



## TECHNICAL DATA

## INTERMEDIATE LEVEL IN-RACK 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

### 1. DESCRIPTION

Viking Intermediate Level In-Rack Sprinklers consist of a water shield installed on specifically listed and/or approved frame style standard and quick response sprinklers equipped with glass bulbs or fusible elements. Refer to Approval Charts 1 and 2 on pages 131d-e for listings and approvals. They are available in both upright and pendent styles with or without sprinkler guards. Refer to Section 5. ORDERING INSTRUCTIONS.

Viking Water Shields protect sprinkler heat-sensing elements from water spray discharging from sprinklers located at a higher elevation. They may be used on in-rack sprinkler systems, under grating, on pilot sprinklers for deluge systems, outdoors as a weather shield, or any other application where water shielding is required.

### 2. LISTINGS AND APPROVALS

cULus Listed: Category VNIV

FM Approved: Classes 2005 and 2020

See the Approval Charts 1 and 2 on pages 131d-e for sprinklers listed and/or approved as Intermediate Level Sprinklers with water shields.

### 3. TECHNICAL DATA

#### Specifications:

Available since 1997.

#### A. Water Shield for Pre-assembled Viking Upright Intermediate Level Sprinklers (See Figure 1):

Dimensions: 2-3/4" (70 mm) diameter, .0359" (.91 mm) thick.

#### B. Model E-1 Water Shield for Upright Sprinklers equipped with Model D-1 Guards (See Figure 2 - Top):

Dimensions: 4-3/8" (112 mm) diameter, 2-1/8" (54 mm), 1/2" (12.7 mm) depth, .0359" (.91 mm) thick. Available since 1998.

#### C. Model F-1 Water Shield for Pendent Sprinklers (See Figure 3 - Top):

Dimensions: 3" (75 mm) diameter, .0359" (.91 mm) thick. Available since 1998.

#### Material Standards:

Water Shields: Cold Rolled Steel UNS-G10080. Finish: Clear Chromate over Zinc Plating, or Stainless Steel UNS-S30400

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

**Upright Intermediate Level Sprinklers (without guards):** Upright Intermediate Level Sprinklers shown in Figure 1 are pre-assembled with the water shields factory installed (see note below).

Refer to the chart on page 131d for upright sprinklers listed and/or approved with water shields.

To order a factory pre-assembled Intermediate Level Upright Sprinkler by part number, use the base part number for the sprinkler selected from the chart on page 131d. Add the suffix "U" after the suffixes for the desired temperature and finish (see current Viking Price Book for temperature and finish suffixes).

**NOTE: Sprinkler guards are NOT available for use with factory preassembled Intermediate Level Upright Sprinklers. For Upright Intermediate Level Sprinklers with guards, see paragraph below.**

**Upright Intermediate Level Sprinklers (with Model D-1 Sprinkler Guards):** For Upright Intermediate Level Sprinklers with guards (Figure 2), the special water shield must be ordered separately and installed in the field. Refer to page 131d for upright sprinklers listed and/or approved for installation with water shields.

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.



**Upright Intermediate Level Sprinkler  
(Factory pre-assembled only)**

The standard response glass bulb style sprinkler shown above is representative only. Standard response fusible link sprinklers and quick response glass bulb or fusible element style sprinklers are also available as intermediate level sprinklers. Refer to Approval Chart 1 for listings and approvals.

**Figure 1**



**Model E-1 Water Shield (Viking Part No. 10326 or Stainless Steel Part No. 14682) for Frame Style Upright Sprinklers with the Model D-1 Sprinkler Guard**

Order Water Shield Separately. (Field Assembly Required.) See Installation Instructions.)  
Order Sprinkler Guard Separately or Factory Installed. (See Ordering Instructions.)



**Upright Intermediate Level Sprinkler  
(with Guard and Water Shield)**

The standard response sprinkler equipped with a 5 mm glass bulb shown above is representative only. Standard response fusible link sprinklers and quick response sprinklers equipped with glass bulbs or fusible elements are also available as intermediate level sprinklers. Refer to Approval Chart 1 on page 131d for listings and approvals.

**Figure 2**



## TECHNICAL DATA

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1. Order the sprinkler using the base part number (plus appropriate suffixes for temperature and finish) for the sprinkler selected from Approval Chart 1 on page 131d (see current Viking Price Book for temperature and finish suffixes).

a. To order the sprinkler guard factory installed on the upright sprinkler, add the suffix "G".

b. To order the Model D-1 Sprinkler Guard separately, order Part No. 10325 or Stainless Steel Part No. 12198 (see page 130a-c).

