



TECHNICAL DATA

FREEDOM™ RESIDENTIAL FLUSH PENDENT SPRINKLER VK420 (K3.8)

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 Flush Pendent Sprinkler VK420 is a small, flush, high-sensitivity solder link and lever residential sprinkler. Designed for use with concealed piping, the units are mounted flush to the ceiling with the fusible link exposed. The sprinkler orifice design, with a K-Factor of 3.8 (55 metric*), allows efficient use of available water supplies for the hydraulically designed fire-protection system. The operating element and special deflector characteristics meet the challenges of residential sprinkler standards.

The sprinklers are available with a Polished Chrome or White painted finish. The two-piece design of the sprinkler and ceiling ring allows installation and testing of the sprinkler prior to ceiling installation. The ceiling ring allows for up to 1/2" (13 mm) of vertical adjustment and can be removed and re-installed, allowing access above removable ceiling panels without shutting down the sprinkler system and removing the sprinkler.

2. LISTINGS AND APPROVALS



cULus Listed: Category VKKW



FM Approved: Class 2030

cULus Listings apply only when Sprinkler VK420 is installed as a replacement sprinkler in existing residential sprinkler systems. VK420 SPRINKLERS MANUFACTURED AFTER JULY 12, 2002 ARE NOT CULUS LISTED FOR USE IN NEW SYSTEMS. Refer to the Approval Charts and Design Criteria for cULus Listing and FM Approval requirements that must be followed.

3. TECHNICAL DATA

Specifications:

Available since 1995.

Minimum Operating Pressure: Refer to the Approval Charts.

Maximum Working Pressure: 175 psi (12 bar). Factory tested pneumatically to 95 psi (6.55 bar).

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

Nominal K-Factor: 3.8 U.S. (55 metric*)

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

Overall Length: 2-9/16" (65.1 mm)

Nominal Temperature rating: 165 °F (74 °C) - Ordinary; the temperature rating is stamped on the sprinkler body.

Maximum Ambient Ceiling Temperature: 100 °F (38 °C)

NOTE: 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.

Material Standards:

Sprinkler Body: Brass UNS-C84400

Body Cap: Brass UNS-C26000

Cover: Stainless Steel UNS-S43000

Deflector: Copper UNS-C19500

Deflector Pins: Stainless Steel UNS-S30300

Button: Brass UNS-C31400

Compression Screw: Brass UNS-C36000

Element Assembly: Beryllium Nickel and Eutectic Solder

Levers: Stainless Steel UNS-S31600

Lever Bar: Copper Alloy UNS-C72500

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

Ceiling Ring: Cold Rolled Steel UNS-G10080

Ordering Information: Refer to Table 1.

4. INSTALLATION

Refer to appropriate NFPA Installation Standards.

5. OPERATION

The concealed deflector is held inside the body of the sprinkler until the eutectic metal solder link is fused.

6. INSPECTIONS, TESTS AND MAINTENANCE

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



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



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7. AVAILABILITY

Viking Sprinkler VK420 is available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

8. GUARANTEE

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

TABLE 1: SPRINKLER ORDERING INFORMATION

NOTE: The sprinkler and ceiling ring must be ordered separately.

Instructions: Using the base part number, add the suffix for the desired Finish.

SIN or Description	Base Part Number	Size NPT Inch	1: Available Finishes		Examples
			Description	Suffix	
VK420	09458-C	1/2	Polished Chrome	F	09458MC/W = VK420 with White Polyester finish.
Ceiling Ring	09390	--	White Polyester	M-/W	09390M/W = Ceiling Ring with White Polyester finish.

Accessories

Sprinkler Wrenches:

- A. Heavy Duty Part Number: 08336W/B¹
- B. Light Duty Wrench Part Number: 10366W/B²

Sprinkler Cabinet:

Holds up to 6 sprinklers: Part number 01731A (available since 1971).

