



TECHNICAL DATA

CLEANROOM SPRINKLER COVER ASSEMBLIES

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

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1. DESCRIPTION

Viking Cleanroom Cover Assemblies are low-profile covers intended for use in cleanroom environments with Viking Mirage® Concealed Pendent Sprinkler VK462, MRI Sprinkler VK462 (listed as quick response), Sprinkler VK464 (listed as standard response for this application) or MRI Sprinkler VK464 (listed as standard response for this application). Note: Adding the seal does NOT change sprinkler VK462 QR listing. The silicone cover gasket is pre-assembled with the concealed cover for an acceptable sprinkler seal for use in a cleanroom or clean zone. The cover assembly is installed flush with the ceiling to provide a smooth appearance, and is available in several standard decorative finishes to meet design requirements. Viking concealed cover plate assemblies may also be custom ordered with any color by any paint manufacturer.

The low-profile cover assembly is designed with a threaded adapter and provides up to ½" (13 mm) of vertical adjustment. The two-piece sprinkler and cover plate design allows installation and testing of the sprinkler prior to installation of the cover plate. The "push-on", "thread-off" design of the concealed cover plate assembly allows 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.



2. LISTINGS AND APPROVALS



cULus Listed: Category VNIV

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

3. TECHNICAL DATA

Specifications:

Refer to the appropriate sprinkler technical page for sprinkler specifications.

Material Standards:

Cover Plate: Copper UNS-C11000 or Stainless Steel UNS-S30400

Base: Brass UNS-C26000 or UNS-C26800

Gasket: Silicone

Springs: Nickel Alloy

Solder: Eutectic

Ordering Information: (Also refer to the current Viking list price book.)

Base Part No. 23174-/CR (3-5/16" diameter) for Sprinkler VK462, VK464, and MRI Sprinklers VK462 and VK464.

Specify finish and temperature rating of the cover plate assembly by first adding the appropriate suffix for the finish and then the appropriate suffix for the cover temperature rating to the base part number:

- Finish Suffix: Polished Chrome = F, Painted White = M-/W, Painted Ivory = M-/I, Painted Black = M-/B
- Temperature Suffix: 135 °F (57 °C) = A, 165 °F (74 °C) = C

For example, cover 23174-/CR with a Painted White finish and a 165 °F (74 °C) temperature rating = 23174MC/W/CR.

Stainless Steel Base Part No. 23183-/CR (3-5/16" diameter) for Sprinkler VK462.

Temperature Suffix: 135 °F (57 °C) = A


For example, cover 23183-/CR with a 135 °F (57 °C) temperature rating = 23183A/CR.

Available Cover Plate Finishes And Temperature Ratings: Refer to Table 1.

4. INSTALLATION

A. After installation of Mirage® Concealed Pendent Sprinkler VK462 or VK464, testing of the system, repairing of all leaks, and installation and painting of the ceiling, the concealed sprinkler cover plate assembly may be attached.

1. Remove the plastic protective cap from the sprinkler.
2. Remove the cover plate assembly from the protective box, taking care not to damage the assembly.
3. Gently place the base of the cover plate assembly over the sprinkler protruding through the 2-1/4" (57.2 mm) ceiling opening.
4. Carefully push the cover plate assembly onto the sprinkler until the cover plate flange fits tightly against the ceiling surface. The maximum adjustment available is ½" (12.7 mm). DO NOT MODIFY THE UNIT. If necessary, re-cut the sprinkler nipple.

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- B. DISASSEMBLY: Cover plates can be removed by gently unthreading them from the sprinkler body.
- C. RE-ASSEMBLY: The push-on feature of these cover plate assemblies allows easy installation of the cover plates.

1. Gently place the base of the cover plate assembly over the sprinkler.
2. Push the cover plate assembly onto the sprinkler until the cover plate flange fits tightly against the surface of the ceiling.

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 Concealed Sprinklers VK462 and VK464 and Cleanroom Cover Assemblies 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.

