



## TECHNICAL DATA

### STANDARD/QUICK RESPONSE CONCEALED PENDENT SPRINKLERS (VK302 & VK352)

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/Quick Response Concealed Pendent Sprinklers are thermosensitive glass bulb spray sprinklers pre-assembled with a threaded adapter for installation with a domed cover that provides up to 1/2" (12.7 mm) of vertical adjustment. The cover plate is available with several decorative finishes to meet design requirements.

The two-piece design allows installation and testing of the sprinkler prior to installation of the cover plate. The "push-on", "thread-off" design of the concealed cover plate assembly allows easy installation of the cover plate after the system has been tested and the ceiling finish has been applied. The cover assembly can be removed and reinstalled, allowing temporary removal of ceiling panels without taking the sprinkler system out of service or removing the sprinkler.



#### 2. LISTINGS AND APPROVALS



**cULus Listed:** Category VNIV



**FM Approved:** Class 2015



**VdS Approved:** Certificate G4080014

Refer to Approval Chart 1 and Design Criteria on pages 41i-j for cULus Listing requirements, and refer to Approval Chart 2 and Design Criteria on page 41k for FM Approval requirements that must be followed.

#### 3. TECHNICAL DATA

##### Specifications:

Available since 2003.

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 sizes: Sprinkler VK302: 1/2" (15 mm) NPT, Sprinkler VK352: 3/4" (20 mm) NPT

Nominal K-Factors: Sprinkler VK302: 5.6 U.S. (80.6 metric\*), Sprinkler VK352: 8.0 U.S. (115.2 metric\*)

\* 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)

Overall Length (sprinkler body): Sprinkler VK302: 2-1/4" (57 mm), Sprinkler VK352: 2-5/16" (59 mm)

##### Material Standards:

Frame Casting: Brass UNS-C84400 or QM Brass for Sprinkler VK302. Brass UNS-C84400 for Sprinkler VK352.

Deflector: Phosphor Bronze UNS-C51000 or Copper UNS-C19500

Bulb: Glass, nominal 3 mm diameter

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

Ejector Spring (Sprinkler VK352): 17-7 Stainless Steel

Compression Screw: Brass UNS-C36000

Pip Cap and Insert Assembly: Copper UNS-C11000 and Stainless Steel UNS-S30400

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

Solder: Eutectic

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

Viking Standard/Quick Response Concealed Pendent Sprinklers VK302 and VK352 and Cover Plate Assembly must be ordered separately:

**Sprinkler:** Base Part No. 06662BA-X or 06666BA-X (includes sprinkler and adapter pre-assembled, with a protective plastic cap covering the unit)

Specify sprinkler temperature rating by adding the appropriate suffix for the temperature rating to the base part number:

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

For example, concealed sprinkler VK302 with a 155 °F (68 °C) temperature rating = 06662BABX.

Note: When ordering this sprinkler using the SIN, add suffix -D. For example, concealed sprinkler VK302 = VK302-D.

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.

	<b>TECHNICAL DATA</b>	<b>STANDARD/QUICK RESPONSE CONCEALED PENDENT SPRINKLERS (VK302 &amp; VK352)</b>
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**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 (for use with 155 °F (68 °C) rated sprinklers only), 165 °F (74 °C) = C (for use with 175 °F (79 °C) or 200 °F (93 °C) rated sprinklers).

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 Wrench:** Part No. 13577W/B\*\* (available since 2006)

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

**Sprinkler Cabinet:** Part No. 01731A (available since 1971)

**4. INSTALLATION**

Refer to appropriate NFPA Installation Standards.

**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 pip cap and sealing spring assembly. 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**

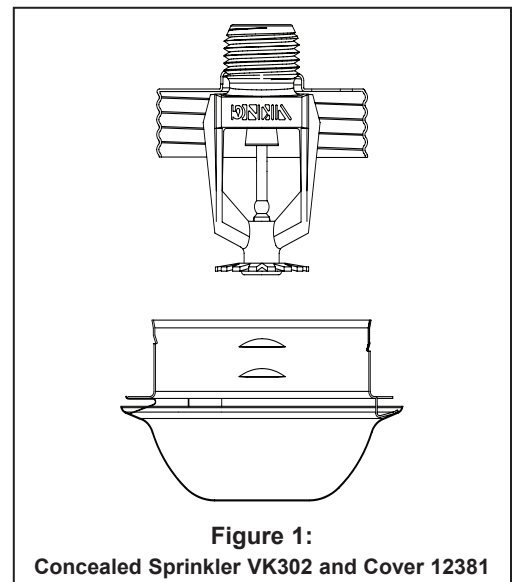
Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.

