



TECHNICAL DATA

MIRAGE® STANDARD AND QR CONCEALED PENDENT SPRINKLER VK462 AND HP SPRINKLER VK463 (K5.6)

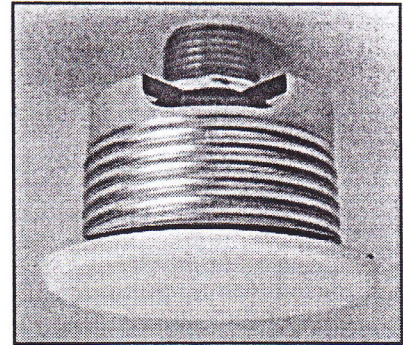
The Viking Corporation, 210 N Industrial Park Road, Hastings MI 49058

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

1. DESCRIPTION

Viking Mirage® Standard and Quick Response Concealed Pendent Sprinkler VK462 and HP Sprinkler VK463 are thermosensitive glass-bulb spray sprinklers designed for installation on concealed pipe systems where the appearance of a smooth ceiling is desired.

The sprinkler is pre-assembled with a threaded adapter for installation with a low-profile cover assembly that provides up to 1/2" (12.7 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", "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

FM Approval: Class 2015

NYC Approved: MEA 89-92-E, Volume 32

LPC Approved: Ref. No. 096e/12

CE Certified: Standard EN 12259-1, EC-certificate of conformity 0832-CPD-2032

Refer to the Approval Chart on page 54c and Design Criteria on page 54d for cULus Listing requirements that must be followed.

3. TECHNICAL DATA

Specifications:

Available since 2006.

Minimum Operating Pressure: 7 psi (0.5 bar)*

Maximum Working Pressure: Sprinkler VK463 is rated for use with water working pressures ranging from the minimum 7 psi (0.5 bar) up to 250 psi (17.2 bar) for high-pressure systems. High-pressure (HP) sprinklers can be identified by locating "250" stamped on the deflector. Sprinkler VK462 is 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: 1/2" (15 mm) NPT

Nominal K-Factor: 5.6 U.S. (80.6 metric†)

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

Patents Pending

*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).

†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.

Material Standards:

Sprinkler Body: Brass UNS-C84400

Deflector: Copper UNS-C19500 for Sprinkler VK462

Phosphor Bronze UNS-C51000 for Sprinkler VK463

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: Cold Rolled Steel UNS-G10080, Finish: Clear Chromate over Zinc Plating

