



## TECHNICAL DATA

## MICROMATIC® STANDARD RESPONSE UPRIGHT SPRINKLER VK100 (K5.6)

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

The Viking Micromatic® Standard Response Upright VK100 Sprinkler is a small, thermosensitive, glass-bulb spray sprinkler available in several different finishes and temperature ratings to meet design requirements. The special Polyester and Electroless Nickel PTFE (ENT) coatings can be used in decorative applications where colors are desired. In addition, these coatings have been investigated for installation in corrosive atmospheres and are listed/approved as corrosion resistant as indicated in the Approval Charts. (Note: **FM Global approves the ENT coating as corrosion resistant.** FM Global has no approval classification for Polyester coatings as corrosion resistant.)

Viking standard response sprinklers may be ordered and/or used as open sprinklers (glass bulb and pip cap assembly removed) on deluge systems. Refer to Ordering Instructions.



### 2. LISTINGS AND APPROVALS



**cULus Listed:** Category VNIV



**FM Approved:** Classes 2001, 2002, 2015, 2017, 2043



**WARNING:** Cancer and Reproductive Harm-  
[www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

**NOTE:** Other International approval certificates are available upon request.

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

### 3. TECHNICAL DATA

#### Specifications:

Minimum Operating Pressure: 7 psi (0.5 bar)†  
 Maximum Working Pressure: 175 psi (12 bar) wwp  
 Factory tested hydrostatically to 500 psi (34.5 bar)  
 Thread size: 1/2" NPT, 15 mm BSP  
 Nominal K-Factor: 5.6 U.S. (80.6 metric\*\*)  
 Glass-bulb fluid temperature rated to -65 °F (-55 °C)  
 Overall Length: 2-3/8" (60 mm)

† cULus Listing, FM Approval, and NFPA 13 installs require a minimum of 7 psi (0.5 bar). The minimum operating pressure for LPCB and CE Approvals ONLY is 5 psi (0.35 bar).

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

#### Material Standards:

Frame Casting: Brass UNS-C84400 or QM Brass  
 Deflector: Brass UNS-C23000 or Copper UNS-C19500  
 Bulb: Glass, nominal 5 mm diameter  
 Belleville Spring Sealing Assembly: Nickel Alloy, coated on both sides with PTFE Tape  
 Screw: Brass UNS-C36000  
 Pip Cap and Insert Assembly: Copper UNS-C11000 and Stainless Steel UNS-S30400  
For Polyester Coated Sprinklers: Belleville Spring-Exposed  
For ENT coated Sprinklers: Belleville Spring - Exposed, Screw and Pipcap - ENT plated.

††Not for FM Approval.

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

Order Micromatic® Standard Response Upright VK100 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, Black Polyester = M-B, Wax Coated = C, Wax Over Polyester = V-W, ENT = JN

Temperature Suffix: 135 °F (57 °C) = A, 155 °F (68 °C) = B, 175 °F (79 °C) = D, 200 °F (93 °C) = E, 212 °F (100 °C) = M, 286 °F (141 °C) = G, 360 °F (182 °C) = H, 500 °F (260 °C) = L.

For example, sprinkler VK100 with a 1/2" thread, Brass finish and a 155 °F (68 °C) temperature rating = Part No. 12986AB

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



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

### Sprinkler Wrenches:

- A. Standard Wrench: Part No. 21475M/B (available since 2017).
- B. Standard Wrench for Wax Coated Sprinklers: Part No. 10896W/B (available since 2000)
- C. Socket Wrench for Wax Coated Sprinklers: Part No. 13577W/B\* (available since 2006)

\*A ½" ratchet is required (not available from Viking).

