



## TECHNICAL DATA

### MICROMATIC® AND MICROMATICHP® STANDARD RESPONSE HORIZONTAL SIDEWALL SPRINKLERS

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

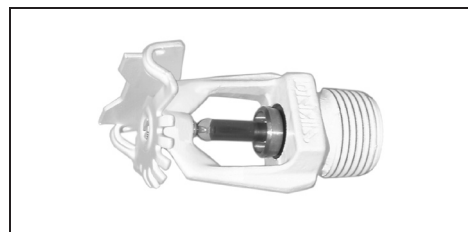
#### 1. DESCRIPTION

Viking Micromatic® and MicromaticHP® Standard Response Horizontal Sidewall Sprinklers are small thermosensitive glass bulb spray sprinklers available with various finishes and temperature ratings to meet design requirements. The special Polyester and Teflon® coatings can be used in decorative applications where colors are desired. In addition, these coatings have been investigated for installation in corrosive atmospheres and are cULus listed as corrosion resistant as indicated in the Approval Chart. (Note: FM Global has no approval classification for Teflon® and Polyester coatings as corrosion resistant.)

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 on page 14f.



Sprinkler Base Part No. 09849



Sprinkler Base Part No. 10224

#### 2. LISTINGS AND APPROVALS

**cULus Listed:** Category VNIV

**FM Approved:** Classes 2012 and 2015

**LPC Approved:** Ref. No. 096e/06

**CE Certified:** Standard EN 12259-1, EC-certificate of conformity 0832-CPD-2001 and 0832-CPD-2003

Refer to Approval Chart 1 and Design Criteria on page 14h for cULus Listing requirements that must be followed. Refer to Approval Chart 2 and Design Criteria on page 14j for FM Approval requirements that must be followed.

#### 3. TECHNICAL DATA

##### Specifications:

Available since 1996.

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

**Maximum Working Pressure: Sprinklers VK116 and VK015 are rated for use with water working pressures ranging from the minimum 7 psi (0.5 bar) up to 250 psi (17 bar) for high-pressure systems. High-pressure (HP) sprinklers can be identified by locating "250" stamped on the deflector. All other Part Nos. not mentioned above are rated to a maximum 175 psi (12 bar) wwp.**

Factory tested hydrostatically to 500 psi (34.5 bar)

Testing: U.S.A. Patent No. 4,831,870

Nominal K-Factor: Refer to the Approval Charts

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

Overall Length: Refer to the Approval Charts

\*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).

##### Material Standards:

Frame Casting: Brass UNS-C84400 or QM Brass for Sprinkler 10224. Brass UNS-C84400 for all other sprinklers.

Deflector: Copper UNS-C19500

Bushing (for high pressure sprinkler 09997): Brass UNS-C36000

Bulb: Glass, nominal 5 mm diameter

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

Screw: Brass UNS-C36000

Pip Cap for sprinkler 10171: Brass UNS-C31600, for sprinkler 10224: Brass UNS-C31600 and UNS-C31400

Pip Cap and Insert Assembly (for all other sprinklers): Copper UNS-C11000 and Stainless Steel UNS-S30400

Pip Cap Attachment (for sprinklers 09849 and 09997): Brass UNS-C36000

For Teflon® Coated Sprinklers: Belleville Spring-Exposed, Screw-Nickel Plated, Pip Cap-Teflon® Coated

For Polyester Coated Sprinklers: Belleville Spring-Exposed

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.

**VIKING****TECHNICAL DATA****MICROMATIC® AND  
MICROMATICHP® STANDARD  
RESPONSE HORIZONTAL  
SIDEWALL SPRINKLERS****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****Ordering Information:** (Also refer to the current Viking price list.)

Order Standard Response Horizontal Sidewall Sprinklers by first adding the appropriate suffix for the sprinkler finish and then the appropriate suffix for the temperature rating to the sprinkler base part number.

