



## TECHNICAL DATA

**STANDARD RESPONSE/QR  
EXTENDED COVERAGE  
CONCEALED PENDENT  
SPRINKLERS VK614 & VK616**

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 Standard/Quick Response Extended Coverage Concealed Pendent Sprinklers VK614 and VK616 are thermosensitive spray sprinklers pre-assembled with a threaded adapter for installation with a domed cover. The small glass bulb operating element and special deflector combine speed of operation and area of coverage to meet quick response extended coverage standards.

The cover plate provides up to 1/2" (12.7 mm) of vertical adjustment and 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.



**For Light Hazard Occupancies Only**

### 2. LISTINGS AND APPROVALS

**cULus Listed:** Category VNIV

Refer to the Approval Chart on page 88c and Design Criteria on page 88d 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).

Testing: U.S.A. Patent No. 4,831,870

Thread size:

Part No. 06778BA-X: 1/2" (15 mm) NPT

Part No. 07077A-X: 3/4" (20 mm) NPT

Nominal K-Factor:

Part No. 06778BA-X: 5.6 U.S. (80.6 metric†)

Part No. 07077A-X: 8.0 U.S. (115.2 metric†)

†Metric K-factor measurement is shown is when pressure is measured 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):

Part No. 06778BA-X: 2-5/16" (59.4 mm)

Part No. 07077A-X: 2-7/16" (61.3 mm)

#### Material Standards:

Sprinkler Frame: Brass UNS-C84400 or QM Brass for Sprinkler 06778BA-X. Brass UNS-C84400 for all other sprinklers.

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

Bulb: Glass, nominal 3 mm diameter

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

Screw: Brass UNS-C36000

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

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

#### Cover Assembly Materials:

Cover: Copper UNS-C11000 and Brass UNS-C26800

Spring: Nickel Alloy

Solder: Eutectic

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.

**VIKING****TECHNICAL DATA****STANDARD RESPONSE/QR  
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Viking Standard/Quick Response Extended Coverage Concealed Pendent Sprinklers and Cover Plate Assembly must be ordered separately:

**Sprinklers:** Base Part No. 06778BA-X or 07077A-X (includes sprinkler and adapter pre-assembled, with a protective plastic cap covering the unit).

Specify sprinkler temperature rating by adding the appropriate suffix for the temperature rating to the base part number:

Temperature Suffix (°F/°C): 135°/57° = A, 155°/68° = B, 175°/79° = D

For example, sprinkler VK614 with a 175°F/79°C temperature rating = 06778BADX.

Note: When ordering this sprinkler using the SIN, add suffix -D. For example, concealed sprinkler VK614 = VK614-D.

**Cover Plate Assembly:** Base Part No. 12381

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 (°F/°C): 135°/57° = A, 165°/74° = C

For example, cover 12381 with a Polished Chrome finish and a 165°F/74°C temperature rating = 12381FC.

**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)**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 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**

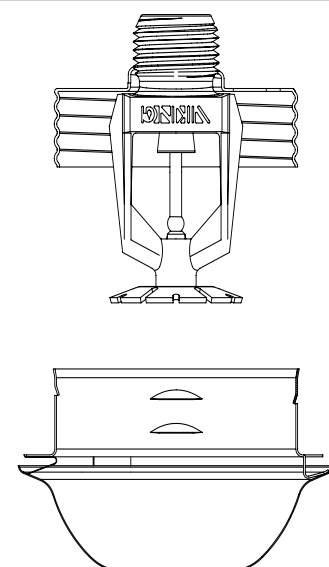
Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.

