



## TECHNICAL DATA

### FLAT SPRAY QUICK RESPONSE PENDENT SPRINKLERS VK920 (K80) AND VK922 (K115)

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 Flat Spray Quick Response Pendent Sprinklers VK920 and VK922 are small, thermosensitive, glass-bulb sprinklers intended for installation in accordance with local standards. They produce a flatter spray pattern than standard spray sprinklers, allowing them to be used with lower clearance above suspended open ceilings, in racks, and concealed spaces. Sprinklers VK920 and VK922 are VdS Approved and CE Certified with Brass, Chrome-Enloy®, or Polyester finishes, with various temperature ratings, and a nominal K-Factor of 5.6 (80 metric) or 8.0 (115 metric) to meet design requirements.

#### 2. LISTINGS AND APPROVALS



**VdS Approved:** Certificate G4080035 (VK920) and G4080036 (VK922)

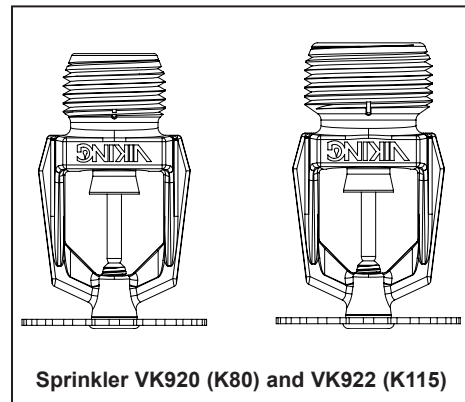


**LPCB Approved**



**CE Certified:** Standard EN 12259-1, EC-certificate of conformity 0786-CPD-40243 and 0786-CPD-40244

Refer to the Approval Chart on page 127c and Design Criteria on page 127e for approval requirements that must be followed.



Sprinkler VK920 (K80) and VK922 (K115)

#### 3. TECHNICAL DATA

##### Specifications:

Available since 2008.

Minimum Operating Pressure: Refer to CEA 4001 or EN12845.

Maximum Working Pressure: 175 psi (12 bar).

Factory tested hydrostatically to 500 psi (34.5 bar)

Thread size: 1/2" (15 mm) or 3/4" (20 mm) NPT

Nominal K-Factor: 5.6 U.S. (80.6 metric\*) or 8.0 U.S. (115.2 metric\*)

\* 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.

Glass-bulb fluid temperature rated to -65 °F (-55 °C)

Overall Length: 2-1/4" (58 mm) for Sprinkler VK920, 2-5/16" (59 mm) for Sprinkler VK922

##### Material Standards:

Frame Casting: Brass UNS-C84400

Deflector: Brass UNS-C26000

Bulb: Glass, nominal 3 mm diameter

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

Screw: Brass UNS-C36000

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

For Sprinklers with Polyester Finishes: Belleville Spring is Exposed

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

Order Flat Spray Quick Response Pendent Sprinklers VK920 and VK922 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, or Black Polyester = M-B

Temperature Suffix: 155 °F (68 °C) = B, 175 °F (79 °C) = D, 200 °F (93 °C) = E

For example, sprinkler VK920 with a Brass finish and a 155 °F (68 °C) temperature rating = Part No. 15111AB

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

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

**Sprinkler Wrench:** 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)

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.

