PATRIOT FIRE PROTECTION, INC.

Fire Sprinklers Save Lives!

2707 70TH Avenue East
Tacoma, WA 98424

TEL: (253) 926.2290
FAX: (253) 922.6150

BPLC North Yard

Equipment Submittal

2511 INTER AVE
PUYALLUP, WA 98372

Patriot Project No. 17-061

Submitted To:

OWNER

BPLC PROPERTIES, LLC

HANFORD, WA OFFICE
TEL (509) 373.8895
FAX (509) 373.8919

VANCOUVER, WA OFFICE
TEL (360) 699.4403
PORTLAND (503) 222.6001
FAX (360) 699.4485

SPOKANE, WA OFFICE
TEL (509) 926.3428
FAX (509) 926.3708

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Reliable®

F1FR56 Series
Quick Response Sprinklers

K-factor 5.6 (80)

Features

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

Product Description

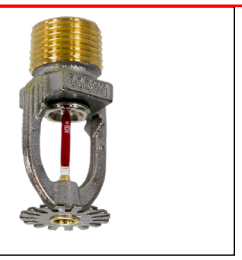
Reliable Model F1FR56 series sprinklers are quick-response standard spray automatic fire sprinklers utilizing a sensitive 3.0 mm glass bulb thermal element.

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 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.

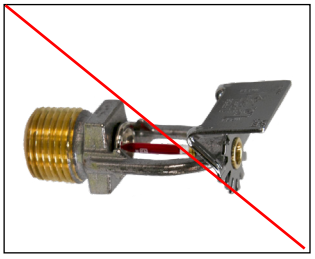
Important! Reliable fire sprinklers must be handled, stored, and installed in accordance with the guidelines in Caution Sheet 310 and this bulletin. Failure to follow these instructions may result in unintended operation or nonoperation of the fire protection system.



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 Sprinkler 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)	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)

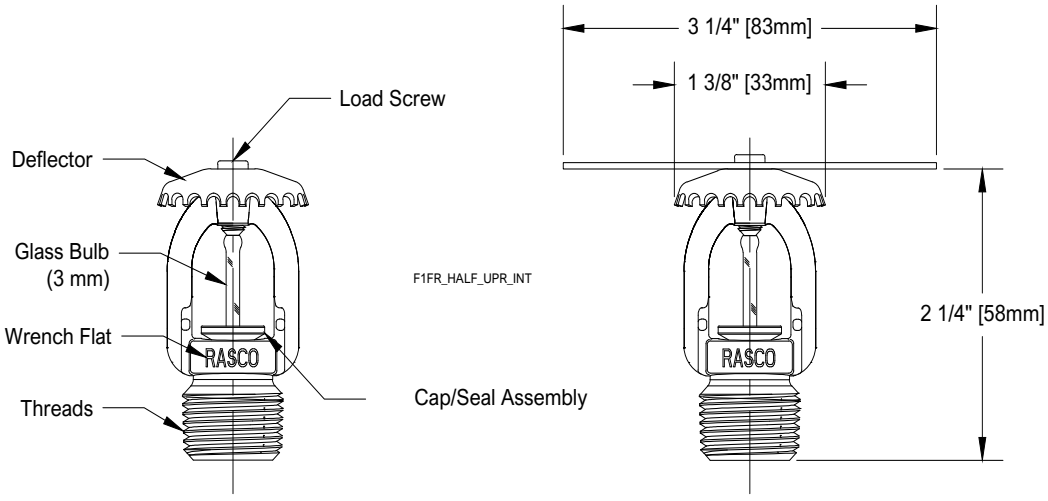
Guards & Shields (New Frames)
Factory Water Shield (cULus, FM)
F-1 Guard (cULus, FM)
F-3 Guard with Shield (cULus, FM)

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 W14 (New frame with guard installed)
Model W13 (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**



Shown with Optional
Factory Installed Water Shield
(Intermediate Upright)

Model F1FR56 Pendent Sprinkler — SIN RA1414

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)

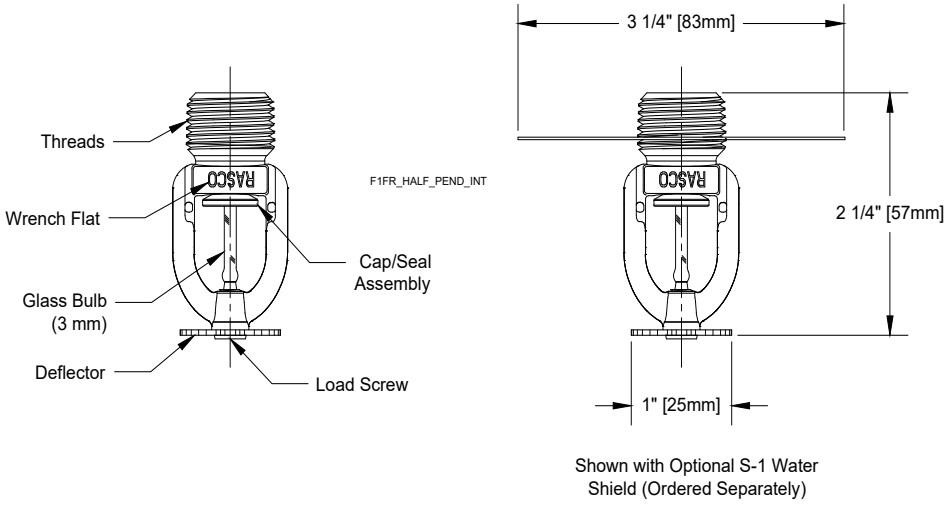
Guards & Shields (Legacy Frames)[3]
C-1 Guard (FM)
C-5 Guard/Shield Kit (FM)
D-1 Guard (cULus, FM)
D-4 Guard/Shield Kit (FM)
D-5 Guard/Shield Kit (cULus, FM)
S-1 Shield (cULus, FM)

Sprinkler Wrenches
Model W2 (pendent)
Model W4 (recessed or concealed)
Model W14 (New frame with guard installed)
Model W13 (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



Shown with Optional S-1 Water Shield (Ordered Separately)

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

Model F1FR56 Horizontal Sidewall Sprinkler — SIN RA1435

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)

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)

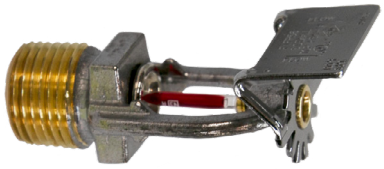
Recessed Escutcheons[2]
- Model F1 (cULus)
- Model F2 (cULus, FM)
- Model FP (cULus)

Guards & Shields (New Frames)[3]
- F-4 Guard (FM)
- F-7 Guard (cULus)

Guards & Shields (Legacy Frames)[3]
- C1 Guard (FM)
- D1 Guard (cULus)

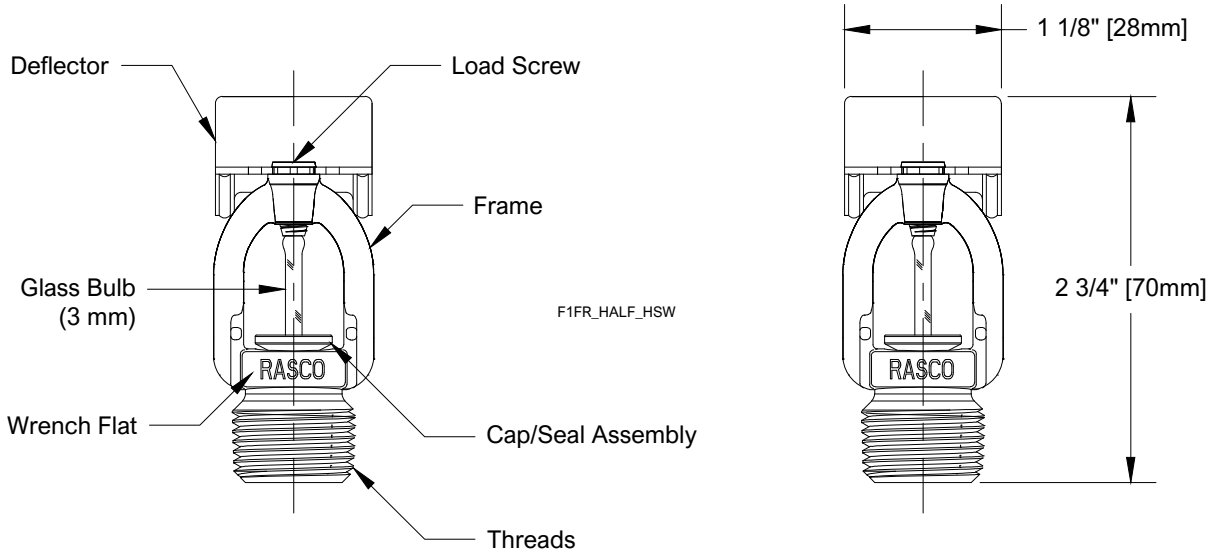
Sprinkler Wrenches
- Model W2 (non-recessed)
- Model W4 (recessed)
- Model W14 (New frame with guard installed)
- Model W13 (Legacy frame with guard installed)

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 6 for recessed installation.

Model F1FR56 Vertical Sidewall Sprinkler — SIN RA1485

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)

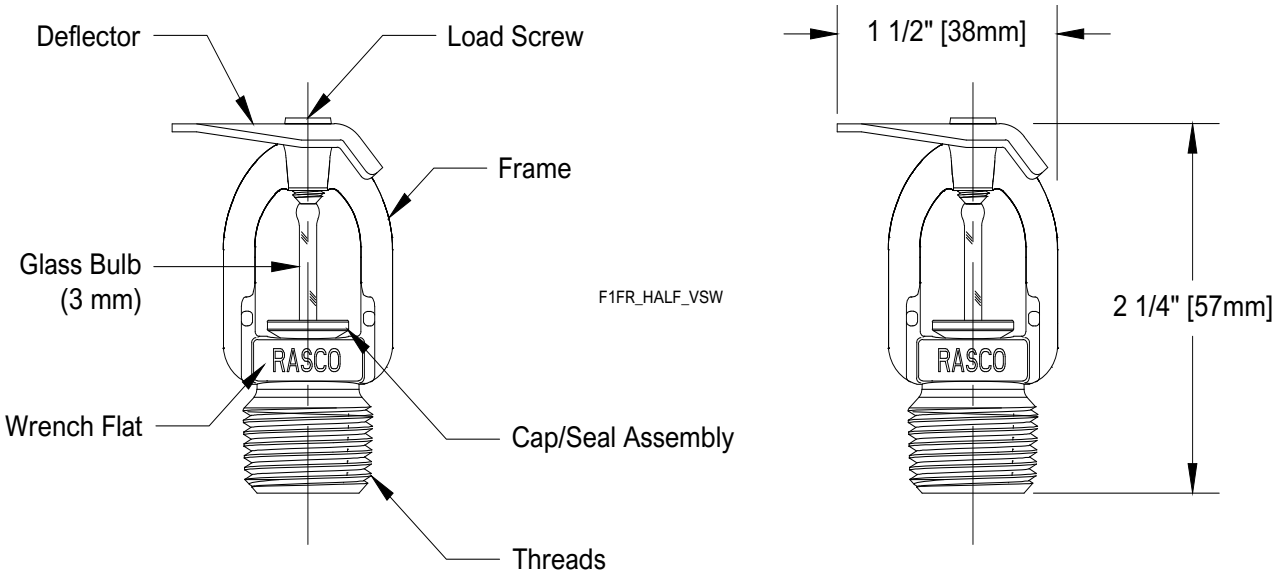
Guards & Shields (Legacy Frames)
C1 Guard (FM)

Sprinkler Wrenches
Model W2
Model W14 (New frame with guard installed)
Model W13 (Legacy frame with guard installed)

Listings and Approvals[1]
cULus Listed
FM Approved
LPCB[2]
UKCA: 0832-UKCA-CPR-S5045

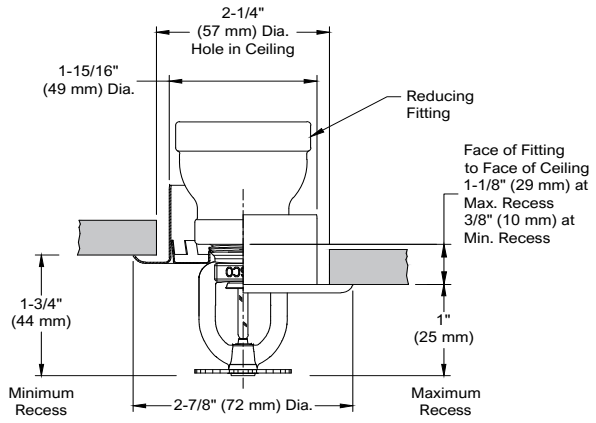
Notes:
1. Listed and approved for Light Hazard ONLY.
2. LPCB approved for use in pendent position ONLY.

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

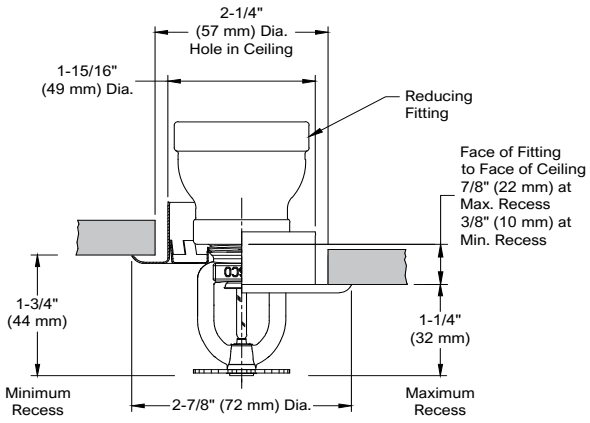


Recessed and Concealed Installation: Pendent Sprinklers

Figure 5

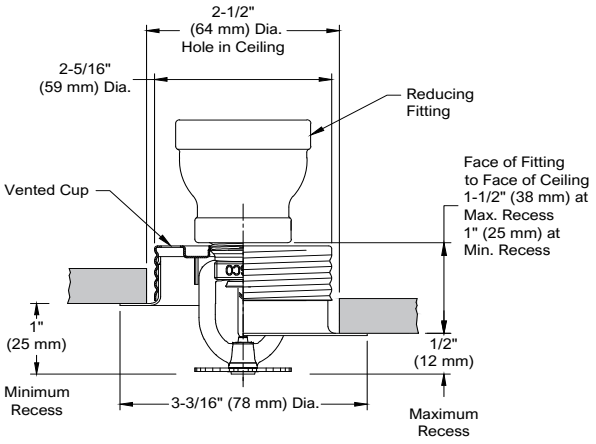


Models F1 & F1FR Pendent Sprinkler
with Model F1 Recessed Escutcheon
3/4" (19mm) Nominal Adjustment



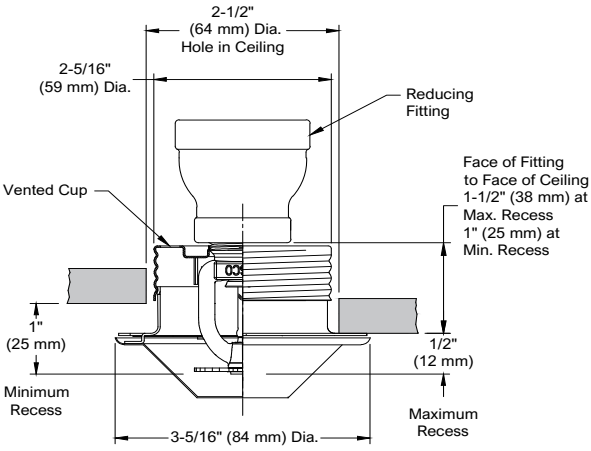
Models F1 & F1FR Pendent Sprinkler
with Model F2 Recessed Escutcheon
1/2" (13mm) Nominal Adjustment

F1_REC_PEND_CCP



Models F1 & F1FR Pendent 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 above the ceiling is positive with respect to the protected area. Ensure that the openings in the Model FP cup are unobstructed following installation.



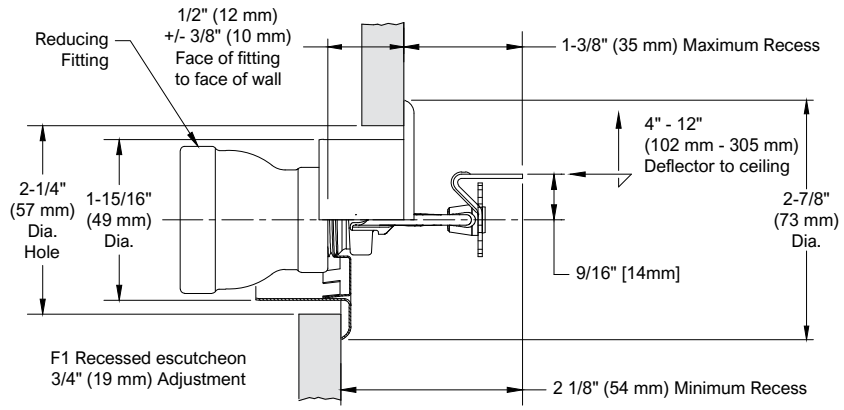
Model F1FR56 CCP Conical Concealed Sprinkler
1/2" (13mm) Nominal Adjustment
(Nominal Cover Plate Projection is 1" (25 mm))

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.

F1 Escutcheon
(F2 Similar)

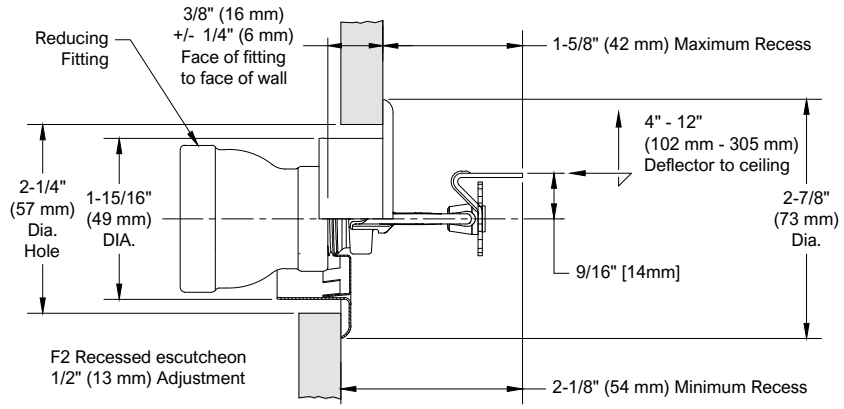
FP Escutcheon

CCP Cover Plate

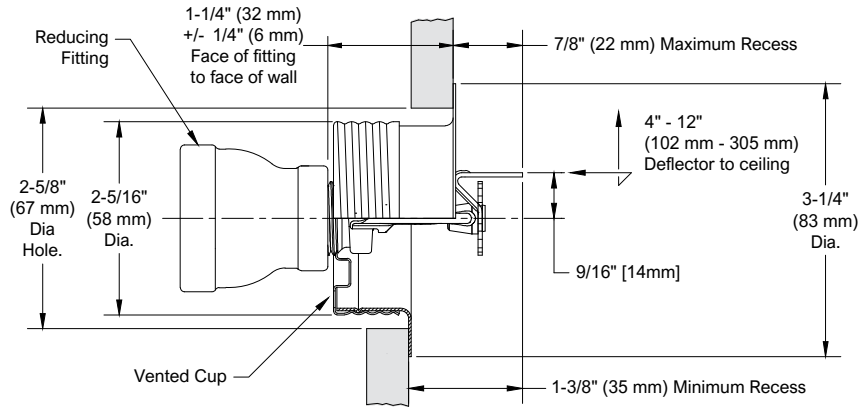


Model F1FR Horizontal Sidewall Sprinkler
with Model F1 Recessed Escutcheon
3/4" (19mm) Nominal Adjustment

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 W13 (Legacy frame with guard installed)

Model W14 (New frame with guard installed)

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 W14 (New frame with guard installed)
- Model W13 (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.

P/N 9999970623

Reliable®

F1FR80 Series
Quick-Response Sprinklers

K-factor 8.0 (115)

Features

- Standard coverage quick-response sprinklers
- Upright and pendent orientations
- Low profile, compact design
- Available in a wide variety of finishes
- Available as Intermediate Level sprinklers

Product Description

Reliable Model F1FR80 series sprinklers are quick-response standard spray automatic fire sprinklers utilizing a sensitive 3mm glass bulb thermal element.

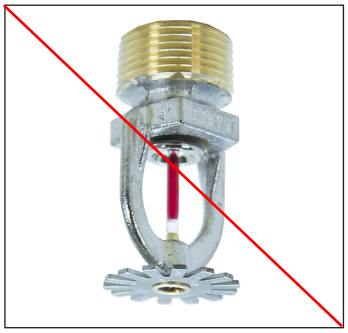
Pendent sprinklers may be installed exposed, or surface mounted using escutcheons such as the Reliable Models B, C, or HB (reference Technical Bulletin 204). When installed recessed, the Model F1FR80 series sprinklers are specifically listed with and may only be installed with listed Reliable recessed escutcheons. Refer to the technical information on the following pages for specific listings for recessed installations and refer to Figure 3 for dimensional information.

When fitted with an approved Reliable water shield, these sprinklers may 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.

Important! Reliable fire sprinklers must be handled, stored, and installed in accordance with the guidelines in Caution Sheet 310 and this bulletin. Failure to follow these instructions may result in unintended operation or nonoperation of the fire protection system.

Model F1FR80
Upright Sprinkler



Model F1FR80 Pendent Sprinkler

Note: Not all versions of the product are shown.

F1FR80 Series Sprinkler Summary

Table A

Sprinkler Model	K-Factor gpm/psi$^{1/2}$ (lpm/bar$^{1/2}$)	Max. Working Pressure psi (bar)	Listings & Approvals	Orientation	Sprinkler Identification Number (SIN)
F1FR80	8.0 (115)	175 (12) 250 (17) (cULus only)	cULus, FM, LPCB, VdS, CE, UKCA	Upright	RA6322
				Pendent	RA6312

Model F1FR80 Upright Sprinkler — SIN RA6322

Technical Specifications
- **Style:** Upright
- **Threads:** 3/4" NPT or ISO 7-R3/4
- **Nominal K-Factor:** 8.0 (115)
- **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

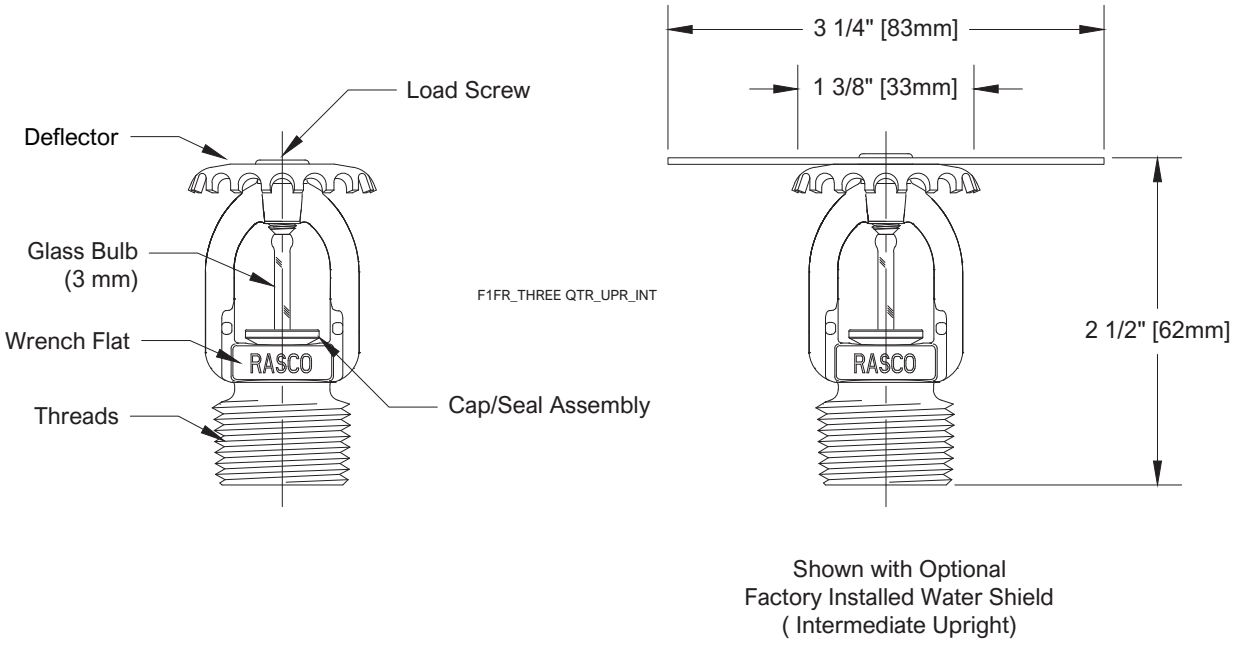
Temperature Ratings
- 135°F (57°C)
- 155°F (68°C)
- 175°F (79°C)
- 200°F (93°C)
- 286°F (141°C)

Guards & Shields
- F-1 Guard (cULus, FM)
- F-2 Guard (FM)
- F-3 Guard with Shield (cULus, FM)
- Factory Installed Shield (cULus, FM)

Sprinkler Wrenches
- Model W2
- Model W14 (with guard installed)

Listings and Approvals
- cULus
- FM
- LPCB
- VdS
- CE
- UKCA: 0832-UKCA-CPR-S5078

Model F1FR80 Upright Sprinkler Components and Dimensions — **Figure 1**



Shown with Optional
Factory Installed Water Shield
(Intermediate Upright)

Model F1FR80 Pendent Sprinkler — SIN RA6312

Technical Specifications
Style:
Pendent
Recessed Pendent
Threads: 3/4" NPT or ISO 7-R3/4
Nominal K-Factor: 8.0 (115)
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)
Model F2 (cULus, FM)
Model FP (cULus)

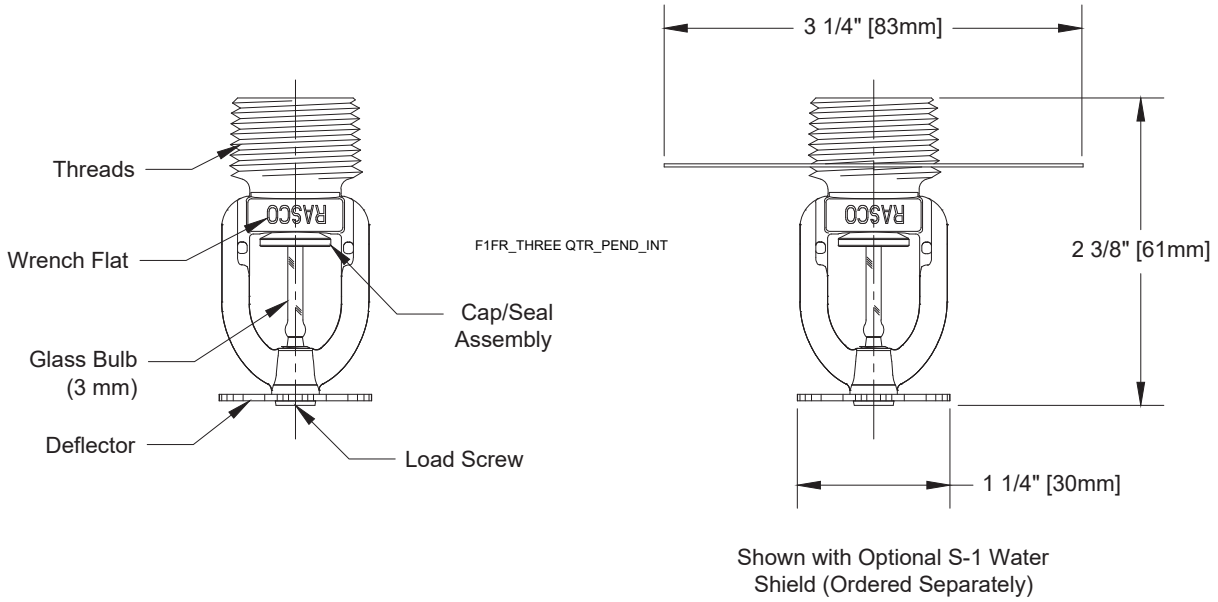
Guards & Shields[2]
F-2 Guard (FM)
F-6 Guard/Shield Kit (FM)
F-7 Guard (cULus)
F-8 Guard/Shield Kit (cULus)
S-2 Shield (cUlus, FM)

Sprinkler Wrenches
Model W2 (pendent)
Model W4 (recessed)
Model W14 (with guard installed)

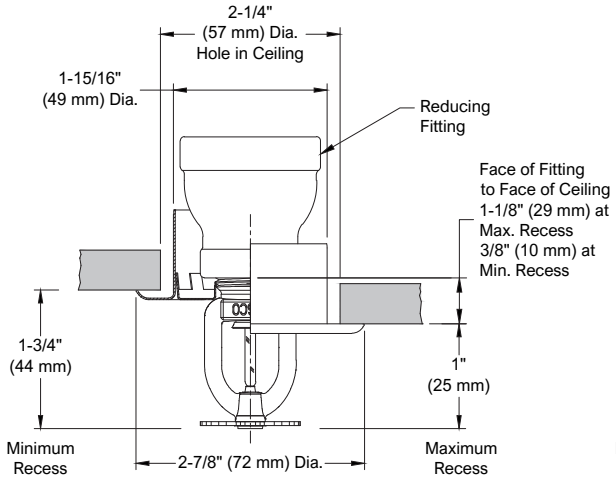
Listings and Approvals[3]
cULus Listed
FM Approved
LPCB
VdS
CE
UKCA: 0832-UKCA-CPR-S5079

Notes:
1. 286°F (141°C) temperature rated sprinkler not listed for recessed use.
2. Not suitable for recessed pendent installations.
3. When used surface mounted or exposed. See Recessed Escutcheon section for specific approvals when installed recessed.

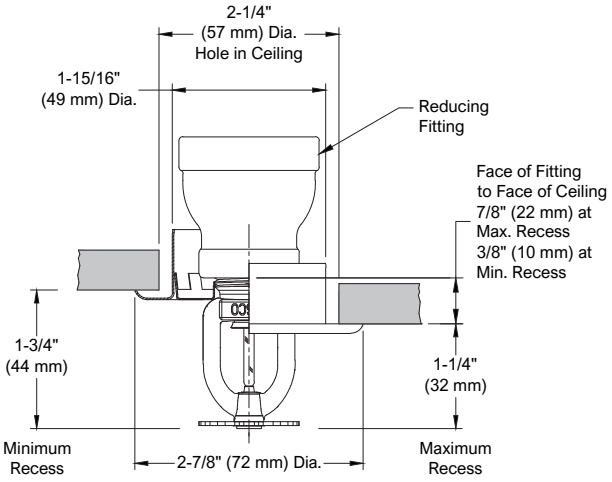
Model F1FR80 Pendent Sprinkler Components and Dimensions — **Figure 2**



Note: Please refer to Figure 3 for recessed installation.

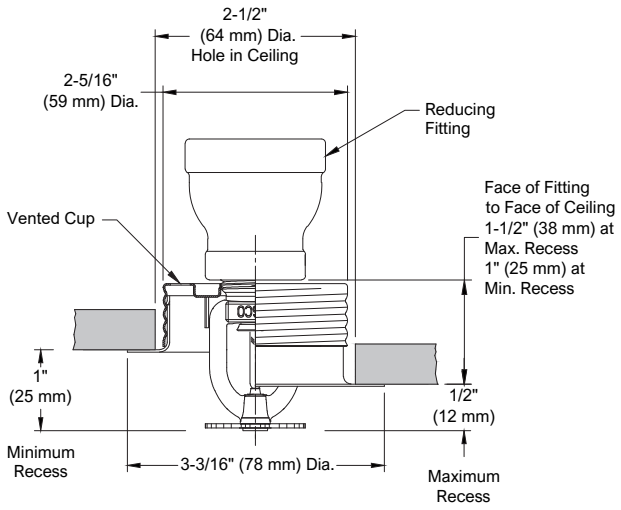


Models F1 & F1FR Pendent Sprinkler
with Model F1 Recessed Escutcheon
3/4" (19mm) Nominal Adjustment



Models F1 & F1FR Pendent Sprinkler
with Model F2 Recessed Escutcheon
1/2" (13mm) Nominal Adjustment

F1_REC_PEND



Models F1 & F1FR Pendent 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 above the ceiling is positive with respect to the protected area. Ensure that the openings in the Model FP cup are unobstructed following installation.

F1 Escutcheon
(F2 Similar)

FP Escutcheon

Wrenches

Model W2 (upright, pendent)

Model W14 (with guard installed)

Model W4
(recessed pendent)

Finishes[1]

Table B

Standard Finishes		Special Application Finishes	
Sprinkler	**F1, F2 and FP[2] Escutcheons**	**Sprinkler**	**F1, F2 and FP[2] Escutcheons**
Bronze	Brass	Electroless Nickel PTFE[3][4]	Bright Brass
Chrome Plated	Chrome Plated	Bright Brass[5]	Satin Chrome
White Polyester[3]	White Polyester	Satin Chrome	Custom Color Polyester
		Custom Color Polyester[3][6]	

Notes:

1. Paint or any other coating applied over the factory finish will void all approvals and warranties.
2. Model FP escutcheons utilizes a galvanized steel cup with a finished trim ring.
3. cULus Listed as corrosion resistant.
4. FM Approved as corrosion resistant.
5. For 200°F (93°C) maximum temperature rated sprinklers only.
6. cULus 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
- F1FR80

Deflector/Orientation
- Upright
- Upright Intermediate
- Pendent

Temperature Rating
- See sprinkler technical specifications

Sprinkler Finish
- See Table B

Recessed Escutcheon
- F1
- F2
- FP

Escutcheon Finish
- See Table B

Sprinkler Wrench
- Model W2 (upright and pendent)
- Model W4 (recessed)
- Model W14 (with guard installed)

P/N 9999970503

Reliable®

Model G5 Series Sprinklers

Standard Spray, Flat Concealed Pendent

Available with Gasketed Cover Plate

Features

- Standard Coverage, Concealed Pendent (K2.8, 4.2, 5.6, & 8.0 [40, 60, 80, & 115 metric])
- Flat concealed cover plate available in a variety of finishes.
- Available with Stainless Steel Clad cover plate (see Table I).
- 3/4-inch (19 mm) cover plate adjustment.
- Cover plate available with optional gasket.

Product Description

Model G5 series sprinklers are standard coverage, flat plate concealed sprinklers designed for installation in accordance with NFPA 13 and FM Global Property Loss Prevention Data Sheets. All Model G5 series sprinklers use a fusible-link operating element.

The sprinklers are offered with a standard Model G5 cover plate, a Model G5 cover plate with a quick-response (QR) gasket, or a Model G5 cover plate with a standard-response (SR) gasket. Model G5 sprinklers with a gasketed cover plate are intended for use in dust free environments such as clean rooms.

Model G5 sprinklers must only be used with the Model G5 cover plate listed or approved with the sprinkler. Table A provides a summary of available Model G5 series sprinklers, along with Listing and Approval information for each sprinkler and cover plate combination.

Important! Reliable fire sprinklers must be handled, stored, and installed in accordance with the guidelines in Caution Sheet 310 and this bulletin. Failure to follow these instructions may result in unintended operation or nonoperation of the fire protection system.

Model G5 Cover Plate

Model G5 Cover Plate with QR Gasket

Model G5 Cover Plate with SR Gasket

Note: Gasket material is silicone rubber, available in white only.

Model G5 Series Sprinkler Summary — **Table A**

Sprinkler Model	K-Factor gpm/psi$^{1/2}$ (L/min/bar$^{1/2}$)	Cover Plate Model	Listings and Approvals	Sensitivity	Max. Working Pressure psi (bar)	Sprinkler Identification Number (SIN)
G5-28	2.8 (40)	G5	cULus	QR	175 (12)	RA3411
			FM	SR		
		G5 QR Gasket	cULus	QR		
		G5 SR Gasket	cULus, FM	SR		
G5-42	4.2 (60)	G5	cULus	QR	175 (12)	RA3413
		G5 QR Gasket				
		G5 SR Gasket	cULus	SR		
G5-56	5.6 (80)	G5	cULus	QR	250 (17)	RA3415
			FM, LPCB, VdS, CE, UKCA	SR	175 (12)	
		G5 QR Gasket	cULus	QR	250 (17)	
		G5 SR Gasket	cULus	SR	250 (17)	
			FM	SR	175 (12)	
G5-56 300	5.6 (80)	G5	cULus	QR	300 (21)	RA4014
		G5 QR Gasket				
		G5 SR Gasket	cULus	SR		
G5-80	8.0 (115)	G5	cULus	QR	175 (12)	RA3412
		G5 QR Gasket				
		G5 SR Gasket	cULus	SR		
G5-80F	8.0 (115)	G5	FM	SR	175 (12)	RA3417
		G5 SR Gasket				

Model G5-28 Standard Coverage, Concealed Pendent Sprinkler — SIN RA3411

Technical Specifications
Style: Flat Concealed Pendent
Threads: 1/2" NPT or ISO 7-1 R1/2
Nominal K-Factor: 2.8 (40 metric)
Max. Working Pressure: 175 psi (12 bar)

Material Specifications
Fusible Link: Beryllium Nickel
Sprinkler Body: Brass Alloy
Levers: Bronze Alloy
Yoke: Brass Alloy
Sealing washer: Nickel with PTFE
Load Screw: Bronze Alloy
Towers: Copper Alloy
Pins: Stainless Steel
Deflector: Bronze Alloy
Cup: Steel

Temperature Ratings
Ordinary
165°F (74°C) (Sprinkler)
[135°F (57°C) (Cover Plate)]
Intermediate
212°F (100°C) (Sprinkler)
[165°F (74°C) (Cover Plate)]

Sensitivity
(See Table B)

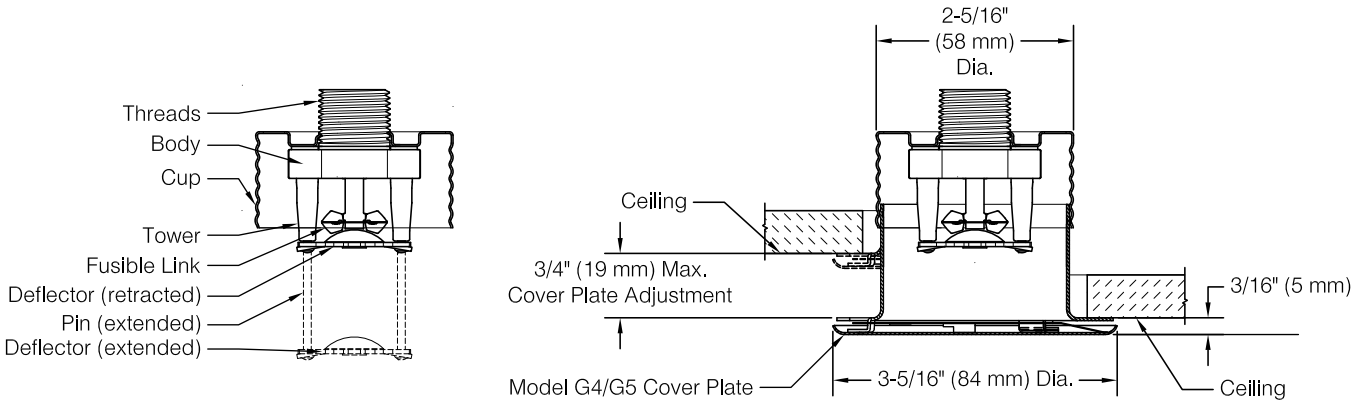
Cover Plates
Model G5
Model G5 QR Gasket (cULus only)
Model G5 SR Gasket

Cover Plate Finishes
(See Table I)

Sprinkler Wrench
Model W3
Model FC

Listings and Approvals
cULus Listed (Light Hazard only)
FM Approved

Model G5-28 Sprinkler Components and Dimensions — **Figure 1**



Model G5-28 Sprinkler Sensitivity — **Table B**

Cover Plate Model	Listing or Approval Agency	
	cULus	FM
G5	QR	SR
G5 QR Gasket	QR	--
G5 SR Gasket	SR	SR

QR: Quick-response
SR: Standard-response

Model G5-42 Standard Coverage, Concealed Pendent Sprinkler — SIN RA3413

Technical Specifications
- **Style:** Flat Concealed Pendent
- **Threads:** 1/2" NPT or ISO 7-1 R1/2
- **Nominal K-Factor:** 4.2 (60 metric)
- **Max. Working Pressure:** 175 psi (12 bar)

Material Specifications
- **Fusible Link:** Beryllium Nickel
- **Sprinkler Body:** Brass Alloy
- **Levers:** Bronze Alloy
- **Yoke:** Brass Alloy
- **Sealing washer:** Nickel with PTFE
- **Load Screw:** Bronze Alloy
- **Towers:** Copper Alloy
- **Pins:** Stainless Steel
- **Deflector:** Bronze Alloy
- **Cup:** Steel

Temperature Ratings
Ordinary
165°F (74°C) (Sprinkler)
[135°F (57°C) (Cover Plate)]
Intermediate
212°F (100°C) (Sprinkler)
[165°F (74°C) (Cover Plate)]

Sensitivity
(See Table C)

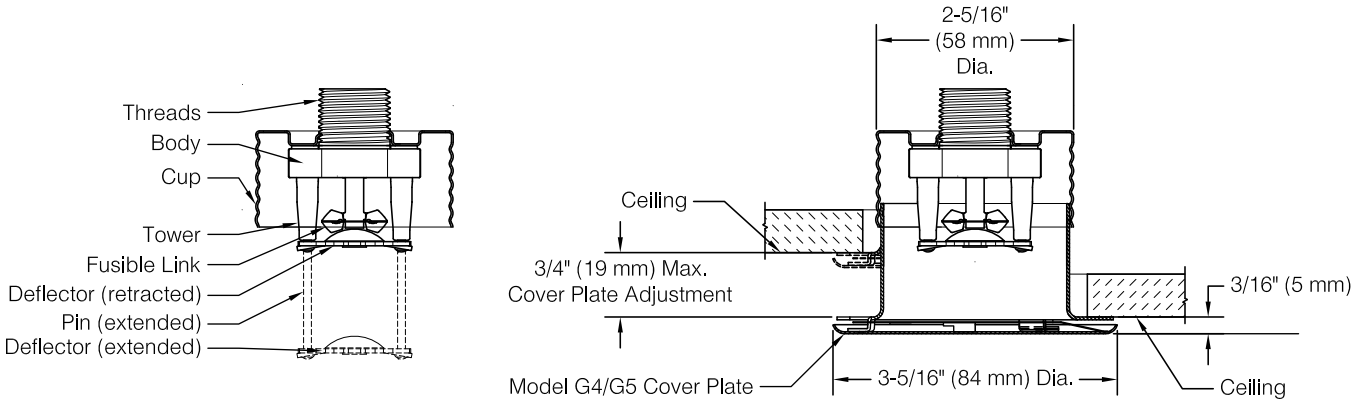
Cover Plates
Model G5
Model G5 QR Gasket
Model G5 SR Gasket

Cover Plate Finishes
(See Table I)

Sprinkler Wrench
Model W3
Model FC

Listings and Approvals
cULus Listed (Light Hazard only)

Model G5-42 Sprinkler Components and Dimensions — Figure 2



Model G5-42 Sensitivity — Table C

Cover Plate Model	Listing or Approval Agency
	cULus
G5	QR
G5 QR Gasket	QR
G5 SR Gasket	SR

QR: Quick-response
SR: Standard-response

Model G5-56 Standard Coverage, Concealed Pendent Sprinkler — SIN RA3415

Technical Specifications
Style: Flat Concealed Pendent
Threads: 1/2" NPT or ISO 7-1 R1/2
Nominal K-Factor: 5.6 (80 metric)
Max. Working Pressure:
175 psi (12 bar)
250 psi (17 bar) (cULus only)

Material Specifications
Fusible Link: Beryllium Nickel
Sprinkler Body: Brass Alloy
Levers: Bronze Alloy
Yoke: Brass Alloy
Sealing washer: Nickel with PTFE
Load Screw: Bronze Alloy
Towers: Copper Alloy
Pins: Stainless Steel
Deflector: Bronze Alloy
Cup: Steel

Temperature Ratings
Ordinary
165°F (74°C) (Sprinkler)
[135°F (57°C) (Cover Plate)]
Intermediate
212°F (100°C) (Sprinkler)
[165°F (74°C) (Cover Plate)]

Sensitivity
(See Table D)

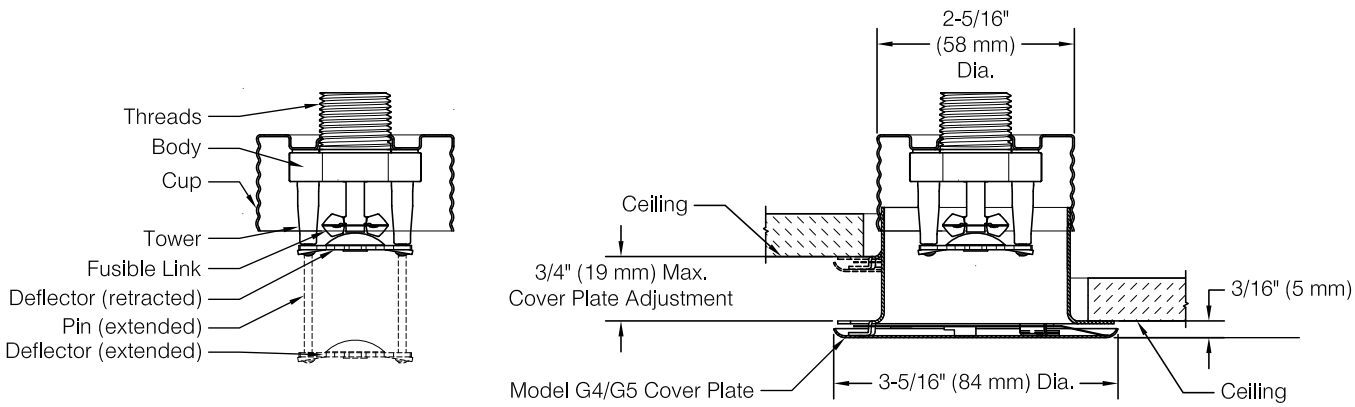
Cover Plates
Model G5
Model G5 QR Gasket (cULus only)
Model G5 SR Gasket (cULus and FM only)

Cover Plate Finishes
(See Table I)

Sprinkler Wrench
Model W3
Model FC

Listings and Approvals
cULus Listed (Light & Ordinary Hazard only)
FM Approved
LPCB Approved
VdS Approved [165°F (74°C) only]
CE Listed (2831-CPR-S2062)
UKCA: 0832-UKCA-CPR-S5045

Model G5-56 Sprinkler Components and Dimensions — Figure 3



Model G5-56 Sensitivity — Table D

Cover Plate Model	Listing or Approval Agency		
	cULus	FM	LPCB, VdS, CE, UKCA
G5	QR	SR	SR
G5 QR Gasket	QR	--	--
G5 SR Gasket	SR	SR	--

QR: Quick-response
SR: Standard-response

Model G5-56 300 Standard Coverage, Concealed Pendent Sprinkler — SIN RA4014

Technical Specifications
Style: Flat Concealed Pendent
Threads: 1/2" NPT or ISO 7-1 R1/2
Nominal K-Factor: 5.6 (80 metric)
Max. Working Pressure: 300 psi (21 bar)

Material Specifications
Fusible Link: Beryllium Nickel
Sprinkler Body: Brass Alloy
Levers: Bronze Alloy
Yoke: Brass Alloy
Sealing washer: Nickel with PTFE
Load Screw: Bronze Alloy
Towers: Copper Alloy
Pins: Stainless Steel
Deflector: Bronze Alloy
Cup: Steel

Temperature Ratings
Ordinary
165°F (74°C) (Sprinkler)
[135°F (57°C) (Cover Plate)]
Intermediate
212°F (100°C) (Sprinkler)
[165°F (74°C) (Cover Plate)]

Sensitivity
(See Table E)

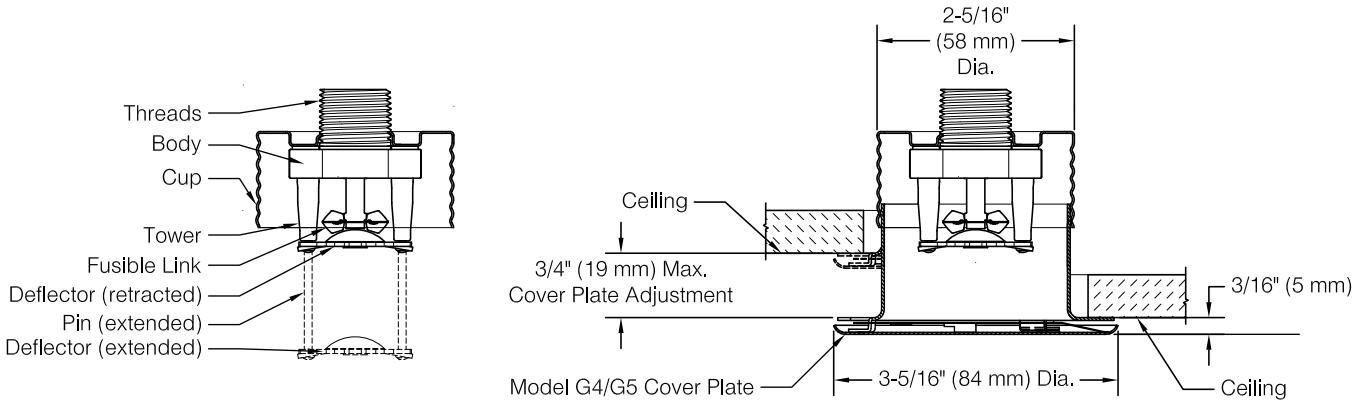
Cover Plates
Model G5
Model G5 QR Gasket
Model G5 SR Gasket

Cover Plate Finishes
(See Table I)

Sprinkler Wrench
Model W3
Model FC

Listings and Approvals
cULus Listed (Light & Ordinary Hazard only)

Model G5-56 300 Sprinkler Components and Dimensions — **Figure 4**



Model G5-56 300 Sensitivity — **Table E**

Cover Plate Model	Listing or Approval Agency
	cULus
G5	QR
G5 QR Gasket	QR
G5 SR Gasket	SR

QR: Quick-response
SR: Standard-response

Model G5-80 Standard Coverage, Concealed Pendent Sprinkler — SIN RA3412

Technical Specifications
Style: Flat Concealed Pendent
Threads: $^{3}/_{4}$" NPT or ISO 7-1 R$^{3}/_{4}$
Nominal K-Factor: 8.0 (115 metric)
Max. Working Pressure: 175 psi (12 bar)

Material Specifications
Fusible Link: Beryllium Nickel
Sprinkler Body: Brass Alloy
Levers: Bronze Alloy
Yoke: Brass Alloy
Sealing washer: Nickel with PTFE
Load Screw: Bronze Alloy
Towers: Copper Alloy
Pins: Stainless Steel
Deflector: Bronze Alloy
Cup: Steel

Temperature Ratings
Ordinary
165°F (74°C) (Sprinkler)
[135°F (57°C) (Cover Plate)]
Intermediate
212°F (100°C) (Sprinkler)
[165°F (74°C) (Cover Plate)]

Sensitivity
(See Table F)

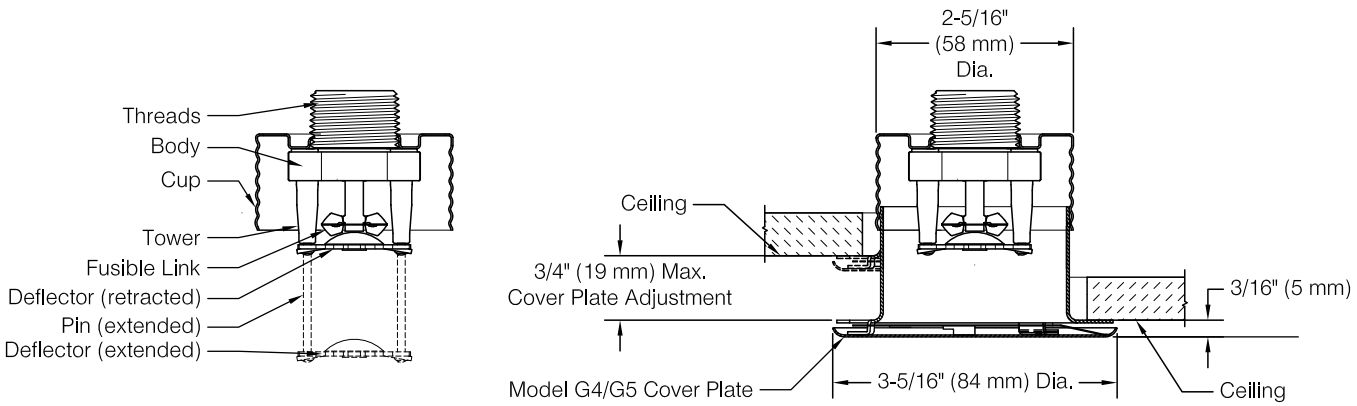
Cover Plates
Model G5
Model G5 QR Gasket
Model G5 SR Gasket

Cover Plate Finishes
(See Table I)

Sprinkler Wrench
Model W3
Model FC

Listings and Approvals
cULus Listed (Light & Ordinary Hazard only)

Model G5-80 Sprinkler Components and Dimensions — **Figure 5**



Model G5-80 Sensitivity — **Table F**

Cover Plate Model	Listing or Approval Agency
	cULus
G5	QR
G5 QR Gasket	QR
G5 SR Gasket	SR

QR: Quick-response
SR: Standard-response

Model G5-80F Standard Coverage, Concealed Pendent Sprinkler — SIN RA3417

Technical Specifications
Style: Flat Concealed Pendent
Threads: 3/4" NPT or ISO 7-1 R3/4
Nominal K-Factor: 8.0 (115 metric)
Max. Working Pressure: 175 psi (12 bar)

Material Specifications
Fusible Link: Beryllium Nickel
Sprinkler Body: Brass Alloy
Levers: Bronze Alloy
Yoke: Brass Alloy
Sealing washer: Nickel with PTFE
Load Screw: Bronze Alloy
Towers: Copper Alloy
Pins: Stainless Steel
Deflector: Stainless Steel
Cup: Steel

Temperature Ratings
Ordinary
165°F (74°C) (Sprinkler)
[135°F (57°C) (Cover Plate)]
Intermediate
212°F (100°C) (Sprinkler)
[165°F (74°C) (Cover Plate)]

Sensitivity
Standard Response

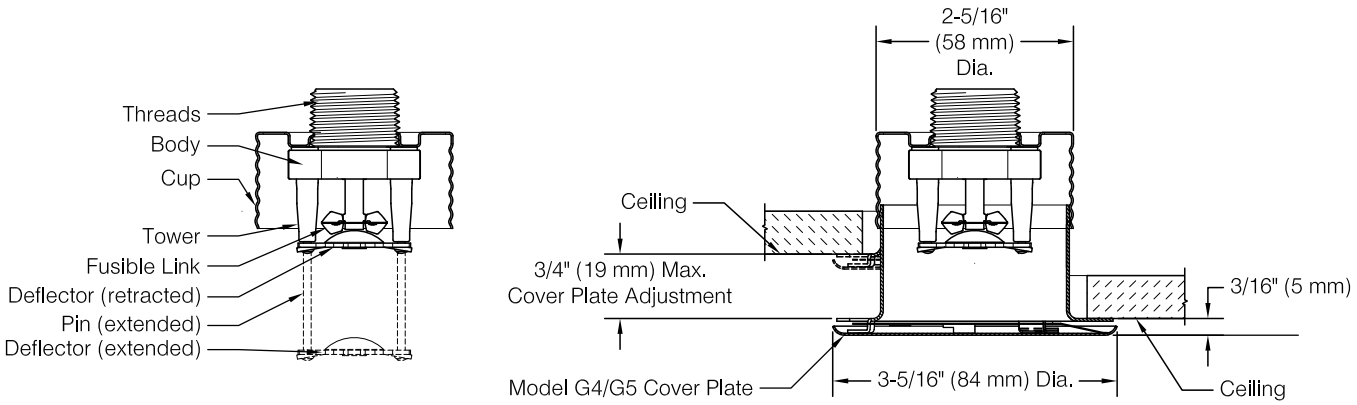
Cover Plates
Model G5
Model G5 SR Gasket

Cover Plate Finishes
(See Table I)

Sprinkler Wrench
Model W3
Model FC

Listings and Approvals
FM Approved

Model G5-80F Sprinkler Components and Dimensions — **Figure 6**



Model G5-80F Sensitivity — **Table G**

Cover Plate Model	Listing or Approval Agency
	FM
G5	SR
G5SR Gasket	SR

SR: Standard-response

Installation Dimensions and Cover Plate Information — **Table H**

Cover Plate Model	Cover Plate Diameter Inch (mm)	Recommended Hole Diameter in Ceiling Inch (mm)	Cover Plate Adjustment Inch (mm)	Min. to Max. Face of Fitting to Ceiling[1] Inch (mm)	Min. to Max. Dropped Deflector Distance below Ceiling Inch (mm)	Cover Plate Temperature Rating °F (°C)
G5	3-5/16 (84)	2-5/8 (67)	3/4 (19)	1-1/2 to 2-1/4 (38 to 57)	1/4 to 1 (6 to 25)	135°F[3] (57°C) or 165°F[4] (74°C)
G5 QR Gasket[2]	3-11/16 (94)					
G5 SR Gasket[2]	4 (101 mm)					

Notes:

1. Face of fitting to ceiling dimensions are based on nominal thread make up. Verify dimensions based on fitting and thread sealing method prior to installation. A 1/2" x 1/2" brass nipple extension (Reliable P/N 6999991900) is available to assist with replacement of Reliable Model G4A sprinklers.
2. Model G5 QR Gasket and Model G5 SR Gasket cover plates are sold as assembled units including both the cover plate and gasket. Model G5 QR Gasket and Model G5 SR Gasket cover plates and gaskets are not interchangeable.
3. For use with 165°F (74°C) temperature rated sprinklers where the Maximum Ceiling Temperature does not exceed 100°F (38°C).
4. For use with 212°F (100°C) temperature rated sprinklers where the Maximum Ceiling Temperature does not exceed 150°F (66°C).

Cover Plate Finishes[1][2] — **Table I**

Standard Finishes	Special Application Finishes
White Paint Chrome	Off-White Paint Black Paint Custom Color Paint (Specify)[3] Raw Brass (Lacquered) Bright Brass Finished Bronze Satin Chrome Stainless Steel Clad[4] Custom Printed

Notes:

1. Paint or any other coating applied over the factory finish will void all approvals and warranties.
2. Cover plates do not carry corrosion resistant listings or approvals.
3. Custom color paint is semi-gloss unless specified otherwise.
4. Stainless steel clad cover plates are Type 316 Stainless Steel on the finished side and C102 Copper Alloy on the back side.

Application

Model G5 series sprinklers are standard coverage, flat plate concealed pendent sprinklers. The sprinklers are intended for use in accordance with NFPA 13 and FM Global Property Loss Prevention Data Sheets, as well as the requirements of the applicable approval agencies.

Model G5 series sprinklers are available as either Quick-response (QR) or Standard-response (SR) depending on the approval agency and cover plate selected.

Model G5 series sprinklers use Model G5 flat cover plates. Model G5 QR Gasket and G5 SR Gasket cover plates are available to limit air and dust movement through the ceiling.

Listing & Approval Agencies

Individual Model G5 series sprinkler may be listed or approved by the following agencies:

- Underwriters Laboratories, Inc. and UL Canada (cULus)
  Listing Category: Sprinklers, Automatic and Open
  Guide Number: VNIV
- FM Approvals (FM)
- Loss Prevention Certification Board (LPCB)
- VdS Schadenverhütung GmbH (VdS)
- EC-Certificate of Conformity 0832-CPD-2062 (CE)
- UKCA EN12259-1 : 1999 +A3:2006

See Table A and the individual sprinkler data sheets in this Bulletin for listings and approvals applicable to each sprinkler.

Installation

Model G5 series sprinklers are intended to be installed in accordance with NFPA 13, FM Global Property Loss Prevention Data Sheets, and the requirements of applicable authorities having jurisdiction. Model G5 series sprinklers must not be installed in ceilings with positive pressure in the space above. Ensure that the 4 slots in the cup are open and unobstructed following installation.

Model G5 series sprinklers are shipped with a wrench-able protective cap that should remain on the sprinkler until the sprinkler system is placed in service following construction.

Model G5 series sprinklers can be installed without removing the wrench-able protective cap using the Model W3 wrench. Alternatively, Model G5 series sprinklers can be installed using the Model FC wrench by temporarily removing the protective cap during installation of the sprinkler. The use of any other wrench to installed Model G5 series sprinklers is not permitted and may damage the sprinkler.

Wrench

Model FC
For use with Model G5 Series sprinklers without wrench-able cap installed

Model W3
For use with Model G5 Series sprinklers with wrench-able cap installed

Fully insert the Model W3 wrench over the cap until it reaches the bottom of the cup, or the Model FC wrench over the sprinkler until the wrench engages the body. Do not wrench any other part of the sprinkler/cup assembly. The Model W3 and FC wrenches are designed to be turned with a standard 1/2" square drive. Tighten the sprinkler into the fitting after applying a PTFE based thread sealant to the sprinkler's threads. Recommended installation torque is specified in Table J.

Installation Torque — **Table J**

Sprinkler Threads	Recommended Installation Torque (min. – max.)	
	ft.lb	N·m
½" NPT or ISO7-1R1/2	8-18	11-24
¾" NPT or ISO7-1R3/4	14-20	19-27

Do not exceed the maximum recommended torque. Exceeding the maximum recommended torque may cause leakage or impairment of the sprinkler. Use care when inserting or removing the wrench from the sprinkler to avoid damage to the sprinkler.

Install the cover plate by hand, pushing and then turning the cover in the clockwise direction until it is tight against the ceiling. For Model G5 QR Gasket and Model G5 SR Gasket cover plates, the gasket should be attached to the flange of the cover plate skirt only. Do not glue the gasket in place or allow the gasket to overlap both the cover plate and the flange of the skirt.

Maintenance

Reliable Model G5 series sprinkler 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 or cover plate which has been painted (other than factory applied). Properly installed Model G5 cover plates will have an air gap that is required for proper operation, do not seal the gap or paint the cover plates. Model G5 series sprinklers have holes in the cup that must remain unobstructed.

Replace any sprinkler which has been damaged. A stock of spare sprinklers should be maintained to allow quick re-placement 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.

Patents

Model G5 series sprinklers may be covered by one or more of the following patents:

U.S. Patent 6,554,077, U.S. Patent 7,275,603, U.S. Patent 8,776,903, U.S. Patent 9,248,327

Ordering Information

Specify the following when ordering.

Sprinkler
- Model [G5-28] [G5-42] [G5-56] [G5-56 300] [G5-80] [G5-80F]
- Temperature Rating [165°F (74°C)] [212°F (100°C)]
- Threads [NPT or ISO 7-1]

Cover Plate
- Model [G5, G5 QR Gasket, G5 SR Gasket]
- Finish (See Table I)

Sprinkler Wrench
- Model W3
- Model FC

P/N 9999970421

Reliable®

Model F3QR56 Series
Quick-Response Dry Sprinkler

K-factor 5.6 (80 metric)

Features

- Various trim options available
- Sprinklers and trim available in a wide variety of standard and special application finishes
- Listed corrosion resistant combinations of sprinkler and trim available

Important! Reliable fire sprinklers must be handled, stored, and installed in accordance with the guidelines in Caution Sheet 310 and this bulletin. Failure to follow these instructions may result in unintended operation or nonoperation of the fire protection system.

Product Description

Model F3QR56 dry sprinklers are Quick-Response, standard coverage sprinklers with a nominal K-factor of 5.6 (80 metric). Available in pendent, horizontal sidewall, and upright configurations, Model F3QR56 dry sprinklers utilize a 3mm glass bulb ordinary, intermediate, or high temperature classification operating element.

Model F3QR56 dry sprinklers are intended for installation on wet pipe, dry pipe, or preaction systems in accordance with NFPA 13, FM Property Loss Prevention Data Sheets, or other applicable installation standards.

Model F3QR56 dry sprinklers are available in a variety of trim options and finish combinations as shown on the following pages. The Reliable escutcheons and cover plates shown are the only escutcheons and cover plates listed for use with the sprinkler. The use of any other escutcheon or cover plate will void all guarantees, warranty, listing, and approvals.

Standard inlet fitting threads are 1" NPT or ISO7-R1 threads. An inlet fitting with 3/4" NPT or ISO7-R3/4 threads (cULus listed only) is also available for select sprinklers for replacement of existing sprinklers.

Table A provides a basic summary of Model F3QR56 dry sprinklers. Additional technical information is provided on the following individual sprinkler pages.

(**Note**: not all versions of sprinkler shown, please see pages 2 through 13)

Sprinkler Summary

Table A

Model	K-Factor gpm/psi$^{1/2}$ (lpm/bar$^{1/2}$)	Approvals*	Max. Working Pressure psi (bar)	Sprinkler Identification Number (SIN)
F3QR56 Dry Pendent	5.6 (80)	cULus, FM	175 (12.0) cULus 250 (17.2)	R5714
F3QR56 Dry Horizontal Sidewall	5.6 (80)	cULus, FM	175 (12.0) cULus 250 (17.2)	R5734
F3QR56 Dry Upright	5.6 (80)	cULus	175 (12.0)	R5724

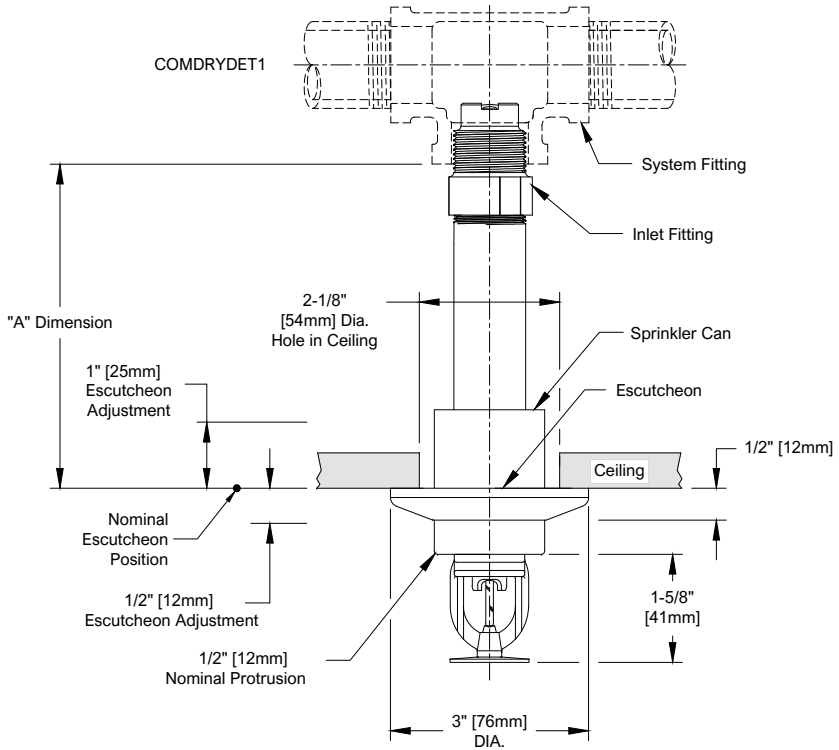
***Note:** Approvals may not apply to all trim, inlet thread, temperature, and/or finish combinations. See pages 2-11 for additional technical information.

Model F3QR56 Dry Pendent: Standard Escutcheon - SIN R5714 **Table B**

"A" Dimension in (mm)	Temperature Classification	Temperature Rating °F (°C)	Glass Bulb Color	Approvals	Sprinkler Guard
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	Ordinary	155°F (68°C)	Red	cULus, FM	C-2
	Intermediate	175°F (79°C)	Yellow	cULus	
		200°F (93°C)	Green	cULus, FM	
	High	286°F (141°C)	Blue	cULus, FM	

Note: Standard inlet fitting threads are 1" NPT or ISO7-R1. Inlet fitting is also available with 3/4" NPT and ISO-R3/4 threads for replacement of existing sprinklers (cULus Listed only).

Model F3QR56 Dry Pendent Sprinkler: Standard Escutcheon **Figure 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[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 Pendent: HB Escutcheon - SIN R5714

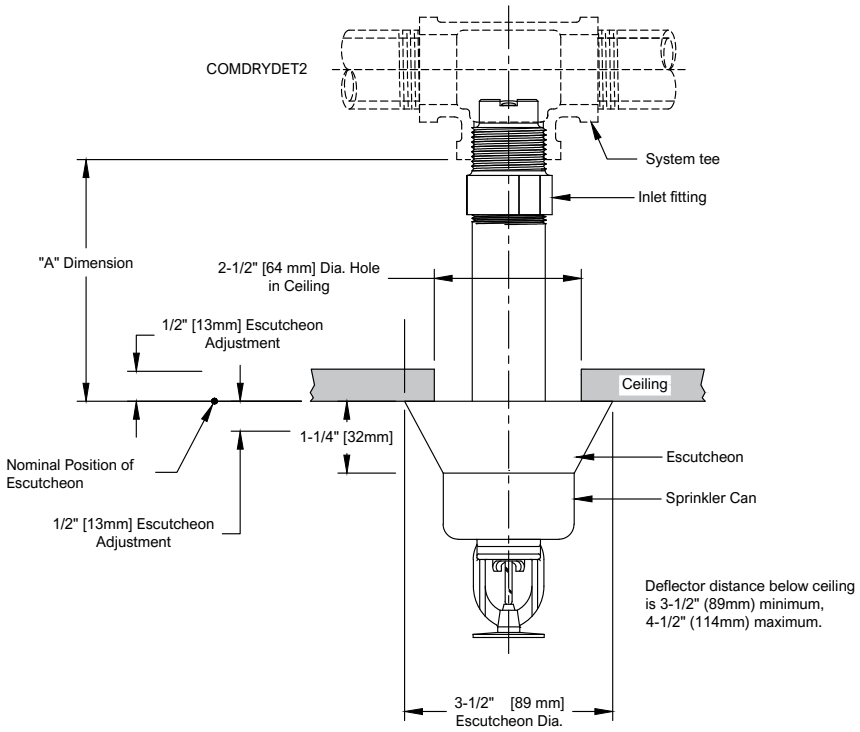
Table C

"A" Dimension in (mm)	Temperature Classification	Temperature Rating F (C)	Glass Bulb Color	Approvals	Sprinkler Guard
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	Ordinary	155°F (68°C)	Red	cULus, FM	C-2
	Intermediate	175°F (79°C)	Yellow	cULus	
		200°F (93°C)	Green	cULus, FM	
	High	286°F (141°C)	Blue	cULus, FM	

Note: Standard inlet fitting threads are 1" NPT or ISO7-R1. Inlet fitting is also available with 3/4" NPT and ISO-R3/4 threads for replacement of existing sprinklers (cULus Listed only).

Model F3QR56 Dry Pendent Sprinkler: HB Escutcheon

Figure 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

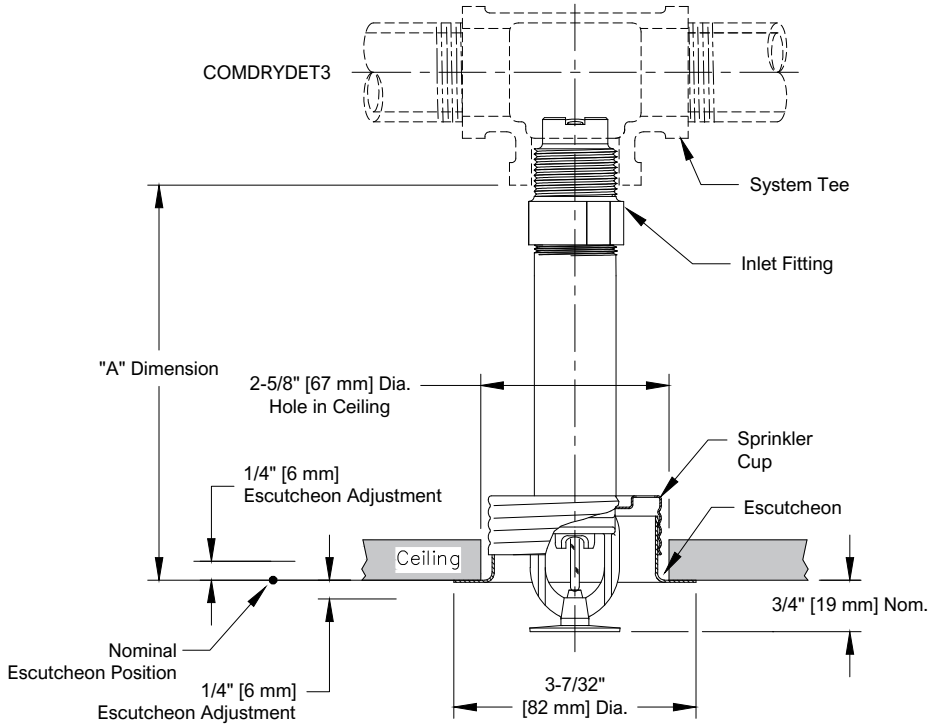
Notes:
1. UL Listed as Corrosion Resistant.
2. Escutcheons do not carry corrosion resistant listings.
3. Base material is cold rolled steel unless noted.
4. FM Approved as Corrosion Resistant.

