



TECHNICAL DATA

STANDARD RESPONSE DRY PENDENT STANDARD ORIFICE 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 Standard Response Dry Pendent 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. Viking Standard Response Dry Pendent Sprinklers are available in various finishes and temperature ratings to meet design requirements.

The special Polyester coating has been investigated for installation in corrosive atmospheres and is cULus listed as corrosion resistant as indicated in Approval Chart 1. (Note: FM Global has no approval classification for Polyester coatings as corrosion resistant.)

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

FM Approved: Classes 2013 and 2015

NYC Approved: MEA 89-92-E, Volume 37

LPCB Approved: Ref. No. 096e/06

CE Certified: Standard EN 12259-1, EC-certificate of conformity 0832-CPD-2001

MED Certified: Standard EN 12259-1, EC-certificate of conformity 0832-MED-1003

NOTE: Other International approval certificates are available upon request.

Refer to Approval Chart 1 and Design Criteria on page 101d for cULus Listing requirements, and refer to Approval Chart 2 and Design Criteria on page 101f for FM Approval requirements that must be followed.

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.

3. TECHNICAL DATA

Specifications:

Available since 1991.

Minimum Operating Pressure: 7 psi (0.5 bar)*

Maximum Working Pressure: 175 psi (12 bar). Factory tested pneumatically to 100 psi (6.89 bar)

Thread size: 1" NPT or 25 mm BSP

Nominal K-Factor: 5.6 U.S. (80.6 metric**) for all listed and approved lengths.

Glass-bulb fluid temperature rated to -65 °F (-55 °C)

*cULus Listing, FM Approval, and NFPA 13 installs require a minimum of 7 psi (0.5 bar). The minimum operating pressure for LPCB and CE Approvals ONLY is 5 psi (0.35 bar).

**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.

Material Standards:

Frame Casting: Brass UNS-C84400

Deflector: Brass UNS-C26000

Bulb: Glass, nominal 5 mm diameter

Belleville Spring Sealing Assembly: Nickel Alloy, coated on both sides with Teflon Tape

Compression Screw: Brass UNS-C36000

Pip Cap: Brass UNS-C31400 or UNS-C31600

Pip Cap Adapter: Brass UNS-C36000

Seat (for Sprinklers VK151, VK155, and VK159 only): Copper UNS-C21000

Orifice: Copper UNS-C22000 or UNS-C11000 (Copper UNS-C21000 for Sprinklers VK151, VK155, and VK159)

Gasket (for Sprinklers VK151, VK155, and VK159 only): Buna-N

Tube: ERW Hydraulic Steel Tube



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Barrel End and Threads (for Sprinklers VK150, VK154, and VK158): QM Brass
Support (Internal): Stainless Steel UNS-S30400
Barrel: Steel Pipe UNS-G10260, Electrodeposited Epoxy Base finish
Sleeve (for Adjustable Standard style only): Brass UNS-C26000 or UNS-C26800

Escutcheon Materials:

Adjustable Standard Dry Escutcheons: Brass UNS-C26000 or UNS-C26800

Recessed Dry Escutcheons: Cold Rolled Steel UNS-G10080

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

Order Standard Response Dry Pendent 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 through 5). The "A" dimension is the distance from the face of the fitting (tee) to the desired finished surface of the ceiling.

These sprinklers are listed and approved in lengths from 1-1/2" to 45-1/2" (38.1 to 1,156 mm) for the adjustable standard style, 3" to 47" (76.2 to 1,194 mm) for the plain barrel style, and 3-1/4" to 47-1/2" (82.5 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 Pendent up to 65-1/2" (1,664 mm). Adjustable Standard Dry Pendent up to 63-1/2" (1,613 mm). Plain Barrel Dry Pendent up to 65" (1,651 mm). Contact the manufacturer for more information.

