



TECHNICAL DATA

VK3521 QUICK RESPONSE PENDENT SPRINKLER (K8.0)

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

1. DESCRIPTION

The Viking VK3521 Quick Response Pendent Sprinkler is a small thermosensitive glass bulb spray sprinkler available with various finishes and temperature ratings to meet design requirements. The special Polyester and Electroless Nickel PTFE (ENT) coatings can be used in decorative applications where colors are desired. In addition, these coatings have been investigated for installation in corrosive environments and are Listed and Approved as indicated in the Approval Chart.

2. LISTINGS AND APPROVALS



UL Listed: Category VNIV



FM Approved: Classes 2001, 2015, 2043

Also approved for use in FM Approved vacuum dry sprinkler systems with a maximum supervisory vacuum pressure of -3 PSI (-207 mbar)



CE: Standard EN12259-1, DOP_XT1A_1-3-21

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

3. TECHNICAL DATA

Specifications:

Rated to: 175 PSI (12 bar) water working pressure.

Factory tested hydrostatically to 500 PSI (34.5 bar)

Thread size: 3/4" NPT (20 mm BSPT)

Nominal K-factor: 8.0 U.S. (115 metric*)

Glass-bulb fluid temperature rated to -65 °F (-55 °C)

* Metric K-factor measurement shown is in bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

Material Standards:

Sprinkler Body: Brass CW602N, UNS-C84400 or QM Brass

Deflector: Stainless Steel UNS S30400

Pip Cap Shell - Stainless Steel UNS-S44400

Pip Cap Disc - Stainless Steel UNS-S30100

Belleville Spring - Nickel Alloy

Pip Cap Seal - Polytetrafluoroethylene (PTFE)

Compression Screw: Brass CW612N, CW508L, UNS-C36000 or UNS-C26000

Shipping Cap: Polyethylene

Bulb: Glass, nominal 3 mm diameter

Ordering Information: (Refer to Table 1 and the current Viking List Price Book.)

4. INSTALLATION

Refer to appropriate NFPA, FM Global, and/or any other applicable installation standards.

NOTICE Risk of permanent damage.

Over-tightening the sprinkler can cause permanent damage.

> Tighten the sprinkler to a **MAXIMUM** torque of 20 ft-lbs (27.1 N-m).

5. OPERATION

During fire conditions, when the temperature around the sprinkler reaches its operating temperature, the heat-sensitive liquid in the glass bulb expands, causing the bulb to shatter, releasing the pip cap 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 are available through a network of domestic and international distributors. See the website for the closest distributor or contact Viking.

8. GUARANTEE

For details of warranty, refer to Viking's current list price schedule or contact Viking directly.



WARNING: Cancer and Reproductive Harm
www.P65Warnings.ca.gov



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TABLE 1: ORDERING INFORMATION
 Instructions: Using the sprinkler base part number,
 (1) add the suffix for the desired Finish
 (2) add the suffix for the desired Temperature Rating.

| Sprinkler Base Part Number | Size | | 1: Finishes | | 2: Temperature Ratings | | | |
|----------------------------------|-------------|------------|--------------------------------|---------------------|------------------------|------------|--|--------|
| | NPT Inch | BSPT mm | Description | Suffix ¹ | Nominal Rating | Bulb Color | Max. Ambient Ceiling Temperature ³ | Suffix |
| 23878 | 3/4 | -- | Brass | A | 135 °F (57 °C) | Orange | 100 °F (38 °C) | A |
| 23890 | -- | 20 | Chrome | F | 155 °F (68 °C) | Red | 100 °F (38 °C) | B |
| | | | White Polyester ^{4,6} | M-/W | 175 °F (79 °C) | Yellow | 150 °F (65 °C) | D |
| | | | Black Polyester ^{4,6} | M-/B | 200 °F (93 °C) | Green | 150 °F (65 °C) | E |
| | | | ENT ^{4,5,6} | JN | 286 °F (141 °C) | Blue | 225 °F (107 °C) | G |
| | | | | | OPEN | -- | -- | Z |

Example: 23878MB/W = VK3521 with white polyester finish and 155 °F (68 °C) nominal temperature rating. This sprinkler is to be installed into an area with a maximum ambient temperature of 100 °F (38 °C) meaning if the area will experience temperatures above the maximum ambient rating, you shall use a higher temperature-rated sprinkler.

