



Fire Marshal Division

P.O. Box 370
Lillington, NC 27546
910-893-7580

Reviewed for Fire Code Compliance



Roger Sullivan

06/16/2025 1:36:19 PM

Application for Plan Review

Permit Type: _____

Date Received: _____ Received By: _____

Name of Project: _____

Physical Address of Project: _____

Plans Submitted By: _____

Project Phone: (_____) - ____ - ____

Contact Person/Address: _____

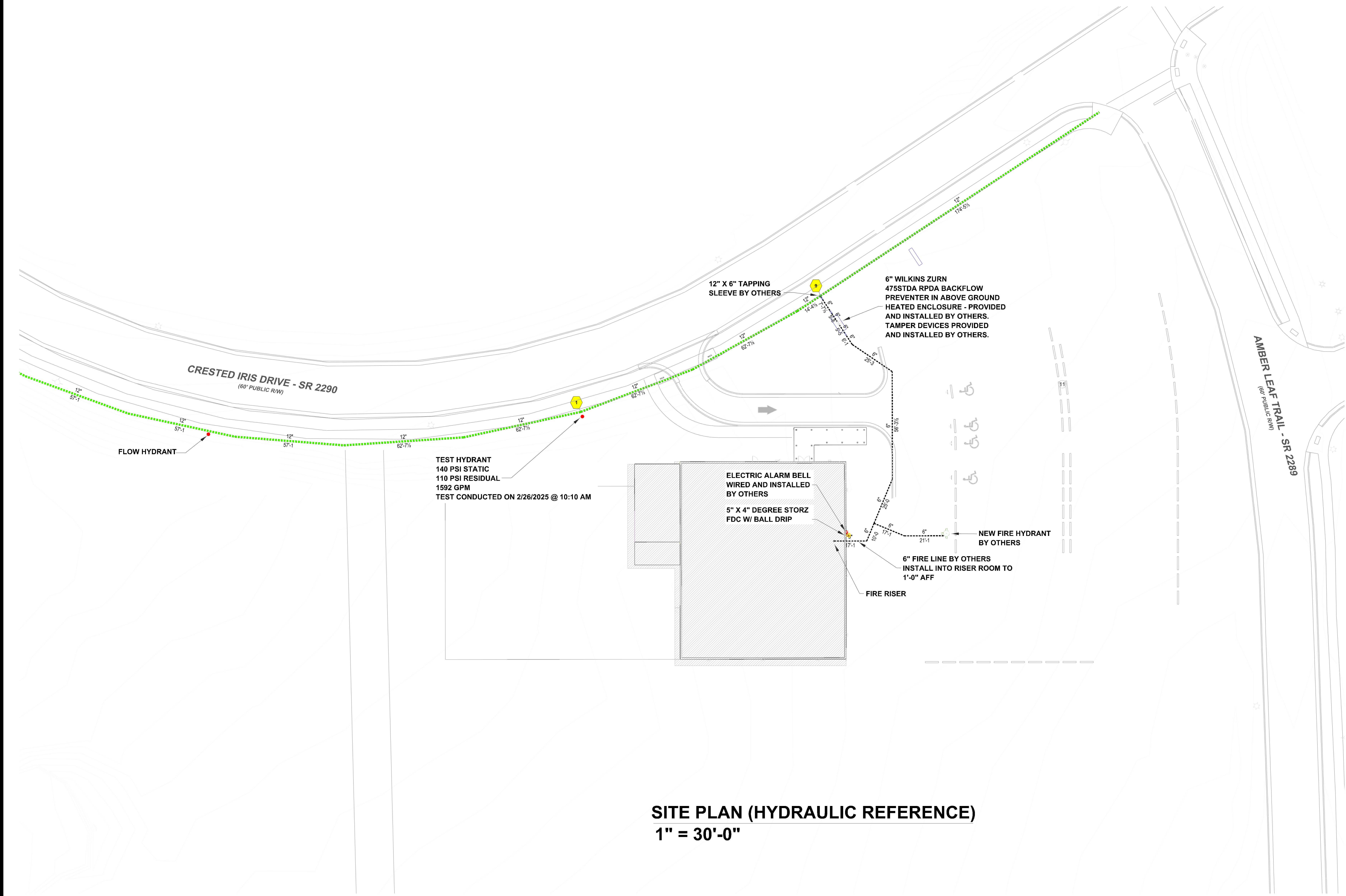
Contact Phone: (_____) - ____ - ____ (_____) - ____ - ____

Contractor's Name/Info: _____

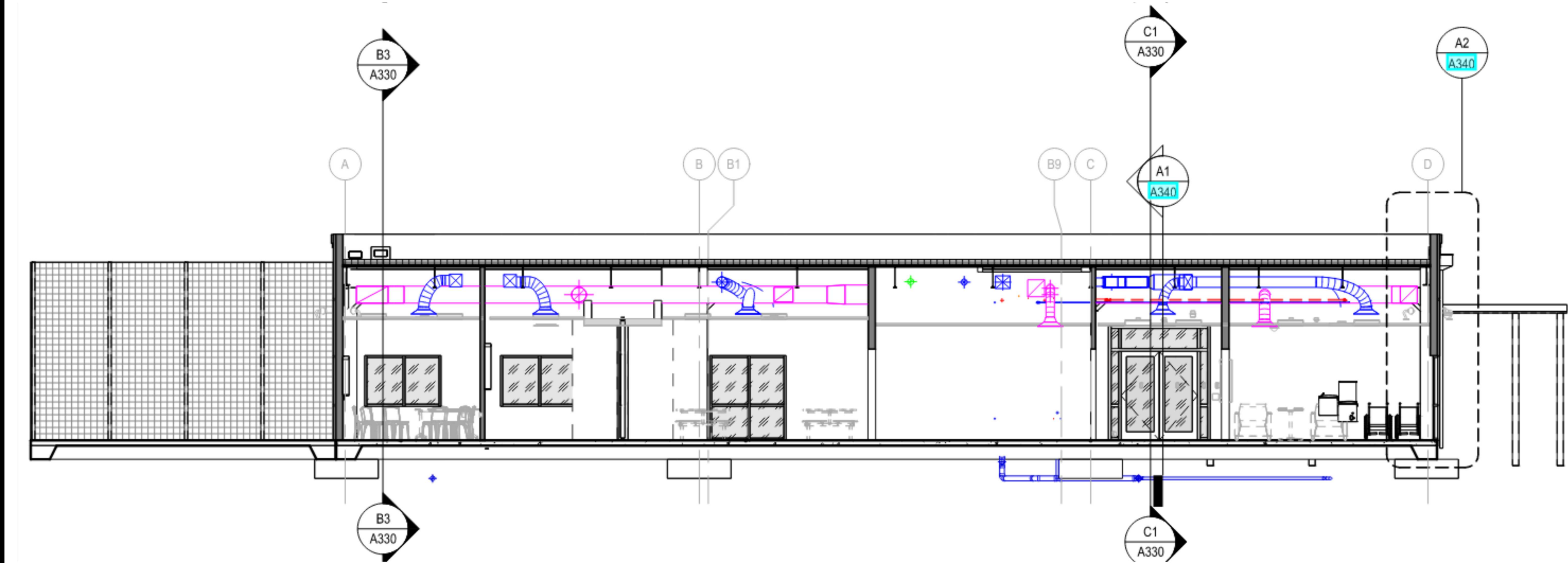
Contractor's Phone: (_____) - ____ - ____

Contact Email: _____

- **Plans that are submitted will be reviewed as quickly as possible with an average time of review between 7-10 working days.**
- **Status checks may be conducted on plan reviews by visiting the website <http://hteweb.harnett.org/Click2GovBP/Index.jsp> or by calling the Harnett County Central Permitting Office (910-893-7525 : Opt. 2), or the Harnett County Fire Marshal's Office (910-893-7580).**
- **Approved plans must be picked up from the Central Permitting Office and all fees paid before any required inspections can be conducted.**



SITE PLAN (HYDRAULIC REFERENCE)
1" = 30'-0"



BUILDING SECTION
NTS

Project Name:	CAPE FEAR VALLEY HEALTH - HARNETT HEALTH DOROTHEA DIX PSYC UNIT	System:	WET SYSTEM
Project Street Address:	CRESTED IRIS DRIVE, LILLINGTON, NC 27546	Sys. Sq. Ft.:	6,843
Suite:	N/A	Floor#:	1
Designed By:	REGIONAL FIRE SERVICES OF NC	Phone:	919-212-2722
Occupancy:	I-2	Hazard:	LIGHT & ORDINARY HAZARD
		Total Bldg. Hgt.:	16'-2"

SYSTEM # 1	
Design Method	DENSITY/AREA
Design Area #	1
Location	PATIENT ROOMS/CORRIDOR
Type of System	WET
Hazard Class	LIGHT HAZARD
Criteria From	AREA DENSITY CURVE
Design Area (sq.ft.)	972
Sprinkler Spacing(sq.ft.)	225' MAX
Density	10 GPM / SQ. FT.
K-factor	5.6
Hose Allowance	100
# Design Sprinklers	10
Special Application Spk.	N/A
Requirement @ BOR	
G.P.M. Req'd	159.98
P.S.I. Req'd	48.194
Requirement @ TEST	
GPM Required	259.98
PSI Required	61.195
Safety factor @ Test	77.755 (95%)
Dry Sys. Vol. (gall)	N/A

Tested by:	REGIONAL FIRE SERVICES OF NC	Date/Time	2/26/2025 @ 10:10 AM	Pressure Hydrant	--
Hydrant Elevation	180'	Flow Hydrant # 1	--	Flow Hydrant #2	--
Static (PSI)	140	Residual (PSI)	110	Flow (gpm)	1592

Copy of Water Test Data Included with Calculation

Hydrant Flow Test Report

Test Date 2/26/2025 Test Time 10:10 AM

Location

Crested Iris Drive

Tested by

Thomas Crowder & Ajith Zacharias
Regional Fire Services of NC, LLC
Witnessed by: Apex Fire Department

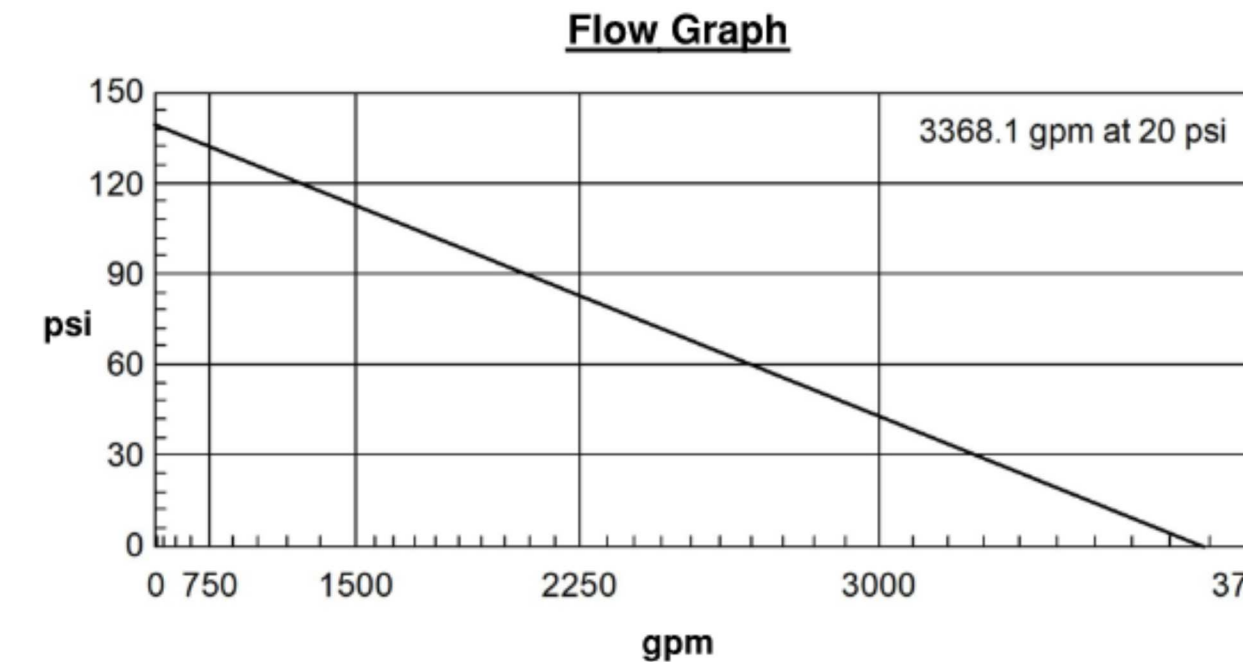
Notes







Witnessed by Harnett Regional Water Department

Read Hydrant

140 psi static pressure
110 psi residual pressure
hydrant elevation

Flow Hydrant(s)		Pitot Pressure	Flow
Outlet	Elev		
#1	2.5	.9	90



Sprinkler Legend										
Symbol	Manufacturer	SIN	Model	Quantity	K-Factor	Type	Size	Response	Finish	Temperature
	Viking	VK4621		13	5.6K	Concealed Pendent	1/2"	Quick	Brass	155°F
	Viking	VK4621		8	5.6K	Concealed Pendent	1/2"	Quick	Brass	200°F
	Viking	VK390	Microfast	4	5.6K	Upright	1/2"	Quick	Brass	155°F
	Viking	VK426	INST	59	5.6K	Pendent	1/2"	Quick	White	165°F
	Viking	VK426	INST	10	5.6K	Pendent	1/2"	Quick	White	205°F
	Viking	VK390	Microfast	1	5.6K	Upright	1/2"	Quick	Brass	286°F
				Total = 95						

GENERAL NOTES

SCOPE OF WORK - TO DESIGN AND INSTALL A WET SPRINKLER SYSTEM IN COMPLIANCE WITH NFPA-13, AND LOCAL AUTHORITY.

F.P.C. WORK START AT 8" FLANGE PROVIDED BY SITE CONTRACTOR. ALL UNDERGROUND PIPING, ELECTRICAL WORK, PAINTING, PATCHING, ACCESS PANELS FOR CONCEALED SPRINKLER VALVES, AND FIRE ALARM SHALL BE PROVIDED BY OTHERS.

ALL WET SYSTEM BRANCH PIPING 1" - 2" TO BE SCH 40 BLACK STEEL WITH DI BLACK THREADED FITTINGS OR GROOVED DUCTILE FITTINGS UNLESS NOTED OTHERWISE.

ALL WET SYSTEM MAIN PIPING 2" - 6" TO BE SCH. 10, BLACK STEEL GROOVED AND JOINED BY GROOVE TYPE FITTINGS.

ALL HANGER ASSEMBLIES SHALL UTILIZE UL/FM LISTED COMPONENTS AND COMPLY WITH NFPA 13.

ALL CONTROL VALVES SHALL BE ELECTRICALLY SUPERVISED. ALL ELECTRICAL CONNECTIONS TO BE MADE BY AN ELECTRICIAN.

ALL INTERIOR PIPING SHALL BE HYDRAULICALLY TESTED AT 200 PSI FOR 2 HOURS.

IT IS THE RESPONSIBILITY OF THE OWNER TO PROVIDE ADEQUATE HEAT TO PREVENT THE FIRE PROTECTION SYSTEM FROM FREEZING.

AUXILIARY DRAINS SHALL BE PROVIDED FOR TRAPPED SECTIONS OF THE SPRINKLER SYSTEM EXCEEDS 5 GALLONS.

ADEQUATE SUPERVISION IS REQUIRED TO BE PROVIDED ON CONTROL VALVES TO SOUND AT LEAST A LOCAL TROUBLE ALARM WHEN THE SYSTEM IS DEACTIVATED AND A TROUBLE SIGNAL BE SENT TO A CENTRAL STATION.

READILY REMOVABLE FITTINGS SHALL BE PROVIDED AT THE END OF CROSS MAINS IN COMPLIANCE W/ NFPA 13.

HYDRAULIC DATA PLATES SHALL BE PROVIDED FOR EACH RISER. A STOCK OF SPARE SPRINKLERS SHALL BE PROVIDED IN ACCORDANCE WITH NFPA 13.

ALL UNDERGROUND PIPING TO BE FLUSHED AND TESTED BY OTHERS PER NFPA 24, PLEASE FORWARD THIS INFORMATION ON TO THE OWNER AND/OR THE GENERAL CONTRACTOR.

SPRINKLERS TO BE INSTALLED UNDER FIXED OBSTRUCTIONS OVER 4'-0" WIDE SUCH AS HVAC DUCT PER NFPA-13.

GENERAL CONTRACTOR TO PROVIDE SPRINKLER KNOX BOX IF REQUIRED.

CONTACT PERSON: LANCE TAYLOR, PROJECT MANAGER, ROBINS & MORTON GROUP, TEL: 615-406-5718

CFVHS - DOROTHEA DIX ADOLESCENT PSYCHIATRIC UNIT
CRESTED IRIS DRIVE
LILLINGTON, NC 27546

REGIONAL FIRE SERVICES OF NC, LLC
1000 GOOD COURT
RALEIGH, NC 27604
Phone: 919-212-2722
Fax: 919-212-2720

GENERAL CONTRACTOR
THE ROBINS & MORTON GROUP
2015-2025 ARSLEY TOWN BLVD.
CHARLOTTE, NC 28273

Job No. 25011
Drawn by: TC
Date: 3/2/2025
Scale: AS NOTED

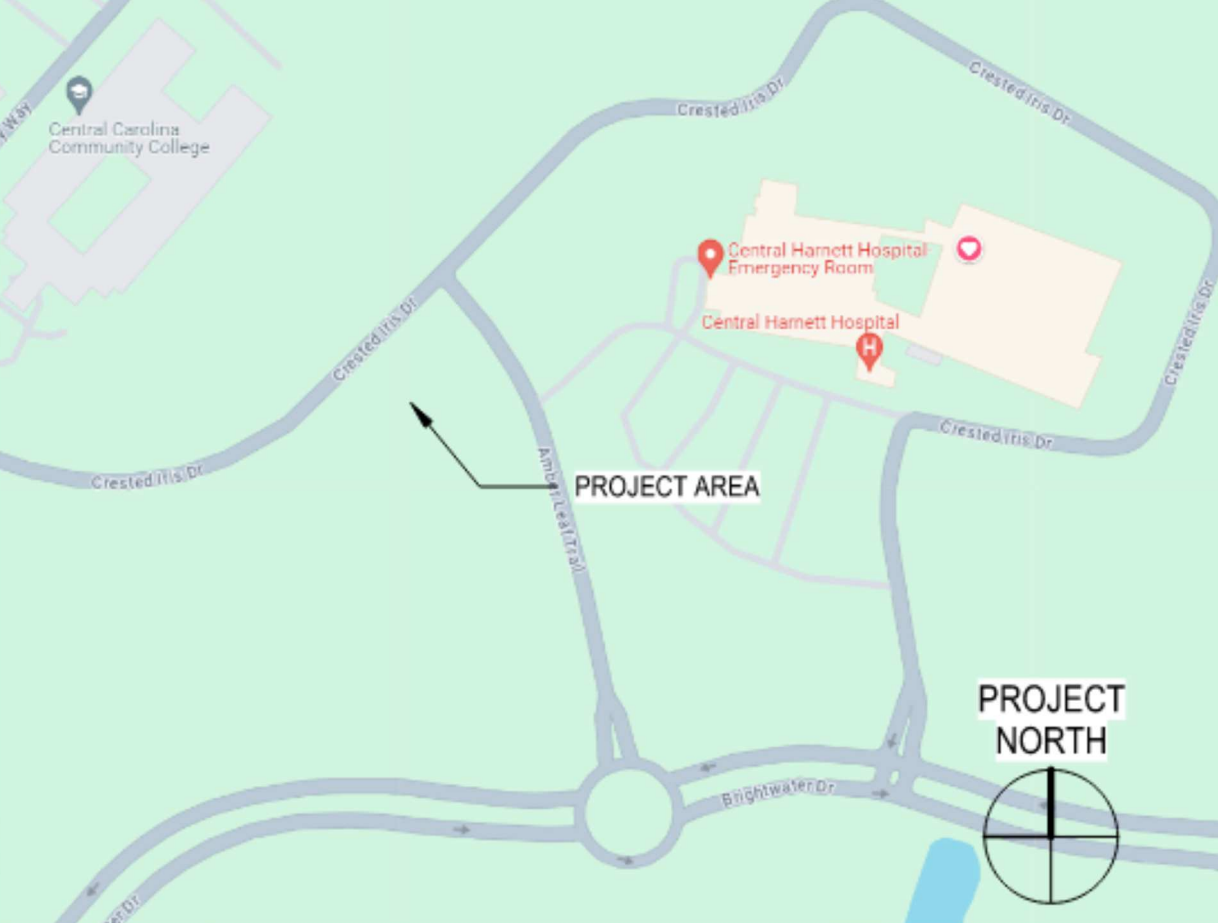


REVISIONS		By	TC
6/12/25	BM COORDINATION SIGN OFF		
6/12/25	SUBMIT TO CONTRACTOR		

NOTES											
HANGER INSTALLATION REQUIREMENTS											
MAXIMUM DISTANCE BETWEEN HANGERS											
NOMINAL PIPE SIZE	1"	1 1/4"	1 1/2"	2"	3"	4"	6"	8"	10"	12"	14"
SCH. 40 & 80 STEEL PIPE	12-0	12-0	12-0	12-0	12-0	12-0	12-0	12-0	12-0	12-0	12-0
THREADED LIGHTWALL CPVC	6-0	6-0	6-0	6-0	6-0	6-0	6-0	6-0	6-0	6-0	6-0

FP-1
FIRE
PROTECTION
SITE PLAN &
NOTES

NORTH



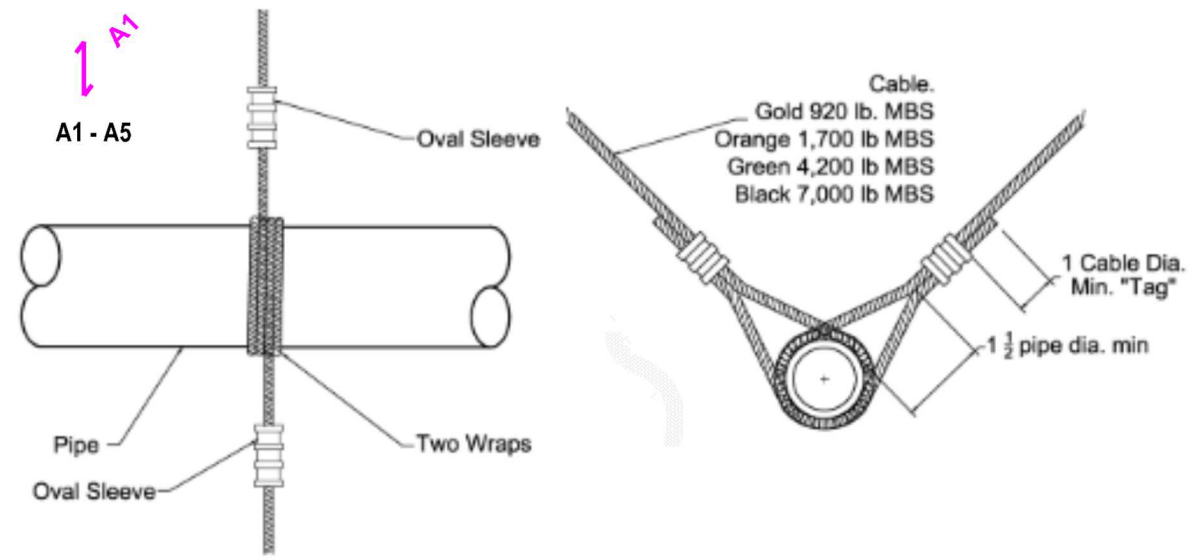
VICINITY MAP
NTS

INSTRUCTIONS

LOOS & CO.
CABLEWARE DIVISION
EST. 1954



Lateral Brace



- Slide oval sleeve onto end of cable. Slide sleeve up cable to allow working room.
- Wrap cable around pipe twice. Form a simple knot on the second wrap to hold the cable in place.
- Slide loose end of the cable into sleeve and pull cable to remove slack.
- Crimp sleeve per Figure 1 below.
- Repeat in opposite direction.

Figure 1

Size	Cable Color	Number of Crimps	Break Strength (lbs)	Working Load (lbs)
#GO3	Gold	2	920	418
#OR4	Orange	2	1,700	770
#GR6	Green	3	4,200	1,900
#BL8	Black	3	7,000	3,180

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Instructions

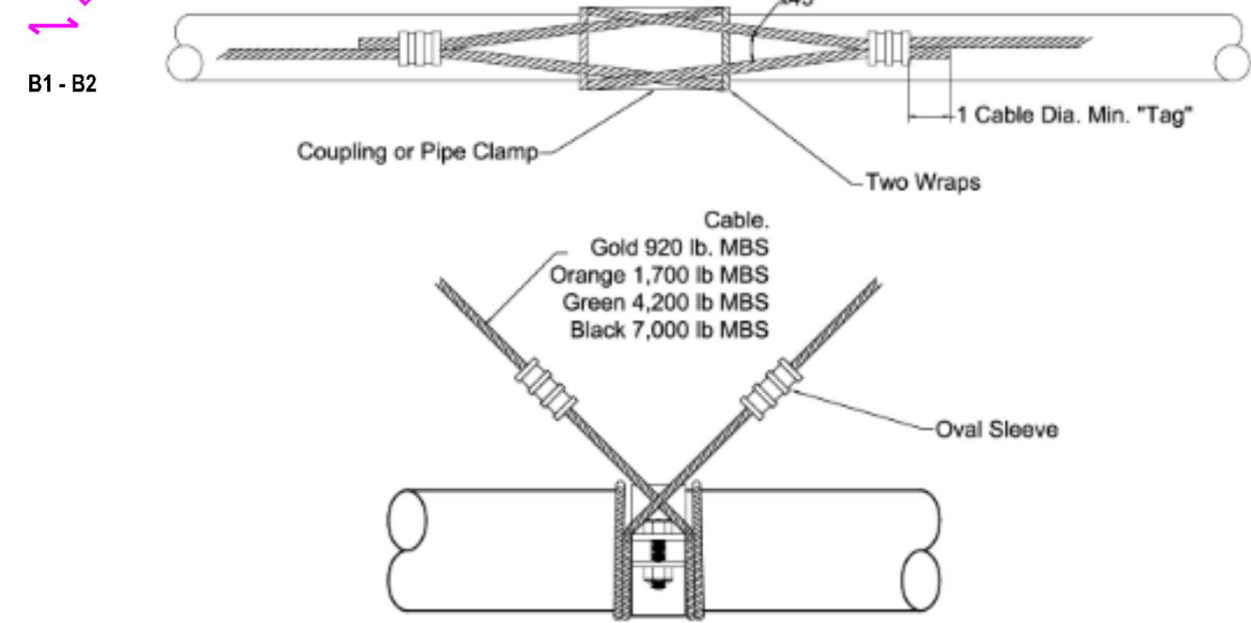
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INSTRUCTIONS

LOOS & CO.
CABLEWARE DIVISION
EST. 1954



Longitudinal Brace



- Slide oval sleeve onto end of cable. Slide sleeve up cable to allow working room.
- Wrap cable around pipe twice. Form a simple knot on the second wrap to hold the cable in place. Be sure the wrap is on the far side of a pipe clamp or grooved coupling, and not on it.
- Slide loose end of the cable into sleeve and pull cable to remove slack.
- Crimp sleeve per Figure 1 below.
- Repeat in opposite direction.

Figure 1

Size	Cable Color	Number of Crimps	Break Strength (lbs)	Working Load (lbs)
#GO3	Gold	2	920	418
#OR4	Orange	2	1,700	770
#GR6	Green	3	4,200	1,900
#BL8	Black	3	7,000	3,180

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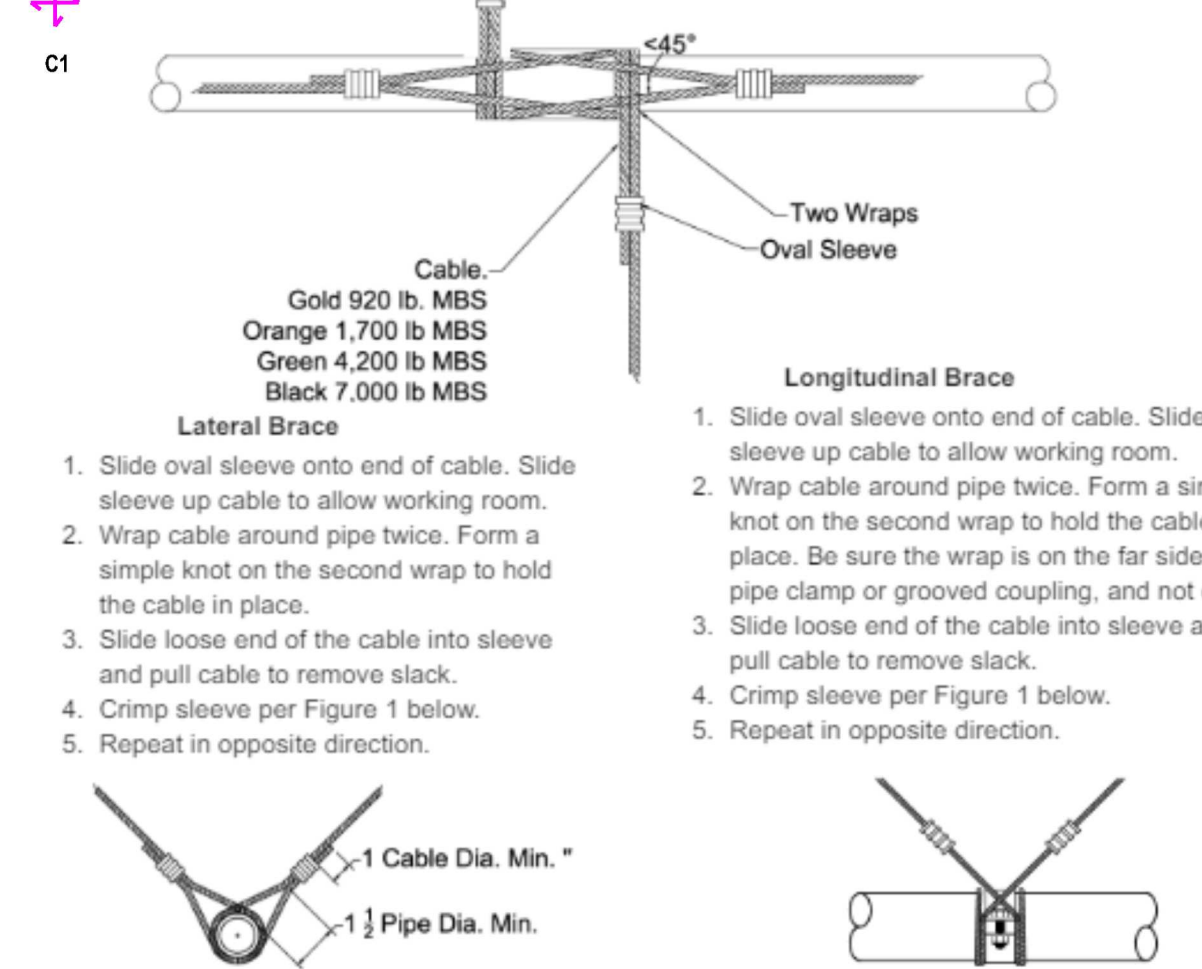
Instructions 60

INSTRUCTIONS

LOOS & CO.
CABLEWARE DIVISION
EST. 1954



4-Way Brace



- Slide oval sleeve onto end of cable. Slide sleeve up cable to allow working room.
- Wrap cable around pipe twice. Form a simple knot on the second wrap to hold the cable in place. Be sure the wrap is on the far side of a pipe clamp or grooved coupling, and not on it.
- Slide loose end of the cable into sleeve and pull cable to remove slack.
- Crimp sleeve per Figure 1 below.
- Repeat in opposite direction.

Figure 1

Size	Cable Color	Number of Crimps	Break Strength (lbs)	Working Load (lbs)
#GO3	Gold	2	920	418
#OR4	Orange	2	1,700	770
#GR6	Green	3	4,200	1,900
#BL8	Black	3	7,000	3,180

61

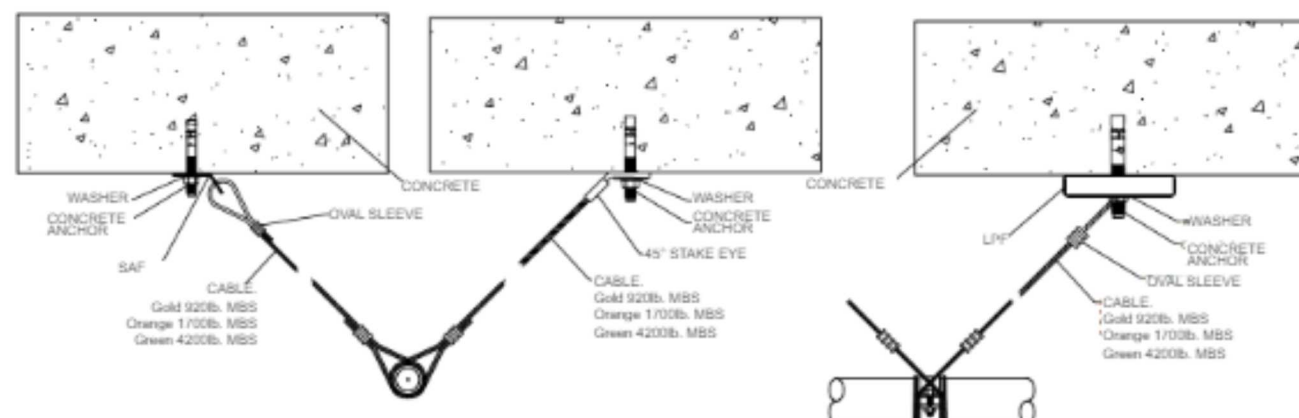
Instructions

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INSTRUCTIONS

LOOS & CO.
CABLEWARE DIVISION
EST. 1954

Load: Perpendicular to Structural Member
Angles: A (30°), B (45°), and C (60°)
Material: Wedge anchors in 4,000 PSI normal-weight cracked concrete



Maximum Load for Wedge Anchors in 4,000 psi (267 bar) Normal-Weight Cracked Concrete

Fastener Diameter	Fastener Embedment	LPF			SAF (All)			Stake Eye		
		30°-44°	45°-59°	60°-90°	30°-44°	45°-59°	60°-90°	30°-44°	45°-59°	60°-90°
3/8"	2"	200 lbs.	282 lbs.	344 lbs.	135 lbs.	214 lbs.	295 lbs.	135 lbs.	214 lbs.	295 lbs.
1/2"	3-5/8"	430 lbs.	607 lbs.	742 lbs.	289 lbs.	460 lbs.	636 lbs.	289 lbs.	460 lbs.	636 lbs.
5/8"	3-7/8"	532 lbs.	729 lbs.	872 lbs.	367 lbs.	566 lbs.	760 lbs.	N/A	N/A	N/A
3/4"	4-1/8"	630 lbs.	903 lbs.	1,117 lbs.	419 lbs.	676 lbs.	948 lbs.	N/A	N/A	N/A



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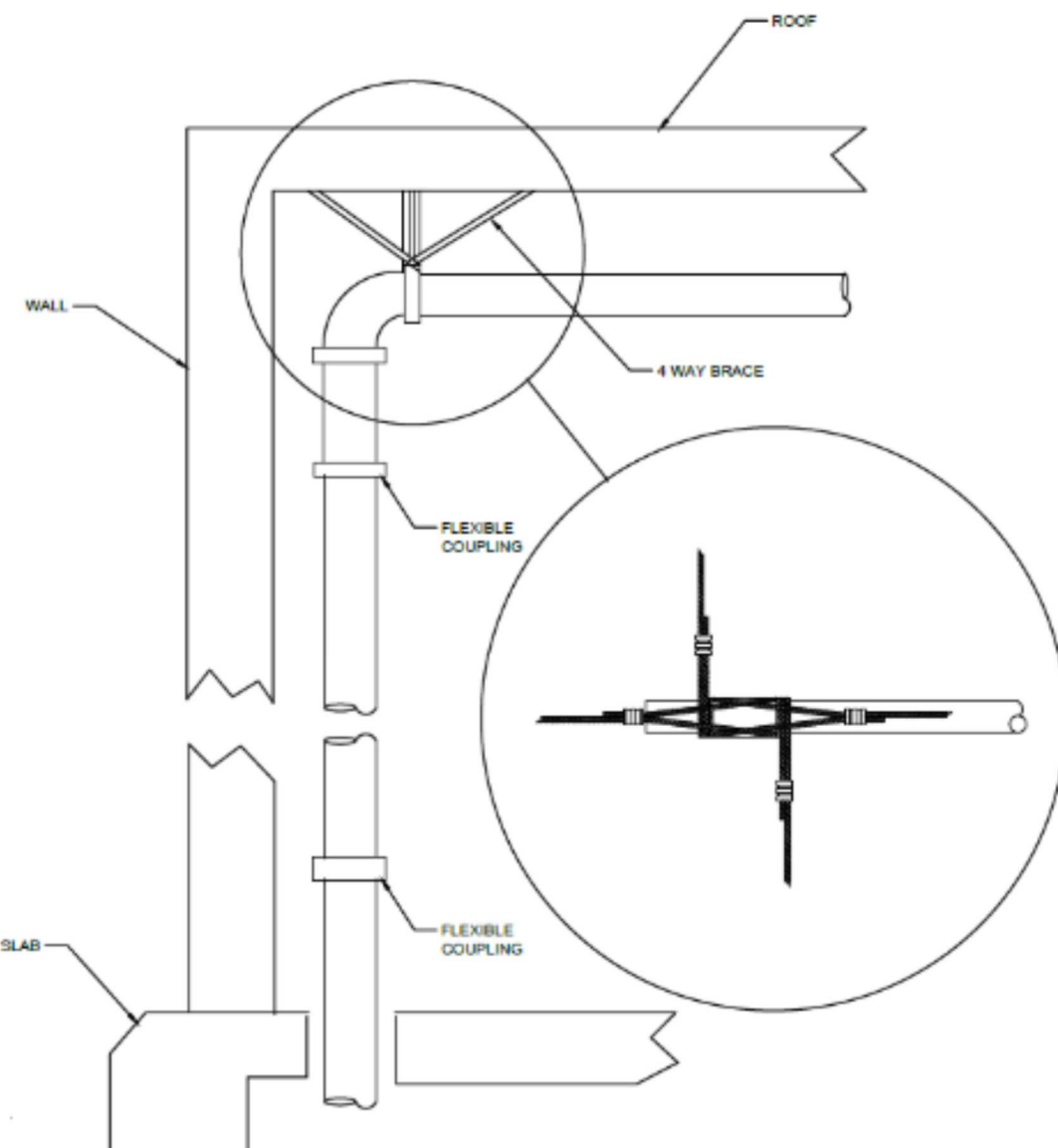
Instructions

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INSTRUCTIONS

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CABLEWARE DIVISION
EST. 1954

Typical Riser Bracing Flat Roof Installation



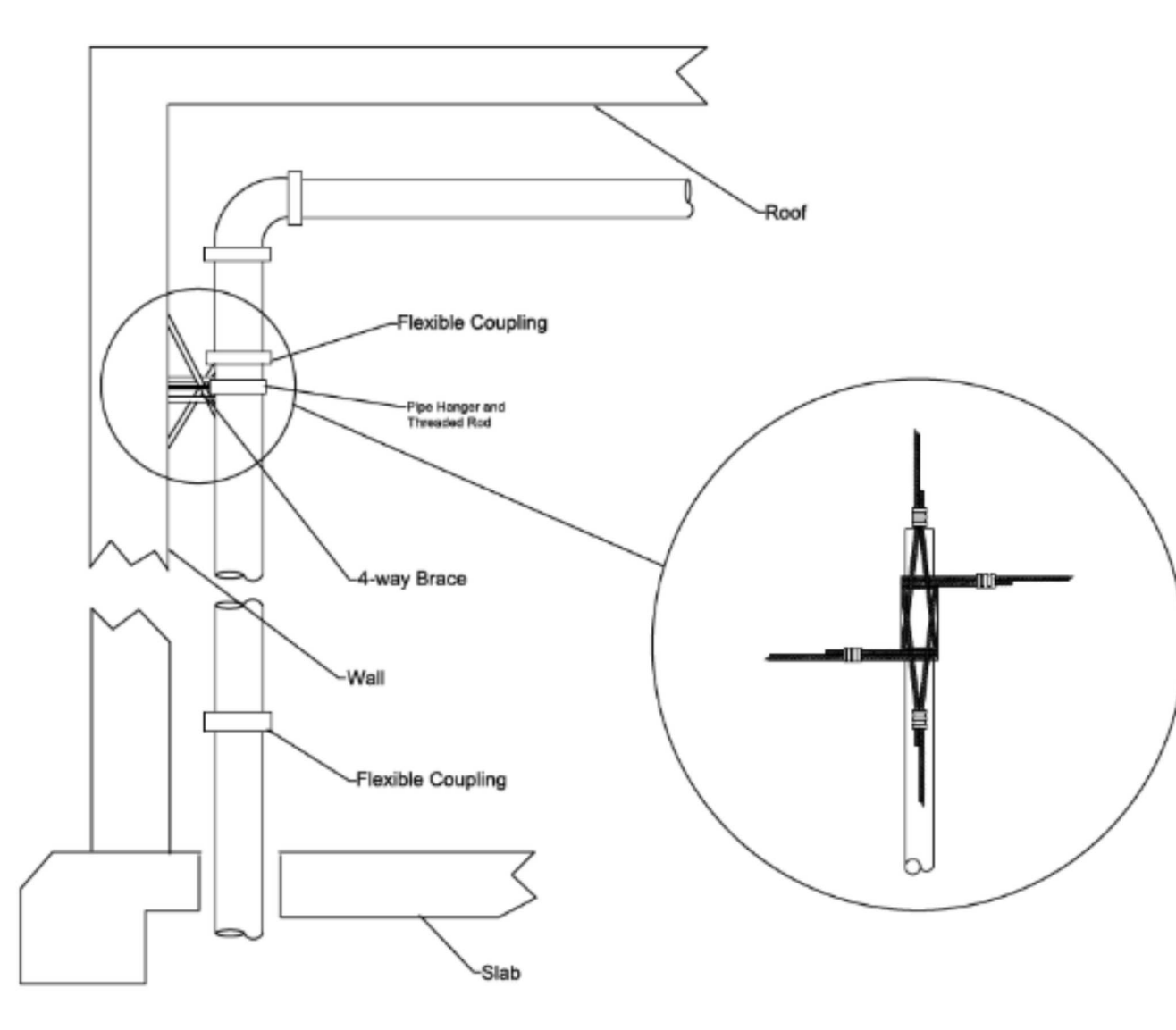
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Instructions 90

INSTRUCTIONS

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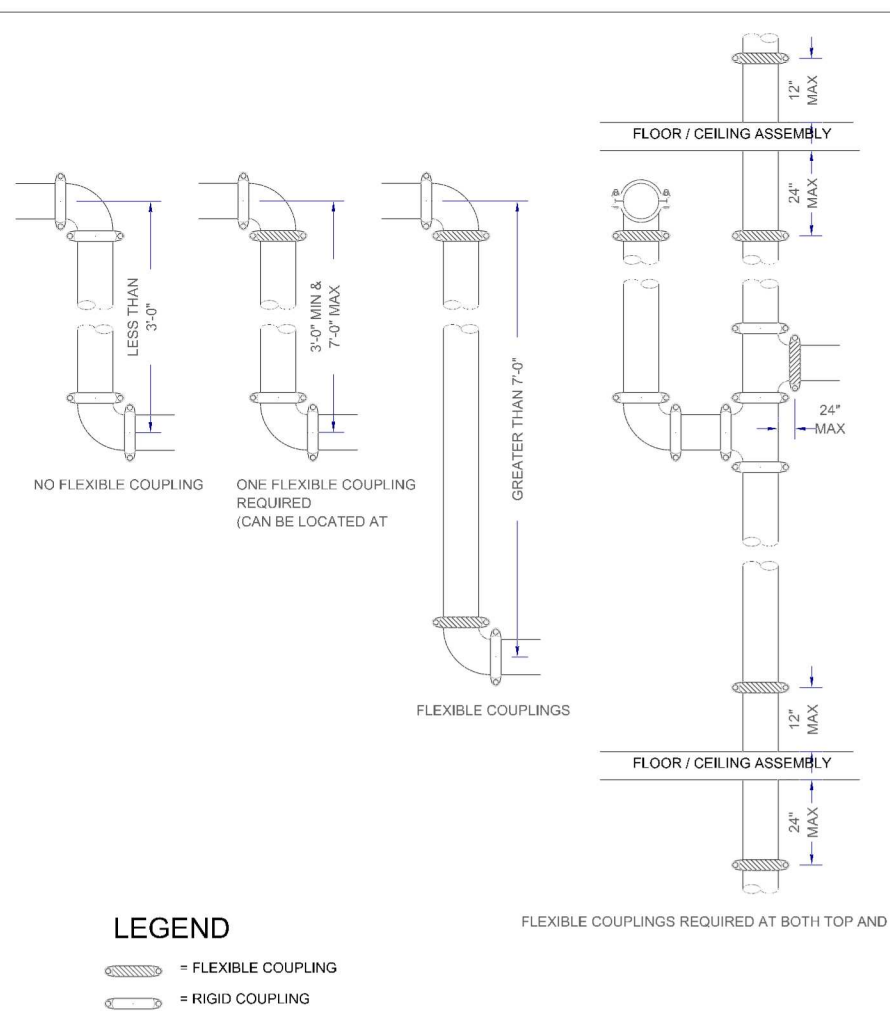
Typical Riser Bracing Wall Installation



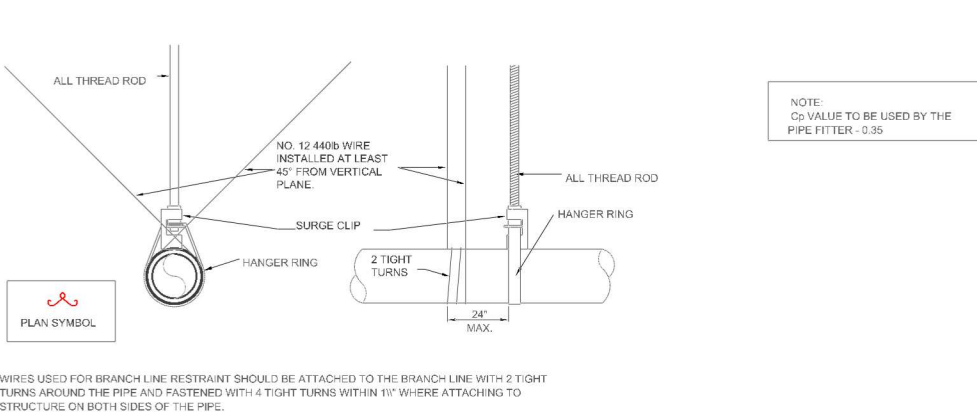
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Instructions

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VERTICAL PIPE FLEXIBLE COUPLING DETAIL
NOT TO SCALE



BRANCH LINE RESTRAINT DETAILS
NOT TO SCALE

Table 9.3.6.4(a) Maximum Spacing (ft) of Steel Branch Line Restraints

Pipe (in.)	Seismic Coefficient (C_s)		
	$C_s \leq 0.50$	$0.5 < C_s \leq 0.71$	$C_s > 0.71$
1	43	36	26
1 1/4	46	39	27
1 1/2	49	41	29
2	53	45	31

CFVHS - DOROTHEA DIX ADOLESCENT PSYCHIATRIC UNIT
CRESTED IRIS DRIVE
LILLINGTON, NC 27546

REGIONAL FIRE SERVICES OF NC, LLC
1000 GOLF COURSE
RALEIGH, NC 27604
Phone: 919-212-2722
Fax: 919-212-2720

GENERAL CONTRACTOR
THE ROBINS & MORTON GROUP
2015-2017 AYSLEY TOWN BLVD.
CHARLOTTE, NC 28273

Job No. 25011 Drawn by: TC Date: 3/3/2025 Pw. No. FP.3 Scale AS NOTED

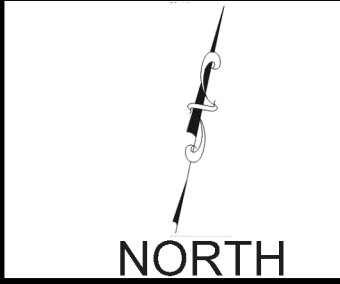


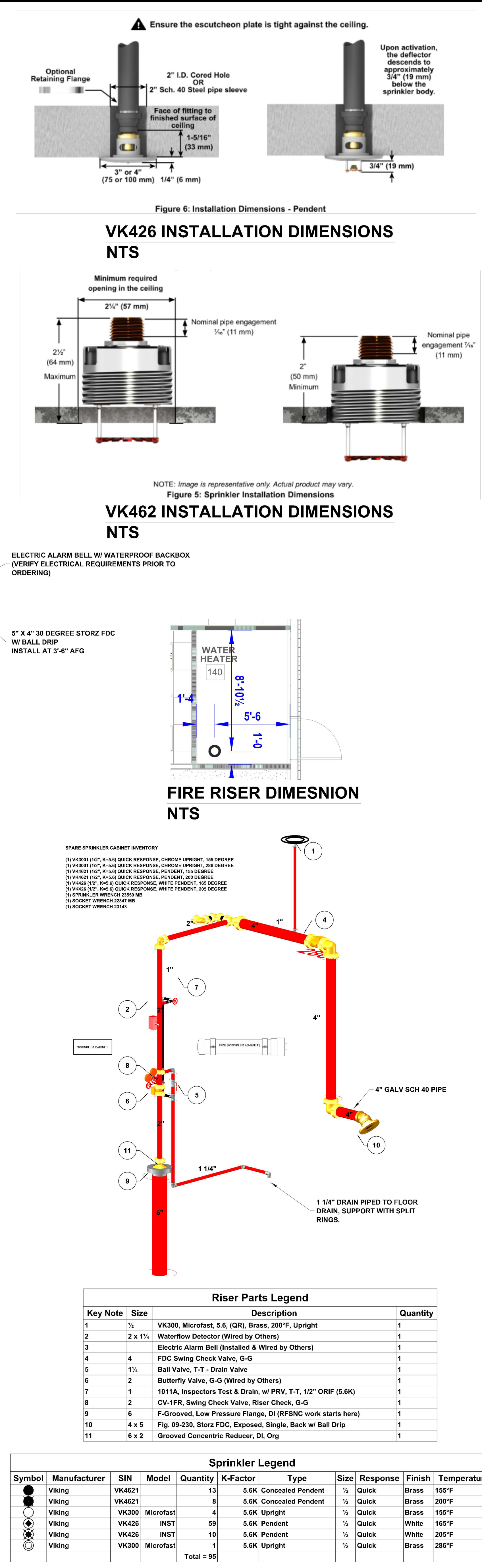
REVISIONS	By	No.	TC
6/12/25	BM	COORDINATOR SIGN OFF	
6/12/25		SUBMIT TO CONTRACTOR	

NOTES

HANGER INSTALLATION REQUIREMENTS											
MAXIMUM DISTANCE BETWEEN HANGERS											
NOMINAL PIPE SIZE	1"	1 1/4"	1 1/2"	2"	3"	4"	6"	8"	10"	12"	14"
SCH. 40 & 80 STEEL PIPE	12-0	12-0	15-0	15-0	15-0	15-0	15-0	15-0	15-0	15-0	15-0
THREADED LIGHTWALL	12-0	12-0	12-0	12-0	12-0	12-0	12-0	12-0	12-0	12-0	12-0
CPVC	6-0	6-0	6-0	6-0	6-0	6-0	6-0	6-0	6-0	6-0	6-0

FP.2
FIRE
PROTECTION
DETAILS



[illegible]

WALL RATING LEGEND	
SYMBOL	DESCRIPTION
	SMOKE PARTITION
	1 HOUR FIRE BARRIER
	1 HOUR FIRE/SMOKE BARRIER







FIRE PROTECTION DIMENSION PLAN
1/4" = 1'-0"



RCP LEGEND

	CEILING TAG		CEILING TYPE
	CEILING HEIGHT		MECHANICAL SUPPLY DIFFUSER
	2X2 ACOUSTICAL SUSPENDED CEILING SYSTEM REFER TO SPECIFICATIONS SECTION 06010		MECHANICAL RETURN GRILL
	2X2 ACOUSTICAL SUSPENDED CEILING SYSTEM WITH HEAD DOWN CLIPS		LIGHT FIXTURE RECESSED CAN
	NEW GYPSUM BOARD CEILING SYSTEM		LIGHT FIXTURE 2X4 LED
	NEW IMPACT RESISTANT GYPSUM BOARD CEILING SYSTEM		LIGHT FIXTURE 2X6 LED
	EXIT SYMBOL TAG WALL MOUNTED LIGHTED WITH DIRECTIONAL ARROWS		LIGHT FIXTURE 2X8 LED
	ACCESS PANEL		EXIT SYMBOL TAG 24 LED
	SECURITY CAMERA		MOTION SENSOR
			EXTERIOR SUPPRESSOR METAL FRAMED SOFFIT WITH EPS FOAM
			AREA NOT IN CONTRACT

KEY PLAN

Sprinkler Legend										
Symbol	Manufacturer	SIN	Model	Quantity	K-Factor	Type	Size	Response	Finish	Temperature
	Viking	VK4621		13	5.6K	Concealed Pendent	1/2"	Quick	Brass	155°F
	Viking	VK4621		8	5.6K	Concealed Pendent	1/2"	Quick	Brass	200°F
	Viking	VK300	Microfast	4	5.6K	Upright	1/2"	Quick	Brass	155°F
	Viking	VK426	INST	59	5.6K	Pendent	1/2"	Quick	White	165°F
	Viking	VK426	INST	10	5.6K	Pendent	1/2"	Quick	White	205°F
	Viking	VK300	Microfast	1	5.6K	Upright	1/2"	Quick	Brass	286°F
				Total = 95						

CFVHS - DOROTHEA DIX ADOLESCENT PSYCHIATRIC UNIT
CRESTED IRIS DRIVE
LILLINGTON, NC 27546

REGIONAL FIRE SERVICES OF NC, LLC
10000 WOOD COURT
RALEIGH, NC 27604
Phone: 919-212-2722
Fax: 919-212-2720

GENERAL CONTRACTOR
THE ROBINS & MORTON GROUP
2015-203 ARSLEY TOWN BLVD.
CHARLOTTE, NC 28273

Job No. 25011 TC Date: 3/2/2025 Drawn by: PF.5 AS NOTED

REVISIONS

No.	By	TC
1		

6/12/25 BM COORDINATOR SIGN OFF
6/12/25 SUBMIT TO CONTRACTOR

NOTES

HANGER INSTALLATION REQUIREMENTS

MAXIMUM DISTANCE BETWEEN HANGERS	
NOMINAL PIPE SIZE	MAXIMUM DISTANCE BETWEEN HANGERS
1"	1'-0"
1 1/4"	1'-0"
1 1/2"	1'-0"
2"	1'-0"
2 1/2"	1'-0"
3"	1'-0"
3 1/2"	1'-0"
4"	1'-0"
4 1/2"	1'-0"
5"	1'-0"
5 1/2"	1'-0"
6"	1'-0"
6 1/2"	1'-0"
7"	1'-0"
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Automatic Fire Sprinkler Systems



3101-310 Poplarwood Court - Raleigh, NC 27604

Ph: 919-212-2722 Fax: 919-212-2720

www.regionalfirenc.com

Ajith Zacharias, CET^a

Certified Engineering Tech.

