VicFlex™ Style VS1 Dry Sprinkler
Models V3505, V3506, V3509, V3510, V3517, V3518

10.91

1.0 PRODUCT DESCRIPTION

Style: Pendent, Concealed Pendent, Horizontal Sidewall

K Factor: 5.6/8.1 S.I.
For system design purposes, no equivalent length calculations are required.

Sprinkler Length: 38"/965 mm, 50"/1270 mm, 58"/1475 mm

Nominal Orifice Size: ½"/13 mm

Maximum Working Pressure: 175 psi/1200 kPa

Factory Hydrostatic Test: 100% @ 500 psi/3450 kPa

Minimum Operating Pressure: 7 psi/48 kPa

Connections: To branch line (inlet) via 1"/25 mm NPT or 1" BSPT

Minimum Bend Radius:

- **UL:** 2"/51 mm
- **FM**: 7"/178 mm

Maximum Number of 90° Bends:

- **UL:** 4
- **FM**: 2 bends for 38", 3 bends for 50", 4 bends for 58"

Hazard Classifications: Light and Ordinary Hazard

ALWAYS REFER TO ANY NOTIFICATIONS AT THE END OF THIS DOCUMENT REGARDING PRODUCT INSTALLATION, MAINTENANCE OR SUPPORT.

System No.		Location	
Submitted By		Date	

Spec Section		Paragraph	
Approved		Date	

2.0 CERTIFICATION/LISTINGS

Approvals/Listings	Model								
	V3505	V3505	V3506	V3506	V3509	V3509	V3510	V3517	V3518
Orifice Size (inches)	½"	½"	½"	½"	½"	½"	½"	½"	½"
Orifice Size (mm)	13	13	13	13	13	13	13	13	13
Nominal K Factor Imperial	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
Nominal K Factor S.I.	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1
Response	Standard	Standard	Quick	Quick	Standard	Standard	Quick	Standard	Quick[1]
Deflector Type	Pendent	Recessed	Pendent	Recessed	Hor. SW	Rec. Hor. SW	Hor. SW, Recessed Hor. Sidewall	Conc Pen	Conc Pen
Approved Temperature Ratings	**F°/C°**								
FM	135/57	135/57	135/57	135/57	135/57	135/57	135/57	–	135/57
	155/68	155/68	155/68	155/68	155/68	155/68	155/68	–	155/68
	175/79	175/79	175/79	175/79	175/79	175/79	175/79	–	175/79
	200/93	200/93	200/93	200/93	200/93	200/93	200/93	–	200/93
	286/141	–	–	–	286/141	–	–	–	–
UL	135/57	135/57	135/57	135/57	135/57	135/57	135/57	135/57	135/57
	155/68	155/68	155/68	155/68	155/68	155/68	155/68	155/68	155/68
	175/79	175/79	175/79	175/79	175/79	175/79	175/79	175/79	175/79
	200/93	200/93	200/93	200/93	200/93	200/93	200/93	200/93	200/93
	286/141	286/141	286/141	286/141	286/141	–	286/141	–	–

[1] Model V3518 is a Standard Response FM sprinkler.

3.0 MATERIAL SPECIFICATIONS

Deflector: Brass

Bulb: Glass with glycerin solution

Bulb Nominal Diameter:

☐ **Quick Response:** 3.0 mm

☐ **Standard Response:** 5.0 mm

Split Spacers: Stainless steel

Load Screw: Brass

Pip Cap: Stainless steel

Spring Seal Assembly: Teflon[2] tape coated beryllium nickel and stainless steel

Frame: Brass

Flexible Hose: Stainless steel

Collar/Weld Fitting: Stainless steel

Gasket Seal: Victaulic EPDM

Isolation Ring: Nylon

Hose Fittings: Carbon steel, zinc-plated

Inlet Fitting: Brass

Outer Tube: Stainless steel

Concealed Cup: Carbon steel, zinc-plated

Brackets: Carbon steel, zinc-plated

[2] Teflon is a registered trademark of Dupont Co.

