



TECHNICAL DATA

**STANDARD/QUICK
RESPONSE EXTENDED
COVERAGE DRY CONCEALED
PENDENT SPRINKLER VK196**

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/Quick Response Extended Coverage Dry Concealed 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.

The dry concealed sprinkler is pre-assembled with a threaded adapter for installation with the domed cover that provides up to ½" (12.7 mm) of vertical adjustment. The push-on, thread-off cover slips on from below the ceiling to allow installation of the sprinkler prior to ceiling construction.

Viking Standard Response Dry Concealed Pendent Sprinklers are available in various finishes and temperature ratings to meet design requirements. The Electroless Nickel Teflon (ENT) coating has been investigated for installation in corrosive atmospheres and is cULus Listed as corrosion resistant as indicated in the Approval Chart. The ENT finish is only available for the sprinkler assembly, the cover plate is not plated.



For Light Hazard Occupancies Only

2. LISTINGS AND APPROVALS

 **cULus Listed:** Category VNIV

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

Refer to the Approval Chart on page 4 and Design Criteria on page 6 for cULus Listing requirements that must be followed.

NOTE: Dry concealed sprinklers are NOT for use in freezers or with the dry sprinkler seal.

3. TECHNICAL DATA

Specifications:

Available since 2003.

Minimum Operating Pressure: 7 psi (0.5 bar)

Maximum Working Pressure: 175 psi (12 bar). Factory tested pneumatically to 95 psi (6.55 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.

* 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 the following U.S. Patents: 8,636,075

Material Standards:

Frame Casting: Brass UNS-C84400

Deflector: Phosphor Bronze UNS-C51000 or Brass UNS-C26000

Bulb: Glass, nominal 3 mm diameter

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

Compression Screw: Brass UNS-C36000

Pip Cap: Brass UNS-C36000

Pip Cap Adapter: Brass UNS-C36000

Orifice: Copper UNS-C22000

Tube: ERW Hydraulic Steel Tube

Support (Internal): Stainless Steel UNS-S30400

Barrel: Steel Pipe UNS-G10260, Electrodeposited Epoxy Base finish

Barrel End and Threads: QM Brass

Cover Adapter: Cold Rolled Steel UNS-G10080, Finish: Clear Chromate over Zinc Plating

Cover Assembly Materials:

Cover Plate Assembly: Copper UNS-C11000 and Brass UNS-C26800

Spring: Beryllium Nickel

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.



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Solder: Eutectic

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

Standard Response/Quick Response Extended Coverage Dry Concealed Pendent Sprinklers and Cover Plate Assemblies must be ordered separately.

Order the sprinkler assembly (includes sprinkler and adapter pre-assembled, with a protective plastic cap covering the unit) by adding the appropriate suffix for the sprinkler 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 Figure 4). 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 4" to 48-1/4" (102 mm to 1,226 mm).

Temperature Suffix: 135 °F (57 °C) = A, 155 °F (68 °C) = B, 175 °F (79 °C) = D

For example, sprinkler VK196 with 1" NPT Threads, a 155 °F (68 °C) temperature rating, and "A" length of 10" = Part No. 12423UAB10. Or, sprinkler VK196 with 1" NPT Threads, ENT coating, a 155 °F (68 °C) temperature rating, and "A" length of 10" = Part No. 12423UJNB10

Cover Plate Assembly: Base Part No. 12381

Specify finish and temperature rating of the cover plate assembly by adding the appropriate suffixes for the finish and the cover temperature rating to the base part number:

Finish Suffix: Polished Chrome = F, Painted White = M-W, Painted Ivory = M-I, Painted Black = M-B

Temperature Suffix: 135 °F (57 °C) = A, 165 °F (74 °C) = C

For example, cover 12381 with a Polished Chrome finish and a 135 °F (57 °C) temperature rating = 12381FA.

Available Finishes And Temperature Ratings:

Refer to Table 1.

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

Sprinkler Wrenches:

Part No. 07565W/B** (available since 1991)

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

4. INSTALLATION

Refer to appropriate NFPA Installation Standards. Concealed dry sprinklers are NOT recommended for freezers or cold storage applications that require sealing methods which could interfere with air flow through the sprinkler cover plate and body.

5. OPERATION

During fire conditions, when the temperature around the sprinkler approaches its operating temperature, the cover plate detaches. Continued heating of the exposed sprinkler causes the heat-sensitive liquid in the glass bulb to expand and the bulb 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/Quick Response Extended Coverage Dry Concealed 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.

