



## TECHNICAL DATA

## MODEL E SPRAY NOZZLES VK810 - VK817

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 Model E, 3D Spray Nozzles are open type spray nozzles designed for directional spray applications in fixed fire protection systems. They have an open design only (non-automatic) with an external deflector that discharges a solid uniform cone spray of low- to medium- velocity water droplets. Model E Spray Nozzles are available in multiple orifice sizes and spray angles to meet design application requirements and they include a 1/2" NPT (DN15) external pipe thread. The base materials are brass, while electroless nickel plating may be applied to the complete assembly for applications requiring corrosion resistance.

The spray angle is the included angle of discharge for each nozzle, and is also marked on the deflector. Figures 1a and 1b illustrate the distribution width at various heights based on testing in the pendent position at 10, 20, and 60 PSI (0.7 bar, 1.4 bar, and 4.1 bar) discharge pressures. Note that the Model E Spray Nozzles are rated for a maximum discharge pressure of 175 PSI (12 bar). At pressures above 60 PSI (4.1 bar), the spray pattern begins to decrease in width due to pull-in of the spray pattern. For exposure protection, see Figures 6a, 6b, and 7 for fixed position angle, distance for included angle spray pattern perpendicular to surface of object at the fixed angle of installation.

For nozzles having nominal U.S. K-Factors of 1.2, 1.8, and 2.3, a bushing is used, flush at the inlet location, to eliminate sharp corner cavity and to prevent debris from collecting. (Nozzles with K-Factors of 3.2, 4.1, 5.6, and 7.2 are machined orifices.) Optional blow-off plugs are available for protection from dust and insect infestation and other accumulation of debris.



**WARNING:** Cancer and Reproductive Harm-  
[www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

### 2. LISTINGS AND APPROVALS



**cULus Listed:** Category VGYZ



**FM Approved:** Fixed Extinguishing Systems

**NYC Approved:** MEA 89-92-E, Volume 29

**China Approval:** Approved according to China GB Standard

Refer to the Approval Chart on page 4 and Design Criteria on page 5 for cULus Listing and FM Approval requirements that must be followed.

### 3. TECHNICAL DATA

#### Specifications:

Minimum Operating Pressure: 10 psi (0.7 bar)

Maximum Working Pressure: 175 psi (12 bar)

Thread size: 1/2" NPT or 15 mm BSPT

Nominal K-Factor: 7.2 U.S. (103.7 metric\*)

5.6 U.S. (80.6 metric)

4.1 U.S. (59.0 metric)

3.2 U.S. (46.1 metric)

2.3 U.S. (33.1 metric)

1.8 U.S. (25.9 metric)

1.2 U.S. (17.3 metric)

Orifice sizes are indicated by the K-Factor, which is marked on the deflector. Refer to the Nominal Discharge Curves on page 10 for each nozzle at various operating residual pressures.

\* 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.

Overall Length: 2-7/16" (61 mm)

#### Material Standards:

Body Casting: Brass UNS-C84400

Splitter: Brass UNS-C36000

Bushing: (for nozzles with 1.2, 1.8, and 2.3 K-Factors): Brass UNS-C36000



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Deflector: Phosphor Bronze UNS-C51000

Screw: Brass UNS-C65100

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

Order Model E Spray Nozzles by first selecting the appropriate base part number for the K-Factor and spray angle desired. Then add the appropriate suffix for the desired finish and the suffix "Z" for open nozzles to the spray nozzle base part number.

Finish Suffix: Brass = A, Electroless Nickel Plated = J

Temperature Suffix: OPEN = Z

For example, spray nozzle VK810 with a K-Factor of 7.2 (103.7 metric) and a Brass finish = Part No. 12867AZ

**Accessories:** (Also refer to the "Sprinkler Accessories" section of the Viking data book.)

**Sprinkler Wrench:** Part No. 10896W/B (available since 2000).

**Blow-Off Plugs (Optional):** Refer to technical data page Form No. F\_021105. Blow-off plugs are used to prevent the depositing of foreign materials in the waterway, which could interfere with the discharge of the spray nozzles. The plugs are designed to blow off when the system piping is pressurized. **Note:** The blow-off plugs have no listings or approvals.

## 4. INSTALLATION

### ⚠ WARNING

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

The Approval Chart on page 4 shows listings and approvals of Model E Spray Nozzles for use on water spray systems and water based deluge systems. The chart shows listings and approvals available at the time of printing. Other approvals are in process. Check with the manufacturer for any additional approvals.

- A. **Spray nozzles are to be installed in accordance with the latest edition of Viking technical data, the latest published 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. The use of Model E Spray Nozzles may be limited due to occupancy and hazard. Refer to the Authority Having Jurisdiction prior to installation.**
- B. Handle Model E Spray Nozzles with care. They must be stored in a cool, dry place in their original shipping container. Never install a spray nozzle that has been dropped or damaged.
- C. Corrosion-resistant spray nozzles must be installed when subject to corrosive atmospheres.
- D. Spray nozzles must be installed after the piping is in place to prevent mechanical damage.
- E. Before installing, be sure to have the appropriate model and style, with the correct K-Factor and spray angle. Spray nozzle deflectors are identified with the VK model number, nominal K-Factor, and spray angle.
  1. Apply a small amount of pipe-joint compound or tape to the external threads of the spray nozzle only, taking care not to allow a build-up of compound inside the inlet.
  2. Install the nozzle on the fixed piping, using the special sprinkler/spray nozzle wrench only. Take care not to over-tighten or damage the spray nozzle. DO NOT use the deflector to start or thread the unit into a fitting.
- F. Spray nozzles must be protected from mechanical damage. Where open spray nozzles are used, care must be taken to prevent foreign materials from entering the orifice. Foreign materials may accumulate and restrict or plug the waterway and may prevent proper operation of the spray nozzle.

## 5. OPERATION

Model E, 3D Spray Nozzles are designed to apply cooling water to exposed vertical, horizontal, curved, and irregular shaped surfaces to allow cooling of objects externally when exposed to an adjacent fire. Cooling is done to prevent objects from absorbing heat that could cause structural damage and possible spread of fire to the protected object. In some applications, Model E Spray Nozzles may be applied to control or extinguish fire of the protected area (depending on water design application density).



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### 6. INSPECTIONS, TESTS AND 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. Spray nozzles must be inspected on a regular basis for corrosion, mechanical damage, obstructions, paint, etc. Where open spray nozzles are installed, verify that foreign materials (such as dust, dirt, etc.) DO NOT restrict or plug the waterspray. The frequency of inspections may vary due to corrosive atmospheres, water supplies, and activity around the device. It is also recommended that outdoor installations of Model E Spray Nozzles with blow-off plugs be periodically inspected, during freezing weather conditions, for the presence of ice buildup from trapped condensate which could effect the proper release of the plugs.
- B. Spray nozzles that have been painted or mechanically damaged must be replaced immediately. Nozzles showing signs of corrosion shall be tested and/or replaced immediately as required. When replacing spray nozzles, use only new Model E Spray Nozzles.
  - 1. Using the appropriate wrench, remove the old spray nozzle and install the new unit. Care must be taken to ensure that the replacement spray nozzle has the proper model, style, and K-Factor. Model E Spray Nozzle deflectors are identified with the VK model number, nominal U.S. K-Factor, and spray angle. A cabinet should be provided and stocked with a wrench and extra spray nozzles of each variety used for replacement purposes.
- C. The spray nozzle 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 nozzles installed.
- D. Fire protection systems that have been subjected 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. Spray nozzles that have been exposed to corrosive products of combustion or high ambient temperatures, should be replaced. Refer to the AHJ for minimum replacement requirements.

### 7. AVAILABILITY

Viking Model E Spray Nozzles 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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### Approval Chart

Model E Spray Nozzles  
 Maximum 175 PSI (12 bar) WWP  
 (Refer also to Design Criteria on page 5.)