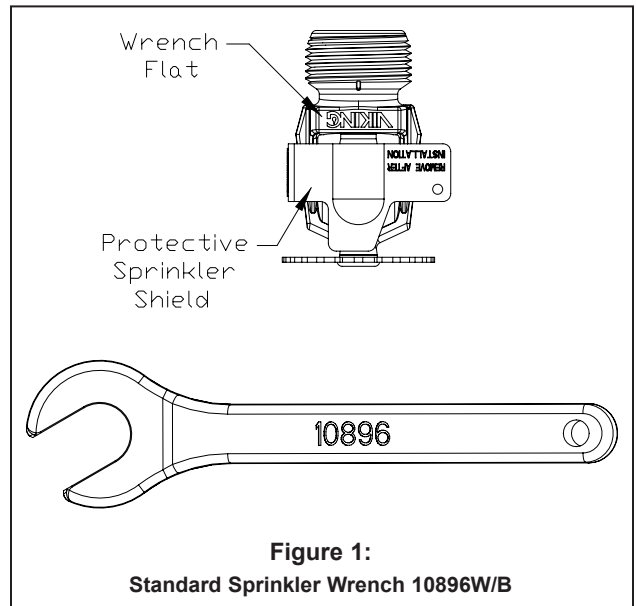
	<b>TECHNICAL DATA</b>	<b>FLAT SPRAY QUICK RESPONSE PENDENT SPRINKLERS VK920 (K80) AND VK922 (K115)</b>
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**4. INSTALLATION**

The sprinklers are designed to be installed in accordance with recognized installation standards. Viking Flat Spray Quick Response Pendent Sprinklers must be installed in accordance with the latest edition of Viking technical data, CEA 4001 "Sprinkler Systems Planning and Installation" or EN12845 "Automatic Sprinkler Systems - Design, Installation, and Maintenance", the Authorities Having Jurisdiction, and also with the provisions of governmental codes, ordinances, and standards whenever applicable. Deviation from the standards or any alteration to the sprinkler after it leaves the factory including, but not limited to: painting, plating, coating, or modification, may render the sprinkler inoperative and will automatically nullify the approval and any guarantee made by The Viking Corporation.

- A. Sprinklers must be handled with care. They must be stored in a cool, dry place in their original shipping container. Never install sprinklers that have been dropped or damaged in any way or exposed to temperatures exceeding the maximum ambient temperature allowed (refer to Table 1). Never install any glass-bulb sprinkler if the bulb is cracked or if there is a loss of liquid from the bulb. A small air bubble should be present in the glass bulb. Any sprinkler with a loss of liquid from the glass bulb should be destroyed immediately.
- B. Wet pipe systems must be provided with adequate heat.
- C. Use only sprinklers listed as corrosion resistant when subject to corrosive environments. When installing corrosion-resistant sprinklers, take care not to damage the corrosion-resistant finish. Use only the special wrench designed for installing coated and recessed Viking sprinklers (any other wrench may damage the unit).
- D. Use care when locating sprinklers near fixtures that can generate heat. Do not install sprinklers where they could be exposed to temperatures exceeding the maximum recommended ambient temperature for the temperature rating used.
- E. The sprinklers must be installed after the piping is in place to prevent mechanical damage. Before installing, be sure to have the appropriate sprinkler model and style, with the correct orifice size, temperature rating, and response characteristics.
- F. With the sprinkler contained in the plastic protective shield, apply a small amount of pipe-joint compound or tape to the male threads only, while taking care not to allow a build-up of compound in the sprinkler orifice.
- G. Install the sprinkler on the piping using special sprinkler wrench 10896W/B only, while taking care not to damage the sprinkler operating parts. (Any other type of wrench may damage the unit.) **DO NOT** use the sprinkler deflector to start or thread the sprinkler into a fitting.



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

Sprinkler Temperature Classification	Sprinkler Nominal Temperature Rating <sup>1,2</sup>	Bulb Color
Ordinary	155 °F (68 °C)	Red
Intermediate	175 °F (79 °C)	Yellow
Intermediate	200 °F (93 °C)	Green