NICET #120860

Water-Based Systems Layout, Level III



HYDRAULIC CALCULATIONS

For:

**CFVHS Harnett Health Dorothea Dix Adolescent
Psychiatric Unit
Crested Iris Drive
Lillington, NC 27546**

Submitted by:

Thomas Crowder

Automatic Fire Sprinkler Systems



Hydraulic Overview

Job Number: 25011 - CFVH Dorothea Dix

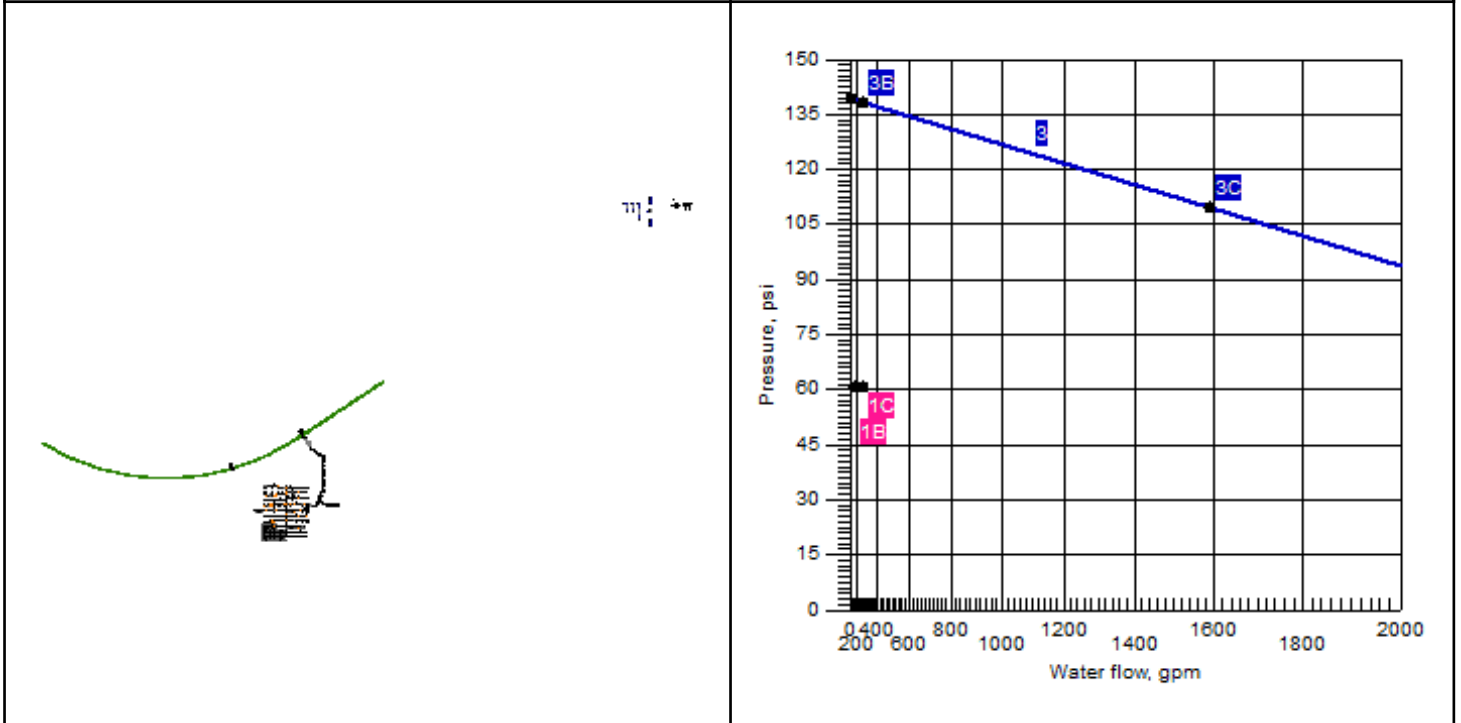
Report Description: Light Hazard (1)

Job		
Job Number	25011	
Designer	THOMAS CROWDER	
Job Name:	CFVHS - DOROTHEA DIX ADOLESCENT PSYCHIATRIC UNIT	Phone 919-212-2722
Address 1	CRESTED IRIS DRIVE	FAX
Address 2	LILLINGTON, NC 27546	State Certification/License Number
Address 3		AHJ
		Job Site/Building

System		
Density	0.10gpm/ft ²	
Area of Application	1500.00ft ² (Actual 972.09ft ²)	
Most Demanding Sprinkler Data	5.6K K-Factor 14.82gpm at 7.000psi	
Hose Streams	100.00gpm	
Coverage Per Sprinkler	225.00ft ²	Number Of Sprinklers Calculated 10
		Number Of Nozzles Calculated 0
System Pressure Demand	61.195psi	
System Flow Demand	159.98gpm	
Total Demand	259.98gpm @ 61.195psi	
Pressure Result	+77.755psi (56.0%)	

Supplies						Check Point Gauges			
<u>Node</u>	<u>Name</u>	<u>Flow(gpm)</u>	<u>Hose Flow(gpm)</u>	<u>Static(psi)</u>	<u>Residual(psi)</u>	<u>Identifier</u>	<u>Pressure(psi)</u>	<u>K-Factor(K)</u>	<u>Flow(gpm)</u>
1	Water Supply	1592.00gpm	100.00gpm	140.000psi	110.000psi	BOR (16)	49.194psi	22.81K	159.98gpm

25011_CPVHS HARNETT DOROTHEA DIX BH.cad	Water Supply at Node 1 (1592.00gpm, 0.00gpm, 140.000psi, 110.000psi)
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Hydraulic Summary

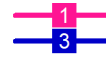
Job Number: 25011 - CFVH Dorothea Dix

Report Description: Light Hazard (1)

Job														
Job Number 25011					Designer THOMAS CROWDER									
Job Name: CFVHS - DOROTHEA DIX ADOLESCENT PSYCHIATRIC UNIT					State Certification/License Number									
Address 1 CRESTED IRIS DRIVE					AHJ									
Address 2 LILLINGTON, NC 27546					Job Site/Building									
Address 3					Drawing Name 25011_CPVHS HARNETT DOROTHEA DIX BH.cad									
System					Remote Area(s)									
Most Demanding Sprinkler Data 5.6K K-Factor 14.82gpm at 7.000psi					Occupancy Light Hazard			Job Suffix CFVH Dorothea Dix						
Hose Allowance At Source 100.00gpm					Density 0.10gpm/ft ²			Area of Application 1500.00ft ² (Actual 972.09ft ²)						
Additional Hose Supplies <table><tr><th>Node</th><th>Flow(gpm)</th></tr><tr><td colspan="2"></td></tr></table>					Node	Flow(gpm)			Number Of Sprinklers Calculated 10			Number Of Nozzles Calculated 0		Coverage Per Sprinkler 225.00ft ²
					Node	Flow(gpm)								
					AutoPeak Results: Pressure For Remote Area(s) Adjacent To Most Remote Area									
Total Hose Streams 100.00gpm														
System Flow Demand 159.98gpm			Total Water Required (Including Hose Allowance) 259.98gpm											
Maximum Pressure Unbalance In Loops 0.000psi														
Maximum Velocity Above Ground 14.05fps between nodes 13 and 10														
Maximum Velocity Under Ground 1.66fps between nodes 9 and 16														
Volume capacity of Wet Pipes 4690.10gal			Volume capacity of Dry Pipes											
Supplies														
Node	Name	Hose Flow (gpm)	Static (psi)	Residual (psi)	@	Flow (gpm)	Available (psi)	@	Total Demand (gpm)	Required (psi)	Safety Margin (psi)			
1	Water Supply	100.00gpm	140.000psi	110.000psi		1592.00gpm	138.950psi		259.98gpm	61.195psi	77.755psi			
Contractor														
Contractor Number 21		Contact Name THOMAS CROWDER					Contact Title PM							
Name of Contractor: REGIONAL FIRE SERVICES OF NC, LLC						Phone 919-212-2722			Extension					
Address 1 3101-310 POPLARWOOD COURT						FAX								
Address 2 RALEIGH, NC 27604						E-mail THOMAS@REGIONALFIRENC.COM								
Address 3						Web-Site								



Water Supply at Node 1



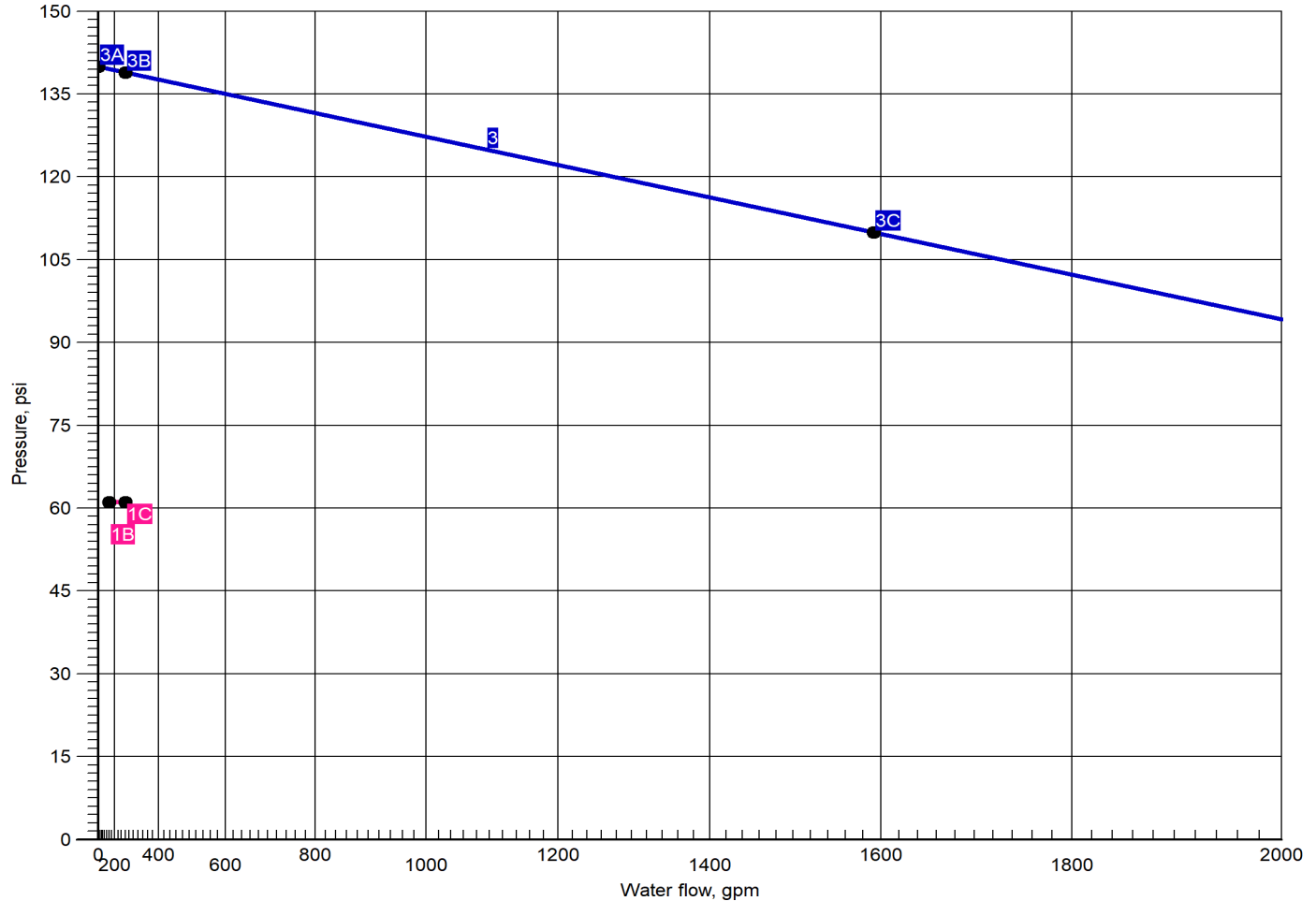
System Demand
Available Water Supply

Job Name: CFVHS - DOROTHEA DIX ADOLESCENT PSYCHIATRIC UNIT

Job Number: 25011 - CFVH Dorothea Dix

Report Description: Light Hazard (1)

Remote Area Number: 1



Curve	Data Point	Hydraulic Calculation Results	Additional Data
1	1B 1C	Required Pressure at System Demand: 61.195psi @ 159.98gpm Required Pressure at System Demand (Including Hose Allowance at Source): 61.195psi @ 259.98gpm	Available Flow @ 20 PSI: 3365.55gpm
3	3A 3B 3C	Available Static Pressure at Water Supply at Node 1: 140.000psi Available Residual Pressure at System Demand: 110.000psi @ 1592.00gpm Available Residual Pressure & Flow at Water Supply at Node 1: 110.000psi @ 1592.00gpm	



Summary Of Outflowing Devices

Job Number: 25011 - CFVH Dorothea Dix
Report Description: Light Hazard (1)

Device		Actual Flow (gpm)	Minimum Flow (gpm)	K-Factor (K)	Pressure (psi)			
Sprinkler	101	17.52gpm	14.82gpm	5.6K	9.783psi			
Sprinkler	102	18.69gpm	14.82gpm	5.6K	11.138psi			
Sprinkler	103	14.94gpm	14.82gpm	5.6K	7.119psi			
Sprinkler	104	14.89gpm	14.82gpm	5.6K	7.070psi			
Sprinkler	105	15.30gpm	14.82gpm	5.6K	7.464psi			
Sprinkler	106	14.83gpm	14.82gpm	5.6K	7.016psi			
Sprinkler	107	15.25gpm	14.82gpm	5.6K	7.419psi			
➡ Sprinkler	108	14.82gpm	14.82gpm	5.6K	7.000psi			
Sprinkler	109	17.06gpm	14.82gpm	5.6K	9.285psi			
Sprinkler	110	16.68gpm	14.82gpm	5.6K	8.873psi			

➡ Most Demanding Sprinkler Data



Node Analysis

Job Number: 25011 - CFVH Dorothea Dix
Report Description: Light Hazard (1)

Node	Elevation(foot)	Fittings	Pressure(psi)	Discharge(gpm)
1	-3'-0	S	61.195psi	159.98gpm
101	9'-1½	Spr(-9.783psi)	9.783psi	17.52gpm
102	9'-0	Spr(-11.138psi)	11.138psi	18.69gpm
103	9'-0	Spr(-7.119psi)	7.119psi	14.94gpm
104	9'-0	Spr(-7.070psi)	7.070psi	14.89gpm
105	9'-0	Spr(-7.464psi)	7.464psi	15.30gpm
106	9'-0	Spr(-7.016psi)	7.016psi	14.83gpm
107	9'-0	Spr(-7.419psi)	7.419psi	15.25gpm
108	9'-0	Spr(-7.000psi)	7.000psi	14.82gpm
109	9'-0	Spr(-9.285psi)	9.285psi	17.06gpm
110	9'-0	Spr(-8.873psi)	8.873psi	16.68gpm
2	9'-8	PO(5'-0)	11.860psi	
3	9'-8	PO(5'-0)	12.113psi	
4	9'-8	E(2'-0)	7.437psi	
5	9'-8	PO(5'-0)	7.629psi	
6	9'-8	PO(5'-0)	8.048psi	
7	9'-8	E(2'-0)	7.391psi	
8	9'-8	PO(5'-0)	7.580psi	
9	-3'-0	T(47'-3½)	61.192psi	
10	9'-8	PO(6'-0)	15.216psi	
11	9'-8	PO(5'-0)	10.064psi	
12	9'-8	PO(5'-0)	7.994psi	
13	1'-2		49.122psi	
14	9'-8	PO(5'-0)	10.170psi	
15	9'-8	PO(6'-0)	14.065psi	
16	1'-0	BOR	49.194psi	
17	9'-8	PO(6'-0)	13.779psi	



Hydraulic Analysis

Job Number: 25011 - CFVH Dorothea Dix

Report Description: Light Hazard (1)

Pipe Type	Diameter	Flow	Velocity	HWC	Friction Loss		Length	Pressure
Downstream	Elevation	Discharge	K-Factor	Pt	Pn	Fittings	Eq. Length	Summary
Upstream							Total Length	
Route 1								
DR	1.0490	14.82gpm	5.50fps	120		0.074703	2'-7½"	Pf 0.868psi
108	9'-0"	14.82gpm	5.6K	7.000psi		Sprinkler,	9'-0"	Pe -0.288psi
8	9'-8"			7.580psi		2E(2'-0"), PO(5'-0")	11'-7½"	Pv
BL	1.3800	29.65gpm	6.36fps	120		0.070906	5'-10"	Pf 0.414psi
8	9'-8"	14.83gpm		7.580psi		Flow (q) from Route 2		Pe
12	9'-8"			7.994psi			5'-10"	Pv
BL	1.3800	44.90gpm	9.63fps	120		0.152808	14'-3"	Pf 2.176psi
12	9'-8"	15.25gpm		7.994psi		Flow (q) from Route 5		Pe 0.000psi
14	9'-8"			10.170psi			14'-3"	Pv
BL	1.3800	61.58gpm	13.21fps	120		0.274129	7'-2"	Pf 3.609psi
14	9'-8"	16.68gpm		10.170psi		Flow (q) from Route 7	6'-0"	Pe
17	9'-8"			13.779psi		PO(6'-0")	13'-2"	Pv
CM	2.1570	61.58gpm	5.41fps	120		0.031140	9'-2"	Pf 0.286psi
17	9'-8"			13.779psi				Pe
15	9'-8"			14.065psi			9'-2"	Pv
CM	2.1570	123.78gpm	10.87fps	120		0.113291	10'-2"	Pf 1.150psi
15	9'-8"	62.19gpm		14.065psi		Flow (q) from Route 3		Pe
10	9'-8"			15.216psi			10'-2"	Pv
CM	2.1570	159.98gpm	14.05fps	120		0.182113	89'-7"	Pf 30.213psi
10	9'-8"	36.20gpm		15.216psi		Flow (q) from Route 9	76'-3½"	Pe 3.693psi
13	1'-2"			49.122psi		2T(12'-3½"), 5E(6'-2"), sCV(13'-6½"), BV(7'-4½")	165'-11"	Pv
DY	6.2800	159.98gpm	1.66fps	140		0.000752	0'-0"	Pf 0.000psi
13	1'-2"			49.122psi				Pe 0.072psi
16	1'-0"			49.194psi		BOR	0'-0"	Pv
UG	6.2800	159.98gpm	1.66fps	140		0.000752	178'-5"	Pf 10.263psi
16	1'-0"			49.194psi			171'-9½"	Pe 1.734psi
9	-3'-0"			61.192psi		3E(22'-1"), 4EE(11'-0½"), 3GV(4'-8½"), BFP(-10.000psi), T(47'-3½")	350'-2"	Pv
UG	12.4600	159.98gpm	0.42fps	140		0.000027	139'-7½"	Pf 0.004psi
9	-3'-0"			61.192psi				Pe
1	-3'-0"			61.195psi		S	139'-7½"	Pv
		100.00gpm				Hose Allowance At Source		
1		259.98gpm						
Route 2								
DR	1.0490	14.83gpm	5.51fps	120		0.074866	2'-10"	Pf 0.663psi
106	9'-0"	14.83gpm	5.6K	7.016psi		Sprinkler,	6'-0"	Pe -0.288psi
7	9'-8"			7.391psi		3E(2'-0")	8'-10"	Pv
BL	1.3800	14.83gpm	3.18fps	120		0.019690	9'-7½"	Pf 0.189psi
7	9'-8"			7.391psi				Pe
8	9'-8"			7.580psi			9'-7½"	Pv
Route 3								
DR	1.0490	14.89gpm	5.53fps	120		0.075394	2'-3"	Pf 0.847psi
104	9'-0"	14.89gpm	5.6K	7.070psi		Sprinkler,	9'-0"	Pe -0.288psi
5	9'-8"			7.629psi		2E(2'-0"), PO(5'-0")	11'-3"	Pv
BL	1.3800	29.83gpm	6.40fps	120		0.071710	5'-10"	Pf 0.419psi
5	9'-8"	14.94gpm		7.629psi		Flow (q) from Route 4		Pe
6	9'-8"			8.048psi			5'-10"	Pv
BL	1.3800	45.13gpm	9.68fps	120		0.154245	13'-1"	Pf 2.016psi
6	9'-8"	15.30gpm		8.048psi		Flow (q) from Route 6		Pe -0.000psi
11	9'-8"			10.064psi			13'-1"	Pv
BL	1.3800	62.19gpm	13.34fps	120		0.279179	8'-4"	Pf 4.001psi
11	9'-8"	17.06gpm		10.064psi		Flow (q) from Route 8	6'-0"	Pe
15	9'-8"			14.065psi		PO(6'-0")	14'-4"	Pv
Route 4								
DR	1.0490	14.94gpm	5.55fps	120		0.075872	2'-0"	Pf 0.607psi
103	9'-0"	14.94gpm	5.6K	7.119psi		Sprinkler,	6'-0"	Pe -0.288psi
4	9'-8"			7.437psi		3E(2'-0")	8'-0"	Pv
BL	1.3800	14.94gpm	3.20fps	120		0.019955	9'-7½"	Pf 0.192psi
4	9'-8"			7.437psi				Pe 0.000psi
5	9'-8"			7.629psi			9'-7½"	Pv
Route 5								
DR	1.0490	15.25gpm	5.66fps	120		0.078827	1'-11½"	Pf 0.864psi
107	9'-0"	15.25gpm	5.6K	7.419psi		Sprinkler,	9'-0"	Pe -0.288psi
12	9'-8"			7.994psi		2E(2'-0"), PO(5'-0")	10'-11½"	Pv
Route 6								



Hydraulic Analysis

Job Number: 25011 - CFVH Dorothea Dix

Report Description: Light Hazard (1)

Pipe Type	Diameter	Flow	Velocity	HWC	Friction Loss		Length	Pressure
Downstream	Elevation	Discharge	K-Factor	Pt	Pn	Fittings	Eq. Length	Summary
Upstream							Total Length	
DR	1.0490	15.30gpm	5.68fps	120		0.079271		
105	9'-0	15.30gpm	5.6K	7.464psi		Sprinkler,		
6	9'-8			8.048psi		2E(2'-0), PO(5'-0)		
Route 7								
DR	1.0490	16.68gpm	6.19fps	120		0.093024		
110	9'-0	16.68gpm	5.6K	8.873psi		Sprinkler,		
14	9'-8			10.170psi		3E(2'-0), PO(5'-0)		
Route 8								
DR	1.0490	17.06gpm	6.33fps	120		0.097013		
109	9'-0	17.06gpm	5.6K	9.285psi		Sprinkler,		
11	9'-8			10.064psi		2E(2'-0), PO(5'-0)		
Route 9								
DR	1.0490	17.52gpm	6.50fps	120		0.101812		
101	9'-1½	17.52gpm	5.6K	9.783psi		Sprinkler,		
2	9'-8			11.860psi		4E(2'-0), PO(5'-0)		
BL	1.3800	17.52gpm	3.76fps	120		0.026777		
2	9'-8			11.860psi				
3	9'-8			12.113psi				
BL	1.3800	36.20gpm	7.77fps	120		0.102603		
3	9'-8	18.69gpm		12.113psi		Flow (q) from Route 10		
10	9'-8			15.216psi		PO(6'-0)		
Route 10								
DR	1.0490	18.69gpm	6.94fps	120		0.114798		
102	9'-0	18.69gpm	5.6K	11.138psi		Sprinkler,		
3	9'-8			12.113psi		2E(2'-0), PO(5'-0)		

Equivalent Pipe Lengths of Valves and Fittings (C=120 only)

C Value Multiplier

$$\left(\frac{\text{Actual Inside Diameter}}{\text{Schedule 40 Steel Pipe Inside Diameter}} \right)^{4.87} = \text{Factor}$$

Value Of C	100	130	140	150
Multiplying Factor	0.713	1.16	1.33	1.51



Hydraulic Analysis

Job Number: 25011 - CFVH Dorothea Dix

Report Description: Light Hazard (1)

Pipe Type	Diameter	Flow	Velocity	HWC	Friction Loss		Length	Pressure
Downstream	Elevation	Discharge	K-Factor	Pt	Pn	Fittings	Eq. Length	Summary
Upstream							Total Length	

Pipe Type Legend	Units Legend		Fittings Legend	
AO Arm-Over	Diameter	Inch	ALV Alarm Valve	
BL Branch Line	Elevation	Foot	AngV Angle Valve	
CM Cross Main	Flow	gpm	b Bushing	
DN Drain	Discharge	gpm	BaV Ball Valve	
DR Drop	Velocity	fps	BFP Backflow Preventer	
DY Dynamic	Pressure	psi	BV Butterfly Valve	
FM Feed Main	Length	Foot	C Cross Flow Turn 90°	
FR Feed Riser	Friction Loss	psi/Foot	cplg Coupling	
MS Miscellaneous	HWC	Hazen-Williams Constant	Cr Cross Run	
OR Outrigger	Pt	Total pressure at a point in a pipe	CV Check Valve	
RN Riser Nipple	Pn	Normal pressure at a point in a pipe	DeV Deluge Valve	
SN Swing Nipple	Pf	Pressure loss due to friction between points	DPV Dry Pipe Valve	
SP Sprig	Pe	Pressure due to elevation difference between indicated points	E 90° Elbow	
ST Stand Pipe	Pv	Velocity pressure at a point in a pipe	EE 45° Elbow	
UG Underground			Ee1 11¼° Elbow	
			Ee2 22½° Elbow	
			f Flow Device	
			fd Flex Drop	
			FDC Fire Department Connection	
			fE 90° FireLock(TM) Elbow	
			fEE 45° FireLock(TM) Elbow	
			flg Flange	
			FN Floating Node	
			fT FireLock(TM) Tee	
			g Gauge	
			GloV Globe Valve	
			GV Gate Valve	
			Ho Hose	
			Hose Hose	
			HV Hose Valve	
			Hyd Hydrant	
			LtE Long Turn Elbow	
			mecT Mechanical Tee	
			Noz Nozzle	
			P1 Pump In	
			P2 Pump Out	
			PIV Post Indicating Valve	
			PO Pipe Outlet	
			PrV Pressure Relief Valve	
			PRV Pressure Reducing Valve	
			red Reducer/Adapter	
			S Supply	
			sCV Swing Check Valve	
			SFx Seismic Flex	
			Spr Sprinkler	
			St Strainer	
			T Tee Flow Turn 90°	
			Tr Tee Run	
			U Union	
			WirF Wirsbo	
			WMV Water Meter Valve	
			Z Cap	



Report Description: Light Hazard (1)

Gauge	Available Static Pressure (psi)	Available Residual Pressure (psi)	Required Residual Pressure (nsi)	K-Factor(K)	Flow(gpm)	Elevation(Foot)
BOR (16)	128.266psi	126.949psi	49.194psi	22.81K	159.98gpm	1'-0

Hydrant Flow Test Report

Test Date 2/26/2025

Test Time 10:10 AM

Location

Crested Iris Drive

Tested by

Thomas Crowder & Ajith Zacharias
Regional Fire Services of NC, LLC
Witnessed by: Apex Fire Department

Notes

Witnessed by Harnett Regional Water Department

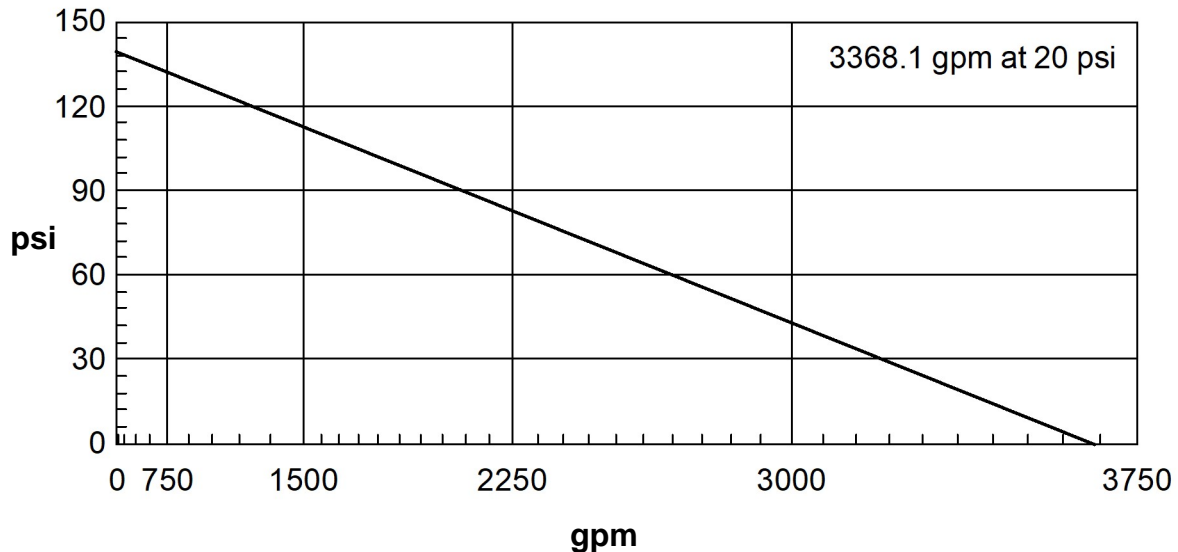
Read Hydrant

140 psi **static pressure**
110 psi **residual pressure**
hydrant elevation

Flow Hydrant(s)

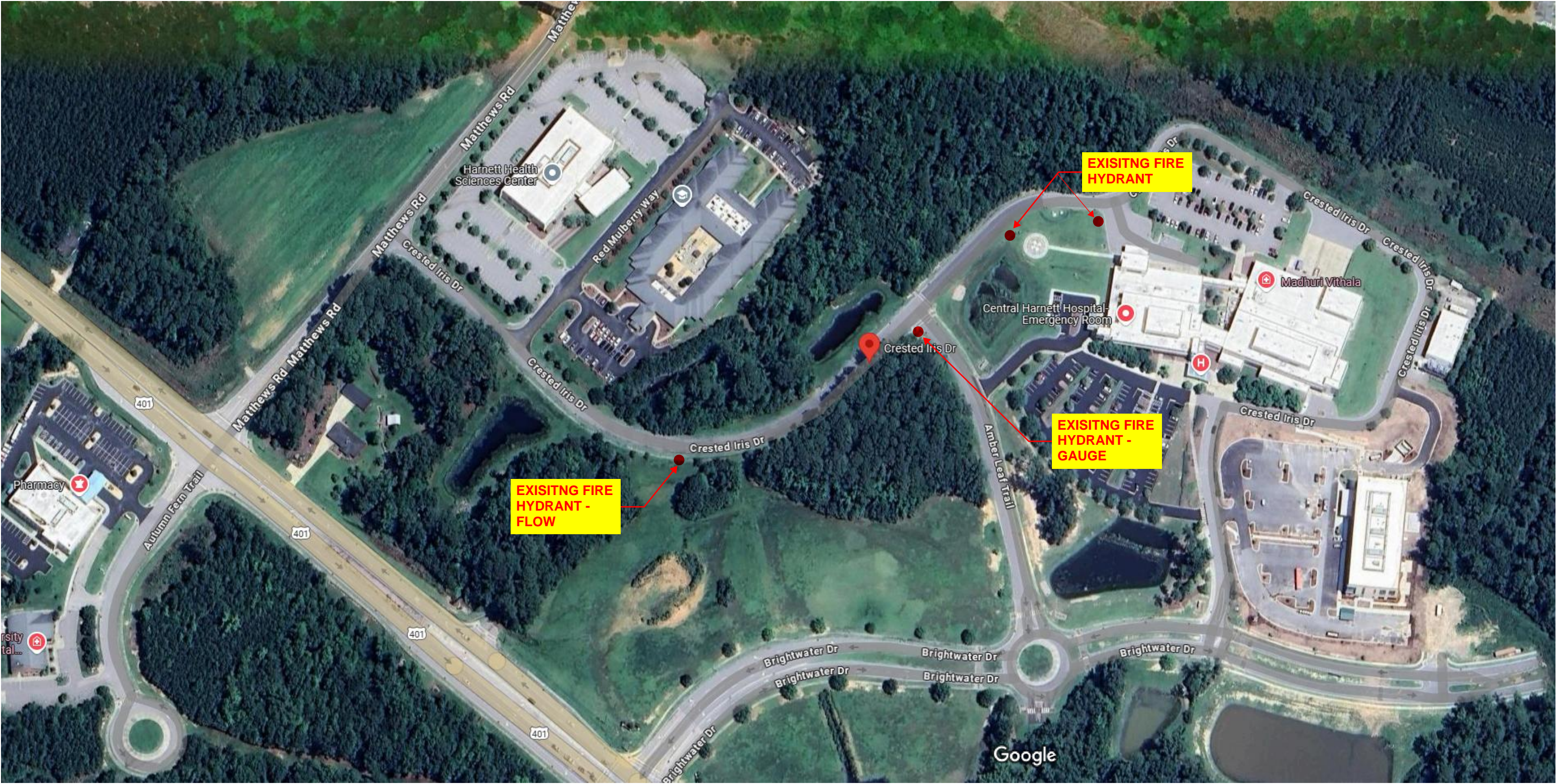
Outlet	Elev	Size	C	Pitot Pressure	Flow
#1		2.5	.9	90	1592 gpm

Flow Graph





Crested Iris Dr



Imagery ©2025 Airbus, Maxar Technologies, Map data ©2025 100 ft



Automatic Fire Sprinkler Systems



3101-310 Poplarwood Court - Raleigh, NC 27604

Ph: 919-212-2722 Fax: 919-212-2720

www.regionalfirenc.com

Please Note

The following submittal package is a standard manufacturer submittal. Material Availability, Vendor & Construction Schedule will determine manufacturers used for this project. All manufacturers and equals used are listed on the attached page.

PRODUCT SPECIFICATIONS

For:

**CFVHS Harnett Health Dorothea Dix Adolescent
Psychiatric Unit
Crested Iris Drive
Lillington, NC 27546**

Submitted by:

Thomas Crowder

Automatic Fire Sprinkler Systems



3101-310 Poplarwood Court - Raleigh, NC 27604

Ph: 919-212-2722 Fax: 919-212-2720

www.regionalfirenc.com

PRODUCT DATA MANUFACTURERS

PIPE

ALLIED
BULLMOOSE
WHEATLAND
YOUNGSTOWN
OR EQUAL

GROOVED FITTINGS

ANVIL
GRINNELL
SHUREJOINT
TYCO
VICTAULIC
OR EQUAL

FITTINGS

ANVIL
GRINNELL
SMITH COOPER
STAR
WARD
OR EQUAL

VALVES & DEVICES

GLOBE
GRINNELL
KENNEDY
MILWAUKEE
MULLER
NIBCO
RELIABLE
VICTAULIC
VIKING
OR EQUAL

AIR COMPRESSORS

GENERAL
GAST
JENNY
EMGLO
OR EQUAL

BACKFLOW DEVICES

AMES
CONBRACO
FEBCO
WILKINS
OR EQUAL

HANGERS & SUPPORTS

AFCON
ARGCO
CADDY / ERICO
HILTI
PHD MFG
TOLCO
OR EQUAL

STEEL NIPPLES

MERIT
SEMENOLE
OR EQUAL

FLEXIBLE SPRINKLER PIPE

AQUAFLEX
FLEXHEAD
FLEXDROP
OR EQUAL

SPRINKLER HEADS

GLOBE
RELIABLE
TYCO
VICTAULIC
VIKING

CPVC

BLAZEMASTER
NIBCO
SPEARS
VIKING
OR EQUAL

ELECTRIC SWITCHES

POTTER ELECTRIC
SYSTEM SENSOR
TYCO
VIKING
OR EQUAL

ALL MANUFACTURERS ARE FIRE SUPPRESSION LISTED AND COMPLIANT WITH NFPA STANDARDS



TECHNICAL DATA

INSTITUTIONAL SPRINKLERS 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 Institutional Style Sprinklers are small, flush, solder link and lever sprinklers made with tamper-resistant construction. These flush-mount sprinklers can be ordered as Quick Response, Quick Response-Extended Coverage, and as Pendent or Horizontal Sidewall configurations. Additionally, the VK427 can be used as Standard Response (FM only). Viking institutional sprinklers have been specifically designed for use with concealed piping in institutional mental health occupancies, correctional facilities, or anywhere a likelihood of tampering with fire sprinklers by the occupants may exist.

The institutional sprinkler assembly consists of the sprinkler body and a 3 or 4 inch escutcheon plate. The sprinkler and escutcheon plate are available with a polished chrome or painted finish.

2. LISTINGS AND APPROVALS*



cULus Listed: Category VNIV



FM Approved: Class 2015 (VK427 ONLY)

* Refer to the Approval Charts and Design Criteria for requirements that must be followed.

NOTICE

THE VIKING CORPORATION DISCLAIMS ANY RESPONSIBILITY FOR DAMAGES OR INJURY (INCLUDING DEATH) CAUSED BY THE OPERATION OR INOPERATION OF SPRINKLERS ARISING OUT OF THE MISUSE OF OR TAMPERING WITH VIKING BRAND SPRINKLERS INCLUDING, WITHOUT LIMITATION, ANY PERSONAL INJURY OR DEATH ARISING OUT OF OR CAUSED BY THE MANIPULATION OF, DISMANTLING OF, OR ATTEMPTED USE OF THE SPRINKLER OR ANY COMPONENT AS AN INSTRUMENT UNRELATED TO ITS INTENDED USE.

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 or 15 mm BSPT
Nominal K-factor: 5.6 U.S. (80.6 metric**)

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

Material Standards:

Sprinkler Body: QM Brass
Deflector: Pendent - Copper UNS-C23000 or UNS-C51000, HSW - Copper UNS-C51000
Deflector Pins: Stainless Steel 302
Button: UNS-C36000
Compression Screw: Brass UNS-C36000
Fusible Link Assembly: UNS-C51910 and Eutectic Solder
Fusible Link Levers: Stainless Steel UNS-S31600
Lever Bar: Copper Alloy UNS-C72500
Belleville Spring Sealing Assembly: Nickel Alloy, coated on both sides with PTFE Tape
Seat: UNS-C31400 or UNS-C31600 Bronze 1/2 to full hard
Pin Ring: Pendent - Copper UNS-C23000, HSW - Copper UNS-C51000

Ordering Information: (Refer to Table 1 and the current Viking List Price Book.)



SIN	THREAD	DESCRIPTION
VK426	NPT	QR Pendent
VK650	NPT	QR EC Pendent
VK427	NPT	QR or SR' HSW
VK651	NPT	QR EC HSW
VK426	BSPT	QR Pendent
VK650	BSPT	QR EC Pendent
VK427	BSPT	QR or SR' HSW
VK651	BSPT	QR EC HSW

1. VK427 is FM Approved as Standard Response (SR)



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



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TABLE 1: ORDERING INFORMATION

INSTRUCTIONS:

Choose a sprinkler style and base part number then,
 (1) add the suffix for the desired Finish
 (2) add the suffix for the desired Temperature Rating.
 (3) select an escutcheon plate and finish⁴.

Style	Sprinkler Base Part Number	SIN	Size		1: Available Finishes		2: Available Temperature Ratings		
			NPT Inch	BSPT mm	Description	Suffix ¹	Nominal Rating	Max. Ambient Ceiling Temperature ³	Suffix
QR Pendent	19663	VK426	1/2	--	Chrome	F	165 °F (74 °C)	100 °F (38 °C)	C
QR Pendent	20110	VK426	--	15	Painted white	M-/W	205 °F (96 °C)	150 °F (65 °C)	E
QR or SR ⁶ HSW	22885	VK427	1/2	--	Painted gray	M-/RAL9006			
QR or SR ⁶ HSW	22908	VK427	--	15	NOTE: The escutcheons are available with the same finishes as the sprinklers.		3: Escutcheons ⁴		
QR EC Pendent	19876	VK650	1/2	--			Description	Base Part Number	
QR EC Pendent	20111	VK650	--	15					
QR EC HSW	22884	VK651	1/2	--			3" (75 mm)	23196	
QR EC HSW	22907	VK651	--	15			4" (100 mm)	23197	

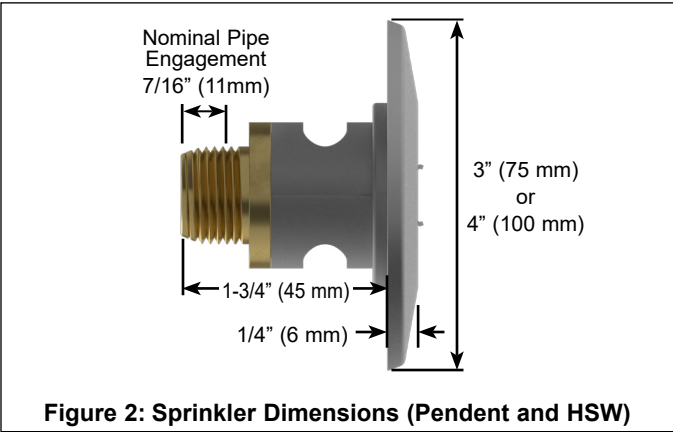
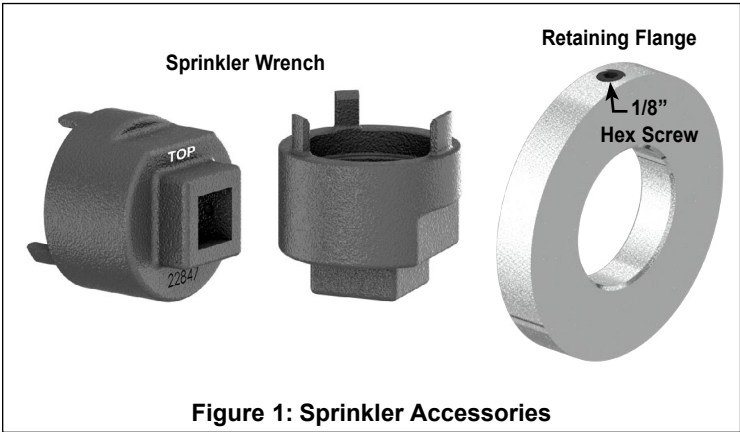
Examples
Sprinkler: 19663MC/RAL9006 = VK426 Quick Response Pendent with Painted gray Finish and 165 °F (74 °C) Nominal temperature rating. This sprinkler is to be installed into an area with a maximum ambient temperature of 100 °F (38 °C) meaning if the area will experience temperatures above the maximum ambient rating, you shall use a higher temperature-rated sprinkler.
Escutcheon: 23196M/RAL9006 = 3" Diameter Escutcheon with Painted gray finish.

Accessories

Sprinkler Wrench (see Figure 1): Socket Wrench: Part No. 22847MB²
Retaining Flange (see Figure 1): Part Number 10599 (includes 1/8" allen head set screw⁵)
Sprinkler Cabinet: Holds Up to 6 sprinklers: Part number 01731A

Footnotes

- Where a dash (-) is shown in the Finish suffix designation, insert the desired Temperature Rating suffix. See example above.
- Requires a 1/2" ratchet which is not available from Viking.
- 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.
- The escutcheons are available with the same finishes as the sprinkler.
- Requires a 1/8" allen wrench which is not available from Viking.
- The VK427 is FM Approved as Standard Response. Refer the Approval Charts and design criteria for further details.





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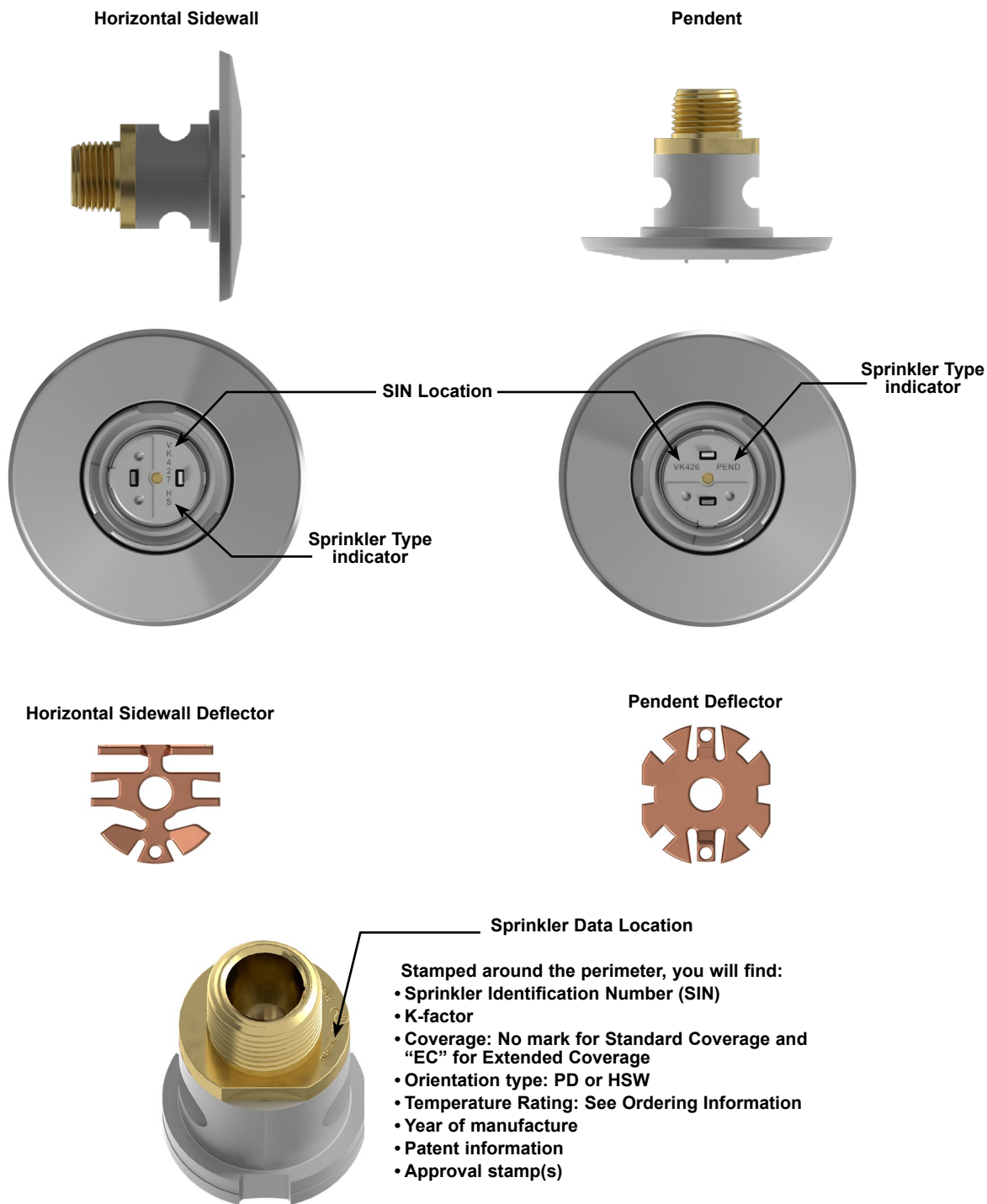


Figure 3: Sprinkler Components and Identification



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4. INSTALLATION

Refer to appropriate NFPA, FM Global, and/or any other applicable installation standards.

