

Victaulic® VicFlex™ Style VS1 Dry Sprinkler

⚠ WARNING



- Read and understand all instructions before attempting to install any Victaulic products.
 - Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.
 - Confirm that any equipment, branch lines, or sections of piping that may have been isolated for/ during testing or due to valve closures/positioning are identified, depressurized, and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.
 - Wear safety glasses, hardhat, and foot protection.
- Failure to follow these instructions could result in death or serious personal injury and property damage.

- This Victaulic® VicFlex™ product shall be used only in fire protection systems that are designed and installed in accordance with current, applicable National Fire Protection Association (NFPA 13, 13D, 13R, etc.) standards, or equivalent standards, and in accordance with applicable building and fire codes. These standards and codes contain important information regarding protection of systems from freezing temperatures, corrosion, mechanical damage, etc.
- 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 installation requirements and local and national codes and standards could compromise system integrity or cause system 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)

K-Factor of Sprinkler:

5.6 US/80 metric

Maximum Number of 90° Bends:

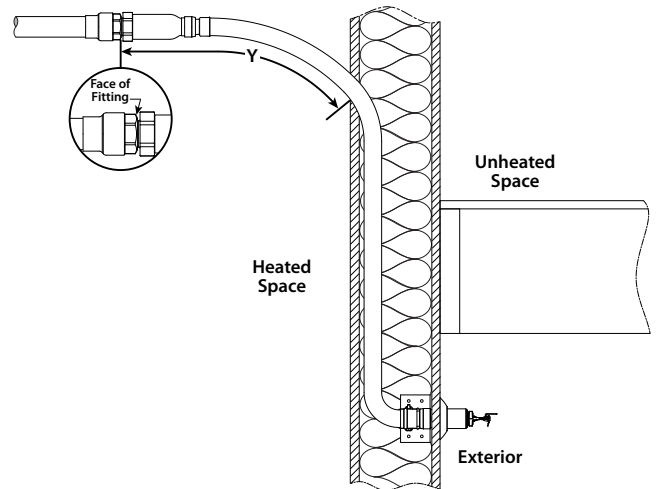
4 Bends (UL) – All Hose Lengths
2 Bends (FM) – 38-inch/965-mm
Hose Length
3 Bends (FM) – 50-inch/1270-mm
Hose Length
4 Bends (FM) – 58-inch/1475-mm
Hose Length

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.

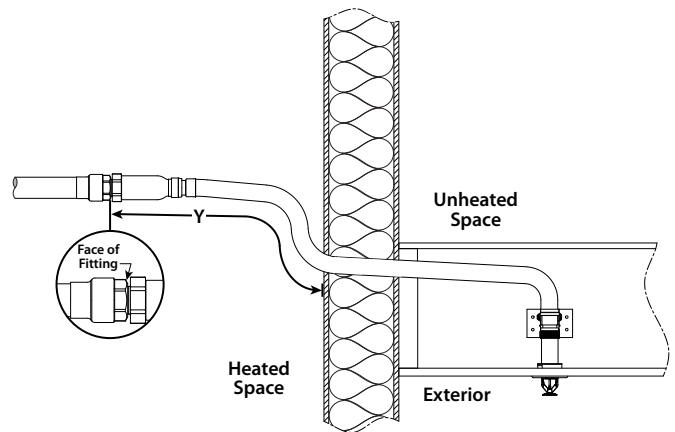
Ambient Temperature Exposed to Discharge End of Sprinkler °F/°C	Exposed Minimum Barrel Length "Y" inches/mm		
	40°F 4°C	50°F 10°C	60°F 16°C
40	0	0	0
4	0	0	0
30	0	0	0
-1	0	0	0
20	4	0	0
-7	100	0	0
10	8	1	0
-12	200	25	0
0	12	3	0
-18	300	75	0
-10	14	4	1
-23	350	100	25
-20	14	6	3
-29	350	150	75
-30	16	8	4
-34	400	200	100
-40	18	8	4
-40	450	200	100
-50	20	10	6
-46	500	250	150
-60	20	10	6
-51	500	250	150

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

SIDEWALL

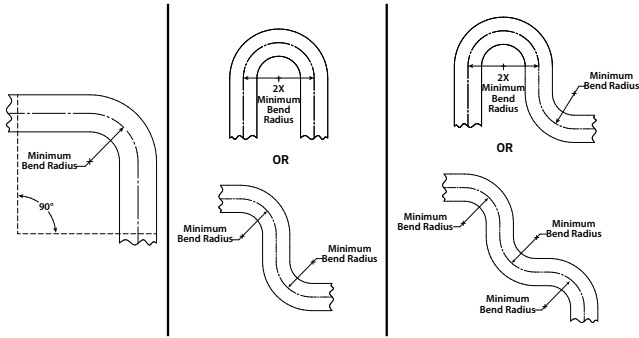


PENDENT



Flexible Hose Bend Characteristics:

NOTE: Care shall be taken to avoid torquing the flexible hose.



