1. DESCRIPTION
Viking Mirage® Quick Response Concealed Pendent Sprinkler VK464 is a thermosensitive glass-bulb spray sprinkler designed for installation on concealed pipe systems where the appearance of a smooth ceiling is desired.
The sprinkler is pre-assembled with a threaded adapter for installation with a low-profile cover assembly that provides up to ½" (13 mm) of vertical adjustment. The two-piece design allows installation and testing of the sprinkler prior to installation of the cover plate. The "push-on" and "thread-on" designs of the concealed cover plate assemblies allow easy installation of the cover plate after the system has been tested and the ceiling finish has been applied. The cover assembly can be removed and reinstalled, allowing temporary removal of ceiling panels without taking the sprinkler system out of service or removing the sprinkler. The Electroless Nickel PTFE (ENT) coating has been investigated for installation in corrosive environments and is listed and approved as indicated in the Approval Charts. The ENT finish is only available for the sprinkler assembly, the cover plate is not plated.

2. LISTINGS AND APPROVALS
- cULus Listed: Category VNIV
- NYC Approved: MEA 89-92-E, Volume 32

Refer to the Approval Chart and Design Criteria for cULus Listing requirements that must be followed.

3. TECHNICAL DATA
Specifications:
- Available since 2006.
- Minimum Operating Pressure: 7 psi (0.5 bar).
- Maximum Working Pressure: 175 psi (12 bar). Factory tested hydrostatically to 500 psi (34.5 bar).
- Thread size: 3/4" (20 mm) NPT
- Nominal K-Factor: 8.0 U.S. (115.2 metric*)

* Metric K-factor measurement is shown 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)

Patents Pending

Material Standards:
- Sprinkler Body: Brass UNS-C84400
- Deflector: Phosphor Bronze UNS-C51000
- Deflector Pins: Stainless Steel UNS-S30300
- Bulb: Glass, nominal 3 mm diameter
- Pip Cap and Insert Assembly: Copper UNS-C11000 and Stainless Steel UNS-S30400
- Button: Brass UNS-C36000
- Screws: 18-8 Stainless Steel
- Belleville Spring Sealing Assembly: Nickel Alloy, coated on both sides with Teflon Tape
- Yoke: Phosphor Bronze UNS-C51000
- Cover Adapter: Cold Rolled Steel UNS-G10080, Finish: Clear Chromate over Zinc Plating

Cover Assembly Materials:
- Cover: Copper UNS-C11000
- Base: Brass UNS-C26000 or UNS-C26800
- Springs: Nickel Alloy
- Solder: Eutectic

Ordering Information: The sprinkler and cover plate must be ordered separately. Refer to Tables 1 and 2.

4. INSTALLATION
Refer to appropriate NFPA Installation Standards.

5. OPERATION
During fire conditions, when the temperature around the sprinkler approaches its operating temperature, the cover plate detaches. Continued heating of the exposed sprinkler causes the heat-sensitive liquid in the glass bulb to expand and the bulb to shatter, releasing the yoke, 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 Mirage® Quick Response Concealed Pendent Sprinkler VK464 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 1: SPRINKLER ORDERING INFORMATION

<table>
<thead>
<tr>
<th>SIN</th>
<th>Sprinkler Base Part Number</th>
<th>Size</th>
<th>1: Finishes</th>
<th>2: Temperature Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Description</td>
<td>Nominal Rating</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Suffix</td>
<td>Temperature Classification</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VK464</td>
<td>13614</td>
<td>3/4</td>
<td>--</td>
<td>Brass</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ENT</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Intermediate</td>
</tr>
</tbody>
</table>

**Accessories**

**Sprinkler Wrenches and tools:**
- A. Heavy Duty Part Number: 14047W/B (available since 2006)
- B. Head Cabinet Wrench Part Number: 14031 (available since 2006)
- C. Optional Concealed Cover Plate Installer Tool Part Number: 144127 (available since 2007)
- D. Optional Large Concealed Cover Plate Installer Tool Part No. 148677 (available since 2007)