### 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

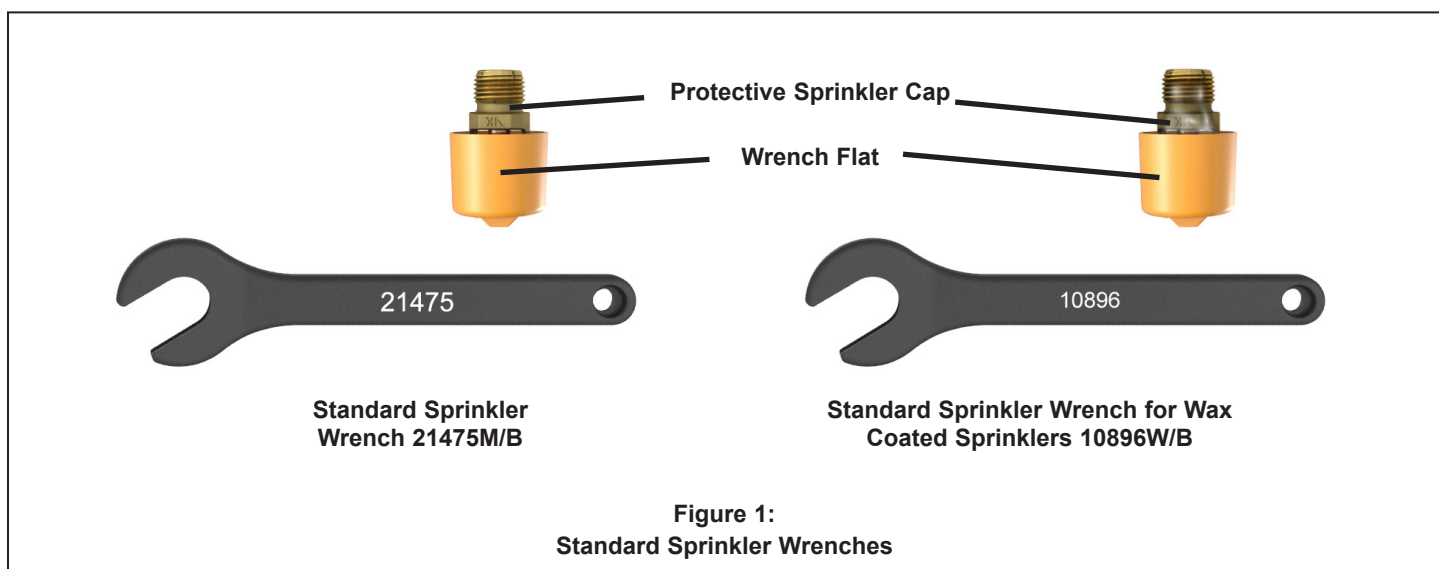
Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.

## 7. AVAILABILITY

The Viking Micromatic® Standard Response Upright Sprinkler VK100 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.





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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
Ordinary	135 °F (57 °C)	100 °F (38 °C)	Orange
Ordinary	155 °F (68 °C)	100 °F (38 °C)	Red
Intermediate	175 °F (79 °C)	150 °F (65 °C)	Yellow
Intermediate	200 °F (93 °C)	150 °F (65 °C)	Green
High	286 °F (141 °C)	225 °F (107 °C)	Blue
Extra High	360 °F (182 °C)	300 °F (149 °C)	Mauve
Ultra High <sup>3</sup>	500 °F (260 °C)	465 °F (240 °C)	Black

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

**Corrosion-Resistant Coatings<sup>4</sup>:** White Polyester, Black Polyester, and Black PTFE in all temperature ratings. ENT in all temperature ratings except 135 °F (57 °C). Wax-Coated Brass and Wax over Polyester<sup>5</sup> for sprinklers with the following temperature ratings:

155 °F (68 °C) Lt. Brown Wax    175 °F (79 °C) Brown Wax    200 °F (93 °C) Brown Wax    286 °F (141 °C) Dk. Brown Wax<sup>5</sup>

### 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> Sprinklers of Ultra-High temperature rating are intended for use inside ovens, dryers, or similar enclosures with normal operating temperatures above 300 °F (149 °C). Where the ambient temperature around the Ultra-High temperature rated sprinkler is significantly reduced below 300 °F (149 °C), response time may be severely retarded.

