



## TECHNICAL DATA

## FREEDOM® RESIDENTIAL PENDENT LEAD FREE SPRINKLER VK4680 (K4.9)

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

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

### 1. DESCRIPTION

Viking Freedom® Residential Pendent Lead Free\* Sprinkler VK4680 is a small, thermo-sensitive, glass-bulb residential sprinkler available in several different finishes and temperature ratings to meet varying design requirements. The orifice design, with a K-Factor of 4.9 (70.6 metric†), allows efficient use of available water supplies for the hydraulically designed fire-protection system. The glass bulb operating element and special deflector characteristics meet the challenges of residential sprinkler standards.

\* Lead content complies with the definition of 'Lead Free' established in the Reduction of Lead in Drinking Water Act (S.3874) endorsed by AWWA's Water Utility Council, and California Assembly Bill #1953.

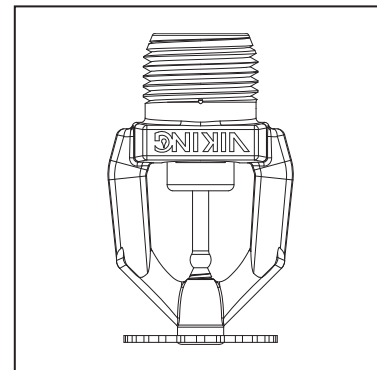
### 2. LISTINGS AND APPROVALS



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

**UL Classified to:** NSF/ANSI Standard 61, Drinking Water System Components and NSF 372 (MH48034).

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



### 3. TECHNICAL DATA

#### Specifications:

Available since 2011.

Minimum Operating Pressure: Refer to the Approval Chart.

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

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

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

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

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

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

#### Material Standards:

Frame Casting: Brass UNS-C89833

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

Bulb: Glass, nominal 3 mm diameter

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

Pip Cap: Brass UNS-C64200

Compression Screw: Brass UNS-C36000

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

**Sprinkler:** Base Part No. 16876

Order Sprinkler VK4680 by first adding the appropriate suffix for the sprinkler finish and then the appropriate suffix for the temperature rating to the sprinkler base part number.

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

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

For example, sprinkler VK4680 with a Brass finish and a 155 °F (68 °C) temperature rating = Part No. 16876AB.

**Available Finishes And Temperature Ratings:** Refer to Table 1.

**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 with Protective Caps: Part No. 13655W/B\*\* (available since 2006)

C. Wrench for Recessed Sprinklers with Protective Shields: Part No. 13577W/B\*\* (available since 2006)

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

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

†Allows use from the floor by attaching a length of 1" diameter CPVC tubing to the tool. Ideal for sprinkler cabinets. Refer to Bulletin F\_051808.

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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**Sprinkler Cabinets:**

- A. Six-head capacity: Part No. 01724A (available since 1971)
- B. Twelve-head capacity: Part No. 01725A (available since 1971)

**4. INSTALLATION**

Refer to appropriate NFPA Installation Standards.

**5. OPERATION**

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

**6. INSPECTIONS, TESTS AND MAINTENANCE**

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

**7. AVAILABILITY**

The Viking Model VK4680 Sprinkler is available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