**Sprinkler Cabinet:**
- Holds up to 6 sprinklers: Part number 01731A (available since 1971).

**Footnotes**
- 1. Where a dash (-) is shown in the Finish suffix designation, insert the desired Temperature Rating suffix. See example above.
- 2. Based on NFPA 13, NFPA 13R, and NFPA 13D. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.
- 3. cULus Listed as corrosion resistant.
- 4. The corrosion resistant and corrosion proofing coatings have passed the standard corrosion test required by the approving agencies indicated in the Approval Chart. 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 ENT coating is applied to all exposed exterior surfaces, including the waterway.
- 5. Requires a ½” ratchet (not available from Viking).
- 6. Also optional for removal of the protective cap. Ideal for sprinkler cabinets.
- 7. The installer tool is for push-on style cover plates only.
TABLE 2: COVER PLATE ORDERING INFORMATION

Instructions:
(1) Select a Cover Plate Base Part Number
(2) Add the suffix for the desired Finish
(3) Add the suffix for the required Cover Plate Nominal Rating.

Example:
23190MC/W = 165 °F (74 °C) Temperature Rated 2-3/4" (70 mm) diameter Round Cover Plate with a Painted White finish.

1: Select a Cover Plate Base Part Number

<table>
<thead>
<tr>
<th>Base Part Number</th>
<th>Size Inch (mm)</th>
<th>Type</th>
<th>Base Part Number</th>
<th>Size Inch (mm)</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>23174</td>
<td>3-5/16 (84)</td>
<td>Round</td>
<td>23463</td>
<td>3-5/16 (84)</td>
<td>Round</td>
</tr>
<tr>
<td>23179</td>
<td>3-5/16 (84)</td>
<td>Square</td>
<td>23482</td>
<td>3-5/16 (84)</td>
<td>Square</td>
</tr>
</tbody>
</table>

2: Select a Finish

<table>
<thead>
<tr>
<th>Description</th>
<th>Suffix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polished Chrome</td>
<td>F</td>
</tr>
<tr>
<td>Brushed Chrome</td>
<td>F/B</td>
</tr>
<tr>
<td>Bright Brass</td>
<td>B</td>
</tr>
<tr>
<td>Antique Brass</td>
<td>B/A</td>
</tr>
<tr>
<td>Brushed Brass</td>
<td>B/B</td>
</tr>
<tr>
<td>Brushed Copper</td>
<td>E/B</td>
</tr>
<tr>
<td>Painted White</td>
<td>M/W</td>
</tr>
<tr>
<td>Painted Ivory</td>
<td>M/I</td>
</tr>
<tr>
<td>Painted Black</td>
<td>M/B</td>
</tr>
</tbody>
</table>

3: Temperature Rating Matrix

<table>
<thead>
<tr>
<th>Cover Plate Nominal Rating (Required)</th>
<th>Temperature Classification</th>
<th>Sprinkler Nominal Rating</th>
<th>Sprinkler Maximum Ambient Ceiling Temperature</th>
<th>Suffix</th>
</tr>
</thead>
<tbody>
<tr>
<td>UL: 135 °F (57 °C)</td>
<td>Ordinary</td>
<td>155 °F (68 °C)</td>
<td>100 °F (38 °C)</td>
<td>A</td>
</tr>
<tr>
<td>165 °F (74 °C)</td>
<td>Intermediate</td>
<td>175 °F (79 °C)</td>
<td>150 °F (65 °C)</td>
<td>C</td>
</tr>
<tr>
<td>165 °F (74 °C)</td>
<td>Intermediate</td>
<td>200 °F (93 °C)</td>
<td>150 °F (65 °C)</td>
<td>C</td>
</tr>
</tbody>
</table>

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. Part number shown is the base part number. For complete part number, refer to current Viking price list schedule.
4. Where a dash (-) is shown in the Finish suffix designation, insert the desired Temperature Rating suffix. See example above.
5. Square cover plate 23179 cULus Listing is for the 135 °F (57 °C) temperature rated cover plate only. Refer to the Approval Chart.

All custom color painted cover plates will have an identifying label affixed to the inside of the cover that indicates the custom color and will have a representative sample (a paint dot) of the paint on the label.

