



TECHNICAL DATA

AUSTRALIAN WATERMARK FREEDOM® RESIDENTIAL 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 Freedom® Residential Sprinklers are small, thermosensitive, glass-bulb residential sprinklers available in several different styles, finishes and temperature ratings to meet varying design requirements. The Electroless Nickel PTFE (ENT) coating has been investigated for installation in corrosive environments and is Listed/Approved as indicated in the Approval Chart. The orifice design 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.

For Concealed style sprinklers, the unit is pre-assembled with a threaded adapter for installation with a low-profile cover assembly—available in push-on or thread-on styles—which allows installation and testing of the sprinkler prior to installation of the cover plate. Each sprinkler also includes a protective cap that prevents damage during installation and finishing and keeps errant overspray from coating internal parts. The two-piece design provides room for adjustment while also allowing temporary removal of ceiling panels without taking the sprinkler system out of service or removing the sprinkler. 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 Charts. The ENT finish is only available for the sprinkler assembly, and stainless steel cover plates are offered for sprinklers with this finish.

2. LISTINGS AND APPROVALS



UL Listed: Category VKKW (VK495 and VK471 cULus ONLY)



WaterMark certified. Certificate WMTS-486, WM-022899



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

Refer to the Approval Charts and Design Criteria for the appropriate sprinkler(s) for requirements that must be followed.

3. TECHNICAL DATA

Specifications:

Minimum Operating Pressure: 7 psi (0.5 bar)

Rated to: 175 PSI (12 bar) maximum water working pressure (WWP)

Factory tested hydrostatically to 500 psi (34.5 bar).

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

Nominal K-factors: Refer to Ordering Information

Glass-bulb fluid temperature rated to -65 °F (-55 °C)

Material Standards:

Frame Casting: Brass or DZR Brass

Deflector: Brass or Phosphor Bronze

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 and Stainless Steel

Compression Screw: Brass or Stainless Steel

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

For Concealed Sprinklers Pins: Stainless Steel; Button: Brass; Yoke: Phosphor Bronze, Cover Adapter: Cold Rolled Steel JIS G3141 and Carbon Steel UNS-G10100 (per JIS G3141), Shipping Cap: High Density Polyethylene

Vibration damper ring: Buna-N Rubber SAE AS-568-017

Cover Plate Materials:

Cover Plate Assembly: Copper and Brass

Spring: Beryllium Nickel

Solder: Eutectic

Ordering Information: (Refer to Tables 1-3.)

4. INSTALLATION

Refer to appropriate NFPA, FM Global, FPAA101D, 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 Freedom® Residential Sprinklers 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

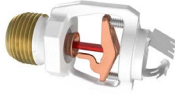
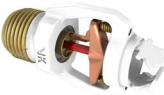
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TABLE 1:
AVAILABLE SPRINKLER STYLES

	SIN	Style	K-factor		SIN	Style	K-factor
	VK467	Upright	4.9		VK460	Horizontal Sidewall	5.8
	VK470 VK471 VK468 VK466 VK472	Pendent Pendent Pendent Pendent Pendent	3.0 3.7 4.9 5.2 5.8		VK480	Concealed Horizontal Sidewall	4.0
	VK430	Pendent	4.3		VK490	Concealed Horizontal Sidewall	5.8
	VK486	Horizontal Sidewall	4.0		VK494 VK495 VK496 VK498	Concealed Pendent	4.9 3.7 3.0 5.8
	VK484	Horizontal Sidewall	4.2				

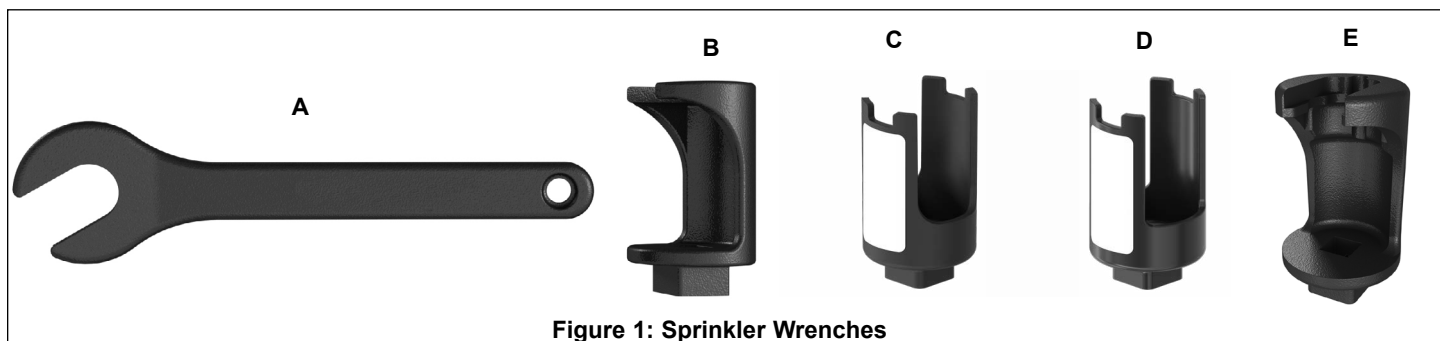


Figure 1: Sprinkler Wrenches



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Ordering Instructions for Sprinkler:

First, Choose a sprinkler style.

Then, using the sprinkler base part number,

(1) add the suffix for the desired Finish

(2) add the suffix for the desired Temperature Rating.

(3) For Concealed Sprinklers, a cover plate must be ordered separately (refer to Table 3).

Example:

23029MB/W = VK467 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.

TABLE 2: ORDERING INFORMATION - SPRINKLERS

SIN	Style	Nominal K-factor		Sprinkler Base Part No.	Size NPT Inch	1: Finishes		2: Temperature Ratings			
		U.S.	metric			Description	Suffix ¹	Nominal Rating	Bulb Color	Max. Ambient Ceiling Temperature ³	Suffix
Upright, Pendent, and Horizontal Sidewall (HSW) Sprinklers (includes recessed versions)											
VK430	Pendent	4.3	62	23022	1/2	Brass	A	155 °F (68 °C)	Red	100 °F (38 °C)	B
VK460	HSW	5.8	84	23028	1/2	Chrome	F	175 °F (79 °C)	Yellow	150 °F (65 °C)	D
VK466	Pendent	5.2	75	23024	1/2	White Polyester ⁴	M-/W	Sprinkler Wrenches (see Figure 1)			
VK467	Upright	4.9	71	23029	1/2	Black Polyester ⁴	M-/B				
VK468	Pendent	4.9	71	23023	1/2	ENT ^{4,5}	JN	A) Standard Wrench		21475W/B	
VK470	Pendent	3.0	43	23021	1/2			B) Recessed Socket Wrench		13655M/B ²	
VK471	Pendent	3.7	47	25642	1/2			E) Recessed Socket Wrench		13577W/B	
VK472	Pendent	5.8	84	23025	1/2			Sprinkler Cabinets			
VK484	HSW	4.2	60	23027	1/2			≤ 6 Sprinklers		01724A	
VK486	HSW	4.0	58	23026	1/2			6-12 Sprinklers		01725A	
Flate Plate Concealed (pendent or horizontal sidewall)											
VK480	HSW	4.0	58	23031	1/2	Brass	A	155 °F (68 °C)	Red	100 °F (38 °C)	B
VK490	HSW	5.8	84	23032	1/2	ENT ^{4,5}	JN	200 °F (93 °C)	Green	150 °F (65 °C)	E
VK494	Pendent	4.9	71	23706	1/2			Sprinkler Wrenches (see Figure 1)			
VK495	Pendent	3.7	53.3	25638	1/2			B) Recessed Socket Wrench ²		13655M/B	
VK496	Pendent	3.0	43	23717	1/2			C) Light-duty wrench ^{2,6}		23143	
VK498	Pendent	5.8	84	23726	1/2			D) Heavy-duty wrench ⁷		22978M/B	
								Sprinkler Cabinet			
								Up to 5 Sprinklers		01731A	

Footnotes

- Where a dash (-) is shown in the Finish suffix designation, insert the desired Temperature Rating suffix. See example above.
- Requires a 1/2" ratchet which is not available from Viking.
- 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.
- UL Listed as corrosion-resistant.
- 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 automatic sprinklers, the ENT coating is applied to all exposed exterior surfaces, including the waterway.
- The installation wrench is intended to be used for a maximum of 500 sprinkler installations at a maximum torque of 14 ft-lbs (19 Nm).
- The Requires a 1/2" ratchet (not available from Viking).



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Ordering Instructions for Cover Plate:

First, Choose a cover plate style — Thread-On or Push-On

Then, using the cover plate base part number,

(1) add the suffix for the desired Finish

(2) add the suffix for the desired Temperature Rating (Note: the required cover plate temperature depends on the sprinkler's temperature rating; Refer to the Temperature Rating Matrix below).

Example:

23190MC/W = 165 °F (74 °C) Temperature rated, 2-3/4" (70 mm) diameter, thread-on style, round cover plate with a painted white finish.

TABLE 3: COVER PLATE ORDERING INFORMATION

Cover Styles and Plate Base Part Numbers						1: Select a Finish		
Thread-On Style			Push-On Style					
Base Part Number ¹	Size Inch (mm)	Type	Base Part Number	Size Inch (mm)	Type	Description	Suffix ⁵	
23190	2-3/4 (70)	Round	23447	2-3/4 (70)	Round	Polished Chrome	F	
23174	3-5/16 (84)	Round	23463	3-5/16 (84)	Round	Brushed Chrome	F-/B	
23179	3-5/16 (84)	Square	23482	3-5/16 (84)	Square	Bright Brass	B	
23193 ⁵	2-3/4 (70)	Stainless Steel Round	23455 ⁵	2-3/4 (70)	Stainless Steel Round	Antique Brass	B-/A	
						Brushed Brass	B-/B	
23183 ⁵	3-5/16 (84)	Stainless Steel Round	23473 ⁵	3-5/16 (84)	Stainless Steel Round	Brushed Copper	E-/B	
						Painted White	M-/W	
			16207	3-5/16 (84)	Round	Painted Black	M-/B	
2: Temperature Rating Matrix ^{1,2}								
Cover Plate Nominal Rating (Required)		Temperature Classification		Sprinkler Nominal Rating		Sprinkler Maximum Ambient Ceiling Temperature ^{2,3}		Suffix
139 °F (59 °C)		Ordinary		155 °F (68 °C)		100 °F (38 °C)		A
165 °F (74 °C)		Intermediate		200 °F (93 °C)		150 °F (65 °C)		C
Footnotes								
1. Part number shown is the base part number. For complete part number, refer to the current Viking price list schedule. 2. The sprinkler temperature rating is stamped on the deflector. 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. Where a dash (-) is shown in the Finish suffix designation, insert the desired Temperature Rating suffix. See example above. 5. Stainless Steel versions are not available with any finishes or paint.								



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Approval Chart Viking VK430, 4.3 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
23022	VK430	1/2	15	4.3	62	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	
12 X 12 (3.7 X 3.7)	12 (45.4)	7.8 (0.54)	12 (45.4)	7.8 (0.54)	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 footnote 6	8 (2.4)
14 X 14 (4.3 X 4.3)	13 (49.2)	9.1 (0.63)	13 (49.2)	9.1 (0.63)				
16 X 16 (4.9 X 4.9)	13 (49.2)	9.1 (0.63)	13 (49.2)	9.1 (0.63)				
18 X 18 (5.5 X 5.5)	17 (64.4)	15.6 (1.08)	17 (64.4)	15.6 (1.08)				
20 X 20 (6.1 X 6.1)	21 (79.5)	23.9 (1.64)	21 (79.5)	23.9 (1.64)				

Footnotes

- Part number shown is the base part number. For complete part number, refer to Viking's current price schedule.
- 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.
- 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 on page 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.
- Listed by Underwriter's Laboratories, Inc. for use in the U.S., Canada, and European Union.
- Approved finish is plain brass, chrome, white polyester, black polyester, and Electroless Nickel PTFE (ENT). Sprinklers with ENT, white polyester, and black polyester finishes are C-UL-US-EU Listed as corrosion-resistant. ENT is available with standard surface-mounted escutcheons or the Micromatic Model E-1 recessed escutcheon.



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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 VK430 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 on page 3.

