GATEWAY STEP BY STEP

3033 8th Ave SE
Puyallup, WA 98372

FIRE SPRINKLER
PRODUCT SUBMITTAL DATA

Jeff Brown Architecture | Stephanie Bower, Architectural Illustration

Emerald Fire
Fire Sprinkler Specialists

11021 Cramer Road NW, Gig Harbor WA 98329
Phone: 253-857-2056 ~ Fax: 253-857-2312

GATEWAY STEP BY STEP

3033 8th Ave SE - Puyallup, WA 98372

Fire Sprinkler Product Data

I. SPRINKLERS

1. Viking VK3001 Microfast K5.6 155* Brass Upright Sprinkler
2. Viking VK3021 Microfast K5.6 155* Brass Pendent Sprinkler
3. Viking VK305 Microfast K5.6 15* Brass Horizontal Sidewall Sprinkler
4. Viking VK176 QR K5.6 155* Dry Pendent Sprinkler

II. VALVES & COMPRESSOR

1. Reliable Model FX Dry Pipe Valve
    - Potter PS10 Pressure Switch
    - Potter PS40 Hi/Low Air Switch
2. Reliable Model G Swing Check Valve
3. Reliable Model CR Commercial Riser Manifold w/ Test N Drain & 175 PressRelief
4. Reliable Model REL-300 Butterfly Control Valve
5. Reliable Model AAV Auto Air Vent
6. Deringer Model 20G Double Check Prevention Assembly w/ grooved butterfly valves
7. C-Air Model 281 Riser Mount Air Compressor w/ Air Maintenance Device
8. FNW Full Port Ball Valve
9. AGF Inspectors Test Valve w/ K5.6 Orifice

III. Hangers & Bracing

1. Nvent Caddy Swivel Ring Hanger
2. Tolco Fig. 99 Threaded Rod
3. Tolco Fig 4LA Sway Brace
4. Tolco Fig. 1001 Sway Brace
5. Tolco Fig 980 Sway Brace Attachment
6. ITW Buildex Sammy GST20 & GST30 Vertical Attachment
7. ITW Buildex Sammy SWG20 Horizontal Attachment

IV. PIPE & FITTINGS

1. Bull Moose Tube Sch. 10 & Sch. 40 Sprinkler Pipe
2. Anvil SPF Ductile Iron Threaded Fittings
3. Victaulic Firelock Grooved Fittings
4. Victaulic 009 & 109 Rigid Grooved Couplings
5. Victaulic 004/75 Flex Grooved Couplings
6. Victaulic 744 Grooved Flange Adapter

V. MISC

1. Argco Sprinkler Identification Signs
2. Argco Spare Head Box
3. Caddy Telescoping Pipe Stand
4. Potter Signal 120v 10” Electric Bell

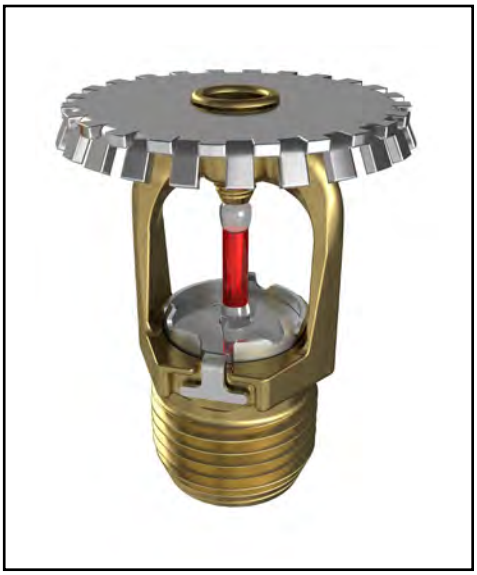
TECHNICAL DATA

VK3001 QUICK RESPONSE UPRIGHT SPRINKLER (K5.6)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com
Visit the Viking website for the latest edition of this technical data page www.vikinggroupinc.com

1. DESCRIPTION

The Viking VK3001 Quick Response Upright Sprinkler is a small thermosensitive glass bulb spray sprinkler available with various finishes and temperature ratings to meet design requirements. The special Polyester and Electroless Nickel PTFE (ENT) coatings can be used in decorative applications where colors are desired. In addition, these coatings have been investigated for installation in corrosive environments and are Listed and Approved as indicated in the Approval Chart.



WARNING: Cancer and Reproductive Harm- www.P65Warnings.ca.gov

2. LISTINGS AND APPROVALS

c UL us — UL Listed: Category VNIV

FM APPROVED — FM Approved: Classes 2016, 2043
Approved for use in FM Approved vacuum dry sprinkler systems with a maximum supervisory vacuum pressure of -3 psi (-207 mbar).

Refer to the Approval Chart and Design Criteria for requirements that must be followed.

3. TECHNICAL DATA

Specifications:
Minimum Operating Pressure: 7 psi (0.5 bar)
Rated to: UL - 250 PSI (24 bar) WWP
FM - 175 PSI (12 bar) WWP
Factory tested hydrostatically to 500 psi (34.5 bar).
Thread size: 1/2" NPT (15 mm BSPT)
Nominal K-factor: 5.6 U.S. (80.6 metric*)
Glass-bulb fluid temperature rated to -65 °F (-55 °C)

* Metric K-factor measurement shown is in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

Material Standards:
Sprinkler Body: Brass CW602N, UNS-C84400 or QM Brass
Deflector: Stainless Steel UNS S30400
Pip Cap Shell - Stainless Steel UNS-S44400
Pip Cap Disc - Stainless Steel UNS-S30100
Belleville Spring - Nickel Alloy
Pip Cap Seal - Polytetrafluoroethylene (PTFE)
Compression Screw: Brass CW612N, CW508L, UNS-C36000 or UNS-C26000
Shipping Cap: Polyethylene
Bulb: Glass, nominal 3 mm diameter

Finishes and Temperatures:

Finish	Brass	Chrome	White Polyester	Black Polyester	ENT	--
Suffix	A	F	M-/W	M-/B	JN	--
Temperature	135 °F (57 °C)	155 °F (68 °C)	175 °F (79 °C)	200 °F (93 °C)	286 °F (141 °C)	Open
Suffix	A	B	D	E	G	Z

Ordering Information: (Refer to Table 1 and the current Viking List Price Book.)

4. INSTALLATION

Refer to appropriate NFPA, FM Global, and/or any other applicable installation standards.

5. OPERATION

During fire conditions, when the temperature around the sprinkler reaches its operating temperature, the heat-sensitive liquid in the glass bulb expands, causing the bulb to shatter, releasing the pip cap assembly. Water flowing through the sprinkler orifice strikes the sprinkler deflector, forming a uniform spray pattern to extinguish or control the fire.

6. INSPECTIONS, TESTS AND MAINTENANCE

Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.

7. AVAILABILITY

Viking Sprinkler Model VK3001 is available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

8. GUARANTEE

For details of warranty, refer to Viking's current list price schedule or contact Viking directly.

TECHNICAL DATA

VK3001 QUICK RESPONSE UPRIGHT SPRINKLER (K5.6)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com
Visit the Viking website for the latest edition of this technical data page www.vikinggroupinc.com

TABLE 1: ORDERING INFORMATION

Instructions: Using the sprinkler base part number,
(1) add the suffix for the desired Finish
(2) add the suffix for the desired Temperature Rating.

Sprinkler Base Part No.	Size		1: Finishes		2: Temperature Ratings			
	NPT Inch	BSPT mm	Description	Suffix[1]	Nominal Rating	Bulb Color	Max. Ambient Ceiling Temperature[2]	Suffix
19916	1/2	--	Brass	A	135 °F (57 °C)	Orange	100 °F (38 °C)	A
19928[6]	--	15	Chrome	F	155 °F (68 °C)	Red	100 °F (38 °C)	B
23100[6]	1/2		White Polyester [3,5]	M-/W	175 °F (79 °C)	Yellow	150 °F (65 °C)	D
			Black Polyester [3,5]	M-/B	200 °F (93 °C)	Green	150 °F (65 °C)	E
			ENT [3,4,5]	JN	286 °F (141 °C)	Blue	225 °F (107 °C)	G
					OPEN	--	--	Z

Example: 19916MB/W = VK3001 with White Polyester Finish and 155 °F (68 °C) Nominal temperature rating. This sprinkler is to be installed into an area with a maximum ambient temperature of 100 °F (38 °C) meaning if the area will experience temperatures above the maximum ambient rating, you shall use a higher temperature-rated sprinkler.

Accessories

Sprinkler Wrenches (see Figure 1):

A. Installer Wrench: Part No. 22055.
B. Cabinet Wrench: Part No. 20901M/B.
C. Straight Wrench: Part No. 22940MB

Sprinkler Cabinet:

A. Up to 6 sprinklers: Part number 01724A.
B. 6-12 Sprinklers: Part number 01725A.

Footnotes

1. Where a dash (-) is shown in the Finish suffix designation, insert the desired Temperature Rating suffix. See example above.
2. Based on NFPA 13, NFPA 13R, and NFPA 13D. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.
3. UL Listed as corrosion resistant.
4. FM Approved as a corrosion proofing coating for installation in corrosive environments.
5. The corrosion resistant and corrosion proofing coatings have passed the standard corrosion test required by the approving agencies indicated in the Approval Chart. These tests cannot and do not represent all possible corrosive environments. Prior to installation, verify through the end-user that the coatings are compatible with or suitable for the proposed environment. For automatic sprinklers, the ENT coating is applied to all exposed exterior surfaces, including the waterway.
6. UL Listed for 250 PSI (17 bar) WWP.

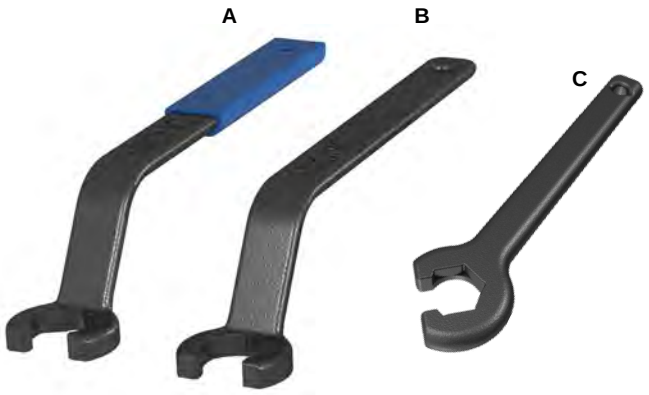


Figure 1: Sprinkler Wrenches

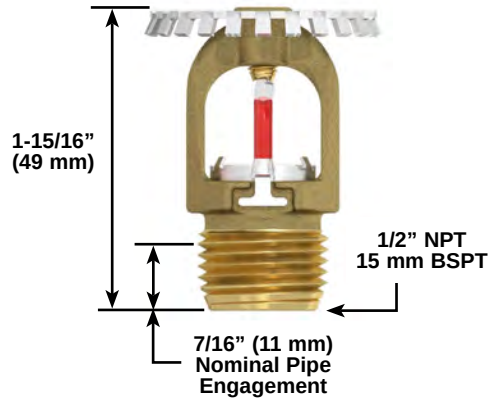


Figure 2: Sprinkler Dimensions

TECHNICAL DATA

VK3001 QUICK RESPONSE UPRIGHT SPRINKLER (K5.6)

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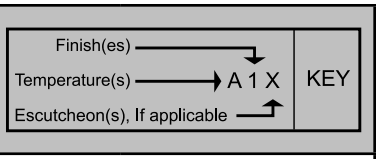
APPROVAL CHART

Viking Quick Response Upright Sprinkler
VK3001 K5.6 (80.6 metric



Sprinkler Base Part Number[1]	Thread Size		Listings and Approvals[2]			
	NPT	BSPT	cULus		FM	
	Inch	mm	Approval Code(s)	Maximum WWP	Approval Code(s)	Maximum WWP
19916	1/2	--	A1	175 PSI (12 bar)	A1	175 PSI (12 bar)
19928	--	15	A1	250 PSI (17 bar)	A1	175 PSI (12 bar)
23100	1/2	--	A1	250 PSI (17 bar)	A1	175 PSI (12 bar)

Approved Temperature Rating Codes:

A = 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C) and 286 °F (141 °C)

Approved Finish Codes:e

1 = Brass, Chrome, White Polyester [3,4], Black Polyester [3,4], and ENT [4,5]

Footnotes

1 Base Part number is shown. For complete part number, refer to Viking's current price schedule.
2 This table shows the listings and approvals available at the time of printing. Check with the manufacturer for any additional approvals.
3 Other colors are available upon request with the same Listings and Approvals as the standard colors.
4 cULus Listed as corrosion resistant.
5 FM Approved as corrosion-proofing for installation in corrosive environments.

DESIGN CRITERIA - UL

cULus Listing Requirements:

The Viking VK3001 Quick Response Upright Sprinkler is cULus Listed as indicated in Approval Chart for installation in accordance with the latest edition of NFPA 13 for standard spray sprinklers.

- Designed for use in Light and Ordinary Hazard occupancies.
- The sprinkler installation rules contained in NFPA 13 for standard spray upright sprinklers shall be followed.

IMPORTANT: Always refer to Form No. F_091699 - Care and Handling of Sprinklers. Also refer to Form No. F_080614 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking Technical Data, the appropriate standards of NFPA, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.

DESIGN CRITERIA - FM

FM Approval Requirements:

The Viking VK3001 Quick Response Upright Sprinkler is FM Approved as quick response Non-Storage upright sprinkler as indicated in the FM Approval Guide. For specific application and installation requirements, reference the latest applicable FM Loss Prevention Data Sheets (including Data Sheet 2-0). FM Global Loss Prevention Data Sheets contain guidelines relating to, but not limited to: minimum water supply requirements, hydraulic design, ceiling slope and obstructions, minimum and maximum allowable spacing, and deflector distance below the ceiling.

NOTE: The FM Installation guidelines may differ from UL and/or NFPA criteria.

IMPORTANT: Always refer to Form No. F_091699 - Care and Handling of Sprinklers. Also refer to Form No. F_080614 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking Technical Data, the appropriate standards of NFPA, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.

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TECHNICAL DATA

VK3001 QUICK RESPONSE UPRIGHT SPRINKLER (K5.6)

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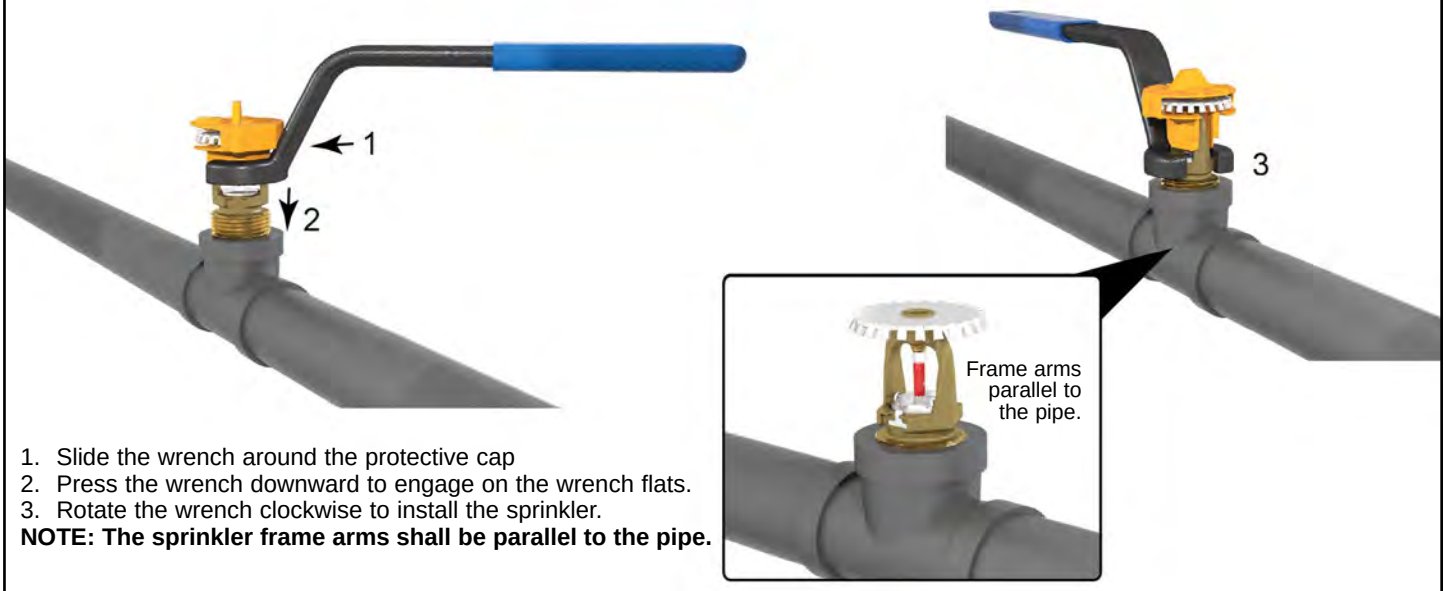
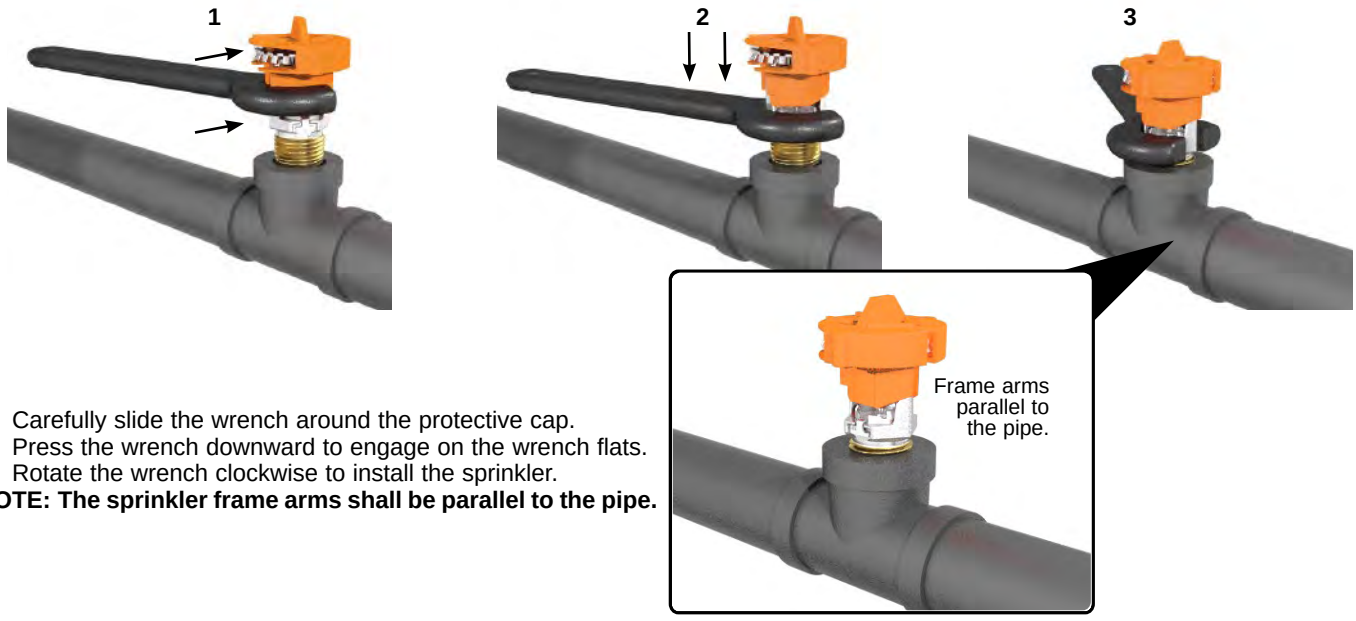
Visit the Viking website for the latest edition of this technical data page www.vikinggroupinc.com



1. Slide the wrench around the protective cap
2. Press the wrench downward to engage on the wrench flats.
3. Rotate the wrench clockwise to install the sprinkler.

NOTE: The sprinkler frame arms shall be parallel to the pipe.

Figure 3: Installation



1. Carefully slide the wrench around the protective cap.
2. Press the wrench downward to engage on the wrench flats.
3. Rotate the wrench clockwise to install the sprinkler.

NOTE: The sprinkler frame arms shall be parallel to the pipe.

Figure 4: Installation (Straight Wrench)

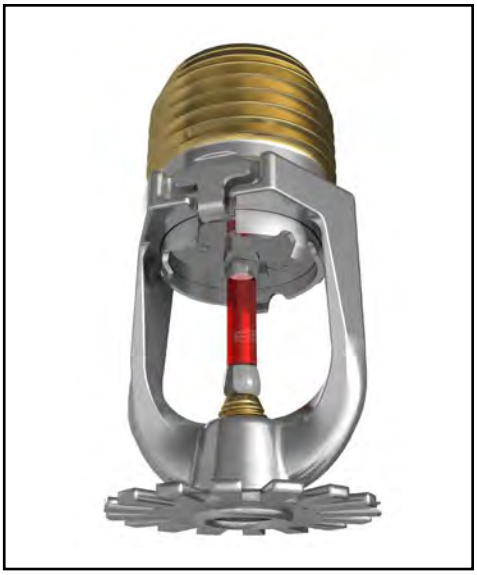
TECHNICAL DATA

VK3021 QUICK RESPONSE PENDENT SPRINKLER (K5.6)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com
Visit the Viking website for the latest edition of this technical data page www.vikinggroupinc.com

1. DESCRIPTION

The Viking VK3021 Quick Response Pendent Sprinkler is a small thermosensitive glass bulb spray sprinkler available with various finishes and temperature ratings to meet design requirements. The special Polyester and Electroless Nickel PTFE (ENT) coatings can be used in decorative applications where colors are desired. In addition, these coatings have been investigated for installation in corrosive environments and are Listed and Approved as indicated in the Approval Chart.



WARNING: Cancer and Reproductive Harm- www.P65Warnings.ca.gov

2. LISTINGS AND APPROVALS

UL Listed: Category VNIV

FM Approved: Classes 2017, 2015, 2043

Refer to the Approval Chart and Design Criteria for requirements that must be followed.

3. TECHNICAL DATA

Specifications:

Minimum Operating Pressure: 7 psi (0.5 bar)
Rated to: UL - 250 PSI (24 bar) WWP
FM - 175 PSI (12 bar) WWP
Factory tested hydrostatically to 500 psi (34.5 bar).
Thread size: 1/2" NPT (15 mm BSPT)
Nominal K-factor: 5.6 U.S. (80.6 metric*)
Glass-bulb fluid temperature rated to -65 °F (-55 °C)

* Metric K-factor measurement shown is in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

Material Standards:

Sprinkler Body: Brass CW602N, UNS-C84400 or QM Brass
Deflector: Stainless Steel UNS S30400
Pip Cap Shell - Stainless Steel UNS-S44400
Pip Cap Disc - Stainless Steel UNS-S30100
Belleville Spring - Nickel Alloy
Pip Cap Seal - Polytetrafluoroethylene (PTFE)
Compression Screw: Brass CW612N, CW508L, UNS-C36000 or UNS-C26000
Shipping Cap: Polyethylene
Bulb: Glass, nominal 3 mm diameter

Finishes and Temperatures:

Finish	Brass	Chrome	White Polyester	Black Polyester	ENT	--
Suffix	A	F	M-/W	M-/B	JN	--
Temperature	135 °F (57 °C)	155 °F (68 °C)	175 °F (79 °C)	200 °F (93 °C)	286 °F (141 °C)	Open
Suffix	A	B	D	E	G	Z

Ordering Information: (Refer to Table 1 and the current Viking List Price Book.)

4. INSTALLATION

Refer to appropriate NFPA, FM Global, and/or any other applicable installation standards.

5. OPERATION

During fire conditions, when the temperature around the sprinkler reaches its operating temperature, the heat-sensitive liquid in the glass bulb expands, causing the bulb to shatter, releasing the pip cap assembly. Water flowing through the sprinkler orifice strikes the sprinkler deflector, forming a uniform spray pattern to extinguish or control the fire.

6. INSPECTIONS, TESTS AND MAINTENANCE

Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.

7. AVAILABILITY

Viking Sprinkler Model VK3021 is available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

8. GUARANTEE

For details of warranty, refer to Viking's current list price schedule or contact Viking directly.

TECHNICAL DATA

VK3021 QUICK RESPONSE PENDENT SPRINKLER (K5.6)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com
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TABLE 1: ORDERING INFORMATION

Instructions: Using the sprinkler base part number,
(1) add the suffix for the desired Finish
(2) add the suffix for the desired Temperature Rating.

Sprinkler Base Part No.	Size		1: Finishes		2: Temperature Ratings			
	NPT Inch	BSPT mm	Description	Suffix[1]	Nominal Rating	Bulb Color	Max. Ambient Ceiling Temperature[3]	Suffix
19917	1/2	--	Brass	A	135 °F (57 °C)	Orange	100 °F (38 °C)	A
19929[7]	--	15	Chrome	F	155 °F (68 °C)	Red	100 °F (38 °C)	B
23101[7]	1/2		White Polyester [4,6]	M-/W	175 °F (79 °C)	Yellow	150 °F (65 °C)	D
			Black Polyester [4,6]	M-/B	200 °F (93 °C)	Green	150 °F (65 °C)	E
			ENT [4,5,6]	JN	286 °F (141 °C)	Blue	225 °F (107 °C)	G
					Open	--	--	Z

Example: 19917MB/W = VK3021 with White Polyester Finish and 155 °F (68 °C) Nominal temperature rating. This sprinkler is to be installed into an area with a maximum ambient temperature of 100 °F (38 °C) meaning if the area will experience temperatures above the maximum ambient rating, you shall use a higher temperature-rated sprinkler.

Accessories

Sprinkler Wrenches (see Figure 1):

A. Installer Wrench: Part No. 22055 (available since 2017).
B. Cabinet Wrench: Part No. 20901M/B (available since 2017).
C. Recessed Socket Wrench: Part No. 20951M/B[2] (available since 2017).
D. Straight Wrench: Part No. 22940MB

Sprinkler Cabinet:

A. Up to 6 sprinklers: Part number 01724A (available since 1971).
B. 6-12 Sprinklers: Part number 01725A (available since 1971).

Footnotes

1. Where a dash (-) is shown in the Finish suffix designation, insert the desired Temperature Rating suffix. See example above.
2. Requires a 1/2" ratchet which is not available from Viking.
3. Based on NFPA 13, NFPA 13R, and NFPA 13D. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.
4. UL Listed as corrosion resistant.
5. FM Approved as a corrosion proofing coating for installation in corrosive environments.
6. The corrosion resistant and corrosion proofing coatings have passed the standard corrosion test required by the approving agencies indicated in the Approval Chart. These tests cannot and do not represent all possible corrosive environments. Prior to installation, verify through the end-user that the coatings are compatible with or suitable for the proposed environment. For automatic sprinklers, the ENT coating is applied to all exposed exterior surfaces, including the waterway.
7. UL Listed for 250 PSI (17 bar) WWP.

Figure 1: Sprinkler Wrenches

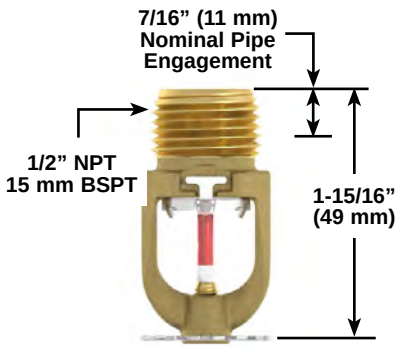

Figure 2: Sprinkler Dimensions

TECHNICAL DATA

VK3021 QUICK RESPONSE PENDENT SPRINKLER (K5.6)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com
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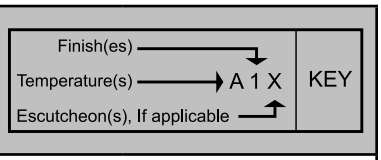
APPROVAL CHART

Viking Quick Response Pendent Sprinkler
VK3021 K5.6 (80.6 metric)



Sprinkler Base Part Number[1]	Thread Size		Listings and Approvals[2]			
	NPT	BSPT	cULus		FM	
	Inch	mm	Approval Code(s)	Maximum WWP	Approval Code(s)	Maximum WWP
19917	1/2	--	A1, B2X, B3Y	175 PSI (12 bar)	A1, B2X, B3Y	175 PSI (12 bar)
19929	--	15	A1, B2X, B3Y	250 PSI (17 bar)	A1, B2X, B3Y	175 PSI (12 bar)
23101	1/2	--	A1, B2X, B3Y	250 PSI (17 bar)	A1, B2X, B3Y	175 PSI (12 bar)

Approved Temperature Rating Codes:

A = 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C) and 286 °F (141 °C)
B = 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C)

Approved Finish Codes:

1 = Brass, Chrome, White Polyester [3,4], Black Polyester [3,4], and ENT [4,5]
2 = Brass, Chrome, White Polyester [3,4], and Black Polyester [3,4]
3 = ENT [4,5]

Footnotes

1 Base Part number is shown. For complete part number, refer to Viking's current price schedule.
2 This table shows the listings and approvals available at the time of printing. Check with the manufacturer for any additional approvals.
3 Other colors are available upon request with the same Listings and Approvals as the standard colors.
4 cULus Listed as corrosion resistant.
5 FM Approved as corrosion-proofing for installation in corrosive environments.

DESIGN CRITERIA - UL

cULus Listing Requirements:
The Viking VK3021 Quick Response Pendent Sprinkler is cULus Listed as indicated in Approval Chart for installation in accordance with the latest edition of NFPA 13 for standard spray sprinklers.

- Designed for use in Light and Ordinary occupancies.
- The sprinkler installation rules contained in NFPA 13 for standard spray Pendent sprinklers shall be followed.

IMPORTANT: Always refer to Form No. F_091699 - Care and Handling of Sprinklers. Also refer to Form No. F_080614 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking Technical Data, the appropriate standards of NFPA, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.

DESIGN CRITERIA - FM

FM Approval Requirements:
The Viking VK3021 Quick Response Pendent Sprinkler is FM Approved as quick response Non-Storage Pendent sprinkler as indicated in the FM Approval Guide. For specific application and installation requirements, reference the latest applicable FM Loss Prevention Data Sheets (including Data Sheet 2-0). FM Global Loss Prevention Data Sheets contain guidelines relating to, but not limited to: minimum water supply requirements, hydraulic design, ceiling slope and obstructions, minimum and maximum allowable spacing, and deflector distance below the ceiling.
NOTE: The FM Installation guidelines may differ from UL and/or NFPA criteria.

IMPORTANT: Always refer to Form No. F_091699 - Care and Handling of Sprinklers. Also refer to Form No. F_080614 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking Technical Data, the appropriate standards of NFPA, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.

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1. Install the escutcheon inner ring onto the sprinkler threads.

2. Carefully slide the wrench** sideways around the protective cap then push upwards to engage with the sprinkler wrench flats.

3. Install the sprinkler and escutcheon assembly into the pipe fitting. Be sure the escutcheon outer ring contacts the surface of the finished ceiling.

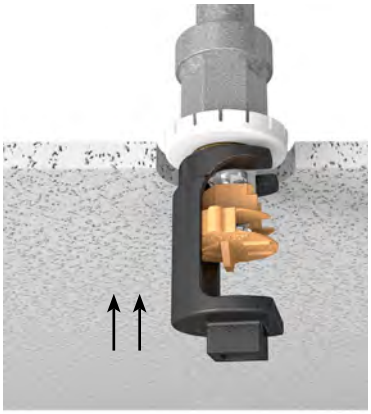
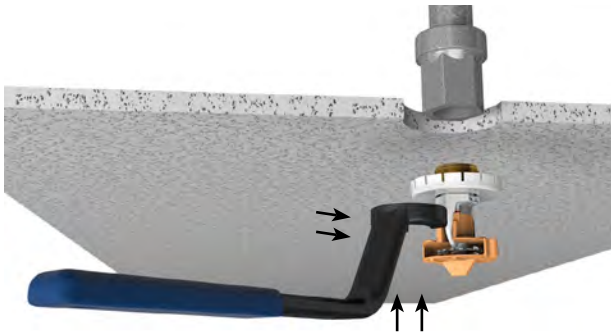


Figure 3: Recessed Installation (with Recessed Socket Wrench)

**A 1/2" ratchet is required (not available from Viking).

1. Install the escutcheon inner ring onto the sprinkler threads.

2. Carefully slide the wrench sideways around the protective cap then push upwards to engage with the sprinkler wrench flats.



3. Install the sprinkler and escutcheon assembly into the pipe fitting. Be sure the escutcheon outer ring contacts the surface of the finished ceiling.