Base Part Number <sup>1</sup>	SIN <sup>2</sup>	Nominal K-Factor		Angle	Listings and Approvals <sup>4</sup>				Base Part Number <sup>1</sup>	SIN <sup>2</sup>	Nominal K-Factor		Angle	Listings and Approvals <sup>4</sup>			
		U.S.	metric <sup>3</sup>		cULus <sup>5</sup>	NYC <sup>6</sup>	FM	China Approval <sup>9</sup>			U.S.	metric <sup>3</sup>		cULus <sup>5</sup>	NYC <sup>6</sup>	FM	China Approval <sup>9</sup>
12867	VK810	7.2	103.7	65°	Yes	Yes	Yes	--	12895	VK814	7.2	103.7	125°	Yes	Yes	Yes	--
12868	VK810	5.6	80.6	65°	Yes	Yes	Yes	--	12896	VK814	5.6	80.6	125°	Yes	Yes	Yes	--
12869	VK810	4.1	59.0	65°	Yes	Yes	Yes	--	12897	VK814	4.1	59.0	125°	Yes	Yes	Yes	--
12870	VK810	3.2	46.1	65°	Yes	Yes	Yes <sup>7</sup>	--	12898	VK814	3.2	46.1	125°	Yes	Yes	Yes <sup>7</sup>	--
12871	VK810	2.3	33.1	65°	Yes	Yes	Yes <sup>7</sup>	--	12899	VK814	2.3	33.1	125°	Yes	Yes	Yes <sup>7</sup>	--
12872	VK810	1.8	25.9	65°	Yes	Yes	Yes <sup>7</sup>	--	12900	VK814	1.8	25.9	125°	Yes	Yes	Yes <sup>7</sup>	--
12873	VK810	1.2	17.3	65°	Yes	Yes	Yes <sup>7</sup>	--	12901	VK814	1.2	17.3	125°	Yes	Yes	Yes <sup>7</sup>	--
12874	VK811	7.2	103.7	80°	Yes	Yes	Yes	--	19886 <sup>10</sup>	VK814	5.6	80.6	125°	Yes	--	Yes	Yes
12875	VK811	5.6	80.6	80°	Yes	Yes	Yes	--	12902	VK815	7.2	103.7	140°	Yes	Yes	Yes	--
12876	VK811	4.1	59.0	80°	Yes	Yes	Yes	--	12903	VK815	5.6	80.6	140°	Yes	Yes	Yes	--
12877	VK811	3.2	46.1	80°	Yes	Yes	Yes <sup>7</sup>	--	12904	VK815	4.1	59.0	140°	Yes	Yes	Yes	--
12878	VK811	2.3	33.1	80°	Yes	Yes	Yes <sup>7</sup>	--	12905	VK815	3.2	46.1	140°	Yes	Yes	Yes <sup>7</sup>	--
12879	VK811	1.8	25.9	80°	Yes	Yes	Yes <sup>7</sup>	--	12906	VK815	2.3	33.1	140°	Yes	Yes	Yes <sup>7</sup>	--
12880	VK811	1.2	17.3	80°	Yes	Yes	Yes <sup>7</sup>	--	12907	VK815	1.8	25.9	140°	Yes	Yes	Yes <sup>7</sup>	--
19883 <sup>10</sup>	VK811	1.2	17.3	80°	Yes	--	Yes	Yes	12908	VK815	1.2	17.3	140°	Yes	Yes	Yes <sup>7</sup>	--
12881	VK812	7.2	103.7	95°	Yes	Yes	Yes	--	19887 <sup>10</sup>	VK815	2.3	33.1	140°	Yes	--	Yes	Yes
12882	VK812	5.6	80.6	95°	Yes	Yes	Yes	--	12909	VK816	7.2	103.7	160°	Yes	Yes	Yes	--
12883	VK812	4.1	59.0	95°	Yes	Yes	Yes	--	12910	VK816	5.6	80.6	160°	Yes	Yes	Yes	--
12884	VK812	3.2	46.1	95°	Yes	Yes	Yes <sup>7</sup>	--	12911	VK816	4.1	59.0	160°	Yes	Yes	Yes	--
12885	VK812	2.3	33.1	95°	Yes	Yes	Yes <sup>7</sup>	--	12912	VK816	3.2	46.1	160°	Yes	Yes	Yes <sup>7</sup>	--
12886	VK812	1.8	25.9	95°	Yes	Yes	Yes <sup>7</sup>	--	12913	VK816	2.3	33.1	160°	Yes	Yes	Yes <sup>7</sup>	--
12887	VK812	1.2	17.3	95°	Yes	Yes	Yes <sup>7</sup>	--	12914	VK816	1.8	25.9	160°	Yes	Yes	Yes <sup>7</sup>	--
19884 <sup>10</sup>	VK812	1.8	25.9	95°	Yes	--	Yes	Yes	12915	VK816	1.2	17.3	160°	Yes	Yes	Yes <sup>7</sup>	--
12888	VK813	7.2	103.7	110°	Yes	Yes	Yes	--	12916	VK817	7.2	103.7	180°	Yes	Yes	Yes	--
12889	VK813	5.6	80.6	110°	Yes	Yes	Yes	--	12917	VK817	5.6	80.6	180°	Yes	Yes	Yes	--
12890	VK813	4.1	59.0	110°	Yes	Yes	Yes	--	12918	VK817	4.1	59.0	180°	Yes	Yes	Yes	--
12891	VK813	3.2	46.1	110°	Yes	Yes	Yes <sup>7</sup>	--	12919	VK817	3.2	46.1	180°	Yes	Yes	Yes <sup>7</sup>	--
12892	VK813	2.3	33.1	110°	Yes	Yes	Yes <sup>7</sup>	--	12920	VK817	2.3	33.1	180°	Yes	Yes	Yes <sup>7</sup>	--
12893	VK813	1.8	25.9	110°	Yes	Yes	Yes <sup>7</sup>	--	12921	VK817	1.8	25.9	180°	Yes	Yes	Yes <sup>7</sup>	--
12894	VK813	1.2	17.3	110°	Yes	Yes	Yes <sup>7</sup>	--	12922	VK817	1.2	17.3	180°	Yes	Yes	Yes <sup>7</sup>	--
19885 <sup>10</sup>	VK813	3.2	46.1	110°	Yes	--	Yes	Yes	21436 <sup>10,11</sup>	VK817	4.1	59.0	180°	Yes	--	Yes	Yes

Available Finishes: Brass<sup>9</sup> or Electroless Nickel Plated<sup>8</sup>

#### Footnotes

<sup>1</sup> Base part number is shown. For complete part number, refer to Viking's current price schedule.

<sup>2</sup> The spray nozzle deflector is identified with the VK model number, K-Factor, and spray angle.

<sup>3</sup> Metric K-factor shown is for use when pressure is measured in bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

<sup>4</sup> This table shows the listings and approvals available at the time of printing. Check with the manufacturer for any additional approvals.

<sup>5</sup> Listed by Underwriters Laboratories Inc. for use in the U.S. and Canada.

<sup>6</sup> Accepted for use, City of New York Department of Buildings, MEA Number 89-92-E, Vol. 29.

<sup>7</sup> Orifice diameter is less than 3/8" (9.4 mm) for Model E Nozzles with K-Factors of 3.2, 2.3, 1.8, and 1.2. A pipeline strainer with a 1/8" (3.2 mm) or less perforation is required for FM Approval.

<sup>8</sup> For corrosion resistance.

<sup>9</sup> Brass only.

<sup>10</sup> Approved according to China GB standard.

<sup>11</sup> Part number 21436 has BSPT threads.



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### DESIGN CRITERIA

(Also refer to the Approval Chart on page 4.)

#### Nozzle Placement

When the Authority Having Jurisdiction requires direct impingement of water spray of the complete protected surface, the nozzles should be spaced and directed so their spray pattern will completely cover the surface plane of the protected object or area. Use the minimum required average density based on the included angle and the K-Factor based on the residual pressure at the inlet of the nozzles. Figures 1a and 1b indicate the coverage for each nozzle's included spray angle at various heights.

