

SPRINKLER HEAD

| | | |
|--------------|---|----------------------------------|
| BRAND | : | VIKING |
| MANUFACTURER | : | VIKING CORPORATION |
| COUNTRY | : | USA. |
| MODEL | : | VK4621 |
| TYPE | : | PENDENT CONCEALED |
| RESPONSE | : | QUICK & STANDARD |
| ACCESSORIES | : | SUPPORT CUP, COVER PLATE |
| APPROVED | : | UL/FM |
| K-FACTOR | : | 5.6 GPM/PSI^{1/2} |
| CONNECTION | : | SCREWED ENDS |
| TEMP. | : | 155°F (PLATE : 139°F) |
| | : | 175°F (PLATE : 165°F) |
| | : | 200°F (PLATE : 165°F) |
| PRESSURE | : | 175 PSI. WKP. (FM APPROVED) |

MATERIAL LIST

| | | |
|---------------------------------------|---|--------------------------|
| FRAME | : | BRASS |
| FINISHED | : | CHROME OR BRASS PLATE |
| BULB | : | GLASS 5 MM. OR 3 MM. |
| BELLEVILLE SPRING SEALING ASSEMBLY | : | NICKEL ALLOY W/PTFE TAPE |
| DEFLECTOR | : | PHOSPHOR BRONZE |
| COVER PLATE | : | COPPER |



TECHNICAL DATA

STANDARD AND QUICK RESPONSE CONCEALED PENDENT SPRINKLER VK4621 (K5.6)

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 Standard and Quick Response Concealed Pendent Sprinkler VK4621 is a thermosensitive glass-bulb spray sprinkler designed for installation on concealed pipe systems where the appearance of a smooth ceiling is desired.

The sprinkler consists of a permanently mounted and threaded adapter cup designed to be installed with a low-profile cover assembly that provides up to 1/2" (13 mm) of vertical adjustment. The two-piece design allows installation and testing of the sprinkler prior to installation of the cover plate. The threaded design of the concealed cover plate assembly allows easy installation of the cover plate after the system has been tested and the ceiling finish has been applied. The cover assembly can be removed and reinstalled, allowing temporary removal of ceiling panels without taking the sprinkler system out of service or removing the sprinkler. During installation of the sprinkler and system testing, the newly designed protective cap guards the sprinkler frame from damage.

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 VNIIV



FM Approved: Class 2015

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

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

3. TECHNICAL DATA

Specifications:

Minimum Operating Pressure: 7 psi (0.5 bar)

Maximum Working Pressure: FM - 175 psi (12 bar). UL - 250 psi (17.2 bar)

Factory tested hydrostatically to 500 psi (34.5 bar).

Thread size: 1/2" (15 mm) NPT or 15 mm BSPT

Nominal K-Factor: 5.6 U.S. (80.6 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 Frame: QM Brass

Deflector: Phosphor Bronze UNS-C51000

Deflector Pins: Stainless Steel UNS-S43000

Pip Cap and Insert Assembly: Copper UNS-C11000, SS UNS-S30400 and SS UNS-S31600

Compression Screw: UNS-C36000

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

Cover Adapter: Cold Rolled Steel UNS-G10080, Finish: Clear Chromate over Zinc Plating

Shipping Cap: HPDE

Cover Plate Materials:

Cover Plate Assembly: Copper UNS-C11000 and Brass UNS-C26800 or Stainless Steel UNS-S30400

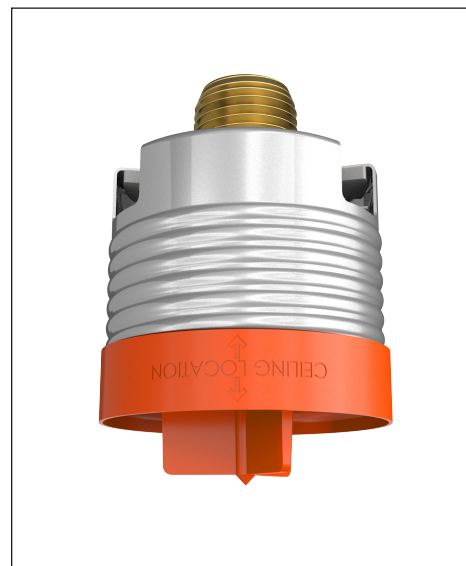
Spring: Beryllium Nickel

Solder: Eutectic

Ordering Information: Refer to Tables 1 and 2.