Figure 4: Recessed Installation (with standard Installer's Wrench)

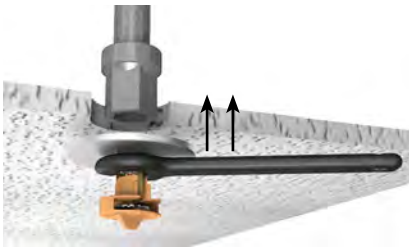
TECHNICAL DATA

VK3021 QUICK RESPONSE PENDENT SPRINKLER (K5.6)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com
Visit the Viking website for the latest edition of this technical data page www.vikinggroupinc.com

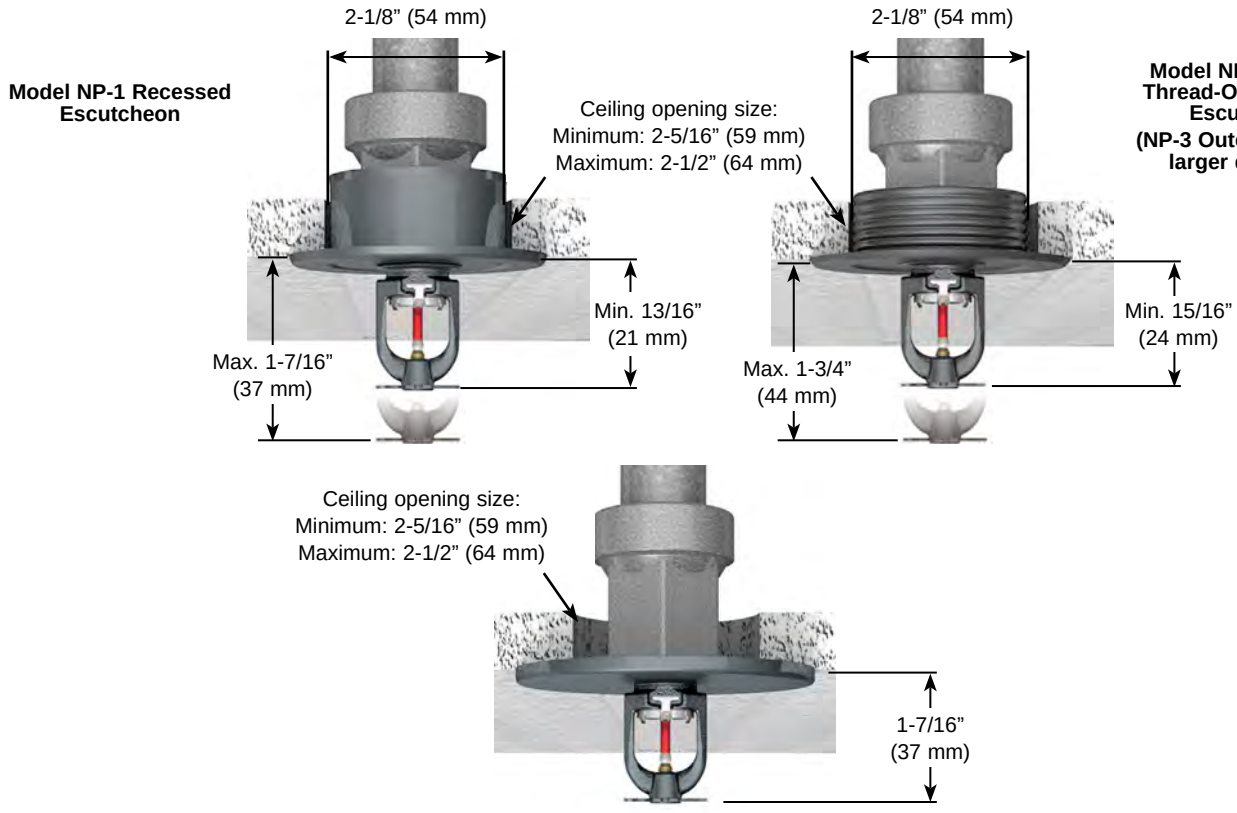
1. Install the escutcheon onto the sprinkler threads.

2. Carefully slide the wrench sideways around the protective cap then push upwards to engage with the sprinkler wrench flats.**



3. Install the sprinkler and escutcheon assembly into the pipe fitting. Be sure the escutcheon contacts the surface of the finished ceiling.

Figure 5: Installation (with Straight Wrench)



Standard Surface-Mounted Escutcheon

Figure 6: Installation Dimensions with Viking Escutcheons

VIKING	TECHNICAL DATA	MICROFAST® QUICK RESPONSE HORIZONTAL SIDEWALL SPRINKLER VK305 (K5.6)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com
Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com

1. DESCRIPTION

The Viking Microfast® Quick Response Horizontal Sidewall Sprinkler VK305 is a small thermosensitive glass bulb spray sprinkler available with various finishes and temperature ratings to meet design requirements. The special Polyester and Electroless Nickel PTFE (ENT) coatings can be used in decorative applications where colors are desired. In addition, these coatings have been investigated for installation in corrosive atmospheres and are listed/approved as corrosion resistant as indicated in Approval Charts.

WARNING: Cancer and Reproductive Harm- www.P65Warnings.ca.gov

2. LISTINGS AND APPROVALS

cULus Listed: Category VNIV

FM Approved: Class 2020

China Approval: Approved according to China GB Standard

Refer to Approval Charts and Design Criteria for listing and approval requirements that must be followed.

3. TECHNICAL DATA

Specifications:

Minimum Operating Pressure: 7 psi (0.5 bar)
Rated to 175 psi (12 bar) water working pressure
Factory tested hydrostatically to 500 psi (34.5 bar)
Nominal K-Factor: 5.6 U.S. (80.6 metric*)

* Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

Overall Length: 2-3/4" (68 mm)

Material Standards:

Frame Casting: Brass UNS-C84400 or QM Brass
Deflector: Copper UNS-C19500
Bulb: Glass, nominal 3 mm diameter
Belleville Spring Sealing Assembly: Nickel Alloy, coated on both sides with PTFE Tape
Screw: Brass UNS-C36000
Pip Cap and Insert Assembly: Copper UNS-C11000 and Stainless Steel UNS-S30400
For Polyester Coated Sprinklers: Belleville Spring-Exposed
For ENT Coated Sprinklers: Belleville Spring - Exposed, Screw and Pip cap - ENT plated.

Ordering Information: (Also refer to the current Viking price list.)

Order Viking Microfast® Quick Response Horizontal Sidewall Sprinkler VK305 by first adding the appropriate suffix for the sprinkler finish and then the appropriate suffix for the temperature rating to the sprinkler base part number.
Finish Suffix: Brass = A, Chrome = F, White Polyester = M-/W, Black Polyester = M-/B, and ENT = JN
Temperature Suffix: 135 °F / 57 °C = A, 155 °F / 68 °C = B, 175 °F / 79 °C = D, 200 °F / 93 °C = E, and 286 °F / 141 °C = G
For example, sprinkler 12997 with a Brass finish and a 155 °F / 68 °C temperature rating = Part No. 12997AB

Available Finishes And Temperature Ratings: Refer to Table 1.

Accessories: (Also refer to the Viking website.)

Sprinkler Wrenches:

A. Standard Wrench: Part No. 21475M/B (available since 2017).
B. Wrench for recessed and/or wax coated sprinklers: Part No. 13655W/B** (available since 2006)
**A ½" ratchet is required (not available from Viking).

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com
Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com

Sprinkler Cabinets:

A. Six-head capacity: Part No. 01724A (available since 1971)
B. Twelve-head capacity: Part No. 01725A (available since 1971)

4. INSTALLATION

Refer to appropriate NFPA Installation Standards.

5. OPERATION

During fire conditions, the heat-sensitive fusible link disengages, the pip cap and spring are released, and the waterway is opened. Water flowing through the sprinkler orifice strikes the sprinkler deflector, forming a uniform spray pattern to extinguish or control the fire.

6. INSPECTIONS, TESTS AND MAINTENANCE

Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.

7. AVAILABILITY

Viking Microfast® Quick Response Horizontal Sidewall Sprinkler VK305 is available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

8. GUARANTEE

For details of warranty, refer to Viking's current list price schedule or contact Viking directly.

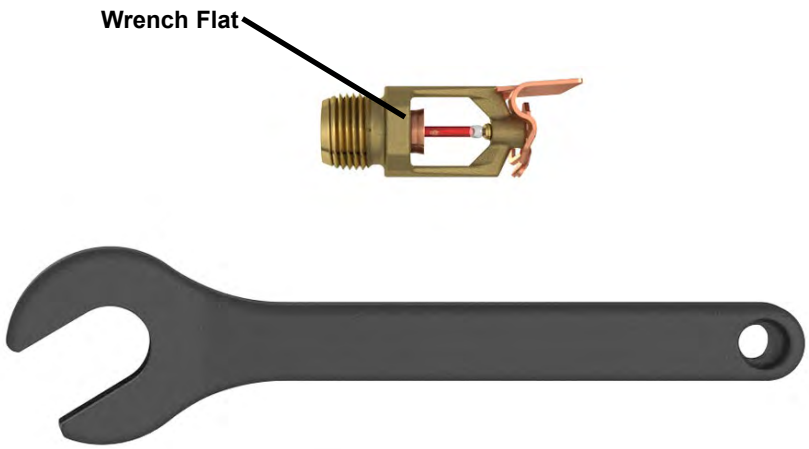


Figure 1:
Standard Sprinkler Wrench 21475M/B

VIKING	TECHNICAL DATA	MICROFAST® QUICK RESPONSE HORIZONTAL SIDEWALL SPRINKLER VK305 (K5.6)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com
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TABLE 1: AVAILABLE SPRINKLER TEMPERATURE RATINGS AND FINISHES

Sprinkler Temperature Classification	Sprinkler Nominal Temperature Rating[1]	Maximum Ambient Ceiling Temperature[2]	Bulb Color
Ordinary	135 °F (57 °C)	100 °F (38 °C)	Orange
Ordinary	155 °F (68 °C)	100 °F (38 °C)	Red
Intermediate	175 °F (79 °C)	150 °F (65 °C)	Yellow
Intermediate	200 °F (93 °C)	150 °F (65 °C)	Green
High	286 °F (141 °C)	225 °F (107 °C)	Blue

Sprinkler Finishes: Brass, Chrome, White Polyester, Black Polyester, and ENT

Corrosion-Resistant Coatings[3]: White Polyester, Black Polyester, and ENT

Footnotes

[1] The sprinkler temperature rating is stamped on the deflector.

[2] Based on NFPA-13. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.

[3] The corrosion-resistant coatings have passed the standard corrosion test required by the approving agencies indicated in the Approval Charts. These tests cannot and do not represent all possible corrosive environments. Prior to installation, verify through the end-user that the coatings are compatible with or suitable for the proposed environment. For automatic sprinklers, the coatings indicated are applied to the exposed exterior surfaces only. For ENT coated sprinklers, the waterway is coated. Note that the spring is exposed on sprinklers with Polyester, and ENT coatings.

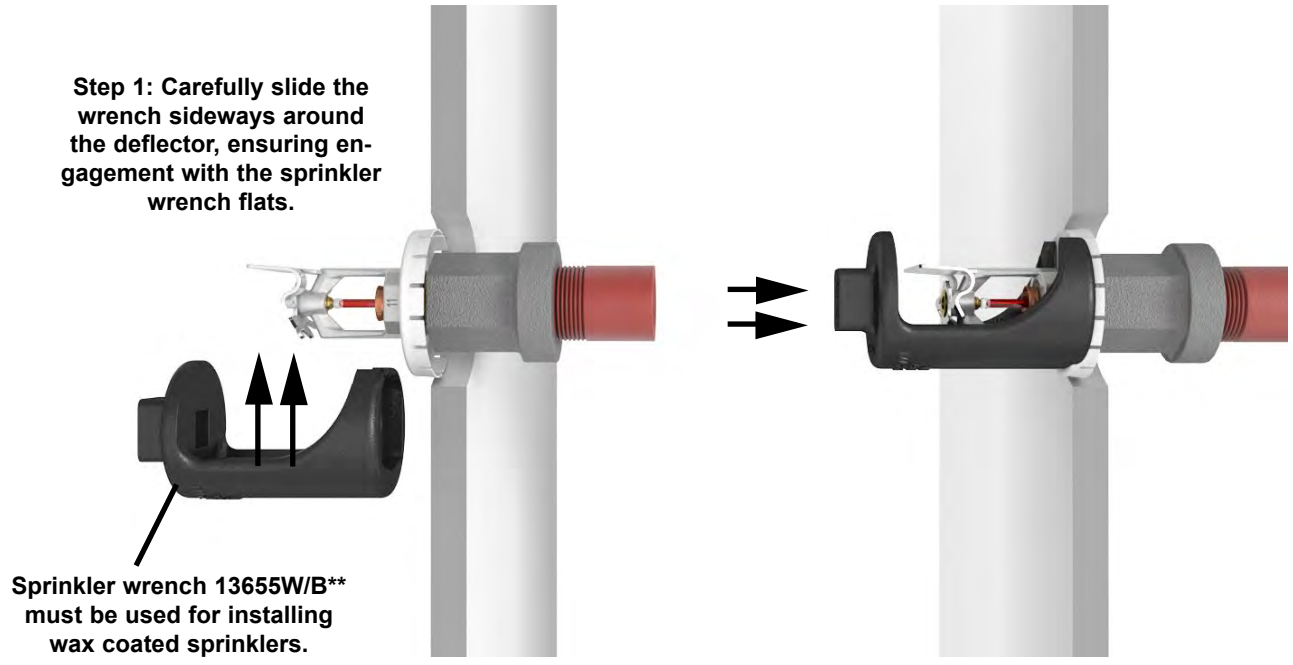

Figure 2: Wrench 13655W/B for Recessed Sprinklers

VIKING	TECHNICAL DATA	MICROFAST® QUICK RESPONSE HORIZONTAL SIDEWALL SPRINKLER VK305 (K5.6)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com
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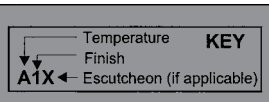
Approval Chart 1 (UL)

Microfast® Quick Response Horizontal Sidewall Sprinkler VK305
For Light or Ordinary Hazard Occupancies
Maximum 175 PSI (12 Bar) WWP
Deflector must be located 4" to 12" (102 mm to 305 mm) below the ceiling.



Sprinkler Base Part Number[1]	SIN	Thread Size		Nominal K-Factor		Overall Length		Listings and Approvals[3] (Refer also to UL Design Criteria.)	
		NPT	BSPT	U.S.	metric[2]	Inches	mm	cULus[4]	China Approval
12997	VK305	1/2"	15 mm	5.6	80.6	2-11/16	68	A1W, B1X, C2W, D2Z	--
19782[7]	VK305	1/2"	--	5.6	80.6	2-11/16	68	E3	E3
NOTICE - Product Below - Limited Availability (Contact Local Viking Office)									
12121	VK305	1/2"	15 mm	5.6	80.6	2-11/16	68	A1W, B1X, C2W, D2Z	--

Approved Temperature Ratings

A - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), and 286 °F (141 °C)
B - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C)
C - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), and 286 °F (141 °C)
D - 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C)
E - 155 °F (68 °C)

Approved Finishes

1 - Brass, Chrome, White Poly-ester[5,6], and Black Polyester[5,6]
2 - ENT[5]
3 - Chrome

Approved Escutcheons

W - Installed with standard surface-mounted escutcheons
X - Installed with standard surface-mounted escutcheons **or** recessed with the Viking Micromatic® Model E-1, E-2, or G-1 Recessed Escutcheon
Z - Installed with standard surface-mounted escutcheons or recessed with the Viking Micromatic Model E-1

Footnotes

[1] Base part number shown. For complete part number, refer to Viking's current price schedule.
[2] Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.
[3] This table shows the listings and approvals available at the time of printing. Other approvals may be in process.
[4] Listed by Underwriters Laboratories Inc. for use in the U.S. and Canada.
[5] cULus Listed as corrosion-resistant.
[6] Other colors are available on request with the same Listings and Approvals as the standard colors.
[7] Approved according to China GB Standard.

DESIGN CRITERIA - UL

(Also refer to Approval Chart 1.)

cULus Listing Requirements:

Quick Response Horizontal Sprinkler VK305 is cULus Listed as indicated in Approval Chart 1 for installation in accordance with the latest edition of NFPA 13 for sidewall standard spray sprinklers.

- Designed for use in Light and Ordinary Hazard occupancies.
- Locate with the deflector 4" to 12" (102 mm to 305 mm) below the ceiling.
- Protection areas and maximum spacing shall be in accordance with the tables provided in NFPA 13.
- Minimum spacing allowed is 6 ft. (1.8 m).
- Align the top of the deflector parallel with the ceiling.
- Locate no less than 4" (102 mm) from end walls.
- Maximum distance from end walls shall be no more than one-half of the allowable distance between sprinklers. The distance shall be measured perpendicular to the wall.
- The sprinkler installation and obstruction rules contained in NFPA 13 for sidewall standard spray sprinklers must be followed.

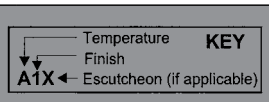
IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to Bulletin Form No. F_080614 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.

VIKING	TECHNICAL DATA	MICROFAST® QUICK RESPONSE HORIZONTAL SIDEWALL SPRINKLER VK305 (K5.6)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com
Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com

Approval Chart 1 (FM)

Microfast® Quick Response Sidewall Sprinklers
Maximum 175 PSI WWP



Sprinkler Base Part Number[1]	SIN	Thread Size		Nominal K-Factor		Overall Length		FM Approvals[3,4] (Refer also to Design Criteria below.)	
		NPT	BSPT	U.S.	metric[2]	Inches	mm		
12997	VK305	1/2”	15 mm	5.6	80.6	2-11/16	68	A1Y, B1X	
NOTICE - Product Below - Limited Availability (Contact Local Viking Office)									
12121	VK305	1/2”	15 mm	5.6	80.6	2-11/16	68	A1W, B1X, C2W, D2Z	--

Approved Temperature Ratings

A - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), and 286 °F (141 °C)
B - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C)

Approved Finishes

1 - Brass

Approved Escutcheons

X - Installed with standard surface-mounted escutcheons **or** recessed with the Viking Micromatic® Model E-1, E-2, E-3, or G-1 Recessed Escutcheon
Y - Installed with standard surface-mounted escutcheons

Footnotes

[1] Base part number shown. For complete part number, refer to Viking's current price schedule.
[2] Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.
[3] This table shows the FM Approvals available at the time of printing. Other approvals may be in process.
[4] Viking vertical sidewall sprinklers may be installed pendent or upright.
[5] Approved according to China GB Standard.

DESIGN CRITERIA - FM

(Also refer to Approval Chart 2 above.)

FM Approval Requirements:

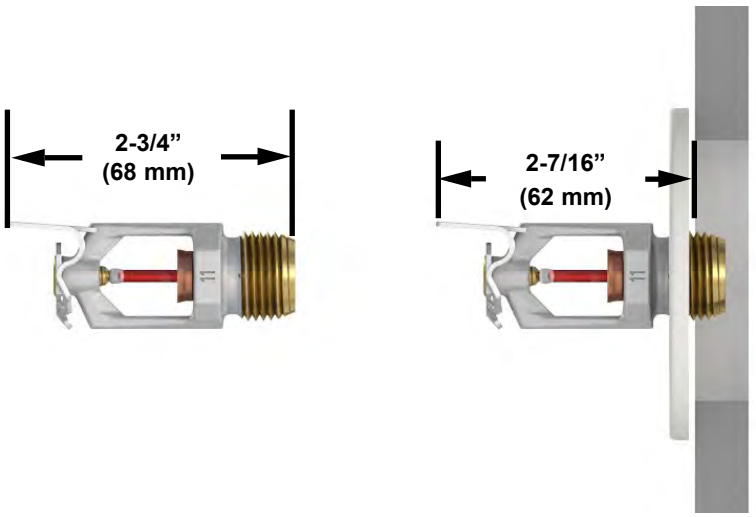
Horizontal Sidewall Sprinkler VK305 is FM Approved as a quick response **Non-Storage** sidewall sprinkler as indicated in the FM Approval Guide. For specific application and installation requirements, reference the latest applicable FM Loss Prevention Data Sheets (including Data Sheet 2-0). FM Global Loss Prevention Data Sheets contain guidelines relating to, but not limited to: minimum water supply requirements, hydraulic design, ceiling slope and obstructions, minimum and maximum allowable spacing, and deflector distance below the ceiling.

NOTE: The FM installation guidelines may differ from cULus and/or NFPA criteria.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to Bulletin Form No. F_080614 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, FM Global, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.

VIKING	TECHNICAL DATA	MICROFAST® QUICK RESPONSE HORIZONTAL SIDEWALL SPRINKLER VK305 (K5.6)

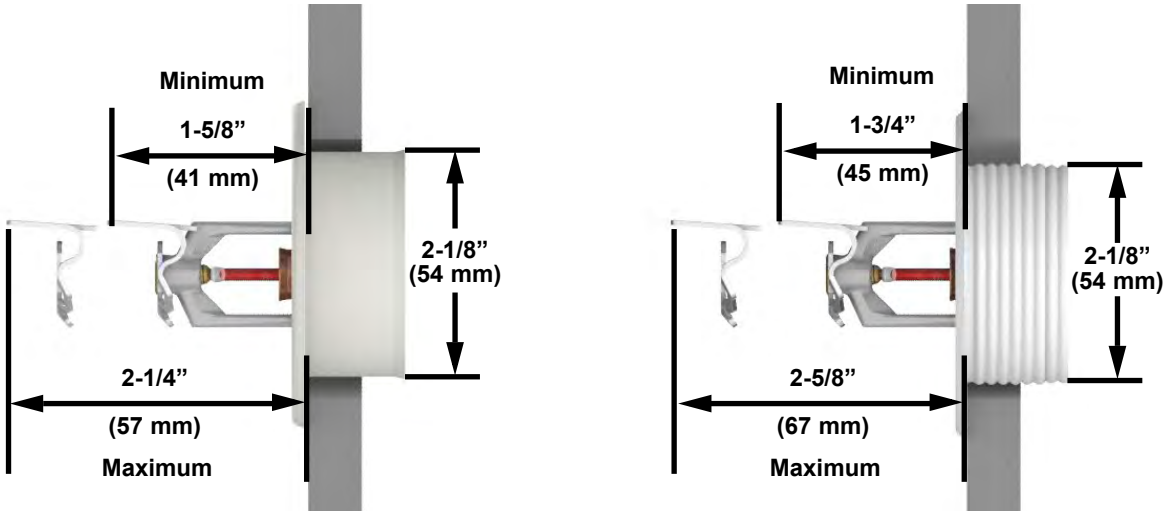
The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com
Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com



Wall Opening Size:
2-5/16” (58.7 mm) minimum
2-1/2” (63.5 mm) maximum

Installed with a Standard 1/8” Surface-Mounted Escutcheon

Figure 3: Sidewall Sprinkler Dimensions with a Standard Escutcheon



Wall Opening Size:
2-5/16” (58.7 mm) minimum
2-1/2” (63.5 mm) maximum

Installed with the Micromatic Model E-1 Recessed Escutcheon

Installed with the Threaded Model E-2 Recessed Escutcheon

Figure 4: Sidewall Sprinkler VK305 Dimensions with the Model E-1 and E-2 Recessed Escutcheons

TECHNICAL DATA

QUICK RESPONSE DRY PENDENT SPRINKLERS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

1. DESCRIPTION

Viking Quick Response Dry Pendent Sprinklers are thermosensitive spray sprinklers suitable for use in areas subject to freezing. The sprinklers are designed for dry systems and preaction systems where it is necessary to prevent water or condensation from entering the drop nipple before sprinkler operation. They may also be installed in spaces subject to freezing and supplied from a wet system in an adjacent heated area.

Viking Quick Response Dry Pendent Sprinklers are available in various finishes and temperature ratings to meet design requirements. The special Polyester and Electroless Nickel PTFE (ENT) coatings have been investigated for installation in corrosive atmospheres and are listed/approved as corrosion resistant as indicated in the Approval Charts. (Note: FM Global has no approval classification for Polyester coatings as corrosion resistant.)

NOTE: When installed in some corrosive environments, the Polyester finish may change color. This natural discoloration over time is not in itself an indication of corrosion and should not be treated as such. All sprinklers installed in corrosive environments should be replaced or tested as described in NFPA 25 on a more frequent basis.

WARNING: Cancer and Reproductive Harm- www.P65Warnings.ca.gov

2. LISTINGS AND APPROVALS

cULus Listed: Category VNIV

FM Approved: Classes 2013 and 2015

NYC Approved: MEA 89-92-E Volume 15

Refer to Approval Chart 1 and Design Criteria on page 105d for cULus Listing requirements, and refer to Approval Chart 2 and Design Criteria on page 105e for FM Approval requirements that must be followed.

3. TECHNICAL DATA

Specifications:

Minimum Operating Pressure: 7 psi (0.5 bar)
Maximum Working Pressure: 175 psi (12 bar).
Factory tested pneumatically to 100 psi (6.89 bar)
Thread size: 1” NPT or 25 mm BSP
Nominal K-Factor: 5.6 U.S. (80.6 metric*) for all listed and approved lengths.

* Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

Glass-bulb fluid temperature rated to -65 °F (-55 °C)
Covered by the following U.S. Patents: 8,636,075 and 10,220,231

Material Standards:

Frame Casting: Brass UNS-C84400
Deflector: Brass UNS-C26000
Bulb: Glass, nominal 3 mm diameter
Belleville Spring Sealing Assembly: Nickel Alloy, coated on both sides with PTFE Tape
Compression Screw: Brass UNS-C36000
Pip Cap: Brass UNS-C31400 or UNS-C31600
Pip Cap Adapter: Brass UNS-C36000
Orifice: Copper UNS-C22000 or UNS-C11000
Tube: ERW Hydraulic Steel Tube
Support (Internal): Stainless Steel UNS-S30400
Barrel: Steel Pipe UNS-G10260, Electrodeposited Epoxy Base finish
Barrel End and Threads: QM Brass
Sleeve (for Adjustable Standard style only): Brass UNS-C26000 or UNS-C26800

Escutcheon Materials:

Adjustable Standard Dry Escutcheons: Brass UNS-C26000 or UNS-C26800

Viking Technical Data may be found on The Viking Corporation’s Web site at http://www.vikinggroupinc.com. The Web site may include a more recent edition of this Technical Data Page.

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Recessed Dry Escutcheons: Cold Rolled Steel UNS-G10080
ENT Coated Adjustable and Recessed Escutcheons: Stainless Steel UNS-S30400

Ordering Information: (Also refer to the current Viking price list.)

Order Quick Response Dry Pendent Sprinklers by first adding the appropriate suffix for the sprinkler finish, the appropriate suffix for the temperature rating, and then the suffix for the length ("A" dimension) to sprinkler base part number. Order in a specific length noted as the "A" dimension. The "A" dimension is the distance from the face of the fitting (tee) to the desired finished surface of the ceiling.

These sprinklers are listed and approved in lengths from 1-1/2" to 45-1/2" (38.1 mm to 1,156 mm) for the adjustable standard style, 3" to 47" (76.2 mm to 1,194 mm) for the plain barrel style, and 3-1/4" to 47-1/2" (82.5 mm to 1,207 mm) for the adjustable recessed style.

Lengths exceeding the standard lengths are available, with no approvals, on a "made-to-order" basis: Recessed Dry Pendent up to 65-1/2" (1,664 mm). Adjustable Standard Dry Pendent up to 63-1/2" (1,613 mm). Plain Barrel Dry Pendent up to 65" (1,651 mm). Contact the manufacturer for more information.

Finish Suffix: Brass = A, Chrome = F, White Polyester = M-/W, and ENT = JN

Temperature Suffix: 155 °F (68 °C) = B, 175 °F (79 °C) = D, 200 °F (93 °C) = E, 286 °F (141 °C) = G

For example, sprinkler VK176 with a Chrome finish and a 155 °F (68 °C) temperature rating, and "A" length of 10" = Part No. 08383UFB10.

Available Finishes And Temperature Ratings: Refer to Table 1.

Accessories: (Also refer to the "Sprinkler Accessories" section of the Viking data book.)

Sprinkler Wrenches:

A. Standard Wrench: Part No. 07297W/B (available since 1991)
B. Wrench for recessed sprinklers: Part No. 07565W/B**
(available since 1991)
**A ½" ratchet is required (not available from Viking).

Sprinkler Guard: Chrome, with no listings or approvals, for installation on dry pendent sprinklers made after May 1994 only (Part No. 08954).

Replacement Escutcheons:

A. Adjustable Standard Dry Escutcheon: Base Part No. 07741
B. Recessed Dry Escutcheon Cup: Base Part No. 05459A

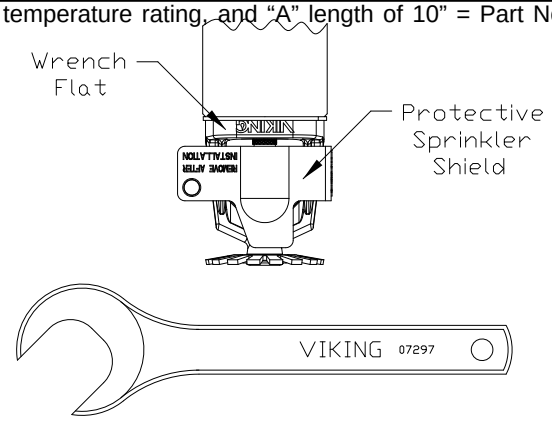


Figure 1: Standard Sprinkler Wrench 07297W/B

4. INSTALLATION

Refer to appropriate NFPA Installation Standards.

5. OPERATION

During fire conditions, the heat-sensitive liquid in the glass bulb expands, causing the glass to shatter, releasing the internal parts to open the waterway. Water flowing through the sprinkler orifice strikes the sprinkler deflector, forming a uniform spray pattern to extinguish or control the fire.

6. INSPECTIONS, TESTS & MAINTENANCE

Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.

7. AVAILABILITY

The Viking Quick Response Dry Pendent Sprinkler is available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

8. GUARANTEE

For details of warranty, refer to Viking's current list price schedule or contact Viking directly.

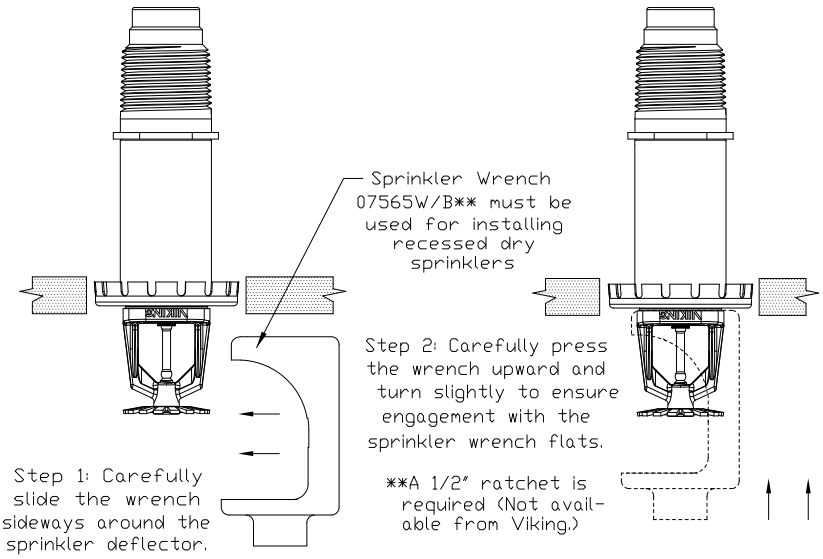


Figure 2: Wrench 07565W/B for Adjustable Recessed Dry Pendent Sprinklers

VIKING®	TECHNICAL DATA	QUICK RESPONSE DRY PENDENT SPRINKLERS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

TABLE 1: AVAILABLE SPRINKLER TEMPERATURE RATINGS AND FINISHES

Sprinkler Temperature Classification	Sprinkler Nominal Temperature Rating[1]	Maximum Ambient Ceiling Temperature[2]	Bulb Color
Ordinary	155 °F (68 °C)	100 °F (38 °C)	Red
Intermediate	175 °F (79 °C)	150 °F (65 °C)	Yellow
Intermediate	200 °F (93 °C)	150 °F (65 °C)	Green
High	286 °F (141 °C)	225 °F (107 °C)	Blue

Sprinkler Finishes: Brass, Chrome, White Polyester, and ENT
Corrosion-Resistant Coating[3,4]: White Polyester and ENT in all temperature ratings

Footnotes

[1] The sprinkler temperature rating is stamped on the deflector.

[2] Based on NFPA-13. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.

[3] The corrosion-resistant Polyester and ENT coatings have passed the standard corrosion test required by the approving agencies indicated in the Approval Charts. These tests cannot and do not represent all possible corrosive environments. Note: These coatings are NOT corrosion proof. Prior to installation, verify through the end-user that the coatings are compatible with or suitable for the proposed environment. Polyester and ENT coatings are applied to the exposed exterior surfaces only. Note that the spring is exposed on sprinklers with Polyester and ENT coatings.

[4] When installed in some corrosive environments, the Polyester finish may change color. This natural discoloration over time is not in itself an indication of corrosion and should not be treated as such. All sprinklers installed in corrosive environments should be replaced or tested as described in NFPA 25 on a more frequent basis.