Finish Suffix: Brass = A, Chrome-Enloy® = F, White Polyester = M-/W, Black Polyester = M-/B, and Black Teflon® = N, Wax Coated = C, Wax Over Polyester = V-/W

Temperature Suffix (°F/°C): 135°/68° = A, 155°/68° = B, 175°/79° = D, 200°/93° = E, 212°/100° = M, 286°/141° = G, 360°/182° = H, OPEN = Z (Teflon® only).

For example, sprinkler VK104 with a 1/2" thread, Brass finish and a 155 °F/68 °C temperature rating = Part No. 10224AB

**Available Finishes And Temperature Ratings:** Refer to Table 1.

**Accessories:** (Also refer to the "Sprinkler Accessories" section of the Viking data book.)

**Sprinkler Wrenches:**

A. Standard Wrench: Part No. 10896W/B (available since 2000).

B. Wrench for recessed sprinklers with protective shields: Part No. 13655W/B\*\* (available since 2003)

C. Wrench for wax coated sprinklers: Part No. 13577W/B\*\* (available since 2006)

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

**Sprinkler Cabinets:**

A. Six-head capacity: Part No. 01724A (available since 1971)

B. Twelve-head capacity: Part No. 01725A (available since 1971)

**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**

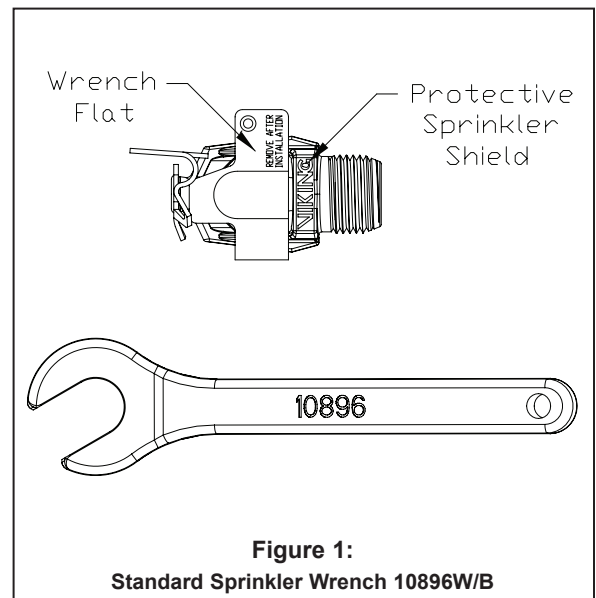
Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.

**7. AVAILABILITY**

Viking Standard Response Horizontal Sidewall 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.



