



COMPTON COLLEGE – STUDENT HOUSING

Fire Protection Cutsheets



www.p2sinc.com

April 2023
P2S Project #J22-0763

APPROVALS AND SPECIFICATIONS

- ASTM A135, Grade A
- ASTM A795, Type E, Grade A
- Pressure rated to 300 psi
- Underwriters Laboratories—United States of America
- Underwriters Laboratories—Canada
- Factory Mutual
- NFPA-13
- NFPA-13R
- NFPA-14
- CIVIL DEFENSE APPROVAL—United Arab Emirates
- Made in the United States of America
- UL, ULC & FM listed for roll-groove, plain-end and welded joints for wet, dry, preaction and deluge sprinkler systems.
- LEED v4 Certified

FINISHES AND COATINGS

- Schedule 10 & 40 Sprinkler Pipe receives an OD mill coating of water-based paint which has corrosion protection expected with a painted carbon steel product, i.e. it would be expected to resist corrosion for an extended and indefinite period in a clean and dry environment and, as environmental conditions deteriorate, the corrosion protection would also diminish.
- Schedule 10 & 40 Sprinkler Pipe (black) receives an ID mill coating of Eddy Guard II MIC preventative coating. EG2 has been tested at independent laboratories to resist bacterial growth and maintain minimal bacterial count after multiple flushes (25) of the pipe.
- Schedule 10 & 40 Sprinkler Pipe when Hot Dip Galvanized by ASTM A123 and supplied by Bull Moose Tube is UL listed and FM approved.

PRODUCT IDENTIFICATION

- Every length of Bull Moose fire sprinkler pipe features large, easy-to-read, continuous stenciling, clearly identifying the manufacturer, type of pipe, size, and length.

Nominal Pipe Size (inches)		1	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	6"	8"
Schedule 10	O.D. (in)	1.315	1.660	1.900	2.375	2.875	3.500	4.500	6.625	8.625
	I.D. (in)	1.097	1.442	1.682	2.157	2.635	3.260	4.260	6.357	8.249
	Empty Weight (lb/ft)	1.410	1.810	2.090	2.640	3.530	4.340	5.620	9.290	16.940
	Water Filled Weight (lb/ft)	1.800	2.518	3.053	4.223	5.893	7.957	11.796	23.038	40.086
	C.R.R.*	15.27	9.91	7.76	6.27	4.92	3.54	2.50	1.158	1.805
	Pieces per Lift	91	61	61	37	30	19	19	10	7
Schedule 40	O.D. (in)	1.315	1.660	1.900	2.375	2.875	3.500	4.500		
	I.D. (in)	1.049	1.380	1.610	2.067	2.469	3.068	4.026		
	Empty Weight (lb/ft)	1.680	2.270	2.720	3.660	5.800	7.580	10.800		
	Water Filled Weight (lb/ft)	2.055	2.918	3.602	5.114	7.875	10.783	16.316		
	C.R.R.*	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
	Pieces per Lift	70	51	44	30	30	19	19		

*Calculated using Standard UL CRR formula, UL Fire Protection Directory, Category VIZY **Not Eddy Guard II treated/Not produced by BMT

SUBMITTAL INFORMATION



Project

Contractor

Engineer

Specification Reference

Date System Type

Locations

Comments

- Schedule 10 - Black
 Schedule 10 - Hot Dip Galvanized
 Schedule 40 - Black
 Schedule 40 - Hot Dip Galvanized

Welded Outlet Fittings For Fire Protection & Other Low Pressure Piping Systems

SPF Welded Outlet Fittings offer the user a high strength, low cost forged threaded and grooved line of fittings specifically designed and manufactured to be installed on proprietary thin wall flow pipe, Schedule 5, 10, and 40 standard wall pipes.

SPF Welded Outlets are forged steel welding outlet fittings. The material used in manufacture meets the chemical and physical requirements of ASTM A 53. SPF Welded Outlet Fittings employ a low weld volume design to provide either a partial or full penetration weld employing a single pass with minimum burn-through and pipe distortion. Threads comply with ANSI B1.20.1. The SPF Welded Outlets are UL Listed and FM Approved for use conforming to the requirements of NFPA 13. SPF Welded Outlet Fittings are rated for 300 psi when used in fire sprinkler system applications.



For Listings/Approval Details and Limitations, visit our website at www.asc-es.com or contact an ASC Engineered Solutions™ Sales Representative.

SPF Welded Outlet Fittings

Outlet Model	Outlet Pipe Size In.	Header Pipe Size In.	Rated Pressure psig
MTM-40	1/2, 3/4, 1	1/2 - 8 (Sch. 10, 40)	300
	1 1/4, 1 1/2, 2, 2 1/2, 3, 4	1/2 - 4 (Sch. 5, DynaFlow)	
	2	4, 6 (EZ-Flow)	
GR-40	1 - 8	1 1/4 - 8 (Sch. 10, 40)	300
	2 1/2 - 8	2 1/2 - 8 (Sch. 5, DynaFlow)	

1. Size-on size (i.e. 2 x 2) SPF Welded Outlet Fittings are not FM Approved.
2. FM rated working pressure when welded on Sch. 5 or lightwall pipe is 175 psi.
3. Refer to the UL and FM websites for the most current pressure ratings.



PROJECT INFORMATION	APPROVAL STAMP
Project:	Approved
Address:	Approved as noted
Contractor:	Not approved
Engineer:	Remarks:
Submittal Date:	
Notes 1:	
Notes 2:	

Welded Outlet Fittings

SPF Welded Outlets are designed and Manufactured to reduce the amount of weld required to install the Tee-Lets on thin wall or proprietary flow pipe. Typically only one weld-pass completes the installation. SPF Welded Outlets install with less weld volume than any other brand of welding outlet fittings for fire sprinkler applications.

To accomplish this:

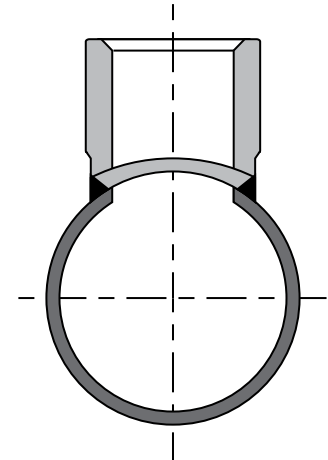
- The contoured end of the fittings employs a reduced outside diameter. Two major advantages are immediately apparent.
- The thinner wall on the contoured end permits welding temperatures to be matched to the thickness of the branch line or main thereby insuring complete penetration without cold welds, weld roll-off, burn-through or excessive distortion.
- On smaller sizes a heavier section is maintained on the threaded end of the fitting. This protects the threads from damage during shipping and handling prior to installation as well as from weld distortion.
- Each outlet size 1½" and larger, whether female threaded, cut grooved or beveled requires the same hole size in the header pipe. This simplifies the installation process.

General Specifications

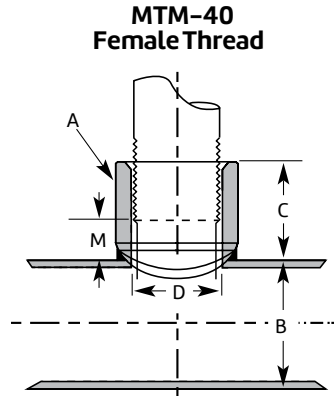
- Welded outlet fittings are manufactured from highly weldable steel which conforms to the chemical and physical requirements of ASTM A-53, Grades A or B, Type E. Ease of installation is assured when automatic welding equipment is used to install SPF Welded Outlets.
- Threads are cut in accordance with the requirements of ANSI B1.20.1, national standard for tapered pipe threads.
- SPF Welded Outlets threaded and grooved welding outlet fittings are UL/ULC Listed and FM Approved for use in the fire sprinkler systems installed in accordance with the requirements of NFPA 13. They are rated for 300 PSI operation in fire sprinkler systems, and higher pressures in other non-critical piping systems.
- SPF Welded Outlets are offered in a wide variety of header sizes. The consolidated header sizes shown in the following charts allow the fittings to be installed on more than one header size, permitting the first size listed to fit the header perfectly, while a small gap along the longitudinal center line of the header will appear for the second size listed.
- SPF Welded Outlets are identified by a lot number that provides full traceability.

For Your Piping Systems Specify SPF Welded Outlets

Branch Outlet Fittings shall be SPF Welded Outlets, Lightweight forged steel, employing low weld volume profile to provide for full penetration welds with minimum burn through and pipe distortion on Schedule 5 thru 10, proprietary thin wall, and standard wall pipe. Threads are to be ANSI B1.20.1 and the bore of the fittings calculated to improve flow. Welding outlets to be UL Listed, FM Approved for use conforming to NFPA 13, and pressure rated for 300 psi maximum.



Welded Outlet Fittings



SPF Welded Outlets – MTM-40

Nominal Outlet A	Nominal Header B	Outlet Length C	Inside Diameter D	Make Up M	Weight Each
In./mm	In./mm	In./mm	In./mm	In./mm	Lbs./kg
1/2 x 13 x	1/4 - 1/2 32 - 40	1.063 27.0	0.700 17.8	0.500 12.7	0.171 0.08
	1/2 - 2 40 - 50	1.063 27.0	0.700 17.8	0.500 12.7	0.171 0.08
	2 - 2 1/2 50 - 65	1.063 27.0	0.700 17.8	0.500 12.7	0.171 0.08
	2 1/2 - 8 65 - 200	1.063 27.0	0.700 17.8	0.500 12.7	0.169 0.08
	1/4 - 1/2 32 - 40	1.125 28.6	0.900 22.9	0.500 12.7	0.260 0.12
3/4 x 19 x	1/2 - 2 40 - 50	1.125 28.6	0.900 22.9	0.500 12.7	0.260 0.12
	2 - 2 1/2 50 - 65	1.125 28.6	0.900 22.9	0.500 12.7	0.260 0.12
	2 1/2 - 8 65 - 200	1.125 28.6	0.900 22.9	0.500 12.7	0.256 0.12
	1/4 - 1/2 32 - 40	1.250 31.8	1.145 29.1	0.500 12.7	0.331 0.15
	1/2 - 2 40 - 50	1.250 31.8	1.145 29.1	0.500 12.7	0.331 0.15
1 x 25 x	2 - 2 1/2 50 - 65	1.250 31.8	1.145 29.1	0.500 12.7	0.320 0.15
	2 1/2 - 3 65 - 80	1.250 31.8	1.145 29.1	0.500 12.7	0.314 0.14
	3 - 4 80 - 100	1.250 31.8	1.145 29.1	0.500 12.7	0.309 0.14
	5 - 8 125 - 200	1.250 31.8	1.145 29.1	0.500 12.7	0.291 0.13
	1/4 - 1/2 32 - 40	1.375 34.9	1.490 37.8	0.500 12.7	0.432 0.19
1 1/4 x 32 x	1/2 - 2 40 - 50	1.375 34.9	1.490 37.8	0.500 12.7	0.421 0.19
	2 - 2 1/2 50 - 65	1.375 34.9	1.490 37.8	0.500 12.7	0.421 0.19
	2 1/2 - 3 65 - 80	1.375 34.9	1.490 37.8	0.500 12.7	0.411 0.19
	3 - 4 80 - 100	1.375 34.9	1.490 37.8	0.500 12.7	0.389 0.18
	5 - 8 125 - 200	1.375 34.9	1.490 37.8	0.500 12.7	0.389 0.18

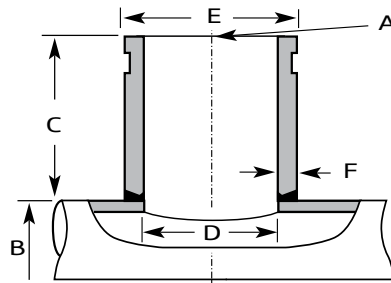
SPF Welded Outlets – MTM-40

Nominal Outlet A	Nominal Header B	Outlet Length C	Inside Diameter D	Make Up M	Weight Each
In./mm	In./mm	In./mm	In./mm	In./mm	Lbs./kg
1 1/2 x 40 x	1/2 40	1.625 41.3	1.610 40.9	0.875 22.2	0.477 .022
	2 50	1.625 41.3	1.610 40.9	0.875 22.2	0.477 .022
	2 1/2 65	1.625 41.3	1.610 40.9	0.875 22.2	0.477 .022
	3 - 4 80 - 100	1.625 41.3	1.610 40.9	0.875 22.2	0.477 .022
	4 100	1.625 41.3	1.610 40.9	0.875 22.2	0.477 .022
2 x 50 x	5 - 8 125 - 200	1.625 41.3	1.610 40.9	0.875 22.2	0.477 .022
	2 50	1.750 44.5	2.067 52.5	0.875 22.2	0.857 0.38
	2 1/2 65	1.750 44.5	2.067 52.5	0.875 22.2	0.829 0.38
	3 80	1.750 44.5	2.067 52.5	0.875 22.2	0.829 0.39
	4 100	1.750 44.5	2.067 52.5	0.875 22.2	0.800 0.36
2 x 50 x	6 150	1.750 44.5	2.067 52.5	0.875 22.2	0.743 0.34
	8 200	1.750 44.5	2.067 52.5	0.875 22.2	0.743 0.34

Note: For Listings/Approval Details and Limitations, visit our website at www.asc-es.com or contact an ASC Engineered Solutions™ Sales Representative.

Welded Outlet Fittings

**GR-40
Cut Groove
Standard Weight**



SPF Welded Outlets – GR-40 (Nominal Sizes 1/4" thru 8")

Nominal Outlet A	Nominal Header B	Outlet Length C	Inside Diameter D	Outside Diameter E	Wall Thickness F
1/4 x 32 x	1/4 32	3 80	1.368 34.7	1.660 42.2	0.140 3.6
	1/2 40	3 80	1.368 34.7	1.660 42.2	0.140 3.6
	2 - 2 1/2 50 - 65	3 80	1.368 34.7	1.660 42.2	0.140 3.6
	3 - 4 80 - 100	3 80	1.368 34.7	1.660 42.2	0.140 3.6
	5 - 8 125 - 200	3 80	1.368 34.7	1.660 42.2	0.140 3.6
1/2 x 40 x	1/2 40	3 80	1.610 40.9	1.900 48.3	0.145 3.7
	2 50	3 80	1.610 40.9	1.900 48.3	0.145 3.7
	2 1/2 65	3 80	1.610 40.9	1.900 48.3	0.145 3.7
	3 - 4 80 - 100	3 80	1.610 40.9	1.900 48.3	0.145 3.7
	5 - 8 125 - 200	3 80	1.610 40.9	1.900 48.3	0.145 3.7
2 x 50 x	2 50	3 80	2.067 52.5	2.375 60.3	0.154 3.9
	2 1/2 65	3 80	2.067 52.5	2.375 60.3	0.154 3.9
	3 80	3 80	2.067 52.5	2.375 60.3	0.154 3.9
	4 100	3 80	2.067 52.5	2.375 60.3	0.154 3.9
	6 150	3 80	2.067 52.5	2.375 60.3	0.154 3.9
8 200	3 80	2.067 52.5	2.375 60.3	0.154 3.9	

SPF Welded Outlets – GR-40 (Nominal Sizes 1/4" thru 8")

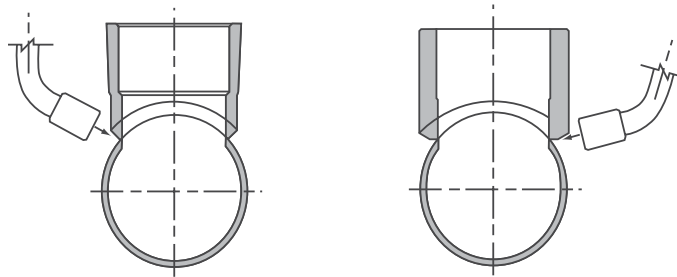
Nominal Outlet A	Nominal Header B	Outlet Length C	Inside Diameter - D		Outside Diameter E	Wall Thickness - F	
			Standard Weight	Schedule 10		Standard Weight	Schedule 10
In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm
2 1/2 x 65 x	2 1/2 65	3 80	2.469 62.7	2.635 67.0	2.875 76.2	0.203 5.0	0.120 3.0
	4 100	3 80	2.469 62.7	2.635 67.0	2.875 76.2	0.203 5.0	0.120 3.0
	6 175	3 80	2.469 62.7	2.635 67.0	2.875 76.2	0.203 5.0	0.120 3.0
	8 200	3 80	2.469 62.7	2.635 67.0	2.875 76.2	0.203 5.0	0.120 3.0
	3 80	3 80	3.068 78.0	3.260 83.0	3.500 88.0	0.216 5.0	0.120 3.0
3 x 80 x	4 100	3 80	3.068 78.0	3.260 83.0	3.500 88.0	0.216 5.0	0.120 3.0
	6 150	3 80	3.068 78.0	3.260 83.0	3.500 88.0	0.216 5.0	0.120 3.0
	8 200	3 80	3.068 78.0	3.260 83.0	3.500 88.0	0.216 5.0	0.120 3.0
	4 100	4 100	4.026 102.0	4.260 108.0	4.500 114.0	0.237 6.0	0.120 3.0
	6 150	4 100	4.026 102.0	4.260 108.0	4.500 114.0	0.237 6.0	0.120 3.0
4 x 100 x	8 200	4 100	4.026 102.0	4.260 108.0	4.500 114.0	0.237 6.0	0.120 3.0
	6 150	4 100	6.065 155.0	6.357 161.5	6.625 168.3	0.280 7.1	0.134 3.0
	8 200	4 100	6.065 155.0	6.357 161.5	6.625 168.3	0.280 7.1	0.134 3.0
	8 x 200 x	8 200	7.981 203.0	8.329 212.0	8.625 213.0	0.322 8.0	0.148 3.0

Note: Welded Outlets are manufactured to fit size-on-size, that is the contoured shape on a given Welded Outlet is made to fit perfectly on the first listed header size. If installed on the second header size marked on the fitting, a slight gap of approximately 1/32" will appear along the longitudinal centerline of the header. For example, a 1" x 2 - 2 1/2" Welded Outlet, is a 1" outlet fitting manufactured to fit perfectly on the 2" header size listed, while leaving a 1/32" gap along the longitudinal centerline of the 2 1/2" size. If a perfect fit is required for a 2 1/2" header pipe, then a 1" x 2 1/2 - 3" Welded Outlet would be ordered. Size consolidations are employed to reduce inventory and provide for greater flexibility. (Additional larger sizes on next page.)

Welded Outlet Fittings

Threading Practice

SPF Welded Outlets thread form is consistent with Aeronautical National Form (ANPT) AS71051. The thread is fully formed over both the L-1 hand tight and L-3 wrench tight threads. NPT tapered threads are typically gauged only over the L-1 threads. This makes SPF Welded Outlets more forgiving of field cut threaded pipe that may only marginally conform to the specification. Fewer leaks translate into lower costs.

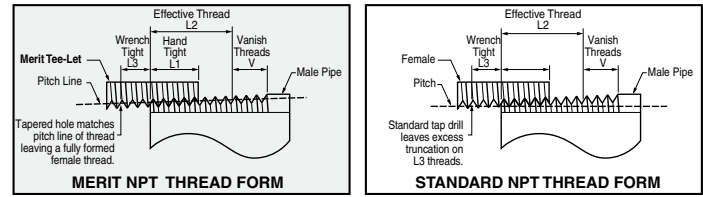


Ease of Installation

SPF Welded Outlets are designed to sit higher on the pipe, thereby requiring less weld and eliminating burn through. SPF Welded Outlets sit higher on the header or branch line pipe than competitive fittings. This allows the welding torch to remain in an optimum position for welding. In addition, 1/2" and larger female threaded and grooved welded outlets require the same hole size for installation. This results in fewer change overs when installed using automatic welders.

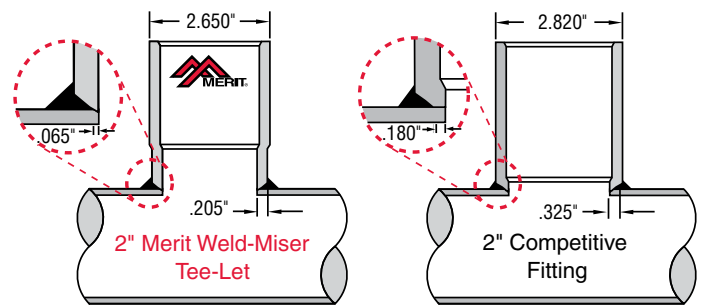
Welding Practice

When measured with respect to linear inches of weld required for installation, SPF Welded Outlets require up to 15% less weld than competitive fittings. This reduces time and savings over time are substantial. The diameter of the contoured end of Welded Outlet has been reduced so that the wall thickness more nearly matches the header or branch line pipe wall thickness. Therefore, current and voltage settings required for welding are set to provide for adequate penetration without burn through and cold shutting. Also, weld volume required for installation is lower for SPF Welded Outlets than most other fittings. Typically, SPF Welded Outlets require one-weld pass for attachment.



NPT Tapered Pipe Threads

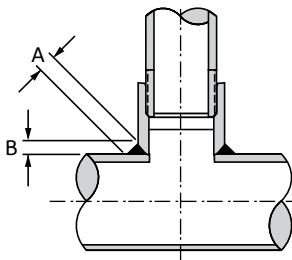
Drop Nipple or Tee-Let Outlet Size	L1 Hand Tight	L3 Wrench Tight	Total L1 - L3 Length	L2 Effective Threads
1/2	0.320	4.48	0.214	3.00
15	8.1	4.48	5.4	3.00
3/4	0.339	4.75	0.214	3.00
20	8.6	4.75	5.4	3.00
1	0.400	4.60	0.261	3.00
25	10.2	4.60	6.6	3.00
1/4	0.420	4.83	0.261	3.00
32	10.7	4.83	6.6	3.00
1 1/2	0.420	4.83	0.261	3.00
40	10.7	4.83	6.6	3.00
2	0.436	5.01	0.261	3.00
50	11.1	5.01	6.6	3.00
2 1/2	0.682	5.46	0.250	2.00
65	17.3	5.46	6.4	2.00
3	0.766	6.13	0.250	2.00
80	19.5	6.13	6.4	2.00
4	0.844	6.75	0.250	2.00
100	21.4	6.75	6.4	2.00



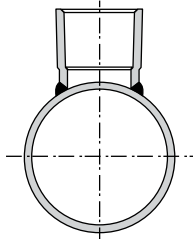
Welding Practice

Outlet Size	SPF Welded Outlets				Competitive Fitting			
	Weld Volume*		Linear Welding		Weld Volume*		Linear Welding	
In. (mm)	Cross Sec. Area	%less	In.(mm)	%less	Cross Sec. Area	%more	In.(mm)	%less
1"	0.051 sq. in.	12%	2.48	0%	0.058 sq. in.	12%	2.48	0%
25	32.9 sq mm		62.9		37.4 sq mm		62.9	
1/4"	0.032"	48%	2.88	4%	0.063	48%	3.01	4%
32	20.6		73.1		40.6		76.4	
1 1/2"	0.036"	40%	3.12	10%	0.060	40%	3.46	10%
40	23.2		79.2		38.7		87.8	
2"	0.040"	62%	3.77	15%	0.106	62%	4.41	15%
50	25.8		95.7		68.3		112.0	

Welded Outlet Fittings



1/2, 3/4 & 1 Outlet



1/4 - 2 Outlet

Recommended Installation Procedures

SPF Welded Outlet Fittings are designed and manufactured to reduce the cost of installation from both the standpoint of labor required and energy consumed. In addition, by following the recommended installation procedures, many of the problems associated with installing welding outlet fittings on standard weight or light weight pipe are eliminated, including burn through and excessive shrinkage resulting in pipe distortion.

Recommended Hole Sizes

The hole cut in the branch or header pipe can be cut prior or subsequent to attachment of the Welded Outlets. One advantage of cutting the hole after welding is that the pipe is left intact during welding, thereby, reducing shrinkage and possible distortion. If holes are cut prior to welding, as some codes require, then the following hole sizes are recommended.

Recommended Welding Procedures

SPF Welded Outlet Fittings are designed to be installed on standard weight or light weight pipe with one weld pass on sizes through 4". Moreover, the wall thickness at the weld end of the fitting approximately matches standard weight pipe.

Accordingly, heat settings can be made to optimize penetration on both the fitting and the pipe which it is being welded. Aside from reducing the likelihood of burn through and distortion resulting from excessive heat, the amount of weld required for adequate penetration is significantly reduced.

As a general rule, the weld should be only as hot as required to allow the weld to penetrate the materials being welded while concomitantly allowing gases developed in the welding process to escape. Every effort must be made to avoid welding too hot or overheating both the pipe and the Welded Outlets. Excessive heat may cause the wrench tight threads (those in the bottom of the Welded Outlets near the weld zone) to distort while also causing the branch pipe to bend. It should be noted that SPF Welded Outlet Fittings have been subjected to exhaustive testing and evaluation, and only negligibly distort when subjected to excessive heat. The threads, on the other hand, may not return to their gauged form after cooling if excessive heat causes them to expand. The following is intended only as a guide, and assumes that the welding equipment is properly calibrated and functioning normally and the operator is qualified.

Note: Please refer to www.asc-es.com or latest catalog for recommended hole size and welding practice.

Recommended Amount of Weld

Outlet Size	A	B
In./mm	In./mm	In./mm
1	1/4	3/16
25	7	5
1 1/4	1/4	3/16
31	7	5
1 1/2	5/16	1/4
38	8	7
2	5/16	1/4
50	8	7
2 1/2	5/16	1/4
63	8	7
3	3/8	5/16
75	10	8
4	3/8	5/16
100	10	8

Recommended Outlet Hole Sizes

Welded Outlet Size	Type	Recommended Hole Size
In./mm		In./mm
1/2	MTM-40	5/8
13		16
3/4	MTM-40	7/8
19		22
1	MTM-40	1 1/8
25		28
1 1/4	MTM-40	1 1/2
31		38
1 1/4	GR-40	1 3/8
31		35
1 1/2	MTM-40 or GR-40	1 5/8
38		41
2	MTM-40 or GR-40	2
50		50
2 1/2	GR-40	2 7/16
63		61
3	GR-40	3
75		75
4	GR-40	4
100		100

Note: Holes may be cut employing mechanical means – including hole sawing, mechanical flame cutting (oxy-acetylene or propane), and air plasma cutting (constricted tungsten arc) machines. Anvil offers a simple approach to cutting the hole. Hand-held templates are sized to match your plasma cutter.

Welded Outlet Fittings

Recommended Settings For Microwire Welding Process

Header Size	Pipe Wall Thickness	Welded Outlet MTM-40 & GR-40	Electrode Size	Welding Current	Arc. Volts	Wire Feed	Travel Speed
In./mm	In./mm	In./mm		AMPS-DC	POS.	IPM	IPM
1¼ - 2 31-50	0.065 2	½ - 2	0.035	100-130	16-20	210	25-30
		13-50					
		2½ - 4 63-100	0.035	115-150	17-21	270	20-25
	0.109 3	½ - 2	0.035	110-140	18-22	220	25-30
		13-50					
		2½ - 4 63-100	0.035	120-160	19-22	290	20-25
2½ - 4 63-100	0.083 2.5	½ - 2	0.035	110-140	17-20	210	20-25
		13-50					
		2½ - 4 63-100	0.035	120-150	17-20	270	20-25
	0.120 3	½ - 2	0.035	120-160	19-22	290	20-25
		13-50					
		2½ - 4 63-100	0.035	130-160	19-22	240	20-25
5-6 125-150	0.109 3	½ - 2	0.035	120-150	17-20	210	20-25
		13-50					
		2½ - 4 63-100	0.035	130-150	18-20	270	15-20
	0.134 3.5	½ - 2	0.035	130-160	19-22	290	20-25
		13-50					
		2½ - 4 63-100	0.045	180-205	20-24	245	27-32
8 200	0.109 3	½ - 2	0.035	120-150	17-20	240	20-25
		13-50					
		2½ - 4 63-100	0.035	130-150	18-20	260	15-20
	0.148 3.5	2½ - 4 63-100	0.045	170-220	18-22	290	12-18
		½ - 2	0.035	130-160	19-22	240	20-25
		13-50					
2½ - 4 63-100	0.035	140-160	20-22	260	15-20		
	0.045	180-225	20-24	290	12-18		

Note:

Shielding Gas Flow (For all Sizes) 20-25 CFH

1) CO₂ - Deeper penetration, faster welding, low cost.

2) 25% - Argon, 75% - CO₂, Recommended for .134 wall and lighter, high welding speeds without melt through, minimum distortion and spatter, good penetration.

ASC Engineered Solutions™ assumes no liability for any consequential damages resulting from the improper use of its Welded Outlet Fittings, nor for any recommendations made with respect to installation procedures.

PERSONALIZED HYDRAULIC SYSTEM SIGNS



HYDRAULIC - SYSTEM	
This building is protected by a Hydraulically Designed Automatic Sprinkler System	
Location	<input type="text"/>
No. of Sprinklers	<input type="text"/>
Basis of Design	
1. DENSITY	<input type="text"/> GPM/SQ. FT.
2. DESIGNED AREA OF DISCHARGE	<input type="text"/> SQ. FT.
System Demand	
1. GPM DISCHARGE	<input type="text"/> GPM
2. RESIDUAL PRESSURE AT THE BASE OF THE RISER	<input type="text"/> PSI
<input type="text"/>	

5" x 7" White Aluminum Signs with Red Lettering. .040 thickness material with holes in 4 corners. Personalized with your company logo and contact information. Seven styles available.

Once you place your order, email your company logo and any additional information to our art department, you will receive a proof and once you approve, your signs will be printed.

Available in aluminum vinyl, or silver embossible foil.

A. (STANDARD)

HYDRAULIC - SYSTEM	
This building is protected by a Hydraulically Designed Automatic Sprinkler System	
Date Installed	<input type="text"/> Month <input type="text"/> Day <input type="text"/> Year
Location	<input type="text"/>
No. of Sprinklers	<input type="text"/>
Basis of Design	
1. Density	<input type="text"/> GPM/SQ. FT.
2. Designed area of discharge	<input type="text"/> SQ. FT.
System Demand	
1. Water flow rate	<input type="text"/> GPM
2. Residual pressure at the base of the riser	<input type="text"/> PSI
Installed by:	
<input type="text"/>	

B.

HYDRAULIC SYSTEM	
This building is protected by a Hydraulically Designed Automatic Sprinkler System	
DATE	<input type="text"/> MO/YR
Location	<input type="text"/>
Basis of Design	
1. DENSITY	<input type="text"/> GPM/SQ. FT.
2. DESIGNED AREA OF DISCHARGE	<input type="text"/>
System Demand	
1. GPM DISCHARGE	<input type="text"/> GPM
2. RESIDUAL PRESSURE AT THE BASE OF THE RISER	<input type="text"/> PSI
3. HOSE STREAM ALLOWANCE	<input type="text"/> GPM
OCCUPANCY CLASSIFICATION	<input type="text"/>
COMMODITY CLASSIFICATION	<input type="text"/>
MAXIMUM STORAGE HEIGHT	<input type="text"/>
<input type="text"/>	

C.

HYDRAULIC SYSTEM	
This building is protected by a Hydraulically Designed Automatic Sprinkler System	
Location	<input type="text"/>
No. of Sprinklers	<input type="text"/>
Basis of Design	
1. DENSITY	<input type="text"/> GPM/SQ. FT.
2. DESIGNED AREA OF DISCHARGE	<input type="text"/> SQ. FT.
System Demand	
1. GPM DISCHARGE	<input type="text"/> GPM
2. RESIDUAL PRESSURE AT THE BASE OF THE RISER	<input type="text"/> PSI
3. HOSE STREAM ALLOWANCE	<input type="text"/> GPM
4. OCCUPANCY CLASSIFICATION	<input type="text"/>
5. COMMODITY CLASSIFICATION	<input type="text"/>
6. MAXIMUM STORAGE HEIGHT	<input type="text"/>
<input type="text"/>	

D.

HYDRAULIC SYSTEM	
This building is protected by a Hydraulically Designed Automatic Sprinkler System	
Date Installed	<input type="text"/> Month <input type="text"/> Day <input type="text"/> Year
Location	<input type="text"/>
Design Basis	
1. Density	<input type="text"/> GPM/SQ. FT.
2. Area	<input type="text"/> SQ. FT.
3. No. of Sprinklers	<input type="text"/>
4. Classification	<input type="text"/>
5. Max storage height	<input type="text"/> FT.
Demand	
1. Water flow rate	<input type="text"/> GPM
2. Residual pressure at the base of the riser	<input type="text"/> PSI
3. Hose Stream allowance	<input type="text"/> GPM
<input type="text"/>	

E.

HYDRAULIC SYSTEM	
This system as shown on print no. <input type="text"/>	
dated <input type="text"/> for <input type="text"/>	
at <input type="text"/> contract no. <input type="text"/>	
Is designed to discharge at a rate of <input type="text"/> gpm(L/min)	
of floor area over a maximum area of <input type="text"/> ft ² (m ²)	
when supplied with water at a rate of <input type="text"/> gpm(L/min)	
at the base of the riser.	
Hose stream allowance of <input type="text"/> gpm(L/min)	
is included above.	
Occupancy classification	<input type="text"/>
Commodity classification	<input type="text"/>
Maximum storage height	<input type="text"/>
<input type="text"/>	

F.

Hydraulically Calculated System	
This system as shown on <input type="text"/>	
company print no <input type="text"/> dated <input type="text"/>	
for <input type="text"/>	
at <input type="text"/> cont. no <input type="text"/>	
is designed to discharge at a rate of <input type="text"/> gpm	
(L/min per sq ft (m ²) of floor area over a maximum area of	
<input type="text"/> sq ft (m ²) when supplied	
with water at the rate of <input type="text"/> gpm (L/min)	
at <input type="text"/> psi (bars) at the base of the riser.	
Hose stream allowance of <input type="text"/> gpm (L/min)	
Is Included in the above.	
Occupancy classification	<input type="text"/>
Commodity classification	<input type="text"/>
Maximum storage height	<input type="text"/>
Installed by: <input type="text"/>	

G.

Pressure Gauges

Application: Fluid medium which does not clog connection port or corrode copper alloy. Specifically designed for the fire sprinkler industry.

Sizes (All sizes not stocked)
4" (100 mm)

Accuracy
± 3/2/3% of span - 1½" (ASME B40.1 Grade B)

Working Range
Steady: 3/4 of full scale value
Fluctuating: 2/3 of full scale value
Short time: full scale value

Operating Temperature
Ambient: -40°F to 140°F (-40°C to 60°C)
Media: max. 140°F (+60°C)

Temperature Error
Additional error when temperature changes from reference temperature of 68°F (20°C) +0.4% for every 18° F (10°C) rising or falling. Percentage of span.

Standard Features

Connection
Material: copper alloy
Lower mount (LM) - not available for 1½" size
1/4" NPT limited to wrench flat area

Bourdon Tube
Material: copper alloy
C-type

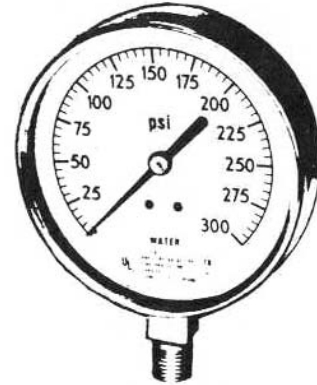
Movement
Copper alloy, silicone dampened

Dial
White plastic with stop pin - black & red lettering

Pointer
Black aluminum

Case
Black polycarbonate

Sprinkler Gauges UL Listed/FM Approved Plastic Case



Approvals
UL listed (UL-393)
FM approved

Standard Scale
PSI

Window
Acrylic, ultrasonically welded to case

Standard Series • Type 110.10sp

Order Options
water: 0-300 psi (65-10-161)
air/water: 0-300 psi (65-10-160)
air: 0-300 psi (65-10-163)

made in USA

6" x 2"

ALUMINUM SPRINKLER IDENTIFICATION SIGNS

All signs .020 Aluminum - Available as generic signs or personalized

AIR CONTROL 50-10-010	COMBINATION STANDPIPE 50-10-088	FIRE DEPARTMENT CONNECTION 50-10-189	IN THIS BUILDING 50-10-250	OPEN SPRINKLER CONTROL 50-10-300	TEST & DRAIN 50-10-355
AIR LINE 50-10-020	CONTROL VALVE 50-10-100	FIRE SPRINKLER ALARM 50-10-220	IN THIS SECTION 50-10-260	OPEN SPRINKLER DRAIN 50-10-310	TEST VALVE 50-10-380
ALARM LINE 50-10-030	DO NOT CLOSE 50-10-129	FIRE SPRINKLER PIPE 50-10-221	LOW POINT DRAIN 50-10-275	OPEN VALVE 50-10-312	WATER MOTOR LINE 50-10-390
ALARM TEST 50-10-040	DRAIN 50-10-130	FIRE SPRINKLER CONTROL VALVE 50-10-224	MAIN CONTROL 50-10-280	SPRINKLER 50-10-317	WET STANDPIPE 50-10-400
ANTI-FREEZE SYSTEM 50-10-045	DRAIN VALVE 50-10-140	FIRE SPRINKLER VALVE 50-10-225	MAIN DRAIN 50-10-290	SPRINKLER VALVE ROOM 50-10-340	WET STANDPIPE SHUTOFF 50-10-420
AUTOMATIC SPRINKLER SHUTOFF 50-10-050	DRY STANDPIPE 50-10-150	FIRE SPRINKLER RISER INSIDE 50-10-228	NORMALLY CLOSED 50-10-293	STANDPIPE SYSTEM 50-10-350	
AUXILIARY DRAIN 50-10-070	ENTIRE SYSTEM 50-10-160	INSPECTORS TEST 50-10-270	OPEN SPRINKLER 50-10-297		

Many other generic signs in stock. Call for details.

The information contained herein is produced in good faith and is believed to be reliable but is for guidance only. ARGCO and its agents cannot assume liability or responsibility for results obtained in the use of its product by persons whose methods are outside or beyond our control. It is the user's responsibility to determine the suitability of any of the products, methods of use, or preparation prior to use, mentioned in our literature. It is the user's responsibility to observe and adapt such precautions as may be advisable for the protection of personnel and property in the handling and use of any of our products.

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OR LOG ONTO WWW.ARGCO.COM**

data sheet

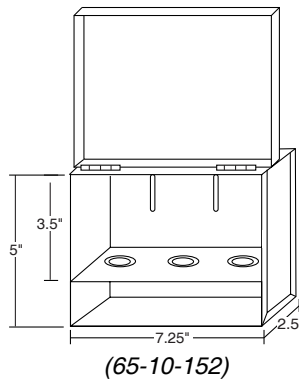
ARGCO



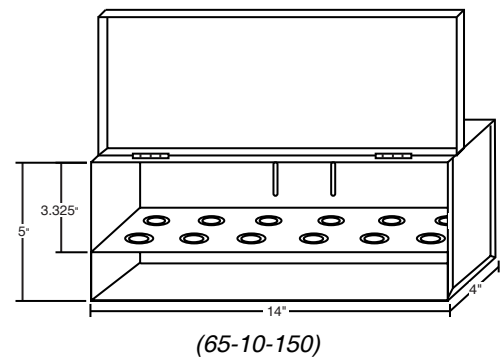
FIRE SPRINKLER SPARE HEADBOXES



3 Head Box



12 Head Box



Heavy gauge steel construction

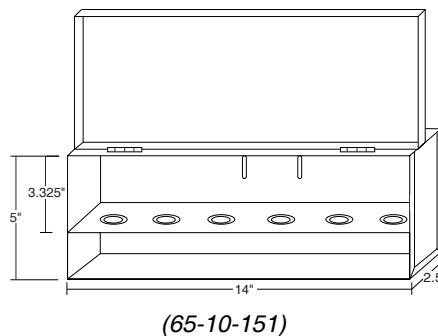
Knockouts and shelf to accommodate any 1/2" or 3/4" sprinkler head

All-welded construction and full length hinge

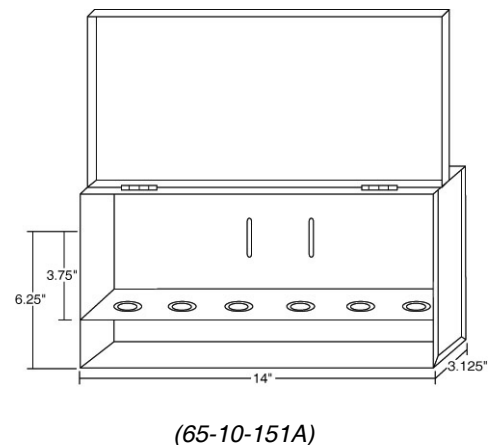
Red powder coated finish

Slotted for easy mounting with screws, rivets or strapping

6 Head Box



6 Large Head Box



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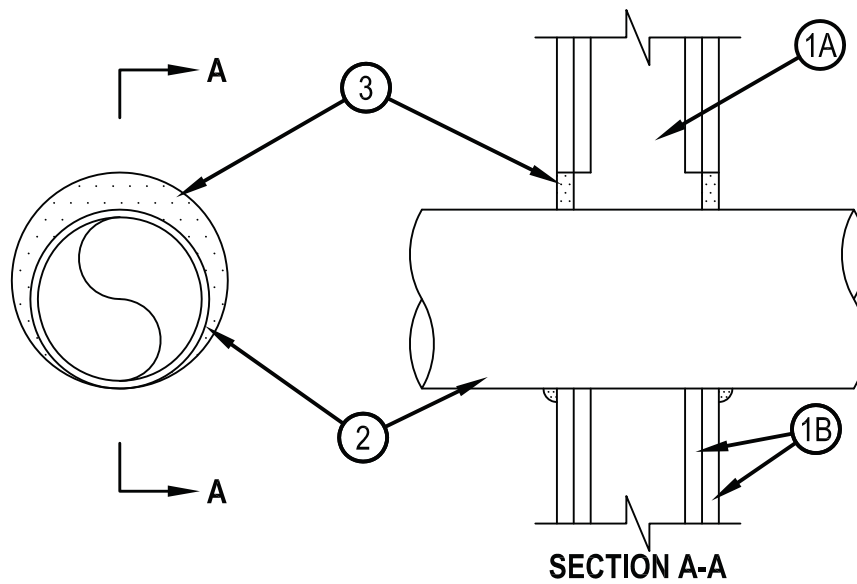
System No. W-L-1054

F Ratings — 1 and 2 Hr (See Items 1 and 3)

T Rating — 0 Hr

L Rating At Ambient — Less Than 1 CFM/Sq Ft

L Rating At 400 F — 4 CFM/Sq Ft



1. Wall Assembly — The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 2-1/2 in. wide and spaced max 24 in. OC. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw-attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. wider and 4 to 6 in. higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. clearance is present between the penetrating item and the framing on all four sides.

B. Gypsum Board* — 5/8 in. thick, 4 ft wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 32-1/4 in. for steel stud walls. Max diam of opening is 14-1/2 in. for wood stud walls.

The F Rating of the firestop system is equal to the fire rating of the wall assembly.

2. Through-Penetrants — One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. The annular space shall be min 0 in. to max 2-1/4 in. Pipe may be installed with continuous point contact. Pipe, conduit or tubing may be installed at an angle not greater than 45 degrees from perpendicular. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:

- A. Steel Pipe — Nom 30 in diam (or smaller) Schedule 10 (or heavier) steel pipe.
- B. Iron Pipe — Nom 30 in. diam (or smaller) cast or ductile iron pipe.
- C. Conduit — Nom 4 in diam (or smaller) steel electrical metallic tubing or 6 in. diam steel conduit.
- D. Copper Tubing — Nom 6 in. diam (or smaller) Type L (or heavier) copper tubing.
- E. Copper Pipe — Nom 6 in. diam (or smaller) regular (or heavier) copper pipe.

3. Fill, Void or Cavity Material* — Sealant — Min 5/8 in. thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point or continuous contact locations between pipe and wall, a min 1/2 in. diam bead of fill material shall be applied at the pipe wall interface on both surfaces of wall .

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant

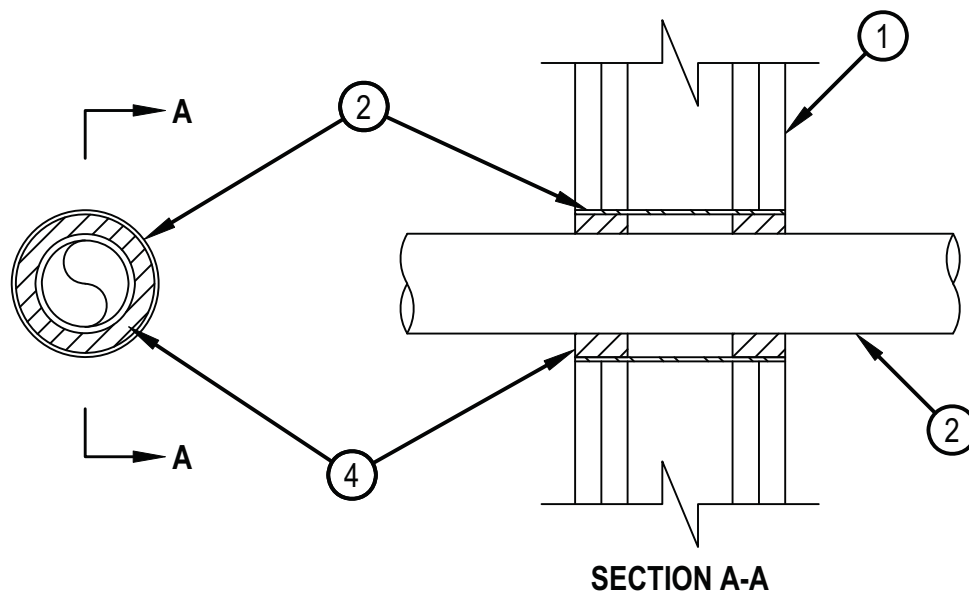
*Bearing the UL Classification Mark



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System No. W-L-2128
F Rating — 1 and 2 Hr (See Item 1)
T Rating — 0 Hr



1. Wall Assembly — The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 2-1/2 in. wide and spaced max 24 in. OC.

B. Gypsum Board* — 5/8 in. thick, 4 ft wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design. Max diam of opening is 3-1/2 in.

2. Metallic Sleeve Optional — Nom 3-1/2 in. (or smaller) cylindrical sleeve fabricated from min 0.016 in. thick (28 gauge) galv sheet steel and having a min 1-1/4 in. lap along longitudinal seam. Length of sleeve to be installed flush with wall surfaces.

3. Through Penetrants — One nonmetallic pipe installed within the firestop system.. Pipe may be installed at an angle not greater than 45 degrees from perpendicular. Pipe to be rigidly supported on both sides of wall assembly. The space between pipe and periphery of opening shall be min 1/4 in. to max 11/16 in. The following types and sizes of nonmetallic pipes may be used:

A. Polyvinyl Chloride (PVC) Pipe — Nom 2 in. diam (or smaller) Schedule 40 PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

B. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 2 in. diam (or smaller) SDR13.5 CPVC pipe for use in closed (process or supply) piping systems.

4. Fill, Void or Cavity Materials* — Sealant — For 1 hr F Rating, min 5/8 in. thickness of fill material applied within the annulus, flush with both surfaces of wall. For 2 hr F Rating, min 1-1/4 in. thickness of fill material applied within annulus, flush with both surfaces of wall.

HILTI CONSTRUCTION CHEMICALS, DIV OF
HILTI INC — FS-ONE Sealant

*Bearing the UL Classification Mark



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March 14, 2006



Building connections that last™

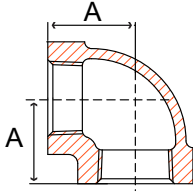


SCI® Cast Iron Threaded Fittings



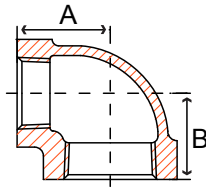


Fig. 37E 1 – 90° Elbow



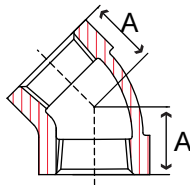
Size in	Part Number	A in	Packing		Weight lb
			Inner	Master	
1/2	37E 1004	1.13	90	180	0.3
3/4	37E 1006	1.31	50	100	0.5
1	37E 1010	1.50	35	70	0.8
1-1/4	37E 1012	1.75	20	40	1.3
1-1/2	37E 1014	1.94	15	30	1.7
2	37E 1020	2.25	7	14	2.7
2-1/2	37E 1024	2.70	4	8	4.3

Fig. 37RE1 – 90° Reducing Elbow



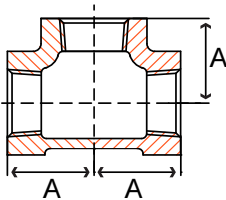
Size in	Part Number	A in	B in	Packing		Weight lb
				Inner	Master	
1 x 1/2	37RE1010004	1.36	1.26	50	100	0.5
1 x 3/4	37RE1010006	1.45	1.38	40	80	0.7
1-1/4 x 1/2	37RE1012004	1.53	1.34	32	64	0.8
1-1/4 x 3/4	37RE1012006	1.63	1.45	28	56	0.9
1-1/4 x 1	37RE1012010	1.67	1.58	25	50	1.0
1-1/2 x 1/2	37RE1014004	1.75	1.52	25	50	1.0
1-1/2 x 3/4	37RE1014006	1.75	1.52	20	40	1.1
1-1/2 x 1	37RE1014010	1.80	1.65	18	36	1.3
1-1/2 x 1-1/4	37RE1014012	1.88	1.82	14	28	1.5
2 x 1/2	37RE1020004	1.97	1.60	15	30	1.4
2 x 3/4	37RE1020006	1.97	1.60	15	30	1.6
2 x 1	37RE1020010	2.02	1.73	12	24	1.8
2 x 1-1/2	37RE1020014	2.16	2.02	10	20	2.3

Fig. 37F 1 – 45° Elbow



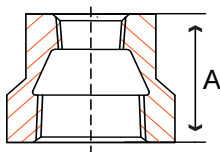
Size in	Part Number	A in	Packing		Weight lb
			Inner	Master	
1	37F 1010	1.26	40	80	0.7
1-1/4	37F 1012	1.29	22	44	1.2
1-1/2	37F 1014	1.44	16	32	1.5
2	37F 1020	1.69	8	16	2.6

Fig. 37T 1 – Tee



Size in	Part Number	A in	Packing		Weight lb
			Inner	Master	
1/2	37T 1004	1.13	60	120	0.4
3/4	37T 1006	1.31	30	60	0.7
1	37T 1010	1.50	20	40	1.1
1-1/4	37T 1012	1.75	12	24	1.8
1-1/2	37T 1014	1.94	8	16	2.4
2	37T 1020	2.25	5	10	3.8

Fig. 37RC1 – Hex Coupling



Size in	Part Number	A in	Packing		Weight lb
			Inner	Master	
1 x 1/2	37RC1010004	1.69	60	120	0.5
1 x 3/4	37RC1010006	1.69	50	100	0.6
2 x 1 (not hex)	37RC1020010	2.81	16	32	1.5

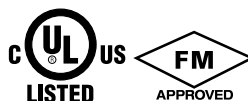
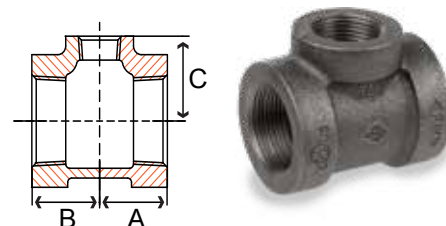


Fig. 37RT1 – Reducing Tee

Size in	Part Number	A in	B in	C in	Packing		Weight lb
					Inner	Master	
1 x 1/2	37RT1010004	1.26	1.26	1.36	25	50	0.9
1 x 1/2 x 1	37RT1010004010	1.50	1.36	1.50	24	48	0.9
1 x 3/4	37RT1010006	1.38	1.38	1.45	22	44	1.0
1 x 3/4 x 1	37RT1010006010	1.50	1.45	1.50	20	40	1.0
1 x 1-1/4	37RT1010012	1.67	1.67	1.58	15	30	1.4
1-1/4 x 1/2	37RT1012004	1.34	1.34	1.53	18	36	1.3
1-1/4 x 1/2 x 1-1/4	37RT1012004012	1.75	1.53	1.75	18	36	1.4
1-1/4 x 3/4	37RT1012006	1.45	1.45	1.62	15	30	1.4
1-1/4 x 3/4 x 1-1/4	37RT1012006012	1.75	1.62	1.75	15	30	1.5
1-1/4 x 1	37RT1012010	1.58	1.58	1.67	15	30	1.6
1-1/4 x 1 x 1/2	37RT1012010004	1.34	1.26	1.53	20	40	1.1
1-1/4 x 1 x 3/4	37RT1012010006	1.45	1.38	1.63	16	32	1.2
1-1/4 x 1 x 1	37RT1012010010	1.58	1.50	1.69	15	30	1.4
1-1/4 x 1 x 1-1/4	37RT1012010012	1.75	1.69	1.75	12	24	1.6
1-1/4 x 1 x 1-1/2	37RT1012010014	1.88	1.80	1.82	12	24	1.8
1-1/4 x 1-1/2	37RT1012014	1.88	1.88	1.82	10	20	2.0
1-1/2 x 1/2	37RT1014004	1.41	1.41	1.66	12	24	1.6
1-1/2 x 1/2 x 1-1/4	37RT1014004012	1.81	1.56	1.88	12	24	1.7
1-1/2 x 1/2 x 1-1/2	37RT1014004014	1.94	1.66	1.94	12	24	1.8
1-1/2 x 3/4	37RT1014006	1.52	1.52	1.75	12	24	1.8
1-1/2 x 3/4 x 1-1/4	37RT1014006012	1.94	1.66	1.88	12	24	1.7
1-1/2 x 3/4 x 1-1/2	37RT1014006014	1.94	1.75	1.94	12	24	1.9
1-1/2 x 1	37RT1014010	1.65	1.65	1.80	10	20	1.9
1-1/2 x 1 x 1/2	37RT1014010004	1.44	1.25	1.69	18	36	1.3
1-1/2 x 1 x 3/4	37RT1014010006	1.50	1.44	1.75	15	30	1.4
1-1/2 x 1 x 1	37RT1014010010	1.65	1.50	1.80	12	24	1.6
1-1/2 x 1 x 1-1/4	37RT1014010012	1.82	1.67	1.88	10	20	1.8
1-1/2 x 1 x 1-1/2	37RT1014010014	1.94	1.80	1.94	8	16	2.1
1-1/2 x 1-1/4	37RT1014012	1.82	1.82	1.88	8	16	2.2
1-1/2 x 1-1/4 x 1/2	37RT1014012004	1.41	1.34	1.66	15	30	1.5
1-1/2 x 1-1/4 x 3/4	37RT1014012006	1.52	1.45	1.75	12	24	1.6
1-1/2 x 1-1/4 x 1	37RT1014012010	1.65	1.58	1.80	12	24	1.8
1-1/2 x 1-1/4 x 1-1/4	37RT1014012012	1.82	1.75	1.88	10	20	2.1
1-1/2 x 1-1/4 x 1-1/2	37RT1014012014	1.94	1.88	1.94	8	16	2.3
1-1/2 x 1-1/4 x 2	37RT1014012020	2.16	2.10	2.02	6	12	2.7
1-1/2 x 2	37RT1014020	2.16	2.16	2.02	5	10	2.9
2 x 1/2	37RT1020004	1.49	1.49	1.88	8	16	2.6
2 x 3/4	37RT1020006	1.60	1.60	1.97	8	16	2.6
2 x 1	37RT1020010	1.73	1.73	2.02	6	12	2.9
2 x 1 x 2	37RT1020010020	2.25	2.02	2.25	5	10	3.1
2 x 1-1/4	37RT1020012	1.90	1.90	2.10	5	10	3.2
2 x 1-1/4 x 2	37RT1020012020	2.25	2.10	2.25	5	10	3.2
2 x 1-1/2	37RT1020014	2.02	2.02	2.16	5	10	3.3
2 x 1-1/2 x 1/2	37RT1020014004	1.49	1.41	1.88	8	16	2.1
2 x 1-1/2 x 3/4	37RT1020014006	1.60	1.52	1.97	8	16	2.2
2 x 1-1/2 x 1	37RT1020014010	1.73	1.65	2.02	8	16	2.4
2 x 1-1/2 x 1-1/4	37RT1020014012	1.90	1.82	2.10	7	14	2.7
2 x 1-1/2 x 1-1/2	37RT1020014014	2.02	1.94	2.16	7	14	2.9
2 x 1-1/2 x 2	37RT1020014020	2.25	2.16	2.25	5	10	3.4
2 x 2-1/2	37RT1020024	2.60	2.60	2.39	3	6	4.6



About ASC Engineered Solutions

ASC Engineered Solutions is defined by quality—in its products, services and support. With more than 1,400 employees, the company’s portfolio of precision-engineered piping support, valves and connections provides products to more than 4,000 customers across industries, such as mechanical, industrial, fire protection, oil and gas, and commercial and residential construction. Its portfolio of leading brands includes ABZ Valve®, AFCON®, Anvil®, Anvil EPS, Anvil Services, Basic-PSA, Beck®, Catawissa, Cooplet®, FlexHead®, FPPI®, Gruvlok®, J.B. Smith, Merit®, North Alabama Pipe, Quadrant®, SCI®, Sharpe®, SlideLOK®, SPF® and SprinkFLEX®. With headquarters in Commerce, CA, and Exeter, NH, ASC also has ISO 9001:2015 certified production facilities in PA, TN, IL, TX, AL, LA, KS, and RI.



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TOLCO Fig. 65 - Reversible Steel C-Type Beam Clamp $\frac{3}{4}$ " (19.0mm) Throat Opening

Size Range:

Fig. 65 - $\frac{1}{2}$ "-13 rod sizes, and $\frac{5}{8}$ "-11 rod sizes
 Fig. 65XT - $\frac{3}{8}$ "-16 rod size (see below)

Material: Steel with hardened cup point set screw and jam nut

Function: Recommended for hanging from steel beam where flange thickness does not exceed $\frac{3}{4}$ " (19.0mm).

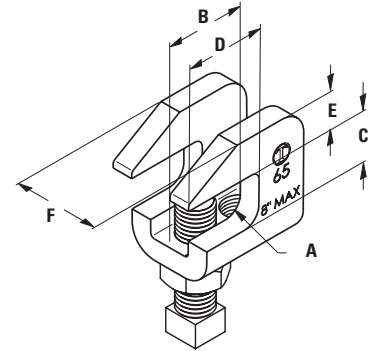
Features: All steel construction eliminates structural deficiencies associated with casting type beam clamps. May be used on top or bottom flange of beam. (Beveled lip allows hanging from top flange where clearance is limited.) May be installed with set screw in up or down position. Offset design permits unlimited rod adjustment by allowing the rod to be threaded completely through the clamp. Open design permits inspection of thread engagement.

Approvals: Underwriters Laboratories Listed in the USA (UL) and Canada (cUL). Exceeds requirements of the National Fire Protection Association (NFPA), pamphlet 13, $\frac{3}{8}$ "-16 rod will support $\frac{1}{2}$ " (15mm) thru 4" (100mm) pipe
 $\frac{1}{2}$ "-13 rod will support thru 8" (200mm) pipe

Finish: Plain or Electro-Galvanized. Contact customer service for alternative finishes and materials.

Order By: Figure number and finish

Fig. 65 Patent #4,570,885



Set Screw and Locknut Included



Part No.	Rod Size A	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)
65- $\frac{1}{2}$	$\frac{1}{2}$ "-13	1 $\frac{1}{2}$ " (38.1)	$\frac{3}{4}$ " (19.0)	1" (25.4)	$\frac{9}{16}$ " (14.3)
65- $\frac{5}{8}$	$\frac{5}{8}$ "-11	1 $\frac{1}{2}$ " (38.1)	$\frac{3}{4}$ " (19.0)	1" (25.4)	$\frac{9}{16}$ " (14.3)

Part No.	F in. (mm)	Approx. Wt./100 Lbs. (kg)
65- $\frac{1}{2}$	1 $\frac{1}{4}$ " (31.7)	55 (24.9)
65- $\frac{5}{8}$	1 $\frac{1}{4}$ " (31.7)	55 (24.9)

TOLCO Fig. 65XT - Reversible Steel C-Type Beam Clamp $\frac{3}{4}$ " (19.0mm) Throat Opening

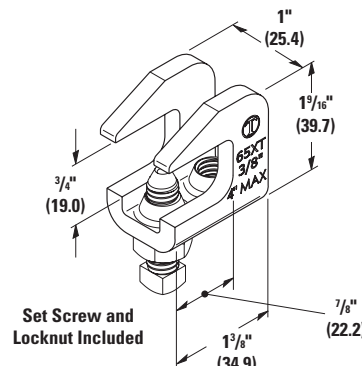
Feature: Extruded holes allows for more thread engagement of threaded rod and set screw.

Finish: Plain or Electro-Galvanized

Order By: Figure number and finish

Approvals: Underwriters Laboratories Listed (cULus) and FM Approved (FM) for up to 4" (100mm) pipe.

Designed to meet or exceed requirements of FM DS 2-0 and NFPA 13.



Set Screw and Locknut Included



Part No.	For Rod Size	Approx. Wt/100 Lbs. (kg)
65XT	$\frac{3}{8}$ "-16	28.0 (12.7)

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

TOLCO Fig. 69 - Beam Clamp Retaining Strap

Size Range: $\frac{3}{8}$ "-16 thru $\frac{3}{4}$ "-10 rod
 4" (101.6mm) thru 16" (406.4mm) lengths
 Note: longer lengths are available consult factory

Material: Pre-Galvanized Steel

Function: To offer more secure fastening of various types of beam clamps to beam where danger of movement might be expected. NFPA 13 requires the use of retaining straps with all beam clamps installed in earthquake areas. Satisfies requirements of NFPA 13.

Important Note: Good installation practice of a retaining strap requires that the strap be held tightly and securely to all component parts of the assembly. Therefore a locking mechanism of some kind, such as a hex nut for the Fig. 69 or the beveled locking slot of the Fig. 69R will provide a more secure reliable installation.

Approvals: Underwriters Laboratories Listed in the USA (**UL**) and Canada (**cUL**). Approved for use with any listed B-Line series or Tolco beam clamp.

Finish: Pre-Galvanized

Order By: Figure number, length (L), and finish.

Note: Minimum return on strap is 1" (25.4mm).
 Lengths over 16" (406mm) are not UL Listed.

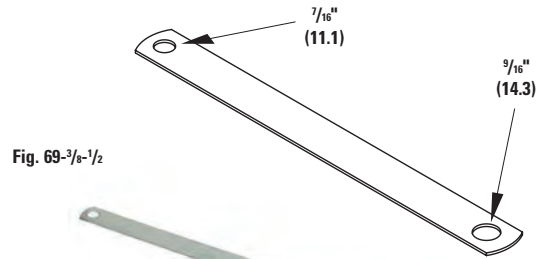


Fig. 69- $\frac{3}{8}$ - $\frac{1}{2}$

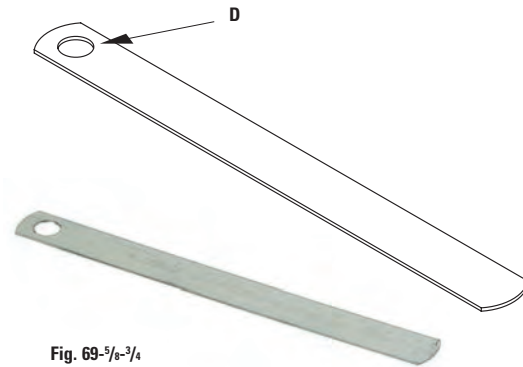
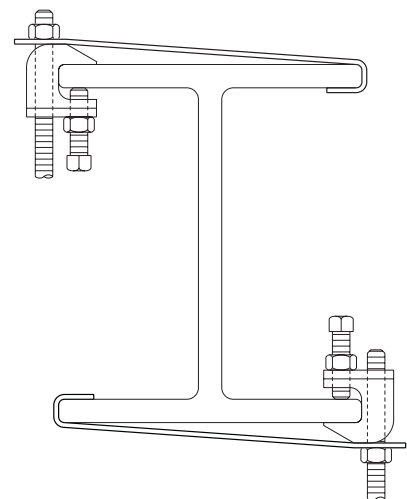


Fig. 69- $\frac{5}{8}$ - $\frac{3}{4}$

Part No.	Hole Dia. D in. (mm)	For Use With	Length
69- $\frac{3}{8}$ - $\frac{1}{2}$ -L	see Detail A	B3033- $\frac{3}{8}$, B3034- $\frac{3}{8}$, B3031- $\frac{3}{8}$, 65- $\frac{3}{8}$, 65XT- $\frac{3}{8}$, 66- $\frac{3}{8}$ B3033- $\frac{1}{2}$, B3034- $\frac{1}{2}$, 65- $\frac{1}{2}$, 66- $\frac{1}{2}$	Specify
69- $\frac{5}{8}$ -L	$\frac{11}{16}$ " (17.5)	B3033- $\frac{5}{8}$, 65- $\frac{5}{8}$, 66- $\frac{5}{8}$	Specify
69- $\frac{3}{4}$ -L	$\frac{13}{16}$ " (20.6)	B3033- $\frac{3}{4}$	Specify



All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

TOLCO Fig. 200 - "Trimline" Adjustable Band Hanger

TOLCO Fig. 200F - "Trimline" Adjustable Band Hanger with Felt Lining for Copper Tubing

TOLCO Fig. 200C - "Trimline" Adjustable Band Hanger with Plastic Coated

TOLCO Fig. 200S - "Trimline" Adjustable Band Hanger with Removable Nut (For sizes 1" thru 2")

Size Range:

Fig. 200 - 1/2" (15mm) thru 8" (200mm) pipe

Material: Steel, Pre-Galvanized

Function: For fire sprinkler and other general piping purposes. Knurled swivel nut design permits hanger adjustment after installation.

Features:

- 1/2" (15mm) thru 2" (50mm) sizes have flared edges for ease of installation on all pipe types and protects CPVC plastic pipe from abrasion. Captured knurled nut design (flared top) on 1" thru 2" sizes keep nut from separating with hanger. Hanger is easily installed around pipe.
- 1/2" (15mm), 3/4" (20mm), and 2 1/2" (65mm) thru 8" (200mm) Spring tension on nut holds it securely in hanger before installation. Knurled nut is easily removed.
- For 1/2" (15mm) and 3/4" (20mm) sizes with non-captured knurl nuts order Fig. 200S

Approvals: Underwriters Laboratories listed (1/2" (15mm) thru 8" (200mm)) in the USA (**UL**) and Canada (**cUL**) for steel and CPVC plastic pipe and Factory Mutual Engineering Approved (**FM**) (3/4" (20mm) thru 8" (200mm)). Conforms to Federal Specifications WW-H-171E & A-A-1192A, Type 10 and Manufacturers Standardization Society ANSI/MSS SP-69 & SP-58, Type 10.

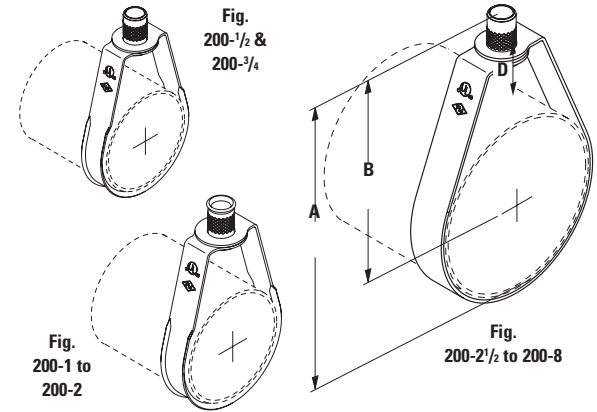
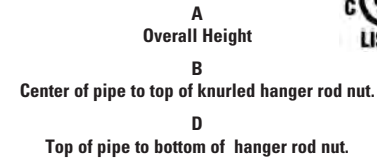
Maximum Temperature: 650°F (343°C)

Finish: Pre-Galvanized. Stainless Steel materials will be supplied with (2) hex nuts in place of a knurl nut.

