

	TECHNICAL DATA	STANDARD/QUICK RESPONSE EXTENDED COVERAGE LIGHT AND ORDINARY HAZARD ELO SPRINKLERS
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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

1. DESCRIPTION

Viking EC/QREC Light and Ordinary Hazard Extra-Large Orifice Sprinklers VK532 and VK534 are thermosensitive spray sprinklers available in several different finishes and temperature ratings to meet varying design requirements. The extra-large orifice produces the flows required to meet Light and Ordinary Hazard density requirements at lower pressures than standard orifice or large orifice sprinklers. The glass bulb operating element and special deflector characteristics meet the challenges of quick response extended coverage standards. Upright Sprinkler VK532 is cULus Listed as standard and quick response and FM Approved as quick response. Pendent Sprinkler VK534 is cULus Listed as standard and quick response. The special Polyester, PTFE, and Electroless Nickel PTFE (ENT) coatings can be used in decorative applications where colors are desired. In addition, ENT coating has been investigated for installation in corrosive atmospheres. See Approval Charts.



2. LISTINGS AND APPROVALS



cULus Listed: Category VNIV

FM Approved: Class 2022

NYC Approved: MEA 89-92-E, Volume 9

Refer to Approval Chart 1 and Design Criteria on pages 83d-e for cULus Listing requirements, and refer to Approval Chart 2 and Design Criteria on page 83f for FM Approval requirements that must be followed.

3. TECHNICAL DATA

Specifications:

Available since 1993.

Minimum Operating Pressure: Refer to the Approval Charts.

Maximum Working Pressure: 175 psi (12 Bar). Factory tested hydrostatically to 500 psi (34.5 bar).

Factory tested hydrostatically to 500 psi (34.5 bar).

Thread size: 3/4" (20 mm) NPT

Nominal K-Factor: 11.2 U.S. (161.3 metric†)

† Metric K-factor measurement shown is 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: Part No. 08687: 2-5/16 (59 mm), Part No. 08340: 2-3/8" (61 mm)

Material Standards:

Sprinkler Frame: Brass UNS-C84400

Deflector: Brass UNS-C26000 for Sprinkler 08340. Copper UNS-C19500 for Sprinkler 08687

Bulb: Glass, nominal 3 mm diameter

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

Screw: Brass UNS-C36000

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

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

For Polyester Coated Sprinklers: Belleville Spring-Exposed

For ENT Coated Sprinkler: Belleville Spring-Exposed, Screw and Pipcap-ENT plated.

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


Order EC/QREC Light and Ordinary Hazard Extra-Large Orifice Sprinklers VK532 and VK534 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 = F, White Polyester = M-/W, Black Polyester = M-/B, Black PTFE = N, and ENT = JN

Temperature Suffix: 135 °F (57 °C) = A, 155 °F (68 °C) = B, 175 °F (79 °C) = D, 200 °F (93 °C) = E, and 286 °F (141 °C) = G

For example, sprinkler VK532 with a Brass finish and a 155 °F (68 °C) temperature rating = Part No. 08687AB

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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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. 05118CW/B (available since 1981)