**Figure 1:**  
**Standard Sprinkler Wrench 10896W/B**

	<b>TECHNICAL DATA</b>	<b>MICROMATIC® AND MICROMATICH<sup>P</sup>® STANDARD RESPONSE HORIZONTAL SIDEWALL SPRINKLERS</b>
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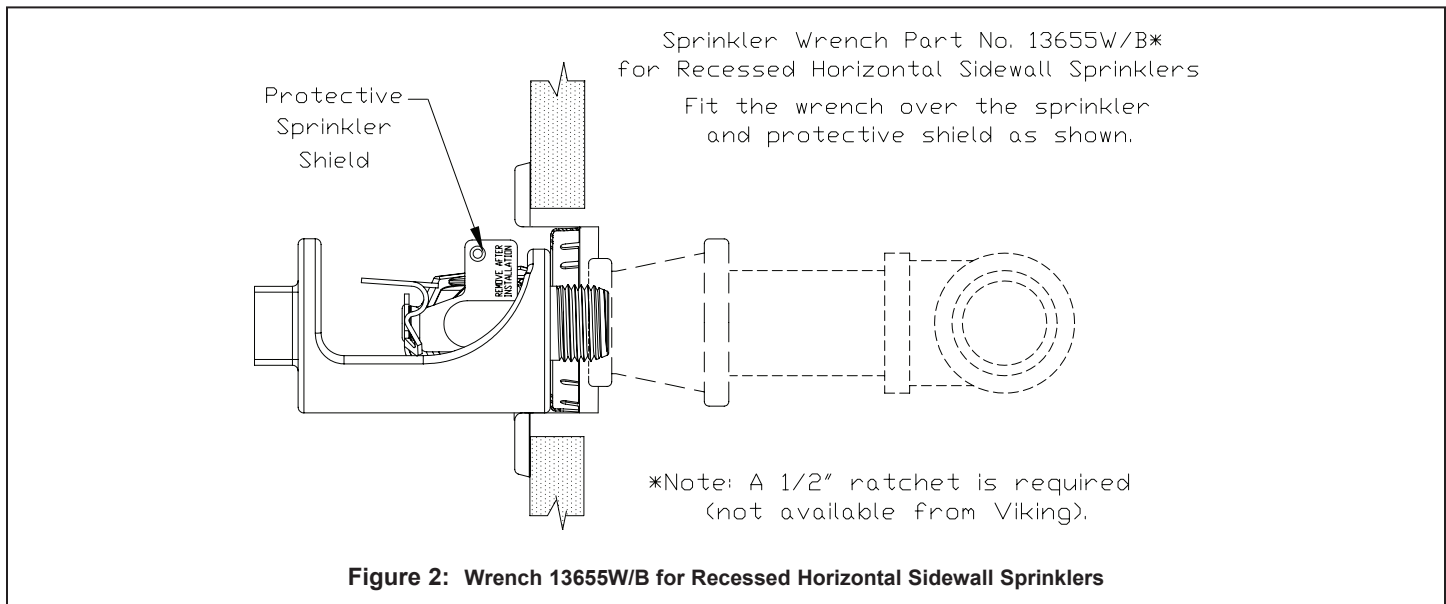
**TABLE 1: AVAILABLE SPRINKLER TEMPERATURE RATINGS AND FINISHES**

Sprinkler Temperature Classification	Sprinkler Nominal Temperature Rating <sup>1</sup>	Maximum Ambient Ceiling Temperature <sup>2</sup>	Bulb Color
Ordinary	135 °F (57 °C)	100 °F (38 °C)	Orange
Ordinary	155 °F (68 °C)	100 °F (38 °C)	Red
Intermediate	175 °F (79 °C)	150 °F (65 °C)	Yellow
Intermediate	200 °F (93 °C)	150 °F (65 °C)	Green
High	286 °F (141 °C)	225 °F (107 °C)	Blue
Extra High	360 °F (182 °C)	300 °F (149 °C)	Mauve

**Sprinkler Finishes:** Brass, Chrome-Enloy®, White Polyester, Black Polyester, and Black Teflon®  
**Corrosion-Resistant Coatings<sup>3</sup>:** White Polyester, Black Polyester, and Black Teflon® in all temperature ratings. Wax-Coated Brass and Wax over Polyester for sprinklers with the following temperature ratings:  
 135 °F (57 °C) Off-White Wax    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>4</sup>

**Footnotes**

- <sup>1</sup> The sprinkler temperature rating is stamped on the deflector.
- <sup>2</sup> 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.
- <sup>3</sup> 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 coatings indicated are applied to the exposed exterior surfaces only. Note that the spring is exposed on sprinklers with Polyester and Teflon® coatings. For Teflon® coated open sprinklers only, the waterway is coated.
- <sup>4</sup> Wax melting point is 170 °F (76 °C) for 286 °F (141 °C) temperature rated sprinklers.



	<h2 style="margin: 0;">TECHNICAL DATA</h2>	<h3 style="margin: 0;">MICROMATIC® AND MICROMATICHP® STANDARD RESPONSE HORIZONTAL SIDEWALL SPRINKLERS</h3>
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<h3 style="margin: 0;">Approval Chart 1 (UL)</h3> <p style="margin: 0;">Micromatic® and MicromaticHP® Standard Response Horizontal Sidewall Sprinklers</p>	<table border="1" style="border-collapse: collapse;"> <tr> <td style="font-size: small;">Temperature</td> <td rowspan="3" style="text-align: center; vertical-align: middle;"><b>KEY</b></td> </tr> <tr> <td style="font-size: small;">Finish</td> </tr> <tr> <td style="font-size: small;">A1X ← Escutcheon (if applicable)</td> </tr> </table>	Temperature	<b>KEY</b>	Finish	A1X ← Escutcheon (if applicable)
Temperature	<b>KEY</b>				
Finish					
A1X ← Escutcheon (if applicable)					