NOTICES

- Sprinklers must be handled with care. They must be stored in a cool, dry place in their original shipping container. Never install sprinklers that have been dropped, damaged in any way, or exposed to temperatures in excess of maximum ambient temperature allowed. Such sprinklers should be destroyed immediately.
- Viking Institutional Sprinklers are not intended for use in corrosive environments. Use only sprinklers listed for corrosive environments when subject to corrosive atmospheres.
- Use care when locating sprinklers near fixtures that can generate heat. Do not install sprinklers where they will be exposed to temperatures that exceed the maximum recommended ambient temperature for the temperature rating used.
- Adequate heat must be provided when the Institutional Sprinklers are installed on wet-pipe systems.
- The sprinklers must be installed after the piping is in place to prevent mechanical damage. Before installing, be sure to have the appropriate sprinkler model and style, with the correct orifice size, temperature rating, and response characteristics.

⚠ WARNING

Viking sprinklers are manufactured and tested to meet the rigid requirements of the approving agency. The sprinklers are designed to be installed in accordance with recognized installation standards. Deviation from the standards or any alteration to the sprinkler after it leaves the factory including, but not limited to: painting, plating, coating, or modification, may render the sprinkler inoperative and will automatically nullify the approval and any guarantee made by The Viking Corporation. Flush sprinklers are decorative sprinklers and may be considered special purpose. As such, some Authorities may limit the use depending on the occupancy classification. Refer to the Authority Having Jurisdiction prior to installation.

General Information:

The tamper-resistant design of the Viking Institutional Sprinklers is dependant upon proper installation as outlined in this document as well as proper piping design and installation. Proper installation ensures that the sprinkler assembly will be held in place by the force of the escutcheon pressing outward on the sprinkler body.

Pay close attention to the instructions below when installing these sprinklers.

Proper installation requires the following:

- The fitting in which the sprinkler is to be installed must be properly located according to the dimensions indicated below.
- The sprinkler fitting and drop nipple should be secured in place by installing the retaining flange as shown in the procedure below.
- The centerline of the fitting in which the sprinkler is to be installed must be perpendicular to the surface of the finished surface.
- Remove the sprinkler cap before placing the system into service.
- After installation, the entire system must be tested in accordance with recognized installation standards. The test is applied after sprinkler installation to ensure that no damage has occurred to the sprinkler during shipping and installation, and to make sure the unit 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 or tape is washed out of the joint

Tools and recommended supplies:

- PTFE Tape
- Institutional Sprinkler Wrench Part Number 22847M/B (requires a 1/2" socket wrench which is not available from Viking)
- 1/2" Ratchet wrench and (optional) extension
- 1/8" hex wrench (used for retaining flange hex screw; not available from Viking)
- Level
- Pliers

INSTALLATION TIP:

Prior to final installation, temporarily install all components described in the procedure below to verify the correct measurements have been achieved. If necessary, re-cut the supply drop nipple and repeat the procedure in order to achieve the correct measurements.



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Procedure:

NOTE: If the retaining flange assembly is to be used, slide the flange over the sprinkler drop nipple prior to threading the nipple into the branch line tee. For an alternative bracing method, refer to Figure 8.

1. Install all piping and cut the sprinkler drop nipple so that the ½" (15 mm) NPT outlet of the reducing coupling is at the correct elevation and centered in a 2" (50 mm) diameter opening in the ceiling.
2. Inspect the sprinkler assembly for damage.
3. Ensure the protective cap is on the sprinkler then apply a small amount of pipe-joint compound or tape (not shown) to the external threads of the sprinkler only, taking care not to allow a build-up of compound in the sprinkler inlet.
4. Install the escutcheon onto the sprinkler body as shown. DO NOT install the sprinkler without the escutcheon.
5. For HSW sprinklers Align the "TOP" marking on the wrench with the same marking on the protective cap. Place the sprinkler wrench over the protective cap on the sprinkler body.

NOTE: The wrench is uniquely designed to fit over the sprinkler cap and into the sprinkler in a specific alignment.

6. Install the sprinkler into the fitting.

NOTE: The Escutcheon plate MUST be tight against the ceiling or wall.

7. Tighten the sprinkler to approximately 7-14 ft-lbs.
8. If desired, use a level to ensure the HSW Institutional Sprinkler is in a horizontal position.

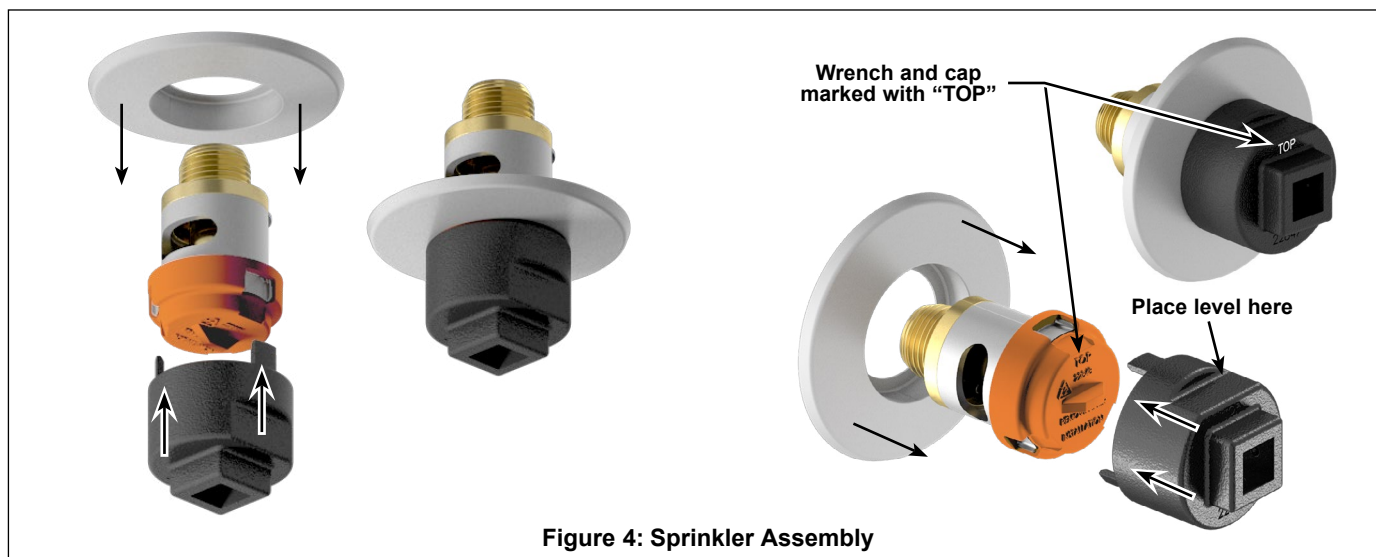


Figure 4: Sprinkler Assembly

9. To avoid damaging the sprinkler, carefully grasp the provided pull tab (manually or using pliers) and pull straight away from the sprinkler face to remove the protective cap.

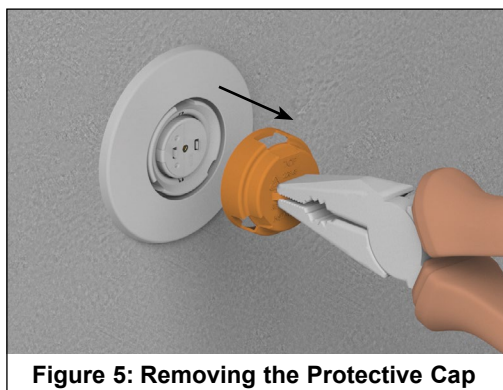


Figure 5: Removing the Protective Cap



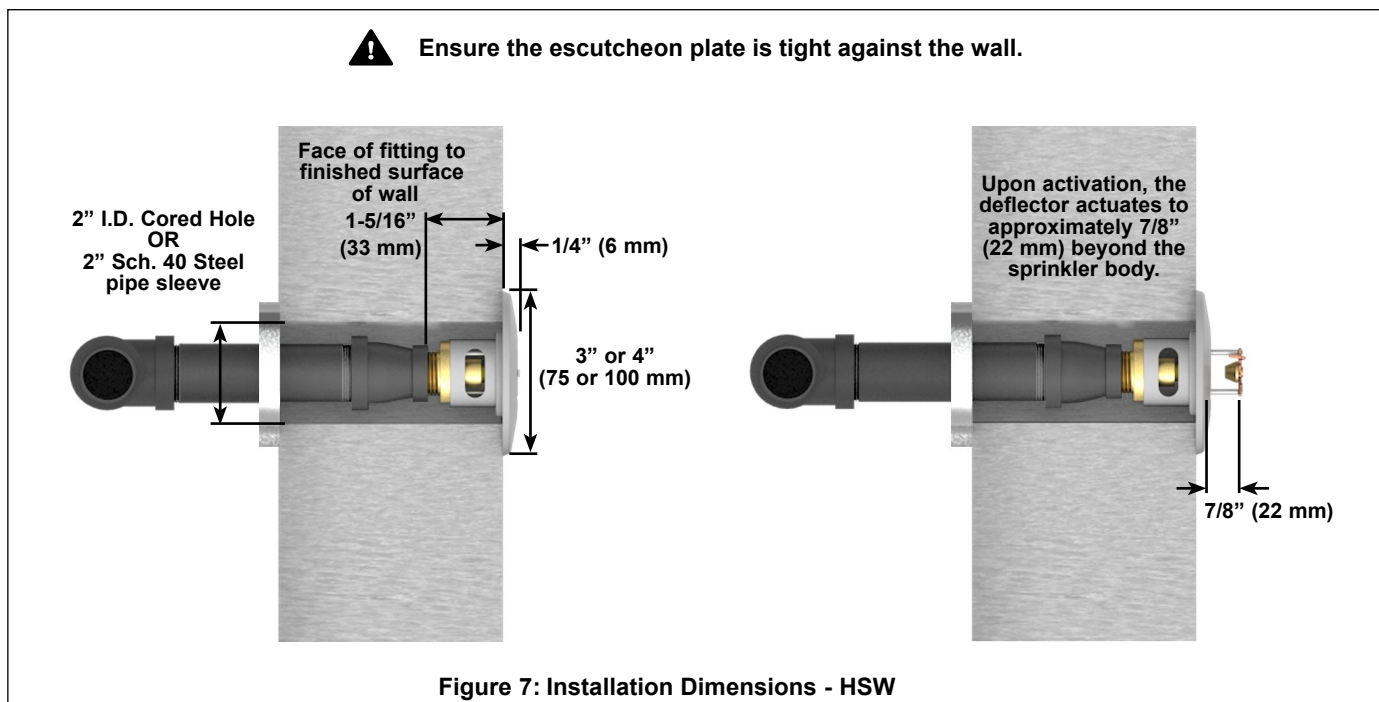
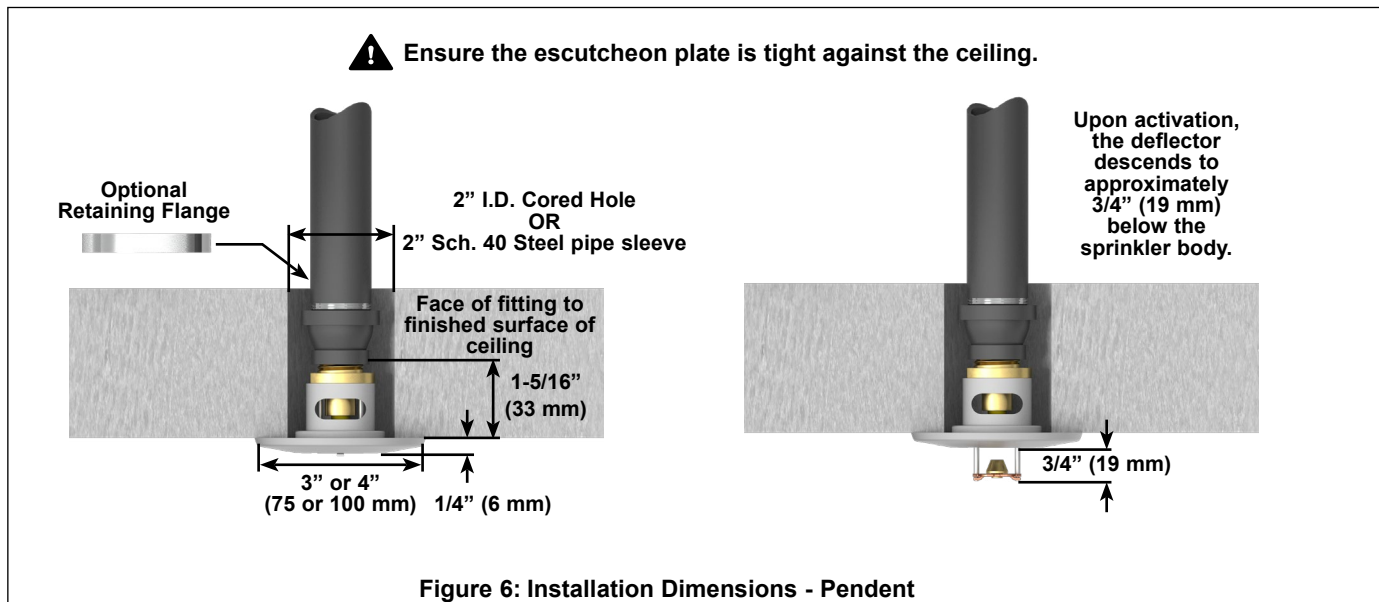
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5. OPERATION

The sprinkler is recessed into the mounting surface, flush to the wall, with only a portion of the fusible link assembly exposed beyond the wall. The concealed deflector is held inside the sprinkler body until the eutectic metal solder link is fused. When the sprinkler fuses, the deflector extends to discharge and distribute water.

The special escutcheon plates shown on this document are the only escutcheon rings that may be used with these institutional sprinklers, and all of these sprinklers must be installed with an escutcheon plate.

The sprinkler piping behind the wall leading to the sprinkler must be secured to prevent any movement of the sprinkler. One method of anchoring the pipe behind the wall is to use the retaining flange and screw assembly that are available from Viking. The flange slides over the sprinkler nipple prior to threading the nipple into the tee.

6. INSPECTIONS, TESTS AND MAINTENANCE

NOTICE

The owner is responsible for maintaining the fire protection system and devices in proper operating condition. For minimum maintenance and inspection requirements, refer to NFPA 25 for Inspection, Testing and Maintenance requirements. In addition, the Authority Having Jurisdiction may have additional maintenance requirements that must be followed.

- A. The sprinklers must be inspected on a regular basis for corrosion, mechanical damage, obstructions, paint, etc. The frequency of inspections may vary due to corrosive atmospheres, water supplies, and activity around the device.
- B. Sprinklers that have been painted 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 after a specified term of service. Refer to the installation standards and the Authority Having Jurisdiction for the specified period of time after which testing and/or replacement is required. Sprinklers that have operated cannot be reassembled or reused, but must be replaced. When replacing sprinklers, use only new sprinklers.
- C. The sprinkler discharge pattern is critical for proper fire protection. Nothing should be hung from the sprinkler, attached to it, or otherwise obstruct the discharge pattern. 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 affected area.

7. AVAILABILITY

Viking Institutional 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.



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APPROVAL CHART Viking Institutional Sprinklers

Finish(es) →	A 1 X	KEY
Temperature(s) →		
Escutcheon(s), If applicable →		

Sprinkler Base Part Number ¹	SIN	Thread Size		Listings and Approvals ^{2,4}	
		NPT Inch	BSPT mm	cULus (Quick Response)	FM (Standard Response)
19663	VK426	1/2	--	A1	-
20110	VK426	--	15	A1	-
22885	VK427	1/2	--	A1	A1
22908	VK427	--	15	A1	A1
19876	VK650	1/2	--	A1	-
20111	VK650	--	15	A1	-
22884	VK651	1/2	--	A1	-
22907	VK651	--	15	A1	-
Approved Temperature Rating Codes: A = 165 °F (74 °C) and 205 °F (96 °C)					Approved Finish Codes: 1 = Chrome, Painted White³, and Painted Gray³ (RAL9006)

Footnotes

- ¹ Base Part number is shown. For complete part number, refer to Viking's current price schedule.
- ² This table shows the listings and approvals available at the time of printing. Check with the manufacturer for any additional approvals.
- ³ Other colors are available upon request with the same Listings and Approvals as the standard colors.
- ⁴ Refer to the applicable cULus or FM Design Criteria in this document for further details.

cULus LISTED FLOW RATES AND COVERAGE AREAS (LIGHT HAZARD) FOR Viking EXTENDED COVERAGE Institutional Sprinklers

Sprinkler Base Part Number ¹	SIN	Thread Size		cULus Listed Flows and Pressures				
		NPT Inch	BSPT mm	Coverage Area Ft x Ft. (m x m)	Minimum Flow ¹ GPM (Lpm)	Minimum Pressure ² PSI (bar)	Deflector to Ceiling Distance Inches (mm)	Minimum Spacing Ft. (m)
19876	VK650	1/2	--	16 x 16 (4,9 x 4,9)	26 (96)	21.6 (1,49)	Flush ³	8 (2,4)
20111	VK650	--	15	16 x 16 (4,9 x 4,9)	26 (96)	21.6 (1,49)	Flush ³	8 (2,4)
22884	VK651	1/2	--	16 x 16 (4,9 x 4,9)	26 (96)	21.6 (1,49)	4 to 12 (102 to 304)	8 (2,4)
22907	VK651	--	15	16 x 16 (4,9 x 4,9)	26 (96)	21.6 (1,49)	4 to 12 (102 to 304)	8 (2,4)

Footnotes

- ¹ Based on the minimum flow in GPM (lpm) from each sprinkler.
- ² Based on Nominal K-factor.
- ³ The sprinkler face protrudes downward from the ceiling 1/4" (6 mm). See Figure 6.



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DESIGN CRITERIA - UL

STANDARD COVERAGE PENDENT

cULus Listing Requirements:

The sprinkler VK426 is cULus Listed as a Quick Response, Flush, Pendent Sprinkler as indicated in the Approval Chart for installation in accordance with the latest edition of NFPA 13. The following requirements must be followed:

- Designed for use in Light and Ordinary Hazard occupancies.
- The sprinkler must be installed in the pendent position in fixed fire protection systems (wet, dry, deluge, or preaction systems).
- Protection areas and maximum spacing shall be in accordance with the tables provided in NFPA 13.
- 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. (100 mm).
- Maximum distance from walls shall be no more than one-half of the allowable distance between sprinklers. The distance shall be measured perpendicular to the wall.
- The sprinkler installation and obstruction rules contained in NFPA 13 for standard coverage pendent spray sprinklers must be followed.

EXTENDED COVERAGE PENDENT

cULus Listing Requirements:

The sprinkler VK650 is cULus Listed as an Extended Coverage, Quick Response, Flush, Pendent Sprinkler as indicated in the Approval Chart for installation in accordance with the latest edition of NFPA 13. The following requirements must be followed:

- Designed for use in Light Hazard occupancies only.
- The sprinkler must be installed in the pendent position in fixed fire protection systems (wet, dry, deluge, or preaction systems).
- Minimum spacing allowed is 8 ft. (2.4 m) unless baffles are installed in accordance with NFPA 13.
- Maximum protection area allowed is 16' x 16' (4.9 m x 4.9 m).
- Minimum distance from walls is 4 in. (100 mm).
- Maximum distance from walls shall be no more than one-half of the allowable distance between sprinklers. The distance shall be measured perpendicular to the wall.
- The sprinkler installation and obstruction rules contained in NFPA 13 for extended coverage pendent spray sprinklers must be followed.

STANDARD COVERAGE HORIZONTAL SIDEWALL

cULus Listing Requirements:

The sprinkler VK427 is cULus Listed as a Quick Response, Flush, Horizontal Sidewall Sprinkler as indicated in the Approval Chart for installation in accordance with the latest edition of NFPA 13. The following requirements must be followed:

- Designed for use in Light and Ordinary Hazard occupancies below smooth, flat, horizontal ceilings.
- The sprinkler must be installed in the horizontal sidewall position in fixed fire protection systems (wet, dry, deluge, or preaction systems).
- Orient the top of the deflector parallel with the ceiling. The wrench is marked with the word "top".
- Must be located with deflector 4" to 12" (102 mm to 304 mm) below the ceiling, and flush with the wall in which they are installed.
- Protection areas and maximum spacing shall be in accordance with the tables provided in NFPA 13.
- Minimum spacing allowed is 6 ft. (1.8 m) unless baffles are installed in accordance with NFPA 13.
- Minimum distance from end walls is 4 in. (102 mm).
- Maximum distance from end walls shall be no more than one-half of the allowable distance between sprinklers. The distance shall be measured perpendicular to the wall.
- The sprinkler installation and obstruction rules contained in NFPA 13 for standard coverage sidewall spray sprinklers must be followed.

EXTENDED COVERAGE HORIZONTAL SIDEWALL

cULus Listing Requirements:

The sprinkler VK651 is cULus Listed as an Extended Coverage, Quick Response, Flush, Horizontal Sidewall Sprinkler as indicated in the Approval Chart for installation in accordance with the latest edition of NFPA 13. The following requirements must be followed:

- Designed for use in Light Hazard occupancies only below smooth, flat, horizontal ceilings.
- The sprinkler must be installed in the horizontal sidewall position in fixed fire protection systems (wet, dry, deluge, or preaction systems).
- Orient the top of the deflector parallel with the ceiling. The wrench is marked with the word "top".
- Must be located with deflector 4" to 12" (102 mm to 304 mm) below the ceiling, and flush with the wall in which they are installed.
- Maximum protection area allowed is 16' x 16' (4.9 m x 4.9 m).
- Maximum spacing shall be in accordance with the tables provided in NFPA 13.
- Minimum spacing allowed is 8 ft. (2.4 m) unless baffles are installed in accordance with NFPA 13.
- Minimum distance from end walls is 4 in. (102 mm).
- Maximum distance from end walls shall be no more than one-half of the allowable distance between sprinklers. The distance shall be measured perpendicular to the wall.
- The sprinkler installation and obstruction rules contained in NFPA 13 for extended coverage sidewall spray sprinklers must be followed.

IMPORTANT: Always refer to 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

INSTITUTIONAL SPRINKLERS K5.6

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

DESIGN CRITERIA - FM

FM Approval Requirements:

The Viking Standard Response Horizontal Sidewall Sprinkler VK427 is FM Approved as standard response sidewall Non-Storage sprinkler, as indicated in the FM Approval Guide. For specific application and installation requirements, reference the latest applicable FM Loss Prevention Data Sheets (including 2-0) and Technical Advisory Bulletins. FM Global Loss Prevention Data Sheets and Technical Advisory Bulletins 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 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.

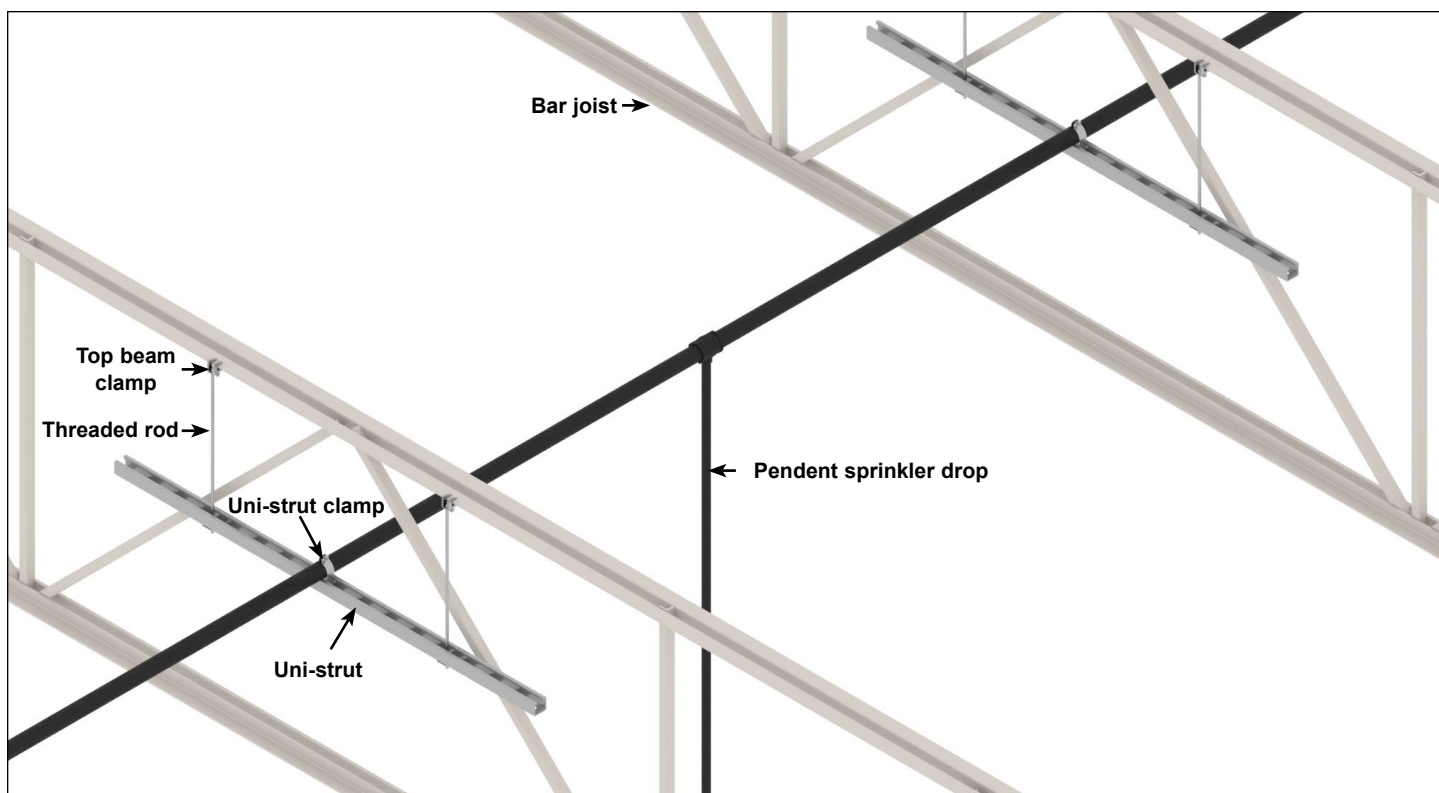


Figure 8: Alternative Bracing Method

NOTICE

Specific situations and conditions may exist that require alternative bracing methods to be used. Additional bracing methods may also be used; the material(s) used must not break down, drip, over-spray, or otherwise interfere with or impede the operation of the sprinkler—especially during fire conditions.



TECHNICAL DATA

SPRINKLER GENERAL CARE, INSTALLATION, AND MAINTENANCE GUIDE

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

1. DESCRIPTION - STANDARD RESPONSE, QUICK RESPONSE, EXTENDED COVERAGE, AND DRY SPRINKLERS

Viking thermosensitive spray sprinklers consist of a small frame and either a glass bulb or a fusible operating element. Available styles include pendent, flush pendent, concealed pendent, upright, horizontal sidewall, vertical sidewall, or conventional, depending on the particular sprinkler model selected.

Viking sprinklers are available with various finishes, temperature ratings, responses, and K-Factors to meet design requirements†. Used in conjunction with one of the corrosion-resistant coatings (for frame style sprinklers), the units provide protection against many corrosive environments. In addition, the special Polyester or Teflon® coatings can be used in decorative applications where colors are desired.

† Refer to the sprinkler technical data page for available styles, finishes, temperature ratings, responses, and nominal K-Factors for specific sprinkler models.

2. LISTINGS AND APPROVALS

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

3. TECHNICAL DATA

Specifications:

Refer to the appropriate sprinkler technical data sheet.

Material Standards:

Refer to the appropriate sprinkler technical data sheet.



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

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)

1" NPT: 30 ft-lbs. (40.7 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. They must be stored in a cool, dry place in their original shipping container. Never install sprinklers that have been dropped, damaged, or exposed to temperatures exceeding the maximum ambient temperature allowed (refer to the temperature chart on the sprinkler technical data page). 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.)

Sprinklers must be protected from mechanical damage during storage, transport, handling, and after installation. Sprinklers subject to mechanical damage must be protected with an approved sprinkler guard.

Use only sprinklers listed as corrosion resistant when subject to corrosive environments. When installing corrosion-resistant sprinklers, take care not to damage the corrosion-resistant coating. Use only the special wrench designed for installing coated or recessed Viking sprinklers (any other wrench may damage the unit).

Concealed sprinklers must be installed in neutral or negative pressure plenums only!

Use care when locating sprinklers near fixtures that can generate heat. Do not install sprinklers where they could be exposed to temperatures exceeding the maximum recommended ambient temperature for the temperature rating used.

Wet pipe systems must be provided with adequate heat. Sprinklers supplied from dry systems in areas subject to freezing must be listed dry sprinklers, upright, or horizontal sidewall sprinklers installed so that water is not trapped. For dry systems, pendent sprinklers and sidewall sprinklers installed on return bends are permitted, where the sprinklers, return bend, and branch line piping are in an area maintained at or above 40 °F (4 °C).

B. Installation Instructions - Standard Spray Sprinklers

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. Deviation from the standards or any alteration to sprinklers or cover plate assemblies after they leave the factory including, but not limited to: painting, plating, coating, or modification, may render them inoperative and will automatically nullify the approvals and any guarantee made by The Viking Corporation.



TECHNICAL DATA

SPRINKLER GENERAL CARE, INSTALLATION, AND MAINTENANCE GUIDE

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Before installation, be sure to have the appropriate sprinkler model and style, with the correct K-Factor, temperature rating, and response characteristics. 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 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 the sprinkler technical data page.

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 have the caps or shields kept on them when applying pipe-joint compound or tape. *Exception: For domed concealed sprinklers, remove the protective cap for installation, and then place it back on the sprinkler temporarily.*
3. Refer to the appropriate sprinkler technical data page to determine the correct sprinkler wrench for the model of sprinkler used. DO NOT use the 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, taking care not to over-tighten or damage the sprinkler.
 - b. For flush and concealed style sprinklers: the internal diameter of the special sprinkler installation wrench is designed for use with the sprinkler contained in the protective cap. *Exception: For domed concealed sprinklers, remove the protective cap for installation, and then place it back on the sprinkler temporarily.* Thread the flush or concealed sprinkler into the ½" or ¾" (15 mm or 20 mm)* NPT outlet of the coupling by turning it clockwise with the special sprinkler wrench. *Thread size depends on the particular sprinkler model used. Refer to the sprinkler technical data page.

C. Installation Instructions - Dry Sprinklers

WARNING: Viking dry sprinklers are to be installed in the 1" outlet (for dry and preaction systems), or run of malleable, ductile iron, or Nibco CPVC* threaded tee fittings (for wet systems) that meet the dimensional requirements of ANSI B16.3 (Class 150), or cast iron threaded tee fittings that meet the dimensional requirements of ANSI B16.4 (Class 125), even at branch line ends. The threaded end of the dry sprinkler is designed to allow the seal to penetrate and extend into the fitting to a predetermined depth. This prevents condensation from accumulating and freezing over the sprinkler seal. ***NOTE: When using CPVC fittings with Viking dry sprinklers, use only new Nibco Model 5012-S-BI. When selecting other CPVC fittings, contact Viking Technical Services.**

1. **DO NOT** install the dry sprinkler into a threaded elbow, coupling, or any other fitting that could interfere with thread penetration. Such installation would damage the brass seal.
2. **DO NOT** install dry sprinklers into couplings or fittings that would allow condensation to accumulate above the seal when the sprinkler is located in an area subject to freezing.
3. **NEVER** try to modify dry sprinklers. They are manufactured for specific "A" or "B" dimensions and cannot be modified.

The dry sprinkler must be installed after the piping is in place to prevent mechanical damage. Before installation, be sure to have the correct sprinkler model and style, with the appropriate "A" or "B" dimension(s), temperature rating, orifice size, and response characteristics. 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. *Exception: For concealed and adjustable recessed dry sprinklers, the protective caps and shields are removed for installation.*

To install the dry sprinkler, refer to the instructions below and the appropriate sprinkler technical data page for illustrated instructions.

Dry upright sprinklers must be installed above the piping, in the upright position only. When installing dry upright or plain barrel style vertical sidewall sprinklers on piping located close to the ceiling, it may be necessary to lower the sprinkler into the fitting from above the ceiling. When installing dry upright or plain barrel vertical sidewall sprinklers from below the ceiling, verify that the opening in the ceiling is a minimum 1-1/2" (38.1 mm) in diameter.

For dry upright or plain barrel vertical sidewall sprinklers in the upright position: First, install the escutcheon (if used) over the threaded end of the sprinkler barrel. Slide the escutcheon past the external threads. NOTE: When installing the dry upright or plain barrel vertical sidewall sprinkler from above the ceiling, it will be necessary to install the escutcheon after lowering the threaded end of the sprinkler through the ceiling penetration.

- A. **For all dry sprinklers:** Apply a small amount of pipe-joint compound or tape to the external threads of the sprinkler barrel only, taking care not to allow a build-up of compound or tape over the brass inlet and seal. **NOTE:** Sprinklers with protective caps or bulb shields must be contained within the caps or shields before applying pipe-joint compound or tape.



TECHNICAL DATA

SPRINKLER GENERAL CARE, INSTALLATION, AND MAINTENANCE GUIDE

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

- B. Refer to the appropriate sprinkler technical data page to determine the correct sprinkler wrench for the model of sprinkler used.
- C. Install the dry sprinkler on the piping using the special dry sprinkler wrench only, while taking care not to damage the sprinkler.
NOTE: Thread the sprinkler into the fitting hand tight, plus 1/2 turn with the dry sprinkler wrench.
- D. *For adjustable standard and adjustable recessed dry pendent and sidewall sprinklers: Escutcheons can be installed after the sprinklers have been installed onto the piping. Refer to the appropriate sprinkler technical data page for escutcheon installation instructions and illustrations.*

D. Installation Instructions - Testing

- 4. After installation, the entire sprinkler system must be tested. The test must be conducted to comply with the installation standards. Viking *high pressure* sprinklers may be hydrostatically tested at a maximum of 300 psi (20.7 bar) for limited periods of time (two hours), for the purpose of acceptance by the Authority Having Jurisdiction.
 - a. Make sure the sprinkler is properly tightened. If a thread leak occurs, normally the sprinkler must be removed, new pipe-joint compound or tape applied, and then reinstalled. This is due to the fact that when the joint seal is damaged, the sealing compound or tape is washed out of the joint. Air testing [do not exceed 40 psi (2.76 bar)] the sprinkler piping prior to testing with water may be considered in areas where leakage during testing must be prevented. Refer to the Installation Standards and the Authority Having Jurisdiction.
 - 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.
- 5. For flush style sprinklers: the ceiling ring can now be installed onto the sprinkler body. Align the ceiling ring with the sprinkler body and thread or push it on (depends on sprinkler model) until the outer flange touches the surface of the ceiling. Note the maximum adjustment is 1/4" (6.35 mm). DO NOT MODIFY THE UNIT. If necessary, re-cut the sprinkler drop nipple as required.
- 6. For concealed sprinklers: the cover assembly can now be attached.
 - a. Remove the cover from the protective box, taking care not to damage the cover plate assembly.
 - b. Gently place the base of the cover plate assembly over the sprinkler protruding through the opening in the ceiling.
 - c. Push the cover plate assembly onto the sprinkler until the unfinished brass flange of the cover plate base (or the cover adapter, if used) touches the surface of the ceiling.
 - d. Refer to the applicable technical data sheet to determine the maximum adjustment available for concealed sprinklers. DO NOT MODIFY THE UNIT. If necessary, re-cut the sprinkler drop nipple.

NOTE: If it is necessary to remove the entire sprinkler unit, the system must be taken out of service. See section 6. INSPECTIONS, TESTS AND MAINTENANCE and follow all warnings and instructions.

5. OPERATION

Refer to the appropriate sprinkler technical data page(s). 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 extinguish or control the fire.

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



TECHNICAL DATA

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6. INSPECTIONS, TESTS AND MAINTENANCE

NOTICE: 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 corrosion, mechanical damage, obstructions, paint, etc. Frequency of inspections may vary due to corrosive atmospheres, water supplies, and activity around the sprinkler unit.
- 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 after a specified term of service. Refer to NFPA 25 and the Authority Having Jurisdiction for the specified period of time after which testing and/or replacement 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. Therefore, nothing should be hung from, attached to, or otherwise obstruct the discharge pattern. 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 affected 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 to remove the old sprinkler by turning it counterclockwise to unthread it from the piping.
 - 2b. For flush and concealed style sprinklers: Remove the ceiling ring or cover plate assembly before unthreading the sprinkler body from the piping. Ceiling rings and 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 body, place the plastic protective cap (from the spare sprinkler cabinet) over the sprinkler to be removed and then fit the sprinkler wrench over the cap. Then use the wrench to unthread the sprinkler from the piping. *Exception: Domed concealed sprinklers are removed without the plastic cap.*
 3. Install the new sprinkler unit by following the instructions in section 4. INSTALLATION. Care must be taken to ensure that the replacement sprinkler is the proper model and style, with the correct K-Factor, temperature rating, and response characteristics. A fully stocked spare sprinkler cabinet should be provided for this purpose. For flush or concealed sprinklers: stock of spare ceiling rings or cover plates should also be available in the spare sprinkler cabinet.
- E. Place the system back in service and secure all valves. Check for and repair all leaks. 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 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

SPRINKLER OVERVIEW

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

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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

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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 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

China Approved



TECHNICAL DATA SHEET

VK3001 Quick Response Upright Sprinkler K5.6 (80.6)

4. TECHNICAL SPECIFICATIONS

4.1 Definitions

Standard Upright Sprinkler: A sprinkler intended to be oriented with the deflector above the frame so water flows upward through the orifice, striking the deflector and forming an umbrella-shaped spray pattern downward. These sprinklers are marked “SSU” (Standard Spray Upright) or “UPRIGHT” on the deflector.

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

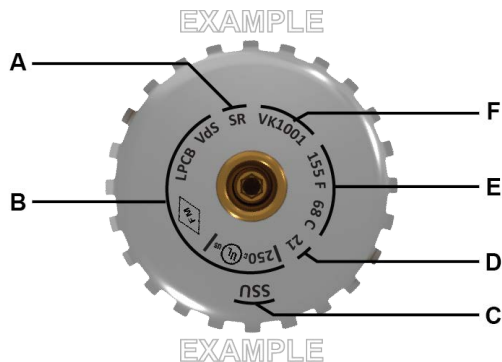


Figure – 1: Markings

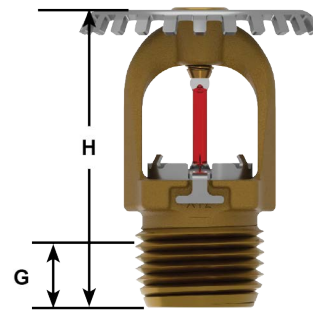


Figure – 2: Dimensions

Ref	Description	Value
A	Response type	QR: Quick Response
B	Listings and Approvals	See sections 3 and 5
C	Sprinkler type	SSU: Standard Spray Upright
D	Manufacture date (year)	See marking
E	Nominal temperature rating	See marking
F	Manufacturers Sprinkler Identification Number (SIN)	VK3001
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.

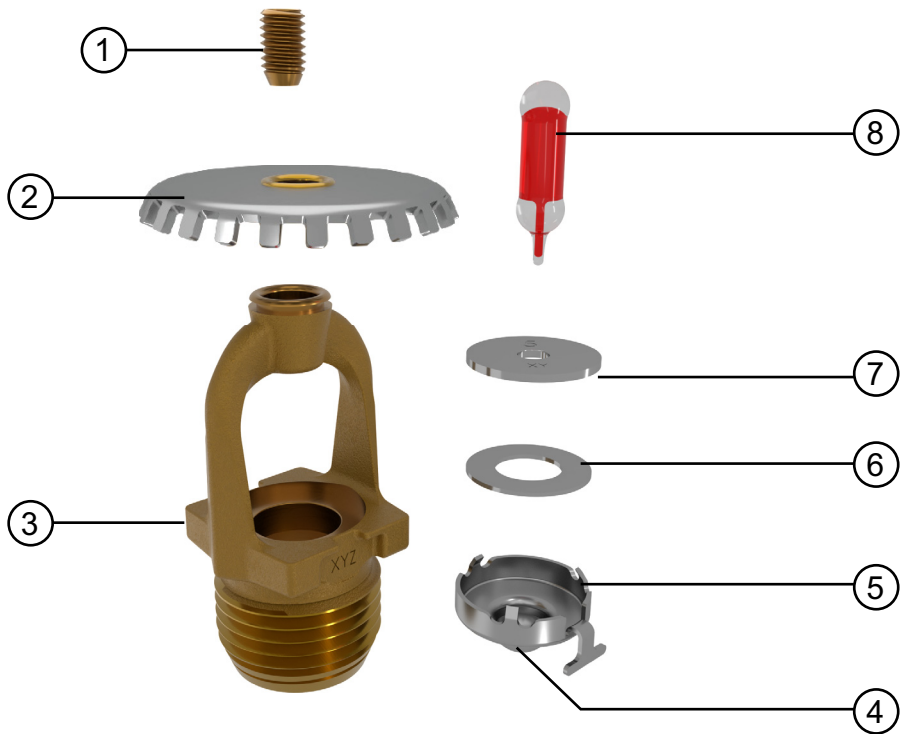


Figure – 3 Sprinkler Components

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

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	CE	LPCB	VdS	UKCA	MED	China
Maximum WWP PSI (bar) →			250 (17)	175 (12)						
23869	1/2"	—	A1	A1	A1	A1	A1	A1	A1	—
23881	—	15 mm	A1	A1	A1	A1	A1	A1	A1	—
26755	—	15 mm	B2	B2	—	—	—	—	—	B2
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 = 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} 2 = Chrome										
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_VK3001.
- 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.
- China Approval: Approved according to China GB standard.

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



TECHNICAL DATA SHEET

**VK3001 Quick Response
Upright Sprinkler K5.6 (80.6)****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).

NOTE: When ordering sprinklers that will be installed into InstaSeal® CPVC fittings, refer to Form No. F_032219 for installation instructions. Use the InstaSeal® alignment tool and NOT the sprinkler wrench for InstaSeal® sprinkler installations.

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
26755*	15 mm BSPT	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

*Only for China

6.2 Sprinkler Accessories

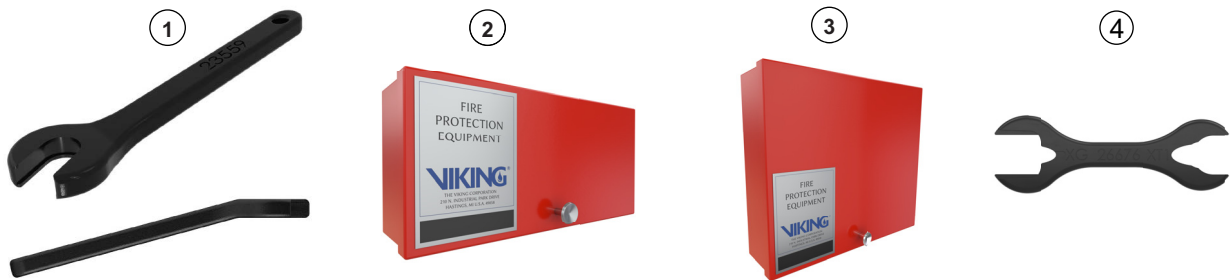


Figure – 4: Sprinkler Accessories

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)
4)	26676	InstaSeal® alignment tool



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 spust'te 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 jinftehm 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 spustite do prevádzky výrobok iba vtedy, pokiaľ ste jasne pochopili tento návod.
	ga	Ná déan an táirge a shuiteail agus a choimisiunu mura dtuigean 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 leiðbeiningamar 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*.



Handling and Installation Instructions

Model XT-1 Upright Sprinklers

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.

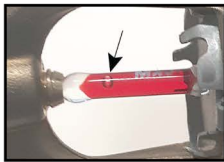
- NEVER use a sprinkler that has been exposed to temperatures exceeding the maximum allowed ambient temperature.
- NEVER use a sprinkler with a loss of liquid from the glass bulb or damage to the fusible element. A small bubble should be visible within the glass bulb; rotate the sprinkler to a horizontal 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)



Handling and Installation Instructions

Model XT-1 Upright Sprinklers

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.

NOTICE

If the sprinkler will be installed into an IS-W2 InstaSeal™ fitting, refer to F_021123 or F_032219 (CPVC InstaSeal™ adapter) for the proper installation instructions.

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 (Figure1).

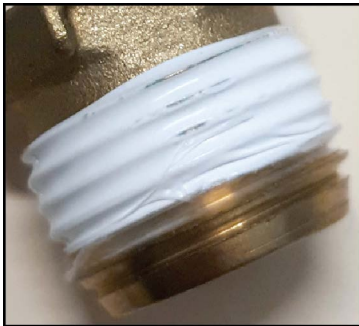


Figure – 1



Handling and Installation Instructions

Model XT-1 Upright Sprinklers

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).

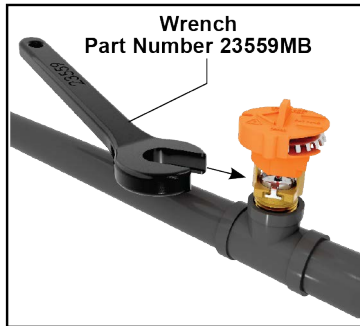


Figure – 2

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.

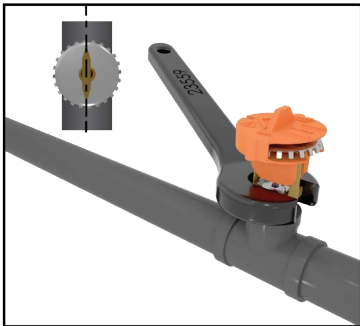


Figure – 3

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)	

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



Operation and Maintenance Instructions

Model XT-1 Sprinklers

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.



Operation and Maintenance Instructions

Model XT-1 Sprinklers

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.



Operation and Maintenance Instructions

Model XT-1 Sprinklers

⚠ 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:

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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

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)



VdS Approved: Standard EN 12259-1:199 + A3:2006; Certificate Number G 422002



LPCB Approved: Standard EN 12259-1:199 + A3:2006; Certificate Number 096e



CE: Standard EN 12259-1:1999 + A3:2006, Sprinkler, DOP_VK4621, 2831, 2023



MED Approved: Standard EN 12259-1:1999 + A3:2006, DOC_MED_VK4621, 2831.



UKCA Approved: Standard EN 12259-1:1999 + A3:2006, DOC_UKCA_VK4621, 0832, 2023.

China Approval: Approved according to China GB standard.



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 15 mm 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.



TECHNICAL DATA

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

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Material Standards:

Sprinkler body: QM Brass or DZR Brass

Deflector: Phosphor Bronze UNS-C51000

Deflector pins: Stainless steel UNS-S43000

Pip cap: Copper UNS-C11000

Pip cap insert: stainless steel UNS-S30400

Pip cap T-hinge ring: Stainless steel 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.

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 contact The Viking Corporation.

8. GUARANTEE

For details of warranty, refer to Viking's current list price schedule 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

Ordering Instructions - Sprinkler Base

1. Choose a sprinkler base part number with the required thread size and listing or approval (refer to the approval chart).
2. Add the suffix for the desired finish.
3. Add the suffix for the desired temperature rating.
4. Order a cover plate (refer to Ordering Instructions - Cover Plate).

EXAMPLE: 24682AB = VK4621 with brass 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 Numbers	
Part Number	Thread Size
24682	½" NPT
22962	15 mm BSPT
26548 ⁷	15 mm BSPT

2. Available Finishes	
Description	Suffix
Brass	A
ENT ^{2,3,5}	JN

3. Temperature Ratings				
Sprinkler Temperature Classification	Temperature Rating	Bulb Color	Maximum Ambient Ceiling Temperature ¹	Suffix
Ordinary	155 °F (68 °C)	Red	100 °F (38 °C)	B
Intermediate	175 °F (79 °C)	Yellow	150 °F (66 °C)	D
Intermediate	200 °F (93 °C)	Green	150 °F (66 °C)	E

Accessories	
Part Number	Description
23143	Installation wrench ^{4,6}
14412	Concealed cover plate installer tool, for use with push-on cover plates only (available since 2007)
14867	Large concealed cover plate installer tool, for use with push-on cover plates only (available since 2007)
01731A	Sprinkler cabinet; holds up to 6 sprinklers (available since 1971)

FOOTNOTES

1. 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.
2. UL Listed as corrosion resistant.
3. 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.
4. Requires a 1/2" ratchet which is not available from Viking.
5. FM Approved as a decorative finish.
6. The installation wrench is intended to be used for a maximum of 500 sprinkler installations at a maximum torque of 14 ft-lbs (19 Nm).
7. See Approval Chart for approval information.



TECHNICAL DATA

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

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Ordering Instructions - Cover Plate

1. Choose a cover plate base part number with the desired shape and style (refer to the approval chart).
2. Add the suffix for the desired finish.
3. Add the suffix for the required temperature rating.

Note: for stainless steel versions, skip steps 2 and 3 (finishes and paint are not available).

Example:

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

1. Cover Plate Base Part Numbers ^{3, 6}			
Style	Base Part Number ⁵	Size Inches (mm)	Shape (type)
Thread-On Style	23190	2 3/4 (70) diameter	Round
	23174	3 5/16 (84) diameter	Round
	23179	3 5/16 (84)	Square
	23174-/CR	3 5/16 (84) diameter	Round (clean room)
	▼ Stainless Steel material ⁴		
	23193	2 3/4 (70) diameter	Round
	23183	3 5/16 (84) diameter	Round
Push-On Style	23183-/CR	3 5/16 (84) diameter	Round (clean room)
	23447	2 3/4 (70) diameter	Round
	23463	3 5/16 (84) diameter	Round
	23482	3 5/16 (84)	Square
	23463-/CR	3 5/16 (84) diameter	Round (clean room)
	▼ Stainless Steel material ⁴		
	23455	2 3/4 (70) diameter	Round
	23473	3 5/16 (84) diameter	Round
	23473-/CR	3 5/16 (84) diameter	Round (clean room)

2. Available Finishes ⁵	
Description	Suffix
Polished Chrome	F
Brushed Chrome	F_/B
Bright Brass	B
Antique Brass	B_/A
Brushed Brass	B_/A
Brushed Copper	B_/A
Painted White	M_/W
Painted Ivory	M_/I
Painted Black	M_/B

3. Temperature Rating Matrix

IMPORTANT: The required cover plate temperature rating is determined by the sprinkler's temperature rating.

Sprinkler Temperature Classification ¹	Required Cover Plate Temperature Rating	Corresponding Sprinkler Nominal Temperature Rating	Maximum Ambient Ceiling Temperature ²	Suffix
Ordinary	139 °F (59 °C)	155 °F (68 °C)	100 °F (38 °C)	A
Intermediate	165 °F (74 °C)	200 °F (93 °C)	150 °F (66 °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.
6. For use with gasketed cover plates has been evaluated as part of the UL Listing.



