1. DESCRIPTION

Viking Freedom® Residential Pendent Sprinkler VK435 is a thermosensitive, glass-bulb residential sprinkler available in several different finishes and temperature ratings to meet varying design requirements. The orifice design, with a K-Factor of 3.1 (44.7 metric*), allows efficient use of available water supplies for the hydraulically designed fire-protection system. The fast response type glass bulb and special deflector combine speed of operation and area of coverage to meet residential sprinkler standards while being aesthetically pleasing.

2. LISTINGS AND APPROVALS

CULus Listed: Category VKKW
NYC Approved: MEA 89-92-E, Volume 30

Refer to the Approval Chart on page 141i and Design Criteria on page 141k for CULus Listing requirements that must be followed.

3. TECHNICAL DATA

Specifications:
Available since 2005.
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: 1/2" (15 mm) NPT
Nominal K-Factor: 3.1 U.S. (44.7 metric*)

*Metric K-factor measurement shown is for 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)

Material Standards:
Frame Casting: Brass UNS-C84400
Deflector: Brass UNS-C23000, Phosphor Bronze UNS-C51000, or Brass UNS-C26000
Bulb: Glass, nominal 3 mm diameter
Belleville Spring Sealing Assembly: Nickel Alloy, coated on both sides with Teflon Tape
Compression Screw: Brass UNS-C36000
Pip Cap: Brass UNS-C31600

Ordering Information: (Also refer to the current Viking price list.)
Sprinkler: Base Part No. 13203
Order Sprinkler VK435 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, and Black Polyester = M-B
Temperature Suffix (°F/°C): 155/68 = B, 175/79 = D
For example, sprinkler VK435 with a Brass finish and a 155 °F/68 °C temperature rating = Part No. 13203AB.
Available Finishes And Temperature Ratings:
Refer to Table 1

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

Sprinkler Wrenches:
A. Standard Wrench: Part No. 10896WB (available since 2000)
B. Wrench for Recessed Sprinklers: Part No. 13577WB (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 Model VK435 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.

<table>
<thead>
<tr>
<th>Sprinkler Temperature Classification</th>
<th>Sprinkler Nominal Temperature Rating</th>
<th>Maximum Ambient Ceiling Temperature</th>
<th>Bulb Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ordinary</td>
<td>155 °F (68 °C)</td>
<td>100 °F (38 °C)</td>
<td>Red</td>
</tr>
<tr>
<td>Intermediate</td>
<td>175 °F (79 °C)</td>
<td>150 °F (65 °C)</td>
<td>Yellow</td>
</tr>
</tbody>
</table>

Sprinkler Finishes: Brass, Chrome-Enloy® (patents pending), White, and Black

Footnotes

1 The sprinkler temperature rating is stamped on the deflector.
2 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.
# Approval Chart

Residential Pendent Sprinkler VK435  
For systems designed to NFPA 13D or NFPA 13R.

<table>
<thead>
<tr>
<th>Sprinkler Base Part Number¹</th>
<th>SIN</th>
<th>NPT Thread Size</th>
<th>Nominal K-Factor</th>
<th>Maximum Water Working Pressure</th>
<th>Overall Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>13203</td>
<td>VK435</td>
<td>1/2</td>
<td>15</td>
<td>3.1</td>
<td>44.7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Maximum Areas of Coverage⁴</th>
<th>Minimum Water Supply Requirements⁴</th>
<th>Listings and Approvals³ (Refer also to Design Criteria on page 141k.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installed below smooth, flat, horizontal ceilings, including ceilings with slopes up to and including 2/12 (9.5°).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 ft. x 12 ft. (3.7 m x 3.7 m)</td>
<td>9 gpm @ 8.4 psi (34.1 L/min @ 0.58 bar)</td>
<td>A1X</td>
</tr>
<tr>
<td>14 ft. x 14 ft. (4.3 m x 4.3 m)</td>
<td>10 gpm @ 10.4 psi (37.9 L/min @ 0.72 bar)</td>
<td>A1X</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Approved Temperature Ratings</th>
<th>Approved Finishes</th>
<th>Approved Escutcheons</th>
</tr>
</thead>
<tbody>
<tr>
<td>A - 155 °F (68 °C) and 175 °F (79 °C)</td>
<td>1 - Brass, Chrome-Enloy®, White, and Black⁸</td>
<td>X - Standard surface-mounted escutcheons or the Microfast® Model F-1 Adjustable Escutcheon⁹, or recessed with the Micromatic® Model E-1 or E-2 Recessed Escutcheon</td>
</tr>
</tbody>
</table>