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 on data page 3 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 the applicable NFPA 13 edition.
- Minimum distance between residential sprinklers: 8 ft. (2.4 m).
- Venting is not required.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to Form No. F_080190, F_080814, and F_080415 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 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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Approval Chart Viking VK460, 5.8 K-Factor Residential Horizontal Sidewall 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			
23028	VK460	1/2	15	5.8	83.6	175 PSI (12 bar)	2-1/2	63.5			
Max. Coverage Area ³ Width X Length Ft. X Ft. (m X m)	Max. Spacing Ft. (m)	Ordinary Temp Rating (155 °F/68 °C)		Intermediate Temp Rating (175 °F/79 °C)		Top of Deflector to Ceiling	Installation Type	Listings and Approvals ⁴		Minimum Spacing Ft. (m)	
		Flow ³ GPM (L/min)	Pressure ³ PSI (bar)	Flow ³ GPM (L/min)	Pressure ³ PSI (bar)			C-UL-US-EU ⁵	VdS		
12 X 12 (3.7 X 3.7)	12 (3.7)	16 (60.6)	7.6 (0.52)	16 (60.6)	7.6 (0.52)	4 to 6 inches	Standard surface-mounted escutcheons or recessed with the Micromatic® Model E-1, E-2, or E-3 recessed escutcheon, or G-1 adjustable escutcheon	See footnote 6	See footnote 6	8 (2.4)	
14 X 14 (4.3 X 4.3)	14 (4.3)	16 (60.6)	7.6 (0.52)	16 (60.6)	7.6 (0.52)						
16 X 16 (4.9 X 4.9)	16 (4.9)	20 (75.7)	11.9 (0.82)	21 (79.5)	13.1 (0.90)						
16 X 18 (4.9 X 5.5)	16 (4.9)	22 (83.3)	14.4 (0.99)	22 (83.3)	14.4 (0.99)						
16 X 20 (4.9 X 6.1)	16 (4.9)	26 (98.4)	20.1 (1.39)	26 (98.4)	20.1 (1.39)						
16 X 22 (4.9 X 6.7)	16 (4.9)	31 (117.3)	28.6 (1.97)	--	--						
18 X 18 (5.5 X 5.5)	18 (5.5)	23 (87.1)	15.7 (1.1)	23 (87.1)	15.7 (1.1)						
18 X 20 (5.5 X 6.1)	18 (5.5)	29 (109.8)	25.0 (1.7)	29 (109.8)	25.0 (1.7)						
20 X 20 (6.1 X 6.1)	20 (6.1)	30 (113.6)	26.8 (1.8)	30 (113.6)	26.8 (1.8)						
16 X 24 (4.9 X 7.3)	16 (4.9)	38 (143.8)	42.9 (2.96)	--	--						
14 X 26 (4.3 X 7.9)	14 (4.3)	42 (159)	52.4 (3.62)	--	--	6 to 12 inches	Standard surface-mounted escutcheons only	See footnote 6 and 7	See footnote 6		
12 X 12 (3.7 X 3.7)	12 (3.7)	16 (60.6)	7.6 (0.52)	16 (60.6)	7.6 (0.52)		Standard surface-mounted escutcheons or recessed with the Micromatic® Model E-1, E-2, or E-3 recessed escutcheon, or G-1 adjustable escutcheon	See footnote 6 and 7	See footnote 6		
14 X 14 (4.3 X 4.3)	14 (4.3)	18 (68.1)	9.7 (0.67)	18 (68.1)	9.7 (0.67)						
16 X 16 (4.9 X 4.9)	16 (4.9)	24 (90.8)	17.1 (1.2)	24 (90.8)	17.1 (1.2)						
16 X 18 (4.9 X 5.5)	16 (4.9)	27 (102.2)	21.7 (1.49)	27 (102.2)	21.7 (1.49)						
16 X 20 (4.9 X 6.1)	16 (4.9)	32 (121.1)	30.4 (2.1)	32 (121.1)	30.4 (2.1)						
16 X 22 (4.9 X 6.7)	16 (4.9)	37 (140.1)	40.7 (2.81)	--	--						
18 X 18 (5.5 X 5.5)	18 (5.5)	29 (109.8)	25.0 (1.7)	29 (109.8)	25.0 (1.7)						
18 X 20 (5.5 X 6.1)	18 (5.5)	35 (132.5)	36.4 (2.51)	35 (132.5)	36.4 (2.51)						
20 X 20 (6.1 X 6.1)	20 (6.1)	36 (136.3)	38.5 (2.66)	36 (136.3)	38.5 (2.66)						
16 X 24 (4.9 X 7.3)	16 (4.9)	42 (159)	52.4 (3.62)	--	--						
14 X 26 (4.3 X 7.9)	14 (4.3)	46 (174.1)	62.9 (4.34)	--	--		Standard surface-mounted escutcheons only	See footnote 6 and 7	See footnote 6		

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 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.
- 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. Refer also to Design Criteria.
- ⁵ Listed by Underwriter's Laboratories, Inc. for use in the U.S., Canada, and European Union.
- ⁶ Approved Finishes are: plain brass, chrome, white polyester, black polyester, and ENT. Other paint colors are available on request with the same C-UL-US-EU listings as the standard finish colors.
- ⁷ Approved finish is Electroless Nickel PTFE (ENT). Sprinklers with ENT, White polyester, and black polyester finishes are C-UL-US-EU Listed as corrosion-resistant. ENT is available with standard surface-mounted escutcheons or the Micromatic Model E-1 recessed escutcheon.



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DESIGN CRITERIA

(Also refer to the Approval Chart.)

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

When using Viking Residential Sprinkler VK460 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).
- The VK460 horizontal sidewall sprinkler deflector shall be located a minimum of 1-3/8" (35 mm) and a maximum of 6" (152 mm) from the wall on which it is installed.

DEFLECTOR POSITION: Install sprinkler VK460 with the leading edge of the deflector oriented parallel to the ceiling and the sprinkler frame arms oriented perpendicular to the ceiling (see Figure 3). **THE TOP SURFACE OF THE DEFLECTOR IS MARKED "TOP"**. The sprinkler must be oriented as shown in Figure 3.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to Forms F_080415, F_080814, 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.

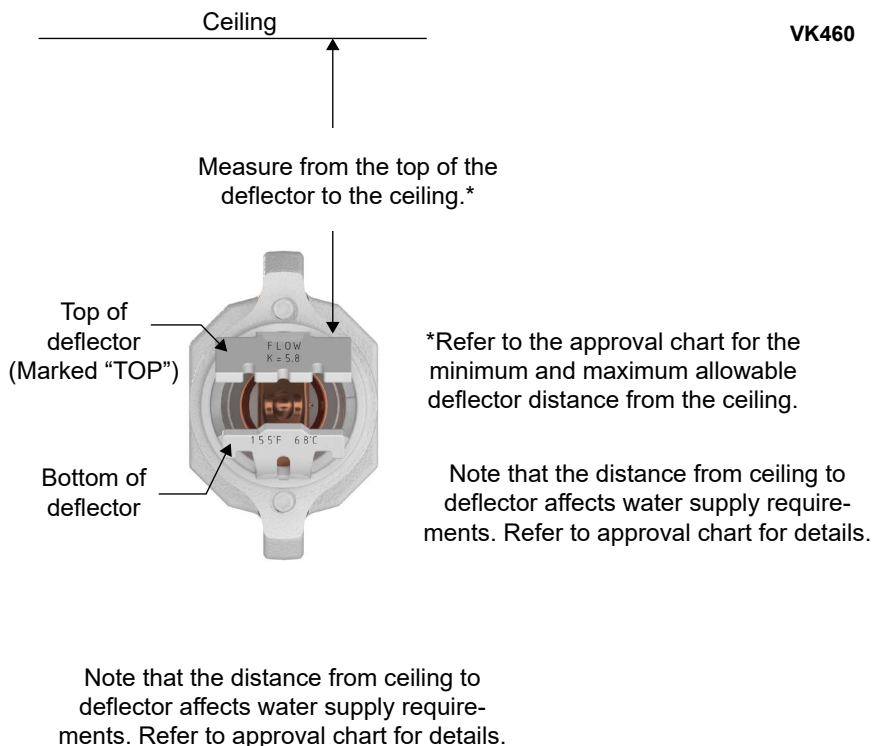


Figure 2: Correct Deflector Orientation



TECHNICAL DATA

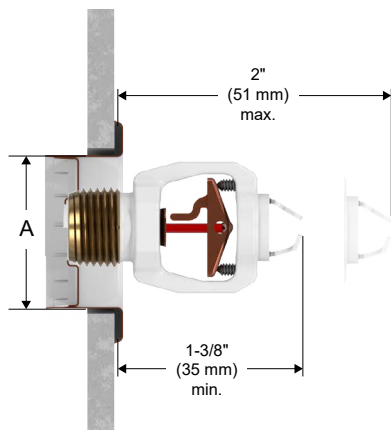
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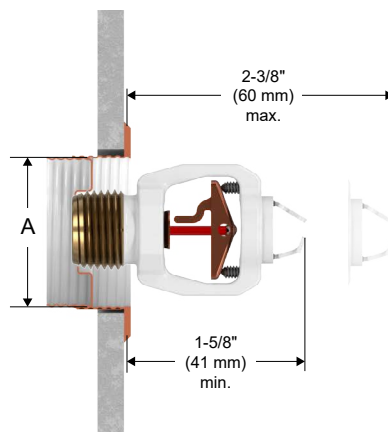
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Model E-1 Escutcheon

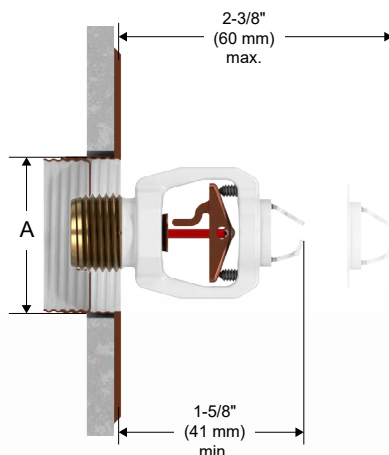


Model E-2 Escutcheon



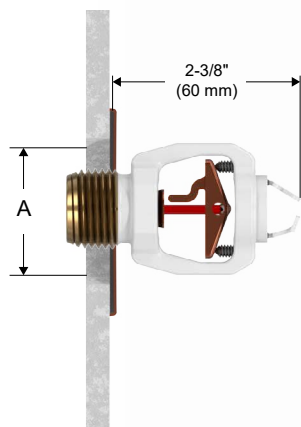
VK460

Model E-3 Escutcheon

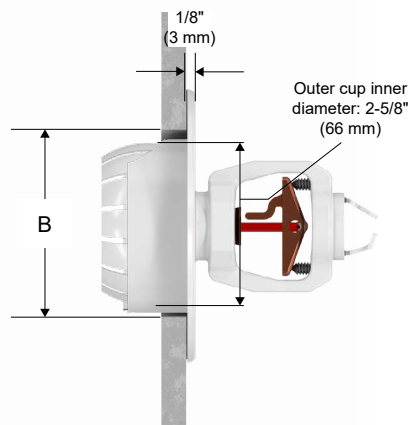


Wall Opening Size (A): Minimum 2-5/16" (59 mm) Maximum 2-1/2" (64 mm)

Wall Opening Size (B):
Minimum 2-5/8" (66 mm)
Maximum 3-3/4" (95 mm)



Surface-Mount Escutcheon



Model G-1 Escutcheon

Figure 3: Installation Dimensions with Escutcheons



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Approval Chart Viking VK466, 5.2 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 NFPA 13, 13R or 13D 2013 Editions

Sprinkler Base Part Number ¹	SIN	NPT Thread Size		Nominal K-Factor		Maximum Water Work- ing Pressure	Overall Length	
		Inches	mm	U.S.	metric ²		Inches	mm
23024	VK466	1/2	15	5.2	74.9	175 psi (12 bar)	2-1/4	58
Max. Cover- age Area ⁵ Ft.X Ft. (m X m)	Ordinary Temp Rat- ing (155 °F/68 °C)		Intermediate Temp Rating (175 °F/79 °C)		Deflec- tor to Ceiling	Installation Type	Listings and Approvals ³	Minimum Spacing Ft. (m)
	Flow ⁵ GPM (L/min)	Pres- sure ⁵ PSI (bar)	Flow ⁵ GPM (L/min)	Pres- sure ⁵ PSI (bar)			C-UL-US-EU ⁴	
12 X 12 (3.7 X 3.7)	14 (53.0)	7.2 (0.50)	14 (53.0)	7.2 (0.50)	1-1/8 to 2 inch	Standard sur- face-mounted escutcheons, or recessed with the Micro- matic® Model E-1, E-2, or E-3 recessed escutcheon	See footnotes 6 and 7	8 (2.4)
14 X 14 (4.3 X 4.3)	14 (53.0)	7.2 (0.50)	14 (53.0)	7.2 (0.50)				
16 X 16 (4.9 X 4.9)	14 (53.0)	7.2 (0.50)	14 (53.0)	7.2 (0.50)				
18 X 18 (5.5 X 5.5)	17 (64.4)	10.7 (0.74)	17 (64.4)	10.7 (0.74)				
20 X 20 (6.1 X 6.1)	20 (75.7)	14.8 (1.02)	20 (75.7)	14.8 (1.02)				

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 Listed by Underwriter's Laboratories, Inc. for use in the U.S., Canada, and European Union.
- ⁵ 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.
- ⁶ Approved finishes are: plain brass, chrome, white polyester, and black polyester, and ENT. Other paint colors are available on request with the same C-UL-US-EU listings as the standard finish colors.
- ⁷ Approved finish is Electroless Nickel PTFE (ENT). Sprinklers with ENT, white polyester, and black polyester finishes are 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

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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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DESIGN CRITERIA

(Also refer to the Approval Chart.)

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

When using Viking Residential Sprinkler VK466 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 the applicable NFPA 13 edition.
- Minimum distance between residential sprinklers: 8 ft. (2.4 m).
- Venting is not required.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to Form No. F_080190, F_080814, and F_080415 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 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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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 VK467, 4.9 K-Factor Residential Upright 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 NFPA 13, 13R or 13D 2013 Editions

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		
23029	VK467	1/2	13	5	71	175 psi (12 bar)	2-1/4	56		
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			
12 X 12 (3.7 X 3.7)	14 (53.0)	8.16 (0.56)	14 (53.0)	8.16 (0.56)	3 - 5 inches	Upright	See footnote 6 and 7.	9 (2.74)		
14 X 14 (4.3 X 4.3)	14 (53.0)	8.16 (0.56)	14 (53.0)	8.16 (0.56)						
16 X 16 (4.9 X 4.9)	16 (60.6)	10.66 (0.73)	16 (60.6)	10.66 (0.73)						
12 X 12 (3.7 X 3.7)	15 (56.8)	9.37 (0.65)	15 (56.8)	9.37 (0.65)	5 - 10 inches					
14 X 14 (4.3 X 4.3)	15 (56.8)	9.37 (0.65)	15 (56.8)	9.37 (0.65)						
16 X 16 (4.9 X 4.9)	18 (68.1)	13.49 (0.93)	18 (68.1)	13.49 (0.93)						
12 X 12 (3.7 X 3.7)	15 (56.8)	9.37 (0.65)	--	--	1 to 3 inch- es below 14 inch beams					
14 X 14 (4.3 X 4.3)	15 (56.8)	9.37 (0.65)	--	--						
16 X 16 (4.9 X 4.9)	18 (68.1)	13.49 (0.93)	--	--						

Footnotes

- ¹ Part number shown is the base part number. For complete part number, refer to Viking's current price schedule.
- ² The metric K-factor shown is for when pressure is measured in Bar. When pressure is measured in kPa, be sure to divide the metric K-factor 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 Approved finishes: plain brass, chrome, white polyester, and black polyester, and ENT. Other paint colors are available upon request with the same C-UL-US-EU listings as the standard finish colors.
- ⁷ Sprinklers with ENT, white polyester, and black polyester finishes are C-UL-US-EU Listed as corrosion-resistant.



