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Fairway Pointe BLDG 17

FIRE SPRINKLER PRODUCT DATA

7/2/2020



TECHNICAL DATA

QUICK RESPONSE DRY HORIZONTAL SIDEWALL 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



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

1. DESCRIPTION

Viking Quick Response Dry Horizontal Sidewall 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 HSW 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.)

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 106c for cULus Listing requirements, and refer to Approval Chart 2 and Design Criteria on page 106d for FM Approval requirements that must be followed.

3. TECHNICAL DATA

Specifications:

Available since 1993.

Minimum Operating Pressure: 7 psi (0.5 bar)

Maximum Working Pressure: 175 psi (12 bar).

Factory tested hydrostatically to 500 psi (34.5 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. Patent numbers: 8,636,075 and 8,376,060 and 10,220,231

Material Standards:

Frame Casting: Brass UNS-C84400

Deflector: Phosphor Bronze UNS-C51000

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

Recessed Dry Escutcheons: Cold Rolled Steel UNS-G10080

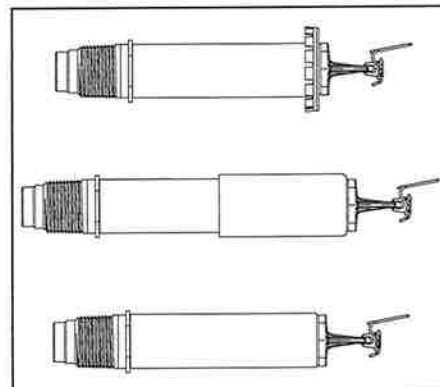
ENT Coated Adjustable and Recessed Escutcheons: Stainless Steel UNS-S30400

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

Order QR Dry HSW 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 wall in which it is to be installed.

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 HSW up to 65-1/2" (1,664 mm). Adjustable Standard Dry HSW up to 63-1/2" (1,613 mm). Plain Barrel Dry HSW up to 65" (1,651 mm). Contact the manufacturer for more information.



For Light Hazard Occupancies Only



	TECHNICAL DATA	QUICK RESPONSE DRY HORIZONTAL SIDEWALL SPRINKLERS
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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
 Escutcheon Suffix = Y for the adj. recessed sprinkler with the Model G-1 Escutcheon (no suffix needed for the Model E-1 Escutcheon).
 For example, sprinkler VK102 with 1" NPT Threads, a Chrome finish, a 155 °F (68 °C) temperature rating, the Model G-1 Escutcheon, and "A" length of 10" = Part No. 08386UFBY10.

Available Finishes And Temperature Ratings: Refer to Table 1.

Accessories: (Also refer to the "Sprinkler Accessories" section.)

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

Dry Sprinkler Protective Cover: Part No. 15610

Replacement Escutcheons:

- A. Adjustable Standard Dry Escutcheon: Base Part No. 08086F
- B. Model E-1 Recessed Dry Escutcheon Cup: Base Part No. 05459A

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 water-way. 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

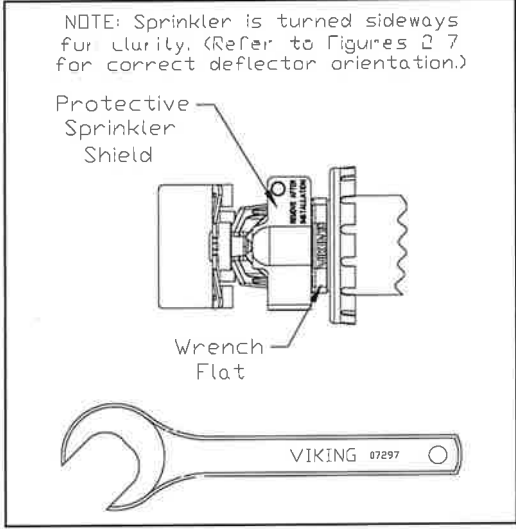
Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.

7. AVAILABILITY

The Viking Quick Response Dry Horizontal Sidewall 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 1:
Standard Sprinkler Wrench 07297W/B**

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.			



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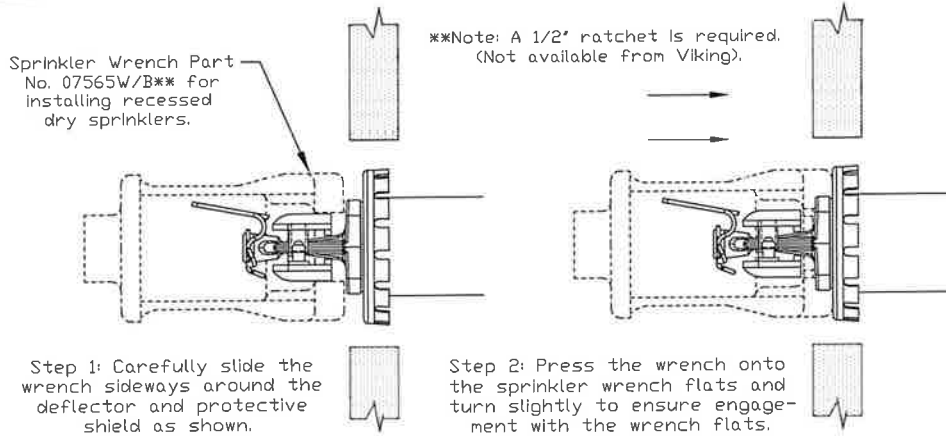


Figure 2: Wrench 07565W/B for Adjustable Recessed Dry Horizontal Sidewall Sprinklers

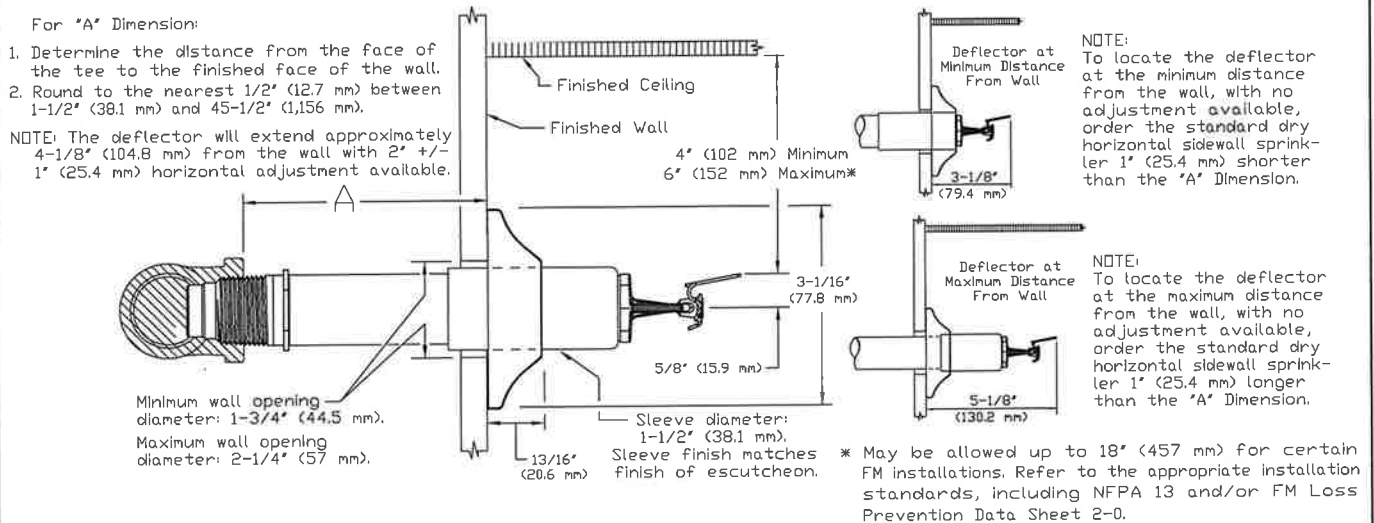


Figure 3: Adjustable Standard Dry Horizontal Sidewall Sprinkler

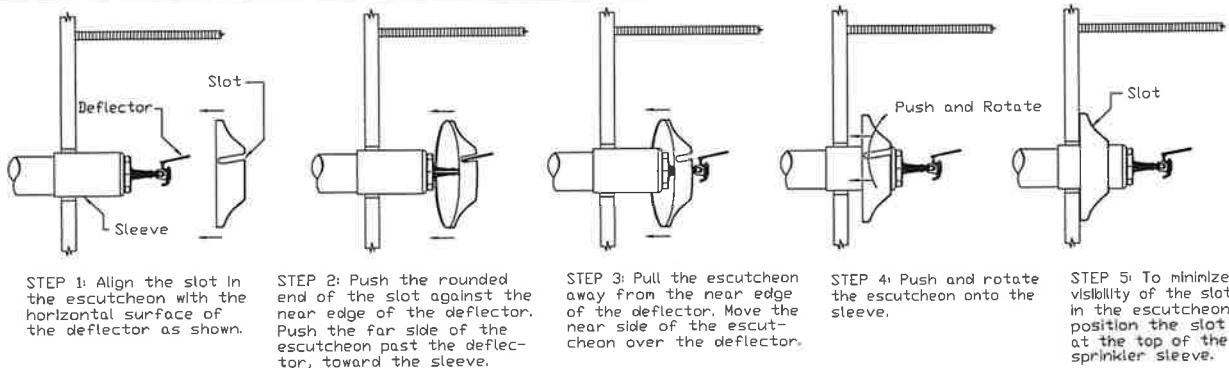


Figure 4: Adjustable Standard Escutcheon Installation

	TECHNICAL DATA	QUICK RESPONSE DRY HORIZONTAL SIDEWALL SPRINKLERS
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Approval Chart 1 (UL) Quick Response Dry Horizontal Sidewall Sprinklers For Light Hazard Occupancies Only Maximum 175 PSI (12 bar) WWP	<table border="1" style="border-collapse: collapse;"> <tr> <td style="padding: 2px;">Temperature</td> <td style="text-align: center;">KEY</td> </tr> <tr> <td style="padding: 2px;">Finish</td> <td></td> </tr> <tr> <td style="padding: 2px;">A1X ← Escutcheon (if applicable)</td> <td></td> </tr> </table>	Temperature	KEY	Finish		A1X ← Escutcheon (if applicable)	
Temperature	KEY						
Finish							
A1X ← Escutcheon (if applicable)							

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 on page 106e.)					
			NPT	BSP	U.S.	metric ³	Inches	mm	cULus ⁵	NYC ⁶	VdS	LPCB	CE	⊙
08384U	VK178	Adjustable	1"	--	5.6	80.6	1/2"	12.7	A1, A5	A1	--	--	--	--
16458U		Standard	--	25 mm	--	80.6	1/2"	12.7	A1, A5	--	--	--	--	--
08386U	VK182	Adjustable	1"	--	5.6	80.6	1/4"	6.35	B2, B6	B2	--	--	--	--
16454U		Recessed	--	25 mm	--	80.6	1/4"	6.35	B2, B6	--	--	--	--	--
08388U	VK174	Plain Barrel	1"	--	5.6	80.6	1/2"	12.7	A3	A4	--	--	--	--
16456U			--	25 mm	--	80.6	1/2"	12.7	A3	--	--	--	--	--

<p style="text-align: center;">Approved Temperature Ratings</p> <p>A - 155 °F (68 °C), 175 °F (79°C), 200 °F (93 °C), and 286 °F (141 °C)</p> <p>B - 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C)</p>	<p style="text-align: center;">Approved Finishes and "A" Dimensions</p> <p>1* - Chrome, or White Polyester⁷ sprinkler with a Chrome, Brass, or White Polyester Sleeve and Escutcheon with "A" dimensions 1-1/2" to 45-1/2" (38.1 mm to 1,156 mm)</p> <p>2* - Chrome, or White Polyester⁷ with "A" dimensions 3-1/4" to 47-1/2" (82.5 mm to 1,207 mm)</p> <p>3 - Chrome, Brass, White Polyester⁷, or ENT⁷ with "A" dimensions 3" to 47" (76.2 mm to 1,194 mm)</p> <p>4 - Chrome or Brass with "A" dimensions 3" to 47" (76.2 mm to 1,194 mm)</p> <p>5 - ENT⁷ sprinkler with an ENT⁷ Sleeve and Escutcheon with "A" dimensions 1-1/2" to 45-1/2" (38.1 mm to 1,156 mm)</p> <p>6 - ENT⁷ with "A" dimensions 3-1/4" to 47-1/2" (82.5 mm to 1,207 mm)</p> <p>*Brass Finish is listed and approved but not standard offering, lead times of 6-8 weeks required. (Matching Brass escutcheons are not available.)</p>
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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 shown is for use 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 for Light Hazard occupancies only.

