



## TECHNICAL DATA

## STANDARD SPRAY CONCEALED HORIZONTAL SIDEWALL SPRINKLER VK481

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: [www.vikinggroupinc.com](http://www.vikinggroupinc.com)

### 1. DESCRIPTION

Viking Quick Response Concealed Horizontal Sidewall Sprinkler VK481 is a small solder link and lever spray sprinkler designed for installation on concealed pipe systems. The sprinkler is hidden from view by a low profile, small diameter cover plate installed flush with the wall.

The two-piece design allows installation and testing of the sprinkler prior to installation of the cover plate. The “push-on”, “pull-off” design of the concealed cover plate assembly allows easy installation of the cover plate after the system has been tested and finish has been applied to the wall, while also permitting up to 1/4” (6.4 mm) of horizontal adjustment. The cover assembly can be removed and reinstalled, allowing access behind the wall without taking the sprinkler system out of service and removing the sprinkler.



### 2. LISTINGS AND APPROVALS

 **cULus Listed: Category VNIV**

 **FM Approved: Class 2015**

Refer to the Approval Charts and Design Criteria for Listing and approval requirements that must be followed.

### 3. TECHNICAL DATA

#### Specifications:

Available since 2012.

Minimum Operating Pressure: 7 psi (0.5 bar)

Rated to 175 psi (1 207 kPa) water working pressure.

Thread size: 1/2” (15 mm) NPT

Nominal K-Factor: 5.6 U.S. (80.6 metric†)

† Metric K-factor measurement is shown 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 mm)

Covered by the following U.S. Patent numbers: 7,854,269 and 7,712,218

#### Material Standards:

Sprinkler Body: QM Brass or Brass UNS-C84400

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

Seat: Brass UNS-C31400 or UNS-C31600

Deflector Ring: Brass UNS-C23000

Deflector Pins: Stainless Steel UNS-S30200

Halo: Phosphor Bronze UNS-C51000

Flow Shaper: Phosphor Bronze UNS-C51000

Lever Bar Ring: 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: Brass UNS-C26000 or UNS-C26800

Spring: Nickel Alloy

Solder: Eutectic



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

Viking Quick Response Concealed Horizontal Sidewall Sprinklers and Cover Plate Assemblies must be ordered separately:

**Sprinkler:** Base Part No. 17555A (includes brass sprinkler with a protective plastic cap covering the unit).

Specify the sprinkler temperature rating by adding the appropriate suffix for the temperature rating:

Temperature Suffix: 165 °F (74 °C) = C and 205 °F (96 °C) = E

For example, sprinkler VK481 with a 165 °F (74 °C) temperature rating = 17555AC.

**Cover Plate Assembly:** Base Part No. 16207

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, 165 °F (74 °C) = C

For example, cover 16207 with a Polished Chrome finish and a 165 °F (74 °C) temperature rating = 16207FC.

**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 ½" 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

Viking concealed sprinklers are 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**



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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 Cover Assembly (Required)		Cover Plate Base Part Number <sup>3</sup>
Ordinary	165 °F (74 °C)	100 °F (38 °C)	135 °F (57 °C)	165 °F (74 °C)	16207
Intermediate	205 °F (96 °C)	150 °F (65 °C)	135 °F (57 °C)	165 °F (74 °C)	16207

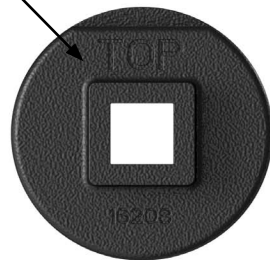
**Cover Plate Finishes:** Polished Chrome, Brushed Chrome, Bright Brass, Antique Brass, Brushed Brass, Brushed Copper, Painted White, Painted Ivory, and Painted Black.

**Sprinkler Finish:** Brass

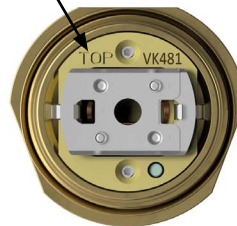
**Footnotes**

- <sup>1</sup> The sprinkler temperature rating is stamped on the sprinkler body.
- <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> Base part number is shown. For complete part number, refer to Viking's current price list schedule.

The internal design of the sprinkler wrench is shaped to fit over the sprinkler and protective cap to ensure that the top of the wrench will be oriented in the same direction as the top of the sprinkler deflector.



**Sprinkler wrench**



**Sprinkler body**

Orient the sprinkler and wrench as shown then slide the wrench over the sprinkler body and the protective cap.



**Figure 2: Sprinkler VK481 Installation and Correct Use of Wrench**



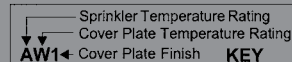
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### Approval Chart - UL

#### Quick Response Concealed Horizontal Sidewall Sprinkler VK481



Position with the centerline of the sprinkler located between 4-3/8" and 12-3/8" (112 mm and 314 mm) below the ceiling.