SCAN QR CODE FOR ACCESS TO THE FULL I-VICFLEX.BRG BEND RADIUS GUIDE INSTRUCTIONS ON VICTAULIC.COM

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.

- **VICTAULIC® VICFLEX™ STYLE VB2 BRACKET ASSEMBLIES ARE RECOMMENDED FOR USE WITH STYLE VS1 RECESSED PENDENT SPRINKLERS.**
- **VICTAULIC® VICFLEX™ STYLE VB3 BRACKET ASSEMBLIES ARE RECOMMENDED FOR USE WITH STYLE VS1 CONCEALED PENDENT SPRINKLERS.**
- **VICTAULIC® VICFLEX™ STYLE VB4 BRACKET ASSEMBLIES ARE RECOMMENDED FOR USE WITH STYLE VS1 SLEEVE AND SKIRT PENDENT SPRINKLERS.**



- **DO NOT** paint, coat, or firestop the outlet/inlet portion of the Style VS1 Dry Sprinkler, identified in the above photo. Braided hose and fitting portions of the Style VS1 Dry Sprinkler may be painted or coated, provided that the paint or coating is compatible with stainless steel material. This includes penetration through firestop-filled annular space of a firewall. The firestop material in direct contact with the flexible braided hose will not impede functionality of the Style VS1 Dry Sprinkler, provided that the components are installed in accordance with Victaulic’s installation instructions.
- Style VS1 Dry Sprinklers that have been altered from their manufactured condition may not function properly and may void agency listings and/or approvals.
- **DO NOT** test Style VS1 Dry Sprinklers with a heat source. The glass bulb can weaken or shatter if exposed to a heat source during testing.
- Style VS1 Dry Sprinklers that have operated cannot be reassembled or reused, per NFPA requirements. When replacing sprinklers, use new sprinklers of the same type, orifice, temperature, and response.
- **DO NOT** clean Style VS1 Dry Sprinklers with soapy water, detergents, ammonia, cleaning fluids, or other chemicals. Remove any dust, lint, etc. with a soft, dry cloth.
- Inspect Style VS1 Dry Sprinklers on a regular basis for corrosion, mechanical damage, obstructions, etc. The frequency of inspections may vary due to corrosive atmospheres/water supplies and activities around the sprinklers.
- **DO NOT** hang anything from or attach anything to Style VS1 Dry Sprinklers. Obstructing the discharge pattern will prevent the sprinkler from operating properly.
- The owner is responsible for maintaining the fire protection system in proper operating condition.
- For minimum maintenance and inspection requirements, refer to NFPA 25 and any other applicable NFPA standards that describe the care and maintenance of sprinkler systems. In addition, the authority having jurisdiction may have additional maintenance, testing, and inspection requirements that shall be followed.

⚠ WARNING

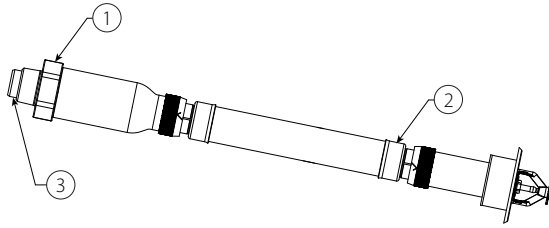
- **Replacement/relocation of this Victaulic® VicFlex™ Style VS1 Dry Sprinkler SHALL be performed by qualified personnel familiar with the system's original design criteria, sprinkler listings/approvals, and state and local codes (including NFPA 13 standards).**