Order By: Part number and pipe size

**** Note:** For metric hanger rod sizes add the metric rod size to the figure number.
Example: 200M8-1 1/2 or 200M10-1 1/2

† M8 rod size is not UL Listed or FM Approved



Pipe Hangers

Part No.**	Pipe Size		Rod Size		A	B	D	Max. Rec. Load	Approx. Wt./100	
	in. (mm)	in. (mm)	in. (mm)	mm**					lbs. (kN)	lbs. (kg)
200-1/2	1/2" (15)	3/8"-16	M8† or M10		3 1/8" (79.4)	2 5/8" (66.7)	1 11/32" (34.1)	400 (1.78)	11	(5.0)
200-3/4	3/4" (20)	3/8"-16	M8† or M10		3 1/8" (79.4)	2 1/2" (63.5)	1 1/16" (27.0)	400 (1.78)	11	(5.0)
200-1	1" (25)	3/8"-16	M8† or M10		3 3/8" (85.7)	2 5/8" (66.7)	1 1/8" (28.6)	400 (1.78)	12	(5.5)
200-1 1/4	1 1/4" (32)	3/8"-16	M8† or M10		3 3/4" (94.0)	2 7/8" (73.0)	1 5/32" (29.3)	400 (1.78)	13	(5.9)
200-1 1/2	1 1/2" (40)	3/8"-16	M†8 or M10		3 7/8" (98.4)	2 7/8" (73.0)	1 3/16" (30.2)	400 (1.78)	14	(6.4)
200-2	2" (50)	3/8"-16	M8† or M10		4 1/2" (114.3)	3 9/32" (80.8)	1 3/16" (30.2)	400 (1.78)	15	(6.9)
200-2 1/2	2 1/2" (65)	3/8"-16	M10		5 5/8" (142.9)	4 1/8" (104.7)	1 7/16" (36.5)	600 (2.67)	27	(12.3)
200-3	3" (75)	3/8"-16	M10		5 7/8" (149.1)	4" (101.6)	1 1/4" (31.7)	600 (2.67)	29	(13.3)
200-3 1/2	3 1/2" (90)	3/8"-16	M10		7 3/8" (187.3)	5 1/4" (133.3)	2 3/16" (55.6)	600 (2.67)	34	(15.6)
200-4	4" (100)	3/8"-16	M10		7 3/8" (187.3)	5" (127.0)	1 3/8" (34.9)	1000 (4.45)	35	(16.0)
200-5	5" (125)	1/2"-13	M12		9 1/8" (231.8)	6 1/4" (158.7)	3 11/32" (84.9)	1250 (5.56)	66	(30.2)
200-6	6" (150)	1/2"-13	M12		10 1/8" (257.2)	6 3/4" (171.4)	2 7/32" (56.3)	1250 (5.56)	73	(33.4)
200-8	8" (200)	1/2"-13	M12		13 1/8" (333.4)	8 3/4" (222.2)	3 7/32" (81.7)	1250 (5.56)	136	(62.3)

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

Pipe Hangers

TOLCO Fig. 120 - "U" Hanger

Size Range: Size $\frac{3}{4}$ " (20mm) thru 8" (200mm) pipe

Material: Steel

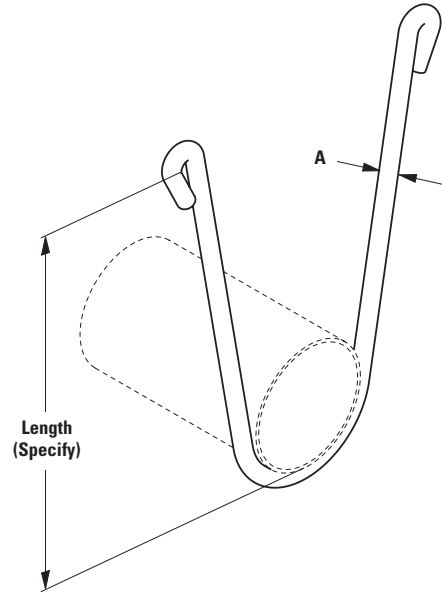
Function: Used to support piping from wood beams where no contraction is expected. Used extensively in automatic fire sprinkler systems.

Approvals: Complies with requirements of National Fire Protection Association (NFPA), Pamphlet 13.

Maximum Temperature: 750°F (399°C)

Finish: Plain. Contact customer service for alternative finishes and materials.

Order By: Figure number, pipe size, length and finish



Part No.	Pipe Size in. (mm)	A in. (mm)	Fastener Size
120- $\frac{3}{4}$	$\frac{3}{4}$ " (20)	$\frac{5}{16}$ " (7.9)	16 x 2*
120-1	1" (25)	$\frac{5}{16}$ " (7.9)	16 x 2*
120-1 $\frac{1}{4}$	1 $\frac{1}{4}$ " (32)	$\frac{5}{16}$ " (7.9)	16 x 2*
120-1 $\frac{1}{2}$	1 $\frac{1}{2}$ " (40)	$\frac{5}{16}$ " (7.9)	16 x 2*
120-2	2" (50)	$\frac{5}{16}$ " (7.9)	16 x 2*
120-2 $\frac{1}{2}$	2 $\frac{1}{2}$ " (65)	$\frac{3}{8}$ " (9.5)	$\frac{3}{8}$ x 2 $\frac{1}{2}$ **
120-3	3" (80)	$\frac{3}{8}$ " (9.5)	$\frac{3}{8}$ x 2 $\frac{1}{2}$ **
120-3 $\frac{1}{2}$	3 $\frac{1}{2}$ " (90)	$\frac{3}{8}$ " (9.5)	$\frac{3}{8}$ x 2 $\frac{1}{2}$ **
120-4	4" (100)	$\frac{3}{8}$ " (9.5)	$\frac{1}{2}$ x 3**
120-5	5" (125)	$\frac{1}{2}$ " (12.7)	$\frac{1}{2}$ x 3**
120-6	6" (150)	$\frac{1}{2}$ " (12.7)	$\frac{1}{2}$ x 3**
120-8	8" (200)	$\frac{1}{2}$ " (12.7)	$\frac{5}{8}$ x 3**

* Drive Screw

** Lag Bolt

Note: 30° leg style for some sizes. Consult factory for availability.

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

TOLCO Fig. 120MJ - Mutt & Jeff "U" Hanger

Size Range: Size 3/4" (20mm) thru 8" (200mm) pipe

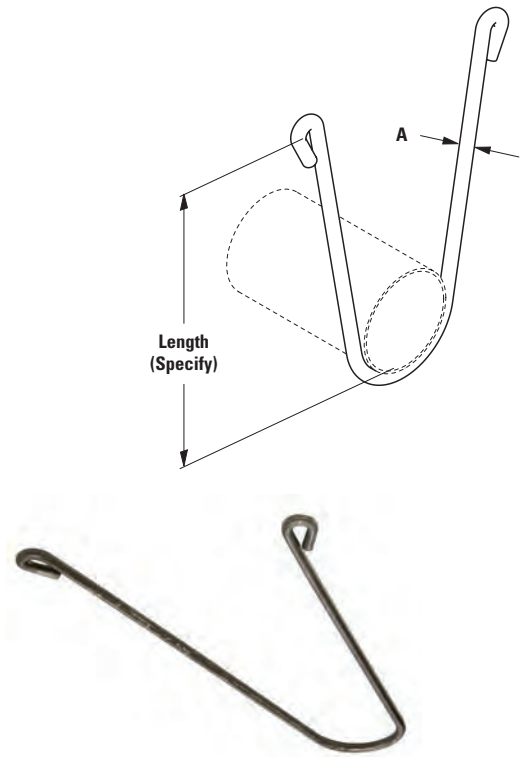
Material: Steel

Function: Used to support piping from wood beams where no contraction is expected. Used extensively in automatic fire sprinkler systems. Fig. 120MJ is used when the wood beam is on a diagonal.

Finish: Plain. Contact customer service for alternative finishes and materials.

Order By: Figure number, side length and finish

Part No.	Pipe Size		A		Fastener Size
	in.	(mm)	in.	(mm)	
120MJ-3/4	3/4"	(20)	5/16"	(7.9)	16 x 2*
120MJ-1	1"	(25)	5/16"	(7.9)	16 x 2*
120MJ-1 1/4	1 1/4"	(32)	5/16"	(7.9)	16 x 2*
120MJ-1 1/2	1 1/2"	(40)	5/16"	(7.9)	16 x 2*
120MJ-2	2"	(50)	5/16"	(7.9)	16 x 2*
120MJ-2 1/2	2 1/2"	(65)	3/8"	(9.5)	3/8 x 2 1/2**
120MJ-3	3"	(80)	3/8"	(9.5)	3/8 x 2 1/2**
120MJ-3 1/2	3 1/2"	(90)	3/8"	(9.5)	3/8 x 2 1/2**
120MJ-4	4"	(100)	3/8"	(9.5)	1/2 x 3**
120MJ-5	5"	(125)	1/2"	(12.7)	1/2 x 3**
120MJ-6	6"	(150)	1/2"	(12.7)	1/2 x 3**
120MJ-8	8"	(200)	1/2"	(12.7)	5/8 x 3**



* Drive Screw
** Lag Bolt

TOLCO Fig. 120W - Wrap Around "U" Hanger

Size Range: Size 3/4" (20mm) thru 2" (50mm) pipe

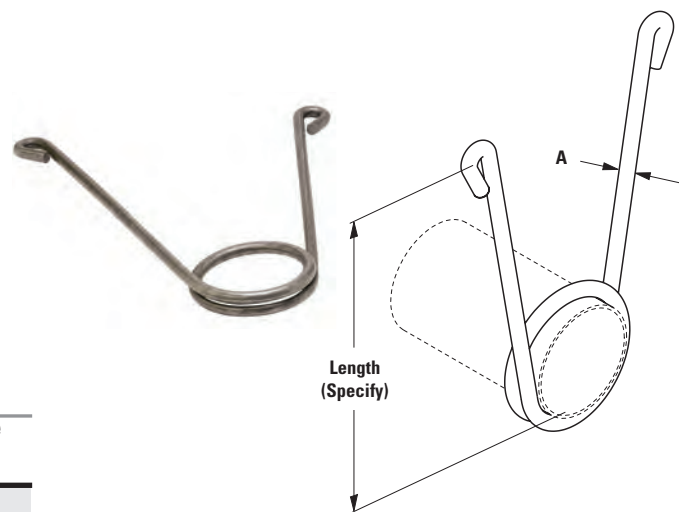
Material: Steel

Function: Required for automatic fire protection agencies to be used on the end of branch lines to prevent pipe from whipping vertical and striking ceiling or beam.

Finish: Plain. Contact customer service for alternative finishes and materials.

Order By: Figure number, side length and finish

Part No.	Pipe Size		A		Fastener Size
	in.	(mm)	in.	(mm)	
120W-3/4	3/4"	(20)	5/16"	(7.9)	16 x 2*
120W-1	1"	(25)	5/16"	(7.9)	16 x 2*
120W-1 1/4	1 1/4"	(32)	5/16"	(7.9)	16 x 2*
120W-1 1/2	1 1/2"	(40)	5/16"	(7.9)	16 x 2*
120W-2	2"	(50)	5/16"	(7.9)	16 x 2*



* Drive Screw

Note: 30° leg style for some sizes. Consult factory for availability.

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

B3373 - Standard Riser Clamp B3373C - PVC Coated Standard Riser Clamp

Size Range: (B3373) 1/2" (15mm) thru 30" (760mm) pipe
(B3373C) 1/2" (15mm) thru 6" (150mm) pipe

Material: Steel

Function: Used for supporting vertical piping.

Approvals: Underwriters Laboratories Listed in the USA (**UL**), Canada (**cUL**) 3/4" (20mm) - 8" (200mm). Factory Mutual Engineering Approved (**FM**), 3/4" (20mm) thru 8" (200mm). Conforms to Federal Specification WW-H-171E & A-A-1192A, Type 8, and Manufacturers Standardization Society ANSI/MSS SP-69 & SP-58, Type 8.

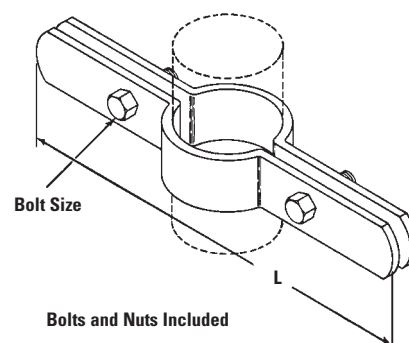
Maximum Temperature: 650°F (343°C)

Finish: Plain. Contact customer service for alternative finishes and materials.

Order By:

Figure number, pipe size and finish.

Designed to meet or exceed requirements of FM DS 2-0.



B3373C



Part No.	Pipe Size in. (mm)	L in. (mm)	Bolt Size	Approx. Wt./100 Lbs. (kg)
B3373-1/2	1/2" (15)	9" (228.6)	3/8"-16 x 1 1/4"	101 (45.9)
B3373-3/4	3/4" (20)	9 1/4" (234.9)	3/8"-16 x 1 1/4"	105 (47.7)
B3373-1	1" (25)	9 9/16" (242.9)	3/8"-16 x 1 1/4"	109 (49.4)
B3373-1 1/4	1 1/4" (32)	10" (254.0)	3/8"-16 x 1 1/4"	112 (50.9)
B3373-1 1/2	1 1/2" (40)	10 1/4" (260.3)	3/8"-16 x 1 1/2"	113 (51.1)
B3373-2	2" (50)	10 3/4" (273.0)	3/8"-16 x 1 1/2"	165 (75.0)
B3373-2 1/2	2 1/2" (65)	11 1/4" (285.7)	3/8"-16 x 1 1/2"	180 (81.6)
B3373-3	3" (80)	11 15/16" (303.2)	3/8"-16 x 1 1/2"	195 (88.4)
B3373-3 1/2	3 1/2" (90)	12 3/8" (314.3)	1/2"-13 x 1 3/4"	217 (98.5)
B3373-4	4" (100)	12 7/8" (327.0)	1/2"-13 x 1 3/4"	228 (103.5)
B3373-5	5" (125)	14" (355.6)	1/2"-13 x 1 3/4"	480 (217.7)
B3373-6	6" (150)	15 3/16" (385.8)	1/2"-13 x 2"	526 (238.6)
B3373-8	8" (200)	17 3/4" (450.8)	5/8"-11 x 2 1/2"	957 (434.1)
B3373-10	10" (250)	19 7/16" (493.7)	5/8"-11 x 2 1/2"	1101 (499.4)
B3373-12	12" (300)	21 11/16" (550.9)	5/8"-11 x 3"	1622 (735.7)
B3373-14	14" (350)	23 9/16" (598.5)	5/8"-11 x 3"	1732 (785.6)

Notes: For ductile iron (D.I.) pipe use part number B3373DI-pipe size. Contact B-Line Engineering for more information.

For larger sizes, consult the full line pipe hanger catalog.

Pipe Clamps

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

CPVC Clamps

TOLCO Fig. 22 - Hanger for CPVC Plastic Pipe & IPS Steel Pipe Single Fastener Strap



Size Range: 3/4" (20mm) thru 2" (50mm) CPVC pipe

Material: Pre-Galvanized Steel

Function: Intended to perform as a hanger to support CPVC piping used in automatic fire sprinkler systems. The product acts as a hanger when tab is upward and the fastener screw is in the horizontal position. Fig. 22 can be installed on the top of a beam, but in this situation acts as a guide to the piping which is supported by the beam itself. It is not intended to support CPVC pipe from under a flat horizontal surface, such as a ceiling.

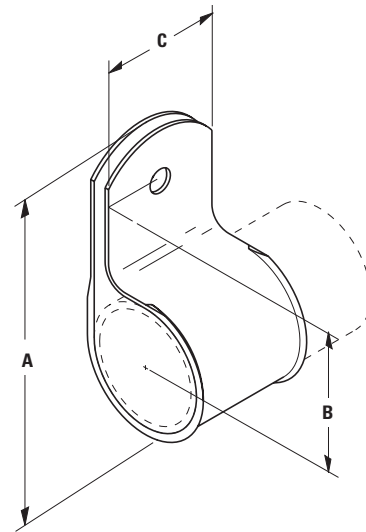
Approvals: Underwriters Laboratories Listed in the USA (UL) and Canada (cUL) to support fire sprinkler piping. May be installed in wood using fasteners supplied with product, or into minimum 20 gauge (0.9mm) steel using (1) 1/4" x 1" tek type screw. Meets and exceeds the requirements of NFPA 13, 13R and 13D.

Features: Fig. 22 incorporates features which protect the pipe and ease installation. The flared edge design protects CPVC pipe from any rough surface. It is easily attached to the building structure using the special UL Listed hex head self threading screw* furnished with the product. It is recommended that rechargeable electric drills fitted with a hex socket attachment to be used as installation tools. No impact tools (such as a hammer) are allowed. Damage has been known to result from installations using impact type tools. No pre-drilling of a pilot hole in wood is required.

Finish: Pre-Galvanized

Order By: Figure number and pipe size.

* Hardened hex head self threading screw is furnished with the product and is the minimum fastener size acceptable.



Part No.	CPVC Pipe Size in. (mm)	A in. (mm)	B in. (mm)	C in. (mm)	Max. Hanger Spacing Ft. (m)	Fastener Hex Head Size in. (mm)	Approx. Wt./100 Lbs. (kg)
22-3/4	3/4" (20)	2 7/16" (61.9)	1 5/16" (33.3)	1 3/16" (30.2)	5'-6" (1.67)	5/16" (7.9)	9 (4.1)
22-1	1" (25)	2 11/16" (68.3)	1 7/16" (36.5)	1 3/16" (30.2)	6'-0" (1.83)	5/16" (7.9)	9 (4.1)
22-1 1/4	1 1/4" (32)	3 1/16" (77.8)	1 5/8" (42.3)	1 3/16" (30.2)	6'-6" (1.98)	5/16" (7.9)	11 (5.0)
22-1 1/2	1 1/2" (40)	3 5/16" (84.1)	1 3/4" (44.4)	1 3/16" (30.2)	7'-0" (2.13)	5/16" (7.9)	12 (5.4)
22-2	2" (50)	3 3/4" (95.2)	2 1/8" (54.6)	1 3/16" (30.2)	8'-0" (2.44)	5/16" (7.9)	15 (6.8)

Reduced Spacing For IPS Pipe

Part No.	IPS Pipe Size in. (mm)	Max. Hanger Spacing Ft. (m)
22-3/4	3/4" (20)	1'-9" (1.67)
22-1	1" (25)	1'-10" (1.83)
22-1 1/4	1 1/4" (32)	2'-4" (1.98)
22-1 1/2	1 1/2" (40)	2'-9" (2.13)
22-2	2" (50)	3'-6" (2.44)

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

TOLCO Fig. 22L2 - One Hole Hanger/Restrainer for CPVC & Steel Pipe

Size Range: 3/4" (20mm) thru 2" (50mm) CPVC & steel pipe

Material: Pre-Galvanized Steel

Function: cULus Listed to perform as a hanger and restrainer for CPVC or IPS piping systems. The innovative design also allows for a preferred installation location close to a CPVC fitting without applying damaging compression forces on the pipe which could result in serious Mechanical ESC (Environmental Stress Cracking).

Approvals: Underwriters Laboratories Listed in the USA (**UL**) and Canada (**cUL**) to support fire sprinkler piping. Can be installed in wood or into minimum 20 gauge (0.9mm) steel using (1) 1/4" x 1" tek type screw. Meets and exceeds the requirements of NFPA 13, 13R and 13D.

Installation Note: Comes in open position for easier installation. Because of multi – structural installation possibilities, specific fastener not included; see notes below for various applications.

For Concrete Installation — UL requires a minimum test load of 340 lbs for CPVC hangers and 750 lbs for steel pipe hangers; verify anchors meet or exceed these requirements.

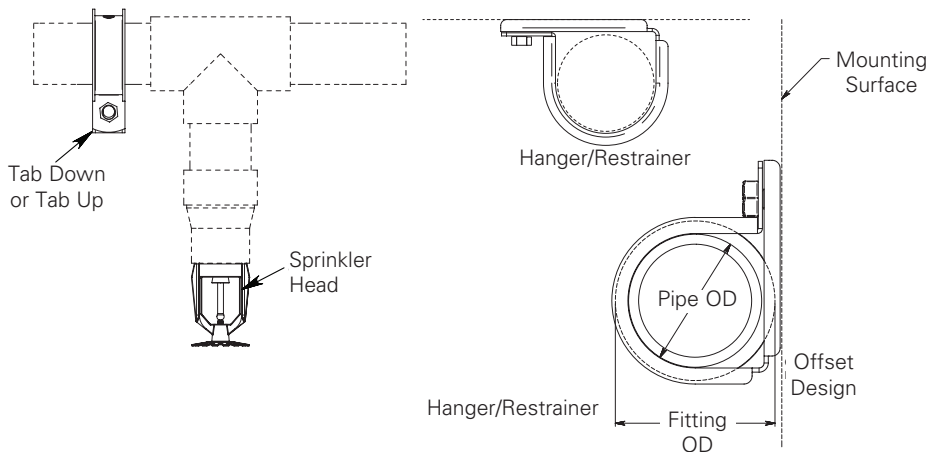
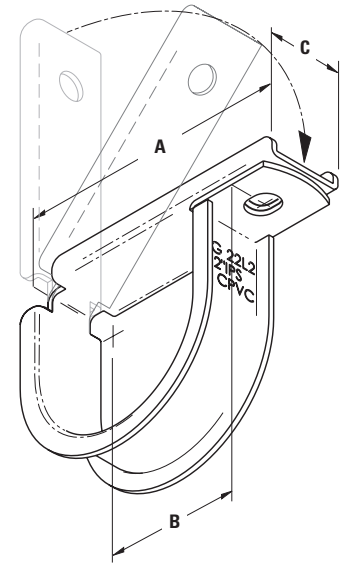
For Wood Installation — #14 x 1 1/2" wood screws will support the required load for **cULus**.

For Steel Installation — 1/4" x 1" (min. 20ga steel) Tek type screw will support required **UL** load.

Finish: Pre-Galvanized

Order By: Part number

Patent Pending



Part No.	CPVC or Steel Pipe Size in. (mm)	A in. (mm)	B in. (mm)	C in. (mm)	Max. Hanger Spacing - CPVC Ft. (m)	Max. Hanger Spacing - Steel Ft. (m)	Approx. Wt./100 Lbs. (kg)
22L2-3/4	3/4" (20)	2 3/16" (55.6)	1 5/16" (23.8)	3/4" (19.0)	5 1/2 (1.67)	NA (NA)	9 (4.1)
22L2-1	1" (25)	2 1/2" (63.5)	1 1/8" (28.6)	3/4" (19.0)	6 (1.83)	12 (3.66)	9 (4.1)
22L2-1 1/4	1 1/4" (32)	2 13/16" (71.4)	1 1/4" (31.7)	3/4" (19.0)	6 1/2 (1.98)	12 (3.66)	11 (5.0)
22L2-1 1/2	1 1/2" (40)	3 1/8" (79.4)	1 7/16" (36.5)	3/4" (19.0)	7 (2.13)	15 (4.57)	12 (5.4)
22L2-2	2" (50)	3 9/16" (90.5)	1 5/8" (41.3)	3/4" (19.0)	8 (2.44)	15 (4.57)	15 (6.8)

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

CPVC Clamps

TOLCO Fig. 23 - Hanger for CPVC Plastic Pipe & IPS Steel Pipe Double Fastener Strap (B-Line B3182)



Size Range: 3/4" (20mm) thru 3" (80mm) CPVC pipe

Material: Pre-Galvanized Steel

Function: Intended to perform as a hanger to support CPVC piping used in automatic fire sprinkler systems. Fig. 23 can be installed on the top, bottom or side of a beam.

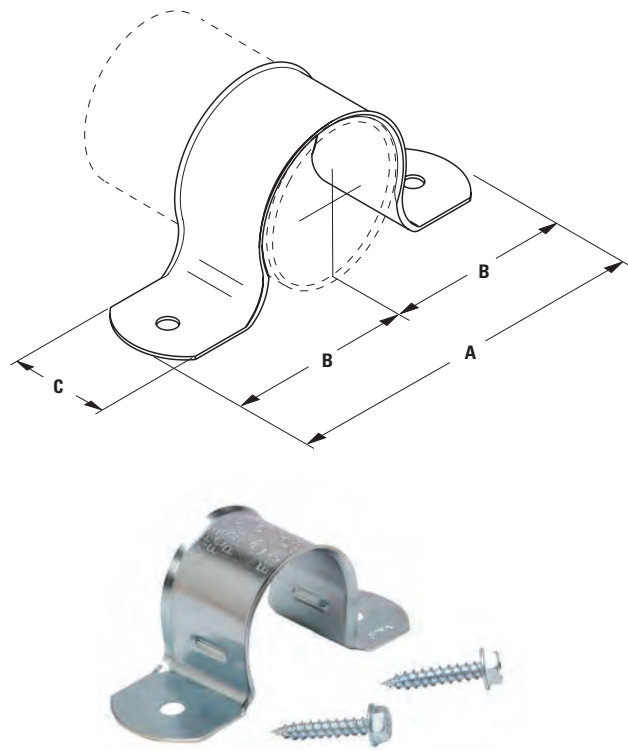
Approvals: Underwriters Laboratories Listed in the USA (UL) and Canada (cUL) sizes 3/4" (20mm) thru 2" (50mm) to support fire sprinkler piping. May be installed in wood using fasteners supplied with product, or into minimum 20 gauge (0.9mm) steel using (2) 1/4" x 1" tek type screw. Meets and exceeds the requirements of NFPA 13, 13R and 13D.

Features: Fig. 23 incorporates features which protect the pipe and ease installation. The flared edge design protects the CPVC pipe from any rough surface. It also incorporates snap restrainers allowing easier and faster installation. Easily attaches to the building structure using the two UL Listed hex head self threading screws* furnished with the product. It is recommended that rechargeable electric drills fitted with a hex socket attachment be used as installation tools. No impact tools (such as a hammer) are allowed. Damage has been known to result from installations using impact type tools. No pre-drilling of a pilot hole in wood is required.

Finish: Pre-Galvanized

Order By: Figure number and pipe size

* Hardened hex head self threading screw is furnished with the product and is the minimum fastener size acceptable.



Part No.	CPVC Pipe Size in. (mm)	A in. (mm)	B in. (mm)	C in. (mm)	Max. Hanger Spacing Ft. (m)	Fastener Hex Head Size in. (mm)	Approx. Wt./100 Lbs. (kg)
23-3/4	3/4" (20)	3 1/8" (79.4)	1 9/16" (39.7)	1 3/16" (30.2)	5 1/2 (1.67)	5/16" (7.9)	9 (4.1)
23-1	1" (25)	3 3/8" (85.7)	1 11/16" (42.9)	1 3/16" (30.2)	6 (1.83)	5/16" (7.9)	9 (4.1)
23-1 1/4	1 1/4" (32)	4 3/16" (106.4)	2 3/32" (53.1)	1 3/16" (30.2)	6 1/2 (1.98)	5/16" (7.9)	11 (5.0)
23-1 1/2	1 1/2" (40)	4 7/16" (112.7)	2 7/32" (56.3)	1 3/16" (30.2)	7 (2.13)	5/16" (7.9)	12 (5.4)
23-2	2" (50)	4 7/8" (123.8)	2 7/16" (61.9)	1 3/16" (30.2)	8 (2.44)	5/16" (7.9)	15 (6.8)
23-2 1/2	2 1/2" (65)	5 3/8" (136.5)	2 11/16" (68.3)	1 3/16" (30.2)	Consult Factory	5/16" (7.9)	22 (10.0)
23-3	3" (80)	6" (152.4)	3" (76.2)	1 3/16" (30.2)	Consult Factory	5/16" (7.9)	25 (11.3)

Reduced Spacing For IPS Pipe

Part No.	IPS Pipe Size in. (mm)	Max. Hanger Spacing Ft. (m)
23-3/4	3/4" (20)	1'-9" (1.67)
23-1	1" (25)	1'-10" (1.83)
23-1 1/4	1 1/4" (32)	2-4" (1.98)
23-1 1/2	1 1/2" (40)	2-9" (2.13)
23-2	2" (50)	3-6" (2.44)
23-2 1/2	2 1/2" (65)	Consult Factory
23-3	3" (80)	Consult Factory

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.



**TOLCO Fig. 24 - Hanger for CPVC Plastic Pipe & IPS Steel Pipe
Double Fastener Strap Side Mounted (B-Line B3183)**

Size Range: 3/4" (20mm) thru 2" (50mm) CPVC pipe

Material: Pre-Galvanized Steel

Function: Intended to perform as a hanger to support CPVC piping used in automatic fire sprinkler systems. Can be installed on the top or on the bottom of a beam.

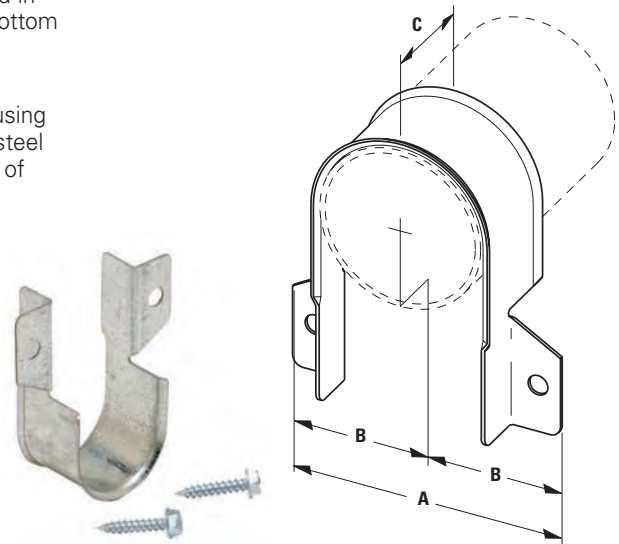
Approvals: Underwriters Laboratories Listed in the USA (UL) and Canada (cUL) to support fire sprinkler piping. May be installed in wood using fasteners supplied with product, or into minimum 20 gauge (0.912mm) steel using (2) 1/4" x 1" tek type screws. Meets and exceeds the requirements of NFPA 13, 13R and 13D.

Features: Fig. 24 incorporates features which protect the pipe and ease installation. The flared edge design protects the CPVC pipe from any rough surface. Easily attaches to the building structure using the two UL Listed hex head self threading screws* furnished with the product. It is recommended that rechargeable electric drills fitted with a hex socket attachment be used as installation tools. No impact tools (such as a hammer) are allowed. Damage has been known to result from installations using impact type tools. No pre-drilling of a pilot hole in wood is required.

Finish: Pre-Galvanized

Order By: Figure number and pipe size

* Hardened hex head self threading screw is furnished with the product and is the minimum fastener size acceptable.



Part No.	CPVC Pipe Size in. (mm)	A in. (mm)	B in. (mm)	C in. (mm)	Max. Hanger Spacing Ft. (m)	Fastener Hex Head Size in. (mm)	Approx. Wt./100 Lbs. (kg)
24-3/4	3/4" (20)	2 ⁵ / ₁₆ " (58.7)	1 ⁵ / ₃₂ " (27.8)	1 ³ / ₁₆ " (30.2)	5 1/2 (1.67)	5/16" (7.9)	9 (4.1)
24-1	1" (25)	2 ⁵ / ₈ " (66.7)	1 ⁵ / ₁₆ " (33.3)	1 ³ / ₁₆ " (30.2)	6 (1.83)	5/16" (7.9)	9 (4.1)
24-1 1/4	1 1/4" (32)	3" (76.2)	1 1/2" (38.1)	1 ³ / ₁₆ " (30.2)	6 1/2 (1.98)	5/16" (7.9)	11 (5.0)
24-1 1/2	1 1/2" (40)	3 1/4" (82.5)	1 ⁵ / ₈ " (42.3)	1 ³ / ₁₆ " (30.2)	7 (2.13)	5/16" (7.9)	12 (5.4)
24-2	2" (50)	3 11/16" (93.7)	1 ²⁷ / ₃₂ " (43.6)	1 ³ / ₁₆ " (30.2)	8 (2.44)	5/16" (7.9)	15 (6.8)

Reduced Spacing For IPS Pipe

Part No.	IPS Pipe Size in. (mm)	Max. Hanger Spacing Ft. (m)
24-3/4	3/4" (20)	1'-9" (1.67)
24-1	1" (25)	1'-10" (1.83)
24-1 1/4	1 1/4" (32)	2-4" (1.98)
24-1 1/2	1 1/2" (40)	2-9" (2.13)
24-2	2" (50)	3-6" (2.44)

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

CPVC Clamps

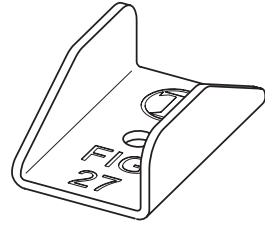
TOLCO Fig. 27B - Speed Nut

Size Range: — Fits screws supplied with all CPVC hangers.

Material: — Steel

Finish: — Pre-Galvanized (Zinc)

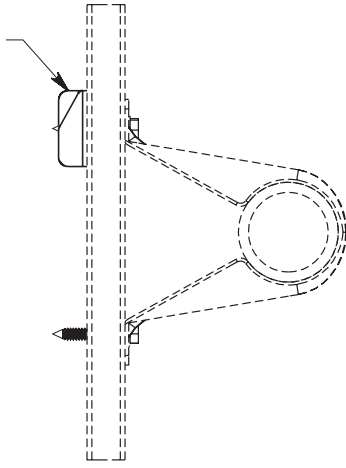
Function: — To be used anywhere a screw cannot achieve full embedment due to thickness of wood structural material when installed. Fig. 27B allows full pull out load capacity of screws when installed to the standard screws supplied with all CPVC hangers (Fig. 22, Fig. 22L2, Fig. 23, Fig. 24, Fig. 28, Fig. 28M, Fig. 29, and B3184).



Part No.	Approx. Wt./100	
	lbs.	(kg)
27B	1.2	(0.5)

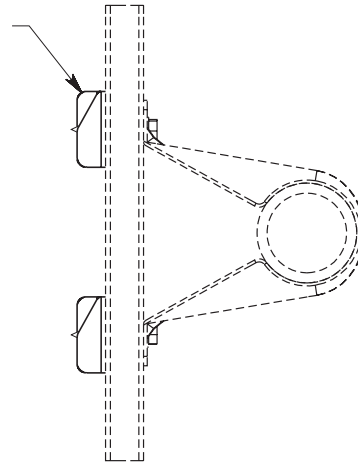


Fig. 27B
(1) Required High Side of Hanger Application

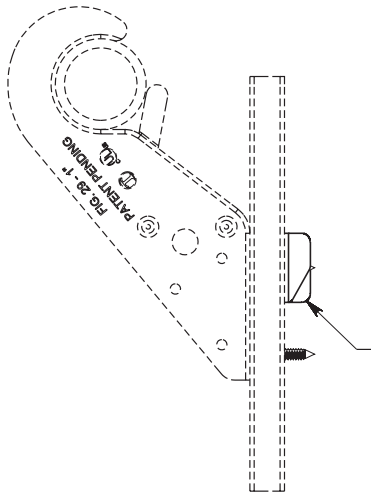


Hanger Application

Fig. 27B
(2) Required

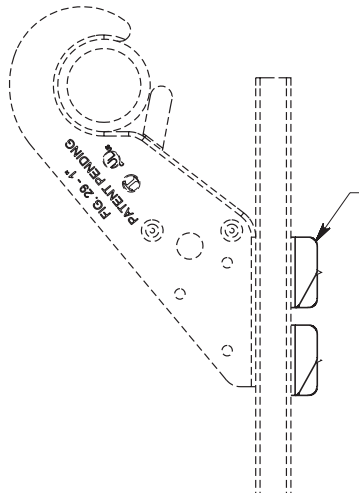


Hanger and Restraint Application



Hanger Application

Fig. 27B
(1) Required High Side of Hanger Application



Hanger and Restraint Application

Fig. 27B
(2) Required

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

TOLCO Fig. 28 - "Stand-Off" Hanger & Restrainer for CPVC Plastic Pipe & IPS Steel Pipe

Size Range: — 3/4" (20mm) through 2" (50mm)

Material: — Steel, Pre-Galvanized

Function: — Designed to be used as a hanger and restrainer for CPVC piping where the "stand-off" design will ease installation by eliminating the need for wood blocking.

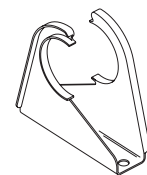
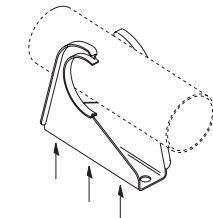
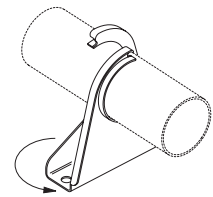
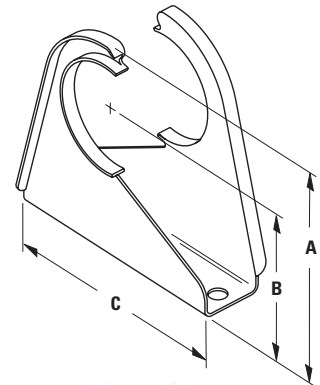
Features:

- Flared edge design protects CPVC pipe from any rough or abrasive surfaces.
- Unique twist and lock design holds pipe firmly in place and allows retrofit type of installation.
- The "Stand-Off" design eliminates the need for wood block extension.
- Can be installed on horizontal or vertical piping regardless of mounting surface orientation.
- Attaches easily to wood structure with two hex head self-threading screws furnished with product.
- Installs easily using rechargeable electrical driver with 5/16" (7.9mm) extension socket eliminating impact tool damage to pipe.
- Attaches easily to steel, minimum 18 gauge (1.024mm) with (2) 1/4" x 1" tek type self drilling tapping screws.
- UL Listed as a hanger and a restrainer for fire sprinkler piping.

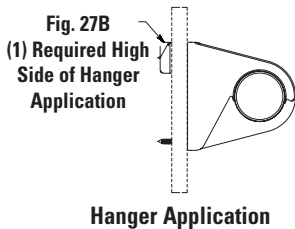
Approvals: — Underwriters Laboratory Listed in the USA (UL) and Canada (cUL) to support automatic fire sprinkler systems. May be installed into wood using fasteners supplied with product, or into minimum 18 gauge steel using (2) 1/4" x 1" tek type screws. Meets and exceeds the requirements of NFPA 13, 13R and 13D. Fig. 28 satisfies the UL vertical restraint requirement where needed. UL Listed as a hanger and vertical restraint when installed on 3/8" (9.5mm) composite wood material. Use two Fig. 27B (page 36) Speed Nuts when used as a hanger and restraint. Use one Fig. 27B Speed Nut on the upper installed screw when used as a hanger only.

Order by: — Figure number and pipe size.

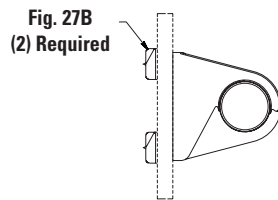
Pat. # 7,455,268, Pat. # 7,832,248



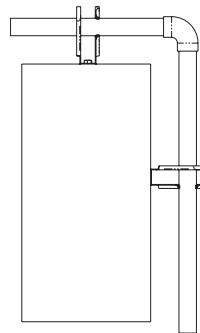
CPVC Clamps



Hanger Application



Hanger and Restraint Application



Part No.	CPVC Pipe Size in. (mm)	A in. (mm)	B in. (mm)	C in. (mm)	Max Hanger Spacing Ft. (m)	Approx. Wt./100 lbs. (kg)
28-3/4	3/4" (20)	3 1/32" (77.0)	2" (50.8)	3 1/2" (88.9)	5 1/2 (1.67)	18 (8.1)
28-1	1" (25)	3 5/16" (84.1)	2 3/16" (55.6)	3 1/2" (88.9)	6 (1.83)	21 (9.5)
28-1 1/4	1 1/4" (32)	3 3/8" (92.1)	2 3/8" (60.3)	3 1/2" (88.9)	6 1/2 (1.98)	23 (10.4)
28-1 1/2	1 1/2" (40)	4" (101.6)	2 1/2" (63.5)	3 1/2" (88.9)	7 (2.13)	31 (14.0)
28-2	2" (50)	4 1/2" (114.3)	2 11/16" (68.3)	3 5/8" (92.1)	8 (2.44)	34 (15.4)

Reduced Spacing For IPS Pipe

Part No.	IPS Pipe Size in. (mm)	Max. Hanger Spacing Ft. (m)
28-3/4	3/4" (20)	1'-9" (1.67)
28-1	1" (25)	1'-10" (1.83)
28-1 1/4	1 1/4" (32)	2'-4" (1.98)
28-1 1/2	1 1/2" (40)	2'-9" (2.13)
28-2	2" (50)	3'-6" (2.44)

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

TOLCO Fig. 906 - sway brace multi-fastener adapter

Material: Steel



Application: Allows sway brace fittings to develop greater load carrying ability by providing multiple fastener attachments for steel and wood. The National Fire Protection (NFPA) provides information on fastener loads to various structures. Refer to NFPA 13 (2016) 9.3.5.9.1.

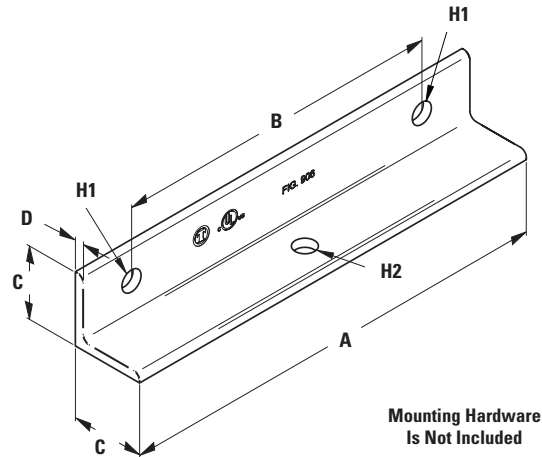
Approvals: Underwriters Laboratories Listed in the USA (UL) and Canada (cUL) only when used with TOLCO™ Fig. 900 Series Earthquake Brace Attachments. Included in our Seismic Engineering Guidelines approved by the State of California Office of Statewide Health Planning and Development (OSHPD). For additional load, spacing and placement information relating to OSHPD projects, please refer to our Seismic Engineering Guidelines, OPM-0052-13.

Installation Instructions: Fig. 906 is a multiple fastener structural attachment component of a longitudinal or lateral sway brace assembly. It is intended to be combined with a TOLCO transitional attachment, "bracing pipe" and a TOLCO "braced pipe" attachment to form a complete bracing assembly. NFPA 13 guidelines should be followed.

To Install: Attach the Fig. 906 to the structural surface as per fastener design guidelines. Attach other TOLCO transitional attachment fitting, Fig. 980, 910, 909, or any other TOLCO approved transitional fitting. Transitional fitting attachment can pivot for adjustment to proper brace angle.

Finish: Plain or Electro-Galvanized. Contact customer service for alternative finishes and materials.

Order By: Figure number and specify dimensions H1 and H2.



Part Number	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	H1	H2	Approx. Wt./100 Lbs. (kg)
906	12" (305.0)	9" (228.6)	2.5" (63.5)	1/4" (6.3)	Specify	Specify	394 (178.7)
906-12	15" (381.0)	12" (304.8)	2.5" (63.5)	1/4" (6.3)	Specify	Specify	494 (224.1)

Load Note: Actual design load determined by anchor and concrete strength, not to exceed the UL Listed maximum load of 1200 lbs (5.33kN).
Load is for Fig. 906. If combined load of anchors is less, must reduce to anchor maximum capacity.

Eaton's B-Line series seismic bracing components are designed to be compatible only with other B-Line series bracing components, resulting in a listed seismic bracing assembly. Eaton B-Line Division warranty for seismic bracing components will be the warranty provided in Eaton B-Line Division standard terms and conditions of sale made available by Eaton, except that, in addition to the other exclusions from Eaton B-Line Division warranty, Eaton makes no warranty relating to B-Line series seismic bracing components that are combined with products not provided by Eaton.

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

Seismic Bracing

Fig. 980 - TOLCO Universal swivel sway brace attachment - $3/8$ "-16 to $3/4$ "-10 rods

Fig. 980H - TOLCO Universal swivel sway brace attachment - $7/8$ "-9 to $1 1/4$ "-7

Size Range: One size fits bracing pipe 1" (25mm) thru 2" (50mm), B-Line series 12 gauge (2.6mm) channel.

Material: Carbon steel

Function: Multi-functional attachment to structure or braced pipe fitting.

Features: This product's design incorporates a concentric attachment opening which is critical to the performance of structural seismic connections and in accordance with NFPA 13, 2019 Section 18.5.11.5. The Fig. 980 mounts to any surface angle and the break off bolt head assures verification of proper installation.

Installation: Fig.980 is the structural or transitional attachment component of a longitudinal or lateral sway brace assembly. It is intended to be combined with the "bracing pipe" and TOLCO™ "braced pipe" attachment, Fig. 1001, 2002, 3000, 4L or approved attachment to pipe to form a complete bracing assembly. NFPA 13 guidelines should be followed.

To Install: Place the Fig. 980 onto the "bracing pipe". Tighten the set bolt until the head breaks off. Attachment can pivot for adjustment to proper brace angle.

Approvals: —Underwriters Laboratories Listed in the USA (**UL**) and Canada (**cUL**). UL Listed for the following brace member type pipes: Sch. 40, KSD 3562. Ask the factory for additional information as it may vary by product size. Included in our Seismic Engineering Guidelines approved by the State of California Office of Statewide Health Planning and Development (**OSHPD**). For additional load, spacing and placement information relating to OSHPD projects, please refer to our Seismic Engineering Guidelines, OPM-0052-13. For FM Approval information refer to FM Approved page 61.

Note: Fig. 980 Swivel Attachment and Fig. 1001, 2002, 3000, 4L, or approved attachment to pipe make up a sway brace system of UL Listed attachments and bracing materials which satisfies the requirements of Underwriters Laboratories and the National Fire Protection Association (**NFPA**)

Finish: Plain, Electro-Galvanized or Stainless Steel.

Contact customer service for alternative finishes.

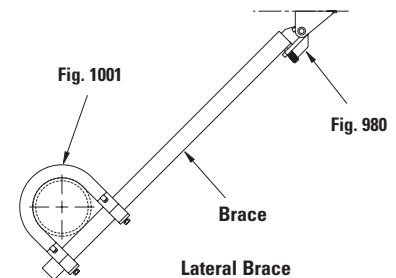
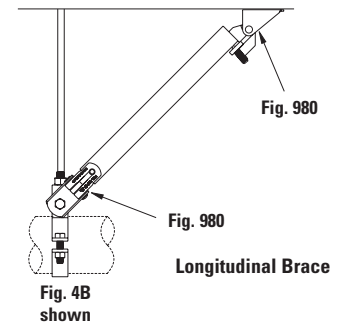
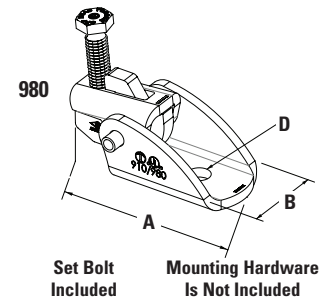
Order By: Figure number and finish.

Pat. #6,273,372, Pat. #6,517,030, Pat. #6,953,174,
Pat. #6,708,930, Pat. #7,191,987, Pat. #7,441,730,
Pat. #7,669,806

Catalog #	A in. (mm)	B in. (mm)	D** in. (mm)	Max. Design Load (cULus) lbs./(kN)	Approx.Wt./100 lbs. (kg)
*980- $3/8$	4 $9/16$ (114.9)	2 $1/16$ (52.4)	$7/16$ (11.1)	1600 (7.12)	149 (67.6)
*980- $1/2$			$9/16$ (14.3)	2100 (9.34)	148 (67.1)
*980- $5/8$			$11/16$ (17.5)	2100 (9.34)	147 (66.7)
*980- $3/4$			$13/16$ (20.6)	2100 (9.34)	146 (66.2)
980H- $7/8$	6 $3/4$ (171.4)	3 $1/2$ (88.9)	$15/16$ (23.8)	Fig. 980H is not UL Listed or FM Approved	402 (182.3)
980H-1			$1 1/16$ (27.0)	400 (181.4)	
980H- $1 1/8$			$1 3/16$ (30.2)	397 (180.1)	
980H- $1 1/4$			$1 5/16$ (33.3)	390 (176.9)	

* Sizes available in stainless steel (980S- $3/8$, 980S- $1/2$, 980S- $5/8$, and 980S- $3/4$) and have the same UL rating as what is listed.

** Mounting attachment hole size.



Eaton's B-Line series seismic bracing components are designed to be compatible only with other B-Line series bracing components, resulting in a listed seismic bracing assembly. Eaton B-Line Division warranty for seismic bracing components will be the warranty provided in Eaton B-Line Division standard terms and conditions of sale made available by Eaton, except that, in addition to the other exclusions from Eaton B-Line Division warranty, Eaton makes no warranty relating to B-Line series seismic bracing components that are combined with products not provided by Eaton.

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

Fig. 980 - TOLCO Universal swivel sway brace attachment - $3/8$ "-16 to $3/4$ "-10 rods Fig. 980H - TOLCO Universal swivel sway brace attachment - $7/8$ "-9 to $1 1/4$ "-7

Size Range: One size fits bracing pipe 1" (25mm) thru 2" (50mm), B-Line series 12 gauge (2.6mm) channel.

Material: Carbon steel

Function: Multi-functional attachment to structure or braced pipe fitting.

Features: This product's design incorporates a concentric attachment opening which is critical to the performance of structural seismic connections and in accordance with NFPA 13, 2019 Section 18.5.11.5. The Fig. 980 mounts to any surface angle and the break off bolt head assures verification of proper installation.

Installation: Fig.980 is the structural or transitional attachment component of a longitudinal or lateral sway brace assembly. It is intended to be combined with the "bracing pipe" and TOLCO™ "braced pipe" attachment, Fig. 1000, 1001, 3000, 4L, or other TOLCO approved attachment to pipe to form a complete bracing assembly. NFPA 13 guidelines should be followed.

To Install: Place the Fig. 980 onto the "bracing pipe". Tighten the set bolt until the head breaks off. Attachment can pivot for adjustment to proper brace angle.

Approvals: —Approved by Factory Mutual Engineering (FM). Included in our Seismic Engineering Guidelines approved by the State of California Office of Statewide Health Planning and Development (OSHPD). For additional load, spacing and placement information relating to OSHPD projects, please refer to our Seismic Engineering Guidelines, OPM-0052-13. For UL Listed information refer to UL Listed page 60.

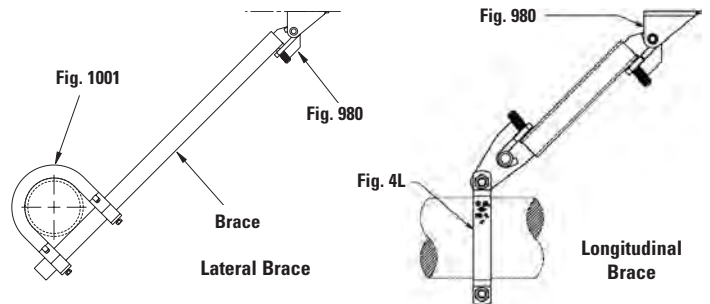
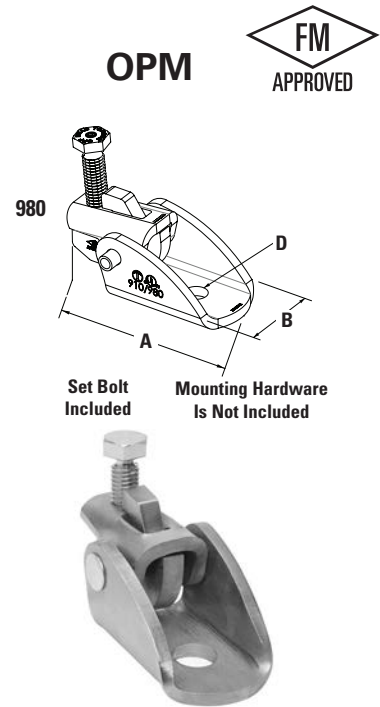
Note: Fig. 980 Swivel Attachment and Fig. 1000, 1001, 4L or other TOLCO approved attachment to pipe that make up a sway brace system of bracing materials which satisfies the requirements of Factory Mutual Engineering and the National Fire Protection Association (NFPA)

Finish: Plain, Electro-Galvanized or Stainless Steel. Contact customer service for alternative finishes.

Order By: Figure number and finish.

Pat. #6,273,372, Pat. #6,517,030, Pat. #6,953,174,
Pat. #6,708,930, Pat. #7,191,987, Pat. #7,441,730,
Pat. #7,669,806

Designed to meet or exceed requirements of FM DS 2-8.



Catalog #	A		B		D**		Max. Design Load*** (FM)				Approx.Wt./100 lbs. (kg)	
	in.	(mm)	in.	(mm)	in.	(mm)	30°-44° lbs./(kN)	45°-59° lbs./(kN)	60°-74° lbs./(kN)	75°-90° lbs./(kN)		
980- $3/8$	4 $9/16$	(114.9)	2 $1/16$	(52.4)	7 $/16$	(11.1)	2370	2790	3360	3750	149	(67.6)
980- $1/2$					9 $/16$	(14.3)					148	(67.1)
980- $5/8$					11 $/16$	(17.5)					147	(66.7)
980- $3/4$					13 $/16$	(20.6)					146	(66.2)
980H- $7/8$	6 $3/4$	(171.4)	3 $1/2$	(88.9)	15 $/16$	(23.8)	Fig. 980H is not UL Listed or FM Approved				402	(182.3)
980H-1					1 $1/16$	(27.0)					400	(181.4)
980H-1 $1/8$					1 $3/16$	(30.2)					397	(180.1)
980H-1 $1/4$					1 $5/16$	(33.3)					390	(176.9)

** Mounting attachment hole size.

*** Installed with 1" or 1 $1/4$ " schedule 40 brace pipe.

Eaton's B-Line series seismic bracing components are designed to be compatible only with other B-Line series bracing components, resulting in a listed seismic bracing assembly. Eaton B-Line Division warranty for seismic bracing components will be the warranty provided in Eaton B-Line Division standard terms and conditions of sale made available by Eaton, except that, in addition to the other exclusions from Eaton B-Line Division warranty, Eaton makes no warranty relating to B-Line series seismic bracing components that are combined with products not provided by Eaton.

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

Seismic Bracing

TOLCO Fig. 4L - sway brace attachment (UL listed)

Size Range: 1" (25mm) through 8" (200mm) IPS. 10" (250mm) and 12" (300mm) not UL listed

Material: Steel and stainless steel.

Function: For bracing pipe against sway and seismic disturbance.

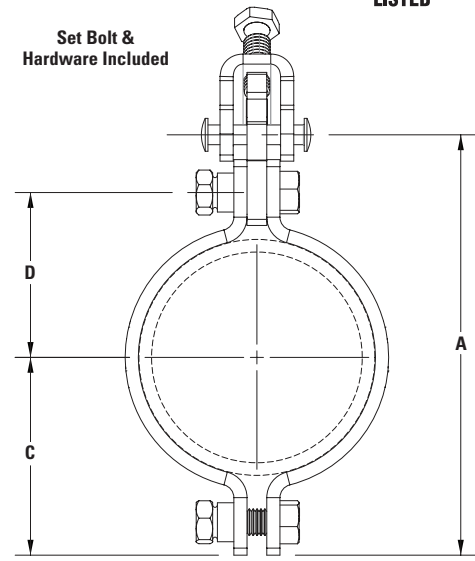
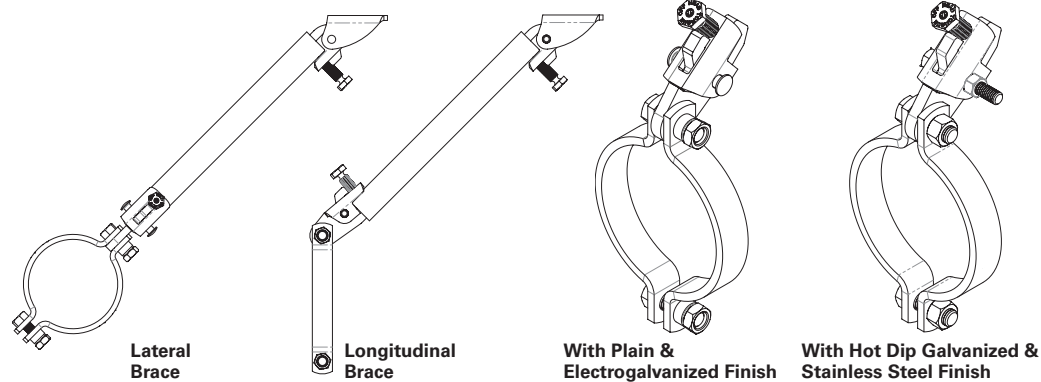
Approvals: Underwriters Laboratories Listed in the USA (UL) and Canada (cUL) 1" (25mm) through 8" (200mm) pipe. UL Listed for the following sprinkler type pipes: Sch. 40, Sch. 10, Bull Moose Eddy Flow, Wheatland Mega Flow, DIN 2448, KSD 3562, KSD 3507. Ask the factory for additional information as it may vary by product size. For FM Approval information refer to FM Approved page 75. Included in our Seismic Engineering Guidelines approved by the State of California Office of Statewide Health Planning and Development (OSHPD). For additional load, spacing and placement information relating to OSHPD projects, please refer to our Seismic Engineering Guidelines, OPM-0052-13.

Installation Instructions: Fig. 4L is the "braced pipe" attachment component of a longitudinal and lateral sway brace assembly. It is intended to be combined with the "bracing pipe" and TOLCO structural attachment component to form a complete bracing assembly. NFPA 13 guidelines should be followed. (For complete detailed instructions see instruction sheet [IL309015EN](#)).

To Install: Place the Fig. 4L over the pipe to be braced and tighten bolts. Then engage "bracing pipe" into jaw opening and tighten set bolt until head snaps off. Jaw attachment can pivot for adjustment to proper brace angle.

Finish: Plain, Electrogalvanized, Hot Dip Galvanized or Stainless Steel (only for 4" & 6" sizes).

Order By: Figure number, pipe size and finish.



Part No.	Nom Pipe Size		A (Max) in.	C in.	D in.	Bolt Size in.	UL Max. Rec. Load		PLN & EG. Approx. Wt./100 lbs.
	in.	(mm)					Logitudinal lbs.	Lateral lbs.	
4L-1	1	(25)	5	2	1 ³ / ₈	1/2-13	1000	1000	176
4L-1 ¹ / ₄	1 ¹ / ₄	(32)	5 ² / ₇	2 ¹ / ₁₆	1 ⁵ / ₉	1/2-13	1000	1000	182
4L-1 ¹ / ₂	1 ¹ / ₂	(40)	5 ¹ / ₂	2 ¹ / ₃	1 ² / ₃	1/2-13	1000	1000	187
4L-2	2	(50)	6 ² / ₇	2 ² / ₃	2	1/2-13	1600	1000	204
4L-2 ¹ / ₂	2 ¹ / ₂	—	6 ⁷ / ₉	3	2 ¹ / ₃	1/2-13	2000	1000	217
4L-65mm	—	(65)	6 ⁷ / ₉	3	2 ¹ / ₃	1/2-13	700	1000	214
4L-3	3	(80)	7 ³ / ₇	3 ¹ / ₄	2 ⁵ / ₈	1/2-13	2000	1000	323
4L-3 ¹ / ₂	3 ¹ / ₂	(90)	8	3 ¹ / ₂	2 ⁷ / ₈	1/2-13	2000	1000	343
4L-4***	4	(100)	8 ³ / ₇	3 ³ / ₄	3 ¹ / ₈	1/2-13	2000**	1000	253
4L-5	5	—	9 ⁵ / ₉	4 ³ / ₈	3 ⁵ / ₈	1/2-13	2000**	1600*	314
4L-125mm	—	(125)	9 ⁵ / ₉	4 ³ / ₈	3 ⁵ / ₈	1/2-13	1200	1600*	314
4L-6***	6	—	11 ³ / ₇	5 ¹ / ₃	4 ⁴ / ₇	1/2-13	2000	1600*	540
4L-150mm	—	(150)	11 ³ / ₇	5 ¹ / ₃	4 ⁴ / ₇	1/2-13	1200	1600*	538
4L-8	8	—	13 ³ / ₅	6 ² / ₅	5 ² / ₃	1/2-13	2000	2100*	645
4L-200mm	—	(200)	13 ³ / ₅	6 ² / ₅	5 ² / ₃	1/2-13	1400	2100*	643
4L-10****	10	(254)	17 ³ / ₅	8 ¹ / ₄	7 ¹ / ₄	1/2-13	NA	NA	1349
4L-12****	12	(300)	19 ³ / ₅	9 ¹ / ₄	8 ¹ / ₄	1/2-13	NA	NA	1526

* Only UL listed as a lateral brace for use with a 1" (25mm) pipe as the brace member.

** Only UL listed as a longitudinal brace for use with a 1" (25mm) thru 1¹/₂" (40mm) pipe as the brace member.

*** Fig 4L-4 and Fig 4L-6 are only sizes available in stainless steel 316.

**** FM approved not UL listed.

Eaton's B-Line series seismic bracing components are designed to be compatible only with other B-Line series bracing components, resulting in a listed seismic bracing assembly. Eaton B-Line Division warranty for seismic bracing components will be the warranty provided in Eaton B-Line Division standard terms and conditions of sale made available by Eaton, except that, in addition to the other exclusions from Eaton B-Line Division warranty, Eaton makes no warranty relating to B-Line series seismic bracing components that are combined with products not provided by Eaton.

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

TOLCO Fig. 4L - sway brace attachment (FM approved)

Size Range: 1" (25mm) through 12" (300mm) IPS.

Material: Steel.

Function: For bracing pipe against sway and seismic disturbance.

Approvals: Approved by Factory Mutual Engineering (FM), 1" (25mm) through 12" (300mm) pipe. For UL Listed information refer to UL Listed page 74. Included in our Seismic Engineering Guidelines approved by the State of California Office of Statewide Health Planning and Development (OSHPD). For additional load, spacing and placement information relating to OSHPD projects, please refer to our Seismic Engineering Guidelines, OPM-0052-13.

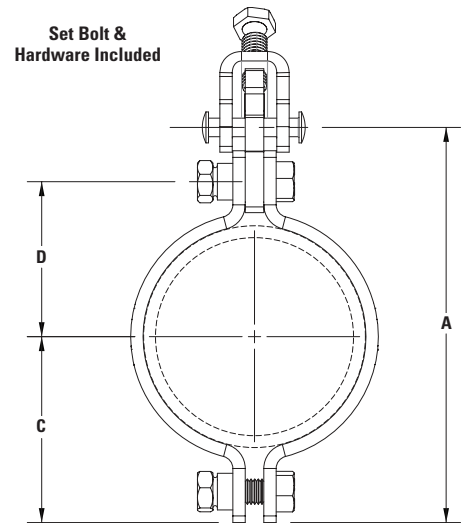
Installation Instructions: Fig. 4L is the "braced pipe" attachment component of a longitudinal and lateral sway brace assembly. It is intended to be combined with the "bracing pipe" and TOLCO™ structural attachment component to form a complete bracing assembly. NFPA 13 and/or FM guidelines should be followed.

To Install: Place the Fig. 4L over the pipe to be braced and tighten bolts. Then engage "bracing pipe" into jaw opening and tighten set bolt until head snaps off. Jaw attachment can pivot for adjustment to proper brace angle. (For complete detailed instructions see instruction sheet [IL309015EN](#)).

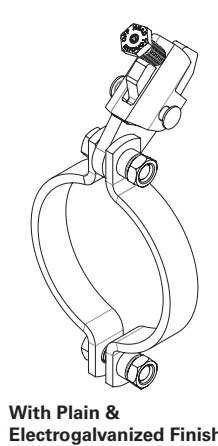
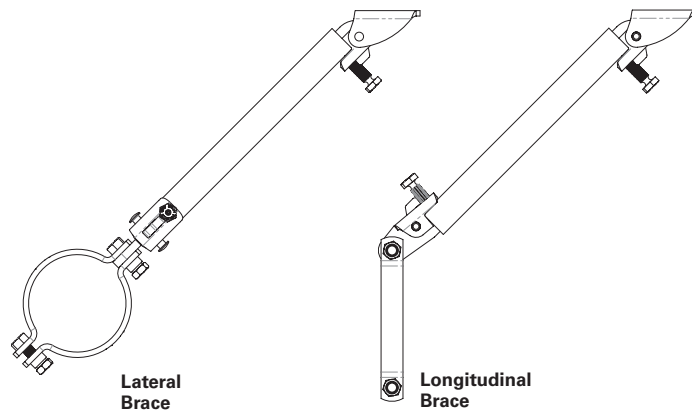
Finish: Plain, Electrogalvanized.

Order By: Figure number, pipe size and finish.

Designed to meet or exceed requirements of FM DS 2-8.



Seismic Bracing



Part No.	Nom Pipe Size in. (mm)	A (Max) in.	C in.	D in.	Bolt Size in.	FM Max. Rec. Load Longitudinal				FM Max. Rec. Load Lateral				Approx. Wt./100 lbs.	
						30°-44° lbs. (kN)	45°-59° lbs. (kN)	60°-74° lbs. (kN)	75°-90° lbs. (kN)	30°-44° lbs. (kN)	45°-59° lbs. (kN)	60°-74° lbs. (kN)	75°-90° lbs. (kN)		
4L-1	1 (25)	5	2	1 ³ / ₈	1/2-13	1060 (4.72)	1160 (5.16)	1400 (6.23)	1500 (6.68)	1370 (6.10)	1940 (8.63)	2380 (10.59)	2650 (11.79)	176	
4L-1 ¹ / ₄	1 ¹ / ₄ (32)	5 ² / ₇	2 ¹ / ₁₆	1 ⁵ / ₈	1/2-13	1060 (4.72)	1160 (5.16)	1400 (6.23)	1500 (6.68)	1370 (6.10)	1940 (8.63)	2380 (10.59)	2650 (11.79)	182	
4L-1 ¹ / ₂	1 ¹ / ₂ (40)	5 ¹ / ₂	2 ¹ / ₃	1 ² / ₃	1/2-13	740 (3.30)	1020 (4.54)	1250 (5.57)	920 (4.10)	1370 (6.10)	1940 (8.63)	2380 (10.59)	2650 (11.79)	187	
4L-2	2 (50)	6 ² / ₇	2 ² / ₃	2	1/2-13	740 (3.30)	1020 (4.54)	1250 (5.57)	920 (4.10)	1420 (6.32)	1990 (8.86)	2440 (10.86)	2720 (12.10)	204	
4L-2 ¹ / ₂	2 ¹ / ₂	—	6 ⁷ / ₈	3	2 ¹ / ₃	1/2-13	520 (2.32)	650 (2.90)	790 (3.52)	1040 (4.63)	1410 (6.28)	1990 (8.86)	2440 (10.86)	2720 (12.10)	220
4L-65mm	— (65)	6 ⁷ / ₈	3	2 ¹ / ₃	1/2-13	520 (2.32)	650 (2.90)	790 (3.52)	1040 (4.63)	1410 (6.28)	1990 (8.86)	2440 (10.86)	2720 (12.10)	218	
4L-3	3 (80)	7 ³ / ₇	3 ¹ / ₄	2 ⁵ / ₈	1/2-13	520 (2.32)	650 (2.90)	790 (3.52)	1040 (4.63)	1410 (6.28)	1990 (8.86)	2440 (10.86)	2720 (12.10)	323	
4L-3 ¹ / ₂	3 ¹ / ₂ (90)	8	3 ¹ / ₂	2 ⁷ / ₈	1/2-13	520 (2.32)	650 (2.90)	790 (3.52)	1040 (4.63)	1410 (6.28)	1990 (8.86)	2440 (10.86)	2720 (12.10)	343	
4L-4	4 (100)	8 ³ / ₇	3 ³ / ₄	3 ¹ / ₈	1/2-13	520 (2.32)	650 (2.90)	790 (3.52)	1040 (4.63)	1410 (6.28)	1990 (8.86)	2440 (10.86)	2720 (12.10)	253	
4L-5	5	—	9 ⁵ / ₈	4 ³ / ₈	3 ⁵ / ₈	1/2-13	520 (2.32)	650 (2.90)	790 (3.52)	1040 (4.63)	1410 (6.28)	1990 (8.86)	2440 (10.86)	313	
4L-125mm	— (125)	9 ⁵ / ₈	4 ³ / ₈	3 ⁵ / ₈	1/2-13	520 (2.32)	650 (2.90)	790 (3.52)	1040 (4.63)	1410 (6.28)	1990 (8.86)	2440 (10.86)	2720 (12.10)	312	
4L-6	6	—	11 ³ / ₇	5 ¹ / ₃	4 ⁴ / ₇	1/2-13	870 (3.87)	1200 (5.34)	1460 (6.50)	1630 (7.26)	1560 (6.94)	2210 (9.84)	2710 (12.06)	3020 (13.44)	540
4L-150mm	— (150)	11 ³ / ₇	5 ¹ / ₃	4 ⁴ / ₇	1/2-13	870 (3.87)	1200 (5.34)	1460 (6.50)	1630 (7.26)	1560 (6.94)	2210 (9.84)	2710 (12.06)	3020 (13.44)	538	
4L-8	8	—	13 ³ / ₅	6 ² / ₅	5 ² / ₃	1/2-13	1190 (5.30)	1440 (6.41)	1580 (7.03)	1750 (7.79)	1560 (6.94)	2210 (9.84)	2710 (12.06)	3020 (13.44)	645
4L-200mm	— (200)	13 ³ / ₅	6 ² / ₅	5 ² / ₃	1/2-13	1190 (5.30)	1440 (6.41)	1580 (7.03)	1750 (7.79)	1560 (6.94)	2210 (9.84)	2710 (12.06)	3020 (13.44)	643	
4L-10	10 (254)	17 ³ / ₅	8 ¹ / ₄	7 ¹ / ₄	1/2-13	1620 (7.21)	1660 (7.38)	1570 (6.98)	1740 (7.74)	1620 (7.21)	2300 (10.23)	2820 (12.54)	3140 (13.97)	1349	
4L-12	12 (300)	19 ³ / ₅	9 ¹ / ₄	8 ¹ / ₄	1/2-13	1620 (7.21)	1660 (7.38)	1570 (6.98)	1740 (7.74)	1620 (7.21)	2300 (10.23)	2820 (12.54)	3140 (13.97)	1526	

Eaton's B-Line series seismic bracing components are designed to be compatible only with other B-Line series bracing components, resulting in a listed seismic bracing assembly. Eaton B-Line Division warranty for seismic bracing components will be the warranty provided in Eaton B-Line Division standard terms and conditions of sale made available by Eaton, except that, in addition to the other exclusions from Eaton B-Line Division warranty, Eaton makes no warranty relating to B-Line series seismic bracing components that are combined with products not provided by Eaton.

