



TECHNICAL DATA

FREEDOM® RESIDENTIAL 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. PRODUCT DESCRIPTION

Viking Freedom® Residential Pendent Sprinkler VK458 is a small, thermosensitive, glass-bulb residential sprinkler available in several different finishes and temperature ratings to meet varying design requirements. The sprinkler orifice design, with a K-Factor of 7.4 (107 metric*), allows efficient use of available water supplies for the hydraulically designed fire-protection system. The glass bulb operating element and special deflector characteristics meet the challenges of residential sprinkler standards.

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



2. LISTINGS AND APPROVALS

 **cULus Listed:** Category VKKW

Refer to the Approval Chart on page 140w and Design Criteria on page 140x for cULus Listing requirements that must be followed.

3. TECHNICAL DATA

Specifications:

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: 3/4" (20 mm) NPT

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

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

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

Overall Length: 2-5/16" (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 UNS30400

Available Finishes And Temperature Ratings:

Refer to Table 1.

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

Sprinkler: Base Part No. 13230

Order sprinkler VK458 by first adding the appropriate suffix for the sprinkler finish and then the appropriate suffix for the temperature rating to the sprinkler base part number.

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

Temperature Suffix (°F/°C): 155°/68° = B, 175°/79° = D

For example, sprinkler VK458 with a Brass finish and a 155 °F/68 °C temperature rating = Part No. 13230AB.

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

Sprinkler Wrenches:

A. Standard Wrench: Part No. 10896W/B (available since 2000)

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

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

Sprinkler Cabinets:

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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- A. Six-head capacity: Part No. 01724A (available since 1971)
 - B. Twelve-head capacity: Part No. 01725A (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, the heat-sensitive liquid in the glass bulb expands, causing the glass to shatter, releasing the pip cap and sealing spring assembly. Water flowing through the sprinkler orifice strikes the sprinkler deflector, forming a uniform spray pattern to extinguish or control the fire.

6. INSPECTIONS, TESTS AND MAINTENANCE

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

7. AVAILABILITY

The Viking Model 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.

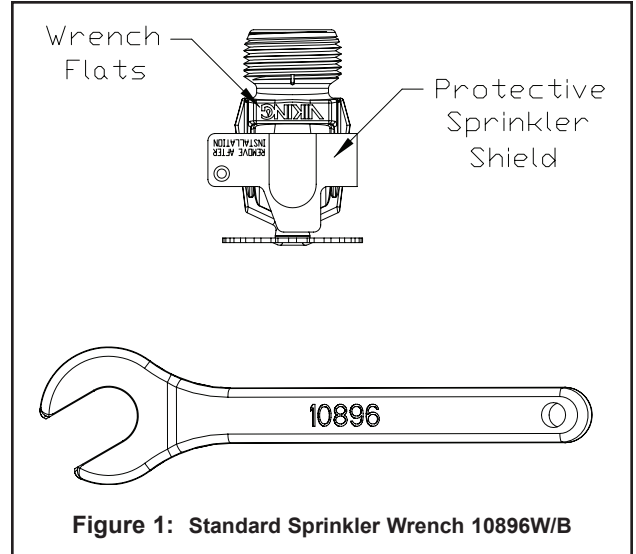


Figure 1: Standard Sprinkler Wrench 10896W/B


TABLE 1: AVAILABLE SPRINKLER TEMPERATURE RATINGS AND FINISHES

Sprinkler Temperature Classification	Sprinkler Nominal Temperature Rating ¹	Maximum Ambient Ceiling Temperature ²	Bulb Color
Ordinary	155 °F (68 °C)	100 °F (38 °C)	Red
Intermediate	175 °F (79 °C)	150 °F (65 °C)	Yellow

Sprinkler Finishes: Brass, Chrome-Enloy® (patents pending), and White Polyester

Footnotes

¹ The sprinkler temperature rating is stamped on the deflector.
² Based on NFPA-13. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.