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



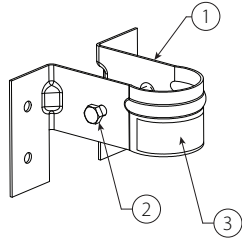
STYLE VS1 SPRINKLER ASSEMBLY DRAWING



Recessed Pendent Shown Above

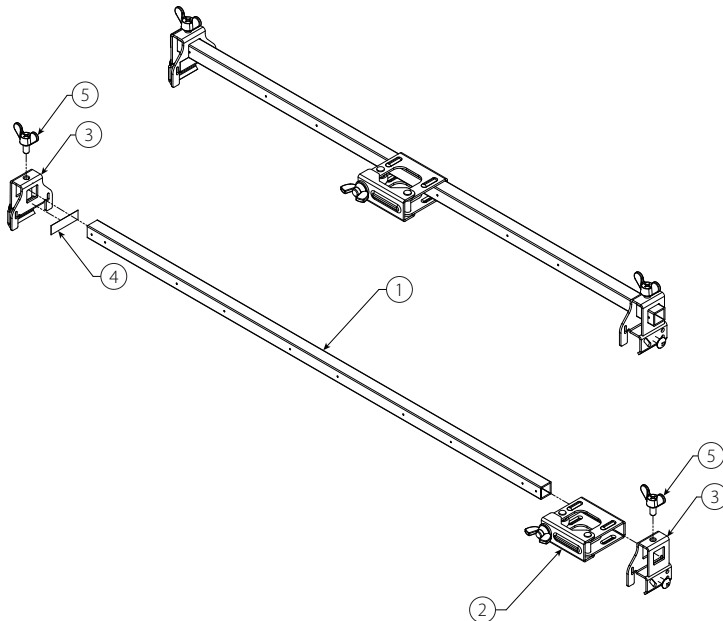
Item	Description
1	Swivel Hex Nut
2	Weld Fitting
3	Inlet

STYLE VB1 BRACKET ASSEMBLY DRAWING



Item	Description
1	Style VB1 Bracket
2	Hex Cap Screw
3	Relocation Warning Label

STYLE VB2 BRACKET ASSEMBLY DRAWING



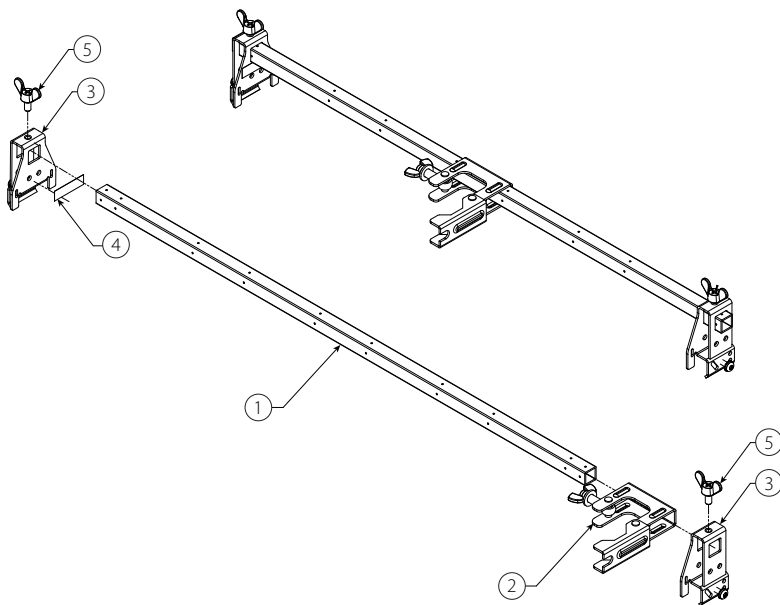
Item	Description
1	24-inch/610-mm or 48-inch/1219-mm Square Bar*
2	Center Gate Assembly with Wing Nut
3	Style VB2 End Bracket with Tapping Screw
4	Relocation/Tamper Evident Warning Label
5	Wing Screw

* 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 are recommended for use with Style VS1 Recessed Pendent Sprinklers.
- For the UL Listing, when the 48-inch/1220-mm length VB2 Bracket is used with the VS1 (V35) Flexible Dry Sprinkler, the maximum spacing is 30-inches/762-mm.

STYLE VB3 BRACKET ASSEMBLY DRAWING

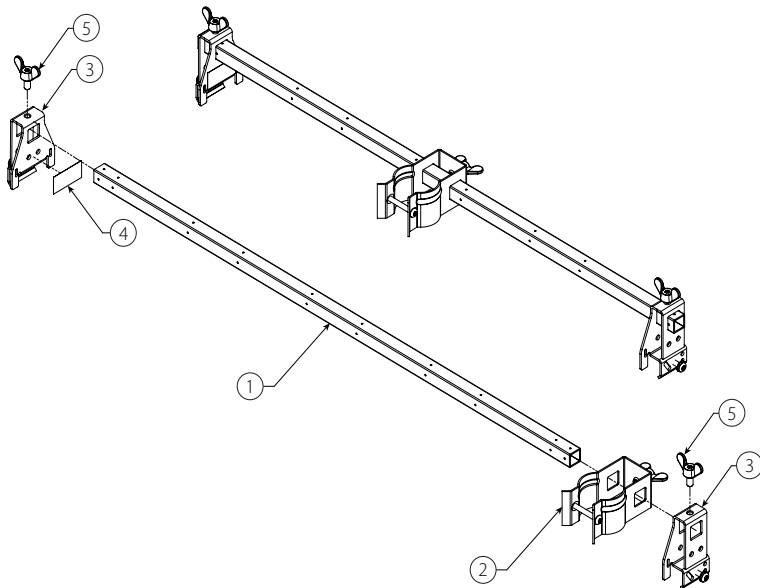


Item	Description
1	24-inch/610-mm or 48-inch/1219-mm Square Bar*
2	Center Gate Assembly with Wing Nut
3	Style VB3 End Bracket with Tapping Screw
4	Relocation/Tamper Evident Warning Label
5	Wing Screw