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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Approval Chart														
Mirage® Concealed Pendent Sprinklers VK462 and VK463														
<div><div>Sprinkler Temperature Rating</div><div>Cover Plate Temperature Rating</div><div>AW1 Cover Plate Finish KEY</div></div>														
Sprinkler Base Part Number ¹	SIN	NPT Thread Size		Nominal K-Factor		Maximum Water Working Pressure	Overall Length (Sprinkler Body)		Listings and Approvals ⁴ (Refer also to Design Criteria on page 54d.)					
		Inch	mm	U.S.	metric ²		Inches	mm	cULus ⁵	FM	NYC ⁶	LPCB	CE ⁷	
Standard Response Applications														
13503A	VK462	1/2"	15	5.6	80.6	175 psi (12 bar)	2-3/16"	56	--	AW1, BZ1	—	—	—	
14697A	VK462	1/2"	15	5.6	80.6	175 psi (12 bar)	2-3/16"	56	--	—	—	AX2, BY2	AX2, BY2	
Quick Response Applications														
13503A	VK462	1/2"	15	5.6	80.6	175 psi (12 bar)	2-3/16"	56	AW1, BY1	--	AX1, BY1	—	—	
14697A	VK462	1/2"	15	5.6	80.6	175 psi (12 bar)	2-3/16"	56	AW1, BY1	--	AX1, BY1	—	—	
13667A	VK463	1/2"	15	5.6	80.6	250 psi (17.2 bar) ³	2-3/16"	56	AW1, BY1	--	AX1, BY1	—	--	
Sprinkler Temperature Ratings A - 155 °F (68 °C) B - 175 °F (79 °C) and 200 °F (93 °C)						Cover Plate Assembly Temp. Ratings ⁸ W - 135 °F (57 °C) cULus Listed cover 13504 ¹ , 13642 ¹ (large diameter), or 15394 ¹ (square cover plate) <i>FM Approved</i> as 139 °F (59 °C) X - 135 °F (57 °C) cULus Listed cover 13504 ¹ or 13642 ¹ (large diameter) Y - 165 °F (74 °C) cover 13504 ¹ or 13642 ¹ (large diameter) Z - 165 °F (74 °C) cover 13504 ¹ , 13642 ¹ (large diameter), or 15394 ¹ (square cover plate)				Finishes of the Cover Plate Assembly ⁹ 1 - Polished Chrome, Painted White, Painted Ivory, or Painted Black 2 - Polished Chrome, Painted White				
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 The Water Working Pressure rating is stamped on the deflector.														
⁴ 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.														
⁵ Listed by Underwriter's Laboratories for use in the U.S. and Canada.														
⁶ Accepted for use, City of New York Department of Buildings, MEA Number 89-92-E, Vol. 32.														
⁷ Certified, Standard EN 12259-1, EC-certificate of conformity 0832-CPD-2032.														
⁸ The 135/139 °F cover has an orange label. The 165 °F cover has a white label.														
⁹ 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.														
NOTE: Custom colors are indicated on a label inside the cover assembly. Refer to Figure 1.														

TABLE 1: AVAILABLE SPRINKLER TEMPERATURE RATINGS AND FINISHES

Sprinkler Temperature Classification	Sprinkler Nominal Temperature Rating ¹	Maximum Ambient Ceiling Temperature ²	Temperature Rating of Cover Assembly (Required)	Bulb Color
Ordinary	155 °F (68 °C)	100 °F (38 °C)	135 °F (57 °C) cULus 139 °F (59 °C) FM	Red
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.