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

Updated 4-2-21

TOLCO Fig. 58 - threaded side beam bracket

Size Range: 3/8"-16 rod, pipe sizes 1/2" (15mm) thru 4" (100mm)

Material: Pre-Galvanized Steel

Function: Practical and economical bracket used to support piping from wood, concrete or steel beams.

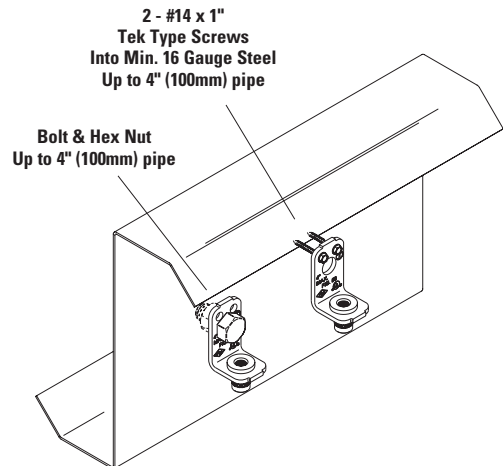
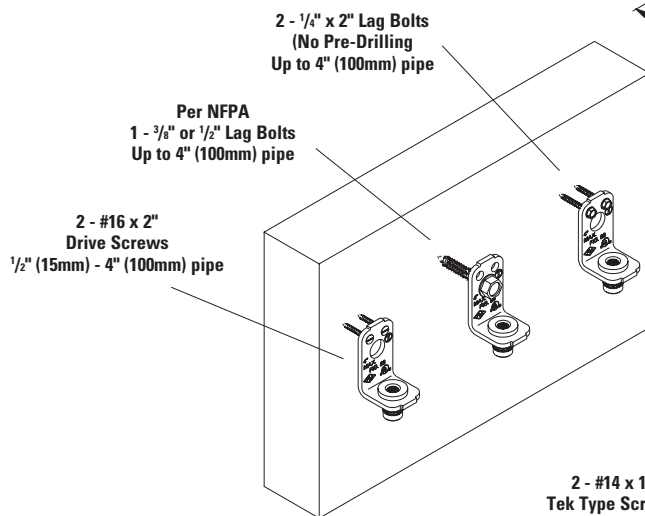
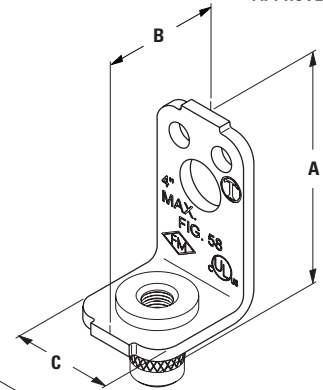
Features: Unique design allows rod to be easily threaded into bracket. Offset design permits unlimited rod adjustment. Center mounting hole will accept 3/8" and 1/2" fastener bolts. Per NFPA 13: 1/2" (15mm) thru 2" (50mm) pipe requires 3/8" fastener, 2 1/2" (65mm) thru 4" (100mm) pipe requires 1/2" fastener.*

Approvals: Underwriters Laboratories Listed in the USA (UL) and Canada (cUL), and Factory Mutual Engineering approved thru 4" (100mm) pipe.

Finish: Pre-Galvanized

Order By: Figure number and finish

***Note:** Additionally UL has listed the Fig. 58 with fasteners as shown in table below.



UL Listed Fastener Table			
Pipe Size	Qty	Fastener Type	Material
2"	2	#16 x 2" Drive screws	Wood
2"	1	3/8" Lag bolt	Wood
2 1/2" - 4"	1	1/2" Lag bolt	Wood
3 1/2"	2	1/4" x 1 1/2" Lag bolts	Wood
4"	2	1/4" x 2" Lag bolts **	Wood
4"	2	1/4" x 1" Tek screws	Metal (15 gauge)
4"	2	1/4" x 1" Tek screws	Metal (16 gauge)

** No pre-drilling

Larger pipe sizes can be hung with reduced spacing.

Part No.	Pipe Size		Rod Size	A		B		C		Approx. Wt./100 Lbs. (kg)
	in.	(mm)		in.	(mm)	in.	(mm)	in.	(mm)	
58	1/2" - 4"	(15 - 100)	3/8"-16	2 3/4"	(69.8)	1 1/2"	(38.1)	1 1/8"	(28.6)	14 (6.3)

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

Threaded Accessories

B3205 - Threaded rod (right-hand threads - both ends)

B3205L - Threaded rod (right & left hand threads)

Size Range: 3/8"-16 thru 7/8"-9 rod

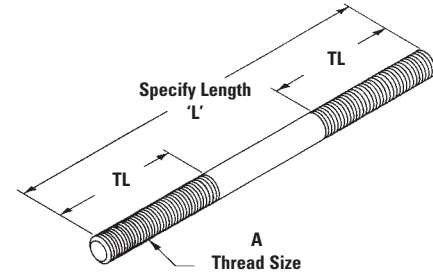
Material: Steel

Function: Recommended for use as a hanger support in hanger assemblies. Rod is threaded on both ends with right hand threads of the length shown. Also available with left and right hand threads - specify Fig. B3205L when ordering.

Maximum Temperature: 750°F (399°C)

Finish: Plain or Electro-Galvanized. Contact customer service for alternative finishes and materials.

Order By: Figure number, rod size, length and finish



Part No.	Thread Size A	Standard Thread Length TL in. (mm)	Design Load	
			650°F (343°C) Lbs. (kN)	750°F (399°C) Lbs. (kN)
B3205-3/8 x 'L'	3/8"-16	2 1/2" (63.5)	730 (3.25)	572 (2.54)
B3205-1/2 x 'L'	1/2"-13	2 1/2" (63.5)	1350 (6.00)	1057 (4.70)
B3205-5/8 x 'L'	5/8"-11	2 1/2" (63.5)	2160 (9.61)	1692 (7.52)
B3205-3/4 x 'L'	3/4"-10	3" (76.2)	3230 (14.37)	2530 (11.25)
B3205-7/8 x 'L'	7/8"-9	3 1/2" (88.9)	4480 (19.93)	3508 (15.60)

For larger sizes consult full line pipe hanger catalog.

ATR - All threaded rod - 120" (3.05m) lengths TOLCO Fig. 99 - all threaded rod cut to length

Size Range: 1/4"-20 thru 7/8"-9 rod in 120" lengths or cut to length

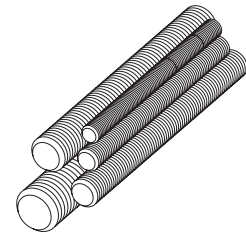
Material: Steel

Maximum Temperature: 750°F (399°C)

Finish: Plain or Electro-Galvanized. Contact customer service for alternative finishes and materials.

Approvals: Included in our Seismic Engineering Guidelines approved by the State of California Office of Statewide Health Planning and Development (OSHPD). For additional load, spacing and placement information relating to OSHPD projects, please refer to our Seismic Engineering Guidelines, OPM-0052-13.

Order By: Figure number, rod size, length and finish



OPM



Part No. - Size x Length		Threads Per Inch	Recommended Load		Approx. Wt./100 Ft.	
ATR	Fig. 99		Lbs.	(kN)	Lbs.	(kg)
ATR 1/4" x 120	99-1/4" x length	20	240 (1.07)	12 (5.44)		
ATR 3/8" x 120	99-3/8" x length	16	730 (3.24)	29 (13.15)		
ATR 1/2" x 120	99-1/2" x length	13	1350 (6.00)	53 (24.04)		
ATR 5/8" x 120	99-5/8" x length	11	2160 (9.60)	89 (40.37)		
ATR 3/4" x 120	99-3/4" x length	10	3230 (14.37)	123 (55.79)		
ATR 7/8" x 120	99-7/8" x length	9	4480 (19.93)	170 (77.11)		

For larger sizes consult full line pipe hanger catalog.

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

FireLock® Check Valves






 SEE VICTAULIC PUBLICATION 10.01 FOR DETAILS

SERIES 717 – cULus, FM, VdS, LPCB

SERIES 717H HIGH PRESSURE – cULus, FM, VdS, LPCB

The FireLock Series 717 Check Valve and Series 717H High Pressure Check Valves are CAD-designed for hydrodynamic efficiency and available in 2"/50mm – 3"/80mm (Series 717H) and 2½"/65mm – 12"/300mm (Series 717) sizes.

Series 717H valves are cULus Listed and FM Approved for service up to 365 psi/2517 kPa. See chart below for approved services for the Series 717 valves.

In both valve designs, the single-disc mechanism incorporates a spring-assisted feature for non-flaming operation. This spring-assisted, single-disc design achieves a leak-free seal with as little as 5ft /1.5m of head. Series 717 and 717H FireLock Check Valves can be installed either vertically (flow upwards only) or horizontally. A cast flow arrow indicator is provided to assist with proper valve orientation. Both valves include upstream and downstream pressure taps. Each valve is factory-tested to the rated working pressure. For systems requiring a Riser Check option, refer to publication 10.09.

Grooved ends allow fast, easy installation with just two Victaulic couplings or the valve may be mounted to flanged (ANSI CL.150) equipment using either to Victaulic Style 741 Vic-Flange® or Style 744 FireLock flange adapters on either end.



Series 717H
(2½ – 3"/65 – 80 mm)



Series 717
(4 – 12"/100 – 300 mm)



Series 717H High Pressure Check Valve
(2 – 3"/50 – 80 mm)

Size	Approval/Listing Service Pressures			
	Series 717H			
	cULus	FM	LPCB	Vds
2"/50 mm	up to 365 psi/2517 kPa	up to 365 psi/2517 kPa	up to 365 psi/2517 kPa	up to 365 psi/2517 kPa
2½"/65 mm	up to 365 psi/2517 kPa	up to 365 psi/2517 kPa	up to 365 psi/2517 kPa	up to 365 psi/2517 kPa
76.1 mm	up to 365 psi/2517 kPa	up to 365 psi/2517 kPa	up to 365 psi/2517 kPa	up to 365 psi/2517 kPa
3"/80 mm	up to 365 psi/2517 kPa	up to 365 psi/2517 kPa	up to 365 psi/2517 kPa	up to 365 psi/2517 kPa
4"/100 mm	n/a	n/a	n/a	n/a
5"/125 mm	n/a	n/a	n/a	n/a
139.7 mm	n/a	n/a	n/a	n/a
6"/150 mm	n/a	n/a	n/a	n/a
165.1 mm	n/a	n/a	n/a	n/a
8"/200 mm	n/a	n/a	n/a	n/a
10"/250 mm	n/a	n/a	n/a	n/a
12"/300 mm	n/a	n/a	n/a	n/a

Size	Approval/Listing Service Pressures			
	Series 717			
	cULus	FM	LPCB	VdS
2"/50 mm	n/a	n/a	n/a	n/a
2½"/65 mm	up to 250 psi/1725 kPa	n/a	up to 365 psi/2517 kPa	n/a
76.1 mm	up to 250 psi/1725 kPa	n/a	up to 365 psi/2517 kPa	up to 16bar/232 psi
3"/80 mm	up to 250 psi/1725 kPa	n/a	up to 365 psi/2517 kPa	up to 16bar/232 psi
4"/100 mm	up to 365 psi/2517 kPa	up to 365 psi/2517 kPa	up to 365 psi/2517 kPa	up to 16bar/232 psi
5"/125 mm	up to 365 psi/2517 kPa	up to 365 psi/2517 kPa	up to 365 psi/2517 kPa	n/a
139.7 mm	up to 365 psi/2517 kPa	up to 365 psi/2517 kPa	up to 365 psi/2517 kPa	up to 16bar/232 psi
6"/150 mm	up to 365 psi/2517 kPa	up to 365 psi/2517 kPa	up to 365 psi/2517 kPa	up to 16bar/232 psi
165.1 mm	up to 365 psi/2517 kPa	up to 365 psi/2517 kPa	up to 365 psi/2517 kPa	n/a
8"/200 mm	up to 365 psi/2517 kPa	up to 365 psi/2517 kPa	up to 348 psi/2400 kPa	up to 16bar/232 psi
10"/250 mm	up to 250 psi/1725 kPa	up to 250 psi/1725 kPa	up to 1725 kPa/250 psi	n/a
12"/300 mm	up to 250 psi/1725 kPa	up to 250 psi/1725 kPa	up to 1725 kPa/250 psi	n/a

JOB/OWNER

System No. _____
Location _____

CONTRACTOR

Submitted By _____
Date _____

ENGINEER

Spec Sect _____ Para _____
Approved _____
Date _____

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REV_P

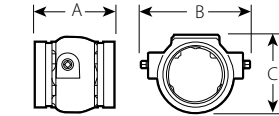


FireLock® Check Valves

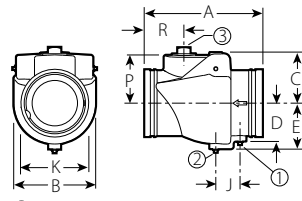
SERIES 717 – cULus, FM, VdS, LPCB

SERIES 717H HIGH PRESSURE – cULus, FM, VdS, LPCB

DIMENSIONS – Series 717

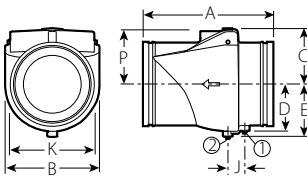


TYPICAL 2½ – 3/65 – 80MM



- ① ½" NPT Upstream Drain
- ② ½" NPT Downstream Drain
- ③ 2" NPT (Drain Optional)

TYPICAL 4 – 8/100 – 200MM

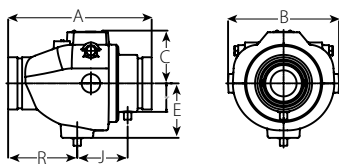


- ① ½" NPT Upstream Drain
- ② ½" NPT Downstream Drain

TYPICAL 10 – 12/250 – 300MM

Size		Dimensions- Inches/millimeters										Approx. Wgt. Ea.
Nominal Size Inches	Actual Outside Diameter Inches	E to E A	B	C	D	E	J	K	P	R	Lbs. kg	
2½	2.875	3.88	4.26	3.57	—	—	—	—	—	—	3.6	
65	73.0	99	108	91	—	—	—	—	—	—	1.6	
76.1 mm	3.000	3.88	4.26	3.57	—	—	—	—	—	—	3.6	
	76.1	99	108	91	—	—	—	—	—	—	1.6	
3	3.500	4.25	5.06	4.17	—	—	—	—	—	—	4.5	
80	88.9	108	129	106	—	—	—	—	—	—	2.0	
4	4.500	9.63	6.00	3.88	2.75	3.50	2.00	4.50	3.50	3.35	20.0	
100	114.3	245	152	99	70	89	51	114	89	85	9.1	
5	5.563	10.50	6.80	4.50	—	4.17	2.15	5.88	4.08	3.98	27.0	
125	141.3	267	173	114	—	106	55	149	104	101	12.3	
139.7 mm	5.500	10.50	6.80	4.50	—	4.17	2.15	5.88	4.08	3.98	27.0	
	139.7	267	173	114	—	106	55	149	104	101	12.3	
6	6.625	11.50	8.00	5.00	—	4.50	2.38	6.67	4.73	3.89	38.0	
150	168.3	292	203	127	—	114	61	169	120	99	17.2	
165.1 mm	6.500	11.50	8.00	5.00	—	4.50	2.38	6.67	4.73	3.89	38.0	
	165.1	292	203	127	—	114	61	169	120	99	17.2	
8	8.625	14.00	9.88	6.06	5.05	5.65	2.15	8.85	5.65	5.75	64.0	
200	219.1	356	251	154	128	144	55	225	144	146	29.0	
10	10.750	17.00	12.00	7.09	5.96	6.69	2.15	10.92	6.73	—	100.0	
250	273.0	432	305	180	151	170	55	277	171	—	45.4	
12	12.750	19.50	14.00	8.06	6.91	7.64	2.51	12.81	7.73	—	140.0	
300	323.9	495	356	205	176	194	64	925	196	—	63.5	

DIMENSIONS - Series 717H



TYPICAL 2"/60.3 mm – 3"/88.9 mm

Size		Dimensions- Inches/millimeters									Approx. Wgt. Ea.
Nominal Size Inches		A	B	C	D	E	J	K	P	R	Lbs. kg
2	8.66	6.46	3.23	1.48	3.02	2.80	—	—	4.25	10.7	
60.3	219.8	164.1	82.1	37.5	76.7	71.0	—	—	108.0	4.9	
2½	9.37	6.94	3.31	1.66	3.40	3.38	—	—	4.38	13.8	
73	238.0	176.3	84.1	42.2	86.4	85.9	—	—	111.3	6.3	
76.1 mm	9.37	6.94	3.31	1.66	3.40	3.38	—	—	4.38	13.8	
	238.0	176.3	84.1	42.2	86.4	85.9	—	—	111.3	6.3	
3	9.62	7.44	3.53	1.91	3.65	3.38	—	—	4.63	20.0	
88.9	244.3	189.0	89.7	48.5	92.7	85.9	—	—	117.6	9.1	

FireLock[®] Check Valves

SERIES 717 – cULus, FM, VdS, LPCB

SERIES 717H HIGH PRESSURE – cULus, FM, VdS, LPCB

MATERIAL SPECIFICATIONS

Body: Ductile Iron conforming to ASTM A-536, grade 65-45-12. Ductile iron conforming to ASTM A-395, grade 65-45-15, is available upon special request.

Body Coating: Series 717H Body: Black Paint
Series 717H Endface: Electroless Nickel
Series 717 (2½ – 3"): PPS Coating
Series 717 (4 – 12"): Black Paint

Body Seat: Series 717H – Nitrile O-ring installed into an electroless nickel plated endface
Series 717 (2½ – 3"): PPS Coated ductile iron
Series 717 (4 – 12"): Welded Nickel

Disc Seal or Coating:

- **Grade "T" Nitrile (Series 717H ONLY)**
Nitrile (Orange color code). Temperature range -20°F to +180°F/-29°C to +82°C. Recommended for petroleum products, air with oil vapors, vegetable and mineral oils within the specified temperature range; except hot, dry air over +140°F/+60°C and water over +150°F/+66°C. NOT RECOMMENDED FOR HOT WATER SERVICES.
- **Grade "E" EPDM (Series 717 ONLY)**
EPDM (green color code). Temperature range -30°F to +230°F/-34°C to +110°C. Recommended for cold and hot water service within the specified temperature range plus a variety of dilute acids, oil-free air and many chemical services. NOT RECOMMENDED FOR PETROLUUM SERVICES.

* Services listed are General Service Recommendations only. It should be noted that there are services for which these gaskets are not recommended. Reference should always be made to the latest Victaulic Gasket Selection Guide for specific gasket service recommendations and for a listing of services which are not recommended.

Discs:

- Series 717H (2 – 3"/50 – 80mm): CF8M Cast Stainless Steel
- Series 717 (2½ – 3"): Aluminum bronze with elastomer seal
- Series 717 (4 – 12"/100 – 300mm) Elastomer-coated ductile iron

Shaft:

- Series 717H (2 – 3"/50 -80mm): Brass
- Series 717 (2½ – 3"): Type 416 Stainless Steel
- Series 717 (4 – 12"/100 – 300mm) Type 316 Stainless Steel

Spring: All sizes Type 302/403 Stainless Steel

Shaft Plug:

- Series 717H (2 – 3"/50 – 80mm): Type 416 Stainless Steel
- Series 717 (2½ – 12"/65 – 300mm): Carbon steel zinc plated

Pipe Plug:

- Series 717H (2 – 3"/50 – 80mm): carbon steel zinc plated
- Series 717 (4 – 12"/100 – 300mm): Carbon steel zinc plated

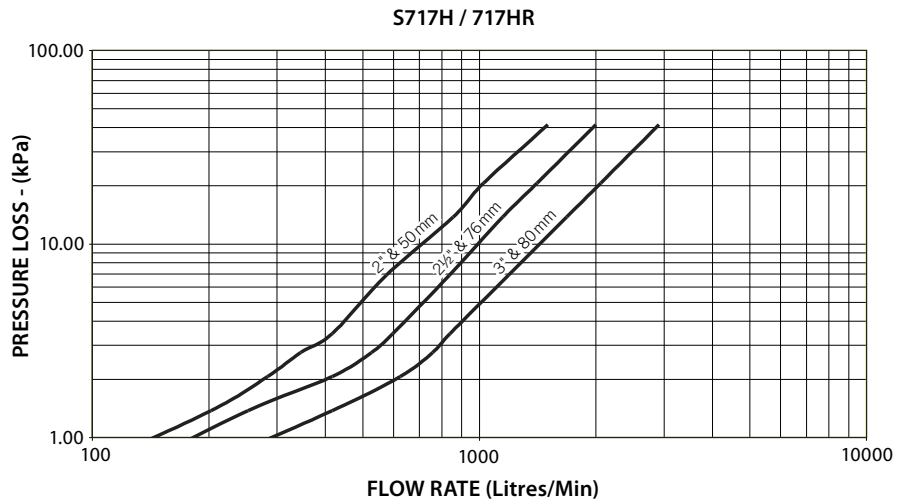
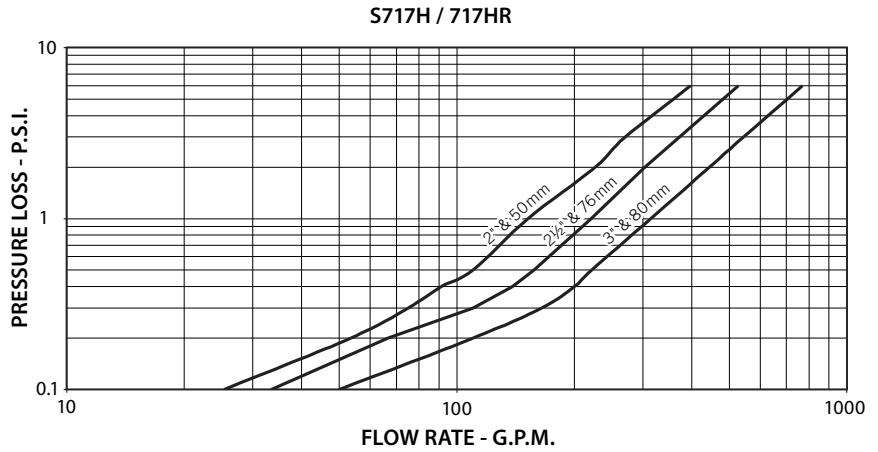
FireLock® Check Valves

SERIES 717 – cULus, FM, VdS, LPCB

SERIES 717H HIGH PRESSURE – cULus, FM, VdS, LPCB

FLOW CHARACTERISTICS

The charts below express the flow of water at 60°F/16°C through valve.



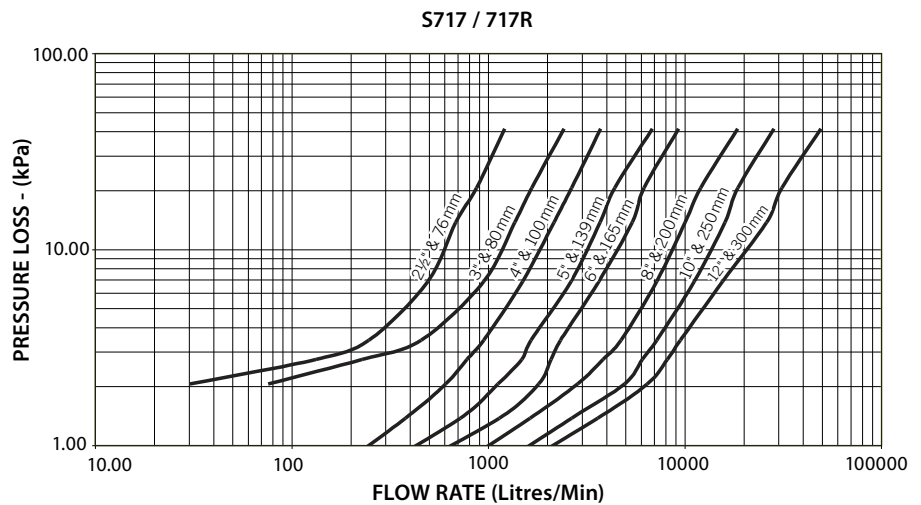
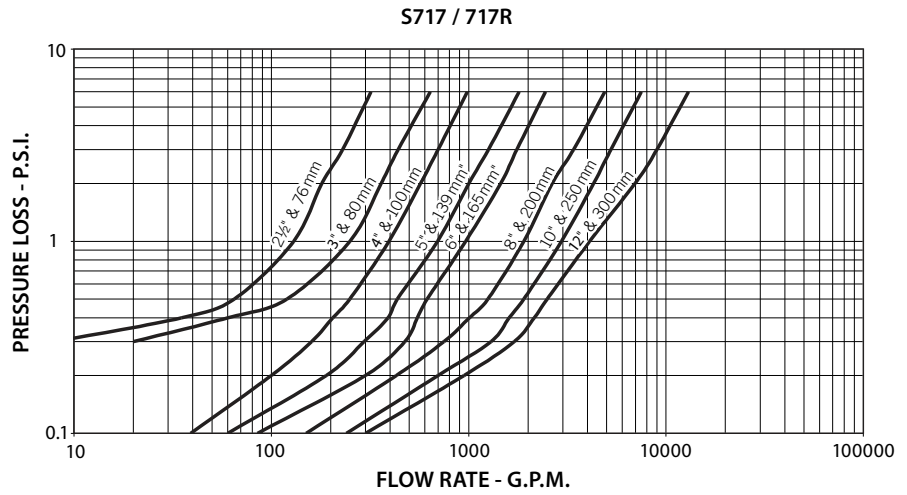
FireLock® Check Valves

SERIES 717 – cULus, FM, VdS, LPCB

SERIES 717H HIGH PRESSURE – cULus, FM, VdS, LPCB

FLOW CHARACTERISTICS

The charts below express the flow of water at 60°F/16°C through valve.



FireLock® Check Valves

SERIES 717 – cULus, FM, VdS, LPCB

SERIES 717H HIGH PRESSURE – cULus, FM, VdS, LPCB

INSTALLATION

Series 717 and Series 717H Check Valves can be installed either vertically (flow up only) or horizontally (with hinge on top) - making sure the flow arrow matches the flow direction through the pipeline.

Reference should always be made to the I-100 Victaulic Field Installation Handbook for the product you are installing. Handbooks are included with each shipment of Victaulic products for complete installation and assembly data, and are available in PDF format on our website at www.victaulic.com.

WARRANTY

Refer to the Warranty section of the current Price List or contact Victaulic for details.

NOTE

This product shall be manufactured by Victaulic or to Victaulic specifications. All products to be installed in accordance with current Victaulic installation/assembly instructions. Victaulic reserves the right to change product specifications, designs and standard equipment without notice and without incurring obligations.

For complete contact information, visit www.victaulic.com

10.08 1479 REV P UPDATED 6/2011

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10.08



Grooved End Fittings



Victaulic offers a broad line of fittings in sizes through 48"/1200mm in a variety of straight and reducing styles. Most standard fittings are cast of durable ductile iron to precise tolerances. Victaulic standard fittings pressure ratings conform to the ratings of Victaulic Style 77 couplings.

All fittings are supplied with grooves or shoulders to permit fast installation without field preparation. The grooved design permits flexibility for easy alignment. *These fittings are not intended for use with Victaulic couplings for plain end pipe (refer to Section 14.04 for fittings available for plain end applications).*

Fittings are provided in various materials including ductile iron, steel or segmentally welded steel depending on styles and size. Fittings are painted orange enamel with a galvanized finish available as an option, contact Victaulic for details.

Victaulic fittings are designed specifically for use in grooved piping systems. Fittings are provided grooved or with shoulders conforming to standard steel pipe outside diameters. When connecting wafer or lug-type butterfly valves directly to Victaulic fittings with 741 or 743 Vic-Flange® adapters, check disc clearance dimensions with I.D. dimension of fitting.

Note: The following Victaulic fittings are VdS approved: NO.10 90° Elbow, NO.11 45° Elbow, NO.20 Tee and NO.60 Cap.

Note: The following Victaulic fittings are LPCB approved: NO.10 90° Elbow, NO.11 45° Elbow, NO.12 22 ½° Elbow, NO.13 11 ¼° Elbow, NO.30 45° Lateral, NO.30-R Reducing Lateral, NO.100 Long Radius Elbow, NO.110 Long Radius Elbow, NO.20 Tee, NO.35 Cross, NO.60 Cap, NO.25 Reducing Tee, NO.33 True Wye, NO.50 Concentric Reducer, NO.51 Eccentric Reducer, NO.29M Tee with Threaded Branch, NO.27 Standpipe Tee, and NO.32 Tee Wye.



NO. 20 TEE



NO. 10 ELBOW



AGS – ADVANCED GROOVE SYSTEM

Advanced Groove System – For 14 – 24"/350 – 600mm piping systems, Victaulic now offers the Advanced Groove System (AGS). Refer to Section 20.05 for AGS fitting details.

Stainless Steel – Grooved end fittings are available in Schedule 10 Type 316 stainless steel (Schedule 5, 40 and Type 304 available as an option) in various sizes. Fitting center-to-end dimensions will vary depending upon type and schedule. Refer to Section 17.04 and 17.16 for details.

Aluminum – Grooved end fittings are available in aluminum alloy 356 T6, in sizes from 1 – 8"/25 – 200mm. Refer to Section 21.03 or contact Victaulic for details.

ALTERNATE STYLES



Extra Heavy EndSeal® "ES" Fittings – EndSeal fittings are available in 2 – 12"/50 – 300mm for use with "ES" grooved pipe and HP-70ES EndSeal couplings. "ES" fittings are painted black for easy identification. EndSeal (and standard) fittings may be easily internally coated (by others) for severe service requirements. Always specify "ES EndSeal fittings" when ordering. See Section 07.03 for information on EndSeal fittings.

Fittings Machined for Rubber or Urethane Lining (MRL) – For severe abrasive services, Victaulic fittings may be rubber or urethane lined (by others). Lining may be inside diameter/end (abrasion resistance) or wrap-around (corrosion and/or abrasion) machined. Refer to Section 25.03 or contact Victaulic for specific details.

Note: Fittings are available with a variety of coatings upon request such as hot dip galvanized, epoxy, glass lined and others.

JOB/OWNER

System No. _____
Location _____

CONTRACTOR

Submitted By _____
Date _____

ENGINEER

Spec Sect _____ Para _____
Approved _____
Date _____

Grooved End Fittings

MATERIAL SPECIFICATIONS

Fitting: Ductile iron conforming to ASTM A-536, grade 65-45-12. Ductile iron conforming to ASTM A-395, grade 65-45-15, is available upon special request.

- Or: Segmentally welded steel as shown under nipples

Nipples: (adapter, swaged & hose)

- $\frac{3}{4}$ – 4"/20 – 100 mm: Carbon steel, Schedule 40, conforming to ASTM A-53, Type F
- 5 – 6"/125 – 150 mm: Carbon steel, Schedule 40, conforming to ASTM A-53, Type E or S, Gr. B
- 8 – 12"/200 – 300 mm: Carbon steel, Schedule 30 or 40, conforming to ASTM A-53, Type E or S, Gr. B

Flanged Adapter Nipples: (Nipple – see above)

- Class 125 Flange: Cast iron conforming to ANSI B-16.1
- Class 150 Flange: Carbon steel conforming to ANSI B-16.5, raised or flat face
- Class 300 Flange: Carbon steel conforming to ANSI B-16.5, raised or flat face

Fitting Coatings: Orange enamel

- Optional: Hot dip galvanized and others. Some fittings supplied electroplated as standard – see product specifications.

Flanged Adapter Nipple Coating: None (Unfinished)

- Optional: Orange enamel, hot dip galvanized and others.

Grooved End Fittings

FLOW DATA

(Frictional Resistance)

The chart expresses the frictional resistance of various Victaulic fittings as equivalent feet of straight pipe. Fittings not listed can be estimated from the data given, for example, a 22½° elbow is approximately one-half the resistance of a 45° elbow. Values of mid-sizes can be interpolated.

Size		Dimension – Feet/meters					
Nominal Size In./mm	Actual Outside Dia. In./mm	Elbows				Tees	
		90° Elbows		45° Elbows		Branch	Run
No. 10 Std. Radius	No. 100 1 ½ D Long Radius	No. 11 Std. Radius	No. 110 1 ½ D Long Radius				
1 25	1.315 33.7	1.7 0.5	—	0.8 0.2	—	4.2 1.3	1.7 0.5
2 50	2.375 60.3	3.5 1.1	2.5 0.8	1.8 0.5	1.1 0.3	8.5 2.6	3.5 1.1
76.1 mm	3.000 76.1	4.3 1.3	—	2.1 0.7	—	10.8 3.3	4.3 1.3
3 80	3.500 88.9	5.0 1.5	3.8 1.2	2.6 0.8	1.6 0.5	13.0 4.0	5.0 1.5
108.0 mm	4.250 108.0	6.4 2.0	—	3.2 0.9	—	15.3 4.7	6.4 2.0
4 100	4.500 114.3	6.8 2.1	5.0 1.5	3.4 1.0	2.1 0.6	16.0 4.9	6.8 2.1
133.0 mm	5.250 133.0	8.1 2.5	—	4.1 1.2	—	20.0 6.2	8.1 2.5
139.7 mm	5.500 139.7	8.5 2.6	—	4.2 1.3	—	21.0 6.4	8.5 2.6
5 125	5.563 141.3	8.5 2.6	—	4.2 1.3	—	21.0 6.4	8.5 2.6
159.0 mm	6.250 159.0	9.4 2.9	—	4.9 1.5	—	25.0 7.6	9.6 2.9
165.1 mm	6.500 165.1	9.6 2.9	—	5.0 1.5	—	25.0 7.6	10.0 3.0
6 150	6.625 168.3	10.0 3.0	7.5 2.3	5.0 1.5	3.0 0.9	25.0 7.6	10.0 3.0
8 200	8.625 219.1	13.0 4.0	9.8 3.0	6.5 2.0	4.0 1.2	33.0 10.1	13.0 4.0
10 250	10.750 273.0	17.0 5.2	12.0 3.7	8.3 2.5	5.0 1.5	41.0 12.5	17.0 5.2
12 300	12.750 323.9	20.0 6.1	14.5 4.4	10.0 3.0	6.0 1.8	50.0 15.2	20.0 6.1
14 350	14.000 355.6	24.5 § 7.5	15.8 4.8	18.5 § 5.6	11.0 3.4	70.0 21.3	23.0 7.0
16 400	16.000 406.4	28.0 § 8.5	18.0 5.5	21.0 § 6.4	13.0 4.0	80.0 24.4	27.0 8.2
18 450	18.000 457.0	31.0 § 9.5	20.0 6.1	23.5 § 7.2	14.0 4.3	90.0 27.4	30.0 9.1
20 800	20.000 508.0	34.0 § 10.4	22.5 6.9	25.5 § 7.8	16.0 4.9	100.0 30.5	33.0 10.1
24 600	24.000 610.0	42.0 § 12.8	27.0 8.2	29.5 § 9.0	19.0 5.8	120.0 36.6	40.0 12.2
26 650	26.000 660.4	#	28.0 8.5	#	20.5 6.3	130.0 39.6	43.0 13.1
30 750	30.000 762.0	#	34.0 10.4	#	24.0 7.3	150.0 45.7	50.0 15.2
36 900	36.000 914.0	#	40.5 12.3	#	28.5 8.7	180.0 54.9	60.0 18.3
42 1050	42.000 1067.0	#	47.0 14.3	#	33.0 10.1	210.0 64.0	70.0 21.3

Contact Victaulic for details.

For use on cut grooved systems only. For roll grooved systems, Victaulic offers the Advanced Groove System (AGS). For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales office.

§ Fitting flow data for 14-24"/350-600 mm size NO. 10 and NO. 11 Elbows is based on fittings for Style 07 and 77 couplings. For flow data on AGS fittings (NO. W10 and NO. W11 Elbows), refer to submittal 20.05.

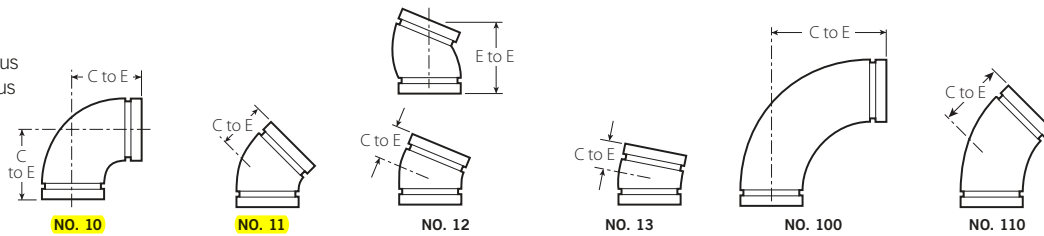
Note: All fittings are ductile iron unless otherwise noted with an "sw" or "s". SW= Segmentally Welded. S= Carbon Steel

Grooved End Fittings

DIMENSIONS

Elbows

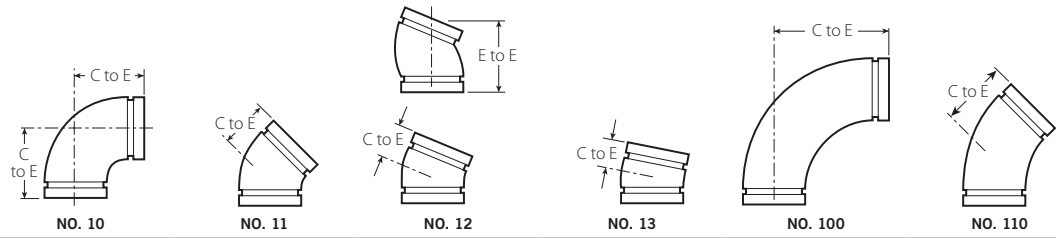
- NO. 10** 90° Elbow
- NO. 11** 45° Elbow
- NO. 12** 22½° Elbow
- NO. 13** 11¼° Elbow
- NO. 100** 90° Long Radius
- NO. 110** 45° Long Radius



Size		No. 10 90° Elbow		No. 11 45° Elbow		No. 12 22½° Elbow (sw)		No. 13 11¼° Elbow (sw)		No. 100† 90° Long Radius Elbow (S)		No. 110† 45° Long Radius Elbow (S)	
Nominal Size Inches mm	Actual Outside Dia. Inches mm	C to E Inches mm	Approx. Wgt. Each Lbs. kg	C to E Inches mm	Approx. Wgt. Each Lbs. kg	C to E Inches mm	Approx. Wgt. Each Lbs. kg	C to E Inches mm	Approx. Wgt. Each Lbs. kg	C to E Inches mm	Approx. Wgt. Each Lbs. kg	C to E Inches mm	Approx. Wgt. Each Lbs. kg
¾ 20	1.050 26.9	2.25 57	0.5 0.2	1.50 38	0.5 0.2	1.63 sw 41	—	1.38 sw 35	—	—	—	—	—
1 25	1.315 33.7	2.25 57	0.6 0.3	1.75 44	0.6 0.3	3.25 @ 83	0.6 0.3	1.38 sw 35	0.3 0.1	—	—	—	—
1¼ 32	1.660 42.4	2.75 70	1.0 0.5	1.75 44	0.9 0.4	1.75 44	0.8 0.4	1.38 sw 35	0.5 0.2	—	—	—	—
1½ 40	1.900 48.3	2.75 70	1.2 0.5	1.75 44	0.9 0.4	1.75 44	0.8 0.4	1.38 sw 35	0.5 0.2	—	—	—	—
2 50	2.375 60.3	3.25 83	1.8 0.8	2.00 51	1.3 0.6	3.75 @ 95	1.4 0.6	1.38 35	1.0 0.5	4.38 111	2.5 1.1	2.75 70	1.8 0.8
2½ 65	2.875 73.0	3.75 95	3.2 1.5	2.25 57	2.2 1.0	4.00 @ 102	2.3 1.0	1.50 38	1.1 0.5	5.13 130	3.4 1.5	3.00 76	2.8 1.3
76.1 mm	3.000 76.1	3.75 95	3.7 1.7	2.25 57	3.4 1.5	2.24 57	—	1.50 38	—	—	—	—	—
3 80	3.500 88.9	4.25 108	4.5 2.0	2.50 64	3.1 1.4	4.50 @ 114	3.1 1.4	1.50 38	2.1 1.0	5.88 149	6.0 2.7	3.38 86	4.9 2.2
3½ 90	4.000 101.6	4.50 114	5.6 2.5	2.75 70	4.3 2.0	2.50 sw 64	4.0 1.8	1.75 sw 44	2.7 1.2	—	—	—	—
4 100	4.500 114.3	5.00 127	7.1 3.2	3.00 76	5.6 2.5	2.88 73	5.6 2.5	1.75 44	3.6 1.6	7.50 191	12.3 5.6	4.00 102	7.3 3.3
108.0 mm	4.250 108.0	5.00 127	11.0 5.0	3.00 76	5.6 2.5	—	—	—	—	—	—	—	—
4½ 120	5.000 127.0	5.25 sw 133	10.0 4.5	3.13 sw 79	6.0 2.7	3.50 89	6.6 3.0	1.88 sw 48	4.2 1.9	—	—	—	—
5 125	5.563 141.3	5.50 140	11.7 5.3	3.25 83	8.3 3.8	2.88 sw 73	7.8 3.5	2.00 sw 51	5.0 2.2	+	18.2 8.3	+	14.8 6.7
133.0 mm	5.250 133.0	5.50 140	11.7 5.3	3.25 83	8.3 3.8	—	—	—	—	—	—	—	—
139.7 mm	5.500 139.7	5.50 140	11.7 5.3	3.25 83	8.3 3.8	2.87 73	—	2.00 51	—	—	—	—	—
6 150	6.625 168.3	6.50 165	17.2 7.8	3.50 89	10.8 4.9	6.25 @ 159	12.2 5.5	2.00 51	7.0 3.2	10.75 273	30.4 13.8	5.50 140	17.4 7.9
159.0 mm	6.250 159.0	6.50 165	18.6 8.4	3.50 89	10.8 4.9	—	—	—	—	—	—	—	—
165.1 mm	6.500 165.1	6.50 165	15.5 7.0	3.50 89	9.8 4.4	3.13 79	11.4 5.2	2.00 51	7.4 3.4	10.75 273	29.0 13.2	5.50 140	19.0 8.6

Note: All fittings are ductile iron unless otherwise noted with an "sw" or "s". SW= Segmentally Welded. S= Carbon Steel

Grooved End Fittings



Size		No. 10 90° Elbow		No. 11 45° Elbow		No. 12 22½° Elbow (sw)		No. 13 11¼° Elbow (sw)		No. 100† 90° Long Radius Elbow (S)		No. 110† 45° Long Radius Elbow (S)	
Nominal Size Inches mm	Actual Outside Dia. Inches mm	C to E Inches mm	Approx. Wgt. Each Lbs. kg	C to E Inches mm	Approx. Wgt. Each Lbs. kg	C to E Inches mm	Approx. Wgt. Each Lbs. kg	C to E Inches mm	Approx. Wgt. Each Lbs. kg	C to E Inches mm	Approx. Wgt. Each Lbs. kg	C to E Inches mm	Approx. Wgt. Each Lbs. kg
8 200	8.625 219.1	7.75 197	29.9 13.6	4.25 108	20.4 9.3	7.75 @ 197	20.0 9.1	2.00 51	10.1 4.6	14.25 362	66.0 30.0	7.25 184	36.0 16.3
10 250	10.750 273.0	9.00 229	63.3 28.7	4.75 121	37.5 17.0	4.38 sw 111	30.0 13.6	2.13 sw 54	11.8 5.3	15.00 381	107.0 48.5	6.25 159	57.0 25.9
12 300	12.750 323.9	10.00 254	74.0 33.6	5.25 133	66.7 30.3	4.88 sw 124	40.0 18.1	2.25 sw 57	29.3 13.3	18.00 457	156.0 70.8	7.50 191	90.0 40.8
14 # 350	14.000 355.6	14.00 355.6	136.0 61.7	5.75 146	65.0 29.5	5.00 sw 127	46.0 20.9	3.50 sw 89	32.0 14.5	21.00 s 533	164.0 74.4	8.75 s 222	82.0 37.2
377.0mm †	14.843 377.0	14.84 376.9	149.3 67.7	6.15 156.2	82.0 37.2	—	—	—	—	—	—	—	—
16 # 400	16.000 406.4	16.00 406.4	171.0 77.6	6.63 168	88.0 39.9	5.00 sw 127	58.0 26.3	4.00 sw 102	42.0 19.1	24.00 s 610	210.0 95.3	10.00 s 254	100.0 45.4
426.0mm †	16.772 426.0	16.77 426.0	198.6 90.1	6.95 176.5	101.3 45.9	—	—	—	—	—	—	—	—
18 # 450	18.000 457.0	18.00 457.2	228.0 103.4	7.46 189	108.0 50.0	5.50 sw 140	65.0 29.5	4.50 sw 114	53.2 24.1	27.00 s 686	273.0 123.8	11.25 s 286	135.0 61.2
480.0mm †	18.898 480.0	18.90 480.0	291.0 132.0	7.83 198.8	141.7 64.3	—	—	—	—	—	—	—	—
20 # 500	20.000 508.0	20.00 508.0	298.0 135.2	8.28 210	138.0 62.6	6.00 sw 152	78.6 36.0	5.00 sw 127	65.0 29.5	30.00 s 762	343.0 155.6	12.50 s 318	174.0 78.9
530.0mm †	20.866 530.0	20.87 530.0	355.0 161.0	8.64 219.4	179.0 81.2	—	—	—	—	—	—	—	—
24 # 600	24.000 610.0	24.00 609.6	438.0 198.7	9.94 252	221.0 100.2	7.00 sw 178	140.0 63.5	6.00 sw 152	60.0 27.2	36.00 s 914	516.0 234.1	15.00 s 381	251.0 113.9
630.0mm †	24.803 630.0	24.80 630.0	545.0 247.2	10.27 261.0	255.2 115.7	—	—	—	—	—	—	—	—
14 – 24 350 – 600	AGS For AGS fitting information, see publication 20.05												

@ Gooseneck design, end-to-end dimension

For use on cut grooved systems only. For roll grooved systems, Victaulic offers the Advanced Groove System (AGS). For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales office.

† Chinese standard sizes

Note: All fittings are ductile iron unless otherwise noted with an "sw" or "s". SW= Segmentally Welded. S= Carbon Steel

Grooved End Fittings

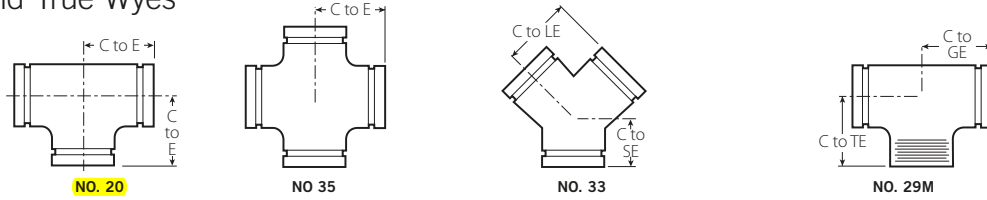
Tees, Crosses and True Wyes

NO. 20 Tee

NO. 35 Cross

NO. 33 True Wye

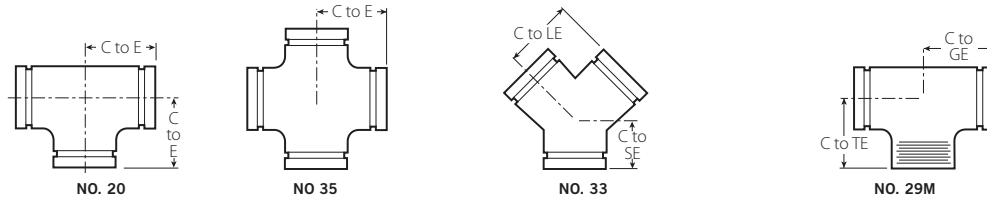
NO. 29M Tee with Threaded Branch




Size		No. 20 Tee		No. 35 Cross (sw)		No. 33 True Wye (sw)			No. 29M Tee with Threaded Branch		
Nominal Size Inches mm	Actual Outside Dia. Inches mm	C to E Inches mm	Approx. Weight Each Lbs. kg	C to E Inches mm	Approx. Weight Each Lbs. kg	C to LE Inches mm	C to SE Inches mm	Approx. Weight Each Lbs. kg	C to GE Inches mm	C to TE Inches mm	Approx. Weight Each Lbs. kg
¾ 20	1.050 26.9	2.25 57	0.6 0.3	2.25 57	0.9 0.4	—	—	—	2.25 57	2.25 57	0.6 0.3
1 25	1.315 33.7	2.25 57	1.0 0.5	2.25 57	1.3 0.6	2.25 57	2.25 57	1.1 0.5	2.25 57	2.25 57	1.0 0.5
1¼ 32	1.660 42.4	2.75 70	1.5 0.7	2.75 70	2.1 1.0	2.75 70	2.50 64	1.5 0.7	2.75 70	2.75 70	1.5 0.7
1½ 40	1.900 48.3	2.75 70	2.0 0.9	2.75 70	2.5 1.1	2.75 70	2.75 70	1.8 0.8	2.75 70	2.75 70	2.0 0.9
2 50	2.375 60.3	3.25 83	3.0 1.4	3.25 83	3.8 1.7	3.25 83	2.75 70	2.5 1.1	3.25 83	4.25 108	3.00 1.4
2½ 65	2.875 73.0	3.75 95	4.3 2.0	3.75 95	6.1 2.8	3.75 95	3.00 76	4.3 2.0	3.75 95	3.75 95	4.3 2.0
76.1 mm	3.000 76.1	3.75 95	5.2 2.4	—	—	—	—	—	3.75 95	3.75 95	5.2 (sw) 2.4
3 80	3.500 88.9	4.25 108	6.8 3.0	4.25 108	10.5 4.8	4.25 108	3.25 83	6.1 2.8	4.25 108	6.00 152	6.8 3.1
3½ 90	4.000 101.6	4.50 (sw) 114	7.9 3.6	4.50 114	11.5 5.2	4.50 114	3.50 89	9.6 4.4	4.50 114	4.50 114	7.9 (sw) 3.6
108.0 mm	4.250 108.0	5.00 127	15.5 7.0	—	—	—	—	—	5.00 127	5.00 127	15.5 7.0
4 100	4.500 114.3	5.00 127	11.9 5.4	5.00 127	15.8 7.2	5.00 127	3.75 95	10.0 4.5	5.00 127	7.25 184	11.9 5.4
4½ 120	5.000 127.0	5.25 (sw) 133	15.0 6.8	5.25 133	18.5 8.4	—	—	—	5.25 133	5.25 133	15.0 (sw) 6.8
133.0 mm	5.250 133.0	5.50 140	17.8 8.1	—	—	—	—	—	5.50 140	5.50 140	17.8 8.1
139.7 mm	5.500 139.7	5.50 140	17.8 8.1	—	—	—	—	—	5.50 140	5.50 140	17.8 8.1
5 125	5.563 141.3	5.50 140	17.8 8.1	5.50 140	20.0 9.1	5.50 140	4.00 102	15.0 6.8	5.50 140	5.50 140	17.8 (sw) 8.1
159.0 mm	6.250 159.0	6.50 165	27.1 12.3	—	—	—	—	—	6.50 165	6.50 165	27.1 12.3
165.1 mm	6.500 165.1	6.50 165	22.0 10.0	6.50 165	28.0 12.7	—	—	—	6.50 165	6.50 165	22.0 10.0
6 150	6.625 168.3	6.50 165	25.7 11.7	6.50 165	28.0 12.7	6.50 165	4.50 114	22.3 10.1	6.50 165	6.50 165	25.7 (sw) 11.7
8 200	8.625 219.1	7.75 197	47.6 21.6	7.75 197	48.0 21.8	7.75 197	6.00 152	36.0 16.3	7.75 197	7.75 197	47.6 (sw) 21.6
10 250	10.750 273.0	9.00 229	99.0 44.9	9.00 229	121.5 55.1	9.00 229	6.50 155	69.9 31.7	9.00 229	9.00 229	99.0 44.9
12 300	12.750 323.9	10.00 254	133.0 60.3	10.00 254	110.0 49.9	10.00 254	7.00 178	80.0 36.3	10.00 254	10.00 254	133.0 60.3

Note: All fittings are ductile iron unless otherwise noted with an "sw" or "s". SW= Segmentally Welded. S= Carbon Steel

Grooved End Fittings



Size		No. 20 Tee		No. 35 Cross (sw)		No. 33 True Wye (sw)			No. 29M Tee with Threaded Branch		
Nominal Size Inches mm	Actual Outside Dia. Inches mm	C to E Inches mm	Approx. Weight Each Lbs. kg	C to E Inches mm	Approx. Weight Each Lbs. kg	C to LE Inches mm	C to SE Inches mm	Approx. Weight Each Lbs. kg	C to GE Inches mm	C to TE Inches mm	Approx. Weight Each Lbs. kg
14 # 350	14.000 355.6	11.00 279	145.0 65.8	11.00 279	198.0 89.8	11.00 279	7.50 191	134.2 60.8	—	—	—
377.0mm	14.000 355.6	11.00 279	145.0 65.8	—	—	—	—	—	—	—	—
16 # 400	16.000 406.4	12.00 305	186.0 84.4	12.00 305	250.0 113.4	12.00 305	8.00 203	167.0 75.7	—	—	—
426.0mm †	16.000 406.4	12.00 305	186.0 84.4	—	—	—	—	—	—	—	—
18 # 450	18.000 457.0	14.00 356	256.0 116.1	15.50 394	350.0 158.8	15.50 394	8.50 216	234.0 106.1	—	—	—
480.0mm †	18.000 457.0	14.00 356	256.0 116.1	—	—	—	—	—	—	—	—
20 # 500	20.000 508.0	15.00 381	339.0 153.8	17.25 438	452.0 205.0	17.25 438	9.00 229	281.0 127.5	—	—	—
530.0mm †	20.000 508.0	15.00 381	339.0 153.8	—	—	—	—	—	—	—	—
24 # 600	24.000 610.0	17.00 432	473.0 214.5	20.00 508	795.0 360.6	20.00 508	10.00 254	523.0 237.2	—	—	—
630.0mm †	24.000 610.0	17.00 432	473.0 214.5	—	—	—	—	—	—	—	—
14 – 24 350 – 600	 For AGS fitting information, see publication 20.05										

For use on cut grooved systems only. For roll grooved systems, Victaulic offers the Advanced Groove System (AGS). For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales office.

† Chinese standard sizes

Note: All fittings are ductile iron unless otherwise noted with an "sw" or "s". SW= Segmentally Welded. S= Carbon Steel

IMPORTANT NOTE:

Fittings size 26 – 48"/650 – 1050mm are available roll grooved for installation with Style 770 large diameter pipe couplings, Contact Victaulic for details.

Grooved End Fittings

Cap

NO. 60



NO. 60

Size		No. 60 Cap	
Nominal Size Inches mm	Actual Outside Diameter Inches mm	T Thickness Inches mm	Approx. Weight Each Lbs. kg
¾ 20	1.050 26.9	0.88 22	0.2 0.1
1 25	1.315 33.7	0.88 22	0.3 0.1
1¼ 32	1.660 42.4	0.88 22	0.3 0.1
1½ 40	1.900 48.3	0.88 22	0.5 0.2
2 50	2.375 60.3	0.88 22	0.6 0.3
2½ 65	2.875 73.0	0.88 22	1.0 0.5
76.1 mm	3.000 76.1	0.88 22	1.2 0.5
3 80	3.500 88.9	0.88 22	1.2 0.5
3½ 90	4.000 101.6	0.88 22	2.5 1.1
108.0 mm	4.250 108.0	1.00 25	2.3 1.0
4 100	4.500 114.3	1.00 25	2.5 1.1
133.0 mm	5.250 133.0	1.00 25	4.5 2.0
139.7 mm	5.500 139.7	1.00 25	4.5 2.0
5 125	5.563 141.3	1.00 25	4.6 2.1
159.0 mm	6.250 159.0	1.00 25	6.8 3.1
165.1 mm	6.500 165.1	1.00 25	7.3 3.3

Size		No. 60 Cap	
Nominal Size Inches mm	Actual Outside Diameter Inches mm	T Thickness Inches mm	Approx. Weight Each Lbs. kg
6 150	6.625 168.3	1.00 25	6.1 2.8
8 200	8.625 219.1	1.19 30	13.1 5.9
10 250	10.750 273.0	1.25 32	21.0 9.5
12 300	12.750 323.9	1.25 32	35.6 16.2
14 # (s) 350	14.000 355.6	9.50 241	*
16 # (s) 400	16.000 406.4	10.00 254	*
18 # (s) 450	18.000 457.0	11.00 279	*
20 # (s) 500	20.000 508.0	12.00 305	*
24 # (s) 600	24.000 610.0	13.50 343	*
14 - 24 350 - 600	For AGS fitting information, see publication 20.05		

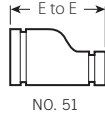
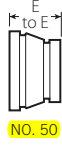
IMPORTANT NOTES:

* Steel dish caps available through 24"/600mm, contact Victaulic.
 No. 60 cap is not suitable for use in vacuum service with Style 72 or 750 couplings. No. 61 bull plugs should be used, see pg. 35.
 # For use on cut grooved systems only. For roll grooved systems, Victaulic offers the Advanced Groove System (AGS). For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales office.
 Note: All fittings are ductile iron unless otherwise noted with an "sw" or "s". SW= Segmentally Welded. S= Carbon Steel

Grooved End Fittings

Concentric/Eccentric Reducer

NO. 50 Concentric
NO. 51 Eccentric



Size	No. 50 Concentric Reducer		No. 51 Eccentric Reducer		
	Nominal Size Inches mm	E to E Inches mm	Approx. Weight Each Lbs. kg	E to E Inches mm	Approx. Weight Each Lbs. kg
1 1/4 x 3/4	3/4 20	+	1.9 0.9	—	—
	1 25	+	1.9 0.9	—	—
1 1/2 x 1/2	3/4 20	+	1.4 0.6	—	—
	1 25	2.50 64	0.8 0.4	8.50 (SW) 216	4.5 2.0
	1 1/4 32	2.50 64	1.0 0.5	—	—
2 x 1 1/2	3/4 20	2.50 64	0.9 0.3	9.00 (SW) 229	2.0 0.9
	1 25	2.50 64	0.7 0.3	9.00 (SW) 229	2.3 1.0
	1 1/4 32	2.50 64	1.2 0.5	9.00 (SW) 229	4.6 2.1
	1 1/2 40	3.50 89	1.0 0.5	3.50 89	1.1 0.5
	2 50	3.50 89	1.0 0.5	3.50 89	1.1 0.5
2 1/2 x 1 1/4	3/4 20	+	1.3 0.6	+	3.3 1.5
	1 25	2.50 64	1.1 0.5	9.50 241	3.5 1.6
	1 1/4 32	3.50 89	3.3 1.5	3.50 89	1.4 0.6
	1 1/2 40	2.50 64	3.6 1.6	9.50 (SW) 241	3.7 1.7
	2 50	2.50 64	3.9 1.8	9.50 (SW) 241	4.3 2.0
	1 1/2 40	2.50 64	5.1 2.3	9.50 (SW) 241	5.1 2.3
	2 50	2.50 64	1.6 0.7	3.50 89	6.0 2.7
3 x 2 1/2	3/4 20	+	1.5 0.7	+	4.5 2.0
	1 25	2.50 64	1.3 0.6	9.50 (SW) 241	4.8 2.2
	1 1/4 32	2.50 64	1.4 0.6	+	4.8 2.2
	1 1/2 40	2.50 64	5.1 2.3	9.50 (SW) 241	5.1 2.3
	2 50	2.50 64	1.6 0.7	3.50 89	6.0 2.7
	2 1/2 40	2.50 64	1.8 0.8	3.50 89	7.0 3.2
	76.1	2.50 64	2.1 1.0	—	—

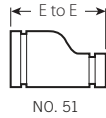
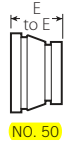
Size	No. 50 Concentric Reducer		No. 51 Eccentric Reducer		
	Nominal Size Inches mm	E to E Inches mm	Approx. Weight Each Lbs. kg	E to E Inches mm	Approx. Weight Each Lbs. kg
3 1/2 x 3	3 80	2.50 64	2.0 0.9	9.50 (SW) 241	7.0 3.2
	4 100	3.00 76	3.0 1.4	13.00 (SW) 330	6.5 2.9
4 x 3	1 1/4 32	+	4.6 2.1	—	—
	1 1/2 40	3.00 (SW) 76	2.6 1.2	10.00 (SW) 254	8.1 3.7
	2 50	3.00 76	2.4 1.1	4.00 102	3.3 1.5
	2 1/2 65	3.00 76	2.7 1.2	4.00 102	3.4 1.5
	3 80	3.00 76	3.2 1.4	4.00 102	3.5 1.6
5 x 4	3 1/2 90	3.00 76	2.9 1.3	10.00 (SW) 254	8.0 3.6
	5 125	11.00 (SW) 279	9.0 4.1	11.00 (SW) 279	5.2 2.4
	2 1/2 65	4.00 102	4.3 2.0	11.00 (SW) 279	10.8 4.9
	3 80	4.00 102	5.5 2.5	11.00 (SW) 279	11.1 5.0
	4 100	3.50 89	4.3 1.9	5.00 127	12.0 5.4
6 x 5	1 1/2 40	4.00 102	5.0 2.3	11.50 (SW) 292	14.5 6.6
	2 50	+	5.5 2.5	+	+
	2 1/2 65	4.00 102	6.6 3.0	11.50 (SW) 292	14.5 6.6
	3 80	4.00 102	6.4 2.9	11.50 (SW) 292	14.2 6.4
	4 100	4.00 102	6.4 2.9	5.50 140	15.0 6.8
	5 125	4.00 102	6.5 2.9	5.50 140	17.0 7.7
	6 150	4.00 102	6.4 2.9	5.50 140	17.0 7.7
8 x 6	2 1/2 65	16.00 406	7.9 3.6	12.00 (SW) 305	26.1 11.8
	3 80	5.00 127	9.3 4.2	12.00 (SW) 305	22.0 10.0

Note: All fittings are ductile iron unless otherwise noted with an "sw" or "s".
SW= Segmentally Welded. S= Carbon Steel

Grooved End Fittings

Concentric/Eccentric Reducer

NO. 50 Concentric
NO. 51 Eccentric



Size	No. 50 Concentric Reducer		No. 51 Eccentric Reducer		
	Nominal Size Inches mm	E to E Inches mm	Approx. Weight Each Lbs. kg	E to E Inches mm	Approx. Weight Each Lbs. kg
# 8 200	4 100	5.00	10.4	12.00 (SW)	23.0
		127	4.8	305	10.4
	5 125	5.00	11.6	12.00 (SW)	23.0
		127	5.2	305	10.4
# 10 250	4 100	5.00	11.9	6.00	24.0
		127	5.4	152	10.9
	6 150	6.00	19.7	13.00 (SW)	32.0
		152	8.9	330	14.5
# 12 300	4 100	+	34.3	+	34.6
			15.6		15.7
	6 150	6.00	20.0	13.00 (SW)	36.9
		152	9.1	330	16.7
# 14 350	6 150	7.00	24.6	14.00 (SW)	50.0
		178	11.2	356	22.7
	8 200	7.00	52.0	14.00 (SW)	53.5
		178	23.6	356	24.3
# 16 400	8 200	7.00	39.0	14.00 (SW)	57.0
		178	17.7	356	25.9
	10 250	13.00	65.0	13.00	60.0
		330	29.5	330	27.2
# 18 450	8 200	13.00	65.0	13.00	60.0
		330	29.5	330	27.2
	10 250	13.00	66.0	13.00	65.0
		330	29.9	330	29.5
# 24 600	12 300	13.00	68.0	13.00	66.0
		330	30.8	330	29.9
	14 350	14.00	73.0	14.00	73.0
		356	33.1	355	33.1
# 18 450	10 250	14.00	73.0	14.00	73.0
		356	33.1	355	33.1
	12 300	14.00	73.0	14.00	73.0
		356	33.1	355	33.1
# 18 450	10 250	14.00	73.0	14.00	73.0
		356	33.1	355	33.1
	14 350	14.00	73.0	14.00	73.0
		356	33.1	355	33.1
# 18 450	10 250	15.00	91.0	15.00	91.0
		381	41.3	381	41.3
	12 300	15.00	91.0	15.00	91.0
		381	41.3	381	41.3

Size	No. 50 Concentric Reducer		No. 51 Eccentric Reducer		
	Nominal Size Inches mm	E to E Inches mm	Approx. Weight Each Lbs. kg	E to E Inches mm	Approx. Weight Each Lbs. kg
# 18 450	12 300	15.00	91.0	15.00	91.0
		381	41.3	381	41.3
	14 350	15.00	91.0	15.00	91.0
		381	41.3	381	41.3
# 20 500	10 250	15.00	91.0	15.00	91.0
		381	41.3	381	41.3
	12 300	20.00	110.0	20.00	177.0
		508	49.9	508	80.3
# 24 600	14 350	20.00	120.0	20.00	120.0
		508	54.4	508	54.4
	16 400	20.00	149.0	20.00	149.0
		508	67.9	508	67.9
# 24 600	16 400	20.00	120.0	20.00	120.0
		508	54.4	508	54.4
	18 450	20.00	136.0	20.00	136.0
		508	61.7	508	61.7
# 24 600	10 250	20.00	142.0	20.00	142.0
		508	64.4	508	64.4
	12 300	20.00	150.0	20.00	150.0
		508	68.0	508	68.0
# 24 600	14 350	20.00	162.0	20.00	162.0
		508	73.5	508	73.5
	16 400	20.00	162.0	20.00	162.0
		508	73.5	508	73.5
# 24 600	18 450	20.00	162.0	20.00	162.0
		508	73.5	508	73.5
	20 500	20.00	151.0	20.00	190.0
		508	68.5	508	86.2
14 - 24 350 - 600	AGS For AGS fitting information, see publication 20.05				

+ Contact Victaulic for details.

* Available with male threaded small end No. 52.

Note: All fittings are ductile iron unless otherwise noted with an "sw" or "s".

SW= Segmentally Welded. S= Carbon Steel

IMPORTANT NOTE:

Steel eccentric reducers available through 30"/750 mm, contact Victaulic for dimensions.

For use on cut grooved systems only. For roll grooved systems, Victaulic offers the Advanced Groove System (AGS). For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales office.

§ Cast fitting available for JIS size. Contact Victaulic for details.

Grooved End Fittings

INSTALLATION

Reference should always be made to the I-100 Victaulic Field Installation Handbook for the product you are installing. Handbooks are included with each shipment of Victaulic products for complete installation and assembly data, and are available in PDF format on our website at www.victaulic.com.

WARRANTY

Refer to the Warranty section of the current Price List or contact Victaulic for details.

NOTE

This product shall be manufactured by Victaulic or to Victaulic specifications. All products to be installed in accordance with current Victaulic installation/assembly instructions. Victaulic reserves the right to change product specifications, designs and standard equipment without notice and without incurring obligations.