**7. AVAILABILITY**

The Viking Quick Response Concealed Pendent 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.



**Figure 1:  
Concealed Sprinkler VK302 and Cover 12381**

**TABLE 1: AVAILABLE SPRINKLER TEMPERATURE RATINGS AND FINISHES**

Sprinkler Temperature Classification	Sprinkler Nominal Temperature Rating <sup>1</sup>	Maximum Ambient Ceiling Temperature <sup>2</sup>	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

**Cover Plate Finishes:** Polished Chrome, Painted White, Painted Ivory, or Painted Black

**Footnotes**

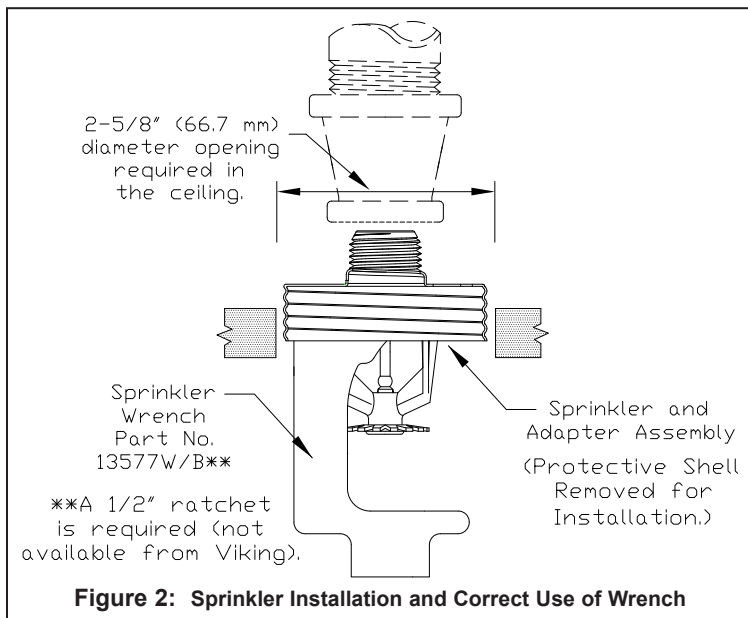
<sup>1</sup> The sprinkler temperature rating is stamped on the deflector.

<sup>2</sup> 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.

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<b>Approval Chart 1 (UL)</b> Standard/Quick Response Concealed Pendent Sprinklers Maximum 175 PSI (12 bar) WWP											
Sprinkler Base Part Number <sup>1</sup>	SIN	NPT Thread Size		Nominal K-Factor		Overall Length (Sprinkler Body)		Listings and Approvals <sup>3</sup> (Refer also to Design Criteria on page 41j.)			
		Inch	mm	U.S.	metric <sup>2</sup>	Inches	mm	cULus <sup>4</sup>	NYC	VdS <sup>6</sup>	LPCB
<b>Quick Response Applications</b>											
06662BA-X	VK302	1/2"	15	5.6	80.6	2-1/4"	57	AW1, BX1	See Footnote 5.	--	--
06666BA-X	VK352	3/4"	20	8.0	115.2	2-5/16"	59	AW1, BX1		--	--
<b>Standard Response Applications</b>											
06662BA-X	VK302	1/2"	15	5.6	80.6	2-1/4"	57	--	--	AW1, CX1	--
06666BA-X	VK352	3/4"	20	8.0	115.2	2-5/16"	59	--	--	--	--
<b>Sprinkler Temperature Ratings</b> A - 155 °F (68 °C) B - 175 °F (79 °C) and 200 °F (93 °C) C - 200 °F (93 °C)				<b>Cover Plate Assembly Temperature Ratings<sup>7</sup></b> W - 135 °F (57 °C) cover 12381' X - 165 °F (74 °C) cover 12381'				<b>Finishes of the Cover Plate Assembly<sup>8</sup></b> 1 - Polished Chrome, Painted White, Painted Ivory, or Painted Black			
<b>Footnotes</b>											
<sup>1</sup> Part number shown is the base part number. For complete part number, refer to current Viking price list schedule. <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 Underwriter's Laboratories for use in the U.S. and Canada. <sup>5</sup> Meets New York City requirements, effective July 1, 2008. <sup>6</sup> VdS Approved, standards VdS 2344:2005-12, VdS 2100-25:2008-01, and EN 12259-1:1999 + A1:2001 + A2:2004 + A3:2006, Certificate G4080014. <sup>7</sup> The 135 °F (57 °C) cover has an orange label. The 165 °F (74 °C) cover has a white label. <sup>8</sup> Standard painted finishes consist of Polyester Baked Enamel. Other paint colors are available on request with the same listings as the standard paint colors. Listings and approvals apply for any paint manufacturer. Contact Viking for additional information.											
<b>NOTE:</b> Custom colors are indicated on a label inside the cover assembly. Refer to Figure 3.											



