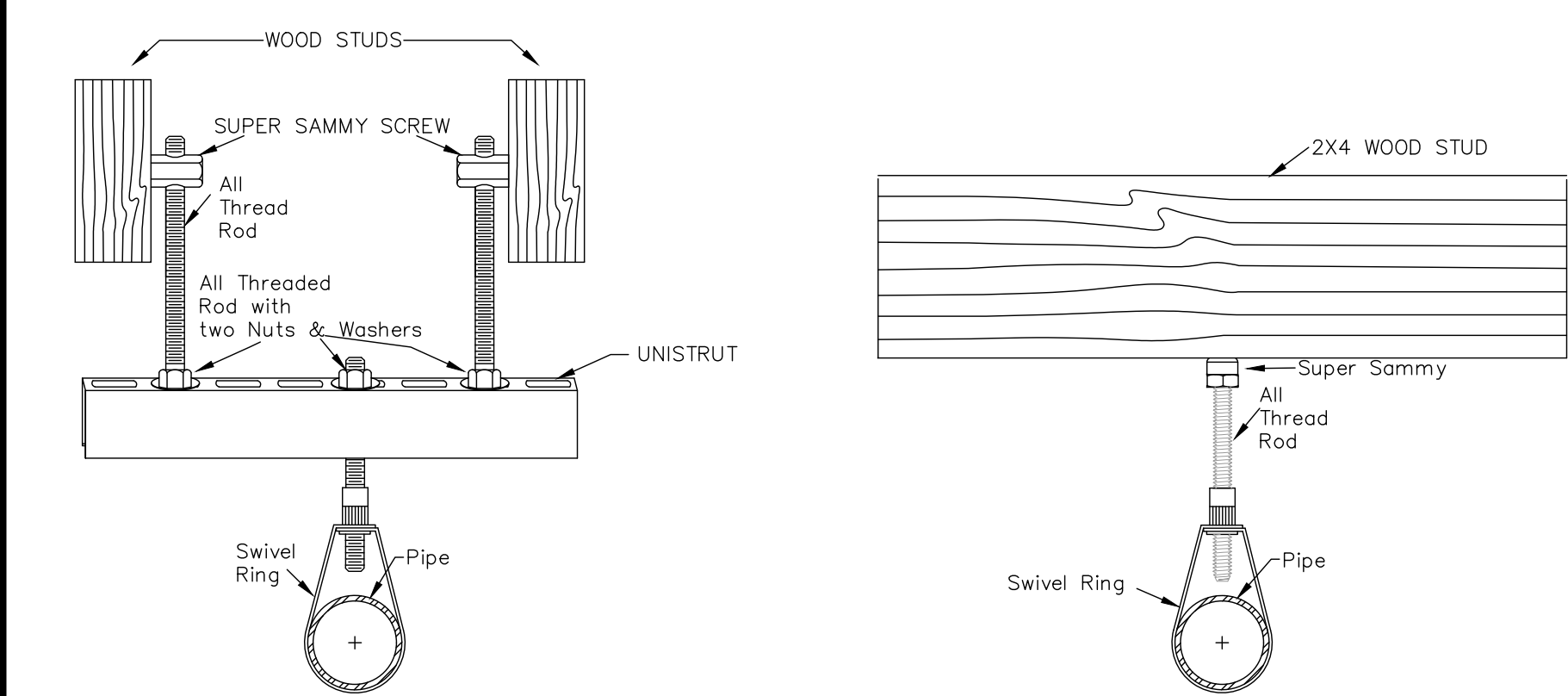


HANGER INSTALLATION REQUIREMENTS												
MAXIMUM DISTANCE BETWEEN HANGERS												
NOMINAL PIPE SIZE	¾"	1"	1½"	2"	2½"	3"	4"	5"	6"	8"		
BLASTMASTER CPMK	2'	6'	8'	10'	12'	14'	16'	18'	20'	N/A	N/A	N/A
THREADED LIGHTWALL	14"	12"	12"	12"	12"	12"	12"	12"	12"	N/A	N/A	N/A
STEEL PIPE (10, 140, 40)	14"	12"	12"	12"	12"	15"	15"	15"	15"	15"	15"	15"