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-BI tees. When selecting other CPVC fittings, contact Viking Technical Services.

- cULus Listing Requirements:**
- Quick Response Dry Horizontal Sidewall 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.
- Limited to Light Hazard occupancies only.
 - 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).
 - Deflector must be positioned between 4" and 6" (102 mm and 152 mm) below the ceiling. Keep the top of the deflector oriented 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 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.

	TECHNICAL DATA	QUICK RESPONSE DRY HORIZONTAL SIDEWALL SPRINKLERS
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Approval Chart 2 (FM) Quick Response Dry Horizontal Sidewall Sprinklers For Light Hazard Occupancies Only Maximum 175 PSI (12 bar) WWP	<table border="1" style="border-collapse: collapse;"> <tr> <td style="padding: 2px;">  Temperature </td> <td rowspan="3" style="text-align: center; vertical-align: middle;">KEY</td> </tr> <tr> <td style="padding: 2px;">  Finish </td> </tr> <tr> <td style="padding: 2px;">  Escutcheon (if applicable) </td> </tr> </table>	 Temperature	KEY	 Finish	 Escutcheon (if applicable)
 Temperature	KEY				
 Finish					
 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	
08384U	VK178	Adjustable Standard	1"	--	5.6	80.6	1/2"	12.7	A1
16458U			--	25 mm	--	80.6	1/2"	12.7	A1
08386U	VK182	Adjustable Recessed	1"	--	5.6	80.6	1/4"	6.35	B2
16454U			--	25 mm	--	80.6	1/4"	6.35	B2
08388U	VK174	Plain Barrel	1"	--	5.6	80.6	1/2"	12.7	A3
16456U			--	25 mm	--	80.6	1/2"	12.7	A3

<p style="text-align: center;">Approved Temperature Ratings</p> <p>A - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), and 286 °F (141 °C)</p> <p>B - 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C)</p>	<p style="text-align: center;">Approved Finishes and "A" Dimensions</p> <p>1* - Bright Brass, Chrome, White Polyester, or ENT⁵ with "A" dimensions 1-1/2" to 45-1/2" (38.1 mm to 1,156 mm)</p> <p>2* - Bright Brass, Chrome, White Polyester, or ENT⁵ with "A" dimensions 3-1/4" to 47-1/2" (82.5 mm to 1,207 mm)</p> <p>3 - Brass, Bright Brass, Chrome, White Polyester, or ENT⁵ "A" dimensions 3" to 47" (76.2 mm to 1,194 mm)</p> <p>*Brass Finish is listed and approved but not standard offering, lead times of 6-8 weeks required. (Matching Brass escutcheons are not available.)</p>
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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 shown is for use 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-BI tees. When selecting other CPVC fittings, contact Viking Technical Services.

FM Approval Requirements:

The Dry HSW 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 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.



TECHNICAL DATA

QUICK RESPONSE
DRY HORIZONTAL
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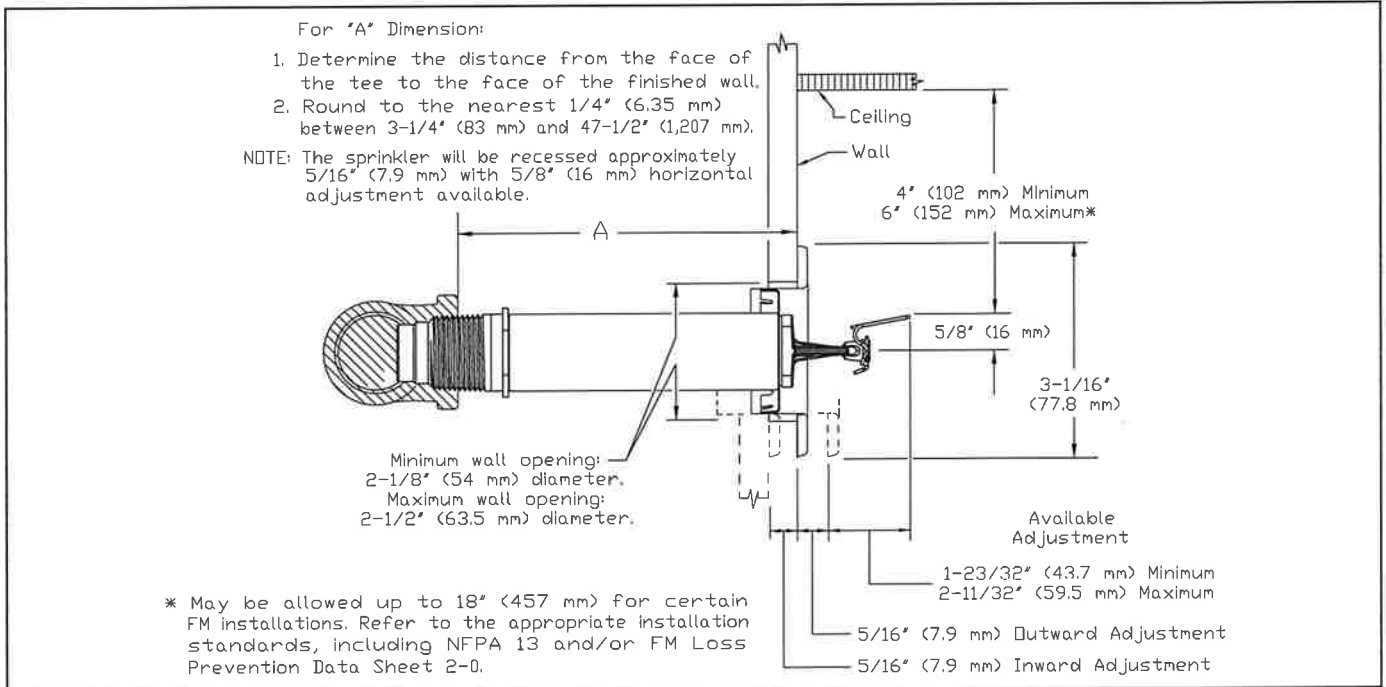


Figure 5: Adjustable Recessed Dry Horizontal Sidewall Sprinkler with the Model E-1 Escutcheon

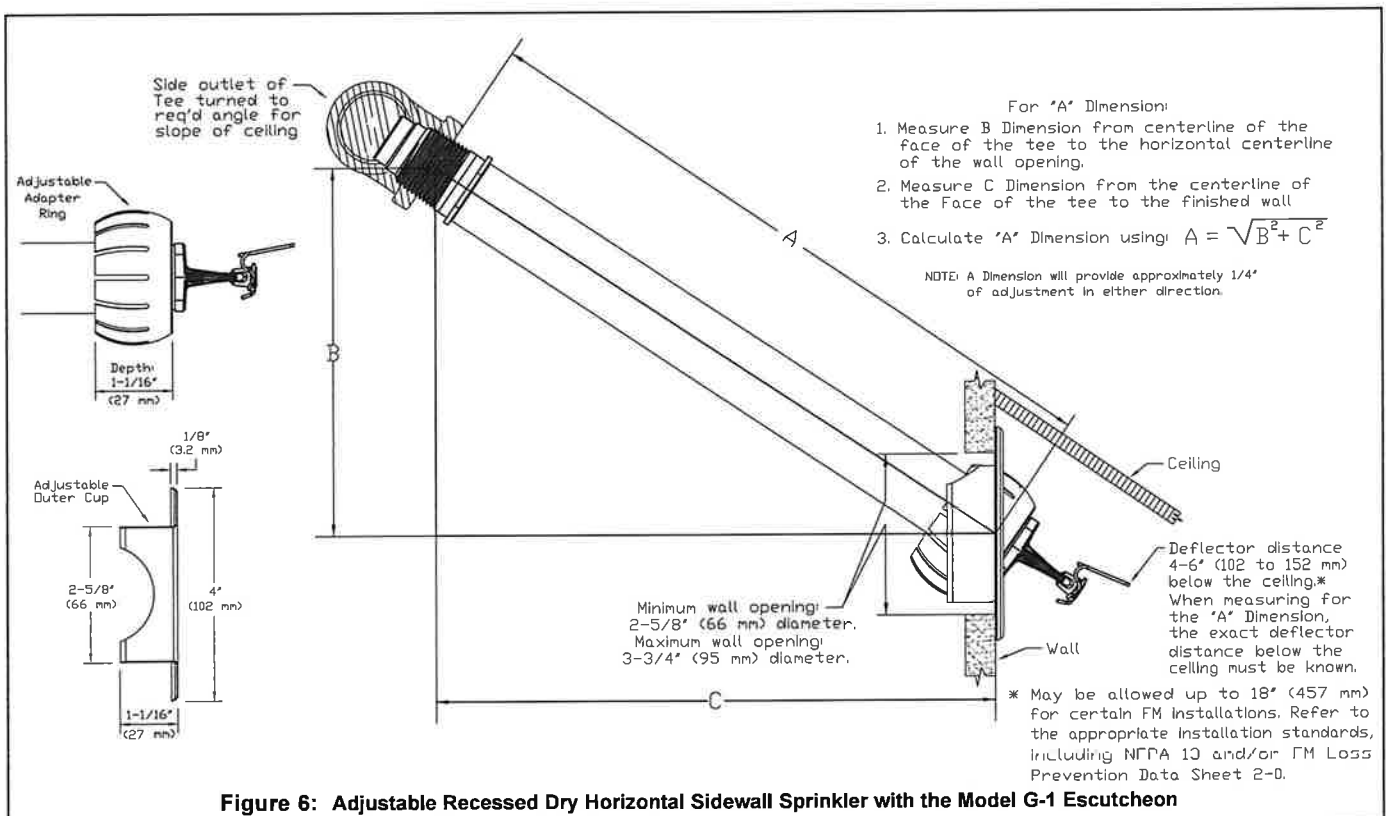


Figure 6: Adjustable Recessed Dry Horizontal Sidewall Sprinkler with the Model G-1 Escutcheon



TECHNICAL DATA

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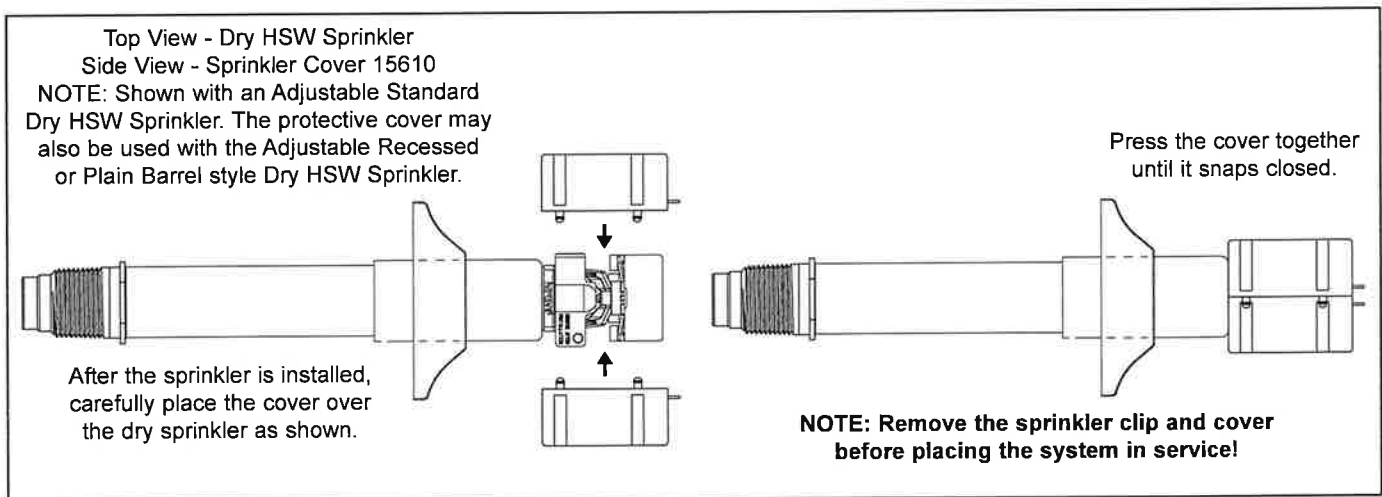
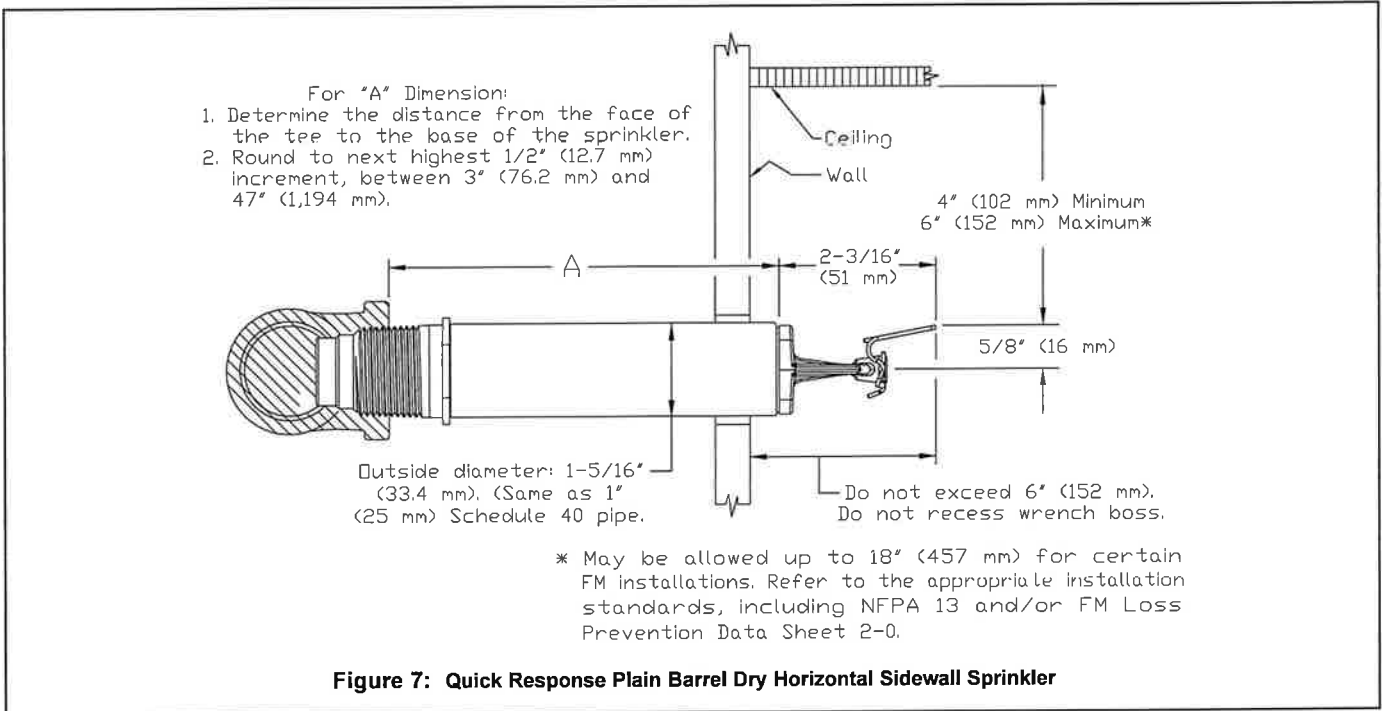