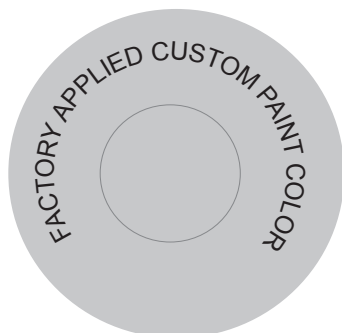
TABLE 1: AVAILABLE COVER PLATE ASSEMBLY TEMPERATURE RATINGS AND FINISHES

Sprinkler Temperature Classification	Sprinkler Nominal Temperature Rating ¹	Maximum Ambient Ceiling Temperature ²	Temperature Rating of Cover Assembly (Required)	Sprinkler Bulb Color	Cover Plate Part No. ³
Ordinary	155 °F (68 °C)	100 °F (38 °C)	135 °F (57 °C)	Red	23183-/CR ⁴
Ordinary	155 °F (68 °C)	100 °F (38 °C)	135 °F (57 °C)	Red	23174-/CR
Intermediate	175 °F (79 °C)	150 °F (65 °C)	165 °F (74 °C)	Yellow	
Intermediate	200 °F (93 °C)	150 °F (65 °C)	165 °F (74 °C)	Green	

Cover Plate Finishes: Polished Chrome, Painted White, Painted Ivory, or Painted Black

Footnotes

1. The sprinkler temperature rating is stamped on the sprinkler 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. Part number shown is the base part number. For complete part number, refer to current Viking price list schedule.
4. Stainless Steel versions are not available with any finishes or paint.



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



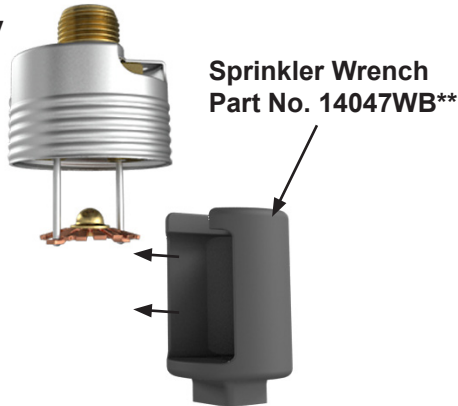
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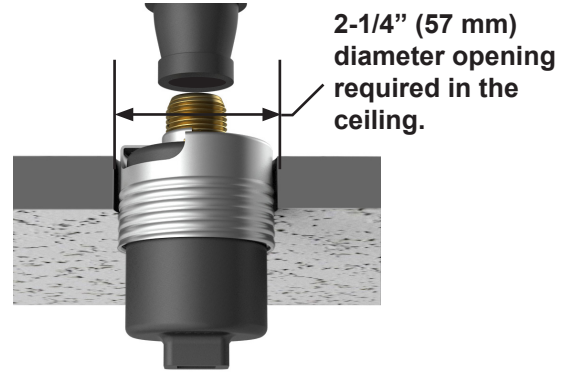
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Sprinkler and Adapter Assembly

- Protective cap removed
- Use wrench 14047WB**



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



Step 2:
 Carefully press the wrench upward and turn slightly to ensure engagement with the sprinkler wrench flats.

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 14047WB** or 14031**. A leak tight seal should be achieved by turning the sprinkler clockwise 1 to 1-1/2 turns beyond finger tight.

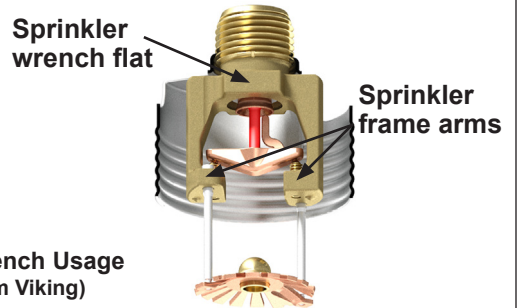


Figure 2: Sprinkler Installation and Proper Wrench Usage
 ** A 1/2" ratchet is required (Not available from Viking)



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Approval Chart

Mirage® Concealed Pendent Sprinklers VK462 and VK464
 and MRI Sprinklers VK462 and VK464 with Large Diameter Cleanroom Cover Assembly 23174-/CR

—	Sprinkler Temperature Rating
—	Cover Plate Temperature Rating
AW1	Cover Plate Finish KEY