Model F3QR56 Dry Pendent: FP Escutcheon - SIN R5714 **Table D**

"A" Dimension in (mm)	Temperature Classification	Temperature Rating °F (°C)	Glass Bulb Color	Approvals	Sprinkler Guard
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	Ordinary	155°F (68°C)	Red	cULus, FM	N/A
	Intermediate	175°F (79°C)	Yellow	cULus	
		200°F (93°C)	Green	cULus, FM	
	High	286°F (141°C)	Blue	cULus	

Note: Standard inlet fitting threads are 1" NPT or ISO7-R1. Inlet fitting is also available with 3/4" NPT and ISO-R3/4 threads for replacement of existing sprinklers (cULus Listed only).

Model F3QR56 Dry Pendent Sprinkler: FP Escutcheon **Figure 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	
Sprinkler[1]	**Escutcheon[3][4]**
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

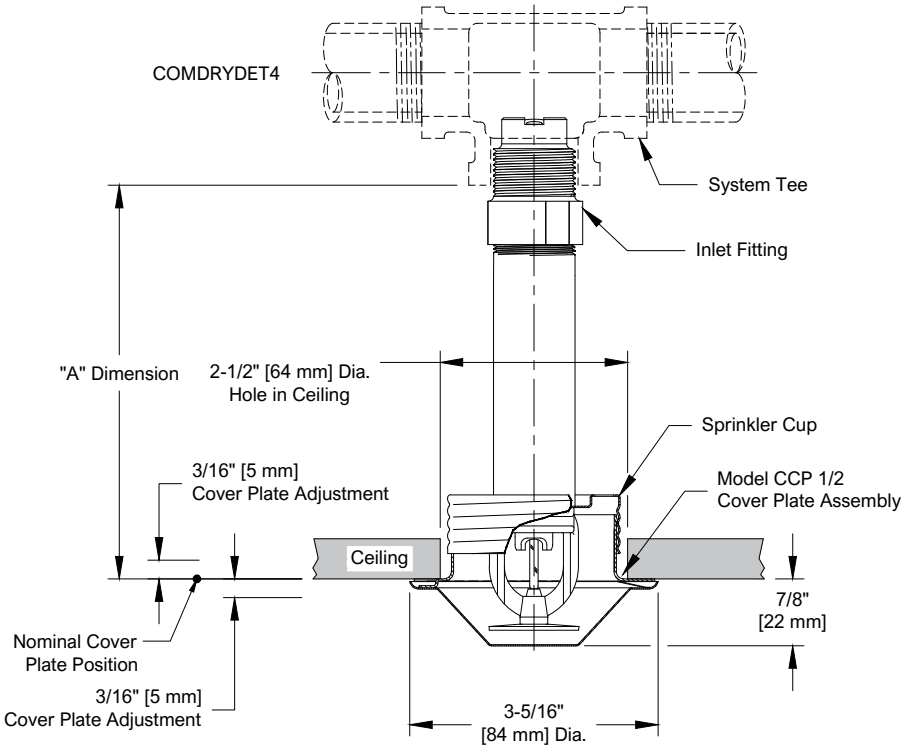
Notes:
1. Cup for FP Recessed is unfinished galvanized steel except electroless nickel PTFE sprinklers which are provided with a stainless steel cup
2. UL Listed as Corrosion Resistant.
3. Escutcheons do not carry corrosion resistant listings.
4. Base material is cold rolled steel unless noted.
5. FM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

Model F3QR56 Dry Pendent: CCP Cover Plate - SIN R5714 **Table E**

"A" Dimension in (mm)	Temperature Classification	Temperature Rating F (C)	Glass Bulb Color	Approvals	Sprinkler Guard
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	Ordinary	155°F (68°C)	Red	cULus, FM	N/A
	Intermediate	175°F (79°C)	Yellow	cULus	
		200°F (93°C)	Green	cULus, FM	
	High (See Caution)	286°F (141°C)	Blue	cULus	

Note: Standard inlet fitting threads are 1" NPT or ISO7-R1. Inlet fitting is also available with 3/4" NPT and ISO-R3/4 threads for replacement of existing sprinklers (cULus Listed only).

Model F3QR56 Dry Pendent Sprinkler: CCP Cover Plate **Figure 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 Concealed	
Sprinkler[1]	**Cover Plate[2]**
Bronze	White Polyester
	Chrome Bright
	Satin Chrome
	Bright Brass
	Unfinished Bronze
	Black Plate
	Custom Color

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

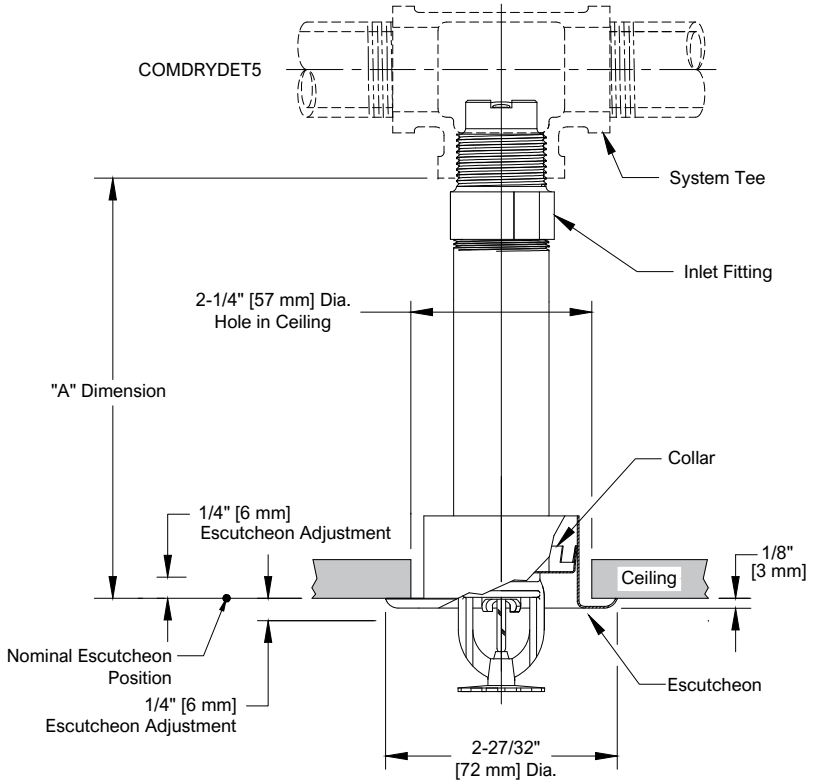
Caution: High temperature CCP sprinklers are provided with a 165°F (74°C) rated cover plate that is suitable for use where the ceiling temperature will not exceed 150°F (66°C). Do not use CCP style sprinklers where the ceiling temperature exceeds 150°F (66°C).

Model F3QR56 Dry Pendent: F1 Escutcheon - SIN R5714 **Table F**

"A" Dimension in (mm)	Temperature Classification	Temperature Rating °F (°C)	Glass Bulb Color	Approvals	Sprinkler Guard
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.	Ordinary	155°F (68°C)	Red	cULus, FM	N/A
	Intermediate	175°F (79°C)	Yellow	cULus	
		200°F (93°C)	Green	cULus, FM	
	High	286°F (141°C)	Blue	cULus	

Note: Standard inlet fitting threads are 1" NPT or ISO7-R1. Inlet fitting is also available with 3/4" NPT and ISO-R3/4 threads for replacement of existing sprinklers (cULus Listed only).

Model F3QR56 Dry Pendent Sprinkler: F1 Escutcheon **Figure 5**



Finish Combinations: F1 Recessed	
Sprinkler	**Escutcheon[2][3]**
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

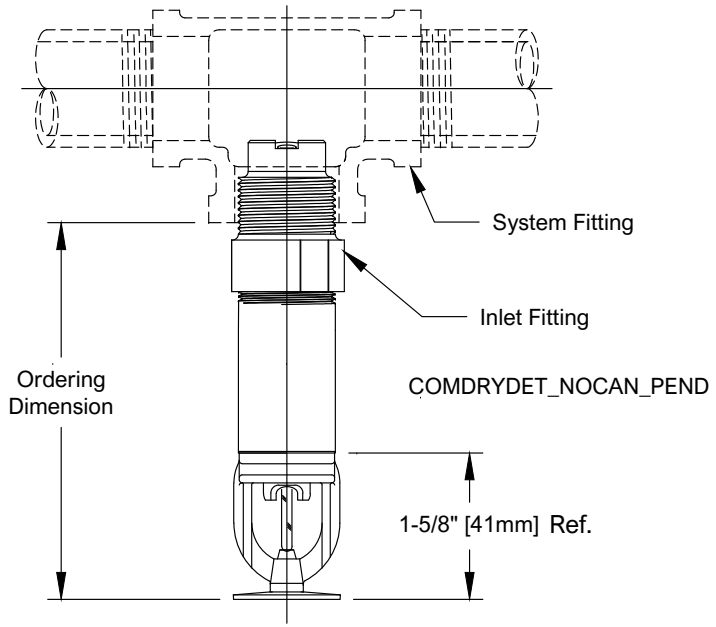
Notes:
1. UL Listed as Corrosion Resistant.
2. Escutcheons do not carry corrosion resistant listings.
3. Base material is cold rolled steel unless noted.
4. FM Approved as Corrosion Resistant.

Model F3QR56 Dry Pendent: No Escutcheon - SIN R5714 **Table G**

Order Dimension in (mm)	Temperature Classification	Temperature Rating °F (°C)	Glass Bulb Color	Approvals	Sprinkler Guard
5" to 48" (127mm to 1219mm) in 1/4" (6mm) increments for 1" connections or 5" to 36" (127mm to 914mm) in 1/4" (6mm) increments for 3/4" connections.	Ordinary	155°F (68°C)	Red	cULus, FM	C-2
	Intermediate	175°F (79°C)	Yellow	cULus	
		200°F (93°C)	Green	cULus, FM	
	High	286°F (141°C)	Blue	cULus, FM	

Note: Standard inlet fitting threads are 1" NPT or ISO7-R1. Inlet fitting is also available with 3/4" NPT and ISO-R3/4 threads for replacement of existing sprinklers (cULus Listed only).

Model F3QR56 Dry Pendent Sprinkler: No Escutcheon **Figure 6**



Note: Customer is responsible for determining the correct deflector distance from the ceiling or structure above.

Available Finishes: No Escutcheon
Sprinkler
Bronze
Chrome
White Polyester[1]
Black Polyester [1]
Custom Color Polyester [1]
Electroless Nickel PTFE [1][2]

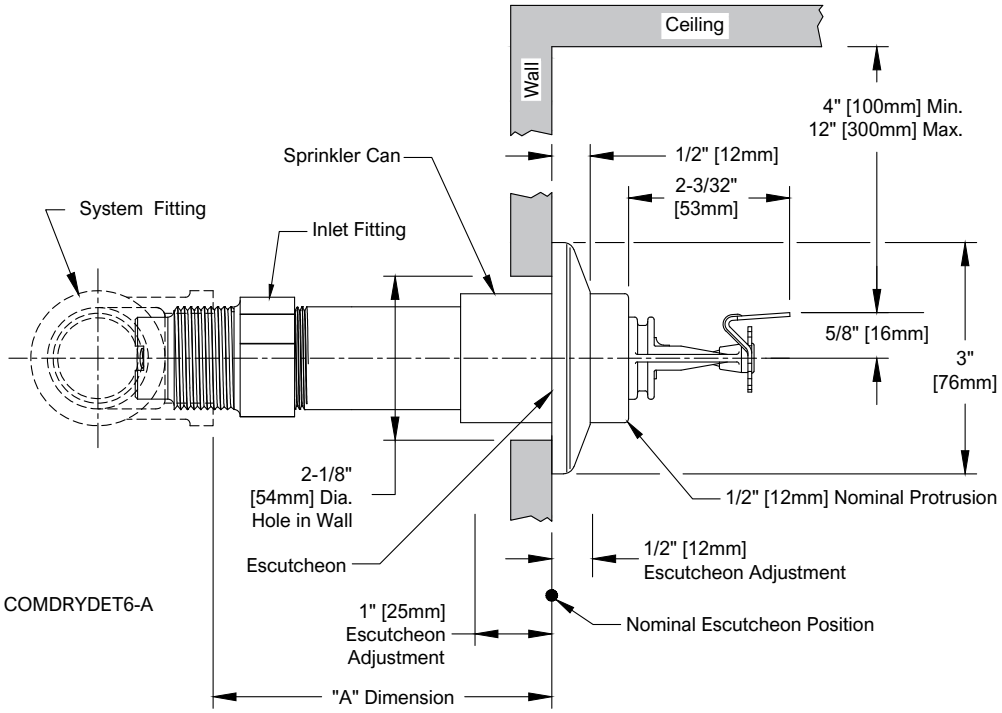
Notes:
1. UL Listed as Corrosion Resistant.
2. FM Approved as Corrosion Resistant.

Model F3QR56 Dry Horizontal Sidewall: Standard Escutcheon - SIN R5734 **Table H**

"A" Dimension in (mm)	Temperature Classification	Temperature Rating °F (°C)	Glass Bulb Color	Approvals (Light Hazard/HC-1 Only)	Sprinkler Guard
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	Ordinary	155°F (68°C)	Red	cULus, FM	C-2 (FM Only)
	Intermediate	175°F (79°C)	Yellow	cULus	
		200°F (93°C)	Green	cULus, FM	
	High	286°F (141°C)	Blue	cULus, FM	

Note: Standard inlet fitting threads are 1" NPT or ISO7-R1. Inlet fitting is also available with 3/4" NPT and ISO-R3/4 threads for replacement of existing sprinklers (cULus Listed only).

Model F3QR56 Dry Horizontal Sidewall: Standard Escutcheon **Figure 7**



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

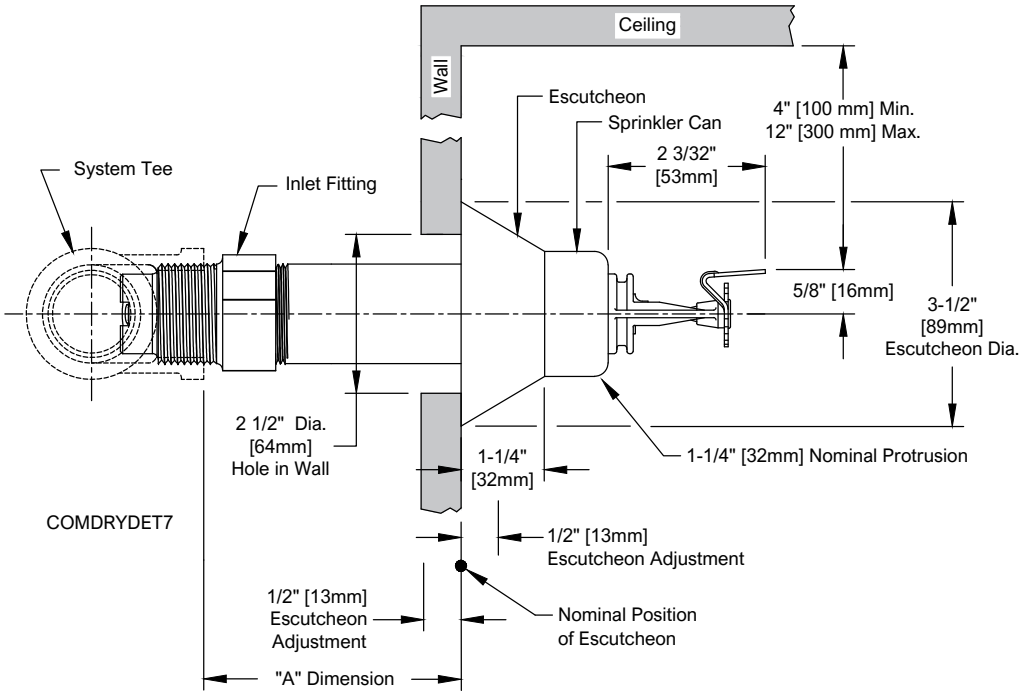
Notes:
1. UL Listed as Corrosion Resistant.
2. Escutcheons do not carry corrosion resistant listings.
3. Base material is 316 stainless steel unless noted.
4. FM Approved as Corrosion Resistant.

Model F3QR56 Dry Horizontal Sidewall: HB Escutcheon - SIN R5734 **Table I**

"A" Dimension in (mm)	Temperature Classification	Temperature Rating °F (°C)	Glass Bulb Color	Approvals (Light Hazard/HC-1 Only)	Sprinkler Guard
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	Ordinary	155°F (68°C)	Red	cULus, FM	C-2 (FM Only)
	Intermediate	175°F (79°C)	Yellow	cULus	
		200°F (93°C)	Green	cULus, FM	
	High	286°F (141°C)	Blue	cULus, FM	

Note: Standard inlet fitting threads are 1" NPT or ISO7-R1. Inlet fitting is also available with 3/4" NPT and ISO-R3/4 threads for replacement of existing sprinklers (cULus Listed only).

Model F3QR56 Dry Horizontal Sidewall: HB Escutcheon **Figure 8**



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.

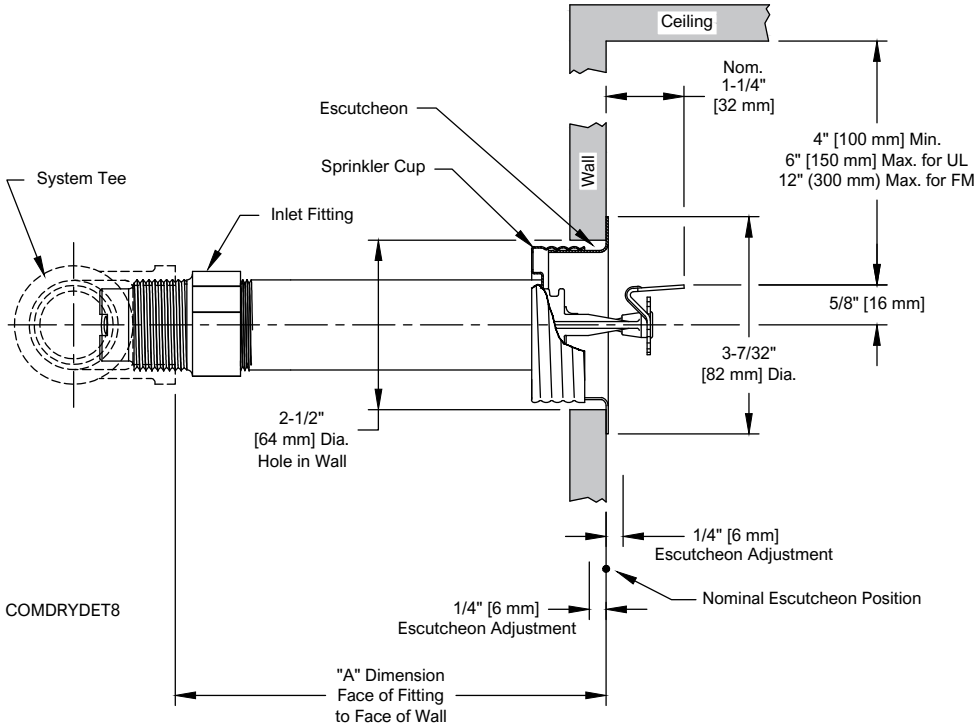
Note: The sprinkler can protrudes 1¼" when escutcheon is in nominal position. Escutcheon adjustment provides -½" (-12.7mm) to +½" (+12.7mm) "A" dimension adjustment range.

Model F3QR56 Dry Horizontal Sidewall: FP Escutcheon - SIN R5734 **Table J**

"A" Dimension in (mm)	Temperature Classification	Temperature Rating °F (°C)	Glass Bulb Color	Approvals (Light Hazard/HC-1 Only)	Sprinkler Guard
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	Ordinary	155°F (68°C)	Red	cULus, FM	N/A
	Intermediate	175°F (79°C)	Yellow	cULus	
		200°F (93°C)	Green	cULus, FM	
	High	286°F (141°C)	Blue	cULus	

Note: Standard inlet fitting threads are 1" NPT or ISO7-R1. Inlet fitting is also available with 3/4" NPT and ISO-R3/4 threads for replacement of existing sprinklers (cULus Listed only).

Model F3QR56 Dry Horizontal Sidewall: FP Escutcheon **Figure 9**



Finish Combinations: FP Recessed	
Sprinkler[1]	**Escutcheon[3][4]**
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 sprinklers which are provided with 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.

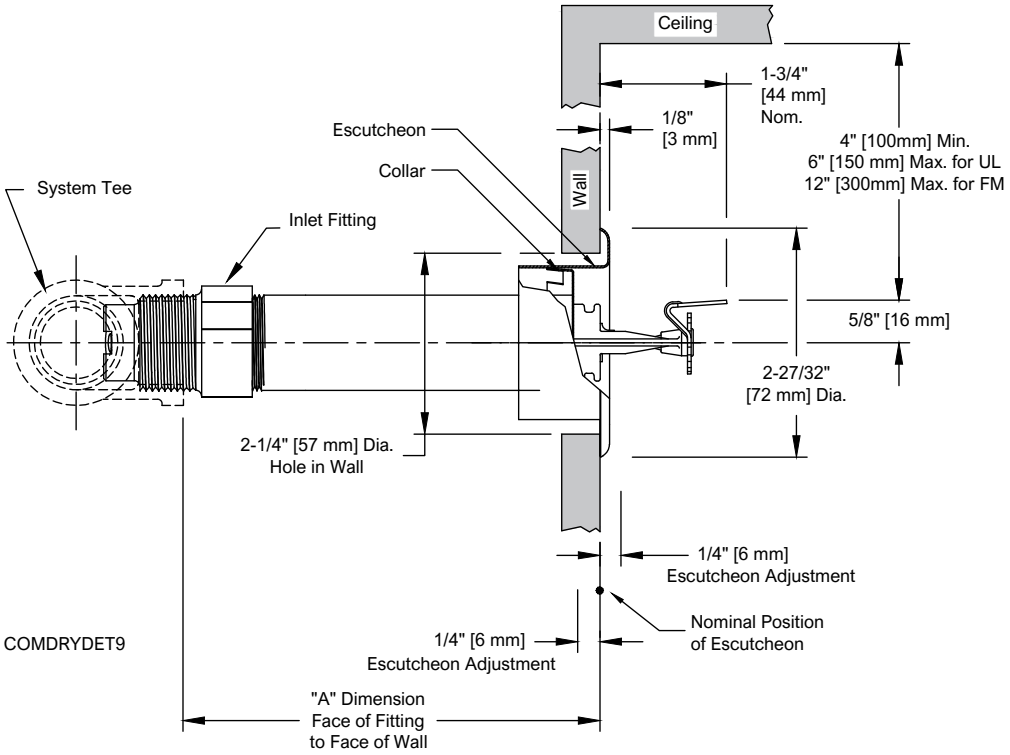
Note: Do not install the Model F3QR56 Dry Horizontal Sidewall sprinkler with the Model FP escutcheon in walls which are positively pressurized with respect to the protected space.

Model F3QR56 Dry Horizontal Sidewall: F1 Escutcheon - SIN R5734 **Table K**

"A" Dimension in (mm)	Temperature Classification	Temperature Rating °F (°C)	Glass Bulb Color	Approvals (Light Hazard/HC-1 Only)	Sprinkler Guard
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	Ordinary	155°F (68°C)	Red	cULus, FM	N/A
	Intermediate	175°F (79°C)	Yellow	cULus	
		200°F (93°C)	Green	cULus, FM	
	High	286°F (141°C)	Blue	cULus	

Note: Standard inlet fitting threads are 1" NPT or ISO7-R1. Inlet fitting is also available with 3/4" NPT and ISO-R3/4 threads for replacement of existing sprinklers (cULus Listed only).

Model F3QR56 Dry Horizontal Sidewall: F1 Escutcheon **Figure 10**



Finish Combinations: F1 Recessed	
Sprinkler	**Escutcheon[2][3]**
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

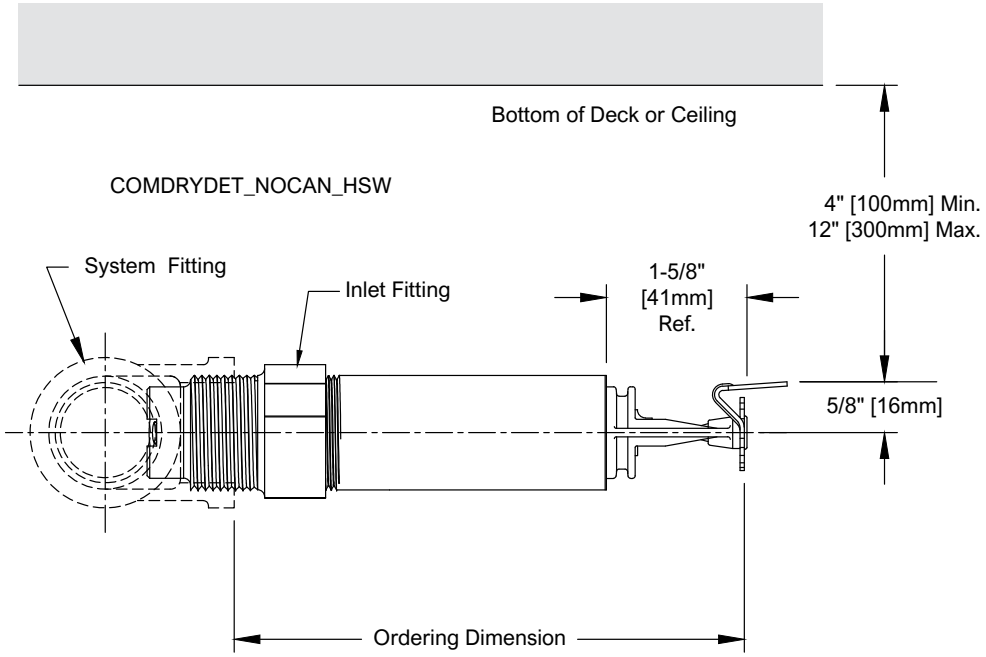
Notes:
1. UL Listed as Corrosion Resistant.
2. Escutcheons do not carry corrosion resistant listings.
3. Base material is cold rolled steel unless noted.
4. FM Approved as Corrosion Resistant.

Model F3QR56 Dry Horizontal Sidewall: No Escutcheon - SIN R5734 **Table L**

Order Dimension in (mm)	Temperature Classification	Temperature Rating °F (°C)	Glass Bulb Color	Approvals (Light Hazard/HC-1 Only)	Sprinkler Guard
5" to 48" (127mm to 1219mm) in 1/4" (6mm) increments for 1" connections or 5" to 36" (127mm to 914mm) in 1/4" (6mm) increments for 3/4" connections	Ordinary	155°F (68°C)	Red	cULus, FM	C-2 (FM only)
	Intermediate	175°F (79°C)	Yellow	cULus	
		200°F (93°C)	Green	cULus, FM	
	High	286°F (141°C)	Blue	cULus, FM	

Note: Standard inlet fitting threads are 1" NPT or ISO7-R1. Inlet fitting is also available with 3/4" NPT and ISO-R3/4 threads for replacement of existing sprinklers (cULus Listed only).

Model F3QR56 Dry Horizontal Sidewall: No Escutcheon **Figure 11**



Note: Customer is responsible for determining the correct distance from the wall to the sprinkler deflector.

Available Finishes: No Escutcheon
Sprinkler
Bronze
Chrome
White Polyester[1]
Black Polyester [1]
Custom Color Polyester [1]
Electroless Nickel PTFE [1][2]

Notes:
1. UL Listed as Corrosion Resistant.
2. FM Approved as Corrosion Resistant.

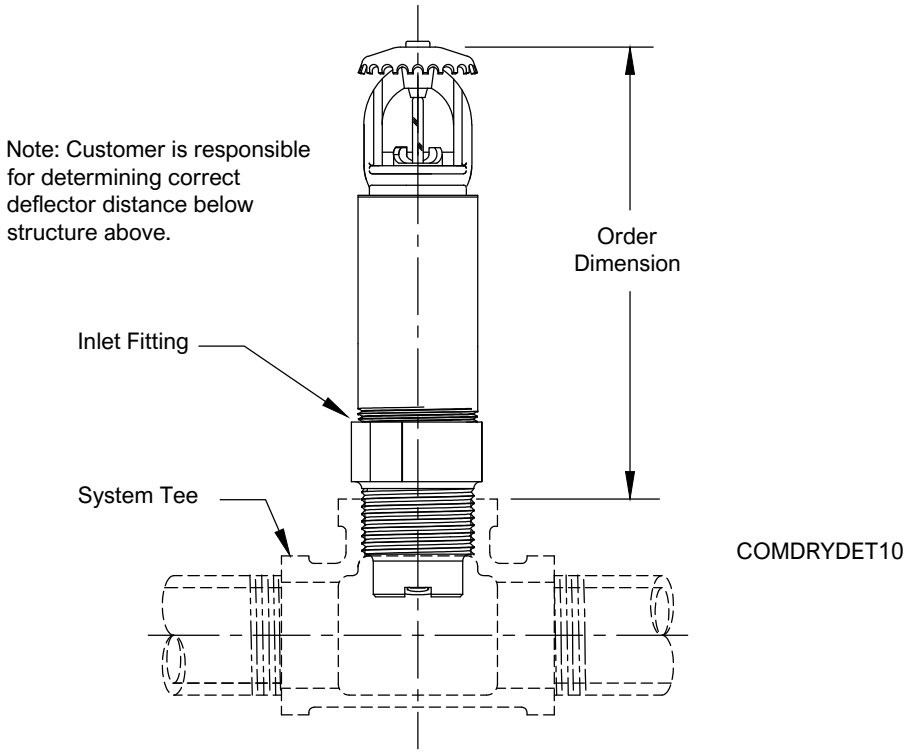
Model F3QR56 Dry Upright - SIN R5724

Table M

Order Dimension in (mm)	Temperature Classification	Temperature Rating °F (°C)	Glass Bulb Color	Approvals	Sprinkler Guard
5” to 48” (127 mm to 1219 mm)	Ordinary	155°F (68°C)	Red	cULus	N/A
	Intermediate	175°F (79°C)	Yellow		
		200°F (93°C)	Green		
	High	286°F (141°C)	Blue		

Model F3QR56 Dry Upright Sprinkler

Figure 12



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

Notes:

1. UL Listed as Corrosion Resistant.

Installation (General)

Dry sprinklers connected to wet pipe systems must be installed as indicated in Figure 14 and as required by NFPA 13 with the Exposed Minimum Barrel Length located in a heated area.

Reliable Model F3QR56 dry sidewall 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 15).

DO NOT install Reliable Model F3QR56 dry sidewall sprinklers into elbows or couplings, welded outlets, mechanical tees, or gasket sealed CPVC fittings.

See Figure 16 for acceptable and unacceptable installation practices.

F3QR56 with Standard Escutcheon

Cut a 2-1/8" (54mm) diameter hole in the wall as shown in Fig. 1. Apply a PTFE based sealant to the sprinkler threads before installing into the fitting. Use the Model F3R installation wrench on the square boss to tighten the sprinkler until it is secured in the sprinkler fitting. Installation is completed by removing the orange glass bulb protector and sliding the escutcheon over the finished sleeve until tight to the finished surface.

F3QR56 with HB Escutcheon

Cut a 2-1/2" (64mm) diameter hole in the wall as shown in Fig. 2. Apply a PTFE based sealant to the sprinkler threads before installing into the fitting. Use the Model F3R installation wrench on the square boss to tighten the sprinkler until it is secured in the sprinkler fitting. Installation is completed by removing the orange glass bulb protector and sliding the skirt over the finished sleeve until tight to the finished suface.

F3QR56 with FP Recessed Escutcheon

Cut a 2-5/8" (67mm) diameter hole in the wall as shown in Fig. 3. Apply a PTFE based sealant to the sprinkler threads before installing into the fitting. Use the Model XLO2 installation wrench (see Fig. 13) on the square boss to tighten the sprinkler until it is secured in the sprinkler fitting. Installation is completed by removing the orange glass bulb protector and pushing (or threading) the FP escutcheon into the threaded cup. Final adjustment is made by turning the FP escutcheon clockwise until the flange makes full contact with the wall surface.

F3QR56 CCP Concealed Cover Plate

Cut a 2-5/8" (67mm) diameter hole in the wall as shown in Fig. 4. Apply a PTFE based sealant to the sprinkler threads before installing into the fitting. Use the Model XLO2 installation wrench (see Fig. 13) on the square boss to tighten the sprinkler until it is secured in the sprinkler fitting. Installation is completed by removing the orange glass bulb protector and pushing (or threading) the SWC cover plate into the threaded cup. Final adjustment is made by turning the cover plate clockwise until the cover plate flange makes full contact with the finished surface.

Note:

1. The Model XLO2 installation wrench for recessed and concealed installations has a open side to accommodate the sprinkler deflector and can only be inserted in one way (see Figure 13). Care must be taken not to damage the deflector during installation.
2. Do not over-tighten sprinklers into fittings. It is recommended that Reliable dry sprinklers be installed using the wrench referenced in this bulletin. A pipe wrench may also be used to install dry sprinklers provided that it only engages the outer tube (steel pipe) of the assembly. Note that a pipe wrench will impart a large amount of torque into the final assembly. This torque will need to be matched or exceeded to remove the sprinkler at a later date. A leak free joint can normally be obtained by installing the sprinkler to a minimum torque of 22 ft-lb (30 N·m) after applying an appropriate thread sealant.
3. Glass bulb sprinklers have orange bulb protectors to minimize bulb damage during shipping, handling, and installation. Reliable installation wrenches are designed to install sprinklers while bulb protectors are in place. REMOVE THE PROTECTORS AT THE TIME THE SPRINKLER SYSTEM IS PLACED INTO SERVICE. Removal of the protectors before this time may leave the glass bulb vulnerable to damage. Remove protectors by undoing the clasp by hand. DO NOT USE TOOLS TO REMOVE THE PROTECTORS.
4. Do not remove the wax fillet in the gap between the cup that supports the bulb and the wrenching boss.

XLO2 Installation Procedure **Figure 13**

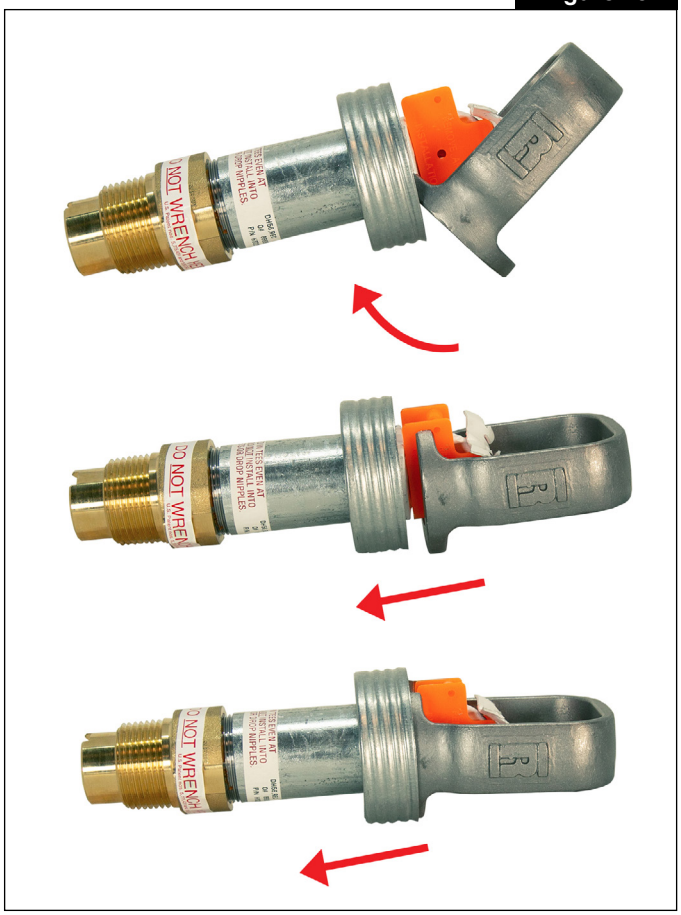


Figure 14

MINIMUM EXPOSED BARREL LENGTH WHEN CONNECTED TO WET PIPE SPRINKLER SYSTEM

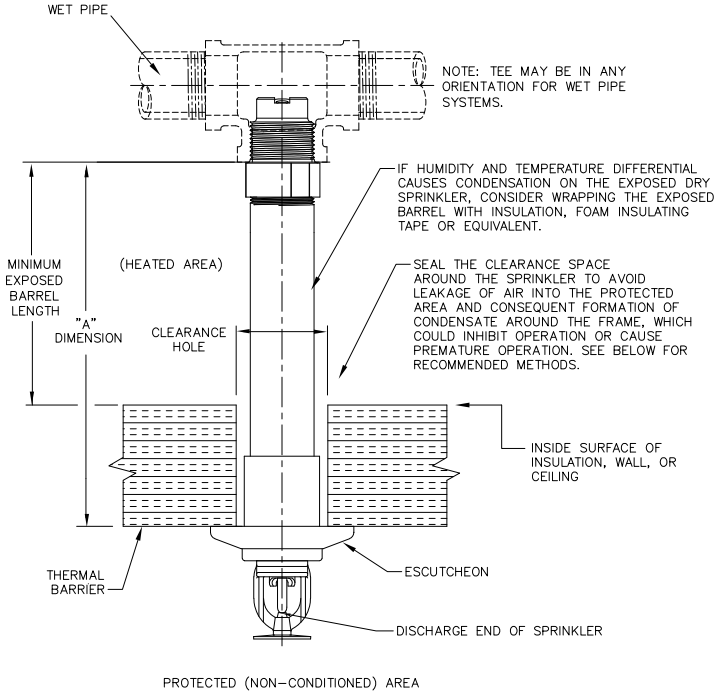
NOTE: STANDARD DRY PENDENT IS SHOWN, HOWEVER, MINIMUM EXPOSED BARREL LENGTH APPLIES TO ALL STYLES OF DRY SPRINKLERS CONNECTED TO A WET PIPE SYSTEM.

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)

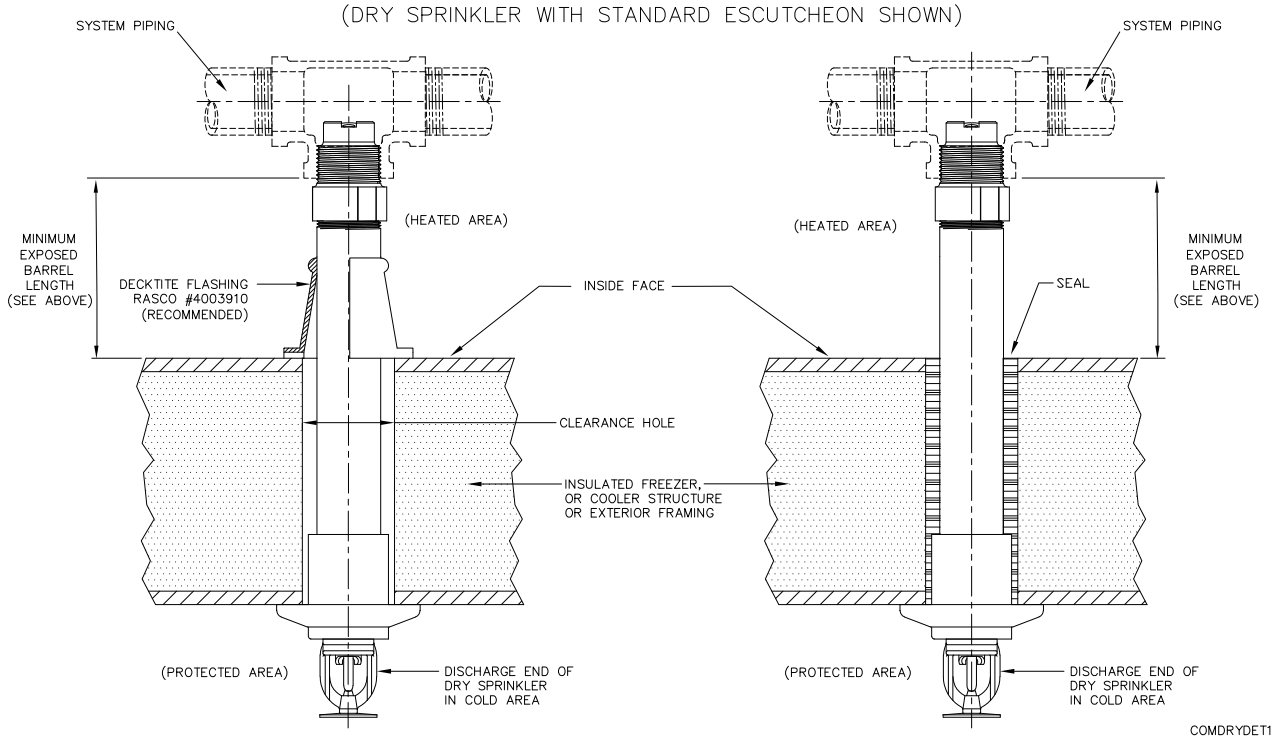
* FOR AMBIENT TEMPERATURES EXPOSED TO THE DISCHARGE END OF THE SPRINKLER THAT OCCUR BETWEEN THE VALUES LISTED, USE THE NEXT COOLER TEMPERATURE.

** 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)



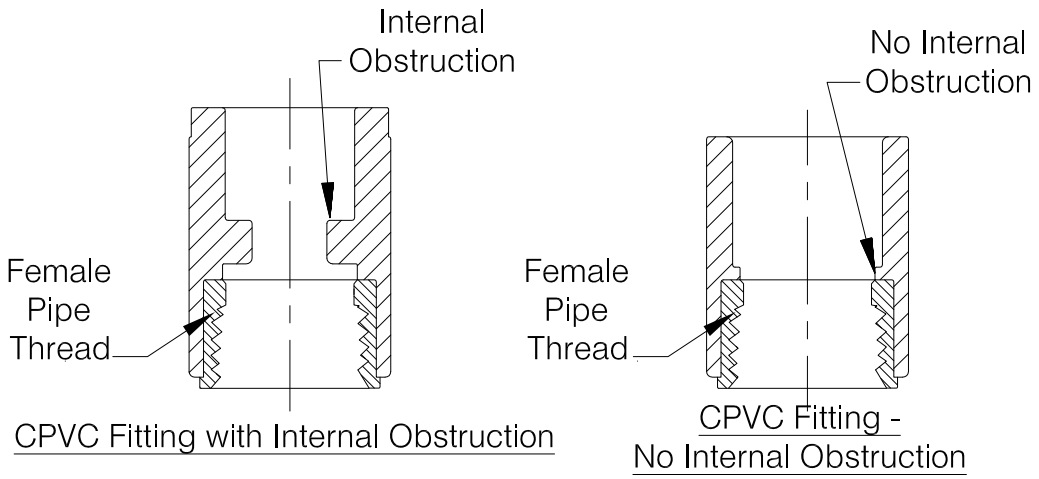
CAUTION

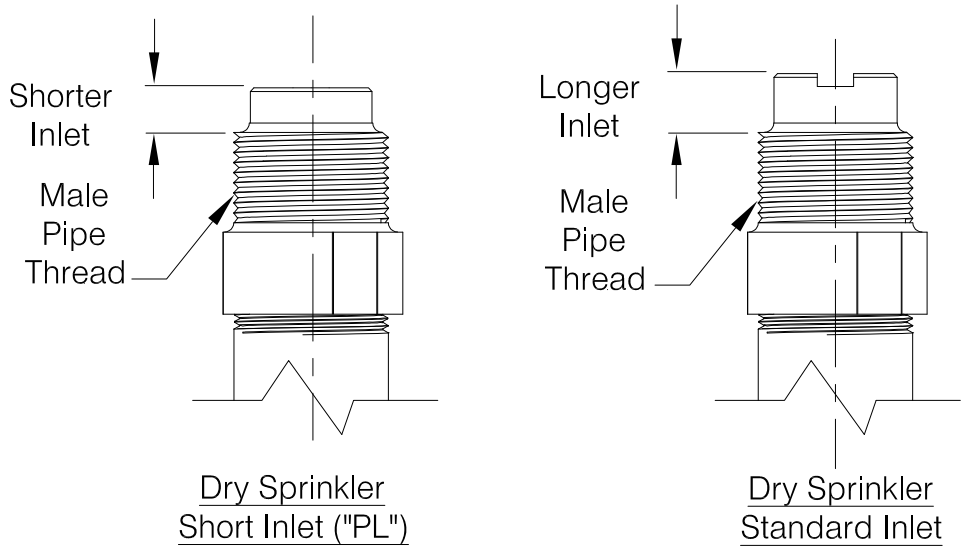
RELIABLE DRY SPRINKLERS MAY BE INSTALLED IN A LISTED CPVC SPRINKLER FITTING, ONLY UPON VERIFICATION THAT THE FITTING DOES NOT INTERFERE WITH THE SPRINKLER'S INLET.

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.





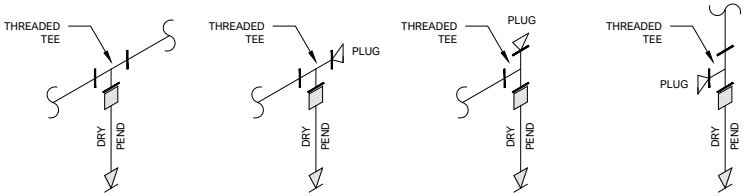
BE SURE TO ORDER THE CORRECT SPRINKLERS FOR YOUR APPLICATION

COMDRYDET2

Acceptable and Unacceptable Installation Practices for Steel Pipe Fittings

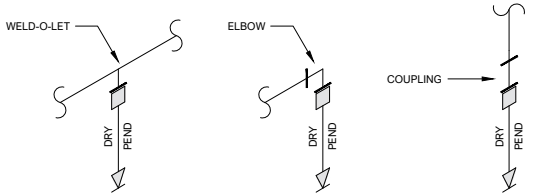
Figure 16

ACCEPTABLE INSTALLATIONS FOR DRY PENDENT SPRINKLERS



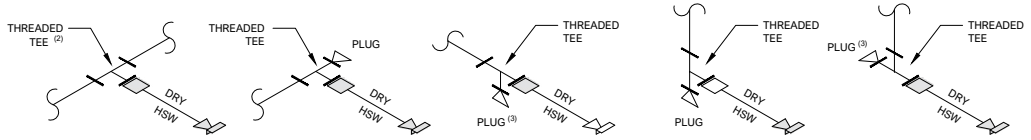
NOTES:
1. EXPOSED LENGTH OF DRY BARREL INSIDE OF CONDITIONED SPACE TO BE IN ACCORDANCE WITH THIS BULLETIN AND NFPA 13.

UNACCEPTABLE INSTALLATIONS FOR DRY PENDENT SPRINKLERS



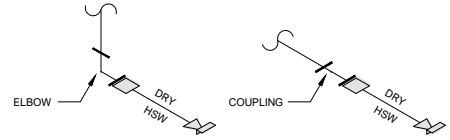
NOTES:
1. IN ADDITION TO THE UNACCEPTABLE INSTALLATIONS ABOVE, DRY PENDENT SPRINKLERS SHALL NOT BE INSTALLED INTO MECHANICAL TEES (SADDLE OR U-BOLT STYLE), OR INTERNALLY GASKETED CPVC FITTINGS.

ACCEPTABLE INSTALLATIONS FOR DRY SIDEWALL SPRINKLERS



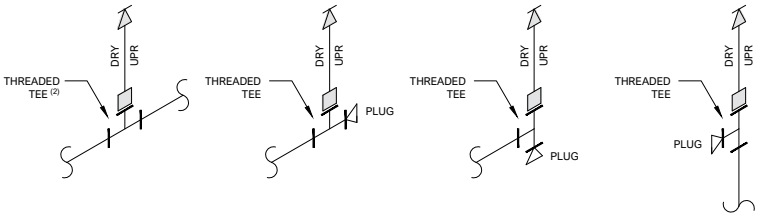
NOTES:
1. EXPOSED LENGTH OF DRY BARREL INSIDE OF CONDITIONED SPACE TO BE IN ACCORDANCE WITH THIS BULLETIN AND NFPA 13.
2. WELD-O-LETS IN COMPLIANCE WITH NFPA 13 REQUIREMENTS ALSO ACCEPTABLE FOR DRY SIDEWALL SPRINKLERS.
3. PREFERRED ORIENTATION OF PLUG IS DOWN.

UNACCEPTABLE INSTALLATIONS FOR DRY SIDEWALL SPRINKLERS



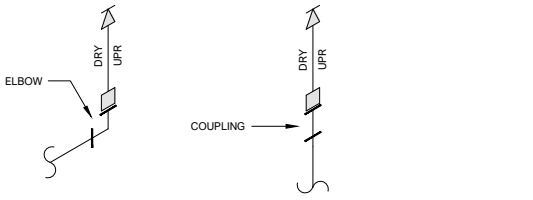
NOTES:
1. IN ADDITION TO THE UNACCEPTABLE INSTALLATIONS ABOVE, DRY SIDEWALL SPRINKLERS SHALL NOT BE INSTALLED INTO MECHANICAL TEES (SADDLE OR U-BOLT STYLE), OR INTERNALLY GASKETED CPVC FITTINGS.

ACCEPTABLE INSTALLATIONS FOR DRY UPRIGHT SPRINKLERS

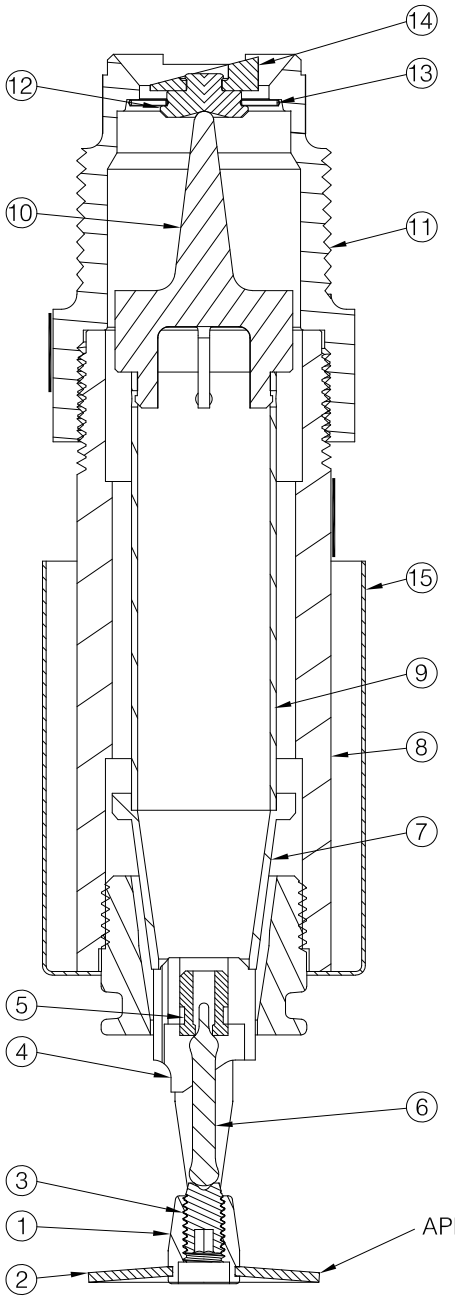


NOTES:
1. EXPOSED LENGTH OF DRY BARREL INSIDE OF CONDITIONED SPACE TO BE IN ACCORDANCE WITH THIS BULLETIN AND NFPA 13.
2. WELD-O-LETS IN COMPLIANCE WITH NFPA 13 REQUIREMENTS ALSO ACCEPTABLE FOR DRY UPRIGHT SPRINKLERS.

UNACCEPTABLE INSTALLATIONS FOR DRY UPRIGHT SPRINKLERS



NOTES:
1. IN ADDITION TO THE UNACCEPTABLE INSTALLATIONS ABOVE, DRY UPRIGHT SPRINKLERS SHALL NOT BE INSTALLED INTO MECHANICAL TEES (SADDLE OR U-BOLT STYLE), OR INTERNALLY GASKETED CPVC FITTINGS.



Item	Description	Material
1	Frame	UNS C83600 Brass
2	Deflector	UNS C51000 Bronze
3	Load Screw	UNS C22000 Brass
4	Seat Adapter	UNS C36000 Brass
5	Bulb Insert	UNS C31400 Copper
6	Glass Bulb	Glass/Glycerin Solution
7	Orifice Adapater	UNS C36000 Brass
8	Outer Tube	Galvanized Steel
9	Inner Tube	UNS C23000 Brass
10	Yoke	UNS C38000 Brass
11	Inlet	UNS C35330 Brass
12	Cap	UNS C54400 Brass
13	Spring Washer/Seal	PTFE Coated Beryllium Nickel
14	Flip Disk	UNS C54400 Brass
15	Can/Escutcheon	Varies (Not used on all models)

NOTE: PIPE WRENCH MAY ONLY BE USED ON OUTER STEEL BARREL OF SPRINKLER

COMDRYDET13

APPEARANCE OF DEFLECTOR WILL VARY DEPENDING ON MODEL

Wrench Options

F3R Wrench
(Standard, HB, and No Escutcheon trims)

XLO2 Wrench
(FP Recessed, F1 Recessed, and CCP trims)

Maintenance

Reliable Model F3QR56 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 Reliable Automatic Sprinkler Co., Inc. guarantee, terms, and conditions, visit www.reliablesprinkler.com.

Patents

US Patent No. 7,841,418

Ordering Information

Specify:

Model F3QR56 Dry Sprinkler
- Upright
- Pendent
- Horizontal Sidewall

Trim Style
- Standard Escutcheon
- HB Escutcheon
- FP Recessed Escutcheon
- F1 Recessed Escutcheon
- CCP Cover Plate (Pendent only)
- No Escutcheon

Temperature Rating
- See available temperatures (depending on trim style and approvals) on pages 2-13

Finish
- See available finish combinations (depending on trim style and approvals) on pages 2-13

Length
- For dry pendent and sidewall sprinklers with trim, “A” dimension is measured from face of fitting to face of finished ceiling or wall in 1/4” (6mm) increments.
- For dry upright sprinklers and sprinklers with no trim, order dimension is from face of fitting to deflector in 1/4” (6mm) increments.

Notes:
1. Lengths are based upon a normally gauged pipe thread “make-up” of .60 inch (15mm) per ANSI B2.1 (approximately 7-1/2 threads).

Installation Wrench
- Model F3R (Standard, HB, and No Escutcheon trims)
- Model XLO2 (FP Recessed, F1 Recessed & CCP trims)

Model 350ASTDA

Double Check Detector Assembly

Application

Designed for installation on water lines in fire protection systems to protect against both backsiphonage and back-pressure of polluted water into the potable water supply. Model 350ASTDA shall provide protection where a potential health hazard does not exist. Incorporates metered by-pass to detect leaks and unauthorized water use.

Standards Compliance (Horizontal & Vertical)

- ASSE® Listed 1048
- AWWA Compliant C510 (with gates only) and C550
- UL® Classified
- C-UL® Classified
- FM® Approved
- CSA® Certified B64.5
- Approved by the Foundation for Cross Connection Control and Hydraulic Research at the University of Southern California
- Meets the requirements of NSF/ANSI/CAN 61*

*(0.25% MAX. WEIGHTED AVERAGE LEAD CONTENT)

By-Pass Backflow Assembly 3/4" Model 950XLD

Materials

Main valve body	304L Stainless steel
Access covers	304L Stainless steel
Internals	Stainless steel, 300 Series NORYL™
Fasteners & springs	Stainless Steel, 300 Series
Elastomers	EPDM (FDA approved)
	Buna Nitrile (FDA approved)
Polymers	NORYL™

Features

Sizes:	2 1/2", 3", 4", 6", 8", 10"	
Maximum working water pressure		175 PSI
Maximum working water temperature		140°F
Hydrostatic test pressure		350 PSI
End connections	(Grooved for steel pipe)	AWWA C606
	(Flanged)	ANSI B16.42 Class 150

Dimensions & Weights (do not include pkg.)

MODEL 350ASTDA SIZE		WEIGHT							
		WITH OS&Y GATES (GXF)		WITH OS&Y GATES (GXG)		WITH BUTTERFLY VALVES (GXG)		WITH BUTTERFLY VALVES (FXG)	
in.	mm	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
2 1/2	65	126	57	116	53	93	42	103	47
3	80	143	65	131	60	97	44	110	50
4	100	218	99	198	90	101	46	123	56
6	150	352	160	322	147	164	74	194	88
8	200	667	303	613	278	350	159	373	169
10	250	885	401	827	375	463	210	521	236

LEAD FREE

NSF/ANSI/CAN 61

(SHOWN WITH OPTIONAL FLANGED END BUTTERFLY VALVES)

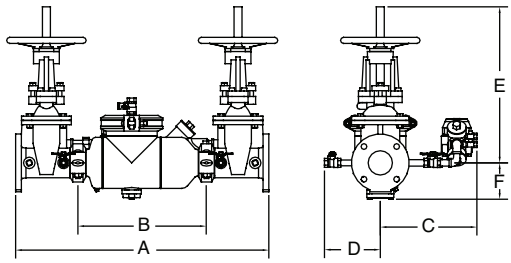
Options (Suffixes can be combined)

☐	-	with flanged end OS & Y gate valves (standard)
☐ LM	-	less water meter
☐	-	with gallon meter (standard)
☐ CFM	-	with cu ft meter
☐ CMM	-	with cu meter meter
☐ G	-	with grooved end OS&Y gate valves
☐ FG	-	with flanged inlet gate connection and grooved outlet gate connection
☐ PI	-	with Post Indicator Gate Valves
☐ BG	-	with grooved end butterfly valves with integral supervisory switches
☐ BF	-	with flanged end butterfly valves with integral supervisory switches
☐ RV	-	with By-pass on right hand side

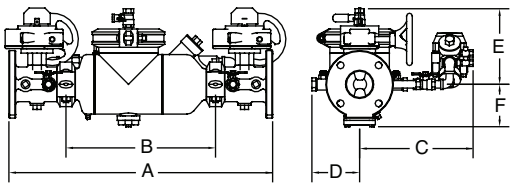
Accessories

- ☐ Repair kit (rubber only)
- ☐ Thermal expansion tank (Model XT)
- ☐ OS & Y Gate valve tamper switch (OSY-40)

MODEL 350ASTDA with OS&Y option



MODEL 350ASTDA with BF option



MODEL 350ASTDA SIZE		DIMENSION (approximate)																	
		A		A WITH BUTTERFLY VALVES		B LESS GATE VALVES		C		D		E OS&Y OPEN		E OS&Y CLOSED		E WITH BUTTERFLY VALVES		F	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
2 1/2	65	31 7/8	810	28 3/4	730	n/a	n/a	12	305	7 1/4	184	17 3/4	451	15 3/8	391	8 1/4	210	5	127
3	80	32 7/8	835	29 3/8	746	n/a	n/a	12	305	7 1/4	184	20 1/4	514	17	432	8 1/4	210	5	127
4	100	34 7/8	886	30 1/4	768	n/a	n/a	12	305	8	203	22 1/2	572	18 1/4	464	9	229	5	127
6	150	43 1/2	1105	36 1/2	927	n/a	n/a	10 1/2	267	10	254	30 1/2	775	24 1/4	616	10 1/4	260	6	152
8	200	52 3/4	1340	45 3/4	1162	n/a	n/a	15 1/8	384	11	279	37	940	28 1/2	724	18 1/2	470	8 3/8	213
10	250	55 3/4	1416	49 3/4	1264	n/a	n/a	15 1/8	384	12	305	45 5/8	1159	34 3/4	883	18 1/2	470	8 3/8	213

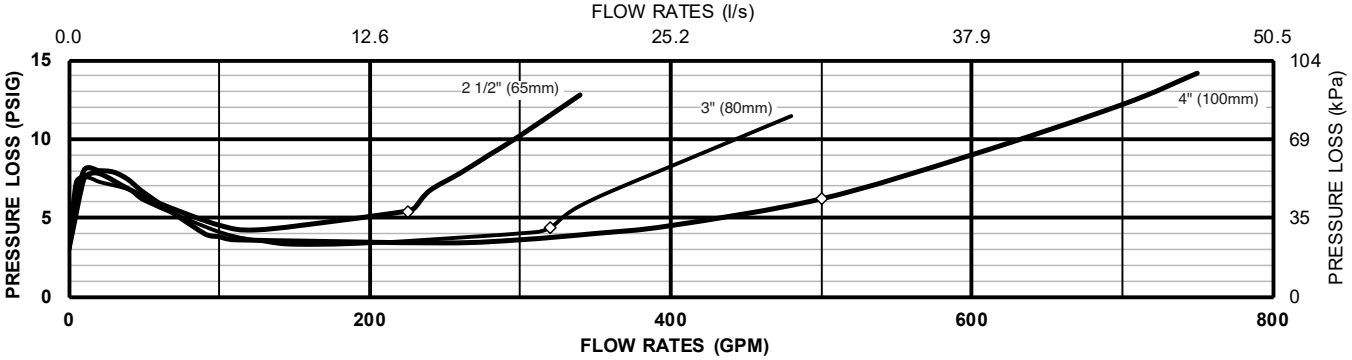
Zurn Industries, LLC | Wilkins
1747 Commerce Way, Paso Robles, CA U.S.A. 93446 Ph. 855-663-9876, Fax 805-238-5766
In Canada | **Zurn Industries Limited**
7900 Goreway Drive, Unit 10, Brampton, Ontario L6T 5W6, 877-892-5216
www.zurn.com

Rev. Q
Date: 08/20
Document No. BF-350ASTDA
Product No. Model 350ASTDA
Patent zurn.com/patents

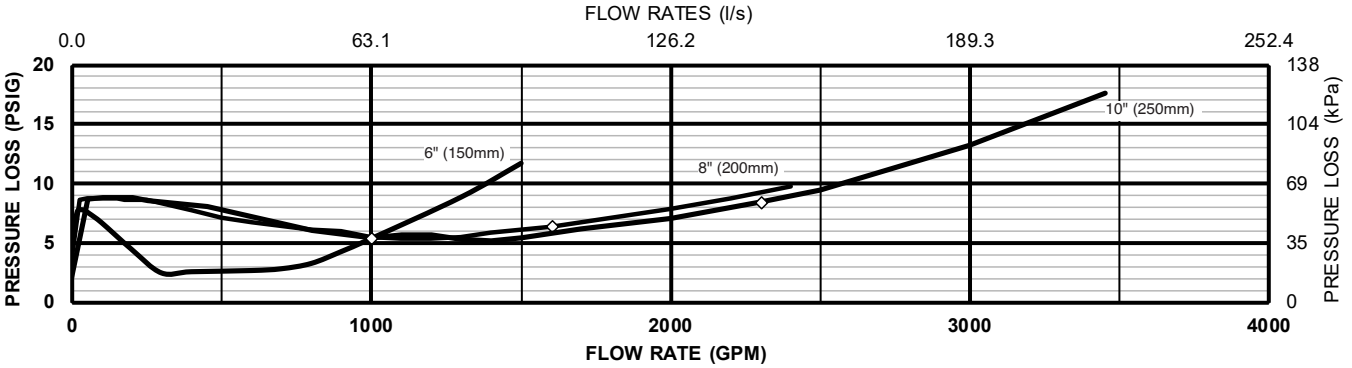
Flow Characteristics

◇Rated Flow (established by approval agencies)

MODEL 350ASTDA 2 1/2", 3" & 4" (STANDARD & METRIC)



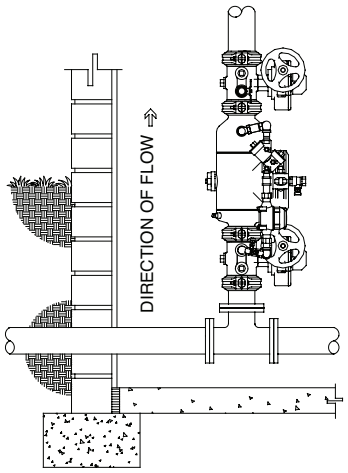
MODEL 350ASTDA 6" 8" & 10" (STANDARD AND METRIC)



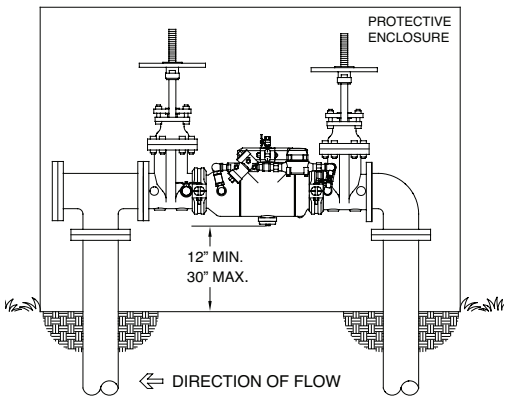
Typical Installation

Local codes shall govern installation requirements. Unless otherwise specified, the assembly shall be mounted at a minimum of 12" (305mm) and a maximum of 30" (762mm) above adequate drains with sufficient side clearance for testing and maintenance. The installation shall be made so that no part of the unit can be submerged.

Capacity thru Schedule 40 Pipe (GPM)				
Pipe size	5 ft/sec	7.5 ft/sec	10ft/sec	15 ft/sec
2 1/2"	**75**	**112**	**149**	**224**
3"	115	173	230	346
4"	198	298	397	595
6"	450	675	900	1351
8"	780	1169	1559	2339
10"	1229	1843	2458	3687
12"	1763	2644	3525	5288



ZURN WILKINS MODEL 350ASTDABG
INDOOR VERTICAL INSTALLATION



ZURN WILKINS MODEL 350ASTDA
OUTDOOR HORIZONTAL INSTALLATION

Specifications

The Double Check Detector Backflow Prevention Assembly shall be certified to NSF/ANSI/CAN 61, ASSE® Listed 1048, and supplied with full port gate valves. The main body and access cover shall be 304L Stainless Steel, the seat ring and check valve shall be Noryl™, the stem shall be stainless steel (ASTM A 276) and the seat disc elastomers shall be EPDM. The first and second check valves shall be accessible for maintenance without removing the device from the line. The Double Check Detector Backflow Prevention Assembly shall be a ZURN WILKINS Model 350ASTDA.

Zurn Industries, LLC | Wilkins
1747 Commerce Way, Paso Robles, CA U.S.A. 93446 Ph. 855-663-9876, Fax 805-238-5766
In Canada | **Zurn Industries Limited**
7900 Goreway Drive, Unit 10, Brampton, Ontario L6T 5W6, 877-892-5216
www.zurn.com

Model CV-1F Grooved End Swing Check Valves

IMPORTANT
Refer to Technical Data Sheet TFP2300 for warnings pertaining to regulatory and health information.

Scan the QR code or enter the URL in a web browser to access the most up-to-date electronic version of this document. Data rates may apply.

docs.jci.com/tycofire/tfp1550

General Description

The TYCO Model CV-1F Grooved End Swing Check Valves are compact and rugged swing-type units that allow water flow in one direction and prevent flow in the opposite direction. A resilient elastomer seal facing on the spring-loaded clapper ensures a leak-tight seal and non-sticking operation.

The Model CV-1F Grooved End Swing Check Valves are furnished with grooved ends and can be installed using GRINNELL Grooved Couplings or GRINNELL Figure 71 Flange Adapters. The Model CV-1F Check Valves have been designed with a removable cover for ease of field maintenance. These valves can be installed horizontally (with cover in the upward position) or vertically with the flow in the upward direction, see Figure 3.

A check valve maintenance kit is available to allow backflushing through a fire department connection without removing the Model CV-1F Grooved End Swing Check Valve from the riser. Refer to technical data sheet TFP1555.

Model CV-1F is a re-designation for Central Figure 590F and GRINNELL Figure 590F Grooved End Swing Check Valves.

NOTICE

The TYCO Model CV-1F Grooved End Swing Check Valves described herein must be installed and maintained in compliance with this document and with the applicable standards of the NATIONAL FIRE PROTECTION ASSOCIATION (NFPA), in addition to the standards of any authorities having jurisdiction. Failure to do so may impair the performance of these devices.

Never remove any piping component nor correct or modify any piping deficiencies without first de-pressurizing and draining the system. Failure to do so may result in serious personal injury, property damage, and/or impaired device performance.

The owner is responsible for maintaining their fire protection system and devices in proper operating condition. Contact the installing contractor or product manufacturer with any questions.

Technical Data

Approvals
Compliance with CE Pressure Equipment Directive (PED) and Standards of Engineering Practice

- 2 in. to 12 in. (DN50 to DN300): UL and C-UL Listed, FM Approved, Bureau Veritas
- 2 1/2 in. to 10 in. (DN65 to DN250): VdS Approved Certificate No. G4060018

Sizes
2 in. to 12 in. (DN50 to DN300)

Maximum Working Pressure
UL/FM - 300 psi (20,7 bar)
VdS - 16 bar

Valve Assembly Finish
Red, non-lead paint

For fire protection pressure rating, listing and approval information, contact your TYCO representative.

Installation

The Model CV-1F Grooved End Swing Check Valves are to be installed in accordance with this section:

Step 1. The arrow cast on the body must point in the direction of the flow.

Step 2. Valves installed vertically must be positioned with the flow in the upward direction.

Step 3. Valves installed horizontally must be positioned with the cover facing up, see Figure 3.

Step 4. Grooved end pipe couplings used with the Model CV-1F Grooved End Swing Check Valves must be installed in accordance with manufacturer's instructions.

Note: *Valves should be installed a reasonable distance downstream from pumps, elbows, expanders, reducers, or other similar devices to extend the valve life. Standard piping practices call for a minimum of five (5) times the pipe diameter for general use.*

Nominal Pipe Size		Nominal Dimensions In. (mm)							Cover Bolt Torque lb-ft (N·m)	Approx. Weight lb (kg)
Valve Size In. (DN)	Pipe O.D. In. (mm)	A	B	C	D	E	F	J		
2 (50)	2.37 (60.3)	6.75 (171.5)	1.96 (49.8)	1.96 (49.8)	2.57 (65.3)	3.25 (82.3)	4.75 (120.7)	1.62 (41.5)	7 (10)	9.0 (4.5)
2 1/2 (65)	2.88 (73.0)	8.00 (203.2)	5.38 (136.7)	2.63 (66.7)	3.09 (78.5)	3.87 (98.3)	5.87 (149.1)	1.63 (41.7)	10 (14)	10.0 (4.5)
76.1 mm (65)	3.00 (76.1)	8.00 (203.2)	5.38 (136.7)	2.63 (66.7)	3.09 (78.5)	3.87 (98.3)	5.87 (149.1)	1.63 (41.7)	10 (14)	10.0 (4.5)
3 (80)	3.50 (88.9)	8.37 (212.6)	5.72 (145.3)	2.81 (71.4)	3.31 (84.1)	3.87 (98.3)	5.87 (149.1)	1.63 (41.7)	10 (14)	11.0 (5.0)
4 (100)	4.50 (114.3)	9.63 (244.6)	6.68 (169.7)	3.80 (96.5)	3.63 (92.2)	4.53 (115.4)	7.13 (181.1)	1.84 (46.7)	10 (14)	25.0 (11.3)
139.7 mm (125)	5.50 (139.7)	10.50 (266.7)	7.40 (188.0)	4.46 (113.3)	4.13 (104.9)	4.90 (124.5)	7.50 (190.5)	1.75 (44.5)	10 (14)	29.0 (13.2)
5 (125)	5.56 (141.3)	10.50 (266.7)	7.40 (188.0)	4.46 (113.3)	4.13 (104.9)	4.90 (124.5)	7.50 (190.5)	1.75 (44.5)	10 (14)	29.0 (13.2)
165.1 mm (150)	6.50 (165.1)	11.50 (292.1)	8.00 (203.2)	4.62 (117.3)	4.50 (114.3)	5.00 (127.0)	7.60 (193.0)	1.85 (47.0)	30 (40)	47.0 (21.3)
6 (150)	6.63 (168.3)	11.50 (292.1)	8.00 (203.2)	4.62 (117.3)	4.50 (114.3)	5.00 (127,0)	7.60 (193,0)	1.85 (47.0)	30 (40)	47.0 (21.3)
8 (200)	8.63 (219.1)	14.00 (355.6)	10.14 (257.8)	6.67 (169.4)	5.52 (140.2)	5.46 (138.7)	8.46 (214.9)	2.13 (54.1)	50 (68)	66.0 (29.9)
10 (250)	10.75 (273.1)	18.00 (457.2)	12.38 (314.5)	8.62 (218.9)	6.41 (162.8)	7.50 (190.5)	10.50 (266.7)	3.00 (76.2)	70 (95)	109.7 (49.4)
12 (300)	12.75 (323.9)	21.00 (533.4)	14.28 (362.7)	9.93 (252.2)	7.27 (184.7)	7.62 (193.5)	10.62 (269.7)	2.75 (69.9)	80 (108)	151.0 (68.0)

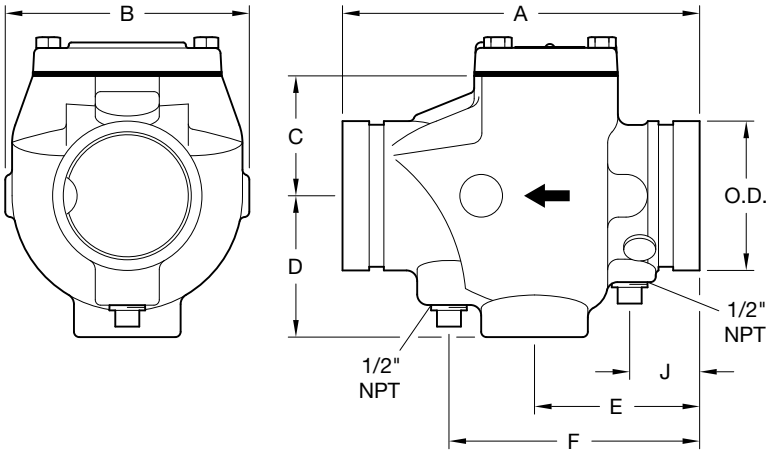


FIGURE 1
MODEL CV-1F GROOVED END SWING CHECK VALVES
NOMINAL DIMENSIONS

Care and Maintenance

The TYCO Model CV-1F Grooved End Swing Check Valves must be maintained and serviced in accordance with this section.

