1. DESCRIPTION

Viking Standard Response Control Mode Specific Application (CMSA) Pendent Sprinkler VK592 is a thermosensitive fusible element type spray sprinkler. With a 19.6 nominal K-Factor, the sprinkler provides greater flows at lower pressures than sprinklers with smaller K-Factors. This feature allows reduced pipe sizing for hydraulically calculated sprinkler systems, and provides the higher densities required to allow an increase in the hazard classification of an occupancy. Viking Standard Response Sprinkler VK592 was subjected to full-scale high piled storage fire testing and is UL Listed, FM Approved, and VdS Approved for use in protecting high-piled storage.

Viking Sprinkler VK592 is intended to protect Class I-IV commodities and plastic and rubber commodities (cartoned, unexpanded only) stored palletized, solid piled, bin boxes, shelf storage, and single, double, multiple row, and portable open rack storage (no open-top containers or solid shelves). Sprinkler VK592 may also be used to protect on-floor storage of idle wood pallets. Refer to Approval Chart 1 and Design Criteria on pages 3-4 for UL Listing requirements, and refer to Approval Chart 2 and Design Criteria on page 8 for FM Approval requirements that must be followed.

NOTE: Sprinkler VK592 is NOT approved for protecting expanded plastics, exposed unexpanded plastics, rolled paper, baled cotton, aerosols, or rubber tires.

2. LISTINGS AND APPROVALS

- **UL Listed:** Category VNIV
- **FM Approved:** Class 2036
- **VdS Approved:** Certificate G4080016

Refer to Approval Chart 1 and Design Criteria on pages 3-4 for UL Listing requirements, for the U.S. and Canada, and refer to Approval Chart 2 and Design Criteria on page 8 for FM Approval requirements that must be followed.

3. TECHNICAL DATA

**Specifications:**
- Available since 2008.
- Maximum Working Pressure: 175 psi (12 bar). Factory tested hydrostatically to 500 psi (34.5 bar).
- Thread size: Base Part No. 14243: 1” NPT, Part No. 15468: 25 mm BSPT
- Nominal K-Factor: 19.6 U.S. (282.6 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.

- Overall Length: 3-3/16” (81 mm)

Covered by one or more of the following patents: US5,829,532; US6,059,044; US6,336,509; US6,502,643; US6,868,917

**Material Standards:**
- Sprinkler Frame: Brass UNS-C84400
- Deflector: Phosphor Bronze UNS-C51000
- Seat and Insert Assembly: Copper UNS-C11000 and Stainless Steel UNS-S30400
- Compression Screw: Stainless Steel UNS-S31603
- Belleville Spring Sealing Assembly: Nickel Alloy, coated on both sides with Teflon Tape
- Trigger and Support: Stainless Steel UNS-S31600
- Fusible Element Assembly: Phosphor Bronze UNS-C51000, polyurethane coated

**Ordering Information:** (Also refer to the current Viking price list.)

Order Standard Response Control Mode Specific Application Pendent Sprinkler VK592 by adding the appropriate suffix for the sprinkler temperature rating to the sprinkler base part number.

- **Finish Suffix:** Brass = A
- **Temperature Suffix:** 160 °F (71 °C) = C, 205 °F (96 °C) = E

For example, sprinkler VK592 with a Brass finish, with 1” NPT threads, and a 160 °F (71 °C) temperature rating = Part No. 14243AC.

**Available Finishes And Temperature Ratings:** Refer to Table 1.

**Accessories:** (Also refer to the “Sprinkler Accessories” section of the Viking data book.)
Sprinkler Cabinets: Six-head capacity: Part No. 01731A (available since 1971)

4. INSTALLATION
Refer to appropriate NFPA Installation Standards.

5. OPERATION
During fire conditions, the heat-sensitive fusible element assembly disengages, releasing the seat and spring assemblies to open the waterway. 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 VK592 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 ¹</th>
<th>Maximum Ambient Ceiling Temperature ²</th>
<th>Frame Paint Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ordinary</td>
<td>160 °F (71 °C)</td>
<td>100 °F (38 °C)</td>
<td>None</td>
</tr>
<tr>
<td>Intermediate</td>
<td>205 °F (96 °C)</td>
<td>150 °F (65 °C)</td>
<td>White</td>
</tr>
</tbody>
</table>

Sprinkler Finish: Brass

Table 1: AVAILABLE SPRINKLER TEMPERATURE RATINGS AND FINISHES

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.
### TECHNICAL DATA

**STANDARD RESPONSE PENDENT SPRINKLER**  
**VK592 (K19.6)**  
(CONTROL MODE SPECIFIC APPLICATION)

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

<table>
<thead>
<tr>
<th>Base Part Number</th>
<th>SIN</th>
<th>Thread Size</th>
<th>Nominal K-Factor</th>
<th>Overall Length</th>
<th>Listings and Approvals</th>
</tr>
</thead>
<tbody>
<tr>
<td>14243A</td>
<td>VK592</td>
<td>1” NPT</td>
<td>19.6</td>
<td>282.6</td>
<td>A1 See Footnote 4. B1</td>
</tr>
<tr>
<td>15468A</td>
<td>VK592</td>
<td>25 mm BSP</td>
<td>19.6</td>
<td>282.6</td>
<td>A1 See Footnote 4. B1</td>
</tr>
</tbody>
</table>

**Approved Temperature Ratings**
- A - 160 °F (71 °C) and 205 °F (96 °C)
- B - 160 °F (71 °C)

<table>
<thead>
<tr>
<th>Approved Finish</th>
<th>Approved Temperature Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - Brass</td>
<td>A - 160 °F (71 °C) and 205 °F (96 °C) B - 160 °F (71 °C)</td>
</tr>
</tbody>
</table>

**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.

### DESIGN CRITERIA - UL

(Also refer to Approval Chart 1 above.)