**7. AVAILABILITY**

The Viking Model VK618 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 VK614 and Cover 12381

	<b>TECHNICAL DATA</b>	<b>STANDARD RESPONSE/QR EXTENDED COVERAGE CONCEALED PENDENT SPRINKLERS VK614 &amp; VK616</b>
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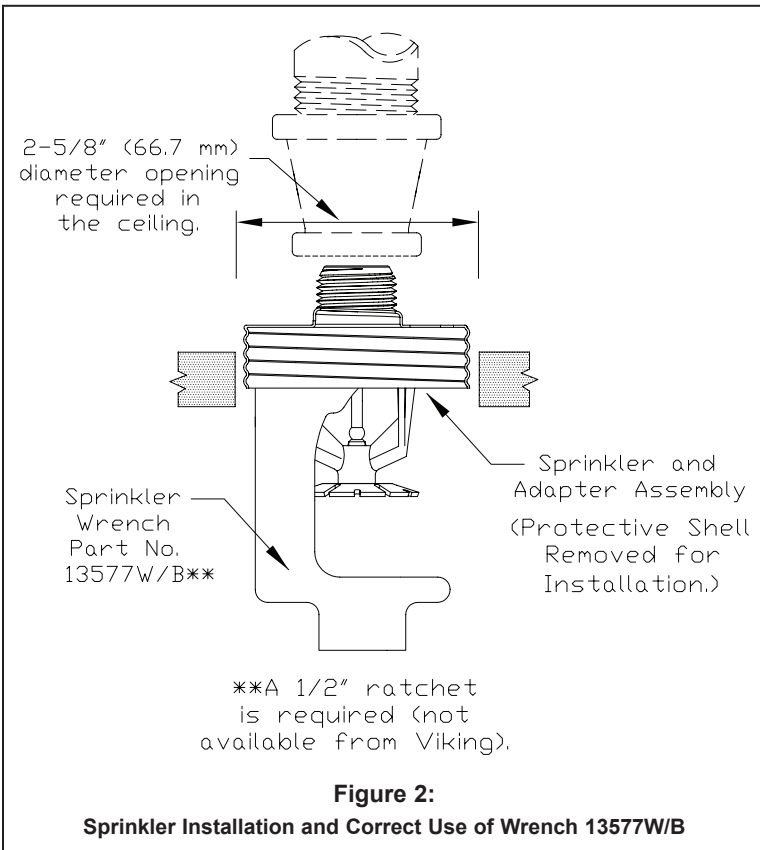
**TABLE 1: AVAILABLE SPRINKLER TEMPERATURE RATINGS AND FINISHES**

Sprinkler Temperature Classification	Sprinkler Nominal Temperature Rating <sup>1</sup>	Maximum Ambient Ceiling Temperature <sup>2</sup>	Bulb Color	Temperature Rating of the Required Cover Assembly	Cover Plate Assembly Base Part Number <sup>3</sup>
Ordinary	135°F (57°C)	100°F (38°C)	Orange	135°F (57°C)	12381
Ordinary	155°F (68°C)	100°F (38°C)	Red	135°F (57°C)	
Intermediate	175°F (79°C)	150°F (65°C)	Yellow	165°F (74°C)	

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

**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.
- <sup>3</sup> Part number shown is the base part number. For complete part number, refer to current Viking price list schedule.



