1. PRODUCT NAME
Viking Model M
Extra Large Orifice Sprinkler

2. MANUFACTURER
THE VIKING CORPORATION
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3. PRODUCT DESCRIPTION
The Viking Model M Extra Large Orifice Sprinkler is a thermo-sensitive glass-bulb spray sprinkler. A rugged 5mm glass-bulb, an extra large orifice, and the familiar Model M design, are combined in the standard response Model M Extra Large Orifice Sprinkler. The extra large orifice provides greater flows at lower pressures than those produced by standard orifice or large orifice sprinklers. This feature allows reduced pipe sizing for hydraulically calculated sprinkler systems which require high densities of water. The Model M Extra Large Orifice Sprinkler may eliminate the need for a fire pump or reduce the size of the pump if it is required. On existing systems, replacing large orifice sprinklers with extra large orifice sprinklers may provide the higher densities required to allow an increase in the hazard classification of an occupancy. Viking Model M Extra Large Orifice Sprinklers are available in both upright and pendant styles with finishes and temperature ratings to meet design requirements. The special Teflon® and polyester coatings can be used in decorative applications where colors are desired. In addition, these two finishes are corrosion resistant and provide protection against many corrosive environments.

During fire conditions, the heat sensitive liquid in the glass-bulb expands, causing the bulb to shatter, releasing the pipe cap and sealing spring assembly. The water flowing through the sprinkler orifice strikes the sprinkler deflector forming a uniform spray pattern to extinguish or control the fire.

Viking Model M Extra Large Orifice Sprinklers may be ordered and/or used as open sprinklers (glass-bulb and pipe cap assembly removed) on deluge systems.

The Viking Model M Extra Large Orifice Upright Sprinkler is UL listed and FM Approved for use in High Piled Storage Occupancies.

When acceptable to the Authority Having Jurisdiction, Viking Model M Extra Large Orifice Upright sprinklers may be used to protect single, double, multiple-row, and portable rack storage of Class I-IV group A and B plastics, cartoned, expanded or unexpanded, as well as exposed unexpanded with:

- a maximum storage height of 20 ft. (6.1 m),
- a maximum ceiling height of 25 ft. (7.6 m),
- a design density of 0.60 gpm/sq. ft. (24.5 l/min/sq. meter), and a design area of
- 2000 sq. ft. (186 sq. meters) for wet systems or
- 2600 sq. ft. (242 sq. meters), for dry systems.

3. PRODUCT DESCRIPTION

4. TECHNICAL DATA

Sprinkler Temperature Classification |
Sprinkler Temperature Rating (Fusing Point) | Ceiling Temperature at Sprinkler |
| Max. Ambient Temp. Allowed¹ | Max. Recommend. Ambient Temp.² |
| Bulb Color³ |

| Ordinary | 135°F(57°C) | 115°F(46°C) | 100°F(38°C) | Orange |
| Ordinary | 155°F(68°C) | 135°F(57°C) | 100°F(38°C) | Red |
| Intermediate | 175°F(79°C) | 155°F(68°C) | 150°F(65°C) | Yellow |
| Intermediate | 200°F(93°C) | 180°F(82°C) | 150°F(65°C) | Green |
| High | 220°F(141°C) | 200°F(93°C) | 225°F(107°C) | Blue |

Sprinkler Finishes: Brass, Polished Chrome, Black Teflon® and White Polyester.

Corrosion Resistant Coatings⁴: Black Teflon® and White Polyester in all temperatures and Wax coated brass in the following temperatures:
- 135°F(57°C) White Wax
- 155°F(68°C) Light Brown Wax
- 175°F(79°C) Dark Brown Wax
- 200°F(93°C) Dark Brown Wax

¹ Based on National Fire Prevention and Control Administration Contract No. 7-34860.
² Based on NFPA-13. Other limits may apply depending on fire loading, sprinkler location and other authority having jurisdiction requirements. Refer to specific installation standards.
³ Temperature rating is stamped on deflector.
⁴ The Corrosion Resistant Coatings have passed the standard corrosion test required by the listed approving agencies. These tests cannot and do not represent all possible corrosive environments. Prior to installing, verify through the end user, that the coatings are compatible or suitable for the proposed environment. The coatings indicated are applied to the exposed exterior surfaces only and therefore cannot be used as open sprinklers. Note that the spout is exposed on the Teflon® coated sprinkler and the White Polyester sprinkler.

4. TECHNICAL DATA

See Chart (page 13 g) for list of approvals.