Figure 8: Dry Horizontal Sidewall Sprinkler Cover Part Number 15610 (shown with an Adjustable Standard Dry HSW Sprinkler) (Optional for temporary use with Viking Dry HSW Sprinklers until finish work is completed around the sprinkler.)



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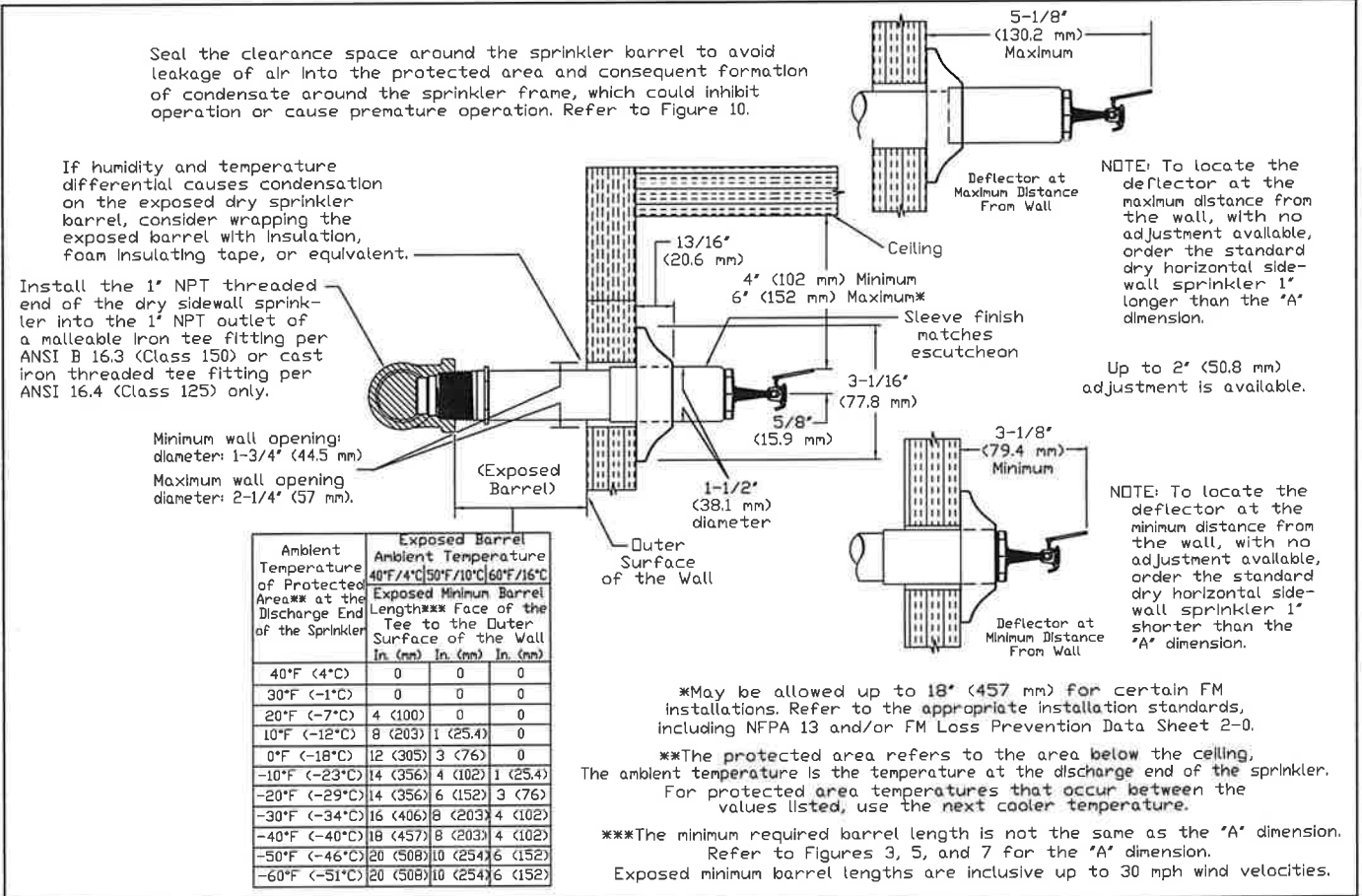


Figure 9: Dry Horizontal Sidwall Sprinkler Required Minimum Barrel Length Based on Ambient Temperature in the Protected Area (Adjustable Standard Dry HSW Sprinkler is Shown)

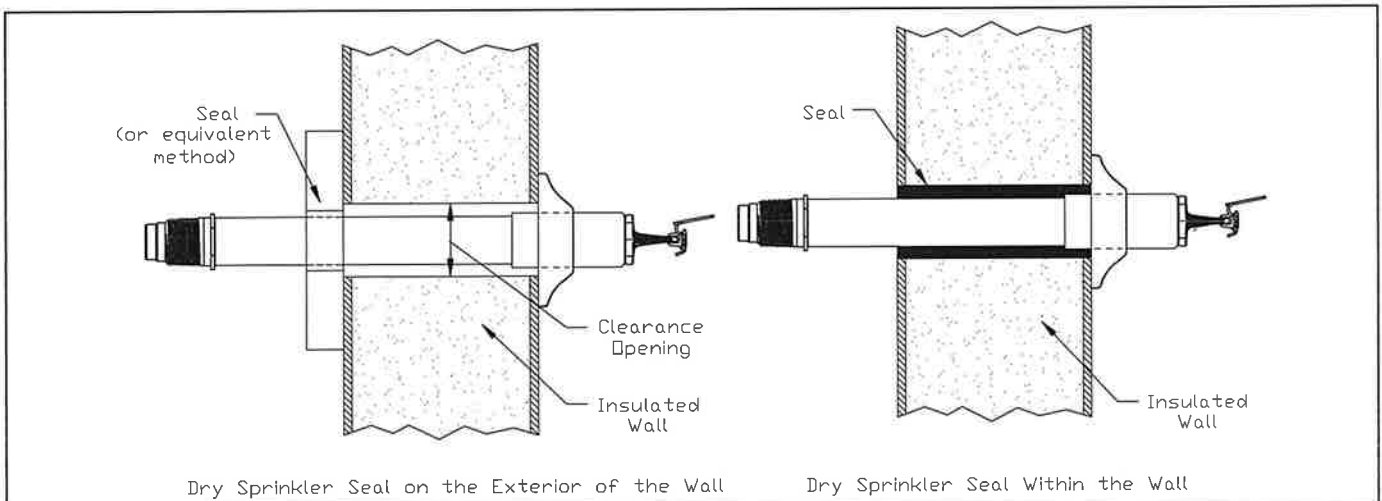


Figure 10: Dry Sprinkler Seal (Adjustable Standard Dry HSW Sprinkler is Shown)



TECHNICAL DATA

VK3021 QUICK RESPONSE PENDENT SPRINKLER (K5.6)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

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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.

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 (17.2 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.



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

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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

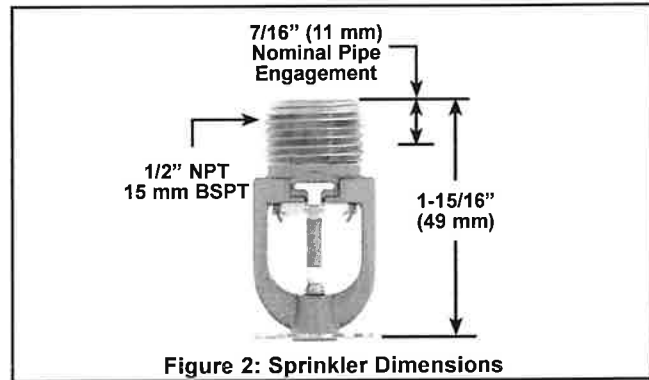
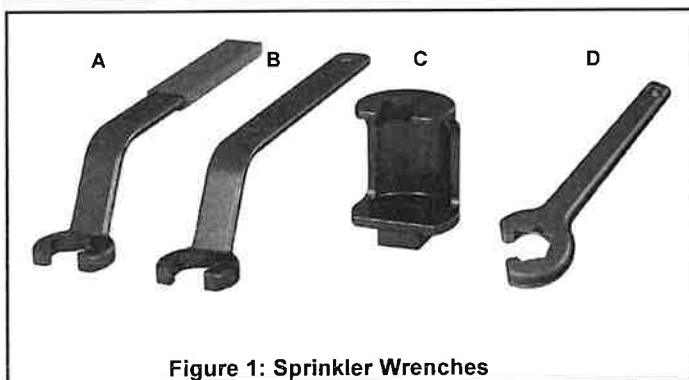
Example: 19917MB/W = VK3021 with White Polyester Finish and 155 °F (68 °C) Nominal temperature rating. This sprinkler is to be installed into an area with a maximum ambient temperature of 100 °F (38 °C) meaning if the area will experience temperatures above the maximum ambient rating, you shall use a 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/B² (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 corrosion-proofing 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 (17.2 bar) WWP.





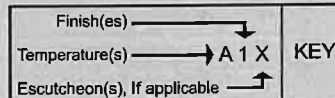
TECHNICAL DATA

VK3021 QUICK RESPONSE PENDENT SPRINKLER (K5.6)

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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 (17.2 bar)	A1, B2X, B3Y	175 PSI (12 bar)
23101	1/2	--	A1, B2X, B3Y	250 PSI (17.2 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}

Approved Escutcheon Code:

X = Installed with Viking Recessed Escutcheons Models NP-1, NP-2, and NP-3, or Viking Standard Surface Mounted Escutcheons
Y = Installed with Viking Model NP-1 Recessed Escutcheon OR Standard Surface Mounted Escutcheons

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.



TECHNICAL DATA

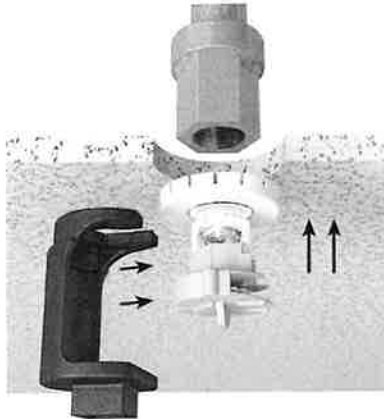
VK3021 QUICK RESPONSE PENDENT SPRINKLER (K5.6)

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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.