**Maximum 175 PSI (12 Bar) WWP**  
 (See Footnotes Below for Allowable Deflector Distance Below the Ceiling.)

Base Part Number <sup>1</sup>	SIN	Maximum Pressure	Thread Size		Nominal K-Factor		Overall Length		Listings and Approvals <sup>3</sup> (Refer also to Design Criteria on pg 14i.)				
			NPT	BSP	U.S.	metric <sup>2</sup>	Inches	mm	cULus <sup>4,5</sup>	NYC <sup>6</sup>	LPCB	CE <sup>10</sup>	⊗ <sup>11</sup>
<b>Standard Orifice</b>													
10224	VK104	175 psi	1/2"	15 mm	5.6	80.6	2-7/16	62.4	B3W, B1W, A1X	B3V, B1V, A1X	A2Z	D2Y	D2Y
10171	VK104	175 psi	--	15 mm	--	80.6	2-7/16	62.4					
<b>Small Orifice</b>													
09126	VK016	175 psi	--	10 mm	4.2	57	2-7/16	62.4	cULus	NYC	LPCB	CE	⊗
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**Maximum 250 PSI (17 Bar) WWP**  
**Standard Orifice, for Installation 4" to 12" (102 mm to 305 mm) Below the Ceiling.**

09849	VK116	250 psi	1/2"	15 mm	5.6	80.6	2-11/16	67.6	cULus <sup>4,8</sup>	NYC	LPCB	CE	⊗
									A1X, B1W	See Footnote 7.	--	--	--

**Maximum 250 PSI (17 Bar) WWP**  
**Small Orifice<sup>9</sup>, for Installation 4" to 6" (102 mm to 152 mm) Below the Ceiling.**

09997 <sup>12</sup>	VK015	250 psi	1/2"	15 mm	2.8	40.3	2-3/4	69	cULus <sup>4,9</sup>	NYC	LPCB	CE	⊗
									A1X, B1W	See Footnote 7.	--	--	--

Approved Temperature Ratings	Approved Finishes	Approved Escutcheons
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 - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), 286 °F (141 °C), and 360 °F (182 °C)	1 - Brass, Chrome-Enloy®, White Polyester <sup>13,14</sup> , Black Polyester <sup>13,14</sup> , and Black Teflon <sup>13</sup> 2 - Brass, Chrome-Enloy®, White Polyester, and Black Polyester 3 - Wax-Coated Brass and Wax Over Polyester (corrosion resistant) 4 - High Temperature 200 °F (93 °C) Wax Coating (corrosion resistant); maximum ambient temperature allowed at ceiling = 150 °F (65 °C)	V - Installed with standard surface-mounted escutcheons or the Viking Microfast® Model F-1 Adjustable Escutcheon, <b>or</b> recessed with the Viking Micromatic® Model E-1 or E-2 Recessed Escutcheon W - Installed with standard surface-mounted escutcheons or the Viking Microfast® Model F-1 Adjustable Escutcheon, <b>or</b> recessed with the Viking Micromatic® Model E-1, E-2, or Model G-1 Recessed Escutcheon X - Installed with standard surface-mounted escutcheons or the Viking Microfast® Model F-1 Adjustable Escutcheon Y - Installed with standard surface-mounted escutcheons only

