



## TECHNICAL DATA

## MICROMATIC® STANDARD RESPONSE PENDENT SPRINKLER VK102 (K5.6)

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

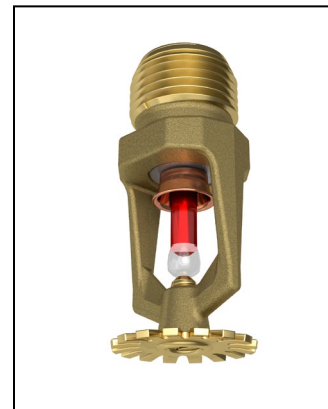
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

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### 1. DESCRIPTION

The Viking Micromatic® Standard Response Pendent VK102 Sprinkler is a small, thermosensitive, glass-bulb spray sprinkler available in several different 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/approved as indicated in the Approval Charts.

Viking standard response sprinklers may be ordered and/or used as open sprinklers (glass bulb and pip cap assembly removed) on deluge systems. Refer to Ordering Instructions.



### 2. LISTINGS AND APPROVALS

 **cULus Listed: Category VNIV**



**FM Approved: Classes 2001, 2002, 2015, 2017, 2043**



**VdS Approved: Certificate G414006 & G414004**



**LPCB Approved**



**CE Certified: Standard EN 12259-1, EC-certificate of conformity 0832-CPD-2021**



**MED Certified: Standard EN 12259-1, EC-certificate 0832-MED-1003**

**China Approval: Approved according to China GB standard.**

**NOTE: Other International approval certificates are available upon request.**

Refer to Approval Charts and Design Criteria for listing and approval requirements that must be followed.



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

### 3. TECHNICAL DATA

#### Specifications:

Minimum Operating Pressure: 7 psi (0.5 bar)\*

Maximum Working Pressure: 175 psi (12 bar) wwp

Factory tested hydrostatically to 500 psi (34.5 bar)

Thread size: 1/2" NPT, 15 mm BSPT

Nominal K-factor: 5.6 U.S. (80.6 metric\*\*)

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

Overall Length: 2-1/4" (57 mm)

\* cULus Listing, FM Approval, and NFPA 13 installs require a minimum of 7 psi (0.5 bar). The minimum operating pressure for LPCB and CE Approvals ONLY is 5 psi (0.35 bar).

\*\*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:

Frame Casting: Brass UNS-C84400 or QM Brass

Deflector: Phosphor Bronze UNS-C51000 (Not for FM Approval) or Copper UNS-C19500

Bulb: Glass, nominal 5 mm diameter

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

Screw: Brass UNS-C36000

Pip Cap and Insert Assembly: Copper UNS-C11000 and Stainless Steel UNS-S30400

For Polyester Coated Sprinklers: Belleville Spring-Exposed

For ENT coated Sprinklers: Belleville Spring - Exposed, Screw and Pipcap - ENT plated.

**Ordering Information:** Refer to Table 1

### 4. INSTALLATION

Refer to appropriate NFPA Installation Standards.

### 5. OPERATION

During fire conditions, the heat-sensitive liquid in the glass bulb expands, causing the glass to shatter, releasing the pip cap and sealing spring 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.

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**7. AVAILABILITY**

The Viking Micromatic® Standard Response Upright Sprinkler VK100 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: 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 No.	Size		1: Finishes		2: Temperature Ratings				
	NPT Inch	BSPT mm	Description	Suffix <sup>1</sup>	Nominal Rating	Bulb Color	Hazard Classification	Max. Ambient Ceiling Temperature <sup>2</sup>	Suffix
12987	1/2	--	Brass	A	135 °F (57 °C)	Orange	Ordinary	100 °F (38 °C)	A
12989	--	15	Chrome	F	155 °F (68 °C)	Red	Ordinary	100 °F (38 °C)	B
20229	--	15	White Polyester <sup>3,5</sup>	M-/W	175 °F (79 °C)	Yellow	Intermediate	150 °F (65 °C)	D
			Black Polyester <sup>3,5</sup>	M-/B	200 °F (93 °C)	Green	Intermediate	150 °F (65 °C)	E
			Wax	C	212 °F (100 °C)	Green	Intermediate	150 °F (65 °C)	M
			Wax over Polyester	V-/W	286 °F (141 °C)	Blue	High	225 °F (107 °C)	G
			ENT <sup>3,4,5</sup>	JN	360 °F (182 °C)	Mauve	Extra High	300 °F (149 °C)	H
					500 °F (260 °C)	Black	Ultra High <sup>6</sup>	465 °F (240 °C)	L

