



TECHNICAL DATA

QUICK RESPONSE EXTENDED COVERAGE CONCEALED HSW SPRINKLER VK680 (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

Viking QREC Concealed Horizontal Sidewall Sprinkler VK680 is a small high-sensitivity solder link and lever sprinkler designed for installation on concealed pipe systems, where the appearance of a smooth wall is desired. The fast response operating element and special flow shaper characteristics meet the challenges of quick response extended coverage standards.

The sprinkler is hidden from view by a low profile, small diameter cover plate installed flush to the wall. The cover plate is available in several decorative finishes to meet design requirements. The two-piece design allows installation and testing of the sprinkler prior to installation of the cover plate. After the system has been tested and wall finish has been applied, the push-on design of the cover plate assembly allows easy installation of the cover plate with up to 1/4" (6.4 mm) adjustment.

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

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

3. TECHNICAL DATA

Specifications:

Available since 2011.

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 in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

Available Cover Plate Horizontal Adjustment: 1/4" (6.4 mm)

Overall Length (Sprinkler Body): 2" (50.8 mm)

Patents Pending

Material Standards:

Sprinkler Body: QM brass or brass UNS-C84400

Belleville Spring Sealing Assembly: Nickel Alloy, coated on both sides with PTFE tape

Seat: UNS-C31400 or UNS-C31600, ENT coating available upon request

Deflector Ring: Brass UNS-C23000

Deflector Pins: Stainless steel UNS-S30200

Halo: Phosphor bronze UNS-C51000, e-coating available upon request

Flow Shaper: Phosphor Bronze UNS-C51000

Lever Bar Ring: Brass UNS-C84400 or UNS-C31600

Compression Screw: 18-8 Stainless Steel

Fusible Link Assembly: Nickel Alloy and Eutectic Solder

Fusible Link Levers: Stainless Steel UNS-S31600

Guide Pin: Stainless Steel UNS-S43000, ENT coating available upon request

Shipping Cap: Polyethylene

Cover Assembly Materials:

Cover Plate Assembly: Copper UNS-C11000 and brass UNS-C26800

Spring: Beryllium nickel

Solder: Eutectic

4. INSTALLATION

Refer to appropriate NFPA Installation Standards.

5. OPERATION

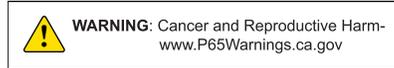
During fire conditions, when the temperature around the sprinkler approaches its operating temperature, the cover plate detaches. Continued heating of the exposed sprinkler causes the fusible element to disengage, releasing the sealing assembly. Water flowing through the sprinkler orifice strikes the flow shaper, 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.



For Light Hazard Occupancies Only





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7. AVAILABILITY

The Viking Model VK680 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 1: ORDERING INFORMATION

THE SPRINKLER AND COVER PLATE MUST BE ORDERED SEPERATELY.

Instructions: Using the sprinkler base part number,

1. Add the suffix for the desired Finish.
2. Add the suffix for the desired Temperature Rating.
3. Refer to Table 2 for the Cover Plate Ordering information.

| Sprinkler Base Part Number | Size | | 1. Available Finishes | | 2. Available Temperature Rating | | | |
|----------------------------|----------|---------|-----------------------|--------|---|----------------|--|--------|
| | NPT Inch | BSPT mm | Description | Suffix | Classification | Nominal Rating | Maximum Ambient Ceiling Temperature ² | Suffix |
| 17114 | 3/4 | -- | Brass | A | Ordinary | 165 °F (74 °C) | 100 °F (38 °C) | C |
| 21358 | -- | 20 | ENT ^{3,4} | JN | Corrosion Resistant Sprinkler Finish: ENT^{3,4} Example: 17114JNC = 165 °F (74 °C) Temperature Rated Sprinkler with an ENT finish. | | | |
| | | | | | | | | |

Accessories

Sprinkler Wrenches (see Figure 1):

- A. Standard (Heavy duty) Wrench: Part Number 16208W/R¹.
- B. Head Cabinet Wrench: Part Number 16267¹.

Sprinkler Cabinet:

Part number 01731A.