**UL Listing Requirements:** (NOTE: The FM Approval requirements differ from UL and/or NFPA criteria. Refer to page 8 for FM requirements.)

- **Design Criteria:** Sprinkler VK592 is UL Listed for use in the U.S. and Canada for High Piled Storage Occupancies with the minimum operating pressures as indicated in Tables 3-9 on pages 5-6.

**Hydraulic Calculations:** Hydraulic calculations must be done in accordance with NFPA 13 for Control Mode Specific Application (CMSA) sprinklers.

**System Type:** Wet systems only.

**Maximum Roof or Ceiling Slope:** 2 in 12 (167 mm/m or 9.5 degrees).

**Sprinkler Position:** Approved for use only in the pendant position. Align the deflector parallel with the ceiling or roof.

**Clearance from Deflector to Top of Storage:** At least 36” (914 mm).

**Determination of the Protection Area of Coverage:** The protection area of coverage per sprinkler \((A_s)\) is determined as follows: 
\[ A_s = S \times L \]

To determine \(S\), measure the distance between sprinklers (or to wall or obstruction in the case of the end sprinkler on the branch line) upstream and downstream along the branch line. Choose the larger of either twice the distance to the wall (or obstruction) or the distance to the next sprinkler. This dimension is \(S\).

To determine \(L\), measure the perpendicular distance to the sprinkler on the adjacent branch line (or to a wall or obstruction in the case of the last branch line) on each side of the branch line on which the subject sprinkler is positioned. Choose the larger of either twice the distance to the wall (or obstruction) or the distance to the next sprinkler. This dimension is \(L\).

**Maximum Protection Area of Coverage:** The maximum allowable protection area of coverage for a sprinkler \((A_s)\) shall be 100 ft² (9.3 m²), as indicated in Table 2. Deviations from the maximum sprinkler spacing are allowed to eliminate obstructions created by structural elements (such as trusses, bar joists, and wind bracing) by moving either a sprinkler or a branch line as follows:

1. **Moving a sprinkler along the branch line a maximum of 1 ft (0.3 m) from its allowable spacing, provided coverage for that sprinkler does not exceed 110 ft² (10.2 m²) per sprinkler where all of the following conditions are met:**
   - The average actual floor area protected by the moved sprinkler and the adjacent sprinklers does not exceed 100 ft² (9.3 m²).
   - Adjacent branch lines maintain the same pattern.
   - The distance between sprinklers doesn’t exceed 12 ft (3.7 m).

2. **Moving a single branch line a maximum of 1 ft (0.3 m) from its allowable spacing, provided coverage for the sprinklers on that branch line and the sprinklers on the branch line it is moving away from does not exceed 110 ft² (10.2 m²) per sprinkler where all of the following conditions are met:**
   - The average actual floor area protected by the sprinklers on the moved branch line and the sprinklers on the adjacent branch lines does not exceed 100 ft² (9.3 m²) per sprinkler.
   - The distance between sprinklers doesn’t exceed 12 ft (3.7 m).
   - It is NOT permitted to move a branch line where there are moved sprinklers on a branch line that exceed the maximum sprinkler spacing.

**Minimum Protection Area of Coverage:** The minimum allowable protection area of coverage per sprinkler \((A_s)\) is 64 ft² (5.9 m²).

**Maximum Distance Between Sprinklers:** The maximum distance between sprinklers shall be limited to not more than 12 ft (3.7 m), as shown in Table 2.

- Deviations from the maximum sprinkler spacing are allowed to eliminate obstructions created by trusses and bar joists by moving a sprinkler along the branch line a maximum of 1 ft (0.3 m) from its allowable spacing, provided coverage for that sprinkler does not exceed 110 ft² (10.2 m²) where ALL of the following conditions are met:
  - The average actual floor area protected by the sprinklers on the moved branch line and the sprinklers on the adjacent branch lines doesn’t exceed 100 ft² (9.3 m²) per sprinkler.

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Form No. F_033108  22.04.14  Rev 22.1
### UL Listing Requirements (continued):

- The distance between sprinklers doesn’t exceed 12 ft (3.7 m).
- It is NOT permitted to move a branch line where there are moved sprinklers on a branch line that exceed the maximum sprinkler spacing.

**Minimum Protection Area of Coverage:** The minimum allowable protection area of coverage per sprinkler ($A_s$) is 64 ft² (5.9 m²).

**Maximum Distance Between Sprinklers:** The maximum distance between sprinklers shall be limited to not more than 12 ft (3.7 m), as shown in Table 2.