**Figure 2: Sprinkler Installation and Correct Use of Wrench**



**Figure 3: Identification of Custom Paint Color for Concealed Covers**



## TECHNICAL DATA

## STANDARD/QUICK RESPONSE CONCEALED PENDENT SPRINKLERS (VK302 & VK352)

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### DESIGN CRITERIA - UL

(Also refer to Approval Chart 1 on page 41i.)

#### cULus Listing Requirements:

Viking Concealed Pendent Sprinklers VK302 and VK352 are cULus Listed quick response as indicated in Approval Chart 1 for installation in accordance with the latest edition of NFPA 13 for standard spray sprinklers.

- Designed for use in Light and Ordinary Hazard occupancies.
- Protection areas and maximum spacing shall be in accordance with the tables provided in NFPA 13. Maximum spacing allowed is 15 ft. (4.6 m).
- Minimum spacing allowed is 6 ft. (1.8 m) unless baffles are installed in accordance with NFPA 13.
- Minimum distance from walls is 4 in. (102 mm).
- 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 coverage pendent spray sprinklers must be followed.
- **DEFLECTOR POSITION:** Install Concealed Pendent Sprinklers VK302 and VK352 with the deflector 3/8" (9.5 mm) to 7/8" (22.2 mm) below the ceiling. Refer to Figures 4 and 5.

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

#### VdS Approval Requirements:

- a) The sprinkler can be installed in a concrete ceiling (massive ceiling) or in a false ceiling made of light materials.
- b) This sprinkler is deflector fixed type and can be only activated by heat. The housing is not tight.
- c) Follow installation guidelines of current standards, CEA4001VdS and EN12845. These sprinklers can only be installed in LH and OH occupancies, except in OH4.

**NOTES:** Due to the design the sprinkler type 'Domed-CCP' shall not be installed in false ceilings in which the false ceiling space is protected by a water extinguishing system.

Due to the design the sprinkler type 'Domed-CCP' shall not be installed in false ceilings in which during a fire the pressure above the false ceiling may be assumed to be higher than the pressure below the false ceiling.

The criterion for the dropping of the cover relevant for this approval is heat.

#### Steps of installation:

1. Prepare the sprinkler key.
2. Remove the plastic cover.
3. Hold the sprinkler with the wrench and fasten it.
4. Replace the plastic cover and do not remove until the cover is installed.

**IMPORTANT: Always refer to Bulletin Form No. F\_091699 - Care and Handling of Sprinklers. Also refer to page QR1-3 or SR1-3 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.**

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Approval Chart 2 (FM)								<div style="border: 1px solid black; padding: 2px; font-size: 8px;">                     Sprinkler Temperature Rating                      Cover Plate Temperature Rating                      AW1 ← Cover Plate Finish    KEY                 </div>		
Standard Response Concealed Pendent Sprinklers Maximum 175 PSI (12 bar) WWP										
Sprinkler Base Part Number <sup>1</sup>	SIN	NPT Thread Size		Nominal K-Factor		Overall Length (Sprinkler Body)		FM Approvals <sup>3</sup> (Refer also to Design Criteria below.)		
		Inch	mm	U.S.	metric <sup>2</sup>	Inches	mm			
06662BA-X	VK302	1/2"	15	5.6	80.6	2-1/4"	57	AW1, BX1		
06666BA-X	VK352	3/4"	20	8.0	115.2	2-5/16"	59	AW1, BX1		
<b>Sprinkler Temperature Ratings</b> A - 155 °F (68 °C) B - 175 °F (79 °C) and 200 °F (93 °C)			<b>Cover Plate Assembly Temp. Ratings<sup>4</sup></b> W - 135 °F (57 °C) cover 12381 <sup>1</sup> X - 165 °F (74 °C) cover 12381 <sup>1</sup>				<b>Finishes of the Cover Plate Assembly<sup>5</sup></b> 1 - Polished Chrome, Painted White, Painted Ivory, or Painted Black			
<b>Footnotes</b>										
<sup>1</sup> Part number shown is the base part number. For complete part number, refer to current Viking price list schedule. <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 FM Approvals available at the time of printing. Other approvals may be in process. Check with the manufacturer for any additional approvals. <sup>4</sup> The 135 °F (57 °C) cover has an orange label. The 165 °F (74 °C) cover has a white label. <sup>5</sup> Standard painted finishes consist of Polyester Baked Enamel. Other paint colors are available on request with the same listings as the standard paint colors. Listings and Approvals apply for any paint manufacturer. Contact Viking for additional information. <b>NOTE:</b> Custom colors are indicated on a label inside the cover assembly. Refer to Figure 3.										