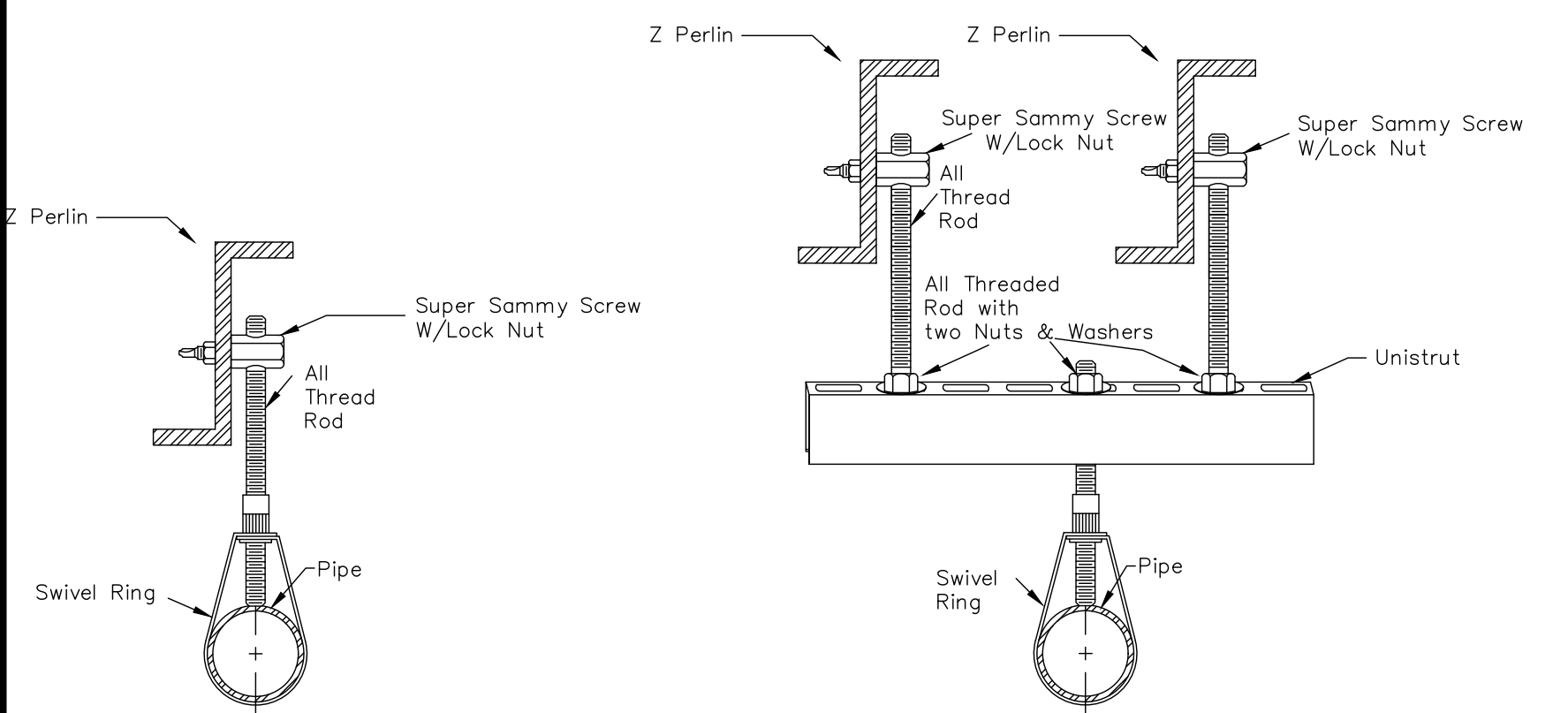
100 PSI STATIC PRESSURE ON SYSTEM REQUIRES UP-LIFT RESTRAINT WITHIN 12 INCHES HORIZONTALLY OF HEAD FOR ARM-OVERS AND END OF BRANCH LINE

THE UNREPORTED LENGTH BETWEEN THE END SPRINKLER AND THE LAST HANGER ON THE LINE SHALL NOT EXCEED 36" FOR 1" PIPE, 48" FOR 1½" PIPE AND 80" FOR 2" PIPE OR LARGER

THE CUMULATIVE HORIZONTAL LENGTH OF AN UNREPORTED ANSWER TO A SPRINKLER, SPRINKLER DROP, OR SPRIG-UP SHALL NOT EXCEED 24"

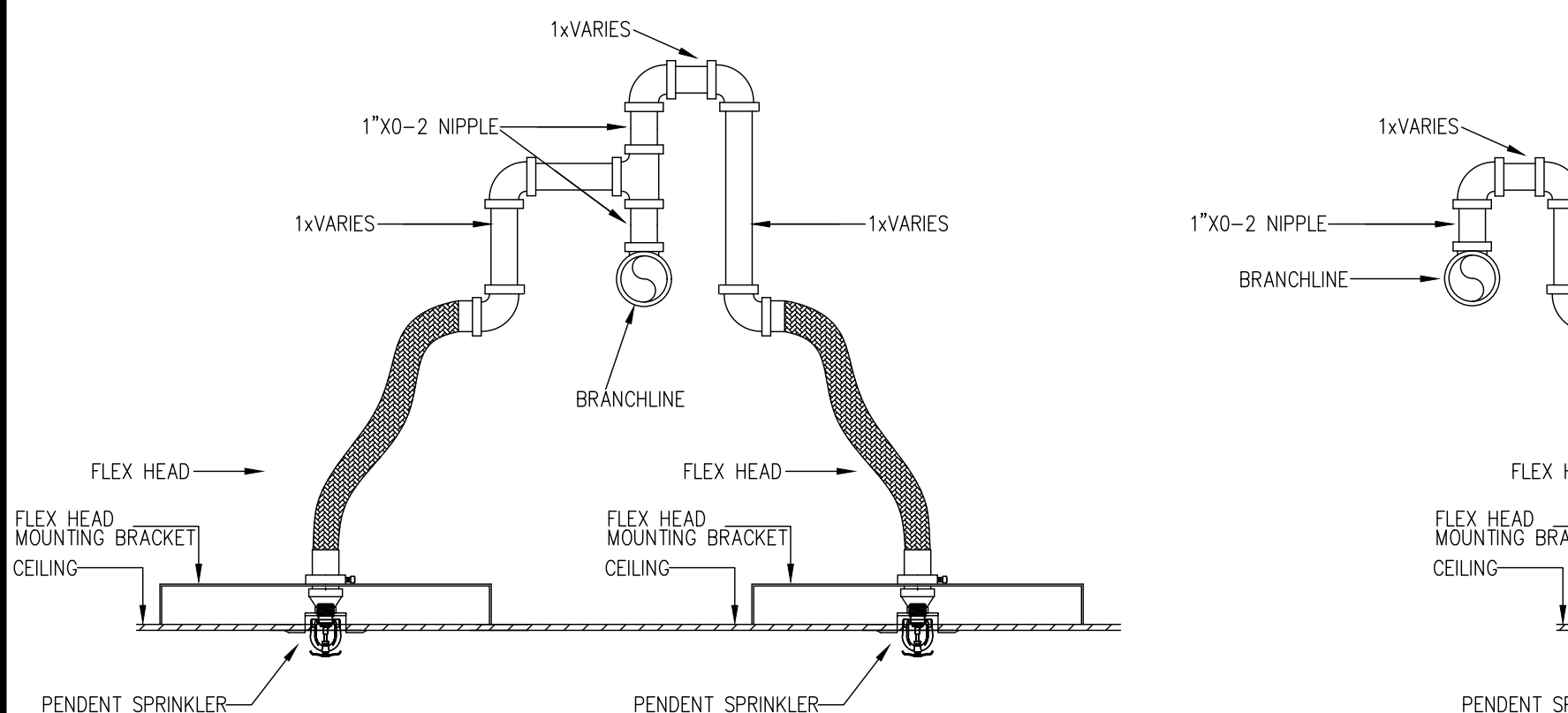
UNISTRUT HANGER DETAIL
N.T.S.