1. Deviations from the maximum sprinkler spacing are allowed to eliminate obstructions created by trusses and bar joists by moving a sprinkler along the branch line a maximum of 1 ft (0.3 m) from its allowable spacing, provided coverage for that sprinkler does not exceed 110 ft² (10.2 m²) where ALL of the following conditions are met:
   - The average actual floor area protected by the sprinklers on the moved branch line and the sprinklers on the adjacent branch lines doesn’t exceed 100 ft² (9.3 m²) per sprinkler.
   - The distance between sprinklers doesn’t exceed 12 ft (3.7 m).
   - It is permitted to move a branch line where there are moved sprinklers on a branch line that exceed the maximum sprinkler spacing.

2. Where branch lines are parallel to trusses and bar joists, deviations from the maximum sprinkler spacing are allowed to eliminate obstructions created by trusses and bar joists by moving a single branch line a maximum of 1 ft (0.3 m) from its allowable spacing, provided coverage for the sprinklers on that branch line and the sprinklers on the branch line it is moving away from does not exceed 110 ft² (10.2 m²) per sprinkler where all of the following conditions are met:
   - The average actual floor area protected by the sprinklers on the moved branch line and the sprinklers on the adjacent branch lines doesn’t exceed 100 ft² (9.3 m²) per sprinkler.
   - The distance between sprinklers doesn’t exceed 12 ft (3.7 m).
   - It is NOT permitted to move a branch line where there are moved sprinklers on a branch line that exceed the maximum sprinkler spacing.

**Minimum Distance Between Sprinklers:** 8 ft (2.4 m) on center.

**Minimum Distance from Walls:** At least 4" (102 mm) from walls.

**Maximum Distance from Walls:** No more than one-half the allowable distance permitted between sprinklers, as indicated in Table 2.

#### Deflector Position:

- Under unobstructed construction, the deflector must be located between 6" (152 mm) and 12" (305 mm) below the ceiling.
- Under obstructed noncombustible construction, the deflector must be located in accordance with one of the following:
  1. With the deflector between 6" (152 mm) and 12" (305 mm) below the ceiling.
  2. With the deflector of sprinklers under concrete tee construction with stems spaced less than 7-1/2 ft (2.3 m) but more than 3 ft (0.9 m) on centers, regardless of the depth of the tee, located at or above a horizontal plane 1" (25.4 mm) below the bottom of the stems of the tees and shall comply with Table 10.

**Obstructions at or Near the Ceiling:** Sprinklers must be arranged to comply with Table 10 and Figure 3 on page 7 for obstructions at or near the ceiling, such as beams, ducts, lights, and top chords of trusses and bar joists. This requirement doesn’t apply where sprinklers are spaced on opposite sides of obstructions less than 24" (610 mm) wide, provided the distance from the centerline on the obstructions to the sprinklers doesn’t exceed one half the allowable distance between sprinklers.

**Isolated Obstructions Below the Elevation of Sprinklers:** Sprinklers must be arranged with respect to isolated obstructions in accordance with one of the following:

1. Sprinklers must be installed below isolated noncontinuous obstructions that restrict only one sprinkler and are located below the elevation of sprinklers such as light fixtures and unit heaters.
2. Additional sprinklers are not required where the obstruction is 2 ft (0.6 m) or less in width and the sprinkler is located horizontally 4" (102 mm) or more from the nearest edge of the obstruction.
3. Additional sprinklers are not required where sprinklers are positioned with respect to the bottom of obstructions in accordance with Table 10 and Figure 3 on page 7.
4. Additional sprinklers are not required where the obstruction is 4" (102 mm) or less in width and in compliance with Figure 4, which illustrates sprinklers shall be positioned such that they are located at least a distance three times greater than the maximum dimension of the obstruction from the sprinkler, but never closer than 4" (102 mm) horizontally.

**Continuous Obstructions Below the Sprinklers:** Sprinklers must be arranged with respect to obstructions in accordance with one of the following:

1. Sprinklers must be installed below continuous obstructions, or they must be arranged to comply with Table 10 and Figure 3 on page 7 for horizontal obstructions entirely below the elevation of sprinklers that restrict sprinkler discharge pattern for two or more adjacent sprinklers, such as ducts, lights, pipes, and conveyors.
2. Additional sprinklers shall not be required where the obstruction is 4" (102 mm) or less in width and installed in accordance with Figure 4.
3. Additional sprinklers are not required where the obstruction is 1 ft (0.3 m) or less in width and located at least 1 ft (0.3 m) horizontally from the sprinkler.
4. Additional sprinklers are not required where the obstruction is 2 ft (0.6 m) or less in width and located a minimum of 2 ft (0.6 m) horizontally from the sprinkler.
5. Ceiling sprinklers are not required to comply with Table 10 where a row of sprinklers is installed under the obstruction.

**Bottom Chords of Bar Joists or Open Trusses:** Sprinklers shall be positioned a minimum of 4" (102 mm) horizontally from the nearest edge to any bottom chord of a bar joist or open truss.

