I-VICFLEX.VS1 INSTALLATION INSTRUCTIONS

Victaulic® VicFlex™ Style VS1 Dry Sprinkler

**WARNING**

- Read and understand all instructions before attempting to install any Victaulic® VicFlex™ products.
- Wear safety glasses, hardhat, and foot protection.
- These installation instructions are intended for an experienced, trained installer.
- The installer shall understand the use of this product and why it was specified for the particular application.
- The installer shall understand common industry safety standards and potential consequences of improper product installation.
- It is the system designer’s responsibility to verify suitability of stainless steel flexible hose for use with the intended fluid media within the piping system and external environment.
- The material specifier shall evaluate the effect of chemical composition, pH level, operating temperature, chloride level, oxygen level, and flow rate on stainless steel components to confirm system life will be acceptable for the intended service.

Failure to follow these instructions could cause improper sprinkler operation and product failure, resulting in death or serious personal injury and property damage.

Maximum Working Pressure Rating:
- 175 psi/12 Bar/1207 kPa

Connection to Branch Line (Inlet):
- 1 inch/25 mm NPT or BSPT

Minimum Bend Radius:
- 2 inch/50 mm (UL)
- 7 inch/178 mm (FM)

SIDEWALL

K-Factor of Sprinkler: 5.6 US/80 metric

Maximum Number of 90° Bends:
- 4 Bends (UL) – All Hose Lengths
- 2 Bends (FM) – 38-inch/965-mm Hose Length
- 3 Bends (FM) – 50-inch/1270-mm Hose Length
- 4 Bends (FM) – 58-inch/1475-mm Hose Length

Flexible Hose Bend Characteristics:

NOTE: For out-of-plane (three-dimensional) bends, care shall be taken to avoid imparting torque on the flexible hose.

The following table is used when the ambient temperature is maintained between 40°F/4°C and 60°F/16°C around the wet piping system.

<table>
<thead>
<tr>
<th>Ambient Temperature Exposed to Discharge End of Sprinkler °F/°C</th>
<th>Exposed Minimum Barrel Length “Y” inches/mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>40°F/4°C</td>
<td>0/0</td>
</tr>
<tr>
<td>4°F/ -4°C</td>
<td>0/0</td>
</tr>
<tr>
<td>30°F/ -1°C</td>
<td>0/0</td>
</tr>
<tr>
<td>20°F/ -7°C</td>
<td>0/0</td>
</tr>
<tr>
<td>10°F/ -12°C</td>
<td>0/0</td>
</tr>
<tr>
<td>0°F/ -18°C</td>
<td>0/0</td>
</tr>
<tr>
<td>-10°F/ -23°C</td>
<td>0/0</td>
</tr>
<tr>
<td>-20°F/ -29°C</td>
<td>0/0</td>
</tr>
<tr>
<td>-30°F/ -34°C</td>
<td>0/0</td>
</tr>
<tr>
<td>-40°F/ -40°C</td>
<td>0/0</td>
</tr>
<tr>
<td>-50°F/ -46°C</td>
<td>0/0</td>
</tr>
<tr>
<td>-60°F/ -51°C</td>
<td>0/0</td>
</tr>
</tbody>
</table>

NOTE: Exposed minimum barrel lengths are inclusive up to 30 mph/48-kph wind velocities.
IMPORTANT INSTALLATION INFORMATION