4. INSTALLATION

Refer to appropriate NFPA Installation Standards and installation instructions in this document.



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



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5. OPERATION

During fire conditions, when the temperature around the sprinkler approaches its operating temperature, the cover plate detaches, releasing the deflector. Continued heating of the exposed sprinkler causes the heat-sensitive liquid in the glass bulb to expand, causing the glass to shatter, releasing the pip cap and sealing spring assembly. Water flowing through the sprinkler orifice strikes the deflector, forming a uniform spray pattern over a specific area of coverage determined by the water supply pressure at the sprinkler to extinguish or control the fire.

6. INSPECTIONS, TESTS AND MAINTENANCE

Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.

7. AVAILABILITY

Viking Sprinkler Model VK4621 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

Instructions:

- (1) Select a Sprinkler Base Part Number
- (2) Add the suffix for the desired Finish
- (3) Add the suffix for the desired Sprinkler Temperature Rating
- (4) Order a cover plate (refer to Table 2)

Example:

22961AE = 200 °F (93 °C) Temperature Rated Sprinkler with a standard Brass finish.

| Sprinkler Base Part No. | Size | | 1: Finishes | | 2: Temperature Ratings | | | | |
|-------------------------------|-------------|------------|----------------------|---------------------|--|-------------------|---------------|--|--------|
| | NPT Inch | BSPT mm | Description | Suffix ¹ | Sprinkler Temperature Classification | Nominal Rating | Bulb Color | Max. Ambient Ceiling Temperature ² | Suffix |
| 22961 | 1/2 | -- | Brass | A | Ordinary | 155 °F (68 °C) | Red | 100 °F (38 °C) | B |
| 22962 | -- | 15 | ENT ^{3,4,6} | JN | Intermediate | 175 °F (79 °C) | Yellow | 150 °F (65 °C) | D |
| | | | | | Intermediate | 200 °F (93 °C) | Green | 150 °F (65 °C) | E |

Accessories

Sprinkler Wrenches⁵ and Tools (see Figure 1):

- A. Heavy Duty Wrench - part number: 22978MB
- B. Installation Wrench - part number 23143
- C. Protective cap removal tool - part number: 23142

Sprinkler Cabinet:

Part number 01731A.

Footnotes

1. Where a dash (-) is shown in the Finish suffix designation, insert the desired Temperature Rating suffix. See example above.
2. Based on NFPA 13, NFPA 13R, and NFPA 13D. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.
3. UL Listed as corrosion resistant.
4. The corrosion resistant coatings have passed the standard corrosion test required by the approving agencies indicated in the Approval Chart. These tests cannot and do not represent all possible corrosive environments. Prior to installation, verify through the end-user that the coatings are compatible with or suitable for the proposed environment. For automatic sprinklers, the ENT coating is applied to all exposed exterior surfaces, including the waterway.
5. Requires a 1/2" ratchet which is not available from us.
6. FM Approved as a decorative finish.



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TABLE 2: COVER PLATE ORDERING INFORMATION

Instructions:

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

Example:

