



## TECHNICAL DATA

### QR FUSIBLE ELEMENT UPRIGHT AND CONVENTIONAL SPRINKLERS (VK311, VK316, VK326, VK328, VK341, VK351, AND VK355)

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 Quick Response Fusible Element Upright and Conventional (Old Style) Sprinklers VK316, VK341, VK355, and HP Sprinklers VK311, VK326, VK328, and VK351 are small, thermosensitive, solder link spray sprinklers available in several different finishes, temperature ratings, and K-Factors to meet design requirements. The special Polyester and Teflon® coatings can be used in decorative applications where colors are desired.

#### 2. LISTINGS AND APPROVALS

**cULus Listed:** Category VNIV

**FM Approved:** Classes 2002 and 2020

Refer to Approval Chart 1 and Design Criteria on page 51j for cULus Listing requirements, and refer to Approval Chart 2 and Design Criteria on page 51k for FM Approval requirements that must be followed.

#### 3. TECHNICAL DATA

##### Specifications:

Available since 2007.

Minimum Operating Pressure: 7 psi (0.5 bar)

**Maximum Working Pressure:** Sprinklers VK316 and VK341 are rated for use with water working pressures ranging from the minimum 7 psi (0.5 bar) up to 250 psi (17 bar) for high-pressure systems. High-pressure (HP) sprinklers can be identified by locating "250" stamped on the deflector. Sprinklers VK311, VK326, VK328, VK351, and VK355 are rated to a maximum 175 psi (12 bar) wwp.

Factory tested hydrostatically to 500 psi (34.5 bar)

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

Thread size: Refer to the Approval Chart

Nominal K-Factor: Refer to the Approval Charts

Overall Length: Refer to the Approval Charts

##### Material Standards:

Frame Casting: Brass UNS-C84400

Deflector: Brass UNS-C23000 or Copper UNS-C19500 for Sprinkler VK316. Copper UNS-C19500 for Sprinkler VK351. Brass UNS-C26000 for all other Sprinklers.

Fusible Element Assembly: Nickel Alloy

Trigger and Support: Stainless Steel UNS-S31600

Bushing (for Sprinklers VK326, VK328, and VK341): Brass UNS-C36000

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

Seat and Insert Assembly: Copper UNS-C11000 and Stainless Steel UNS-S30400

Screw: Brass UNS-C36000

For Teflon® Coated Sprinklers: Belleville Spring-Exposed, Screw-Nickel Plated, Pip Cap-Teflon® Coated

For Polyester Coated Sprinklers: Belleville Spring-Exposed

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

Order Quick Response Fusible Element Upright and Conventional Sprinklers 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, White Polyester = M-/W, Black Polyester = M-/B, and Black Teflon® = N

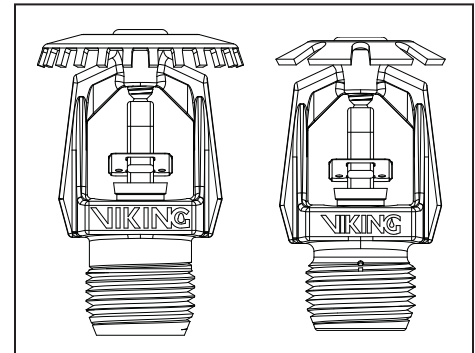
Temperature Suffix (°F/°C): 165°/74° = C, 205°/96° = E, and 280°/138° = G

For example, sprinkler VK326 with a Brass finish and a 165 °F/74 °C temperature rating = Part No. 13957AC

##### Available Finishes And Temperature Ratings:

Refer to Table 1

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



Upright

Conventional

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.

	<b>TECHNICAL DATA</b>	<b>QR FUSIBLE ELEMENT UPRIGHT AND CONVENTIONAL SPRINKLERS (VK311, VK316, VK326, VK328, VK341, VK351, AND VK355)</b>
---	-----------------------	---

**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**

**Sprinkler Wrenches:**

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

**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 fusible element assembly disengages, releasing the seat and spring assemblies to open the waterway. 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**

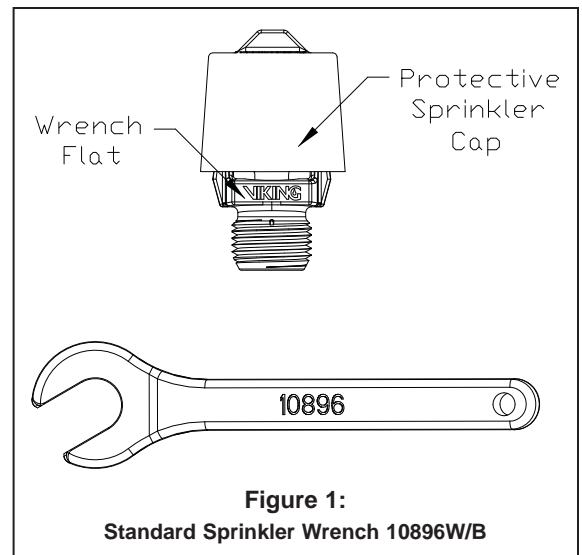
Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.

