



## TECHNICAL DATA

### QUICK RESPONSE CONCEALED PENDENT SPRINKLER VK4611 (K2.8)

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](http://www.vikinggroupinc.com)

#### 1. DESCRIPTION

Viking Quick Response Concealed Pendent Sprinkler VK4611 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 VNV

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: 175 psi (12 bar)  
 Factory tested hydrostatically to 500 psi (34.5 bar).  
 Thread size: 1/2" (15 mm) NPT or 15 mm BSPT  
 Nominal K-Factor: 2.8 U.S. (40.3 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

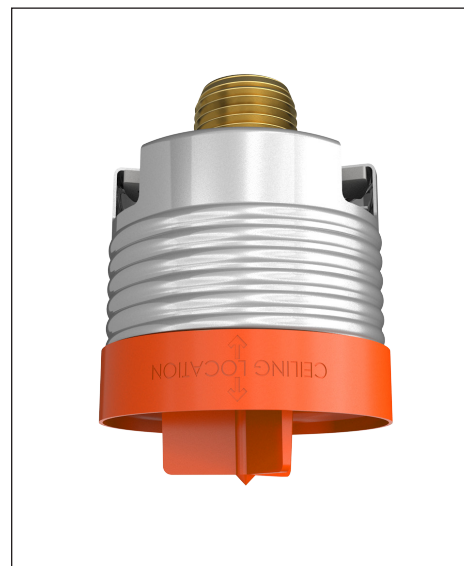
##### Cover Plate Materials:

Cover Plate Assembly: Copper UNS-C11000 and Brass UNS-C26800 or or Stainless Steel UNS-S30400  
 Spring: Beryllium Nickel  
 Solder: Eutectic

**Ordering Information:** Sprinkler Assembly and Cover Plate must be ordered separately. Refer to Tables 1 and 2.

#### 4. INSTALLATION

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



**For Light Hazard Occupancies Only**



**WARNING:** Cancer and Reproductive Harm-  
[www.P65Warnings.ca.gov](http://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 VK4611 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:

23438AE = 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 <sup>1</sup>	Sprinkler Temperature Classification	Nominal Rating	Bulb Color	Max. Ambient Ceiling Temperature <sup>2</sup>	Suffix
23438	1/2	--	Brass	A	Ordinary	155 °F (68 °C)	Red	100 °F (38 °C)	B
23440	--	15	ENT <sup>3,4</sup>	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 Wrenches<sup>5</sup> 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.



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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.

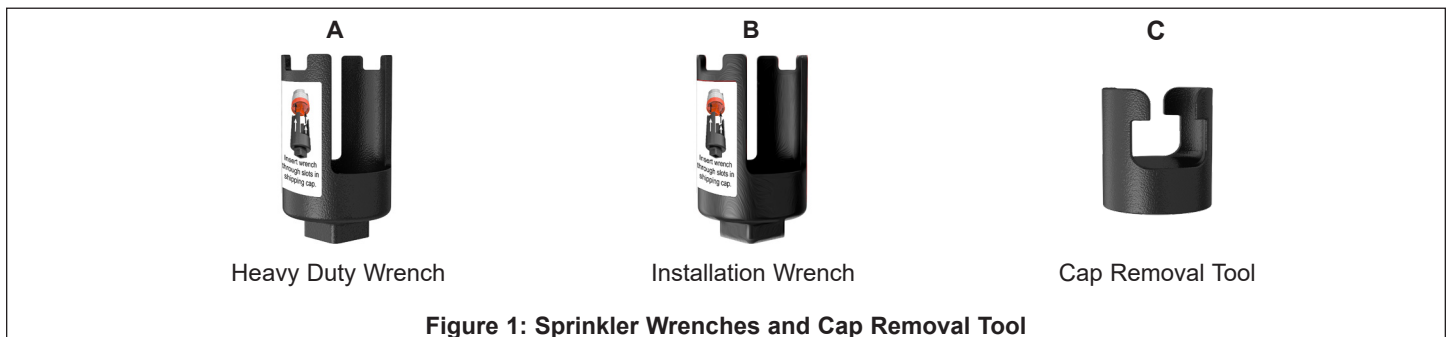
1: Select a Cover Plate Base Part Number <sup>3</sup>						2: Select a Finish	
Thread-On Style			Push-On Style			Description	Suffix <sup>5</sup>
Base Part Number	Size Inch (mm)	Type	Base Part Number	Size Inch (mm)	Type		
23190	2-3/4 (70)	Round	23447	2-3/4 (70)	Round	Polished Chrome	F
23174	3-5/16 (84)	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
						Antique Brass	B-/A
						Brushed Brass	B-/B
						Brushed Copper	E-/B
						Painted White	M-/W
						Painted Ivory	M-/I
						Painted Black	M-/B