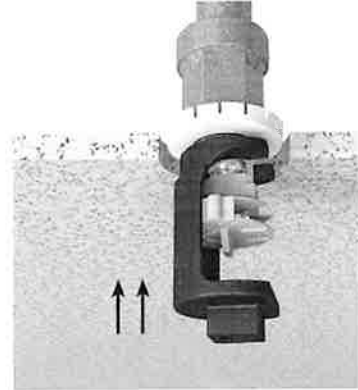
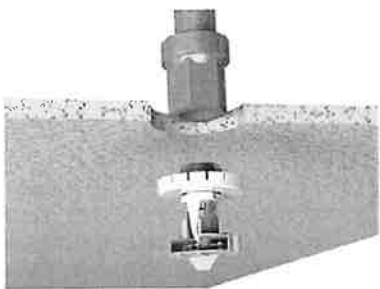


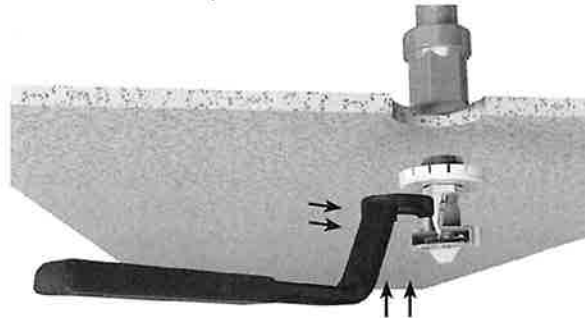
Figure 3: Recessed Installation (with Recessed Socket Wrench)

**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)

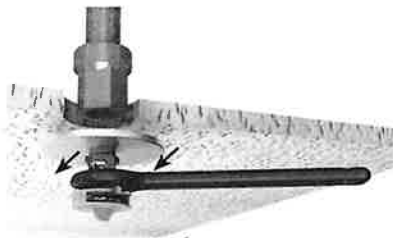


TECHNICAL DATA

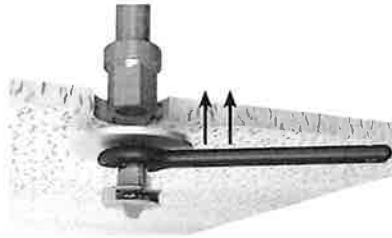
**VK3021 QUICK RESPONSE
PENDENT SPRINKLER (K5.6)**

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
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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.

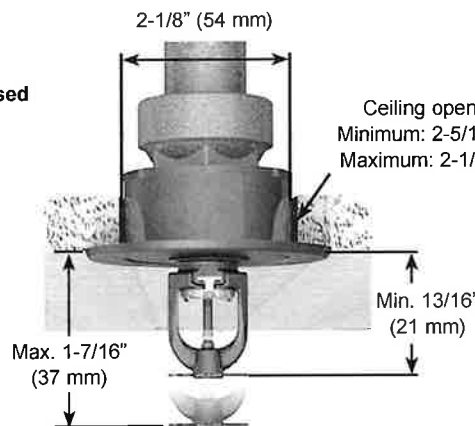


3. Install the sprinkler and escutcheon assembly into the pipe fitting. Be sure the escutcheon contacts the surface of the finished ceiling.



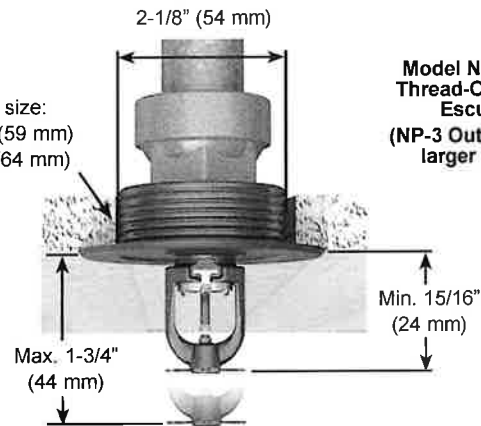
Figure 5: Installation (with Straight Wrench)

Model NP-1 Recessed Escutcheon

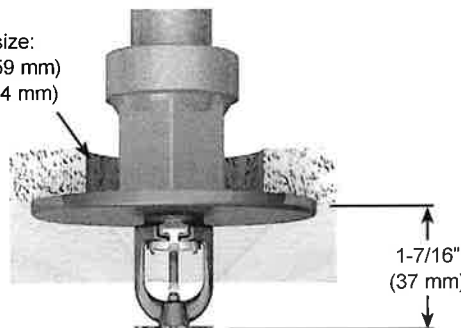


Ceiling opening size:
 Minimum: 2-5/16" (59 mm)
 Maximum: 2-1/2" (64 mm)

**Model NP-2 or NP-3
 Thread-On Recessed Escutcheon
 (NP-3 Outer ring has a larger diameter)**



Ceiling opening size:
 Minimum: 2-5/16" (59 mm)
 Maximum: 2-1/2" (64 mm)



Standard Surface-Mounted Escutcheon

Figure 6: Installation Dimensions with Viking Escutcheons



TECHNICAL DATA

FREEDOM® RESIDENTIAL PENDENT SPRINKLER VK468 (K4.9)

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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1. DESCRIPTION

Viking Freedom® Residential Pendent Sprinkler VK468 is a small, thermosensitive, glass-bulb residential sprinkler available in several different finishes and temperature ratings to meet varying design requirements. The Electroless Nickel PTFE (ENT) coating has been investigated for installation in corrosive atmospheres and is C-UL-US-EU Listed as corrosion resistant as indicated in the Approval Chart. The orifice design, with a K-Factor of 4.9 (70.6 metric†), allows efficient use of available water supplies for the hydraulically designed fire-protection system. The glass bulb operating element and special deflector characteristics meet the challenges of residential sprinkler standards.



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

2. LISTINGS AND APPROVALS

UL Listed (C-UL-US-EU): Category VKKW

VdS Approved

NYC Approved: MEA 89-92-E, Volume 35

UL Classified to: NSF/ANSI Standard 61, Drinking Water System Components (MH48034).

Refer to the Approval Chart and Design Criteria for C-UL-US-EU Listing requirements that must be followed.

3. TECHNICAL DATA

Specifications:

Available since 2006.

Minimum Operating Pressure: Refer to the Approval Chart.

Maximum Working Pressure: 175 psi (12 bar). Factory tested hydrostatically to 500 psi (34.5 bar).

Thread size: 1/2" (15 mm) NPT

Nominal K-Factor: 4.9 U.S. (70.6 metric†)

†Metric K-factor measurement shown is 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)

Overall Length: 2-1/4" (58 mm)

Material Standards:

Frame Casting: Brass UNS-C84400 or QM Brass

Deflector: Brass UNS-C23000, Phosphor Bronze UNS-C51000, or Brass UNS-C26000

Bulb: Glass, nominal 3 mm diameter

Belleville Spring Sealing Assembly: Nickel Alloy, coated on both sides with Polytetrafluoroethylene (PTFE) Tape

Pip Cap and Insert Assembly: Copper UNS-C11000 and Stainless Steel UNS-S30400

Compression Screw: Brass UNS-C36000

For ENT coated sprinklers: Belleville spring - Exposed. Screw and Pipcap - ENT plated.

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

Sprinkler: Base Part No. 13637

Order Sprinkler VK468 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: 155 °F (68 °C) = B, 175 °F (79 °C) = D

For example, sprinkler VK468 with a Brass finish and a 155 °F (68 °C) temperature rating = Part No. 13637AB.

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 sprinklers: Part No. 13577W/B* (available since 2006)

C. Optional Protective Sprinkler Cap Remover/Escutcheon Installer Tool** Part No. 15915 (available since 2010.)

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

**Allows use from the floor by attaching a length of 1" diameter CPVC tubing to the tool. Ideal for sprinkler cabinets. Refer to Bulletin F_051808.

	TECHNICAL DATA	FREEDOM® RESIDENTIAL PENDENT SPRINKLER VK468 (K4.9)
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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 liquid in the glass bulb expands, causing the glass to shatter, releasing the pip cap and sealing spring 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

The Viking Model VK468 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.

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
Sprinkler Finishes: Brass, Chrome, White Polyester, Black Polyester, and ENT			
Corrosion Resistant Coatings³: 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 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 ENT coated sprinklers, the waterway is coated. Note that the spring is exposed on sprinklers with ENT coating.			

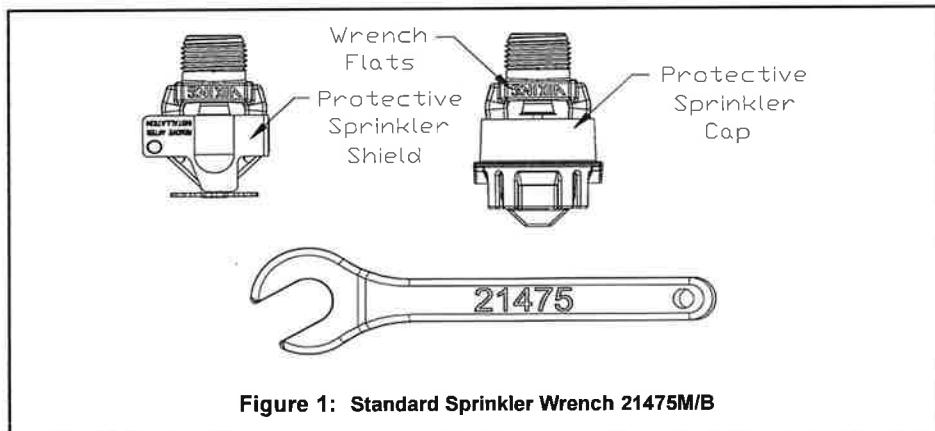


Figure 1: Standard Sprinkler Wrench 21475M/B

	TECHNICAL DATA	FREEDOM® RESIDENTIAL PENDENT SPRINKLER VK468 (K4.9)
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Approval Chart
Viking VK468, 4.9 K-Factor Residential Pendent Sprinkler
 For systems designed to NFPA 13D or NFPA 13R. For systems designed to NFPA 13, refer to the design criteria. For Ceiling types refer to current editions of NFPA 13, 13R or 13D

Sprinkler Base Part Number ¹	SIN	NPT Thread Size		Nominal K-Factor		Maximum Water Working Pressure	Overall Length				
		Inches	mm	U.S.	metric ²		Inches	mm			
13637	VK468	1/2	15	4.9	70.6	175 psi (12 bar)	2-1/4	58			
Max. Coverage Area ⁴ Ft.X Ft. (m X m)	Ordinary Temp Rating (155 °F/68 °C)		Intermediate Temp Rating (175 °F/79 °C)		Deflector to Ceiling	Installation Type	Listings and Approvals ³				Minimum Spacing Ft. (m)
	Flow ⁴ GPM (L/min)	Pressure ⁴ PSI (bar)	Flow ⁴ GPM (L/min)	Pressure ⁴ PSI (bar)			C-UL-US-EU ⁵	VdS	NYC ⁶	NSF ⁸	
12 X 12 (3.7 X 3.7)	13 (49.2)	7.0 (0.48)	13 (49.2)	7.0 (0.48)	1-1/8 to 2 inch	Standard surface-mounted escutcheons, or recessed with the Micromatic® Model E-1, E-2, or E-3 Recessed Escutcheon	See Foot-notes 7 and 10.	See Foot-notes 7 and 10.	See Foot-note 7.	See Foot-note 7.	8 (2.4)
14 X 14 (4.3 X 4.3)	13 (49.2)	7.0 (0.48)	13 (49.2)	7.0 (0.48)							
16 X 16 (4.9 X 4.9)	13 (49.2)	7.0 (0.48)	13 (49.2)	7.0 (0.48)							
18 X 18 (5.5 X 5.5)	17 (64.4)	12.0 (0.83)	17 (64.4)	12.0 (0.83)							
20 X 20 (6.1 X 6.1)	20 (75.7)	16.7 (1.15)	20 (75.7)	16.7 (1.15)							

