



## TECHNICAL DATA

### QUICK RESPONSE EXTENDED COVERAGE CONCEALED HSW SPRINKLER VK680 (K8.0)

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.

### 1. DESCRIPTION

Viking QREC Concealed Horizontal Sidewall Sprinkler VK680 is a small high-sensitivity solder link and lever sprinkler designed for installation on concealed pipe systems, where the appearance of a smooth wall is desired. The fast response operating element and special flow shaper characteristics meet the challenges of quick response extended coverage standards.

The sprinkler is hidden from view by a low profile, small diameter cover plate installed flush to the wall. The cover plate is available in 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. After the system has been tested and wall finish has been applied, the push-on design of the cover plate assembly allows easy installation of the cover plate with up to 1/4" (6.4 mm) adjustment.

### 2. LISTINGS AND APPROVALS

 **cULus Listed:** Category VNIV



**CCCF Approved:** Approved by the China Certification Center for Fire Products (CCCF)

Refer to the Approval Chart and Design Criteria on this Technical Data Page for cULus Listing requirements that must be followed.

### 3. TECHNICAL DATA

#### Specifications:

Available since 2011.

Minimum Operating Pressure: 7 psi (0.5 bar)

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: 8.0 U.S. (115.2 metric)†

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

Available Cover Plate Horizontal Adjustment: 1/4" (6.4 mm)

Overall Length (Sprinkler Body): 2" (50.8 mm)

Patents Pending

#### Material Standards:

Sprinkler Body: QM Brass and Brass UNS-C84400

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

Seat: Brass UNS-C31400

Deflector Ring: Brass UNS-C23000

Deflector Pins: Stainless Steel UNS-S30200

Halo: Brass UNS-C31400 or Phosphor Bronze UNS-C51000

Flow Shaper: Phosphor Bronze UNS-C51000

Lever Bar Ring: Brass UNS-C31400 or Brass UNS-C84400

Compression Screw: 18-8 Stainless Steel

Fusible Link Assembly: Nickel Alloy and Eutectic Solder

Fusible Link Levers: Stainless Steel UNS-S31600

Guide Pin: Stainless Steel UNS-S43000

Shipping Cap: Polyethylene

#### Cover Assembly Materials:

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

Spring: Beryllium Nickel

Solder: Eutectic



For Light Hazard Occupancies Only



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

Viking QREC Concealed HSW Sprinkler VK680 and Cover Plate Assembly must be ordered separately:

**Sprinkler:** Part No. 17114AC (includes a 165 °F (74 °C) temperature rated sprinkler with a protective plastic cap covering the unit).

**Cover Plate Assembly:** Base Part No. 16207 (3-5/16" diameter)

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, Painted White = M-/W, Painted Ivory = M-/I, Painted Black = M-/B

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

For example, cover 16207 with a Polished Chrome finish and a 135 °F (57 °C) temperature rating = 16207FA.

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

**Accessories:** (Also refer to the Viking website.)

**Sprinkler Wrenches\*\*:**

A. Heavy Duty Wrench Part No. 16208W/R (available since 2010)

B. Head Cabinet Wrench Part Number 16267\*\*\* (available since 2010)

C. Optional Large Concealed Cover Plate Installer Tool Part No. 14867 (available since 2007)

\*\*Requires a 1/2" ratchet (not available from Viking).

\*\*\*Ideal for sprinkler cabinets.

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

#### 4. INSTALLATION

Refer to appropriate NFPA Installation Standards.

#### 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 fusible element to disengage, releasing the sealing assembly. Water flowing through the sprinkler orifice strikes the flow shaper, 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 VK680 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.



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 1: Identification of Custom Paint for Concealed Covers**