**Example:** 12987MB/W = VK102 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.

**Corrosion Resistant Coatings<sup>5</sup>**

- White Polyester and Black Polyester in all temperature ratings.
- ENT in all temperature ratings except 135 °F (57 °C).
- Wax-Coated Brass and Wax over Polyester<sup>7</sup> for sprinklers with the following temperature ratings:  
 155 °F (68 °C) Lt. Brown Wax | 175 °F (79 °C) Brown Wax | 200 °F (93 °C) Brown Wax | 286 °F (141 °C) Dk. Brown Wax<sup>7</sup>

**Accessories**

**Sprinkler Wrenches (see Figure 1):**

- A. Standard Wrench: Part No. 21475M/B
- B. Standard Wrench for Wax Coated Sprinklers: Part No. 10896W/B
- C. Socket Wrench for Recessed Pendent Sprinklers: Part No. 13655W/B (A 1/2" ratchet is required, not available from Viking)
- D. Socket Wrench for Wax Coated Sprinklers: Part No. 13577W/B (A 1/2" ratchet is required, not available from Viking)
- E. Optional Protective Sprinkler Cap Remover/Escutcheon Installer Tool<sup>9</sup>: Part No. 15915

**Sprinkler Cabinet:**

- A. Up to 6 sprinklers: Part number 01724A (available since 1971).
- B. 6-12 Sprinklers: Part number 01725A (available since 1971).