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

NOTICE	
<ul style="list-style-type: none"> • Victaulic® VicFlex™ Style VB3 Bracket Assemblies are recommended for use with Style VS1 Concealed Pendent Sprinklers. • For the UL Listing, when the 48-inch/1220-mm length VB3 Bracket is used with the VS1 (V35) Flexible Dry Sprinkler, the maximum spacing is 30-inches/762-mm. 	

STYLE VB4 BRACKET ASSEMBLY DRAWING



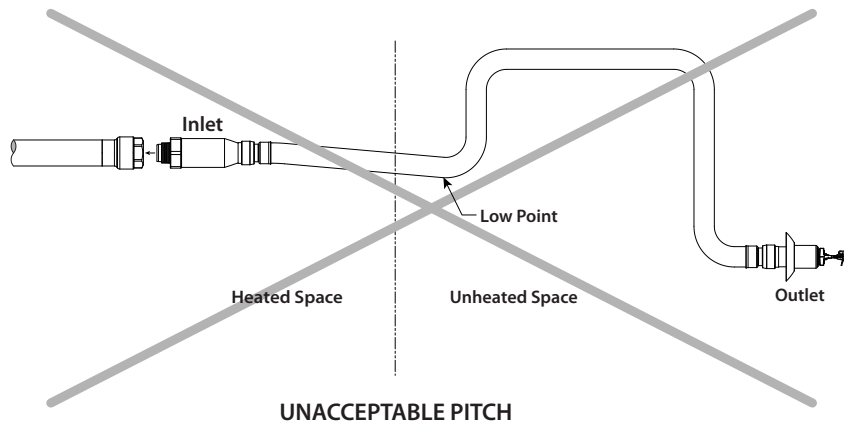
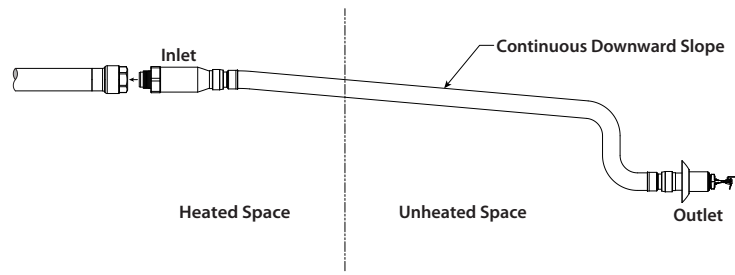
Item	Description
1	24-inch/610-mm or 48-inch/1219-mm Square Bar*
2	Center Bracket Assembly with Wing Screw
3	Style VB3 End Bracket with Tapping Screw
4	Relocation/Tamper Evident Warning Label
5	Wing Screw

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

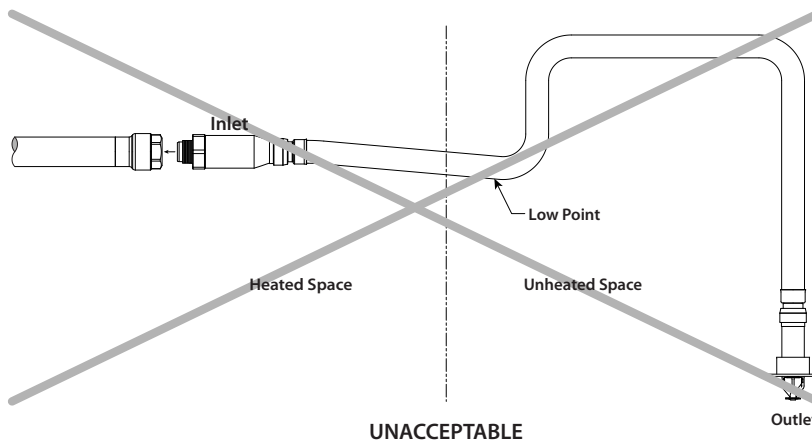
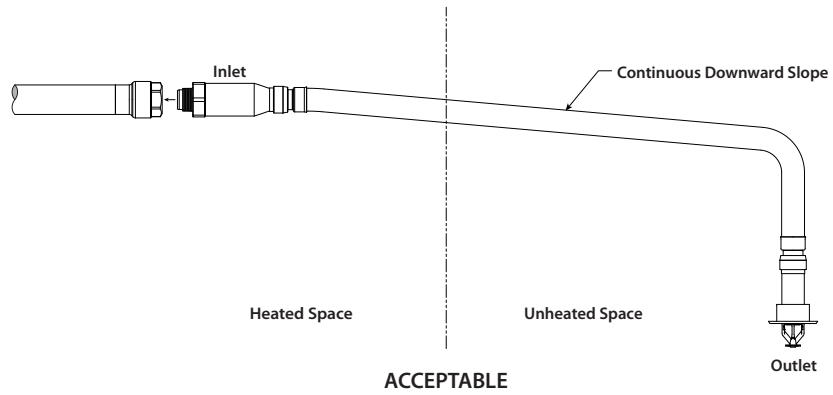
NOTICE	
<ul style="list-style-type: none"> • Victaulic® VicFlex™ Style VB4 Bracket Assemblies are recommended for use with Style VS1 Sleeve and Skirt Pendent Sprinklers. • For the UL Listing, when the 48-inch/1220-mm length VB4 Bracket is used with the VS1 (V35) Flexible Dry Sprinkler, the maximum spacing is 30-inches/762-mm. 	