3.1 ACCESSORIES SPECIFICATIONS

Sprinkler Finishes:

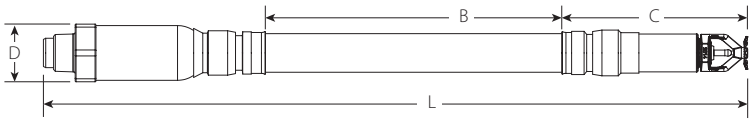
☐ **Standard:** VC-250

☐ White painted RAL 9010

4.0 DIMENSIONS

Product Details and Optional Components

Style VS1 Dry Sprinkler

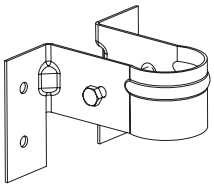


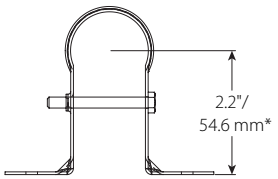
Sprinkler Length inches mm	Overall Length (pendent) L inches mm	Live Length B inches mm	Outlet End Length C inches mm	Maximum OD D inches mm
38 965	39.2 995	25.1 638	6.5 165	2.2 56
50 1270	51.2 1300	37.1 943	6.5 165	2.2 56
58 1475	59.2 1505	45.1 1145	6.5 165	2.2 56

NOTE

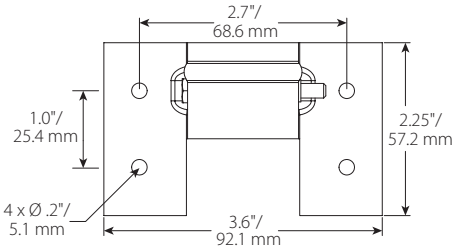
- Add ½" to Overall Length and Outlet End Length for increased length of sidewall deflector

Style VB1 Bracket





*Note: Theoretical center point of sprinkler in bracket.

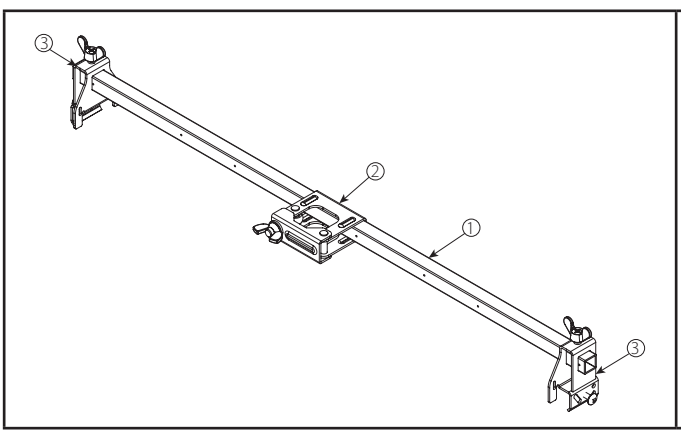


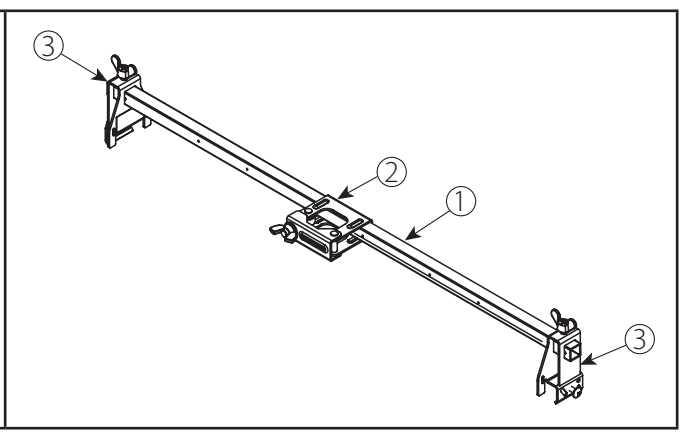
Style VB2 Bracket
Recessed Pendent, Suspended Ceilings

Item	Description
1	24"/610 mm or 48"/1220 mm Square Bar
2	Patented 1-Bee Center Bracket
3	End Bracket

Style VB3 Bracket
Concealed Pendent, Suspended Ceilings

Item	Description
1	24"/610 mm or 48"/1220 mm Square Bar
2	Patented 1-Bee Center Bracket
3	End Bracket