**Sprinkler Finishes:** Brass, Chrome-Enloy®, White Polyester, and Black Polyester

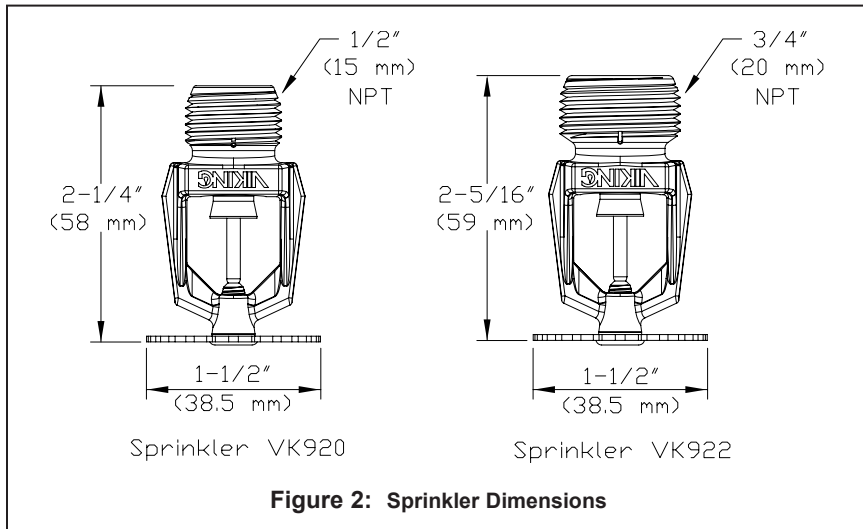
**Footnotes**

- <sup>1</sup> The sprinkler temperature rating is stamped on the deflector.
- <sup>2</sup> Sprinklers shall be chosen with a temperature rating close to but not lower than 30 °C above the highest anticipated ambient temperature. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.

	<h2 style="margin: 0;">TECHNICAL DATA</h2>	<h3 style="margin: 0;">FLAT SPRAY QUICK RESPONSE PENDENT SPRINKLERS VK920 (K80) AND VK922 (K115)</h3>
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Approval Chart														
Flat Spray Quick Response Pendent Sprinklers Maximum 175 PSI (12 bar) WWP														
Sprinkler Base Part No. <sup>1</sup>	Sprinkler Style	SIN	Thread Size		Nominal K-Factor		Overall Length		Listings and Approvals <sup>3</sup> (Refer also to Design Criteria on page 127e.)					
			NPT	BSP	U.S.	metric <sup>2</sup>	Inches	mm	cULus	FM	VdS	LPCB	CE	⚙
<b>Standard Orifice</b>														
15111	Pendent <sup>3</sup>	VK920	1/2"	15 mm	5.6	80.6	2-1/4"	58	--	--	A1	A1	A1 <sup>4</sup>	--
<b>Large Orifice</b>														
15112	Pendent <sup>3</sup>	VK922	3/4"	20 mm	8.0	115.2	2-5/16"	59	--	--	A1	--	A1 <sup>5</sup>	--
<b>Approved Temperature Ratings</b> A - 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C)								<b>Approved Finishes</b> 1 - Brass, Chrome-Enloy®, White Polyester, and Black Polyester						
<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 chart shows the listings and approvals available at the time of printing. Check with the manufacturer for any additional approvals. <sup>4</sup> CE Certified, Standard EN 12259-1, EC-certificate of conformity 0786-CPD-40243. <sup>5</sup> CE Certified, Standard EN 12259-1, EC-certificate of conformity 0786-CPD-40244.														



- H. After installation, the entire sprinkler system must be tested. The test must be conducted to comply with the Installation Standards. Make sure the sprinkler has been properly tightened. If a thread leak occurs, normally the unit must be removed, new pipe-joint compound or tape applied, and then reinstalled. This is due to the fact that when the joint seal is damaged, the sealing compound or tape is washed out of the joint. Immediately replace any damaged units, using the special sprinkler wrench only.
- I. **After installation and testing and repairing of all leaks, remove the protective shields from the sprinklers. To remove the shield, simply pull the ends of the shield apart where it is snapped together. THE SHIELDS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!**
- J. If it is necessary to remove the entire sprinkler unit, the system must be taken out of service. See section 6. INSPECTIONS, TESTS, AND MAINTENANCE and follow all warnings and instructions.

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(K80) AND VK922 (K115)**

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**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**

**NOTICE:** The owner is responsible for maintaining the fire protection system and devices in proper operating condition. For minimum maintenance and inspection requirements, refer to the appropriate standard that describes care and maintenance of sprinkler systems. In addition, the Authority Having Jurisdiction may have additional maintenance, testing, and inspection requirements that must be followed.