**Footnotes**

<sup>1</sup> Base part number shown. For complete part number, refer to Viking's current price schedule.  
<sup>2</sup> 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.  
<sup>3</sup> This table shows the listings and approvals available at the time of printing. Other approvals may be in process.  
<sup>4</sup> Listed by Underwriters Laboratories Inc. for use in the U.S. and Canada.  
<sup>5</sup> cULus Listings limited to Light Hazard Occupancies where allowed by the installation standards being applied, with the deflector 4" to 12" (102 mm to 305 mm) below the ceiling.  
<sup>6</sup> Approved by the New York City Board of Standards and Appeals under Calendar Number 219-76-SA.  
<sup>7</sup> Meets New York City requirements, effective July 1, 2008.  
<sup>8</sup> cULus Listed for Light Hazard Occupancies where allowed by the installation standards being applied, and Ordinary Hazard Group I and II Occupancies.  
<sup>9</sup> cULus Listings limited to Light Hazard Occupancies where allowed by the installation standards being applied, with hydraulically calculated wet systems.  
<sup>10</sup> CE Certified, Standard EN 12259-1, EC-certificate of conformity 0832-CPD-2001 and 0832-CPD-2003.  
<sup>11</sup> ⊗ MED Certified, Standard EN 12259-1, EC-certificate of conformity 0832-MED-1003 and 0832-MED-1008.  
<sup>12</sup> The sprinkler orifice is bushed.  
<sup>13</sup> cULus Listed as corrosion-resistant.  
<sup>14</sup> Other colors are available on request with the same Listings and Approvals as the standard colors.

	<b>TECHNICAL DATA</b>	<b>MICROMATIC® AND MICROMATICHP® STANDARD RESPONSE HORIZONTAL SIDEWALL SPRINKLERS</b>
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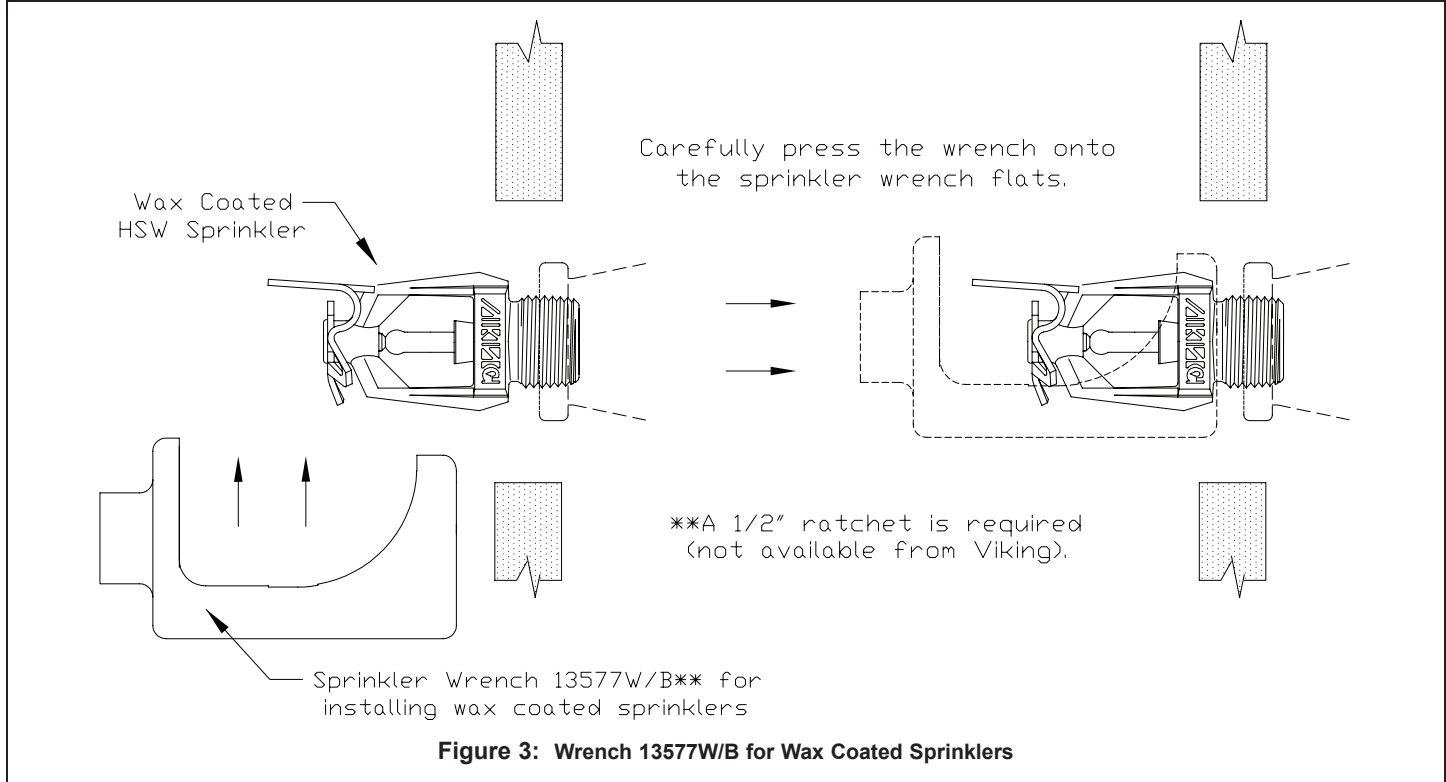
**DESIGN CRITERIA - UL**  
 (Also refer to Approval Chart 1 on page 14h.)