<sup>4</sup> The corrosion-resistant coatings have passed the standard corrosion test required by the approving agencies indicated in the Approval Charts. These tests cannot and do not represent all possible corrosive environments. Prior to installation, verify through the end-user that the coatings are compatible with or suitable for the proposed environment. 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 ENT coatings. For ENT coated automatic sprinklers, the waterway is coated.

<sup>5</sup> Wax melting point is 170 °F (76 °C) for 286 °F (141 °C) temperature rated sprinklers.

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<b>Approval Chart 1 (UL)</b> Micromatic® Standard Response Upright Sprinkler VK100 Maximum 175 PSI (12 bar) WWP											
Sprinkler Base Part Number <sup>1</sup>	SIN	Thread Size		Nominal K-Factor		Overall Length		Listings and Approvals <sup>3</sup> (Refer also to UL Design Criteria.)			
		NPT	BSP	U.S.	metric <sup>2</sup>	Inches	mm	cULus <sup>4</sup>	VdS	LPCB	CE
<b>Standard Orifice</b>											
12986	VK100	1/2"	15 mm	5.6	80.6	2-1/4"	57	A1, B3, C4, D2, E5	--	--	--
12993	VK100	--	15 mm	5.6	80.6	2-1/4"	57	A1, B3, C4, D2, E5	--	--	--
<b>NOTICE - Product Below - Limited Availability (Contact Local Viking Office)</b>											
10138	VK100	1/2"	15 mm	5.6	80.6	2-1/4"	57	A1, B3, C4, D2, E5	--	--	--
10193	VK100	--	15 mm	5.6	80.6	2-1/4"	57	A1, B3, C4, D2, E5	--	--	--
<b>Approved Temperature Ratings</b> A - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), 286 °F (141 °C), and 360 °F (182 °C) B - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C) C - 286 °F (141 °C) D - 500 °F (260 °C) <sup>7</sup> E - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), 286 °F (141 °C), 360 °F (182 °C), and 500 °F (260 °C) <sup>7</sup>						<b>Approved Finishes</b> 1 - Brass, Chrome, White Polyester <sup>5,6</sup> , and Black Polyester <sup>5,6</sup> 2 - Brass and Chrome 3 - Wax-Coated Brass and Wax Over Polyester <sup>5</sup> 4 - High Temperature 200 °F (93 °C) Wax Coating (corrosion resistant); maximum ambient temperature allowed at ceiling = 150 °F (65 °C) 5 - ENT <sup>5</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 shown is for use 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> cULus Listed as corrosion resistant. <sup>6</sup> Other colors are available on request with the same Listings and Approvals as the standard colors. <sup>7</sup> Sprinklers of Ultra-High temperature rating are intended for use inside ovens, dryers, or similar enclosures with normal operating temperatures above 300 °F (149 °C). Where the ambient temperature around the Ultra-High temperature rated sprinkler is significantly reduced below 300 °F (149 °C), the response time of the Ultra-High temperature rated sprinkler may be severely retarded.											

<b>DESIGN CRITERIA - UL</b> (Also refer to Approval Chart 1.)
<b>cULus Listing Requirements:</b> The Viking Micromatic® Standard Response Upright Sprinkler VK100 is cULus Listed as indicated in Approval Chart 1 for installation in accordance with the latest edition of NFPA 13 for standard spray sprinklers. <ul style="list-style-type: none"> <li>• Designed for use in Light, Ordinary, and Extra Hazard occupancies.</li> <li>• The sprinkler installation rules contained in NFPA 13 for standard spray upright sprinklers must be followed.</li> </ul>
<b>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, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.</b>



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### Approval Chart 2 (FM)

Micromatic® Standard Response Upright Sprinkler VK100  
Maximum 175 PSI (12 bar) WWP