- A. Sprinklers must be inspected on a regular basis for corrosion, mechanical damage, obstructions, paint, etc. The frequency of the inspections may vary due to corrosive atmospheres, water supplies, and activity around the device.
- B. Sprinklers that have been painted, caulked, or mechanically damaged must be replaced immediately. Sprinklers showing signs of corrosion shall be tested and/or replaced immediately as required. Installation standards require sprinklers to be tested, and if necessary, replaced after a specified term of service. Refer to the installation standards and the Authority Having Jurisdiction for the specified period of time after which testing and/or replacement is required. Sprinklers that have operated cannot be re-assembled or re-used, but must be replaced. When replacing sprinklers, use only new sprinklers.
- C. The sprinkler discharge pattern is critical for proper fire protection. Nothing should be hung from, attached to, or otherwise obstruct the discharge pattern. All obstructions must be immediately removed or, if necessary, additional sprinklers installed.
- D. When replacing existing sprinklers, the system must be removed from service. Refer to the appropriate system description and/or valve instructions. Prior to removing the system from service, notify all Authorities Having Jurisdiction. Consideration should be given to employment of a fire patrol in the affected area.
  1. Remove the system from service, drain all water, and relieve all pressure on the piping.
  2. Using the special sprinkler wrench, remove the old sprinkler and install the new unit. Care must be taken to ensure that the replacement sprinkler is the proper model and style, with the correct orifice size, temperature rating, and response characteristics. A fully stocked spare sprinkler cabinet should be provided for this purpose. Follow instructions in section 4. INSTALLATION.
  3. Place the system back in service and secure all valves. Check for and repair all leaks.
- E. Sprinkler systems that have been subjected to a fire must be returned to service as soon as possible. The entire system must be inspected for damage and repaired or replaced as necessary. Sprinklers that have been exposed to corrosive products of combustion or high ambient temperatures, but have not operated, should be replaced. Refer to the Authority Having Jurisdiction for minimum replacement requirements.

**7. AVAILABILITY**

Viking Flat Spray Quick Response Pendent 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.

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**DESIGN CRITERIA**  
 (Also refer to the Approval Chart on page 127c.)