Sprinkler Base Part Number ¹	SIN	NPT Thread Size		Nominal K-Factor		Maximum Water Working Pressure		Listings and Approvals ³ (Refer also to Design Criteria below and on the applicable sprinkler data page.)		
		Inch	mm	U.S.	metric ²	psi	bar	cULus ⁴	FM	NYC
Quick Response Applications										
13503A	VK462	1/2"	15	5.6	80.6	175	12	AW1, BX1, AY2	--	--
15480A	VK462 (MRI)	1/2"	15	5.6	80.6	175	12	AW1, BX1	--	--
Standard Response Applications										
13614A	VK464	3/4"	20	8.0	115.2	175	12	AW1, BX1	--	--
15481A	VK464 (MRI)	3/4"	20	8.0	115.2	175	12	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 - 135 °F (57 °C) cleanroom cover assembly 23174-A/CR ¹ X - 165 °F (74 °C) cleanroom cover assembly 23174-C/CR ¹ Y - 135 °F (57 °C) cleanroom cover assembly 23183A/CR ¹					Finishes of the Cover Plate Assembly⁶ 1 - Polished Chrome, Painted White, Painted Ivory, or Painted Black 2 - Stainless Steel ⁷			

Footnotes

- Part number shown is the base part number. For complete part number, refer to current Viking price list schedule.
- 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.
- 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.
- Listed by Underwriter's Laboratories for use in the U.S. and Canada.
- The 135 °F (57 °C) cover has an orange label. The 165 °F (74 °C) cover has a white label.
- 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.
- Stainless Steel is not considered a finish.

NOTE: Custom colors are indicated on a label inside the cover assembly. Refer to Figure 1.

DESIGN CRITERIA

(Also refer to the Approval Chart above.)

cULus Listing Requirements:

Viking Cleanroom Sprinkler Cover Assembly 23174-/CR is cULus Listed for use with the Mirage® Concealed Pendent Sprinklers VK462 (QR), VK464 (SR), and MRI Sprinklers VK462 (QR) or VK464 (SR) in a cleanroom or clean zone for installation in accordance with the latest edition of NFPA 13 for cleanrooms when the following conditions are met:

- Wet systems shall be provided throughout the facility containing cleanrooms and clean zones.
- Sprinklers shall be installed in the plenum and interstitial space above cleanrooms and shall be hydraulically designed for a density of 0.2 gpm (8.15 L/min m²) over a design area of 3000 ft² (278.8 m²).
- Sprinklers installed in duct systems shall be hydraulically designed for a density of 0.5 gpm (1.9 L/min) over an area derived by multiplying the distance between the sprinklers in a horizontal duct by the width of the duct. Minimum discharge shall be 20 gpm (76 L/min) per sprinkler from the five (5) hydraulically most remote sprinklers.
- Sprinklers installed in ductwork shall be spaced a maximum of 20 ft (6.1 m) apart horizontally and 12 ft (3.7 m) apart vertically.
- A separate indicating control valve shall be provided for sprinklers installed in ductwork.
- The sprinklers shall be accessible for periodic inspection and maintenance.

NOTE: Sprinkler VK464 is cULus Listed as a **standard response** sprinkler when using Cleanroom Sprinkler Cover Assembly 23174-A/CR. However, it is listed as a **quick response** sprinkler as indicated on sprinkler technical data page 55a-e when using Cover Assembly 23174 (for non-cleanroom applications).