**3: Temperature Rating Matrix<sup>1,2</sup>**

Cover Plate Nominal Rating (Required)	Temperature Classification	Sprinkler Nominal Rating	Sprinkler Maximum Ambient Ceiling Temperature <sup>2</sup>	Suffix
135 °F (57 °C)	Ordinary	155 °F (68 °C)	100 °F (38 °C)	<b>A</b>
165 °F (74 °C)	Intermediate	175 °F (79 °C)	150 °F (65 °C)	<b>C</b>
165 °F (74 °C)	Intermediate	200 °F (93 °C)	150 °F (65 °C)	<b>C</b>

**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.

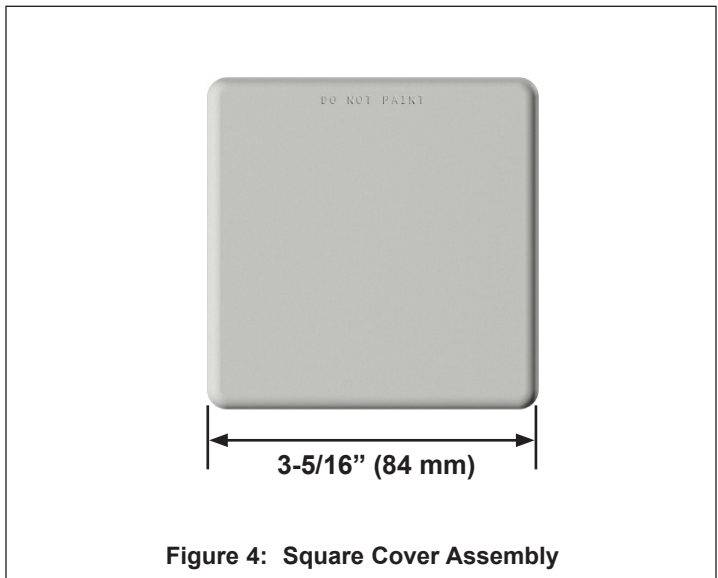
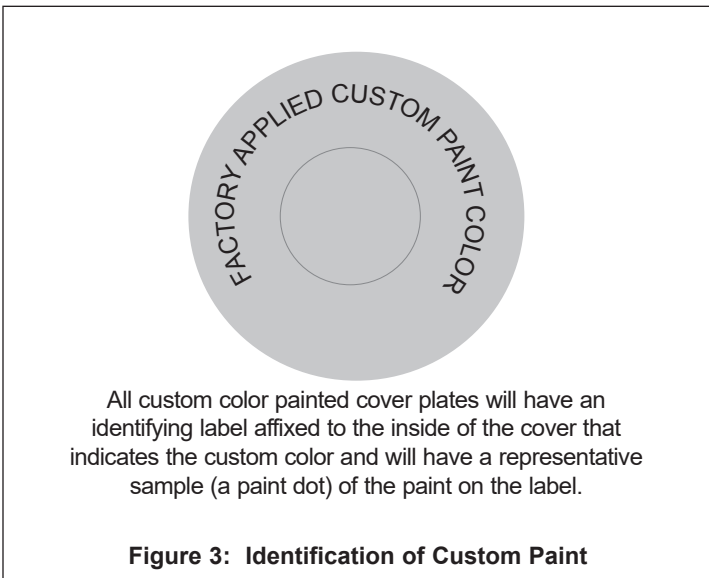
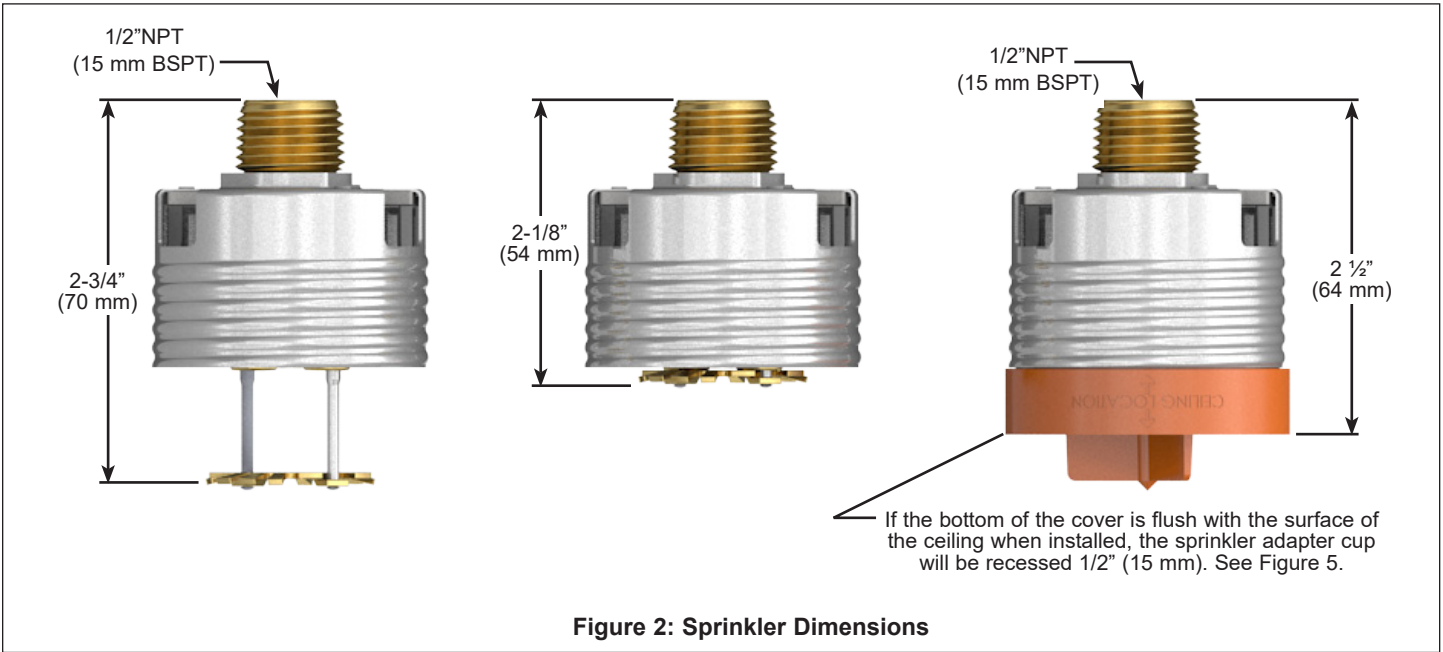