2. Order the upright Model E-1 Water Shield, Viking Part No. 10326 or Stainless Steel Part No. 14682.

**Pendent Intermediate Level Sprinklers:** For pendent Intermediate Level Sprinklers Figure 3), the Model F-1 Water Shields and sprinklers must be ordered separately and the water shield must be installed in the field.

Refer to page 131e for pendent sprinklers listed and/or approved for installation with water shields.

1. Order the sprinklers using the base part number (plus appropriate suffixes for temperature and finish) for the sprinkler selected from the chart on page 131e (see current Viking Price Book for temperature and finish suffixes).

a. For optional sprinkler guards factory installed on the pendent sprinkler, add the suffix "G".

b. To order the optional Model D-1 Sprinkler Guard separately, order Part No. 10325 or Stainless Steel Part No. 12198 (see page 130a-c).

2. Order the Model F-1 Water Shields using the appropriate part number for the thread size required. For 1/2" NPT, order Part No. 10323 or Stainless Steel Part No. 14683. For 3/4" NPT, order Part No. 10324 or Stainless Steel Part No. 14684.

NOTE: Water shields are for use on pendent sprinklers with or without guards.

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

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

**Model D-1 Sprinkler Guard:** Part No. 10325 or Stainless Steel Part No. 12198 (**NOT for use with factory pre-assembled Upright Intermediate Level Sprinkler.**) (See technical data page 130a-c.)

**Sprinkler Cabinet:** Six-head capacity: Part No. 03985A for factory pre-assembled upright intermediate level sprinklers (available since 1977)

#### 4. INSTALLATION

Refer to the appropriate sprinkler technical data page for warnings and additional installation instructions. Then install units according to the following.

Where sprinkler guards\* are used, follow installation steps described on page 130a-c. (Note: sprinkler guards\* may be ordered factory pre-installed).

**For pre-assembled Upright Intermediate Level Sprinklers\* (see Figure 1):**

Go to steps 2 and 3 below.

\* Note: Sprinkler guards are NOT available for pre-assembled Upright Intermediate Level Sprinklers.

**For Upright Intermediate Level Sprinklers with Guards (see Figure 2):**

1. Install the Model E-1 Water Shields for upright sprinklers with Model D-1 Sprinkler Guards.

a-1. Position the concave surface of the water shield facing the guard.

a-2. Align the "x" slots in the water shield with the intersecting wires at the top of the guard.

a-3. Press the water shield down firmly until the shield snaps into place with the flat inside surface of the water shield resting on the top horizontal wire ring of the guard (see Figure 2).

2. Go to steps 2 and 3 below.

**For Pendent Intermediate Level Sprinklers (see Figure 3):**

1. Install the Model F-1 Water Shields, threading the pendent sprinklers into the shields.

2. Apply a small amount of pipe-joint compound or tape to the external sprinklers threads only, taking care not to allow a build-up of compound in the sprinkler orifice.

3. Install the sprinkler on the piping using the special sprinkler wrench designed for the sprinkler used. DO NOT use the water shield or guard to start or thread the sprinkler into the fitting.



#### Model F-1 Water Shield for Pendent Sprinklers

For 1/2" NPT, order Part No. 10323 or Stainless Steel Part No. 14683. For 3/4" NPT, order Part No. 10324 or Stainless Steel Part No. 14684.

Order Water Shield and Pendent Sprinkler Separately (Field Assembly Required)



For Optional Sprinkler Guard, Order Guard Separately or Factory Installed (See Ordering Instructions.)



#### Pendent Intermediate Level Sprinklers

(Water Shield Installed in Field)  
The standard response glass bulb style sprinkler shown above is representative only. Standard response fusible link sprinklers and quick response glass bulb or fusible element style sprinklers are also available as intermediate level sprinklers. Refer to Approval Chart 2 on page 131e for listings and approvals.

Figure 3

**TECHNICAL DATA****INTERMEDIATE LEVEL  
IN-RACK SPRINKLERS**

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**IMPORTANT NOTES**

Sprinkler guards are NOT available for pre-assembled Upright Intermediate Level Sprinklers. For Upright Intermediate Level Sprinklers with guards (Figure 2), the special water shield must be ordered separately and installed in the field.

