	<h2 style="margin: 0;">TECHNICAL DATA</h2>	<h3 style="margin: 0;">ESFR PENDENT SPRINKLERS SIN VK500 (K = 14.0)</h3>
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1. PRODUCT NAME

Viking Model S-1 Early Suppression Fast Response Pendent Sprinklers (K = 14.0)

- Sprinkler Base P/N 10284 (SIN VK500†) FM and LPCB Approved and UL/C-UL Listed (Without an ejector spring)
- Sprinkler Base P/N 11350 (SIN VK500†) FM and VdS Approved (With an ejector spring)

Available since 2000.

†The Sprinkler Identification Number (SIN) is stamped on the sprinkler deflector.

2. MANUFACTURER

The Viking Corporation
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 Hastings, Michigan 49058 USA
 Telephone: (269) 945-9501
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3. PRODUCT DESCRIPTION

Viking Early Suppression Fast Response (ESFR) Pendent Sprinkler SIN VK500 is a fast response fusible element type sprinkler designed for early fire suppression.

With a 14.0 nominal K-Factor and special deflector, this sprinkler produces large, high-momentum water droplets in

a hemispheric pattern below the deflector. This permits penetration of the fire plume and direct wetting of the burning fuel surface while cooling the atmosphere early in the development of a high-challenge fire.

Viking SIN VK500 ESFR Pendent Sprinklers may be used in the protection of ordinary types of storage. However, they are primarily intended to protect the following types of storage, which tend to produce severe-challenge fires: palletized and solid pile storage and single, double, multiple row, and portable rack storage (no open-top containers or solid shelves).

Viking ESFR Pendent SIN VK500 Sprinklers provide protection of most common storage materials, including:

- Encapsulated or unencapsulated Class I, II, III, and IV commodities*.
- Cartoned and uncartoned unexpanded plastics*.
- Cartoned and uncartoned expanded plastics*.

In addition, some storage arrangements of rolled paper, aerosols, and rubber tires may be protected by Viking ESFR Pendent Sprinkler SIN VK500.



Sprinkler Base Part No. 10284 (Shown with ordinary temperature rated element.) Sprinkler Base Part No. 11350 is similar, however, it has an ejector spring.

ESFR Pendent Sprinkler Base Part No. 10284 is FM and LPCB Approved and UL/C-UL Listed, while Part No. 11350 is FM and VdS Approved for:

- Protecting rack storage of certain specified materials up to 35 ft (10,7 m) high in buildings with 40 ft (12,2 m) high ceilings with no in-rack sprinklers*.

Sprinkler Temp. Classification	Nominal Temperature Rating (Fusing Point) ²	Maximum Ambient Ceiling Temperature ¹	Frame Paint Color
Ordinary	165 °F (74 °C)	100 °F (38 °C)	None
Intermediate ¹⁰	205 °F (96 °C)	150 °F (65 °C)	White

Approval Chart

Viking ESFR Pendent Sprinkler SIN VK500

KEY

Temperature

Finish

Escutcheon (if applicable)

A1X ←

Pendent Deflector	NPT Thread Size		Sprinkler Base Part Number ³	SIN	Nominal K-Factor		Listings and Approvals ^{4,5}				
	Inch	mm			U.S.	metric ⁶	FM	VdS	cULus ⁷	NYC ⁸	LPCB
Fast Response Fusible Element	3/4	20	10284	VK500	14.0	–	A1, B1	–	A1, B1	A1	A1
			11350	VK500	–	20,2	A1	A1	–	A1	–

Approved Temperature Ratings
 A - 165 °F (74 °C) B - 205 °F (96 °C)⁹

Approved Finish
 1 - Brass

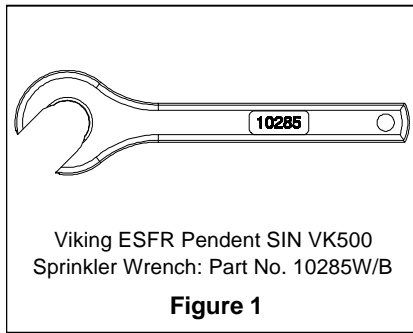
Footnotes

- ¹ 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.
- ² The temperature rating is stamped on the deflector.
- ³ Base part number shown. For complete part number, refer to Viking's current price schedule.
- ⁴ This chart shows listings and approvals available at the time of printing.
- ⁵ Refer to the latest standards of NFPA 13, applicable FM Global Loss Prevention Data Sheets, LPCB Loss Prevention Standards, and the latest standards of Verband der Sachversicherer.
- ⁶ Metric K-Factor shown is for use when pressure is measured in kPa. When pressure is measured in BAR, multiply the metric K-Factor shown by 10.0.
- ⁷ Listed by Underwriters Laboratories Inc. for use in the U.S. and Canada.
- ⁸ Accepted for use, City of New York Department of Buildings, MEA 89-92-E, Vol. XVIII.
- ⁹ The intermediate temperature rating is available for Sprinkler Base Part Number 10284 only.