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

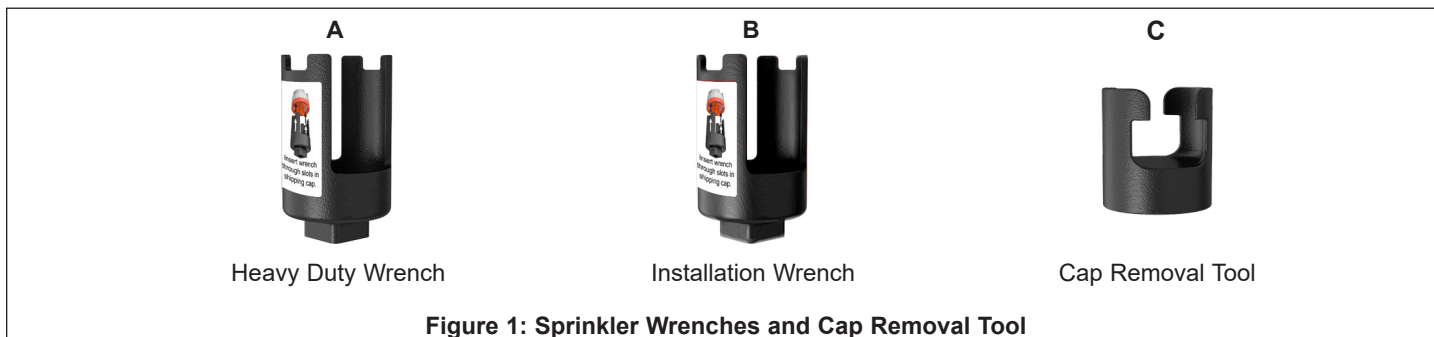
| 1: Select a Cover Plate Base Part Number ³ | | | | | | 2: Select a Finish | |
|---|----------------|-----------------------|------------------|----------------|-----------------------|--------------------|---------------------|
| Thread-On Style | | | Push-On Style | | | Description | Suffix ⁵ |
| Base Part Number | Size Inch (mm) | Type | Base Part Number | Size Inch (mm) | Type | | |
| 23190 | 2-3/4 (70) | Round | 23447 | 2-3/4 (70) | Round | Polished Chrome | F |
| 23174 | 3-5/16 (84) | Round | 23463 | 3-5/16 (84) | Round | Brushed Chrome | F-/B |
| 23179 | 3-5/16 (84) | Square | 23482 | 3-5/16 (84) | Square | Bright Brass | B |
| 23193 ⁴ | 2-3/4 (70) | Stainless Steel Round | 23455 | 2-3/4 (70) | Stainless Steel Round | Antique Brass | B-/A |
| | | | | | | Brushed Brass | B-/B |
| 23183 ⁴ | 3-5/16 (84) | Stainless Steel Round | 23473 | 3-5/16 (84) | Stainless Steel Round | Brushed Copper | E-/B |
| | | | | | | Painted White | M-/W |
| 23174-/CR | 3-5/16 (84) | Clean Room | 23463-/CR | 3-5/16 (84) | Clean Room | Painted Ivory | M-/I |
| 23183-/CR | 3-5/16 (84) | Stainless Steel Round | 23473-/CR | 3-5/16 (84) | Stainless Steel Round | Painted Black | M-/B |
| | | Clean Room | | | | | |

3: Temperature Rating Matrix^{1,2}

| Cover Plate Nominal Rating (Required) | Temperature Classification | Sprinkler Nominal Rating | Sprinkler Maximum Ambient Ceiling Temperature ² | Suffix |
|--|----------------------------|--------------------------|--|----------|
| UL: 135 °F (57 °C) FM: 139° F (59 °C) | Ordinary | 155 °F (68 °C) | 100 °F (38 °C) | A |
| 165 °F (74 °C) | Intermediate | 175 °F (79 °C) | 150 °F (65 °C) | C |
| 165 °F (74 °C) | Intermediate | 200 °F (93 °C) | 150 °F (65 °C) | C |

Footnotes

- 1. The sprinkler temperature rating is stamped on the deflector.
- 2. Based on NFPA-13. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.
- 3. Part number shown is the base part number. For complete part number, refer to current Viking price list schedule.
- 4. Stainless Steel versions are not available with any finishes or paint.
- 5. Where a dash (-) is shown in the Finish suffix designation, insert the desired Temperature Rating suffix. See example above.

