1. DESCRIPTION
The Viking Quick Response Extra-Large Orifice Upright Sprinkler VK531 is a ther-
osensitive glass bulb spray sprinkler available in several different finishes and
temperature ratings to meet design requirements. The special Polyester, Electroless
Nickel PTFE (ENT), and PTFE coatings can be used in decorative applications where
colors are desired. In addition, these coatings have been investigated for installa-
tion in corrosive environments and are listed/approved as indicated in the Approval
Charts.

The extra-large orifice provides greater flows at lower pressures than standard
orifice or large orifice sprinklers. This feature allows reduced pipe sizing for hy-
draulically calculated sprinkler systems, which require high densities of water.
Viking Standard Response Extra-Large Orifice Sprinklers may eliminate the
need for a fire pump or reduce the size of the pump if it is required. On existing
systems, replacing large orifice sprinklers with extra-large orifice sprinklers may
provide the higher densities required to allow an increase in the hazard classifica-
tion of an occupancy.

Viking Quick Response Extra-Large Orifice Upright Sprinkler VK531 may be
ordered and/or used as an open sprinkler (glass bulb and pip cap assembly re-
moved) on deluge systems. Refer to Ordering Instructions below.

2. LISTINGS AND APPROVALS

- **cULus Listed:** Category VNIV
- **FM Approved:** Class 2020
- **VdS Approved:** Certificate G413059, G413060
- **LPCB Approved:** Certificate 096e/14

Refer to Approval Chart 1 and Design Criteria on page 3 for cULus Listing requirements, and refer to Approval Chart 2 and Design
Criteria on page 4 for FM Approval requirements that must be followed.

3. TECHNICAL DATA

**Specifications:**
Available since 2000.
Maximum Working Pressure: 175 psi (12 bar). Factory tested hydrostatically to 500 psi (34.5 bar).
Thread size: See Approval Charts
Nominal K-Factor: 11.2 U.S. (161.3 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: 2-5/16” (58.7 mm)

**Material Standards:**
- Sprinkler Frame: Brass UNS-C84400
- Deflector: Brass UNS-C26000
- Bulb: Glass, nominal 3 mm diameter
- Pip Cap and Insert Assembly: Copper UNS-C11000 and Stainless Steel UNS-S30400
- Compression Screw: Brass UNS-C36000
- Belleville Spring Sealing Assembly: Nickel Alloy, coated on both sides with Teflon Tape
  - For Polyester Coated Sprinklers: Belleville Spring-Exposed
  - For ENT Coated Sprinkler: Belleville Spring-Exposed, Screw and Pipcap-ENT plated.

**Ordering Information:** (Also refer to the current Viking price list.)
Order Quick Response Extra-Large Orifice Upright Sprinkler VK531 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.
QUICK RESPONSE
EXTRA-LARGE ORIFICE
UPRIGHT SPRINKLER
VK531 (STORAGE-DENSITY/AREA)

Finish Suffix: Brass = A, Chrome = F, White Polyester = M-/W, Black Polyester = M-/B, ENT = JN
Temperature Suffix: 155 °F (68 °C) = B, 175 °F (79 °C) = D, 200 °F (93 °C) = E, 286 °F (141 °C) = G, OPEN = Z (PTFE only).
For example, sprinkler VK531 with a Brass finish and a 155 °F (68 °C) temperature rating = Part No. 10633AB

Available Finishes And Temperature Ratings: Refer to Table 1.

Accessories: (Also refer to the Viking website.)

Sprinkler Wrenches:
B. Wrench for coated sprinklers: Part No. 11663W/B** (available since 2001)
   **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, when the temperature around the sprinkler reaches its operating temperature, the heat-sensitive liquid in the glass bulb expands, causing the bulb 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 Quick Response Extra-Large Orifice Upright 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>
<tr>
<td>Intermediate</td>
<td>200 °F (93 °C)</td>
<td>150 °F (65 °C)</td>
<td>Green</td>
</tr>
<tr>
<td>High</td>
<td>286 °F (141 °C)</td>
<td>225 °F (107 °C)</td>
<td>Blue</td>
</tr>
</tbody>
</table>

Sprinkler Finishes: Brass, Chrome, White Polyester, Black Polyester, and ENT
Corrosion-Resistant Coatings: White Polyester, and Black Polyester in all temperature ratings. ENT in all temperature ratings except 135°F (57°C).