Before closing a fire protection system main control valve for maintenance work on the fire protection system that it controls, obtain permission to shut down the affected fire protection system from the proper authorities and notify all personnel who may be affected by this decision.

After placing a fire protection system in service, notify the proper authorities and advise those responsible for monitoring proprietary and/or central station alarms.

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the NATIONAL FIRE PROTECTION ASSOCIATION, such as NFPA 25, in addition to the standards of any authority having jurisdiction. Contact the installing contractor or product manufacturer with any questions. Any impairments must be immediately corrected.

Automatic sprinkler systems are recommended to be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

No.	Part	Material	Qty.
1	Body	Ductile Iron	1
2	Cover	Ductile Iron	1
3	Cover Gasket	Nitrile Rubber	1
4	Hex Cap Screw	Steel, Zinc Plated	AR
5	Clapper, 2 in. to 8 in. (DN50 to DN200)	Stainless Steel	1
	Clapper, 10 in. to 12 in. (DN250 to DN300)	Ductile Iron	

No.	Part	Material	Qty.
6	Clapper Facing	EPDM Grade "E"	1
7	Spring	Stainless Steel	1
8	Hinge Shaft	Stainless Steel	1
9	Retaining Ring	Stainless Steel	AR
11	Retention Bolt	Stainless Steel	1
13	Retaining Disc	Stainless Steel	1

No.	Part	Material	Qty.
14	Locknut	Stainless Steel	1
15	Plug 1/2 in. NPT	Cast Iron	2
16	Adhesive	Thread Sealer	AR
17	Nameplate	Aluminum	1
18	Rivet	Steel	2
19	Spacer	Stainless Steel	1

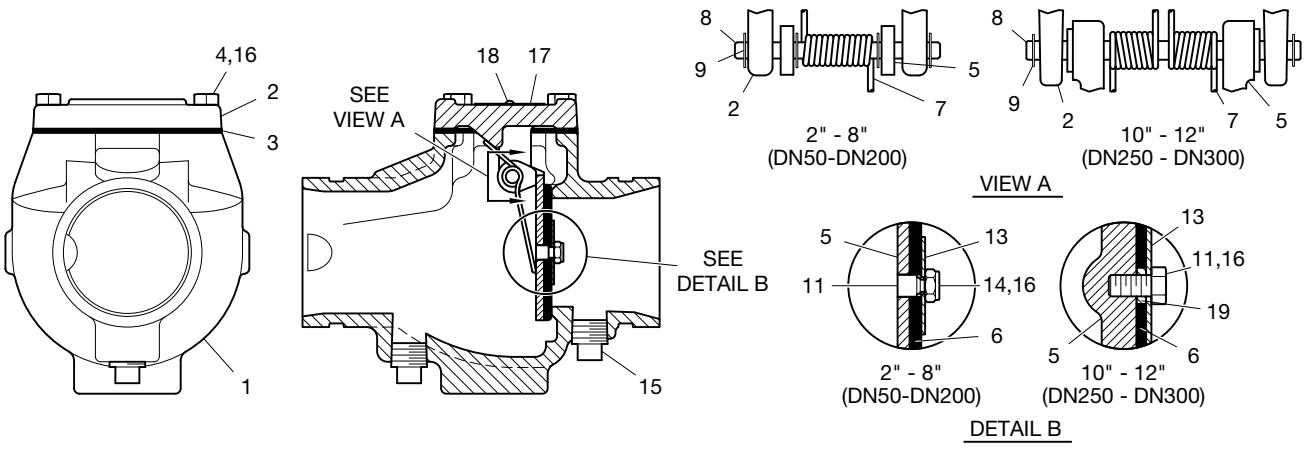
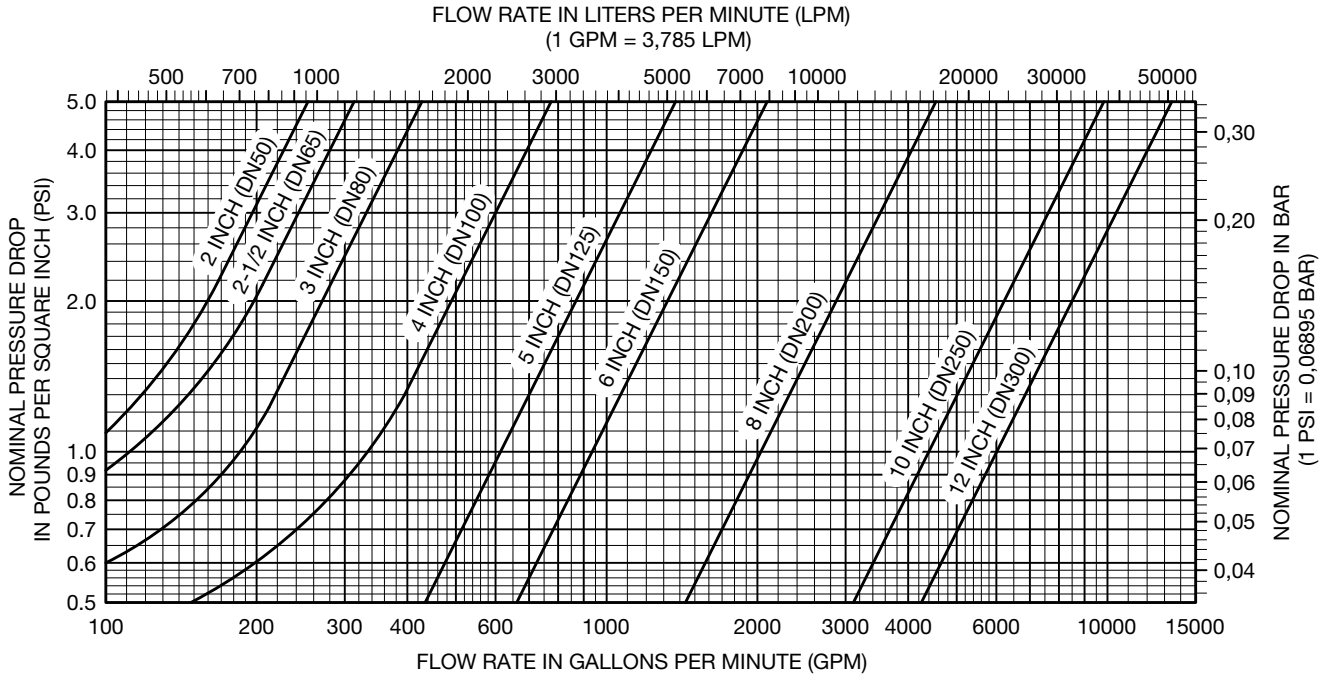


FIGURE 2
MODEL CV-1F GROOVED END SWING CHECK VALVES
ASSEMBLY



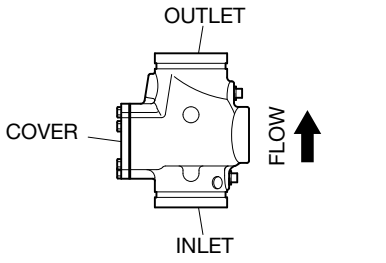
GRAPH A
MODEL CV-1F GROOVED END SWING CHECK VALVES
NOMINAL PRESSURE LOSS VS. FLOW

Valve Size In. (DN)	Pipe O.D. In. (mm)	Part Number
2 (50)	2.37 (60.3)	59-590-0-020
2 1/2 (65)	2.88 (73.0)	59-590-0-025
76.1 mm (65)	3.00 (76.1)	59-590-0-076
3 (80)	3.50 (88.9)	59-590-0-030
4 (100)	4.50 (114.3)	59-590-0-040
139.7 mm (125)	5.50 (139,7)	59-590-0-139
5 (125)	5.56 (141.3)	59-590-0-050
165.1 mm (150)	6.50 (165.1)	59-590-0-165
6 (150)	6.63 (168.3)	59-590-0-060
8 (200)	8.63 (219.1)	59-590-0-080
10 (250)	10.75 (273.1)	59-590-0-100
12 (300)	12.75 (323.9)	59-590-0-120

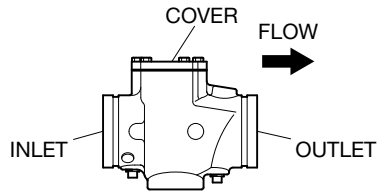
TABLE A
MODEL CV-1F GROOVED END SWING CHECK VALVES
PART NUMBER SELECTION

Valve Size In. (DN)	Pipe O.D. In. (mm)	Cover Gasket Part Number		Clapper Facing Part Number		Clapper Assembly Part Number	
		Americas Only	EMEA/APAC	Americas Only	EMEA/APAC	Americas Only	EMEA/APAC
2 (50)	2.37 (60.3)	595907020	97670501	59020EPDM	59020EPDM	97670201A	97670201
2 1/2 (65)	2.88 (73.0)	595907030	97561801	59025EPDME	59025EPDM	97562801A	97562065
76.1 mm (65)	3.00 (76.1)	595907030	97561801	59025EPDME	59025EPDM	—	97562801
3 (80)	3.50 (88.9)	595907030	97561801	59030EPDME	59030EPDM	97562201A	97562201
4 (100)	4.50 (114.3)	595907040	97512001	59040EPDME	59040EPDM	97549001A	97549001
139.7 mm (125)	5.50 (139.7)	595907040	97512001	59050EPDME	59050EPDM	—	97565501
5 (125)	5.56 (141.3)	595907040	97512001	59050EPDME	59050EPDM	97565501A	97562125
165.1 mm (150)	6.50 (165.1)	595907060	97521801	59060EPDME	59060EPDM	—	97524101
6 (150)	6.63 (168.3)	595907060	97521801	59060EPDME	59060EPDM	97524101A	97562150
8 (200)	8.63 (219.1)	595907080	97547901	59080EPDME	59080EPDM	97592201A	97592201
10 (250)	10.75 (273.1)	595907100	97600001	59100EPDM	59100EPDM	97598001A	97598001
12 (300)	12.75 (323.9)	595907120	97600002	59120EPDM	59120EPDM	97647701A	97647701

TABLE B
MODEL CV-1F GROOVED END SWING CHECK VALVES REPLACEMENT VALVE PARTS
PART NUMBER SELECTION



VERTICAL ORIENTATION



HORIZONTAL ORIENTATION

FIGURE 3
MODEL CV-1F GROOVED END SWING CHECK VALVES PROPER ORIENTATION

Limited Warranty

For warranty terms and conditions, visit www.tyco-fire.com.

Ordering Procedure

Contact your local distributor for availability. When placing an order, indicate the full product name and Part Number (P/N).

Model CV-1F Check Valve
Specify: Model CV-1F Grooved End Swing Check Valve, size (specify), P/N (specify per Table A)

Replacement Valve Parts
See Figure 2 to identify Parts.

Cover Gasket
Specify: Model CV-1F Grooved End Swing Check Valve, Cover Gasket, size (specify), P/N (specify per Table B)

Clapper Facing
Specify: Model CV-1F Grooved End Swing Check Valve, Clapper Seal Facing, EPDM Grade “E”, size (specify), P/N (specify per Table B)

Clapper Assembly
Includes items 2, 3, 5 to 14, and 17 to 19.

Specify: Model CV-1F Grooved End Swing Check Valve, Clapper Assembly, size (specify), P/N (specify per Table B)

1467 Elmwood Avenue, Cranston, RI 02910 | Telephone +1-401-781-8220

Johnson Controls

POTTER
The Symbol of Protection

VSR

Vane Type Waterflow Alarm Switch W/ Retard

Features

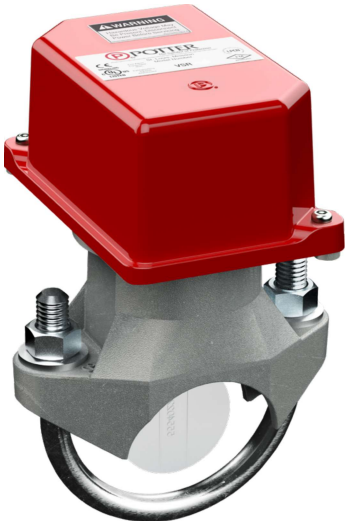
- Assembled in USA
- 0-90 second field replaceable time delay retard
- Easy to read retard time delay adjustment knob
- UL Listed models for 2"-6" steel pipe schedules 5 through 40
- UL Listed and FM approved models for 2"-8" steel pipe schedules 10 through 40
- Two SPDT (form C) contacts
- Weatherproof
- Easy to read wire terminal designations

⚠ WARNING

- Installation must be performed by qualified personnel and in accordance with all national and local codes and ordinances.
- Shock hazard. Disconnect power source before servicing. Serious injury or death could result.
- Risk of explosion. Not for use in hazardous locations. Serious injury or death could result.

CAUTION

Waterflow switches that are monitoring wet pipe sprinkler systems shall not be used as the sole initiating device to discharge AFFF, deluge, or chemical suppression systems. Waterflow switches used for this application may result in unintended discharges caused by surges, trapped air, or short retard times.



CE LPCB FM APPROVED SIGNALING c UL us LISTED

Description

The Model VSR is a vane type waterflow switch for use on wet sprinkler systems. It is UL Listed for use on a steel pipe; schedules 5 through 40, sizes 2" - 6" and is UL Listed and FM Approved for use on steel pipe; schedules 10 through 40, sizes 2" thru 8" (50 mm thru 200 mm). LPC approved sizes are 2" thru 8" (50 mm thru 200 mm). See Ordering Information chart.

The VSR may also be used as a sectional waterflow detector on large systems. The VSR contains two single pole, double throw, snap action switches and an adjustable, instantly recycling pneumatic retard. The switches are actuated when a flow of 10 GPM (38 LPM) or more occurs downstream of the device. The flow condition must exist for a period of time necessary to overcome the selected retard period.

Enclosure

The VSR switches and retard device are enclosed in a weather/UV/flame resistant high impact composite plastic. The cover is held in place with two tamper resistant screws which require a special key for removal. A field installable cover tamper switch is available as an option which may be used to indicate unauthorized removal of the cover. See bulletin number 5401103 for installation instructions of this switch.

NOTICE

This document contains important information on the installation and operation of the VSR. Please read all instructions carefully and notify the building owner or their authorized representative before any work is done on the fire sprinkler or fire alarm system. A copy of this document is required by NFPA 72 to be maintained on site.

Technical Specifications

Conduit Entrances	Two knockouts provided for 1/2" conduit. Individual switch compartments suitable for dissimilar voltages
Contact Ratings	Two sets of SPDT (Form C) 10.0 Amps at 125/250VAC 2.0 Amps at 30VDC Resistive 10 mAmps min. at 24VDC
Enclosure	Cover - Weather/UV/Flame Resistant High Impact Composite Base - Die-cast aluminum
Environmental Specifications	NEMA 4/IP54 Rated Enclosure suitable for indoor or outdoor use with factory installed gasket when used with appropriate conduit fitting. Temperature Range: 40°F - 120°F, (4.5°C - 49°C) - UL Non-corrosive sleeve factory installed in saddle.
Flow Sensitivity Range for Signal	4-10 GPM (15-38 LPM) - UL
Maximum Surge	18 FPS (5.5 m/s)
Service Pressure	450 PSI (31 BAR) - UL
Service Use	Automatic Sprinkler NFPA-13 One or two family dwelling NFPA-13D Residential occupancy up to four stories NFPA-13R National Fire Alarm Code NFPA-72

Specifications subject to change without notice.

VSR

Vane Type Waterflow Alarm Switch W/ Retard

Installation (see Fig. 1)

These devices may be mounted on horizontal or vertical pipe. On horizontal pipe they shall be installed on the top side of the pipe where they will be accessible. The device should not be installed within 6" (15 cm) of a fitting which changes the direction of the waterflow or within 24" (60 cm) of a valve or drain.

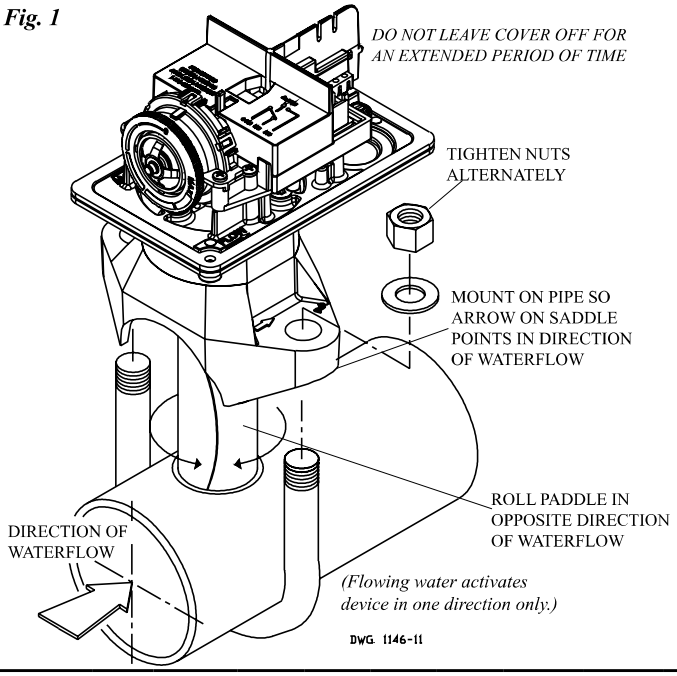
NOTE: Do not leave cover off for an extended period of time.

Drain the system and drill a hole in the pipe using a hole saw in a slow speed drill (see Fig. 1). Clean the inside pipe of all growth or other material for a distance equal to the pipe diameter on either side of the hole. Roll the vane so that it may be inserted into the hole; do not bend or crease it. Insert the vane so that the arrow on the saddle points in the direction of the waterflow. Take care not to damage the non-corrosive bushing in the saddle. The bushing should fit inside the hole in the pipe. Install the saddle strap and tighten nuts alternately to required torque (see the chart in Fig. 1). The vane must not rub the inside of the pipe or bind in any way.

⚠ CAUTION

Do not trim the paddle. Failure to follow these instructions may prevent the device from operating and will void the warranty. Do not obstruct or otherwise prevent the trip stem of the flow switch from moving when water flows as this could damage the flow switch and prevent an alarm. If an alarm is not desired, a qualified technician should disable the alarm system.

Fig. 1

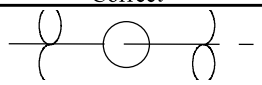
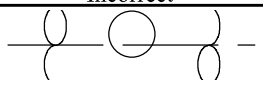


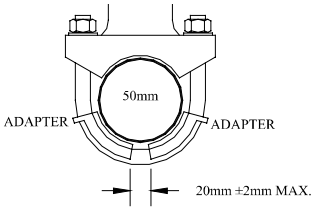
Retard Adjustment

The delay can be adjusted by rotating the retard adjustment knob from 0 to the max setting (60-90 seconds). The time delay should be set at the minimum required to prevent false alarms

CAUTION

Hole must be drilled perpendicular to the pipe and vertically centered
Refer to the Compatible Pipe/Installation Requirements chart for size

Correct	Incorrect
	

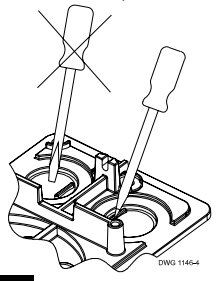


USE (2) 5180162 ADAPTERS AS SHOWN ABOVE

Compatible Pipe/ Installation Requirements

Model	Nominal Pipe Size		Nominal Pipe O.D.		Pipe Wall Thickness										Hole Size		U-Bolt Nuts Torque	
					Lightwall		Schedule 10 (UL)		Schedule 40 (UL)		BS-1387 (LPC)		DN (VDS)					
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	ft-lb	n-m
VSR-2	2	DN50	2.375	60.3	.065	1.651	0.109	2.77	0.154	3.91	0.142	3.6	0.091	2.3	1.25 + .125/-.062	33.0 ± 2.0	20	27
VSR-2 1/2	2.5	-	2.875	73.0	.084	2.134	0.120	3.05	0.203	5.16	-	-	-	-				
VSR-2 1/2	-	DN65	3.000	76.1	-	-	-	-	-	-	0.142	3.6	0.102	2.6				
VSR-3	3	DN80	3.500	88.9	.083	2.108	0.120	3.05	0.216	5.49	0.157	4.0	0.114	2.9	2.00 ± .125	50.8 ± 2.0		
VSR-3 1/2	3.5	-	4.000	101.6	-	-	0.120	3.05	0.226	5.74	-	-	-	-				
VSR-4	4	DN100	4.500	114.3	.084	2.134	0.120	3.05	0.237	6.02	0.177	4.5	0.126	3.2				
VSR-5	5	-	5.563	141.3	-	-	0.134	3.40	0.258	6.55	-	-	-	-				
VSR-6	6	DN150	6.625	168.3	.115	2.921	0.134	3.40	0.280	7.11	0.197	5.0	0.157	4.0				
VSR-8	8	DN200	8.625	219.1	-	-	0.148	3.76	0.322	8.18	0.248	6.3	0.177	4.5				

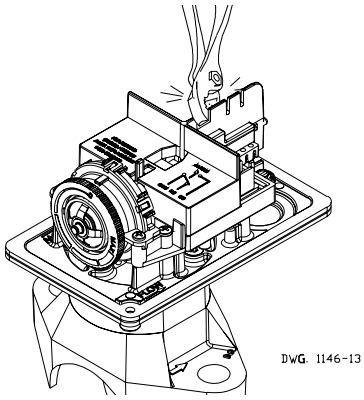
Fig. 2
To remove knockouts: Place screwdriver at inside edge of knockouts, not in the center.



NOTICE

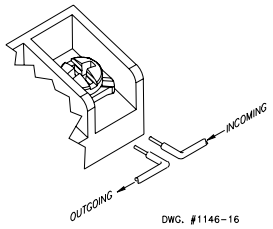
Do not drill into the base as this creates metal shavings which can create electrical hazards and damage the device. Drilling voids the warranty.

Fig. 3
Break out thin section of cover when wiring both switches from one conduit entrance.



Switch Terminal Connections Clamping Plate Terminal

Fig. 4



⚠ WARNING

An uninsulated section of a single conductor should not be looped around the terminal and serve as two separate connections. The wire must be severed, thereby providing supervision of the connection in the event that the wire become dislodged from under the terminal. Failure to sever the wire may render the device inoperable risking severe property damage and loss of life.

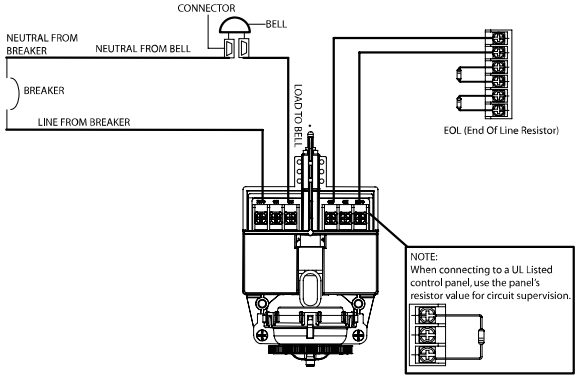
Do not strip wire beyond 3/8" of length or expose an uninsulated conductor beyond the edge of the terminal block. When using stranded wire, capture all strands under the clamping plate.

Typical Electrical Connections

Fig. 5

Notes:

1. The Model VSR has two switches, one can be used to operate a central station, proprietary or remote signaling unit, while the other contact is used to operate a local audible or visual annunciator.
2. For supervised circuits, see "Switch Terminal Connections" drawing and warning note (Fig. 4).

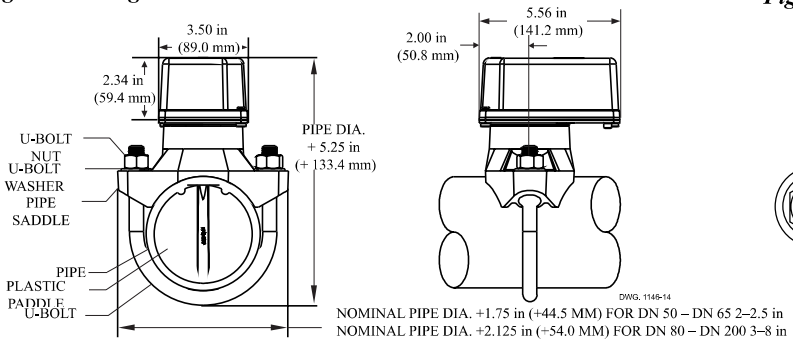


Testing

The frequency of inspection and testing for the Model VSR and its associated protective monitoring system shall be in accordance with applicable NFPA Codes and Standards and/or the authority having jurisdiction (manufacturer recommends quarterly or more frequently).

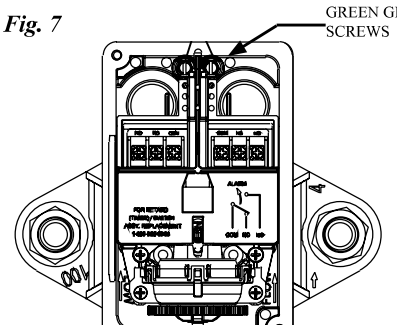
If provided, the inspector's test valve shall always be used for test purposes. If there are no provisions for testing the operation of the flow detection device on the system, application of the VSR is not recommended or advisable.
A minimum flow of 10 GPM (38 LPM) is required to activate this device.

Fig. 6 Mounting Dimensions



NOMINAL PIPE DIA. +1.75 in (+44.5 MM) FOR DN 50 – DN 65 2–2.5 in
NOMINAL PIPE DIA. +2.125 in (+54.0 MM) FOR DN 80 – DN 200 3–8 in

Fig. 7



NOTICE

Advise the person responsible for testing of the fire protection system that this system must be tested in accordance with the testing instructions.

Maintenance

Inspect detectors monthly. If leaks are found, replace the detector. The VSR waterflow switch should provide years of trouble-free service. The retard and switch assembly are easily field replaceable. In the unlikely event that either component does not perform properly, please order replacement retard switch assembly stock #1029030 (see Fig. 8). There is no maintenance required, only periodic testing and inspection.

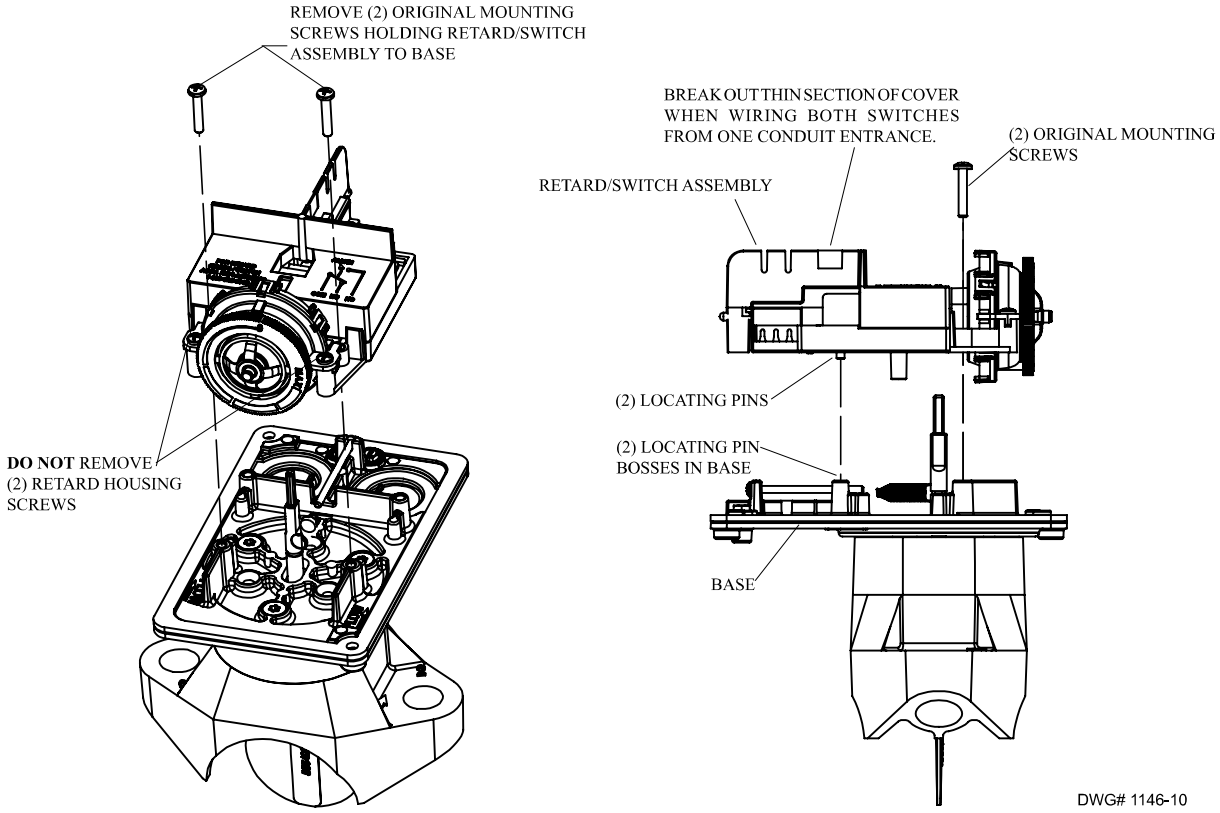
Retard/Switch Assembly Replacement (See Fig. 8)

1. Make sure the fire alarm zone or circuit connected to the waterflow switch is bypassed or otherwise taken out of service.
2. Disconnect the power source for local bell (if applicable).
3. Identify and remove all wires from the waterflow switch.
4. Remove the (2) mounting screws holding retard/switch assembly to the base. **Do not** remove the (2) retard housing screws.
5. Remove the retard assembly by lifting it straight up over the tripstem.
6. Install the new retard assembly. Make sure the locating pins on the retard/switch assembly fit into the locating pin bosses on the base.
7. Re-install the (2) original mounting screws.
8. Reconnect all wires. Perform a flow test and place the system back in service.

NOTICE

The Retard/Switch Assembly is field-replaceable without draining the system or removing the waterflow switch from the pipe

Fig. 8



Removal of Waterflow Switch

- To prevent accidental water damage, all control valves should be shut tight and the system completely drained before waterflow detectors are removed or replaced.
- Turn off electrical power to the detector, then disconnect wiring.
- Loosen nuts and remove U-bolts.
- Gently lift the saddle far enough to get your fingers under it. With your fingers, roll the vane so it will fit through the hole while continuing to lift the waterflow detector saddle.
- Lift detector clear of pipe.

NOTICE

Flow switches have a normal service life of 10-15 years. However, the service life may be significantly reduced by local environmental conditions.

Ordering Information

Model	Nominal Pipe Size		Part Number
VSR-2	2"	DN50	1144402
VSR-2 1/2	2 1/2"	DN65	1144425
VSR-3	3"	DN80	1144403
VSR-3 1/2	3 1/2"	-	1144435
VSR-4	4"	DN100	1144404
VSR-5	5"	-	1144405
VSR-6	6"	DN150	1144406
VSR-8	8"	DN200	1144408

Optional: Cover Tamper Switch Kit, stock no. 0090148
FSBS-FLOWSWITCH BYPASS SWITCH, stock no. 3001006
Replaceable Components: Retard/Switch Assembly, stock no. 1029030

½”-2” IPS Angle

INSIST ON FPPI®

Globe Valves, UL/ULC Listed* 300 psi

Description

Manufactured from cast brass*, our angle valves are for Trim or Drain applications and are designed to be suitable for all sprinkler systems including high pressure sprinkler systems. The soft seat design utilizes NBR Nancar N70 material for positive sealing to 300 psi. The most common use for the 2” IPS size is as a system drain at the riser. May be used on both alarm valve and shotgun type riser assemblies.

Installation

Installation of the Trim/Drain valves can be accomplished using normal installation methods. It is important to “hold back” each component in the piping assembly to prevent over-tightening of the previously installed component. Use a suitable thread sealant such as PipeFit Thread Sealant with PTFE or FPPI PTFE Pipe Thread Tape to as- sure a positive seal between the valves and the installed pipe.

*UL/ULC Listed, 2R97.

Caution: Do not overtighten male threads into the valve body. Thread damage or cracking of the valve body may occur.

Specifications

Materials:
Cast Brass*
Body
Bonnet

Brass* ASTM B16:
Gland
Holder
Stem
Washer

Stainless Steel:
Nut
NBR Nancar N70
Rubber seat
JIS FC20
Hand wheel

Sizes:
½” IPS FxF
¾” IPS FxF
1” IPS FxF
1¼” IPS FxF
1½” IPS FxF
2” IPS FxF

*Contains lead. Not for use in water systems intended for human consumption.

3198 LIONSHEAD AVE
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+ 1 800 344-1822
FAX + 1 800 344-3775

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POTTER
The Symbol of Protection

BELLS
PBA-AC & MBA-DC

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	MBA-6-12	1750070	.12A	85	76
8 (200)	12VDC	MBA-8-12	1750080	.12A	90	77
10 (250)	12VDC	MBA-10-12	1750060	.12A	92	78
6 (150)	24VDC	MBA-6-24	1750100	.06A	87	77
8 (200)	24VDC	MBA-8-24	1750110	.06A	91	79
10 (250)	24VDC	MBA-10-24	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

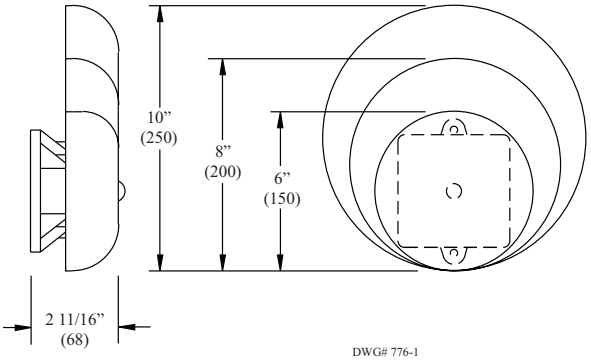
All DC bells are polarized and have built-in transient protection.
* Does not have ULC listing.

⚠ 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.

Potter Electric Signal Company, LLC • St. Louis, MO, • Phone: 866-572-3005/Canada 888-882-1833 • www.pottersignal.com

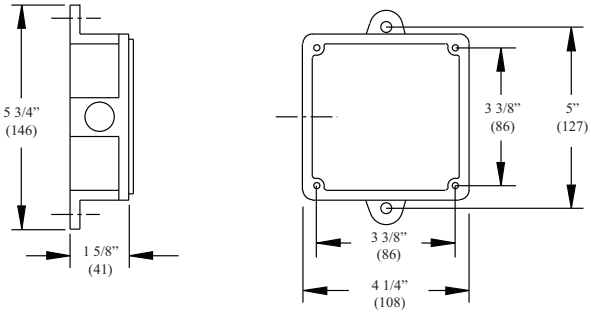
Bells Dimensions Inches (mm)
Fig. 1



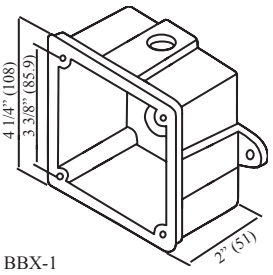
DWG# 776-1

Weatherproof Backbox Dimensions Inches (mm)
Fig. 2

Box has one threaded 1/2" conduit entrance

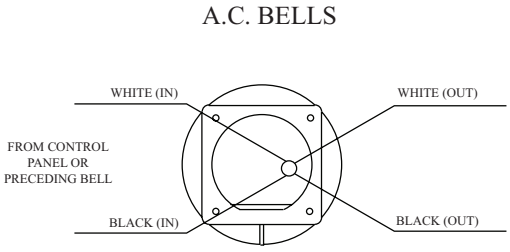


DWG# 776-2



BBX-1

Wiring (rear view)
Fig. 3

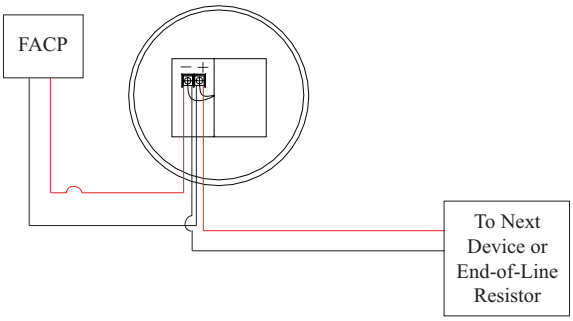


CAUTION:
WHEN ELECTRICAL SUPERVISION IS REQUIRED USE IN AND OUT LEADS AS SHOWN.

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



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.

State Pipe & Supply, Inc.

THIS INFORMATION PROVIDED IS BASED ON ASTM GUIDELINES FOR WELDED PIPE SPECIFICATIONS AND ASTM REQUIREMENTS. ACTUAL PIPE AND MATERIAL TEST REPORTS PROVIDED WOULD MEET OR EXCEED THESE GUIDELINES.

TEST REPORTS WOULD PROVIDE SPECIFIC AND ACTUAL DETAILS CONCERNING THE MECHANICAL AND CHEMICAL PROPERTIES OF THE ACTUAL PIPE, AS WELL AS ADDITIONAL TESTS RESULTS REQUIRED BY ASTM.

SCHEDULE 10 ** Black and Galvanized Steel ERW Pipe

Pipe Size Nominal	O.D.	I.D.	Weight / Foot	Test Pressure psi
1"	1.315	1.097	1.410	700
1-1/4"	1.660	1.442	1.810	1200
1-1/2"	1.900	1.682	2.090	1200
2"	2.375	2.157	2.640	2300
2-1/2"	2.875	2.635	3.530	2500
3"	3.500	3.260	4.340	1290
4"	4.500	4.260	5.620	1000
5"	5.563	5.295	7.780	1010
6"	6.625	6.357	9.300	1020
8" **	8.625	8.249	16.960	780

** 8" wall thickness is 0.188, not SCH10 or 0.148" wall thickness.

COMPOSITION AND PROPERTIES

Chemical and mechanical properties requirements are as prescribed by applicable ASTM standards edition January 2006.

Chemical Requirements, Percent (Product)

		C	Mn	P	S	Other
Specification	Grade	max	max	max	max	
ASTM A53	A	0.250	0.950	0.05	0.045	-

1 Residual elements max: Cu-0.40, Ni-0.40, Cr-0.40, Mo-0.15 and V-.08. These live elements combined shall not exceed 1%.

Mechanical Properties-Tensile Requirements

		Strength-psi.			
		Yield		Tensile	
Specification	Grade	Min	Max	Min	Max
ASTM A53	A	30,000	-	48,000	-

NOTE: Elongation requirements vary with nominal area of test specimen and specified minimum tensile strength of the steel grade.

State Pipe & Supply, Inc.

THIS INFORMATION PROVIDED IS BASED ON ASTM GUIDELINES FOR WELDED PIPE SPECIFICATIONS AND ASTM REQUIREMENTS. ACTUAL PIPE AND MATERIAL TEST REPORTS PROVIDED WOULD MEET OR EXCEED THESE GUIDELINES.

TEST REPORTS WOULD PROVIDE SPECIFIC AND ACTUAL DETAILS CONCERNING THE MECHANICAL AND CHEMICAL PROPERTIES OF THE ACTUAL PIPE, AS WELL AS ADDITIONAL TESTS RESULTS REQUIRED BY ASTM.

SCHEDULE 40 Black and Galvanized Steel ERW Pipe

Pipe Size Nominal	O.D.	I.D.	Weight / Foot	Test Pressure psi
1"	1.315	1.049	1.680	700
1-1/4"	1.660	1.380	2.270	1200
1-1/2"	1.900	1.610	2.720	1200
2"	2.375	2.067	3.660	2300
2-1/2"	2.875	2.469	5.800	2500
3"	3.500	3.068	7.580	2220
4"	4.500	4.026	10.800	1900
5"	5.563	5.047	14.630	1670
6"	6.625	6.065	18.990	1520
8"	8.625	7.981	28.580	1340

COMPOSITION AND PROPERTIES

Chemical and mechanical properties requirements are as prescribed by applicable ASTM standards edition January 2006.

Chemical Requirements, Percent (Product)

		C	Mn	P	S	Other
Specification	Grade	max	max	max	max	
ASTM A53	A	0.250	0.950	0.05	0.045	-

1 Residual elements max: Cu-0.40, Ni-0.40, Cr-0.40, Mo-0.15 and V-.08. These five elements combined shall not exceed 1%.

Mechanical Properties-Tensile Requirements

		Strength-psi.			
		Yield		Tensile	
Specification	Grade	Min	Max	Min	Max
ASTM A53	A	30,000	-	48,000	-

NOTE: Elongation requirements vary with nominal area of test specimen and specified minimum tensile strength of the steel grade.

Victaulic® Grooved End Fittings

No. 20 Tee

No. 10 Elbow

1.0 PRODUCT DESCRIPTION

Available Sizes

- ¾ – 24"/DN20 – DN600

Pipe Material

- Carbon steel

Maximum Working Pressure

- Pressure ratings for Victaulic standard fittings conform to the ratings of Victaulic Style 77 couplings (refer to publication 06.04 for more information).

Application

- Connects pipe, provides change in direction and adapts sizes or components
- Supplied with Victaulic Original Groove System (OGS) grooves
- Exclusively for use with Victaulic couplings, valves, accessories and pipe which feature ends formed with the Victaulic OGS groove profile

NOTES

- For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information.
- These fittings are not intended for use with Victaulic plain end couplings. Intended for use only in grooved piping systems. When connecting wafer or lug type butterfly valves directly to Victaulic fittings using Style 741 or Style 743 flange adapters, be sure to check disc clearance dimensions with I.D. dimension of fitting.

ALWAYS REFER TO ANY NOTIFICATIONS AT THE END OF THIS DOCUMENT REGARDING PRODUCT INSTALLATION, MAINTENANCE OR SUPPORT.

2.0 CERTIFICATION/LISTINGS

EN 10311
CPR (EU)
No. 305/2011

BS EN 10311
CPR (UK)
2019 No. 465

NOTES

- When supplied as “hot dip galvanized” the following fittings are UL Classified in accordance with ANSI/NSF 61 and for use on cold +86°F/+30°C potable water service and ANSI/NSF 372: No. 10 90° Elbow, No. 11 45° Elbow, No. 12 22½° Elbow, No. 13 11¼° Elbow, No. 100 90° Long Radius Elbow, No. 110 45° Long Radius Elbow, No. 20 Tee, No. 25 Tee with Grooved Branch, No. 30 45° Lateral, No. 60 Cap, No. 50 Concentric Reducers, No. 51 Eccentric Reducers.
- The following Victaulic fittings are VdS approved: No.10 90° Elbow, No.11 45° Elbow, No.20 Tee and No.60 Cap.
- The following Victaulic fittings are LPCB approved: No.10 90° Elbow, No.11 45° Elbow, No.12 22 ½ Elbow, No.13 11 ¼° Elbow, No.30 45° Lateral, No.30-R Reducing Lateral, No.100 Long Radius Elbow, No.110 Long Radius Elbow, No.20 Tee, No.35 Cross, No.60 Cap, No.25 Reducing Tee, No.33 True Wye, No.50 Concentric Reducer, No.51 Eccentric Reducer and No.29M Tee with Threaded Branch.
- The following Victaulic fittings are FM approved: No.10 90° Elbow, No.11 45° Elbow, No.12 22½ Elbow, No.13 11¼° Elbow, No.30 45° Lateral, No.100 Long Radius Elbow, No.20 Tee, No.35 Cross, No.60 Cap, No.25 Reducing Tee and No.50 Concentric Reducer.
- Download publication 10.01 for Fire Protection Certifications/Listings Reference Guide to view which sizes of the fittings listed above have active fire protection approvals.

3.0 SPECIFICATIONS – MATERIAL

Fitting: (specify choice)

- ☐ Standard: Ductile iron conforming to ASTM A536, Grade 65-45-12.
- ☐ Optional: Segmentally welded carbon steel, standard wall, conforming to ASTM A53, Type E or S, Gr. B

Nipples: (specify choice)

- ☐ ¾ – 6"/DN20 – DN150: Carbon steel, Schedule 40, conforming to ASTM A53, Type E or S, Gr. B
- ☐ 8 – 12"/DN200 – DN300: Carbon steel, standard wall, conforming to ASTM A53, Type E or S, Gr. B

Flanged Adapter Nipples: (specify choice)

- ☐ Class 125 Flange: Cast iron conforming to ANSI B16.1
- ☐ Class 150 Flange: Carbon steel conforming to ANSI B16.5, raised or flat face
- ☐ Class 300 Flange: Carbon steel conforming to ANSI B16.5, raised or flat face

Fitting Coating: (specify choice)

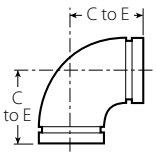
- ☐ Standard: Orange enamel
- ☐ Optional: Hot dip galvanized and others. Some fittings supplied electroplated as standard – see product specifications

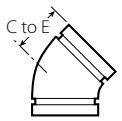
Flanged Adapter Nipple Coating: (specify choice)

- ☐ Standard: None (Unfinished)
- ☐ Optional: Orange enamel, hot dip galvanized and others

4.0 DIMENSIONS

Elbows
No. 10 90° Elbow
No. 11 45° Elbow





Size		No. 10 90° Elbow		No. 11 45° Elbow	
Nominal inches DN	Actual Outside Diameter inches mm	C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
¾ DN20	1.050 26.9	2.25 57	0.5 0.2	1.50 38	0.5 0.2
1 DN25	1.315 33.7	2.25 57	0.6 0.2	1.75 44	0.5 0.2
1 ¼ DN32	1.660 42.4	2.75 70	0.8 0.4	1.75 44	0.6 0.3
1 ½ DN40	1.900 48.3	2.75 70	1.0 0.5	1.75 44	0.8 0.4
2 DN50	2.375 60.3	3.25 83	1.8 0.8	2.00 51	1.3 0.6
2 ½	2.875 73.0	3.75 95	3.0 1.3	2.25 57	2.1 1.0
DN65	3.000 76.1	3.75 95	3.1 1.4	2.25 57	2.3 1.0
3 DN80	3.500 88.9	4.25 108	4.5 2.0	2.50 64	3.0 1.3
3 ½ DN90	4.000 101.6	4.50 114	5.6 2.5	2.75 70	4.0 1.8
	4.250 108.0	5.00 127	6.2 2.8	3.00 76	4.6 2.1
4 DN100	4.500 114.3	5.00 127	6.8 3.1	3.00 76	5.2 2.4
4 ½	5.000 127.0	5.00 127	8.6 3.9	3.13 79	5.9 2.7
	5.250 133.0	5.50 140	10.3 4.7	3.25 83	6.6 3.0
DN125	5.500 139.7	5.50 140	9.9 4.5	3.25 83	7.2 3.2
5	5.563 141.3	5.50 140	10.1 4.6	3.25 83	7.4 3.4
	6.000 152.4	6.50 (sw) 165	13.3 6.0	3.50 (sw) 89	9.5 4.3
	6.250 159.0	6.50 165	13.0 5.9	3.25 83	9.5 4.3
	6.500 165.1	6.50 165	15.5 7.0	3.50 89	9.7 4.4
6 DN150	6.625 168.3	6.50 165	15.3 6.9	3.50 89	10.2 4.6
200A	216.3	7.75 197	34.7 15.7	4.25 108	14.4 6.5

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

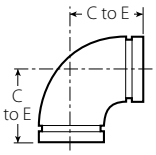
(sw) = Carbon Steel Segmentally Welded

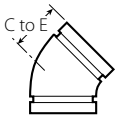
NOTE
- All fittings are ductile iron unless otherwise noted with an (sw).

4.0 DIMENSIONS (CONTINUED)

Elbows

No. 10 90° Elbow
No. 11 45° Elbow





Size		No. 10 90° Elbow		No. 11 45° Elbow	
Nominal inches DN	Actual Outside Diameter inches mm	C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
8 DN200	8.625 219.1	7.75 197	27.5 12.5	4.25 108	18.6 8.4
250A	267.4	9.00 229	67.8 30.7	4.75 121	28.1 12.7
10 DN250	10.750 273.0	9.00 229	50.0 22.7	4.75 121	37.5 17.0
300A	318.5	10.00 254	73.5 33.3	5.25 133	41.3 18.7
12 DN300	12.750 323.9	10.00 254	79.3 36.0	5.25 133	45.0 20.4
14[1] DN350	14.000 355.6	14.00 356	146.0 66.2	5.80 147	78.0 35.4
	14.843 377.0	14.88 378	168.0 76.2	6.15 156	82.0 37.2
16[1] DN400	16.000 406.4	16.00 406	190.0 86.2	6.63 168	88.2 40.0
	16.772 426.0	16.75 425	216.0 98.0	6.95 177	98.1 44.5
18[1] DN450	18.000 457.2	18.00 457	241.0 109.3	7.46 189	123.0 55.8
	18.898 480.0	18.90 480	291.0 132.0	7.83 199	123.2 55.9
20[1] DN500	20.000 508.0	20.00 508	296.0 134.3	8.28 210	151.0 68.5
	20.866 530.0	20.88 530	355.0 161.0	8.64 219	179.0 81.2
22 DN550	22.000 558.8	25.00 635	386.0 175.1	12.11 308	210.0 95.3
24[1] DN600	24.000 609.6	24.00 610	475.0 215.5	9.94 252	240.0 108.9
	24.803 630.0	24.75 629	545.0 247.2	10.27 261	275.4 124.9
14 – 60 DN350 – DN1500	For AGS fitting information, see publication 20.05 AGS™				

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(sw) = Carbon Steel Segmentally Welded

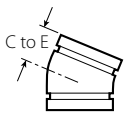
NOTE

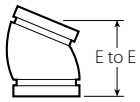
- All fittings are ductile iron unless otherwise noted with an (sw).

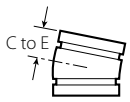
4.0 DIMENSIONS (CONTINUED)

Elbows

No. 12 22 ½° Elbow
No. 13 11 ¼° Elbow







Size		No. 12 22 ½° Elbow		No. 12G (GSNK) 22 ½° Elbow		No. 13 11 ¼° Elbow	
Nominal inches DN	Actual Outside Diameter inches mm	C to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
¾ DN20	1.050 26.9	1.63 (sw) 41	0.4 0.2	NA	NA	1.38 (sw) 35	0.4 0.2
1 DN25	1.315 33.7	1.63 (sw) 41	0.5 0.2	3.25 83	0.6 0.3	1.38 (sw) 35	0.4 0.2
1 ¼ DN32	1.660 42.4	1.75 44	0.8 0.4	NA	NA	1.38 35	0.6 0.3
1 ½ DN40	1.900 48.3	1.75 44	1.0 0.4	NA	NA	1.38 35	0.6 0.3
2 DN50	2.375 60.3	1.88 48	1.2 0.5	3.75 95	1.4 0.6	1.38 35	1.0 0.4
2 ½	2.875 73.0	2.00 (sw) 51	2.4 1.1	4.00 102	2.0 0.9	1.50 38	1.6 0.7
DN65	3.000 76.1	2.25 57	2.5 1.1	NA	NA	1.50 38	1.7 0.8
3 DN80	3.500 88.9	2.25 (sw) 57	3.1 1.4	4.50 114	3.1 1.4	1.50 38	2.0 0.9
3 ½ DN90	4.000 101.6	2.50 (sw) 64	4.0 1.8	NA	NA	1.75 (sw) 44	2.8 1.3
	4.250 108.0	2.88 (sw) 73	+	NA	NA	1.75 (sw) 44	+
4 DN100	4.500 114.3	2.88 73	4.8 2.2	5.25 133	4.8 2.2	1.75 44	3.3 1.5
4 ½	5.000 127.0	2.88 (sw) 73	+	NA	NA	1.88 (sw) 48	+
	5.250 133.0	2.88 (sw) 73	+	NA	NA	2.00 (sw) 51	+
DN125	5.500 139.7	2.88 73	6.3 2.9	NA	NA	2.00 51	4.6 2.1
5	5.563 141.3	2.88 (sw) 73	7.8 3.5	NA	NA	2.00 (sw) 51	5.0 2.3
	6.000 152.4	3.13 (sw) 79	+	NA	NA	2.00 (sw) 51	+
	6.250 159.0	3.13 (sw) 79	+	NA	NA	2.00 (sw) 51	+
	6.500 165.1	3.13 79	10.4 4.7	NA	NA	2.00 51	7.1 3.2
6 DN150	6.625 168.3	3.13 (sw) 79	12.2 5.5	6.25 159	12.2 5.5	2.00 51	6.4 2.9

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(sw) = Carbon Steel Segmentally Welded

NA = Not Available

"+" = Contact Victaulic for details

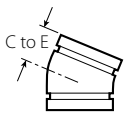
NOTE

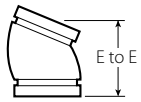
- All fittings are ductile iron unless otherwise noted with an (sw).

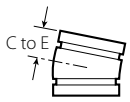
4.0 DIMENSIONS (CONTINUED)

Elbows

No. 12 22½° Elbow
No. 13 11¼° Elbow







Size		No. 12 22½° Elbow		No. 12G (GSNK) 22½° Elbow		No. 13 11¼° Elbow	
Nominal inches DN	Actual Outside Diameter inches mm	C to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
8 DN200	8.625 219.1	3.88 (sw) 98	20.0 9.1	7.75 197	18.1 8.2	2.00 51	8.2 3.7
10 DN250	10.750 273.0	4.38 111	30.0 13.6	NA	NA	2.13 54	11.8 5.3
12 DN300	12.750 323.9	4.88 124	40.0 18.1	NA	NA	2.25 57	29.3 13.3
14[1] DN350	14.000 355.6	5.00 (sw) 127	46.0 20.9	NA	NA	3.50 (sw) 89	32.0 14.5
16[1] DN400	16.000 406.4	5.00 (sw) 127	58.0 26.3	NA	NA	4.00 (sw) 102	42.0 19.1
18[1] DN450	18.000 457.2	5.50 (sw) 140	65.0 29.5	NA	NA	4.50 (sw) 114	53.0 24.0
20[1] DN500	20.000 508.0	6.00 (sw) 152	78.6 35.7	NA	NA	5.00 (sw) 127	65.0 29.5
22[1] DN550	22.000 558.8	6.50 (sw) 165	125.0 56.7	NA	NA	5.50 (sw) 140	80.0 36.3
24[1] DN600	24.000 609.6	7.00 (sw) 178	140.0 63.5	NA	NA	6.00 (sw) 152	94.5 42.9
14 – 60 DN350 – DN1500	For AGS fitting information, see publication 20.05 AGS™						

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(sw) = Carbon Steel Segmentally Welded

NA = Not Available

"+" = Contact Victaulic for details

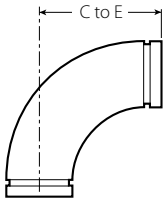
NOTE

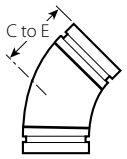
- All fittings are ductile iron unless otherwise noted with an (sw).

4.0 DIMENSIONS (CONTINUED)

Elbows

No. 100 90° Long Radius Elbow
No. 110 45° Long Radius Elbow





Size		No. 100 90° 1½D Long Radius Elbow		No. 110 45° 1½D Long Radius Elbow	
Nominal inches DN	Actual Outside Diameter inches mm	C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
¾ DN20	1.050 26.9	2.50 (s) 64	0.4 0.2	1.75 (s) 44	0.4 0.2
1 DN25	1.315 33.7	2.88 (s) 73	0.8 0.4	2.25 (s) 57	0.6 0.3
1¼ DN32	1.660 42.4	3.25 (s) 83	1.1 0.5	2.38 (s) 60	0.9 0.4
1½ DN40	1.900 48.3	3.63 (s) 92	2.2 1.0	2.50 (s) 64	1.1 0.5
2 DN50	2.375 60.3	4.38 111	2.6 1.2	2.75 70	1.9 0.9
2½	2.875 73.0	5.13 130	3.4 1.5	3.13 (s) 79	3.0 1.4
3 DN80	3.500 88.9	5.88 149	6.0 2.7	3.38 86	3.8 1.7
3½ DN90	4.000 101.6	6.63 (s) 168	8.7 3.9	3.63 (s) 92	5.6 2.5
4 DN100	4.500 114.3	7.50 191	10.8 4.9	4.00 102	7.4 3.4
5	5.563 141.3	9.25 235	18.0 8.2	4.25 108	14.8 6.7
	6.500 165.1	10.75 273	25.8 11.7	5.50 140	15.8 7.2
6 DN150	6.625 168.3	10.75 273	30.4 13.8	5.38 137	16.7 7.6
8 DN200	8.625 219.1	14.25 362	68.5 31.1	7.25 184	36.0 16.3
10 DN250	10.750 273.0	15.00 381	81.6 37.0	6.25 159	40.1 18.2
12 DN300	12.750 323.9	18.00 457	138.0 62.6	7.50 191	69.6 31.6
14[1] DN350	14.000 355.6	21.00 533	222.7 101.0	8.75 222	112.4 51.0
16[1] DN400	16.000 406.4	24.00 610	302.0 137.0	10.00 254	158.7 72.0
18[1] DN450	18.000 457.2	27.00 686	421.8 191.3	11.25 286	224.9 102.0
20[1] DN500	20.000 508.0	30.00 762	498.2 226.0	12.50 318	246.9 112.0
22[1] DN550	22.000 558.8	36.00 (s) 914	400.0 181.4	16.50 (s) 419	205.0 93.0
24[1] DN600	24.000 609.6	36.00 914	765.0 347.0	15.00 381	370.4 168.0
14 – 60 DN350 – DN1500	For AGS fitting information, see publication 20.05 AGS™				

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

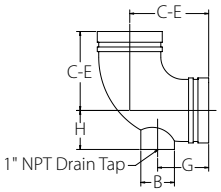
(s) = Carbon Steel

NOTE

- All fittings are ductile iron unless otherwise noted with an (s).

4.1 DIMENSIONS

No. 10-DR
90° Drain Elbow



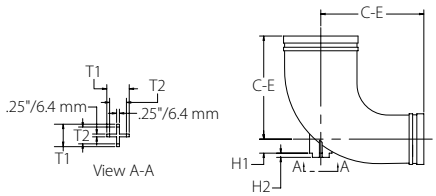
Size		No. 10-DR 90° Drain Elbow					Weight
Nominal inches DN	Actual Outside Diameter inches mm	C to E inches mm	ØB inches mm	G inches mm	H inches mm	Drain Tap NPT inches mm	Approx. (Each) lb kg
2½	2.875 73.0	3.75 95	1.81 46	2.75 70	1.68 43	1 25	3.5 1.6
3 DN80	3.500 88.9	4.25 108	1.81 46	2.75 70	2.13 54	1 25	4.8 2.2
4 DN100	4.500 114.3	5.00 127	1.81 46	2.75 70	2.63 67	1 25	7.8 3.5
6 DN150	6.625 168.3	6.50 165	1.81 46	2.75 70	3.65 93	1 25	18.1 8.2
8 DN200	8.625 219.1	7.75 197	1.81 46	2.75 70	4.50 114	1 25	29.6 13.4

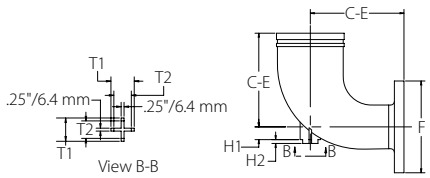
NOTE
- ISO 7-R thread options are available; contact Victaulic.

4.2 DIMENSIONS

Reducing Base Support Elbow

No. R-10G
No. R-10F





Size						No. R-10G 90° Reducing Base Support Elbow Groove x Groove						No. R-10F 90° Reducing Base Support Elbow Groove x Class 150 Flange*						
Nominal inches DN			Actual Outside Diameter inches mm			C to E inches mm	H1 inches mm	H2 inches mm	T1 inches mm	T2 inches mm	Approx. Weight (Each) lb kg	C to E inches mm	ØF inches mm	H1 inches mm	H2 inches mm	T1 inches mm	T2 inches mm	Approx. Weight (Each) lb kg
6 DN150	x	4 DN100	6.625 168.3	x	4.500 114.3	9.19 233	1.25 32	0.38 10	2.00 51	1.50 38	33.0 15.0	9.19 233	9.00 229	1.25 32	0.38 10	2.00 51	1.50 38	46.0 20.9
		5			5.563 141.3	9.00 229	1.50 38	0.38 10	2.00 51	1.50 38	37.0 16.8	9.00 229	10.00 254	1.50 38	0.38 10	2.00 51	1.50 38	52.0 23.6
8 DN200	x	6 DN150	8.625 219.1	x	6.625 168.3	10.50 267	2.13 54	0.38 10	2.00 51	1.50 38	51.0 23.1	10.50 267	11.00 279	2.13 54	0.38 10	2.00 51	1.50 38	70.0 31.8
10 DN250	x	8 DN200	10.750 273.0	x	8.625 219.1	12.00 305	2.38 60	0.38 10	2.00 51	1.50 38	88.0 39.9	12.00 305	13.50 343	2.38 60	0.38 10	2.00 51	1.50 38	118.0 53.5

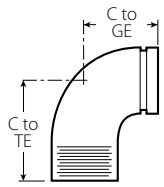
* Contact Victaulic for additional flange end options.

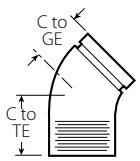
For long radius base support elbow options, please refer to publication 07.13.

4.3 DIMENSIONS

Adapter Elbow

No. 18 90° Adapter Elbow
No. 19 45° Adapter Elbow





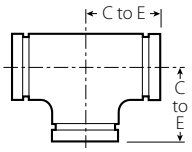
Size		No. 18 90° Adapter Elbow Groove x Male Thread[1]			No. 19 45° Adapter Elbow Groove x Male Thread[1]		
Nominal inches DN	Actual Outside Diameter inches mm	C to GE inches mm	C to TE inches mm	Approx. Weight (Each) inches mm	C to GE inches mm	C to TE inches mm	Approx. Weight (Each) lb kg
3/4 DN20	1.050 26.9	2.25 57	2.25 57	0.5 0.2	1.50 38	1.50 38	0.5 0.2
1 DN25	1.315 33.7	2.25 57	2.25 57	0.6 0.3	NA	NA	NA
1 ¼ DN32	1.660 42.4	2.75 70	2.75 70	1.2 0.5	NA	NA	NA
1 ½ DN40	1.900 48.3	2.75 70	2.75 70	1.4 0.7	1.75 44	1.75 44	0.9 0.4
2 DN50	2.375 60.3	3.25 83	4.25 108	2.5 1.1	2.00 51	2.00 51	1.6 0.7
2 ½	2.875 73.0	3.75 95	3.75 95	3.7 1.7	2.25 57	2.25 57	2.3 1.0
3 DN80	3.500 88.9	4.25 108	6.00 152	6.6 3.0	2.50 64	4.25 108	5.0 2.3
4 DN100	4.500 114.3	5.00 127	7.25 184	10.0 4.5	NA	NA	NA
6 DN150	6.625 168.3	6.50 165	6.50 165	19.0 8.6	3.50 89	3.50 89	10.8 4.9

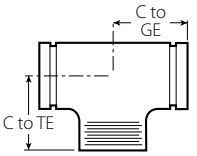
[1] Available with British Standard Pipe Threads, specify "BSP" clearly on order.

NA = Not Available

4.4 DIMENSIONS

Tees, Crosses and True Wyes
No. 20
No. 29M





Size		No. 20 Tee		No. 29M Tee Groove x Male Thread[2] Branch		
Nominal inches DN	Actual Outside Diameter inches mm	C to E inches mm	Approx. Weight (Each) lb kg	C to GE inches mm	C to TE lb kg	Approx. Weight (Each) inches mm
¾ DN20	1.050 26.9	2.25 57	0.8 0.4	2.25 (sw) 57	2.25 (sw) 57	0.6 0.3
1 DN25	1.315 33.7	2.25 57	0.9 0.4	2.25 (sw) 57	2.25 (sw) 57	0.9 0.4
1 ¼ DN32	1.660 42.4	2.75 70	1.5 0.7	2.75 70	2.75 70	1.6 0.7
1 ½ DN40	1.900 48.3	2.75 70	1.7 0.8	2.75 70	2.75 70	1.8 0.8
2 DN50	2.375 60.3	3.25 83	2.8 1.3	3.25 83	4.25 108	3.5 1.6
2 ½	2.875 73.0	3.75 95	4.8 2.2	3.75 (sw) 95	3.75 (sw) 95	4.3 2.0
DN65	3.000 76.1	3.75 95	5.3 2.4	3.75 (sw) 95	3.75 (sw) 95	5.2 2.4
3 DN80	3.500 88.9	4.25 108	6.4 2.9	4.25 (sw) 108	4.25 (sw) 108	7.2 3.3
3 ½ DN90	4.000 101.6	4.50 (sw) 114	7.9 3.6	4.50 (sw) 114	4.50 (sw) 114	7.9 3.6
	4.250 108.0	5.00 127	12.0 5.4	5.00 (sw) 127	5.00 (sw) 127	15.5 7.0
4 DN100	4.500 114.3	5.00 127	11.3 5.1	5.00 127	7.25 184	16.3 7.4
4 ½	5.000 127.0	5.25 (sw) 133	15.0 6.8	5.25 (sw) 133	5.25 (sw) 133	15.0 6.8
	5.250 133.0	5.50 140	16.2 7.3	5.50 (sw) 140	5.50 (sw) 140	17.8 8.1
DN125	5.500 139.7	5.50 140	17.8 8.1	5.50 (sw) 140	5.50 (sw) 140	17.8 8.1
5	5.563 141.3	5.50 140	17.8 8.1	5.50 (sw) 140	5.50 (sw) 140	24.0 10.9
	6.000 152.4	6.50 (sw) 165	+	6.50 (sw) 165	6.50 (sw) 165	25.7 11.7
	6.250 159.0	6.50 (sw) 165	+	6.50 (sw) 165	6.50 (sw) 165	27.1 12.3
	6.500 165.1	6.50 165	25.0 11.3	6.50 (sw) 165	6.50 (sw) 165	28.0 12.7
6 DN150	6.625 168.3	6.50 165	25.7 11.7	6.50 (sw) 165	6.50 (sw) 165	33.0 15.0
200A	216.3	7.75 197	43.3 19.6	NA	NA	NA

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

[2] Available with British Standard Pipe Threads, specify "BSP" clearly on order.

(sw) = Carbon Steel Segmentally Welded

NA = Not Available

"+" = Contact Victaulic for details

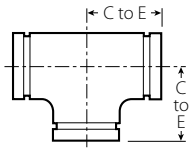
NOTES

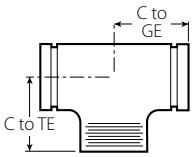
- All fittings are ductile iron unless otherwise noted with an (sw).

4.3 DIMENSIONS (CONTINUED)

Tees, Crosses and True Wyes

No. 20
No. 29M





Size		No. 20 Tee		No. 29M Tee Groove x Male Thread[2] Branch		
Nominal inches DN	Actual Outside Diameter inches mm	C to E inches mm	Approx. Weight (Each) lb kg	C to GE inches mm	C to TE lb kg	Approx. Weight (Each) inches mm
8 DN200	8.625 219.1	7.75 197	49.5 22.5	7.75 (sw) 197	7.75 (sw) 197	47.6 21.6
250A	267.4	9.00 229	66.0 29.9	NA	NA	NA
10 DN250	10.750 273.0	9.00 229	72.4 32.8	9.00 (sw) 229	9.00 (sw) 229	99.0 44.9
300A	318.5	10.00 254	95.0 43.1	NA	NA	NA
12 DN300	12.750 323.9	10.00 254	107.2 48.6	10.00 (sw) 254	10.00 (sw) 254	133.0 60.3
14[1] DN350	14.000 355.6	11.00 (sw) 279	150.0 68.0	11.00 (sw) 279	11.00 (sw) 279	+
	14.843 377.0	11.50 292	159.3 72.3	NA	NA	NA
16[1] DN400	16.000 406.4	12.00 (sw) 305	188.0 85.3	12.00 (sw) 305	12.00 (sw) 305	+
	16.772 426.0	13.00 330	211.6 96.0	NA	NA	NA
18[1] DN450	18.000 457.2	15.50 (sw) 394	200.0 90.7	15.50 (sw) 394	15.50 (sw) 394	+
	18.898 480.0	14.57 370	211.6 96.0	NA	NA	NA
20[1] DN500	20.000 508.0	17.25 (sw) 438	339.0 153.8	17.25 (sw) 438	17.25 (sw) 438	+
	20.866 530.0	15.39 391	382.0 173.3	NA	NA	NA
22[1] DN550	22.000 558.8	19.00 (sw) 483	468.0 212.3	19.00 (sw) 483	19.00 (sw) 483	+
24[1] DN600	24.000 609.6	20.00 (sw) 508	592.0 268.5	20.00 (sw) 508	20.00 (sw) 508	+
	24.803 630.0	17.37 441	502.0 227.7	NA	NA	NA
14 – 60 DN350 – DN1500	For AGS fitting information, see publication 20.05 AGS™					

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

[2] Available with British Standard Pipe Threads, specify "BSP" clearly on order.

(sw) = Carbon Steel Segmentally Welded

NA = Not Available

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NOTES

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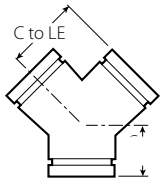
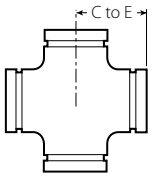
4.4 DIMENSIONS

Tees, Crosses and True Wyes

No. 33
No. 35





Size		No. 33 True Wye			No. 35 Cross	
Nominal inches DN	Actual Outside Diameter inches mm	C to LE inches mm	C to SE inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
¾ DN20	1.050 26.9	2.25 (sw) 57	2.00 (sw) 51	0.8 0.4	2.25 (sw) 57	0.9 0.4
1 DN25	1.315 33.7	2.25 (sw) 57	2.25 (sw) 57	1.1 0.5	2.25 (sw) 57	1.3 0.6
1 ¼ DN32	1.660 42.4	2.75 (sw) 70	2.50 (sw) 64	1.5 0.7	2.75 (sw) 70	2.1 1.0
1 ½ DN40	1.900 48.3	2.75 (sw) 70	2.75 (sw) 70	1.8 0.8	2.75 (sw) 70	2.5 1.1
2 DN50	2.375 60.3	3.25 (sw) 83	2.75 (sw) 70	2.5 1.1	3.25 83	4.0 1.8
2 ½	2.875 73.0	3.75 (sw) 95	3.00 (sw) 76	5.1 2.3	3.75 95	6.1 2.8
DN65	3.000 76.1	3.75 (sw) 95	3.25 (sw) 83	5.5 2.5	3.75 95	7.8 3.5
3 DN80	3.500 88.9	4.25 (sw) 108	3.25 (sw) 83	6.1 2.8	4.25 108	11.8 5.4
3 ½ DN90	4.000 101.6	4.50 (sw) 114	3.50 (sw) 89	9.6 4.4	4.50 (sw) 114	11.5 5.2
	4.250 108.0	5.00 (sw) 127	3.75 (sw) 95	9.7 4.4	5.00 127	18.4 8.3
4 DN100	4.500 114.3	5.00 127	3.75 95	10.0 4.5	5.00 127	15.8 7.2
4 ½	5.000 127.0	5.25 (sw) 133	4.00 (sw) 102	12.5 5.7	5.25 (sw) 133	18.5 8.4
	5.250 133.0	5.50 (sw) 140	4.00 (sw) 102	13.8 6.2	5.50 (sw) 140	19.0 8.6
DN125	5.500 139.7	5.50 (sw) 140	4.00 (sw) 102	15.0 6.8	5.50 (sw) 140	19.5 8.8
5	5.563 141.3	5.50 (sw) 140	4.00 (sw) 102	15.0 6.8	5.50 140	28.6 13.0
	6.000 152.4	6.50 (sw) 165	4.50 (sw) 114	17.5 7.9	6.50 (sw) 165	22.0 10.0
	6.250 159.0	6.50 (sw) 165	4.50 (sw) 114	19.9 9.0	6.50 165	41.4 18.8
	6.500 165.1	6.50 (sw) 165	4.50 (sw) 114	21.5 9.8	6.50 165	44.0 20.0
6 DN150	6.625 168.3	6.50 (sw) 165	4.50 (sw) 114	22.3 10.1	6.50 165	46.0 20.9
8 DN200	8.625 219.1	7.75 (sw) 197	6.00 (sw) 152	36.0 16.3	7.75 (sw) 197	48.0 21.8

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(sw) = Carbon Steel Segmentally Welded

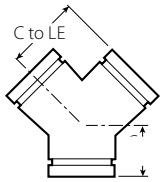
NOTE

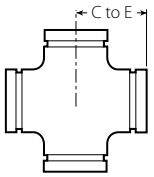
- All fittings are ductile iron unless otherwise noted with an (sw).