Figures 6a and 6b indicate the distance from the nozzles to the tangent surface of the protected object at various fixed angles. The fixed angle is the included angle from pendent position being zero of spray nozzle position. The spray angle is the included angle of the spray nozzle pattern. The maximum distance is determined where the spray pattern angle is unchanged at the perpendicular position to tangent of fixed angle. The distances indicated are for 20 PSI (1.4 Bar) minimum, to 60 PSI (4.1 Bar) maximum residual pressure at the inlet of the nozzles. When Viking Model E Spray Nozzles are used to protect surfaces of vessels, they should be positioned normal to the surface being protected and approximately 2 ft. (.6 m) from the surface. Using the proper spray angle and K-Factor with this approach will provide the most effective protection and minimize effects of wind or draft conditions on the water spray pattern of the nozzles.

#### Installation Precaution

As a nozzle is being installed farther from the plane of protection, the centerline that is perpendicular to the plane of protection is potentially off-set with the center/target of plane of protection due to installation error. Take extra care when locating a nozzle far from the plane of protection. Recommendation: Overlap spray patterns to provide a safety factor in the installation.

#### Notes About Pressure Requirements (Figures 6a & 6b)

1. Working pressures of 10 to 60 PSI (.7 to 4.1 Bar) can only be applied for 0° (vertically downward) orientation.
2. Working pressures for orientation angles other than 0° are 20 to 60 PSI (1.4 to 4.1 Bar).
3. However, unless otherwise specified, when the nozzles are axially installed 2 ft. (.6 m) or less from the plane of protection, working pressures of 10 to 60 PSI (.7 to 4.1 Bar) can be applied on all installation angles.

#### Spray Patterns

The design spray pattern profiles of the Model E Spray Nozzles with included spray angles of 65° to 180° are given in the graph in Figures 1a and 1b for discharge pressures from 10 to 60 PSI (.7 to 4.1 Bar). When discharge pressures above this are applied, the coverage area will decrease because the spray pattern tends to draw inward at higher pressures. When applying discharge pressures higher than 60 PSI (4.1 Bar), consult the Viking Technical Services department.

In Figures 6a and 6b, the maximum axial distance between the nozzle tip and the tangential plane being protected using a fixed installation angle is given. The operating discharge pressures are 20 PSI to 60 PSI (1.4 to 4.1 Bar) for application of this data. It is recommended that overlap be applied when using nozzles for exposure protection in this method.

#### Pipeline Strainers

Orifice diameter is less than 3/8" (9.4 mm) for Model E Nozzles with K-Factors of 3.2, 2.3, 1.8, and 1.2. A pipeline strainer with a 1/8" (3.2 mm) or less perforation is required for FM Approval.

**IMPORTANT: Always refer to Bulletin Form No. F\_091699 - Care and Handling of Sprinklers. Viking spray nozzles 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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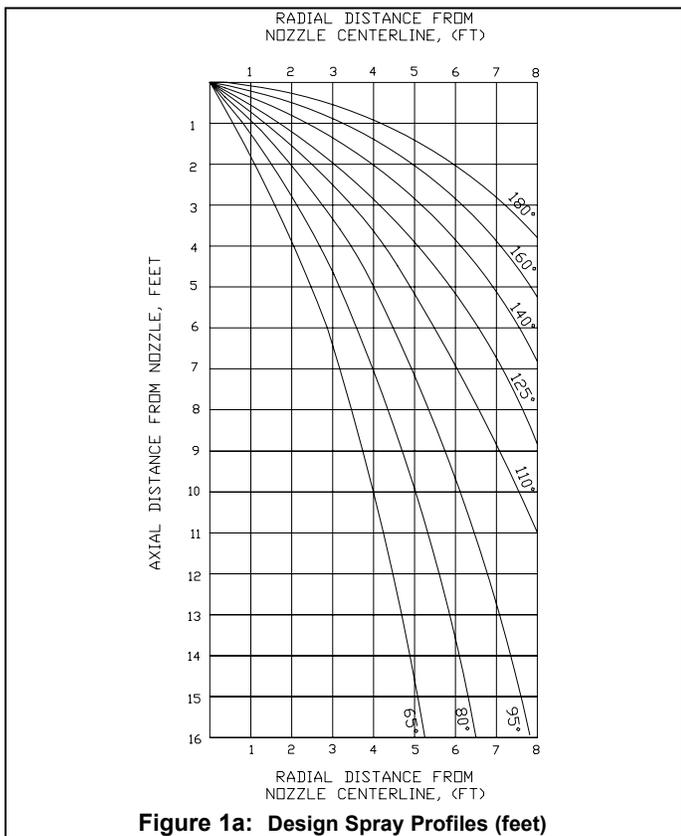


Figure 1a: Design Spray Profiles (feet)

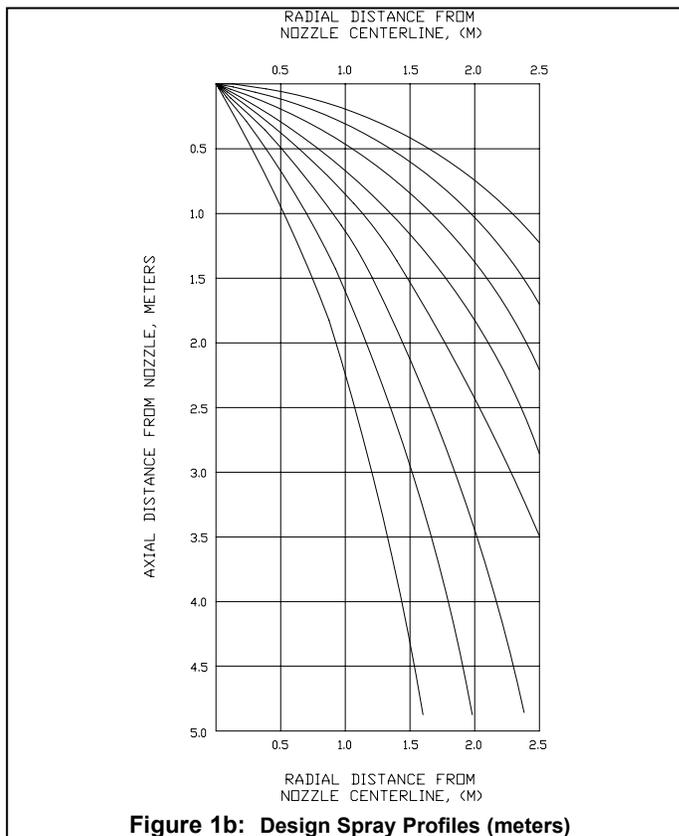


Figure 1b: Design Spray Profiles (meters)

NOTES:

1. Design data was obtained from tests in still air.
2. Design data applies to a residual (flowing) pressure range at the nozzle inlet of 10 to 60 PSI (.7 to 4.1 Bar). For pressures up to 175 PSI (12 Bar), consult the Viking Technical Services department toll free at 1-877-384-5464. Refer to the Authority Having Jurisdiction for their minimum required residual pressure.
3. The shapes of the Design Spray Profiles remain essentially unchanged over the maximum Axial Distances shown on pages 8-9.
4. Maximum Axial Distances shown on pages 8-9 are based on exposure protection.