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Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

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DESIGN CRITERIA

(Also refer to the Approval Chart.)

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

When using Viking's residential Upright Sprinkler VK467 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 and 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 the applicable NFPA 13 edition.
- Minimum distance between residential sprinklers: 9 ft. (2.74 m).

BEAM CEILING GUIDELINES

C-UL-US-EU Listed for installation in residential occupancies with beam ceilings (with horizontal ceilings only).

Refer to the Approval Chart for sprinkler areas of coverage and hydraulic design.

Sprinkler Location: Locate sprinklers on the underside of the beams (not in the bays or pockets formed by the beams). Refer to Figure 4. The vertical distance from the sprinkler deflector to the bottom of the primary beam must be between 1" and 3" (25 to 75 mm). The horizontal distance from the centerline of the sprinkler to the primary beam cannot be more than 2" (50 mm) (Figure 4).

Beam Position: Directly attached to the underside of a combustible or non-combustible smooth ceiling of any height.

Beam Size and Shape (Cross section):

- Depth: Maximum 14" (350 mm) for primary beams. Secondary beam depth cannot be greater than the primary beam.
- Width: Unlimited.
- Beam Shape: Rectangular to circular.

Beam Types: Combustible or non-combustible, solid surface, solid or hollow core.

Beam Spacing:

- A. For primary beams, the distance from the wall to the center of the nearest primary beam must be at least 3'-4" (1.0 m), and not more than one-half the listed sprinkler spacing. **Note:** Sprinklers may not be required to be located in the first beam nearest the wall. Center-to-center distance between primary beams is to be a maximum of 16 ft (4.9 m). Refer to Figure 6A.
- B. When beam pockets created by the primary beams exceed 20 ft (6.1 m) in length, secondary beams are required as follows (also refer to Figure 6B):
 1. Secondary beam depth must be equal to primary beam depth.
 2. Secondary beams must be placed so that the bays formed by the primary beams do not exceed 20 ft (6.1 m) in length.
- C. When primary beam spans do not exceed 20 ft (6.1 m), secondary beams (not required) may have any distance from wall to nearest secondary beam and any distance center to center between secondary beams. Refer to Figure 6B.

Also:

When primary beam spans exceed 20ft (6.1 m) an alternate protection scheme for the compartment would be to calculate all the sprinklers in the compartment. Refer to Figure 7.

- More stringent design requirement.
- Secondary beams or baffles would not be required for a compartment space design.
- The minimum required discharge from each sprinkler would utilize flow rates given in the Approval Chart for NFPA 13D and NFPA13R applications

Lintels: Must be present over doorways exiting the compartment. Lintel height must be whichever is greatest: at least 8" (200 mm) or at least the depth of the primary beams.

Beam and Soffit Arrangements: If a soffit is installed, beams may be arranged within the soffit. The cross section of the soffit may be any size, provided it does not create an obstruction to water distribution per the obstruction rules of NFPA 13 for residential sprinklers. Where there is a soffit, beam spacing from the wall is to be measured from the face of the soffit rather than the wall. **NOTE:** The sprinkler area of coverage is to be measured from the wall.

Definitions:

- Primary beams: The main beams that run primarily in one direction.
- Secondary beams: The beams that run perpendicular to the main beams.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to Form No.s F_080190, F_080814, and F_080415 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 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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The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

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VK467

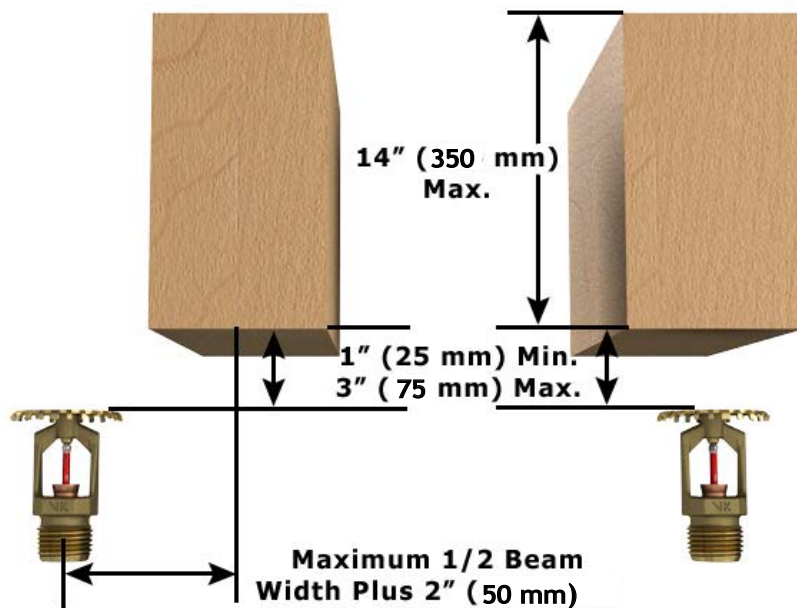


Figure 4: Sprinkler Positioning Under Primary Beams

VK467

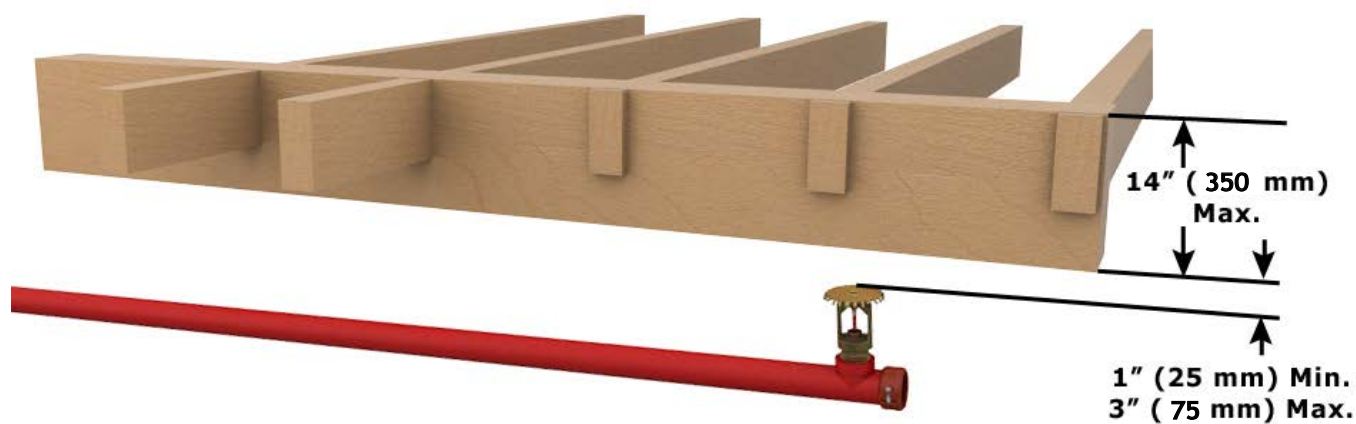


Figure 5: Sprinkler Positioning Under Primary Beams



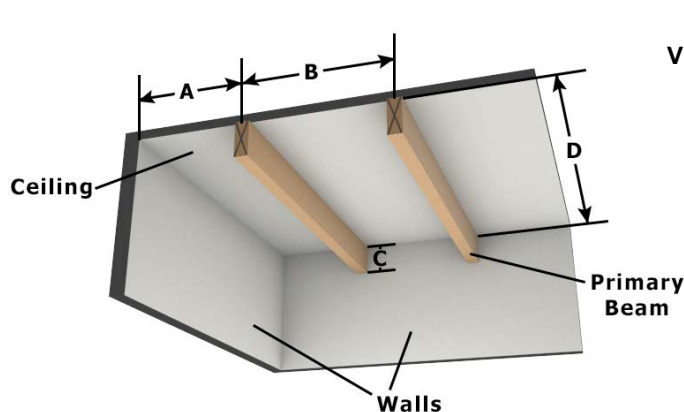
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All dimensions are measured to wall faces and to centerlines of beams.

A = Distance from wall to nearest primary beam:

Minimum: 3 ft 4 in (1.0 m).

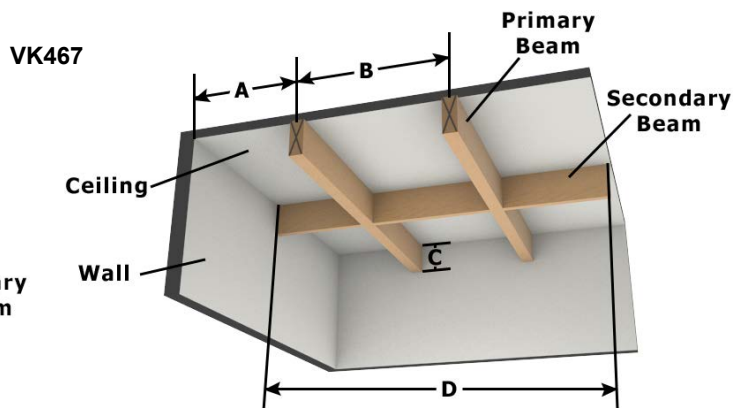
Maximum: No more than 1/2 listed sprinkler spacing.

B = Spacing between primary beams: 16 ft (4.9 m) maximum

C = Beam depth: 14" (350 mm) maximum

D = Beam span: 20 ft (6.1 m) maximum

Figure 6A: Primary Beam Spans up to 20 ft (6.1 m)



All dimensions are measured to wall faces and to centerlines of beams.

A = Distance from wall to nearest primary beam:

Minimum: 3 ft 4 in (1.0 m).

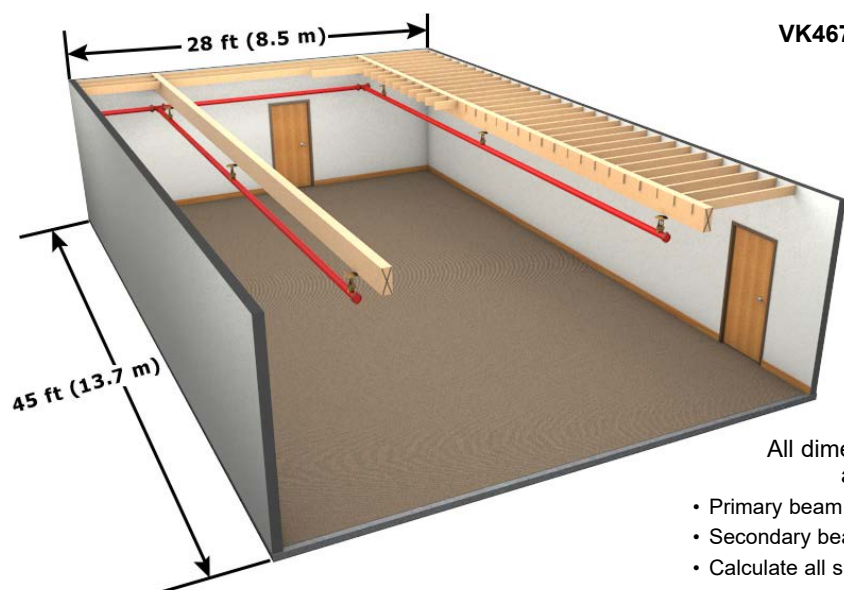
Maximum: No more than 1/2 listed sprinkler spacing.

B = Spacing between primary beams: 16 ft (4.9 m) maximum

C = Beam depth: 14" (350 mm) maximum

D = 20 ft (6.1 m) maximum for secondary beams that are to be equal in depth for primary beams and that are required so that primary beam pockets do not exceed 20 ft (6.1 m).

Figure 6B: Primary Beam Spans over 20 ft (6.1 m)



VK467

EXAMPLE

All dimensions are measured to wall faces and to centerlines of beams.

- Primary beam spans exceeding 20 ft (6.1 m)
- Secondary beams or baffles not required
- Calculate all sprinklers in compartment (Above example 6 sprinklers)

Figure 7: Alternate Entire Compartment Protection Scheme Example



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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	
23023	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	
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 footnotes 6 and 7.	See footnotes 6 and 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

- Part number shown is the base part number. For complete part number, refer to Viking's current price schedule.
- 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.
- 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.
- 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.
- Listed by Underwriter's Laboratories, Inc. for use in the U.S., Canada, and European Union.
- Approved finishes are: plain brass, chrome, white polyester, and black polyester, and ENT. Other paint colors are available on request with the same C-UL-US-EU listings as the standard finish colors.
- Approved finish is Electroless Nickel PTFE (ENT). Sprinklers with ENT, white polyester, and black polyester finishes are 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

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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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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 the applicable NFPA 13 edition.
- Minimum distance between residential sprinklers: 8 ft. (2.4 m).
- Venting is not required.

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.



TECHNICAL DATA

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Approval Chart Viking VK470, 3.0 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 the 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
23021	VK470	1/2	15	3.0	43.2	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	
12 X 12 (3.7 X 3.7)	8 (30.3)	7.11 (0.49)	8 (30.3)	7.11 (0.49)	1-1/8 to 2 inch	Standard surface- mounted es- cutcheons, or recessed with the Micromatic® Model E-1, E-2, or E-3 re- cessed es- cutcheon	See footnotes 6 and 7.	8 (2.4)
14 X 14 (4.3 X 4.3)	10 (37.9)	11.11 (0.77)	10 (37.9)	11.11 (0.77)				
15 X 15 (4.6 X 4.6)	12 (45.4)	16 (1.10)	12 (45.4)	16 (1.10)				
16 X 16 (4.9 X 4.9)	13 (49.2)	18.8 (1.29)	13 (49.2)	18.8 (1.29)				

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.
- ⁵ Listed by Underwriter's Laboratories, Inc. for use in the U.S., Canada, and European Union.
- ⁶ Approved finishes are: brass, chrome, white polyester, and black polyester. Other paint colors are available on request with the same C-UL-US-EU listings as the standard finish colors.
- ⁷ Approved finish is plain brass, chrome, white polyester, black polyester, and Electroless Nickel PTFE (ENT). Sprinklers with ENT, white polyester, and black polyester finishes are 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

AUSTRALIAN WATERMARK FREEDOM® RESIDENTIAL 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

DESIGN CRITERIA

(Also refer to the Approval Chart.)