4.4 DIMENSIONS (CONTINUED)

Tees, Crosses and True Wyes

No. 33
No. 35





Size		No. 33 True Wye			No. 35 Cross	
Nominal inches DN	Actual Outside Diameter inches mm	C to LE inches mm	C to SE inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
10 DN250	10.750 273.0	9.00 (sw) 229	6.50 (sw) 165	54.5 24.7	9.00 (sw) 229	70.0 31.8
12 DN300	12.750 323.9	10.00 (sw) 254	7.00 (sw) 178	80.0 36.3	10.00 (sw) 254	110.0 49.9
14[1] DN350	14.000 355.6	11.00 (sw) 279	7.50 (sw) 191	134.2 60.9	11.00 (sw) 279	198.0 89.8
16[1] DN400	16.000 406.4	12.00 (sw) 305	8.00 (sw) 203	167.0 75.7	12.00 (sw) 305	250.0 113.4
18[1] DN450	18.000 457.2	15.50 (sw) 394	8.50 (sw) 216	180.0 81.6	15.50 (sw) 394	350.0 158.8
20[1] DN500	20.000 508.0	17.25 (sw) 438	9.00 (sw) 229	200.0 90.7	17.25 (sw) 438	452.0 205.0
22[1] DN550	22.000 558.8	19.00 (sw) 483	9.50 (sw) 241	225.0 102.1	19.00 (sw) 483	624.0 283.0
24[1] DN600	24.000 609.6	20.00 (sw) 508	10.00 (sw) 254	250.0 113.4	20.00 (sw) 508	795.0 360.6
14 – 60 DN350 – DN1500	For AGS fitting information, see publication 20.05 AGS™					

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(sw) = Carbon Steel Segmentally Welded

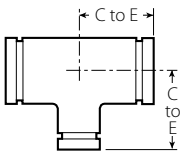
NOTE

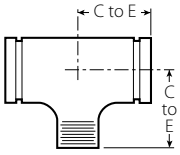
- All fittings are ductile iron unless otherwise noted with an (sw).

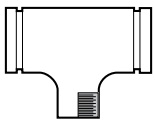
4.4 DIMENSIONS (CONTINUED)

Reducing Tee

No. 25
No. 29T
No. 29F







Size									No. 25 Grooved Branch Reducing Tee		No. 29T Reducing Tee Groove x Male Thread[2] Branch		No. 29F[2] Reducing Tee Groove x Female Thread[2] Branch	
Nominal inches DN					Actual Outside Diameter inches mm				C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
1 DN25	x	1 DN25	x	¾ DN20	1.315 33.7	x	1.315 33.7	x	1.050 26.9	2.25 (sw) 57	0.8 0.4	2.25 (sw) 57	0.8 0.4	NA	NA
1 ¼ DN32	x	1 ¼ DN32	x	¾ DN20	1.660 42.4	x	1.660 42.4	x	1.050 26.9	2.75 (sw) 70	1.0 0.5	2.75 (sw) 70	1.0 0.5	NA	NA
				1 DN25					1.315 33.7	2.75 (sw) 70	1.3 0.6	2.75 (sw) 70	1.5 0.7	NA	NA
1 ½ DN40	x	1 ½ DN40	x	¾ DN20	1.900 48.3	x	1.900 48.3	x	1.050 26.9	2.75 (sw) 70	1.5 0.7	2.75 (sw) 70	1.5 0.7	NA	NA
				1 DN25					1.315 33.7	2.75 (sw) 70	1.5 0.7	2.75 (sw) 70	1.8 0.8	NA	NA
				1 ¼ DN32					1.660 42.4	2.75 (sw) 70	2.1 1.0	2.75 (sw) 70	1.7 0.8	NA	NA
2 DN50	x	2 DN50	x	¾ DN20	2.375 60.3	x	2.375 60.3	x	1.050 26.9	3.25 83	2.5 1.1	3.25 83	2.5 1.1	NA	NA
				1 DN25					1.315 33.7	3.25 83	2.7 1.2	3.25 83	2.7 1.2	NA	NA
				1 ¼ DN32					1.660 42.4	3.25 (sw) 83	2.3 1.0	3.25 (sw) 83	2.3 1.0	NA	NA
				1 ½ DN40					1.900 48.3	3.25 83	3.2 1.5	3.25 83	3.2 1.5	NA	NA
2 ½	x	2 ½	x	¾ DN20	2.875 73.0	x	2.875 73.0	x	1.050 26.9	3.75 (sw) 95	3.9 1.8	3.75 (sw) 95	3.0 1.4	NA	NA
				1 DN25					1.315 33.7	3.75 95	3.8 1.7	3.75 95	3.8 1.7	NA	NA
				1 ¼ DN32					1.660 42.4	3.75 95	4.0 1.8	3.75 95	4.0 1.8	NA	NA
				1 ½ DN40					1.900 48.3	3.75 95	4.8 2.2	3.75 95	4.8 2.2	NA	NA
				2 DN50					2.375 60.3	3.75 95	4.5 2.0	3.75 95	4.5 2.0	NA	NA
DN65	x	DN65	x	¾ DN20	3.000 76.1	x	3.000 76.1	x	1.050 26.9	3.75 (sw) 95	+	3.75 (sw) 95	+	NA	NA
				1 DN25					1.315 33.7	3.75 (sw) 95	+	3.75 (sw) 95	+	NA	NA
				1 ¼ DN32					1.660 42.4	3.75 (sw) 95	+	3.75 (sw) 95	+	NA	NA
				1 ½ DN40					1.900 48.3	3.75 (sw) 95	+	3.75 (sw) 95	+	NA	NA
				2 DN50					2.375 60.3	3.75 95	4.6 2.1	3.75 95	4.6 2.1	NA	NA

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

[2] Available with British Standard Pipe Threads, specify "BSP" clearly on order.

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NOTES

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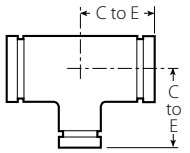
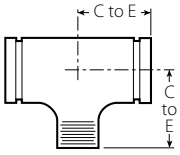
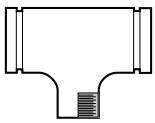
4.4 DIMENSIONS (CONTINUED)

Reducing Tee

No. 25
No. 29T
No. 29F







Size									No. 25 Grooved Branch Reducing Tee		No. 29T Reducing Tee Groove x Male Thread[2] Branch		No. 29F[2] Reducing Tee Groove x Female Thread[2] Branch	
Nominal inches DN					Actual Outside Diameter inches mm				C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
3 DN80	x	3 DN80	x	¾ DN20	3.500 88.9	x	3.500 88.9	x	1.050 26.9	4.25 (sw) 108	5.7 2.6	4.25 (sw) 108	5.7 2.6	NA	NA
				1 DN25					1.315 33.7	4.25 108	6.0 2.7	4.25 108	6.0 2.7	NA	NA
				1 ¼ DN32					1.660 42.4	4.25 108	6.0 2.7	4.25 108	6.3 2.9	NA	NA
				1 ½ DN40					1.900 48.3	4.25 108	6.6 3.0	4.25 108	6.6 3.0	NA	NA
				2 DN50					2.375 60.3	4.25 108	6.2 2.8	4.25 108	6.2 2.8	4.25 108	6.2 2.8
				2 ½					2.875 73.0	4.25 108	6.6 3.0	4.25 108	6.6 3.0	NA	NA
				DN65					3.000 76.1	4.25 108	6.8 3.1	4.25 108	11.6 5.3	NA	NA
3 ½ DN90	x	3 ½ DN90	x	¾ DN20	4.000 101.6	x	4.000 101.6	x	1.050 26.9	4.50 (sw) 114	+	4.50 (sw) 114	+	NA	NA
				1 DN25					1.315 33.7	4.50 (sw) 114	+	4.50 (sw) 114	+	NA	NA
				1 ¼ DN32					1.660 42.4	4.50 (sw) 114	+	4.50 (sw) 114	+	NA	NA
				1 ½ DN40					1.900 48.3	4.50 (sw) 114	+	4.50 (sw) 114	+	NA	NA
				2 DN50					2.375 60.3	4.50 (sw) 114	+	4.50 (sw) 114	+	NA	NA
				2 ½					2.875 73.0	4.50 (sw) 114	+	4.50 (sw) 114	+	NA	NA
				3 DN80					3.500 88.9	4.50 (sw) 114	+	4.50 (sw) 114	+	NA	NA
					4.250 108.0	x	4.250 108.0	x	1.050 26.9	5.00 (sw) 127	+	5.00 (sw) 127	+	5.00 (sw) 127	+
									1.315 33.7	5.00 (sw) 127	+	5.00 (sw) 127	+	5.00 (sw) 127	+
									1.660 42.4	5.00 (sw) 127	+	5.00 (sw) 127	+	5.00 (sw) 127	+
									1.900 48.3	5.00 (sw) 127	+	5.00 (sw) 127	+	5.00 (sw) 127	+
									2.375 60.3	5.00 (sw) 127	+	5.00 (sw) 127	+	5.00 (sw) 127	+
									3.000 76.1	5.00 (sw) 127	+	5.00 (sw) 127	+	5.00 (sw) 127	+
									3.500 88.9	5.00 127	9.5 4.3	5.00 (sw) 127	+	NA	NA

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

[2] Available with British Standard Pipe Threads, specify "BSP" clearly on order.

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NOTES

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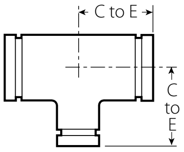
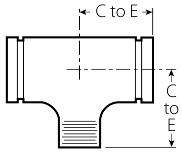
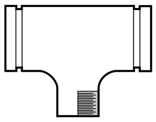
4.4 DIMENSIONS (CONTINUED)

Reducing Tee

No. 25
No. 29T
No. 29F







Size		No. 25 Grooved Branch Reducing Tee		No. 29T Reducing Tee Groove x Male Thread[2] Branch		No. 29F[2] Reducing Tee Groove x Female Thread[2] Branch	
Nominal inches DN	Actual Outside Diameter inches mm	C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
4 x 4 x ¾ DN100 DN100 DN20	4.500 x 4.500 x 1.050 114.3 114.3 26.9	5.00 (sw) 127	8.0 3.6	5.00 (sw) 127	9.3 4.2	NA	NA
1 DN25	1.315 33.7	5.00 127	9.1 4.1	5.00 127	9.1 4.1	NA	NA
1 ¼ DN32	1.660 42.4	5.00 (sw) 127	8.9 4.0	5.00 (sw) 127	10.0 4.5	NA	NA
1 ½ DN40	1.900 48.3	5.00 127	10.2 4.6	5.00 127	10.2 4.6	NA	NA
2 DN50	2.375 60.3	5.00 127	11.2 5.1	5.00 127	11.2 5.1	NA	NA
2 ½	2.875 73.0	5.00 127	11.5 5.2	5.00 127	11.5 5.2	NA	NA
DN65	3.000 76.1	5.00 127	10.3 4.7	5.00 127	10.3 4.7	NA	NA
3 DN80	3.500 88.9	5.00 127	11.6 5.3	5.00 127	11.6 5.3	NA	NA
	5.250 x 5.250 x 1.050 133.0 133.0 26.9	5.50 (sw) 140	+	5.50 (sw) 140	+	5.50 (sw) 140	+
	1.315 33.7	5.50 (sw) 140	+	5.50 (sw) 140	+	5.50 (sw) 140	+
	1.660 42.4	5.50 (sw) 140	+	5.50 (sw) 140	+	5.50 (sw) 140	+
	1.900 48.3	5.50 (sw) 140	+	5.50 (sw) 140	+	5.50 (sw) 140	+
	2.375 60.3	5.50 (sw) 140	+	5.50 (sw) 140	+	NA	NA
	3.000 76.1	5.50 (sw) 140	+	5.50 (sw) 140	+	5.50 (sw) 140	+
	3.500 88.9	5.50 (sw) 140	+	5.50 (sw) 140	+	5.50 (sw) 140	+
	4.250 108.0	5.50 140	12.9 5.9	5.50 (sw) 140	+	NA	NA

1 For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

2 Available with British Standard Pipe Threads, specify "BSP" clearly on order.

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NOTES

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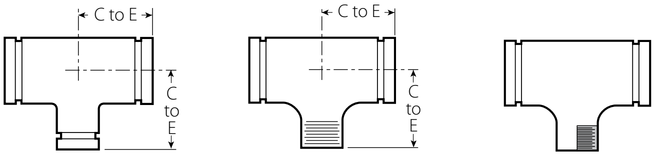
4.4 DIMENSIONS (CONTINUED)

Reducing Tee

No. 25
No. 29T
No. 29F



Size		No. 25 Grooved Branch Reducing Tee		No. 29T Reducing Tee Groove x Male Thread[2] Branch		No. 29F[2] Reducing Tee Groove x Female Thread[2] Branch	
Nominal inches DN	**Actual Outside Diameter** inches mm	**C to E** inches mm	**Approx. Weight (Each)** lb kg	**C to E** inches mm	**Approx. Weight (Each)** lb kg	**C to E** inches mm	**Approx. Weight (Each)** lb kg
x x ¾ DN125 DN125 DN20	5.500 x 5.500 x 1.050 139.7 139.7 26.9	5.50 (sw) 140	+	5.50 (sw) 140	+	NA	NA
1 DN25	1.315 33.7	5.50 (sw) 140	+	5.50 (sw) 140	+	NA	NA
1 ¼ DN32	1.660 42.4	5.50 (sw) 140	+	5.50 (sw) 140	+	NA	NA
1 ½ DN40	1.900 48.3	5.50 (sw) 140	+	5.50 (sw) 140	+	NA	NA
2 DN50	2.375 60.3	5.50 140	13.5 6.1	5.50 (sw) 140	+	NA	NA
DN65	3.000 76.1	5.50 (sw) 140	+	5.50 (sw) 140	+	NA	NA
3 DN80	3.500 88.9	5.50 140	13.8 6.3	5.50 (sw) 140	+	NA	NA
	4.250 108.0	5.50 (sw) 140	+	5.50 (sw) 140	+	NA	NA
4 DN100	4.500 114.3	5.50 140	14.4 6.5	5.50 (sw) 140	+	NA	NA
5 x 5 x ¾ DN20	5.563 x 5.563 x 1.050 141.3 141.3 26.9	5.50 (sw) 140	+	5.50 (sw) 140	+	NA	NA
1 DN25	1.315 33.7	5.50 (sw) 140	14.0 6.4	5.50 (sw) 140	14.0 6.4	NA	NA
1 ¼ DN32	1.660 42.4	5.50 (sw) 140	+	5.50 (sw) 140	+	NA	NA
1 ½ DN40	1.900 48.3	5.50 (sw) 140	14.3 6.5	5.50 (sw) 140	14.5 6.6	NA	NA
2 DN50	2.375 60.3	5.50 (sw) 140	14.5 6.6	5.50 (sw) 140	14.5 6.6	NA	NA
2 ½	2.875 73.0	5.50 140	15.5 7.0	5.50 140	15.8 7.2	NA	NA
3 DN80	3.500 88.9	5.50 140	12.6 5.7	5.50 (sw) 140	17.0 7.7	NA	NA
4 DN100	4.500 114.3	5.50 140	16.0 7.3	5.50 (sw) 140	16.0 7.3	NA	NA

1 For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

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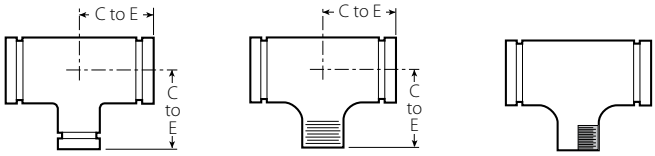
4.4 DIMENSIONS (CONTINUED)

Reducing Tee

No. 25
No. 29T
No. 29F



Size				No. 25 Grooved Branch Reducing Tee		No. 29T Reducing Tee Groove x Male Thread[2] Branch		No. 29F[2] Reducing Tee Groove x Female Thread[2] Branch	
Nominal inches DN	Actual Outside Diameter inches mm			C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
	6.000 x 6.000 x 152.4 x 152.4		1.050 26.9	6.50 (sw) 165	+	6.50 (sw) 165	+	NA	NA
			1.315 33.7	6.50 (sw) 165	+	6.50 (sw) 165	+	NA	NA
			1.660 42.4	6.50 (sw) 165	+	6.50 (sw) 165	+	NA	NA
			1.900 48.3	6.50 (sw) 165	+	6.50 (sw) 165	+	NA	NA
			2.375 60.3	6.50 (sw) 165	+	6.50 (sw) 165	+	NA	NA
			3.000 76.1	6.50 (sw) 165	+	6.50 (sw) 165	+	NA	NA
			3.500 88.9	6.50 (sw) 165	+	6.50 (sw) 165	+	NA	NA
			4.250 108.0	6.50 (sw) 165	+	6.50 (sw) 165	+	NA	NA
			4.500 114.3	6.50 (sw) 165	+	6.50 (sw) 165	+	NA	NA
			5.250 133.0	6.50 (sw) 165	+	6.50 (sw) 165	+	NA	NA

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

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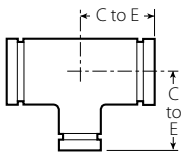
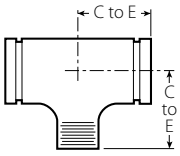
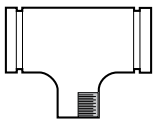
4.4 DIMENSIONS (CONTINUED)

Reducing Tee

No. 25
No. 29T
No. 29F







Size			No. 25 Grooved Branch Reducing Tee		No. 29T Reducing Tee Groove x Male Thread[2] Branch		No. 29F[2] Reducing Tee Groove x Female Thread[2] Branch	
Nominal inches DN	Actual Outside Diameter inches mm		C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
	6.250 x 6.250 x	1.050 26.9	6.50 (sw) 165	+	6.50 (sw) 165	+	6.50 (sw) 165	+
		1.315 33.7	6.50 (sw) 165	+	6.50 (sw) 165	+	6.50 (sw) 165	+
		1.660 42.4	6.50 (sw) 165	+	6.50 (sw) 165	+	6.50 (sw) 165	+
		1.900 48.3	6.50 (sw) 165	+	6.50 (sw) 165	+	6.50 (sw) 165	+
		2.375 60.3	6.50 (sw) 165	+	6.50 (sw) 165	+	6.50 (sw) 165	+
		3.000 76.1	6.50 (sw) 165	+	6.50 (sw) 165	+	6.50 (sw) 165	+
		3.500 88.9	6.50 165	18.5 8.4	6.50 (sw) 165	+	NA	NA
		4.250 108.0	6.50 165	18.5 8.4	6.50 (sw) 165	+	NA	NA
		4.500 114.3	6.50 165	12.1 5.5	6.50 (sw) 165	+	NA	NA
		5.250 133.0	6.50 165	19.0 8.6	6.50 (sw) 165	+	NA	NA
	6.500 x 6.500 x	1.050 26.9	6.50 (sw) 165	+	6.50 (sw) 165	+	NA	NA
		1.315 33.7	6.50 (sw) 165	10.8 4.9	6.50 (sw) 165	10.8 4.9	NA	NA
		1.660 42.4	6.50 (sw) 165	11.0 5.0	6.50 (sw) 165	11.0 5.0	NA	NA
		1.900 48.3	6.50 (sw) 165	11.3 5.1	6.50 (sw) 165	11.3 5.1	NA	NA
		2.375 60.3	6.50 165	18.9 8.6	6.50 165	18.9 8.6	NA	NA
		3.000 76.1	6.50 165	20.0 9.1	6.50 (sw) 165	+	NA	NA
		3.500 88.9	6.50 165	24.3 11.0	6.50 (sw) 165	+	NA	NA
		4.500 114.3	6.50 165	23.8 10.8	6.50 (sw) 165	+	NA	NA
		5.500 139.7	6.50 165	26.0 11.8	6.50 (sw) 165	+	NA	NA

1 For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

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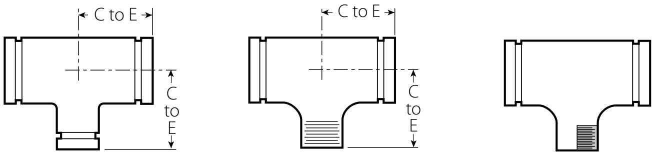
4.4 DIMENSIONS (CONTINUED)

Reducing Tee

No. 25
No. 29T
No. 29F



Size		No. 25 Grooved Branch Reducing Tee		No. 29T Reducing Tee Groove x Male Thread[2] Branch		No. 29F[2] Reducing Tee Groove x Female Thread[2] Branch	
Nominal inches DN	**Actual Outside Diameter** inches mm	**C to E** inches mm	**Approx. Weight (Each)** lb kg	**C to E** inches mm	**Approx. Weight (Each)** lb kg	**C to E** inches mm	**Approx. Weight (Each)** lb kg
6 x 6 x ¾ DN150 x DN150 x DN20	6.625 x 6.625 x 1.050 168.3 x 168.3 x 26.9	6.50 (sw) 165	+	6.50 (sw) 165	+	NA	NA
1 DN25	1.315 33.7	6.50 (sw) 165	23.0 10.4	6.50 (sw) 165	23.0 10.4	NA	NA
1 ¼ DN32	1.660 42.4	6.50 (sw) 165	25.0 11.3	6.50 (sw) 165	25.0 11.3	NA	NA
1 ½ DN40	1.900 48.3	6.50 (sw) 165	25.0 11.3	6.50 (sw) 165	25.0 11.3	NA	NA
2 DN50	2.375 60.3	6.50 165	22.8 10.3	6.50 165	22.8 10.3	NA	NA
2 ½	2.875 73.0	6.50 165	23.8 10.8	6.50 165	25.2 11.4	NA	NA
DN65	3.000 76.1	6.50 (sw) 165	+	6.50 165	+	NA	NA
3 DN80	3.500 88.9	6.50 165	24.8 11.2	6.50 165	24.9 11.3	NA	NA
4 DN100	4.500 114.3	6.50 165	24.8 11.2	6.50 165	22.1 10.0	NA	NA
DN125	5.500 139.7	6.50 (sw) 165	+	6.50 (sw) 165	+	NA	NA
5	5.563 141.3	6.50 165	26.7 12.1	6.50 (sw) 165	26.7 12.1	NA	NA
200A x 200A x 65A	216.3 x 216.3 x 76.3	7.75 (sw) 197	+	NA	NA	NA	NA
100A	114.3	7.75 (sw) 197	+	NA	NA	NA	NA
165A		7.75 197	50.0 22.7	NA	NA	NA	NA

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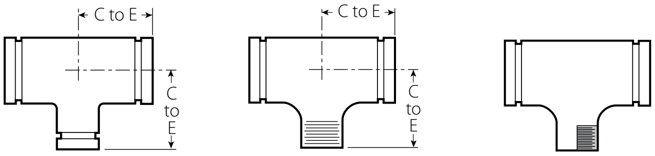
4.4 DIMENSIONS (CONTINUED)

Reducing Tee

No. 25
No. 29T
No. 29F



Size: Nominal inches DN	Size: Actual Outside Diameter inches mm	No. 25 Grooved Branch Reducing Tee: C to E inches mm	No. 25: Approx. Weight (Each) lb kg	No. 29T Reducing Tee Groove x Male Thread[2] Branch: C to E inches mm	No. 29T: Approx. Weight (Each) lb kg	No. 29F[2] Reducing Tee Groove x Female Thread[2] Branch: C to E inches mm	No. 29F: Approx. Weight (Each) lb kg
8 x 8 x ¾ DN200 DN200 DN20	8.625 x 8.625 x 1.050 219.1 219.1 26.9	7.75 (sw) 197	+	7.75 (sw) 197	+	7.75 (sw) 197	+
1 DN25	1.315 33.7	7.75 (sw) 197	+	7.75 (sw) 197	+	7.80 (sw) 198	+
1 ¼ DN32	1.660 42.4	7.75 (sw) 197	+	7.75 (sw) 197	+	7.80 (sw) 198	+
1 ½ DN40	1.900 48.3	7.75 (sw) 197	33.0 15.0	7.75 (sw) 197	37.7 17.1	7.80 (sw) 198	+
2 DN50	2.375 60.3	7.75 (sw) 197	33.5 15.2	7.75 (sw) 197	33.5 15.2	NA	NA
2 ½	2.875 73.0	7.75 197	37.3 16.9	7.75 (sw) 197	34.0 15.4	NA	NA
DN65	3.000 76.1	7.75 (sw) 197	37.5 17.0	NA	NA	7.80 (sw) 198	+
3 DN80	3.500 88.9	7.75 197	37.5 17.0	7.75 (sw) 197	33.6 15.2	NA	NA
	4.250 108.0	7.75 197	48.9 22.2	NA	NA	NA	NA
4 DN100	4.500 114.3	7.75 197	42.9 19.5	7.75 (sw) 197	35.0 15.9	NA	NA
	5.250 133.0	9.02 229	54.6 24.8	7.75 (sw) 197	+	NA	NA
DN125	5.500 139.7	7.75 (sw) 197	+	NA	NA	NA	NA
5	5.563 141.3	7.75 197	37.0 16.8	7.75 (sw) 197	37.0 16.8	NA	NA
	6.250 159.0	7.75 197	51.6 23.4	7.75 (sw) 197	+	NA	NA
	6.500 165.1	7.75 197	43.2 19.6	7.75 (sw) 197	+	NA	NA
6 DN150	6.625 168.3	7.75 197	48.5 22.0	7.75 (sw) 197	43.0 19.5	NA	NA
	10.528 10.528 6.500 267.4 267.4 165.1	9.00 229	68.4 31.0	NA	NA	NA	NA
250A x 250A x 4 DN100	267.4 x 267.4 x 4.5 114.3	9.00 (sw) 229	+	NA	NA	NA	NA
125A	139.8	9.00 (sw) 229	+	NA	NA	NA	NA
200A	216.3	9.00 229	82.0 37.2	NA	NA	NA	NA

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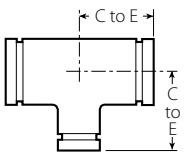
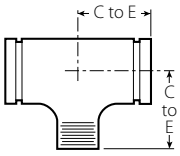
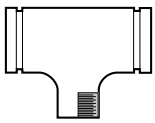
4.4 DIMENSIONS (CONTINUED)

Reducing Tee

No. 25
No. 29T
No. 29F







Size								No. 25 Grooved Branch Reducing Tee		No. 29T Reducing Tee Groove x Male Thread[2] Branch		No. 29F[2] Reducing Tee Groove x Female Thread[2] Branch	
Nominal inches DN				Actual Outside Diameter inches mm				C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
10 DN250	x	10 DN250	x	¾ DN20	10.750 273.0	x	10.750 273.0	x	1.050 26.9	9.00 (sw) 229	+	9.00 (sw) 229	+	NA	NA
				1 DN25					1.315 33.7	9.00 (sw) 229	+	9.00 (sw) 229	+	NA	NA
				1 ¼ DN32					1.660 42.4	9.00 (sw) 229	+	9.00 (sw) 229	+	NA	NA
				1 ½ DN40					1.900 48.3	9.00 (sw) 229	57.0 25.9	9.00 (sw) 229	57.0 25.9	NA	NA
				2 DN50					2.375 60.3	9.00 (sw) 229	62.0 28.1	9.00 (sw) 229	65.0 29.5	9.00 (sw) 229	+
				2 ½					2.875 73.0	9.00 229	62.5 28.3	9.00 (sw) 229	53.0 24.0	NA	NA
				DN65					3.000 76.1	9.00 (sw) 229	71.2 32.3	NA	NA	NA	NA
				3 DN80					3.500 88.9	9.00 229	62.1 28.2	9.00 (sw) 229	60.0 27.2	NA	NA
									4.250 108.0	9.02 229	77.6 35.2	9.00 (sw) 229	+	NA	NA
				4 DN100					4.500 114.3	9.00 229	61.0 27.7	9.00 (sw) 229	61.0 27.7	NA	NA
									5.250 133.0	9.02 229	84.2 38.2	9.00 (sw) 229	+	NA	NA
				DN125					5.500 139.7	9.00 (sw) 229	+	9.00 (sw) 229	+	NA	NA
									6.250 159.0	9.02 229	84.9 38.5	9.00 (sw) 229	+	NA	NA
				5					5.563 141.3	9.00 (sw) 229	52.0 23.6	9.00 (sw) 229	52.0 23.6	NA	NA
									6.250 159.0	9.00 229	61.0 27.7	9.00 (sw) 229	+	NA	NA
									6.500 165.1	9.00 229	64.2 29.1	9.00 (sw) 229	+	NA	NA
				6 DN150					6.625 168.3	9.00 229	59.0 26.8	9.00 (sw) 229	60.0 27.2	NA	NA
				8 DN200					8.625 219.1	9.00 229	64.7 29.3	9.00 (sw) 229	64.7 29.3	NA	NA
300A	x	300A	x	150A	318.5	x	318.5	x	165.2	10.00 (sw) 254	+	NA	NA	NA	NA
				200A					216.3	10.00 (sw) 254	+	NA	NA	NA	NA
				250A					267.4	10.00 254	111.0 50.3	NA	NA	NA	NA

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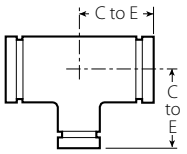
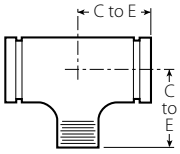
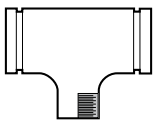
4.4 DIMENSIONS (CONTINUED)

Reducing Tee
No. 25
No. 29T
No. 29F







Size						No. 25 Grooved Branch Reducing Tee		No. 29T Reducing Tee Groove x Male Thread[2] Branch		No. 29F[2] Reducing Tee Groove x Female Thread[2] Branch	
Nominal inches DN			Actual Outside Diameter inches mm			C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
12 x 12 x ¾			12.750 x 12.750 x 1.050			10.00 (sw) 254	+	NA	NA	10.00 (sw) 254	+
DN300 x DN300 x DN20			323.9 x 323.9 x 26.9								
		1 DN25			1.315 33.7	10.00 (sw) 254	70.0 31.8	10.00 (sw) 254	77.0	10.00 (sw) 254	+
		1 ¼ DN32			1.660 42.4	10.00 (sw) 254	+	10.00 (sw) 254	+	10.00 (sw) 254	+
		1 ½ DN40			1.900 48.3	10.00 (sw) 254	+	10.00 (sw) 254	+	10.00 254	+
		2 DN50			2.375 60.3	10.00 (sw) 254	78.0 35.4	10.00 (sw) 254	78.0 35.4	10.00 (sw) 254	+
		2 ½			2.875 73.0	10.00 (sw) 254	80.0 36.3	10.00 (sw) 254	80.0 36.3	NA	NA
		DN65			3.000 76.1	10.00 (sw) 254	+	10.00 (sw) 254	+	10.00 (sw) 254	+
		3 DN80			3.500 88.9	10.00 (sw) 254	80.0 36.3	10.00 (sw) 254	86.5 39.2	NA	NA
					4.250 108.0	10.00 254	+	10.00 (sw) 254	+	NA	NA
		4 DN100			4.500 114.3	10.00 (sw) 254	86.7 39.3	10.00 (sw) 254	77.0 34.9	NA	NA
					5.250 133.0	10.00 254	130.0 59.0	10.00 (sw) 254	+	NA	NA
		DN125			5.500 139.7	10.00 (sw) 254	81.8 37.1	10.00 (sw) 254	+	NA	NA
		5			5.563 141.3	10.00 (sw) 254	75.0 34.0	10.00 (sw) 254	75.0 34.0	NA	NA
					6.250 159.0	10.00 254	125.6 57.0	10.00 (sw) 254	+	NA	NA
					6.500 165.1	10.00 (sw) 254	+	10.00 (sw) 254	+	NA	NA
		6 DN150			6.625 168.3	10.00 254	88.5 40.2	10.00 (sw) 254	75.0 34.0	NA	NA
		8 DN200			8.625 219.1	10.00 254	80.0 36.3	10.00 (sw) 254	80.0 36.3	NA	NA
		10 DN250			10.750 273.0	10.00 254	123.5 56.0	10.00 (sw) 254	84.0 38.1	NA	NA

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

[2] Available with British Standard Pipe Threads, specify "BSP" clearly on order.

(sw) = Carbon Steel Segmentally Welded

NA = Not Available

"+" = Contact Victaulic for details

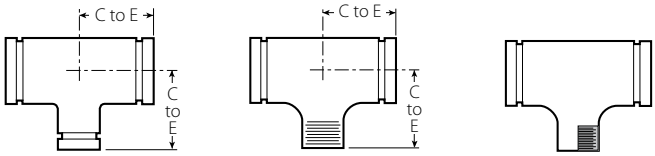
NOTES

- All fittings are ductile iron unless otherwise noted with an (sw).

4.4 DIMENSIONS (CONTINUED)

Reducing Tee

No. 25
No. 29T
No. 29F



Size								No. 25 Grooved Branch Reducing Tee		No. 29T Reducing Tee Groove x Male Thread[2] Branch		No. 29F[2] Reducing Tee Groove x Female Thread[2] Branch	
Nominal inches DN					Actual Outside Diameter inches mm			C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
14[1] DN350	x 14 DN350	x 4 DN100			14.000 355.6	x 14.000 355.6	x 4.500 114.3	11.00 (sw) 279	102.0 46.3	11.00 (sw) 279	102.0 46.3	NA	NA
		6 DN150					6.625 168.3	11.00 (sw) 279	108.2 49.1	11.00 (sw) 279	108.2 49.1	NA	NA
		8 DN200					8.625 219.1	11.00 (sw) 279	112.0 50.8	11.00 (sw) 279	112.0 50.8	NA	NA
		10 DN250					10.750 273.0	11.00 (sw) 279	120.0 54.4	11.00 (sw) 279	120.0 54.4	NA	NA
		12 DN300					12.750 323.9	11.00 (sw) 279	129.1 58.6	11.00 (sw) 279	129.1 58.6	NA	NA
					14.843 377.0	14.843 377.0	6.500 165.1	11.00 279	142.4 64.6	NA	NA	NA	NA
							8.625 219.1	11.00 279	145.5 66.0	NA	NA	NA	NA
							10.750 273.0	11.00 279	149.9 68.0	NA	NA	NA	NA
							12.750 323.9	11.00 279	144.6 65.6	NA	NA	NA	NA
16[1] DN400	x 16 DN400	x 4 DN100			16 DN400	x 16 DN400	x 4.500 114.3	12.00 (sw) 305	130.0 59.0	12.00 (sw) 305	130.0 59.0	NA	NA
		6 DN150					6.625 168.3	12.00 (sw) 305	133.5 60.6	12.00 (sw) 305	133.5 60.6	NA	NA
		8 DN200					8.625 219.1	12.00 (sw) 305	145.0 65.8	12.00 (sw) 305	145.0 65.8	NA	NA
		10 DN250					10.750 273.0	12.00 (sw) 305	149.5 67.8	12.00 (sw) 305	149.5 67.8	NA	NA
		12 DN300					12.750 323.9	12.00 (sw) 305	154.0 69.9	12.00 (sw) 305	154.0 69.9	NA	NA
		14 DN350					14.000 355.6	12.00 (sw) 305	167.0 75.7	NA	NA	NA	NA
					16.772 426.0	x 16.772 426.0	x 6.250 159.0	12.83 326	189.6 86.0	NA	NA	NA	NA
							8.625 219.1	12.83 326	213.9 97.0	NA	NA	NA	NA
							10.750 273.0	12.83 326	224.9 102.0	NA	NA	NA	NA
							12.750 323.9	12.83 326	224.9 102.0	NA	NA	NA	NA
							14.843 377.0	12.83 326	227.1 103.0	NA	NA	NA	NA

1 For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

2 Available with British Standard Pipe Threads, specify "BSP" clearly on order.

(sw) = Carbon Steel Segmentally Welded

NA = Not Available

"+" = Contact Victaulic for details

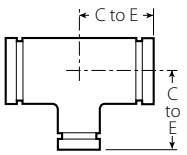
NOTES

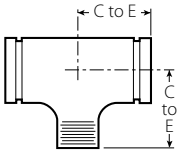
- All fittings are ductile iron unless otherwise noted with an (sw).

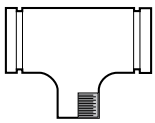
4.4 DIMENSIONS (CONTINUED)

Reducing Tee

No. 25
No. 29T
No. 29F







Size								No. 25 Grooved Branch Reducing Tee		No. 29T Reducing Tee Groove x Male Thread[2] Branch		No. 29F[2] Reducing Tee Groove x Female Thread[2] Branch	
Nominal inches DN				Actual Outside Diameter inches mm				C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
18[1] DN450	x	18 DN450	x	4 DN100	18.000 457.2	x	18.000 457.2	x 4.500 114.3	15.50 (sw) 394	194.0 88.0	15.50 (sw) 394	194.0 88.0	NA	NA
				6 DN150				6.625 168.3	15.50 (sw) 394	200.0 90.7	15.50 (sw) 394	200.0 90.7	NA	NA
				8 DN200				8.625 219.1	15.50 (sw) 394	202.6 91.9	15.50 (sw) 394	202.0 91.6	NA	NA
				10 DN250				10.750 273.0	15.50 (sw) 394	212.0 96.2	15.50 (sw) 394	212.0 96.2	NA	NA
				12 DN300				12.750 323.9	15.50 (sw) 394	222.6 101.0	15.50 (sw) 394	222.6 101.0	NA	NA
				14 DN350				14.000 355.6	15.50 (sw) 394	230.1 104.4	NA	NA	NA	NA
				16 DN400				16 DN400	15.50 (sw) 394	247.6 112.3	NA	NA	NA	NA
					18.898 480.0	x	18.898 480.0	x 4.250 108.0	14.75 375	282.4 128.1	NA	NA	NA	NA
								5.250 133.0	14.75 375	283.0 128.4	NA	NA	NA	NA
								6.250 159.0	14.75 375	283.3 128.5	NA	NA	NA	NA
								10.750 273.0	14.75 375	285.1 129.3	NA	NA	NA	NA
								14.843 377.0	14.75 375	293.8 133.2	NA	NA	NA	NA

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

[2] Available with British Standard Pipe Threads, specify "BSP" clearly on order.

(sw) = Carbon Steel Segmentally Welded

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NOTES

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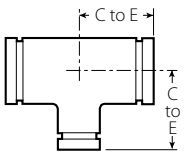
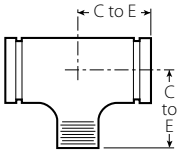
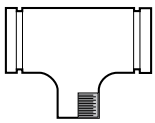
4.4 DIMENSIONS (CONTINUED)

Reducing Tee

No. 25
No. 29T
No. 29F







Size							No. 25 Grooved Branch Reducing Tee		No. 29T Reducing Tee Groove x Male Thread[2] Branch		No. 29F[2] Reducing Tee Groove x Female Thread[2] Branch	
Nominal inches DN			Actual Outside Diameter inches mm				C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
20[1] x 20 x 6 DN500 DN500 DN150			20.000 x 20.000 x 6.625 508.0 508.0 168.3				17.25 (sw) 438	240.0 108.9	17.25 (sw) 438	240.0 108.9	NA	NA
		8 DN200			8.625 219.1		17.25 (sw) 438	244.0 110.7	17.25 (sw) 438	244.0 110.7	NA	NA
		10 DN250			10.750 273.0		17.25 (sw) 438	256.0 116.1	17.25 (sw) 438	256.0 116.1	NA	NA
		12 DN300			12.750 323.9		17.25 (sw) 438	264.3 119.9	17.25 (sw) 438	264.0 119.7	NA	NA
		14 DN350			14.000 355.6		17.25 (sw) 438	275.0 124.7	NA	NA	NA	NA
		16 DN400			16.000 406.4		17.25 (sw) 438	288.6 130.9	NA	NA	NA	NA
		18 DN450			18.000 457.2		17.25 (sw) 438	297.0 134.7	NA	NA	NA	NA
			20.866 x 20.866 x 6.250 530.0 530.0 159.0				17.25 438	368.2 167.0	NA	NA	NA	NA
					8.625 219.1		17.25 438	401.3 182.0	NA	NA	NA	NA
					10.750 273.0		17.25 438	379.2 172.0	NA	NA	NA	NA
					12.750 323.9		17.25 438	401.2 182.0	NA	NA	NA	NA
					14.843 377.0		17.25 438	383.6 174.0	NA	NA	NA	NA
					16.772 426.0		17.25 438	401.2 182.0	NA	NA	NA	NA
					18.898 480.0		17.25 438	399.2 181.1	NA	NA	NA	NA

1 For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

2 Available with British Standard Pipe Threads, specify "BSP" clearly on order.

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NOTES

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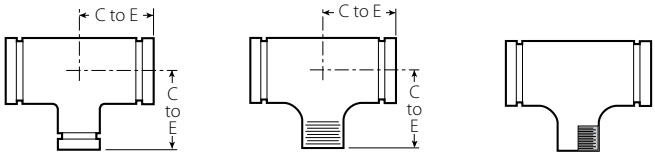
4.4 DIMENSIONS (CONTINUED)

Reducing Tee

No. 25
No. 29T
No. 29F



Size								No. 25 Grooved Branch Reducing Tee		No. 29T Reducing Tee Groove x Male Thread[2] Branch		No. 29F[2] Reducing Tee Groove x Female Thread[2] Branch	
Nominal inches DN				Actual Outside Diameter inches mm				C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
24[1] x 24 x 8 DN600 x DN600 x DN200				24.000 x 24.000 x 8.625 609.6 x 609.6 x 219.1				20.00 (sw) 508	340.0 154.2	20.00 (sw) 508	340.0 154.2	NA	NA
		10 DN250				10.750 273.0		20.00 (sw) 508	343.9 156.0	20.00 (sw) 508	343.9 156.0	NA	NA
		12 DN300				12.750 323.9		20.00 (sw) 508	352.8 160.0	20.00 (sw) 508	352.8 160.0	NA	NA
		14 DN350				14.000 355.6		20.00 508	+	NA	NA	NA	NA
		16 DN400				16.000 406.4		20.00 (sw) 508	378.0 171.5	NA	NA	NA	NA
		18 DN450				18.000 457.2		20.00 508	+	NA	NA	NA	NA
		20 DN500				20.000 508.0		20.00 (sw) 508	400.0 181.4	NA	NA	NA	NA
				24.803 x 24.803 x 6.250 630.0 x 630.0 x 159.0				20.00 508	559.2 253.6	NA	NA	NA	NA
						8.625 219.1		20.00 508	559.2 253.6	NA	NA	NA	NA
						10.750 273.0		20.00 508	562.2 255.0	NA	NA	NA	NA
						12.750 323.9		20.00 508	562.2 255.0	NA	NA	NA	NA
						14.843 377.0		20.00 508	586.4 266.0	NA	NA	NA	NA
						16.772 426.0		20.00 508	579.8 263.0	NA	NA	NA	NA
						18.898 480.0		20.00 508	568.8 258.0	NA	NA	NA	NA
						20.866 530.0		20.00 508	574.3 260.5	NA	NA	NA	NA
14 – 60 DN350 – DN1500				For AGS fitting information, see publication 20.05 AGS™									

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

[2] Available with British Standard Pipe Threads, specify "BSP" clearly on order.

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NOTES

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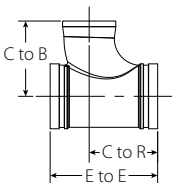
4.5 DIMENSIONS (CONTINUED)

Pitcher Tee

No. 29P



Size										No. 29P Pitcher Tee Groove x Female Thread Branch			
Nominal inches DN					Actual Outside Diameter inches mm					C to R inches mm	E to E inches mm	C to B inches mm	Approx. Weight (Each) lb kg
4 DN100	x	4 DN100	x	2½	4.500 114.3	x	4.500 114.3	x	2.875 73.0	4.75 121	7.50 191	5.25 133	10.1 4.6

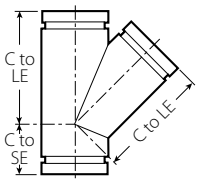
NOTE

- All fittings are ductile iron unless otherwise noted with an (sw).

4.6 DIMENSIONS

45° Lateral

No. 30



Size		No. 30 45° Lateral		
Nominal inches DN	Actual Outside Diameter inches mm	C to LE inches mm	C to SE inches mm	Approx. Weight (Each) lb kg
¾ DN20	1.050 26.9	4.50 (sw) 114	2.00 (sw) 51	0.9 0.4
1 DN25	1.315 33.7	5.00 (sw) 127	2.25 (sw) 57	1.7 0.8
1 ¼ DN32	1.660 42.4	5.75 (sw) 146	2.50 (sw) 64	2.5 1.1
1 ½ DN40	1.900 48.3	6.25 (sw) 159	2.75 (sw) 70	3.5 1.6
2 DN50	2.375 60.3	7.00 (sw) 178	2.75 (sw) 70	5.1 2.3
2 ½	2.875 73.0	7.75 (sw) 197	3.00 (sw) 76	9.0 4.1
DN65	3.000 76.1	8.50 (sw) 216	3.25 (sw) 83	9.8 4.4
3 DN80	3.500 88.9	8.50 216	3.25 83	10.3 4.6
3 ½ DN90	4.000 101.6	10.00 (sw) 254	3.50 (sw) 89	22.0 10.0
	4.250 108.0	10.50 (sw) 267	3.75 (sw) 95	22.1 10.0
4 DN100	4.500 114.3	10.50 267	3.75 95	17.9 8.1
4 ½	5.000 127.0	12.50 (sw) 318	4.00 (sw) 102	23.8 10.8
	5.250 133.0	12.50 (sw) 318	4.00 (sw) 102	25.3 11.5
DN125	5.500 139.7	12.50 (sw) 318	4.00 (sw) 102	26.8 12.1
5	5.563 141.3	12.50 (sw) 318	4.00 (sw) 102	29.8 13.5
	6.000 152.4	14.00 (sw) 356	4.50 (sw) 114	33.8 15.3
	6.250 159.0	14.00 (sw) 356	4.50 (sw) 114	36.8 16.7
	6.500 165.1	14.00 (sw) 356	4.50 (sw) 114	43.6 19.8
6 DN150	6.625 168.3	14.00 356	4.50 114	43.6 19.8

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(sw) = Carbon Steel Segmentally Welded

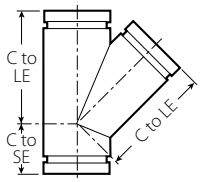
NOTE

- All fittings are ductile iron unless otherwise noted with an (sw).

4.6 DIMENSIONS (CONTINUED)

45° Lateral

No. 30



Size		No. 30 45° Lateral		
Nominal inches DN	Actual Outside Diameter inches mm	C to LE inches mm	C to SE inches mm	Approx. Weight (Each) lb kg
8 DN200	8.625 219.1	18.00 (sw) 457	6.00 (sw) 152	73.0 33.1
10 DN250	10.750 273.0	20.50 (sw) 521	6.50 (sw) 165	105.0 47.6
12 DN300	12.750 323.9	23.00 (sw) 584	7.00 (sw) 178	165.0 74.8
14[1] DN350	14.000 355.6	26.50 (sw) 673	7.50 (sw) 191	276.0 125.2
16[1] DN400	16.000 406.4	29.00 (sw) 737	8.00 (sw) 203	344.2 156.1
18[1] DN450	18.000 457.2	32.00 (sw) 813	8.50 (sw) 216	429.0 194.6
20[1] DN500	20.000 508.0	35.00 (sw) 889	9.00 (sw) 229	500.0 226.8
22[1] DN550	22.000 558.8	38.00 (sw) 965	9.50 (sw) 241	610.0 276.7
24[1] DN600	24.000 609.6	40.00 (sw) 1016	10.00 (sw) 254	715.0 324.3

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(sw) = Carbon Steel Segmentally Welded

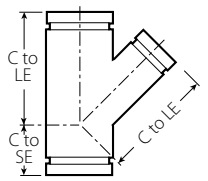
NOTE

- All fittings are ductile iron unless otherwise noted with an (sw).

4.7 DIMENSIONS

45° Reducing Lateral

No. 30-R SWS



Size											No. 30-R SWS 45° Reducing Lateral (sw)		
Nominal inches DN					Actual Outside Diameter inches DN						C to LE inches mm	C to SE inches mm	Approx. Weight (Each) lb kg
3 DN80	x	3 DN80	x	2 DN50	3.500 88.9	x	3.500 88.9	x	2.375 60.3		8.50 216	3.25 83	9.8 4.4
				2½					2.875 73.0		8.50 216	3.25 83	9.8 4.4
4 DN100	x	4 DN100	x	2 DN50	4.500 114.3	x	4.500 114.3	x	2.375 60.3		10.50 267	3.75 95	10.0 4.5
				2½					2.875 73.0		10.50 267	3.75 95	10.0 4.5
				3 DN80					3.500 88.9		10.50 267	3.75 95	18.3 8.3
5	x	5	x	2 DN50	5	x	5	x	2.375 60.3		12.50 318	4.00 102	24.0 10.9
				3 DN80					3.500 88.9		12.50 318	4.00 102	27.0 12.2
				4 DN100					4.500 114.3		12.50 318	4.00 102	26.5 12.0
6 DN150	x	6 DN150	x	3 DN80	6.625 168.3	x	6.625 168.3	x	3.500 88.9		14.00 356	4.50 114	37.0 16.8
				4 DN100					4.500 114.3		14.00 356	4.50 114	36.0 16.3
				5					5.563 141.3		14.00 356	4.50 114	44.7 20.3
8 DN200	x	8 DN200	x	3 DN80	8.625 219.1	x	8.625 219.1	x	3.500 88.9		18.00 457	6.00 152	58.0 26.3
				4 DN100					4.500 114.3		18.00 457	6.00 152	62.0 28.1
				5					5.563 141.3		18.00 457	6.00 152	75.5 34.2
				6 DN150					6.625 168.3		18.00 457	6.00 152	82.0 37.2
10 DN250	x	10 DN250	x	4 DN100	10.750 273.0	x	10.750 273.0	x	4.500 114.3		20.50 521	6.50 165	104.8 47.5
				5					5.563 141.3		20.50 521	6.50 165	105.0 47.6
				6 DN150					6.625 168.3		20.50 521	6.50 165	105.8 48.0
				8 DN200					8.625 219.1		20.50 521	6.50 165	118.0 53.5
12 DN300	x	12 DN300	x	4 DN100	12.750 323.9	x	12.750 323.9	x	4.500 114.3		23.00 584	7.00 178	135.0 61.2
				5					5.563 141.3		23.00 584	7.00 178	122.0 55.3
				6 DN150					6.625 168.3		23.00 584	7.00 178	137.0 62.1
				8 DN200					8.625 219.1		23.00 584	7.00 178	147.0 66.7
				10 DN250					10.750 273.0		23.00 584	7.00 178	167.0 75.7

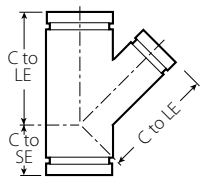
[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(sw) = Carbon Steel Segmentally Welded

4.7 DIMENSIONS (CONTINUED)

45° Reducing Lateral

No. 30-R SWS



Size											No. 30-R SWS 45° Reducing Lateral (sw)		
Nominal inches DN					Actual Outside Diameter inches DN						C to LE inches mm	C to SE inches mm	Approx. Weight (Each) lb kg
14[1] DN350	x	14 DN350	x	4 DN100	14.000 355.6	x	14.000 355.6	x	4.500 114.3		26.50 673	7.50 191	176.0 79.8
				6 DN150					6.625 168.3		26.50 673	7.50 191	187.0 84.8
				8 DN200					8.625 219.1		26.50 673	7.50 191	210.0 95.3
				10 DN250					10.750 273.0		26.50 673	7.50 191	235.0 106.6
				12 DN300					12.750 323.9		26.50 673	7.50 191	252.0 114.3
16[1] DN400	x	16 DN400	x	6 DN150	16.000 406.4	x	16.000 406.4	x	6.625 168.3		29.00 737	8.00 203	215.0 97.5
				8 DN200					8.625 219.1		29.00 737	8.00 203	252.5 114.5
				10 DN250					10.750 273.0		29.00 737	8.00 203	265.0 120.2
				12 DN300					12.750 323.9		29.00 737	8.00 203	295.0 133.8
				14 DN350					16.000 406.4		29.00 737	8.00 203	305.0 138.3
18[1] DN450	x	18 DN450	x	6 DN150	18.000 457.2	x	18.000 457.2	x	6.625 168.3		32.00 813	8.50 216	274.0 124.3
				8 DN200					8.625 219.1		32.00 813	8.50 216	275.0 124.7
				10 DN250					10.750 273.0		32.00 813	8.50 216	285.0 129.3
				12 DN300					12.750 323.9		32.00 813	8.50 216	347.0 157.4
				14 DN350					14.000 355.6		32.00 813	8.50 216	350.0 158.8
				16 DN400					16.000 406.4		32.00 813	8.50 216	362.0 164.2
20[1] DN500	x	20 DN500	x	10 DN250	20.000 508.0	x	20.000 508.0	x	10.750 273.0		35.00 889	9.00 229	410.0 186.0
				12 DN300					12.750 323.9		35.00 889	9.00 229	415.0 188.2
				14 DN350					14.000 355.6		35.00 889	9.00 229	420.0 190.5
				16 DN400					16.000 406.4		35.00 889	9.00 229	425.0 192.8
24[1] DN600	x	24 DN600	x	16 DN400	24.000 609.6	x	24.000 609.6	x	16.000 406.4		40.00 1016	10.00 254	556.0 252.2
				20 DN500					20.000 508.0		40.00 1016	10.00 254	715.0 324.3
14 – 60 DN350 – DN1500					For AGS fitting information, see publication 20.05 AGS™								

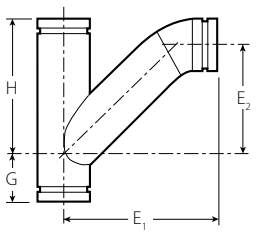
[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(sw) = Carbon Steel Segmentally Welded

4.8 DIMENSIONS

Tee Wye

No. 32



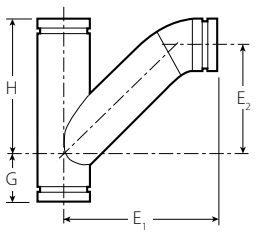
Size										No. 32 Tee Wye (sw)				
Nominal inches DN					Actual Outside Diameter inches mm					G inches mm	H inches mm	E1 inches mm	E2 inches mm	Approx. Weight (Each) lb kg
2 DN50	x	2 DN50	x	2 DN50	2.375 60.3	x	2.375 60.3	x	2.375 60.3	2.75 70	7.00 178	9.00 229	4.63 117	6.4 2.9
2½	x	2½	x	2½	2.875 73.0	x	2.875 73.0	x	2.875 73.0	3.00 76	7.75 197	10.50 267	5.75 146	11.5 5.2
3 DN80	x	3 DN80	x	2 DN50	3.500 88.9	x	3.500 88.9	x	2.375 60.3	3.25 83	8.50 216	10.38 264	6.00 152	12.5 5.7
				3 DN80					3.500 88.9	3.25 83	8.50 216	11.50 292	6.50 165	14.3 6.5
3½ DN90	x	3½ DN90	x	3½ DN90	4.000 101.6	x	4.000 101.6	x	4.000 101.6	3.25 83	10.00 254	13.00 330	7.75 197	15.0 6.8
4 DN100	x	4 DN100	x	1 DN25	4.500 114.3	x	4.500 114.3	x	1.315 33.7	3.75 95	10.50 267	12.25 311	8.38 213	17.0 7.7
				2 DN50					2.375 60.3	3.75 95	10.50 267	11.88 302	7.50 191	20.0 9.1
				3 DN80					3.500 88.9	3.75 95	10.50 267	12.88 327	7.88 200	23.0 10.4
				4 DN100					4.500 114.3	3.75 95	10.00 254	13.63 346	8.13 206	26.0 11.8
5	x	5	x	2 DN50	5.563 141.3	x	5.563 141.3	x	2.375 60.3	4.00 102	12.50 318	13.13 333	8.75 222	29.0 13.2
				3 DN80					3.500 88.9	4.00 102	12.50 318	14.25 362	9.25 235	31.5 14.3
				4 DN100					4.500 114.3	4.00 102	12.50 318	15.13 384	9.63 244	36.7 16.6
				5					5.563 141.3	4.00 102	12.50 318	16.13 410	10.00 254	48.0 21.8
6 DN150	x	6 DN150	x	2 DN50	6.625 168.3	x	6.625 168.3	x	2.375 60.3	4.50 114	14.00 356	14.13 359	9.75 248	29.0 13.2
				3 DN80					3.500 88.9	4.50 114	14.00 356	15.31 389	10.31 262	37.3 16.9
				4 DN100					4.500 114.3	4.50 114	14.00 356	16.25 413	10.75 273	46.3 21.0
				5					5.563 141.3	4.50 114	14.00 356	17.25 438	11.13 283	55.0 25.0
				6 DN150					6.625 168.3	4.50 114	14.00 356	18.25 464	11.50 292	60.5 27.4
8 DN200	x	8 DN200	x	2 DN50	8.625 219.1	x	8.625 219.1	x	2.375 60.3	6.00 152	18.00 457	17.00 432	12.63 321	70.0 31.8
				3 DN80					3.500 88.9	6.00 152	18.00 457	18.19 462	13.19 335	76.0 34.5
				4 DN100					4.500 114.3	6.00 152	18.00 457	19.00 483	13.50 343	76.4 34.6
				5					5.563 141.3	6.00 152	18.00 457	20.00 508	13.88 352	85.6 38.8
				6 DN150					6.625 168.3	6.00 152	18.00 457	21.13 537	14.38 365	112.0 50.8
				8 DN200					8.625 219.1	6.00 152	18.00 457	23.25 591	15.25 387	127.9 58.0

(sw) = Carbon Steel Segmentally Welded

4.8 DIMENSIONS

Tee Wye

No. 32



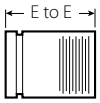
Size									No. 32 Tee Wye (sw)				
Nominal inches DN					Actual Outside Diameter inches mm				G inches mm	H inches mm	E1 inches mm	E2 inches mm	Approx. Weight (Each) lb kg
10 DN250	x	10 DN250	x	2 DN50	10.750 273.0	x	10.750 273.0	x	2.375 60.3	6.50 165	20.50 521	18.75 476	14.38 365	90.0 40.8
				3 DN80					3.500 88.9	6.50 165	20.50 521	19.88 505	14.88 378	96.0 43.5
				4 DN100					4.500 114.3	6.50 165	20.50 521	20.75 527	15.25 387	97.4 44.2
				5					5.563 141.3	6.50 165	20.50 521	21.88 556	15.75 400	115.0 52.2
				6 DN150					6.625 168.3	6.50 165	20.50 521	22.88 581	16.13 410	133.1 60.4
				8 DN200					8.625 219.1	6.50 165	20.50 521	27.25 692	19.25 489	156.0 70.8
				10 DN250					10.750 273.0	6.50 165	20.50 521	27.25 692	18.00 457	190.0 86.2
12 DN300	x	12 DN300	x	2 DN50	12.750 323.9	x	12.750 323.9	x	2.375 60.3	7.00 178	23.00 584	20.75 527	16.38 416	120.0 54.4
				3 DN80					3.500 88.9	7.00 178	23.00 584	21.75 552	16.75 425	125.0 56.7
				4 DN100					4.500 114.3	7.00 178	23.00 584	22.63 575	17.13 435	127.0 57.6
				5					5.563 141.3	7.00 178	23.00 584	23.63 600	17.50 445	143.0 64.9
				6 DN150					6.625 168.3	7.00 178	23.00 584	24.78 629	18.03 458	165.0 74.8
				8 DN200					8.625 219.1	7.00 178	23.00 584	26.92 684	18.92 481	176.0 79.8
				10 DN250					10.750 273.0	7.00 178	23.00 584	29.00 737	19.75 502	200.0 90.7
				12 DN300					12.750 323.9	7.00 178	23.00 584	31.00 787	20.50 521	240.0 108.9

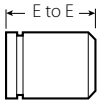
(sw) = Carbon Steel Segmentally Welded

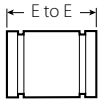
4.9 DIMENSIONS

Adapter Nipple

No. 40
No. 42
No. 43







Size		No. 40 Adapter Nipple Groove x Male Thread[2] (s)		No. 42 Adapter Nipple Groove x Bevel (s)		No. 43 Adapter Nipple Groove x Groove (s)	
Nominal inches DN	Actual Outside Diameter inches mm	E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
¾ DN20	1.050 26.9	3.00 76	0.3 0.1	3.00 76	0.3 0.1	3.00 76	0.3 0.1
1 DN25	1.315 33.7	3.00 76	0.4 0.2	3.00 76	0.4 0.2	3.00 76	0.4 0.2
1 ¼ DN32	1.660 42.4	4.00 102	0.8 0.3	4.00 102	0.8 0.3	4.00 102	0.8 0.3
1 ½ DN40	1.900 48.3	4.00 102	0.9 0.4	4.00 102	0.9 0.4	4.00 102	0.9 0.4
2 DN50	2.375 60.3	4.00 102	1.2 0.6	4.00 102	1.2 0.6	4.00 102	1.2 0.6
2 ½	2.875 73.0	4.00 102	1.9 0.9	4.00 102	1.9 0.9	4.00 102	1.9 0.9
DN65	3.000 76.1	4.00 102	2.0 0.9	4.00 102	2.0 0.9	4.00 102	2.0 0.9
3 DN80	3.500 88.9	4.00 102	2.5 1.1	4.00 102	2.5 1.1	4.00 102	2.5 1.1
3 ½ DN90	4.000 101.6	4.00 102	3.0 1.4	4.00 102	3.0 1.4	4.00 102	3.0 1.4
	4.250 108.0	6.00 152	4.9 2.2	6.00 152	4.9 2.2	6.00 152	4.9 2.2
4 DN100	4.500 114.3	6.00 152	5.4 2.5	6.00 152	5.4 2.5	6.00 152	5.4 2.5
4 ½	5.000 127.0	6.00 152	6.3 2.8	6.00 152	6.3 2.8	6.00 152	6.3 2.8
	5.250 133.0	6.00 152	6.9 3.1	6.00 152	6.9 3.1	6.00 152	6.9 3.1
DN125	5.500 139.7	6.00 152	7.2 3.3	6.00 152	7.2 3.3	6.00 152	7.2 3.3
5	5.563 141.3	6.00 152	7.3 3.3	6.00 152	7.3 3.3	6.00 152	7.3 3.3
	6.000 152.4	6.00 152	8.6 3.9	6.00 152	8.6 3.9	6.00 152	8.6 3.9
	6.250 159.0	6.00 152	9.0 4.1	6.00 152	9.0 4.1	6.00 152	9.0 4.1
	6.500 165.1	6.00 152	9.3 4.2	6.00 152	9.3 4.2	6.00 152	9.3 4.2
6 DN150	6.625 168.3	6.00 152	9.5 4.3	6.00 152	9.5 4.3	6.00 152	9.5 4.3
8 DN200	8.625 219.1	6.00 152	14.3 6.5	6.00 152	14.3 6.5	6.00 152	14.3 6.5
10 DN250	10.750 273.0	8.00 203	22.8 10.3	8.00 203	22.8 10.3	8.00 203	22.8 10.3
12 DN300	12.750 323.9	8.00 203	33.1 15.0	8.00 203	33.1 15.0	8.00 203	33.1 15.0

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

[2] Available with British Standard Pipe Threads, specify "BSP" clearly on order.

(s) = Carbon Steel Segmentally Welded

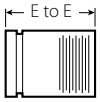
NOTE

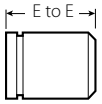
- For pump package nipples with 1 ½"/40mm hole cut to receive Style 923 Vic-Let or Style 924 Vic-O-Well request special No. 40, 42 or 43 nipples and specify No. 40-H, 42-H or 43-H on order. Note: 4 – 12"/DN100 – N300 diameter – 8"/200mm length required.

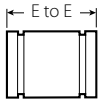
4.9 DIMENSIONS (CONTINUED)

Adapter Nipple

No. 40
No. 42
No. 43







Size		No. 40 Adapter Nipple Groove x Male Thread[2] (s)		No. 42 Adapter Nipple Groove x Bevel (s)		No. 43 Adapter Nipple Groove x Groove (s)	
Nominal inches DN	Actual Outside Diameter inches mm	E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
14[1] DN350	14.000 355.6	8.00 203	36.5 16.5	8.00 203	36.5 16.5	8.00 203	36.5 16.5
16[1] DN400	16.000 406.4	8.00 203	41.8 19.0	8.00 203	41.8 19.0	8.00 203	41.8 19.0
18[1] DN450	18.000 457.2	8.00 203	47.2 21.4	8.00 203	47.2 21.4	8.00 203	47.2 21.4
20[1] DN500	20.000 508.0	8.00 203	52.5 23.8	8.00 203	52.5 23.8	8.00 203	52.5 23.8
22[1] DN550	22.000 558.8	8.00 203	57.9 26.3	8.00 203	57.9 26.3	8.00 203	57.9 26.3
24[1] DN600	24.000 609.6	8.00 203	63.2 28.7	8.00 203	63.2 28.7	8.00 203	63.2 28.7
14 – 60 DN350 – DN1500	For AGS fitting information, see publication 20.05 AGS™						

1 For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

2 Available with British Standard Pipe Threads, specify "BSP" clearly on order.

(s) = Carbon Steel Segmentally Welded

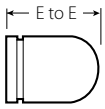
NOTE

- For pump package nipples with 1 ½"/40mm hole cut to receive Style 923 Vic-Let or Style 924 Vic-O-Well request special No. 40, 42 or 43 nipples and specify No. 40-H, 42-H or 43-H on order. Note: 4 – 12"/DN100 – N300 diameter – 8"/200mm length required.

4.10 DIMENSIONS

Cap
No. 60

Bull Plug
No. 61



Size		No. 60 Cap		No. 61 Bull Plug (s)	
Nominal inches DN	Actual Outside Diameter inches mm	T inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
¾ DN20	1.050 26.9	0.91 (s) 23	0.2 0.1	NA	NA
1 DN25	1.315 33.7	0.79 20	0.2 0.1	NA	NA
1 ¼ DN32	1.660 42.4	0.79 20	0.4 0.2	NA	NA
1 ½ DN40	1.900 48.3	0.79 20	0.4 0.2	NA	NA
2 DN50	2.375 60.3	0.88 22	0.7 0.3	4.00 102	2.6 1.2
2 ½	2.875 73.0	0.88 22	1.2 0.5	5.00 127	3.0 1.4
DN65	3.000 76.1	0.88 22	1.2 0.5	NA	NA
3 DN80	3.500 88.9	0.88 22	1.7 0.7	6.00 152	4.5 2.0
3 ½ DN90	4.000 101.6	0.88 22	1.9 0.9	NA	NA
	4.250 108.0	0.92 23	2.6 1.2	NA	NA
4 DN100	4.500 114.3	0.92 23	3.1 1.4	7.00 178	7.5 3.4
4 ½	5.000 127.0	1.00 (s) 25	5.4 2.4	NA	NA
	5.250 133.0	0.92 23	3.9 1.8	NA	NA
DN125	5.500 139.7	0.92 23	4.5 2.0	NA	NA
5	5.563 141.3	0.92 23	4.9 2.2	8.00 203	11.5 5.2
	6.250 159.0	0.92 23	5.7 2.6	NA	NA
	6.500 165.1	0.92 23	6.2 2.8	NA	NA
6 DN150	6.625 168.3	0.92 23	6.4 2.9	10.00 254	18.0 8.2
200A	216.3	1.13 29	17.4 7.9	NA	NA

[1] For 14"/DN350 and larger roll grooved systems, Victaulic offers the Advanced Groove System (AGS). For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(s) = Carbon Steel

NA = Not Available

"+" = Contact Victaulic for details

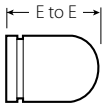
NOTES

- All fittings are ductile iron unless otherwise noted with an (s).
- No. 60 cap is not suitable for use in vacuum service with Style 72 or Style 750 couplings. No. 61 bull plugs should be used.
- Steel dish caps available through 24"/DN600, contact Victaulic.
- No. 60 Caps are available with taps. Tap sizes range from ½" up to 4" maximum, depending on the diameter of the cap, and can be provided centered or offset to suit the application. Contact Victaulic for pricing and availability. All tapped caps are non-cancellable and non-returnable.

4.10 DIMENSIONS

Cap
No. 60

Bull Plug
No. 61



Size		No. 60 Cap		No. 61 Bull Plug (s)	
Nominal inches DN	Actual Outside Diameter inches mm	T inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
8 DN200	8.625 219.1	1.13 29	13.6 6.2	12.00 305	29.0 13.2
10 DN250	10.750 273.0	1.13 29	23.6 10.7	10.00 254	39.0 17.7
12 DN300	12.750 323.9	1.25 32	38.5 17.5	NA	NA
14[1] DN350	14.000 355.6	9.50 (s) 241	42.0 19.1	NA	NA
16[1] DN400	16.000 406.4	10.00 (s) 254	45.0 20.4	NA	NA
18[1] DN450	18.000 457.2	11.00 (s) 279	58.0 26.3	NA	NA
20[1] DN500	20.000 508.0	12.00 (s) 305	67.5 30.6	NA	NA
22[1] DN550	22.000 558.8	13.00 (s) 330	+	NA	NA
24[1] DN600	24.000 609.6	13.50 (s) 343	105.0 47.6	NA	NA
14 – 60 DN350 – DN1500	For AGS fitting information, see publication 20.05 AGS™				

[1] For 14"/DN350 and larger roll grooved systems, Victaulic offers the Advanced Groove System (AGS). For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(s) = Carbon Steel

NA = Not Available

"+" = Contact Victaulic for details

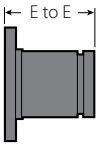
NOTES

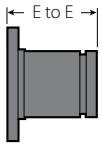
- All fittings are ductile iron unless otherwise noted with an (s).
- No. 60 cap is not suitable for use in vacuum service with Style 72 or Style 750 couplings. No. 61 bull plugs should be used.
- Steel dish caps available through 24"/DN600, contact Victaulic.
- No. 60 Caps are available with taps. Tap sizes range from ½" up to 4" maximum, depending on the diameter of the cap, and can be provided centered or offset to suit the application. Contact Victaulic for pricing and availability. All tapped caps are non-cancellable and non-returnable.

4.11 DIMENSIONS

Flanged Adapter Nipple

No. 41





Size		No. 41 ANSI Class 125 Flange Adapter Nipple Flat Face (s)		No. 41-DN PN10/16 Flange Adapter Nipple Flat Face (s)	
Nominal inches DN	**Actual Outside Diameter** inches mm	**E to E** inches mm	**Approx. Weight (Each)** lb kg	**E to E** inches mm	**Approx. Weight (Each)** lb kg
¾ DN20	1.050 26.9	3.00 76	+	NA	NA
1 DN25	1.315 33.7	3.00 76	2.0 0.9	3.00 76	2.6 1.2
1 ¼ DN32	1.660 42.4	4.00 102	3.0 1.4	3.00 76	4.1 1.9
1 ½ DN40	1.900 48.3	4.00 102	3.5 1.6	NA	NA
2 DN50	2.375 60.3	4.00 102	5.5 2.5	4.00 102	6.2 2.8
2 ½	2.875 73.0	4.00 102	8.0 3.6	NA	NA
DN65	3.000 76.1	NA	NA	4.00 102	7.1 3.2
3 DN80	3.500 88.9	4.00 102	9.5 4.3	4.00 102	9.0 4.1
3 ½ DN90	4.000 101.6	4.00 102	+	NA	NA
	4.250 108.0	NA	NA	NA	NA
4 DN100	4.500 114.3	6.00 152	16.7 7.6	6.00 152	12.8 5.8
4 ½	5.000 127.0	NA	NA	NA	NA
	5.250 133.0	NA	NA	NA	NA
DN125	5.500 139.7	NA	NA	6.00 152	16.8 7.6
5	5.563 141.3	6.00 152	21.5 9.8	NA	NA
	6.500 165.1	NA	NA	NA	NA
6 DN150	6.625 168.3	6.00 152	26.5 12.0	6.00 152	20.5 9.3
200A	216.3	NA	NA	NA	NA

[1] For 14"/DN350 and larger roll grooved systems, Victaulic offers the Advanced Groove System (AGS). For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(s) = Carbon Steel

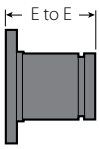
NA = Not Available

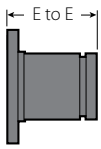
"+" = Contact Victaulic for details

4.11 DIMENSIONS (CONTINUED)

Flanged Adapter Nipple

No. 41





Size		No. 41 ANSI Class 125 Flange Adapter Nipple Flat Face (s)		No. 41-DN PN10/16 Flange Adapter Nipple Flat Face (s)	
Nominal inches DN	**Actual Outside Diameter** inches mm	**E to E** inches mm	**Approx. Weight (Each)** lb kg	**E to E** inches mm	**Approx. Weight (Each)** lb kg
8 DN200	8.625 219.1	6.00 152	39.0 17.7	6.00 152	30.8 14.0
250A	267.4	NA	NA	NA	NA
10 DN250	10.750 273.0	8.00 203	64.2 29.1	8.00 203	46.3 21.0
300A	318.5	NA	NA	NA	NA
12 DN300	12.750 323.9	8.00 203	87.0 39.5	8.00 203	58.7 26.6

[1] For 14"/DN350 and larger roll grooved systems, Victaulic offers the Advanced Groove System (AGS). For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(s) = Carbon Steel

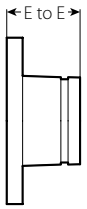
NA = Not Available

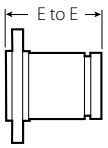
"+" = Contact Victaulic for details

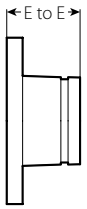
4.11 DIMENSIONS (CONTINUED)

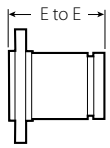
Flanged Adapter Nipple

No. 45F
No. 45R
No. 45FE
No. 45RE









Size		No. 45F ANSI Class 150 Flange Adapter Nipple Flat Face		No. 45R ANSI Class 150 Flange Adapter Nipple Raised Face		No. 45FE PN10/16 Flange Adapter Nipple Flat Face		No. 45RE PN10/16 Flange Adapter Nipple Raised Face	
Nominal inches DN	Actual Outside Diameter inches mm	E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
¾ DN20	1.050 26.9	3.00 (s) 76	2.0 0.9	3.00 (s) 76	2.0 0.9	NA	NA	NA	NA
1 DN25	1.315 33.7	3.00 (s) 76	2.7 1.2	3.00 (s) 76	2.7 1.2	NA	NA	NA	NA
1 ¼ DN32	1.660 42.4	4.00 (s) 102	3.6 1.6	4.00 (s) 102	3.6 1.6	NA	NA	NA	NA
1 ½ DN40	1.900 48.3	4.00 (s) 102	3.9 1.8	4.00 (s) 102	3.9 1.8	2.52 64	+	2.52 64	+
2 DN50	2.375 60.3	4.00 102	6.0 2.7	4.00 102	6.0 2.7	2.52 64	+	2.52 64	+
2 ½	2.875 73.0	4.00 102	9.9 4.5	4.00 102	9.9 4.5	NA	NA	NA	NA
DN65	3.000 76.1	NA	NA	NA	NA	2.52 64	+	2.52 64	+
3 DN80	3.500 88.9	4.00 102	11.7 5.3	4.00 102	11.7 5.3	2.52 64	+	2.52 64	+
3 ½ DN90	4.000 101.6	4.00 (s) 102	13.8 6.3	4.00 (s) 102	13.8 6.3	NA	NA	NA	NA
	4.250 108.0	NA	NA	NA	NA	NA	NA	NA	NA
4 DN100	4.500 114.3	6.00 152	18.5 8.4	6.00 152	18.5 8.4	2.76 70	+	2.76 70	+
DN125	5.500 139.7	NA	NA	NA	NA	2.76 70	+	2.76 70	+
5	5.563 141.3	6.00 (s) 152	21.4 9.7	6.00 (s) 152	21.4 9.7	NA	NA	NA	NA
	6.500 165.1	NA	NA	NA	NA	2.76 70	+	2.76 70	+
6 DN150	6.625 168.3	6.00 152	29.0 13.2	6.00 152	29.0 13.2	2.76 70	+	2.76 70	+
8 DN200	8.625 219.1	6.00 152	42.0 19.1	6.00 152	42.0 19.1	3.15 80	+	3.15 80	+
10 DN250	10.750 273.0	8.00 203	64.2 29.1	8.00 203	64.2 29.1	3.15 80	+	3.15 80	+
12 DN300	12.750 323.9	8.00 203	88.2 40.0	8.00 203	88.2 40.0	3.15 80	+	3.15 80	+
14[1] DN350	14.000 355.6	8.00 (s) 203	126.4 57.3	8.00 203	126.4 57.3	NA	NA	NA	NA
16[1] DN400	16.000 406.4	8.00 (s) 203	150.0 68.0	8.00 203	150.0 68.0	NA	NA	NA	NA

[1] For 14"/DN350 and larger roll grooved systems, Victaulic offers the Advanced Groove System (AGS). For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(s) = Carbon Steel

NA = Not Available

"+" = Contact Victaulic for details

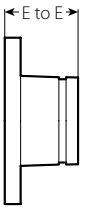
NOTE

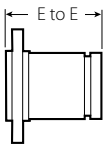
- All fittings are ductile iron unless otherwise noted with an (s).