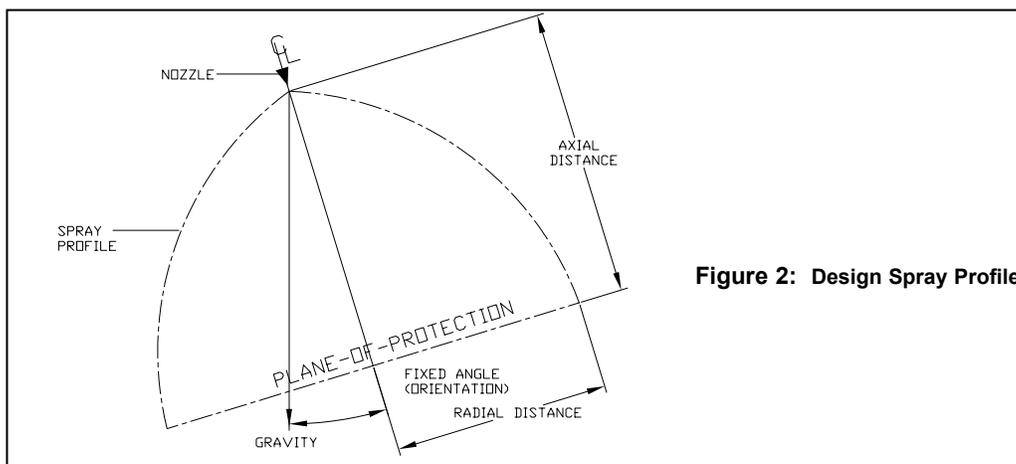


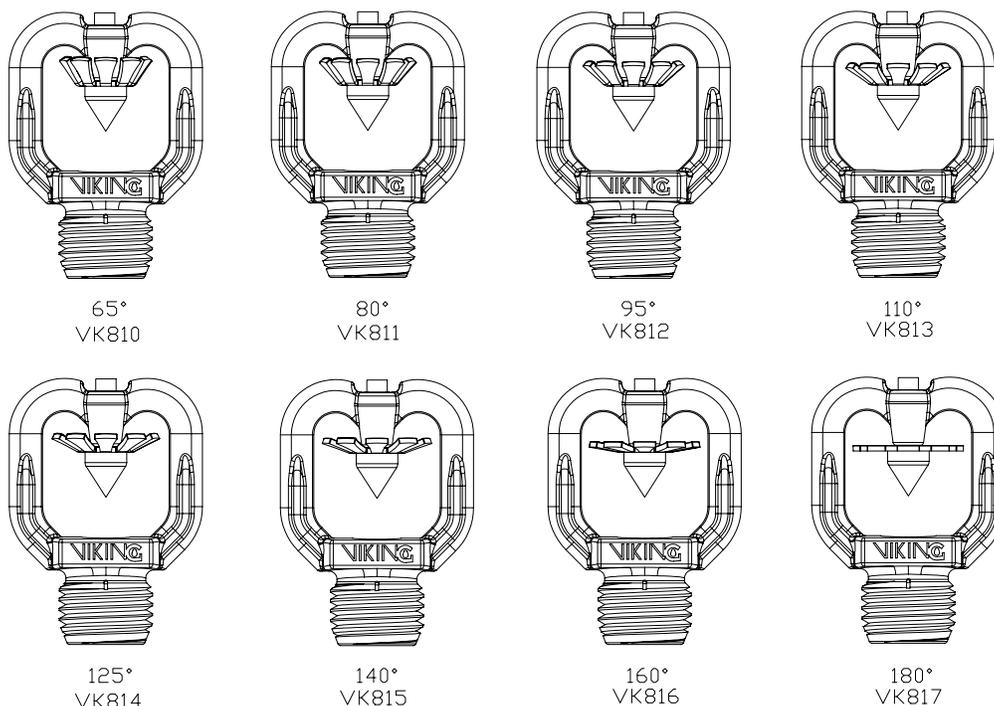
Figure 2: Design Spray Profile



TECHNICAL DATA

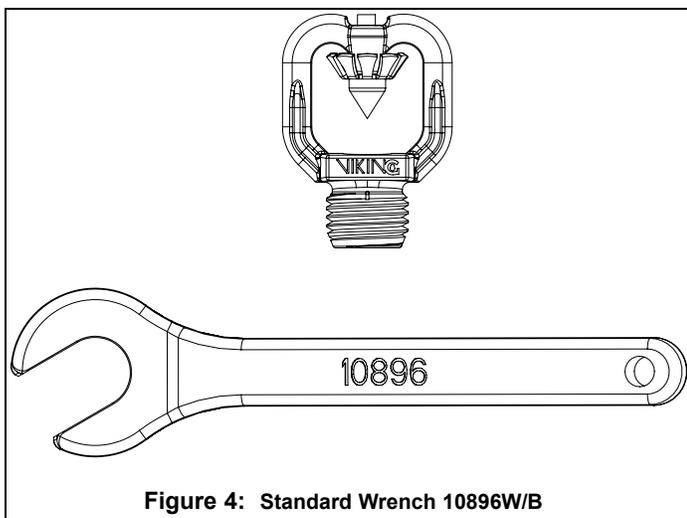
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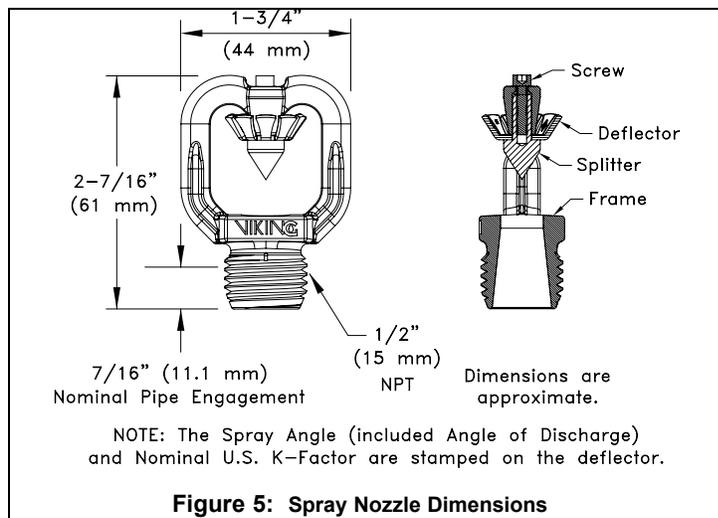


**Figure 3: Spray Angles**

Nozzles are shown with defectors in the upright position for clarity.  
 May be installed in any position to meet design requirements.



**Figure 4: Standard Wrench 10896W/B**



NOTE: The Spray Angle (included Angle of Discharge) and Nominal U.S. K-Factor are stamped on the deflector.

**Figure 5: Spray Nozzle Dimensions**

	<h2 style="margin: 0;">TECHNICAL DATA</h2>	<h3 style="margin: 0;">MODEL E SPRAY NOZZLES VK810 - VK817</h3>
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MAXIMUM AXIAL DISTANCE FOR 65° SPRAY ANGLE IN FEET AND INCHES							
FIXED ANGLE	K FACTOR						
	1.2	1.8	2.3	3.2	4.1	5.6	7.2
0°	16-0	16-0	16-0	16-0	16-0	16-0	16-0
30°	10	10-0	10-3	10-6	11-0	11-6	12-0
45°	8-0	8-0	8-3	8-9	9-0	9-6	10-0
60°	7-0	7-0	7-6	8-3	8-6	8-9	9-0
90°	6-6	6-9	7-0	7-6	8-0	8-0	8-6
120°	6-3	6-3	6-6	7-0	7-6	7-6	8-0
135°	6-0	6-0	6-3	6-6	7-0	7-0	7-6
150°	5-9	5-9	6-0	6-0	6-6	6-9	7-0
180°	5-0	5-0	5-3	5-6	6-0	6-6	6-9

MAXIMUM AXIAL DISTANCE FOR 125° SPRAY ANGLE IN FEET AND INCHES							
FIXED ANGLE	K FACTOR						
	1.2	1.8	2.3	3.2	4.1	5.6	7.2
0°	9-0	9-0	9-0	9-0	9-0	9-0	9-0
30°	4-9	4-9	5-3	6-0	7-0	7-3	8-0
45°	4-6	4-6	4-9	5-0	6-0	6-6	7-0
60°	3-6	3-6	3-9	4-0	5-0	5-6	6-0
90°	3-0	3-0	3-3	3-6	4-6	4-9	5-6
120°	2-0	2-0	2-6	3-3	3-9	3-9	4-0
135°	1-9	1-9	2-3	3-0	3-6	3-6	3-9
150°	1-6	1-9	2-3	2-6	3-0	3-3	3-6
180°	1-3	1-6	2-0	2-6	2-9	3-0	3-3