Footnotes

1. Requires a 1/2" ratchet which is not available from Viking.
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.



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



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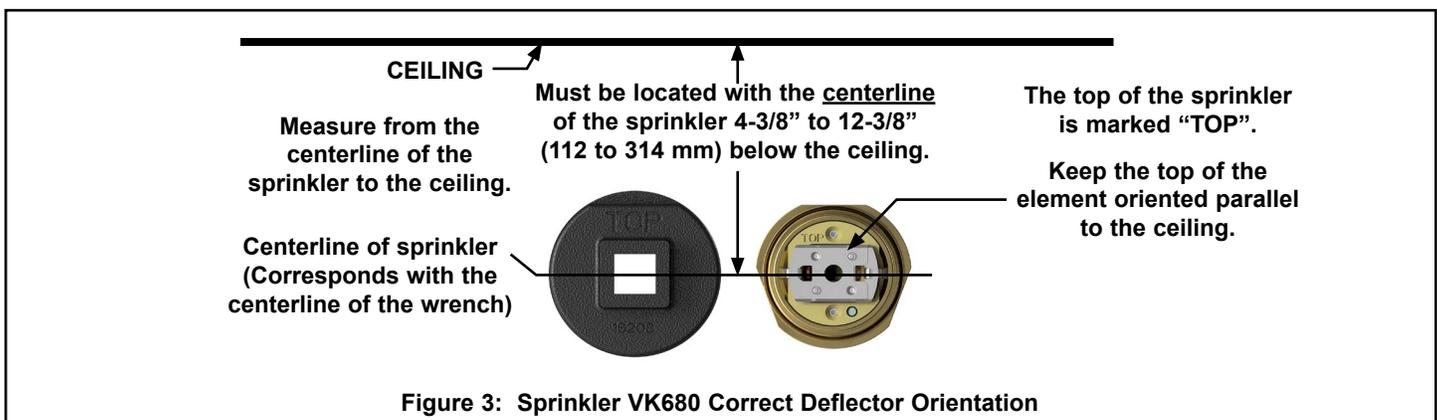
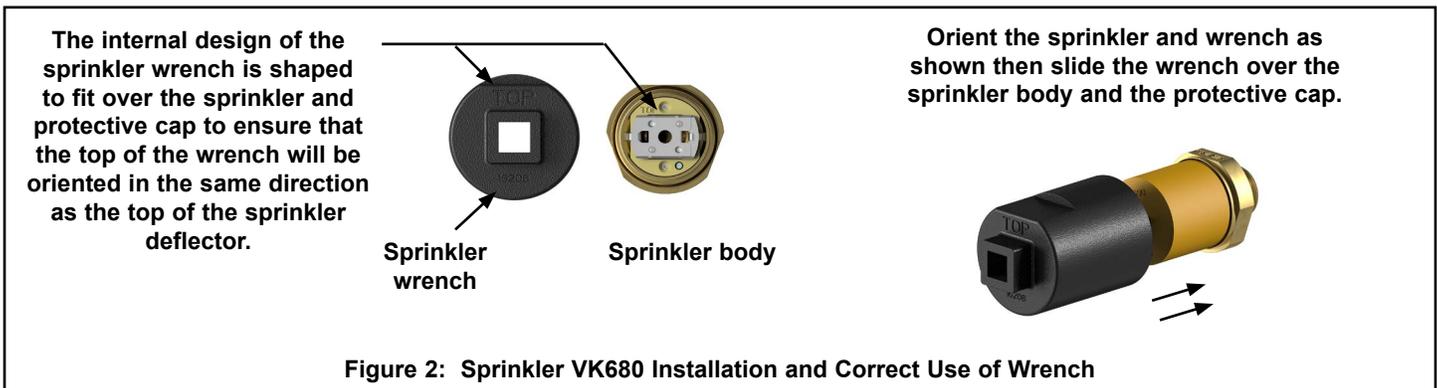
TABLE 2: COVER PLATE ORDERING INFORMATION

Instructions: Using the cover plate base part number,
 (1) add the suffix for the desired Finish
 (2) add the suffix for the required Cover Plate Nominal Rating.