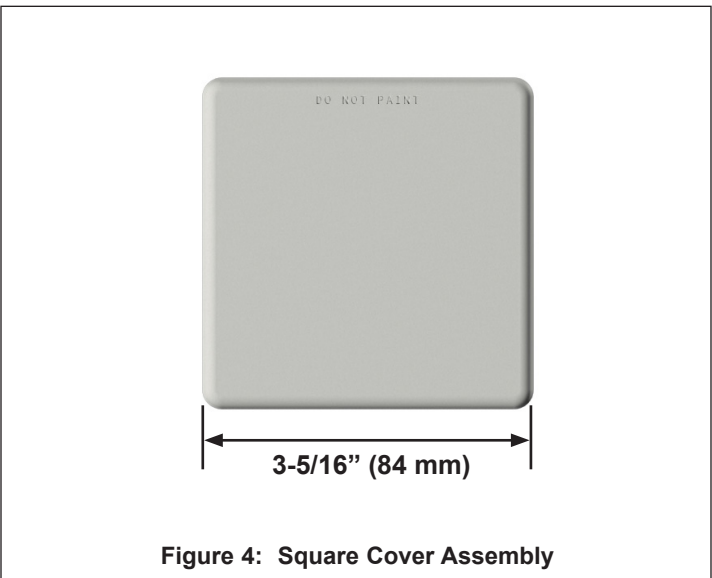
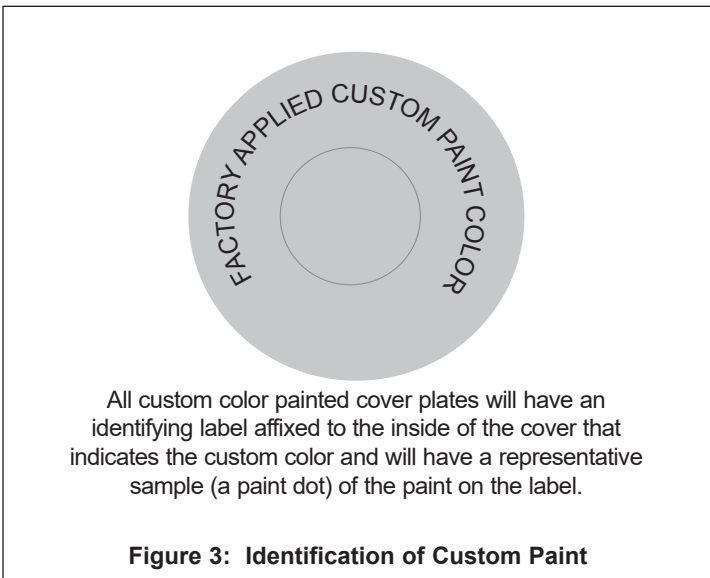
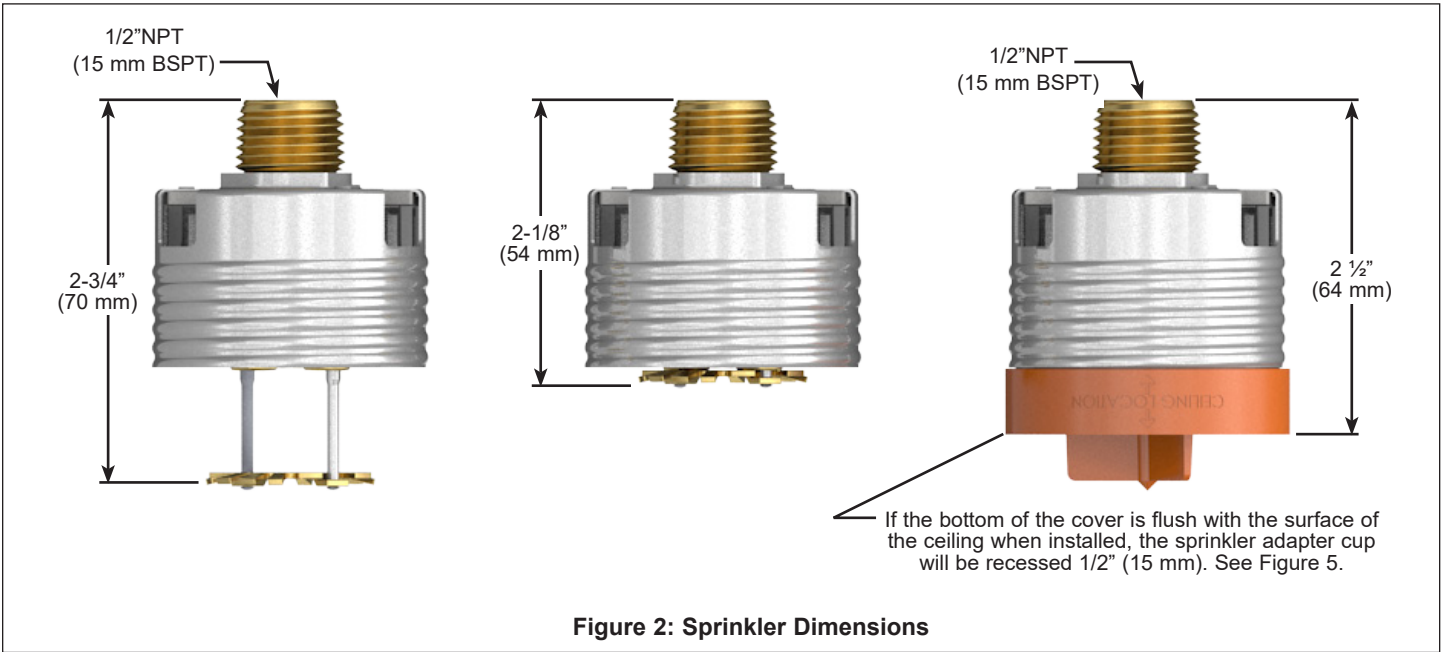