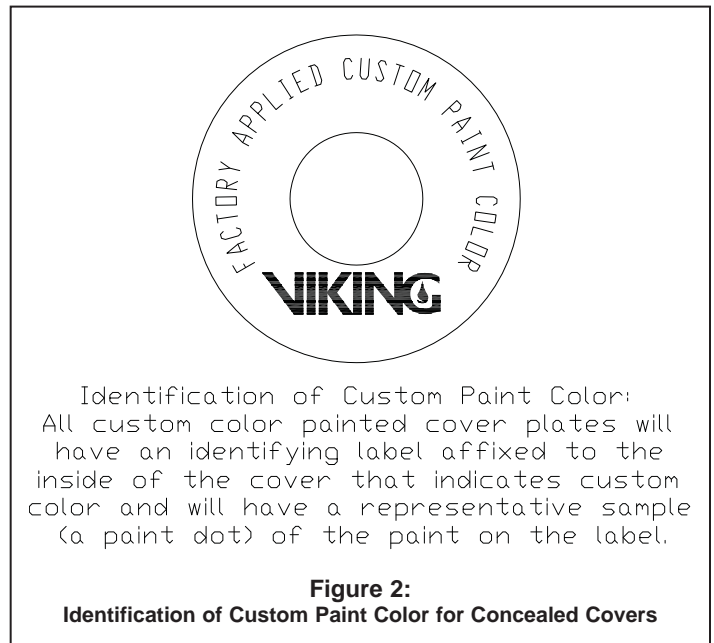
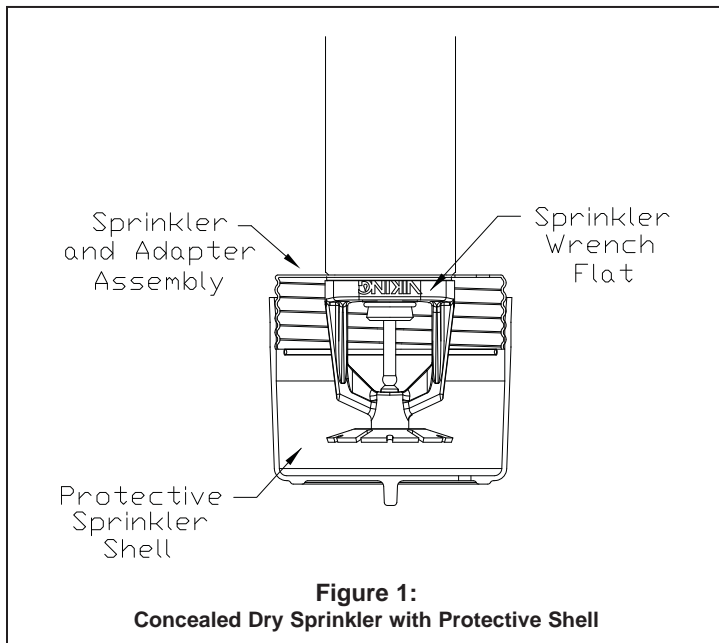
8. GUARANTEE

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

	TECHNICAL DATA	STANDARD/QUICK RESPONSE EXTENDED COVERAGE DRY CONCEALED PENDENT SPRINKLER VK196
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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	Temperature Rating of the Cover Assembly (Required) ⁴	Cover Plate Base Part Number ³	Bulb Color
Ordinary	135 °F (57 °C)	100 °F (38 °C)	135 °F (57 °C)	12381	Orange
Ordinary	155 °F (68 °C)	100 °F (38 °C)	135 °F (57 °C)	12381	Red
Intermediate	175 °F (79 °C)	150 °F (65 °C)	165 °F (74 °C)	12381	Yellow
Sprinkler Finishes: Brass or ENT (See Ordering Information section)					
Cover Plate Finishes: Polished Chrome, Painted White, Painted Ivory, or Painted Black					
Corrosion Resistant Coatings⁵: ENT					
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 Part number shown is the base part number. For complete part number, refer to current Viking price list schedule. ⁴ The 135 °F (57 °C) cover has an orange label. The 165 °F (74 °C) cover has a white label. ⁵ The corrosion resistant 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. Prior to installation, verify through the end-user that the coatings are compatible with or suitable for the proposed environment. The ENT coating is applied to all exposed exterior surfaces. Note that the spring is exposed on sprinklers with ENT coatings.					



