete/asphalt or embedded in concrete, FlashShield™ CSST must be routed in a non-metallic watertight conduit which has an inside diameter at least 1/2 in. larger than the outside diameter of the tubing. Under concrete/asphalt slab, sleeved CSST must be buried in accordance with all local codes. No mechanical joints are permitted within the conduit.
- 7) Installation must be properly supported to not only keep the job professional and organized but also to prevent excess strain on the bends and fittings. Supports installed in addition to the practices outlined by Gastite Division, restricts the tubing and increases susceptibility to nail or screw strike damage.
- 8) Gas piping systems must be properly bonded to the structure's electrical service. A qualified professional following the NEC approved methods as outlined in Section 4.10 shall perform the bonding installation.

FIELD FITTING ASSEMBLY PROCEDURE: XR3 FITTING (REV 2) TO FLASHSHIELD+™ CSST (single layer jacket)



STEP 1 CUT-TO-LENGTH (FIG. 1)

Cut tubing to desired length using tubing cutter. Cut should be centered in a corrugation valley. Use light roller pressure with extra rotations in one direction to leave tubing round and free of burrs on cut.

To ensure a quality flare, all cuts should be made on a straight section of tubing.

Note: Tube ends are sharp use caution when handling.

STEP 2 STRIP JACKET (FIG. 2, FIG. 3)

Using a utility knife, cut jacket back to the second valley from tubing end.

Do not cut the jacket in such a way that the steel tubing end is scored (this could affect seating).

Remove the short section of jacket which will expose one full corrugation valley of the tubing.

Optionally, use side-1 of FlashShield™ stripping tool for jacket strip.



STEP 3 INSTALL NUT AND BUSHINGS (FIG. 4)

Thread fitting body (NPT thread) into valve or appliance connection. Slide nut onto CSST and back a few inches.

Separate bushings and position on tubing as shown, locating large bump into the valley of the first corrugation leaving one corrugation-peak exposed between the end of the bushing and tubing.

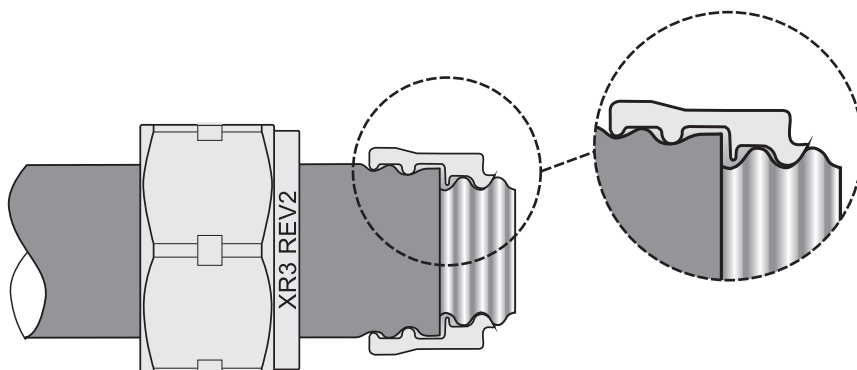


FIG. 1



FIG. 2

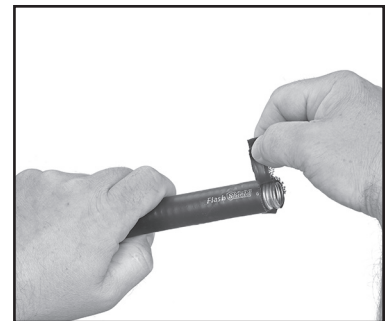


FIG. 3



FIG. 4

FIELD FITTING ASSEMBLY PROCEDURE Con't: XR3 FITTING (REV 2) TO FLASHSHIELD+™ CSST (single layer jacket)



STEP 4 POSITION BUSHINGS (FIG. 5)

Insert bushings into fitting body. A small amount of resistance indicates the bushings are being compressed to further capture the jacket.

Note: Pipe dope or sealant is not to be used inside the fitting.