VERTICAL SAMMY HANGER DETAIL
N.T.S.



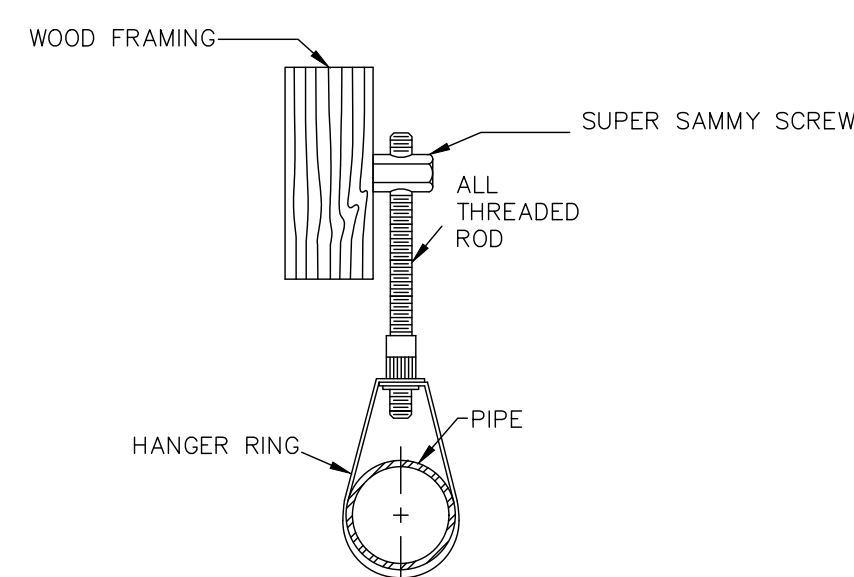
Z PERLIN HANGER DETAIL
N.T.S.

UNISTRUT HANGER DETAIL

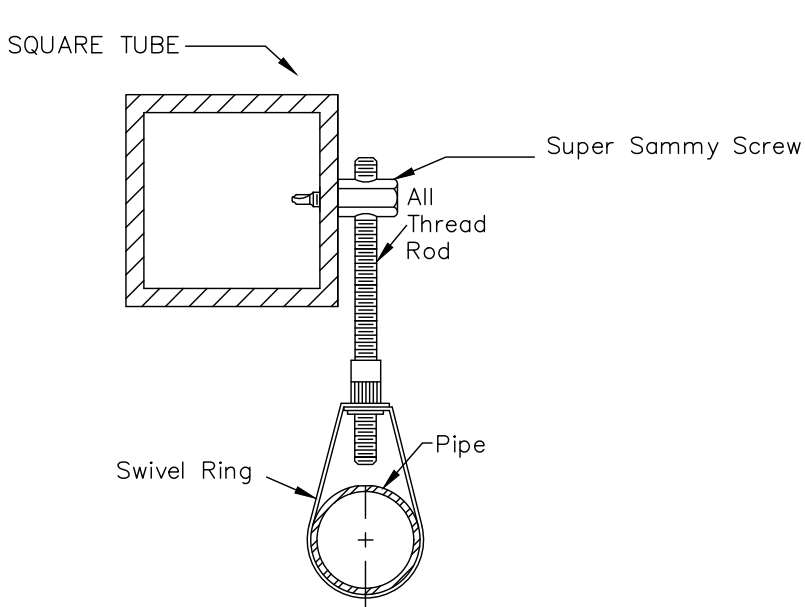


SPLIT OUTLET FLEX HEAD DETAIL
N.T.S.