**cULus Listing Requirements:**


Standard Horizontal Sprinklers are cULus Listed as indicated in the Approval Chart for installation in accordance with the latest edition of NFPA 13 for sidewall standard spray sprinklers.

- Designed for use in occupancy hazard classifications as indicated in the approval chart, below smooth, flat ceilings only.
- Protection areas and maximum spacing shall be in accordance with the tables provided in NFPA 13.
- Minimum spacing allowed is 6 ft. (1.8 m).
- Align the top of the deflector parallel with the ceiling.
- Locate no less than 4" (102 mm) from end walls.
- Maximum distance from end 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 installation and obstruction rules contained in NFPA 13 for sidewall standard spray sprinklers must be followed.

**IMPORTANT: Always refer to Bulletin Form No. F\_091699 - Care and Handling of Sprinklers. Also refer to page SR1-3 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.**

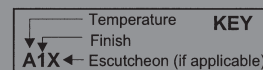


**Figure 3: Wrench 13577W/B for Wax Coated Sprinklers**

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<b>Approval Chart 2 (FM)</b> Micromatic® Standard Response Horizontal Sidewall Sprinklers Maximum 175 PSI (12 Bar) WWP										
Base Part Number <sup>1</sup>	SIN	Maximum Pressure	Thread Size		Nominal K-Factor		Overall Length		FM Approvals <sup>3</sup> (Refer also to Design Criteria below.)	
			NPT	BSP	U.S.	metric <sup>2</sup>	Inches	mm		
10224	VK104	175 psi	1/2"	15 mm	5.6	80.6	2-7/16	62.4	A1X, B1W	
10171	VK104	175 psi	--	15 mm	--	80.6	2-7/16	62.4		
<b>Approved Temperature Ratings</b> A - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), and 286 °F (141 °C), B - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C)				<b>Approved Finishes</b> 1 - Brass and Chrome-Enloy®			<b>Approved Escutcheons</b> W - Installed with standard surface-mounted escutcheons or the Viking Microfast® Model F-1 Adjustable Escutcheon, or recessed with the Viking Micromatic® Model E-1, E-2, or Model G-1 Recessed Escutcheon X - Installed with standard surface-mounted escutcheons or the Viking Microfast® Model F-1 Adjustable Escutcheon			
Footnotes										
<sup>1</sup> Base part number shown. For complete part number, refer to Viking's current price schedule. <sup>2</sup> 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. <sup>3</sup> This table shows the listings and approvals available at the time of printing. Other approvals may be in process.										