B. Wrench for recessed pendent sprinkler: Part No. 11663W/B** (available since 2001)

**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

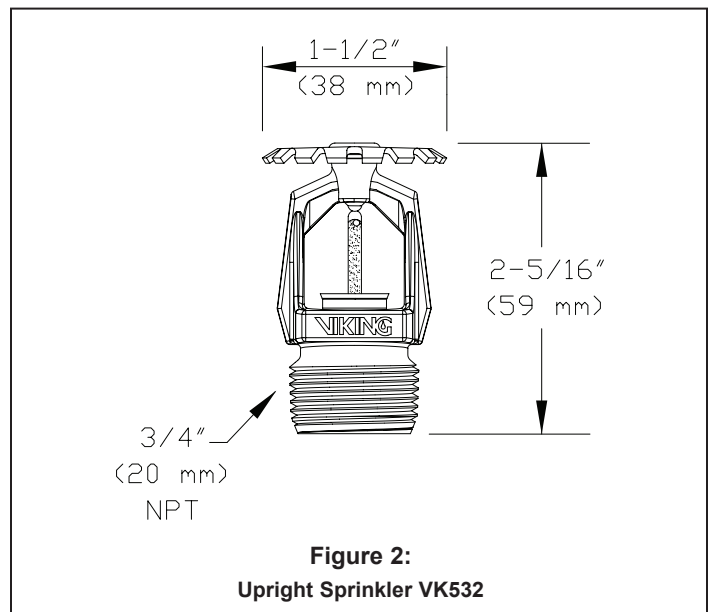
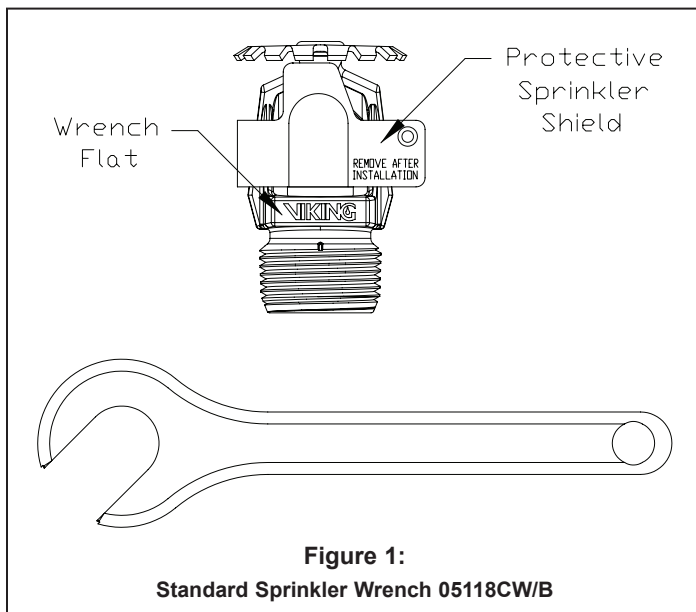
Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.

7. AVAILABILITY

Viking Sprinklers VK532 and VK534 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.





TECHNICAL DATA

**STANDARD/QUICK RESPONSE
EXTENDED COVERAGE
LIGHT AND ORDINARY
HAZARD ELO SPRINKLERS**

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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
High	286 °F (141 °C)	225 °F (107 °C)	Blue

Sprinkler Finishes: Brass, Chrome, White Polyester³, Black Polyester³, Black PTFE³, and ENT

Corrosion-Resistant Coatings⁴: ENT

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 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 PTFE coatings. For PTFE coated open sprinklers only, the waterway is coated.
- ⁴ The corrosion-resistant coatings have passed the standard corrosion test required by the approving agencies indicated in the Approval Chart. 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 ENT sprinklers, all exposed surfaces and the waterway are coated, but note that the spring is exposed.