**Open Gratings:** Sprinklers installed under open gratings must be of the intermediate level/rack storage type or otherwise shielded from the discharge of overhead sprinklers.

**Overhead Doors:** Quick response spray sprinklers are permitted to be utilized under overhead doors.
### TABLE 2: UL-PROTECTION AREAS AND MAXIMUM SPACING OF VK592 SPRINKLERS

<table>
<thead>
<tr>
<th>Construction Type</th>
<th>Ceiling/Roof Heights up to 40 ft (12.2 m)</th>
<th>Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noncombustible unobstructed</td>
<td>100 ft² (9.3 m²)</td>
<td>12 ft</td>
</tr>
<tr>
<td>Noncombustible obstructed</td>
<td>100 ft² (9.3 m²)</td>
<td>12 ft</td>
</tr>
<tr>
<td>Combustible unobstructed</td>
<td>100 ft² (9.3 m²)</td>
<td>12 ft</td>
</tr>
<tr>
<td>Combustible obstructed</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Rack storage applications</td>
<td>100 ft² (9.3 m²)</td>
<td>12 ft</td>
</tr>
</tbody>
</table>

### TABLE 3: UL DESIGN CRITERIA - PALLETTIZED AND SOLID-PILED STORAGE OF CLASS I-IV COMMODITIES USING CONTROL MODE SPECIFIC APPLICATION PENDENT SPRINKLER VK592

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Commodity Class</th>
<th>Maximum Storage Height</th>
<th>Maximum Ceiling/ Roof Height</th>
<th>Number of Design Sprinklers</th>
<th>Minimum Operating Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palletized and Solid Piled</td>
<td>Classes I-IV</td>
<td>25 ft (7.6 m)</td>
<td>30 ft (9.1 m)</td>
<td>15</td>
<td>16 PSI (1.1 bar)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30 ft (9.1 m)</td>
<td>35 ft (10.5 m)</td>
<td>15</td>
<td>25 PSI (1.7 bar)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>35 ft (10.5 m)</td>
<td>40 ft (12.2 m)</td>
<td>15</td>
<td>30 PSI (2.1 bar)</td>
</tr>
</tbody>
</table>

**NOTE:** Hose stream allowance shall be in accordance with NFPA 13 for Control Mode Specific Application Sprinklers.

### TABLE 4: UL DESIGN CRITERIA - PALLETTIZED AND SOLID-PILED STORAGE OF PLASTIC AND RUBBER COMMODITIES USING CONTROL MODE SPECIFIC APPLICATION PENDENT SPRINKLER VK592

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Commodity Class</th>
<th>Maximum Storage Height</th>
<th>Maximum Ceiling/ Roof Height</th>
<th>Number of Design Sprinklers</th>
<th>Minimum Operating Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palletized and Solid Piled Storage</td>
<td>Cartoned Unexpanded Plastics</td>
<td>20 ft (6.1 m)</td>
<td>25 ft (7.6 m)</td>
<td>15</td>
<td>16 PSI (1.1 bar)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 ft (6.1 m)</td>
<td>30 ft (9.1 m)</td>
<td>15</td>
<td>25 PSI (1.7 bar)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 ft (6.1 m)</td>
<td>35 ft (10.5 m)</td>
<td>15</td>
<td>30 PSI (2.1 bar)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 ft (6.1 m)</td>
<td>40 ft (12.2 m)</td>
<td>15</td>
<td>30 PSI (2.1 bar)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25 ft (7.6 m)</td>
<td>30 ft (9.1 m)</td>
<td>15</td>
<td>25 PSI (1.7 bar)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25 ft (7.6 m)</td>
<td>35 ft (10.5 m)</td>
<td>15</td>
<td>30 PSI (2.1 bar)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25 ft (7.6 m)</td>
<td>40 ft (12.2 m)</td>
<td>15</td>
<td>30 PSI (2.1 bar)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30 ft (9.1 m)</td>
<td>35 ft (10.5 m)</td>
<td>15</td>
<td>25 PSI (1.7 bar)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30 ft (9.1 m)</td>
<td>40 ft (12.2 m)</td>
<td>15</td>
<td>30 PSI (2.1 bar)</td>
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<tr>
<td></td>
<td></td>
<td>35 ft (10.5 m)</td>
<td>40 ft (12.2 m)</td>
<td>15</td>
<td>30 PSI (2.1 bar)</td>
</tr>
</tbody>
</table>

**NOTE:** Hose stream allowance shall be in accordance with NFPA 13 for Control Mode Specific Application Sprinklers.

### TABLE 5: UL DESIGN CRITERIA - SINGLE-, DOUBLE-, AND MULTIPLE-ROW RACK STORAGE (WITHOUT SOLID SHELVES) OF CLASS I-IV COMMODITIES STORED UP TO AND INCLUDING 25 ft (7.6 m) HIGH USING CONTROL MODE SPECIFIC APPLICATION PENDENT SPRINKLER VK592

