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OR CCB NO. 1045

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Permit Number 23-01679-01

FIRE PROTECTION MATERIAL DATA SUBMITTAL FOR

WILCO EUGENE

4818 W 11TH AVE
EUGENE, OR

Date: 4/20/2023

Job# SC1388

Andy Shuck
Fire Protection Design

◆ E-MAIL andrew.shuck@omlidandswinney.us

Received by City of Eugene: 10_FP_Wilco_Eugene_Material_Data - 05/15/2023, 10:50:21 AM



F1FR56 Series Quick Response Sprinklers

K-factor 5.6 (80)

Features

- Standard coverage quick-response sprinklers
- Upright, pendent, horizontal sidewall, and vertical sidewall defectors
- Low profile, compact design
- Available in a wide variety of finishes

Product Description

Reliable Model F1FR56 series sprinklers are quick-response standard spray automatic fire sprinklers utilizing a sensitive 3.0 mm glass bulb thermal element.

Pendent and horizontal sidewall sprinklers may be installed exposed or surface mounted using escutcheons such as the Reliable Models B, C, or HB (reference Technical Bulletin 204). When installed recessed or concealed, the Model F1FR56 series sprinklers are specifically listed with and may only be installed with listed Reliable escutcheons and cover plates. Refer to the technical information on the following pages for specific listings for recessed and concealed installations and refer to Figures 5 and 6 for dimensional information.

When fitted with an approved water shield, these sprinklers may be considered intermediate sprinklers for use in racks, below grated walkways, and other areas where intermediate level sprinklers are required.

Table A provides a summary of the approvals and availability of specific Model F1FR series sprinkler configurations. Additional technical information for each sprinkler model is provided on the following pages.



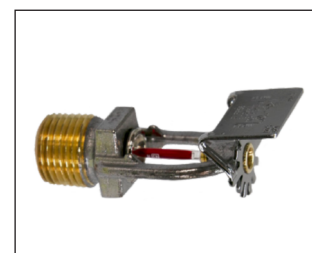
Model F1FR56 Pendent



Model F1FR56 Upright



Model F1FR56 Vertical Sidewall

Model F1FR56
Horizontal Sidewall

Note: Not all versions of the product are shown.

Note: This bulletin may contain information on New and Legacy sprinklers that reflects a dimensional change only. Sprinkler Identification Number (SIN), application, performance, and listings/approval are not otherwise affected. Sprinklers with New frames will include the suffix "N" in the order.

F1FR Series Sprinklers Summary

Table A

Sprinkler Model	K-Factor gpm/psi ^{1/2} (lpm/bar ^{1/2})	Orientation	Listings & Approvals	Max. Working Pressure psi (bar)	Sprinkler Identification Number (SIN)
F1FR56	5.6 (80)	Upright Intermediate Upright	cULus, FM, LPCB, VdS, EC, WM, UKCA	175 (12) 250 (17) (cULus only)	RA1425
		Pendent	cULus, FM, LPCB, VdS, EC, WM, UKCA	175 (12) 250 (17) (cULus only)	RA1414
		Concealed Pendent	cULus, VdS, EC, WM, UKCA	175 (12) 250 (17) (cULus only)	RA1414
		Horizontal Sidewall	cULus, FM	175 (12) 250 (17) (cULus only)	RA1435
		Vertical Sidewall	cULus, FM, LPCB, UKCA	175 (12)	RA1485

Model F1FR56 Upright Sprinkler

SIN RA1425

Technical Specifications

Style: Upright, Intermediate Upright

Threads: 1/2" NPT or ISO 7-R1/2

Nominal K-Factor: 5.6 (80 metric)

Max. Working Pressure:

175 psi (12 bar)

250 psi (17 bar) (cULus only)

Material Specifications

Thermal Sensor: 3 mm Glass Bulb

Sprinkler Frame: Brass Alloy

Cap: Bronze Alloy

Sealing Washer: Nickel with PTFE

Load Screw: Copper Alloy

Deflector: Brass Alloy

Sprinkler Finishes

(See Table B)

Sensitivity

Quick response

Temperature Ratings

135°F (57°C)

155°F (68°C)

175°F (79°C)

200°F (93°C)

286°F (141°C)

Guards & Shields (New Frames)

Factory Water Shield (cULus, FM)

F-1 Guard (cULus, FM)

F-3 Guard with Shield (cULus, FM)

Guards and Shields (Legacy Frames)

Factory Water Shield

C-1 Guard (FM)

C-3 Guard with Shield (cULus, FM)

D-1 Guard (cULus)

D-3 Guard with Shield (cULus)

Sprinkler Wrench

Model W2

Model J (New frame with guard installed)

Model JD (Legacy frame with guard installed)

Listings and Approvals

cULus Listed

FM Approved

LPCB

VdS

EC

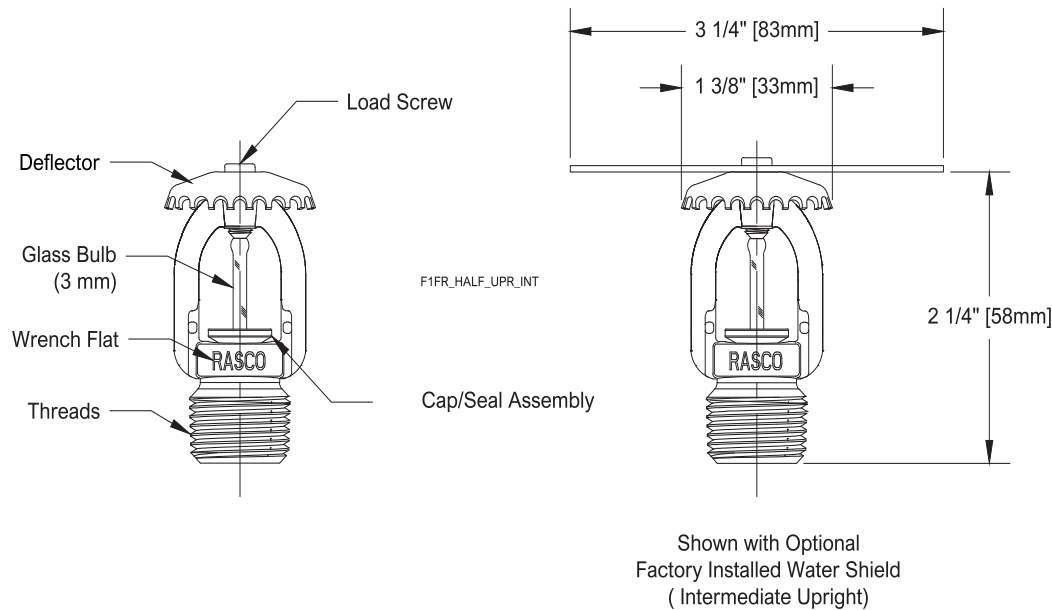
WM

UKCA: 0832-UKCA-CPR-S5045



Model F1FR56 Upright Sprinkler Components and Dimensions

Figure 1



Technical Specifications**Style:**

Pendent
Recessed Pendent
Concealed Pendent

Threads: 1/2" NPT or ISO 7-R1/2

Nominal K-Factor: 5.6 (80 metric)

Max. Working Pressure:

175 psi (12 bar)
250 psi (17 bar) (cULus only)

Material Specifications

Thermal Sensor: 3 mm Glass Bulb

Sprinkler Frame: Brass Alloy

Cap: Bronze Alloy

Sealing Washer: Nickel with PTFE

Load Screw: Copper Alloy

Deflector: Brass Alloy

Sprinkler Finishes

(See Table B)

Sensitivity

Quick response

Temperature Ratings⁽¹⁾

135°F (57°C)
155°F (68°C)
175°F (79°C)
200°F (93°C)
286°F (141°C)

Recessed Escutcheons

Model F1 (cULus, LPCB, VdS, CE, WM)
Model F2 (cULus, FM, LPCB, VdS, CE, WM)
Model FP (cULus, VdS, CE, WM)

Cover Plate

Model CCP (cULus, VdS⁽²⁾, CE⁽²⁾)

Guards & Shields (New Frames)⁽³⁾

F-1 Guard (FM)
F-5 Guard/Shield Kit (FM)
F-7 Guard (cULus)
F-8 Guard/Shield Kit (cULus)
S-1 Shield (cULus, FM)

Guards & Shields (Legacy Frames)⁽³⁾

C-1 Guard (FM)
C-5 Guard/Shield Kit (FM)
D-1 Guard (cULus, FM)
D-4 Guard/Shield Kit (FM)
D-5 Guard/Shield Kit (cULus, FM)
S-1 Shield (cULus, FM)

Sprinkler Wrenches

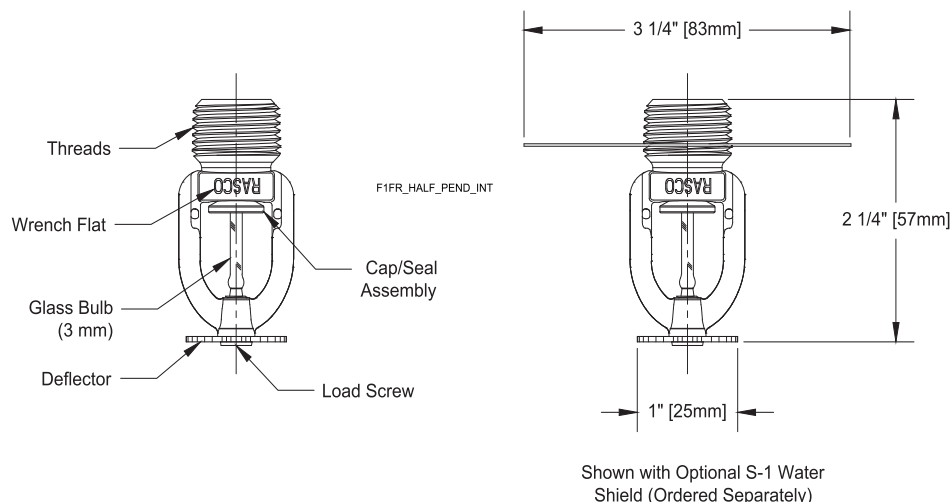
Model W2 (pendent)
Model W4 (recessed or concealed)
Model J (New frame with guard installed)
Model JD (Legacy frame with guard installed)

Listings and Approvals⁽⁴⁾

cULus Listed
FM Approved
LPCB
VdS
EC
WM
UKCA: 0832-UKCA-CPR-S5045,
0831-UKCA-CPR-5072 (CCP)

**Notes:**

1. 286°F (141°C) temperature rated sprinkler not listed for recessed or concealed use.
2. VdS and CE approval for CCP concealed use is for 155°C (68°C) sprinkler ONLY.
3. Not suitable for recessed or concealed pendent installations.
4. When used surface mounted or exposed. See Recessed Escutcheon and Cover Plate section for specific approvals when installed recessed or concealed.

Model F1FR56 Pendent Sprinkler Components and Dimensions**Figure 2**

Note: Please refer to Figure 8 for recessed and concealed installation.

Technical Specifications**Style:**

Horizontal Sidewall
Recessed Horizontal Sidewall

Threads: 1/2" NPT or ISO 7-R1/2**Nominal K-Factor:** 5.6 (80 metric)**Max. Working Pressure:**

175 psi (12 bar)
250 psi (17 bar) (cULus only)

Material Specifications**Thermal Sensor:** 3 mm Glass Bulb**Sprinkler Frame:** Brass Alloy**Cap:** Bronze Alloy**Sealing Washer:** Nickel with PTFE**Load Screw:** Copper Alloy**Deflector:** Brass Alloy**Sprinkler Finishes**

(See Table B)

Sensitivity

Quick response

Temperature Ratings ⁽¹⁾

135°F (57°C)
155°F (68°C)
175°F (79°C)
200°F (93°C)
286°F (141°C)

Recessed Escutcheons⁽²⁾

Model F1 (cULus)
Model F2 (cULus, FM)
Model FP (cULus)

Guards & Shields (New Frames)⁽³⁾

F-4 Guard (FM)
F-7 Guard (cULus)

Guards & Shields (Legacy Frames)⁽³⁾

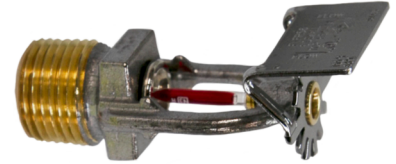
C1 Guard (FM)
D1 Guard (cULus)

Sprinkler Wrenches

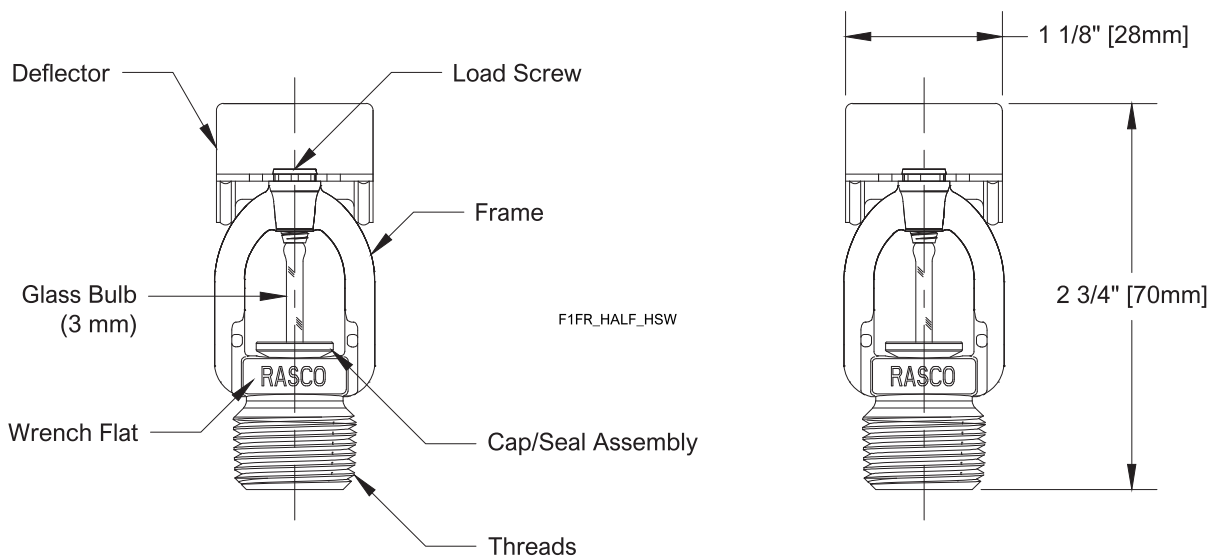
Model W2 (non-recessed)
Model W4 (recessed)
Model J (New frame with guard installed)
Model JD (Legacy frame with guard installed)

Listings and Approvals

cULus Listed⁽⁴⁾
FM Approved⁽⁵⁾

**Notes:**

1. 286°F (141°C) temperature rated sprinkler not listed for recessed use.
2. FM approved recessed installation when used with Model F2 escutcheon ONLY.
3. Not suitable for recessed horizontal sidewall installations.
4. cULus Listed for Light and Ordinary Hazard when installed exposed or surface mounted. Listed for Light Hazard ONLY when installed recessed.
5. FM Approved for Light Hazard ONLY.

Model F1FR56 Horizontal Sidewall Sprinkler Components and Dimensions**Figure 3****Note:** Please refer to Figure 9 for recessed installation.

Technical Specifications**Style:**

Upright Vertical Sidewall
Pendent Vertical Sidewall

Threads: 1/2" NPT or ISO 7-R1/2

Nominal K-Factor: 5.6 (80 metric)

Max. Working Pressure: 175 psi (12 bar)

Material Specifications

Thermal Sensor: 3 mm Glass Bulb

Sprinkler Frame: Brass Alloy

Cap: Bronze Alloy

Sealing Washer: Nickel with PTFE

Load Screw: Copper Alloy

Deflector: Brass Alloy

Sprinkler Finishes

(See Table B)

Sensitivity

Quick response

Temperature Ratings

135°F (57°C)

155°F (68°C)

175°F (79°C)

200°F (93°C)

286°F (141°C)

Guards & Shields (New Frames)

F-2 Guard (FM)

Guards & Shields (Legacy Frames)

C1 Guard (FM)

Sprinkler Wrenches

Model W2

Model J (New frame with guard installed)

Model JD (Legacy frame with guard installed)

Listings and Approvals⁽¹⁾

cULus Listed

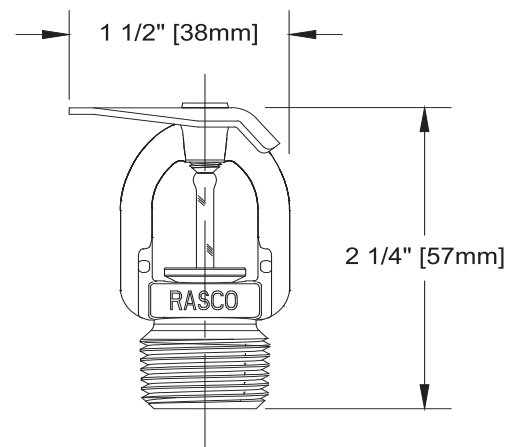
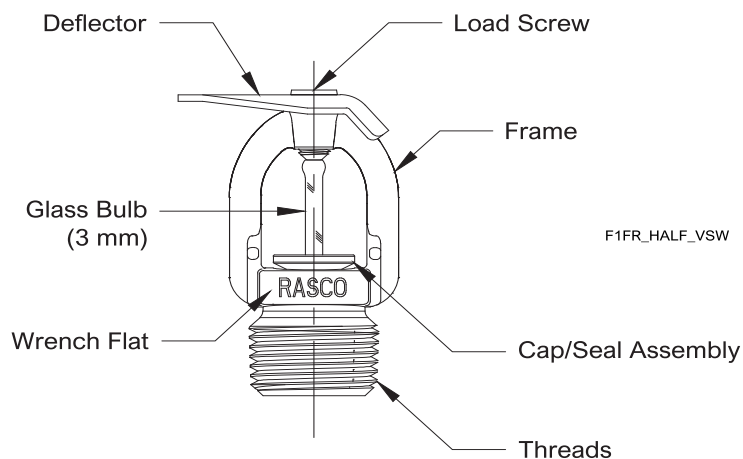
FM Approved

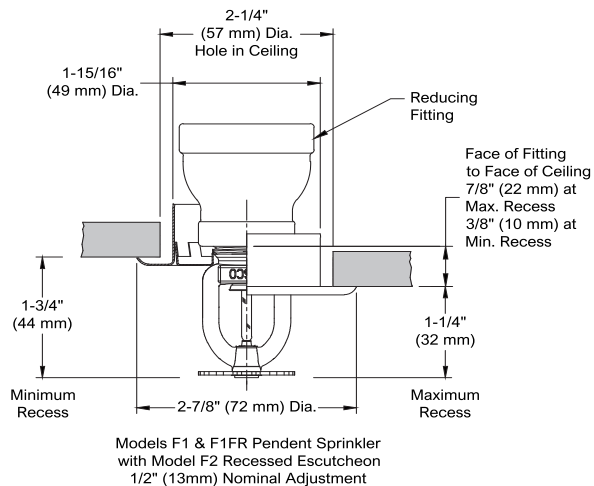
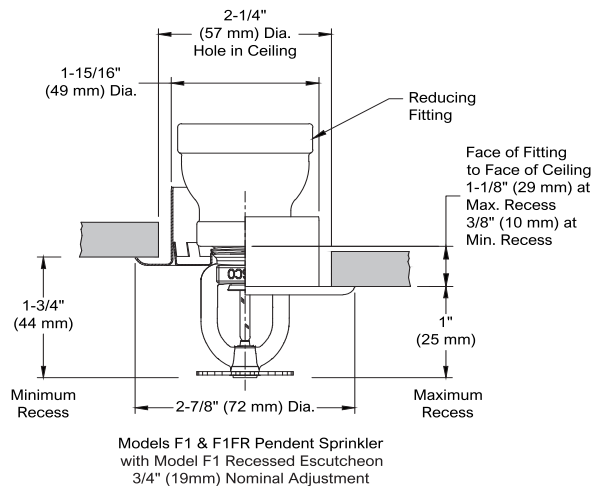
LPCB⁽²⁾

UKCA: 0832-UKCA-CPR-S5045

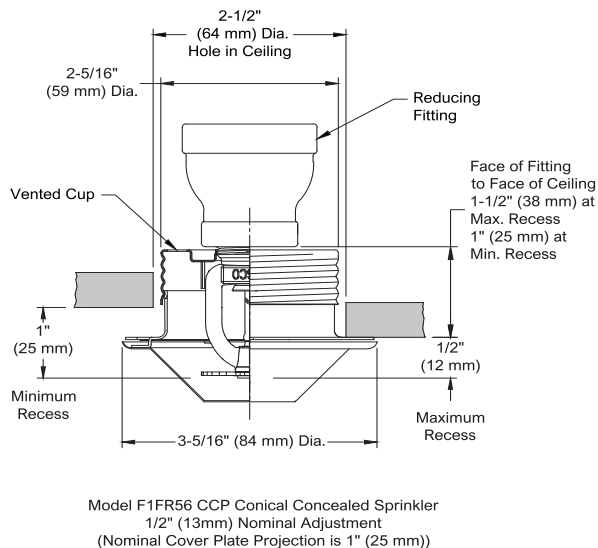
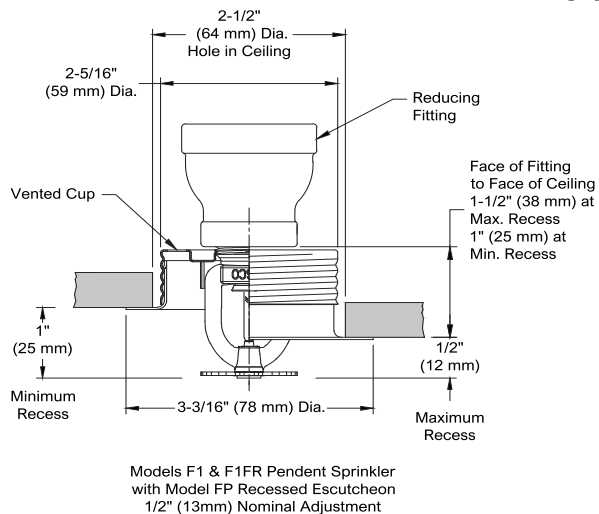
**Notes:**

1. Listed and approved for Light Hazard ONLY.
2. LPCB approved for use in pendent position ONLY.

Model F1FR56 Vertical Sprinkler Components and Dimensions**Figure 4**



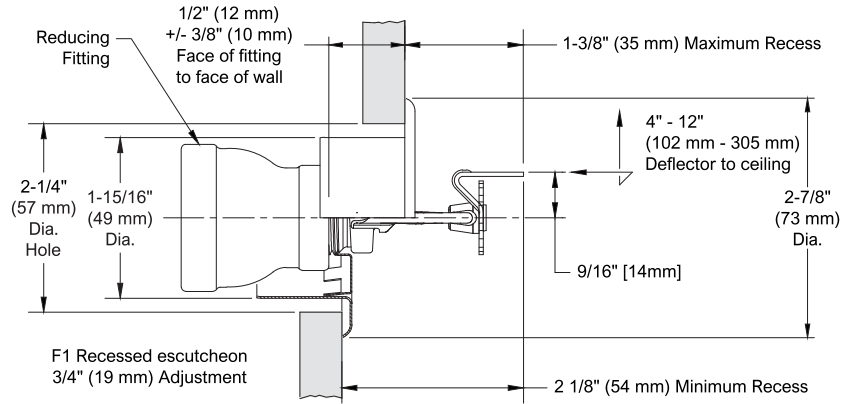
F1_REC_PEND_CCP



Note: Model FP recessed assemblies may not be used where the pressure in the space above the ceiling is positive with respect to the protected area. Ensure that the openings in the Model FP cup are unobstructed following installation.

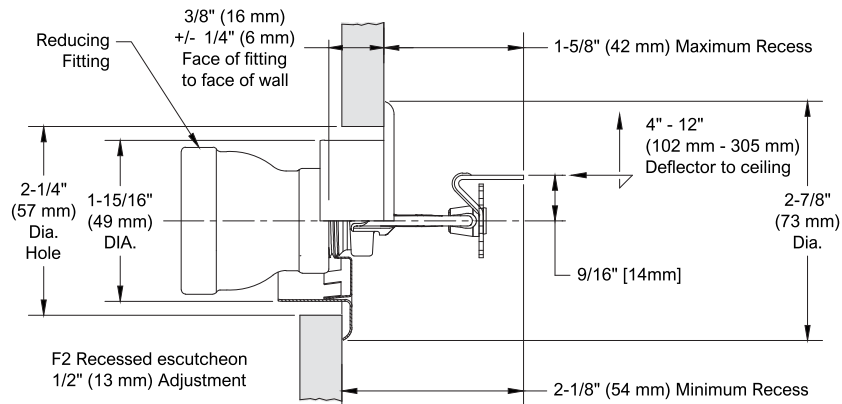
Note: Model CCP concealed assemblies may not be used where the pressure in the space above the ceiling is positive with respect to the protected area. Ensure that the openings in the Model CCP cup are unobstructed following installation.



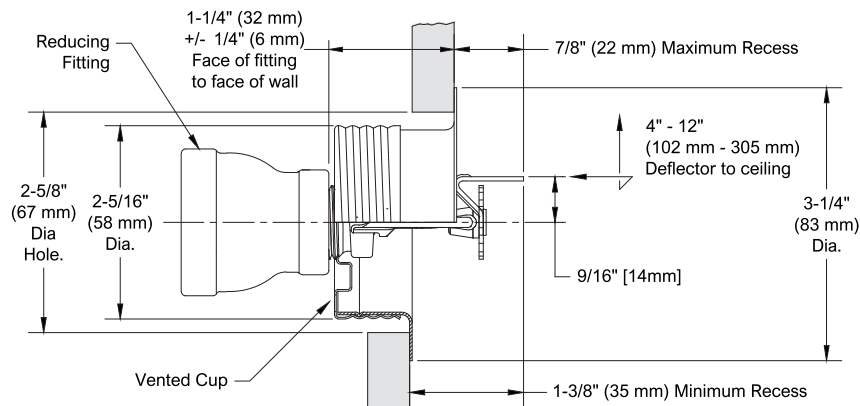


Model F1FR Horizontal Sidewall Sprinkler
with Model F1 Recessed Escutcheon
3/4" (19mm) Nominal Adjustment

F1FR_REC_HSW



Model F1FR Horizontal Sidewall Sprinkler
with Model F2 Recessed Escutcheon
1/2" (13mm) Nominal Adjustment



Model F1FR Horizontal Sidewall Sprinkler
with Model FP Recessed Escutcheon
1/2" (13mm) Nominal Adjustment

Note: Model FP recessed assemblies may not be used where the pressure in the space behind the sprinkler is positive with respect to the space in the protected area. Ensure that the openings in the Model FP cup are unobstructed following installation.

Wrenches



Model W2 (upright, pendent)



Model J (New frame with guard installed)
Model JD (Legacy frame with guard installed, similar but with zinc finish)



Model W4
(recessed, concealed pendent)

Finishes⁽¹⁾

Table B

Standard Finishes			Special Application Finishes		
Sprinkler	F1, F2 and FP ⁽²⁾ Escutcheons	CCP Cover Plate ⁽²⁾	Sprinkler	F1, F2 and FP ⁽²⁾ Escutcheons	CCP Cover Plate ⁽²⁾
Bronze	Brass	Chrome	Electroless Nickel PTFE ⁽³⁾⁽⁴⁾	Bright Brass	Bright Brass
Chrome	Chrome	White Paint	Bright Brass ⁽⁵⁾	Satin Chrome	Satin Chrome
White Polyester ⁽³⁾	White Polyester		Satin Chrome	Custom Color Polyester	Custom Color Paint
			Custom Color Polyester ⁽³⁾		

Notes:

1. Paint or any other coating applied over the factory finish will void all approvals and warranties.
2. Model FP escutcheons and Model CCP sprinklers utilize a galvanized steel cup with a finished trim ring or cover plate.
3. cULus Listed as corrosion resistant.
4. FM Approved as corrosion resistant.
5. For 200°F (93°C) maximum temperature rated sprinklers only.

Installation

Model F1FR Series sprinklers must be installed in accordance with NFPA13 and the requirements of all applicable authorities having jurisdiction. Model F1FR Series sprinklers must be installed with the Reliable sprinkler installation wrench identified in this Bulletin. Any other wrench may damage the sprinkler. The Models W2 and W4 wrenches have two sets of jaws. Use the smallest set of jaws that fit on the wrench flats of the sprinkler. A leak tight sprinkler joint can be obtained with a torque of 8 to 18 lb-ft (11 to 24 N-m). Do not tighten sprinklers over the maximum recommended installation torque. Exceeding the maximum recommended installation torque may cause leakage or impairment of the sprinkler.

Glass bulb sprinklers have orange bulb protectors or protective caps to minimize bulb damage during shipping, handling and installation. Reliable sprinkler installation wrenches are designed to install sprinklers with bulb protectors in place. Remove the bulb protector at the time when the sprinkler system is placed in service for fire protection. Removal of the bulb protector before this time may leave the bulb vulnerable to damage. Remove bulb protectors by undoing the clasp by hand. Do not use tools to remove bulb protectors.

Maintenance

Reliable Model F1FR series sprinklers should be inspected and the sprinkler system maintained in accordance with NFPA 25, as well as the requirements of any Authorities Having Jurisdiction.

Prior to installation, sprinklers should remain in the original cartons and packaging until used. This will minimize the potential for damage to sprinklers that could cause improper operation or non-operation.

Do not clean sprinklers with soap and water, ammonia liquid or any other cleaning fluids. Remove dust by gentle vacuuming without touching the sprinkler.

Replace any sprinkler which has been painted (other than factory applied). A stock of spare sprinklers should be maintained to allow quick replacement of damaged or operated sprinklers. Failure to properly maintain sprinklers may result in inadvertent operation or non-operation during a fire event.

Guarantee

For the guarantee, terms, and conditions, visit www.reliablesprinkler.com.

Ordering Information

Specify the following when ordering:

Model

- F1FR56

Deflector/Orientation

- Upright
- Intermediate Upright
- Pendent
- CCP Concealed Pendent
- Horizontal Sidewall
- Vertical Sidewall

Temperature Rating

- See sprinkler technical specifications

Sprinkler Finish

- See Table B

Recessed Escutcheon⁽¹⁾⁽²⁾

- F1
- F2
- FP

Escutcheon Finish

- See Table B

CCP Cover Plate Temperature Rating

- 135°F (57°C) [For use with 135°F (57°C) and 155°F (68°C) sprinklers.]
- 165°F (74°C) [For use with 175°F (79°C) and 200°F (93°C) sprinklers.]

CCP Cover Plate Finish

- See Table B

Sprinkler Wrench

- Model W2
- Model W4 (recessed, concealed)
- Model J (New frame with guard installed)
- Model JD (Legacy frame with guard installed)

Notes:

1. 286°F (141°C) sprinklers are not listed to be used recessed or concealed.
2. For FM, recessed sprinklers must use the Model F2 escutcheon.



Model F3QR56 Dry K5.6 (80 metric) Quick-Response, Standard Spray Sprinklers

Bulletin 157 November 2022

Features

- Available in the following configurations:
 - Pendent with standard escutcheon
 - Pendent with Model HB extended escutcheon
 - Pendent with Model FP recessed escutcheon
 - Pendent with Model F1 recessed escutcheon
 - Concealed Pendent with Model CCP cover plate
 - Horizontal Sidewall with Standard escutcheon
 - Horizontal Sidewall with Model HB extended escutcheon
 - Horizontal Sidewall with Model FP recessed escutcheon (FM Standard Response)
 - Horizontal Sidewall with Model F1 recessed escutcheon (FM Standard Response)
 - Upright
- Available with 1" NPT, ISO7-1R1, 3/4" NPT, or ISO7-1R3/4 inlet fitting.
- 3/4" NPT inlet fittings permit replacement of older 3/4" inlet dry sprinklers without changing to a larger sprinkler fitting.
- Sprinklers, escutcheons, and cover plates are available in a wide variety of standard and special application finishes.
- White polyester, black polyester, and Electroless Nickel PTFE (ENT) finish sprinklers are cULus Listed as Corrosion Resistant.
- Available with cULus Listed 250 psi (17.2 bar) pressure rating for Dry Pendent and select HSW configurations. FM Approved for 175 psi (12 bar).

Product Description

Model F3QR56 Dry sprinklers are quick-response, standard coverage sprinklers with a nominal K-Factor of 5.6 (80 metric). Available in Dry Pendent, Dry Horizontal Sidewall, and Dry Upright configurations, Model F3QR56 Dry sprinklers all use a 3 mm glass bulb operating element. See the Temperature Ratings table in this Bulletin for available temperature ratings. Model F3QR56 Dry sprinklers are intended for installation on wet-pipe, dry-pipe, or preaction sprinkler systems in accordance with NFPA 13, FM Property Loss Prevention Data Sheets, and other applicable installation standards.

Model F3QR56 Dry Pendent and Sidewall sprinklers are available with a variety of escutcheon options as illustrated in Figs. 1 through 3 and Figs. 5 through 9. In addition, Model F3QR56 Dry Pendent sprinklers are also available with the Model CCP conical concealed cover plate as illustrated in Fig. 4. Available sprinkler, escutcheon, and cover plate finishes are identified in the Finishes table in this Bulletin. The Model F1 escutcheon, Model FP escutcheon, and Model CCP cover plate are the only recessed escutcheons and cover plate listed for use with Model F3QR56 Dry sprinklers; the use of any other recessed escutcheon or cover plate with Model F3QR56 Dry sprinklers will void all guarantees, warranties, listings and approvals.



Pendent
(See Fig. 1)



Pendent / HB
(See Fig. 2)



Recessed FP Pendent
(See Fig. 3)



Concealed
(See Fig. 4)



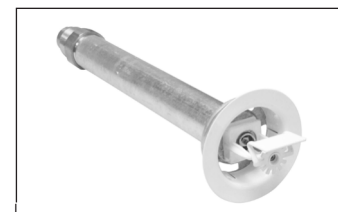
Recessed F1 Pendent
(See Fig. 5)



Horizontal Sidewall
(See Fig. 6)



Horizontal Sidewall / HB
(See Fig. 7)



Recessed FP
Horizontal Sidewall
(See Fig. 8)



Recessed F1
Horizontal Sidewall
(See Fig. 9)



Upright
(See Fig. 10)

Inlet fittings are available with 1" NPT, ISO 7-1R1, 3/4" NPT, or ISO7-1R3/4 threads. Sprinklers with 3/4" NPT and ISO7-1R3/4 inlet fittings are intended primarily for replacement of existing 3/4" or ISO7-1R3/4 inlet dry sprinklers, but may also be used in new installations.

See the Available Configurations, Listings, and Approvals table in this Bulletin for further information on Model F3QR56 Dry sprinklers.

Available Configurations, Listings, and Approvals

Sprinkler Model	Escutcheon or Cover Plate	Available Length (See Figs. 1-9)	Listings and Approvals ⁽¹⁾	Inlet Threads	Sprinkler Identification Number (SIN)
F3QR56 Dry Pendent	Standard Escutcheon	2" to 36" (50 to 900 mm)	cULus, NYC	3/4" NPT or ISO7-1R3/4	R5714
	HB Extended Escutcheon	3-1/2" to 36" (90 to 900 mm)			
	F1 Recessed Escutcheon				
	FP Recessed Escutcheon				
	CCP Cover Plate				
	Standard Escutcheon	2" to 48" (50 to 1200 mm)	cULus, FM, NYC	1" NPT or ISO7-1R1	
	HB Extended Escutcheon	3-1/2" to 48" (90 to 1200 mm)			
	F1 Recessed Escutcheon				
	FP Recessed Escutcheon				
	CCP Cover Plate				
F3QR56 Dry Horizontal Sidewall	Standard Escutcheon	2" to 48" (50 to 1200 mm)	cULus ⁽²⁾ , NYC ⁽²⁾	3/4" NPT or ISO7-1R3/4	R5734
	HB Extended Escutcheon	3-1/2" to 48" (90 to 1200 mm)			
	F1 Recessed Escutcheon				
	FP Recessed Escutcheon				
	Standard Escutcheon	2" to 48" (50 to 1200 mm)	cULus ⁽²⁾ , FM ⁽³⁾ , NYC ⁽²⁾	1" NPT or ISO7-1R1	
	HB Extended Escutcheon	3-1/2" to 48" (90 to 1200 mm)			
	F1 Recessed Escutcheon	3-1/2" to 48" (90 to 1200 mm)	cULus ⁽²⁾ , FM ⁽³⁾⁽⁴⁾ , NYC ⁽²⁾		
	FP Recessed Escutcheon				
F3QR56 Dry Upright	N/A	5" to 48" (127 to 1200 mm)	cULus ⁽²⁾	1" NPT or ISO7-1R1	R5724

⁽¹⁾ For available temperature ratings and finishes see the Temperature Ratings and Finishes tables, respectively, in this Bulletin.

⁽²⁾ cULus Listing and NYC for Light Hazard and Ordinary Hazard only.

⁽³⁾ FM Approved for Light Hazard only.

⁽⁴⁾ Model F3QR56 Dry Horizontal Sidewall with Model F1 or Model FP recessed escutcheon are FM Approved as Standard Response.

Listing and Approval Agencies

See the Available Configurations, Listings, and Approvals table in this Bulletin for listings and approvals applicable to each available configuration.

1. Listed by Underwriters Laboratories, Inc. and UL Certified for Canada (cULus)
2. Certified by FM Approvals (FM)
3. Permitted in New York City based on UL Listing per Local Law 33/2007 (NYC)

Technical Data

Nominal K-Factor: 5.6 gpm/psi^{1/2} (80 L/min/bar^{1/2})

Sprinkler	Listing or Approval	Deflector to Ceiling Distance	Maximum Working Pressure
F3QR56 Dry Pendent	cULus, NYC	See note below	250 psi (17.2 bar)
	FM	See note below	175 psi (12 bar)
F3QR56 Dry Horizontal Sidewall	cULus, NYC	4" to 6 "	250 psi (17.2 bar)
		4" to 12"	175 psi (12 bar)
	FM	See note below	175 psi (12 bar)
F3QR56 Dry Upright	cULus	See note below	175 psi (12 bar)

Note: Deflector distance to be in accordance with applicable NFPA, FM, or other agency requirements. Information is provided only when additional clarification is necessary.

Temperature Classification	Glass Bulb Color	Sprinkler Temperature Rating	Cover Plate Temperature Rating	Maximum Ceiling Temperature	Listings and Approvals ⁽¹⁾
Ordinary	Orange	135°F (57°C)	135°F (57°C)	100°F (38°C)	cULus, FM, NYC
	Red	155°F (68°C)			
Intermediate	Yellow	175°F (79°C)	165°F (74°C)	150°F (66°C)	cULus, NYC
Intermediate	Green	200°F (93°C)	165°F (74°C)	150°F (66°C)	cULus, FM, NYC
High	Blue	286°F (141°C)	None	225°F (107°C)	cULus, FM ⁽²⁾ , NYC
			165°F (74°C)	150°F (66°C)	cULus, NYC

⁽¹⁾ For listed and approved sprinkler, escutcheon, and inlet configurations see the Available Configurations, Listings, and Approvals table in this Bulletin.

⁽²⁾ High temperature classification is FM Approved with Standard and Model HB escutcheons only.

Finish Notes

1. Finishes vary with type of trim selected. See table provided with each sprinkler detail for finish combinations.
2. Paint or any other coating applied over the factory finish will void all approvals and warranties.
3. Other finishes and colors may be available on special order. Consult your Reliable sales representative for details.
4. For Standard, Model HB, and Model F1 trims, both components of escutcheon are finished.
5. For Model FP and CCP trims, only the trim ring and cover plate are finished. The threaded sprinkler cup is unfinished.