**7. AVAILABILITY**

The Viking Quick Response Fusible Element Upright and Conventional 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.



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

**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>	Frame Paint Color
Ordinary	165 °F (74 °C)	100 °F (38 °C)	None
Intermediate	205 °F (96 °C)	150 °F (65 °C)	White
High	280 °F (138 °C)	225 °F (107 °C)	Blue

**Sprinkler Finishes:** Brass, Chrome-Enloy<sup>®</sup>, White Polyester<sup>3</sup>, Black Polyester<sup>3</sup>, and Black Teflon<sup>®3</sup>

**Footnotes**

<sup>1</sup> Decorative sprinklers may not be color coded. The 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> For automatic sprinklers, the coatings indicated are applied to the exposed exterior surfaces only. Note that the spring is exposed on sprinklers with Polyester and Teflon<sup>®</sup> coatings. For Teflon<sup>®</sup> coated open sprinklers only, the waterway is coated.

	<h2 style="margin: 0;">TECHNICAL DATA</h2>	<h3 style="margin: 0;">QR FUSIBLE ELEMENT UPRIGHT AND CONVENTIONAL SPRINKLERS (VK311, VK316, VK326, VK328, VK341, VK351, AND VK355)</h3>
---	--	--

**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**

Approval Chart 1 (UL)													
Quick Response Fusible Element Upright and Conventional Sprinklers Maximum 175 PSI (12 bar) WWP													
Base Part Number <sup>1</sup>	SIN	Thread Size		Nominal K-Factor		Overall Length		Listings and Approvals <sup>3</sup> (Refer also to Design Criteria below.)					
		NPT	BSP	U.S.	metric <sup>2</sup>	Inches	mm	cULus <sup>4</sup>	NYC	VdS	LPCB	CE	⊕
<b>Conventional-Standard Orifice</b>													
13952	VK311	1/2"	15 mm	5.6	80.6	2-3/16	56	A2	See Footnote 5.	--	--	--	--
<b>Conventional-Large Orifice</b>													
13979	VK355	3/4"	20 mm	8.0	115.2	2-5/16	59	A2	See Footnote 5.	--	--	--	--
<b>Upright-Large Orifice</b>													
13976	VK351	3/4"	20 mm	8.0	115.2	2-5/16	59	A1	See Footnote 5.	--	--	--	--
13966	VK351	1/2"	15 mm	8.0	115.2	2-5/16	59	A1	See Footnote 5.	--	--	--	--
<b>Upright-Small Orifice<sup>6</sup></b>													
13957 <sup>7</sup>	VK326	1/2"	15 mm	2.8	40.3	2-1/4	57	A1	See Footnote 5.	--	--	--	--
13958 <sup>7</sup>	VK328	1/2"	15 mm	4.2	57	2-3/16	56	A1	See Footnote 5.	--	--	--	--
<b>Maximum 250 PSI (17 bar) WWP</b>													
<b>Upright-Standard Orifice</b>													
Base Part Number <sup>1</sup>	SIN	Thread Size		Nominal K-Factor		Overall Length		Listings and Approvals <sup>3</sup> (Refer also to Design Criteria below.)					
		NPT	BSP	U.S.	metric <sup>2</sup>	Inches	mm	cULus <sup>4</sup>	NYC	VdS	LPCB	CE	⊕
13953	VK316	1/2"	15 mm	5.6	80.6	2-3/16	56	A1	See Footnote 5.	--	--	--	--
<b>Upright-Small Orifice<sup>5</sup></b>													
13963 <sup>7</sup>	VK341	1/2"	15 mm	2.8	40.3	2-3/16	56	A1	See Footnote 5.	--	--	--	--
<b>Approved Temperature Ratings</b>						<b>Approved Finishes</b>							
A - 165 °F (74 °C), 205 °F (96 °C), and 280 °F (138 °C)						1 - Brass, Chrome-Enloy <sup>®</sup> , White Polyester <sup>®</sup> , Black Polyester <sup>®</sup> , and Black Teflon <sup>®</sup> 2 - Brass, Chrome-Enloy <sup>®</sup> , White Polyester <sup>®</sup> , and Black Polyester <sup>®</sup>							
<b>Footnotes</b>													
<sup>1</sup> Base part number is shown. 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 table shows the listings and approvals available at the time of printing. Check with the manufacturer for any additional approvals. <sup>4</sup> Listed by Underwriters Laboratories Inc. for use in the U.S. and Canada. <sup>5</sup> Meets New York City requirements, effective July 1, 2008. <sup>6</sup> Listings and Approvals limited to Light Hazard Occupancies where allowed by the installation standards being applied, with hydraulically calculated wet systems only. <sup>7</sup> The sprinkler orifice is bushed. <sup>8</sup> Other colors are available on request with the same Listings and Approvals as the standard colors.													