Finish Suffix: Brass = A, Chrome-Enloy® = F, and White Polyester = M/W

Temperature Suffix (°F/°C): 155°/68° = B, 175°/79° = D, 200°/93° = E, 286°/141° = G

For example, sprinkler VK154 with 1" NPT Threads, a Chrome finish and a 155 °F/68 °C temperature rating, and "A" length of 10" = Part No. 07740UFB10.

Available Finishes And Temperature Ratings: Refer to Table 1.

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

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 1/2" ratchet is required (not available from Viking).

Sprinkler Guard: Chrome, with no listings or approvals, for installation on dry pendent sprinklers manufactured after May 1994 only (Part No. 08954).

Replacement Escutcheons:

A. Adjustable Standard Dry Escutcheon: Base Part No. 07741

B. Recessed Dry Escutcheon Cup: Base Part No. 05459A

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.

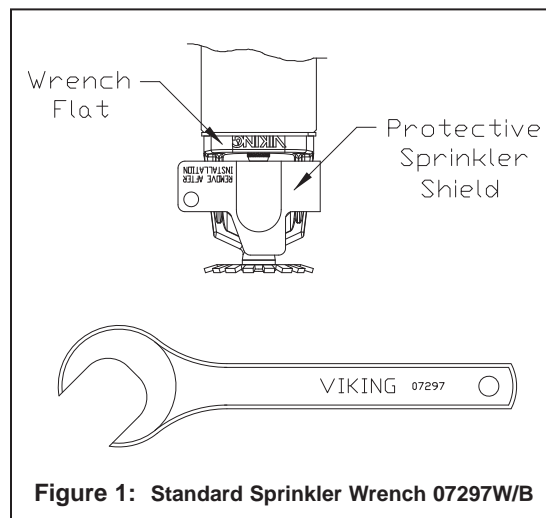


Figure 1: Standard Sprinkler Wrench 07297W/B

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TABLE 1: AVAILABLE SPRINKLER TEMPERATURE RATINGS AND FINISHES			
Sprinkler Temperature Classification	Sprinkler Nominal Temperature Rating ¹	Maximum Ambient Ceiling Temperature ²	Bulb Color
Ordinary	155 °F (68 °C)	100 °F (38 °C)	Red
Intermediate	175 °F (79 °C)	150 °F (65 °C)	Yellow
Intermediate	200 °F (93 °C)	150 °F (65 °C)	Green
High	286 °F (141 °C)	225 °F (107 °C)	Blue

Sprinkler Finishes: Brass, Chrome-Enloy® (patents pending), and White Polyester
Corrosion-Resistant Coating^{3,4}: White Polyester 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 coating has passed the standard corrosion test required by the approving agencies indicated in Approval Chart 1. These tests cannot and do not represent all possible corrosive environments. Note: This coating is NOT corrosion proof. Prior to installation, verify through the end-user that the coating is compatible with or suitable for the proposed environment. Polyester coating is applied to the exposed exterior surfaces only. Note that the spring is exposed on sprinklers with Polyester 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.