TECHNICAL DATA

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

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Approval Chart Concealed Pendent Sprinkler VK4621 1/2" NPT or 15 mm BSPT, Nominal K-factor 5.6 U.S. (80.6 metric ²)							<div><div><div>Sprinkler Temperature Rating</div><div>Cover Plate Temperature Rating</div><div>AW1</div><div>Cover Plate Finish</div><div>KEY</div></div></div>	
Listings and Approvals ³ (Refer also to Design Criteria)								
Sprinkler Base Part No. ¹	cULus ^{4, 9}	China Approval	FM	VdS	LPCB	CE	MED	UKCA
	Maximum Water Working Pressure 250 psi (17.2 bar)		Maximum Water Working Pressure 175 psi (12 bar)					
Standard Response Applications								
24682A	--	--	AV1, BX1, AS2, BT2, BW1, CX1, CT2, CX1	AV1, CX1	AV1, CX1	AV1, CX1	AV1, CX1	AV1, CX1
24682JN ^{7,8}	--	--	AV1, BX1, AS2, BT2, BW1, CX1, CT2, CX1	--	--	--	--	--
22962A	--	--	AV1, BX1, AS2, BT2, BW1, CX1, CT2, CX1	AV1, CX1	AV1, CX1	AV1, CX1	AV1, CX1	AV1, CX1
22962JN ^{7,8}	--	--	AV1, BX1, AS2, BT2, BW1, CX1, CT2, CX1	--	--	--	--	--
Quick Response Applications								
24682A	AV1, BX1, AS2, BT2, CX1, CT2	--	--	--	--	--	--	--
24682JN ^{7,8}	AV1, BX1, AS2, BT2, CX1, CT2	--	--	--	--	--	--	--
22962A	AV1, BX1, AS2, BT2, CX1, CT2	--	--	--	--	--	--	--
22962JN ^{7,8}	AV1, BX1, AS2, BT2, CX1, CT2	--	--	--	--	--	--	--
26548	AV1, BX1, AS2, BT2, CX1, CT2	AV1, CX1, AS2, CT2	--	--	--	--	--	--
Approved Sprinkler Temperature Rating Key		Approved Cover Plate Assembly Finishes Key ⁵				Approved Cover Plate Finishes Key		
A = 155 °F (68 °C) B = 175 °F (79 °C) C = 200 °F (93 °C)		S = 139 °F (59 °C) Stainless steel covers (23193, 23455, 23183, and 23473) T = 165 °F (74 °C) Stainless steel covers (23193, 23455, 23183, and 23473) V = 139 °F (59 °C) covers (23190, 23447, 23174, 23463, 23179, and 23482) W = 165 °F (59 °C) square covers (23179 and 23482) X = 165 °F (74 °C) covers (23190, 23447, 23174, and 23463)				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		
Footnotes								
<div><div>1. Part number shown is the base part number. For complete part number, refer to current Viking price list schedule.</div><div>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.</div><div>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.</div><div>4. Listed by Underwriter's Laboratories for use in the U.S. and Canada.</div><div>5. The 139 °F (59 °C) covers have an orange label. The 165 °F (74 °C) covers have a white label.</div><div>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.</div><div>7. cULus Listed as corrosion-resistant.</div><div>8. FM Approved as a decorative finish.</div><div>9. Refer to the Cleanroom Sprinkler Cover Assembly technical data sheet for Viking's UL Listed cover plates with built-in gaskets.</div></div> <div>NOTE: Custom colors are indicated on a label inside the cover assembly. Refer to Figure 2</div>								



TECHNICAL DATA

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

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
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 Visit the Viking website for the latest edition of this technical data page www.vikinggroupinc.com

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.



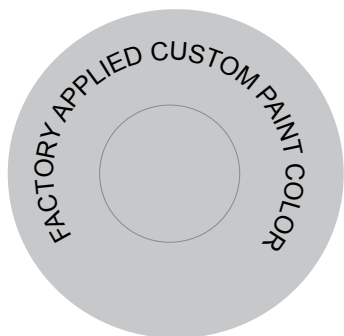
TECHNICAL DATA

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

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



Figure 1: Installation Wrench



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



3-5/16" (84 mm)

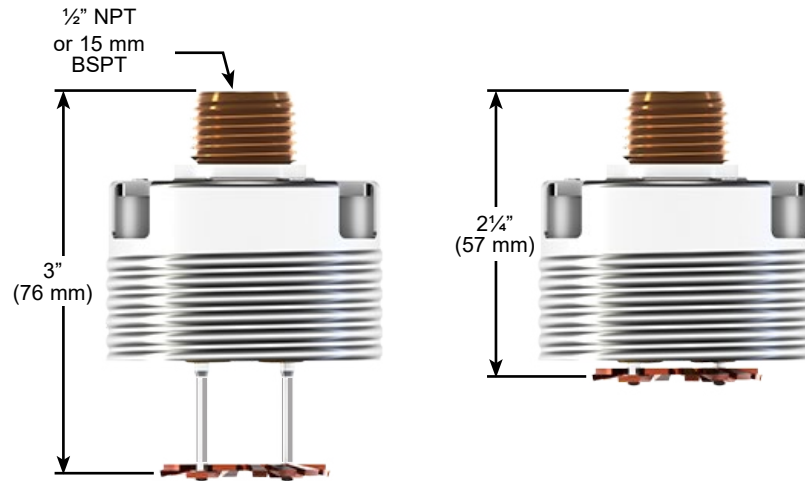
Figure 3: Square Cover Assembly



TECHNICAL DATA

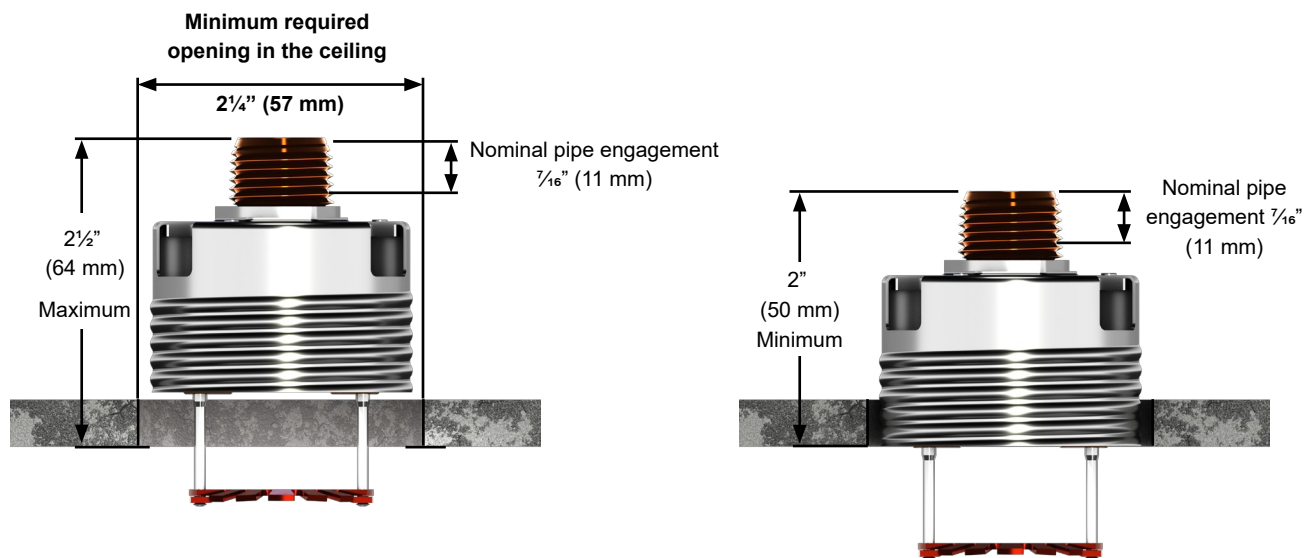
STANDARD AND QUICK RESPONSE CONCEALED PENDENT SPRINKLER VK4621 (K5.6)

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NOTE: Image is representative only. Actual product may vary.

Figure 4: Sprinkler Dimensions



NOTE: Image is representative only. Actual product may vary.

Figure 5: Sprinkler Installation Dimensions



TECHNICAL DATA

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

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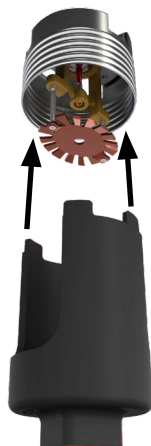


NOTICE: USE ONLY the designated sprinkler wrenches shown in this document. Permanent damage to the sprinkler assembly can occur if the proper wrench is not used. Other sprinkler wrenches available from Viking may fit into the sprinkler adapter cup; however, only the wrenches shown here are designed to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

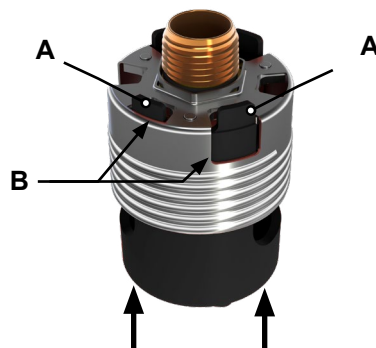
Step 1:
Remove the protective cap.



Step 2:
Insert the wrench into the sprinkler adapter.



Step 3:
Rotate the wrench slightly in either direction until the tines on the wrench (A) line up with the vent openings (B) 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.



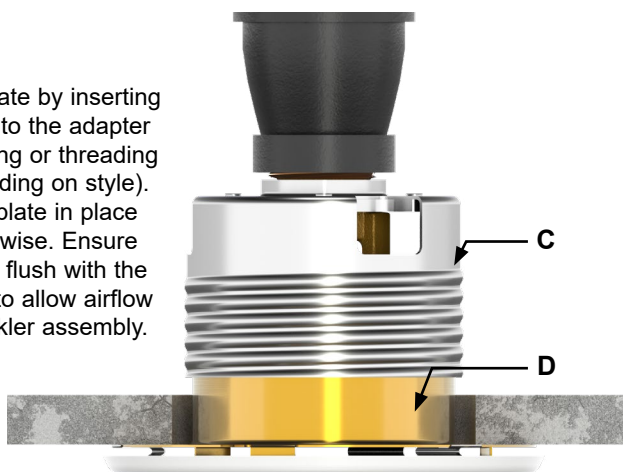
NOTE: Image is representative only. Actual product may vary.

Figure 6: Using the Sprinkler Wrench



Minimum

Install the cover plate by inserting the adapter (D) into the adapter cup (C) 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.



Maximum

NOTE: Image is representative only. Actual product may vary.

Figure 7: Installing the Cover Plate



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)

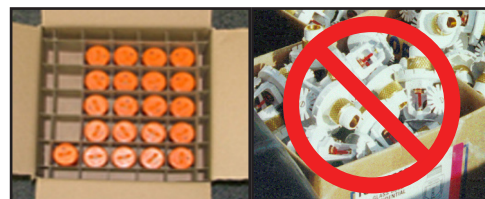
3/4" NPT: 20 ft-lbs. (27.1 N-m)

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: 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
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!

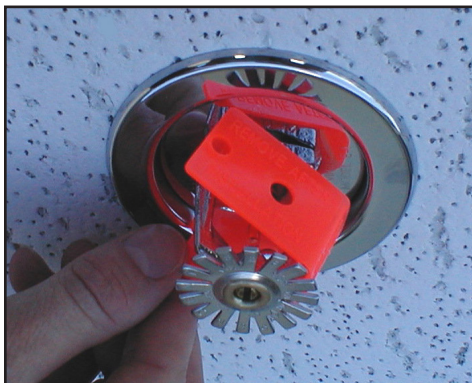


Figure 1: Sprinkler shield being removed from a pendent sprinkler.



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.



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.



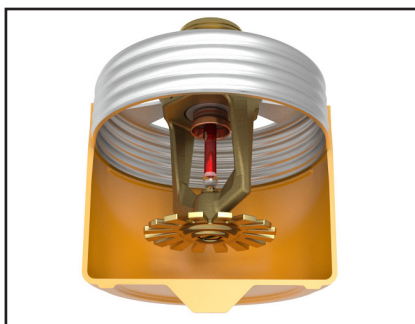
BULLETIN

CARE AND HANDLING
OF SPRINKLERS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
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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.



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.



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.

Fire Sprinkler Pipe

Schedule 10 and Schedule 40

Submittal Data Sheet



FM Approved and Fully Listed Sprinkler Pipe

Wheatland's Schedule 10 and Schedule 40 steel fire sprinkler pipe is FM Approved and UL, C-UL and FM Listed.

Approvals and Specifications

Both products meet or exceed the following standards:

- ASTM A135, Type E, Grade A (Schedule 10)
- ASTM A795, Type E, Grade A (Schedule 40)
- NFPA 13

Manufacturing Protocols

Schedule 10 and Schedule 40 are subjected to the toughest possible testing protocols to ensure the highest quality and long-lasting performance.

Finishes and Coatings

All Wheatland black steel fire sprinkler pipe up to 6" receives a proprietary mill coating to ensure a clean, corrosion-resistant surface that outperforms and outlasts standard lacquer coatings. This coating allows the pipe to be easily painted, without special preparation. Schedule 10 and Schedule 40 can be ordered in black, or with hot-dip galvanizing, to meet FM/UL requirements for dry systems that meet the zinc coating specifications of ASTM A795 or A53. All Wheatland galvanized material is also UL Listed.

Product Marking

Each length of Wheatland fire sprinkler pipe is continuously stenciled to show the manufacturer, type of pipe, grade, size and length. Barcoding is acceptable as a supplementary identification method.

SCHEDULE 10 SPECIFICATIONS

NPS	NOM OD		NOM ID		NOMINAL WALL		NOMINAL WEIGHT		UL		PIECES
	in.	mm	in.	mm	in.	mm	lbs./ft.	kg/m	CRR*	Lift	
1¼	1.660	42.2	1.442	36.6	.109	2.77	1.81	2.69	7.3	61	
1½	1.900	48.3	1.682	42.7	.109	2.77	2.09	3.11	5.8	61	
2	2.375	60.3	2.157	54.8	.109	2.77	2.64	3.93	4.7	37	
2½	2.875	73.0	2.635	66.9	.120	3.05	3.53	5.26	3.5	30	
3	3.500	88.9	3.260	82.8	.120	3.05	4.34	6.46	2.6	19	
4	4.500	114.3	4.260	108.2	.120	3.05	5.62	8.37	1.6	19	
5	5.563	141.3	5.295	134.5	.134	3.40	7.78	11.58	1.5	13	
6	6.625	168.3	6.357	161.5	.134	3.40	9.30	13.85	1.0	10	
8	8.625	219.1	8.249	209.5	.188	4.78	16.96	25.26	2.1	7	

* Calculated using Standard UL CRR formula, UL Fire Protection Directory, Category VIZY.

* The CRR is a ratio value used to measure the ability of a pipe to withstand corrosion. Threaded Schedule 40 steel pipe is used as the benchmark (value of 1.0).

SCHEDULE 40 SPECIFICATIONS

NPS	NOM OD		NOM ID		NOMINAL WALL		NOMINAL WEIGHT		UL		PIECES
	in.	mm	in.	mm	in.	mm	lbs./ft.	kg/m	CRR*	Lift	
1	1.315	33.4	1.049	26.6	.133	3.38	1.68	2.50	1.00	70	
1¼	1.660	42.2	1.380	35.1	.140	3.56	2.27	3.39	1.00	51	
1½	1.900	48.3	1.610	40.9	.145	3.68	2.72	4.05	1.00	44	
2	2.375	60.3	2.067	52.5	.154	3.91	3.66	5.45	1.00	30	

* Calculated using Standard UL CRR formula, UL Fire Protection Directory, Category VIZY.

* The CRR is a ratio value used to measure the ability of a pipe to withstand corrosion. Threaded Schedule 40 steel pipe is used as the benchmark (value of 1.0).



SUBMITTAL INFORMATION

PROJECT:

CONTRACTOR:

DATE:

ENGINEER:

SPECIFICATION REFERENCE:

SYSTEM TYPE:

LOCATIONS:

COMMENTS:

☐ BLACK

☐ HOT-DIP GALVANIZED

Reducing 90° Elbow Fig. 3201R



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

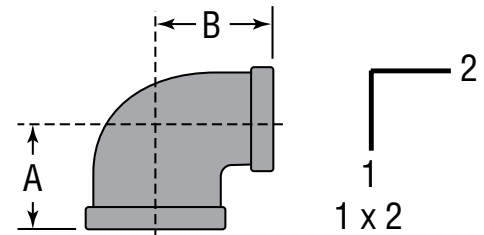
Material Specifications

- **Dimensions:** ASME B16.3
- **Material:** ASTM A536 Grade 65-45-12
- **Finish:** Black
- **Threads:** NPT per ASME B1.20.1
- **Agency Approvals:** All ductile iron threaded fittings are UL/ULC Listed and FM Approved.

Note: Ductile iron fittings have higher tensile strength than that of steel pipe. Therefore, over tightening can cause damage to pipe threads which may cause leakage. Ductile iron fittings should be tightened approximately three turns beyond hand tight, but no more than four turns.

Fig. 3201R Reducing 90° Elbow

Nominal Size	Max. Working Pressure ▲	Dimensions		Approx Wt. Each
1 x 2		A	B	
In. (mm)	PSI (kPa)	In. (mm)	In. (mm)	Lbs. (kg)
1 x ½	500	1.26	1.36	0.44
25 x 15	3450	32.00	34.54	0.20
1 x ¾	500	1.37	1.45	0.52
25 x 20	3450	34.79	36.83	0.24
1¼ x ½	500	1.34	1.53	0.64
32 x 15	34550	34.03	38.86	0.29
1¼ x ¾	500	1.45	1.62	0.72
32 x 20	3450	36.83	41.14	0.33
1¼ x 1	500	1.58	1.67	0.75
32 x 25	3450	40.13	42.41	0.34
1½ x ½	500	1.41	1.66	0.64
40 x 15	3450	35.81	42.16	0.29
1½ x ¾	500	1.52	1.75	0.77
40 x 20	3450	38.61	44.45	0.35
1½ x 1	500	1.65	1.80	0.92
40 x 25	3450	41.91	45.72	0.42
1½ x 1¼	500	1.82	1.88	1.08
40 x 32	3450	46.22	47.75	0.49
2 x ½	500	1.49	1.88	1.08
50 x 15	3450	37.84	47.75	0.49
2 x ¾	500	1.60	1.97	1.24
50 x 20	3450	40.64	50.03	0.56
2 x 1	500	1.73	2.02	1.40
50 x 25	3450	43.94	51.30	0.64
2 x 1¼	500	1.90	2.10	1.52
50 x 32	3450	48.26	53.34	0.70
2 x 1½	500	2.02	2.16	1.65
50 x 40	3450	51.30	54.86	0.75



▲ – Working Pressure Ratings are for reference only and based on Sch. 40 pipe. For the latest UL/ULC, and FM pressure ratings versus pipe schedule, please visit www.asc-es.com or contact your local ASC Engineered Solutions™ Representative.

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

Fig. 3201 90° Elbow



Material Specifications

Dimensions: ASME B16.3

Material: ASTM A536 Grade 65-45-12

Finish: Black

Threads: NPT per ASME B1.20.1

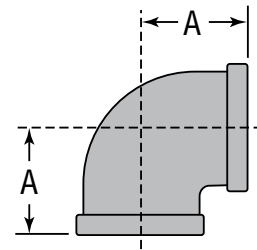
Agency Approvals: All ductile iron threaded fittings are UL/ULC Listed and FM Approved.

Note: Ductile iron fittings have higher tensile strength than that of steel pipe. Therefore, over tightening can cause damage to pipe threads which may cause leakage. Ductile iron fittings should be tightened approximately three turns beyond hand tight, but no more than four turns.

Figure 3201 90° Elbow

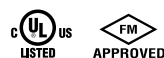
Nominal Size	Maximum Working Pressure ▲	Dimension A	Approx Wt. Each
In. (mm)	psi (kPa)	In. (mm)	Lbs. (kg)
1	500	1.50	0.62
20	3450	38.10	0.68
1¼	500	1.75	0.90
32	3450	44.45	0.41
1½	500	1.94	1.20
40	3450	49.276	0.54
2	500	2.25	1.85
50	3450	57.15	0.84

▲ – Working Pressure Ratings are for reference only and based on Sch. 40 pipe. For the latest UL/ULC, and FM pressure ratings versus pipe schedule, please visit asc-es.com or contact your local ASC Engineering Solutions™ Representative.



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

Straight Tee Fig. 3205



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

Material Specifications

Dimensions: ASME B16.3

Material: ASTM A536 Grade 65–45–12

Finish: Black

Threads: NPT per ASME B1.20.1

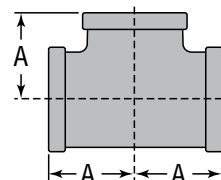
Agency Approvals: All ductile iron threaded fittings are UL/ULC Listed and FM Approved.

Note: Ductile iron fittings have higher tensile strength than that of steel pipe. Therefore, over tightening can cause damage to pipe threads which may cause leakage. Ductile iron fittings should be tightened approximately three turns beyond hand tight, but no more than four turns.

Figure 3205 Straight Tee

Nominal Size	Maximum Working Pressure ▲	Dimension A	Approx Wt. Each
In. (mm)	psi (kPa)	In. (mm)	Lbs. (kg)
1 25	500 3450	1.50 38.10	0.85 0.39
1¼ 32	500 3450	1.75 44.45	1.22 0.55
1½ 40	500 3450	1.94 49.27	1.55 0.70
2 50	500 3450	2.25 57.15	2.45 1.11

▲ – Working Pressure Ratings are for reference only and based on Sch. 40 pipe. For the latest UL/ULC, and FM pressure ratings versus pipe schedule, please visit asc-es.com or contact your local ASC Engineering Solutions™ Representative.



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

Reducing Coupling Fig. 3221R



Material Specifications

Dimensions: ASME B16.3

Material: ASTM A536 Grade 65-45-12

Finish: Black

Threads: NPT per ASME B1.20.1

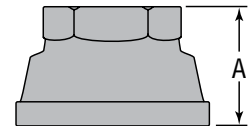
Agency Approvals: All ductile iron threaded fittings are UL/ULC Listed and FM Approved.

Note: Ductile iron fittings have higher tensile strength than that of steel pipe. Therefore, over tightening can cause damage to pipe threads which may cause leakage. Ductile iron fittings should be tightened approximately three turns beyond hand tight, but no more than four turns.

Figure 3221R Reducing Coupling

Nominal Size	Maximum Working Pressure ▲	Dimension A	Approx Wt. Each
In. (mm)	psi (kPa)	In. (mm)	Lbs. (kg)
1x½ 25 x 15	500 3450	1.69 42.92	0.39 0.18
1 x ¾ 25 x 20	500 3450	1.69 42.92	0.53 0.24
1¼ x ¾ 32 x 20	500 3450	2.06 52.32	0.64 0.29

▲ – Working Pressure Ratings are for reference only and based on Sch. 40 pipe. For the latest UL/ULC, and FM pressure ratings versus pipe schedule, please visit asc-es.com or contact your local ASC Engineering Solutions™ Representative.



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

Cap
Fig. 3224



Material Specifications

Dimensions: ASME B16.3

Material: ASTM A536 Grade 65-45-12

Finish: Black

Threads: NPT per ASME B1.20.1

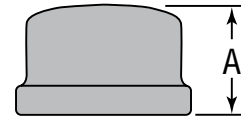
Agency Approvals: All ductile iron threaded fittings are UL/ULC Listed and FM Approved.

Note: Ductile iron fittings have higher tensile strength than that of steel pipe. Therefore, over tightening can cause damage to pipe threads which may cause leakage. Ductile iron fittings should be tightened approximately three turns beyond hand tight, but no more than four turns.

Figure 3224 Cap

Nominal Size	Maximum Working Pressure ▲	Dimension A	Approx Wt. Each
In. (mm)	psi (kPa)	In. (mm)	Lbs. (kg)
1	500	1.16	0.32
25	3450	29.46	0.15
1¼	500	1.28	0.43
32	3450	32.51	0.20
1½	500	1.33	0.60
40	3450	33.78	0.27
2	500	1.45	0.91
50	3450	36.83	0.41

▲ – Working Pressure Ratings are for reference only and based on Sch. 40 pipe. For the latest UL/ULC, and FM pressure ratings versus pipe schedule, please visit asc-es.com or contact your local ASC Engineered Solutions™ Representative.



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

Bushings Fig. 3283



Material Specifications

Dimensions: ASME B16.14

Material: ASTM A536 Grade 65-45-12

Finish: Black

Threads: NPT per ASME B1.20.1

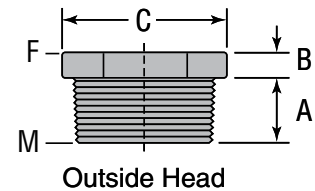
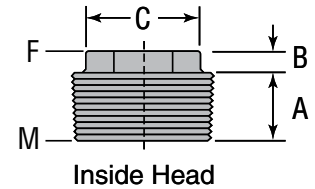
Agency Approvals: All ductile iron threaded fittings are UL/ULC Listed and FM Approved.

Note: Ductile iron fittings have higher tensile strength than that of steel pipe. Therefore, over tightening can cause damage to pipe threads which may cause leakage. Ductile iron fittings should be tightened approximately three turns beyond hand tight, but no more than four turns.

Figure 3283 Bushings

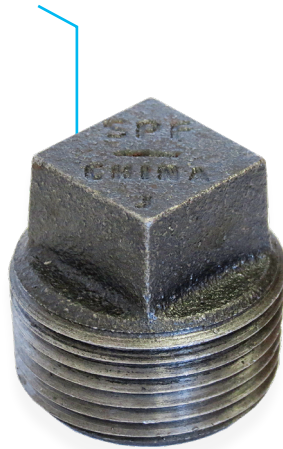
Nominal Size	Maximum Working Pressure ▲	Dimensions			Style	Approx Wt. Each
Male (M) x Female (F)	psi (kPa)	A	B	C		Lbs. (kg)
In. (mm)		In. (mm)	In. (mm)	In. (mm)	-	
1 x 1½	500	0.75	0.25	1.42	Outside	0.22
25 x 15	3450	19.05	6.35	36.06		0.10
1 x ¾	500	0.75	0.25	1.42	Outside	0.17
25 x 20	3450	19.05	6.35	36.06		0.08
1¼ x 1	500	0.80	0.28	1.76	Outside	0.28
32 x 25	3450	20.32	7.11	44.70		0.13
1½ x 1	500	0.83	0.31	2.00	Outside	0.45
40 x 25	3450	21.08	7.874	50.80		0.20
1½ x 1¼	500	0.83	0.31	2.00	Outside	0.30
40 x 32	3450	21.08	7.874	50.80		0.14
2 x 1	500	0.88	0.41	1.95	Inside	0.67
50 x 25	3450	22.35	10.414	49.43		0.30
2 x 1¼	500	0.88	0.34	2.48	Outside	0.73
50 x 32	3450	22.35	8.636	62.99		0.33
2 x 1½	500	0.88	0.34	2.48	Outside	0.61
50 x 40	3450	22.35	8.636	62.99		0.28

▲ – Working Pressure Ratings are for reference only and based on Sch. 40 pipe. For the latest UL/ULC, and FM pressure ratings versus pipe schedule, please visit asc-es.com or contact your local ASC Engineering Solutions™ Representative.



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

Cored Plug Fig. 3388



Material Specifications

Dimensions: ASME B16.14

Material: ASTM A536 Grade 65-45-12

Finish: Black

Threads: NPT per ASME B1.20.1

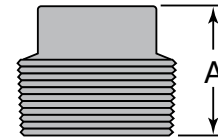
Agency Approvals: All ductile iron threaded fittings are UL/ULC Listed and FM Approved.

▲ Pressure – Temperature Ratings in accordance with ASME B16.3 Class 150

Note: Ductile iron fittings have higher tensile strength than that of steel pipe. Therefore, over tightening can cause damage to pipe threads which may cause leakage. Ductile iron fittings should be tightened approximately three turns beyond hand tight, but no more than four turns.

Figure 3388 Cored Plug

Nominal Size	Maximum Working Pressure ▲	Dimension A	Approx. Wt. Each
In. (mm)	psi (kPa)	In. (mm)	Lbs. (kg)
1/2* 15	500 3450	0.94 23.87	0.10 0.05
3/4 20	500 3450	1.07 27.17	0.17 0.08
1 25	500 3450	1.25 31.75	0.28 0.13
1 1/4 32	500 3450	1.36 34.54	0.44 0.20
1 1/2 40	500 3450	1.45 36.83	0.62 0.28
2 50	500 3450	1.56 39.62	0.91 0.41



▲ – Working Pressure Ratings are for reference only and based on Sch. 40 pipe. For the latest UL/ULC, and FM pressure ratings versus pipe schedule, please visit asc-es.com or contact your local ASC Engineering Solutions™ Representative.

*Part supplied as Solid Plug.



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

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	DRAWN BY
N/A	A	NEW SUBMITTAL DRAWING	4/7/2016	OD
N/A	B	CHANGE P/N TO MPT WAS ADJT	8/15/2017	OD

NO.	DESCRIPTION	QTY (PER BRACKET)
1	LEFT BRACKET LEG	1
2	RIGHT BRACKET LEG	1
3	OUTER CHANNEL BAR	1
4	INNER CHANNEL BAR	1
5	OPEN HUB	1
6	3/8"-24 UNF SET SCREW	1
7	M-6 WING NUT AND BOLT	2
8	#10 SELF-TAPPING, #2 SQ HEAD SCREW & #10 EXTERNAL TOOTH WASHER	2
9	M6 SOCKET HEAD SCREW & NUT	2

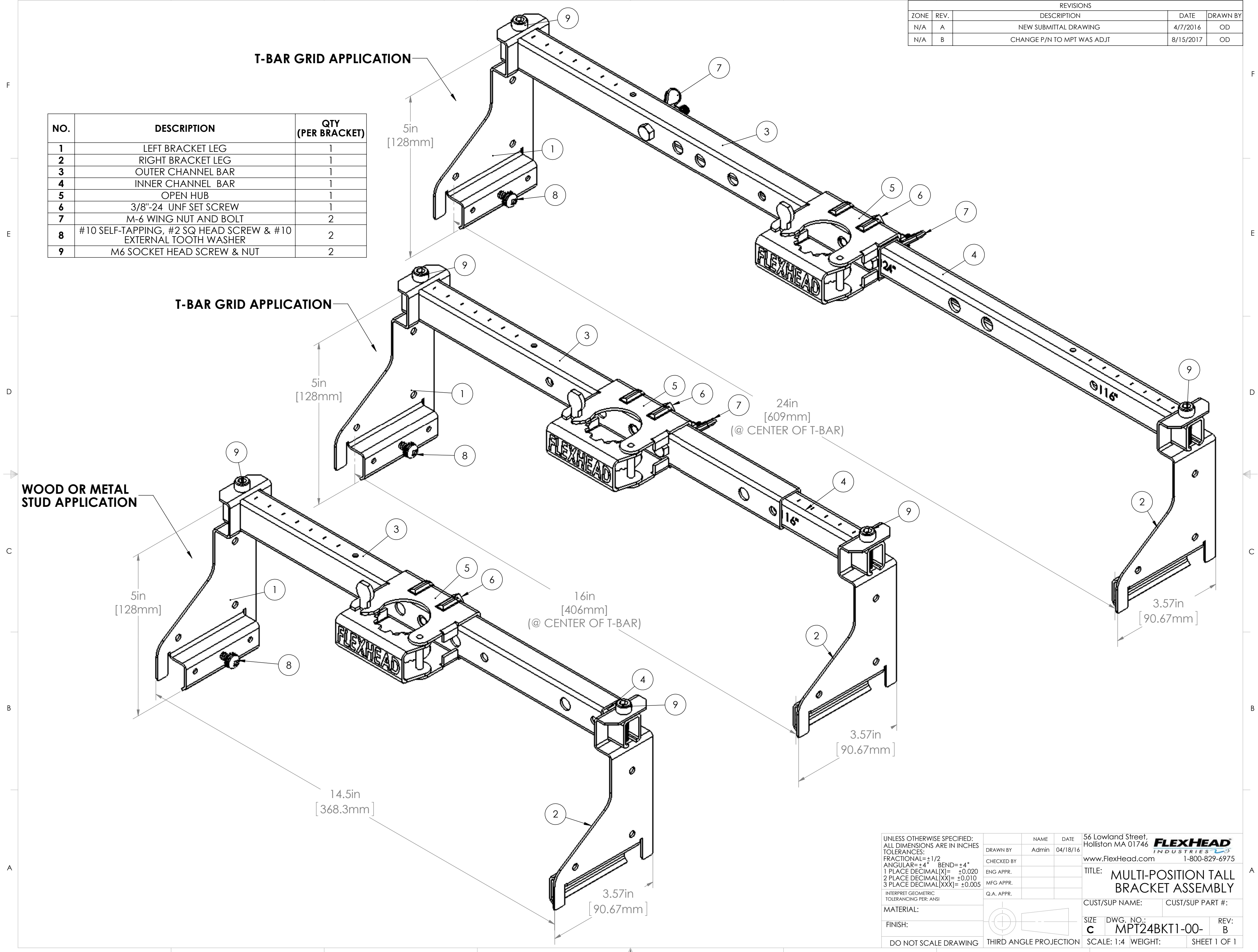
T-BAR GRID APPLICATION

T-BAR GRID APPLICATION

WOOD OR METAL
STUD APPLICATION

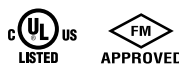
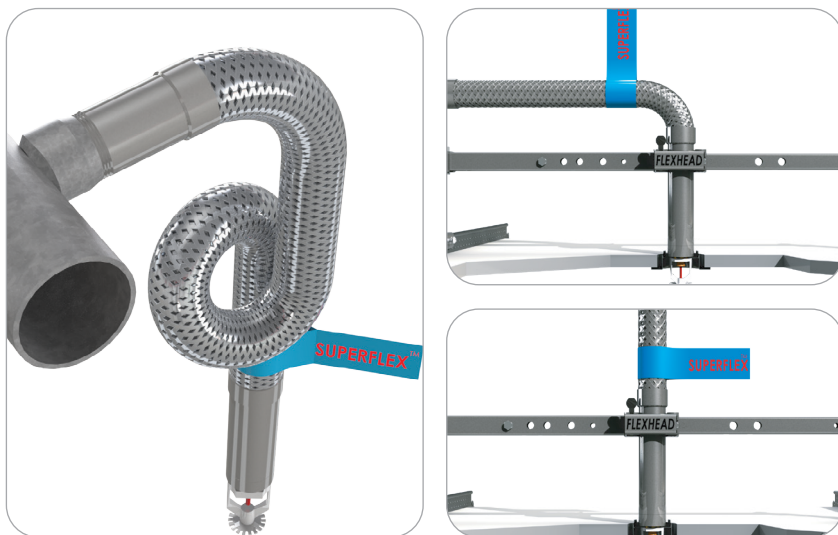
F
E
D
C
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A

F
E
D
C
B
A



UNLESS OTHERWISE SPECIFIED: ALL DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL=± 1/2 ANGULAR=± 4° BEND=± 4° 1 PLACE DECIMAL[X]= ± 0.020 2 PLACE DECIMAL[XX]= ± 0.010 3 PLACE DECIMAL[XXX]= ± 0.005 INTERPRET GEOMETRIC TOLERANCING PER: ANSI MATERIAL: FINISH: DO NOT SCALE DRAWING				NAME Admin	DATE 04/18/16	56 Lowland Street, Holliston MA 01746 www.FlexHead.com 1-800-829-6975
DRAWN BY Admin				CHECKED BY		TITLE: MULTI-POSITION TALL BRACKET ASSEMBLY
ENG APPR.				MFG APPR.		CUST/SUP NAME:
Q.A. APPR.						CUST/SUP PART #:
THIRD ANGLE PROJECTION				SIZE C	DWG. NO.: MPT24BKT1-00-	REV: B
				SCALE: 1:4	WEIGHT:	SHEET 1 OF 1

SuperFlex® Hose Fig. 20XXSF



Product Specifications

Assembly Length

36in 48in 72in

Outlet Drop Size (NPT per ASME B1.20.1)

½ NPS (DN15) ¾ NPS (DN20)

Inlet Pipe Size (NPT per ASME B1.20.1)

1 NPS (DN25)

1 NPS (DN25) Pressure Rating

UL: 175 psi (1,205 kPa)

FM: 175 psi (1,205 kPa)

Minimum Bend Radius

UL: 2.0 in (50.8 mm)

FM: 7.0 in (177.8 mm)

Ambient Temperature

300°F (145°C) Max

Material

304 Stainless Steel

Features

- 100% Leak Tested Fully Welded Design
- Pre-Installed Sprinkler Head option available upon request
- Every hose comes with an easy to identify Blue Tag
- No bend radius inspection required for cULus applications
- Compliant with NFPA 13, 13R, & 13D
- For Wet, Dry, and Pre-Action Sprinkler Systems

Ordering

Specify figure number, length, outlet size, and description

Fig. 20XXSF cULus & FM Approved Brackets

Bracket Fig. # & Size	cULus Listed	FM Approved	FlexHead Historical Model Number
FH120. 24in NEW	✓	✓	-
FH120. 48in NEW	✓	✓	-
FH150 NEW	✓	✓	-
BKT-MPT	✓	✓	MPT24BKT1
BKT-ADO, 16in	✓	✓	ADO16BKT3
BKT-ADO, 24in	✓	✓	ADO24BKT3
BKT-ADO, 30in		✓	ADO30BKT3
BKT-ADO, 48in		✓	ADO48BKT3
BKT-UHO3		✓	UHO-3
BKT-TZ		✓	SPO6TZBKT2

Notes: Flexhead Historical Model Numbers may be used to verify cULus Listings & FM Approvals.



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

SuperFlex® Hose

Fig. 20XXSF

Fig. 20XXSF cULus Listing per UL 2443 & FM Approval (Listing) per FM 1637

Outlet Drop Size	Assembly Length	Equivalent Length						Max # of 90° Bends	
		UL	FM					UL	FM
			k = 5.6	k = 8.0	k = 11.2	k = 14.0	k = 16.8		
-	In	ft/m	ft/m	ft/m	ft/m	ft/m	ft/m		
½ NPS DN15	36	30 9.1	16.2 4.9	16.9 5.2	11.5 3.5	-	-	5	2
	48	47 14.3	28.7 8.7	29.3 8.9	15.4 4.7	-	-	8	3
	72	71 21.6	53.9 16.4	54.3 16.5	23.2 7.0	-	-	12	4
¾ NPS DN20	36	29 8.8	-	21.6 6.5	21.6 6.5	21.8 6.6	22.0 6.7	5	2
	48	44 13.4	-	30.5 9.3	30.6 9.3	31.1 9.4	30.8 9.4	8	3
	72	70 21.3	-	48.5 14.8	48.8 14.8	49.9 15.2	48.6 14.8	12	4

1. Equivalent Length of NPS 1 (DN25) Sch 40 Pipe.
2. Equivalent Lengths listed above assume the maximum number of 90° bends.
3. A 90° bend can be achieved with two 45° bends or three 30° bends.
4. UL Equivalent Lengths are listed for installation with sprinklers with a maximum k-factor of 16.8.
5. FM Equivalent Lengths listed above include the Friction Loss of the Sprinkler.
6. UL Listed for "Limited Flexibility".



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Building connections that last™

SuperFlex® Hose

Fig. 20XXSF

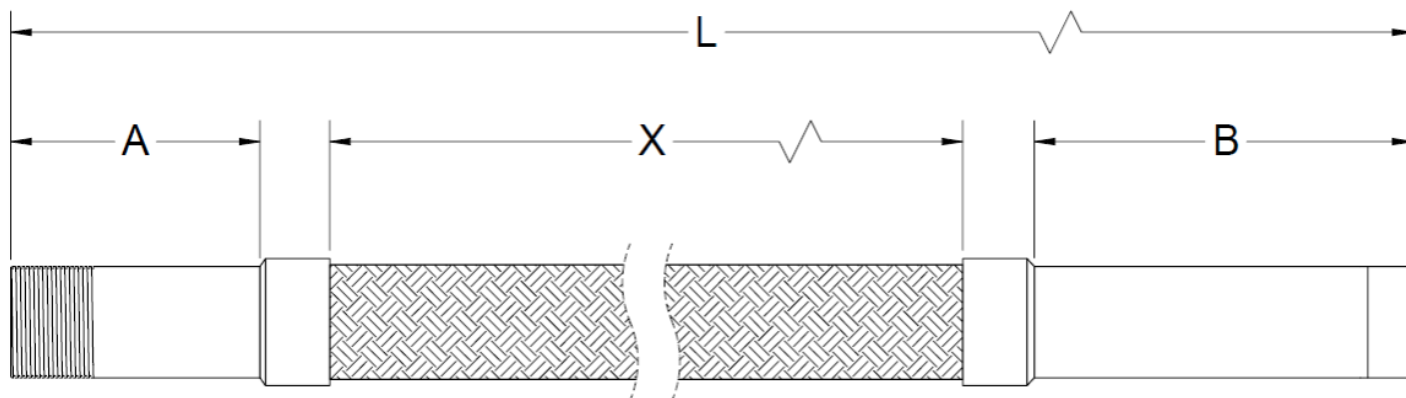


Fig. 20XXSF cULus Listing per UL 2443 & FM Approval (Listing) per FM 1637

Assembly Length	True Length (L)		Braid Length (X)		Inlet Nipple Length (A)		Outlet Drop		FlexHead Historical Model Number	
	in	mm	in	mm	in	mm	in	mm	½ NPS Outlet	¾ NPS Outlet
36	36	914	27	686					2036SF-50	2036SF-75
48	48	1219	39	991	3.0	76.2	6.3	160.0	2048SF-50	2048SF-75
72	72	1829	63	1600					2072SF-50	2072SF-75



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Building connections that last™

SuperFlex® Hose Fig. 20XXSF

Installation Instructions

Connection to the Branch

- 1 Apply pipe sealant or tape to the NPT thread.
- 2 Install into branch outlet. Tighten the assembly by placing the pipe wrench on the pipe nipple section.
- 3 **Note:** Only place the pipe wrench on the unthreaded portion of the inlet nipple.

Connection to the Sprinkler Head

- 1 Installation of the sprinkler head into the outlet drop shall be per the sprinkler manufacturer's installation instructions.

Connection to the Bracket

- 1 Installation of the hose to the bracket shall be per the bracket's installation instructions. The bracket shall be listed for installation with the 20XXSF. See Page 1 for Listed and Approved brackets.

Bending the Hose

- 1 The hose may be bent to ensure the inlet nipple and outlet drop are in the desired locations.
- 2 The hose should never be bent to a radius less than minimum listed bend radius. The bend radius is defined to the center of the hose.
- 3 The hose must have at least one 90° bend. A 90° bend can be achieved with two 45° bends or three 30° bends.
- 4 For best performance, the bends in the hose should be as large and smooth as possible.

General Installation Notes

- 1 Never apply a wrench to the braided hose.
- 2 The Fig 20XXSF may be installed in any direction from the branch.
- 3 If installing a sprinkler to a bracket after installation, it is best practice to prevent twisting of the bracket and hose by holding the outlet drop with a wrench.



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Cap
Fig. SK-1



Material Specifications

Cast Fittings
Ductile Iron conforming to ASTM A536

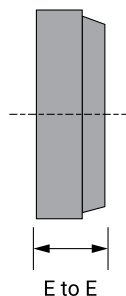
Coatings
Rust inhibiting paint
Color: Orange (standard)
Hot Dipped Zinc Galvanized
conforming to ASTM A153 (optional)
Other available options
Example: RAL3000 or RAL9000 Series

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



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

Cap
Fig. SK-1



Nominal Size	O.D.	End to End	Approx. Wt. Ea.
In./DN(mm)	In./mm	In./mm	Lbs./kg
1¼ 32	1.660 42.2	1 25	0.4 0.2
1½ 40	1.900 48.3	1 25	0.5 0.2
2 50	2.375 60.3	1 25	0.7 0.3
2½ 65	2.875 73.0	1 25	1.0 0.4
3 80	3.500 88.9	1 25	1.5 0.7
4 100	4.500 114.3	1½/₁₆ 27	2.7 1.2
5 125	5.563 141.3	1½/₁₆ 27	4.4 2.0
6 150	6.625 168.3	1½/₁₆ 27	6.6 3.0
8 200	8.625 219.1	1¾/₁₆ 30	11.3 5.1
10* 250	10.750 273.1	1¼ 32	21.0 9.5
12* 300	12.750 323.9	1¼ 32	35.5 16.1

Note:

*Supplied as Style K-1 only.




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Concentric Reducer Fig. 7072



 - Available galvanized

Material Specifications

Cast Fittings

Ductile Iron conforming to ASTM A536

Fabricated Fittings

1"-10" Carbon Steel, Schedule 40, conforming to ASTM A53, Grade B

12" and above Carbon Steel, Standard Wall, conforming to ASTM A53, Grade B

Coatings

Rust inhibiting paint
Color: Orange (Standard)

Hot Dipped Zinc Galvanized conforming to ASTM A153 (Optional)

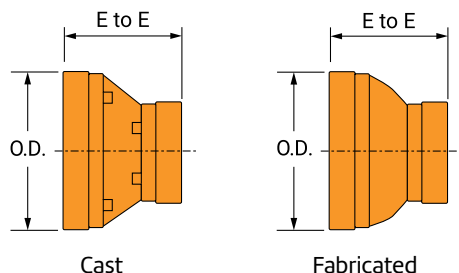
Other available options
(Example: RAL3000 or RAL9000 Series)

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Project:	Approved
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Engineer:	Remarks:
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Notes 1:	
Notes 2:	

Concentric Reducer Fig. 7072



Nominal Size	O.D. - 1	O.D. - 2	End to End	Approx. Wt. Ea.	Nominal Size	O.D. - 1	O.D. - 2	End to End	Approx. Wt. Ea.
In./DN(mm)	In./mm	In./mm	In./mm	Lbs./kg	In./DN(mm)	In./mm	In./mm	In./mm	Lbs./kg
1 1/4 x 1 32 x 25	1.660 42.2	1.315 33.4	2 1/2 64	0.6 0.3	3 x 1 1/2 80 x 40	3.500 88.9	1.900 48.3	2 1/2 64	1.3 0.6
1 1/2 x 1 40 x 25	1.900 48.3	1.315 33.4	2 1/2 64	0.6 0.3	3 x 2 ■ 80 x 50	3.500 88.9	2.375 60.3	2 1/2 64	1.4 0.6
1 1/2 x 1 1/4 40 x 32	1.900 48.3	1.660 42.2	2 1/2 64	0.6 0.3	3 x 2 1/2 ■ 80 x 65	3.500 88.9	2.875 73.0	2 1/2 64	1.6 0.7
2 x 1 50 x 25	2.375 60.3	1.315 33.4	2 1/2 64	0.8 0.4	3 1/2 x 3 90 x 80	4.000 101.6	3.500 88.9	3 76	1.8 0.8
2 x 1 1/4 ■ 50 x 32	2.375 60.3	1.660 42.2	2 1/2 64	1.3 0.6	4 x 1 100 x 25	4.500 114.3	1.315 33.4	3 76	2.2 1.0
2 x 1 1/2 ■ 50 x 40	2.375 60.3	1.900 48.3	2 1/2 64	1.3 0.6	4 x 1 1/4 100 x 32	4.500 114.3	1.660 42.2	3 76	2.2 1.0
2 1/2 x 1 65 x 25	2.875 73.0	1.315 33.4	2 1/2 64	1.0 0.5	4 x 1 1/2 100 x 40	4.500 114.3	1.900 48.3	3 76	2.3 1.0
2 1/2 x 1 1/4 65 x 32	2.875 73.0	1.660 42.2	2 1/2 64	1.0 0.5	4 x 2 ■ 100 x 50	4.500 114.3	2.375 60.3	3 76	2.4 1.1
2 1/2 x 1 1/2 65 x 40	2.875 73.0	1.900 48.3	2 1/2 64	1.3 0.6	4 x 2 1/2 ■ 100 x 65	4.500 114.3	2.875 73.0	3 76	2.6 1.2
2 1/2 x 2 ■ 65 x 50	2.875 73.0	2.375 60.3	2 1/2 64	1.6 0.7	4 x 3 ■ 100 x 80	4.500 114.3	3.500 88.9	3 76	3.2 1.5
3 x 1 80 x 25	3.500 88.9	1.315 33.4	2 1/2 64	1.2 0.5	4 x 3 1/2 100 x 90	4.500 114.3	4.000 101.6	3 76	3.6 1.6
3 x 1 1/4 80 x 32	3.500 88.9	1.660 42.2	2 1/2 64	1.3 0.6	5 x 2 125 x 50	5.563 141.3	2.375 60.3	3 1/2 89	4.6 2.1

Note:

Additional sizes available, see Gruvlok Catalog or contact an ASC Engineered Solutions Representative.

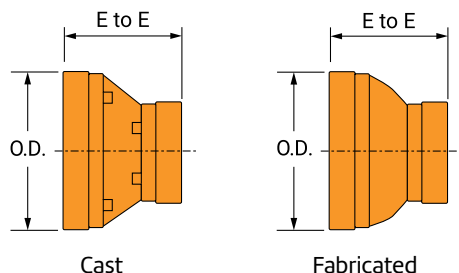
■ Cast fittings, all others are fabricated steel.



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Concentric Reducer Fig. 7072



Nominal Size	O.D. -1	O.D. -2	End to End	Approx. Wt. Ea.	Nominal Size	O.D. -1	O.D. -2	End to End	Approx. Wt. Ea.
In./DN(mm)	In./mm	In./mm	In./mm	Lbs./kg	In./DN(mm)	In./mm	In./mm	In./mm	Lbs./kg
5 x 2½ 125 x 65	5.563 141.3	2.875 73.0	3½ 89	4.5 2.0	8 x 4 ■ 200 x 100	8.625 219.1	4.500 114.3	5 127	9.0 4.1
5 x 3 125 x 80	5.563 141.3	3.500 88.9	3½ 89	4.4 2.0	8 x 5 200 x 125	8.625 219.1	5.563 141.3	5 127	11.5 5.2
5 x 4 ■ 125 x 100	5.563 141.3	4.500 114.3	3½ 89	4.5 2.0	8 x 6 ■ 200 x 150	8.625 219.1	6.625 168.3	5 127	15.5 7.0
6 x 1 150 x 25	6.625 168.3	1.315 33.4	4 102	6.8 3.1	10 x 4 250 x 100	10.750 273.1	4.500 114.3	6 152	20.0 9.1
6 x 1½ 150 x 40	6.625 168.3	1.900 48.3	4 102	6.9 3.1	10 x 5 250 x 125	10.750 273.1	5.563 141.3	6 152	20.0 9.1
6 x 2 ■ 150 x 50	6.625 168.3	2.375 60.3	4 102	6.0 2.7	10 x 6 ■ 250 x 150	10.750 273.1	6.625 168.3	6 152	20.0 9.1
6 x 2½ 150 x 65	6.625 168.3	2.875 73.0	4 102	6.0 2.7	10 x 8 ■ 250 x 200	10.750 273.1	8.625 219.1	6 152	23.9 10.8
6 x 3 ■ 150 x 80	6.625 168.3	3.500 88.9	4 102	5.4 2.4	12 x 4 300 x 100	12.750 323.9	4.500 114.3	7 178	25.0 11.3
6 x 4 ■ 150 x 100	6.625 168.3	4.500 114.3	4 102	5.6 2.5	12 x 6 300 x 150	12.750 323.9	6.625 168.3	7 178	29.0 13.2
6 x 5 ■ 150 x 125	6.625 168.3	5.563 141.3	4 102	6.0 2.7	12 x 8 300 x 200	12.750 323.9	8.625 219.1	7 178	29.0 13.2
8 x 3 200 x 80	8.625 219.1	3.500 88.9	5 127	12.0 5.5	12 x 10 300 x 250	12.750 323.9	10.750 273.1	7 178	32.4 14.7

Note:

Additional sizes available, see Gruvlok Catalog or contact an ASC Engineered Solutions Representative.

