



TECHNICAL DATA

MICROMATIC® STANDARD RESPONSE HORIZONTAL SIDEWALL SPRINKLER VK104 (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

The Micromatic® Viking Standard Response Horizontal Sidewall Sprinkler VK104 is a small thermosensitive glass bulb spray sprinkler available with various 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, the ENT and Polyester coatings have been investigated for installation in corrosive environments and are listed/approved as indicated in the Approval Chart(s).

2. LISTINGS AND APPROVALS*



cULus Listed: Category VNI V



FM Approved: Class Series 2000



LPCB Approved



CE Certified: Standard EN 12259-1, EC-certificate of constancy of performance 0832-CPR-S0021, EC-Certificate of Conformity 0832-CPD-2001

China Approval: Approved according to China GB standard.

NOTE: Other international approval certificates are available upon request.

* Refer to the approval charts and design criteria for Listing and approval requirements that must be followed.

3. TECHNICAL DATA

Specifications:

Minimum Operating Pressure: 7 psi (0.5 bar)
Rated to 175 psi (12 bar) water working pressure
Factory tested hydrostatically to 500 psi (34.5 bar)
Nominal K-Factor: 5.6 U.S. (80.6 metric*)

* 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.

Glass-bulb fluid temperature rated to -65 °F (-55 °C)
Overall Length: 2-1/2" (64 mm)

Material Standards:

Frame Casting: Brass UNS-C84400 or QM Brass
Deflector: 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 ENT Coated Sprinklers: Belleville Spring-Exposed, Screw and Pip Cap-ENT Coated
For Polyester Coated Sprinklers: Belleville Spring-Exposed

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

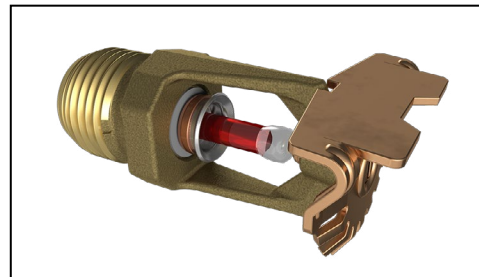
Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.

7. AVAILABILITY

The Micromatic® Viking Standard Response Horizontal Sidewall Sprinkler VK104 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.



Horizontal Sidewall
For Light Hazard Occupancies Only



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



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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 ¹	Nominal Rating	Bulb Color	Hazard Classification	Max. Ambient Ceiling Temperature ²	Suffix
12995	1/2	--	Brass	A	135 °F (57 °C)	Orange	Ordinary	100 °F (38 °C)	A
12988	--	15	Chrome	F	155 °F (68 °C)	Red	Ordinary	100 °F (38 °C)	B
20230	--	15	White Polyester ^{3,4}	M-/W	175 °F (79 °C)	Yellow	Intermediate	150 °F (65 °C)	D
			Black Polyester ^{3,4}	M-/B	200 °F (93 °C)	Green	Intermediate	150 °F (65 °C)	E
			Wax	C	286 °F (141 °C)	Blue	High	225 °F (107 °C)	G
			Wax over Polyester	V-/W	360 °F (182 °C)	Mauve	Extra High	300 °F (149 °C)	H
			ENT ^{3,4,6,7}	JN					

Example: 12995MB/W = VK104 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 Coatings⁴

- White Polyester and Black Polyester in all temperature ratings.
- Wax-Coated Brass and Wax over Polyester^{3,4} 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 Wax⁵

Accessories

Sprinkler Wrenches (see Figure 1):

- Standard Wrench: Part No. 21475M/B
- Standard Wrench for Wax Coated Sprinklers: Part No. 10896W/B
- Socket Wrench for Recessed Pendent Sprinklers: Part No. 13655W/B (A 1/2" ratchet is required, not available from Viking)
- Socket Wrench for Wax Coated Sprinklers: Part No. 13577W/B (A 1/2" ratchet is required, not available from Viking)