6. INSPECTIONS, TESTS AND MAINTENANCE

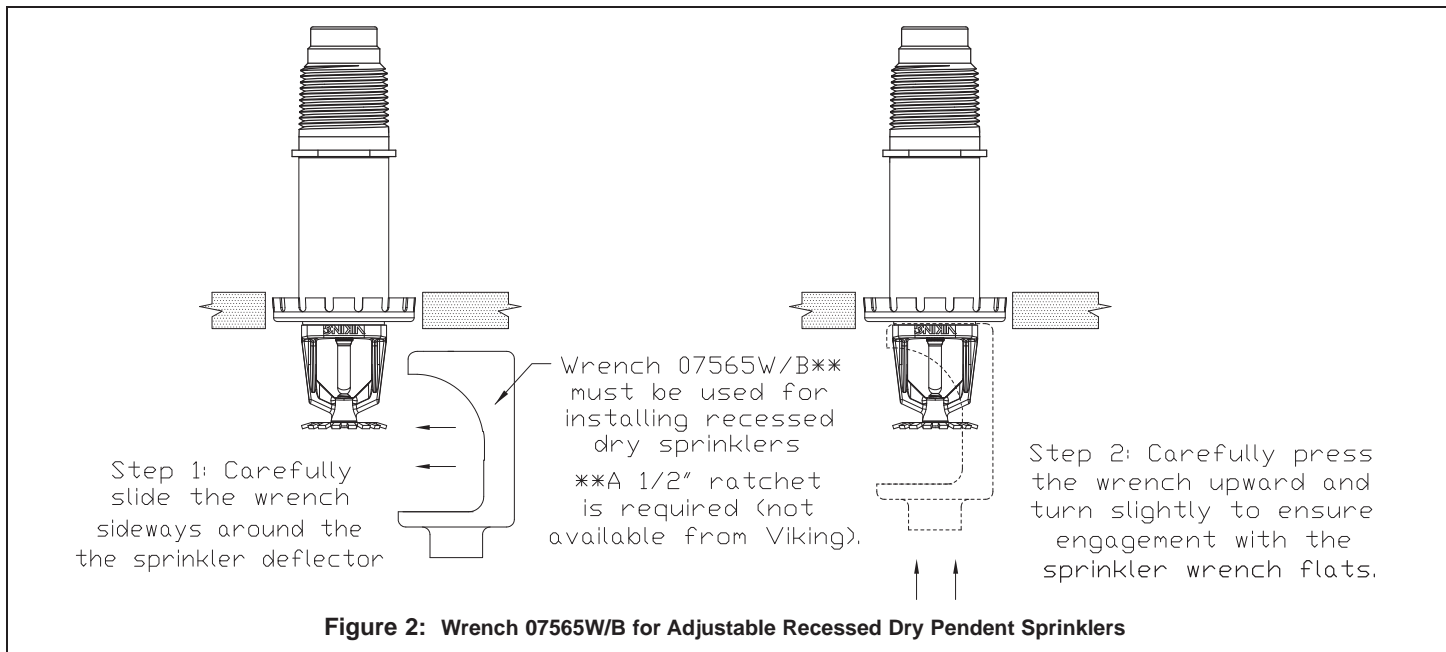
Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.


7. AVAILABILITY

The Viking Standard Response Dry Pendent 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.



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Approval Chart 1 (UL) Standard Response Standard Orifice Dry Pendent Sprinklers Maximum 175 PSI (12 bar) WWP														
Sprinkler Base Part No. ¹	SIN	Style	Thread Size		Nominal K-Factor ²		Order Length Increment		Listings and Approvals ⁴ (Refer also to Design Criteria below.)					
			NPT	BSP	U.S.	metric ³	Inches	mm	cULus ⁵	NYC ⁶	VdS	LPCB	CE ⁷	⊕ ⁸
07740U	VK154	Adjustable Standard	1"	--	5.6	--	1/2"	12.7	A1	A1	--	--	--	--
07854U			--	25 mm	--	80.6	1/2"	12.7	A1	--	--	--	--	--
09341			VK155	--	25 mm	--	80.6	1/2"	12.7	--	--	--	A2	A2
06530U	VK158	Adjustable Recessed	1"	--	5.6	--	1/4"	6.35	B3	B3	--	--	--	--
07853U			--	25 mm	--	80.6	1/4"	6.35	B3	--	--	--	--	--
09342			VK159	--	25 mm	--	80.6	1/4"	6.35	--	--	--	B3	B3
07852U	VK150	Plain Barrel	1"	--	5.6	--	1/2"	12.7	A4	A5	--	--	--	--
07855U			--	25 mm	--	80.6	1/2"	12.7	A4	--	--	--	--	--
09343			VK151	--	25 mm	--	80.6	1/2"	12.7	--	--	--	A5	A5
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-Enloy® or White Polyester® sprinkler with a Chrome-Enloy® 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-Enloy® with "A" dimensions 1-1/2" to 45-1/2" (38.1 mm to 1,156 mm) 3 - Chrome-Enloy® or White Polyester® with "A" dimensions 3-1/4" to 47-1/2" (82.5 to 1,207 mm) 4 - Chrome-Enloy®, White Polyester®, or Brass with "A" dimensions 3" to 47" (76.2 to 1,194 mm) 5 - Chrome-Enloy® or Brass with "A" dimensions 3" to 47" (76.2 mm to 1,194 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 89-92-E, Vol. 37. ⁷ CE Certified, Standard EN 12259-1, EC-certificate of conformity 0832-CPD-2001. ⁸ ⊕ MED Certified, Standard EN 12259-1, EC-certificate of conformity 0832-MED-1003. ⁹ cULus Listed as corrosion resistant.														