	<h2 style="margin: 0;">TECHNICAL DATA</h2>	<p><b>STANDARD RESPONSE/QR EXTENDED COVERAGE CONCEALED PENDENT SPRINKLERS VK614 &amp; VK616</b></p>
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<b>Approval Chart</b> Standard/Quick Response Extended Coverage Concealed Pendent Sprinklers For Light Hazard Occupancies Only. Maximum 175 PSI (12 Bar) WWP																	
								<table border="1" style="font-size: small;"> <tr> <td style="text-align: center;">—</td> <td>Temperature</td> <td rowspan="3" style="vertical-align: middle;"><b>KEY</b></td> </tr> <tr> <td style="text-align: center;">—</td> <td>Finish</td> </tr> <tr> <td style="text-align: center;">A1X ←</td> <td>Escutcheon (if applicable)</td> </tr> </table>			—	Temperature	<b>KEY</b>	—	Finish	A1X ←	Escutcheon (if applicable)
—	Temperature	<b>KEY</b>															
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Sprinkler Base Part Number <sup>1</sup>	SIN	NPT Thread Size		Nominal K-Factor		Maximum Areas of Coverage <sup>4</sup> (Length x Width)	Minimum Water Supply Requirements <sup>4</sup> Flow/Pressure	Listings and Approvals <sup>3</sup> (Refer also to Design Criteria on page 88e.)		
		Inches	mm	U.S.	metric <sup>2</sup>			cULus <sup>5</sup>	FM	NYC
<b>Standard Response Applications<sup>7</sup></b>										
06778BA-X	VK614	1/2	15	5.6	80.6	18' x 18' (5.5 m x 5.5 m)	33 gpm @ 34.7 psi (124.9 L/min @ 2.39 Bar)	CW1	--	See Footnote 6.
07077A-X	VK616	3/4	20	8.0	115.2	18' x 18' (5.5 m x 5.5 m)	33 gpm @ 17.0 psi (124.9 L/min @ 1.17 Bar)	CW1	--	See Footnote 6.
06778BA-X	VK614	1/2	15	5.6	80.6	20' x 20' (6.1 m x 6.1 m)	40 gpm @ 51.0 psi (151.4 L/min @ 3.52 Bar)	CW1	--	See Footnote 6.
07077A-X	VK616	3/4	20	8.0	115.2	20' x 20' (6.1 m x 6.1 m)	40 gpm @ 25.0 psi (151.4 L/min @ 1.72 Bar)	CW1	--	See Footnote 6.
<b>Quick Response Applications</b>										
06778BA-X	VK614	1/2	15	5.6	80.6	16' x 16' (4.9 m x 4.9 m)	26 gpm @ 21.6 psi (98.4 L/min @ 1.49 Bar)	AW1, DX1	--	See Footnote 6.
07077A-X	VK616	3/4	20	8.0	115.2	16' x 16' (4.9 m x 4.9 m)	26 gpm @ 10.6 psi (98.4 L/min @ 0.73 Bar)	AW1, DX1	--	See Footnote 6.
06778BA-X	VK614	1/2	15	5.6	80.6	18' x 18' (5.5 m x 5.5 m)	33 gpm @ 34.7 psi (124.9 L/min @ 2.39 Bar)	BW1, DX1	--	See Footnote 6.
07077A-X	VK616	3/4	20	8.0	115.2	18' x 18' (5.5 m x 5.5 m)	33 gpm @ 17.0 psi (124.9 L/min @ 1.17 Bar)	BW1, DX1	--	See Footnote 6.
06778BA-X	VK614	1/2	15	5.6	80.6	20' x 20' (6.1 m x 6.1 m)	40 gpm @ 51.0 psi (151.4 L/min @ 3.52 Bar)	BW1, DX1	--	See Footnote 6.
07077A-X	VK616	3/4	20	8.0	115.2	20' x 20' (6.1 m x 6.1 m)	40 gpm @ 25.0 psi (151.4 L/min @ 1.72 Bar)	BW1, DX1	--	See Footnote 6.
<b>Sprinkler Temperature Ratings</b>				<b>Cover Assembly Temperature Ratings<sup>8</sup></b>				<b>Cover Plate Finishes<sup>9</sup></b>		
A - 135°F (57°C) and 155°F (68°C) B - 135°F (57°C) C - 155°F (68°C) D - 175°F (79°C)				W - 135°F (57°C) cover 12381 <sup>1</sup> X - 165°F (74°C) cover 12381 <sup>1</sup>				1 - Polished Chrome, Painted White, Painted Ivory, or Painted Black		

**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 for Light Hazard occupancies with smooth, flat, horizontal ceilings only.

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

<sup>7</sup> cULus Listings are limited to Light Hazard occupancies, where allowed by the installation standards being applied.

<sup>8</sup> The 135°F cover has an orange label. The 165°F cover has a white label.

<sup>9</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 3.



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**DESIGN CRITERIA**

(Also refer to the Approval Chart on page 88d.)

