



TECHNICAL DATA

FREEDOM® RESIDENTIAL CONCEALED PENDENT SPRINKLER VK458 (K7.4)

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

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

1. DESCRIPTION

Viking Freedom® Residential Concealed Pendent Sprinkler VK458 is a small high-sensitivity glass bulb residential sprinkler for use with a domed cover assembly. The orifice design, with a K-Factor of 7.4 (107 metric*), allows the sprinkler's 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.

Concealed sprinkler VK458 is pre-assembled with a threaded adapter for installation with the domed cover that provides up to ½" (12.7 mm) of vertical adjustment. The cover plate is available with several decorative finishes to meet design requirements. The two-piece design allows installation and testing of the sprinkler prior to installation of the cover plate. The "push-on", "thread-off" design of the concealed cover plate assembly allows easy installation of the cover plate after the system has been tested and the ceiling finish has been applied. The cover assembly can be removed and reinstalled, allowing temporary removal of ceiling panels without taking the sprinkler system out of service or removing the sprinkler.



2. LISTINGS AND APPROVALS



cULus Listed: Category VKKW

NYC Approved: MEA 89-92-E, Volume 36

NSF Certified: NSF/ANSI Standard 61, Drinking Water System Components

Refer to the Approval Chart on page 142w and Design Criteria on page 142x for cULus Listing requirements that must be followed.

3. TECHNICAL DATA

Specifications:

Available since 2005.

Minimum Operating Pressure: Refer to the Approval Chart.

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

Thread size: ¾" (20 mm) NPT

Nominal K-Factor: 7.4 U.S. (107 metric*)

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

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

Overall Length (Sprinkler Body): 2-5/16" (59 mm)

Material Standards:

Frame Casting: Brass UNS-C84400 or QM Brass

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

Bulb: Glass, nominal 3 mm diameter

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

Compression Screw: Brass UNS-C36000

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

Cover Adapter: Cold Rolled Steel UNS-G10080, Finish: Clear Chromate over Zinc Plating

Cover Assembly Materials:

Cover Plate Assembly: Copper UNS-C11000 and Brass UNS-C26800

Spring: Beryllium Nickel

Solder: Eutectic

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

Viking Residential Concealed Pendent Sprinkler VK458 and Cover Plate Assembly must be ordered separately:

Sprinkler: Base Part No. 13230ABX (includes sprinkler and adapter pre-assembled, with a protective plastic cap covering the unit)

Note: When ordering this sprinkler using the SIN, add suffix -D. For example, concealed sprinkler VK458 = VK458-D.

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

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Cover Plate Assembly: Base Part No. 12207

Specify finish and temperature rating of the cover plate assembly by adding the appropriate suffixes for the finish and the cover temperature rating to the base part number:

Finish Suffix: Polished Chrome = F, Brushed Chrome = F-/B, Bright Brass = B, Antique Brass = B-/A, Brushed Brass = B-/B, Brushed Copper = E-/B, Painted White = M-/W, Painted Ivory = M-/I, Painted Black = M-/B

Temperature Suffix: 135 °F (57 °C) = A

For example, cover 12207 with a Polished Chrome finish and a 135 °F (57 °C) temperature rating = 12207FA.

Available Finishes And Temperature Ratings: Refer to Table 1.

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

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

**A ½” ratchet is required (not available from Viking).

Sprinkler Cabinet: Part No. 01731A (available since 1971)

NOTE: Not for use with the Viking Residential Sprinkler Extension.

4. INSTALLATION

Refer to appropriate NFPA Installation Standards. For NFPA 13D horizontal ceiling criteria and slopes, refer to TIA 1028R for slope ceiling criteria exceptions.

5. OPERATION

During fire conditions, when the temperature around the sprinkler approaches its operating temperature, the cover plate detaches. Continued heating of the exposed sprinkler causes the heat-sensitive liquid in the glass bulb to expand and the bulb to shatter, releasing the pip cap and sealing spring assembly. Water flowing through the sprinkler orifice strikes the sprinkler deflector, forming a uniform spray pattern to extinguish or control the fire.