Model F3QR56 Dry Pendent Sprinkler with Standard Escutcheon (SIN R5714)

"A" Dim.	2" to 48" (51mm to 1219mm) in 1/4" (6mm) increments for 1" connections or
	2" to 36" (51mm to 914mm) in 1/4" (6mm) increments for 3/4" connections

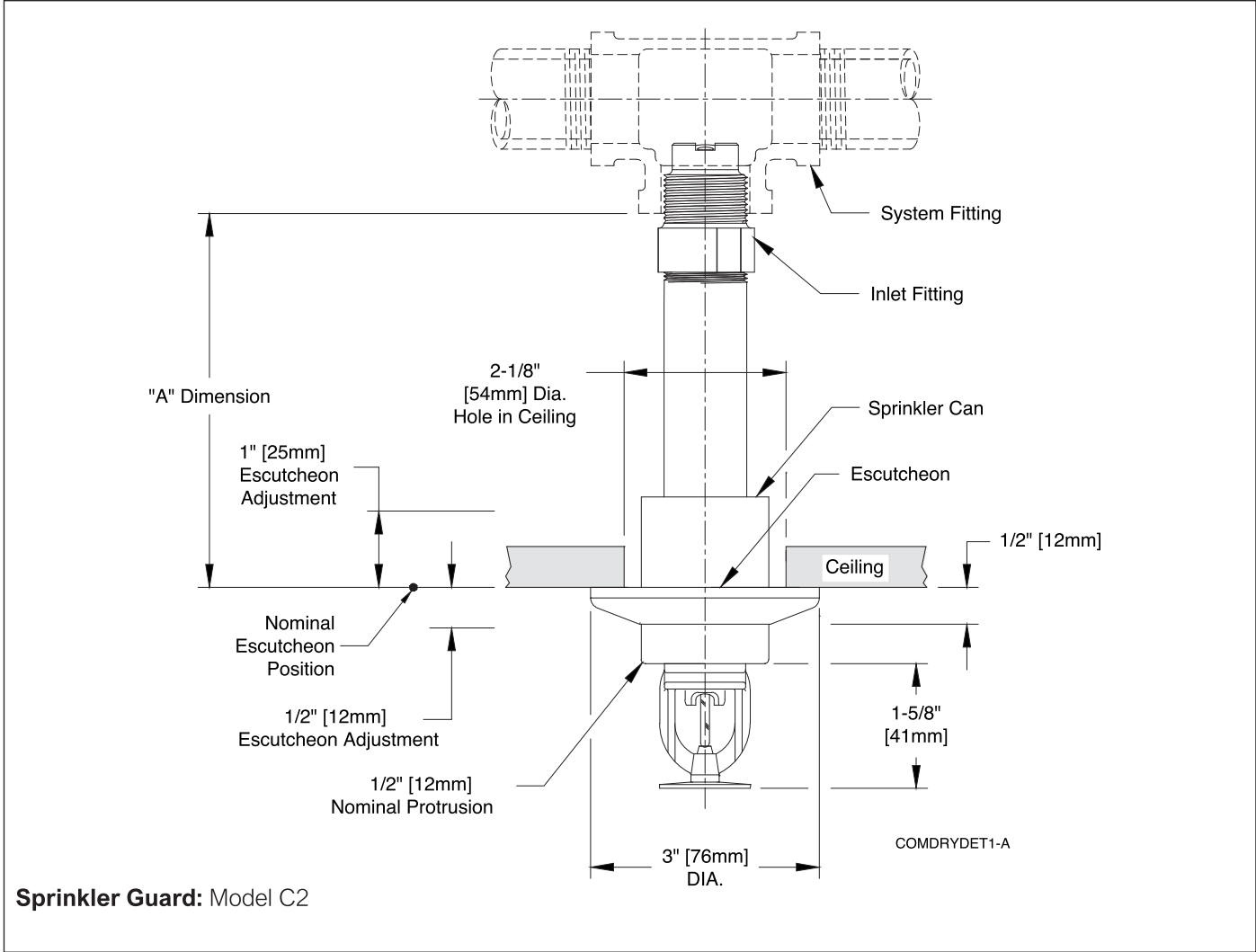


Fig. 1

Note: The sprinkler can protrudes 1/2" (12mm) when escutcheon is in nominal position. Escutcheon adjustment provides -1/2" (12mm) to +1" (25mm) "A" dimension adjustment range.

Finish Combinations: Standard Escutcheon	
Sprinkler	Escutcheon ⁽²⁾⁽³⁾
Bronze	Polished Stainless
Bronze	Laquered Brass
Chrome	Polished Stainless
White Polyester ⁽¹⁾	White Polyester
Black Polyester ⁽¹⁾	Black Polyester
Custom Color Polyester ⁽¹⁾	Custom Color Polyester
Electroless Nickel PTFE ⁽⁴⁾	Polished Stainless

Notes:

1. UL Listed as Corrosion Resistant.
2. Escutcheons do not carry corrosion resistant listings.
3. Base material is 316 stainless steel unless noted.
4. FM Approved as Corrosion Resistant.

Model F3QR56 Dry Pendent Sprinkler with Model HB Extended Escutcheon (SIN R5714)

"A" Dim.	3½" to 48" (89mm to 1219mm) in 1/4" (6mm) increments for 1" connections or 3½" to 36" (89mm to 914mm) in 1/4" (6mm) increments for 3/4" connections
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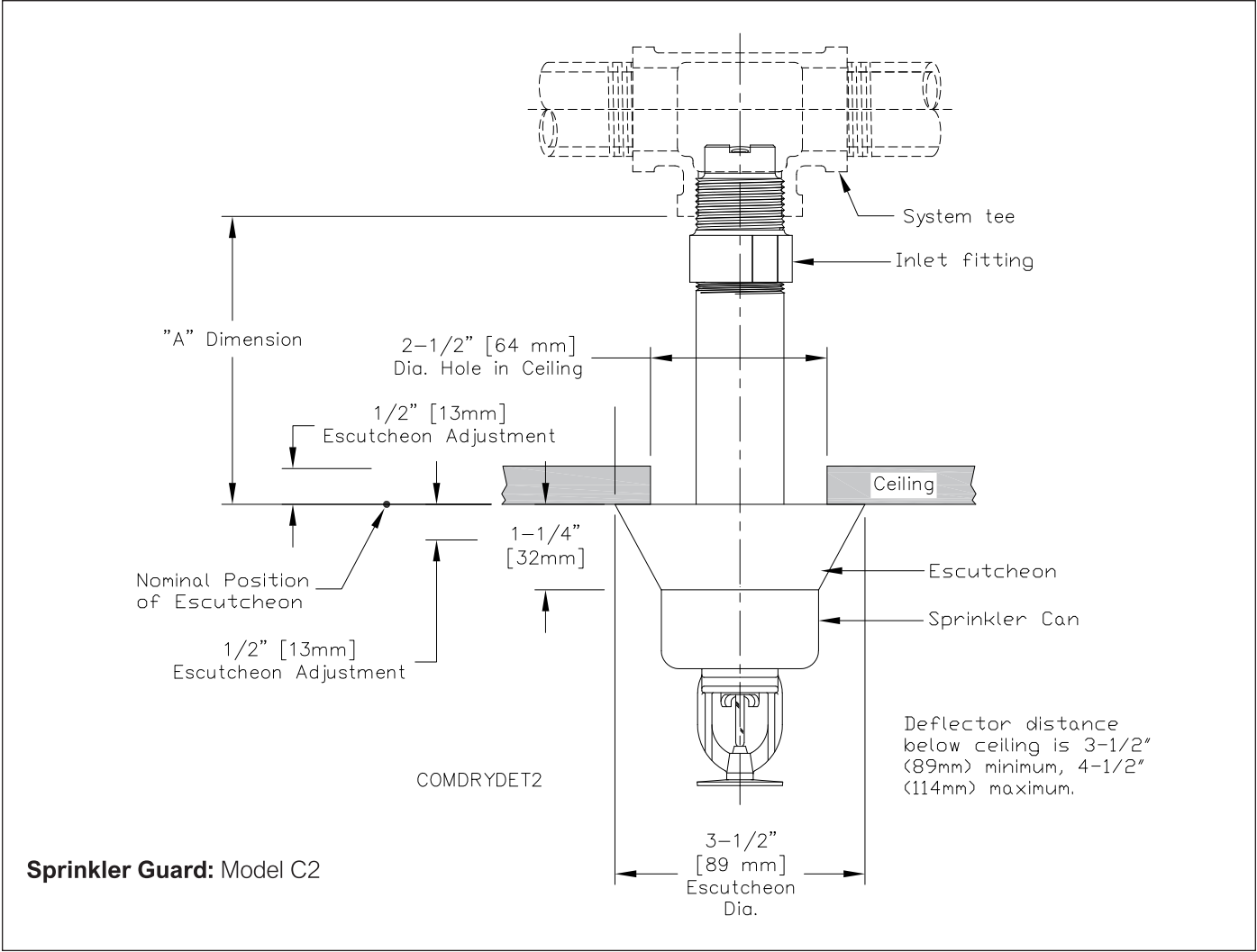


Fig. 2

Note: The sprinkler can protrudes 1¼" when escutcheon is in nominal position. Escutcheon adjustment provides -½" (-12.7mm) to +½" (+12.7mm) "A" dimension adjustment range.

Finish Combinations: HB Escutcheon	
Sprinkler	Escutcheon ⁽²⁾⁽³⁾
Bronze	Chrome
Chrome	Chrome
White Polyester ⁽¹⁾	White Polyester
Black Polyester ⁽¹⁾	Black Polyester
Custom Color Polyester ⁽¹⁾	Custom Color Polyester
Electroless Nickel PTFE ⁽¹⁾⁽⁴⁾	Stainless Steel

- Notes:**
1. UL Listed as Corrosion Resistant.
 2. Escutcheons do not carry corrosion resistant listings.
 3. Base material is cold rolled steel unless noted.
 4. FM Approved as Corrosion Resistant.

Model F3QR56 Dry Pendent Sprinkler with Model FP Recessed Escutcheon (SIN R5714)

"A" Dim.	3 1/2" to 48" (89mm to 1219mm) in 1/4" (6mm) increments for 1" connections or
	3 1/2" to 36" (89mm to 914mm) in 1/4" (6mm) increments for 3/4" connections

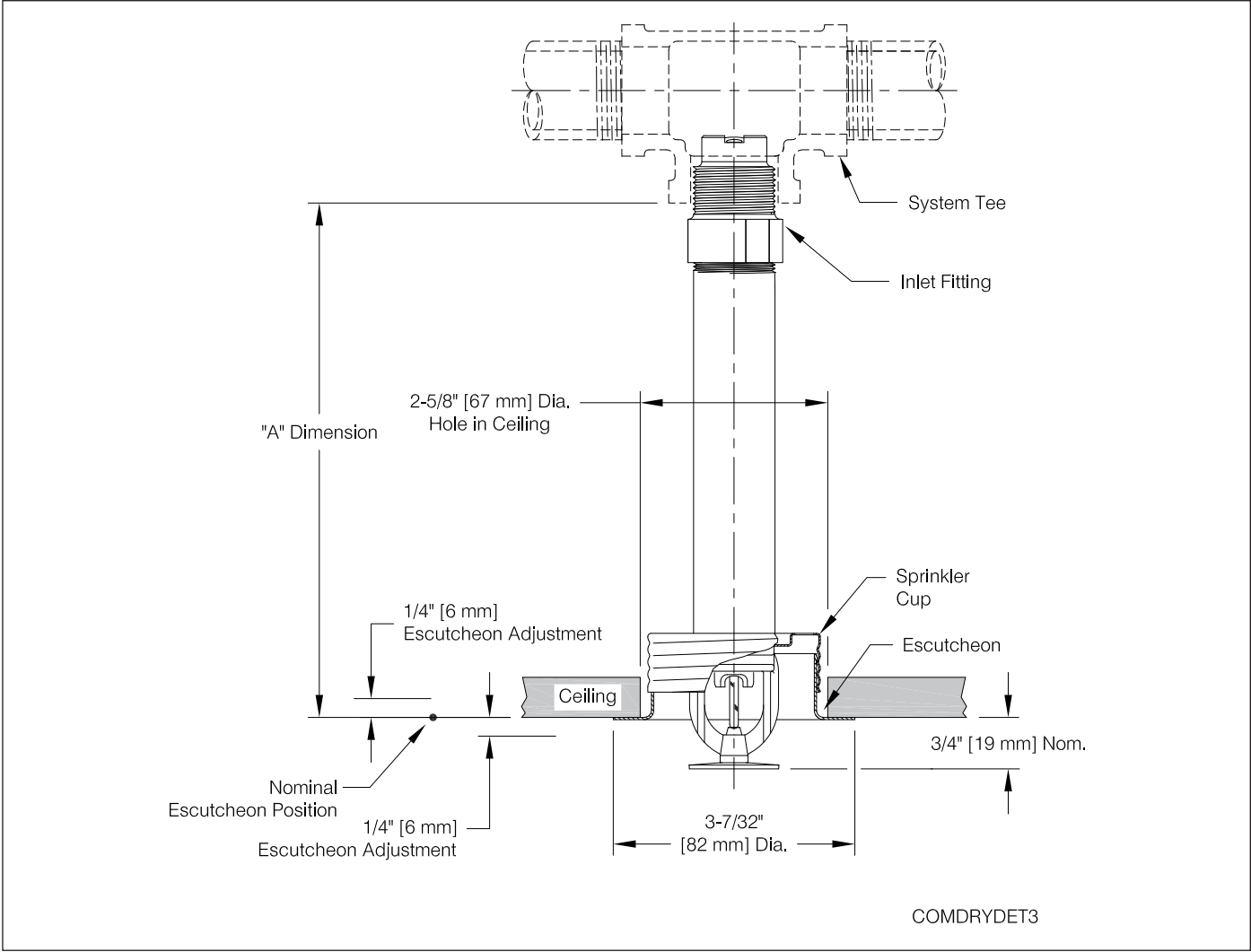


Fig. 3

Note: Do not install the Model F3QR56 Dry Pendent sprinkler with the Model FP escutcheon in ceilings which have positive pressure in the space above.

Finish Combinations: FP Recessed Escutcheon	
Sprinkler ⁽¹⁾	Escutcheon ⁽³⁾⁽⁴⁾
Bronze	Chrome
Bronze	Brass
Chrome	Chrome
White Polyester ⁽²⁾	White Polyester
Black Polyester ⁽²⁾	Black Polyester
Custom Color Polyester ⁽²⁾	Custom Color Polyester
Electroless Nickel PTFE ⁽²⁾⁽⁵⁾	Stainless Steel

Notes:

1. Cup for FP Recessed is unfinished galvanized steel except electroless nickel PTFE sprinkler uses a stainless steel cup.
2. UL Listed as Corrosion Resistant.
3. Escutcheons do not carry corrosion resistant listings.
4. Base material is cold rolled steel unless noted.
5. FM Approved as Corrosion Resistant.

Model F3QR56 Dry Pendent Sprinkler with Model CCP Cover Plate (SIN R5714)

"A" Dim.	3 1/2" to 48" (89mm to 1219mm) in 1/4" (6mm) increments for 1" connections or
	3 1/2" to 36" (89mm to 914mm) in 1/4" (6mm) increments for 3/4" connections

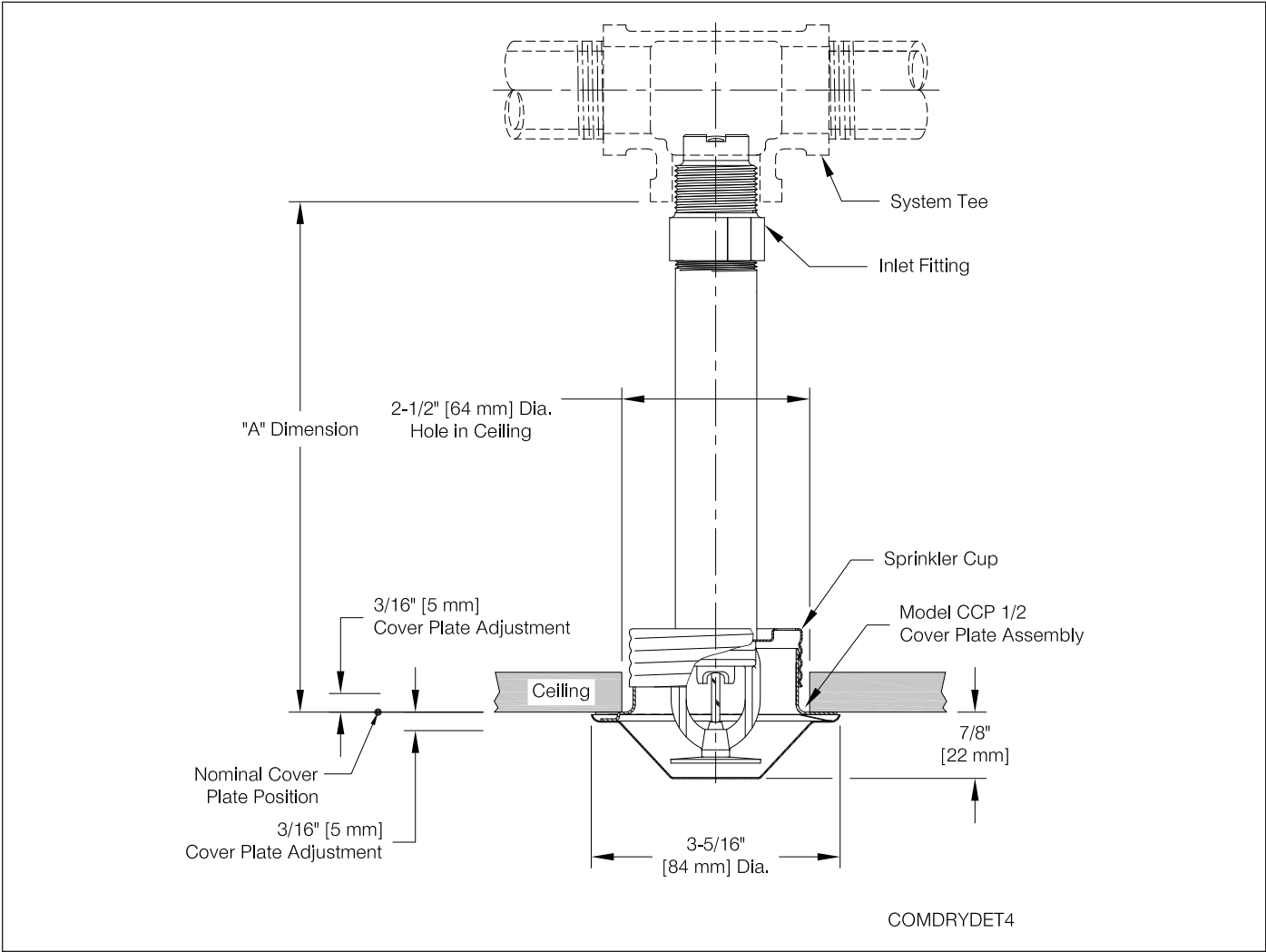


Fig. 4

Note: Do not install the Model F3QR56 Dry Pendent sprinkler with the Model CCP cover plate in ceilings which have positive pressure in the space above.

Finish Combinations: CCP Conical Cover Plate	
Sprinkler	Cover Plate ⁽²⁾
Bronze	White Polyester
	Chrome Bright
	Chrome Dull
	Bright Brass
	Unfinished Bronze
	Custom Color

Notes:

1. Cup for CCP Concealed in unfinished galvanized steel.
2. Cover plates do not carry corrosion resistant listings.

Model F3QR56 Dry Pendent Sprinkler with Model F1 Recessed Escutcheon (SIN R5714)

"A" Dim.	3½" to 48" (89mm to 1219mm) in ¼" (6mm) increments for 1" connections or 3½" to 36" (89mm to 914mm) in ¼" (6mm) increments for ¾" connections.
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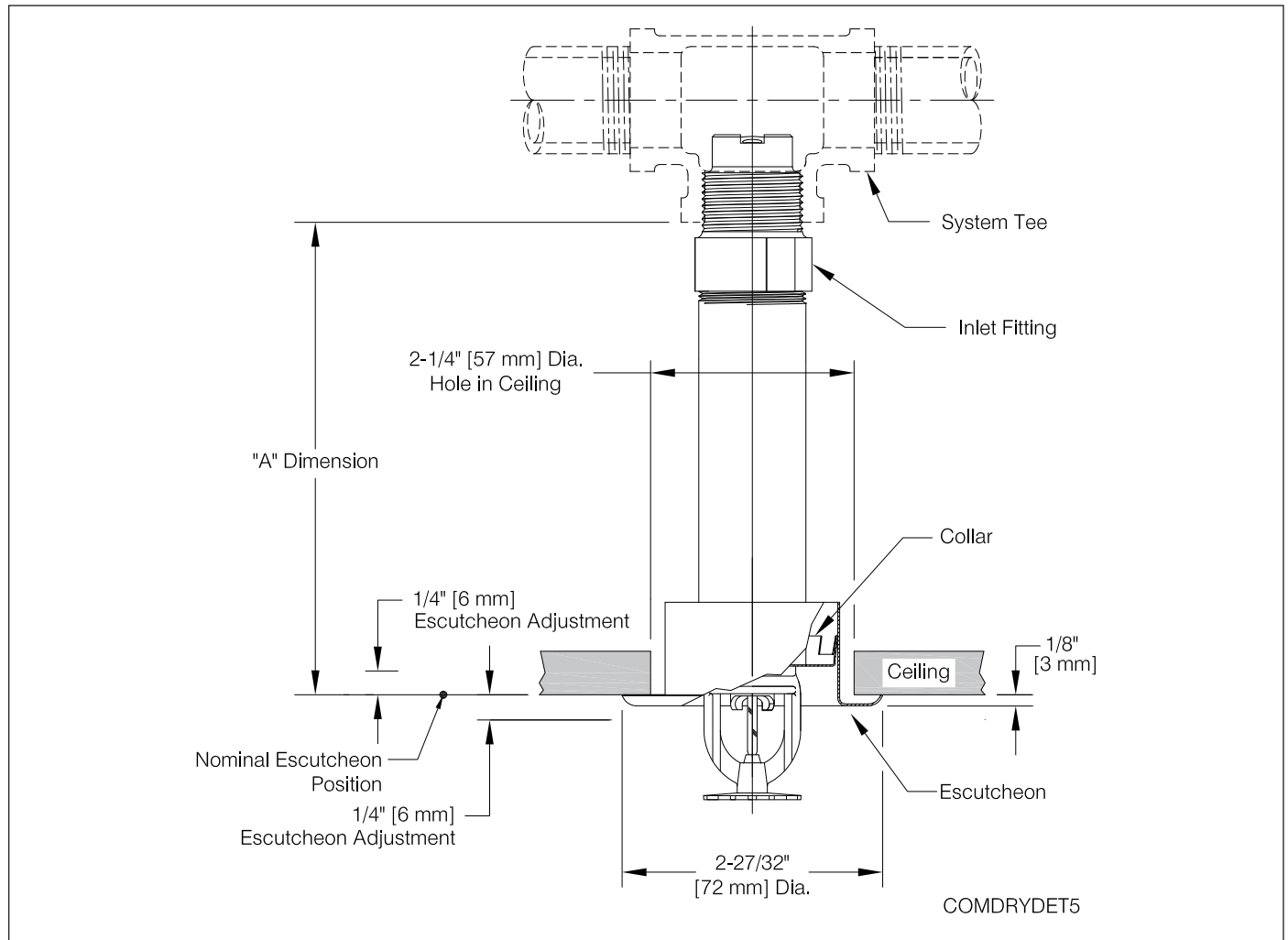


Fig. 5

Finish Combinations: F1 Recessed Escutcheon	
Sprinkler	Escutcheon ⁽²⁾⁽³⁾
Bronze	Chrome
Bronze	Brass
Chrome	Chrome
White Polyester ⁽¹⁾	White Polyester
Black Polyester ⁽¹⁾	Black Polyester
Custom Color Polyester ⁽¹⁾	Custom Color Polyester
Electroless Nickel PTFE ⁽¹⁾⁽⁴⁾	Stainless Steel

Notes:

1. UL Listed as Corrosion Resistant.
2. Escutcheons do not carry corrosion resistant listings.
3. Base material is cold rolled steel unless noted.
4. FM Approved as Corrosion Resistant.

Model F3QR56 Dry Horizontal Sidewall Sprinkler with Standard Escutcheon (SIN R5734)

"A" Dim.	2" to 48" (51mm to 1219mm) in 1/4" (6mm) increments for 1" connections or 2" to 36" (51mm to 914mm) in 1/4" (6mm) increments for 3/4" connections
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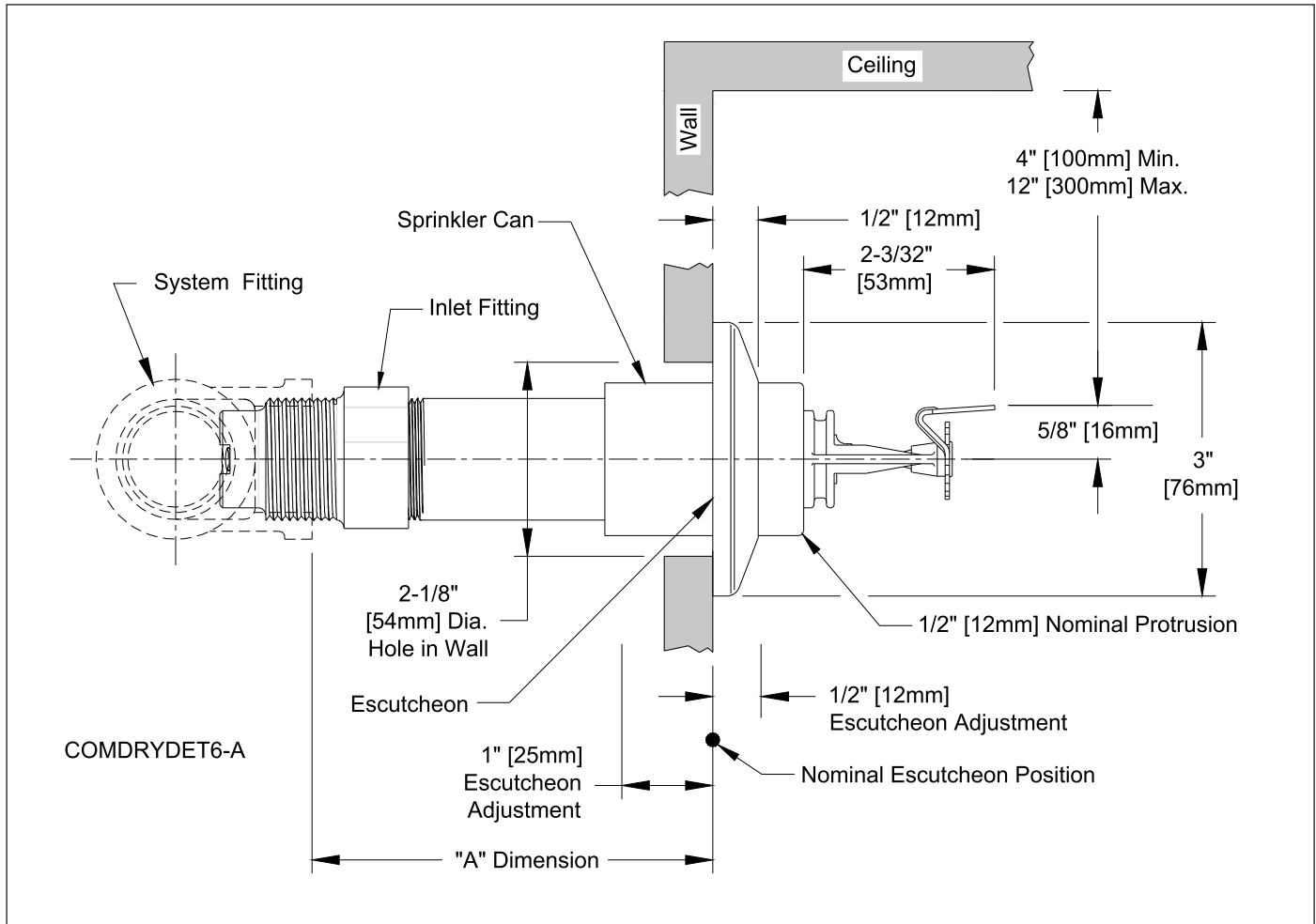


Fig. 6

Note: The sprinkler can protrude 1/2" when escutcheon is in nominal position. Escutcheon adjustment provides -1/2" (-12mm) to +1" (25mm) "A" dimension adjustment range.

Finish Combinations: Standard Escutcheon	
Sprinkler	Escutcheon ⁽²⁾⁽³⁾
Bronze	Polished Stainless
Bronze	Laquered Brass
Chrome	Polished Stainless
White Polyester ⁽¹⁾	White Polyester
Black Polyester ⁽¹⁾	Black Polyester
Custom Color Polyester ⁽¹⁾	Custom Color Polyester
Electroless Nickel PTFE ⁽¹⁾⁽⁴⁾	Polished Stainless

Notes:

1. UL Listed as Corrosion Resistant.
2. Escutcheons do not carry corrosion resistant listings.
3. Base material is 316 stainless steel unless noted.
4. FM Approved as Corrosion Resistant.

Model F3QR56 Dry Horizontal Sidewall Sprinkler with Model HB Escutcheon (SIN R5734)

"A" Dim.	3 1/2" to 48" (89mm to 1219mm) in 1/4" (6mm) increments for 1" connections or 3 1/2" to 36" (89mm to 914mm) in 1/4" (6mm) increments for 3/4" connections
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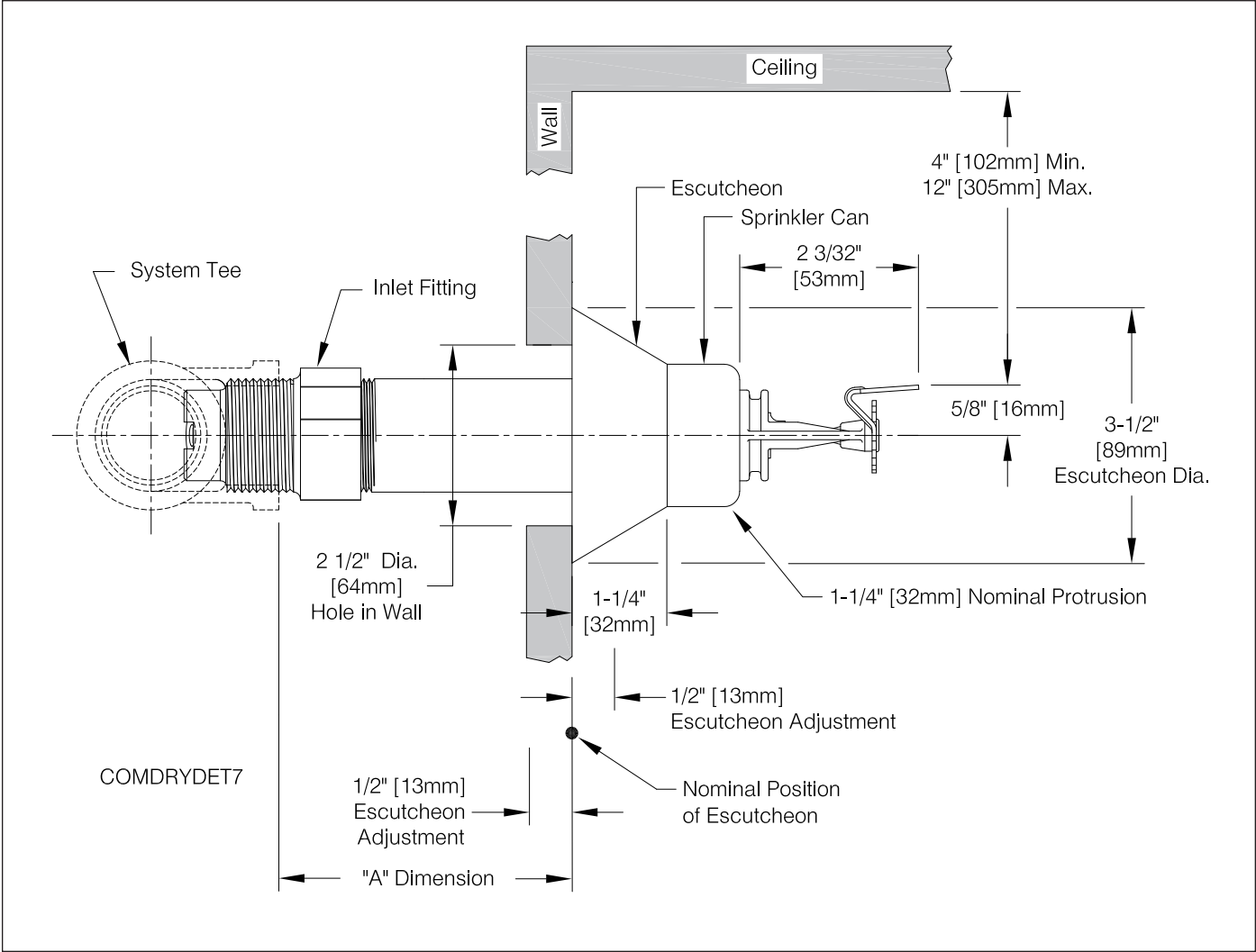


Fig. 7

Note: The sprinkler can protrudes 1 1/4" when escutcheon is in nominal position. Escutcheon adjustment provides -1/2" (-12.7mm) to +1/2" (+12.7mm) "A" dimension adjustment range.

Finish Combinations: HB Escutcheon	
Sprinkler	Escutcheon ⁽²⁾⁽³⁾
Bronze	Chrome
Chrome	Chrome
White Polyester ⁽¹⁾	White Polyester
Black Polyester ⁽¹⁾	Black Polyester
Custom Color Polyester ⁽¹⁾	Custom Color Polyester
Electroless Nickel PTFE ⁽¹⁾⁽⁴⁾	Stainless Steel

- Notes:**
1. UL Listed as Corrosion Resistant.
 2. Escutcheons do not carry corrosion resistant listings.
 3. Base material is cold rolled steel unless noted.
 4. FM Approved as Corrosion Resistant.

Model F3QR56 Dry Horizontal Sidewall Sprinkler with Model FP Recessed Escutcheon (SIN R5734)

"A" Dim.	3 1/2" to 48" (89mm to 1219mm) in 1/4" (6mm) increments for 1" connections or
	3 1/2" to 36" (89mm to 914mm) in 1/4" (6mm) increments for 3/4" connections

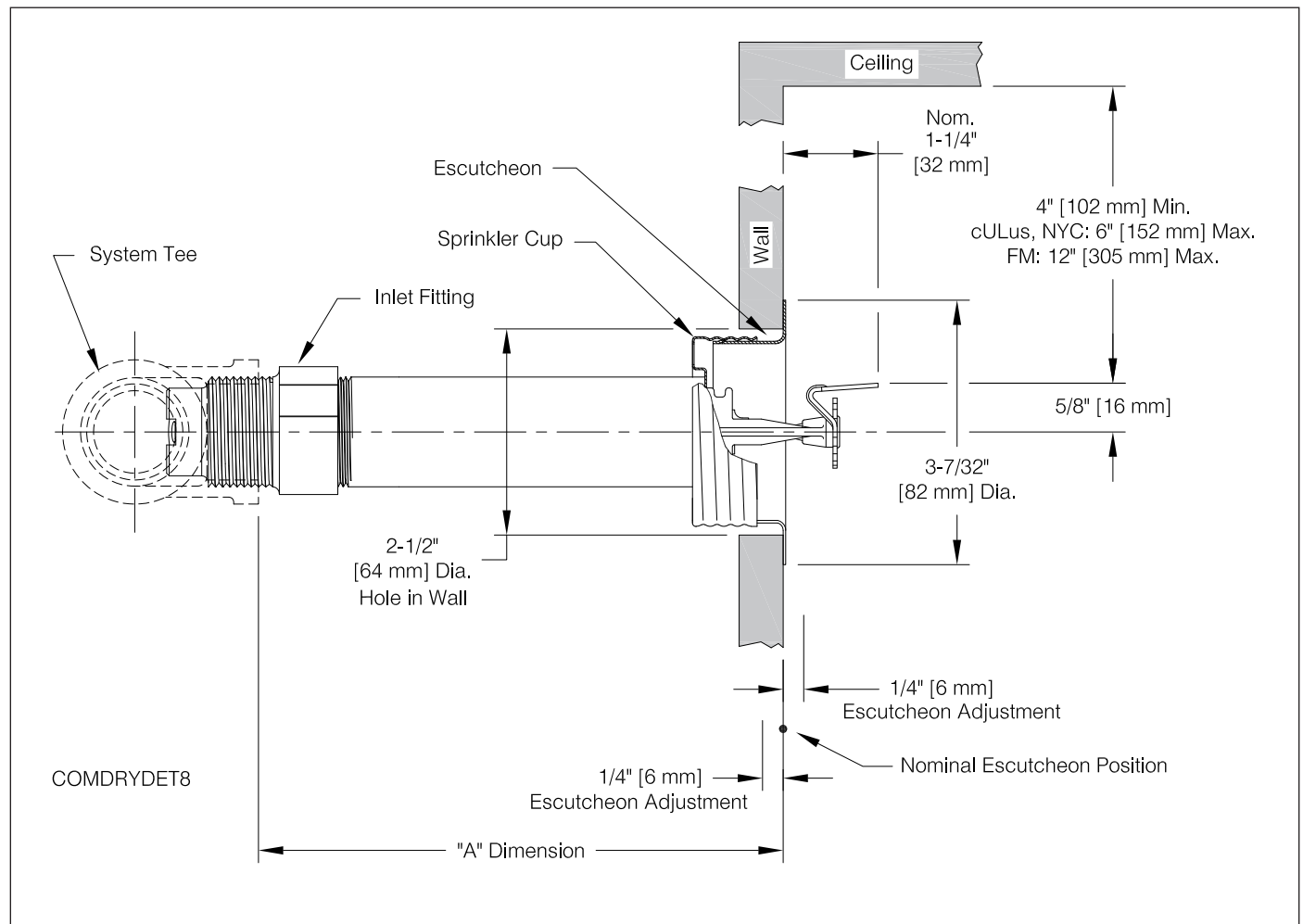


Fig. 8

Note: Do not install the Model F3QR56 Dry Horizontal Sidewall sprinkler with the Model FP escutcheon in walls which are positively pressurized with respect to the protected space.

Finish Combinations: FP Recessed Escutcheon	
Sprinkler ⁽¹⁾	Escutcheon ⁽³⁾⁽⁴⁾
Bronze	Chrome
Bronze	Brass
Chrome	Chrome
White Polyester ⁽²⁾	White Polyester
Black Polyester ⁽²⁾	Black Polyester
Custom Color Polyester ⁽²⁾	Custom Color Polyester
Electroless Nickel PTFE ⁽²⁾⁽⁵⁾	Stainless Steel

Notes:

1. Cup for FP Recessed is unfinished galvanized steel except electroless nickel PTFE sprinkler uses a stainless steel cup.
2. UL Listed as Corrosion Resistant.
3. Escutcheons do not carry corrosion resistant listings.
4. Base material is cold rolled steel unless noted.
5. FM Approved as Corrosion Resistant.

Model F3QR56 Dry Horizontal Sidewall Sprinkler with Model F1 Recessed Escutcheon (SIN R5734)

"A" Dim.	3½" to 48" (89mm to 1219mm) in ¼" (6mm) increments for 1" connections or 3½" to 36" (89mm to 914mm) in ¼" (6mm) increments for ¾" connections
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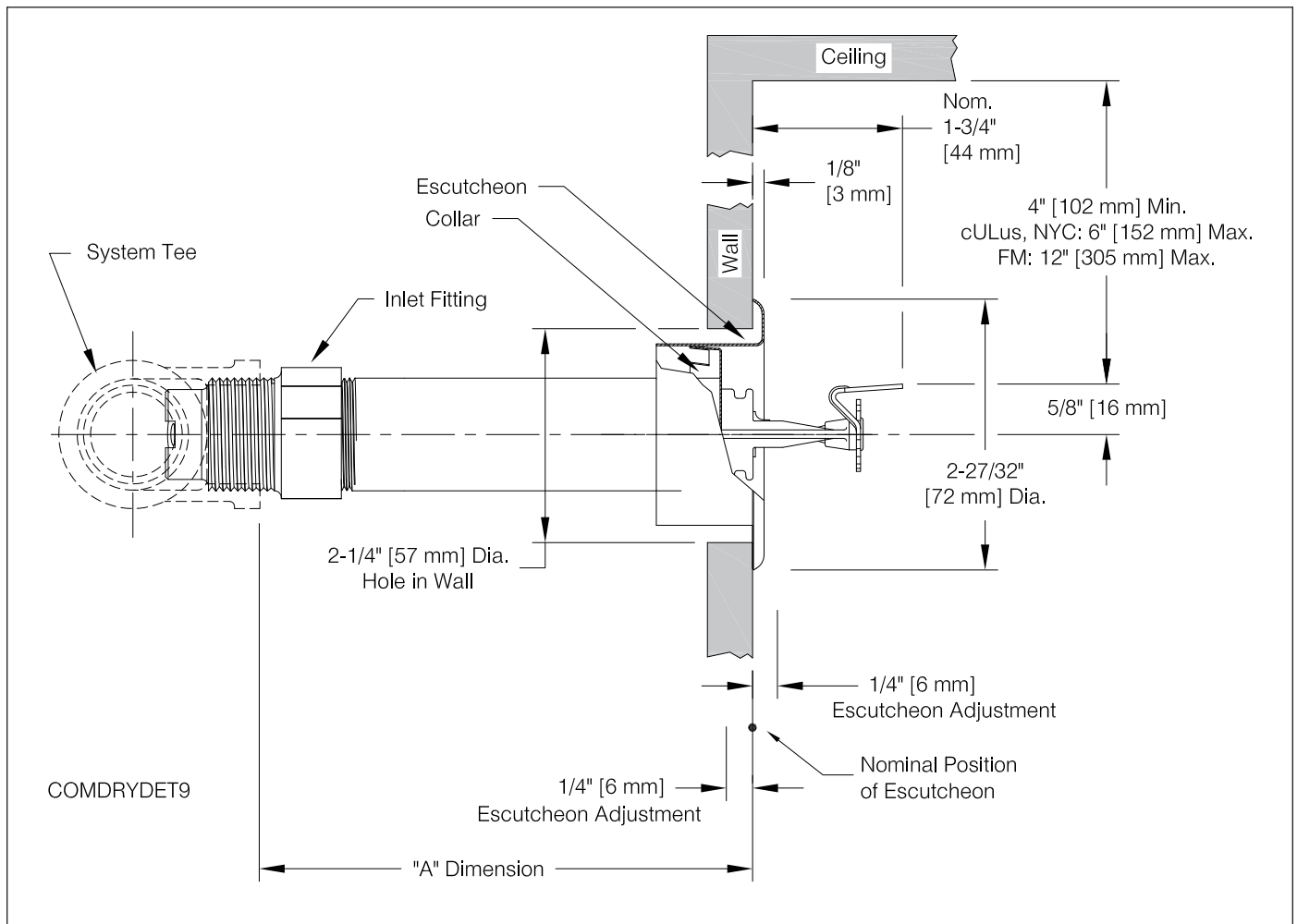


Fig. 9

Finish Combinations: F1 Recessed Escutcheon	
Sprinkler	Escutcheon ⁽²⁾⁽³⁾
Bronze	Chrome
Bronze	Brass
Chrome	Chrome
White Polyester ⁽¹⁾	White Polyester
Black Polyester ⁽¹⁾	Black Polyester
Custom Color Polyester ⁽¹⁾	Custom Color Polyester
Electroless Nickel PTFE ⁽¹⁾⁽⁴⁾	Stainless Steel

Notes:

1. UL Listed as Corrosion Resistant.
2. Escutcheons do not carry corrosion resistant listings.
3. Base material is cold rolled steel unless noted.
4. FM Approved as Corrosion Resistant.