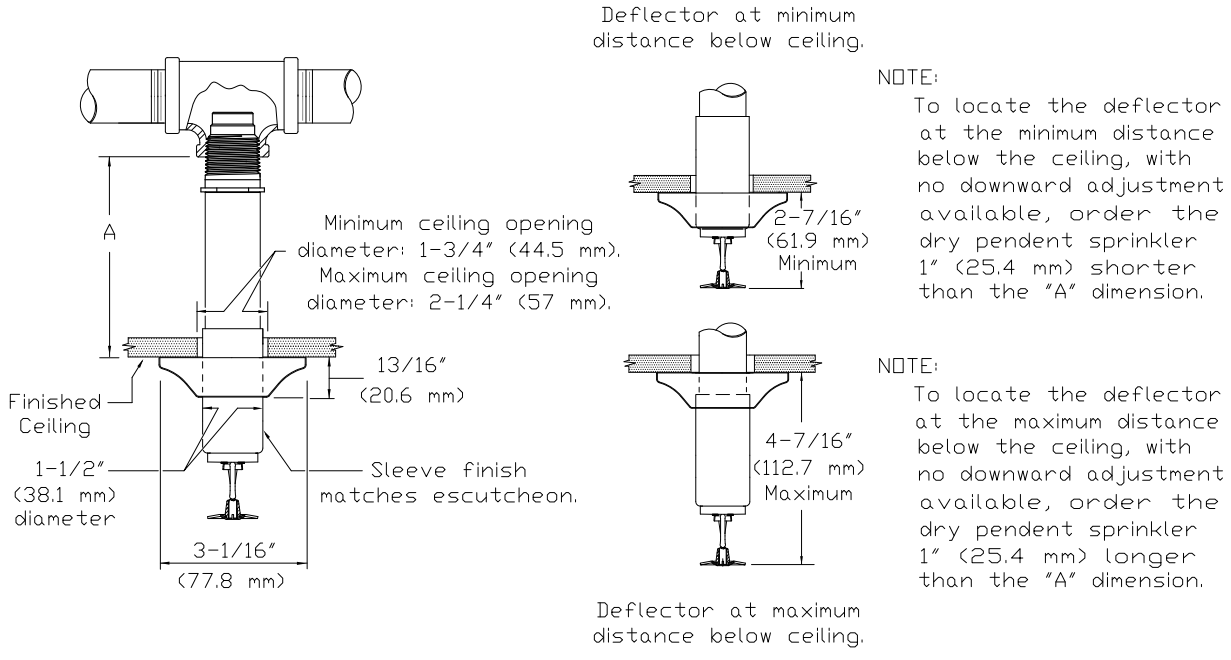


Figure 3: Adjustable Standard Dry Pendent Sprinkler

VIKING®

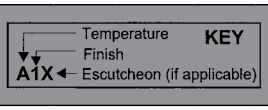
TECHNICAL DATA

QUICK RESPONSE DRY PENDENT SPRINKLERS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Approval Chart 1 (UL)

Quick Response Dry Pendent Sprinklers
Maximum 175 PSI (12 bar) WWP



Sprinkler Base Part No.[1]	SIN	Style	Thread Size		Nominal K-Factor[2]		Order Length Increment		Listings and Approvals[4] (Refer also to Design Criteria below.)					
			NPT	BSP	U.S.	metric[3]	Inches	mm	cULus[5]	NYC[6]	VdS	LPCB	CE	
08383U	VK176	Adjustable Standard	1”	--	5.6	80.6	1/2”	12.7	A1, A5	A1	--	--	--	--
16457U			--	25 mm	--	80.6	1/2”	12.7	A1, A5	--	--	--	--	--
08385U	VK180	Adjustable Recessed	1”	--	5.6	80.6	1/4”	6.35	B2, B6	B2	--	--	--	--
16453U			--	25 mm	--	80.6	1/4”	6.35	B2, B6	--	--	--	--	--
08387U	VK172	Plain Barrel	1”	--	5.6	80.6	1/2”	12.7	A3	A4	--	--	--	--
16455U			--	25 mm	--	80.6	1/2”	12.7	A3	--	--	--	--	--

Approved Temperature Ratings

A - 155 °F (68 °C), 175 °F (79°C), 200 °F (93 °C), and 286 °F (141 °C)

B - 155 °F (68 °C), 175 °F (79°C), and 200 °F (93 °C)

Approved Finishes and “A” Dimensions

1 - Chrome or White Polyester[7] sprinkler with a Chrome or White Polyester Sleeve and Escutcheon with “A” dimensions 1-1/2” to 45-1/2” (38.1 mm to 1,156 mm)
2 - Chrome or White Polyester[7] with “A” dimensions 3-1/4” to 47-1/2” (82.5 mm to 1,207 mm)
3 - Chrome, Brass, White Polyester[7], or ENT[7] with “A” dimensions 3” to 47” (76.2 mm to 1,194 mm)
4 - Chrome or Brass with “A” dimensions 3” to 47” (76.2 mm to 1,194 mm)
5 - ENT[7] sprinkler with an ENT[7] Sleeve and Escutcheon with “A” dimensions 1-1/2” to 45-1/2” (38.1 mm to 1,156 mm)
6 - ENT[7] with “A” dimensions 3-1/4” to 47-1/2” (82.5 mm to 1,207 mm)

Footnotes

[1] Part number shown is the base part number. For complete part number, refer to current Viking price list schedule.

[2] K-Factor applies for standard lengths (“A” Dimensions indicated above).

[3] Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

[4] This chart shows the listings and approvals available at the time of printing. Other approvals may be in process. Check with the manufacturer for any additional approvals.

[5] Listed by Underwriter’s Laboratories for use in the U.S. and Canada.

[6] Accepted for use, City of New York Department of Buildings, MEA Number 89-92-E, Vol. 15.

[7] cULus Listed as corrosion resistant.

DESIGN CRITERIA - UL

(Also refer to Approval Chart 1 above.)

NOTE: When using CPVC fittings with Viking dry sprinklers, use only new Nibco Model 5012-S-Bl tees. When selecting other CPVC fittings, contact Viking Technical Services.

cULus Listing Requirements:

Standard Dry Pendent Sprinklers are cULus Listed as indicated in Approval Chart 1 for installation in accordance with the latest edition of NFPA 13 for standard spray sprinklers.

- Designed for use in Light and Ordinary Hazard occupancies.
- The sprinkler installation and obstruction rules contained in NFPA 13 for standard spray pendent sprinklers must be followed.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to page DRY1-3 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.

VIKING®

TECHNICAL DATA

QUICK RESPONSE DRY PENDENT SPRINKLERS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Approval Chart 2 (FM)

Quick Response Dry Pendent Sprinklers
Maximum 175 PSI (12 bar) WWP

KEY: Temperature, Finish, A1X Escutcheon (if applicable)

Sprinkler Base Part No.[1]	SIN	Style	Thread Size		Nominal K-Factor[2]		Order Length Increment		FM Approvals[4] (Refer also to Design Criteria below.)
			NPT	BSP	U.S.	metric[3]	Inches	mm	
08383U	VK176	Adjustable Standard	1"	--	5.6	80.6	1/2"	12.7	A1
16457U			--	25 mm	--	80.6	1/2"	12.7	A1
08385U	VK180	Adjustable Recessed	1"	--	5.6	80.6	1/4"	6.35	B2
16453U			--	25 mm	--	80.6	1/4"	6.35	B2
08387U	VK172	Plain Barrel	1"	--	5.6	80.6	1/2"	12.7	A3
16455U			--	25 mm	--	80.6	1/2"	12.7	A3

Approved Temperature Ratings

A - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), and 286 °F (141 °C)

B - 155 °F (68 °C), 175 °F (79°C), and 200 °F (93 °C)

Approved Finishes and "A" Dimensions

1 - Brass, Chrome, White Polyester, or ENT[5] sprinkler with a Brass, Chrome, White Polyester, or ENT[5] Sleeve and Escutcheon with "A" dimensions 1-1/2" to 45-1/2" (38.1 mm to 1,156 mm)

2 - Brass, Chrome, White Polyester, or ENT[5] with "A" dimensions 3-1/4" to 47-1/2" (82.5 mm to 1,207 mm)

3 - Brass, Chrome, White Polyester, or ENT[5] with "A" dimensions 3" to 47" (76.2 mm to 1,194 mm)

Footnotes

[1] Part number shown is the base part number. For complete part number, refer to current Viking price list schedule.

[2] K-Factor applies for standard lengths ("A" Dimensions indicated above).

[3] Metric K-Factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

[4] This chart shows the FM Approvals available at the time of printing. Other approvals may be in process. Check with the manufacturer for any additional approvals.

[5] FM approved as corrosion resistant.

DESIGN CRITERIA - FM

(Also refer to Approval Chart 2 above.)

NOTE: When using CPVC fittings with Viking dry sprinklers, use only new Nibco Model 5012-S-Bl tees. When selecting other CPVC fittings, contact Viking Technical Services.

FM Approval Requirements:

The Dry Pendent Sprinklers in the Approval Chart above are FM Approved as quick response **Non-storage** standard spray sprinklers as indicated in the FM Approval Guide. For specific application and installation requirements, reference the latest applicable FM Loss Prevention Data Sheets (including 2-0) and Technical Advisory Bulletins. FM Global Loss Prevention Data Sheets and Technical Advisory Bulletins contain guidelines relating to, but not limited to: minimum water supply requirements, hydraulic design, ceiling slope and obstructions, minimum and maximum allowable spacing, and deflector distance below the ceiling.

NOTE: The FM installation guidelines may differ from cULus and/or NFPA criteria.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to page DRY1-3 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, FM Global, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.

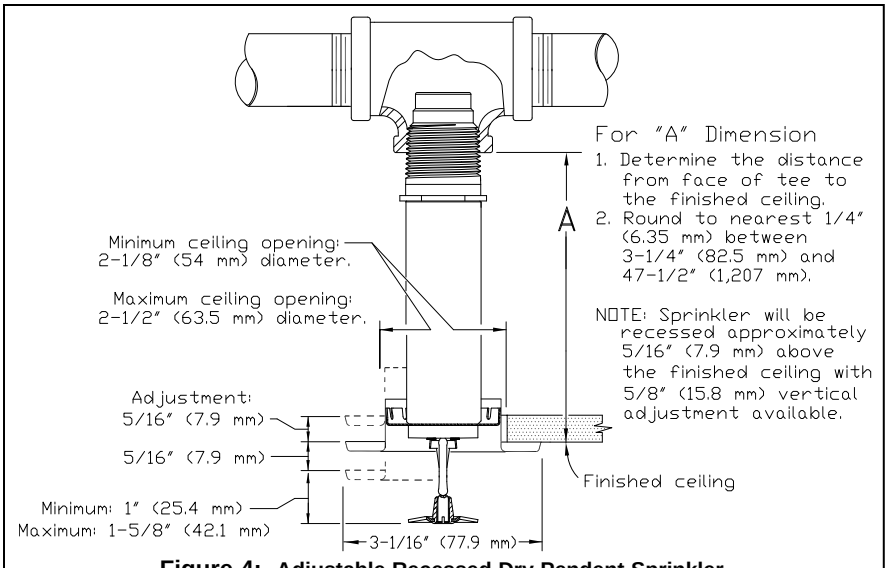


Figure 4: Adjustable Recessed Dry Pendent Sprinkler

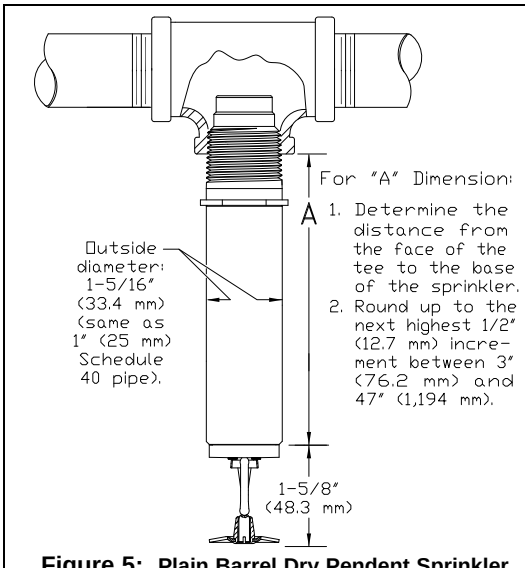


Figure 5: Plain Barrel Dry Pendent Sprinkler

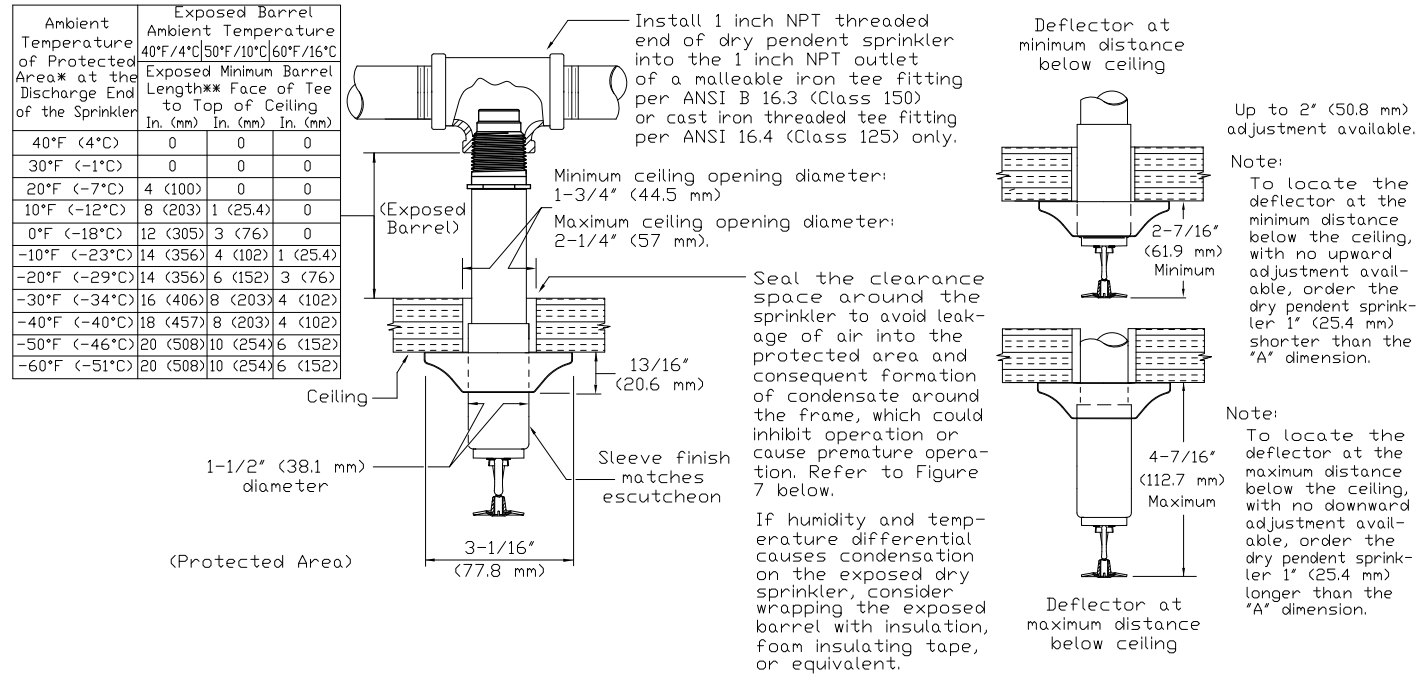
VIKING®

TECHNICAL DATA

QUICK RESPONSE DRY PENDENT SPRINKLERS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Ambient Temperature of Protected Area* at the Discharge End of the Sprinkler	Exposed Barrel Ambient Temperature 40°F/4°C — Exposed Minimum Barrel Length** Face of Tee to Top of Ceiling In. (mm)	50°F/10°C In. (mm)	60°F/16°C 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 (203)	1 (25.4)	0
0°F (-18°C)	12 (305)	3 (76)	0
-10°F (-23°C)	14 (356)	4 (102)	1 (25.4)
-20°F (-29°C)	14 (356)	6 (152)	3 (76)
-30°F (-34°C)	16 (406)	8 (203)	4 (102)
-40°F (-40°C)	18 (457)	8 (203)	4 (102)
-50°F (-46°C)	20 (508)	10 (254)	6 (152)
-60°F (-51°C)	20 (508)	10 (254)	6 (152)



*The protected area refers to the area below the ceiling.
The ambient temperature is the temperature at the discharge end of the sprinkler.
For protected area temperatures that occur between the values listed, use the next cooler temperature.

**The minimum required barrel length is not the same as the "A" dimension. Refer to Figures 3-5 for the "A" dimension.
NOTE: Exposed minimum barrel lengths are inclusive up to 30 mph wind velocities.

Figure 6: **Dry Pendent Sprinkler Required Minimum Barrel Length Based on Ambient Temperature in the Protected Area (Adjustable Standard Dry Pendent Sprinkler is Shown)**

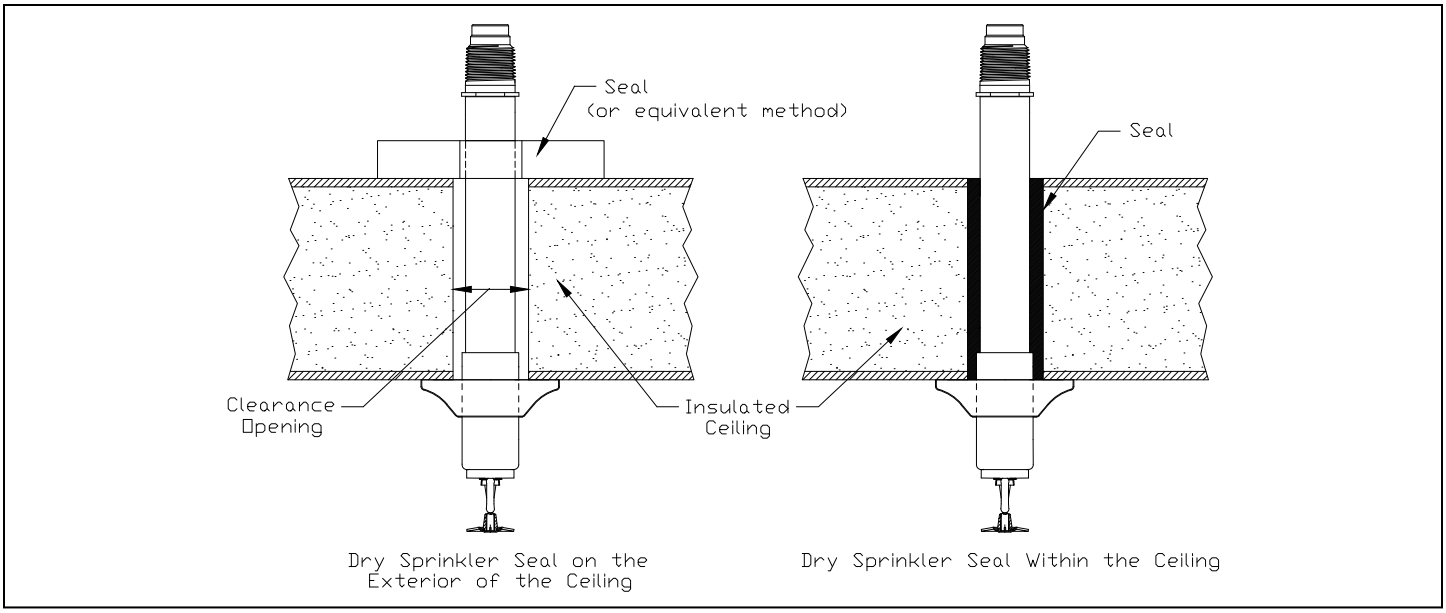


Figure 7: **Dry Sprinkler Seal (Adjustable Standard Dry Pendent Sprinkler is Shown)**

Reliable®

Model FX Dry Pipe Valve

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

Features

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

Product Description

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

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

Model FX Dry Pipe Valve Technical Data — **Table A**

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

Notes:

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

Model FX Dry Pipe Valve

Technical Specifications
Pressure Rating: See Table A

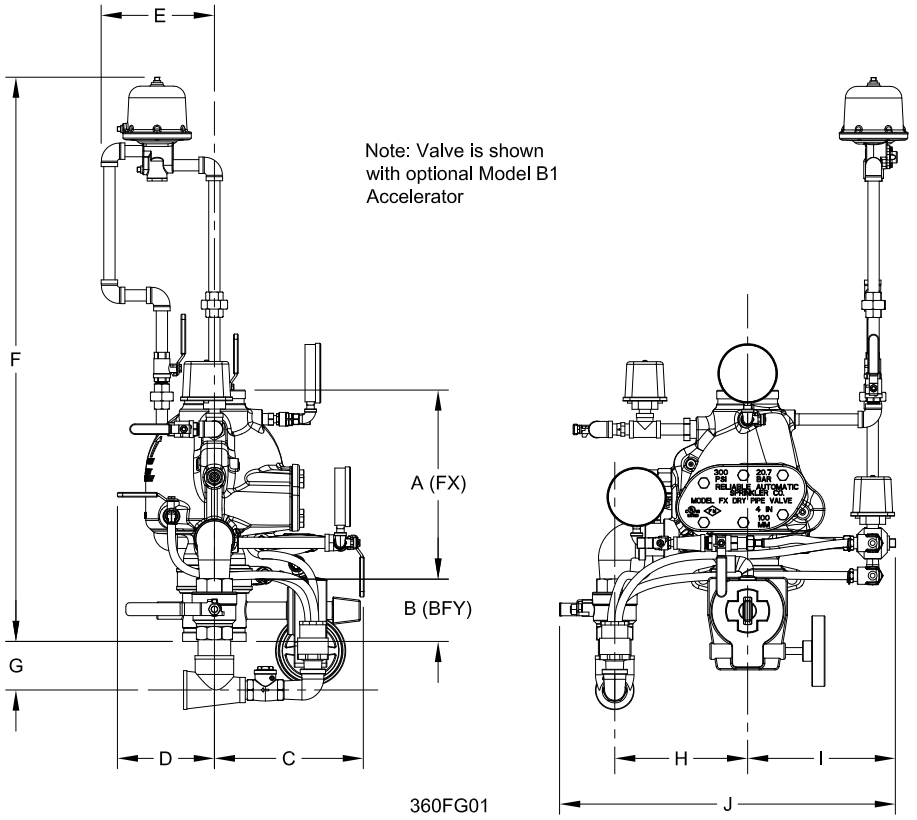
Material Specifications
Body & Cover: Ductile Iron, painted
Clapper: Stainless Steel
Seat: EPDM Rubber/Aluminum
Trim: Galvanized Steel

End Connections
See Table A

Installation Orientation
Vertical (Up Through Valve)

Approvals
cULus Listed (All sizes)
FM Approved (All sizes, except 6" (150mm) & 165 mm)

Model FX Dry Pipe Valve Components and Dimensions — **Figure 1**

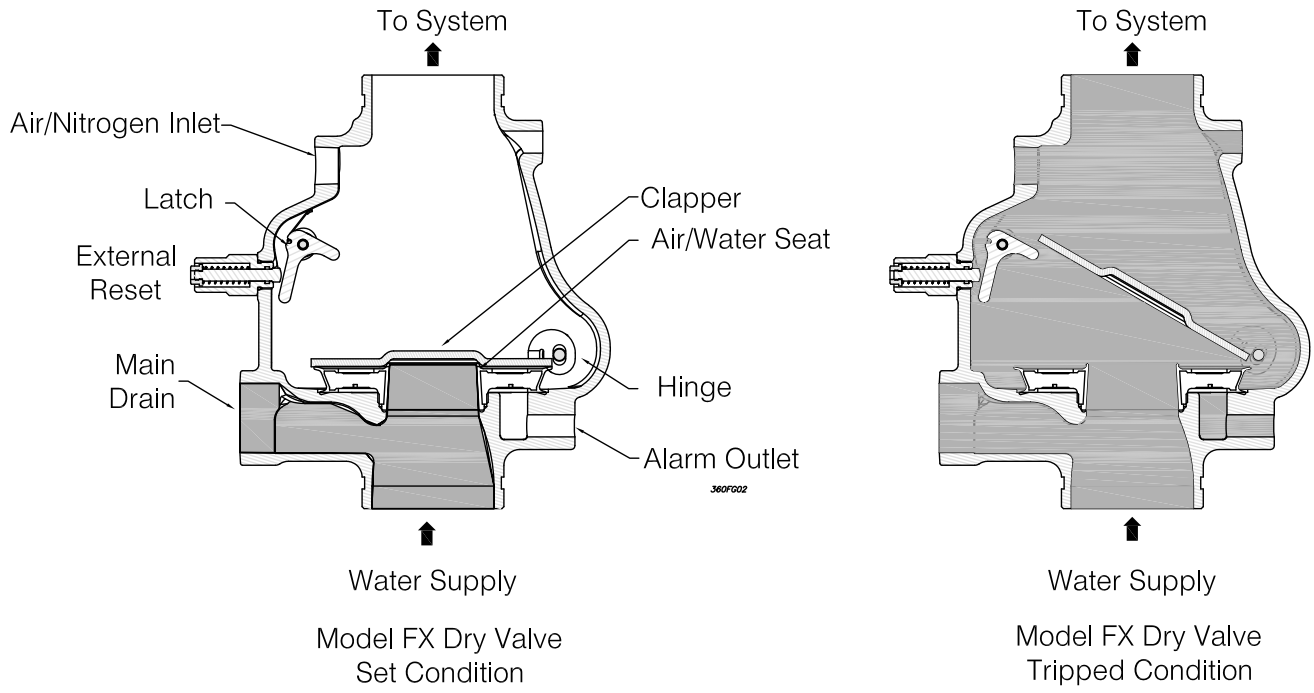


Model FX Dry Pipe Valve Dimensions - in. (mm) — **Table B**

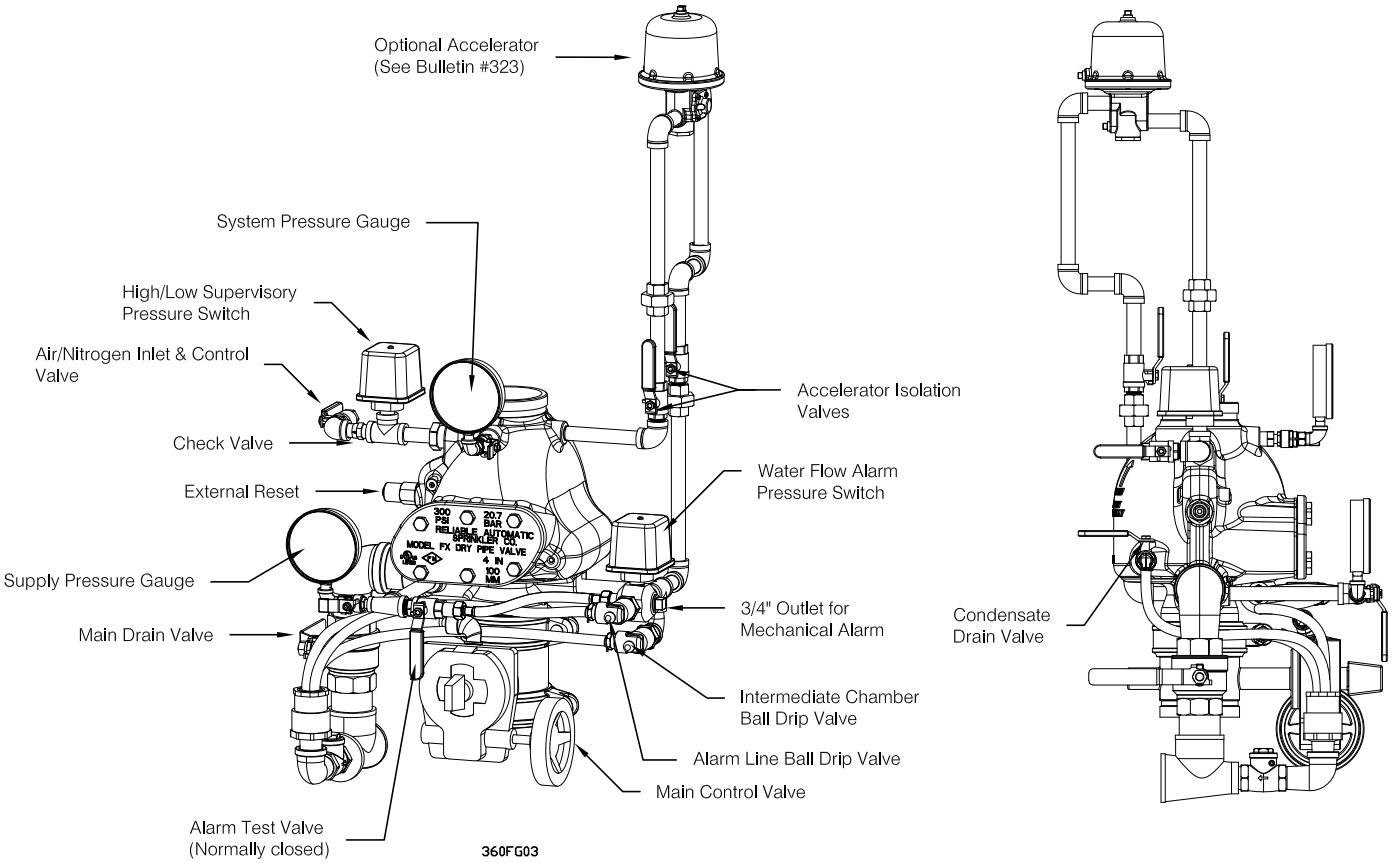
Valve Size	A	B	C	D	E	F	G	H	I	J
2" (50mm)	10 (254)	3-1/8 (79)	10 (254)	6-3/8 (162)	8-1/4 (210)	36-1/2 (927)	5/8 (16)	7-1/4 (184)	9-5/8 (244)	21-3/8 (543)
2-1/2" (65mm), 3" (80mm), & 76mm	12-1/4 (311)	3-1/2 (89)	10-1/4 (260)	6-7/8 (175)	8-1/4 (210)	39-1/4 (997)	5-1/2 (140)	8-1/4 (210)	10-1/8 (257)	22 (559)
4" (100mm)	13-3/4 (349)	4-1/2 (114)	10-7/8 (276)	7 (178)	8-1/4 (210)	41-1/8 (1045)	3-1/2 (89)	9-5/8 (244)	10-3/4 (273)	24-1/2 (622)
6" (150mm), 165mm	16 (406)	5-3/4 (146)	12-1/2 (318)	12-1/2 (318)	8-1/4 (210)	42-1/4 (1073)	3 (76)	11-1/2 (292)	12 (305)	30-1/2 (775)

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

Model FX Dry Pipe Valve Section View **Figure 2**



Model FX Dry Pipe Valve Components **Figure 3**



Operation

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

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

Pneumatic Pressure Requirement **Table C**

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

Installation

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

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

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

Note: The valve may be hydrostatically tested with the clapper in either the open or closed position.

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

Friction Loss (Equivalent Length of Schedule 40 Pipe) C = 120 (C = 100) **Table D**

2” (50mm)	10.2 (7.3)
2-1/2” (65mm), 76mm	7.0 (5.0)
3” (80mm)	13.0 (9.3)
4” (100mm)	23.9 (17.0)
6” (150mm), 165mm	60.0 (43.1)

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

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

Alarm Test

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

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

Maintenance

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

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

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

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

Guarantee

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

Ordering Information

Specify:

- Model FX Dry Pipe Valve
- Size
- End Connections
- Trim*
  - Fully assembled with control valve
  - Fully assembled without control valve
  - Segmented trim
  - Loose trim
- (Optional) Model B1 Accelerator (PN 650120001A)

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

Model FX Fully Assembled Part Number

Figure 4

65080 X Y Z 00

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

***Note:** Available only with Groove/Groove connections

Model FX Valve Only (No Trim) Part Number

Figure 5

61010 XX 60 Y

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

***Note:** Available only with Groove/Groove connections

Weight (Valve Only)

Figure 6

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

Model FX Trim Only Part Number

Figure 7

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

Weight (Trim Only)

Figure 8

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

P/N 9999970559

PS10 SERIES
PRESSURE SWITCH

UL, cUL, and CSFM Listed, FM and LPC Approved, NYMEA Accepted, CE Marked

Dimensions: 3.78" (9,6cm)W x 3.20" (8,1cm)D x 4.22" (10,7cm)H

Conduit Entrance: Two knockouts provided for 1/2" conduit. Individual switch compartments and ground screws suitable for dissimilar voltages.

Enclosure: Cover - Die-cast with textured red powdercoat finish, single cover screw and rain lip.

Base - Die-cast

Pressure Connection: Nylon 1/2" NPT Male

Factory Adjustment: 4 - 8 PSI (0,27 - 0,55 BAR)
Differential: 2 PSI (0,13 BAR) typical

Maximum System Pressure: 300 PSI (20,68 BAR)

Switch Contacts: SPDT (Form C)
10.1 Amps at 125/250VAC, 2.0 Amps at 30VDC
One SPDT in PS10-1, Two SPDT in PS10-2

Environmental Specifications:
NEMA 4/IP66 Rated Enclosure - indoor or outdoor when used with NEMA 4 conduit fittings.
Temperature range: -40°F to 140°F (-40°C to 60°C)

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

Ordering Information

Model	Description	Stock No.
PS10-1	Pressure switch with one set SPDT contacts	1340103
PS10-2	Pressure switch with two sets SPDT contacts	1340104
	Hex Key	5250062
	Cover Tamper Switch Kit	0090200

Tamper
Cover incorporates tamper resistant fastener that requires a special key for removal. One key is supplied with each device. For optional cover tamper switch kit, order Stock No. 0090200. See bulletin #5401200 PSCTSK.

Installation
The Potter PS10 Series Pressure Actuated Switches are designed for the detection of a waterflow condition in automatic fire sprinkler systems of particular designs such as wet pipe systems with alarm check valves, dry pipe, preaction, or deluge valves. The PS10 is also suitable to provide a low pressure supervisory signal; adjustable between 4 and 15 psi (0,27 and 1,03 BAR).

1. Apply Teflon tape to the threaded male connection on the device. (Do not use pipe dope)
2. Device should be mounted in the upright position (threaded connection down).
3. Tighten the device using a wrench on the flats on the device.