For pendent Intermediate Level Sprinklers (Figure 3), the Model F-1 Water Shields and sprinklers must be ordered separately and the water shield must be installed in the field.

Refer to the Approval Charts on pages 131d-e for sprinklers listed and/or approved for installation with water shields.

**WARNING:** Viking products 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 inoperative and will nullify the approval and any guarantee made by The Viking Corporation.

**IMPORTANT:** Always refer to Bulletin Form No. F\_091699 - Care and Handling of Sprinklers. Also refer to the appropriate sprinkler data page. Viking sprinklers are designed to be installed in accordance with the latest edition of Viking technical data, the latest 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 certain types of sprinklers may be limited due to occupancy and hazard. Refer to the Authority Having Jurisdiction prior to installation.

**5. OPERATION**

Refer to the sprinkler technical data page for the sprinkler model used. Viking Water Shields protect sprinkler heat-sensing elements from water spray discharging from sprinklers located at a higher elevation.

**6. INSPECTIONS, TESTS AND MAINTENANCE**

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

**7. AVAILABILITY**

Viking Intermediate Level In-Rack Sprinklers 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.

	<h2 style="margin: 0;">TECHNICAL DATA</h2>	<h3 style="margin: 0;">INTERMEDIATE LEVEL IN-RACK SPRINKLERS</h3>
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<h3 style="margin: 0;">Approval Chart 1</h3> <p style="margin: 0;">Upright Intermediate-Level Sprinklers                  (The following upright sprinklers may be ordered with water shields factory installed.)</p>	<table border="1" style="border-collapse: collapse;"> <tr> <td style="padding: 2px;">Temperature</td> <td rowspan="3" style="text-align: center; vertical-align: middle;"><b>KEY</b></td> </tr> <tr> <td style="padding: 2px;">Finish</td> </tr> <tr> <td style="padding: 2px;">A1X ← Escutcheon (if applicable)</td> </tr> </table>	Temperature	<b>KEY</b>	Finish	A1X ← Escutcheon (if applicable)
Temperature	<b>KEY</b>				
Finish					
A1X ← Escutcheon (if applicable)					

**Standard Response, Glass Bulb Type**

Sprinkler Base Part No. <sup>1</sup>	SIN	Sprinkler Style	Thread Size		Orifice Size	Nominal K-Factor		Maximum Pressure	Overall Length (Sprinkler)		Listings and Approvals <sup>3</sup> (Also refer to Important Notes on page 131c.)		
			NPT	BSP		U.S.	metric <sup>2</sup>		Inches	mm	cULus <sup>4</sup>	FM <sup>5</sup>	NYC
10138	VK550	Upright	1/2"	--	Standard	5.6	80.6	175 psi	2-1/4	57	B1	A1	--
12986	VK550	Upright	1/2"	--	Standard	5.6	80.6	175 psi	2-3/8	60	B1	A1	--
10141	VK560	Upright	3/4"	--	Large	8.0	115.2	175 psi	2-3/8	60	B1	A1	--
10220	VK560	Upright	1/2"	--	Large	8.0	115.2	175 psi	2-7/16	62	B1	A1	--

**Standard Response, Fusible Link Type**

05557	VK552	Upright	1/2"	--	Standard	5.6	80.6	175 psi	2-1/4	57	C1	C1	--
12973	VK552	Upright	1/2"	--	Standard	5.6	80.6	175 psi	2-3/8	60	C1	C1	--
05514	VK562	Upright	3/4"	--	Large	8.0	115.2	175 psi	2-3/8	60	C1	C1	--

**Quick Response, Glass Bulb Type**

06661B	VK556	Upright	1/2"	--	Standard	5.6	80.6	175 psi	2-1/4	57	B1	B1	--
12978	VK556	Upright	1/2"	--	Standard	5.6	80.6	175 psi	2-5/16	60	B1	B1	--
12281	VK558	Upright	1/2"	--	Standard	5.6	80.6	250 psi	2-1/4	57	B1	--	--
06665B	VK566	Upright	3/4"	--	Large	8.0	115.2	175 psi	2-3/8	60	B1	B1	--


**Quick Response, Fusible Element Type**

12279	VK551	Upright	1/2"	--	Standard	5.6	80.6	175 psi	2-5/16	59	D1	--	--
13976	VK567	Upright	3/4"	--	Large	8.0	115.2	175 psi	2-5/16	59	D1	D1	--