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Approval Chart 1
 Standard Response/Quick Response Extended Coverage
 Dry Concealed Pendent Sprinkler VK196
 For Light Hazard Occupancies Only
 Maximum 175 PSI (12 bar) WWP



Sprinkler Base Part No. ¹	Thread Size		Maximum Area of Coverage ² Width x Length	Nominal K-Factor ³		Minimum Water Supply Requirements ²	Order Length Increment		Listings and Approvals ⁵ (Refer also to Design Criteria on page 108n.)					
	NPT	BSP		U.S.	metric ⁴		Inches	mm	cULus ⁶	FM	NYC ⁸	VdS	LPCB	

Quick Response Listings													
12423UA	1"	--	16 ft. x 16 ft. (4.9 m x 4.9 m)	5.6	80.6	26 gpm @ 21.6 psi (98.4 L/min @ 1.49 bar)	1/4"	6.35	AW1, BW1, CX1	--	AW1, BW1, CX1	--	--
12431UA	--	25 mm											
12423UA	1"	--	18 ft. x 18 ft. (5.5 m x 5.5 m)	5.6	80.6	33 gpm @ 34.7 psi (124.9 L/min @ 2.39 bar)	1/4"	6.35	AW1, CX1	--	AW1, CX1	--	--
12431UA	--	25 mm											
12423UA	1"	--	20 ft. x 20 ft. (6.1 m x 6.1 m)	5.6	80.6	40 gpm @ 51.0 psi (151.4 L/min @ 3.52 bar)	1/4"	6.35	AW1, CX1	--	AW1, CX1	--	--
12431UA	--	25 mm											

Standard Response Listings													
12423UA	1"	--	18 ft. x 18 ft. (5.5 m x 5.5 m)	5.6	80.6	33 gpm @ 34.7 psi (124.9 L/min @ 2.39 bar)	1/4"	6.35	BW1	--	BW1	--	--
12431UA	--	25 mm											
12423UA	1"	--	20 ft. x 20 ft. (6.1 m x 6.1 m)	5.6	80.6	40 gpm @ 51.0 psi (151.4 L/min @ 3.52 bar)	1/4"	6.35	BW1	--	BW1	--	--
12431UA	--	25 mm											

Sprinkler Temperature Ratings A - 135 °F (57 °C) B - 155 °F (68 °C) C - 175 °F (79 °C)	Cover Plate Temperature Ratings W - 135 °F (57 °C) X - 165 °F (74 °C)	Cover Plate Finishes 1 - Polished Chrome, Painted White, Painted Ivory, and Painted Black ⁹
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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 For areas of coverage smaller than shown, use the "Minimum Water Supply Requirement" for the next larger "Area of Coverage" listed for the sprinkler used. The distance from sprinklers to walls shall not exceed one-half the sprinkler spacing indicated for the "Minimum Water Supply Requirement" used.

³ K-Factor applies for standard lengths ("A" Dimensions indicated above).

⁴ 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.

⁵ 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.

⁶ Listed by Underwriter's Laboratories for use in the U.S. and Canada. Listings are limited to Light-Hazard occupancies with smooth, flat, horizontal ceilings.

⁷ Listed by Underwriter's Laboratories for use in the U.S. and Canada. Listings are limited to Light-Hazard occupancies where allowed by the installation standards being applied, with smooth, flat, horizontal ceilings.

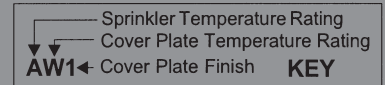
⁸ Accepted for use, City of New York Department of Buildings, MEA 89-92-E, Vol. 37.

⁹ Other paint colors are available on request with the same listings as the standard finish colors. Listings and approvals apply for any paint manufacturer. Contact Viking for additional information. Custom colors are indicated on a label inside the cover assembly. Refer to Figure 2.