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Approval Chart Residential Pendent Sprinkler VK458 For systems designed to NFPA 13D ⁶ or NFPA 13R. For systems designed to NFPA 13, refer to the design criteria on page 140y.	<table border="1" style="border-collapse: collapse;"> <tr> <td style="font-size: small;">Temperature</td> <td style="font-size: small;">KEY</td> </tr> <tr> <td style="font-size: small;">Finish</td> <td></td> </tr> <tr> <td style="font-size: small;">A1X ← Escutcheon (if applicable)</td> <td></td> </tr> </table>	Temperature	KEY	Finish		A1X ← Escutcheon (if applicable)	
Temperature	KEY						
Finish							
A1X ← Escutcheon (if applicable)							

Sprinkler Base Part Number ¹	SIN	NPT Thread Size		Nominal K-Factor		Maximum Water Working Pressure	Overall Length	
		Inches	mm	U.S.	metric ²		Inches	mm
13230	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 140y.)		
		cULus ⁵	NYC ⁸	NSF ⁹

Installed below smooth, flat, horizontal ceilings, including ceilings with slopes up to and including 2/12 (9.5°).				
12 ft. x 12 ft. (3.7 m x 3.7 m)	20 gpm @ 7.3 psi (75.7 L/min @ 0.50 bar)	A1X	A1X	A1X
14 ft. x 14 ft. (4.3 m x 4.3 m)	20 gpm @ 7.3 psi (75.7 L/min @ 0.50 bar)	A1X	A1X	A1X
16 ft. x 16 ft. (4.9 m x 4.9 m)	20 gpm @ 7.3 psi (75.7 L/min @ 0.50 bar)	A1X	A1X	A1X
18 ft. x 18 ft. (5.5 m x 5.5 m)	22 gpm @ 8.8 psi (83.3 L/min @ 0.61 bar)	A1X	A1X	A1X
20 ft. x 20 ft. (6.1 m x 6.1 m)	24 gpm @ 10.5 psi (90.8 L/min @ 0.73 bar)	A1X	A1X	A1X

Installed below ceilings with slopes⁷ up to and including an 8/12 (33.7°) pitch. Refer to Figure 5 on page 140z.				
Maximum Areas of Coverage ⁴	Minimum Water Supply Requirements ⁴	UL	NYC ⁸	NSF ⁹
16 ft. x 16 ft. (4.9 m x 4.9 m)	20 gpm @ 7.3 psi (75.7 L/min @ 0.50 bar)	B1X	B1X	B1X
16 ft. x 16 ft. (4.9 m x 4.9 m)	24 gpm @ 10.5 psi (90.8 L/min @ 0.73 bar)	C1X	C1X	C1X
18 ft. x 18 ft. (5.5 m x 5.5 m)	23 gpm @ 9.7 psi (87.1 L/min @ 0.67 bar)	B1X	B1X	B1X
18 ft. x 18 ft. (5.5 m x 5.5 m)	25 gpm @ 11.4 psi (94.6 L/min @ 0.79 bar)	C1X	C1X	C1X
20 ft. x 20 ft. (6.1 m x 6.1 m)	24 gpm @ 10.5 psi (90.8 L/min @ 0.73 bar)	B1X	B1X	B1X
20 ft. x 20 ft. (6.1 m x 6.1 m)	25 gpm @ 11.4 psi (94.6 L/min @ 0.79 bar)	C1X	C1X	C1X

Approved Temperature Ratings A - 155 °F (68 °C) and 175 °F (79 °C) B - 155 °F (68 °C) C - 175 °F (79 °C)	Approved Finishes 1 - Brass, Chrome-Enloy®, White Polyester, and Black Polyester ¹⁰	Approved Escutcheons X - Standard surface-mounted escutcheons, the Microfast® Model F-1 Adjustable Escutcheon, or recessed with the Micromatic® Model E-1 or E-2 Recessed Escutcheon
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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 shown is for use when pressure is measured in bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.
- 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 cULus Listings as the standard finish colors.