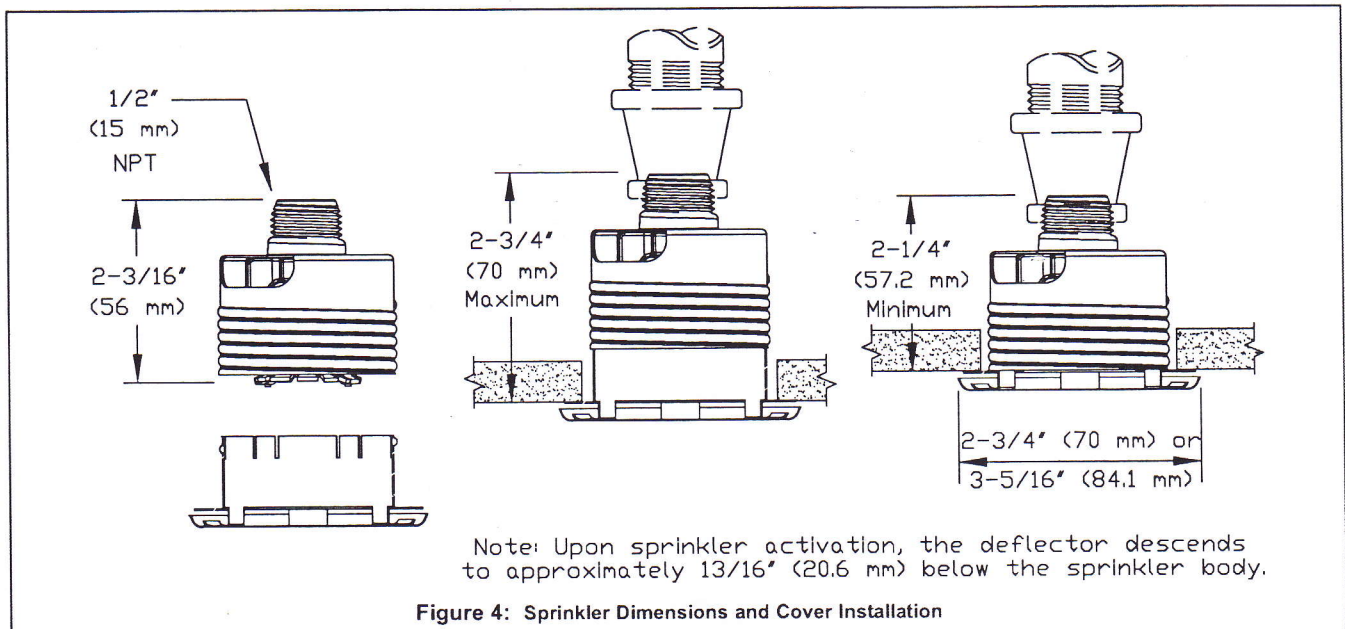
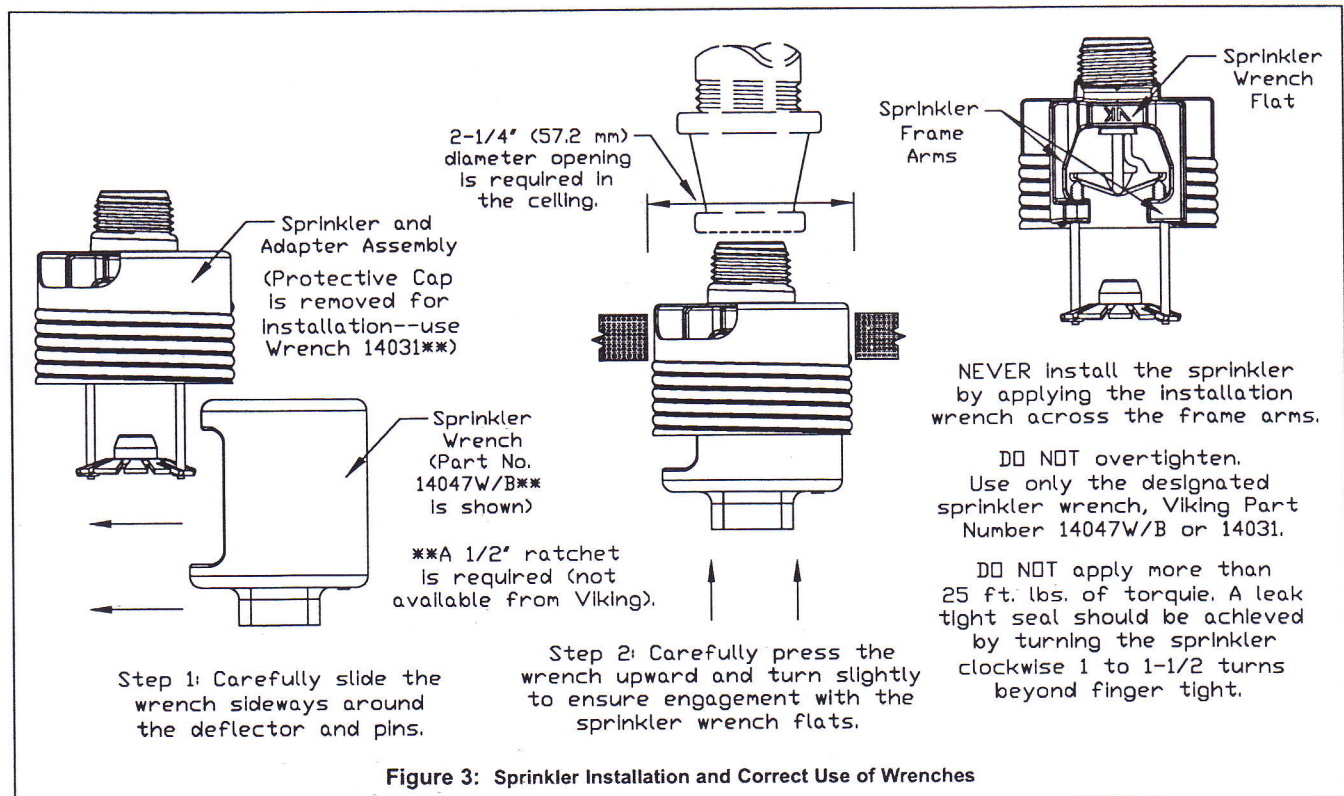
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QUICK RESPONSE SPRINKLERS GENERAL CARE, INSTALLATION, AND MAINTENANCE GUIDE

