



TECHNICAL DATA

MIRAGE® QUICK RESPONSE CONCEALED PENDENT MRI SPRINKLERS (K5.6 & 8.0)

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

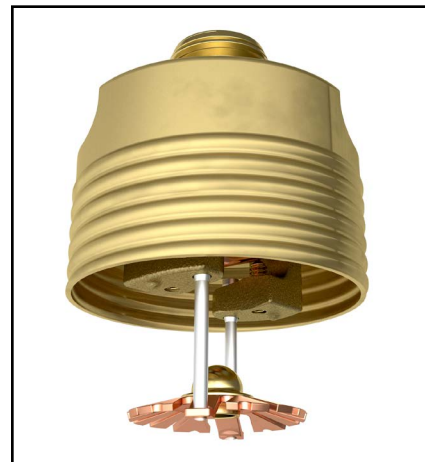
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Visit the Viking website for the latest edition of this technical data page.

1. DESCRIPTION

Viking Mirage® Quick Response Concealed MRI Sprinklers are intended for use inside an MRI environment, such as the MR system room. They are not intended to be used within the bore of the MR scanner itself. This sprinkler has been independently tested for use with a 3-Tesla MR system in accordance with ASTM F2052-15 criteria. The results of this test demonstrate that this product is acceptable for use in an environment with a static magnetic field of 3-Tesla or less and the highest spatial gradient magnetic field of 330-Gauss/cm or less.

The sprinkler is pre-assembled with a threaded adapter for installation 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 "push-on" and "thread-on" designs of the concealed cover plate assemblies allow 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.



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

2. LISTINGS AND APPROVALS

 **cULus Listed:** Category VNIV

 **CE:** Standard EN12259-1, DOP_VK462MRI_22-9-20

Refer to the Approval Chart and Design Criteria for cULus Listing requirements that must be followed.

3. TECHNICAL DATA

Specifications:

Available since 2008.

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) or 3/4" (20 mm) NPT

Nominal K-Factor: 5.6 U.S. (80.6 metric*) or 8.0 U.S. (115.2 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)

Patents Pending

Material Standards:

Sprinkler Body: Brass UNS-C84400

Deflector: Phosphor Bronze UNS-C51000

Deflector Pins: Stainless Steel Alloy

Bulb: Glass, nominal 3 mm diameter

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

Button: Brass UNS-C36000

Screws: 18-8 Stainless Steel

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

Yoke: Phosphor Bronze UNS-C51000

Cover Adapter: Brass UNS-C26800

Cover Assembly Materials:

Cover: Copper UNS-C11000

Base: Brass UNS-C26800 or UNS-C26000

Springs: Nickel Alloy

Solder: Eutectic

Ordering Information: The sprinkler and cover plate must be ordered separately. Refer to Tables 1 and 2.

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4. INSTALLATION

Refer to appropriate NFPA Installation Standards.

5. OPERATION

During fire conditions, when the temperature around the sprinkler approaches its operating temperature, the cover plate detaches. Continued heating of the exposed sprinkler causes the heat-sensitive liquid in the glass bulb to expand and the bulb to shatter, releasing the yoke, 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 Sprinklers VK462 and VK464 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.



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Ordering Instructions - Sprinkler Base

1. Choose a sprinkler base part number with the required thread size and listing or approval (refer to the approval chart).
2. Add the suffix for the desired finish.
3. Add the suffix for the desired temperature rating.
4. Order a cover plate (refer to Ordering Instructions - Cover Plate).

Example:

15480AE = 200 °F (93 °C) Temperature Rated Sprinkler with a standard Brass finish.

NOTE: If ordering the MRI sprinkler by referring to the SIN, be sure to specify "MRI".

1. Sprinkler Base Part Numbers¹

Part Number	Thread Size
15480A	1/2" NPT
15481A	3/4" NPT

2. Temperature Ratings

Sprinkler Temperature Classification	Temperature Rating	Bulb Color	Maximum Ambient Ceiling Temperature ²	Suffix
Ordinary	155 °F (68 °C)	Red	100 °F (38 °C)	B
Intermediate	175 °F (79 °C)	Yellow	150 °F (68 °C)	D
Intermediate	200 °F (93 °C)	Green	150 °F (68 °C)	E

Accessories

Part Number	Description
14047W/B	Heavy-duty wrench (available since 2006) ³
14031	Head cabinet wrench (available since 2006) ⁴
14412	Optional concealed cover plate installer tool (available since 2007) ⁵
14867	Optional large concealed cover plate installer tool (available since 2007) ⁵
01731A	Sprinkler cabinet; holds up to 6 sprinklers (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. Requires a 1/2" ratchet which is not available from Viking.
4. Also optional for removal of the protective cap. Ideal for sprinkler cabinets.
5. The installer tool is for push-on style cover plates only.



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Ordering Instructions - Cover Plate

1. Choose a cover plate base part number with the desired shape and style (refer to the approval chart).
2. Add the suffix for the desired finish.
3. Add the suffix for the required temperature rating.