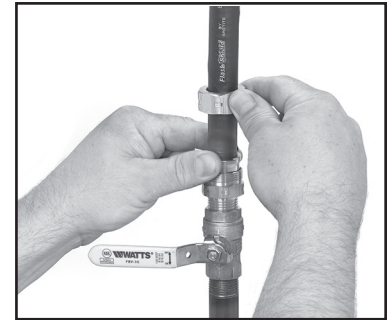
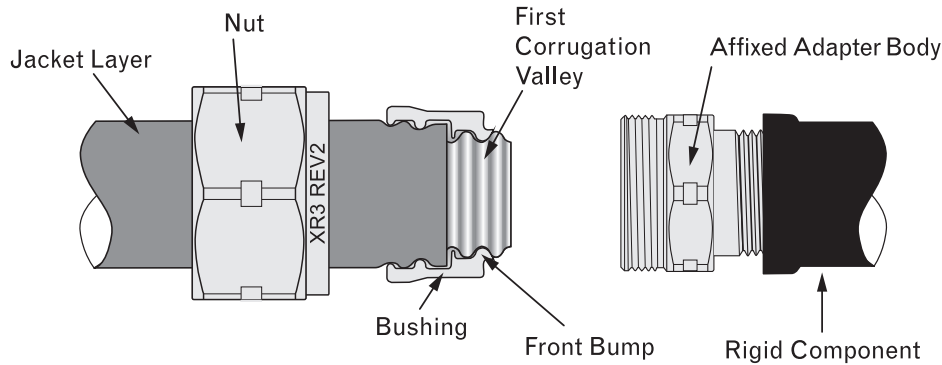


FIG. 5

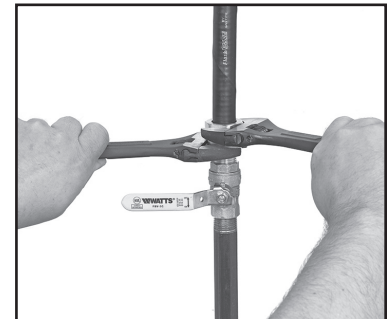


FIG. 6

STEP 5 WRENCH FITTING (FIG. 6)

Slide nut over bushings and thread onto fitting body. Some resistance will be experienced as the nut begins to compress the tubing and create the double-wall flare. Continue to wrench the nut until the resistance increases greatly and the double-wall flare is tightly seated.

Note: Rotate the nut only during the tightening process. Do not rotate the fitting body.

CSST & Fittings

RECOMMENDED TORQUE VALUES		
SIZE	EHD	*TORQUE
3/8"	13	25 ft-lbs
1/2"	19	35 ft-lbs
3/4"	23	45 ft-lbs
1"	31	65 ft-lbs
1-1/4"	37	95 ft-lbs
1-1/2"	48	120 ft-lbs
2"	60	150 ft-lbs

Fitting is factory lubricated to reduce field torque requirements. Lubrication must be chloride free.

* Minimum torque values supplied for lab testing reference only. Field installation requirements: system must pass pressure/leak test (See Section 6 of FlashShield™ Design & Installation Guide).

FIELD FITTING ASSEMBLY PROCEDURE: XR3 FITTING TO FLASHSHIELD™ CSST (multi-layer jacket)



STEP 1 CUT-TO-LENGTH (FIG. 1)

Cut tubing to desired length using tubing cutter. Cut should be centered in a corrugation valley. Use light roller pressure with extra rotations in one direction to leave tubing round and free of burrs on cut.

To ensure a quality flare, all cuts should be made on a straight section of tubing.

Note: Tube ends are sharp use caution when handling.

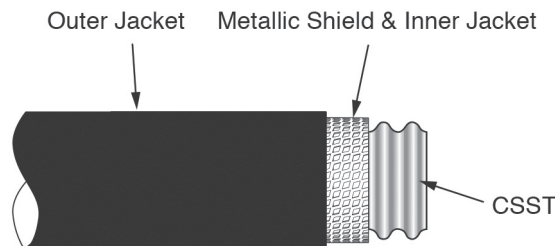
STEP 2 CUT & STRIP JACKET LAYERS (FIG. 2, FIG. 3, FIG. 4) Place cut-end of FlashShield™ tubing into Side 1 of the stripping tool up to the tube stop.

Cut 1: Close the stripping tool around tubing. Begin rotating the tool back and forth on the CSST (3 – 5, 200° twists) while applying pressure until the blades cut through all 3 jacket layers.

Strip: To remove jacket section, release pressure and grasp the tool from the end. Pull tool straight away from tubing while allowing the tool to open slightly so that the blades can clear the peaks of the corrugations. Remove and discard the stripped jacket layer(s) from the tool.