Footnotes

- 1. Requires a 1/2" ratchet (not available from Viking)
- 2. Ideal for sprinkler cabinets

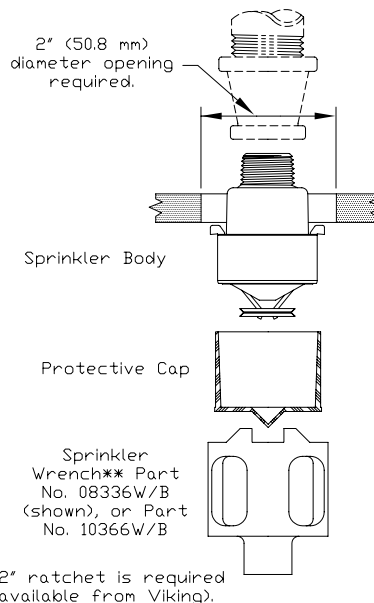


Figure 1: Sprinkler Installation and Correct Use of Wrench

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Approval Chart 1 (UL) Residential Flush Pendent Sprinkler VK420	<table border="1" style="font-size: small;"> <tr> <td>—</td> <td>Sprinkler Temperature Rating</td> </tr> <tr> <td>—</td> <td>Cover Plate Temperature Rating</td> </tr> <tr> <td>AW1</td> <td>Cover Plate Finish KEY</td> </tr> </table>	—	Sprinkler Temperature Rating	—	Cover Plate Temperature Rating	AW1	Cover Plate Finish KEY
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Sprinkler Base Part Number ¹	Ceiling Ring 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
09458	09390	VK420	1/2	15	3.8	55	175 psi (12 bar)	2-9/16"	65.1

Maximum Areas of Coverage ⁶	Minimum Water Supply Requirements ⁶				Listings and Approvals ^{3,4} (Refer also to Design Criteria below.)		
	Single Sprinkler		Two or More		cULus	NYC	NSF
Installed below smooth, flat, horizontal ceilings. Includes ceilings with slopes up to and including 2/12 (9.5°)⁵.							
12 ft. x 12 ft. (3.7 m x 3.7 m)	10 gpm @ 7.0 psi (49.2 L/min @ 0.48 bar)		10 gpm @ 7.0 psi (49.2 L/min @ 0.48 bar)		A1	A1	--
14 ft. x 14 ft. (4.3 m x 4.3 m)	11 gpm @ 8.4 psi (42 L/min @ 0.58 bar)		10 gpm @ 7.0 psi (49.2 L/min @ 0.48 bar)		A1	A1	--
16 ft. x 16 ft. (4.9 m x 4.9 m)	13 gpm @ 11.7 psi (50 L/min @ 0.81 bar)		11 gpm @ 8.4 psi (42 L/min @ 0.58 bar)		A1	A1	--
18 ft. x 18 ft. (5.5 m x 5.5 m)	16 gpm @ 17.7 psi (61 L/min @ 1.23 bar)		13 gpm @ 11.7 psi (50 L/min @ 0.81 bar)		A1	A1	--
20 ft. x 20 ft. (6.1 m x 6.1 m)	19 gpm @ 25 psi (72 L/min @ 1.73 bar)		17 gpm @ 20 psi (65 L/min @ 1.38 bar)		A1	A1	--
Installed below ceilings with slopes up to and including a 6/12 (26.6°) pitch⁷.							
					cULus	NYC	NSF
16 ft. x 16 ft. (4.9 m x 4.9 m)	16 gpm @ 17.7 psi (61 L/min @ 1.23 bar)		12 gpm @ 10 psi (46 L/min @ 0.69 bar)		A1	A1	--
18 ft. x 18 ft. (5.5 m x 5.5 m)	20 gpm @ 27.7 psi (76 L/min @ 1.91 bar)		17 gpm @ 20 psi (65 L/min @ 1.38 bar)		A1	A1	--
Sprinkler Temperature Rating A - 165 °F (74 °C)				Finishes 1 - Polished Chrome or Painted White			

Footnotes

1. Part number shown is the base part number. For complete part number, 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.
4. Listed by Underwriter's Laboratories for use in the U.S. and Canada. Accepted for use, City of New York Department of Buildings, MEA Number 89-92-E, Vol. 15. cULus Listings and NYC Approvals apply only when Sprinkler VK420 is installed as a replacement sprinkler in existing residential sprinkler systems.
5. Listings are for residential occupancies with smooth, flat, horizontal ceilings. Includes ceilings with slopes up to and including a 2/12 (9.5°) pitch.
6. For areas of coverage smaller than shown, use the "Minimum Water Supply Requirement" for the next larger area listed. The distance from sprinklers to walls shall not exceed one-half the sprinkler spacing indicated for the "Minimum Water Supply Requirement" used.
7. Listings are for residential occupancies with ceilings sloped between a 0/12 (0°) pitch and a 6/12 (26.6°) pitch. Areas under sloped ceilings must be measured along the ceiling slope. Refer to Figure 4, Installation Notes on page 145f. Actual floor coverage in the horizontal plane under sloped ceilings will be less than the listed area of coverage.