- Victaulic® VicFlex™ Style VS1 Dry Sprinklers shall be installed according to current, applicable National Fire Protection Association (NFPA 13, 13D, 13R, etc.) standards or equivalent standards. Style VS1 Dry Sprinklers are intended to be installed in wet, dry, or preaction actuated systems. Deviations from these standards or alterations to Style VS1 Dry Sprinklers will void any Victaulic warranty and will impact system integrity. Installations shall meet the provisions of the local authority having jurisdiction and local codes, as applicable.
- Victaulic® VicFlex™ Sprinkler Fittings shall not be intermixed with other manufacturer’s flexible sprinkler products.
- Transport and store Style VS1 Dry Sprinklers in a cool, dry environment in their original packaging.
- Refer to the specific Victaulic product submittal for applications and listing information. Submittals can be downloaded at victaulic.com.
- Size the piping system to provide the minimum operating pressure of 7 psi/0.5 Bar/48 kPa.
- Per NFPA requirements, flush the system to remove foreign material. Continue to flush the system until water runs clear.
- DO NOT install sprinkler system piping through heating ducts.
- DO NOT connect sprinkler system piping to domestic hot water systems.
- DO NOT install Style VS1 Dry Sprinklers where they will be exposed to temperatures that exceed the maximum ambient temperature rating for the sprinkler and sprinkler fittings.
- Style VS1 Dry Sprinklers have limited flexibility* and are intended only to be installed with bends not less than their respective minimum bend radii. DO NOT install flexible hose in a straight configuration.
- Protect wet piping systems from freezing temperatures.
- If construction is altered, the building owner or their representative is responsible for referencing applicable standards to determine if additional Style VS1 Dry Sprinklers or other system adjustments are required.
- DO NOT install Style VS1 Dry Sprinklers that have been dropped or struck by another object, even if they do not appear damaged. Never install glass bulb sprinklers if the bulb is cracked or if there is a loss of liquid from the bulb. Discard and replace any Style VS1 Dry Sprinklers that are damaged or show signs of corrosion.
- Before installation, verify that the Style VS1 Dry Sprinkler is the proper style, orifice size, and temperature rating for the intended service.

**WARNING**

- Replacement/relocation of this Victaulic® VicFlex™ Style VS1 Dry Sprinkler SHALL be performed by qualified personnel familiar with the system’s original design criteria, sprinkler listings/approvals, and state and local codes (including NFPA 13 standards).
- Failure to replace/relocate a Style VS1 Dry Sprinkler properly could affect its performance during a fire, resulting in serious personal injury and property damage.

* Reference UL 2443: Section 25.1

STYLE VS1 SPRINKLER ASSEMBLY DRAWING

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Swivel Hex Nut</td>
</tr>
<tr>
<td>2</td>
<td>Weld Fitting</td>
</tr>
<tr>
<td>3</td>
<td>Inlet</td>
</tr>
</tbody>
</table>

Recessed Pendent Shown Above
**STYLE VB1 BRACKET ASSEMBLY DRAWING**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Style VB1 Bracket</td>
</tr>
<tr>
<td>2</td>
<td>Hex Cap Screw</td>
</tr>
<tr>
<td>3</td>
<td>Relocation Warning Label</td>
</tr>
</tbody>
</table>

**STYLE VB2 BRACKET ASSEMBLY DRAWING**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>24-inch/610-mm or 48-inch/1219-mm Square Bar*</td>
</tr>
<tr>
<td>2</td>
<td>Center Gate Assembly with Wing Nut</td>
</tr>
<tr>
<td>3</td>
<td>Style VB2 End Bracket with Tapping Screw</td>
</tr>
<tr>
<td>4</td>
<td>Relocation Warning Label</td>
</tr>
<tr>
<td>5</td>
<td>Wing Screw</td>
</tr>
</tbody>
</table>

* Reference submittal document 10.91 for listing information. Square bar length is in reference to nominal ceiling grid spacing.

**NOTICE**

- **VICTAULIC® VICFLEX™ STYLE VB2 BRACKET ASSEMBLIES SHALL BE USED ONLY WITH STYLE VS1 RECESSED PENDENT SPRINKLERS.**

**STYLE VB3 BRACKET ASSEMBLY DRAWING**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>24-inch/610-mm or 48-inch/1219-mm Square Bar*</td>
</tr>
<tr>
<td>2</td>
<td>Center Gate Assembly with Wing Nut</td>
</tr>
<tr>
<td>3</td>
<td>Style VB3 End Bracket with Tapping Screw</td>
</tr>
<tr>
<td>4</td>
<td>Relocation Warning Label</td>
</tr>
<tr>
<td>5</td>
<td>Wing Screw</td>
</tr>
</tbody>
</table>

* Reference submittal document 10.91 for listing information. Square bar length is in reference to nominal ceiling grid spacing.