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- 1a. For frame-style sprinklers, install escutcheon (if used), which is designed to thread onto the external threads of the sprinkler. Refer to the appropriate sprinkler data page to determine approved escutcheons for use with specific sprinkler models.
- 1b. For quick response flush and concealed style sprinklers: Cut the sprinkler nipple so that the 1/2" or 3/4" (15 mm or 20 mm)* NPT outlet of the reducing coupling is at the desired location, and centered in the opening* in the ceiling or wall.
*Size depends on the sprinkler model used. Refer to the sprinkler technical data page.
2. Apply a small amount of pipe-joint compound or tape to the external threads of the sprinkler only, taking care not to allow a build-up of compound in the sprinkler inlet. **NOTE:** Sprinklers with protective caps or bulb shields must have the caps or shields kept on them when applying pipe-joint compound or tape. *Exception: For domed concealed sprinklers VK302, VK352, VK461, VK462, VK463, and VK464, remove the protective cap for installation, and then place it back on the sprinkler temporarily.*
3. Refer to the appropriate sprinkler technical data page to determine the correct sprinkler wrench for the model of sprinkler used. **DO NOT** use the deflector or fusible element to start or thread the sprinkler into a fitting.
 - a. Install the sprinkler onto the piping using the special sprinkler wrench only, taking care not to over-tighten or damage the sprinkler.
 - b. For flush and concealed style sprinklers: the internal diameter of the special sprinkler installation wrench is designed for use with the sprinkler contained in the protective cap. *Exception: For domed concealed sprinklers VK302, VK352, VK461, VK462, VK463, and VK464, remove the protective cap for installation, and then place it back on the sprinkler temporarily.* Thread the quick response flush or concealed sprinkler into the 1/2" or 3/4" (15 mm or 20 mm)* NPT outlet of the coupling by turning it clockwise with the special sprinkler wrench. *Thread size depends on the particular sprinkler model used. Refer to the sprinkler technical data page.
4. After installation, the entire sprinkler system must be tested. The test must be conducted to comply with the installation standards. Viking *high pressure* sprinklers may be hydrostatically tested at a maximum of 300 psi (20.7 bar) for limited periods of time (two hours), for the purpose of acceptance by the Authority Having Jurisdiction.
 - a. Make sure the sprinkler is properly tightened. If a thread leak occurs, normally the sprinkler must be removed, new pipe-joint compound or tape applied, and then reinstalled. This is due to the fact that when the joint seal is damaged, the sealing compound or tape is washed out of the joint. Air testing [do not exceed 40 psi (2.76 bar)] the sprinkler piping prior to testing with water may be considered in areas where leakage during testing must be prevented. Refer to the Installation Standards and the Authority Having Jurisdiction.
 - b. **Remove plastic protective sprinkler caps or bulb shields AFTER the wall or ceiling finish work is completed where the sprinkler is installed and there no longer is a potential for mechanical damage to the sprinkler operating elements.** To remove the bulb shields, simply pull the ends of the shields apart where they are snapped together. To remove caps from frame style sprinklers, turn the caps slightly and pull them off the sprinklers. **SPRINKLER CAPS OR BULB SHIELDS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!** Retain a protective cap or shield in the spare sprinkler cabinet.
5. For quick response flush style sprinklers: the escutcheon ring can now be installed onto the sprinkler body. Align the escutcheon ring with the sprinkler body and thread or push it on (depends on sprinkler model) until the outer flange touches the surface of the ceiling or wall in which the sprinkler is installed. Note the maximum adjustment is 1/4" (6.35 mm). **DO NOT MODIFY THE UNIT.** If necessary, re-cut the sprinkler nipple as required.
6. For quick response concealed sprinklers: the cover assembly can now be attached.
 - a. Remove the cover from the protective box, taking care not to damage the cover plate assembly.
 - b. Gently place the base of the cover plate assembly over the sprinkler protruding through the opening in the ceiling or wall.
 - c. Push the cover plate assembly onto the sprinkler until the unfinished brass flange of the cover plate base (or the cover adapter, if used) touches the surface of the ceiling or wall.
 - d. The maximum adjustment available for quick response concealed sprinklers is 1/2" (12.7 mm). **DO NOT MODIFY THE UNIT.** If necessary, re-cut the sprinkler nipple.