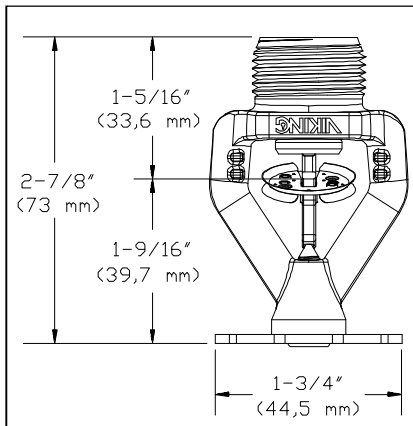
TECHNICAL DATA

**ESFR PENDENT SPRINKLERS
SIN VK500 (K = 14.0)**

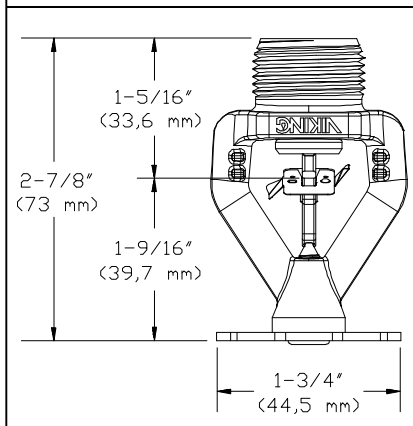


Viking ESFR Pendent SIN VK500
Sprinkler Wrench: Part No. 10285W/B

Figure 1



Sprinkler Base Part No. 10284
shown with the ordinary temperature
rated element. Sprinkler Base
Part No. 11350 is similar, however,
it has an ejector spring.



Sprinkler Base Part No. 10284
shown with the intermediate
temperature rated element.
(Dimensions are approximate.)

Figure 2

INSTALLATION GUIDELINES

NOTE: Sprinkler SIN VK500 is contained in a plastic cap for protection during shipping and installation. Remove the cap from the sprinkler AFTER installation.

Maximum Roof or Ceiling Slope: 2 in 12 (167 mm/m or 9.5 degrees).

Note: If the ceiling is beam and girder or panel construction, locate sprinklers in the bays rather than under the beams.

Sprinkler Position: Approved for use only in the pendent position in wet systems: FM Global Loss Prevention Data Sheet 2-2 provides the following positioning requirement: Install K14.0 ESFR sprinklers with the center line of the thermal sensing element located a maximum of **13"** (330 mm) and a minimum of **4"** (102 mm) below the ceiling. **NOTE:** NFPA 13 indicates the following for ESFR pendent sprinklers having a 14.0 nominal K-Factor: Position the deflector a maximum of **14"** (356 mm) and a minimum of **6"** (152 mm) below the ceiling.

Align the deflector parallel with the ceiling or roof.

Deflector Distance from Walls: At least 4" (102 mm) from walls, and no more than one-half the allowable distance permitted between sprinklers.

Clearance from Deflector to Top of Storage: At least 36" (914 mm).

Distance Between Sprinklers: The maximum area of coverage allowed per sprinkler is 100 ft² (9,3 m²)**. The minimum area of coverage allowed per sprinkler is 64 ft² (5,8 m²) per FM Global Loss Prevention Data Sheet 2-2, and 80 ft² (7,4 m²) per NFPA 13.

- For buildings over 30 ft. (9,1 m) high, spacing between sprinklers and/or branch lines must be from 8 to 10 ft. (2,4 to 3,1 m)**.
- For building heights up to 30 ft. (9,1 m), the spacing allowed between sprinklers and/or branch lines is 8 to 12 ft. (2,4 to 3,7 m), provided the area covered per sprinkler does not exceed the maximum 100 ft² (9,3 m²) allowed**.

** For cULus applications, refer to the latest edition of NFPA 13 for permissible deviations from the maximum sprinkler spacing rules above, to eliminate obstructions created by trusses and bar joists when using ESFR sprinklers.

For additional design and installation requirements, refer to the latest applicable FM Global Loss Prevention Data Sheets, the latest standards of Verband der Sachversicherer, the National Fire Protection Association, and any other AHJs, and also with the provisions of governmental codes, ordinances, and standards whenever applicable.