Figure 1: Identification of Custom Paint for Concealed Covers

Figure 2: Square Cover Assembly
Approval Chart
Mirage® Quick Response Concealed Pendent Sprinkler VK464
Maximum 175 PSI (12 bar) WWP

<table>
<thead>
<tr>
<th>Sprinkler Base Part Number(^1)</th>
<th>SIN</th>
<th>NPT Thread Size</th>
<th>Nominal K-Factor</th>
<th>Listings and Approvals(^3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Inch</td>
<td>mm</td>
<td>U.S.</td>
</tr>
<tr>
<td>13614A VK464</td>
<td>3/4&quot;</td>
<td>20</td>
<td></td>
<td>8.0</td>
</tr>
<tr>
<td>13614JN(^6) VK464</td>
<td>3/4&quot;</td>
<td>20</td>
<td></td>
<td>8.0</td>
</tr>
</tbody>
</table>

Sprinkler Temperature Ratings
A - 155°F (68°C)
B - 175°F (79°C) and 200°F (93°C)

Cover Plate Assembly Temp. Ratings\(^6\)
W - 135°F (57°C) cover, 23190\(^1\), 23447\(^1\), 23174\(^1\), 23463\(^1\) (large diameter), or 23179\(^1\), 23482\(^1\) (square cover plate)
X - 165°F (74°C) cover 23190\(^1\), 23447\(^1\), 23174\(^1\), 23463\(^1\) (large diameter)

Finishes of the Cover Plate Assembly\(^7\)
1. Polished Chrome, Brushed Chrome, Bright Brass, Antique Brass, Brushed Brass, Brushed Copper, Painted White, Painted Ivory, or Painted Black

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.
\(^4\) Listed by Underwriter’s Laboratories for use in the U.S. and Canada.
\(^5\) Accepted for use, City of New York Department of Buildings, MEA Number 89-92-E, Vol. 32.
\(^6\) The 135°F cover has an orange label. The 165°F cover has a white label.
\(^7\) Standard painted finishes consist of Polyester Baked Enamel. Other paint colors are available on request with the same listings as the standard paint colors. Listings and approvals apply for any paint manufacturer. Contact Viking for additional information.

\(^8\) cULus Listed as corrosion resistant.

NOTE: Custom colors are indicated on a label inside the cover assembly. Refer to Figure 1.

DESIGN CRITERIA
(Also refer to the Approval Chart.)

\textbf{cULus Listing Requirements:}
Mirage® Quick Response Concealed Pendent Sprinkler VK464 is cULus Listed for installation in accordance with the latest edition of NFPA 13 for standard coverage pendent spray sprinklers as indicated below:

\begin{itemize}
  \item For hazard occupancies up to and including Ordinary Hazard, Group II.
  \item Protection areas and maximum spacing shall be in accordance with the tables provided in NFPA 13. Maximum spacing allowed is 15 ft. (4.6 m).
  \item Minimum spacing allowed is 6 ft. (1.8 m) unless baffles are installed in accordance with NFPA 13.
  \item Minimum distance from walls is 4 in. (102 mm).
  \item Maximum distance from walls shall be no more than one-half of the allowable distance between sprinklers. The distance shall be measured perpendicular to the wall.
  \item The sprinkler obstruction rules contained in NFPA 13 for standard coverage pendent spray sprinklers must be followed.
\end{itemize}

\textbf{NOTE:} Concealed sprinklers must be installed in neutral or negative pressure plenums only.

\textbf{IMPORTANT:} Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to Form No. F_080416 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, Assemblee Pleniere, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.
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.

NEVER install the sprinkler by applying the installation wrench across the frame arms. DO NOT overtighten. Use only the designated sprinkler wrenches, Part Numbers 14047WB** or 14031**. A leak-tight seal should be achieved by turning the sprinkler clockwise 1 to 1-1/2 turns beyond finger tight.

Figure 3: Sprinkler Installation and Proper Wrench Usage  
*** A 1/2” ratchet is required (Not available from us.)

NOTE: Upon sprinkler activation, the deflector descends to approximately 13/16” (21 mm) below the sprinkler body.

Figure 5: Sprinkler Dimensions and Cover Installation-VK464

Sprinkler Wrench Part No. 14047WB**  
Sprinkler Wrench Part No. 14031**

2-1/4” (57 mm)  
diameter opening required in the ceiling.

Step 1:  
Carefully slide the wrench sideways around the deflector and pins

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

3/4” (20 mm) NPT  
2-1/4” (57 mm)  
2-11/16” (68 mm)  
2-3/16” (56 mm)  
2-3/4” (70 mm) or 3-5/16” (84 mm)