DESIGN CRITERIA- UL
(Also refer to Approval Chart 1 above.)

cULus Listing Requirements:

cULus Listings apply only when Sprinkler VK420 is installed as a replacement sprinkler in existing residential sprinkler systems. VK420 SPRINKLERS MANUFACTURED AFTER JULY 12, 2002 ARE NOT cULus LISTED FOR USE IN NEW SYSTEMS.

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.



TECHNICAL DATA

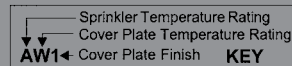
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Approval Chart 2 (FM)

Residential Flush Pendent Sprinkler VK420

Sprinkler VK420 is FM Approved for use in new residential sprinkler systems as well as a replacement in existing residential sprinkler systems.



Sprinkler Base Part Number ¹	Ceiling Ring 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
09458	09390	VK420	1/2	15	3.8	55	175 psi (12 bar)	2-9/16"	65.1
Maximum Areas of Coverage ⁴		Minimum Water Supply Requirements ⁴					FM Approvals ³ (Refer also to Design Criteria below.)		
		Single Sprinkler			Two or More				
12 ft. x 12 ft. (3.7 m x 3.7 m)		14 gpm @ 13.6 psi (53 L/min @ 0.93 bar)			10 gpm @ 7.0 psi (49.2 L/min @ 0.48 bar)		A1		
14 ft. x 14 ft. (4.3 m x 4.3 m)		20 gpm @ 27.7 psi (76 L/min @ 1.91 bar)			14 gpm @ 13.6 psi (53 L/min @ 0.93 bar)		A1		
16 ft. x 16 ft. (4.9 m x 4.9 m)		26 gpm @ 46.8 psi (99 L/min @ 3.24 bar)			18 gpm @ 22.5 psi (68 L/min @ 1.53 bar)		A1		
Sprinkler Temperature Rating A - 165 °F (74 °C)					Finishes 1 - Polished Chrome, Brass, or Painted White				

Footnotes

1. Part number shown is the base part number. For complete part number, 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 FM Approvals available at the time of printing. Other approvals may be in process. Check with the manufacturer for any additional approvals.
4. For areas of coverage smaller than shown, use the "Minimum Water Supply Requirement" for the next larger area listed.

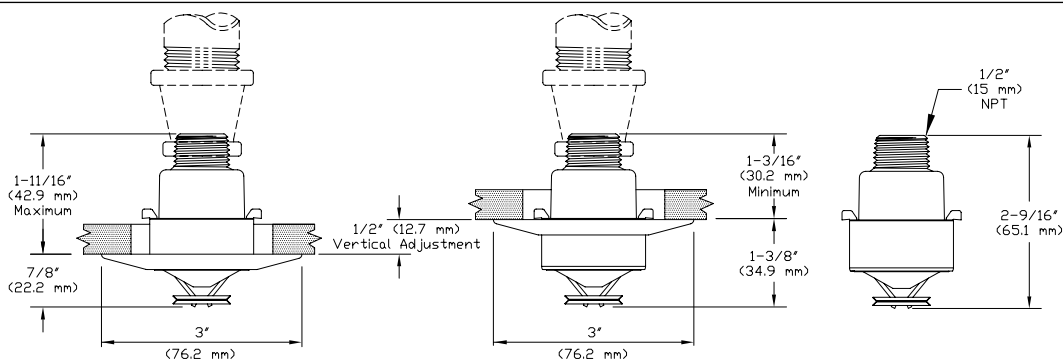
DESIGN CRITERIA- FM

(Also refer to Approval Chart 2 above.)