Model F3QR56 Dry Upright (SIN 5724)
 Order Dimensions 5" to 48" (127 mm to 1219 mm)

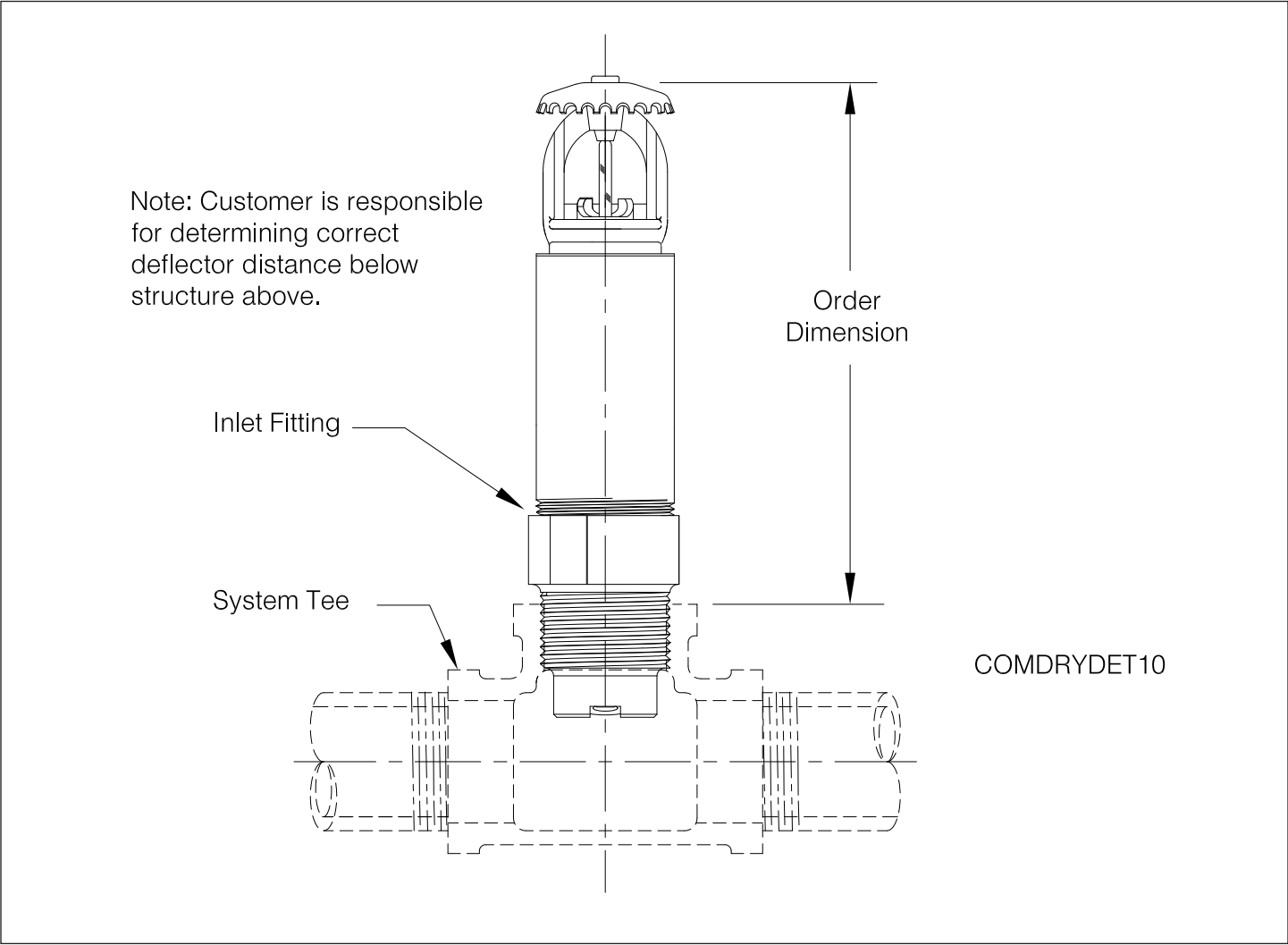


Fig. 10

Finish Combinations: Upright	
Sprinkler	Escutcheon
Bronze	NA
Electroless Nickel PTFE ⁽¹⁾	NA

- Notes:**
1. UL Listed as Corrosion Resistant.
 2. Escutcheons do not carry corrosion resistant listings.
 3. Base material is cold rolled steel unless noted.

MINIMUM EXPOSED BARREL LENGTH WHEN CONNECTED TO WET PIPE SPRINKLER SYSTEM

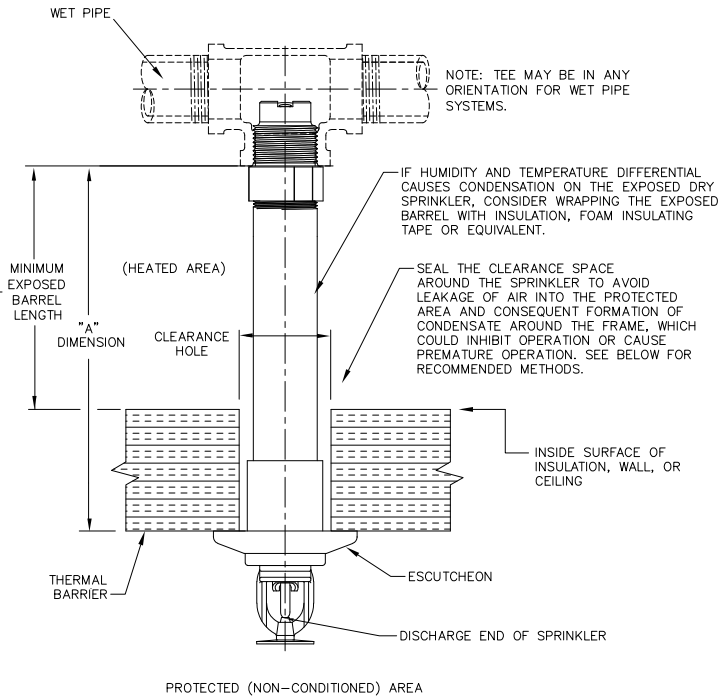
NOTE: STANDARD DRY PENDENT IS SHOWN, HOWEVER, MINIMUM EXPOSED BARREL LENGTH APPLIES TO ALL STYLES OF DRY SPRINKLERS CONNECTED TO A WET PIPE SYSTEM.

AMBIENT TEMPERATURE EXPOSED TO DISCHARGE END OF SPRINKLER*	EXPOSED BARREL AMBIENT TEMPERATURE		
	40°F/4°C	50°F/10°C	60°F/16°C
	EXPOSED MINIMUM BARREL LENGTH** (FACE OF FITTING TO TOP OF CEILING)***		
	IN. (MM)	IN. (MM)	IN. (MM)
40°F (4°C)	0	0	0
30°F (-1°C)	0	0	0
20°F (-7°C)	4 (100)	0	0
10°F (-12°C)	8 (200)	1 (25)	0
0°F (-18°C)	12 (300)	3 (75)	0
-10°F (-23°C)	14 (350)	4 (100)	1 (25)
-20°F (-29°C)	14 (350)	6 (150)	3 (75)
-30°F (-34°C)	16 (400)	8 (200)	4 (100)
-40°F (-40°C)	18 (450)	8 (200)	4 (100)
-50°F (-46°C)	20 (500)	10 (250)	6 (150)
-60°F (-51°C)	20 (500)	10 (250)	6 (150)

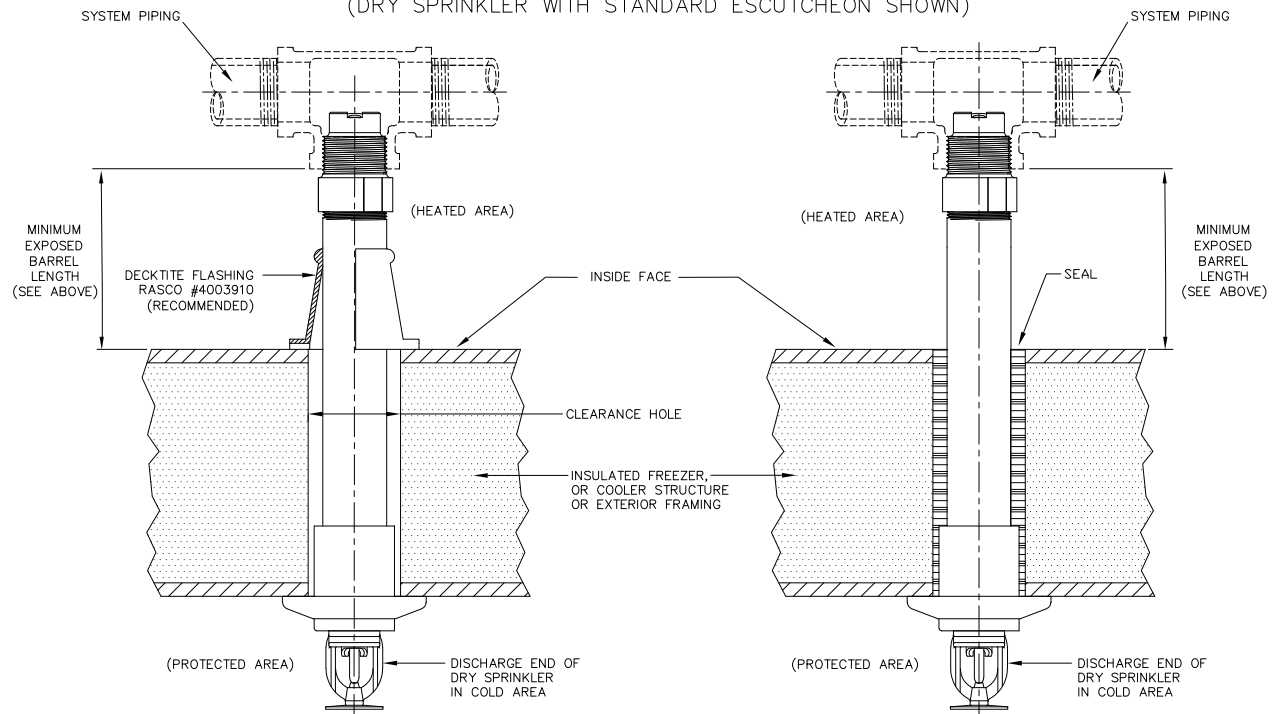
* FOR AMBIENT TEMPERATURES EXPOSED TO THE DISCHARGE END OF THE SPRINKLER THAT OCCUR BETWEEN THE VALUES LISTED, USE THE NEXT COOLER TEMPERATURE.

** THE MINIMUM EXPOSED BARREL LENGTH IS NOT THE SAME AS THE "A" DIMENSION. THE MINIMUM EXPOSED BARREL LENGTH IS BASED ON A PROPERLY SEALED PENETRATION WITH A MAXIMUM WIND VELOCITY ON THE EXPOSED SPRINKLER OF 30 MPH (48 KM/H). LONGER EXPOSED BARREL LENGTHS WILL HELP AVOID FREEZING OF THE WET PIPING WHERE HIGHER WIND VELOCITY IS EXPECTED.

*** THE MINIMUM EXPOSED BARREL LENGTH IS MEASURED FROM THE FACE OF THE FITTING TO THE INSIDE FACE OF THE INSULATION, WALL, OR CEILING LEADING TO THE COLD SPACE, WHICHEVER IS CLOSEST TO THE FITTING.



RECOMMENDED DRY SPRINKLER SEAL ARRANGEMENTS (DRY SPRINKLER WITH STANDARD ESCUTCHEON SHOWN)



COMDRYDET11

Fig. 11

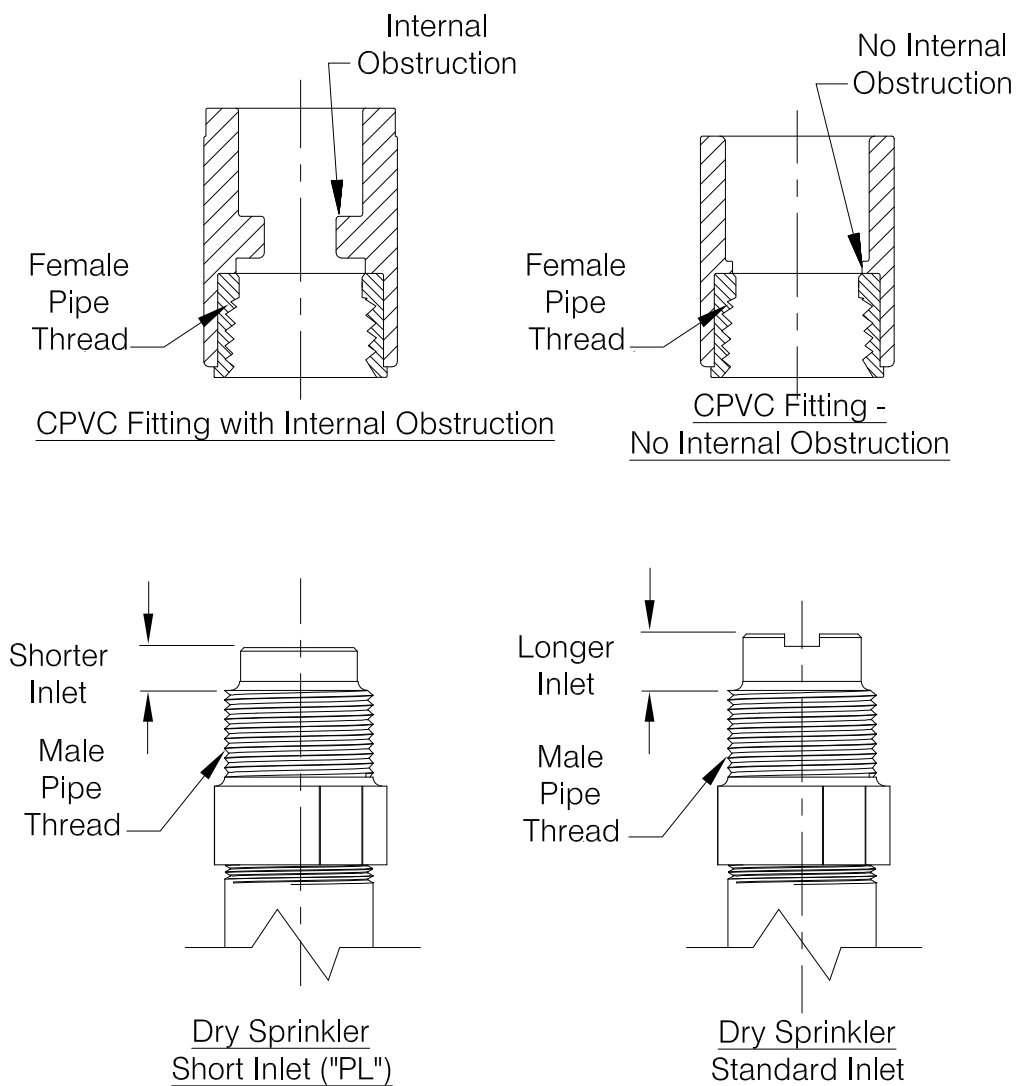
CAUTION

RELIABLE DRY SPRINKLERS MAY BE INSTALLED IN A LISTED CPVC SPRINKLER FITTING, ONLY UPON VERIFICATION THAT THE FITTING DOES NOT INTERFERE WITH THE SPRINKLER'S INLET.

Do not install dry sprinklers with standard inlets into CPVC fittings that have an internal obstruction; this will damage the sprinkler, the fitting, or both.

Short inlet ("PL") versions of Reliable dry sprinklers are available that may or may not be compatible with fittings having internal obstructions in existing installations. Sprinklers with the short inlet ("PL") should only be installed in CPVC fittings of wet-pipe systems.

In all cases, verify sprinkler and fitting dimensions prior to installation to avoid interference.



BE SURE TO ORDER THE CORRECT SPRINKLERS FOR YOUR APPLICATION

COMDRYDET2

Fig. 12

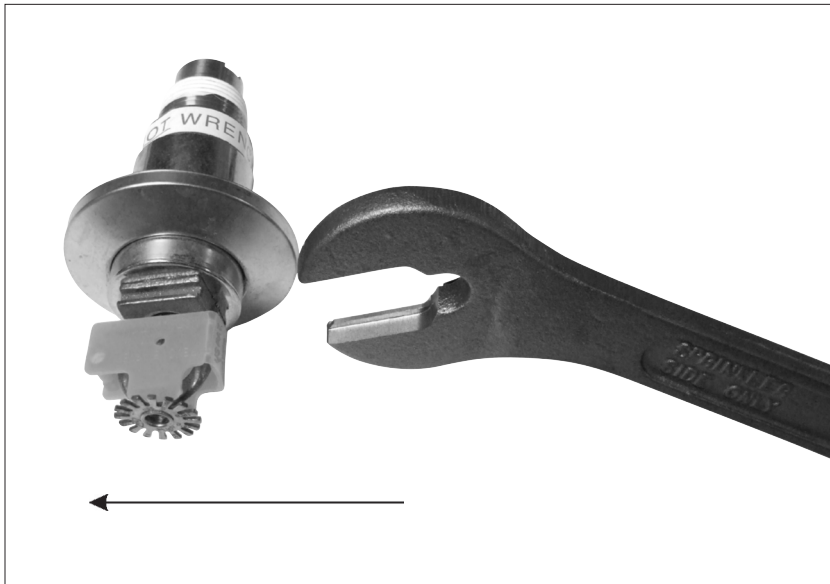


Fig. 13 - Model F3R Wrench

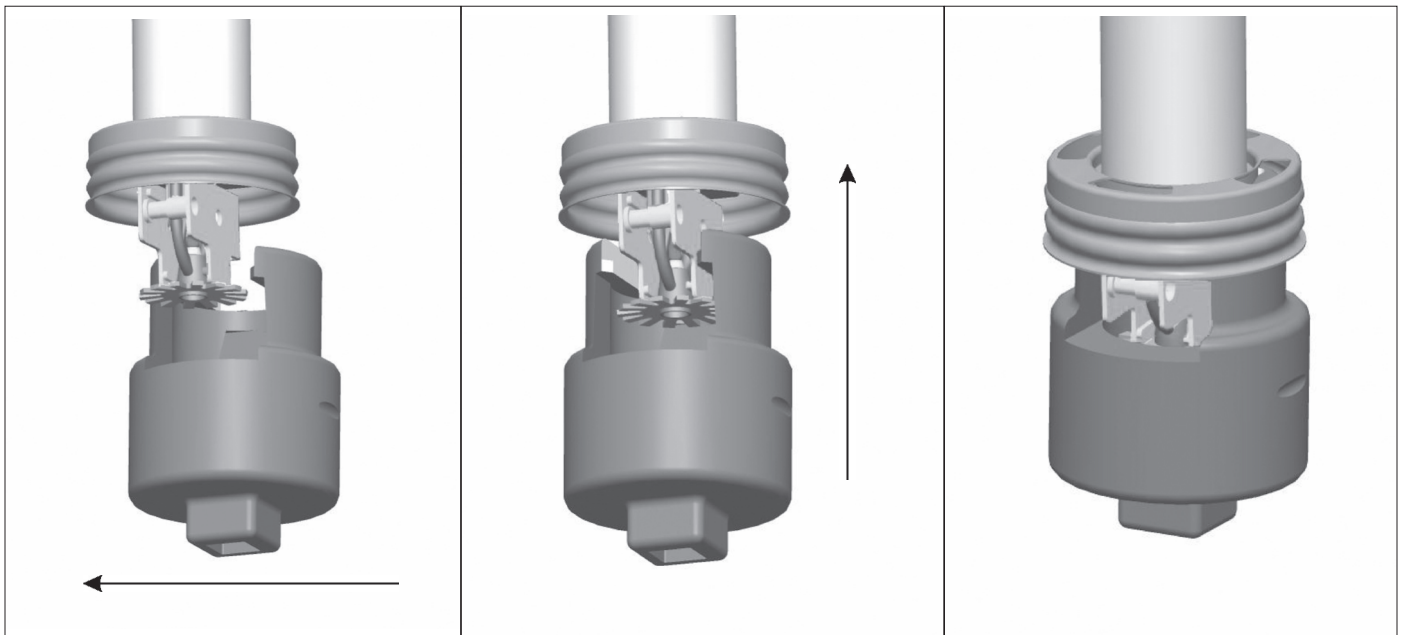
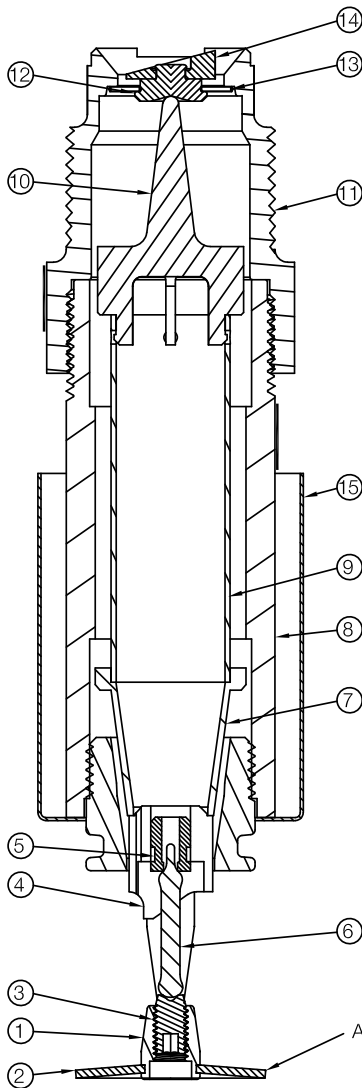


Fig. 14 - Model XLO2 Wrench

MATERIAL SPECIFICATIONS



ITEM #	DESCRIPTION	MATERIAL SPECIFICATION
1	FRAME	BRASS PER UNS C83600
2	DEFLECTOR	BRONZE PER UNS C51000
3	LOAD SCREW	BRASS PER UNS C22000
4	SEAT ADAPTOR	BRASS ALLOY PER UNS C36000
5	BULB INSERT	COPPER ALLOY PER UNS C31400
6	GLASS BULB	GLASS W/GLYCERIN SOLUTION
7	ORIFICE ADAPTOR	BRASS ALLOY PER UNS C36000
8	OUTER TUBE	GALVANIZED STEEL
9	INNER TUBE	BRASS ALLOY PER UNS C23000
10	YOKE	BRASS ALLOY PER UNS C38000
11	INLET	BRASS ALLOY PER UNS C35330
12	CAP	BRASS ALLOY PER UNS C54400
13	SPRING WASHER/SEAL	PTFE COATED BERYLLIUM NICKEL
14	FLIP DISK	BRASS ALLOY PER UNS C54400
15	CAN/ESCUTCHEON	PAINTED OR PLATED MILD STEEL, EXCEPT FOR TYPE 316 STAINLESS STEEL FOR SPRINKLERS WITH ENT FINISH

(PIPE WRENCH MAY ONLY BE USED ON OUTER STEEL PIPE OF SPRINKLER)

COMDRYDET13

APPEARANCE OF DEFLECTOR MAY VARY DEPENDING ON MODEL

Fig. 15

Installation Instructions

When used on wet pipe systems, Reliable Model F3QR56 dry sprinklers may be installed in ductile or malleable cast iron threaded tees, or CPVC tees and adapters upon verification that the sprinkler inlet fitting does not interfere with the interior of the fitting (see Figure 12).

When used on dry pipe systems, Reliable Model F3QR56 dry pendent sprinklers MUST ONLY BE installed in the outlets of ductile or malleable cast iron threaded tees on horizontal pipe such that the inlet of the sprinkler protrudes above the bottom level of the pipe.

When used on dry pipe systems, Reliable Model F3QR56 dry sidewall and dry upright sprinklers may be installed in ductile or malleable cast iron threaded tees, or CPVC tees and adapters upon verification that the sprinkler inlet fitting does not interfere with the interior of the fitting (see Figure 12).

DO NOT install Reliable dry sprinklers into elbows or couplings, welded outlets, mechanical tees, or gasket sealed CPVC fittings.

Dry sprinklers connected to wet pipe systems must be installed as indicated in Figure 11 and as required by NFPA 13 with the Exposed Minimum Barrel Length located in a heated area.

An orange protective clip is factory installed on the sprinkler to protect the glass bulb thermal element from damage. The clip should remain in place during installation of the sprinkler and be removed when the sprinkler system is placed in service. Sprinklers with 3/4" NPT and ISO7-1R3/4 inlets are supplied with a protective cap on the inlet that must be removed before installation.

Use the following steps for installation:

1. Cut a hole in the wall or ceiling directly in-line with the outlet of the fitting. See the Installation Data table for the recommended hole diameter based on the escutcheon or cover plate option selected.
2. Apply pipe joint compound or PTFE tape to the male threads of the sprinkler's inlet fitting.
3. Install the sprinkler in the fitting using the installation wrench specified in the Installation Data table. The Model F3R wrench is designed to be inserted into the grooves in the sprinkler's wrench boss as shown in Fig. 13. The Model XLO2 wrench is designed to fit into the cup and engage the wrench boss as shown in Fig. 14. Do NOT wrench any part of the sprinkler assembly other than the wrench boss. When inserting or removing the wrench from the sprinkler, care should be taken to prevent damage to the sprinkler. The sprinkler is then tightened into the pipe fitting to achieve a leak free connection. The recommended minimum to maximum installation torque is 22 - 30 lb-ft (30 – 40 N-m) for 1" NPT and ISO7-1R1 sprinklers, and 14 - 20 lb-ft (19 – 27 N-m) for 3/4" NPT and ISO7-1R3/4 sprinklers.

- 3a. Alternatively, where access to the outer tube of the sprinkler is available, the Model F3QR56 Dry sprinkler may be installed using a pipe wrench. The pipe wrench shall only be permitted to interface with the galvanized steel outer tube portion of the sprinkler (Item #8 in Fig. 15). Do NOT wrench any other portion of the sprinkler assembly. A pipe wrench can install the sprinkler into the fitting with a large amount of torque; consideration should be given to the need for future removal of the sprinkler because the installation torque will have to be matched or exceeded to remove the sprinkler. The recommended minimum to maximum installation torque is 22 - 30 lb-ft (30 – 40 N-m) for 1" NPT and ISO7-1R1 sprinklers, and 14 - 20 lb-ft (19 – 27 N-m) for 3/4" NPT and ISO7-1R3/4 sprinklers.
4. Standard and Model HB escutcheons can be installed by slipping the escutcheon over the can until the escutcheon is seated against the ceiling or wall. Model F1 escutcheons are installed by pressing the escutcheon onto the collar until the escutcheon is seated against the ceiling or wall. The Model FP escutcheon is installed by pressing or threading the escutcheon into the cup by hand; the escutcheon can be tightened against the ceiling or wall by turning the escutcheon in a clockwise direction and removed by turning the escutcheon in a counter-clockwise direction. To install the Model CCP cover plate, first remove the protective clip. Install the Model CCP cover plate on the sprinkler by pressing or threading the cover plate into the cup by hand; the cover plate can be tightened against the ceiling by turning the cover plate in a clockwise direction and removed by turning the cover plate in a counter-clockwise direction.
5. Remove the orange protective clip when placing the sprinkler system in service.

Installation Data

Sprinkler Model	Escutcheon or Cover Plate	Suggested Hole Diameter in Wall or Ceiling	Installation Wrench	Required Centerline of Sprinkler Tube/Inlet to Finished Ceiling Vertical Dimension*
F3QR56 Dry Pendent	Standard Escutcheon	2-1/8" (54 mm)	F3R	Not Applicable
	HB Extended Escutcheon	2-1/2" (64 mm)	F3R	
	F1 Recessed Escutcheon	2-1/4" (57 mm)	XLO2	
	FP Recessed Escutcheon	2-1/2" (64 mm)	XLO2	
	CCP Cover Plate		XLO2	
F3QR56 Dry Horizontal Sidewall	Standard Escutcheon	2-1/8" (54 mm)	F3R	4-5/8" to 12-5/8" (118 mm to 321 mm)
	HB Extended Escutcheon	2-1/2" (64 mm)	F3R	cULus, NYC 4-5/8" to 6-5/8" (118 mm to 168 mm)
	F1 Recessed Escutcheon	2-1/4" (57 mm)	XLO2	
	FP Recessed Escutcheon	2-1/2" (64 mm)	XLO2	FM 4-5/8" to 12-5/8" (118 mm to 321 mm)
	F1 Recessed Escutcheon	2-1/4" (57 mm)	XLO2	
	FP Recessed Escutcheon	2-1/2" (64 mm)	XLO2	
F3QR56 Dry Upright	N/A	1-1/2" (38mm)	F3R	Not Applicable

***Note:** Based on 5/8" (16 mm) centerline of sprinkler tube/inlet to deflector vertical distance.

Maintenance

The Model F3QR56 Dry Sprinklers should be inspected and the sprinkler system maintained in accordance with NFPA 25. Do not remove the factory applied thermally sensitive wax fillet between the bulb supporting cup and the wrenching boss. Do not replace this wax with a substitute substance.

An Alternate substance may interfere with proper operation of the sprinkler. Do not clean sprinklers with soap and water, ammonia or any other cleaning fluids. Remove dust by using a soft brush or gently vacuuming. Replace any sprinkler which has been painted (other than factory applied) or damaged in any way. A stock of spare sprinklers should be maintained to allow quick replacement of damaged or operated sprinklers. Prior to installation, sprinklers should be maintained in the original cartons and packaging until used to minimize the potential for damage to sprinklers that would cause improper operation or non-operation.

Ordering Information

Specify:

1. Sprinkler: [Model F3QR56 Dry Pendent SIN R5714]
[Model F3QR56 Dry Horizontal Sidewall SIN R5734]
[Model F2QR Dry Upright SIN R5724]
2. Escutcheon/Cover Plate: [None][Standard escutcheon]
[Model HB extended escutcheon][Model F1 recessed escutcheon][Model FP recessed escutcheon][Model CCP cover plate – pendent only]
3. Inlet Threads: [1" NPT][ISO7-1R1][3/4" NPT][ISO7-1R3/4]

4. Inlet Fitting: [Long – Standard Inlet Fitting][Short "PL" – Wet Pipe Systems only]
5. Sprinkler Temperature Rating: See Temperature Ratings Table
6. Sprinkler Finish: See Finish Combinations Table
7. Escutcheon/Cover Plate Finish: See Finish Combinations Table
8. Length:

*For dry pendants and dry sidewalls: "A" Dimension is from face of tee to face of finished ceiling or wall in 1/4" (6mm) increments. See Fig. 1 through Fig. 9.

*For dry uprights: Order dimension is from face of tee to top of deflector in 1/4" (6mm) increments. See Fig. 10.

Notes:

1. For Dry Upright, customer is responsible for determining the correct deflector distance from structure above.
2. Length is based on normally gauged pipe thread "make-up" of .600" (15mm) per ANSI B2.1 (approximately 7-1/2 threads).

Installation Wrench

Model F3R Sprinkler Wrench (Standard and HB escutcheons)
Model XLO2 Sprinkler Wrench (FP Recessed and CCP Concealed)

The equipment presented in this bulletin is to be installed in accordance with the latest published Standards of the National Fire Protection Association, Factory Mutual Research Corporation, or other similar organizations and also with the provisions of governmental codes or ordinances whenever applicable.

Products manufactured and distributed by Reliable have been protecting life and property for almost 100 years.

Manufactured by



Reliable Automatic Sprinkler Co., Inc.

(800) 431-1588
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Model GXLO Series Sprinklers

Storage and Non-Storage Sprinklers
K11.2 (160 metric)

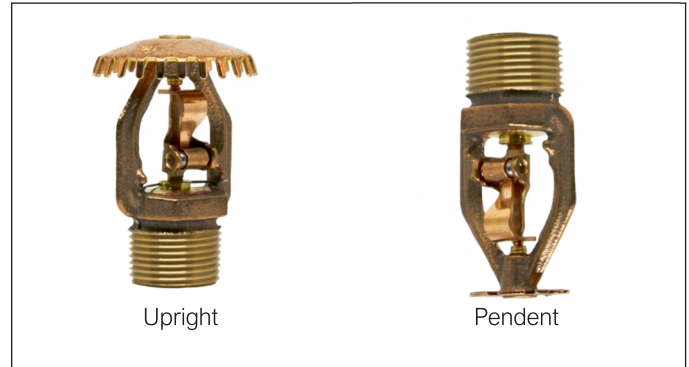
Product Description

Reliable Model GXLO (extra-large orifice) upright and pendent sprinklers are standard coverage standard-response sprinklers that utilize a robust center strut, solder in compression thermal element. These sprinklers are intended for use in hydraulically calculated control mode density area (CMDA) storage and non-storage occupancies in accordance with the area/density curves of NFPA 13 or other applicable standards.

The Model GXLO sprinkler is FM Approved as a standard-response storage and non-storage sprinkler when used in accordance with FM Global Property Loss Prevention Data Sheets.

For new installations, the sprinkler is provided with either 3/4-inch NPT or ISO 7-R3/4 threads. The upright version is also available with 1/2-inch NPT or ISO 7-R1/2 threads for retrofit installations only. Sprinklers without guards are installed using the Model H wrench.

For use as an intermediate level sprinkler, the Model GXLO upright sprinkler is available with a factory installed water shield. Various other water shields, guards, or guard/shield options are also available for both upright and pendent models (please refer to Technical Specifications on following pages). Sprinkler guards or guard/shields may be installed in the field or factory installed. Use of the Model JV sprinkler wrench is required for installation where a guard is added to the sprinkler prior to threading the assembly into a fitting.



Model GXLO Series Sprinklers



Upright with Factory Installed Shield
(Factory Installed water shield)

Model GXLO Specifications

Table A

Style	Sprinkler Identification Number (SIN)	Listings and Approvals	Sensitivity	K-Factor
Upright Intermediate Upright	R2921	cULus, FM	Standard Response	11.2 (160 metric)
Pendent	R2916	FM		

Model GXLO Upright Sprinkler

SIN R2921

Technical Specifications

Style: Upright, Intermediate Upright

Threads: 3/4" NPT or ISO 7-1R3/4*

Nominal K-Factor: 11.2 (160 metric)

Max. Working Pressure: 175 psi (12 bar)

Material Specifications

Thermal Sensor: Solder Capsule

Sprinkler Frame: Brass Alloy

Button/Cup: Brass Alloy

Sealing Assembly: Brass with PTFE

Load Screw: Bronze

Deflector: Bronze Alloy

Levers: Bronze Alloy

Ejection Spring: Stainless Steel

Sprinkler Finishes

See Table C

Sensitivity

Standard Response

Temperature Ratings

See Table D

Guards & Shields

D-6 Guard & Water Shield (cULus)

D-7 Guard & Water Shield (FM)

D-8 Guard (FM)

Water Shield (factory installed; FM)

Sprinkler Wrench

Model H

Model JV (with guard installed)

Listings and Approvals

cULus Listed

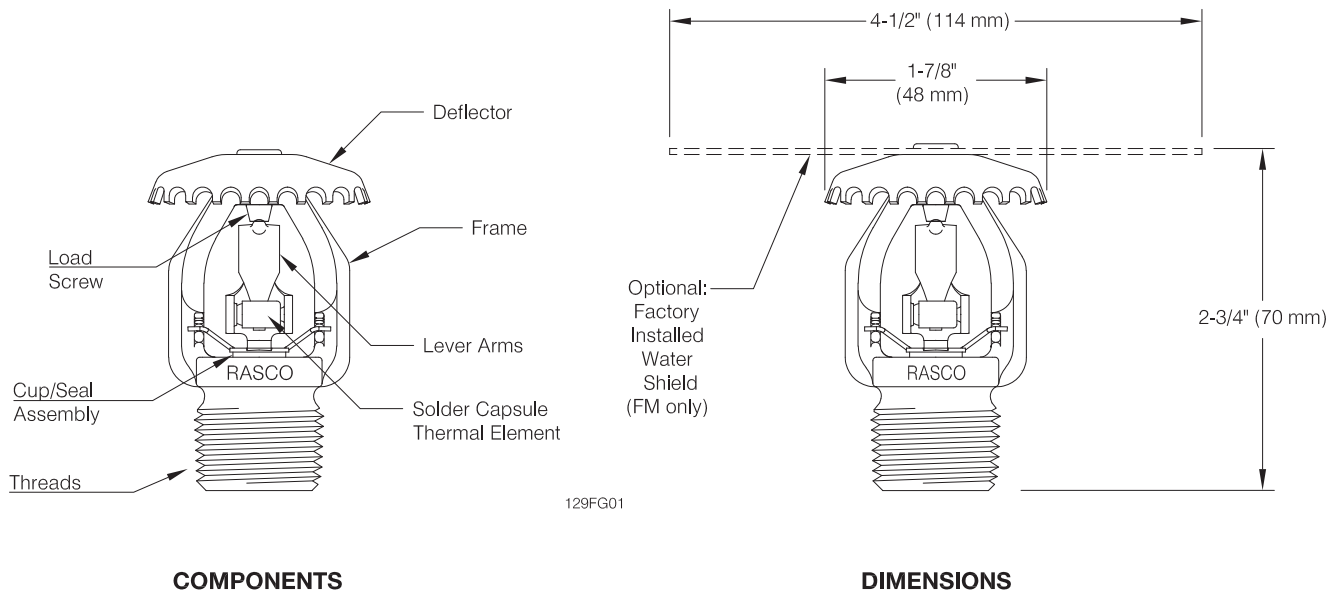
FM Approved



***Note:** 1/2" NPT and ISO 7-R1/2 threads available for RETROFIT APPLICATIONS ONLY on upright sprinkler. This sprinkler will be identified with a pintle on the deflector. Not available on intermediate upright sprinkler.

Model GXLO Upright Components and Dimensions

Figure 1



Model GXLO Pendent Sprinkler

SIN R2916

Technical Specifications

Style: Pendent

Threads: 3/4" NPT or ISO 7-1R3/4

Nominal K-Factor: 11.2 (160 metric)

Max. Working Pressure: 175 psi (12 bar)

Material Specifications

Thermal Sensor: Beryllium Nickel Solder Link

Sprinkler Frame: Brass Alloy

Button/Cup: Brass Alloy

Sealing Assembly: Brass Alloy with PTFE

Load Screw: Bronze

Deflector: Bronze Alloy

Levers: Bronze Alloy

Sprinkler Finishes

See Table C

Sensitivity

Standard Response

Temperature Ratings

See Table D

Guards & Shields

D-8 Guard

D-9 Guard & Water Shield

S-2 Water Shield

Sprinkler Wrench

Model H

Model JV (with guard installed)

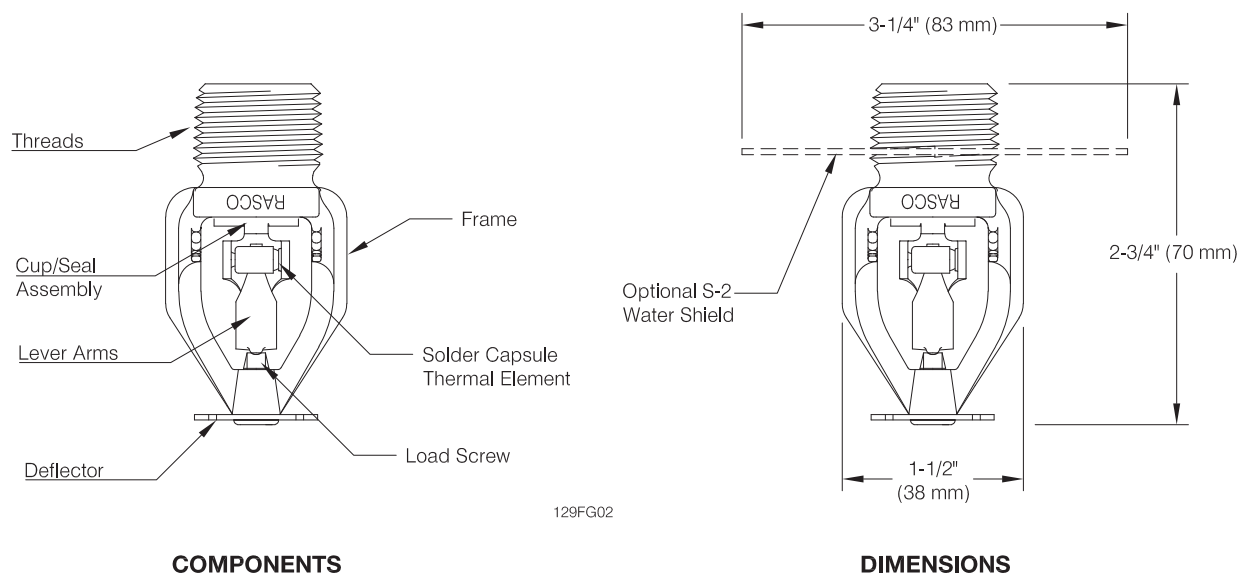
Listings and Approvals

FM Approved



Model GXLO Pendent Components and Dimensions

Figure 2



Model GXLO Commodity Selection and Design Criteria Overview
Table B

Storage Type	NFPA	FM GLOBAL
Sprinkler Type	CMDA	Storage
Response Type	SR	SR
System Type	Pendent - Wet Upright - Wet, Dry, Preaction	Pendent - Wet Upright - Wet, Dry, Preaction
Temperature Rating °F (°C)	165, 212, 286 (74, 100, 141)	165, 212, 286 (74, 100, 141)
Roof Construction	See NFPA 13	See FM Global 2-0
Ceiling Slope	See NFPA 13	See FM Global 2-0
Maximum Coverage Area	See NFPA 13	See FM Global 2-0
Minimum Coverage Area	See NFPA 13	See FM Global 2-0
Maximum Spacing	See NFPA 13	See FM Global 2-0
Minimum Spacing	See NFPA 13	See FM Global 2-0
Minimum Clearance to Commodity	See NFPA 13	See FM Global 2-0
Sprinkler Distance to Ceiling	See NFPA 13	See FM Global 2-0
Open Frame, Single, Double, Multiple Row, or Portable Rack Storage of Class I - IV Commodity and Group A Plastic	See NFPA 13	See FM 2-0 & 8-9
Solid Pile or Palletized Storage of Class I - IV Commodity and Group A Plastic	See NFPA 13	See FM 2-0 & 8-9
Idle Pallet Storage	See NFPA 13	See FM 2-0,8-9 & 8-24
Rubber Tire Storage	See NFPA 13	See FM 8-3
Rolled Paper Storage	See NFPA 13	Pendent - N/A Upright - See FM 8-21
Flammable Liquid Storage	See NFPA 30	See FM 7-29 and 8-9
Aerosol Storage	See NFPA 13	See FM 7-31
Auto Components in Portable Racks	See NFPA 13	See FM 2-0 and 8-9

Finishes

Table C

Upright (R2921)	Pendent (R2916)
Bronze	Bronze
Chrome ⁽¹⁾	
Lead ⁽¹⁾⁽²⁾	
Wax ⁽¹⁾⁽²⁾⁽³⁾	
Wax over Lead ⁽¹⁾⁽²⁾⁽³⁾	

Notes:

1. Not available with factory attached water shield
2. cULus listed as corrosion resistant
3. Clear wax used on ordinary temperature rated sprinklers. Brown wax used on intermediate temperature rated sprinklers. Brown wax may be used on high temperature rated sprinklers where the ambient temperature does not exceed 150°F (66°C).