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| Approval Chart | | | | | | | | | |
|---|--------|-------------|---------|--|---------------------|--------------------------------|------------------|--|--------------------|
| Concealed Pendent Sprinkler VK4621 | | | | | | | | | |
| Sprinkler Base Part No. ¹ | SIN | Thread Size | | Nominal K-factor | | Maximum Water Working Pressure | | Listings and Approvals ³ (Refer also to Design Criteria) | |
| | | NPT Inch | BSPT mm | U.S. | metric ² | cULus | FM | cULus ⁴ | FM |
| Standard Response Applications | | | | | | | | | |
| 22961A | VK4621 | 1/2" | -- | 5.6 | 80.6 | -- | 175 psi (12 bar) | -- | AV1, BX1, AS2, BT2 |
| 22961JN ^{7,8} | VK4621 | 1/2" | -- | 5.6 | 80.6 | -- | 175 psi (12 bar) | -- | AV1, BX1, AS2, BT2 |
| 22962A | VK4621 | -- | 15 | 5.6 | 80.6 | -- | 175 psi (12 bar) | -- | AV1, BX1, AS2, BT2 |
| 22962JN ^{7,8} | VK4621 | -- | 15 | 5.6 | 80.6 | -- | 175 psi (12 bar) | -- | AV1, BX1, AS2, BT2 |
| Quick Response Applications | | | | | | | | | |
| 22961A | VK4621 | 1/2" | -- | 5.6 | 80.6 | 250 psi (17.2 bar) | -- | AV1, BX1, AS2, BT2, AY3, BZ3 | -- |
| 22961JN ^{7,8} | VK4621 | 1/2" | -- | 5.6 | 80.6 | 250 psi (17.2 bar) | -- | AV1, BX1, AS2, BT2, AY3, BZ3 | -- |
| 22962A | VK4621 | -- | 15 | 5.6 | 80.6 | 250 psi (17.2 bar) | -- | AV1, BX1, AS2, BT2, AY3, BZ3 | -- |
| 22962JN ^{7,8} | VK4621 | -- | 15 | 5.6 | 80.6 | 250 psi (17.2 bar) | -- | AV1, BX1, AS2, BT2, AY3, BZ3 | -- |
| Sprinkler Temperature Ratings | | | | Cover Plate Assembly Temperature Ratings ⁵ | | | | Cover Plate Assembly Finishes | |
| A = 155 °F (68 °C) B = 175 °F (79 °C) and 200 °F (93 °C) | | | | S - 135 °F (57 °C) cULus Listed or 139 °F (59 °C) FM Approved Stainless Steel cover 23193 and 23455, or 23183 and 23473 (large diameter) T - 165 °F (74 °C) Stainless Steel cover 23193 and 23455 or 23183 and 23473 (large diameter) V - 135 °F (57 °C) cULus Listed or 139 °F (59 °C) FM Approved cover 23190 and 23447, 23174 and 23463 (large diameter), or 23179 and 23482 (square cover plate) X - 165 °F (74 °C) cover 23190 and 23447, or 23174 and 23463 (large diameter) Y - 135 °F (57 °C) Clean Room Cover 23174A-/CR and 23463A-/CR or 135 °F (57 °C) Stainless Steel Clean Room Cover 23183A/CR and 23473A/CR Z - 165 °F (74 °C) Clean Room Cover 23174C-/CR and 23463C-/CR | | | | 1 - Polished Chrome, Brushed Chrome, Bright Brass, Antique Brass, Brushed Brass, Brushed Copper, Painted ⁶ White, Painted ⁶ Ivory, or Painted ⁶ Black 2 - Stainless Steel 3 - Polished Chrome, Painted White, Painted Ivory, or Painted Black | |
| Footnotes | | | | | | | | | |
| 1. Part number shown is the base part number. For complete part number, refer to current Viking price list schedule. 2. Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0. 3. This chart shows the listings and approvals available at the time of printing. Other approvals may be in process. Check with the manufacturer for any additional approvals. 4. Listed by Underwriter's Laboratories for use in the U.S. and Canada. 5. The 135 °F (57 °C) [139 °F (59 °C)] covers have an orange label. The 165 °F (74 °C) covers have a white label. 6. 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. 7. cULus Listed as corrosion resistant. 8. FM Approved as a decorative finish. | | | | | | | | | |
| NOTE: Custom colors are indicated on a label inside the cover assembly. Refer to Figure 3. | | | | | | | | | |