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.
3 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. For all ENT coated sprinklers, the waterway is coated.

Form No. F_120699 18.10.11 Rev 18.2.P65
Sprinkler wrench 11663W/B** must be used for installing coated sprinklers.

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

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.
### Approval Chart 1 (UL)

**Quick Response Extra-Large Orifice Upright Sprinkler VK531**  
**Maximum 175 PSI (12 Bar) WWP**

<table>
<thead>
<tr>
<th>Base Part Number</th>
<th>SIN</th>
<th>Sprinkler Style</th>
<th>Thread Size</th>
<th>Nominal K-Factor</th>
<th>Overall Length</th>
<th>Listings and Approvals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>NPT</td>
<td>BSP</td>
<td>U.S.</td>
<td>metric¹</td>
</tr>
<tr>
<td>10633</td>
<td>VK531</td>
<td>Upright</td>
<td>3/4&quot;</td>
<td>20 mm</td>
<td>11.2</td>
<td>161.3</td>
</tr>
<tr>
<td>19304</td>
<td>VK5311</td>
<td>Upright</td>
<td>3/4&quot;</td>
<td>20 mm</td>
<td>11.2</td>
<td>161.3</td>
</tr>
<tr>
<td>19305</td>
<td>VK5311</td>
<td>Upright</td>
<td>1/2&quot;</td>
<td>15 mm</td>
<td>11.2</td>
<td>161.3</td>
</tr>
</tbody>
</table>

**Approved Temperature Ratings**  
A - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), and 286 °F (141 °C)

**Approved Finishes**  
1 - Brass, Chrome, White Polyester, Black Polyester, and ENT⁷  
2 - Brass, Chrome, White Polyester, and Black Polyester

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**Footnotes**

1. Base part number shown. For complete part number, refer to Viking’s current price 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 table shows the listings and approvals available at the time of printing. Other approvals may be in process.
4. Listed by Underwriters Laboratories Inc. for use in the U.S. and Canada.
5. cULus-Listed only for use in wet pipe sprinkler systems (or preaction systems qualifying as wet systems).
7. cULus Listed as corrosion-resistant.

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

**cULus Listing Requirements:**  
Quick Response Extra-Large Orifice Upright Sprinkler VK531 is cULus Listed for installation in accordance with the latest edition of NFPA 13 for standard upright spray sprinklers:

- Designed for use in hazard occupancies up to and including Ordinary Hazard Group II with a minimum operating pressure of 7 PSI (0.5 bar).
- Also Listed for use in High-Piled Storage Occupancies as defined in NFPA 13 with a minimum operating pressure of 7 PSI (0.5 bar).
- Listed only for use in wet pipe sprinkler systems (or preaction systems qualifying as wet systems).
- The sprinkler installation and obstruction rules contained in NFPA 13 for standard spray upright sprinklers must be followed.

**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, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.
## Approval Chart 2 (FM)

Quick Response Extra-Large Orifice Upright Sprinkler VK531 (Storage-Density/Area) Maximum 175 PSI (12 Bar) WWP

<table>
<thead>
<tr>
<th>Base Part Number</th>
<th>SIN</th>
<th>Sprinkler Style</th>
<th>Thread Size</th>
<th>Nominal K-Factor</th>
<th>Overall Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>10633</td>
<td>VK531</td>
<td>Upright</td>
<td>3/4&quot;</td>
<td>11.2</td>
<td>2-5/16</td>
</tr>
</tbody>
</table>

Approved Temperature Ratings
A - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), and 286 °F (141 °C)

Approved Finishes
1 - Brass, Chrome, and ENT

### Footnotes

1 Base part number shown. For complete part number, refer to Viking’s current price 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 table shows the FM Approvals available at the time of printing. Other approvals may be in process.

4 FM Approved as corrosion-resistant.

## Design Criteria - FM

Quick Response Extra-Large Orifice Upright Sprinkler VK531 is FM Approved as a quick response upright Non-Storage sprinkler and as a quick response upright Storage sprinkler as indicated in the FM Approval Guide. For specific application and installation requirements, reference the latest applicable FM Loss Prevention Data Sheets (including 2-0 and 8-9). 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.

<table>
<thead>
<tr>
<th>Temperature</th>
<th>KEY</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>X</td>
</tr>
</tbody>
</table>

### Footnotes

1 FM Approved as corrosion-resistant.

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 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.