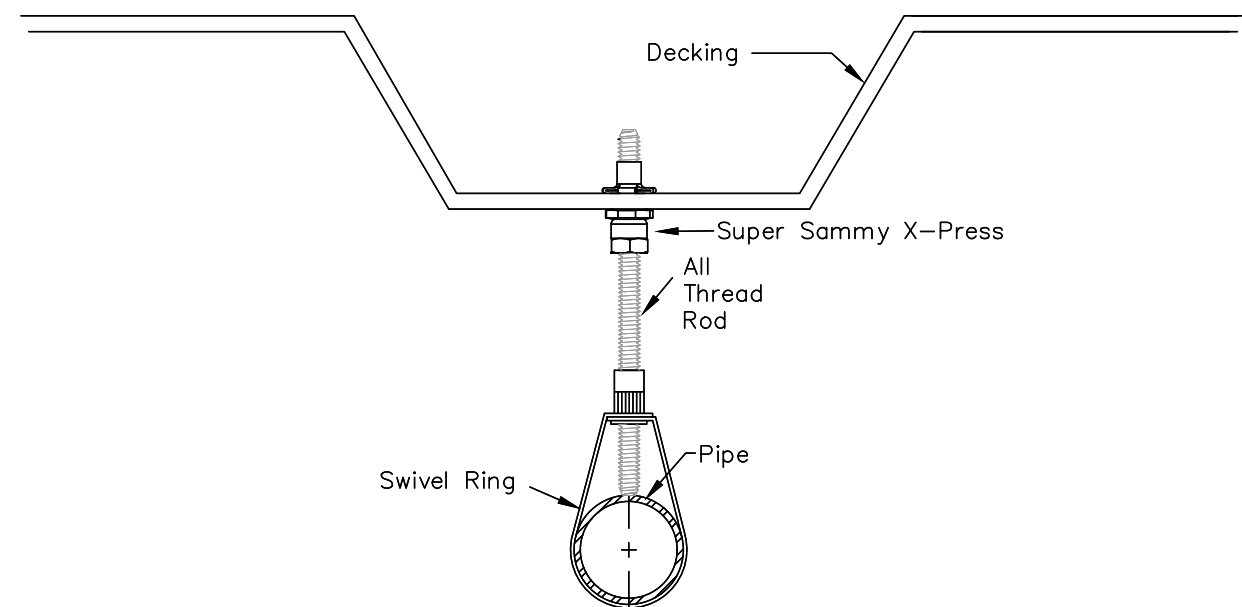
FLEX HEAD DETAIL
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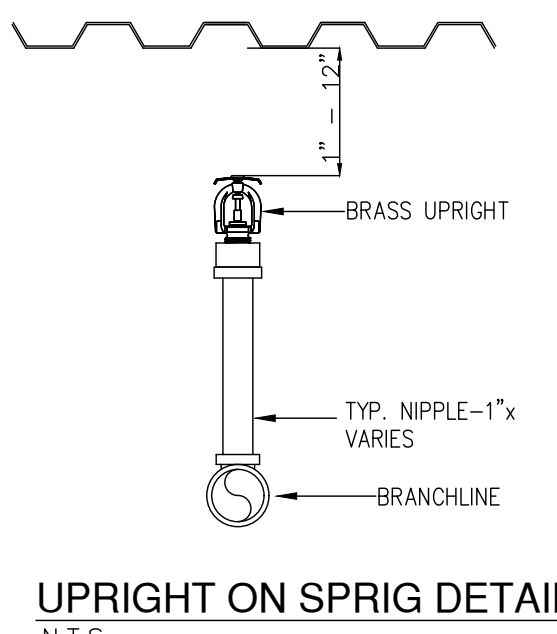
SAMMY HANGER DETAIL
N.T.S.



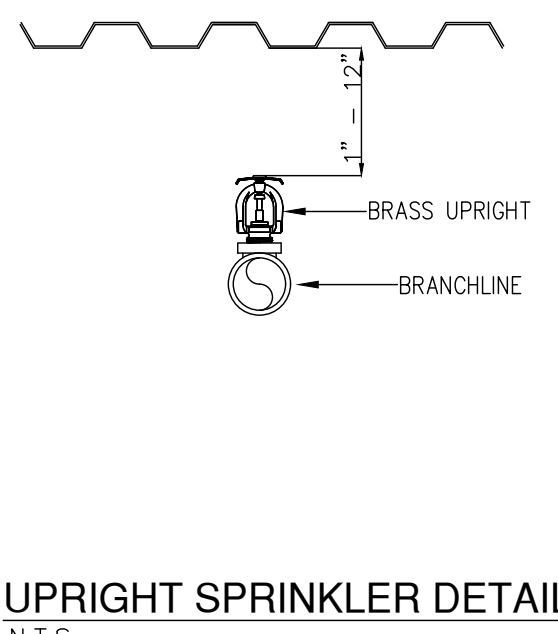
SQUARE TUBE HANGER DETAIL
N.T.S.



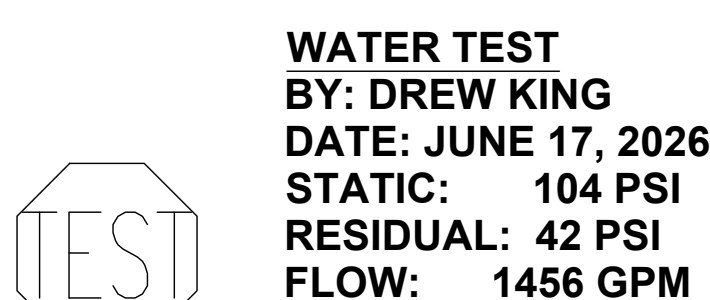
SAMMY X-PRESS HANGER DETAIL
N.T.S.
N.T.S.