Footnotes

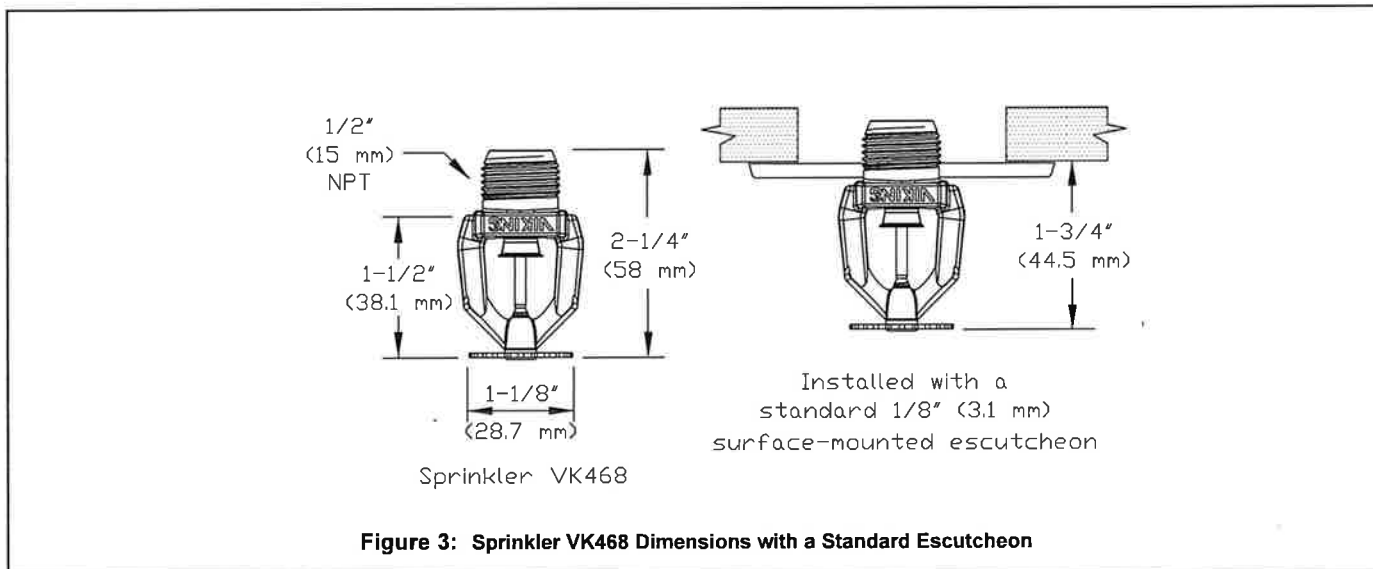
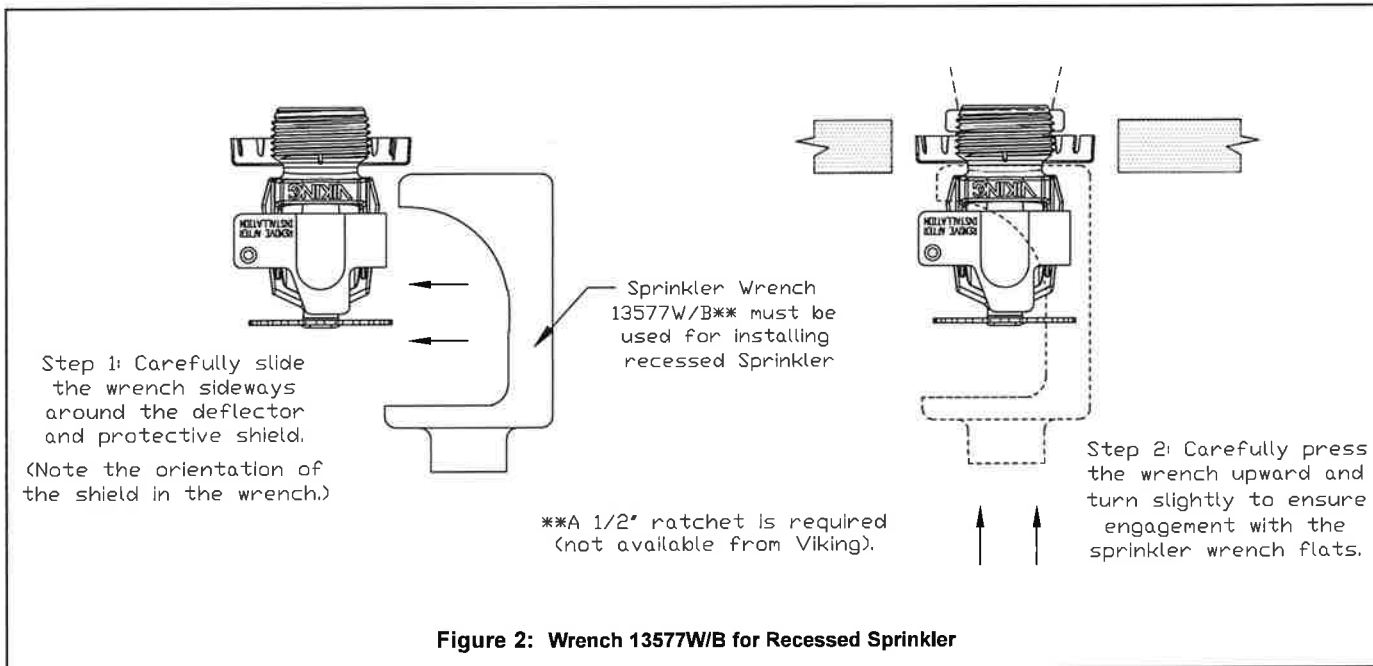
- ¹ Part number shown is the base part number. For complete part number, refer to Viking's current price schedule.
- ² Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.
- ³ This chart shows the listings and approvals available at the time of printing. Other approvals may be in process. Check with the manufacturer for any additional approvals. Refer also to Design Criteria.
- ⁴ For areas of coverage smaller than shown, use the "Flow" and "Pressure" for the next larger area listed. Flows and pressures listed are per sprinkler. The distance from sprinklers to walls shall not exceed one-half the sprinkler spacing indicated for the minimum "Flow" and "Pressure" used.
- ⁵ Listed by Underwriter's Laboratories, Inc. for use in the U.S., Canada, and European Union.
- ⁶ Accepted for use, City of New York Department of Buildings, MEA Number 89-92-E, Vol. 35.
- ⁷ Approved Finishes are: Brass, Chrome, White Polyester, and Black Polyester⁹
- ⁸ UL Classified to: NSF/ANSI Standard 61, Drinking Water System Components (MH48034).
- ⁹ Other paint colors are available on request with the same C-UL-US-EU listings as the standard finish colors.
- ¹⁰ Approved finish is Electroless Nickel PTFE (ENT). ENT is C-UL-US-EU Listed as corrosion resistant. ENT is available with standard surface-mounted escutcheons or the Micromatic Model E-1 Recessed Escutcheon.



TECHNICAL DATA

FREEDOM® RESIDENTIAL
PENDENT SPRINKLER
VK468 (K4.9)

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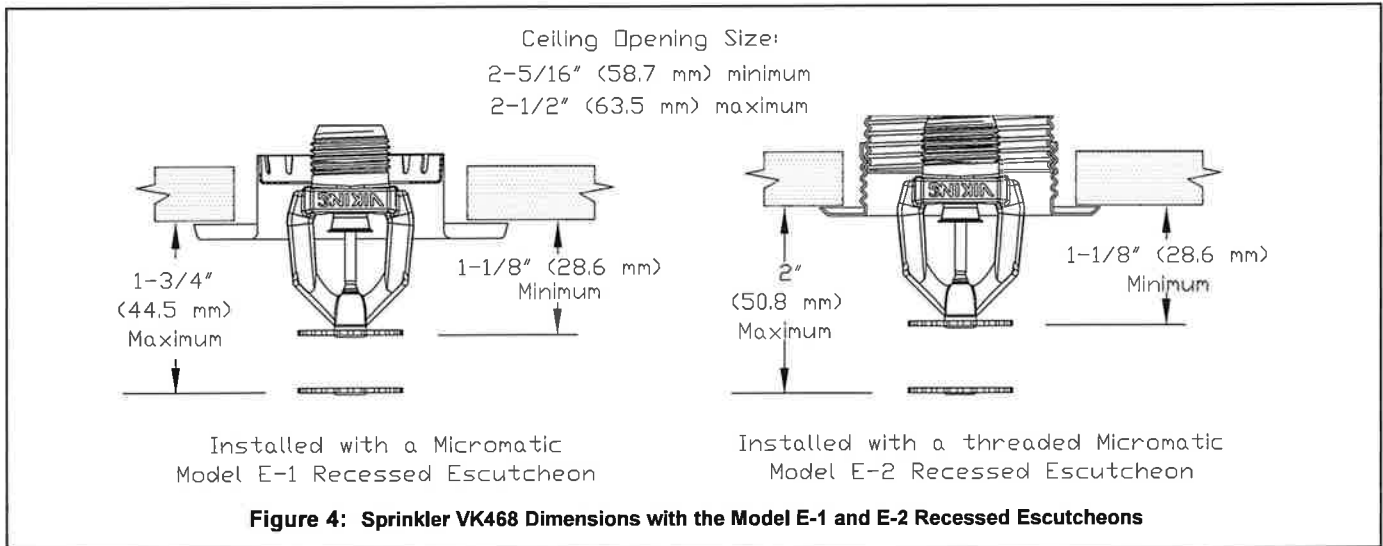




TECHNICAL DATA

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DESIGN CRITERIA

(Also refer to the Approval Chart.)

UL Listing Requirements (C-UL-US-EU):

When using Viking Residential Pendent Sprinkler VK468 for systems designed to NFPA 13D or NFPA 13R, apply the listed areas of coverage and minimum water supply requirements shown in the Approval Chart.

For systems designed to NFPA 13: The number of design sprinklers is to be the four contiguous most hydraulically demanding sprinklers. The minimum required discharge from each of the four sprinklers is to be the greater of the following:

- The flow rates given in the Approval Chart for NFPA 13D and NFPA13R applications for each listed area of coverage, or
- Calculated based on a minimum discharge of 0.1 gpm/sq. ft. over the "design area" in accordance with sections 8.5.2.1 or 8.6.2.1.2 of NFPA 13.
- Minimum distance between residential sprinklers: 8 ft. (2.4 m).

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to Form No. F_080614, F_080415 and F_080190 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, VdS, and any other similar Authorities Having Jurisdiction, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable. Final approval and acceptance of all residential sprinkler installations must be obtained from the Authorities Having Jurisdiction.



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1. DESCRIPTION

Viking EasyPac Residential Riser Manifold Assemblies are available in sizes 1", 1-1/4", 1-1/2", and 2" for NFPA 13D and NFPA13R residential fire sprinkler systems. The configuration eliminates the need to drain the system before installing the relief valve, while a built in test port allows hydrostatic testing without draining the system. The EasyPac Residential Assemblies include pressure gauges, Potter flow switches, 3-way gauge control valve and 1" drain valve (or 1-1/4" for 2" Manifold). The EasyPac assemblies are made with steel bodies and are available in threaded or grooved connections.

2. LISTINGS AND APPROVALS

Pressure Gauges: UL Listed, FM Approved

Waterflow Alarm Switch: UL Listed - Category USQT, cUL Listed, FM Approved - Waterflow Detectors, Vane Type, CSFM Listed

Ball Valve: UL Listed, FM Approved

AGF TestanDrain Model 1000: UL Listed - Category VEHZ, FM Approved - Sprinkler System Alarm Testers

AGF TestanDrain Model 1011 with Pressure Relief Valve: UL Listed - Category VEHZ, FM Approved - Sprinkler System Alarm Testers

3. TECHNICAL DATA

Specifications and Material Standards:

Available since 2007.

- Pressure Rating: 250 PSI (17.2 bar) maximum water working pressure.
- Fabricated steel pipe.
- Available in male NPT threaded inlet and outlet connections using Schedule 40 steel pipe.
- Available in grooved inlet and outlet connections using Schedule 10 steel pipe.
- Available with male NPT threaded inlet x grooved outlet using Schedule 40 steel pipe.
- Riser bodies coated with black Ecoat.
- Flow Switch: Two single-pole double-throw switches with Form C contacts rated at 15 Amps 125/250 V. AC, 2.5 Amp 0-30 V. DC. Each switch can be wired for open or closed circuit operation. See Figure 1.

Ordering Information:

(Also refer to the current Viking price list.)

There are three different options available for the Residential line:

Basic Residential EasyPac Assemblies with Ball Valve Drain (See Figure 2)

Residential EasyPac Assemblies with TESTanDRAIN Valve (See Figure 3)

Residential EasyPac Assemblies with TESTanDRAIN and Pressure Relief Valve (PRV) (See Figure 4)

See Table 1 for Part Numbers.

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.

4. INSTALLATION

Refer to appropriate NFPA Installation Standards.

Note: The EasyPac Residential Riser Manifold Assembly can be installed horizontally with flow switch on top, or vertically with flow upward.