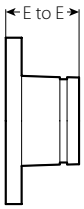
4.11 DIMENSIONS (CONTINUED)

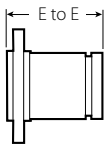
Flanged Adapter Nipple

No. 45F
No. 45R
No. 45FE
No. 45RE









Size		No. 45F ANSI Class 150 Flange Adapter Nipple Flat Face		No. 45R ANSI Class 150 Flange Adapter Nipple Raised Face		No. 45FE PN10/16 Flange Adapter Nipple Flat Face		No. 45RE PN10/16 Flange Adapter Nipple Raised Face	
Nominal inches DN	Actual Outside Diameter inches mm	E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
18[1] DN450	18.000 457.2	8.00 (s) 203	177.0 80.3	8.00 (s) 203	177.0 80.3	NA	NA	NA	NA
20[1] DN500	20.000 508.0	8.00 (s) 203	218.0 98.9	8.00 (s) 203	218.0 98.9	NA	NA	NA	NA
24[1] DN600	24.000 609.6	8.00 (s) 203	283.0 128.4	8.00 (s) 203	283.0 128.4	NA	NA	NA	NA
14 – 60 DN350 – DN1500	For AGS fitting information, see publication 20.05 AGS™								

[1] For 14"/DN350 and larger roll grooved systems, Victaulic offers the Advanced Groove System (AGS). For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(s) = Carbon Steel

NA = Not Available

"+" = Contact Victaulic for details

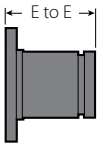
NOTE

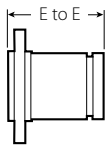
- All fittings are ductile iron unless otherwise noted with an (s).

4.16 DIMENSIONS (CONTINUED)

Flange Adapter Nipple

No 46F
No 46R





Size		No. 46F ANSI Class 300 Flange Adapter Nipple Flat Face (s)		No. 46R ANSI Class 300 Flange Adapter Nipple Raised Face (s)	
Nominal inches DN	Actual Outside Diameter inches mm	E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
¾ DN20	1.050 26.9	3.00 76	3.3 1.5	3.00 76	+
1 DN25	1.315 33.7	3.00 76	3.9 1.8	3.00 76	3.9 1.8
1 ¼ DN32	1.660 42.4	4.00 102	4.8 2.2	4.00 102	4.8 2.2
1 ½ DN40	1.900 48.3	4.00 102	6.9 3.1	4.00 102	6.9 3.1
2 DN50	2.375 60.3	4.00 102	8.1 3.7	4.00 102	8.1 3.7
2 ½	2.875 73.0	4.00 102	11.9 5.4	4.00 102	11.9 5.4
3 DN80	3.500 88.9	4.00 102	16.5 7.5	4.00 102	16.5 7.5
3 ½ DN90	4.000 101.6	4.00 102	20.1 9.1	4.00 102	20.1 9.1
4 DN100	4.500 114.3	6.00 152	27.4 12.4	6.00 152	27.4 12.4
5	5.563 141.3	6.00 152	35.3 16.0	6.00 152	35.3 16.0
6 DN150	6.625 168.3	6.00 152	47.5 21.5	6.00 152	47.5 21.5
8 DN200	8.625 219.1	6.00 152	68.0 30.8	6.00 152	68.0 30.8
10 DN250	10.750 273.0	8.00 203	100.8 45.7	8.00 203	100.8 45.7
12 DN300	12.750 323.9	8.00 203	148.0 67.1	8.00 203	148.0 67.1
14[1] DN350	14.000 355.6	8.00 203	180.0 81.8	NA	NA
16[1] DN400	16.000 406.4	8.00 203	237.0 107.5	NA	NA
18[1] DN450	18.000 457.2	8.00 203	297.0 134.7	NA	NA
20[1] DN500	20.000 508.0	8.00 203	+	NA	NA
22[1] DN550	22.000 558.8	8.00 203	+	NA	NA
24[1] DN600	24.000 609.6	8.00 203	+	NA	NA
14 – 60 DN350 – DN1500	For AGS fitting information, see publication 20.05 AGS™				

[1] For 14"/DN350 and larger roll grooved systems, Victaulic offers the Advanced Groove System (AGS). For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(s) = Carbon Steel

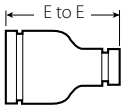
NA = Not Available

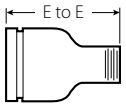
+ = Contact Victaulic for details

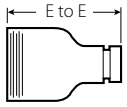
4.12 DIMENSIONS

Swaged Nipple

No. 53
No. 54
No. 55







Size						No. 53 Swage Nipple Groove x Groove (s)		No. 54 Swage Nipple Groove x Male Thread[1] (s)		No. 55 Swage Nipple Male Thread[1] x Groove (s)	
Nominal inches DN			Actual Outside Diameter inches mm			E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
2 DN50	x	¾ DN20	2.375 60.3	x	1.050 26.9	6.50 165	2.0 0.9	NA	NA	NA	NA
		1 DN25			1.315 33.7	6.50 165	2.0 0.9	6.50 165	2.0 0.9	6.50 165	2.0 0.9
		1 ¼ DN32			1.660 42.4	6.50 165	2.0 0.9	6.50 165	2.0 0.9	6.50 165	2.0 0.9
		1 ½ DN40			1.900 48.3	6.50 165	2.0 0.9	6.50 165	2.0 0.9	6.50 165	2.0 0.9
2 ½ DN65	x	1 DN25	2.875 73.0	x	1.315 33.7	7.00 178	3.0 1.4	7.00 178	3.0 1.4	7.00 178	3.0 1.4
		1 ¼ DN32			1.660 42.4	7.00 178	3.0 1.4	7.00 178	3.0 1.4	7.00 178	3.0 1.4
		1 ½ DN40			1.900 48.3	7.00 178	3.0 1.4	7.00 178	3.0 1.4	7.00 178	3.0 1.4
		2 DN50			2.375 60.3	7.00 178	3.0 1.4	7.00 178	3.0 1.4	7.00 178	3.0 1.4
	x	1 ½ DN40	3.000 76.1	x	1.900 48.3	NA	NA	8.00 203	4.0 1.8	NA	NA
		2 DN50			2.375 60.3	8.00 203	4.0 1.8	NA	NA	NA	NA
3 DN80	x	1 DN25	3.500 88.9	x	1.315 33.7	8.00 203	4.5 2.0	8.00 203	4.5 2.0	8.00 203	4.5 2.0
		1 ¼ DN32			1.660 42.4	8.00 203	4.5 2.0	8.00 203	4.5 2.0	8.00 203	4.5 2.0
		1 ½ DN40			1.900 48.3	8.00 203	4.5 2.0	8.00 203	4.5 2.0	8.00 203	4.5 2.0
		2 DN50			2.375 60.3	8.00 203	4.5 2.0	8.00 203	4.5 2.0	8.00 203	4.5 2.0
		2 ½ DN65			2.875 73.0	8.00 203	4.5 2.0	8.00 203	4.5 2.0	8.00 203	4.5 2.0
					3.000 76.1	8.00 203	4.5 2.0	8.00 203	4.5 2.0	NA	NA
3 ½ DN90	x	3 DN80	4.000 101.6	x	3.500 88.9	8.00 203	6.8 3.1	8.00 203	6.8 3.1	8.00 203	6.8 3.1
4 DN100	x	1 DN25	4.500 114.3	x	1.315 33.7	9.00 229	7.5 3.4	9.00 229	7.5 3.4	9.00 229	7.5 3.4
		1 ¼ DN32			1.660 42.4	9.00 229	7.5 3.4	9.00 229	7.5 3.4	NA	NA
		1 ½ DN40			1.900 48.3	9.00 229	7.5 3.4	9.00 229	7.5 3.4	9.00 229	7.5 3.4
		2 DN50			2.375 60.3	9.00 229	7.5 3.4	9.00 229	7.5 3.4	9.00 229	7.5 3.4
		2 ½ DN65			2.875 73.0	9.00 229	7.5 3.4	9.00 229	7.5 3.4	9.00 229	7.5 3.4
					3.000 76.1	9.00 229	7.5 3.4	NA	NA	NA	NA
		3 DN80			3.500 88.9	9.00 229	7.5 3.4	9.00 229	7.5 3.4	9.00 229	7.5 3.4
		3 ½ DN90			4.000 101.6	9.00 229	7.5 3.4	9.00 229	7.5 3.4	9.00 229	7.5 3.4

[1] Available with British Standard Pipe Threads, specify BSP clearly on order.

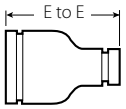
(s) = Carbon Steel

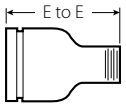
NA = Not Available

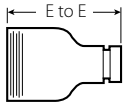
4.12 DIMENSIONS

Swaged Nipple

No. 53
No. 54
No. 55







Size						No. 53 Swage Nipple Groove x Groove (s)		No. 54 Swage Nipple Groove x Male Thread[1] (s)		No. 55 Swage Nipple Male Thread[1] x Groove (s)	
Nominal inches DN			Actual Outside Diameter inches mm			E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
5	x	2 DN50	5.563 141.3	x	2.375 60.3	11.00 279	11.5 5.2	11.00 279	11.5 5.2	11.00 279	11.5 5.2
		3 DN80			3.500 88.9	11.00 279	11.5 5.2	11.00 279	11.5 5.2	11.00 279	11.5 5.2
		4 DN100			4.500 114.3	11.00 279	11.5 5.2	11.00 279	11.5 5.2	11.00 279	11.5 5.2
6 DN150	x	1 DN25		x	1.315 33.7	12.00 305	17.0 7.7	12.00 305	17.0 7.7	12.00 305	17.0 7.7
		1¼ DN32			1.660 42.4	12.00 305	17.0 7.7	12.00 305	17.0 7.7	12.00 305	17.0 7.7
		1½ DN40			1.900 48.3	12.00 305	17.2 7.8	12.00 305	17.2 7.8	12.00 305	17.0 7.7
		2 DN50			2.375 60.3	12.00 305	17.4 7.9	12.00 305	17.4 7.9	12.00 305	17.4 7.9
		2½			2.875 73.0	12.00 305	17.4 7.9	12.00 305	17.4 7.9	12.00 305	17.4 7.9
		3 DN80			3.500 88.9	12.00 305	17.4 7.9	12.00 305	17.4 7.9	12.00 305	17.4 7.9
		3½ DN90			4.000 101.6	12.00 305	17.5 7.9	12.00 305	17.5 7.9	NA	NA
		4 DN100			4.500 114.3	12.00 305	17.5 7.9	12.00 305	17.5 7.9	12.00 305	17.5 7.9
		4½			5.000 127.0	12.00 305	17.5 7.9	12.00 305	17.5 7.9	NA	NA
		5			5.563 141.3	12.00 305	17.5 7.9	12.00 305	17.5 7.9	12.00 305	17.5 7.9
8 DN200	x	6 DN150	8.625 219.1	x	6.625 168.3	12.00 305	29.0 13.2	12.00 305	29.0 13.2	12.00 305	29.0 13.2

[1] Available with British Standard Pipe Threads, specify BSP clearly on order.

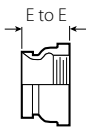
(s) = Carbon Steel

NA = Not Available

4.13 DIMENSIONS

Female Threaded Adapter

No. 80



Size		No. 80 Adapter Groove x Female Thread[1]	
Nominal inches DN	**Actual Outside Diameter** inches mm	**E to E** inches mm	**Approx. Weight (Each)** lb kg
¾ DN20	1.050 26.9	2.00 (s) 51	0.6 0.3
1 DN25	1.315 33.7	2.08 53	0.4 0.2
1 ¼ DN32	1.660 42.4	2.29 58	0.6 0.3
1 ½ DN40	1.900 48.3	2.29 58	1.0 0.5
2 DN50	2.375 60.3	2.50 64	1.5 0.7
2 ½	2.875 73.0	2.75 70	1.8 0.8
DN65	3.000 76.1	2.75 70	2.2 1.0
3 DN80	3.500 88.9	2.75 70	2.8 1.3
4 DN100	4.500 114.3	3.25 83	4.5 2.0

[1] Available with British Standard Pipe Threads, specify "BSP" clearly on order.

(s) = Carbon Steel

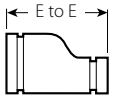
NOTE

- All fittings are ductile iron unless otherwise noted with an (s).

4.15 DIMENSIONS

Concentric/Eccentric Reducer

No. 50
No. 51



Size						No. 50 Concentric Reducer		No. 51 Eccentric Reducer	
Nominal inches DN			Actual Outside Diameter inches mm			E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
1 DN25	x	¾ DN20	1.315 33.7	x	1.050 26.9	8.00 (s) 203	+	8.00 (s) 203	+
1 ¼ DN32	x	¾ DN20	1.660 42.4	x	1.050 26.9	8.00 (s) 203	1.3 0.6	8.00 (s) 203	1.3 0.6
		1 DN25			1.315 33.7	2.50 64	0.6 0.3	8.00 (s) 203	1.4 0.6
1 ½ DN40	x	¾ DN20	1.900 48.3	x	1.050 26.9	8.50 (s) 216	1.5 0.7	8.50 (s) 216	1.5 0.7
		1 DN25			1.315 33.7	2.50 64	0.8 0.4	8.50 (s) 216	1.7 0.8
		1 ¼ DN32			1.660 42.4	2.50 64	0.9 0.4	8.50 (s) 216	1.8 0.8
2 DN50	x	¾ DN20	2.375 60.3	x	1.050 26.9	2.50 64	0.8 0.4	9.00 (s) 229	2.2 1.0
		1 DN25			1.315 33.7	2.50 64	0.7 0.3	9.00 (s) 229	2.3 1.0
		1 ¼ DN32			1 ¼ DN32	2.50 64	0.8 0.4	9.00 (s) 229	2.5 1.1
		1 ½ DN40			1.900 48.3	2.50 64	1.2 0.5	3.50 89	1.1 0.5
2 ½	x	¾ DN20	2.875 73.0	x	1.050 26.9	9.50 (s) 241	+	9.50 (s) 241	+
		1 DN25			1.315 33.7	2.50 64	1.4 0.6	9.50 (s) 241	3.4 1.5
		1 ¼ DN32			1 ¼ DN32	2.50 64	1.4 0.6	3.50 89	1.3 0.6
		1 ½ DN40			1.900 48.3	2.50 64	1.4 0.6	9.50 (s) 241	3.8 1.7
		2 DN50			2.375 60.3	2.50 64	1.5 0.7	3.50 89	1.6 0.7
	x	1 DN25	3.000 76.1	x	1.315 33.7	2.50 64	+	9.50 (s) 241	+
DN65		1 ¼ DN32			1.660 42.4	2.50 64	+	9.50 (s) 241	+
		1 ½ DN40			1.900 48.3	2.50 64	+	9.50 (s) 241	+
		2 DN50			2.375 60.3	2.50 64	+	9.50 (s) 241	+
		2 ½			2.875 73.0	2.50 64	+	9.50 (s) 241	+

[1] For 14"/DN350 and larger roll grooved systems, Victaulic offers the Advanced Groove System (AGS). For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(s) = Carbon Steel

NA = Not Available

"+" = Contact Victaulic for details

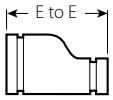
NOTES

- All fittings are ductile iron unless otherwise noted with an (s).
- Available with make threaded small end No. 52
- Steel eccentric reducers available through 30"/DN750, contact Victaulic for dimensions.

4.15 DIMENSIONS (CONTINUED)

Concentric/Eccentric Reducer

No. 50
No. 51



Size						No. 50 Concentric Reducer		No. 51 Eccentric Reducer	
Nominal inches DN			Actual Outside Diameter inches mm			E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
3 DN80	x	¾ DN20	3.500 88.9	x	1.050 26.9	9.50 (s) 241	+	9.50 (s) 241	+
		1 DN25			1.315 33.7	2.50 64	1.8 0.8	9.50 (s) 241	4.8 2.2
		1 ¼ DN32			1.660 42.4	2.50 64	1.4 0.6	9.50 (s) 241	5.0 2.3
		1 ½ DN40			1.900 48.3	2.50 64	2.0 0.9	9.50 (s) 241	5.1 2.3
		2 DN50			2.375 60.3	2.50 64	1.6 0.7	3.50 89	1.9 0.9
		2 ½			2.875 73.0	2.50 64	1.7 0.7	3.50 89	2.1 1.0
		DN65			3.000 76.1	2.50 64	2.1 1.0	9.50 (s) 241	5.4 2.4
3 ½ DN90	x	3 DN80	4.000 101.6	x	3.500 88.9	2.50 64	2.1 1.0	10.00 (s) 254	7.0 3.2
			4.250 108.0	x	2.875 73.0	3.50 89	+	NA	NA
					3.000 76.1	3.50 89	+	NA	NA
					3.500 88.9	3.50 89	+	NA	NA
4 DN100	x	1 DN25	4.500 114.3	x	1.315 33.7	3.00 76	3.0 1.4	10.00 (s) 254	6.5 2.9
		1 ¼ DN32			1.660 42.4	10.00 (s) 254	+	10.00 (s) 254	+
		1 ½ DN40			1.900 48.3	3.00 76	2.6 1.2	10.00 (s) 254	6.9 3.1
		2 DN50			2.375 60.3	3.00 76	3.4 1.5	4.00 102	2.9 1.3
		DN65			3.000 76.1	3.00 76	3.3 1.5	4.00 102	3.2 1.4
		2 ½			2.875 73.0	3.00 76	3.3 1.5	4.00 102	3.1 1.4
		3 DN80			3.500 88.9	3.00 76	3.2 1.5	4.00 102	3.4 1.5
		3 ½ DN90			4.000 101.6	3.00 76	3.0 1.4	10.00 (s) 254	8.1 3.7
			5.250 133.0	x	4.250 108.0	4.50 114	+	NA	NA

[1] For 14"/DN350 and larger roll grooved systems, Victaulic offers the Advanced Groove System (AGS). For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(s) = Carbon Steel

NA = Not Available

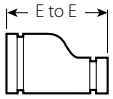
"+" = Contact Victaulic for details

NOTES

- All fittings are ductile iron unless otherwise noted with an (s).
- Available with make threaded small end No. 52
- Steel eccentric reducers available through 30"/DN750, contact Victaulic for dimensions.

4.15 DIMENSIONS

Concentric/Eccentric Reducer
No. 50
No. 51



Size						No. 50 Concentric Reducer		No. 51 Eccentric Reducer	
Nominal inches DN			Actual Outside Diameter inches mm			E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
DN125	x	2 DN50	5.500 139.7	x	2.375 60.3	11.00 (s) 279		11.00 (s) 279	
		DN65			3.000 76.1	4.50 114	4.1 1.9	11.00 (s) 279	10.7 4.9
		3 DN80			3.500 88.9	4.50 114	5.7 2.6	11.00 (s) 279	+
		4 DN100			4.500 114.3	4.50 114	5.1 2.3	5.00 127	+
5	x	2 DN50	5.563 141.3	x	2.375 60.3	11.00 (s) 279	10.1 4.6	11.00 (s) 279	10.1 4.6
		2½			2.875 73.0	4.00 102	4.3 2.0	11.00 279	10.8 4.9
		3 DN80			3.500 88.9	4.00 102	5.7 2.6	11.00 (s) 279	11.1 5.0
		3½ DN90			4.000 101.6	11.00 (s) 279	+	11.00 (s) 279	+
		4 DN100			4.500 114.3	3.50 89	4.3 2.0	5.00 127	5.5 2.5
			6.250 159.0	x	3.500 88.9	4.50 114	+	NA	NA
					4.250 108.0	4.00 102	+	NA	NA
					4.500 114.3	4.00 102	+	NA	NA
					5.250 133.0	4.00 102	+	NA	NA
			6.500 165.1	x	2.375 60.3	4.00 102	6.1 2.8	11.50 (s) 292	NA
					3.000 76.1	4.00 102	5.9 2.7	10.50 (s) 292	18.1 8.2
					3.500 88.9	4.00 102	6.2 2.8	5.50 140	6.1 2.8
					4.500 114.3	4.00 102	6.2 2.8	5.50 140	6.8 3.1
					5.500 139.7	4.00 102	5.6 2.5	5.50 140	8.0 3.6
					5.563 141.3	4.00 102	6.4 2.9	5.50 140	7.5 3.4
					6.250 159.0	4.00 102	6.6 3.0	NA	NA

[1] For 14"/DN350 and larger roll grooved systems, Victaulic offers the Advanced Groove System (AGS). For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(s) = Carbon Steel

NA = Not Available

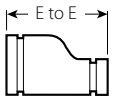
"+" = Contact Victaulic for details

NOTES

- All fittings are ductile iron unless otherwise noted with an (s).
- Available with make threaded small end No. 52
- Steel eccentric reducers available through 30"/DN750, contact Victaulic for dimensions.

4.15 DIMENSIONS

Concentric/Eccentric Reducer
No. 50
No. 51



Size						No. 50 Concentric Reducer		No. 51 Eccentric Reducer	
Nominal inches DN			Actual Outside Diameter inches mm			E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
6 DN150	x	1 DN25	6.625 168.3	x	1.315 33.7	4.00 102	6.2 2.8	11.50 (s) 292	+
		1½ DN40			1.900 48.3	11.50 (s) 292	+	11.50 (s) 292	+
		2 DN50			2.375 60.3	4.00 102	6.6 3.0	11.50 (s) 292	14.2 6.4
		2½			2.875 73.0	4.00 102	6.4 2.9	11.50 (s) 292	14.2 6.4
		DN65			3.000 76.1	11.50 (s) 292	+	11.50 (s) 292	+
		3 DN80			3.500 88.9	4.00 102	6.4 2.9	5.50 140	7.4 3.4
		4 DN100			4.500 114.3	4.00 102	5.8 2.6	5.50 140	7.8 3.5
		DN125			5.500 139.7	4.00 102	6.4 2.9	5.50 140	8.1 3.7
		5			5.563 141.3	4.00 102	6.4 2.9	5.50 140	8.1 3.7
					6.500 165.1	4.00 102	7.2 3.3	11.50 (s) 292	+
			8.515 216.3	x	3.500 88.9	5.00 127	+	NA	NA
					4.500 114.3	5.00 127	+	NA	NA
					5.500 139.7	4.50 114	+	NA	NA
200A	x	165A	216.3	x	6.500 165.1	5.00 127	9.5 4.3	NA	NA

[1] For 14"/DN350 and larger roll grooved systems, Victaulic offers the Advanced Groove System (AGS). For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(s) = Carbon Steel

NA = Not Available

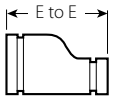
"+" = Contact Victaulic for details

NOTES

- All fittings are ductile iron unless otherwise noted with an (s).
- Available with make threaded small end No. 52
- Steel eccentric reducers available through 30"/DN750, contact Victaulic for dimensions.

4.15 DIMENSIONS

Concentric/Eccentric Reducer
No. 50
No. 51



Size						No. 50 Concentric Reducer		No. 51 Eccentric Reducer	
Nominal inches DN			Actual Outside Diameter inches mm			E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
8 DN200	x	2½	8.625 219.1	x	2.875 73.0	12.00 (s) 305	+	12.00 (s) 305	+
		76.1 mm			76.1	12.00 (s) 305	+	12.00 (s) 305	+
		3 DN80			3.500 88.9	5.00 127	9.3 4.2	12.00 (s) 305	22.0 10.0
					4.250 108.0	5.00 127	11.5 5.2	NA	NA
		4 DN100			4.500 114.3	5.00 127	10.4 4.7	6.00 152	10.5 4.8
		DN125			5.500 139.7	5.00 127	11.7 5.3	12.00 (s) 305	24.5 11.1
		5			5.563 141.3	5.00 127	11.6 5.3	12.00 (s) 305	23.8 10.8
					6.250 159.0	4.50 114	11.9 5.4	NA	NA
					6.500 165.1	4.50 114	12.6 5.7	6.00 152	12.8 5.8
		6 DN150			6.625 168.3	5.00 127	11.9 5.4	6.00 152	13.2 6.0
10 DN250	x	4 DN100	10.750 273.0	x	4.500 114.3	6.25 159	20.1 9.1	13.00 (s) 330	33.8 15.3
		DN125			5.500 139.7	13.00 (s) 330	+	13.00 (s) 330	35.7 16.2
		5			5.563 141.3	13.00 (s) 330	35.8 16.2	13.00 (s) 330	35.8 16.2
					6.500 165.1	6.00 152	+	13.00 (s) 330	+
		6 DN150			6.625 168.3	6.00 152	22.0 10.0	13.00 (s) 330	36.9 16.7
		8 DN200			8.625 219.1	6.00 152	23.0 10.4	7.00 178	37.0 16.8
250A	x	200A	267.4	x	216.3	6.00 152	23.0 10.4	NA	NA
12 DN300	x	4 DN100	12.750 323.9	x	4.500 114.3	14.00 (s) 356	48.0 21.8	14.00 (s) 356	48.0 21.8
					6.500 165.1	14.00 (s) 356	+	14.00 (s) 356	+
		6 DN150			6.625 168.3	7.00 178	25.0 11.3	14.00 (s) 356	50.2 22.8
		8 DN200			8.625 219.1	7.00 178	38.0 17.2	14.00 (s) 356	53.5 24.3
		10 DN200			10.750 273.0	7.00 178	38.0 17.2	14.00 (s) 356	56.5 25.6

[1] For 14"/DN350 and larger roll grooved systems, Victaulic offers the Advanced Groove System (AGS). For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(s) = Carbon Steel

NA = Not Available

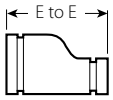
"+" = Contact Victaulic for details

NOTES

- All fittings are ductile iron unless otherwise noted with an (s).
- Available with make threaded small end No. 52
- Steel eccentric reducers available through 30"/DN750, contact Victaulic for dimensions.

4.15 DIMENSIONS

Concentric/Eccentric Reducer
No. 50
No. 51



Size						No. 50 Concentric Reducer		No. 51 Eccentric Reducer	
Nominal inches DN			Actual Outside Diameter inches mm			E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
300A	x	250A	318.5	x	216.3	7.00 178	38.0 17.2	NA	NA
14[1] DN350	x	6 DN150	14.000 355.6	x	6.625 168.3	13.00 330	63.1 28.6	13.00 330	77.2 35.0
		8 DN200			8.625 219.1	13.00 330	72.7 33.0	13.00 330	81.6 37.0
					10.528 267.4	13.00 330	80.5 36.5	13.00 330	88.2 40.0
		10 DN200			10.750 273.0	13.00 330	80.5 36.5	13.00 330	88.2 40.0
					12.539 318.5	13.00 330	81.6 37.0	13.00 330	90.4 41.0
		12 DN300			12.750 323.9	13.00 330	81.6 37.0	13.00 330	90.4 41.0
16[1] DN400	x	8 DN200	16.000 406.4	x	8.625 219.1	14.00 356	80.5 36.5	14.00 356	99.2 45.0
		250A			267.4	14.00 356	93.0 42.2	NA	NA
		10 DN200			10.750 273.0	14.00 356	93.0 42.2	14.00 356	99.2 45.0
					12.539 318.5	14.00 356	100.3 45.5	14.00 356	103.6 47.0
		12 DN300			12.750 323.9	14.00 356	100.3 45.5	14.00 356	103.6 47.0
		14 DN350			14.000 355.6	14.00 356	100.3 45.5	14.00 356	108.0 49.0
18[1] DN450	x	10 DN200	18.000 457.2	x	10.750 273.0	15.00 381	112.4 51.0	15.00 381	125.7 57.0
		12 DN300			12.750 323.9	15.00 381	122.4 55.5	15.00 381	134.5 61.0
		14 DN350			14.000 355.6	15.00 381	122.4 55.5	15.00 381	136.7 62.0
		16 DN400			16.000 406.4	15.00 381	126.8 57.5	15.00 381	143.3 65.0

[1] For 14"/DN350 and larger roll grooved systems, Victaulic offers the Advanced Groove System (AGS). For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(s) = Carbon Steel

NA = Not Available

"+" = Contact Victaulic for details

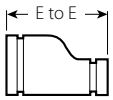
NOTES

- All fittings are ductile iron unless otherwise noted with an (s).
- Available with make threaded small end No. 52
- Steel eccentric reducers available through 30"/DN750, contact Victaulic for dimensions.

4.15 DIMENSIONS

Concentric/Eccentric Reducer

No. 50
No. 51



Size						No. 50 Concentric Reducer		No. 51 Eccentric Reducer	
Nominal inches DN			Actual Outside Diameter inches mm			E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
20[1] DN500	x	10 DN200	20.000 508.0	x	10.750 273.0	20.00 508	160.0 72.6	20.00 508	172.0 78.0
		300A			318.5	20.00 508	162.3 73.6	NA	NA
		12 DN300			12.750 323.9	20.00 508	162.3 73.6	20.00 508	183.0 83.0
		14 DN350			14.000 355.6	20.00 508	177.5 80.5	20.00 508	191.8 87.0
		16 DN400			16.000 406.4	20.00 508	176.4 80.0	20.00 508	200.6 91.0
		18 DN450			18.000 457.2	20.00 508	205.0 93.0	20.00 508	209.4 95.0
24[1] DN600	x	10 DN200	24.000 609.6	x	10.750 273.0	20.00 508	222.7 101.0	20.00 508	222.7 101.0
		12 DN300			12.750 323.9	20.00 508	209.4 95.0	20.00 508	238.1 108.0
		14 DN350			14.000 355.6	20.00 508	213.8 97.0	20.00 508	246.9 112.0
		16 DN400			16.000 406.4	20.00 508	215.8 97.9	20.00 508	251.3 114.0
		18 DN450			18.000 457.2	20.00 508	229.3 104.0	20.00 508	244.7 111.0
		20 DN500			20.000 508.0	20.00 508	+	20.00 508	275.6 125.0
14 – 60 DN350 – DN1500			For AGS fitting information, see publication 20.05 AGS™						

[1] For 14"/DN350 and larger roll grooved systems, Victaulic offers the Advanced Groove System (AGS). For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(s) = Carbon Steel

NA = Not Available

"+" = Contact Victaulic for details

NOTES

- All fittings are ductile iron unless otherwise noted with an (s).
- Available with make threaded small end No. 52
- Steel eccentric reducers available through 30"/DN750, contact Victaulic for dimensions.

4.16 DIMENSIONS

Small Threaded Reducer
No. 52
No. 52F

Size						No. 52 Concentric Reducer Groove x Male Thread[1]		No. 52F Concentric Reducer Groove x Female BSPT Thread	
Nominal inches DN			Actual Outside Diameter inches mm			E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
1¼ DN32	x	1 DN25	1.660 42.4	x	1.315 33.7	NA	NA	2.50 64	0.4 0.2
1½ DN40	x	1 DN25	1.900 48.3	x	1.315 33.7	2.50 64	0.8 0.4	NA	NA
		1¼ DN32			1.660 42.4	2.50 64	0.9 0.4	NA	NA
2 DN50	x	¾ DN20	2.375 60.3	x	1.050 26.9	2.56 65	0.8 0.4	NA	NA
		1 DN25			1.315 33.7	2.50 64	0.9 0.4	NA	NA
		1¼ DN32			1.660 42.4	2.50 64	0.9 0.4	NA	NA
		1½ DN40			1.900 48.3	2.50 64	1.0 0.5	NA	NA
2½	x	1 DN25	2.875 73.0	x	1.315 33.7	2.50 64	1.1 0.5	NA	NA
		1¼ DN32			1.660 42.4	2.50 64	1.6 0.7	NA	NA
		1½ DN40			1.900 48.3	2.50 64	1.6 0.7	NA	NA
		2 DN50			2.375 60.3	2.50 64	1.8 0.8	NA	NA
DN65	x	1 DN25	3.000 76.1	x	1.315 33.7	2.50 64	1.8 0.8	NA	NA
		1¼ DN32			1.660 42.4	2.50 64	1.8 0.8	NA	NA
		1½ DN40			1.900 48.3	2.50 64	1.8 0.8	2.50 64	1.8 0.8
		2 DN50			2.375 60.3	2.50 64	1.8 0.8	2.50 64	2.0 0.9

[1] Available with British Standard Pipe Threads, specify "BSP" clearly on order.

(s) = Carbon Steel

NA = Not Available

"+" = Contact Victaulic for details

NOTE

- All fittings are ductile iron unless otherwise noted with an (s).

4.16 DIMENSIONS

Small Threaded Reducer
No. 52
No. 52F

Size						No. 52 Concentric Reducer Groove x Male Thread[1]		No. 52F Concentric Reducer Groove x Female BSPT Thread	
Nominal inches DN			Actual Outside Diameter inches mm			E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
3 DN80	x	¾ DN25	3.500 88.9	x	1.050 26.9	9.50 (s) 241	+	NA	NA
		1 DN25			1.315 33.7	2.50 64	1.8 0.8	NA	NA
		1 ¼ DN32			1.660 42.4	2.50 64	1.5 0.7	2.50 64	2.0 0.9
		1 ½ DN40			1.900 48.3	2.50 64	2.2 1.0	2.50 64	2.0 0.9
		2 DN50			2.375 60.3	2.50 64	2.0 0.9	2.50 64	2.0 0.9
		2 ½			2.875 73.0	2.50 64	2.4 1.1	NA	NA
		DN65			3.000 76.1	2.50 64	2.4 1.1	2.50 64	2.0 0.9
			4.250 108.0	x	1.660 42.4	NA	NA	3.00 76	2.9 1.3
					1.900 48.3	NA	NA	3.00 76	3.1 1.4
					2.375 60.3	3.00 76	1.3 0.6	3.00 76	3.1 1.4
					2.875 73.0	3.00 76	1.3 0.6	NA	NA
					3.000 76.1	3.00 76	1.3 0.6	NA	NA
					3.500 88.9	3.50 89	3.4 1.5	NA	NA
4 DN100	x	1 DN25	4.500 114.3	x	1.315 33.7	3.00 76	3.0 1.4	NA	NA
		1 ¼ DN32			1.660 42.4	NA	NA	3.00 76	3.3 1.5
		1 ½ DN40			1.900 48.3	3.00 76	2.7 1.2	3.00 76	3.3 1.5
		2 DN50			2.375 60.3	3.00 76	3.5 1.6	3.00 76	3.5 1.6
		2 ½			2.875 73.0	3.00 76	3.5 1.6	NA	NA
		DN65			3.000 76.1	3.00 76	2.9 1.3	NA	NA
		3 DN80			3.500 88.9	3.00 76	3.5 1.6	NA	NA

[1] Available with British Standard Pipe Threads, specify "BSP" clearly on order.

(s) = Carbon Steel

NA = Not Available

"+" = Contact Victaulic for details

NOTE

- All fittings are ductile iron unless otherwise noted with an (s).

4.16 DIMENSIONS

Small Threaded Reducer
No. 52
No. 52F

Size						No. 52 Concentric Reducer Groove x Male Thread[1]		No. 52F Concentric Reducer Groove x Female BSPT Thread	
Nominal inches DN			Actual Outside Diameter inches mm			E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
			5.250 133.0	x	3.500 88.9	4.50 114	4.6 2.1	NA	NA
DN125	x	DN65	5.500 139.7	x	3.000 76.1	4.50 114	4.4 2.0	NA	NA
		3 DN80			3.500 88.9	4.50 114	4.4 2.0	NA	NA
5	x	2 DN50	5.563 141.3	x	2.375 60.3	11.00 (s) 279	3.5 1.6	NA	NA
		3 DN80			3.500 88.9	11.00 (s) 279	3.6 1.6	NA	NA
		4 DN100			4.500 114.3	11.00 (s) 279	11.9 5.4	NA	NA
			6.250 159.0	x	1.660 42.4	NA	NA	4.50 114	5.5 2.5
					1.900 48.3	NA	NA	4.50 114	5.5 2.5
					2.375 60.3	NA	NA	4.50 114	5.5 2.5
					3.000 76.1	4.50 114	5.1 2.3	NA	NA
					3.500 88.9	4.75 121	5.5 2.5	NA	NA
			6.500 165.1	x	1.660 42.4	NA	NA	4.00 102	6.4 2.9
					1.900 48.3	NA	NA	4.00 102	6.6 3.0
					2.375 60.3	4.00 102	5.5 2.5	4.00 102	6.6 3.0
					3.000 76.1	4.00 102	5.9 2.7	NA	NA
					3.500 88.9	4.00 102	6.6 3.0	NA	NA

[1] Available with British Standard Pipe Threads, specify "BSP" clearly on order.

(s) = Carbon Steel

NA = Not Available

"+" = Contact Victaulic for details

NOTE

- All fittings are ductile iron unless otherwise noted with an (s).

4.16 DIMENSIONS

Small Threaded Reducer
No. 52
No. 52F

Size						No. 52 Concentric Reducer Groove x Male Thread[1]		No. 52F Concentric Reducer Groove x Female BSPT Thread	
Nominal inches DN			Actual Outside Diameter inches mm			E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
6 DN150	x	1 DN25	6.625 168.3	x	1.315 33.7	4.00 102	5.5 2.5	NA	NA
		2 DN50			2.375 60.3	4.00 102	6.7 3.0	NA	NA
		2½			2.875 73.0	4.00 102	5.8 2.6	NA	NA
		3 DN80			3.500 88.9	4.00 102	8.0 3.6	NA	NA
		4 DN100			4.500 114.3	11.50 (s) 292	15.9 7.2	NA	NA
		5			5.563 141.3	11.50 (s) 292	20.0 9.1	NA	NA
8 DN200	x	4 DN100			4.500 114.3	12.00 (s) 305	22.9 10.4	NA	NA
		6 DN150			6.625 168.3	12.00 (s) 305	25.0 11.3	NA	NA

[1] Available with British Standard Pipe Threads, specify "BSP" clearly on order.

(s) = Carbon Steel

NA = Not Available

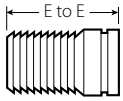
"+" = Contact Victaulic for details

NOTE

- All fittings are ductile iron unless otherwise noted with an (s).

4.16 DIMENSIONS (CONTINUED)

Hose Nipple
No. 48



Size		No. 48 Hose Nipple (s)	
Nominal inches DN	**Actual Outside Diameter** inches mm	**E to E** inches mm	**Approx. Weight (Each)** lb kg
¾ DN20	1.050 26.9	3.13 79	0.3 0.1
1 DN25	1.315 33.7	3.38 86	0.4 0.2
1 ¼ DN32	1.660 42.4	3.88 98	0.6 0.3
1 ½ DN40	1.900 48.3	3.88 98	0.8 0.4
2 DN50	2.375 60.3	4.50 114	1.0 0.4
2 ½	2.875 73.0	5.38 137	2.0 0.9
3 DN80	3.500 88.9	5.75 146	3.1 1.4
4 DN100	4.500 114.3	7.00 178	4.9 2.2
5	5.563 141.3	8.75 222	8.0 3.6
6 DN150	6.625 168.3	10.13 257	14.3 6.5
8 DN200	8.625 219.1	11.88 302	24.7 11.2
10 DN250	10.750 273.0	12.50 318	41.0 18.6
12 DN300	12.750 323.9	14.50 368	62.0 28.1

(s) = Carbon Steel

5.0 PERFORMANCE

Flow Data

(Frictional Resistance)

The chart expresses the frictional resistance of various Victaulic fittings as equivalent feet of straight pipe. Fittings not listed can be estimated from the data given, for example, a 22½° elbow is approximately one-half the resistance of a 45° elbow. Values of mid-sizes can be interpolated.

Size		90° Elbows		45° Elbows		Tees	
Nominal inches DN	**Actual Outside Diameter** inches mm	**No. 10 Std. Radius** feet meters	**No. 100 1 ½ D Long Radius** inches mm	**No. 11 Std. Radius** feet meters	**No. 110 1 ½ D Long Radius** inches mm	**Branch** feet meters	**Run** feet meters
¾ DN20	1.050 26.9	1.4 0.4	–	0.7 0.2	–	3.3 1.0	1.4 0.4
1 DN25	1.315 33.7	1.7 0.5	–	0.8 0.2	–	4.2 1.3	1.7 0.5
1 ¼ DN32	1.660 42.4	3.8 1.1	–	4.5 1.4	–	6.1 1.9	1.5 0.5
1 ½ DN40	1.900 48.3	5.5 1.7	–	3.7 1.1	–	6.1 1.9	1.2 0.4
2 DN50	2.375 60.3	3.6 1.1	2.5 0.8	1.8 0.5	1.1 0.3	8.5 2.6	3.6 1.1
	3.000 76.1	4.3 1.3	–	2.3 0.7	–	10.8 3.3	4.3 1.3
3 DN80	3.500 88.9	5.0 1.5	3.8 1.2	2.6 0.8	1.6 0.5	13.0 4.0	5.0 1.5
	4.250 108.0	6.4 2.0	–	3.2 1.0	–	15.3 4.7	6.4 2.0
4 DN100	4.500 114.3	6.8 2.1	5.0 1.5	3.4 1.0	2.1 0.6	16.0 4.9	6.8 2.1
	5.250 133.0	8.1 2.5	–	4.1 1.3	–	20.0 6.1	8.1 2.5
DN125	5.500 139.7	8.5 2.6	–	4.2 1.3	–	21.0 6.4	8.5 2.6
5	5.563 141.3	8.5 2.6	–	4.2 1.3	–	21.0 6.4	8.5 2.6
	6.250 159.0	9.4 2.9	–	4.9 1.5	–	25.0 7.6	9.6 2.9
	6.500 165.1	9.6 2.9	–	5.0 1.5	–	25.0 7.6	10.0 3.0
6 DN150	6.625 168.3	10.0 3.0	7.5 2.3	5.0 1.5	3.0 0.9	25.0 7.6	10.0 3.0
8 DN200	8.625 219.1	13.1 4.0	9.8 3.0	6.5 2.0	4.0 1.2	33.1 10.1	13.1 4.0
10 DN250	10.750 273.0	17.0 5.2	12.0 3.7	8.3 2.5	5.0 1.5	41.0 12.5	17.0 5.2
12 DN300	12.750 323.9	20.0 6.1	14.5 4.4	10.0 3.0	6.0 1.8	50.0 15.2	20.0 6.1
14 DN350	14.000 355.6	24.5[1] 7.5	15.8 4.8	18.5[1] 5.6	11.0 3.4	70.0 21.3	23.0 7.0
16 DN400	16.000 406.4	28.0[1] 8.5	18.0 5.5	21.0[1] 6.4	13.0 4.0	80.0 24.4	27.0 8.2
18 DN450	18.000 457.2	31.0[1] 9.4	20.0 6.1	23.5[1] 7.2	14.0 4.3	90.0 27.4	30.0 9.1
20 DN500	20.000 508.0	34.0[1] 10.4	22.5 6.9	25.5[1] 7.8	16.0 4.9	100.0 30.5	33.0 10.1
24 DN600	24.000 609.6	42.0[1] 12.8	27.0 8.2	29.5[1] 9.0	19.0 5.8	120.0 36.6	40.0 12.2

[1] Fitting flow data for 14-24/DN350-DN600 size No. 10 and No. 11 Elbows is based on fittings for Style 07 and Style 77 couplings. For flow data on AGS fittings (No. W10 and No. W11 Elbows), refer to publication 20.05.

6.0 NOTIFICATIONS

⚠ WARNING

- **Read and understand all instructions before attempting to install any Victaulic products.**
- **Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**
- **Confirm that any equipment, branch lines, or sections of piping that may have been isolated for/during testing or due to valve closures/positioning are identified, depressurized, and drained immediately prior to installation, removal, adjustment, or maitenance of any Victaulic products.**
- **The installer shall understand the use of this product and why it was specified for the particular application.**
- **The installer shall understand common industry safety standards and potential consequences of improper product installation.**
- **Wear safety glasses, hardhat, and foot protection.**

Failure to follow these instructions could result in death or serious personal injury and property damage.

7.0 REFERENCE MATERIALS

Galvanized
Publication 07.01 for Original Groove Fittings
Publication 20.05 for AGS Fittings

Extra Heavy EndSeal “ES”
Publication 07.03

Fabricated Steel Fittings
Publication 07.04

Shouldered Ends
Publication 07.06

xL fittings for abrasive services
Publication 07.07

Victaulic Base Support Elbows
Publication 07.13

Plain End
Publication 14.04

Stainless Steel
Publication 17.16

AGS - Advanced Groove System
from 14 – 60"/DN350 – DN1500
Publication 20.05

Aluminum
Publication 21.03

Copper
Publication 22.04

Ductile Iron for AWWA size pipe
Publication 23.05

User Responsibility for Product Selection and Suitability
Each user bears final responsibility for making a determination as to the suitability of Victaulic products for a particular end-use application, in accordance with industry standards and project specifications, and the applicable building codes and related regulations as well as Victaulic performance, maintenance, safety, and warning instructions. Nothing in this or any other document, nor any verbal recommendation, advice, or opinion from any Victaulic employee, shall be deemed to alter, vary, supersede, or waive any provision of Victaulic Company's standard conditions of sale, installation guide, or this disclaimer.

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Note
This product shall be manufactured by Victaulic or to Victaulic specifications. All products to be installed in accordance with current Victaulic installation/assembly instructions. Victaulic reserves the right to change product specifications, designs and standard equipment without notice and without incurring obligations.

Installation
Reference should always be made to the Victaulic installation handbook or installation instructions of the product you are installing. Handbooks are included with each shipment of Victaulic products, providing complete installation and assembly data, and are available in PDF format on our website at www.victaulic.com.

Warranty
Refer to the Warranty section of the current Price List or contact Victaulic for details.

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07.01 1449 Rev AM Updated 08/2024

FireLock™ Fittings

10.03

1.0 PRODUCT DESCRIPTION

Available Sizes

- 1 ¼ – 12"/DN32 – DN300

Maximum Working Pressure

- Pressure ratings for Victaulic FireLock™ Fittings conform to the ratings of Victaulic FireLock Installation-Ready™ Style 009N couplings (refer to publication 10.64 for more information).

Application

- FireLock™ fittings are designed for use exclusively with Victaulic couplings that have been Listed or Approved for Fire Protection Services. Use of other couplings or flange adapters may result in bolt pad interference.
- Connects pipe, provides change in direction and adapts sizes or components

Pipe Materials

- Carbon steel

2.0 CERTIFICATION/LISTINGS

EN 10311
CPR (EU)
No. 305/2011

BS EN 10311
CPR (UK)
2019 No. 465

3.0 SPECIFICATIONS – MATERIAL

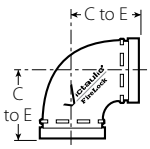
Fitting: Ductile iron conforming to ASTM A536, Grade 65-45-12.

Fitting Coating: (specify choice)

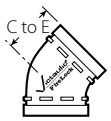
- ☐ Orange coating.
- ☐ Red coating (standard for EMEA-I and Asia Pacific).
- ☐ Optional: Hot dipped galvanized.

ALWAYS REFER TO ANY NOTIFICATIONS AT THE END OF THIS DOCUMENT REGARDING PRODUCT INSTALLATION, MAINTENANCE OR SUPPORT.

4.0 DIMENSIONS



No. 001



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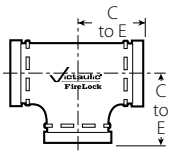


No. 002

No. 006

Nominal Size inches DN	Actual Outside Diameter inches mm	No. 001 90° Elbow C to E inches mm	No. 001 90° Elbow Approximate Weight Each lb kg	No. 003 45° Elbow C to E inches mm	No. 003 45° Elbow Approximate Weight Each lb kg	No. 002 Straight Tee C to E inches mm	No. 002 Straight Tee Approximate Weight Each lb kg	No. 006 Cap T inches mm	No. 006 Cap Approximate Weight Each lb kg
1 ¼ DN32	1.660 42.4	2.75 70	1.0 0.5	1.75 45	0.7 0.3	2.75 70	1.4 0.6	0.82 21	0.3 0.1
1 ½ DN40	1.900 48.3	2.75 70	1.2 0.5	1.75 45	0.8 0.4	2.75 70	1.8 0.8	0.82 21	0.4 0.2
2 DN50	2.375 60.3	2.75 70	1.6 0.7	2.00 51	1.4 0.6	2.75 70	2.4 1.1	0.88 22	0.6 0.3
2 ½	2.875 73.0	3.00 76	2.1 1.0	2.25 57	2.2 1.0	3.00 76	3.4 1.5	0.88 22	1.0 0.5
 DN65	3.000 76.1	3.00 76	2.5 1.1	2.25 57	2.4 1.1	3.00 76	3.8 1.7	–	–
3 DN80	3.500 88.9	3.38 86	3.4 1.5	2.50 64	3.1 1.4	3.38 86	5.1 2.3	0.88 22	1.2 0.5
	4.250 108.0	4.00 102	5.7 2.6	3.00 76	5.1 2.3	4.00 102	7.5 3.4	–	–
4 DN100	4.500 114.3	4.00 102	5.9 2.7	3.00 76	4.9 2.2	4.00 102	6.8 3.1	1.00 25	2.4 1.1
 DN125	5.500 139.7	4.88 124	12.4 5.6	3.25 83	8.2 3.7	4.88 124	15.4 7.0	–	–
5	5.563 141.3	4.88 124	7.8 3.5	3.25 83	8.3 3.8	4.88 124	15.3 6.9	1.00 25	4.1 1.9
	6.250 159.0	5.50 140	12.6 5.7	3.50 89	9.2 4.2	5.50 140	17.9 8.1	–	–
	6.500 165.1	5.43 138	13.0 5.9	3.50 89	9.4 4.2	5.50 140	19.7 8.9	–	–
6 DN150	6.625 168.3	5.50 140	13.7 6.2	3.50 89	10.4 4.7	5.50 140	20.2 9.2	1.00 25	5.9 2.7
	8.515 216.3	6.81 173	23.1 10.5	–	–	6.94 176	33.6 15.0	–	–
8 DN200	8.625 219.1	6.81 173	25.4 11.5	4.25 108	18.9 8.6	6.94 176	36.9 16.8	1.13 29	12.7 5.8
10 DN250	10.750 273.0	8.25 210	43.2 19.6	4.00 102	25.0 11.3	8.25 210	63.6 28.9	1.06 27	14.2 6.4
12 DN300	12.750 323.9	9.38 238	66.7 30.3	4.50 114	36.1 16.4	9.38 238	80.7 36.6	1.06 27	22.6 10.3

5.0 PERFORMANCE

Flow Data

Size		Flow Data Frictional Resistance			
Nominal inches DN	**Actual Outside Diameter** inches mm	**No. 001 90° Elbow** feet meters	**No. 003 45° Elbow** feet meters	**No. 002 Straight Tee Branch** feet meters	**No. 002 Straight Tee Run** feet meters
1 ¼ DN32	1.660 42.4	2.00 0.6	2.13 0.6	7.50 2.3	0.50 0.2
1 ½ DN40	1.900 48.3	2.63 0.8	2.75 0.8	6.63 2.0	1.00 0.3
2 DN50	2.375 60.3	3.50 1.1	1.88 0.6	8.50 2.6	3.50 1.1
2 ½	2.875 73.0	4.38 1.3	2.25 0.7	10.88 3.3	4.38 1.3
DN65	3.000 76.1	4.50 1.4	2.38 0.7	11.00 3.4	4.50 1.4
3 DN80	3.500 88.9	5.00 1.5	2.63 0.8	13.00 4.0	5.00 1.5
	4.250 108.0	6.50 2.0	3.25 1.0	15.38 4.7	6.50 2.0
4 DN100	4.500 114.3	6.88 2.1	3.50 1.1	16.00 4.9	6.88 2.1
DN125	5.500 139.7	8.38 2.6	4.13 1.3	20.63 6.3	8.38 2.6
5	5.563 141.3	8.50 2.6	4.25 1.3	21.00 6.4	8.50 2.6
	6.250 159.0	9.50 2.9	5.00 1.5	25.00 7.6	9.63 2.9
	6.500 165.1	9.88 3.0	5.00 1.5	24.50 7.5	9.88 3.0
6 DN150	6.625 168.3	10.00 3.0	5.00 1.5	25.00 7.6	10.00 3.0
216 DN200	8.515 216.3	13.00 4.0	-	33.00 10.1	13.00 4.0
8 DN200	8.625 219.1	13.00 4.0	6.50 2.0	33.00 12.5	13.00 5.2
10 DN250	10.750 273.0	17.00 5.2	8.30 2.50	41.00 12.5	17.00 5.2
12 DN300	12.750 323.9	20.00 6.1	10.00 3.0	50.00 15.2	20.00 6.1

[1] The flow data listed is based upon the pressure drop of Schedule 40 pipe.

6.0 NOTIFICATIONS

General Notes

NOTE: When assembling FireLock EZ™ couplings onto end caps, take additional care to make certain the end cap is fully seated against the gasket end stop. For FireLock EZ™ Style 009N/009H couplings, use FireLock™ No. 006 end caps containing the “EZ” marking on the inside face or No. 60 end caps containing the “QV EZ” marking on the inside face. Non-Victaulic end cap products shall not be used with Style 009/009V/009H/009N couplings.

7.0 REFERENCE MATERIALS

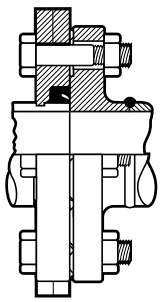
10.64: Victaulic® FireLock™ Rigid Coupling Style 009N

10.02: Victaulic® FireLock™ Rigid Coupling Style 005H with Vic-Plus™ Gasket System

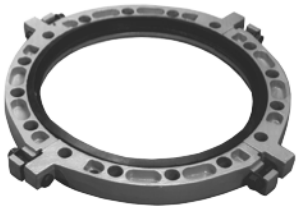
29.01: Victaulic® Terms and Conditions of Sale

Victaulic® *"Vic"-Flange* Adapters
Styles 741 and 743

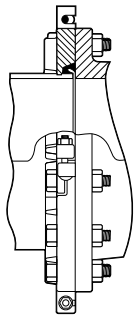
Style 741
2 – 12"/DN50 – DN300



Exaggerated for clarity

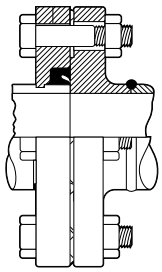


Style 741
14 – 24"/DN350 – DN600



Exaggerated for clarity

Style 743
2 – 12"/DN50 – DN300



Exaggerated for clarity

1.0 PRODUCT DESCRIPTION

Available Sizes

- **Style 741:** 2 – 24"/DN50 – DN600
- **Style 743:** 2 – 12"/DN50 – DN300

Pipe Material

- Carbon steel
- For use with stainless steel pipe, refer to Victaulic publication 17.09 for pressure ratings and end loads.
- For use with PVC pipe, refer to Victaulic publication 32.01 for pressure ratings.
- For use with aluminum pipe, refer to Victaulic publication 21.04 for pressure ratings and end loads.
- For exceptions reference section 6.0 Notifications.

Maximum Working Pressure

- **Style 741:** Accommodates pressure ranging from full vacuum (29.9 in-Hg/760 mm-Hg) up to 300 psi/2068 kPa/21 bar
- **Style 743:** Accommodates pressure ranging from full vacuum (29.9 in-Hg/760 mm-Hg) up to 720 psi/4964 kPa/50 bar

Application

- Designed to transition from flanged to grooved piping systems

ALWAYS REFER TO ANY NOTIFICATIONS AT THE END OF THIS DOCUMENT REGARDING PRODUCT INSTALLATION, MAINTENANCE OR SUPPORT.

2.0 CERTIFICATION/LISTINGS

EN 10311
CPR (EU)
No. 305/2011

BS EN 10311
CPR (UK)
2019 No. 465

NOTE

- See Victaulic publication 02.06: Victaulic Potable Water Approvals ANSI/NSF for potable water approvals if applicable.

3.0 SPECIFICATIONS – MATERIAL

Housing: Ductile iron conforming to ASTM A536, Grade 65-45-12. Ductile iron conforming to ASTM A395, Grade 65-45-15, is available upon special request.

Housing Coating: (specify choice)

☐ Standard: Black coating.

☐ Optional: Hot dipped galvanized per ASTM A123.

☐ Optional: Contact Victaulic with your requirements for other coatings.

Gasket: (specify choice[1])

☐ **Victaulic Grade "E" EPDM**

EPDM (Green stripe color code). Temperature range –30°F to +230°F/–34°C to +110°C. May be specified for hot water service within the specified temperature range plus a variety of dilute acids, oil-free air and many chemical services. UL Classified in accordance with ANSI/NSF 61 for cold +73°F/+23°C and hot +180°F/+82°C potable water service and ANSI/NSF 372. NOT COMPATIBLE FOR USE WITH PETROLEUM SERVICES OR STEAM SERVICES.

☐ **Victaulic Grade "T" Nitrile**

Nitrile (Orange stripe color code). Temperature range 20°F to +180°F/29°C to +82°C. May be specified for oil related services, including air with oil vapor, this gasket may be specified for temperatures rated up to +180°F/+82°C. For water related services, this gasket may be specified for temperatures rated up to +150°F/+66°C. For oil free, dry air services, this gasket may be specified for temperatures rated up to +140°F/+60°C. NOT COMPATIBLE FOR USE WITH HOT WATER SERVICES OR STEAM SERVICES.

☐ **Others**

For alternate gasket selection, reference publication 05.01: Victaulic Seal Selection Guide.

1 Services listed are General Service Guidelines only. It should be noted that there are services for which these gaskets are not compatible. Reference should always be made to the latest Victaulic Seal Selection Guide for specific gasket service guidelines and for a listing of services which are not compatible.

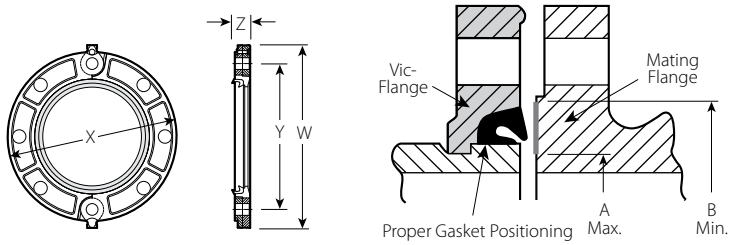
Draw Bolts/Nuts (14 – 24"/DN350 – DN600 only):

☐ Carbon steel oval neck track bolts meeting the mechanical property requirements of ASTM A449 (imperial) and ISO 898-1 Class 9.8 (metric). Carbon steel hex flange nuts meeting the mechanical property requirements of ASTM A563 Grade B (imperial - heavy hex nuts) and ASTM A563M Class 9 (metric - hex nuts). Track bolts and hex flange nuts are zinc electroplated per ASTM B633 FE/ZN5, finish Type III (imperial) or Type II (metric).

4.0 DIMENSIONS

Style 741 *Vic-Flange* Adapter

2 – 12"/DN50 – DN300
ANSI Class 125 and 150 Flanges



Exaggerated for clarity

Size		Assembly Bolt/Nut[2]		Sealing Surface		Dimensions				Weight
Nominal inches DN	**Actual Outside Diameter** inches mm	**Qty.**	**Size** inches	**"A" Max.** inches mm	**"B" Min.** inches mm	**W** inches mm	**X** inches mm	**Y** inches mm	**Z** inches mm	**Approximate (Each)** lb kg
2 DN50	2.375 60.3	4	⅝ x 2 ¾	2.38 60	3.41 87	6.75 172	6.00 152	4.75 121	0.75 19	3.1 1.4
2 ½	2.875 73.0	4	⅝ x 3	2.88 73	3.91 99	7.88 200	7.00 178	5.50 140	0.88 22	4.8 2.1
3 DN80	3.500 88.9	4	⅝ x 3	3.50 89	4.53 115	8.50 216	7.50 191	6.00 152	1.00 25	5.3 2.4
4 DN100	4.500 114.3	8	⅝ x 3	4.50 114	5.53 141	10.00 254	9.00 229	7.50 191	1.00 25	7.4 3.4
5	5.563 141.3	8	¾ x 3 ½	5.56 141	6.71 171	11.00 279	10.00 254	8.50 216	1.00 25	8.6 3.9
6 DN150	6.625 168.3	8	¾ x 3 ½	6.63 168	7.78 198	12.00 305	11.00 279	9.50 241	1.00 25	9.9 4.5
8 DN200	8.625 219.1	8	¾ x 3 ½	8.63 219	9.94 252	14.75 375	13.50 343	11.75 298	1.13 29	16.6 7.5
10 DN250	10.750 273.0	12	⅞ x 4	10.75 273	12.31 313	17.25 438	16.00 406	14.25 362	1.25 32	24.2 11.0
12 DN300	12.750 323.9	12	⅞ x 4	12.75 324	14.31 364	20.25 514	19.00 483	17.00 432	1.25 32	46.8 21.2

[2] Total assembly bolts required to be supplied by installer.

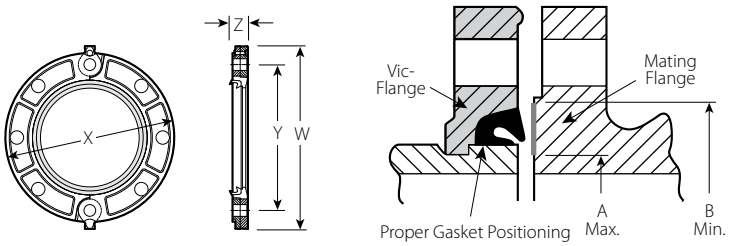
NOTE

- IMPORTANT: Style 741 *Vic-Flange* adapters provide rigid joints when used on pipe with standard cut or roll groove dimensions and consequently allow no linear or angular movement at the joint. When used with Victaulic Series 700 butterfly valves, plastic pipe or light wall metallic pipe, small teeth in I.D. of key section should be removed and may be used on one side of the valve. Reference the I-100: Victaulic Field Installation Handbook for details. Contact Victaulic for information on ISO 2084 (PN10); DIN 2532 (PN10) and JIS B-2210 (10K) flanges.

4.1 DIMENSIONS

Style 741 *Vic-Flange* Adapter

DN50 – DN300/2 – 12"
PN10 and PN16 Flanges



Exaggerated for clarity

Size		PN10 Flanges		PN16 Flanges		Sealing Surface		Dimensions				Weight
Nominal DN inches	Actual Outside Diameter mm inches	Assembly Bolt/Nut[2,3] Qty.	Assembly Bolt/Nut[2,3] Size mm	Qty.	Size mm	"A" Max. mm inches	"B" Min. mm inches	W mm inches	X mm inches	Y mm inches	Z mm inches	Approximate (Each) kg lb
DN50 2	60.3 2.375	4	M16 x 70	4	M16 x 70	60 2.38	87 3.41	178 7.00	165 6.50	127 5.00	22 0.88	1.4 3.1
DN65	76.1 3.000	4	M16 x 70	4	M16 x 70	76 3.00	103 4.05	210 8.25	187 7.38	146 5.75	22 0.88	2.1 4.7
DN80 3	88.9 3.500	8	M16 x 70	8	M16 x 70	89 3.50	115 4.53	219 8.63	200 7.88	162 6.38	22 0.88	2.4 5.4
DN100 4	114.3 4.500	8	M16 x 76	8	M16 x 76	114 4.50	141 5.55	251 9.88	229 9.00	181 7.13	25 1.00	3.5 7.7
DN125	139.7 5.500	8	M16 x 76	8	M16 x 76	141 5.55	171 6.73	276 10.88	251 9.88	213 8.38	29 1.13	4.2 9.3
	159.0 6.250	8	M20 x 89	8	M20 x 89	159 6.25	187 7.36	314 12.38	289 11.38	241 9.50	29 1.13	4.5 10.0
	165.1 6.500	8	¾ x 3 ½	8	¾ x 3 ½	165 6.50	192 7.56	305 12.00	279 11.00	241 9.50	25 1.00	5.0 11.0
DN150 6	168.3 6.625	8	M20 x 89	8	M20 x 89	168 6.63	198 7.78	302 11.88	279 11.00	241 9.50	25 1.00	4.5 10.0
DN200 8	219.1 8.625	8	M20 x 89	12	M20 x 89	219 8.63	252 9.94	368[4] 14.50	343[4] 13.50	295[4] 11.63	29[4] 1.13	7.5 16.6
DN250 10	273.0 10.750	12	M20 x 89	12	M24 x 90	273 10.75	313 12.31	438[5] 17.25	397[5] 15.63	352[5] 13.88	29[5] 1.13	11.0 24.2
DN300 12	323.9 12.750	12	M20 x 89	12	M24 x 90	324 12.75	365 14.31	479[6] 18.88	460[6] 18.13	400[6] 15.75	32[6] 1.25	17.4 38.4

[2] Total assembly bolts required to be supplied by installer.

[3] Longer bolts required when the *Vic-Flange* is utilized with wafer-type valves.

[4] PN16 dimensions (mm/inches): W = 360/14.17; X = 340/13.38; Y = 295/11.63; Z = 32/1.25.

[5] PN16 dimensions (mm/inches): W = 438/17.24; X = 406/16.00; Y = 356/14.00; Z = 32/1.25.

[6] PN16 dimensions (mm/inches): W = 478/18.82; X = 445/17.50; Y = 410/16.13; Z = 32/1.25.

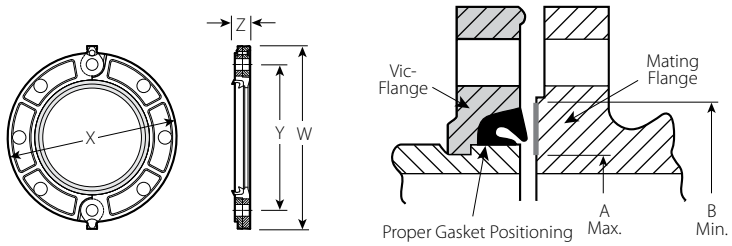
NOTE

- IMPORTANT: Style 741 *Vic-Flange* adapters provide rigid joints when used on pipe with standard cut or roll groove dimensions and consequently allow no linear or angular movement at the joint. When used with Victaulic Series 700 butterfly valves, plastic pipe or light wall metallic pipe, small teeth in I.D. of key section should be removed and may be used on one side of the valve. Reference the I-100: Victaulic Field Installation Handbook for details. Contact Victaulic for information on ISO 2084 (PN10); DIN 2532 (PN10) and JIS B-2210 (10K) flanges.

4.2 DIMENSIONS

Style 741 *Vic-Flange* Adapter

DN50 – DN200/2 – 8"
Australian Standard Table “E” Flanges



Exaggerated for clarity

Size		Assembly Bolt/Nut[2]		Sealing Surface		Dimensions				Weight
Nominal DN inches	**Actual Outside Diameter** mm inches	**Qty.**	**Size** inches	**“A” Max.** mm inches	**“B” Min.** mm inches	**W** mm inches	**X** mm inches	**Y** mm inches	**Z** mm inches	**Approximate (Each)** kg lb
DN50 2	60.3 2.375	4	⅝ x 2 ¾	60 2.38	84 3.31	165 6.50	152 6.00	114 4.50	19 0.75	1.9 4.1
DN80 3	88.9 3.500	4	⅝ x 3	89 3.50	113 4.44	200 7.88	191 7.50	146 5.75	25 1.00	2.4 5.4
DN100 4	114.3 4.500	8	⅝ x 3	114 4.50	131 5.16	251 9.88	229 9.00	178 7.00	25 1.00	3.3 7.2
DN150 6	168.3 6.625	8	¾ x 3 ½	168 6.63	192 7.56	286 11.25	279 11.00	235 9.25	25 1.00	4.5 9.9
DN200 8	219.1 8.625	8	¾ x 3 ½	219 8.63	247 9.72	368 14.50	343 13.50	292 11.50	29 1.13	5.7 12.5

[2] Total assembly bolts required to be supplied by installer.

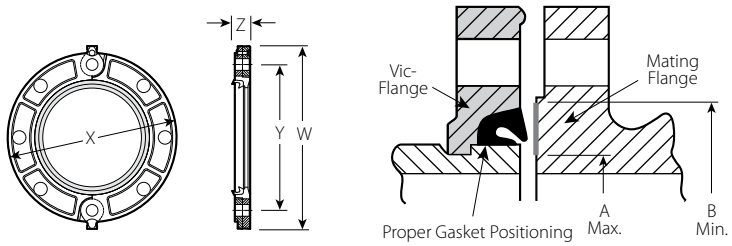
NOTE

- IMPORTANT: Style 741 *Vic-Flange* adapters provide rigid joints when used on pipe with standard cut or roll groove dimensions and consequently allow no linear or angular movement at the joint. When used with Victaulic Series 700 butterfly valves, plastic pipe or light wall metallic pipe, small teeth in I.D. of key section should be removed and may be used on one side of the valve. Reference the I-100: Victaulic Field Installation Handbook for details. Contact Victaulic for information on ISO 2084 (PN10); DIN 2532 (PN10) and JIS B-2210 (10K) flanges.

4.3 DIMENSIONS

Style 741 *Vic-Flange* Adapter

DN50 – DN200/2 – 8"
Chinese Standard



Exaggerated for clarity

Size		Assembly Bolt/Nut[2]		Sealing Surface		Dimensions				Weight
Nominal DN inches	Actual Outside Diameter mm inches	Qty.	Size mm	"A" Max. mm inches	"B" Min. mm inches	W mm inches	X mm inches	Y mm inches	Z mm inches	Approximate (Each) kg lb
DN50 2	60.3 2.375	4	M16 X 70	60 2.38	87 3.41	172 6.75	152 6.00	121 4.75	19 0.75	1.4 3.1
DN65	76.1 3.000	4	M16 X 70	78 3.07	94 3.68	210 8.25	187 7.38	146 5.75	22 0.88	2.1 4.7
DN80 3	88.9 3.500	8	M16 X 76	89 3.50	115 4.53	213 8.38	191 7.50	152.4 6.00	25 1.00	2.4 5.4
	108.0 4.250	8	M16 X 76	110 4.33	126 4.97	248 9.75	222 8.75	181 7.13	25 1.00	3.5 7.7
DN100 4	114.3 4.500	8	M16 X 76	114 4.50	141 5.55	251 9.88	229 9.00	191 7.50	25 1.00	3.5 7.7
	133.0 5.250	8	M16 X 76	135 5.33	153 6.02	276 10.88	251 9.88	213 8.38	29 1.13	3.9 8.6
DN125	139.7 5.500	8	M16 X 76	142 5.59	160 6.28	276 10.88	251 9.88	213 8.38	29 1.13	3.9 8.6
	159.0 6.250	8	M20 X 89	159 6.25	187 7.36	314 12.38	289 11.38	241 9.50	29 1.13	4.5 10.0
	165.1 6.500	8	M20 X 89	165 6.50	195 7.68	305 12.00	280 11.00	241 9.50	29 1.13	4.5 10.0
DN200 8	219.1 8.625	12	M20 X 89	219 8.63	252 9.94	368 14.50	343 13.50	298 11.75	29 1.13	7.5 16.6

[2] Total assembly bolts required to be supplied by installer.