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DESIGN CRITERIA - UL

(Also refer to Approval Chart)

cULus Listing Requirements:

Concealed Pendent Sprinkler VK4621 is cULus Listed as quick response for installation in accordance with the latest edition of NFPA 13 for standard coverage pendent spray sprinklers as indicated below.

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

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

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to Form No. F_080614 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.

DESIGN CRITERIA - FM

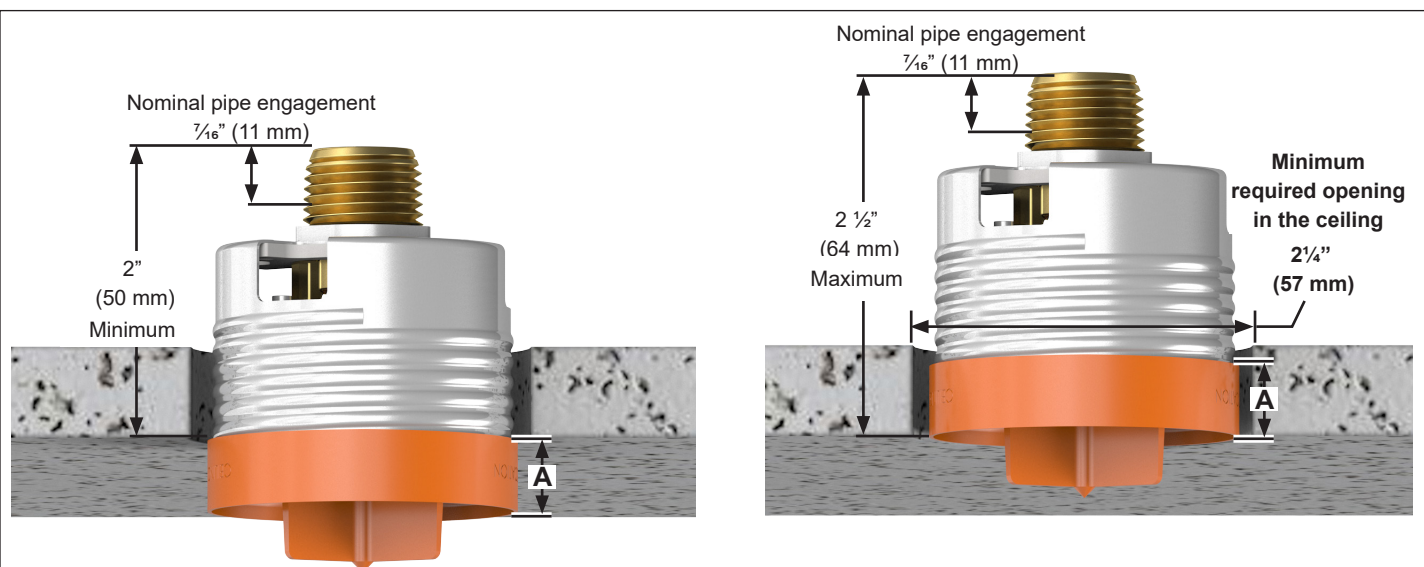
(Also refer to Approval Chart)

FM Approval Requirements:

Viking Concealed Pendent Sprinkler VK4621 is FM Approved as a standard response **Non-Storage** concealed pendent sprinkler as indicated in the FM Approval Guide. For specific application and installation requirements, reference the latest applicable FM Loss Prevention Data Sheets (including Data Sheet 2-0). FM Global Loss Prevention Data Sheets contain guidelines relating to, but not limited to: minimum water supply requirements, hydraulic design, ceiling slope and obstructions, minimum and maximum allowable spacing, and deflector distance below the ceiling.