**Footnotes**

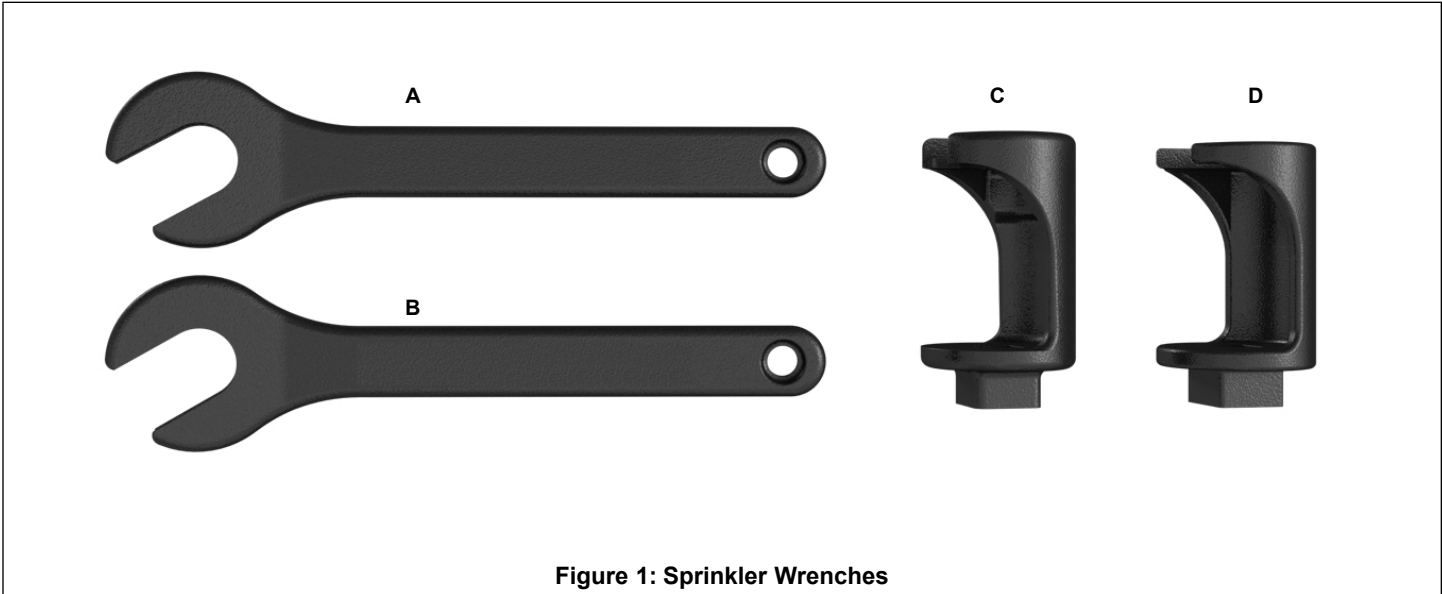
1. Where a dash (-) is shown in the Finish suffix designation, insert the desired Temperature Rating suffix. See example above.
2. Based on NFPA 13, NFPA 13R, and NFPA 13D. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.
3. UL Listed as corrosion resistant.
4. FM Approved corrosion resistant.
5. The corrosion resistant and corrosion proofing coatings have passed the standard corrosion test required by the approving agencies indicated in the Approval Chart(s). 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 coatings indicated are applied to the exposed exterior surfaces only. Note that the spring is exposed on sprinklers with Polyester and ENT coatings. For ENT coated automatic sprinklers, the waterway is coated.
6. Sprinklers of Ultra-High temperature rating are intended for use inside ovens, dryers, or similar enclosures with normal operating temperatures above 300 °F (149 °C). Where the ambient temperature around the Ultra-High temperature rated sprinkler is significantly reduced below 300 °F (149 °C), response time may be severely retarded.
7. Wax melting point is 170 °F (76 °C) for 286 °F (141 °C) temperature rated sprinklers. For more information regarding wax coatings, refer to [Bulletin Form No. F\\_010201](#).
8. Allows use from the floor by attaching a length of 1" diameter CPVC tubing to the tool. Ideal for sprinkler cabinets. Refer to [Bulletin F\\_051808](#).



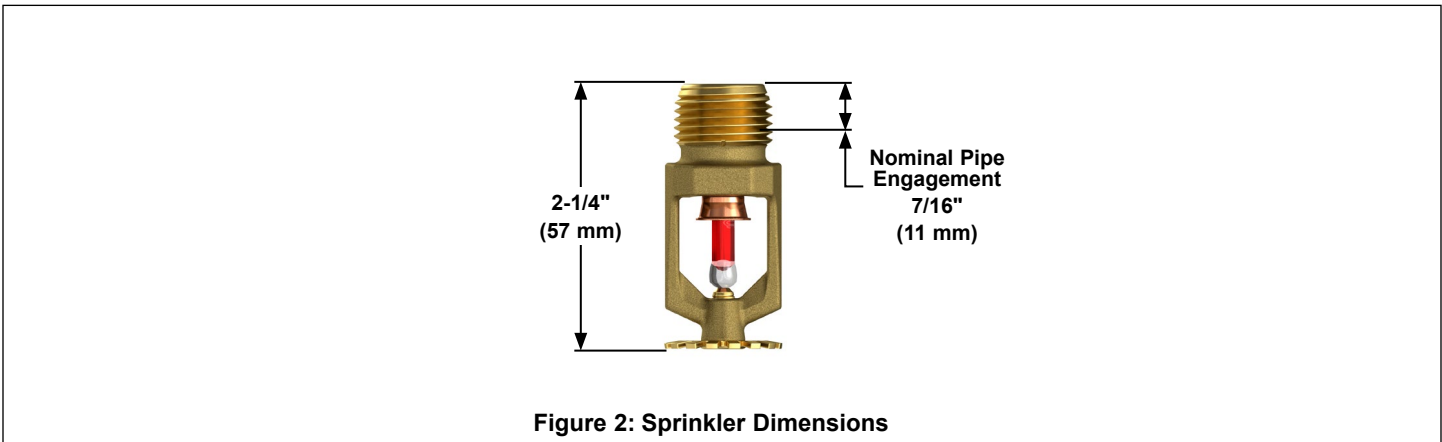
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**Figure 1: Sprinkler Wrenches**



