



TECHNICAL DATA

MICROMATIC® AND MicromaticHP® STANDARD RESPONSE PENDENT SPRINKLERS

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

Telephone: 269-945-9501 Technical Services 877-384-5464 Fax: 269-945-4495 Email: techsvcs@vikingcorp.com

1. DESCRIPTION

Viking Micromatic® and MicromaticHP® Standard Response Pendent Sprinklers are small, thermosensitive, glass-bulb spray sprinklers available in several different finishes, temperature ratings, and K-Factors 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 11b.



2. LISTINGS AND APPROVALS

cULus Listed: Category VNIV

FM Approved: Classes 2001, 2002, 2006, 2015, and 2017

NYC Approved: MEA 89-92-E, Volume 12

ABS Certified: Certificate 04-HS407984A-PDA

VdS Approved: Certificate G4040096, G4040098, G4060058, G4060059, G4980001, G4980002, G4980005, and G4980007

LPC Approved: Ref. No. 096e/06 and 167a/04

CE Certified: Standard EN 12259-1, EC-certificate of conformity 0786-CPD-40141, 0786-CPD-40181, 0832-CPD-2001, and 0832-CPD-2003

MED Certified: Standard EN 12259-1, EC-certificate of conformity 0832-MED-1003 and 0832-MED-1008, and RINA Certificate No. MED497705C5

NOTE: Other International approval certificates are available upon request.

Refer to the Approval Charts on pages 11d-f and Design Criteria on page 11f for cULus and FM approval requirements that must be followed.

3. TECHNICAL DATA

Specifications:

Available since 1997.

Minimum Operating Pressure: Refer to the Approval Chart

Maximum Working Pressure: Sprinklers VK023 and VK122 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

Thread size: Refer to the Approval Charts

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

Material Standards:

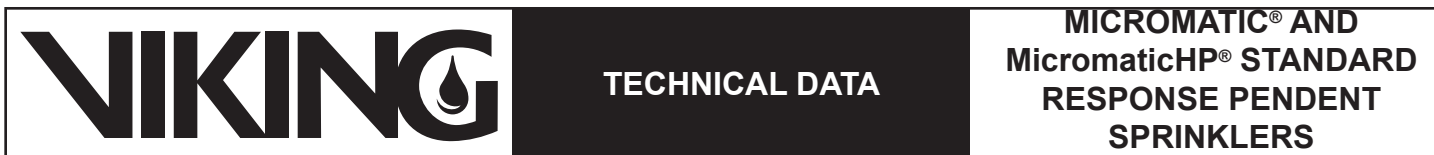
Frame Casting: Brass UNS-C84400

Deflector: Phosphor Bronze UNS-C51000 or Copper UNS-C19500 for Sprinklers 10139, 10142, 10170, 10173, 10223, and 12105. Brass UNS-C26000 for all other Sprinklers.

Bushing (for Sprinklers 09994, 10189, 10221, and 10222): Brass UNS-C36000

Bulb: Glass, nominal 5 mm diameter

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.



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

Screw: Brass UNS-C36000

Pip Cap for Sprinklers 09992, 09994, and 10221: Brass UNS-C31400 or UNS-C31600

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

Pip Cap Attachment: Brass UNS-C36000

Ejector Spring (for Sprinkler 12105): Stainless Steel

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

For Polyester Coated Sprinklers: Belleville Spring-Exposed

Ordering Information: (Also refer to the current [Viking price list](#).)

Order Micromatic® and MicromaticHP® Standard Response Pendent 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, Black Teflon® = N, Wax Coated = C, Wax Over Polyester = V-/W

Temperature Suffix (°F/°C): 135°/57° = A, 155°/68° = B, 175°/79° = D, 200°/93° = E, 212°/100° = M, 286°/141° = G, 360°/182° = H, 500°/260° = L, OPEN = Z (Teflon® only).

For example, sprinkler VK102 with a 1/2" thread, Brass finish and a 155 °F/68 °C temperature rating = Part No. 10139AB

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: Part No. 12144W/B** (available since 2003)

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

NOTE: RECESSED PENDENT SPRINKLERS WITH PROTECTIVE CAPS MUST USE WRENCH 12144W/B.

**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

The Viking Micromatic® and MicromaticHP® Standard Response Pendent 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.