DESIGN CRITERIA - UL
 (Also refer to Approval Chart 1 above.)

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 Pendent Sprinklers are cULus Listed as indicated in Approval Chart 1 for installation in accordance with the latest edition of NFPA 13 for standard spray pendent sprinklers.

- Designed for use in Light, Ordinary, and Extra Hazard occupancies.
- 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) unless baffles are installed in accordance with NFPA 13.
- Locate no less than 4" (102 mm) from walls.
- Maximum distance from 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 standard spray pendent sprinklers must be followed.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to page DRY1-3 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, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.



TECHNICAL DATA

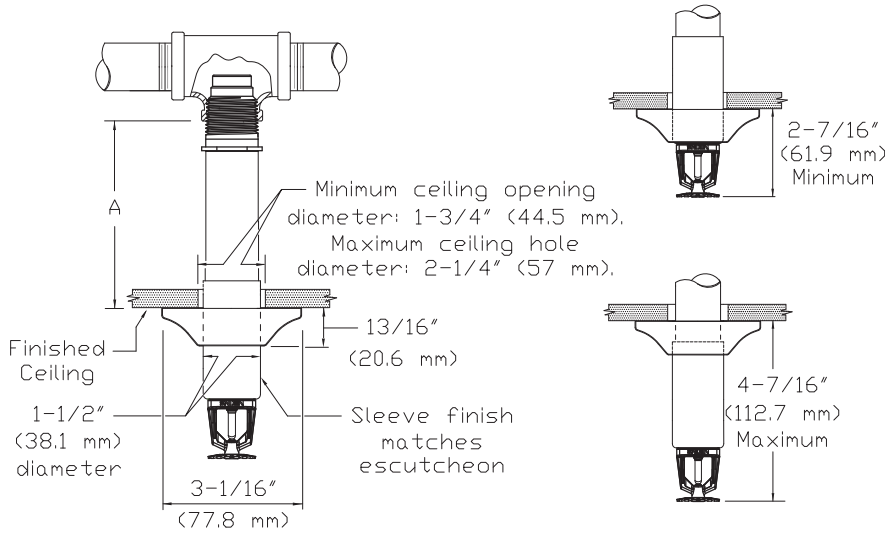
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- For "A" Dimension: 1. Determine the distance from the face of the tee to the finished ceiling.
2. Round to the nearest 1/2" (12.7 mm) between 1-1/2" and 45-1/2" (38.1 mm and 1,156 mm).
NOTE: The deflector will be located approximately 3-7/16" (87.3 mm) below the ceiling, with 1" (25.4 mm) upward and 1" (25.4 mm) downward adjustment.

Deflector at minimum distance below ceiling.



NOTE: To locate the deflector at the minimum distance below the ceiling, with no upward adjustment available, order the dry pendent sprinkler 1" (25.4 mm) shorter than the A dimension.

NOTE: To locate the deflector at the maximum distance below the ceiling, with no downward adjustment available, order the dry pendent sprinkler 1" (25.4 mm) longer than the A dimension.

Deflector at maximum distance below ceiling.