**8. GUARANTEE**

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

**TABLE 1: AVAILABLE SPRINKLER TEMPERATURE RATINGS AND FINISHES**

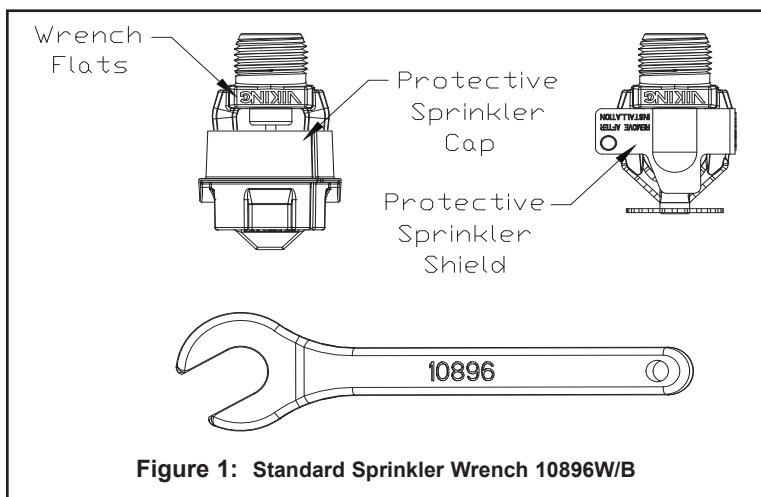
Sprinkler Temperature Classification	Sprinkler Nominal Temperature Rating <sup>1</sup>	Maximum Ambient Ceiling Temperature <sup>2</sup>	Bulb Color
Ordinary	155 °F (68 °C)	100 °F (38 °C)	Red
Intermediate	175 °F (79 °C)	150 °F (65 °C)	Yellow

**Sprinkler Finishes:** Brass, Chrome, White Polyester, and Black Polyester

**Footnotes**

<sup>1</sup> The sprinkler temperature rating is stamped on the deflector.

<sup>2</sup> 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.



**Figure 1: Standard Sprinkler Wrench 10896W/B**



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### Approval Chart Viking VK4680, 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 NFPA 13, 13R or 13D 2013 Editions

Sprinkler Base Part Number <sup>1</sup>	SIN	NPT Thread Size		Nominal K-Factor		Maximum Water Working Pressure	Overall Length			
		Inches	mm	U.S.	metric <sup>2</sup>		Inches	mm		
16876	VK4680	1/2	15	4.9	70.6	175 psi (12 bar)	2-1/4	58		
Max. Coverage Area <sup>4</sup> 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 <sup>3</sup>			Minimum Spacing Ft. (m)
	Flow <sup>4</sup> GPM (L/min)	Pressure <sup>4</sup> PSI (bar)	Flow <sup>4</sup> GPM (L/min)	Pressure <sup>4</sup> PSI (bar)				NYC	NSF <sup>8</sup>	
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, the Microfast® Model F-1 Adjustable Escutcheon, or recessed with the Micromatic® Model E-1, E-2, or E-3 Recessed Escutcheon	See Foot-note 7.	See Foot-note 6.	See Foot-note 7.	8 (2.4)
14 X 14 (4.3 X 4.3)	13 (49.2)	7.0 (0.48)	13 (49.2)	7.0 (0.48)						
16 X 16 (4.9 X 4.9)	13 (49.2)	7.0 (0.48)	13 (49.2)	7.0 (0.48)						
18 X 18 (5.5 X 5.5)	17 (64.4)	12.0 (0.83)	17 (64.4)	12.0 (0.83)						
20 X 20 (6.1 X 6.1)	20 (75.7)	16.7 (1.15)	20 (75.7)	16.7 (1.15)						

#### Footnotes

<sup>1</sup> Part number shown is the base part number. For complete part number, refer to Viking's current price schedule.

<sup>2</sup> 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.

<sup>3</sup> 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.

<sup>4</sup> 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.

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

<sup>6</sup> Meets New York City requirements, effective July 1, 2008.

<sup>7</sup> Approved Finishes are: Brass, Chrome, White Polyester, and Black Polyester <sup>9</sup>

<sup>8</sup> UL Classified to: NSF/ANSI Standard 61, Drinking Water System Components and NSF 372 (MH48034).

<sup>9</sup> Other paint colors are available on request with the same C-UL-US-EU listings as the standard finish colors.