STYLE VS1 SPRINKLER ASSEMBLY PITCHING REQUIREMENTS

SIDEWALL



PENDENT



FOR DRY SYSTEMS ONLY:

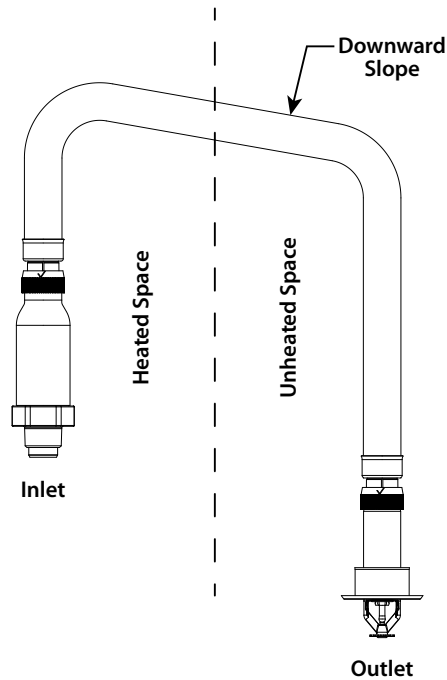
- The Style VS1 Dry Sprinkler's inlet shall be installed only into the outlet of a fitting (excluding elbows) or welded outlet that meets the dimensional requirements of ANSI B16.3 and ANSI B16.4, Class 125 and Class 150. Use a sample fitting to confirm proper engagement and to verify that there is no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



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.

Minimum and Maximum Hole Sizes

Sprinkler Style	Hole Sizes – inches/millimeters	
	Minimum	Maximum
VS1 Recessed	2 51	2 3/8 60
VS1 Concealed	2 5/8 67	2 3/4 70
VS1 Sleeve/Skirt	1 3/4 44	2 1/2 64

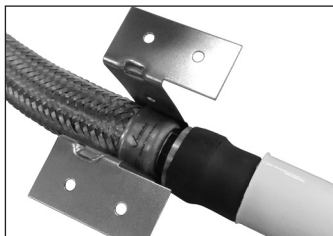


2. Apply a non-hardening pipe-joint compound or two to three wraps of PTFE thread sealant tape to the male threads of the Style VS1 Dry Sprinkler's inlet, in accordance with the pipe joint compound or tape manufacturer's instructions.

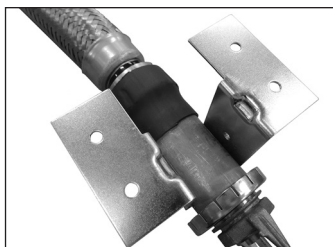
- 2a. Using a 2-inch wrench, tighten the swivel hex nut at the Style VS1 Dry Sprinkler's inlet to a torque of 30ft-lbs/41 N•m (approximately 1/2 to 3/4 of a turn past hand-tight).



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.

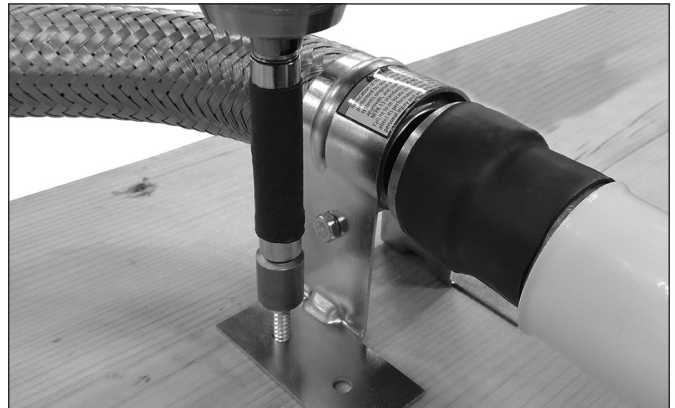


- An alternative to step 4 is to snap the bracket onto the outlet tube, as shown.