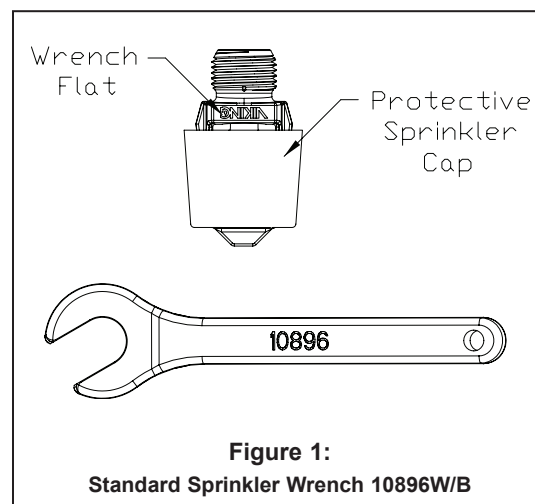


Figure 1:
Standard Sprinkler Wrench 10896W/B

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TABLE 1: AVAILABLE SPRINKLER TEMPERATURE RATINGS AND FINISHES

Sprinkler Temperature Classification	Sprinkler Nominal Temperature Rating ¹	Maximum Ambient Ceiling Temperature ²	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
Intermediate	212 °F (100 °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
Ultra High ³	500 °F (260 °C)	465 °F (240 °C)	Black

Sprinkler Finishes: Brass, Chrome-Enloy®, White Polyester, Black Polyester, and Black Teflon®
Corrosion-Resistant Coatings⁴: White Polyester, Black Polyester, and Black Teflon® in all temperature ratings. Wax-Coated Brass and Wax over Polyester⁵ 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
 212 °F (100 °C) Dk. Brown Wax⁶ 286 °F (141 °C) Dk. Brown Wax⁶

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 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.
- ⁴ The corrosion-resistant coatings have passed the standard corrosion test required by the approving agencies indicated on pages 11 d-e. 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.
- ⁵ Wax Over Polyester is unavailable for Sprinklers VK023 and VK122.
- ⁶ Wax melting point is 170 °F (76 °C) for 212 °F (100 °C) and 286 °F (141 °C) temperature rated sprinklers.