Figure 3: Adjustable Standard Dry Pendent Sprinkler

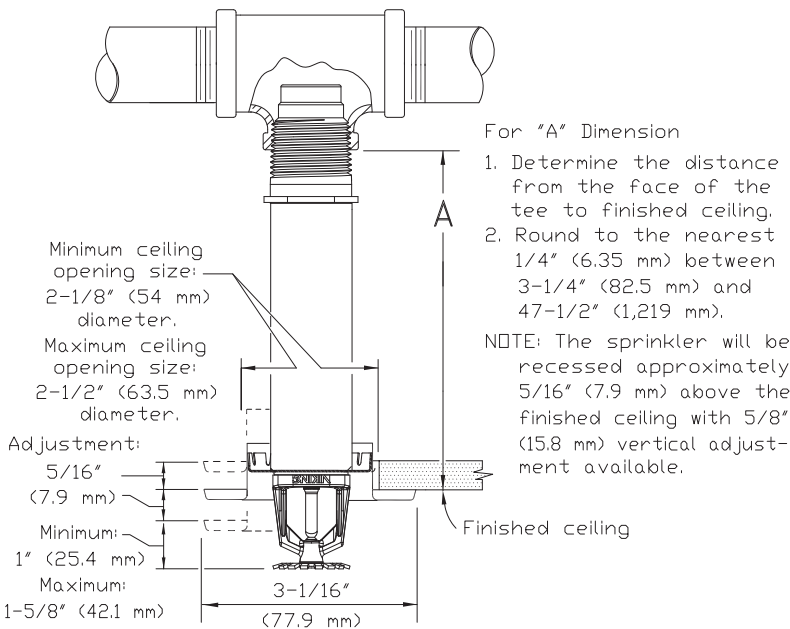


Figure 4: Adjustable Recessed Dry Pendent Sprinkler

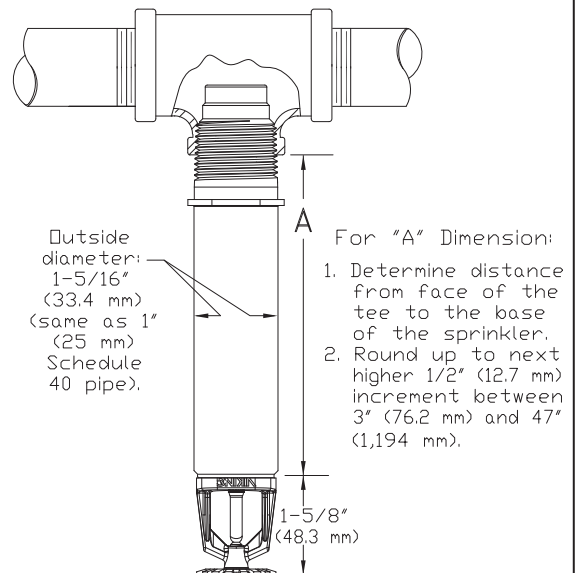


Figure 5: Plain Barrel Dry Pendent Sprinkler

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Approval Chart 2 (FM) Standard Response Standard Orifice Dry Pendent Sprinklers Maximum 175 PSI (12 bar) WWP														
								<table border="1" style="font-size: small;"> <tr> <td style="text-align: center;">Temperature</td> <td style="text-align: center;">KEY</td> </tr> <tr> <td style="text-align: center;">Finish</td> <td></td> </tr> <tr> <td style="text-align: center;">A1X ← Escutcheon (if applicable)</td> <td></td> </tr> </table>	Temperature	KEY	Finish		A1X ← Escutcheon (if applicable)	
Temperature	KEY													
Finish														
A1X ← Escutcheon (if applicable)														

Sprinkler Base Part No. ¹	SIN	Style	Thread Size		Nominal K-Factor ²		Order Length Increment		FM Approvals ⁴ (Refer also to Design Criteria below.)
			NPT	BSP	U.S.	metric ³	Inches	mm	
07740U	VK154	Adjustable Standard	1"	--	5.6	--	1/2"	12.7	A1
07854U			--	25 mm	--	80.6	1/2"	12.7	A1
06530U	VK158	Adjustable Recessed	1"	--	5.6	--	1/4"	6.35	B2
07853U			--	25 mm	--	80.6	1/4"	6.35	B2
07852U	VK150	Plain Barrel	1"	--	5.6	--	1/2"	12.7	A3
07855U			--	25 mm	--	80.6	1/2"	12.7	A3