Temperature Ratings

Table D

Classification	Sprinkler Rating		Maximum Ambient Temperature		Frame Color
	°F	°C	°F	°C	
Ordinary	165	74	100	38	Uncolored
Intermediate	212	100	150	66	White
High	286	141	225	107	Blue

Installation

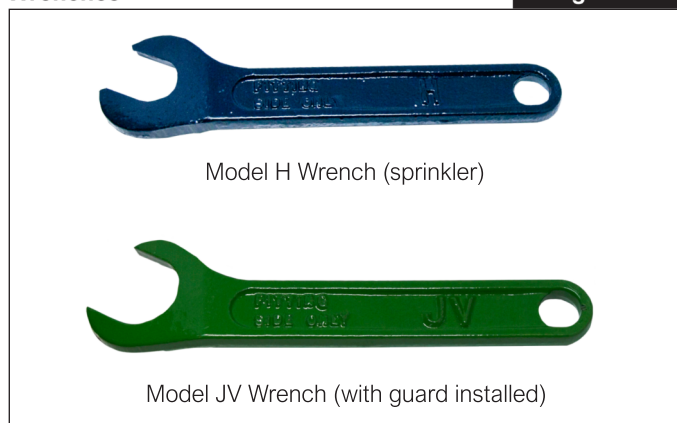
Model GXLO sprinklers must be installed according to appropriate NFPA Standards, FM Global Loss Prevention Data Sheets, and/or the requirements of the authority having jurisdiction.

Use only the Model H sprinkler wrench for sprinkler installation or use the Model JV wrench to install the sprinkler/guard assembly (Figure 3). Any other type of wrench may damage the sprinkler. Damaged sprinklers must be replaced immediately.

A leak tight joint should be obtained with a torque of 14 to 20 lb-ft (19 to 27 N.m) for 3/4 inch NPT and ISO 7-R3/4 thread sprinklers. For 1/2 inch NPT and ISO 7-R1/2 thread sprinklers the recommended installation torque is 8 to 18 lb-ft (11 to 24 N.m). Exceeding the maximum recommended torque may cause leakage or impairment of the sprinklers.

Wrenches

Figure 3



Maintenance

Reliable Model GXLO sprinklers should be inspected and the sprinkler system maintained in accordance with NFPA 25, as well as the requirements of any Authorities Having Jurisdiction.

Prior to installation, sprinklers should remain in the original cartons and packaging until used. This will minimize the potential for damage to sprinklers that could cause improper operation or non-operation.

Do not clean sprinklers with soap and water, ammonia liquid or any other cleaning fluids. Remove dust by gentle vacuuming without touching the sprinkler.

Replace any sprinkler which has been painted (other than factory applied). A stock of spare sprinklers should be maintained to allow quick replacement of damaged or operated sprinklers.

Failure to properly maintain sprinklers may result in inadvertent operation or non-operation during a fire event.

Guarantee

For the Reliable Automatic Sprinkler Co., Inc. guarantee, terms, and conditions, visit www.reliablesprinkler.com.

Ordering Information

Specify the following when ordering.

Model GXLO Sprinkler

- Upright
- Intermediate Upright
- Pendent

Threads

- 3/4" NPT
- ISO 7-R3/4
- 1/2" NPT (Retrofit installations only, upright only)
- ISO 7-R1/2 (Retrofit installations only, upright only)

Temperature Rating

- 165°F (74°C)
- 212°F (100°C)
- 286°F (141°C)

Finish

See Table C

Guards/Shields

See Technical Specifications

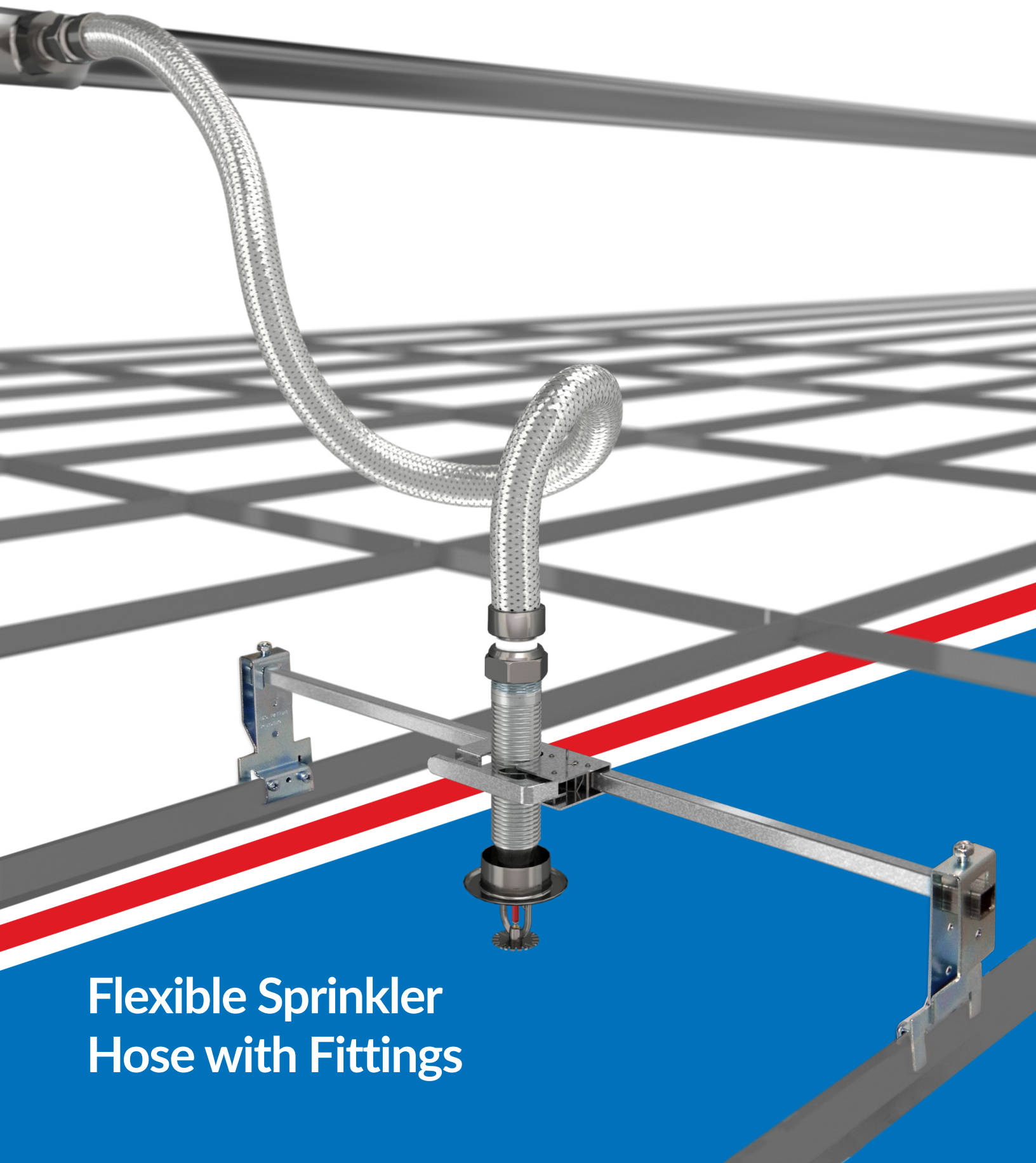
Wrench

- Model H
- Model JV (with guards installed)

Reliable[®]

RASCOFLEX[™]

Sprinkler Connections



**Flexible Sprinkler
Hose with Fittings**

Series RFB Braided Hose Assemblies



RASCOFLEX™ Sprinkler Connections are manufactured for installation on suspended ceiling grids. They can be applied onto grid types such as T-Bar, metal stud, wood beam, or hat channel grids. The complete set comes ready to install and is UL Listed and FM Approved.

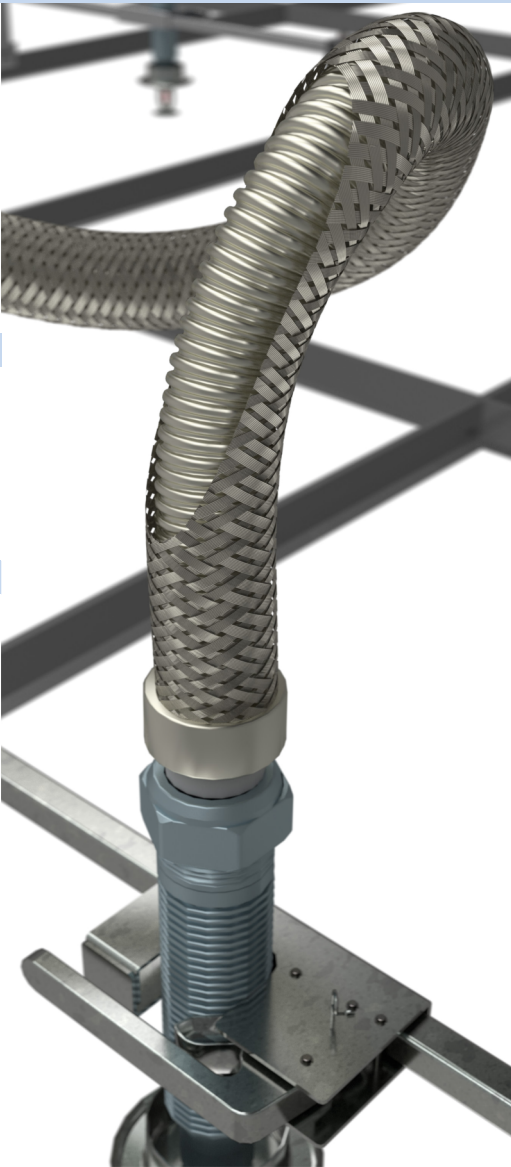
RASCOFLEX™ Sprinkler Connections are designed for use in hydraulically intended wet, deluge, pre-action or dry sprinkler systems per NFPA 13, 13R, and 13D guidelines.

RASCOFLEX™ Sprinkler Connection Components

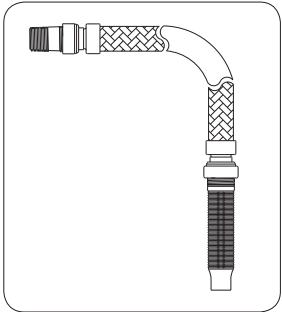
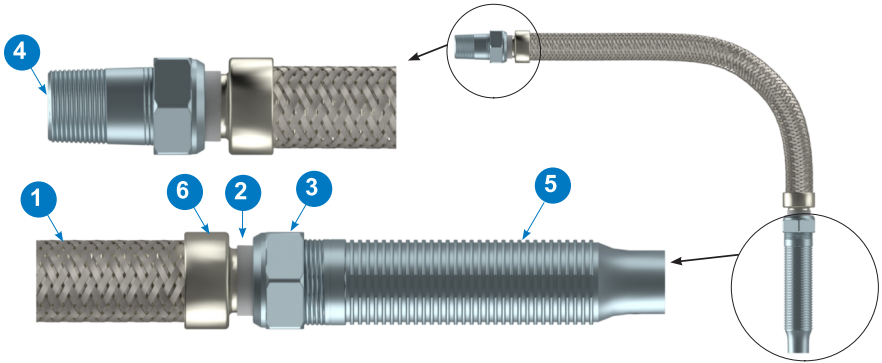
- (Hose Model) 1" Nominal ID Braided Hose
- Lengths: 24", 31", 40", 48", 60", 72"
- 1/2" and 3/4" straight reducers
- 1/2" and 3/4" elbow reducer
- 24" (610mm) and 48" (1219mm) bracket that can be used on suspended T-Bar, Metal Stud, Wood Beam, and Hat Channel ceiling grids.

Technical Data

- Maximum Working Pressure:
 - 200 psi per FM Approval
 - 175 psi per UL Listing
- Maximum Ambient Temperature: 300°F
- Connection to Branch Line: 1-inch/25mm NPT/BSPT
- Minimum Bend Radius of Flexible Sprinkler Hose:
 - 3" (76mm) per UL Listing
 - 7" (178mm) per FM Approval
- Maximum Number 90° Bends:
Refer to the "Friction Loss Data" on page 5
- Maximum K-Factor of Flexible Sprinkler Hose to be connected Reducing Nipple:
 - 1/2": 5.6 US (80 Metric)
 - 3/4": 14.0 US (200 Metric)
- Listing and Approvals
 - Braided: FM Approved, UL Listed

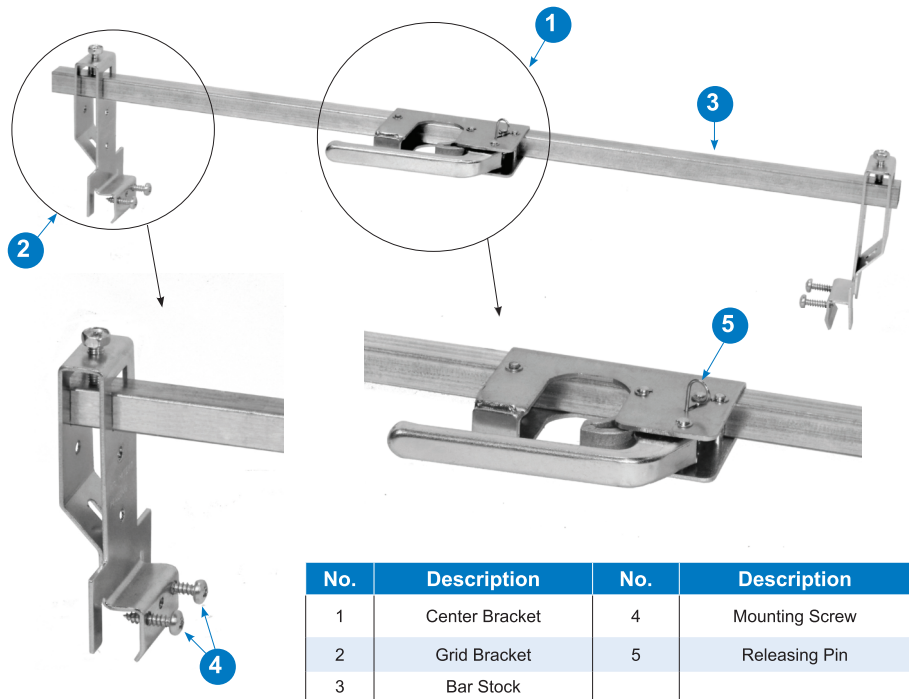


Braided Flexible Hose



No.	Description	No.	Description
1	Flexible Hose with Braid	4	Branch Line Nipple (1")
2	Isolation Ring	5	Reducer
3	Nut and Gasket	6	Welded Collar Fitting

Bracket Assembly



Material Specifications

Hose	Stainless Steel 304	O-Ring	EPDM
Reducer	Zinc Plated Carbon Steel	Bracket-L	Zinc Plated SPCC Steel
Nipple	Zinc Plated Carbon Steel	Bracket-S	Zinc Plated SPCC Steel
Nut	Zinc Plated Carbon Steel	Braid	Stainless Steel 304
Isolation Ring	Nylon 66	Bar Stock	Zinc Plated SGCC Steel

Friction Loss Data



Braided Hose UL Listed

Model	Outlet Size NPT (inch)	Length inch (mm)	Maximum Number 90° Bends at 3" (76mm) Bend Radius	UL Listed Maximum Equivalent Length of SCH 40 1 inch Diameter Pipe (C=120), ft (m)
RFB24H	1/2	24 (609.6)	2	10 (3)
RFB24T	3/4	24 (609.6)	2	13 (4)
RFB31H	1/2	31 (787.4)	3	14 (4.3)
RFB31T	3/4	31 (787.4)	3	16 (3.9)
RFB40H	1/2	40 (1016)	4	21 (6.4)
RFB40T	3/4	40 (1016)	4	23 (7)
RFB48H	1/2	48 (1219.2)	4	24 (7.3)
RFB48T	3/4	48 (1219.2)	4	26 (7.9)
RFB60H	1/2	60 (1524)	4	25 (7.6)
RFB60T	3/4	60 (1524)	4	30 (9.1)
RFB72H	1/2	72 (1828.8)	5	36 (11)
RFB72T	3/4	72 (1828.8)	5	33 (10.1)

Friction Loss Data (continued)



Braided Hose FM Approval

Length of Flexible Hose (inch)	Outlet Size		Sprinkler K-Factor	Maximum Ambient Temperature °F (°C)	Maximum Working Pressure psi (bar)	Maximum Number of 90° Bends at 7" (178mm) Bend Radius	Equivalent Length of 1" (33.7mm) Sch. 40 Pipe ft (m)
	Size (inch)	Type					
24"	1/2	Straight	5.6 (80)	300°F (149°C)	200 (13.79)	1	9.7 (2.9)
	1/2	90° Elbow	5.6 (80)	300°F (149°C)	200 (13.79)	0	11.5 (3.5)
	3/4	Straight	14.0 (200)	300°F (149°C)	200 (13.79)	1	9.9 (3)
	3/4	90° Elbow	14.0 (200)	300°F (149°C)	200 (13.79)	0	10.2 (3.1)
31"	1/2	Straight	5.6 (80)	300°F (149°C)	200 (13.79)	2	12.4 (3.8)
	1/2	90° Elbow	5.6 (80)	300°F (149°C)	200 (13.79)	2	15.8 (4.8)
	3/4	Straight	14.0 (200)	300°F (149°C)	200 (13.79)	2	13.7 (4.1)
	3/4	90° Elbow	14.0 (200)	300°F (149°C)	200 (13.79)	2	14.5 (4.4)
40"	1/2	Straight	5.6 (80)	300°F (149°C)	200 (13.79)	2	15.9 (4.8)
	1/2	90° Elbow	5.6 (80)	300°F (149°C)	200 (13.79)	2	21.6 (6.6)
	3/4	Straight	14.0 (200)	300°F (149°C)	200 (13.79)	2	18.5 (5.6)
	3/4	90° Elbow	14.0 (200)	300°F (149°C)	200 (13.79)	2	20 (6)
48"	1/2	Straight	5.6 (80)	300°F (149°C)	200 (13.79)	3	19.0 (5.8)
	1/2	90° Elbow	5.6 (80)	300°F (149°C)	200 (13.79)	3	25.9 (7.9)
	3/4	Straight	14.0 (200)	300°F (149°C)	200 (13.79)	3	22.7 (6.9)
	3/4	90° Elbow	14.0 (200)	300°F (149°C)	200 (13.79)	3	24.8 (7.5)
60"	1/2	Straight	5.6 (80)	300°F (149°C)	200 (13.79)	4	23.7 (7.2)
	1/2	90° Elbow	5.6 (80)	300°F (149°C)	200 (13.79)	4	33.1 (10)
	3/4	Straight	14.0 (200)	300°F (149°C)	200 (13.79)	4	29.1 (8.8)
	3/4	90° Elbow	14.0 (200)	300°F (149°C)	200 (13.79)	4	32.2 (9.8)
72"	1/2	Straight	5.6 (80)	300°F (149°C)	200 (13.79)	4	28.4 (8.6)
	1/2	90° Elbow	5.6 (80)	300°F (149°C)	200 (13.79)	4	40.4 (12.3)
	3/4	Straight	14.0 (200)	300°F (149°C)	200 (13.79)	4	35.5 (10.8)
	3/4	90° Elbow	14.0 (200)	300°F (149°C)	200 (13.79)	4	39.5 (12)

Limited Warranty

Reliable Automatic Sprinkler Co. warrants that their products will be free of any defects in materials and workmanship under normal conditions of use and service for period of (2) two years from the date of sale. Under this warranty, the obligation is limited to replacing or repairing any product that is returned to **RASCOFLEX™** Sprinkler Connections and after the completion of inspection of defects in material or workmanship under normal operating conditions of use/service. To either repair or replace any product is upon Reliable Automatic Sprinkler Co. to decide. The following are excluded from the coverage of the warranty:

- Components other than those manufactured or sold by Reliable Automatic Sprinkler Co.
- The installation, designing, inspection, or testing process done in a manner not in compliance with the appropriate and applicable requirements, codes, law, regulation or rule of any federal, state or local governmental or industry standards such as NFPA
- Products that have not been inspected and maintained in accordance with Reliable specifications and NFPA standards
- Defect resulting from ordinary wear and tear.
- Products that have been altered in any way by anyone other than Reliable Sprinkler Co.
- Products that have been misused
- Exposure to abnormal environmental conditions

This warranty is non-transferable and shall benefit only the original purchaser of the Reliable Flexible Sprinkler product. If any provision here-of or any portion of any provision shall be held invalid, the remainder of this Limited Warranty shall not be affected thereby, and all provisions of this Limited Warranty shall remain valid and in full force and effect to the fullest extent permitted by law.

THIS LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. NOTWITHSTANDING ANY PROVISION TO THE CONTRARY HEREIN OR ANY APPLICABLE LAW TO THE CONTRARY, IN NO EVENT SHALL RELIABLE AUTOMATIC SPRINKLER CO., BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES UNDER ANY CIRCUMSTANCES WHATSOEVER, WHETHER ARISING FROM ANY BREACH OF THIS LIMITED WARRANTY OR OTHERWISE ARISING FROM OR IN CONNECTION WITH THE USE OR OPERATION OF, OR ANY DEFECT IN, ANY RELIABLE SPRINKLER CO, PRODUCT OR OTHERWISE.



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www.reliablesprinkler.com

APPROVALS AND SPECIFICATIONS

- ASTM A135, Grade A
- ASTM A795, Type E, Grade A
- Pressure rated to 300 psi
- Underwriters Laboratories—United States of America
- Underwriters Laboratories—Canada
- Factory Mutual
- NFPA-13
- NFPA-13R
- NFPA-14
- CIVIL DEFENSE APPROVAL—United Arab Emirates
- Made in the United States of America
- UL, ULC & FM listed for roll-groove, plain-end and welded joints for wet, dry, preaction and deluge sprinkler systems.
- LEED v4 Certified

FINISHES AND COATINGS

- Eddy Flow Sprinkler Pipe receives an OD mill coating of water-based paint which has corrosion protection expected with a painted carbon steel product, i.e. it would be expected to resist corrosion for an extended and indefinite period in a clean and dry environment and, as environmental conditions deteriorate, the corrosion protection would also diminish.
- Eddy Flow Sprinkler Pipe (black) receives an ID mill coating of Eddy Guard II MIC preventative coating. EG2 has been tested at independent laboratories to resist bacterial growth and maintain minimal bacterial count after multiple flushes (25) of the pipe.
- Eddy Flow Sprinkler Pipe when Hot Dip Galvanized by ASTM A123 and supplied by Bull Moose Tube is UL listed and FM approved.

PRODUCT IDENTIFICATION

- Every length of Bull Moose fire sprinkler pipe features large, easy-to-read, continuous stenciling, clearly identifying the manufacturer, type of pipe, size, and length.

Nominal Pipe Size (Inches)	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
O.D. (In)	1.660	1.900	2.375	2.875	3.500	4.500
I.D. (In)	1.530	1.728	2.203	2.705	3.334	4.310
Empty Weight (lb/ft)	1.222	1.844	2.330	2.809	3.361	4.968
Water Filled Weight (lb/ft)	2.019	2.860	3.982	5.299	7.144	11.290
C.R.R.*	1.98	3.44	2.78	1.66	1.00	1.00
Pieces per Lift	61	61	37	30	19	19

*Calculated using Standard UL CRR formula, UL Fire Protection Directory, Category VIZY



SUBMITTAL INFORMATION

Project

Contractor

Engineer

Specification Reference

Date System Type

Locations

Comments

☐ Eddy Flow - Black ☐ Eddy Flow - Hot Dip Galvanized

APPROVALS AND SPECIFICATIONS

- ASTM A135, Grade A
- ASTM A795, Type E, Grade A
- Pressure rated to 300 psi
- Underwriters Laboratories—United States of America
- Underwriters Laboratories—Canada
- Factory Mutual
- NFPA-13
- NFPA-13R
- NFPA-14
- CIVIL DEFENSE APPROVAL—United Arab Emirates
- Made in the United States of America
- UL, ULC & FM listed for roll-groove, plain-end and welded joints for wet, dry, preaction and deluge sprinkler systems.
- LEED v4 Certified

FINISHES AND COATINGS

- Eddythread Sprinkler Pipe receives an OD mill coating of water-based paint which has corrosion protection expected with a painted carbon steel product, i.e. it would be expected to resist corrosion for an extended and indefinite period in a clean and dry environment and, as environmental conditions deteriorate, the corrosion protection would also diminish.
- Eddythread Sprinkler Pipe (black) receives an ID mill coating of Eddy Guard II MIC preventative coating. EG2 has been tested at independent laboratories to resist bacterial growth and maintain minimal bacterial count after multiple flushes (25) of the pipe.
- Eddythread Sprinkler Pipe when Hot Dip Galvanized by ASTM A123 and supplied by Bull Moose Tube is UL listed and FM approved.

PRODUCT IDENTIFICATION

- Every length of Bull Moose fire sprinkler pipe features large, easy-to-read, continuous stenciling, clearly identifying the manufacturer, type of pipe, size, and length.

Nominal Pipe Size (Inches)	1	1-1/4"	1-1/2"	2"
O.D. (In)	1.295	1.650	1.900	2.375
I.D. (In)	1.083	1.418	1.654	2.123
Empty Weight (lb/ft)	1.461	2.070	2.547	3.308
Water Filled Weight (lb/ft)	1.860	2.754	3.468	4.842
C.R.R.*	1.00	1.00	1.00	1.00
Pieces per Lift	70	51	44	30

*Calculated using Standard UL CRR formula, UL Fire Protection Directory, Category VIZY



SUBMITTAL INFORMATION

Project

Contractor

Engineer

Specification Reference

Date System Type

Locations

Comments

☐ Eddythread - Black ☐ Eddythread - Hot Dip Galvanized

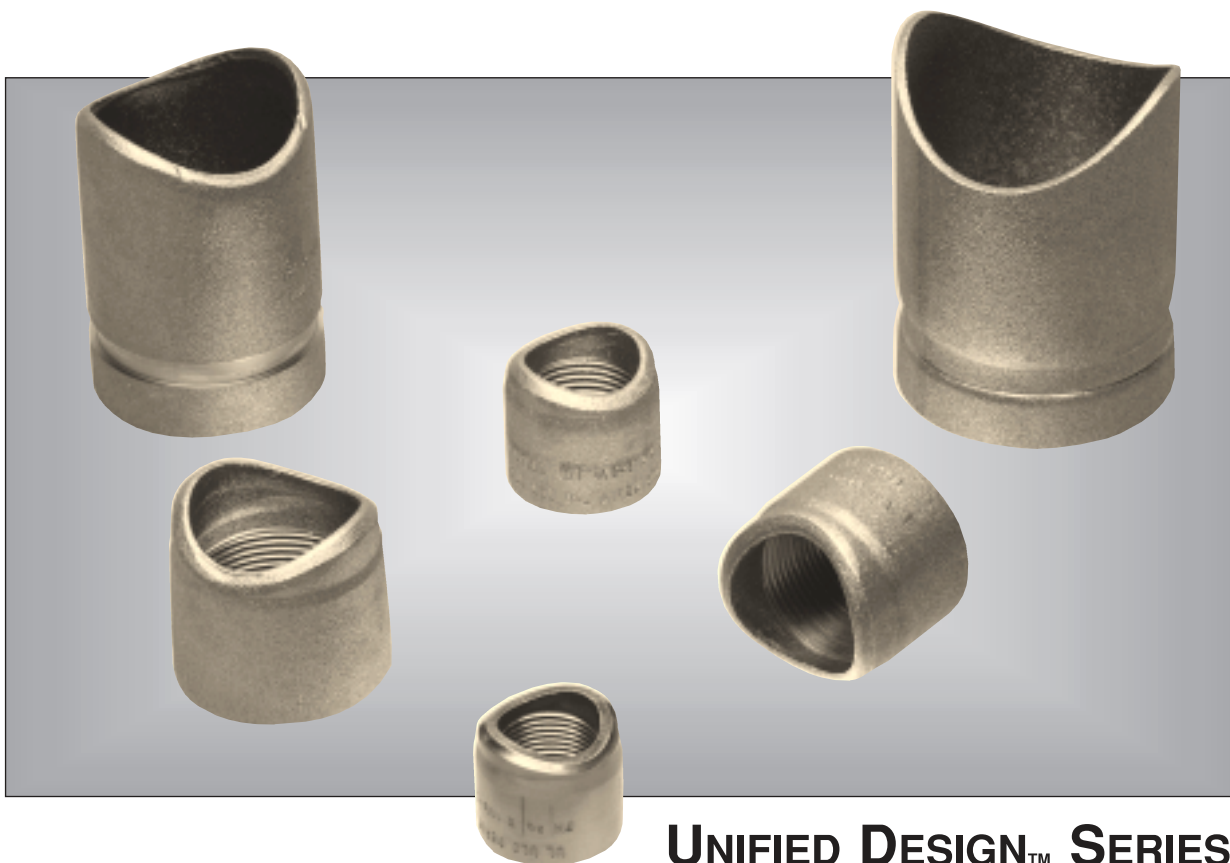
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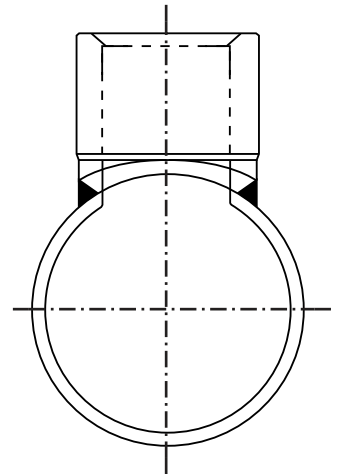
For Fire Protection & Other Low Pressure Piping Systems

Merit Weld-Miser™ Tee-Let® Welding Branch Outlet Fittings offer the user a high strength, low cost forged threaded and grooved line of fittings specifically designed and manufactured to be installed on schedules 5 thru 10, proprietary thin wall flow pipe and standard wall pipe.

Unified Design™ Series

Merit's Unified Design™ Series carries all important design considerations into its entire line of welding branch outlet fittings.

- Merit Weld-Miser Tee-Lets are designed and manufactured to reduce the amount of weld required to install the Tee-Lets on thin wall or proprietary flow pipe. Typically only one weld-pass completes the installation. Merit Tee-Lets install with less weld volume than any other brand of welding outlet fittings for fire sprinkler applications. To accomplish this:
 - The contoured end of the fittings employs a reduced outside diameter. Two major advantages are immediately apparent:
 - The thinner wall on the contoured end permits welding temperatures to be matched to the thickness of the branch line or main thereby insuring complete penetration without cold welds, weld roll-off, burn-through or excessive distortion.
 - On the smaller sizes a heavier section is maintained on the threaded end of the fitting. This protects the threads from damage during shipping and handling prior to installation as well as from weld distortion.
- Each outlet size 1-1/2" and larger, whether male or female threaded, grooved or beveled requires the same hole size in the header pipe. This simplifies the installation process.



General Specifications

- Tee-Let welding outlet fittings are manufactured from highly weldable steel which conforms to the chemical and physical requirements of ASTM A-53, Grades A or B, Type E. Ease of installation is assured when automatic welding equipment is used to install Merit Tee-Lets.
- Threads are cut in accordance with the requirements of ANSI B1.20.1, 300 lb. class, national standard for tapered pipe threads. BS21:1985 BSPT threads are available.
- Tee-Let threaded and grooved welding outlet fittings are UL/ULC Listed, and FM Approved for use in the fire sprinkler systems installed in accordance with the requirements of NFPA Bulletin 13. They are rated for 300 PSI operation in fire sprinkler systems, and higher pressures in other non-critical piping systems. Send for pressure ratings per ASME/ANSI B31.
- Tee-Lets are offered in a wide variety of header sizes. The consolidated header sizes shown in the following charts allow the fittings to be installed on more than one header size, while permitting the first size listed to fit the header perfectly, while a small gap along the longitudinal centerline of the header will appear for the second size listed.

For Your Piping Systems Specify Weld-Miser™ Tee-Let®

Branch Outlet Fittings shall be Merit Weld-Miser™ Tee-Let®, lightweight forged steel, employing low weld volume profile to provide for full penetration welds with minimum burn-through and pipe distortion on schedules 5 thru 10, proprietary thin wall, and standard wall pipe. Threads are to be ANSI B1.20.1, tapered 300 lb. class or BS21:1985, and the bore of the fittings calculated to improve flow. Welding outlets to be UL Listed, FM Approved for use conforming to NFPA, Bulletin 13 and pressure rated for 300 PSI maximum. Tee-Lets® by Merit Manufacturing Corporation, Pottstown, Pennsylvania 19464 U.S.A.

How to order – Use either of the following methods for ordering Merit® Weld-Miser™ Tee-Lets®.

Method No. 1 – Specify quantity desired followed by the part number shown in the “dimensions” chart for the type and size of outlet desired.

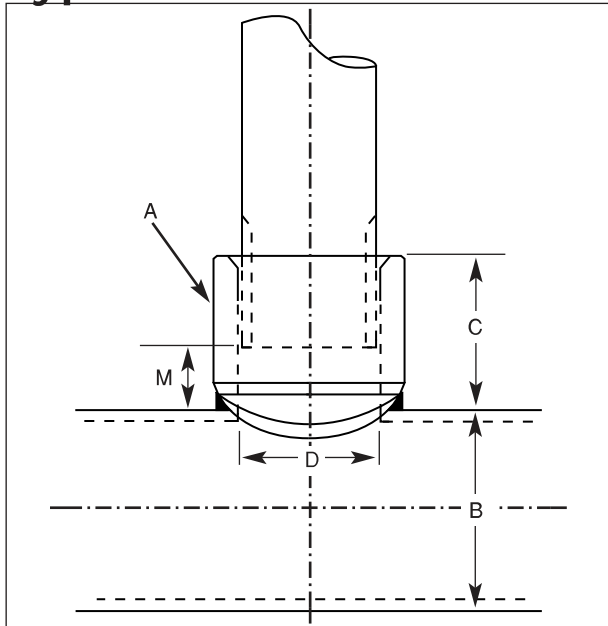
QUANTITY

PART NUMBER

Method No. 2 – Use the following system:

Quantity	Outlet Size	Header Size	Weight	Type End	Merit Tee-Let	Steel Material
↓	↓	↓	↓	↓		
Always order a few more than actually required for the job.	Column “A” of chart	Insert size consolidation from Column “B” of chart	Sch. 10 Standard	A – Female Thread B – Male Thread C – Cut Groove C/R – Roll Groove		

Type A - Female Threads



Dimensions & Corresponding Part Numbers

Part Number BSPT	In. / mm					Weight Each Lb. / kgs
	Nominal Outlet Size A	Nominal Header Size B	Outlet Length Size C	Inside Diameter Size D	Make up Size M	
1002002 -	1/4 x 6 x	1-1/4 - 8 6 - 200				0.080 0.04
1005012 -	1/2 x 13 x	1-1/4 - 1-1/2 32 - 40	1.063 27.0	0.700 17.8	0.500 12.7	0.171 0.08
1005015 -		1-1/2 - 2 40 - 50	1.063 27.0	0.700 17.8	0.500 12.7	0.171 0.08
1005020 -		2 - 2-1/2 50 - 65	1.063 27.0	0.700 17.8	0.500 12.7	0.171 0.08
1005025 -		2-1/2 - 8 65 - 200	1.063 27.0	0.700 17.8	0.500 12.7	0.169 0.08
1007012 -	3/4 x 19 x	1-1/4 - 1-1/2 32 - 40	1.125 28.6	0.900 22.9	0.500 12.7	0.260 0.12
1007015 -		1-1/2 - 2 40 - 50	1.125 28.6	0.900 22.9	0.500 12.7	0.260 0.12
1007020 -		2 - 2-1/2 50 - 65	1.125 28.6	0.900 22.9	0.500 12.7	0.260 0.12
1007025 -		2-1/2 - 8 65 - 200	1.125 28.6	0.900 22.9	0.500 12.7	0.256 0.12
1010012 1110012 1010015 1110015 1010020 1110020 1010025 1110025 1010030 1110030 1010050 1110050	1 x 25 x	1-1/4 - 1-1/2 32 - 40 1-1/2 - 2 40 - 50 2 - 2-1/2 50 - 65 2-1/2 - 3 65 - 80 3 - 4 80 - 100 5 - 8 125 - 200	1.250 31.8 1.250 31.8 1.250 31.8 1.250 31.8 1.250 31.8 1.250 31.8	1.145 29.1 1.145 29.1 1.145 29.1 1.145 29.1 1.145 29.1 1.145 29.1	0.500 12.7 0.500 12.7 0.500 12.7 0.500 12.7 0.500 12.7 0.500 12.7	0.331 0.15 0.331 0.15 0.320 0.15 0.314 0.14 0.309 0.14 0.291 0.13
1012012 1112012 1012015 1112015 1012020 1112020 1012025 1112025 1012030 1112030 1012050 1112050	1- 1/4 x 32 x	1-1/4 - 1-1/2 32 - 40 1-1/2 - 2 40 - 50 2 - 2-1/2 50 - 65 2-1/2 - 3 65 - 80 3 - 4 80 - 100 5 - 8 125 - 200	1.375 34.9 1.375 34.9 1.375 34.9 1.375 34.9 1.375 34.9 1.375 34.9	1.490 37.8 1.490 37.8 1.490 37.8 1.490 37.8 1.490 37.8 1.490 37.8	0.500 12.7 0.500 12.7 0.500 12.7 0.500 12.7 0.500 12.7 0.500 12.7	0.432 0.19 0.421 0.19 0.421 0.19 0.411 0.19 0.389 0.18 0.389 0.18

TYPE-A SHOWN

Part Number BSPT	In. / mm					Weight Each Lb. / kgs
	Nominal Outlet Size A	Nominal Header Size B	Outlet Length Size C	Inside Diameter Size D	Make up Size M	
1015015 1115015 1015020 1115020 1015025 1115025 1015030 1115030 1015040 1115040 1015050 1115050	1- 1/2 x 40 x	1-1/2 40 2 50 2-1/2 65 3 - 4 80 - 100 4 100 5 - 8 125 - 200	1.625 41.3 1.625 41.3 1.625 41.3 1.625 41.3 1.625 41.3 1.625 41.3	1.610 40.9 1.610 40.9 1.610 40.9 1.610 40.9 1.610 40.9 1.610 40.9	0.875 22.2 0.875 22.2 0.875 22.2 0.875 22.2 0.875 22.2 0.875 22.2	0.477 0.22 0.477 0.22 0.477 0.22 0.477 0.22 0.477 0.22 0.477 0.22
1020020 1120020 1020025 1120025 1020030 1120030 1020040 1120040 1020050 1120050 1020060 1120060 1020080 1120080	2 x 50 x	2 50 2-1/2 65 3 80 4 100 5 125 6 150 8 200	1.750 44.5 1.750 44.5 1.750 44.5 1.750 44.5 1.750 44.5 1.750 44.5 1.750 44.5	2.067 52.5 2.067 52.5 2.067 52.5 2.067 52.5 2.067 52.5 2.067 52.5 2.067 52.5	0.875 22.2 0.875 22.2 0.875 22.2 0.875 22.2 0.875 22.2 0.875 22.2 0.875 22.2	0.857 0.38 0.829 0.38 0.829 0.39 0.800 0.36 0.743 0.34 0.743 0.34 0.743 0.34
1025025 1125025 1025030 1125030 1025040 1125040 1025050 1125050 1025060 1125060 1025080 1125080	2-1/2 x 65 x	2-1/2 65 3 80 4 100 5 125 6 150 8 200	2.215 54.0 2.215 54.0 2.215 54.0 2.215 54.0 2.215 54.0 2.215 54.0 2.215 54.0	2.469 62.7 2.469 62.7 2.469 62.7 2.469 62.7 2.469 62.7 2.469 62.7 2.469 62.7	1.125 28.6 1.125 28.6 1.125 28.6 1.125 28.6 1.125 28.6 1.125 28.6 1.125 28.6	1.250 0.55 1.200 0.55 1.150 0.52 1.150 0.52 1.150 0.52 1.150 0.52
1025030 - 1025040 - 1025050 - 1025060 - 1025080 -	3 x 80 x	3 80 4 100 5 125 6 150 8 200	2.500 63.5 2.500 63.5 2.500 63.5 2.500 63.5 2.500 63.5 2.500 63.5	3.068 77.9 3.068 77.9 3.068 77.9 3.068 77.9 3.068 77.9 3.068 77.9	1.500 38.1 1.500 38.1 1.500 38.1 1.500 38.1 1.500 38.1 1.500 38.1	3.100 1.41 3.100 1.41 3.100 1.41 3.100 1.41 3.100 1.41 3.100 1.41
1040040 - 1040050 - 1040060 - 1040080 -	4 x 4 x	4 100 5 125 6 150 8 200	3.000 76.2 3.000 76.2 3.000 76.2 3.000 76.2	4.026 102.3 4.026 102.3 4.026 102.3 4.026 102.3	2.000 50.8 2.000 50.8 2.000 50.8 2.000 50.8	5.000 2.27 5.000 2.27 5.000 2.27 5.000 2.27

Note: Tee-lets are manufactured to fit size-on-size, that is the contoured shape on a given Tee-Let is made to fit perfectly on the first listed header size. If installed on the second header size marked on the fitting, a slight gap of approximately 1/32" will appear along the longitudinal centerline of the header. For example, a 1" x 2 - 2-1/2" Tee-Let, is a 1" outlet fitting manufactured to fit perfectly on the 2" header size listed, while leaving a 1/32" gap along the longitudinal centerline of the 2-1/2" size. If a perfect fit is required for a 2-1/2" header pipe, then a 1" x 2-1/2 - 3" Tee-let would be ordered. Size consolidations are employed to reduce inventory and provide for greater flexibility.