Cut 2: Turn stripping tool around to side 2 and place the stripped tubing end back in the tool up to the tube stop. While maintaining the tube against the tube stop, apply firm closing pressure and rotate the tool back and forth on the CSST (3-5, 200° twists) until the blades have cut through the outer plastic jacket layer only.

Strip: Maintain firm closing pressure and pull the tool straight away from the tube to use the blades to strip off the outer coating. Occasionally, a small portion of material may prevent complete stripping. Use the pliers feature at the corner of the tool to grab the material and pull it away.



Note: Accidentally cutting through the aluminum shield below the point of the outer jacket cut/strip location will reduce the effectiveness of the fitting to-shield electrical continuity, and FlashShield's electrical performance.



FIG. 1



FIG. 2



FIG. 3

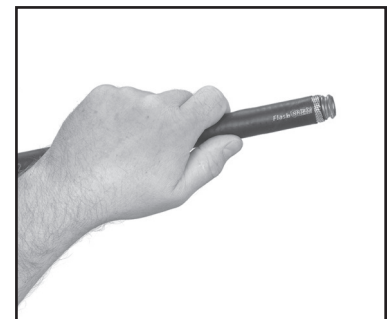


FIG. 4

FIELD FITTING ASSEMBLY PROCEDURE Con't: XR3 FITTING TO FLASHSHIELD™ CSST (multi-layer jacket)



STEP 3 INSTALL NUT AND BUSHINGS (FIG. 5)

Thread fitting body (NPT thread) into valve or appliance connection. Slide nut onto CSST and back a few inches. Separate bushings and position on tubing as shown, locating large bump into the valley of the first corrugation leaving one corrugation-peak exposed between the end of the bushing and tubing.

Note: Metallic shield contact feature must be utilized with FlashShield.

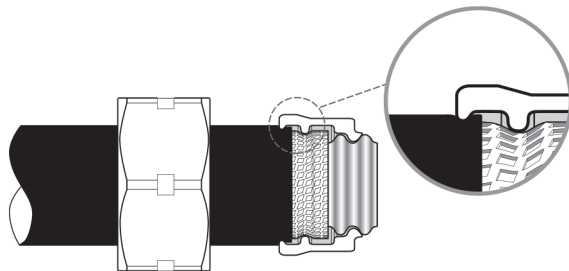


FIG. 5

STEP 4 POSITION BUSHINGS (FIG. 6)

Insert bushings into fitting body. A small amount of resistance indicates the bushings are being compressed to further capture the jacket.

Note: Pipe dope or sealant is not to be used inside the fitting.

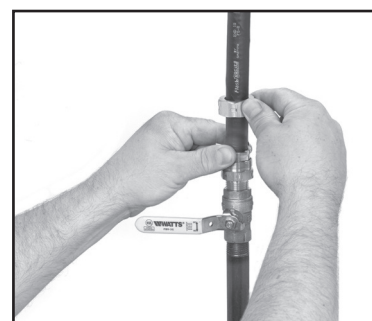


FIG. 6

STEP 5 WRENCH FITTING (FIG. 7)

Slide nut over bushings and thread onto fitting body. Some resistance will be experienced as the nut begins to compress the tubing and create the double-wall flare. Continue to wrench the nut until the resistance increases greatly and the double-wall flare is tightly seated.

Note: Rotate the nut only during the tightening process. Do not rotate the fitting body.

Note: The use of XR3 series fittings in combination with Gastite yellow tubing is an acceptable practice.

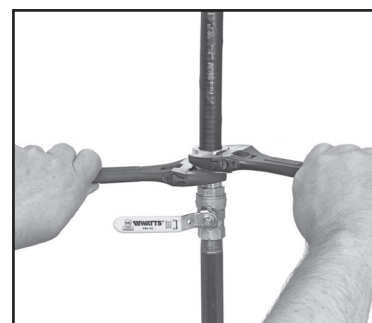


FIG. 7

FLASHSHIELD™ RECOMMENDED TORQUE VALUES		
SIZE	EHD	*TORQUE
3/8"	13	25 ft-lbs
1/2"	19	35 ft-lbs
3/4"	23	45 ft-lbs
1"	31	65 ft-lbs
1-1/4"	37	95 ft-lbs
1-1/2"	48	120 ft-lbs
2"	60	150 ft-lbs

Fitting is factory lubricated to reduce field torque requirements. Lubrication must be chloride free.