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 - Brass, Chrome-Enloy®, or White Polyester sprinkler with a Brass, Chrome-Enloy® or White Polyester Sleeve and Escutcheon with "A" dimensions 1-1/2" to 45-1/2" (38.1 to 1,156 mm) 2 - Brass, Chrome-Enloy®, or White Polyester with "A" dimensions 3-1/4" to 47-1/2" (82.5 to 1,207 mm) 3 - Brass, Chrome-Enloy®, or White Polyester with "A" dimensions 3" to 47" (76.2 to 1,194 mm)
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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 FM Approvals available at the time of printing. Other approvals may be in process. Check with the manufacturer for any additional approvals.

DESIGN CRITERIA - FM
(Also refer to Approval Chart 2 above.)

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.

FM Approval Requirements:
 Standard Dry Pendent Sprinklers in the Approval Chart above are FM Approved as standard response **Non-storage** standard spray sprinklers as indicated in the FM Approval Guide. For specific application and installation requirements, reference the latest applicable FM Loss Prevention Data Sheets (including 2-0) and Technical Advisory Bulletins. FM Global Loss Prevention Data Sheets and Technical Advisory Bulletins contain guidelines relating to, but not limited to: minimum water supply requirements, hydraulic design, ceiling slope and obstructions, minimum and maximum allowable spacing, and deflector distance below the ceiling.

NOTE: The FM installation guidelines may differ from cULus and/or NFPA criteria.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to page DRY1-3 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.



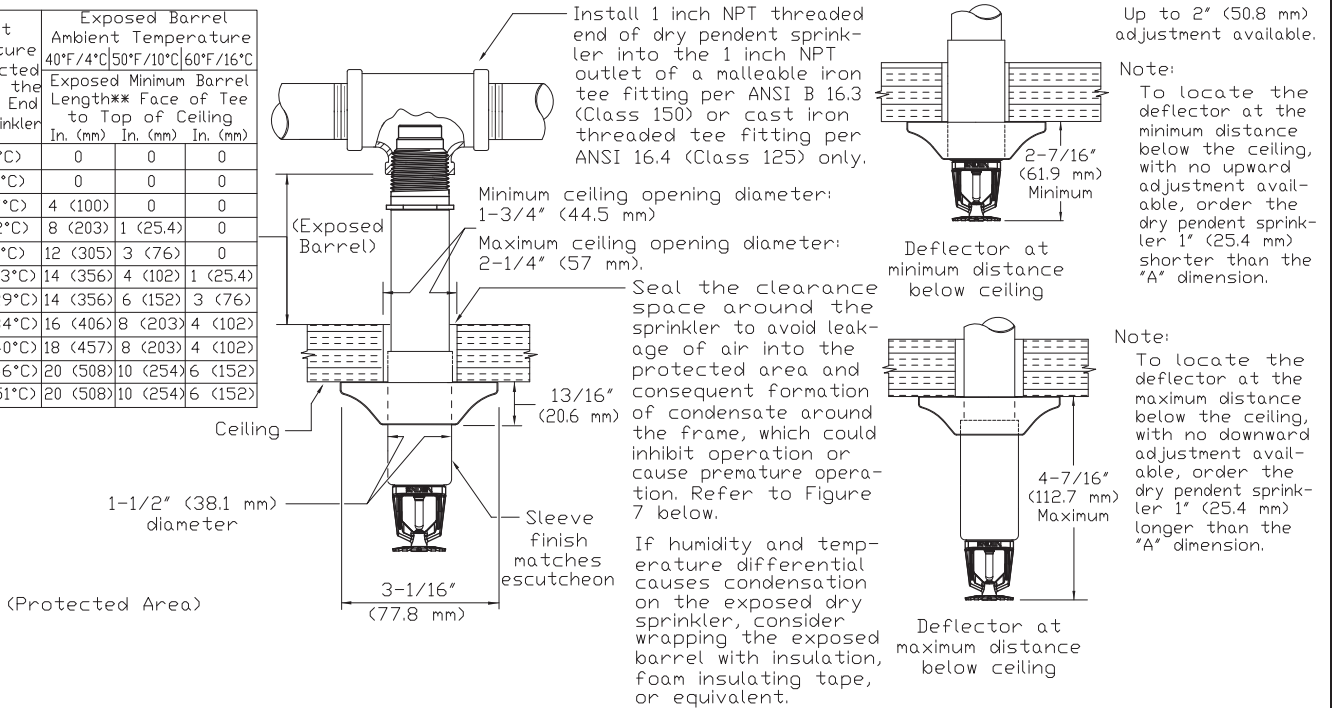
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Ambient Temperature of Protected Area* at the Discharge End of the Sprinkler	Exposed Barrel Ambient Temperature		
	40°F/4°C	50°F/10°C	60°F/16°C
40°F (4°C)	0	0	0
30°F (-1°C)	0	0	0
20°F (-7°C)	4 (100)	0	0
10°F (-12°C)	8 (203)	1 (25.4)	0
0°F (-18°C)	12 (305)	3 (76)	0
-10°F (-23°C)	14 (356)	4 (102)	1 (25.4)
-20°F (-29°C)	14 (356)	6 (152)	3 (76)
-30°F (-34°C)	16 (406)	8 (203)	4 (102)
-40°F (-40°C)	18 (457)	8 (203)	4 (102)
-50°F (-46°C)	20 (508)	10 (254)	6 (152)
-60°F (-51°C)	20 (508)	10 (254)	6 (152)