NOTE: The FM installation guidelines may differ from cULus and/or NFPA criteria.

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Install the sprinkler so the finished surface of the ceiling lines up within the marked $\frac{1}{2}$ " (13 mm) range on the protective cap (A).

Figure 5: Sprinkler Installation Dimensions



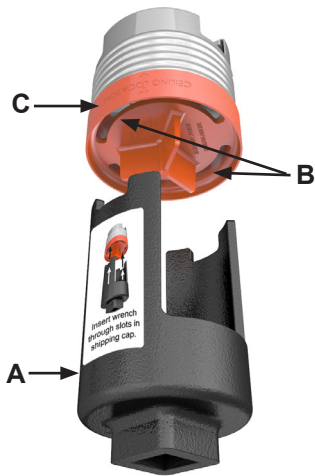
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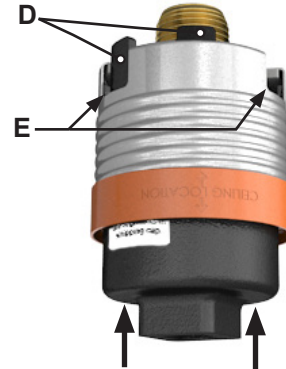


USE ONLY the designated sprinkler wrenches shown in this document. Permanent damage to the sprinkler assembly can occur if the proper wrench is not used. Other sprinkler wrenches available from Viking may fit into the sprinkler adapter cup; however, only the wrenches shown here are designed to properly install this sprinkler.



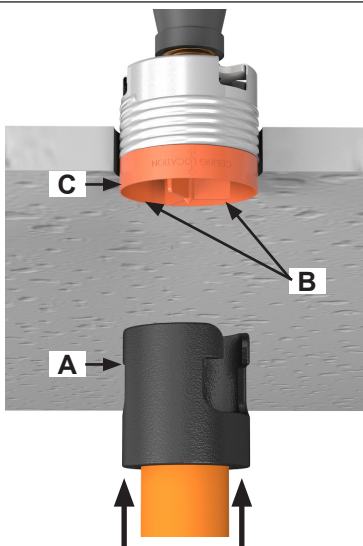
Step 1:
 Insert the wrench (A) into the slots (B) on the protective cap (C).

Scan for Installation Video

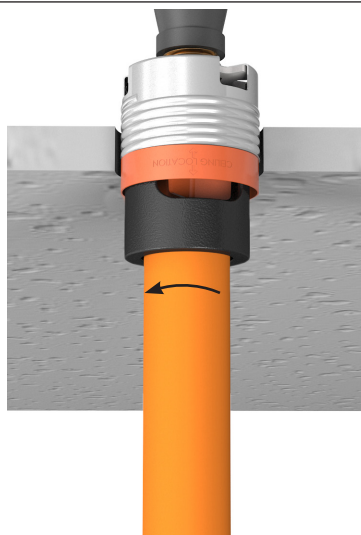


Step 2:
 Rotate the wrench slightly in either direction until the tines on the wrench (D) line up with the vent openings (E) on the adapter cup and lock into place. NOTE: A leak tight seal must be achieved. Turn the sprinkler clockwise 1 to 1-½ turns past finger-tight.

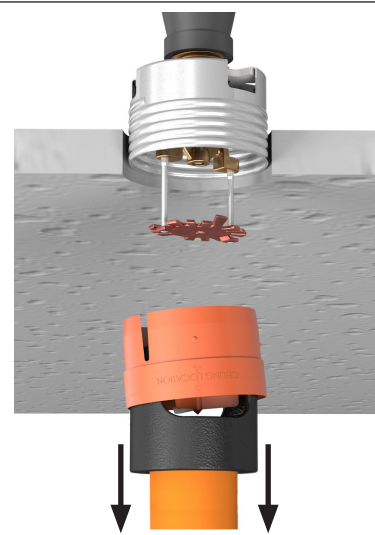
Figure 6: Using the Sprinkler Wrenches



Step 1:
 Attach a peice of plastic pipe as shown and tighten the thumb screw; then, insert the tool (A) into the slots (B) in the protective cap (C).



Step 2:
 Rotate the tool slightly to lock into place.



Step 2:
 Gently, pull downward to remove the protective cap. The deflector will slide downwards on the pins.

Figure 7: Using the Cap Removal Tool



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