ESFR Pendent Sprinkler Base Part No. 10284 is FM and LPCB Approved, while Part No. 11350 is FM and VdS Approved for:

- Protecting rack storage of certain specified materials up to 40 ft (12,2 m) high in buildings with 45 ft (13,7 m) high ceilings with one row of in-rack sprinklers*.

*** REFER TO THE LATEST APPLICABLE FM LOSS PREVENTION DATA SHEETS, THE LATEST STANDARDS OF VERBAND DER SACHVER-SICHERER, LPCB, AND THE NATIONAL FIRE PROTECTION ASSOCIATION.**

Sprinkler Position: FM Global Loss Prevention Data Sheet 2-2 provides the following positioning requirement: Install K14.0 ESFR sprinklers with the center line of the thermal sensing element lo-

cated a maximum of **13"** (330 mm) and a minimum of **4"** (102 mm) below the ceiling. **NOTE:** NFPA 13 indicates the following for ESFR pendent sprinklers having a 14.0 nominal K-Factor: Position the deflector a maximum of **14"** (356 mm) and a minimum of **6"** (152 mm) below the ceiling.

4. TECHNICAL INFORMATION

LISTINGS AND APPROVALS: Base Part No. 10284 is FM and LPCB Approved and UL/C-UL Listed, while Part No. 11350 is FM and VdS Approved—refer to the Approval Chart. Rated to 175 psi (1 207 kPa) water working pressure. Factory tested hydrostatically to 500 psi (3 447 kPa).

K-factor: Nominal 14.0 U.S. (20,2 metric††, for use when pressure is measured in kPa).

††Metric K-Factor shown is for use when pressure is measured in kPa. When pressure is measured in BAR, multiply the metric K-Factor shown by 10.0.



TECHNICAL DATA

ESFR PENDENT SPRINKLERS SIN VK500 (K = 14.0)

Thread Size: 3/4" (20 mm) NPT
Deflector Diameter: 1-3/4" (44,45 mm)
Overall Length: 2-7/8" (73 mm)

SPRINKLER MATERIALS

Frame: Brass Casting UNS-C84400
Seat: Stainless Steel UNS-S31603
Belleville Spring Sealing Assembly:
Nickel Alloy, coated on both sides
with Teflon Tape
Screw: Stainless Steel UNS-S31603
Deflector: Bronze UNS-C51000
Trigger and Support: Stainless Steel
UNS-S31600
Fusible Element Assembly: Beryllium
Nickel, coated with black acrylic
paint.

Ejector Spring (Sprinkler Base Part No.
11350 only): 17-7 Stainless Steel

AVAILABLE FINISH: Brass

ACCESSORIES

Sprinkler Wrench: Part No. 10285W/B
Size: Fits 3/4" NPT ESFR Pendent
Sprinklers

Available since 2000.

Sprinkler Cabinet: Part No. 01725A

Capacity: twelve (12) sprinklers

Length: 10-3/16" (259 mm)

Height: 8-9/16" (217 mm)

Depth: 2-9/16" (65 mm)

5. AVAILABILITY & SERVICE

Viking products are available through a network of domestic, Canadian, and international distributors. See the Viking Corp. Web site for your closest distributor or contact The Viking Corporation.

Viking technical data may be found on
The Viking Corporation's Web site at
<http://www.vikingcorp.com>.

The Web site may include a more recent
edition of this technical data page.

6. GUARANTEES

For details of warranty, refer to Viking's current list price schedule or contact The Viking Corporation directly.

7. DESIGN & INSTALLATION

WARNING: Viking sprinklers are manufactured and tested to meet rigid requirements of the approving agency. The sprinklers are designed to be installed in accordance with recognized installation standards. Deviation from the standards or any alteration to the sprinkler after it leaves the factory including, but not limited to: painting, plating, coating, or modification, may render the sprinkler inoperative and will automatically nullify the approval and any guarantee made by The Viking Corporation.

A. Viking ESFR Pendent SIN VK500 Sprinklers are to be installed in accordance with applicable FM Global Loss Prevention Data Sheets, the latest standards of Verband der Sachversicherer, LPCB, and the National Fire Protection Association, the Authorities Having Jurisdiction, and also with the provisions of governmental codes, ordinances, and standards whenever applicable.

B. Sprinklers must be handled with care. They must be stored in a cool, dry place in their original shipping container. Never install sprinklers that have been dropped or damaged in any way. (Such sprinklers should be destroyed immediately.) Wet-pipe systems must be provided with adequate heat.