TYPE C

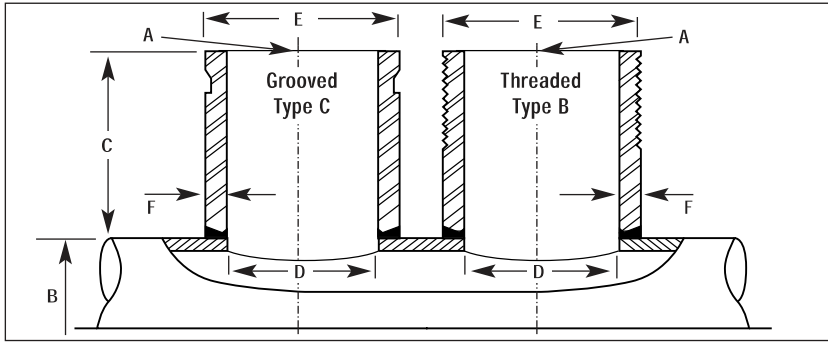
Cut Groove Std. Wt.

TYPE B

Male Thread Std. Wt.

TYPE C/R

Roll Groove Sch. 10



TYPE-C SHOWN

Dimensions & Corresponding Part Numbers

Male Thread Std. Wt.	Cut Groove Std. Wt.	Roll Groove Sch. 10	In. / mm				F Wall Thickness Std. Wt.	Weight Each Lb. / kgs
			Nominal Outlet Size A	Nominal Header Size B	Outlet Length Size C	Inside Diameter Size D	Outside Diameter Size E	
1310012	2010012	2210012	1 x	1-1/4 - 1-1/2	3	1.049	1.315	0.133 1.500
			25 x	32 - 40	80	26.6	33.4	3.4 30
1310015	2010015	2210015		1-1/2 - 2	3	1.049	1.315	0.133 1.500
				40 - 50	80	26.6	33.4	3.4 30
1210020	2010020	2210020		2 - 2-1/2	3	1.049	1.315	0.133 1.500
				50 - 65	80	26.6	33.4	3.4 30
1310025	2010025	2210025		2-1/2 - 4	3	1.049	1.315	0.133 1.500
				65 - 100	80	26.6	33.4	3.4 30
1310050	2010050	2210050		5 - 8	3	1.049	1.315	0.133 1.500
				125 - 200	80	26.6	33.4	3.4 30
1312012	2012012	2212012	1-1/4 x	1-1/4	3	1.368	1.660	0.140 1.500
			32 x	32	80	34.7	42.2	3.6 30
1312015	2012015	2212015		1-1/2	3	1.368	1.660	0.140 1.500
				40	80	34.7	42.2	3.6 30
1212020	2012020	2212020		2 - 2-1/2	3	1.368	1.660	0.140 1.500
				50 - 65	80	34.7	42.2	3.6 30
1312025	2012025	2212025		3 - 4	3	1.368	1.660	0.140 1.500
				80 - 100	80	34.7	42.2	3.6 30
1312050	2012050	2212050		5 - 8	3	1.368	1.660	0.140 1.500
				125 - 200	80	34.7	42.2	3.6 30
1315015	2015015	2215015	1-1/2 x	1-1/2	3	1.610	1.900	0.145 1.500
			40 x	40	80	40.9	48.3	3.7 30
1215020	2015020	2215020		2	3	1.610	1.900	0.145 1.500
				50	80	40.9	48.3	3.7 30
1315025	2015025	2215025		2-1/2	3	1.610	1.900	0.145 1.500
				65	80	40.9	48.3	3.7 30
1315030	2015030	2215030		3 - 4	3	1.610	1.900	0.145 1.500
				80 - 100	80	40.9	48.3	3.7 30
1315050	2015050	2215050		5 - 8	3	1.610	1.900	0.145 1.500
				125 - 200	80	40.9	48.3	3.7 30
1320020	2020020	-	2 x	2	3	2.067	2.375	0.154 1.500
			50 x	50	80	52.5	60.3	3.9 30
1320025	2020025	-		2-1/2	3	2.067	2.375	0.154 1.500
				65	80	52.5	60.3	3.9 30
1320030	2020030	-		3	3	2.067	2.375	0.154 1.500
				80	80	52.5	60.3	3.9 30
1320035	2020040	-		4	3	2.067	2.375	0.154 1.500
				100	80	52.5	60.3	3.9 30
1320050	2020050	-		5	3	2.067	2.375	0.154 1.500
				125	80	52.5	60.3	3.9 30
1320060	2020060	-		6	3	2.067	2.375	0.154 1.500
				150	80	52.5	60.3	3.9 30
1320080	2020080	-		8	3	2.067	2.375	0.154 1.500
				200	80	52.5	60.3	3.9 30

Male Thread Std. Wt.	Cut Groove Std. Wt. Metric	Roll Groove Sch. 10	In. / mm						Wall Thickness		Weight Each Lb. / kgs
			Nominal Outlet Size A	Nominal Header Size B	Outlet Length Size C	Inside Diameter Std. Wt. Size D	Outside Diameter Sch. 10 Size E	Outside Diameter Size F	Std. F	Sch. 10 F	
1325025	2025025	2225025	2-1/2 x	2-1/2	3	2.469	2.635	2.875	0.203	0.120	1.500
	2125025	2225030	65 x	65	80	62.7	67.0	76.2	5.0	3.0	30
1325030	2025030	2225030		3	3	2.469	2.635	2.875	0.203	0.120	1.500
	2125030			80	80	62.7	67.0	76.2	5.0	3.0	30
1325035	2025040	2225035		4	3	2.469	2.635	2.875	0.203	0.120	1.500
	2125040			100	80	62.7	67.0	76.2	5.0	3.0	30
1325050	2025050	2225050		5	3	2.469	2.635	2.875	0.203	0.120	1.500
	2125050			125	80	62.7	67.0	76.2	5.0	3.0	30
1325060	2025060	2225060		6	3	2.469	2.635	2.875	0.203	0.120	1.500
	2125060			175	80	62.7	67.0	76.2	5.0	3.0	30
1325080	2025080	2225080		8	3	2.469	2.635	2.875	0.203	0.120	1.500
	2125080			200	80	62.7	67.0	76.2	5.0	3.0	30
1330025	2030025	2230025	3 x	3	3	3.068	3.260	3.500	0.216	0.120	1.500
			80 x	80	80	78.0	83.0	88.0	5.0	3.0	30
1330030	2030030	2230030		3-1/2	3	3.068	3.260	3.500	0.216	0.120	1.500
				85	80	78.0	83.0	88.0	5.0	3.0	30
1330035	2030035	2230035		4	3	3.068	3.260	3.500	0.216	0.120	1.500
				100	80	78.0	83.0	88.0	5.0	3.0	30
1330050	2030050	2230050		5	3	3.068	3.260	3.500	0.216	0.120	1.500
				125	80	78.0	83.0	88.0	5.0	3.0	30
1330060	2030060	2230060		6	3	3.068	3.260	3.500	0.216	0.120	1.500
				150	80	78.0	83.0	88.0	5.0	3.0	30
1330080	2030080	2230080		8	3	3.068	3.260	3.500	0.216	0.120	1.500
				200	80	78.0	83.0	88.0	5.0	3.0	30
1340040	2040040	2240040	4 x	4	4	4.026	4.260	4.500	0.237	0.120	1.500
			100 x	100	100	102.0	108.0	114.0	6.0	3.0	30
1340050	2040050	2240050		5	4	4.026	4.260	4.500	0.237	0.120	1.500
				125	100	102.0	108.0	114.0	6.0	3.0	30
1340060	2040060	2240060		6	4	4.026	4.260	4.500	0.237	0.120	1.500
				150	100	102.0	108.0	114.0	6.0	3.0	30
1340080	2040080	2240080		8	4	4.026	4.260	4.500	0.237	0.120	1.500
				200	100	102.0	108.0	114.0	6.0	3.0	30
-	2060060	2260060	6 x	6	4	6.065	6.357	6.625	0.280	0.134	1.500
			150 x	150	100	155.0	161.5	168.3	7.1	3.0	30
-	2060080	2260080		8	4	6.065	6.357	6.625	0.280	0.134	1.500
				200	100	155.0	161.5	168.3	7.1	3.0	30
-	2080080	2280080	8 x	8	4	7.981	8.329	8.625	0.322	0.148	1.500
			200 x	200	100	203.0	212.0	213.0	8.0	3.0	30

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Model CP1 Cap

cULus Listed, FM Approved
300 psi (20.7 bar)

CP1 Cap Technical Data

Operating Specifications
Maximum Working Pressure:
300 psi (20.7 bar)

Material Specifications

Body: ASTM A536 Grade 65-45-12 Ductile Iron

Design Specification

Groove: AWWA-C606

Available Finishes

Housing:

Standard orange paint
Hot dipped galvanized (ASTM A-153)

Listings and Approvals

cULus Listed
FM Approved



CP1 Cap Dimensions

Figure 1

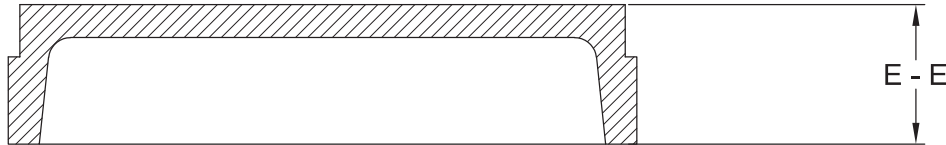


Table A

Nominal Size in (mm)	Pipe O.D. in/mm	Dimension E - E in (mm)	Weight lb (kg)
1 (25)	1.315 (33.7)	15/16 (24)	0.22 (0.10)
1-1/4 (32)	1.660 (42.2)	15/16 (24)	0.29 (0.13)
1-1/2 (40)	1.900 (48.3)	15/16 (24)	0.35 (0.16)
2 (50)	2.375 (60.3)	15/16 (24)	0.55 (0.25)
2-1/2 (65)	2.875 (73.0)	15/16 (24)	0.77 (0.35)
3 (80)	3.500 (88.9)	15/16 (24)	0.93 (0.42)
4 (100)	4.500 (114.3)	1 (25)	1.54 (0.70)
6 (150)	6.625 (168.3)	1 (25)	3.42 (1.55)
8 (200)	8.625 (219.1)	1-3/16 (30)	6.62 (3)
10 (250)	10.750 (273.0)	1-1/4 (32)	13.12 (5.95)
12 (300)	12.750 (323.9)	1-1/4 (32)	18.48 (8.38)



Model E90S1 Grooved Elbow 90° Short Radius

cULus Listed, FM Approved
300 psi (20.7 bar)

E90S1 Grooved Elbow 90° Short Radius Technical Data

Operating Specifications

Maximum Working Pressure:
300 psi (20.7 bar)

Material Specifications

Body: ASTM A536 Grade 65-45-12 Ductile Iron

Design Specifications

Groove: AWWA-C606

Available Finishes

Housing:

Standard orange paint
Hot dipped galvanized (ASTM A-153)

Listings and Approvals

cULus Listed
FM Approved



E90S1 Grooved Elbow 90° Short Radius Dimensions

Figure 1

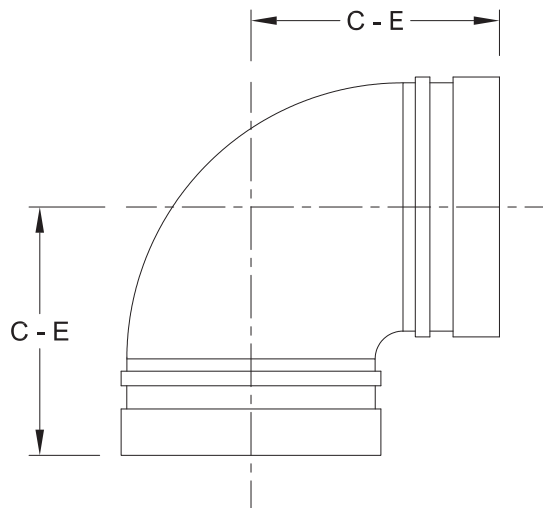


Table A

Nominal Size in (mm)	Pipe O.D. in (mm)	Dimension in (mm)	Weight lb (kg)	Fitting Friction Loss Eq Feet of Pipe (m)
		C - E		
2 (50)	2.375 (60.3)	2-3/4 (70)	1.41 (0.64)	3.6 (1.1)
2-1/2 (65)	2.875 (73.0)	3 (76)	1.94 (0.88)	4.3 (1.3)
3 (80)	3.500 (88.9)	3-3/8 (85)	2.56 (1.16)	4.9 (1.5)
4 (100)	4.500 (114.3)	4 (102)	4.06 (1.84)	6.9 (2.1)
6 (150)	6.625 (168.3)	5-1/2 (140)	10.14 (4.60)	9.8 (3)
8 (200)	8.625 (219.1)	6-7/8 (175)	16.64 (8)	13.1 (4)
10 (250)	10.750 (273.0)	8-7/16 (215)	32.63 (14.80)	17.1 (5.2)
12 (300)	12.750 (323.9)	8-11/16 (220)	35.06 (15.90)	20.0 (6.1)

Reliable®

Model FLX1 Flexible Coupling

cULus Listed, FM Approved
300 psi (20.7 bar)

FLX1 Flexible Coupling Technical Data

Operating Specifications
Maximum Working Pressure:
300 psi (20.7 bar)

Operating Temperature
-30 °F to 230 °F (-34 °C to 110 °C)

Material Specifications

Housings: ASTM A536 Grade 65-45-12 Ductile Iron
Gasket: Pre-lubricated Grade E EPDM

Design Specification

Groove: AWWA-C606

Bolt Specification:
SAE J429 Grade 5

Available Finishes

Housing:

Standard orange paint
Hot dipped galvanized (ASTM A-153)

Bolts:

Zinc Electroplating

Listings and Approvals

cULus Listed
FM Approved



FLX1 Flexible Coupling Dimensions

Figure 1

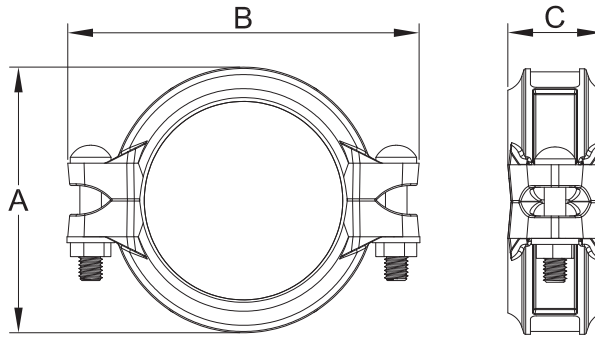


Table A

Nominal Size in (mm)	Pipe O.D. in (mm)	Max. End Load Lbs (KN)	Pipe End Gap in (mm)	Bolts Size x Length in	Angular Movement from Centerline		Dimensions			Weight lb (kg)
					Per Coupling Deg.	Per Pipe in/ft (mm/m)	A in (mm)	B in (mm)	C in (mm)	
1 (25)	1.315 (33.7)	405 (1.8)	1/16 (1.6)	3/8 x 1-1/2	2.75°	0.58 (48)	2-3/16 (55)	3-13/16 (97)	1-3/4 (45)	0.99 (0.45)
1-1/4 (32)	1.660 (42.2)	656 (2.92)	1/16 (1.6)	3/8 x 1-3/4	2.17°	0.46 (38)	2-1/2 (64)	4-1/4 (108)	1-3/4 (45)	1.10 (0.50)
1-1/2 (40)	1.900 (48.3)	852 (3.79)	1/16 (1.6)	3/8 x 1-3/4	1.9°	0.4 (33)	2-3/4 (69)	4-1/2 (114)	1-3/4 (45)	1.17 (0.53)
2 (50)	2.375 (60.3)	1327 (5.91)	1/16 (1.6)	3/8 x 2-1/8	1.52°	0.32 (27)	3-5/16 (84)	4-7/8 (124)	1-13/16 (46)	1.50 (0.68)
2-1/2 (65)	2.875 (73.0)	1945 (8.66)	1/16 (1.6)	3/8 x 2-1/8	1.25°	0.26 (22)	3-7/8 (98)	5-3/8 (137)	1-13/16 (46)	1.85 (0.84)
3 (80)	3.500 (88.9)	2885 (12.84)	1/16 (1.6)	3/8 x 2-1/8	1.03°	0.22 (18)	4-1/2 (114)	6-1/8 (156)	1-13/16 (46)	2.16 (0.98)
4 (100)	4.500 (114.3)	4769 (21.22)	1/8 (3.2)	1/2 x 2-5/8	1.6°	0.34 (28)	5-9/16 (142)	7-7/16 (189)	2 (50)	3.02 (1.37)
6 (150)	6.625 (168.3)	10340 (46)	1/8 (3.2)	1/2 x 2-5/8	1.08°	0.23 (19)	7-13/16 (198)	9-7/8 (251)	2 (50)	4.63 (2.10)
8 (200)	8.625 (219.1)	17524 (77.97)	1/8 (3.2)	5/8 x 3-1/8	0.83°	0.18 (15)	10-1/16 (256)	12-7/16 (316)	2-3/8 (60)	8.27 (3.75)
10 (250)	10.750 (273.0)	27206 (121.05)	1/8 (3.2)	3/4 x 3-1/2	0.83°	0.14 (12)	12-9/16 (319)	15-1/2 (393)	2-1/2 (64)	14.22 (6.45)
12 (300)	12.750 (323.9)	38297 (170.39)	1/8 (3.2)	3/4 x 4-1/3	0.83°	0.12 (10)	14-3/4 (374)	17-13/16 (453)	2-1/2 (65)	18.95 (8.55)

FLX1 Pipe Compatibility
Table B

Nominal Size in (mm)	Groove Type	Pipe	Approvals
1 (25)	Cut, Rolled	40	cULus, FM
	Rolled	10	FM
1-1/4 (32)	Cut, Rolled	40	cULus, FM
	Rolled	10	cULus, FM
		Fire-Flo Schedule 7	cULus
		Mega-Flow Schedule 7	cULus
		Eddy Flow Schedule 7	cULus
1-1/2 (40)	Cut, Rolled	40	cULus, FM
	Rolled	10	cULus, FM
		Fire-Flo Schedule 7	cULus, FM
		Mega-Flow Schedule 7	cULus
		Eddy Flow Schedule 7	cULus
2 (50)	Cut, Rolled	40	cULus, FM
	Rolled	10	cULus, FM
		Fire-Flo Schedule 7	cULus, FM
		Mega-Flow Schedule 7	cULus
		Eddy Flow Schedule 7	cULus
		Hydroflow Schedule 7	cULus
2-1/2 (65)	Cut, Rolled	40	cULus, FM
	Rolled	10	cULus, FM
		Fire-Flo Schedule 7	cULus, FM
		Mega-Flow Schedule 7	cULus
		Eddy Flow Schedule 7	cULus
		Hydroflow Schedule 7	cULus
3 (80)	Cut, Rolled	40	cULus, FM
	Rolled	10	cULus, FM
		Fire-Flo Schedule 7	cULus, FM
		Mega-Flow Schedule 7	cULus
		Eddy Flow Schedule 7	cULus
		Hydroflow Schedule 7	cULus
4 (100)	Cut, Rolled	40	cULus, FM
	Rolled	10	cULus, FM
		Fire-Flo Schedule 7	cULus, FM
		Mega-Flow Schedule 7	cULus
		Eddy Flow Schedule 7	cULus
		Hydroflow Schedule 7	cULus
6 (150)	Cut, Rolled	40	cULus, FM
	Rolled	10	cULus, FM
		Mega-Flow Schedule 7	cULus

FLX1 Pipe Compatibility (cont.)
Table B

Nominal Size in (mm)	Groove Type	Pipe	Approvals
8 (200)	Cut, Rolled	40	cULus, FM
	Rolled	10	cULus
		0.188 in. wall	FM
10 (250)	Cut, Rolled	40	cULus, FM
	Rolled	10	cULus
12 (300)	Cut, Rolled	40	cULus, FM
	Rolled	ASME B36.10M-10	cULus

Notes:

1. 10 refers to Schedule 10 steel pipe in accordance with NFPA 13.
2. 40 refers to Schedule 40 steel pipe in accordance with NFPA 13.
3. Fire-Flo Schedule 7 refers to Youngstown Tube Schedule 7 pipes.
4. Mega-Flow Schedule 7 refers to Listed Mega-Flow steel Pipe manufactured by Wheatland Tube Co.
5. Eddy Flow Schedule 7 refers to Listed Eddy Flow steel pipe manufactured by Bull Moose Tube Co.
6. Hydroflow Schedule 7 refers to Listed Nucor Hydroflow steel pipe manufactured by Nucor Tubular Products Inc.



Model CRG1 Grooved Concentric Reducer

cULus Listed, FM Approved
300 psi (20.7 bar)

CRG1 Grooved Concentric Reducer Technical Data

Operating Specifications
Maximum Working Pressure:
300 psi (20.7 bar)

Material Specifications

Body: ASTM A536 Grade 65-45-12 Ductile Iron

Design Specification

Groove: AWWA-C606

Available Finishes

Housing:

Standard orange paint
Hot dipped galvanized (ASTM A-153)

Listings and Approvals

cULus Listed
FM Approved



CRG1 Grooved Concentric Reducer Dimensions

Figure 1

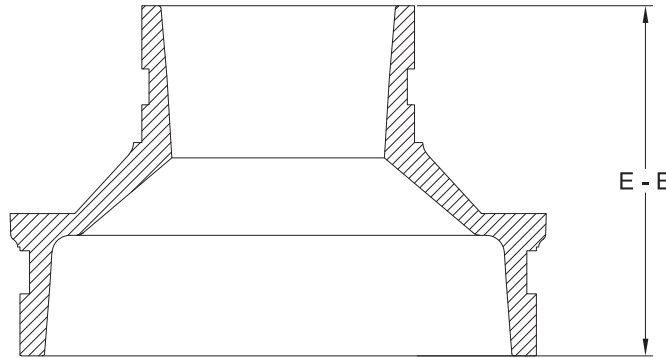


Table A

Nominal Size in (mm)	Pipe O.D. in/mm	Dimension E - E in (mm)	Weight lb (kg)
1-1/2 x 1-1/4 (40 x 32)	1.900 x 1.660 (48.3 x 42.2)	2-1/2 (64)	0.90 (0.41)
2 x 1-1/4 (50 x 32)	2.375 x 1.660 (60.3 x 42.2)	2-1/2 (64)	0.95 (0.43)
2 x 1-1/2 (50 x 40)	2.375 x 1.900 (60.3 x 48.3)	2-1/2 (64)	0.95 (0.43)
2-1/2 x 1-1/4 (65 x 32)	2.875 x 1.660 (73.0 x 42.2)	2-1/2 (64)	1.10 (0.50)
2-1/2 x 1-1/2 (65 x 40)	2.875 x 1.900 (73.0 x 48.3)	2-1/2 (64)	1.10 (0.50)
2-1/2 x 2 (65 x 50)	2.875 x 2.375 (73.0 x 60.3)	2-1/2 (64)	1.15 (0.52)
3 x 1-1/4 (80 x 32)	3.500 x 1.660 (88.9 x 42.2)	2-1/2 (64)	1.32 (0.60)
3 x 1-1/2 (80 x 40)	3.500 x 1.900 (88.9 x 48.3)	2-1/2 (64)	1.37 (0.62)
3 x 2 (80 x 50)	3.500 x 2.375 (88.9 x 60.3)	2-1/2 (64)	1.41 (0.64)
3 x 2-1/2 (80 x 65)	3.500 x 2.875 (88.9 x 73.0)	2-1/2 (64)	1.59 (0.72)
4 x 1-1/4 (100 x 32)	4.500 x 1.660 (114.3 x 42.2)	3 (76)	1.99 (0.90)
4 x 1-1/2 (100 x 40)	4.500 x 1.900 (114.3 x 48.3)	3 (76)	1.99 (0.90)
4 x 2 (100 x 50)	4.500 x 2.375 (114.3 x 60.3)	3 (76)	2.36 (1.07)
4 x 2-1/2 (100 x 65)	4.500 x 2.875 (114.3 x 73.0)	3 (76)	2.43 (1.10)
4 x 3 (100 x 80)	4.500 x 3.500 (114.3 x 88.9)	3 (76)	2.60 (1.18)
6 x 2 (150 x 50)	6.625 x 2.375 (168.3 x 60.3)	3-3/8 (85)	3.86 (1.75)
6 x 2-1/2 (150 x 65)	6.625 x 2.875 (168.3 x 73.0)	3-3/8 (85)	4.26 (1.93)
6 x 3 (150 x 80)	6.625 x 3.500 (168.3 x 88.9)	3-3/8 (85)	4.63 (2.10)
6 x 4 (150 x 100)	6.625 x 4.500 (168.3 x 114.3)	3-3/8 (85)	5.18 (2.35)
8 x 4 (200 x 100)	8.625 x 4.500 (219.1 x 114.3)	3-3/8 (85)	7.17 (3.25)
8 x 6 (200 x 150)	8.625 x 6.625 (219.1 x 168.3)	3-3/8 (85)	7.61 (3.45)

Reliable®

Model RGD1 Angled Pad Coupling

Rigid Grooved Coupling

cULus Listed, FM Approved
300 psi (20.7 bar)

RDG1 Angled Pad Coupling Technical Data

Operating Specifications

Maximum Working Pressure:

300 psi (20.7 bar)

Operating Temperature:

-30 °F to 230 °F (-34 °C to 110 °C)

Material Specifications

Housings: ASTM A536 Grade 65-45-12 Ductile Iron

Gasket: Pre-lubricated Grade E EPDM

Design Specification

Groove: AWWA-C606

Bolt Specification

SAE J429 Grade 5

Gasket Options

Standard

Flush Gap

Available Finishes

Housing:

Standard orange paint

Hot dipped galvanized (ASTM A-153)

Bolts:

Zinc Electroplating

Listings and Approvals

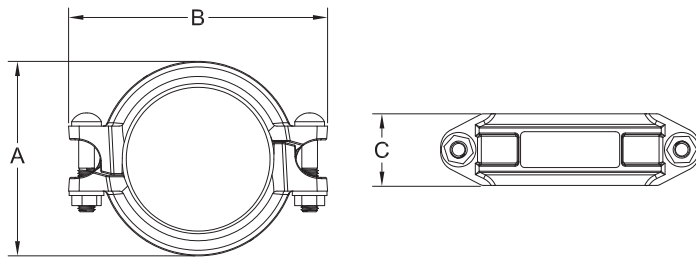
cULus Listed

FM Approved



RGD1 Angled Pad Coupling Dimensions

Figure 1



Gasket Options

Figure 2

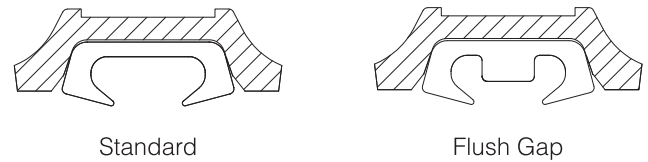


Table A

Nominal Size in (mm)	Pipe O.D. in (mm)	Max. End Load Lbs (KN)	Pipe End Gap in (mm)	Bolts Size x Length in (mm)	Dimensions			Weight lb (kg)
					A in (mm)	B in (mm)	C in (mm)	
1 (25)	1.315 (33.7)	405 (1.8)	1/16 (1.6)	3/8 x 2-1/8	2-1/4 (56)	3-3/4 (96)	1-7/8 (47)	0.99 (0.45)
1-1/4 (32)	1.660 (42.2)	656 (2.92)	1/16 (1.6)	3/8 x 2-3/8	2-1/2 (64)	4-3/16 (106)	1-7/8 (47)	1.37 (0.62)
1-1/2 (40)	1.900 (48.3)	852 (3.79)	1/16 (1.6)	3/8 x 2-3/8	2-3/4 (69)	4-7/16 (113)	1-7/8 (47)	1.43 (0.65)
2 (50)	2.375 (60.3)	1327 (5.91)	1/16 (1.6)	3/8 x 2-3/8	3-1/2 (88)	4-13/16 (122)	1-7/8 (47)	1.74 (0.79)
2-1/2 (65)	2.875 (73.0)	1945 (8.66)	1/16 (1.6)	3/8 x 2-3/4	3-15/16 (100)	5-3/8 (137)	1-7/8 (47)	1.96 (0.89)
3 (80)	3.500 (88.9)	2885 (12.84)	1/16 (1.6)	3/8 x 2-3/4	4-9/16 (116)	6-1/16 (154)	1-7/8 (47)	2.27 (1.03)
4 (100)	4.500 (114.3)	4769 (21.22)	5/32 (4.1)	1/2 x 3	5-5/8 (142)	7-3/8 (188)	2-1/16 (52)	2.93 (1.33)
6 (150)	6.625 (168.3)	10340 (46)	5/32 (4.1)	1/2 x 3-1/8	7-13/16 (199)	9-11/16 (246)	2-1/16 (52)	5 (2.27)
8 (200)	8.625 (219.1)	17524 (77.97)	5/32 (4.1)	5/8 x 4-3/4	10-5/16 (262)	12-11/16 (322)	2-5/8 (66)	9.92 (4.50)
10 (250)	10.750 (273.0)	27206 (121.05)	5/32 (4.1)	3/4 x 6-7/10	12-13/16 (325)	15-3/4 (400)	2-5/8 (66)	24.26 (11)
12 (300)	12.750 (323.9)	38297 (170.39)	5/32 (4.1)	7/8 x 7-1/4	14-13/16 (376)	18-7/16 (468)	2-5/8 (67)	28.67 (13)

Nominal Size in (mm)	Groove Type	Pipe	Approvals
1 (25)	Cut, Rolled	40	cULus, FM
	Rolled	10	cULus, FM
1-1/4 (32)	Cut, Rolled	40	cULus, FM
	Rolled	10	cULus, FM
		Fire-Flo Schedule 7	cULus
		Mega-Flow Schedule 7	cULus
		Eddy Flow Schedule 7	cULus
1-1/2 (40)	Cut, Rolled	40	cULus, FM
	Rolled	10	cULus, FM
		Fire-Flo Schedule 7	cULus, FM
		Mega-Flow Schedule 7	cULus
		Eddy Flow Schedule 7	cULus
2 (50)	Cut, Rolled	40	cULus, FM
	Rolled	10	cULus, FM
		Fire-Flo Schedule 7	cULus, FM
		Mega-Flow Schedule 7	cULus
		Eddy Flow Schedule 7	cULus
		Hydroflow Schedule 7	cULus
2-1/2 (65)	Cut, Rolled	40	cULus, FM
	Rolled	10	cULus, FM
		Fire-Flo Schedule 7	cULus, FM
		Mega-Flow Schedule 7	cULus
		Eddy Flow Schedule 7	cULus
		Hydroflow Schedule 7	cULus
3 (80)	Cut, Rolled	40	cULus, FM
	Rolled	10	cULus, FM
		Fire-Flo Schedule 7	cULus, FM
		Mega-Flow Schedule 7	cULus
		Eddy Flow Schedule 7	cULus
		Hydroflow Schedule 7	cULus
4 (100)	Cut, Rolled	40	cULus, FM
	Rolled	10	cULus, FM
		Fire-Flo Schedule 7	cULus, FM
		Mega-Flow Schedule 7	cULus
		Eddy Flow Schedule 7	cULus
		Hydroflow Schedule 7	cULus
6 (150)	Cut, Rolled	40	cULus, FM
	Rolled	10	cULus, FM
		Mega-Flow Schedule 7	cULus

RGD1 Pipe Compatibility (cont.)
Table B

Nominal Size in (mm)	Groove Type	Pipe	Approvals
8 (200)	Cut, Rolled	40	cULus, FM
	Rolled	10	cULus
		0.188 in. wall	FM
10 (250)	Cut, Rolled	40	cULus, FM
	Rolled	10	cULus
12 (300)	Cut, Rolled	40	cULus, FM

Notes:

1. 10 refers to Schedule 10 steel pipe in accordance with NFPA 13.
2. 40 refers to Schedule 40 steel pipe in accordance with NFPA 13.
3. Fire-Flo Schedule 7 refers to Youngstown Tube Schedule 7 pipes.
4. Mega-Flow Schedule 7 refers to Listed Mega-Flow steel Pipe manufactured by Wheatland Tube Co.
5. Eddy Flow Schedule 7 refers to Listed Eddy Flow steel pipe manufactured by Bull Moose Tube Co.
6. Hydroflow Schedule 7 refers to Listed Nucor Hydroflow steel pipe manufactured by Nucor Tubular Products Inc.

P/N 9999970633



Model TESR1 Grooved Tee Short Radius

cULus Listed, FM Approved
300 psi (20.7 bar)

TESR1 Grooved Tee Short Radius Technical Data

Operating Specifications
Maximum Working Pressure:
300 psi (20.7 bar)

Material Specifications

Body: ASTM A536 Grade 65-45-12 Ductile Iron

Design Specification

Groove: AWWA-C606

Available Finishes

Housing:

Standard orange paint
Hot dipped galvanized (ASTM A-153)

Listings and Approvals

cULus Listed
FM Approved



TESR1 Grooved Tee Short Radius Dimensions

Figure 1

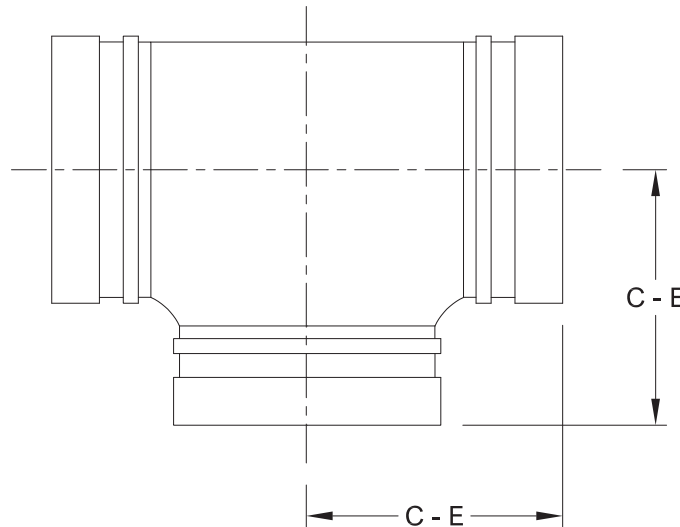


Table A

Nominal Size in (mm)	Pipe O.D. in/mm	Dimension C - E in (mm)	Weight lb (kg)	Run Friction Loss Eq Feet of Pipe (m)	Branch Friction Loss Eq Feet of Pipe (m)
2 (50)	2.375 (60.3)	2-3/4 (70)	2.25 (1.02)	3.6 (1.1)	8.5 (2.6)
2-1/2 (65)	2.875 (73.0)	3 (76)	2.76 (1.25)	4.3 (1.3)	10.8 (3.3)
3 (80)	3.500 (88.9)	3-3/8 (85)	3.77 (1.71)	4.9 (1.5)	13.1 (4)
4 (100)	4.500 (114.3)	4 (102)	5.47 (2.48)	6.9 (2.1)	16.1 (4.9)
6 (150)	6.625 (168.3)	5-1/2 (140)	13.41 (6.08)	9.8 (3)	24.9 (7.6)
8 (200)	8.625 (219.1)	6-7/8 (175)	26.46 (12)	13.1 (4)	33.1 (10.1)
10 (250)	10.750 (273.0)	8-1/2 (215)	37.15 (16.85)	17.1 (5.2)	41 (12.5)
12 (300)	12.750 (323.9)	8-11/16 (220)	55.35 (25.10)	20 (6.1)	49.9 (15.2)



Model 041 U Bolt Threaded Mechanical Tee FNPT

cULus Listed, FM Approved
300 psi (20.7 bar)

041 U Bolt Threaded Mechanical Tee FNPT Technical Data

Operating Specifications

Maximum Working Pressure:
300 psi (20.7 bar)

Operating Temperature

-30 °F to 230 °F (-34 °C to 110 °C)

Material Specifications

Housings: ASTM A536 Grade 65-45-12 Ductile Iron

Gasket: Grade E EDPM

Bolt Specification:

SAE J429 Grade 5

Thread Specification:

ASME B1.20.1

Available Finishes

Housing:

Standard orange paint

Hot dipped galvanized (ASTM A-153)

Listings and Approvals

cULus Listed

FM Approved



041 U Bolt Threaded Mechanical Tee FNPT Dimensions

Figure 1

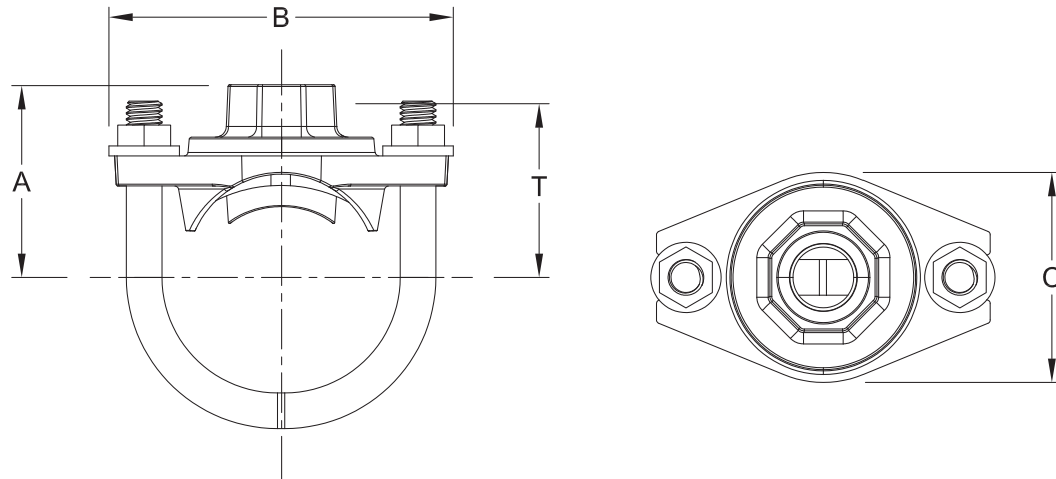


Table A

Nominal Size		Hole Saw Size in (mm)	Bolt Size in	Bolt Torque lbs-ft / N-M	Dimensions				Weight lb (kg)
Run Pipe in (mm)	Threaded Outlet in (mm)				A in/mm	B in/mm	C in/mm	Take Out T in/mm	
1-1/4 (32)	1/2 (15)	1-3/16 (30)	3/8	22-29 (30-40)	2-1/8 (53)	3-1/2 (89)	2-3/16 (56)	1-3/4 (44)	0.90 (0.41)
	3/4 (20)	1-3/16 (30)	3/8	22-29 (30-40)	2-1/8 (53)	3-1/2 (89)	2-3/16 (56)	1-3/4 (44)	0.95 (0.43)
	1 (25)	1-3/16 (30)	3/8	22-29 (30-40)	2-3/16 (56)	3-1/2 (89)	2-3/16 (56)	1-7/8 (47)	0.95 (0.43)
1-1/2 (40)	1/2 (15)	1-3/16 (30)	3/8	22-29 (30-40)	2-3/16 (55)	3-1/2 (89)	2-3/16 (56)	1-13/16 (46)	0.90 (0.41)
	3/4 (20)	1-3/16 (30)	3/8	22-29 (30-40)	2-3/16 (55)	3-1/2 (89)	2-3/16 (56)	1-13/16 (46)	0.93 (0.42)
	1 (25)	1-3/16 (30)	3/8	22-29 (30-40)	2-1/4 (58)	3-1/2 (89)	2-3/16 (56)	1-15/16 (49)	0.99 (0.45)
2 (50)	1/2 (15)	1-3/16 (30)	3/8	22-29 (30-40)	2-1/2 (64)	3-7/8 (98)	2-3/16 (56)	2-1/16 (53)	0.93 (0.42)
	3/4 (20)	1-3/16 (30)	3/8	22-29 (30-40)	2-1/2 (64)	3-7/8 (98)	2-3/16 (56)	2-1/16 (53)	0.97 (0.44)
	1 (25)	1-3/16 (30)	3/8	22-29 (30-40)	2-5/8 (67)	3-7/8 (98)	2-3/16 (56)	2-3/16 (56)	0.97 (0.44)
2-1/2 (65)	1/2 (15)	1-3/16 (30)	3/8	22-29 (30-40)	2-3/4 (69)	4-3/8 (111)	2-3/16 (56)	2-1/4 (58)	1.28 (0.58)
	3/4 (20)	1-3/16 (30)	3/8	22-29 (30-40)	2-3/4 (69)	4-3/8 (111)	2-3/16 (56)	2-1/4 (58)	1.28 (0.58)
	1 (25)	1-3/16 (30)	3/8	22-29 (30-40)	2-13/16 (72)	4-3/8 (111)	2-3/16 (56)	2-3/8 (61)	1.32 (0.60)
3 (80)	1 (25)	1-3/16 (30)	3/8	22-29 (30-40)	3-3/16 (81)	5-1/16 (128)	2-3/16 (56)	2-5/8 (67)	1.32 (0.60)