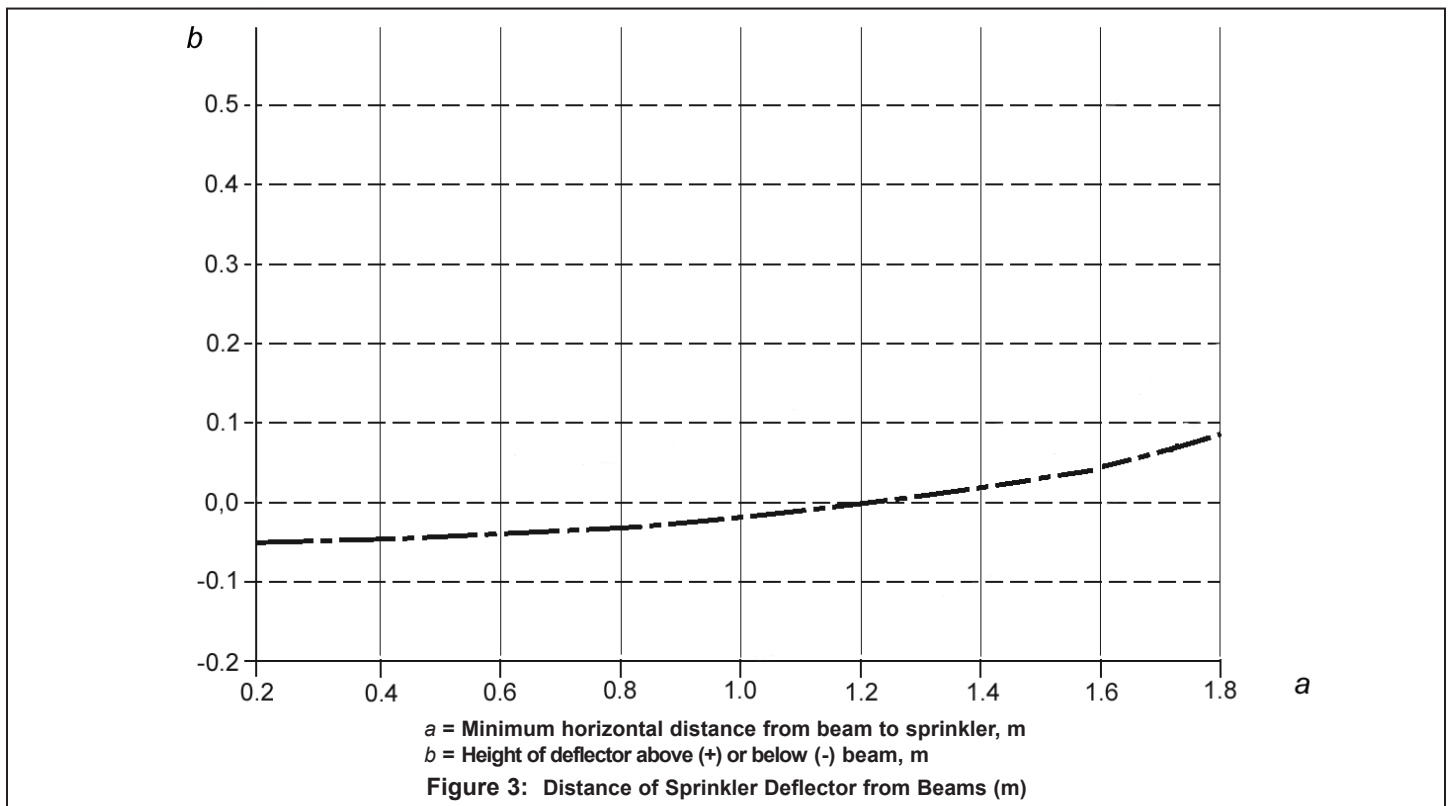
**Approval Requirements:**

Flat Spray Quick Response Sprinklers VK920 and VK922 are VdS Approved and CE Certified as indicated in the Approval Chart for installation in accordance with CEA 4001 "Sprinkler Systems Planning and Installation" or EN12845 "Automatic Sprinkler Systems - Design, Installation, and Maintenance" where flat spray sprinklers are permitted.

- Permitted for use only in concealed spaces, above suspended open ceilings, and in racks.
- Approved for use only in the pendent position. Align the deflector parallel with the ceiling or roof.
- Sprinkler VK920 (K80) is allowed in OH installations and HHS as an intermediate sprinkler in high piled storage.
- Sprinkler VK922 (K115) is allowed only in HHS as an intermediate sprinkler in high piled storage.
- Deflector Position
  1. For OH installations: There must be a clear space of at least 12" (300 mm) between the sprinkler deflector and the suspended roof or suspended ceiling. NOTE: This includes suspended open cell ceilings in OH occupancies. The vertical distance between the sprinkler deflector and the top of the suspended ceiling shall be no less than 12" (300 mm).
  2. Intermediate sprinklers in HH occupancies: The clearance between the sprinkler deflector and the top of storage shall be not less than 4" (100 mm). NOTE: It shall be ensured that water from sprinklers operating at intermediate levels can penetrate the goods stored. The distance between goods stored in racking and placed back to back shall be at least 6" (150 mm), and if necessary, pallet stops fitted.
- Beams and similar obstructions: Refer to CEA 4001 or EN12845 and **Figure 3 below**.
- For effective installation, CEA 4001 or EN12845 must be referenced and followed in all cases.

**NOTE:** Flat Spray Sprinklers have water distribution characteristics that are significantly different from standard spray sprinklers and conventional sprinklers. This allows Sprinklers VK920 and VK922 to be used in conformance with CEA 4001 or EN12845.

**IMPORTANT: Always refer to Bulletin Form No. F\_091699 - Care and Handling of Sprinklers. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, FM Global, LPCB, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.**



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