FireLock® Fittings



FireLock® products comprise a unique system specifically designed for fire protection services. FireLock full-flow elbows and tees feature CAD-developed, hydrodynamic design, affording a shorter center-to-end dimension than standard fittings. A noticeable bulge allows the water to make a smoother turn to maintain similar flow characteristics as standard full flow fittings.

FireLock fittings are designed for use exclusively with Victaulic IPS-sized couplings that have been Listed or Approved for Fire Protection Services. Use of other couplings or flange adapters may result in bolt pad interference.

Victaulic FireLock fittings pressure ratings conform to the ratings of Victaulic FireLock Style 005 couplings.



MATERIAL SPECIFICATIONS

Fitting: Ductile iron conforming to ASTM A-536, grade 65-45-12.

Fitting Coating:

- Orange enamel.
- Red Enamel in EMEA-I.
- **Optional:** Hot dipped galvanized.

JOB/OWNER

System No. _____
 Location _____

CONTRACTOR

Submitted By _____
 Date _____

ENGINEER

Spec Sect _____ Para _____
 Approved _____
 Date _____

www.victaulic.com

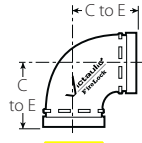
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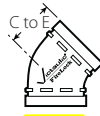


FireLock® Fittings

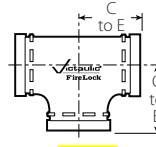
DIMENSIONS



NO. 001



NO. 003



NO. 002



NO. 006

Size		No. 001 90° Elbow		No. 003 45° Elbow		No. 002 Straight Tee		No. 006 Cap	
Nominal Size Inches mm	Actual Outside Diameter Inches mm	C to E Inches mm	Approx. Weight Each Lbs. kg	C to E Inches mm	Approx. Weight Each Lbs. kg	C to E Inches mm	Approx. Weight Each Lbs. kg	Thickness "T" Inches mm	Approx. Weight Each Lbs. kg
1 ¼ 32	1.660 42.4	—	—	—	—	—	—	0.8 21	0.3 0.1
1 ½ 40	1.900 48.3	—	—	—	—	—	—	0.82 21	0.4 0.2
2 50	2.375 60.3	2.75 70	1.7 0.8	2.00 51	1.8 0.8	2.75 70	2.4 1.1	0.88 22	0.6 0.3
2 ½ 65	2.875 73.0	3.00 76	3.1 1.4	2.25 57	2.2 1.0	3.00 76	3.6 1.6	0.88 22	1.0 0.5
76.1 mm	3.000 76.1	3.00 76	3.30 1.5	2.25 57	2.4 1.1	—	—	—	—
3 80	3.500 88.9	3.38 86	4.0 1.8	2.50 64	3.1 1.4	3.38 86	5.3 2.4	0.88 22	1.2 0.5
108 mm	4.250 108.0	4.00 102	5.7 2.6	3.00 76	5.1 2.3	4.00 102	7.5 3.4	—	—
4 100	4.500 114.3	4.00 102	6.7 3.0	3.00 76	5.6 2.5	4.00 102	8.7 3.9	1.00 25	2.4 1.1
5 125	5.563 141.3	4.88 124	12.6 5.7	3.25 83	8.3 3.8	4.88 124	15.7 7.1	1.00 25	4.1 1.9
159 mm	6.250 158.8	5.50 140	12.6 5.7	3.50 89	9.2 4.2	5.50 140	17.9 8.0	—	—
6 150	6.625 168.3	5.50 140	18.3 8.3	3.50 89	11.7 5.3	5.50 140	22.7 10.3	1.00 25	5.9 2.7
8 200	8.625 219.1	6.81 173	25.5 11.6	4.25 108	20.4 9.3	6.94 176	38.7 17.6	1.13 29	12.7 5.8

FireLock® Fittings

FLOW DATA

Size		Frictional Resistance Equivalent Feet/meters of Straight Pipe †			
Nominal Size Inches mm	Actual Outside Diameter Inches mm	Elbows		No. 002 Straight Tee	
		No. 001 90° Elbow	No. 003 45° Elbow	Branch	Run
1¼ 32	1.660 42.4	1.5	0.8	3.7	1.5
		0.5	0.2	1.1	0.5
1½ 40	1.900 48.3	2.2	1.1	5.5	2.2
		0.7	0.3	1.7	0.7
2 50	2.375 60.3	3.5	1.8	8.5	3.5
		1.1	0.5	2.6	1.1
2½ 65	2.875 73.0	4.3	2.2	10.8	4.3
		1.3	0.7	3.3	1.3
76.1 mm	3.000 76.1	4.5	2.3	11.0	4.5
		1.4	0.7	3.4	1.4
3 80	3.500 88.9	5.0	2.6	13.0	5.0
		1.5	0.8	4.0	1.5
108 mm	4.250 108.0	6.4	3.2	15.3	6.4
		2.0	0.9	4.7	2.0
4 100	4.500 114.3	6.8	3.4	16.0	6.8
		2.1	1.0	4.9	2.1
5 125	5.563 141.3	8.5	4.2	21.0	8.5
		2.6	1.3	6.4	2.6
159 mm	6.250 158.8	9.4	4.9	25.0	9.6
		2.9	1.5	7.6	2.9
6 150	6.625 168.3	10.0	5.0	25.0	10.0
		3.0	1.5	7.6	3.0
8 200	8.625 219.1	13.0	5.0	33.0	13.0
		4.0	1.5	10.1	4.0

† The flow data listed is based upon the pressure drop of Schedule 40 pipe.

FireLock® Fittings

GENERAL NOTES

NOTE: When assembling FireLock EZ couplings onto end caps, take additional care to make certain the end cap is fully seated against the gasket end stop. For FireLock EZ Style 009/009V/009H couplings, use FireLock No. 006 end caps containing the “EZ” marking on the inside face or No. 60 end caps containing the “QV EZ” marking on the inside face. Non-Victaulic end cap products shall not be used with Style 009/009V/009H couplings.

WARRANTY

Refer to the Warranty section of the current Price List or contact Victaulic for details.

NOTE

This product shall be manufactured by Victaulic or to Victaulic specifications. All products to be installed in accordance with current Victaulic installation/assembly instructions. Victaulic reserves the right to change product specifications, designs and standard equipment without notice and without incurring obligations.

For complete contact information, visit www.victaulic.com

10.03 1539 REV I UPDATED 2/2010

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10.03



FireLock® Rigid Coupling






 \$ LPC and VdS Approved, see notes on page 4
SEE VICTAULIC PUBLICATION 10.01 FOR DETAILS

STYLE 005

WITH VIC-PLUS™ GASKET SYSTEM (NORTH AMERICA ONLY)

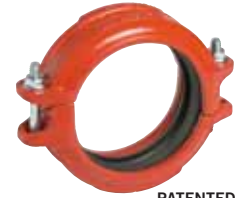
FireLock® Style 005 rigid coupling has a unique, patented angle-pad design which allows the housings to offset while clamping the grooves. By permitting the housings to slide on the angled bolt pads, rigidity is obtained.

Support and hanging requirements correspond to NFPA 13 Sprinkler Systems. Angle-pad design permits assembly by removing one nut/bolt and swinging the housing over the gasket. This reduces components to handle during assembly.

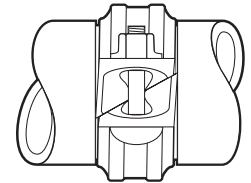
Style 005 FireLock coupling are designed and recommended for use ONLY on fire protection systems.

Vic-Plus™ Gasket System:

In North America, Victaulic® offers a gasket system which requires no field lubrication on wet pipe systems that are hydrostatically tested. The Vic-Plus™ System (patented) is dry, clean, and non-toxic. It reduces assembly time substantially and eliminates the mess and chance of over-lubrication. Please refer to the latest copy of the Victaulic Field Installation Handbook (I-100) for supplemental lubrication requirements and dry pipe fire protection system notes.



PATENTED



Exaggerated for clarity

LISTING/APPROVALS

The information provided below is based on the latest listing and approval data at the time of publication. Listings/Approvals are subject to change and/or additions by the approvals agencies. Contact Victaulic for performance on other pipe and the latest listings and approvals.

Related Working Pressure – psi					Related Working Pressure – psi					Related Working Pressure – psi				
Pipe Sch.	Size Inches	UL	ULC	FM	Pipe Sch.	Size Inches	UL	ULC	FM	Pipe Sch.	Size Inches	UL	ULC	FM
5	1 ¼ – 3	175	175	175	EL	1 ¼ – 2	300	N/A	N/A	MT	1 ¼ – 2	300	N/A	N/A
	1 ¼ – 4	350	350	350	ET	1 ¼ – 2	300	N/A	N/A	STF	1 ¼ – 4	N/A	N/A	300
10, 40	5 – 8	300	300	300	EZ	4 – 6	300#	N/A	300	Steady Thd.	1 ¼ – 2	N/A	N/A	300
	BLT	1 ¼ – 2	300	300	N/A	FF	1 ¼ – 4	N/A	N/A	300	TF	3 – 8	N/A	N/A
DF	1 ¼ – 4	300	300	300	GAL - 7	1 ¼ – 2	300	N/A	N/A	WLS	1 ¼ – 2	300	300	N/A
DT	1 ¼ – 2	300	300	N/A	MLT	1 ¼ – 2	300	N/A	N/A	XL	1 ¼ – 3	300	300	300
EF	1 ½ – 4	175@	N/A	175	MF	1 ¼ – 4	300	N/A	300*					

* FM approved for service in 1 ½ – 4" pipe.
 # UL Listed for service up to 4" pipe only.
 @ UL Listed for service up to 3" only.

JOB/OWNER

System No. _____
 Location _____

CONTRACTOR

Submitted By _____
 Date _____

ENGINEER

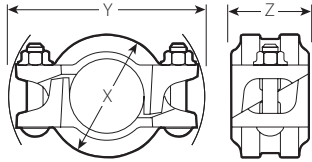
Spec Sect _____ Para _____
 Approved _____
 Date _____

FireLock® Rigid Coupling

STYLE 005

WITH VIC-PLUS™ GASKET SYSTEM (NORTH AMERICA ONLY)

DIMENSIONS



Rated for wet and dry sprinkler systems at 350 psi/2413 kPa for 1 ¼ – 4 7/32 – 100 mm sizes and 300 psi /2068 kPa for 4 ¼ – 8 7/108 – 200mm sizes; Schedule 10 roll grooved or Schedule 40 cut or roll grooved steel pipe. Style 005 is rigid and does not accommodate expansion, contraction or angular deflection.

Size		Max. Work Pressure § *	Max. End Load *	Allow. Pipe End Sep. †	Bolt/Nut@ No – Size	Dimensions – Inches/mm			Approx. Wgt. Each
Nominal Size Inches/mm	Actual Outside Diameter Inches/mm	PSI kPa	Lbs. N	Inches mm	Inches mm	X	Y	Z	Lbs. kg
1 ¼ 32	1.660 42.4	350 2413	755 3370	0.05 1.2	2 – ¾ x 2 ¼	2.75 70	4.50 114	1.88 148	1.2 0.5
1 ½ 40	1.900 48.3	350 2413	990 4415	0.05 1.2	2 – ¾ x 2 ¼	3.00 76	4.75 121	1.88 148	1.2 0.5
2 50	2.375 60.3	350 2413	1550 6900	0.07 1.7	2 – ¾ x 2 ½	3.50 89	5.25 133	1.88 148	1.6 0.7
2 ½ 65	2.875 73.0	350 2413	2270 10110	0.07 1.7	2 – ¾ x 2 ½	4.00 102	5.75 146	1.88 148	1.9 .09
76.1 mm	3.000 76.1	350 2413	2475 11010	0.07 1.7	2 – ¾ x 2 ½	4.13 105	5.75 146	1.88 148	1.9 0.9
3 80	3.500 88.9	350 2413	3365 14985	0.07 1.7	2 – ¾ x 2 ½	4.63 118	6.13 156	1.88 148	2.1 1.0
4 100	4.500 114.3	350 2413	5565 24770	0.16 4.1	2 – ¾ x 2 ½	5.75 146	7.25 184	2.13 54	3.1 1.4
108.0mm	4.250 108.0	300 2068	4255 18940	0.16 4.1	2 – ¾ x 2 ½	5.63 143	7.25 184	2.13 54	3.1 1.4
5 125	5.563 141.3	300 2068	7290 32445	0.16 4.1	2 – ½ x 3	6.88 175	9.00 229	2.13 54	4.5 2.0
133.0mm	5.250 133.0	300 2068	6495 28900	0.16 4.1	2 – ½ x 2 ¾	6.63 168	9.00 229	2.13 54	4.5 2.0
139.7mm	5.500 139.7	300 2068	7125 31715	0.16 4.1	2 – ½ x 2 ¾	6.88 175	9.00 229	2.13 54	4.8 2.2
6 150	6.625 168.3	300 2068	10340 46020	0.16 4.1	2 – ½ x 3	8.00 203	10.00 254	2.13 53	5.0 2.3
159.0mm	6.250 159.0	300 2068	9200 40955	0.16 4.1	2 – ½ x 2 ¾	7.63 194	10.00 254	2.13 54	5.5 2.5
165.1 mm	6.500 165.1	300 2068	9955 44295	0.16 4.1	2 – ½ x 3	8.15 207	10.00 254	2.13 54	5.5 2.5
8 200	8.625 219.1	300 2068	17525 78000	0.19 4.8	2 – ¾ x 4 ¼	10.50 267	13.14 334	2.63 67	11.3 5.1

* Working Pressure and End Load are total, from all internal and external loads, based on standard weight (ANSI) steel pipe, standard roll or cut grooved in accordance with Victaulic specifications. Contact Victaulic for performance on other pipe.
 WARNING: FOR ONE TIME FIELD TEST ONLY, the Maximum Joint Working Pressure may be increased to 1 1/2 times the figures shown.

† The allowable pipe separation dimension shown is for system layout purposes only. Style 005 couplings are considered rigid connections and will not accommodate expansion or contraction of the piping system.

@ Number of bolts required equals number of housing segments. Metric thread size bolts are available (color coded gold) for all coupling sizes upon request. Contact Victaulic for details.

§ Style 005 couplings are VdS and LPC Approved to 12 Bar/175 psi.

FireLock® Rigid Coupling

STYLE 005

WITH VIC-PLUS™ GASKET SYSTEM (NORTH AMERICA ONLY)

MATERIAL SPECIFICATIONS

Housing: Ductile iron conforming to ASTM A-536, grade 65-45-12. Ductile iron conforming to ASTM A-395, grade 65-45-15, is available upon special request.

Housing Coating: Orange enamel (North America); red enamel (Europe)

- **Optional:** Hot dipped galvanized

Gasket:

- **Grade “E” EPDM – Type A Vic-Plus™ Gasket System Δ**
(Violet color code). FireLock products have been Listed by Underwriters Laboratories Inc. and Approved by Factory Mutual Research for wet and dry (oil free air) sprinkler services up to the rated working pressure using the Grade “E” Type A Vic-Plus™ Gasket System, requiring no field lubrication for most installation conditions.
- **Grade “L” Silicone**
Recommended for dry heat, air without hydrocarbons to +350°F and certain chemical services.

For dry services, Victaulic continues to recommend the use of Grade “E” Type A FlushSeal® Gasket. Contact Victaulic for details.

Bolts/Nuts: Heat-treated plated carbon steel, trackhead meeting the physical and chemical requirements of ASTM A-449 and physical requirements of ASTM A-183.

Δ Standard gasket and FlushSeal gasket approved for dry pipe systems to –40°F/–40°C. Based on “typical” pipe surface conditions, supplemental lubricant is recommended for services installed below 0°F/–18°C and for all dry pipe systems or systems to be subjected to air tests prior to being filled with water. Supplemental lubrication may also be required on pipe with raised or undercut weld seams or pipe that has voids and/or cracks at the weld seams. Victaulic continues to recommend the use of FlushSeal gaskets for dry services.

FireLock® Rigid Coupling

STYLE 005

WITH VIC-PLUS™ GASKET SYSTEM (NORTH AMERICA ONLY)

GENERAL NOTES

WARNING: Depressurize and drain the piping system before attempting to install, remove, or adjust any Victaulic piping products.

WARRANTY

Refer to the Warranty section of the current Price List or contact Victaulic for details.

NOTE

This product shall be manufactured by Victaulic or to Victaulic specifications. All products to be installed in accordance with current Victaulic installation/assembly instructions. Victaulic reserves the right to change product specifications, designs and standard equipment without notice and without incurring obligations.

INSTALLATION

Reference should always be made to the I-100 Victaulic Field Installation Handbook for the product you are installing. Handbooks are included with each shipment of Victaulic products for complete installation and assembly data, and are available in PDF format on our website at www.victaulic.com.



WCAS-697KR4

For complete contact information, visit www.victaulic.com

10.02 1538 REV I UPDATED 9/2006

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10.02



Zero-Flex® Rigid Coupling

STYLE 07

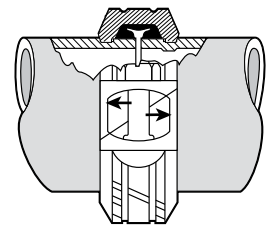


The unique angle-pad design of the Zero-Flex® Style 07 coupling adjusts to standard pipe and roll or cut groove tolerances, positively clamping the pipe to resist flexural and torsional loads. The wider key section fills more of the groove area.

The Victaulic standard rigid coupling offering for grade “EHP” or “T” gaskets is the Style 107 installation-ready rigid coupling. For all available sizes, the Style 107 is the standard rigid coupling Victaulic supplies in North America for piping systems using Grade “EHP” or “T” gaskets. Contact Victaulic for further details.

Style 07 couplings are rated up to 750psi/5175kPa, dependant on size, for 1 – 12”/25 – 300mm piping systems. Rigid couplings provide rigidity for valve connections, machinery rooms, fire mains, and long straight runs. Support and hanging requirements correspond to ASME B31.1 Power Piping Code, ASME B31.9 Building Services Code and NFPA 13 Sprinkler Systems. Angle-pad design permits assembly by removing one nut/bolt and scissoring housing over gasket. This reduces the number of components to handle during assembly, speeds and eases installation.

For 14 – 24”/350 – 600mm sizes Victaulic offers the Advanced Groove System (AGS) line of products. Request publication 20.02 for information on the rigid W07 AGS coupling.



Exaggerated for clarity

MATERIAL SPECIFICATIONS

Housing: Ductile iron conforming to ASTM A-536, grade 65-45-12. Ductile iron conforming to ASTM A-395, grade 65-45-15, is available upon special request.

Housing Coating: Orange enamel.
 • **Optional:** Hot dipped galvanized and others.

Coupling Gasket: (specify choice‡)

- **Grade “E” EPDM**
 EPDM (Green color code). Temperature range –30°F to +230°F/–34°C to +110°C. Recommended for cold and hot water service within the specified temperature range plus a variety of dilute acids, oil-free air and many chemical services. UL classified in accordance with ANSI/NSF 61 for cold +86°F/+30°C and hot +180°F/+82°C potable water service. NOT RECOMMENDED FOR PETROLEUM SERVICES.
- **Grade “T” nitrile**
 Nitrile (Orange color code). Temperature range –20°F to +180°F/–29°C to +82°C. Recommended for petroleum products, air with oil vapors, vegetable and mineral oils within the specified temperature range. Not recommended for hot water services over +150°F/+66°C or for hot dry air over +140°F/+60°C.

‡ Services listed are General Service Recommendations only. It should be noted that there are services for which these gaskets are not recommended. Reference should always be made to the latest Victaulic Gasket Selection Guide for specific gasket service recommendations and for a listing of services which are not recommended.

NOTE: Additional gasket styles are available. Contact Victaulic for details.

Bolts/Nuts: Heat-treated plated carbon steel, trackhead meeting the physical and chemical requirements of ASTM A-449 and physical requirements of ASTM A-183.

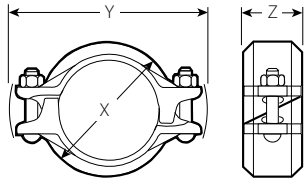
JOB/OWNER	CONTRACTOR	ENGINEER
System No. _____	Submitted By _____	Spec Sect _____ Para _____
Location _____	Date _____	Approved _____
		Date _____




Zero-Flex® Rigid Coupling

STYLE 07

DIMENSIONS



TYPICAL 1 – 12"

Size		Max. Work Pressure *	Max. End Load *	Allow. Pipe End Sep. †	Bolt/Nut@ No – Size	Dimensions – Inches/mm			Approx. Wgt. Each
Nominal Size Inches mm	Actual Outside Diameter Inches mm	psi kPa	Lbs. N	Inches mm	Inches	X	Y	Z	Lbs. kg
1 25	1.315 33.7	750 5175	650 2890	0.05 1.2	2 – 3/8 x 2	2.36 60	4.22 107	1.84 47	1.6 0.7
1 1/4 32	1.660 42.4	750 5175	1,620 7210	0.05 1.2	2 – 3/8 x 2	2.69 68	4.62 117	1.84 47	1.6 0.7
1 1/2 40	1.900 48.3	750 5175	2,130 9480	0.05 1.2	2 – 3/8 x 2	2.94 75	5.81 148	1.84 47	1.6 0.7
2 50	2.375 60.3	750 5175	3,320 14775	0.07 1.7	2 – 1/2 x 2 1/2	3.35 85	5.78 147	1.84 47	2.3 1.0
2 1/2 65	2.875 73.0	750 5175	4,875 21695	0.07 1.7	2 – 1/2 x 2 3/4	3.88 98	6.38 162	1.84 47	2.6 1.2
76.1 mm	3.000 76.1	750 5175	5,300 23585	0.07 1.7	2 – 12 x 70.0	4.21 107	6.61 168	1.84 47	3.6 1.6
3 80	3.500 88.9	750 5175	7,215 32105	0.07 1.7	2 – 1/2 x 2 1/2	4.54 115	6.81 173	1.84 47	3.0 1.4
4 100	4.500 114.3	750 5175	11,925 53065	0.16 4.1	2 – 1/2 x 2 3/4	5.81 148	8.21 209	2.07 53	5.3 2.4
108.0mm	4.250 108.0	750 5175	10,635 47325	0.16 4.1	2 – 12 x 70.0	5.56 141	7.98 203	2.07 53	5.2 2.4
5 125	5.563 141.3	750 5175	18,225 81100	0.16 4.1	2 – 5/8 x 3 1/4	7.03 179	9.89 251	2.07 53	7.4 3.4
133.0mm	5.250 133.0	700 4825	15,145 67395	0.16 4.1	2 – 16 x 82.5	6.69 170	9.60 244	2.07 53	7.4 3.4
139.7 mm	5.500 139.7	700 4825	16,625 73980	0.16 4.1	2 – 16 x 82.5	6.94 176	9.82 249	2.07 53	7.6 3.4
6 150	6.625 168.3	700 4825	24,130 107380	0.16 4.1	2 – 5/8 x 3 1/4	8.26 210	10.83 275	2.07 53	8.3 3.8
159.0mm	6.250 159.0	700 4825	21,465 95520	0.16 4.1	2 – 16 x 82.5	7.84 199	10.54 268	2.07 53	9.2 4.2
165.1 mm	6.500 165.1	700 4825	23,225 103305	0.16 4.1	2 – 5/8 x 3 1/4	8.13 207	10.84 275	2.07 53	8.3 3.8
8 § 200	8.625 219.1	600 4130	35,000 155750	0.19 4.8	2 – 3/4 x 4 1/4	10.54 268	13.74 349	2.51 64	15.1 6.8
10 § 250	10.750 273.0	500 3450	45,400 202030	0.13 3.3	2 – 7/8 x 6 1/2	12.86 327	16.98 431	2.56 65	23.5 10.7
12 § 300	12.750 323.9	400 2750	51,000 226950	0.13 3.3	2 – 7/8 x 6 1/2	14.86 377	18.88 480	2.56 65	28.2 12.8
14 – 24 350 – 600	 For 14 – 24"/350 – 600 mm sizes Victaulic offers the Advanced Groove System (AGS) line of products. Request publication 20.02 for information on the rigid W07 AGS coupling.								

§ Couplings 8, 10, 12"/200, 250, 300mm sizes available to JIS standard. Refer to section 06.17 for details.

* Working Pressure and End Load are total, from all internal and external loads, based on standard weight (ANSI) steel pipe, standard **roll** or **cut** grooved in accordance with Victaulic specifications. Contact Victaulic for performance on other pipe.

WARNING: FOR ONE TIME FIELD TEST ONLY, the Maximum Joint Working Pressure may be increased to 1 1/2 times the figures shown.

† For field installation only on roll grooved pipe or cut grooved pipe. Zero-Flex Style 07 couplings are essentially rigid and do not permit expansion/contraction.

@ Number of bolts required equals number of housing segments.

Metric thread size bolts are available (color coded gold) for all coupling sizes upon request. Contact Victaulic for details.

Style 07 couplings must **not** be used to join PVC pipe.

Zero-Flex[®] Rigid Coupling

STYLE 07

Zero-Flex[®] Rigid Coupling

STYLE 07

INSTALLATION

Reference should always be made to the I-100 Victaulic Field Installation Handbook for the product you are installing. Handbooks are included with each shipment of Victaulic products for complete installation and assembly data, and are available in PDF format on our website at www.victaulic.com.

WARRANTY

Refer to the Warranty section of the current Price List or contact Victaulic for details.

NOTE

This product shall be manufactured by Victaulic or to Victaulic specifications. All products to be installed in accordance with current Victaulic installation/assembly instructions. Victaulic reserves the right to change product specifications, designs and standard equipment without notice and without incurring obligations.

For complete contact information, visit www.victaulic.com

06.02 1482 REV K UPDATED 3/2009

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06.02



FireLock EZ™ Rigid Coupling



STYLE 009 (UL, FM)

STYLE 009V (UL, FM, VdS, LPCB)

The FireLock EZ Style 009 and Style 009V couplings are rigid, installation-ready couplings for fire protection pipe joining. The coupling's unique design eliminates loose parts, insures consistent installation and provides substantial gains in productivity.

IMPORTANT

FireLock EZ Style 009 and Style 009V couplings are recommended for use ONLY on fire protection systems.



PATENTED

STYLE 009 LISTINGS/APPROVALS †‡§

The information provided below is based on the latest listing and approval data at the time of publication. Listings/Approvals are subject to change and/or additions by the approvals agencies. Contact Victaulic for performance on other pipe and the latest listings and approvals.

Pipe			Size			Pressure Rating – psi			Pipe			Size			Pressure Rating – psi				
Sch.	Inches	UL	ULC	FM	Sch.	Inches	UL	ULC	FM	Sch.	Inches	UL	ULC	FM	Sch.	Inches	UL	ULC	FM
5	1 ¼ – 2	175	175	175	EZT	1 ¼ – 2	300	300	300	MT	1 ¼ – 2	300	300	300					
10, 40	1 ¼ – 4	300	300	300	FF	1 ¼ – 4	300	300	300	MLT	1 ¼ – 2	300	300	300					
	BLT	1 ¼ – 2	300	300	300	FLF	1 ¼ – 4	N/A	N/A	300	ST	1 ¼ – 2	N/A	N/A	300				
	DF	1 ¼ – 4	300	300	300	FLT	1 ¼ – 2	N/A	N/A	300	STF	1 ¼ – 4	N/A	N/A	300				
	DT	1 ¼ – 2	300	300	300	FLTL	1 ¼ – 2	N/A	N/A	300	TF	2 ¼ – 4	N/A	N/A	300				
	EF	1 ¼ – 4	175	175	175	GL	1 ¼ – 2	300	300	300	WLS	1 ¼ – 2	300	300	300				
	EL	1 ¼ – 2	300	300	300	G5	1 ¼ – 2	175	175	175	WST	1 ¼ – 2	175	175	175				
	ET40	1 ¼ – 2	300	300	300	G7	1 ¼ – 2	300	300	300	XL	1 ¼ – 2	300	300	300				
	EZF	3 – 4	300	300	300	MF	1 ¼ – 4	300	300	300									

STYLE 009V LISTINGS/APPROVALS †‡§

Pipe Schedule	Size Nominal Size Inches mm	Pressure Rating			
		VdS	LPC	UL	FM
§	76.1 mm	—	—	16 Bar 232 psi	16 Bar 232 psi
§	1 ¼ – 4, 76.1 mm 32 – 100	16 Bar 232 psi	16 Bar 232 psi	—	—
10, 40	1 ¼ 32	—	—	16 Bar 232 psi	20.7 Bar 300 psi
	1 ½ 40	—	—	16 Bar 232 psi	20.7 Bar 300 psi
	2 50	—	—	16 Bar 232 psi	20.7 Bar 300 psi
	3 80	—	—	16 Bar 232 psi	20.7 Bar 300 psi
	4 100	—	—	16 Bar 232 psi	20.7 Bar 300 psi

† Listed/Approved for wet and dry pipe systems (> -40°F/-40°C). For rigid pipe connections in systems operating below 0°F/-18°C Victaulic recommends Style 005 FireLock rigid couplings with Grade "L" silicone gaskets.

‡ Please refer to the Victaulic Field Installation Handbook (I-100) for details concerning when supplemental lubrication is required.

§ Style 009V couplings are VdS and LPC approved to 16 Bar/232 psi for wet and dry fire protection systems.

JOB/OWNER

System No. _____
Location _____

CONTRACTOR

Submitted By _____
Date _____

ENGINEER

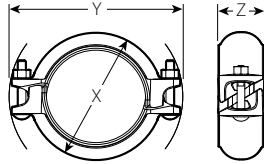
Spec Sect _____ Para _____
Approved _____
Date _____

FireLock EZ™ Rigid Coupling

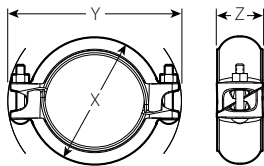
STYLE 009 (UL, FM)

STYLE 009V (UL, FM, VdS, LPCB)

STYLE 009 DIMENSIONS



STYLE 009 PRE-ASSEMBLED (STAB IN CONDITION)

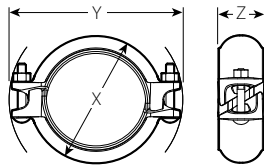


STYLE 009 JOINT ASSEMBLED

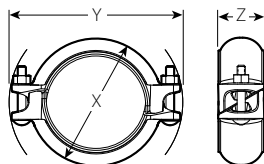
Size		Max. Work. Press. *	Max. End Load *	Allow. Pipe End Sep. †	@ Bolt/Nut No. – Size	Dimensions – Inches/mm					Aprx. Wgt. Ea.
Nominal Size Inches mm	Actual Outside Dia. Inches mm	psi kPa	Lbs. N	Inches mm	Inches	Pre-assembled (Stab in condition)		Joint Assembled			Lbs. kg
						X	Y	X	Y	Z	
1 ¼ 32	1.660 42.4	300 2068	649 2888	0.10 2.54	2 – ¾ x 2	3.13 80	4.93 125	2.86 73	4.83 123	1.93 49	1.5 0.7
1 ½ 40	1.900 48.3	300 2068	851 3787	0.10 2.54	2 – ¾ x 2	3.38 86	5.16 131	3.11 79	5.07 129	1.86 47	1.7 0.8
2 50	2.375 60.3	300 2068	1329 5914	0.12 3.05	2 – ¾ x 2 ½	3.88 99	5.81 148	3.59 91	5.68 144	1.86 47	1.9 0.9
2 ½ 65	2.875 73.0	300 2068	1948 8668	0.12 3.05	2 – ¾ x 2 ½	4.38 111	6.21 158	4.08 104	6.10 155	1.87 48	2.0 0.9
3 80	3.500 88.9	300 2068	2886 12842	0.12 3.05	2 – ¾ x 2 ½	5.06 129	6.68 170	4.73 120	6.43 163	1.90 48	4.3 2.0
4 100	4.500 114.3	300 2068	4771 21230	0.17 4.32	2 – ¾ x 2 ½	6.46 164	8.64 220	6.00 152	8.34 212	2.10 53	2.3 1.0

* @ † Refer to notes below.

STYLE 009V DIMENSIONS



STYLE 009V PRE-ASSEMBLED (STAB IN CONDITION)



STYLE 009V JOINT ASSEMBLED

Size		Max. Work. Press. *	Max. End Load *	Allow. Pipe End Sep. †	@ Bolt/Nut No. – Size	Dimensions – Inches/mm					Aprx. Wgt. Ea.
Nominal Size Inches mm	Actual Outside Dia. Inches mm	psi kPa	Lbs. N	Inches mm	Inches	Pre-assembled (Stab in condition)		Joint Assembled			Lbs. kg
						X	Y	X	Y	Z	
1 ¼ 32	1.660 42.4	300 2068	649 2888	0.10 2.54	2 – M10 x 57	3.14 80	4.84 123	2.85 72	4.65 118	1.91 49	1.6 0.7
1 ½ 40	1.900 48.3	300 2068	851 3787	0.10 2.54	2 – M10 x 57	3.34 85	5.06 129	3.13 80	4.85 123	1.92 49	1.7 0.8
2 50	2.375 60.3	300 2068	1329 5914	0.12 3.05	2 – M10 x 64	3.91 99	5.66 144	3.61 92	5.47 139	1.94 49	2.1 0.9
76.1 mm	3.000 76.1	300 2068	1948 8668	0.12 3.05	2 – M10 x 64	4.57 116	6.46 164	4.17 106	6.18 157	1.96 50	2.3 1.1
3 80	3.500 88.9	300 2068	2886 12842	0.12 3.05	2 – M10 x 64	5.15 131	7.12 181	4.73 120	6.67 169	1.94 49	2.6 1.2
4 100	4.500 114.3	300 2068	4771 21230	0.17 4.32	2 – M10 x 64	6.39 162	8.74 222	6.05 154	8.46 215	2.11 54	4.6 2.1

* Working Pressure and End Load are total, from all internal and external loads, based on standard weight (ANSI) steel pipe, standard roll or cut grooved in accordance with Victaulic specifications. See pages 3 and 4 of this document for Listed/Approved ratings on other pipe.

WARNING: FOR ONE TIME FIELD TEST ONLY, the Maximum Joint Working Pressure may be increased to 1 ½ times the figures shown.

† The allowable pipe separation dimension shown is for system layout purposes only. FireLock EZ couplings are considered rigid connections and will not accommodate expansion or contraction of the piping system.

@ Number of bolts required equals number of housing segments.

FireLock EZ™ Rigid Coupling

STYLE 009 (UL, FM)

STYLE 009V (UL, FM, VdS, LPCB)

MATERIAL SPECIFICATIONS

Housing: Ductile iron conforming to ASTM A-536, grade 65-45-12. Ductile iron conforming to ASTM A-395, grade 65-45-15, is available upon special request.

Housing Coating:

- Orange enamel (North America)
- Red enamel (Europe)

Optional Coatings:

- Hot dipped galvanized

Gasket:

- **Grade “E” EPDM (Type A)**

FireLock EZ products have been Listed by Underwriters Laboratories Inc., Underwriters Laboratories of Canada Limited, and Approved by Factory Mutual Research for wet and dry (oil free air) sprinkler services within the rated working pressure.

Bolts/Nuts: Heat-treated plated carbon steel, trackhead meeting the physical and chemical requirements of ASTM A-449 and physical requirements of ASTM A-183.

FireLock EZ™ Rigid Coupling

STYLE 009 (UL, FM)

STYLE 009V (UL, FM, VdS, LPCB)

GENERAL NOTES

NOTE: When assembling FireLock EZ couplings onto end caps, take additional care to make certain the end cap is fully seated against the gasket end stop. For FireLock EZ Style 009 and Style 009V couplings, use FireLock No. 006 end caps containing the “EZ” marking on the inside face or No. 60 end caps containing the “QV EZ” marking on the inside face. Non-Victaulic end cap products shall not be used with Style 009/009V couplings.

INSTALLATION

Reference should always be made to the I-100 Victaulic Field Installation Handbook for the product you are installing. Handbooks are included with each shipment of Victaulic products for complete installation and assembly data, and are available in PDF format on our website at www.victaulic.com.

WARRANTY

Refer to the Warranty section of the current Price List or contact Victaulic for details.

NOTE

This product shall be manufactured by Victaulic or to Victaulic specifications. All products to be installed in accordance with current Victaulic installation/assembly instructions. Victaulic reserves the right to change product specifications, designs and standard equipment without notice and without incurring obligations.



WCAS-78KHHG

For complete contact information, visit www.victaulic.com

10.60 3999 REV H UPDATED 11/2007

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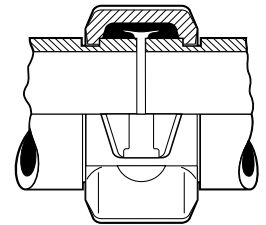


Flexible Coupling

STYLE 75



Style 75 is available where moderate pressures are expected or weight considerations are a factor. Up to 50% lighter in weight than the Style 77, the Style 75 coupling is recommended for service up to 500 psi/3450 kPa depending on size. Housings are cast in two identical pieces in all sizes. Hot-dip galvanized and special coatings are available for all sizes.



Exaggerated for clarity

MATERIAL SPECIFICATIONS

Housing: Ductile iron conforming to ASTM A-536, grade 65-45-12. Ductile iron conforming to ASTM A-395, grade 65-45-15, is available upon special request.

Housing Coating: Orange enamel.

- **Optional:** Hot dipped galvanized and others.

Gasket: (specify choice*)

- **Grade "E" EPDM**

EPDM (Green color code). Temperature range -30°F to +230°F/-34°C to +110°C. Recommended for hot water service within the specified temperature range plus a variety of dilute acids, oil-free air and many chemical services. UL classified in accordance with ANSI/NSF 61 for cold +86°F/+30°C and hot +180°F/+82°C potable water service. NOT RECOMMENDED FOR PETROLEUM SERVICES.

- **Grade "T" nitrile**

Nitrile (Orange color code). Temperature range -20°F to +180°F/-29°C to +82°C. Recommended for petroleum products, air with oil vapors, vegetable and mineral oils within the specified temperature range; except hot, dry air over +140°F/+60°C and water over +150°F/+66°C. NOT RECOMMENDED FOR HOT WATER SERVICES.

* Services listed are General Service Recommendations only. It should be noted that there are services for which these gaskets are not recommended. Reference should always be made to the latest Victaulic Gasket Selection Guide for specific gasket service recommendations and for a listing of services which are not recommended.

Bolts/Nuts: Heat-treated plated carbon steel, trackhead meeting the physical and chemical requirements of ASTM A-449 and physical requirements of ASTM A-183.

JOB/OWNER

System No. _____
Location _____

CONTRACTOR

Submitted By _____
Date _____

ENGINEER

Spec Sect _____ Para _____
Approved _____
Date _____

Flexible Coupling

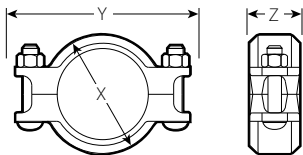
STYLE 75

DIMENSIONS

Size		Max. Work Pressure *	Max. End Load *	Allow. Pipe End Sep. †	Deflect. Fr. C _L †		Bolt/Nut@ No - Size	Dimensions – Inches/mm			Approx. Wgt. Each
Nominal Size Inches mm	Actual Outside Diameter Inches mm				Per Cplg. Deg.	Pipe In./Ft. mm/m		X	Y	Z	
1 25	1.315 33.4	500 3450	680 3025	0 – 0.06 0 – 1.6	2° – 43'	0.57 48	2 – 3/8 x 2	2.38 61	4.27 108	1.77 45	1.3 0.6
1 1/4 32	1.660 42.2	500 3450	1080 4805	0 – 0.06 0 – 1.6	2° – 10'	0.45 38	2 – 3/8 x 2	2.68 68	4.61 117	1.77 45	1.4 0.6
1 1/2 40	1.900 48.3	500 3450	1,420 6320	0 – 0.06 0 – 1.6	1° – 56'	0.40 33	2 – 3/8 x 2	2.91 74	4.82 122	1.77 45	1.5 0.6
2 50	2.375 60.3	500 3450	2,215 9860	0 – 0.06 0 – 1.6	1° – 31'	0.32 26	2 – 3/8 x 2	3.43 87	5.22 133	1.88 48	1.7 0.8
2 1/2 65	2.875 73.0	500 3450	3,245 14440	0 – 0.06 0 – 1.6	1° – 15'	0.26 22	2 – 3/8 x 2	3.88 98	5.68 144	1.88 48	1.9 0.9
76.1 mm ‡	3.000 76.1	500 3450	3,535 15730	0 – 0.06 0 – 1.6	1° – 12'	0.26 22	2 – 3/8 x 2	4.00 102	5.90 150	1.88 48	1.9 0.9
3 80	3.500 88.9	500 3450	4,800 21360	0 – 0.06 0 – 1.6	1° – 2'	0.22 18	2 – 1/2 x 2 3/4	4.50 114	7.00 178	1.88 48	2.9 1.3
3 1/2 90	4.000 101.6	500 3450	6,300 28035	0 – 0.06 0 – 1.6	0° – 54'	0.19 16	2 – 1/2 x 2 3/4	5.00 127	7.50 191	1.88 48	2.9 1.3
4 100	4.500 114.3	500 3450	7,950 35380	0 – 0.13 0 – 3.2	1° – 36'	0.34 28	2 – 1/2 x 2 3/4	5.80 147	8.03 204	2.13 54	4.1 1.9
108.0mm	4.250 108.0	450 3100	6,380 28395	0 – 0.13 0 – 3.2	1° – 41'	0.35 29	2 – 12 x 70.0	5.55 141	7.79 198	2.13 54	3.7 1.7
4 1/2 120	5.000 127.0	450 3100	8,820 39250	0 – 0.13 0 – 3.2	1° – 26'	0.25 21	2 – 5/8 x 3 1/4	6.13 156	9.43 240	2.13 54	5.5 2.5
5 125	5.563 141.3	450 3100	10,935 48660	0 – 0.13 0 – 3.2	1° – 18'	0.27 23	2 – 5/8 x 3 1/4	6.88 175	10.07 256	2.13 54	5.8 2.6
133.0mm	5.250 133.0	450 3100	9,735 43325	0 – 0.13 0 – 3.2	1° – 21'	0.28 24	2 – 16 x 82.5	6.55 166	9.37 238	2.13 54	6.0 2.7
139.7 mm ‡	5.500 139.7	450 3100	10,665 47460	0 – 0.13 0 – 3.2	1° – 18'	0.28 24	2 – 5/8 x 3 1/4	6.80 173	9.59 244	2.13 54	6.3 2.9
152.4mm	6.000 152.4	450 3100	12,735 56670	0 – 0.13 0 – 3.2	1° – 12'	0.21 18	2 – 5/8 x 3 1/4	7.38 187	10.48 266	1.88 48	6.2 2.8
6 150	6.625 168.3	450 3100	15,525 69085	0 – 0.13 0 – 3.2	1° – 5'	0.23 18	2 – 5/8 x 3 1/4	8.00 203	11.07 281	2.13 54	7.0 3.2

Continued on page 3.

* † @ ‡ Refer to notes on page 3.



Flexible Coupling

STYLE 75

DIMENSIONS

Size		Max. Work Pressure *	Max. End Load *	Allow. Pipe End Sep. †	Deflect. Fr. C _L †		Bolt/Nut@ No – Size	Dimensions – Inches/mm			Approx. Wgt. Each
Nominal Size Inches mm	Actual Outside Diameter Inches mm	psi kPa	Lbs. N	Inches mm	Per Cplg. Deg.	Pipe In./Ft. mm/m	Inches	X	Y	Z	Lbs. kg
159.0mm	6.250 159.0	450 3100	13.800 61405	0 – 0.13 0 – 3.2	1° – 9'	0.24 20	2 – 16 x 82.5	7.63 194	10.49 266	2.13 54	6.8 3.1
165.1mm ‡	6.500 165.1	450 3100	14.940 66483	0 – 0.13 0 – 3.2	1° – 6'	0.23 19	2 – 5/8 x 3 1/4	7.84 199	10.66 271	2.06 52	7.2 3.3
203.2mm #	8.000 203.2	450 3100	22.635 100725	0 – 0.13 0 – 3.2	0° – 54'	0.16 13	2 – 3/4 x 4 1/4	9.72 247	13.33 339	2.31 58	12.6 5.7
8 200	8.625 219.1	450 3100	26.280 116945	0 – 0.13 0 – 3.2	0° – 50'	0.18 14	2 – 3/4 x 4 1/4	10.34 263	13.97 355	2.32 59	12.4 5.6
254.0mm #	10.000 254.0	350 2400	27.500 122375	0 – 0.13 0 – 3.2	0° – 43'	0.15 11	2 – 7/8 x 5 1/2	12.16 309	15.81 402	2.53 64	20.8 9.4
304.8mm #	12.000 304.8	350 2400	39.500 175775	0 – 0.13 0 – 3.2	0° – 36'	0.13 9	2 – 7/8 x 5 1/2	14.16 360	17.69 449	2.53 64	23.6 10.7

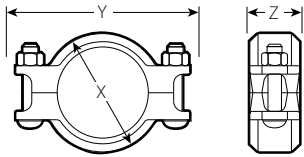
* Working Pressure and End Load are total, from all internal and external loads, based on standard weight (ANSI) steel pipe, standard roll or cut grooved in accordance with Victaulic specifications. Contact Victaulic for performance on other pipe.

WARNING: FOR ONE TIME FIELD TEST ONLY, the Maximum Joint Working Pressure may be increased to 1 1/2 times the figures shown.

† Allowable Pipe End Separation and Deflection figures show the maximum nominal range of movement available at each joint for standard roll grooved pipe. Figures for standard cut grooved pipe may be doubled. These figures are maximums; for design and installation purposes these figures should be reduced by: 50% for 3/4 – 3 1/2"/20 – 90mm; 25% for 4"/100mm and larger.

@ Number of bolts required equals number of housing segments.

Metric thread size bolts are available (color coded gold) for all coupling sizes upon request. Contact Victaulic for details.



Flexible Coupling

STYLE 75

WARRANTY

Refer to the Warranty section of the current Price List or contact Victaulic for details.

NOTE

This product shall be manufactured by Victaulic or to Victaulic specifications. All products to be installed in accordance with current Victaulic installation/assembly instructions. Victaulic reserves the right to change product specifications, designs and standard equipment without notice and without incurring obligations.

INSTALLATION

Reference should always be made to the I-100 Victaulic Field Installation Handbook for the product you are installing. Handbooks are included with each shipment of Victaulic products for complete installation and assembly data, and are available in PDF format on our website at www.victaulic.com.



WCAS-6ZAQS8

For complete contact information, visit www.victaulic.com

06.05 1470 REV I UPDATED 7/2007

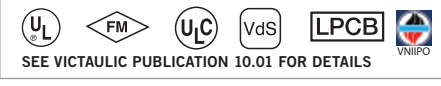
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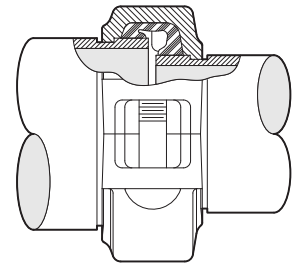


Reducing Coupling

STYLE 750



The Style 750 Reducing Coupling permits direct reduction on the piping run. Designed to replace two couplings and a reducing fitting, the Style 750 features a special reducing gasket for pressure responsive sealing. A steel washer which prevents telescoping of the smaller pipe inside the larger pipe during vertical systems assembly is available upon request.



Exaggerated for clarity

MATERIAL SPECIFICATIONS

Housing: Ductile iron conforming to ASTM A-536, grade 65-45-12. Ductile iron conforming to ASTM A-395, grade 65-45-15, is available upon special request.

Housing Coating: Orange enamel
 • **Optional:** Hot dipped galvanized and others

Gasket: (Specify choice*):

- **Grade "E" EPDM (All other sizes)**
 EPDM (Green color code). Temperature range -30°F to +230°F/-34°C to +110°C. Recommended for cold and hot water service within the specified temperature range plus a variety of dilute acids, oil-free air and many chemical services. UL classified in accordance with ANSI/NSF 61 for cold +86°F/+30°C and hot +180°F/+82°C potable water service. NOT RECOMMENDED FOR PETROLEUM SERVICES.
- **Grade "T" nitrile**
 Nitrile (Orange color code). Temperature range -20°F to +180°F/-29°C to +82°C. Recommended for petroleum products, air with oil vapors, vegetable and mineral oils within the specified temperature range. Not recommended for hot water services over +150°F/+66°C or for hot dry air over +140°F/+60°C.

* Services listed are General Service Recommendations only. It should be noted that there are services for which these gaskets are not recommended. Reference should always be made to the latest Victaulic Gasket Selection Guide for specific gasket service recommendations and for a listing of services which are not recommended.

- **Optional:** Assembly Washer: Galvanized, carbon steel

Bolts/Nuts: Heat-treated plated carbon steel, trackhead meeting the physical and chemical requirements of ASTM A-449 and physical requirements of ASTM A-183.

JOB/OWNER

System No. _____
 Location _____

CONTRACTOR

Submitted By _____
 Date _____

ENGINEER

Spec Sect _____ Para _____
 Approved _____
 Date _____

Reducing Coupling

STYLE 750

DIMENSIONS

Size	Max. Work Pressure *	Max. End Load *	Allow. Pipe End Sep. †	Deflect. Fr. C _i †		Bolt/Nut@ No - Size	Dimensions – Inches/mm			Approx. Wgt. Each			
				Per Cplg. Deg.	Pipe In./Ft. mm/m		X	Y	Z				
2 50	×	1 25	350 2410	500 2225	0 – 0.07 0 – 1.8	0° – 57°	0.20 17	2 – 3/8 x 2	3.38 85	5.28 134	1.88 48	2.7 1.2	
		1½ 40	350 2410	1000 4450	0 – 0.07 0 – 1.8	0° – 57°	0.20 17		2 – 3/8 x 2	3.38 85	5.28 134	1.88 48	2.0 1.0
2½ 65	×	2 50	500 3450	2215 9850	0 – 0.07 0 – 1.8	0° – 47°	0.16 14	2 – 3/8 x 2	4.00 102	5.93 151	1.88 48	3.1 1.4	
76.1 mm	×	2 50	350 2410	1550 6900	0 – 0.07 0 – 1.8	0° – 47°	0.16 14	2 – ½ x 2¾	4.38 111	6.63 168	1.88 48	4.6 2.1	
3 80	×	2 50	350 2410	1550 6900	0 – 0.07 0 – 1.8	0° – 39°	0.13 11	2 – ½ x 2¾	4.75 121	7.13 181	1.88 48	4.9 2.2	
		2½ 65	500 3450	3250 14460	0 – 0.07 0 – 1.8	0° – 39°	0.13 11		2 – ½ x 2¾	4.75 121	7.13 181	1.88 48	4.3 2.0
88.9 mm	×	76.1 mm	350 2410	2275 10125	0 – 0.07 0 – 1.8	0° – 39°	0.13 11	2 – ½ x 2¾	4.75 121	7.13 181	1.88 48	4.2 1.9	
4 100	×	2 50	350 2410	1550 6900	0 – 0.13 0 – 3.2	1° – 19°	0.28 25	2 – 5/8 x 3¼	6.25 159	8.90 226	2.25 57	8.1 3.7	
		2½ 65	350 2410	2275 10125	0 – 0.13 0 – 3.2	1° – 19°	0.28 25		2 – 5/8 x 3¼	6.25 159	8.90 226	2.25 57	8.6 3.9
		3 80	500 3450	4810 21400	0 – 0.13 0 – 3.2	1° – 19°	0.28 25		2 – 5/8 x 3¼	6.00 152	8.90 226	2.25 57	6.7 3.0
114.3 mm	×	76.1 mm	350 2410	2475 11014	0 – 0.13 0 – 3.2	1° – 19°	0.28 25	2 – 5/8 x 3¼	6.25 159	8.90 226	2.25 57	6.9 3.1	
5 125	×	4 100	350 2410	5565 24765	0 – 0.13 0 – 3.2	1° – 3°	0.22 19	2 – ¾ x 4¼	7.18 182	10.70 272	2.13 54	11.2 5.1	
6 150	×	4 100	350 2410	5565 24765	0 – 0.13 0 – 3.2	0° – 52°	0.18 15	2 – ¾ x 4¼	8.63 211	11.90 302	2.25 57	16.7 7.6	
		5 125	350 2410	8500 37825	0 – 0.13 0 – 3.2	0° – 52°	0.18 15		2 – ¾ x 4¼	8.31 211	11.90 302	2.25 57	12.9 5.9
165.1 mm	×	4 100	350 2410	5565 24765	0 – 0.13 0 – 3.2	0° – 55°	0.19 16	2 – ¾ x 4¼	8.63 219	11.90 302	2.25 57	15.2 6.9	
8 200	×	6 150	350 2410	12000 53400	0 – 0.13 0 – 3.2	0° – 38°	0.13 11	2 – 7/8 x 5	10.81 275	14.88 378	2.50 64	22.4 10.2	
		219.1 mm	×	165.1 mm	350 2410	1625	0 – 0.13 0 – 3.2		0° – 38°	0.13 11	2 – 7/8 x 5	10.75 273	14.88 378
10 273	×	8 219.1	350 2410	20450	0 – 0.13 0 – 3.2	0° – 25°	0.9 8	2 – 1 x 5½	13.12 333	17.26 438	2.62 67	31.4 14.2	

Style 750 Reducing couplings should not be used with end caps (#60) in systems where a vacuum may be developed. Contact Victaulic for details.

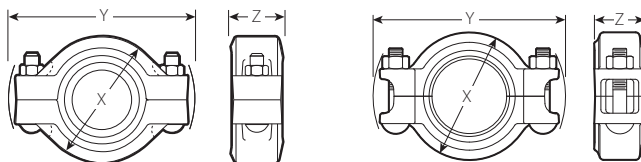
* Working Pressure and End Load are total, from all internal and external loads, based on standard weight (ANSI) steel pipe, standard **roll** or **cut** grooved in accordance with Victaulic specifications. Contact Victaulic for performance on other pipe. Maximum working pressure rating based on larger pipe size. Maximum End Load rating based on smaller pipe size. WARNING: FOR ONE TIME FIELD TEST ONLY, the Maximum Joint Working Pressure may be increased to 1½ times the figures shown.

† Allowable Pipe End Separation and Deflection figures show the maximum nominal range of movement available at each joint for standard **roll** grooved pipe. Figures for standard **cut** grooved pipe may be doubled. These figures are maximums; for design and installation purposes these figures should be reduced by: 50% for ¾ – 3½/20 – 90 mm; 25% for 4"/100 mm and larger.

@ Number of bolts required equals number of housing segments.

Metric thread size bolts are available (color coded gold) for all coupling sizes upon request. Contact Victaulic for details.

WARNING: Depressurize and drain the piping system before attempting to install, remove, or adjust any Victaulic piping products.



Reducing Coupling

STYLE 750

FLOW DATA

HEAD LOSS

The head loss across Style 750 Reducing coupling is very small and is essentially the same as for standard short body reducing pipe fittings.

Equivalent lengths of standard weight steel pipe are shown in the tables. All data is based on water flowing at ambient temperature.

FLOW REDUCING

Size		Equiv. Pipe Length
Nominal Size Inches/mm		Sm. Dia. Feet/m
2 50	× 1 25	5.9 1.8
		2.0 0.6
2½ 65	× 2 50	1.9 0.6
		1.9 0.6
76.1 mm	× 2 50	1.9 0.6
		5.5 1.7
3 80	× 2½ 65	3.8 1.2
		3.8 1.2
88.9 mm	× 76.1 mm	3.8 1.2
4 100	× 2 50	6.0 1.8
		6.0 1.8
		6.0 1.8
114.3 mm	× 76.1 mm	6.0 1.8
		3.0 0.9
5 125	× 4 100	6.0 1.8
		4.5 1.4
6 150	× 4 100	6.0 1.8
		6.0 1.8
165.1 mm	× 4 100	6.0 1.8
		7.3 2.2
8 200	× 6 150	7.3 2.2
		7.3 2.23
219.1 mm	× 165.1 mm	7.3 2.23
10 273	× 8 219.1	8.7 2.65
		8.7 2.65

FLOW EXPANDING

Size		Equiv. Pipe Length
Nominal Size Inches/mm		Sm. Dia. Feet/m
1 25	× 2 50	2.7 0.8
		1.9 0.6
1½ 40	× 2 50	1.9 0.6
		1.0 0.3
2 50	× 2½ 65	1.0 0.3
		1.0 0.3
76.1 mm	× 76.1 mm	1.0 0.3
		3.5 1.1
3 80	× 4 100	3.0 0.9
		2.5 0.8
2½ 65	× 3 80	2.5 0.8
		3.0 0.9
76.1 mm	× 88.9 mm	2.5 0.8
		3.0 0.9
3 80	× 4 100	2.5 0.8
		3.3 1.0
4 100	× 5 125	4.6 1.4
		4.6 1.4
165.1 mm	× 165.1 mm	4.6 1.4
		2.3 0.7
5 125	× 6 150	2.3 0.7
		6.0 1.8
6 150	× 8 200	6.0 1.8
		5.4 1.65
165.1 mm	× 219.1 mm	5.4 1.65
8 219.1	× 10 273	6.3 19.2
		6.3 19.2

Reducing Coupling

STYLE 750

INSTALLATION

Reference should always be made to the I-100 Victaulic Field Installation Handbook for the product you are installing. Handbooks are included with each shipment of Victaulic products for complete installation and assembly data, and are available in PDF format on our website at www.victaulic.com.

WARRANTY

Refer to the Warranty section of the current Price List or contact Victaulic for details.

NOTE

This product shall be manufactured by Victaulic or to Victaulic specifications. All products to be installed in accordance with current Victaulic installation/assembly instructions. Victaulic reserves the right to change product specifications, designs and standard equipment without notice and without incurring obligations.



WCAS-6UPKD7

For complete contact information, visit www.victaulic.com

06.08 1536 REV I UPDATED 6/2008

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TECHNICAL DATA SHEET

VK3001 Quick Response Upright Sprinkler K5.6 (80.6)

1. PRODUCT IDENTIFICATION

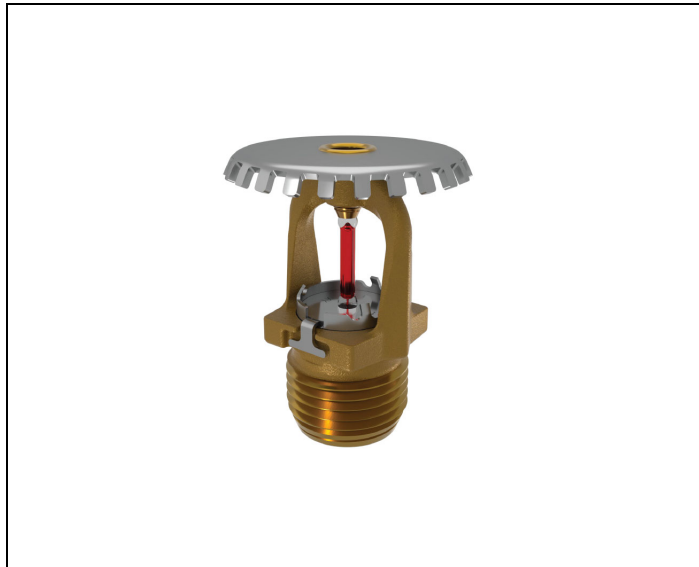
This document covers the following product, hereafter referred to as “sprinkler”:

VK3001: Quick Response, Standard Coverage, Upright, K5.6 (80.6) Sprinkler.

2. INTENDED USE

The sprinkler is intended to be used in automatic fire sprinkler systems as allowed by applicable approval authorities. The sprinkler must be used in accordance with:

1. the sprinkler’s Listings, Approvals, and associated design requirements.
2. the recognized design and installations standards issued, for example NFPA, FM, EN, VdS, or LPCB.
3. the latest revisions of all applicable manufacturer’s documentation.



Governmental codes, ordinances, and standards may apply and may differ from one another.

WARNING

Cancer and Reproductive Harm www.P65Warnings.ca.gov

3. LISTING AND APPROVALS

Refer to section 5 for details and requirements that must be followed.



cULus Listed



VdS Approved



FM Approved



UKCA Approved



CE



MED Approved



LPCB Approved

4.4 Materials of Construction

NOTICE: Do not disassemble the sprinkler.

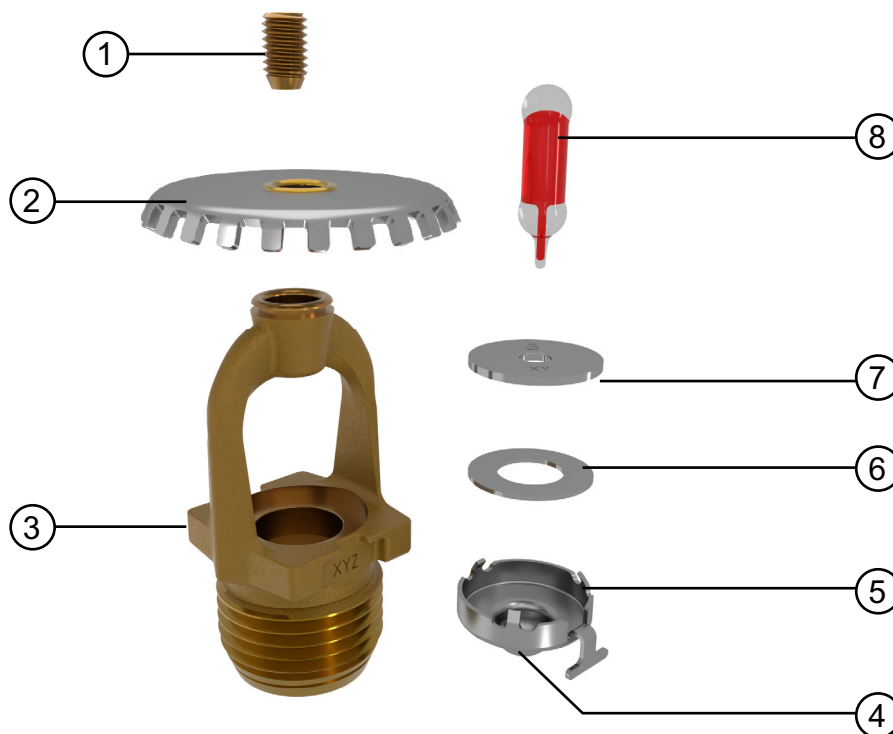


Figure – 3 Sprinkler Components

Ref	Description	Material
1	Compression screw	Brass CW612N, CW508L, UNS-C36000 or UNS-C26000
2	Deflector	Stainless steel UNS S30400
3	Sprinkler body	CW602N, UNS-C84400 or QM brass
4	Pip cap seal	Polytetrafluoroethylene (PTFE)
5	Pip cap shell	Stainless steel UNS-S44400
6	Belleville spring	Nickel alloy
7	Pip cap disc	Stainless steel UNS-S30100
8	Bulb	Glass, nominal 0.10" (3 mm) diameter


TECHNICAL DATA SHEET
**VK3001 Quick Response
Upright Sprinkler K5.6 (80.6)**
5. LISTING AND APPROVAL DESIGN REQUIREMENTS
5.1 Listing and Approval Specifications

Sprinkler Base Part Number ¹	Thread Size		Approval Body				
	NPT	BSPT	cULus		FM		
			Approval Specification	Maximum working water pressure	Approval Specification	Maximum working water pressure	
23869	1/2"	—	A1	250 psi (17 bar)	A1	175 psi (12 bar)	
23881	—	15 mm	A1	250 psi (17 bar)	A1	175 psi (12 bar)	
Additional Listings and Approvals Maximum WWP 175 psi (12 bar)							
			CE	LPCB	VdS	UKCA	MED
23869	1/2"	—	A1	A1	A1	A1	A1
23881	—	15 mm	A1	A1	A1	A1	A1
Approval Specification (Temperature Ratings) Key: A = 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C) and 286 °F (141 °C)							
Approval Specification (Finishes) Key: 1 = Brass, Chrome, White Polyester ^{2,3} , Black Polyester ^{2,3} , and ENT ^{3,4}							
1 For complete part number, refer to Viking's current price list. 2 For White Polyester and Black Polyester, other colors are available upon request and will carry the same Listings and Approvals as the standard colors. 3 cULus Listed as corrosion resistant. 4 FM Approved as corrosion resistant.							

5.2 cULus Listing Requirements and Details

The sprinkler is cULus Listed as indicated in Table 5.1 for installation in accordance with the latest edition of NFPA 13 for standard spray sprinklers. This sprinkler is designed for use in light and ordinary hazard occupancies.

5.3 FM Approval Requirements and Details

The sprinkler is FM Approved as quick response Non-Storage upright sprinkler as indicated in the FM Approval Guide. The sprinkler is also approved for use in FM Approved vacuum dry sprinkler systems with a maximum supervisory vacuum pressure of -3 psi (-207 mbar). 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. For specific application and installation requirements, refer to the latest applicable FM Loss Prevention Data Sheets (including Data Sheet 2-0).



5.4 Additional Approval Requirements and Details

Refer to Table 5.1 for approved configurations allowed by each of the following approvals.

- CE CPR: Standard EN 12259-1:1999 +A3:2006; Declaration of Performance DOP_XT1A.
- LPCB: Standard EN 12259-1:1999 +A3:2006; Certificate Number 096m.
- VdS: Standard EN 12259-1:1999 +A3:2006; Certificate Number G 422005.
- UKCA: Standard EN12259-1:1999 +A3:2006; Declaration of Conformity UKCA DOC_S5048.
- MED: Standard EN 12259-1:1999 +A3:2006; Declaration of Conformity DOC_MED_XT1.

5.5 Corrosion Resistant Coatings

The corrosion resistant coatings have passed the standard corrosion tests required by the approving agencies and are listed and approved as indicated in Table 5.1. These tests do not represent all possible corrosive environments. The Electro-less Nickel PTFE (ENT) finish passed the UL 199 thirty day corrosion test and is cULus listed and FM Approved as corrosion resistant. For automatic sprinklers, the ENT coating is applied to all exposed exterior surfaces, including the waterway.

Prior to installation, verify that the coatings are compatible with, or suitable for, the proposed environment. The ENT finish has not been evaluated for environments containing chlorine, such as indoor swimming pools. It is not recommended for these applications.

5.6 Sprinkler Guards and Water Shields

The sprinkler is approved for use with the Model XG Sprinkler Guard and the Model XWU upright water shield. Refer to the Guards and Water Shields for XT1 Sprinklers technical data sheet for more information.

5.7 Available Temperature Ratings

Viking sprinklers are available in several temperature ratings that relate to a specific temperature classification. Applicable installation rules mandate the use and limitations of each temperature classification. In selecting the appropriate temperature classification, the maximum expected ceiling temperature must be known. When there is doubt as to the maximum temperature at the sprinkler location, a maximum-reading thermometer should be used to determine the temperature under conditions that would show the highest readings to be expected. In addition, recognized installation rules may require a higher temperature classification, depending upon sprinkler location, occupancy classification, commodity classification, storage height, and other hazards. In all cases, the maximum expected ceiling temperature dictates the lowest allowable temperature classification. Sprinklers located immediately adjacent to a heat source may require a higher temperature rating.


TECHNICAL DATA SHEET
**VK3001 Quick Response
Upright Sprinkler K5.6 (80.6)**
6. ORDERING PROCEDURE
6.1 Sprinkler

1. Choose a sprinkler base part number with the required thread size and listing or approval (refer to section 5):
2. Add the suffix for the desired finish.
3. Add the suffix for the desired temperature rating.

NOTE: For Polyester, insert the desired temperature rating suffix where the dash (-) is shown.

EXAMPLE: 23869MB/W = VK3001 with white polyester finish and 155 °F (68 °C) nominal temperature rating. This sprinkler is to be installed into an area with a maximum ambient temperature of 100 °F (38 °C).