5. TESTANDRAIN VALVE OPERATING INSTRUCTIONS

1. To Test: Turn valve handle counterclockwise from "Off" to "Test". The handle will stop automatically. After test is completed, return handle to "Off".
2. To Drain: Turn handle counterclockwise from "Off" to "Test". The handle will stop automatically. Depress "Push" button and turn handle to "Drain". When system is empty, return handle clockwise to "Off" position.

6. INSPECTIONS, TESTS AND MAINTENANCE

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

7. AVAILABILITY

The Viking EasyPac Riser Assemblies are 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

EASYPAC RESIDENTIAL RISER MANIFOLD ASSEMBLIES 1" - 2" (DN25 - DN50)

The Viking Corporation, 210 N Industrial Park Road, Hastings MI 49058

Telephone: 269-945-9501 Technical Services 877-384-5464 Fax: 269-945-4495 Email: techsvcs@vikingcorp.com

Table 1 - Commercial EasyPac Assemblies

Pipe Size	Inlet / Outlet Connections	Option	Pipe Size	Viking Part Number
1"	Thread / Thread	Ball Valve	Schedule 40	15226
		TESTanDRAIN		15227
		TESTanDRAIN and PRV		15228
	Groove / Groove	Ball Valve	Schedule 10	15243
		TESTanDRAIN		15244
		TESTanDRAIN and PRV		15245
1-1/4"	Thread / Thread	Ball Valve	Schedule 40	14840
		TESTanDRAIN		15229
		TESTanDRAIN and PRV		15230
	Groove / Groove	Ball Valve	Schedule 10	14841
		TESTanDRAIN		15231
		TESTanDRAIN and PRV		15232
	Thread / Groove	Ball Valve	Schedule 40	14905
		TESTanDRAIN		15233
		TESTanDRAIN and PRV		15234
1-1/2"	Thread / Thread	Ball Valve	Schedule 40	14842
		TESTanDRAIN		15235
		TESTanDRAIN and PRV		15236
	Groove / Groove	Ball Valve	Schedule 10	14843
		TESTanDRAIN		15237
		TESTanDRAIN and PRV		15238
	Thread / Groove	Ball Valve	Schedule 40	14849
		TESTanDRAIN		15239
		TESTanDRAIN and PRV		15240
2"	Thread / Thread	Ball Valve	Schedule 40	14844
		TESTanDRAIN		15241
		TESTanDRAIN and PRV		14901
	Groove / Groove	Ball Valve	Schedule 10	14845
		TESTanDRAIN		15242
		TESTanDRAIN and PRV		14900
	Thread / Groove	Ball Valve	Schedule 40	14846
		TESTanDRAIN		15246
		TESTanDRAIN and PRV		15247

TESTadDRAIN Option:

Includes a test orifice with size specified from 3/8" (K2.8) to 25K ESFR*, depending on the smallest sprinkler installed on the system. Must add suffix to the part number for the desired orifice size.

Orifice Suffix:

- A = 3/8" (K 2.8)
- B = 7/16" (K 4.2)
- C = 1/2" (K 5.6)
- D = 17/32" (K 8.0)

TESTadDRAIN with PRV Option:

Includes test orifice and pressure relief valve. The test orifice must be specified based on the smallest sprinkler installed on the system for 3/8" (K2.8) to K25 ESFR*. The pressure relief valve is not factory assembled to the TestanDrain. Must add suffix to the part number for the desired orifice size and pressure setting of the pressure relief valve.

Orifice Suffix:

- A = 3/8" (K 2.8)
- B = 7/16" (K 4.2)
- C = 1/2" (K 5.6)
- D = 17/32" (K 8.0)

PRV Suffix:

- 175
- 185
- 195
- 205
- 225
- 250

NOTE: It is important to note that the pressure rating of the relief valve indicates an operating range of pressure for both opening and closing of the valve. Standard relief valves are required to OPEN in a range of pressure between 90% and 105% of their rating. The valves are required to CLOSE at a pressure above 80% of that rating.

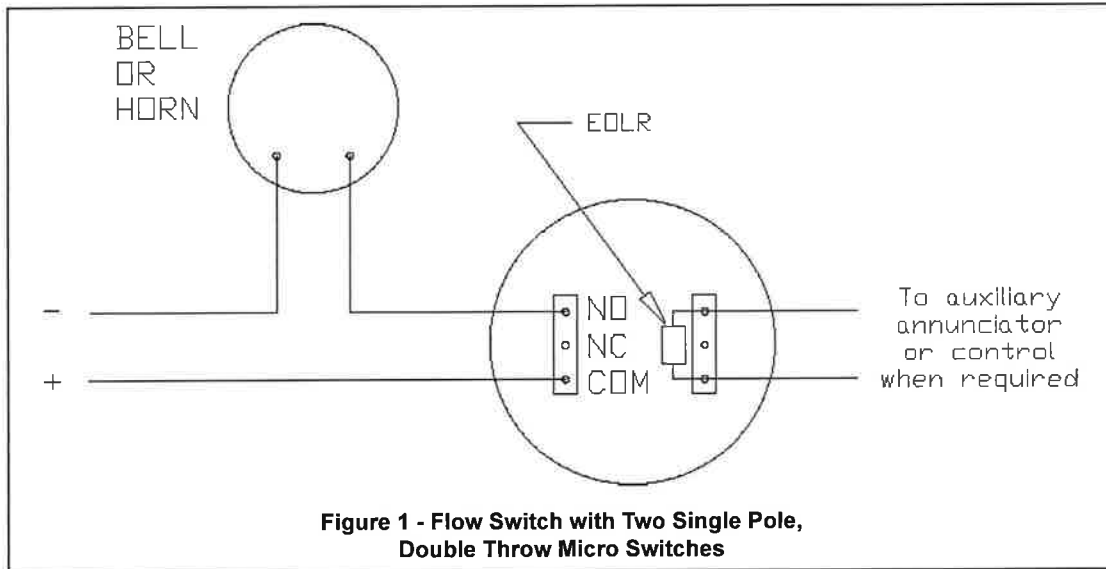
NOTE: For Canada orders, add the suffix -CAN to the part number (includes tamper-proof cover on the flow switch).

Table 2 - Pipe Diameters

	1"	1-1/4"	1-1/2"	2"
Pipe OD	1.315" (33.4 mm)	1.660" (42 mm)	1.900" (48 mm)	2.375" (60 mm)
Schedule 10 Pipe ID	1.097" (27.9 mm)	1.45" (36.6 mm)	1.69" (42.7 mm)	2.16" (54.8 mm)
Schedule 40 Pipe ID	1.049" (26.6 mm)	1.38" (35.1 mm)	1.61" (40.9 mm)	2.07" (52.5 mm)

	TECHNICAL DATA	EASYPAC RESIDENTIAL RISER MANIFOLD ASSEMBLIES 1" - 2" (DN25 - DN50)
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The Viking Corporation, 210 N Industrial Park Road, Hastings MI 49058
Telephone: 269-945-9501 Technical Services 877-384-5464 Fax: 269-945-4495 Email: techsvcs@vikingcorp.com





TECHNICAL DATA

**EASYPAC RESIDENTIAL
RISER MANIFOLD
ASSEMBLIES**
1" - 2" (DN25 - DN50)

The Viking Corporation, 210 N Industrial Park Road, Hastings MI 49058

Telephone: 269-945-9601 Technical Services 877-384-5464 Fax: 269-945-4495 Email: techsvcs@vikingcorp.com

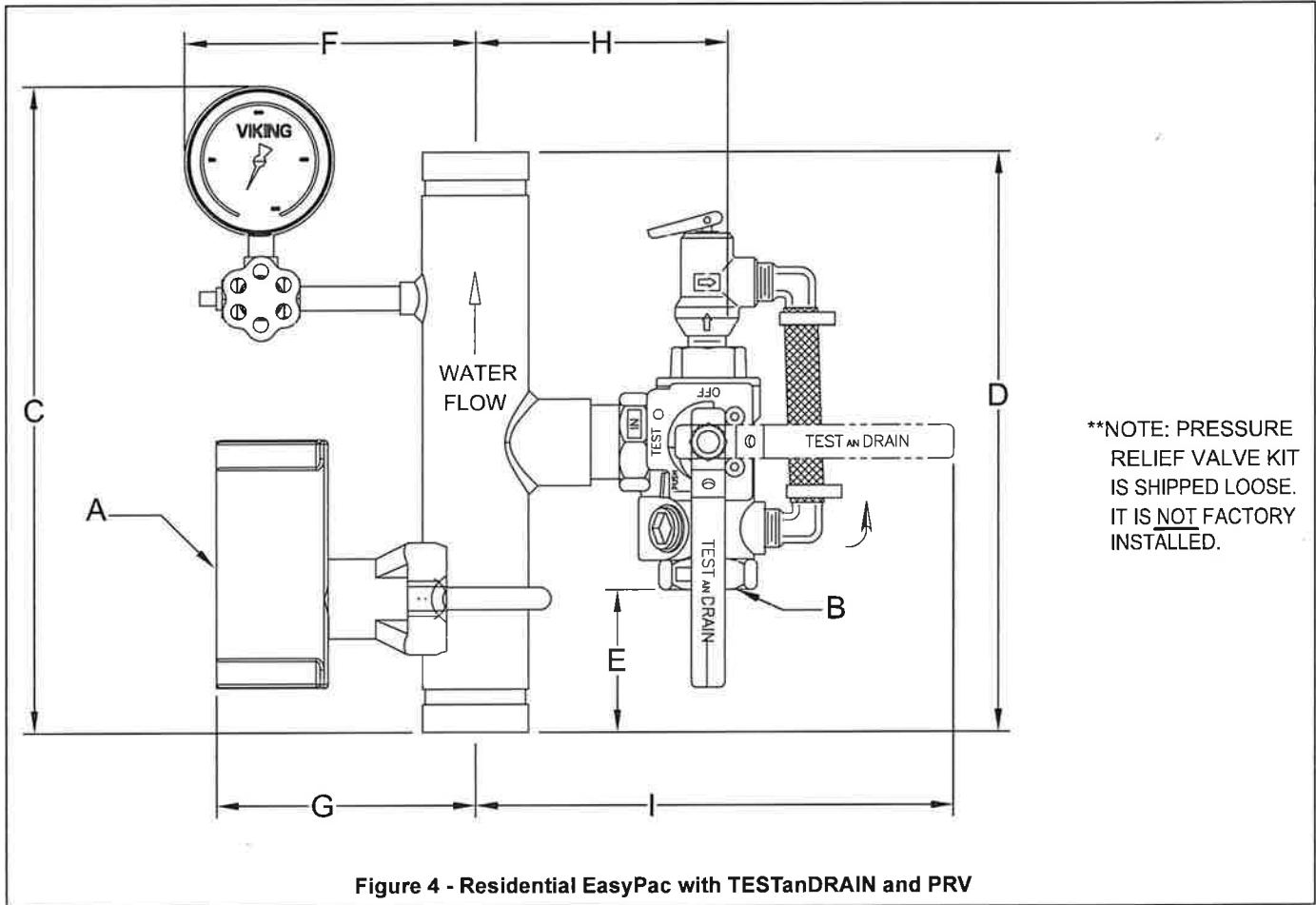


Figure 4 - Residential EasyPac with TESTandDRAIN and PRV

Size	A	B	C	D	E	F	G	H	I
1" (DN25)¹	VSR-S Flow Switch ²	1" NPT	16-1/16" (409)	14-15/16" (379)	4-1/8" (105)	6-3/16" (157)	5-3/4" (146)	3-7/8" (98)	8-1/2" (216)
1-1/4" (DN32)	VSR-S Flow Switch ²	1" NPT	16-1/2" (419)	15" (381)	5-1/8" (131)	6-3/32" (155)	6-11/32" (161)	4-15/32" (114)	9-3/32" (231)
1-1/2" (DN40)	VSR-S Flow Switch ²	1" NPT	16-1/2" (419)	15" (381)	5-1/8" (131)	7-19/32" (193)	6-15/16" (164)	4-19/32" (117)	9-7/32" (234)
2" (DN50)	VSR Flow Switch ³	1-1/4" NPT	14-1/2" (369)	13" (330)	3-1/4" (83)	6-7/16" (164)	5-51/64" (148")	5-13/64" (132)	10-45/64" (272)

¹ The body of the 1" manifold is comprised of four 1" nipples and three tee's.

² Mounted with included nipple (Not Shown)

³ Mounted with included U bolt (As shown above)

Note: Dimensions may vary by ± 1/4" (6.3 mm)



Submittal Data for CPVC Strap Hangers

All materials to be used in the installation of sprinkler system are to conform to NFPA 13, 13R and 13D, Local Authorities having Jurisdiction and any applicable referenced codes and standards.