**Figure 2: Sprinkler Dimensions**



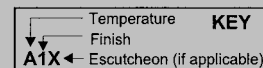
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**Approval Chart 1 (UL)**

Micromatic® Standard Response Pendent Sprinkler VK102  
 Maximum 175 PSI (12 bar) WWP



Sprinkler Base Part Number <sup>1</sup>	SIN	Thread Size		Nominal K-factor		Overall Length		Listings and Approvals <sup>3</sup> (Refer also to UL Design Criteria.)					
		NPT	BSPT	U.S.	metric <sup>2</sup>	Inches	mm	cULus <sup>4</sup>	VdS	LPCB	CE <sup>8</sup>	9	China Approval
12987	VK102	1/2"	15 mm	5.6	80.6	2-1/4"	57	A1, B3, B1Y, C4, D2, E5, G5Z	A1	A1, B3, B1Y	F1, G1Y	F2X	--
12989	VK102	--	15 mm	5.6	80.6	2-1/4"	57	A1, B3, B1Y, C4, D2, E5, G5Z	A1	A1, B3, B1Y	F1, G1Y	F2X	--
20229 <sup>10</sup>	VK102	--	15 mm	5.6	80.6	2-1/4"	57	E6	--	--	--	--	E6

**NOTICE - Product Below - No longer offered.**

10139	VK102	1/2"	15 mm	5.6	80.6	2-1/4"	57	A1, B3, B1Y, C4, D2, E5, G5Z	--	--	--	--	--
10173	VK102	--	15 mm	5.6	80.6	2-1/4"	57	A1, B3, B1Y, C4, D2, E5, G5Z	A1	A1, B3, B1Y	--	F2X	--
18020	VK102	1/2"	15 mm	5.6	80.6	2-1/4"	57	A1, B3, B1Y, C4, D2, E5, G5Z	A1	A1, B3, B1Y	F1, G1X	F2X	--

**Approved Temperature Rating Codes**

- A = 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), 286 °F (141 °C), and 360 °F (182 °C)
- B = 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C)
- C = 286 °F (141 °C)
- D = 500 °F (260 °C)<sup>7</sup>
- E = 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), 286 °F (141 °C), 360 °F (182 °C), and 500 °F (260 °C)<sup>7</sup>
- F = 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), 286 °F (141 °C), and 360 °F (182 °C)
- G = 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C)

**Approved Finish Codes**

- 1 = Brass, Chrome, White Polyester<sup>5,6</sup> and Black Polyester<sup>5,6</sup>
- 2 = Brass and Chrome
- 3 = Wax-Coated Brass and Wax Over Polyester<sup>5</sup>
- 4 = High Temperature 200 °F (93 °C) Wax Coating (corrosion resistant); maximum ambient temperature allowed at ceiling = 150 °F (65 °C)
- 5 = ENT<sup>5</sup>
- 6 = Chrome

**Approved Escutcheon Codes**

- X = Recessed with the Viking Model E-1, E-2, or E-3 Recessed Escutcheon
- Y = Standard surface-mounted escutcheon or recessed with the Viking Model E-1, E-2, or E-3 Recessed Escutcheon
- Z = Standard surface-mounted escutcheon or recessed with the Viking Model E-1 Recessed Escutcheon