### Footnotes
1. Part number shown is the base part number. For complete part number, refer to current Viking price list schedule.
2. 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.
3. 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.
4. 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.
5. Listed by Underwriter’s Laboratories for use in the U.S. and Canada.
6. Listings are for residential occupancies with smooth, flat, horizontal ceilings. Includes ceilings with slopes up to and including a 2/12 (9.5°) pitch.
7. Accepted for use, City of New York Department of Buildings, MEA Number 89-92-E, Vol. 30.
8. Tested and Certified by NSF to NSF/ANSI Standard 61, Drinking Water System Components.
9. Other paint colors are available on request with the same cULus Listings as the standard finish colors.
10. The Microfast® Model F-1 Adjustable Escutcheon is considered a surface-mounted escutcheon because it does not allow the fusible element of the sprinkler to be recessed behind the face of the wall or ceiling.
Sprinkler 141j

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

Figure 1: Standard Sprinkler Wrench 10896W/B

Figure 2: Wrench 12577W/B for Installing Recessed Sprinkler VK435

Step 1: Carefully slide the wrench sideways around the deflector and protective shield. (Note the orientation of the shield in the wrench.)

Sprinkler Wrench 13577W/B** must be used for installing recessed Sprinkler VK435

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

Step 2: Carefully press the wrench upward and turn slightly to ensure engagement with the sprinkler wrench flats.
**DESIGN CRITERIA**

*(Also refer to the Approval Chart on page 141i.)*

**cULus Listing Requirements:**

When using Viking Residential Sprinkler VK435 for systems designed to NFPA 13D or NFPA 13R, apply the listed areas of coverage and minimum water supply requirements shown in the Approval Chart on page 141i.

For systems designed to NFPA 13:

- The number of design sprinklers is to be the four contiguous most hydraulically demanding sprinklers. The minimum required discharge from each of the four sprinklers is to be the greater of the following:
  - The flow rates given in the Approval Chart on data page 141i for NFPA 13D and NFPA13R applications for each listed area of coverage, or
  - Calculated based on a minimum discharge of 0.1 gpm/sq. ft. over the “design area” in accordance with sections 8.5.2.1 or 8.6.2.1.2 of NFPA 13

- Minimum distance between residential sprinklers: 8 ft. (2.4 m).

**IMPORTANT:** Always refer to Bulletin Form No. F_091699 - Care and Handling of sprinklers. Also refer to pages RES1-17 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 and any other similar Authorities Having Jurisdiction, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable. Final approval and acceptance of all residential sprinkler installations must be obtained from the Authorities Having Jurisdiction.

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**Figure 3:**

Sprinkler VK435 Dimensions with a Standard Escutcheon and the Model F-1 Adjustable Escutcheon
Ceiling Opening Size:
2-5/16' (58.7 mm) minimum
2-1/2' (63.5 mm) maximum

1-3/4' (44.5 mm) Minimum
1-1/8' (28.6 mm) Maximum

Installed with a Micromatic Model E-1
Recessed Escutcheon

1-1/8' (28.6 mm) Minimum
2' (50.8 mm) Maximum

Installed with a threaded Micromatic Model E-2
Recessed Escutcheon

Figure 4:
Sprinkler VK435 Dimensions with the Model E-1 and E-2 Recessed Escutcheons