6. INSPECTIONS, TESTS AND MAINTENANCE

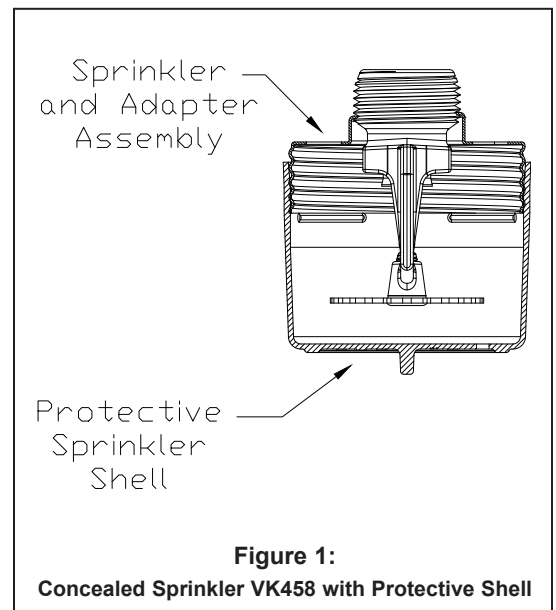
Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.

7. AVAILABILITY

The Viking Model VK458 Sprinkler is available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

8. GUARANTEE

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



**Figure 1:
Concealed Sprinkler VK458 with Protective Shell**

TABLE 1: AVAILABLE SPRINKLER TEMPERATURE RATINGS AND FINISHES

Sprinkler Temperature Classification	Sprinkler Nominal Temperature Rating ¹	Maximum Ambient Ceiling Temperature ²	Temperature Rating of the Cover Assembly (Required)	Cover Plate Base Part Number ³	Bulb Color
Ordinary	155 °F (68 °C)	100 °F (38 °C)	135 °F (57 °C)	12207	Red

Cover Plate Finishes: Polished Chrome, Brushed Chrome, Bright Brass, Antique Brass, Brushed Brass, Brushed Copper, Painted White, Painted Ivory, or Painted Black

Footnotes

¹ The sprinkler temperature rating is stamped on the deflector.

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

³ Part number shown is the base part number. For complete part number, refer to current Viking price list schedule.

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<p>Approval Chart Residential Concealed Pendent Sprinkler VK458 For systems designed to NFPA 13D⁶ or NFPA 13R. For systems designed to NFPA 13, refer to the design criteria on page 142x.</p>	<table border="1" style="border-collapse: collapse;"> <tr> <td style="font-size: small;">— Sprinkler Temperature Rating</td> </tr> <tr> <td style="font-size: small;">— Cover Plate Temperature Rating</td> </tr> <tr> <td style="font-size: small;">AW1 ← Cover Plate Finish KEY</td> </tr> </table>	— Sprinkler Temperature Rating	— Cover Plate Temperature Rating	AW1 ← Cover Plate Finish KEY
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— Cover Plate Temperature Rating				
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Sprinkler Base Part Number ¹	SIN	NPT Thread Size		Nominal K-Factor		Maximum Water Working Pressure	Overall Length (Sprinkler Body)	
		Inches	mm	U.S.	metric ²		Inches	mm
13230ABX	VK458	3/4	20	7.4	107	175 psi (12 bar)	2-5/16	59

Maximum Areas of Coverage ⁴	Minimum Water Supply Requirements ⁴	Listings and Approvals ³ (Refer also to Design Criteria on page 142x.)		
		cULus ⁵	NYC ⁸	NSF ⁹

Installed below smooth, flat, horizontal ceilings, including ceilings with slopes up to and including 2/12 (9.5°).

Maximum Areas of Coverage ⁴	Minimum Water Supply Requirements ⁴	UL	NYC ⁸	NSF ⁹
12 ft. x 12 ft. (3.7 m x 3.7 m)	20 gpm @ 7.3 psi (75.7 L/min @ 0.50 bar)	AX1	AX1	AX1
14 ft. x 14 ft. (4.3 m x 4.3 m)	20 gpm @ 7.3 psi (75.7 L/min @ 0.50 bar)	AX1	AX1	AX1
16 ft. x 16 ft. (4.9 m x 4.9 m)	20 gpm @ 7.3 psi (75.7 L/min @ 0.50 bar)	AX1	AX1	AX1
18 ft. x 18 ft. (5.5 m x 5.5 m)	23 gpm @ 9.7 psi (87.1L/min @ 0.67 bar)	AX1	AX1	AX1
20 ft. x 20 ft. (6.1 m x 6.1 m)	28 gpm @ 14.3 psi (106 L/min @ 0.99 bar)	AX1	AX1	AX1

Installed below ceilings with slopes⁷ up to and including an 8/12 (33.7°) pitch. Refer to Figure 5 on page 142z.