FM Approval Requirements:

Flush Pendent Sprinkler VK420 is FM Approved as a quick response **Special Protection** residential flush pendent sprinkler as indicated in the FM Approval Guide. For specific application and installation requirements, reference the latest applicable FM Loss Prevention Data Sheets (including Data Sheet 2-0). FM Global Loss Prevention Data Sheets contain guidelines relating to, but not limited to: minimum water supply requirements, hydraulic design, ceiling slope and obstructions, minimum and maximum allowable spacing, and deflector distance below the ceiling.

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.



NOTE: Upon sprinkler activation, the deflector descends to approximately 1/4" (6.4 mm) below the sprinkler body.

Figure 2: Sprinkler Dimensions and Ceiling Ring Installation



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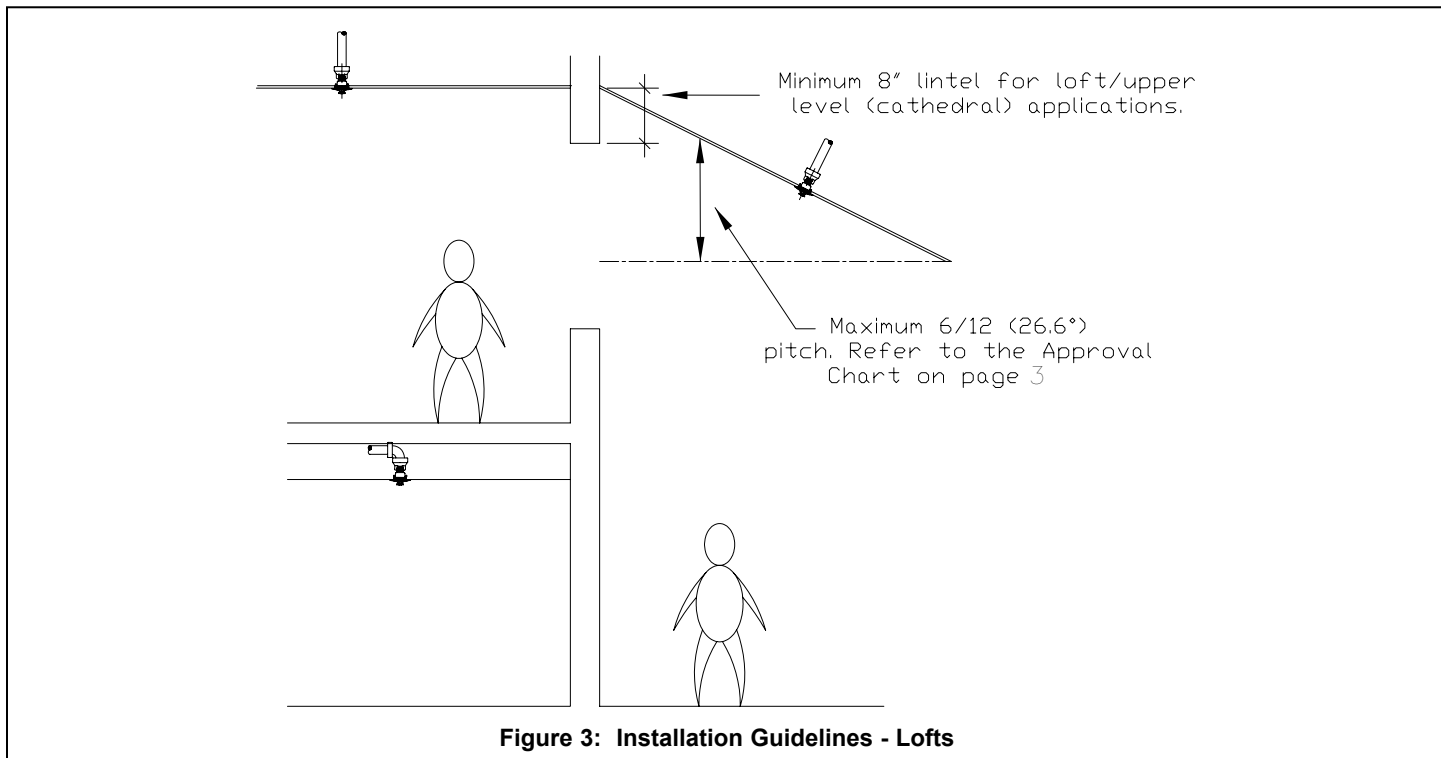