<b>DESIGN CRITERIA - FM</b> (Also refer to Approval Chart 2 above.)
<b>FM Approval Requirements:</b> Sprinkler VK104 is FM Approved as a standard response <b>Non-Storage</b> sidewall sprinkler as indicated in the FM Approval Guide. For specific application and installation requirements, reference the latest applicable FM Loss Prevention Data Sheets (including 2-0) and Technical Advisory Bulletins. FM Global Loss Prevention Data Sheets and Technical Advisory Bulletins 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. <b>NOTE: The FM installation guidelines may differ from cULus and/or NFPA criteria.</b>
<b>IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to page SR1-3 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.</b>

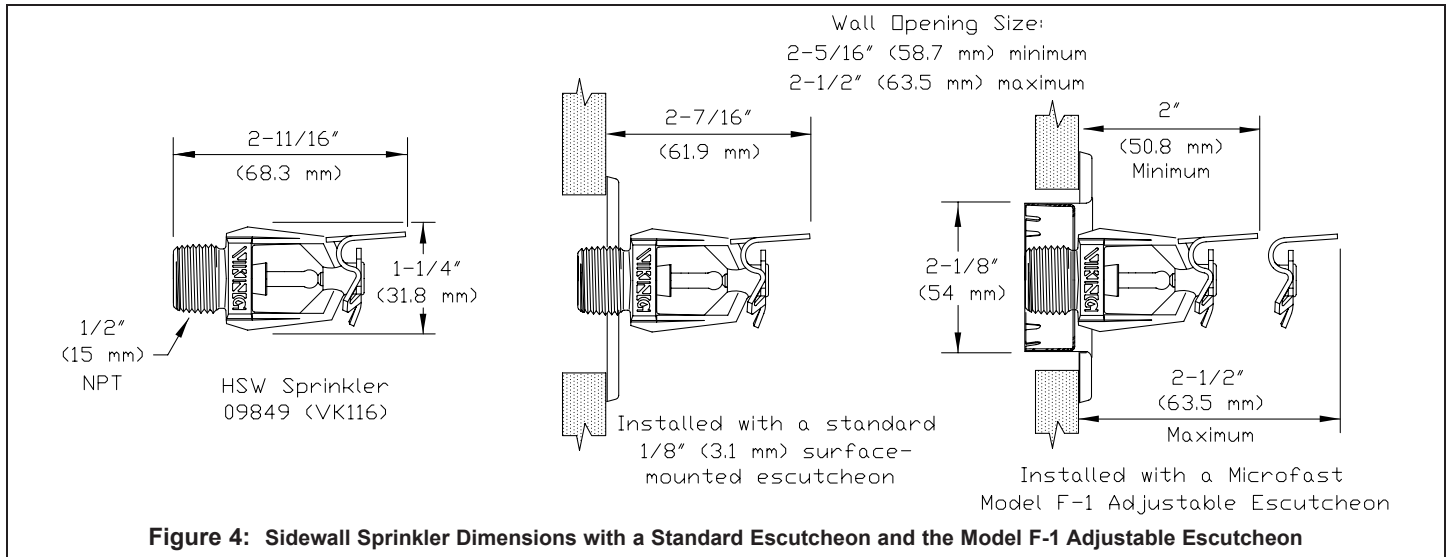


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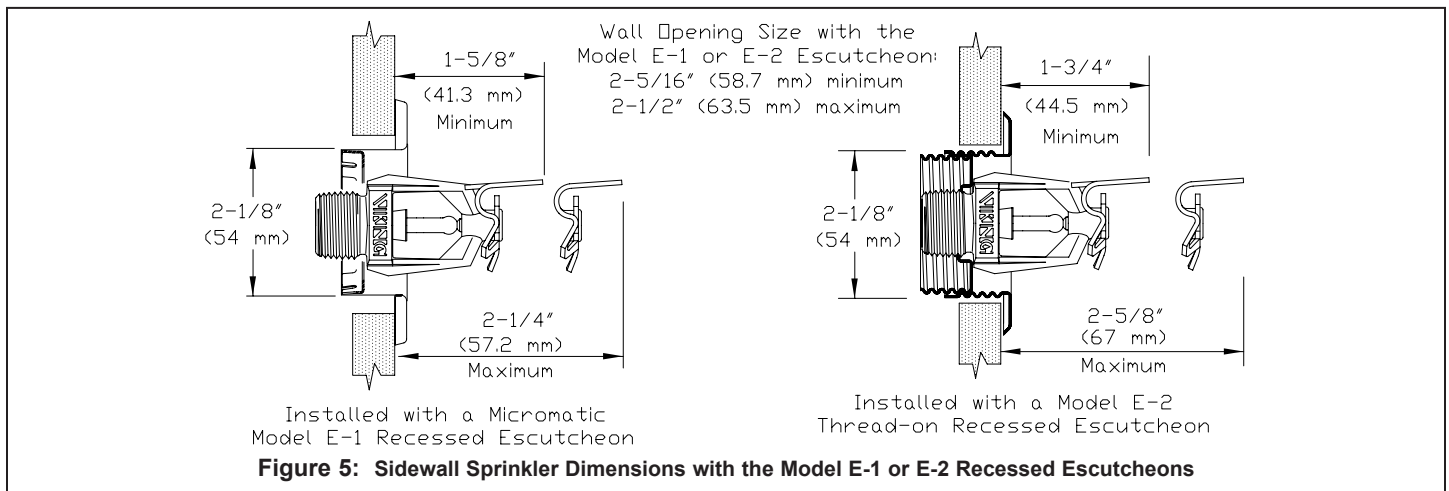
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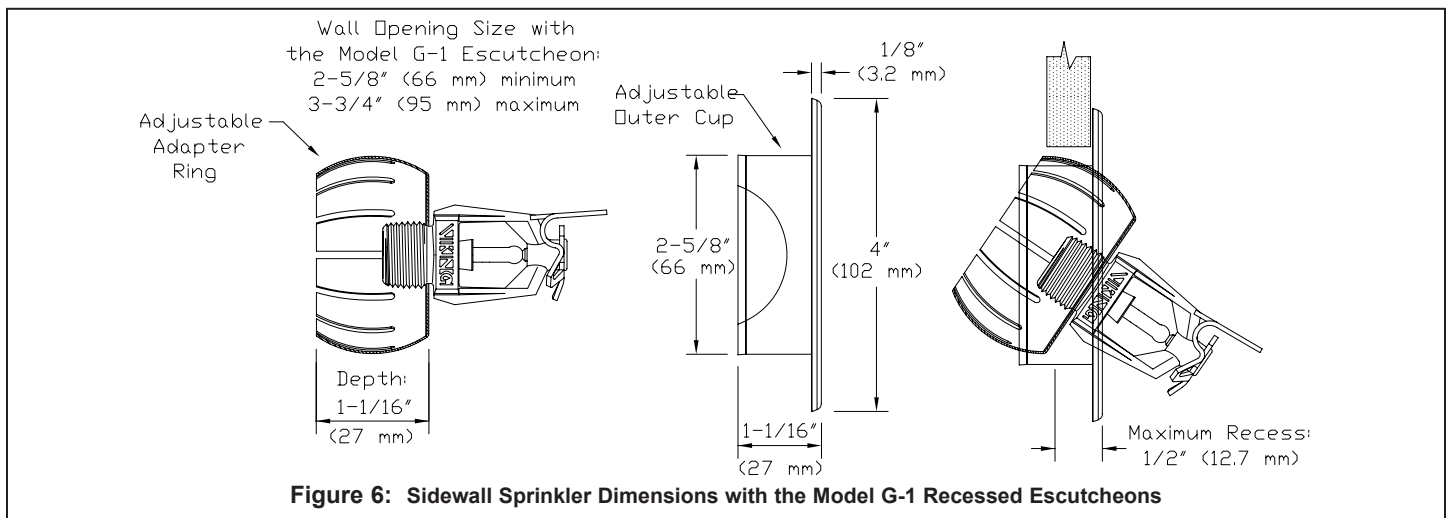
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**Figure 4: Sidewall Sprinkler Dimensions with a Standard Escutcheon and the Model F-1 Adjustable Escutcheon**



**Figure 5: Sidewall Sprinkler Dimensions with the Model E-1 or E-2 Recessed Escutcheons**



**Figure 6: Sidewall Sprinkler Dimensions with the Model G-1 Recessed Escutcheons**

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