MAXIMUM AXIAL DISTANCE FOR 80° SPRAY ANGLE IN FEET AND INCHES							
FIXED ANGLE	K FACTOR						
	1.2	1.8	2.3	3.2	4.1	5.6	7.2
0°	16-0	16-0	16-0	16-0	16-0	16-0	16-0
30°	9-6	9-6	10-0	10-6	11-0	11-3	11-6
45°	7-6	7-6	8-0	8-3	8-6	9-0	9-9
60°	6-0	6-3	6-6	7-0	7-0	8-0	8-6
90°	5-6	6-0	6-3	6-6	6-9	7-6	8-0
120°	5-0	5-3	5-9	6-0	6-6	6-6	7-0
135°	4-6	5-3	5-6	5-9	6-0	6-3	6-6
150°	4-3	4-6	4-9	5-6	5-9	6-0	6-0
180°	4-0	4-3	4-6	5-3	5-6	5-9	5-9

MAXIMUM AXIAL DISTANCE FOR 140° SPRAY ANGLE IN FEET AND INCHES							
FIXED ANGLE	K FACTOR						
	1.2	1.8	2.3	3.2	4.1	5.6	7.2
0°	7-0	7-0	7-0	7-0	7-0	7-0	7-0
30°	3-6	4-0	4-6	5-0	5-6	5-6	6-0
45°	3-3	3-6	3-9	4-3	4-6	5-0	5-3
60°	2-3	2-3	2-6	3-6	4-0	4-3	4-6
90°	2-0	2-0	2-9	3-0	3-6	3-6	4-0
120°	1-9	1-9	2-3	2-9	3-0	3-3	3-6
135°	1-6	1-6	1-9	2-3	2-6	2-9	3-0
150°	1-3	1-3	1-6	1-9	2-0	2-3	2-6
180°	1-0	1-0	1-6	1-6	1-9	2-0	2-3

MAXIMUM AXIAL DISTANCE FOR 95° SPRAY ANGLE IN FEET AND INCHES							
FIXED ANGLE	K FACTOR						
	1.2	1.8	2.3	3.2	4.1	5.6	7.2
0°	16-0	16-0	16-0	16-0	16-0	16-0	16-0
30°	8-0	8-3	9-0	9-6	10-6	11-0	11-6
45°	7-0	7-0	7-3	7-6	8-0	8-9	9-6
60°	5-0	5-3	5-6	6-3	6-6	7-0	8-0
90°	4-6	5-0	5-3	5-6	6-0	6-6	7-0
120°	4-0	4-3	4-9	5-3	5-6	5-6	6-0
135°	3-6	3-9	4-3	4-9	5-0	5-3	5-6
150°	3-3	3-6	3-6	4-6	4-9	5-0	5-0
180°	3-0	3-3	3-3	4-0	4-6	4-9	4-9

MAXIMUM AXIAL DISTANCE FOR 160° SPRAY ANGLE IN FEET AND INCHES							
FIXED ANGLE	K FACTOR						
	1.2	1.8	2.3	3.2	4.1	5.6	7.2
0°	5-6	5-6	5-6	5-6	5-6	5-6	5-6
30°	4-0	4-0	4-0	4-3	4-9	4-9	5-0
45°	3-0	3-0	3-3	3-6	3-9	3-9	4-0
60°	2-0	2-0	2-0	2-6	3-0	3-3	3-3
90°	1-0	1-3	1-9	2-0	2-6	2-6	3-0
120°	NR	1-0	1-6	1-9	2-0	2-3	2-6
135°	NR	NR	1-0	1-6	1-9	1-9	2-0
150°	NR	NR	NR	1-0	1-2	1-6	1-9
180°	NR	NR	NR	1-0	1-0	1-3	1-6

MAXIMUM AXIAL DISTANCE FOR 110° SPRAY ANGLE IN FEET AND INCHES							
FIXED ANGLE	K FACTOR						
	1.2	1.8	2.3	3.2	4.1	5.6	7.2
0°	11-0	11-0	11-0	11-0	11-0	11-0	11-0
30°	6-6	6-6	7-3	8-3	9-0	9-3	9-6
45°	5-6	5-9	6-6	7-0	7-6	8-0	8-6
60°	4-9	5-0	5-3	5-6	6-0	7-0	7-6
90°	4-0	4-0	4-6	5-0	5-6	6-0	6-6
120°	3-0	3-3	3-9	4-0	4-6	4-9	5-0
135°	2-9	2-9	3-3	3-9	4-3	4-6	4-9
150°	2-6	2-9	3-0	3-6	3-9	4-2	4-6
180°	2-3	2-6	3-0	3-3	3-6	4-0	4-3

MAXIMUM AXIAL DISTANCE FOR 180° SPRAY ANGLE IN FEET AND INCHES							
FIXED ANGLE	K FACTOR						
	1.2	1.8	2.3	3.2	4.1	5.6	7.2
0°	4-0	4-0	4-0	4-0	4-0	4-0	4-0
30°	2-3	2-3	2-6	2-9	3-0	3-0	3-0
45°	2-0	2-0	2-0	2-3	2-6	2-9	2-9
60°	1-6	1-6	1-9	2-0	2-3	2-6	2-6
90°	NR	NR	1-0	1-0	1-6	1-9	2-3
120°	NR	NR	1-0	1-0	1-3	1-6	1-9
135°	NR	NR	NR	1-0	1-0	1-3	1-6
150°	NR	NR	NR	NR	1-0	1-3	1-3
180°	NR	NR	NR	NR	NR	1-0	1-0

NR = Not Recommended

**Figure 6a: Maximum Axial Distance Between Nozzle Tip  
and Plane of Protection for Exposure Protection (ft)**

**NOTES ABOUT FIGURES 6a AND 6b:**

1. Working pressures of 10 to 60 PSI (.7 to 4.1 Bar) can only be applied for 0° (vertically downward) orientation.
2. Working pressures for orientation angles other than 0° are 20 to 60 PSI (1.4 to 4.1 Bar).
3. However, unless otherwise specified, when the nozzles are axially installed 2 ft. (.6 m) or less from the plane of protection, working pressures of 10 to 60 PSI (.7 to 4.1 Bar) can be applied on all installation angles.

	<h2 style="margin: 0;">TECHNICAL DATA</h2>	<h2 style="margin: 0;">MODEL E SPRAY NOZZLES</h2> <h3 style="margin: 0;">VK810 - VK817</h3>
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**Visit the Viking website for the latest edition of this technical data page.**

MAXIMUM AXIAL DISTANCE FOR 65° SPRAY ANGLE IN METERS							
FIXED ANGLE	K FACTOR (METRIC)						
ANGLE	17.3	25.9	33.1	46.1	59.0	80.6	103.7
0°	4,9	4,9	4,9	4,9	4,9	4,9	4,9
30°	3,0	3,0	3,1	3,2	3,4	3,5	3,7
45°	2,4	2,4	2,5	2,7	2,7	2,9	3,0
60°	2,1	2,1	2,3	2,5	2,6	2,7	2,7
90°	2,0	2,1	2,1	2,3	2,4	2,4	2,6
120°	1,9	1,9	2,0	2,1	2,3	2,3	2,4
135°	1,8	1,8	1,9	2,0	2,1	2,1	2,3
150°	1,8	1,8	1,8	1,8	2,0	2,1	2,1
180°	1,5	1,5	1,6	1,7	1,8	2,0	2,1

MAXIMUM AXIAL DISTANCE FOR 125° SPRAY ANGLE IN METERS							
FIXED ANGLE	K FACTOR (METRIC)						
ANGLE	17.3	25.9	33.1	46.1	59.0	80.6	103.7
0°	2,7	2,7	2,7	2,7	2,7	2,7	2,7
30°	1,4	1,4	1,6	1,8	2,1	2,2	2,4
45°	1,4	1,4	1,4	1,5	1,8	2,0	2,1
60°	1,1	1,1	1,1	1,2	1,5	1,7	1,8
90°	0,9	0,9	1,0	1,1	1,4	1,4	1,7
120°	0,6	0,6	0,8	1,0	1,1	1,1	1,2
135°	0,5	0,5	0,7	0,9	1,1	1,1	1,1
150°	0,5	0,5	0,7	0,8	0,9	1,0	1,1
180°	0,4	0,5	0,6	0,8	0,8	0,9	1,0