**Footnotes**

1. Base part number is shown. For complete part number, refer to Viking's current price schedule.
2. Metric K-factor shown is for use 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. Check with the manufacturer for any additional approvals.
4. Listed by Underwriters Laboratories Inc. for use in the U.S. and Canada.
5. cULus Listed as corrosion resistant.
6. Other colors are available on request with the same Listings and Approvals as the standard colors.
7. Sprinklers of Ultra-High temperature rating are intended for use inside ovens, dryers, or similar enclosures with normal operating temperatures above 300 °F (149 °C). Where the ambient temperature around the Ultra-High temperature rated sprinkler is significantly reduced below 300 °F (149 °C), the response time of the Ultra-High temperature rated sprinkler may be severely retarded.
8. CE Certified, Standard EN 12259-1, EC-certificate of conformity 0832-CPD-0021.
9. MED Certified, Standard EN 12259-1, EC-certificate of conformity 0832-MED-1003 and 0832-MED-1008.
10. Approved according to China GB standard

**DESIGN CRITERIA - UL**

(Also refer to Approval Chart 1.)

**cULus Listing Requirements:**

The Viking Micromatic® Standard Response Pendent Sprinkler VK102 is cULus Listed as indicated in Approval Chart 1 for installation in accordance with the latest edition of NFPA 13 for standard spray sprinklers.

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

**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.**



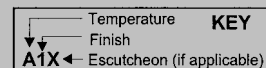
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### Approval Chart 2 (FM)

Micromatic® Standard Response Pendent Sprinkler VK102  
 Maximum 175 PSI (12 bar) WWP



Sprinkler Base Part Number <sup>1</sup>	SIN	Thread Size		Nominal K-Factor		Overall Length		FM Approvals <sup>3</sup> (Refer also to Design Criteria below.)
		NPT	BSPT	U.S.	metric <sup>2</sup>	Inches	mm	
12987	VK102	1/2"	15 mm	5.6	80.6	2-1/4"	57	A1, B2, C3, D1, E4, G1Y, G4Z
12989	VK102	--	15 mm	5.6	80.6	2-1/4"	57	A1, B2, C3, D1, E4, G1Y, G4Z
20229 <sup>7</sup>	VK102	--	15 mm	5.6	80.6	2-1/4"	57	E5
<b>NOTICE - Product Below - Limited Availability (Contact Local Viking Office)</b>								
10139	VK102	1/2"	15 mm	5.6	80.6	2-1/4"	57	A1, B2, C3, D1, E4, G1Y, G4Z
10173	VK102	--	15 mm	5.6	80.6	2-1/4"	57	A1, B2, C3, D1, E4, G1Y, G4Z
18020	VK102	1/2"	15 mm	5.6	80.6	2-1/4"	57	A1, B2, C3, D1, G1Y

#### Approved Temperature Rating Codes

A = 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), 212 °F (100 °C), 286 °F (141 °C), and 360 °F (182 °C)  
 B = 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), and 212 °F (100 °C)  
 C = 286 °F (141 °C)  
 D = 500 °F (260 °C)<sup>5</sup>  
 E = 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), 286 °F (141 °C), 360 °F (182 °C), and 500 °F (260 °C)<sup>5</sup>  
 F = 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C)  
 G = 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C)

#### Approved Finish Codes

1 = Brass, Chrome, White Polyester<sup>5,6</sup> and Black Polyester<sup>5,6</sup>  
 2 = Wax-Coated Brass (corrosion resistant)  
 3 = High Temperature 200 °F (93 °C) Wax Coating (corrosion resistant); maximum ambient temperature allowed at the ceiling = 150 °F (65 °C)  
 4 = ENT<sup>6</sup>  
 5 = Chrome

#### Approved Escutcheon Codes

Y = Standard surface-mounted escutcheon or recessed with the Viking Model E-1, E-2, or E-3 Recessed Escutcheon  
 Z = Standard surface-mounted escutcheon or recessed with the Viking Model E-1 Recessed Escutcheon

#### Footnotes

- Base part number is shown. For complete part number, refer to Viking's current price schedule.
- Metric K-factor shown is for use when pressure is measured in bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.
- This table shows the listings and approvals available at the time of printing. Check with the manufacturer for any additional approvals.
- Other colors are available on request with the same Approvals as the standard colors.
- Sprinklers of Ultra-High temperature rating are intended for use inside ovens, dryers, or similar enclosures with normal operating temperatures above 300 °F (149 °C). Where the ambient temperature around the Ultra-High temperature rated sprinkler is significantly reduced below 300 °F (149 °C), the response time of the Ultra-High temperature rated sprinkler may be severely retarded.
- FM approved as corrosion resistant.
- Approved according to China GB standard.