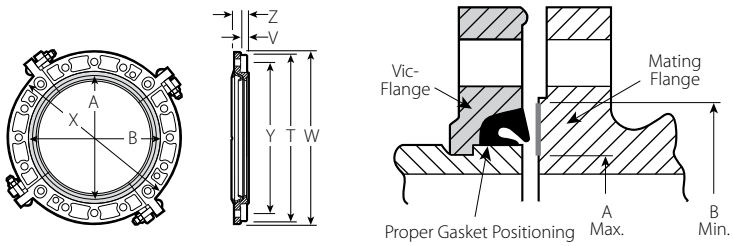
NOTE

- IMPORTANT: Style 741 *Vic-Flange* adapters provide rigid joints when used on pipe with standard cut or roll groove dimensions and consequently allow no linear or angular movement at the joint. When used with Victaulic Series 700 butterfly valves, plastic pipe or light wall metallic pipe, small teeth in I.D. of key section should be removed and may be used on one side of the valve. Reference the I-100: Victaulic Field Installation Handbook for details. Contact Victaulic for information on ISO 2084 (PN10); DIN 2532 (PN10) and JIS B-2210 (10K) flanges.

4.4 DIMENSIONS

Style 741 *Vic-Flange* Adapter

14 – 24"/DN350 – DN600[7]
ANSI Class 125 and 150 Flanges



Exaggerated for clarity

Size		Bolt/Nut				Sealing Surface		Dimensions						Weight
		Assembly[2]		Draw[8]										
Nominal inches DN	Actual Outside Diameter inches mm	Qty.	Size inches	Qty.	Size inches	"A" Max. inches mm	"B" Min. inches mm	T inches mm	V inches mm	W inches mm	X inches mm	Y inches mm	Z inches mm	Approximate (Each) lb kg
14 DN350	14.000 355.6	12	1 x 4½	4	⅝ x 3½	14.00 356	16.39 416	19.38 492	1.00 25	24.50 622	21.00 533	18.75 476	2.50 64	62.0 28.1
16 DN400	16.000 406.4	16	1 x 4 ½	4	⅝ x 3½	16.00 406	18.39 467	21.50 546	1.00 25	27.13 689	23.50 597	21.25 540	2.50 64	79.0 35.8
18 DN450	18.000 457.0	16	1 ⅛ x 4 ¾	4	¾ x 4¼	18.00 457	20.00 508	22.25 565	1.00 25	29.00 737	25.50 648	22.75 578	2.75 70	82.3 37.3
20 DN500	20.000 508.0	20	1 ⅛ x 5 ¼	4	¾ x 4¼	20.00 508	22.50 572	25.00 635	1.00 25	31.50 800	27.50 699	25.00 635	2.75 70	103.3 46.9
24 DN600	24.000 610.0	20	1 ¼ x 5 ¾	4	¾ x 4¼	24.00 610	27.75 705	29.00 737	1.00 25	36.00 914	32.00 813	29.50 749	3.00 76	142.0 64.4

[2] Total assembly bolts required to be supplied by installer.

[7] For cut groove systems only. For 14 – 24"/DN350 – DN600 roll groove systems, AGS (Advanced Groove System) products are used. The Style 741 *Vic-Flange* adapter is not compatible with the AGS system.

[8] Draw bolts supplied with 14 – 24"/DN350 – DN600 *Vic-Flange* adapters.

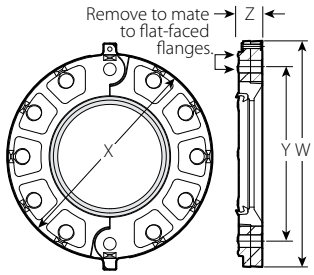
NOTE

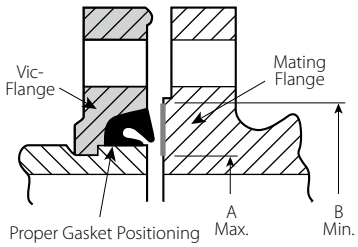
- IMPORTANT: Style 741 *Vic-Flange* adapters provide rigid joints when used on pipe with standard cut or roll groove dimensions and consequently allow no linear or angular movement at the joint. When used with Victaulic Series 700 butterfly valves, plastic pipe or light wall metallic pipe, small teeth in I.D. of key section should be removed and may be used on one side of the valve. Reference the I-100: Victaulic Field Installation Handbook for details. Contact Victaulic for information on ISO 2084 (PN10); DIN 2532 (PN10) and JIS B-2210 (10K) flanges.

4.5 DIMENSIONS

Style 743 *Vic-Flange* Adapter

ANSI Class 250 and 300 Flanges





Exaggerated for clarity

Size		Assembly Bolt/Nut[2]		Sealing Surface		Dimensions				Weight
Nominal inches DN	**Actual Outside Diameter** inches mm	**Qty.**	**Size** inches	**"A" Max.** inches mm	**"B" Min.** inches mm	**W** inches mm	**X** inches mm	**Y** inches mm	**Z** inches mm	**Approximate (Each)** lb kg
2 DN50	2.375 60.3	8	⅝ x 3	2.38 60	3.41 87	7.75 197	6.50 165	5.00 127	1.00 25	4.8 2.2
2½	2.875 73.0	8	¾ x 3¼	2.88 73	3.91 99	8.63 219	7.50 191	5.88 149	1.13 29	7.4 3.4
3 DN80	3.500 88.9	8	¾ x 3½	3.50 89	4.53 115	9.50 241	8.25 210	6.63 168	1.25 32	9.1 4.1
4 DN100	4.500 114.3	8	¾ x 3¾	4.50 114	5.53 141	11.38 289	10.00 254	7.88 200	1.38 35	15.3 6.9
5	5.563 141.3	8	¾ x 4	5.56 141	6.72 171	12.38 314	11.00 279	9.25 235	1.50 38	17.7 8.0
6 DN150	6.625 168.3	12	¾ x 4½	6.63 168	7.78 198	13.88 352	12.50 318	10.63 270	1.50 38	23.4 10.6
8 DN200	8.625 219.1	12	⅞ x 4¾	8.63 219	9.94 252	16.75 425	15.00 381	13.00 330	1.75 44	34.3 15.6
10 DN250	10.750 273.0	16	1 x 5¼	10.75 273	12.31 313	19.25 489	17.50 445	15.25 387	2.00 51	48.3 21.9
12 DN300	12.750 323.9	16	1 ⅛ x 5¾	12.75 324	14.31 363	22.25 565	20.50 521	17.75 451	2.13 54	70.5 32.0

[2] Total assembly bolts required to be supplied by installer.

5.0 PERFORMANCE

Style 741 *Vic-Flange* Adapter

2 – 12"/DN50 – DN300
ANSI Class 125 and 150 Flanges

Size		Maximum Working Pressure[9]	Maximum End Load[9]
Nominal inches DN	**Actual Outside Diameter** inches mm	psi kPa	lb N
2 DN50	2.375 60.3	300 2068	1330 5920
2 ½	2.875 73.0	300 2068	1950 8680
3 DN80	3.500 88.9	300 2068	2885 12840
4 DN100	4.500 114.3	300 2068	4770 21225
5	5.563 141.3	300 2068	7290 32440
6 DN150	6.625 168.3	300 2068	10350 46060
8 DN200	8.625 219.1	300 2068	17500 77875
10 DN250	10.750 273.0	300 2068	27215 121110
12 DN300	12.750 323.9	300 2068	38285 170270

[9] Working Pressure and End Load are total, from all internal and external loads, based on standard weight (ANSI) steel pipe, standard roll or cut grooved in accordance with Victaulic specifications. Contact Victaulic for performance on other pipe.

NOTE

- WARNING: FOR ONE TIME FIELD TEST ONLY, the Maximum Joint Working Pressure may be increased to 1½ times the figures shown.

5.1 PERFORMANCE

Style 741 *Vic-Flange* Adapter

DN50 – DN300/2 – 12"
PN10 and PN16 Flanges

Size		PN10 Flanges		PN16 Flanges	
Nominal DN inches	**Actual Outside Diameter** mm inches	**Maximum Working Pressure[9]** bar psi	**Maximum End Load[9]** N lb	**Maximum Working Pressure[9]** bar psi	**Maximum End Load[9]** N lb
DN50 2	60.3 2.375	10 145	2850 640	16 230	4561 1025
DN65	76.1 3.000	10 145	4540 1020	16 230	7275 1635
DN80 3	88.9 3.500	10 145	6210 1395	16 230	9925 2230
DN100 4	114.3 4.500	10 145	10260 2305	16 230	16420 3690
DN125	139.7 5.500	10 145	15330 3446	16 230	24520 5512
	159.0 6.250	10 145	19800 4450	16 230	31400 7056
DN150 6	168.3 6.625	10 145	22250 5000	16 230	35600 8000
DN200 8	219.1 8.625	10 145	37690 8470	16 230	60320 13555
DN250 10	273.0 10.750	10 145	58560 13160	16 230	93695 21055
DN300 12	323.9 12.750	10 145	82370 18510	16 230	131810 29620

[9] Working Pressure and End Load are total, from all internal and external loads, based on standard weight (ANSI) steel pipe, standard roll or cut grooved in accordance with Victaulic specifications. Contact Victaulic for performance on other pipe.

NOTE

- WARNING: FOR ONE TIME FIELD TEST ONLY, the Maximum Joint Working Pressure may be increased to 1½ times the figures shown.

5.2 PERFORMANCE

Style 741 *Vic-Flange* Adapter

DN50 – DN200/2 – 8"
Australian Standard Table "E" Flanges

Size		Maximum Working Pressure[9]	Maximum End Load[9]
Nominal DN inches	Actual Outside Diameter mm inches	kPa psi	N lb
DN50[10] 2	60.3 2.375	1400 203	3996 900
DN80 3	88.9 3.500	1400 203	8700 1955
DN100 4	114.3 4.500	1400 203	14374 3220
DN150 6	168.3 6.625	1400 203	31150 7000
DN200 8	219.1 8.625	1400 203	52777 11860

[9] Working Pressure and End Load are total, from all internal and external loads, based on standard weight (ANSI) steel pipe, standard roll or cut grooved in accordance with Victaulic specifications. Contact Victaulic for performance on other pipe.

NOTE

- WARNING: FOR ONE TIME FIELD TEST ONLY, the Maximum Joint Working Pressure may be increased to 1½ times the figures shown.

5.3 PERFORMANCE

Style 741 *Vic-Flange* Adapter

DN50 – DN200/2 – 8"
Chinese Standard

Size		Maximum Working Pressure[9]	Maximum End Load[9]
Nominal DN inches	Actual Outside Diameter mm inches	kPa psi	N lb
DN50 2	60.3 2.375	1400 203	3996 900
DN65	76.1 3.000	1400 203	6365 1431
DN80 3	88.9 3.500	1400 203	8700 1955
	108.0 4.250	1400 203	12819 2882
DN100 4	114.3 4.500	1400 203	14374 4370
	133.0 5.250	1400 203	19440 4822
DN125	139.7 5.500	1400 203	21448 4822
	159.0 6.250	1400 203	27784 6246
	165.1 6.500	1400 203	29920 6726
DN200 8	219.1 8.625	1400 203	52777 11860

[9] Working Pressure and End Load are total, from all internal and external loads, based on standard weight (ANSI) steel pipe, standard roll or cut grooved in accordance with Victaulic specifications. Contact Victaulic for performance on other pipe.

NOTE

- WARNING: FOR ONE TIME FIELD TEST ONLY, the Maximum Joint Working Pressure may be increased to 1½ times the figures shown.

5.4 PERFORMANCE

Style 741 *Vic-Flange* Adapter

14 – 24"/DN350 – DN600
ANSI Class 125 and 150 Flanges

Size		Maximum Working Pressure[9]	Maximum End Load[9]
Nominal inches DN	Actual Outside Diameter inches mm	psi kPa	lb N
14 DN350	14.000 355.6	300 2068	46180 205500
16 DN400	16.000 406.4	300 2068	60300 268335
18 DN450	18.000 457.0	300 2068	76340 339700
20 DN500	20.000 508.0	300 2068	94250 419400
24 DN600	24.000 610.0	300 2068	135700 603865

[9] Working Pressure and End Load are total, from all internal and external loads, based on standard weight (ANSI) steel pipe, standard roll or cut grooved in accordance with Victaulic specifications. Contact Victaulic for performance on other pipe.

NOTE

- WARNING: FOR ONE TIME FIELD TEST ONLY, the Maximum Joint Working Pressure may be increased to 1½ times the figures shown.

5.5 PERFORMANCE

Style 743 *Vic-Flange* Adapter

ANSI Class 250 and 300 Flanges

Size		Maximum Working Pressure[9]	MaximumEnd Load[9]
Nominal inches DN	Actual Outside Diameter inches mm	psi kPa	lb N
2 DN50	2.375 60.3	720 4964	3190 14200
2½	2.875 73.0	720 4964	4670 20780
3 DN80	3.500 88.9	720 4964	6925 30815
4 DN100	4.500 114.3	720 4964	11445 50930
5	5.563 141.3	720 4964	17500 77875
6 DN150	6.625 168.3	720 4964	24805 110380
8 DN200	8.625 219.1	720 4964	42045 187100
10 DN250	10.750 273.0	720 4964	65315 290650
12 DN300	12.750 323.9	720 4964	91880 408870

[9] Working Pressure and End Load are total, from all internal and external loads, based on standard weight (ANSI) steel pipe, standard roll or cut grooved in accordance with Victaulic specifications. Contact Victaulic for performance on other pipe.

NOTE

- WARNING: FOR ONE TIME FIELD TEST ONLY, the Maximum Joint Working Pressure may be increased to 1½ times the figures shown.

6.0 NOTIFICATIONS

- The Style 741 (2 – 12"/DN50 – DN300) design incorporates small teeth inside the key shoulder I.D. to prevent rotation. These teeth should be removed when *Vic-Flange* adapter is utilized with a Victaulic Series 700 grooved-end butterfly valve, Schedule 5 pipe or plastic pipe. *Vic-Flange* adapter Style 741 may only be used on one side of Victaulic Series 700 butterfly valve, sizes 2 – 4"/DN50 – DN100 fitted with standard or latch-lock handles.
- *Vic-Flange* adapter must be assembled so it does not interfere with handle operation. Because of the outside flange dimension, *Vic-Flange* adapter should not be used within 90° of one another on a standard fitting. When wafer or lug-type valves are used adjoining a Victaulic fitting, check disc dimensions to assure proper clearance.
- *Vic-Flange* adapters should not be used as anchor points for tie-rods across nonrestrained joints. Mating rubber faced flanges, valves, etc. requires the use of a *Vic-Flange* washer.
- Area A-B noted in the drawings in sections 4.0 through 4.5 must be free from gouges, undulations or deformities of any type for effective sealing.
- *Vic-Flange* adapter gaskets must always be assembled with the color coded lip on the pipe and the other lip facing the mating flange.
- *Vic-Flange* hinge points must be oriented approximately 90° to each other when mated.
- Flange Washers: *Vic-Flange* adapters require a smooth hard surface at the mating flange face for effective sealing. Some applications for which the *Vic-Flange* adapter is otherwise well suited do not provide an adequate mating surface. In such cases, it is recommended that a metal (Type F phenolic for Style 641 with copper systems) Flange Washer be inserted between the *Vic-Flange* adapter and the mating flange to provide the necessary sealing surface.
- Typical applications where a Flange Washer should be used are:
  - A. When mating to a serrated flange: a flange gasket should be used adjacent to the serrated flange and then the Flange Washer is inserted between the *Vic-Flange* adapter and the flange gasket.
  - B. When mating to a wafer valve: where typical valves are rubber lined and partially rubber faced (smooth or not), the Flange Washer is placed between the valve and the *Vic-Flange* adapter.
  - C. When mating a rubber faced flange: the Flange Washer is placed between the *Vic-flanges* and the rubber faced flange.
  - D. When mating AWWA cast flanges to IPS flanges: the Flange Washer or Transition Ring is placed between two *Vic-Flange* adapters with the hinge points oriented 90° to each other. If one flange is not a *Vic-Flange* adapter (e.g., flanged valve), then a flange gasket must be placed adjacent to that flange and the Flange Washer inserted between the flange gasket and the *Vic-Flange* adapter. Transition rings rather than Flange Washers must be used when mating Style 741 to Style 341 Flange Adapters in sizes 14 – 24"/DN350 – DN600.
  - E. When mating to components (valves, strainers, etc.) where the component flange face has an insert: follow the same arrangement as in Application 1.
  - F. Additional information regarding the use of a Flange Washer can be found in the I-100: Victaulic Field Installation Handbook.
- When ordering Flange Washers, always specify product style (Style 741 or Style 743) and size to assure proper Flange Washer is supplied.

NOTE

- Style 741 is compatible with ANSI CL 125 or CL150, PN10/16 and Australian Standard Table E bolt hole patterns.

6.0 NOTIFICATIONS (Continued)

⚠WARNING

- **Victaulic RX roll sets must be used when grooving light-wall/thin-wall stainless steel pipe for use with Victaulic Couplings.**

Failure to use Victaulic RX roll sets when grooving light-wall/thin-wall stainless steel pipe may cause joint failure, resulting in serious personal injury and/or property damage.

NOTICE

- **Victaulic RX grooving rolls must be ordered separately. They are identified by a silver color and the designation RX on the front of the roll sets.**

NOTICE

- **Victaulic does not recommend the use of any furnace butt-welded pipe with sizes NPS 2”/DN50 and smaller Victaulic gasketed joint products. This includes, but is not limited to, ASTM A53 Type F pipe.**

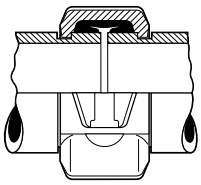
7.0 REFERENCE MATERIALS

02.06: Victaulic Potable Water Approvals
05.01: Victaulic Seal Selection Guide
10.01: Victaulic Regulatory Approval Reference Guide
17.01: Victaulic Pipe Preparation for Use on Stainless Steel Pipe With Victaulic Products
17.09: Victaulic Pressure Ratings and End Loads for Victaulic Ductile Iron Grooved Couplings on Stainless Steel Pipe
29.01: Victaulic Terms and Conditions/Warranty
1-100: Victaulic Field Installation Handbook

Victaulic® Flexible Coupling
Style 75

06.05

1 – 8"/DN25 – DN200



Exaggerated for clarity

1.0 PRODUCT DESCRIPTION

Available Sizes

- 1 – 8"/DN25 – DN200

Pipe Material

- Carbon steel
- Stainless steel
- For exceptions see section 6.0 Notifications

Maximum Working Pressure

- Accommodates pressures ranging from full vacuum (29.9 in Hg/760 mm Hg) up to 500 psi/3447 kPa/34 bar
- Working pressure dependent on material, wall thickness and size of pipe

Application

- Joins standard roll grooved and cut grooved pipe, as well as grooved fittings, valves and accessories
- Provides a flexible pipe joint which allows for expansion, contraction and deflection
- Up to 50% lighter in weight than standard Victaulic Style 77 or Style 177N flexible couplings

2.0 CERTIFICATION/LISTINGS

NOTES

- Download publication 10.01 for Fire Protection Certifications/Listings Reference Guide.
- See publication 02.06: Victaulic Potable Water Approvals ANSI/NSF for potable water approvals if applicable.

ALWAYS REFER TO ANY NOTIFICATIONS AT THE END OF THIS DOCUMENT REGARDING PRODUCT INSTALLATION, MAINTENANCE OR SUPPORT.

3.0 SPECIFICATIONS – MATERIAL

Housing: Ductile iron conforming to ASTM A536, Grade 65-45-12. Ductile iron conforming to ASTM A395, Grade 65-45-15, is available upon special request.

Housing Coating: (specify choice)

- ☐ Standard: Orange enamel
- ☐ Optional: Hot dipped galvanized
- ☐ Optional: Contact Victaulic with your requirements for other coatings.

Gasket: (specify choice[1])

☐ **Grade "E" EPDM**

EPDM (Green stripe color code). Temperature range –30ºF to +230ºF/–34ºC to +110ºC. May be specified for hot water service within the specified temperature range plus a variety of dilute acids, oil-free air and many chemical services. UL Classified in accordance with ANSI/NSF 61 for cold +73°F/+23°C and hot +180°F/+82°C potable water service and ANSI/NSF 372. NOT COMPATIBLE FOR USE WITH PETROLEUM SERVICES OR STEAM SERVICES.

☐ **Grade "T" Nitrile**

Nitrile (Orange stripe color code). Temperature range –20ºF to +180ºF/–29ºC to +82ºC. May be specified for petroleum products, air with oil vapors, vegetable and mineral oils within the specified temperature range; not compatible for hot dry air over +140°F/+60°C and water over +150°F/+66°C. NOT COMPATIBLE FOR USE WITH HOT WATER.

☐ **Others**

For alternate gasket selection, reference publication 05.01: Victaulic Seal Selection Guide - Elastomeric Seal Construction.

[1] Services listed are General Service Guidelines only. It should be noted that there are services for which these gaskets are not compatible. Reference should always be made to the latest Victaulic Seal Selection Guide for specific gasket service guidelines and for a listing of services which are not compatible.

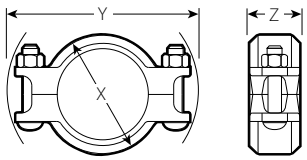
Bolts/Nuts: (specify choice[2])

- ☐ Standard: Carbon steel oval neck track bolts meeting the mechanical property requirements of ASTM A449 (imperial) and ISO 898-1 Class 9.8 (M10-M16) Class 8.8 (M20 and greater). Carbon steel hex nuts meeting the mechanical property requirements of ASTM A563 Grade B (imperial - Heavy Hex nuts) and ASTM A563M Class 9 (metric - hex nuts). Track bolts and hex nuts are zinc electroplated per ASTM B633 ZN/FE5, finish Type III (imperial) or Type II (metric).
- ☐ Optional (imperial): Stainless steel oval neck track bolts meeting the mechanical property requirements of ASTM F593, Group 2 (316 stainless steel), condition CW. Stainless steel heavy nuts meeting the mechanical property requirements of ASTM F594, Group 2 (316 stainless steel), condition CW, with galling reducing coating.

[2] Optional bolts/nuts are available in imperial sizes only.

4.0 DIMENSIONS

Style 75 Flexible Coupling



Size		Pipe End Separation[3]	Deflection from Centerline[3]		Bolt/Nut		Dimensions			Weight
Nominal inches DN	Actual Outside Diameter inches mm	Allowable inches mm	Per Cplg. Degrees	Pipe inches/ft. mm/m	Qty.	Size imperial metric	X inches mm	Y inches mm	Z inches mm	Approx. (Each) lb kg
1 DN25	1.315 33.7	0–0.06 0–1.6	2°–43′	0.57 47	2	⅜ x 2 M10 x 51	2.38 61	4.27 108	1.77 45	1.3 0.5
1 ¼ DN32	1.660 42.4	0–0.06 0–1.6	2°–10′	0.45 37	2	⅜ x 2 M10 x 51	2.68 68	4.61 117	1.77 45	1.4 0.5
1 ½ DN40	1.900 48.3	0–0.06 0–1.6	1°–56′	0.40 33	2	⅜ x 2 M10 x 51	2.91 74	4.82 122	1.77 45	1.5 0.5
2 DN50	2.375 60.3	0–0.06 0–1.6	1°–31′	0.32 27	2	⅜ x 2 M10 x 51	3.43 87	5.22 133	1.88 48	1.7 1.0
2 ½	2.875 73.0	0–0.06 0–1.6	1°–15′	0.26 22	2	⅜ x 2 M10 x 51	3.88 98	5.68 144	1.88 48	1.9 1.0
DN65	3.000 76.1	0–0.06 0–1.6	1°–12′	0.26 22	2	⅜ x 2 M10 x 51	4.00 102	5.90 150	1.88 48	1.9 1.0
3 DN80	3.500 88.9	0–0.06 0–1.6	1°–2′	0.22 18	2	½ x 2 ¾ M12 x 70	4.50 114	7.00 178	1.88 48	2.9 1.5
3 ½ DN90	4.000 101.6	0–0.06 0–1.6	0°-54′	0.19 16	2	½ x 2 ¾ M12 x 70	5.00 127	7.50 191	1.88 48	2.9 1.5
4 DN100	4.500 114.3	0–0.13 0–3.2	1°–36′	0.34 28	2	½ x 2 ¾ M12 x 70	5.80 147	8.03 204	2.13 54	4.1 2.0
	4.250 108.0	0–0.13 0–3.2	1°–41′	0.35 29	2	½ x 2 ¾ M12 x 70	5.55 141	7.79 198	2.13 54	3.7 1.5
	5.000 127.0	0–0.13 0–3.2	1°–26′	0.25 21	2	⅝ x 3 ¼ M16 x 83	6.13 156	9.43 240	2.13 54	5.5 2.5
	5.250 133.0	0–0.13 0–3.2	1°–21′	0.28 23	2	⅝ x 3 ¼ M16 x 83	6.55 166	9.37 238	2.13 54	6.0 2.5
DN125	5.500 139.7	0–0.13 0–3.2	1°–18′	0.28 23	2	⅝ x 3 ¼ M16 x 83	6.80 173	9.59 244	2.13 54	6.3 3.0
5	5.563 141.3	0–0.13 0–3.2	1°–18′	0.27 22	2	⅝ x 3 ¼ M16 x 83	6.88 175	10.07 256	2.13 54	5.8 2.5
	6.000 152.4	0–0.13 0–3.2	1°–12′	0.21 17	2	⅝x 3 ¼ M16 x 83	7.38 187	10.48 266	1.88 48	6.2 3.0
	6.250 159.0	0–0.13 0–3.2	1°–9′	0.24 20	2	⅝ x 3 ¼ M16 x 83	7.63 194	10.49 266	2.13 54	6.8 3.0
	6.500 165.1	0–0.13 0–3.2	1°–7′	0.23 19	2	⅝ x 3 ¼ M16 x 83	7.84 199	10.66 271	2.08 53	6.6 3.0
6 DN150	6.625 168.3	0–0.13 0–3.2	1°–5′	0.23 19	2	⅝ x 3 ¼ M16 x 83	8.00 203	11.07 281	2.13 54	7.0 3.0
200A[4]	216.3	0–0.13 0–3.2	0°–51′	0.18 15	2	¾ x 5 M20 x 127	10.19 259	13.75 350	2.32 59	13.2 6.0
8 DN200	8.625 219.1	0–0.13 0–3.2	0°–50′	0.18 15	2	¾ x 5 M20 x 127	10.34 263	13.97 355	2.13 59	12.4 5.5

[3] Allowable Pipe End Separation and Deflection figures show the maximum nominal range of movement available at each joint for standard **roll** grooved pipe. Figures for standard **cut** grooved pipe may be doubled. These figures are maximums; for design and installation purposes these figures should be reduced by: 50% for ¾ – 3 ½"/DN20 – DN90; 25% for 4"/DN100 and larger.

[4] Japanese Industrial Standard (JIS) size

NOTE

- Metric thread size bolts are available (color coded gold) for all coupling sizes upon request. Contact Victaulic for details.

5.0 PERFORMANCE

Style 75 Flexible Coupling

Size		Maximum Working Pressure[5]	Maximum End Load[5]
Nominal inches DN	**Actual Outside Diameter** inches mm	psi kPa	lb N
1 DN25	1.315 33.7	500 3447	680 3024
1 ¼ DN32	1.660 42.4	500 3447	1080 4804
1 ½ DN40	1.900 48.3	500 3447	1420 6316
2 DN50	2.375 60.3	500 3447	2215 9852
2 ½	2.875 73.0	500 3447	3245 14434
DN65	3.000 76.1	500 3447	3535 15724
3 DN80	3.500 88.9	500 3447	4800 21352
3 ½ DN90	4.000 101.6	500 3447	6300 28024
4 DN100	4.500 114.3	500 3447	7950 35364
	4.250 108.0	450 3103	6380 28380
	5.000 127.0	450 3103	8820 39234
	5.250 133.0	450 3103	9735 43304
DN125	5.500 139.7	450 3103	10665 47440
5	5.563 141.3	450 3103	10935 48642
	6.000 152.4	450 3103	12735 56648
	6.250 159.0	450 3103	13800 61386
	6.500 165.1	450 3103	14930 66412
6 DN150	6.625 168.3	450 3103	15525 69058
200A[4]	216.3	450 3103	25625 113986
8 DN200	8.625 219.1	450 3103	26280 116900

[4] Japanese Industrial Standard (JIS) size

[5] Working Pressure and End Load are total, from all internal and external loads, based on ANSI B36.10 sized carbon steel pipe, grooved in accordance with Victaulic specifications. Contact Victaulic for performance on other pipe.

NOTE

- WARNING: FOR ONE TIME FIELD TEST ONLY, the Maximum Joint Working Pressure may be increased to 1½ times the figures shown.

6.0 NOTIFICATIONS

⚠ WARNING

- **Read and understand all instructions before attempting to install, remove, adjust, or maintain any Victaulic piping products.**
- **Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**
- **Wear safety glasses, hardhat, and foot protection.**

Failure to follow these instructions could result in death or serious personal injury and property damage.

NOTICE

- **Victaulic RX grooving rolls must be ordered separately. They are identified by a silver color and the designation RX on the front of the roll sets.**

NOTICE

- **Victaulic does not recommend the use of any furnace butt-welded pipe with sizes NPS 2"/DN50 and smaller Victaulic gasketed joint products. This includes, but is not limited to, ASTM A53 Type F pipe.**

7.0 REFERENCE MATERIALS

02.06: Victaulic Potable Water Approvals ANSI/NSF
05.01: Victaulic Seal Selection Guide - Elastomeric Seal Construction
06.15: Victaulic Pressure Ratings and End Loads for Victaulic Couplings on Steel Pipe
10.01: Victaulic Products for Fire Protection Pipings Systems - Regulatory Approval Reference Guide
17.01: Victaulic Pipe Preparation for Use on Stainless Steel Pipe With Victaulic Products
17.09: Victaulic Ductile Iron Grooved Couplings Performance Data for Stainless Steel Pipe
25.01: Victaulic Standard Groove Specifications
26.01: Victaulic Design Data
29.01: Victaulic Terms and Conditions of Sale
I-100: Victaulic Field Installation Handbook
I-ENDCAP: Victaulic End Cap Installation Safety Instructions

FireLock™ Installation-Ready™ Rigid Couplings
Style 009V, Style 009N and Style 109

10.64

Style 009V
Patented

Style 009N
Patented

Style 109
Patented

1.0 PRODUCT DESCRIPTION

Available Sizes

- Style 009V: 1 ¼ – 12"/DN32 – DN300
- Style 009N: 1 ¼ – 12"/DN32 – DN300
- Style 109: 1 ¼ – 4"/DN32 – DN100

Pipe Material

- Schedule 10, Schedule 40 or specialty carbon steel pipe listed in Section 5. For use with alternative materials and wall thicknesses please contact Victaulic
- For exceptions reference section 6.0 Notifications

Maximum Working Pressure

- Accommodates pressures ranging from full vacuum (29.9 in Hg/760 mm Hg) to 365 psi/2517 kPa
- Working pressure dependent on material, wall thickness and size of pipe

Function

- Joins carbon steel pipe with grooved ends conforming to publication 25.01
- Provides a rigid pipe joint designed to restrict axial or angular movement

Pipe Preparation

- Cut or roll grooved in accordance with publication 25.01: Victaulic Standard Groove Specifications.

2.0 CERTIFICATION/LISTINGS

LPS 1219: Issue 3.1
Cert/LPCB Ref. 104-1a/36

009N: G4090023
109: G421013

EN 10311
CPR (EU)
No. 305/2011

BS EN 10311
CPR (UK)
2019 No. 465

ALWAYS REFER TO ANY NOTIFICATIONS AT THE END OF THIS DOCUMENT REGARDING PRODUCT INSTALLATION, MAINTENANCE OR SUPPORT.

3.0 SPECIFICATIONS – MATERIAL

Housing: Ductile iron conforming to ASTM A 536, Grade 65-45-12. Ductile iron conforming to ASTM A 395, Grade 65-45-15, is available upon special request.

Housing Coating: (specify choice)

- ☐ Orange coating
- ☐ Red coating (standard for EMEA-I and Asia Pacific)
- ☐ Optional for Style 009N and 009V: Galvanized per ASTM A123 (Hot Dipped) or ASTM A1059 (Thermo-Diffusion)
- ☐ Optional for Style 109: Mechanically Galvanized per ASTM B695 (available only in North America and Latin America).

Gasket: (specify choice)

- ☐ **Grade "E" EPDM (Type A) Vic-Plus™ Pre-lubricated Gasket**

  EPDM (Violet Color Code). Applicable for wet and dry (oil-free air) fire protection systems only. Listed/Approved for continuous use in wet and dry systems. Listed/Approved for dry systems at -40°F/-40°C and above. Not compatible for use with hot water services or steam services.

NOTES

- Reference should always be made to publication I-100, Victaulic Field Installation Handbook for gasket lubrication instructions.
- Services listed are General Service Guidelines only. It should be noted that there are services for which these gaskets are not compatible. Reference should always be made to publication 05.01, Victaulic Gasket Selection Guide for specific gasket service guidelines and for a listing of services which are not compatible.
- The gasket pre-lubrication will appear white to slightly amber in color. The color will not impact gasket or coupling performance.

Bolts/Nuts: (specify choice)

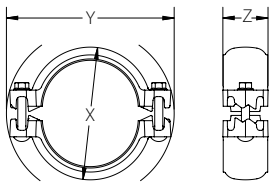
- ☐ Standard: Carbon steel oval neck track bolts meeting the mechanical property requirements of (imperial) ASTM A449 or (metric) ISO 898-1 Class 9.8 (M10-M16) or Class 8.8 (M20 and greater). Carbon steel hex nuts meeting the mechanical property requirements of (imperial hex nuts) ASTM A563 Grade B or (metric hex nuts) ISO 898-2 Class 10 (M12-M16) or Class 8 (M20 and greater). Track bolts and hex nuts are zinc electroplated per ASTM B633 Fe/Zn5 finish (imperial) Type III or (metric) Type II.
- ☐ Optional for Style 009N: Stainless steel oval neck track bolts meeting the requirements of ASTM F593, Group 2 (316 stainless steel), condition CW. Stainless steel Heavy Hex nuts meeting the requirements of ASTM F594, Group 2 (316 stainless steel), condition CW, with galling-resistant coating.[1]

[1] Optional bolts/nuts are available in imperial size only.

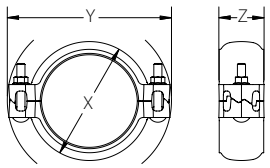
Coupling Linkage (Style 109 only): High Strength Steel with comparable physical properties to that of the Track Bolt (ASTM A449). Linkage is zinc electroplated per ASTM B633 Fe/Zn 5, Type III Finish.

4.0 DIMENSIONS

Style 009V Two-Bolt Installation-Ready Coupling



Style 009V Pre-Assembled



Style 009V Joint Assembled

Size		Maximum Working Pressure[2]	Maximum End Load[2]	Allow. Pipe End Separation[3]	Bolt/Nut		Dimensions					Approx. Weight (Each)
							Pre-Assembled		Joint Assembled			
Nominal inches DN	Actual Outside Diameter inches mm	Lbs. N	inches mm	psi kPa	Qty.	Size inches mm	X inches mm	Y inches mm	X inches mm	Y inches mm	Z inches mm	lb kg
1 ¼ DN32	1.660 42.4	365 2517	790 3514	0.10 2.54	2	⅜ x 2 M10 x 51	3.25 82	4.81 122	2.88 74	4.75 120	2.13 54	1.7 0.8
1 ½ DN40	1.900 48.3	365 2517	1035 4604	0.10 2.54	2	⅜ x 2 M10 x 51	3.50 88	5.06 128	3.13 80	5.00 128	2.13 54	1.7 0.8
2 DN50	2.375 60.3	365 2517	1617 7192	0.12 3.05	2	⅜ x 2 ½ M10 x 63	4.06 104	5.63 142	3.63 92	5.63 142	2.13 54	2.1 1.0
2 ½	2.875 73.0	365 2517	2370 10542	0.12 3.05	2	⅜ x 2 ½	4.56 116	6.06 154	4.06 104	6.06 154	2.13 54	2.2 1.0
3 DN80	3.500 88.9	365 2517	3512 15622	0.12 3.05	2	⅜ x 2 ½ M10 x 63	5.19 132	6.81 174	4.63 118	6.69 170	2.19 56	2.6 1.2
4 DN100	4.500 114.3	365 2517	5805 25822	0.17 4.32	2	⅜ x 2 ½ M10 x 63	6.38 162	7.94 202	5.75 146	7.75 196	2.25 58	3.5 1.6
6 DN150	6.625 168.3	365 2517	12582 55968	0.17 4.32	2	½ x 3 M12 x 76	9.00 228	10.69 272	8.31 212	10.56 268	2.31 58	6.3 2.9
8 DN200	8.625 219.1	365 2517	21326 94862	0.17 4.32	2	⅝ x 3 ⅝ M16 x 92	11.31 288	13.75 350	10.56 268	13.63 346	2.81 72	13.0 5.9
10 DN250	10.750 273.0	365 2517	33127 147358	0.25 6.4	2	⅞ x 6 M22 x 152	14.13 358	17.50 444	13.25 336	17.13 434	2.94 74	25.0 11.5
12 DN300	12.750 323.9	365 2517	46600 207290	0.25 6.4	2	⅞ x 6 M22 x 152	16.38 416	19.50 496	15.63 396	19.25 488	2.94 74	30.0 13.5

[2] Working Pressure and End Load are total, from all internal and external loads, based on standard weight (ANSI) steel pipe, standard roll or cut grooved in accordance with Victaulic specifications. See the Listings/Approvals section of this publication for ratings on other pipe.

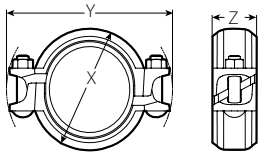
[3] The allowable pipe separation dimension shown is for system layout purposes only. Style 009V couplings are considered rigid connections and will not accommodate expansion or contraction of the piping system.

NOTES

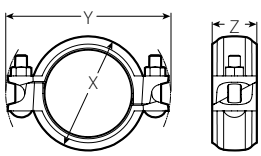
- When assembling Style 009V, Style 009N or Style 109 couplings onto end caps, take additional care to make certain the end cap is fully seated against the gasket end stop. For Style 009V, Style 009N couplings, use FireLock No. 006 end caps containing the "EZ" marking on the inside face or No. 60 end caps containing the "QV EZ" marking on the inside face. Non-Victaulic end cap products shall not be used with Style 009V, Style 009N or Style 109 couplings. IMPORTANT: Gaskets intended for the Style 009 or Style 009V couplings cannot be used with the Style 009N or Style 109 coupling. There is no interchanging of gaskets or housings between coupling styles.
- **Use Of FlushSeal Gaskets For Dry Pipe Systems** Style 009V, Style 009N or Style 109 couplings are supplied with Grade "E" Type A gaskets. These gaskets include an integral pipe stop, that once installed provides the similar benefits as a FlushSeal gasket for dry pipe systems. It should be noted that standard Victaulic FlushSeal gaskets cannot be used with the Style 009V, Style 009N or Style 109 couplings.
- The Allowable Pipe End Separation dimension shown is for system layout purposes only. Style 009V, Style 009N or Style 109 Installation-Ready rigid couplings are considered rigid connections and will not accommodate expansion/contraction or angular movement of the piping system. Contact Victaulic for torsional resistance information.

4.1 DIMENSIONS

Style 009N Two-Bolt *Installation-Ready* Coupling



Style 009N Pre-Assembled



Style 009N Joint Assembled

Size		Maximum Working Pressure[2]	Maximum End Load[2]	Allow. Pipe End Separation[3]	Bolt/Nut		Dimensions					Approx. Weight (Each)
							Pre-assembled		Joint Assembled			
Nominal inches DN	Actual Outside Diameter inches mm	psi kPa	lb N	inches mm	Qty.	Size inches mm	X inches mm	Y inches mm	X inches mm	Y inches mm	Z inches mm	lb kg
1¼ DN32	1.660 42.4	365 2517	790 3514	0.10 2.54	2	⅜ × 2 M10 x 51	3.13 79	5.00 127	2.75 70	5.00 127	2.00 51	1.4 0.6
1½ DN40	1.900 48.3	365 2517	1035 4604	0.10 2.54	2	⅜ × 2 M10 x 51	3.38 86	5.13 130	3.00 76	5.13 130	2.00 51	1.5 0.7
2 DN50	2.375 60.3	365 2517	1617 7193	0.12 3.05	2	⅜ × 2½ M10 x 63	4.00 102	5.63 143	3.50 89	5.63 143	2.00 51	1.9 0.9
2½	2.875 73.0	365 2517	2370 10542	0.12 3.05	2	⅜ × 2½ M10 x 63	4.50 114	6.13 156	4.00 102	6.13 156	2.00 51	2.1 1.0
DN65	3.000 76.1	365 2517	2580 11476	0.12 3.05	2	⅜ × 2½ M10 x 63	4.63 118	6.00 152	4.13 105	6.13 156	2.00 51	2.1 1.0
3 DN80	3.500 88.9	365 2517	3512 15622	0.12 3.05	2	⅜ × 2½ M10 x 63	5.13 130	6.75 171	4.63 117	6.75 171	2.00 51	2.3 1.0
4 DN100	4.500 114.3	365 2517	5805 25822	0.17 4.32	2	⅜ × 2½ M10 x 63	6.00 152	7.88 200	5.63 143	7.50 191	2.13 54	2.9 1.3
	4.250 108.0	365 2517	5178 23020	0.17 4.32	2	⅜ × 2½ M10 x 63	5.63 152	7.38 1.87	5.38 137	7.38 187	2.13 54	3.1 1.4
5	5.563 141.3	365 2517	8872 39456	0.17 4.32	2	½ × 3 M12 x 76	7.25 184	9.25 235	6.75 171	9.13 232	2.25 57	5.0 2.3
	5.250 133.0	365 2517	7901 35106	0.17 4.32	2	½ × 3 M12 x 76	6.63 168	9.00 229	6.38 162	9.00 229	2.25 57	4.8 2.2
DN125	5.500 139.7	365 2517	8672 38529	0.17 4.32	2	½ × 3 M12 x 76	6.88 175	9.25 235	6.75 171	9.13 232	2.25 57	4.9 2.2
6 DN150	6.625 168.3	365 2517	12582 44469	0.17 4.32	2	½ × 3¼ M12 x 83	8.38 213	10.38 264	7.88 200	10.13 257	2.25 57	6.0 2.7
	6.250 159.0	365 2517	11198 49753	0.17 4.32	2	½ × 3¼ M12 x 83	7.88 200	10.00 254	7.38 187	9.88 251	2.25 57	5.6 2.5
	6.500 165.1	365 2517	12112 53813	0.17 4.32	2	½ × 3¼ M12 x 83	8.00 203	10.25 260	7.75 197	10.13 257	2.25 57	6.0 2.7
8 DN200	8.625 219.1	365 2517	21326 94863	0.17 4.32	2	⅝ × 4 M16 x 101	10.88 276	13.38 340	10.25 260	13.13 333	2.50 64	11.4 5.2
	8.515 216.3	365 2517	20712 55968	0.17 4.32	2	⅝ × 4 M16 x 101	10.63 270	13.25 337	10.25 260	10.13 257	2.63 67	11.4 5.2
10 DN250	10.750 273.0	300 2068	27229 121121	0.25 6.4	2	⅞ × 6½ M22 x 165	13.75 349	17.00 432	13.25 337	17.13 435	2.75 70	22.6 10.3
12 DN300	12.750 323.9	300 2068	38303 170380	0.25 6.4	2	⅞ × 6½ M22 x 165	16.00 406	19.00 483	15.50 394	19.13 486	2.75 70	27.6 12.5

[2] Working Pressure and End Load are total, from all internal and external loads, based on standard weight (ANSI) steel pipe, standard roll or cut grooved in accordance with Victaulic specifications. See the Listings/Approvals section of this publication for ratings on other pipe.

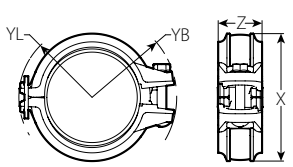
[3] The allowable pipe separation dimension shown is for system layout purposes only. Style 009N couplings are considered rigid connections and will not accommodate expansion or contraction of the piping system.

NOTES

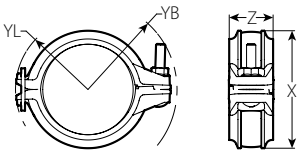
- When assembling Style 009V, Style 009N or Style 109 couplings onto end caps, take additional care to make certain the end cap is fully seated against the gasket end stop. For Style 009V, Style 009N couplings, use FireLock No. 006 end caps containing the "EZ" marking on the inside face or No. 60 end caps containing the "QV EZ" marking on the inside face. Non-Victaulic end cap products shall not be used with Style 009V, Style 009N or Style 109 couplings. IMPORTANT: Gaskets intended for the Style 009 or Style 009V couplings cannot be used with the Style 009N or Style 109 coupling. There is no interchanging of gaskets or housings between coupling styles.
- **Use Of FlushSeal Gaskets For Dry Pipe Systems** Style 009V, Style 009N or Style 109 couplings are supplied with Grade "E" Type A gaskets. These gaskets include an integral pipe stop, that once installed provides the similar benefits as a FlushSeal gasket for dry pipe systems. It should be noted that standard Victaulic FlushSeal gaskets cannot be used with the Style 009V, Style 009N or Style 109 couplings.
- The Allowable Pipe End Separation dimension shown is for system layout purposes only. Style 009V, Style 009N or Style 109 Installation-Ready rigid couplings are considered rigid connections and will not accommodate expansion/contraction or angular movement of the piping system. Contact Victaulic for torsional resistance information.

4.2 DIMENSIONS

Style 109 One-Bolt *Installation-Ready* Coupling



Style 109 Pre-Assembled



Style 109 Joint Assembled

Size		Max. Working Pressure	Max. End Load	Allow. Pipe End Sep. Maximum	Bolt/Nut		Dimensions								Weight
							Pre-Assembled				Assembled				
Nominal inches DN	Actual Outside Diameter inches mm	psi kPa	Lbs. N	inches mm	Qty.	Size inches mm	YL inches mm	YB inches mm	X inches mm	Z inches m m	YL inches mm	YB inches mm	X inches mm	Z inches mm	Approx. (Each) lb kg
1 ¼ DN32	1.660 42.4	365 2517	790 3514	0.10 2.54	1	⅜ x 2 ¼ M10 x 57	1.97 50	2.49 63	3.17 81	1.95 50	1.93 49	2.59 66	2.84 72	1.95 50	1.5 0.7
1 ½ DN40	1.900 48.3	365 2517	1035 4603	0.10 2.54	1	⅜ x 2 ¼ M10 x 57	2.13 54	2.60 66	3.41 87	1.95 50	2.1 53	2.68 68	3.07 78	1.95 50	1.6 0.7
2 DN50	2.375 60.3	365 2517	1617 7192	0.12 3.048	1	⅜ x 2 ¼ M10 x 57	2.32 59	2.85 72	3.76 96	1.98 50	2.29 58	2.95 75	3.45 88	1.98 50	1.9 0.9
2 ½	2.875 73.0	365 2517	2370 10540	0.12 3.048	1	⅜ x 2 ¼ M10 x 57	2.63 67	3.09 78	4.29 109	1.99 51	2.61 66	3.15 80	3.93 100	1.99 51	2.1 1.0
DN65	3.000 76.1	365 2517	2580 11476	0.12 3.048	1	7⁄16 x 2 ¾ M11 x 69	2.68 68	3.22 82	4.56 116	2.03 52	2.64 67	3.45 88	4.22 107	2.03 52	2.4 1.1
3 DN80	3.500 88.9	365 2517	3512 15620	0.12 3.048	1	7⁄16 x 2 ¾ M11 x 69	2.93 74	3.53 90	5.13 130	2.07 53	2.89 73	3.78 96	4.67 119	2.07 53	2.7 1.2
4 DN100	4.500 114.3	300 2068	4771 21223	0.17 4.318	1	7⁄16 x 2 ¾ M11 x 69	3.47 88	4.01 102	6.03 153	2.08 53	3.43 87	4.22 107	5.56 141	2.08 53	3.5 1.6

[4] Working Pressure and End Load are total, from all internal and external loads, based on standard weight (ANSI) steel pipe, standard roll or cut grooved in accordance with Victaulic specifications. See the Listings/Approvals section of this publication for ratings on other pipe.

[5] The allowable pipe separation dimension shown is for system layout purposes only. Style 109 couplings are considered rigid connections and will not accommodate expansion or contraction of the piping system.

NOTES

- When assembling Style 009V, Style 009N or Style 109 couplings onto end caps, take additional care to make certain the end cap is fully seated against the gasket end stop. For Style 009V, Style 009N couplings, use FireLock No. 006 end caps containing the "EZ" marking on the inside face or No. 60 end caps containing the "QV EZ" marking on the inside face. Non-Victaulic end cap products shall not be used with Style 009V, Style 009N or Style 109 couplings. IMPORTANT: Gaskets intended for the Style 009 or Style 009V couplings cannot be used with the Style 009N or Style 109 coupling. There is no interchanging of gaskets or housings between coupling styles.
- **Use Of FlushSeal Gaskets For Dry Pipe Systems** Style 009V, Style 009N or Style 109 couplings are supplied with Grade "E" Type A gaskets. These gaskets include an integral pipe stop, that once installed provides the similar benefits as a FlushSeal gasket for dry pipe systems. It should be noted that standard Victaulic FlushSeal gaskets cannot be used with the Style 009V, Style 009N or Style 109 couplings.
- The Allowable Pipe End Separation dimension shown is for system layout purposes only. Style 009V, Style 009N or Style 109 Installation-Ready rigid couplings are considered rigid connections and will not accommodate expansion/contraction or angular movement of the piping system. Contact Victaulic for torsional resistance information.

5.0 PERFORMANCE

Style 009V Two-Bolt Installation-Ready Coupling Listings/Approvals

Size		cULus		FM	
Nominal inches DN	Actual Outside Diameter inches mm	Sch. 10 psi kPa bar	Sch. 40 psi kPa bar	Sch. 10 psi kPa bar	Sch. 40 psi kPa bar
1 ¼ DN32	1.660 42.4	365 2516 25	365 2516 25	365 2515 25	365 2515 25
1 ½ DN40	1.900 48.3	365 2516 25	365 2516 25	365 2515 25	365 2515 25
2 DN50	2.375 60.3	365 2516 25	365 2516 25	365 2515 25	365 2515 25
2 ½	2.875 73.0	365 2516 25	365 2516 25	365 2515 25	365 2515 25
3 DN80	3.500 88.9	365 2516 25	365 2516 25	365 2515 25	365 2515 25
4 DN100	4.500 114.3	365 2516 25	365 2516 25	365 2515 25	365 2515 25
6 DN150	6.625 168.3	300 2068 20	365 2516 25	300 2065 20	365 2515 25
8 DN200	8.625 219.1	300[14] 2068[14] 20[14]	365 2516 25	300[13] 2065[13] 20[13]	365 2515 25
10 DN250	10.750 273.0	300[14] 2068[14] 20[14]	365 2516 25	300[13] 2065[13] 20[13]	365 2515 25
12 DN300	12.750 323.9	300[14] 2068[14] 20[14]	365 2516 25	300[13] 2065[13] 20[13]	365 2515 25

6 Listed/Approved for continuous use in wet and dry systems. Listed/Approved for dry systems -40° F/C and above. Please see the Victaulic InstallationManual I-009V for details concerning when supplemental lubrication is required.

8 FM approved for BS 1387 (EN 10255) Medium 3.6 mm pipe wall.

9 cULus listed for EN 10220 4.0 mm pipe wall.

10 cULus listed for EN 10255 4.5 mm pipe wall.

13 FM approved for 0.188" pipe wall.

14 cULus listed for 0.188" pipe wall.

15 cULus listed for JIS G3452 5.8mm pipe wall.

5.1 PERFORMANCE

Specialty Pipe
Style 009V Two-Bolt Installation-Ready Coupling Listings/Approvals

Pipe Type	Size	Pressure Rating	Pressure Rating
	inches DN	UL psi kPa bar	FM psi kPa bar
EF	1 ¼ – 4 DN32 – DN100	300 2068 20	300 2065 20
EL	1 ¼ – 2 DN32 – DN50	–	300 2065 20
MF	1 ¼ – 6 DN32 – DN150	300 2068 20	300 2065 20
FF	1 ½ – 4 DN40 – DN100	300 2068 20	300 2065 20
HF	1 ¼ – 4 DN32 – DN100	–	300 2065 20
	2 – 4 DN50 – DN100	300 2068 20	– – –
ET40	1 ¼ – 2 DN32 – DN50	300 2068 20	300 2065 20
EZT	1 ¼ – 2 DN32 – DN50	300 2068 20	300 2065 20
MT	1 ¼ – 2 DN32 – DN50	300 2068 20	300 2065 20
MLT	1 ¼ – 2 DN32 – DN50	300 2068 20	300 2065 20
Easy-Flow	1 ¼ – 4 DN32 – DN100	175 1206 12	300 2065 20
WG5, WG5E, WF5, WL7	1 ¼ – 4 DN32 – DN100	175 1206 12	–
WG7, WG7E	1 ¼ – 4 DN32 – DN100	175 1206 12	300 2065 20
WLS	1 ¼ – 2 DN32 – DN50	–	300 2065 20
GL	1 ¼ – 2 DN32 – DN50	–	300 2065 20

NOTES

- Easy Flow = Steel pipe manufactured by Borusan Mannesmann Boru
- EF = EDDY FLOW steel pipe manufactured by Bull Moose Tube Co.
- EL = EDDYLITE steel pipe manufactured by Bull Moose Tube Co.
- ET40 = Eddythread 40 steel pipe manufactured by Bull Moose Tube Co.
- EZF = EZ-Flow steel pipe manufactured by Northwest Pipe Co.
- EZT = EZ-Thread steel pipe manufactured by Youngstown Tube Co.
- FF = Fire-Flo steel pipe manufactured by Youngstown Tube Co.
- GL = GL steel pipe manufactured by Wheatland Tube Co.
- HF = Hydroflow sch 7 steel pipe manufactured by Nucor Tubular Products Inc.
- MF = Mega-Flow steel pipe manufactured by Wheatland Tube Co.
- MT = Mega-Thread steel pipe manufactured by Wheatland Tube Co.
- MLT = MLT steel pipe manufactured by Wheatland Tube Co
- WG5, WG5E, WF5 = WGalweld 5, WGalweld 5E, WFlow 5 steel pipe manufactured by Wuppermann Stahl GmbH.
- WG7, WG7E, WL7 = WGalweld 7, Wgalweld 7E, WLight 7 steel pipe manufactured by Wuppermann Stahl GmbH
- WLS = WLS steel pipe manufactured by Wheatland Tube Co.

5.2 PERFORMANCE

Style 009N Two-Bolt *Installation-Ready* Coupling Listings/Approvals[6]

The information provided below is based on the latest listing and approval data at the time of publication. Listings/Approvals are subject to change and/or additions by the approval agencies. Contact Victaulic for performance on other pipe and the latest listings and approvals.

Size		cULus		FM		VdS	LPCB
Nominal inches DN	Actual Outside Diameter inches mm	Sch. 10 psi kPa bar	Sch. 40 psi kPa bar	Sch. 10 psi kPa bar	Sch. 40 psi kPa bar	 psi kPa bar	 psi kPa bar
1 ¼ DN32	1.660 42.4	365 2516 25	365 2516 25	363 2503 25	363 2503 25	363 2503 25	363 2503 25
1 ½ DN40	1.900 48.3	365 2516 25	365 2516 25	363 2503 25	363 2503 25	363 2503 25	363 2503 25
2 DN50	2.375 60.3	365 2516 25	365 2516 25	363 2503 25	363 2503 25	363 2503 25	363 2503 25
2 ½	2.875 73.0	365 2516 25	365 2516 25	363 2503 25	363 2503 25	–	363 2503 25
DN65	3.000 76.1	365[7] 2516[7] 25[7]	–	363[8] 2503[8] 25[8]	–	363 2503 25	363 2503 25
3 DN80	3.500 88.9	365 2516 25	365 2516 25	363 2503 25	363 2503 25	363 2503 25	363 2503 25
4 DN100	4.500 114.3	365 2516 25	365 2516 25	363 2503 25	363 2503 25	363 2503 25	363 2503 25
	4.250 108.0	–	–	363 2503 25	363 2503 25	–	–
5	5.563 141.3	365 2516 25	365 2516 25	363 2503 25	363 2503 25	232 1600 16	363 2503 25
	5.250 133.0	–	–	363[8] 2503[8] 25[8]	–	–	–
DN125	5.500 139.7	290[9] 1999[9] 20[9]	–	363[8] 2503[8] 25[8]	–	232 1600 16	363 2503 25
6 DN150	6.625 168.3	300 2068 20	365 2516 25	300 2068 20	363 2503 25	232 1600 16	363 2503 25
	6.250 159	–	–	363[8] 2503[8] 25[8]	–	–	–

6 Listed/Approved for continuous use in wet and dry systems. Listed/Approved for dry systems -40° F/C and above. Please see the Victaulic InstallationManual I-109 for details concerning when supplemental lubrication is required.

7 cULus listed for DIN 2458 (EN 10220) 2.6 mm pipe wall.

8 FM approved for BS 1387 (EN 10255) Medium 3.6 mm pipe wall.

9 cULus listed for EN 10220 4.0 mm pipe wall.

10 cULus listed for EN 10255 4.5 mm pipe wall.

11 With optional stainless steel fasteners, cULus Listed to 175psi/1207 kPa/12 bar and FM Approved to the FM ratings shown in the above table. The stainless steel fasteners have a marking designation of "316" on the end face of the bolt.

12 cUL listed to 250 psi/1720 kPa /17 bar.

13 FM approved for 0.188" pipe wall.

14 cULus listed for 0.188" pipe wall.

15 cULus Listed for JIS G3452 pipe.

5.2 PERFORMANCE (CONTINUED)

Style 009N Two-Bolt *Installation-Ready* Coupling Listings/Approvals[6]

The information provided below is based on the latest listing and approval data at the time of publication. Listings/Approvals are subject to change and/or additions by the approval agencies. Contact Victaulic for performance on other pipe and the latest listings and approvals.

Size		cULus		FM		VdS	LPCB
Nominal inches DN	Actual Outside Diameter inches mm	Sch. 10 psi kPa bar	Sch. 40 psi kPa bar	Sch. 10 psi kPa bar	Sch. 40 psi kPa bar	 psi kPa bar	 psi kPa bar
	6.500 165.1	290[10] 1999[10] 20[10]	–	363[8] 2503[8] 25[8]	–	–	363 2503 25
8 DN200	8.625 219.1	300[14] 2068[14] 20[14]	365 2516 25	300[13] 2068[13] 20[13]	363 2503 25	232 1600 16	363 2503 25
	8.515 216.3	290 1999 20	–	363[8] 2503[8] 25[8]	–	–	–
10 DN250	10.750 273.0	300[14] 2068[14] 20[14]	300 2068 20	300[13] 2068[13] 20[13]	300 2068 20	–	290 2000 20
12 DN300	12.750 323.9	300[12 14] 2068[12 14] 20[12 14]	300 2068 20	250[13] 1720[13] 17[13]	300 2068 20	–	290 2000 20

6 Listed/Approved for continuous use in wet and dry systems. Listed/Approved for dry systems -40° F/C and above. Please see the Victaulic InstallationManual I-109 for details concerning when supplemental lubrication is required.

7 cULus listed for DIN 2458 (EN 10220) 2.6 mm pipe wall.

8 FM approved for BS 1387 (EN 10255) Medium 3.6 mm pipe wall.

9 cULus listed for EN 10220 4.0 mm pipe wall.

10 cULus listed for EN 10255 4.5 mm pipe wall.

11 With optional stainless steel fasteners, cULus Listed to 175psi/1207 kPa/12 bar and FM Approved to the FM ratings shown in the above table. The stainless steel fasteners have a marking designation of "316" on the end face of the bolt.

12 cUL listed to 250 psi/1720 kPa /17 bar.

13 FM approved for 0.188" pipe wall.

14 cULus listed for 0.188" pipe wall.

15 cULus Listed for JIS G3452 pipe.

5.3 PERFORMANCE

Specialty Pipe
Style 009N Two-Bolt *Installation-Ready* Coupling Listings/Approvals

Pipe Type	Size inches DN	Pressure Rating UL psi kPa bar	Pressure Rating FM psi kPa bar
EF	1 ¼ – 4 DN32 – DN100	300 2068 20	–
EL	1 ¼ – 2 DN32 – DN50	300 2068 20	300 2068 20
EZF	3-4 DN80 – DN100	300 2068 20	–
MF	1 ¼ – 4 DN32 – DN100	300 2068 20	300 2068 20
	6 DN150	175 1206 12	175 1207 12
FF	1 ½ – 4 DN40 – DN100	300 2068 20	–
ET40	1 ¼ – 2 DN32 – DN50	300 2068 20	–
EZT	1 ¼ – 2 DN32 – DN50	300 2068 20	300 2068 20
MT	1 ¼ – 2 DN32 – DN50	300 2068 20	300 2068 20
MLT	1 ¼ – 2 DN32 – DN50	–	300 2068 20
Easy Flow	1 ¼ – 4 DN32 – DN100	–	300 2068 20
WG5, WG5E, WF5, WG7, WG7E,WL7	1 ¼ – 4 DN32 – DN100	300 2068 24	300 2068 20
TF (Tex-Flow)	2 ½ – 4 DN65 - DN100	–	300 2068 20
WLS	1 ¼ – 2 DN32 – DN50	–	300 2068 20
GL	1 ¼ – 2 DN32 – DN50	–	300 2068 20

NOTES

- Easy Flow = Steel pipe manufactured by Borusan Mannesmann Boru
- EF = EDDY FLOW steel pipe manufactured by Bull Moose Tube Co.
- EL = EDDYLITE steel pipe manufactured by Bull Moose Tube Co.
- ET40 = Eddythread 40 steel pipe manufactured by Bull Moose Tube Co.
- EZF = EZ-Flow steel pipe manufactured by Northwest Pipe Co.
- EZT = EZ-Thread steel pipe manufactured by Youngstown Tube Co.
- FF = Fire-Flo steel pipe manufactured by Youngstown Tube Co.
- GL = GL steel pipe manufactured by Wheatland Tube Co.
- MF = Mega-Flow steel pipe manufactured by Wheatland Tube Co.
- MT = Mega-Thread steel pipe manufactured by Wheatland Tube Co.
- MLT = MLT steel pipe manufactured by Wheatland Tube Co
- TF = Tex-Flow steel pipe manufactured by Tex-Tube Co.
- WG5, WG5E, WF5 = WGalweld 5, WGalweld 5E, WFlow 5 steel pipe manufactured by Wuppermann Stahl GmbH.
- WG7, WG7E, WL7 = WGalweld 7, Wgalweld 7E, WLight 7 steel pipe manufactured by Wuppermann Stahl GmbH
- WLS = WLS steel pipe manufactured by Wheatland Tube Co.

5.4 PERFORMANCE

Style 109 One-Bolt *Installation-Ready* Coupling Listings/Approvals[15]

The information provided below is based on the latest listing and approval data at the time of publication. Listings/Approvals are subject to change and/or additions by the approvals agencies. Contact Victaulic for performance on other pipe and the latest listings and approvals.

Size		cULus		FM		VdS	LPCB
Nominal inches DN	**Actual Outside Diameter** inches mm	**Sch. 10** psi kPa bar	**Sch. 40** psi kPa bar	**Sch. 10** psi kPa bar	**Sch. 40** psi kPa bar	 psi kPa bar	 psi kPa bar
1 ¼ DN32	1.660 42.4	365 2516 25	365 2516 25	365 2517 25	365 2517 25	232 1600 16	363 2503 25
1 ½ DN40	1.900 48.3	365 2516 25	365 2516 25	365 2517 25	365 2517 25	232 1600 16	363 2503 25
2 DN50	2.375 60.3	365 2516 25	365 2516 25	365 2517 25	365 2517 25	232 1600 16	363 2503 25
2 ½	2.875 73.0	365 2516 25	365 2516 25	365 2517 25	365 2517 25	–	–
DN65	3.000 76.1	–	–	365 2517 25	365 2517 25	232 1600 16	363 2503 25
3 DN80	3.500 88.9	365 2516 25	365 2516 25	365 2517 25	365 2517 25	232 1600 16	363 2503 25
4 DN100	4.500 114.3	300 2068 20	300 2068 20	300 2068 20	300 2068 20	–	290 2000 20

[15] Listed/Approved for continuous use in wet and dry systems. Listed/Approved for dry systems -40° F/C and above. Please see the Victaulic Installation Manual I-109 for details concerning when supplemental lubrication is required.

NOTE

- With optional stainless steel fasteners, cULus Listed to 300 psi/2068 kPa/20.6 bar and FM Approved to the FM ratings shown in the above table. The stainless steel fasteners have a marking designation of "316" on the head of the bolt.

5.5 PERFORMANCE

Specialty Pipe
Style 109 One-Bolt *Installation-Ready* Coupling Listings/Approvals

Pipe Type	Size inches DN	Pressure Rating cULus psi kPa bar	 FM psi kPa bar
EF	1 ¼ – 2 ½ DN32 – 73.0 mm	–	300 2068 20
	1 ½ – 2 ½ DN40 – 73.0 mm	300 2068 20	–
	3 – 4 DN80 – DN100	300 2068 20	300 2068 20
Easy Flow	1 ¼ – 2 DN32 – DN50	–	300 2068 20
	3 – 4 DN80 – DN100	–	300 2068 20
EL	1 ¼ – 2 DN32 – DN50	–	300 2068 20
ET40	1 ¼ – 2 DN32 – DN50	300 2068 20	300 2068 20
EZT	1 ¼ – 2 DN32 – DN50	–	300 2068 20
	1 ½ – 2 DN40 – DN50	300 2068 20	–
FF	1 ½ – 4 DN40 – DN100	300 2068 20	300 2068 20
GL	1 ¼ – 2 DN32 – DN50	–	300 2068
MF	1 ¼ – 4 DN32 – DN100	300 2068 20	300 2068 20
MT	1 ¼ – 2 DN32 – DN50	300 2068 20	300 2068 20
MLT	1 ¼ – 2 DN32 – DN50	300 2068 20	300 2068 20

NOTES

- EF = EDDY FLOW steel pipe manufactured by Bull Moose Tube Co.
- Easy Flow = Easy Flow steel pipe manufactured by Borusan Mannesmann Boru.
- EL = EDDYLITE steel pipe manufactured by Bull Moose Tube Co.
- ET40 = Eddythread 40 steel pipe manufactured by Bull Moose Tube Co.
- EZT = EZ-Thread steel pipe manufactured by Youngstown Tube Co.
- FF = Fire-Flo steel pipe manufactured by Youngstown Tube Co.
- GL = GL steel pipe manufactured by Wheatland Tube Co.
- MF = Mega-Flow steel pipe manufactured by Wheatland Tube Co.
- MT = Mega-Thread steel pipe manufactured by Wheatland Tube Co.
- MLT = MLT steel pipe manufactured by Wheatland Tube Co.
- TF = Tex-Flow steel pipe manufactured by Tex-Tube Co.
- WG5, WG5E, WF5 = WGalweld 5, WGalweld 5E, and WFlow 5 steel pipe manufactured by Wuppermann Stahl GmbH
- WG7, WG7E, WL7 = WGalweld 7, WGalweld 7E, and WLight 7 steel pipe manufactured by Wuppermann Stahl GmbH.
- WLS = WLS steel pipe manufactured by Wheatland Tube Co.

5.5 PERFORMANCE (CONTINUED)

Specialty Pipe
Style 109 One-Bolt *Installation-Ready* Coupling Listings/Approvals

Pipe Type	Size inches DN	Pressure Rating cULus psi kPa bar	Pressure Rating FM psi kPa bar
TF	2½ – 4 73.00 mm – DN100	–	300 2068 20
WG5, WG5E, WF5, WL7	1¼ – 4 DN32 – DN100	300 2068 20	–
WG7, WG7E	1¼ – 4 DN32 – DN100	300 2068 20	300 2068 20
WLS	1¼ – 2 DN32 – DN50	–	300 2068 20

NOTES

- EF = EDDY FLOW steel pipe manufactured by Bull Moose Tube Co.
- Easy Flow = Easy Flow steel pipe manufactured by Borusan Mannesmann Boru.
- EL = EDDYLITE steel pipe manufactured by Bull Moose Tube Co.
- ET40 = Eddythread 40 steel pipe manufactured by Bull Moose Tube Co.
- EZT = EZ-Thread steel pipe manufactured by Youngstown Tube Co.
- FF = Fire-Flo steel pipe manufactured by Youngstown Tube Co.
- GL = GL steel pipe manufactured by Wheatland Tube Co.
- MF = Mega-Flow steel pipe manufactured by Wheatland Tube Co.
- MT = Mega-Thread steel pipe manufactured by Wheatland Tube Co.
- MLT = MLT steel pipe manufactured by Wheatland Tube Co.
- TF = Tex-Flow steel pipe manufactured by Tex-Tube Co.
- WG5, WG5E, WF5 = WGalweld 5, WGalweld 5E, and WFlow 5 steel pipe manufactured by Wuppermann Stahl GmbH
- WG7, WG7E, WL7 = WGalweld 7, WGalweld 7E, and WLight 7 steel pipe manufactured by Wuppermann Stahl GmbH.
- WLS = WLS steel pipe manufactured by Wheatland Tube Co.

6.0 NOTIFICATIONS

⚠ WARNING

- **Read and understand all instructions before attempting to install any Victaulic products.**
- **Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**
- **Wear safety glasses, hardhat, and foot protection.**

Failure to follow these instructions could result in death or serious personal injury and property damage.

- **These products shall be used only in fire protection systems that are designed and installed in accordance with current, applicable National Fire Protection Association (NFPA 13, 13D, 13R, etc.) standards, or equivalent standards, and in accordance with applicable building and fire codes. These standards and codes contain important information regarding protection of systems from freezing temperatures, corrosion, mechanical damage, etc.**
- **The installer shall understand the use of this product and why it was specified for the particular application.**
- **The installer shall understand common industry safety standards and potential consequences of improper product installation.**
- **It is the system designer's responsibility to verify suitability of materials for use with the intended fluid media within the piping system and external environment.**
- **The material specifier shall evaluate the effect of chemical composition, pH level, operating temperature, chloride level, oxygen level, and flow rate on materials to confirm system life will be acceptable for the intended service.**

Failure to follow installation requirements and local and national codes and standards could compromise system integrity or cause system failure, resulting in death or serious personal injury and property damage.

NOTICE

- **Victaulic does not recommend the use of any furnace butt-welded pipe with sizes 2"/DN50 and smaller Victaulic gasketed joint products. This includes, but is not limited to, ASTM A53 Type F pipe.**

NOTE

- If using coated pipe, please refer to the installation instructions for pipe preparation details.

7.0 REFERENCE MATERIALS

05.01: Seal Selection Guide

25.01: Original Groove System (OGS) Groove Specifications

I-009N: Installation Instructions FireLock EZ™ Rigid Coupling Style 009N

I-009V: Installation Instructions FireLock™ Installation-Ready™ Rigid Coupling Style 009V

I-100: Victaulic Field Installation Handbook

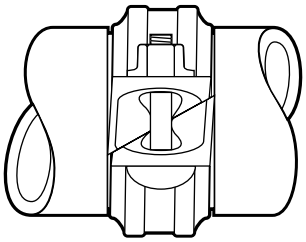
I-109: Installation Instructions FireLock™ One-Bolt Rigid Coupling Style 109

I-ENDCAP: Victaulic End Caps Installation Instructions

I-IMPACT: Impact Tool Usage Guidelines

Victaulic® FireLock™ Rigid Coupling
Style 005H

10.02



Exaggerated for clarity

1.0 PRODUCT DESCRIPTION

Available Sizes

- 1 ¼ – 8"/DN32 – DN200

Maximum Working Pressure

- Up to 350 psi/2413 kPa

Function

- Joins carbon steel pipe with grooved ends conforming to publication 25.01
- This product is designed for fire protection systems only

Pipe Material

- Schedule 10, Schedule 40 or specialty carbon steel pipe listed in Section 5. For use with alternative materials and wall thicknesses please contact Victaulic
- For exceptions reference section 6.0 Notifications

2.0 CERTIFICATION/LISTINGS

104-1a/02

ALWAYS REFER TO ANY NOTIFICATIONS AT THE END OF THIS DOCUMENT REGARDING PRODUCT INSTALLATION, MAINTENANCE OR SUPPORT.

3.0 SPECIFICATIONS – MATERIAL

Housing: Ductile iron conforming to ASTM A-536, grade 65-45-12. Ductile iron conforming to ASTM A-395, grade 65-45-15, is available upon special request.

Housing Coating: (specify choice)

☐ Orange coating.

☐ Red coating (standard for EMEA-I and Asia Pacific).

☐ Optional: Hot dipped galvanized.

Coupling Gasket (specify choice):

☐ Grade "E" EPDM Type A Vic-Plus™ Gasket System[1]

EPDM (Violet color code). FireLock products have been Listed by Underwriters Laboratories Inc. and Approved by Factory Mutual Research for wet and dry (oil free air) sprinkler services up to the rated working pressure using the Grade "E" Type A Vic-Plus™ Gasket System, requiring no field lubrication for most installation conditions.

☐ Grade "L" silicone

Recommended for dry heat, air without hydrocarbons to +350°F and certain chemical service.