* Minimum torque values supplied for lab testing reference only. Field installation requirements: system must pass pressure/leak test (See Section 6 of FlashShield™ Design & Installation Guide)

Corrugated Stainless Steel Tubing (CSST)



APPLICATION:

- CSST flexible gas piping supplies natural gas or liquefied petroleum gas to appliances.

MATERIAL / SPECIFICATIONS:

- Tubing: ASTM A240 Type 304, Stainless Steel.
- Jacket: Electrically insulative and UV resistant polymer, complying with requirements of ASTM E84 and CAN/ULC-S102.2 25/50
- Protective jacket system complies with ICC-ES PMG LC1027.

FEATURES AND BENEFITS:

- Electrically insulative polymer cover.
- Metallic shielded CSST.
- Protective shield is electrically continuous through fitting joints (Arc-Trap™).
- Metal shield layer dissipates and conducts electricity.
- No manufacturer required bonding.
- Flexibility means quick and easy installations. FlashShield+™ installs 30-70% faster than traditional piping methods.
- Pre-marked by the foot, there's no measuring, rigid pipe cutting or threading. This means less waste and fewer fittings.
- 75% fewer fittings in the average installation means a safer system, less leak potential and reduced callbacks.
- FlashShield+™ CSST is lightweight.

Part #	Description	Pkg. Qty.	Lbs.	Reel Size (Dia x Width)
1/2" Tubing				
FSP-8-50	1/2"	50 Ft/Box	8.3	21" x 6"
FSP-8-125	1/2"	125 Ft/Coil	28.8	20" x 12-1/2"
FSP-8-250	1/2"	250 Ft/Coil	49.5	20" x 12-1/2"
FSP-8-500	1/2"	500 Ft/Coil	95	24" x 25"
FSP-8-1000	1/2"	1,000 Ft/Coil	187	32" x 21-1/2"
FSP-8-1500	1/2"	1,500 Ft/Coil	270	32" x 21-1/2"
3/4" Tubing				
FSP-11-50	3/4"	50 Ft/Box	10.5	21" x 6"
FSP-11-125	3/4"	125 Ft/Coil	34.1	20" x 12"
FSP-11-250	3/4"	250 Ft/Coil	64.3	24" x 25"
FSP-11-500	3/4"	500 Ft/Coil	116.5	24" x 25"
FSP-11-1000	3/4"	1,000 Ft/Coil	230	32" x 21"
1" Tubing				
FSP-16-50	1"	50 Ft/Box	23.4	20" x 12"
FSP-16-75	1"	75 Ft/Coil	31	20" x 12"
FSP-16-150	1"	150 Ft/Coil	58.1	24" x 25"
FSP-16-300	1"	300 Ft/Coil	104.1	24" x 25"
FSP-16-500	1"	500 Ft/Coil	174.5	32" x 21"

CSST & Fittings

Regulators

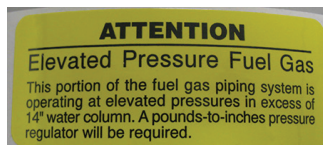
Application: For use in elevated pressure systems (in excess of 1/2 psi) to reduce pressure to standard appliance use levels.



Part #	Description	Max. Individual Load	Total Load of Multiple Appliances Combined	Max. Inlet Pressure	Outlet Pressure	NPT
GT-325-3L	Maxitrol	225,400 Btu/hr	805,000 Btu/hr	2 PSI	7-11 w.c.	1/2"
GT-325-5AL	Maxitrol	684,250 Btu/hr	966,000 Btu/hr	2 PSI	7-11 w.c.	3/4"
GT-325-7AL	Maxitrol	2,012,500 Btu/hr	2,012,500 Btu/hr	2 PSI	7-11 w.c.	1-1/4"

System Identification

Adhesive Labels for are offered to identify elevated pressure systems.



Part #	Description
GT-EPAL-1-100	Adhesive Labels for elevated pressure identification

XR3-Series Fittings

APPLICATION:

- Straight Fittings connect the flexible gas tubing to gas supply, distribution manifolds or gas appliances.
- Couplings allow for the splicing and additions to the flexible gas tubing.
- Termination Fittings create a fixed point "stub-out" on a wall or floor surface.
- Termination Bracket Fittings provide a secure attachment point for key-valves and as an alternate termination point.