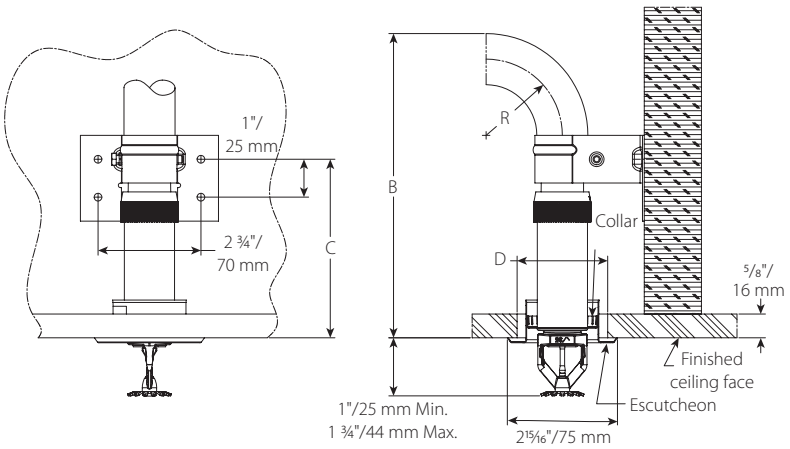
4.1 DIMENSIONS

Sprinkler Finishes: Dimensions and Mounting Conditions:

NOTE

- Drawings are shown with ⅝" finished ceiling thickness. Adjustments to "B" and "C" dimensions will be required if finished ceiling thickness deviate from drawing.

Recessed Pendent:



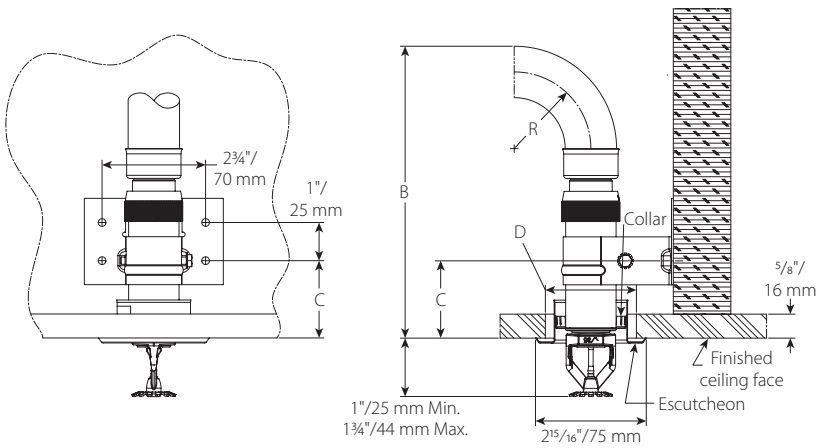
Take-out Chart						
Dimension	inches/mm					
Bend Radius "R"	2/50	3/75	4/100	5/125	6/150	7/175
B	7⅝/193	8⅝/218	9⅝/244	10⅝/269	11⅝/295	12⅝/320
C	4 ¾/119					
Ceiling Hole Diameter "D"	2 – 2⅜"/50 – 60mm					

NOTE

- Dimensions are shown with ¾" escutcheon at middle of height adjustment range.

4.2 DIMENSIONS

Recessed Pendent Alternative Bracket Location:



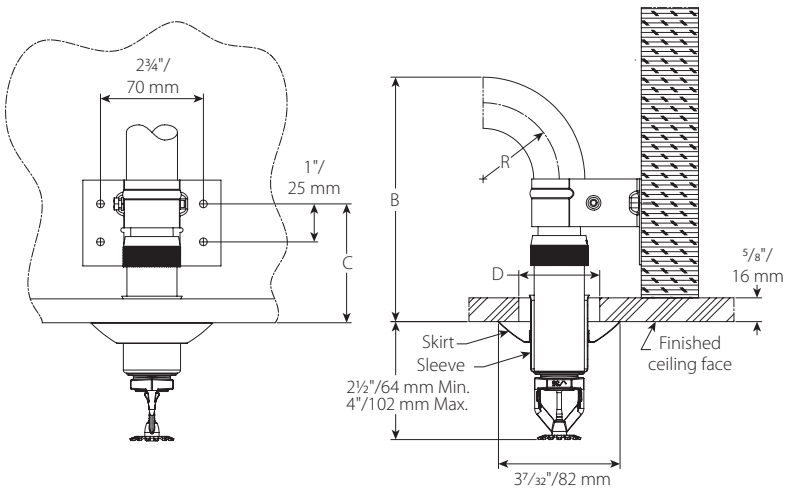
Take-out Chart						
Dimension	inches/mm					
Bend Radius "R"	2/50	3/75	4/100	5/125	6/150	7/175
B	7 3/8/193	8 3/8/218	9 3/8/244	10 3/8/269	11 3/8/295	12 3/8/320
C	2/50					
Ceiling Hole Diameter "D"	2 – 2 3/8/50 – 60					