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<div style="text-align: center;"> <b>Approval Chart</b>                      Quick Response Concealed Pendent Sprinkler VK4611                 </div> <div style="float: right; border: 1px solid black; padding: 2px; font-size: 8px;">                     Sprinkler Temperature Rating                      Cover Plate Temperature Rating                      AW1 ← Cover Plate Finish    <b>KEY</b> </div>							
Sprinkler Base Part No. <sup>1</sup>	SIN	Thread Size		Nominal K-factor		Maximum Water Working Pressure	Listings and Approvals <sup>3</sup> (Refer also to Design Criteria)
		NPT Inch	BSPT mm	U.S.	metric <sup>2</sup>	cULus	cULus <sup>4</sup>
23438A	VK4611	1/2"	--	2.8	40.3	175 psi (12 bar)	AV1, BX1
23438JN <sup>7</sup>							AV1, BX1
23440A		--	15	AV1, BX1			
23440JN <sup>7</sup>				AV1, BX1			
Sprinkler Temperature Ratings		Cover Plate Assembly Temperature Ratings <sup>5</sup>				Cover Plate Assembly Finishes	
A = 155 °F (68 °C) B = 175 °F (79 °C) and 200 °F (93 °C)		V - 135 °F (57 °C) covers 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)				1 - Polished Chrome, Brushed Chrome, Bright Brass, Antique Brass, Brushed Brass, Brushed Copper, Painted <sup>6</sup> White, Painted <sup>6</sup> Ivory, or Painted <sup>6</sup> 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) 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. <b>NOTE: Custom colors are indicated on a label inside the cover assembly. Refer to Figure 3.</b>							



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**DESIGN CRITERIA - UL**  
 (Also refer to Approval Chart)

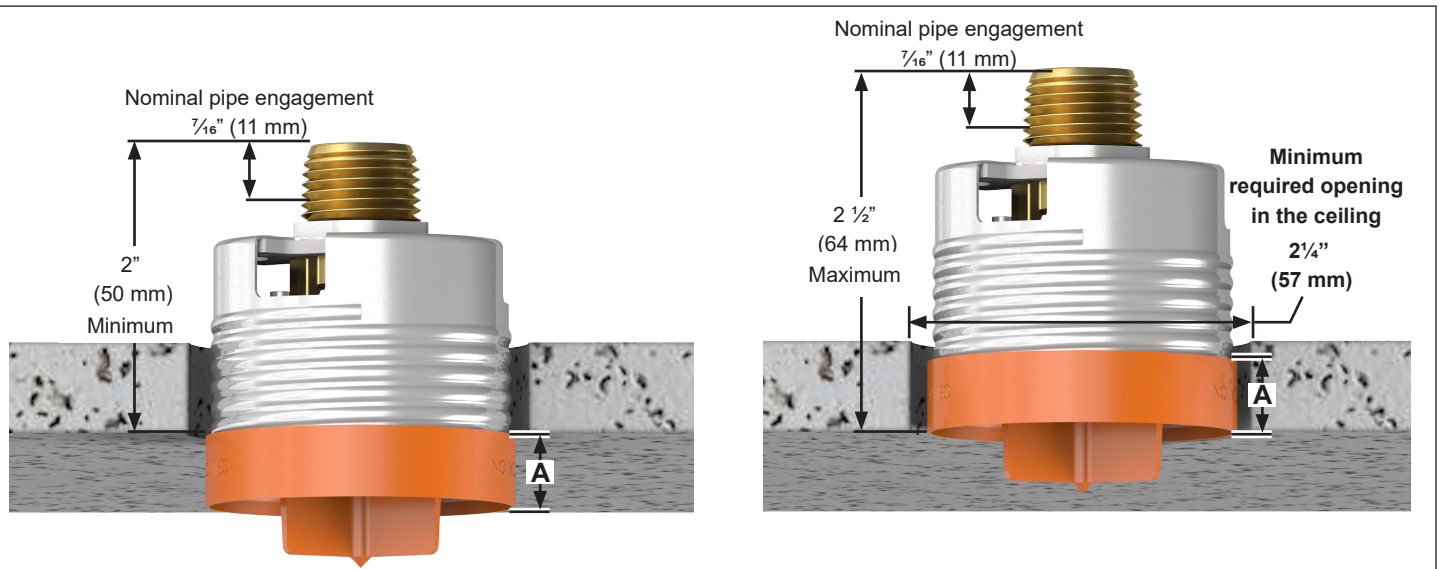
**cULus Listing Requirements:**

Concealed Pendent Sprinkler VK4611 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.