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 5 and 6 of this instruction sheet for Style VS1 Sprinkler Assembly pitching requirements.

STYLE VB2, STYLE VB3, AND STYLE VB4 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.



- 1a. 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.
- 1b. Using a 2-inch wrench, tighten the swivel hex nut at the Style VS1 Dry Sprinkler's inlet to a torque of 30ft-lbs/41 N•m (approximately ½ to ¾ of a turn past hand-tight).



NOTE: 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 ½ to ¾ of a turn past hand-tight) to secure the end bracket to the square bar.

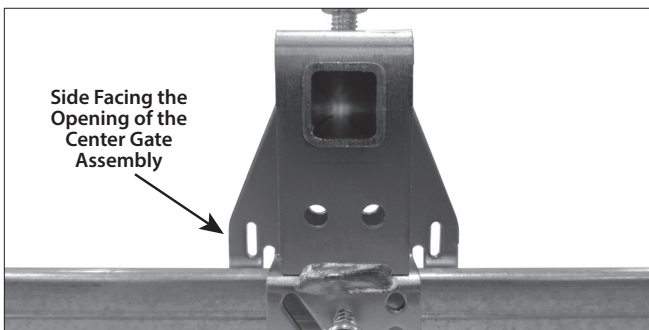
2. Attach the end brackets of the Style VB2/VB3 or VB4 Bracket to the T-bar rails of an ASTM C635 ceiling suspension system installed in accordance with ASTM C636 standards. Verify that the ends of the Style VB2/VB3 or VB4 Bracket engage the rails, as shown below.



VB2/VB3 Bracket (shown above)

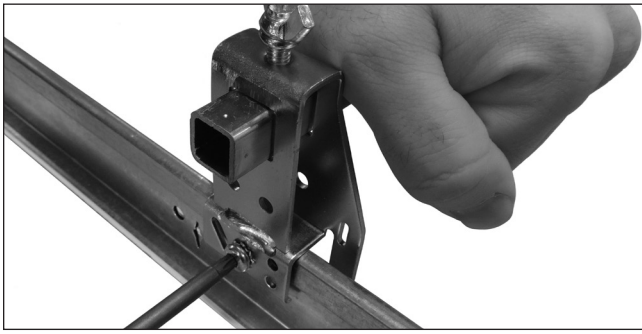


VB4 Bracket (shown above)



- 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 to the left.

NOTE: For the UL Listing, when the 48-inch/1220-mm length VB2, VB3, or VB4 Bracket is used with the VS1 (V35) Flexible Dry Sprinkler, the maximum spacing is 30-inches/762-mm.



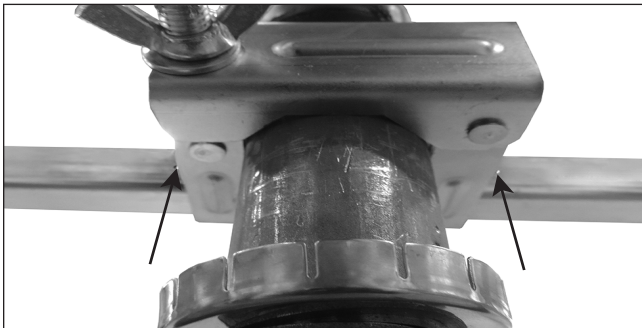
2b. Apply light downward pressure, as shown to the left, to maintain the position of the end bracket flat against the T-bar rail. To secure the end brackets to the T-bar rails, tighten the pre-installed sheet metal screws using a #2 recessed square drive bit. Penetrate through the T-bar rail until the 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.**



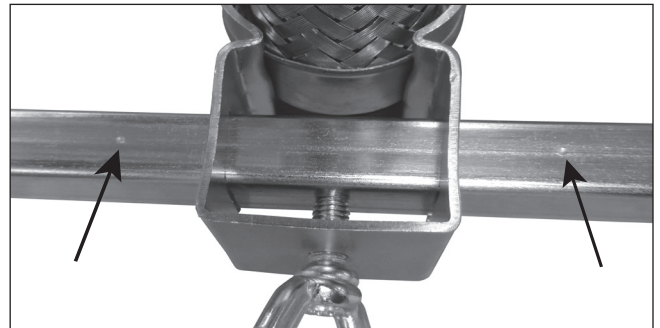
3a. (VB2/VB3) Move the center gate assembly of the Style VB2/ VB3 Bracket to the desired location. Loosen the wing nut to open the center gate assembly, then slide the sprinkler reducing nipple into the center gate assembly, as shown above. **NOTE:** The pivot screw of the center gate assembly is staked to resist removal of the wing nut.