NOTE

- Dimensions are shown with ¾" escutcheon at middle of height adjustment range.

4.3 DIMENSIONS

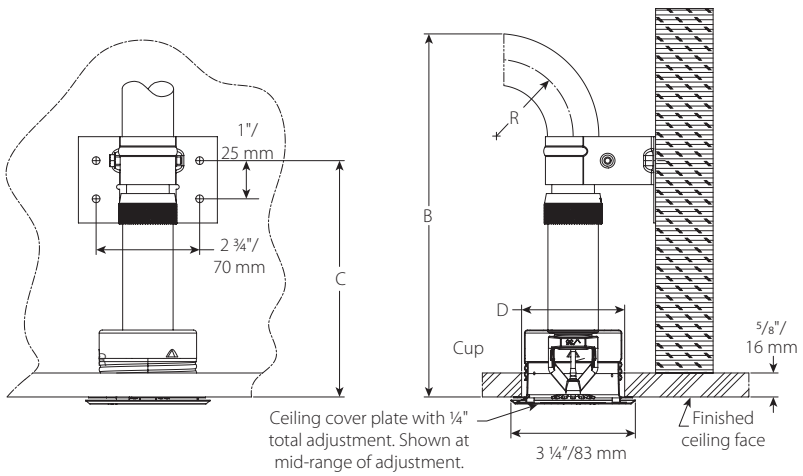
Sleeve and Skirt Pendent:



Hose Clearance Chart						
Dimension	inches/mm					
Bend Radius "R"	2/50	3/75	4/100	5/125	6/150	7/175
B	6 ½/163	7 ½/188	8 ½/213	9 ½/239	10 ½/264	11 ½/290
C	3 ⅛/79					
Ceiling Hole Diameter "D"	1 ¾/44 – 2 ⅛/54					

4.4 DIMENSIONS

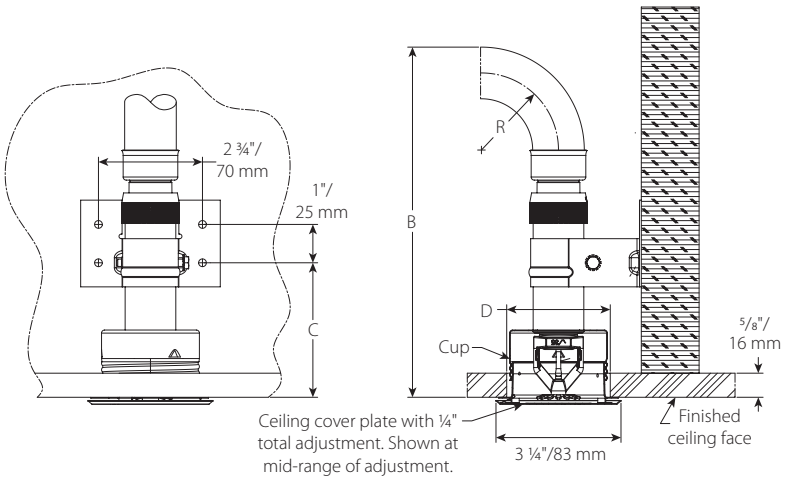
Concealed Pendent:



Hose Clearance Chart						
Dimension	inches/mm					
Minimum Bend Radius "R"	2/50	3/75	4/100	5/125	6/150	7/175
B	9 ½/241	10 ½/267	11 ½/292	12 ½/318	13 ½/343	14 ½/368
C	6 ¼ /157					
Ceiling Hole Diameter "D"	2 ⅝/67 – 2 ¾ /70					