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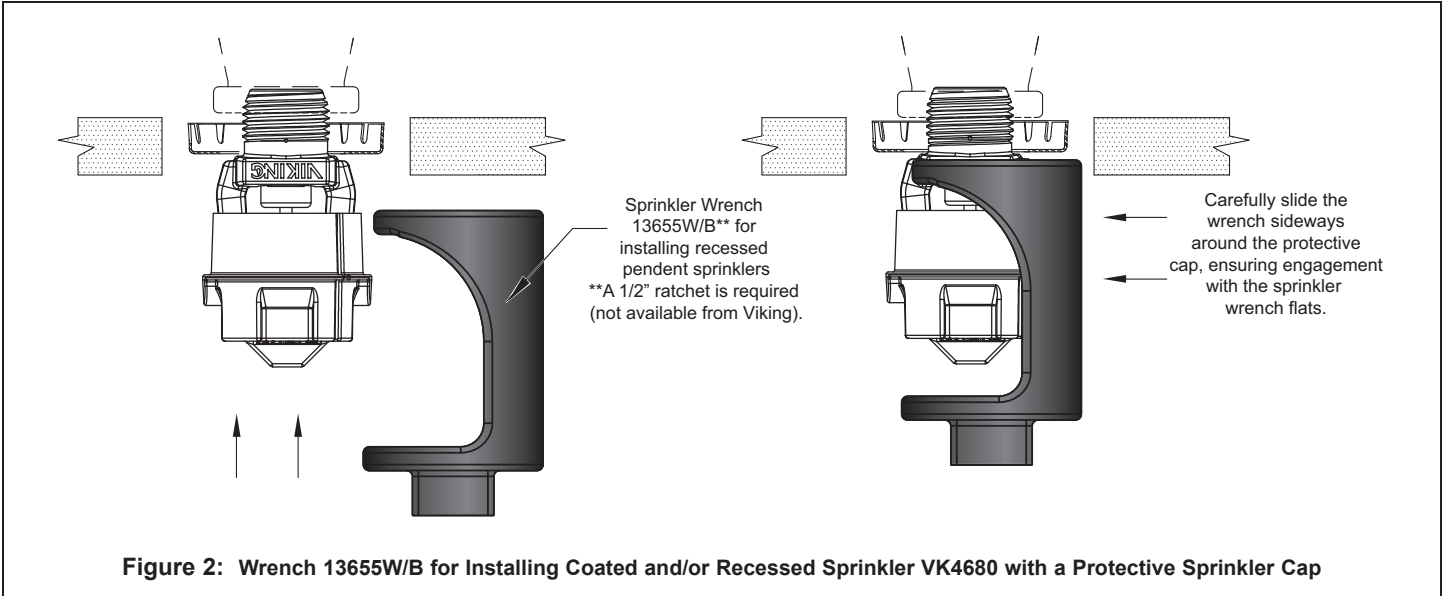


Figure 2: Wrench 13655W/B for Installing Coated and/or Recessed Sprinkler VK4680 with a Protective Sprinkler Cap