| Cover Plate Base Part Number ⁴ | Size Inch (mm) | Style | 1: Finishes | | Temperature Rating Matrix ^{1,2} | | | |
|---|----------------|-------|-----------------|---------------------|--|--------------------------|---|--------|
| | | | Description | Suffix ⁵ | Cover Plate Nominal Rating (Required) | Sprinkler Nominal Rating | Sprinkler Max. Ambient Ceiling Temperature ^{2,3} | Suffix |
| 16207 | 3-5/16 (84) | Round | Polished Chrome | F | 139 °F (59 °C) | 165 °F (74 °C) | 100 °F (38 °C) | A |
| | | | Painted White | M-W | Example: 16207MA/W = 139 °F (59 °C) Temperature Rated 3-5/16" (84 mm) Diameter Round Cover Plate with a Painted White finish. | | | |
| | | | Painted Ivory | M-I | | | | |
| | | | Painted Black | M-B | | | | |

Footnotes

1. The sprinkler temperature rating is stamped on the deflector.
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. Maximum ambient temperature for cover assembly is 100 °F (38 °C).
4. Part number shown is the base part number. For complete part number, refer to current our price list schedule.
5. Where a dash (-) is shown in the Finish suffix designation, insert the desired Temperature Rating suffix. See example above.





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| Sprinkler Base Part Number ¹ | NPT Thread Size | | Nominal K-Factor | | Maximum Water Working Pressure | Overall Length (Sprinkler Body) | |
|---|-----------------|-------|------------------|---------------------|--------------------------------|---------------------------------|----|
| | Inches | mm | U.S. | metric ² | psi (bar) | Inches | mm |
| 17114AC | 3/4 | -- | 8.0 | 115.2 | 175 (12) | 2 | 51 |
| 17114JNC ⁸ | 3/4 | -- | 8.0 | 115.2 | 175 (12) | 2 | 51 |
| 21358AC | -- | 20 mm | 8.0 | 115.2 | 175 (12) | 2 | 51 |

Approval Chart

QREC Concealed HSW Sprinkler VK680

For Light Hazard Occupancies Only.

For installation below smooth, flat, horizontal ceilings only.

| | |
|-----|--------------------------------|
| — | Sprinkler Temperature Rating |
| — | Cover Plate Temperature Rating |
| AW1 | Cover Plate Finish KEY |

| Maximum Areas of Coverage ⁴ (Width x Throw) | Minimum Water Supply Requirements ⁴ | Sprinkler Distance Below the Ceiling | Listings and Approvals ^{3,9} (Refer also to Design Criteria on page 5.) | | |
|---|---|---|---|-----------------|-----|
| | | | cULus ⁵ | NYC | |
| 14' x 22' (4.3 m x 6.7 m) | 31 gpm @ 15.0 psi (117.3 L/min @ 1.04 Bar) | Must be installed with the <u>centerline</u> of the sprinkler 4-3/8" to 12-3/8" (112 to 314 mm) below the ceiling. | AX1 | See Footnote 6. | |
| 16' x 16' (4.9 m x 4.9 m) | 26 gpm @ 10.6 psi (98.4 L/min @ 0.73 Bar) | | AX1 | | |
| 16' x 18' (4.9 m x 5.5 m) | 29 gpm @ 13.1 psi (109.8 L/min @ 0.91 Bar) | | AX1 | | |
| 16' x 20' (4.9 m x 6.1 m) | 32 gpm @ 16.0 psi (121.1 L/min @ 1.1 Bar) | | AX1 | | |
| 16' x 22' (4.9 m x 6.7 m) | 36 gpm @ 20.3 psi (136.3 L/min @ 1.4 Bar) | | AX1 | | |
| 18' x 18' (5.5 m x 5.5 m) | 33 gpm @ 17.0 psi (124.9 L/min @ 1.2 Bar) | | AX1 | | |
| 18' x 20' (5.5 m x 6.1 m) | 36 gpm @ 20.3 psi (136.3 L/min @ 1.4 Bar) | | AX1 | | |
| 18' x 22' (5.5 m x 6.7 m) | 40 gpm @ 25 psi (151.4 L/min @ 1.72 Bar) | | AX1 | | |
| 14' x 24' (4.3 m x 7.3 m) | 34 gpm @ 18.1 psi (128.7 L/min @ 1.25 Bar) | | 4-3/8" (112 mm) | | AX1 |
| 16' x 24' (4.9 m x 7.3 m) | 39 gpm @ 23.8 psi (147.6 L/min @ 1.64 Bar) | | to 6-3/8" (162 mm) | | AX1 |
| 14' x 24' (4.3 m x 7.3 m) | 35 gpm @ 19.2 psi (132.5 L/min @ 1.32 Bar) | 6-3/8" (162 mm) | AX1 | | |
| 16' x 24' (4.9 m x 7.3 m) | 40 gpm @ 25 psi (151.4 L/min @ 1.72 Bar) | to 12-3/8" (314 mm) | AX1 | | |
| Sprinkler Temperature Rating A - 165 °F (74 °C) | Cover Assembly Temperature Rating X - 139 °F (59 °C) cover 16207 ¹ | Cover Plate Finishes 1 - Polished Chrome, Painted White ⁷ , Painted Ivory ⁷ , or Painted Black ⁷ | | | |