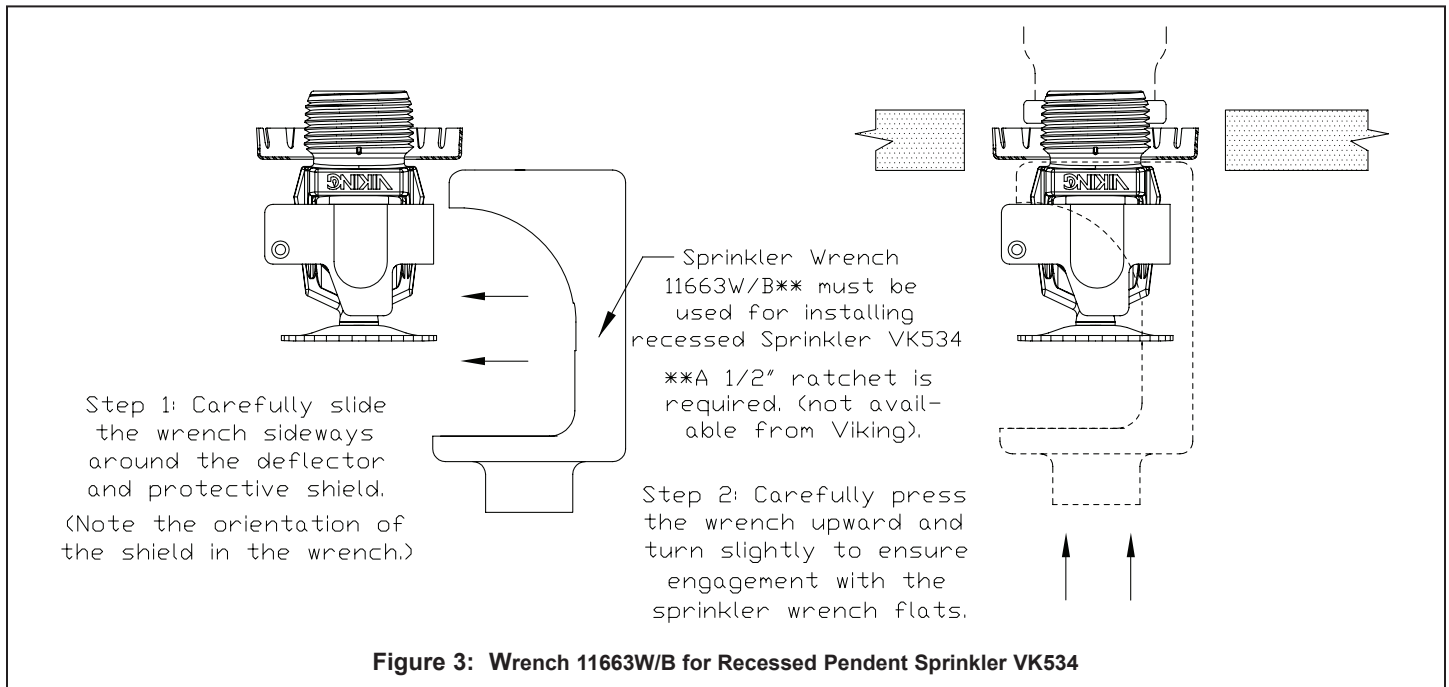


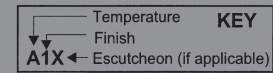
Figure 3: Wrench 11663W/B for Recessed Pendant Sprinkler VK534

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Sprinkler Base Part Number ¹	SIN	NPT Thread Size		Nominal K-Factor		Maximum Water Working Pressure	Overall Length	
		Inches	mm	U.S.	metric ²		Inches	mm
08687 Upright	VK532	3/4	20	11.2	161.3	175 psi (12 Bar)	2-5/16	59
08340 Pendent	VK534	3/4	20	11.2	161.3		2-3/8	61

**Approval Chart 1 (UL)
EC/QREC Light and Ordinary Hazard ELO Sprinklers**



Max. Sprinkler Spacing (L x W) ⁷	Maximum Area per Sprinkler	Minimum Water Supply Requirements ⁷			Listings and Approvals ³ (Refer also to Design Criteria on page 83e.)			
		Light Hazard	Ordinary Hazard Group I	Ordinary Hazard Group II	Pendent VK534		Upright VK532	
		Flow / Pressure	Flow / Pressure	Flow / Pressure	cULus ⁴	NYC ⁵	cULus ⁴	NYC ⁵

Standard Response

16 ft. x 16 ft. (4.9 m x 4.9 m)	256 ft ² (23.8 m ²)	--	38 gpm @ 11.5 psi (143.9 L/min @ .79 Bar)	51 gpm @ 20.7 psi (193.1 L/min @ 1.43 Bar)	C1X, D1Y, D2Z, C2W	C1X, D1Y	C1, C2	C1
18 ft. x 18 ft. (5.5 m x 5.5 m)	324 ft ² (30.1 m ²)	--	49 gpm @ 19.1 psi (185.5 L/min @ 1.32 Bar)	65 gpm @ 33.7 psi (246.1 L/min @ 2.32 Bar)	C1X, D1Y, D2Z, C2W	C1X, D1Y	C1, C2	C1
20 ft. x 20 ft. (6.1 m x 6.1 m)	400 ft ² (37.2 m ²)	--	60 gpm @ 28.7 psi (227.1 L/min @ 1.98 Bar)	80 gpm @ 51.0 psi (302.8 L/min @ 3.52 Bar)	C1X, D1Y, D2Z, C2W	C1X, D1Y	C1, C2	C1