<p style="text-align: center;"><b>Approved Temperature Ratings</b></p> <p>A - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), 286 °F (141 °C), and 360 °F (182 °C)                  B - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), and 286 °F (141 °C)                  C - 165 °F (74 °C), 220 °F (104 °C), and 286 °F (141 °C)                  D - 165 °F (74 °C), 205 °F (96 °C), and 280 °F (138 °C)</p>	<p><b>Approved Finish</b></p> <p>1 - Brass</p>
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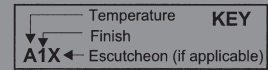
**Footnotes**

<sup>1</sup> Base part number is shown. For complete part number, refer to Viking's current price list.  
<sup>2</sup> 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.  
<sup>3</sup> This chart shows the listings and approvals available at the time of printing. Other approvals may be in process. Check with the manufacturer for any additional approvals.  
<sup>4</sup> Listed by Underwriters Laboratories, Inc. for use in the U.S. and Canada.  
<sup>5</sup> FM Approved for protection of occupancies described in the FM Global Loss Prevention Data Sheets (including 2-0 and 8-9) and Technical Advisory Bulletins.

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**Approval Chart 2**  
**Pendent Intermediate-Level Sprinklers**  
 (The following pendent sprinklers may be installed with water shields. Pendent sprinklers and water shields must be ordered separately and field assembled.)



**Standard Response, Glass Bulb Type**

Sprinkler Base Part No. <sup>1</sup>	SIN	Sprinkler Style	Thread Size		Nominal Orifice	Nominal K-Factor		Maximum Pressure	Overall Length (Sprinkler)		Listings and Approvals <sup>3</sup> (Also refer to Important Notes on page 131c.)		
			NPT	BSP		U.S.	metric <sup>2</sup>		Inches	mm	cULus <sup>4</sup>	FM <sup>5</sup>	NYC
10139	VK102	Pendent	1/2"	--	Standard	5.6	80.6	175 psi	2-1/4	57	B1	A1	--
12987	VK102	Pendent	1/2"	--	Standard	5.6	80.6	175 psi	2-1/4	57	B1	A1	--
10142	VK202	Pendent	3/4"	--	Large	8.0	115.2	175 psi	2-5/16	59	B1	A1	--

**Standard Response, Fusible Link Type**

05508	VK110	Pendent	1/2"	--	Standard	5.6	80.6	175 psi	2-1/4	57	C1	C1	--
12972	VK110	Pendent	1/2"	--	Standard	5.6	80.6	175 psi	2-1/4	57	C1	C1	--
05516	VK206	Pendent	3/4"	--	Large	8.0	115.2	175 psi	2-5/16	59	C1	C1	--

**Quick Response, Glass Bulb Type**

06662B	VK302	Pendent	1/2"	--	Standard	5.6	80.6	175 psi	2-1/4	58	B1	B1	--
12979	VK302	Pendent	1/2"	--	Standard	5.6	80.6	175 psi	2-1/4	58	B1	B1	--
12282	VK317	Pendent	1/2"	--	Standard	5.6	80.6	250 psi	2-1/4	58	B1	--	--
06666B	VK352	Pendent	3/4"	--	Large	8.0	115.2	175 psi	2-3/8	60	B1	B1	--

**Quick Response, Fusible Element Type**

12275	VK303	Pendent	1/2"	--	Standard	5.6	80.6	175 psi	2-1/4	58	D1	--	--
13975	VK353	Pendent	3/4"	--	Large	8.0	115.2	175 psi	2-3/8	60	--	D1	--

<p style="text-align: center;"><b>Approved Temperature Ratings</b></p> <p>A - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), 286 °F (141 °C), and 360 °F (182 °C)</p> <p>B - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), and 286 °F (141 °C)</p> <p>C - 165 °F (74 °C), 220 °F (104 °C), and 286 °F (141 °C)</p> <p>D - 165 °F (74 °C), 205 °F (96 °C), and 280 °F (138 °C)</p>	<p><b>Approved Finish</b></p> <p>1 - Brass</p>
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**Footnotes**

- <sup>1</sup> Base part number is shown. For complete part number, refer to Viking's current price list.
- <sup>2</sup> 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.
- <sup>3</sup> This chart shows the listings and approvals available at the time of printing. Other approvals may be in process. Check with the manufacturer for any additional approvals.
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