1. Sprinkler Base Part Number		2. Finish		3. Temperature Rating			
See Section 5		Description	Suffix	Nominal Temperature Rating	Bulb Color	Maximum Ambient Ceiling Temperature	Suffix
23869	1/2" NPT	Brass	A	135 °F (57 °C)	Orange	100 °F (38 °C)	A
23881	15 mm BSPT	Chrome	F	155 °F (68 °C)	Red	100 °F (38 °C)	B
		White Polyester	M-/W	175 °F (79 °C)	Yellow	150 °F (65 °C)	D
		Black Polyester	M-/B	200 °F (93 °C)	Green	150 °F (65 °C)	E
		ENT	JN	286 °F (141 °C)	Blue	225 °F (107 °C)	G
				OPEN	—	—	Z

6.2 Sprinkler Accessories


Figure – 4: Sprinkler Accessories

Ref.	Part Number	Description
1)	23559MB	Straight wrench: required for proper installation
2)	01724A	Sprinkler cabinet: holds up to 6 sprinklers
3)	01725A	Sprinkler cabinet: holds up to 12 sprinklers (not shown)


TECHNICAL DATA SHEET
**VK3001 Quick Response
Upright Sprinkler K5.6 (80.6)**
7. CONTACT

The sprinkler and accessories are available through Viking distributors only. Contact your local Viking sales office which can be found on our website:

Americas and Asia: www.vikinggroupinc.com/locations OR Europe, Middle East, Africa (EMEA): www.viking-emea.com/contact

Manufacturer:

The Viking Corporation
5150 Beltway SE
Caledonia, MI 49316
Tel.: (800) 968-9501
Fax: 269-818-1680
Technical Services: 1-877-384-5464
techsvcs@vikingcorp.com

Importer EU:

Viking S.A.
21, Z.I, Haneboesch
L-4562 Differdange / Niederkorn
Tel.: +352 58 37 37 – 1
Fax: +352 58 37 36
vikinglux@viking-emea.com

Asia Pacific (APAC) Main Office:

The Viking Corporation (Far East) Pte. Ltd.
69 Tuas View Square
Westlink Techpark, Singapore 637621
Tel: (+65) 6 278 4061
Fax: (+65) 6 278 4609
vikingAPAC@vikingcorp.com



Handling and Installation Instructions

Model XT-1 Upright Sprinklers

bg	Инсталирайте и пуснете продукта в експлоатация само ако следната инструкция е ясно разбрана.	lv	Produkta iemontēšanu un ekspluatācijas sākšanu veikt tikai tad, ja dotā instrukcija ir pilnībā saprasta.
cs	Namontujte a spusťte do provozu produkt pouze tehdy, když jste jasně pochopili tento návod.	lt	Produktą montuokite ir pradėkite eksploatuoti tik tuomet, jei aiškiai suprantate šią instrukciją.
de	Du må kun montere og idriftsætte produktet, hvis du har forstået følgende vejledning til fulde.	mt	Installa u f'ad dem il-prodott biss jekk l-istruzzjonijiet li ġejjin jinftiehm u b'mod ċar.
de	Produkt nur einbauen und in Betrieb nehmen, wenn die nachfolgende Anleitung klar verstanden wird.	nl	Product alleen installeren en in gebruik nemen, als de volgende instructies begrepen zijn.
el	Η εγκατάσταση και θέση σε λειτουργία του προϊόντος επιτρέπονται μόνο εάν οι ακόλουθες οδηγίες έχουν γίνει κατανοητές.	no	Ikke installer og ta i bruk produktet uten at følgende anvisninger er tydelig forstått.
en	Do not install and commission the product unless you have clearly understood the instructions below.	pl	Produkt należy montować i uruchamiać tylko wtedy, gdy poniższe instrukcje są w pełni zrozumiałe.
es	Instalar el producto y ponerlo en funcionamiento solo cuando se hayan comprendido claramente las siguientes instrucciones.	pt	Instalar e colocar o produto em funcionamento somente se as instruções a seguir forem claramente compreendidas.
et	Paigaldage toode ja kasutage seda ainult siis, kui saate alljärgnevast juhendist selgelt aru.	ro	Montați produsul și puneți-l în funcțiune numai dacă instrucțiunea următoare este înțeleasă clar.
fi	Tuotteen saa asentaa ja ottaa käyttöön vain, jos jäljempänä oleva ohje ymmärretään selvästi.	ru	Не устанавливайте и не принимайте оборудование в эксплуатацию, если вы четко не поняли инструкции ниже
fr	N'installer et ne mettre en service le produit que si les instructions suivantes ont été clairement comprises.	sk	Namontujte a spusťte do prevádzky výrobok iba vtedy, pokiaľ ste jasne pochopili tento návod.
ga	Ná déan an táirge a shuiteail agus a choimisiunu mura dtuigeann tu na teoracha thíos go soileir.	sl	Izdelek vgradite in zaženite samo, če ste dobro razumeli navodila v nadaljevanju.
hr	Ne instalirajte i ne puštajte proizvod u rad ako niste jasno razumjeli donje upute.	sr	Ne instalirajte i ne puštajte proizvod u rad ako niste jasno razumeli uputstva u nastavku.
hu	Csak akkor építse be a terméket és helyezze üzembe, ha a következő útmutatót egyértelműen megértette.	sv	Montera och driftsätt produkten endast om du förstår den efterföljande instruktionen.
is	Settu ekki upp eða taktu vöruna í notkun nema þú hafir skilið greinilega leiðbeiningarnar hér að neðan.	tr	Aşağıdaki talimatları açıkça anlamadan ürünü kurmayın ve devreye almayın.
it	Montare il prodotto e metterlo in funzione solo se si sono comprese appieno le seguenti istruzioni.		

1. PRODUCT IDENTIFICATION

This document covers the following products, hereafter referred to as “sprinkler”:

- VK1001 Standard Response Upright Sprinkler K5.6 (80.6)
- VK2001 Standard Response Upright Sprinkler K8.0 (115)
- VK2002 Standard Response Upright Sprinkler K8.0 (115)
- VK3001 Quick Response Upright Sprinkler K5.6 (80.6)
- VK3501 Quick Response Upright Sprinkler K8.0 (115)
- VK3502 Quick Response Upright Sprinkler K8.0 (115)
- OTHER APPLICABLE DOCUMENTS

2. OTHER APPLICABLE DOCUMENTS

For intended use and relevant conditions for the safe use of the specific sprinkler refer to the appropriate *Technical Data Sheet*.



3. TRANSPORT AND HANDLING

⚠ WARNING

A damaged or compromised sprinkler poses the risk of fatal consequences.

Damaged or compromised sprinklers will not operate properly which could lead to loss of life.

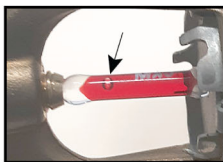
- NEVER use a sprinkler that has been exposed to temperatures exceeding the maximum allowed ambient temperature.
- NEVER use a sprinkler with a loss of liquid from the glass bulb or damage to the fusible element. A small bubble should be visible within the glass bulb; rotate the sprinkler to a horizontal position while observing the bulb to see the bubble.
- NEVER use a sprinkler that has been dropped or damaged.
- ALWAYS Protect the sprinkler from mechanical damage during storage, transport, and handling.
- NEVER use sprinklers that have been painted by anyone other than the manufacturer.
- ALWAYS protect sprinklers from being painted during installation or replacement in accordance with the installation standards.
- NEVER clean sprinklers with anything other than 7 psi or lower compressed air.
- NEVER apply soap, water, ammonia, adhesives, solvents or any other fluids on sprinklers.
- Destroy every damaged or compromised sprinkler.

NOTICE

Protect sprinklers during transport and handling.

- ALWAYS handle the sprinkler with care.
- ALWAYS keep the protective cap on the sprinkler during transport and handling.
- NEVER remove the protective cap until the fire sprinkler system is placed in service and the potential for mechanical damage no longer exists.
- ALWAYS protect the sprinkler from direct sunlight during transport and handling.
- ALWAYS store sprinkler in a cool, dry, protected area.
- ALWAYS use original manufacturer's shipping containers.
- NEVER store a sprinkler loose in a box, bin, bucket, or other type of container.
- ALWAYS keep the sprinkler separated from other sprinklers.
- NEVER allow metal parts to contact the sprinkler operating elements.

NOTE: If the glass bulb included on the sprinkler has been exposed to ultraviolet light, the color inside the bulb may fade. This color change does not affect the operation of the sprinkler.



CORRECT
(Bulb intact, bubble visible)



INCORRECT
(bulb cracked, fluid missing)



CORRECT
(Protective caps in place)



INCORRECT
(Protective caps not in place)



CORRECT
Container



INCORRECT
(Stored loose in a box)



4. INSTALLATION

⚠ WARNING

Installation by insufficiently qualified personnel poses the risk of fatal consequences.

- This sprinkler must be installed properly by qualified personnel familiar with safe practices and applicable and recognized design and installation standards issued, for example, by NFPA, FM, VdS, or LPCB, and trained how to properly perform the installation procedures.

⚠ CAUTION

Cutting Hazard.

Sprinklers, accessories, cabinets, and packaging can have sharp edges that can cause cuts.

- Wear appropriate personal protective equipment (gloves) while handling product.

Optional Guards, Shields, and Escutcheons: If the sprinkler shall be installed together with a guard, shield, or escutcheon refer to the applicable documents for the products used.

1. Install all required piping in the intended installation location.
2. Verify that the sprinkler model/style, K-factor, temperature rating, and response characteristics are appropriate for the intended installation location. See Table 1 and Figure 4.
3. Inspect the sprinkler for damage. Destroy every damaged or compromised sprinkler. The following are examples in which sprinklers are considered damaged or compromised. Replace the sprinkler in the following cases:
 - Sprinkler with a loss of fluid from the glass bulb or damage to the fusible element.
 - Sprinklers that have been field painted, caulked, or mechanically damaged.
 - Sprinklers showing signs of corrosion.
4. Verify that the sprinkler is protected with the protective cap or clip.
5. Apply a small amount of pipe-joint compound or tape to the external threads of the sprinkler only. Do not allow a build-up of compound inside the sprinkler inlet (Figure 1).

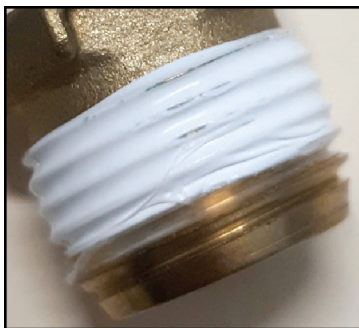


Figure – 1

6. **NOTICE: Do not use the deflector to start threading the sprinkler into a fitting. Use ONLY the approved wrench to install the sprinkler. Refer to the sprinkler’s *Technical Data Sheet*.**

Carefully slide the proper wrench onto the wrench flats (Figure 2).

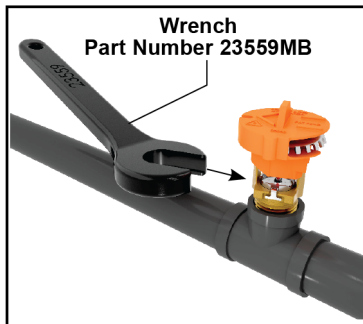


Figure – 2

7. **NOTICE: Over-tightening the sprinkler can cause permanent damage. For 1/2" NPT (or 15 mm BSPT) sprinkler, tighten up to a maximum torque of 14 ft-lbs (19 Nm). For 3/4" NPT (or 20 mm BSPT) sprinkler, tighten up to a maximum of 20 ft-lbs (27,1 Nm).**

Tighten the sprinkler as necessary (Figure 3). If applicable, install a sprinkler guard and water shield.

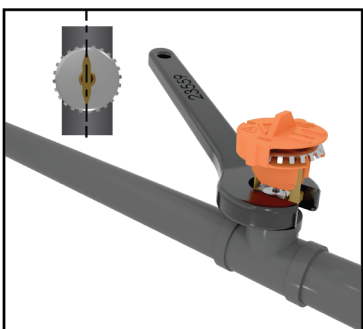


Figure – 3

8. **NOTICE: Sprinkler protective caps/clips must be removed from the sprinkler before placing the system in service. Test the entire sprinkler system.**

Refer to the applicable system documentation, regulations, and standards to ensure compliance.

Table 1: Sprinkler Markings	
Ref	Parameter
A	Response type
B	Listings and approvals
C	Sprinkler type
D	Manufacture date
E	Nominal temperature rating
F	Manufacturer’s Sprinkler Identification Number (SIN)

EXAMPLE
EXAMPLE
Figure – 4



Handling and Installation Instructions

Model XT-1 Upright Sprinklers

5. CONTACT

The sprinkler and accessories are available through Viking distributors only. Contact your local Viking sales office which can be found on our website:

Americas and Asia: www.vikinggroupinc.com/locations OR Europe, Middle East, Africa (EMEA): www.viking-emea.com/contact

Manufacturer:

The Viking Corporation
5150 Beltway SE
Caledonia, MI 49316
Tel.: (800) 968-9501
Fax: 269-818-1680
Technical Services: 1-877-384-5464
techsvcs@vikingcorp.com

Importer EU:

Viking S.A.
21, Z.I, Haneboesch
L-4562 Differdange / Niederkorn
Tel.: +352 58 37 37 – 1
Fax: +352 58 37 36
vikinglux@viking-emea.com

Asia Pacific (APAC) Main Office:

The Viking Corporation (Far East) Pte. Ltd.
69 Tuas View Square
Westlink Techpark, Singapore 637621
Tel: (+65) 6 278 4061
Fax: (+65) 6 278 4609
vikingAPAC@vikingcorp.com



1. PRODUCT IDENTIFICATION

This document covers the following product, hereafter referred to as “sprinkler” (SR=Standard Response, QR=Quick Response):

- VK1001 SR Upright Sprinkler K5.6 (80.6)
- VK2001 SR Upright Sprinkler K8.0 (115)
- VK2002 SR Upright Sprinkler K8.0 (115)
- VK3001 QR Upright Sprinkler K5.6 (80.6)
- VK3501 QR Upright Sprinkler K8.0 (115)
- VK3502 QR Upright Sprinkler K8.0 (115)
- VK1021 SR Pendent Sprinkler K5.6 (80.6)
- VK2021 SR Pendent Sprinkler K8.0 (115)
- VK2022 SR Pendent Sprinkler K8.0 (115)
- VK3021 QR Pendent Sprinkler K5.6 (80.6)
- VK3521 QR Pendent Sprinkler K8.0 (115)
- VK3522 QR Pendent Sprinkler K8.0 (115)
- VK1181 SR Conventional Sprinkler K5.6 (80.6)
- VK1201 SR Conventional Sprinkler K8.0 (115)
- VK1202 SR Conventional Sprinkler K8.0 (115)
- VK3101 QR Conventional Sprinkler K5.6 (80.6)
- VK3541 QR Conventional Sprinkler K8.0 (115)
- VK3542 QR Conventional Sprinkler K8.0 (115)

WARNING

Cancer and Reproductive Harm www.P65Warning.ca.gov

2. OTHER APPLICABLE DOCUMENTS

For intended use and relevant conditions for the safe use of the specific sprinkler, refer to the appropriate Technical Data Sheet. In case an installed sprinkler needs to be replaced, refer to the appropriate Handling and Installation Instructions for the installation of the new sprinkler.

3. MAINTAINING OPERATIONAL READINESS

Functionality

During fire conditions, the operating element fuses or shatters (depending on the type of sprinkler), releasing the pip cap and sealing assembly. Water flowing through the sprinkler orifice strikes the sprinkler deflector, forming a uniform spray pattern to control or extinguish the fire.

WARNING

This section contains important safety information. Read and follow all information.

Damaged or Compromised Sprinklers

Damaged or compromised sprinklers will not operate properly which could lead to loss of life.

- NEVER clean, paint, or caulk sprinklers.
- NEVER apply soap, water, ammonia, adhesives, solvents or any other fluids on sprinklers.
- NEVER expose sprinklers to temperatures exceeding the maximum allowed ambient ceiling temperature. See the Technical Data Sheet.
- ALWAYS replace a compromised or damaged sprinkler.
- NEVER attempt to repair or reassemble a sprinkler.
- ALWAYS replace operated sprinklers and cover assemblies and sprinklers exposed to corrosive products of combustion.
- Replacement of sprinklers must only be performed following the instructions in section 4.

The following are examples in which sprinklers are considered damaged or compromised. Replace the sprinkler in the following cases:

- Sprinkler with a loss of fluid from the glass bulb or damage to the fusible element.
- Sprinklers or cover plate assemblies that have been field painted, caulked, or mechanically damaged.
- Sprinklers showing signs of extraordinary corrosion.



Obstructions and obstacles

Obstructions and obstacles may compromise sprinkler discharge patterns which are critical for proper fire protection.

- NEVER attach items to sprinklers or hang items from the ceiling in an area protected with sprinklers.
- NEVER install walls in areas protected with sprinklers without having a specialized company verifying the design of the sprinkler system.
- ALWAYS remove obstructions and obstacles to sprinkler spray patterns.

Sprinkler systems that have been subjected to a fire

Sprinkler systems that have been subjected to a fire must be returned to service as soon as possible.

- After an event of fire, the entire sprinkler system must be inspected for damage and repaired as necessary.
- Refer to the minimum requirements of the Authority Having Jurisdiction for replacement of sprinklers.
- Consider the employment of a fire patrol as long as the sprinkler system is out of service.

Inspections and testing

The owner is responsible for having the sprinklers inspected and tested according to standards of the applicable approval body and to the requirements of the Authority Having Jurisdiction to maintain proper operating condition of the system.

- Sprinklers must be inspected on a regular basis for corrosion, mechanical damage, obstructions, paint, etc. Frequency of inspections may vary due to corrosive atmospheres, water supplies, and activity around the sprinkler.

The applicable approval body or Authority Having Jurisdiction may require sprinklers to be replaced after a specified term of service.

- Refer to the standards of the applicable approval body, such as NFPA, FM, VdS, or LPCB, and the requirements of the Authority Having Jurisdiction for detailed inspection, testing and replacements requirements.

Sprinklers removed from the system for testing or for any other purpose must be replaced according to section 4.

4. REMOVAL AND REPLACEMENT

WARNING

Removal and replacement of sprinklers by insufficiently qualified personnel poses the risk of fatal consequences in case of fire.

- Removal or replacement of sprinklers must be performed by qualified personnel familiar with safe practices and applicable and recognized design and installation standards issued, for example, by NFPA, FM, VdS, or LPCB, and trained how to properly perform the installation procedures.

WARNING

Removal and replacement of sprinklers will temporarily eliminate the fire protection capabilities of the sprinkler system.

- Consider the employment of a fire patrol in the affected area.
- Prior to proceeding, notify all Authorities Having Jurisdiction.


⚠ WARNING

Re-installation of a removed sprinkler may compromise the operational safety of the sprinkler system.

- NEVER reinstall a removed sprinkler.
 - ALWAYS use new sprinklers for replacement.
1. Select new sprinklers with identical performance characteristics as well as respective accessories such as escutcheons, cover plates, and protective caps. A stocked spare sprinkler cabinet may be provided for this purpose on site.
 2. According to appropriate system description and/or valve instructions, remove the system from service, drain all water, and relieve all pressure on the piping.
 3. Only for flush and concealed style sprinklers: Remove the ceiling ring or cover plate assembly of the old sprinkler by gently unthreading or pulling it off the sprinkler body (depends on the sprinkler model used).
 4. Use the proper sprinkler wrench for the old sprinkler according to its Technical Data Sheet.
 5. Only for flush and concealed style sprinklers, but not for domed concealed sprinklers: Replace the plastic protective cap over the old sprinkler and fit the wrench over the cap.
 6. Use the wrench to remove the old sprinkler by turning it counterclockwise to unthread it from the piping.
 7. Install the new sprinkler by following its Handling and Installation Instructions.
 8. Place the system back in service and secure all valves.
 9. Check for and repair all leaks.

5. DISPOSAL

At end of use the product described here should be disposed of via the national recycling system.

6. CONTACT

The sprinkler and accessories are available through Viking distributors only. Contact your local Viking sales office which can be found on our website:

Americas and Asia: www.vikinggroupinc.com/locations OR Europe, Middle East, Africa (EMEA): www.viking-emea.com/contact

Manufacturer:

The Viking Corporation
5150 Beltway SE
Caledonia, MI 49316
Tel.: (800) 968-9501
Fax: 269-818-1680
Technical Services: 1-877-384-5464
techsvcs@vikingcorp.com

Importer EU:

Viking S.A.
21, Z.I, Haneboesch
L-4562 Differdange / Nieder Korn
Tel.: +352 58 37 37 – 1
Fax: +352 58 37 36
vikinglux@viking-emea.com

Asia Pacific (APAC) Main Office:

The Viking Corporation (Far East) Pte. Ltd.
69 Tuas View Square
Westlink Techpark, Singapore 637621
Tel: (+65) 6 278 4061
Fax: (+65) 6 278 4609
vikingAPAC@vikingcorp.com



TECHNICAL DATA SHEET

VK3021 Quick Response Pendent Sprinkler K5.6 (80.6)

1. PRODUCT IDENTIFICATION

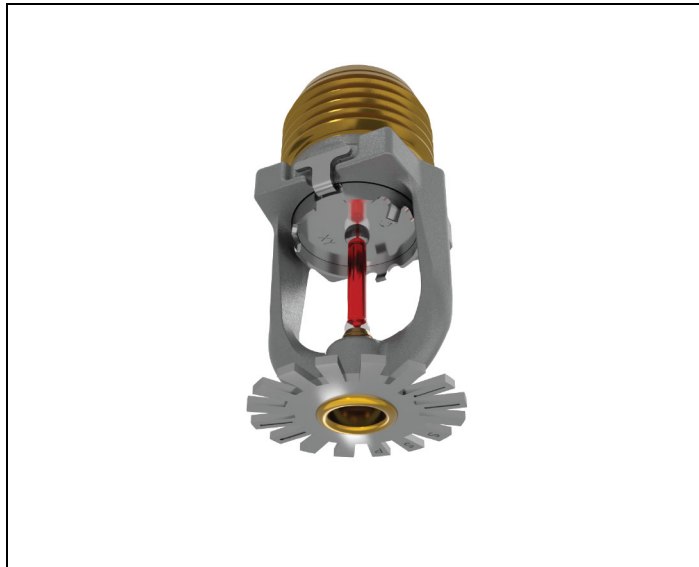
This document covers the following product, hereafter referred to as “sprinkler”:

VK3021: Quick Response, Standard Coverage, Pendent, K5.6 (80.6) Sprinkler.

2. INTENDED USE

The sprinkler is intended to be used in automatic fire sprinkler systems as allowed by applicable approval authorities. The sprinkler must be used in accordance with:

1. the sprinkler’s Listings, Approvals, and associated design requirements.
2. the recognized design and installations standards issued, for example NFPA, FM, EN, VdS, or LPCB.
3. the latest revisions of all applicable manufacturer’s documentation.



Governmental codes, ordinances, and standards may apply and may differ from one another.

⚠ WARNING

Cancer and Reproductive Harm www.P65Warnings.ca.gov

3. LISTING AND APPROVALS

Refer to section 5 for details and requirements that must be followed.



cULus Listed



VdS Approved



FM Approved



UKCA Approved



CE



MED Approved



LPCB Approved


TECHNICAL DATA SHEET
**VK3021 Quick Response
Pendent Sprinkler K5.6 (80.6)**
4. TECHNICAL SPECIFICATIONS
4.1 Definitions

Standard Pendent Sprinkler: A sprinkler intended to be oriented with the deflector below the frame so water flows downward through the orifice, striking the deflector and forming an umbrella-shaped spray pattern downward. These sprinklers are marked “SP/RP” (Standard Pendent/Recessed Pendent). When a standard pendent sprinkler is used with a recessed escutcheon, it becomes a recessed pendent sprinkler.

Recessed Sprinkler: A spray sprinkler assembly intended for installation with a concealed piping system. The assembly consists of a sprinkler installed in a decorative adjustable recessed escutcheon that minimizes the protrusion of the sprinkler beyond the ceiling or wall without adversely affecting the sprinkler distribution or sensitivity. Refer to the appropriate technical data page for allowable sprinkler models, temperature ratings, and occupancy classifications.

NOTICE: Do not recess any sprinkler not listed or approved for use with the escutcheon. Refer to Section 5.

Corrosion Resistant Sprinkler: A special service sprinkler with non-corrosive protective coatings, or that is fabricated from non-corrosive material, for use in atmospheres that would normally corrode sprinklers. Sprinklers can be ordered as corrosion resistant sprinklers and can be used with escutcheons when allowed by the approval body.

4.2 Ratings and Physical Characteristics

Parameter	Value
Minimum operating pressure	7 psi (0.5 bar)
Maximum rated pressure	UL: 250 psi (17 bar) FM and CE: 175 psi (12 bar)
Factory tested pressure	500 psi (35 bar)
Thread size	1/2" NPT or 15 mm BSPT
Nominal K-factor	5.6 U.S. (80.6)
Minimum temperature rating (glass bulb)	-65 °F (-55 °C)

4.3 Markings and Dimensions

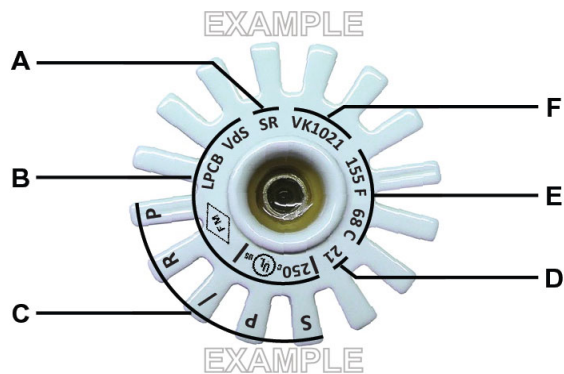


Figure – 1 Markings

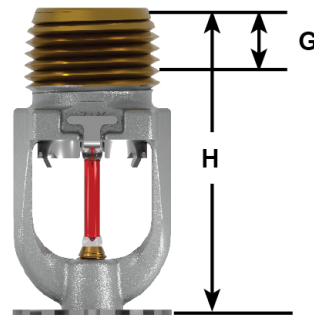


Figure – 2: Dimensions

Ref	Description	Value
A	Response type	QR: Quick Response
B	Listings and Approvals	See sections 3 and 5
C	Sprinkler type	SP/RP: Standard Pendent/Recessed Pendent
D	Manufacture date (year)	See marking
E	Nominal temperature rating	See marking
F	Manufacturers Sprinkler Identification Number (SIN)	VK3021
G	Nominal pipe engagement	7/16" (11 mm)
H	Height	1-15/16" (49 mm)

4.4 Materials of Construction

NOTICE: Do not disassemble the sprinkler.

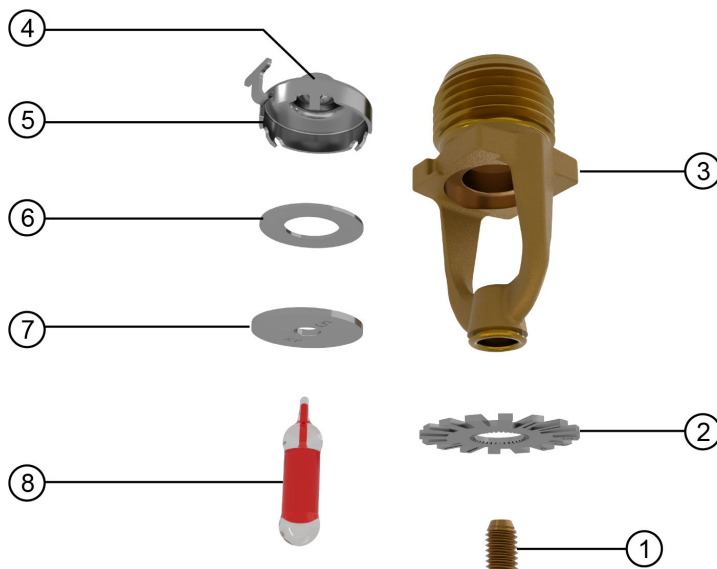


Figure – 3 Sprinkler Components

Ref	Description	Material
1	Compression screw	Brass CW612N, CW508L, UNS-C36000 or UNS-C26000
2	Deflector	Stainless steel UNS S30400
3	Sprinkler body	CW602N, UNS-C84400 or QM brass
4	Pip cap seal	Polytetrafluoroethylene (PTFE)
5	Pip cap shell	Stainless steel UNS-S44400
6	Belleville spring	Nickel alloy
7	Pip cap disc	Stainless steel UNS-S30100
8	Bulb	Glass, nominal 0.10" (3 mm) diameter


TECHNICAL DATA SHEET
**VK3021 Quick Response
Pendent Sprinkler K5.6 (80.6)**
5. LISTING AND APPROVAL DESIGN REQUIREMENTS
5.1 Listing and Approval Specifications

Sprinkler Base Part Number ¹	Thread Size		Approval Body				
	NPT	BSPT	cULus		FM		
			Approval Specification	Maximum working water pressure	Approval Specification	Maximum working water pressure	
23870	1/2"	—	A1, A2X, A3Y	250 psi (17 bar)	A1, B2X, B3Y	175 psi (12 bar)	
23882	—	15 mm	A1, A2X, A3Y	250 psi (17 bar)	A1, B2X, B3Y	175 psi (12 bar)	
Additional Listings and Approvals Maximum WWP 175 psi (12 bar)							
			CE	LPCB	VdS	UKCA	MED
23870	1/2"	—	A1, B2X, B3Y	A1, A2X, A3Y	A1	A1, A2X, A3Y	A1, A2X, A3Y
23882	—	15 mm	A1, B2X, B3Y	A1, A2X, A3Y	A1	A1, A2X, A3Y	A1, A2X, A3Y
Approval Specification (Temperature Ratings) Key:							
A = 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C) and 286 °F (141 °C)							
B = 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C)							
Approval Specification (Finishes) Key:							
1 = Brass, Chrome, White Polyester ^{2,3} , Black Polyester ^{2,3} , and ENT ^{3,4}							
2 = Brass, Chrome, White Polyester ^{2,3} , and Black Polyester ^{2,3}							
3 = ENT ^{3,4}							
Approval Specification (Escutcheons) Key:							
X = Installed with Viking Recessed Escutcheons Models E-1, E-2, E-3, NP-1, NP-2, and NP-3, or Viking Standard Surface Mounted Escutcheons							
Y = Installed with Viking Recessed Escutcheons Models E-1 and NP-1, or Viking Standard Surface Mounted Escutcheons							
1 For complete part number, refer to Viking's current price list.							
2 For White Polyester and Black Polyester, other colors are available upon request and will carry the same Listings and Approvals as the standard colors.							
3 cULus Listed as corrosion resistant.							
4 FM Approved as corrosion resistant.							

5.2 cULus Listing Requirements and Details

The sprinkler is cULus Listed as indicated in Table 5.1 for installation in accordance with the latest edition of NFPA 13 for standard spray sprinklers. This sprinkler is designed for use in light and ordinary hazard occupancies.

5.3 FM Approval Requirements and Details

The sprinkler is FM Approved as quick response Non-Storage pendent sprinkler as indicated in the FM Approval Guide. The sprinkler is also approved for use in FM Approved vacuum dry sprinkler systems with a maximum supervisory vacuum pressure of -3 psi (-207 mbar). 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. For specific application and installation requirements, refer to the latest applicable FM Loss Prevention Data Sheets (including Data Sheet 2-0).



5.4 Additional Approval Requirements and Details

Refer to Table 5.1 for approved configurations allowed by each of the following approvals.

- CE CPR: Standard EN 12259-1:1999 +A3:2006; Declaration of Performance DOP_XT1A.
- LPCB: Standard EN 12259-1:1999 +A3:2006; Certificate Number 096m.
- VdS: Standard EN 12259-1:1999 +A3:2006; Certificate Number G 422006.
- UKCA: Standard EN12259-1:1999 +A3:2006; Declaration of Conformity UKCA DOC_S5048.
- MED: Standard EN 12259-1:1999 +A3:2006; Declaration of Conformity DOC_MED_XT1.

For specific application and installation requirements, refer to the latest applicable governmental codes, ordinances, and standards for the installation location.

5.5 Corrosion Resistant Coatings

The corrosion resistant coatings have passed the standard corrosion tests required by the approving agencies and are listed and approved as indicated in Table 5.1. These tests do not represent all possible corrosive environments. The Electro-less Nickel PTFE (ENT) finish passed the UL 199 thirty day corrosion test and is cULus listed and FM Approved as corrosion resistant. For automatic sprinklers, the ENT coating is applied to all exposed exterior surfaces, including the waterway.

Prior to installation, verify that the coatings are compatible with, or suitable for, the proposed environment. The ENT finish has not been evaluated for environments containing chlorine, such as indoor swimming pools. It is not recommended for these applications.

5.6 Sprinkler Guards and Water Shields

The sprinkler is approved for use with the Model XG Sprinkler Guard and the Model F-1 water shield. Refer to the Guards and Water Shields for XT1 Sprinklers technical data sheet for more information.

5.7 Escutcheons

The sprinkler is approved for use with various styles of Viking escutcheons. Specific installation dimensions apply that must be observed. Refer to the sprinkler's Handling and Installation instructions for more information.

5.8 Available Temperature Ratings

Viking sprinklers are available in several temperature ratings that relate to a specific temperature classification. Applicable installation rules mandate the use and limitations of each temperature classification. In selecting the appropriate temperature classification, the maximum expected ceiling temperature must be known. When there is doubt as to the maximum temperature at the sprinkler location, a maximum-reading thermometer should be used to determine the temperature under conditions that would show the highest readings to be expected. In addition, recognized installation rules may require a higher temperature classification, depending upon sprinkler location, occupancy classification, commodity classification, storage height, and other hazards. In all cases, the maximum expected ceiling temperature dictates the lowest allowable temperature classification. Sprinklers located immediately adjacent to a heat source may require a higher temperature rating.


TECHNICAL DATA SHEET
**VK3021 Quick Response
Pendent Sprinkler K5.6 (80.6)**
6. ORDERING PROCEDURE
6.1 Sprinkler

1. Choose a sprinkler base part number with the required thread size and listing or approval (refer to section 5):
2. Add the suffix for the desired finish.
3. Add the suffix for the desired temperature rating.

NOTE: For Polyester, insert the desired temperature rating suffix where the dash (-) is shown.

EXAMPLE: 23870MB/W = VK3021 with white polyester finish and 155 °F (68 °C) nominal temperature rating. This sprinkler is to be installed into an area with a maximum ambient temperature of 100 °F (38 °C).

1. Sprinkler Base Part Number		2. Finish		3. Temperature Rating			
See Section 5		Description	Suffix	Nominal Temperature Rating	Bulb Color	Maximum Ambient Ceiling Temperature	Suffix
23870	1/2" NPT	Brass	A	135 °F (57 °C)	Orange	100 °F (38 °C)	A
23882	15 mm BSPT	Chrome	F	155 °F (68 °C)	Red	100 °F (38 °C)	B
		White Polyester	M-/W	175 °F (79 °C)	Yellow	150 °F (65 °C)	D
		Black Polyester	M-/B	200 °F (93 °C)	Green	150 °F (65 °C)	E
		ENT	JN	286 °F (141 °C)	Blue	225 °F (107 °C)	G
				OPEN	—	—	Z

6.2 Sprinkler Accessories



Figure – 4: Sprinkler Accessories

Image Reference	Part Number	Description
1)	23559MB	Straight wrench: required for proper installation
2)	23560MB	Recessed socket wrench
3)	01724A	Sprinkler cabinet: holds up to 6 sprinklers
4)	01725A	Sprinkler cabinet: holds up to 12 sprinklers (not shown)
5)	06419A	Model E-1 Slip-on style recessed escutcheon
	07902	Model E-1 Slip-on style recessed escutcheon (stainless steel)
6)	11038	Model E-2 Threaded recessed escutcheon
7)	18347	Model E-3 Threaded recessed escutcheon (large diameter outer cup)
8)	01960A	Large standard flat surface mount escutcheon (steel)
	09488	Large standard flat surface mount escutcheon (stainless steel)
9)	02960A	Small standard flat surface mount escutcheon (steel)
	07526	Small standard flat surface mount escutcheon (stainless steel)
10)	01961B	Large standard raised surface mount escutcheon (brass)


TECHNICAL DATA SHEET
**VK3021 Quick Response
Pendent Sprinkler K5.6 (80.6)**
7. CONTACT

The sprinkler and accessories are available through Viking distributors only. Contact your local Viking sales office which can be found on our website:

Americas and Asia: www.vikinggroupinc.com/locations OR Europe, Middle East, Africa (EMEA): www.viking-emea.com/contact

Manufacturer:

The Viking Corporation
5150 Beltway SE
Caledonia, MI 49316
Tel.: (800) 968-9501
Fax: 269-818-1680
Technical Services: 1-877-384-5464
techsvcs@vikingcorp.com

Importer EU:

Viking S.A.
21, Z.I, Haneboesch
L-4562 Differdange / Niederkorn
Tel.: +352 58 37 37 – 1
Fax: +352 58 37 36
vikinglux@viking-emea.com

Asia Pacific (APAC) Main Office:

The Viking Corporation (Far East) Pte. Ltd.
69 Tuas View Square
Westlink Techpark, Singapore 637621
Tel: (+65) 6 278 4061
Fax: (+65) 6 278 4609
vikingAPAC@vikingcorp.com



Handling and Installation Instructions

Model XT-1 Pendent Sprinklers

bg	Инсталирайте и пуснете продукта в експлоатация само ако следната инструкция е ясно разбрана.	lv	Produkta iemontēšanu un ekspluatācijas sākšanu veikt tikai tad, ja dotā instrukcija ir pilnībā saprasta.
cs	Namontujte a spusťte do provozu produkt pouze tehdy, když jste jasně pochopili tento návod.	lt	Produktą montuokite ir pradėkite eksploatuoti tik tuomet, jei aiškiai suprantate šią instrukciją.
de	Du må kun montere og idriftsætte produktet, hvis du har forstået følgende vejledning til fulde.	mt	Installa u f'ad dem il-prodott biss jekk l-istruzzjonijiet li ġejjin jinftiehm b'mod ċar.
de	Produkt nur einbauen und in Betrieb nehmen, wenn die nachfolgende Anleitung klar verstanden wird.	nl	Product alleen installeren en in gebruik nemen, als de volgende instructies begrepen zijn.
el	Η εγκατάσταση και θέση σε λειτουργία του προϊόντος επιτρέπονται μόνο εάν οι ακόλουθες οδηγίες έχουν γίνει κατανοητές.	no	Ikke installer og ta i bruk produktet uten at følgende anvisninger er tydelig forstått.
en	Do not install and commission the product unless you have clearly understood the instructions below.	pl	Produkt należy montować i uruchamiać tylko wtedy, gdy poniższe instrukcje są w pełni zrozumiałe.
es	Instalar el producto y ponerlo en funcionamiento solo cuando se hayan comprendido claramente las siguientes instrucciones.	pt	Instalar e colocar o produto em funcionamento somente se as instruções a seguir forem claramente compreendidas.
et	Paigaldage toode ja kasutage seda ainult siis, kui saate alljärgnevast juhendist selgelt aru.	ro	Montați produsul și puneți-l în funcțiune numai dacă instrucțiunea următoare este înțeleasă clar.
fi	Tuotteen saa asentaa ja ottaa käyttöön vain, jos jäljempänä oleva ohje ymmärretään selvästi.	ru	Не устанавливайте и не принимайте оборудование в эксплуатацию, если вы четко не поняли инструкции ниже
fr	N'installer et ne mettre en service le produit que si les instructions suivantes ont été clairement comprises.	sk	Namontujte a spusťte do prevádzky výrobok iba vtedy, pokiaľ ste jasne pochopili tento návod.
ga	Ná déan an táirge a shuiteail agus a choimisiunu mura dtuigeann tu na teoracha thíos go soiléir.	sl	Izdelek vgradite in zaženite samo, če ste dobro razumeli navodila v nadaljevanju.
hr	Ne instalirajte i ne puštajte proizvod u rad ako niste jasno razumjeli donje upute.	sr	Не инсталирајте и не пуштајте производ у рад ако нисте јасно разумели упутства у наставку.
hu	Csak akkor építse be a terméket és helyezze üzembe, ha a következő útmutatót egyértelműen megértette.	sv	Montera och driftsätt produkten endast om du förstår den efterföljande instruktionen.
is	Settu ekki upp eða taktu vöruna í notkun nema þú hafir skilið greinilega leiðbeiningarnar hér að neðan.	tr	Aşağıdaki talimatları açıkça anlamadan ürünü kurmayın ve devreye almayın.
it	Montare il prodotto e metterlo in funzione solo se si sono comprese appieno le seguenti istruzioni.		

1. PRODUCT IDENTIFICATION

This document covers the following products, hereafter referred to as “sprinkler”:

- VK1021 Standard Response Pendent Sprinkler K5.6 (80.6)
- VK2021 Standard Response Pendent Sprinkler K8.0 (115)
- VK2022 Standard Response Pendent Sprinkler K8.0 (115)
- VK3021 Quick Response Pendent Sprinkler K5.6 (80.6)
- VK3521 Quick Response Pendent Sprinkler K8.0 (115)
- VK3522 Quick Response Pendent Sprinkler K8.0 (115)

2. OTHER APPLICABLE DOCUMENTS

For intended use and relevant conditions for the safe use of the specific sprinkler refer to the appropriate *Technical Data Sheet*.



3. TRANSPORT AND HANDLING

⚠ WARNING

A damaged or compromised sprinkler poses the risk of fatal consequences.

Damaged or compromised sprinklers will not operate properly which could lead to loss of life.

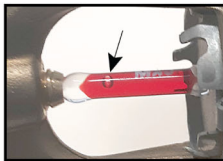
- NEVER use a sprinkler that has been exposed to temperatures exceeding the maximum allowed ambient temperature.
- NEVER use a sprinkler with a loss of liquid from the glass bulb or damage to the fusible element. A small bubble should be visible within the glass bulb; rotate the sprinkler to a horizontal position while observing the bulb to see the bubble.
- NEVER use a sprinkler that has been dropped or damaged.
- ALWAYS Protect the sprinkler from mechanical damage during storage, transport, and handling.
- NEVER use sprinklers that have been painted by anyone other than the manufacturer.
- ALWAYS protect sprinklers from being painted during installation or replacement in accordance with the installation standards.
- NEVER clean sprinklers with anything other than 7 psi or lower compressed air.
- NEVER apply soap, water, ammonia, adhesives, solvents or any other fluids on sprinklers.
- Destroy every damaged or compromised sprinkler.

NOTICE

Protect sprinklers during transport and handling.

- ALWAYS handle the sprinkler with care.
- ALWAYS keep the protective cap on the sprinkler during transport and handling.
- NEVER remove the protective cap until the fire sprinkler system is placed in service and the potential for mechanical damage no longer exists.
- ALWAYS protect the sprinkler from direct sunlight during transport and handling.
- ALWAYS store sprinkler in a cool, dry, protected area.
- ALWAYS use original manufacturer's shipping containers.
- NEVER store a sprinkler loose in a box, bin, bucket, or other type of container.
- ALWAYS keep the sprinkler separated from other sprinklers.
- NEVER allow metal parts to contact the sprinkler operating elements.

NOTE: If the glass bulb included on the sprinkler has been exposed to ultraviolet light, the color inside the bulb may fade. This color change does not affect the operation of the sprinkler.



CORRECT
(Bulb intact, bubble visible)



INCORRECT
(bulb cracked, fluid missing)



CORRECT
(Protective caps in place)



INCORRECT
(Protective caps not in place)



CORRECT
Container



INCORRECT
(Stored loose in a box)

4. INSTALLATION

⚠ WARNING

Installation by insufficiently qualified personnel poses the risk of fatal consequences.

- This sprinkler must be installed properly by qualified personnel familiar with safe practices and applicable and recognized design and installation standards issued, for example, by NFPA, FM, VdS, or LPCB, and trained how to properly perform the installation procedures.

⚠ WARNING

Incorrect recessed installation poses the risk of fatal consequences.

- For recessed applications, this sprinkler must be installed according to the dimensions shown in Figure 1.

⚠ CAUTION

Cutting Hazard.

Sprinklers, accessories, cabinets, and packaging can have sharp edges that can cause cuts.

- Wear appropriate personal protective equipment (gloves) while handling product.

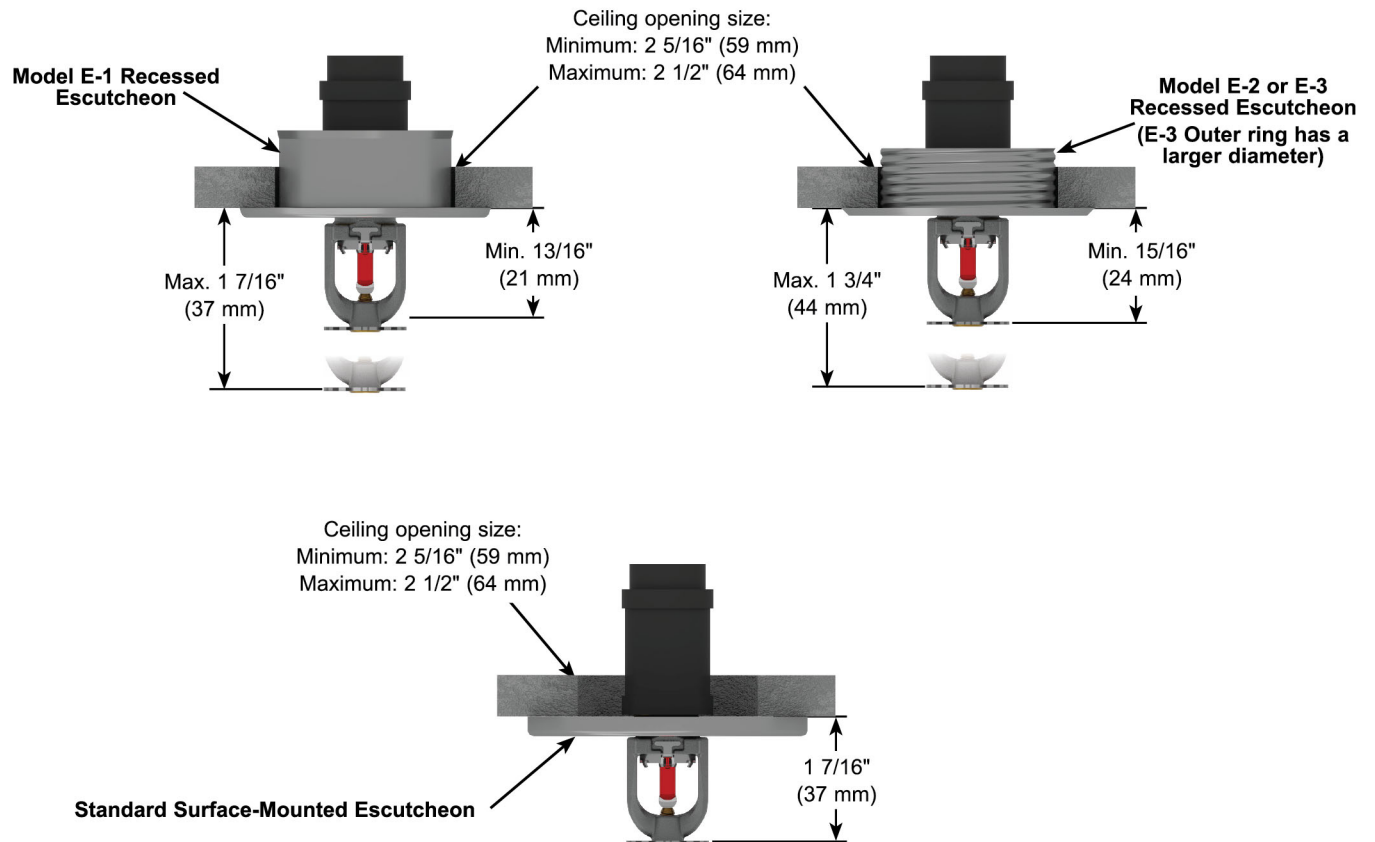


Figure – 1 Installation Dimensions with Viking Escutcheons

Optional Guards, Shields, and Escutcheons: If the sprinkler shall be installed together with a guard, shield, or escutcheon refer to the applicable documents for the products used.

1. Install all required piping in the intended installation location.
2. Verify that the sprinkler model/style, K-factor, temperature rating, and response characteristics are appropriate for the intended installation location. See Table 1 and Figure 5.
3. Inspect the sprinkler for damage. Destroy every damaged or compromised sprinkler. The following are examples in which sprinklers are considered damaged or compromised. Replace the sprinkler in the following cases:
 - Sprinkler with a loss of fluid from the glass bulb or damage to the fusible element.
 - Sprinklers that have been field painted, caulked, or mechanically damaged.
 - Sprinklers showing signs of corrosion.
4. Verify that the sprinkler is protected with the protective cap or clip.
5. Apply a small amount of pipe-joint compound or tape to the external threads of the sprinkler only. Do not allow a build-up of compound inside the sprinkler inlet (Figure 2).

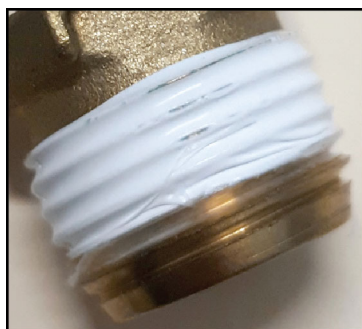


Figure – 2

6. If applicable, Install the escutcheon on the sprinkler threads.
7. **NOTICE: Do not use the deflector to start threading the sprinkler into a fitting. Use ONLY the approved wrench to install the sprinkler. Refer to the sprinkler's *Technical Data Sheet*.**
 - a) **For recessed sprinkler wrench (Figure 3a):** Carefully slide the wrench sideways around the protective cap and push upwards to engage with the sprinkler wrench flats.
 - b) **For the standard sprinkler wrench (Figure 3b):** Carefully slide the wrench onto the sprinkler wrench flats.

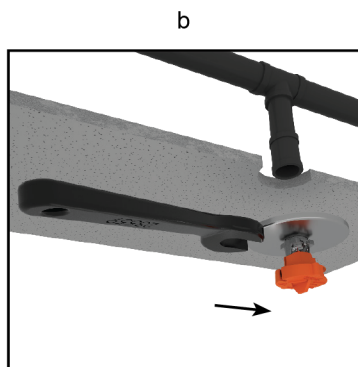
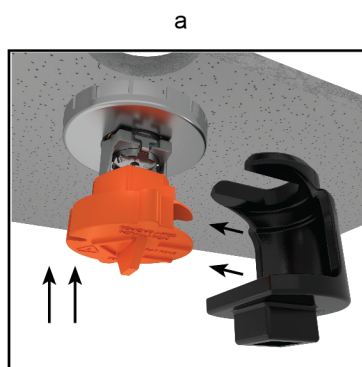



Figure – 3

	Handling and Installation Instructions	Model XT-1 Pendent Sprinklers
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8. **NOTICE: Over-tightening the sprinkler can cause permanent damage. For 1/2" NPT (or 15 mm BSPT) sprinkler, tighten up to a maximum torque of 14 ft-lbs (19 Nm). For 3/4" NPT (or 20 mm BSPT) sprinkler, tighten up to a maximum of 20 ft-lbs (27,1 Nm).**
Tighten the sprinkler as necessary (Figure 4a and 4b). If applicable, install a sprinkler guard and water shield.

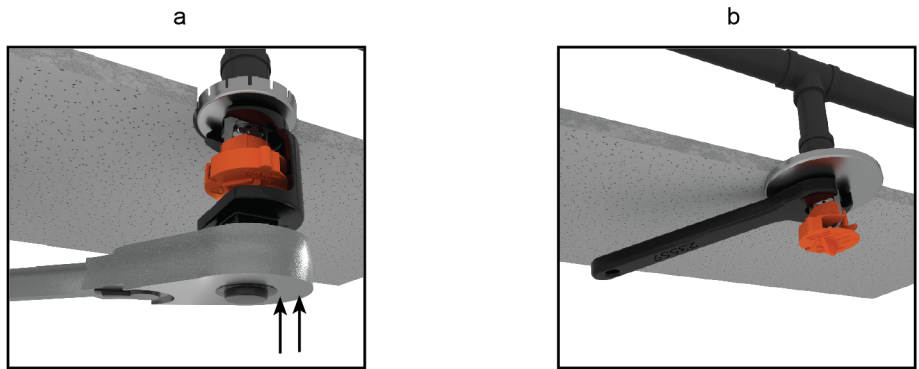


Figure – 4

9. **NOTICE: Sprinkler protective caps/clips must be removed from the sprinkler before placing the system in service. Test the entire sprinkler system.**
Refer to the applicable system documentation, regulations, and standards to ensure compliance.

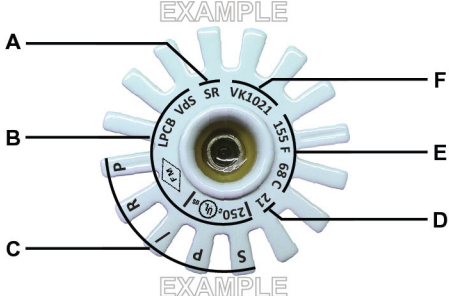
Table 1: Sprinkler Markings		
Ref	Parameter	
A	Response type	
B	Listings and approvals	
C	Sprinkler type	
D	Manufacture date	
E	Nominal temperature rating	
F	Manufacturer's Sprinkler Identification Number (SIN)	

Figure – 5



Handling and Installation Instructions

Model XT-1 Pendent Sprinklers

5. CONTACT

The sprinkler and accessories are available through Viking distributors only. Contact your local Viking sales office which can be found on our website:

Americas and Asia: www.vikinggroupinc.com/locations OR Europe, Middle East, Africa (EMEA): www.viking-emea.com/contact

Manufacturer:

The Viking Corporation
5150 Beltway SE
Caledonia, MI 49316
Tel.: (800) 968-9501
Fax: 269-818-1680
Technical Services: 1-877-384-5464
techsvcs@vikingcorp.com

Importer EU:

Viking S.A.
21, Z.I, Haneboesch
L-4562 Differdange / Niederkorn
Tel.: +352 58 37 37 – 1
Fax: +352 58 37 36
vikinglux@viking-emea.com

Asia Pacific (APAC) Main Office:

The Viking Corporation (Far East) Pte. Ltd.
69 Tuas View Square
Westlink Techpark, Singapore 637621
Tel: (+65) 6 278 4061
Fax: (+65) 6 278 4609
vikingAPAC@vikingcorp.com



1. PRODUCT IDENTIFICATION

This document covers the following product, hereafter referred to as “sprinkler” (SR=Standard Response, QR=Quick Response):

- VK1001 SR Upright Sprinkler K5.6 (80.6)
- VK2001 SR Upright Sprinkler K8.0 (115)
- VK2002 SR Upright Sprinkler K8.0 (115)
- VK3001 QR Upright Sprinkler K5.6 (80.6)
- VK3501 QR Upright Sprinkler K8.0 (115)
- VK3502 QR Upright Sprinkler K8.0 (115)
- VK1021 SR Pendent Sprinkler K5.6 (80.6)
- VK2021 SR Pendent Sprinkler K8.0 (115)
- VK2022 SR Pendent Sprinkler K8.0 (115)
- VK3021 QR Pendent Sprinkler K5.6 (80.6)
- VK3521 QR Pendent Sprinkler K8.0 (115)
- VK3522 QR Pendent Sprinkler K8.0 (115)
- VK1181 SR Conventional Sprinkler K5.6 (80.6)
- VK1201 SR Conventional Sprinkler K8.0 (115)
- VK1202 SR Conventional Sprinkler K8.0 (115)
- VK3101 QR Conventional Sprinkler K5.6 (80.6)
- VK3541 QR Conventional Sprinkler K8.0 (115)
- VK3542 QR Conventional Sprinkler K8.0 (115)

WARNING

Cancer and Reproductive Harm www.P65Warning.ca.gov

2. OTHER APPLICABLE DOCUMENTS

For intended use and relevant conditions for the safe use of the specific sprinkler, refer to the appropriate Technical Data Sheet. In case an installed sprinkler needs to be replaced, refer to the appropriate Handling and Installation Instructions for the installation of the new sprinkler.

3. MAINTAINING OPERATIONAL READINESS

Functionality

During fire conditions, the operating element fuses or shatters (depending on the type of sprinkler), releasing the pip cap and sealing assembly. Water flowing through the sprinkler orifice strikes the sprinkler deflector, forming a uniform spray pattern to control or extinguish the fire.

WARNING

This section contains important safety information. Read and follow all information.

Damaged or Compromised Sprinklers

Damaged or compromised sprinklers will not operate properly which could lead to loss of life.

- NEVER clean, paint, or caulk sprinklers.
- NEVER apply soap, water, ammonia, adhesives, solvents or any other fluids on sprinklers.
- NEVER expose sprinklers to temperatures exceeding the maximum allowed ambient ceiling temperature. See the Technical Data Sheet.
- ALWAYS replace a compromised or damaged sprinkler.
- NEVER attempt to repair or reassemble a sprinkler.
- ALWAYS replace operated sprinklers and cover assemblies and sprinklers exposed to corrosive products of combustion.
- Replacement of sprinklers must only be performed following the instructions in section 4.

The following are examples in which sprinklers are considered damaged or compromised. Replace the sprinkler in the following cases:

- Sprinkler with a loss of fluid from the glass bulb or damage to the fusible element.
- Sprinklers or cover plate assemblies that have been field painted, caulked, or mechanically damaged.
- Sprinklers showing signs of extraordinary corrosion.



Obstructions and obstacles

Obstructions and obstacles may compromise sprinkler discharge patterns which are critical for proper fire protection.

- NEVER attach items to sprinklers or hang items from the ceiling in an area protected with sprinklers.
- NEVER install walls in areas protected with sprinklers without having a specialized company verifying the design of the sprinkler system.
- ALWAYS remove obstructions and obstacles to sprinkler spray patterns.

Sprinkler systems that have been subjected to a fire

Sprinkler systems that have been subjected to a fire must be returned to service as soon as possible.

- After an event of fire, the entire sprinkler system must be inspected for damage and repaired as necessary.
- Refer to the minimum requirements of the Authority Having Jurisdiction for replacement of sprinklers.
- Consider the employment of a fire patrol as long as the sprinkler system is out of service.

Inspections and testing

The owner is responsible for having the sprinklers inspected and tested according to standards of the applicable approval body and to the requirements of the Authority Having Jurisdiction to maintain proper operating condition of the system.

- Sprinklers must be inspected on a regular basis for corrosion, mechanical damage, obstructions, paint, etc. Frequency of inspections may vary due to corrosive atmospheres, water supplies, and activity around the sprinkler.

The applicable approval body or Authority Having Jurisdiction may require sprinklers to be replaced after a specified term of service.

- Refer to the standards of the applicable approval body, such as NFPA, FM, VdS, or LPCB, and the requirements of the Authority Having Jurisdiction for detailed inspection, testing and replacements requirements.

Sprinklers removed from the system for testing or for any other purpose must be replaced according to section 4.

4. REMOVAL AND REPLACEMENT

WARNING

Removal and replacement of sprinklers by insufficiently qualified personnel poses the risk of fatal consequences in case of fire.

- Removal or replacement of sprinklers must be performed by qualified personnel familiar with safe practices and applicable and recognized design and installation standards issued, for example, by NFPA, FM, VdS, or LPCB, and trained how to properly perform the installation procedures.

WARNING

Removal and replacement of sprinklers will temporarily eliminate the fire protection capabilities of the sprinkler system.

- Consider the employment of a fire patrol in the affected area.
- Prior to proceeding, notify all Authorities Having Jurisdiction.


⚠ WARNING

Re-installation of a removed sprinkler may compromise the operational safety of the sprinkler system.

- NEVER reinstall a removed sprinkler.
 - ALWAYS use new sprinklers for replacement.
1. Select new sprinklers with identical performance characteristics as well as respective accessories such as escutcheons, cover plates, and protective caps. A stocked spare sprinkler cabinet may be provided for this purpose on site.
 2. According to appropriate system description and/or valve instructions, remove the system from service, drain all water, and relieve all pressure on the piping.
 3. Only for flush and concealed style sprinklers: Remove the ceiling ring or cover plate assembly of the old sprinkler by gently unthreading or pulling it off the sprinkler body (depends on the sprinkler model used).
 4. Use the proper sprinkler wrench for the old sprinkler according to its Technical Data Sheet.
 5. Only for flush and concealed style sprinklers, but not for domed concealed sprinklers: Replace the plastic protective cap over the old sprinkler and fit the wrench over the cap.
 6. Use the wrench to remove the old sprinkler by turning it counterclockwise to unthread it from the piping.
 7. Install the new sprinkler by following its Handling and Installation Instructions.
 8. Place the system back in service and secure all valves.
 9. Check for and repair all leaks.

5. DISPOSAL

At end of use the product described here should be disposed of via the national recycling system.

6. CONTACT

The sprinkler and accessories are available through Viking distributors only. Contact your local Viking sales office which can be found on our website:

Americas and Asia: www.vikinggroupinc.com/locations OR Europe, Middle East, Africa (EMEA): www.viking-emea.com/contact

Manufacturer:

The Viking Corporation
5150 Beltway SE
Caledonia, MI 49316
Tel.: (800) 968-9501
Fax: 269-818-1680
Technical Services: 1-877-384-5464
techsvcs@vikingcorp.com

Importer EU:

Viking S.A.
21, Z.I, Haneboesch
L-4562 Differdange / Niederkorn
Tel.: +352 58 37 37 – 1
Fax: +352 58 37 36
vikinglux@viking-emea.com

Asia Pacific (APAC) Main Office:

The Viking Corporation (Far East) Pte. Ltd.
69 Tuas View Square
Westlink Techpark, Singapore 637621
Tel: (+65) 6 278 4061
Fax: (+65) 6 278 4609
vikingAPAC@vikingcorp.com

**BULLETIN****REGULATORY AND HEALTH
WARNINGS**

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

Visit the Viking website for the latest edition of this technical data page www.vikinggroupinc.com

1. DESCRIPTION

Regulatory and Health Warnings applying to materials used in the manufacture and construction of fire protection products are provided herein as they relate to legally mandated jurisdictional regions.

⚠ WARNING**STATE OF CALIFORNIA, USA**

Installing or servicing fire protection products such as sprinklers, valves, piping etc. can expose you to chemicals including, but not limited to, lead, nickel, butadiene, titanium dioxide, chromium, carbon black, and acrylonitrile which are known to the State of California to cause cancer or birth defects or other reproductive harm.

For more information, go to www.P65Warnings.ca.gov

2. WARRANTY TERMS AND CONDITIONS

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



TECHNICAL DATA

STANDARD AND QUICK RESPONSE CONCEALED PENDENT SPRINKLER VK4621 (K5.6)

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

Visit the Viking website for the latest edition of this technical data page www.vikinggroupinc.com

1. DESCRIPTION

Viking Standard and Quick Response Concealed Pendent Sprinkler VK4621 is a small thermosensitive, glass-bulb sprinkler designed for installation on concealed pipe systems where the appearance of a smooth ceiling is desired. The low-profile cover assemblies provide up to 1/2" (13 mm) of vertical adjustment.

Features:

- K5.6 (80.6 metric).
- Quick response glass bulb operating element.
- Integral threaded adapter cup accepts push-on or thread-on cover plates.
- Low-profile, small diameter, removeable cover plates offer almost flush appearance upon installation and allow ease of maintenance.
- Protective cap prevents damage during installation and finishing and keeps errant overspray from coating internal parts.
- Various finishes available to meet design requirements.
- Optional Electroless Nickel PTFE (ENT) coating provides corrosion resistance (see Approval Chart).

2. LISTINGS AND APPROVALS



cULus Listed: Category VNIV



FM Approved: Class 2015

Also approved for use in FM Approved vacuum dry sprinkler systems with a maximum supervisory vacuum pressure of -3 psi (-207mbar)



WARNING: Cancer and Reproductive Harm-
www.P65Warnings.ca.gov

Refer to the Approval Charts and Design Criteria on for cULus Listing requirements that must be followed.

3. TECHNICAL DATA

Specifications:

Minimum Operating Pressure: 7 psi (0.5 bar)

Maximum Working Pressure: FM - 175 psi (12 bar). UL - 250 psi (17.2 bar)

Factory tested hydrostatically to 500 psi (34.5 bar).

Thread size: 1/2" NPT or BSPT

Nominal K-Factor: 5.6 U.S. (80.6 metric*)

Glass-bulb fluid temperature rated to -65 °F (-55 °C)

* Metric K-factor measurement shown is in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

Material Standards:

Sprinkler body: QM Brass

Deflector: Phosphor Bronze UNS-C51000

Deflector Pins: Stainless Steel UNS-S43000

Pip Cap and Insert Assembly: Copper UNS-C11000, SS UNS-S30400 and SS UNS-S31600

Compression Screw: UNS-C36000

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

Cover Adapter: Cold Rolled Steel JIS G3141 and Carbon Steel UNS-G10100 (per JIS G3141)

Shipping Cap: High Density Polyethylene

Cover Plate Materials:

Cover Plate Assembly: Copper UNS-C11000 and Brass UNS-C26800 or Stainless Steel UNS-S30400

Spring: Beryllium Nickel

Solder: Eutectic

Ordering Information: Refer to Tables 1 and 2.

4. INSTALLATION

Refer to appropriate NFPA Installation Standards and installation instructions in this document.



TECHNICAL DATA

STANDARD AND QUICK RESPONSE CONCEALED PENDENT SPRINKLER VK4621 (K5.6)

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

Visit the Viking website for the latest edition of this technical data page www.vikinggroupinc.com

5. OPERATION

During fire conditions, when the temperature around the sprinkler approaches its operating temperature, the cover plate detaches, releasing the deflector. Continued heating of the exposed sprinkler causes the heat-sensitive liquid in the glass bulb to expand, causing the glass to shatter, releasing the pip cap and sealing spring assembly. Water flowing through the sprinkler orifice strikes the deflector, forming a uniform spray pattern over a specific area of coverage determined by the water supply pressure at the sprinkler to extinguish or control the fire.

6. INSPECTIONS, TESTS AND MAINTENANCE

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

7. AVAILABILITY

Viking 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.

TABLE 1: ORDERING INFORMATION

Instructions:

- (1) Select a Sprinkler Base Part Number
- (2) Add the suffix for the desired Finish
- (3) Add the suffix for the desired Sprinkler Temperature Rating
- (4) Order a cover plate (refer to Table 2)

Example:

24682AE = 200 °F (93 °C) Temperature Rated Sprinkler with a standard Brass finish.

Sprinkler Base Part No.	Size		1: Finishes		2: Temperature Ratings				
	NPT	BSPT	Description	Suffix ¹	Sprinkler Temperature Classification	Nominal Rating	Bulb Color	Max. Ambient Ceiling Temperature ²	Suffix
24682	1/2"	--	Brass	A	Ordinary	155 °F (68 °C)	Red	100 °F (38 °C)	B
22962	--	1/2"	ENT ^{3,4,6}	JN	Intermediate	175 °F (79 °C)	Yellow	150 °F (65 °C)	D
					Intermediate	200 °F (93 °C)	Green	150 °F (65 °C)	E

Accessories

Sprinkler Wrenches and Tools (see Figure 1):

- A. Installation wrench: 24339⁵
- B. Protective cap removal tool: 24340
- C. Concealed Cover Plate Installer Tool Part Number: 14412⁷ (available since 2007)
- D. Large Concealed Cover Plate Installer Tool Part No. 14867⁷ (available since 2007)

Sprinkler Cabinet:

Part number 01731A.

Footnotes

1. Where a dash (-) is shown in the Finish suffix designation, insert the desired Temperature Rating suffix. See example above.
2. Based on NFPA 13, NFPA 13R, and NFPA 13D. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.
3. UL Listed as corrosion resistant.
4. 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. For automatic sprinklers, the ENT coating is applied to all exposed exterior surfaces, including the waterway.
5. Require a 3/8" ratchet which is not available from us.
6. FM Approved as a decorative finish.
7. The installer tool is for push-on style cover plates only.



TECHNICAL DATA

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TABLE 2: COVER PLATE ORDERING INFORMATION

Instructions:

- (1) Select a Cover Plate Base Part Number
- (2) Add the suffix for the desired Finish
- (3) Add the suffix for the required Cover Plate Nominal Rating.

Example:

23190MC/W = 165 °F (74 °C) Temperature Rated 2-3/4" (70 mm) diameter Round Cover Plate with a Painted White finish.

1: Select a Cover Plate Base Part Number ³						2: Select a Finish	
Thread-On Style			Push-On Style			Description	Suffix ⁵
Base Part Number	Size Inch (mm)	Type	Base Part Number	Size Inch (mm)	Type		
23190	2-3/4 (70)	Round	23447	2-3/4 (70)	Round	Polished Chrome	F
23174	3-5/16 (84)	Round	23463	3-5/16 (84)	Round	Brushed Chrome	F-/B
23179	3-5/16 (84)	Square	23482	3-5/16 (84)	Square	Bright Brass	B
23193 ⁴	2-3/4 (70)	Stainless Steel Round	23455	2-3/4 (70)	Stainless Steel Round	Antique Brass	B-/A
						Brushed Brass	B-/B
23183 ⁴	3-5/16 (84)	Stainless Steel Round	23473	3-5/16 (84)	Stainless Steel Round	Brushed Copper	E-/B
						Painted White	M-/W
23174-/CR	3-5/16 (84)	Clean Room	23463-/CR	3-5/16 (84)	Clean Room	Painted Ivory	M-/I
23183-/CR	3-5/16 (84)	Stainless Steel Round	23473-/CR	3-5/16 (84)	Stainless Steel Round	Painted Black	M-/B
		Clean Room			Clean Room		

3: Temperature Rating Matrix^{1,2}

Cover Plate Nominal Rating (Required)	Temperature Classification	Sprinkler Nominal Rating	Sprinkler Maximum Ambient Ceiling Temperature ²	Suffix
UL: 135 °F (57 °C) FM: 139 °F (59 °C)	Ordinary	155 °F (68 °C)	100 °F (38 °C)	A
165 °F (74 °C)	Intermediate	175 °F (79 °C)	150 °F (65 °C)	C
165 °F (74 °C)	Intermediate	200 °F (93 °C)	150 °F (65 °C)	C

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. Stainless Steel versions are not available with any finishes or paint.
5. Where a dash (-) is shown in the Finish suffix designation, insert the desired Temperature Rating suffix. See example above.



