1. DESCRIPTION

Viking EC/QREC Light and Ordinary Hazard Extra-Large Orifice Sprinklers VK532
and VK534 are thermostensitive spray sprinklers available in several different finishes
and temperature ratings to meet varying design requirements. The extra-large orifice
produces the flows required to meet Light and Ordinary Hazard density require-
ments at lower pressures than standard orifice or large orifice sprinklers. The special
deflector is designed to meet Light and Ordinary-Hazard density requirements for
specifically listed extended areas of coverage when the required minimum water
supply is provided at the sprinkler. Upright Sprinkler VK532 has cULus Listings and
FM Approvals as standard and quick response; Pendent Sprinkler VK534 has cULus
Listings as standard and quick response.
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 2020 and 2022
**NYC Approved:** MEA 89-92-E, Volume 9

Refer to the Approval Charts on pages 83d-e and Design Criteria on page 83f for cULus Listing and FM Approval requirements
that must be followed.

3. TECHNICAL DATA

**Specifications:**
Available since 1993.
Minimum Operating Pressure: Refer to the Approval Charts.
Maximum Working Pressure: 175 psi (12 Bar). Factory tested hydrostatically
to 500 psi (34.5 bar).
Factory tested hydrostatically to 500 psi (34.5 bar).
Thread size: 3/4” (20 mm) NPT
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: Part No. 08687: 2-5/16 (59 mm)
Part No. 08340: 2-3/8” (61 mm)

**Material Standards:**
Sprinkler Frame: Brass UNS-C84400
Deflector: Brass UNS-C26000 for Sprinkler 08340. Copper UNS-C19500 for Sprinkler 08687
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 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 EC/QREC Light and Ordinary Hazard Extra-Large Orifice Sprinklers VK532 and
VK534 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): 135/57° = A, 155/68° = B, 175/79° = D, 200/93° = E, and 286/141° = G
For example, sprinkler VK532 with a Brass finish and a 155 °F/68 °C temperature rating = Part No. 08687AB

Form No. F_051393

Replaces page 83a-f, dated October 9, 2009.
(Added QR ECLH FM Approval for Sprinkler VK532.)
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. 05118CW/B (available since 1981)
B. Wrench for recessed pendent sprinkler: 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, 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
Viking Sprinklers VK532 and VK534 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.
### TABLE 1: AVAILABLE SPRINKLER TEMPERATURE RATINGS AND FINISHES

<table>
<thead>
<tr>
<th>Sprinkler Temperature Classification</th>
<th>Sprinkler Nominal Temperature Rating(^1)</th>
<th>Maximum Ambient Ceiling Temperature(^2)</th>
<th>Bulb Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ordinary</td>
<td>135 °F (57 °C)</td>
<td>100 °F (38 °C)</td>
<td>Orange</td>
</tr>
<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-Enloy\(^6\), White Polyester\(^3\), Black Polyester\(^3\), and Black Teflon\(^6\)

**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. 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\(^6\) coatings. For Teflon\(^6\) coated open sprinklers only, the waterway is coated.

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**Figure 3: Wrench 11663W/B for Recessed Pendent Sprinkler VK534**

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

Sprinkler Wrench 11663W/B\(^**\) must be used for installing recessed Sprinkler VK534.\(^**\)

Step 2: Carefully press the wrench upward and turn slightly to ensure engagement with the sprinkler wrench flats.
**Sprinkler 83d**
November 12, 2009

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

### STANDARD/QUICK RESPONSE

**LIGHT AND ORDINARY HAZARD ELO SPRINKLERS**

**Sprinkler Base Part Number** | **SIN** | **NPT Thread Size** | **Nominal K-Factor** | **Maximum Water Working Pressure** | **Overall Length**
--- | --- | --- | --- | --- | ---
08687 Upright | VK532 | 3/4 | 20 | 11.2 | 161.3 | 175 psi (12 Bar) | 2-5/16 | 59
08340 Pendent | VK534 | 3/4 | 20 | 11.2 | 161.3 | 175 psi (12 Bar) | 2-3/8 | 61