Sprinkler Cabinet:

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

Footnotes

- Where a dash (-) is shown in the Finish suffix designation, insert the desired Temperature Rating suffix. See example above.
- 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.
- UL Listed as corrosion resistant.
- The corrosion resistant 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.
- 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](#).
- FM Approved as corrosion resistant.
- Not available in 135 °F (57 °C)



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Figure 1: Sprinkler Wrenches

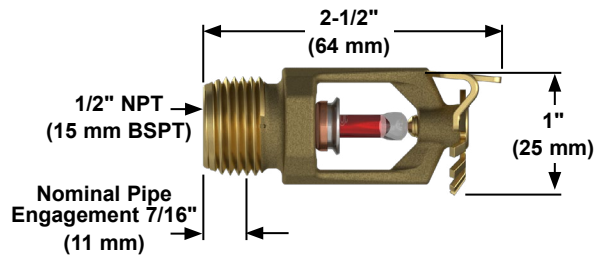


Figure 2: Sprinkler Dimensions

Step 1: Carefully slide the wrench sideways around the deflector, ensuring engagement with the sprinkler wrench flats.

Step 2: Carefully press the wrench onto the sprinkler wrench flats.

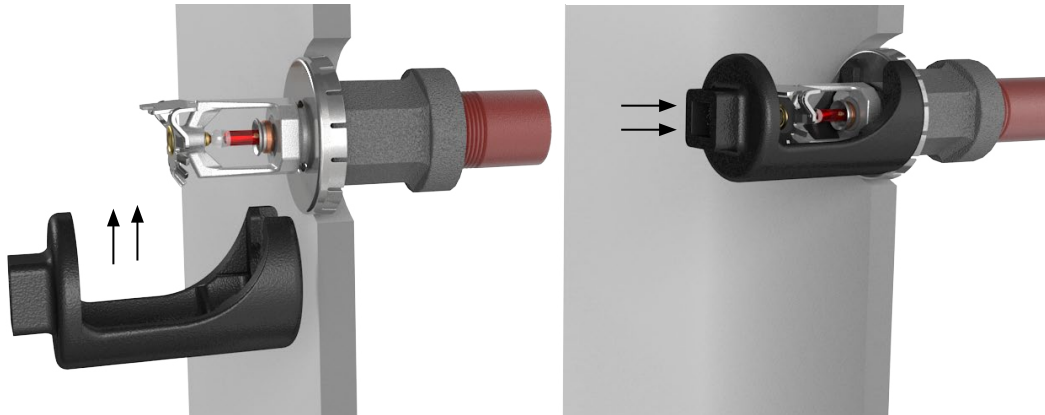


Figure 3: Recessed Sprinkler Installation

** A 1/2" ratchet is required which is not available from Viking.



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Approval Chart 1 (UL)

Micromatic® Viking Standard Response Horizontal Sidewall Sprinkler VK104
 For Light Hazard Occupancies Only
 Maximum 175 PSI (12 Bar) WWP

Temperature	KEY
Finish	
A1X ← Escutcheon (if applicable)	

Sprinkler Base Part Number ¹	SIN	Thread Size		Nominal K-factor		Overall Length		Listings and Approvals ³ (Refer also to UL Design Criteria.)				
		NPT	BSPT	U.S.	metric ²	Inches	mm	cULus ⁴	LPCB	MED	CE ⁸	China Approval
12995	VK104	1/2"	--	5.6	80.6	2-1/2"	64	A1Z, B1X, B2X, C4Z, E4Y	A1Z, B2Z	C1 ⁹	C1Z ⁸	--
12988	VK104	--	15 mm	5.6	80.6	2-1/2"	64	A1Z, B1X, B2X, C4Z, E4Y	A1Z, B2Z	C1 ⁹	C1Z ⁸	--
20230 ¹⁰	VK104	--	15 mm	5.6	80.6	2-1/2"	64	D3	--	--	--	D3
NOTICE - Product Below - No longer offered.												
10224	VK104	1/2"	--	5.6	80.6	2-1/2"	64	B2W, B1W, A1X	A1Z	C1 ⁹	C1Y ⁸	C1Z ⁹
10171	VK104	--	15 mm	5.6	80.6	2-1/2"	64	B2W, B1W, A1X	A1Z	C1 ⁹	C1Y ⁸	C1Z ⁹