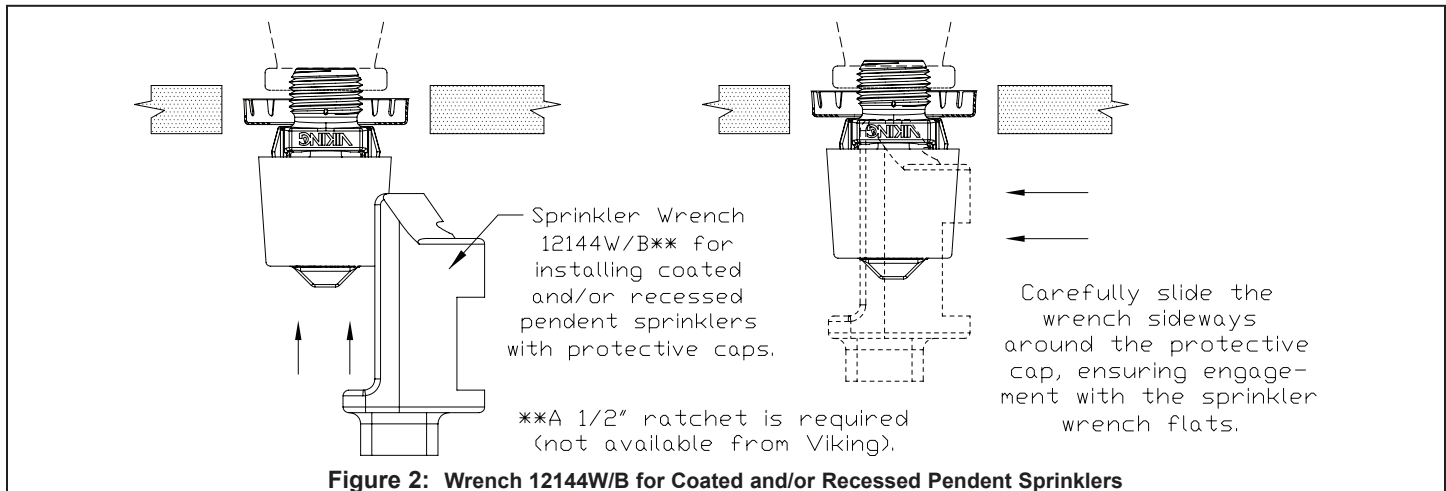


Figure 2: Wrench 12144W/B for Coated and/or Recessed Pendent Sprinklers


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Approval Chart 1 Micromatic® Standard Response Pendent Sprinklers Maximum 175 PSI (12 bar) WWP														
Sprinkler Base Part Number ¹	SIN	Thread Size		Nominal K-Factor		Overall Length		Listings and Approvals ³ (Refer also to Design Criteria on page 11 g.)						
		NPT	BSP	U.S.	metric ²	Inches	mm	cULus ⁴	FM	NYC ⁷	VdS	LPCB	CE	⊕
Standard Orifice														
10139	VK102	1/2"	15 mm	5.6	80.6	2-3/16"	56	B1, D5, E7, F4	A3, C6, F3	B1, D5, E7	B3	B3, D5	G3 ¹²	G3 ^{14,15}
10173 ¹¹	VK102	--	15 mm	5.6	80.6	2-3/16"	56	B1, D5, E7, F4	A3, C6, F3	B1, D5, E7	B3	B3, D5	--	--
Large Orifice														
10223	VK202	1/2"	15 mm	8.0	115.2	2-3/8"	60	B1, D5, E7, F4	B4, D6, F4	B1, D5, E7	B3	--	--	--
10142	VK202	3/4"	20 mm	8.0	115.2	2-5/16"	59	B1, D5, E7, F4	B4, D6, F4	B1, D5, E7	--	B3, D5	G4 ¹²	G4 ¹⁴
10170	VK202	--	20 mm	8.0	115.2	2-3/8"	60	B1, D5, E7	C6, A4	--	--	B3, D5	G4 ¹²	G4 ¹⁴
12105	VK202	3/4"	20 mm	8.0	115.2	2-3/16"	56	--	--	--	B3	--	B3 ¹³	--
Small Orifice⁹														
10221 ¹⁰	VK003	1/2"	15 mm	2.8	40.3	2-3/16"	56	B1, D5, E7	B4, D6	--	--	--	--	--
10222 ¹⁰	VK004	1/2"	15 mm	4.2	60.5	2-1/4"	58	B1, D5, E7	--	--	--	B3, D5	--	--
10175	VK004	--	10 mm	4.2	60.5	2-1/4"	58	--	--	--	B3	B3, D5	G3 ¹³	G3 ^{14,15}
10189 ^{10,11}	VK003	--	15 mm	2.8	40.3	2-3/16"	56	B1, D5, E7	B4, D6	--	--	--	--	--
Approved Temperature Ratings 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), 286 °F (141 °C), and 360 °F (182 °C) C - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), and 212 °F (100 °C) D - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C) E - 286 °F (141 °C) F - 500 °F (260 °C) ⁸ G - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), 286 °F (141 °C), and 360 °F (182 °C)								Approved Finishes 1 - Brass, Chrome-Enloy®, White Polyester ^{5,6} , Black Polyester ^{5,6} , and Black Teflon ^{6,5} 2 - White Polyester ⁶ , Black Polyester ⁶ , Black Teflon®, Wax-Coated Brass, and Wax over Polyester 3 - Brass, Chrome-Enloy®, White Polyester ⁶ , and Black Polyester ⁶ 4 - Brass and Chrome-Enloy® 5 - Wax-Coated Brass and Wax Over Polyester ⁶ 6 - Wax-Coated Brass (corrosion resistant) 7 - High Temperature 200 °F (93 °C) Wax Coating (corrosion resistant); maximum ambient temperature allowed at ceiling = 150 °F (65 °C)						
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 Accepted for use, City of New York Department of Buildings, MEA Number 89-92-E, Vol. 12. ⁸ 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. ⁹ Listings and Approvals limited to Light Hazard Occupancies where allowed by the installation standards being applied, with hydraulically calculated wet systems only. ¹⁰ The sprinkler orifice is bushed. ¹¹ Sprinklers 10173 and 10189 are available on special order. ¹² CE Certified, Standard EN 12259-1, EC-certificate of conformity 0832-CPD-2001 and 0832-CPD-2003. ¹³ CE Certified, Standard EN 12259-1, EC-certificate of conformity 0786-CPD-40141 and 0786-CPD-40181. ¹⁴ MED Certified, Standard EN 12259-1, EC-certificate of conformity 0832-MED-1003 and 0832-MED-1008. ¹⁵ MED Certified, RINA Certificate No. MED497705C5.														