Maximum Areas of Coverage ⁴	Minimum Water Supply Requirements ⁴	Listings and Approvals ³ (Refer also to Design Criteria on page 142x.)		
		UL	NYC ⁸	NSF ⁹
16 ft. x 16 ft. (4.9 m x 4.9 m)	22 gpm @ 8.8 psi (83.3 L/min @ 0.61 bar)	AX1	AX1	AX1
18 ft. x 18 ft. (5.5 m x 5.5 m)	28 gpm @ 14.3 psi (106 L/min @ 0.99 bar)	AX1	AX1	AX1
20 ft. x 20 ft. (6.1 m x 6.1 m)	28 gpm @ 14.3 psi (106 L/min @ 0.99 bar)	AX1	AX1	AX1

Sprinkler Temperature Ratings A - 155 °F (68 °C)	Cover Temperature Rating X - 135 °F (57 °C)	Cover Plate Finishes 1 - Polished Chrome, Brushed Chrome, Bright Brass, Antique Brass, Brushed Brass, Brushed Copper, Painted White, Painted Ivory, or Painted Black ¹⁰
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Footnotes

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

² 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 For areas of coverage smaller than shown, use the "Minimum Water Supply Requirement" for the next larger area listed. Flows and pressures listed are per sprinkler.

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

⁶ Refer to TIA 1028R slope ceiling criteria exceptions.

⁷ Areas under sloped ceilings must be measured along the ceiling slope. Actual floor coverage in the horizontal plane under sloped ceilings will be less than the listed area of coverage.

⁸ Accepted for use, City of New York Department of Buildings, MEA Number 89-92-E, Vol. 36.

⁹ Tested and Certified by NSF (National Sanitation Foundation) to NSF/ANSI Standard 61, Drinking Water System Components.

¹⁰ 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. Refer to Figure 4.



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DESIGN CRITERIA

(Also refer to the Approval Chart on page 142w.)

cULus Listing Requirements:

When using Viking Residential Concealed Pendent Sprinkler VK458 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 142w.

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 142w 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).

DEFLECTOR POSITION: Install Residential Concealed Pendent Sprinkler VK458 with the deflector 3/8” (9.5 mm) to 7/8” (22.2 mm) below the ceiling. Refer to Figure 3.

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 pages RES1-17 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.