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

When using Viking Residential Pendent Sprinkler VK470 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 the applicable NFPA 13 edition.
- Minimum distance between residential sprinklers: 8 ft. (2.4 m).
- Venting is not required.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to Form No.s F_080190, F_080814, and F_080415 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 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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AUSTRALIAN WATERMARK FREEDOM® RESIDENTIAL 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

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Approval Chart Viking VK471, 3.7 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 the 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
25641	VK471	1/2	--	3.7	53.3	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)			cULus ⁵	
12 X 12 (3.7 X 3.7)	10 (37.9)	7.3 (0.50)	10 (37.9)	7.3 (0.50)	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 footnotes 6 and 7.	8 (2.4)
14 X 14 (4.3 X 4.3)	10 (37.9)	7.3 (0.50)	10 (37.9)	7.3 (0.50)				
16 X 16 (4.6 X 4.6)	13 (49.2)	12.3 (0.82)	13 (49.2)	12.3 (0.82)				
18 X 18 (4.9 X 4.9)	17 (64.43)	21.1 (1.44)	17 (64.43)	21.1 (1.44)				

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.
- ⁵ Listed by Underwriter's Laboratories, Inc. for use in the U.S. and Canada.
- ⁶ Approved finishes are: plain brass, chrome, white polyester, black polyester, and ENT. Other paint colors are available on request with the same cULus listings as the standard finish colors.
- ⁷ Approved finish is Electroless Nickel PTFE (ENT). Sprinklers with ENT, white polyester, and black polyester finishes are cULus Listed as corrosion-resistant. ENT is available with standard surface-mounted escutcheons or the Micromatic Model E-1 recessed escutcheon.



TECHNICAL DATA

AUSTRALIAN WATERMARK FREEDOM® RESIDENTIAL 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

DESIGN CRITERIA

(Also refer to the Approval Chart.)

UL Listing Requirements (cULus):

When using Viking Residential Pendent Sprinkler VK471 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 the applicable NFPA 13 edition.
- Minimum distance between residential sprinklers: 8 ft. (2.4 m).
- Venting is not required.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to Form No.s F_080190, F_080814, and F_080415 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 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.



TECHNICAL DATA

AUSTRALIAN WATERMARK FREEDOM® RESIDENTIAL 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

Approval Chart Viking VK472, 5.8 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
23025	VK472	1/2	15	5.8	83.6	175 psi (12 bar)		2-1/4	58
Max. Coverage Area ⁵ 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 ⁵ GPM (L/min)	Pressure ⁵ PSI (bar)	Flow ⁵ GPM (L/min)	Pressure ⁵ PSI (bar)			C-UL-US-EU ⁴	VdS	
16 X 16 (4.9 X 4.9)	16 (60.6)	7.6 (0.52)	17 (64.4)	8.6 (0.59)	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 footnotes 6 and 7.	See footnotes 6 and 7.	8 (2.4)
18 X 18 (5.5 X 5.5)	17 (64.4)	8.6 (0.59)	17 (64.4)	8.6 (0.59)					
20 X 20 (6.1 X 6.1)	21 (79.5)	13.1 (0.90)	--	--					

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 Listed by Underwriter's Laboratories, Inc. for use in the U.S., Canada, and European Union.
- ⁵ 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.
- ⁶ Approved finishes are: plain brass, chrome, white polyester, black polyester, ENT. Other paint colors are available on request with the same C-UL-US-EU listings as the standard finish colors.
- ⁷ Approved finish is Electroless Nickel PTFE (ENT). Sprinklers with ENT, white polyester, and black polyester finishes are 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

AUSTRALIAN WATERMARK FREEDOM® RESIDENTIAL 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

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DESIGN CRITERIA

(Also refer to the Approval Chart.)

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

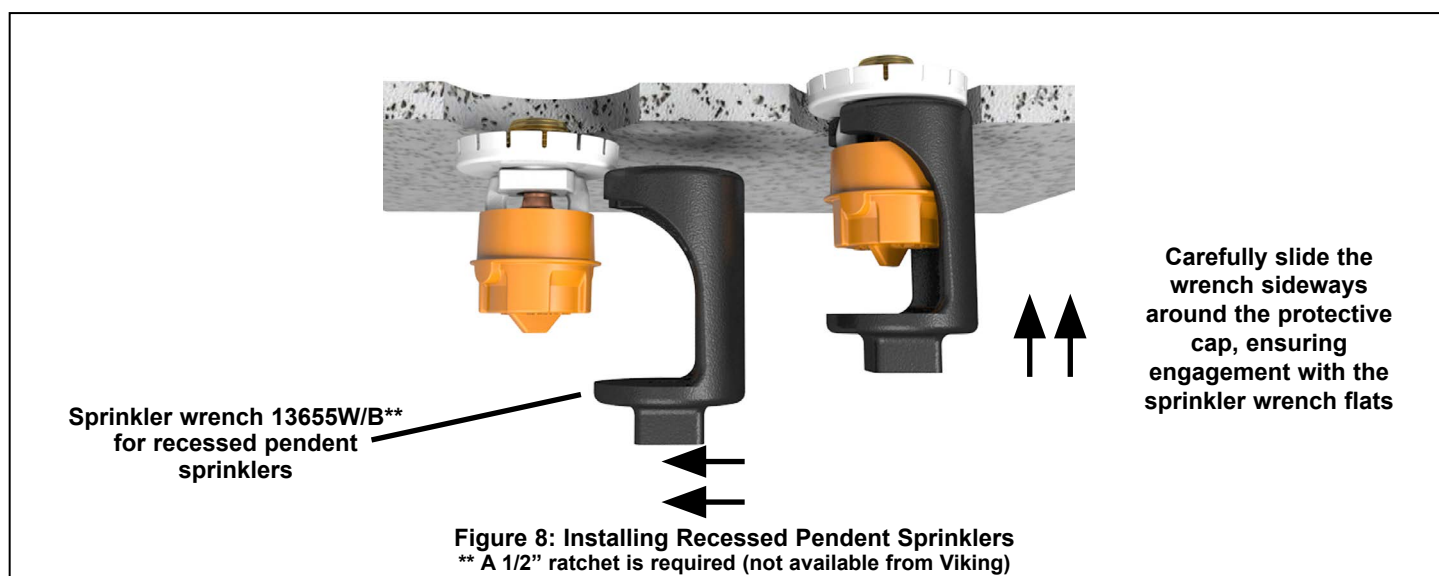
When using Viking Residential Pendent Sprinkler VK472 for systems designed to NFPA 13D or NFPA 13R, apply the listed areas of coverage and minimum water supply requirements shown in the Approval Chart.

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 the applicable NFPA 13 edition.
- Minimum distance between residential sprinklers: 8 ft. (2.4 m).
- Venting is not required.

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.

VK430, VK466, VK468, VK470, and VK472





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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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VK430, VK466, VK468, VK470, and VK472

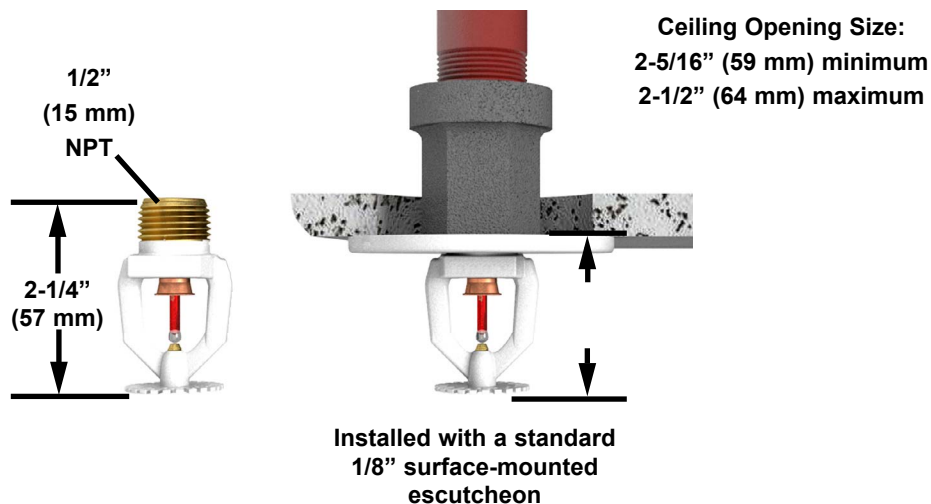


Figure 9: Sprinkler Dimensions with a Standard Escutcheon

VK430, VK466, VK468, VK470, and VK472

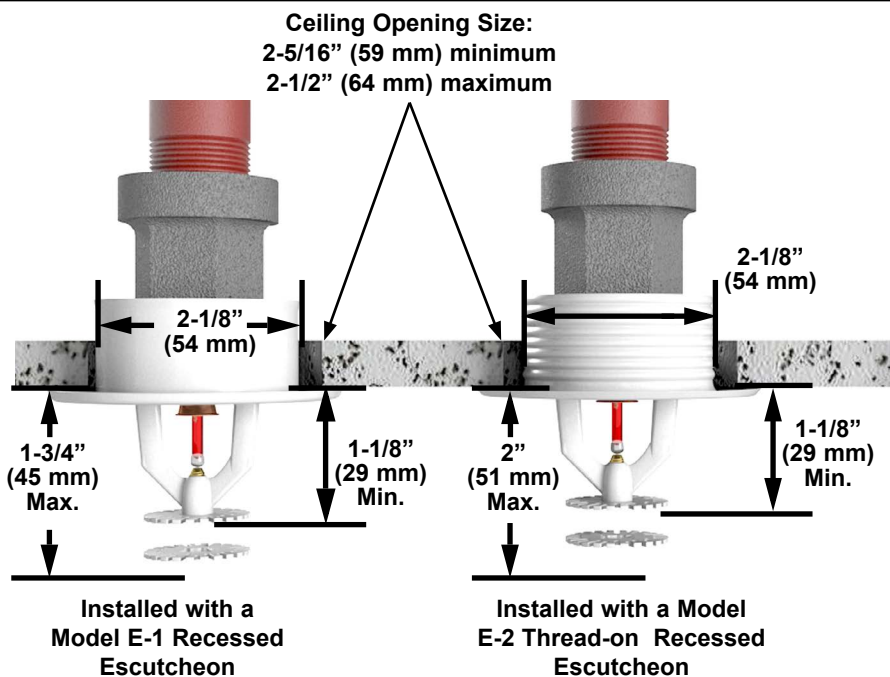


Figure 10: Sprinkler Dimensions with the Model E-1 and E-2 Recessed Escutcheons



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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 Chart¹

Viking VK480, 4.0 K-Factor Residential Concealed HSW Sprinkler

For systems designed to NFPA 13D or NFPA 13R. For systems designed to NFPA 13, refer to the design criteria on page 4.

For Ceiling types refer to the most current Edition of NFPA 13, 13R or 13D.

Sprinkler Base Part Number ²		SIN	NPT Thread Size		Nominal K-Factor		Maximum Water Working Pressure		
			Inches	mm	U.S.	metric ³			
23031A		VK480	1/2	15	4.0	57.7	175 psi (12 bar)		
23031JN ^{8,9}		VK480	1/2	15	4.0	57.7	175 psi (12 bar)		
Max. Coverage Area ⁶ Width X Length Ft. X Ft. (m X m)	Max. Spacing Ft. (m)	Ordinary Temp Rating (165 °F/74 °C)		Intermediate Temp Rating (205 °F/96 °C)		Centerline of Sprinkler to Ceiling	Installation Type	Listings and Approvals ⁴	Minimum Spacing Ft. (m)
		Flow ⁶ GPM (L/min)	Pressure ⁶ PSI (bar)	Flow ⁶ GPM (L/min)	Pressure ⁶ PSI (bar)			C-UL-US-EU ⁵	
12 X 12 (3.7 X 3.7)	12 (3.7)	11 (41.7)	7.6 (0.52)	13 (49.3)	10.6 (0.73)	4-3/8 to 6-3/8 inches (111 to 162mm)	Concealed with Cover Plate As- sembly	See footnote 2, 7, and 8	8 (2.4)
14 X 14 (4.3 X 4.3)	14 (4.3)	13 (49.3)	10.6 (0.73)	13 (49.3)	10.6 (0.73)				
16 X 16 (4.9 X 4.9)	16 (4.9)	16 (60.6)	16 (1.10)	16 (60.6)	16 (1.10)				
16 X 18 (4.9 X 5.5)	16 (4.9)	17 (64.4)	18.1 (1.25)	18 (68.1)	20.3 (1.40)				
12 X 12 (3.7 X 3.7)	12 (3.7)	12 (45.5)	9 (0.62)	13 (49.3)	10.6 (0.73)	6-3/8 to 12-3/8 inches (162 to 314mm)			
14 X 14 (4.3 X 4.3)	14 (4.3)	14 (53.0)	12.3 (0.84)	14 (53.0)	12.3 (0.84)				
16 X 16 (4.9 X 4.9)	16 (4.9)	16 (60.6)	16 (1.10)	16 (60.6)	16 (1.10)				
16 X 18 (4.9 X 5.5)	16 (4.9)	18 (68.1)	20.3 (1.40)	18 (68.1)	20.3 (1.40)				

Footnotes

¹ For North American Markets only.