Wiring Instructions
1. Remove the tamper resistant screw with the special key provided.
2. Carefully place a screwdriver on the edge of the knockout and sharply apply a force sufficient to dislodge the knockout plug. See Fig 9
3. Run wires through an approved conduit connector and affix the connector to the device.
4. Connect the wires to the appropriate terminal connections for the service intended. See Figures 2,4,5, and 6. See Fig 7 for two switch, one conduit wiring.

Testing
The operation of the pressure alarm switch should be tested upon completion of installation and periodically thereafter in accordance with the applicable NFPA codes and standards and/or the authority having jurisdiction (manufacturer recommends quarterly or more frequently).

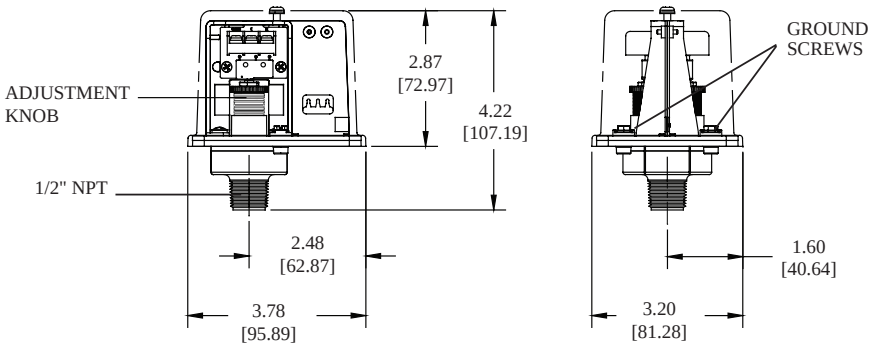
Wet System
Method 1: When using PS10 and control unit with retard - connect PS10 into alarm port piping on the input side of retard chamber and electrically connect PS10 to control unit that provides a retard to compensate for surges. Insure that no unsupervised shut-off valves are present between the alarm check valve and PS10.
Method 2: When using the PS10 for local bell application or with a control that does not provide a retard feature - the PS10 must be installed on the alarm outlet side of the retard chamber of the sprinkler system.
Testing: Accomplished by opening the inspector's end-of-line test valve. Allow time to compensate for system or control retard.
Note: Method 2 is not applicable for remote station service use, if there is an unsupervised shut-off valve between the alarm check valve and the PS10.

Wet System With Excess Pressure
Connect PS10 into alarm port piping extending from alarm check valve. Retard provisions are not required. Insure that no unsupervised shut-off valves are present between the alarm check valve and the PS10.
Testing: Accomplished by opening the water by-pass test valve or the inspector's end-of-line test valve. When using end-of-line test, allow time for excess pressure to bleed off.

Dry System
Connect PS10 into alarm port piping that extends from the intermediate chamber of the alarm check valve. Install on the outlet side of the in-line check valve of the alarm port piping. Insure that no unsupervised shut-off valves are present between the alarm check valve and the PS10.
Testing: Accomplished by opening the water by-pass test valve.
Note: The above tests may also activate any other circuit closer or water motor gongs that are present on the system.

Dimensions

Fig. 1

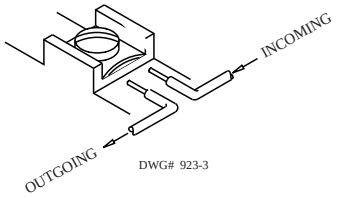


NOTE: To prevent leakage, apply Teflon tape sealant to male threads only.

DWG# 930-1

Switch Clamping Plate Terminal

Fig. 2



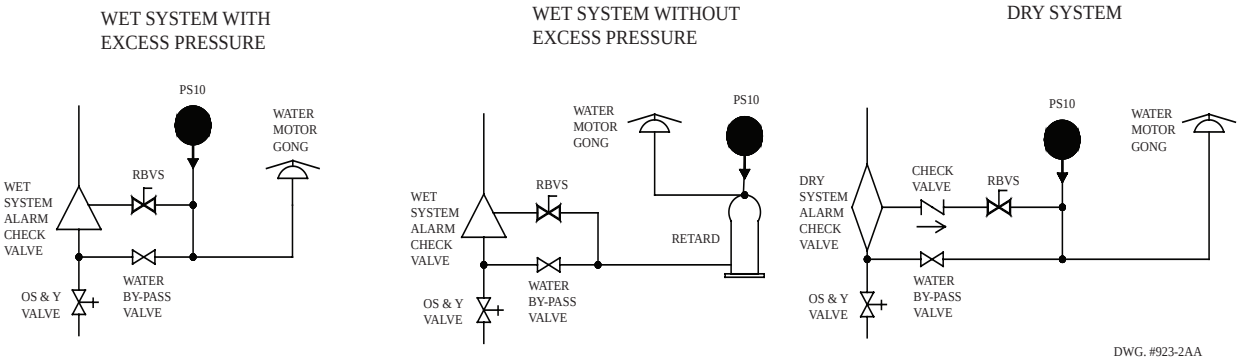
DWG# 923-3

⚠ 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 becomes dislodged from under the terminal.

Typical Sprinkler Applications

Fig. 3



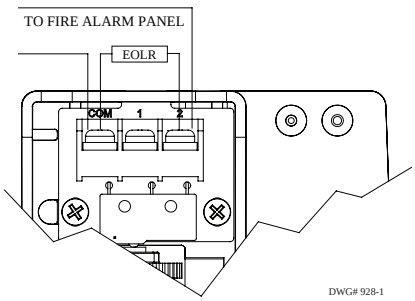
DWG. #923-2AA

⚠ CAUTION

Closing of any shutoff valves between the alarm check valve and the PS10 will render the PS10 inoperative. To comply with NFPA-72 any such valve shall be electrically supervised with a supervisory switch such as Potter Model RBVS.

Low Pressure Signal Connection

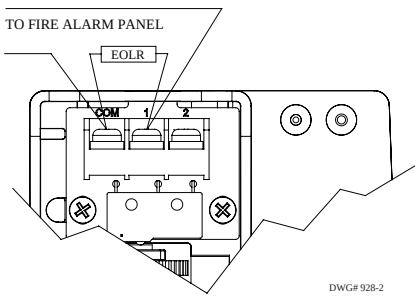
Fig. 4



DWG# 928-1

Waterflow Signal Connection

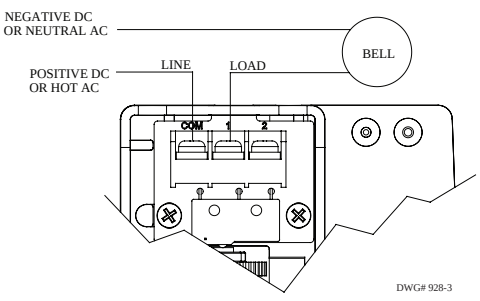
Fig. 5



DWG# 928-2

Local Bell For Waterflow Connection

Fig. 6

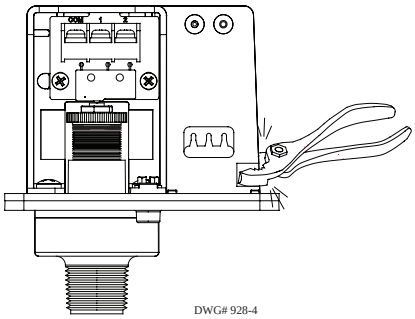


DWG# 928-3

One Conduit Wiring

Fig. 7

Break out thin section of divider to provide path for wires when wiring both switches from one conduit entrance.



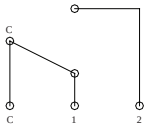
DWG# 928-4

Switch Operation

Fig. 8

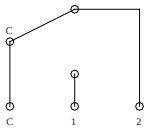
Terminal
C: Common
1: Closed when installed under normal system pressure.
2: Open when installed under normal system pressure. Closes on pressure drop. Use for low pressure supervision.

W/ PRESSURE APPLIED



Terminal
1: Open with no pressure supplied. Closes upon detection of pressure. Use for waterflow indication.
2: Closed with no pressure applied.

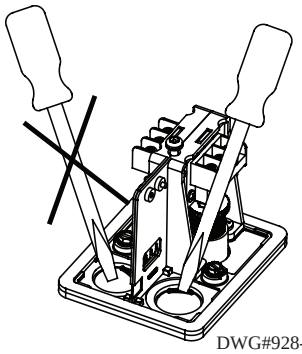
W/O PRESSURE APPLIED



DWG#928-6

Removing Knockouts

Fig. 9



DWG#928-5

⚠ 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.
- Read all instructions carefully and understand them before starting installation. Save instructions for future use. Failure to read and understand instructions could result in improper operation of device resulting in serious injury or death.
- Risk of explosion. Not for use is hazardous locations. Serious injury or death could result.

⚠ CAUTION

- Do not tighten by grasping the switch enclosure. Use wrenching flats on the bushing only. Failure to install properly could damage the switch and cause improper operation resulting in damage to equipment and property.
- To seal threads, apply Teflon tape to male threads only. Using joint compounds or cement can obstruct the pressure port inlet and result in improper device operation and damage to equipment.
- Do not over tighten the device, standard piping practices apply.

Engineer/Architect Specifications Pressure Type Waterflow Switch

Pressure type waterflow switches; shall be a Model PS10 as manufactured by Potter Electric Signal Company, St Louis MO., and shall be installed on the fire sprinkler system as shown and or specified herein.

Switches shall be provided with a ½" NPT male pressure connection and shall be connected to the alarm port outlet of; Wet Pipe Alarm Valves, Dry Pipe Valves, Pre-Action Valves, or Deluge Valves. The pressure switch shall be actuated when the alarm line pressure reaches 4 - 8 PSI (0,27 - 0,55 BAR).

Pressure type waterflow switches shall have a maximum service pressure rating of 300 PSI (20,68 BAR) and shall be factory adjusted to operate on a pressure increase of 4 - 8 PSI (0,27 - 0,55 BAR)

Pressure switch shall have one or two form C contacts, switch contact rating 10.1 Amps at 125/250 VAC, 2.0 Amps at 30 VDC.

Pressure type waterflow switches shall have two conduit entrances one for each individual switch compartment to facilitate the use of dissimilar voltages for each individual switch.

The cover of the pressure type waterflow switch shall be Zinc die-cast with rain lip and shall attach with one tamper resistant screw. The Pressure type waterflow switch shall be suitable for indoor or outdoor service with a NEMA 4/IP66 rating.

The pressure type waterflow switch shall be UL Ulc and CSFM listed, FM and LPC approved and NYMEA accepted.

PS40 SERIES
SUPERVISORY PRESSURE SWITCH

UL, cUL, and CSFM Listed, FM and LPC Approved, NYMEA Accepted, CE Marked

Dimensions: 3.78" (9,6cm)W x 3.20" (8,1cm)D x 4.22" (10,7cm)H

Conduit Entrance: Two knockouts provided for 1/2" conduit. Individual switch compartments and ground screw suitable for dissimilar voltages

Enclosure: Cover- Die-cast with textured red powdercoat finish, single cover screw and rain lip.
Base- Die-cast

Pressure Connection: Nylon 1/2" NPT male

Factory Adjustment: PS40-1 operates on decrease at 30 PSI (2,1 BAR)
PS40-2 operates in increase at 50 PSI (3,5 BAR) and on decrease at 30 PSI (2,1 BAR)

Pressure Range: 10-60 PSI (,7 - 4,1 BAR)

Differential: Typical 1 lb. at 10 PSI (,07 at ,7 BAR)
4 lbs at 60 PSI (,28 at 4,1 BAR)

Maximum System Pressure: 300 PSI (20,68 BAR)

Switch Contacts: SPDT (Form C)
10.1 Amps at 125/250VAC, 2.0 Amps at 30VDC
One SPDT in PS40-1, Two SPDT in PS40-2

Environmental Specifications:
NEMA 4/IP66 Rated Enclosure - indoor or outdoor when used with NEMA 4 conduit fittings.
Temperature range: -40°F to 140°F (-40°C to 60°C)

Tamper: Cover incorporates tamper resistant fastener that requires a special key for removal. One key is supplied with each device. For optional cover tamper switch kit, order Stock No. 0090200. See bulletin #5401200 PSCTSK.

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

Ordering Information

Model	Description	Stock No.
PS40-1	Pressure switch with one set SPDT contacts	1340403
PS40-2	Pressure switch with two sets SPDT contacts	1340404
	Hex Key	5250062
	Cover Tamper Switch Kit	0090200
BVL	Bleeder valve	1000018

Installation

The Potter PS40 Series Supervisory Pressure Actuated Switches are designed primarily to detect an increase and/or decrease from normal system pressure in automatic fire sprinkler systems. Typical applications are: Dry pipe systems, pre-action air/nitrogen supervision, pressure tanks, air supplies, and water supplies. The PS40 switch is factory set for 40 PSI (2,8 BAR) normal system pressure. The switch marked with the word LOW is set to operate at a pressure decrease of 10 PSI (,7 BAR) at 30 PSI (2,1 BAR). The switch marked with the word HIGH is set to operate at a pressure increase of 10 PSI (,7 BAR) at 50 PSI (3,5 BAR). See section heading **Adjustments and Testing** if other than factory set point is required.

1. Connect the PS40 to the system side of any shutoff or check valve.
2. Apply Teflon tape to the threaded male connection on the device. (Do not use pipe dope)
3. Device should be mounted in the upright position. (Threaded connection down)
4. Tighten the device using a wrench on the flats on the device.

Wiring Instructions

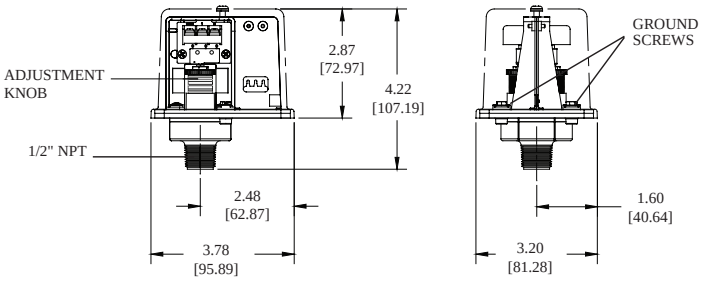
1. Remove the tamper resistant screw with the special key provided.
2. Carefully place a screwdriver on the edge of the knockout and sharply apply a force sufficient to dislodge the knockout plug. See Fig. 9
3. Run wires through an approved conduit connector and affix the connector to the device. A NEMA-4 rated conduit fitting is required for outdoor use.
4. Connect the wires to the appropriate terminal connections for the service intended. See Figures 2,4,5,6, and 8

Adjustment And Testing

The operation of the pressure supervisory switch should be tested upon completion of installation and periodically thereafter in accordance with the applicable NFPA codes and standards and/or the authority having jurisdiction (manufacturer recommends quarterly or more frequently).
Note: Testing the PS40 may activate other system connected devices.
The use of a Potter BVL (see product bulletin 8900067 for details) is recommended to facilitate setting and testing of the PS40 pressure switch. When a BVL (bleeder valve) is used, the pressure to the switch can be isolated and bled from the exhaust port on the BVL without effecting the supervisory pressure of the entire system. See Fig. 3
The operation point of the PS40 Pressure Switch can be adjusted to any point between 10 and 60 PSI (0,7 - 4,11 BAR) by turning the adjustment knob(s) clockwise to raise the actuation point and counter clockwise to lower the actuation point. In the case of the PS40-2, both switches operate independent of each other. Each switch may be independently adjusted to actuate at any point acrosss the switch adjustment range. Initial adjustment can be made with a visual reference from the top of the adjustment knob across to the printed scale on the switch bracket. Final adjustments should be verified with a pressure gauge.

PS40 SERIES
SUPERVISORY PRESSURE SWITCH

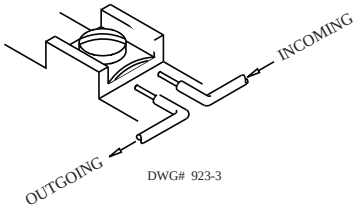
Dimensions
Fig. 1



NOTE: To prevent leakage, apply Teflon tape sealant to male threads only.

DWG# 930-1

Switch Clamping Plate Terminal
Fig. 2

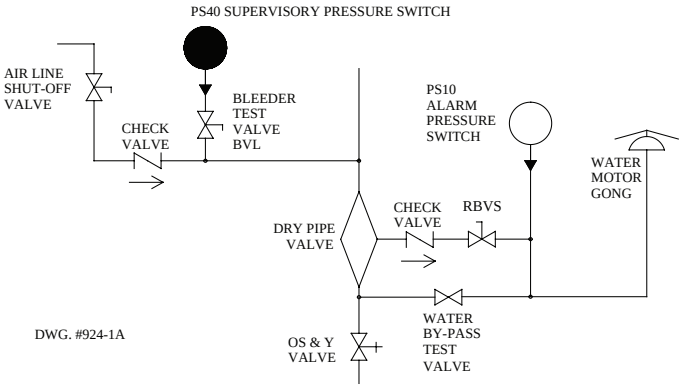


DWG# 923-3

⚠ 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 becomes dislodged from under the terminal.

Typical Sprinkler Applications
Fig. 3



DWG. #924-1A

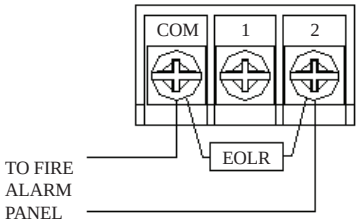
⚠ CAUTION

Closing of any shutoff valves between the alarm check valve and the PS10 will render the PS10 inoperative. To comply with IBC, IFC, and NFPA-13, any such valve shall be electrically supervised with a supervisory switch such as Potter Model RBVS.

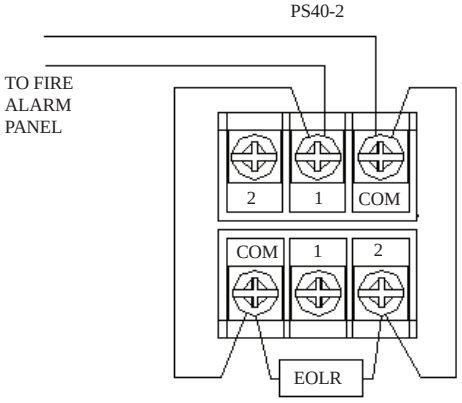
Typical Connections
Fig. 4

WITH NORMAL SYSTEM PRESSURE APPLIED LOW -TERMINAL 2 CLOSES ON PRESSURE DROP.

PS40-1



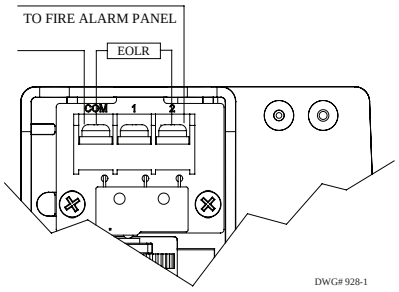
PS40-2



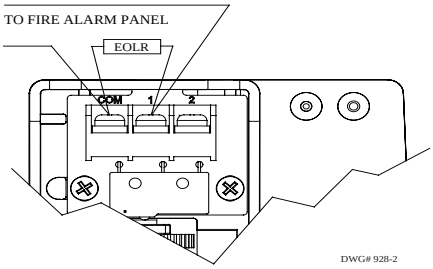
WITH NORMAL SYSTEM PRESSURE APPLIED HIGH - TERMINAL 1 WILL CLOSE ON PRESSURE INCREASE.

DWG# 930-2

Low Pressure Signal Connection
Fig. 5

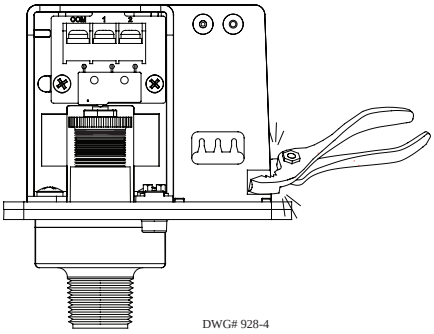


High Pressure Signal Connection
Fig. 6



One Conduit Wiring
Fig. 7

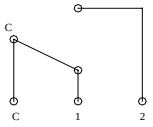
Break out thin section of divider to provide path for wires when wiring both switches from one conduit entrance.



Changing Pressure
(With normal system pressure)
Fig. 8

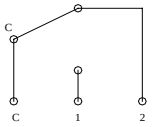
Terminal
C: Common
1: Closed when installed under normal system pressure.
2: Open when installed under normal system pressure. Closes on pressure drop. Use for low air signal.

LOW PRESSURE SWITCH



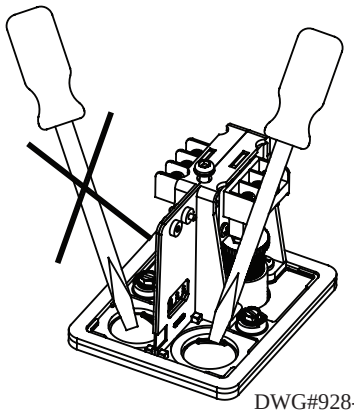
Terminal
1: Open when installed under normal system pressure. Closes on increase in pressure. Use for high air signal.
2: Closed under normal system pressure.

HIGH PRESSURE SWITCH



DWG# 930-3

Removing Knockouts
Fig. 9



DWG#928-5

Engineer/Architect Specifications Pressure Type Waterflow Switch

Pressure type supervisory switches; shall be a Model PS40 as manufactured by Potter Electric Signal Company, St. Louis, MO., and shall be installed on the fire sprinkler system as shown and or specified herein.

Switches shall be provided with a 1/2" NPT male pressure connection to be connected into the air supply line on the system side of any shut-off valve. A Model BVL bleeder valve as supplied by Potter Electric Signal Company of St. Louis, MO., or equivalent shall be connected in line with the PS40 to provide a means of testing the operation of the supervisory switch. (See Fig. 3)

The switch unit shall contain SPDT (Form C) switch(es). One switch shall be set to operate at a pressure decrease of 10 PSI (0,7 BAR) from normal. If two switches are provided, the second switch shall be set to operate at a pressure increase of 10 PSI (0,7 BAR) from normal.

Switch contacts shall be rated at 10.1 Amps at 125/250VAC and 2.0 Amps at 30VDC. The units shall have a maximum pressure rating of 300 PSI (20,68 BAR) and shall be adjustable from 10 to 60 PSI (0,7 to 4,1 BAR).

Pressure switches shall have two conduit entrances, one for each individual switch compartment to facilitate the use of dissimilar voltages for each individual switch.

The cover of the pressure switch shall be zinc die-cast with rain lip and shall attach with one tamper resistant screw. The pressure switch shall be suitable for indoor or outdoor service with a NEMA-4/IP66 rating.

The pressure switch shall be UL, ULC, and CSFM listed, FM and LPC approved and NYMEA accepted.

⚠ 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.
- Read all instructions carefully and understand them before starting installation. Save instructions for future use. Failure to read and understand instructions could result in improper operation of device resulting in serious injury or death.
- Risk of explosion. Not for use is hazardous locations. Serious injury or death could result.

⚠ CAUTION

- Do not tighten by grasping the switch enclosure. Use wrenching flats on the bushing only. Failure to install properly could damage the switch and cause improper operation resulting in damage to equipment and property.
- To seal threads, apply Teflon tape to male threads only. Using joint compounds or cement can obstruct the pressure port inlet and result in improper device operation and damage to equipment.
- Do not over tighten the device, standard piping practices apply.
- Do not apply any lubricant to any component of the pressure switch.

Reliable®

Model G Swing Check Valve

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

cULus Listed, FM Approved

Features

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

Product Description

Reliable Model G Swing Check Valves are low friction loss check valves approved for use in fire protection systems. Typical applications include connections between public water supplies and private fire systems, at the discharge from fire pumps, at gravity tank connections and at fire department pumper connections. All Model G Check Valves are provided with ½” NPT (R½) supply side and discharge side connections (Item 12, Figure 1). Grooved end connections provide fast and easy installation using listed or approved mechanical grooved couplings. Rigid style grooved couplings can be used for positive clamping to resist flexural and torsional loads.

Installation

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

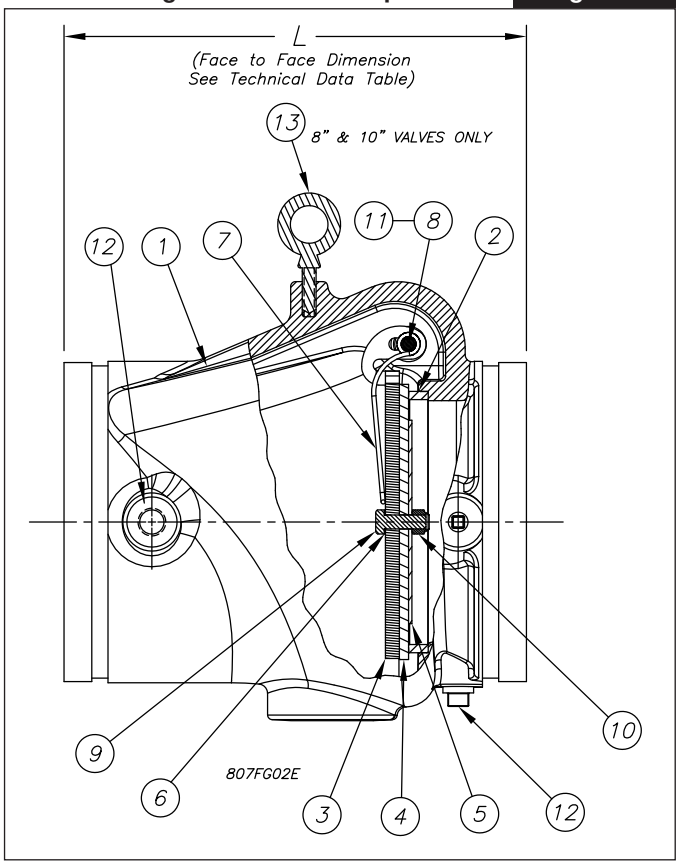
Reliable Model G Swing Check Valve (3”)

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

Technical Data **Table A**

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

Model G Swing Check Valve Components **Figure 1**



Valve Components (refer to Figure 1) **Table B**

Item No.	Part Name	Material
1	Valve Body	Gray Cast Iron Class 30
2	Seat	Bronze C83600 or C93200
3	Clapper	Stainless Steel 304 or 17-4
4	Facing Seal *	EPDM Rubber
5	Clamping Ring	Stainless Steel 304
6	Gasket *	EPDM Rubber or PTFE
7	Spring	Stainless Steel 302
8	Hinge Pin	Stainless Steel 303
9	Bolt	Stainless Steel 18-8
10	Locknut *	Stainless Steel 18-8
11	Plug, 1/8" NPT	Steel
12	Plug, ½" NPT	Steel
13	Shoulder Eye	Steel

* Part of Replacement Seal Kit

Replacement Seal Kit Part Numbers **Table C**

Part Number									
1-1/2" (40 mm)	2" (50 mm)	2½" (65 mm)	76 mm	3" (80 mm)	4" (100 mm)	6" (150 mm)	165 mm	8" (200 mm)	10" (250 mm)
6888000015	6888000020	6888040025	6888040025	6888040030	6888040040	6888040060	6888040060	6888040080	6888040090

Maintenance

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

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

Guarantee

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

Ordering Information

Specify:

1. Model G Check Valve.
2. Size.

P/N 9999970071

Reliable®

Model CR Commercial Riser

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

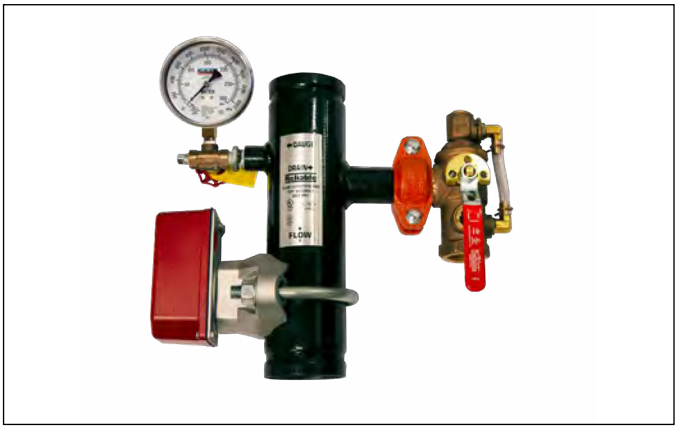
cULus Listed, FM Approved

Features

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

Product Description

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



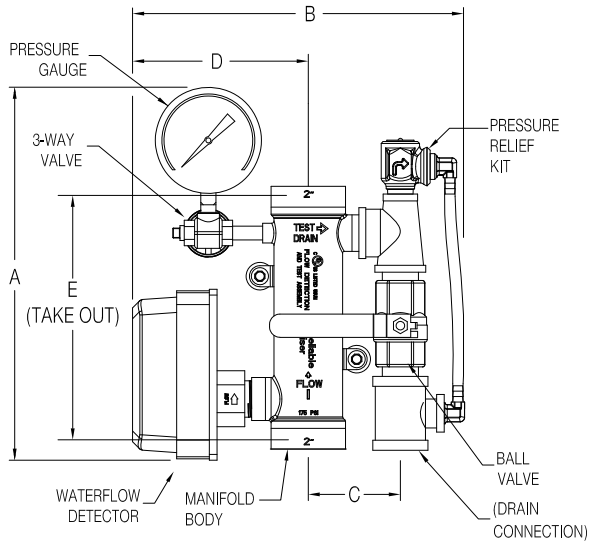
3" (80mm) welded Commercial Riser
w/ 175psi Pressure Relief Kit and Test & Drain Valve (K5.6)

Model CR Commercial Riser — **Table A**

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

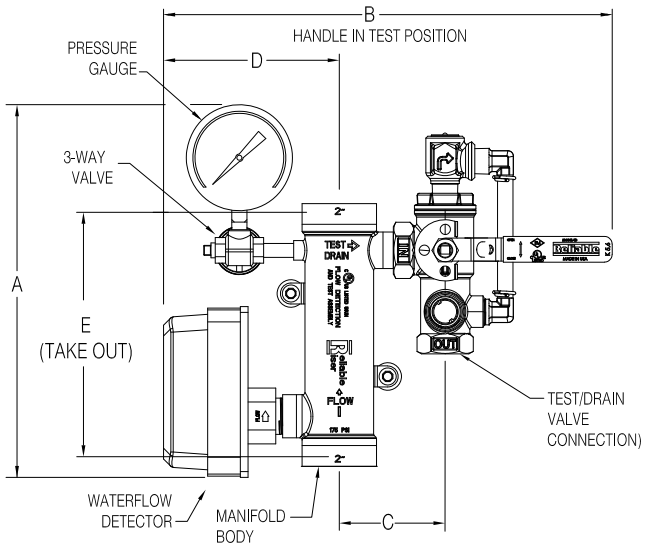
***Note:** K-factor must be equal to or less than the K-factor of the smallest K-factor installed on the sprinkler system. For sprinkler systems where the smallest K-factor sprinkler on the system is greater than the largest available valve K-factor, use any valve K-factor that will provide a minimum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

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



BASIC ASSEMBLY (2" [50MM] VERSION SHOWN) WITH OPTIONAL PRESSURE RELIEF KIT

621FG01C



BASIC ASSEMBLY (2" [50MM] VERSION SHOWN) WITH TEST AND DRAIN VALVE & OPTIONAL PRESSURE RELIEF KIT
(TEST AND DRAIN SHOWN IN "TEST" POSITION)

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

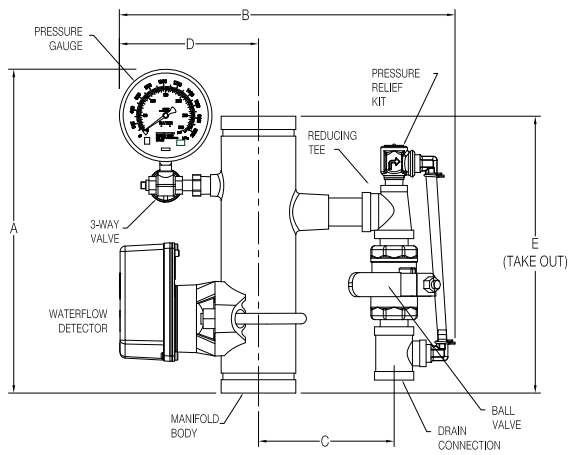
End Connection	Manifold Pipe Size in (mm)	A in (mm)	B in (mm)	C in (mm)	D in (mm)	E in (mm)	Weight lbs (kg)
Threaded Ends (See Fig. 1)	1-1/2 (40)	12-1/8 (308)	10-1/2 (267)	3 (80)	5-1/2 (140)	8-1/4 (210)	8.3 (3.8)
	2 (50)	12-1/8 (308)	10-3/4 (273)	3-1/4 (83)	5-3/4 (146)	8-1/4 (210)	9.1 (4.1)

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

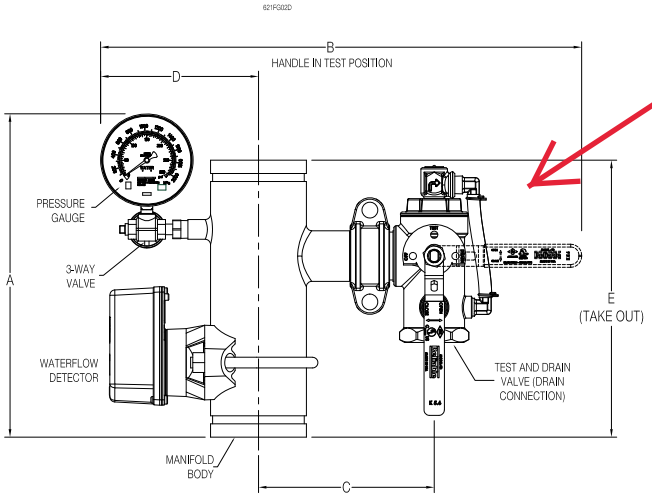
End Connection	Manifold Pipe Size in (mm)	A in (mm)	B in (mm)	C in (mm)	D in (mm)	E in (mm)	Weight lbs (kg)
Threaded Ends (See Fig. 1)	1-1/2 (40)	12-1/8 (308)	14-1/4 (362)	3 (80)	5-1/2 (140)	8-1/4 (210)	8.3 (3.8)
	2 (50)	12-1/8 (308)	14-1/2 (368)	3-1/4 (83)	5-3/4 (146)	8-1/4 (210)	9.1 (4.1)

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

Figure 2



BASIC ASSEMBLY (3" [80MM] VERSION SHOWN)
WITH OPTIONAL PRESSURE RELIEF KIT



BASIC ASSEMBLY (4" [100MM] VERSION SHOWN)
WITH TEST AND DRAIN VALVE
& OPTIONAL PRESSURE RELIEF KIT
(TEST AND DRAIN SHOWN IN "TEST" POSITION)

Grooved End Basic Assembly w/ Pressure Relief Valve

Table D

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

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

Table E

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

Note: 2” grooved version will have a 1” threaded drain outlet and threaded inlet on the test and drain valve.