MAXIMUM AXIAL DISTANCE FOR 80° SPRAY ANGLE IN METERS							
FIXED ANGLE	K FACTOR (METRIC)						
ANGLE	17.3	25.9	33.1	46.1	59.0	80.6	103.7
0°	4,9	4,9	4,9	4,9	4,9	4,9	4,9
30°	3,0	3,0	3,0	3,2	3,4	3,4	3,5
45°	2,3	2,3	2,4	2,5	2,6	2,7	3,0
60°	1,8	1,9	2,0	2,1	2,1	2,4	2,6
90°	1,7	1,8	1,9	2,0	2,1	2,3	2,4
120°	1,5	1,6	1,8	1,8	2,0	2,0	2,1
135°	1,4	1,6	1,7	1,8	1,8	1,9	2,0
150°	1,3	1,4	1,4	1,7	1,8	1,8	1,8
180°	1,2	1,3	1,4	1,6	1,7	1,8	1,8

MAXIMUM AXIAL DISTANCE FOR 140° SPRAY ANGLE IN METERS							
FIXED ANGLE	K FACTOR (METRIC)						
ANGLE	17.3	25.9	33.1	46.1	59.0	80.6	103.7
0°	2,1	2,1	2,1	2,1	2,1	2,1	2,1
30°	1,1	1,2	1,4	1,5	1,7	1,7	1,8
45°	1,0	1,1	1,1	1,3	1,4	1,5	1,6
60°	0,7	0,7	0,8	1,1	1,2	1,3	1,4
90°	0,6	0,6	0,8	0,9	1,1	1,1	1,2
120°	0,5	0,5	0,7	0,8	0,9	1,0	1,1
135°	0,5	0,5	0,5	0,7	0,8	0,8	0,9
150°	0,4	0,4	0,5	0,5	0,6	0,7	0,8
180°	0,3	0,3	0,5	0,5	0,5	0,6	0,7

MAXIMUM AXIAL DISTANCE FOR 95° SPRAY ANGLE IN METERS							
FIXED ANGLE	K FACTOR (METRIC)						
ANGLE	17.3	25.9	33.1	46.1	59.0	80.6	103.7
0°	4,9	4,9	4,9	4,9	4,9	4,9	4,9
30°	2,4	2,5	2,7	2,9	3,2	3,4	3,5
45°	2,1	2,1	2,2	2,3	2,4	2,7	2,9
60°	1,5	1,6	1,7	1,9	2,0	2,1	2,4
90°	1,4	1,5	1,6	1,7	1,8	2,0	2,1
120°	1,2	1,3	1,4	1,6	1,7	1,7	1,8
135°	1,1	1,1	1,3	1,4	1,5	1,6	1,7
150°	1,0	1,1	1,1	1,4	1,4	1,5	1,5
180°	0,9	1,0	1,0	1,2	1,4	1,4	1,4

MAXIMUM AXIAL DISTANCE FOR 160° SPRAY ANGLE IN METERS							
FIXED ANGLE	K FACTOR (METRIC)						
ANGLE	17.3	25.9	33.1	46.1	59.0	80.6	103.7
0°	1,7	1,7	1,7	1,7	1,7	1,7	1,7
30°	4,3	1,2	1,2	1,3	1,4	1,4	1,5
45°	0,9	0,9	1,0	1,1	1,1	1,1	1,2
60°	0,6	0,6	0,6	0,8	0,9	1,0	1,0
90°	0,3	0,4	0,5	0,6	0,8	0,8	0,9
120°	NR	0,3	0,4	0,5	0,6	0,7	0,8
135°	NR	NR	0,3	0,5	0,5	0,5	0,6
150°	NR	NR	NR	0,3	0,4	0,5	0,5
180°	NR	NR	NR	0,3	0,3	0,4	0,5

MAXIMUM AXIAL DISTANCE FOR 110° SPRAY ANGLE IN METERS							
FIXED ANGLE	K FACTOR (METRIC)						
ANGLE	17.3	25.9	33.1	46.1	59.0	80.6	103.7
0°	3,4	3,4	3,4	3,4	3,4	3,4	3,4
30°	2,0	2,0	2,2	2,5	2,7	2,8	3,0
45°	1,7	1,8	2,0	2,1	2,3	2,4	2,6
60°	1,4	1,5	1,6	1,7	1,8	2,1	2,2
90°	1,2	1,2	1,4	1,5	1,7	1,8	2,0
120°	0,9	1,0	1,1	1,2	1,4	1,4	1,5
135°	0,8	0,8	1,0	1,1	1,3	1,4	1,4
150°	0,8	0,8	0,9	1,1	1,1	1,3	1,4
180°	0,7	0,8	0,9	0,9	1,1	1,2	1,3

MAXIMUM AXIAL DISTANCE FOR 180° SPRAY ANGLE IN METERS							
FIXED ANGLE	K FACTOR (METRIC)						
ANGLE	17.3	25.9	33.1	46.1	59.0	80.6	103.7
0°	1,2	1,2	1,2	1,2	1,2	1,2	1,2
30°	0,7	0,7	0,8	0,8	0,9	0,9	0,9
45°	0,6	0,6	0,6	0,7	0,8	0,8	0,8
60°	0,5	0,5	0,5	0,6	0,7	0,8	0,8
90°	NR	NR	0,3	0,3	0,5	0,5	0,7
120°	NR	NR	0,3	0,3	0,4	0,5	0,5
135°	NR	NR	NR	0,3	0,3	0,4	0,5
150°	NR	NR	NR	NR	0,3	0,4	0,4
180°	NR	NR	NR	NR	NR	0,3	0,3

NR = Not Recommended

**Figure 6b: Maximum Axial Distance Between Nozzle Tip and Plane of Protection for Exposure Protection (m)**

**NOTES ABOUT FIGURES 6a AND 6b:**

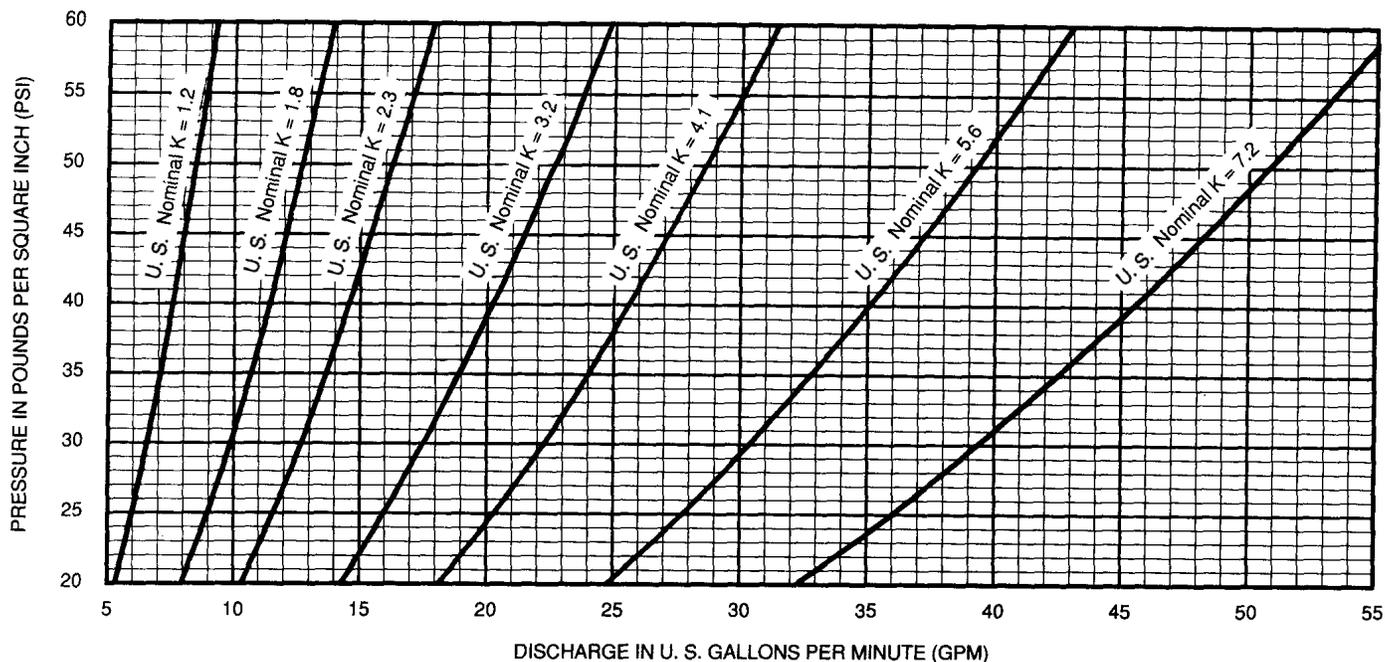
1. Working pressures of 10 to 60 PSI (.7 to 4.1 Bar) can only be applied for 0° (vertically downward) orientation.
2. Working pressures for orientation angles other than 0° are 20 to 60 PSI (1.4 to 4.1 Bar).
3. However, unless otherwise specified, when the nozzles are axially installed 2 ft. (.6 m) or less from the plane of protection, working pressures of 10 to 60 PSI (.7 to 4.1 Bar) can be applied on all installation angles.