#### Approval Chart 1 (UL Listings)

**EC/QREC Light and Ordinary Hazard ELO Sprinklers**

<table>
<thead>
<tr>
<th>Max. Sprinkler Spacing (L x W)</th>
<th>Minimum Area per Sprinkler</th>
<th>Minimum Water Supply Requirements&lt;sup&gt;6&lt;/sup&gt;</th>
<th>Listings and Approvals&lt;sup&gt;3&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Light Hazard</strong></td>
<td><strong>Ordinary Hazard Group I</strong></td>
<td><strong>Ordinary Hazard Group II</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Flow / Pressure</strong></td>
<td><strong>Flow / Pressure</strong></td>
<td><strong>Flow / Pressure</strong></td>
<td><strong>cULus&lt;sup&gt;4&lt;/sup&gt;</strong></td>
</tr>
<tr>
<td><strong>Standard Response</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 ft. x 16 ft. (4.9 m x 4.9 m)</td>
<td>256 ft&lt;sup&gt;2&lt;/sup&gt; (23.8 m&lt;sup&gt;2&lt;/sup&gt;)</td>
<td>38 gpm @ 11.5 psi (143.9 L/min @ .79 Bar)</td>
<td>51 gpm @ 20.7 psi (193.1 L/min @ 1.43 Bar)</td>
</tr>
<tr>
<td>18 ft. x 18 ft. (5.5 m x 5.5 m)</td>
<td>324 ft&lt;sup&gt;2&lt;/sup&gt; (30.1 m&lt;sup&gt;2&lt;/sup&gt;)</td>
<td>49 gpm @ 19.1 psi (185.5 L/min @ 1.32 Bar)</td>
<td>65 gpm @ 33.7 psi (246.1 L/min @ 2.32 Bar)</td>
</tr>
<tr>
<td>20 ft. x 20 ft. (6.1 m x 6.1 m)</td>
<td>400 ft&lt;sup&gt;2&lt;/sup&gt; (37.2 m&lt;sup&gt;2&lt;/sup&gt;)</td>
<td>60 gpm @ 28.7 psi (227.1 L/min @ 1.98 Bar)</td>
<td>80 gpm @ 51.0 psi (302.8 L/min @ 3.52 Bar)</td>
</tr>
<tr>
<td><strong>Quick Response</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 ft. x 12 ft. (3.7 m x 3.7 m)</td>
<td>144 ft&lt;sup&gt;2&lt;/sup&gt; (13.4 m&lt;sup&gt;2&lt;/sup&gt;)</td>
<td>--</td>
<td>30 gpm @ 7.2 psi (113.6 L/min @ .50 Bar)</td>
</tr>
<tr>
<td>14 ft. x 14 ft. (4.3 m x 4.3 m)</td>
<td>196 ft&lt;sup&gt;2&lt;/sup&gt; (18.2 m&lt;sup&gt;2&lt;/sup&gt;)</td>
<td>--</td>
<td>30 gpm @ 7.2 psi (113.6 L/min @ .50 Bar)</td>
</tr>
<tr>
<td>16 ft. x 16 ft. (4.9 m x 4.9 m)</td>
<td>256 ft&lt;sup&gt;2&lt;/sup&gt; (23.8 m&lt;sup&gt;2&lt;/sup&gt;)</td>
<td>30 gpm @ 7.2 psi (113.6 L/min @ .50 Bar)</td>
<td>--</td>
</tr>
<tr>
<td>18 ft. x 18 ft. (5.5 m x 5.5 m)</td>
<td>324 ft&lt;sup&gt;2&lt;/sup&gt; (30.1 m&lt;sup&gt;2&lt;/sup&gt;)</td>
<td>33 gpm @ 8.7 psi (124.9 L/min @ .60 Bar)</td>
<td>--</td>
</tr>
<tr>
<td>20 ft. x 20 ft. (6.1 m x 6.1 m)</td>
<td>400 ft&lt;sup&gt;2&lt;/sup&gt; (37.2 m&lt;sup&gt;2&lt;/sup&gt;)</td>
<td>40 gpm @ 12.8 psi (151.4 L/min @ .88 Bar)</td>
<td>--</td>
</tr>
</tbody>
</table>

#### Approved Temperature Ratings

A - 135 °F (57 °C) and 175 °F (79 °C)
B - 135 °F (57 °C), 155 °F (68 °C), and 175 °F (79 °C)
C - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C)
D - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), and 286 °F (141 °C)
E - 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C)
F - 155 °F (68 °C)

#### Approved Finishes

1 - Brass, Chrome-Enloy®, White Polyester, Black Polyester, and Black Teflon®

#### Approved Escutcheons

X - Standard surface-mounted escutcheons or the Microfast<sup>®</sup> Model F-1 Adjustable Escutcheon<sup>2</sup>
Y - Standard surface-mounted escutcheons or the Microfast<sup>®</sup> Model F-1 Adjustable Escutcheon<sup>2</sup>, or recessed with the Micromatic<sup>®</sup> Model E-1 or E-2 Recessed Escutcheon

#### Footnotes

<sup>1</sup> Part number shown is the base part number. For complete part number, refer to current Viking price list schedule.