Installation

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

Maintenance

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

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

Guarantee

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

Ordering Information

Specify:

1. Reliable Model CR Commercial Riser
2. Size
3. End Connections (1 ½" and 2" threaded, 2" through 8" grooved)
4. (Optional) Schedule 40 (2" through 4" grooved end only)
5. Drain Option (Ball valve or Test and Drain valve)
6. Test orifice K-factor (if ordering Test and Drain valve)
7. (Optional) Pressure Relief Valve Kit (175, 185, 210, 260, or 310 psi [12.1, 12.8, 14.5, 17.9, or 21.4 bar])

Notes:

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

Commercial Riser Ordering Information Part Number — **Figure 3**

6A XX 0C P YY Z

Riser Manifold Size & End Connections XX	Option* Drain Valve/K-Factor YY	Pressure Relief Valve Z
08 = 1-1/2" Threaded Female NPT	00 = 1" Ball Valve Drain	0 = None
09 = 2" Threaded Female NPT	01 = 1-1/4" Ball Valve Drain	1 = 175 psi (12.1 bar)
10 = 2" Grooved SCH10	02 = 2" Ball Valve Drain	2 = 185 psi (12.8 bar)
11 = 2" Grooved SCH40	03 = 1" RASCO T&D Valve - K2.8	3 = 210 psi (14.5 bar)
12 = 2-1/2" Grooved SCH10	04 = 1" RASCO T&D Valve - K4.2	4 = 260 psi (17.9 bar)
13 = 2-1/2" Grooved SCH40	05 = 1" RASCO T&D Valve - K5.6	5 = 310 psi (21.4 bar)
14 = 3" Grooved SCH10	06 = 1-1/4" RASCO T&D Valve - K4.2	
15 = 3" Grooved SCH40	07 = 1-1/4" RASCO T&D Valve - K5.6	
16 = 4" Grooved SCH10	08 = 1-1/4" RASCO T&D Valve - K8.0	
17 = 4" Grooved SCH40	09 = 1-1/4" RASCO T&D Valve - K11.2	
18 = 6" Grooved SCH10	10 = 2" RASCO T&D Valve - K5.6	
19 = 8" Grooved SCH10	11 = 2" RASCO T&D Valve - K8.0	
	12 = 2" RASCO T&D Valve - K11.2	
	13 = 2" RASCO T&D Valve - K16.8	
	14 = 2" RASCO T&D Valve - K 2.8	

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

P/N 9999970536

Reliable®

Model AAV Automatic Air Vent

cULus Listed,
FM Approved

Features

- Stainless Steel Construction
- 175 psi and 300 psi option

Product Description

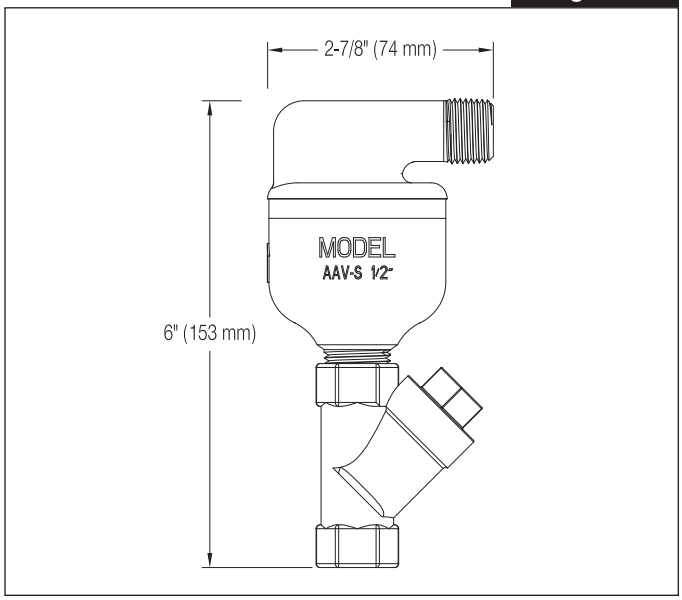
The Reliable Model AAV Automatic Air Vent is designed to reduce the amount of trapped air in a wet pipe fire sprinkler system. Reducing the amount of air in the system reduces internal corrosion of piping by limiting the supply of oxygen and can also reduce the incidence of false alarms. The Model AAV is designed to automatically vent air from a high point in the system as the piping is filled and will automatically close when water reaches the vent. Air that subsequently migrates to the Model AAV will also be vented. The Model AAV is provided with a ½" NPT inlet for connection to the system, and a ½" NPT outlet connection for routing to drain (if desired).

Model AAV Automatic Air Vent

Installation

The Model AAV shall be installed in accordance with the requirements of NFPA 13 and any applicable local codes or standards. The recommended location is near a high point of the wet pipe system. The Model AAV must be installed in the upright, vertical position on top of the pipe, in a location that does not obstruct the distribution pattern of any fire sprinkler. If desired, a ball valve (not included) may be installed in line with the device to facilitate inspection and servicing. Immediately after filling the wet pipe system, inspect the Model AAV for leaks and proper operation.

Dimensions **Figure 1**



Maintenance

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

The Reliable Model AAV Automatic Air Vent shall periodically be given a thorough inspection and test. NFPA 25, "Inspection, Testing, and Maintenance of Water Based Fire Protection Systems," provides minimum maintenance requirements. System components shall be tested, operated, cleaned and inspected at least annually and parts replaced as required.

Listings and Approvals

- UL Listed to Subject 2573, Automatic Air Release Valves and Air/Vacuum Valves for Fire Protection Service
- FM Approved to Approval Standard for Air Release Valves, Class 1344

Guarantee

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

Ordering Information

Specify the following when ordering:
Model AAV Automatic Air Vent

- 175 psi
- 300 psi

P/N 9999970535

Reliable®

Model BFG-300 Supervised Butterfly Valve Grooved

cULus Listed, FM Approved

Product Description

The Reliable Model BFG-300 Supervised Butterfly valves are cULus Listed and FM Approved for fire protection systems. Reliable Supervised Butterfly Valves valves have AWWA C606 grooved end connections. They are available in 2-1/2" (65mm), 3" (76mm), 4" (100mm), 6" (150mm), and 8" (203mm) nominal sizes. The valves are listed for 300 psi (20.7 bar) working pressure. The maximum working temperature for the valves is 250°F (120°C).

Maintenance

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

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

Guarantee

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

Supervised Grooved Butterfly Valve - Supervised Open

Supervised Grooved Butterfly Valve - Supervised Closed

Ordering Information

Specify the following when ordering:

Model BFG-300 Butterfly Valve
Supervision

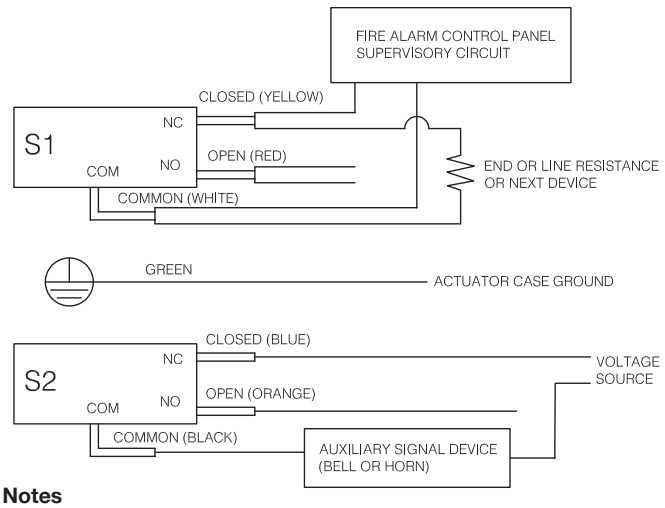
- Valve Supervised Open (yellow indicator)
- Valve Supervised Closed (white indicator)

Valve Size

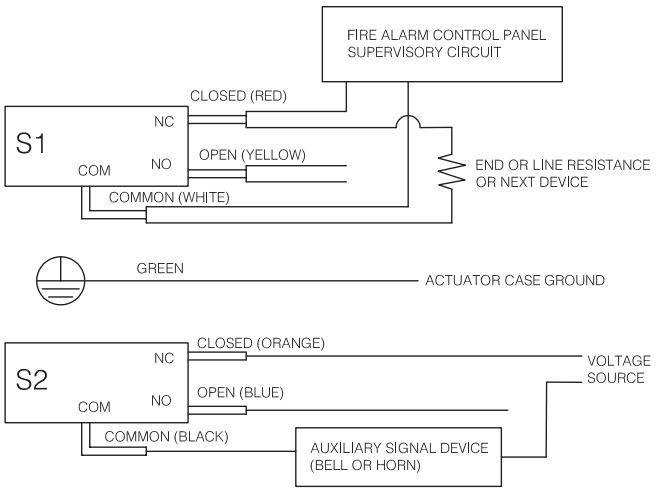
- 2-1/2" (65mm)
- 3" (76mm)
- 4" (100mm)
- 6" (150mm)
- 8" (203mm)

Reliable Supervised Butterfly Valve Wiring Diagram - Valve in Supervised Position **Figure 1**

Supervised Open Valve



Supervised Closed Valve



Notes

1. Rated: 5A-1/6HP-125/250VAC
   0.5A - 125VDC
   0.25A - 250DC
2. Switch 1: 2 Leads per terminal
   Switch 2 : 1 Lead per terminal

Reliable Model BFG-300 Supervised Butterfly Valve Grooved

Technical Specifications
Pressure Rating:
300 psi (20.7 bar)

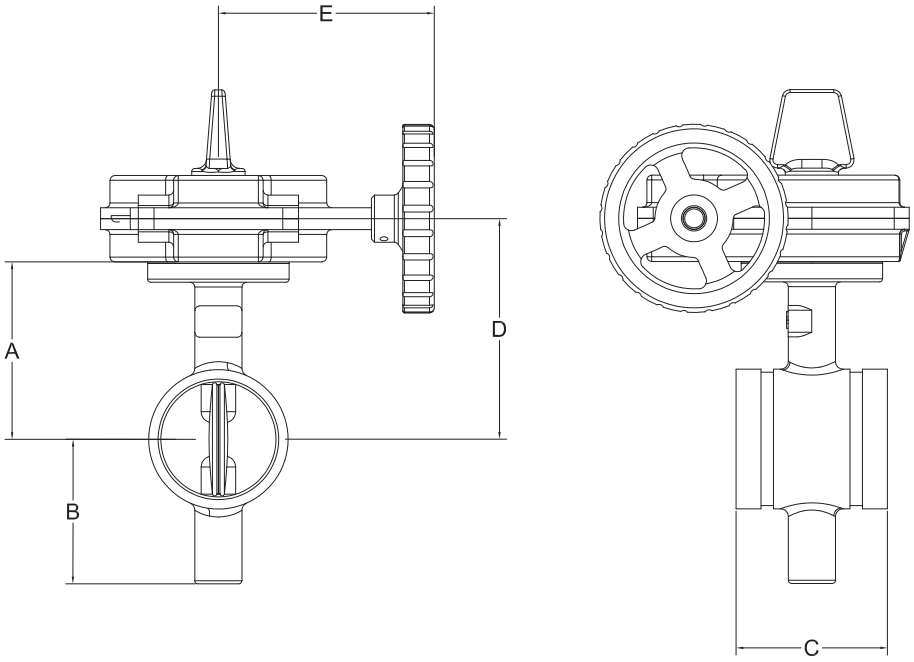
Material Specifications
Body: Brass ASTM A-536 Nylon-11 Coated
Disc: ASTM A-536 EPDM Encapsulated
Upper and Lower Stems: AISI 420-SS
Housing: ASTM A-536
Hand Wheel: ASTM A-536
Flag Indicator: ASTM A-536
Shear Pin: ASTM A-510
Segment Gear: ASTM B-148 or B-584
Housing Gasket: EDPM Grade E
O-Ring: EDPM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

Specifications
Groove Inlet: AWWA C 606

Listings and Approvals
cULus Listed
FM Approved

Reliable Supervised Butterfly Valve Specification and Dimensions

Figure 2



Dimensions - in. (mm)

Table B

Valve Size	A	B	C	D	E
2-1/2” (65)	4-1/8 (105)	3-5/8 (92)	3-13/16 (96)	5-1/3 (135)	5-1/3 (135)
3” (76)	4-7/16 (112)	3-11/16 (95)	3-13/16 (96)	5-5/8 (142)	5-1/3 (135)
4” (100)	5-11/16 (145)	4-1/3 (108)	4-1/2 (115)	6-15/16 (175)	5-1/3 (135)
6” (150)	7 (179)	5-11/16 (146)	5-3/16 (132)	8-1/4 (209)	7-5/8 (193)
8” (203)	8 (204)	6-11/16 (170)	5-13/16 (147)	9-1/4 (234)	7-5/8 (193)

999970588

Job Name _____ Contractor _____

Job Location _____ Approval _____

Engineer _____ Contractor's P.O. No. _____

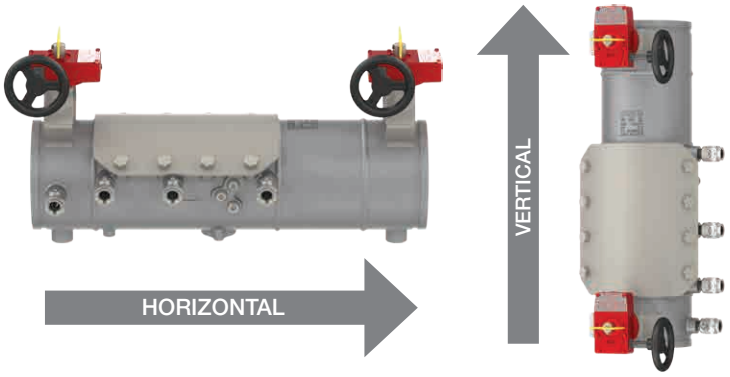
Approval _____ Representative _____

LEAD FREE*

Deringer™ 20

Double Check Valve Assembly

Sizes: 2"**– 8"



The Deringer™ 20 Double Check Valve Assembly is designed to prevent non-health hazard pollutants from entering the potable water supply system caused by backpressure and/or backsiphonage conditions

Features

- Intergral shutoff valves indoor/outdoor application
- 100% stainless steel housing
- Tamper-resistant test cocks
- Patented Dual-action™ check modules
  - Poppet action at low flow
  - Swing action at high flow
- Silicone elastomer check discs
- Prewired supervisory switches
- Flange adapters available
- IPS grooved ends

Specifications

The Deringer 20 Double Check Valve shall utilize two independent Dual-action check modules and two integral resiliently seated shut-off valves all of which shall be contained within a single rigid valve housing constructed entirely of 304 stainless steel. Both integral shutoff valves shall include pre-wired supervisory tamper switches contained within a weatherproof actuator housing approved for both indoor and outdoor use. Dual-action check modules shall operate as a "poppet style" check under low flow conditions, operate as a "swing style" check under high flow conditions and utilize replaceable silicone elastomer sealing discs. Assembly test cocks shall be handle-less and operate via a tamper resistant actuator. Assembly shall have a single full access service port and cover with an "inline" replaceable elastomer seal. Assembly shall be serviceable without special tools and approved for both horizontal and vertical applications.

Approved for Fire Protection, Waterworks, Plumbing, and Irrigation Applications.

Materials

Valve Housing:	304 Stainless Steel
Valve Cover:	304 Stainless Steel
SOV Disks:	EPDM/304SS
SOV Shafts:	304 Stainless Steel
SOV Bearings:	Teflon® fluoropolymer/Bronze
Non-wetted Bolts:	Grade 8 Zinc Plated
Check Disks:	Silicone (NSF)
Wetted Fasteners:	18-8 Stainless Steel
Check Springs:	17-7 Stainless Steel
Check Pins:	17-7/18-8 Stainless Steel
Check Seats:	Noryl® Polymer (NSF)
O-rings:	Buna-N (NSF)

Pressure — Temperature

Temperature Range: 33°F – 140°F

Working Pressure: 10 – 175psi

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**

NOTICE

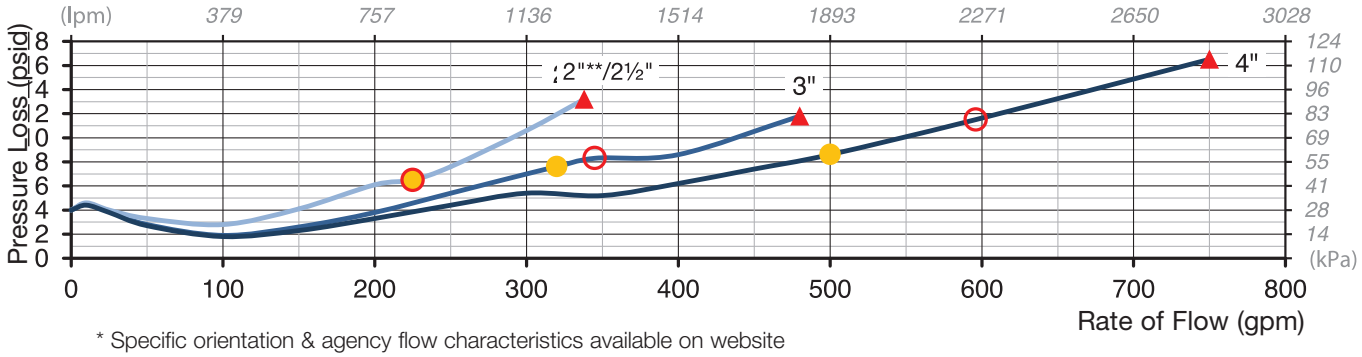
The information contained herein is not intended to replace the full product installation and safety information available or the experience of a trained product installer. You are required to thoroughly read all installation instructions and product safety information before beginning the installation of this product.

AMES FIRE & WATERWORKS

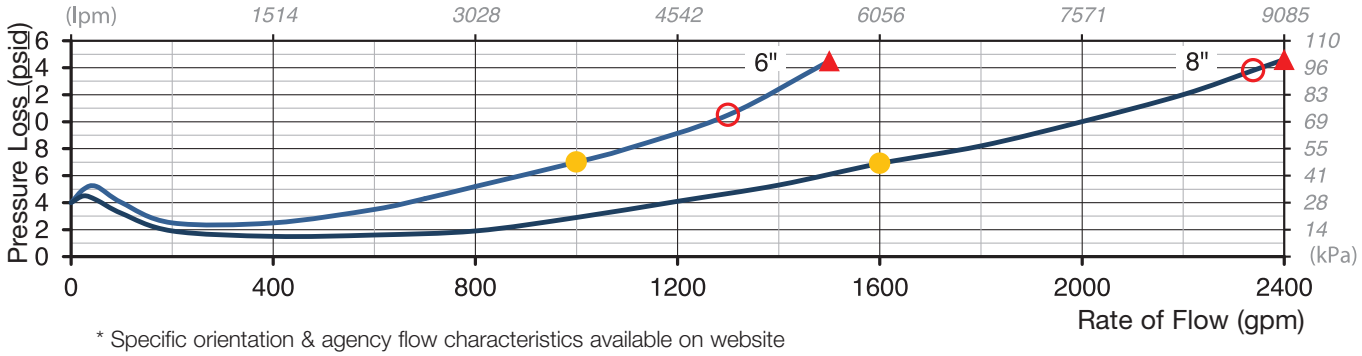
A WATTS Brand

Flow Performance

● = Rated Flow ▲ = UL Tested ○ = 15 fps



* Specific orientation & agency flow characteristics available on website



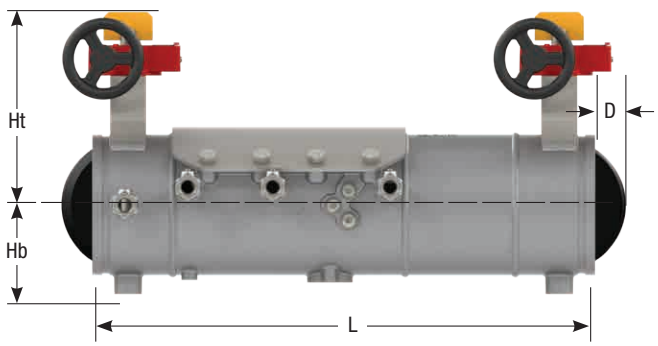
* Specific orientation & agency flow characteristics available on website

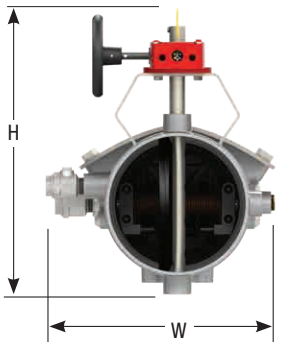
Standards

AWWA C510-07 Compliant
NSF/ANSI 372, UL CERTIFIED
LEAD FREE
End Connections
- IPS Groove for Steel Pipe: AWWA C606
- Flange Adapters: ANSI B16.1 Class 125

CLASSIFIED UL C US
FM APPROVED
ASSE 1015
USC APPROVED

Dimensions — Weights





Size	Model	Ht		Hb		L		D		H		W		Weight	
in.		*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs*	*kg*
2 (2½)**	20	7.1	180	2.9	74	22.3	566	0.0	0	10.0	254	11.0	279	52	24
2½	20	7.1	180	2.9	74	18.7	475	0.0	0	10.0	254	11.0	279	38	17
3	20	7.4	188	2.9	74	18.7	475	0.0	0	10.3	262	11.0	279	40	18
4	20	7.9	201	2.9	74	18.7	475	0.2	5	10.3	262	11.0	279	42	19
6	20	10.1	257	4.5	114	25	726	1.0	25	14.6	370	13.8	351	90	41
8	20	10.4	264	5.4	137	30.7	780	1.8	46	15.8	401	13.8	351	141	64

**2" size utilizes a 2 ½" assembly with 2 ½" groove to 2" female NPT adapter and couplings. Adapter and couplings ship unassembled.

AMES FIRE & WATERWORKS

A WATTS Brand

USA: Backflow T: (978) 689-6066 • F: (978) 975-8350 • AmesFireWater.com
USA: Control Valves T: (713) 943-0688 • F: (713) 944-9445 • AmesFireWater.com
Canada: T: (905) 332-4090 • F: (905) 332-7068 • AmesFireWater.ca
Latin America: T: (52) 55-4122-0138 • AmesFireWater.com

C-AIRE®
COMPRESSORS

WHISPER QUIET SERIES

Digital Air Maintenance Device (AMD) GEN-3 with Leak Detection™

(See reverse)

S281R-LD1-115PD

- ✓ Digital AMD GEN-3 with Leak Detection™
- ✓ Appropriate for single-valve systems
- ✓ Whisper quiet
- ✓ Compact design
- ✓ 12-month warranty
- ✓ Oil-free and low maintenance
- ✓ Low vibration
- ✓ 5-minute installation
- ✓ Versatile mounting to riser, wall, or floor
- ✓ 2D & 3D CAD files available

SYSTEM SIZE	PSI	GAL.
Pre-Action	10	1,386
Low Pressure	18	715
Standard Pressure	40	280

IDEAL FOR QUIET SETTINGS

NURSING HOMES · CHURCHES · APARTMENT BUILDINGS

TECHNICAL SPECIFICATIONS

HP	1
PRESSURE SWITCH	Digital AMD GEN-3 Adjustable 5-55 PSI Factory Set at 10-20 PSI Minimum Differential: 5 PSI
CFM	3.8 @ 10 PSI
PUMP	2 Cylinder, Oil Free
CYLINDERS	Ceramic Composite
NOISE LEVEL	56 dB
OUTLET	1/2" NPT
DIMENSIONS	14" x 13" x 14"
WEIGHT	41 lbs.

PHASE/ VOLTS	RUNNING AMPS	BREAKER SIZE
1/115	8.5	15

INCLUDED

Universal Mounting Bracket

Riser Mount Hose Clamps (for 2.5" to 4" risers)

Power cord for installation and testing purposes. Refer to the authority having jurisdiction regarding hard wiring requirements.

ACCESSORIES AVAILABLE

Floor Mounting Kit
Part: INSTALL-S28

1/2" x 30" stainless steel flexible hose
Part: DT 3005 H-1PK
Pack of 5: PART DT 3005 H-5PK

1/2" x 36" flexible hose
Part: DT 3605 H
Pack of 5: PART DT 3605 H-5PK

1/2" x 48" flexible hose
Part: DT 4805 H
Pack of 5: PART DT 4805 H-5PK

1/2" x 72" flexible hose
Part: DT 7205 H
Pack of 5: PART DT 7205 H-5PK

Riser Mount Hose Clamps (for 5" to 7" risers)
Part: HS HC6-8-K

Riser Mount Hose Clamps (for 7" to 9" risers)
Part: HS HC8-10-K

380 WEST 1ST STREET, DRESSER, WI 54009 | 800-762-2247 | 651-462-3440 cairecompressors.com

C-AIRE® COMPRESSORS

WHISPER QUIET SERIES

Digital Air Maintenance Device (AMD) GEN-3 with Leak Detection™

FEATURES

- Digitally set system pressure in seconds
- For use on single valve systems
- IP65 water resistance rated (NEW!)
- Flash memory
- Measures system air leaks (NEW!)
- Tamper proof lock-out setting
- Ceramic digital pressure sensor (NEW!)
- 304 stainless steel housing (NEW!)

Digital Air Maintenance Device (AMD) GEN-3 with Leak Detection™

Leak Detection™ quantifies the amount of air leaking from the system by tracking the total number of starts during two trailing periods. On site users can quickly access the total number of starts during the past 24 hours and 7 days to determine leak severity and identify trends. Additionally, if repairs to leaks have been made, Leak Detection™ can be used to measure what percent of total leaks have been sealed.

Data can be entered on our website for a detailed assessment of leaks, as well as determine if the leaks are within compliance of NFPA standards.

Listings:
Air Maintenance Device
USA: UL 508
Canada: C22.2 No. 14
Patent Pending

380 WEST 1ST STREET, DRESSER, WI 54009 | 800-762-2247 | 651-462-3440 cairecompressors.com

Figure 410A

BRASS BODY BALL VALVES

FNW™

2 PC FULL PORT* 600 WOG

Features:

- Threaded Connection
- 600 WOG
- 150 WSP
- Full Port *
- PTFE Seats
- Meets MSS SP-110 Standards
- UL Approved (Up to 2”)
- FM & CSA Approved (1/2” to 2” only)
- Blow-out Proof Stem
- Adjustable Packing
- Stocked Configurations:
  - Standard Lever (1/4” to 4”)
  - Oval Handle (1/4” to 1”)
  - Tee Handle (1/2” to 1”)
- Optional Lock Lever Kit
- Optional Stem Extension Kit
- Optional Tee Handle Kit
- Optional Oval Handle Kit
- Optional Memory Stop Kit

* 4” Valve is Standard Port

NOT FOR USE AT OR BELOW GROUND LEVEL

Standard Lever (1/4”~ 4”)

Accessories

Additional Stocked Configurations


Tee Handle (1/2”~1”) Oval Handle (1/4”~1”)

WARNING:

- This product contains lead or lead compounds known to the State of California to cause cancer and birth defects and other reproductive harm. Do not use in connection with drinking water. Wash hands after handling.