041 Pipe Compatibility

Table B

Nominal Size in (mm)	Pipe	Approvals
1-1/4 (32)	10	cULus, FM
	40	
1-1/2 (40)	10	cULus, FM
	40	
2 (50)	10	cULus, FM
	40	
2-1/2 (65)	10	cULus, FM
	40	
3 (80)	10	cULus, FM
	40	



Model MTT2 Threaded Mechanical Tee FNPT

cULus Listed, FM Approved
300 psi (20.7 bar)

MTT2 Threaded Mechanical Tee FNPT Technical Data

Operating Specifications

Maximum Working Pressure:
300 psi (20.7 bar)

Operating Temperature
-30 °F to 230 °F (-34 °C to 110 °C)

Material Specifications

Housings: ASTM A536 Grade 65-45-12 Ductile Iron

Gasket: Grade E EDPM

Bolt Specification:

SAE J429 Grade 5

Thread Specification:

ASME B1.20.1

Available Finishes

Housing:

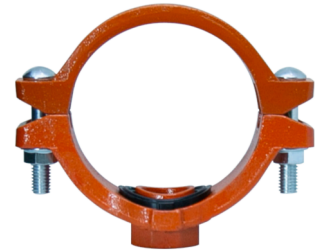
Standard orange paint

Hot dipped galvanized (ASTM A-153)

Listings and Approvals

cULus Listed

FM Approved



MTT2 Threaded Mechanical Tee FNPT Dimensions

Figure 1

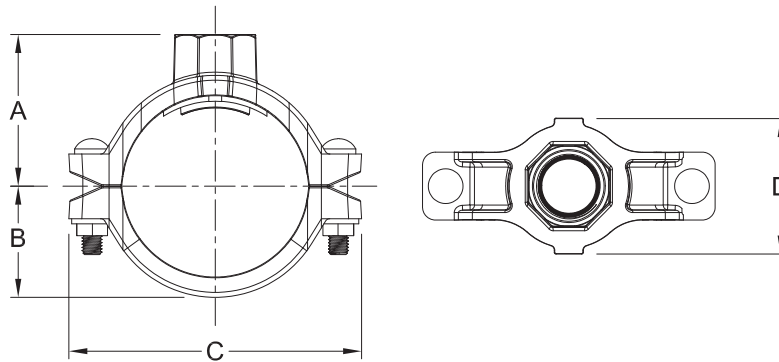


Table A

Nominal Size in (mm)	Pipe O.D. in (mm)	Nominal Branch Pipe Size NPS (DN)	Bolt Size x Length in	Dimensions				Weight lb (kg)	Hole Saw Size in (mm)
				A in (mm)	B in (mm)	C in (mm)	D in (mm)		
2 (50)	2.375 (60.3)	1 (25)	3/8 x 2-3/8	1-7/8 (47)	1-5/8 (42)	4-3/4 (120)	3 (76)	1.85 (0.84)	1-1/2 (38)
		1-1/4 (32)	3/8 x 2-3/8	2-5/8 (52)	1-5/8 (42)	4-3/4 (120)	3-5/16 (84)	2.25 (1.02)	1-3/4 (45)
		1-1/2 (40)	3/8 x 2-3/8	2-13/16 (71)	1-5/8 (42)	4-3/4 (120)	3-5/16 (84)	2.47 (1.12)	1-3/4 (45)
2-1/2 (65)	2.875 (73.0)	1 (25)	1/2 x 2-5/8	2-7/16 (62)	1-7/8 (47)	5-5/8 (143)	3 (76)	2.32 (1.05)	1-1/2 (38)
		1-1/4 (32)	1/2 x 2-5/8	2-7/8 (74)	1-7/8 (47)	5-5/8 (143)	3-5/16 (84)	2.56 (1.16)	1-3/4 (45)
		1-1/2 (40)	1/2 x 2-5/8	2-1/4 (58)	1-7/8 (47)	5-5/8 (143)	3-9/16 (90)	2.93 (1.33)	2 (51)
3 (80)	3.500 (88.9)	1 (25)	1/2 x 2-5/8	2-3/4 (70)	2-3/16 (55)	6-1/4 (158)	3 (76)	3 (1.36)	1-1/2 (38)
		1-1/4 (32)	1/2 x 2-5/8	3-3/16 (81)	2-3/16 (55)	6-1/4 (158)	3-5/16 (84)	3 (1.36)	1-3/4 (45)
		1-1/2 (40)	1/2 x 2-5/8	3-3/16 (81)	2-3/16 (55)	6-1/4 (158)	3-9/16 (90)	3.15 (1.43)	2 (51)
		2 (50)	1/2 x 2-5/8	3-3/16 (81)	2-3/16 (55)	6-1/4 (158)	4 (101)	3.42 (1.55)	2-1/2 (64)
4 (100)	4.500 (114.3)	1 (25)	1/2 x 2-3/4	3-1/4 (82)	2-3/16 (55)	7-1/8 (181)	3 (76)	2.87 (1.30)	1-1/2 (38)
		1-1/4 (32)	1/2 x 2-3/4	3-11/16 (94)	2-3/16 (55)	7-1/8 (181)	3-5/16 (84)	3.31 (1.50)	1-3/4 (45)
		1-1/2 (40)	1/2 x 2-3/4	3-11/16 (94)	2-3/16 (55)	7-1/8 (181)	3-9/16 (90)	3.37 (1.53)	2 (51)
		2 (50)	1/2 x 2-3/4	3-11/16 (94)	2-3/16 (55)	7-1/8 (181)	4 (101)	3.68 (1.67)	2-1/2 (64)
		2-1/2 (65)	1/2 x 2-3/4	3-11/16 (94)	2-3/16 (55)	7-1/8 (181)	4-5/8 (117)	4.48 (2.03)	2-3/4 (70)
6 (150)	6.625 (168.3)	1 (25)	5/8 x 3-5/16	4-1/4 (109)	3-3/16 (97)	9-3/4 (248)	3 (76)	5.18 (2.35)	1-1/2 (38)
		1-1/4 (32)	5/8 x 3-5/16	4-1/4 (109)	3-3/16 (97)	9-3/4 (248)	3-5/16 (84)	5.42 (2.46)	1-3/4 (45)
		1-1/2 (40)	5/8 x 3-5/16	4-1/4 (109)	3-3/16 (97)	9-3/4 (248)	3-9/16 (90)	5.40 (2.45)	2 (51)
		2 (50)	5/8 x 3-5/16	4-1/4 (109)	3-3/16 (97)	9-3/4 (248)	4 (101)	5.65 (2.56)	2-1/2 (64)
		2-1/2 (65)	5/8 x 3-5/16	4-1/4 (109)	3-3/16 (97)	9-3/4 (248)	4-5/8 (117)	6.28 (2.85)	2-3/4 (70)

MTT2 Pipe Compatibility**Table B**

Nominal Size in (mm)	Pipe	Approvals
2 (50)	10	cULus, FM
	40	
2-1/2 (65)	10	cULus, FM
	40	
3 (80)	10	cULus, FM
	40	
4 (100)	10	cULus, FM
	40	
6 (150)	10	cULus, FM
	40	

Reliable®

Model MTG1 Grooved Mechanical Tee

cULus Listed, FM Approved
300 psi (20.7 bar)

MTG1 Grooved Mechanical Tee Technical Data

Operating Specifications

Maximum Working Pressure:
See Table A

Operating Temperature

-30 °F to 230 °F (-34 °C - 110 °C)

Material Specifications

Housings: ASTM A536 Grade 65-45-12 Ductile Iron

Gasket: Grade E EDPM

Bolt Specification:

SAE J429 Grade 5

Thread Specification:

ASME B1.20.1

Available Finishes

Housing:

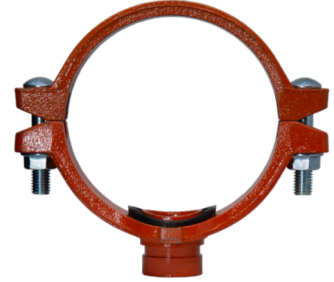
Standard orange paint

Hot dipped galvanized (ASTM A-153)

Listings and Approvals

cULus Listed

FM Approved



MTG1 Grooved Mechanical Tee Dimensions

Figure 1

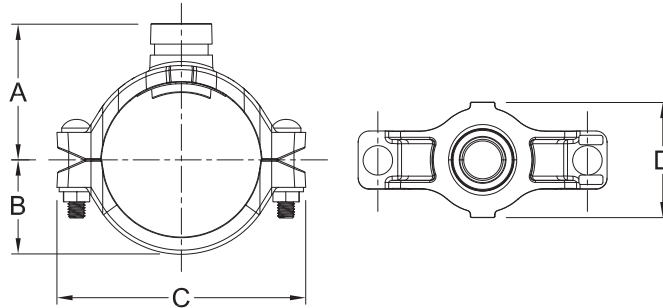



Table A

Nominal Size in (mm)	Pipe O.D. in (mm)	Nominal Branch Pipe Size NPS (DN)	Branch Pipe O.D. in (mm)	Bolt Size x Length in	Dimensions				Weight lb (kg)	Hole Saw Size in (mm)
					A in (mm)	B in (mm)	C in (mm)	D in (mm)		
2 (50)	2.375 (60.3)	1-1/4 (32)	1.660 (42.2)	3/8 x 2-3/8	2-7/8 (73)	1-5/8 (42)	4-3/4 (120)	3-5/16 (84)	2.12 (0.96)	1-3/4 (45)
		1-1/2 (40)	1.900 (48.3)					3-5/16 (84)	2.16 (0.98)	1-3/4 (45)
2-1/2 (65)	2.875 (73.0)	1-1/4 (32)	1.660 (42.2)	1/2 x 2-5/8	3-1/16 (79)	1-7/8 (47)	5-5/8 (143)	3-5/16 (84)	2.65 (1.20)	1-3/4 (45)
		1-1/2 (40)	1.900 (48.3)					3-9/16 (90)	2.80 (1.27)	2 (51)
3 (80)	3.500 (88.9)	1-1/4 (32)	1.660 (42.2)	1/2 x 2-5/8	3-3/8 (86)	2-3/16 (55)	6-1/4 (158)	3-5/16 (84)	2.80 (1.27)	1-3/4 (45)
		1-1/2 (40)	1.990 (48.3)		3-3/8 (86)			3-9/16 (90)	2.98 (1.35)	2 (51)
		2 (50)	2.375 (60.3)		3-7/16 (87)			4 (101)	3.31 (1.50)	2-1/2 (64)
4 (100)	4.500 (114.3)	1-1/4 (32)	1.660 (42.2)	1/2 x 2-3/4	3-7/8 (99)	2-9/16 (65)	7-1/8 (181)	3-5/16 (84)	4.15 (1.88)	1-3/4 (45)
		1-1/2 (40)	1.900 (48.3)					3-9/16 (90)	3.57 (1.62)	2 (51)
		2 (50)	2.375 (60.3)					4 (101)	3.90 (1.77)	2-1/2 (64)
		2-1/2 (65)	2.875 (73.0)					4-5/8 (117)	4.19 (1.90)	2-3/4 (70)
		3 (80)	3.500 (88.9)					5-3/8 (136)	4.63 (2.1)	3-1/2 (89)
6 (150)	6.625 (168.3)	1-1/4 (32)	1.660 (42.2)	5/8 x 3-5/16	4-15/16 (125)	3-13/16 (97)	9-3/4 (248)	3-5/16 (84)	5.31 (2.41)	1-3/4 (45)
		1-1/2 (40)	1.900 (48.3)		4-15/16 (125)			3-9/16 (90)	5.31 (2.41)	2 (51)
		2 (50)	2.375 (60.3)		4-15/16 (125)			4 (101)	5.58 (2.53)	2-1/2 (64)
		2-1/2 (65)	2.875 (73.0)		5 (127)			4-5/8 (117)	6.62 (3)	2-3/4 (70)
		3 (80)	3.500 (88.9)		5 (127)			5-3/8 (136)	6.79 (3.08)	3-1/2 (89)
		4 (100)	4.500 (114.3)		5-1/16 (129)			6-3/8 (162)	7.72 (3.50)	4-1/2 (114)
8 (200)	8.625 (219.1)	2 (50)	2.375 (60.3)	5/8 x 3-1/2	6 (152)	1-15/16 (125)	12-5/8 (322)	4 (101)	9.24 (4.19)	2-1/2 (64)
		2-1/2 (65)	2.875 (73.0)		6-1/16 (154)			4-5/8 (117)	10.06 (4.56)	2-3/4 (70)
		3 (80)	3.500 (88.9)		6-1/16 (154)			5-3/8 (136)	10.25 (4.65)	3-1/2 (89)
		4 (100)	4.500 (114.3)		6-3/16 (156)			6-3/8 (162)	11.69 (5.3)	4-1/2 (114)

MTG1 Pipe Compatibility
Table B

Nominal Size in (mm)	Nominal Branch Pipe Size in (mm)	Pipe	Approvals
2 (50)	1-1/4 (32)	10, 40	cULus, FM
	1-1/2 (40)		
2-1/2 (65)	1-1/4 (32)	10, 40	cULus, FM
	1-1/2 (40)		
3 (80)	1-1/4 (32)	10, 40	cULus, FM
	1-1/2 (40)		
	2 (50)		
4 (100)	1-1/4 (32)	10, 40	cULus, FM
	1-1/2 (40)		
	2 (50)		
	2-1/2 (65)		
	3 (80)		
6 (150)	1-1/4 (32)	10, 40	cULus, FM
	1-1/2 (40)		
	2 (50)		
	2-1/2 (65)		
	3 (80)		
	4 (100)		
8 (200)	2 (50)	10, 40	cULus, FM
	2-1/2 (65)		
	3 (80)		
	4 (100)		



TOLCOTM fire protection solutions



Seismic Bracing

Fig. 980 - TOLCO Universal swivel sway brace attachment - $\frac{3}{8}$ "-16 to $\frac{3}{4}$ "-10 rods

Fig. 980H - TOLCO Universal swivel sway brace attachment - $\frac{7}{8}$ "-9 to $1\frac{1}{4}$ "-7

Size Range: One size fits bracing pipe 1" (25mm) thru 2" (50mm), B-Line series 12 gauge (2.6mm) channel.

Material: Carbon steel

Function: Multi-functional attachment to structure or braced pipe fitting.

Features: This product's design incorporates a concentric attachment opening which is critical to the performance of structural seismic connections and in accordance with NFPA 13, 2019 Section 18.5.11.5. The Fig. 980 mounts to any surface angle and the break off bolt head assures verification of proper installation.

Installation: Fig.980 is the structural or transitional attachment component of a longitudinal or lateral sway brace assembly. It is intended to be combined with the "bracing pipe" and TOLCO™ "braced pipe" attachment, Fig. 1001, 2002, 3000, 4L or approved attachment to pipe to form a complete bracing assembly. NFPA 13 guidelines should be followed.

To Install: Place the Fig. 980 onto the "bracing pipe". Tighten the set bolt until the head breaks off. Attachment can pivot for adjustment to proper brace angle.

Approvals: —Underwriters Laboratories Listed in the USA (UL) and Canada (cUL). UL Listed for the following brace member type pipes: Sch. 40, KSD 3562. Ask the factory for additional information as it may vary by product size. Included in our Seismic Engineering Guidelines approved by the State of California Office of Statewide Health Planning and Development (OSHPD). For additional load, spacing and placement information relating to OSHPD projects, please refer to our Seismic Engineering Guidelines, OPM-0052-13. For FM Approval information refer to FM Approved page 61.

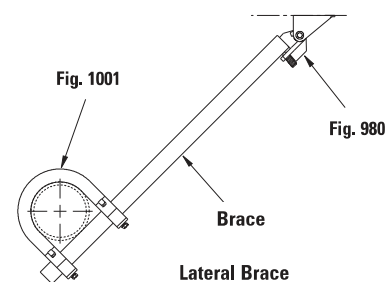
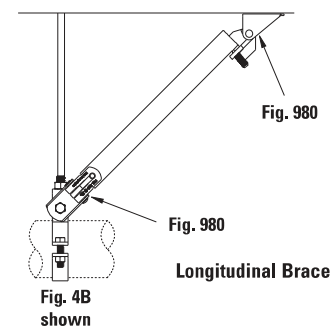
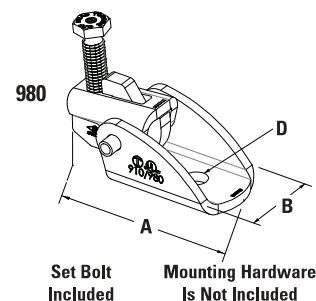
Note: Fig. 980 Swivel Attachment and Fig. 1001, 2002, 3000, 4L, or approved attachment to pipe make up a sway brace system of UL Listed attachments and bracing materials which satisfies the requirements of Underwriters Laboratories and the National Fire Protection Association (NFPA)

Finish: Plain, Electro-Galvanized or Stainless Steel.

Contact customer service for alternative finishes.

Order By: Figure number and finish.

Pat. #6,273,372, Pat. #6,517,030, Pat. #6,953,174,
Pat. #6,708,930, Pat. #7,191,987, Pat. #7,441,730,
Pat. #7,669,806



Catalog #	A in. (mm)	B in. (mm)	D** in. (mm)	Max. Design Load (cULus) lbs./ (kN)	Approx.Wt./100 lbs. (kg)
*980- $\frac{3}{8}$	$4\frac{3}{16}$ (114.9)	$2\frac{1}{16}$ (52.4)	$\frac{7}{16}$ (11.1)	1600 (7.12)	149 (67.6)
*980- $\frac{1}{2}$			$\frac{9}{16}$ (14.3)	2100 (9.34)	148 (67.1)
*980- $\frac{5}{8}$			$\frac{11}{16}$ (17.5)	2100 (9.34)	147 (66.7)
*980- $\frac{3}{4}$			$\frac{13}{16}$ (20.6)	2100 (9.34)	146 (66.2)
980H- $\frac{7}{8}$	$6\frac{3}{4}$ (171.4)	$3\frac{1}{2}$ (88.9)	$\frac{15}{16}$ (23.8)	Fig. 980H is not UL Listed or FM Approved	402 (182.3)
980H-1			$1\frac{1}{16}$ (27.0)		400 (181.4)
980H- $1\frac{1}{8}$			$1\frac{3}{16}$ (30.2)		397 (180.1)
980H- $1\frac{1}{4}$			$1\frac{5}{16}$ (33.3)		390 (176.9)

* Sizes available in stainless steel (980S- $\frac{3}{8}$, 980S- $\frac{1}{2}$, 980S- $\frac{5}{8}$, and 980S- $\frac{3}{4}$) and have the same UL rating as what is listed.

** Mounting attachment hole size.

Eaton's B-Line series seismic bracing components are designed to be compatible only with other B-Line series bracing components, resulting in a listed seismic bracing assembly. Eaton B-Line Division warranty for seismic bracing components will be the warranty provided in Eaton B-Line Division standard terms and conditions of sale made available by Eaton, except that, in addition to the other exclusions from Eaton B-Line Division warranty, Eaton makes no warranty relating to B-Line series seismic bracing components that are combined with products not provided by Eaton.

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

Fig. 980 - TOLCO Universal swivel sway brace attachment - $\frac{3}{8}$ "-16 to $\frac{3}{4}$ "-10 rods
Fig. 980H - TOLCO Universal swivel sway brace attachment - $\frac{7}{8}$ "-9 to $1\frac{1}{4}$ "-7

Size Range: One size fits bracing pipe 1" (25mm) thru 2" (50mm), B-Line series 12 gauge (2.6mm) channel.

Material: Carbon steel

Function: Multi-functional attachment to structure or braced pipe fitting.

Features: This product's design incorporates a concentric attachment opening which is critical to the performance of structural seismic connections and in accordance with NFPA 13, 2019 Section 18.5.11.5. The Fig. 980 mounts to any surface angle and the break off bolt head assures verification of proper installation.

Installation: Fig.980 is the structural or transitional attachment component of a longitudinal or lateral sway brace assembly. It is intended to be combined with the "bracing pipe" and TOLCO™ "braced pipe" attachment, Fig. 1000, 1001, 3000, 4L, or other TOLCO approved attachment to pipe to form a complete bracing assembly. NFPA 13 guidelines should be followed.

To Install: Place the Fig. 980 onto the "bracing pipe". Tighten the set bolt until the head breaks off. Attachment can pivot for adjustment to proper brace angle.

Approvals: —Approved by Factory Mutual Engineering (FM). Included in our Seismic Engineering Guidelines approved by the State of California Office of Statewide Health Planning and Development (OSHPD). For additional load, spacing and placement information relating to OSHPD projects, please refer to our Seismic Engineering Guidelines, OPM-0052-13. For UL Listed information refer to UL Listed page 60.

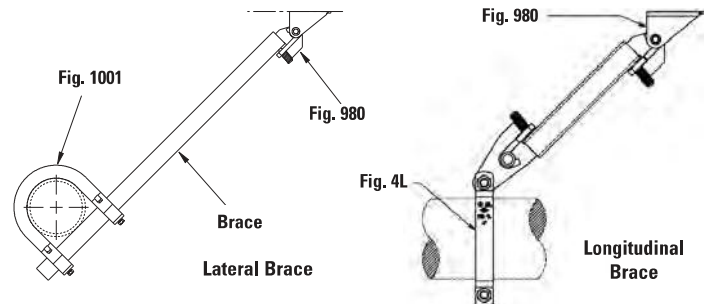
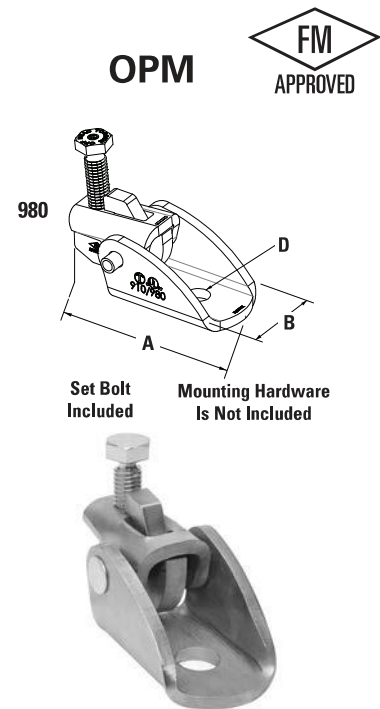
Note: Fig. 980 Swivel Attachment and Fig. 1000, 1001, 4L or other TOLCO approved attachment to pipe that make up a sway brace system of bracing materials which satisfies the requirements of Factory Mutual Engineering and the National Fire Protection Association (NFPA)

Finish: Plain, Electro-Galvanized or Stainless Steel.
Contact customer service for alternative finishes.

Order By: Figure number and finish.

Pat. #6,273,372, Pat. #6,517,030, Pat. #6,953,174,
Pat. #6,708,930, Pat. #7,191,987, Pat. #7,441,730,
Pat. #7,669,806

Designed to meet or exceed requirements of FM DS 2-8.



Catalog #	A		B		D**		Max. Design Load*** (FM)				Approx.Wt./100 lbs. (kg)
	in.	(mm)	in.	(mm)	in.	(mm)	30°-44° lbs./(kN)	45°-59° lbs./(kN)	60°-74° lbs./(kN)	75°-90° lbs./(kN)	
980- $\frac{3}{8}$	$4\frac{9}{16}$ (114.9)	$2\frac{1}{16}$ (52.4)	$1\frac{1}{16}$ (14.3)	$1\frac{1}{16}$ (14.3)	$\frac{7}{16}$ (11.1)						149 (67.6)
980- $\frac{1}{2}$					$\frac{9}{16}$ (14.3)						148 (67.1)
980- $\frac{5}{8}$					$\frac{11}{16}$ (17.5)						147 (66.7)
980- $\frac{3}{4}$					$\frac{13}{16}$ (20.6)						146 (66.2)
980H- $\frac{7}{8}$	$6\frac{3}{4}$ (171.4)	$3\frac{1}{2}$ (88.9)	$1\frac{1}{16}$ (27.0)	$1\frac{1}{16}$ (27.0)	$\frac{15}{16}$ (23.8)						402 (182.3)
980H-1					$1\frac{1}{16}$ (27.0)		Fig. 980H is not UL Listed or FM Approved				400 (181.4)
980H- $1\frac{1}{8}$					$\frac{13}{16}$ (30.2)						397 (180.1)
980H- $1\frac{1}{4}$					$\frac{15}{16}$ (33.3)						390 (176.9)

** Mounting attachment hole size.

*** Installed with 1" or $1\frac{1}{4}$ " schedule 40 brace pipe.

Eaton's B-Line series seismic bracing components are designed to be compatible only with other B-Line series bracing components, resulting in a listed seismic bracing assembly. Eaton B-Line Division warranty for seismic bracing components will be the warranty provided in Eaton B-Line Division standard terms and conditions of sale made available by Eaton, except that, in addition to the other exclusions from Eaton B-Line Division warranty, Eaton makes no warranty relating to B-Line series seismic bracing components that are combined with products not provided by Eaton.

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

Seismic Bracing

TOLCO Fig. 4L - sway brace attachment (UL listed)

Size Range: 1" (25mm) through 8" (200mm) IPS. 10" (250mm) and 12" (300mm) not UL listed

Material: Steel and stainless steel.

Function: For bracing pipe against sway and seismic disturbance.

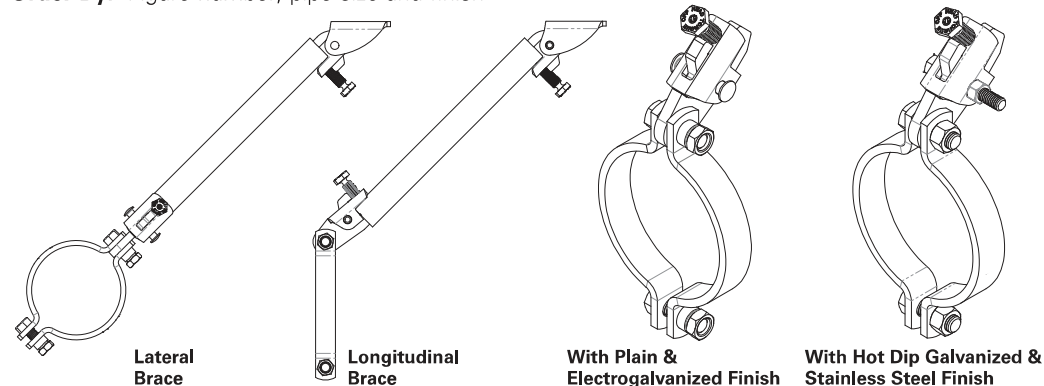
Approvals: Underwriters Laboratories Listed in the USA (UL) and Canada (cUL) 1" (25mm) through 8" (200mm) pipe. UL Listed for the following sprinkler type pipes: Sch. 40, Sch. 10, Bull Moose Eddy Flow, Wheatland Mega Flow, DIN 2448, KSD 3562, KSD 3507. Ask the factory for additional information as it may vary by product size. For FM Approval information refer to FM Approved page 75. Included in our Seismic Engineering Guidelines approved by the State of California Office of Statewide Health Planning and Development (OSHPD). For additional load, spacing and placement information relating to OSHPD projects, please refer to our Seismic Engineering Guidelines, OPM-0052-13.

Installation Instructions: Fig. 4L is the "braced pipe" attachment component of a longitudinal and lateral sway brace assembly. It is intended to be combined with the "bracing pipe" and TOLCO structural attachment component to form a complete bracing assembly. NFPA 13 guidelines should be followed. (For complete detailed instructions see instruction sheet [IL309015EN](#)).

To Install: Place the Fig. 4L over the pipe to be braced and tighten bolts. Then engage "bracing pipe" into jaw opening and tighten set bolt until head snaps off. Jaw attachment can pivot for adjustment to proper brace angle.

Finish: Plain, Electrogalvanized, Hot Dip Galvanized or Stainless Steel (only for 4" & 6" sizes).

Order By: Figure number, pipe size and finish.



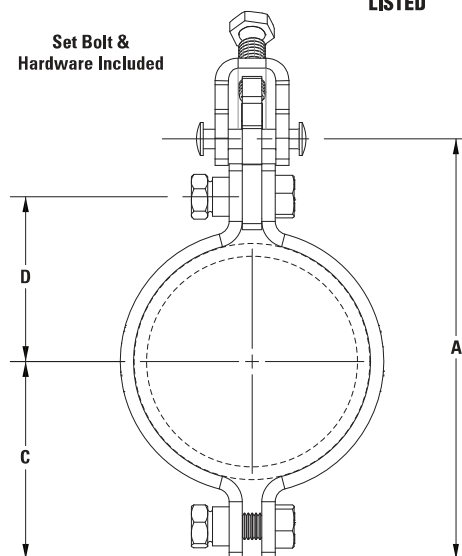
Part No.	Nom Pipe Size in.	(mm)	A (Max) in.	C in.	D in.	Bolt Size in.	UL Max. Rec. Load Logitudinal lbs.	Lateral lbs.	PLN & EG. Approx. Wt./100 lbs.
4L-1	1	(25)	5	2	1 ³ / ₈	1/2-13	1000	1000	176
4L-1 ¹ / ₄	1 ¹ / ₄	(32)	5 ² / ₇	2 ¹ / ₁₆	1 ⁵ / ₉	1/2-13	1000	1000	182
4L-1 ¹ / ₂	1 ¹ / ₂	(40)	5 ¹ / ₂	2 ¹ / ₃	1 ² / ₃	1/2-13	1000	1000	187
4L-2	2	(50)	6 ² / ₇	2 ² / ₃	2	1/2-13	1600	1000	204
4L-2 ¹ / ₂	2 ¹ / ₂	—	6 ⁷ / ₉	3	2 ¹ / ₃	1/2-13	2000	1000	217
4L-65mm	—	(65)	6 ⁷ / ₉	3	2 ¹ / ₃	1/2-13	700	1000	214
4L-3	3	(80)	7 ³ / ₇	3 ¹ / ₄	2 ⁵ / ₈	1/2-13	2000	1000	323
4L-3 ¹ / ₂	3 ¹ / ₂	(90)	8	3 ¹ / ₂	2 ⁷ / ₈	1/2-13	2000	1000	343
4L-4***	4	(100)	8 ³ / ₇	3 ³ / ₄	3 ¹ / ₈	1/2-13	2000**	1000	253
4L-5	5	—	9 ⁵ / ₉	4 ³ / ₈	3 ⁵ / ₈	1/2-13	2000**	1600*	314
4L-125mm	—	(125)	9 ⁵ / ₉	4 ³ / ₈	3 ⁵ / ₈	1/2-13	1200	1600*	314
4L-6***	6	—	11 ³ / ₇	5 ¹ / ₃	4 ⁴ / ₇	1/2-13	2000	1600*	540
4L-150mm	—	(150)	11 ³ / ₇	5 ¹ / ₃	4 ⁴ / ₇	1/2-13	1200	1600*	538
4L-8	8	—	13 ³ / ₅	6 ² / ₅	5 ² / ₃	1/2-13	2000	2100*	645
4L-200mm	—	(200)	13 ³ / ₅	6 ² / ₅	5 ² / ₃	1/2-13	1400	2100*	643
4L-10****	10	(254)	17 ³ / ₅	8 ¹ / ₄	7 ¹ / ₄	1/2-13	NA	NA	1349
4L-12****	12	(300)	19 ³ / ₅	9 ¹ / ₄	8 ¹ / ₄	1/2-13	NA	NA	1526

* Only UL listed as a lateral brace for use with a 1" (25mm) pipe as the brace member.

** Only UL listed as a longitudinal brace for use with a 1" (25mm) thru 1¹/₂" (40mm) pipe as the brace member.

*** Fig 4L-4 and Fig 4L-6 are only sizes available in stainless steel 316.

**** FM approved not UL listed.



Eaton's B-Line series seismic bracing components are designed to be compatible only with other B-Line series bracing components, resulting in a listed seismic bracing assembly. Eaton B-Line Division warranty for seismic bracing components will be the warranty provided in Eaton B-Line Division standard terms and conditions of sale made available by Eaton, except that, in addition to the other exclusions from Eaton B-Line Division warranty, Eaton makes no warranty relating to B-Line series seismic bracing components that are combined with products not provided by Eaton.

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

Updated 4-2-21

TOLCO Fig. 4L - sway brace attachment (FM approved)

Size Range: 1" (25mm) through 12" (300mm) IPS.

Material: Steel.

Function: For bracing pipe against sway and seismic disturbance.

Approvals: Approved by Factory Mutual Engineering (FM), 1" (25mm) through 12" (300mm) pipe. For UL Listed information refer to UL Listed page 74. Included in our Seismic Engineering Guidelines approved by the State of California Office of Statewide Health Planning and Development (OSHPD). For additional load, spacing and placement information relating to OSHPD projects, please refer to our Seismic Engineering Guidelines, OPM-0052-13.

Installation Instructions: Fig. 4L is the "braced pipe" attachment component of a longitudinal and lateral sway brace assembly. It is intended to be combined with the "bracing pipe" and TOLCO™ structural attachment component to form a complete bracing assembly. NFPA 13 and/or FM guidelines should be followed.

To Install: Place the Fig. 4L over the pipe to be braced and tighten bolts. Then engage "bracing pipe" into jaw opening and tighten set bolt until head snaps off. Jaw attachment can pivot for adjustment to proper brace angle. (For complete detailed instructions see instruction sheet [IL309015EN](#)).

Finish: Plain, Electrogalvanized.

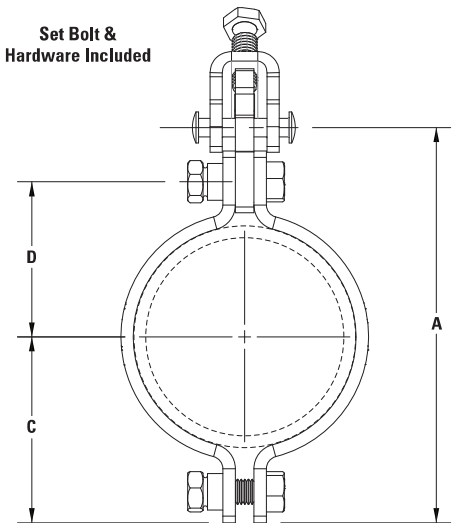
Order By: Figure number, pipe size and finish.

Designed to meet or exceed requirements of FM DS 2-8.

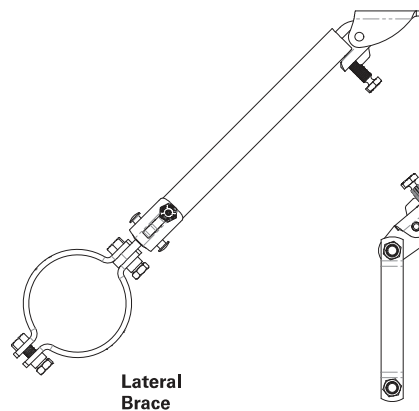
OPM



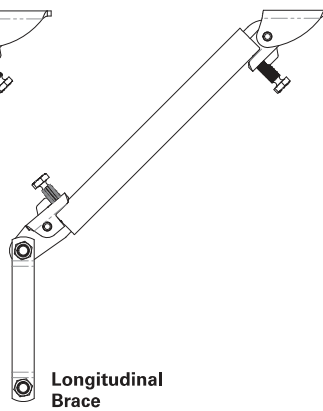
Set Bolt &
Hardware Included



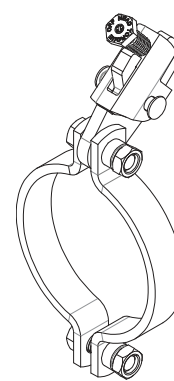
Seismic Bracing



Lateral
Brace



Longitudinal
Brace



With Plain &
Electrogalvanized Finish



Part No.	Nom Pipe Size in. (mm)	A (Max) in.	C in.	D in.	Bolt Size in.	FM Max. Rec. Load Longitudinal				FM Max. Rec. Load Lateral				Approx. Wt./100 lbs.
						30°-44° lbs. (kN)	45°-59° lbs. (kN)	60°-74° lbs. (kN)	75°-90° lbs. (kN)	30°-44° lbs. (kN)	45°-59° lbs. (kN)	60°-74° lbs. (kN)	75°-90° lbs. (kN)	
4L-1	1 (25)	5	2	1 3/8	1/2-13	1060 (4.72)	1160 (5.16)	1400 (6.23)	1500 (6.68)	1370 (6.10)	1940 (8.63)	2380 (10.59)	2650 (11.79)	176
4L-1 1/4	1 1/4 (32)	5 7/8	2 1/8	1 5/8	1/2-13	1060 (4.72)	1160 (5.16)	1400 (6.23)	1500 (6.68)	1370 (6.10)	1940 (8.63)	2380 (10.59)	2650 (11.79)	182
4L-1 1/2	1 1/2 (40)	5 1/2	2 1/3	1 2/3	1/2-13	740 (3.30)	1020 (4.54)	1250 (5.57)	920 (4.10)	1370 (6.10)	1940 (8.63)	2380 (10.59)	2650 (11.79)	187
4L-2	2 (50)	6 7/8	2 2/3	2	1/2-13	740 (3.30)	1020 (4.54)	1250 (5.57)	920 (4.10)	1420 (6.32)	1990 (8.86)	2440 (10.86)	2720 (12.10)	204
4L-2 1/2	2 1/2 (63.5)	6 7/8	3	2 1/3	1/2-13	520 (2.32)	650 (2.90)	790 (3.52)	1040 (4.63)	1410 (6.28)	1990 (8.86)	2440 (10.86)	2720 (12.10)	220
4L-65mm	— (65)	6 7/8	3	2 1/3	1/2-13	520 (2.32)	650 (2.90)	790 (3.52)	1040 (4.63)	1410 (6.28)	1990 (8.86)	2440 (10.86)	2720 (12.10)	218
4L-3	3 (80)	7 3/4	3 1/4	2 5/8	1/2-13	520 (2.32)	650 (2.90)	790 (3.52)	1040 (4.63)	1410 (6.28)	1990 (8.86)	2440 (10.86)	2720 (12.10)	323
4L-3 1/2	3 1/2 (90)	8	3 1/2	2 7/8	1/2-13	520 (2.32)	650 (2.90)	790 (3.52)	1040 (4.63)	1410 (6.28)	1990 (8.86)	2440 (10.86)	2720 (12.10)	343
4L-4	4 (100)	8 3/4	3 3/4	3 1/8	1/2-13	520 (2.32)	650 (2.90)	790 (3.52)	1040 (4.63)	1410 (6.28)	1990 (8.86)	2440 (10.86)	2720 (12.10)	253
4L-5	5 (125)	9 5/8	4 3/8	3 5/8	1/2-13	520 (2.32)	650 (2.90)	790 (3.52)	1040 (4.63)	1410 (6.28)	1990 (8.86)	2440 (10.86)	2720 (12.10)	313
4L-125mm	— (125)	9 5/8	4 3/8	3 5/8	1/2-13	520 (2.32)	650 (2.90)	790 (3.52)	1040 (4.63)	1410 (6.28)	1990 (8.86)	2440 (10.86)	2720 (12.10)	312
4L-6	6 (150)	11 3/4	5 1/3	4 7/8	1/2-13	870 (3.87)	1200 (5.34)	1460 (6.50)	1630 (7.26)	1560 (6.94)	2210 (9.84)	2710 (12.06)	3020 (13.44)	540
4L-150mm	— (150)	11 3/4	5 1/3	4 7/8	1/2-13	870 (3.87)	1200 (5.34)	1460 (6.50)	1630 (7.26)	1560 (6.94)	2210 (9.84)	2710 (12.06)	3020 (13.44)	538
4L-8	8 (200)	13 3/5	6 2/5	5 2/3	1/2-13	1190 (5.30)	1440 (6.41)	1580 (7.03)	1750 (7.79)	1560 (6.94)	2210 (9.84)	2710 (12.06)	3020 (13.44)	645
4L-200mm	— (200)	13 3/5	6 2/5	5 2/3	1/2-13	1190 (5.30)	1440 (6.41)	1580 (7.03)	1750 (7.79)	1560 (6.94)	2210 (9.84)	2710 (12.06)	3020 (13.44)	643
4L-10	10 (254)	17 7/5	8 1/4	7 1/4	1/2-13	1620 (7.21)	1660 (7.38)	1570 (6.98)	1740 (7.74)	1620 (7.21)	2300 (10.23)	2820 (12.54)	3140 (13.97)	1349
4L-12	12 (300)	19 3/5	9 1/4	8 1/4	1/2-13	1620 (7.21)	1660 (7.38)	1570 (6.98)	1740 (7.74)	1620 (7.21)	2300 (10.23)	2820 (12.54)	3140 (13.97)	1526

Eaton's B-Line series seismic bracing components are designed to be compatible only with other B-Line series bracing components, resulting in a listed seismic bracing assembly. Eaton B-Line Division warranty for seismic bracing components will be the warranty provided in Eaton B-Line Division standard terms and conditions of sale made available by Eaton, except that, in addition to the other exclusions from Eaton B-Line Division warranty, Eaton makes no warranty relating to B-Line series seismic bracing components that are combined with products not provided by Eaton.