<sup>2</sup> Metric K-factor measurement shown is when pressure is measured in kPa, divide the metric K-factor shown by 10.0.

<sup>3</sup> This chart shows listings and approvals available at time of printing. Check with the manufacturer for any additional approvals.

<sup>4</sup> cULus Listed for use in the U.S. and Canada.

<sup>5</sup> Approved for use, City of New York Department of Buildings, MEA 89-92 Vol. 9.

<sup>6</sup> To determine “Minimum Water Supply Requirement” for areas of coverage where length and width of actual sprinkler spacing are not equal, select the “Maximum Sprinkler Spacing” from the chart that is equal to or greater than the larger of the actual spacing (length or width) dimensions used. Example: When using 10'-6" x 13'-0" sprinkler spacing, provide the “Minimum Water Supply Requirement” listed in the chart for 14'-0" x 14'-0" spacing. For areas of coverage smaller than shown, use the “Minimum Water Supply Requirement” in the appropriate hazard group for the next larger area listed. The distance from sprinklers to walls shall not exceed one-half the “Maximum Sprinkler Spacing” listed for the “Minimum Water Supply Requirement” used.

<sup>7</sup> The Microfast<sup>®</sup> 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.
**Approval Chart 2 (FM Approval)**

Extended Coverage ELO Upright Sprinkler VK532
Maximum 175 PSI (12 Bar) WWP

<table>
<thead>
<tr>
<th>Maximum Sprinkler Spacing (L x W)</th>
<th>Maximum Area per Sprinkler</th>
<th>Standard Response Ordinary Hazard FM Approval Requirements: Refer to the Design Criteria section on page 83f.</th>
<th>FM Approval¹ Upright Sprinkler VK532</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 ft. x 12 ft. (3.7 m x 3.7 m)</td>
<td>144 ft² (13.4 m²)</td>
<td>NOTE: FM installation guidelines may differ from cULus and/or NFPA criteria. Refer to the latest applicable FM Loss Prevention Data Sheets (including 2-8N and 3-26) and Technical Advisory Bulletins.</td>
<td>A1</td>
</tr>
<tr>
<td>14 ft. x 14 ft. (4.3 m x 4.3 m)</td>
<td>196 ft² (18.2 m²)</td>
<td></td>
<td>A1</td>
</tr>
<tr>
<td>16 ft. x 16 ft. (4.9 m x 4.9 m)</td>
<td>256 ft² (23.8 m²)</td>
<td></td>
<td>A1</td>
</tr>
<tr>
<td>16 ft. x 16 ft. (4.9 m x 4.9 m)</td>
<td>256 ft² (23.8 m²)</td>
<td></td>
<td>A1</td>
</tr>
<tr>
<td>18 ft. x 18 ft. (5.5 m x 5.5 m)</td>
<td>324 ft² (30.1 m²)</td>
<td></td>
<td>B1</td>
</tr>
<tr>
<td>20 ft. x 20 ft. (6.1 m x 6.1 m)</td>
<td>400 ft² (37.2 m²)</td>
<td></td>
<td>B1</td>
</tr>
</tbody>
</table>

**Quick Response Light Hazard FM Approval Requirements:** Refer to the Design Criteria section on page 83f.

<table>
<thead>
<tr>
<th>Maximum Sprinkler Spacing (L x W)</th>
<th>Maximum Area per Sprinkler</th>
<th>FM Approval¹ Upright Sprinkler VK532</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 ft. x 18 ft. (5.5 m x 5.5 m)</td>
<td>324 ft² (30.1 m²)</td>
<td>B1</td>
</tr>
<tr>
<td>20 ft. x 20 ft. (6.1 m x 6.1 m)</td>
<td>400 ft² (37.2 m²)</td>
<td>B1</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)
B - 155 °F (68 °C) and 175 °F (79 °C)