² For complete part number, also refer to current Viking price list schedule.

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. Refer also to Design Criteria listed below.

⁵ Sprinkler VK480 is Listed by Underwriter's Laboratories, Inc. for use in the U.S., Canada, and European Union.

⁶ 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 wall shall not exceed one half of the allowable maximum distance between sprinklers.

⁷ Cover Temperature Rating is 139 °F (59 °C). Cover Part No. 16207.

⁸ Accepted cover plate finishes are: White Polyester. Other paint colors are available on request with the same listings as the standard finish colors. Listings and approvals apply for any paint manufacturer. Contact Viking for additional information. Custom colors are indicated on a label inside the cover assembly. Accepted sprinkler finishes are plain brass and ENT.

⁹ cULus Listed as corrosion-resistant.



TECHNICAL DATA

AUSTRALIAN WATERMARK FREEDOM® RESIDENTIAL 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

DESIGN CRITERIA

(Also refer to the Approval Chart on page 3.)

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

When using Viking Residential Concealed Horizontal Sidewall Sprinkler VK480 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 above.

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 above for NFPA 13D and NFPA 13R 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.
- **THE TOP OF THE SPRINKLER BODY AND THE TOP OF THE INSTALLATION WRENCH ARE MARKED "TOP"**. Orient the top of the sprinkler element parallel with the ceiling.
- Minimum distance between residential sprinklers: 8 ft. (2.4 m).

NOTE: Concealed sprinklers must be installed in neutral or negative pressure plenums only.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to Form No. F_080190 and Form No. F_080415 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 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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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 VK484, 4.2 K-Factor Residential Horizontal Sidewall 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 NFPA 13, 13R or 13D current editions

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				
23027	VK484	1/2	15	4.2	57	175 psi (12 bar)	3	76				
Max. Coverage Area ⁴ Width X Length Ft. X Ft. (m X m)	Max. Spacing Ft. (m)	Ordinary Temp Rating (155 °F/68 °C)		Intermediate Temp Rating (175 °F/79 °C)		Top of 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				
12 X 12 (3.7 X 3.7)	12 (3.7)	13 (49.2)	9.6 (0.66)	13 (49.2)	9.6 (0.66)	4 to 6 inches	Standard surface-mounted escutcheons or recessed with the Micromatic® Model E-1, E-2, E-3, or G-1 Recessed Escutcheon	See Footnotes 6 and 7.	8 (2.4)			
14 X 14 (4.3 X 4.3)	14 (4.3)	14 (53.0)	11.1 (0.77)	15 (56.8)	12.8 (0.88)							
16 X 16 (4.9 X 4.9)	16 (4.9)	16 (60.6)	14.5 (1.00)	17 (64.4)	16.4 (1.13)							
16 X 18 (4.9 X 5.5)	16 (4.9)	19 (71.9)	20.5 (1.41)	19 (71.9)	20.5 (1.41)							
16 X 20 (4.9 X 6.1)	16 (4.9)	22 (83.3)	27.4 (1.89)	22 (83.3)	27.4 (1.89)							
12 X 12 (3.7 X 3.7)	12 (3.7)	14 (53.0)	11.1 (0.77)	14 (53.0)	11.1 (0.77)	6 to 12 inches						
14 X 14 (4.3 X 4.3)	14 (4.3)	16 (60.6)	14.5 (1.00)	16 (60.6)	14.5 (1.00)							
16 X 16 (4.9 X 4.9)	16 (4.9)	18 (68.1)	18.4 (1.27)	18 (68.1)	18.4 (1.27)							
16 X 18 (4.9 X 5.5)	16 (4.9)	20 (75.7)	22.7 (1.56)	20 (75.7)	22.7 (1.56)							
16 X 20 (4.9 X 6.1)	16 (4.9)	25 (94.6)	35.4 (2.44)	25 (94.6)	35.4 (2.44)							

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.

⁵ Listed by Underwriter's Laboratories, Inc. for use in the U.S., Canada, and the European Union.

⁶ Approved Finishes are: plain brass, chrome, white polyester, black polyester, and ENT. Other paint colors are available on request with the same cULus listings as the standard finish colors.

⁷ Approved finish is Electroless Nickel PTFE (ENT). Sprinklers with ENT, white polyester, and black polyester finishes are C-UL-US-EU Listed as corrosion-resistant. ENT is available with standard surface-mounted escutcheons or the Model E-1 recessed escutcheon.



TECHNICAL DATA

AUSTRALIAN WATERMARK FREEDOM® RESIDENTIAL 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

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DESIGN CRITERIA

(Also refer to the Approval Chart.)

cULus Listing Requirements:

When using Viking Residential Sprinkler VK484 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).
- The VK484 horizontal sidewall sprinkler deflector shall be located a minimum of 1-3/4" (44.5 mm) and a maximum of 6" (152 mm) from the wall on which it is installed.

DEFLECTOR POSITION: Install Viking Residential Horizontal Sidewall Sprinkler VK484 with the leading edge of the deflector oriented parallel with the ceiling and the sprinkler frame arms oriented perpendicular to the ceiling. Refer to the Approval Chart for the required distance between the top of the deflector and the ceiling.

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 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.

VK484

Wall Opening Size (A): Minimum 2-5/16" (59 mm), Maximum 2-1/2" (64 mm)

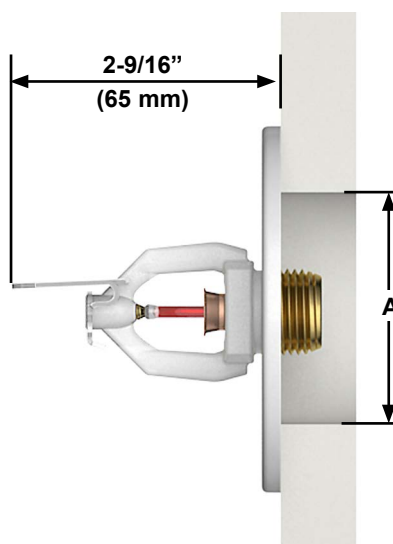


Figure 11:
Sprinkler VK484 Dimensions with a Standard Escutcheon



TECHNICAL DATA

AUSTRALIAN WATERMARK FREEDOM® RESIDENTIAL 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

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VK484

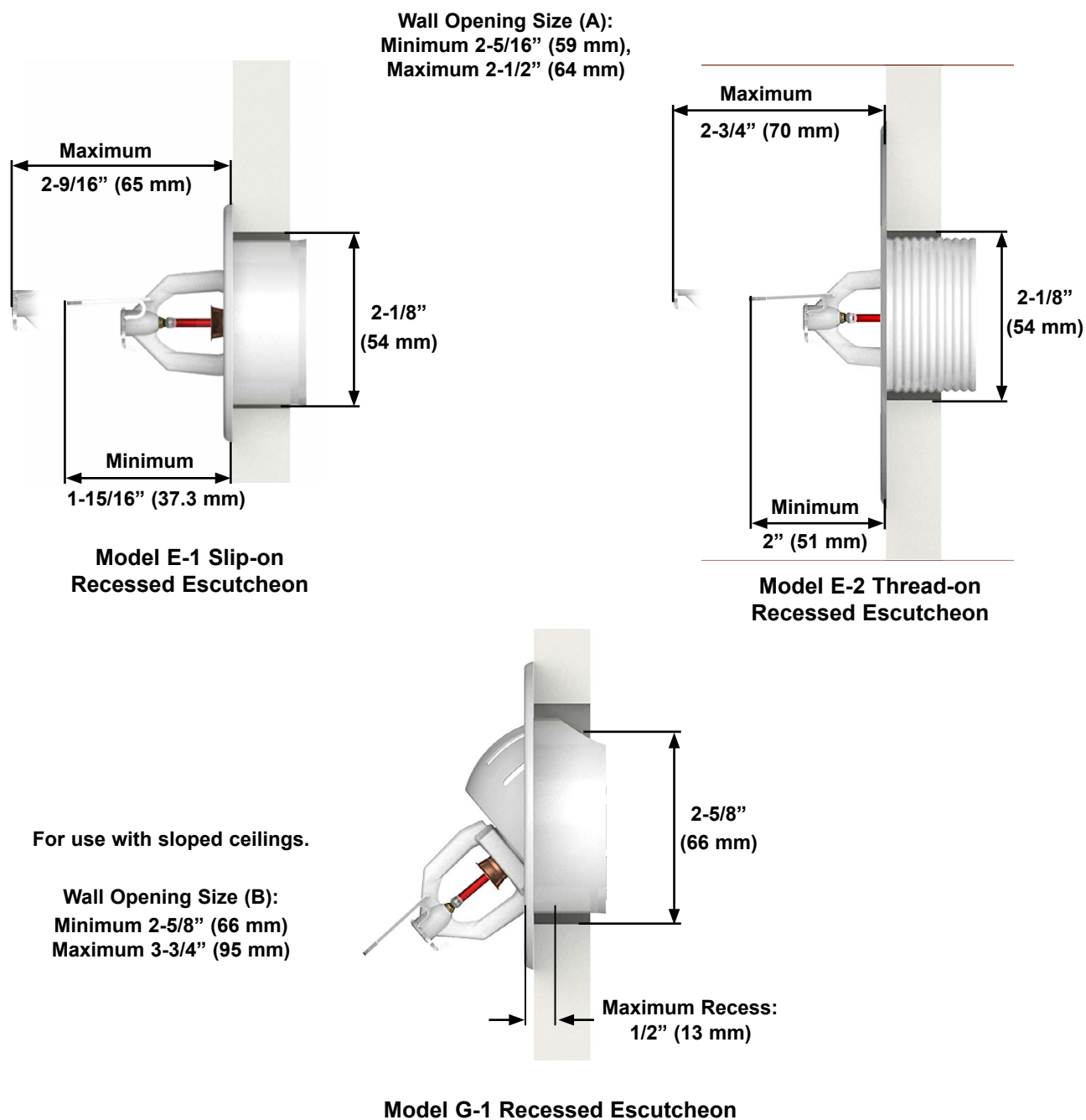


Figure 12:
Sprinkler VK484 Dimensions with Model E-1, E-2, and G-1 Recessed Escutcheons



TECHNICAL DATA

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Approval Chart

Viking VK486, 4.0 K-Factor Residential Horizontal Sidewall 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	
23026	VK486	1/2	15	4.0	57.7	175 psi (12 bar)		2-7/16	62	
Max. Coverage Area ³ Width X Length Ft. X Ft. (m X m)	Max. Spac- ing Ft. (m)	Ordinary Temp Rating (155 °F/68 °C)		Intermediate Temp Rating (175 °F/79 °C)		Top of Deflec- tor to Ceiling	Installation Type	Listings and Approvals ⁴		Mini- mum Spacing Ft. (m)
		Flow ³ GPM (L/min)	Pressure ³ PSI (bar)	Flow ³ GPM (L/min)	Pressure ³ PSI (bar)			C-UL-US-EU ⁵	VdS	
12 X 12 (3.7 X 3.7)	12 (3.7)	11 (41.7)	7.6 (0.52)	11 (41.7)	7.6 (0.52)	4 to 6 inches	Standard surface- mounted escutch- eons or recessed with the Micromat- ic® Model E-1, E-2, E-3, or G-1 recessed escutcheon	See footnotes 6 and 7.	See foot- note 6.	8 (2.4)
14 X 14 (4.3 X 4.3)	14 (4.3)	12 (45.5)	9 (0.62)	12 (45.5)	9 (0.62)					
16 X 16 (4.9 X 4.9)	16 (4.9)	13 (49.3)	10.6 (0.73)	13 (49.3)	10.6 (0.73)					
16 X 18 (4.9 X 5.5)	16 (4.9)	16 (60.6)	16 (1.10)	16 (60.6)	16 (1.10)					
16 X 20 (4.9 X 6.1)	16 (4.9)	22 (83.3)	30.3 (2.09)	22 (83.3)	30.3 (2.09)					
16 X 22 (4.9 X 6.7)	16 (4.9)	24 (90.8)	36 (2.48)	24 (90.8)	36 (2.48)					
18 X 18 (5.5 X 5.5)	18 (5.5)	18 (68.1)	20.3 (1.40)	19 (71.9)	22.6 (1.60)					
18 X 20 (5.5 X 6.1)	18 (5.5)	22 (83.3)	30.3 (2.09)	22 (83.3)	30.3 (2.09)					
20 X 20 (6.1 X 6.1)	20 (6.1)	22 (83.3)	30.3 (2.09)	22 (83.3)	30.3 (2.09)					
12 X 12 (3.7 X 3.7)	12 (3.7)	12 (45.5)	9 (0.62)	12 (45.5)	9 (0.62)	6 to 12 inches				
14 X 14 (4.3 X 4.3)	14 (4.3)	12 (45.5)	9 (0.62)	13 (49.3)	10.6 (0.73)					
16 X 16 (4.9 X 4.9)	16 (4.9)	14 (53.0)	12.3 (0.84)	14 (53.0)	12.3 (0.84)					
16 X 18 (4.9 X 5.5)	16 (4.9)	16 (60.6)	16 (1.10)	16 (60.6)	16 (1.10)					
16 X 20 (4.9 X 6.1)	16 (4.9)	23 (87.1)	33.1 (2.28)	23 (87.1)	33.1 (2.28)					
16 X 22 (4.9 X 6.7)	16 (4.9)	26 (98.4)	42.3 (2.91)	26 (98.4)	42.3 (2.91)					
18 X 18 (5.5 X 5.5)	18 (5.5)	18 (68.1)	20.3 (1.40)	19 (71.9)	22.6 (1.60)					
18 X 20 (5.5 X 6.1)	18 (5.5)	23 (87.1)	33.1 (2.28)	23 (87.1)	33.1 (2.28)					
20 X 20 (6.1 X 6.1)	20 (6.1)	24 (90.8)	36 (2.48)	24 (90.8)	36 (2.48)					

Footnotes

- Part number shown is the base part number. For complete part number, refer to Viking's current price schedule.
- 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.
- 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.
- 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.
- Listed by Underwriter's Laboratories, Inc. for use in the U.S., Canada, and European Union.
- Approved Finishes are: plain brass, chrome, white polyester, black polyester, and ENT. Other paint colors are available on request with the same C-UL-US-EU listings as the standard finish colors.
- Approved finish is Electroless Nickel PTFE (ENT). Sprinklers with ENT, white polyester, and black polyester finishes are C-UL-US-EU Listed as corrosion-resistant. ENT is available with standard surface-mounted escutcheons or the Micromatic Model E-1 recessed escutcheon.