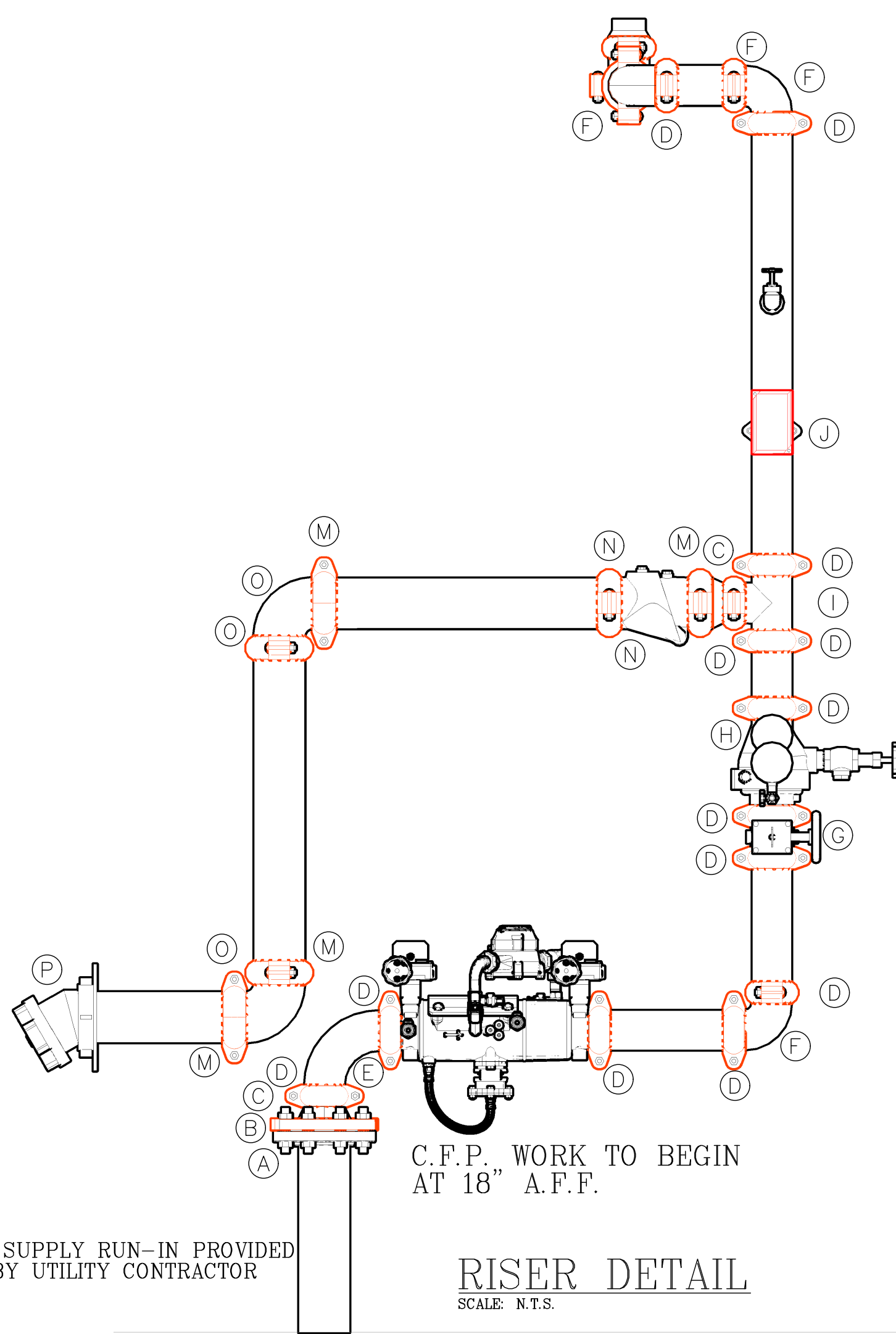
UPRIGHT ON SPRIG DETAIL
N.T.S.



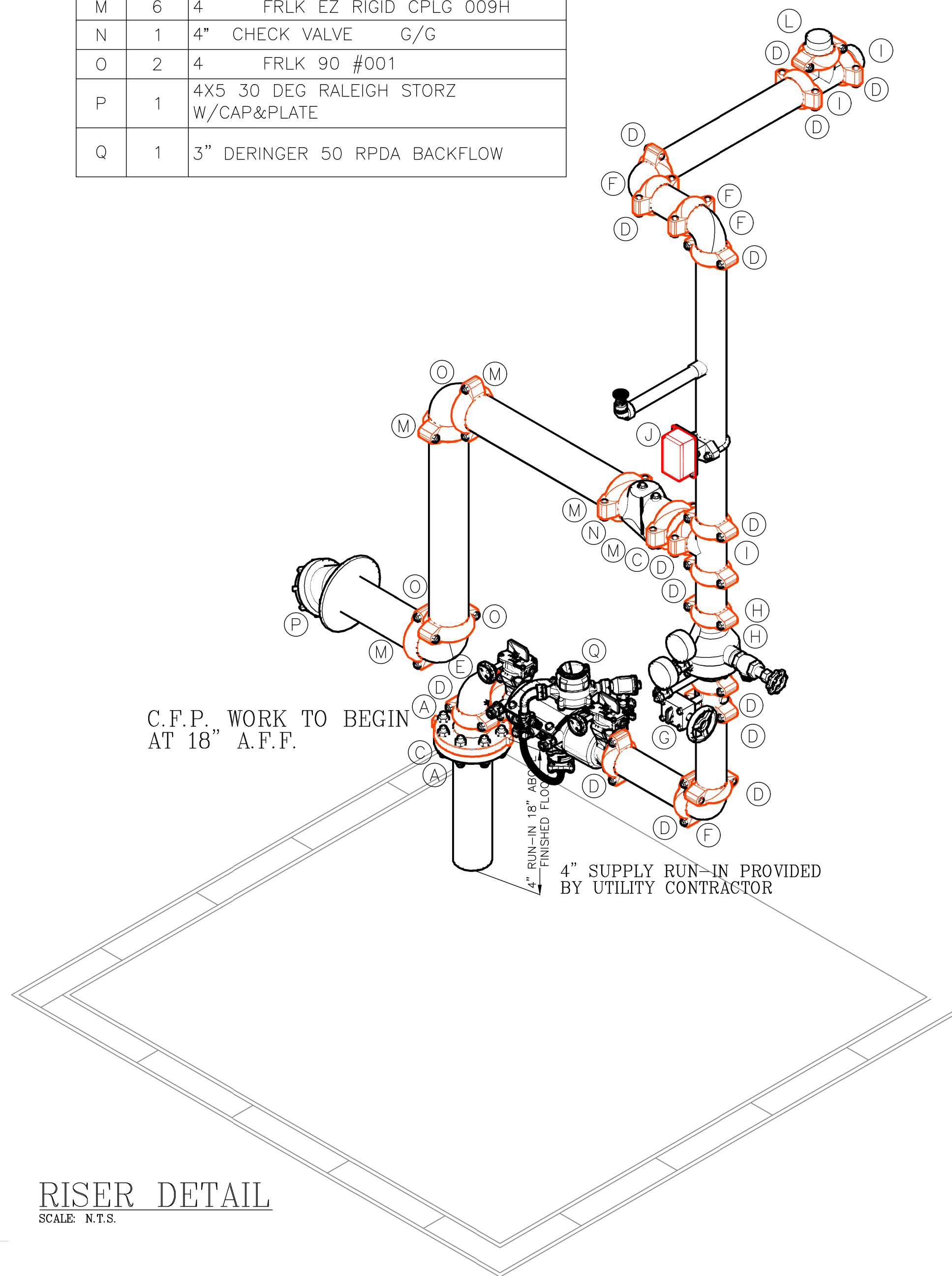
UPRIGHT SPRINKLER DETAIL
N.T.S.