**NOTICE**

- **VICTAULIC® VICFLEX™ STYLE VB3 BRACKET ASSEMBLIES SHALL BE USED ONLY WITH STYLE VS1 CONCEALED PENDENT SPRINKLERS.**
STYLE VS1 SPRINKLER ASSEMBLY PITCHING REQUIREMENTS
SIDEWALL

ACCEPTABLE PITCH

UNACCEPTABLE PITCH

PENDENT

ACCEPTABLE

UNACCEPTABLE
FOR DRY SYSTEMS ONLY:

- The Style VS1 Dry Sprinkler’s inlet shall be installed only into the outlet of a fitting (excluding elbows) or welded outlet that meets the dimensional requirements of ANSI B16.3 and ANSI B16.4, Class 125 and Class 150. Use a sample fitting to confirm proper engagement and to verify that there is no interference between the sprinkler and the fitting.

  Style VS1 Dry Sprinklers in an unheated space shall be installed with a continuous downward slope along its entire length from the branch line fitting to the sprinkler. No localized low points shall be present along the length of the Style VS1 Dry Sprinkler.

  Style VS1 Dry Sprinklers in an unheated space are not permitted to be installed into the top of the branch line piping. Style VS1 Dry Sprinklers shall be installed into the side or from the bottom of the branch line piping.

  In a heated space, if a portion of the Style VS1 Dry Sprinkler is installed from the top of a branch line and then extends into an unheated space, it shall be installed with a continuous downward slope along the entire length from the inside wall to the outlet of the sprinkler. No localized low points shall be present along the length of the sprinkler in the unheated space. Refer to the drawing below.

  ![Diagram showing the installation of a Style VS1 Dry Sprinkler in both heated and unheated spaces.]

FOR WET SYSTEMS ONLY:

- **DO NOT** install Style VS1 Dry Sprinklers into any threaded elbow, thread-by-thread coupling, or fitting that interferes with thread penetration. The inlet of the Style VS1 Dry Sprinkler **SHALL NOT** bottom out in the fitting. Use a sample fitting to confirm proper engagement.

- To ensure unobstructed flow during operation, the Style VS1 Dry Sprinkler shall be installed into a fitting that will prevent water and debris from accumulating at the dry sprinkler’s inlet.

- Verify that the exposed minimum barrel length in the heated space is measured and maintained in accordance with the table on page 1.

  In a heated space, if a portion of the Style VS1 Dry Sprinkler extends into an unheated space, it shall be installed with a continuous downward slope along the entire length from the inside wall to the outlet end of the dry sprinkler. No localized low points shall be present along the length of the sprinkler in the unheated space. Refer to the drawing above.
STYLE VB1 BRACKET INSTALLATION FOR WOOD OR METAL JOISTS/STUDS

**WARNING**

- **DO NOT** attempt to adjust or remove a Style VS1 Dry Sprinkler while the sprinkler system is pressurized. Failure to follow this instruction could result in death or serious personal injury and property damage.

1. Cut a hole in the finished ceiling or wall. Refer to the table below for hole sizes.

<table>
<thead>
<tr>
<th>Sprinkler Style</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>VS1 Recessed</td>
<td>2 51</td>
<td>2 3/8 60</td>
</tr>
<tr>
<td>VS1 Concealed</td>
<td>2 7/8 67</td>
<td>2 3/4 70</td>
</tr>
<tr>
<td>VS1 Sleeve/Skirt</td>
<td>1 3/4 44</td>
<td>2 1/2 64</td>
</tr>
</tbody>
</table>

2. Apply a non-hardening pipe-joint compound or two to three wraps of PTFE thread sealant tape to the male threads of the Style VS1 Dry Sprinkler’s inlet, in accordance with the pipe joint compound or tape manufacturer’s instructions.

