1. DESCRIPTION
Viking Standard Response Ordinary Hazard Dry Horizontal Sidewall Sprinklers are thermosensitive spray sprinklers suitable for use in areas subject to freezing. The sprinklers are designed for dry systems and preaction systems where it is necessary to prevent water or condensation from entering the drop nipple before sprinkler operation. They may also be installed in spaces subject to freezing and supplied from a wet system in an adjacent heated area. The large orifice dry sidewall sprinkler allows greater flows at lower pressures than standard orifice sprinklers. The newly designed deflector carries and expanded approval for installation from 4” to 12” below the ceiling.

Viking Standard Response Ordinary Hazard Dry Horizontal Sidewall Sprinklers are available in various finishes and temperature ratings to meet design requirements. The special Polyester and Electroless Nickel PTFE (ENT) coatings have been investigated for installation in corrosive atmospheres and are cULus listed as corrosion resistant as indicated in the Approval Chart.

NOTE: When installed in some corrosive environments, the Polyester finish may change color. This natural discoloration over time is not in itself an indication of corrosion and should not be treated as such. All sprinklers installed in corrosive environments should be replaced or tested as described in NFPA 25 on a more frequent basis.

2. LISTINGS AND APPROvals

- cULus Listed: Category VNIV
- NYC Approved: MEA 89-92-E, Volume 37

Refer to the Approval Chart on page 3 and Design Criteria on page 4 for cULus Listing requirements that must be followed.

3. TECHNICAL DATA

Specifications:
Available since 2005.
Minimum Operating Pressure: 7 PSI (0.5 bar)
Maximum Working Pressure: 175 PSI (12 bar)
Factory tested hydrostatically to 500 psi (34.5 bar)
Thread size: 1” NPT or 25 mm BSP
Nominal K-Factor: 8.0 U.S. (115.2 metric*) for lengths up to 48”.

* 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.

Glass-bulb fluid temperature rated to -65 °F (-55 °C)
Covered by U.S. Patent numbers: 8,636,075 and 8,376,060 and 10,220,231

Material Standards:
- Frame Casting: Brass UNS-C84400
- Deflector: Phosphor Bronze UNS-C51000
- Bulb: Glass, nominal 5 mm diameter
- Belleville Spring Sealing Assembly: Nickel Alloy, coated on both sides with PTFE Tape
- Compression Screw: Brass UNS-C36000
- Pip Cap and Adapter: Brass UNS-C36000
- Orifice: Copper UNS-C11000 or UNS-C21000
- Tube: ERW Hydraulic Steel Tube
- Inlet and Barrel End: QM Brass or Brass UNS-C31400 or Brass UNS-C31600
- Support (Internal): Brass UNS-C36000 or Brass UNS-C31400 or Brass UNS-C31600
- Barrel: Steel Pipe UNS-G10260, Electrodeposited Epoxy Base finish
- Sleeve (for Adjustable Standard style only): Brass UNS-C26000 or UNS-C268000
Escutcheon Materials:
Adjustable Standard Dry Escutcheons: Brass UNS-C26000 or UNS-C26800
Recessed Dry Escutcheons: Cold Rolled Steel UNS-G10080
ENT Coated Adjustable and Recessed Escutcheons: Stainless Steel UNS-S30400

Ordering Information: (Also refer to the current Viking price list.)
Order Standard Response Ordinary Hazard Dry Horizontal Sidewall Sprinklers by first adding the appropriate suffix for the sprinkler finish, the appropriate suffix for the temperature rating, and then the suffix for the length (“A” dimension) to sprinkler base part number. Order in a specific length noted as the “A” dimension (see Figures 3, 5, 6, and 7). The “A” dimension is the distance from the face of the fitting (tee) to the desired finished surface of the wall in which it is to be installed. These sprinklers are listed and approved in lengths from 1-1/2” to 45-1/2” (38 mm to 1,156 mm) for the adjustable standard style, 3” to 47” (76 mm to 1,194 mm) for the plain barrel style, and 3-1/4” to 47-1/2” (83 mm to 1,207 mm) for the adjustable recessed style.
Lengths exceeding the standard lengths are available, with no approvals, on a “made-to-order” basis: Recessed Dry Horizontal Sidewall up to 64-1/4 (1,632 mm). Adjustable Standard Dry Horizontal Sidewall up to 63-1/2” (1,613 mm). Plain Barrel Dry Horizontal Sidewall up to 65” (1,651 mm). Contact the manufacturer for more information.