SITE PLAN
SCALE: N.T.S.



RISER DETAIL
SCALE: N.T.S.



RISER DETAIL
SCALE: N.T.S.

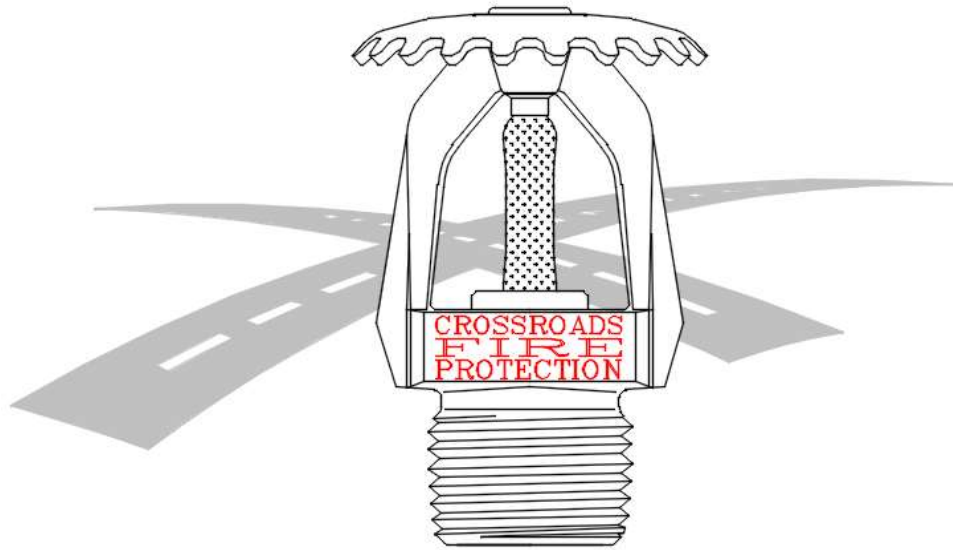
Legend		
ID	Qty	Description
A	1	4" GASKET FULL RED RUB .125
B	1	4 VIC FLANGE ADAPTER #741
C	2	4 X 3 VIC CON-RED #50
D	18	3 FRLK EZ RIGID CPLG 009H
E	1	3 VIC LONG RADIUS 90 #100
F	3	3 FRLK 90 #001
G	1	3 VIC B FLY W/TAMPER #705
H	1	3" VIC RISER CHECK G/G 717HR
I	2	3 FRLK TEE #002
J	1	3" WATER FLOW SWITCH
K	1	3 X 2 1/2 VIC CON-RED #50
L	1	3 X 2 VIC CON-RED #50
M	6	4 FRLK EZ RIGID CPLG 009H
N	1	4" CHECK VALVE G/G
O	2	4 FRLK 90 #001
P	1	4X5.30 DEG RALEIGH STORZ W/CAP&PLATE
Q	1	3" DERINGER 50 RPDA BACKFLOW

LEGEND

- | | |
|-----|---|
| --- | DENOTES EXISTING FIRE PROTECTION PIPING |
| --- | DENOTES NEW FIRE PROTECTION PIPING |
| --- | DENOTES UNDERGROUND PIPING |
| ⊙ | DENOTES HYDRAULIC REFERENCE NODE |
| ⬆ | DENOTES RISE IN PIPE |
| ⬆ | DENOTES WET RISER |
| ⊙ | DENOTES PENDENT |
| ⬆ | DENOTES UPRIGHT |

GENERAL NOTES

1. ALL WORK SHALL BE IN FULL COMPLIANCE WITH NFPA 13 2013 ED., LOCAL AEN, AND THE NORTH CAROLINA STATE BUILDING CODE. THE WORK SHALL MEET ALL REQUIREMENTS OF THE NORTH CAROLINA STATE BUILDING CODE AND THE NORTH CAROLINA STATE FIRE MARSHAL'S WORKING SYSTEM WHICH MEETS ALL REQUIREMENTS OF NFPA 13 2013 ED., LOCAL AEN, AND THE NORTH CAROLINA STATE BUILDING CODE.
2. THE DESIGN AND FIELD INSTALLATION SHALL BE APPROVED AND APPROVED FOR THE INTENDED USE AND SHALL BE INSTALLED IN FULL COMPLIANCE WITH MANUFACTURER'S INSTRUCTIONS.
3. SPRINKLER HEADS ARE SPACED PER LIGHT HAZARD SPRINKLER SPACING NOT TO EXCEED 25'S SQ. FT.
4. ALL SPRINKLER HEADS SHALL BE BLACK WITH THREADED ENDS AND JOINED BY BULK DUCTILE IRON THREADED FITTINGS.
5. ALL SCH. 40 PIPE FOR 12" 16" SHALL BE BLACK WITH GROOVED ENDS AND JOINED BY BULK DUCTILE IRON THREADED FITTINGS.
6. PIPE HANGERS TO BE INSTALLED PER NFPA 13.
7. THE DESIGN SHALL BE SUBMITTED TO THE COUNTY ENGINEER FOR APPROVAL TO MEET SYSTEM DEMAND PER NFPA 13 2013 ED.
8. DEMONSTRATION REQUIRED PER 11.2.3.2.2.
9. SMALL ROOM RULE USED PER NFPA 13 2013ED. 8.6.3.2.4.1