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

**FM Approval Requirements:**

Viking Concealed Pendent Sprinklers VK302 and VK352 are FM Approved as standard response **Non-Storage** concealed pendent sprinklers as indicated in the FM Approval Guide. For specific application and installation requirements, reference the latest applicable FM Loss Prevention Data Sheets (including Data Sheet 2-0). FM Global Loss Prevention Data Sheets 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 SR1-3 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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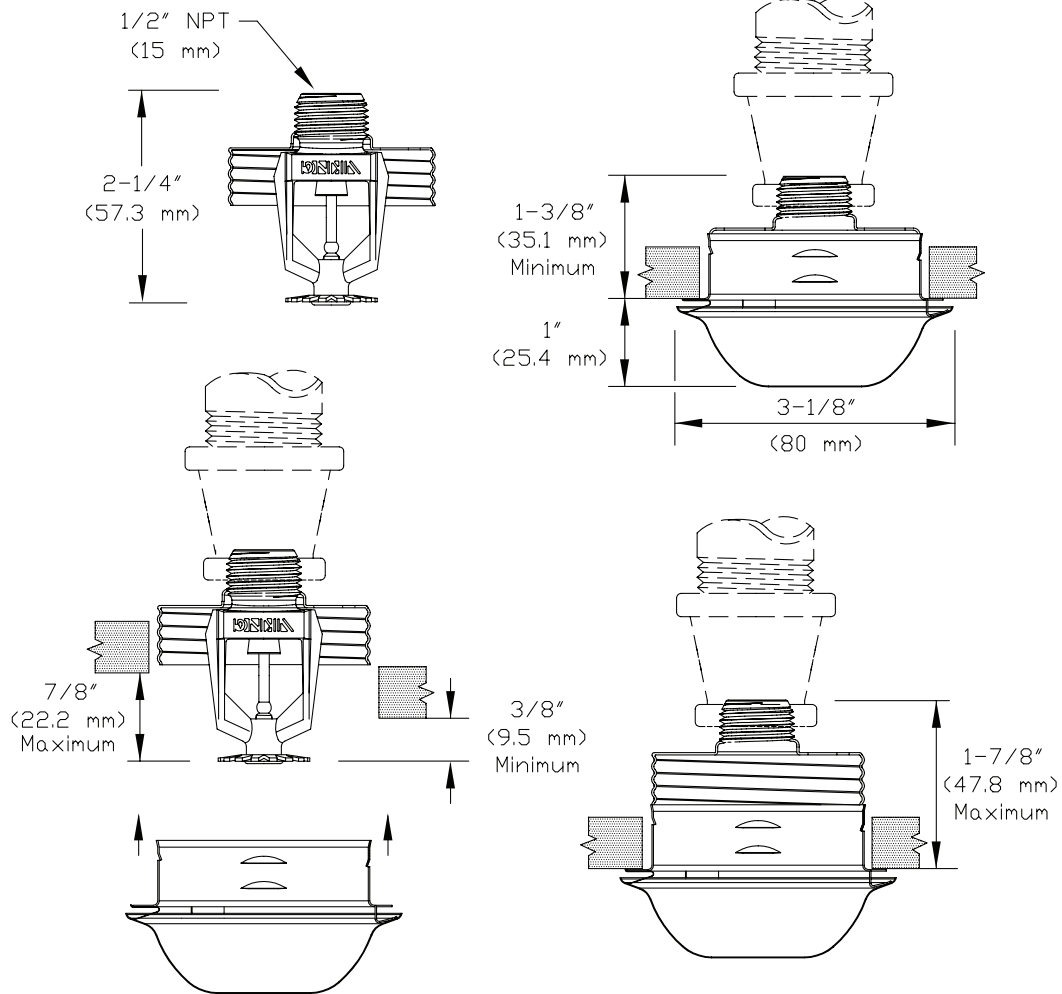