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DESIGN CRITERIA

(Also refer to the Approval Chart.)

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

When using Viking Residential Horizontal Sidewall Sprinkler VK486 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 NFPA 13R 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).
- The VK486 horizontal sidewall sprinkler deflector shall be located a minimum of 1-1/4" (31.8 mm) and a maximum of 6" (152 mm) from the wall on which it is installed.

DEFLECTOR POSITION: Install sprinkler VK486 with the leading edge of the deflector oriented parallel to the ceiling and the sprinkler frame arms oriented perpendicular to the ceiling (see Figure 14). **THE TOP SURFACE OF THE DEFLECTOR IS MARKED "TOP"**. The sprinkler must be oriented as shown in Figure 13 below.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to Form No. F_080190, F_080814, and F_080415 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 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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VK486

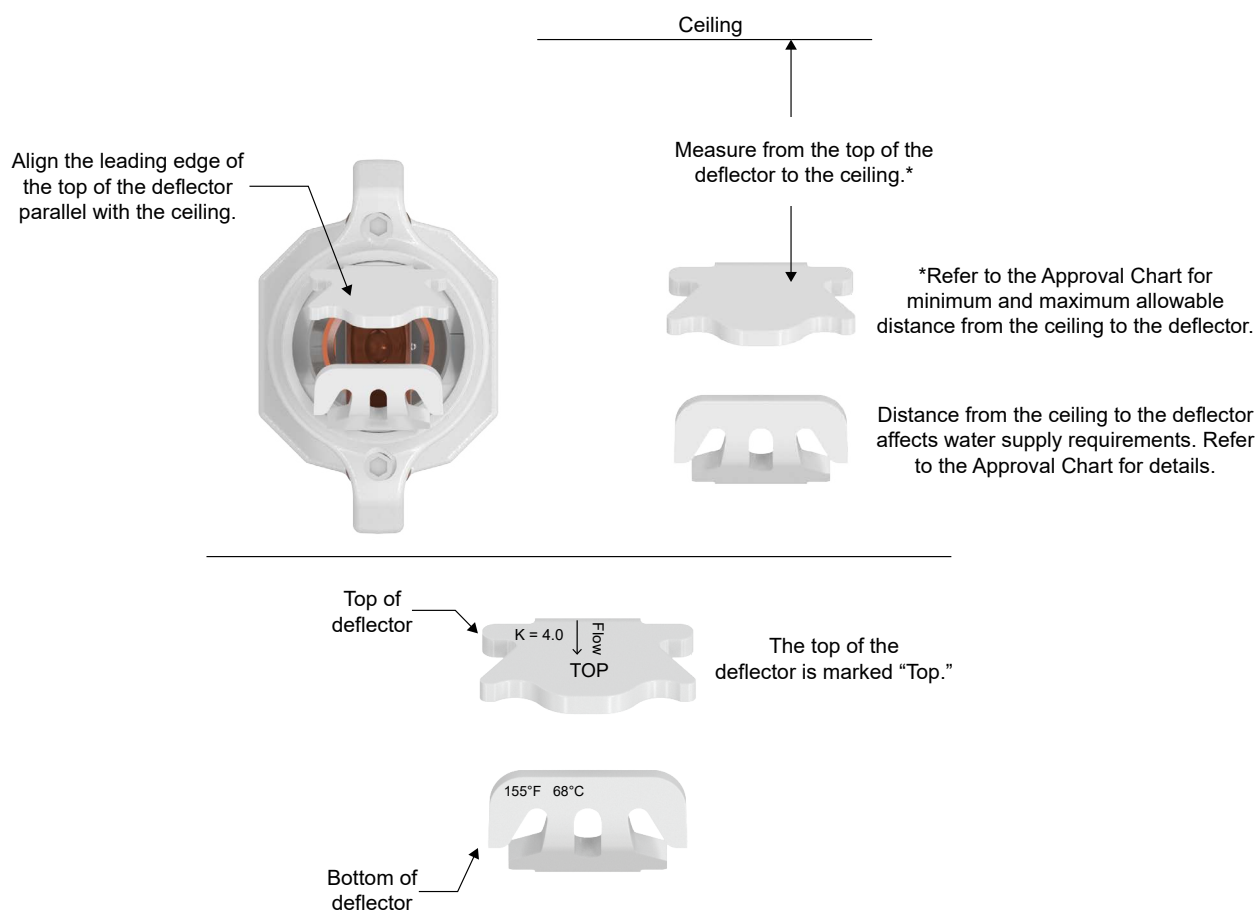


Figure 13:
Correct Orientation of the Deflector



TECHNICAL DATA

AUSTRALIAN WATERMARK FREEDOM® RESIDENTIAL SPRINKLERS

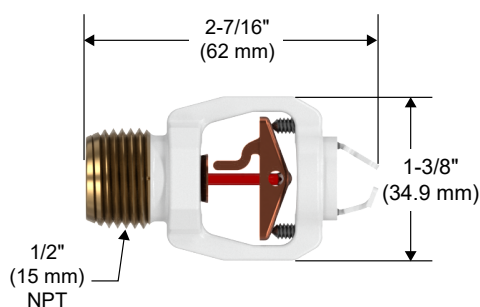
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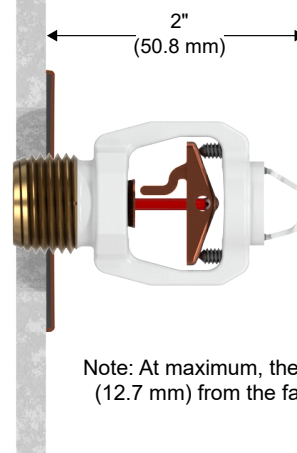
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VK486

Wall Opening Size:
Min: 2-5/16" (58.7 mm)
Max: 2-1/2" (63.5 mm)



Sprinkler (No Escutcheon)



Note: At maximum, the adapter is 1/2" (12.7 mm) from the face of the wall.

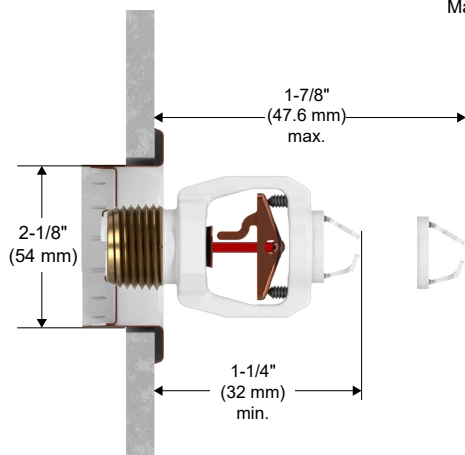
Standard 1/8" (3.1 mm) Surface-Mounted Escutcheon

Figure 14:

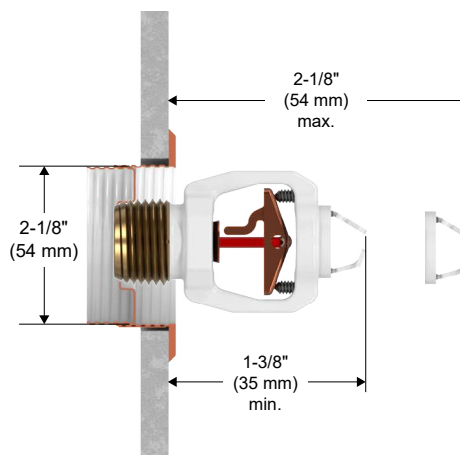
Sprinkler VK486 Dimensions with a Standard Escutcheon

VK486

Wall Opening Size:
Min: 2-5/16" (58.7 mm)
Max: 2-1/2" (63.5 mm)



Micromatic Model E-1 Escutcheon



Model E-2 Thread-On Recessed Escutcheon

Figure 15:

Sprinkler VK486 Dimensions with the Model E-1 and E-2 Recessed Escutcheons



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Approval Chart

Viking VK490, 5.8 K-Factor Residential Concealed HSW Sprinkler

For systems designed to NFPA 13D or NFPA 13R. For systems designed to NFPA 13, refer to the design criteria below. For ceiling types refer to the most current Edition of NFPA 13, 13R or 13D

Sprinkler Base Part Number ¹		SIN	NPT Thread Size		Nominal K-Factor		Maximum Water Working Pressure
			Inches	mm	U.S.	metric ²	
23032		VK490	1/2	15	5.8	83.6	175 psi (12 bar)
23032JN		VK490	1/2	15	5.8	83.6	175 psi (12 bar)
Max. Coverage Area ⁵ Width X Length Ft. X Ft. (m X m)	Max. Spacing Ft. (m)	All Temperatures		Centerline of Sprinkler to Ceiling	Installation Type	Listings and Approvals ³	Minimum Spac- ing Ft. (m)
		Flow ⁵ GPM (L/min)	Pressure ⁵ PSI (bar)			C-UL-US-EU ⁴	
12 X 12 (3.7 X 3.7)	12 (3.7)	16 (60.6)	7.6 (0.52)	4-3/8 to 6-3/8 inches	Concealed with Cover Plate Assembly	See footnotes 6 and 7	8 (2.4)
14 X 14 (4.3 X 4.3)	14 (4.3)	17 (64.4)	8.6 (0.59)				
16 X 16 (4.9 X 4.9)	16 (4.9)	19 (71.9)	10.7 (0.74)				
16 X 18 (4.9 X 5.5)	16 (4.9)	22 (83.3)	14.4 (0.99)				
16 X 20 (4.9 X 6.1)	16 (4.9)	23 (87.1)	15.7 (1.08)				
16 X 22 (4.9 X 6.7)	16 (4.9)	31 (117.3)	28.6 (1.97)				
18 X 20 (5.5 X 6.1)	18 (5.5)	28 (106.0)	23.3 (1.61)	6-3/8 to 12-3/8 inches			
12 X 12 (3.7 X 3.7)	12 (3.7)	17 (64.4)	8.6 (0.59)				
14 X 14 (4.3 X 4.3)	14 (4.3)	17 (64.4)	8.6 (0.59)				
16 X 16 (4.9 X 4.9)	16 (4.9)	19 (71.9)	10.7 (0.74)				
16 X 18 (4.9 X 5.5)	16 (4.9)	21 (79.5)	13.1 (0.90)				
16 X 20 (4.9 X 6.1)	16 (4.9)	26 (98.4)	20.1 (1.39)				
16 X 22 (4.9 X 6.7)	16 (4.9)	31 (117.3)	28.6 (1.97)				
18 X 20 (5.5 X 6.1)	18 (5.5)	28 (106.0)	23.3 (1.61)				

Footnotes

¹ For complete part number, also refer to current Viking price list 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 listed below.

⁴ Sprinkler VK490 is Listed by Underwriter's Laboratories, Inc. for use in the U.S., Canada, and European Union.

⁵ 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.

⁶ Cover temperature ratings are 139 °F (59 °C) and 165 F (74 °C). Cover Part No. 16207 ¹.

⁷ Accepted cover plate finishes are: white polyester and chrome. Other paint colors are available on request with the same listings as the standard finish colors. Listings and approvals apply for any paint manufacturer. Contact Viking for additional information. Custom colors are indicated on a label inside the cover assembly. Approved sprinkler finishes are plain brass and ENT.



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DESIGN CRITERIA

(Also refer to the Approval Chart on page 3.)

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

When using Viking Residential Concealed Horizontal Sidewall Sprinkler VK490 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 on page 3.

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:

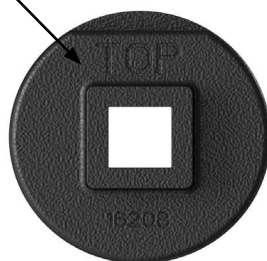
- The flow rates given in the Approval Chart above for NFPA 13D and NFPA 13R applications for each listed area of coverage, or
- Calculated based on a minimum discharge of 0.1 gpm/sq. ft. over the "design area" in accordance with the applicable NFPA 13 edition.
- **THE TOP OF THE SPRINKLER BODY AND THE TOP OF THE INSTALLATION WRENCH ARE MARKED "TOP".** Orient the top of the sprinkler element parallel with the ceiling as shown in Figure 17.
- Minimum distance between residential sprinklers: 8 ft. (2.4 m).

NOTE: Concealed sprinklers must be installed in neutral or negative pressure plenums only.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to Form No. F_080190 and F_080415 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 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.

VK480, VK490

The internal design of the sprinkler wrench is shaped to fit over the sprinkler and protective cap to ensure that the top of the wrench will be oriented in the same direction as the top of the sprinkler deflector.



Sprinkler
wrench



Sprinkler body

Orient the sprinkler and wrench as shown then slide the wrench over the sprinkler body and the protective cap.