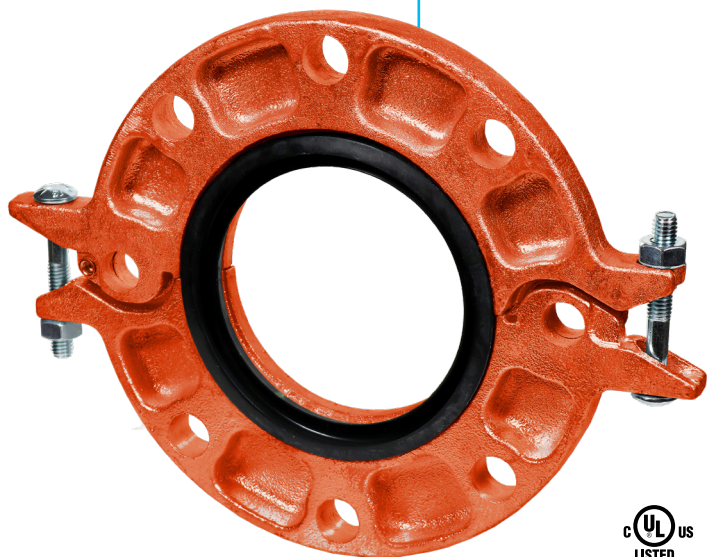
■ Cast fittings, all others are fabricated steel.



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Grooved Flange Adapter Fig. F-3



The SPF® F-3 Flange allows direct connection of Class 125 or Class 150 flanged components to a grooved piping system. The two interlocking halves of the SPF Flange are hinged for ease of handling, and are drawn together by a latch bolt which eases assembly on the pipe. Precision machined bolt holes, key and mating surfaces assure concentricity and flatness to provide exact fit-up with flanged, lug, and wafer styles of pipe system equipment. A specially designed gasket provides a leak-tight seal on both the pipe and the mating flange face.

All SPF F-3 Flanges have designed-in anti-rotation tines which bite into and grip the sides of the pipe grooves to provide a secure, rigid connection.

The SPF F-3 Flange requires the use of a steel adapter insert when used against rubber faced surfaces, wafer/lug design valves and serrated or irregular sealing surfaces.

(See Installation and Assembly Instructions Section or contact your ASC Engineered Solutions™ Representative for details.)

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

Material Specifications

Housing

Ductile Iron conforming to ASTM A536, Grade 65-45-12

Latch Bolts and Segment Bolts

SAE J429, Grade 5, Zinc Electroplated
ISO 898-1, Class 8.8, Zinc Electroplated followed by a Yellow Chromate Dip

Latch Nuts and Segment Nuts

ASTM A563, Grade A, Zinc Electroplated
ISO 898-2, Class 8.8, Zinc Electroplated followed by a Yellow Chromate Dip

Coatings

Rust inhibiting paint
Color: Orange (Standard)
Hot Dipped Zinc Galvanized (Optional)
Other available options
(Example: RAL3000 or RAL9000 Series)

For other coating requirements contact an ASC Engineered Solutions Representative.

Lubrication

Standard Gvulok
Gvulok Xtreme required for dry pipe systems and freezer applications

Gasket Materials

Properties as designated in accordance with ASTM D2000

Grade "E" EPDM (Green color code)
-40°F to 100°F (Service Temperature Range)
(-40°C to 38°C)

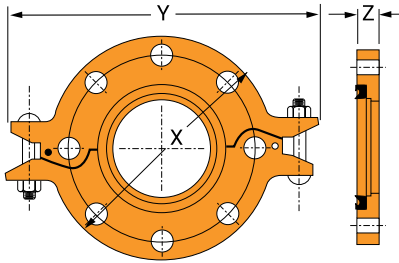
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many chemical services.

NOT FOR USE IN PETROLEUM APPLICATIONS.



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

Grooved Flange Adapter Fig. F-3



ANSI Class 150 or ISO PN10 or PN16 Bolt Patterns

Nominal Size	Pipe O.D.	Max. Working Pressure ▲	Max. End Load	Latch Bolt		Dimensions			Sealing Surface		Mating Flange Bolts				Approx. Wt. Ea.	
				Latch Bolt Size*	Specified Torque §	X	Y	Z	A Max.	B Min.	Mating Flange Bolts		Specified Torque §			
											Min.	Max.		Qty.		Size
In./DN(mm)	In./mm	PSI/bar	Lbs./kN	In./mm	Ft.-Lbs/N-m	In./mm	In./mm	In./mm	In./mm	In./mm	ANSI PN10 (16)	ANSI in. (ISO) mm	Ft.-Lbs/N-m	Lbs./kg		
2 50	2.375 60.3	300 20.7	1,329 5.91	3/8 x 2 3/4 M10 x 70	30 40	45 60	6 1/4 159	8 3/8 213	3/4 19	2 3/8 60	3 7/16 87	4 4	5/8 x 2 3/4 M16 x 70	110 149	140 190	4.2 1.9
2 1/2 65	2.875 73.0	300 20.7	1,948 8.66	3/8 x 2 3/4 M10 x 70	30 40	45 60	7 178	9 1/2 241	3/4 19	2 7/8 73	4 102	4 —	5/8 x 2 3/4 M16 x 70	110 149	140 190	4.6 2.1
3 O.D. 76.1	2.996 76.1	300 20.7	2,115 9.41	— M10 x 70	30 40	45 60	7 1/4 184	9 3/4 248	3/4 19	3 76	4 1/8 105	— 4	— M16 x 70	110 149	140 190	4.8 2.2
3 88.9	3.500 88.9	300 20.7	2,886 12.84	3/8 x 2 3/4 M10 x 70	30 40	45 60	7 7/8 200	10 1/2 267	3/4 19	3 1/2 89	4 9/16 116	4 8	5/8 x 2 3/4 M16 x 70	110 149	140 190	6.0 2.7
4 100	4.500 114.3	300 20.7	4,771 21.22	3/8 x 2 3/4 M10 x 70	30 40	45 60	9 229	11 1/2 292	3/4 19	4 1/2 114	5 9/16 141	8 8	5/8 x 2 3/4 M16 x 70	110 149	140 190	6.3 2.9
5 1/2 O.D. 139.7	5.500 139.7	300 20.7	7,127 31.70	— M10 x 70	30 40	45 60	9 7/8 251	12 7/8 327	7/8 22	5 9/16 141	6 3/4 171	— 8	— M16 x 75	220 298	250 339	15.6 7.1
5 125	5.563 141.3	300 20.7	7,292 32.44	3/8 x 2 3/4 M10 x 70	30 40	45 60	10 254	12 1/2 318	7/8 22	5 9/16 141	6 3/4 171	8 —	3/4 x 2 7/8 —	220 298	250 339	8.8 4.0
6 1/2 O.D. 165.1	6.500 165.1	300 20.7	9,955 44.28	— M10 x 70	30 40	45 60	11 1/4 286	14 356	7/8 22	6 5/8 168	7 13/16 198	— 8	— M20 x 80	220 298	250 339	9.7 4.4
6 150	6.625 168.3	300 20.7	10,341 46.00	3/8 x 2 3/4 M10 x 70	30 40	45 60	11 279	14 356	7/8 22	6 5/8 168	7 13/16 198	8 8	3/4 x 3 1/8 M20 x 80	220 298	250 339	9.6 4.4
8 200	8.625 219.1	300 20.7	17,528 77.97	3/8 x 2 3/4 M10 x 70	30 40	45 60	13 1/2 343	16 1/2 419	1 25	8 5/8 219	10 254	8 8 (12)	3/4 x 3 1/4 M20 x 80	220 298	250 339	15.6 7.1
10 250	10.750 273.1	300 20.7	27,229 121.12	3/8 x 2 3/4 M10 x 70	30 40	45 60	16 406	19 483	1 25	10 3/4 273	12 1/8 308	12 12	7/8 x 3 1/2 M20 x 90	320 439	400 542	18.2 8.3
12 300	12.750 323.9	300 20.7	38,303 170.38	3/8 x 2 3/4 M10 x 70	30 40	45 60	19 483	21 3/4 552	1 1/4 32	12 3/4 324	14 1/8 359	12 12	7/8 x 3 3/4 —	320 439	400 542	29.9 13.6
12 (PN) 300	12.750 323.9	300 20.7	38,303 170.38	— M10 x 70	30 40	45 60	18 1/8 460	21 1/4 540	1 25	12 3/4 324	14 1/8 359	12 12	— M20 x 90	320 439	400 542	20.9 9.5

Note:

+ PN 16 uses M24 x 90 (PN) dimensions for 10" and 12" sizes. The specified mating flange bolt torque for M24 bolts is 434 – 542 N-m.

* Available in ANSI or metric bolt sizes only as indicated.

• Flange cannot be assembled directly to Series 7700 butterfly valve. Flange can be assembled to one side of series 7500 and 7600 valve.

▲ – Working Pressure Ratings are for reference only and based on Sch. 40 pipe. For the latest UL/ULC, FM, VdS and LPCB pressure ratings versus pipe schedule, please visit asc-es.com or contact your local ASC Engineered Solutions™ Representative.

§ – For additional Bolt Torque information, see Technical Data Section.

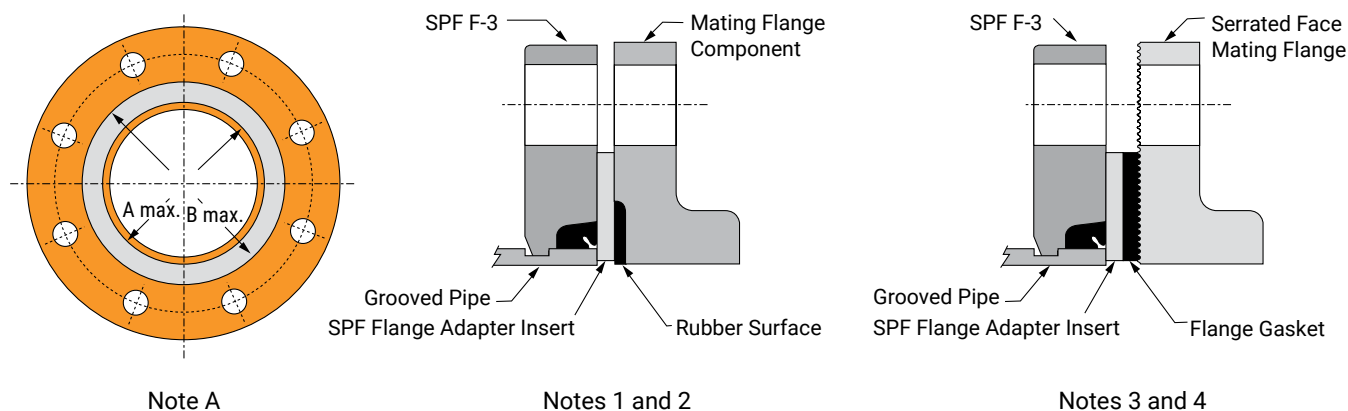
Warning: For dry pipe systems and freezer applications lubrication of the gasket is required, Gruvlok Xtreme Lubricant is required.



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Grooved Flange Adapter Fig. F-3



- A.** The sealing surfaces A Max. to B Min. of the mating flange must be free from gouges, undulations and deformities of any type to ensure proper sealing of gasket.
- B.** SPF Flanges are to be assembled on butterfly valves so as not to interfere with actuator or handle operation.
- C.** Do not use SPF Flanges within 90 degrees of one another on standard fittings because the outside dimensions may cause interference.
- D.** SPF Flanges should not be used as anchor points for tierods across non-restrained joints.
- E.** SPF F-3 Flange sealing gaskets require a hard flat surface for adequate sealing. The use of a SPF Flange Adapter Insert is required for applications against rubber faced valves or other equipment. The SPF Flange Adapter Insert is installed between the SPF Flange sealing gasket and the mating flange or surface to provide a good sealing surface area.
- F.** SPF Flanges are not recommended for use against formed rubber flanges.

Applications which require a SPF Flange Adapter Insert

1. When mating to a wafer valve (lug valve), if the valve is rubber faced in the area designated by the sealing surface dimensions (A Max. to B Min.), place the SPF Flange Adapter Insert between the valve and the SPF Flange.
2. When mating to a rubber-faced metal flange, the SPF Flange Adapter Insert is placed between the SPF Flange and the rubber-faced flange.
3. When mating to a serrated flange surface, a standard full faced flange gasket is installed against the serrated flange face, and the SPF Flange Adapter Insert is placed between the SPF Flange and the standard flange gasket.
4. When mating to valves or other component equipment where the flange face has an insert, use procedure described in note 3.



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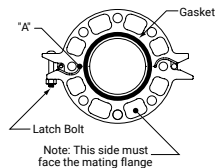
Building connections that last™

Fig. F-3 Grooved Flange Adapter

ALWAYS USE A GRUVLOK® SPF/ANVIL® LUBRICANT FOR PROPER COUPLING ASSEMBLY. Thorough lubrication of the external surface of the gasket is essential to prevent pinching and possible damage to the gasket. For temperatures above 150°F (65°C) and below 32°F (0°C) use Gruvlok SPF/Anvil Xtreme Lubricant and lubricate all gasket surfaces, internal and external. See Gruvlok SPF/Anvil Lubricants in the Technical Data section of the Anvil SPF catalog for additional important information. **Check pipe end for proper grooved dimensions and to assure that the pipe end is free of indentations and projections that would prevent proper sealing of the Gruvlok flange gasket.**

- 1 On the side without the hinge pin, loosen the latch bolt nut to the end of the bolt thread. (It is not necessary to remove the nut from the latch bolt.) Swing the latch bolt out of the slot. Open the F-3 Flange and place around the grooved pipe end with the key section fitting into the groove. The flange gasket cavity must face the pipe end.

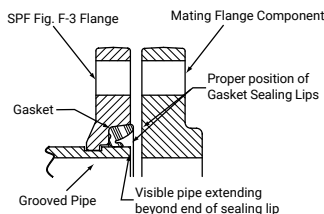
- 2 Place the latch bolt back into the slotted hole. Tighten the nut until there is a $\frac{1}{16}$ " gap between the flange halves at location "A". (See Figure on the right)



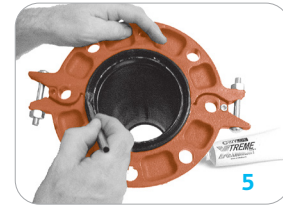
- 3 Check the gasket to assure that it is properly suited for the intended service. Lubricate the entire exterior surface of the gasket, including the sealing lips, using the proper Gruvlok lubricant.

- 4 Stretch the gasket around the pipe end and then press the gasket into the cavity between the pipe O.D. and the flange. The gasket must be properly positioned as shown in the figure below.

Warning: The Fig. F-3 flange gasket must be inserted so that the sealing lips face toward the pipe end and the mating flange. The lip of the gasket, sealing on the pipe, should not extend beyond the pipe end. The pipe should extend out beyond the end of the sealing lip by approximately $\frac{1}{8}$ " on the 2"-6" sizes and $\frac{3}{16}$ " on the 8"-12" sizes.



- 5 With the gasket in place apply lubricant to the exposed gasket tip, which will seal on the mating flange. **Tighten the nuts on the latch bolts alternately to the specified latch bolt torque. The flange housings must be in firm metal- to-metal contact.**



- 6 Verify that the mating flange face is hard, flat and smooth, free of indentations, which would prevent proper sealing of the flange gasket. Assure the gasket is still in the proper position and align flange bolt holes with the mating flange, pump, tank, etc., bolt holes.

Warning: It is important to line up the bolt holes before bringing the two flanges together. Sliding the flanges into place will dislodge the gasket and cause leakage to occur. When using a flange insert, it is important that the insert is properly aligned with the gasket prior to tightening the bolts.

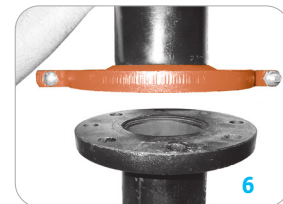


Fig. F-3 Grooved Flange Adapter

7 Insert a flange bolt or stud with material properties of SAE J429 Grade 5 or higher through the bolt holes and thread a nut on hand tight. Continue this procedure until all bolt holes have been fitted. Tighten the nuts alternately and evenly so the flange faces remain parallel. All the bolts or studs must be torqued to the mating flange bolts specified torque. The flange faces should have metal-to-metal contact.

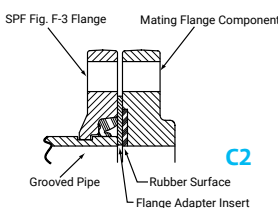
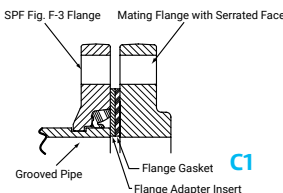
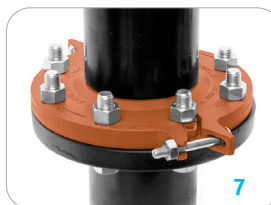
Note: The Fig. F-3 Flange requires the use of a Flange Adapter Insert when used against rubber surfaces (Figure C1), serrated flange surfaces or mating flanges with inserts (Figure C2). The Flange Adapter Insert will be exposed to the fluids in the system. Ensure that the Insert is compatible with the fluids in the systems and with adjacent piping components.

Warning: Do not use a steel Flange Adapter Insert in copper systems or in systems where galvanic corrosion is possible.

Specified Bolt Torque for Latch and Mating Flange Bolts

Specified bolt torque is for the latch and mating flange bolts used on SPF flanges. The nuts must be tightened alternately and evenly until fully tightened.

Caution: Proper torquing of latch and mating flange bolts is required to obtain specified performance. **Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation.** Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.



ANSI/Metric
Specified Latch Bolt Torque

Bolt Size	Wrench Size	Specified Bolt Torque*
In./mm	In./mm	Ft.-Lbs/N-m
3/8	11/16	30-45
M10	16	40-60
1/2	7/8	80-100
5/8	1 1/16	100-130
3/4	1 1/4	130-180
7/8	1 7/16	180-220

* Non-lubricated bolt torques

ANSI/Metric
Specified Mating Flange Bolt Torque

Bolt Size	Wrench Size	Specified Bolt Torque*
In./mm	In./mm	Ft.-Lbs/N-m
5/8	1 1/16	110-140
M16	24	149-190
3/4	1 1/4	220-250
M20	30	298-339
7/8	1 7/16	320-400
M24	36	434-542
1	1 5/8	360-520
1 1/8	1 13/16	450-725
1 1/4	2	620-1000

* Non-lubricated bolt torques



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Building connections that last™

Reducing 90° Elbow (Groove x Thread)
Fig. SE-5



Material Specifications

- Cast Fittings**
Ductile Iron conforming to ASTM A536, Grade 65-45-12
- Coatings**
Rust inhibiting paint
Color: Black
Other available options
Example: RAL3000 or RAL9000 Series



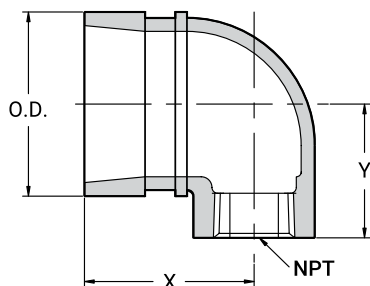
- SE-5 ductile iron fittings are grooved on the large end and reduced size female NPT threaded on the small end. The SE-5 fittings are ideal for all types of applications where transition from grooved to female thread is required.
- SE-5 fittings allow for convenient connection of drains, vents, pressure gauges as well as direct connection of an end of line sprinkler head.
- All sizes are UL, ULC listed and FM approved for 300 PSI working pressure.

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



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

Reducing 90° Elbow (Groove x Thread) Fig. SE-5



Nominal Size	O.D.	Max. Wk. Pressure	X	Y	Approx. Wt. Ea.
In./DN(mm)	In./mm	PSI/bar	In./mm	In./mm	Lbs./kg
1 1/4 x 1/2 32 x 15	1.660 42.2	300 20.7	1 3/4 44	1 3/8 35	0.5 0.3
1 1/4 x 3/4 32 x 20	1.660 42.2	300 20.7	1 7/8 48	1 3/8 35	0.5 0.3
1 1/4 x 1 32 x 25	1.660 42.2	300 20.7	2 51	1 1/2 38	0.6 0.3
1 1/2 x 1/2 40 x 15	1.900 48.3	300 20.7	1 3/4 44	1 3/8 35	0.6 0.3
1 1/2 x 3/4 40 x 20	1.900 48.3	300 20.7	1 7/8 48	1 3/8 35	0.7 0.3
1 1/2 x 1 40 x 25	1.900 48.3	300 20.7	2 51	1 1/2 38	0.8 0.4
2 x 1/2 50 x 15	2.375 60.3	300 20.7	1 3/4 44	1 5/8 41	0.8 0.4
2 x 3/4 50 x 20	2.375 60.3	300 20.7	1 7/8 48	1 5/8 41	0.9 0.4
2 x 1 50 x 25	2.375 60.3	300 20.7	2 51	1 3/4 44	1.0 0.5
2 1/2 x 1/2 65 x 15	2.875 73.0	300 20.7	1 3/4 44	1 13/16 46	1.2 0.5
2 1/2 x 3/4 65 x 20	2.875 73.0	300 20.7	1 7/8 48	1 13/16 46	1.3 0.6
2 1/2 x 1 65 x 25	2.875 73.0	300 20.7	2 51	1 15/16 49	1.5 0.7
3 x 3/4 80 x 20	3.500 88.9	300 20.7	2 1/16 52	2 3/8 60	2.2 1.0
3 x 1 80 x 25	3.500 88.9	300 20.7	2 1/16 52	2 1/2 64	2.5 1.1



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Building connections that last™

**Rigid Coupling
Fig. C-4**



The C-4 Rigid Coupling is our standard coupling and is designed for rigid piping applications. The C-4 is specially designed to provide a rigid, locked-in pipe connection to meet the specific demands of rigid design steel pipe.

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

Material Specifications

Housing

Ductile Iron conforming to ASTM A536, Grade 65-45-12

Bolts

SAE J429, Grade 5, Zinc Electroplated (Standard)

Heavy Hex Nuts

ASTM A563, Grade A, Zinc Electroplated, Violet Dyed (Standard)

Coatings

Rust inhibiting paint
Color: Orange (Standard)
Hot Dipped Zinc Galvanized (Optional)

Lubrication

Standard Gruvlok
Gruvlok Xtreme

Gasket Materials

Properties as designated in accordance with ASTM D2000

Pre-Lubricated Grade "E" EPDM, Type A C-Style Gasket (Violet color code)

-40°F to 150°F (Service Temperature Range)
(-40°C to 66°C)

Recommended for wet and dry (oil free air) fire protection sprinkler systems. For freezing conditions, Gruvlok Xtreme Lubricant is required.

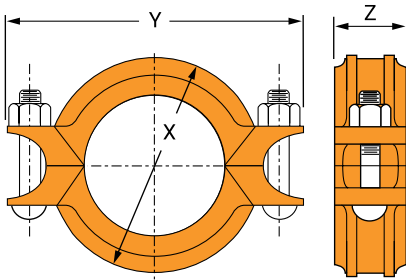
Grade "EP" EPDM Flush Gap Gasket (Green color code)

-40°F to 230°F (Service Temperature Range)
(-40°C to 110°C)

Recommended for wet and dry (oil free air) fire protection sprinkler systems. For freezing conditions, Gruvlok Xtreme Lubricant is required.

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

Rigid Coupling Fig. C-4



Nominal Size	Pipe O.D.	Max. Working Pressure ▲	Max. End Load	Range of Pipe End Separation	Coupling Dimensions			Coupling Bolts		Approx. Wt. Ea.
					X	Y	Z	Qty.	Size	
In./DN(mm)	In./mm	PSI/bar	Lbs./kN	In./mm	In./mm	In./mm	In./mm		In./mm	Lbs./kg
1 25	1.315 33.4	300 20.7	407 1.81	0-1/32 0-0.79	2 3/8 60	4 102	1 3/4 44	2	3/8 x 2 1/4 M10 x 57	1.2 0.5
1 1/4 32	1.660 42.2	300 20.7	649 2.89	0-1/32 0-0.79	2 5/8 67	4 1/4 108	1 23/32 44	2	3/8 x 2 1/4 M10 x 57	1.4 0.6
1 1/2 40	1.900 48.3	300 20.7	851 3.78	0-1/32 0-0.79	2 7/8 73	4 1/2 114	1 23/32 44	2	3/8 x 2 1/4 M10 x 57	1.5 0.7
2 50	2.375 60.3	300 20.7	1,329 5.91	0-1/32 0-0.79	3 11/32 85	5 3/16 132	1 23/32 44	2	3/8 x 2 1/4 M10 x 57	1.7 0.8
2 1/2 65	2.875 73.0	300 20.7	1,948 8.66	0-1/32 0-0.79	3 7/8 98	5 11/16 144	1 23/32 44	2	3/8 x 2 1/2 M10 x 63	1.9 0.9
3 O.D. 76.1	2.996 76.1	300 20.7	2,115 9.41	0-1/32 0-0.79	4 1/8 105	6 1/8 156	1 7/8 48	2	3/8 x 2 1/2 M10 x 63	2.2 1.0
3 80	3.500 88.9	300 20.7	2,886 12.84	0-1/32 0-0.79	4 1/2 114	6 1/4 159	1 3/4 44	2	3/8 x 3 M10 x 70	2.4 1.1
4 100	4.500 114.3	300 20.7	4,771 21.22	0-3/32 0-2.38	5 3/4 146	7 7/16 189	1 7/8 48	2	3/8 x 3 M10 x 70	3.5 1.6
5 1/2 O.D. 139.7	5.500 139.7	300 20.7	7,127 31.70	0-3/32 0-2.38	6 7/8 175	9 1/4 235	2 1/16 52	2	1/2 x 3 M12 x 76	5 2.2
5 125	5.563 141.3	300 20.7	7,292 32.44	0-3/32 0-2.38	6 13/16 173	8 15/16 227	1 7/8 48	2	1/2 x 3 M12 x 70	4.5 2.0

Note:

Range of Pipe End Separation values are for roll grooved pipe and may be doubled for cut groove pipe.

1. Working pressure and/or end load are total allowable, based on standard weight steel pipe, roll or cut grooved.

2. One time field test pressure may be increased to 1.5 times the figures listed above.

▲ – Working Pressure Ratings are for reference only and based on Sch. 10 and Sch. 40 pipe.

WARNING: For dry pipe systems and freezer applications lubrication of the gasket is required, Gruvlok Xtreme Lubricant is required.

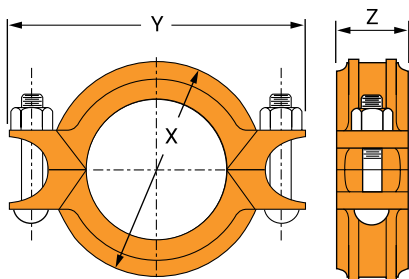


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Building connections that last™

Rigid Coupling Fig. C-4

(continued)



Nominal Size	Pipe O.D.	Max. Working Pressure ▲	Max. End Load	Range of Pipe End Separation	Coupling Dimensions			Coupling Bolts		Approx. Wt. Ea.
					X	Y	Z	Qty.	Size	
In./DN(mm)	In./mm	PSI/bar	Lbs./kN	In./mm	In./mm	In./mm	In./mm		In./mm	Lbs./kg
6½ O.D. 165.1	6.500 165.1	300 20.7	9,955 44.28	0-¾/₃₂ 0-2.38	8⅞ 207	10¾/₈ 264	2⅞ 54	2	½ x 3 M12 x 76	5.8 2.6
6 150	6.625 168.3	300 20.7	10,341 46.00	0-¾/₃₂ 0-2.38	7⅞ 200	10⅞/₁₆ 256	1⅞/₁₆ 49	2	½ x 3 M12 x 70	5.4 2.4
8 200	8.625 219.1	300 20.7	17,528 77.97	0-¾/₃₂ 0-2.38	10⅞ 257	12⅞/₁₆ 316	2⅞/₈ 60	2	½ x 3 M12 x 70	9.5 4.3
10 250	10.750 273.1	300 20.7	27,229 121.12	0-¾/₃₂ 0-2.38	13 331	16¾/₄ 425	2⅞/₈ 67	2	¾ x 5 M22 x 125	21.5 9.8
12 300	12.750 323.9	300 20.7	38,303 170.38	0-¾/₃₂ 0-2.38	15¾/₈ 391	19¼/₄ 489	2⅞/₈ 67	2	¾ x 5½ M22 x 140	27.4 12.4

Note:

Range of Pipe End Separation values are for roll grooved pipe and may be doubled for cut groove pipe.

- Working pressure and/or end load are total allowable, based on standard weight steel pipe, roll or cut groove.
- One time field test pressure may be increased to 1.5 times the figures listed above.

▲ – Working Pressure Ratings are for reference only and based on Sch. 10 and Sch. 40 pipe.

WARNING: For dry pipe systems and freezer applications lubrication of the gasket is required, Gruvlok Xtreme Lubricant is required.



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Fig. C-4 Rigid Coupling



Read and understand all instructions before use.

WARNING

Ensure system is drained and depressurized before installation or service.

Use appropriate personal protective equipment.



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

Check pipe ends for proper grooved dimensions and to ensure that the pipe is free of indentations, projections, or other imperfections that would prevent proper sealing of the gasket.

1 Check and lubricate gasket

Check gasket to be sure it is compatible for the intended service. Apply a thin coating of Gruvlok lubricant to the exterior surface and sealing lips of the gasket. Some applications require lubrication of the entire gasket surface. Be careful that foreign particles do not adhere to lubricated surfaces. Pre-lubricated gaskets do not require lubrication.

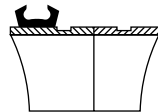
Notice: Gruvlok Xtreme Lubricant must be applied when used in dry pipe systems or freezer applications.



2 Gasket installation

Slip the gasket over the pipe end making sure the gasket lip does not overhang the pipe end.

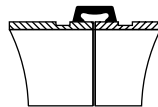
On couplings 10" and larger it may be easier to turn the gasket inside out then lubricate and slide the gasket over the pipe end as shown.



3 Alignment

After aligning the two pipe ends, pull the gasket into position centering it between the grooves on each pipe. Gasket should not extend into the groove on either pipe.

On couplings 10" and larger, flip or roll the gasket into centered position.



4 Housings

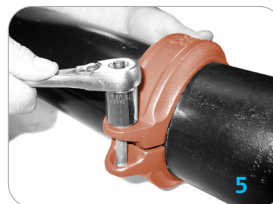
Remove one nut and bolt and loosen the other nut. Place one housing over the gasket, making sure the housing keys fit into the pipe grooves. Swing the other housing over the gasket and into the grooves on both pipes, making sure the tongue and recess of each housing is properly mated. Reinsert the bolt and run-up both nuts finger tight.



5 Tighten nuts

Securely tighten nuts alternately and equally, keeping the gaps at the bolt pads evenly spaced.

Notice: Uneven tightening may cause the gasket to pinch. Gasket should not be visible between segments after bolts are tightened.



ANSI Specified Bolt Torque

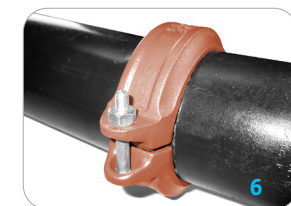
Bolt Size	Wrench Size	Specified Bolt Torque*
In.	In.	Ft.-Lbs
3/8	11/16	30-45
1/2	7/8	80-100
5/8	1 1/16	100-130
7/8	1 7/16	180-220

* Non-lubricated bolt torque.

6 Assembly is complete

Visually inspect the pipe joint to assure the coupling keys are fully engaged in the pipe grooves. The bolt pads are to have equal gaps on each side of the coupling.

Notice: Visually inspect both sides of the coupling to ensure gaps between bolt pads are evenly spaced and are parallel. Any deviations must be corrected before placing coupling into service.



90° Short Pattern Elbow
Fig. SE-1



Material Specifications

- Cast Fittings**
Ductile Iron conforming to ASTM A536, Grade 65-45-12
- Coatings**
Rust inhibiting paint
Color: Orange (standard)
Hot Dipped Zinc Galvanized conforming to ASTM A153 (optional)
Other available options
Example: RAL3000 or RAL9000 Series

SE-1 are short pattern products and are specifically designed for use in Fire Protection applications where economy is a factor. All products are UL/ULC Listed, LPCB, VdS and FM Approved.

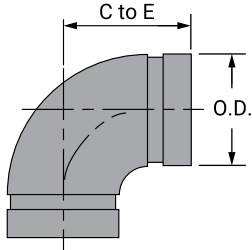
Maximum working pressure for these products is 300 PSI. For the latest UL/ULC listed, LPCB, VdS and FM Approved pressure ratings versus pipe schedule, see www.asc-es.com or contact your local ASC Engineered Solutions™ Representative.

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



PROJECT INFORMATION	APPROVAL STAMP
Project:	Approved
Address:	Approved as noted
Contractor:	Not approved
Engineer:	Remarks:
Submittal Date:	
Notes 1:	
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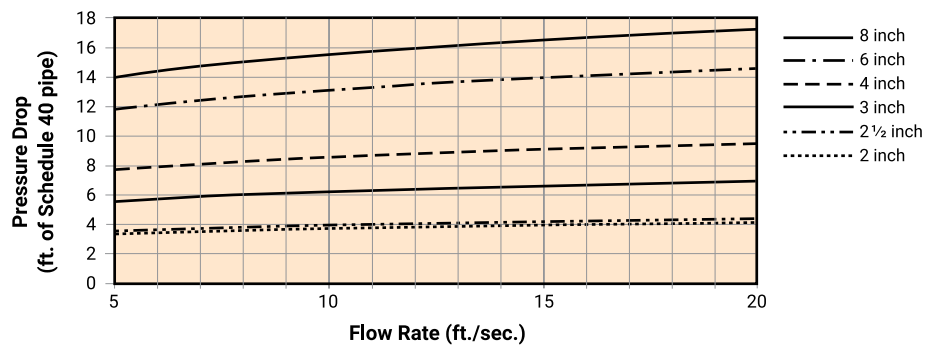
90° Short Pattern Elbow Fig. SE-1



Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	In./mm	In./mm	Lbs./kg
2 50	2.375 60.3	2¾ 70	1.5 0.7
2½ 65	2.875 73.0	3 76	2.1 1.0
3 80	3.500 88.9	3⅝ 86	3.6 1.6
4 100	4.500 114.3	4 102	5.8 2.6
6 150	6.625 168.3	5½ 140	11.8 5.3
8 200	8.625 219.1	6⅞ 175	21.1 9.6

Note:
Additional sizes available, contact an ASC Engineered Solutions™ Representative.

SE-1 90° Elbow Short Pattern Fitting - Pressure Drop



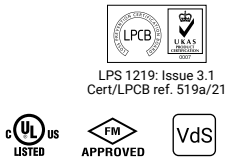
Note:
SPF/Anvil® short pattern fittings exceed the headloss requirements of NFPA 13.
For Fig. SE-1 90° grooved end elbows use the value shown.
Above values are shown for Schedule 40 pipe to be consistent with industry practices.



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Building connections that last™

Short Pattern Tee
Fig. ST-1



Material Specifications

Cast Fittings
Ductile Iron conforming to ASTM A536

Coatings
Rust inhibiting paint
Color: Orange (standard)
Hot Dipped Zinc Galvanized conforming to ASTM A153 (optional)
Other available options
Example: RAL3000 or RAL9000 Series

ST-1 are short pattern products that are specifically designed for use in Fire Protection applications where economy is a factor. All products are UL/ULC Listed, LPCB, VdS and FM Approved.

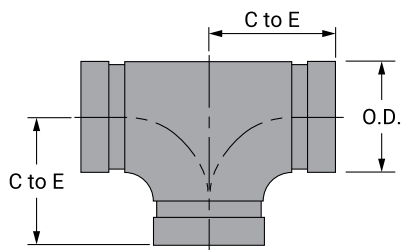
Maximum working pressure for these products is 300 PSI. For the latest UL/ULC listed, LPCB, VdS and FM Approved pressure ratings versus pipe schedule, see www.asc-es.com or contact your local ASC Engineered Solutions™ Representative.

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



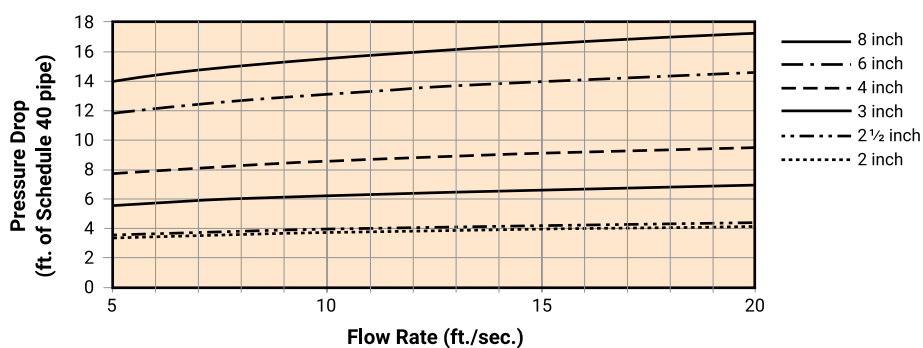
PROJECT INFORMATION	APPROVAL STAMP
Project:	Approved
Address:	Approved as noted
Contractor:	Not approved
Engineer:	Remarks:
Submittal Date:	
Notes 1:	
Notes 2:	

Short Pattern Tee Fig. ST-1



Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	In./mm	In./mm	Lbs./kg
2 50	2.375 60.3	2¾ 70	2.9 1.3
2½ 65	2.875 73.0	3 76	4.6 2.1
3 80	3.500 88.9	3⅝ 86	6.9 3.1
4 100	4.500 114.3	4 102	10.9 4.9
6 150	6.625 168.3	5½ 140	25.0 11.3
8 200	8.625 219.1	6⅞ 175	42.1 19.1

ST-1 90° Tee Short Pattern Fitting - Pressure Drop



Note:

SPF/Anvil® short pattern fittings exceed the headloss requirements of NFPA 13.

For Fig. ST-1 grooved end tee branch use 2 ½ times the value shown.

For Fig. ST-1 grooved end tee run use the value shown.

Above values are shown for Schedule 40 pipe to be consistent with industry practices.



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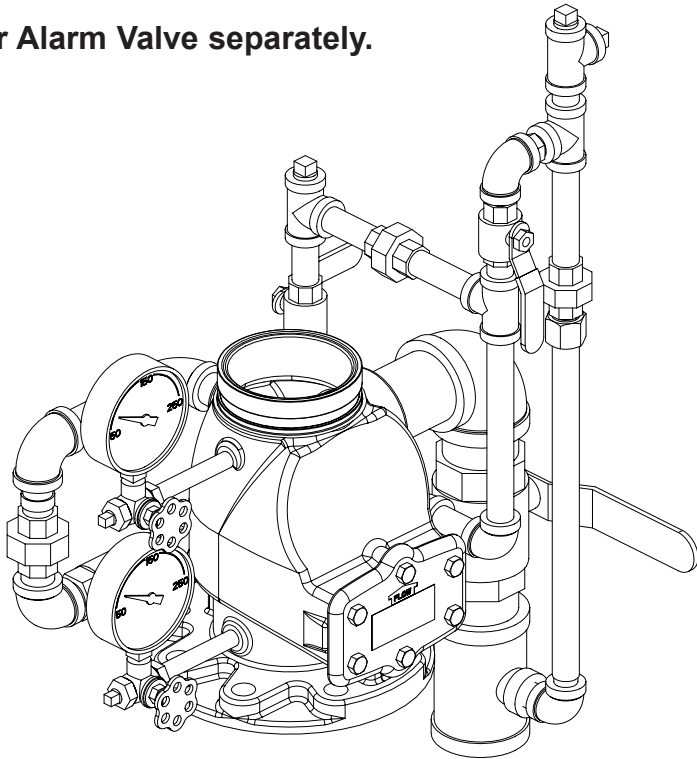
Building connections that last™



TECHNICAL DATA

MODEL J-1 ALARM CHECK VALVE VERTICAL TRIM

Order Alarm Valve separately.



This Trim Chart is for use with the following Viking Trim Sets

Valve Size	Galvanized	Brass
3" (DN80)	08633	11428
4" (DN100)	08634	11429
6" (DN150)	08635	11430
8" (DN200)	08636	11431



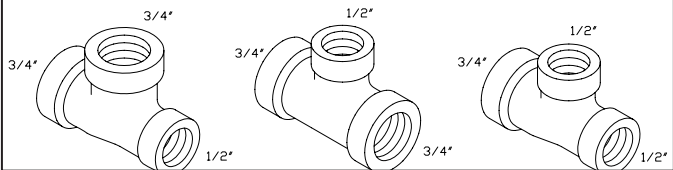
WARNING: Cancer and Reproductive Harm-
www.P65Warnings.ca.gov

NOTES: For use with Trim Chart on page 27 b.

General Notes:

- Valve must be trimmed as shown. Any deviation from trim size or arrangement may affect the proper operation of the valve.
- All pipe, 3/4" (20 mm) and smaller, shall be galvanized steel except when other materials are specified in the technical data for the system used. All trim components must be listed for up to 300 PSI (20.7 bar) Water Working Pressure.
- Dimensions in parentheses are millimeter.
- Viking uses ASME fitting designations. Tee's shall be called out in the following order: 1 - largest outlet on run; 2 - Smaller outlet on run; 3 - Branch size.

NOTE: Viking uses ASME fitting designations. Tee's shall be called out in the following manner: 1-Largest outlet on run; 2-Smaller outlet on run; 3-Branch size.



Note 1: When using a water motor alarm, a strainer is required. Circuit closer vent trim may be required when an alarm pressure switch is used. (See technical data for the retard chamber.)

Note 2: This location may be used for optional pressure relief valve (not available from Viking). Install 3/4" (20 mm) tee and listed pressure relief valve.

Note 3: To supply an optional excess pressure pump (not available from Viking and not a listed assembly), replace 1/2" ell marked "A" with a tee. Replace 3/4" ell marked "B" with a tee to connect outlet from excess pressure pump. Do not exceed listed water working pressure rating of system components. Perform hydrostatic tests in accordance with recognized Installation Standards.

Note 4: Location for non-interruptible pressure switch. When waterflow through the alarm valve occurs, supply to this location cannot be shut off until water flow through the alarm valve stops. **Caution** - Non-interruptible alarm port may only be used on systems with constant pressure. A retard chamber may not be installed on the non-interruptible alarm port.

Note 5: Component specified is included in Viking trim sets; do not substitute. Use of components other than specified will void any listings and approvals and may affect operation of the valve.

Note 6: 300 PSI (20.7 bar) water pressure gauges are provided with trim. 600 PSI (41.4 bar) water pressure gauges are available. Order separately when needed*. Refer to current Viking Price Book.

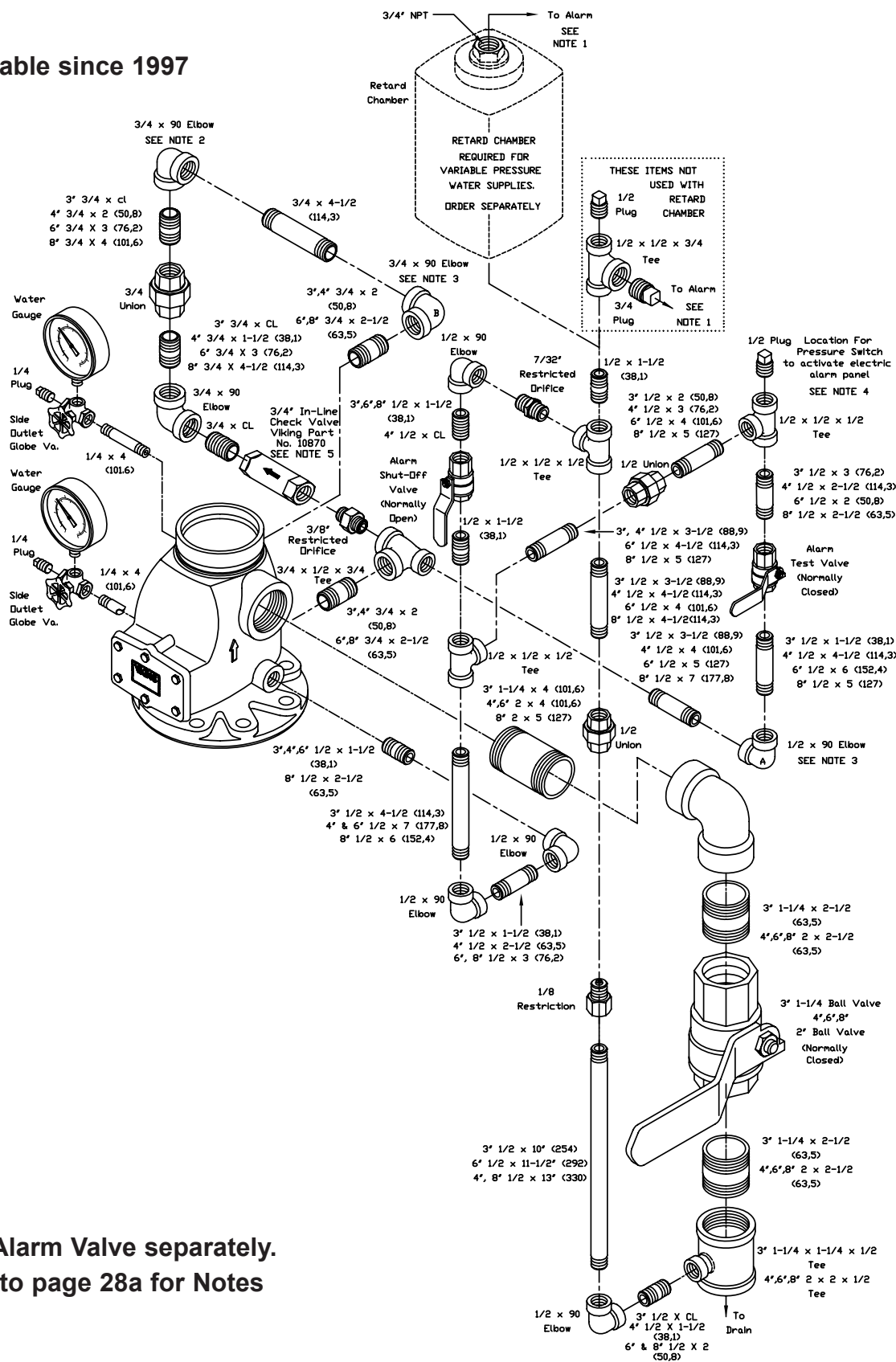
* NFPA 13 requires gauges to have a minimum limit not less than twice the normal water working pressure at the point where the gauges are installed. When normal water working pressure exceeds 150 PSI (10.3 bar), order 600 PSI (41.4 bar) water pressure gauges separately.



TECHNICAL DATA

MODEL J-1 ALARM CHECK VALVE VERTICAL TRIM

Available since 1997

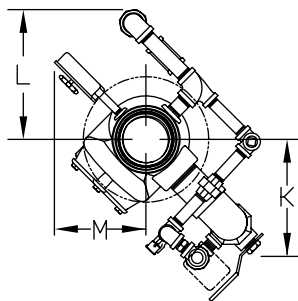


Order Alarm Valve separately.
Refer to page 28a for Notes

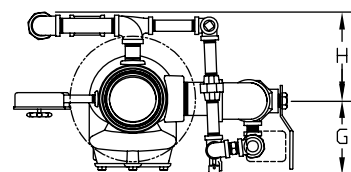


TECHNICAL DATA

MODEL J-1 ALARM CHECK VALVE VERTICAL TRIM



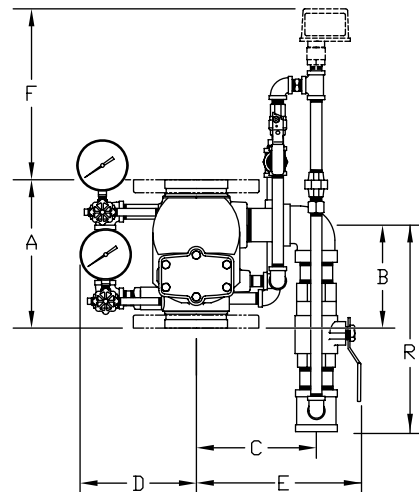
Model J-1 Alarm Check Valve
Vertical Trim, and Pressure
Switches Must be
Ordered Separately
Refer to Technical Data.



All dimensions are approximations.
Dimensions in parentheses
are millimeter.

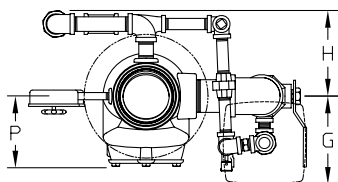
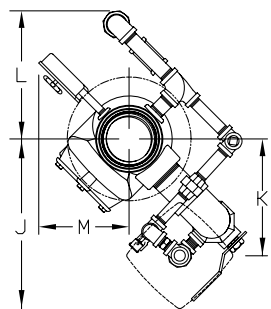
SIZE	A	B	C	D	E	F	G	H	K	L	M	R
3" (DN80)	10-1/8 (257)	7-1/4 (184)	7-3/4 (197)	7-3/4 (197)	10-1/8 (257)	11-3/4 (298)	5 (127)	6-1/2 (165)	7-1/4 (184)	10 (254)	5-1/2 (140)	11 (279)
4" (DN100)	10-5/8 (270)	7-1/2 (191)	9 (229)	9 (229)	12-1/4 (311)	12-3/8 (314)	5-1/2 (140)	6-1/4 (159)	8-3/4 (222)	10 (254)	6-1/2 (165)	12-1/2 (318)
6" (DN150)	13-3/8 (340)	10-1/4 (260)	9-3/4 (248)	9-3/4 (248)	13 (330)	11-1/4 (286)	6 (153)	8-3/4 (222)	9-1/4 (235)	11 (279)	7 (178)	12-1/2 (318)
8" (DN200)	17 (432)	8-1/4 (210)	11 (279)	10-1/2 (267)	14-1/4 (362)	6-3/4 (171)	6-1/2 (165)	10 (254)	10-7/8 (276)	12 (305)	7-1/2 (191)	12-1/2 (318)

MODEL J-1 ALARM CHECK VALVE WITH VERTICAL TRIM
FOR CONSTANT PRESSURE WATER SUPPLY

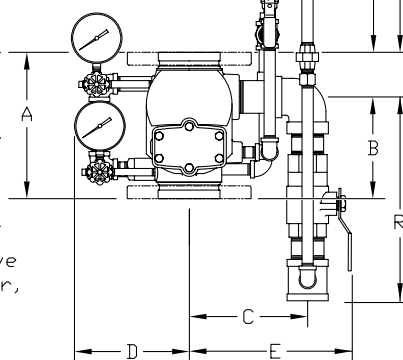


All dimensions are approximations.
Dimensions in parentheses are millimeter.