Accessories

Sprinkler Wrenches (see Figure 1):

- A. Standard Wrench: Part number 23559MB
- B. Recessed Socket Wrench: Part number 23560MB²

Sprinkler Cabinet:

- A. Up to 6 sprinklers: Part number 01724A
- B. 6-12 sprinklers: Part number 01725A

Footnotes

1. Where a dash (-) is shown in the Finish suffix designation, insert the desired Temperature Rating suffix. See example above.
2. Requires a 1/2" ratchet which is not available from Viking.
3. 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.
4. UL Listed as corrosion resistant.
5. FM Approved as corrosion resistant.
6. 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.

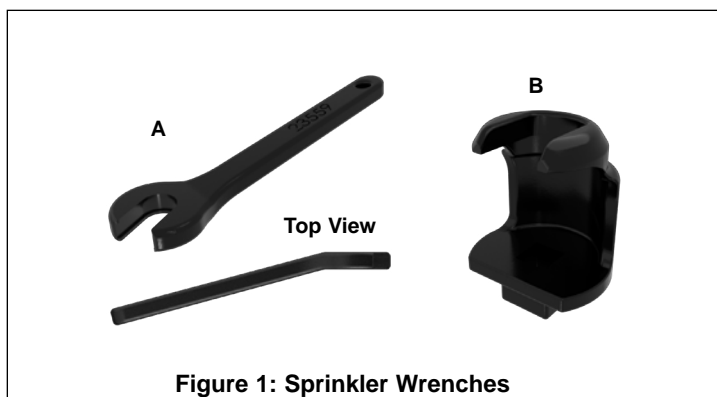


Figure 1: Sprinkler Wrenches

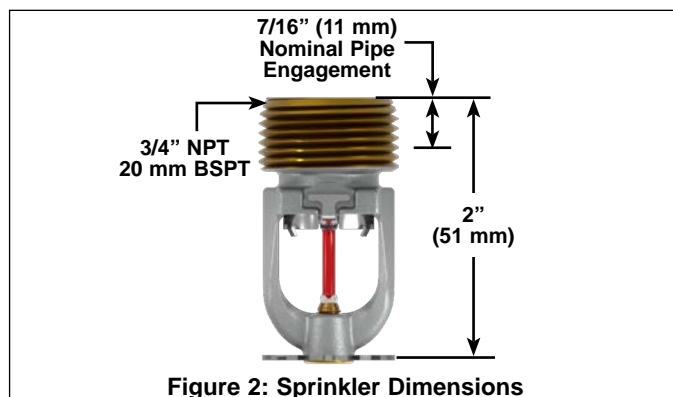


Figure 2: Sprinkler Dimensions



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| APPROVAL CHART Viking Quick Response Pendent Sprinkler VK3521 K8.0 (115 metric) Maximum 175 PSI (12 bar) WWP | | | | | | | | | | | | |
|--|-------------|------|---------------------------------------|-------------------|--|--------------|---|-----|------------------|---------|--------------------------------|---|
| | | | | | <table border="1"> <tr> <td>Finish(es) →</td> <td>↓</td> <td rowspan="3">KEY</td> </tr> <tr> <td>Temperature(s) →</td> <td>→ A 1 X</td> </tr> <tr> <td>Escutcheon(s), If applicable →</td> <td>↑</td> </tr> </table> | Finish(es) → | ↓ | KEY | Temperature(s) → | → A 1 X | Escutcheon(s), If applicable → | ↑ |
| Finish(es) → | ↓ | KEY | | | | | | | | | | |
| Temperature(s) → | → A 1 X | | | | | | | | | | | |
| Escutcheon(s), If applicable → | ↑ | | | | | | | | | | | |
| Sprinkler Base Part Number ¹ | Thread Size | | Listings and Approvals ^{2,6} | | | | | | | | | |
| | NPT | BSPT | UL | FM | CE ⁶ | | | | | | | |
| | Inch | mm | Approval Listings | Approval Listings | Approval Listings | | | | | | | |
| 23878 | 3/4 | -- | A1, B2X, B3Y | A1, B2X, B3Y | C1, D2X, D3Y | | | | | | | |
| 23890 | -- | 20 | A1, B2X, B3Y | A1, B2X, B3Y | C1, D2X, D3Y | | | | | | | |
| <p align="center">Approved Temperature Ratings:</p> <p>A = 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), and 286 °F (141 °C) B = 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C) C = 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C) and 286 °F (141 °C) D = 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C)</p> | | | | | | | | | | | | |
| <p align="center">Approved Finishes:</p> <p>1 = Brass, Chrome, White Polyester^{3,4}, Black Polyester^{3,4}, and ENT^{4,5} 2 = Brass, Chrome, White Polyester^{3,4}, and Black Polyester^{3,4} 3 = ENT^{4,5}</p> | | | | | | | | | | | | |
| <p align="center">Approved Escutcheons:</p> <p>X = Installed with Viking Recessed Escutcheons Models NP-1, NP-2, and NP-3, or Viking Standard Surface Mounted Escutcheons Y = Installed with Viking Model NP-1 Recessed Escutcheon OR Standard Surface Mounted Escutcheons</p> | | | | | | | | | | | | |
| <p align="center">Footnotes</p> <p>¹ Base Part number is shown. For complete part number, refer to Viking's current price schedule. ² This table shows the listings and approvals available at the time of printing. Check with the manufacturer for any additional approvals. ³ Other colors are available upon request with the same Listings and Approvals as the standard colors. ⁴ cULus Listed as corrosion resistant. ⁵ FM Approved as corrosion resistant. ⁶ CE: Standard EN12259-1, Declaration of Performance DOP_XT1A_1-3-21.</p> | | | | | | | | | | | | |