Quick Response

12 ft. x 12 ft. (3.7 m x 3.7 m)	144 ft ² (13.4 m ²)	--	30 gpm @ 7.2 psi (113.6 L/min @ .50 Bar)	39 gpm @ 12.1 psi (147.7 L/min @ .84 Bar)	E1Y, E2Z	--	E1, E2	See Footnote 6.
14 ft. x 14 ft. (4.3 m x 4.3 m)	196 ft ² (18.2 m ²)	--	30 gpm @ 7.2 psi (113.6 L/min @ .50 Bar)	39 gpm @ 12.1 psi (147.7 L/min @ .84 Bar)	E1Y, E2Z	--	E1, E2	See Footnote 6.
16 ft. x 16 ft. (4.9 m x 4.9 m)	256 ft ² (23.8 m ²)	30 gpm @ 7.2 psi (113.6 L/min @ .50 Bar)	--	--	B1Y, F2Z	--	B1, F2	See Footnote 6.
18 ft. x 18 ft. (5.5 m x 5.5 m)	324 ft ² (30.1 m ²)	33 gpm @ 8.7 psi (124.9 L/min @ .60 Bar)	--	--	B1Y, F2Z	--	B1, F2	See Footnote 6.
20 ft. x 20 ft. (6.1 m x 6.1 m)	400 ft ² (37.2 m ²)	40 gpm @ 12.8 psi (151.4 L/min @ .88 Bar)	--	--	A1Y, G2Z	--	A1, G2	See Footnote 6.

Approved Temperature Ratings

- A - 135 °F (57 °C) and 175 °F (79 °C)
- B - 135 °F (57 °C), 155 °F (68 °C), and 175 °F (79 °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), and 200 °F (93 °C)
- E - 155 °F (68 °C)
- F - 155 °F (68 °C), and 175 °F (79 °C)
- G - 175 °F (79 °C)

Approved Finishes


- 1 - Brass, Chrome, White Polyester, Black Polyester, and Black PTFE
- 2 - ENT⁸

Approved Escutcheons

- W - Standard surface-mounted escutcheons only
- X - Standard surface-mounted escutcheons or the Micro-fast[®] Model F-1 Adjustable Escutcheon
- Y - Standard surface-mounted escutcheons or the Microfast[®] Model F-1 Adjustable Escutcheon, or recessed with the Micromatic[®] Model E-1, E-2, or E-3 Recessed Escutcheon
- Z - Standard surface-mounted escutcheons or the Micromatic Model E-1 Recessed Escutcheon.

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 listings and approvals available at time of printing. Check with the manufacturer for any additional approvals.
⁴ cULus Listed for use in the U.S. and Canada.
⁵ Accepted for use, City of New York Department of Buildings, MEA 89-92-E Vol. 9.
⁶ Meets New York City requirements, effective July 1, 2008.
⁷ To determine "Minimum Water Supply Requirement" for areas of coverage where length and width of actual sprinkler spacing are not equal, select the "Maximum Sprinkler Spacing" from the chart that is equal to or greater than the larger of the actual spacing (length or width) dimensions used. Example: When using 10'-6" x 13'-0" sprinkler spacing, provide the "Minimum Water Supply Requirement" listed in the chart for 14'-0" x 14'-0" spacing. For areas of coverage smaller than shown, use the "Minimum Water Supply Requirement" in the appropriate hazard group for the next larger area listed. The distance from sprinklers to walls shall not exceed one-half the "Maximum Sprinkler Spacing" listed for the "Minimum Water Supply Requirement" used.
⁸ cULus Listed as corrosion-resistant.