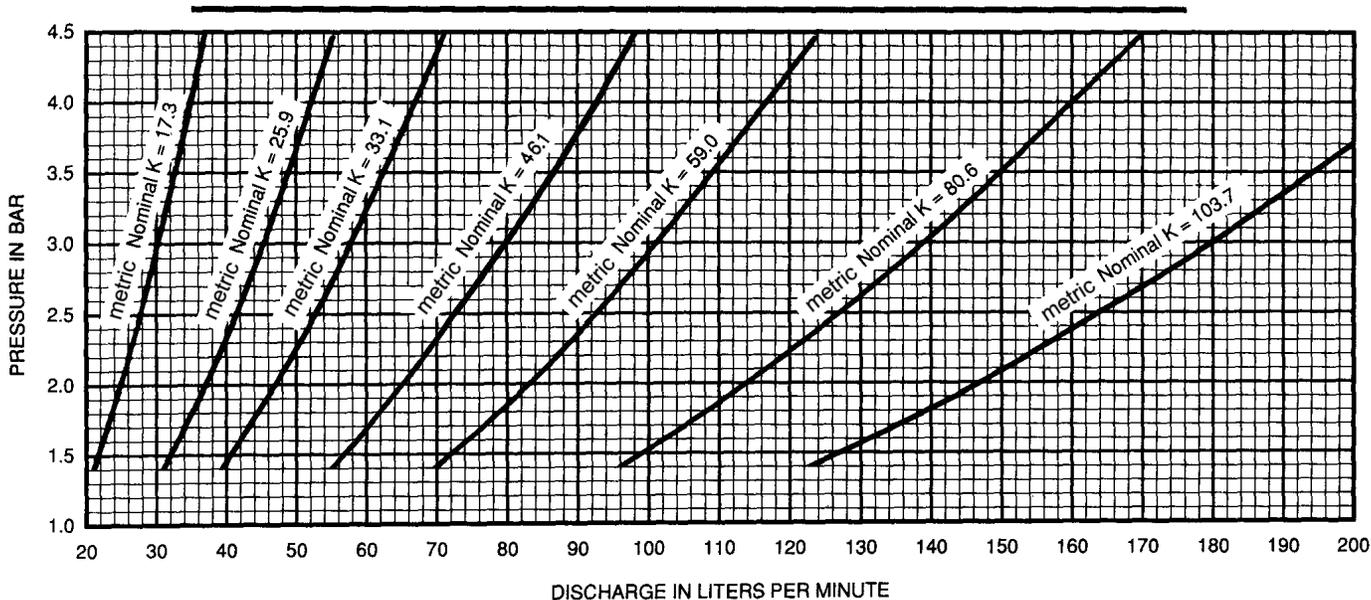
TECHNICAL DATA

MODEL E SPRAY NOZZLES  
VK810 - VK817

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**NOTE:**  $Q = K\sqrt{p}$ ; where "Q" = flow in U.S. gallons per minute, "p" = pressure in pounds per square inch, and "K" is the nominal discharge coefficient.



**NOTE:**  $Q = K\sqrt{p}$ ; where "Q" = flow in liters per minute, "p" = pressure in bar, and "K" is the nominal discharge coefficient.

**Figure 7: Nominal Discharge Curves**  
 (Refer to the Authority Having Jurisdiction for Their Minimum Required Residual Pressure.)



## BULLETIN

CARE AND HANDLING  
OF SPRINKLERS

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

## SPRINKLERS ARE FRAGILE - HANDLE WITH CARE!

### General Handling and Storage:

- Store sprinklers in a cool, dry place.
- Protect sprinklers during storage, transport, handling, and after installation.
- Use the original shipping containers. DO NOT place sprinklers loose in boxes, bins, or buckets.
- Keep sprinklers separated at all times. DO NOT allow metal parts to contact sprinkler operating elements.

### For Pre-Assembled Drops:

- Protect sprinklers during handling and after installation.
- For recessed assemblies, use the protective sprinkler cap (Viking Part Number 10364).

### Sprinklers with Protective Shields or Caps:

- DO NOT remove shields or caps until after sprinkler installation and there no longer is potential for mechanical damage to the sprinkler operating elements.
- **Sprinkler shields or caps MUST be removed BEFORE placing the system in service!**
- Remove the sprinkler shield by carefully pulling it apart where it is snapped together.
- Remove the cap by turning it slightly and pulling it off the sprinkler.

### Sprinkler Installation:

- DO NOT use the sprinkler deflector or operating element to start or thread the sprinkler into a fitting.
- **Use only the designated sprinkler head wrench!** Refer to the current sprinkler technical data page to determine the correct wrench for the model of sprinkler used.
- DO NOT install sprinklers onto piping at the floor level.
- Install sprinklers after the piping is in place to prevent mechanical damage.
- DO NOT allow impacts such as hammer blows directly to sprinklers or to fittings, pipe, or couplings in close proximity to sprinklers. Sprinklers can be damaged from direct or indirect impacts.
- DO NOT attempt to remove drywall, paint, etc., from sprinklers.
- **Take care not to over-tighten the sprinkler and/or damage its operating parts!**

#### Maximum Torque:

1/2" NPT: 14 ft-lbs. (19.0 N-m)

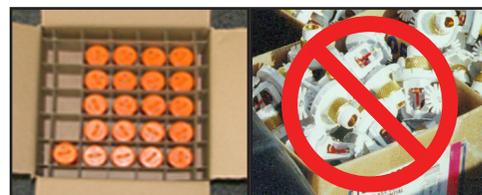
3/4" NPT: 20 ft-lbs. (27.1 N-m)

1" NPT: 30 ft-lbs. (40.7 N-m)



**CORRECT**  
(Original container used)

**INCORRECT**  
(Placed loose in box)



**CORRECT**  
(Protected with caps)

**INCORRECT**  
(Protective caps not used)



**CORRECT**  
(Piping is in place at the ceiling)

**INCORRECT**  
(Sprinkler at floor level)



**CORRECT**  
(Special installation wrenches)

**INCORRECT**  
(Designated wrench not used)



**WARNING:** Cancer and Reproductive Harm-  
[www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

### **! WARNING**

Any sprinkler with a loss of liquid from the glass bulb or damage to the fusible element should be destroyed. Never install sprinklers that have been dropped, damaged, or exposed to temperatures exceeding the maximum ambient temperature allowed. Sprinklers that have been painted in the field must be replaced per NFPA 13. Protect sprinklers from paint and paint overspray in accordance with the installation standards. Do not clean sprinklers with soap and water, ammonia, or any other cleaning fluid. Do not use adhesives or solvents on sprinklers or their operating elements.