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Commodity Class</th>
<th>Maximum Storage Height</th>
<th>Maximum Ceiling/ Roof Height</th>
<th>Number of Design Sprinklers</th>
<th>Minimum Operating Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-Row, Double-Row, and Multiple-Row</td>
<td>Classes I-IV</td>
<td>20 ft (6.1 m)</td>
<td>25 ft (7.6 m)</td>
<td>15</td>
<td>16 PSI (1.1 bar)</td>
</tr>
<tr>
<td>Rack (no open-top containers)</td>
<td>Encapsulated or Unencapsulated</td>
<td>20 ft (6.1 m)</td>
<td>30 ft (9.1 m)</td>
<td>15</td>
<td>25 PSI (1.7 bar)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 ft (6.1 m)</td>
<td>35 ft (10.5 m)</td>
<td>15</td>
<td>30 PSI (2.1 bar)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 ft (6.1 m)</td>
<td>40 ft (12.2 m)</td>
<td>15</td>
<td>30 PSI (2.1 bar)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25 ft (7.6 m)</td>
<td>30 ft (9.1 m)</td>
<td>15</td>
<td>30 PSI (2.1 bar)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25 ft (7.6 m)</td>
<td>35 ft (10.5 m)</td>
<td>15</td>
<td>25 PSI (1.7 bar)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25 ft (7.6 m)</td>
<td>40 ft (12.2 m)</td>
<td>15</td>
<td>30 PSI (2.1 bar)</td>
</tr>
</tbody>
</table>

**NOTE:** Hose stream allowance shall be in accordance with NFPA 13 for Control Mode Specific Application Sprinklers.
### TABLE 6: UL DESIGN CRITERIA - SINGLE-, DOUBLE-, AND MULTIPLE-ROW RACK STORAGE (WITHOUT SOLID SHELVES) OF CLASS I-IV COMMODITIES STORED OVER 25 ft (7.6 m) HIGH USING CONTROL MODE SPECIFIC APPLICATION PENDENT SPRINKLER VK592

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Commodity Class</th>
<th>Maximum Storage Height</th>
<th>Maximum Ceiling/ Roof Height</th>
<th>Number of Design Sprinklers</th>
<th>Minimum Operating Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-Row, Double-Row, and Multiple-Row Rack (no open-top containers)</td>
<td>Classes I-IV Encapsulated or Unencapsulated</td>
<td>30 ft (9.1 m)</td>
<td>35 ft (10.5 m)</td>
<td>15</td>
<td>25 PSI (1.7 bar)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30 ft (9.1 m)</td>
<td>40 ft (12.2 m)</td>
<td>15</td>
<td>30 PSI (2.1 bar)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>35 ft (10.5 m)</td>
<td>40 ft (12.2 m)</td>
<td>15</td>
<td>30 PSI (2.1 bar)</td>
</tr>
</tbody>
</table>

**NOTE:** Hose stream allowance shall be in accordance with NFPA 13 for Control Mode Specific Application Sprinklers.

### TABLE 7: UL DESIGN CRITERIA - SINGLE-, DOUBLE-, AND MULTIPLE-ROW RACK STORAGE (WITHOUT SOLID SHELVES) OF PLASTIC COMMODITIES STORED UP TO AND INCLUDING 25 ft (7.6 m) HIGH USING CONTROL MODE SPECIFIC APPLICATION PENDENT SPRINKLER VK592

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Commodity Class</th>
<th>Maximum Storage Height</th>
<th>Maximum Ceiling/ Roof Height</th>
<th>Number of Design Sprinklers</th>
<th>Minimum Operating Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-Row, Double-Row, and Multiple-Row Rack (no open-top containers)</td>
<td>Cartoned Unexpanded Plastics</td>
<td>20 ft (6.1 m)</td>
<td>25 ft (7.6 m)</td>
<td>15</td>
<td>16 PSI (1.1 bar)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 ft (6.1 m)</td>
<td>30 ft (9.1 m)</td>
<td>15</td>
<td>16 PSI (1.1 bar)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 ft (6.1 m)</td>
<td>35 ft (10.5 m)</td>
<td>15</td>
<td>25 PSI (1.7 bar)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 ft (6.1 m)</td>
<td>40 ft (12.2 m)</td>
<td>15</td>
<td>30 PSI (2.1 bar)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25 ft (7.6 m)</td>
<td>30 ft (9.1 m)</td>
<td>15</td>
<td>16 PSI (1.1 bar)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25 ft (7.6 m)</td>
<td>35 ft (10.5 m)</td>
<td>15</td>
<td>25 PSI (1.7 bar)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25 ft (7.6 m)</td>
<td>40 ft (12.2 m)</td>
<td>15</td>
<td>30 PSI (2.1 bar)</td>
</tr>
</tbody>
</table>

**NOTE:** Hose stream allowance shall be in accordance with NFPA 13 for Control Mode Specific Application Sprinklers.

### TABLE 8: UL DESIGN CRITERIA - SINGLE-, DOUBLE-, AND MULTIPLE-ROW RACK STORAGE (WITHOUT SOLID SHELVES) OF PLASTIC COMMODITIES STORED OVER 25 ft (7.6 m) HIGH USING CONTROL MODE SPECIFIC APPLICATION PENDENT SPRINKLER VK592