- Limited to Light Hazard Occupancies where allowed by the installation standards being applied, with hydraulically calculated wet systems only.
- 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.**



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

**Figure 5: Sprinkler Installation Dimensions**



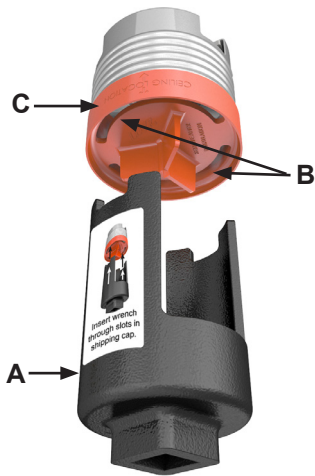
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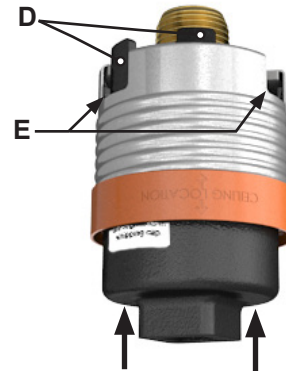


USE ONLY the designated sprinkler wrenches shown in this document. Permanent damage to the sprinkler assembly can occur if the proper wrench is not used. Other sprinkler wrenches available from Viking may fit into the sprinkler adapter cup; however, only the wrenches shown here are designed to properly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



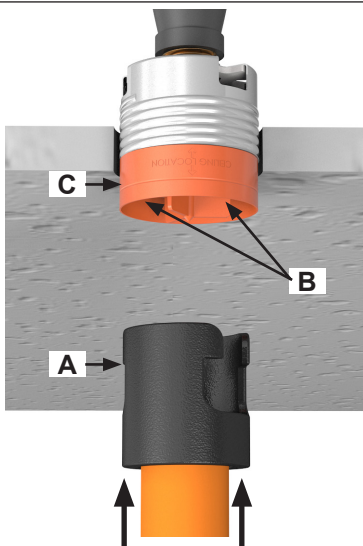
Step 1:  
 Insert the wrench (A) into the slots (B) on the protective cap (C).

Scan for  
 Installation Video

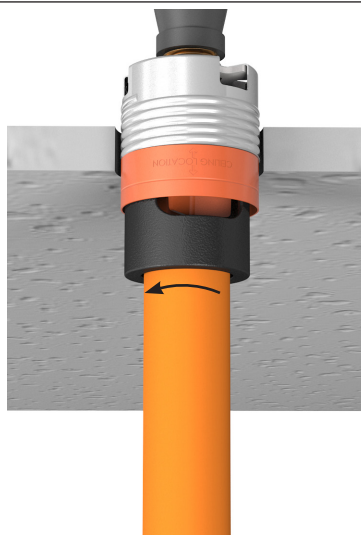


Step 2:  
 Rotate the wrench slightly in either direction until the tines on the wrench (D) line up with the vent openings (E) on the adapter cup and lock into place. NOTE: A leak tight seal must be achieved. Turn the sprinkler clockwise 1 to 1-½ turns past finger-tight.

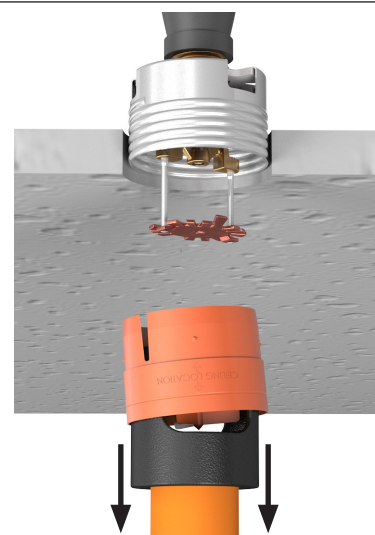
Figure 6: Using the Sprinkler Wrenches



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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