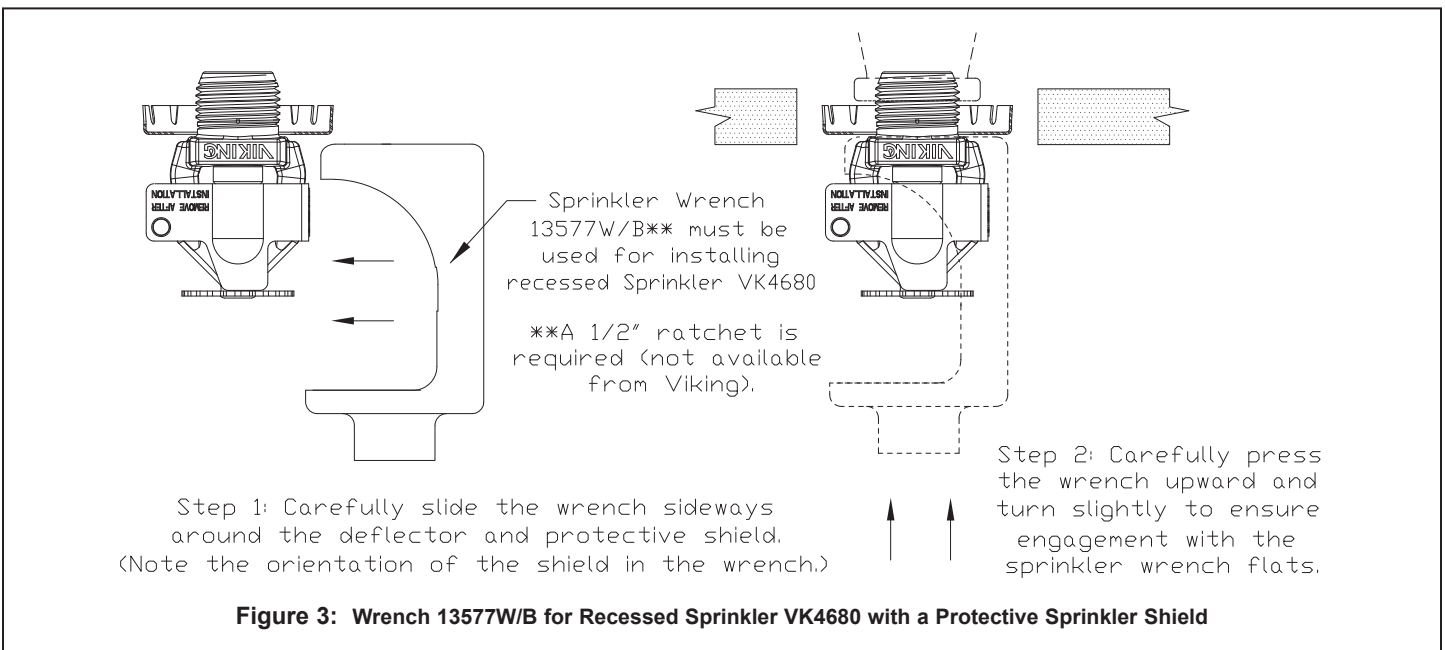


Figure 3: Wrench 13577W/B for Recessed Sprinkler VK4680 with a Protective Sprinkler Shield