MATERIAL / SPECIFICATIONS:

- Fitting adapter, bushings and nut – Brass.
- Square Flange – Steel with zinc coating or cast bronze.

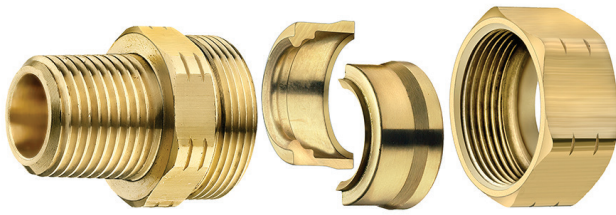
FEATURES AND BENEFITS:

- Metal-Lock for continuous conductivity.
- Tool-less flare design; Simple hand tools such as tubing cutters, wrenches and the Jacket Stripping Tool are all that are needed to work with the FlashShield components.
- Metal-to-metal seat, with no split rings, O-rings or gaskets.
- Self-guiding assembly to ensure a perfectly even flare.
- Exclusive, patented Jacket-Lock fitting eliminates exposed stainless steel beyond the nut.
- All components are fully reusable.



XR3 Straight Fitting

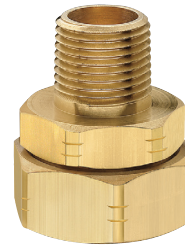
APPLICATION: Connect the flexible gas tubing to gas supply, distribution manifolds, or gas applications.



Part #	Description
XR3FTG-8-24	1/2" XR3 Straight Fitting - 1/2" NPT
XR3FTG-11-24	3/4" XR3 Straight Fitting - 3/4" NPT
XR3FTG-16-12	1" XR3 Straight Fitting - 1" NPT
XR3FTG-20-6	1-1/4" XR3 Straight Fitting - 1-1/4" NPT
XR3FTG-24-4	1-1/2" XR3 Straight Fitting - 1-1/2" NPT
XR3FTG-32-4	2" XR3 Straight Fitting - 2" NPT

XR3 Reducing Fitting

APPLICATION: Allow for the slicing and additions to the flexible gas tubing.



Part #	Description
XR3REDFTG-11-08-24	3/4" XR3 Reducing Fitting - 1/2" NPT
XR3REDFTG-16-12-12	1" XR3 Reducing Fitting - 3/4" NPT

XR3 Coupling Fittings

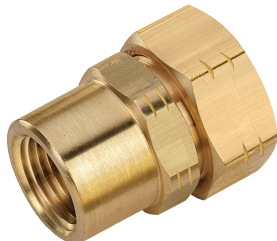
APPLICATION: Allow for the slicing and additions to the flexible gas tubing.



Part #	Description
XR3CPL-8-12	1/2" XR3 Coupling
XR3CPL-11-12	3/4" XR3 Coupling
XR3CPL-16-6	1" XR3 Coupling
XR3CPL-20-6	1-1/4" XR3 Coupling
XR3CPL-24-4	1-1/2" XR3 Coupling
XR3CPL-32-4	2" XR3 Coupling

XR3 Straight Female Fitting

APPLICATION: Connect the flexible gas tubing to gas supply, distribution manifolds or gas appliances.



Part #	Description
XR3FTGFM-8-24	1/2" XR3 Straight Fitting - 1/2" Female NPT
XR3FTGFM-11-8-24	3/4" XR3 Straight Fitting - 1/2" Female NPT
XR3FTGFM-11-24	3/4" XR3 Straight Fitting - 3/4" Female NPT

XR3 Termination Fitting

APPLICATION: Creates a fixed point “stub-out” on a wall or floor surface.



Part #	Description
XR3TRM-8-12	1/2" XR3 Term. Fitting w/ Square Flange - 1/2" NPT
XR3TRM-11-12	3/4" XR3 Term. Fitting w/ Square Flange - 3/4" NPT
XR3TRM-16-6	1" XR3 Term. Fitting w/ Square Flange - 1" NPT
XR3TRM-20-6	1-1/4" XR3 Term. Fitting - 1-1/4" NPT
XR3TRM-24-4	1-1/2" XR3 Term. Fitting w/ Square Flange - 1-1/2" NPT
XR3TRM-32-4	2" XR3 Term. Fitting w/ Square Flange - 2" NPT

XR3 Termination Fitting with Bronze Flange

APPLICATION: Creates a fixed point “stub-out” on a wall or floor surface.