Figure 4:

Concealed Sprinkler VK302 Dimensions and Cover Installation



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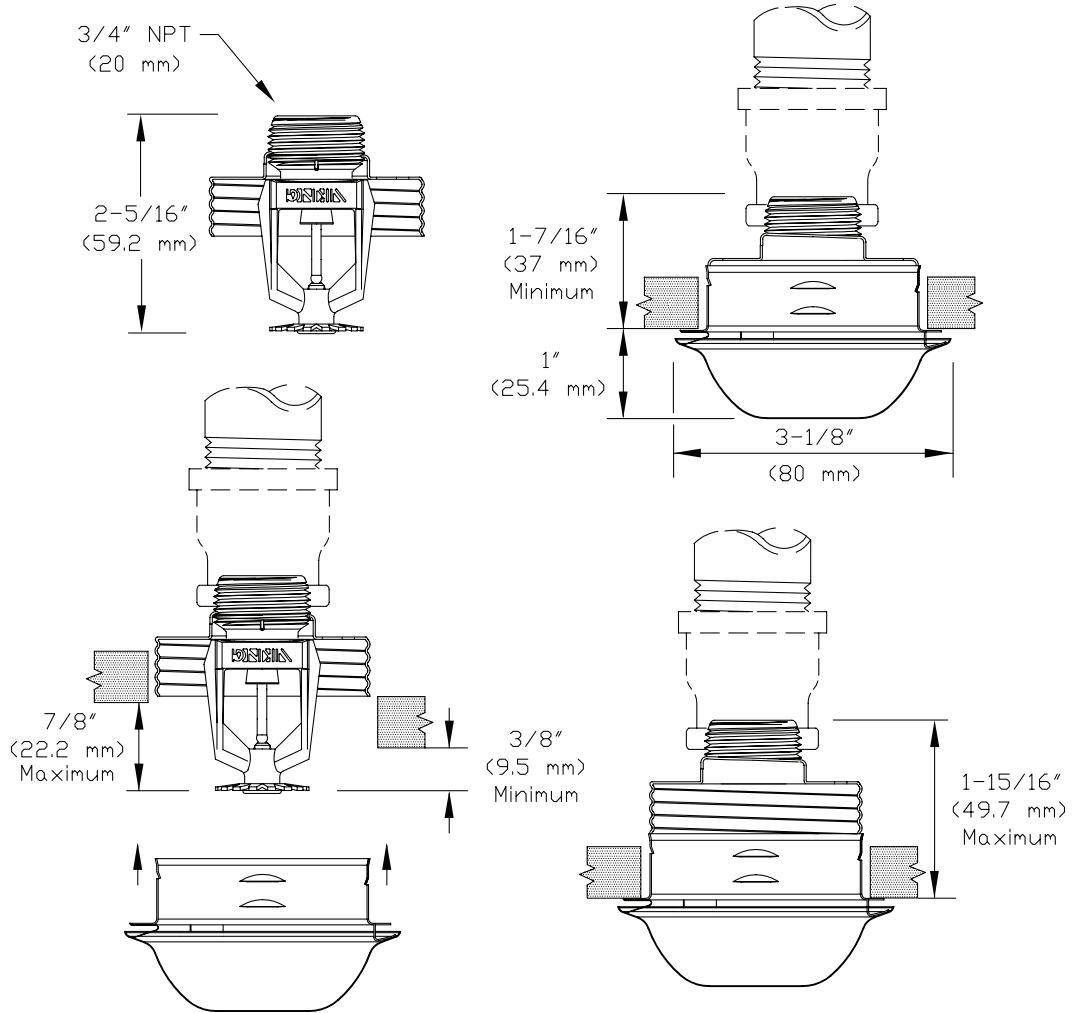


Figure 5:

Concealed Sprinkler VK352 Dimensions and Cover Installation

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