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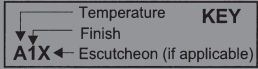
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Approval Chart 2 Micromatic® Standard Response Pendent Sprinklers Maximum 175 PSI (12 bar) WWP														
Sprinkler Base Part Number ¹	SIN	Thread Size		Nominal K-Factor		Overall Length		Listings and Approvals ³ (Refer also to Design Criteria on page 11g.)						
		NPT	BSP	U.S.	metric ²	Inches	mm	cULus ⁴	FM	NYC ⁷	VdS	LPCB	CE ¹²	
Installed with the Viking Micromatic® Model E-1 or E-2 Recessed Escutcheon														
10139	VK102	1/2"	15 mm	5.6	80.6	2-3/16"	56	B1	A2 ¹⁰	B1	B2	B2	C2	--
10173 ¹¹	VK102	--	15 mm	5.6	80.6	2-3/16"	56	B1	A3 ¹⁰	--	--	B2	--	--
10223	VK202	1/2"	15 mm	8.0	115.2	2-3/8"	60	B1	B3 ¹⁰	B1	--	--	--	--
10142	VK202	3/4"	20 mm	8.0	115.2	2-5/16"	59	B1	B3 ¹⁰	B1	--	B2	C2	--
10170	VK202	--	20 mm	8.0	115.2	2-3/8"	60	B1	B3 ¹⁰	--	--	B2	C2	--
12105	VK202	3/4"	20 mm	8.0	115.2	2-3/16"	56	--	--	--	B2	--	B2	--
10221 ^{8,9}	VK003	1/2"	15 mm	2.8	40.3	2-3/16"	56	B1	A3 ⁸	B1	--	--	--	--
10222 ^{8,9}	VK004	1/2"	15 mm	4.2	60.5	2-1/4"	58	B1	--	B1	--	B2	--	--
Installed with the Viking Microfast® Model F-1 Adjustable Escutcheon														
10139	VK102	1/2"	15 mm	5.6	80.6	2-3/16"	56	B1	--	B1	D2	B2	--	--
10223	VK202	1/2"	15 mm	8.0	115.2	2-3/8"	60	B1	--	B1	B2	--	--	--
10221 ^{8,9}	VK003	1/2"	15 mm	2.8	40.3	2-3/16"	56	B1	--	B1	--	--	--	--
Approved Temperature Ratings								Approved Finishes						
A - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), and 212 °F (100 °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), and 200 °F (93 °C) D - 286 °F (141 °C)								1 - Brass, Chrome-Enloy®, White Polyester ^{5,6} , Black Polyester ^{5,6} , and Black Teflon ^{6,5} 2 - Brass, Chrome-Enloy®, White Polyester ⁶ , and Black Polyester ⁶ 3 - Brass and Chrome-Enloy®						
Footnotes														
¹ Base part number is 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. 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 Accepted for use, City of New York Department of Buildings, MEA Number 89-92-E, Vol. 12. ⁸ Listings and Approvals limited to Light Hazard Occupancies where allowed by the installation standards being applied, with hydraulically calculated wet systems only. ⁹ The sprinkler orifice is bushed. ¹⁰ FM Approval of Viking Micromatic® Standard Response Recessed Pendent Sprinklers installed with the Viking Micromatic® Model E-1 or E-2 Recessed Escutcheon is limited to wet systems and preaction systems qualifying as wet systems, for hazard occupancies up to and including Ordinary Hazard, Group II. ¹¹ Sprinkler 10173 is available on special order. ¹² CE Certified, Standard EN 12259-1, EC-certificate of conformity 0786-CPD-40181, 0832-CPD-2001, and 0832-CPD-2003.														

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Approval Chart 3 MicromaticHP® Standard Response Pendent Sprinklers Maximum 250 PSI (17 bar) WWP														
Sprinkler Base Part Number ¹	SIN	Thread Size		Nominal K-Factor		Overall Length		Listings and Approvals ³ (Refer also to Design Criteria on page 11g.)						
		NPT	BSP	U.S.	metric ²	Inches	mm	cULus ⁴	FM	NYC	VdS	LPCB	CE	
Standard Orifice														
09992	VK122	1/2"	15 mm	5.6	80.6	2-1/4"	58	A1, D2	--	--	--	--	--	--
Small Orifice⁷														
09994 ^{7,8}	VK023	1/2"	15 mm	2.8	40.3	2-1/4"	58	A1	--	--	--	--	--	--
Installed with the Viking Micromatic® Model E-1 or E-2 Recessed Escutcheon														
09992	VK122	1/2"	15 mm	5.6	80.6	2-1/4"	58	C1	--	--	--	--	--	--
09994 ^{7,8}	VK023	1/2"	15 mm	2.8	40.3	2-1/4"	58	C1	--	--	--	--	--	--
Installed with the Viking Microfast® Model F-1 Adjustable Escutcheon														
09992	VK122	1/2"	15 mm	5.6	80.6	2-1/4"	58	B1	--	--	--	--	--	--
09994 ^{7,8}	VK023	1/2"	15 mm	2.8	40.3	2-1/4"	58	B1	--	--	--	--	--	--
Approved Temperature Ratings 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), 200 °F (93 °C), and 286 °F (141 °C) C - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C) D - 500 °F (260 °C) ⁸								Approved Finishes 1 - Brass, Chrome-Enloy®, White Polyester ^{5,6} , Black Polyester ^{5,6} , and Black Teflon ⁵ 2 - Brass and Chrome-Enloy®						
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 Listings and Approvals limited to Light Hazard Occupancies where allowed by the installation standards being applied, with hydraulically calculated wet systems only. ⁸ The sprinkler orifice is bushed. ⁹ 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.														