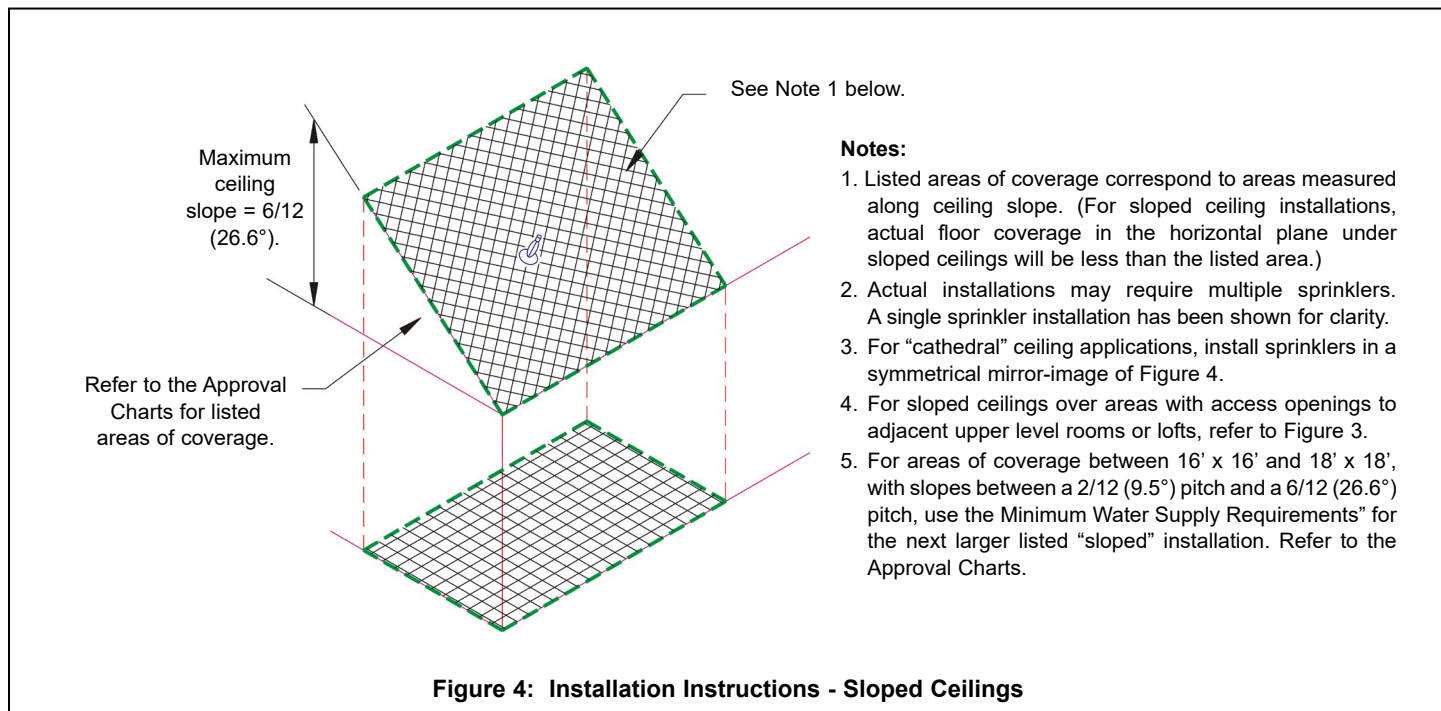


Figure 3: Installation Guidelines - Lofts



Notes:

1. Listed areas of coverage correspond to areas measured along ceiling slope. (For sloped ceiling installations, actual floor coverage in the horizontal plane under sloped ceilings will be less than the listed area.)
2. Actual installations may require multiple sprinklers. A single sprinkler installation has been shown for clarity.
3. For "cathedral" ceiling applications, install sprinklers in a symmetrical mirror-image of Figure 4.
4. For sloped ceilings over areas with access openings to adjacent upper level rooms or lofts, refer to Figure 3.
5. For areas of coverage between 16' x 16' and 18' x 18', with slopes between a 2/12 (9.5°) pitch and a 6/12 (26.6°) pitch, use the Minimum Water Supply Requirements" for the next larger listed "sloped" installation. Refer to the Approval Charts.

Figure 4: Installation Instructions - Sloped Ceilings