SIZE	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R
3" (DN80)	10-1/8 (257)	7-1/4 (184)	7-3/4 (197)	7-3/4 (197)	10-1/8 (257)	20 (508)	6-1/4 (159)	6-1/2 (165)	11-3/4 (299)	7-1/4 (184)	10 (254)	5-1/2 (140)	5-7/8 (149)	28-1/8 (714)	4-3/4 (121)	11 (279)
4" (DN100)	10-5/8 (270)	7-1/2 (191)	9 (229)	9 (229)	12-1/4 (311)	20-1/2 (521)	6-1/2 (165)	6-1/4 (159)	13-3/8 (340)	8-3/4 (222)	10 (254)	6-1/2 (165)	5-7/8 (149)	28-5/8 (733)	5-1/4 (134)	12-1/2 (318)
6" (DN150)	13-3/8 (340)	10-1/4 (260)	9-3/4 (248)	9-3/4 (248)	13 (330)	19-1/4 (489)	6-3/4 (171)	8-3/4 (222)	14-1/8 (359)	9-1/4 (235)	11 (279)	7 (178)	5-7/8 (149)	28 (711)	7 (178)	12-1/2 (318)
8" (DN200)	17 (432)	8-1/4 (210)	11 (279)	10-1/2 (267)	14-1/4 (362)	13-1/2 (343)	7-1/2 (191)	10 (254)	16-1/4 (413)	10-7/8 (276)	12 (305)	7-1/2 (191)	5-7/8 (149)	23-5/8 (600)	9 (229)	12-1/2 (318)



Model J-1 Alarm Check Valve
Vertical Trim, Retard Chamber,
Pressure Switches, and
Circuit Closer Vent Trim
Must be Ordered Separately
Refer to Technical Data.



J-1 ALARM CHECK VALVE WITH VERTICAL TRIM,
RETARD CHAMBER, AND PRESSURE SWITCH FOR
VARIABLE PRESSURE WATER SUPPLY



TECHNICAL DATA

RETARD CHAMBER MODEL C-1

The Viking Corporation, 5150 Beltway SE, Caledonia, MI 49316

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 Model C-1 Retard Chamber is a surge tank used with Viking Alarm Check Valves to reduce the possibility of false alarms due to changes in the water supply pressure.

Features

1. Ductile iron body
2. Self draining

2. LISTINGS AND APPROVALS

Refer to Table 1 for more information.



cULus Listed: VPLX and VPLX7 - 300 psi (20.7 bar) MWP



FM Approved: Waterflow Alarm Valves - 300 psi (20.7 bar) MWP

New York City Board of Standards and Appeals: Calendar Number 219-76-SA
- 250 psi (17.2 bar) MWP



VdS Approved: Wet Alarm Valve Stations; 250 psi (17.2 bar) MWP



LPCB Approved - Standard EN12259-2 Part 2; Certificate No. 096b; 250 psi (17.2 bar) MWP



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

3. TECHNICAL DATA

Specifications:

Pressure Rating - 300 psi (20.7 bar) water working pressure.

Factory tested hydrostatically to 600 psi (41.4 bar).

Connections: 1/2" (15 mm) NPT inlet and 3/4" (20 mm) NPT outlet.

Capacity: 1 Gallon (4 Liters) Approx.

Material Standards:

Body: Ductile Iron 65-45-12.

Bushings: Cast Iron UNS-F12102

Coating: Viking black E-coat Spec SPF02 W01

Shipping Weight - 22 lbs. (10 kg.)

Available Since - 1986

TABLE 1: ORDERING INFORMATION

Part Number	Description	Listings/Approvals				Availability	Shipping Weight
		cULus	FM	VdS	LPCB		
05904B	Model C-1 Retard Chamber	x	x	x	x	Americas/EMEA	22 lbs. (10 Kg)
25800	Model C-1 Retard Chamber	x	x			EMEA/APAC	22 lbs. (10 Kg)
25801	Model C-1 Retard Chamber	x	x			EMEA/APAC	22 lbs. (10 Kg)
Accessories							
01611A	1/8" (3.2mm) Restricted orifice ¹					Americas/EMEA/APAC	0.13 lbs. (0.06 Kg)
01973A	Circuit closer vent assembly ²					Americas/EMEA/APAC	2.95 lbs. (1.34 Kg)

1. The restriction is required; however, it's included in Viking Alarm Check Valve trim sets designed for use with "variable pressure" water supplies.

2. The circuit closer vent assembly is required when an electric alarm pressure switch is installed without a Water Motor Alarm.



TECHNICAL DATA

RETARD CHAMBER MODEL C-1

The Viking Corporation, 5150 Beltway SE, Caledonia, MI 49316

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4. INSTALLATION

1. The Retard Chamber and associated trim must be installed as shown on the Viking Alarm Check Valve Trim Sheets. The trim size and arrangement shown on Viking Trim Charts is required for proper operation.
2. Circuit Closer Vent Trim must be galvanized steel unless other materials are specified in the Technical Data for the system used.
3. The 1/8 inch Drain Restriction must be installed in the Retard Chamber drain piping. The alarm supply trim piping must be restricted as shown on Viking Alarm Check Valve Trim Charts. Model J-1 Alarm Check Valve trim requires a 7/32" Restricted Orifice (Part No. 06980A).
4. The Retard Chamber must drain automatically to a non-pressurized drain.
5. For the Retard Chamber to properly drain, it must be vented. This is normally accomplished through the Water Motor Alarm connection. However, when the line to the Water Motor is trapped or an electric Alarm Pressure Switch is used without the Water Motor Alarm, Circuit Closer Vent Trim must be installed and kept clean to allow the Retard Chamber to drain.
6. Verify that all system components are rated for the water working pressure of the system.

5. OPERATION

When the clapper of the Alarm Check Valve opens, water flows through the restricted alarm supply piping into the inlet of the Retard Chamber. The Retard Chamber begins to fill while simultaneously draining through the 1/8 inch (3.2 mm) Drain Restriction.

During a sustained flow of water, the Retard Chamber fills faster than water can drain through the Drain Restriction. Pressurized water fills the Retard Chamber and pressurizes the Water Motor Alarm and/or Alarm Pressure Switch. Pressure surges insufficient to overcome the volume and drain capacity of the Retard Chamber will not activate an alarm. Two Retard Chambers may be installed in series to combat false alarms from systems subject to excessive pressure surges.

6. INSPECTION, TESTS AND MAINTENANCE

NOTICE: THE OWNER IS RESPONSIBLE FOR MAINTAINING THE FIRE PROTECTION SYSTEM AND DEVICES IN PROPER OPERATING CONDITION. THE VIKING MODEL C-1 RETARD CHAMBER AND ASSOCIATED PIPING MUST BE KEPT FREE OF FOREIGN MATTER, FREEZING CONDITIONS, AND PHYSICAL DAMAGE THAT COULD IMPAIR ITS OPERATION. THE FREQUENCY OF INSPECTIONS MAY VARY DUE TO CONTAMINATED OR CORROSIVE WATER SUPPLIES, CORROSIVE ATMOSPHERES, OR ACTIVITY AROUND THE DEVICE. ALARM DEVICES AND OTHER CONNECTED EQUIPMENT MAY REQUIRE MORE FREQUENT INSPECTIONS. REFER TO APPLICABLE CODES, SYSTEM DESCRIPTION, AND TECHNICAL DATA FOR THE EQUIPMENT USED.

After installation and prior to each Waterflow Alarm Test:

1. Verify that the Alarm Check Valve and Retard Chamber are trimmed exactly as shown on Viking Trim Sheets with no deviations. The trim size and arrangement is required for proper operation.
2. Inspect and clean the 1/8 inch (3.2 mm) Drain Restriction at least annually.

After each operation and Waterflow Alarm Test:

1. Verify that the Retard Chamber and alarm line piping has drained completely and associated alarm equipment has properly reset.
2. Refer to Technical Data for the Water Motor Alarm, Alarm Pressure Switch, and other associated equipment for additional testing and maintenance requirements.

WARNING: ANY SYSTEM MAINTENANCE INVOLVING PLACING A CONTROL VALVE OR ALARM SYSTEM OUT OF SERVICE MAY ELIMINATE THE FIRE PROTECTION CAPABILITIES OF THAT SYSTEM. PRIOR TO PROCEEDING, NOTIFY ALL AUTHORITIES HAVING JURISDICTION. CONSIDERATION SHOULD BE GIVEN TO EMPLOYMENT OF A FIRE PATROL IN THE AFFECTED AREAS.

For minimum maintenance requirements, refer to NFPA 25. In addition, the Authority Having Jurisdiction may have additional maintenance requirements that must be followed.

7. AVAILABILITY

The Viking Retard Chamber is available through a network of domestic and international distributors. See the Viking Corp. Web site for closest distributor or contact The Viking Corporation.

8. GUARANTEES

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



TECHNICAL DATA

RETARD CHAMBER MODEL C-1

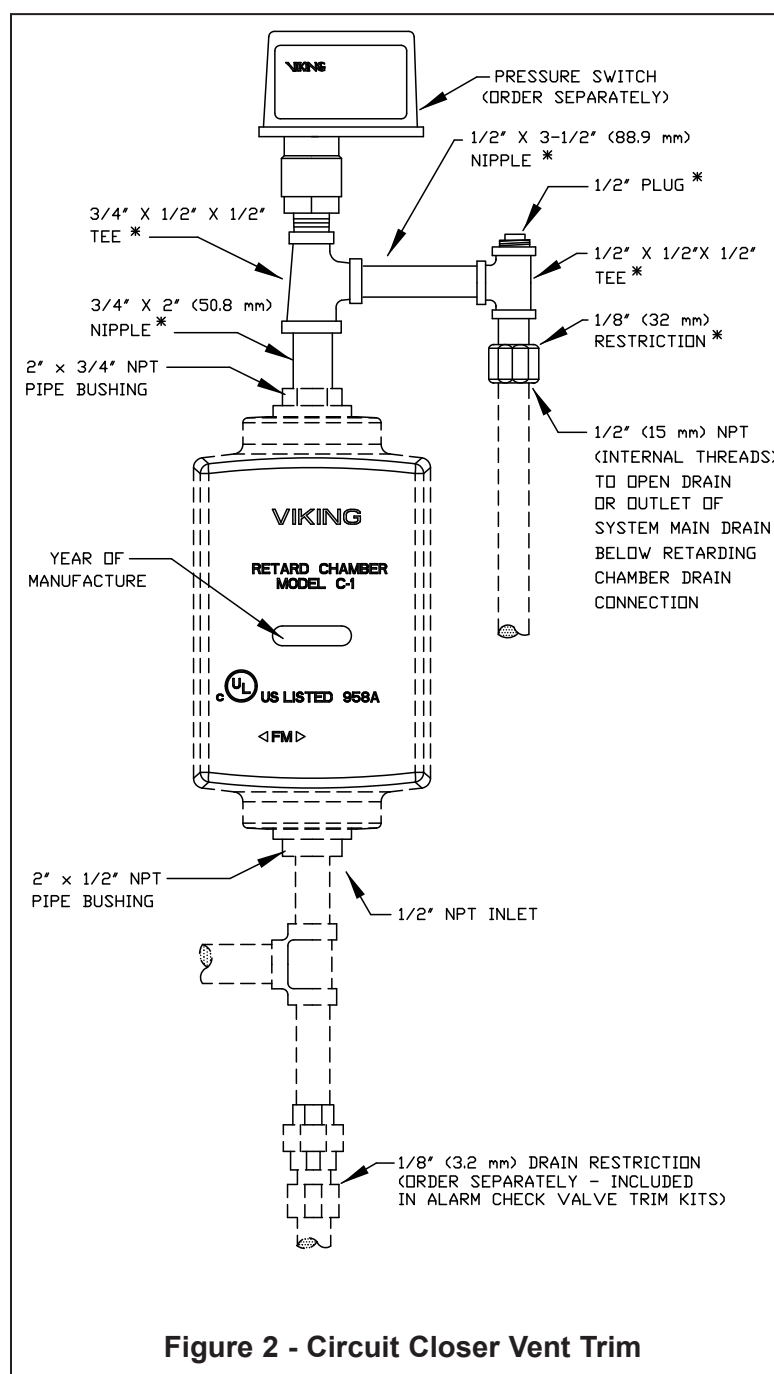
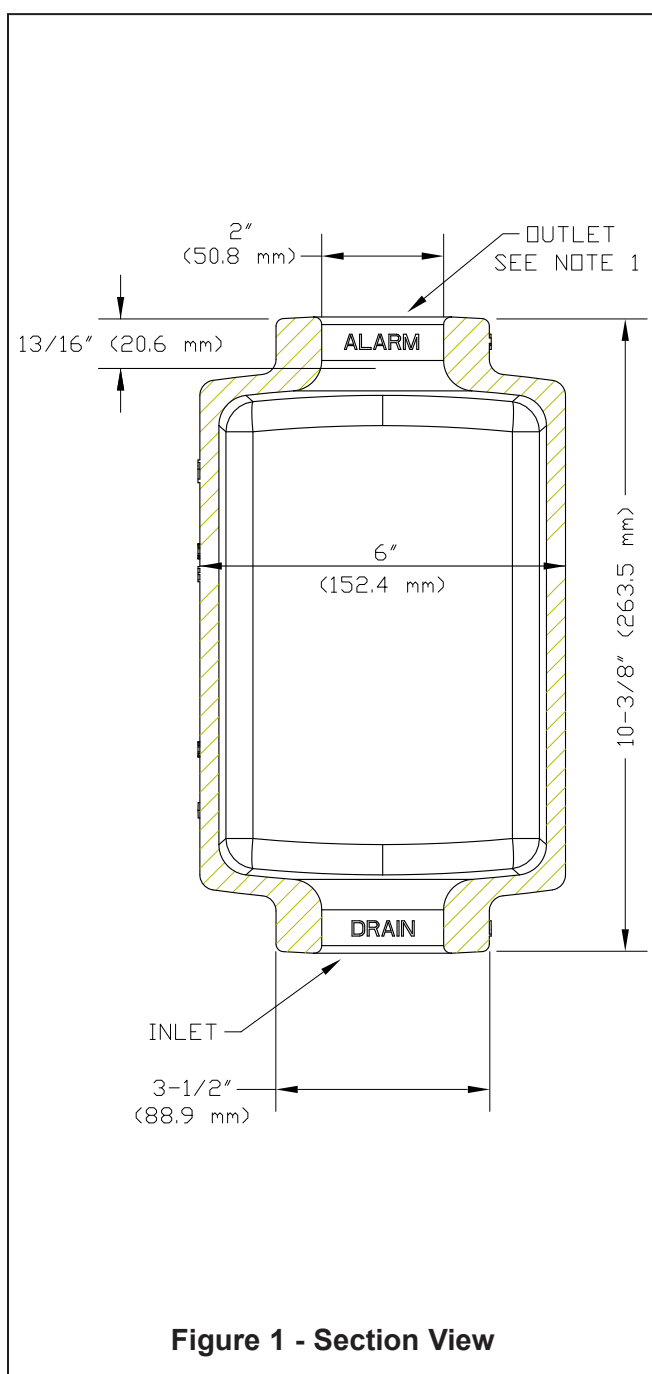
The Viking Corporation, 5150 Beltway SE, Caledonia, MI 49316

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

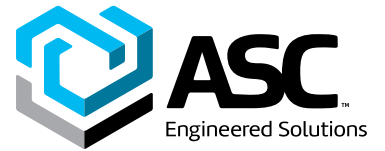
Visit the Viking website for the latest edition of this technical data page www.vikinggroupinc.com.

Figures 1 & 2 Notes

1. Connect alarm line piping to the 3/4" (20 mm) outlet of the Retard Chamber. When using a Water Motor Alarm, a strainer is required. When using an electric Alarm Pressure Switch only, or when the alarm line piping is trapped, Circuit Closer Vent Trim is required.
2. Items marked with * are included in the Viking Circuit Closer Vent Trim sets.



Building connections that last™



Series 67FVGET

Grooved End Butterfly Valve with
Indicator Datasheet



Grooved End Butterfly Valve with Indicator Series 67BFVGET

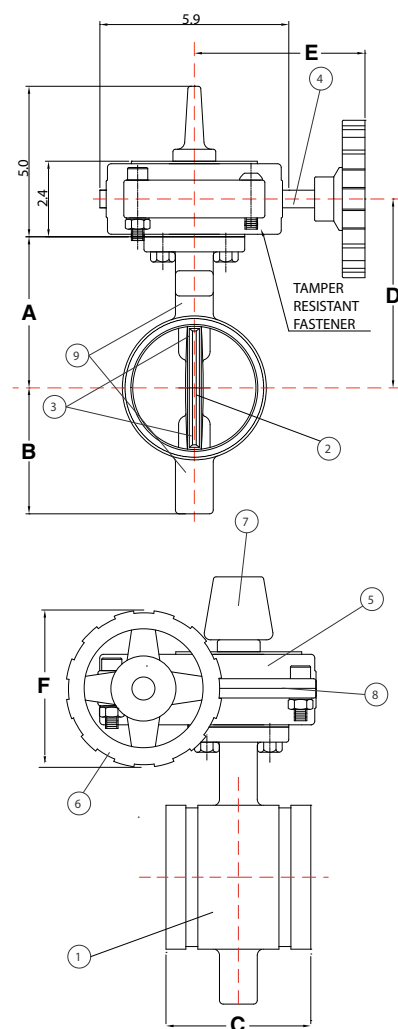


Parts & Materials

No.	Part	Material
1	Body	ASTM A-536 DI, Epoxy Coated
2	Disc	ASTM A-536 DI, EPDM Encapsulated
3	Upper and Lower Stems	AISI Type 431 Stainless Steel
4	Gear Housing	ASTM A-536 Ductile Iron, Zinc Electroplated
5	Handwheel	ASTM A-536 Ductile Iron
6	Flag Indicator	ASTM A-536 Ductile Iron
7	O-Rings (all)	EPDM

Design Features

- 300 psi
- UL Listed
- FM Approved
- California State Fire Marshall Approval No. 7770-2252: 0500
- Factory installed replaceable double tamper switch
- Approved for indoor and outdoor use
- Grooved ends
- Gear Operator

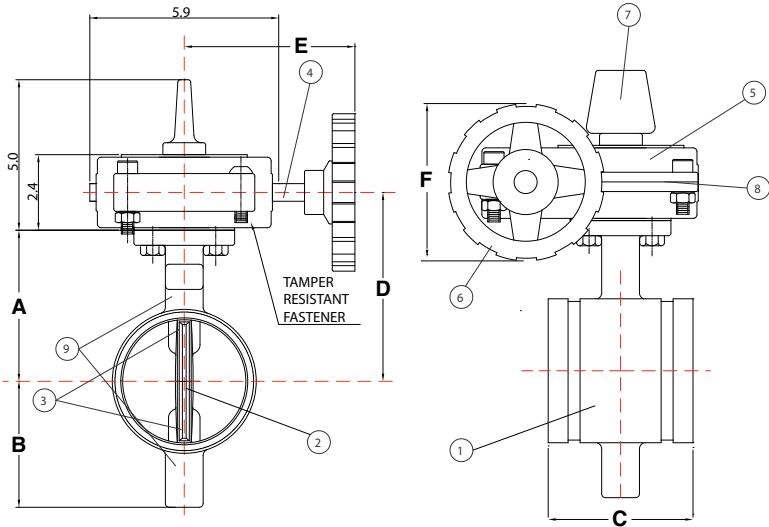


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Building connections that last™

Grooved End Butterfly Valve with Indicator

Fig. 67BFVGET



Dimensions

Pipe Size	Part Number	A	B	C	E	Handwheel Diameter	Weight
In./mm		In./mm	In./mm	In./mm	In./mm	In./mm	Lb./ g
2½	67BFVGET024	4.02	2.80	3.82	5.28	5.00	19.0
65		102	71	97	134	127.0	8.63
3	67BFVGET030	4.29	3.19	3.82	5.28	5.00	20.4
80		109	81	97	134	127.0	9.25
4	67BFVGET040	5.04	3.74	4.57	5.28	5.00	23.6
100		128	95	116	134	127.0	10.71
6	67BFVGET060	6.02	5.24	5.83	5.28	8.70	42.4
150		153	133	148	134	221.0	19.28
8	67BFVGET080	7.24	6.46	5.24	8.27	8.70	52.6
200		184	164	133	210	221.0	23.9

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.



asc-es.com

Building connections that last™

FC-DS-SERIES-67BFVGET-v01 20210817





Angle Valves

Female x Male

- Used as fire hose outlet connections
- Female NPT inlet x Male hose thread outlet, 300 PSI, cast brass*, UL listed/FM approved

Model No.	Size	A	B Open	C	D	Swing Radius
5010	1½" x 1½"	4"	7¾"	2¼"	2"	2½"
5015	2½" X 2½"	5¼"	11"	3¼"	2¾"	3½"

Female x Female

- Used with hose rack assemblies
- Female NPT inlet and outlet, 300 PSI, cast brass*, UL listed/FM approved

Model No.	Size	A	B Open	C	D	Swing Radius
5020	1½" x 1½"	4"	7¾"	2¼"	2"	2½"
5025	2½" X 2½"	5¼"	11"	3¼"	2¾"	3½"

*Optional brass finishes add suffix to model no.

-B Polished; -C Rough Chrome Plated; -D Polished Chrome Plated

Pressure Restricting Angle Valves

Female x Male

- Used as fire hose outlet connections
- Field-adjustable restricting mechanism reduces water pressure under flowing conditions (175 PSI max. inlet). When full flow is required, restriction can be over-ridden by trained personnel
- Female NPT inlet x Male hose thread outlet, 175 PSI, cast brass*, UL listed/FM Approved

Model No.	Size	A	B Open	C	D	Swing Radius
5030	1½" x 1½"	4"	8"	2¼"	2"	2½"
5035	2½" X 2½"	5¼"	11½"	3¼"	2¾"	3½"

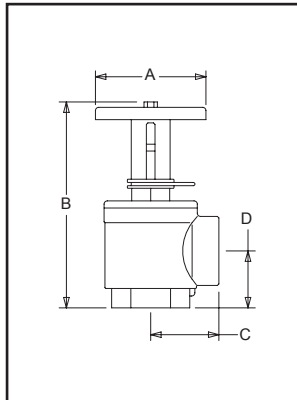
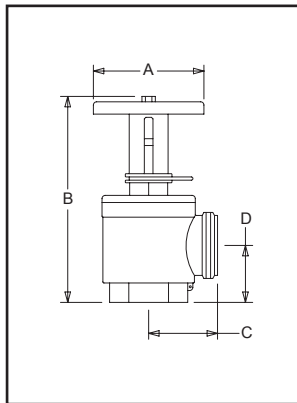
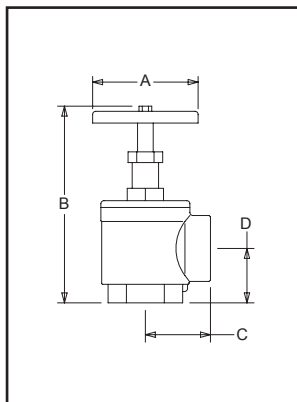
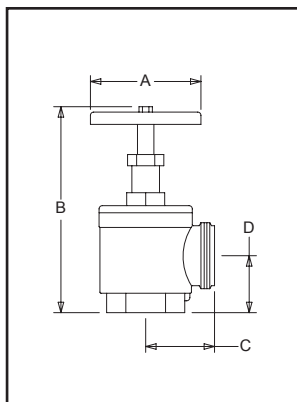
Female x Female

- Used with hose rack assemblies
- Field-adjustable restricting mechanism reduces water pressure under flowing conditions (175 PSI max. inlet). When full flow is required, restriction can be over-ridden by trained personnel
- Female NPT inlet and outlet, 175 PSI, cast brass*, UL listed/FM Approved

Model No.	Size	A	B Open	C	D	Swing Radius
5040	1½" x 1½"	4"	8"	2¼"	2"	2½"
5045	2½" X 2½"	5½"	11½"	3½"	2½"	3½"

*Optional brass finishes add suffix to model no.

-B Polished; -C Rough Chrome Plated; -D Polished Chrome Plated



Identification Signs For Sprinkler Systems and Devices NFPA 13 Signing Requirements

General Description

Identification Signs (Ref. Figure 1) are designed to provide information to the end user about the sprinkler system and its components. They are available with a variety of wording combinations to meet the signing requirements of NFPA 13.

The five basic types of Identification Signs are as follows:

Type A- Control Valve Sign

Type B- Multi-Purpose Text Signs
(See Below)

Type D- Fire Alarm Sign

Type E- Hydraulic Calculation Sign

Type B- Identification Signs are available with the following text options:

AIR CONTROL
AIR LINE
ALARM TEST
ANTIFREEZE SYSTEM
AUXILIARY DRAIN
CONTROL VALVE
DRAIN
DRAIN VALVE
INSPECTORS TEST
MAIN CONTROL
MAIN DRAIN

WARNINGS

The Identification Signs described herein must be installed and maintained in compliance with this document, as well as with the applicable standards of the National Fire Protection Association, in addition to the standards of any other authorities having jurisdiction. Failure to do so may impair the performance of these devices.

The owner is responsible for maintaining their fire protection system and devices in proper operating condition. The installing contractor or sprinkler manufacturer should be contacted with any questions.

Technical Data

Material & Finish

18 gauge aluminum with mylar facing.

	Width x Height	
	Inches	(mm)
Type A	9 x 7	(229 x 178)
Type B	6 x 2	(152 x 51)
Type C	7¼ x 1¼	(197 x 32)
Type D	9 x 7	(229 x 178)
Type E	5 x 7	(127 x 178)

Installation

The Identification Signs are provided with 1/8 Inch (3,2 mm) diameter or larger holes (or slots) in the corners for easy attachment using standard hardware chain, wire, plastic lock ties, or light gauge metal strap (not included).

Care and Maintenance

The following inspection procedure must be performed as indicated, in addition to any specific requirements of the NFPA, and any impairments must be immediately corrected.

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the National Fire Protection Association (e.g., NFPA 25), in addition to the standards of any authority having jurisdiction. The installing contractor or product manufacturer should be contacted relative to any questions.

It is recommended that automatic sprinkler systems be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

After placing a fire protection system in service, notify the proper authorities and advise those responsible for monitoring proprietary and/or central station alarms.

INSPECTION PROCEDURE

Annual visual inspections are recommended to ensure that Identification Signs are properly located.

THIS VALVE CONTROLS
AUTOMATIC SPRINKLERS

SUPPLY
TO

MUST
BE **OPEN** AT ALL
TIMES

TO BE HANDLED ONLY BY AUTHORIZED PERSON OR
BY EMPLOYEE CARING FOR SPRINKLER SYSTEM

IN CASE OF FIRE
DO NOT SHUT VALVE UNTIL FIRE IS ENTIRELY OUT

WHEN VALVE IS SHUT FOR EMERGENCY - REPAIRS - OR FIRE -
NOTIFY:

REQUEST DIRECTIONS -- RESTORE PROTECTION QUICKLY

SIGN- TYPE A, P/N 2300A

**SPRINKLER
FIRE - ALARM**

WHEN BELL RINGS
CALL
FIRE DEP'T OR POLICE

SIGN- TYPE D

RECTANGULAR 6-1/2" X 8-1/2", P/N 2316
OR
ROUND 7-1/4" DIAMETER, P/N 2329

AUXILIARY DRAIN

**SIGN- TYPE B,
AVAILABLE WITH THE
FOLLOWING TEXT OPTIONS**

"AIR CONTROL"P/N 2328
"AIR LINE"P/N 2302
"ALARM TEST" P/N 2304A
"ANTIFREEZE SYSTEM"P/N 2306
"AUXILIARY DRAIN"P/N 2307
"CONTROL VALVE"P/N 2310
"DRAIN"P/N 2311
"DRAIN VALVE"P/N 2327
"INSPECTORS TEST"P/N 2313
"MAIN CONTROL"P/N 2319
"MAIN DRAIN"P/N 2320

HYDRAULIC-SYSTEM

This Building is Protected by a
Hydraulically Designed Automatic
Sprinkler System

Location

No. of Sprinklers

Basis of Design

1. DENSITY **GPM/SQ.FT.**

2. DESIGNED AREA OF DISCHARGE **SQ.FT.**

System Demand

1. WATER FLOW RATE **GPM**

2. RESIDUAL PRESSURE AT THE
BASE OF THE RISER **PSI**

SIGN- TYPE E, P/N 2317

**FIGURE 1
IDENTIFICATION SIGNS**

Limited Warranty

Products manufactured by Tyco Fire & Building Products (TFBP) are warranted solely to the original Buyer for ten (10) years against defects in material and workmanship when paid for and properly installed and maintained under normal use and service. This warranty will expire ten (10) years from date of shipment by TFBP. No warranty is given for products or components manufactured by companies not affiliated by ownership with TFBP or for products and components which have been subject to misuse, improper installation, corrosion, or which have not been installed, maintained, modified or repaired in accordance with applicable Standards of the National Fire Protection Association, and/or the standards of any other Authorities Having Jurisdiction. Materials found by TFBP to be defective shall be either repaired or replaced, at TFBP's sole option. TFBP neither assumes, nor authorizes any person to assume for it, any other obligation in connection with the sale of products or parts of products. TFBP shall not be responsible for sprinkler system design errors or inaccurate or incomplete information supplied by Buyer or Buyer's representatives.

In no event shall TFBP be liable, in contract, tort, strict liability or under any other legal theory, for incidental, indirect, special or consequential damages, including but not limited to labor charges, regardless of whether TFBP was informed about the possibility of such damages, and in no event shall TFBP's liability exceed an amount equal to the sales price.

The foregoing warranty is made in lieu of any and all other warranties, express or implied, including warranties of merchantability and fitness for a particular purpose.

This limited warranty sets forth the exclusive remedy for claims based on failure of or defect in products, materials or components, whether the claim is made in contract, tort, strict liability or any other legal theory.

This warranty will apply to the full extent permitted by law. The invalidity, in whole or part, of any portion of this warranty will not affect the remainder.

Ordering Procedure

Orders must include the description and Part Number (P/N). Contact your local distributor for availability.

Hardware for hanging is not supplied with the Sign. It must be ordered separately.

Identification Signs,

(Types A, C, D, or E)

Specify: Type (A, C, D, or E)

Identification Sign, P/N (specify).

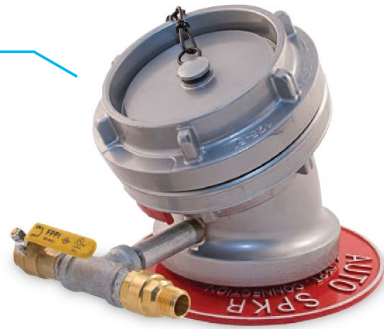
Identification Signs

(Type B)

Specify: Type B Identification Sign inscribed (specify, e.g. "AIR CONTROL"), P/N (specify).

Type A	P/N 2300A
Type D (Round)	P/N 2329
Type D (Rectangle)	P/N 2316
Type E	P/N 2317
Type B	
"AIR CONTROL"	P/N 2328
"AIR LINE"	P/N 2302
"ALARM TEST"	P/N 2304A
"ANTIFREEZE SYSTEM"	P/N 2306
"AUXILIARY DRAIN"	P/N 2307
"CONTROL VALVE"	P/N 2310
"DRAIN"	P/N 2311
"DRAIN VALVE"	P/N 2327
"INSPECTORS TEST"	P/N 2313
"MAIN CONTROL"	P/N 2319
"MAIN DRAIN"	P/N 2320

STORZ Type Fire Department Connection – with Drain Valves Fig. 09-230



Description

FPPI STORZ Kits contain all the pieces needed for a complete installation of a STORZ Type Fire Department Connection (FDC). STORZ connections have been used in the fire service for decades for large diameter connections at the fire truck. Use of STORZ connections eliminates the need for the fire service to use adapters to make their final connection to the building. This FPPI STORZ Type FDC includes both a ball valve and ball drip valve for both passive and active draining of the FDC. Fire Department Connection Kit is complete with the STORZ Connection FDC, STORZ Cap, 4" IPS identification sign, ball drip and ball valve.

Features

- Metal Face eliminates gasket failure
- "Sexless" Connection saves time and eliminates connection errors
- Included metal grille protects the waterway from foreign debris
- Complete assembly with cap, 30° elbow, and aluminum wall plate
- Drain consists of a 1/2" full-port ball valve and ball drip

Installation

Installation of a STORZ fitting is accomplished with normal installation methods* used in the fire sprinkler industry. Make sure the female threads of the Storz fitting and the male pipe end are free of contaminants and debris. Apply a suitable thread sealant to the threads of the male pipe end such as PipeFit® or PipeFit AS®. Thread the Storz fitting on to the male pipe end until hand tight. Tighten the STORZ type fitting one additional turn using a specially designed spanner wrench to prevent damage to the outer surfaces of the fitting.

Use the same normal installation techniques to thread the drain valve assembly onto the 1/2" pipe extending down from the Storz connection.

DO NOT USE MORE THAN ONE SEALANT TYPE PER THREADED CONNECTION. DO NOT OVER TIGHTEN THREADS. OVER TIGHTENING WILL CAUSE LEAKS IN THIS AND OTHER THREADED COMPONENTS.

Specifications

Material:

Forged T6160 Aluminum
Alloy Storz Connection

Brass Valves

Galvanized Steel Drain Pipe & Tee

Finish:

Powder Coated

Seal:

Metal Face

Approvals:

Meets NFPA 1963 edition 1998 Standard for fire hose connections

Available Sizes:

5" Storz x 4" FNPT w/ 30° Elbow

Accessories:

Cap, Wall Plate, Ball Drip & Drain Valves all included in kit



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

**GUARDIAN**FIRE EQUIPMENT, INC.
MIAMI, FL

Ph. 800.327.6584 • Fax 800.827.3869

DETAIL AND SUBMITTAL SHEET**5300-5500 Series - Globe Valves, Ball Valves and Caps**

Project/Location: _____

Date: _____

Architect/Engineer: _____

Contractor: _____

☒ **Appropriate Selection****Globe Valves - Female x Male** - Used as fire hose outlet connections.

Female NPT inlet x male hose thread outlet, cast brass

Model No.	Size	A	B	C	D
<input type="checkbox"/> 5310	2 1/2" x 2 1/2"	5 1/8"	10 7/8"	7"	2 5/8"

Optional Finish: ☐ -B Polished Brass ☐ -C Rough Chrome Plated ☐ -D Polished Chrome PlatedThreads: ☐ NST ☐ Other _____**Globe Valves - Female x Female** - Used with hose rack assemblies

and as drain outlets. Female NPT inlet and outlet, cast brass

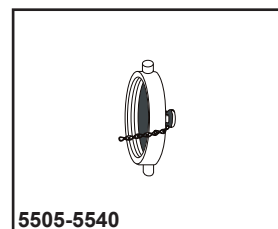
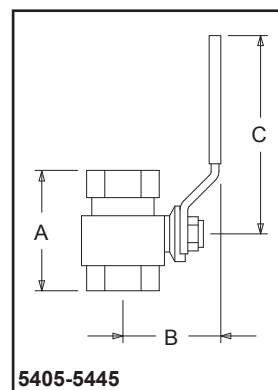
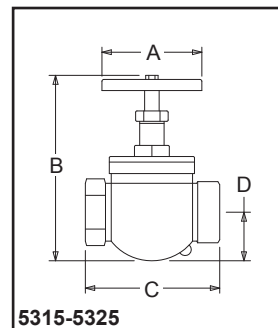
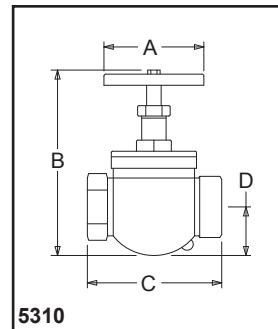
Model No.	Size	A	B	C	D
<input type="checkbox"/> 5315*	1/2" x 1/2"	2 1/8"	3 3/8"	1 7/8"	5/8"
<input type="checkbox"/> 5320*	1 1/2" x 1 1/2"	3 3/8"	5 3/4"	3 3/8"	1 1/4"
<input type="checkbox"/> 5325	2 1/2" x 2 1/2"	5 1/8"	10 7/4"	7"	2 5/8"

Optional Finish: ☐ -B Polished Brass ☐ -C Rough Chrome Plated ☐ -D Polished Chrome Plated*Variation: ☐ -EXT Extended stems (up to 36"). Specify Length: _____**Ball Valves** - Used where rapid "on/off" control of flow is required. Suitable for water, oil, gas or steam. Forged brass body, chrome plated ball, teflon seals, vinyl covered handle. Female NPT inlet/outlet, positive closure in either flow direction.

Model No.	Size	Port	A	B	C	Pressure (psi) WOG
<input type="checkbox"/> 5405	1/2"	1/2"	2 1/8"	1 5/16"	3 1/8"	600
<input type="checkbox"/> 5410	3/4"	3/4"	2 7/16"	1 13/16"	3 13/16"	600
<input type="checkbox"/> 5415	1"	1"	3"	1 15/16"	3 13/16"	600
<input type="checkbox"/> 5120	1 1/4"	1 1/4"	3 5/16"	2 1/8"	3 13/16"	600
<input type="checkbox"/> 5425	1 1/2"	1 1/2"	3 11/16"	2 11/16"	5 7/16"	600
<input type="checkbox"/> 5430	2"	2"	4 15/16"	2 15/16"	5 7/16"	400
<input type="checkbox"/> 5435	2 1/2"	2 1/2"	5 11/16"	4"	6 13/16"	400
<input type="checkbox"/> 5440	3"	3"	6 5/16"	4 5/16"	6 13/16"	400
<input type="checkbox"/> 5445	4"	4"	8"	5 5/16"	7 5/16"	400

Caps with Chains - Used to protect hose thread outlets on valves and hydrants, not intended for pressure application. Cast brass caps (pin lugs)* or red plastic caps (rocker lugs).

Size	3/4"	1"	1 1/2"	2"	2 1/2"	3"	4"	3"
Brass* Model No.	<input type="checkbox"/> 5505	<input type="checkbox"/> 5510	<input type="checkbox"/> 5515	<input type="checkbox"/> 5520	<input type="checkbox"/> 5525	<input type="checkbox"/> 5530	<input type="checkbox"/> 5535	<input type="checkbox"/> 5540
Plastic Model No	---	---	<input type="checkbox"/> 5515P	---	<input type="checkbox"/> 5525P	---	---	---

Optional Finish: ☐ -B Polished Brass ☐ -C Rough Chrome Plated ☐ -D Polished Chrome PlatedThreads: ☐ NST ☐ Other _____* Optional: ☐ -RL: Add rocker lugs

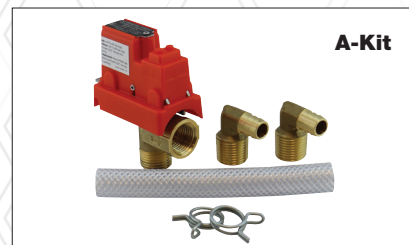
TEST_{AND}DRAIN[®]

Model 1011

QUALITY COMPONENTS FOR FIRE SPRINKLER SYSTEMS



Model 1011
Shown with A-Kit
Installed



A-Kit



T-Kit

System Test and Express Drain Valve

The UL Listed and FM Approved AGF TEST_{AND}DRAIN Model 1011 is a single-handle ball valve designed to eliminate the multiple connections needed by traditional loop assemblies while providing the test and express drain functions for wet fire sprinkler systems. TEST_{AND}DRAIN Model 1011 valves are available in 3/4" - 2" sizes, include sight glasses, and a tamper resistant test orifice in optional sizes (2.8K - 25.2K). All valves are field-serviceable (repair kits sold separately) and are available with locking kits for added security. Model 1011 valves are compliant with NFPA standards which require provisions for properly draining a system.

The **A-Kit** includes a UL Listed and FM Approved, 175 PSI, Model 7000L pressure relief valve (other ratings: 200, 225, and 300 PSI) with drain trim.

The **T-Kit** includes a UL Listed and FM Approved, 175 PSI, Model 7000L pressure relief valve (other rating available), 3-way universal gauge valve for testing, 4" pressure gauge, and drain trim.

Features

- NFPA 13 Compliant
- 400 PSI Rated
- Tamper-Resistant Sight Glass
- Tamper-Resistant Test Orifice
- Horizontal or Vertical Installation
- Field Serviceable
- Optional Locking Kit

Orifice Size		A-Kit Part Numbers					T-Kit Part Numbers				
K-Factor	Fractional	3/4"	1"	1 1/4"	1 1/2"	2"	3/4"	1"	1 1/4"	1 1/2"	2"
2.8	3/8"	200A	210A	220A	230A	240A	200T	210T	220T	230T	240T
4.2	7/16"	201A	211A	221A	231A	241A	201T	211T	221T	231T	241T
5.6*	1/2"	202A	212A	222A	232A	242A	202T	212T	222T	232T	242T
8.0	17/32"	203A	213A	223A	233A	243A	203T	213T	223T	233T	243T
11.2 (ELO)	5/8"	204A	214A	224A	234A	244A	204T	214T	224T	234T	244T
14.0 (ESFR)	3/4"	-	-	225A	235A	245A	-	-	225T	235T	245T
25.2	-	-	-	-	236A	246A	-	-	-	236T	246T

*Most Popular Models

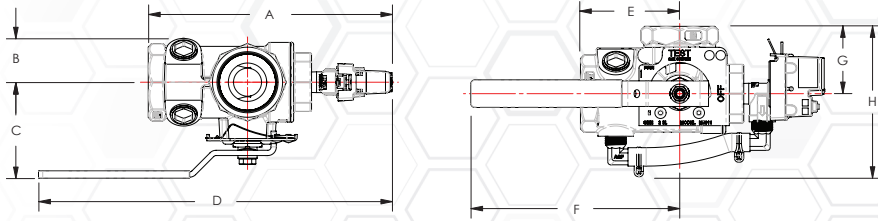


WWW.AGFMFG.COM

TDS-1011 - 6/23

Dimensions

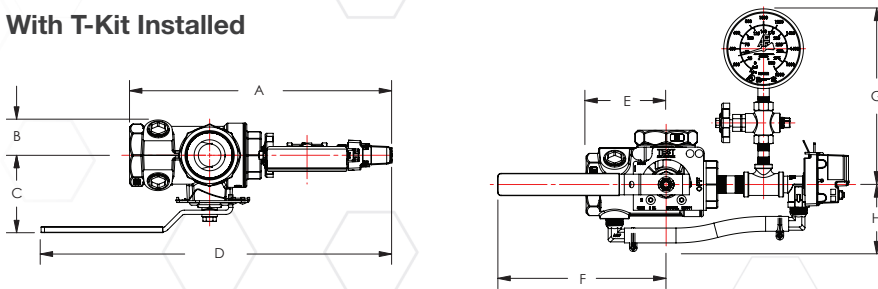
With A-Kit Installed



Size	A	B	C	D	E	F	G	H
3/4"	8 1/4" (209 mm)	1 1/8" (36 mm)	2 3/8" (60 mm)	9 1/8" (233 mm)	3 3/8" (86 mm)	4 5/8" (116 mm)	1 3/4" (44 mm)	4 1/2" (114 mm)
1"	8 1/4" (209 mm)	1 1/8" (36 mm)	2 3/8" (60 mm)	9 1/8" (233 mm)	3 3/8" (86 mm)	4 5/8" (116 mm)	1 3/4" (44 mm)	4 1/2" (114 mm)
1 1/4"	8 1/2" (217 mm)	1 3/8" (36 mm)	2 3/4" (71 mm)	10 1/2" (266 mm)	3 3/8" (84 mm)	5 1/2" (139 mm)	2" (50 mm)	4 7/8" (125 mm)
1 1/2"	9 1/2" (242 mm)	1 3/4" (43 mm)	3 3/4" (95 mm)	13 5/8" (346 mm)	3 7/8" (98 mm)	8 1/8" (207 mm)	2 5/8" (67 mm)	5 7/8" (150 mm)
2"	9 1/2" (242 mm)	1 3/4" (43 mm)	3 3/4" (95 mm)	13 5/8" (346 mm)	3 7/8" (98 mm)	8 1/8" (207 mm)	2 5/8" (67 mm)	5 7/8" (150 mm)

Sizes have been rounded to the highest millimeter

With T-Kit Installed



Size	A	B	C	D	E	F	G	H
3/4"	11 1/8" (284 mm)	1 3/8" (36 mm)	2 3/8" (60 mm)	12 5/8" (320 mm)	3 3/8" (86 mm)	4 5/8" (116 mm)	8 1/2" (216 mm)	2 3/4" (71 mm)
1"	11 3/8" (290 mm)	1 3/8" (36 mm)	2 3/8" (60 mm)	12 5/8" (320 mm)	3 3/8" (86 mm)	4 5/8" (116 mm)	8 1/2" (216 mm)	2 3/4" (71 mm)
1 1/4"	11 3/4" (298 mm)	1 1/8" (36 mm)	2 3/4" (71 mm)	13 7/8" (353 mm)	3 3/8" (84 mm)	5 1/2" (139 mm)	8 1/2" (216 mm)	2 7/8" (73 mm)
1 1/2"	12 3/4" (324 mm)	1 3/4" (43 mm)	3 3/4" (95 mm)	17" (432 mm)	3 7/8" (98 mm)	8 1/8" (207 mm)	8 1/2" (216 mm)	3 1/4" (81 mm)
2"	12 3/4" (324 mm)	1 3/4" (43 mm)	3 3/4" (95 mm)	17" (432 mm)	3 7/8" (98 mm)	8 1/8" (207 mm)	8 1/2" (216 mm)	3 1/4" (81 mm)

Sizes have been rounded to the highest millimeter

NOTE: UL and FM standards for sprinkler system pressure relief valves require relief valves to operate within a range of their ratings. FM requires a relief valve to OPEN at a pressure no less than 85% of their rating and UL requires OPENING at a pressure no greater than 105% of their rating. Both standards require the relief valves to CLOSE within a percentage below OPEN. Choose the relief valve comparing static pressure to 90% of the relief valve's rating to determine the estimated minimum OPENING and 80% of the relief valve's rating for approximate maximum CLOSING. The relief valve should be installed where it is easily accessible for maintenance. Care should be taken that the relief valve CANNOT be isolated from the system when the system is operational. A relief valve should NEVER have a shutoff valve or a plug downstream of its outlet.

USA Patent #4741361 and Other Patents Pending

For use on wet fire sprinkler systems.

Valve Sizes

3/4", 1", 1 1/4", 1 1/2", and 2"

Orifice Options

2.8K, 4.2K, 5.6K, 8.0K, 11.2K (ELO),
14.0K (ESFR), and 25.2K

Connections

Inlet..... NPT

Outlet..... NPT

(BSPP Available)

Installation Orientation

Horizontal or Vertical

Electrical Requirements

None

Valve Materials

Handle Steel

Stem Rod Brass

Ball.....C.P. Brass

Body Bronze

Valve Seat.....Impregnated Teflon®

Indicator Plate Steel

Rating

400 PSI

Compliance

NFPA 13

NYC-BSA No. 720-87-SM

Model 1011 Valve Approvals

UL/ULC (EX4019 & EX4533)

FM



AGF Manufacturing Inc.
100 Quaker Lane, Malvern, PA 19355

Phone: 610-240-4900

Fax: 610-240-4906

www.agfmfg.com

Job Name: _____

Architect: _____

Engineer: _____

Contractor: _____



UNITED BRASS WORKS, INC.

714 S. Main St., Randleman, NC 27317

Tel: 800-334-3035 Fax: 800-498-4696 www.ubw.com



Model 125S Globe Valve

Soft Disc

200 WOG @ 180 ° Max

100% Pressure Tested

Threaded Ends • Integral Seat

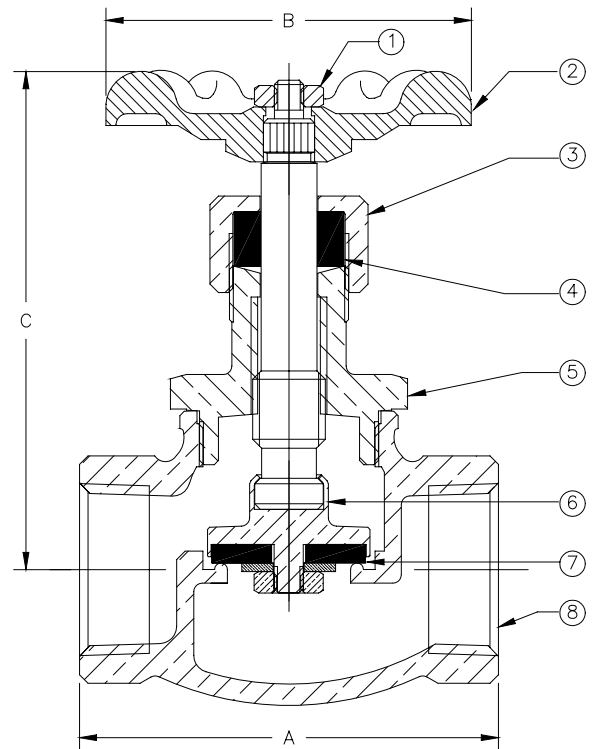
Rising Stem

Swivel Disc Holder



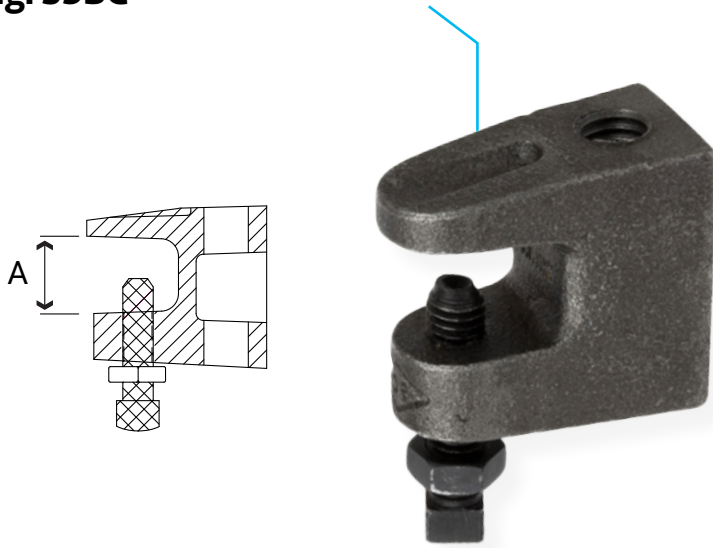
MATERIAL LIST

NO.	DESCRIPTION	MATERIAL
1	Hex Nut	Steel
2	Handwheel	Aluminum
3	Packing Nut	Brass
4	Packing	Graphite Non-Asb.
5	Bonnet (1/4" – 1") Bonnet (1 1/4" – 2")	Brass Bronze
6	Stem & Disc Holder	Brass
7	Disc	Buna N
8	Body	Bronze



Size	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
A	1.75	1.84	2.22	2.47	2.97	3.56	4.06	4.69
B	1.75	1.75	2.03	2.38	2.75	3.00	3.72	3.72
C (closed)	2.88	3.13	3.38	3.50	4.25	4.75	5.50	5.50
Ship Wt. (lbs.)	0.44	0.56	0.80	1.00	1.81	2.57	3.69	5.88
Qty. Unit Pack	12	12	12	6	6	4	2	2
Qty. Per Case	60	60	72	60	36	24	12	12

Universal C-type Clamp (Standard Throat) Fig. 35BC



Material Specifications

Size

$\frac{3}{8}$ " Rod
 $\frac{1}{2}$ " Rod

Material

Ductile iron, hardened steel cup point set screw and locknut.