**Approved Finishes**
1 - Brass, Chrome-Enloy®, White Polyester, and Black Polyester

Footnotes
1. This chart shows listings and approvals available at time of printing. Check with the manufacturer for any additional approvals.
2. To determine “Minimum Water Supply Requirement” for areas of coverage where length and width of actual sprinkler spacing are not equal, select the “Maximum Sprinkler Spacing” from the chart that is equal to or greater than the larger of the actual spacing (length or width) dimensions used. Example: When using 10'-6” x 13'-0” sprinkler spacing, provide the “Minimum Water Supply Requirement” listed in the chart for 14'-0” x 14'-0” spacing. For areas of coverage smaller than shown, use the “Minimum Water Supply Requirement” in the appropriate hazard group for the next larger area listed. The distance from sprinklers to walls shall not exceed one-half the “Maximum Sprinkler Spacing” listed for the “Minimum Water Supply Requirement” used.

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**Figure 4:** Sprinkler VK534 Dimensions with a Standard Escutcheon and the Model F-1 Adjustable Escutcheon
**TECHNICAL DATA**

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

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**DESIGN CRITERIA**

(Also refer to Approval Charts 1 and 2.)

**cULus Listing Requirements:**

EC-ELO Upright Sprinkler VK532 and Pendent Sprinkler VK534 are cULus Listed as indicated in Approval Chart 1 for installation in accordance with the latest edition of NFPA 13 for extended coverage upright and pendent spray sprinklers as indicated below:

- The minimum water supplies and maximum areas of coverage shown in Approval Chart 1 are designed to provide the following design densities: 0.10 gpm/ft² (4.1 mm/min) for Light Hazard densities; 0.15 gpm/ft² (6.1 mm/min) for Ordinary-Hazard Group I densities; 0.2 gpm/ft² (8.1 mm/min) for Ordinary-Hazard Group II densities.
- The sprinkler installation rules contained in NFPA 13 for extended coverage upright and pendent spray sprinklers must be followed.
- Viking EC-ELO Upright and Pendent Sprinklers are cULus Listed for use in unobstructed construction, and noncombustible obstructed construction consisting of solid steel and/or concrete beams as defined in the latest edition of NFPA 13.
- Ceiling slope not to exceed 2/12 (9.5°).

**Also, Viking ECOH-ELO Upright Sprinkler VK532 and Pendent Sprinkler VK534 are specifically cULus Listed for Ordinary Hazard Occupancies:**

- For non-combustible obstructed construction within trusses or bar joists having non-combustible web members greater than 1” (25.4 mm) when applying the 4 times obstruction criteria rule as defined in NFPA 13 under “Obstructions to Sprinkler Discharge Pattern Development”.
- For installation under concrete tees when installed as follows:
  1. The stems of the concrete tee construction must be spaced between 3 ft (0.9 m) and 7 ft-6 in (2.3 m) on center. The depth of the concrete tees must not exceed 30 in (762 mm). The maximum permitted concrete tee length is 32 ft (9.8 m). However, where the concrete tee length exceeds 32 ft (9.8 m), non-combustible baffles, equal in height to the depth of the tees, can be installed so that the space between the tees does not exceed 32 ft (9.8 m).
  2. The sprinkler deflector is to be located in a horizontal plane at or above 1” (25.4 mm) below the bottom of the concrete tee stems.
  3. When the sprinkler deflector is located higher than a horizontal plane 1” (25.4 mm) beneath the bottom of the concrete tee stems, the obstruction to sprinkler discharge criteria requirements of NFPA 13 for extended coverage upright sprinklers applies.

**FM Approval Requirements:**

Upright Sprinkler VK532 is FM Approved as a Standard Response ECOH-ELO sprinkler for installation in accordance with the latest applicable FM Loss Prevention Data Sheets (including 2-8N) and Technical Advisory Bulletins as indicated below:

- For limited use in buildings of specific ceiling or roof construction and for the protection of certain specific ordinary hazard occupancies (non-stor-
- age and/or non-flammable or non-combustible liquid).

Upright Sprinkler VK532 is also FM Approved as a Quick Response ECLH-ELO sprinkler for installation in accordance with the latest applicable FM Loss Prevention Data Sheets (including 2-8N) and Technical Advisory Bulletins.

FM Global Loss Prevention Data Sheets and Technical Advisory Bulletins 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 pages EC1-3 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.

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![Figure 5: Sprinkler VK534 Dimensions with the Model E-1 and E-2 Recessed Escutcheons](image-url)