Finish Suffix: Brass = A, Chrome = F, White Polyester = M-/W, and ENT = JN
Temperature Suffix: 155 °F (68 °C)= B, 175 °F (79 °C) = D, 200 °F (93 °C) = E, 286 °F (141 °C) = G
Escutcheon Suffix = Y for the adjustable recessed sprinkler with the Model G-1 Escutcheon (no suffix needed for the Model E-1 Escutcheon).

For example, sprinkler VK2543 with 1” NPT Threads, Chrome finish, 155 °F (68 °C) temperature rating, a Model G-1 Escutcheon, and “A” length of 10” = Part No. 21481FBY10.

Available Finishes And Temperature Ratings: Refer to Table 1.

Accessories: (Also refer to the Viking website.)
Sprinkler Wrenches:
A. Standard Wrench: Part No. 07297W/B (available since 1991)
B. Wrench for recessed sprinklers: Part No. 07565W/B** (available since 1991)
  **A ½” ratchet is required (not available from Viking).
Dry Sprinkler Protective Cover: Part No. 15610

Replacement Escutcheons:
A. Adjustable Standard Dry Escutcheon: Base Part No. 08086F
B. Model E-1 Recessed Dry Escutcheon Cup: Base Part No. 05459A
C. Model G-1 Recessed Dry Escutcheon Cup: Base Part No.

4. INSTALLATION
Refer to appropriate NFPA Installation Standards.

5. OPERATION
During fire conditions, the heat-sensitive liquid in the glass bulb expands, causing the glass to shatter, releasing the internal parts to open the waterway. Water flowing through the sprinkler orifice strikes the sprinkler deflector, forming a uniform spray pattern to extinguish or control the fire.

6. INSPECTIONS, TESTS AND MAINTENANCE
Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.

7. AVAILABILITY
The Viking Standard Response Ordinary Hazard Dry Horizontal Sidewall Sprinkler is 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.
TABLE 1: AVAILABLE SPRINKLER TEMPERATURE RATINGS AND FINISHES

<table>
<thead>
<tr>
<th>Sprinkler Temperature Classification</th>
<th>Sprinkler Nominal Temp. Rating1</th>
<th>Maximum Ambient Ceiling Temperature2</th>
<th>Bulb Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ordinary</td>
<td>155 °F (68 °C)</td>
<td>100 °F (38 °C)</td>
<td>Red</td>
</tr>
<tr>
<td>Intermediate</td>
<td>175 °F (79 °C)</td>
<td>150 °F (65 °C)</td>
<td>Yellow</td>
</tr>
<tr>
<td>Intermediate</td>
<td>200 °F (93 °C)</td>
<td>150 °F (65 °C)</td>
<td>Green</td>
</tr>
<tr>
<td>High</td>
<td>286 °F (141 °C)</td>
<td>225 °F (107 °C)</td>
<td>Blue</td>
</tr>
</tbody>
</table>

Sprinkler Finishes: Brass, Chrome, White Polyester, and ENT

Corrosion-Resistant Coating3,4: White Polyester and ENT in all temperature ratings

Footnotes

1 The sprinkler temperature rating is stamped on the deflector.
2 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.
3 The corrosion-resistant Polyester and ENT coatings have passed the standard corrosion test required by the approving agencies indicated in the Approval Chart. These tests cannot and do not represent all possible corrosive environments. Note: These coatings are NOT corrosion proof. Prior to installation, verify through the end-user that the coatings are compatible with or suitable for the proposed environment. Polyester and ENT coatings are applied to the exposed exterior surfaces only. Note that the spring is exposed on sprinklers with Polyester and ENT coatings.
4 When installed in some corrosive environments, the Polyester finish may change color. This natural discoloration over time is not in itself an indication of corrosion and should not be treated as such. All sprinklers installed in corrosive environments should be replaced or tested as described in NFPA 25 on a more frequent basis.