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 = 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), 286 °F (141 °C), and 360 °F (182 °C)
- D = 155 °F (68 °C)
- E = 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C)

Approved Finish Codes

- 1 = Brass, Chrome, White Polyester^{6,7}, and Black Polyester^{6,7}
- 2 = Wax-Coated Brass and Wax Over Polyester (corrosion resistant)
- 3 = Chrome
- 4 = ENT⁶

Approved Escutcheon Codes

- W = Standard surface-mounted escutcheons or recessed with the Viking Model E-1, E-2, E-3, or Model G-1 Recessed Escutcheons
- X = Standard surface-mounted escutcheons or recessed with the Viking Model E-1, E-2, or E-3 Recessed Escutcheons
- Y = Installed with surface-mounted escutcheons or recessed with the Viking Model E-1 Recessed Escutcheons
- Z = Installed with surface-mounted escutcheons only

Footnotes

1. Base part number shown. For complete part number, refer to Viking's current price 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 table shows the listings and approvals available at the time of printing. Other approvals may be in process.
4. Listings and Approvals are limited to Light Hazard Occupancies where allowed by the installation standards being applied.
5. Listed by Underwriters Laboratories Inc. for use in the U.S. and Canada.
6. cULus Listed as corrosion-resistant.
7. Other colors are available on request with the same Listings and Approvals as the standard colors.
8. Certified, Standard EN 12259-1, EC-certificate of conformity 0832-CPD-0021 and 0832-CPD-2003.
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 above.)

cULus Listing Requirements:

The Micromatic® Viking Standard Response Horizontal Sidewall Sprinkler VK104 is cULus Listed as indicated in the Approval Chart for installation in accordance with the latest edition of NFPA 13 for sidewall standard spray sprinklers.

- For use in Light Hazard occupancies only where allowed by the installation standards being applied.
- Locate the deflector 4" to 12" (102 mm to 305 mm) below the ceiling.
- 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 Bulletin 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 1 (FM)

Micromatic® Viking Standard Response Horizontal Sidewall Sprinkler VK104

Maximum 175 PSI (12 Bar) WWP

KEY	
Temperature	↓
Finish	←
Escutcheon (if applicable)	←

Sprinkler Base Part Number ¹	SIN	Thread Size		Nominal K-factor		Overall Length		FM Approvals ³ (Refer also to UL Design Criteria.)
		NPT	BSPT	U.S.	metric ²	Inches	mm	
12995	VK104	1/2"	--	5.6	80.6	2-1/2"	64	A1Y, B1X, C2Y, D2W
12988	VK104	--	15 mm	5.6	80.6	2-1/2"	64	A1Y, B1X, C2Y, D2W
20230 ⁶	VK104	--	15 mm	5.6	80.6	2-1/2"	64	E3
NOTICE - Product Below - No longer offered.								
10224	VK104	1/2"	--	5.6	80.6	2-1/2"	64	A1Y, B1X
10171	VK104	--	15 mm	5.6	80.6	2-1/2"	64	A1Y, B1X
Approved Temperature Rating Codes								
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) C = 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), and 286 °F (141 °C) D = 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C) E = 155 °F (68 °C)								
Approved Finish Code		Approved Escutcheon Codes						
1 = Brass and Chrome 2 = ENT ⁵ 3 = Chrome		X = Standard surface-mounted escutcheons or recessed with the Viking Model E-1, E-2, E-3, or G-1 Recessed Escutcheons Y = Standard surface-mounted escutcheons only W = Standard surface-mounted escutcheons or recessed with the Viking Model E-1 Recessed Escutcheons						
Footnotes								
1. Base part number shown. For complete part number, refer to Viking's current price 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 table shows the listings and approvals available at the time of printing. Other approvals may be in process. 4. Listings and Approvals are limited to Light Hazard Occupancies where allowed by the installation standards being applied. 5. FM Approved as corrosion resistant. 6. Approved according to China GB standard.								