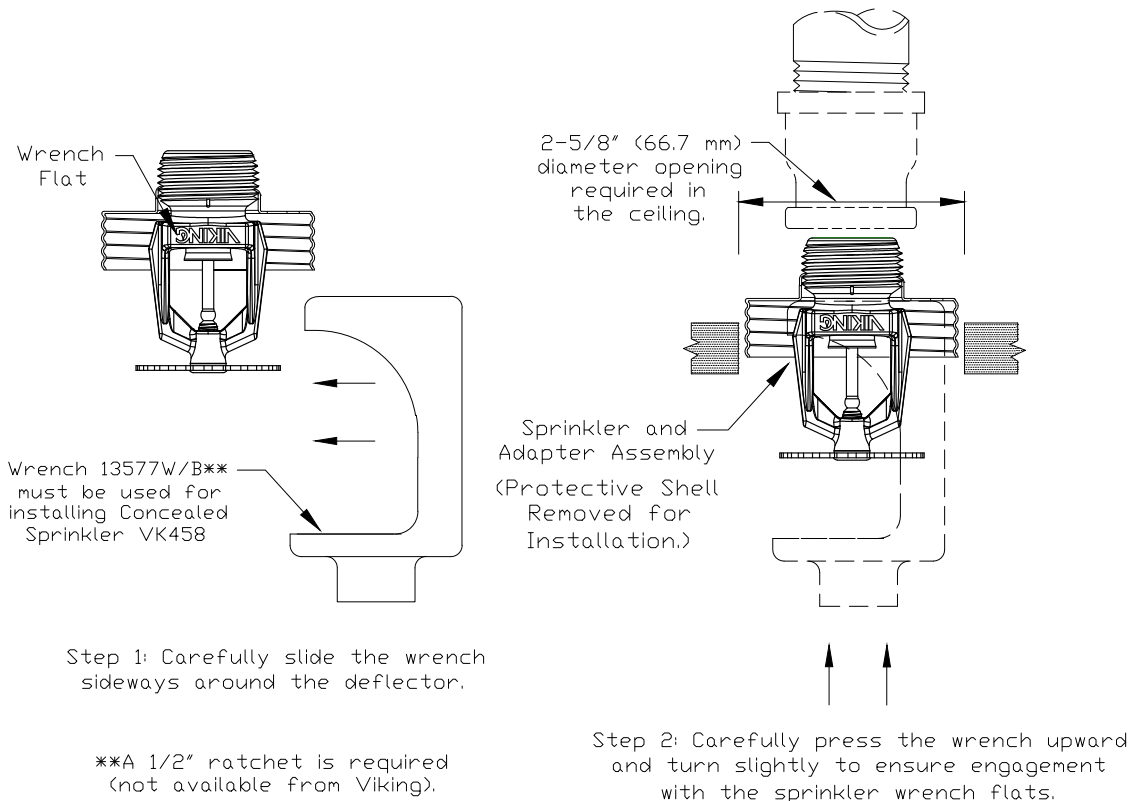


Figure 2: Sprinkler Installation and Correct Use of Sprinkler Wrench

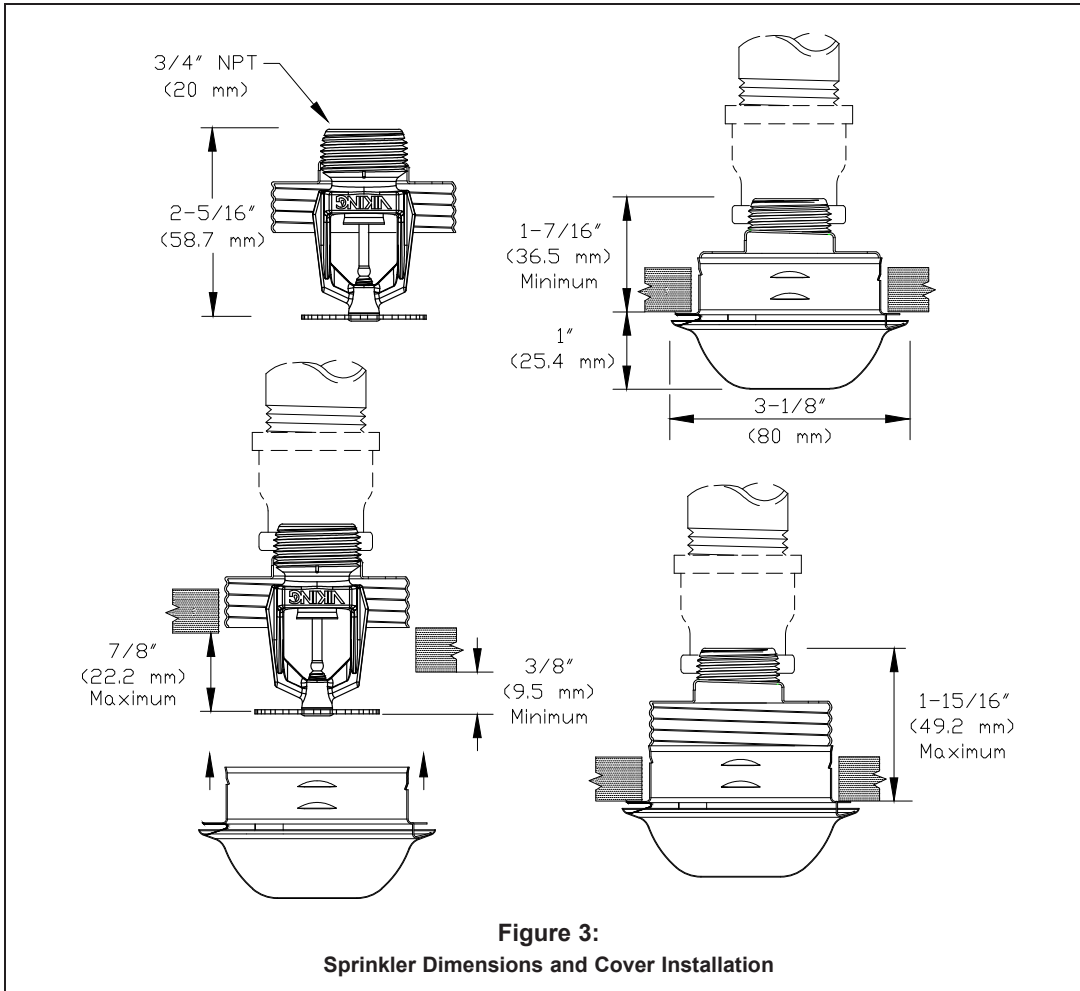


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Identification of Custom Paint Color:
All custom color painted cover plates will have an identifying label affixed to the inside of the cover that indicates custom color and will have a representative sample (a paint dot) of the paint on the label.

Figure 4: Identification of Custom Paint Color for Concealed Covers



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