Example:

23190MC/W = 165 °F (74 °C) Temperature Rated, 2-3/4" (70 mm) diameter, Thread-On style Round Cover Plate with a Painted White finish.

1. Cover Plate Base Part Numbers^{1, 2}

Style	Base Part Number	Size Inches (mm)	Shape
Thread-On Style	23190	2-3/4 (70)	Round
	23174	3-5/16 (84)	Round
	23174-/CR	3-5/16 (84)	Round
Push-On Style	23447	2-3/4 (70)	Round
	23463	3-5/16 (84)	Round
	23463-/CR	3-5/16 (84)	Round

2. Available Finishes³

Description	Suffix
Polished Chrome	F
Brushed Chrome	F-/B
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^{4, 5}

The required cover plate temperature rating is determined by the sprinkler's temperature rating.

Sprinkler Temperature Classification ⁴	Required Cover Plate Temperature Rating	Corresponding Sprinkler Nominal Temperature Rating	Maximum Ambient Ceiling Temperature	Suffix
Ordinary	139 °F (59 °C)	155 °F (68 °C)	100 °F (38 °C)	A
Intermediate	165 °F (74 °C)	175 °F (79 °C)	150 °F (65 °C)	C
Intermediate	165 °F (74 °C)	200 °F (93 °C)	150 °F (65 °C)	C

FOOTNOTES

1. For complete part number, refer to current Viking price list schedule.
2. For cleanroom cover plate part numbers and approval details, see the Cleanroom Sprinkler Cover Assembly technical data sheet.
3. Where a dash (-) is shown in the Finish suffix designation, insert the desired Temperature Rating suffix. See example above.
4. The sprinkler temperature rating is stamped on the deflector.
5. 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.



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All custom color painted cover plates will have an identifying label affixed to the inside of the cover that indicates the custom color and will have a representative sample (a paint dot) of the paint on the label.

Figure 1: Identification of Custom Paint for Concealed Covers

Approval Chart							Sprinkler Temperature Rating Cover Plate Temperature Rating AW14 Cover Plate Finish KEY	
Mirage® Quick Response Concealed Pendent MRI Sprinklers								
Sprinkler Base Part Number¹	SIN	NPT Thread Size		Nominal K-Factor		Maximum Water Working Pressure	Listings and Approvals³ (Refer also to Design Criteria.)	
		Inch	mm	U.S.	metric²		cULus⁴,⁸	CE⁷
15480A	VK462	1/2"	15	5.6	80.6	175 psi (12 bar)	AW1, BX1	AW1, BX1
15481A	VK464	3/4"	20	8.0	115.2	175 psi (12 bar)	AW1, BX1	--
Sprinkler Temperature Ratings A - 155°F (68°C) B - 175°F (79°C) and 200°F (93°C)			Cover Plate Assembly Temperature Ratings⁵ W - 139°F (59°C) cover 23190, 23447 or 23174, 23463 (large diameter) X - 165°F (74°C) cover 23190, 23447 or 23174, 23463 (large diameter)				Cover Plate Assembly Finishes⁶ 1 - Polished Chrome, Brushed Chrome, Bright Brass, Antique Brass, Brushed Brass, Brushed Copper, Painted White, Painted Ivory, or Painted 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 139°F (59°F) cover has an orange label. The 165°F (74°C) cover has a white label.								
6. Painted finish consists of Polyester Baked Enamel. 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. CE: Standard EN 12259-1, Declaration of Performance DOP_VK462MRI_22-9-20.								
8. Refer to the Cleanroom Sprinkler Cover Assembly technical data sheet for Viking's UL Listed cover plates with built-in gaskets.								
NOTE: Custom colors are indicated on a label inside the cover assembly. Refer to Figure 1.								



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DESIGN CRITERIA

(Also refer to the Approval Chart.)

cULus Listing Requirements:

Mirage® Concealed Pendent MRI Sprinklers were subjected to magnetic field interaction testing and determined to be MRI conditional according to the terminology specified in ASTM International, Designation F2502-15. These sprinklers are intended for use in a high magnetic field environment according to the following conditions:

1. Static magnetic field of 3-Tesla or less
2. Highest spatial gradient magnetic field of 330-Gauss/cm or less

Sprinklers VK462 and VK464 are cULus Listed for installation in accordance with the latest edition of NFPA 13 for standard coverage pendent spray sprinklers as indicated below.