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DESIGN CRITERIA
 (Also refer to the Approval Charts on pages 11d-f.)

cULus Listing Requirements:

Micromatic® and MicromaticHP® Standard Pendent Sprinklers are cULus Listed as indicated in the Approval Charts for installation in accordance with the latest edition of NFPA 13 for standard spray sprinklers.

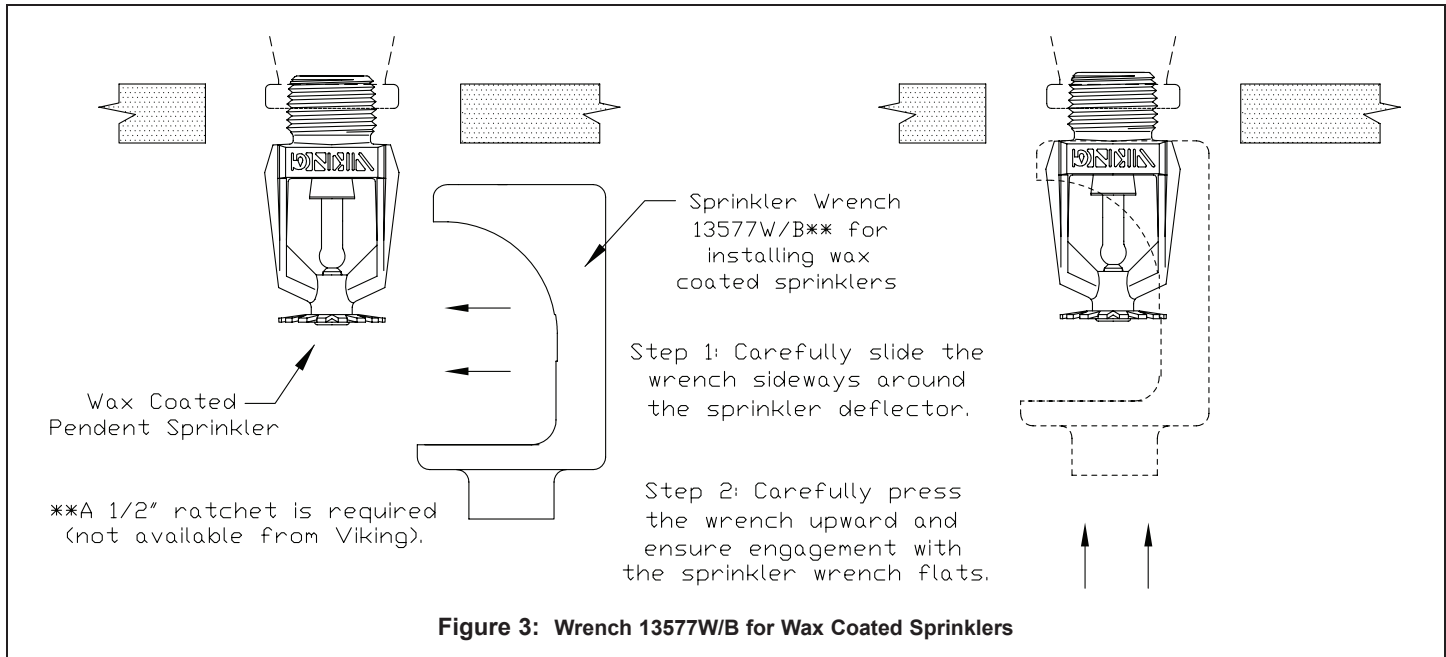
- Designed for use in Light, Ordinary, and Extra Hazard occupancies (*exception: small orifice sprinklers are limited to Light Hazard where allowed by the installation standards being applied, with hydraulically calculated wet systems only.*)
- The sprinkler installation rules contained in NFPA 13 for standard spray pendent sprinklers must be followed.

FM Approval Requirements:

Standard Pendent Sprinklers are FM Approved as indicated in the Approval Charts for installation in accordance with the latest applicable FM Loss Prevention Data Sheets (including 2-8N) 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 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.



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