Glass Bulb Fluid Temperature rated to

-65 °F (-55°C)

Rated 175 PSI (1 207 kPa) water working pressure
Factory tested hydrostatically to 500 PSI (3 448 kPa)
Thread size: 3/4 NPT (20mm)
Orifice Size: Nominal 5/8” (16mm)
K Factor: 11.5 (16.6 Metric for use when pressure is measured in kPa)
Spring: USA Patent No. 4,167,974
Bulb: USA Patent No. 4,796,710
Spacing requirements: Refer to Approval Chart and Figure A
Minimum operating pressure requirements: Refer to Approval Chart and Figure A
Materials:
Frame: Brass castings UNS-C84400
Deflector: Brass UNS-C26000
Bulb: Glass; Nominal 5mm diameter
Seal: Teflon® Tape
Spring: Nickel Alloy
UL & ULC Spacing and Minimum Pressure Requirements*

Maximum Spacing (UL & C-UL Upright and UL & ULC Pendent)
Ordinary Hazard Occupancies (UL & C-UL Upright and UL & ULC Pendent):
  130 Ft² (12.0 m²)
Extra Hazard Occupancies (UL & C-UL Upright and UL & ULC Pendent):
  90 Ft² (8.4 m²) for pipe schedule systems.
  100 Ft² (9.3 m²) for systems hydraulically calculated according to NFPA 13 with densities of .25 GPM/Ft² (10.2 L/min/m²) or greater.
  130 Ft² (12.1 m²) for systems hydraulically calculated according to NFPA 13 with densities less than .25 GPM/Ft² (10.2 L/min/m²).
High Piled Storage (UL & C-UL Upright):
  100 Ft² (9.3 m²) for systems hydraulically calculated according to NFPA 231, 231C, or 231D with densities of .25 GPM/Ft² (10.2 L/min/m²) or greater.
  130 Ft² (12.1 m²) for systems hydraulically calculated according to NFPA 231, 231C, or 231D with densities less than .25 GPM/Ft² (10.2 L/min/m²).

Maximum Distance Between Sprinklers (UL & C-UL Upright and UL & ULC Pendent)
Ordinary Hazard Occupancies (UL & C-UL Upright and UL & ULC Pendent):
  15 Ft (4.6 m)
Extra Hazard Occupancies (UL & C-UL Upright and UL & ULC Pendent):
  12 Ft (3.7 m) - Exception #1: Maximum distance between sprinklers = 12'-6" (3.8 m) in bays 25 ft. (7.6 m) wide.
  Exception #2: Maximum distance between sprinklers = 15'-0" (4.6 m) for systems hydraulically calculated according to NFPA 13 with densities less than .25 GPM/Ft² (10.2 L/min/m²).
High Piled Storage Occupancies (UL & C-UL Upright):
  12 Ft (3.7 m) - Exception #1: Maximum distance between sprinklers = 12'-6" (3.8 m) in bays 25 ft. (7.6 m) wide.
  Exception #2: Maximum distance between sprinklers = 15'-0" (4.6 m) for systems hydraulically calculated according to NFPA 13 with densities less than .25 GPM/Ft² (10.2 L/min/m²).

Minimum Distance Between Sprinklers (UL & C-UL Upright and UL & ULC Pendent)
Ordinary Hazard & Extra Hazard (UL & C-UL Upright and UL & ULC Pendent):
  6 Ft (1.8 m) - Unless provided with baffles installed according to NFPA 13
High Piled Storage Occupancies (UL & C-UL Upright only):
  6 Ft (1.8 m) - Unless provided with baffles installed according to NFPA 13

Minimum Operating Pressure (UL & C-UL Upright and UL & ULC Pendent)
Ordinary Hazard, Extra Hazard (UL & C-UL Upright and UL & ULC Pendent):
  7 PSI (48.3 kPa)
High Piled Storage Occupancies (UL & C-UL Upright only):
  10 PSI (70 kPa)

FM** Approval Spacing & Minimum Pressure Requirements

Maximum Spacing (FM Upright only)
Ordinary Hazard, Extra Hazard, and High Piled Storage Occupancies (FM Upright only):
  100 Ft² (9.3 m²)

Maximum Distance Between Sprinklers (FM Upright only)
Ordinary Hazard, Extra Hazard, and High Piled Storage Occupancies (FM Upright only):
  12 Ft (3.7 m)

Minimum Distance Between Sprinklers (FM Upright only)
Ordinary Hazard, Extra Hazard, and High Piled Storage Occupancies (FM Upright only):
  7 Ft (2.1 m)

Minimum Operating Pressure (FM Upright only)
Ordinary Hazard, Extra Hazard, and High Piled Storage Occupancies (FM Upright only):
  10 PSI (70 kPa)

**For FM Approval, installation must comply with requirements of applicable Factory Mutual Loss Prevention Data Sheets.
Pintle Screw: Brass UNS-C36000.