4.5 DIMENSIONS

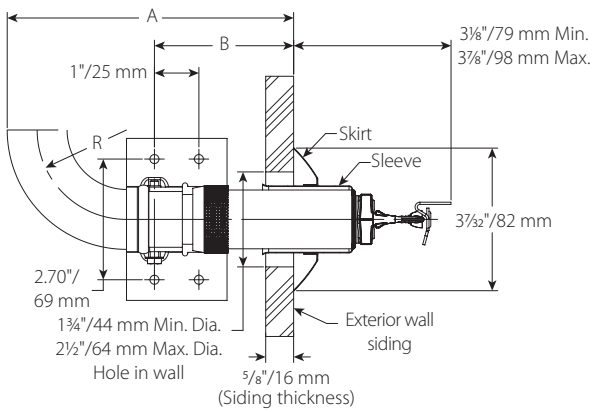
Concealed Pendent Alternative Bracket Location:



Hose Clearance Chart						
Dimension	inches/mm					
Bend Radius "R"	2/50	3/75	4/100	5/125	6/150	7/175
B	9⅛/231	10⅛/257	11⅛/282	12⅛/307	13⅛/333	14⅛/358
C	3½/89					
Ceiling Hole Diameter "D"	2⅝/67 – 2¾/70					

4.6 DIMENSIONS

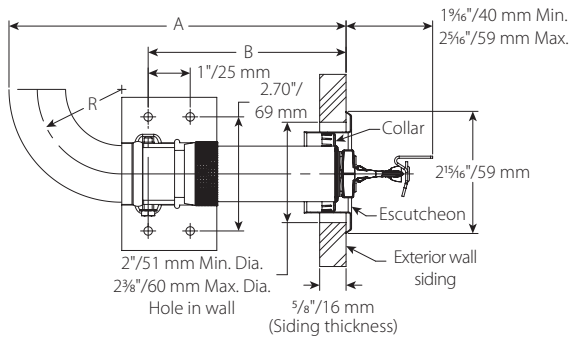
Sleeve and Skirt Sidewall:



Hose Clearance Chart						
Dimension	inches/mm					
Minimum Bend Radius "R"	2/50	3/75	4/100	5/125	6/150	7/175
A	6½/163	7½/188	8½/213	9½/239	10½/264	11½/290
B	3⅛/79					
Ceiling Hole Diameter "D"	1¾/44 – 2⅛/54					

4.7 DIMENSIONS

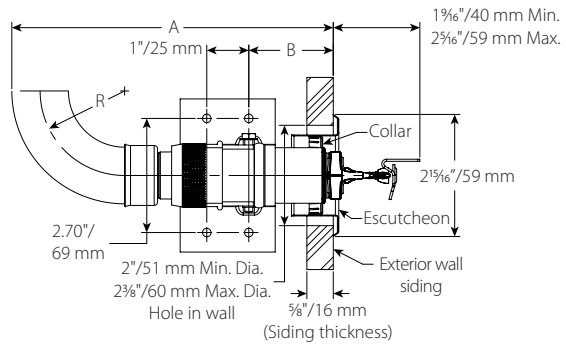
Recessed Sidewall:



Hose Clearance Chart						
Dimension	inches/mm					
Minimum Bend Radius "R"	2/50	3/75	4/100	5/125	6/150	7/175
A	8/203	9/229	10/254	11/279	12/305	13/330
B	4 3⁄4/119					
Ceiling Hole Diameter "D"	2/51 – 2 3⁄8/60					

4.8 DIMENSIONS

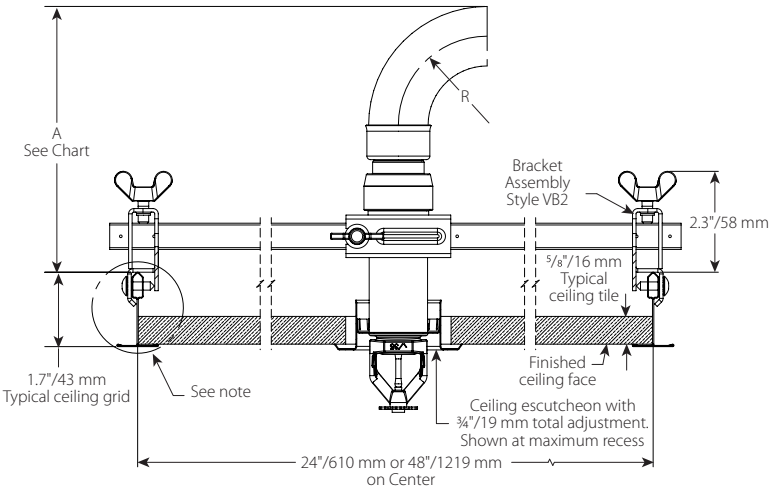
Recessed Sidewall Alternative Bracket Location:



Hose Clearance Chart						
Dimension	inches/mm					
Bend Radius "R"	2/50	3/75	4/100	5/125	6/150	7/175
A	8/203	9/229	10/254	11/279	12/305	13/330
B	2/51					
Ceiling Hole Diameter "D"	2/51 – 2 3⁄8/60					

4.9 DIMENSIONS

VB2 Recessed Pendent:



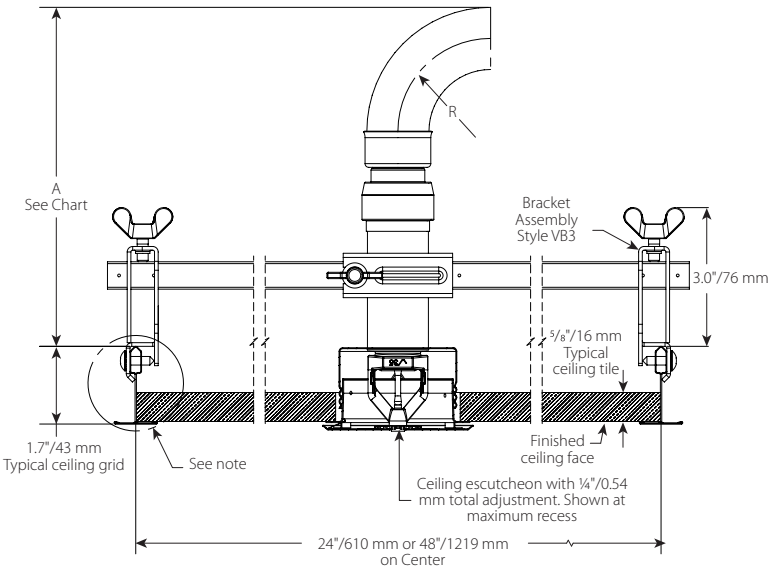
Hose Clearance Chart						
Dimension	inches/mm					
Bend Radius "R"	2/50	3/75	4/100	5/125	6/150	7/175
A	6½/163	7½/188	8½/213	9½/239	10½/264	11½/290

NOTE

- Victaulic *VicFlex* Style VB2 Bracket assemblies shall be used only with Style VS1 recessed pendent sprinklers.

4.10 DIMENSIONS

VB3 Concealed Pendent:



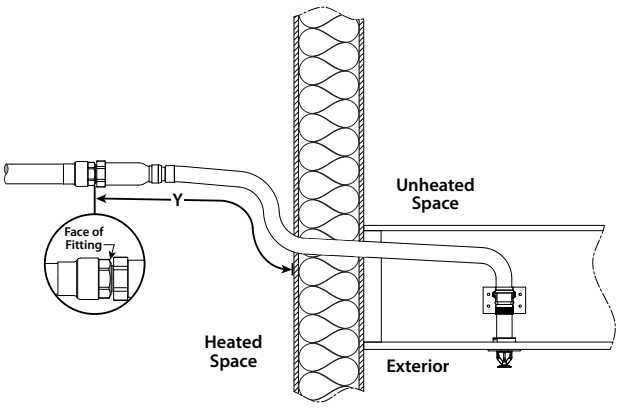
Hose Clearance Chart						
Dimension	inches/mm					
Bend Radius "R"	2/50	3/75	4/100	5/125	6/150	7/175
A	7⅝/193	8⅝/218	9⅝/244	10⅝/269	11⅝/295	12⅝/320