TECHNICAL DATA

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Approval Chart									
Concealed Pendent Sprinkler VK4621									
Sprinkler Base Part No. ¹	SIN	Thread Size		Nominal K-factor		Maximum Water Working Pressure		Listings and Approvals ³ (Refer also to Design Criteria)	
		NPT	BSPT	U.S.	metric ²	cULus	FM	cULus ⁴	FM
Standard Response Applications									
24682A	VK4621	1/2"	--	5.6	80.6	--	175 psi (12 bar)	--	AV1, BX1, AS2, BT2
24682JN ^{7,8}	VK4621	1/2"	--	5.6	80.6	--	175 psi (12 bar)	--	AV1, BX1, AS2, BT2
22962A	VK4621	--	1/2"	5.6	80.6	--	175 psi (12 bar)	--	AV1, BX1, AS2, BT2
22962JN ^{7,8}	VK4621	--	1/2"	5.6	80.6	--	175 psi (12 bar)	--	AV1, BX1, AS2, BT2
Quick Response Applications									
24682A	VK4621	1/2"	--	5.6	80.6	250 psi (17.2 bar)	--	AV1, BX1, AS2, BT2, AY3, BZ3	--
24682JN ^{7,8}	VK4621	1/2"	--	5.6	80.6	250 psi (17.2 bar)	--	AV1, BX1, AS2, BT2, AY3, BZ3	--
22962A	VK4621	--	1/2"	5.6	80.6	250 psi (17.2 bar)	--	AV1, BX1, AS2, BT2, AY3, BZ3	--
22962JN ^{7,8}	VK4621	--	1/2"	5.6	80.6	250 psi (17.2 bar)	--	AV1, BX1, AS2, BT2, AY3, BZ3	--
Sprinkler Temperature Ratings		Cover Plate Assembly Temperature Ratings ⁵						Cover Plate Assembly Finishes	
A = 155 °F (68 °C) B = 175 °F (79 °C) and 200 °F (93 °C)		S - 135 °F (57 °C) cULus Listed or 139 °F (59 °C) FM Approved Stainless Steel cover 23193 and 23455, or 23183 and 23473 (large diameter) T - 165 °F (74 °C) Stainless Steel cover 23193 and 23455 or 23183 and 23473 (large diameter) V - 135 °F (57 °C) cULus Listed or 139 °F (59 °C) FM Approved cover 23190 and 23447, 23174 and 23463 (large diameter), or 23179 and 23482 (square cover plate) X - 165 °F (74 °C) cover 23190 and 23447, or 23174 and 23463 (large diameter) Y - 135 °F (57 °C) Clean Room Cover 23174A-/CR and 23463A-/CR or 135 °F (57 °C) Stainless Steel Clean Room Cover 23183A-/CR and 23473A-/CR Z - 165 °F (74 °C) Clean Room Cover 23174C-/CR and 23463C-/CR						1 - Polished Chrome, Brushed Chrome, Bright Brass, Antique Brass, Brushed Brass, Brushed Copper, Painted ⁶ White, Painted ⁶ Ivory, or Painted ⁶ Black 2 - Stainless Steel 3 - Polished Chrome, Painted White, Painted Ivory, or Painted Black	
Footnotes									
1. Part number shown is the base part number. For complete part number, refer to current Viking price list schedule. 2. 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. 3. 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. 4. Listed by Underwriter's Laboratories for use in the U.S. and Canada. 5. The 135 °F (57 °C) [139 °F (59 °C)] covers have an orange label. The 165 °F (74 °C) covers have a white label. 6. 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. 7. cULus Listed as corrosion resistant. 8. FM Approved as a decorative finish.									
NOTE: Custom colors are indicated on a label inside the cover assembly. Refer to Figure 2.									



TECHNICAL DATA

STANDARD AND QUICK RESPONSE CONCEALED PENDENT SPRINKLER VK4621 (K5.6)

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DESIGN CRITERIA - UL

(Also refer to Approval Chart)

cULus Listing Requirements:

Concealed Pendent Sprinkler VK4621 is cULus Listed as quick response for installation in accordance with the latest edition of NFPA 13 for standard coverage pendent spray sprinklers as indicated below.

- For hazard occupancies up to and including Ordinary Hazard, Group II.
- 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 obstruction rules contained in NFPA 13 for standard coverage pendent spray sprinklers must be followed.

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

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to Form No. F_080614 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.

DESIGN CRITERIA - FM

(Also refer to Approval Chart)

FM Approval Requirements:

Viking Concealed Pendent Sprinkler VK4621 is FM Approved as a standard response **Non-Storage** concealed pendent sprinkler 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 Form No. F_080614 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.



TECHNICAL DATA

**STANDARD AND
QUICK RESPONSE
CONCEALED PENDENT
SPRINKLER VK4621 (K5.6)**

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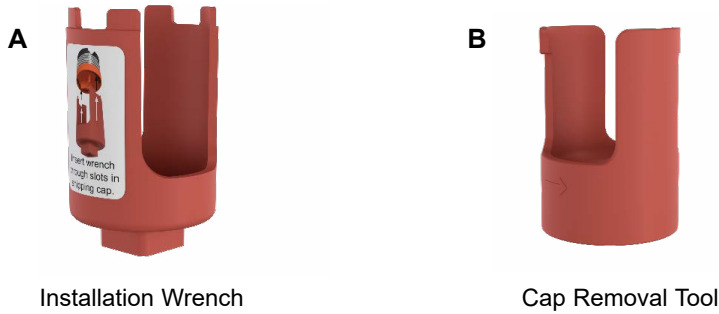
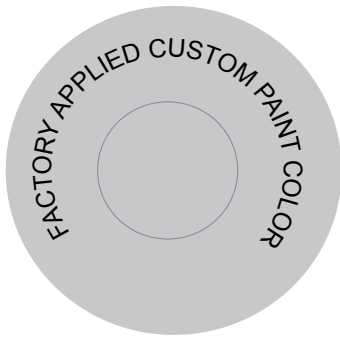


Figure 1: Sprinkler Wrench and Cap Removal Tool



All custom color painted cover plates will have an identifying label affixed to the inside of the cover that indicates the custom color and will have a representative sample (a paint dot) of the paint on the label.

Figure 2: Identification of Custom Paint

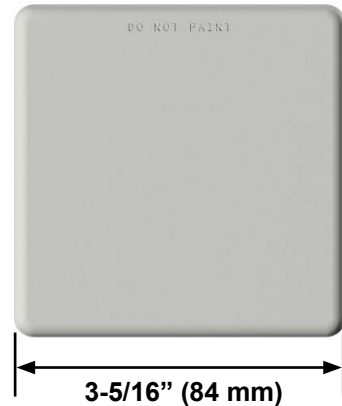


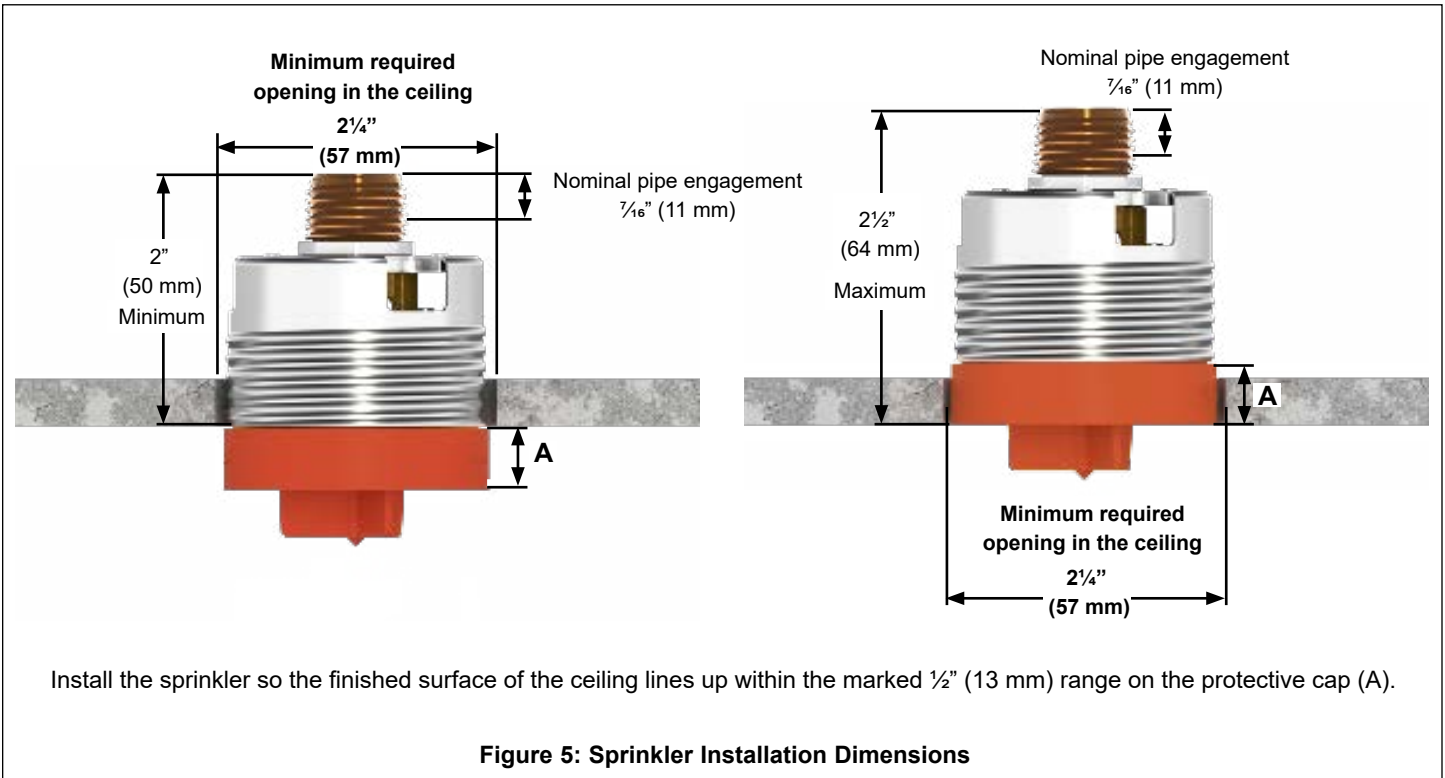
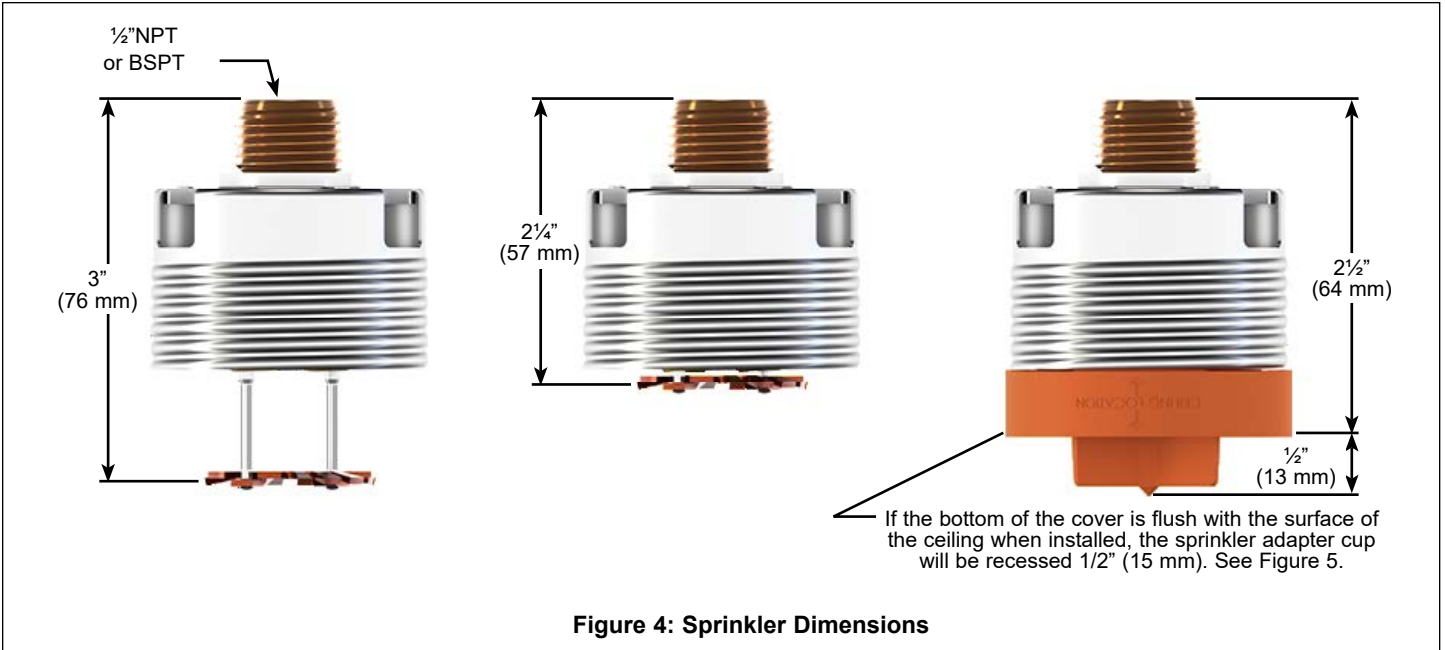
Figure 3: Square Cover Assembly



TECHNICAL DATA

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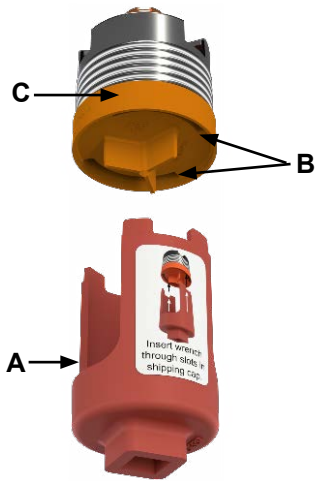
TECHNICAL DATA

STANDARD AND QUICK RESPONSE CONCEALED PENDENT SPRINKLER VK4621 (K5.6)

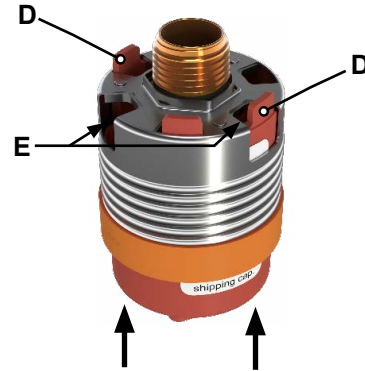
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USE ONLY the designated sprinkler wrenches shown in this document. Permanent damage to the sprinkler assembly can occur if the proper wrench is not used. Other sprinkler wrenches available from Viking may fit into the sprinkler adapter cup; however, only the wrenches shown here are designed to properly install this sprinkler.



Step 1:
 Insert the wrench (A) into the slots (B) on the protective cap (C).



Step 2:
 Rotate the wrench slightly in either direction until the tines on the wrench (D) line up with the vent openings (E) on the adapter cup and lock into place. NOTE: A leak tight seal must be achieved. Turn the sprinkler clockwise 1 to 1-½ turns past finger-tight.

Figure 6: Using the Sprinkler Wrench



Step 1:
 Attach a piece of CPVC pipe as shown and tighten the thumb screw (not shown); then, insert the tool (A) into the slots (B) in the protective cap (C).

Step 2:
 Rotate the tool slightly to lock into place.

Step 2:
 Gently, pull downward to remove the protective cap. The deflector will slide downwards on the pins.

Figure 7: Using the Cap Removal Tool



TECHNICAL DATA

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Install the cover plate by inserting the adapter into the adapter cup and pushing or threading into place (depending on style). Snug the cover plate in place by rotating clockwise. Ensure the cover plate is flush with the ceiling as shown to allow airflow through the sprinkler assembly.

Figure 8: Installing the Cover Plate



BULLETIN

CARE AND HANDLING
OF SPRINKLERS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
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SPRINKLERS ARE FRAGILE - HANDLE WITH CARE!

General Handling and Storage:

- Store sprinklers in a cool, dry place.
- Protect sprinklers during storage, transport, handling, and after installation.
- Use the original shipping containers. DO NOT place sprinklers loose in boxes, bins, or buckets.
- Keep sprinklers separated at all times. DO NOT allow metal parts to contact sprinkler operating elements.

For Pre-Assembled Drops:

- Protect sprinklers during handling and after installation.
- For recessed assemblies, use the protective sprinkler cap (Viking Part Number 10364).

Sprinklers with Protective Shields or Caps:

- DO NOT remove shields or caps until after sprinkler installation and there no longer is potential for mechanical damage to the sprinkler operating elements.
- **Sprinkler shields or caps MUST be removed BEFORE placing the system in service!**
- Remove the sprinkler shield by carefully pulling it apart where it is snapped together.
- Remove the cap by turning it slightly and pulling it off the sprinkler.

Sprinkler Installation:

- DO NOT use the sprinkler deflector or operating element to start or thread the sprinkler into a fitting.
- **Use only the designated sprinkler head wrench!** Refer to the current sprinkler technical data page to determine the correct wrench for the model of sprinkler used.
- DO NOT install sprinklers onto piping at the floor level.
- Install sprinklers after the piping is in place to prevent mechanical damage.
- DO NOT allow impacts such as hammer blows directly to sprinklers or to fittings, pipe, or couplings in close proximity to sprinklers. Sprinklers can be damaged from direct or indirect impacts.
- DO NOT attempt to remove drywall, paint, etc., from sprinklers.
- **Take care not to over-tighten the sprinkler and/or damage its operating parts!**

Maximum Torque:

1/2" NPT: 14 ft-lbs. (19.0 N-m)

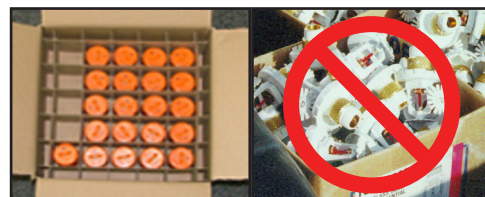
3/4" NPT: 20 ft-lbs. (27.1 N-m)

1" NPT: 30 ft-lbs. (40.7 N-m)



CORRECT
(Original container used)

INCORRECT
(Placed loose in box)



CORRECT
(Protected with caps)

INCORRECT
(Protective caps not used)



CORRECT
(Piping is in place at the ceiling)

INCORRECT
(Sprinkler at floor level)



CORRECT
(Special installation wrenches)

INCORRECT
(Designated wrench not used)



WARNING: Cancer and Reproductive Harm-
www.P65Warnings.ca.gov

! WARNING

Any sprinkler with a loss of liquid from the glass bulb or damage to the fusible element should be destroyed. Never install sprinklers that have been dropped, damaged, or exposed to temperatures exceeding the maximum ambient temperature allowed. Sprinklers that have been painted in the field must be replaced per NFPA 13. Protect sprinklers from paint and paint overspray in accordance with the installation standards. Do not clean sprinklers with soap and water, ammonia, or any other cleaning fluid. Do not use adhesives or solvents on sprinklers or their operating elements.

Refer to the appropriate technical data page and NFPA standards for complete care, handling, installation, and maintenance instructions. For additional product and system information Viking data pages and installation instructions are available on the Viking Web site at www.vikinggroupinc.com.



BULLETIN

CARE AND HANDLING
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PROTECTIVE SPRINKLER SHIELDS AND CAPS

General Handling and Storage:

Many Viking sprinklers are available with a plastic protective cap or shield temporarily covering the operating elements. The snap-on shields and caps are factory installed and are intended to help protect the operating elements from mechanical damage during shipping, storage, and installation. NOTE: It is still necessary to follow the care and handling instructions on the appropriate sprinkler technical data sheets* when installing sprinklers with bulb shields or caps.

WHEN TO REMOVE THE SHIELDS AND CAPS:

NOTE: SHIELDS AND CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!

Remove the shield or cap from the sprinkler only after checking all of the following:

- The sprinkler has been installed*.
- The wall or ceiling finish work is completed where the sprinkler is installed and there no longer is a potential for mechanical damage to the sprinkler operating elements.

SHIELDS AND CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!

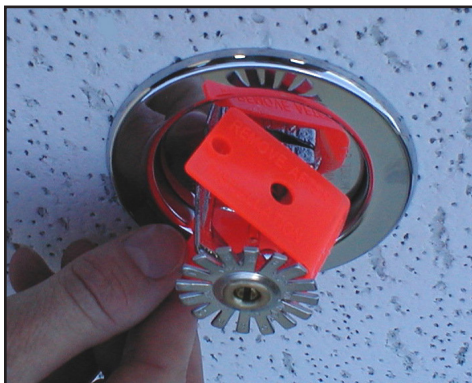


Figure 1: Sprinkler shield being removed from a pendent sprinkler.



Figure 2: Sprinkler cap being removed from a pendent sprinkler.



Figure 3: Sprinkler cap being removed from an upright sprinkler.

HOW TO REMOVE SHIELDS AND CAPS:

No tools are necessary to remove the shields or caps from sprinklers. DO NOT use any sharp objects to remove them! **Take care not to cause mechanical damage to sprinklers when removing the shields or caps.** When removing caps from fusible element sprinklers, use care to prevent dislodging ejector springs or damaging fusible elements. NOTE: Squeezing the sprinkler cap excessively could damage sprinkler fusible elements.

- To remove the shield, simply pull the ends of the shield apart where it is snapped together. Refer to Figure 1.
- To remove the cap, turn it slightly and pull it off the sprinkler. Refer to Figures 2 and 3.

NOTICE

Refer to the current sprinkler technical data page to determine the correct sprinkler wrench for the model of sprinkler used.

WARNING

Never install sprinklers that have been dropped, damaged, or exposed to temperatures in excess of the maximum ambient temperature allowed.

* Refer to the appropriate current technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Web site at www.vikinggroupinc.com.



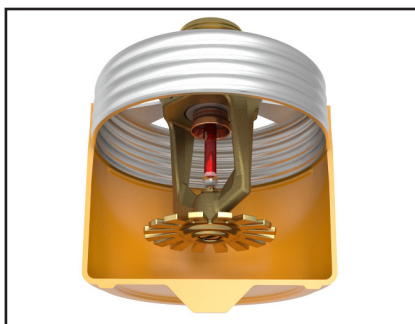
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CONCEALED COVER ASSEMBLIES ARE FRAGILE!
TO ASSURE SATISFACTORY PERFORMANCE OF THE PRODUCT, HANDLE WITH CARE.



Concealed Sprinkler and Adapter
 Assembly with Protective Cap

Concealed Sprinkler and Adapter
 Assembly (Protective Cap Removed)



Cover Plate Assembly
 (Pendent Cover 12381 shown)



GENERAL HANDLING AND STORAGE INSTRUCTIONS:

- Do not store in temperatures exceeding 100 °F (38 °C). Avoid direct sunlight and confined areas subject to heat.
- Protect sprinklers and cover assemblies during storage, transport, handling, and after installation.
 - Use original shipping containers.
 - Do not place sprinklers or cover assemblies loose in boxes, bins, or buckets.
- Keep the sprinkler bodies covered with the protective sprinkler cap any time the sprinklers are shipped or handled, during testing of the system, and while ceiling finish work is being completed.
- Use only the designated Viking recessed sprinkler wrench (refer to the appropriate sprinkler data page) to install these sprinklers. **NOTE:** The protective cap is temporarily removed during installation and then placed back on the sprinkler for protection until finish work is completed.
- Do not over-tighten the sprinklers into fittings during installation.
- Do not use the sprinkler deflector to start or thread the sprinklers into fittings during installation.
- Do not attempt to remove drywall, paint, etc., from the sprinklers.
- Remove the plastic protective cap from the sprinkler before attaching the cover plate assembly. **PROTECTIVE CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!**

Refer to the appropriate current technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Web site at www.vikinggroupinc.com.



BULLETIN

CARE AND HANDLING
OF SPRINKLERS

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

USE THE FOLLOWING PRECAUTIONS WHEN HANDLING WAX-COATED SPRINKLERS

Many of Viking's sprinklers are available with factory-applied wax coating for corrosion resistance. These sprinklers MUST receive appropriate care and handling to avoid damaging the wax coating and to assure satisfactory performance of the product.

General Handling and Storage of Wax-Coated Sprinklers:

- Store the sprinklers in a cool, dry place (in temperatures below the maximum ambient temperature allowed for the sprinkler temperature rating. Refer to Table 1 below.)
- Store containers of wax-coated sprinklers separate from other sprinklers.
- Protect the sprinklers during storage, transport, handling, and after installation.
- Use original shipping containers.
- Do not place sprinklers in loose boxes, bins, or buckets.

Installation of Wax-Coated Sprinklers:

Use only the special sprinkler head wrench designed for installing wax-coated Viking sprinklers (any other wrench may damage the unit).

- Take care not to crack the wax coating on the units.
- For touching up the wax coating after installation, wax is available from Viking in bar form. Refer to Table 1 below. The coating MUST be repaired after sprinkler installation to protect the corrosion-resistant properties of the sprinkler.
- Use care when locating sprinklers near fixtures that can generate heat. Do not install sprinklers where they would be exposed to temperatures exceeding the maximum recommended ambient temperature for the temperature rating used.
- Inspect the coated sprinklers frequently soon after installation to verify the integrity of the corrosion resistant coating. Thereafter, inspect representative samples of the coated sprinklers in accordance with NFPA 25. Close up visual inspections are necessary to determine whether the sprinklers are being affected by corrosive conditions.

TABLE 1

Sprinkler Temperature Rating (Fusing Point)	Wax Part Number	Wax Melting Point	Maximum Ambient Ceiling Temperature ¹	Wax Color
155 °F (68 °C) / 165 °F (74 °C)	02568A	148 °F (64 °C)	100 °F (38 °C)	Light Brown
175 °F (79 °C)	04146A	161 °F (71 °C)	150 °F (65 °C)	Brown
200 °F (93 °C)	04146A	161 °F (71 °C)	150 °F (65 °C)	Brown
220 °F (104 °C)	02569A	170 °F (76 °C)	150 °F (65 °C)	Dark Brown
286 °F (141 °C)	02569A	170 °F (76 °C)	150 °F (65 °C)	Dark Brown

¹ 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.



Never install sprinklers that have been dropped, damaged, or exposed to temperatures in excess of the maximum ambient temperature allowed.

Refer to the appropriate current technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Web site at www.vikinggroupinc.com.



TECHNICAL DATA

SPRINKLER OVERVIEW

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 fire sprinklers consist of a threaded frame with a specific waterway or orifice size and a deflector for distributing water in a specified pattern. A closed or sealed sprinkler refers to a complete assembly, including the thermosensitive operating element. An open sprinkler does not use an operating element and is open at all times. The distribution of water is intended to extinguish a fire or to control its spread.

Viking sprinklers are available in several models and styles. Refer to specific sprinkler technical data pages for available styles, finishes, temperature ratings, thread sizes, and nominal K-Factors for the particular model selected.

2. LISTINGS AND APPROVALS

Refer to the Approval Charts on the appropriate sprinkler technical data page(s) and/or approval agency listings.



WARNING: Cancer and Reproductive Harm-
www.P65Warnings.ca.gov

3. TECHNICAL DATA

Pressure Ratings:

Maximum allowable water working pressure is 175 psig (12 Bar) unless rated and specified for high water working pressure [250 psig (17.2 bar)].

Sprinkler Identification:

Viking sprinklers are identified and marked with the word "Viking", the sprinkler identification number (SIN) consisting of "VK" plus a three digit number*, the model letter, and the year of manufacture.

Available Finishes:

Viking sprinklers are available in several decorative finishes. Some models are available with corrosion-resistant coatings or are fabricated from non-corrosive material. Refer to the sprinkler technical data page for additional information.

Available Temperature Ratings:

Viking sprinklers are available in several temperature ratings that relate to a specific temperature classification. Applicable installation rules mandate the use and limitations of each temperature classification. In selecting the appropriate temperature classification, the maximum expected ceiling temperature must be known. When there is doubt as to the maximum temperature at the sprinkler location, a maximum-reading thermometer should be used to determine the temperature under conditions that would show the highest readings to be expected. In addition, recognized installation rules may require a higher temperature classification, depending upon sprinkler location, occupancy classification, commodity classification, storage height, and other hazards. In all cases, the maximum expected ceiling temperature dictates the lowest allowable temperature classification. Sprinklers located immediately adjacent to a heat source may require a higher temperature rating.

K-Factors:

Viking sprinklers are available in several orifice sizes with related K-Factors. The orifice is a tapered waterway and, therefore, the K-Factor given is nominal. Nominal U.S. K-Factors are provided in accordance with the 1999 edition of NFPA 13, Section 3-2.3. Refer to the specific data page for appropriate K-Factor information.

Available Styles:

Viking sprinklers are available for installation in several positions as indicated by a stamping on the deflector. The deflector style dictates the appropriate installation position of the sprinkler; it breaks the solid stream of water issuing from the sprinkler orifice to form a specific spray pattern. The following list indicates the various styles and identification of Viking sprinklers.

UPRIGHT SPRINKLER: A sprinkler intended to be installed with the deflector above the frame so water flows upward through the orifice, striking the deflector and forming an umbrella-shaped spray pattern downward. Marked "SSU" (Standard Sprinkler Upright) or "UPRIGHT" on the deflector.

PENDENT SPRINKLER: A sprinkler intended to be oriented with the deflector below the frame so water flows downward through the orifice, striking the deflector and forming an umbrella-shaped spray pattern downward. Marked "SSP" (Standard Sprinkler Pendent) or "PENDENT" on the deflector.

CONVENTIONAL SPRINKLER: An "old style" sprinkler intended to be installed with the deflector in either the upright or pendent position. The deflector provides a spherical type pattern with 40 to 60 percent of the water initially directed downward and a proportion directed upward. Must be installed in accordance with installation rules for conventional or old style sprinklers. **DO NOT USE AS A REPLACEMENT FOR STANDARD SPRAY SPRINKLERS.** Marked "C U/P" (Conventional Upright/Pendent) on the deflector.

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.



TECHNICAL DATA

SPRINKLER OVERVIEW

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VERTICAL SIDEWALL (VSW) SPRINKLER: A sprinkler intended for installation near the wall and ceiling. The deflector provides a water spray pattern outward in a quarter-spherical pattern and can be installed in the upright or pendent position with the flow arrow in the direction of discharge. Marked "SIDEWALL" on the deflector with an arrow and the word "FLOW". (Note: Some vertical sidewall sprinklers can only be installed in the upright or pendent position—in this case, the sprinkler will also be marked "UPRIGHT" or "PENDENT".)

HORIZONTAL SIDEWALL (HSW) SPRINKLER: A sprinkler intended for installation near the wall and ceiling. The special deflector provides a water spray pattern outward in a quarter-spherical pattern. Most of the water is directed away from the nearby wall with a small portion directed at the wall behind the sprinkler. The top of the deflector is oriented parallel with the ceiling or roof. The flow arrows point in the direction of discharge. Marked "SIDEWALL" and "TOP" with an arrow and the word "FLOW".

EXTENDED COVERAGE (EC) SPRINKLER: A spray sprinkler designed to discharge water over an area having the maximum dimensions indicated in the individual listings. Maximum area of coverage, minimum flow rate, orifice size, and nominal K-Factor are specified in the individual listings. EC sprinklers are intended for Light-Hazard occupancies with smooth, flat, horizontal ceilings unless otherwise specified. In addition to the above markings, the sprinkler is marked "EC".

QUICK RESPONSE (QR) SPRINKLER: A spray sprinkler with a fast-actuating operating element. The use of quick response sprinklers may be limited due to occupancy and hazard. Refer to the Authority Having Jurisdiction (AHJ) prior to installing.

QUICK RESPONSE EXTENDED COVERAGE (QREC) SPRINKLER: A spray sprinkler designed to discharge water over an area having the maximum dimensions indicated in the individual listing. This is a sprinkler with an operating element that meets the criteria for quick response. QREC sprinklers are only intended for Light Hazard occupancies. The sprinkler is marked "QREC".

FLUSH SPRINKLER: A decorative spray sprinkler intended for installation with a concealed piping system. The unit is mounted flush with the ceiling or wall, with the fusible link exposed. Upon actuation, the deflector extends beyond the ceiling or wall to distribute water discharge. The sprinkler is marked "SSP", "PEND", or "SIDEWALL" and "TOP".

CONCEALED SPRINKLER: A decorative spray sprinkler intended for installation with a concealed piping system. The sprinkler is hidden from view by a cover plate installed flush with the ceiling or wall. During fire conditions, the cover plate detaches, and upon sprinkler actuation, the deflector extends beyond the ceiling or wall to distribute water discharge. The sprinkler is marked "SSP", "PEND", or "SIDEWALL" and "TOP".

RECESSED SPRINKLER: A spray sprinkler assembly intended for installation with a concealed piping system. The assembly consists of a sprinkler installed in a decorative adjustable recessed escutcheon that minimizes the protrusion of the sprinkler beyond the ceiling or wall without adversely affecting the sprinkler distribution or sensitivity. Refer to the appropriate technical data page for allowable sprinkler models, temperature ratings, and occupancy classifications. DO NOT RECESS ANY SPRINKLER NOT LISTED FOR USE WITH THE ESCUTCHEON.

CORROSION-RESISTANT SPRINKLER: A special service sprinkler with non-corrosive protective coatings, or that is fabricated from non-corrosive material, for use in atmospheres that would normally corrode sprinklers.

DRY SPRINKLER: A special-service sprinkler intended for installation on dry pipe systems or wet pipe systems where the sprinkler is subject to freezing temperatures. The unit consists of a sprinkler permanently secured to an extension nipple with a sealed inlet end to prevent water from entering the nipple until the sprinkler operates. The unit MUST be installed in a tee fitting. Dry upright sprinklers are marked with the "B" dimension [distance from the face of the fitting (tee) to the top of the deflector]. Dry pendent and sidewall sprinklers are marked with the "A" dimension [the distance from the face of fitting (tee) to the finished surface of the ceiling or wall].

LARGE DROP SPRINKLER: A type of special application sprinkler used to provide fire control of specific high-challenge fire hazards. Large drop sprinklers are designed to produce an umbrella-shaped spray pattern downward with a higher percentage of "large" water droplets than standard spray sprinklers. The sprinkler has an extra-large orifice with a nominal K-Factor of 11.2. Marked "HIGH CHALLENGE" and "UPRIGHT".

EARLY SUPPRESSION FAST-RESPONSE (ESFR) SPRINKLER: A sprinkler intended to provide fire suppression of specific high-challenge fire hazards through the use of a fast response fusible link, 14.0, 16.8, or 25.2 nominal K-Factor, and special deflector. ESFR sprinklers are designed to produce high-momentum water droplets in a hemispherical pattern below the deflector. This permits penetration of the fire plume and direct wetting of the burning fuel surface while cooling the atmosphere early in the development of a high-challenge fire. Marked "ESFR" and "UPRIGHT" or "PEND".

INTERMEDIATE LEVEL/RACK STORAGE SPRINKLER: A standard spray sprinkler assembly designed to protect its operating element from the spray of sprinklers installed at higher elevations. The assembly consists of a standard or large orifice upright or pendent sprinkler with an integral upright or pendent water shield and guard assembly. Use only those sprinklers that have been tested and listed for use with the assembly. Refer to the technical data page for allowable sprinkler models.

RESIDENTIAL SPRINKLER: A sprinkler intended for use in the following occupancies: one- and two-family dwellings with the fire protection sprinkler system installed in accordance with NFPA 13D; residential occupancies up to four stories in height with the fire protection system installed in accordance with NFPA 13R; and where allowed by the Authority Having Jurisdiction in residential portions of any occupancy with the fire protection system installed in accordance with NFPA 13.



TECHNICAL DATA

SPRINKLER OVERVIEW

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

Residential sprinklers have a unique distribution pattern and utilize a “fast response” heat sensitive operating element. They enhance survivability in the room of fire origin and are designed to provide a life safety environment for a minimum of ten minutes. For this reason, residential sprinklers must not be used to replace standard sprinklers unless tested for and approved by the Authority Having Jurisdiction. In addition to standard markings, the unit is identified as “RESIDENTIAL SPRINKLER” or “RES”.

4. INSTALLATION

Refer to appropriate NFPA Installation Standards.

5. OPERATION

Refer to the appropriate sprinkler technical data page(s).

6. INSPECTIONS, TESTS AND MAINTENANCE

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

7. AVAILABILITY

Viking 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.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers and the appropriate sprinkler general care, installation, and maintenance guide. Vikings 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. The sprinkler technical data page may contain installation requirements specific for the sprinkler model selected. The use of certain types of sprinklers may be limited due to occupancy and hazard. Refer to the Authority Having Jurisdiction prior to installation.

**BULLETIN****REGULATORY AND HEALTH
WARNINGS**

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

Visit the Viking website for the latest edition of this technical data page www.vikinggroupinc.com

1. DESCRIPTION

Regulatory and Health Warnings applying to materials used in the manufacture and construction of fire protection products are provided herein as they relate to legally mandated jurisdictional regions.

⚠ WARNING**STATE OF CALIFORNIA, USA**

Installing or servicing fire protection products such as sprinklers, valves, piping etc. can expose you to chemicals including, but not limited to, lead, nickel, butadiene, titanium dioxide, chromium, carbon black, and acrylonitrile which are known to the State of California to cause cancer or birth defects or other reproductive harm.

For more information, go to www.P65Warnings.ca.gov

2. WARRANTY TERMS AND CONDITIONS

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



TECHNICAL DATA

MICROFAST® QUICK RESPONSE PENDENT SPRINKLER VK302 (K5.6)

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

Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com


1. DESCRIPTION

The Viking Microfast® Quick Response Pendent Sprinkler VK302 is a small thermosensitive glass bulb spray sprinkler available with various finishes and temperature ratings to meet design requirements. The special Polyester and Electroless Nickel PTFE (ENT) coatings can be used in decorative applications where colors are desired. In addition, these coatings have been investigated for installation in corrosive environments and are Listed and Approved as indicated in the Approval Charts.


2. LISTINGS AND APPROVALS

 **cULus Listed:** Category VNIV


 **FM Approved:** Class Series 2000

 **VdS Approved:** Certificates G414009, G414010, G4040095, and 4880045

 **LPCB Approved:** Certificate 096e/06

 **CE:** Standard EN 12259-1, Declaration of Performance DOP_Sprinklers_LPCB_5-2-19, DOP_VK302ENT_29-1-20 & DOP_VK302-57C_30-9-20

China Approval: Approved according to China GB standard

 **MED Certified:** Standard EN 12259-1, EC-certificate of conformity 0832-MED-1003

Refer to Approval Chart 1 and Design Criteria cULus Listing requirements, and refer to Approval Chart 2 and Design Criteria for FM Approval requirements that must be followed.

3. TECHNICAL DATA

Specifications:

Minimum Operating Pressure: 7 psi (0.5 bar)
 Rated to 175 psi (12 bar) water working pressure
 Factory tested hydrostatically to 500 psi (34.5 bar)
 Thread size: 1/2" NPT, 15 mm BSP
 Nominal K-Factor: 5.6 U.S. (80.6 metric**)
 Glass-bulb fluid temperature rated to -65 °F (-55 °C)
 Overall Length: 2-1/4" (58 mm)

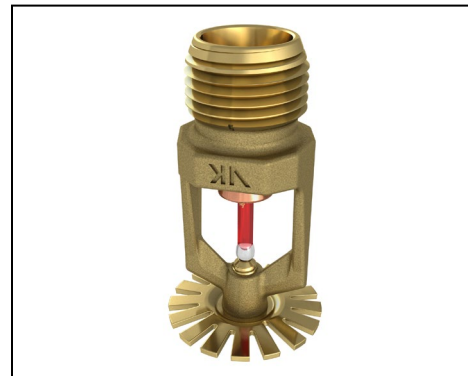
*cULus Listing, FM Approval, and NFPA 13 installs require a minimum of 7 psi (0.5 bar). The minimum operating pressure for LPCB and CE Approvals ONLY is 5 psi (0.35 bar).

Material Standards:

Frame Casting: Brass UNS-C84400 or QM Brass
 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 PTFE Tape
 Screw: Brass UNS-C36000
 Pip Cap and Insert Assembly: Copper UNS-C11000 and Stainless Steel UNS-S30400
For Polyester Coated Sprinklers: Belleville Spring-Exposed
For ENT Coated Sprinklers: Belleville Spring-Exposed, Screw and Pipcap - ENT plated.

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

Order Quick Response Pendent Sprinklers by first adding the appropriate suffix for the sprinkler finish and then the appropriate suffix for the temperature rating to the sprinkler base part number.



 **WARNING:** Cancer and Reproductive Harm-
www.P65Warnings.ca.gov



TECHNICAL DATA

MICROFAST® QUICK RESPONSE PENDENT SPRINKLER VK302 (K5.6)

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

Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com

Finish Suffix: Brass = A, Chrome = F, White Polyester = M-/W, Black Polyester = M-/B, and ENT = JN

Temperature Suffix: 135 °F (57 °C) = A, 155 °F (68 °C) = B, 175 °F (79 °C) = D, 200 °F (93 °C) = E, 286 °F (141 °C) = G

For example, sprinkler VK302 with a Brass finish and a 155 °F (68 °C) temperature rating = Part No. 12979AB

Available Finishes And Temperature Ratings: Refer to Table 1.

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

Sprinkler Wrenches:

A. Standard Wrench: Part No. 21475M/B.

B. Wrench for Recessed Pendent Sprinklers: Part No. 13655W/B** (available since 2006)

C. Optional Protective Sprinkler Cap Remover/Escutcheon Installer Tool*** Part No. 15915 (available since 2010)

**A ½" ratchet is required (not available from Viking).

***Allows use from the floor by attaching a length of 1" diameter CPVC tubing to the tool. Ideal for sprinkler cabinets. Refer to Bulletin F_051808.

Sprinkler Cabinets:

A. Six-head capacity: Part No. 01724A (available since 1971)

B. Twelve-head capacity: Part No. 01725A (available since 1971)

4. INSTALLATION

Refer to appropriate NFPA Installation Standards.

5. OPERATION

During fire conditions, the heat-sensitive liquid in the glass bulb expands, causing the glass 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 Microfast® Quick Response Pendent Sprinkler VK302 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.

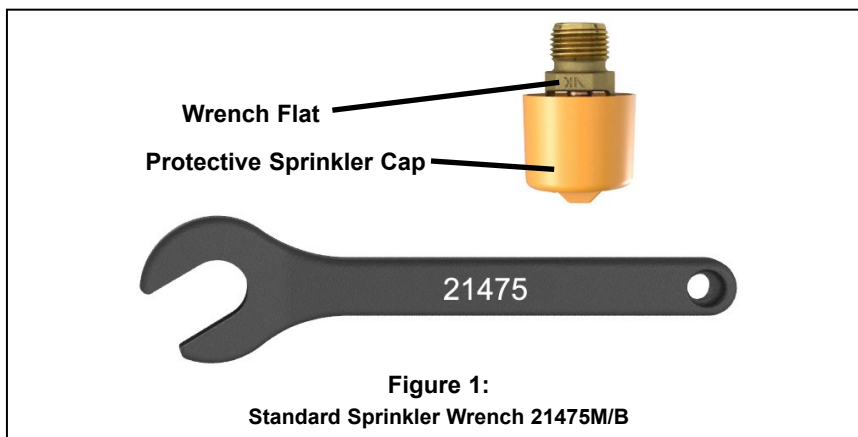


Figure 1:
Standard Sprinkler Wrench 21475M/B



TECHNICAL DATA

MICROFAST® QUICK RESPONSE PENDENT SPRINKLER VK302 (K5.6)

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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	Bulb Color
Ordinary	135 °F (57 °C)	100 °F (38 °C)	Orange
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
High	286 °F (141 °C)	225 °F (107 °C)	Blue

Sprinkler Finishes: Brass, Chrome, White Polyester, Black Polyester, and ENT

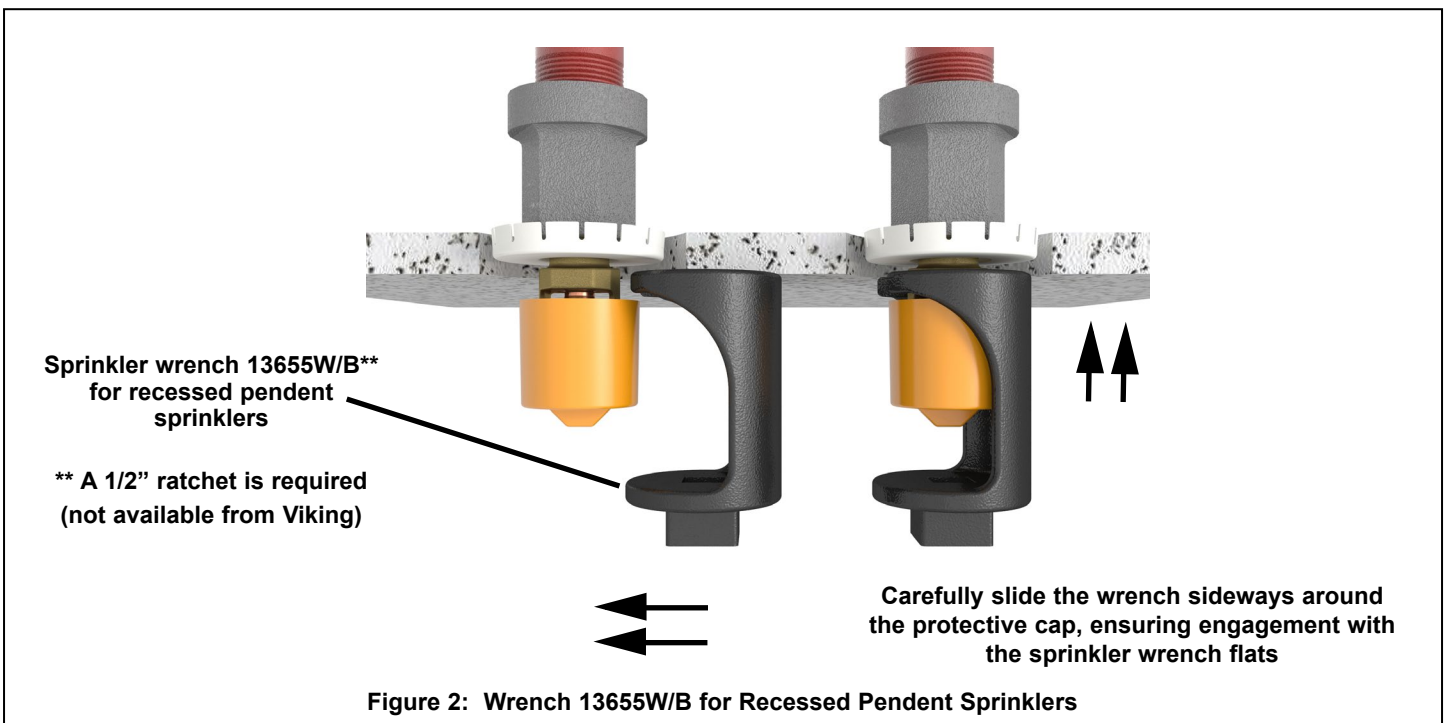
Corrosion-Resistant Coatings³: White Polyester, and Black Polyester. ENT in all temperature ratings except 135 °F (57 °C)

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 The corrosion-resistant coatings have passed the standard corrosion test required by the approving agencies indicated in the Approval Charts. 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. For automatic sprinklers, the coatings indicated are applied to the exposed exterior surfaces only. Note that the spring is exposed on sprinklers with Polyester and ENT coatings. For ENT coated automatic sprinklers, the waterway is coated.





TECHNICAL DATA

MICROFAST® QUICK RESPONSE PENDENT SPRINKLER VK302 (K5.6)

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Approval Chart 1 (UL) The Viking Microfast® Quick Response Pendent Sprinkler VK302 Maximum 175 PSI (12 Bar) WWP														
Base Part Number ¹	SIN	Sprinkler Style	Thread Size		Nominal K-Factor		Overall Length		Listings and Approvals ³ (Refer also to Design Criteria.)					
			NPT	BSP	U.S.	metric ²	Inches	mm	cULus ⁴	VdS	LPCB	CE ⁷	MED ⁸	China Approval
12979	VK302	Pendent	1/2"	15 mm	5.6	80.6	2-1/4	58	A1Z, B1Y, D2, C2X	A1	A1Z, B1Y	D1Z, C1Y, D2, A1Z, B1Y	D1	--
21354 ⁹	VK302	Pendent	--	15 mm	5.6	80.6	2-1/4	58	D3	--	--	--	--	D3
NOTICE - Product Below - Limited Availability (Contact Local Viking Office)														
06662B	VK302	Pendent	1/2"	15 mm	5.6	80.6	2-1/4	58	A1Z, B1Y, D2, C2X	--	--	--	--	--
18021	VK302	Pendent	1/2"	15 mm	5.6	80.6	2-1/4	58	A1Z, B1Y	A1	A1Z, B1Y	D1Z, C1Y, D2	D1	--
Approved Temperature Ratings			Approved Finishes				Approved Escutcheons							
A - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), 286 °F (141 °C) B - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C) C - 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C) D - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), 286 °F (141 °C)			1 - Brass, Chrome, White Polyester ^{5,6} , Black Polyester ^{5,6} 2 - ENT ⁵ 3 - Chrome				X - Standard surface-mounted escutcheon or the Viking Micromatic® Model E-1 Recessed Escutcheon Y - Standard surface-mounted escutcheon or recessed with the Viking Micromatic® Model E-1, E-2, or E-3 Recessed Escutcheon Z - Standard surface-mounted escutcheon							
Footnotes														
¹ Base part number shown. For complete part number, refer to Viking's current price schedule. ² 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. ³ This table shows the listings and approvals available at the time of printing. Other approvals may be in process. ⁴ Listed by Underwriters Laboratories Inc. for use in the U.S. and Canada. ⁵ cULus Listed as corrosion-resistant. ⁶ Other colors are available on request with the same Listings and Approvals as the standard colors. ⁷ CE: Standard EN 12259-1, Declaration of Performance DOP_Sprinklers_LPCB_5-2-19, DOP_VK302ENT_29-1-20 & DOP_VK302-57C_30-9-20. ⁸ MED Certified, Standard EN 12259-1, EC-0832-MED-1003. ⁹ Approved according to China GB Standard.														

DESIGN CRITERIA - UL

(Also refer to Approval Chart 1 above.)

cULus Listing Requirements:

The Viking Microfast® Quick Response Pendent Sprinkler VK302 is cULus Listed as indicated in the Approval Chart for installation in accordance with the latest edition of NFPA 13 for standard spray sprinklers.

- Designed for use in Light and Ordinary occupancies.
- The sprinkler installation rules contained in NFPA 13 for standard spray pendent sprinklers must be followed.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to Form No. F_080614 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.



TECHNICAL DATA

MICROFAST® QUICK RESPONSE PENDENT SPRINKLER VK302 (K5.6)

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
 Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com

Approval Chart 2 (FM) The Viking Microfast® Quick Response Pendent Sprinkler VK302 Maximum 175 PSI (12 Bar) WWP									
Base Part Number ¹	SIN	Sprinkler Style	Thread Size		Nominal K-Factor		Overall Length		FM Approvals ³ (Refer also to Design Criteria.)
			NPT	BSP	U.S.	metric ²	Inches	mm	
12979	VK302	Pendent	1/2"	15 mm	5.6	80.6	2-1/4	58	A1Z, B1Y, D2X, C2
21354 ⁶	VK302	Pendent	--	15 mm	5.6	80.6	2-1/4	58	C3
NOTICE - Product Below - Limited Availability (Contact Local Viking Office)									
06662B	VK302	Pendent	1/2"	15 mm	5.6	80.6	2-1/4	58	A1Z, B1Y, D2X, C2
18021	VK302	Pendent	1/2"	15 mm	5.6	80.6	2-1/4	58	A1Z, B1Y
Approved Temperature Ratings A - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), 286 °F (141 °C) B - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C) C - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), 286 °F (141 °C) D - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C)			Approved Finishes 1 - Brass, Chrome, White Polyester ⁴ , and Black Polyester ⁴ 2 - ENT ⁵ 3 - Chrome				Approved Escutcheons X - Standard surface-mounted escutcheon or the Viking Micromatic® Model E-1 Recessed Escutcheon Y - Standard surface-mounted escutcheon or recessed with the Viking Micromatic® Model E-1 or E-2 Recessed Escutcheon Z - Standard surface-mounted escutcheon		
Footnotes									
¹ Base part number shown. For complete part number, refer to Viking's current price schedule. ² 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. ³ This table shows the FM Approvals available at the time of printing. Other approvals may be in process. ⁴ Other colors are available on request with the same Approvals as the standard colors. ⁵ FM approved as corrosion resistant. ⁶ Approved according to China GB Standard.									

KEY	
Temperature	→
Finish	→
A1X ← Escutcheon (if applicable)	←

DESIGN CRITERIA - FM

(Also refer to Approval Chart 2 above.)

FM Approval Requirements:

The Viking Microfast® Quick Response Pendent Sprinkler VK302 is FM Approved as quick response **Non-storage** 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 Form No. F_080614 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.



TECHNICAL DATA

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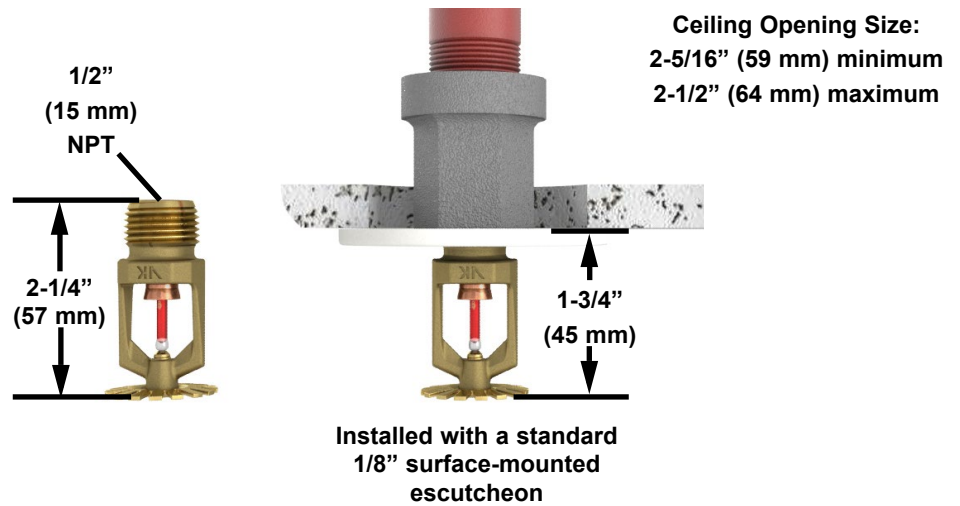


Figure 3: Sprinkler Dimensions with a Standard Escutcheon

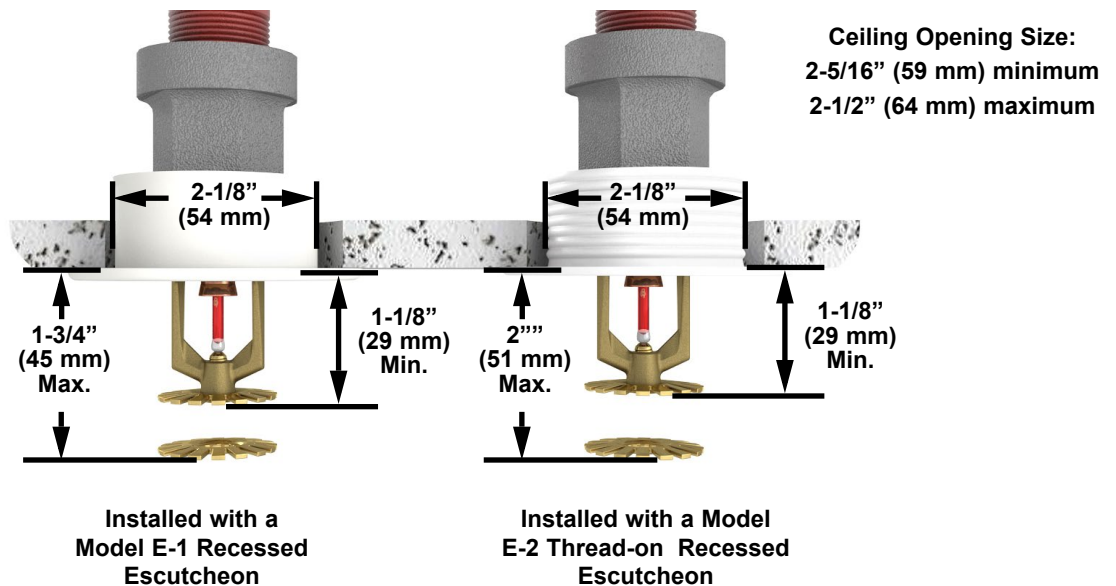


Figure 4: Sprinkler Dimensions with the Model E-1 and E-2 Recessed Escutcheons



BULLETIN

CARE AND HANDLING OF SPRINKLERS

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SPRINKLERS ARE FRAGILE - HANDLE WITH CARE!

General Handling and Storage:

- Store sprinklers in a cool, dry place.
- Protect sprinklers during storage, transport, handling, and after installation.
- Use the original shipping containers. DO NOT place sprinklers loose in boxes, bins, or buckets.
- Keep sprinklers separated at all times. DO NOT allow metal parts to contact sprinkler operating elements.

For Pre-Assembled Drops:

- Protect sprinklers during handling and after installation.
- For recessed assemblies, use the protective sprinkler cap (Viking Part Number 10364).

Sprinklers with Protective Shields or Caps:

- DO NOT remove shields or caps until after sprinkler installation and there no longer is potential for mechanical damage to the sprinkler operating elements.
- **Sprinkler shields or caps MUST be removed BEFORE placing the system in service!**
- Remove the sprinkler shield by carefully pulling it apart where it is snapped together.
- Remove the cap by turning it slightly and pulling it off the sprinkler.

Sprinkler Installation:

- DO NOT use the sprinkler deflector or operating element to start or thread the sprinkler into a fitting.
- **Use only the designated sprinkler head wrench!** Refer to the current sprinkler technical data page to determine the correct wrench for the model of sprinkler used.
- DO NOT install sprinklers onto piping at the floor level.
- Install sprinklers after the piping is in place to prevent mechanical damage.
- DO NOT allow impacts such as hammer blows directly to sprinklers or to fittings, pipe, or couplings in close proximity to sprinklers. Sprinklers can be damaged from direct or indirect impacts.
- DO NOT attempt to remove drywall, paint, etc., from sprinklers.
- **Take care not to over-tighten the sprinkler and/or damage its operating parts!**

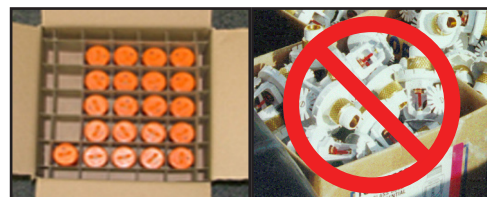
Maximum Torque:

- 1/2" NPT: 14 ft-lbs. (19.0 N-m)
- 3/4" NPT: 20 ft-lbs. (27.1 N-m)
- 1" NPT: 30 ft-lbs. (40.7 N-m)



CORRECT
(Original container used)

INCORRECT
(Placed loose in box)



CORRECT
(Protected with caps)

INCORRECT
(Protective caps not used)




CORRECT
(Piping is in place at the ceiling)

INCORRECT
(Sprinkler at floor level)



CORRECT
(Special installation wrenches)

INCORRECT
(Designated wrench not used)

 **WARNING:** Cancer and Reproductive Harm-
www.P65Warnings.ca.gov

! WARNING

Any sprinkler with a loss of liquid from the glass bulb or damage to the fusible element should be destroyed. Never install sprinklers that have been dropped, damaged, or exposed to temperatures exceeding the maximum ambient temperature allowed. Sprinklers that have been painted in the field must be replaced per NFPA 13. Protect sprinklers from paint and paint overspray in accordance with the installation standards. Do not clean sprinklers with soap and water, ammonia, or any other cleaning fluid. Do not use adhesives or solvents on sprinklers or their operating elements.

Refer to the appropriate technical data page and NFPA standards for complete care, handling, installation, and maintenance instructions. For additional product and system information Viking data pages and installation instructions are available on the Viking Web site at www.vikinggroupinc.com.



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PROTECTIVE SPRINKLER SHIELDS AND CAPS

General Handling and Storage:

Many Viking sprinklers are available with a plastic protective cap or shield temporarily covering the operating elements. The snap-on shields and caps are factory installed and are intended to help protect the operating elements from mechanical damage during shipping, storage, and installation. NOTE: It is still necessary to follow the care and handling instructions on the appropriate sprinkler technical data sheets* when installing sprinklers with bulb shields or caps.

WHEN TO REMOVE THE SHIELDS AND CAPS:

NOTE: SHIELDS AND CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!

Remove the shield or cap from the sprinkler only after checking all of the following:

- The sprinkler has been installed*.
- The wall or ceiling finish work is completed where the sprinkler is installed and there no longer is a potential for mechanical damage to the sprinkler operating elements.

SHIELDS AND CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!

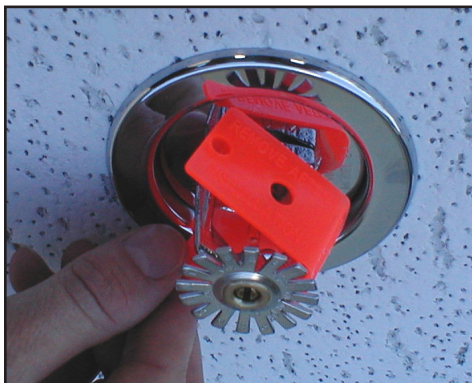


Figure 1: Sprinkler shield being removed from a pendent sprinkler.



Figure 2: Sprinkler cap being removed from a pendent sprinkler.



Figure 3: Sprinkler cap being removed from an upright sprinkler.

HOW TO REMOVE SHIELDS AND CAPS:

No tools are necessary to remove the shields or caps from sprinklers. DO NOT use any sharp objects to remove them! **Take care not to cause mechanical damage to sprinklers when removing the shields or caps.** When removing caps from fusible element sprinklers, use care to prevent dislodging ejector springs or damaging fusible elements. NOTE: Squeezing the sprinkler cap excessively could damage sprinkler fusible elements.

- To remove the shield, simply pull the ends of the shield apart where it is snapped together. Refer to Figure 1.
- To remove the cap, turn it slightly and pull it off the sprinkler. Refer to Figures 2 and 3.

NOTICE

Refer to the current sprinkler technical data page to determine the correct sprinkler wrench for the model of sprinkler used.

WARNING

Never install sprinklers that have been dropped, damaged, or exposed to temperatures in excess of the maximum ambient temperature allowed.

* Refer to the appropriate current technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Web site at www.vikinggroupinc.com.



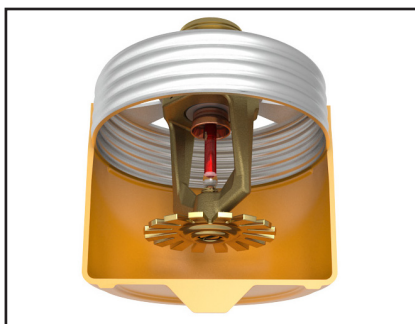
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CONCEALED COVER ASSEMBLIES ARE FRAGILE!
TO ASSURE SATISFACTORY PERFORMANCE OF THE PRODUCT, HANDLE WITH CARE.



Concealed Sprinkler and Adapter
 Assembly with Protective Cap

Concealed Sprinkler and Adapter
 Assembly (Protective Cap Removed)



Cover Plate Assembly
 (Pendent Cover 12381 shown)



GENERAL HANDLING AND STORAGE INSTRUCTIONS:

- Do not store in temperatures exceeding 100 °F (38 °C). Avoid direct sunlight and confined areas subject to heat.
- Protect sprinklers and cover assemblies during storage, transport, handling, and after installation.
 - Use original shipping containers.
 - Do not place sprinklers or cover assemblies loose in boxes, bins, or buckets.
- Keep the sprinkler bodies covered with the protective sprinkler cap any time the sprinklers are shipped or handled, during testing of the system, and while ceiling finish work is being completed.
- Use only the designated Viking recessed sprinkler wrench (refer to the appropriate sprinkler data page) to install these sprinklers. **NOTE:** The protective cap is temporarily removed during installation and then placed back on the sprinkler for protection until finish work is completed.
- Do not over-tighten the sprinklers into fittings during installation.
- Do not use the sprinkler deflector to start or thread the sprinklers into fittings during installation.
- Do not attempt to remove drywall, paint, etc., from the sprinklers.
- Remove the plastic protective cap from the sprinkler before attaching the cover plate assembly. **PROTECTIVE CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!**

Refer to the appropriate current technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Web site at www.vikinggroupinc.com.



BULLETIN

CARE AND HANDLING
OF SPRINKLERS

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USE THE FOLLOWING PRECAUTIONS WHEN HANDLING WAX-COATED SPRINKLERS

Many of Viking's sprinklers are available with factory-applied wax coating for corrosion resistance. These sprinklers MUST receive appropriate care and handling to avoid damaging the wax coating and to assure satisfactory performance of the product.

General Handling and Storage of Wax-Coated Sprinklers:

- Store the sprinklers in a cool, dry place (in temperatures below the maximum ambient temperature allowed for the sprinkler temperature rating. Refer to Table 1 below.)
- Store containers of wax-coated sprinklers separate from other sprinklers.
- Protect the sprinklers during storage, transport, handling, and after installation.
- Use original shipping containers.
- Do not place sprinklers in loose boxes, bins, or buckets.

Installation of Wax-Coated Sprinklers:

Use only the special sprinkler head wrench designed for installing wax-coated Viking sprinklers (any other wrench may damage the unit).

- Take care not to crack the wax coating on the units.
- For touching up the wax coating after installation, wax is available from Viking in bar form. Refer to Table 1 below. The coating MUST be repaired after sprinkler installation to protect the corrosion-resistant properties of the sprinkler.
- Use care when locating sprinklers near fixtures that can generate heat. Do not install sprinklers where they would be exposed to temperatures exceeding the maximum recommended ambient temperature for the temperature rating used.
- Inspect the coated sprinklers frequently soon after installation to verify the integrity of the corrosion resistant coating. Thereafter, inspect representative samples of the coated sprinklers in accordance with NFPA 25. Close up visual inspections are necessary to determine whether the sprinklers are being affected by corrosive conditions.

TABLE 1

Sprinkler Temperature Rating (Fusing Point)	Wax Part Number	Wax Melting Point	Maximum Ambient Ceiling Temperature ¹	Wax Color
155 °F (68 °C) / 165 °F (74 °C)	02568A	148 °F (64 °C)	100 °F (38 °C)	Light Brown
175 °F (79 °C)	04146A	161 °F (71 °C)	150 °F (65 °C)	Brown
200 °F (93 °C)	04146A	161 °F (71 °C)	150 °F (65 °C)	Brown
220 °F (104 °C)	02569A	170 °F (76 °C)	150 °F (65 °C)	Dark Brown
286 °F (141 °C)	02569A	170 °F (76 °C)	150 °F (65 °C)	Dark Brown

¹ 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.



Never install sprinklers that have been dropped, damaged, or exposed to temperatures in excess of the maximum ambient temperature allowed.

Refer to the appropriate current technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Web site at www.vikinggroupinc.com.

**BULLETIN****REGULATORY AND HEALTH
WARNINGS**

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1. DESCRIPTION

Regulatory and Health Warnings applying to materials used in the manufacture and construction of fire protection products are provided herein as they relate to legally mandated jurisdictional regions.

⚠ WARNING**STATE OF CALIFORNIA, USA**

Installing or servicing fire protection products such as sprinklers, valves, piping etc. can expose you to chemicals including, but not limited to, lead, nickel, butadiene, titanium dioxide, chromium, carbon black, and acrylonitrile which are known to the State of California to cause cancer or birth defects or other reproductive harm.