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Commodity Class</th>
<th>Maximum Storage Height</th>
<th>Maximum Ceiling/ Roof Height</th>
<th>Number of Design Sprinklers</th>
<th>Minimum Operating Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-Row, Double-Row, and Multiple-Row Rack (no open-top containers)</td>
<td>Cartoned Unexpanded Plastics</td>
<td>30 ft (9.1 m)</td>
<td>35 ft (10.5 m)</td>
<td>15</td>
<td>25 PSI (1.7 bar)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30 ft (9.1 m)</td>
<td>40 ft (12.2 m)</td>
<td>15</td>
<td>30 PSI (2.1 bar)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>35 ft (10.5 m)</td>
<td>40 ft (12.2 m)</td>
<td>15</td>
<td>30 PSI (2.1 bar)</td>
</tr>
</tbody>
</table>

**NOTE:** Hose stream allowance shall be in accordance with NFPA 13 for Control Mode Specific Application Sprinklers.

### TABLE 9: UL DESIGN CRITERIA - ON FLOOR STORAGE OF IDLE WOOD PALLETS STORED UP TO AND INCLUDING 20 ft (7.6 m) HIGH USING CONTROL MODE SPECIFIC APPLICATION PENDENT SPRINKLER VK592

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Commodity Class</th>
<th>Maximum Storage Height</th>
<th>Maximum Ceiling/ Roof Height</th>
<th>Number of Design Sprinklers</th>
<th>Minimum Operating Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>On Floor</td>
<td>Idle Wood Pallets</td>
<td>20 ft (6.1 m)</td>
<td>25 ft (7.6 m)</td>
<td>15</td>
<td>16 PSI (1.1 bar)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 ft (6.1 m)</td>
<td>30 ft (9.1 m)</td>
<td>15</td>
<td>16 PSI (1.1 bar)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 ft (6.1 m)</td>
<td>35 ft (10.5 m)</td>
<td>15</td>
<td>25 PSI (1.7 bar)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 ft (6.1 m)</td>
<td>40 ft (12.2 m)</td>
<td>15</td>
<td>30 PSI (2.1 bar)</td>
</tr>
</tbody>
</table>

**NOTE:** Hose stream allowance shall be in accordance with NFPA 13 for Control Mode Specific Application Sprinklers.
TABLE 10: POSITIONING SPRINKLER VK592 TO AVOID OBSTRUCTIONS TO DISCHARGE-UL ONLY

<table>
<thead>
<tr>
<th>Distance from Sprinkler to Side of Obstruction (A)</th>
<th>Maximum Allowable Distance of Deflector Above Bottom of Obstruction (B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. inches</td>
<td>metric mm</td>
</tr>
<tr>
<td>Less than 1 ft</td>
<td>Less than .3048 m</td>
</tr>
<tr>
<td>1 ft to less than 1 ft 6 in.</td>
<td>.3048 m to less than .46 m</td>
</tr>
<tr>
<td>1 ft 6 in. to less than 2 ft</td>
<td>.46 m to less than .61 m</td>
</tr>
<tr>
<td>2 ft to less than 2 ft 6 in.</td>
<td>.61 m to less than .76 m</td>
</tr>
<tr>
<td>2 ft 6 in. to less than 3 ft</td>
<td>.76 m to less than .91 m</td>
</tr>
<tr>
<td>3 ft to less than 3 ft 6 in.</td>
<td>.91 m to less than 1.07 m</td>
</tr>
<tr>
<td>3 ft 6 in to less than 4 ft</td>
<td>1.07 m to less than 1.22 m</td>
</tr>
<tr>
<td>4 ft to less than 4 ft 6 in.</td>
<td>1.22 m to less than 1.37 m</td>
</tr>
<tr>
<td>4 ft 6 in. to less than 5 ft</td>
<td>1.37 m to less than 1.52 m</td>
</tr>
<tr>
<td>5 ft to less than 5 ft 6 in.</td>
<td>1.52 m to less than 1.7 m</td>
</tr>
<tr>
<td>5 ft 6 in. to less than 6 ft</td>
<td>1.7 m to less than 1.83 m</td>
</tr>
<tr>
<td>6 ft</td>
<td>1.83 m</td>
</tr>
</tbody>
</table>

Figure 3: Positioning of Sprinklers to Avoid Obstructions to Discharge

Figure 4: Minimum Distance from Obstructions-UL Only

A ≥ 3C or 3D
(Use dimension C or D, whichever is greater.)
STANDARD RESPONSE  
PENDENT SPRINKLER  
VK592 (K19.6)  
(CONTROL MODE SPECIFIC APPLICATION)

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

Approval Chart 2 (FM)
Standard Response Pendent Sprinkler VK592 (K19.6)
Maximum 175 PSI (12 Bar) WWP

<table>
<thead>
<tr>
<th>Base Part Number1</th>
<th>SIN</th>
<th>Thread Size</th>
<th>Nominal K-Factor</th>
<th>Overall Length</th>
<th>FM Approvals3,4</th>
</tr>
</thead>
<tbody>
<tr>
<td>14243A</td>
<td>VK592</td>
<td>1&quot; NPT</td>
<td>19.6</td>
<td>3-3/16</td>
<td>A1</td>
</tr>
<tr>
<td>15468A</td>
<td>VK592</td>
<td>25 mm BSP</td>
<td>19.6</td>
<td>3-3/16</td>
<td>A1</td>
</tr>
</tbody>
</table>

Approved Temperature Ratings
A - 160 °F (71 °C) and 205 °F (96 °C)

Approved Finish
1 - Brass

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 FM Approved as a standard response pendent Storage sprinkler. Refer to Design Criteria below.