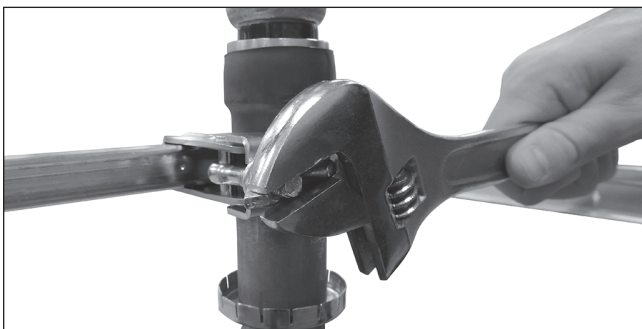
3b. (VB4) Remove the button-head cap screw from the center bracket assembly. Snap the bracket onto the weld fitting, as shown above. Verify that the slot of the bracket aligns with the lip on the weld fitting.



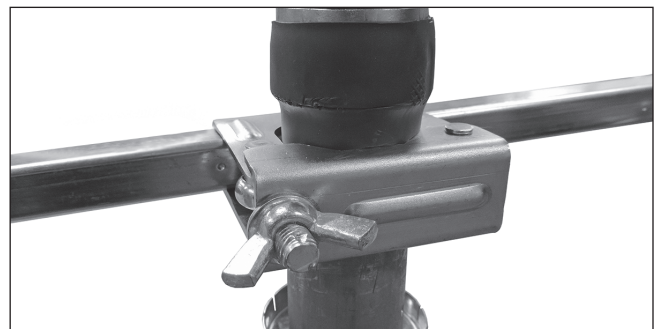
4a. (VB2/VB3) For center-of tile installations, position the center gate assembly between the two reference marks on the square bar, as shown above.



4b. (VB4) For center-of tile installations, position the center bracket assembly between the two reference marks on the square bar, as shown above. Hand-tighten the wing screw to maintain this position.



5a. (VB2/VB3) Close the center gate assembly around the sprinkler reducing nipple. Swing the pivot screw and washer into the slot on the gate. Tighten the wing nut to a torque of 50 inch-lbs/6 N•m (approximately hand-tight, plus 1/2 to 3/4 of a turn), as shown above. **NOTE:** Verify that the washer is seated under the head of the wing nut.





5b. (VB4) Replace the button-head cap screw that was removed in step 3b. Tighten the button-head cap screw to a torque of 15 inch-lbs/6 N•m (approximately 1 to 2 turns past hand tight), as shown to the left.

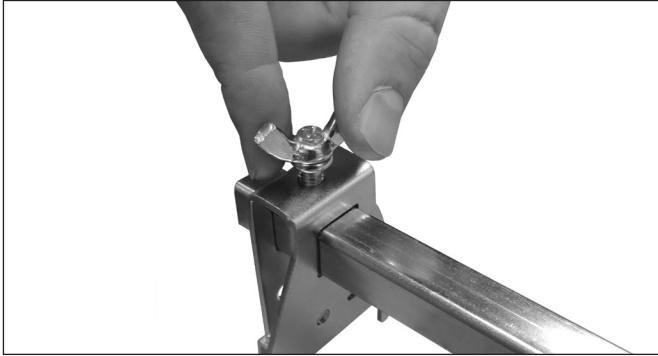


5c. (VB4) Completely tighten the wing screw to a torque of 15 inch-lbs/6 N•m (approximately hand-tight, plus ½ to ¾ of a turn).

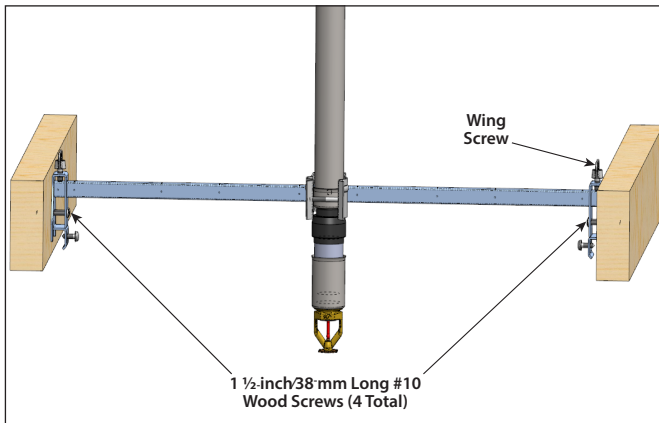


STYLE VB3 AND VB4 BRACKETS – INSTALLATION FOR WOOD JOISTS/STUDS

1. Install the inlet of the Style VS1 Dry Sprinkler into the sprinkler piping, as described in step 1 on page 8.



2. Loosen and remove the wing screw of the Style VB3 or VB4 end bracket assembly. Remove the end bracket assembly from the square bar.
3. Measure the distance between the wood joists/studs.
- 3a. Cut the square bar to the length needed to fit between the two wood joists/studs. This length shall be measured from the outside of the end bracket assembly to the point on the square bar that will butt against the other wood joist/stud.