Part #	Description
XR3TRM-8-CB-12	1/2" XR3 Term. Fitting w/ Bronze Flange - 1/2" NPT
XR3TRM-11-CB-12	3/4" XR3 Term. Fitting w/ Bronze Flange - 3/4" NPT
XR3TRM-16-CB-6	1" XR3 Term. Fitting w/ Bronze Flange - 1" NPT
XR3TRM-20-CB-6	1-1/4" XR3 Term. Fitting w/ Bronze Flange - 1-1/4" NPT
XR3TRM-24-CB-4	1-1/2" XR3 Term. Fitting w/ Bronze Flange - 1-1/2" NPT

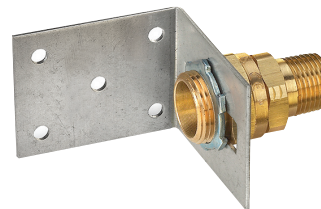
XR3 Termination Fitting with No Flange



Part #	Description
XR3TRM-8-NF-12	1/2" XR3 Term. Fitting - 1/2" NPT
XR3TRM-11-NF-12	3/4" XR3 Term. Fitting - 3/4" NPT
XR3TRM-16-NF-6	1" XR3 Term. Fitting - 1" NPT
XR3TRM-20-NF-6	1-1/4" XR3 Term. Fitting - 1-1/4" NPT
XR3TRM-24-NF-4	1-1/2" XR3 Term. Fitting - 1-1/2" NPT
XR3TRM-32-NF-4	2" XR3 Term. Fitting - 2" NPT

XR3 Termination Bracket Fitting

APPLICATION: Provides a secure attachment point for key-valves and as an alternate termination point.



Part #	Description
XR3TRMBKT-8-12	1/2" XR3 Term. Bracket Fitting - 1/2" NPT
XR3TRMBKT-11-12	3/4" XR3 Term. Bracket Fitting - 3/4" NPT
XR3TRMBKT-16-6	1" XR3 Term. Bracket Fitting - 1" NPT
XR3TRMBKT-20-6	1-1/4" XR3 Term. Bracket Fitting - 1-1/4" NPT
XR3TRMBKT-24-4	1-1/2" XR3 Term. Bracket Fitting - 1-1/2" NPT
XR3TRMBKT-32-4	2" XR3 Term. Bracket Fitting - 2" NPT

XR3 Tee Fittings

APPLICATION: Allow for the splicing and additions to the flexible gas tubing.



Part #	Description
XR3T-8-12	1/2" Run x 1/2" Run x 1/2" Tee - Tee Fitting
XR3T-11-12	3/4" Run x 3/4" Run x 3/4" Tee - Tee Fitting
XR3T-16-6	1" Run x 1" Run x 1" Tee - Tee Fitting
XR3T-11-8-8-6	3/4" Run x 1/2" Run x 1/2" Tee - Tee Fitting
XR3T-11-11-8-6	3/4" Run x 3/4" Run x 1/2" Tee - Tee Fitting
XR3T-16-11-8-6	1" Run x 3/4" Run x 1/2" Tee - Tee Fitting
XR3T-16-11-11-6	1" Run x 3/4" Run x 3/4" Tee - Tee Fitting
XR3T-16-16-8-6	1" Run x 1" Run x 1/2" Tee - Tee Fitting
XR3T-16-16-11-6	1" Run x 1" Run x 3/4" Tee - Tee Fitting

XR3 Series Appliance Stub-Outs

APPLICATION: Creates a fixed point "stub-out" on a wall or floor surface for meter and appliance attachment.



Part #	Description
XR3-APSTUB-8-10	1/2" XR3 x 1-1/2" Stub Length x 1/2" NPT
XR3-L-APSTUB-8-10	1/2" XR3 x 2-1/4" Stub Length x 1/2" NPT
XR3-APSTUB-11-10	3/4" XR3 x 1-1/2" Stub Length x 1/2" NPT
XR3-L-APSTUB-11-10	3/4" XR3 x 2-1/4" Stub Length x 1/2" NPT
XR3-APSTUB-11-11-10	3/4" XR3 x 1-1/2" Stub Length x 3/4" NPT
XR3-L-APSTUB 11-11-10	3/4" XR3 x 2-1/4" Stub Length x 3/4" NPT

Modular Stub System

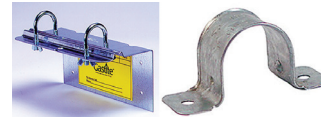
APPLICATION: All Stubs create a fixed point "stub-out" on a wall or floor surface for meter and appliance attachment.