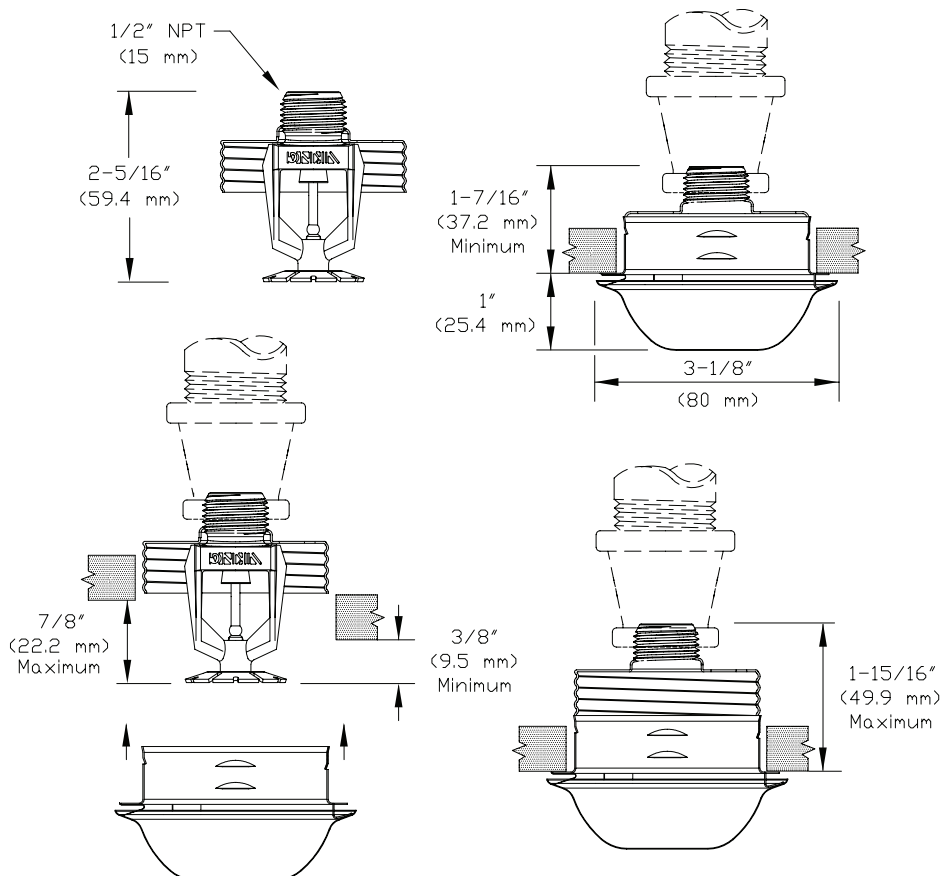
**cULus Listing Requirements:**

Standard/Quick Response Extended Coverage Concealed Pendent Sprinklers VK614 and VK616 are cULus Listed for installation in accordance with the latest edition of NFPA 13 for extended coverage pendent spray sprinklers:

- Limited to Light Hazard occupancies, where allowed by the installation standards being applied, with smooth, flat, horizontal ceilings only.
- **DEFLECTOR POSITION:** Install with the deflector 3/8" (9.5 mm) to 7/8" (22.2 mm) below the ceiling. Refer to Figures 3 and 4.
- Minimum spacing allowed is 8 ft. (2.4 m) unless baffles are installed in accordance with NFPA 13.
- Minimum distance from walls is 4 in. (102 mm).
- Maximum distance from walls 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 pendent 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 pages EC1-3 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.**



NOTE: A 2-5/8" (66.7 mm) diameter opening is required in the ceiling.