Finish

Plain

Zinc Plated (Hot-Dip Galvanized optional)

Service

Recommended for use under roof installations with bar joist or I-Beam type construction, or for attachment to the top or bottom flange of structural shapes where the vertical hanger rod is required to be offset from the edge of the flange and where the thickness of joist or flange does not exceed $\frac{3}{4}$ ".

Approvals

Complies with Federal Specification A-A-1192A (Type 19 & 23), WW-H-171-E (Type 23), ANSI/MSS SP-69 and MSS SP-58 (Type 19 & 23).
UL, ULC Listed and FM Approved.

How to size

Size of clamp is determined by size of rod to be used.

Installation

Follow recommended set screw torque values per MSS-SP-69.

Features

- They may be attached to horizontal flanges of structural members in either the top beam or bottom beam positions.
- Secured in place by a cup-pointed Set Screw tightened against the flange. A Jam Nut is provided for tightening the Set Screw against the Body Casting.
- Thru tapping of the body casting permits extended adjustment of the threaded rod.
- Can be used with AF090 or AF090R retaining clip for seismic applications.

Ordering

Specify rod size, figure number, name of clamp and finish.

Dimensions (In) – Load (Lbs) – Torque (In-Lbs) – Weight (Lbs)

Rod Size	A	Torque Value	Design Loads ■		Weight
			Top	Bottom	
In.	In.	In.-Lbs.	Lbs.	Lbs.	Lbs.
$\frac{3}{8}$	$\frac{3}{8}$	60	400	250	0.34
$\frac{1}{2}$	$\frac{3}{8}$	125	950	760	0.63

Note:

■ Maximum temperature of 450° F



ANVIL
An ASC Engineered Solution

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

Adjustable Swivel Ring Fig. 69



1/2" through 2" Size
Rounded Edge Design

2 1/2" through 8" Size

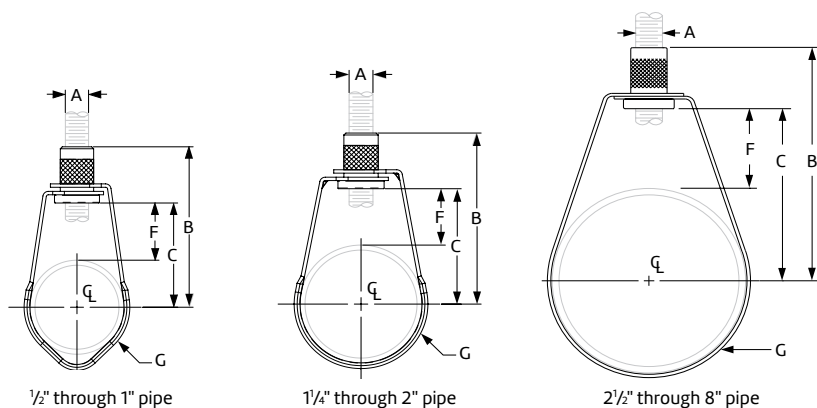
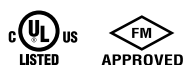


Fig. 69: Dimensions (in) • Loads (lbs) • Weight (lbs)

Pipe Size	Max Load	Weight	Rod Size A	B	C	F	G Width
1/2	300	0.10	3/8	2 7/8	2	1 9/16	5/8
3/4		0.10		2 3/4	1 7/8	1 5/16	
1		0.10		2 9/16	1 11/16	1	
1 1/4		0.10		2 5/8	1 3/4	7/8	
1 1/2		0.10		2 3/4	1 7/8		
2	525	0.11	1/2	3 1/4	2 3/8	1 1/8	3/4
2 1/2		0.20		4	2 3/4	1 5/16	
3		0.20		3 13/16	2 15/16	1 3/16	
4	650	0.30	1/2	4 11/16	3 13/16	1 9/16	3/4
5	1,000	0.54		5 5/16	4 3/8		
6		0.65		6 11/16	5 9/16	2 1/4	
8		1.00		8 9/16	7 9/16	3 1/4	

Size Range: 1/2" through 8"

Material: Carbon steel

Finish: Strap is Pre-Galvanized Zinc Material. Nut is Zinc Plated.

Service: Recommended for suspension of non-insulated stationary pipe line.

Maximum Temperature: 450° F

Approvals: Complies with Federal Specification A-A-1192A (Type 10), WW-H-171-E (Type 10), and ANSI/MSS SP-58 (Type 10).

UL Listed and FM Approved (Sizes 3/4" – 8").

Features:

- 1/2" – 2" sizes designed for use with steel and CPVC piping and manufactured with FBC System Compatible oil.
- Threads are countersunk so that they cannot become burred or damaged.
- Knurled swivel nut provides vertical adjustment after piping is in place.
- Captured swivel nut in the 1/2" through 6" sizes. The capture is permanent in the bottom portion of the band, allowing the hanger to be opened during installation if desired, but not allowing the nut to fall completely out.

Ordering:

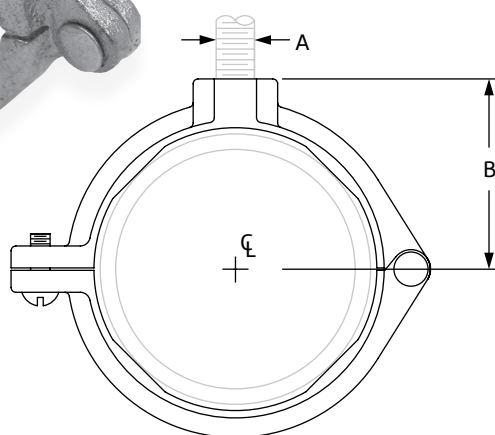
Specify size, figure number and name.

Non-captured nut also available upon request.



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

Extension Split Pipe Clamp (Rod Threaded) Fig. 138R



Size Range: 3/8" through 3"

Material: Malleable Iron

Finish: Plain or Zinc Plated

Service: Recommended for non-insulated stationary pipe lines.

Maximum Temperature: 450° F

Approvals: Complies with Federal Specification A-A-1192A (Type 12) WW-H-171-E (Type 25), ANSI/MSS SP-69 and MSS SP-58 (Type 12).

Features:

- Rapid installation assured by hinged design and single closure screw.
- When used with nipple this clamp is particularly adaptive for use on refrigeration or compressor piping subject to vibration.
- Interior design provides firm grip on pipe.
- Inside of ring tapered to prevent entrapment of condensed moisture.

Ordering: Specify pipe size, figure number, name and finish.



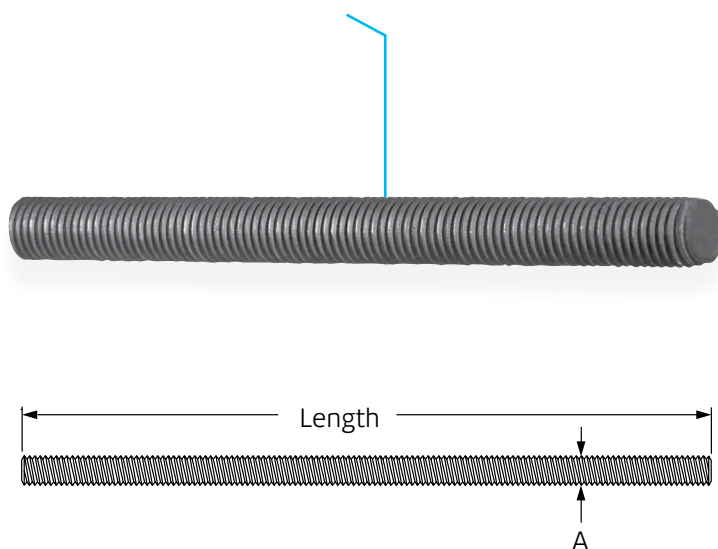
Fig. 138R: Dimensions (in) • Loads (lbs) • Weight (lbs)

Pipe Size	Max Load	Weight	Rod Size A	B
3/8	180	0.10	3/8	13/16
1/2		0.13		7/8
3/4		0.14		1
1		0.16		1 1/8
1 1/4		0.22		1 5/16
1 1/2		0.24		1 7/16
2	300	0.31	1/2	1 11/16
2 1/2		0.60		2 1/8
3		0.74		2 7/16

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Notes 1:	
Notes 2:	

Continuous Threaded Rod

Fig. 146 (Formerly Afcon Fig. 650)



Size Range: ¼" through 1½" stocked in six, ten, and twelve foot lengths. Other even foot lengths can be furnished to order.

Material: Carbon steel or Stainless Steel Gr 304

Threads: National Coarse (UNF), rod threaded complete length.

Finish: Plain or Zinc Plated (Hot-Dip Galvanized optional)

Maximum Temperature:
Zinc Plated 450°F, Stainless Steel 650°F

Approvals: Complies with MSS SP-58.

Ordering: Specify rod diameter and length, figure number, name and finish.

Note: The acceptability of galvanized coatings at temperatures above 450°F is at the discretion of the end user.



Fig. 146: Dimensions (in) • Loads (lbs) • Weight (lbs)

Rod Size A	Threads per Inch	Max Load	Weight per Ft.
		650° F	
¼	20	240	0.12
⅜	16	730	0.30
½	13	1,350	0.53
⅝	11	2,160	0.84
¾	10	3,230	1.20
⅞	9	4,480	1.70
1	8	5,900	2.30
1¼	7	9,500	3.60
1½	6	13,800	5.10

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

Medium Pipe Clamp Fig. 212

Size Range: 1/2" through 30"

Material: Carbon steel

Finish: Plain or Hot-Dip Galvanized
(Hot Dip Galvanized comes with zinc plated hardware)

Service: Recommended for suspension of cold pipe lines or hot lines where no insulation is required.

Maximum Temperature: Plain 750° F, Galvanized 450° F

Approvals: Complies with Federal Specification A-A-1192A (Type 4) WW-H-171-E (Type 4), ANSI/MSS SP-69 and MSS SP-58 (Type 4). UL, ULC Listed and FM Approved (Sizes 3/4" – 8").

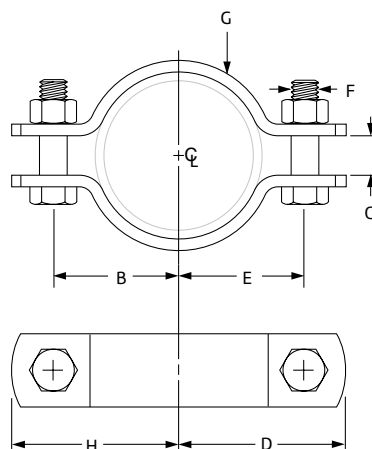
Installation: Normally used with weldless eye nut Fig. 290 or eye rod.

Features:

- Clamps tightly to pipe.
- Wide range of sizes.
- Equal gap design on many sizes.

Ordering: Specify pipe size, figure number, name and finish.

Note: The "C" gap dimension ensures adequate clearance at the top attachment point for a weldless eye nut or other appropriate rod attachment. This gap may or may not be present on the bottom portion of the clamp. If different loads or dimensions are required, refer to Fig. 42 SD non-standard two bolt pipe clamp.



Note: This picture is representative of a typical Figure 212. Distance between clamp ears beneath pipe may or may not be equal to upper gap.

Fig. 212: Dimensions (in) • Loads (lbs) • Weight (lbs)

Pipe Size	Span Ft.	Max Load For Service Temp		Weight	B	C	Rod Take Out E	H	D	F	G Width
		650° F	750° F								
1/2				0.29	1		1 3/16	1 17/32	1 23/32		
3/4				0.33	1 1/8		1 1/4	1 21/32	1 25/32		
1	7*	500	–	0.35		1/2	1 3/8		1 29/32	5/16	
1 1/4				0.38	1 7/16		1 5/8	1 31/32	2 5/32		
1 1/2	9*	800		0.43	1 9/16		1 11/16	2 3/32	2 7/32		1
2	10*			1.10	2 1/8		2 1/8	2 3/4	2 3/4		
2 1/2	11*			1.20	2 5/8		2 5/8	3 1/4	3 1/4		
3	12*			1.40	2 7/8		2 7/8	3 1/2	3 1/2	1/2	
3 1/2	13*	1,040	930	1.50	3 3/16	5/8	3 3/16	3 13/16	3 13/16		
4	14*			1.80	3 1/2		3 1/2	4 1/4	4 1/4		
5	16*			2.60	4 3/16	3/4	4 3/16	4 15/16	4 15/16	5/8	1 1/4
6	17*			5.40	4 7/8		4 7/8	5 3/4	5 3/4		
8	19*	1,615	1,440	6.50	6	1 1/4	6	6 7/8	6 7/8	3/4	1 1/2
10	22*			13.60	7 7/16		7 7/16	8 9/16	8 9/16		
12	23*			15.20	8 7/16	1	8 7/16	9 9/16	9 9/16		2
14	20	2,490	2,220	20.50	9 1/4		9 1/4	10 5/8	10 5/8	7/8	
16	15			22.30	10 1/4	1 1/8	10 1/4	11 5/8	11 5/8		
18	15			31.60	11 5/8	1 1/4	11 5/8	13	13	1	2 1/2
20	12	3,060	2,730	35.80	12 3/4	1 3/8	12 3/4	14 1/8	14 1/8	1 1/8	
24	12			53.10	15 1/4	1 5/8	15 1/4	16 7/8	16 7/8	1 1/4	3
30	9	3,500	3,360	113.90	19	2	19	21 1/8	21 1/8	1 3/4	4

Clamps may be furnished with square ends. "Span" represents the maximum recommended distance between hangers on a continuous & straight run of horizontal standard weight steel pipe filled with water. In all cases, verify that chosen location of hangers does not subject hangers to a load greater than the maximum recommended load shown above. For vapor service, the presence of fittings or insulation, and other weights and types of pipe, spans may either increase or decrease. In all cases, verify that chosen location of hanger does not subject hangers to a load greater than the maximum recommended load shown. *Indicates that span represents the maximum span for water filled pipe.

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

Restraining Strap Fig. AF090



Material Specifications

Size Range

$\frac{3}{8}$ " through $\frac{1}{2}$ " Threaded Rod

Material

Carbon steel

Finish

Pre-Galvanized per ASTM A653

Service

Secures beam clamps to the beam where building movement is expected due to seismic activity. NFPA 13 requires the use of restraining straps in seismic areas. For use with Anvil Fig. 86, 88, 92, 93, 94, and 95 beam clamps.

Approvals

cULus Listed. Complies with the hanging and bracing requirements listed in NFPA 13.

Features

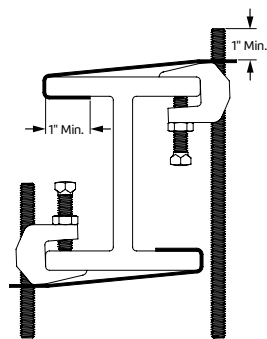
- Dual hole design allows for one part to be installed with $\frac{3}{8}$ " and $\frac{1}{2}$ " rod.

Installation Instructions

- Install beam clamp per manufacture's installation instructions.
- Place restraining strap over exposed rod.
- Pull tight and wrap the opposite end of the restraining strap around the beam flange. At least 1" must wrap around the beam. For best performance, ensure the retrofit restraining strap is tight against the beam.
- For rod which extends less than 1" past the restraining strap, a nut must be installed to secure the restraining strap to the beam clamp and rod.
- Fire Protection applications shall also be installed per the requirements of NFPA 13 and local codes.

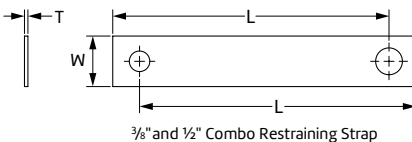
Ordering

Specify size, length, figure number and description.

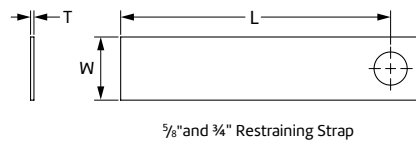


Dimensions (In)

Rod Size	L Length	W Width	T Thickness
$\frac{3}{8}$ & $\frac{1}{2}$		1	15 ga.
$\frac{5}{8}$	6, 8, 10, 12, 14, 16, 18	1 $\frac{1}{4}$	14 ga.
$\frac{3}{4}$			



$\frac{3}{8}$ " and $\frac{1}{2}$ " Combo Restraining Strap



$\frac{5}{8}$ " and $\frac{3}{4}$ " Restraining Strap

Notes:

ASC Engineered Solutions® brand bracing components are designed to be compatible ONLY with other ASC Engineered Solutions brand bracing components, resulting in a Listed seismic bracing assembly. Updated UL listing information may be viewed at www.ul.com.

Disclaimer:

ASC Engineered Solutions® does not provide any warranties and specifically disclaims any liability whatsoever with respect to ASC Engineered Solutions bracing products and components that are used in combination with products, parts or systems not manufactured or sold by ASC Engineered Solutions. In no event shall ASC Engineered Solutions be liable for any incidental, direct, consequential, special or indirect damages or lost profits where non-ASC Engineered Solutions bracing components have been, or are used.

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

SAMMY X-PRESS®

THE FASTEST WAY TO ATTACH THREADED ROD TO LIGHT GAUGE STEEL

THE SAMMY X-PRESS ELIMINATES THE NEED TO BUILD COSTLY TRAPEZE SUPPORTS SAVING HOURS OF LABOR EACH DAY.



SWIVEL | VERTICAL | SIDEWINDER



SAVE LABOR TIME AND COST

Save hours each day by installing X-Press anchors. For each 30 min trapeze assembled, the X-Press anchor takes less than 60 seconds, cutting days of work into hours.



PERFECT SOLUTION

For use with metal roof deck and other applications where accessing the back of the fastener is not possible.



DESIGNED WITH VERSATILITY IN MIND

Vertical, horizontal, and swivel models allow for any type of job to be completed including roofs with up to a 89 degree pitch.

SAMMYS®
THREADED ROD ANCHORING SYSTEM

WWW.SAMMYSANCHORS.COM

SAMMY X^{PRESS} IT™ 2.0

Install in seconds with the Sammy X-Press It™ 2.0 Universal Installation Tool!



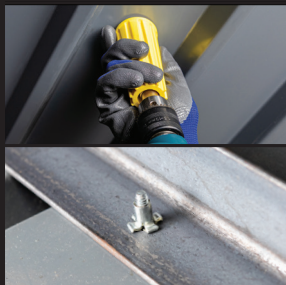
Pre-Drill Hole



Attach X^{PRESS} IT™ 2.0 Sleeve



Insert and Lock In X-^{PRESS} Anchor

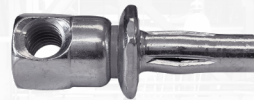


Install by Expanding Anchor



VERTICAL MOUNT

PART NUMBER	MODEL	ROD SIZE	BOX QTY	MASTER PACK
8181922	XP 200	1/4"	25	125
8150922	XP 20	3/8"	25	125
8153922	XP 35	3/8"	25	125



HORIZONTAL MOUNT

PART NO.	MODEL	ROD SIZE	BOX QTY	MASTER PACK
8293957	SWXP 35	3/8"	25	125



SWIVEL MOUNT

PART NO.	MODEL	ROD SIZE	BOX QTY	MASTER PACK
8294922	SXP 20	3/8"	25	125
8295922	SXP 35	3/8"	25	125
8272957	SXP 2.0	1/2"	25	125
8271957	SXP 3.5	1/2"	25	125

ACCESSORIES

PART NO.	MODEL	DESCRIPTION	QTY
8196910	UXPIT 2.0*	X-Press It 2.0 Installation Tool	1
8152910	XPDB	25/64" Drill Bit	1

*Tool Includes: Sleeve, Bit Receiver, Hex Wrench, and 25/64" Drill Bit.



Visit www.sammysanchors.com for additional approval information.

SAMMYS

THREADED ROD ANCHORING SYSTEM

WWW.SAMMYSANCHORS.COM

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Features

- Listed for indoor and outdoor use
- Outdoor use requires BBK-1 or HC-BB weatherproof back box
- Indoor use mounts directly to standard 4" box
- Low current draw
- High dB output
- AC and DC models
- DC models are motor driven, polarized, and have built in transient protection for supervised alarm circuits
- Available in 6", 8" and 10" sizes



* ULC on PDC-DC Only

Description

These vibrating type bells are designed for use as fire or general signaling devices. They have low power consumption and high decibel ratings. The unit mounts on a standard 4" (101mm) square electrical box for indoor use or on a model BBK-1 or HC-BB weatherproof backbox for outdoor applications. Weatherproof backbox model BBK-1 or HC-BB, Stock No. 1500001.

Notes

1. Minimum dB ratings are calculated from integrated sound pressure measurements made at Underwriters Laboratories as specified in UL Standard 464. UL temperature range is -30° to 150°F (-34° to 66°C)
2. Typical dB ratings are calculated from measurements made with a conventional sound level meter and are indicative of output levels in an actual installation.
3. ULC only applies to PDC-DC bells.

Size inches (mm)	Voltage	Model Number	Stock Number	Current (Max.)	Typical dB at 10 ft. (3m) (2)	Minimum dB at 10 ft. (3m) (1)
6 (150)	12VDC	PDC-6-12	1750500	200mA	96	76
8 (200)	12VDC	PDC-8-12	1750502	.200mA	96	77
10 (250)	12VDC	PDC-10-12	1750504	.200mA	96	78
6 (150)	24VDC	PDC-6-24	1750501	.20mA	95	77
8 (200)	24VDC	PDC-8-24	1750503	20mA	83	79
10 (250)	24VDC	PDC-10-24	1750505	20mA	85	80
6 (150)	24VAC	PBA246	1806024*	.17A	91	78
8 (200)	24VAC	PBA248	1808024*	.17A	94	77
10 (250)	24VAC	PBA2410	1810024*	.17A	94	78
6 (150)	120VAC	PAC1206	1826120	.05A	98	83
8 (200)	120VAC	PAC1208	1828120	.05A	98	84
10 (250)	120VAC	PAC12010	1821120	.05A	98	86

All DC bells are polarized and have built-in transient protection. * Does not have ULC listing.

Technical Specifications

Dimensions	6" (150mm), 8" (200mm) and 10" (250mm)
Enclosure	Cover: Steel Finish: Red Powder Coat Base: non-corrosive composite material All parts have corrosion resistant finishes Model BBK-1 or HC-BB weatherproof backbox (optional)
Voltages Available	24VAC 120VAC 12VDC (10.2 to 15.6) Polarized 24VDC (20.4 to 31.2) Polarized
Environmental Limitations	Indoor or outdoor use (See Note 1) -40° to 150°F (-40° to 66°C) (Outdoor use requires weatherproof backbox.)
Termination	AC Bells - 4 No. 18 AWG stranded wires DC Bells - 18 AWG stranded wire
Service Use	NFPA 13, 72, local AHJ

*Specifications subject to change without notice.

⚠ WARNING

- Installation must be performed by qualified personnel and in accordance with all national and local codes and ordinances.
- Shock hazard. Disconnect power source before servicing. Serious injury or death could result.
- Risk of explosion. Not for use in hazardous locations. Serious injury or death could result.

⚠ WARNING

In outdoor or wet installations, bell must be mounted with weatherproof backbox, BBK-1 or HC-BB. Standard electrical boxes will not provide a weatherproof enclosure. If the bell and/or assembly is exposed to moisture, it may fail or create an electrical hazard.

Installation

The bell shall be installed in accordance with NFPA 13, 72, or local AHJ. The top of the device shall be no less than 90" AFF and not less than 6" below the ceiling.

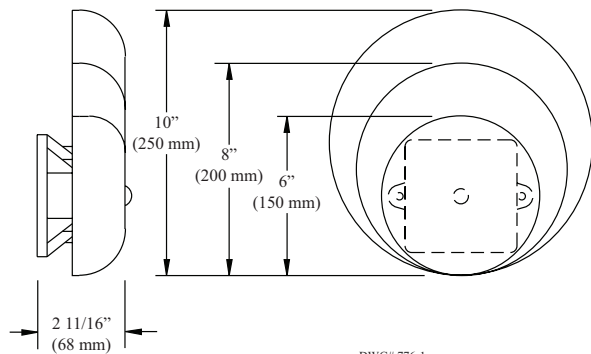
1. Remove the gong.
2. Connect wiring (see Fig. 3).
3. Mount bell mechanism to backbox (bell mechanism must be mounted with the striker pointing down).
4. Reinstall the gong (be sure that the gong positioning pin, in the mechanism housing, is in the hole in the gong).
5. Test all bells for proper operation and observe that they can be heard where required (bells must be heard in all areas as designated by the authority having jurisdiction).

WARNING

Failure to install striker down will prevent bell from ringing.

Bell Dimension Inches (mm)

Fig 1

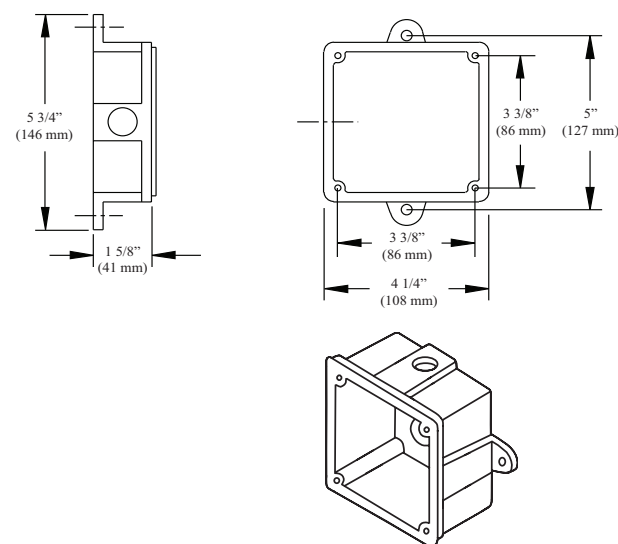


DWG# 776-1

Weatherproof Backbox Dimensions Inches (mm)

MODEL BBK-1 OR HC-BB

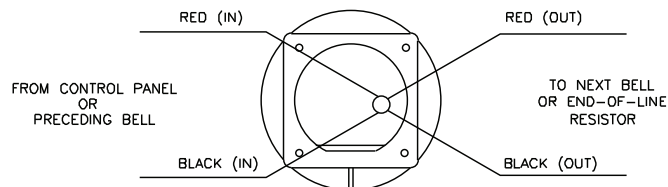
Fig 2



Wiring Rear View

Fig 3

D.C. BELLS (OBSERVE POLARITY)



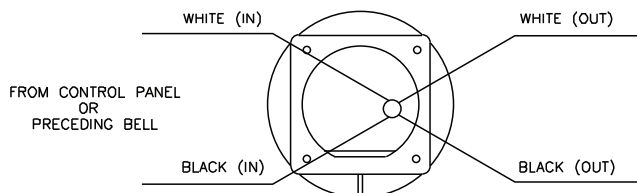
CAUTION:

WHEN ELECTRICAL SUPERVISION IS REQUIRED USE IN AND OUT LEADS AS SHOWN.

NOTES:

1. OBSERVE POLARITY TO RING D.C. BELLS.
2. RED WIRES POSITIVE (+).
3. BLACK WIRES NEGATIVE (-).
4. EOL RESISTOR IS SUPPLIED BY FIRE ALARM CONTROL PANEL.

A.C. BELLS



CAUTION:

WHEN ELECTRICAL SUPERVISION IS REQUIRED USE IN AND OUT LEADS AS SHOWN.

NOTES:

1. WHEN USING A.C. BELLS, TERMINATE EACH EXTRA WIRE SEPARATELY AFTER LAST BELL.

Features

- One or two switch models available
- Independent switch adjustment on two switch models, no tools needed
- Two 1/2" conduit/cable entrances
- Separate isolated wiring chambers
- Non-corrosive pressure connection
- VdS version available
- Non-Conductive enclosure



NOTICE

This document contains important information on the installation and operation of PS10 pressure switches. Please read all instructions carefully before beginning installation. A copy of this document is required by NFPA 72 to be maintained on site.



Installation

The Potter PS10 Series Pressure Actuated Switches are designed for the detection of a waterflow condition in automatic fire sprinkler systems of particular designs such as wet pipe systems with alarm check valves, dry pipe, preaction, or deluge valves. The PS10 is also suitable to provide a low pressure supervisory signal; adjustable between 4 and 15 psi (0,27 and 1,03 bar).

1. Apply Teflon tape to the threaded male connection on the device. (Do not use pipe dope)
2. Device should be mounted in the upright position (threaded connection down).
3. Tighten the device using a wrench on the flats on the device.

Wiring Instructions

1. Remove the tamper resistant screw with the special key provided.
2. Carefully place a screwdriver on the edge of the knockout and sharply apply a force sufficient to dislodge the knockout plug. See Fig 9.
3. Run wires through an approved conduit connector and affix the connector to the device. NEMA 4 rated conduit and fittings are required for outdoor use.
4. Connect the wires to the appropriate terminal connections for the service intended. See Figures 2,4,5, and 6. See Fig. 7 for two switch, one conduit wiring.

Technical Specifications

Conduit Entrances	Two knockouts for 1/2" conduit provided. Individual switch compartments and ground screw suitable for dissimilar voltages
Contact Ratings	SPDT (Form C) 10.1 Amps at 125/250VAC, 2.0 Amps at 30VDC One SPDT in PS10-1, Two SPDT in PS10-2
Cover Tamper	Cover incorporates tamper resistant fastener that requires a special key for removal. One key is supplied with each device.
Differential	2 psi (0,13 bar) typical
Dimensions	3.78"(9,6cm)Wx3.20"(8,1cm)Dx4.22"(10,7cm)H
Enclosure	Cover: Weather/UV/Flame Resistant High Impact Composite Base: Die Cast All parts have corrosion resistant finishes
Environmental Limitations	-40° F to 140° F (-40°C to 60°C) NEMA 4/IP66 Rated Enclosure indoor or outdoor when used with NEMA 4 conduit fittings
Factory Adjustment	4 - 8 psi (0,27 - 0,55 bar)
Maximum System Pressure	300 psi (20,68 bar)
Pressure Connection	Nylon 1/2" NPT male
Pressure Range	4-15 psi (0,27 - 1,03 bar)
Service Use	NFPA 13, 13D, 13R, 72

*Specifications subject to change without notice.

Testing and Adjustment

NOTE: Testing the PS10 may activate other system connected devices. The operation of the pressure alarm switch should be tested upon completion of installation and periodically thereafter in accordance with the applicable NFPA codes and standards and/or the authority having jurisdiction (manufacturer recommends quarterly or more frequently). There should be no need to adjust the PS10 when it is used as a pressure type waterflow indicator. It is factory set to comply with UL and FM standards.

Wet System

Method 1: When using PS10 and control unit with retard - connect PS10 into alarm port piping on the input side of retard chamber and electrically connect PS10 to control unit that provides a retard to compensate for surges. Insure that no unsupervised shut-off valves are present between the alarm check valve and PS10.

Method 2: When using the PS10 for local bell application or with a control that does not provide a retard feature - the PS10 must be installed on the alarm outlet side of the retard chamber of the sprinkler system.

Testing: Accomplished by opening the inspector's end-of-line test valve. Allow time to compensate for system or control retard.

NOTE: Method 2 is not applicable for remote station service use, if there is an unsupervised shut-off valve between the alarm check valve and the PS10.

Wet System With Excess Pressure

Connect PS10 into alarm port piping extending from alarm check valve. Retard provisions are not required. Insure that no unsupervised shut-off valves are present between the alarm check valve and the PS10.

Testing: Accomplished by opening the water by-pass test valve or the inspector's end-of-line test valve. When using end-of-line test, allow time for excess pressure to bleed off.

Dry System

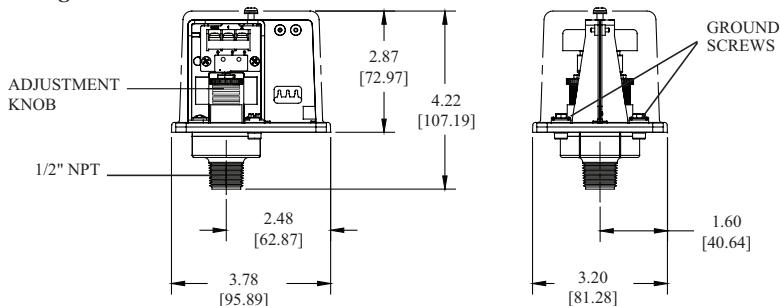
Connect PS10 into alarm port piping that extends from the intermediate chamber of the alarm check valve. Install on the outlet side of the in-line check valve of the alarm port piping. Insure that no unsupervised shut-off valves are present between the alarm check valve and the PS10.

Testing: Accomplished by opening the water by-pass test valve.

NOTE: The above tests may also activate any other circuit closer or water motor gongs that are present on the system.

Dimensions

Fig 1

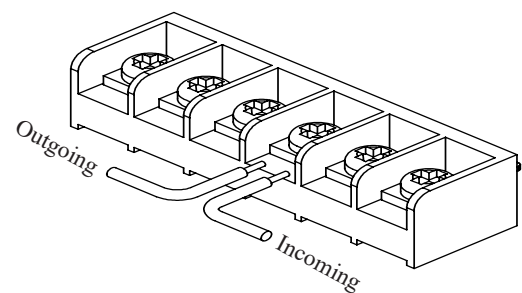


NOTE: To prevent leakage, apply Teflon tape sealant to male threads only.

DWG# 930-1

Switch Clamping Plate Terminal

Fig 2

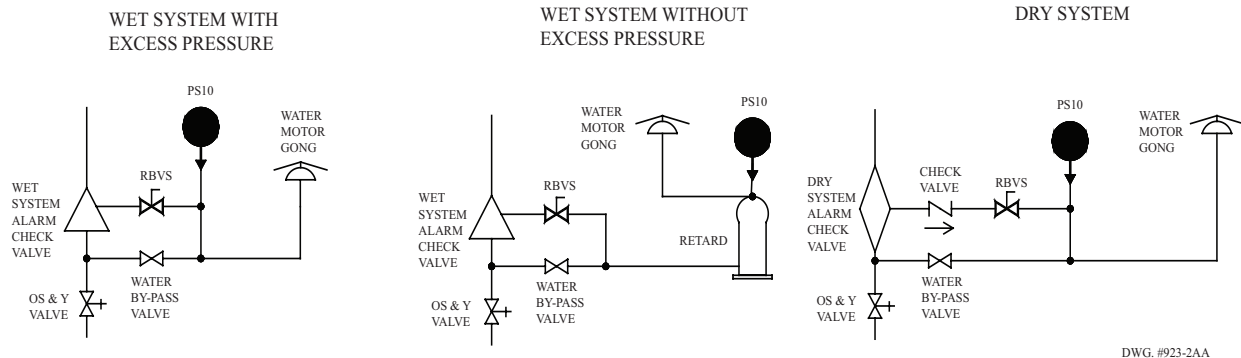


WARNING

An uninsulated section of a single conductor should not be looped around the terminal and serve as two separate connections. The wire must be severed, thereby providing supervision of the connection in the event that the wire becomes dislodged from under the terminal.

Typical Sprinkler Applications

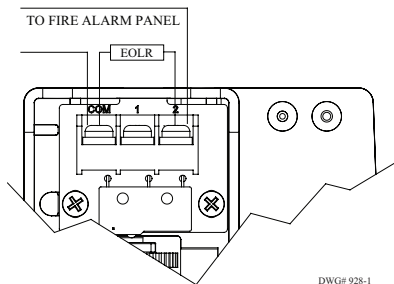
Fig 3



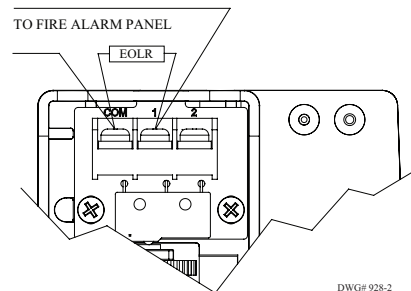
CAUTION

Closing of any shutoff valves between the alarm check valve and the PS10 will render the PS10 inoperative. To comply with NFPA-72 any such valve shall be electrically supervised with a supervisory switch such as Potter Model RBVS.

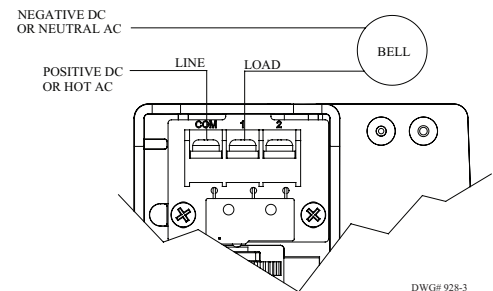
Low Pressure Signal Connection
Fig 4



Waterflow Signal Connection
Fig 5



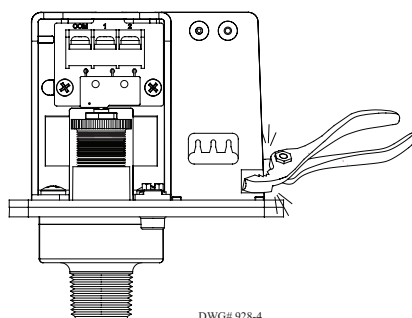
Local Bell For Waterflow Connection
Fig 6



One Conduit Wiring

Fig 7

Break out thin section of divider to provide path for wires when wiring both switches from one conduit entrance.

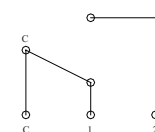


Switch Operation

Fig 8

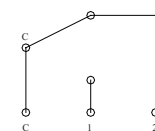
Terminal
C: Common
1: Closed when installed under normal system pressure.
2: Open when installed under normal system pressure. Closes on pressure drop. Use for low pressure supervision.

W/ PRESSURE APPLIED



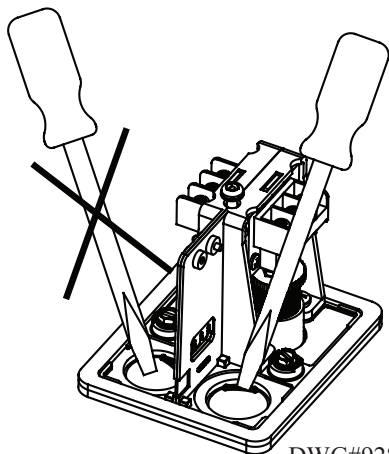
Terminal
1: Open with no pressure supplied. Closes upon detection of pressure. Use for waterflow indication.
2: Closed with no pressure applied.

W/O PRESSURE APPLIED



Removing Knockouts

Fig 9



DWG#928-5

Engineer/Architect Specifications Pressure Type Waterflow Switch

Pressure type waterflow switches; shall be a Model PS10 as manufactured by Potter Electric Signal Company, St Louis MO., and shall be installed on the fire sprinkler system as shown and or specified herein.

Switches shall be provided with a 1/2" NPT male pressure connection and shall be connected to the alarm port outlet of; Wet Pipe Alarm Valves, Dry Pipe Valves, Pre-Action Valves, or Deluge Valves. The pressure switch shall be actuated when the alarm line pressure reaches 4 - 8 psi (0,27 - 0,55 bar).

Pressure type waterflow switches shall have a maximum service pressure rating of 300 psi (20,68 bar) and shall be factory adjusted to operate on a pressure increase of 4 - 8 psi (0,27 - 0,55 bar)

Pressure switch shall have one or two form C contacts, switch contact rating 10.1 Amps at 125/250 VAC, 2.0 Amps at 30 VDC.

Pressure type waterflow switches shall have two conduit entrances one for each individual switch compartment to facilitate the use of dissimilar voltages for each individual switch.

The cover of the pressure type waterflow switch shall be Weather/UV/ Flame Resistant High Impact Composite with rain lip and shall attach with one tamper resistant screw. The Pressure type waterflow switch shall be suitable for indoor or outdoor service with a NEMA 4/IP66 rating.

The pressure type waterflow switch shall be UL ULc and CSFM listed, FM and LPC approved and NYMEA accepted.

WARNING

- Installation must be performed by qualified personnel and in accordance with all national and local codes and ordinances.
- Shock hazard. Disconnect power source before servicing. Serious injury or death could result.
- Read all instructions carefully and understand them before starting installation. Save instructions for future use. Failure to read and understand instructions could result in improper operation of device resulting in serious injury or death.
- Risk of explosion. Not for use in hazardous locations. Serious injury or death could result.

CAUTION

- Do not tighten by grasping the switch enclosure. Use wrenching flats on the bushing only. Failure to install properly could damage the switch and cause improper operation resulting in damage to equipment and property.
- To seal threads, apply Teflon tape to male threads only. Using joint compounds or cement can obstruct the pressure port inlet and result in improper device operation and damage to equipment.
- Do not over tighten the device, standard piping practices apply.

Ordering Information

Model	Description	Part Number
PS10-1	Pressure switch with one set SPDT contacts	1340103
PS10-2	Pressure switch with two sets SPDT contacts	1340104
Hex Key		5250062
Cover Tamper Switch Kit		0090200

Tamper

Cover incorporates tamper resistant fastener that requires a special key for removal. One key is supplied with each device. For optional cover tamper switch kit, order Stock No. 0090200. See bulletin #5401200 PSCTSK.

NOTICE

Pressure switches have a normal service life of 10-15 years. However, the service life may be significantly reduced by local environmental conditions.

Features

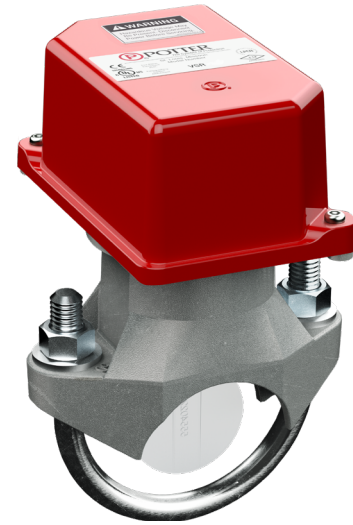
- Assembled in USA
- 0-90 second field replaceable time delay retard
- Easy to read retard time delay adjustment knob
- UL Listed models for 2"-6" steel pipe schedules 5 through 40
- UL Listed and FM approved models for 2"-8" steel pipe schedules 10 through 40
- Two SPDT (form C) contacts
- Weatherproof
- Easy to read wire terminal designations

WARNING

- Installation must be performed by qualified personnel and in accordance with all national and local codes and ordinances.
- Shock hazard. Disconnect power source before servicing. Serious injury or death could result.
- Risk of explosion. Not for use in hazardous locations. Serious injury or death could result.

CAUTION

Waterflow switches that are monitoring wet pipe sprinkler systems shall not be used as the sole initiating device to discharge AFFF, deluge, or chemical suppression systems. Waterflow switches used for this application may result in unintended discharges caused by surges, trapped air, or short retard times.



Description

The Model VSR is a vane type waterflow switch for use on wet sprinkler systems. It is UL Listed for use on a steel pipe; schedules 5 through 40, sizes 2" - 6" and is UL Listed and FM Approved for use on steel pipe; schedules 10 through 40, sizes 2" thru 8" (50 mm thru 200 mm). LPC approved sizes are 2" thru 8" (50 mm thru 200 mm). See Ordering Information chart.

The VSR may also be used as a sectional waterflow detector on large systems. The VSR contains two single pole, double throw, snap action switches and an adjustable, instantly recycling pneumatic retard. The switches are actuated when a flow of 10 GPM (38 LPM) or more occurs downstream of the device. The flow condition must exist for a period of time necessary to overcome the selected retard period.

Enclosure

The VSR switches and retard device are enclosed in a weather/UV/ flame resistant high impact composite plastic. The cover is held in place with two tamper resistant screws which require a special key for removal. A field installable cover tamper switch is available as an option which may be used to indicate unauthorized removal of the cover. See bulletin number 5401103 for installation instructions of this switch.

NOTICE

This document contains important information on the installation and operation of the VSR. Please read all instructions carefully and notify the building owner or their authorized representative before any work is done on the fire sprinkler or fire alarm system. A copy of this document is required by NFPA 72 to be maintained on site.

Technical Specifications

Conduit Entrances	Two knockouts provided for 1/2" conduit. Individual switch compartments suitable for dissimilar voltages
Contact Ratings	Two sets of SPDT (Form C) 10.0 Amps at 125/250VAC 2.0 Amps at 30VDC Resistive 10 mAmps min. at 24VDC
Enclosure	Cover - Weather/UV/Flame Resistant High Impact Composite Base - Die-cast aluminum
Environmental Specifications	NEMA 4/IP54 Rated Enclosure suitable for indoor or outdoor use with factory installed gasket when used with appropriate conduit fitting. Temperature Range: 40°F - 120°F, (4.5°C - 49°C) - UL Non-corrosive sleeve factory installed in saddle.
Flow Sensitivity Range for Signal	4-10 GPM (15-38 LPM) - UL
Maximum Surge	18 FPS (5.5 m/s)
Service Pressure	450 PSI (31 BAR) - UL
Service Use	Automatic Sprinkler One or two family dwelling Residential occupancy up to four stories National Fire Alarm Code NFPA-13 NFPA-13D NFPA-13R NFPA-72

Specifications subject to change without notice.

Installation (see Fig. 1)

These devices may be mounted on horizontal or vertical pipe. On horizontal pipe they shall be installed on the top side of the pipe where they will be accessible. The device should not be installed within 6" (15 cm) of a fitting which changes the direction of the waterflow or within 24" (60 cm) of a valve or drain.

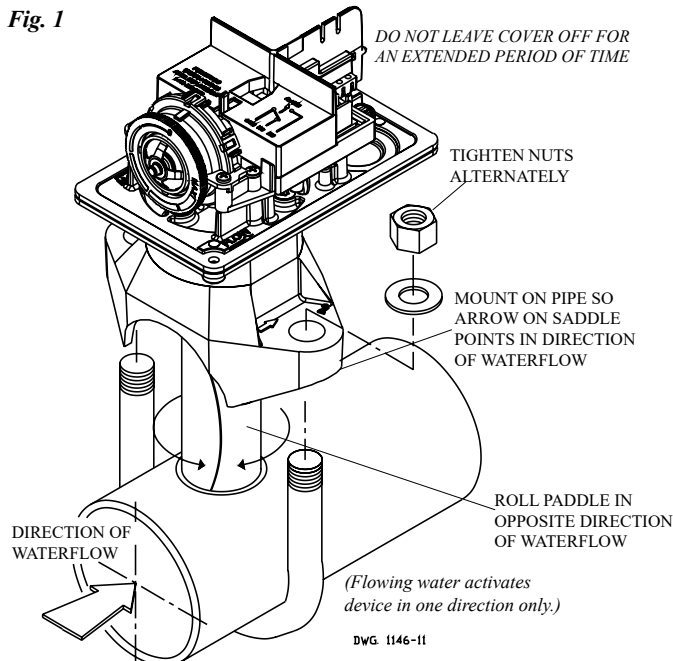
NOTE: Do not leave cover off for an extended period of time.

Drain the system and drill a hole in the pipe using a hole saw in a slow speed drill (see Fig. 1). Clean the inside pipe of all growth or other material for a distance equal to the pipe diameter on either side of the hole. Roll the vane so that it may be inserted into the hole; do not bend or crease it. Insert the vane so that the arrow on the saddle points in the direction of the waterflow. Take care not to damage the non-corrosive bushing in the saddle. The bushing should fit inside the hole in the pipe. Install the saddle strap and tighten nuts alternately to required torque (see the chart in Fig. 1). The vane must not rub the inside of the pipe or bind in any way.

CAUTION

Do not trim the paddle. Failure to follow these instructions may prevent the device from operating and will void the warranty. Do not obstruct or otherwise prevent the trip stem of the flow switch when water flows as this could damage the flow switch and prevent an alarm. If an alarm is not desired, a qualified technician should disable the alarm system.

Fig. 1

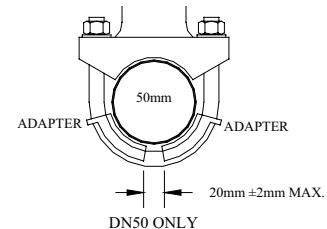
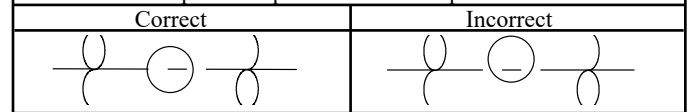


Retard Adjustment

The delay can be adjusted by rotating the retard adjustment knob from 0 to the max setting (60-90 seconds). The time delay should be set at the minimum required to prevent false alarms

CAUTION

Hole must be drilled perpendicular to the pipe and vertically centered. Refer to the Compatible Pipe/Installation Requirements chart for size.



USE (2) 5180162 ADAPTERS AS SHOWN ABOVE

Compatible Pipe/ Installation Requirements

Model	Nominal Pipe Size		Nominal Pipe O.D.		Pipe Wall Thickness										Hole Size		U-Bolt Nuts Torque			
					Lightwall		Schedule 10 (UL)		Schedule 40 (UL)		BS-1387 (LPC)		DN (VDS)							
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	ft-lb	n-m		
VSR-2	2	DN50	2.375	60.3	.065	1.651	0.109	2.77	0.154	3.91	0.142	3.6	0.091	2.3	1.25 + .125/-0.062	33.0 ± 2.0	20	27		
VSR-2 1/2	2.5	-	2.875	73.0	.084	2.134	0.120	3.05	0.203	5.16	-	-	-	-						
VSR-2 1/2	-	DN65	3.000	76.1	-	-	-	-	-	-	0.142	3.6	0.102	2.6						
VSR-3	3	DN80	3.500	88.9	.083	2.108	0.120	3.05	0.216	5.49	0.157	4.0	0.114	2.9	2.00 ± .125	50.8 ± 2.0				
VSR-3 1/2	3.5	-	4.000	101.6	-	-	0.120	3.05	0.226	5.74	-	-	-	-						
VSR-4	4	DN100	4.500	114.3	.084	2.134	0.120	3.05	0.237	6.02	0.177	4.5	0.126	3.2						
VSR-5	5	-	5.563	141.3	-	-	0.134	3.40	0.258	6.55	-	-	-	-						
VSR-6	6	DN150	6.625	168.3	.115	2.921	0.134	3.40	0.280	7.11	0.197	5.0	0.157	4.0						
VSR-8	8	DN200	8.625	219.1	-	-	0.148	3.76	0.322	8.18	0.248	6.3	0.177	4.5						

Fig. 2

To remove knockouts: Place screwdriver at inside edge of knockouts, not in the center.

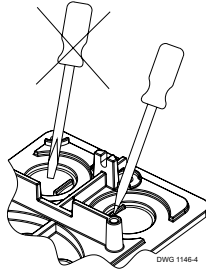
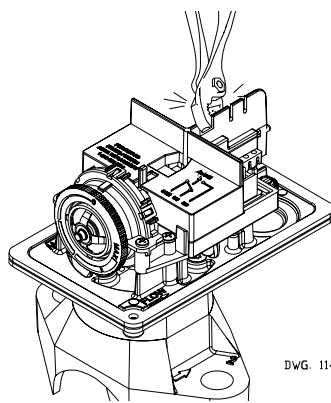


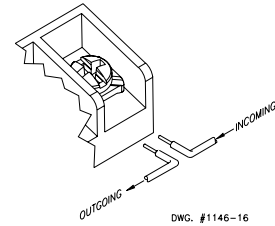
Fig. 3

Break out thin section of cover when wiring both switches from one conduit entrance.