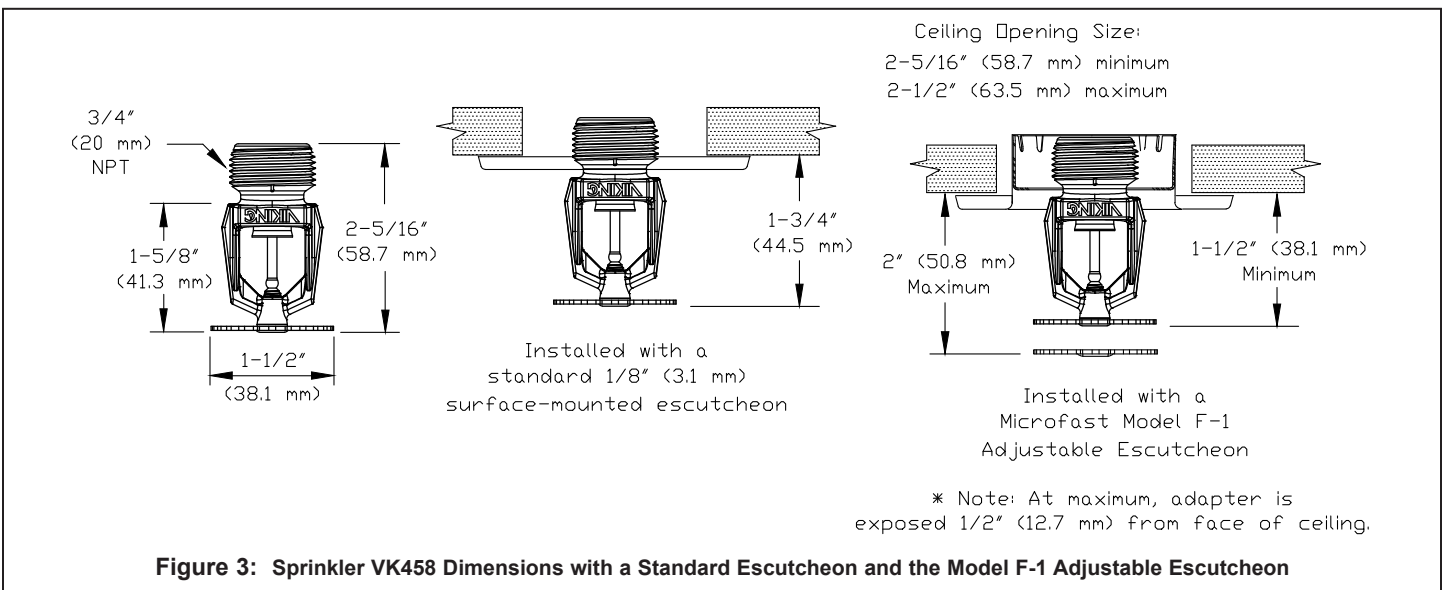
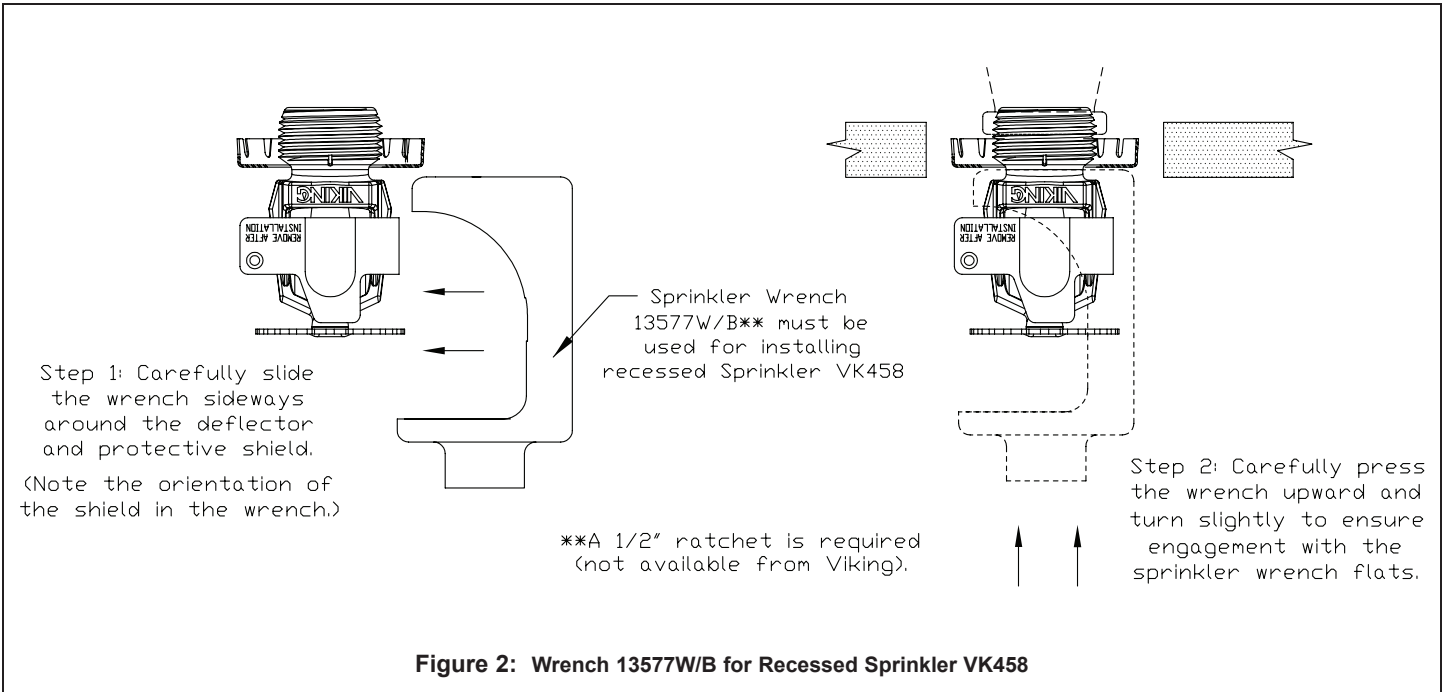