2a. Using a 2-inch wrench, tighten the swivel hex nut at the Style VS1 Dry Sprinkler’s inlet to a torque of 30 ft-lbs/41 N•m (approximately 1/2 to 3/4 of a turn past hand-tight).

3. Using a 5/16-inch hex socket, remove the hex cap screw from the bracket.

4. Snap the bracket onto the weld fitting, as shown to the left. Verify that the slot of the bracket aligns with the lip on the weld fitting.

5. Place the bracket assembly in the desired position on the wood or metal joist/stud. Verify that the sprinkler is oriented in the proper position.

5a. Using a 5/16-inch hex socket, re-install the hex cap screw. Tighten the hex cap screw to 15 inch-lbs/1.7 N•m (approximately one to two turns past hand-tight). This will retain the sprinkler orientation in relation to the bracket mounting flanges.

6. Anchor the bracket in the desired location on the wood or metal joist/stud by using two #10 x 1 1/2-inch long wood screws (for wood joists/studs shown above) or two #10 x 1 1/2-inch long sheet metal screws (for metal joists/studs). **NOTE:** Victaulic does not supply wood screws or sheet metal screws.

**NOTICE**

- Always reference pages 4 and 5 of this instruction sheet for Style VS1 Sprinkler Assembly pitching requirements.

- An alternative to step 4 is to snap the bracket onto the outlet tube, as shown.
STYLE VB2 AND STYLE VB3 BRACKETS – INSTALLATION FOR ASTM C635 CEILING SUSPENSION SYSTEMS INSTALLED WITH LAY-IN TILES (IN ACCORDANCE WITH ASTM C636 STANDARDS)

**WARNING**

- DO NOT attempt to adjust or remove a Style VS1 Dry Sprinkler while the sprinkler system is pressurized. Failure to follow this instruction could result in death or serious personal injury and property damage.

1. Apply a non-hardening pipe-joint compound or two to three wraps of PTFE thread sealant tape to the male threads of the Style VS1 Dry Sprinkler’s inlet, in accordance with the pipe joint compound or tape manufacturer’s instructions.

1a. Using a 2-inch wrench, tighten the swivel hex nut at the Style VS1 Dry Sprinkler’s inlet to a torque of 30 ft-lbs/41 N•m (approximately 1/2 to 3/4 of a turn past hand-tight).

2. Attach the end brackets of the Style VB2 Bracket to the T-bar rails of an ASTM C635 ceiling suspension system installed in accordance with ASTM C636 standards. Verify that the ends of the Style VB2 Bracket engage the rails.

2a. For center-of-tile installations, align the end bracket with the center-of-tile slot of the T-bar rail (with the side facing the opening of the center gate assembly), as shown above.

2b. Apply light downward pressure, as shown above, to maintain the position of the end bracket flat against the T-bar rail. To secure the end brackets to the T-bar rails, tighten the pre-installed sheet metal screws using a #2 recessed square drive bit. Penetrate through the T-bar rail until the end bracket is seated fully against the T-bar rail. **DO NOT over-tighten the screws. Over-tightening will cause the screw to strip, resulting in an unsecured bracket connection.**

3. Move the center gate assembly of the Style VB2 Bracket to the desired location. Loosen the wing nut to open the center gate assembly, then slide the sprinkler reducing nipple into the center gate assembly. **NOTE:** The pivot screw of the center gate assembly is staked to resist removal of the wing nut.

For adjustment purposes, the wing screw on top of each end bracket assembly can be loosened to allow the end bracket to slide on the square bar. Tighten the wing screw on top of each end bracket assembly to a torque of 36 inch-lbs/4 N•m (approximately 1/2 to 3/4 of a turn past hand-tight) to secure the end bracket to the square bar.
For center-of tile installations, position the center gate assembly between the two reference marks on the square bar, as shown above.

3a. Close the center gate assembly around the sprinkler reducing nipple. Swing the pivot screw and washer into the slot on the gate, and tighten the wing nut to a torque of 50 inch-lbs/6 N•m (approximately hand-tight, plus ½ to ¾ of a turn). **NOTE:** Verify that the washer is seated under the head of the wing nut.