**Figure 4: Sprinkler Dimensions and Cover Installation for Sprinkler VK614 with up to 1/2" (12.7 mm) Cover Adjustment Available**

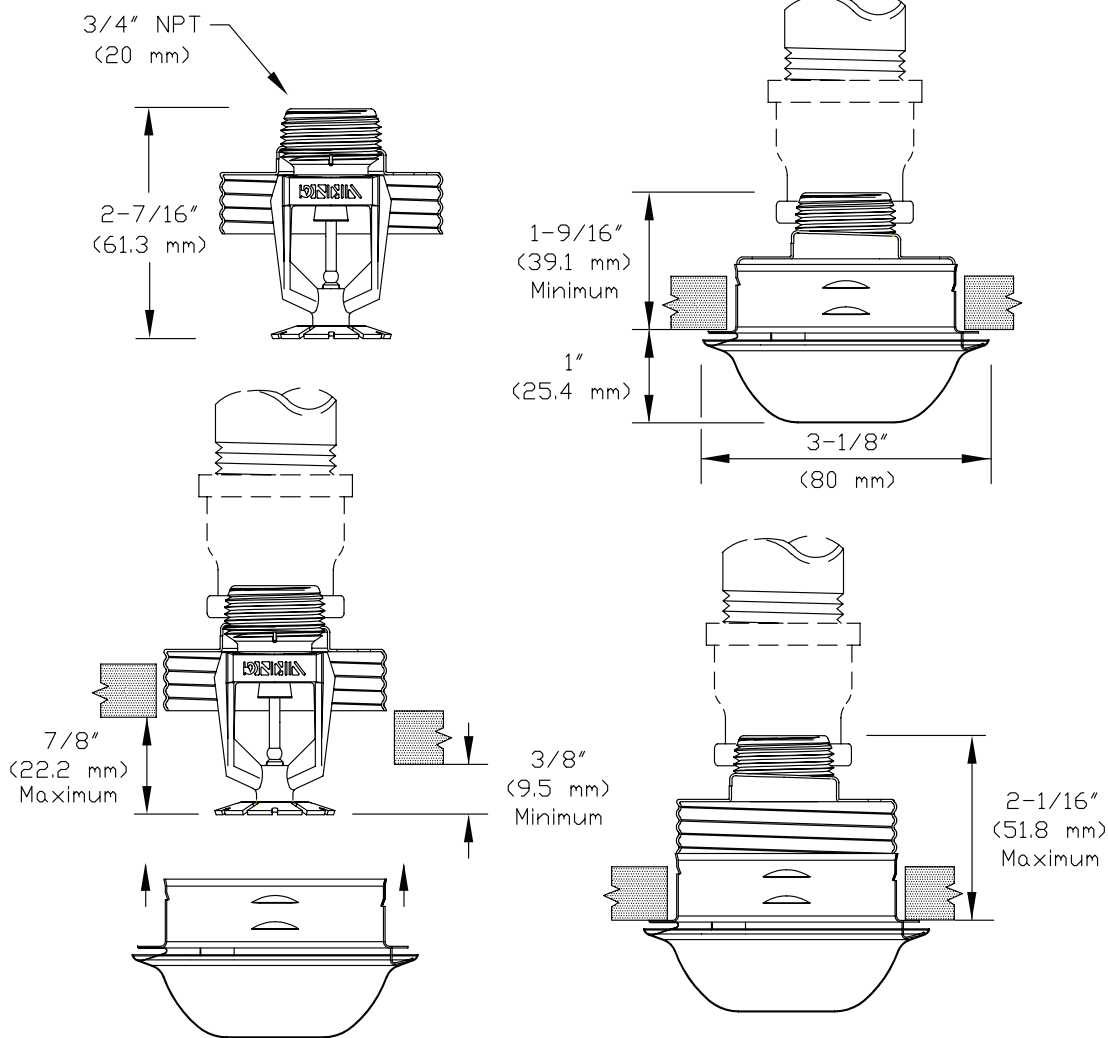


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NOTE: A 2-5/8" (66.7 mm) diameter opening is required in the ceiling.

Figure 5:

Sprinkler Dimensions and Cover Installation for Sprinkler VK616 with up to 1/2" (12.7 mm) Cover Adjustment Available