Footnotes

- Part number shown is the base part number. For complete part number, refer to current Viking price list schedule.
- 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.
- 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.
- For areas of coverage smaller than shown, use the "Minimum Water Supply Requirement" for the next larger area listed. Flows and pressures listed are per sprinkler.
- Listed by Underwriter's Laboratories, Inc. for use in the U.S. and Canada. cULus Listings are limited to Light Hazard occupancies with smooth, flat, horizontal ceilings only. ways install horizontal sidewall sprinkler VK680 with the top of the sprinkler element oriented parallel with the ceiling. Refer to Figure 3 on page 3.
- Meets New York City requirements, effective July 1, 2008.
- 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.
- cULus Listed as corrosion resistant.

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



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DESIGN CRITERIA

(Also refer to the Approval Chart on page 4.)

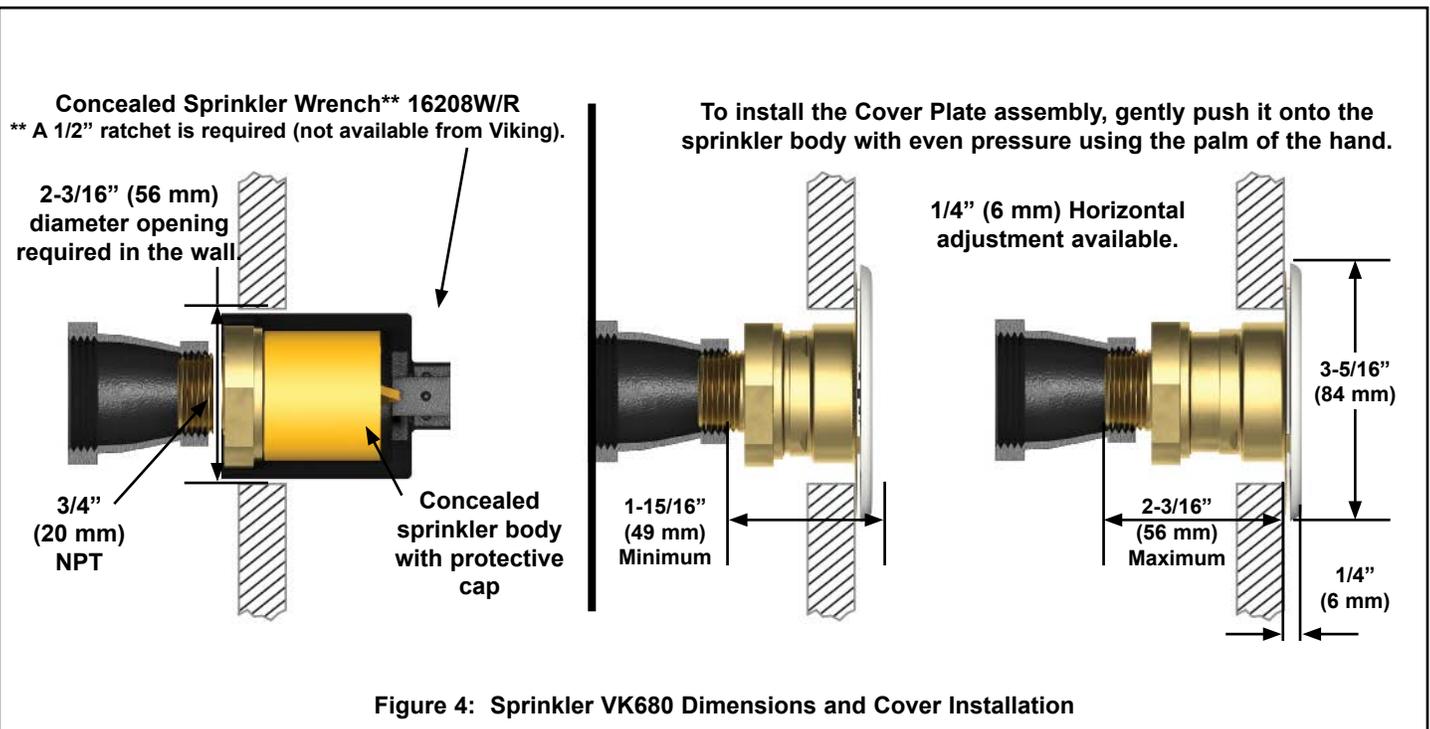
cULus Listing Requirements:

QREC Concealed HSW Sprinkler VK680 is cULus Listed for installation in accordance with the latest edition of NFPA 13 for extended coverage sidewall spray sprinklers:

- Limited to Light Hazard occupancies with smooth, flat, horizontal ceilings only.
- Minimum distance between sprinklers: 9 ft. (2.7 m)
- **THE TOP OF THE SPRINKLER BODY AND THE TOP OF THE INSTALLATION WRENCH ARE MARKED "TOP"**. Orient the top of the sprinkler element parallel with the ceiling as shown in Figure 3.
- Minimum distance from end walls is 4 in. (102 mm).
- Maximum distance from the end wall shall be no more than one-half of the allowable distance between sprinklers. The distance shall be measured perpendicular to the wall.
- The sprinkler installation and obstruction rules contained in NFPA 13 for extended coverage sidewall spray sprinklers must be followed.

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

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.





BULLETIN

CARE AND HANDLING
OF SPRINKLERS

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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)

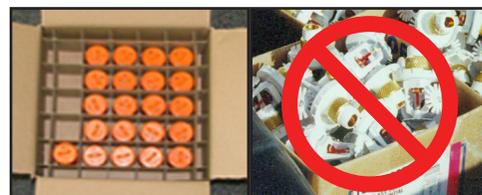
3/4" NPT: 20 ft-lbs. (27.1 N-m)

1" NPT: 30 ft-lbs. (40.7 N-m)



CORRECT
(Original container used)

INCORRECT
(Placed loose in box)



CORRECT
(Protected with caps)

INCORRECT
(Protective caps not used)



CORRECT
(Piping is in place at the ceiling)

INCORRECT
(Sprinkler at floor level)



CORRECT
(Special installation wrenches)

INCORRECT
(Designated wrench not used)



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

! 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.



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CARE AND HANDLING
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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!



Figure 1: Sprinkler shield being removed from a pendent sprinkler.



Figure 2: Sprinkler cap being removed from a pendent sprinkler.



Figure 3: Sprinkler cap being removed from an upright sprinkler.

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.

NOTICE

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

WARNING

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.



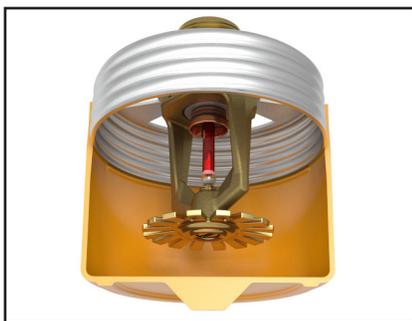
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CONCEALED COVER ASSEMBLIES ARE FRAGILE!
TO ASSURE SATISFACTORY PERFORMANCE OF THE PRODUCT, HANDLE WITH CARE.