DESIGN CRITERIA - UL

cULus Listing Requirements:

The Viking VK3521 Quick Response Pendent Sprinkler is cULus Listed as indicated in Approval Chart for installation in accordance with the latest edition of NFPA 13 for standard spray sprinklers.

- Designed for use in Light and Ordinary Hazard occupancies.
- The sprinkler installation rules contained in NFPA 13 for standard spray pendent sprinklers shall be followed.

IMPORTANT: Always refer to Form Number F_091699 - Care and Handling of Sprinklers. Also refer to Form Number 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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DESIGN CRITERIA - FM

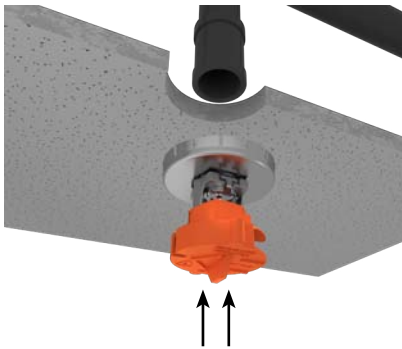
FM Approval Requirements:

The Viking VK3521 Quick Response Pendent Sprinkler is FM Approved as quick response Non-Storage 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.

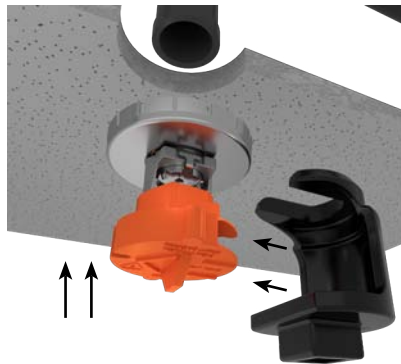
NOTE: The FM Installation guidelines may differ from UL and/or NFPA criteria.

IMPORTANT: Always refer to Form Number F_091699 - Care and Handling of Sprinklers. Also refer to Form Number 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.

1. Install the escutcheon inner ring onto the sprinkler threads.



2. Carefully slide the wrench sideways around the protective cap then push upwards to engage with the sprinkler wrench flats.



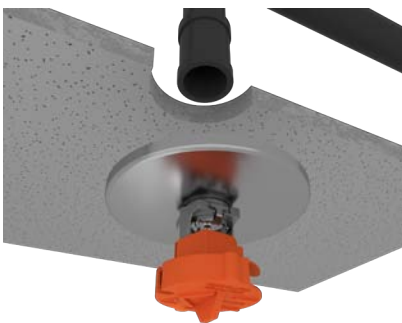
3. Install the sprinkler and escutcheon assembly into the pipe fitting. Be sure the escutcheon outer ring contacts the surface of the finished ceiling.



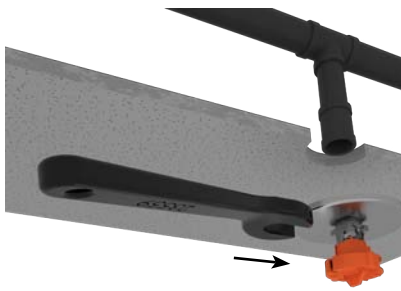
Figure 3: Recessed Installation (with Recessed Socket Wrench)

**A 1/2" ratchet is required (not available from Viking).

1. Install the escutcheon onto the sprinkler threads.



2. Carefully slide the wrench onto the sprinkler wrench flats.



3. Install the sprinkler and escutcheon assembly into the pipe fitting. Be sure the escutcheon contacts the surface of the finished ceiling.



Figure 4: Installation (with Standard Wrench)



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