For dry services, Victaulic continues to recommend the use of Grade "E" Type A FlushSeal® Gasket. Contact Victaulic for details.

[1] Standard gasket and FlushSeal gasket approved for dry pipe systems to –40°F/–40°C. Based on "typical" pipe surface conditions, supplemental lubricant is recommended for services installed below 0°F/–18°C and for all dry pipe systems or systems to be subjected to air tests prior to being filled with water. Supplemental lubrication may also be required on pipe with raised or undercut weld seams or pipe that has voids and/or cracks at the weld seams. Victaulic continues to recommend the use of FlushSeal gaskets for dry services.

NOTE

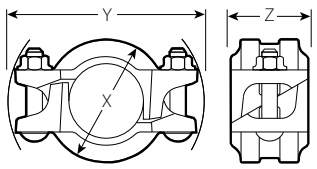
- Additional gasket styles are available. Contact Victaulic for details.

Bolts/Nuts: Carbon steel oval neck track bolt(s) meeting the mechanical property requirements of ASTM A449 (imperial) and ISO 898-1 Class 9.8 (M10-M16) Class 8.8 (M20 and greater). Carbon steel hex nuts meeting the mechanical property requirements of ASTM A563 Grade B (imperial) and ASTM A563M Class 9 (metric). Track bolts and hex nuts are zinc electroplated per ASTM B633 Fe/Zn 5, finish Type III (imperial) or Type II (metric).

4.0 DIMENSIONS

Style 005H

Rated for wet and dry sprinkler systems at 350 psi/2413 kPa for 1 ¼ – 4"/32 – 100 mm sizes and 300 psi /2068 kPa for 4 ¼ – 8"/108 – 200 mm sizes; Schedule 10 roll grooved or Schedule 40 cut or roll grooved steel pipe. Style 005H is rigid and does not accommodate expansion, contraction or angular deflection.



Style 005H

Size		Maximum Working Pressure[1,4]	Maximum End Load[1]	Allow. Pipe End Separation[2]	Bolt/Nut[3]	Dimensions			Approx. Weight Each
Nominal inches mm	Actual Outside Diameter inches mm	psi kPa	lbs N	inches mm	No –size inches	X inches mm	Y inches mm	Z inches mm	lbs kg
1 ¼ 32	1.660 42.4	350 2413	755 3370	0.05 1.2	2 – ⅜ × 2 ¼	2.75 70	4.50 114	1.88 48	1.2 0.5
1 ½ 40	1.900 48.3	350 2413	990 4415	0.05 1.2	2 – ⅜ × 2 ¼	3.00 76	4.75 121	1.88 48	1.2 0.5
2 50	2.375 60.3	350 2413	1550 6900	0.07 1.7	2 – ⅜ × 2 ½	3.50 89	5.25 133	1.88 48	1.6 0.7
2 ½ 65	2.875 73.0	350 2413	2270 10110	0.07 1.7	2 – ⅜ × 2 ½	4.00 102	5.75 146	1.88 48	1.9 .09
76.1 mm	3.000 76.1	350 2413	2475 11010	0.07 1.7	2 – ⅜ × 2 ½	4.13 105	5.75 146	1.88 48	1.9 0.9
3 80	3.500 88.9	350 2413	3365 14985	0.07 1.7	2 – ⅜ × 2 ½	4.63 118	6.13 156	1.88 48	2.1 1.0
4 100	4.500 114.3	350 2413	5565 24770	0.16 4.1	2 – ⅜ × 2 ½	5.75 146	7.25 184	2.13 54	3.1 1.4
108.0 mm	4.250 108.0	300 2068	4255 18940	0.16 4.1	2 – ⅜ × 2 ½	5.63 143	7.25 184	2.13 54	3.1 1.4
5 125	5.563 141.3	300 2068	7290 32445	0.16 4.1	2 – ½ × 3	6.88 175	9.00 229	2.13 54	4.5 2.0
133.0 mm	5.250 133.0	300 2068	6495 28900	0.16 4.1	2 – ½ × 2 ¾	6.63 168	9.00 229	2.13 54	4.5 2.0
139.7 mm	5.500 139.7	300 2068	7125 31715	0.16 4.1	2 – ½ × 2 ¾	6.88 175	9.00 229	2.13 54	4.8 2.2
6 150	6.625 168.3	300 2068	10340 46020	0.16 4.1	2 – ½ × 3	8.00 203	10.00 254	2.13 53	5.0 2.3
159.0 mm	6.250 159.0	300 2068	9200 40955	0.16 4.1	2 – ½ × 2 ¾	7.63 194	10.00 254	2.13 54	5.5 2.5
165.1 mm	6.500 165.1	300 2068	9955 44295	0.16 4.1	2 – ½ × 3	8.15 207	10.00 254	2.13 54	5.5 2.5
8 200	8.625 219.1	300 2068	17525 78000	0.19 4.8	2 – ⅝ × 4 ¼	10.50 267	13.14 334	2.63 67	11.3 5.1

1 Working Pressure and End Load are total, from all internal and external loads, based on standard weight (ANSI) steel pipe, standard roll or cut grooved in accordance with Victaulic specifications. Contact Victaulic for performance on other pipe. WARNING: FOR ONE TIME FIELD TEST ONLY, the Maximum Joint Working Pressure may be increased to 1½ times the figures shown.

2 The allowable pipe separation dimension shown is for system layout purposes only. Style 005H couplings are considered rigid connections and will not accommodate expansion or contraction of the piping system.

3 Number of bolts required equals number of housing segments. Metric thread size bolts are available (color coded gold) for all coupling sizes upon request. Contact Victaulic for details.

4 Style 005H couplings are VdS and LPC Approved to 16 Bar/235 psi.

5.0 PERFORMANCE

Style 005H

The information provided below is based on the latest listing and approval data at the time of publication. Listings/ Approvals are subject to change and/or additions by the approvals agencies.

Contact Victaulic for performance on other pipe and the latest listings and approvals.

Related Working Pressure psi					Related Working Pressure psi					Related Working Pressure psi				
Pipe Sch.	Size inches	UL	ULC	FM	Pipe Sch.	Size inches	UL	ULC	FM	Pipe Sch.	Size inches	UL	ULC	FM
5	1¼ – 3	175	175	175	EL	1¼ – 2	300	N/A	N/A	MT	1¼ – 2	300	N/A	N/A
10, 40	1¼ – 3	350	350	350	ET	1¼ – 2	300	N/A	N/A	STF	1¼ – 4	N/A	N/A	300
	5 – 8	300	300	300	EZ	4 – 6	300[6]	N/A	300	Steady Thd.	1¼ – 2	N/A	N/A	300
BLT	1¼ – 2	300	300	N/A	FF	1¼ – 4	N/A	N/A	300	TF	3 – 8	N/A	N/A	300
DF	1¼ – 4	300	300	300	GAL -7	1¼ – 2	300	N/A	N/A	WLS	1¼ – 2	300	300	N/A
DT	1¼ – 2	300	300	N/A	MLT	1¼ – 2	300	N/A	N/A	XL	1¼ – 3	300	300	300
EF	1¼ – 4	175[7]	N/A	175	MF	1¼ – 4	300	N/A	300[5]					

[5] FM approved for service in 1 ½ – 4" pipe.

[6] UL Listed for service up to 4" pipe only.

[7] UL Listed for service up to 3" only.

6.0 NOTIFICATIONS

⚠ WARNING

- **Read and understand all instructions before attempting to install any Victaulic products.**
- **Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**
- **Wear safety glasses, hardhat, and foot protection.**

Failure to follow these instructions could result in death or serious personal injury and property damage.

- **These products shall be used only in fire protection systems that are designed and installed in accordance with current, applicable National Fire Protection Association (NFPA 13, 13D, 13R, etc.) standards, or equivalent standards, and in accordance with applicable building and fire codes. These standards and codes contain important information regarding protection of systems from freezing temperatures, corrosion, mechanical damage, etc.**
- **The installer shall understand the use of this product and why it was specified for the particular application.**
- **The installer shall understand common industry safety standards and potential consequences of improper product installation.**
- **It is the system designer's responsibility to verify suitability of materials for use with the intended fluid media within the piping system and external environment.**
- **The material specifier shall evaluate the effect of chemical composition, pH level, operating temperature, chloride level, oxygen level, and flow rate on materials to confirm system life will be acceptable for the intended service.**

Failure to follow installation requirements and local and national codes and standards could compromise system integrity or cause system failure, resulting in death or serious personal injury and property damage.

NOTICE

- **Victaulic does not recommend the use of any furnace butt-welded pipe with sizes 2"/DN50 and smaller Victaulic gasketed joint products. This includes, but is not limited to, ASTM A53 Type F pipe.**

7.0 REFERENCE MATERIALS

10.01 Victaulic Products for Fire Protection Piping Systems – Regulatory Approval Reference Guide

I-100 Victaulic Field Installation Handbook

FlameGuard®
CPVC FIRE SPRINKLER PRODUCTS

FG-2-0215

Complete System of Pipe, Fittings & Solvent Cement
Corrosion Resistant • Superior Flow • Ease of Installation

Spears® **FlameGuard®** CPVC Fire Sprinkler Products provide a cost effective alternative to metal systems with advantages of high corrosion resistance, improved system hydraulics, ease of installation and quick assembly with common tools. CPVC Fire Sprinkler Systems are based on proven products that have been in continuous service for over 40 years. Spears® **FlameGuard®** products are approved by UL®, FM® Global, LPCB and Certified by NSF International for potable water use. Check local codes for restrictions and limitations.

Corrosion Resistant CPVC Material Does Not Sustain Biological Growth

Unlike metal systems, **FlameGuard®** CPVC products never rust, scale or pit and do not sustain biological growth - a cause of Microbiologically Influenced Corrosion (MIC) which can destroy metal fire sprinkler systems from the inside out.

Superior Flow Characteristics for Lower Friction Losses

The smooth-wall interior surfaces of **FlameGuard®** CPVC systems result in reduced friction loss over metal systems. The design flow characteristics remain constant throughout the life of the product because there is no interior corrosion in the system due to microbiological activity.

Pressure Rated to 175 psi (1200kpa) @ 150°F (65°C)

FlameGuard® CPVC Products are produced in combinations of Schedule 40 and Schedule 80 Fitting configurations con-forming to ASTM F 438 or F 439 standards and **FlameGuard®** SDR 13.5 CPVC Fire Sprinkler Pipe conforming to ASTM F 442 standards. UL® and FM® Rated working pressure is 175 psi (1200kpa) @ 150°F (65°C) (LPCB rated to 120°F) (49°C).

Easy Installation for Lower Costs

FlameGuard® CPVC system installations significantly reduce costs over conventional metal piping by virtually eliminating prefabrication. Systems can be fully installed on site using solvent cement joining methods.

UL® Listed for U.S. and Canada in NFPA 13, 13R & 13D Systems

FlameGuard® CPVC Fire Sprinkler Products are UL® listed for U.S. and Canada applications for Light Hazard occupancies as defined in NFPA 13, Residential occupancies up to and including 4-stories as defined in NFPA 13R, and Residential occupancies for one and two family dwellings and manufactured homes as defined in NFPA 13D. Consult Spears® **FlameGuard®** CPVC Fire Sprinkler Products Installation Instructions and NFPA Standards for additional applications including air plenum, system risers, concealed, exposed, underground, combustable attic, garage, basement and low pressure dry piping installations.

Full Limited Lifetime Warranty

FlameGuard® CPVC Fire Sprinkler Products carry a limited lifetime warranty against defects in material or workmanship. Consult Spears® warranty for additional details.

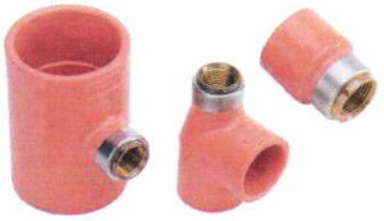
PROGRESSIVE PRODUCTS FROM SPEARS®
INNOVATION & TECHNOLOGY
Visit our website at www.spearsmfg.com

Assessed to ISO 9001: 2008
Certificate number 293

Spears® FlameGuard® . . . The Leader in Innovative CPVC Fire Sprinkler System Products

Pioneer in Molded-in Metal Insert Head Adapters
Patent No. 5,437,481

Spears® pioneered the development of the **FlameGuard®** molded-in-place metal thread insert for connection of sprinkler heads to CPVC fire sprinkler systems, plus Metal FIPT threaded female adapters for metal-to-plastic transitions.



Developed the Special Reinforced (SR) Head Adapters
Patent No. 5,582,439

Spears® **FlameGuard®** continuous improvement program developed the technology to produce a superior patented plastic threaded fitting - the Special Reinforced (SR) Design. This unique design incorporates a patented thermoplastic compression process that equalizes stresses generated by tapered thread joint make-up. All CPVC plastic body and threads provide a more uniform construction and improved corrosion resistance.

Lead Free

Revolutionary Gasket Sealed Head Adapter Choices
Patent No. 8,474,472 - 8,297,663 - 7,458,613

- Requires NO Thread Sealants
- Eliminates Stress
- Prevents Over Tightening
- Provides Easy Frame Alignment

Spears® revolutionary Gasket Sealed Head Adapters feature an elastomer gasket seal at the base of the threads. The gasket seal allows a modified thread design that eliminates radial stress and associated problems typical with tapered thread joint make up. Choose from **TorqueSafe™** design with rotating brass thread insert, **SofTorque™** design with Special Reinforced (SR) plastic threads and compressible gasket or **QuickTorque™** with similar features plus brass threads.

TorqueSafe™, SofTorque™ & QuickTorque™ Fittings
Lead Free

Full Assortment of Specialty Products & Fitting Configurations

Spears® **FlameGuard®** products provide the specialty fittings needed in today's fire sprinkler systems. The **GripLoc™** Elbow, Tee, Cap and Coupling and **GripLoc™** Repair Coupling for quick no-cement repairs; the Adjustable Drop Nipple for fine-tuning to finished ceiling height; and Ringed Head Adapter for ease of locating during installation. Plus a full assortment of fittings including Grooved Coupling Adapters, Unions and Flanges sizes 3/4" through 3".

GripLoc™ Elbow, Tee, Cap, Coupling & Repair Couplings
Lead Free

Complete Size Range of CPVC Pipe

Spears® **FlameGuard®** CPVC Fire Sprinkler Pipe is available in sizes 3/4" to 3"; and conforms to ASTM F 442 standard for SDR 13.5 CPVC pipe.

Spears® Solvent Cements & Thread Sealant

FlameGuard® products should be installed using Spears® FS-5 One-Step Solvent Cement. For threaded joints, use Spears® **BLUE 75™** Thread Sealant that has been tested for compatibility with **FlameGuard®** CPVC Fire Sprinkler Products. Spears® **TorqueSafe™, SofTorque™** and **QuickTorque™** Gasket Sealed Adapter requires no sealant. Consult sprinkler head manufacturer prior to use.

ASC Engineered Solutions

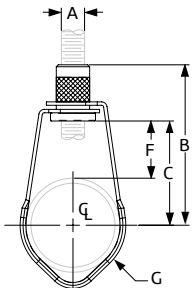
Adjustable Swivel Ring
Fig. 69

½" through 2" Size
Rounded Edge Design

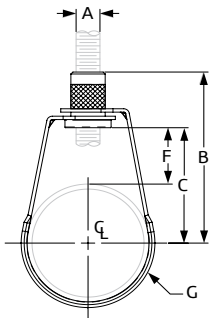
2½" through 8" Size

c UL us LISTED

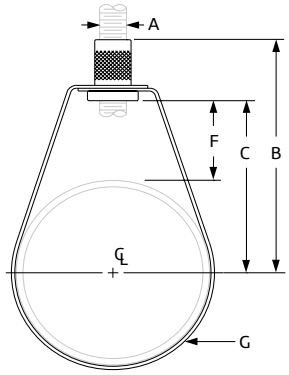
FM APPROVED



½" through 1" pipe



1¼" through 2" pipe



2½" through 8" pipe

Size Range: ½" through 8"

Material: Carbon steel

Finish: Strap is Pre-Galvanized Zinc Material. Nut is Zinc Plated.

Service: Recommended for suspension of non-insulated stationary pipe line.

Maximum Temperature: 450° F

Approvals: Complies with Federal Specification A-A-1192A (Type 10), WW-H-171-E (Type 10), and ANSI/MSS SP-58 (Type 10).
UL Listed and FM Approved (Sizes ¾" – 8").

Features:

- ½" – 2" sizes designed for use with steel and CPVC piping and manufactured with FBC System Compatible oil.
- Threads are countersunk so that they cannot become burred or damaged.
- Knurled swivel nut provides vertical adjustment after piping is in place.
- Captured swivel nut in the ½" through 6" sizes. The capture is permanent in the bottom portion of the band, allowing the hanger to be opened during installation if desired, but not allowing the nut to fall completely out.

Ordering:
Specify size, figure number and name.
Non-captured nut also available upon request.

Fig. 69: Dimensions (in) • **Loads** (lbs) • **Weight** (lbs)

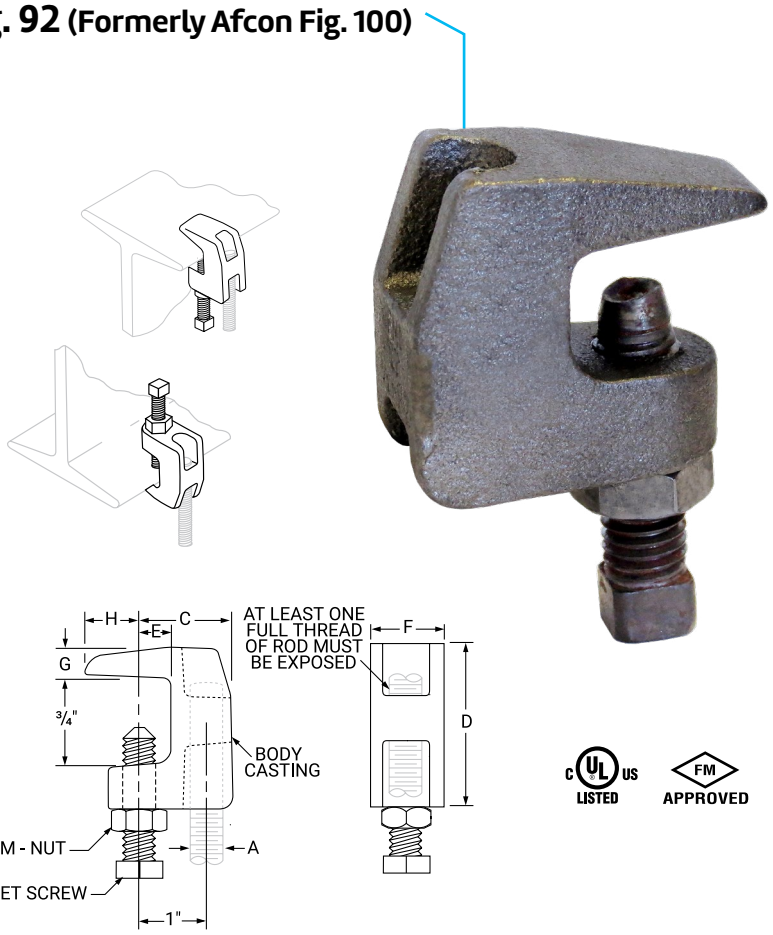
Pipe Size	Max Load	Weight	Rod Size A	B	C	F	G Width
½	300	0.10	⅜	2⅞	2	1 9/16	⅝
¾		0.10		2¾	1⅞	1 5/16	
1		0.10		2 9/16	1 11/16	1	
1¼		0.10		2⅝	1¾	⅞	
1½		0.10		2¾	1⅞		
2		0.11		3¼	2⅜	1⅛	
2½	525	0.20		4	2¾	1 5/16	¾
3		0.20		3 13/16	2 15/16	1 3/16	
4	650	0.30		4 11/16	3 13/16	1 9/16	
5	1,000	0.54	½	5 5/16	4⅜		
6		0.65		6 11/16	5 9/16	2¼	
8		1.00		8 9/16	7 9/16	3¼	

ANVIL
An ASC Engineered Solution

PROJECT INFORMATION	APPROVAL STAMP
Project:	☐ Approved
Address:	☐ Approved as noted
Contractor:	☐ Not approved
Engineer:	Remarks:
Submittal Date:	
Notes 1:	
Notes 2:	

Universal C-type Clamp (Standard Throat)

Fig. 92 (Formerly Afcon Fig. 100)



c UL us LISTED

FM APPROVED

Material Specifications

Size Range
3/8" and 1/2"

Material
Ductile iron, hardened steel cup point set screw and locknut.

Finish
☐ Plain
☐ Zinc Plated (Hot-Dip Galvanized optional)

Service
Recommended for use under roof installations with bar joist type construction, or for attachment to the top or bottom flange of structural shapes where the vertical hanger rod is required to be offset from the edge of the flange and where the thickness of joist or flange does not exceed 3/4".

Approvals
Complies with Federal Specification A-A-1192A (Type 19 & 23), WW-H-171-E (Type 23), ANSI/MSS SP-69 and MSS SP-58 (Type 19 & 23).
UL, ULC Listed and FM Approved.

How to size
Size of clamp is determined by size of rod to be used.

Installation
Follow recommended set screw torque values per MSS-SP-69.

Features
- They may be attached to horizontal flanges of structural members in either the top beam or bottom beam positions.
- Secured in place by a cup-pointed Set Screw tightened against the flange. A Jam Nut is provided for tightening the Set Screw against the Body Casting.
- Thru tapping of the body casting permits extended adjustment of the threaded rod.
- Can be used with Fig 89X retaining clip for seismic applications.

Ordering
Specify rod size, figure number, name of clamp and finish.

Available with oversized tapped rod hole for Hot Dip Galvanized finish.

Dimensions (In) - Load (Lbs) - Torque (In-Lbs) - Weight (Lbs)

Rod Size A	Set Screw Size	Torque Value	Max Loads ■ Top	Max Loads ■ Bottom	Weight	C	D	E	F	G	H
In.	In.	In.-Lbs.	Lbs.	Lbs.	Lbs.	In.	In.	In.	In.	In.	In.
3/8	3/8	60	500	250	0.34	1 5/16	1 9/16	9/16	13/16	3/8	1/2
1/2	1/2	125	950	760	0.63	1 3/8	1 13/16	1/2	1 1/16	7/16	23/32

Note:
■ Maximum temperature of 450° F

ANVIL
An ASC Engineered Solution

PROJECT INFORMATION	APPROVAL STAMP
Project:	☐ Approved
Address:	☐ Approved as noted
Contractor:	☐ Not approved
Engineer:	Remarks:
Submittal Date:	
Notes 1:	
Notes 2:	

DEWALT®

ANCHORS & FASTENERS

Rod Hanging System for Concrete, Wood & Steel

Hangermate®+

DEWALT®

ANCHORS & FASTENERS

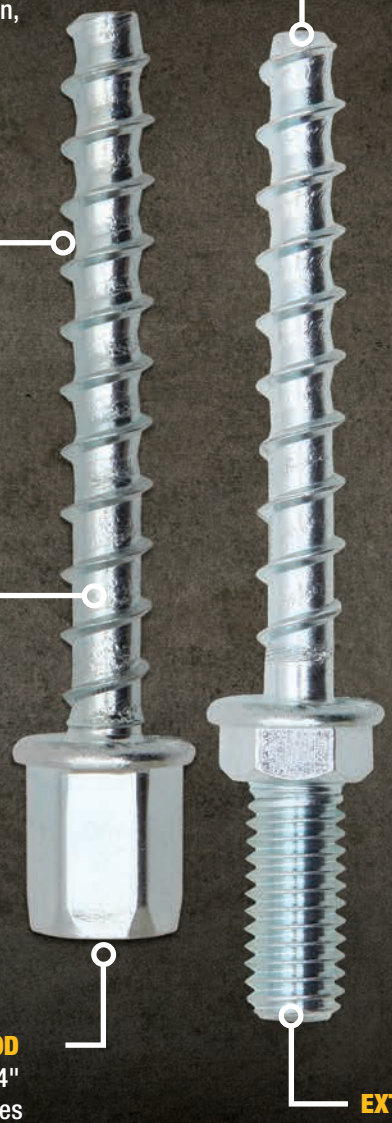
ICC ES ESR-3889 | SEISMIC REGION QUALIFICATION | TENSION ZONE CRACKED CONCRETE | FM APPROVED

UL & FM FULL LISTING PAGES 10-11

THREAD PROFILE
low torque, fast installation, full concrete engagement

STANDARD 1/4" BIT
no need for specialty bit for installation

HARDENED STEEL
installs in hard concrete and remains ductile



THREADED ROD
available in 1/4" or 3/8" rod sizes

EXTERNAL 3/8" THREAD
for attaching directly to anchor

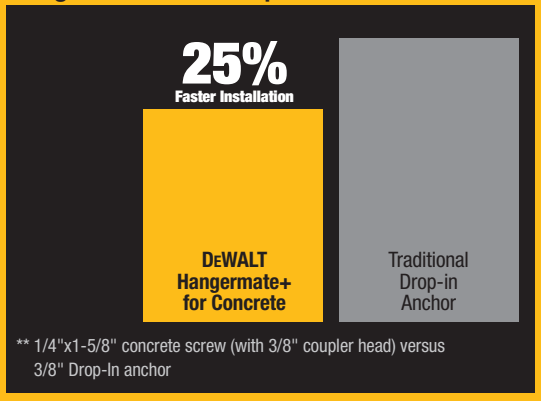
	DEWALT Hangermate+	ITW Buildex Sammys®
Approved Embedments	1-5/8" & 2-1/2"	2-1/4"
Bit Size	1/4" ANSI	Specialty
Pullout, $N_{p,cr}$*	1412 lbs	857 lbs

* for 2-1/2" embedment

Sammys® is a registered trademark of Illinois Tool Works Inc.

Faster Installation

Hangermate+ VS Drop-In Anchor**



** 1/4"x1-5/8" concrete screw (with 3/8" coupler head) versus 3/8" Drop-In anchor

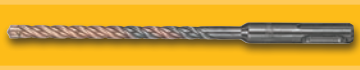
Installation Driver and Bit Reference

CAT #	DESCRIPTION	DRIVER	BIT
Hangermate+ Concrete - Internally Threaded			
PFM2211100	1/4" x 1-5/8"	PFM1491050	DW5517
PFM2211200	1/4" x 1-5/8"	PFM1491100	DW5517
PFM2211250	1/4" x 2-1/2"	PFM1491100	DW5517
Hangermate+ For Concrete - Externally Threaded			
PFM1421000	1/4" x 1-5/8"	DW22862	DW5517
PFM1421050	1/4" x 2-1/2"	DW22862	DW5517
Pivot For Concrete - Angled Applications			
PFM2281300	1/4 x 2"	PFM2201250	02796SD
Suspender For Concrete - Dual-Directional			
PFM2271050	5/16" x 2-1/4"	PFM2201300	DW5517

Hangermate®+
Rod Hanging Anchors for Concrete

	CAT #	DESCRIPTION	SAMMYS® MODEL #	HANG	ROD SIZE	QTY	MSTR
	Hangermate+ For Concrete - Internally Threaded						
	PFM2211100	1/4" x 1-5/8"	CST 200	Vertical	1/4"	25	125
	PFM2211200	1/4" x 1-5/8"	CST 20	Vertical	3/8"	25	125
	PFM2211250	1/4" x 2-1/2"	CCST 516	Vertical	3/8"	25	125
	Hangermate+ For Concrete - Externally Threaded						
	PFM1421000	1/4" x 1-5/8"	–	Vertical	3/8"	25	125
	PFM1421050	1/4" x 2-1/2"	–	Vertical	3/8"	25	125
	Hangermate+ Pivot For Concrete - Angled Applications						
	PFM228130	1/4 x 2"	SH-GST/CST 20	Variable	3/8"	25	125
	Hangermate+ Suspender For Concrete - Dual-Directional						
	PFM2271050	5/16" x 2-1/4"	-	Vert. & Hori.	3/8"	25	125

The Complete Anchoring Solution - Installation Accessories and Tools

	CAT #	DESCRIPTION	HANGERMATE+	QTY	MSTR QTY
	PFM1491050	1/4" Socket Driver	Concrete Rod Hanger	1	5
	PFM1491100	3/8" Socket Driver	Concrete Rod Hanger	1	5
	DW22862	1/2" Drive Socket	Externally Threaded Concrete Rod Hanger	1	-
	PFM2201300	Suspender Driver	Suspender	1	5
	PFM2201250	Pivot Driver	Pivot	1	5
	DWMT73934B	1/2" Impact Rated® Deep Socket	External	1	-
	DW2547IR	1/4" Hex to 1/2" Square Adapter			
	DW5517	1/4" X 6" (4" usable length) SDS+ Full Head Carbide Masonry Drill Bit			
	02796SD	Hex Shank SDS-Plus (only for Pivot for Concrete)			
	PFM2201050	Adapter for hanging 1/2" rod (3/8" to 1/2" Adapter)			
	DCH273P2DH	20V MAX* Brushless Rotary Hammer			
	DCF887D2	20V MAX* XR Brushless 3-Speed Impact Driver			
	DCF883M2	20V MAX* Lithium Ion 3/8" Impact Wrench			
	DCS350D1	Cordless Threaded Rod Cutter			

* Maximum initial battery voltage (measured without a workload) is 20 volts. Nominal voltage is 18.

DEWALT®

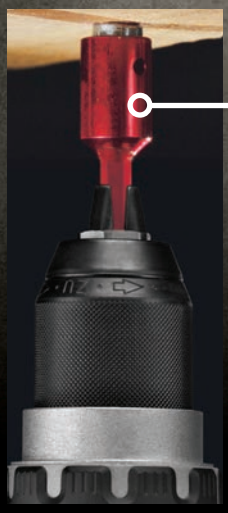
ANCHORS & FASTENERS

UL & FM FULL LISTING PAGES 10-11

	DEWALT Hangermate	ITW Buildex Sammys®
Dual Head	Suspender	No
Point Style	Type 17 Gimlet	Gimlet Only
Single Piece Design	Select Sizes	All 2-piece

TYPE 17 GIMLET
easy material removal, no pre-drilling required

SINGLE PIECE DESIGN†
allows removal and adjustment
† Available on PFM2251000, PFM2251100 & PFM2261100



WOOD DRIVER
spin off feature helps reduce over driving

SIDE MOUNT OPTION
for horizontal applications

Type 17 Gimlet Helps Reduce Splitting*

*Compared to Sammys® drilled 2" into pressure treated lumber with DEWALT DCD790D2

Sammys® is a registered trademark of Illinois Tool Works Inc.

Installation Driver Reference		
CAT #	DESCRIPTION	DRIVER
Hangermate Wood - Vertical		
PFM2251000	1/4" x 2"	PFM2201150
PFM2251050	1/4" x 1"	PFM2201150
PFM2251100	1/4" x 2"	PFM2201150
PFM2251150	5/16" x 2-1/2"	PFM2201150
PFM2251200	1/4" x 3"	PFM2201150
PFM2251250	1/4" x 4"	PFM2201150
PFM2251300	5/16" x 2-1/2"	PFM2201150
Hangermate Wood - Horizontal		
PFM2261000	1/4" x 1"	PFM2201150
PFM2261050	1/4" x 1"	PFM2201150
PFM2261100	1/4" x 2"	PFM2201150
PFM2261150	5/16" x 2-1/2"	PFM2201150
Pivot For Wood - Angled Applications		
PFM2281100	1/4" x 2"	PFM2201250
Suspender For Wood - Dual-Directional		
PFM2271000	5/16" x 2-1/4"	PFM2201300
Wood - Acoustical Ceiling Screw Eyelet		
PFM2251500	1/4" x 3"	PFM2201350

Hangermate®
Rod Hanging Anchors for Wood

	CAT #	DESCRIPTION	SAMMYS® MODEL #	HANG	ROD SIZE	QTY	MSTR QTY
	Hangermate For Wood - Vertical						
	PFM2251000	1/4" x 2"	GST 200	Vertical	1/4"	25	125
	PFM2251050	1/4" x 1"	GST 10	Vertical	3/8"	25	125
	PFM2251100	1/4" x 2"	GST 20	Vertical	3/8"	25	125
	PFM2251150	5/16" x 2-1/2"	GST 25-380	Vertical	3/8"	25	125
	PFM2251200	1/4" x 3"	GST 30	Vertical	3/8"	25	125
	PFM2251250	1/4" x 4"	-	Vertical	3/8"	25	125
	PFM2251300	5/16" x 2-1/2"	GST 2	Vertical	1/2"	25	125
	Hangermate For Wood - Horizontal						
	PFM2261000	1/4" x 1"	SWG 200	Horizontal	1/4"	25	125
	PFM2261050	1/4" x 1"	SWG 10	Horizontal	3/8"	25	125
	PFM2261100	1/4" x 2"	SWG 20	Horizontal	3/8"	25	125
	PFM2261150	5/16" x 2-1/2"	SWG 25-380	Horizontal	3/8"	25	125
	Hangermate Pivot For Wood - Angled Applications						
	PFM2281100	1/4" x 2"	SH-GST 20	Variable	3/8"	25	125
	Hangermate Suspender For Wood - Dual-Directional						
	PFM2271000	5/16" x 2-1/4"	-	Vertical & Horizontal	3/8"	25	125
	Hangermate For Wood - Acoustical Ceiling Screw Eyelet						
	PFM2251500	3/16" x 3"	CWSD 15	Vertical & Horizontal	Eyelet Hole 3/16"	25	125

The Complete Anchoring Solution - Installation Accessories and Tools

	CAT #	DESCRIPTION	HANGERMATE	QTY	MSTR QTY
	PFM2201150	Wood Socket Driver	Rod Hanger	1	5
	PFM2201300	Suspender Driver	Suspender	1	5
	PFM2201250	Pivot Driver	Pivot	1	5
	PFM2201350	Ceiling Screw Eyelet Driver	Acoustical	1	5
	PFM2201100	Pole Tool Kit	Rod Hanger	1	5
	DCF6102S2	12V Max* Lithium Ion 1/4" (13mm) Screwdriver Kit			
	DCD790D2	20V MAX* XR Lithium Ion Brushless Compact Drill/Driver Kit			
	DCD990M2	20V MAX* XR Lithium Ion Premium 3-Speed Drill/Driver Kit			
	DCD995M2	20V MAX* XR Lithium Ion Brushless Premium Hammerdrill Kit			

* Maximum initial battery voltage (measured without a workload) is 20 volts. Nominal voltage is 18.

DEWALT

ANCHORS & FASTENERS

UL & FM FULL LISTING
PAGES 10-11

SELF-DRILLING POINT eliminates pre-drilling

ONE PIECE DESIGN provides solid connection from steel to threaded rod

STEEL DRIVER spin off feature helps reduce over driving

SELF-TAPPING THREADS low torque to install

HORIZONTAL MOUNT OPTION

	DEWALT Hangermate	ITW Buildex Sammys®
Dual Head	**Suspender**	No
Single Piece Design	**Yes**	All 2-piece
UL Approved Range*	**12 SKUs**	8 SKUs

*On select sizes with coupling nut

Sammys is a registered trademark of Illinois Tool Works Inc.

Installation Driver Reference

CAT #	DESCRIPTION	DRIVER
Hangermate Steel - Vertical		
PFM2231000	1/4-20 1" #3	PFM2201200
PFM2231100	1/4-20 x 1" #3	PFM2201200
PFM223110N	1/4-20 x 1" #3 / nut	PFM2201200
PFM2231150	1/4"-20 x 1-1/2" #5	PFM2201200
PFM223115N	1/4-20 x 1-1/2" #5 / nut	PFM2201200
PFM2231200	1/4-20 x 1-1/2" #3	PFM2201200
PFM223120N	1/4-20x1-1/2" #3 / nut	PFM2201200
PFM2231250	1/4-20 x 2" #3	PFM2201200
Hangermate Steel - Horizontal		
PFM2241100	1/4-20 x 1" #3	PFM2201200
PFM224110N	1/4-20 x 1" #3 / nut	PFM2201200
PFM2241150	1/4-20 x 1-1/2" #3	PFM2201200
PFM224115N	1/4-20 x 1-1/2" #3 / nut	PFM2201200
PFM2241200	1/4-20 x 1-1/2" #5	PFM2201200
PFM224120N	1/4-20 x 1-1/2" #5 /nut	PFM2201200
Pivot Steel - Angled Applications		
PFM2281150	1/4-20 x 1" #3	PFM2201250
PFM2281200	12-20 x 1-3/4" #5	PFM2201250
PFM2281250	1/4-14 x 1" #3	PFM2201250
Suspender Steel - Dual-Directional		
PFM227110N	1/4-20 x 1" #3 / nut	PFM2201300
PFM227120N	1/4-20 x 1-1/2" #3 / nut	PFM2201300
PFM227130N	1/4-20 x 1-1/2" #5 / nut	PFM2201300
Steel - Acoustical Ceiling Screw Eyelet		
PFM2231500	1/4" x 3"	PFM2201350
PFM2231550	1/4" x 3-1/4"	PFM2201350

Hangermate®
Rod Hanging Anchors for Steel

	CAT #	DESCRIPTION	SAMMYS® MODEL #	HANG	ROD SIZE	QTY	MSTR QTY
	Hangermate For Steel - Vertical						
	PFM2231000	1/4-20 x 1" #3	DSTR 100	Vertical	1/4"	25	125
	PFM2231100	1/4-20 x 1" #3	-	Vertical	3/8"	25	125
	PFM223110N	1/4-20 x 1" #3 / nut	DSTR 1	Vertical	3/8"	25	125
	PFM2231150	1/4"-20 x 1-1/2" #5	DSTR 1-1/2	Vertical	3/8"	25	125
	PFM223115N	1/4-20 x 1-1/2" #5 / nut	DSTR 1	Vertical	3/8"	25	125
	PFM2231200	1/4-20 x 1-1/2" #3	-	Vertical	3/8"	25	125
	PFM223120N	1/4-20x1-1/2" #3 / nut	DST15	Vertical	3/8"	25	125
	PFM2231250	1/4-20 x 2" #3	DST 20	Vertical	3/8"	25	125
	Hangermate For Steel - Horizontal						
	PFM2241100	1/4-20 x 1" #3	SDW 10	Horizontal	3/8"	25	125
	PFM224110N	1/4-20 x 1" #3 / nut	SDWR 1	Horizontal	3/8"	25	125
	PFM2241150	1/4-20 x 1-1/2" #3	-	Horizontal	3/8"	25	125
	PFM224115N	1/4-20 x 1-1/2" #3 / nut	-	Horizontal	3/8"	25	125
	PFM2241200	1/4-20 x 1-1/2" #5	SWT 15	Horizontal	3/8"	25	125
	PFM224120N	1/4-20 x 1-1/2" #5 /nut	SWDR 1-1/2	Horizontal	3/8"	25	125
	Hangermate Pivot For Steel - Angled Applications						
	PFM2281150	1/4-20 x 1" #3	SH-DSTR 1	Variable	3/8"	25	125
	PFM2281200	12-20 x 1-3/4" #5	SH-TEK 50	Variable	3/8"	25	125
	PFM2281250	1/4-14 x 1" #3	-	Variable	3/8"	25	125
	Hangermate Suspender For Steel - Dual-Directional						
	PFM227110N	1/4-20 x 1" #3 / nut	-	Vert. & Horz.	3/8"	25	125
	PFM227120N	1/4-20 x 1-1/2" #3 / nut	-	Vert. & Horz.	3/8"	25	125
	PFM227130N	1/4-20 x 1-1/2" #5 / nut	-	Vert. & Horz.	3/8"	25	125
	Hangermate For Steel - Acoustical Ceiling Screw Eyelet						
	PFM2231500	3/16" x 2"	CWSD 1	Vert. & Horz.	Eyelet Hole 3/16"	25	125
	PFM2231550	3/16" x 3-1/4"	CWSD 2	Vert. & Horz.		25	125
	Recommended 1300 to 2000 rpms for proper installation.						

The Complete Anchoring Solution - Installation Accessories and Tools

	CAT #	DESCRIPTION	HANGERMATE	QTY	MSTR QTY
	PFM2201200	Steel Socket (Silver)	Rod Hanger	1	5
	PFM2201300	Suspender Driver	Suspender	1	5
	PFM2201250	Pivot Driver	Pivot	1	5
	PFM2201350	Ceiling Screw Eyelet Driver	Acoustical	1	5
	PFM2201100	Pole Tool Kit	Rod Hanger	1	5
	PFM2201050	Adapter for hanging 1/2" rod (3/8" to 1/2" Adapter)			
	DCD991P2	20 V MAX* XR Lithium Ion Brushless 3-Speed Drill / Driver Kit			
	DCF887D2	20V MAX* XR 1/4" 3-Speed Impact Driver Kit			

* Maximum initial battery voltage (measured without a workload) is 20 volts. Nominal voltage is 18.

DEWALT®

ANCHORS & FASTENERS

Pivot™

Pivot Installation Driver & Bit Reference

NUMBER	DESCRIPTION	DRIVER	DRILL BIT
Pivot For Concrete			
PFM2281300	1/4 x 2"	PFM2201250	02796SD
Pivot For Wood			
PFM2281100	1/4" x 2"	PFM2201250	*
Pivot For Steel			
PFM2281150	1/4-20 x 1" #3	PFM2201250	*
PFM2281200	12-20 x 1-3/4" #5	PFM2201250	*
PFM2281250	1/4-14 x1" #3	PFM2201250	*

* No pre-drilling necessary

◀ **STAR DRIVE T-25 full engagement driving through tough materials**

Hangermate®
Specialty Rod Hanging Anchors

Suspender™

UL & FM FULL LISTING PAGES 10-11

APPROVED

MULTIPLE THREADS
different thread and point styles

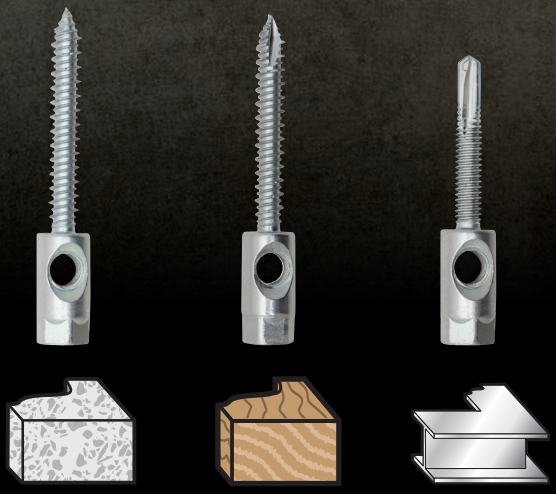
TWIN LEAD THREAD
for thread engagement (concrete & wood)

DUAL DIRECTIONAL THREAD
one part for vertical or horizontal application

Suspender Installation Driver & Bit Reference

NUMBER	DESCRIPTION	DRIVER	DRILL BIT
Suspender For Concrete			
PFM2271050	5/16" x 2-1/4"	PFM2201300	DW5517
Suspender For Wood			
PFM2271000	5/16" x 2-1/4"	PFM2201300	*
Suspender For Steel			
PFM227110N	1/4-20 x 1" #3/nut	PFM2201300	*
PFM227120N	12-20 x 1-1/2" #3/nut	PFM2201300	*
PFM227130N	1/4-14 x1" #5/nut	PFM2201300	*

* No pre-drilling necessary



DEWALT®

ANCHORS & FASTENERS

Hangermate+ For Concrete - Internally Threaded

CAT #	DESCRIPTION	HANG	ROD SIZE	DRIVER	ULTIMATE TENSILE LOAD (LBS)*	APPROVALS: UL PIPE SIZE	UL LOAD	FM PIPE SIZE	FM LOAD	ICC-ES
PFM2211100	1/4" x 1-5/8"	Vertical	1/4"	PFM1491050	2,835	-	-	4"	1,475	ESR-3889
PFM2211200	1/4" x 1-5/8"	Vertical	3/8"	PFM1491100	2,835	-	-	4"	1,475	ESR-3889
PFM2211250	1/4" x 2-1/2"	Vertical	3/8"	PFM1491100	3,650	-	-	4"	1,475	ESR-3889

*In 2,500psi uncracked concrete

Hangermate+ For Concrete - Externally Threaded

PFM1421000	1/4" x 1-5/8"	Vertical	3/8"	DW22862	2,835	-	-	4"	1,475	ESR-3889
PFM1421050	1/4" x 2-1/2"	Vertical	3/8"	DW22862	3,650	-	-	4"	1,475	ESR-3889

*In 2,500psi uncracked concrete

Hangermate+ Pivot For Concrete - Angled Applications

PFM2281300	1/4 x 2"	Variable	3/8"	PFM2201250	2,830 (Vert.)	-	-	-	-	-
					990 (45°)	-	-	-	-	-

* In 2,500psi uncracked concrete

Hangermate+ Suspender For Concrete - Dual-Directional

PFM2271050	5/16" x 2-1/4"	Vert. & Hori.	3/8"	PFM2201300	2,188 (Vert.)	-	-	4"	1,475	-
					2,767 (Horz.)	-	-	4"	1,475	-

*In 3,650psi uncracked concrete

Hangermate+ For Wood - Vertical

PFM2251000	1/4" x 2"	Vertical	1/4"	PFM2201150	1,510	-	-	-	-	-
PFM2251050	1/4" x 1"	Vertical	3/8"	PFM2201150	685	-	-	-	-	-
PFM2251100	1/4" x 2"	Vertical	3/8"	PFM2201150	1,510	3"	1,050	-	-	-
PFM2251150	5/16" x 2-1/2"	Vertical	3/8"	PFM2201150	2,670	4"	1,500	4"	1,475	-
PFM2251200	1/4" x 3"	Vertical	3/8"	PFM2201150	2,075	3"	1,050	-	-	-
PFM2251250	1/4" x 4"	Vertical	3/8"	PFM2201150	2,075	3"	1,050	-	-	-
PFM2251300	15/16" x 2-1/2"	Vertical	1/2"	PFM2201150	2,670	-	-	-	-	-

*Ultimate Loads In Douglas Fir

Hangermate+ For Wood - Horizontal

PFM2261000	1/4" x 1"	Horizontal	1/4"	PFM2201150	685	-	-	-	-	-
PFM2261050	1/4" x 1"	Horizontal	3/8"	PFM2201150	685	-	-	-	-	-
PFM2261100	1/4" x 2"	Horizontal	3/8"	PFM2201150	1,800	3"	1,050	-	-	-
PFM2261150	5/16" x 2-1/2"	Horizontal	3/8"	PFM2201150	1,450	3"	1,050	-	-	-

*Ultimate Loads In Douglas Fir

Hangermate+ Pivot For Wood - Angled Applications

PFM2281100	1/4" x 2"	Variable	3/8"	PFM2201250	1,470 (Vert.)	-	-	-	-	-
					1,154 (45°)	-	-	-	-	-

*Ultimate Loads In Douglas Fir

Hangermate+ Suspender For Wood - Dual-Directional

PFM2271000	5/16" x 2-1/4"	Vert. & Horz.	3/8"	PFM2201300	2,487	-	-	4"	1,475	-

*Ultimate Loads In Douglas Fir — FM Load applies to vertical only

Hangermate+ For Wood - Acoustical Ceiling Screw Eyelet

PFM2251500	3/16" x 3"	Vert. & Horz.	3/16"	PFM2201350	883	-	-	-	-	-

*Ultimate Loads In Douglas Fir

Hangermate®
Rod Hanging Anchor Approvals

APPROVALS

Hangermate+ For Steel - Vertical

CAT #	DESCRIPTION	HANG	ROD SIZE	DRIVER	MIN. THICK.	MAX. THICK.	ULTIMATE TENSILE LOAD (MATERIAL THICKNESS)	LOAD DIRECTION	PIPE SIZE	UL THICK.	PIPE SIZE	FM THICK.
PFM2231000	1/4-20 1" #3	Vert.	1/4"	PFM2201200	0.060	0.250	2,375 (0.125")	-	-	-	-	-
PFM2231100	1/4-20 x 1" #3	Vert.	3/8"	PFM2201200	0.060	0.250	2,375 (0.125")	V	4"	0.060"	-	-
PFM223110N	1/4-20 x 1" #3/nut	Vert.	3/8"	PFM2201200	0.060	0.250	4,690 (0.125")	V	4"	0.125"	4"	12 ga.
PFM2231150	1/4"-20 x 1-1/2" #5	Vert.	3/8"	PFM2201200	0.188	0.250	3,675 (0.188")	V	4"	0.060"	4"	16 ga.
PFM223115N	1/4-20 x 1-1/2" #5/nut	Vert.	3/8"	PFM2201200	0.060	0.250	5,810 (0.188")	V	4"	0.125"	4"	12 ga.
PFM2231200	1/4-20 x 1-1/2" #3	Vert.	3/8"	PFM2201200	0.188	0.250	2,375 (0.125")	V	4"	0.060"	-	-
PFM223120N	1/4-20 x 1-1/2" #3/nut	Vert.	3/8"	PFM2201200	0.060	0.250	4,690 (0.125")	V	4"	0.060"	-	-
PFM2231250	1/4-20 x 2" #3	Vert.	3/8"	PFM2201200	0.060	0.250	2,375 (0.125")	V	4"	0.125"		

Hangermate+ For Steel - Horizontal

PFM2241100	1/4-20 x 1" #3	Horiz.	3/8"	PFM2201200	0.060	0.250	2,570 (0.111")	H	-	-	-	-
PFM224110N	1/4-20 x 1" # /nut	Horiz.	3/8"	PFM2201200	0.060	0.250	2,810 (0.111")	H	4"	0.060"	4"	16 ga.
PFM2241150	1/4-20 x 1-1/2" #3	Horiz.	3/8"	PFM2201200	0.060	0.250	2,570 (0.111")	H	-	-	-	-
PFM224115N	1/4-20 x 1-1/2" #3/nut	Horiz.	3/8"	PFM2201200	0.060	0.250	2,810 (0.111")	H	4"	0.060"	4"	16 ga.
PFM2241200	1/4-20 x 1-1/2" #5	Horiz.	3/8"	PFM2201200	0.060	0.500	3,530 (0.188")	H	-	-	-	-
PFM224120N	1/4-20 x 1-1/2" #5/nut	Horiz.	3/8"	PFM2201200	0.060	0.500	2,810 (0.111")	H	4"	0.060"	4"	16 ga.

Hangermate+ Pivot For Steel - Angled Applications

PFM2281150	1/4-20 x 1" #3	Variable	3/8"	PFM2201250	0.060	0.188	3,210 (0.188")	V	-	-	-	-
							975 (0.188")	45°	-	-	-	-
PFM2281200	12-20 x 1-3/4" #5	Variable	3/8"	PFM2201250	0.11	0.188	3,270 (0.188")	V	-	-	-	-
							975 (0.188")	45°	-	-	-	-
PFM2281250	1/4-14 x 1" #3	Variable	3/8"	PFM2201250	0.188	0.5	2,875 (0.188")	V	-	-	-	-
							875 (0.188")	45°	-	-	-	-

Hangermate+ Suspender For Steel - Dual-Directional

PFM227110N	1/4-20 x 1" #3/nut	Vert. & Horz.	3/8"	PFM2201300	0.060	0.210	4,690 (0.125")	V	4"	0.060"	4"	16 ga.
								H	4"	0.060"	4"	16 ga.
PFM227120N	1/4-20 x 1-1/2" #3/nut	Vert. & Horz.	3/8"	PFM2201300	0.060	0.210	4,690 (0.125")	V	4"	0.060"	4"	16 ga.
								H	4"	0.060"	4"	16 ga.
PFM227130N	1/4-20 x 1-1/2" # nut	Vert. & Horz.	3/8"	PFM2201300	0.188	0.500	4,690 (0.125")	V	4"	0.060"	4"	16 ga.
								H	4"	0.060"	4"	16 ga.

Hangermate+ For Steel - Acoustical Ceiling Screw Eyelet

PFM2251500	3/16" x 2"		3/16"	PFM2201350	-	0.060	590 (0.188")	-	-	-	-	-
PFM2251550	3/16" x 3-1/4"		3/16"	PFM2201350	-	0.060	590 (0.188")	-	-	-	-	-

Loads vary depending on steel thickness.
Contact DEWALT for more information.

DEWALT®

ANCHORS & FASTENERS

Hangermate®+
Rod Hanging Anchors

DEWALT LOCATIONS			Field Service	DEWALT Tool Service	Anchor Distribution Center
ALABAMA	Birmingham	205-942-0538		■	
	Mobile	251-602-1000		■	
ALASKA	Anchorage	907-561-7181		■	
ARKANSAS	Little Rock	501-372-3040		■	
ARIZONA	Phoenix	602-437-1200	■	■	
	Phoenix	602-431-8024			■
CALIFORNIA	San Francisco	510-783-3959	■	■	
	Hayward	510-293-1500			■
	San Diego	858-279-2011		■	
	Anaheim	714-414-0369		■	
	Sacramento	916-344-3520		■	
	Ontario	909-930-1437		■	
	Tustin	714-731-2500			■
COLORADO	Denver	303-922-8325	■	■	
	Denver	303-922-9202			■
CONNECTICUT	Hartford	860-563-5800		■	
FLORIDA	Ft. Lauderdale	954-321-6635	■	■	
	Tampa	813-884-0434	■	■	
	Orlando	407-657-0474	■	■	
	Orlando	813-626-4500			■
	W. Palm Beach	561-689-3247		■	
GEORGIA	Atlanta	770-246-1710	■	■	
	Atlanta	678-966-0000			■
HAWAII	Honolulu	808-842-9925		■	
IOWA	Des Moines	515-270-1340		■	
ILLINOIS	Addison	630-521-1097	■	■	
	Addison	630-960-3156			■
INDIANA	Indianapolis	317-243-8308		■	
	Indianapolis	317-773-1668			■
KANSAS	Kansas City	913-495-4330		■	
	Kansas City	816-472-5033			■
	Wichita	316-943-1271		■	
KENTUCKY	Louisville	502-380-3748		■	
LOUISIANA	New Orleans	504-832-2187	■	■	
	Baton Rouge	225-296-3191		■	
MARYLAND	Baltimore	410-536-0722		■	
	Capital Heights	301-333-0865	■	■	
	Baltimore / DC	301-773-1722			■
MASSACHUSETTS	Boston	781-329-3407		■	
MICHIGAN	Grand Rapids	616-261-0425		■	
	Detroit	248-597-5000		■	
	Detroit	248-543-8600			■
MINNESOTA	Minneapolis	952-884-9191		■	
	Minneapolis	612-331-3770			■
MISSOURI	St Louis	314-997-9100		■	
	Kansas City	816-472-5033			■
NEVADA	Las Vegas	702-889-6025		■	
NEW JERSEY	Elmwood Park	201-475-3524		■	

DEWALT LOCATIONS			Field Service	DEWALT Tool Service	Anchor Distribution Center
NEW MEXICO	Albuquerque	505-884-1002		■	
NEW YORK	Buffalo	716-884-6220		■	
	Queens	718-335-1042		■	
	Rochester	585-228-2080		■	
	Long Island	631-952-2008		■	
	Albany	518-785-1867		■	
	New York	800-524-3244			■
NORTH CAROLINA	Charlotte	704-392-0245		■	
	Charlotte	704-375-5012			■
	Greensboro	336-852-1300		■	
	Raleigh	919-878-0357		■	
OHIO	Cleveland	440-842-9100		■	
	Cincinnati	513-772-3111		■	
	Columbus	614-895-3112		■	
OKLAHOMA	Oklahoma City	405-634-8403		■	
	Tulsa	918-249-8641		■	
OREGON	Portland	503-255-6556	■	■	
PENNSYLVANIA	Philadelphia	215-271-5500	■	■	
	Pittsburgh	412-642-0204	■	■	
	Allentown	610-435-9544		■	
	York	717-755-3441	■	■	
SOUTH CAROLINA	Charleston	843-745-9197		■	
	Greenville	864-299-8662		■	
TENNESSEE	Memphis	901-384-8100		■	
	Nashville	615-242-1633		■	
	Nashville	615-248-2667			■
	Knoxville	865-688-0921		■	
TEXAS	Dallas	972-446-2996	■	■	
	Dallas	972-446-5985			■
	Houston	713-466-1194	■	■	
	Houston	281-491-0351			■
	San Antonio	210-732-1221	■	■	
	Fort Worth	817-831-3828		■	
	Austin	512-382-3971		■	
UTAH	Salt Lake City	801-486-5828	■	■	
	Salt Lake City	801-466-9428			■
VIRGINIA	Virginia Beach	757-363-0091		■	
WASHINGTON	Seattle	206-763-2010	■	■	
	Spokane	509-535-9252		■	
	Seattle	425-251-0312			■
WEST VIRGINIA	Charleston	304-343-0289		■	
WISCONSIN	Milwaukee	414-645-4285		■	
	Milwaukee	414-645-8821			■

DEWALT, ELCO, & POWERS Anchors and Fasteners Inquiries: 800-524-3244

DEWALT, ELCO, & POWERS Anchors and Fasteners Technical Questions: email: anchors@dewalt.com

Dealer Stamp

1-800-4 DEWALT®

www.DEWALT.com

CPVC TWO-HOLE STAND OFF STRAP

FIG. 076

Function: Designed to support CPVC pipe horizontally from the side or bottom of beam, or composite wood joists with a minimum of $^{3}/_{8}$" web thickness. Fig. 076 can only be used as a guide on top of beam or on vertical piping. Fig. 076 may be installed onto wood using supplied fasteners. Intended for attachment to concrete, steel structural members, and sheet metal, with fasteners and fastening methods that comply with NFPA13 requirements. Features flared edges to protect piping as it slides through the installed fitting.

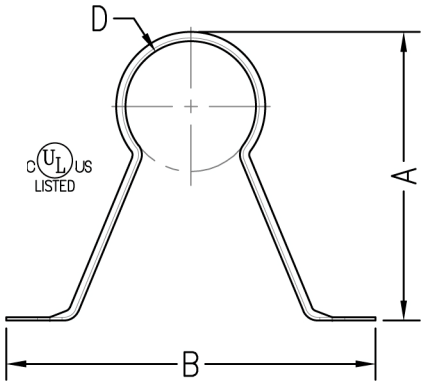
Size: $^{3}/_{4}$" (20) through 2" (50) CPVC pipe.

Material: Carbon Steel

Finish: Pre-galvanized

Approvals: Underwriters Laboratories listed for US and Canada.

Ordering: Specify figure number and pipe size.



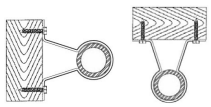
Pipe Size		A		B		D Nominal		Box Qty.	Max. Spacing		Appx. Wt. Per 100	
									ft.	m	lbs.	kg
$^{3}/_{4}$	(20)	$2^{9}/_{16}$	(65.09)	$4^{1}/_{4}$	(107.95)	1.050	(26.67)	100	5.5	(1.68)	12.10	(5.49)
1	(25)	$2^{13}/_{16}$	(71.44)	$4^{1}/_{2}$	(114.30)	1.315	(33.40)	100	6	(1.83)	12.80	(5.81)
$1^{1}/_{4}$	(32)	$3^{3}/_{16}$	(80.96)	$4^{5}/_{8}$	(117.48)	1.660	(42.16)	100	6.5	(1.98)	14.10	(6.40)
$1^{1}/_{2}$	(40)	$3^{7}/_{16}$	(87.31)	5	(127.00)	1.900	(48.26)	100	7	(2.13)	15.20	(6.89)
2	(50)	$3^{7}/_{8}$	(98.43)	5	(127.00)	2.375	(60.33)	100	8	(2.44)	16.40	(7.44)

PHD Manufacturing, Inc.
44018 Columbiana-Waterford Road
Columbiana, Ohio 44408-9481
Phone: 800-321-2736 • 330-482-9256
Fax: 330-482-2763
Web: www.phd-mfg.com

FIGURE 076 INSTALLATION INSTRUCTIONS

FUNCTION: Designed to support CPVC pipe horizontally from the side or bottom of beam, or composite wood joists with a minimum of 3/8" web thickness. **Fig. 076 can only be used as a guide on top of beam or on vertical piping.** Fig. 076 may be installed onto wood using supplied fasteners. Intended for attachment to concrete, steel structural members, and sheet metal, with fasteners and fastening methods that comply with NFPA13 requirements. Features flared edges to protect piping as it slides through the installed fitting.

ORIENTATIONS:



SUPPORT

GUIDE

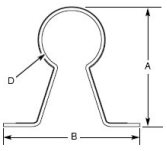
APPROVALS: Underwriters Laboratories listed for US and Canada

MATERIAL: Carbon Steel Fitting and two #10 X 1" hardened unslotted indented hex head self threading screws

FINISH: Pre-galvanized G-90

WARNINGS: The safety of the total system involves a system designer, installer, and user. The manufacturer has limited or no control over such factors as environmental conditions, total system design, product selection, and maintenance. The installer is responsible for the application to conform to local codes, the integrity of attaching structure, and the use of proper fasteners. Failure to follow these specifications may result in product malfunction. All load ratings are for static conditions and neglect dynamic loading of any kind. Observe all safety regulations for your surroundings while installing.

INSTALLATION: Clip strap around CPVC pipe and squeeze strap back around pipe to size noted below, or slide over end of pipe. Fig. 076 should slide freely on pipe. Then orient and mount strap to surface where applicable taking into account the maximum spacing allowed between straps. Install in compliance with NFPA 13 and local codes. DO NOT use impact tools when installing. No pre-drilling is required when utilizing supplied fasteners.



Pipe Size	A	B	D Nominal	Material Size	Max Spacing
3/4	2 5/8	3 1/2	1.050	20 ga. X 1 1/8"	5'-6"
1	2 15/16	3 1/2	1.315	20 ga. X 1 1/8"	6'-0"
1 1/4	3 1/4	3 1/2	1.660	20 ga. X 1 1/8"	6'-6"
1 1/2	3 1/2	3 1/2	1.900	20 ga. X 1 1/8"	7'-0"
2	3 15/16	4	2.375	20 ga. X 1 1/8"	8'-0"

4/11/19

CPVC STRAPS

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CPVC TWO-HOLE SIDE MOUNT STRAP — FIG. 077

Function: Designed to support CPVC pipe horizontally from the side or bottom of beam. Fig. 077 can only be used as a guide on top of beam or on vertical piping. Fig. 077 also acts as a restrainer to prevent the thrust of a sprinkler head during activation when mounted on top of structure. Fig. 077 may be installed onto wood using supplied fasteners or into, minimum 20 gauge, steel using two 1/4" X 1" tek type screws (not included). Features flared edges to protect piping and retaining dimples to allow for easy installation onto pipe.

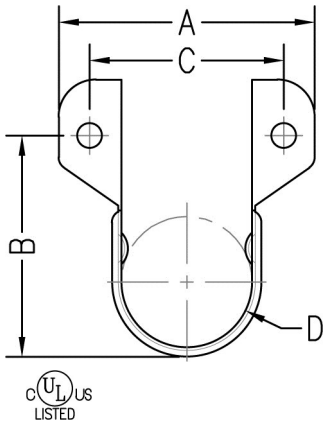
Size: 3/4" (20) through 2" (50) CPVC pipe.

Material: Carbon Steel

Finish: Pre-galvanized

Approvals: Underwriters Laboratories listed for US and Canada.

Ordering: Specify figure number and pipe size.



Pipe Size		A		B		C		D Nominal		Box Qty.	Max. Spacing		Appx. Wt. Per 100	
											ft.	m	lbs.	kg
3/4	(20)	2 5/16	(58.74)	1 7/8	(47.63)	1 11/16	(42.86)	1.050	(26.67)	100	5.5	(1.68)	8.50	(3.86)
1	(25)	2 9/16	(65.09)	2 3/16	(55.56)	1 15/16	(49.21)	1.315	(33.40)	100	6	(1.83)	9.40	(4.26)
1 1/4	(32)	2 15/16	(74.61)	2 1/2	(63.50)	2 5/16	(58.74)	1.660	(42.16)	100	6.5	(1.98)	10.40	(4.72)
1 1/2	(40)	3 1/4	(82.55)	2 13/16	(71.44)	2 5/8	(66.68)	1.900	(48.26)	100	7	(2.13)	11.30	(5.13)
2	(50)	3 5/8	(92.08)	3 1/4	(82.55)	3	(76.20)	2.375	(60.33)	100	8	(2.44)	13.20	(5.99)

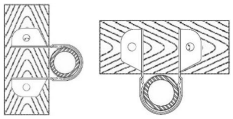
Unless otherwise specified, all dimensions on drawings and in charts are in inches and dimensions shown in parentheses are in millimeters.

PHD Manufacturing, Inc.
44018 Columbiana-Waterford Road
Columbiana, Ohio 44408-9481
Phone: 800-321-2736 • 330-482-9256
Fax: 330-482-2763
Web: www.phd-mfg.com

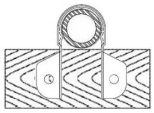
FIGURE 077 INSTALLATION INSTRUCTIONS

FUNCTION: Designed to support CPVC pipe horizontally from the side or bottom of beam. **Fig. 077 can only be used as a guide on top of beam or on vertical piping. Fig. 077 also acts as a restrainer to prevent the thrust of a sprinkler head during activation when mounted on top of structure.** Fig. 077 may be installed onto wood using supplied fasteners or into, minimum 20 gauge, steel using two 1/4" X 1" tek type screws. Features flared edges to protect piping and retaining dimples to allow for easy installation onto pipe.

ORIENTATIONS:



SUPPORT



RESTRAINT/GUIDE

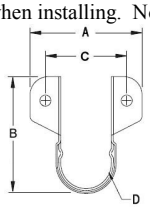
APPROVALS: Underwriters Laboratories listed for US and Canada

MATERIAL: Carbon Steel Fitting and two #10 X 1" hardened unslotted indented hex head self threading screws

FINISH: Pre-galvanized G-90

WARNINGS: The safety of the total system involves a system designer, installer, and user. The manufacturer has limited or no control over such factors as environmental conditions, total system design, product selection, and maintenance. The installer is responsible for the application to conform to local codes, the integrity of attaching structure, and the use of proper fasteners. Failure to follow these specifications may result in product malfunction. All load ratings are for static conditions and neglect dynamic loading of any kind. Observe all safety regulations for your surroundings while installing.

INSTALLATION: Clip strap around CPVC pipe or slide over end of pipe, Fig. 077 should slide freely on pipe. Then orient and mount strap to surface where applicable taking into account the maximum spacing allowed between straps. Install in compliance with NFPA and local codes. DO NOT use impact tools when installing. No pre-drilling is required when utilizing supplied fasteners.



Pipe Size	A	B	C	D Nominal	Material Size	Max Spacing
3/4	2 5/16	2 15/32	1 11/16	1.050	20 ga. X 1 1/8"	5'-6"
1	2 9/16	2 23/32	1 15/16	1.315	20 ga. X 1 1/8"	6'-0"
1 1/4	2 29/32	3 1/16	2 9/32	1.660	20 ga. X 1 1/8"	6'-6"
1 1/2	3 5/32	3 5/16	2 17/32	1.990	20 ga. X 1 1/8"	7'-0"
2	3 5/8	3 25/32	3	2.375	20 ga. X 1 1/8"	8'-0"

Fig. 25 - Surge Restrainer

c UL US LISTED

Size Range — One size fits 3/4" thru 2" pipe.

Material — Pre-Galvanized Steel

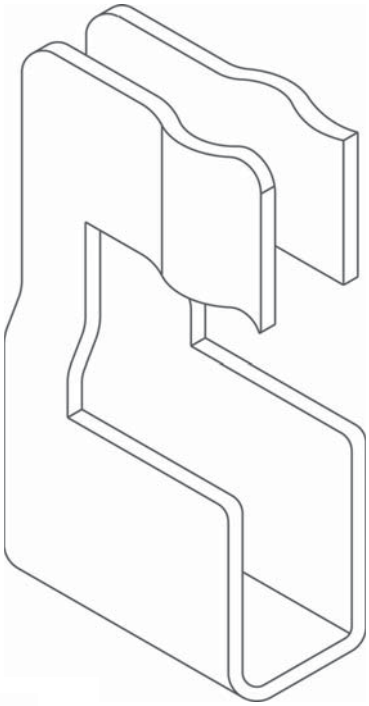
Function — Designed to be used in conjunction with TOLCO® Band Hangers to restrict the upward movement of piping as it occurs during sprinkler head activation or earthquake type activity. The surge restrainer is easily and efficiently installed by snapping into a locking position on the band hanger. This product is intended to satisfy the requirements as indicated in the National Fire Protection Association NFPA 13, 2010 edition, 9.2.3.4.4.1 and 9.2.3.4.4.4 Can be used to restrain either steel pipe or CPVC plastic Pipe.

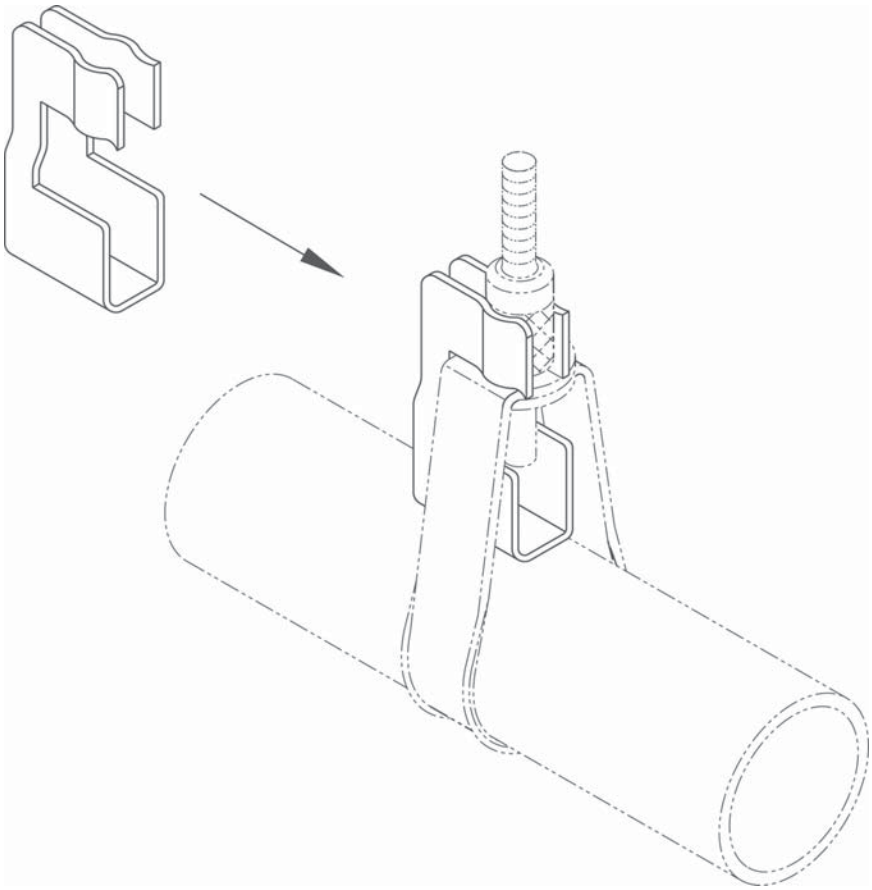
Approvals — Underwriters' Laboratories Listed **only** when used with TOLCO band hangers Fig. 2, 2NFPA and 200, in the USA **(UL)** and Canada **(cUL)**.

Finish — Pre-Galvanized

Order By — Figure number and TOLCO band hanger, size from 3/4" thru 2".

Patent #5,344,108





TOLCO Fig. 74 & Fig. 77 Installation Instructions

Structural attachment for restraint (sway brace) & hanger assembly

Product overview - Fig. 74

Options are available with or without hardware. All options should be used in accordance with NFPA-13.

- Accommodates ⅜" (9.5mm) or ½" (12.7mm) standard all threaded rod (ATR) as the restraint (brace) member, refer to NFPA 13 (2013) Table 9.3.5.11.8 (a)(b) & (c) for allowable brace lengths.
- Multiple holes to allow various fasteners to attach to the structure.
  - Larger hole accommodates ⅜" (9.5mm) fastener.
  - Smaller hole accomodates ¼" (6.4mm) or #10 fasteners.
- Barrel rolls freely to allow installation angles from 0° to 90° from the mounting surface.

Fig 74 listed as a hanger by UL for Fig 74 - A and Fig 74 - W/O (with appropriately rated hardware) to support up to 4" (100mm) pipe.

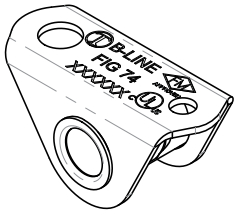


Fig. 74

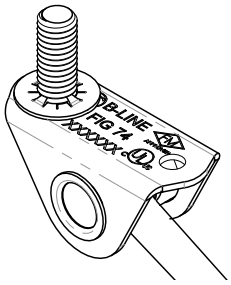


Fig. 74-C

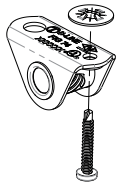


Fig. 74 w/o

Fig. 74 -A

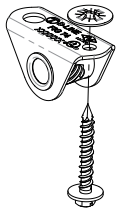
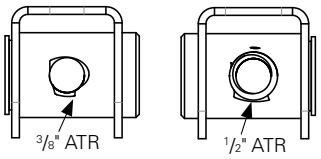


Fig. 74 -B

Dual Threaded Hole



—	Part No.	Description
W0	**FIG 74 W0**	Without screws
A	**FIG 74 A**	Hex bolt
B	**FIG 74 B**	Concrete anchor
C	**FIG 74 C**	Steel, self

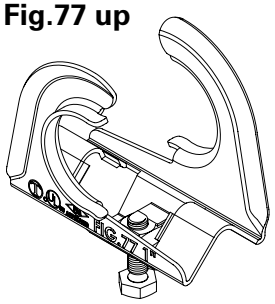
Product overview - Fig. 77

Fig. 77 – system piping attachment for restraint (sway brace) assembly

- Accommodates ⅜" (9.5mm) or ½" (12.7mm)standard all threaded rod (ATR) as the restraint (brace) member, refer to NFPA 13 for allowable brace length.
- UL Listed for Steel Sch. 10, 40 and light wall engineered pipe and plastic CPVC pipe.[§]
- FM Approved for Steel Sch. 10, 40 and light wall engineered pipe.