UL Listed in the USA and Canada to support fire sprinkler piping.

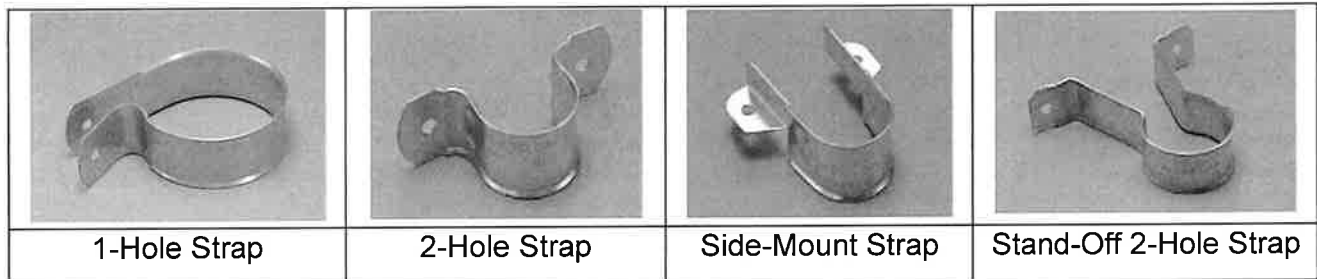
- A "one-hole strap" can function as a hanger and restraining device. It supports CPVC pipe horizontally from top or side of beam. As a restraining device, the hanger will be inverted so the fastener is downward. This installation will prevent upward movement of the sprinkler during activation.
- A "two-hole strap" can function as a hanger and restraining device. It supports CPVC pipe horizontally from top, bottom, or side of beam. A hex-head self-threading screw (furnished with most CPVC hangers) is easily installed using an electric drill. No pre-drilling pilot hole is required.
- A "side-mount strap" supports the CPVC pipe horizontally from top or bottom of beam
- A "stand-off 2-hole strap" supports the CPVC pipe off of the vertical face of the structural or composite wood joists.

Hangers must be clean, free of burrs, and all surface oils. Any contaminants must be removed from the hanger.

The pipe size of the hanger shall be the same size as the supported pipe.

Pipe hangers must have a load bearing surface at least 1/2" inch wide.

Examples of CPVC Hangers



This submittal shall include the following checked items:

Product	
<input checked="" type="checkbox"/>	3/4" Hangers
<input checked="" type="checkbox"/>	1" Hangers
<input checked="" type="checkbox"/>	1-1/4" Hangers
<input type="checkbox"/>	1-1/2" Hangers
<input checked="" type="checkbox"/>	2" Hangers

Origin of Manufacture	
Domestic	Foreign
<input type="checkbox"/>	<input checked="" type="checkbox"/>



Submittal Data CPVC Pipe and Fittings

Listings:

- Light hazard occupancies as defined in the standard for “Installation of Sprinkler Systems”, NFPA 13.
- Residential occupancies as defined in the standard for “Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height”, NFPA 13R.
- Residential occupancies as defined in the standard for “Installation of Sprinkler Systems in One and Two Family Dwellings and Manufactured Homes”, NFPA 13D. - Underground fire service systems as described in the “Installation of Sprinkler Systems”, NFPA 13 2007 Edition, and where appropriate the “Standard for Installation of Private Service Mains & Their Appurtenances”, NFPA 24
- Local Authorities having jurisdiction and any applicable referenced codes and standards.

Approvals:

UL, FM, CUL, NSF, Dade County, LPCB, MEA, and the City of Los Angeles.

Material Specifications:

Pipe: ASTM F442, SDR 13.5

Fittings: ASTM F438, (Sch. 40) and ASTM F439 (Sch. 80)

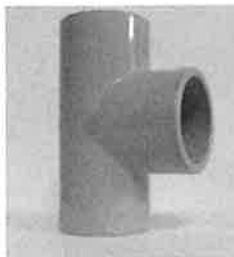
Maximum Working Pressure of 175 PSI



Straight Elbow



Reducing Elbow



Straight Tee



Reducing Tee



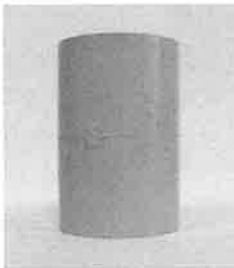
Cross



Reducing Cross



45 Elbow



Coupling



Sprinkler Adapter
w/ Brass Insert



Slip-Thread Adapter



Sprinkler Head Adapter 90° Ell



Sprinkler Head Adapter Tee



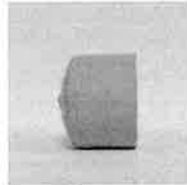
Back-to Back Tee



Grooved Coupling Adapter



Reducer Bushing



Cap

CPVC Pipe Submittal Data for Fire Sprinkler Systems

All material used in the installation of the sprinkler system conforms to:

NFPA 13

NFPA 13R

NFPA 13D



- All CPVC piping should be pressure tested at 200 PSI for 2 hours.
- Chemical compatibility should be checked per manufacturer.
- Glycerin antifreeze solutions are acceptable and installation of antifreeze systems should comply with NFPA Section 7.6.2 of NFPA 13 (2007 Edition).

BlazeMaster® Pipe Dimensions and Weights SDR 13.5 (ASTM F 442)									
Nominal Size		Average OD		Average ID		Pounds Per Foot	Kilograms Per Meter	Pounds Per Foot	Kilograms Per Meter
Inches	mm	Inches	mm	Inches	mm	Empty	Empty	H ₂ O Filled	H ₂ O Filled
3/4	20.0	1.050	26.7	.874	22.2	0.168	0.250	0.428	0.637
1	25.0	1.315	33.4	1.101	28.0	0.262	0.390	0.675	1.035
1 1/4	32.0	1.660	42.2	1.394	35.4	0.418	0.622	1.079	1.636
1 1/2	40.0	1.900	48.3	1.598	40.6	0.548	0.816	1.417	2.109
2	50.0	2.375	60.3	2.003	50.9	0.859	1.278	2.224	3.310
2 1/2	65.0	2.875	73.0	2.423	61.5	1.257	1.871	3.255	4.844
3	80.0	3.500	88.9	2.950	75.0	1.867	2.778	4.829	7.186

Note: The above average OD and average ID information is per ASTM F442. Check with individual manufacturers for actual OD and ID information.

Allowance for Friction Loss in Fittings (Equivalent Feet of Pipe)							
Fitting Size (In.)	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"
Tee Branch	3	5	6	8	10	12	15
Elbow 90°	4	5	6	7	9	12	13
Elbow 45°	1	1	2	2	2	3	4
Coupling	1	1	1	1	1	2	2
Tee Run	1	1	1	1	1	2	2

Submittal Data for Ductile Iron Threaded Fittings





All materials to be used in the installation of sprinkler system are to conform to NFPA 13, Local Authorities Having Jurisdiction and any applicable referenced codes and standards.





Fittings shall meet the following criteria:

- Ductile Iron Threaded Fittings, Class 150, shall meet or exceed ASME B16.3 Standards.

The following are fitting pressure limits as described in NFPA 13:

- The rupture strength of ductile iron fittings 6 in. in size and smaller is sufficient to provide an adequate factor of safety.
- Standard weight pattern ductile iron fittings 6 in. in size and smaller shall be permitted where pressures do not exceed 300 psi.
- Listed fittings shall be permitted for system pressures up to the limits specified in their listings.
- Fittings not meeting the requirements of the three above items shall be extra-heavy pattern where pressures exceed 175 psi.

			
90° Straight Elbow	90° Reducing Elbow	Straight Tee	Reducing Tee

			
Crosses	45° Elbow	Coupling	Reducer

Examples of Ductile Iron Threaded Fittings

This submittal shall include the following checked items.

Product	Class150	Class300
<input checked="" type="checkbox"/> Ductile Iron Threaded Fittings	<input checked="" type="checkbox"/>	
	Domestic	Foreign
Origin of Manufacture	<input type="checkbox"/>	<input checked="" type="checkbox"/>



UNITED BRASS WORKS, INC.

714 S. Main St., Randleman, NC 27317

Tel: 800-334-3035 Fax: 800-498-4696 www.ubw.com



Model 99S Swing Check Valve

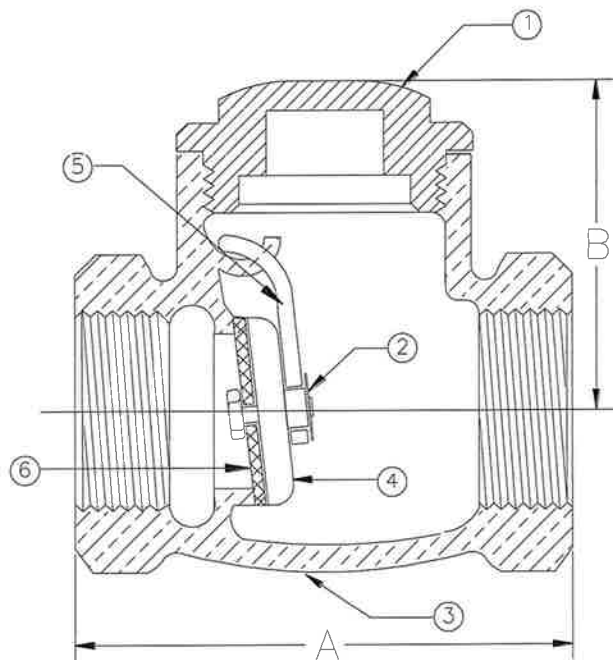


200 WOG @ 180 ° Max
100% Pressure Tested • Integral Seat
Threaded Ends • Soft Disc

Not recommended for pulsating or vibrating service.
Do Not Install laying on side.
Keep seat clean.

MATERIAL LIST

NO.	DESCRIPTION	MATERIAL
1	Cap (1/4" - 1") Cap (1 1/4" - 2")	Brass Bronze
2	Washer	Brass
3	Body	Bronze
4	Disc	Brass
5	Hinge	Stainless Steel
6	Disc	Buna-N



Size	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
A	1.89	1.89	2.14	2.51	3.03	3.45	3.81	4.44
B	1.22	1.22	1.28	1.53	2.06	2.20	2.20	2.86
Ship Wgt. (lbs.)	0.45	0.45	0.58	0.81	1.62	1.81	2.41	3.42
Qty. Unit Pack	12	12	12	12	6	6	4	2
Qty. Per Case	60	60	60	60	30	18	12	6

For Health Hazard Applications

Job Name FAIRWAY POINTE 17 Contractor FLSA

Job Location 288 GALERIE DR. Approval _____

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

Approval _____ Representative _____

Series 009 Reduced Pressure Zone Assemblies

Sizes: 1/4" – 2"

Series 009 Reduced Pressure Zone Assemblies are designed to protect potable water supplies in accordance with national plumbing codes and water authority requirements. This series is designed to protect drinking water supplies from dangerous cross-connections in accordance with national plumbing codes and water authority requirements for non-potable service applications such as irrigation, fireline, or industrial processing.

This series features two in-line, independent check valves, captured springs and replaceable check seats with an intermediate relief valve. Its compact modular design facilitates easy maintenance and assembly access. Sizes 1/4" – 1" shutoffs have tee handles.

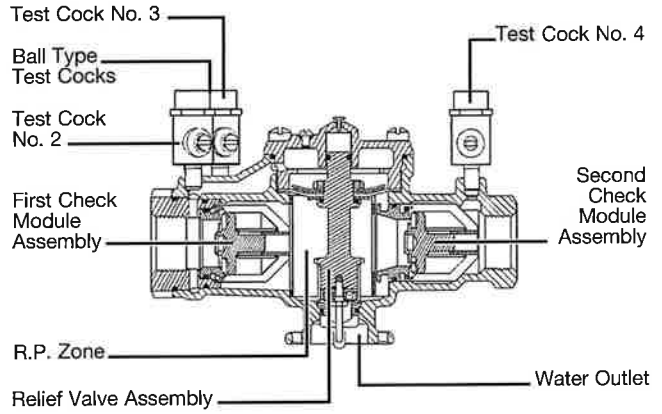
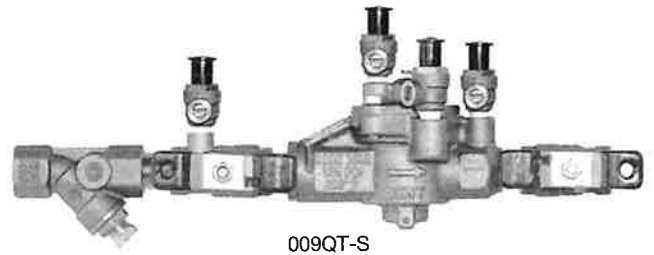
Features

- Single access cover and modular check construction for ease of maintenance
- Top entry - all internals immediately accessible
- Captured springs for safe maintenance
- Internal relief valve for reduced installation clearances
- Replaceable seats for economical repair
- Bronze body construction for durability 1/4" – 2"
- Ball valve test cocks — screwdriver slotted 1/4" – 2"
- Large body passages provides low pressure drop
- Compact, space saving design
- No special tools required for servicing

Specifications

A Reduced Pressure Zone Assembly shall be installed at each potential health hazard location to prevent backflow due to backsiphonage and/or backpressure. The assembly shall consist of an internal pressure differential relief valve located in a zone between two positive seating check modules with captured springs and silicone seat discs. Seats and seat discs shall be replaceable in both check modules and the relief valve. There shall be no threads or screws in the waterway exposed to line fluids. Service of all internal components shall be through a single access bronze cover secured with stainless steel bolts. The assembly shall also include two resilient seated isolation valves, four resilient seated test cocks and an air gap drain fitting. The assembly shall meet the requirements of: USC; ASSE Std. 1013; AWWA Std. C511-92; CSA B64.4. Shall be a Watts Series 009.