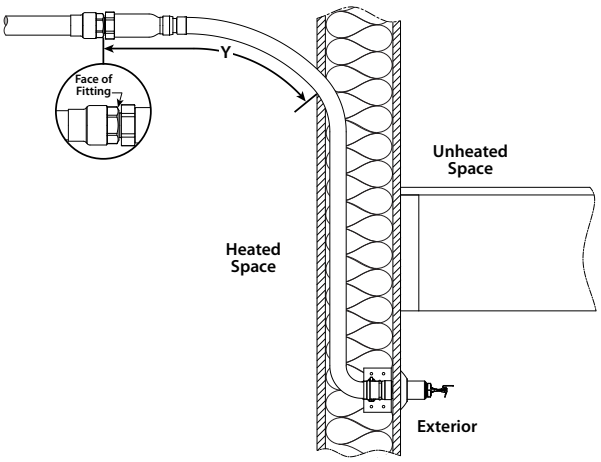
NOTE

- Victaulic *VicFlex* Style VB3 Bracket assemblies shall be used only with Style VS1 concealed pendent sprinklers.

5.0 PERFORMANCE

Freeze Protection





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 4	0 0	0 0	0 0
30 -1	0 0	0 0	0 0
20 -7	4 100	0 0	0 0
10 -12	8 200	1 25	0 0
0 -18	12 300	3 75	0 0
-10 -23	14 350	4 100	1 25
-20 -29	14 350	6 150	3 75
-30 -34	16 400	8 200	4 100
-40 -40	18 450	8 200	4 100
-50 -46	20 500	10 250	6 150
-60 -51	20 500	10 250	6 150

NOTE

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

Maximum Allowable Number of Bends

Sprinkler Length inches mm	Maximum Allowable Number of 90° Bends at 2"/51mm Bend Radius for UL Listing	Maximum Allowable Number of 90° Bends at 7"/178mm Bend Radius for FM Approval
38 965	4	2
50 1270	4	3
58 1475	4	4

6.0 NOTIFICATIONS

⚠ WARNING

- Read and understand all instructions before attempting to install any Victaulic® VicFlex™ products.
- Wear safety glasses, hardhat, and foot protection.
- 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.

⚠ 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.
- Wear safety glasses, hardhat, and foot protection.

Failure to follow these instructions could result in death or serious personal injury and property damage.

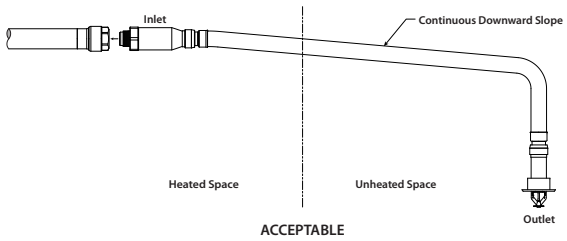
- These products shall be used only in fire protection systems that are designed and installed in accordance with current, applicable National Fire Protection Association (NFPA 13, 13D, 13R, etc.) standards, or equivalent standards, and in accordance with applicable building and fire codes. These standards and codes contain important information regarding protection of systems from freezing temperatures, corrosion, mechanical damage, etc.
- 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 materials 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 materials 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.

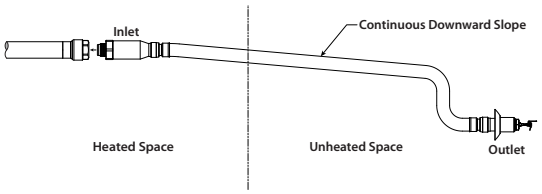
6.0 NOTIFICATIONS (CONTINUED)

Important Installation Notes:

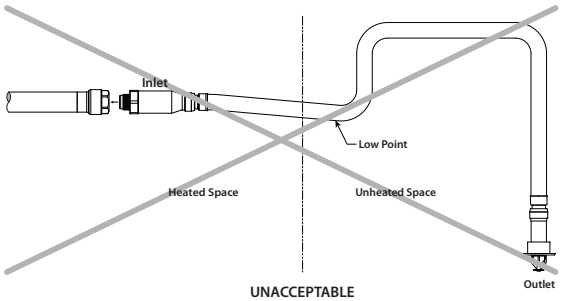
1. Shall be installed only in accordance with NFPA 13 Standard for the the Installation of Sprinkler Systems and applicable FM Data Sheets.
2. Install and tighten swivel hex nut at inlet of sprinkler fitting only.
3. Do not remove deflector or inlet end of sprinkler.



