1. DESCRIPTION
Viking Mirage® Standard and Quick Response Concealed Pendent Sprinkler VK462 and HP Sprinkler VK463 are thermosensitive glass-bulb spray sprinklers 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" (12.7 mm) of vertical adjustment. The two-piece design allows installation and testing of the sprinkler prior to installation of the cover plate. The "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
- FM Approval: Class 2015
- NYC Approved: MEA 89-92-E, Volume 32
- VdS Approved: Certificate G4080021
- LPCB Approved: Ref. No. 096e/12
- CE Certified: Standard EN 12259-1, EC-certificate of conformity 0832-CPD-2032
- China Approval: Approved according to China GB Standard

Refer to the Approval Charts and Design Criteria listing and approval requirements that must be followed.

3. TECHNICAL DATA

Specifications:
- Available since 2006.
- Minimum Operating Pressure: 7 psi (0.5 bar)*
- Maximum Working Pressure: Sprinkler VK463 is rated for use with water working pressures ranging from the minimum 7 psi (0.5 bar) up to 250 psi (17.2 bar) for high-pressure systems. High-pressure (HP) sprinklers can be identified by locating “250” stamped on the deflector. Sprinkler VK462 is rated to a maximum 175 psi (12 bar) wwp.
- Factory tested hydrostatically to 500 psi (34.5 bar)
- Thread size: 1/2" (15 mm) NPT
- Nominal K-Factor: 5.6 U.S. (80.6 metric **)
- Glass-bulb fluid temperature rated to -65°F (-55°C)
- Patents Pending
- cULus Listing, FM Approval, and NFPA 13 installs require a minimum of 7 psi (0.5 bar). The minimum operating pressure for LPCB and CE Approvals ONLY is 5 psi (0.35 bar).
- **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.

Material Standards:
- Sprinkler Body: Brass UNS-C84400
- Deflector: Copper UNS-C19500 for Sprinkler; Phosphor Bronze UNS-C51000 for Sprinkler VK463
- Deflector Pins: Stainless Steel Alloy
- 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 PTFE 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 or Stainless Steel UNS-S30400
- 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, pig-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 VK462 and VK463 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>
<thead>
<tr>
<th>TABLE 1: SPRINKLER ORDERING INFORMATION</th>
</tr>
</thead>
</table>
| Instructions:
(1) Select a Sprinkler Base Part Number
(2) Add the suffix for the desired Finish
(3) Add the suffix for the desired Sprinkler Temperature Rating
(4) Order a cover plate (refer to Table 2)

Example:
13503AE = 200 °F (93 °C) Temperature Rated Sprinkler with a standard Brass finish.

<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>NPT</td>
<td>BSPT</td>
<td>Description</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Inch</td>
<td>mm</td>
<td></td>
</tr>
<tr>
<td>VK462</td>
<td>13503</td>
<td>1/2</td>
<td>--</td>
<td>Brass</td>
</tr>
<tr>
<td>VK462</td>
<td>21356 9</td>
<td>--</td>
<td>15</td>
<td>ENT 3.4</td>
</tr>
<tr>
<td>VK463</td>
<td>13667</td>
<td>1/2</td>
<td>--</td>
<td>Intermediate</td>
</tr>
</tbody>
</table>

Accessories
Sprinkler Wrenches and tools (see Figure 1):
A. Heavy Duty Part Number: 14047W/B (available since 2006)
B. Head Cabinet Wrench Part Number: 14031 4 (available since 2006)
C. Optional Concealed Cover Plate Installer Tool Part Number: 14412 (available since 2007)
D. Optional Large Concealed Cover Plate Installer Tool Part No. 14867 (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. UL Listed as corrosion resistant.
4. The corrosion resistant 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. Not available with ENT finish. See approval charts for more information.
8. See approval charts for more information.
9. Approved according to China GB Standard.
10. 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, Thread-On style Round Cover Plate with a Painted White finish.