†Does not indicate approval status. Refer to Page 2 for approved sizes & models.



Now Available
WattsBox Insulated Enclosures.
For more information, send for literature ES-WB.

NOTICE
Inquire with governing authorities for local installation requirements

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.

Watts product specifications in U.S. customary units and metric are approximate and are provided for reference only. For precise measurements, please contact Watts Technical Service. Watts reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligation to make such changes and modifications on Watts products previously or subsequently sold.



Available Models: 1/4" – 2"

Suffix:

- QT – quarter-turn ball valves
- S – bronze strainer
- LF – without shutoff valves
- AQT – elbow fittings for 360° rotation
3/4" – 2" only
- PC – internal Polymer Coating
- SH – stainless steel ball valve handles
- HC – 2 1/2" inlet/outlet fire hydrant fitting (2" valve)

Prefix:

- C – clean and check strainer 3/4" – 1" only
- U – union connections (see ES-U009)

Materials: 1/4" – 2"

Bronze body construction, silicone rubber disc material in the first and second check plus the relief valve. Replaceable polymer check seats for first and second checks. Removable Relief valve soate. Stainless steel cover bolts.

Standardly furnished with NPT body connections. For optional bronze union inlet and outlet connections, specify prefix U (1/2" – 2"). Series 009QT furnished with quarter turn, full port, resilient seated, bronze ball valve shutoffs.

Pressure / Temperature

Series 009 1/4" – 2" Suitable for supply pressure up to 175psi (12.1 bar). Water temperature: 33°F – 180°F (0.5°C – 75°C).

Standards

- USC
- ASSE No. 1013
- AWWA C511-92
- CSA B64.4
- IAPMO File No. 1563.

†Does not indicate approval status. See below for approved models.



Approvals

ASSE, AWWA, CSA, IAPMO

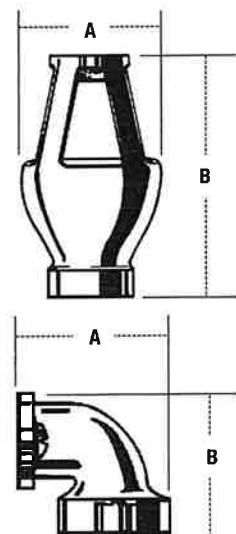
Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California.

UL Classified 3/4" – 2"
(LF models only except 009M3LF)

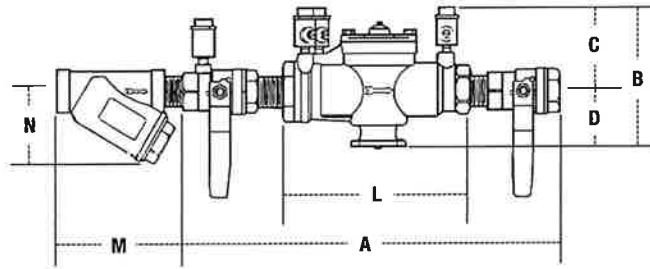
Air Gaps and Elbows

MODEL	DRAIN OUTLET	DIMENSIONS				WEIGHT	
		for 909, 009 and 993 sizes		A		B	
	<i>in.</i> <i>mm</i>	<i>in.</i> <i>mm</i>	<i>in.</i> <i>mm</i>	<i>in.</i> <i>mm</i>	<i>in.</i> <i>mm</i>		
909AGA	1/4"-1/2" 009, 3/4" 009M2/M3	1/2 13	2 3/8 60	3 1/8 79	0.625 0.28		
909AGC	3/4"-1" 009/909, 1"-1 1/2" 009M2	1 25	3 3/8 83	4 7/8 124	1.5 0.68		
909AGF	1 1/4"-2" 009M1, 1 1/4"-3" 009/909, 2" 009M2, 4"-6" 993	2 51	4 3/8 111	6 3/4 171	3.25 1.47		
909AGK	4"-6" 909, 8"-10" 909M1	3 76	6 3/8 162	9 3/8 244	6.25 2.83		
909AGM	8"-10" 909	4 102	7 3/8 187	11 1/4 286	15.5 7.03		
909ELA	1/4"-1/2" 009, 3/4" 009M2/M3	- -	- -	- -	- -		
909ELC	3/4"-1" 009/909	- -	2 3/8 60	2 3/8 60	0.38 0.17		
* 909ELF	1 1/4"-2" 009M1, 1 1/4"-2" 009/909, 2" 009M2, 4"-6" 993	- -	3 3/8 92	3 3/8 92	2 0.91		
* 909ELH Vertical	2 1/2"-3" 009/909	- -	- -	- -	- -		

* Epoxy coated



Dimensions and Weight: 1/4" – 2" 009



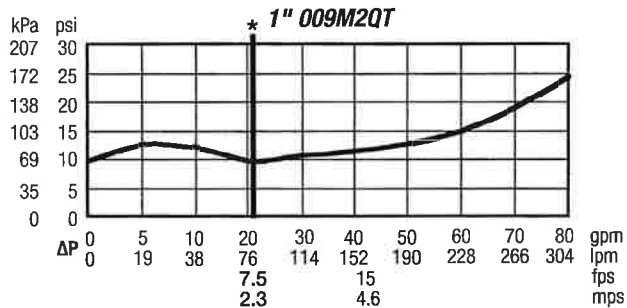
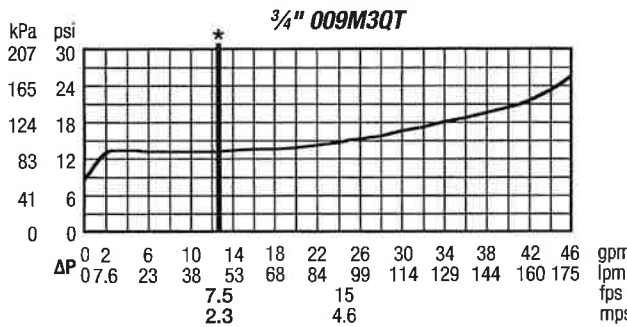
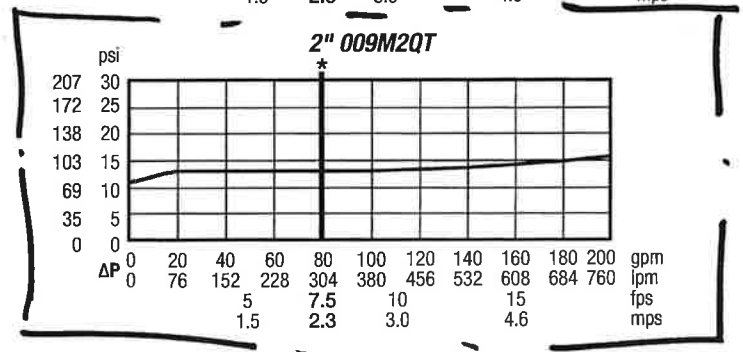
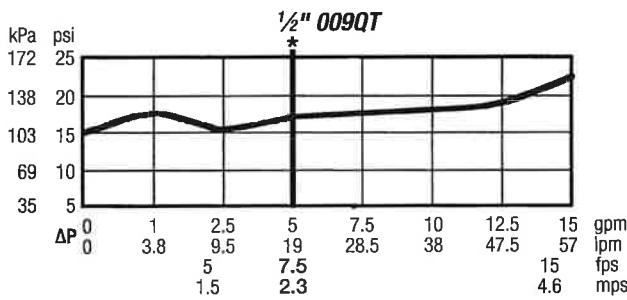
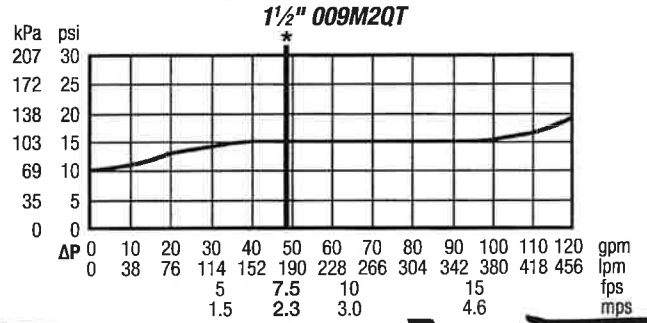
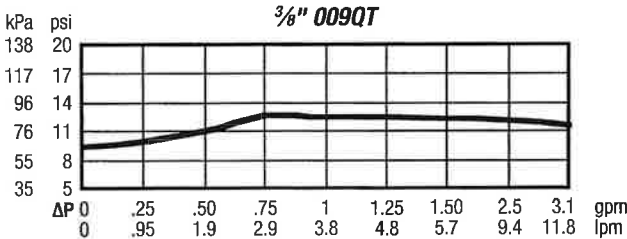
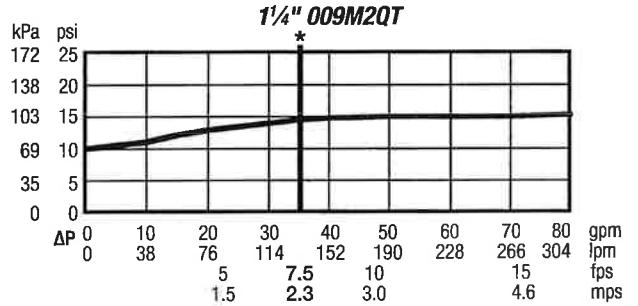
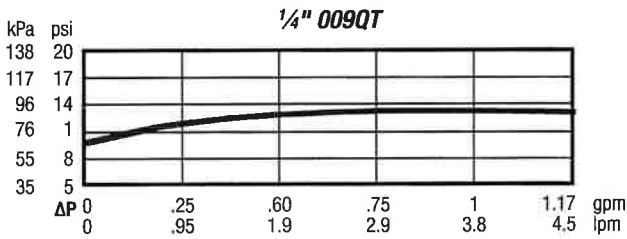
009 1/4" – 2"

SIZE		DIMENSIONS (APPROX.)										STRAINER DIMENSIONS				WEIGHT	
in.		A		B		C		D		L		M		N		lbs.	kgs.
		in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm		
1/4		10	250	4 5/8	117	3 3/8	86	1 1/4	32	5 1/2	140	2 3/8	60	2 1/2	64	5	2
3/8		10	250	4 5/8	117	3 3/8	86	1 1/4	32	5 1/2	140	2 3/8	60	2 1/2	64	5	2
1/2		10	250	4 5/8	117	3 3/8	86	1 1/4	32	5 1/2	140	2 3/4	70	2 1/4	57	5	2
3/4		10 3/4	273	5	127	3 1/2	89	1 1/2	38	6 3/4	171	3 3/16	81	2 3/4	70	6	3
1		14 1/2	368	5 1/2	140	3	76	2 1/2	64	9 1/2	241	3 3/4	95	3	76	12	5
1 1/4		17 3/8	441	6	150	3 1/2	89	2 1/2	64	11 3/8	289	4 7/16	113	3 1/2	89	15	6
1 1/2		17 7/8	454	6	150	3 1/2	89	2 1/2	64	11 1/8	283	4 7/8	124	4	102	16	7
2		21 3/8	543	7 3/4	197	4 1/2	114	3 1/4	83	13 1/2	343	5 15/16	151	5	127	30	13

Suffix HC – Fire Hydrant Fittings dimension 'A' = 25"

Capacity

Performance as established by an independent testing laboratory. *Typical maximum system flow rate (7.5 feet/sec., 2.3 meters/sec.)



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