Crossroads Fire Protection
809 South Market Street
Benson, NC 27504
919-207-3855

Job Name : Antioch Baptist Church
Drawing : FP3
Location : 6670 OLD US 421, LILLINGTON, NC 27546
Remote Area : 1
Contract : CC-11974
Data File : Antioch Uprights Calc 1.WXF

HYDRAULIC CALCULATIONS
for

JOB NAME Antioch Baptist Church
Location 6670 OLD US 421, LILLINGTON, NC 27546
Drawing # FP3
Contract # CC-11974
Date 07-09-2026

DESIGN

Remote area # 1
Remote area location MOST REMOTE
Occupancy classification MULTIPURPOSE
Density .1 - Gpm/SqFt
Area of application 1557 - SqFt
Coverage/sprinkler 225 - SqFt
Type of sprinkler calculated
Sprinklers calculated 10
In-rack demand - GPM
Hose streams 100 - GPM
Total water required (including hose streams) 332.158 - GPM @ 68.4782 - Psi
Type of system WET GRID
Volume of system (dry or pre-action) - Gal

WATER SUPPLY INFORMATION

Test date 06-17-2026
Location TEST
Source of info DREW KING

CONTRACTOR INFO Crossroads Fire Protection
Address 809 South Market Street / Benson, NC 27504
Phone # 919-207-3855
Name of designer CFP
Authority having jurisdiction HARNETT COUTNY
NOTES:

text1(35) - invisible

Water Supply Curve

Crossroads Fire Protection
Antioch Baptist Church

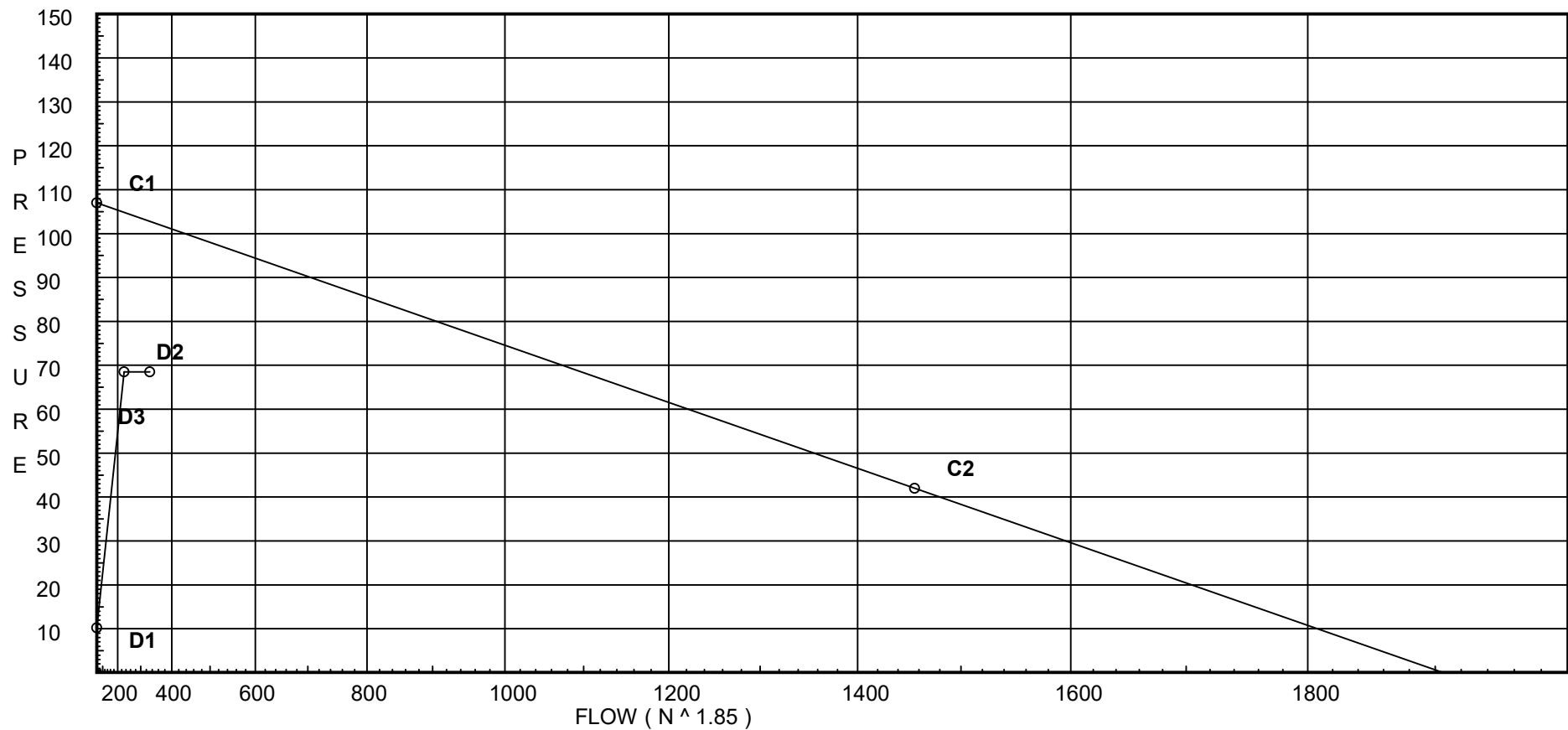
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Date 07-09-2026