**Refer to the appropriate technical data page and NFPA standards for complete care, handling, installation, and maintenance instructions. For additional product and system information Viking data pages and installation instructions are available on the Viking Web site at [www.vikinggroupinc.com](http://www.vikinggroupinc.com).**



## BULLETIN

CARE AND HANDLING  
OF SPRINKLERS

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## PROTECTIVE SPRINKLER SHIELDS AND CAPS

### General Handling and Storage:

Many Viking sprinklers are available with a plastic protective cap or shield temporarily covering the operating elements. The snap-on shields and caps are factory installed and are intended to help protect the operating elements from mechanical damage during shipping, storage, and installation. NOTE: It is still necessary to follow the care and handling instructions on the appropriate sprinkler technical data sheets\* when installing sprinklers with bulb shields or caps.

### WHEN TO REMOVE THE SHIELDS AND CAPS:

NOTE: SHIELDS AND CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!

Remove the shield or cap from the sprinkler only after checking all of the following:

- The sprinkler has been installed\*.
- 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.

**SHIELDS AND CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!**



Figure 1: Sprinkler shield being removed from a pendent sprinkler.



Figure 2: Sprinkler cap being removed from a pendent sprinkler.



Figure 3: Sprinkler cap being removed from an upright sprinkler.

## HOW TO REMOVE SHIELDS AND CAPS:

No tools are necessary to remove the shields or caps from sprinklers. DO NOT use any sharp objects to remove them! **Take care not to cause mechanical damage to sprinklers when removing the shields or caps.** When removing caps from fusible element sprinklers, use care to prevent dislodging ejector springs or damaging fusible elements. NOTE: Squeezing the sprinkler cap excessively could damage sprinkler fusible elements.

- To remove the shield, simply pull the ends of the shield apart where it is snapped together. Refer to Figure 1.
- To remove the cap, turn it slightly and pull it off the sprinkler. Refer to Figures 2 and 3.

### NOTICE

Refer to the current sprinkler technical data page to determine the correct sprinkler wrench for the model of sprinkler used.

### WARNING

Never install sprinklers that have been dropped, damaged, or exposed to temperatures in excess of the maximum ambient temperature allowed.

\* Refer to the appropriate current technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Web site at [www.vikinggroupinc.com](http://www.vikinggroupinc.com).



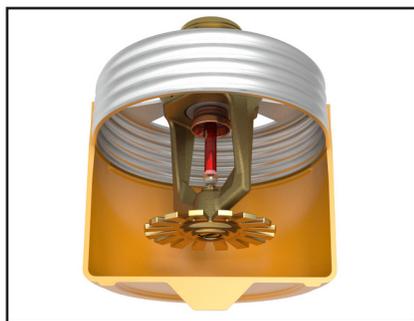
## BULLETIN

CARE AND HANDLING  
OF SPRINKLERS

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**CONCEALED COVER ASSEMBLIES ARE FRAGILE!**  
**TO ASSURE SATISFACTORY PERFORMANCE OF THE PRODUCT, HANDLE WITH CARE.**



Concealed Sprinkler and Adapter  
 Assembly with Protective Cap

Concealed Sprinkler and Adapter  
 Assembly (Protective Cap Removed)



Cover Plate Assembly  
 (Pendent Cover 12381 shown)



#### GENERAL HANDLING AND STORAGE INSTRUCTIONS:

- Do not store in temperatures exceeding 100 °F (38 °C). Avoid direct sunlight and confined areas subject to heat.
- Protect sprinklers and cover assemblies during storage, transport, handling, and after installation.
  - Use original shipping containers.
  - Do not place sprinklers or cover assemblies loose in boxes, bins, or buckets.
- Keep the sprinkler bodies covered with the protective sprinkler cap any time the sprinklers are shipped or handled, during testing of the system, and while ceiling finish work is being completed.
- Use only the designated Viking recessed sprinkler wrench (refer to the appropriate sprinkler data page) to install these sprinklers. **NOTE:** The protective cap is temporarily removed during installation and then placed back on the sprinkler for protection until finish work is completed.
- Do not over-tighten the sprinklers into fittings during installation.
- Do not use the sprinkler deflector to start or thread the sprinklers into fittings during installation.
- Do not attempt to remove drywall, paint, etc., from the sprinklers.
- Remove the plastic protective cap from the sprinkler before attaching the cover plate assembly. **PROTECTIVE CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!**

Refer to the appropriate current technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Web site at [www.vikinggroupinc.com](http://www.vikinggroupinc.com).



## BULLETIN

CARE AND HANDLING  
OF SPRINKLERS

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

## USE THE FOLLOWING PRECAUTIONS WHEN HANDLING WAX-COATED SPRINKLERS

Many of Viking's sprinklers are available with factory-applied wax coating for corrosion resistance. These sprinklers MUST receive appropriate care and handling to avoid damaging the wax coating and to assure satisfactory performance of the product.

### General Handling and Storage of Wax-Coated Sprinklers:

- Store the sprinklers in a cool, dry place (in temperatures below the maximum ambient temperature allowed for the sprinkler temperature rating. Refer to Table 1 below.)
- Store containers of wax-coated sprinklers separate from other sprinklers.
- Protect the sprinklers during storage, transport, handling, and after installation.
- Use original shipping containers.
- Do not place sprinklers in loose boxes, bins, or buckets.

### Installation of Wax-Coated Sprinklers:

Use only the special sprinkler head wrench designed for installing wax-coated Viking sprinklers (any other wrench may damage the unit).

- Take care not to crack the wax coating on the units.
- For touching up the wax coating after installation, wax is available from Viking in bar form. Refer to Table 1 below. The coating MUST be repaired after sprinkler installation to protect the corrosion-resistant properties of the sprinkler.
- Use care when locating sprinklers near fixtures that can generate heat. Do not install sprinklers where they would be exposed to temperatures exceeding the maximum recommended ambient temperature for the temperature rating used.
- Inspect the coated sprinklers frequently soon after installation to verify the integrity of the corrosion resistant coating. Thereafter, inspect representative samples of the coated sprinklers in accordance with NFPA 25. Close up visual inspections are necessary to determine whether the sprinklers are being affected by corrosive conditions.

TABLE 1

Sprinkler Temperature Rating (Fusing Point)	Wax Part Number	Wax Melting Point	Maximum Ambient Ceiling Temperature <sup>1</sup>	Wax Color
155 °F (68 °C) / 165 °F (74 °C)	02568A	148 °F (64 °C)	100 °F (38 °C)	Light Brown
175 °F (79 °C)	04146A	161 °F (71 °C)	150 °F (65 °C)	Brown
200 °F (93 °C)	04146A	161 °F (71 °C)	150 °F (65 °C)	Brown
220 °F (104 °C)	02569A	170 °F (76 °C)	150 °F (65 °C)	Dark Brown
286 °F (141 °C)	02569A	170 °F (76 °C)	150 °F (65 °C)	Dark Brown

<sup>1</sup> 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.



Never install sprinklers that have been dropped, damaged, or exposed to temperatures in excess of the maximum ambient temperature allowed.

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**BULLETIN****REGULATORY AND HEALTH  
WARNINGS**

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

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Visit the Viking website for the latest edition of this technical data page [www.vikinggroupinc.com](http://www.vikinggroupinc.com)

**1. DESCRIPTION**

Regulatory and Health Warnings applying to materials used in the manufacture and construction of fire protection products are provided herein as they relate to legally mandated jurisdictional regions.

**⚠ WARNING****STATE OF CALIFORNIA, USA**

Installing or servicing fire protection products such as sprinklers, valves, piping etc. can expose you to chemicals including, but not limited to, lead, nickel, butadiene, titanium dioxide, chromium, carbon black, and acrylonitrile which are known to the State of California to cause cancer or birth defects or other reproductive harm.

For more information, go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

**2. WARRANTY TERMS AND CONDITIONS**

For details of warranty, refer to Viking's current list price schedule at [www.vikinggroupinc.com](http://www.vikinggroupinc.com) or contact Viking directly.