Temperature	KEY
—	Finish
A1X ←	Escutcheon (if applicable)

Sprinkler 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>Standard Orifice</b>								
12986	VK100	1/2"	15 mm	5.6	80.6	2-1/4"	57	A1, B2, C3, D1, E4, F6
12993	VK100	--	15 mm	5.6	80.6	2-1/4"	57	A1, D1, E4, F6, G5
<b>NOTICE - Product Below - Limited Availability (Contact Local Viking Office)</b>								
10138	VK100	1/2"	15 mm	5.6	80.6	2-1/4"	57	A1, B2, C3, D1, E4, F6
10193	VK100	--	15 mm	5.6	80.6	2-1/4"	57	A1, G5, D1, E4, F6
<b>Approved Temperature Ratings</b> A - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), 212 °F (100 °C), 286 °F (141 °C), and 360 °F (182 °C) B - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C) and 212 °F (100 °C) C - 286 °F (141 °C) D - 500 °F (260 °C) <sup>5</sup> E - 155 °F (68 °C) F - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), 286 °F (141 °C), 360 °F (182 °C), and 500 °F (260 °C) <sup>5</sup> G - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C)				<b>Approved Finishes</b> 1 - Brass, Chrome, White Polyester <sup>4</sup> , and Black Polyester <sup>4</sup> 2 - Wax-Coated Brass (corrosion resistant) 3 - High Temperature 200 °F (93 °C) Wax Coating (corrosion resistant); maximum ambient temperature allowed at ceiling = 150 °F (65 °C) 4 - Wax-Coated Brass and Wax Over Polyester <sup>5</sup> 5 - White Polyester and Wax-Coated Brass (corrosion resistant) 6- ENT <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 shown is for use 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> Other colors are available on request with the same Approvals as the standard colors. <sup>5</sup> Sprinklers of Ultra-High temperature rating are intended for use inside ovens, dryers, or similar enclosures with normal operating temperatures above 300 °F (149 °C). Where the ambient temperature around the Ultra-High temperature rated sprinkler is significantly reduced below 300 °F (149 °C), the response time of the Ultra-High temperature rated sprinkler may be severely retarded. <sup>6</sup> FM approved as corrosion resistant.								

### DESIGN CRITERIA - FM

(Also refer to Approval Chart 2.)

#### FM Approval Requirements:

The Viking Micromatic® Standard Response Upright Sprinkler VK100 is FM Approved as standard response **Non-Storage** upright 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.**

**IMPORTANT: Always refer to Bulletin Form No. F\_091699 - Care and Handling of Sprinklers. Also refer to page SR1-3 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.**



TECHNICAL DATA

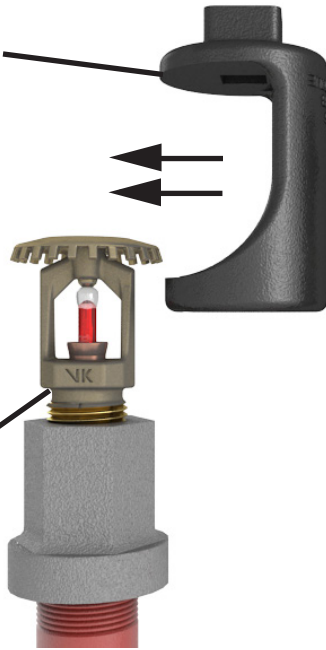
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Sprinkler wrench 13577W/B\*\*  
must be used for installing  
wax coated sprinklers.

Step 1: Carefully slide the  
wrench sideways around the  
deflector, ensuring engage-  
ment with the sprinkler  
wrench flats.

Wax Coated  
Upright Sprinkler



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

Step 2: Carefully press the wrench downward  
and ensure engagement with the sprinkler  
wrench flats.

Figure 2: Socket Wrench 13577W/B for Wax Coated Sprinklers