Fig. 74 & Fig.77 assembly

Fig.77 up



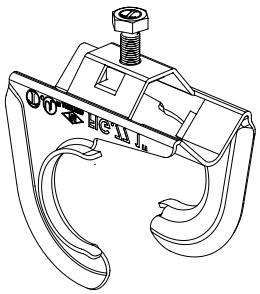


Fig.77 down

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Recommended installation method:

Step 1: Install all threaded rod (ATR), (brace member) to TOLCO™ Fig. 74 structural attachment. Bottom out ½" ATR in barrel nut or thread ⅜" ATR through to back side of barrel nut for proper engagement.

Step 2: Install TOLCO Fig. 77 system attachment to sprinkler pipe branch line to be restrained. You can position with the rod engagement either above or below the sprinkler pipe. Rod must extend a minimum of 1" (25.4mm) past the edge of the Fig. 77. The attachment can be slid along the pipe to position close to where the Fig. 74 structural attachment will be fastened to the structure. The snap on design of the Fig. 77 allows maximum adjustability during this stage of the installation process. The Fig. 74 can be rotated to accommodate angles from 0° to 90° from the mounting surface. See Fig. 74 images to the right.

Step 3: Engage ATR attached to the Fig. 74 structural attachment to the rod engagement portion of the Fig. 77 system attachment. **DO NOT** tighten the set bolt at this time.

Step 4: Install Fig. 74 structural attachment to the building structure. Follow fastener manufacturer and NFPA 13 guidelines to install appropriate fastener for the structural type (i.e. concrete, wood, steel).

Step 5: Tighten set bolt on Fig. 77 system attachment until head breaks off verifying proper installation torque.

Sway brace assemblies are intended to be installed in accordance with NFPA 13 and the manufacturer's installation instructions.

NOTICE

§ When installing Fig. 77 to plastic (CPVC) pipe do **NOT** use power tools to tighten the break-off head set bolt as this may cause damage to the plastic pipe.

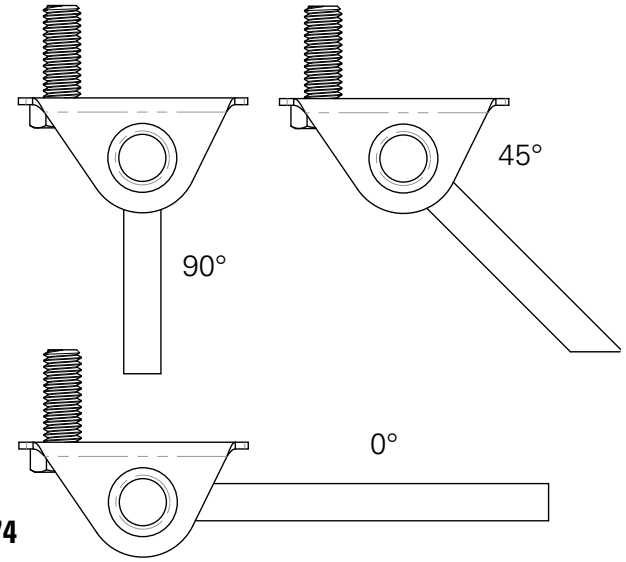

Fig. 74

- Fig. 74 can be rotated to any angle from 0° to 90° to meet the installation requirements.
- The same bending angles apply to a side mount application.
- These bending allowances apply to the installation of the Fig. 74 as both as a component of a branch line restraint or component of a hanger assembly.

UL listed maximum allowable loads (horizontal)

Product	Sch. 10, Sch. 40, Dynaflow & CPVC ⅜" Rod (9.5mm)	½" Rod (12.7mm)
Fig. 74 (sway brace)	300 lbs. (1.344 kN)	300 lbs. (1.344 kN)
Fig. 77 – 1" (25.4)	300 lbs. (1.344 kN)	300 lbs. (1.344 kN)
Fig. 77 – 1¼" (31.75)	300 lbs. (1.344 kN)	300 lbs. (1.344 kN)
Fig. 77 – 1½" (38.1)	300 lbs. (1.344 kN)	300 lbs. (1.344 kN)
Fig. 77 – 2" (50.8)	300 lbs. (1.344 kN)	300 lbs. (1.344 kN)

All thread rod maximum restraint lengths

Rod	Root	Least Radius of Gyration	Maximum Unbraced Length (L) - in/Max. Horizontal Load @ 45° (lbs.)**			
Size (in)	Dia. (in)	r (in)	l/r=100	l/r=200	l/r=300	l/r=400†
⅜	0.300	0.075	7/(300)	14/(186)	22/(82)	30/(44)
½	0.404	0.101	10/(300)‡	20/(300)‡	30/(152)	40/(85)

† l/r = 400 NFPA 13 2010, Sec 9.3.6.1 (5) † l/r = 400 NFPA 13 2013,Sec 9.3.6.1 (5)

** Per NFPA 13 (2013) Table 9.3.5.11.8 (a)(b)(c); for additional load information at various other angles see this table.

‡Maximum load governed by Fig. 74 and Fig. 77 Maximum horizontal load.

FM approved* maximum allowable loads***

Product	30° - 44° ⅜" Rod (9.5mm)	30° - 44° ½" Rod (12.7mm)	45° - 59° ⅜" Rod (9.5mm)	45° - 59° ½" Rod (12.7mm)	60° - 74° ⅜" Rod (9.5mm)	60° - 74° ½" Rod (12.7mm)	75° - 90° ⅜" Rod (9.5mm)	75° - 90° ½" Rod (12.7mm)
Fig. 74	790 (3.51 kN)	790 (3.51 kN)	810 (3.60 kN)	810 (3.60 kN)	620 (2.76 kN)	620 (2.76 kN)	680 (3.02 kN)	680 (3.02 kN)
Fig. 77 – 1" (25.4)	140 (.623 kN)	160 (.712 kN)	200 (.890 kN)	230 (1.02 kN)	250 (1.11 kN)	280 (1.25 kN)	280 (1.25 kN)	320 (1.42 kN)
Fig. 77 – 1¼" (31.75)	140 (.623 kN)	170 (.756 kN)	200 (.890 kN)	250 (1.11 kN)	250 (1.11 kN)	300 (1.33 kN)	280 (1.33 kN)	340 (1.51 kN)
Fig. 77 – 1½" (38.1)	130 (.578 kN)	160 (.712 kN)	190 (.845 kN)	230 (1.02 kN)	230 (1.02 kN)	280 (1.25 kN)	260 (1.29 kN)	320 (1.42 kN)
Fig. 77 – 2" (50.8)	120 (.534 kN)	150 (.667 kN)	170 (.756 kN)	210 (.934 kN)	210 (.934 kN)	260 (1.29 kN)	240 (1.07 kN)	290 (1.29 kN)

*Approved for Sch. 10, Sch. 40, Dynaflow, Eddy flow.
***For Fig 74 - B and Fig 74 - C, utilize UL load of 300 lbs.

Eaton
1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com

B-Line Division
13201 Dahlia Street, Suite 200
Fontana, CA 92337
United States
Phone: 800-851-7415

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Publication No. IL309021EN
March 1, 2023 SEIS-4

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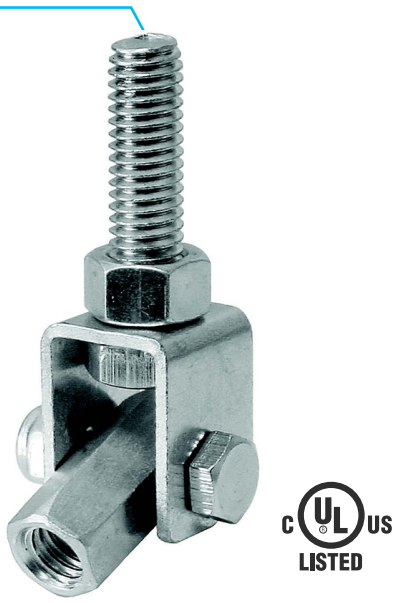
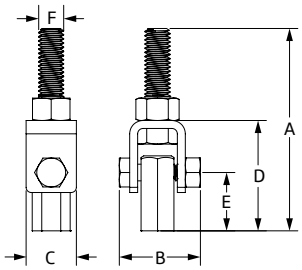
ASC Engineered Solutions

Swivel Attachment
Fig. AF777



Dimensions (In)

Rod Size	A	B	C	D	E	F
3/8	3	1 3/8	3/4	1 5/8	7/8	3/8
1/2	3 5/8	1 1/2	1 3/16	1 13/16	7/8	1/2



Loads (Lbs) • Dimensions (In)

Hanger Rod Diameter	UL Max Sprinkler Pipe Size (UL 203)	UL Max Seismic Restraint Load (UL 203a)	Max Hanger Load
3/8	Up to 4" Pipe	1,000	250
1/2	Up to 8" Pipe	n/a	760

Notes
ASC Engineered Solutions™ brand bracing components are designed to be compatible ONLY with other ASC Engineered Solutions brand bracing components, resulting in a Listed seismic bracing assembly. Updated UL listing information may be viewed at www.ul.com

Disclaimer
ASC Engineered Solutions does not provide any warranties and specifically disclaims any liability whatsoever with respect to ASC Engineered Solutions bracing products and components that are used in combination with products, parts or systems not manufactured or sold by ASC Engineered Solutions. In no event shall ASC Engineered Solutions be liable for any incidental, direct, consequential, special or indirect damages or lost profits where non-ASC Engineered Solutions bracing components have been, or are used.

Material Specifications

Size Range
3/8" through 1/2" rod

Material
Carbon steel

Finish
Electro-Galvanized per ASTM B633

Hanger Service:
Swivel hanger designed to support horizontal piping from angled structures. Listed for installation at angles between 0 and 90 degrees.

Restraint Service
May be installed as a branch line restraint per the requirements of NFPA 13. The AF777 may be installed directly to the structure or to the Fig. AF779.

Approvals
cULus Listed (UL 203 and UL 203a – 3/8" only). Complies with the hanging and restraint requirements listed in NFPA 13.

Installation
- Install mounting bolt into structure or structural attachment and tighten hex nut until the yoke (U-Shaped Bracket) is tight against the structure or attachment.
- Thread the hanger rod or restraint rod into the hex union until it bottoms. Back rod off a maximum of one turn to allow the hex union to swivel freely.
- Adjust angle as necessary.
- If the AF777 is exposed to vibration from the piping system or the structure, jam nuts may be installed on the mounting bolt and the threaded rod.
- Fire Protection applications shall also be installed per NFPA 13 requirements.

Features
Full 90 degree rotation allows for installation at any angle.

Ordering
Specify figure number, finish, size, and description.

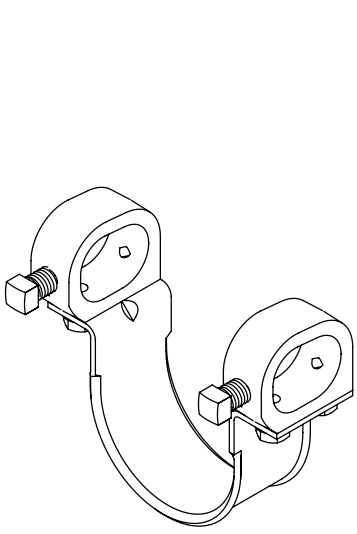
ANVIL®
An ASC Engineered Solution

PROJECT INFORMATION	APPROVAL STAMP
Project:	☐ Approved
Address:	☐ Approved as noted
Contractor:	☐ Not approved
Engineer:	Remarks:
Submittal Date:	
Notes 1:	
Notes 2:	

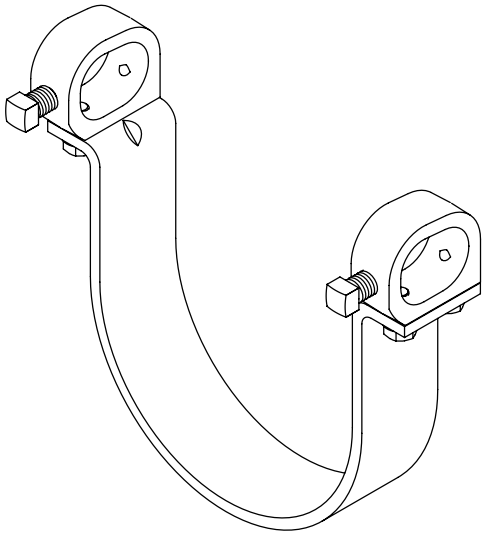
ASC Engineered Solutions

Model K Lateral Sway Brace
Fig. AF035

c UL us LISTED FM APPROVED



1" (DN25) to 3" (DN80) Service Pipe



4" (DN100) to 12" Service Pipe

Material Specifications

Size Range:
Service Pipe Size: 1" – 12"
Brace Member: 1" – 2"

Material
Ductile Iron Casting with Carbon Steel Strap and Hardware

Finish
☐ Plain
☐ Electro-Galvanized

Service
A seismic lateral brace designed to connect a brace member to the service pipe. The AF035 rigidly braces steel and CPVC piping systems subjected to horizontal and vertical seismic loads.

Approvals
cULus Listed (ANSI/UL 203a) and FM Approved (FM 1950-13). Complies with NFPA 13, ASCE 7, IBC, & MSS SP-127 bracing requirements.

Features
- The set screw provides a visual indication that proper installation has been achieved
- Rounded edge design eliminates potential for abrasion of CPVC pipe

Patents
No. 7,516,922, No. 7,523,895

Ordering
Specify figure number, service pipe size, brace size, finish, and description.

AFCON
An ASC Engineered Solution

PROJECT INFORMATION	APPROVAL STAMP
Project:	☐ Approved
Address:	☐ Approved as noted
Contractor:	☐ Not approved
Engineer:	Remarks:
Submittal Date:	
Notes 1:	
Notes 2:	

Model K Lateral Sway Brace
Fig. AF035

FIG. AF035: Weight Per Size

Service Pipe Size	Brace Member Size			
	1" (DN25)	1¼"(DN32)	1½" (DN40)	2" (DN50)
1 (DN25)	1.60 lbs	1.80 lbs	2.00 lbs	2.28 lbs
1¼" (DN32)	1.68 lbs	1.88 lbs	2.08 lbs	2.36 lbs
1½" (DN40)	1.64 lbs	1.84 lbs	2.04 lbs	2.32 lbs
2" (DN50)	1.88 lbs	2.08 lbs	2.28 lbs	2.56 lbs
2½"	1.90 lbs	2.10 lbs	2.30 lbs	2.58 lbs
DN65	2.00 lbs	2.20 lbs	2.40 lbs	2.68 lbs
3" (DN80)	2.10 lbs	2.30 lbs	2.50 lbs	2.78 lbs
4" (DN100)	2.18 lbs	3.38 lbs	3.58 lbs	3.76 lbs
5" (DN125)	3.40 lbs	3.60 lbs	3.80 lbs	4.08 lbs
DN150	3.80 lbs	4.00 lbs	4.20 lbs	4.48 lbs
6"	3.90 lbs	4.10 lbs	4.30 lbs	4.58 lbs
DN200	4.70 lbs	4.90 lbs	5.10 lbs	5.38 lbs
8"	4.80 lbs	5.00 lbs	5.20 lbs	5.48 lbs
10"	5.60 lbs	5.80 lbs	6.00 lbs	6.28 lbs
12"	6.16 lbs	6.36 lbs	6.56 lbs	6.84 lbs

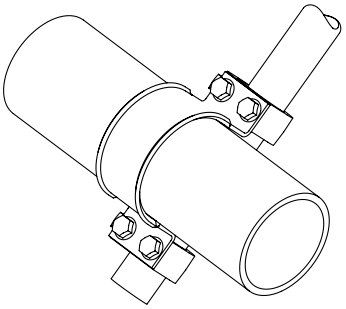
ASC Engineered Solutions

Model K Lateral Sway Brace
Fig. AF035

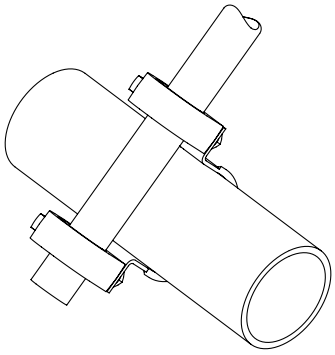
FIG. AF035 cULus Listing per ANSI/UL 203a (ASD)

Service Pipe Size	Standard Service Pipe	Speicalty Service Pipe	Horizontal Load Rating at Brace Angle			
			30°-44°	45°-59°	60°-90°	Listed
			lbf/kN	lbf/kN	lbf/kN	lbf/kN
1" (DN25)	Sch. 10 Sch. 40 CPVC Metric Pipe	Mega-Thread MLT / GL Eddy Thread EZ-Thread				
1¼" (DN32)	Sch. 10 Sch. 40 CPVC Metric Pipe	Mega-Flow MLT / GL Mega-Thread Eddy Flow Eddy Thread EZ-Thread				
1½" (DN40)	Sch. 10 Sch. 40 CPVC Metric Pipe	Mega-Flow MLT / GL Mega-Thread Eddy Flow Eddy Thread EZ-Thread Fire-Flo	625 2.78	884 3.93	1082 4.81	1250 5.56
2" (DN50)	Sch. 10 Sch. 40 CPVC Metric Pipe	Mega-Flow MLT / GL Mega-Thread Eddy Flow Eddy Thread EZ-Thread Fire-Flo				
2½"	Sch. 10 Sch. 40 CPVC	Mega-Flow Eddy Flow Fire-Flo				
DN65	Metric Pipe	–				
3" (DN80)	Sch. 10 Sch. 40 CPVC Metric Pipe	Mega-Flow Eddy Flow Fire-Flo				
4" (DN100)	Sch. 10 Sch. 40 Metric Pipe	Mega-Flow Eddy Flow Fire-Flo				
5" (DN125)	Sch. 10 Sch. 40 Metric Pipe	–				
DN150	Metric Pipe	–	942 4.19	1333 5.93	1632 7.26	1885 8.38
6"	Sch. 10 Sch. 40	Mega-Flow				
DN200	Metric Pipe	–				
8"	0.188" wall Sch. 40	–				
10"	0.188" wall Sch. 40	–				
12"	0.188" wall Sch. 40	–	1125 5.00	1591 7.08	1948 8.67	2250 10.01

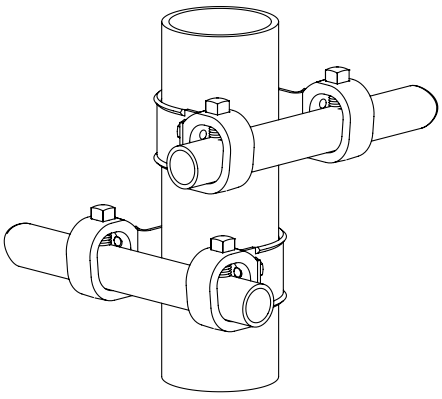
1) Brace Angles are determined from Vertical.
2) Sch. 10 & 0.188" Wall Load Ratings may be used for any thicker wall pipe of the same diameter.
3) Listed load ratings reduced for angle ranges in accordance with NFPA 13-2019 Table 18.5.2.3.
4) See table below for UL listed specialty pipes & UL Listed metric service pipes.
5) Load Ratings reflect 1" (DN25) – 2" (DN50) brace members. See table below for listed brace members.
6) Minimum safety factor of 2.2 in accordance with NFPA 13-2019 Section A.18.5.2.3.



Lateral Application



Lateral Application



Riser Application

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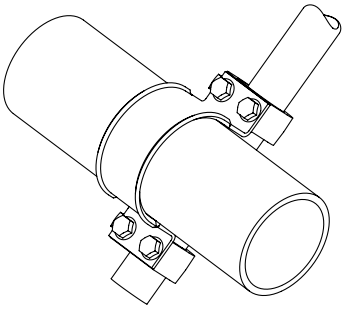
Model K Lateral Sway Brace
Fig. AF035

FIG. AF035 cULus Listing Per UL 203a (ASD) For NFPA 13-2016 Editions Or Earlier

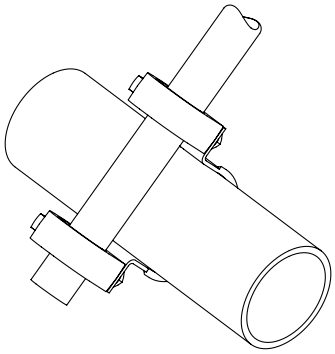
UL's current Listings are predicated on installation in accordance with the latest edition of NFPA 13. The 2016 and earlier editions of NFPA 13 referenced a minimum safety factor of 1.5 for the load rating as compared to 2.2 for the current edition. The load ratings noted in this table are consistent with the historical cULus Listings that were evaluated to the requirements of UL 203A, Outline of Investigation for Sway Brace Devices for Fire Sprinkler System Piping, based upon a minimum safety factor of 1.5 in accordance with the earlier editions of NFPA 13. The load ratings based upon the 2016 or earlier editions of NFPA 13 should only be used where approved by the Authority Having Jurisdiction (AHJ).

Service Pipe Size	Standard Service Pipe	Speicalty Service Pipe	Horizontal Load Rating at Brace Angle			
			30°-44°	45°-59°	60°-74°	75°-90°
			lbf/kN	lbf/kN	lbf/kN	lbf/kN
1" (DN25)	Sch. 10 Sch. 40 Metric Pipe	Mega-Thread MLT / GL Eddy Thread EZ-Thread				
1¼" (DN32)	Sch. 10 Sch. 40 Metric Pipe	Mega-Flow MLT / GL Mega-Thread Eddy Flow Eddy Thread EZ-Thread				
1½" (DN40)	Sch. 10 Sch. 40 Metric Pipe	Mega-Flow MLT / GL Mega-Thread Eddy Flow Eddy Thread EZ-Thread Fire-Flo				
2" (DN50)	Sch. 10 Sch. 40 Metric Pipe	Mega-Flow MLT / GL Mega-Thread Eddy Flow Eddy Thread EZ-Thread Fire-Flo				
2½"	Sch. 10 Sch. 40 Metric Pipe	Mega-Flow Eddy Flow Fire-Flo	1382 6.15	1955 8.70	2393 10.65	2765 15.52
DN65	Metric Pipe	–				
3" (DN80)	Sch. 10 Sch. 40 Metric Pipe	Mega-Flow Eddy Flow Fire-Flo				
4" (DN100)	Sch. 10 Sch. 40 Metric Pipe	Mega-Flow Eddy Flow Fire-Flo				
5" (DN125)	Sch. 10 Sch. 40 Metric Pipe	–				
DN150	Metric Pipe	–				
6"	Sch. 10 Sch. 40	Mega-Flow				
DN200	Metric Pipe	–				
8"	0.188" Wall Sch. 40	–				
10"	0.188" Wall Sch. 40	–				
12"	0.188" Wall Sch. 40	–	1870 8.32	2644 11.77	3238 14.40	3740 16.64

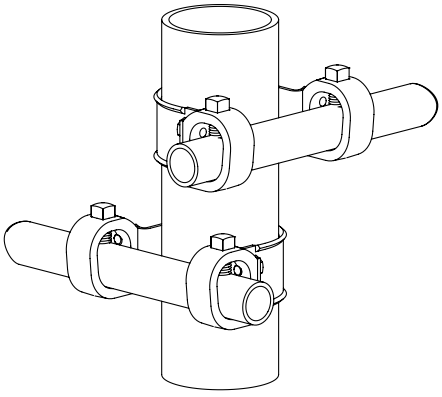
1) Brace Angles are determined from Vertical.
2) Sch. 10 & 0.188" Wall Load Ratings may be used for any thicker wall pipe of the same diameter.
3) Listed load ratings reduced for angle ranges in accordance with NFPA 13-2016 Section A.9.3.5.2.3.
4) See table below for UL listed specialty pipes & UL Listed metric service pipes.
5) Load Ratings reflect 1" (DN25) – 2" (DN50) brace members. See table below for listed brace members.
6) Minimum safety factor of 2.2 in accordance with NFPA 13-2016 Section A.9.3.5.2.3.



Lateral Application



Lateral Application



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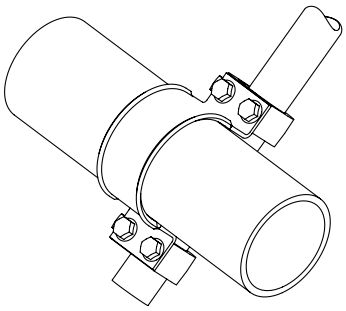
ASC Engineered Solutions

Model K Lateral Sway Brace
Fig. AF035

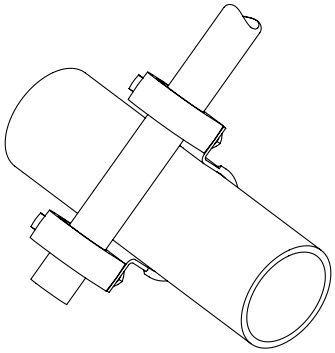
FIG. AF035 FM Approved (Listing) per FM 1950-13 (ASD)

Service Pipe Size	Standard Service Pipe	Speicalty Service Pipe	Horizontal Load Rating at Brace Angle			
			30°-44°	45°-59°	60°-74°	75°-90°
			lbf/kN	lbf/kN	lbf/kN	lbf/kN
1" (DN25)	Sch. 10 Sch. 40 Metric Pipe	Mega-Thread MLT / GL Eddy Thread EZ-Thread	1660 7.38	2350 10.45	2880 12.81	3210 14.28
1¼" (DN32)	Sch. 10 Sch. 40 Metric Pipe	Mega-Flow MLT / GL Mega-Thread Eddy Flow Eddy Thread EZ-Thread				
1½" (DN40)	Sch. 10 Sch. 40 Metric Pipe	Mega-Flow MLT / GL Mega-Thread Eddy Flow Eddy Thread EZ-Thread Fire-Flo	1540 6.85	2170 9.65	2660 11.83	2970 13.21
2" (DN50)	Sch. 10 Sch. 40 Metric Pipe	Mega-Flow MLT / GL Mega-Thread Eddy Flow Eddy Thread EZ-Thread Fire-Flo				
2½"	Sch. 10 Sch. 40	Mega-Flow Eddy Flow Fire-Flo	1270 5.65	1790 7.96	2200 9.79	2450 10.90
DN65	Metric Pipe	–				
3" (DN80)	Sch. 10 Sch. 40 Metric Pipe	Mega-Flow Eddy Flow Fire-Flo				
4" (DN100)	Sch. 10 Sch. 40 Metric Pipe	Mega-Flow Eddy Flow Fire-Flo	1020 4.54	1450 6.45	1770 7.87	1980 8.81
5" (DN125)	Sch. 10 Sch. 40 Metric Pipe	–	860 3.83	1220 5.43	1490 6.63	1660 7.38
DN150	Metric Pipe	–				
6"	Sch. 10 Sch. 40	Mega-Flow				
DN200	Metric Pipe	–	540 2.40	770 3.43	950 4.23	1060 4.72
8"	0.188" Wall Sch. 40	–				

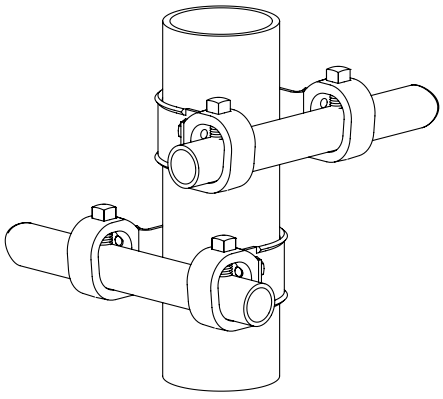
1) Brace Angles are determined from Vertical.
2) Sch. 10 & 0.188" Wall Load Ratings may be used for any thicker wall pipe of the same diameter.
3) See table below for FM listed specialty pipes & FM Listed metric service pipes.
4) Load Ratings reflect 1" (DN25) – 2" (DN50) brace members. See table below for listed brace members.
5) Minimum safety factor of 1.5 in accordance with NFPA 13-2016 Section A.9.3.5.2.3. To convert the load ratings above to a safety factor of 2.2 per NFPA 13-2019 Section A.18.5.2.3, multiply load ratings by a factor of 0.68.
5) To convert to LRFD Load Ratings, ASD Load Ratings may be multiplied by a factor of 1.5.



Lateral Application



Lateral Application



Riser Application

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Building connections that last™

Model K Lateral Sway Brace
Fig. AF035

1 Place the AF035 over the service pipe to be braced.

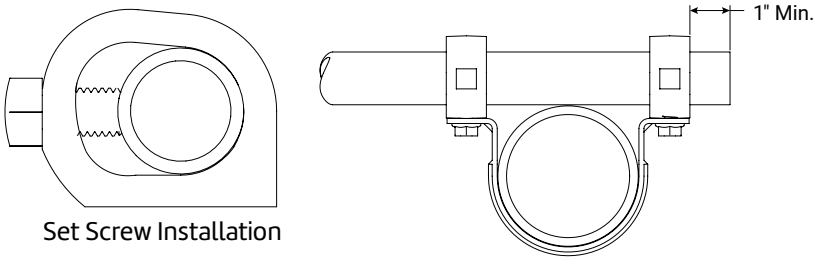
2 Insert the brace member through the cast hoop ends.
The end of the brace pipe shall extend at least 1" (25.4 mm) past the cast hoop ends.

3 Hand tighten the set screws until they contact the brace member.
Continue to torque the set screws until the heads bottom out on the cast hoop ends.

4 Tighten per the fastener or structural attachment specifications.

5 Ensure the brace angle is within the specified range.

Notes: The brace member may be installed above or below the service pipe.



Set Screw Installation

FIG. AF035 cULus Listed & FM Approved Brace Members

Brace Member	Brace Size	Standard (or Equivalent)	UL	FM
Sch. 40 NPS Pipe	1", 1¼", 1½", 2"	ASTM A53, A106, A135, or A795	✓	✓
Sch. 40 Metric Pipe	DN25 DN32 DN40 DN50	KS S 3562	✓	✓
		EN10255H		✓
Metric Pipe		GB/T 3091		✓
		JIS G3454		✓

FIG. AF035 cULus Listed & FM Approved Metric Service Pipes

Service Pipe Standard (or Equivalent)	Service Pipe Size	UL	FM
KS D 3507 KS D 3537	DN25 DN32 DN40 DN50 DN65 DN80 DN100 DN125 DN150 DN200	✓	✓
KS D 3562 Sch. 40		✓	✓
GB/T 3091 GB/T 3092			✓
JIS G3452			✓
EN 10255M			✓
EN 10255H			✓

Notes:
ASC Engineered Solutions™ brand bracing components are designed to be compatible ONLY with other ASC Engineered Solutions brand bracing components, resulting in a Listed seismic bracing assembly. Updated UL listing information may be viewed at www.ul.com and updated FM approval information may be viewed at www.approvalguide.com.

Disclaimer:
ASC Engineered Solutions does not provide any warranties and specifically disclaims any liability whatsoever with respect to ASC bracing products and components that are used in combination with products, parts or systems not manufactured or sold by ASC. In no event shall ASC be liable for any incidental, direct, consequential, special or indirect damages or lost profits where non-ASC bracing components have been, or are used.

Seis Brace® Seismic Fire Protection Design Tool may be accessed at www.seisbrace.com

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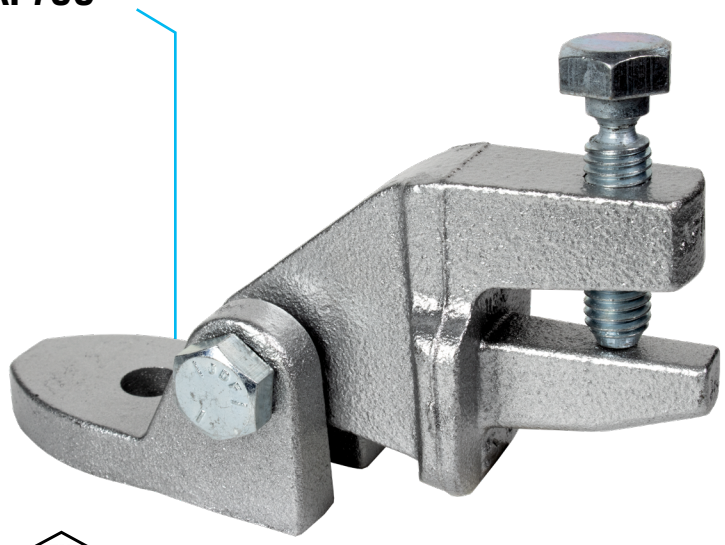
Universal Swivel Attachment
Fig. AF700



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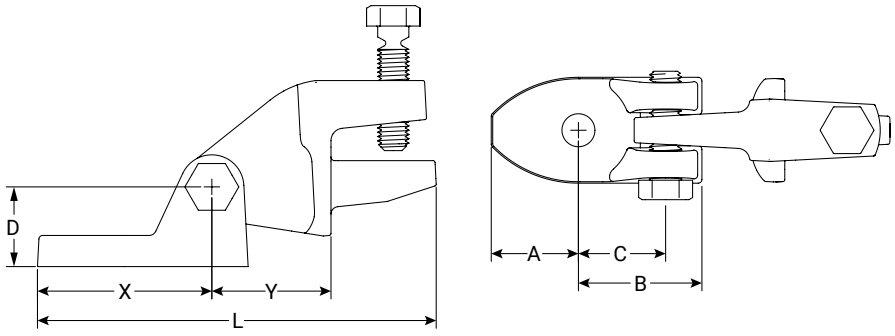


FIG. AF700 Dimensions and Weight

A	B	C	D	L	X	Y	Weight
In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	lbs/kgs
1.40 35.56	1.983 50.37	1.400 35.56	1.280 32.51	6.40 162.6	2.80 71.1	1.91 48.5	2.25 1.02

Notes:

ASC Engineered Solutions™ brand bracing components are designed to be compatible ONLY with other ASC Engineered Solutions brand bracing components, resulting in a Listed seismic bracing assembly. Updated UL listing information may be viewed at www.ul.com and updated FM approval information may be viewed at www.approvalguide.com.

Material Specifications

Size Range
Brace Member: See Table
Anchors: ½"- ¾" (M12—M18)

Material
Ductile Iron with Carbon Steel Hardware

Finish
☐ Plain
☐ Electro-Galvanized per ASTM B633

Service
A seismic swivel attachment designed to connect a brace member to the building structure or to a seismic structural attachment. The AF700 rigidly braces piping systems subjected to horizontal and vertical seismic loads.

Approvals
cULus Listed (ANSI/UL 203a)), FM Approved (FM 1950-13), & FM Tested (FM 1950-16). FM Tested (ANSI/FM 1950-16). Complies with NFPA 13, ASCE 7, IBC, & MSS SP-127 bracing requirements.

Features
- The set screw provides a visual indication that proper installation has been achieved
- Eliminates brace member eccentricity by concentrically loading 1" and 1 ¼" brace pipes

Ordering
Specify figure number, fastener size, finish and description.

Seis Brace® Seismic Fire Protection Design Tool may be accessed at www.seisbrace.com

AFCON
An ASC Engineered Solution

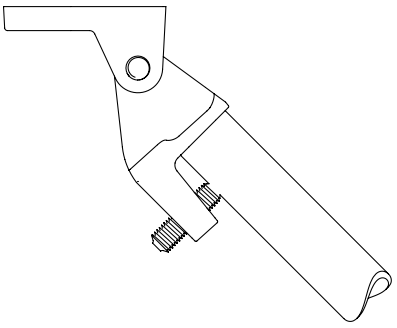
PROJECT INFORMATION	APPROVAL STAMP
Project:	☐ Approved
Address:	☐ Approved as noted
Contractor:	☐ Not approved
Engineer:	Remarks:
Submittal Date:	
Notes 1:	
Notes 2:	

Universal Swivel Attachment
Fig. AF700

FIG. AF700 cULus Listing per ANSI/UL 203a (ASD)

Brace Member	Fastener Size	Horizontal Load Rating at Brace Angle			
		30°- 44°	45°- 59°	60°- 90°	Listed
1" – 2" Sch 40 Pipe (DN25 – DN50)	½"- ¾" (M12-M18)	942 lbf (4.19 kN)	1333 lbf (5.93 kN)	1632 lbf (7.26 kN)	1885 lbf (8.38 kN)

1) Load ratings may apply to NPFA 13 fastener orientations A, B, C, D, E, F, G, H, or I.
2) Brace Angles are determined from Vertical.
3) Listed load ratings reduced for angle ranges in accordance with NFPA 13-2019 Table 18.5.2.3.
4) See table below for listed brace members.
5) Minimum safety factor of 2.2 in accordance with NFPA 13-2019 Section A.18.5.2.3.

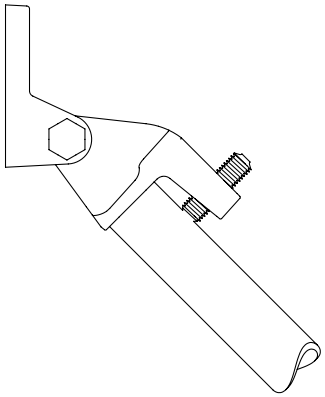


NFPA 13 Orientations A, B, or C

FIG. AF700 FM Approved (Listing) per FM 1950-13 (ASD)

Brace Member	Fastener Size	Horizontal Load Rating at Brace Angle			
		30°-44°	45°-59°	60°-74°	74°-90°
1" – 2" Sch 40 Pipe (DN25 – DN50)	½"- ¾" (M12-M18)	1780 lbf (7.92 kN)	2510 lbf (11.17 kN)	3080 lbf (13.70 kN)	3440 lbf (15.30 kN)

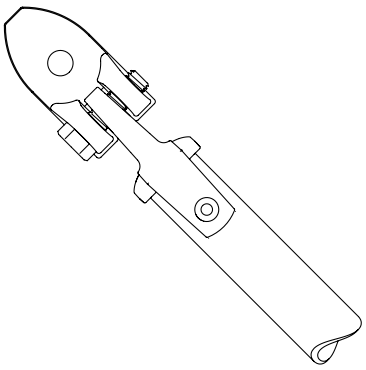
1) Load ratings may apply to NPFA 13 fastener orientations A, B, C, D, E, F, G, H, or I.
2) Brace Angles are determined from Vertical.
3) Listed load ratings reduced for angle ranges in accordance with NFPA 13-2019 Table 18.5.2.3.
4) See table below for listed brace members.
5) Minimum safety factor of 1.5 in accordance with NFPA 13-2016 Section A.9.3.5.2.3. To convert the load ratings above to a safety factor of 2.2 per NFPA 13-2019 Section A.18.5.2.3, multiply load ratings by a factor of 0.68.
6) To convert to LRFD Load Ratings, ASD Load Ratings may be multiplied by a factor of 1.5.



NFPA 13 Orientations D, E, or F

FIG. AF700 FM Listed, Approved & Tested Brace Members

Brace Member	Brace Size	Standard (or Equivalent)	UL	FM
Sch. 40 NPS Pipe	1", 1¼", 1½", 2"	ASTM A53, A106,A135, or A795	✓	✓
Sch. 40 Metric Pipe	DN25	KS S 3562	✓	✓
	DN32	EN10255H		✓
Metric Pipe	DN40	GB/T 3091		✓
	DN50	JIS G3454		✓



NFPA 13 Orientations G, H, or I

FIG AF700 Horizontal Prying Factors (Pr) Per NFPA 13: Angles (Deg)

Fastener Orientation	A	B	C	D	E	F	G	H	I
Brace Angle	30°-44°	45°-59°	60°-90°	30°-44°	45°-59°	60°-90°	30°-44°	45°-59°	60°-90°
AF700	2.55	1.09	0.91	1.41	1.45	2.00	1.83	1.29	1.06
AF700 w/ Metal Deck[1]	2.55	1.09	1.14	–	–	–	–	–	–
AF700 w/ Metal Deck[2]	2.75	1.11	1.14	–	–	–	–	–	–

1) Prying factors reflect the baseplate "B" dimension overhanging the edge of the metal deck. Used for DeWalt anchor loads.
2) Prying factors reflect the baseplate "A" or "B" dimension overhanging the edge of the metal deck. Used for NFPA & Hilti anchor loads.
3) Prying Factors calculated in accordance with NFPA 13-2019 Section A.18.5.12.2.

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Universal Swivel Attachment
Fig. AF700

Method 1 – Connection to Brace Member First

1. Slide the brace member over the lower jaw until it contacts the back wall.
2. Hand tighten the set screw until it contacts the brace member. Continue to torque the set screw until the head breaks off.
3. Rotate the brace assembly up to the fastener or the related seismic structural attachment and connect through the mounting hole.
4. Tighten per the fastener or structural attachment specifications.
5. Ensure the brace angle is within the range specified.

Notes: The cross bolt should be hand tight. For visual inspection, at least one thread should be exposed.

Method 2 – Connection to Structure First

1. Connect the AF700 to the fastener or the related seismic structural attachment.
2. Tighten per the fastener or structural attachment specifications.
3. Slide the brace member over the lower jaw until it contacts the back wall.
4. Hand tighten the set screw until it contacts the brace member. Continue to torque the set screw until the head breaks off.
5. Rotate the brace member until the brace angle is within the specified range.

Notes: The cross bolt should be hand tight. For visual inspection, at least one thread should be exposed..

Structural Attachments, Anchors, & Fasteners Listed, Approved, & Tested with the AF700

Structural Attachment	Structure
AF085	Steel Joist (Top Chord)
AF086	Horizontal Steel Flange (I-Beam Bottom Flange)
AF772	Horizontal Steel Flange (I-Beam Bottom Flange)
AF778	Horizontal Steel Flange (I-Beam Top or Bottom Flange) C-Channel (Top or Bottom Flange) Vertical Flange of a Joist (Top Chord)
AF779	All Structures with the Applicable Approved Anchor or Fastener
DeWalt Power-Stud®+ SD1	Cracked Concrete Cracked Concrete Filled Metal Deck
DeWalt Power-Stud®+ SD2	Cracked Concrete Cracked Concrete Filled Metal Deck
DeWalt Wood-Knocker®II+	Cracked Concrete
DeWalt Bang-It®+	Cracked Concrete Filled Metal Deck
DeWalt DDI+™	Cracked Concrete Filled Metal Deck
Anchors & Fasteners Per NFPA 13	Cracked Concrete Cracked Concrete Filled Metal Deck Steel Wood Saw Lumber or Glue-Laminated Timbers

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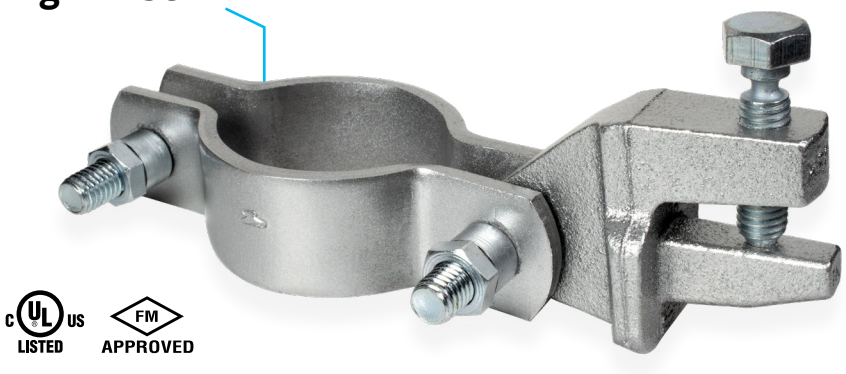
Longitudinal & Lateral Seismic Clamp
Fig. AF730



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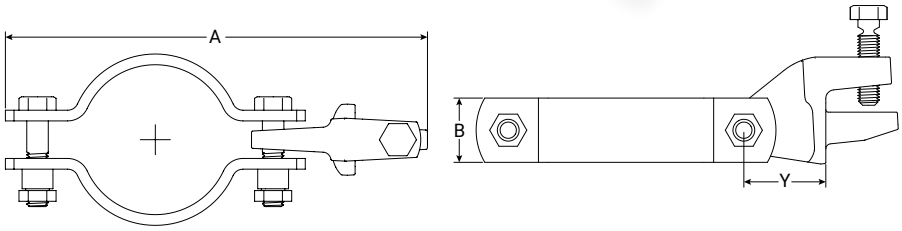


FIG. AF730 Dimensions and Weight

Size	A In./mm	B In./mm	Y In./mm	Weight lbs/kgs
1" (DN25)	7.6 193	1.50 38.1	1.91 48.5	2.49 1.13
1½" (DN32)	8.0 203			2.55 1.13
1½" (DN40)	8.2 208			2.64 1.20
2" (DN50)	8.7 221			2.78 1.26
2½"	9.2 234			2.92 1.32
3" (DN80)	9.8 249			3.13 1.42
4" (DN100)	10.8 274			3.38 1.53
5"	12.1 307			3.81 1.73
6"	13.2 335			4.12 1.87
8"	15.2 386			6.40 2.90
10"	18.1 460			7.60 3.45
12"	20.1 511			8.60 3.90

Notes:
ASC Engineered Solutions™ brand bracing components are designed to be compatible ONLY with other ASC Engineered Solutions brand bracing components, resulting in a Listed seismic bracing assembly. Updated UL listing information may be viewed at www.ul.com and updated FM approval information may be viewed at www.approvalguide.com.

Material Specifications

Size Range
Service Pipe Size: 1" – 12", DN25–DN100

Material
Carbon Steel Clamp and Hardware. Ductile Iron Brace Member Attachment Fitting.

Finish
- ☐ Plain
- ☐ Clamp: Hot Dipped Galvanized per ASTM A153
- ☐ Brace Member Attachment Fitting: Electro-Galvanized per ASTM B633

Service
A seismic longitudinal and lateral brace clamp designed to connect a piping system to a brace member. The AF730 rigidly braces piping systems subjected to horizontal and vertical seismic loads.

Approvals
cULus Listed (ANSI/UL 203a) and FM Approved (FM 1950–13). FM Tested (ANSI/FM 1950–16). Complies with NFPA 13, ASCE 7, IBC, & MSS SP–127 bracing requirements.

Features
- Torque off set screw and nuts provide a visual indication that the desired installation torque values have been achieved.

Ordering
Specify figure number, service pipe size, finish, and description.

Seis Brace® Seismic Fire Protection Design Tool may be accessed at www.seisbrace.com

AFCON
An ASC Engineered Solution

PROJECT INFORMATION	APPROVAL STAMP
Project:	☐ Approved
Address:	☐ Approved as noted
Contractor:	☐ Not approved
Engineer:	Remarks:
Submittal Date:	
Notes 1:	
Notes 2:	

ASC Engineered Solutions

Longitudinal & Lateral Seismic Clamp
Fig. AF730

FIG. AF730 cULus Listing per ANSI/UL 203a (ASD)

Service Pipe Size	Standard Service Pipe	Specialty Service Pipe	Horizontal Load Rating at Brace Angle							
			Longitudinal Load Rating				Lateral Load Rating			
			30°-44°	45°-59°	60°-90°	Listed	30°-44°	45°-59°	60°-90°	Listed
			lbf/kN	lbf/kN	lbf/kN	lbf/kN	lbf/kN	lbf/kN	lbf/kN	lbf/kN
1" (DN25)	Sch. 10 Sch. 40 Metric Pipe	Mega-Thread MLT / GL Eddy Thread EZ-Thread	340 1.51	480 2.14	588 2.62	680 3.02	340 1.51	480 2.14	588 2.62	680 3.02
1¼" (DN32)	Sch. 10 Sch. 40 Metric Pipe	Mega-Flow MLT / GL Mega-Thread Eddy Flow Eddy Thread EZ-Thread								
1½" (DN40)	Sch. 10 Sch. 40 Metric Pipe	Mega-Flow MLT / GL Mega-Thread Eddy Flow Eddy Thread Fire-Flo EZ-Thread	375 1.67	530 2.36	649 2.89	750 3.34	375 1.67	530 2.36	649 2.89	750 3.34
2" (DN50)	Sch. 10 Sch. 40 Metric Pipe	Mega-Flow MLT / GL Mega-Thread Eddy Flow Eddy Thread Fire-Flo EZ-Thread								
2½"	Sch. 10 Sch. 40	Mega-Flow Eddy Flow Fire-Flo	545 2.42	770 3.43	943 4.19	1090 4.85	545 2.42	770 3.43	943 4.19	1090 4.85
3" (DN80)	Sch. 10 Sch. 40 Metric Pipe	Mega-Flow Eddy Flow Fire-Flo								
4" (DN100)	Sch. 10 Sch. 40 Metric Pipe	Mega-Flow Eddy Flow Fire-Flo								
5"	Sch. 10 Sch. 40	–								
6"	Sch. 10 Sch. 40	Mega-Flow	942 4.19	1333 5.93	1632 7.26	1885 8.38	942 4.19	1333 5.93	1632 7.26	1885 8.38
8"	Sch. 10 0.188" Wall Sch. 40	–								
10"	0.188" Wall Sch. 40	–								

Brace Angles are determined from Vertical.

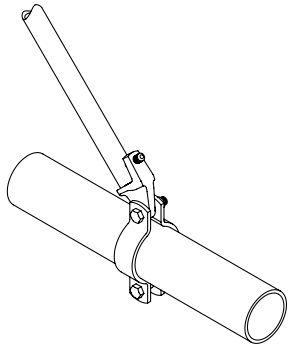
Sch. 10 & 0.188" Wall Load Ratings may be used for any thicker wall pipe of the same diameter.

Listed load ratings reduced for angle ranges in accordance with NFPA 13-2019 Table 18.5.2.3.

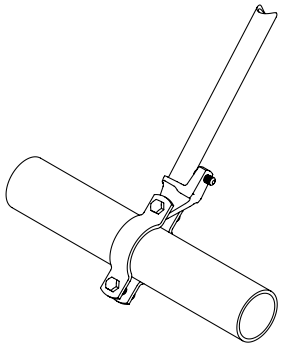
See table on page 4 for UL listed specialty pipes & UL Listed metric service pipes.

See table on page 4 for UL listed brace members.

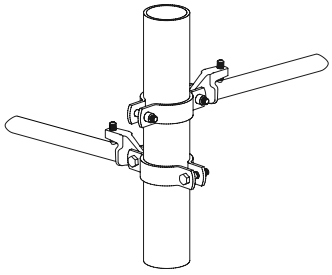
Load ratings include a minimum safety factor of 2.2 in accordance with NFPA 13-2019 Section A.18.5.2.3.
All load ratings may be used for NFPA 13-2016 designs.



Longitudinal Application



Lateral Application



Riser Application

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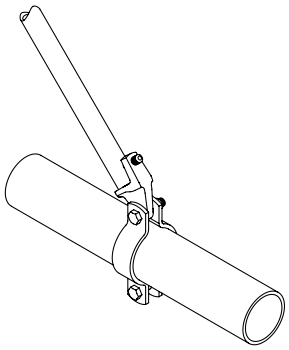
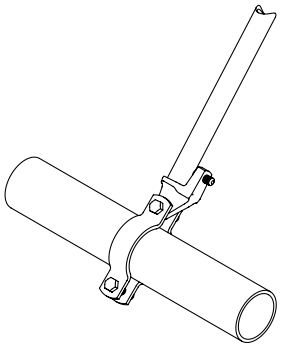
Longitudinal & Lateral Seismic Clamp
Fig. AF730

FIG. AF730 FM Approved (Listing) per FM 1950-13 (ASD)

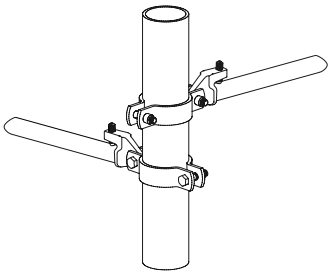
Service Pipe Size	Standard Service Pipe	Specialty Service Pipe	Horizontal Load Rating at Brace Angle							
			Longitudinal Load Rating				Lateral Load Rating			
			30˚-44˚	45˚-59˚	60˚-74˚	75˚-90˚	30˚-44˚	45˚-59˚	60˚-74˚	75˚-90˚
			lbf/kN	lbf/kN	lbf/kN	lbf/kN	lbf/kN	lbf/kN	lbf/kN	lbf/kN
1" (DN25)	Sch. 10 Sch. 40 Metric Pipe	Mega-Thread MLT / GL Eddy Thread EZ-Thread	550 2.24	640 2.84	670 2.98	740 3.29	1740 7.74	2460 10.94	3010 13.39	3360 14.95
1¼" (DN32)	Sch. 10 Sch. 40 Metric Pipe	Mega-Flow MLT / GL Mega-Thread Eddy Flow Eddy Thread EZ-Thread	740 3.29	680 3.02	820 3.65	1620 7.21	1430 6.36	2020 8.99	2480 11.03	2770 12.32
1½" (DN40)	Sch. 10 Sch. 40 Metric Pipe	Mega-Flow MLT / GL Mega-Thread Eddy Flow Eddy Thread Fire-Flo EZ-Thread	800 3.56	650 2.89	790 3.51	1800 8.01	1790 7.96	2530 11.25	3100 13.79	3460 15.39
2" (DN50)	Sch. 10 Sch. 40 Metric Pipe	Mega-Flow MLT / GL Mega-Thread Eddy Flow Eddy Thread Fire-Flo EZ-Thread	830 3.69	990 4.4	1190 5.29	1620 7.21	1820 8.1	2580 11.48	3160 14.06	3530 15.7
2½"	Sch. 10 Sch. 40	Mega-Flow Eddy Flow Fire-Flo	800 3.65	700 3.11	850 3.78	1930 8.59	1610 7.16	2280 10.14	2790 12.41	3120 13.88
3" (DN80)	Sch. 10 Sch. 40 Metric Pipe	Mega-Flow Eddy Flow Fire-Flo	960 4.27	1330 5.92	1540 6.85	1700 7.56	1550 6.89	2200 9.79	2690 11.97	3010 13.39
4" (DN100)	Sch. 10 Sch. 40 Metric Pipe	Mega-Flow Eddy Flow Fire-Flo	760 3.38	1040 4.63	1270 5.65	1400 6.23	1260 5.6	1790 7.96	2190 9.74	2440 10.85
5"	Sch. 10 Sch. 40	–	890 3.96	1230 5.47	1410 6.27	1550 6.89	1260 5.6	1790 7.96	2190 9.74	2440 10.85
6"	Sch. 10 Sch. 40	Mega-Flow	700 3.11	940 4.18	1140 5.07	1310 5.83	950 4.23	1340 5.96	1640 7.3	1830 8.14
8"	0.188" Wall Sch. 40	–	990 4.4	1130 5.03	1360 6.05	1520 6.76	1540 6.85	2170 9.65	2660 11.82	2970 13.21
10"	0.188" Wall Sch. 40	–	1020 4.54	850 3.78	1000 4.45	1100 4.89	1700 7.56	2410 10.72	2950 13.12	3290 14.63
12"	0.188" Wall Sch. 40	–	970 4.31	1010 4.49	1220 5.43	1430 6.36	1690 7.52	2390 10.63	2930 13.03	3270 14.55



Longitudinal Application



Lateral Application



Riser Application

Brace Angles are determined from Vertical.

Sch. 10 & 0.188" Wall Load Ratings may be used for any thicker wall pipe of the same diameter.

Load ratings include a minimum safety factor of 1.5 in accordance with NFPA 13-2016 Section A.9.3.5.2.3. To convert the load ratings above to a safety factor of 2.2 per NFPA 13-2019 Section A.18.5.2.3, multiply load ratings by a factor of 0.68.

To convert to LRFD Load Ratings, ASD Load Ratings may be multiplied by a factor of 1.5.

See table on page 4 for FM approved metric service pipes.

See table on page 4 for FM approved brace members.

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Longitudinal & Lateral Seismic Clamp
Fig. AF730

Method 1 – Connection to Brace Member First

1. Slide the brace member over the lower jaw until it contacts the back wall of the brace member attachment fitting.
2. Hand tighten the set screw until it contacts the brace member. Continue to torque the set screw until the head breaks off.
3. Rotate the brace assembly to the service pipe. Unbolt the back nut & bolt and rotate the clamp halves over the service pipe. Re-assemble the nut and bolt.
4. Hand tighten the nuts on both sides of the clamp. Evenly and alternately torque the nut until the head breaks off. It is best practice to tighten the nut at the jaw side first.
5. Ensure the brace angle is within the range specified.

Method 2 – Connection to Service Pipe First

1. Unbolt the back nut & bolt and rotate the clamp halves over the service pipe. Re-assemble the nut and bolt.
2. Hand tighten the nuts on both sides of the clamp. Evenly and alternately torque the nut until the head breaks off. It is best practice to tighten the nut at the jaw side first.
3. Slide the brace member over the lower jaw until it contacts the back wall of the brace member attachment fitting.
4. Hand tighten the set screw until it contacts the brace member. Continue to torque the set screw until the head breaks off.

FIG. AF730 cULus Listed & FM Approved Brace Members

Brace Member	Sizes	Standards (or Equivalent)	UL Listed	FM Approved
Sch. 40 NPS Pipe	1", 1¼", 1½", 2"	ASTM A53, A106, A135, or A795	✓	✓
Sch. 40 Metric Pipe	DN25, DN32, DN40, DN50	KS D 3562	✓	✓
Metric Pipe		EN10255H		✓
		GB/T 3091		✓
		JIS G3454		✓

FIG. AF730 cULus Listed & FM Approved Metric Service Pipes

Brace Member	Service Pipe Sizes	UL Listed	FM Approved
KS D 3507 KS D 3537	DN25, DN32, DN40, DN50, DN 80, DN100	✓	✓
KS D 3562 Sch. 40		✓	✓
GB/T 3091 GB/T 3092			✓
JIS G3452			✓
EN 10255M			
EN 10255H			

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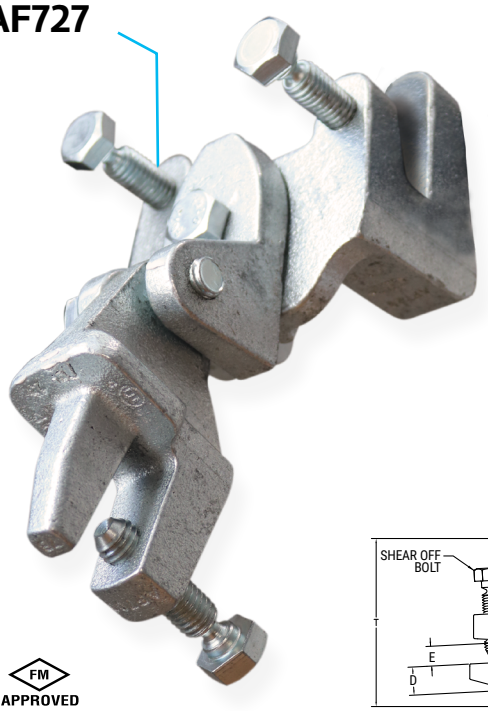
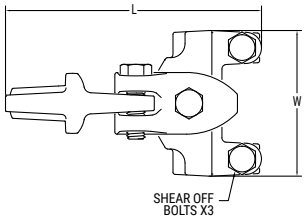
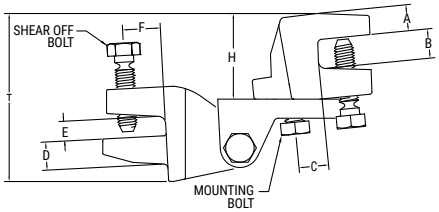
ASC Engineered Solutions

Universal Structural Attachment & Swivel
Fig. AF727

known as the
"Bear Claw™"







c UL us LISTED FM APPROVED

FIG. AF727: Dimensions and Weights

Mounting Bolt	A	B	D	E	F	T
	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm
½"	0.78	0.75	0.74	0.56	0.97	5.13
	19.8	19.1	18.8	14.2	24.6	130.2

FIG. AF727: Dimensions and Weights (Continued)

Mounting Bolt	C	H	L	W	Weight
	In./mm	In./mm	In./mm	In./mm	lbs/kg
½"	0.80	2.31	7.06	4.22	5.53
	20.3	58.7	179.3	107.22	2.51

Notes:
ASC Engineered Solutions™ brand bracing components are designed to be compatible ONLY with other ASC Engineered Solutions brand bracing components, resulting in a Listed seismic bracing assembly. Updated UL listing information may be viewed at www.ul.com and updated FM approval information may be viewed at www.approvalguide.com.

Material Specifications

Size Range
Flange Thickness: up to ¾"
Brace Member: See Table

Material
Ductile Iron with Carbon Steel Hardware

Finish
☐ Plain ☐ Electro-Galvanized per ASTM B633

Service
A seismic structural attachment and swivel designed to attach steel I-beams, flanges, and joists to brace members. The AF727 rigidly braces piping systems subjected to horizontal and vertical seismic loads.

Approvals
cULus Listed (ANSI/UL 203a) & FM Approved (FM 1950-13). Complies with NFPA 13, ASCE 7, IBC, & MSS SP-127 bracing requirements.

Features
- Set screws provide visual indication that proper installation torque has been achieved
- Provides a fast "one-step" installation of structural attachment and swivel connection

Ordering
Specify figure number, finish, and description.

Disclaimer
ASC Engineered Solutions does not provide any warranties and specifically disclaims any liability whatsoever with respect to ASC Engineered Solutions bracing products and components that are used in combination with products, parts or systems not manufactured or sold by ASC Engineered Solutions. In no event shall ASC Engineered Solutions be liable for any incidental, direct, consequential, special or indirect damages or lost profits where non-ASC Engineered Solutions bracing components have been, or are used.

Seis Brace® Seismic Fire Protection Design Tool may be accessed at www.seisbrace.com

AFCON
An ASC Engineered Solution

PROJECT INFORMATION	APPROVAL STAMP
Project:	☐ Approved
Address:	☐ Approved as noted
Contractor:	☐ Not approved
Engineer:	Remarks:
Submittal Date:	
Notes 1:	
Notes 2:	

ASC Engineered Solutions

Universal Structural Attachment & Swivel
Fig. AF727

FIG. AF727 cULus Listing per ANSI/UL 203a (ASD)

Structure	Load Orientation	Horizontal Load Rating at Brace Angle			
		30°-44°	45°-59°	60°-90°	Listed
		lbf/kN	lbf/kN	lbf/kN	lbf/kN
Horizontal Steel Flange and Vertical Steel Flange	Parallel to Flange and Perpendicular to Flange	942 4.19	1333 5.93	1632 7.26	1885 8.38

1) Brace Angles are determined from Vertical.
2) Listed load ratings reduced for angle ranges in accordance with NFPA 13-2019 Table 18.5.2.3.
3) Minimum safety factor of 2.2 in accordance with NFPA 13-2019 Section A.18.5.2.3.
4) Published Load is based on evaluation of the load capacity and deformation of the AFCON product only, capacity and deformation of structural members should be evaluated by the engineer of record.

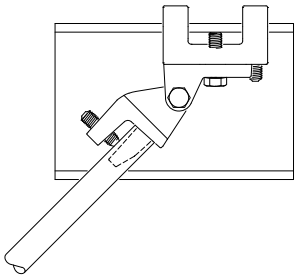
FIG. AF727 FM Approved (Listing) per FM 1950-13 (ASD)

Structure	Load Orientation	Flange Thickness	Horizontal Load Rating at Brace Angle			
			30°-44°	45°-59°	60°-74°	75°-90°
		lbf/kN	In./mm	lbf/kN	lbf/kN	lbf/kN
Horizontal Steel Flange	Parallel to Flange	0.125-0.750 3.18-19.05	1280 5.69	1840 8.18	2210 9.83	2470 10.99
	Perpendicular to Flange		1570 6.98	1490 6.63	1040 4.63	1150 5.12
Vertical Steel Flange	Parallel to Flange		870 3.87	1440 6.41	1230 5.47	1360 6.05
	Perpendicular to Flange		1030 4.58	2260 10.05	2490 11.08	2750 12.23

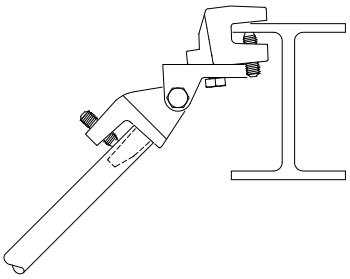
1) Brace Angles are determined from Vertical.
2) Listed load ratings reduced for angle ranges in accordance with NFPA 13-2019 Table 18.5.2.3.
3) Minimum safety factor of 1.5 in accordance with NFPA 13-2016 Section A.9.3.5.2.3. To convert the load ratings above to a safety factor of 2.2 per NFPA 13-2019 Section A.18.5.2.3, multiply load ratings by a factor of 0.68.
4) To convert to LRFD Load Ratings, ASD Load Ratings may be multiplied by a factor of 1.5.

FIG. AF727 FM Listed, Approved & Tested Brace Members

Brace Member	Sizes	Standards (or Equivalent)	UL	FM
Sch. 40 NPS Pipe	1", 1¼", 1½", 2"	ASTM A53, A106, A135, or A795	✓	✓
Sch. 40 Metric Pipe	DN25	KS S 3562	✓	✓
	DN32	EN10255H		✓
Metric Pipe	DN40	GB/T 3091		✓
	DN50	JIS G3454		✓

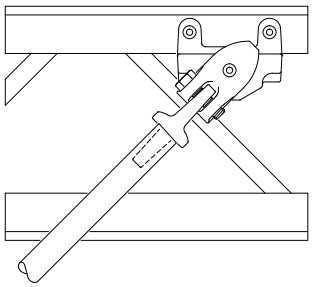


Horizontal Steel Flange (I-Beam)
Seismic Load Parallel to the Flange

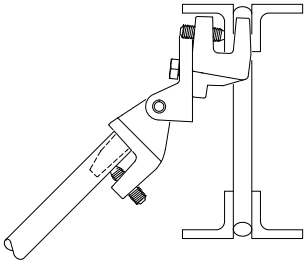


Horizontal Steel Flange (I-Beam)
Seismic Load Perpendicular to the Flange

Notes: Product can be connected to either the top or bottom flange in this application.



Vertical Steel Flange (Joist)
Seismic Load Parallel to the Flange



Vertical Steel Flange (Joist)
Seismic Load Perpendicular to the Flange

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Universal Structural Attachment & Swivel
Fig. AF727

Sway brace assemblies are intended to be installed in accordance with NFPA 13 and the manufacturer's installation instructions.

Method 1 – Connection to Brace Member First

1. Slide the brace member over the lower jaw until it contacts the back wall.
2. Hand tighten the set screw until it contacts the brace member. Continue to torque the set screw until the head breaks off.
3. Place the other end of the AF727 on a horizontal or vertical steel flange.
4. Hand tighten the set screws until they contact the flange. Continue to torque the set screws until the heads break off.
5. Ensure the brace angle is within the range specified.

Notes: The cross bolt should be hand tight. For visual inspection, at least one thread should be exposed.

Method 2 – Connection to Structure First

1. Attach the AF727 to a horizontal or vertical steel flange
2. Hand tighten the set screws until they contact the flange. Continue to torque the set screws until the heads break off.
3. Slide the brace member over the jaw on the other side of the AF727 until it contacts the back wall.
4. Hand tighten the set screw until it contacts the brace member. Continue to torque he set screw until the head breaks off.
5. Rotate the brace member until the brace angle is within the specified range.

Notes: The cross bolt should be hand tight. For visual inspection, at least one thread should be exposed.

FS-ONE
Technical Data

At 73°F (23°C) and 50% relative humidity

Chemical basis
Water-based intumescent acrylic dispersion

Density
Approx. 1.5 g/cm³

Color
Red

Working time
Approx. 20-30 min.

Curing time
Approx. 2 mm / 3 days

Shore A Hardness
Approx. 50

Movement capability
Approx. 5%

Intumescent Activation
Approx 482°F (250°C)

Expansion rate (unrestricted):
Up to 3-5 times original volume

Temperature resistance (cured)
–40°F to 212°F (–40°C to 100°C)

Application temperature
41°F to 104°F (5°C to 40°C)

Surface burning characteristics (ASTM E 84-96)
Flame Spread: 0
Smoke Development: 5

Sound transmission classification (ASTM E 90-99) 56

Approvals

ICBO Evaluation Service, Inc.
Report No. 5071

California State Fire Marshal
Listing No. 4485-1200:108

City of New York
MEA 326-96-M Vol. IV

Tested in accordance with
- UL 1479
- ASTM E 814
- ASTM E 84

Internationally tested and approved

c UL us CLASSIFIED
FILL, VOID OR CAVITY MATERIAL
FOR USE IN THROUGH-PENETRATION
FIRESTOP SYSTEMS
SEE UL FIRE RESISTANCE DIRECTORY
66Y7

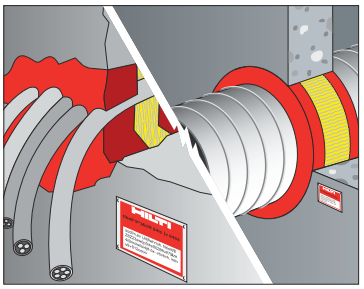
FM APPROVED

FGG =BM= SYSTEM COMPATIBLE

latest product information : www.us.hilti.com

ordering information see page: 30

FS-ONE
High Performance Intumescent Firestop Sealant



System Advantage / Customer Benefits
- Protects most typical firestop penetration applications
- Easy to work with and fast cleanup
- Can be repenetrated when laying new cables
- Can be painted

Product description
- Intumescent (expands when exposed to fire) firestop sealant that helps protect combustible and non-combustible penetrations for up to 4 hours fire rating

Product features
- Smoke, gas and water resistant after material has cured
- Contains no halogen, solvents or asbestos
- High fire rating properties
- Water based, easy to clean

Areas of application
- Steel, copper and EMT pipes
- Insulated steel and copper pipes
- Cable bundles
- Closed or vented plastic pipes
- HVAC penetrations

For use with
- Concrete, masonry, drywall and wood floor assemblies
- Wall and floor assemblies rated up to 4 hours

Examples
- Sealing around plastic pipe penetrations in fire rated construction
- Sealing around combustible and non-combustible penetrations in fire rated construction

Installation instructions for FS-ONE

Opening

1. Clean the opening. Surfaces to which FS-ONE will be applied should be cleaned of loose debris, dirt, oil, moisture, frost and wax. Structures supporting penetrating items must be installed in compliance with local building and electrical standards.

Application of firestop sealant

2. Install the prescribed backfilling material type and depth to obtain the desired rating (if required). Leave sufficient depth for applying FS-ONE.
3. Application of firestop sealant: Apply FS-ONE to the required depth in order to obtain the desired fire rating. Make sure FS-ONE contacts all surfaces to provide maximum adhesion. For application of FS-ONE use a standard caulking gun, foil pack gun, bulk loader and bulk gun. With FS-ONE buckets, Graco type sealant pumps may be used. (Contact pump manufacturer for proper selection).
4. Smoothing of firestop sealant: To complete the seal, tool immediately to give a smooth appearance. Excess sealant, prior to curing, can be cleaned away from adjacent surfaces and tools with water.
5. Leave completed seal undisturbed for 48 hours.
6. For maintenance reasons, a penetration seal could be permanently marked with an identification plate. In such a case, mark the identification plate and fasten it in a visible position next to the seal.

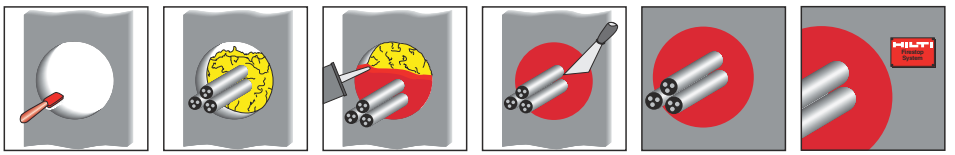
Notice about approvals
- Check that the penetration has been sealed according to the specified drawing in the UL Fire Resistance Directory or Hilti Firestop Manual. For further advice, please contact Hilti customer service. Refer to Hilti product literature and UL fire resistance directory for specific application details.

Not for use...
- High movement expansion joints
- Underwater
- On materials where oil, plasticizers or solvents may bleed i.e. impregnated wood, oil based seals, green or partially vulcanized rubber
- In any penetration other than those specifically described in this manual or the test reports

Safety precautions
- Before handling, read the product and Material Safety Data Sheet for detailed use and health information
- Keep out of reach of children
- Wear suitable gloves and eye protection

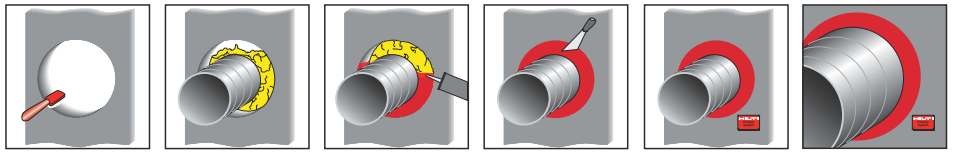
Storage
- Store only in the original packaging in a location protected from moisture at temperatures between 40°F (5°C) and 86°F (30°C)
- Observe expiration date on the packaging

CABLE



1. Clean opening. *2. Pack mineral wool. (If required)* *3. Apply FS-ONE.* *4. Smooth FS-ONE.* *5. Leave completed seal undisturbed for 48 hours.* *6. Fasten identification plate (if required).*

PIPE



1. Clean opening. *2. Pack mineral wool. (If required)* *3. Apply FS-ONE.* *4. Smooth FS-ONE.* *5. Leave completed seal undisturbed for 48 hours.* *6. Fasten identification plate (if required).*