C. The sprinklers must be installed after the piping is in place to prevent mechanical damage. Before installing, be sure to have the appropriate sprinkler model and style, with the correct orifice size, temperature rating, and response characteristics.

D. With the sprinkler contained in the plastic protective cap, apply a small amount of pipe-joint compound or tape to the male threads only, while taking care not to allow a build-up of compound in the sprinkler orifice.

E. **With the sprinkler contained in the plastic protective cap, install the sprinkler onto the piping by applying the special sprinkler wrench (shown in Figure 1) to the sprinkler wrench flats only, while taking care not to damage the sprinkler operating parts. DO NOT use any other type of wrench, as this could damage the unit. DO NOT use the sprinkler deflector or fusible element to start or thread the sprinkler into a fitting. DO NOT exceed 50 ft. lbs. of torque (hand tight, plus approximately two full turns with the wrench) to install these sprinklers. Higher levels of torque may distort the sprinkler inlet with consequent leakage or impairment of the sprinkler.**

F. Use only the special sprinkler wrench and immediately replace any damaged units.

G. After installation, the entire sprinkler system must be tested. The test must be conducted to comply with the Installation Standards. Make sure the sprinkler has been properly tightened. If a thread leak

occurs, normally the unit 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.

H. After installation and testing and repairing of all leaks, remove the plastic protective cap from the sprinkler. THE CAP MUST BE REMOVED FROM THE SPRINKLER BEFORE PLACING THE SYSTEM IN SERVICE.

I. System design must be based on ESFR design guidelines described in applicable FM Global Loss Prevention Data Sheets, the latest standards of Verband der Sachversicherer, LPCB, the National Fire Protection Association, and the Authorities Having Jurisdiction. All requirements of recognized sprinkler system design standards apply to systems utilizing Viking ESFR Pendent Sprinklers.

NOTE: Viking recommends installing one style of sprinklers (either pendent or upright) throughout ESFR systems. However, provided the fusible elements are installed within the distance below the ceiling allowed by the installation standards, and when acceptable to the AHJ, Viking considers the practice of mixing upright and pendent ESFR sprinklers to be acceptable.

8. MAINTENANCE

NOTICE: The owner is responsible for maintaining the fire protection system and devices in proper operating condition. For minimum maintenance and inspection requirements, refer to the NFPA standard that describes care and maintenance of sprinkler systems. In addition, the Authorities Having Jurisdiction may have additional maintenance, testing, and inspection requirements that must be followed.

A. The sprinklers must be inspected on a regular basis for corrosion, mechanical damage, obstructions, paint, etc. The frequency of inspections may vary due to corrosive atmosphere, water supplies, and activity around the device.

B. Sprinklers that have been painted or mechanically damaged must be replaced immediately. Sprinklers showing signs of corrosion shall be tested and/or replaced immediately as required. Installation standards require



- sprinklers to be tested and, if necessary, replaced after a specified term of service. For Viking ESFR Pendent Sprinklers, refer to the Installation Standards (e.g., NFPA 25) and the Authorities Having Jurisdiction for the specified period of time after which testing and/or replacement is required. Sprinklers that have operated cannot be reassembled or reused, but must be replaced. When replacing sprinklers, use only new sprinklers.
- C. The sprinkler discharge pattern is critical for proper fire protection. Therefore, nothing should be hung from, attached to, or otherwise obstruct the discharge pattern. All obstructions must be immediately removed or, if necessary, additional sprinklers installed.
- D. When replacing existing sprinklers, the system must be removed from service. Refer to the appropriate system description and/or valve instructions. Prior to removing the system from service, notify all Authorities Having Jurisdiction. Consideration should be given to employment of a fire patrol in the affected area.
1. Remove the system from service, drain all water, and relieve all pressure on the piping.
 2. Using the special sprinkler wrench, remove the old sprinkler and install the new unit. Care must be taken to ensure that the replacement sprinkler is the proper model and style, with the correct orifice size, temperature rating, and response characteristics. A fully stocked spare sprinkler cabinet should be provided for this purpose.
3. Place the system back in service and secure all valves. Check the replaced sprinklers and repair all leaks.
- E. Sprinkler systems that have been subject to a fire must be returned to service as soon as possible. The entire system must be inspected for damage and repaired or replaced as necessary. Sprinklers that have been exposed to corrosive products of combustion, but have not operated, should be replaced. Refer to the Authorities Having Jurisdiction for minimum replacement requirements.