Switch Terminal Connections Clamping Plate Terminal

Fig. 4



DWG. #1146-16

NOTICE

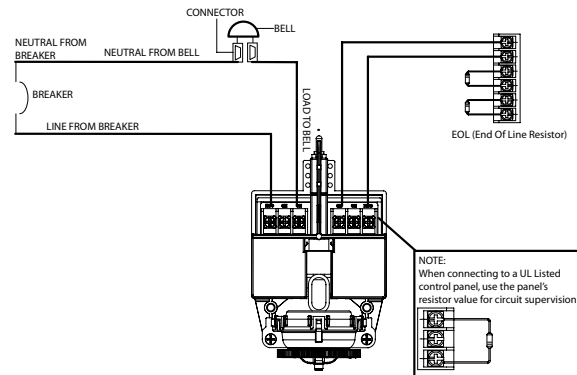
Do not drill into the base as this creates metal shavings which can create electrical hazards and damage the device. Drilling voids the warranty.

Typical Electrical Connections

Fig. 5

Notes:

1. The Model VSR has two switches, one can be used to operate a central station, proprietary or remote signaling unit, while the other contact is used to operate a local audible or visual annunciator.
2. For supervised circuits, see "Switch Terminal Connections" drawing and warning note (Fig. 4).



Testing

The frequency of inspection and testing for the Model VSR and its associated protective monitoring system shall be in accordance with applicable NFPA Codes and Standards and/or the authority having jurisdiction (manufacturer recommends quarterly or more frequently).

If provided, the inspector's test valve shall always be used for test purposes. If there are no provisions for testing the operation of the flow detection device on the system, application of the VSR is not recommended or advisable.

A minimum flow of 10 GPM (38 LPM) is required to activate this device.

Fig. 6 Mounting Dimensions

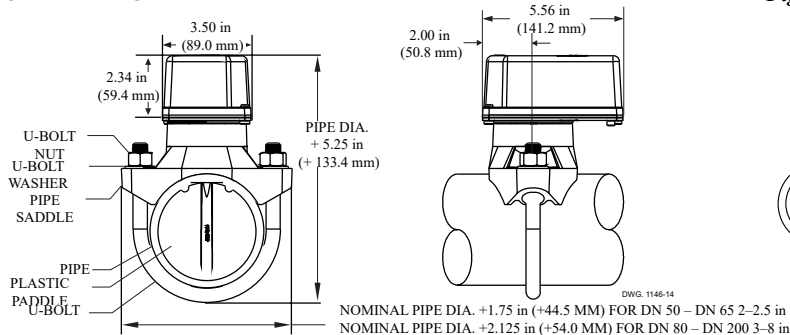
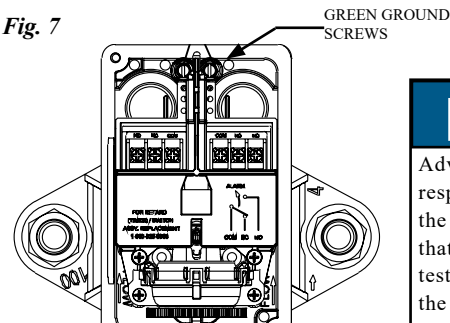


Fig. 7



NOTICE

Advise the person responsible for testing of the fire protection system that this system must be tested in accordance with the testing instructions.

Maintenance

Inspect detectors monthly. If leaks are found, replace the detector. The VSR waterflow switch should provide years of trouble-free service. The retard and switch assembly are easily field replaceable. In the unlikely event that either component does not perform properly, please order replacement retard switch assembly stock #1029030 (see Fig. 8). There is no maintenance required, only periodic testing and inspection.

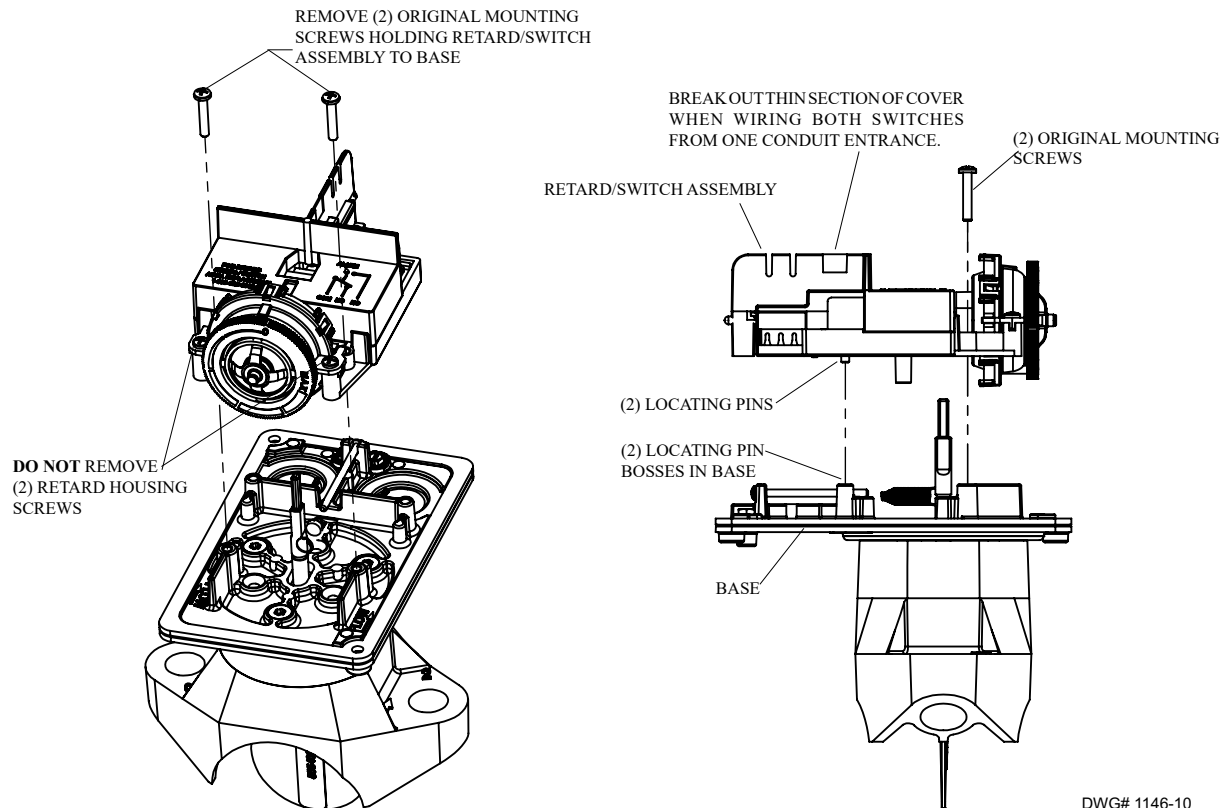
Retard/Switch Assembly Replacement (See Fig. 8)

1. Make sure the fire alarm zone or circuit connected to the waterflow switch is bypassed or otherwise taken out of service.
2. Disconnect the power source for local bell (if applicable).
3. Identify and remove all wires from the waterflow switch.
4. Remove the (2) mounting screws holding retard/switch assembly to the base. **Do not** remove the (2) retard housing screws.
5. Remove the retard assembly by lifting it straight up over the tripstem.
6. Install the new retard assembly. Make sure the locating pins on the retard/switch assembly fit into the locating pin bosses on the base.
7. Re-install the (2) original mounting screws.
8. Reconnect all wires. Perform a flow test and place the system back in service.

NOTICE

The Retard/Switch Assembly is field-replaceable without draining the system or removing the waterflow switch from the pipe

Fig. 8



Removal of Waterflow Switch

- To prevent accidental water damage, all control valves should be shut tight and the system completely drained before waterflow detectors are removed or replaced.
- Turn off electrical power to the detector, then disconnect wiring.
- Loosen nuts and remove U-bolts.
- Gently lift the saddle far enough to get your fingers under it. With your fingers, roll the vane so it will fit through the hole while continuing to lift the waterflow detector saddle.
- Lift detector clear of pipe.

NOTICE

Flow switches have a normal service life of 10-15 years. However, the service life may be significantly reduced by local environmental conditions.

Ordering Information

Model	Nominal Pipe Size		Part Number
VSR-2	2"	DN50	1144402
VSR-2 1/2	2 1/2"	DN65	1144425
VSR-3	3"	DN80	1144403
VSR-3 1/2	3 1/2"	-	1144435
VSR-4	4"	DN100	1144404
VSR-5	5"	-	1144405
VSR-6	6"	DN150	1144406
VSR-8	8"	DN200	1144408

Optional: Cover Tamper Switch Kit, stock no. 0090148
FSBS-FLOWSWITCH BYPASS SWITCH, stock no. 3001006
Replaceable Components: Retard/Switch Assembly, stock no. 1029030

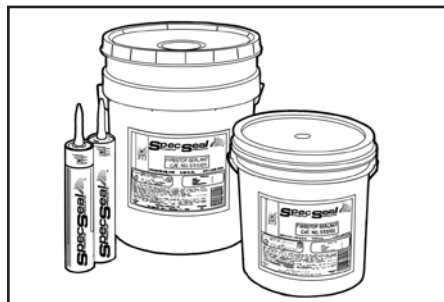
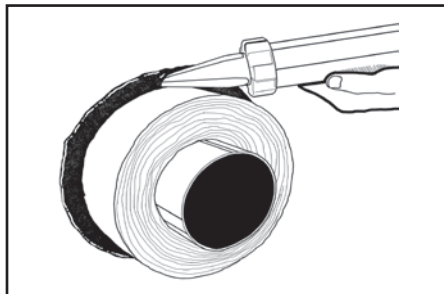


SERIES SSS INTUMESCENT SEALANT

APPLICATIONS

SpecSeal® Series SSS Sealant is used to seal through-penetrations as well as construction gaps and blank openings. SpecSeal Series SSS has been tested for use with metallic penetrants up to 30" (762 mm) trade size. This product is also used with other SpecSeal® Products such as SpecSeal® Firestop Collars and Wrap Strips.

See Table A for a summary application list.



PRODUCT DESCRIPTION

SpecSeal® Series SSS Sealant is a latex based, high solids firestop compound. This material, when properly installed, will effectively seal penetration openings against the spread of fire, smoke, toxic gasses and water.

SpecSeal® Series SSS Sealant features STI's patented and proprietary two-stage intumescent technology. When exposed to high temperatures or fire, this material expands aggressively in a highly directionalized fashion to quickly close off voids left by the burning or melting of combustible materials.

SpecSeal® Series SSS Sealant's unique multi-viscosity formula yields a single grade that has excellent caulking properties as well as high build properties on vertical or overhead surfaces. This single grade may be pumped, caulked (standard cartridge or bulk loaded), knifed or troweled. In addition, SpecSeal Series SSS Sealant does not contain PCB's or asbestos.

SpecSeal® Series SSS Sealant is storage stable (when stored according to the manufacturer's recommendations) and will not separate nor shrink when dried. SpecSeal Series SSS Sealant will adhere to all common construction and penetrant materials and contains no solvents that might adversely effect plastic pipes or cable jackets.

FEATURE	BENEFIT
• Water-Based	Easy installation, cleanup, and disposal.
• Two-Stage Intumescence	Extremely fast and directionalized expansion.
• Endothermic Fillers	Absorb heat & release water.
• High Solids Formula	No shrinkage!
• Sandable & Paintable	(when dry)
• Water-Resistant	Will not re-emulsify when dry!
• Safe	Safe for contact with plastics.
• Red Color	Easy identification and inspection.
• Multi Viscosity Grade	Excellent caulking properties along with high build capabilities.
• Excellent Smoke Seal	

PERFORMANCE

SpecSeal® Series SSS Sealant is the basis for systems that meet the exacting criteria of ASTM E814 (UL1479) as well as the time-temperature requirements of ASTM E119 (UL263). Systems have been tested for all common forms of construction and most common penetrants with ratings up to 4 hours. STI firestop systems are designed to maximize the fire resistance of the seal by not only sealing off the spread of fire and hot gasses but also by minimizing the amount of heat conducted through the assembly. Thus all systems have been designed to provide T Ratings capable of matching the rating of the wall or floor assembly (where possible) when tested without penetrants.

	<p>FILL, VOID OR CAVITY MATERIALS FOR USE IN JOINT SYSTEMS AND THROUGH-PENETRATION FIRESTOP SYSTEMS. SEE UL DIRECTORY OF PRODUCTS CERTIFIED FOR CANADA AND UL FIRE RESISTANCE DIRECTORY.</p> <p>3L73</p>	
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PHYSICAL PROPERTIES

Properties	Series SSS
Color	Red
Odor	Mild Latex
Density	9.4 lb/gal (1.13 kg/L)
Solids Content	80% ± 2%
pH	8.3
In Service Temperature	-10°F (-23°C) - 185°F (85°C)
Storage Temperature	40°F (4°C) - 95°F (35°C)
Flame Spread	0*
Smoke Developed*	10*

Properties	Series SSS
STC Rating (ASTM E90/ASTM C919)	62
VOC Content (EPA Method 24/ASTM D3960)	0.18 lbs/gal (22.0 g/L)
Shelf Life	2 yrs
Expansion Begins	230°F (110°C) 1st Stage 350°F (177°C) 2nd Stage
Expansion Range	230°F to > 1,000°F (110°C to > 538°C)
Volume Expansion	> 500% Free Expansion

* Tested to ASTM E84 (UL723) at 14% surface coverage (modified test for sealants and caulks)



**Table A:
APPLICATIONS**

**TESTED AND CLASSIFIED
FOR FIRE RESISTANCE**

- **Metallic Pipes** including steel, iron, or copper pipe and tubing through all common constructions.
- **Nonmetallic Pipes, Conduits & Tubing** including PVC, CPVC, PVDF, PEX, PEX-AL-PEX, ABS, PB through all common constructions.
- **Cable, Cable Trays & Bus Duct**
- **HVAC Ductwork**
- **Insulated Pipes**
- **Multi-Service Penetrations** including AC line sets, electrical, telephone, or TV service entrance and interior penetrations.
- **Complete Wood Floor firestopping package** for electrical, plumbing, HVAC, TV and telephone.

SPECIFICATIONS

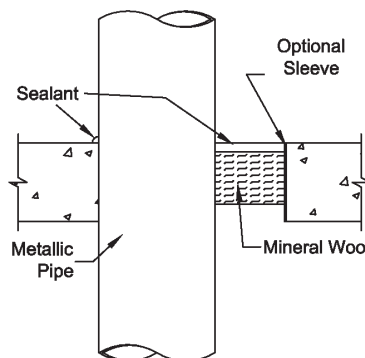
The firestopping sealant shall be a one-part, two-stage intumescent latex compound. The sealant when exposed to high heat or flame shall be capable of expanding a minimum of 8 times. Range of continuing expansion shall be from 230°F to >1,000°F (110°C to > 538°C). The sealant shall be thixotropic and shall be capable of caulking or troweling onto vertical surfaces or overhead. The sealant shall be UL Classified and/or FM Systems Approved and tested to the requirements of ASTM E814 (UL1479).

SPECIFIED DIVISIONS

- DIV. 7 07840 Through-Penetration Firestopping
- DIV. 13 13900 Special Construction Fire Suppression & Supervisory Systems
- DIV. 15 15250 Mechanical Insulation – Fire Protection
- DIV. 16 16050 Basic Electrical Materials & Methods

Shown below and on the following page are just a few of the most common applications for SpecSeal Series SSS Sealant. Consult the Technical Library at www.stifirestop.com for over 200 available designs utilizing this product.

Fig. 1: METALLIC PIPE PENETRATIONS - CONCRETE/MASONRY FLOORS & WALLS



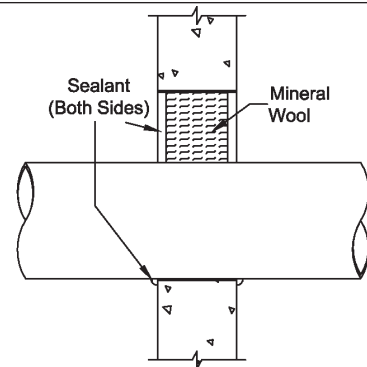
UL SYSTEM C-AJ-1079

F Rating: 4 Hr • T Rating: 0

Steel or Iron Pipe: 24", Copper Pipe: 6"

Annulus: Point Contact to 4" • Sealant Depth: 1/2" Forming Material: Nom 4 pcf Mineral Wool

Thickness: 1-1/2" for 6" Steel or Iron Pipe
3" for 4" Copper or 6" Iron or Steel Pipe



UL SYSTEM C-AJ-1217

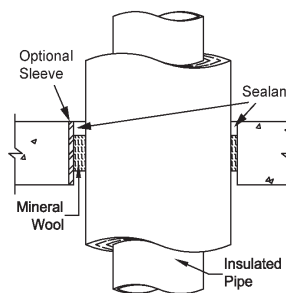
F Rating: 4 Hr • T Rating: 0

Steel or Iron Pipe: 30", Copper Pipe: 6"

Annulus: Point Contact to 2" • Sealant Depth: 1/2" Forming Material: Nom 4 pcf Mineral Wool

Tightly Packed to a 3" Depth.

Fig. 2: INSULATED METALLIC PIPE PENETRATIONS - CONCRETE/MASONRY FLOORS & WALLS



UL SYSTEM C-AJ-5087

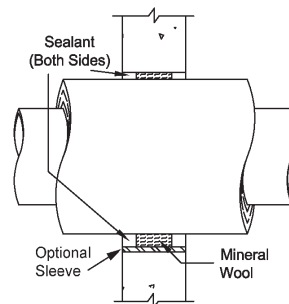
F Rating: 2 Hr • T Rating: 1

Steel or Iron Pipe: 24"

Insulated with 2" Thick Fiber Glass or Mineral Wool Pipe Insulation

Annulus: 1/2" to 1-1/2" • Sealant Depth: 1/2"

Forming Material: Nom 4 pcf Mineral Wool Tightly Packed to a 4" Depth.



SEALANT REQUIREMENTS IN CUBIC INCHES PER 1/4 INCH OF INSTALLED DEPTH*

Pipe Size		Diameter of Opening (in.)													
		1.5	2.0	3.0	4.0	5.0	6.0	7.0	8.0	10	12	14	26		
Trade Size	Pipe O.D.														
0.5"	0.840	0.3	0.6	1.6	3.0	4.8	6.9	9.5	12.4	19.5	28.1	38.3	132.6		
1"	1.315	0.1	0.4	1.4	2.8	4.6	6.7	9.3	12.2	19.3	27.9	38.1	132.4		
1.5"	1.900			1.1	2.4	4.2	6.4	8.9	11.9	18.9	27.6	37.8	132.0		
2"	2.375			0.7	2.0	3.8	6.0	8.5	11.5	18.5	27.2	37.4	131.6		
2.5"	2.875			0.1	1.5	3.3	5.4	8.0	10.9	18.0	26.7	36.9	131.1		
3"	3.500				0.7	2.5	4.7	7.2	10.2	17.2	25.9	36.1	130.3		
3.5"	4.000					1.8	3.9	6.5	9.4	16.5	25.1	35.3	129.6		
4"	4.500					0.8	3.0	5.6	8.5	15.6	24.2	34.4	128.7		
6"	6.625	*Different Sealant Depth? <div>1/2" Multiply by 2 5/8" Multiply by 2.5 1" Multiply by 4 1-1/4" Multiply by 5</div>						1.1	4.0	11.1	19.7	29.9	124.2		
8"	8.625										4.9	13.6	23.8	118.0	
10"	10.750												5.6	15.8	110.0
12"	12.750													6.6	100.8
24"	24.000														

IMPORTANT NOTE: This table is for estimation purposes only. Consult UL Fire Resistance Directory or STI Product & Application Guide for specific installation requirements and limitations
Metric Estimation Table available upon request.

INSTALLATION INSTRUCTIONS

General: Areas to be protected must be clean and free of oil, loose dirt, rust or scale. Installation temperatures must be between 35°F and 100°F (2°C and 38°C). Allow product to dry a minimum of 24 hours before exposure to moisture.

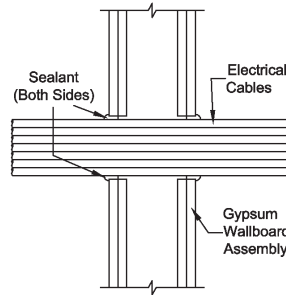
System Selection: Selection of an appropriate firestop system design is critical to the fire protection process. Space limitations preclude highly detailed information pertaining to individual application systems. Please consult the STI Product & Application Guide as well as the UL® Fire Resistance Directory for additional information.

Forming: Some installations may require forming as either an integral part of the system or as an option to facilitate installation. In systems where forming is required, mineral wool batts (min. nom. 4 lb/cu. ft (64 kg/m³) density) are recommended. Some gypsum wallboard systems utilize fiberglass. Cut forming material over-size to allow for tight packing. Position forming material to allow for the proper depth of fill material.

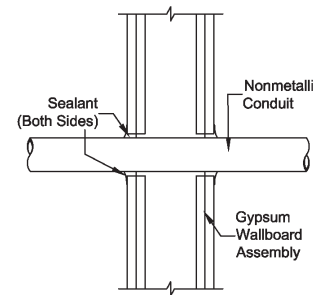
Fill Material: SpecSeal® Series SSS Sealant may be installed by caulking using a standard caulking gun or from bulk containers using a bulk loading caulk gun, or by manually troweling using a mason's trowel or putty knife. If the sealant tends to pull back from a surface, clean the surface with a damp rag or sponge and reapply. Work sealant into all areas exercising care to eliminate voids or seams. The surface of the sealant can be smoothed using a putty knife dipped in water. Adding water to the sealant itself is not recommended. Sealant (when dry) may be sanded and painted using most non-solvent based paints. In gypsum wallboard penetrations, crown sealant 1/4" (6 mm) from penetrant to wallboard surface at a point approximately 1/2" (13 mm) or more from opening. Sealant (when dry) may be painted using most non-solvent based paints.

Smoke Sealing: In some applications including firestop collars, SpecSeal® Series SSS Sealant is recommended as a smoke seal. It is suggested in these application that the sealant be applied to both sides of walls. In floor applications, a sealing bead is suggested top and bottom.

Fig. 3: ELECTRICAL, DATA OR COMMUNICATIONS PENETRATIONS - RATED GYPSUM WALLBOARD ASSEMBLIES

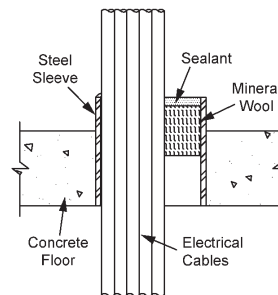


UL SYSTEM W-L-3076
F Rating: 1 or 2 Hr • T Rating: 0 hr
Up to 4" Cable Bundle
Centered in 4 - 1/2" Opening
Sealant Depth: 5/8" with 1/4" Crown

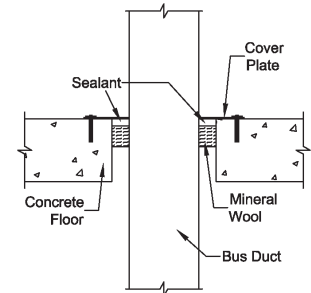


UL SYSTEM W-L-2093
F Rating: 1 or 2 Hr • T Rating: 1, 1-1/2 Hr
2" Rigid PVC, ENMT,
or Optical Fiber Raceway.
1-1/4" PVDF Optical Fiber Raceway.
Sealant Depth: 5/8" with 1/4" Crown

Fig. 4: ELECTRICAL PENETRATIONS - CONCRETE/MASONRY FLOORS & WALLS

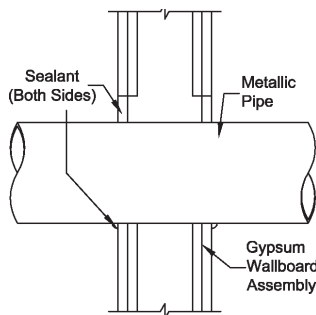


UL SYSTEM C-AJ-3154
F Rating: 1, 2, 3 & 4 Hr • T Rating: 0, 1/2, & 2 3/4 Hr
Optional Sleeve-PVC or Steel
Electrical, Telephone or Data Cables
Annulus: 0" to 2"
Sealant Depth: 1/2"
Forming Materials: Nom 4 pct Mineral Wool
Sealant Depth: 1/2" for 1, 2, 3 Hr; 1" for 4 Hr

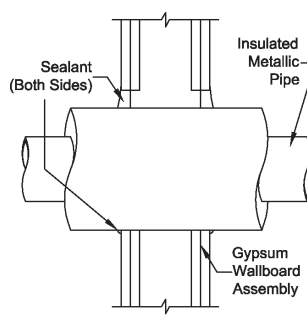


UL SYSTEM C-AJ-6008
F Rating: 3 Hr • T Rating: 0 Hr
Aluminum or Copper Bus Duct 5,000 Amp
Steel Cover Plate
Sealant Depth: 1/2"
Forming Materials: Nom 4 pct Mineral Wool
Tightly Packed to a depth of 1-1/2"

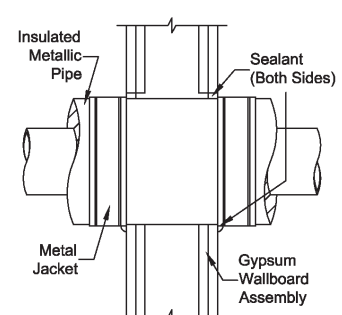
Fig. 5: BARE & INSULATED METALLIC PIPE PENETRATIONS - RATED GYPSUM WALLBOARD ASSEMBLIES



UL SYSTEM W-L-1049
F Rating: 2 hr • T Rating: 0 hr
Steel or Iron Pipe: 24", Copper Pipe: 6"
Annulus: Point Contact to 2"
Sealant Depth: 5/8" with 3/8" Crown



UL SYSTEM W-L-5014
F Rating: 1 & 2 Hr • T Rating: 1 & 2 Hr
Steel or Iron Pipe: 12", Copper Pipe: 4"
Insulated with 2" Thick Fiber Glass
or Mineral Wool Pipe Insulation
Annulus: 0" to 1-1/4"
Sealant Depth: 5/8" with 3/8" Crown



UL SYSTEM W-L-5051
F Rating: 1 & 2 Hr • T Rating: 3/4, 1, 1-1/2 & 2 Hr
Steel or Iron Pipe: 16", Copper Pipe: 6"
Foam Glass Pipe Insulation: 1" to 3" Thick
12" Wide 0.010" Thick Metal Jacket Wrapped Around Insulation and
Secured with Metal Banding as Shown Annulus: 0" to 1-1/2"
Sealant Depth: 5/8"



INSTALLATION INSTRUCTIONS

LIMITATIONS: SpecSeal® Series SSS Sealant is water-based and cures through the evaporation of water. Low temperatures as well as high humidity may retard drying. Non-porous or impermeable backing materials, plates, or coatings may retard the drying process. Do not paint or seal in any way that prevents contact with air until sealant has dried through completely. This product has been designed to be safe with plastics and has been used extensively and successfully with a variety of different types of plastic pipes, tubes, and plastic cable insulations. Variations in these materials however, make it impossible to guarantee compatibility. STI strongly recommends that the user consult with the manufacturer of the pipe, tubing, or cable in question regarding any known sensitivities or potential restrictions before applying this product.

MAINTENANCE

Inspection: Installations should be inspected periodically for subsequent damage. Any damage should be repaired using SpecSeal® products per the original approved design.

Retrofit: When adding or removing penetrants, care should be taken to minimize damage to the seal. Reseal using SpecSeal® products per the approved design. **NOTE:** New penetrants of a different nature than the original design may require a totally new firestop design or extensive modifications to the existing design. Reseal all openings as per the requirements of the modified design.

TECHNICAL SERVICE

Specified Technologies Inc. provides toll free technical support to assist in product selection and appropriate installation design. UL Systems, Material Safety Data Sheets and other technical information is available through the Technical Library at www.stifirestop.com.

PRECAUTIONARY INFORMATION

Consult Material Safety Data Sheet for additional information on the safe handling and disposal of this material. Wash areas of skin contact with soap and water. Avoid contact with eyes. **SEALANT IS CONDUCTIVE UNTIL DRY.**

AVAILABILITY

SpecSeal® Series SSS Sealant is available from authorized STI distributors. Consult factory or website for the names and locations of the nearest sales representatives or distributors.

CATALOG NUMBER	DESCRIPTION
SSS100	10.1 oz. Tube (300 ml) 18.2 cu.in.
SSS129	29 oz. Tube (858 ml) 52 cu. in.
SSS120	20 oz. Sausage (592 ml) 36 cu. in.
SSS102	2 Gal. Pail (7.6 liters) 462 cu.in.
SSS105	5 Gal. Pail (19.0 liters) 1,155 cu.in.

CITY OF NEW YORK MEA 28-92-M

IMPORTANT NOTICE: All statements, technical information, and recommendations contained herein are based upon testing believed to be reliable, but the accuracy and completeness thereof is not guaranteed.

WARRANTY

Specified Technologies Inc. manufactures its goods in a manner to be free of defects. Should any defect occur in its goods (within one year), Specified Technologies Inc., upon prompt notification, will at its option, exchange or repair the goods or refund the purchase price.

LIMITATIONS AND EXCLUSIONS:

THIS WARRANTY IS IN LIEU OF ALL OTHER REPRESENTATIONS EXPRESSED OR IMPLIED (INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR USE) AND UNDER NO CIRCUMSTANCES SHALL SPECIFIED TECHNOLOGIES INC. BE RESPONSIBLE FOR ANY INCIDENTAL OR CONSEQUENTIAL PROPERTY DAMAGE OR LOSSES. PRIOR TO USE, THE USER SHALL DETERMINE THE SUITABILITY OF THE PRODUCT FOR ITS INTENDED USE, AND THE USER ASSUMES ALL RISKS AND LIABILITY FOR SUBSEQUENT USE.

No statement or recommendation not contained herein shall have any force or effect unless in an agreement signed by officers of seller and manufacturer.

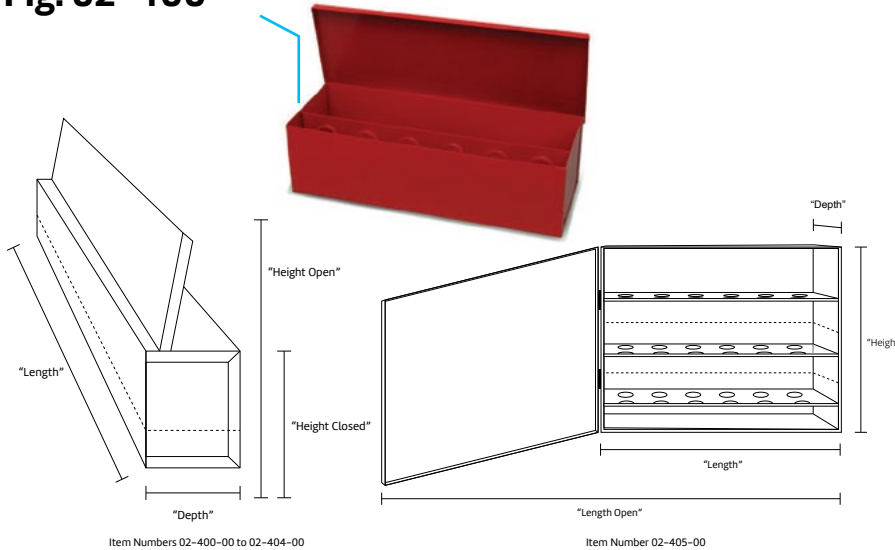
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Spare Sprinkler Head Storage Cabinet Fig. 02-400



Description

Fire Protection Products, Inc. Spare Sprinkler Head Cabinets are designed to allow for spare sprinkler head storage as required by NFPA guidelines. The Spare Sprinkler Head Cabinets are available in six configurations. Three head, six head, six head ESFR, twelve head, twenty-four head, and thirty-six head. All six styles are manufactured with "knockouts" to accommodate the most common size sprinklers. The shelf is positioned to allow for the storage of a typical sprinkler head wrench. Each cabinet is finished in red enamel. Each spare head cabinet comes with a hinged door which remains closed to protect the spare sprinklers from the elements and features holes on the back panel to allow for attachment to most surfaces utilizing the appropriate fasteners. Not intended for exposed or harsh environments.

Installation

Select the correct Spare Sprinkler Head Cabinet in accordance with the Automatic Sprinkler Systems Handbook. As per the 1989 Edition the correct number of spare sprinkler is as follows:

0-300 sprinklers, not less than 6; 300-1000, not less than 12; 1000 or more, not less than 24. Stock of spare sprinklers shall include all types and ratings installed.*

Once the correct Spare Sprinkler Head Cabinet has been selected, installation is accomplished by inserting the correct fastener in each of the holes inside the cabinet, securing the cabinet securely to the wall. Insert the correct number and type of sprinklers in accordance with the "handbook".

*Final determination is subject to approval by the AHJ.

Specifications

Material:

Steel – 22 Gauge

Finish:

Red enamel

Styles:

3 Spare sprinklers, 1/2" or 3/4"
6 Spare sprinklers, 1/2" or 3/4"
6 Spare, ESFR, 1/2", 3/4" or 1"
12 Spare sprinklers 1/2" or 3/4"
24 Spare sprinklers
36 Spare sprinklers

Cabinet Type	Length	Depth	Height	Height (open)
12 head cabinet (02-400-00)	14 1/4"	4"	5 1/4"	10 7/16"
6 head cabinet (02-401-00)	14 1/4"	2 7/16"	5 1/4"	10 1/4"
3 head cabinet (02-402-00)	7 6/16"	2 1/2"	5 1/4"	10 1/4"
ESFR cabinet 6 head (02-403-00)	14 1/4"	3 3/16"	6 1/2"	12 3/4"
24 head cabinet (02-404-00)	14 1/4"	4"	8 7/16"	17"
36 head cabinet (02-405-00)	12 5/18"	4"	11 3/4"	26 11/16" (Length open)



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

NFPA-13 Seismic Bracing Calculation

Sheet _____ of _____

Project Cape Fear Valley Health - Harnett He Contractor Regional Fire Services NC, LLC
Address Crested Iris Drive Address 3101-310 Poplarwood Ct
Lillington, NC 27546 Raleigh, NC 27604
Telephone 919-212-2722

Design Name: 4-WAY

Brace Information

Length of Brace* N/A
Diameter of Brace Gold 418 lb Load Rating
Type of Brace Four Way
Angle of Brace 30 to 44 degrees
Least radius of gyration* N/A
l/r value* N/A
Maximum horizontal load 209 lbs

Fastener Information

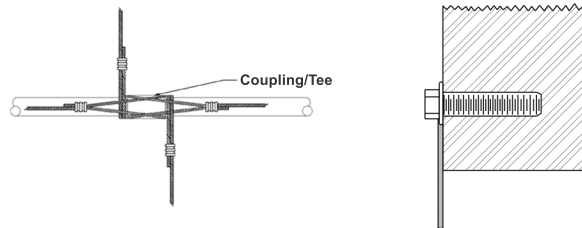
Orientation of connecting surface Orientation 3
Fastener Type Wedge/Expansion Anchor in Con
Diameter 3/8"
Length (in wood) (in concrete) 2"
Structural Attachment Fitting SAF
Maximum Load 76 lbs

Seismic Brace Attachments

Structure attachment fitting or tension- only bracing system:

Manufacturer Loos & Co., Inc.
Model #GO3
Listed Load Rating 418 lbs
Adjusted load rating (per 18.5.2.3) 209 lbs

Seismic Brace Assembly Details
(Provide detail on plans)



Brace ID No. to be used on plans C1

Sprinkler System Load Calculation [F_{pw}=C_pW_p(default is 0.5C_p)

Diameter	Type	Length (ft)	Weight per ft.	Total Weight + 15% (lbs)
4"	SCH. 10 Steel	6.00	11.78	81.28
Total Zone of Influence Weight (W _p) (water filled pipe x 1.15 per 18.5.5.2)				81.28 lbs

C_p Value 0.35

Maximum Load F_{pw} = C_pW_p = 28.45 lbs

* Excludes tension only bracing systems



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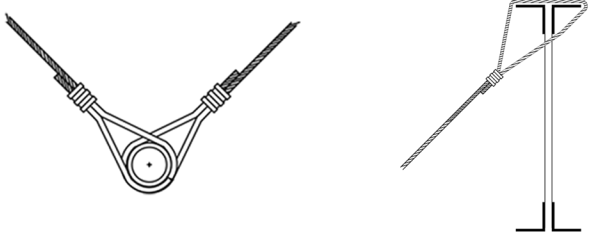
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NFPA-13 Seismic Bracing Calculation

Sheet _____ of _____

Project Cape Fear Valley Health - Harnett He Contractor Regional Fire Services NC, LLC
 Address Crested Iris Drive Address 3101-310 Poplarwood Ct
Lillington, NC 27546 Raleigh, NC 27604
 Telephone 919-212-2722

Design Name: LATERAL

Brace Information	Seismic Brace Attachments
Length of Brace* N/A	Structure attachment fitting or tension- only bracing system:
Diameter of Brace <u>Gold 418 lb Load Rating</u>	Manufacturer <u>Loos & Co., Inc.</u>
Type of Brace <u>Lateral</u>	Model <u>#GO3</u>
Angle of Brace <u>30 to 44 degrees</u>	Listed Load Rating <u>418 lbs</u>
Least radius of gyration* N/A	Adjusted load rating (per 18.5.2.3) <u>209 lbs</u>
l/r value* N/A	
Maximum horizontal load <u>209 lbs</u>	
	Seismic Brace Assembly Details (Provide detail on plans)
	
	Brace ID No. to be used on plans <u>A1</u>

Sprinkler System Load Calculation [F _{pw} =C _p W _p (default is 0.5C _p)				
Diameter	Type	Length (ft)	Weight per ft.	Total Weight + 15% (lbs)
2"	SCH. 10 Steel	18.00	4.22	87.35
1"	SCH. 40 Steel	15.00	2.05	35.36
Total Zone of Influence Weight (W _p) (water filled pipe x 1.15 per 18.5.5.2)				122.72 lbs
C _p Value <u>0.35</u>		Maximum Load F _{pw} = C _p W _p = <u>42.95 lbs</u>		

* Excludes tension only bracing systems

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NFPA-13 Seismic Bracing Calculation

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Project Cape Fear Valley Health - Harnett He Contractor Regional Fire Services NC, LLC
 Address Crested Iris Drive Address 3101-310 Poplarwood Ct
Lillington, NC 27546 Raleigh, NC 27604
 Telephone 919-212-2722

Design Name: LATERAL

Brace Information

Length of Brace* N/A
 Diameter of Brace Orange 770 lb Load Rating
 Type of Brace Lateral
 Angle of Brace 30 to 44 degrees
 Least radius of gyration* N/A
 I/r value* N/A
 Maximum horizontal load 385 lbs

Fastener Information

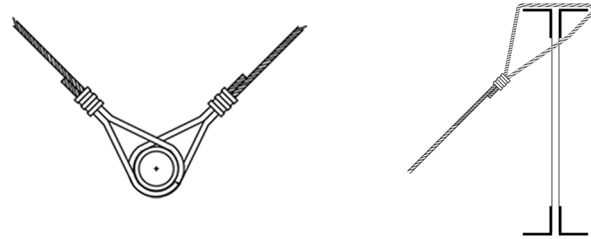
Orientation of connecting surface Orientation 1
 Fastener Type Loop Around Bar Joist
 Diameter N/A
 Length (in wood) (in concrete) N/A
 Structural Attachment Fitting N/A
 Maximum Load 385 lbs

Seismic Brace Attachments

Structure attachment fitting or tension- only bracing system:

Manufacturer Loos & Co., Inc.
 Model #OR4
 Listed Load Rating 770 lbs
 Adjusted load rating (per 18.5.2.3) 385 lbs

Seismic Brace Assembly Details
 (Provide detail on plans)



Brace ID No. to be used on plans A2

Sprinkler System Load Calculation [F_{pw}=C_pW_p(default is 0.5C_p)]

Diameter	Type	Length (ft)	Weight per ft.	Total Weight + 15% (lbs)
2"	SCH. 10 Steel	14.00	4.22	67.94
1 1/4"	SCH. 40 Steel	150.00	2.93	505.42
1"	SCH. 40 Steel	60.00	2.05	141.45
Total Zone of Influence Weight (W _p) (water filled pipe x 1.15 per 18.5.5.2)				714.82 lbs

C_p Value 0.35

Maximum Load F_{pw} = C_pW_p = 250.19 lbs

* Excludes tension only bracing systems

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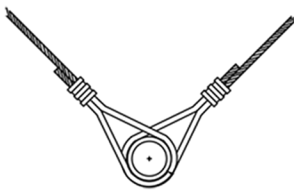
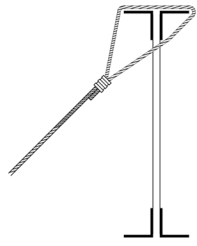
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NFPA-13 Seismic Bracing Calculation

Sheet _____ of _____

Project Cape Fear Valley Health - Harnett He Contractor Regional Fire Services NC, LLC
 Address Crested Iris Drive Address 3101-310 Poplarwood Ct
Lillington, NC 27546 Raleigh, NC 27604
 Telephone 919-212-2722

Design Name: LATERAL

Brace Information	Seismic Brace Attachments
Length of Brace* N/A	Structure attachment fitting or tension- only bracing system:
Diameter of Brace <u>Orange 770 lb Load Rating</u>	Manufacturer <u>Loos & Co., Inc.</u>
Type of Brace <u>Lateral</u>	Model <u>#OR4</u>
Angle of Brace <u>30 to 44 degrees</u>	Listed Load Rating <u>770 lbs</u>
Least radius of gyration* N/A	Adjusted load rating (per 18.5.2.3) <u>385 lbs</u>
l/r value* N/A	
Maximum horizontal load <u>385 lbs</u>	
	Seismic Brace Assembly Details (Provide detail on plans)
	
	
	Brace ID No. to be used on plans <u>A3</u>

Sprinkler System Load Calculation [F _{pw} =C _p W _p (default is 0.5C _p)				
Diameter	Type	Length (ft)	Weight per ft.	Total Weight + 15% (lbs)
2"	SCH. 10 Steel	25.00	4.22	121.32
1 1/4"	SCH. 40 Steel	235.00	2.93	791.83
1"	SCH. 40 Steel	75.00	2.05	176.81
Total Zone of Influence Weight (W _p) (water filled pipe x 1.15 per 18.5.5.2)				1089.97 lbs
C _p Value <u>0.35</u>		Maximum Load F _{pw} = C _p W _p = <u>381.49 lbs</u>		

* Excludes tension only bracing systems

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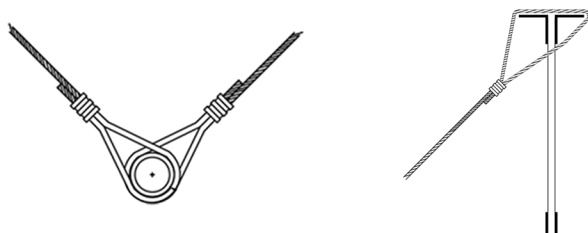
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NFPA-13 Seismic Bracing Calculation

Sheet _____ of _____

Project Cape Fear Valley Health - Harnett He Contractor Regional Fire Services NC, LLC
 Address Crested Iris Drive Address 3101-310 Poplarwood Ct
Lillington, NC 27546 Raleigh, NC 27604
 Telephone 919-212-2722

Design Name: LATERAL

Brace Information	Seismic Brace Attachments
Length of Brace* N/A	Structure attachment fitting or tension- only bracing system:
Diameter of Brace <u>Orange 770 lb Load Rating</u>	Manufacturer <u>Loos & Co., Inc.</u>
Type of Brace <u>Lateral</u>	Model <u>#OR4</u>
Angle of Brace <u>30 to 44 degrees</u>	Listed Load Rating <u>770 lbs</u>
Least radius of gyration* N/A	Adjusted load rating (per 18.5.2.3) <u>385 lbs</u>
l/r value* N/A	
Maximum horizontal load <u>385 lbs</u>	
Fastener Information	Seismic Brace Assembly Details (Provide detail on plans)
Orientation of connecting surface <u>Orientation 1</u>	
Fastener Type <u>Loop Around Bar Joist</u>	
Diameter <u>N/A</u>	
Length (in wood) (in concrete) <u>N/A</u>	
Structural Attachment Fitting <u>N/A</u>	
Maximum Load <u>385 lbs</u>	Brace ID No. to be used on plans <u>A4</u>

Sprinkler System Load Calculation [F_{pw}=C_pW_p(default is 0.5C_p)]

Diameter	Type	Length (ft)	Weight per ft.	Total Weight + 15% (lbs)
2"	SCH. 10 Steel	25.00	4.22	121.32
1 1/4"	SCH. 40 Steel	200.00	2.93	673.90
1"	SCH. 10 Steel	85.00	1.81	176.93
Total Zone of Influence Weight (W _p) (water filled pipe x 1.15 per 18.5.5.2)				972.15 lbs

C_p Value 0.35

Maximum Load F_{pw} = C_pW_p = 340.25 lbs

* Excludes tension only bracing systems

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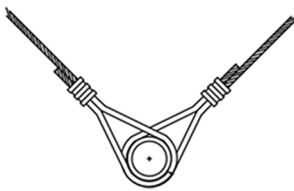
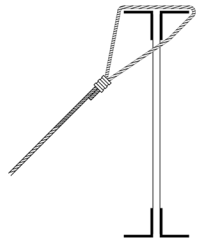
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NFPA-13 Seismic Bracing Calculation

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Project Cape Fear Valley Health - Harnett He Contractor Regional Fire Services NC, LLC
 Address Crested Iris Drive Address 3101-310 Poplarwood Ct
Lillington, NC 27546 Raleigh, NC 27604
 Telephone 919-212-2722

Design Name: LATERAL

Brace Information	Seismic Brace Attachments
Length of Brace* N/A	Structure attachment fitting or tension- only bracing system:
Diameter of Brace <u>Orange 770 lb Load Rating</u>	Manufacturer <u>Loos & Co., Inc.</u>
Type of Brace <u>Lateral</u>	Model <u>#OR4</u>
Angle of Brace <u>30 to 44 degrees</u>	Listed Load Rating <u>770 lbs</u>
Least radius of gyration* N/A	Adjusted load rating (per 18.5.2.3) <u>385 lbs</u>
l/r value* N/A	
Maximum horizontal load <u>385 lbs</u>	
	Seismic Brace Assembly Details (Provide detail on plans)
	
	
	Brace ID No. to be used on plans <u>A5</u>

Sprinkler System Load Calculation [F _{pw} =C _p W _p (default is 0.5C _p)]				
Diameter	Type	Length (ft)	Weight per ft.	Total Weight + 15% (lbs)
2"	SCH. 10 Steel	25.00	4.22	121.32
1 1/4"	SCH. 40 Steel	215.00	2.93	724.44
1"	SCH. 40 Steel	106.00	2.05	249.90
Total Zone of Influence Weight (W _p) (water filled pipe x 1.15 per 18.5.5.2)				1095.66 lbs
C _p Value <u>0.35</u> Maximum Load F _{pw} = C _p W _p = <u>383.48 lbs</u>				

* Excludes tension only bracing systems

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NFPA-13 Seismic Bracing Calculation

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Project Cape Fear Valley Health - Harnett He Contractor Regional Fire Services NC, LLC
 Address Crested Iris Drive Address 3101-310 Poplarwood Ct
Lillington, NC 27546 Raleigh, NC 27604
 Telephone 919-212-2722

Design Name: Longitudinal

Brace Information

Length of Brace* N/A
 Diameter of Brace Gold 418 lb Load Rating
 Type of Brace Longitudinal
 Angle of Brace 30 to 44 degrees
 Least radius of gyration* N/A
 I/r value* N/A
 Maximum horizontal load 209 lbs

Fastener Information

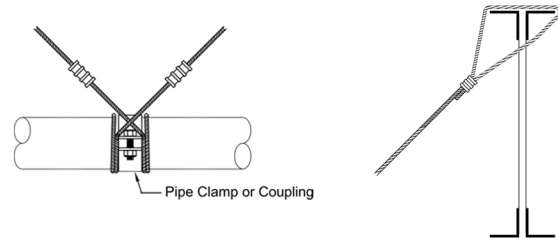
Orientation of connecting surface Orientation 1
 Fastener Type Loop Around Bar Joist
 Diameter N/A
 Length (in wood) (in concrete) N/A
 Structural Attachment Fitting N/A
 Maximum Load 209 lbs

Seismic Brace Attachments

Structure attachment fitting or tension- only bracing system:

Manufacturer Loos & Co., Inc.
 Model #GO3
 Listed Load Rating 418 lbs
 Adjusted load rating (per 18.5.2.3) 209 lbs

Seismic Brace Assembly Details
 (Provide detail on plans)



Brace ID No. to be used on plans B1

Sprinkler System Load Calculation [F_{pw}=C_pW_p(default is 0.5C_p)]

Diameter	Type	Length (ft)	Weight per ft.	Total Weight + 15% (lbs)
2"	SCH. 10 Steel	42.00	4.22	203.83
4"	SCH. 10 Steel	6.00	11.78	81.28
Total Zone of Influence Weight (W _p) (water filled pipe x 1.15 per 18.5.5.2)				285.11 lbs

C_p Value 0.35

Maximum Load F_{pw} = C_pW_p = 99.79 lbs

* Excludes tension only bracing systems

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NFPA-13 Seismic Bracing Calculation

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Project Cape Fear Valley Health - Harnett He Contractor Regional Fire Services NC, LLC
 Address Crested Iris Drive Address 3101-310 Poplarwood Ct
Lillington, NC 27546 Raleigh, NC 27604
 Telephone 919-212-2722

Design Name: Longitudinal

Brace Information

Length of Brace* N/A
 Diameter of Brace Gold 418 lb Load Rating
 Type of Brace Longitudinal
 Angle of Brace 30 to 44 degrees
 Least radius of gyration* N/A
 I/r value* N/A
 Maximum horizontal load 209 lbs

Fastener Information

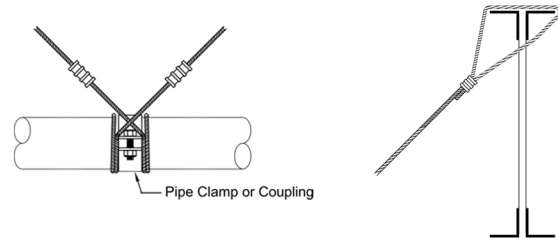
Orientation of connecting surface Orientation 1
 Fastener Type Loop Around Bar Joist
 Diameter N/A
 Length (in wood) (in concrete) N/A
 Structural Attachment Fitting N/A
 Maximum Load 209 lbs

Seismic Brace Attachments

Structure attachment fitting or tension- only bracing system:

Manufacturer Loos & Co., Inc.
 Model #GO3
 Listed Load Rating 418 lbs
 Adjusted load rating (per 18.5.2.3) 209 lbs

Seismic Brace Assembly Details
 (Provide detail on plans)



Brace ID No. to be used on plans B2

Sprinkler System Load Calculation [F_{pw}=C_pW_p(default is 0.5C_p)]

Diameter	Type	Length (ft)	Weight per ft.	Total Weight + 15% (lbs)
2"	SCH. 10 Steel	43.00	4.22	208.68
Total Zone of Influence Weight (W _p) (water filled pipe x 1.15 per 18.5.5.2)				208.68 lbs

C_p Value 0.35

Maximum Load F_{pw} = C_pW_p = 73.04 lbs

* Excludes tension only bracing systems

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