**TECHNICAL DATA**

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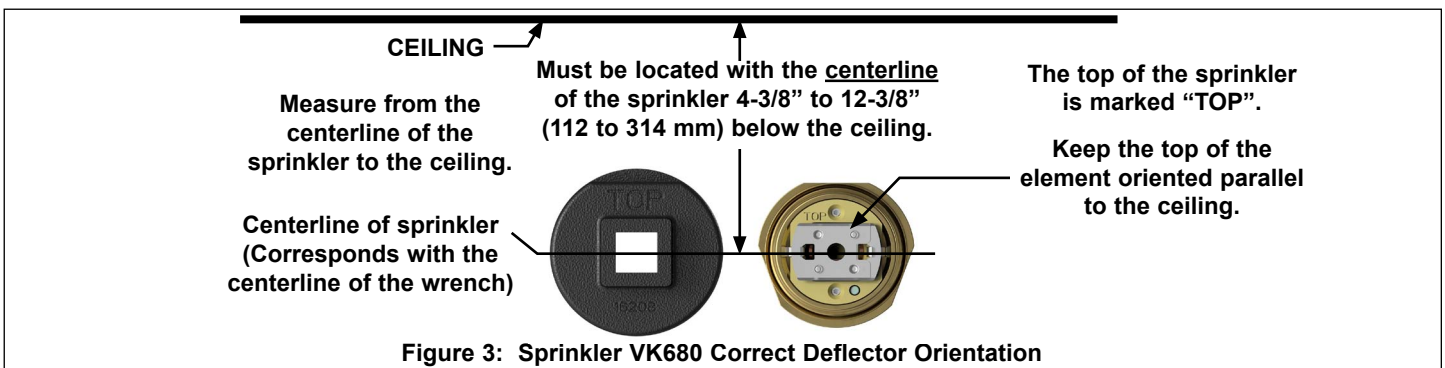
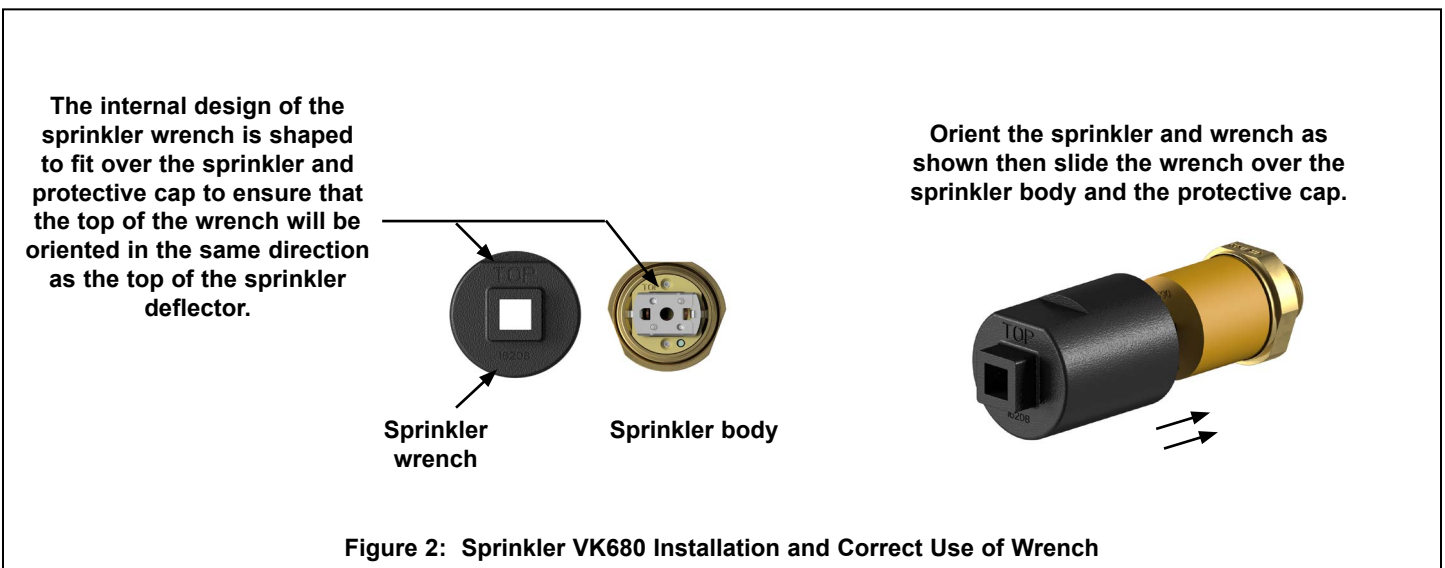
**TABLE 1: AVAILABLE SPRINKLER TEMPERATURE RATINGS AND FINISHES**

Sprinkler Temperature Classification	Sprinkler Nominal Temperature Rating <sup>1</sup>	Maximum Ambient Ceiling Temperature <sup>2</sup>	Temperature Rating of the Required Cover Assembly	Cover Plate Base Part Number <sup>3</sup>
Ordinary	165 °F (74 °C)	100 °F (38 °C)	135 °F (57 °C)	16207

**Cover Plate Finishes:** Polished Chrome, Painted White, Painted Ivory, or Painted Black

**Footnotes**

- <sup>1</sup> The sprinkler temperature rating is stamped on the inlet.
- <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.
- <sup>3</sup> Part number shown is the base part number. For complete part number, refer to current Viking price list schedule.





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Sprinkler Base Part Number <sup>1</sup>	NPT Thread Size		Nominal K-Factor		Maximum Water Working Pressure	Overall Length (Sprinkler Body)	
	Inches	mm	U.S.	metric <sup>2</sup>	psi (bar)	Inches	mm
17114AC	3/4	--	8.0	115.2	175 (12)	2	51
<b>NOTICE - Product Below - ONLY for CCCF Approval</b>							
20379AC	--	20 mm	8.0	115.2	175 (12)	2	51

### Approval Chart

QREC Concealed HSW Sprinkler VK680

For Light Hazard Occupancies Only.