DESIGN CRITERIA - FM
(Also refer to Approval Chart 2 above.)

FM Approval Requirements:
1. Sprinkler VK592 is FM Approved as a standard response pendent 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 Data Sheets 2-0 and 8-9).
2. Approved storage sprinklers are also FM Approved for use as non-storage sprinklers 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 UL and/or NFPA criteria.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to page 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.
SPRINKLERS ARE FRAGILE - HANDLE WITH CARE!

**General Handling and Storage:**
- Store sprinklers in a cool, dry place.
- Protect sprinklers during storage, transport, handling, and after installation.
- Use the original shipping containers. DO NOT place sprinklers loose in boxes, bins, or buckets.
- Keep sprinklers separated at all times. DO NOT allow metal parts to contact sprinkler operating elements.

**For Pre-Assembled Drops:**
- Protect sprinklers during handling and after installation.
- For recessed assemblies, use the protective sprinkler cap (Viking Part Number 10364).

**Sprinklers with Protective Shields or Caps:**
- DO NOT remove shields or caps until after sprinkler installation and there no longer is potential for mechanical damage to the sprinkler operating elements.
- Sprinkler shields or caps MUST be removed BEFORE placing the system in service!
- Remove the sprinkler shield by carefully pulling it apart where it is snapped together.
- Remove the cap by turning it slightly and pulling it off the sprinkler.

**Sprinkler Installation:**
- DO NOT use the sprinkler deflector or operating element to start or thread the sprinkler into a fitting.
- Use only the designated sprinkler head wrench! Refer to the current sprinkler technical data page to determine the correct wrench for the model of sprinkler used.
- DO NOT install sprinklers onto piping at the floor level.
- Install sprinklers after the piping is in place to prevent mechanical damage.
- DO NOT allow impacts such as hammer blows directly to sprinklers or to fittings, pipe, or couplings in close proximity to sprinklers. Sprinklers can be damaged from direct or indirect impacts.
- DO NOT attempt to remove drywall, paint, etc., from sprinklers.
- Take care not to over-tighten the sprinkler and/or damage its operating parts!

**Maximum Torque:**
- 1/2” NPT: 14 ft-lbs. (19.0 N-m)
- 3/4” NPT: 20 ft-lbs. (27.1 N-m)
- 1” NPT: 30 ft-lbs. (40.7 N-m)

**WARNING**
Any sprinkler with a loss of liquid from the glass bulb or damage to the fusible element should be destroyed. Never install sprinklers that have been dropped, damaged, or exposed to temperatures exceeding the maximum ambient temperature allowed. Sprinklers that have been painted in the field must be replaced per NFPA 13. Protect sprinklers from paint and paint overspray in accordance with the installation standards. Do not clean sprinklers with soap and water, ammonia, or any other cleaning fluid. Do not use adhesives or solvents on sprinklers or their operating elements.

Refer to the appropriate technical data page and NFPA standards for complete care, handling, installation, and maintenance instructions. For additional product and system information Viking data pages and installation instructions are available on the Viking Web site at www.vikinggroupinc.com.
PROTECTIVE SPRINKLER SHIELDS AND CAPS

General Handling and Storage:
Many Viking sprinklers are available with a plastic protective cap or shield temporarily covering the operating elements. The snap-on shields and caps are factory installed and are intended to help protect the operating elements from mechanical damage during shipping, storage, and installation. NOTE: It is still necessary to follow the care and handling instructions on the appropriate sprinkler technical data sheets* when installing sprinklers with bulb shields or caps.

WHEN TO REMOVE THE SHIELDS AND CAPS:

NOTE: SHIELDS AND CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!

Remove the shield or cap from the sprinkler only after checking all of the following:
• The sprinkler has been installed*.
• The wall or ceiling finish work is completed where the sprinkler is installed and there no longer is a potential for mechanical damage to the sprinkler operating elements.

SHIELDS AND CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!

HOW TO REMOVE SHIELDS AND CAPS:

No tools are necessary to remove the shields or caps from sprinklers. DO NOT use any sharp objects to remove them! Take care not to cause mechanical damage to sprinklers when removing the shields or caps. When removing caps from fusible element sprinklers, use care to prevent dislodging ejector springs or damaging fusible elements. NOTE: Squeezing the sprinkler cap excessively could damage sprinkler fusible elements.

• To remove the shield, simply pull the ends of the shield apart where it is snapped together. Refer to Figure 1.
• To remove the cap, turn it slightly and pull it off the sprinkler. Refer to Figures 2 and 3.

Refer to the current sprinkler technical data page to determine the correct sprinkler wrench for the model of sprinkler used.

Never install sprinklers that have been dropped, damaged, or exposed to temperatures in excess of the maximum ambient temperature allowed.