Sprinkler Base Part Number <sup>1</sup>	SIN	NPT Thread Size		Nominal K-Factor		Maximum Water Working Pressure	Overall Length (Sprinkler Body)		Listings and Approvals <sup>3,4</sup> (Refer also to Design Criteria.)	
		Inch	mm	U.S.	metric <sup>2</sup>		Inches	mm	cULus <sup>5</sup>	NYC
17555A	VK481	1/2"	15	5.6	80.6	175 psi (12 bar)	2"	50	AX1	See Footnote 6.
<b>Sprinkler Temperature Ratings</b> A - 165 °F (74 °C) and 205 °F (96 °C)		<b>Cover Plate Assembly Temp. Ratings<sup>7</sup></b> X - 135 °F (57 °C) or 165 °F (74 °C) Cover Part No. 16207 <sup>1</sup>				<b>Finishes of the Cover Plate Assembly<sup>8</sup></b> 1 - Polished Chrome, Brushed Chrome, Bright Brass, Antique Brass, Brushed Brass, Brushed Copper, 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> Listed for use in Light or Ordinary Hazard Occupancies.
- <sup>5</sup> Listed by Underwriter's Laboratories for use in the U.S. and Canada.
- <sup>6</sup> Meets New York City requirements, effective July 1, 2008.
- <sup>7</sup> The 135 °F (57 °C) cover has an orange label. The 165 °F (74 °C) cover has a white label.
- <sup>8</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.

### DESIGN CRITERIA

(Also refer to the Approval Chart above.)

#### cULus Listing Requirements:

Quick Response Concealed Horizontal Sidewall Sprinkler VK481 is cULus Listed for installation in accordance with the latest edition of NFPA 13 for standard coverage sidewall spray sprinklers as indicated below:

- Designed for use in Light or Ordinary Hazard Occupancies.
- **Position with the centerline of the sprinkler located between 4-3/8" and 12-3/8" (112 mm and 314 mm) below the ceiling. 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.
- This sprinkler must be installed flush with the wall.
- Protection areas and maximum spacing shall be in accordance with the tables provided in NFPA 13 for standard sidewall sprinklers. Minimum spacing allowed is 7 ft. (2.1 m).
- Maximum distance from end walls shall be no more than one-half of the allowable distance between sprinklers. The distance shall be measured perpendicular to the wall. Minimum distance from end walls is 4 in. (102 mm).
- The sprinkler installation and obstruction rules contained in NFPA 13 for standard 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 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.



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Approval Chart - FM											
Standard Response Concealed Horizontal Sidewall Sprinkler VK481											
Position with the centerline of the sprinkler located between 4-3/8" and 12-3/8" (112 mm and 314 mm) below the ceiling.											
Sprinkler Base Part Number <sup>1</sup>	SIN	NPT Thread Size		Nominal K-Factor		Maximum Water Working Pressure	Overall Length (Sprinkler Body)		Listings and Approvals <sup>3</sup> (Refer also to Design Criteria.)		
		Inch	mm	U.S.	metric <sup>2</sup>		Inches	mm	FM		
17555A	VK481	1/2"	15	5.6	80.6	175 psi (12 bar)	2"	50	AX1		
<b>Sprinkler Temperature Ratings</b> A - 165 °F (74 °C) and 205 °F (96 °C)			<b>Cover Plate Assembly Temp. Ratings<sup>4</sup></b> X - 135 °F (57 °C) or 165 °F (74 °C) Cover Part No. 16207 <sup>1</sup>				<b>Finishes of the Cover Plate Assembly<sup>5</sup></b> 1 - Polished Chrome, Brushed Chrome, Bright Brass, Antique Brass, Brushed Brass, Brushed Copper, Painted White, Painted Ivory, or Painted Black				
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### DESIGN CRITERIA

(Also refer to the Approval Chart above.)

#### FM Approval Requirements

Viking Standard Response Concealed HSW Sprinkler VK481 is FM Approved as a Non-Storage Sidewall sprinkler as indicated in the FM Approval Guide. For specific application and installation requirements, reference the latest applicable FM Loss Prevention Data Sheets (including Data Sheet 2-0). FM Global Loss Prevention Data Sheets contain guidelines relating to, but not limited to: minimum water supply requirements, hydraulic design, ceiling slope and obstructions, minimum and maximum allowable spacing, and deflector distance below the ceiling.