NOTE: If it is necessary to remove the entire sprinkler unit, the system must be taken out of service. See section 6. INSPECTIONS, TESTS AND MAINTENANCE and follow all warnings and instructions.

5. OPERATION

Refer to the appropriate sprinkler technical data page(s). During fire conditions, the operating element fuses or shatters (depending on the type of sprinkler), releasing the pip cap and sealing assembly. Water flowing through the sprinkler orifice strikes the sprinkler deflector, forming a uniform spray pattern to extinguish or control the fire.



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Cover Assembly Materials:

Cover: Copper UNS-C11000

Base: Brass UNS-C26000 or UNS-C26800

Springs: Nickel Alloy

Solder: Eutectic

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

Viking Mirage® Standard and Quick Response Concealed Pendent Sprinklers and Cover Plate Assemblies must be ordered separately:

Sprinkler: Base Part No. 13503A, 14697A, or HP Base Part No. 13667A

Specify sprinkler temperature rating by adding the appropriate suffix for the temperature rating to the base part number:

Temperature Suffix (°F/°C): 155°/68° = B, 175°/79° = D, 200°/93° = E

For example, sprinkler VK463 with a 155 °F/68 °C temperature rating = 13667AB.

Cover Plate Assembly: Base Part No. 13504 (2-3/4" diameter), Base Part No. 13642 (3-5/16" diameter), or Base Part No. 15394 (square cover plate, 3-5/16" diameter)

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-/SW1004, Painted Ivory = M-/SW1634, Painted Black = M-/SW1007

Temperature Suffix (°F/°C): 135°/57° UL (139°/59° FM) = A, 165°/74° = C

For example, cover 13504 with a Polished Chrome finish and a 165 °F/74 °C temperature rating = 13504FC.

Note: Square cover plate 15394 cULus Listing is for the 135 °F (57 °C) temperature rated cover plate only. Refer to the Approval Chart.

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. Heavy Duty Wrench Part No. 14047W/B (available since 2006), or

B. Head Cabinet Wrench Part No. 14031*** (available since 2006)

C. Optional Concealed Cover Plate Installer Tool Part No. 14412 for cover 13504, or Part No. 14867 for the large diameter cover (available since 2007)

Requires a 1/2" ratchet (not available from Viking). *Optional for removal of the protective cap. Ideal for sprinkler cabinets.

Sprinkler Cabinet: Part No. 01731A, Capacity: five (5) sprinklers (available since 1971)

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 VK463 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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DESIGN CRITERIA

(Also refer to the Approval Chart on page 54c.)

cULus Listing Requirements:

Mirage® Standard and Quick Response Concealed Pendent Sprinklers VK462 and VK463 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.

FM Approval Requirements: Mirage® Concealed Pendent Sprinkler VK462 is FM Approved as a standard response standard spray sprinkler as indicated in the Approval Chart for hazard occupancies up to and including Ordinary Hazard, Group II. 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 or QR1-3 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.



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

Figure 1: Identification of Custom Paint Color for Concealed Covers



Figure 2: Square Cover Assembly 15394