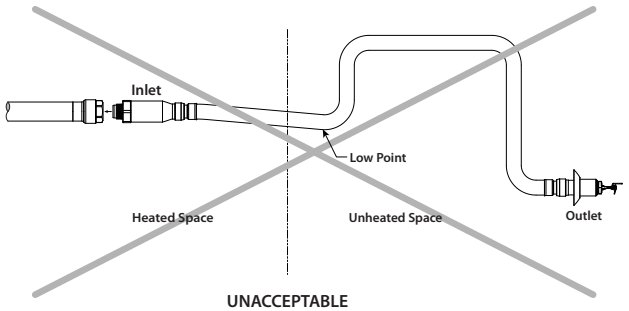
ACCEPTABLE



ACCEPTABLE



UNACCEPTABLE



UNACCEPTABLE

6.0 NOTIFICATIONS (CONTINUED)

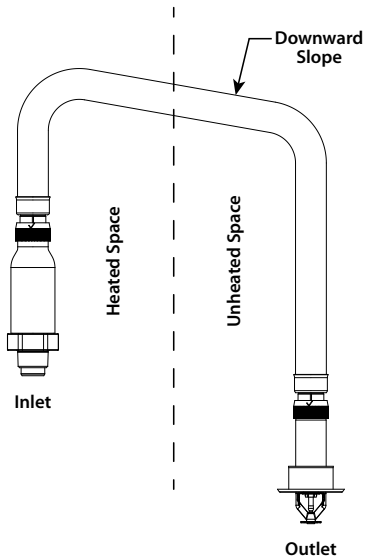
FOR DRY SYSTEMS ONLY:

- 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.



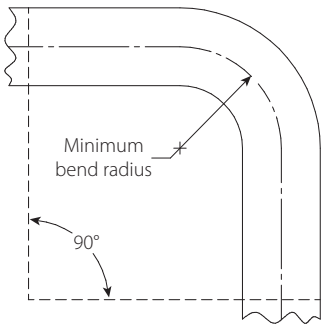
FOR WET SYSTEMS ONLY:

- **DO NOT** install Victaulic® VicFlex™ Style VS1 Dry Sprinklers into any threaded elbow, threaded-by-thread coupling, or fitting that interferes with thread penetration. The inlet of the Victaulic® VicFlex™ 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 Victaulic® VicFlex™ 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.

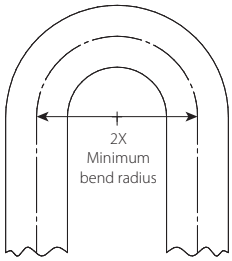
In a heated space, if a portion of the Style VS1 Dry Sprinkler extends into an unheated space, it shall be installed with a continuous downward slope along the entire length from the inside wall to the outlet end of the dry sprinkler. No localized low points shall be present along the length of the sprinkler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

7.0 REFERENCE MATERIALS

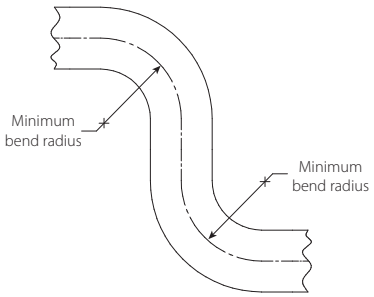
ONE BEND

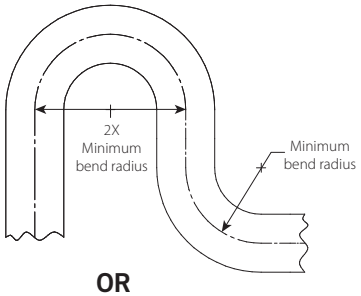


TWO BENDS

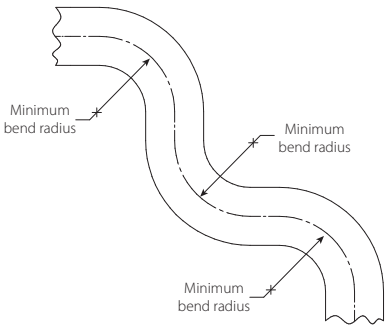


OR





OR



NOTE

- For out-of-plane (three-dimensional) bends, care must be taken to avoid imparting torsional stress on the sprinkler.

29.01: Victaulic Terms and Conditions of Sale

I-VICFLEX.VS1: Victaulic® VicFlex™ Style VS1 Dry Sprinkler Installation Instructions