<table>
<thead>
<tr>
<th>Base Part Number</th>
<th>Size (inch)</th>
<th>Type</th>
<th>Base Part Number</th>
<th>Size (inch)</th>
<th>Type</th>
<th>Description</th>
<th>Suffix</th>
</tr>
</thead>
<tbody>
<tr>
<td>23179</td>
<td>3-5/16 (84)</td>
<td>Round</td>
<td>23463</td>
<td>3-5/16 (84)</td>
<td>Round</td>
<td>Brushed Chrome</td>
<td>F-/B</td>
</tr>
<tr>
<td>23183</td>
<td>3-5/16 (84)</td>
<td>Stainless Steel Round</td>
<td>23473</td>
<td>3-5/16 (84)</td>
<td>Stainless Steel Round</td>
<td>B-/B</td>
<td></td>
</tr>
<tr>
<td>23174/CR</td>
<td>3-5/16 (84)</td>
<td>Clean Room</td>
<td>23463/CR</td>
<td>3-5/16 (84)</td>
<td>Clean Room</td>
<td>Painted Ivory</td>
<td>M-/I</td>
</tr>
<tr>
<td>23183CR</td>
<td>3-5/16 (84)</td>
<td>Stainless Steel Round Clean Room</td>
<td>23473CR</td>
<td>3-5/16 (84)</td>
<td>Stainless Steel Round Clean Room</td>
<td>M-/B</td>
<td></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>FM: 139 °F (59 °C)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Intermediate</td>
<td>175 °F (79 °C)</td>
<td>150 °F (65 °C)</td>
<td>C</td>
</tr>
<tr>
<td></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. Stainless Steel versions are not available with any finishes or paint.
5. Where a dash (-) is shown in the Finish suffix designation, insert the desired Temperature Rating suffix. See example above.
### Approval Chart 1 (UL)

**Mirage® Concealed Pendent Sprinklers VK462 and VK463**

<table>
<thead>
<tr>
<th>Sprinkler Base Part No.</th>
<th>SIN</th>
<th>Thread Size</th>
<th>Nominal K-factor</th>
<th>Maximum Water Working Pressure</th>
<th>Listings and Approvals* (Refer also to Design Criteria)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>NPT Inch</td>
<td>BSPT mm</td>
<td>U.S.</td>
<td>metric</td>
</tr>
<tr>
<td>Standard Response Applications</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13503A VK462</td>
<td>1/2’</td>
<td>--</td>
<td>5.6</td>
<td>80.6</td>
<td>175 psi (12 bar)</td>
</tr>
<tr>
<td>21356A VK462</td>
<td>--</td>
<td>15</td>
<td>5.6</td>
<td>80.6</td>
<td>175 psi (12 bar)</td>
</tr>
<tr>
<td>Quick Response Applications</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13503A VK462</td>
<td>1/2’</td>
<td>15</td>
<td>5.6</td>
<td>80.6</td>
<td>175 psi (12 bar)</td>
</tr>
<tr>
<td>13503JN VK462</td>
<td>1/2’</td>
<td>15</td>
<td>5.6</td>
<td>80.6</td>
<td>175 psi (12 bar)</td>
</tr>
<tr>
<td>21356A VK462</td>
<td>--</td>
<td>15</td>
<td>5.6</td>
<td>80.6</td>
<td>175 psi (12 bar)</td>
</tr>
<tr>
<td>13667A VK463</td>
<td>1/2’</td>
<td>15</td>
<td>5.6</td>
<td>80.6</td>
<td>250 psi (17.2 bar)</td>
</tr>
<tr>
<td>13667JN VK463</td>
<td>1/2’</td>
<td>15</td>
<td>5.6</td>
<td>80.6</td>
<td>250 psi (17.2 bar)</td>
</tr>
</tbody>
</table>

**Approved Sprinkler Temperature Rating Codes**

- **A** = 155 °F (68 °C)
- **B** = 175 °F (79 °C)
- **C** = 200 °F (93 °C)

**Approved Cover Plate Temperature Rating Codes**

- S - 135 °F (57 °C) cover 23193, 23445 or 23183, 23473 (large diameter)
- T - 165 °F (74 °C) cover 23193, 23445 or 23183, 23473 (large diameter)
- V - 135 °F (57 °C) cover 23190, 23447, 23174, 23463 (large diameter), or 23179, 23482 (square cover plate)
- X - 165 °F (74 °C) cover 23190, 23447, or 23174, 23463 (large diameter)
- Y - 135 °F (57 °C) cover 23190, 23447 LPCB Approved as 139 °F (59 °C)
- Z - 165 °F (74 °C) cover 23190, 23447

**Approved Cover Plate Finish Codes**

- 1 - Polished Chrome, Brushed Chrome, Bright Brass, Antique Brass, Brushed Brass, Brushed Copper, Painted White, Painted Ivory, or Painted Black
- 2 - Stainless Steel

**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. The Water Working Pressure rating is stamped on the deflector.
4. 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.
5. Listed by Underwriter’s Laboratories for use in the U.S. and Canada.
8. CE Certified, Standard EN 12259-1, EC-certificate of conformity 0832-CPD-2032.
9. The 135/139 °F cover has an orange label. The 165 °F (74 °C) cover has a white label.
10. Approved according to China GB Standard.