Concealed Sprinkler and Adapter
 Assembly with Protective Cap

Concealed Sprinkler and Adapter
 Assembly (Protective Cap Removed)



Cover Plate Assembly
 (Pendent Cover 12381 shown)



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.



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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.

TABLE 1

| Sprinkler Temperature Rating (Fusing Point) | Wax Part Number | Wax Melting Point | Maximum Ambient Ceiling Temperature ¹ | Wax Color |
|--|--------------------|-------------------|---|-------------|
| 155 °F (68 °C) / 165 °F (74 °C) | 02568A | 148 °F (64 °C) | 100 °F (38 °C) | Light Brown |
| 175 °F (79 °C) | 04146A | 161 °F (71 °C) | 150 °F (65 °C) | Brown |
| 200 °F (93 °C) | 04146A | 161 °F (71 °C) | 150 °F (65 °C) | Brown |
| 220 °F (104 °C) | 02569A | 170 °F (76 °C) | 150 °F (65 °C) | Dark Brown |
| 286 °F (141 °C) | 02569A | 170 °F (76 °C) | 150 °F (65 °C) | Dark Brown |

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.



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

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TECHNICAL DATA

SPRINKLER OVERVIEW

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1. DESCRIPTION

Viking fire sprinklers consist of a threaded frame with a specific waterway or orifice size and a deflector for distributing water in a specified pattern. A closed or sealed sprinkler refers to a complete assembly, including the thermosensitive operating element. An open sprinkler does not use an operating element and is open at all times. The distribution of water is intended to extinguish a fire or to control its spread.

Viking sprinklers are available in several models and styles. Refer to specific sprinkler technical data pages for available styles, finishes, temperature ratings, thread sizes, and nominal K-Factors for the particular model selected.

2. LISTINGS AND APPROVALS

Refer to the Approval Charts on the appropriate sprinkler technical data page(s) and/or approval agency listings.



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

3. TECHNICAL DATA

Pressure Ratings:

Maximum allowable water working pressure is 175 psig (12 Bar) unless rated and specified for high water working pressure [250 psig (17.2 bar)].

Sprinkler Identification:

Viking sprinklers are identified and marked with the word "Viking", the sprinkler identification number (SIN) consisting of "VK" plus a three digit number*, the model letter, and the year of manufacture.

Available Finishes:

Viking sprinklers are available in several decorative finishes. Some models are available with corrosion-resistant coatings or are fabricated from non-corrosive material. Refer to the sprinkler technical data page for additional information.

Available Temperature Ratings:

Viking sprinklers are available in several temperature ratings that relate to a specific temperature classification. Applicable installation rules mandate the use and limitations of each temperature classification. In selecting the appropriate temperature classification, the maximum expected ceiling temperature must be known. When there is doubt as to the maximum temperature at the sprinkler location, a maximum-reading thermometer should be used to determine the temperature under conditions that would show the highest readings to be expected. In addition, recognized installation rules may require a higher temperature classification, depending upon sprinkler location, occupancy classification, commodity classification, storage height, and other hazards. In all cases, the maximum expected ceiling temperature dictates the lowest allowable temperature classification. Sprinklers located immediately adjacent to a heat source may require a higher temperature rating.

K-Factors:

Viking sprinklers are available in several orifice sizes with related K-Factors. The orifice is a tapered waterway and, therefore, the K-Factor given is nominal. Nominal U.S. K-Factors are provided in accordance with the 1999 edition of NFPA 13, Section 3-2.3. Refer to the specific data page for appropriate K-Factor information.

Available Styles:

Viking sprinklers are available for installation in several positions as indicated by a stamping on the deflector. The deflector style dictates the appropriate installation position of the sprinkler; it breaks the solid stream of water issuing from the sprinkler orifice to form a specific spray pattern. The following list indicates the various styles and identification of Viking sprinklers.