*The protected area refers to the area below the ceiling. The ambient temperature is the temperature at the discharge end of the sprinkler. For protected area temperatures that occur between the values listed, use the next cooler temperature.

**The minimum required barrel length is not the same as the "A" dimension. Refer to Figures 3-5 for the "A" dimension. NOTE: Exposed minimum barrel lengths are inclusive up to 30 mph wind velocities.

Figure 6: Dry Pendent Sprinkler Required Minimum Barrel Length Based on Ambient Temperature in the Protected Area (Adjustable Standard Dry Pendent Sprinkler is shown)

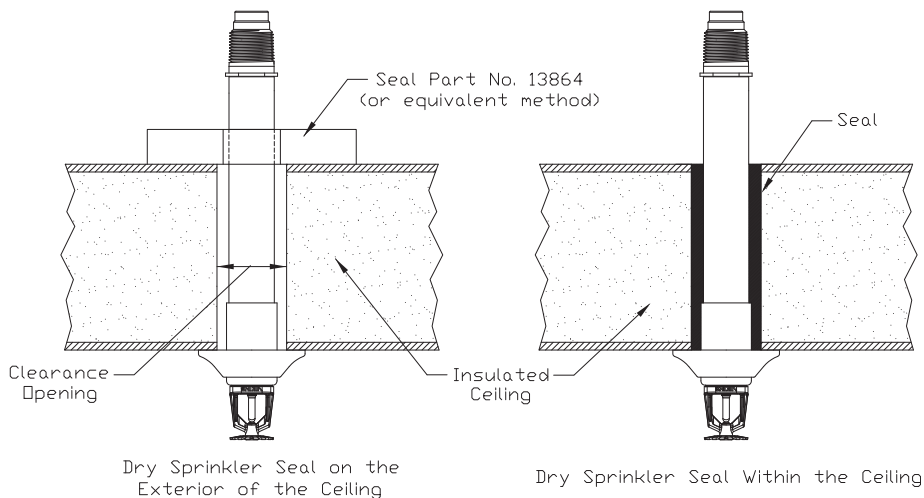


Figure 7: Dry Sprinkler Seal (Adjustable Standard Dry Pendent Sprinkler is Shown)

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