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DESIGN CRITERIA
 (Also refer to the Approval Chart on page 140w.)

cULus Listing Requirements:

When using Viking Residential Pendant 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 140w.

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 140w for NFPA 13D and NFPA13R applications for each listed area of coverage, or
- Calculated based on a minimum discharge of 0.1 gpm/sq. ft. over the “design area” in accordance with sections 8.5.2.1 or 8.6.2.1.2 of NFPA 13.
- Minimum distance between residential sprinklers: 8 ft. (2.4 m).

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

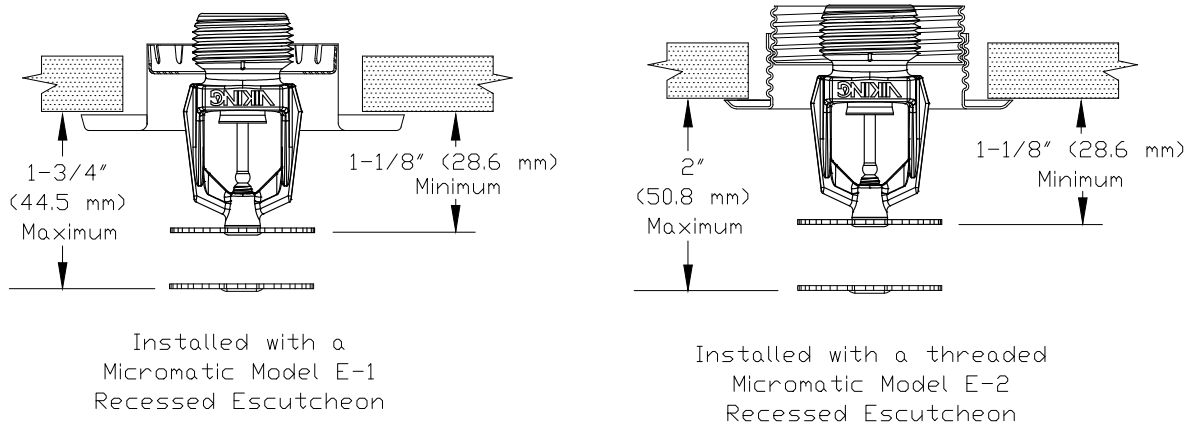


Figure 4: Sprinkler VK458 Dimensions with the Model E-1 and E-2 Recessed Escutcheons



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