Figure Number Matrix

FNW 410A Handle Size

HANDLE CODE	SIZE CODE	
Standard Handle = Blank	1/4 = B	1-1/2 = J
Oval Handle (1/4”~1”) = O	3/8 = C	2 = K
Tee Handle (1/2”~1”) = T	1/2 = D	2-1/2 = L
	3/4 = F	3 = M
	1 = G	4 = P
	1-1/4 = H	

FM APPROVED 1/2” ~ 2”

CSA C US 1/2” ~ 2”

UL 1/4” ~ 2”

Kit Codes (Order Separately)

FNW 410A Kit Size

KIT TYPE	SIZE CODE
Replacement Handle = BRYLWH	1/4” ~ 1/2” = BD
Locking Lever = LHK	3/4” ~ 1” = FG
Stem Extension = SE	1-1/4” ~ 1-1/2” = HJ
Tee Handle* = THK	* 2” ~ 4” = KP
Oval Handle* = OHK	
Memory Stop = MSK	

* NOTE: Due to the higher torque requirements of larger valves, use of Tee and Oval handles on valves larger than 1-1/2” **can be difficult to operate.**

Gas Approvals

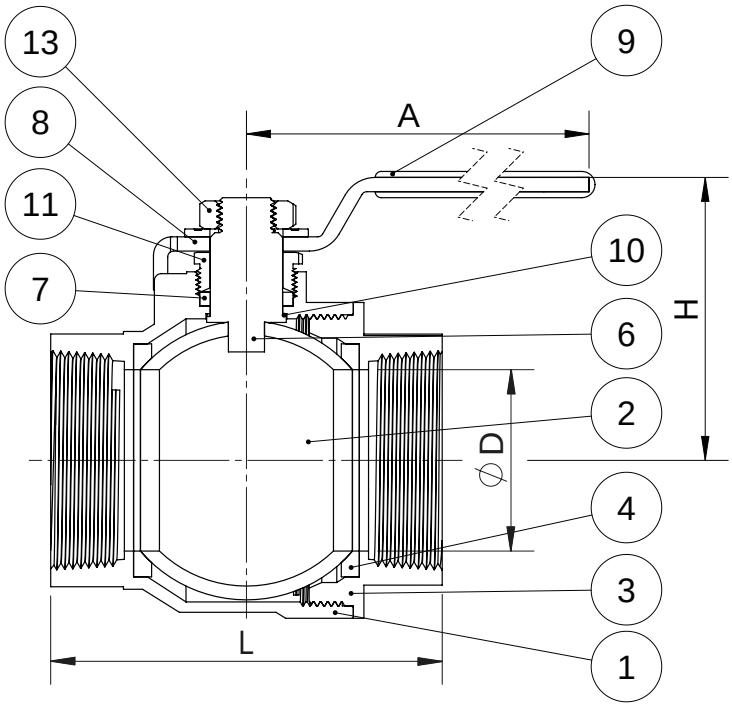
- CSA Class 3371-08, ANSI Z21.15/CSA9.1, 1/2 PSIG, -40°F - 125°F
- CSA Class 3371-10, CGA 3.16, 125 PSIG, -40°F - 149°F
- CSA Class 3371-12, CGA CR91-002, 5 PSIG, -40°F - 125°F
- CSA Class 3371-88, ANSI Z21.15/CSA9.1, 1/2 PSIG, -40°F - 125°F
- CSA Class 3371-92, ASME B16.44, 5 PSIG, -40°F - 125°F
- CSA Class 3371-94, ASME B16.33, 125 PSIG, -20°F - 150°F
- UL Class YRBX, ANSI/UL-842, 600 PSIG, -20°F - 125°F
- UL Class YSDT, ANSI/UL-125, 250 PSIG, -40°F - 130°F

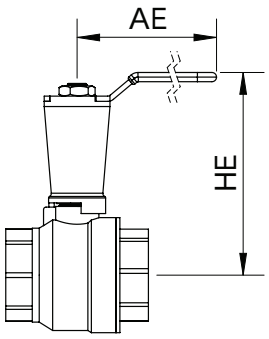
www.fnw.com

FNW™

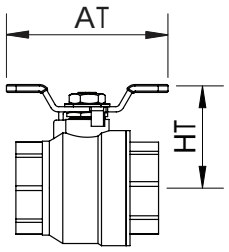
Figure 410A
BRASS BODY BALL VALVES

2 PC FULL PORT* 600 WOG

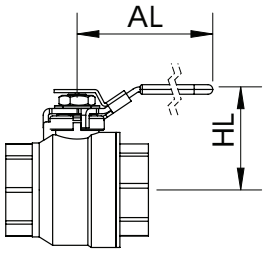




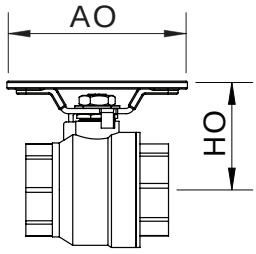
STEM EXTENSION KIT



TEE HANDLE KIT



LOCKING LEVER KIT



OVAL HANDLE KIT

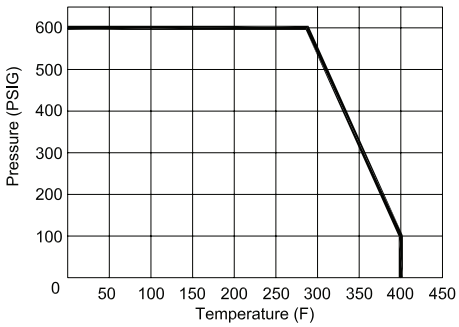
Dimensions (inches) & Weights

SIZE	ØD	A	L	H	Wt. (Lbs)
1/4	0.35	3.10	1.69	1.35	0.28
3/8	0.39	3.10	1.80	1.40	0.30
1/2	0.50	3.10	2.12	1.50	0.40
3/4	0.75	4.32	2.45	1.85	0.74
1	0.98	4.32	2.98	2.01	1.03
1-1/4	1.26	5.11	3.35	2.32	1.61
1-1/2	1.50	5.11	3.60	2.55	2.11
2	1.97	7.80	4.23	3.07	3.83
2-1/2	2.48	7.80	5.15	3.48	6.48
3	2.95	7.80	5.91	3.89	9.18
4	2.95	7.80	6.26	3.92	11.65

SIZE	AL	HL	AO	HO	AT	HT	AE	HE
1/4	3.06	1.65	2.80	1.44	2.70	1.34	2.95	4.27
3/8	3.06	1.72	2.80	1.46	2.70	1.36	2.95	4.30
1/2	3.06	1.72	2.80	1.52	2.70	1.43	2.95	4.35
3/4	4.32	2.17	3.60	1.91	3.40	1.78	3.95	4.80
1	4.32	2.37	3.60	2.06	3.40	1.93	3.95	4.93
1-1/4	5.09	2.81	4.39	2.32	4.03	2.18	4.92	5.28
1-1/2	5.09	2.98	4.39	2.54	4.03	2.40	4.92	5.45
2	7.75	3.67	5.38	3.14	4.85	3.08	8.00	6.02
2-1/2	7.75	4.13	5.38	3.55	4.85	3.46	8.00	6.41
3	7.75	4.58	5.38	3.91	4.85	3.82	8.00	6.81
4	7.75	4.62	5.38	3.91	4.85	3.90	8.00	6.97

Standard Materials

Ref. No.	Description	Material	Qty	Remarks
1	Body	ASTM B124-C37700 Brass	1	1/4" to 1-1/2"
		ASTM B584-C85700 Brass		2" to 4"
2	Ball	ASTM B16-C36000 Brass (Chrome Plated)	1	1/4" to 3/4" (Solid)
		ASTM B124-C37700 Brass (Chrome Plated)		1" to 4" (Shell)
3	End Cap	ASTM B124-C37700 Brass	1	
4	Seat	PTFE	2	
6	Stem	ASTM B16-C36000	1	
7	Stem Packing	PTFE	1	
8	Handle	ASTM A283-D Steel	1	Zinc Plated
9	Handle Sleeve	Vinyl	1	
10	Thrust Washer	PTFE	1	2" to 4"
11	Packing Gland	ASTM B16-C36000	1	
13	Handle Nut	AISI-1010 Steel	1	Zinc Plated



DOC: FNW410A11 Ver. 3/2016

FOR DRY SYSTEMS **Model 3011BV**

INSPECTOR'sTEST®

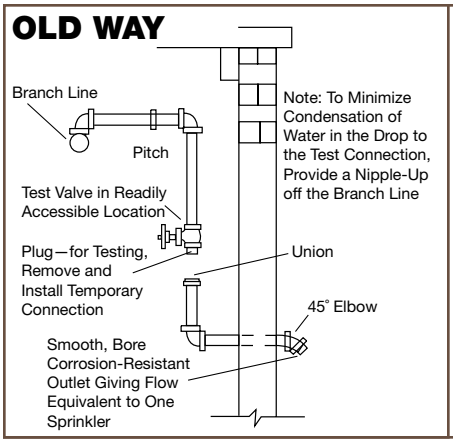
Remote Inspector's Test for Dry Systems

c UL us FM APPROVED

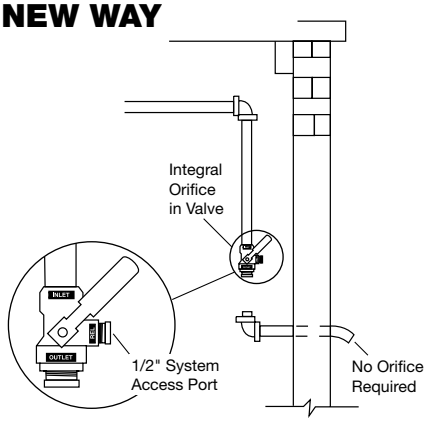
1"

- The AGF Manufacturing Inc. **Model 3011BV INSPECTOR'sTEST®** is designed to perform the remote inspector's test function as required for dry pipe systems by NFPA 13, 2007 Edition (see reverse).
- The **Model 3011BV INSPECTOR'sTEST®** is a single handle bronze ball valve rated at 300 PSI.
- Available with test orifice sizes of ⅜" (2.8K), 7/16" (4.2K), ½" (5.6K), 17/32" (8.0K), and ⅝" (11.2K, ELO).
- The **Model 3011BV INSPECTOR'sTEST®** is also available with optional sight glass as the **Model 3011SG**. Other products available in the 3011 family include the **Model 3011A** (which includes a **Model 7000 Pressure Relief Valve** with drainage piping) and the **Model 3011ASG,** (which includes a sight glass, along with the **Model 7000 Pressure Relief Valve** with drainage piping.)

OLD WAY



NEW WAY



MODEL 3011SG WITH SIGHT GLASS

ADVANTAGES

- Hours spent testing, draining, reactivating, and component installation are now reduced to minutes.
- Sight glass option saves time witnessing flow from the exterior of the building.

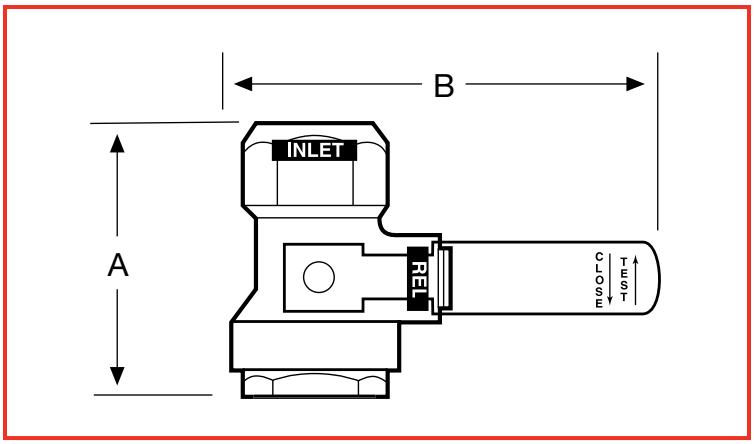
Reliability, Versatility, Code Compatibility

FOR DRY SYSTEMS **Model 3011BV**

INSPECTOR'S TEST®

Model 3011 300 PSI Bronze Ball Valve

Model 3011BV



The Model 3011BV provides all of the following...

From the 2007 Edition of NFPA 13:

Paragraph 8.17.4.3.1, 8.17.4.3.2 Dry Pipe Systems

A trip test connection not less than 1" (25 mm) in diameter terminating in a smooth bore corrosion-resistant orifice, to provide flow equivalent to one sprinkler of a type installed on the trip test connection, shall be located on the end of the most distant sprinkler pipe in the upper story and shall be equipped with a readily accessible shutoff valve and plug not less than 1" (25 mm) at least one of which shall be brass.

Dimensions

Orifice Size Available: 3/8", 7/16", 1/2", 17/32", ELO (5/8")

Model	A	B
3011	3 1/16" (75 mm)	4 11/16" (118 mm)

Materials

Handle: Steel
Stem: Rod Brass
Ball: C.P. Bronze
Body: Bronze
Valve Seat: Virgin Teflon®
Sight Glass: Bronze & Glass
Hex Plug: Brass

Approvals

UL and ULC Listed: EX4019
FM Approved
NYC-BSA No. 720-87-SM

MADE IN U.S.A.

The Model 3011 Family...


3011BV


3011SG


3011A


3011ASG

USA Patent # 4971109 and Other Patents Pending

AGF Manufacturing Inc.
100 Quaker Lane, Malvern, PA 19355
Phone: 610-240-4900
Fax: 610-240-4906
www.testandrain.com

Job Name:_____

Architect:_____

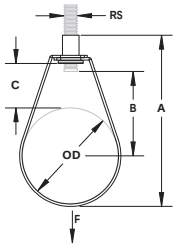
Engineer:_____

Contractor:_____

115 Standard Duty Loop Hanger

The 115 Standard Duty Loop Hanger is ideal for suspending stationary, non-insulated pipe lines, including CPVC pipes, in fire sprinkler systems. A knurled insert nut helps simplify vertical adjustments and flared edges on the base (1/2" to 4" sizes) help protect pipes from coming into contact with any sharp edges of the hanger.

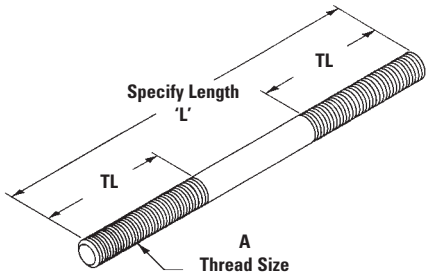
- Flared edges help prevent any sharp surfaces from coming into contact with the pipe (1/2" to 4" sizes)
- Retained insert nut helps ensure the loop hanger and insert nut stay together
- Recommended for the suspension of stationary non-insulated pipe lines
- Manufactured to use the minimum rod size permitted by NFPA® for fire sprinkler piping
- Conforms with Federal Specification WW-H-171 (Type 10), Manufacturers Standardization Society (MSS) SP-58 (Type 10)



Material: Steel
Finish: Pregalvanized

Part Number	Pipe Size	Outer Diameter OD	Rod Size RS	A	B	C	Static Load F	Certifications
1150050EG	1/2"	0.840"	3/8"	2 13/16"	1 1/8"	1"	300 lb	cULus
1150075EG	3/4"	1.050"	3/8"	3"	1 3/16"	15/16"	300 lb	cULus, FM
1150100EG	1"	1.315"	3/8"	3 1/4"	1 3/8"	15/16"	300 lb	cULus, FM
1150125EG	1 1/4"	1.660"	3/8"	3 9/16"	1 1/2"	15/16"	300 lb	cULus, FM
1150150EG	1 1/2"	1.900"	3/8"	3 13/16"	1 5/8"	15/16"	300 lb	cULus, FM
1150200EG	2"	2.375"	3/8"	4 1/4"	1 7/8"	15/16"	300 lb	cULus, FM
1150250EG	2 1/2"	2.875"	3/8"	5 15/16"	3 7/16"	2"	525 lb	cULus, FM
1150300EG	3"	3.500"	3/8"	6 9/16"	3 1/2"	1 15/16"	525 lb	cULus, FM
1150350EG	3 1/2"	4.000"	3/8"	7 1/16"	3 3/4"	1 15/16"	585 lb	cULus, FM
1150400EG	4"	4.500"	3/8"	7 9/16"	4"	1 15/16"	650 lb	cULus, FM
1150500EG	5"	5.563"	1/2"	9 13/16"	4 3/4"	2 1/4"	1,000 lb	cULus, FM
1150600EG	6"	6.625"	1/2"	11 5/16"	6 5/16"	3 5/16"	1,000 lb	cULus, FM
1150800EG	8"	8.625"	1/2"	12 7/8"	6 7/8"	2 7/8"	1,000 lb	cULus, FM

B3205 - Threaded Rod (right-hand threads - both ends)
B3205L - Threaded Rod (right & left hand threads)



Size Range: 3/8"-16 thru 7/8"-9 rod

Material: Steel

Function: Recommended for use as a hanger support in hanger assemblies. Rod is threaded on both ends with right hand threads of the length shown. Also available with left and right hand threads - specify Fig. B3205L when ordering.

Maximum Temperature: 750°F (399°C)

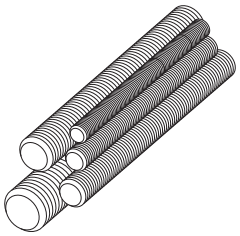
Finish: Plain or Electro-Galvanized. Contact customer service for alternative finishes and materials.

Order By: Figure number, rod size, length and finish

Part No.	Thread Size A	Standard Thread Length TL in.	(mm)	Design Load 650°F (343°C) Lbs.	(kN)	750°F (399°C) Lbs.	(kN)
B3205-3/8 x 'L'	3/8"-16	2 1/2"	(63.5)	730	(3.25)	572	(2.54)
B3205-1/2 x 'L'	1/2"-13	2 1/2"	(63.5)	1350	(6.00)	1057	(4.70)
B3205-5/8 x 'L'	5/8"-11	2 1/2"	(63.5)	2160	(9.61)	1692	(7.52)
B3205-3/4 x 'L'	3/4"-10	3"	(76.2)	3230	(14.37)	2530	(11.25)
B3205-7/8 x 'L'	7/8"-9	3 1/2"	(88.9)	4480	(19.93)	3508	(15.60)

For larger sizes consult full line pipe hanger catalog.

ATR - All Threaded Rod - 120" (3.05m) Lengths
TOLCO™ Fig. 99 - All Threaded Rod Cut To Length



OPM

Size Range: 1/4"-20 thru 7/8"-9 rod in 120" lengths or cut to length

Material: Steel

Maximum Temperature: 750°F (399°C)

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

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

Order By: Figure number, rod size, length and finish

Part No. - Size x Length ATR	Fig. 99	Threads Per Inch	Recommended Load Lbs.	(kN)	Approx. Wt./100 Ft. Lbs.	(kg)
ATR 1/4" x 120	99-1/4" x length	20	240	(1.07)	12	(5.44)
ATR 3/8" x 120	99-3/8" x length	16	730	(3.24)	29	(13.15)
ATR 1/2" x 120	99-1/2" x length	13	1350	(6.00)	53	(24.04)
ATR 5/8" x 120	99-5/8" x length	11	2160	(9.60)	89	(40.37)
ATR 3/4" x 120	99-3/4" x length	10	3230	(14.37)	123	(55.79)
ATR 7/8" x 120	99-7/8" x length	9	4480	(19.93)	170	(77.11)

For larger sizes consult full line pipe hanger catalog.

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

TOLCO™ Fig. 4LA - "In-Line" Sway Brace Attachment

OPM

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

Material: Steel

Function: For bracing pipe against sway and seismic disturbance.

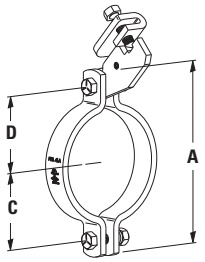
Approvals: Approved by Factory Mutual Engineering **(FM)**, 1" (25mm) through 12" (300mm) pipe. Underwriters Laboratories Listed in the USA and Canada **(cULus)**. Included in our Seismic Engineering Guidelines approved by the State of California Office of Statewide Health Planning and Development **(OSHPD)**. For additional load, spacing and placement information relating to OSHPD projects, please refer to our Seismic Engineering Guidelines, OPM-0052-13. See loads in charts on page 37.

Installation: Fig. 4LA can be used as the system attachment component of a longitudinal or lateral brace assembly. It is intended to be combined with the "bracing member" and our transitional attachment and structural attachment to form a complete bracing assembly. NFPA 13, FM DS 2-8, and/or OSHPD guidelines should be followed.

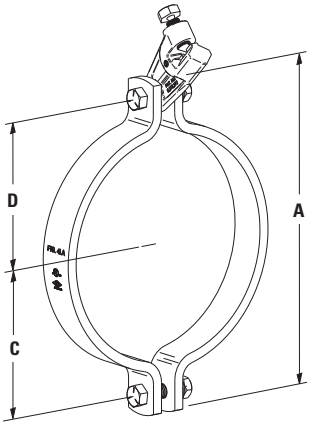
To Install: Place the Fig. 4LA pipe clamp component over the pipe to be braced and tighten down the break-off nuts until the hex head portion breaks off to verify correct installation torque. Next engage brace member (pipe or strut) with jaw component and tighten break-off head bolt until the hex head breaks off to verify correct installation torque. Pivot jaw for correct angle and attach to structure using our brand transitional attachment and structural attachment.

Finish: Plain or Electro-Galvanized.

Order By: Part number and finish.



4LA-1 thru 4LA-4



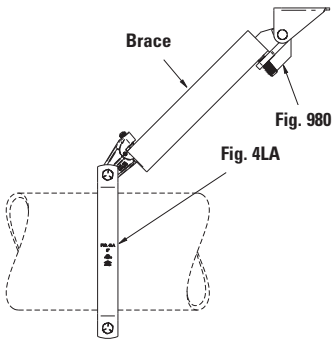
4LA-6 thru 4LA-12

Part No.	Pipe Size		A		C		D		Bolt Size	Approx. Wt./100	
	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)		lbs.	(kg)
4LA-1	1"	(25)	3 19/32"	(91.2)	1 5/16"	(33.5)	1 5/16"	(33.5)	3/8"-16	119	(54.0)
4LA-1 1/4	1 1/4"	(32)	3 29/32"	(99.3)	1 3/8"	(35.3)	1 3/8"	(35.3)	3/8"-16	123	(55.8)
4LA-1 1/2	1 1/2"	(40)	4 5/32"	(105.7)	1 1/2"	(38.5)	1 1/2"	(38.5)	3/8"-16	127	(57.6)
4LA-2	2"	(50)	5 11/32"	(135.6)	2 1/32"	(51.9)	2 1/16"	(51.9)	3/8"-16	142	(64.4)
4LA-2 1/2	2 1/2"	(65)	5 27/32"	(148.7)	2 5/16"	(58.5)	2 5/16"	(58.5)	3/8"-16	173	(78.5)
4LA-3	3"	(80)	6 1/2"	(164.9)	2 5/8"	(66.6)	2 5/8"	(66.6)	3/8"-16	187	(84.8)
4LA-3 1/2	3 1/2"	(90)	7 13/32"	(188.1)	2 7/8"	(73.1)	2 7/8"	(73.1)	3/8"-16	198	(89.8)
4LA-4	4"	(100)	7 17/32"	(191.3)	3 1/8"	(79.5)	3 1/8"	(79.5)	3/8"-16	209	(94.8)
4LA-6	6"	(150)	10 5/8"	(269.9)	4 9/16"	(115.9)	4 9/16"	(115.9)	1/2"-13	521	(236.3)
4LA-8	8"	(200)	12 13/16"	(325.5)	5 9/16"	(143.7)	5 21/32"	(143.7)	1/2"-13	629	(285.3)
4LA-10	10"	(250)	16 1/2"	(419.1)	7 1/4"	(184.2)	7 1/4"	(184.2)	1/2"-13	1320	(598.7)
4LA-12	12"	(300)	18 1/2"	(469.9)	8 1/4"	(209.6)	8 1/4"	(209.6)	1/2"-13	1496	(678.6)

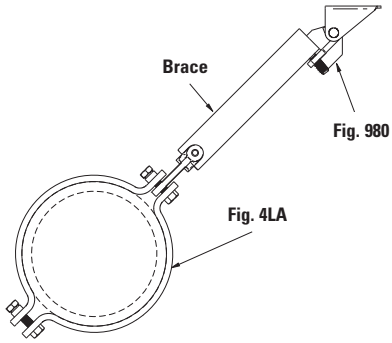
Eaton's B-Line series seismic bracing components are designed to be compatible only with other B-Line series bracing components, resulting in a listed seismic bracing assembly. Eaton B-Line Division warranty for seismic bracing components will be the warranty provided in Eaton B-Line Division standard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

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

TOLCO™ Fig. 4LA - "In-Line" Sway Brace Attachment cont.



Longitudinal Brace



Lateral Brace

Longitudinal Loads			Max. Horizontal Design Load (FM)								Max. Horizontal	
Part No.	Pipe Size		30° - 44°		45° - 59°		60° - 74°		75° - 90°		Design Load (UL)	
	in.	(mm)	lbf	(kN)	lbf	(kN)	lbf	(kN)	lbs.	(kN)	lbf	(kN)
4LA-1	1"	(25)	680	(3.02)	970	(4.31)	1190	(5.29)	1320	(5.87)	1000	(4.45)
4LA-1 1/4	1 1/4"	(32)	680	(3.02)	970	(4.31)	1190	(5.29)	1320	(5.87)	1000	(4.45)
4LA-1 1/2	1 1/2"	(40)	680	(3.02)	970	(4.31)	1190	(5.29)	1320	(5.87)	1000	(4.45)
4LA-2	2"	(50)	680	(3.02)	860	(3.82)	1030	(4.58)	1150	(5.11)	1000	(4.45)
4LA-2 1/2	2 1/2"	(65)	680	(3.02)	970	(4.31)	1190	(5.29)	1320	(5.87)	1000	(4.45)
4LA-3	3"	(80)	680	(3.02)	970	(4.31)	1190	(5.29)	1320	(5.87)	1000	(4.45)
4LA-3 1/2	3 1/2"	(90)	680	(3.02)	970	(4.31)	1190	(5.29)	1320	(5.87)	1000	(4.45)
4LA-4	4"	(100)	680	(3.02)	970	(4.31)	1190	(5.29)	1320	(5.87)	1000	(4.45)
4LA-6	6"	(150)	1620	(7.20)	--	(--)	2010	(8.94)	2220	(9.87)	1600	(7.11)
4LA-8	8"	(200)	1620	(7.20)	--	(--)	1570	(6.98)	1740	(7.74)	2015	(8.96)
4LA-10	10"	(250)	1620	(7.20)	--	(--)	1570	(6.98)	1740	(7.74)	NA	(NA)
4LA-12	12"	(300)	1620	(7.20)	--	(--)	1570	(6.98)	1740	(7.74)	NA	(NA)

Lateral Loads			Max. Horizontal Design Load (FM)								Max. Horizontal	
Part No.	Pipe Size		30° - 44°		45° - 59°		60° - 74°		75° - 90°		Design Load (UL)	
	in.	(mm)	lbf	(kN)	lbf	(kN)	lbf	(kN)	lbf	(kN)	lbf	(kN)
4LA-1	1"	(25)	680	(3.02)	970	(4.31)	1190	(5.29)	1320	(5.87)	NA	(NA)
4LA-1 1/4	1 1/4"	(32)	680	(3.02)	970	(4.31)	1190	(5.29)	1320	(5.87)	NA	(NA)
4LA-1 1/2	1 1/2"	(40)	680	(3.02)	970	(4.31)	1190	(5.29)	1320	(5.87)	NA	(NA)
4LA-2	2"	(50)	680	(3.02)	970	(4.31)	1190	(5.29)	1320	(5.87)	NA	(NA)
4LA-2 1/2	2 1/2"	(65)	680	(3.02)	970	(4.31)	1190	(5.29)	1320	(5.87)	NA	(NA)
4LA-3	3"	(80)	680	(3.02)	970	(4.31)	1190	(5.29)	1320	(5.87)	1000	(4.45)
4LA-3 1/2	3 1/2"	(90)	680	(3.02)	970	(4.31)	1190	(5.29)	1320	(5.87)	1000	(4.45)
4LA-4	4"	(100)	680	(3.02)	970	(4.31)	1190	(5.29)	1320	(5.87)	1000	(4.45)
4LA-6	6"	(150)	1620	(7.20)	--	(--)	2820	(12.54)	3140	(13.96)	1600	(7.11)
4LA-8	8"	(200)	1620	(7.20)	--	(--)	2820	(12.54)	3140	(13.96)	2015	(8.96)
4LA-10	10"	(250)	1620	(7.20)	--	(--)	2820	(12.54)	3140	(13.96)	NA	(NA)
4LA-12	12"	(300)	1620	(7.20)	--	(--)	2820	(12.54)	3140	(13.96)	NA	(NA)

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

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

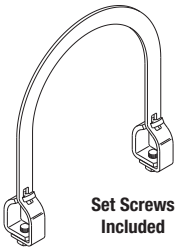
Fig. 1001 - Sway Brace Attachment

TOLCO

Component of State of California OSHPD Approved Seismic Restraints System

c UL us LISTED

FM APPROVED



Size Range: Pipe size to be braced: 1" (25mm) thru 8" (200mm) IPS.
* Pipe size used for bracing: 1" (25mm) and 1¼" (32mm) Schedule 40 IPS.

Material: Steel

Function: For bracing pipe against sway and seismic disturbance. The pipe attachment component of a sway brace system: Fig. 1001 is used in conjunction with a Fig. 900 Series fitting and joined together with bracing pipe per NFPA 13, forming a complete sway brace assembly.

Features: Can be used to brace schedules 7 through 40 IPS. Field adjustable, making critical pre-engineering of bracing pipe length unnecessary. Unique design requires no threading of bracing pipe. Can be used as a component of a four-way riser brace. Comes assembled and ready for installation. Fig. 1001 has built-in visual verification of correct installation. See installation note below.

Installation Note: Position Fig. 1001 over the pipe to be braced and tighten two hex head cone point set screws until heads bottom out. A minimum of 1" (25mm) pipe extension is recommended. Brace pipe can be installed on top or bottom of pipe to be braced.

Approvals: Underwriters Laboratories Listed in the USA **(UL)** and Canada **(cUL)**. Approved by Factory Mutual Engineering **(FM)**. Included in our Seismic Restraints Catalog approved by the State of California Office of Statewide Health Planning and Development **(OSHPD)**. For additional load, spacing and placement information relating to OSHPD projects, please refer to the TOLCO Seismic Restraint Systems Guidelines, OPA-0300-10.

Finish: Plain or Electro-Galvanized. Contact B-Line for alternative finishes and materials.

Order By: Indicate pipe size to be braced followed by pipe size used for bracing, figure number and finish.

Important Note: Fig. 1001 is precision manufactured to perform its function as a critical component of a complete bracing assembly. To ensure performance, the UL Listing requires that Fig. 1001 must be used only with other TOLCO bracing products.

Pipe Size		UL Listed Design Load - Lbs. For Brace Pipe Size 1" / 1¼"		
		Sch. 7	Sch. 10	Sch. 40
in.	(mm)	1" / 1¼"	1" / 1¼"	1" / 1¼"
1"	(25)	-- / --	1000 / 1000	1000 / 1000
1¼"	(32)	1000 / 1000	1000 / 1000	1000 / 1000
1½"	(40)	1000 / 1000	1500 / 1500	1500 / 1500
2"	(50)	1000 / 1000	2015 / 2015	2015 / 2015
2½"	(65)	1600 / 1600	2015 / 2765	2015 / 2765
3"	(80)	1600 / 1600	2015 / 2765	2015 / 2765
4"	(100)	1600 / 1600	2015 / 2765	2015 / 2765
6"	(150)	1600 / 1600	2015 / 2765	2015 / 2765
8"	(200)	1600 / 1600	2015 / 2765	2015 / 2765

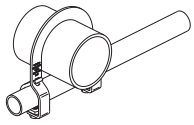
Pipe Size		Part Number & Approx. Wt./100						FM Design Load - For Sch. 7, Sch. 10, & Sch. 40 Pipe Allowable Horizontal Capacity (lbf) Per Installation [1,2,3]							
		1" (24mm) Brace Pipe			1¼" (32mm) Brace Pipe			30°-44°		45°-59°		60°-74°		75°-90°	
in.	(mm)		Lbs.	(kg)		Lbs.	(kg)	Lbs.	(kN)	Lbs.	(kN)	Lbs.	(kN)	Lbs.	(kN)
1"	(25)	1001-1 X 1	100.0	(45.3)	1001-1 X 1¼	118.0	(53.5)	1800	(8.00)	2550	(11.34)	3120	(13.88)	3490	(25.52)
1¼"	(32)	1001-1¼ X 1	100.0	(45.3)	1001-1¼ X 1¼	114.0	(51.7)	1230	(5.47)	1740	(7.74)	2140	(9.52)	2380	(10.58)
1½"	(40)	1001-1½ X 1	100.0	(45.3)	1001-1½ X 1¼	115.0	(52.1)	1230	(5.47)	1740	(7.74)	2140	(9.52)	2380	(10.58)
2"	(50)	1001-2 X 1	108.0	(49.0)	1001-2 X 1¼	121.0	(54.9)	1230	(5.47)	1740	(7.74)	2140	(9.52)	2380	(10.58)
2½"	(65)	1001-2½ X 1	138.6	(62.8)	1001-2½ X 1¼	160.4	(72.7)	800	(3.56)	1130	(5.02)	1380	(6.14)	1540	(6.85)
3"	(80)	1001-3 X 1	147.2	(66.7)	1001-3 X 1¼	168.7	(76,5)	850	(3.78)	1200	(5.34)	1470	(6.54)	1640	(7.29)
4"	(100)	1001-4 X 1	160.9	(73.0)	1001-4 X 1¼	182.4	(82.7)	850	(3.78)	1200	(5.34)	1470	(6.54)	1640	(7.29)
6"	(150)	1001-6 X 1	190.0	(86.2)	1001-6 X 1¼	211.4	(95.9)	510	(2.27)	730	(3.25)	890	(3.96)	990	(4.40)
8"	(200)	1001-8 X 1	217.4	(98.6)	1001-8 X 1¼	238.8	(108.3)	510	(2.27)	730	(3.25)	890	(3.96)	990	(4.40)

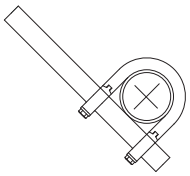
[1] FM Approved when used with 1 or 1¼ inch NPS Schedule 40 GB/T 3091,EN 10255H, or JIS G3451 steel pipe as the brace member.

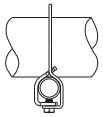
[2] Load rating for LW above refers to FM Approved Lightwall Pipe commonly referred to as "Schedule 7". These ratings may also be applied when EN 10220 and GB/T 8163 steel pipe.

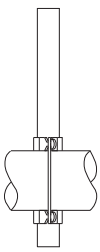
[3] Load rating for Schedule 10 above may be applied to GB/T 3092,EN 10255M and H, or JIS G3454, FM Approved Thinwall, or Schedule 40 steel pipes.

Note: See UL load ratings in UL Listed Design Load chart shown under drawing.









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

TOLCO Fig. 980 - Universal swivel sway brace attachment - 3/8" to 3/4" mounting hardware
TOLCO Fig. 980H - Universal swivel sway brace attachment - 7/8" to 1 1/4" mounting hardware

OPM

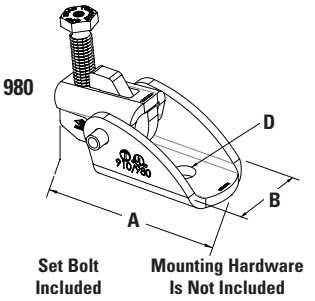
c UL us LISTED

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

Material: Carbon steel

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

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



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

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

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

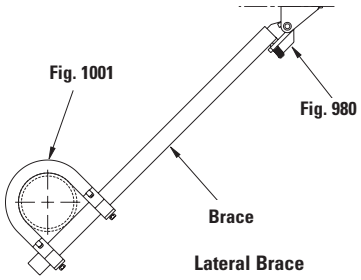
Note: Fig. 980 Swivel Attachment and Fig. 1001, 2002, 3000, 4L, or approved attachment to pipe make up a sway brace system of UL Listed attachments and bracing materials which satisfies the requirements of Underwriters Laboratories and the National Fire Protection Association **(NFPA)**

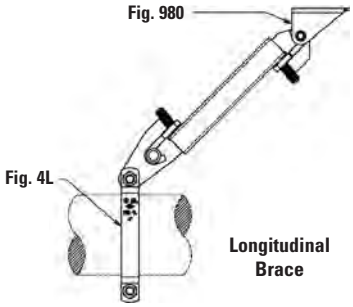
Finish: Plain, Electro-Galvanized or Stainless Steel.

Contact customer service for alternative finishes.

Order By: Figure number and finish.