Approval Chart

Standard Response Ordinary Hazard Dry
Horizontal Sidewall Sprinklers (8.0K)
Maximum 175 PSI (12 bar) WWP

Sprinkler Base Part Number1 SIN Style Thread Size Nominal K-Factor2 Order Length Increment Listings and Approvals4

<table>
<thead>
<tr>
<th>Sprinkler Base Part Number1</th>
<th>SIN</th>
<th>Style</th>
<th>Thread Size</th>
<th>Nominal K-Factor2</th>
<th>Order Length Increment</th>
<th>Listings and Approvals4</th>
</tr>
</thead>
<tbody>
<tr>
<td>21487U VK2523</td>
<td></td>
<td></td>
<td>1&quot;</td>
<td>8.0 U.S. (115.2 metric3)</td>
<td>1/2&quot;, 12.7</td>
<td>A1, A5, A1, A5 -- -- -- -- --</td>
</tr>
<tr>
<td>21488U VK2523</td>
<td></td>
<td></td>
<td>-- 25 mm</td>
<td>8.0 U.S. (115.2 metric3)</td>
<td>1/2&quot;, 12.7</td>
<td>A1, A5, A1, A5 -- -- -- -- --</td>
</tr>
<tr>
<td>21481U VK2543</td>
<td></td>
<td>Adjustable Recessed</td>
<td>1&quot;</td>
<td>8.0 U.S. (115.2 metric3)</td>
<td>1/4&quot;, 6.35</td>
<td>B2, B6, B2 -- -- -- -- --</td>
</tr>
<tr>
<td>21482U VK2543</td>
<td></td>
<td></td>
<td>-- 25 mm</td>
<td>8.0 U.S. (115.2 metric3)</td>
<td>1/4&quot;, 6.35</td>
<td>B2, B6, B2 -- -- -- -- --</td>
</tr>
<tr>
<td>21493U VK2503</td>
<td></td>
<td>Plain Barrel</td>
<td>1&quot;</td>
<td>8.0 U.S. (115.2 metric3)</td>
<td>1/2&quot;, 12.7</td>
<td>A3, A4 -- -- -- -- --</td>
</tr>
<tr>
<td>21494U VK2503</td>
<td></td>
<td></td>
<td>-- 25 mm</td>
<td>8.0 U.S. (115.2 metric3)</td>
<td>1/2&quot;, 12.7</td>
<td>A3, A4 -- -- -- -- --</td>
</tr>
</tbody>
</table>

Approved Temperature Ratings
A - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), and 286 °F (141 °C)
B - 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C)

Approved Finishes and “A” Dimensions
1 - Chrome or White Polyester sprinkler with a Chrome or White Polyester Sleeve and Escutcheon with “A” dimensions 1-1/2” to 45-1/2” (38.1 mm to 1,156 mm)
2 - Chrome or White Polyester with “A” dimensions 3-1/4” to 47-1/2” (82.5 mm to 1,207 mm)
3 - Chrome, Brass, White Polyester, or ENT with “A” dimensions 3” to 47” (76.2 mm to 1,194 mm)
4 - Chrome or Brass with “A” dimensions 3” to 47” (76.2 mm to 1,194 mm)
5 - ENT sprinkler with an ENT Sleeve and Escutcheon with “A” dimensions 1-1/2” to 45-1/2” (38.1 mm to 1,156 mm)
6 - ENT with “A” dimensions 3-1/4” to 47-1/2” (82.5 mm to 1,207 mm)

Footnotes

1 Part number shown is the base part number. For complete part number, refer to current Viking price list schedule.
2 K-Factor applies for standard lengths (“A” Dimensions indicated above).
3 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.
4 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.
5 Listed by Underwriter’s Laboratories for use in the U.S. and Canada.
6 Accepted for use, City of New York Department of Buildings, MEA Number 89-92-E, Vol. 37.
7 cULus Listed as corrosion resistant.
STANDARD RESPONSE  
ORDINARY HAZARD DRY  
HSW SPRINKLERS (8.0K) 
(VK2503, VK2523, & VK2543)

TECHNICAL DATA

NOTE: When using CPVC fittings with Viking dry sprinklers, use only new Nibco Model 5012-S-BI tees. When selecting other CPVC fittings, contact Viking Technical Services.

cULus Listing Requirements:
Standard Dry Horizontal Sidewall Sprinklers are cULus Listed as indicated in the Approval Chart for installation in accordance with the latest edition of NFPA 13 for sidewall standard spray sprinklers.