Figure 16: Sprinkler VK490 Installation and Correct Use of Wrench



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VK480, VK490

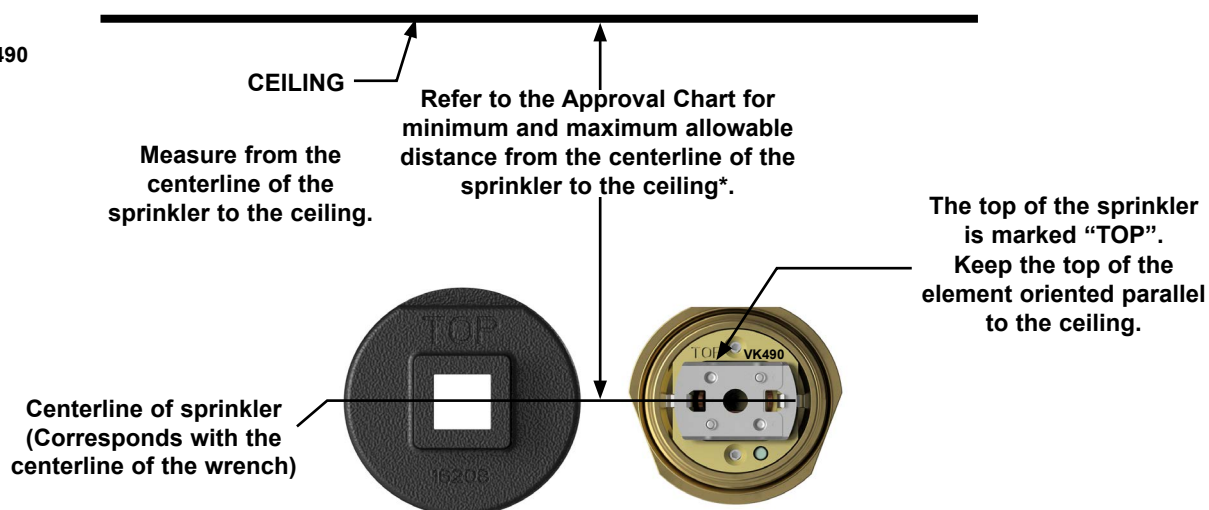
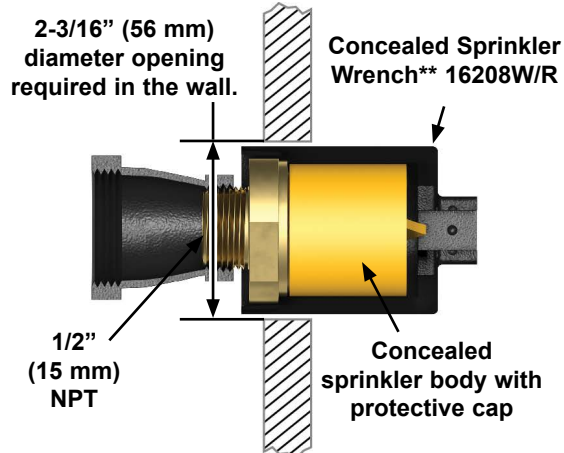


Figure 17: Sprinkler VK490 Correct Deflector Orientation

*Distance from the ceiling affects water supply requirements. Refer to the Approval Chart.

VK480, VK490



To install the Cover Plate assembly, gently push it onto the sprinkler body with even pressure using the palm of the hand.

Figure 18: Sprinkler VK490 Dimensions and Cover Installation

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



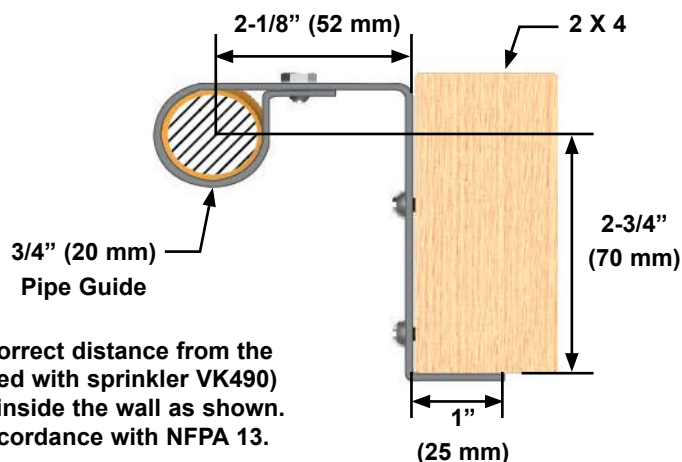
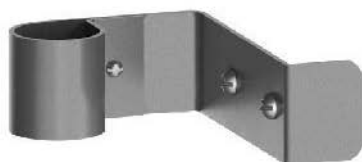
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VK480, VK490

**3/4" (20 mm) Pipe Guide
(Hardware included)**



NOTE: To ensure that the sprinkler is located the correct distance from the face of the finished wall, use the pipe guide (included with sprinkler VK490) and attached it to the 3/4" CPVC pipe and the 2 X 4 inside the wall as shown. All piping, hangers/bracing must be installed in accordance with NFPA 13.

Figure 19: Sprinkler VK490 Pipe Guide

VK480, VK490

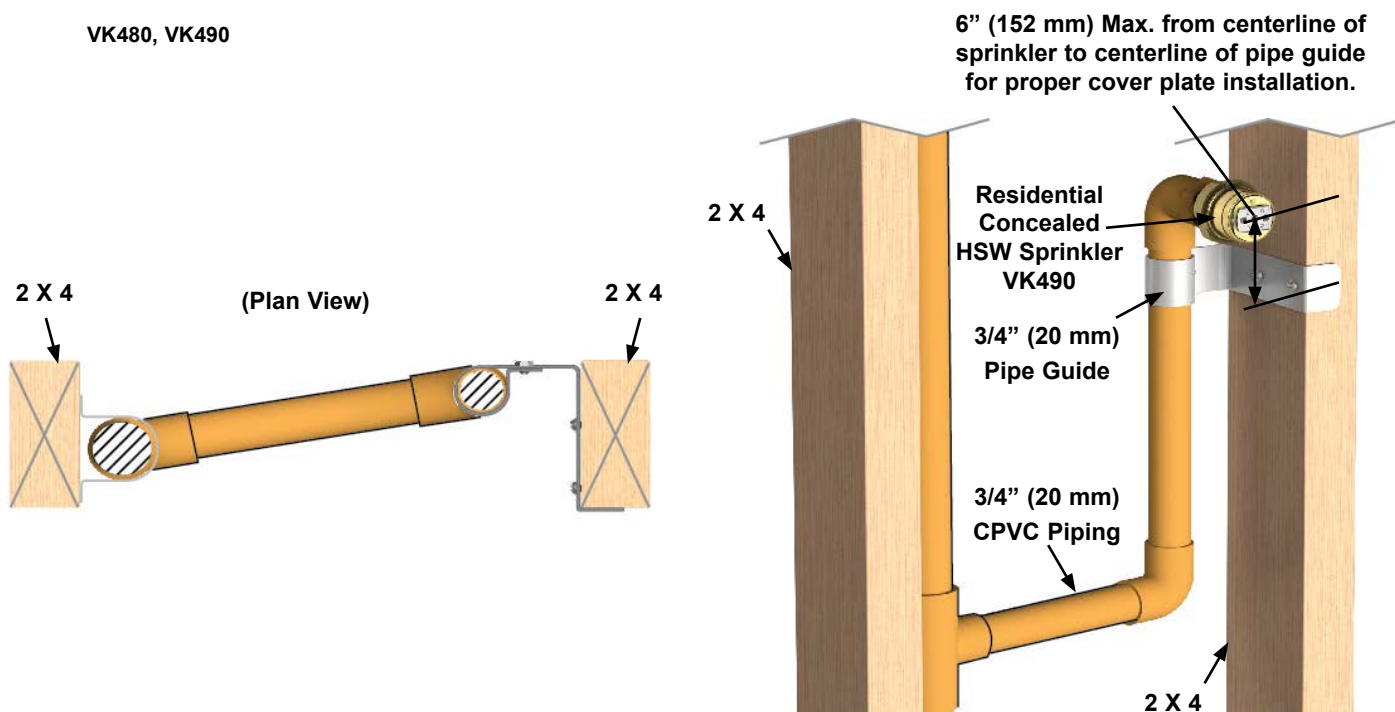


Figure 20: Sprinkler VK490 Pipe Guide Installation Instructions



TECHNICAL DATA

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VK480, VK490

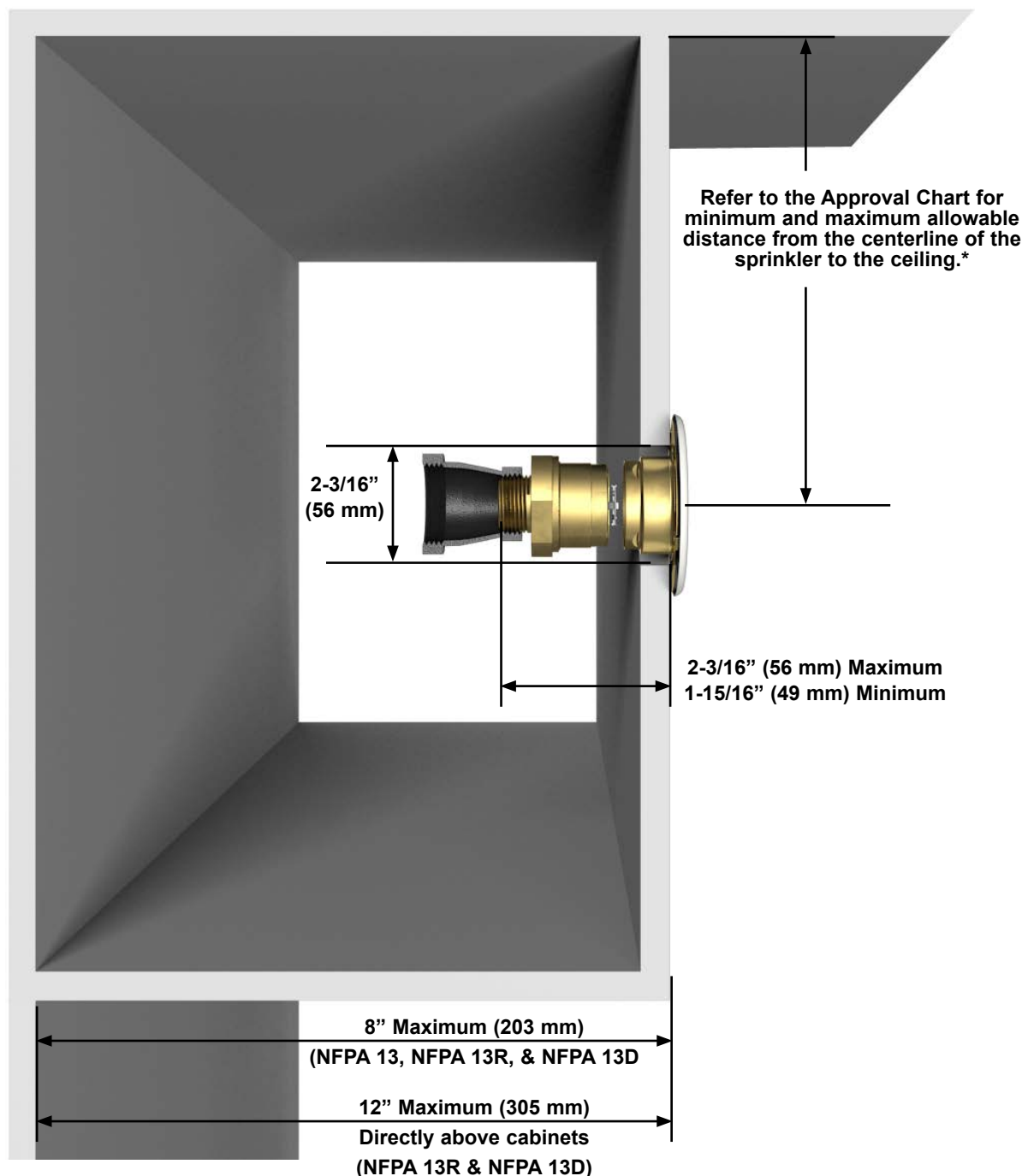


Figure 21: Sprinkler VK490 Installation - Soffit

*Distance from the ceiling affects water supply requirements. Refer to the Approval Chart



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Approval Chart

Viking VK494, 4.9 K-factor Residential Concealed 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	Thread Size			Nominal K-factor		Maximum Water Working Pressure	
		NPT	BSPT		U.S.	metric ²		
23706	VK494	1/2"	15 mm		4.9	70.6	175 psi (12 bar)	
Max. Coverage Area ⁵ W X L Ft. X Ft. (m X m)	Flow GPM (LPM)		Pressure PSI (bar)	Deflector to Ceiling	Installation Type	Listings and Approvals ³		Minimum Spacing Ft. (m)
	155 °F (68 °C), 200 °F (93 °C) Temperature Rated Sprinklers		cULusEU ⁴					
12 X 12 (3.7 X 3.7)	13 (49.2)		7.0 (0.48)	Refer to Figure 5 (on VK494 techni- cal datasheet)	Concealed with Cover Plate As- sembly. See Footnote 6.	See Footnotes 6 & 7		8 (2.4)
14 X 14 (4.3 X 4.3)	13 (49.2)		7.0 (0.48)					
16 X 16 (4.9 X 4.9)	13 (49.2)		7.0 (0.48)					
18 X 18 (5.5 X 5.5)	17 (64.4)		12.0 (0.83)					
20 X 20 (6.1 X 6.1)	20 (75.7)		16.7 (1.15)					

Footnotes

- Part number shown is the base part number. For complete part number, refer to the current Viking price schedule.
- 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.
- 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.
- Listed by Underwriter's Laboratories, Inc. for use in the U.S., Canada, and European Union.
- 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.
- Accepted Cover Plate Finishes are: Polished chrome, brushed chrome, bright brass, antique brass, brushed brass, brushed copper, painted white, painted ivory, or painted black. Other paint colors are available on request with the same listings as the standard finish colors. Stainless steel cover plates are not available with any finishes or paint. Listings and Approvals apply for any paint manufacturer. Contact Viking for additional information. Custom colors are indicated on a label inside the cover assembly. Refer to Figure 2.
- cULusEU Listed as corrosion-resistant - Electroless Nickel PTFE (ENT). Other listed finishes available: plain brass.

DESIGN CRITERIA

(Also refer to the Approval Chart.)