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





Catalog #	A in.	A (mm)	B in.	B (mm)	D** in.	D** (mm)	Max. Design Load (cULus) lbs./(kN)	Max. Design Load*** (FM) 30°-44° lbs./(kN)	45°-59° lbs./(kN)	60°-74° lbs./(kN)	75°-90° lbs./(kN)	Approx.Wt./100 lbs.	(kg)
980-3/8	4 9/16	(114.9)	2 1/16	(52.4)	7/16	(11.1)	1600 (7.12)	2370 (10.54)	2790 (12.41)	3360 (14.94)	3750 (16.68)	149	(67.6)
980-1/2					9/16	(14.3)	2100 (9.34)					148	(67.1)
980-5/8					11/16	(17.5)	2100 (9.34)					147	(66.7)
980-3/4					13/16	(20.6)	2100 (9.34)					146	(66.2)
980H-7/8	6 3/4	(171.4)	3 1/2	(88.9)	15/16	(23.8)	Fig. 980H is not UL Listed or FM Approved	Fig. 980H is not UL Listed or FM Approved				402	(182.3)
980H-1					1 1/16	(27.0)						400	(181.4)
980H-1 1/8					1 3/16	(30.2)						397	(180.1)
980H-1 1/4					1 5/16	(33.3)						390	(176.9)

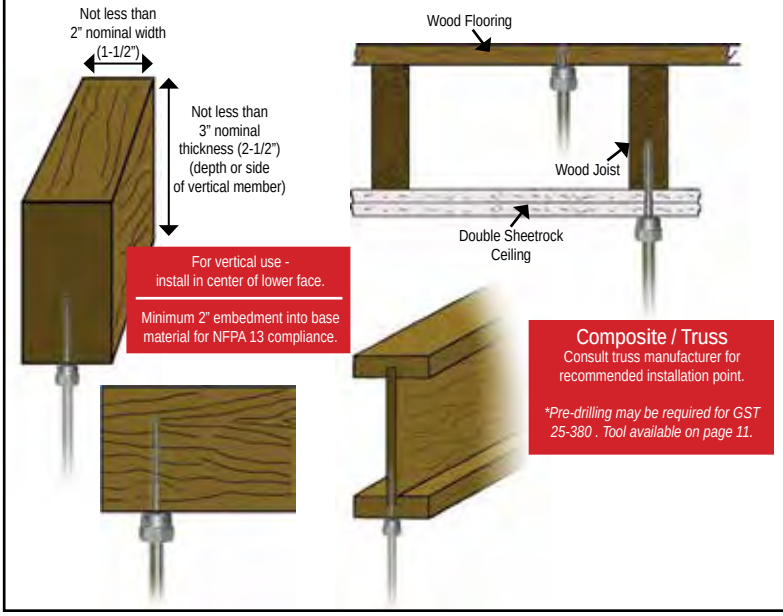
* Sizes available in stainless steel (980S-3/8, 980S-1/2, 980S-5/8, and 980S-3/4) and have the same UL rating as what is listed.
** Mounting attachment hole size.
*** Installed with 1" or 1 1/4 "schedule 40 brace pipe.

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

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

SAMMYS® FOR WOOD - Vertical Application

Application



Product Features

- No pre-drilling required.
- Quick to install using the Sammy Nut Driver with an 18V cordless drill.
- Saves time from traditional methods.
- Reduces installation costs.
- Assembled in the U.S.A.

View our installation videos!
YouTube

Approvals	Rod Size	Part Number	Model	Screw Descriptions	Ultimate Pullout (lbs)	UL Test Load (lbs)	FM Test Load (lbs)	Box Qty	Case Qty
VERTICAL MOUNT									
	1/4"	8002957	GST 100	1/4 x 1"	210 (7/16" OSB) 670 (3/4" Ply)			25	125
	1/4"	8003957	GST 200	1/4 x 2"	1760 (Fir)			25	125
	3/8"	8007957	GST 10	1/4 x 1"	210 (7/16" OSB) 670 (3/4" Ply)	300		25	125
	3/8"	8008957	GST 20	1/4 x 2"	1760 (Fir)	850	1475	25	125
	3/8"	8068925	GST 20-SS	1/4 x 2"	1760 (Fir)	850		25	125
	3/8"	8009925	GST 25-380	3/8 x 2-1/2"	2113 (Fir)	1500		25	125
	3/8"	8010957	GST 30	1/4 x 3"	2060 (Fir)	1500	1475	25	125
	1/2"	8013925	GST 2	1/4 x 2"	1760 (Fir)			25	125
	1/2"	8015925	GST 3	1/4 x 3"	2275 (Fir)			25	125

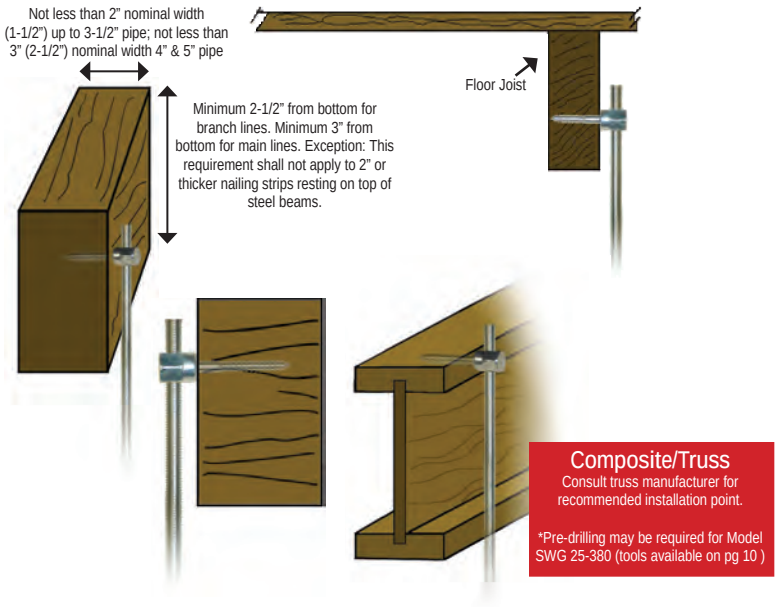
#14 Black
Nut Driver
Part # 8113910

#14 SW Red
Nut Driver
Part # 8114910

ASSEMBLED U.S.A.

SPECIAL NUT DRIVER SYSTEM: The nut drivers were designed with a unique spin-off feature which provides a fast and safe installation each time. When the face of the driver comes into contact with the material you are installing into, continue drilling until nut driver spins free. Installation is then complete. Warranty requires the use of the appropriate nut driver for installations.

SIDEWINDERS® for Wood *Installs HORIZONTALLY into the side of wood structures easily and quickly!*



Composite/Truss
Consult truss manufacturer for recommended installation point.

*Pre-drilling may be required for Model SWG 25-380 (tools available on pg 10)

Product Features

- No pre-drilling required.
- Quick to install using the Sammy Nut Driver with an 18V cordless drill/driver.
- Saves time from traditional methods.
- Reduces installation cost.
- Made in the U.S.A.

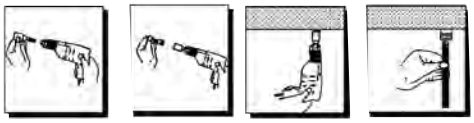
#14 SW Red Nut Driver Part # 8114910

Approvals	Rod Size	Part Number	Model	Screw Descriptions	Ultimate Pullout (lbs)	UL Test Load (lbs)	Box Qty	Case Qty
	1/4"	8018957	SWG 100	1/4 x 1"	622 (Fir)		25	125
	1/4"	8019957	SWG 200	1/4 x 2"	1725 (Fir)		25	125
	3/8"	8020957	SWG 10	1/4 x 1"	622 (Fir)	300	25	125
	3/8"	8021957	SWG 20	1/4 x 2"	1725 (Fir)	1050	25	125
	3/8"	8073925	SWG 20-SS	1/4 x 2"	1725 (Fir)	850	25	125
	3/8"	8022925	SWG 25-380	3/8 x 2-1/2"	2249 (Fir)	1500	25	125
	3/8"	8023925	SWG 30	1/4 x 3"	1884 (Fir)		25	125

INSTALLATION STEPS - VERTICAL INTO WOOD & STEEL:

1. *Insert the appropriate nut driver into a 3/8" or 1/2" portable drill.*
2. *Insert the SAMMYS into the #14 (black) nut driver (p/n 8113910). Drill should be in a vertical position.*
3. *Push the face of the nut driver tight to the member. When the nut driver spins freely on the SAMMYS, stop drill and remove.*
4. *The SAMMYS is now ready to receive 1/4", 3/8", 1/2" or metric all thread rod, bolt stock. (The 1/2" requires the #14SW red nut driver)*

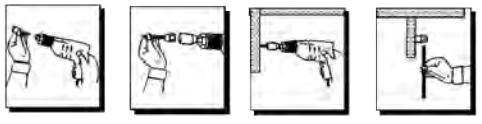
Note: When installing DSTR, follow the above instructions, then add retainer nut and torque to 20 foot lbs. for maximum pullout in purlin steel.



INSTALLATION STEPS - HORIZONTAL INTO WOOD & STEEL:

1. *Insert the appropriate nut driver into a 3/8" or 1/2" portable drill.*
2. *Insert the SAMMYS into the #14SW (red) nut driver (p/n 8114910). With drill unit in a horizontal position and at a right angle to the structural member, begin installation.*
3. *When the nut driver spins free on the SAMMYS, stop the drill and remove.*
4. *The unit is now ready to receive 1/4", 3/8" or metric all thread rod or bolt stock.*

Note: When installing SWDR, follow the above instructions, then add retainer nut and torque to 20 foot lbs. for maximum pullout in purlin steel.



SPECIAL NUT DRIVER SYSTEM: The nut drivers were designed with a unique spin-off feature which provides a fast and safe installation each time. When the face of the driver comes into contact with the material you are installing into, continue drilling until nut driver spins free. Installation is then complete. Warranty requires the use of the appropriate nut driver for installations.

BULL MOOSE TUBE

SCHEDULE 10 & 40 SPRINKLER PIPE SUBMITTAL DATA SHEET

APPROVALS AND SPECIFICATIONS

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

FINISHES AND COATINGS

- Schedule 10 & 40 Sprinkler Pipe receives an OD mill coating of water-based paint which has corrosion protection expected with a painted carbon steel product, i.e. it would be expected to resist corrosion for an extended and indefinite period in a clean and dry environment and, as environmental conditions deteriorate, the corrosion protection would also diminish.
- Schedule 10 & 40 Sprinkler Pipe (black) receives an ID mill coating of Eddy Guard II MIC preventative coating. EG2 has been tested at independent laboratories to resist bacterial growth and maintain minimal bacterial count after multiple flushes (25) of the pipe.
- Schedule 10 & 40 Sprinkler Pipe when Hot Dip Galvanized by ASTM A123 and supplied by Bull Moose Tube is UL listed and FM approved.

PRODUCT IDENTIFICATION

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

	Nominal Pipe Size (inches)	1	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	6"**	8"**
Schedule 10	O.D. (in)	1.315	1.660	1.900	2.375	2.875	3.500	4.500	6.625	8.625
	I.D. (in)	1.097	1.442	1.682	2.157	2.635	3.260	4.260	6.357	8.249
	Empty Weight (lb/ft)	1.410	1.810	2.090	2.640	3.530	4.340	5.620	9.290	16.940
	Water Filled Weight (lb/ft)	1.800	2.518	3.053	4.223	5.893	7.957	11.796	23.038	40.086
	C.R.R.*	15.27	9.91	7.76	6.27	4.92	3.54	2.50	1.158	1.805
	Pieces per Lift	91	61	61	37	30	19	19	10	7
Schedule 40	O.D. (in)	1.315	1.660	1.900	2.375	2.875	3.500	4.500		
	I.D. (in)	1.049	1.380	1.610	2.067	2.469	3.068	4.026		
	Empty Weight (lb/ft)	1.680	2.270	2.720	3.660	5.800	7.580	10.800		
	Water Filled Weight (lb/ft)	2.055	2.918	3.602	5.114	7.875	10.783	16.316		
	C.R.R.*	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
	Pieces per Lift	70	51	44	30	30	19	19		

*Calculated using Standard UL CRR formula, UL Fire Protection Directory, Category VIZY **Not Eddy Guard II treated/Not produced by BMT

SUBMITTAL INFORMATION

Project

Contractor

Engineer

Specification Reference

Date

System Type

Locations

Comments

◯ Schedule 10 - Black ◯ Schedule 10 - Hot Dip Galvanized ◯ Schedule 40 - Black ◯ Schedule 40 - Hot Dip Galvanized

BULLMOOSETUBE.COM
1819 Clarkson Road, Chesterfield, MO 63017
US: 800.325.4467 | Canada: 800.882.4666 | sales@BullMooseIndustries.com

This packet contains engineering and product information specific to the following project:

Project Info

Project Name: Thurston County Readiness Center

Project Address: WA

Architect:

Engineer:

Contractor:

Submittal Date: February 14, 2019

Approver Instructions

Review product specifications: Please review the product specifications and technical information for each product to ensure suitability of application and use.

Review product options: If applicable, please review the selected product options on each product page to ensure suitability of application and use.

Approve or reject individual products: Please complete the approval stamp section for each product.

OPTIONAL STAINLESS STEEL BOLTS & NUTS:
Stainless steel bolts and nuts are also available. Contact a Gruvlok Representative for more information.

HOUSING:
Ductile Iron conforming to ASTM A536, Grade 65-45-12, or
Malleable Iron conforming to ASTM A47, Grade 32510.

OPTIONAL COATINGS:

- ❑ Rust inhibiting lead-free paint Color: ORANGE (standard)
- ❑ Hot Dipped Zinc Galvanized (optional)
- ❑ Other Colors Available (IE: RAL3000 and RAL9000): _____

For other Coating requirements contact a Gruvlok Representative.

Approval Stamp

- ☐ **Approved**
- ☐ **Approved as noted**
- ☑ **Not approved**

Remarks:

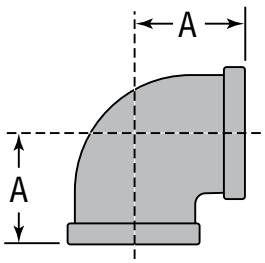
Product Index

The following products are included in this submittal:

3201 90° Elbow
3205 Straight Tee
3221 Coupling
3201R Reducing 90° Elbow
3221R Reducing Coupling

FIG. 3201

90° Elbow



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For Listings/Approval Details and Limitations, visit our website at www.anvilintl.com or contact an Anvil® Sales Representative.

FIGURE 3201 - 90° ELBOW

Nominal Size	Maximum Working Pressure▲	Dimension A	Approx. Wt. Each
In. (mm)	*PSI (kPa)*	*In. (mm)*	*Lbs. (kg)*
1 *20*	500 *3450*	1.50 *38.10*	0.62 *0.28*
1¼ *32*	500 *3450*	1.75 *44.45*	0.90 *0.41*
1½ *40*	500 *3450*	1.94 *49.276*	1.20 *0.54*
2 *50*	500 *3450*	2.25 *57.15*	1.85 *0.84*

▲ – Working Pressure Ratings are for reference only and based on Sch. 40 pipe. For the latest UL/ULC, and FM pressure ratings versus pipe schedule, please visit anvilintl.com or contact your local Anvil Representative.

MATERIAL SPECIFICATIONS

Dimensions: ASME B16.3

Material: ASTM A536 Grade 65-45-12

Finish: Black

Threads: NPT per ASME B1.20.1

Agency Approvals: All ductile iron threaded fittings are UL/ULC Listed and FM Approved.

NOTICE: Ductile iron fittings have higher tensile strength than that of steel pipe. Therefore, over tightening can cause damage to pipe threads which may cause leakage. Ductile iron fittings should be tightened approximately three turns beyond hand tight, but no more than four turns.

PROJECT INFORMATION	APPROVAL STAMP
Project: Thurston County Readiness Center	☐ **Approved**
Address: WA	☐ **Approved as noted**
Contractor:	☐ **Not approved**
Engineer:	**Remarks:**
Submittal Date: February 14, 2019	
Notes 1:	
Notes 2:	

FIG. 3201R

Reducing 90° Elbow

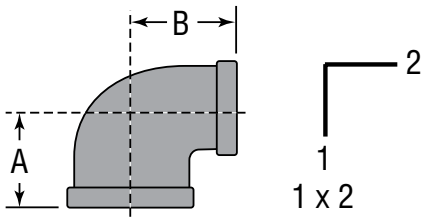

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FIGURE 3201R - REDUCING 90° ELBOW

Nominal Size 1 x 2	Max. Working Pressure▲	Dimensions A	Dimensions B	Approx. Wt. Each
In. (mm)	*PSI (kPa)*	*In. (mm)*	*In. (mm)*	*Lbs. (kg)*
1 x ½ *25 x 15*	500 *3450*	1.26 *32.00*	1.36 *34.54*	0.44 *0.20*
1 x ¾ *25 x 20*	500 *3450*	1.37 *34.79*	1.45 *36.83*	0.52 *0.24*
1¼ x ½ *32 x 15*	500 *34550*	1.34 *34.03*	1.53 *38.86*	0.64 *0.29*
1¼ x ¾ *32 x 20*	500 *3450*	1.45 *36.83*	1.62 *41.14*	0.72 *0.33*
1¼ x 1 *32 x 25*	500 *3450*	1.58 *40.13*	1.67 *42.41*	0.75 *0.34*
1½ x 1 *40 x 25*	500 *3450*	1.65 *41.91*	1.80 *45.72*	0.92 *0.42*
1½ x 1¼ *40 x 32*	500 *3450*	1.82 *46.22*	1.88 *47.75*	1.08 *0.49*
2 x ½ *50 x 15*	500 *3450*	1.49 *37.84*	1.88 *47.75*	1.08 *0.49*
2 x ¾ *50 x 20*	500 *3450*	1.60 *40.64*	1.97 *50.03*	1.24 *0.56*
2 x 1 *50 x 25*	500 *3450*	1.73 *43.94*	2.02 *51.30*	1.40 *0.64*
2 x 1¼ *50 x 32*	500 *3450*	1.90 *48.26*	2.10 *53.34*	1.52 *0.70*
2 x 1½ *50 x 40*	500 *3450*	2.02 *51.30*	2.16 *54.86*	1.65 *0.75*

▲ – Working Pressure Ratings are for reference only and based on Sch. 40 pipe. For the latest UL/ULC, and FM pressure ratings versus pipe schedule, please visit anvilintl.com or contact your local Anvil Representative.

MATERIAL SPECIFICATIONS

Dimensions: ASME B16.3

Material: ASTM A536 Grade 65-45-12

Finish: Black

Threads: NPT per ASME B1.20.1

Agency Approvals: All ductile iron threaded fittings are UL/ULC Listed and FM Approved.

NOTICE: Ductile iron fittings have higher tensile strength than that of steel pipe. Therefore, over tightening can cause damage to pipe threads which may cause leakage. Ductile iron fittings should be tightened approximately three turns beyond hand tight, but no more than four turns.

PROJECT INFORMATION	APPROVAL STAMP
Project: Thurston County Readiness Center	☐ **Approved**
Address: WA	☐ **Approved as noted**
Contractor:	☐ **Not approved**
Engineer:	**Remarks:**
Submittal Date: February 14, 2019	
Notes 1:	
Notes 2:	

FIG. 3205

Straight Tee

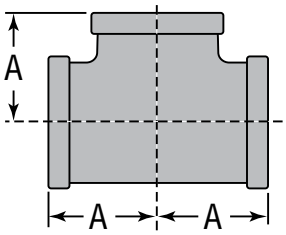

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FIGURE 3205 - STRAIGHT TEE

Nominal Size	Maximum Working Pressure▲	Dimension A	Approx. Wt. Each
In. (mm)	*PSI (kPa)*	*In. (mm)*	*Lbs. (kg)*
1 *25*	500 *3450*	1.50 *38.10*	0.85 *0.39*
1¼ *32*	500 *3450*	1.75 *44.45*	1.22 *0.55*
1½ *40*	500 *3450*	1.94 *49.27*	1.55 *0.70*
2 *50*	500 *3450*	2.25 *57.15*	2.45 *1.11*

▲ – Working Pressure Ratings are for reference only and based on Sch. 40 pipe. For the latest UL/ULC, and FM pressure ratings versus pipe schedule, please visit anvilintl.com or contact your local Anvil Representative.

MATERIAL SPECIFICATIONS

Dimensions: ASME B16.3

Material: ASTM A536 Grade 65-45-12

Finish: Black

Threads: NPT per ASME B1.20.1

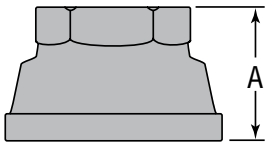
Agency Approvals: All ductile iron threaded fittings are UL/ULC Listed and FM Approved.

NOTICE: Ductile iron fittings have higher tensile strength than that of steel pipe. Therefore, over tightening can cause damage to pipe threads which may cause leakage. Ductile iron fittings should be tightened approximately three turns beyond hand tight, but no more than four turns.

PROJECT INFORMATION	APPROVAL STAMP
Project: Thurston County Readiness Center	☐ **Approved**
Address: WA	☐ **Approved as noted**
Contractor:	☐ **Not approved**
Engineer:	**Remarks:**
Submittal Date: February 14, 2019	
Notes 1:	
Notes 2:	

FIG. 3221R

Reducing Coupling



c UL us LISTED FM APPROVED

For Listings/Approval Details and Limitations, visit our website at www.anvilintl.com or contact an Anvil® Sales Representative.

FIGURE 3221R - REDUCING COUPLING

Nominal Size	Maximum Working Pressure▲	Dimension A	Approx. Wt. Each
In. (mm)	*PSI (kPa)*	*In. (mm)*	*Lbs. (kg)*
1 x ½ *25 x 15*	500 *3450*	1.69 *42.92*	0.39 *0.18*
1 x ¾ *25 x 20*	500 *3450*	1.69 *42.92*	0.53 *0.24*

▲ – Working Pressure Ratings are for reference only and based on Sch. 40 pipe. For the latest UL/ULC, and FM pressure ratings versus pipe schedule, please visit anvilintl.com or contact your local Anvil Representative.

MATERIAL SPECIFICATIONS

Dimensions: ASME B16.3

Material: ASTM A536 Grade 65-45-12

Finish: Black

Threads: NPT per ASME B1.20.1

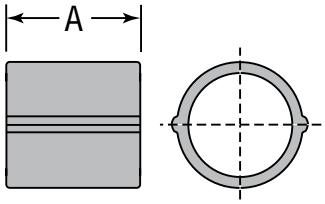
Agency Approvals: All ductile iron threaded fittings are UL/ULC Listed and FM Approved.

NOTICE: Ductile iron fittings have higher tensile strength than that of steel pipe. Therefore, over tightening can cause damage to pipe threads which may cause leakage. Ductile iron fittings should be tightened approximately three turns beyond hand tight, but no more than four turns.

PROJECT INFORMATION	APPROVAL STAMP
Project: Thurston County Readiness Center	☐ **Approved**
Address: WA	☐ **Approved as noted**
Contractor:	☐ **Not approved**
Engineer:	**Remarks:**
Submittal Date: February 14, 2019	
Notes 1:	
Notes 2:	

FIG. 3221

Coupling



c UL us LISTED FM APPROVED

For Listings/Approval Details and Limitations, visit our website at www.anvilintl.com or contact an Anvil® Sales Representative.

FIGURE 3221 - COUPLING

Nominal Size	Maximum Working Pressure▲	Dimension A	Approx. Wt. Each
In. (mm)	*PSI (kPa)*	*In. (mm)*	*Lbs. (kg)*
1 *25*	500 *3450*	1.67 *42.42*	0.40 *0.18*
1¼ *32*	500 *3450*	1.93 *49.02*	0.57 *0.26*
1½ *40*	500 *3450*	2.15 *54.61*	0.75 *0.34*
2 *50*	500 *3450*	2.53 *64.26*	1.15 *0.52*

▲ – Working Pressure Ratings are for reference only and based on Sch. 40 pipe. For the latest UL/ULC, and FM pressure ratings versus pipe schedule, please visit anvilintl.com or contact your local Anvil Representative.

MATERIAL SPECIFICATIONS

Dimensions: ASME B16.3

Material: ASTM A536 Grade 65-45-12

Finish: Black

Threads: NPT per ASME B1.20.1

Agency Approvals: All ductile iron threaded fittings are UL/ULC Listed and FM Approved.

NOTICE: Ductile iron fittings have higher tensile strength than that of steel pipe. Therefore, over tightening can cause damage to pipe threads which may cause leakage. Ductile iron fittings should be tightened approximately three turns beyond hand tight, but no more than four turns.

PROJECT INFORMATION	APPROVAL STAMP
Project: Thurston County Readiness Center	☐ **Approved**
Address: WA	☐ **Approved as noted**
Contractor:	☐ **Not approved**
Engineer:	**Remarks:**
Submittal Date: February 14, 2019	
Notes 1:	
Notes 2:	

Victaulic® FireLock™ Fittings

10.03

1.0 PRODUCT DESCRIPTION

Available Sizes

- 1 ¼ – 8"/DN32 – DN200

Maximum Working Pressure

- Pressure ratings for Victaulic FireLock™ Fittings conform to the ratings of Victaulic FireLock EZ™ 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
Regulation (EU)
No. 305/2011

3.0 SPECIFICATIONS – MATERIAL

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

Fitting Coating:

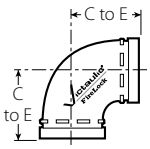
- ☐ Orange enamel.
- ☐ Red enamel in Europe, Middle East, Africa, and India.
- ☐ Optional: Hot dipped galvanized.

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

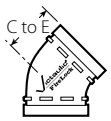
System No.		Location	
Submitted By		Date	

Spec Section		Paragraph	
Approved		Date	

4.0 DIMENSIONS



No. 001



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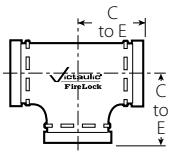


No. 002

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	— —	— —	— —	— —	— —	— —	0.82 21	0.3 0.1
1 ½ DN40	1.900 48.3	— —	— —	— —	— —	— —	— —	0.82 21	0.4 0.2
2 DN50	2.375 60.3	2.75 70	1.7 0.8	2.00 51	1.8 0.8	2.75 70	2.4 1.1	0.88 22	0.6 0.3
2 ½	2.875 73.0	3.00 76	3.1 1.4	2.25 57	2.2 1.0	3.00 76	3.6 1.6	0.88 22	1.0 0.5
DN65	3.000 76.1	3.00 76	3.30 1.5	2.25 57	2.4 1.1	3.00 76	3.8 1.7	—	—
3 DN80	3.500 88.9	3.38 86	4.0 1.8	2.50 64	3.1 1.4	3.38 86	5.3 2.4	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	6.7 3.0	3.00 76	5.6 2.5	4.00 102	8.7 3.9	1.00 25	2.4 1.1
5	5.563 141.3	4.88 124	12.6 5.7	3.25 83	8.3 3.8	4.88 124	15.7 7.1	1.00 25	4.1 1.9
DN125	5.500 139.7	4.88 124	12.4 5.6	3.25 82.6	8.2 3.7	4.88 124	15.4 6.9	—	—
	6.250 158.8	5.50 140	12.6 5.7	3.50 89	9.2 4.2	5.50 140	17.9 8.0	—	—
6 DN150	6.625 168.3	5.50 140	18.3 8.3	3.50 89	11.7 5.3	5.50 140	22.7 10.3	1.00 25	5.9 2.7
	6.500 165.1	5.43 140	17.6 7.9	3.50 89	11.4 5.2	5.50 140	22.0 9.9	—	—
8 DN200	8.625 219.1	6.81 173	25.5 11.6	4.25 108	20.4 9.3	6.94 176	38.7 17.6	1.13 29	12.7 5.8
	8.515 216.3	6.81 173	23.1 10.5	— —	— —	6.94 176	33.6 15.2	— —	— —

5.0 PERFORMANCE

Flow Data

Size		Frictional Resistance Equivalent of Straight Pipe[1]			
		Elbows		No. 002 Straight Tee	
Nominal Size inches DN	Actual Outside Diameter inches mm	No. 001 90° Elbow feet meters	No. 003 45° Elbow feet meters	Branch feet meters	Run feet meters
1 ¼ DN32	1.660 42.4	— —	— —	— —	— —
1 ½ DN40	1.900 48.3	— —	— —	— —	— —
2 DN50	2.375 60.3	3.5 1.1	1.8 0.5	8.5 2.6	3.5 1.1
2 ½	2.875 73.0	4.3 1.3	2.2 0.7	10.8 3.3	4.3 1.3
DN65	3.000 76.1	4.5 1.4	2.3 0.7	11.0 3.4	4.5 1.4
3 DN80	3.500 88.9	5.0 1.5	2.6 0.8	13.0 4.0	5.0 1.5
	4.250 108.0	6.4 2.0	3.2 0.9	15.3 4.7	6.4 2.0
4 DN100	4.500 114.3	6.8 2.1	3.4 1.0	16.0 4.9	6.8 2.1
5	5.563 141.3	8.5 2.6	4.2 1.3	21.0 6.4	8.5 2.6
DN125	5.500 139.7	8.3 2.5	4.1 1.3	20.6 6.3	8.3 2.5
	6.250 158.8	9.4 2.9	4.9 1.5	25.0 7.6	9.6 2.9
6 DN150	6.625 168.3	10.0 3.0	5.0 1.5	25.0 7.6	10.0 3.0
	6.500 165.1	9.8 3.0	4.9 1.5	24.5 7.5	9.8 3.0
8 DN200	8.625 219.1	13.0 4.0	5.0 1.5	33.0 10.1	13.0 4.0
	8.515 216.3	13.0 4.0	— —	33.0 10.1	13.0 4.0

[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® FireLock™ Installation-Ready™ Rigid Couplings Style 009N and Style 109

10.64

Patented

Patented

1.0 PRODUCT DESCRIPTION

Available Sizes

- Style 009N: 1 ¼ – 12"/DN32 – DN300
- Style 109: 1 ¼ – 2 ½"/DN32 – 73.0 mm

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.

Maximum Working Pressure

- Up to 365 psi/2517 kPa.

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.

2.0 CERTIFICATION/LISTINGS

C104-1a/36

EN 10311
Regulation (EU)
No. 305/2011

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

System No.		Location	
Submitted By		Date	

Spec Section		Paragraph	
Approved		Date	

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 enamel (North America, Asia Pacific)
- ☐ Red enamel (Europe)
- ☐ Optional for Style 009N: Hot dipped galvanized

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.

Bolts/Nuts: (specify choice)

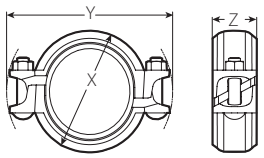
- ☐ Standard: Carbon steel oval neck track bolts meeting the mechanical property requirements of ASTM A449 (imperial) and ISO 898-1 Class 9.8 (M10-M16) Class 8.8 (M20 and greater). Carbon steel hex nuts meeting the mechanical property requirements of ASTM A563 Grade B (imperial) and ASTM A563M Class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

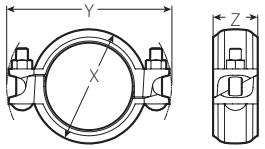
Coupling Linkage: High Strength Steel with comparable physical properties to that of the Track Bolt (ASTM A449). Linkage is zinc electroplated per ASTM B633 Fe/Zn 5, Type III Finish.

4.0 DIMENSIONS

Style 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					Weight
							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	Approx. (Each) lb kg
1 ¼ 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
1 ½ 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 × 2 ½ M10 x 63	4.00 102	5.63 143	3.50 89	5.63 143	2.00 51	1.9 0.9
2 ½	2.875 73.0	365 2517	2370 10542	0.12 3.05	2	⅜ × 2 ½ 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 × 2 ½ 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 × 2 ½ 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 × 2 ½ 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 × 2 ½ 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 × 3 ¼ 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 × 3 ¼ 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 × 3 ¼ 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
	8.500 216.0	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 × 6 ½ 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 × 6 ½ 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.

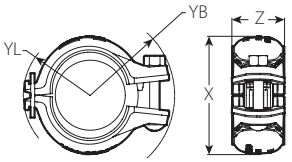
[3] The allowable pipe separation dimension shown is for system layout purposes only. Style 009N couplings are considered rigid connections and will not accommodate expansion or contraction of the piping system.

NOTES

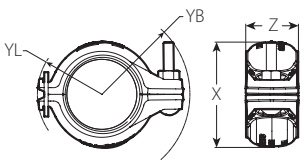
- When assembling Style 009N or Style 109 couplings onto end caps, take additional care to make certain the end cap is fully seated against the gasket end stop. For Style 009N or Style 109 couplings, use FireLock No. 006 end caps containing the "EZ" marking on the inside face or No. 60 end caps containing the "QV EZ" marking on the inside face. Non-Victaulic end cap products shall not be used with Style 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 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 009N or Style 109 couplings.

4.1 DIMENSIONS

Style 109 One-Bolt *Installation-Ready* Coupling



Style 109 Pre-Assembled



Style 109 Joint Assembled

Size		Maximum Working Pressure[4]	Maximum End Load[4]	Pipe End Separation Allowable[5]	Bolt/Nut		Dimensions								Weight
							Pre-assembled				Joint Assembled				
Nominal	Actual Outside Diameter				Qty.	Size	YL	YB	X	Z	YL	YB	X	Z	Approx. (Each)
inches mm	inches mm	psi kPa	lb N	inches mm		inches mm	inches mm	inches mm	inches mm	inches mm	inches mm	inches mm	inches mm	inches mm	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	1.88 48	2.50 64	3.13 79	1.88 48	1.88 48	2.63 67	2.75 70	1.88 48	1.4 0.6
1 ½ DN40	1.900 48.3	365 2517	1035 4604	0.10 2.54	1	⅜ x 2 ¼ M10 x 57	2.00 51	2.63 67	3.25 83	1.88 48	2.00 51	2.75 70	3.00 76	1.88 48	1.5 0.7
2 DN50	2.375 60.3	365 2517	1616 7193	0.12 3.05	1	⅜ x 2 ½ M10 x 63	2.25 57	2.88 73	3.88 98	2.00 51	2.25 57	3.13 79	3.50 89	2.00 51	1.8 0.8
2 ½	2.875 73.0	365 2517	2370 10542	0.12 3.05	1	⅜ x 2 ½ M10 x 63	2.50 64	3.13 79	4.38 111	2.00 51	2.50 64	3.38 86	3.88 98	2.00 51	2.1 0.9

[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 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 009N or Style 109 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 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 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 and cannot be used with the Style 009N or Style 109 couplings.