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Approval Chart 2
 Standard Response/Quick Response Extended Coverage
 Dry Concealed Pendent Sprinkler VK196
 For Light Hazard Occupancies Only
 Maximum 175 PSI (12 bar) WWP



Sprinkler Base Part No. ¹	Thread Size		Maximum Area of Coverage ² Width x Length	Nominal K-Factor ³		Minimum Water Supply Requirements ²	Order Length Increment		Listings and Approvals ⁵ (Refer also to Design Criteria on page 108n.)
	NPT	BSP		U.S.	metric ⁴		Inches	mm	

Quick Response Listings										
12423UJN ⁹	1"	--	16 ft. x 16 ft. (4.9 m x 4.9 m)	5.6	80.6	26 gpm @ 21.6 psi (98.4 L/min @ 1.49 bar)	1/4"	6.35	AW1, BX1	
12423UJN ⁹	--	25 mm								
12423UJN ⁹	1"	--	18 ft. x 18 ft. (5.5 m x 5.5 m)	5.6	80.6	33 gpm @ 34.7 psi (124.9 L/min @ 2.39 bar)	1/4"	6.35	BX1	
12423UJN ⁹	--	25 mm								
12423UJN ⁹	1"	--	20 ft. x 20 ft. (6.1 m x 6.1 m)	5.6	80.6	40 gpm @ 51.0 psi (151.4 L/min @ 3.52 bar)	1/4"	6.35	BX1	
12423UJN ⁹	--	25 mm								

Standard Response Listings										
12423UJN ⁹	1"	--	18 ft. x 18 ft. (5.5 m x 5.5 m)	5.6	80.6	33 gpm @ 34.7 psi (124.9 L/min @ 2.39 bar)	1/4"	6.35	AW1	
12423UJN ⁹	--	25 mm								
12423UJN ⁹	1"	--	20 ft. x 20 ft. (6.1 m x 6.1 m)	5.6	80.6	40 gpm @ 51.0 psi (151.4 L/min @ 3.52 bar)	1/4"	6.35	AW1	
12423UJN ⁹	--	25 mm								

Sprinkler Temperature Ratings A - 155 °F (68 °C) B - 175 °F (79 °C)	Cover Plate Temperature Ratings W - 135 °F (57 °C) X - 165 °F (74 °C)	Cover Plate Finishes 1 - Polished Chrome, Painted White, Painted Ivory, and Painted Black ⁸
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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 For areas of coverage smaller than shown, use the "Minimum Water Supply Requirement" for the next larger "Area of Coverage" listed for the sprinkler used. The distance from sprinklers to walls shall not exceed one-half the sprinkler spacing indicated for the "Minimum Water Supply Requirement" used.

³ K-Factor applies for standard lengths ("A" Dimensions indicated above).

⁴ 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.

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⁷ Listed by Underwriter's Laboratories for use in the U.S. and Canada. Listings are limited to Light-Hazard occupancies where allowed by the installation standards being applied, with smooth, flat, horizontal ceilings.

⁸ Other paint colors are available on request with the same listings as the standard finish colors. Listings and approvals apply for any paint manufacturer. Contact Viking for additional information. Custom colors are indicated on a label inside the cover assembly. Refer to Figure 2.

⁹ cULus Listed as corrosion resistant.

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DESIGN CRITERIA
 (Also refer to the Approval Chart on page 108m.)

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:

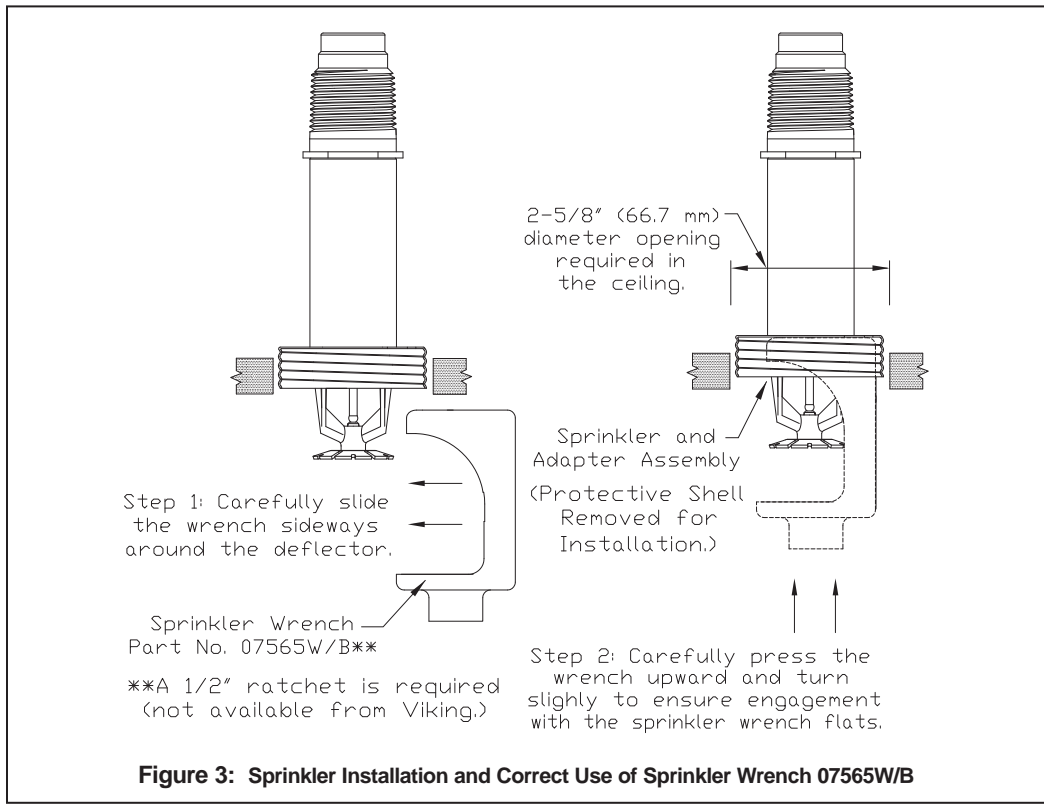
Standard/Quick Response Extended Coverage Dry Concealed Pendent Sprinklers are cULus Listed as indicated in the Approval Chart for installation in accordance with the latest edition of NFPA 13 for extended coverage spray pendent sprinklers.