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to the applicable sprinkler data page, and page 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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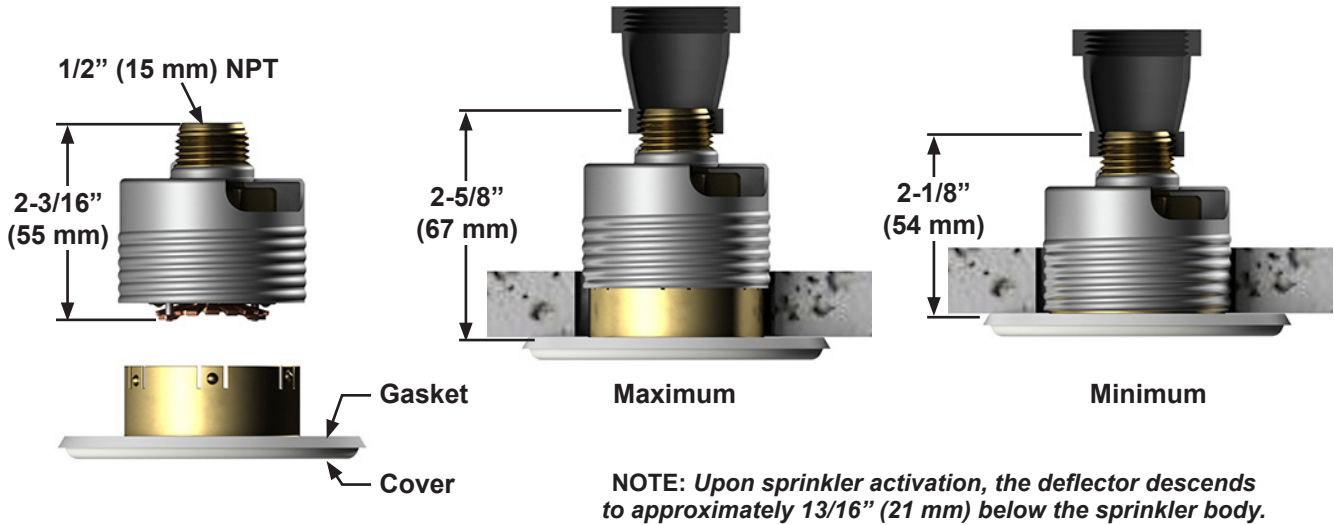


Figure 3: Sprinkler VK462 Dimensions and Cover Installation

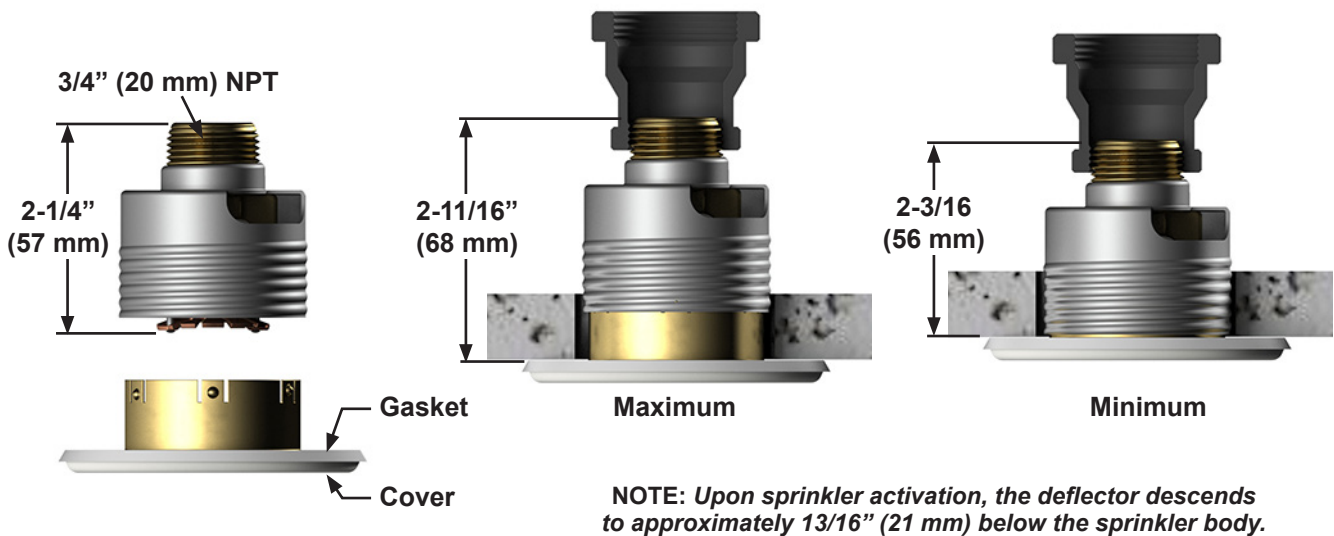


Figure 4: Sprinkler VK464 Dimensions and Cover Installation