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

Updated 4-2-21

Seismic Bracing

TOLCO Fig. 1000 - "Fast Clamp" branch line restraint attachment (UL listed)

Size Range: Pipe size to be braced: 1" (25mm) thru 4" (100mm) 40 IPS.
Pipe size used for bracing: 1" (25mm) and 1¼" (32mm) Schedule 40 IPS.
For pipe sizes larger than 2" (50mm) please refer to TOLCO™ Fig. 1001.

Material: Steel

Function: A restraint device intended for lateral bracing.

Features: Field adjustable, making critical pre-engineering of bracing pipe unnecessary. Unique design requires no threading of bracing pipe. Steel leaf spring insert provided to assure installer and inspector necessary minimum torque has been achieved.

Installation: Fig. 1000 is the "braced pipe" attachment component of a lateral sway brace assembly. It is intended to be combined with the "bracing pipe" and TOLCO structural attachment component, Fig. 980, 910, 909 or other approved TOLCO component to form a complete bracing assembly. Follow NFPA 13 guidelines.

To Install: Place the Fig. 1000 over the pipe to be braced, insert bracing pipe through opening leaving a minimum of 1" extension. Brace pipe can be installed on top or bottom of pipe to be braced. Tighten hex nuts until leaf spring is flat. It is recommended that the brace angle be adjusted before hex nuts are fully tightened.

Approvals: Underwriters Laboratories Listed in the USA (UL) and Canada (cUL). Approved for use with engineered light wall sprinkler pipe up to 2" as a restraint device. Torque requirement is 6-8 ft./lbs. (8-10Nm). Included in our Seismic Engineering Guidelines approved by the State of California Office of Statewide Health Planning and Development (OSHPD). For additional load, spacing and placement information relating to OSHPD projects, please refer to our Seismic Engineering Guidelines, OPM-0052-13.

For FM Approval information refer to FM Approved page 69.

Application Note: Position Fast Clamp and tighten two hex nuts until leaf spring flattens. A minimum of 1" pipe extension beyond the Fig. 1000 is recommended.

Finish: Plain or Electro-Galvanized. Contact customer service for alternative finishes and materials.

Order By: Order by figure number, pipe size to be braced, followed by pipe size used for bracing (1" (25mm) or 1¼" (32mm)) , and finish.

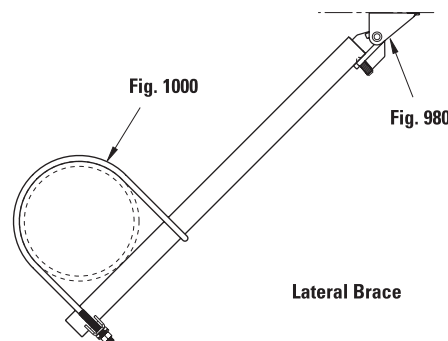
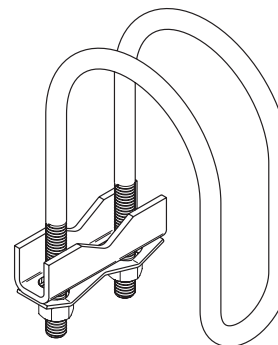
Pipe Size in. (mm)	Part Number & Approx. Wt./100			
	1" (24mm) Brace Pipe		1¼" (32mm) Brace Pipe	
		Lbs. (kg)		Lbs. (kg)
1" (25)	1000-1 X 1	71.6 (32.5)	1000-1 X 1¼	75.8 (34.4)
1¼" (32)	1000-1¼ X 1	74.8 (33.9)	1000-1¼ X 1¼	79.1 (35.9)
1½" (40)	1000-1½ X 1	77.8 (35.3)	1000-1½ X 1¼	82.1 (37.2)
2" (50)	1000-2 X 1	84.1 (38.1)	1000-2 X 1¼	88.4 (40.1)

UL Listed Design Load
1" (25mm) thru 2" (50mm) pipe size 650 Lbs. (2.89kN)

OPM



Hardware
Included



Eaton's B-Line series seismic bracing components are designed to be compatible only with other B-Line series bracing components, resulting in a listed seismic bracing assembly. Eaton B-Line Division warranty for seismic bracing components will be the warranty provided in Eaton B-Line Division standard terms and conditions of sale made available by Eaton, except that, in addition to the other exclusions from Eaton B-Line Division warranty, Eaton makes no warranty relating to B-Line series seismic bracing components that are combined with products not provided by Eaton.

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

TOLCO Fig. 1000 - "Fast Clamp" sway brace attachment (FM approved)

Size Range: Pipe size to be braced: 1" (25mm) thru 4" (100mm) 40 IPS.
 Pipe size used for bracing: 1" (25mm) and 1 1/4" (32mm) Schedule 40 IPS.
 For pipe sizes larger than 4" (100mm) please refer to TOLCO™ Fig. 1001.

Material: Steel

Function: For bracing pipe against sway and seismic disturbance.

Features: Field adjustable, making critical pre-engineering of bracing pipe unnecessary. Unique design requires no threading of bracing pipe. Steel leaf spring insert provided to assure installer and inspector necessary minimum torque has been achieved.

Installation: Fig. 1000 is the "braced pipe" attachment component of a lateral sway brace assembly. It is intended to be combined with the "bracing pipe" and TOLCO structural attachment component, Fig. 980 or other approved TOLCO seismic brace to form a complete bracing assembly. Follow NFPA 13 guidelines.

To Install: Place the Fig. 1000 over the pipe to be braced, insert bracing pipe through opening leaving a minimum of 1" extension. Brace pipe can be installed on top or bottom of pipe to be braced. Tighten hex nuts until leaf spring is flat. It is recommended that the brace angle be adjusted before hex nuts are fully tightened.

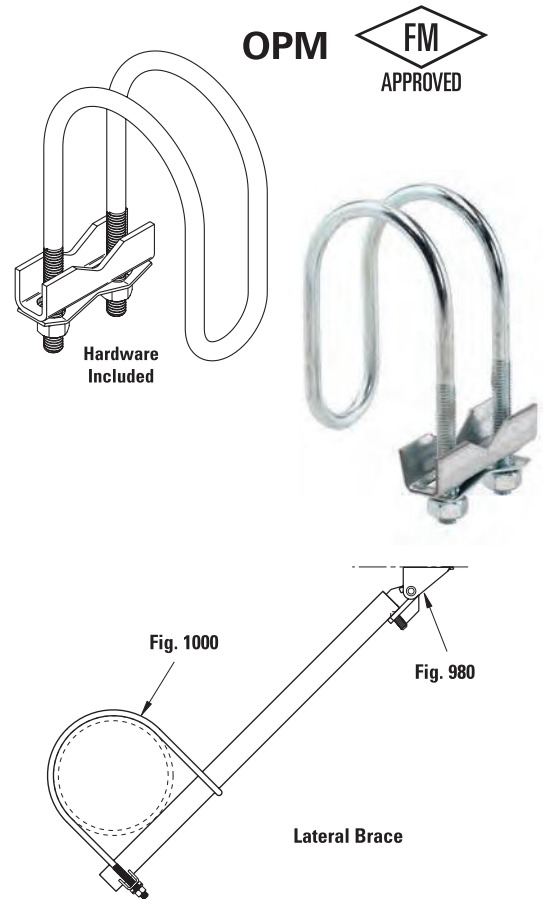
Approvals: Approved by Factory Mutual Engineering (FM). Included in our Seismic Engineering Guidelines approved by the State of California Office of Statewide Health Planning and Development (OSHPD). For additional load, spacing and placement information relating to OSHPD projects, please refer to our Seismic Engineering Guidelines, OPM-0052-13. For UL Listed information refer to UL Listed page 68.

Application Note: Position Fast Clamp and tighten two hex nuts until leaf spring flattens. A minimum of 1" pipe extension beyond the Fig. 1000 is recommended.

Finish: Plain or Electro-Galvanized. Contact customer service for alternative finishes and materials.

Order By: Order by figure number, pipe size to be braced, followed by pipe size used for bracing (1" (25mm) or 1 1/4" (32mm)), and finish.

Designed to meet or exceed requirements of FM DS 2-8.



Pipe Size in. (mm)	Part Number & Approx. Wt./100				Design Load - Allowable Horizontal Capacity (lbf) Per Installation ^{1,2,3}			
	1" (24mm) Brace Pipe Lbs. (kg)		1 1/4" (32mm) Brace Pipe Lbs. (kg)		30°-44° Lbs. (kN)	45°-59° Lbs. (kN)	60°-74° Lbs. (kN)	75°-90° Lbs. (kN)
1" (25)	1000-1 X 1	71.6 (32.5)	1000-1 X 1 1/4	75.8 (34.4)	200 (0.89)	280 (1.24)	340 (1.51)	380 (1.69)
1 1/4" (32)	1000-1 1/4 X 1	74.8 (33.9)	1000-1 1/4 X 1 1/4	79.1 (35.9)	200 (0.89)	280 (1.24)	340 (1.51)	380 (1.69)
1 1/2" (40)	1000-1 1/2 X 1	77.8 (35.3)	1000-1 1/2 X 1 1/4	82.1 (37.2)	200 (0.89)	280 (1.24)	340 (1.51)	380 (1.69)
2" (50)	1000-2 X 1	84.1 (38.1)	1000-2 X 1 1/4	88.4 (40.1)	200 (0.89)	280 (1.24)	340 (1.51)	380 (1.69)
2 1/2" (65)	1000-2 1/2 X 1	90.2 (40.9)	1000-2 1/2 X 1 1/4	94.6 (42.9)	200 (0.89)	280 (1.24)	340 (1.51)	380 (1.69)
3" (80)	1000-3 X 1	97.3 (44.1)	1000-3 X 1 1/4	101.7 (46.1)	230 (1.02)	320 (1.42)	400 (1.78)	450 (2.00)
3 1/2" (90)	1000-3 1/2 X 1	104.0 (47.2)	1000-3 1/2 X 1 1/4	108.4 (49.2)	230 (1.02)	320 (1.42)	400 (1.78)	450 (2.00)
4" (100)	1000-4 X 1	110.3 (50.0)	1000-4 X 1 1/4	114.6 (52.0)	230 (1.02)	320 (1.42)	400 (1.78)	450 (2.00)

¹ FM Approved when used with 1, 1 1/4, 1 1/2, or 2 inch NPS Schedule 40 GB/T 3091, EN 10255H, or JIS G3451 steel pipe as the brace member.

² Load rating for LW above refers to FM Approved Lightwall Pipe commonly referred to as "Schedule 7". These ratings may also be applied when EN 10220 and GB/T 8163 steel pipe.

³ Load rating for Schedule 10 above may be applied to GB/T 3092, EN 10255M and H, or JIS G3454, FM Approved Thinwall, or Schedule 40 steel pipes.

Eaton's B-Line series seismic bracing components are designed to be compatible only with other B-Line series bracing components, resulting in a listed seismic bracing assembly. Eaton B-Line Division warranty for seismic bracing components will be the warranty provided in Eaton B-Line Division standard terms and conditions of sale made available by Eaton, except that, in addition to the other exclusions from Eaton B-Line Division warranty, Eaton makes no warranty relating to B-Line series seismic bracing components that are combined with products not provided by Eaton.

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

Fig. 200 - "Trimline" Adjustable Band Hanger

Fig. 200R (Import) - "Trimline" Adjustable Band Hanger w/Retainer Ring



Size Range — 1/2" thru 8" pipe

Material — Carbon Steel, Mil. Galvanized to G90 specifications

Function — For fire sprinkler and other general piping purposes. Knurled swivel nut design permits hanger adjustment after installation.

Features —

- (1/2" thru 2") Flared edges ease installation for all pipe types and protect CPVC plastic pipe from abrasion. Captured design keeps adjusting nut from separating with hanger. Hanger is easily installed around pipe.
- (2½" thru 8") Spring tension on nut holds it securely in hanger before installation. Adjusting nut is easily removed.

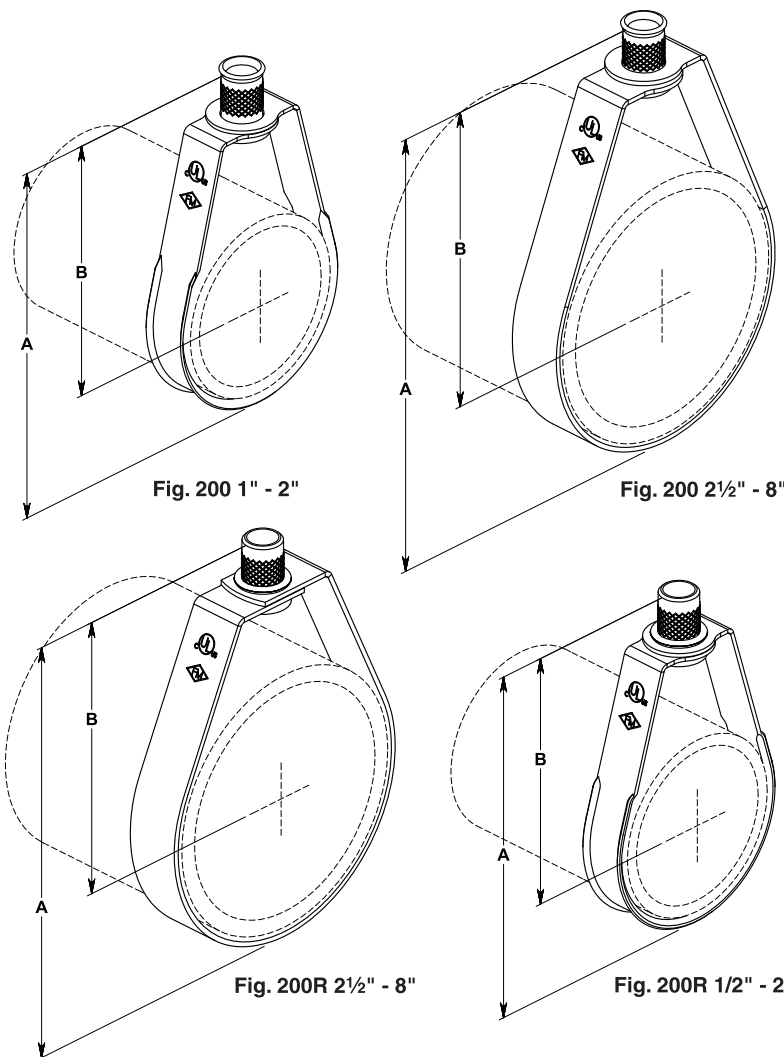
Approvals — Underwriters' Laboratories listed (1/2" thru 8") in the USA (**UL**) and Canada (**cUL**) for steel and CPVC plastic pipe and Factory Mutual Engineering Approved (3/4" thru 8"). Conforms to Federal Specifications WW-H-171E, Type 10 and Manufacturers Standardization Society SP-69, Type 10.

Maximum Temperature — 650°F

Finish — Mil. Galvanized. Stainless Steel materials will be supplied with (2) hex nuts in place of a knurl nub.

Order By — Figure number and pipe size

Note — Figure 200R (import) with retainer ring and non-captured knurl nut.



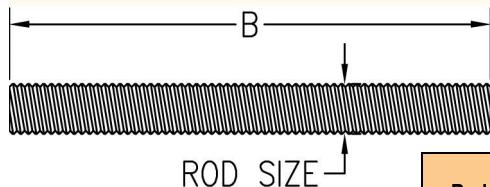
Dimensions • Weights

Pipe Size	Rod Size Inch	Rod Size Metric	A	B	Max. Rec. Load Lbs.	Approx. Wt./100
1/2	3/8	8mm or 10mm	3 1/8	2 5/8	400	11
3/4	3/8	8mm or 10mm	3 1/8	2 1/2	400	11
1	3/8	8mm or 10mm	3 3/8	2 5/8	400	12
1 1/4	3/8	8mm or 10mm	3 3/4	2 7/8	400	13
1 1/2	3/8	8mm or 10mm	3 7/8	2 7/8	400	14
2	3/8	8mm or 10mm	4 1/2	3	400	15
2 1/2	3/8	10mm	5 5/8	4 1/8	600	27
3	3/8	10mm	5 7/8	4	600	29
3 1/2	3/8	10mm	7 3/8	5 1/4	600	34
4	3/8	10mm	7 3/8	5	1000	35
5	1/2	12mm	9 1/8	6 1/4	1250	66
6	1/2	12mm	10 1/8	6 3/4	1250	73
8	1/2	12mm	13 1/8	8 3/4	1250	136

THREADED ACCESSORIES

FIG. 10

THREADED STUDS



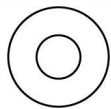
Function: Designed for use in pipe hanger assemblies.
Material: Carbon steel (Type 304 or 316 Stainless Steel upon request)
Finish: Plain or electro-galvanized (Hot dipped galvanized upon request)
Ordering: Specify figure number, rod size, length (B), material, and finish.

Rod Size	Max. Rec. Load				Wt. Per Inch	
	650°F (343°C)		750°F (399°C)			
	lbs.	kN	lbs.	kN	lbs.	kg
3/8 x B	730	(3.25)	572	(2.54)	.02	(.01)
1/2 x B	1350	(6.01)	1057	(4.70)	.04	(.02)
5/8 x B	2160	(9.61)	1692	(7.52)	.07	(.03)
3/4 x B	3230	(14.37)	2530	(11.25)	.11	(.05)
7/8 x B	4480	(19.93)	3508	(15.61)	.14	(.06)

THREADED ACCESSORIES

FIG. 130

FLAT WASHER



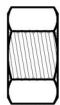
Function: Designed to provide a greater bearing surface diameter.
Material: Carbon steel (Type 304 or 316 Stainless Steel upon request)
Finish: Plain or electro-galvanized (Hot dipped galvanized upon request)
Ordering: Specify figure number, rod size, material, and finish.

Rod Size		1/4	3/8	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 1/2
I.D.		5/16 (7.94)	7/16 (11.11)	9/16 (14.29)	1 1/16 (17.46)	1 3/16 (20.64)	1 5/16 (23.81)	1 7/16 (26.99)	1 9/16 (31.75)	1 11/16 (34.93)	1 13/16 (41.28)
O.D.		3/4 (19.05)	1 (25.40)	1 3/8 (34.93)	1 3/4 (44.45)	2 (50.80)	2 1/4 (57.15)	2 1/2 (63.50)	2 3/4 (69.85)	3 (76.20)	3 1/2 (88.90)
Wt. Each	lbs.	.01	.02	.04	.08	.11	.15	.19	.22	.26	.38
	kg	(.01)	(.01)	(.02)	(.04)	(.05)	(.07)	(.09)	(.10)	(.12)	(.17)

THREADED ACCESSORIES

FIG. 110 & 110H

HEX NUT



Function: Designed for use as a fastening device.

Material: Carbon steel (Type 304 or 316 Stainless Steel upon request)

Finish: Plain or electro-galvanized (Hot dipped galvanized upon request)

Ordering: Specify figure number, rod size, material, and finish.

Standard Hex Nut (**Fig. 110**) or Heavy Hex Nut (**Fig. 110H**).

Rod Size	Wt. Each																					
	1/4		5/16		3/8		1/2		5/8		3/4		7/8		1		1 1/8		1 1/4		1 1/2	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
Fig. 110	.01	(.01)	.01	(.01)	.02	(.01)	.04	(.02)	.07	(.03)	.12	(.05)	.19	(.09)	.28	(.13)	.40	(.18)	.54	(.24)	.94	(.43)
Fig. 110H	--	--	--	--	.03	(.01)	.07	(.03)	.12	(.05)	.19	(.09)	.30	(.14)	.43	(.20)	.59	(.27)	.79	(.36)	1.31	(.59)

THREADED ACCESSORIES



STANDARD ROD COUPLING

FIG. 100

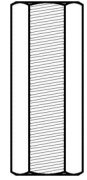
Function: Designed to provide a means of connecting two lengths of threaded rod with equal diameters.

Material: Carbon steel (Type 304 or 316 Stainless Steel upon request)

Finish: Plain or electro-galvanized

Ordering: Specify figure number, rod size, material, and finish.

Rod Size	Length		Hex Width		Max. Rec. Load		Wt. Each	
					lbs.	kN	lbs.	kg
1/4	7/8	(22.23)	3/8	(9.53)	240	(1.07)	.06	(0.03)
3/8	1 3/4	(44.45)	5/8	(15.88)	730	(3.25)	.11	(0.05)
1/2	1 3/4	(44.45)	1 1/16	(17.46)	1350	(6.01)	.11	(0.05)
5/8	2 1/8	(53.98)	1 3/16	(20.64)	2160	(9.61)	.17	(0.08)
3/4	2 1/4	(31.75)	1	(25.40)	3230	(14.37)	.28	(0.13)
7/8	2 1/2	(63.50)	1 1/4	(31.75)	4480	(19.93)	.56	(0.25)
1	2 3/4	(69.85)	1 3/8	(34.93)	5900	(26.24)	.72	(0.33)





Model FX Dry Pipe Valve

2" (50mm), 2-1/2" (65mm), 76mm, 3" (80mm),
4" (100mm), 6" (150mm), 165mm

cULus Listed, FM Approved

Features

- Lightweight ductile iron body with compact trim
- External reset reduces setup and commissioning time
- Does not require priming water

Product Description

The Reliable Model FX Dry Pipe Valve is a differential-principle, externally resettable valve designed for use as a primary control valve in a dry pipe system. The valve clapper is held in the set position by pneumatic pressure acting on a larger surface area than that of the incoming water pressure. Release of pneumatic pressure from the system allows the dry pipe valve to open. The Model FX valve is available with grooved end, flanged end, or flange x grooved end connections (see Table A).

When required, all sizes of the Model FX valve may be equipped with the Reliable Model B1 Accelerator (PN 650120001A; ordered separately). The accelerator is a normally closed valve that opens upon a predetermined rate of air or nitrogen pressure loss. When the accelerator opens, air or nitrogen pressure is directed to the intermediate chamber of the Model FX valve, hastening the valve trip time. Please refer to Reliable Technical Bulletin 323 for further information.



Note: Pressure switches (low air and flow alarm) provided with fully assembled valves only. Order separately with loose and segmented trim.

Model FX Dry Pipe Valve Technical Data

Model FX Dry Pipe Valve Technical Data					Table A
Valve Size	End Connection	Fully Assembled Weight (w/o Control Valve) lbs (kg)	Approximate Shipping Weight for Valve Fully Assembled with Trim lbs (kg)	Rated Pressure psi (bar)	Listings and Approvals
2" (50mm)	Groove/Groove	42 (19)	82 (37)	250 (17.2)	cULus FM
2-1/2" (65mm)	Groove/Groove	55 (25)	115 (52)	300 (20.7)	
76mm	Groove/Groove	55 (25)	120 (54)		
3" (80mm)	Groove/Groove	56 (25)	120 (54)		
4" (100mm)	Groove/Groove	78 (35)	155 (70)		
	Flange/Groove	90 (41)	167 (76)		
	Flange/Flange	102 (46)	179 (81)		
6" (150mm)	Groove/Groove	127 (58)	234 (106)		
	Flange/Groove	136 (62)	252 (114)		
	Flange/Flange	163 (74)	270 (122)		
165mm	Groove/Groove	127 (58)	234 (106)		

Notes:

1. Grooved ends per ANSI/AWWA C606; flanged ends per ASME B16.5 Class 150, BS10 BS-E, or ISO 7005-2 PN16 (specify).
2. Valves are intended to be installed on systems where the pressure does not exceed the working capabilities of the end configurations.
3. Approximate shipping weight given for fully assembled valve and trim, including control valve and accelerator.

Model FX Dry Pipe Valve

Technical Specifications

Pressure Rating: See Table A

Material Specifications

Body & Cover: Ductile Iron, painted

Clapper: Stainless Steel

Seat: EPDM Rubber/Aluminum

Trim: Galvanized Steel

End Connections

See Table A

Installation Orientation

Vertical (Up Through Valve)

Approvals

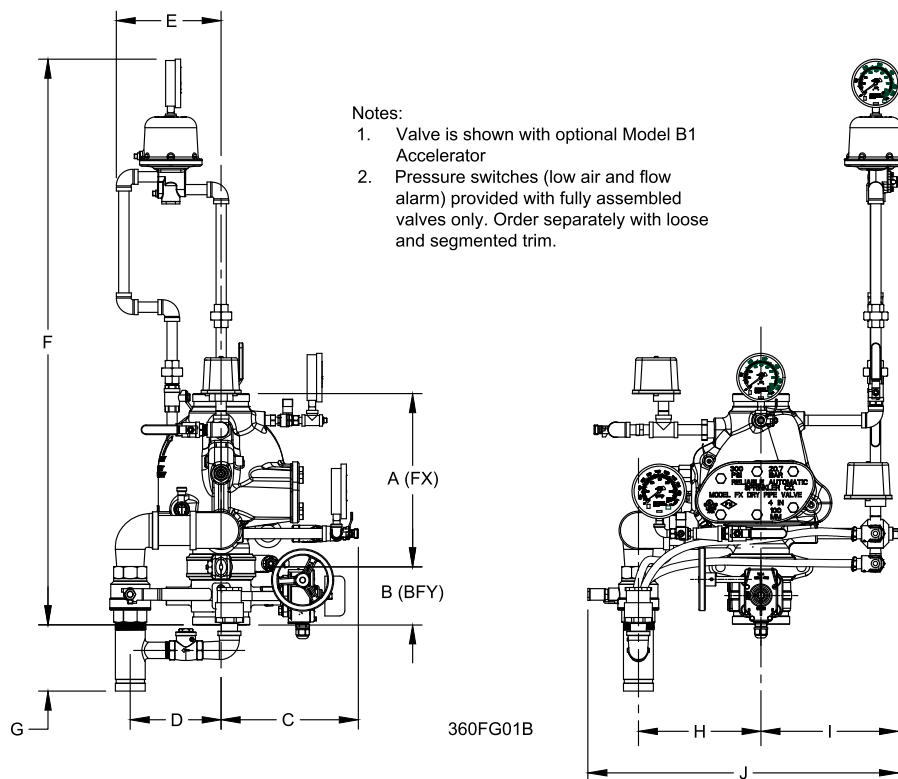
cULus Listed

FM Approved



Model FX Dry Pipe Valve Components and Dimensions

Figure 1

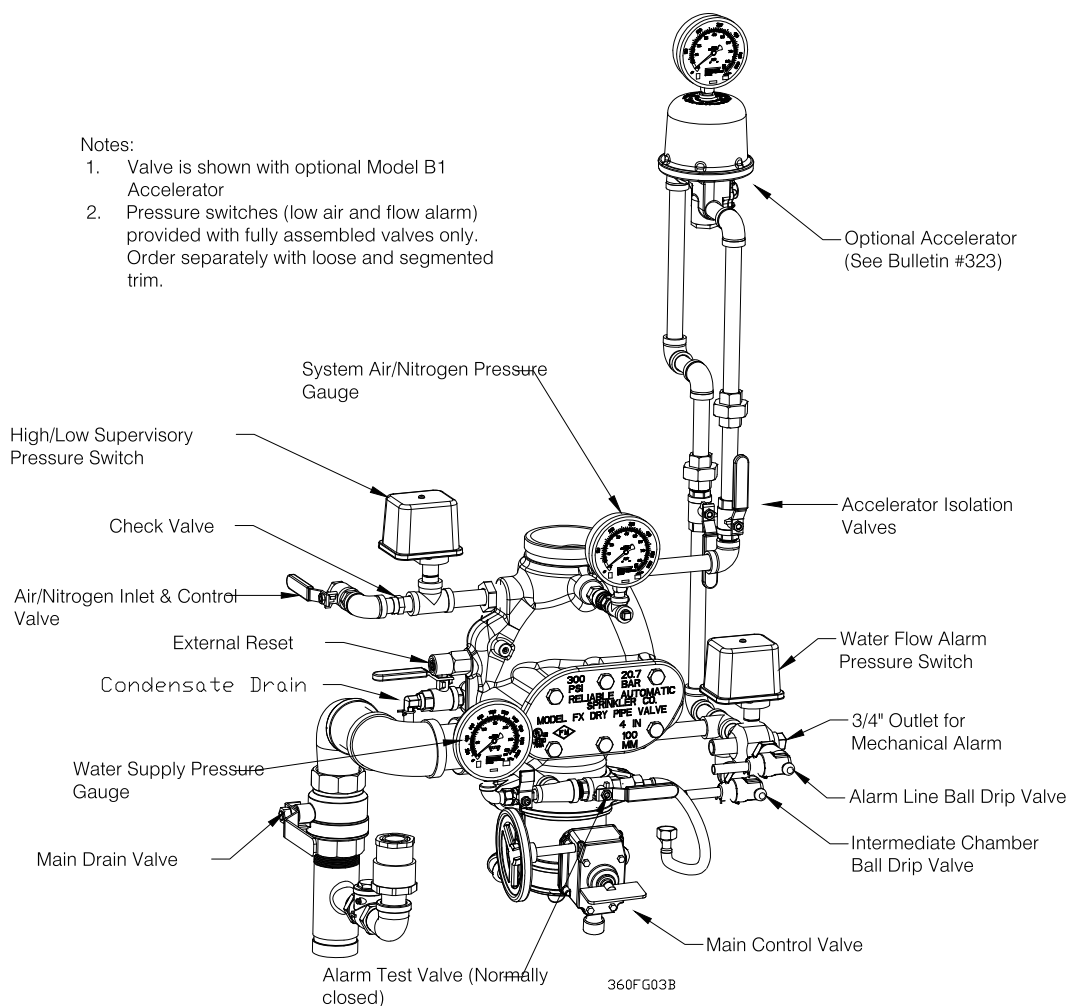
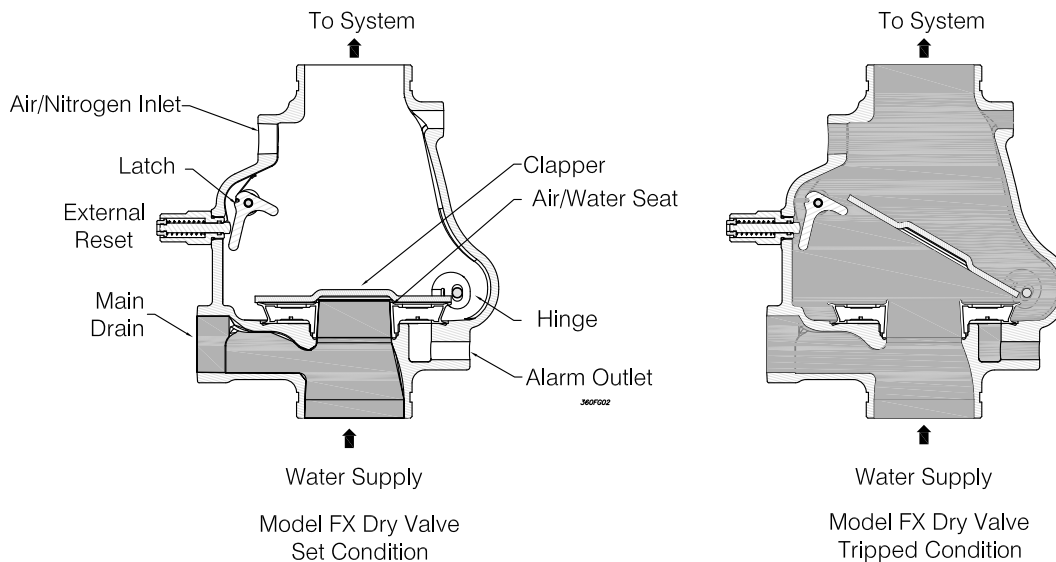


Model FX Dry Pipe Valve Dimensions - in. (mm)

Table B

Valve Size	A	B	C	D	E	F	G	H	I	J
2" (50mm)	10 (254)	4-1/8 (105)	10 (254)	7 (178)	8-1/4 (210)	40 (1016)	3/4 (19)	7-1/4 (184)	9-5/8 (244)	21-3/8 (543)
2-1/2" (65mm), 3" (80mm), & 76mm	12-1/4 (311)	3-7/8 (98)	10-1/4 (260)	7-3/8 (187)	8-1/4 (210)	43-3/4 (1111)	5-7/8 (149)	8-1/4 (210)	10-1/8 (257)	22 (559)
4" (100mm)	13-3/4 (349)	4-9/16 (116)	10-7/8 (276)	7-1/2 (191)	8-1/4 (210)	45-5/8 (1159)	4-7/8 (124)	9-5/8 (244)	10-3/4 (273)	24-1/2 (622)
6" (150mm), 165mm	16 (406)	5-7/8 (149)	12-1/2 (318)	7-1/2 (191)	8-1/4 (210)	47-1/2 (1207)	4 (102)	11-1/2 (292)	12 (305)	30-1/2 (775)

Note: Dimension A (body take-out) is same for all end configurations. Dimension B (control valve) is not applicable to 76mm and 165mm valves as well as flanged valves.



Operation

The Reliable Model FX Dry Pipe Valve is shown in both the closed and open position in Figure 2. The upper surface area of the clapper is approximately six times larger than the surface area of the bottom of the clapper that is exposed to the water supply in the set position. In the closed position, pneumatic pressure acts on the larger upper surface of the clapper while water pressure acts on the smaller lower surface area. Because of this surface area differential, one psi of pneumatic pressure can offset approximately six psi of water pressure. Table C provides the appropriate pneumatic pressure to water pressure ratio.

When a sprinkler operates, the upward force of the water pressure acting beneath the clapper overcomes the reduced pneumatic pressure and allows the clapper to open. Water then flows through the Model FX Dry Pipe Valve into the system piping and into the alarm outlet activating the alarm device(s). Once the clapper has opened, the lever acts as a latch preventing the clapper from returning to the closed position until manually reset.

Pneumatic Pressure Requirement

Table C

Water Pressure psi (bar)	Pneumatic Pressure psi (bar)	
Maximum	Not Less Than	Not More Than
20 (1.37)	10 (0.68)	20 (1.37)
50 (3.45)	15 (1.03)	25 (1.72)
75 (5.17)	20 (1.37)	30 (2.06)
100 (6.89)	25 (1.72)	35 (2.41)
125 (8.62)	30 (2.06)	40 (2.75)
150 (10.34)	35 (2.41)	45 (3.10)
175 (12.07)	40 (2.75)	50 (3.45)
200 (13.79)	45 (3.10)	55 (3.79)
225 (15.51)	50 (3.45)	60 (4.14)
250 (17.24)	55 (3.79)	65 (4.48)
275 (18.96)	60 (4.14)	70 (4.83)
300 (20.68)	65 (4.48)	75 (5.17)

Installation

The Model FX Dry Pipe Valve shall be installed in accordance with NFPA 13, "Standard for the Installation of Sprinkler Systems," as well as the requirements of any authorities having jurisdiction. The direction of flow shall be up through the assembly. Failure to follow installation instructions may void the warranty and/or listing of the valve. Verify compatibility of the Model FX Dry Pipe Valve materials with the water supply and the environment where the valve will be installed prior to installation.

The Model FX Dry Pipe Valve must be installed in a readily visible and accessible location where a minimum temperature of 40°F (4°C) or above must be maintained. Heat tracing of the Model FX Dry Pipe Valve and trim is not permitted. Heat tracing can result in the formation of hardened mineral deposits that can prevent proper operation of the dry pipe valve.

The valve and trim kit have been tested, approved and listed in accordance with UL and FM standards. Hydrostatically testing the valve and trim to pressures higher than their rating is limited to the hydrostatic test as referenced by NFPA 13.

Normal operation and hydrostatic testing do not address the possibility of a water hammer which may damage the valve. A water hammer can create pressure more than the rated pressure of the equipment and should be avoided by all necessary means. Water hammer can occur from (but is not limited to) improper fire pump settings, underground construction work, or improper venting of trapped air in piping.

Friction Loss (Equivalent Length of Schedule 40 Pipe)

Table D

Size	C = 100 ft (m)	C = 120 ft (m)	Cv Value
2" (50mm)	7.2 (2.2)	10.0 (3.0)	99
2-1/2" (65mm), 76mm	8.1 (2.5)	11.4 (3.5)	170
3" (80mm)	9.5 (2.9)	13.2 (4.0)	262
4" (100mm)	16.7 (5.1)	23.5 (7.2)	396
6" (150mm), 165mm	26.4 (8.0)	37 (11.3)	861

Model FX Dry Pipe Valve Set Up Procedure (Reference Figure 2)

1. Close the Main Control Valve and close the Air/Nitrogen Control Valve.
2. Open the Main Drain Valve and drain the system.
3. Open all drain valves and vents at low points throughout the system, closing them when flow of water has stopped.
4. Inspect and replace any necessary portions of the sprinkler system subjected to fire conditions.
5. Push in the plunger of the Intermediate Chamber Ball Drip Valve and the Alarm Line Ball Drip Valve to force the ball from its seat to drain any water in the lines.
6. When standing in front of the valve, locate the External Reset on the left side of the dry valve body. Push in on the plunger in the center of the External Reset until you hear a distinct clicking noise indicating that the clapper has closed. A tool, such as a screwdriver, may be needed to press the External Reset plunger.
7. Open the Air/Nitrogen Control Valve and rapidly apply compressed air or nitrogen into the Model FX Dry Pipe Valve system until the pressure conforms to the level indicated in Table C, as indicated on the System Pressure Gauge. Set the air or nitrogen supply to automatic operation.
8. Partially open the Main Drain Valve.
9. Slightly open the Main Control Valve until water begins to flow through the Main Drain Valve.
10. Once water begins to flow through the Main Drain Valve, slowly close the Main Drain Valve.
11. If installed, reset the Model B1 Accelerator per Reliable Technical Bulletin 323 and open the Accelerator Isolation Valves.
12. Observe if water leaks through the Intermediate Chamber Ball Drip Valve into the closed drain. If no leak occurs, the dry pipe valve clapper is sealed.
13. Slowly open the Main Control Valve. Verify that the Main Control Valve is fully open and properly monitored.

Alarm Test

1. Notify the owner and monitoring company that testing is being performed on the system.
2. Open the Alarm Test Valve.
3. Verify that pressure alarm switch has activated, and signal has been reported to the fire alarm system.
4. Close the Alarm Test Valve.
5. Push in the plunger of the Alarm Line Ball Drip Valve to force the ball from its seat to relieve pressure and drain any water in the line.

When testing is complete, notify the owner and monitoring company that the system has been returned to service.

Maintenance

The owner is responsible for maintaining the fire protection system in proper operating condition. Any system maintenance or testing that involves placing a system out of service may eliminate the fire protection that is provided by the fire protection system. Notify any required authorities having jurisdiction and implement appropriate precautions prior to proceeding.

The Reliable Model FX Dry Pipe Valve shall periodically be given a thorough inspection and test. NFPA 25, "Inspection, Testing and Maintenance of Water Based Fire Protection Systems," provides minimum maintenance requirements. Replace any components found to be corroded, damaged, worn or non-operable. Increase the frequency of inspections when the valve is exposed to corrosive conditions or chemicals that could impact materials and/or operation of the assembly.

Excess water may settle above the valve clapper following hydrostatic testing, system activation, or as a result of condensation. To remove excess water from the system:

1. Notify the owner and monitoring company that maintenance is being performed on the system.
2. Close the Main Control Valve and close the Air/Nitrogen Control Valve.
3. If an Accelerator is present, close the Accelerator Isolation Valves.
4. Open the Main Drain Valve.
5. Open the Condensate Drain Valve on the left rear of the dry pipe valve body until all water has drained. Close Condensate Drain Valve immediately when the flow of water has stopped.
6. Open the Air/Nitrogen Control Valve and allow pneumatic pressure to return to normal (refer to Table C). Set pneumatic supply to automatic operation.
7. If an Accelerator was isolated in step three, open the Accelerator Isolation Valves.
8. Open the Main Control Valve until water begins to flow through the Main Drain Valve.
9. Slowly close the Main Drain Valve.
10. Fully open the Main Control Valve. Verify that the Main Control Valve is fully open and properly monitored.
11. Notify the owner and monitoring company that the system has been returned to service.

Guarantee

For Reliable Automatic Sprinkler, Co., Inc. guarantee, terms, and conditions, visit www.reliablesprinkler.com.

Ordering Information

Specify:

- Model FX Dry Pipe Valve
- Size
- End Connections
- Trim*
 - Fully assembled with control valve
 - Fully assembled without control valve
 - Segmented trim (control valve not included)
 - Loose trim (control valve not included)
- (Optional) Model B1 Accelerator (PN 650120001A)

***Note:** Low pressure switch (PN 6990006381) and alarm pressure switch (PN 6990006382) are included with fully assembled trims only. Order separately when selecting segmented or loose trim.

Service Kits

Service kits are available for routine servicing of the valve (reference assembly drawings on website). Service kits for the Model FX Dry Pipe Valve include the following components:

- Seal Assembly (item 4)
- Cover Gasket (item 5)
- Grease (item 17)

Note: Seat and seal is an integral unit. Replacement requires the appropriate Seat Installation Wrench.