**NOTE:** Custom colors are indicated on a label inside the cover assembly. Refer to Figure 1.
**DESIGN CRITERIA - UL**
(Also refer to Approval Chart 1)

**cULus Listing Requirements:**
Mirage® Concealed Pendent Sprinklers VK462 and VK463 are cULus Listed as quick response for installation in accordance with the latest edition of NFPA 13 for standard coverage pendent spray sprinklers as indicated below.
- For hazard occupancies up to and including Ordinary Hazard, Group II.
- 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).
- Minimum spacing allowed is 6 ft. (1.8 m) unless baffles are installed in accordance with NFPA 13.
- Minimum distance from walls is 4 in. (102 mm).
- 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.
- The sprinkler obstruction rules contained in NFPA 13 for standard coverage pendent spray sprinklers must be followed.

**NOTE:** Concealed sprinklers must be installed in neutral or negative pressure plenums only.

**VdS Approval Requirements:**
- a) The sprinkler can be installed in a concrete ceiling (massive ceiling) or in a false ceiling made of light materials.
- b) This sprinkler is deflector fixed type and can be only activated by heat. The housing is not tight.
- c) Follow installation guidelines of current standards, CEA4001VdS and EN12845. These sprinklers can only be installed in LH and OH occupancies, except in OH4.

**NOTES:** Due to the design the sprinkler type ‘Domed-CCP’ shall not be installed in false ceilings in which the false ceiling space is protected by a water extinguishing system.
- Due to the design the sprinkler type ‘Domed-CCP’ shall not be installed in false ceilings in which during a fire the pressure above the false ceiling may be assumed to be higher than the pressure below the false ceiling.
- The criterion for the dropping of the cover relevant for this approval is heat.

**Steps of installation:**
1. Prepare the sprinkler key.
2. Remove the plastic cover.
3. Hold the sprinkler with the wrench and fasten it.
4. Replace the plastic cover and do not remove until the cover is installed.

**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.

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**Figure 1:** Identification of Custom Paint for Concealed Covers

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 2:** Square Cover Assembly
MIRAGE® STANDARD AND
QR CONCEALED PENDENT
SPRINKLER VK462 AND HP
SPRINKLER VK463 (K5.6)

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
Visit the Viking website for the latest edition of this technical data page www.vikinggroupinc.com

Designteria - FM

**FM Approval Requirements:**

Viking Concealed Pendent Sprinkler VK462 is FM Approved as a standard response Non-Storage concealed pendent sprinkler as indicated in the FM Approval Guide. For specific application and installation requirements, reference the latest applicable FM Loss Prevention Data Sheets (including Data Sheet 2-0). 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.

**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.

**Approval Chart 2 (FM)**

<table>
<thead>
<tr>
<th>Sprinkler Base Part No.¹</th>
<th>SIN</th>
<th>Thread Size</th>
<th>Nominal K-Factor</th>
<th>Maximum Water Working Pressure</th>
<th>FM Approvals³ (Refer also to Design Criteria below.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>NPT Inch</td>
<td>BSPT mm</td>
<td>U.S.</td>
<td>metric²</td>
</tr>
<tr>
<td>13503A</td>
<td>VK462</td>
<td>1/2&quot;</td>
<td>15</td>
<td>5.6</td>
<td>80.6</td>
</tr>
<tr>
<td>21356A¹</td>
<td>VK462</td>
<td>--</td>
<td>15</td>
<td>5.6</td>
<td>80.6</td>
</tr>
</tbody>
</table>

Approved Sprinkler Temperature Rating Codes

Approved Cover Plate Temperature Rating Codes

Approved Cover Plate Finish Codes

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 FM Approvals available at the time of printing. Other approvals may be in process. Check with the manufacturer for any additional approvals.

4. The 139 °F (59 °C) cover has an orange label. The 165 °F (74 °C) cover has a white label.

5. Painted finish consists 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.

6. Approved according to China GB Standard.

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

**Footnotes**
Sprinkler and Adapter Assembly
- Protective cap removed
- Use wrench 14047W/B**

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.

NEVER install the sprinkler by applying the installation wrench across the frame arms. DO NOT overtighten. Use only the designated sprinkler wrenches, Viking Part Numbers 14047W/B** 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 Viking)

Figure 4: Sprinkler Dimensions and Cover Installation

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