For more information, go to www.P65Warnings.ca.gov

2. WARRANTY TERMS AND CONDITIONS

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



TECHNICAL DATA

FREEDOM® RESIDENTIAL PENDENT SPRINKLER VK468 (K4.9)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

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1. DESCRIPTION

Viking Freedom® Residential Pendent Sprinkler VK468 is a small, thermosensitive, glass-bulb residential sprinkler available in several different finishes and temperature ratings to meet varying design requirements. The Electroless Nickel PTFE (ENT) coating has been investigated for installation in corrosive atmospheres and is C-UL-US-EU Listed as corrosion resistant as indicated in the Approval Chart. The orifice design, with a K-Factor of 4.9 (70.6 metric†), allows efficient use of available water supplies for the hydraulically designed fire-protection system. The glass bulb operating element and special deflector characteristics meet the challenges of residential sprinkler standards.

2. LISTINGS AND APPROVALS



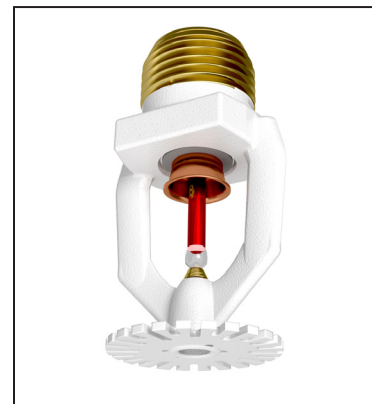
UL Listed (C-UL-US-EU): Category VKKW



VdS Approved

NYC Approved: MEA 89-92-E, Volume 35

UL Classified to: NSF/ANSI Standard 61, Drinking Water System Components (MH48034).



WARNING: Cancer and Reproductive Harm-
www.P65Warnings.ca.gov

Refer to the Approval Chart and Design Criteria for C-UL-US-EU Listing requirements that must be followed.

3. TECHNICAL DATA

Specifications:

Available since 2006.

Minimum Operating Pressure: Refer to the Approval Chart.

Maximum Working Pressure: 175 psi (12 bar). Factory tested hydrostatically to 500 psi (34.5 bar).

Thread size: 1/2" (15 mm) NPT

Nominal K-Factor: 4.9 U.S. (70.6 metric†)

†Metric K-factor measurement shown is 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: 2-1/4" (58 mm)

Material Standards:

Frame Casting: Brass UNS-C84400 or QM Brass

Deflector: Brass UNS-C23000, 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 Polytetrafluoroethylene (PTFE) Tape

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

Compression Screw: Brass UNS-C36000

For ENT coated sprinklers: Belleville spring - Exposed. Screw and Pipcap - ENT plated.

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

Sprinkler: Base Part No. 13637

Order Sprinkler VK468 by first adding the appropriate suffix for the sprinkler finish and then the appropriate suffix for the temperature rating to the sprinkler base part number.

Finish Suffix: Brass = A, Chrome = F, White Polyester = M-/W, Black Polyester = M-/B, and ENT = JN

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

For example, sprinkler VK468 with a Brass finish and a 155 °F (68 °C) temperature rating = Part No. 13637AB.

Available Finishes And Temperature Ratings:

Refer to Table 1.

Accessories: (Also refer to the Viking website.)

Sprinkler Wrenches:

A. Standard Wrench: Part No. 21475M/B (available since 2017)

B. Wrench for recessed sprinklers: Part No. 13577W/B* (available since 2006)

C. Optional Protective Sprinkler Cap Remover/Escutcheon Installer Tool** Part No. 15915 (available since 2010.)

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

**Allows use from the floor by attaching a length of 1" diameter CPVC tubing to the tool. Ideal for sprinkler cabinets. Refer to Bulletin F_051808.

	TECHNICAL DATA	FREEDOM® RESIDENTIAL PENDENT SPRINKLER VK468 (K4.9)
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Sprinkler Cabinets:

- A. Six-head capacity: Part No. 01724A (available since 1971)
- B. Twelve-head capacity: Part No. 01725A (available since 1971)

4. INSTALLATION

Refer to appropriate NFPA Installation Standards.

5. OPERATION

During fire conditions, the heat-sensitive liquid in the glass bulb expands, causing the glass 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 Model VK468 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.

TABLE 1: AVAILABLE SPRINKLER TEMPERATURE RATINGS AND FINISHES

Sprinkler Temperature Classification	Sprinkler Nominal Temperature Rating ¹	Maximum Ambient Ceiling Temperature ²	Bulb Color
Ordinary	155 °F (68 °C)	100 °F (38 °C)	Red
Intermediate	175 °F (79 °C)	150 °F (65 °C)	Yellow

Sprinkler Finishes: Brass, Chrome, White Polyester ³, Black Polyester ³, and ENT ^{3,4}

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 Sprinklers with ENT, White Polyester, and Black Polyester finishes are C-UL-US-EU Listed as corrosion resistant.
- ⁴ The ENT coating has 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. For ENT coated sprinklers, the waterway is coated. Note that the spring is exposed on sprinklers with ENT coating.

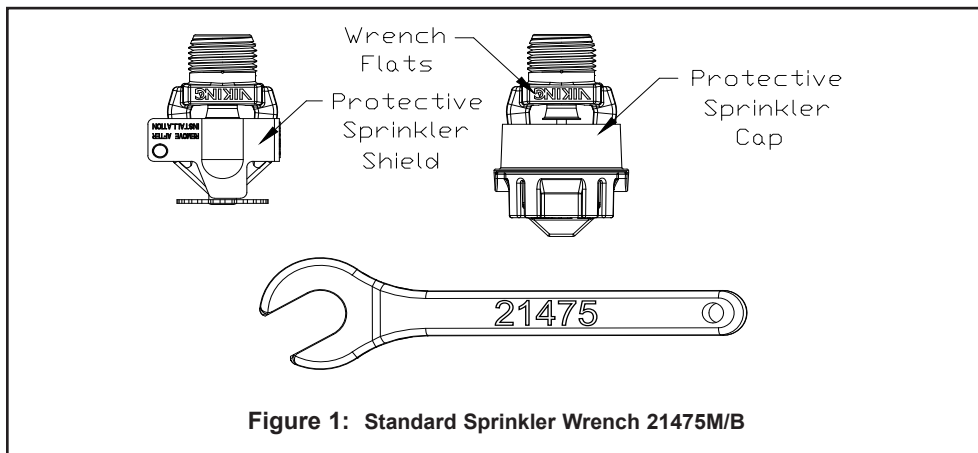


Figure 1: Standard Sprinkler Wrench 21475M/B



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Approval Chart Viking VK468, 4.9 K-Factor Residential Pendent Sprinkler

For systems designed to NFPA 13D or NFPA 13R. For systems designed to NFPA 13, refer to the design criteria. For Ceiling types refer to current editions of NFPA 13, 13R or 13D

Sprinkler Base Part Number ¹	SIN	NPT Thread Size		Nominal K-Factor		Maximum Water Working Pressure	Overall Length				
		Inches	mm	U.S.	metric ²		Inches	mm			
13637	VK468	1/2	15	4.9	70.6	175 psi (12 bar)	2-1/4	58			
Max. Coverage Area ⁴ Ft.X Ft. (m X m)	Ordinary Temp Rating (155 °F/68 °C)		Intermediate Temp Rating (175 °F/79 °C)		Deflector to Ceiling	Installation Type	Listings and Approvals ³				Minimum Spacing Ft. (m)
	Flow ⁴ GPM (L/min)	Pressure ⁴ PSI (bar)	Flow ⁴ GPM (L/min)	Pressure ⁴ PSI (bar)			C-UL-US-EU ⁵	VdS	NYC ⁶	NSF ⁸	
12 X 12 (3.7 X 3.7)	13 (49.2)	7.0 (0.48)	13 (49.2)	7.0 (0.48)	1-1/8 to 2 inch	Standard surface-mounted escutcheons, or recessed with the Micromatic® Model E-1, E-2, or E-3 Recessed Escutcheon	See Foot-notes 7 and 10.	See Foot-notes 7 and 10.	See Foot-note 7.	See Foot-note 7.	8 (2.4)
14 X 14 (4.3 X 4.3)	13 (49.2)	7.0 (0.48)	13 (49.2)	7.0 (0.48)							
16 X 16 (4.9 X 4.9)	13 (49.2)	7.0 (0.48)	13 (49.2)	7.0 (0.48)							
18 X 18 (5.5 X 5.5)	17 (64.4)	12.0 (0.83)	17 (64.4)	12.0 (0.83)							
20 X 20 (6.1 X 6.1)	20 (75.7)	16.7 (1.15)	20 (75.7)	16.7 (1.15)							

Footnotes

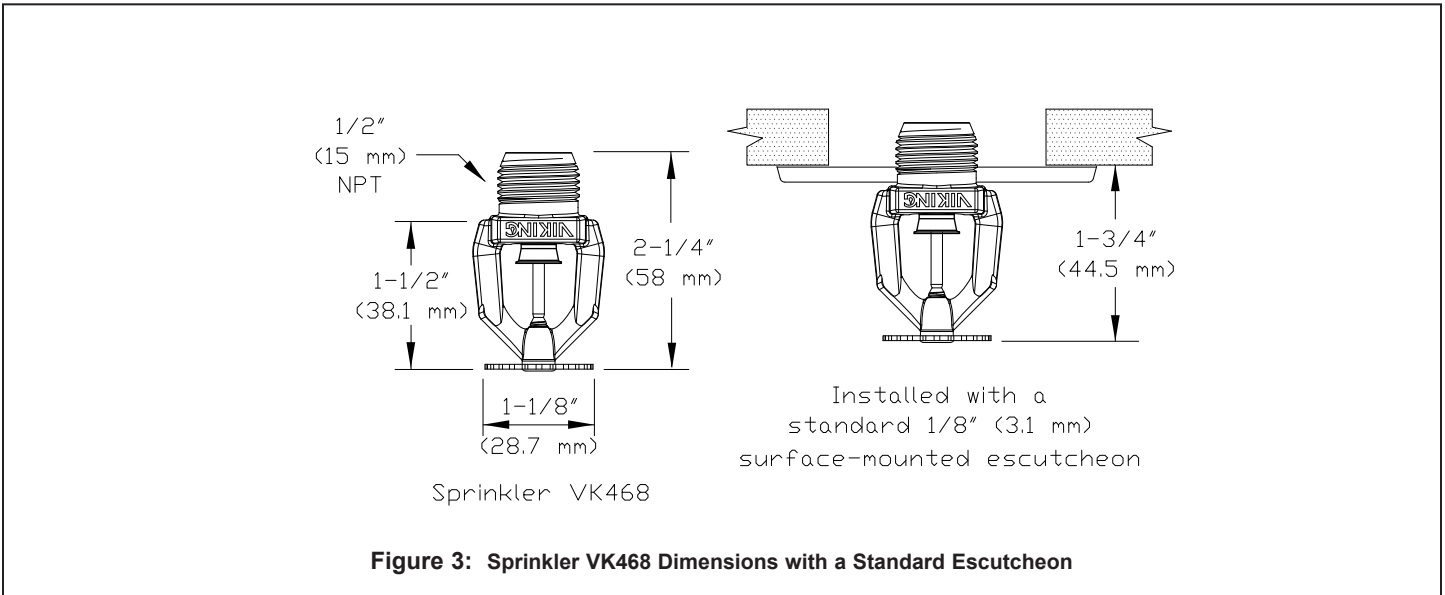
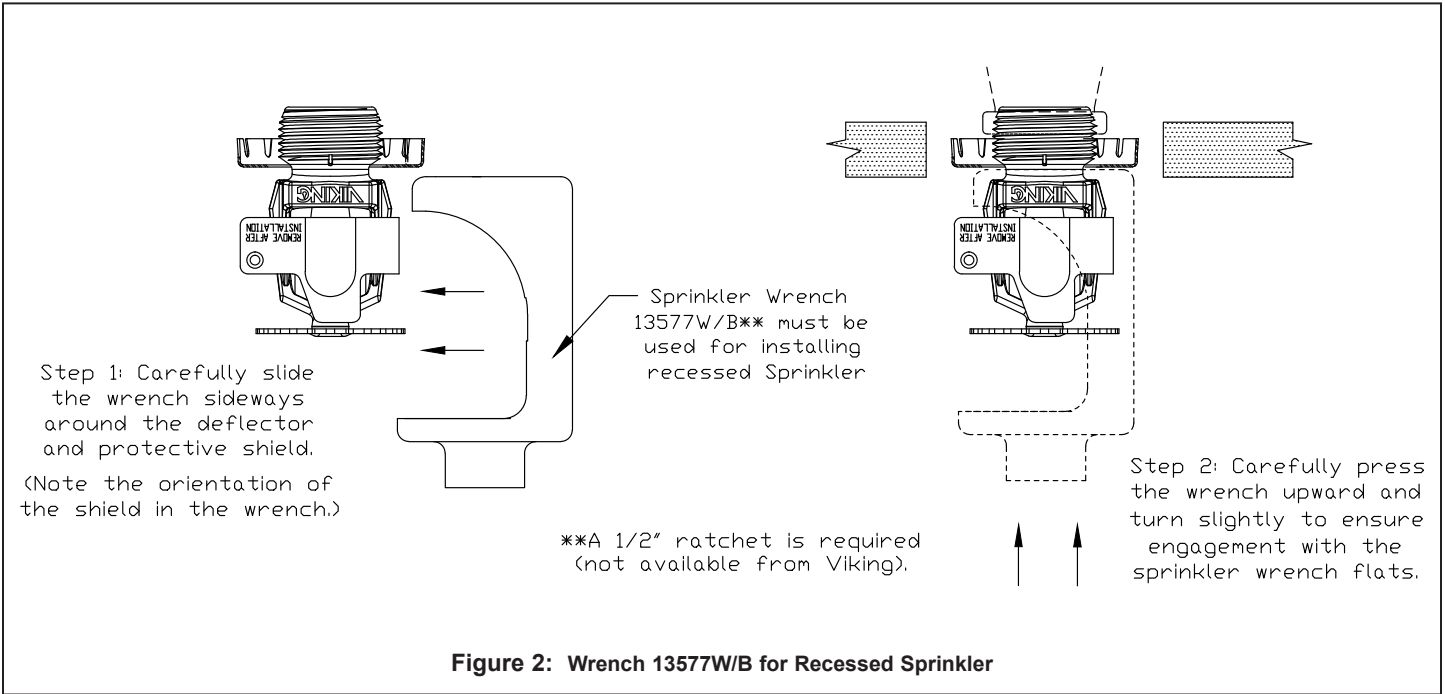
- ¹ Part number shown is the base part number. For complete part number, refer to Viking's current price schedule.
- ² Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.
- ³ This chart shows the listings and approvals available at the time of printing. Other approvals may be in process. Check with the manufacturer for any additional approvals. Refer also to Design Criteria.
- ⁴ For areas of coverage smaller than shown, use the "Flow" and "Pressure" for the next larger area listed. Flows and pressures listed are per sprinkler. The distance from sprinklers to walls shall not exceed one-half the sprinkler spacing indicated for the minimum "Flow" and "Pressure" used.
- ⁵ Listed by Underwriter's Laboratories, Inc. for use in the U.S., Canada, and European Union.
- ⁶ Accepted for use, City of New York Department of Buildings, MEA Number 89-92-E, Vol. 35.
- ⁷ Approved Finishes are: Brass, Chrome, White Polyester, and Black Polyester⁹
- ⁸ UL Classified to: NSF/ANSI Standard 61, Drinking Water System Components (MH48034).
- ⁹ Other paint colors are available on request with the same C-UL-US-EU listings as the standard finish colors.
- ¹⁰ Approved finish is Electroless Nickel PTFE (ENT). Sprinklers with ENT, White Polyester, and Black Polyester finishes are C-UL-US-EU Listed as corrosion resistant. ENT is available with standard surface-mounted escutcheons or the Micromatic Model E-1 Recessed Escutcheon.



TECHNICAL DATA

**FREEDOM® RESIDENTIAL
PENDENT SPRINKLER
VK468 (K4.9)**

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
 Visit the Viking website for the latest edition of this technical data page www.vikinggroupinc.com

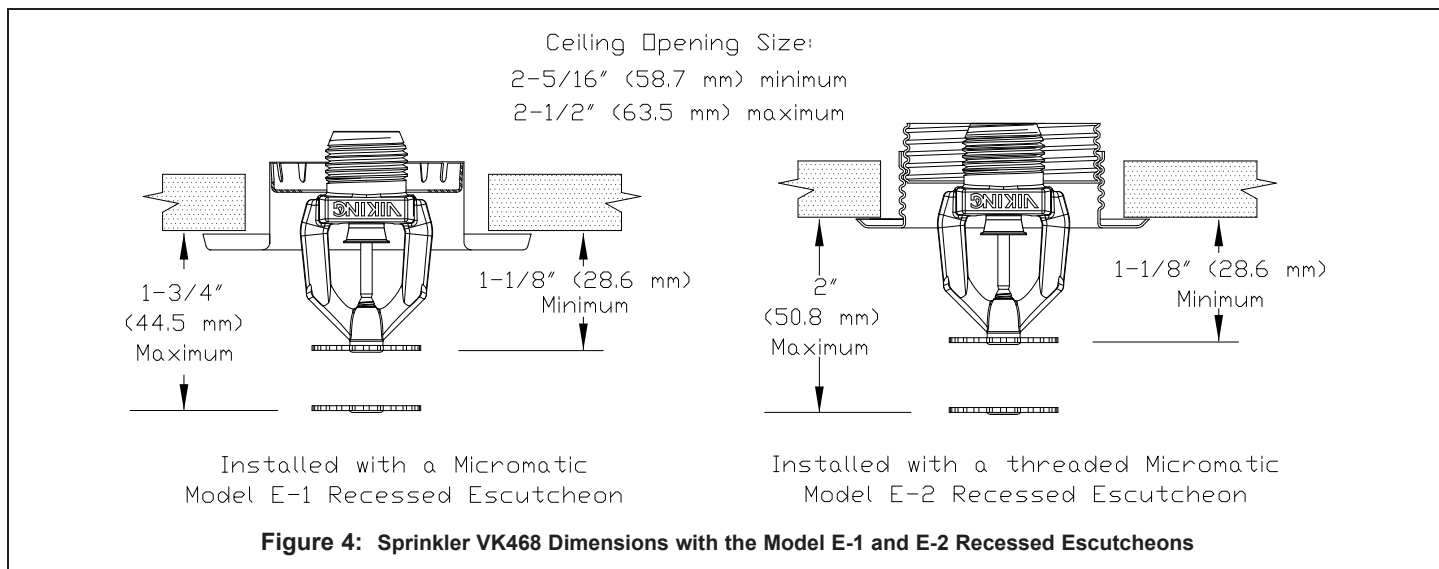




TECHNICAL DATA

FREEDOM® RESIDENTIAL PENDENT SPRINKLER VK468 (K4.9)

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 Visit the Viking website for the latest edition of this technical data page www.vikinggroupinc.com



DESIGN CRITERIA

(Also refer to the Approval Chart.)

UL Listing Requirements (C-UL-US-EU):

When using Viking Residential Pendant Sprinkler VK468 for systems designed to NFPA 13D or NFPA 13R, apply the listed areas of coverage and minimum water supply requirements shown in the Approval Chart.

For systems designed to NFPA 13: The number of design sprinklers is to be the four contiguous most hydraulically demanding sprinklers. The minimum required discharge from each of the four sprinklers is to be the greater of the following:

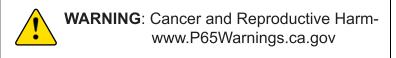
- The flow rates given in the Approval Chart for NFPA 13D and NFPA13R applications for each listed area of coverage, **or**
- Calculated based on a minimum discharge of 0.1 gpm/sq. ft. over the "design area" in accordance with sections 8.5.2.1 or 8.6.2.1.2 of NFPA 13.
- Minimum distance between residential sprinklers: 8 ft. (2.4 m).

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to Form No. F_080614, F_080415 and F_080190 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, VdS, and any other similar Authorities Having Jurisdiction, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable. Final approval and acceptance of all residential sprinkler installations must be obtained from the Authorities Having Jurisdiction.



Viking Residential Sprinkler Installation Guide

October 25, 2018



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TECHNICAL DATA

FREEDOM® RESIDENTIAL SPRINKLER INSTALLATION GUIDE

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1. DESCRIPTION

Viking residential automatic sprinklers are equipped with a “fast response” heat-sensitive operating element designed to respond individually and quickly to a specific high temperature. Viking residential sprinklers are designed to combine speed of operation with water distribution characteristics to help in the control of residential fires and to improve life safety by prolonging the time available for occupants to escape or be evacuated.

2. LISTINGS AND APPROVALS

Refer to the Approval Charts on the appropriate sprinkler technical data page(s) and/or approval agency listings.

- A. Viking residential sprinklers are intended for use in the following occupancies: one- and two-family dwellings and mobile homes with the fire protection sprinkler system installed in accordance with NFPA 13D; residential occupancies up to four stories in height with the fire protection system installed in accordance with NFPA 13R; or residential portions of any occupancy with the fire protection system installed in accordance with NFPA 13. Information contained in this guide is based on NFPA 13, “Standard for the Installation of Sprinkler Systems”.
- B. The design criteria for residential sprinklers contained in the NFPA installation standards must be followed except as modified by the individual UL 1626 listing information provided in the technical data pages and this Residential Sprinkler Installation Guide. For listed areas of coverage, technical data, and specific design and installation instructions, refer to the appropriate Viking technical data page for the sprinkler model used.
- C. Viking residential sprinklers listed by Underwriters Laboratories, Inc. (UL) have passed fire tests designed to represent fire conditions for the sprinkler’s listed area of coverage. The standards for residential sprinkler performance and spray patterns are printed in Underwriters Laboratories Publication UL 1626, “Standard for Residential Sprinklers for Fire Protection Service”. All listed Viking residential sprinklers meet or exceed UL 1626 performance requirements and spray pattern criteria for their listed areas of coverage.
- D. NFPA standards allow use of residential sprinklers with rates, design areas, areas of coverage, and minimum design pressures other than those specified in the standards when they have been listed for such specific residential installation conditions.

3. TECHNICAL DATA

Specifications:

Refer to the appropriate sprinkler technical data sheet.

Material Standards:

Refer to the appropriate sprinkler technical data sheet.

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.

4. INSTALLATION

NOTE: Take care not to over-tighten the sprinkler and/or damage its operating parts!

Maximum Torque: 1/2” NPT: 14 ft-lbs. (19.0 N-m) 3/4” NPT: 20 ft-lbs. (27.1 N-m)

A. Care and Handling (also refer to Bulletin - Care and Handling of Sprinklers, Form No. F_091699.)

Sprinklers must be handled with care and protected from mechanical damage during storage, transport, handling, and after installation.

Store sprinklers in a cool, dry place in their original container.

Use care when locating sprinklers near fixtures that can generate heat.

Never install sprinklers that have been dropped, damaged in any way, or exposed to temperatures exceeding the maximum ambient temperature allowed (refer to Table 1.)

Never install any glass-bulb sprinkler if the bulb is cracked or if there is a loss of liquid from the bulb. A small air bubble should be present in the glass bulb. Any sprinkler with a loss of liquid from the glass bulb or damage to the fusible element should be destroyed immediately. (Note: Installing glass bulb sprinklers in direct sunlight (ultraviolet light) may affect the color of the dye used to color code the bulb. This color change does not affect the integrity of the bulb.)

Viking residential sprinklers are intended for use on wet pipe residential systems only. Adequate heat must be provided for wet-pipe systems. DO NOT use Viking residential sprinklers on dry systems unless specifically allowed by recognized installation standards or the Authority Having Jurisdiction.

Residential concealed sprinklers must be installed in neutral or negative pressure plenums only!

Corrosion-resistant sprinklers must be installed when subject to corrosive atmospheres. **NOTE:** Viking residential sprinklers are not intended for use in corrosive environments.

Replaces pages 1-17, dated December 1, 2016.

(Added P65 Warning.)



TECHNICAL DATA

FREEDOM® RESIDENTIAL SPRINKLER INSTALLATION GUIDE

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TABLE 1: RESIDENTIAL SPRINKLER TEMPERATURE RATINGS

Sprinkler Temperature Classification	Sprinkler Nominal Temperature Rating ¹	Maximum Ambient Ceiling Temperature ³	Bulb Color
Residential Glass Bulb Style Sprinklers			
Ordinary	155 °F (68 °C)	100 °F (38 °C)	Red
Intermediate	175 °F (79 °C)	150 °F (65 °C)	Yellow
Sprinkler Temperature Classification	Sprinkler Nominal Temperature Rating (Fusing Point) ¹	Maximum Ambient Ceiling Temperature ³	
Residential Fusible Element Style Sprinklers			
Ordinary	165 °F (74 °C)	100 °F (38 °C)	
Sprinkler Temperature Classification	Sprinkler Nominal Temperature Rating (Fusing Point)	Maximum Ambient Ceiling Temperature ³	Temperature Identification Stamp
Residential Flush Style Sprinklers			
Ordinary	165 °F (74 °C)	100 °F (38 °C)	On Cover or Sprinkler Inlet (VK476)
Intermediate	220 °F (104 °C)	150 °F (65 °C)	On Cover
Sprinkler Temperature Classification	Sprinkler Nominal Temperature Rating (Fusing Point)	Maximum Ambient Ceiling Temperature ³	Cover Plate Temperature Rating
Residential Concealed Style Sprinklers			
Ordinary	135 °F (57 °C) ¹ , 140 °F (60 °C) ² , 155 °F (68 °C) ¹ , or 165 °F (74 °C) ¹	100 °F (38 °C)	135 °F (57 °C)

Footnotes

¹ The sprinkler temperature rating is stamped on the deflector or flow shaper.

² The temperature rating is stamped on the sprinkler.

³ 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.

B. Installation Instructions

Viking sprinklers are manufactured and tested to meet the rigid requirements of approving agencies. They are designed to be installed in accordance with recognized installation standards NFPA 13, NFPA 13R, and NFPA 13D, and any associated TIAs.

Deviation from the standards or any alteration to the sprinklers or cover plate assemblies after they leave the factory including, but not limited to: painting, plating, coating, or modification, may render the sprinklers inoperative and will automatically nullify the approval and any guarantee made by Viking.

The use of residential sprinklers may be limited due to occupancy and hazard. Residential fire protection systems must be designed and installed only by those who are completely familiar with the appropriate standards and codes, and thoroughly experienced in fire protection design, hydraulic calculations, and sprinkler system installation.

Before installation, be sure to have the appropriate sprinkler model and style, with the correct K-Factor, temperature rating, and response characteristics. Viking residential sprinklers must be installed after the piping is in place to prevent mechanical damage. Keep sprinklers with protective caps or bulb shields contained within the caps or shields during installation and testing, and any time the sprinkler is shipped or handled.

1a. For frame-style sprinklers, install escutcheon (if used), which is designed to thread onto the external threads of the sprinkler*.

*Refer to the appropriate sprinkler technical data page to determine approved escutcheons for use with specific sprinkler models.

1b. For flush and concealed style sprinklers: Cut the sprinkler nipple so that the ½" or ¾" (15 mm or 20 mm) NPT** outlet of the reducing coupling is at the desired location and centered in the opening** in the ceiling or wall.

**Size depends on the sprinkler model used. Refer to appropriate sprinkler data page.



TECHNICAL DATA

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DESIGN CRITERIA

For Systems Designed to NFPA 13D or NFPA 13R: Apply the listed areas of coverage and minimum water supply requirements shown in the approval charts on the residential sprinkler data pages. The sprinkler flow rate is the minimum required discharge from each of the total number of design sprinklers as specified in NFPA 13D or NFPA 13R.

For Systems Designed to the latest edition of NFPA 13: The number of design sprinklers is to be the four most hydraulically demanding sprinklers. The minimum required discharge from each of the four sprinklers is to be the greater of the following:

- The flow rates given in the approval charts on the data pages for NFPA 13D and NFPA13R for each area of coverage listed, or
- Calculated based on a minimum discharge of 0.1 gpm/sq. ft. over the “design area” in accordance with sections 8.5.2.1 or 8.6.2.1.2 of NFPA 13. The greatest dimension of the coverage area cannot be any greater than the maximum areas of coverage shown on the data pages.

Flow Rates

All residential sprinklers manufactured on or after July 12, 2002 are listed with a single minimum flow rate. Where rooms have more than one sprinkler, multiple-sprinkler calculations are still required, but the first sprinkler and any additional sprinkler or sprinklers must be calculated flowing at identical minimum flow rates, based on the area of sprinkler coverage, using the minimum flow and pressure listed for the sprinkler model used.

Consult the appropriate standards and the Authorities Having Jurisdiction to determine the number of sprinklers to hydraulically calculate to verify adequate water supply for multiple-sprinkler operation.

Operating Pressure: The minimum operating pressure of any sprinkler shall be the minimum operating pressure specified by the listing, or 7 psi (0.5 bar), whichever is greater. The maximum allowable operating pressure is 175 psi (12 bar).

Areas of Coverage

If the actual area of coverage is less than the listed area of coverage, use the minimum water supply for the next larger area of coverage listed. DO NOT interpolate. Residential sprinkler systems must be hydraulically calculated according to NFPA standards to verify that the water supply is adequate for proper operation of the sprinklers. Hydraulic calculations are required to verify adequate water supply at the hydraulically most remote single sprinkler when it is operating at the minimum gpm and psi listed for single-sprinkler operation for the sprinkler model used.

Viking residential sprinklers may be listed for more than one area of coverage. Suggested practice in selecting area of coverage is to select the one that can be adequately supplied by the available water supply and still allow for the installation of as few sprinklers in a compartment as possible while observing all guidelines pertaining to obstructions and spacing. This maximizes the use of the available water supply, which is often limited on residential fire protection systems. After selecting an appropriate area of coverage, sprinklers must be spaced according to guidelines set forth in the installation standards.

Definition of “COMPARTMENT”: A space completely enclosed by walls and a ceiling. Openings to an adjoining space are allowed, provided the openings have a minimum lintel depth of 8 in. (203.2 mm) from the ceiling.

Spacing Guidelines

For guidelines concerning spacing of Viking residential sprinklers near beams, obstructions, heat sources, and sloped ceilings [slopes more than a 2/12 (9.5°) pitch], refer to the Viking residential sprinkler data pages and installation guide, the appropriate NFPA standard, and the Authority Having Jurisdiction. NOTE: Sloped, beamed, and pitched ceilings could require special design features such as larger flow, or a design for more sprinklers to operate in the compartment, or both.

Distance from Walls: Install not more than one-half the listed sprinkler spacing nor less than 4” (102 mm) from walls, partitions, or obstructions as defined in the standards.

Minimum Sprinkler Spacing: The minimum distance between residential sprinklers to prevent cold soldering (i.e., the spray from one operating sprinkler onto an adjacent sprinkler that could prevent its proper activation) is 8 ft. (2.4 m).

Maximum Sprinkler Spacing: Locate adjacent sprinklers no farther apart than the listed spacing.

Deflector Position: Install frame style residential *pendent* sprinklers with the deflector between 1” and 4” (25.4 mm to 102 mm) below smooth ceilings, unless the sprinkler data page indicates otherwise. Install pendent sprinklers in the pendent position only, with the deflector oriented parallel with the ceiling or roof.

Refer to the individual listings in the residential sprinkler data pages for horizontal sidewall sprinkler deflector or sprinkler centerline distance below the ceiling. Install horizontal sidewall sprinklers in the horizontal position only below smooth ceilings, with the leading edge of the deflector or element assembly oriented parallel with the ceiling.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to the appropriate sprinkler data page. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA and any other similar Authorities Having Jurisdiction, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable. Final approval and acceptance of all residential sprinkler installations must be obtained from the Authorities Having Jurisdiction.



TECHNICAL DATA

FREEDOM® RESIDENTIAL SPRINKLER INSTALLATION GUIDE

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2. Apply a small amount of pipe-joint compound or tape to the external threads of the sprinkler only, taking care not to allow a build-up of compound in the sprinkler inlet. **NOTE:** Sprinklers with protective caps or bulb shields must be contained within the caps or shields before applying pipe-joint compound or tape. *Exception: For concealed sprinklers (i.e., VK457, VK458, VK468, VK474, and VK4570) the protective cap is removed for installation.*
3. Care must be taken when installing sprinklers on CPVC and copper piping systems. Never install the sprinkler into the reducing fitting before attaching the reducing fitting to the piping. Sprinklers must be installed on CPVC systems after the reducing fitting has been installed and the primer and/or cement manufacturer's recommended curing time has elapsed. When installing sprinklers on copper piping systems, take care to brush the inside of the sprinkler supply piping and reducing fitting to ensure that no flux accumulates in the sprinkler orifice. Excess flux can cause corrosion and may impair the ability of the sprinkler to operate properly.
4. Refer to the appropriate sprinkler technical data page to determine the correct sprinkler wrench for the model of sprinkler used. DO NOT use the sprinkler deflector or fusible element to start or thread the sprinkler into a fitting.
 - a. Install the sprinkler onto the piping using the special sprinkler wrench only, while taking care not to over-tighten or damage the sprinkler operating parts.
 - b. Thread the flush or concealed sprinkler into the 1/2" or 3/4" (15 mm or 20 mm) NPT** outlet of the coupling by turning it clockwise with the special sprinkler wrench. *NOTE: For flush and concealed sprinklers with protective shells, the internal diameter of the special flush and concealed sprinkler installation wrench is designed for use with the sprinkler contained within the shell. Exception: For concealed sprinklers VK457, VK458, VK468, VK474, and VK4570 the protective cap is removed for installation, and then placed back on the sprinkler temporarily.*
5. After installation, the entire sprinkler system must be tested. The test must be conducted to comply with the installation standards.
 - a. Make sure the sprinkler has been properly tightened. If a thread leak occurs, normally the unit must be removed, new pipe-joint compound or tape applied, and then reinstalled. This is due to the fact that when the joint seal leaks, the sealing compound is washed out of the joint.
 - b. **Remove plastic protective sprinkler caps or bulb shields AFTER the wall or ceiling finish work is completed where the sprinkler is installed and there no longer is a potential for mechanical damage to the sprinkler operating elements.** To remove the bulb shields, simply pull the ends of the shields apart where they are snapped together. To remove caps from frame style sprinklers, turn the caps slightly and pull them off the sprinklers. **SPRINKLER CAPS OR BULB SHIELDS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!** Retain a protective cap or shield in the spare sprinkler cabinet.
6. For residential flush sprinklers, the ceiling ring can now be installed onto the sprinkler body. Align the ceiling ring with the sprinkler body and thread on or push it on until the flange touches the ceiling. Note the maximum vertical adjustment is 1/2" (12,7 mm) for sprinkler VK420 and 5/8" for VK476. DO NOT MODIFY THE UNIT. If necessary, re-cut the sprinkler drop nipples as required.
7. For residential concealed sprinklers, the cover plate assembly can now be attached.
 - a. Remove the cover plate assembly from the protective box, taking care not to damage the assembly.
 - b. From below the ceiling, gently place the base of the cover plate assembly over the sprinkler protruding through the opening in the ceiling or wall.
 - c. Carefully push the cover plate assembly onto the sprinkler, using even pressure with the palm of the hand, until the unfinished brass flange of the cover plate base touches the ceiling or wall.
 - d. The maximum adjustment available for residential concealed sprinklers is 1/2" (12.7 mm) [1/4" (6.4 mm) for sprinkler VK480]. DO NOT MODIFY THE UNIT. If necessary, re-cut the sprinkler nipples.

NOTE: If it is necessary to remove the entire sprinkler unit, the system must be taken out of service. See Maintenance instructions below and follow all warnings and instructions.

5. OPERATION

During fire conditions, the operating element fuses or shatters (depending on the type of sprinkler), releasing the pip cap and sealing assembly. Water flowing through the sprinkler orifice strikes the sprinkler deflector or flow shaper, forming a uniform, high-wall wetting spray pattern to extinguish or control the fire.



TECHNICAL DATA

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6. INSPECTIONS, TESTS AND MAINTENANCE

Refer to NFPA 25 for Inspection, Testing and Maintenance requirements. **NOTICE:** The owner is responsible for having the fire-protection system and devices inspected, tested, and maintained in proper operating condition in accordance with this guide, and applicable NFPA standards. In addition, the Authority Having Jurisdiction may have additional maintenance, testing, and inspection requirements that must be followed.

- A. Sprinklers must be inspected on a regular basis for signs of corrosion, mechanical damage, obstructions, paint, etc. Frequency of the inspections may vary due to corrosive atmospheres, water supplies, and activity around the device.
- B. Sprinklers or cover plate assemblies that have been field painted, caulked, or mechanically damaged must be replaced immediately. Sprinklers showing signs of corrosion shall be tested and/or replaced immediately as required. Installation standards require sprinklers to be tested and, if necessary, replaced immediately after a specified term of service. Refer to NFPA 25 and the Authorities Having Jurisdiction for the specified period of time after which testing and/or replacement of residential sprinklers is required. Never attempt to repair or reassemble a sprinkler. Sprinklers and cover assemblies that have operated cannot be reassembled or re-used, but must be replaced. When replacement is necessary, use only new sprinklers and cover assemblies with identical performance characteristics.
- C. The sprinkler discharge pattern is critical for proper fire protection. Nothing should be hung from, attached to, or otherwise obstruct the discharge pattern of the sprinkler. All obstructions must be immediately removed or, if necessary, additional sprinklers installed.
- D. When replacing existing sprinklers, the system must be removed from service. Refer to the appropriate system description and/or valve instructions. Prior to removing the system from service, notify all Authorities Having Jurisdiction. Consideration should be given to employment of a fire patrol in the effected area.
 1. Remove the system from service, drain all water, and relieve all pressure on the piping.
 - 2a. For frame-style sprinklers, use the special sprinkler wrench and remove the old sprinkler by turning it counterclockwise to unthread it from the piping.
 - 2b. *For residential flush pendent and concealed style sprinklers: Remove the ceiling ring or cover plate assembly before unthreading the sprinkler body from the piping. To remove a ceiling ring, grasp it from below the ceiling and gently turn it counterclockwise. Cover plates can be removed either by gently unthreading them or pulling them off the sprinkler body (depends on the sprinkler model used). After the ceiling ring or cover plate assembly has been removed from the sprinkler, use the sprinkler wrench to unthread the sprinkler from the piping. NOTE: For flush and concealed sprinklers with protective shells, the internal diameter of the special flush and concealed sprinkler installation wrench is designed for use with the sprinkler contained within the shell. Place a plastic protective shell (from the spare sprinkler cabinet) over the sprinkler to be removed and then fit the sprinkler wrench over the shell. Exception: Concealed sprinklers VK457, VK458, VK468, VK474, and VK4570 are removed without the plastic cap.*
 3. Follow instructions in section 4B. Installation Instructions to install the new unit. Be sure the replacement sprinkler is the correct model and style, with the appropriate K-Factor, temperature rating, and response characteristics. A fully stocked sprinkler cabinet should be provided for this purpose. *(For flush or concealed style sprinklers, stock of spare ceiling rings or cover plates should also be available in the spare sprinkler cabinet.)*
 4. Place the system back in service and secure all valves. Check for and repair all leaks.
- E. Sprinkler systems that have been subjected to a fire must be returned to service as soon as possible. The entire system must be inspected for damage, and repaired or replaced as necessary. Sprinklers that have been exposed to corrosive products of combustion or high ambient temperatures, but have not operated, should be replaced. Refer to the Authority Having Jurisdiction for minimum replacement requirements.

7. AVAILABILITY

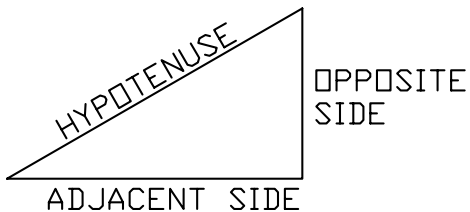
Viking Residential Sprinklers are available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

8. GUARANTEE

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

	TECHNICAL DATA	FREEDOM® RESIDENTIAL SPRINKLER INSTALLATION GUIDE
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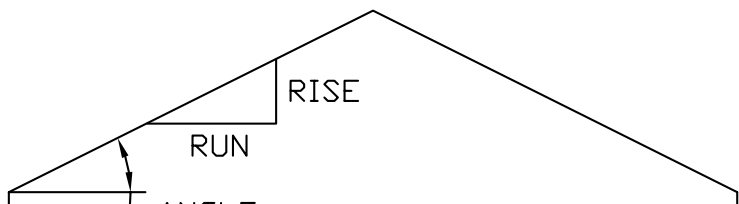


TANGENT =
 OPPOSITE SIDE (RISE)
 ADJACENT SIDE (RUN)

$$\frac{\text{RISE}}{\text{RUN}} = \text{TANGENT}$$

$$\text{ANGLE} = \text{TAN}^{-1} \left(\frac{\text{RISE}}{\text{RUN}} \right)$$

$$\text{SLOPE DISTANCE} = \sqrt{\langle \text{RISE} \rangle^2 + \langle \text{RUN} \rangle^2}$$



RISE	RUN	TANGENT	ANGLE	SLOPE DISTANCE
2	12	.1666	9.45°	12.1
3	12	.2500	14°	12.3
4	12	.3333	18.4°	12.6
5	12	.4166	22.6°	13
6	12	.5000	26.5°	13.4
7	12	.5833	30.2°	13.8
8	12	.6666	33.6°	14.4
9	12	.7500	36.8°	15
10	12	.8333	39.8°	15.6
11	12	.9166	42.5°	16.2
12	12	1	45°	16.97

Table 2
 Rise Over Run Conversion to Degrees of Slope

	TECHNICAL DATA	FREEDOM® RESIDENTIAL SPRINKLER INSTALLATION GUIDE
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**SPACING OF RESIDENTIAL SPRINKLERS LISTED FOR USE
BELOW SLOPED CEILINGS UP TO AN 8/12 (33.7°) PITCH**
 (Refer to the appropriate residential sprinkler technical data page for listings.)

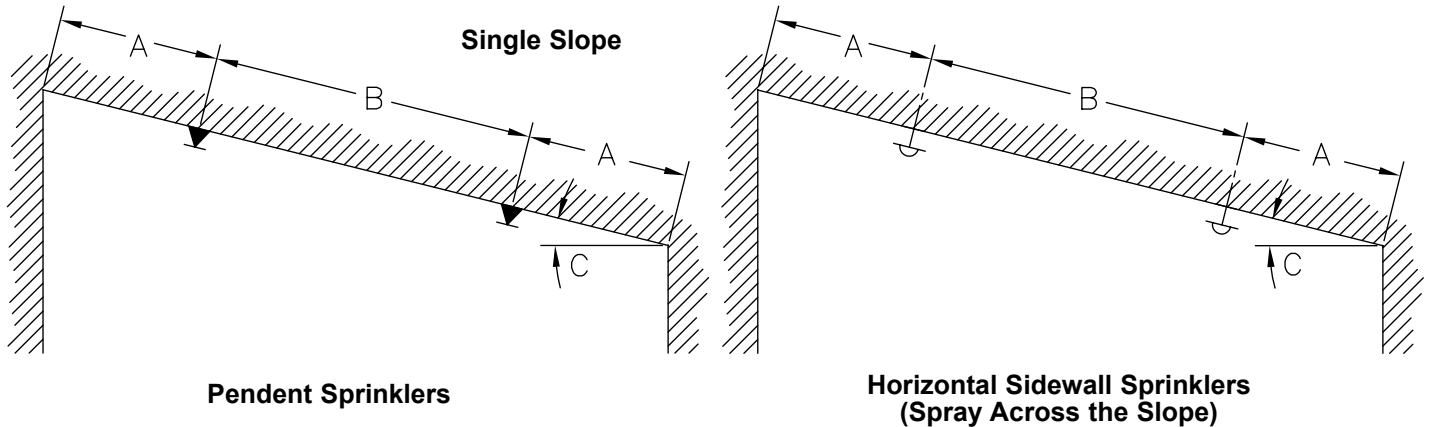


Figure 1

- (A) One-half listed spacing of sprinkler maximum, 0'-4" (0-102 mm) minimum.
- (B) Listed spacing of sprinkler, maximum, 8'-0" (2.4 m) minimum.
- (C) Where angle "C" is greater than an 8/12 (33.7°) pitch, see Figure 2 below.

**SPACING OF RESIDENTIAL SPRINKLERS BELOW SLOPED
CEILINGS WITH GREATER THAN 8/12 (33.7°) PITCH**
 (NOTE: Refer to NFPA 13D or NFPA 13R, and the Authority Having Jurisdiction.)

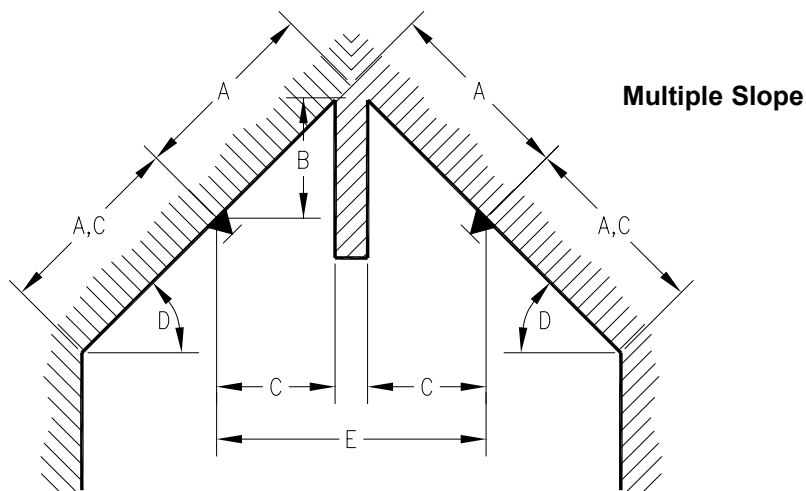


Figure 2

- (A) One-half listed spacing of sprinkler, maximum.
- (B) 3'-0" (.91 m) maximum.
- (C) 0'-4" (0-102 mm) minimum.
- (D) Slopes greater than an 8/12 (33.7°) pitch.
- (E) For distance less than 8'-0" (2.4 m), baffle required.



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SPACING OF RESIDENTIAL SPRINKLERS LISTED FOR USE BELOW SLOPED CEILINGS UP TO AN 8/12 (33.7°) PITCH

(Refer to the appropriate residential sprinkler technical data page for listings.)

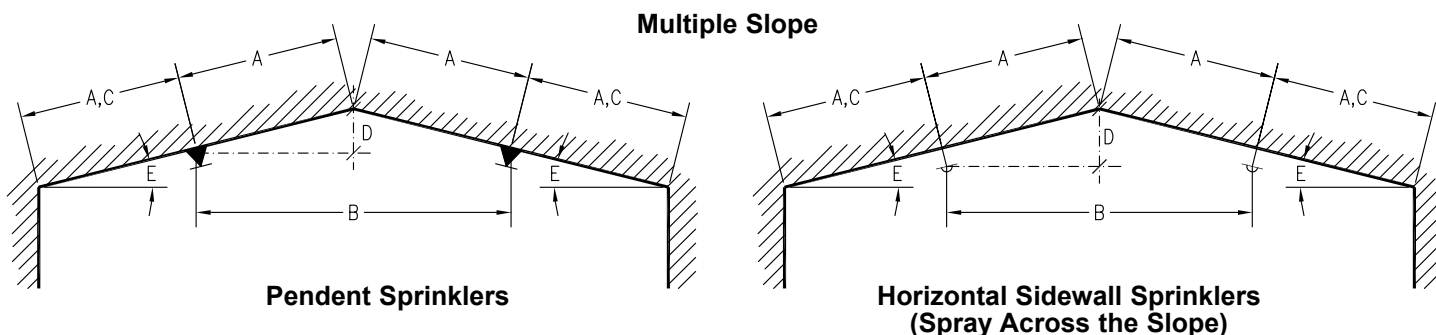


Figure 3

- (A) One-half listed spacing of sprinkler, maximum.
- (B) 8'-0" (2.4 m) minimum.
- (C) 0'-4" (0-102 mm) minimum.
- (D) 3'-0" (.91 m) maximum.
- (E) Acceptable for slopes of 0/12 to 8/12 (0° to 33.7°) pitch.

SPACING OF RESIDENTIAL PENDENT SPRINKLERS AT PEAK OF SLOPED CEILINGS WITH PITCH LESS THAN 8/12 (33.7°)

(Refer to the appropriate residential sprinkler technical data page for listings.)

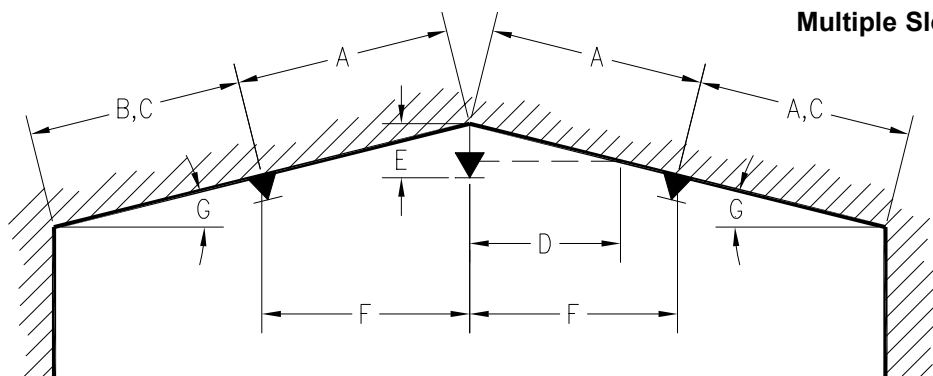


Figure 4

- (A) Listed spacing of sprinkler, maximum.
- (B) One-half listed spacing of sprinkler, maximum.
- (C) 0'-4" minimum.
- (D) Refer to page 10 for minimum distance between sprinkler and intersecting sloped ceiling.
- (E) Refer to the appropriate residential sprinkler technical data page for deflector distance below ceiling.
- (F) 8'-0" minimum.
- (G) Reference: 4/12 (18.0°) pitch maximum for 12' (3.7 m) spacing.
 2.5/12 (12.0°) pitch maximum for 14' (4.3 m) spacing.
 2/12 (10.0°) pitch maximum for 16' (4.9 m) spacing.
 2/12 (10.0°) pitch maximum for 18' (5.5 m) spacing.
 1.9/12 (9.0°) pitch maximum for 20' (6.1 m) spacing.
 Angles based on sprinklers installed 0'-4" (0-102 mm) from peak.

NOTE: Whenever possible, utilize design as shown in Figure 3 above.



TECHNICAL DATA

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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

SPACING OF RESIDENTIAL SPRINKLERS BELOW SLOPED CEILINGS WITH GREATER THAN 8/12 (33.7°) PITCH WITH NO BAFFLE AND A MAXIMUM OF 2 SPRINKLERS IN THE ROOM
(NOTE: Refer to NFPA 13D or NFPA 13R, and the Authority Having Jurisdiction.)

Multiple Slope

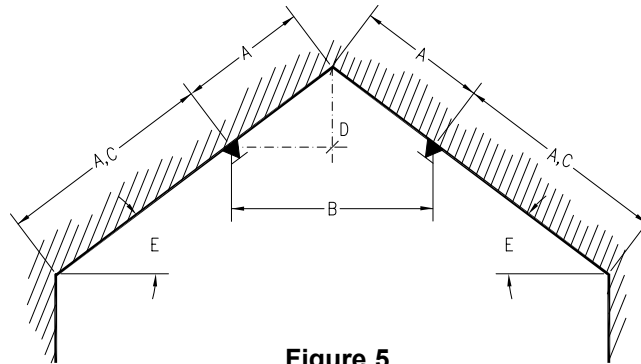


Figure 5

- (A) One-half listed spacing of sprinkler, maximum.
- (B) 8'-0" (2.4 m) minimum.
- (C) 0'-4" (0-102 mm) minimum.
- (D) 3'-0" (.91 m) maximum.
- (E) Acceptable for slopes greater than an 8/12 (33.7°) pitch.
- (F) When this design is used, refer to the appendices of NFPA 13D or NFPA 13R, and the Authority Having Jurisdiction regarding the number of design sprinklers to hydraulically calculate.

SPACING OF RESIDENTIAL SPRINKLERS BELOW CEILINGS WITH SLOPES EXCEEDING 8/12 (33.7°) PITCH WITH NO BAFFLE AND A MAXIMUM OF 3 SPRINKLERS IN THE ROOM
(NOTE: Refer to NFPA 13D or NFPA 13R, and the Authority Having Jurisdiction.)

Multiple Slope

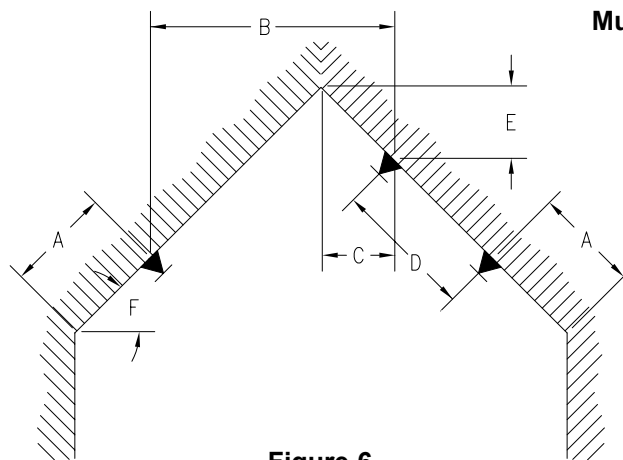


Figure 6

- (A) 0'-4" (0-102 mm) minimum, to one-half listed spacing, maximum.
- (B) One-half listed spacing, maximum, 8'-0" (2.4 m) minimum.
- (C) 0'-4" (0-102 mm) minimum.
- (D) Listed spacing maximum, 8'-0" (2.4 m) minimum.
- (E) 3'-0" (.91 m) maximum.
- (F) Slopes greater than 8/12 up to a 21/12 (33.7° up to 60°) pitch.

NOTES: In addition to the above limits, rooms requiring this type of installation must be hydraulically calculated to supply a minimum of three operating sprinklers. Layout similar for horizontal sidewall sprinklers with throw across slope. Refer to the appropriate residential sprinkler technical data sheets.



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SPACING OF RESIDENTIAL SPRINKLERS BELOW CEILINGS WITH SLOPES EXCEEDING 8/12 (33.7°) PITCH WITH NO BAFFLE AND A MAXIMUM OF 2 SPRINKLERS IN THE ROOM
(NOTE: Refer to NFPA 13D or NFPA 13R, and the Authority Having Jurisdiction.)

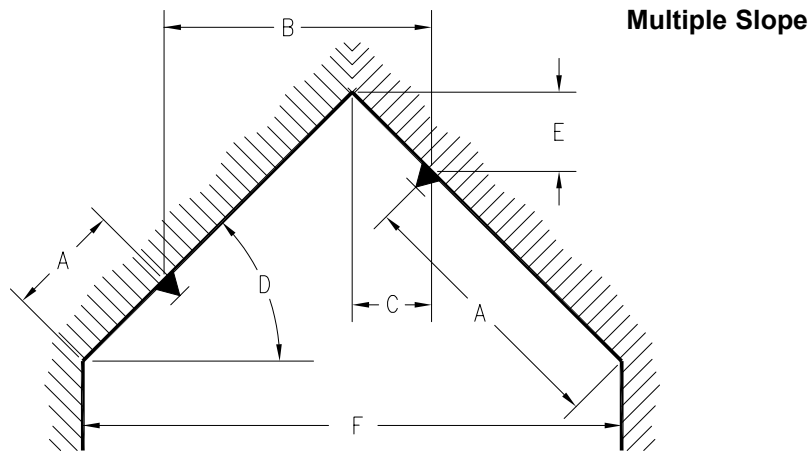


Figure 7

- (A) 0'-4" (0-102 mm) minimum, to one-half listed spacing, maximum.
- (B) One-half listed spacing, maximum, 8'-0" (2.4 m) minimum.
- (C) 0'-4" (0-102 mm) minimum.
- (D) Slopes greater than 8/12 pitch up to a 21/12 (33.7° up to a 60°) pitch.
- (E) 3'-0" (.91 m) maximum.
- (F) When dimension "F" exceeds 16' (4.9 m), utilize design configuration shown in Figure 6.

NOTES: Layout similar for horizontal sidewall sprinklers with throw across slope. Refer to the appropriate residential sprinkler technical data sheets.

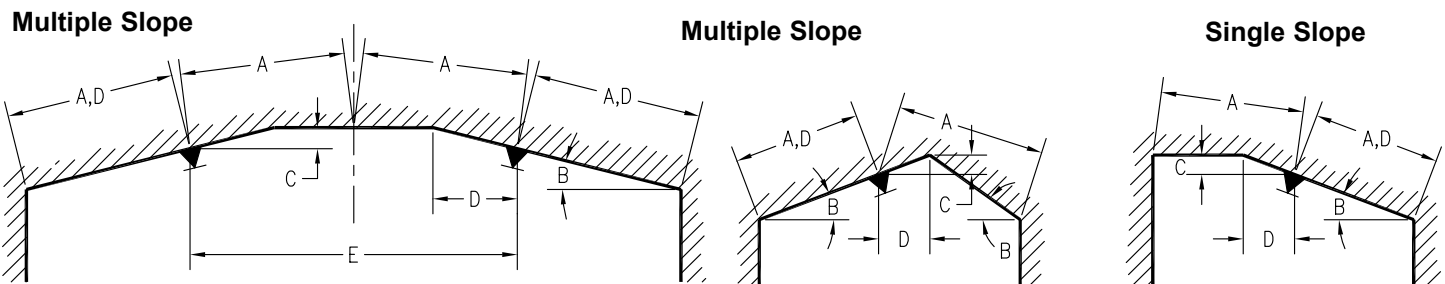


Figure 8

- (A) One-half listed spacing, maximum.
- (B) Refer to the appropriate residential sprinkler technical data pages for listings of sprinklers for use below slopes up to and including a 8/12 (33.7°) pitch.
- (C) 3'-0" (.91 m) maximum.
- (D) 0'-4" (0-102 mm) minimum.
- (E) 8'-0" (2.4 m) minimum without baffle.

NOTES: Layout similar for horizontal sidewall sprinklers with throw across slope. Refer to the appropriate residential sprinkler technical data sheets.

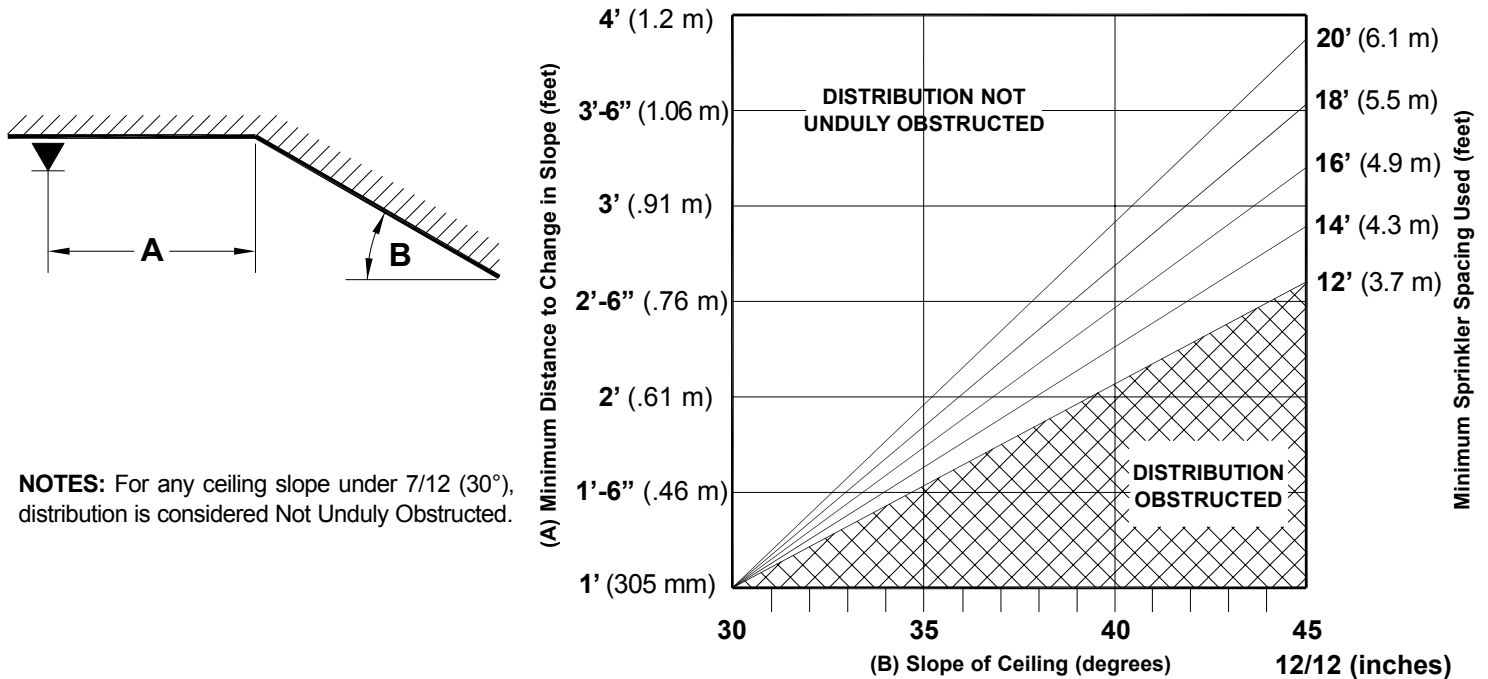


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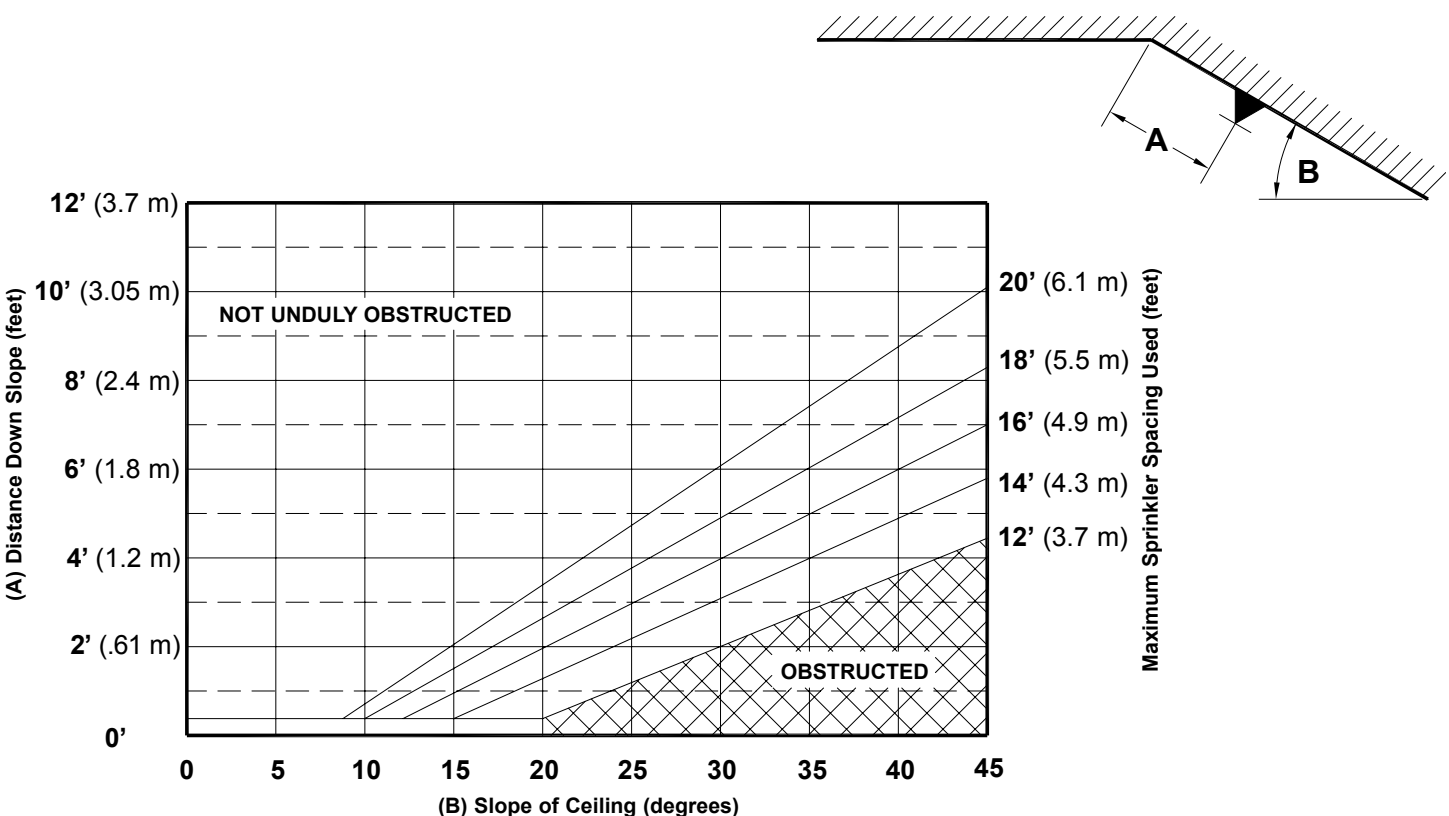
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MINIMUM DISTANCE BETWEEN SPRINKLER AND INTERSECTING SLOPED CEILINGS



MAXIMUM DISTANCE DOWN SLOPE TO AVOID OBSTRUCTION TO SPRINKLER DISCHARGE



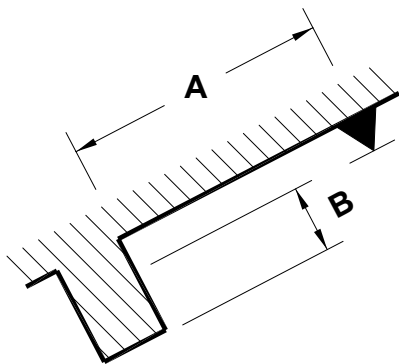
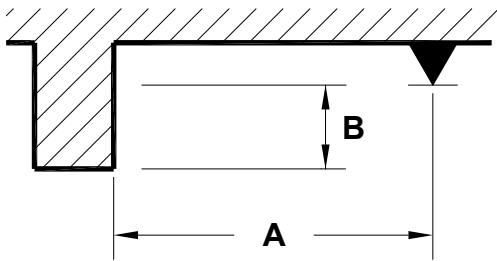


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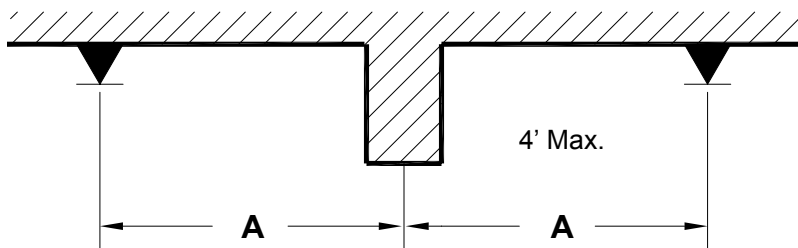
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AVOIDING OBSTRUCTIONS TO SPRINKLER DISCHARGE
 (Obstruction rules for residential sprinklers are found in section 8.10 of the 2010 edition of NFPA 13.)
Positioning Residential Pendent Sprinklers - Obstructions at the Ceiling

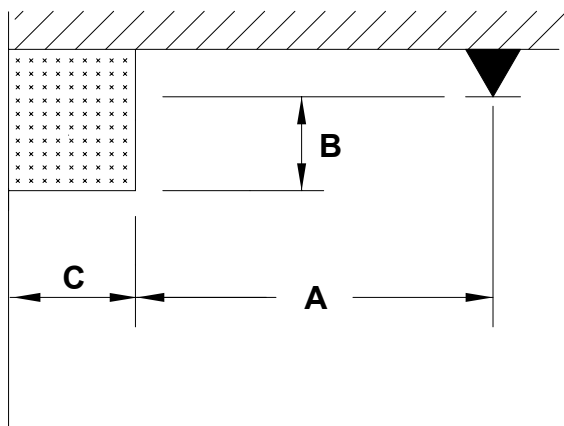


Distance from Sprinkler to Side of Ceiling Obstruction (Dimension A)	Maximum Distance from Deflector to Bottom of Ceiling Obstruction (Dimension B)	
	Inches	mm
Less than 1 ft. 6 in. (Less than 457 mm)	0	0
1 ft. 6 in. to less than 3 ft. (457 mm to less than .94 m)	1	25.4
3 ft. to less than 4 ft. (.91 m to less than 1.2 m)	3	76
4 ft. to less than 4 ft. 6 in. (1.2 m to less than 1.37 m)	5	127
4 ft. 6 in. to less than 6 ft. (1.37 m to less than 1.8 m)	7	178
6 ft. to less than 6 ft. 6 in. (1.8 m to less than 2 m)	9	229
6 ft. 6 in. to less than 7 ft. (2 m to less than 2.1 m)	11	279
7 ft. or greater (2.1 m or greater)	14	356



Residential pendent sprinklers may be located on opposite sides of continuous obstructions up to 4 ft. (1.2 m) wide at the ceiling, as long as the distance from the centerline of the obstruction to the sprinklers (A) does not exceed one-half the maximum spacing allowed between sprinklers.