### DESIGN CRITERIA - FM

(Also refer to Approval Chart 2.)

#### FM Approval Requirements:

The Viking Micromatic® Standard Response Pendent Sprinkler VK102 is is FM Approved as standard 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 cULus and/or NFPA criteria.**

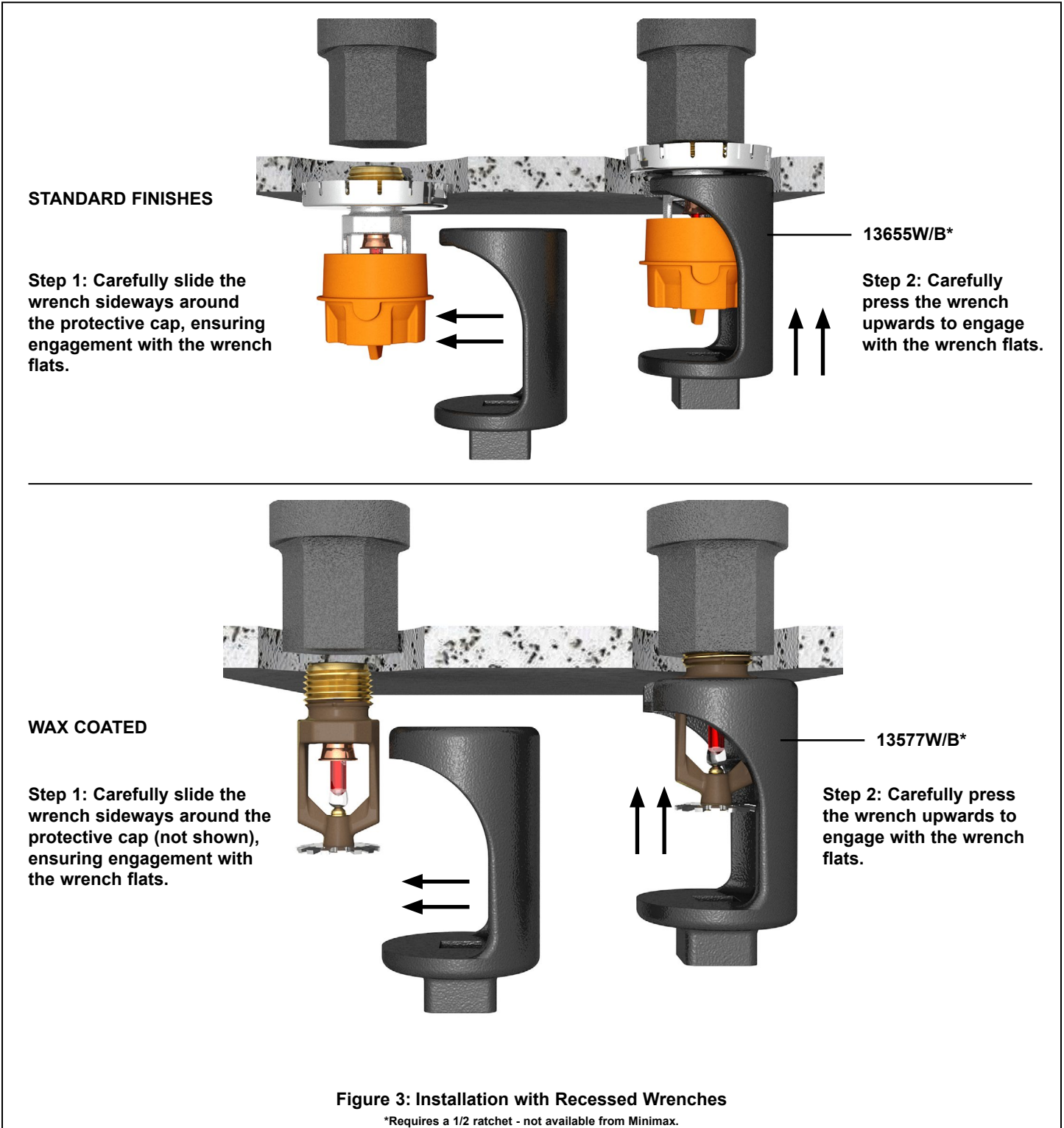
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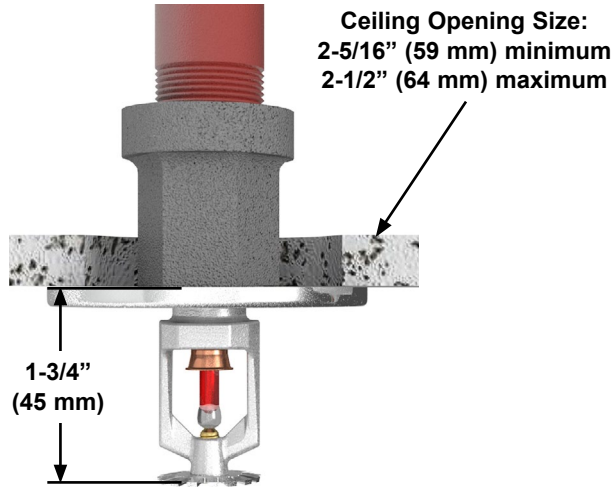