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DESIGN CRITERIA - UL
(Also refer to Approval Chart 1.)

cULus Listing Requirements:

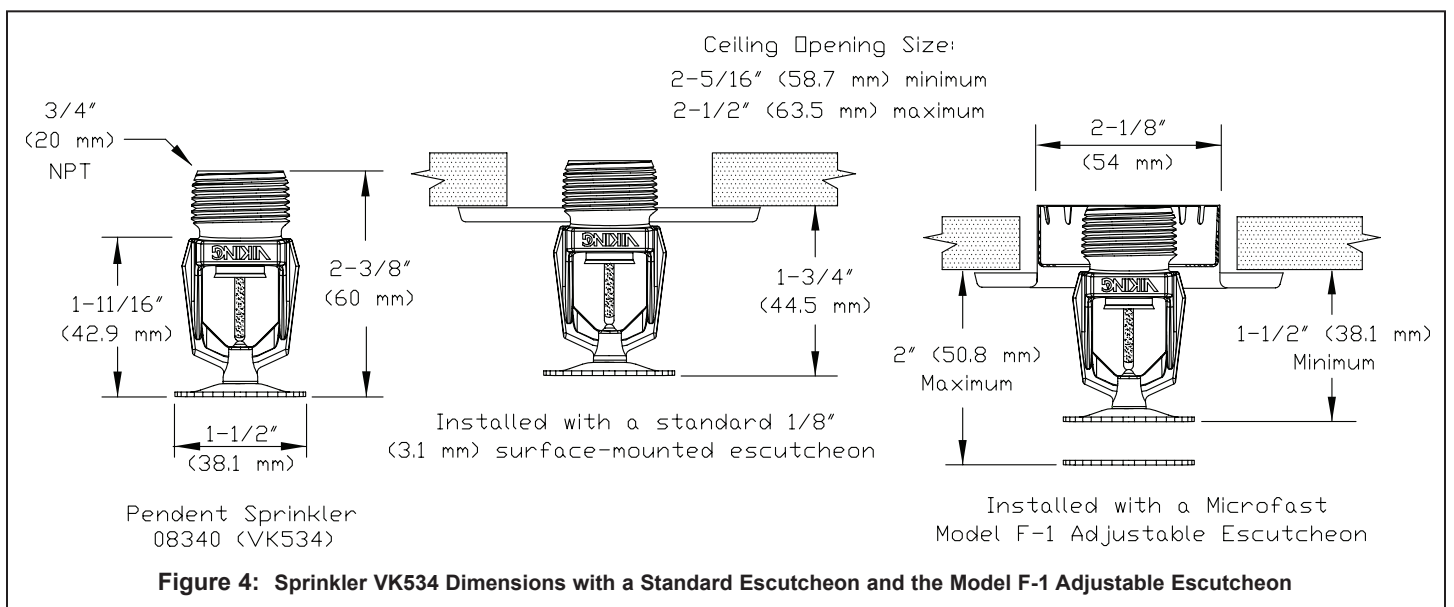
EC-ELO Upright Sprinkler VK532 and Pendent Sprinkler VK534 are cULus Listed as indicated in Approval Chart 1 for installation in accordance with the latest edition of NFPA 13 for extended coverage upright and pendent spray sprinklers as indicated below:

- The minimum water supplies and maximum areas of coverage shown in Approval Chart 1 are designed to provide the following design densities: 0.10 gpm/ft² (4.1 mm/min) for Light Hazard densities; 0.15 gpm/ft² (6.1 mm/min) for Ordinary-Hazard Group I densities; 0.2 gpm/ft² (8.1 mm/min) for Ordinary-Hazard Group II densities.
- The sprinkler installation rules contained in NFPA 13 for extended coverage upright and pendent spray sprinklers must be followed.
- Viking EC-ELO Upright and Pendent Sprinklers are cULus Listed for use in unobstructed construction, and noncombustible obstructed construction consisting of solid steel and/or concrete beams as defined in the latest edition of NFPA 13.
- Ceiling slope not to exceed 2/12 (9.5°).