**NOTE:** The FM installation guidelines may differ from cULus and/or NFPA criteria.

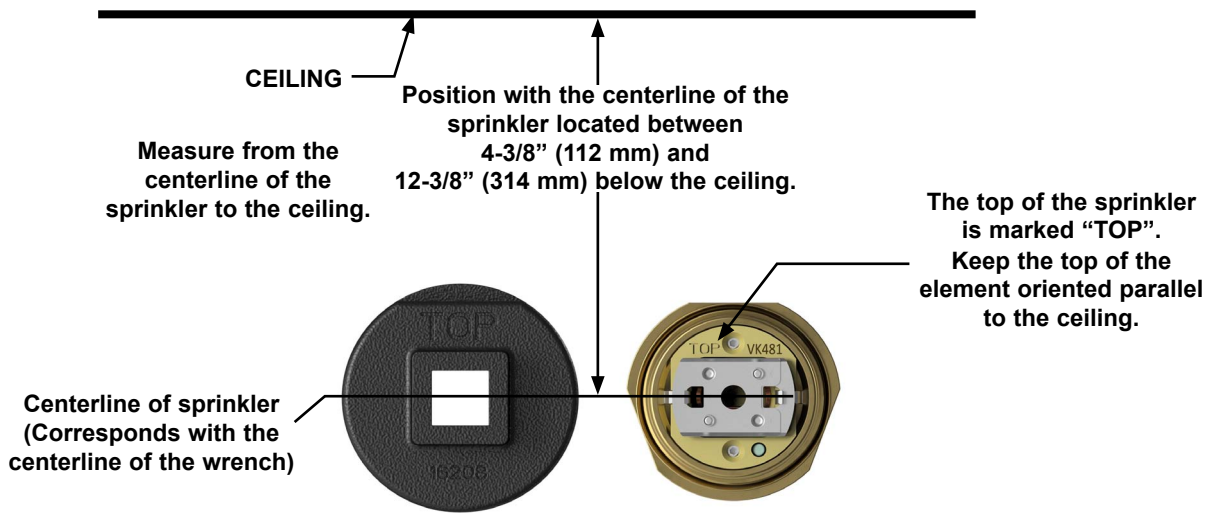
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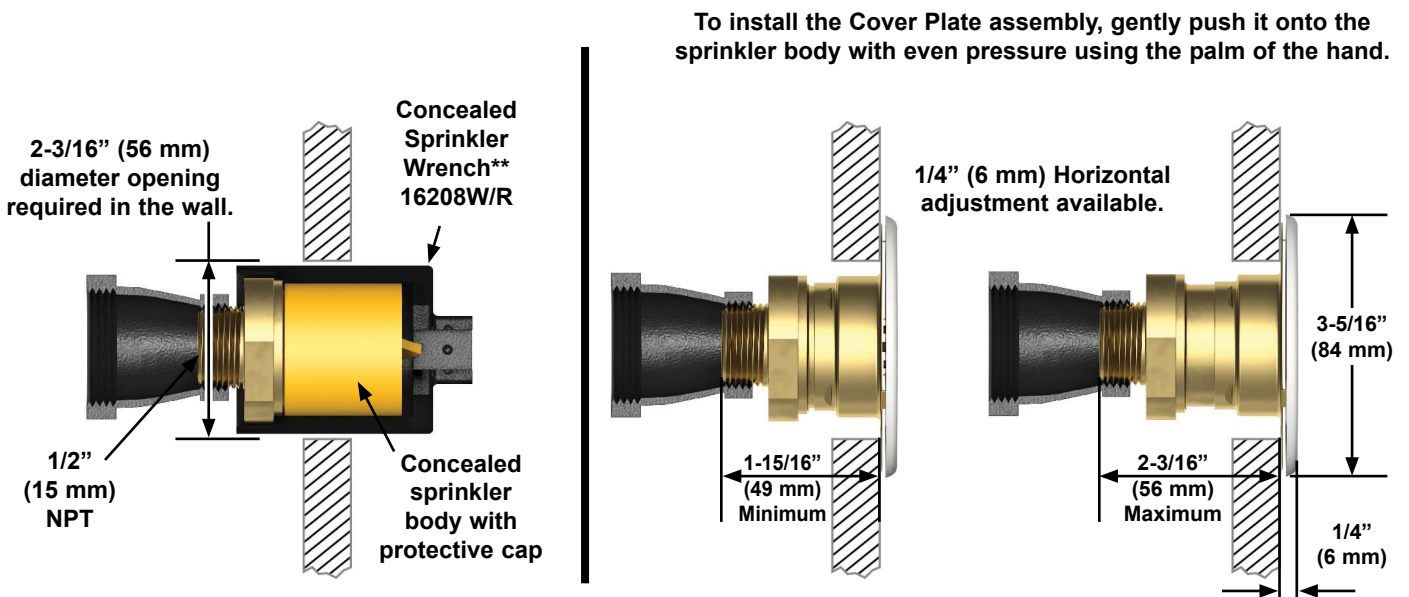
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**Figure 3: Sprinkler VK481 Correct Deflector Orientation**



**Figure 4: Sprinkler VK481 Dimensions and Cover Installation**

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