- For hazard occupancies up to and including Ordinary Hazard, Group II.
- Protection areas and maximum spacing shall be in accordance with the tables provided in NFPA 13. 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 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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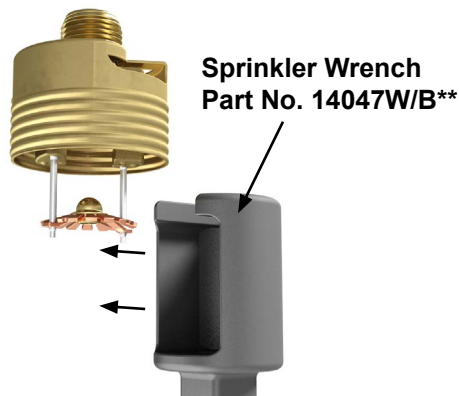
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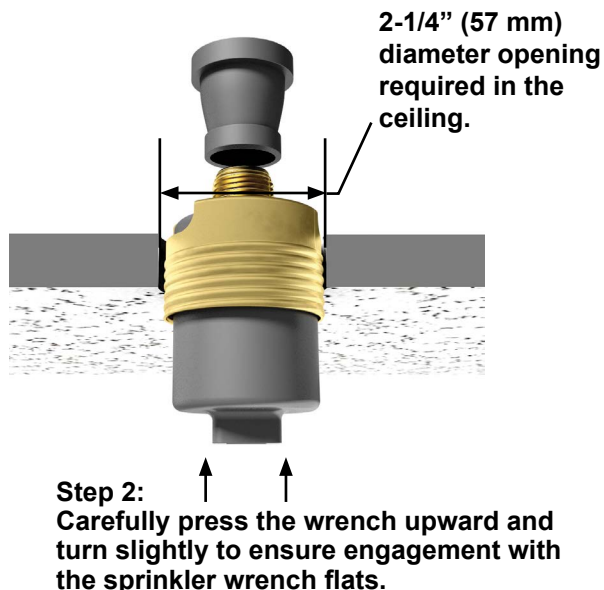
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Sprinkler and Adapter Assembly

- Protective cap removed
- Use wrench 14031**



Step 1:
Carefully slide the
wrench sideways around
the deflector and pins



- NEVER install the sprinkler by applying the installation wrench across the frame arms.
- DO NOT overtighten.
- Use only the designated sprinkler wrenches, Viking Part Numbers 14047W/B or 14031**.
- A leak tight seal should be achieved by turning the sprinkler clockwise 1 to 1-1/2 turns beyond finger tight.

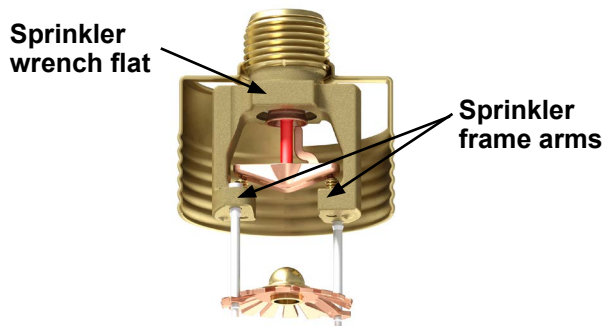


Figure 2: Sprinkler Installation and Proper Wrench Usage (Sprinkler VK462 Shown)

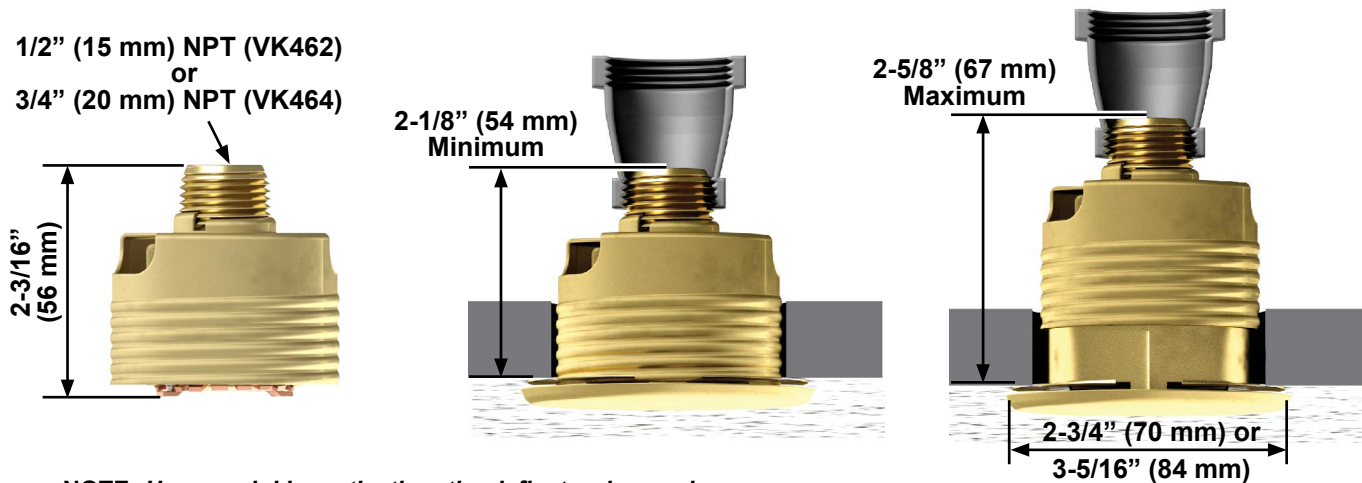
** A 1/2" ratchet is required (Not available from Viking)



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NOTE: Upon sprinkler activation, the deflector descends to approximately 13/16" (21 mm) below the sprinkler body.

Figure 3: Sprinkler Dimensions and Cover Installation (Sprinkler VK462 Shown)