Also, Viking ECOH-ELO Upright Sprinkler VK532 and Pendent Sprinkler VK534 are specifically cULus Listed for Ordinary Hazard Occupancies:

- For non-combustible obstructed construction within trusses or bar joists having non-combustible web members greater than 1" (25.4 mm) when applying the 4 times obstruction criteria rule as defined in NFPA 13 under "Obstructions to Sprinkler Discharge Pattern Development".
- For installation under concrete tees when installed as follows:
 1. The stems of the concrete tee construction must be spaced between 3 ft (0.9 m) and 7 ft-6 in (2.3 m) on center. The depth of the concrete tees must not exceed 30 in (762 mm). The maximum permitted concrete tee length is 32 ft (9.8 m). However, where the concrete tee length exceeds 32 ft (9.8 m), non-combustible baffles, equal in height to the depth of the tees, can be installed so that the space between the tees does not exceed 32 ft (9.8 m).
 2. The sprinkler deflector is to be located in a horizontal plane at or above 1" (25.4 mm) below the bottom of the concrete tee stems.
 3. When the sprinkler deflector is located higher than a horizontal plane 1" (25.4 mm) beneath the bottom of the concrete tee stems, the obstruction to sprinkler discharge criteria requirements of NFPA 13 for extended coverage upright sprinklers applies.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to pages EC1-3 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, 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 2 (FM)			KEY
Quick Response Extended Coverage ELO Upright Sprinkler VK532 For HC-1, HC-2, and HC-3 Occupancies Maximum 175 PSI (12 Bar) WWP			Temperature Finish A1X ← Escutcheon (if applicable)
Maximum Sprinkler Spacing (L x W ²)	Maximum Area per Sprinkler	Refer to Design Criteria below.	FM Approval ¹ Upright Sprinkler VK532
16 ft. x 16 ft. (4.9 m x 4.9 m)	256 ft ² (23.8 m ²)	NOTE: FM installation guidelines may differ from cULus and/or NFPA criteria. Refer to the latest applicable FM Loss Prevention Data Sheets (including 2-0 and 3-26).	A1
18 ft. x 18 ft. (5.5 m x 5.5 m)	324 ft ² (30.1 m ²)		A1
20 ft. x 20 ft. (6.1 m x 6.1 m)	400 ft ² (37.2 m ²)		A1
Approved Temperature Ratings A - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), and 286 °F (141 °C)		Approved Finishes 1 - Brass, Chrome, White Polyester, Black Polyester, ENT ³	
Footnotes			
¹ This chart shows the FM Approvals available at time of printing. Check with the manufacturer for any additional approvals. ² To determine "Minimum Water Supply Requirement" for areas of coverage where length and width of actual sprinkler spacing are not equal, select the "Maximum Sprinkler Spacing" from the chart that is equal to or greater than the larger of the actual spacing (length or width) dimensions used. Example: When using 10'-6" x 13'-0" sprinkler spacing, provide the "Minimum Water Supply Requirement" listed in the chart for 14'-0" x 14'-0" spacing. For areas of coverage smaller than shown, use the "Minimum Water Supply Requirement" in the appropriate hazard group for the next larger area listed. The distance from sprinklers to walls shall not exceed one-half the "Maximum Sprinkler Spacing" listed for the "Minimum Water Supply Requirement" used. ³ FM Approved as corrosion-resistant.			

DESIGN CRITERIA - FM
(Also refer to Approval Chart 2 above.)

FM Approval Requirements:
 Sprinkler VK532 is FM Approved as a quick response **Non-Storage** extended coverage upright sprinkler as indicated in the FM Approval Guide for use in occupancy hazard classifications HC-1, HC-2, and HC-3. For specific application and installation requirements, reference the latest applicable FM Loss Prevention Data Sheets (including Data Sheets 2-0 and 3-26). FM Global Loss Prevention Data Sheets 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 EC1-3 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.