Part #	Description
GT-1/2X6STUB-10	1/2"M x 6"L Straight Stub-Out
GT-1/2X12STUB	1/2"M x 12"L Straight Stub-Out
GT-3/4X6STUB-10	3/4"M x 6"L Straight Stub-Out
GT-3/4X12STUB-10	3/4"M x 12"L Straight Stub-Out
GT-1X6STUB-10	1"M x 6"L Straight Stub-Out
GT-1X12STUB-10	1"M x 12"L Straight Stub-Out
GT-STUB-BRACE	Stub Bracket (optional) – Fits All

Pipe Support

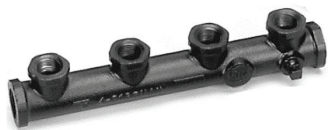
APPLICATION: Strap anchors metal tubing.



Part #	Description
GT-MBRACE-1	Manifold Mounting Kit - Fits all manifolds
GT-MSTRAP-6-250	Metal Tubing Strap – Fits 3/8" CSST
GT-MSTRAP-8-250	Metal Tubing Strap – Fits 1/2" CSST
GT-MSTRAP11-150	Metal Tubing Strap – Fits 3/4" CSST

Multi-Port Manifolds

APPLICATION: Provides central distribution point for individual runs to each appliance.



Part #	Description
GT-4-PORTMAN	Cast 4 port – 3/4"F x 4 @ 1/2"F x 1/2"F
GT-5-PORTMAN	Cast 5 port – 3/4"F x 1 @ 3/4"F x 4 @ 1/2"F x 1/2"F
GT-111596-08	Coated Steel 4 Port – 3/4"F x 4 @ 1/2" F x 3/4"M

XR3 Series Outlet Boxes

APPLICATION: Creates a secure recessed termination point for connection to moveable appliances.



Part #	Description
FSOUTLET-BOX-FR8	Firestop gas outlet box kit with 1/2" XR2 Fitting

Striker Plates

APPLICATION: Striker plates used for protection where flexible gas piping passes through structural members and is restricted from moving to avoid nails, screws and other potential puncture threats.

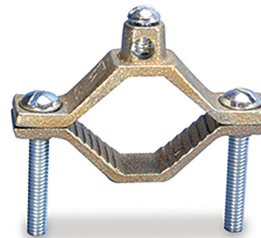


Part #	Description
GT-TFM204	Quarter Striker Plate – 3" x 2"
GT-TFM201	Half Striker Plate – 3" x 7"
GT-TFM203	Three-Quarter Striker Plate – 3" x 8"
GT-TFM205	Full Striker Plate – 3" x 12"
GT-TFM210	6" x 17" Striker Plate

Bonding Clamps

APPLICATION: For attachment to the FlashShield™ CSST gas piping system, a single bonding clamp must be attached to either a segment of steel pipe, a rigid pipe component or to the XR3 brass hex fitting.

Bonding clamps are listed to UL467 for use on XR3 hex fittings.



Part #	Description
CWP1JSH	Bonding Clamp for 3/8" and 1/2" CSST
CWP2JSH	Bonding Clamp for 3/4", 1" and 1-1/4" CSST
CWP3JSH	Bonding Clamp for 1-1/2" and 2" CSST

Jacket Stripper Tool

APPLICATION: Jacket Stripping Tool for cutting and removal of outer CSST jackets & metal shield before connecting fitting. Allows for clean, quick and proper fitting assembly.



Part #	Description
STRP3-8-24	1/2" Jacket Stripper
STRP3-11-24	3/4" Jacket Stripper
STRP3-16-24	1" Jacket Stripper

Tubing Cutters

APPLICATION: Tubing Cutters, fitted with cutting wheel designed to cut stainless steel, create clean cuts for optimal flaring of tubing.



Part #	Description
GT-CUTTER-SM	Cutter with flat rollers – 3/8" – 1" FlashShield CSST
GT-BLADE-SM-5	Replacement blade for GTCUTTER-SM (19 mm diam.)
GT-CUTTER-LG	Cutter with flat rollers – Up to 1-1/2" FlashShield CSST