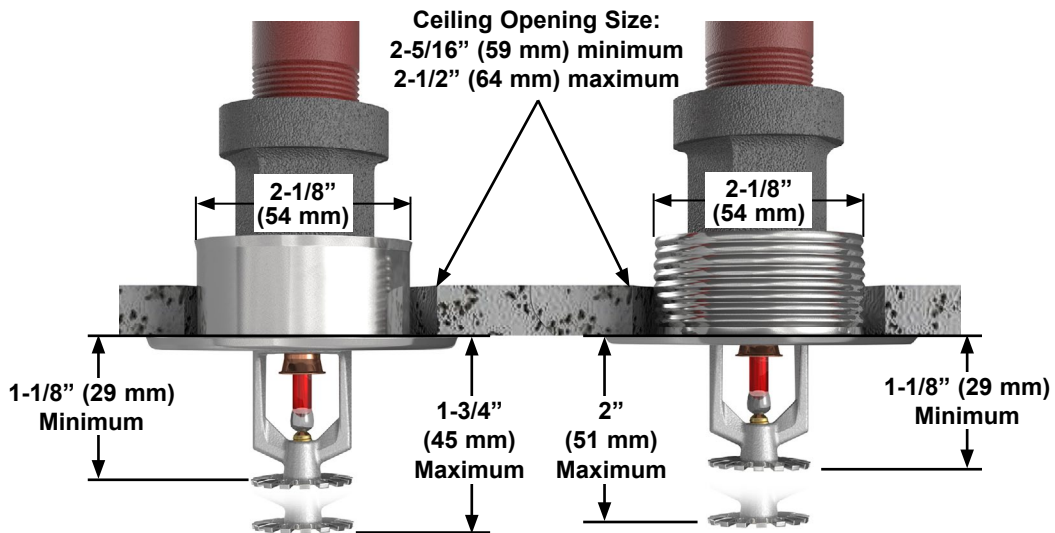
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Installed with a standard 1/8" surface-mounted escutcheon



Installed with a Model E-1 Recessed Escutcheon

Installed with a Model E-2 Thread-on Recessed Escutcheon

Figure 4: Installation Dimensions with Escutcheons