- Designed for use in Light and Ordinary Hazard occupancies with smooth, flat ceilings only.
- Protection areas and maximum spacing shall be in accordance with the tables provided in NFPA 13.
- Minimum spacing allowed is 6 ft. (1.8 m).
- Deflector must be positioned between 4" and 12" (102 mm and 305 mm) below the ceiling. Keep the leading edge of the deflector and the centerline axis of the sprinkler frame oriented parallel with the ceiling.
- Locate no less than 4" (102 mm) from end walls.
- Maximum distance from end walls shall be no more than one-half of the allowable distance between sprinklers. The distance shall be measured perpendicular to the wall.
- The sprinkler installation and obstruction rules contained in NFPA 13 for sidewall standard spray sprinklers must be followed.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to Form No. F_080614 for general care, installation, and maintenance information. Viking sprinklers 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.

### Figure 2: Wrench 07565W/B for Adjustable Recessed Dry Horizontal Sidewall Sprinklers

**NOTE:** A 1/2" ratchet is required and not available from Viking.

**Step 1:**
Carefully slide the wrench sideways around the deflector and protective shield as shown.

**Step 2:**
Press the wrench onto the sprinkler wrench flats and turn slightly to ensure engagement with the wrench flats.
To locate the deflector at the maximum distance from the wall, with no adjustment available, order the standard dry horizontal sidewall sprinkler 1” (25 mm) longer than the “A” Dimension.

To locate the deflector at the minimum distance from the wall, with no adjustment available, order the standard dry horizontal sidewall sprinkler 1” (25 mm) shorter than the “A” Dimension.

Determining the “A” Dimension: Adjustable Standard HSW Sprinkler
1. Determine the distance from the face of the tee to the finished face of the wall.
2. Round to the nearest 1/2” (13mm) between 1-1/2” (38 MM) and 45-1/2” (1,156 mm).

NOTE: The deflector will extend approximately 4-1/4” (108 mm) from the wall with 2” (+/- 1” (25 mm) horizontal adjustment available.

<table>
<thead>
<tr>
<th>Ref</th>
<th>Variable Parameter</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Wall opening</td>
<td>1-3/4” (45 mm)</td>
<td>2-1/4” (57 mm)</td>
</tr>
<tr>
<td>2</td>
<td>Deflector to ceiling distance</td>
<td>4” (102 mm)</td>
<td>12” (305 mm)</td>
</tr>
<tr>
<td>3</td>
<td>Deflector to wall distance</td>
<td>3-1/4” (83 mm)</td>
<td>5-1/4” (113 mm)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ref</th>
<th>Fixed Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Escutcheon depth</td>
<td>13/16” (21 mm)</td>
</tr>
<tr>
<td>5</td>
<td>Escutcheon outer diameter</td>
<td>3-1/16” (78 mm)</td>
</tr>
<tr>
<td>6</td>
<td>Top of deflector to centerline</td>
<td>5/8” (16 mm)</td>
</tr>
</tbody>
</table>
Determining the “A” Dimension: Adjustable Recessed HSW Sprinkler with Model E-1 Escutcheon

1. Determine the distance from the face of the tee to the finished face of the wall.
2. Round to the nearest 1/4” (16 mm) between 3-1/4” (83 mm) and 47-1/2” (1,207 mm).

NOTE: The sprinkler will be recessed approximately 5/16” (8 mm) with 5/8” (16 mm) horizontal adjustment available.

<table>
<thead>
<tr>
<th>Ref</th>
<th>Variable Parameter</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Wall opening</td>
<td>2-1/8” (54 mm)</td>
<td>2-1/2” (64 mm)</td>
</tr>
<tr>
<td>2</td>
<td>Deflector to ceiling distance</td>
<td>4” (102 mm)</td>
<td>12” (305 mm)</td>
</tr>
<tr>
<td>3</td>
<td>Deflector to wall distance</td>
<td>1-7/8” (48 mm)</td>
<td>2-1/2” (64 mm)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ref</th>
<th>Fixed Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Escutcheon depth (Model E-1)</td>
<td>1-1/16” (27 mm)</td>
</tr>
<tr>
<td>5</td>
<td>Escutcheon outer diameter</td>
<td>3-1/16” (78 mm)</td>
</tr>
<tr>
<td>6</td>
<td>Top of deflector to centerline</td>
<td>5/8” (16 mm)</td>
</tr>
</tbody>
</table>

**Figure 4: Adjustable Standard Escutcheon Installation**

**Figure 5: Adjustable Recessed Ordinary Hazard Dry HSW Sprinkler with the Model E-1 Escutcheon**
Determining the “A” Dimension - Plain Barrel Dry HSW Sprinkler

1. Determine the distance from the face of the tee to teh base of the sprinkler.
2. Round to the next higher 1/2” (13 mm) increment, between 3” (76 mm) and 47” (1,194 mm).