**DESIGN CRITERIA - UL**  
(Also refer to Approval Chart 1 above.)

**cULus Listing Requirements:**  
 Quick Response Fusible Element Upright and Conventional (Old Style) Sprinklers VK316, VK341, and VK355 and HP Sprinklers VK311, VK326, VK328, and VK351 are cULus Listed as indicated in the Approval Chart for installation in accordance with the latest edition of NFPA 13 for standard spray sprinklers, or old style (conventional) sprinklers.

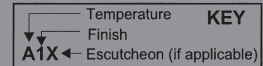
- Designed for use in Light and Ordinary Hazard occupancies (*Small orifice sprinklers are limited to Light Hazard where allowed by the installation standards being applied, with hydraulically calculated wet systems only. Exception: 4.2K sprinklers may be installed on hydraulically calculated dry pipe systems where piping is corrosion resistant or internally galvanized.*)
- The sprinkler installation rules contained in NFPA 13 for standard spray upright sprinklers must be followed. For conventional sprinklers, refer to the installation guidelines for old style (conventional) sprinklers.

**IMPORTANT: Always refer to Bulletin Form No. F\_091699 - Care and Handling of Sprinklers. Also refer to page QR1-3 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, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.**

	<h2 style="margin: 0;">TECHNICAL DATA</h2>	<p><b>QR FUSIBLE ELEMENT UPRIGHT AND CONVENTIONAL SPRINKLERS (VK311, VK316, VK326, VK328, VK341, VK351, AND VK355)</b></p>
---	--	--

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

<b>Approval Chart 2 (FM)</b> Quick Response Fusible Element Upright Sprinklers Maximum 175 PSI (12 bar) WWP								
Base Part Number <sup>1</sup>	SIN	Thread Size		Nominal K-Factor		Overall Length		FM Approvals <sup>3</sup> (Refer also to Design Criteria below.)
		NPT	BSP	U.S.	metric <sup>2</sup>	Inches	mm	
<b>Large Orifice</b>								
13976	VK351	3/4"	20 mm	8.0	115.2	2-5/16	59	A2
<b>Small Orifice<sup>4</sup></b>								
13957 <sup>5</sup>	VK326	1/2"	15 mm	2.8	40.3	2-1/4	57	A1
<b>Approved Temperature Ratings</b> A - 165 °F (74 °C), 205 °F (96 °C), and 280 °F (138 °C)					<b>Approved Finishes</b> 1 - Brass and Chrome-Enloy® 2 - Brass, Chrome-Enloy®, White Polyester <sup>6</sup> , and Black Polyester <sup>6</sup>			
<b>Footnotes</b>								
<sup>1</sup> Base part number is shown. 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 table shows the FM Approvals available at the time of printing. Check with the manufacturer for any additional approvals. <sup>4</sup> FM Approved as a quick response <b>Non-Storage</b> upright sprinkler. For specific application and installation requirements, reference the latest applicable FM Loss Prevention Data Sheets (including Data Sheet 2-0). <sup>5</sup> The sprinkler orifice is bushed. <sup>6</sup> Other colors are available on request with the same Approvals as the standard colors.								



**DESIGN CRITERIA - FM**  
(Also refer to Approval Chart 2 above.)

**FM Approval Requirements:**  
 Sprinklers VK326 and VK351 are FM Approved as quick response **Non-Storage** upright sprinklers 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.**

**IMPORTANT: Always refer to Bulletin Form No. F\_091699 - Care and Handling of Sprinklers. Also refer to page QR1-3 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.**