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

When using Viking Residential Concealed Pendent Sprinkler VK494 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 NFPA 13R 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 9.5.2.1 or 10.2.4.1.2 of the current edition of NFPA 13.
- Minimum distance between residential sprinklers: 8 ft. (2.4 m).

NOTE: Concealed sprinklers must be installed in neutral or negative pressure plenums only.

IMPORTANT: Always refer to Bulletin Form No. F_080415 - Best Practices for Residential Sprinkler Handling and Installation. 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 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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APPROVAL CHART - VK495

VK495, 3.7 K-Factor Residential Concealed 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	Thread Size		Nominal K-Factor		Maximum Water Working Pressure
		Inches	mm	U.S.	metric ²	
25638	VK495	1/2	15	3.7	53.3	175 psi (12 bar)
Maximum Coverage Area ⁵ W X L Ft. X Ft. (m X m)	Flow gpm (Lpm)	Pressure PSI (bar)	Deflector to Ceiling	Installation Type	Listings and Approvals ³ cULus ⁴	Minimum Spacing Ft. (m)
12 X 12 (3.7 X 3.7)	10 (37.6)	7.3 (0.5)	Refer to Figure 2 (on VK495 technical datasheet)	Concealed with Cover Plate Assembly. See Footnotes 6.	See Footnotes 3, 4, and 7	8 (2.4)
14 X 14 (4.3 X 4.3)	10 (37.6)	7.3 (0.5)				
15 X 15 (4.6 X 4.6)	12 (45.4)	10.5 (0.7)				
16 X 16 (4.9 X 4.9)	13 (49.2)	12.3 (0.8)				
18 X 18 (5.5 X 5.5)	17 (64.4)	21.1 (1.5)			See Footnotes 3, 4, and 8.	

Footnotes

- Part number shown is the base part number. For complete part number, refer to current our price list.
- 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.
- 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.
- Listed by Underwriter's Laboratories, Inc. for use in the U.S. and Canada.
- 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.
- Accepted cover plate finishes are: Polished Chrome, Brushed Chrome, Bright Brass, Antique Brass, Brushed Brass, Brushed Copper, Painted White, Painted Ivory, or Painted Black. Other paint colors are available on request with the same listings as the standard finish colors. Listings and approvals apply for any paint manufacturer. Contact Viking for additional information. Custom colors are indicated on a label inside the cover assembly.
- Sprinklers with the Electroless Nickel PTFE (ENT) finish are cULus Listed as corrosion-resistant. Other listed sprinkler finishes available: plain brass.
- The 18' X 18' (5.5 m X 5.5 m) coverage area is cULus listed for use with 155 °F (68 °C) rated sprinklers only.



TECHNICAL DATA

AUSTRALIAN WATERMARK FREEDOM® RESIDENTIAL 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

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DESIGN CRITERIA

(Also refer to the Approval Chart.)

UL Listing Requirements (cULus):

When using Viking Residential Concealed Pendent Sprinkler VK495 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 NFPA 13R 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 9.5.2.1 or 10.2.4.1.2 of the current edition of NFPA 13.
- Minimum distance between residential sprinklers: 8 ft. (2.4 m).

NOTE: Concealed sprinklers must be installed in neutral or negative pressure plenums only.

IMPORTANT: Always refer to Bulletin Form No. F_080415 - Best Practices for Residential Sprinkler Handling and Installation. 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 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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APPROVAL CHART

VK496, 3.0 K-Factor Residential Concealed 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	Thread Size		Nominal K-Factor		Maximum Water Working Pressure
		Inches	mm	U.S.	metric ²	
23717	VK496	1/2	15	3.0	43.2	175 psi (12 bar)
Maximum Coverage Area ⁵ W X L Ft. X Ft. (m X m)	All Temperatures		Deflector to Ceiling	Installation Type	Listings and Approvals ³	Minimum Spacing Ft. (m)
	Flow gpm (Lpm)	Pressure PSI (bar)			cULusEU ⁴	
12 X 12 (3.7 X 3.7)	8 (30.3)	7.1 (0.49)	Refer to Figure 2 (on VK496 techni- cal datasheet)	Concealed with Cover Plate Assembly. See Footnotes 6.	See Footnotes 3, 4, and 7	8 (2.4)
14 X 14 (4.3 X 4.3)	12 (45.4)	16 (1.1)				
16 X 16 (4.9 X 4.9)	15 (56.8)	25 (1.72)				

Footnotes

- Part number shown is the base part number. For complete part number, refer to current our price schedule.
- 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.
- 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.
- Listed by Underwriter's Laboratories, Inc. for use in the U.S., Canada, and European Union.
- 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.
- Accepted cover plate finishes are: polished chrome, brushed chrome, bright brass, antique brass, brushed brass, brushed copper, painted white, painted ivory, or painted black. Other paint colors are available on request with the same listings as the standard finish colors. Listings and approvals apply for any paint manufacturer. Contact Viking for additional information. Custom colors are indicated on a label inside the cover assembly.
- C-UL-US-EU Listed as corrosion-resistant - Electroless Nickel PTFE (ENT). Other sprinkler finishes available: plain brass.

DESIGN CRITERIA

(Also refer to the Approval Chart on page 3.)

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

When using Viking Residential Concealed Pendent Sprinkler VK496 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 NFPA 13R 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).

NOTE: Concealed sprinklers must be installed in neutral or negative pressure plenums only.

IMPORTANT: Always refer to Bulletin Form No. F_080415 - Best Practices for Residential Sprinkler Handling and Installation. 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 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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APPROVAL CHART

Viking VK498, 5.8 K-Factor Residential Concealed 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 Wor- king Pressure
		Inches	mm	U.S.	metric ²	
23726	VK498	1/2	15	5.8	83.6	175 psi (12 bar)
Max. Coverage Area ⁵ Ft. X Ft. (m X m)	All Temperature Ratings		Deflector to Ceiling	Installation Type	Listings and Approvals ³	Minimum Spacing Ft. (m)
	Flow GPM (LPM)	Pressure PSI (bar)			cULusEU ⁴	
12 X 12 (3.7 X 3.7)	16 (60.6)	7.6 (0.52)	Refer to Figure 24	Concealed with Cover Plate Assembly. See footnote 6.	See footnotes 6 and 7	8 (2.4)
14 X 14 (4.3 X 4.3)	17 (64.4)	8.6 (0.59)				
16 X 16 (4.9 X 4.9)	17 (64.4)	8.6 (0.59)				
18 X 18 (5.5 X 5.5)	17 (64.4)	8.6 (0.59)				
20 X 20 (6.1 X 6.1)	20 (75.7)	11.9 (0.82)				

Footnotes

- For complete part number, refer to current Viking price schedule.
- 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.
- 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.
- Listed by Underwriter's Laboratories, Inc. for use in the U.S., Canada, and European Union.
- 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.
- Accepted cover plate finishes are: Polished chrome, brushed chrome, bright brass, antique brass, brushed brass, brushed copper, painted white, painted ivory, or painted black. Other paint colors are available on request with the same listings as the standard finish colors. Listings and approvals apply for any paint manufacturer. Contact Viking for additional information. Custom colors are indicated on a label inside the cover assembly.
- cULusEU Listed as corrosion-resistant - Electroless Nickel PTFE (ENT). Other sprinkler finishes available: plain brass.

DESIGN CRITERIA

(Also refer to the Approval Chart above.)

UL Listing Requirements (cULusEU):

When using Viking Residential Concealed Pendent Sprinkler VK498 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 NFPA 13R 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).

NOTE: Concealed sprinklers must be installed in neutral or negative pressure plenums only.

IMPORTANT: Always refer to Bulletin Form No. F_080415 - Best Practices for Residential Sprinkler Handling and Installation. 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 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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VK494, VK495, VK496, and VK498



All custom color painted cover plates will have an identifying label affixed to the inside of the cover that indicates the custom color and will have a representative sample (a paint dot) of the paint on the label.

Figure 22: Identification of Custom Paint

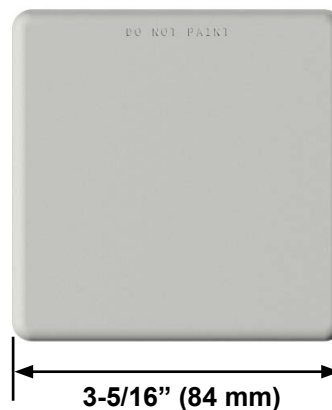
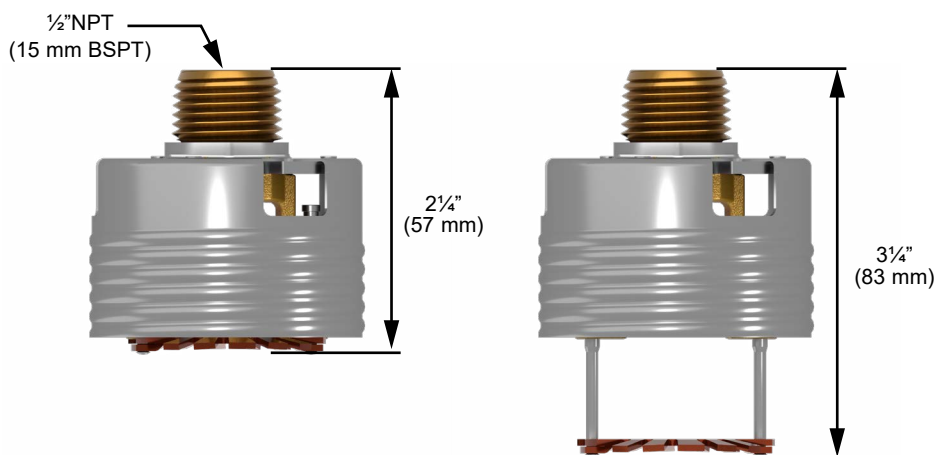


Figure 23: Square Cover Assembly

VK494, VK495, VK496, and VK498



NOTE: Image is representative only. Actual product may vary.

Figure 24: Sprinkler Dimensions

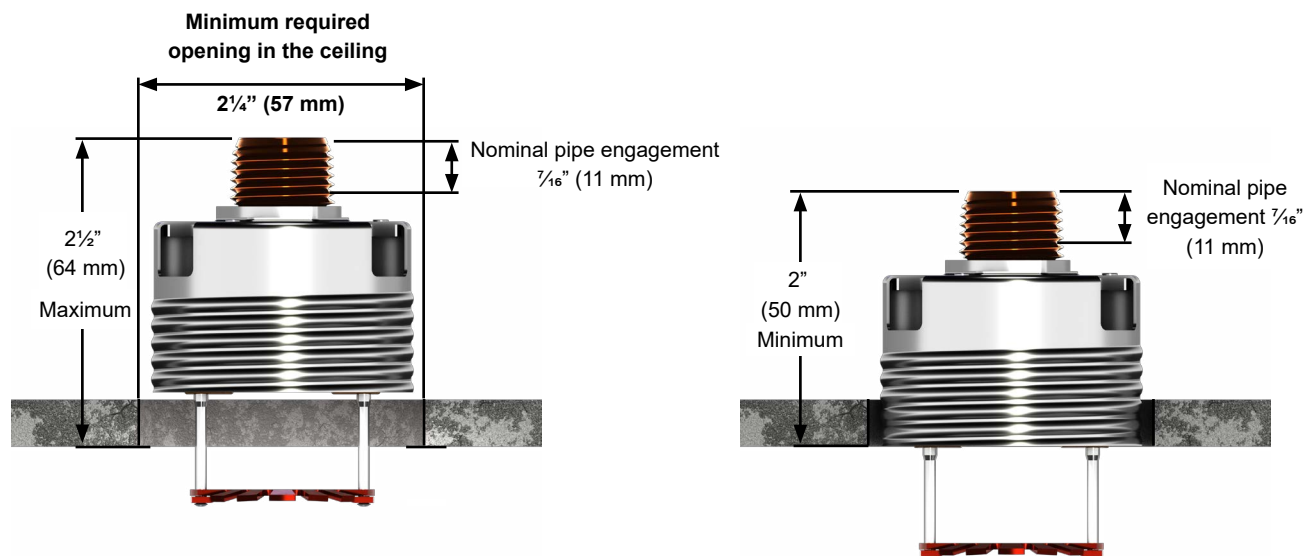


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VK494, VK495, VK496, and VK498



NOTE: Image is representative only. Actual product may vary.

Figure 25: Sprinkler Installation Dimensions



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VK494, VK495, VK496, and VK498

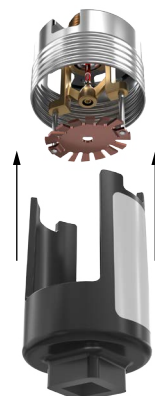


NOTICE: USE ONLY the designated sprinkler wrenches shown in this document. Permanent damage to the sprinkler assembly can occur if the proper wrench is not used. Other sprinkler wrenches available from Viking may fit into the sprinkler adapter cup; however, only the wrenches shown here are designed to properly install this sprinkler.

Step 1:
Remove the protective cap.

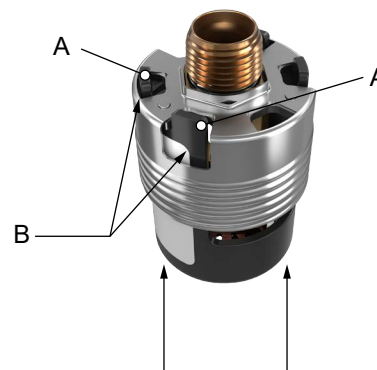


Step 2:
Insert the wrench into the sprinkler adapter.



Step 3:

Rotate the wrench slightly in either direction until the tines on the wrench (A) line up with the vent openings (B) on the adapter cup and lock into place. (Note: A leak-tight seal must be achieved. Turn the sprinkler clock-wise 1 to 1-1/2 turns passed finger-tight.



NOTE: Image is representative only. Actual product may vary.

Figure 26: Using the Sprinkler Wrench

VK494, VK495, VK496, and VK498



NOTE: Image is representative only. Actual product may vary.

Figure 27: Installing the Cover Plate