UPRIGHT SPRINKLER: A sprinkler intended to be installed with the deflector above the frame so water flows upward through the orifice, striking the deflector and forming an umbrella-shaped spray pattern downward. Marked "SSU" (Standard Sprinkler Upright) or "UPRIGHT" on the deflector.

PENDENT SPRINKLER: A sprinkler intended to be oriented with the deflector below the frame so water flows downward through the orifice, striking the deflector and forming an umbrella-shaped spray pattern downward. Marked "SSP" (Standard Sprinkler Pendent) or "PENDENT" on the deflector.

CONVENTIONAL SPRINKLER: An "old style" sprinkler intended to be installed with the deflector in either the upright or pendent position. The deflector provides a spherical type pattern with 40 to 60 percent of the water initially directed downward and a proportion directed upward. Must be installed in accordance with installation rules for conventional or old style sprinklers. **DO NOT USE AS A REPLACEMENT FOR STANDARD SPRAY SPRINKLERS.** Marked "C U/P" (Conventional Upright/Pendent) on the deflector.

Viking Technical Data may be found on
The Viking Corporation's Web site at
<http://www.vikinggroupinc.com>.
The Web site may include a more recent
edition of this Technical Data Page.



TECHNICAL DATA

SPRINKLER OVERVIEW

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

VERTICAL SIDEWALL (VSW) SPRINKLER: A sprinkler intended for installation near the wall and ceiling. The deflector provides a water spray pattern outward in a quarter-spherical pattern and can be installed in the upright or pendent position with the flow arrow in the direction of discharge. Marked "SIDEWALL" on the deflector with an arrow and the word "FLOW". (Note: Some vertical sidewall sprinklers can only be installed in the upright or pendent position—in this case, the sprinkler will also be marked "UPRIGHT" or "PENDENT".)

HORIZONTAL SIDEWALL (HSW) SPRINKLER: A sprinkler intended for installation near the wall and ceiling. The special deflector provides a water spray pattern outward in a quarter-spherical pattern. Most of the water is directed away from the nearby wall with a small portion directed at the wall behind the sprinkler. The top of the deflector is oriented parallel with the ceiling or roof. The flow arrows point in the direction of discharge. Marked "SIDEWALL" and "TOP" with an arrow and the word "FLOW".

EXTENDED COVERAGE (EC) SPRINKLER: A spray sprinkler designed to discharge water over an area having the maximum dimensions indicated in the individual listings. Maximum area of coverage, minimum flow rate, orifice size, and nominal K-Factor are specified in the individual listings. EC sprinklers are intended for Light-Hazard occupancies with smooth, flat, horizontal ceilings unless otherwise specified. In addition to the above markings, the sprinkler is marked "EC".

QUICK RESPONSE (QR) SPRINKLER: A spray sprinkler with a fast-actuating operating element. The use of quick response sprinklers may be limited due to occupancy and hazard. Refer to the Authority Having Jurisdiction (AHJ) prior to installing.

QUICK RESPONSE EXTENDED COVERAGE (QREC) SPRINKLER: A spray sprinkler designed to discharge water over an area having the maximum dimensions indicated in the individual listing. This is a sprinkler with an operating element that meets the criteria for quick response. QREC sprinklers are only intended for Light Hazard occupancies. The sprinkler is marked "QREC".

FLUSH SPRINKLER: A decorative spray sprinkler intended for installation with a concealed piping system. The unit is mounted flush with the ceiling or wall, with the fusible link exposed. Upon actuation, the deflector extends beyond the ceiling or wall to distribute water discharge. The sprinkler is marked "SSP", "PEND", or "SIDEWALL" and "TOP".

CONCEALED SPRINKLER: A decorative spray sprinkler intended for installation with a concealed piping system. The sprinkler is hidden from view by a cover plate installed flush with the ceiling or wall. During fire conditions, the cover plate detaches, and upon sprinkler actuation, the deflector extends beyond the ceiling or wall to distribute water discharge. The sprinkler is marked "SSP", "PEND", or "SIDEWALL" and "TOP".