Positioning Residential Pendent Sprinklers - Obstructions Along Walls



- (A) Distance from centerline of sprinkler to side of obstruction.
- (B) Distance from deflector to bottom of obstruction.
- (C) Width of the obstruction.

Obstructions up to 30 in. (.8 m) wide (C) located against the wall are permitted to be protected when (A) is greater than or equal to (C) minus 8 in. (.2 m) plus (B).

$$C \leq 30 \text{ in.} \quad \text{for metric } C \leq .8 \text{ m}$$

$$A \geq (C - 8 \text{ in.}) + B \quad \text{for metric } A \geq (C - .2 \text{ m}) + B$$

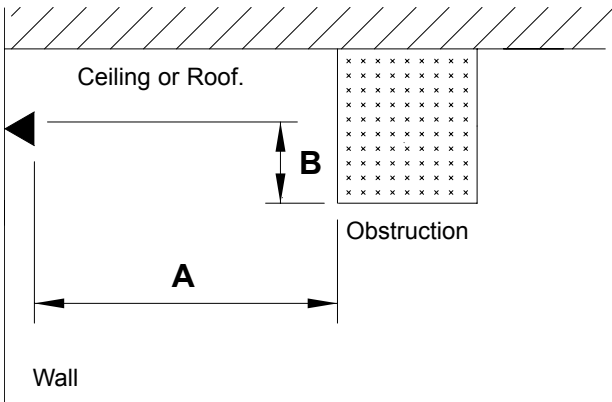
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AVOIDING OBSTRUCTIONS TO SPRINKLER DISCHARGE

(Obstruction rules for residential sprinklers are found in section 8.10 of the 2010 edition of NFPA 13.)

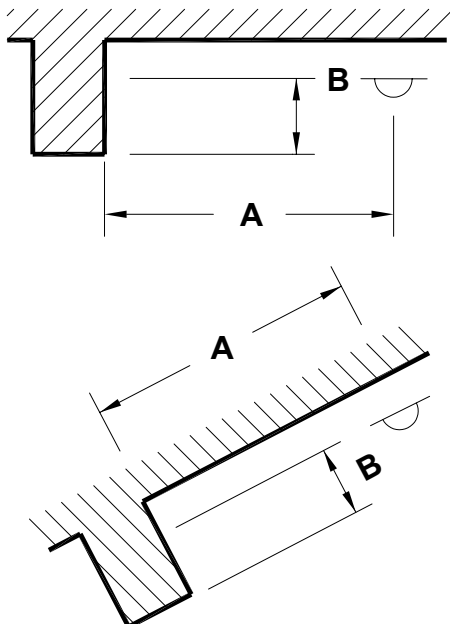
Positioning Residential Horizontal Sidewall Sprinklers - Obstructions at the Ceiling



(A) Distance from sprinkler to side of obstruction.
 (B) Distance from deflector to bottom of obstruction.

Distance from Sprinkler to Side of Ceiling Obstruction (Dimension A)	Maximum Distance from Deflector to Bottom of Ceiling Obstruction (Dimension B)	
	Inches	mm
Less than 8 ft. (Less than 2.4 m)	No Obstructions Allowed	
8 ft. to less than 10 ft. (2.4 m to less than 3.05 m)	1	25.4
10 ft. to less than 11 ft. (3.05 m to less than 3.35 m)	2	50.8
11 ft. to less than 12 ft. (3.35 m to less than 3.7 m)	3	76
12 ft. to less than 13 ft. (3.7 m to less than 4 m)	4	102
13 ft. to less than 14 ft. (4 m to less than 4.3 m)	6	152
14 ft. to less than 15 ft. (4.3 m to less than 4.6 m)	7	178
15 ft. to less than 16 ft. (4.6 m to less than 4.9 m)	9	229
16 ft. to less than 17 ft. (4.9 m to less than 5.2 m)	11	279
17 ft. or greater (5.2 m or greater)	14	356

Positioning Residential Horizontal Sidewall Sprinklers - Obstructions Along Walls



Distance from Sprinkler to Side of Obstruction Along Wall (Dimension A)	Maximum Distance from Deflector to Bottom of Obstruction (Dimension B)	
	Inches	mm
Less than 1 ft. 6 in. (Less than 457 mm)	0	0
1 ft. 6 in. to less than 3 ft. (457 mm to less than .94 m)	1	25.4
3 ft. to less than 4 ft. (.91 m to less than 1.2 m)	3	76
4 ft. to less than 4 ft. 6 in. (1.2 m to less than 1.37 m)	5	127
4 ft. 6 in. to less than 6 ft. (1.37 m to less than 1.8 m)	7	178
6 ft. to less than 6 ft. 6 in. (1.8 m to less than 2 m)	9	229
6 ft. 6 in. to less than 7 ft. (2 m to less than 2.1 m)	11	279
7 ft. or greater (2.1 m or greater)	14	356

(A) Distance from sprinkler to side of obstruction.
 (B) Distance from deflector to bottom of obstruction.



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LOCATING RESIDENTIAL SPRINKLERS NEAR HEAT SOURCES

Ordinary temperature rated residential sprinklers (135 °F to 170 °F rated) are only to be installed where the maximum ambient ceiling temperature will not exceed 100 °F. Where the maximum ambient ceiling temperature will be from 101 °F to 150 °F, use intermediate temperature rated residential sprinklers (175 °F to 225 °F rated).

Residential sprinklers must be positioned a sufficient distance away from heat sources that include fireplaces, stoves, kitchen ranges, wall ovens, hot water pipes, water heaters, furnaces and associated flues and ducts, and light fixtures. The following minimum distances must be maintained for both ordinary and intermediate temperature rated residential sprinklers as indicated.

Heat Source	Minimum Distance from Edge of Source to Ordinary Temperature Rated Sprinkler		Minimum Distance from Edge of Source to Intermediate Temperature Rated Sprinkler	
	Inches	metric	Inches	metric
Side of open or recessed fireplace	36	.91 m	12	305 mm
Front of recessed fire place	60	1.5 m	36	.91 m
Coal- or wood-burning stove	42	1.1 m	12	305 mm
Kitchen range	18	457 mm	9	229 mm
Wall oven	18	457 mm	9	229 mm
Hot air flues	18	457 mm	9	229 mm
Uninsulated heat ducts	18	457 mm	9	229 mm
Uninsulated hot water pipes	12	305 mm	6	152 mm
Side of ceiling- or wall-mounted hot air diffusers	24	.61 m	12	305 mm
Front of wall-mounted hot air diffusers	36	.91 m	18	457 mm
Hot water heater or furnace	6	152 mm	3	76 mm
Light fixture less than 250W	6	152 mm	3	76 mm
Light fixture 250W to 499W	12	305 mm	6	152 mm
Where residential sprinklers will be exposed to the rays of the sun passing through glass or plastic skylights, use intermediate temperature rated sprinklers.				
When locating residential sprinklers in an unventilated concealed compartment, under an unventilated attic or uninsulated roof, where the maximum ambient temperature does not exceed 150 °F, use intermediate temperature rated sprinklers.				



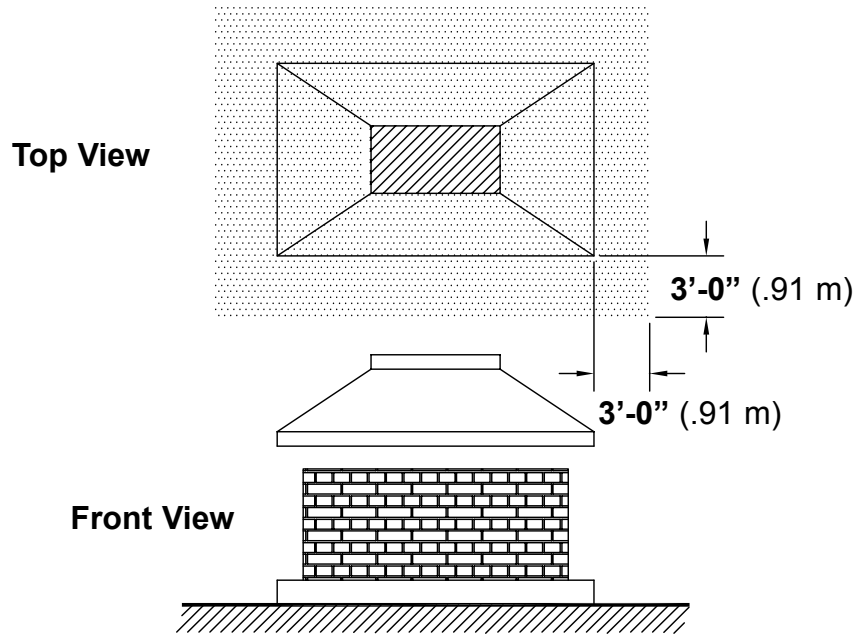
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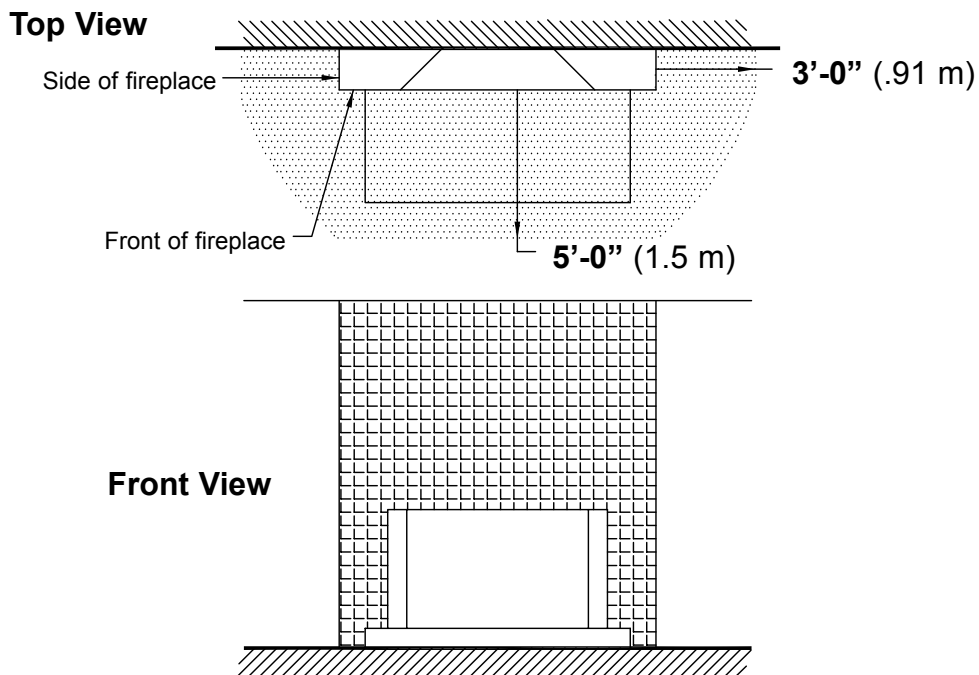
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NOTE: The dimensions shown are intended to apply to residential sprinklers installed in ceilings above fireplaces used to burn products that cause elevated temperatures at or near the ceiling in areas surrounding the fireplace. The recommendations should not be construed to apply to decorative non-opening fireplaces such as gas fire units that will not cause elevated temperatures at the ceiling.



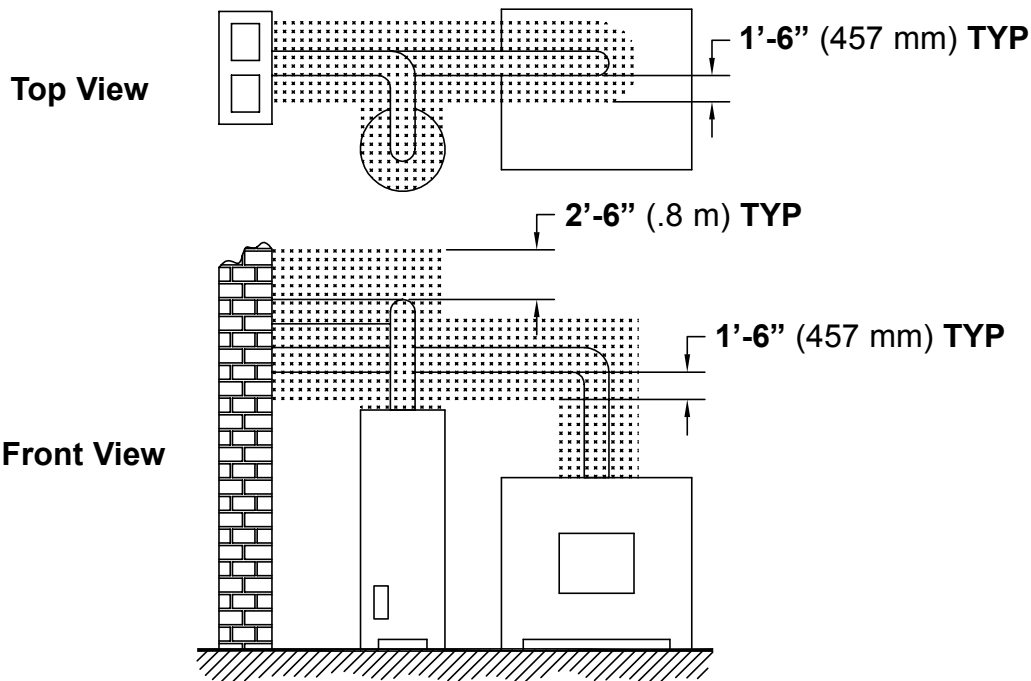
Sprinklers near an open hearth fireplace must be located outside of the shaded area or be intermediate degree rated.



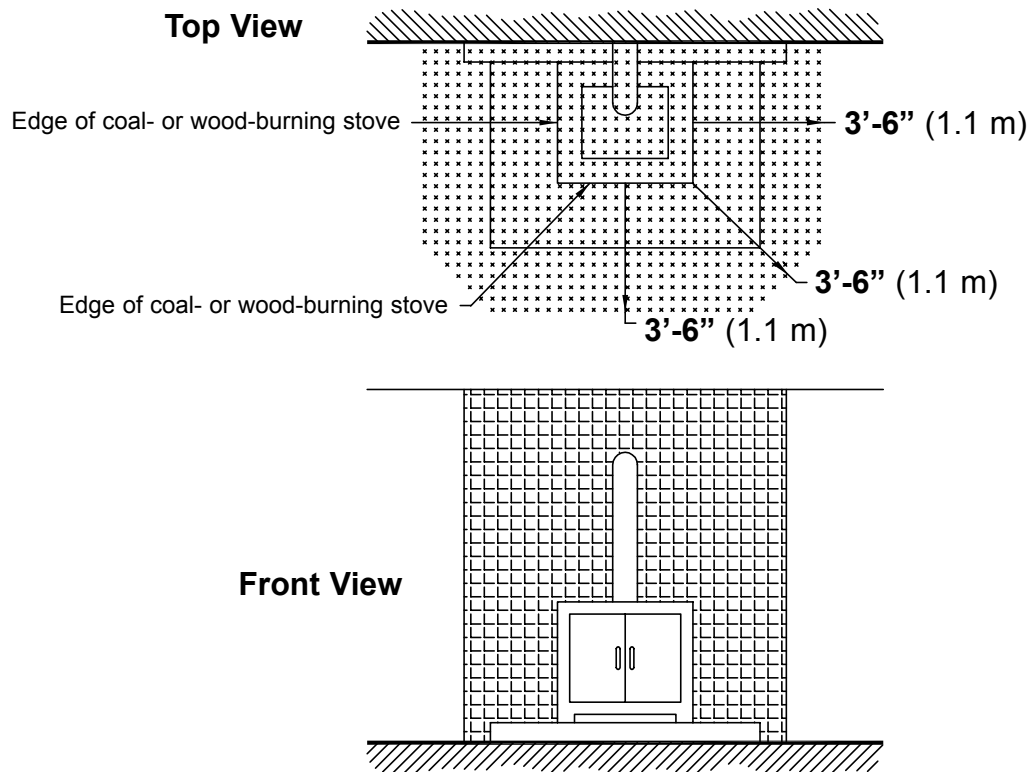
Sprinklers near a recessed hearth fireplace must be located outside of the shaded area [at least 3'-0" (.91 m)] from the side of a recessed fireplace and at least 5'-0" (1.5 m) from the front) or be intermediate degree rated.

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Sprinklers near a furnace or water heater must be located outside of the shaded area or be intermediate degree rated.



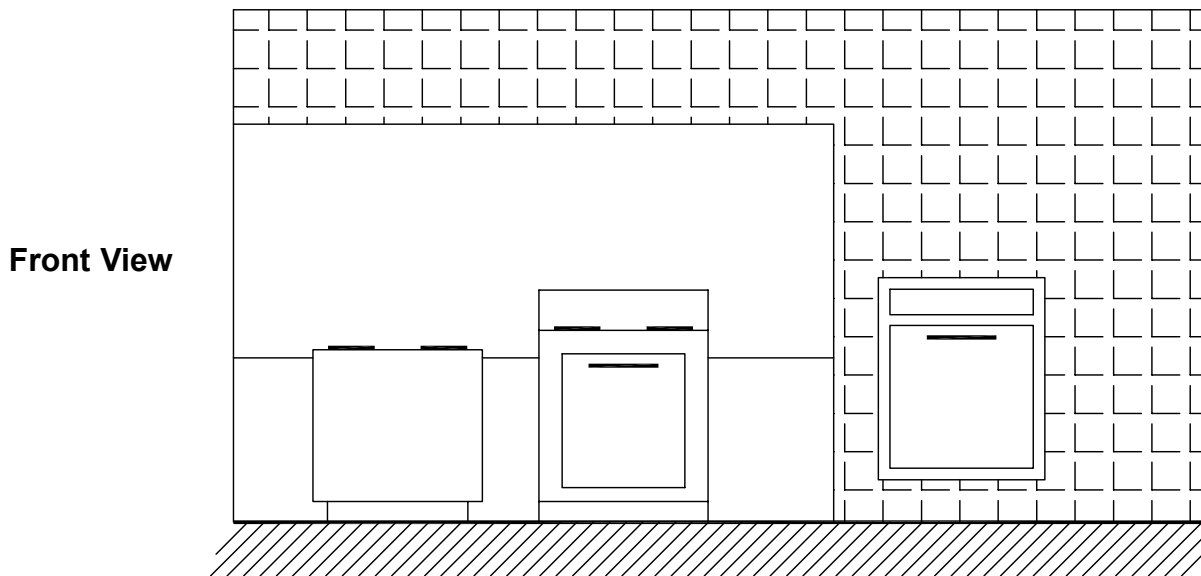
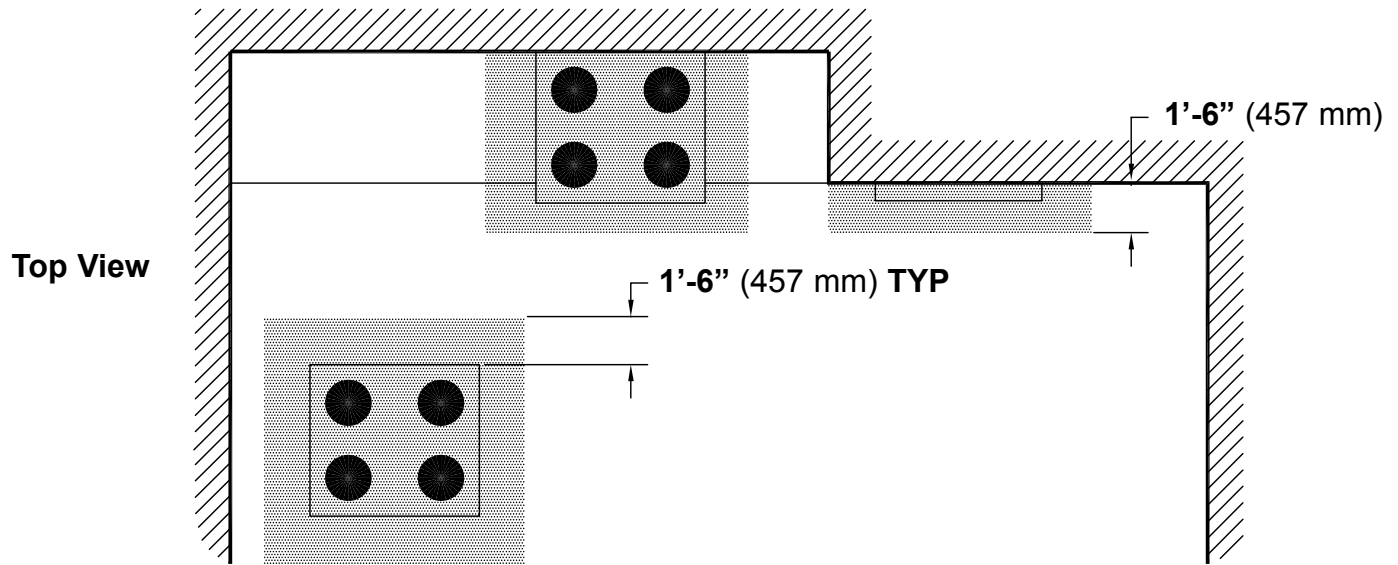
Sprinklers near a coal- or wood-burning stove must be located outside of shaded area or be intermediate degree rated.



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Sprinklers near a range or wall oven must be located outside of shaded areas or be intermediate degree rated.



BULLETIN

CARE AND HANDLING OF SPRINKLERS

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

SPRINKLERS ARE FRAGILE - HANDLE WITH CARE!

General Handling and Storage:

- Store sprinklers in a cool, dry place.
- Protect sprinklers during storage, transport, handling, and after installation.
- Use the original shipping containers. DO NOT place sprinklers loose in boxes, bins, or buckets.
- Keep sprinklers separated at all times. DO NOT allow metal parts to contact sprinkler operating elements.

For Pre-Assembled Drops:

- Protect sprinklers during handling and after installation.
- For recessed assemblies, use the protective sprinkler cap (Viking Part Number 10364).

Sprinklers with Protective Shields or Caps:

- DO NOT remove shields or caps until after sprinkler installation and there no longer is potential for mechanical damage to the sprinkler operating elements.
- **Sprinkler shields or caps MUST be removed BEFORE placing the system in service!**
- Remove the sprinkler shield by carefully pulling it apart where it is snapped together.
- Remove the cap by turning it slightly and pulling it off the sprinkler.

Sprinkler Installation:

- DO NOT use the sprinkler deflector or operating element to start or thread the sprinkler into a fitting.
- **Use only the designated sprinkler head wrench!** Refer to the current sprinkler technical data page to determine the correct wrench for the model of sprinkler used.
- DO NOT install sprinklers onto piping at the floor level.
- Install sprinklers after the piping is in place to prevent mechanical damage.
- DO NOT allow impacts such as hammer blows directly to sprinklers or to fittings, pipe, or couplings in close proximity to sprinklers. Sprinklers can be damaged from direct or indirect impacts.
- DO NOT attempt to remove drywall, paint, etc., from sprinklers.
- **Take care not to over-tighten the sprinkler and/or damage its operating parts!**

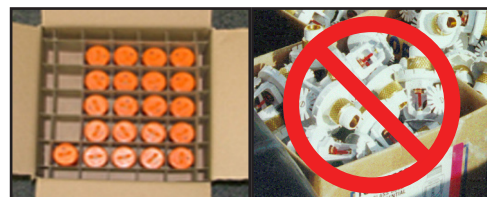
Maximum Torque:

- 1/2" NPT: 14 ft-lbs. (19.0 N-m)**
- 3/4" NPT: 20 ft-lbs. (27.1 N-m)**
- 1" NPT: 30 ft-lbs. (40.7 N-m)**



CORRECT
(Original container used)

INCORRECT
(Placed loose in box)



CORRECT
(Protected with caps)

INCORRECT
(Protective caps not used)



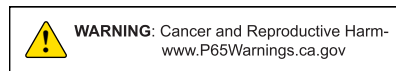
CORRECT
(Piping is in place at the ceiling)

INCORRECT
(Sprinkler at floor level)



CORRECT
(Special installation wrenches)

INCORRECT
(Designated wrench not used)



! WARNING

Any sprinkler with a loss of liquid from the glass bulb or damage to the fusible element should be destroyed. Never install sprinklers that have been dropped, damaged, or exposed to temperatures exceeding the maximum ambient temperature allowed. Sprinklers that have been painted in the field must be replaced per NFPA 13. Protect sprinklers from paint and paint overspray in accordance with the installation standards. Do not clean sprinklers with soap and water, ammonia, or any other cleaning fluid. Do not use adhesives or solvents on sprinklers or their operating elements.

Refer to the appropriate technical data page and NFPA standards for complete care, handling, installation, and maintenance instructions. For additional product and system information Viking data pages and installation instructions are available on the Viking Web site at www.vikinggroupinc.com.



BULLETIN

CARE AND HANDLING
OF SPRINKLERS

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

PROTECTIVE SPRINKLER SHIELDS AND CAPS

General Handling and Storage:

Many Viking sprinklers are available with a plastic protective cap or shield temporarily covering the operating elements. The snap-on shields and caps are factory installed and are intended to help protect the operating elements from mechanical damage during shipping, storage, and installation. NOTE: It is still necessary to follow the care and handling instructions on the appropriate sprinkler technical data sheets* when installing sprinklers with bulb shields or caps.

WHEN TO REMOVE THE SHIELDS AND CAPS:

NOTE: SHIELDS AND CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!

Remove the shield or cap from the sprinkler only after checking all of the following:

- The sprinkler has been installed*.
- The wall or ceiling finish work is completed where the sprinkler is installed and there no longer is a potential for mechanical damage to the sprinkler operating elements.

SHIELDS AND CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!

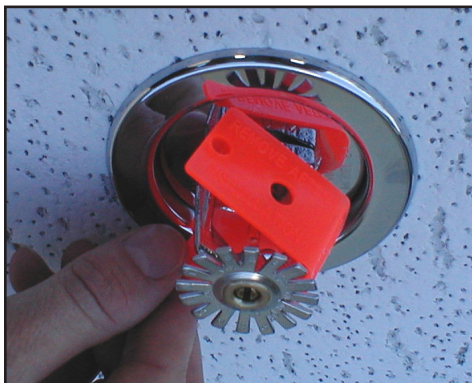


Figure 1: Sprinkler shield being removed from a pendent sprinkler.



Figure 2: Sprinkler cap being removed from a pendent sprinkler.



Figure 3: Sprinkler cap being removed from an upright sprinkler.

HOW TO REMOVE SHIELDS AND CAPS:

No tools are necessary to remove the shields or caps from sprinklers. DO NOT use any sharp objects to remove them! **Take care not to cause mechanical damage to sprinklers when removing the shields or caps.** When removing caps from fusible element sprinklers, use care to prevent dislodging ejector springs or damaging fusible elements. NOTE: Squeezing the sprinkler cap excessively could damage sprinkler fusible elements.

- To remove the shield, simply pull the ends of the shield apart where it is snapped together. Refer to Figure 1.
- To remove the cap, turn it slightly and pull it off the sprinkler. Refer to Figures 2 and 3.

NOTICE

Refer to the current sprinkler technical data page to determine the correct sprinkler wrench for the model of sprinkler used.

WARNING

Never install sprinklers that have been dropped, damaged, or exposed to temperatures in excess of the maximum ambient temperature allowed.

* Refer to the appropriate current technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Web site at www.vikinggroupinc.com.



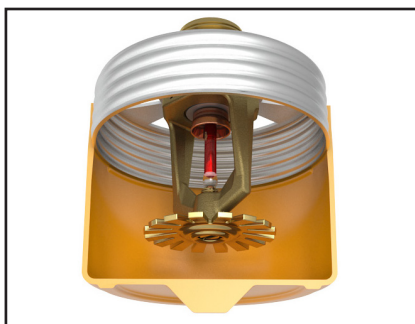
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CONCEALED COVER ASSEMBLIES ARE FRAGILE!
TO ASSURE SATISFACTORY PERFORMANCE OF THE PRODUCT, HANDLE WITH CARE.



Concealed Sprinkler and Adapter
 Assembly with Protective Cap

Concealed Sprinkler and Adapter
 Assembly (Protective Cap Removed)



Cover Plate Assembly
 (Pendent Cover 12381 shown)



GENERAL HANDLING AND STORAGE INSTRUCTIONS:

- Do not store in temperatures exceeding 100 °F (38 °C). Avoid direct sunlight and confined areas subject to heat.
- Protect sprinklers and cover assemblies during storage, transport, handling, and after installation.
 - Use original shipping containers.
 - Do not place sprinklers or cover assemblies loose in boxes, bins, or buckets.
- Keep the sprinkler bodies covered with the protective sprinkler cap any time the sprinklers are shipped or handled, during testing of the system, and while ceiling finish work is being completed.
- Use only the designated Viking recessed sprinkler wrench (refer to the appropriate sprinkler data page) to install these sprinklers. **NOTE:** The protective cap is temporarily removed during installation and then placed back on the sprinkler for protection until finish work is completed.
- Do not over-tighten the sprinklers into fittings during installation.
- Do not use the sprinkler deflector to start or thread the sprinklers into fittings during installation.
- Do not attempt to remove drywall, paint, etc., from the sprinklers.
- Remove the plastic protective cap from the sprinkler before attaching the cover plate assembly. **PROTECTIVE CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!**

Refer to the appropriate current technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Web site at www.vikinggroupinc.com.



BULLETIN

CARE AND HANDLING
OF SPRINKLERS

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

USE THE FOLLOWING PRECAUTIONS WHEN HANDLING WAX-COATED SPRINKLERS

Many of Viking's sprinklers are available with factory-applied wax coating for corrosion resistance. These sprinklers MUST receive appropriate care and handling to avoid damaging the wax coating and to assure satisfactory performance of the product.

General Handling and Storage of Wax-Coated Sprinklers:

- Store the sprinklers in a cool, dry place (in temperatures below the maximum ambient temperature allowed for the sprinkler temperature rating. Refer to Table 1 below.)
- Store containers of wax-coated sprinklers separate from other sprinklers.
- Protect the sprinklers during storage, transport, handling, and after installation.
- Use original shipping containers.
- Do not place sprinklers in loose boxes, bins, or buckets.

Installation of Wax-Coated Sprinklers:

Use only the special sprinkler head wrench designed for installing wax-coated Viking sprinklers (any other wrench may damage the unit).

- Take care not to crack the wax coating on the units.
- For touching up the wax coating after installation, wax is available from Viking in bar form. Refer to Table 1 below. The coating MUST be repaired after sprinkler installation to protect the corrosion-resistant properties of the sprinkler.
- Use care when locating sprinklers near fixtures that can generate heat. Do not install sprinklers where they would be exposed to temperatures exceeding the maximum recommended ambient temperature for the temperature rating used.
- Inspect the coated sprinklers frequently soon after installation to verify the integrity of the corrosion resistant coating. Thereafter, inspect representative samples of the coated sprinklers in accordance with NFPA 25. Close up visual inspections are necessary to determine whether the sprinklers are being affected by corrosive conditions.

TABLE 1

Sprinkler Temperature Rating (Fusing Point)	Wax Part Number	Wax Melting Point	Maximum Ambient Ceiling Temperature ¹	Wax Color
155 °F (68 °C) / 165 °F (74 °C)	02568A	148 °F (64 °C)	100 °F (38 °C)	Light Brown
175 °F (79 °C)	04146A	161 °F (71 °C)	150 °F (65 °C)	Brown
200 °F (93 °C)	04146A	161 °F (71 °C)	150 °F (65 °C)	Brown
220 °F (104 °C)	02569A	170 °F (76 °C)	150 °F (65 °C)	Dark Brown
286 °F (141 °C)	02569A	170 °F (76 °C)	150 °F (65 °C)	Dark Brown

¹ 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.



Never install sprinklers that have been dropped, damaged, or exposed to temperatures in excess of the maximum ambient temperature allowed.

Refer to the appropriate current technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Web site at www.vikinggroupinc.com.



TECHNICAL DATA

SPRINKLER OVERVIEW

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 fire sprinklers consist of a threaded frame with a specific waterway or orifice size and a deflector for distributing water in a specified pattern. A closed or sealed sprinkler refers to a complete assembly, including the thermosensitive operating element. An open sprinkler does not use an operating element and is open at all times. The distribution of water is intended to extinguish a fire or to control its spread.

Viking sprinklers are available in several models and styles. Refer to specific sprinkler technical data pages for available styles, finishes, temperature ratings, thread sizes, and nominal K-Factors for the particular model selected.

2. LISTINGS AND APPROVALS

Refer to the Approval Charts on the appropriate sprinkler technical data page(s) and/or approval agency listings.



WARNING: Cancer and Reproductive Harm
www.P65Warnings.ca.gov

3. TECHNICAL DATA

Pressure Ratings:

Maximum allowable water working pressure is 175 psig (12 Bar) unless rated and specified for high water working pressure [250 psig (17.2 bar)].

Sprinkler Identification:

Viking sprinklers are identified and marked with the word "Viking", the sprinkler identification number (SIN) consisting of "VK" plus a three digit number*, the model letter, and the year of manufacture.

Available Finishes:

Viking sprinklers are available in several decorative finishes. Some models are available with corrosion-resistant coatings or are fabricated from non-corrosive material. Refer to the sprinkler technical data page for additional information.

Available Temperature Ratings:

Viking sprinklers are available in several temperature ratings that relate to a specific temperature classification. Applicable installation rules mandate the use and limitations of each temperature classification. In selecting the appropriate temperature classification, the maximum expected ceiling temperature must be known. When there is doubt as to the maximum temperature at the sprinkler location, a maximum-reading thermometer should be used to determine the temperature under conditions that would show the highest readings to be expected. In addition, recognized installation rules may require a higher temperature classification, depending upon sprinkler location, occupancy classification, commodity classification, storage height, and other hazards. In all cases, the maximum expected ceiling temperature dictates the lowest allowable temperature classification. Sprinklers located immediately adjacent to a heat source may require a higher temperature rating.

K-Factors:

Viking sprinklers are available in several orifice sizes with related K-Factors. The orifice is a tapered waterway and, therefore, the K-Factor given is nominal. Nominal U.S. K-Factors are provided in accordance with the 1999 edition of NFPA 13, Section 3-2.3. Refer to the specific data page for appropriate K-Factor information.

Available Styles:

Viking sprinklers are available for installation in several positions as indicated by a stamping on the deflector. The deflector style dictates the appropriate installation position of the sprinkler; it breaks the solid stream of water issuing from the sprinkler orifice to form a specific spray pattern. The following list indicates the various styles and identification of Viking sprinklers.

UPRIGHT SPRINKLER: A sprinkler intended to be installed with the deflector above the frame so water flows upward through the orifice, striking the deflector and forming an umbrella-shaped spray pattern downward. Marked "SSU" (Standard Sprinkler Upright) or "UPRIGHT" on the deflector.

PENDENT SPRINKLER: A sprinkler intended to be oriented with the deflector below the frame so water flows downward through the orifice, striking the deflector and forming an umbrella-shaped spray pattern downward. Marked "SSP" (Standard Sprinkler Pendent) or "PENDENT" on the deflector.

CONVENTIONAL SPRINKLER: An "old style" sprinkler intended to be installed with the deflector in either the upright or pendent position. The deflector provides a spherical type pattern with 40 to 60 percent of the water initially directed downward and a proportion directed upward. Must be installed in accordance with installation rules for conventional or old style sprinklers. **DO NOT USE AS A REPLACEMENT FOR STANDARD SPRAY SPRINKLERS.** Marked "C U/P" (Conventional Upright/Pendent) on the deflector.

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.



TECHNICAL DATA

SPRINKLER OVERVIEW

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

VERTICAL SIDEWALL (VSW) SPRINKLER: A sprinkler intended for installation near the wall and ceiling. The deflector provides a water spray pattern outward in a quarter-spherical pattern and can be installed in the upright or pendent position with the flow arrow in the direction of discharge. Marked "SIDEWALL" on the deflector with an arrow and the word "FLOW". (Note: Some vertical sidewall sprinklers can only be installed in the upright or pendent position—in this case, the sprinkler will also be marked "UPRIGHT" or "PENDENT".)

HORIZONTAL SIDEWALL (HSW) SPRINKLER: A sprinkler intended for installation near the wall and ceiling. The special deflector provides a water spray pattern outward in a quarter-spherical pattern. Most of the water is directed away from the nearby wall with a small portion directed at the wall behind the sprinkler. The top of the deflector is oriented parallel with the ceiling or roof. The flow arrows point in the direction of discharge. Marked "SIDEWALL" and "TOP" with an arrow and the word "FLOW".

EXTENDED COVERAGE (EC) SPRINKLER: A spray sprinkler designed to discharge water over an area having the maximum dimensions indicated in the individual listings. Maximum area of coverage, minimum flow rate, orifice size, and nominal K-Factor are specified in the individual listings. EC sprinklers are intended for Light-Hazard occupancies with smooth, flat, horizontal ceilings unless otherwise specified. In addition to the above markings, the sprinkler is marked "EC".

QUICK RESPONSE (QR) SPRINKLER: A spray sprinkler with a fast-actuating operating element. The use of quick response sprinklers may be limited due to occupancy and hazard. Refer to the Authority Having Jurisdiction (AHJ) prior to installing.

QUICK RESPONSE EXTENDED COVERAGE (QREC) SPRINKLER: A spray sprinkler designed to discharge water over an area having the maximum dimensions indicated in the individual listing. This is a sprinkler with an operating element that meets the criteria for quick response. QREC sprinklers are only intended for Light Hazard occupancies. The sprinkler is marked "QREC".

FLUSH SPRINKLER: A decorative spray sprinkler intended for installation with a concealed piping system. The unit is mounted flush with the ceiling or wall, with the fusible link exposed. Upon actuation, the deflector extends beyond the ceiling or wall to distribute water discharge. The sprinkler is marked "SSP", "PEND", or "SIDEWALL" and "TOP".

CONCEALED SPRINKLER: A decorative spray sprinkler intended for installation with a concealed piping system. The sprinkler is hidden from view by a cover plate installed flush with the ceiling or wall. During fire conditions, the cover plate detaches, and upon sprinkler actuation, the deflector extends beyond the ceiling or wall to distribute water discharge. The sprinkler is marked "SSP", "PEND", or "SIDEWALL" and "TOP".

RECESSED SPRINKLER: A spray sprinkler assembly intended for installation with a concealed piping system. The assembly consists of a sprinkler installed in a decorative adjustable recessed escutcheon that minimizes the protrusion of the sprinkler beyond the ceiling or wall without adversely affecting the sprinkler distribution or sensitivity. Refer to the appropriate technical data page for allowable sprinkler models, temperature ratings, and occupancy classifications. DO NOT RECESS ANY SPRINKLER NOT LISTED FOR USE WITH THE ESCUTCHEON.

CORROSION-RESISTANT SPRINKLER: A special service sprinkler with non-corrosive protective coatings, or that is fabricated from non-corrosive material, for use in atmospheres that would normally corrode sprinklers.

DRY SPRINKLER: A special-service sprinkler intended for installation on dry pipe systems or wet pipe systems where the sprinkler is subject to freezing temperatures. The unit consists of a sprinkler permanently secured to an extension nipple with a sealed inlet end to prevent water from entering the nipple until the sprinkler operates. The unit MUST be installed in a tee fitting. Dry upright sprinklers are marked with the "B" dimension [distance from the face of the fitting (tee) to the top of the deflector]. Dry pendent and sidewall sprinklers are marked with the "A" dimension [the distance from the face of fitting (tee) to the finished surface of the ceiling or wall].

LARGE DROP SPRINKLER: A type of special application sprinkler used to provide fire control of specific high-challenge fire hazards. Large drop sprinklers are designed to produce an umbrella-shaped spray pattern downward with a higher percentage of "large" water droplets than standard spray sprinklers. The sprinkler has an extra-large orifice with a nominal K-Factor of 11.2. Marked "HIGH CHALLENGE" and "UPRIGHT".

EARLY SUPPRESSION FAST-RESPONSE (ESFR) SPRINKLER: A sprinkler intended to provide fire suppression of specific high-challenge fire hazards through the use of a fast response fusible link, 14.0, 16.8, or 25.2 nominal K-Factor, and special deflector. ESFR sprinklers are designed to produce high-momentum water droplets in a hemispherical pattern below the deflector. This permits penetration of the fire plume and direct wetting of the burning fuel surface while cooling the atmosphere early in the development of a high-challenge fire. Marked "ESFR" and "UPRIGHT" or "PEND".

INTERMEDIATE LEVEL/RACK STORAGE SPRINKLER: A standard spray sprinkler assembly designed to protect its operating element from the spray of sprinklers installed at higher elevations. The assembly consists of a standard or large orifice upright or pendent sprinkler with an integral upright or pendent water shield and guard assembly. Use only those sprinklers that have been tested and listed for use with the assembly. Refer to the technical data page for allowable sprinkler models.

RESIDENTIAL SPRINKLER: A sprinkler intended for use in the following occupancies: one- and two-family dwellings with the fire protection sprinkler system installed in accordance with NFPA 13D; residential occupancies up to four stories in height with the fire protection system installed in accordance with NFPA 13R; and where allowed by the Authority Having Jurisdiction in residential portions of any occupancy with the fire protection system installed in accordance with NFPA 13.



TECHNICAL DATA

SPRINKLER OVERVIEW

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

Residential sprinklers have a unique distribution pattern and utilize a “fast response” heat sensitive operating element. They enhance survivability in the room of fire origin and are designed to provide a life safety environment for a minimum of ten minutes. For this reason, residential sprinklers must not be used to replace standard sprinklers unless tested for and approved by the Authority Having Jurisdiction. In addition to standard markings, the unit is identified as “RESIDENTIAL SPRINKLER” or “RES”.

4. INSTALLATION

Refer to appropriate NFPA Installation Standards.

5. OPERATION

Refer to the appropriate sprinkler technical data page(s).

6. INSPECTIONS, TESTS AND MAINTENANCE

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

7. AVAILABILITY

Viking 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.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers and the appropriate sprinkler general care, installation, and maintenance guide. Vikings 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. The sprinkler technical data page may contain installation requirements specific for the sprinkler model selected. The use of certain types of sprinklers may be limited due to occupancy and hazard. Refer to the Authority Having Jurisdiction prior to installation.



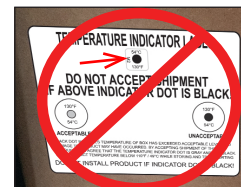
BULLETIN

BEST PRACTICES FOR RESIDENTIAL SPRINKLER HANDLING & INSTALLATION

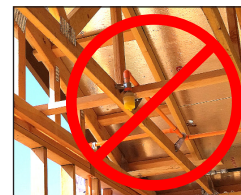
The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
 Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com
 Visit the Viking website for the latest edition of this technical data page.

SPRINKLERS ARE FRAGILE - HANDLE WITH CARE!

- Always keep sprinklers in a cool dry place.
- Protect sprinklers during storage, transport and handling as well as before, during and after installation. Refer to Viking's Care and Handling of Sprinklers Bulletin [Form No. F_091699²](#).
- Proper transit, storage and installation of sprinklers in a high-heat environment is a must. Care should be taken to prevent sprinklers from being exposed to ambient heat conditions in excess of those referenced in installation standards.
- Do not stage or store sprinklers on the job site in advance in a non-conditioned space prior to installation.
- Keep sprinklers in the original packaging and check temperature indicators on box label prior to installation. If the indicator has turned black, DO NOT install any product contained in the box. Refer to Viking product return policies.
- Temperatures exceeding the maximum ambient temperature of the sprinkler temperature-rating during storage, transport, handling and installation must be avoided.
- Per NFPA standards 13, 13R, and 13D, sprinklers installed where maximum ambient temperatures are at or over 101 °F (38 °C) through 150 °F (66 °C) shall be intermediate temperature-rated sprinklers. Additionally, if sprinklers are installed in an unventilated concealed space under an uninsulated roof or in an unventilated attic, they shall be of intermediate temperature classification.
- Sprinklers installed where ambient temperatures are at or below 100 °F (38 °C) may be either ordinary or intermediate temperature-rated sprinklers. Refer to NFPA standards 13R 6.2.3.1 and 13D 7.5.6.1.
- Rough-in of sprinkler piping during hot weather conditions should not include the installation of sprinklers unless reasonable ambient temperatures can be maintained. Ambient temperatures that are considered when choosing the temperature rating for a sprinkler should take into account the range of ambient temperatures that are expected from installation through establishment and maintenance of temperature in a conditioned space. Appropriate insulation may be considered. **Example:** An ordinary temperature sprinkler should not be exposed to maximum ambient temperature higher than 100 °F (38 °C) or more. Refer to NFPA 13, Table 6.2.5.1, NFPA 13R, 6.2.3.1 and NFPA 13D, 7.5.6.1.
- CPVC fire sprinkler products exposed to high ambient temperatures (e.g. installed in unventilated, concealed spaces such as attics) should be insulated to maintain a cooler environment. Refer to Viking Plastics Installation and Design Manual, [Form No. F_080712²](#), for care and handling procedures.
- Protect all sprinklers and connecting CPVC piping in attic spaces and unvented concealed spaces from excessive heat exposure above 100 °F (38 °C). To separate excessive attic heat, properly tent and fully insulate all pipe in unconditioned spaces.
- Pressure relief valves should be installed on wet sprinkler systems where there is a risk of over-pressurization of a checked water supply, due to thermal expansion. Refer to NFPA 13, 7.1.2.1 and NFPA 13D, A.5.2.2.2.
- Fire sprinkler systems should be installed per current referenced editions of building codes and installation standards adopted in the jurisdiction where work is being performed.



INCORRECT
(Heat exposure)



INCORRECT
(Unconditioned at rough-in)



INCORRECT
(Exposed piping)



INCORRECT
(No pressure relief valve)

WARNING: Cancer and Reproductive Harm-
www.P65Warnings.ca.gov

¹Hot weather condition is defined as temperatures that can reach the maximum ambient temperature-rating of the sprinkler.

²Clicking on blue hyperlink will open referenced document.

▲ WARNING

Any sprinkler with a loss of liquid from the glass bulb or damage to the fusible element should be destroyed. Never install sprinklers that have been dropped, damaged, or exposed to temperatures exceeding the maximum ambient temperature allowed. Sprinklers that have been painted in the field must be replaced per NFPA 13. Protect sprinklers from paint and paint overspray in accordance with the installation standards. Do not clean sprinklers with soap and water, ammonia, or any other cleaning fluid. Do not use adhesives or solvents on sprinklers or their operating elements.

Refer to the appropriate technical data page and NFPA standards for complete care, handling, installation, and maintenance instructions. For additional product and system information Viking data pages and installation instructions are available on the Viking Web site at www.vikinggroupinc.com.

**BULLETIN****REGULATORY AND HEALTH
WARNINGS**

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

Visit the Viking website for the latest edition of this technical data page www.vikinggroupinc.com

1. DESCRIPTION

Regulatory and Health Warnings applying to materials used in the manufacture and construction of fire protection products are provided herein as they relate to legally mandated jurisdictional regions.

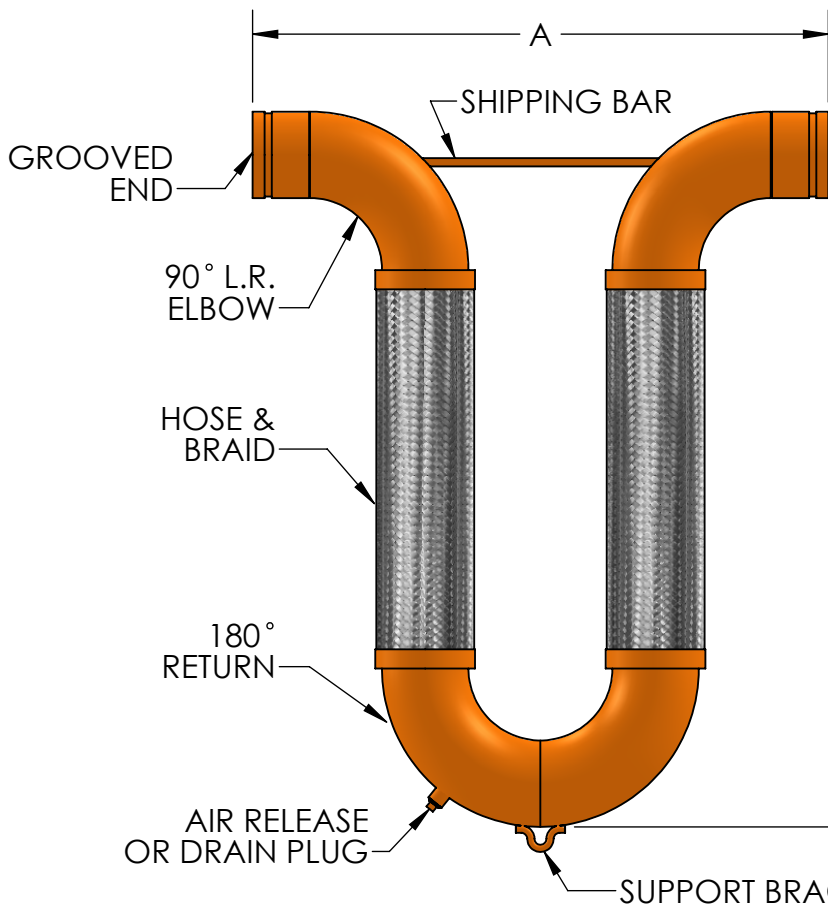
⚠ WARNING**STATE OF CALIFORNIA, USA**

Installing or servicing fire protection products such as sprinklers, valves, piping etc. can expose you to chemicals including, but not limited to, lead, nickel, butadiene, titanium dioxide, chromium, carbon black, and acrylonitrile which are known to the State of California to cause cancer or birth defects or other reproductive harm.

For more information, go to www.P65Warnings.ca.gov

2. WARRANTY TERMS AND CONDITIONS

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

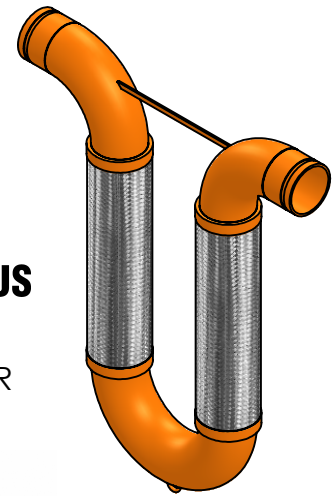


FOR FIRE
SPRINKLER
SYSTEMS



**MATERIALS OF
CONSTRUCTION**

- END FITTINGS - CARBON STEEL - SCH 40/STD WT
- HOSE & BRAID - STAINLESS STEEL - 300 SERIES
- 90° ELBOW - CARBON STEEL - SCH 40/STD WT
- 180° RETURN - CARBON STEEL - SCH 40/STD WT



SUPPORT BRACKET (2" AND LARGER)

NOTE: METRALOOPS 2-1/2" AND LARGER INSTALLED IN ANY ORIENTATION OTHER THAN HANGING DOWN MUST HAVE THE 180° RETURN SUPPORTED. (SEE INSTALLATION INSTRUCTIONS.)

CONTACT FACTORY FOR ADDITIONAL SIZES AND MOVEMENTS. ALL DIMENSIONS IN INCHES.

QTY	SIZE	MODEL	MOVEMENT	A	B	PSI	WT (LBS)	PROJECT INFO
	1" (25mm)	MLUGFM160100	±8"	18"	23"	300	8	
	1.25" (32mm)	MLUGFM160125	±8"	19"	25"	300	10	
	1.5" (40mm)	MLUGFM160150	±8"	21"	27"	300	15	
	2" (50mm)	MLUGFM160200	±8"	23"	30"	300	19	
	2.5" (65mm)	MLUGFM160250	±8"	25"	34"	300	31	
	3" (80mm)	MLUGFM160300	±8"	27"	37"	300	45	
	4" (100mm)	MLUGFM160400	±8"	31.5"	43"	175	64	
	5" (125mm)	MLUGFM160500	±8"	36"	48"	175	105	
	6" (150mm)	MLUGFM160600	±8"	42"	55"	175	160	
	8" (200mm)	MLUGFM160800	±8"	56"	70"	175	297	
	10" (250mm)	MLUGFM161000	±8"	68"	74.5"	175	485	
	12" (300mm)	MLUGFM161200	±8"	80"	84.5"	175	675	

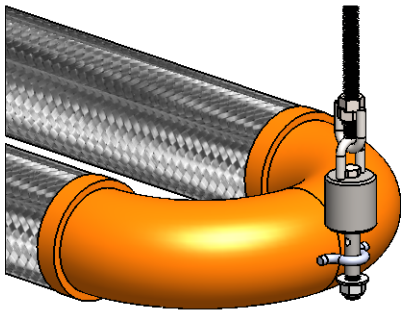
SUITABLE FOR USE IN DRY PIPE SYSTEMS
FOR TEMPERATURES TO -40°F.

2	SIZES ADDED	8/21/2018
REV. 1	SUPPORT BRACKET CHANGE	DATE 2/5/2015
		2323 W. HUBBARD ST. CHICAGO, IL 60612 TEL: 312-738-3800 WWW.METRAFIRE.COM
METRAFLEX FIRELOOP™ GROOVED ENDS, ±8" MOVEMENT		
DRAWN BY: DKISH		DATE: 5/30/2014
APPROVED: ZB		DATE: 5/30/2014
SCALE: NTS	DRAWING NUMBER: MLUGFM16-REV2	

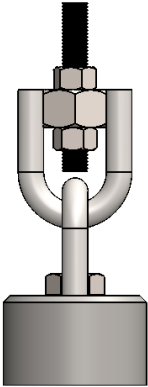
CUSTOMER: _____

PROJECT: _____

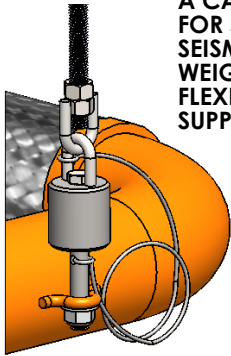
ENGINEER: _____



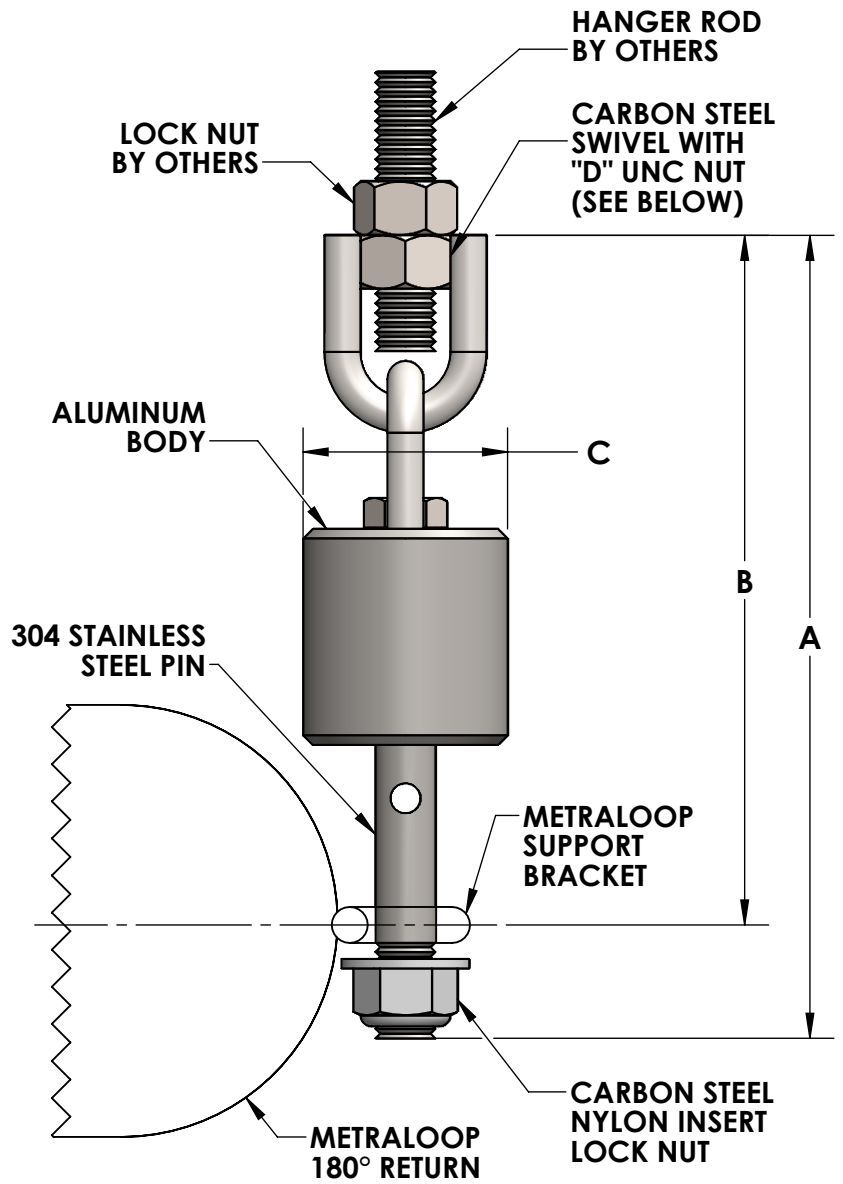
METRALOOP WITH SEISMIC BREAKAWAY HANGER
(FORMERLY BREAKAWAY COUPLING)



IF THE HANGER ROD IS SMALLER THAN THE NUT OF THE SWIVEL HANGER, SIMPLY SLIDE THE UNDERSIZED ROD THROUGH THE NUT AND FASTEN WITH THE APPROPRIATE SIZED NUTS.



A CABLE TETHER IS SUPPLIED FOR SUPPORTING LARGE SEISMIC LOOPS WHOSE WEIGHT OR EXTREME FLEXIBILITY MAY REQUIRE SUPPORT.



SEISMIC BREAKAWAY HANGER SIZING CHART				
LOOP SIZE	LOOP MOVEMENT			
	±4"	±8"	±16"	±24"
1/2"	NOT REQUIRED		SBH65	SBH65
3/4"			SBH65	SBH65
1"			SBH65	SBH65
1-1/4"			SBH65	SBH65
1-1/2"			SBH65	SBH65
2"			SBH65	SBH80
2-1/2"		SBH80	SBH80	SBH130
3"		SBH80	SBH80	SBH130
4"	SBH130	SBH130	SBH130	SBH200
5"	SBH130	SBH130	SBH200	SBH400
6"	SBH200	SBH200	SBH400	SBH400
8"	SBH400	SBH650	SBH650	SBH650

QTY	PART #	A (in)	B (in)	C (in)	D (in)
	SBH30	7.25	6.375	2.125	5/8"
	SBH45	7.25	6.375	2.125	5/8"
	SBH65	7.25	6.375	2.125	5/8"
	SBH80	7.25	6.375	2.125	5/8"
	SBH130	9.75	8.75	2.875	5/8"
	SBH200	9.75	8.75	2.875	3/4"
	SBH400	12.75	11.625	2.875	3/4"
	SBH650	12.75	11.625	2.875	3/4"

CUSTOMER: _____

PROJECT: _____

ENGINEER: _____

REV.	DATE
2323 W. HUBBARD ST. CHICAGO, IL 60612 TEL: 312-738-3800 FAX: 312-738-0415 WWW.METRAFLEX.COM	
SEISMIC BREAKAWAY HANGER (FORMERLY BREAKAWAY COUPLING)	
DRAWN BY: DKISH	DATE: 9/25/2018
APPROVED:	DATE:
SCALE: N/A	DRAWING NUMBER: SBH-4

METRAFLEX SEISMIC BREAKAWAY HANGER OPERATION, INSTALLATION, AND MAINTENANCE INSTRUCTIONS

General: The purpose of the Metraflex Seismic BreakAway Hanger is to support the flexible element of a seismic joint such as the Metraloop. During a seismic event, the Seismic BreakAway Hanger will break free allowing the seismic joint to freely move in its complete range of motion. After the seismic event, the Metraflex Seismic BreakAway Hanger can be simply reassembled.

Application: Each Metraflex Seismic BreakAway Hanger is factory set for a specific load and will be matched to a specific Metraloop or other seismic joint. The Metraflex Seismic BreakAway Hanger is installed in the hanger rod of the seismic joint. For the Metraloop product this will be located at the 180° return fitting. For Dog Leg products this will be at the 90° elbow. For large movement units, Seismic BreakAway Hangers may be required to support the flexible hose, see figure 4 and 4A.

Tethers: Tethers are used to prevent the seismic joint from over flexing and are included on all Seismic BreakAway Hangers.

Installation:

1. The Metraflex Seismic BreakAway Hanger should be installed as close to the seismic joint as possible. See figure 1.
2. Insure that the correct size Hanger has been selected for installation by reviewing the submittal.
3. The swivel eye bolt should be installed in the top position attached to rod or cable that complies with the contract documents. See figure 1 and 2.
4. A male thread is provided for connection to the seismic joint. See figure 1 and 2.
5. Apply the no step stickers provided with the Hanger to the pipe / insulation cover.

Caution:

1. When lifting from the flexible hose, never point load the hose during the installation process, always use a saddle. The hose consists of corrugated stainless steel hose and can be damaged.
2. The Seismic BreakAway Hanger is designed for a specific load based on the size and configuration of the seismic joint. People walking on the seismic joint or other outside loads on the devise can result in premature breaking of the coupling and should be avoided. No Step warning stickers have been provided with the Seismic BreakAway Hanger for larger pipe sizes.
3. When installing a seismic joint with multiple Seismic BreakAway Hangers, evenly lift the seismic device into place. Do not over flex the hose.

Testing:

Each Seismic BreakAway Hanger is factory tested prior to shipment. No field testing is necessary.

Maintenance:

The Metraflex Seismic BreakAway Hanger does not require maintenance and there are no serviceable parts. If the Hanger is ever pulled apart, for any reason, simply insert the pin back into the Hanger until it is bottomed out. For Hangers designed to support larger seismic connections a "C-clamp" may be required to push the pin for reassembly.



CUSTOMER: _____

PROJECT: _____

ENGINEER: _____

SEISMIC BREAKAWAY HANGER	
OPERATION, INSTALLATION, AND MAINTENANCE INSTRUCTIONS	
DRAWN BY: DKISH	DATE: 11/12/2015
APPROVED: JC	DATE: 11/12/2015
SCALE: N/A	DRAWING NUMBER: SBH-OIM 1 of 2

METRAFLEX SEISMIC BREAKAWAY HANGER OPERATION, INSTALLATION, AND MAINTENANCE INSTRUCTIONS

INSTRUCTIONS CONTINUED:

FIGURE 1

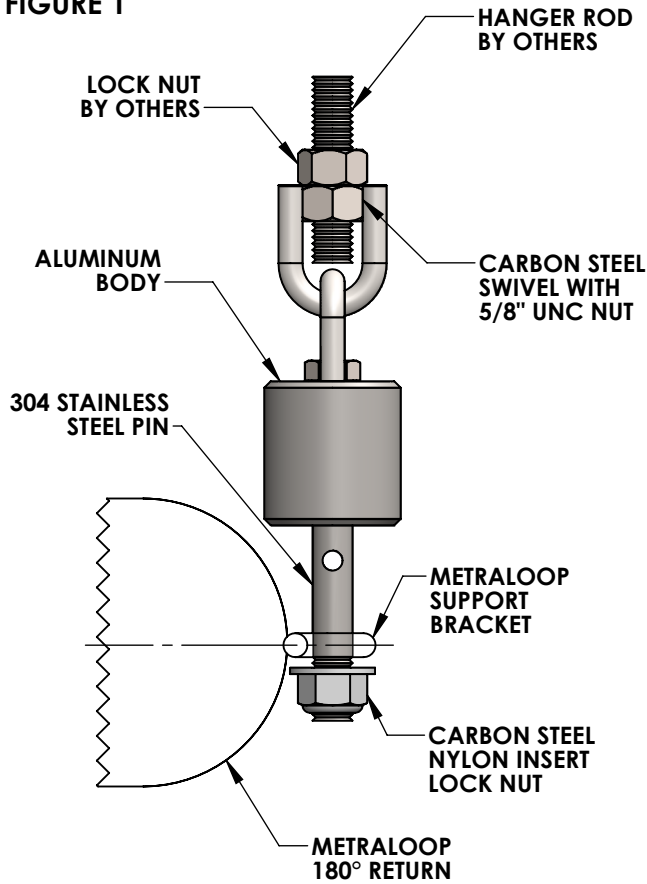


FIGURE 2

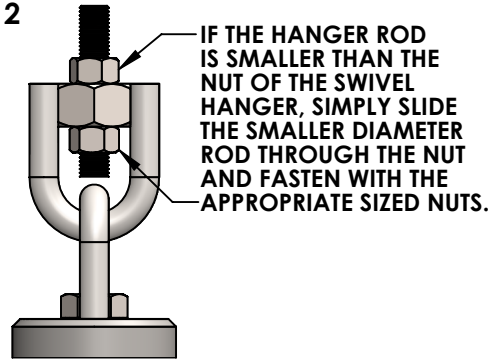


FIGURE 3

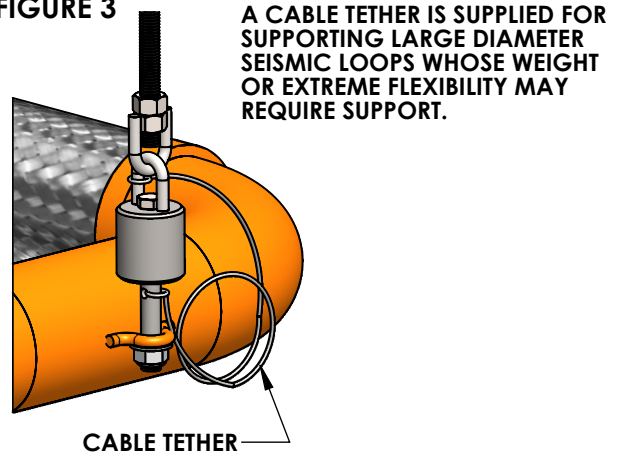


FIGURE 4

UNITS CAN ALSO BE USED WITH SADDLES TO PREVENT LONG FLEXIBLE LEGS ON LARGE LOOPS FROM SAGGING.

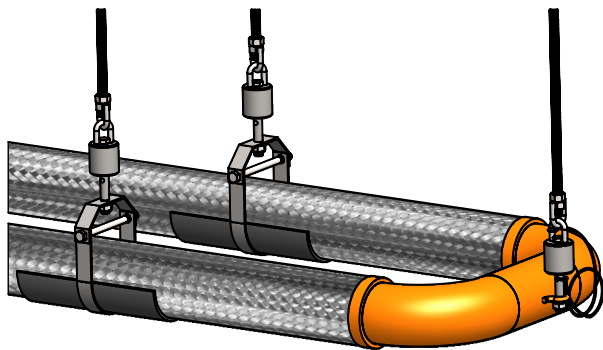
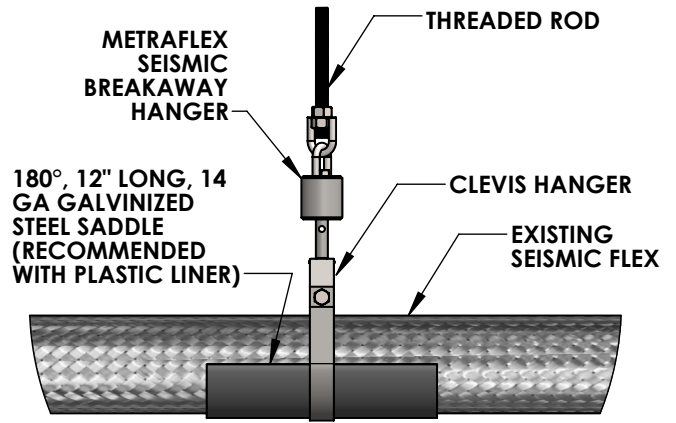


FIGURE 4A



Metraflex
for pipes in motion

2323 W. HUBBARD ST.
CHICAGO, IL 60612
TEL: 312-738-3800
FAX: 312-738-0415
WWW.METRAFLEX.COM

SEISMIC BREAKAWAY HANGER

OPERATION, INSTALLATION, AND MAINTENANCE INSTRUCTIONS

DRAWN BY: DKISH	DATE: 11/10/2015
APPROVED: JC	DATE: 11/11/2015
SCALE: N/A	DRAWING NUMBER: SBH-OIM 2 of 2

CUSTOMER: _____

PROJECT: _____

ENGINEER: _____