- 2" Model FX Seat Wrench: PN 6881702000
- 2-1/2" and 3" Model FX Seat Wrench: PN 6881703000
- 4" Model FX Seat Wrench: PN 6881704000
- 6" Model FX Seat Wrench: PN 6881706000

65080 X Y Z 00

Valve Size <u>X</u>	End Connection <u>Y</u>	Trim <u>Z</u>
2 = 2" (50mm)*	7 = Groove/Groove	0 = W/O Control Valve, W/O Accelerator
1 = 2-1/2" (65mm)*	8 = Flange/Groove, Class 150	1 = W/ Control Valve, W/O Accelerator*
7 = 76mm*	9 = Flange/Groove, BS-E	2 = W/ 2 Control Valves, W/O Accelerator*
3 = 3" (80mm)*	A = Flange/Groove, PN16	3 = W/O Control Valve, W/ Accelerator
4 = 4" (100mm)	B = Flange/Flange, Class 150	4 = W/ Control Valve, W/ Accelerator*
6 = 6" (150mm)	C = Flange/Flange, BS-E	5 = W/ 2 Control Valves, W/ Accelerator*
5 = 165mm*	E = Flange/Flange, PN 16	

*Note: Available only with Groove/Groove connections

Model FX Valve Only (No Trim)
Part Number

Figure 5

61010 XX 60 Y

Valve Size <u>XX</u>	End Connection <u>Y</u>
20 = 2" (50mm)*	7 = Groove/Groove
25 = 2-1/2" (65mm)*	8 = Flange/Groove, Class 150
76 = 76mm*	9 = Flange/Groove, BS-E
30 = 3" (80mm)*	A = Flange/Groove, PN16
40 = 4" (100mm)	B = Flange/Flange, Class 150
60 = 6" (150mm)	C = Flange/Flange, BS-E
65 = 165mm*	E = Flange/Flange, PN 16

*Note: Available only with Groove/Groove connections

Weight (Valve Only)

Figure 6

Size	End Connection lbs (kg)		
	GRV/GRV	FLG/GRV	FLG/FLG
2" (50mm)	22 (10)	N/A	N/A
2-1/2" (65mm) & 76 mm	34 (16)	N/A	N/A
3" (80mm)	35 (15)	N/A	N/A
4" (100mm)	52 (24)	64 (29)	76 (35)
6" (150mm)	101 (46)	119 (54)	137 (62)
165mm	101 (46)	N/A	N/A

Model FX Trim Only Part Number

Figure 7

Valve Size	Trim Part Numbers	
	Loose	Segmentally Assembled
2" (50mm)	6508000001	65080000011
2-1/2" (65mm), 76mm, & 3" (80mm)	6508000002	65080000012
4" (100mm), 6" (150mm), 165mm	6508000003	65080000013

Weight (Trim Only)

Figure 8

Size	Loose Trim lbs (kg)	Segmentally Assembled Trim lbs (kg)
2" (50mm)	20 (9)	23 (10)
2-1/2" (65mm), 76mm, & 3" (80mm)	21 (10)	25 (11)
4" (100mm), 6" (150mm), & 165mm	26 (12)	30 (14)

Reliable®

Model CR Commercial Riser

1-1/2" through 8" (40-200 mm) Sizes

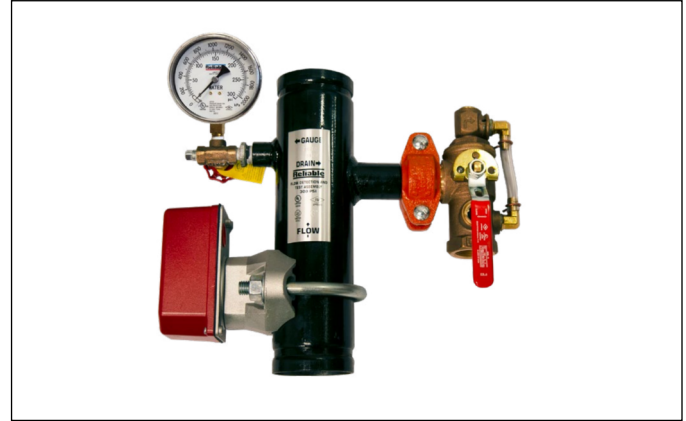
cULus Listed, FM Approved

Features

- Cast stainless steel body for 1-1/2" models and 2" threaded model
- Schedule 10 welded body for 2" - 8" grooved versions
- Optional schedule 40 manifold for 2" - 4" sizes
- Approved for vertical or horizontal installation

Product Description

The Reliable Model CR Commercial Riser arrives factory assembled with water flow switch, pressure gauge, and main drain for a cost-effective system riser or floor control assembly. The Model CR is cULus listed (VEOY.EX5980) and FM approved as a unit. The main drain is available with a ball valve or Reliable Test and Drain valve, which is available with a wide selection of test orifice K-factor choices. An optional pressure relief valve kit, available in 175, 185, 210, 260, and 310 psi (12, 13, 14, 18, and 21 bar) rating, is also available.



3" (80mm) welded Commercial Riser
w/ 175psi Pressure Relief Kit and Test & Drain Valve (K5.6)

Model CR Commercial Riser

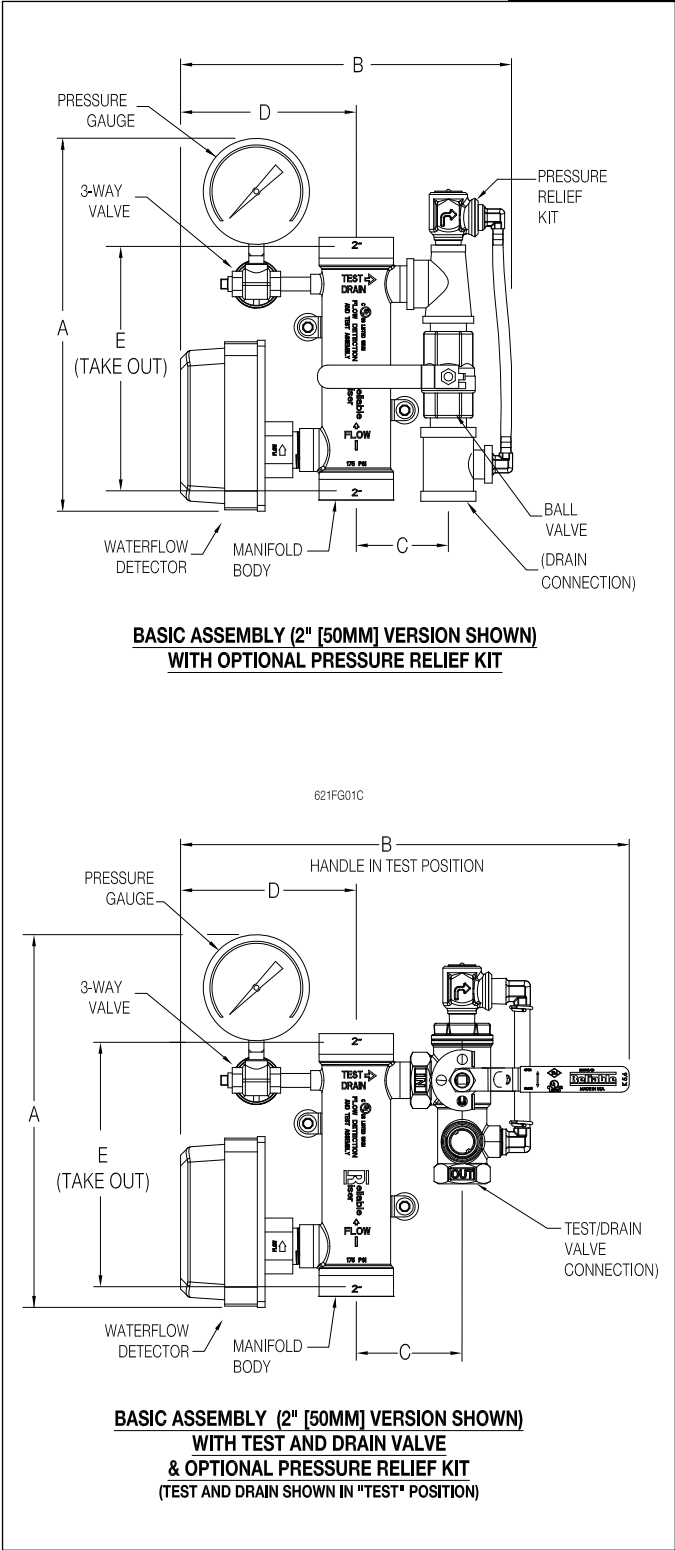
Table A

Valve Size	End Connections	Pressure Rating	Material	End-to-End Take Out	Drain Size	K-Factor for Optional Test and Drain Valve*
1-1/2" (40mm)	Threaded (NPT or BSPT)	250 psi (17.2 bar)	Cast Stainless	8-1/4" (210mm)	1" (25mm)	2.8 (40) 4.2 (60) 5.6 (80)
	Grooved		Cast Stainless	9-1/2" (241mm)	1" (25mm)	
2" (50mm)	Threaded (NPT or BSPT)		Cast Stainless	8-1/4" (210mm)	1" (25mm)	
2" (50mm)	Grooved	300 psi (20.7 bar)	S10, S40 Steel	13" (330mm)	1" (25mm)	2.8 (40) 4.2 (60) 5.6 (80) 8.0 (115) 11.2 (160)
2-1/2" (65mm)	Grooved		S10, S40 Steel	13" (330mm)	1-1/4" (32mm)	
3" (80mm)	Grooved		S10, S40 Steel	13" (330mm)	1-1/4" (32mm)	
4" (100mm)	Grooved		S10, S40 Steel	13" (330mm)	2" (50mm)	2.8 (40) 4.2 (60) 5.6 (80) 8.0 (115), 11.2 (160) 16.8 (240)
6" (150mm)	Grooved		S10 Steel	13" (330mm)	2" (50mm)	
8" (200mm)	Grooved		S10 Steel	13" (330mm)	2" (50mm)	

***Note:** K-factor must be equal to or less than the K-factor of the smallest K-factor installed on the sprinkler system. For sprinkler systems where the smallest K-factor sprinkler on the system is greater than the largest available valve K-factor, use any valve K-factor that will provide a minimum flow of 10gpm (38 lpm) as required to operate a UL Listed Waterflow Switch.

Model CR Commercial Riser Threaded End Assemblies (1-1/2" [40mm] & 2" [50mm])

Figure 1



**Threaded End Basic Assembly w/
Pressure Relief Valve**

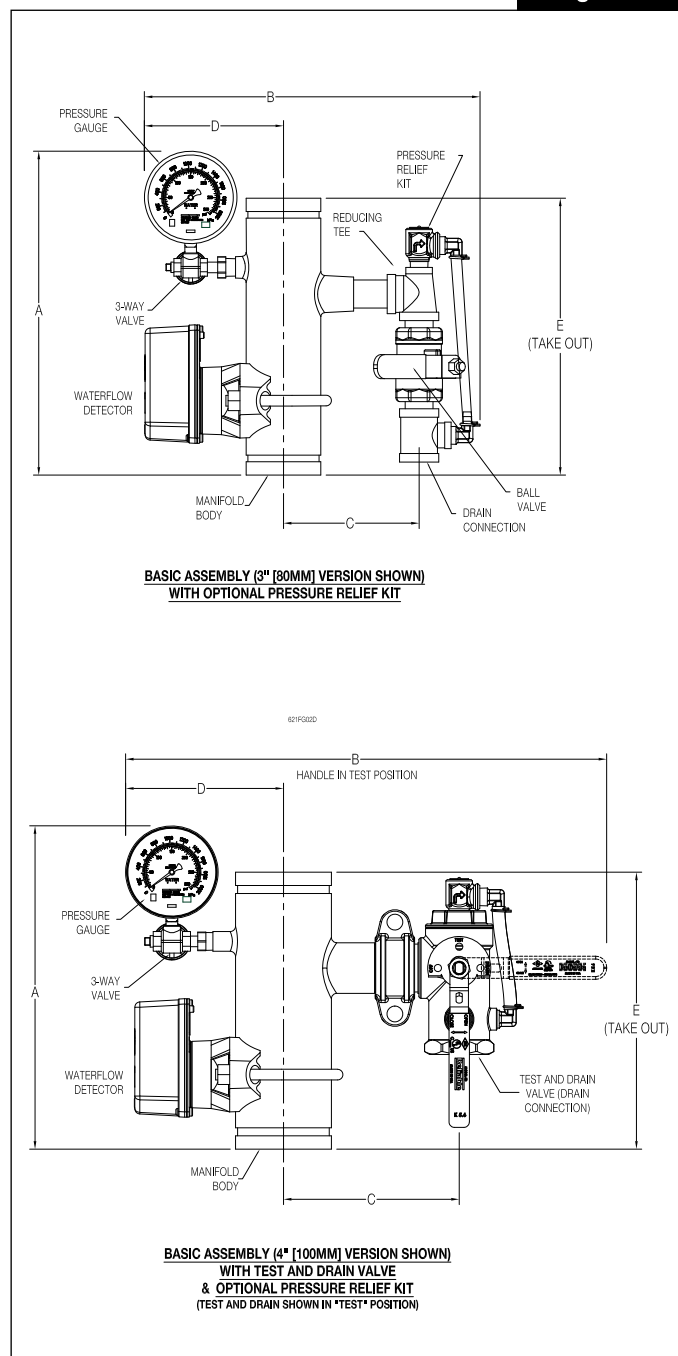
Table B						
End Connection	Manifold Pipe Size in (mm)	A in (mm)	B in (mm)	C in (mm)	D in (mm)	Weight lbs (kg)
Threaded Ends (See Fig. 1)	1-1/2 (40)	12-1/8 (308)	10-1/2 (267)	3 (80)	5-1/2 (140)	8.3 (3.8)
	2 (50)	12-1/8 (308)	10-3/4 (273)	3-1/4 (83)	5-3/4 (146)	9.1 (4.1)

**Threaded End w/ Test & Drain Valve and
Pressure Relief Kits**

Table C						
End Connection	Manifold Pipe Size in (mm)	A in (mm)	B in (mm)	C in (mm)	D in (mm)	Weight lbs (kg)
Threaded Ends (See Fig. 1)	1-1/2 (40)	12-1/8 (308)	14-1/4 (362)	3 (80)	5-1/2 (140)	8.3 (3.8)
	2 (50)	12-1/8 (308)	14-1/2 (368)	3-1/4 (83)	5-3/4 (146)	9.1 (4.1)

Model CR Commercial Riser Grooved End Assemblies (2" [50mm] - 8" [200mm])

Figure 2



Notes:

- 1-1/2" grooved version will be cast in stainless steel.
- 1-1/2" and 2" models will have threaded test and drain valve.

Grooved End Basic Assembly w/ Pressure Relief Valve

Table D

End Connection	Manifold Pipe Size in (mm)	A in (mm)	B in (mm)	C in (mm)	D in (mm)	E in (mm)	Weight lbs (kg)
Grooved Ends (See Fig. 2)	1-1/2 (40)	13-1/2 (343)	10-1/2 (267)	3 (76)	5-1/2 (140)	9-1/2 (241)	8.3 (3.8)
	2 (50)	15-1/4 (387)	14-1/2 (368)	5-1/4 (133)	6 (152)	13 (330)	10.7 (4.9)
	2-1/2 (65)	15-1/4 (387)	15 (381)	6-3/4 (171)	6-1/4 (159)	13 (330)	12.9 (5.9)
	3 (80)	15-1/4 (387)	16-1/4 (413)	7 (178)	6-1/2 (165)	13 (330)	17.6 (8.0)
	4 (80)	15-1/4 (387)	19 (483)	8-1/4 (210)	7 (178)	13 (330)	21.3 (9.7)
	6 (150)	15-1/4 (387)	21-1/2 (546)	9-1/4 (235)	8 (203)	13 (330)	26.3 (11.9)
	8 (200)	15-1/4 (387)	23 (584)	10-1/4 (260)	9 (229)	13 (330)	31.0 (14.1)

Grooved End w/ Test & Drain Valve and Pressure Relief Kits

Table E

End Connection	Manifold Pipe Size in (mm)	A in (mm)	B in (mm)	C in (mm)	D in (mm)	E in (mm)	Weight lbs (kg)
Grooved Ends (See Fig. 2)	1-1/2 (40)	13-1/2 (343)	11-1/2 (292)	3-1/2 (89)	5-3/4 (146)	9-1/2 (241)	8.3 (3.8)
	2 (50)	15-1/4 (387)	16 (406)	5-1/4 (133)	6 (152)	13 (330)	10.7 (4.9)
	2-1/2 (65)	15-1/4 (387)	16-1/2 (419)	6-3/4 (171)	6-1/4 (159)	13 (330)	12.9 (5.9)
	3 (80)	15-1/4 (387)	17-1/4 (438)	7 (178)	6-1/2 (165)	13 (330)	17.6 (8.0)
	4 (80)	15-1/4 (387)	20-1/2 (521)	8-1/4 (210)	7 (178)	13 (330)	21.3 (9.7)
	6 (150)	15-1/4 (387)	23 (584)	9-1/4 (235)	8 (203)	13 (330)	26.3 (11.9)
	8 (200)	15-1/4 (387)	24-1/2 (622)	10-1/4 (260)	9 (229)	13 (330)	31.0 (14.1)

Installation

The Model CR Commercial Riser shall be installed in accordance with NFPA 13, "Standard for the Installation of Sprinkler Systems," as well as the requirements of any authorities having jurisdiction. When installed vertically, the direction of flow shall be up through the assembly. For horizontal installations, the water flow indicator must be located to the top and drain opening to the bottom. Failure to follow installation instructions may void the warranty and/or listing of the valve. Verify compatibility of the Model CR Commercial Riser materials with the water supply and the environment where the valve will be installed prior to installation.

Maintenance

The owner is responsible for maintaining the fire protection system in proper operating condition. Any system maintenance or testing that involves placing a system out of service may eliminate the fire protection that is provided by the fire protection system. Notify any required authorities having jurisdiction and implement appropriate precautions prior to proceeding.

The Reliable Model CR Commercial Riser shall periodically be given a thorough inspection and test. NFPA 25, "Inspection, Testing and Maintenance of Water Based Fire Protection Systems," provides minimum maintenance requirements. Replace any components found to be corroded, damaged, worn or non-operable. Increase the frequency of inspections when the valve is exposed to corrosive conditions or chemicals that could impact materials and/or operation of the assembly.

Note: The water flow switch for the 1-1/2" and 2" cast stainless steel manifold uses a proprietary paddle. This paddle is only available for purchase from Reliable. When replacing water flow switch, order part number 96556923.

Guarantee

For Reliable Automatic Sprinkler, Co., Inc. guarantee, terms, and conditions, visit www.reliablesprinkler.com.

Ordering Information

Specify:

1. Reliable Model CR Commercial Riser
2. Size
3. End Connections
4. (Optional) Schedule 40 (2" through 4" grooved end only)
5. Drain Option (Ball valve or Test and Drain valve)
6. Test orifice K-factor (if ordering Test and Drain valve)
7. (Optional) Pressure Relief Valve Kit

Notes:

1. All Model CR Commercial Riser Assemblies come with a 300 psi (20.7 bar) UL Listed and FM Approved pressure gauge for 175 psi (12.1 bar) applications. If the Model CR Commercial Riser Assembly is to be installed in a higher pressure application, please purchase a 600 psi (41.4 bar) (P/N 98248005) pressure gauge. This gauge may or may not be UL Listed and/or FM Approved at the time of purchase.
2. Unless specified at the time of ordering, pressure relief kits are installed at the factory.

6A XX 0C P YY Z

Riser Manifold Size & End Connections XX	Option Drain Valve/K-Factor YY	Pressure Relief Valve Z
04 = 1-1/2" BSPT Female SS 05 = 1-1/2" Grooved SS 07 = 2" BSPT Female SS 08 = 1-1/2" NPT Female SS 09 = 2" NPT Female SS 10 = 2" Grooved SCH10 11 = 2" Grooved SCH40	00 = 1" Ball Valve 03 = 1" RASCO T&D Valve K2.8 04 = 1" RASCO T&D Valve K4.2 05 = 1" RASCO T&D Valve K5.6	0 = None 1 = 175 psi (12.1 bar) 2 = 185 psi (12.8 bar) 3 = 210 psi (14.5 bar) 4 = 260 psi (17.9 bar) 5 = 310 psi (21.4 bar)
12 = 2-1/2" Grooved SCH10 13 = 2-1/2" Grooved SCH40 14 = 3" Grooved SCH10 15 = 3" Grooved SCH40	01 = 1-1/4" Ball Valve 26 = 1-1/4" RASCO T&D Valve K2.8 06 = 1-1/4" RASCO T&D Valve K4.2 07 = 1-1/4" RASCO T&D Valve K5.6 08 = 1-1/4" RASCO T&D Valve K8.0 09 = 1-1/4" RASCO T&D Valve K11.2	
16 = 4" Grooved SCH10 17 = 4" Grooved SCH40 18 = 6" Grooved SCH10 19 = 8" Grooved SCH10	02 = 2" Ball Valve 27 = 2" RASCO T&D Valve K2.8 28 = 2" RASCO T&D Valve K4.2 10 = 2" RASCO T&D Valve K5.6 11 = 2" RASCO T&D Valve K8.0 12 = 2" RASCO T&D Valve K11.2 13 = 2" RASCO T&D Valve K16.8	

Notes:

1. 1-1/2" and 2" manifolds have a 1" threaded drain outlet.
2. 2-1/2" and 3" manifolds have a 1-1/4" grooved outlet for Test & Drain valve or a 1-1/4" threaded outlet for ball valve drain.
3. 4", 6", and 8" manifolds have a 2" grooved outlet for Test & Drain valve or 2" threaded outlet for ball valve drain

Reliable®

Model BFG-300 Supervised Butterfly Valve Grooved

cULus Listed, FM Approved
300 psi (20.7 bar)

Product Description

The Reliable Model BFG-300 Supervised Butterfly valves are cULus Listed and FM Approved for fire protection systems. Reliable Supervised Butterfly Valves have AWWA C606 grooved end connections. They are available in 2-1/2" (65mm), 3" (80mm), 4" (100mm), 6" (150mm), and 8" (200mm) nominal sizes. The valves are listed for 300 psi (20.7 bar) working pressure. The maximum working temperature for the valves is 250°F (120°C).

Maintenance

The owner is responsible for maintaining the fire protection system in proper operating condition. Any system maintenance or testing that involves placing a control valve out of service will eliminate the fire protection that is provided by the fire protection system.

The Reliable Supervised Closed Butterfly valves and associated equipment shall periodically be given a thorough inspection and test. NFPA 25, "Inspection, Testing and Maintenance of Water Based Fire Protection Systems," provides minimum maintenance requirements.

Guarantee

For Reliable Automatic Sprinkler Co., Inc. guarantee, terms, and conditions, visit www.reliablesprinkler.com.



Supervised Grooved Butterfly Valve - Supervised Open



Supervised Grooved Butterfly Valve - Supervised Closed

Ordering Information

Specify the following when ordering:

Model BFG-300 Butterfly Valve Supervision

- Valve Supervised Open (yellow indicator)
- Valve Supervised Closed (white indicator)

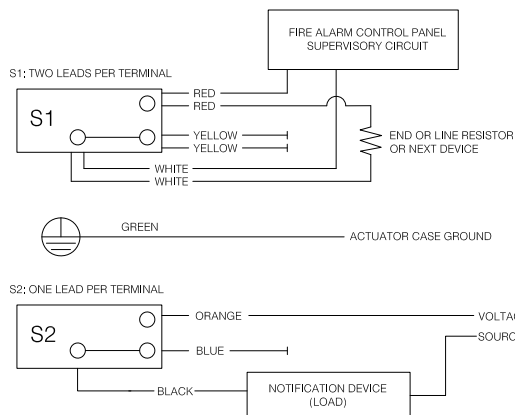
Valve Size

- 2-1/2" (65mm)
- 3" (80mm)
- 4" (100mm)
- 6" (150mm)
- 8" (200mm)

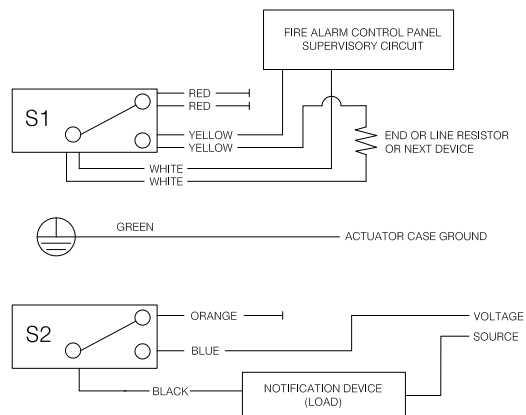
Reliable Supervised Butterfly Valve Wiring Diagram - Valve in Supervised Position

Figure 1

Supervised Normally Open Valve



Supervised Normally Closed Valve



Notes: Rated: 5A-1/6HP-125/250VAC
0.5A - 125VDC
0.25A - 250VDC

Reliable Model BFG-300 Supervised Butterfly Valve Grooved

Technical Specifications

Pressure Rating:
300 psi (20.7 bar)

Material Specifications

Body: Ductile Iron ASTM A-536 Nylon-11 Coated
Disc: ASTM A-536 EPDM Encapsulated
Upper and Lower Stems: AISI 420-SS
Housing: ASTM A-536
Hand Wheel: ASTM A-536
Flag Indicator: ASTM A-536
Shear Pin: ASTM A-510
Segment Gear: ASTM B-148 or B-584
Housing Gasket: EDPM Grade E
O-Ring: EDPM Grade E

Specifications

Groove Inlet: AWWA C 606

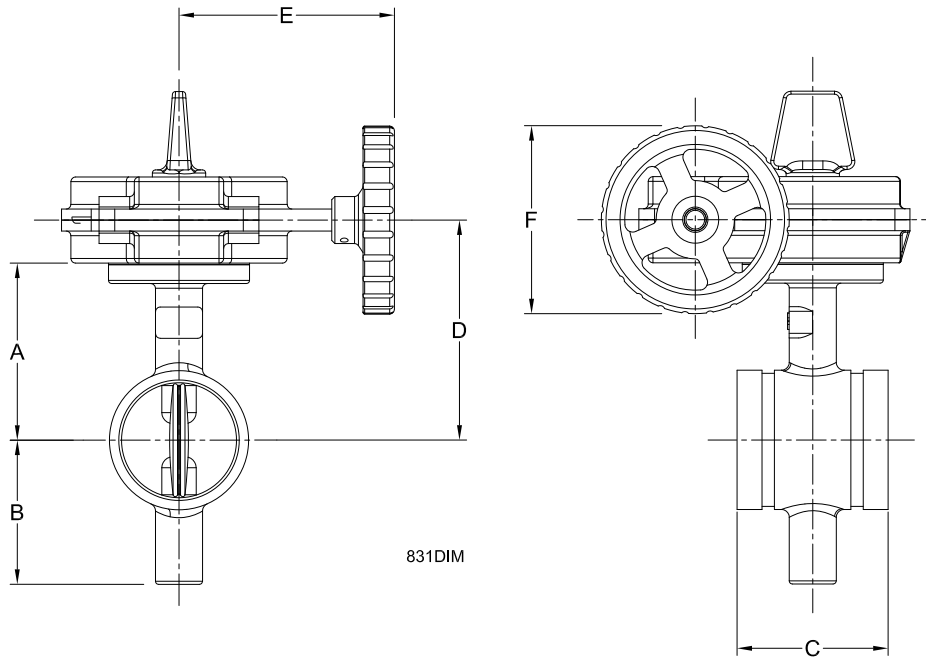
Listings and Approvals

cULus Listed
FM Approved



Reliable Supervised Butterfly Valve Specification and Dimensions

Figure 2



Dimensions - in. (mm)

Table B

Valve Size	A	B	C	D	E	F
2-1/2" (65)	4-1/8 (105)	3-5/8 (92)	3-13/16 (96)	5-1/3 (135)	5-5/16 (135)	5 (128)
3" (80)	4-7/16 (112)	3-11/16 (95)	3-13/16 (96)	5-5/8 (142)	5-5/16 (135)	5 (128)
4" (100)	5-11/16 (145)	4-1/4 (108)	4-1/2 (115)	6-15/16 (175)	5-5/16 (135)	5 (128)
6" (150)	7 (179)	5-11/16 (146)	5-3/16 (132)	8-1/4 (209)	7-5/8 (193)	8-5/8 (220)
8" (200)	8 (204)	6-11/16 (170)	5-13/16 (147)	9-1/4 (234)	7-5/8 (193)	8-5/8 (220)



Model G Swing Check Valve

1-1/2", 2", 2-1/2", 3", 4", 6", 8", & 10" Sizes

cULus Listed, FM Approved

Features

- Grooved end connections.
- Compact, lightweight design.
- Non-slamming, spring loaded clapper to minimize water hammer.
- Approved for horizontal and vertical installation.
- Streamlined body design provides very low friction loss.

Product Description

Reliable Model G Swing Check Valves are low friction loss check valves approved for use in fire protection systems. Typical applications include connections between public water supplies and private fire systems, at the discharge from fire pumps, at gravity tank connections and at fire department pumper connections. All Model G Check Valves are provided with 1/2" NPT (R1/2) supply side and discharge side connections (Item 12, Figure 1). Grooved end connections provide fast and easy installation using listed or approved mechanical grooved couplings. Rigid style grooved couplings can be used for positive clamping to resist flexural and torsional loads.

Installation

The Model G Check Valve shall be installed in accordance with NFPA 13, "Standard for the Installation of Sprinkler Systems," as well as the requirements of any authorities having jurisdiction. When installed vertically, the direction of flow shall be up through the valve (install with flow arrow pointed up). For horizontal installations, the hinge pin must be located to the top. Failure to follow installation instructions may void the warranty and listing of the valve. Verify compatibility of the Model G Check Valve materials with the water supply and the environment where the valve will be installed prior to installation. Do not apply lubricants, sealants, or other chemicals to the clapper seal or seat.



Reliable Model G Swing Check Valve (3")

Note: Model G Check Valves may be damaged by excessively turbulent water flow. Model G Check Valves should be installed a reasonable distance from pipe transitions, such as pumps, elbows, expanders, reducers, or similar devices. Typical piping practices suggest a minimum distance of five times the pipe diameter for general use.

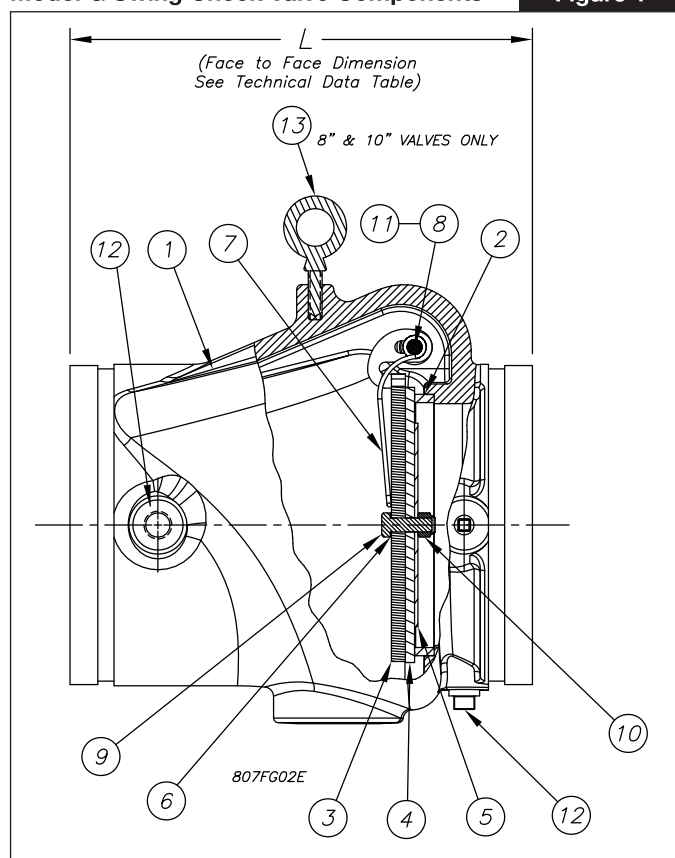
Technical Data

Table A

Valve Size	Pressure Rating	Face-to-Face Dimension	Eq. Length C = 120	Eq. Length C = 100	Cv Factor	Shipping Weight
1-1/2" (40 mm)	300 psi (20.7 bar)	6-1/4" (159 mm)	6.7' (2.0 m)	4.8' (1.5 m)	36	5 lbs (2.3 kg)
2" (50 mm)		6-1/2" (165 mm)	9.6' (2.9 m)	6.8' (2.1 m)	67	6 lbs (2.7 kg)
2-1/2" (65 mm)		7.12" (181 mm)	6.0' (1.8m)	4.3' (1.3m)	212	9 lbs (4.1 kg)
76 mm	250 psi (17.3 bar)	7.12" (181 mm)	6.0' (1.8m)	4.3' (1.3m)	212	9 lbs. (4.1 kg)
3" (80 mm)		7.62" (194 mm)	5.3' (1.6m)	3.8' (1.2m)	376	11 lbs. (5.0 kg)
4" (100 mm)		8.44" (214 mm)	7.1' (2.2m)	5.0' (1.5m)	656	17 lbs. (7.7 kg)
6" (150 mm)		10.25" (260 mm)	13.7' (4.2m)	9.8' (3.0m)	1395	38 lbs. (17.2 kg)
165 mm		10.25" (260 mm)	13.7' (4.2m)	9.8' (3.0m)	1395	38 lbs. (17.2 kg)
8" (200 mm)		12.5" (318 mm)	15.9' (4.8m)	11.3' (3.4m)	2818	63 lbs. (28.6 kg)
10" (250 mm)	300 psi (20.7 bar)	14.5" (368 mm)	28.8' (8.8m)	20.6' (6.3m)	3928	102 lbs. (46.3 kg)

Model G Swing Check Valve Components

Figure 1



Valve Components (refer to Figure 1)

Table B

Item No.	Part Name	Material
1	Valve Body	Gray Cast Iron Class 30
2	Seat	Bronze C83600 or C93200
3	Clapper	Stainless Steel 304 or 17-4
4	Facing Seal *	EPDM Rubber
5	Clamping Ring	Stainless Steel 304
6	Gasket *	EPDM Rubber or PTFE
7	Spring	Stainless Steel 302
8	Hinge Pin	Stainless Steel 303
9	Bolt	Stainless Steel 18-8
10	Locknut *	Stainless Steel 18-8
11	Plug, 1/8" NPT	Steel
12	Plug, 1/2" NPT	Steel
13	Shoulder Eye	Steel

* Part of Replacement Seal Kit

Replacement Seal Kit Part Numbers

Table C

Part Number									
1-1/2" (40 mm)	2" (50 mm)	2 1/2" (65 mm)	76 mm	3" (80 mm)	4" (100 mm)	6" (150 mm)	165 mm	8" (200 mm)	10" (250 mm)
6888000015	6888000020	6888040025	6888040025	6888040030	6888040040	6888040060	6888040060	6888040080	6888040090

Maintenance

The owner is responsible for maintaining the fire protection system in proper operating condition. Any system maintenance or testing that involves placing a system out of service may eliminate the fire protection that is provided by the fire protection system. Notify any required authorities having jurisdiction and implement appropriate precautions prior to proceeding.

The Reliable Model G Check Valve shall periodically be given a thorough inspection and test. NFPA 25, "Inspection, Testing and Maintenance of Water Based Fire Protection Systems," provides minimum maintenance requirements. Inspect the interior of the valve and all components for corrosion, damage, and wear at least every five (5) years. Replace any components found to be corroded, damaged, or worn. Increase the frequency of inspections when the valve is exposed to corrosive conditions or chemicals that could impact the valve materials.

Guarantee

For Reliable Automatic Sprinkler Co., Inc. guarantee, terms, and conditions, visit www.reliablesprinkler.com.

Ordering Information

Specify:

1. Model G Check Valve.
2. Size.



UL, ULC, and FM Approved

Sizes Available: 6" (150mm), 8" (200mm) and 10" (250mm)

Voltages Available: 24VAC
120VAC
12VDC (10.2 to 15.6) Polarized
24VDC (20.4 to 31.2) Polarized

Service Use: Fire Alarm
General Signaling
Burglar Alarm

Environment: Indoor or outdoor use (See Note 1)
-40° to 150°F (-40° to 66°C)
(Outdoor use requires weatherproof backbox.)

Termination: AC Bells - 4 No. 18 AWG stranded wires
DC Bells - Terminal strip

Finish: Red powder coating

Optional: Model BBK-1 weatherproof backbox
Model BBX-1 deep weatherproof backbox

These vibrating type bells are designed for use as fire, burglar or general signaling devices. They have low power consumption and high decibel ratings. The unit mounts on a standard 4" (101mm) square electrical box for indoor use or on a model BBK-1 weatherproof backbox or BBX-1 deep weatherproof backbox for outdoor applications. Weatherproof backbox model BBK-1, Stock No. 1500001.

Notes:

1. Minimum dB ratings are calculated from integrated sound pressure measurements made at Underwriters Laboratories as specified in UL Standard 464. UL temperature range is -30° to 150°F (-34° to 66°C).
2. Typical dB ratings are calculated from measurements made with a conventional sound level meter and are indicative of output levels in an actual installation.
3. ULC only applies to MBA DC bells.

Size inches (mm)	Voltage	Model Number	Stock Number	Current (Max.)	Typical dB at 10 ft. (3m) (2)	Minimum dB at 10 ft. (3m) (1)
6 (150)	12VDC	MBA126	1750070	.12A	85	76
8 (200)	12VDC	MBA128	1750080	.12A	90	77
10 (250)	12VDC	MBA1210	1750060	.12A	92	78
6 (150)	24VDC	MBA246	1750100	.06A	87	77
8 (200)	24VDC	MBA248	1750110	.06A	91	79
10 (250)	24VDC	MBA2410	1750090	.06A	94	80
6 (150)	24VAC	PBA246	1806024*	.17A	91	78
8 (200)	24VAC	PBA248	1808024*	.17A	94	77
10 (250)	24VAC	PBA2410	1810024*	.17A	94	78
6 (150)	120VAC	PBA1206	1806120*	.05A	92	83
8 (200)	120VAC	PBA1208	1808120*	.05A	99	84
10 (250)	120VAC	PBA12010	1810120*	.05A	99	86

All DC bells are polarized and have built-in transient protection.

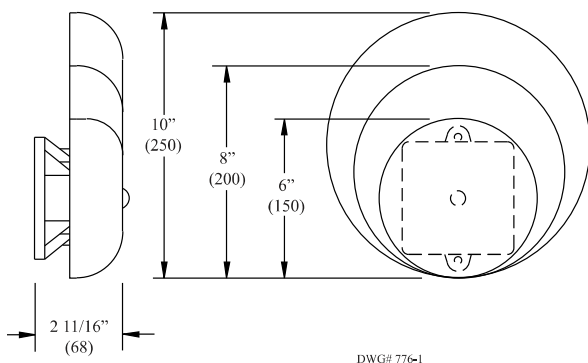
* Does not have ULC listing.

⚠ WARNING

In outdoor or wet installations, bell must be mounted with weatherproof backbox, BBK-1 or BBX-1. Standard electrical boxes will not provide a weatherproof enclosure. If the bell and/or assembly is exposed to moisture, it may fail or create an electrical hazard.

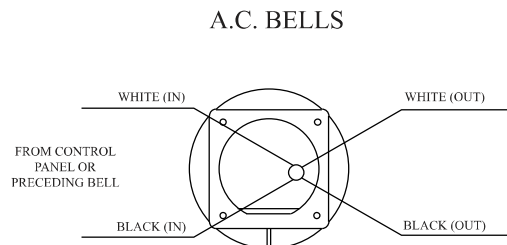
Bells Dimensions Inches (mm)

Fig. 1



Wiring (rear view)

Fig. 3



CAUTION:
WHEN ELECTRICAL SUPERVISION IS REQUIRED USE IN AND OUT LEADS AS SHOWN.

NOTES:

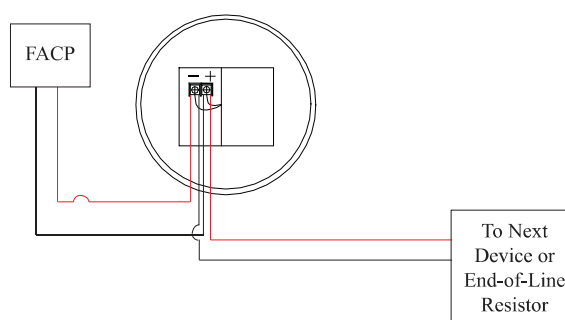
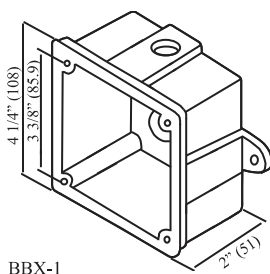
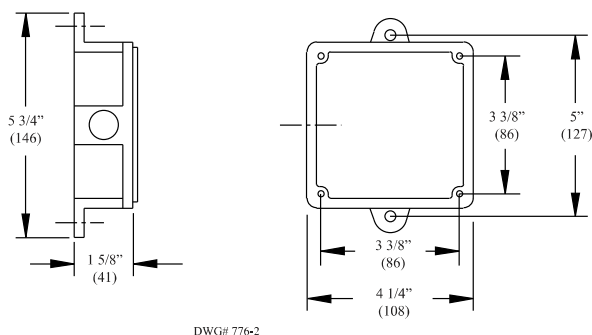
1. WHEN USING AC BELLS, TERMINATE EACH EXTRA WIRE SEPARATELY AFTER LAST BELL.
2. END-OF-LINE RESISTOR IS NOT REQUIRED ON AC BELLS.

DWG# 776-3

Weatherproof Backbox Dimensions Inches (mm)

Fig. 2

Box has one threaded 1/2" conduit entrance



Installation

1. The bell shall be installed in accordance with NFPA 13, 72, or local AHJ. The top of the device shall be no less than 90" AFF and not less than 6" below the ceiling.
2. Remove the gong.
3. Connect wiring (see Fig. 3).
4. Mount bell mechanism to backbox (bell mechanism must be mounted with the striker pointing down).
5. Reinstall the gong (be sure that the gong positioning pin, in the mechanism housing, is in the hole in the gong).
6. Test all bells for proper operation and observe that they can be heard where required (bells must be heard in all areas as designated by the authority having jurisdiction).

WARNING

Failure to install striker down will prevent bell from operating.