RECESSED SPRINKLER: A spray sprinkler assembly intended for installation with a concealed piping system. The assembly consists of a sprinkler installed in a decorative adjustable recessed escutcheon that minimizes the protrusion of the sprinkler beyond the ceiling or wall without adversely affecting the sprinkler distribution or sensitivity. Refer to the appropriate technical data page for allowable sprinkler models, temperature ratings, and occupancy classifications. DO NOT RECESS ANY SPRINKLER NOT LISTED FOR USE WITH THE ESCUTCHEON.

CORROSION-RESISTANT SPRINKLER: A special service sprinkler with non-corrosive protective coatings, or that is fabricated from non-corrosive material, for use in atmospheres that would normally corrode sprinklers.

DRY SPRINKLER: A special-service sprinkler intended for installation on dry pipe systems or wet pipe systems where the sprinkler is subject to freezing temperatures. The unit consists of a sprinkler permanently secured to an extension nipple with a sealed inlet end to prevent water from entering the nipple until the sprinkler operates. The unit MUST be installed in a tee fitting. Dry upright sprinklers are marked with the "B" dimension [distance from the face of the fitting (tee) to the top of the deflector]. Dry pendent and sidewall sprinklers are marked with the "A" dimension [the distance from the face of fitting (tee) to the finished surface of the ceiling or wall].

LARGE DROP SPRINKLER: A type of special application sprinkler used to provide fire control of specific high-challenge fire hazards. Large drop sprinklers are designed to produce an umbrella-shaped spray pattern downward with a higher percentage of "large" water droplets than standard spray sprinklers. The sprinkler has an extra-large orifice with a nominal K-Factor of 11.2. Marked "HIGH CHALLENGE" and "UPRIGHT".

EARLY SUPPRESSION FAST-RESPONSE (ESFR) SPRINKLER: A sprinkler intended to provide fire suppression of specific high-challenge fire hazards through the use of a fast response fusible link, 14.0, 16.8, or 25.2 nominal K-Factor, and special deflector. ESFR sprinklers are designed to produce high-momentum water droplets in a hemispherical pattern below the deflector. This permits penetration of the fire plume and direct wetting of the burning fuel surface while cooling the atmosphere early in the development of a high-challenge fire. Marked "ESFR" and "UPRIGHT" or "PEND".

INTERMEDIATE LEVEL/RACK STORAGE SPRINKLER: A standard spray sprinkler assembly designed to protect its operating element from the spray of sprinklers installed at higher elevations. The assembly consists of a standard or large orifice upright or pendent sprinkler with an integral upright or pendent water shield and guard assembly. Use only those sprinklers that have been tested and listed for use with the assembly. Refer to the technical data page for allowable sprinkler models.

RESIDENTIAL SPRINKLER: A sprinkler intended for use in the following occupancies: one- and two-family dwellings with the fire protection sprinkler system installed in accordance with NFPA 13D; residential occupancies up to four stories in height with the fire protection system installed in accordance with NFPA 13R; and where allowed by the Authority Having Jurisdiction in residential portions of any occupancy with the fire protection system installed in accordance with NFPA 13.



TECHNICAL DATA

SPRINKLER OVERVIEW

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Residential sprinklers have a unique distribution pattern and utilize a “fast response” heat sensitive operating element. They enhance survivability in the room of fire origin and are designed to provide a life safety environment for a minimum of ten minutes. For this reason, residential sprinklers must not be used to replace standard sprinklers unless tested for and approved by the Authority Having Jurisdiction. In addition to standard markings, the unit is identified as “RESIDENTIAL SPRINKLER” or “RES”.

4. INSTALLATION

Refer to appropriate NFPA Installation Standards.

5. OPERATION

Refer to the appropriate sprinkler technical data page(s).

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 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.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers and the appropriate sprinkler general care, installation, and maintenance guide. Vikings 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. The sprinkler technical data page may contain installation requirements specific for the sprinkler model selected. The use of certain types of sprinklers may be limited due to occupancy and hazard. Refer to the Authority Having Jurisdiction prior to installation.

**BULLETIN****REGULATORY AND HEALTH
WARNINGS**

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

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

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

2. WARRANTY TERMS AND CONDITIONS

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