Pip Cap: Copper UNS-C31600

Teflon® Sprinklers:

Spring: Nickel Alloy; Exposed

Pintle Screw: Brass UNS-C36000

Tin plated, painted black for appearance only

Pip Cap: Leaded Bronze

UNS-C31600

Tin plated

Teflon® coated

Polyester Sprinklers:

Spring: Nickel Alloy; Exposed

Pintle Screw: Brass UNS-C36000

Tin plated, painted white for appearance only

Pip Cap: Leaded Bronze

UNS-C31600

Tin plated

**Accessories:**

Sprinkler Wrench

Standard ELO wrench:

PN 07297M

Wrench for coated & recessed ELO sprinklers:

PN 07565W/B (1/2" ratchet required)

**Available Finishes:**

Chrome, Brass, Black Teflon® or White Polyester

5. **AVAILABILITY AND SERVICE**

Viking sprinklers are available through a network of Domestic, Canadian, and International Distributors, see the Yellow Pages of the telephone directory (listed under “Sprinklers Automatic Fire”) or write to The Viking Corporation.

6. **GUARANTEES**

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

7. **INSTALLATION**

WARNING: Viking sprinklers are manufactured and tested to meet the 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 inoperable and will automatically nullify the approval and any guarantee made by The Viking Corporation.

A. Sprinklers are to be installed in accordance with the latest published standards of the National Fire Protection Association, Factory Mutual, Loss Prevention Council, Assemblee Pleniere, Verband der Sachversicherer or other similar organizations and also with the provisions of governmental codes, ordinances and standards whenever applicable. The use of Extra Large Orifice sprinklers may be limited due to occupancy and hazard. Refer to the Authority Having Jurisdiction prior to installation.

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, damaged or exposed to temperatures in excess of...
the maximum ambient temperature allowed. Never install any glass bulb sprinkler if the bulb is cracked or if there is a loss of liquid from the bulb. (These sprinklers should be destroyed immediately).

C. Corrosion resistant sprinklers must be installed when subject to corrosive atmospheres. When installing corrosion resistant sprinklers, take care not to damage the corrosion resistant coating. Use only the special wrench designed for installing coated Viking sprinklers (any other wrench may damage the unit).

D. The sprinkler must be installed after the piping is in place to prevent mechanical damage. Before installing, make sure the appropriate model, style, orifice size and temperature rating are used.

1. Install escutcheon, if used which is designed to thread onto the external threads of the sprinkler only, taking care not to allow a build up of compound in the sprinkler inlet.
2. Install the sprinkler on the piping using the special sprinkler wrench only, taking care not to over-tighten or damage the sprinkler operating parts. DO NOT use the deflector to start or thread the sprinkler into a fitting.
3. After installation, the entire sprinkler system must be tested in accordance with the recognized installation standards. The test is applied after the sprinkler installation to insure no damage has occurred to the sprinkler during shipping and installation, and to make sure the sprinkler has been properly tightened. If a thread leak should occur, normally the sprinkler must be removed, new pipe joint compound or tape applied and 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 the sprinkler piping prior to testing with water may be considered in areas where leakage during testing must be prevented. Refer to the Installation Guides, and the Authority Having Jurisdiction.

F. Sprinklers must be protected from mechanical damage. Wet pipe systems must be provided with adequate heat. When installing Extra Large Orifice Sprinklers on dry systems, refer to the Installation Guides, and the Authority Having Jurisdiction.

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 National Fire Protection Association Pamphlet that describes care and maintenance of sprinkler systems. In addition, the Authority Having Jurisdiction may have additional maintenance, testing and inspection requirements which must be followed.

A. The Sprinklers must be inspected on a regular basis for corrosion, mechanical damage, obstructions, paint, etc. The frequency of the inspections may vary due to corrosive atmospheres, 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. Standard response Sprinklers that are 50 years old shall be tested and/or replaced as 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, draining all water and relieving 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 replace the sprinkler with the proper model, style, orifice size and temperature rating. A fully stocked spare sprinkler cabinet should be provided for this purpose.

3. Place the system back in service and secure all valves. Check and repair all leaks.

E. Sprinkler 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. Sprinklers that have been exposed to corrosive products of combustion or high ambient temperatures, but have not operated, should be replaced. Refer to the Authority Having Jurisdiction for minimum replacement requirements.