<table>
<thead>
<tr>
<th>Ref</th>
<th>Variable Parameter</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Deflector to ceiling distance</td>
<td>4” (102 mm)</td>
<td>12” (305 mm)</td>
</tr>
<tr>
<td>2</td>
<td>Deflector to finished wall distance</td>
<td>Do not recess wrench boss</td>
<td>6” (152 mm)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ref</th>
<th>Fixed Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Sprinkler base to deflector distance</td>
<td>2-1/4” (57 mm)</td>
</tr>
<tr>
<td>4</td>
<td>Top of deflector to centerline</td>
<td>5/8” (16 mm)</td>
</tr>
<tr>
<td>5</td>
<td>Pipe outside diameter (Same as 1” (13 mm) Schedule 40 pipe)</td>
<td>1-5/16” (33 mm)</td>
</tr>
</tbody>
</table>

Figure 6: Plain Barrel Dry Horizontal Sidewall Sprinkler VK2503
Determining the “A” Dimension - Adjustable Recessed Dry HSW Sprinkler VK2543 with Model G-1 Escutcheon

1. Measure the “B” Dimension from the centerline of the face of the tee to the horizontal centerline of the wall opening.
2. Measure the “C” Dimension from the centerline of the face of the tee to the finished wall.
3. Calculate the “A” Dimension using this formula: \( A = \sqrt{B^2 + C^2} \)

NOTE: The “A” Dimension will provide approximately 1/4” (6 mm) of adjustment in either direction.

<table>
<thead>
<tr>
<th>Ref</th>
<th>Variable Parameter</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Wall opening</td>
<td>2-5/8” (66 mm)</td>
<td>3-3/4” (95 mm)</td>
</tr>
<tr>
<td>2</td>
<td>Deflector to ceiling distance</td>
<td>4” (102 mm)</td>
<td>12” (305 mm)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ref</th>
<th>Fixed Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Escutcheon depth (Model G-1 outer cup)</td>
<td>1-1/16” (27 mm)</td>
</tr>
<tr>
<td>4</td>
<td>Escutcheon outer diameter (outer cup)</td>
<td>4” (102 mm)</td>
</tr>
<tr>
<td>5</td>
<td>Escutcheon inner diameter (outer cup)</td>
<td>2-5/8” (66 mm)</td>
</tr>
<tr>
<td>6</td>
<td>Escutcheon depth (inner cup)</td>
<td>1-1/16” (27 mm)</td>
</tr>
</tbody>
</table>

Figure 7: Adjustable Recessed Dry Horizontal Sidewall Sprinkler VK2543 with the Model G-1 Escutcheon

NOTE: When measuring for the “A” Dimension, the exact deflector distance below the ceiling must be known.
Shown with a Plain Barrel Dry HSW Sprinkler.
The protective cover may also be used with the Adjustable Recessed or Adjustable Standard style Dry HSW Sprinkler.

NOTE: Remove the sprinkler clip and cover before placing the system in service!

Figure 8: Dry Horizontal Sidewall Sprinkler Cover Part Number 15610 (shown with a Plain Barrel Dry HSW Sprinkler) (Optional for temporary use with Viking Dry HSW Sprinklers until finish work is completed around the sprinkler.)

Shown with a Plain Barrel Dry HSW Sprinkler.
The protective cover may also be used with the Adjustable Recessed or Adjustable Standard style Dry HSW Sprinkler.

NOTE: Remove the sprinkler clip and cover before placing the system in service!

Figure 8: Dry Horizontal Sidewall Sprinkler Cover Part Number 15610 (shown with a Plain Barrel Dry HSW Sprinkler) (Optional for temporary use with Viking Dry HSW Sprinklers until finish work is completed around the sprinkler.)

Figure 9: Dry Horizontal Sidewall Sprinkler Minimum Barrel Length Based on Ambient Temperature in the Protected Area (Adjustable Standard Dry HSW Sprinkler is Shown)
Seal Part Number
19398M/W or equivalent method.

Dry sprinkler seal on the exterior of the wall
Dry sprinkler seal within the wall

Figure 10: Dry Sprinkler Seal (Adjustable Standard Dry HSW Sprinkler is Shown)