



TECHNICAL DATA

MODEL E SPRAY NOZZLES VK810 - VK817

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.

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

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

Form No. F_062104 20.06.15 Rev. 20.1

Replaces Form No. F_062104 Rev 19.1
(Added 21436; removed 19888.)



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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).