For installation below smooth, flat, horizontal ceilings only.

Maximum Areas of Coverage <sup>4</sup> (Width x Throw)	Minimum Water Supply Requirements <sup>4</sup>	Sprinkler Distance Below the Ceiling	Listings and Approvals <sup>3</sup> (Refer also to Design Criteria on page 4.)				
			cULus <sup>5</sup>	FM	NYC	CCC <sup>6</sup>	
14' x 22' (4.3 m x 6.7 m)	31 gpm @ 15.0 psi (117.3 L/min @ 1.04 Bar)	Must be installed with the <u>centerline</u> of the sprinkler 4-3/8" to 12-3/8" (112 to 314 mm) below the ceiling.	AX1	--	See Footnote 6.	AX1	
16' x 16' (4.9 m x 4.9 m)	26 gpm @ 10.6 psi (98.4 L/min @ 0.73 Bar)		AX1	--		AX1	
16' x 18' (4.9 m x 5.5 m)	29 gpm @ 13.1 psi (109.8 L/min @ 0.91 Bar)		AX1	--		AX1	
16' x 20' (4.9 m x 6.2 m)	32 gpm @ 16.0 psi (121.1 L/min @ 1.1 Bar)		AX1	--		AX1	
16' x 22' (4.9 m x 6.7 m)	36 gpm @ 20.3 psi (136.3 L/min @ 1.4 Bar)		AX1	--		AX1	
18' x 18' (5.5 m x 5.5 m)	33 gpm @ 17.0 psi (124.9 L/min @ 1.2 Bar)		AX1	--		AX1	
18' x 20' (5.5 m x 6.2 m)	36 gpm @ 20.3 psi (136.3 L/min @ 1.4 Bar)		AX1	--		AX1	
18' x 22' (5.5 m x 6.7 m)	40 gpm @ 25 psi (151.4 L/min @ 1.72 Bar)		AX1	--		AX1	
14' x 24' (4.3 m x 7.3 m)	34 gpm @ 18.1 psi (128.7 L/min @ 1.25 Bar)		4-3/8" (112 mm)	AX1		--	--
16' x 24' (4.9 m x 7.3 m)	39 gpm @ 23.8 psi (147.6 L/min @ 1.64 Bar)		to 6-3/8" (162 mm)	AX1		--	--
14' x 24' (4.3 m x 7.3 m)	35 gpm @ 19.2 psi (132.5 L/min @ 1.32 Bar)	6-3/8" (162 mm)	AX1	--	--		
16' x 24' (4.9 m x 7.3 m)	40 gpm @ 25 psi (151.4 L/min @ 1.72 Bar)	to 12-3/8" (314 mm)	AX1	--	--		
<b>Sprinkler Temperature Rating</b> A - 165 °F (74 °C)	<b>Cover Assembly Temperature Rating</b> X - 135 °F (57 °C) cover 16207 <sup>1</sup>	<b>Cover Plate Finishes</b> 1 - Polished Chrome, Painted White <sup>7</sup> , Painted Ivory <sup>7</sup> , or Painted Black <sup>7</sup>					

#### Footnotes

- <sup>1</sup> Part number shown is the base part number. For complete part number, refer to current Viking price list 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.
  - <sup>4</sup> 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.
  - <sup>5</sup> Listed by Underwriter's Laboratories, Inc. for use in the U.S. and Canada. cULus Listings are limited to Light Hazard occupancies with smooth, flat, horizontal ceilings only. Always install horizontal sidewall sprinkler VK680 with the top of the sprinkler element oriented parallel with the ceiling. Refer to Figure 3 on page 4.
  - <sup>6</sup> Meets New York City requirements, effective July 1, 2008.
  - <sup>7</sup> Painted finish consists of Polyester Baked Enamel. Other paint colors are available on request with the same listings as the standard paint colors. Listings and approvals apply for any paint manufacturer. Contact Viking for additional information.
- NOTE:** Custom colors are indicated on a label inside the cover assembly. Refer to Figure 1.



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#### DESIGN CRITERIA

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

##### cULus Listing Requirements:

QREC Concealed HSW Sprinkler VK680 is cULus Listed for installation in accordance with the latest edition of NFPA 13 for extended coverage sidewall spray sprinklers:

- Limited to Light Hazard occupancies with smooth, flat, horizontal ceilings only.
- Minimum distance between sprinklers: 9 ft. (2.7 m)
- **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 3.
- Minimum distance from end walls is 4 in. (102 mm).
- Maximum distance from the end wall shall be no more than one-half of the allowable distance between sprinklers. The distance shall be measured perpendicular to the wall.
- The sprinkler installation and obstruction rules contained in NFPA 13 for extended coverage sidewall spray sprinklers must be followed.

**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 Bulletin 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, FM Global, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.**