DESIGN CRITERIA - FM

(Also refer to Approval Chart 2 above.)

FM Approval Requirements:

The Micromatic® Viking Standard Response Horizontal Sidewall Sprinkler VK104 is FM Approved as standard response sidewall **Non-Storage** sprinklers, 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.

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

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to Bulletin 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.

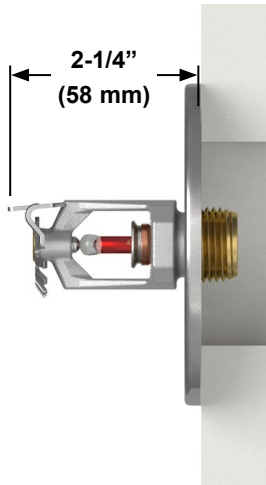


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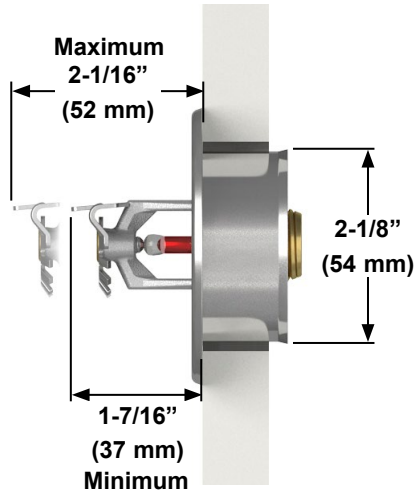
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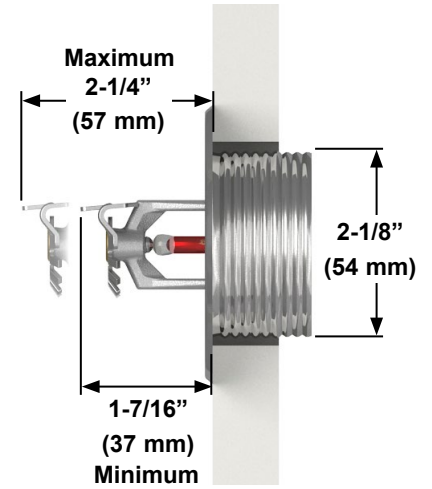
Wall Opening Size:
 Maximum - 2-1/2" (64 mm)
 Minimum - 2-5/16" (57 mm)



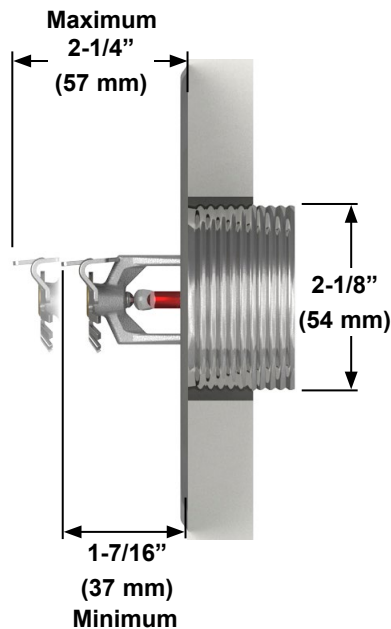
Surface-Mounted Escutcheon



Model E-1 Recessed Escutcheon



Model E-2 Recessed Escutcheon



Model E-3 Recessed Escutcheon

Figure 4: Installation Dimensions with Escutcheons