5.0 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[11]		FM[11]		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 2517 25	365 2517 25	363 2503 25	363 2503 25	363 2500 25	363 2500 25
1 ½ DN40	1.900 48.3	365 2517 25	365 2517 25	363 2503 25	363 2503 25	363 2500 25	363 2500 25
2 DN50	2.375 60.3	365 2517 25	365 2517 25	363 2503 25	363 2500 25	363 2500 25	363 2500 25
2 ½	2.875 73.0	365 2517 25	365 2517 25	363 2503 25	363 2500 25	363 2500 25	363 2500 25
DN65	3.000 76.1	365[7] 2517[7] 25[7]	N/A	363[8] 2503[8] 25[8]	N/A	363 2500 25	363 2500 25
3 DN80	3.500 88.9	365 2517 25	365 2517 25	363 2503 25	363 2503 25	363 2500 25	363 2500 25
4 DN100	4.500 114.3	365 2517 25	365 2517 25	363 2503 25	363 2503 25	363 2500 25	363 2500 25
	4.250 108.0	N/A	N/A	363 2503 25	363 2503 25	N/A	N/A
5	5.563 141.3	290 2000 20	365 2517 25	363 2503 25	363 2503 25	232 1600 16	363 2500 25
	5.250 133.0	N/A	N/A	363[8] 2503[8] 25	N/A	N/A	N/A
DN125	5.500 139.7	290[9] 2000[9] 20[9]	N/A	363[8] 2503[8] 25[8]	N/A	232 1600 25	363 2500 25
6 DN150	6.625 168.3	300 2068 20	365 2517 25	363 2503 25[7]	363 2503 25	232 1600 16	363 2500 25
	6.250 159.0	N/A	N/A	363[8] 2503[8] 25	N/A	N/A	N/A
	6.500 165.1	290[10] 2000[10] 20	N/A	363[8] 2503[8] 25[8]	N/A	N/A	363 2500 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 Installation Manual I-009N 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.

5.0 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[11]		FM[11]		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
8 DN200	8.625 219.1	300 2068 20	365 2517 25	363 2503 25	363 2503 25	232 1600 16	363 2500 25
	8.500 216.0	290 2000 20	N/A	363[8] 2503[8] 25[7]	N/A	N/A	N/A
10 DN250	10.750 273.0	300 2068 20	300 2068 20	300 2068 20	300 2068 20	N/A	N/A
12 DN300	12.750 323.9	300[12] 2068[12] 20[12]	300 2068 25	250 1720 17	300 2068 20	N/A	N/A

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 Installation Manual I-009N 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.

5.1 PERFORMANCE

Style 109 One-Bolt *Installation-Ready* Coupling Listings/Approvals[13]

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	
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
1¼ DN32	1.660 42.4	365 2517 25	365 2517 25	365 2517 25	365 2517 25
1½ DN40	1.900 48.3	365 2517 25	365 2517 25	365 2517 25	365 2517 25
2 DN50	2.375 60.3	365 2517 25	365 2517 25	365 2517 25	365 2517 25
2½	2.875 73.0	365 2517 25	365 2517 25	365 2517 25	365 2517 25

13 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.

5.2 PERFORMANCE

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

Pipe Type	Size inches DN	Pressure Rating cULus psi kPa bar	Pressure Rating FM psi kPa bar
EF	1 ¼ – 4 DN32 – DN100	300 2068 20	N/A
EL	1 ¼ – 2 DN32 – DN50	300 2068 20	300 2068 20
ET40	1 ¼ – 2 DN32 – DN50	300 2068 20	N/A
EZF	3 – 4 DN80 – DN100	300 2068 20	N/A
EZT	1 ¼ – 2 DN32 – DN50	300 2068 20	300 2068 20
FF	1 ½ – 4 DN40 – DN100	300 2068 20	N/A
GL	1 ¼ – 2 DN32 – DN50	300 2068 20	300 2068 20
MF	1 ¼ – 4 DN32 – DN100	300 2068 20	300 2068 20
	6 DN150	175 1205 12	175 1205 12
MT	1 ¼ – 2 DN32 – DN50	300 2068 20	300 2068 20
MLT	1 ¼ – 2 DN32 – DN50	N/A	300 2068 20
TF	2 ½ – 4 73.0 mm – DN100	N/A	300 2068 20
WG5, WG5E, WF5, WG7, WG7E, WL7	1 ¼ – 4 DN32 – DN100	175 1205 12	300 2068 20
WLS	1 ¼ – 2 DN32 – DN50	300 2068 20	300 2068 20

NOTES

- 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.

5.3 PERFORMANCE

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
EF	1 ¼ – 2 ½ DN32 – 73.0 mm	N/A	300 2068 20
	1 ½ – 2 ½ DN40 – 73.0 mm	300 2068 20	N/A
Easy-Flow	1 ¼ – 2 DN32 – DN50	N/A	300 2068 20
EL	1 ¼ – 2 DN32 – DN50	N/A	300 2068 20
ET40	1 ¼ – 2 DN32 – DN50	300 2068 20	300 2068 20
EZT	1 ¼ – 2 DN32 – DN50	N/A	300 2068 20
	1 ½ – 2 DN40 – DN50	300 2068 20	N/A
FF	1 ½ – 2 ½ DN40 – 73.0 mm	300 2068 20	300 2068 20
GL	1 ¼ – 2 DN32 – DN50	N/A	300 2068
MF	1 ¼ – 2 ½ DN32 – 73.0 mm	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
TF	2 ½ 73.0 mm	N/A	300 2068 20
WG7, WG7E	1 ¼ – 2 DN32 – DN50	N/A	300 2068 20
WLS	1 ¼ – 2 DN32 – DN50	N/A	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.
- WG7, WG7E = WGalweld 7 and WGalweld 7E 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.

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-100: Victaulic Field Installation Handbook

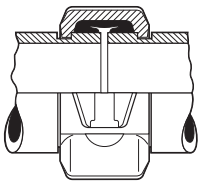
I-109: Installation Instructions FireLock™ One-Bolt Rigid Coupling Style 109

I-ENDCAP: Victaulic End Caps Installation Instructions

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

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.

System No.		Location	
Submitted By		Date	

Spec Section		Paragraph	
Approved		Date	

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.

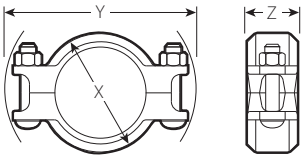
Bolts/Nuts: (specify choice[2])

- ☐ Standard: Carbon steel oval neck track bolts meeting the mechanical property requirements of ASTM A449 (imperial) and ISO 898-1 Class 9.8 (metric). 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



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	2º–43′	0.57 48	2	⅜ x 2 M10 x 51	2.38 61	4.27 108	1.77 45	1.3 0.6
1 ¼ DN32	1.660 42.4	0–0.06 0–1.6	2º–10′	0.45 38	2	⅜ x 2 M10 x 51	2.68 68	4.61 117	1.77 45	1.4 0.6
1 ½ DN40	1.900 48.3	0–0.06 0–1.6	1º–56′	0.40 33	2	⅜ x 2 M10 x 51	2.91 74	4.82 122	1.77 45	1.5 0.6
2 DN50	2.375 60.3	0–0.06 0–1.6	1º–31′	0.32 26	2	⅜ x 2 M10 x 51	3.43 87	5.22 133	1.88 48	1.7 0.8
2 ½	2.875 73.0	0–0.06 0–1.6	1º–15′	0.26 22	2	⅜ x 2 M10 x 51	3.88 98	5.68 144	1.88 48	1.9 0.9
DN65	3.000 76.1	0–0.06 0–1.6	1º–12′	0.26 22	2	⅜ x 2 M10 x 51	4.00 102	5.90 150	1.88 48	1.9 0.9
3 DN80	3.500 88.9	0–0.06 0–1.6	1º–2′	0.22 18	2	½ x 2 ¾ M12 x 70	4.50 114	7.00 178	1.88 48	2.9 1.3
3 ½ DN90	4.000 101.6	0–0.06 0–1.6	0º-54′	0.19 16	2	½ x 2 ¾ M12 x 70	5.00 127	7.50 191	1.88 48	2.9 1.3
4 DN100	4.500 114.3	0–0.13 0–3.2	1º–36′	0.34 28	2	½ x 2 ¾ M12 x 70	5.80 147	8.03 204	2.13 54	4.1 1.9
	4.250 108.0	0–0.13 0–3.2	1º–41′	0.35 29	2	½ x 2 ¾ M12 x 70	5.55 141	7.79 198	2.13 54	3.7 1.7
	5.000 127.0	0–0.13 0–3.2	1º–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	5.563 141.3	0–0.13 0–3.2	1º–18′	0.27 23	2	⅝ x 3 ¼ M16 x 83	6.88 175	10.07 256	2.13 54	5.8 2.6
	5.250 133.0	0–0.13 0–3.2	1º–21′	0.28 24	2	⅝ x 3 ¼ M16 x 83	6.55 166	9.37 238	2.13 54	6.0 2.7
DN125	5.500 139.7	0–0.13 0–3.2	1º–18′	0.28 24	2	⅝ x 3 ¼ M16 x 83	6.80 173	9.59 244	2.13 54	6.3 2.9
	6.000 152.4	0–0.13 0–3.2	1º–12′	0.21 18	2	⅝ x 3 ¼ M16 x 83	7.38 187	10.48 266	1.88 48	6.2 2.8
6 DN150	6.625 168.3	0–0.13 0–3.2	1º–5′	0.23 18	2	⅝ x 3 ¼ M16 x 83	8.00 203	11.07 281	2.13 54	7.0 3.2
	6.250 159.0	0–0.13 0–3.2	1º–9′	0.24 20	2	⅝ x 3 ¼ M16 x 83	7.63 194	10.49 266	2.13 54	6.8 3.1
	6.500 165.1	0–0.13 0–3.2	1º–7′	0.23 58	2	⅝ x 3 ¼ M16 x 83	7.84 199	10.66 271	2.08 53	6.6 3.0
	8.515 216.3	0–0.13 0–3.2	0º–51′	0.18 46	2	¾ x 4 ¼ M20 x 108	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	0º–50′	0.18 14	2	¾ x 4 ¼ M20 x 108	10.34 263	13.97 355	2.13 59	12.4 5.6

[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.

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

Size		Maximum Working Pressure[4]	Maximum End Load[4]
Nominal inches DN	Actual Outside Diameter inches mm	psi kPa	lb N
1 DN25	1.315 33.7	500 3447	680 3,025
1 ¼ DN32	1.660 42.4	500 3447	1080 4,805
1 ½ DN40	1.900 48.3	500 3447	1420 6,320
2 DN50	2.375 60.3	500 3447	2215 9,860
2 ½	2.875 73.0	500 3447	3245 14,440
DN65	3.000 76.1	500 3447	3535 15,730
3 DN80	3.500 88.9	500 3447	4800 21,360
3 ½ DN90	4.000 101.6	500 3447	6300 28,035
4 DN100	4.500 114.3	500 3447	7950 35,380
	4.250 108.0	450 3103	6380 28,395
	5.000 127.0	450 3103	8820 39,250
5	5.563 141.3	450 3103	10935 48,660
	5.250 133.0	450 3103	9735 43,325
DN125	5.500 139.7	450 3103	10665 47,460
	6.000 152.4	450 3103	12735 56,670
6 DN150	6.625 168.3	450 3103	15525 69,085
	6.250 159.0	450 3103	13800 61,405
	6.500 165.1	450 3103	14930 66,412
	8.515 216.3	450 3103	25625 113,986
8 DN200	8.625 219.1	450 3103	26280 116,945

[4] 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

- **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.**

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

FireLock™ Flange Adapter
Style 744

10.04

1.0 PRODUCT DESCRIPTION

Available Sizes

- 2 – 8" (50 – 200mm)

Maximum Working Pressure

- For maximum working pressure reference section 4.0 Dimensions

Application

- Designed for directly incorporating flanged components with ANSI CL. 125 or CL. 150 bolt hole patterns into a grooved pipe system.
- Designed and recommended for use in fire protection systems only.

Pipe Material

- Carbon Steel
- Stainless Steel
- For exceptions reference section 6.0 Notifications

2.0 CERTIFICATION/LISTINGS

See Victaulic publication 10.01 for details.

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

System No.		Location	
Submitted By		Date	

Spec Section		Paragraph	
Approved		Date	

3.0 SPECIFICATIONS – MATERIAL

Flange 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.

Coating: Black enamel

☐ Optional: Hot dipped galvanized

Bolts/Nuts: Supplied by installer

Gasket: Grade "E" EPDM - Type A Vic-Plus Gasket System[1]
(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.

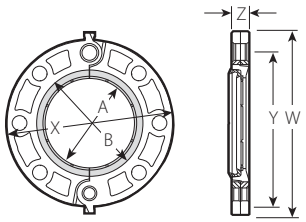
[1] Standard gasket approved for dry pipe systems to –40°F (–40°C). Based on "typical" pipe surface conditions, supplemental lubricant is recommended for services installed below 0°F (-18°C) and for all dry pipe systems or systems to be subjected to air tests prior to being filled with water. Supplemental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

4.0 DIMENSIONS

Style 744

Sizes 2 – 8" (50 – 200 mm)

ANSI Class 125 and 150 Flange



Pipe Size						Sealing Surface						Weight
Nominal Diameter inches mm	Actual Outside Diameter inches mm	Maximum Working Pressure psi kPa	Maximum End Load lbs N	No. Bolts[2] Req'd.	Bolt Size[2] inches	A Max.	B Min.	W	X	Y	Z	Approx. Each
2 50	2.375 60.3	175 1200	775 3450	4	⅝ x 2¾	2.38 60	3.41 87	6.75 172	6.00 152	4.75 121	0.75 19	2.7 1.2
2½ 65	2.875 73.0	175 1200	1135 5050	4	⅝ x 3	2.88 73	3.91 99	7.88 200	7.00 178	5.50 140	0.88 22	4.2 1.9
3 80	3.500 88.9	175 1200	1685 7500	4	⅝ x 3	3.50 89	4.53 115	8.44 214	7.50 191	6.00 152	0.94 24	4.8 2.2
4 100	4.500 114.3	175 1200	2780 11045	8	⅝ x 3	4.50 114	5.53 141	9.94 252	9.00 229	7.50 191	0.94 24	7.1 3.2
5 125	5.563 141.3	175 1200	4250 18920	8	¼ x 3½	5.56 141	6.71 171	11.00 279	10.00 254	8.50 216	1.00 25	8.3 3.8
6[3] 150	6.625 168.3	175 1200	6030 26840	8	¼ x 3½	6.63 168	7.78 198	12.00 305	11.00 279	9.50 241	1.00 25	9.3 4.2
8[3] 200	8.625 219.1	175 1200	10219 45475	8	¼ x 3½	8.63 219	9.94 252	14.63 372	13.50 343	11.75 297	1.13 29	13.9 6.3

[2] Total bolts required to be supplied by installer. Bolt sizes for conventional flange-to-flange connection. Larger bolts are required when Vic-Flange adapter is utilized with wafer-type valves.

[3] Not available with Vic-Plus gasket system. Lubrication is required.

NOTES

- Working Pressure and End Load are total, from all internal and external loads, based on standard weight 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 1 ½ times the figures shown.
- Style 744 FireLock Flange adapters provide rigid joints when used on pipe with standard roll or cut groove dimensions and consequently allow no linear or angular movement at the joint.
- WARNING: Depressurize and drain the piping system before attempting to install, remove, or adjust any Victaulic piping products.

5.0 PERFORMANCE

Not applicable. Contact Victaulic for more information.

6.0 NOTIFICATIONS

Important Installation Considerations

1. The Style 744 (2 – 8"/50 – 200 mm) design incorporates small teeth inside the key shoulder I.D. to prevent rotation.
2. FireLock Flange adapter should not be used on FireLock fittings. When wafer or lug-type valves are used adjoining a Victaulic fitting, check disc dimensions to assure proper clearance.
3. FireLock Flange adapters should not be used as anchor points for tie-rods across nonrestrained joints. Mating rubber faced flanges, valves, etc. require the use of a FireLock Flange washer.
4. Area A-B noted in the above drawing must be free from gouges, undulations or deformities of any type for effective sealing.
5. FireLock Flange adapter gaskets must always be assembled with the color coded lip on the pipe and the other lip facing the mating flange.
6. Flange Washers: FireLock 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 Flange Washer be inserted between the FireLock 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 standard flat flange gasket should be used adjacent to the serrated flange and then the Flange Washer is inserted between the FireLock 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 FireLock Flange adapter.

C. When mating a rubber faced flange: the Flange Washer is placed between the FireLock Flange adapters and the rubber faced flange.

D. When mating AWWA cast flanges to IPS flanges: the Flange Washer is placed between two FireLock Flanges. The hinge points must be oriented approximately 90° to each other. If one flange is not a FireLock Flange adapter (e.g. flanged valve), then a standard flat flange gasket must be placed adjacent to that flange and the Flange Washer inserted between the flange gasket and the FireLock Flange adapter.

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. When mating to a Series 705-W Butterfly valve, Style 744 may only be used on one side of the connection.

When ordering Flange Washers, always specify product style (Style 744) and size to assure proper Flange Washer is supplied.

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: Regulatory Approval Reference Guide

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.

Intellectual Property Rights
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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.

Trademarks
Victaulic and all other Victaulic marks are the trademarks or registered trademarks of Victaulic Company, and/or its affiliated entities, in the U.S. and/or other countries.

11-A 6"x 2" ALUMINUM SPRINKLER IDENTIFICATION SIGNS

All signs .020 Aluminum - Available as generic signs or personalized

AIR CONTROL 50-10-010	COMBINATION STANDPIPE 50-10-088	FIRE DEPARTMENT CONNECTION 50-10-189	IN THIS BUILDING 50-10-250	OPEN SPRINKLER CONTROL 50-10-300	TEST & DRAIN 50-10-355
AIR LINE 50-10-020	CONTROL VALVE 50-10-100	FIRE SPRINKLER ALARM 50-10-220	IN THIS SECTION 50-10-260	OPEN SPRINKLER DRAIN 50-10-310	TEST VALVE 50-10-380
ALARM LINE 50-10-030	DO NOT CLOSE 50-10-129	FIRE SPRINKLER PIPE 50-10-221	LOW POINT DRAIN 50-10-275	OPEN VALVE 50-10-312	WATER MOTOR LINE 50-10-390
ALARM TEST 50-10-040	DRAIN 50-10-130	FIRE SPRINKLER CONTROL VALVE 50-10-224	MAIN CONTROL 50-10-280	SPRINKLER 50-10-317	WET STANDPIPE 50-10-400
ANTI-FREEZE SYSTEM 50-10-045	DRAIN VALVE 50-10-140	FIRE SPRINKLER VALVE 50-10-225	MAIN DRAIN 50-10-290	SPRINKLER VALVE ROOM 50-10-340	WET STANDPIPE SHUTOFF 50-10-420
AUTOMATIC SPRINKLER SHUTOFF 50-10-050	DRY STANDPIPE 50-10-150	FIRE SPRINKLER RISER INSIDE 50-10-228	NORMALLY CLOSED 50-10-293	STANDPIPE SYSTEM 50-10-350	50-10-425
AUXILIARY DRAIN 50-10-070	ENTIRE SYSTEM 50-10-160	INSPECTORS TEST 50-10-270	OPEN SPRINKLER 50-10-297		

.020 Aluminum • Holes drilled in corners • Zinc Plated Sign Chain Available

11-B IDENTIFICATION DECALS

White Vinyl Decals with Bright Red Print • Available as generic signs or personalized

AIR CONTROL 50-20-010	ANTI-FREEZE SYSTEM 50-20-045	FIRE EXTINGUISHER 50-20-200	INSPECTOR'S TEST 50-20-270	TEST & DRAIN 50-20-355
AIR LINE 50-20-020	AUXILIARY DRAIN 50-20-070	FIRE DEPARTMENT VALVE 50-20-201	MAIN CONTROL 50-20-280	WATER MOTOR LINE 50-20-390
ALARM LINE 50-20-030	CONTROL VALVE 50-20-100	FIRE HOSE 50-20-200	MAIN DRAIN 50-20-290	SPRINKLER 50-20-541
ALARM TEST 50-20-040	DRAIN VALVE 50-20-140	FIRE SPRINKLER PIPE 50-20-221	OPEN SPRINKLER CONTROL 50-20-297	SPRINKLER 50-20-542
		FIRE PROTECTION 8" x 2" 50-20-219	SPRINKLER 50-20-317	50-20-410

11-C 4"x 6" ALUMINUM SPRINKLER IDENTIFICATION SIGNS

COMBINATION STANDPIPE SHUTOFF 50-10-090	FIRE DEPARTMENT CONNECTION 50-10-191	FIRE DEPARTMENT CONNECTION AUTOMATIC SPRINKLER 50-10-191	FIRE DEPARTMENT CONNECTION (STANDPIPE) 50-10-215	WET STANDPIPE SHUT-OFF 50-10-410	WET STANDPIPE CONTROL 50-10-411

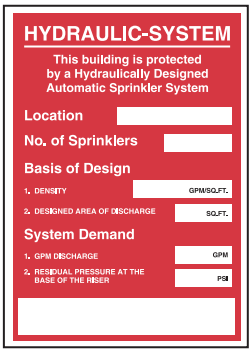
SPRINKLER IDENTIFICATION SIGNS

12-A 5"x 7" HYDRAULIC SYSTEM SIGNS

Bright Red Background with White Copy and Boxes Available in Three different styles:

- **.020 Aluminum with holesdrilled in corners** *(50-10-240)*
- **Vinyl with adhesive back** *(50-20-240)*
- **Embossible silver foil with adhesive back** *(50-30-240)*

Also available with custom personalization.



generic

personalized

12-B 9"x 7" ALUMINUM SPRINKLER IDENTIFICATION SIGNS

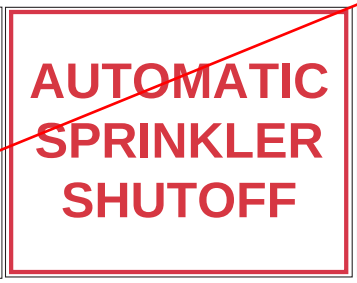
50-10-120

50-10-171

50-10-322

50-10-125

50-10-351



50-10-060

50-10-360

Zinc-Plated Sign Chain
100 ft. box
(50-99-100)

12-C MISCELLANEOUS ALUMINUM SPRINKLER SIGNS

3" x 8" 50-10-214

3" x 8" 50-10-227

3" x 8" 50-10-081

FDC Wallplate
cast aluminum or plastic
50-15-200

6" x 12" 50-10 -329

6" x 12" 50-10-061

6" Round
Aluminum Bell Sign
50-10-172

Cast Aluminum 3" x 8" 50-10-195

4" x 12" 50-10-271

12" x 24" 50-10-342

data sheet

ARGCO

GUARANTEED

FIRE SPRINKLER SPARE HEADBOXES

Heavy gauge steel construction

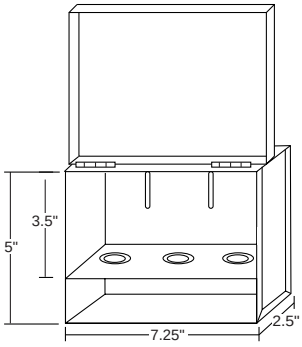
Knockouts and shelf to accommodate any 1/2” or 3/4” sprinkler head

All-welded construction and full length hinge

Red powder coated finish

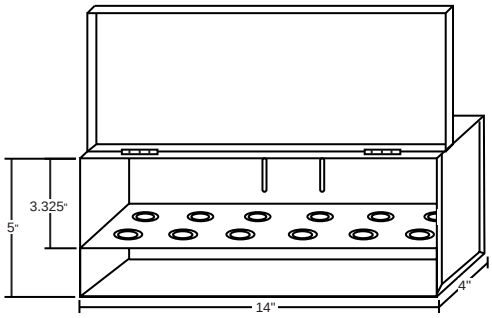
Slotted for easy mounting with screws, rivets or strapping

3 Head Box



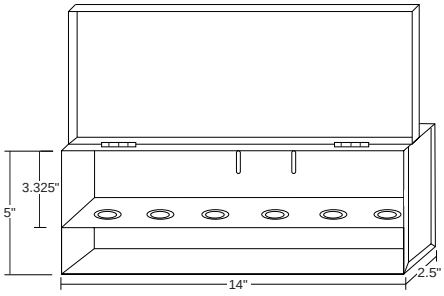
(65-10-152)

12 Head Box



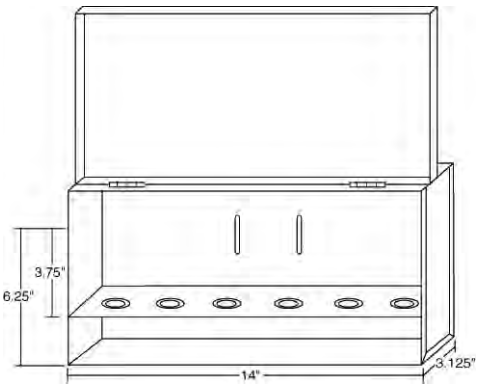
(65-10-150)

6 Head Box



(65-10-151)

6 Large Head Box



(65-10-151A)

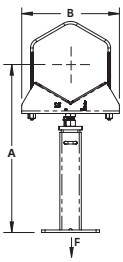
FOR MORE INFORMATION CALL ARGCO AT 1-800-854-1015
OR LOG ONTO WWW.ARGCO.COM

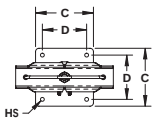
Telescoping Pipe Stand





- Supports and fastens low to the ground horizontal pipe runs
- Complete out-of-the-box assembly provides a compact solution, simplifying material handling and reducing the amount of storage space required
- Designed to minimize fabrication and reduce the installation time of a complete stand by up to 80%
- Telescoping post provides fast vertical height adjustment
- V-bolt fastener accommodates multiple pipe sizes, reducing inventory by over 65%
- Easy "push-to-install" nVent CADDY Rod Lock feature allows the V-bolt to assemble quickly
- Integrated weep hole at bottom of stand provides drainage for condensation
- Includes four holes for anchoring base to floor
- Conforms with Federal Specification WW-H-171 (Type 37, 38), Manufacturers Standardization Society ANSI®/MSS-SP-58 (Type 37)





Material: Steel
Finish: Electrogalvanized
Static Load Safety Factor: 3.5:1

Part Number	Pipe Size	A	B	C	D	Hole Size HS	Static Load F
CTS04	1" – 8"	20" – 40 1/2"	6 1/2"	6 1/2"	5"	9/16"	1,370 lb
CTS10	5" – 24"	23" – 49 7/8"	14 3/8"	8 1/2"	6 1/2"	9/16"	1,740 lb

Part Number	With V-Bolt	Pipe Size	A
CTS04	Yes	1"	20" - 36 1/4"
		1 1/4"	20 1/4" - 36 1/2"
		1 1/2"	20 3/8" - 36 5/8"
		2"	20 5/8" - 36 7/8"
		3"	21 1/4" - 37 1/2"
		4"	21 7/8" - 38 1/8"
	No	5"	22 1/2" - 38 3/4"
		6"	23 1/8" - 39 1/4"
		8"	24 1/4" - 40 1/2"

Part Number	With V-Bolt	Pipe Size	A
CTS10	Yes	5"	23" - 39 1/4"
		6"	23 1/2" - 40"
		8"	24 3/4" - 41"
		10"	26" - 42 1/4"
	No	12"	27 1/4" - 43 3/8"
		14"	27 7/8" - 44 1/8"
		16"	29 1/8" - 45 1/4"
		18"	30 1/4" - 46 3/8"
		20"	31 3/8" - 47 1/2"
		24"	33 5/8" - 49 7/8"

When insulating pipe install V-bolt after insulation.

Telescoping pipe stand can accommodate pipes up to 24" when v-bolt is removed. Installer must determine weight of the pipe and proper spacing when supporting larger sizes.

BELLS

PBA-AC & PDC-DC

Features

- Listed for indoor and outdoor use
- Outdoor use requires BBK-1 or HC-BB weatherproof back box
- Indoor use mounts directly to standard 4” box
- Low current draw
- High dB output
- AC and DC models
- DC models are motor driven, polarized, and have built in transient protection for supervised alarm circuits
- Available in 6”, 8” and 10” sizes

* ULC on PDC-DC Only
** FM on PBA-AC Only

Description

These vibrating type bells are designed for use as fire 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 or HC-BB weatherproof backbox for outdoor applications. Weatherproof backbox model BBK-1 or HC-BB, 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 PDC-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	PDC-6-12	1750500	200mA	96	76
8 (200)	12VDC	PDC-8-12	1750502	.200mA	96	77
10 (250)	12VDC	PDC-10-12	1750504	.200mA	96	78
6 (150)	24VDC	PDC-6-24	1750501	.20mA	95	77
8 (200)	24VDC	PDC-8-24	1750503	20mA	83	79
10 (250)	24VDC	PDC-10-24	1750505	20mA	85	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.

Technical Specifications

Dimensions	6” (150mm), 8” (200mm) and 10” (250mm)
Enclosure	Cover: Steel Finish: Red Powder Coat Base: non-corrosive composite material All parts have corrosion resistant finishes Model BBK-1 or HC-BB weatherproof backbox (optional)
Voltages Available	24VAC 120VAC 12VDC (10.2 to 15.6) Polarized 24VDC (20.4 to 31.2) Polarized
Environmental Limitations	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 - 18 AWG stranded wire
Service Use	NFPA 13, 72, local AHJ

*Specifications subject to change without notice.

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.

WARNING

In outdoor or wet installations, bell must be mounted with weatherproof backbox, BBK-1 or HC-BB. 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.

Installation

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.

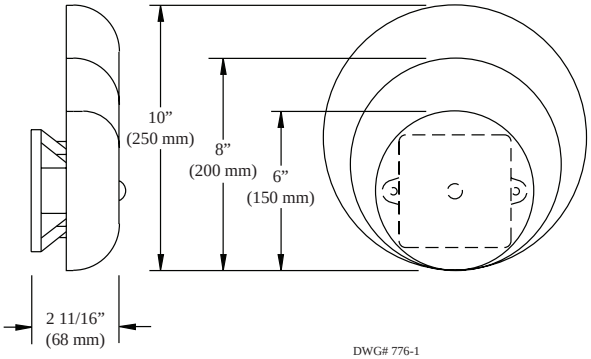
1. Remove the gong.
2. Connect wiring (see Fig. 3).
3. Mount bell mechanism to backbox (bell mechanism must be mounted with the striker pointing down).
4. Reinstall the gong (be sure that the gong positioning pin, in the mechanism housing, is in the hole in the gong).
5. Test all bells for proper operation 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 ringing.

Bell Dimension Inches (mm)

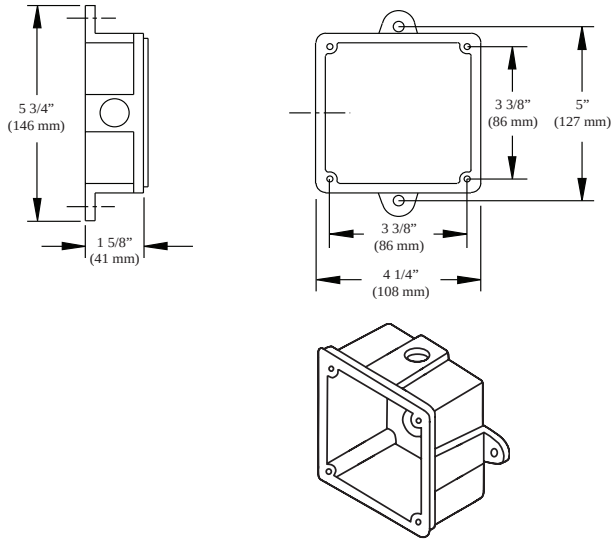
Fig 1



Weatherproof Backbox Dimensions Inches (mm)

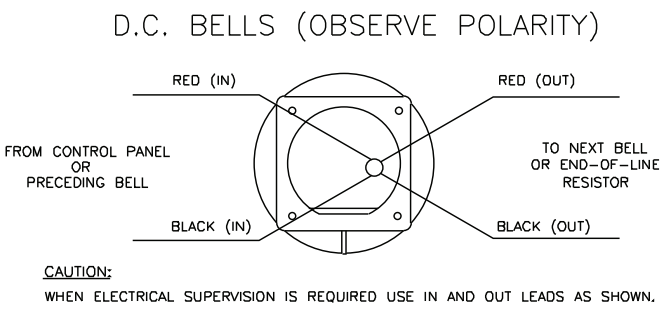
MODEL BBK-1 OR HC-BB

Fig 2



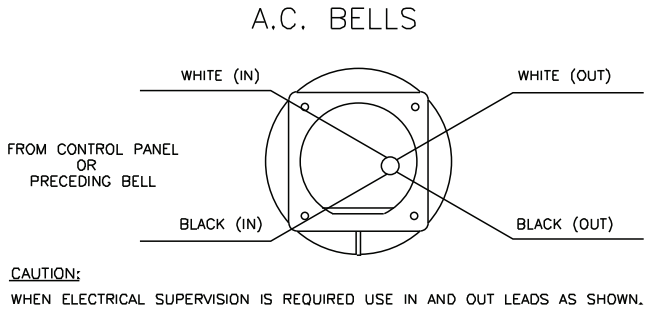
Wiring Rear View

Fig 3



NOTES:

1. OBSERVE POLARITY TO RING D.C. BELLS.
2. RED WIRES POSITIVE (+).
3. BLACK WIRES NEGATIVE (-).
4. EOL RESISTOR IS SUPPLIED BY FIRE ALARM CONTROL PANEL.



NOTES:

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