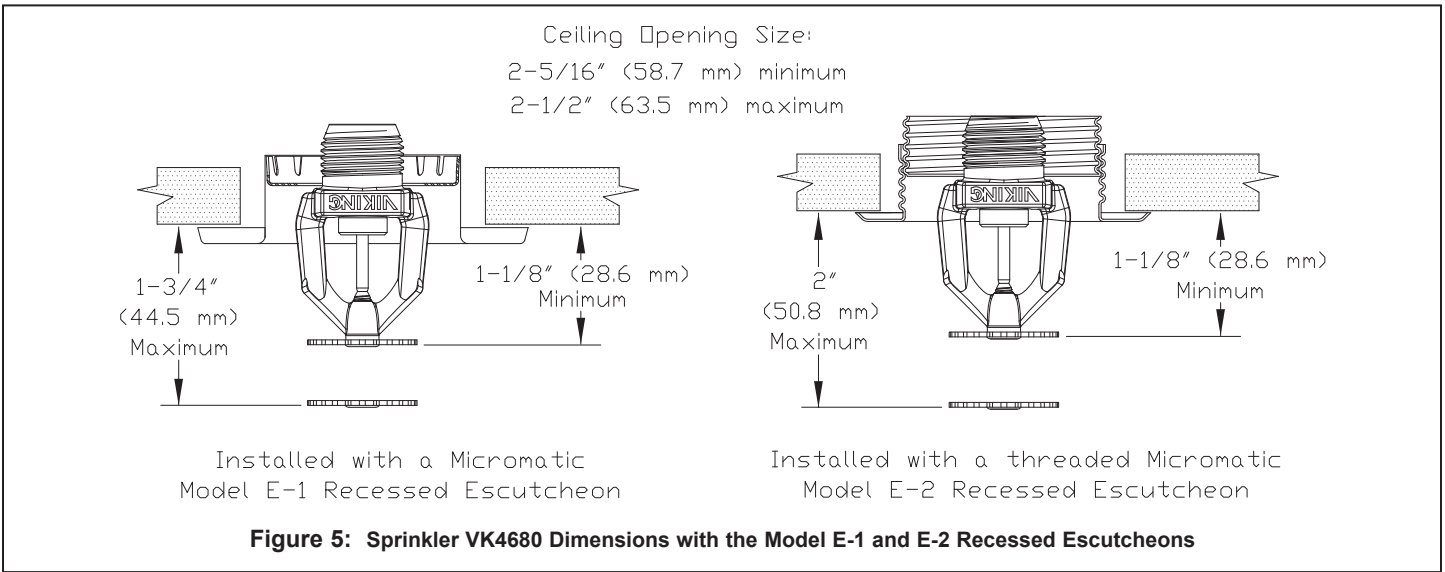
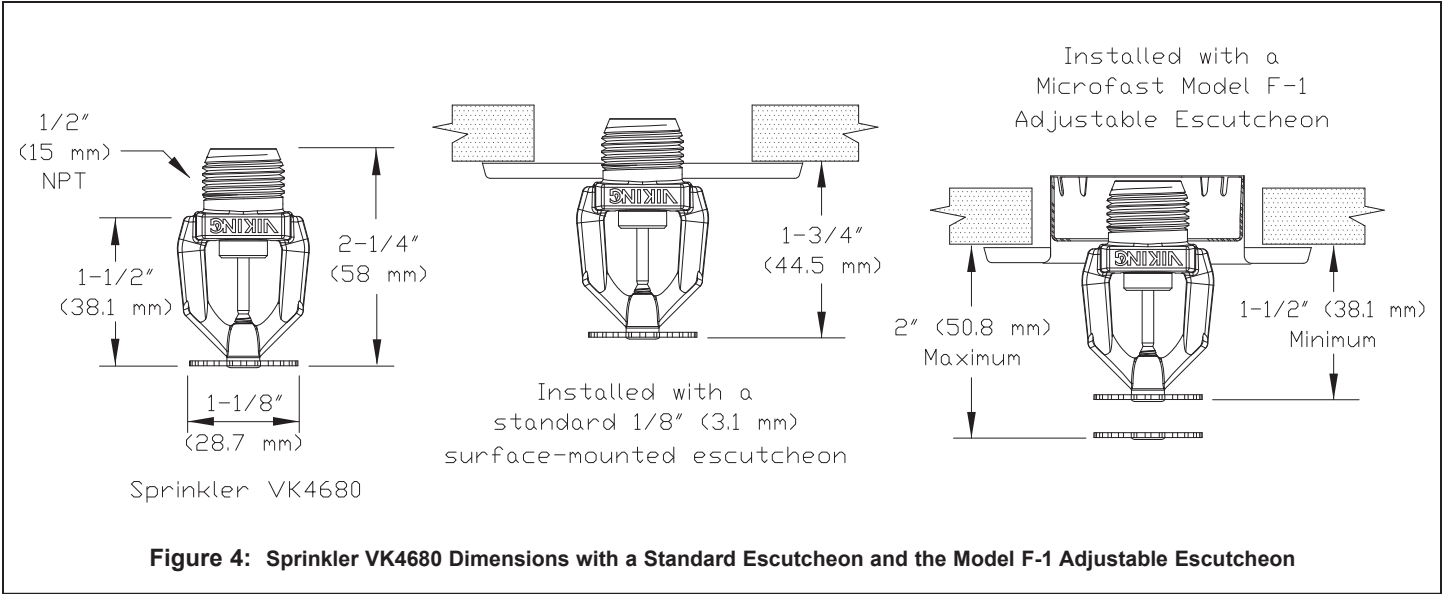


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### DESIGN CRITERIA

(Also refer to the Approval Chart.)

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

When using Viking Residential Pendent Lead Free Sprinkler VK4680 for systems designed to NFPA 13D or NFPA 13R, apply the listed areas of coverage and minimum water supply requirements shown in the Approval Chart.

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

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

**IMPORTANT: Always refer to Bulletin Form No. F\_091699 - Care and Handling of Sprinklers. Also refer to 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.**