- Limited to Light Hazard occupancies, where allowed by the installation standards being applied, with smooth, flat, horizontal ceilings only.
- Minimum spacing allowed is 8 ft. (2.4 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 extended coverage pendent spray sprinklers must be followed.
- **DEFLECTOR POSITION:** Install Dry Concealed Pendent Sprinkler VK196 with the deflector 3/8" (9.5 mm) to 7/8" (22.2 mm) below the ceiling. Refer to Figure 4.

NOTES: Concealed sprinklers must be installed in neutral or negative pressure plenums only.

Dry concealed sprinklers are NOT for use in freezers or with the dry sprinkler seal.

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.



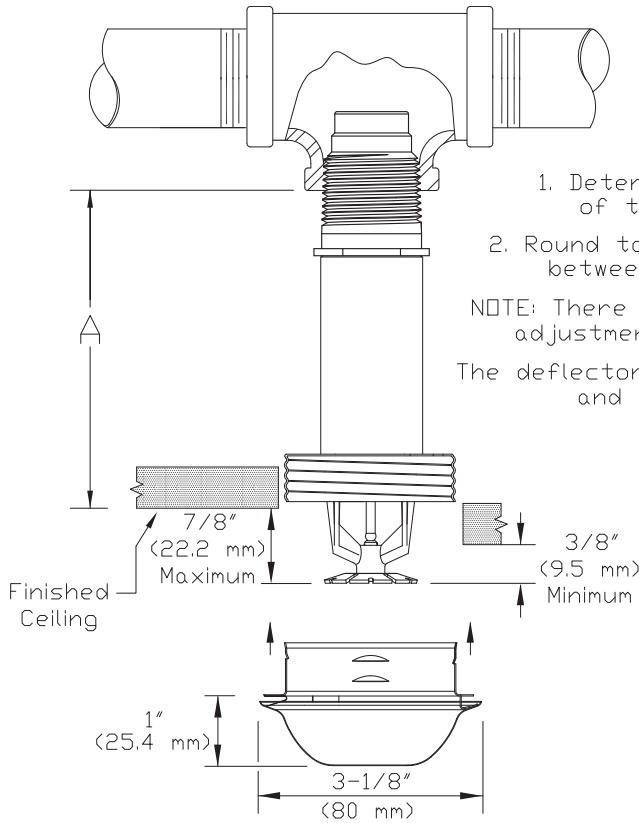


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For "A" Dimension:

1. Determine the distance from the face of the tee to the finished ceiling.
2. Round to the nearest 1/4" (6.35 mm) between 4" (102) and 48-1/4" (1,226 mm).

NOTE: There is approximately 1/2" (12.7 mm) vertical adjustment available. EC/QREC Dry Concealed

The deflector MUST be located between 3/8" (9.5 mm) and 7/8" (22.2 mm) below the ceiling.

Figure 4: Dry Concealed Pendent Sprinkler with up to 1/2" (12.7 mm) Adjustment.