* Refer to the appropriate current technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Web site at www.vikinggroupinc.com.
GENERAL HANDLING AND STORAGE INSTRUCTIONS:

• Do not store in temperatures exceeding 100 °F (38 °C). Avoid direct sunlight and confined areas subject to heat.

• Protect sprinklers and cover assemblies during storage, transport, handling, and after installation.
  -- Use original shipping containers.
  -- Do not place sprinklers or cover assemblies loose in boxes, bins, or buckets.

• Keep the sprinkler bodies covered with the protective sprinkler cap any time the sprinklers are shipped or handled, during testing of the system, and while ceiling finish work is being completed.

• Use only the designated Viking recessed sprinkler wrench (refer to the appropriate sprinkler data page) to install these sprinklers. NOTE: The protective cap is temporarily removed during installation and then placed back on the sprinkler for protection until finish work is completed.

• Do not over-tighten the sprinklers into fittings during installation.

• Do not use the sprinkler deflector to start or thread the sprinklers into fittings during installation.

• Do not attempt to remove drywall, paint, etc., from the sprinklers.

• Remove the plastic protective cap from the sprinkler before attaching the cover plate assembly. **PROTECTIVE CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!**

  Refer to the appropriate current technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Web site at www.vikinggroupinc.com.
USE THE FOLLOWING PRECAUTIONS WHEN HANDLING WAX-COATED SPRINKLERS

Many of Viking’s sprinklers are available with factory-applied wax coating for corrosion resistance. These sprinklers MUST receive appropriate care and handling to avoid damaging the wax coating and to assure satisfactory performance of the product.

General Handling and Storage of Wax-Coated Sprinklers:

- Store the sprinklers in a cool, dry place (in temperatures below the maximum ambient temperature allowed for the sprinkler temperature rating. Refer to Table 1 below.)
- Store containers of wax-coated sprinklers separate from other sprinklers.
- Protect the sprinklers during storage, transport, handling, and after installation.
- Use original shipping containers.
- Do not place sprinklers in loose boxes, bins, or buckets.

Installation of Wax-Coated Sprinklers:

- Use only the special sprinkler head wrench designed for installing wax-coated Viking sprinklers (any other wrench may damage the unit).
- Take care not to crack the wax coating on the units.
- For touching up the wax coating after installation, wax is available from Viking in bar form. Refer to Table 1 below. The coating MUST be repaired after sprinkler installation to protect the corrosion-resistant properties of the sprinkler.
- Use care when locating sprinklers near fixtures that can generate heat. Do not install sprinklers where they would be exposed to temperatures exceeding the maximum recommended ambient temperature for the temperature rating used.
- Inspect the coated sprinklers frequently soon after installation to verify the integrity of the corrosion resistant coating. Thereafter, inspect representative samples of the coated sprinklers in accordance with NFPA 25. Close up visual inspections are necessary to determine whether the sprinklers are being affected by corrosive conditions.

Never install sprinklers that have been dropped, damaged, or exposed to temperatures in excess of the maximum ambient temperature allowed.

Refer to the appropriate current technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Web site at www.vikinggroupinc.com.

### TABLE 1

<table>
<thead>
<tr>
<th>Sprinkler Temperature Rating (Fusing Point)</th>
<th>Wax Part Number</th>
<th>Wax Melting Point</th>
<th>Maximum Ambient Ceiling Temperature</th>
<th>Wax Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>155 °F (68 °C) / 165 °F (74 °C)</td>
<td>02568A</td>
<td>148 °F (64 °C)</td>
<td>100 °F (38 °C)</td>
<td>Light Brown</td>
</tr>
<tr>
<td>175 °F (79 °C)</td>
<td>04146A</td>
<td>161 °F (71 °C)</td>
<td>150 °F (65 °C)</td>
<td>Brown</td>
</tr>
<tr>
<td>200 °F (93 °C)</td>
<td>04146A</td>
<td>161 °F (71 °C)</td>
<td>150 °F (65 °C)</td>
<td>Brown</td>
</tr>
<tr>
<td>220 °F (104 °C)</td>
<td>02569A</td>
<td>170 °F (76 °C)</td>
<td>150 °F (65 °C)</td>
<td>Dark Brown</td>
</tr>
<tr>
<td>286 °F (141 °C)</td>
<td>02569A</td>
<td>170 °F (76 °C)</td>
<td>150 °F (65 °C)</td>
<td>Dark Brown</td>
</tr>
</tbody>
</table>

¹ 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.
1. DESCRIPTION
Regulatory and Health Warnings applying to materials used in the manufacture and construction of fire protection products are provided herein as they relate to legally mandated jurisdictional regions.

⚠️ WARNING

STATE OF CALIFORNIA, USA
Installing or servicing fire protection products such as sprinklers, valves, piping etc. can expose you to chemicals including, but not limited to, lead, nickel, butadiene, titanium dioxide, chromium, carbon black, and acrylonitrile which are known to the State of California to cause cancer or birth defects or other reproductive harm.

For more information, go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

2. WARRANTY TERMS AND CONDITIONS
For details of warranty, refer to Viking’s current list price schedule at [www.vikinggroupinc.com](http://www.vikinggroupinc.com) or contact Viking directly.