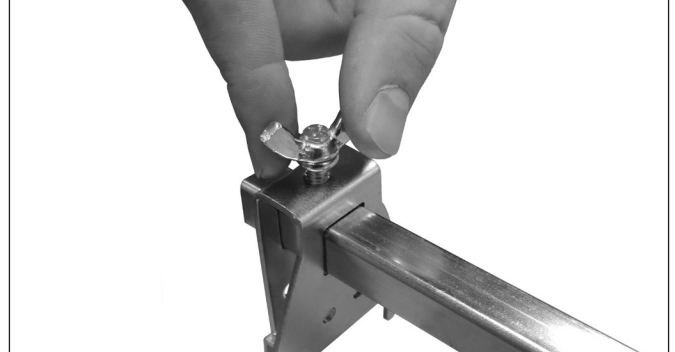


4. Place the end bracket assembly, removed in step 2, onto the end of the square bar so that the square bar is flush with the outside of the end bracket assembly. Reinstall the wing screw loosely into the top of the end bracket assembly.
5. Install the modified Style VB3 or VB4 Bracket between the wood joists/studs by using four, 1½-inch/38-mm long #10 wood screws in the locations noted in the graphic shown above. **NOTE:** Install the top two wood screws first.
6. Tighten the wing screw on top of the end bracket assembly to a torque of 36 inch-lbs/4 N•m (approximately ½ to ¾ of a turn past hand-tight).
7. Perform the applicable steps 3a – 5c on pages 9 – 10 to complete the installation for the Style VB3 or VB4 Bracket.

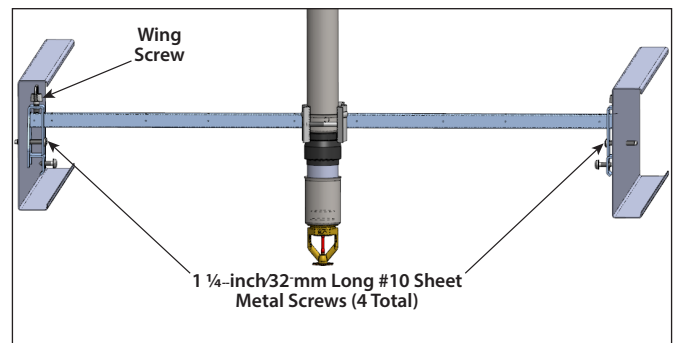
NOTE: End brackets may be secured to the joists in a vertical or horizontal orientation, provided they are secured with four screws.

STYLE VB3 AND VB4 BRACKETS – INSTALLATION FOR ASTM C645 METAL JOISTS/ STUDS INSTALLED IN ACCORDANCE WITH ASTM C754 STANDARDS

1. Install the inlet of the Style VS1 Dry Sprinkler into the sprinkler piping, as described in Step 1 on page 8.



2. Loosen and remove the wing screw of the Style VB3 or VB4 end bracket assembly. Remove the end bracket assembly from the square bar.
3. Measure the distance between the metal joists/studs.
- 3a. Cut the square bar to the length needed to fit between the two metal joists/studs. This length shall be measured from the outside of the end bracket assembly to the point on the square bar that will butt against the other metal joist/stud.



4. Place the end bracket assembly, removed in step 2, onto the end of the square bar so that the square bar is flush with the outside of the end bracket assembly. Reinstall the wing screw loosely into the top of the end bracket assembly.
5. Install the modified Style VB3 or VB4 Bracket between the metal joists/studs by using four, 1¼-inch/32-mm long #10 self-drilling sheet metal screws in the locations noted in the graphic shown above. **NOTE:** Install the top two sheet metal screws first.
6. Tighten the wing screw on top of the end bracket assembly to a torque of 36 inch-lbs/4 N•m (approximately ½ to ¾ of a turn past hand-tight).
7. Perform the applicable steps 3a – 5c on pages 9 – 10 to complete the installation for the Style VB3 or VB4 Bracket.

NOTE: End brackets may be secured to the joists in a vertical or horizontal orientation, provided they are secured with four screws.

Victaulic® VicFlex™ Style VS1 Dry Sprinkler

For complete contact information, visit victaulic.com

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