City Water Supply:

C1 - Static Pressure : 107
C2 - Residual Pressure: 42
C2 - Residual Flow : 1456

Demand:

D1 - Elevation : 10.212
D2 - System Flow : 232.158
D2 - System Pressure : 68.478
Hose (Demand) : 100
D3 - System Demand : 332.158
Safety Margin : 34.300



Fittings Used Summary

Crossroads Fire Protection
Antioch Baptist Church

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Date 07-09-2026

Fitting Legend

Abbrev.	Name	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12	14	16	18	20	24
B	NFPA 13 Butterfly Valve	0	0	0	0	0	6	7	10	0	12	9	10	12	19	21	0	0	0	0	0
E	NFPA 13 90' Standard Elbow	0	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61
Fsp	Flow Switch Potter VSR	Fitting generates a Fixed Loss Based on Flow																			
G	NFPA 13 Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
S	NFPA 13 Swing Check	0	0	5	7	9	11	14	16	19	22	27	32	45	55	65					
T	NFPA 13 90' Flow thru Tee	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121

Units Summary

Diameter Units	Inches
Length Units	Feet
Flow Units	US Gallons per Minute
Pressure Units	Pounds per Square Inch

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with *. The fittings marked with a * show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a * will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

Flow Summary - NFPA

Crossroads Fire Protection
Antioch Baptist Church

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Date 07-09-2026

SUPPLY ANALYSIS

<i>Node at Source</i>	<i>Static Pressure</i>	<i>Residual Pressure</i>	<i>Flow</i>	<i>Available Pressure</i>	<i>Total Demand</i>	<i>Required Pressure</i>
TEST	107.0	42	1456.0	102.778	332.16	68.478

NODE ANALYSIS

<i>Node Tag</i>	<i>Elevation</i>	<i>Node Type</i>	<i>Pressure at Node</i>	<i>Discharge at Node</i>	<i>Notes</i>	
101	18.625		20.44			
H1	22.417	5.6	17.28	23.28	0.1	225
H2	24.58	5.6	16.14	22.5	0.1	225
H3	24.58	5.6	16.14	22.5	0.1	225
H4	22.417	5.6	17.31	23.3	0.1	225
102	18.625		20.65			
H5	22.417	5.6	17.47	23.41	0.1	225
H6	24.58	5.6	16.34	22.64	0.1	225
H7	24.58	5.6	16.34	22.64	0.1	225
H8	22.417	5.6	17.51	23.43	0.1	225
103	18.625		21.42			
H9	22.417	5.6	19.2	24.54	0.1	225
H10	24.58	5.6	18.26	23.93	0.1	225
104	18.625		22.69			
105	18.625		23.81			
106	18.625		24.71			
107	18.625		25.29			
108	18.625		25.5			
201	18.625		20.57			
202	18.625		20.8			
203	18.625		21.63			
204	18.625		22.87			
205	18.625		24.27			
206	18.625		25.93			
207	18.625		28.04			
208	18.625		30.95			
M2	9.625		46.78			
TOR	9.625		47.33			
BOR	1.0		56.64			
BF	1.0		64.86			
RI	1.0		65.05			
UG1	-1.0		68.86			
TEST	1.0		68.48	100.0		

Final Calculations : Hazen-Williams

Crossroads Fire Protection
Antioch Baptist Church

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Date 07-09-2026

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
101 to H1	18.625 22.417		-44.94 -44.94	1.5 1.682	E T 4.95 9.9	11.208 14.850 26.058	120 -0.0584	20.440 -1.642 -1.522		Vel = 6.49	
H1 to H2	22.417 24.580	5.60	23.28 -21.66	1.5 1.682		12.958 12.958	120 -0.0151	17.276 -0.937 -0.196		Vel = 3.13	
H2 to H3	24.580 24.580	5.60	22.50 0.84	1.5 1.682		13.333 13.333	120 0.0001	16.143 0.0 0.001		Vel = 0.12	
H3 to H4	24.580 22.417	5.60	22.50 23.34	1.5 1.682		12.958 12.958	120 0.0174	16.144 0.937 0.225		Vel = 3.37	
H4 to 201	22.417 18.625	5.60	23.29 46.63	1.5 1.682	E T 4.95 9.9	11.167 14.850 26.017	120 0.0625	17.306 1.642 1.626		Vel = 6.73	
201			0.0 46.63					20.574		K Factor = 10.28	
102 to H5	18.625 22.417		-45.12 -45.12	1.5 1.682	E T 4.95 9.9	11.208 14.850 26.058	120 -0.0588	20.648 -1.642 -1.533		Vel = 6.51	
H5 to H6	22.417 24.580	5.60	23.41 -21.71	1.5 1.682		12.958 12.958	120 -0.0152	17.473 -0.937 -0.197		Vel = 3.13	
H6 to H7	24.580 24.580	5.60	22.63 0.92	1.5 1.682		13.333 13.333	120 0.0001	16.339 0.0 0.001		Vel = 0.13	
H7 to H8	24.580 22.417	5.60	22.64 23.56	1.5 1.682		12.958 12.958	120 0.0177	16.340 0.937 0.229		Vel = 3.40	
H8 to 202	22.417 18.625	5.60	23.43 46.99	1.5 1.682	E T 4.95 9.9	11.167 14.850 26.017	120 0.0634	17.506 1.642 1.650		Vel = 6.78	
202			0.0 46.99					20.798		K Factor = 10.30	
103 to H9	18.625 22.417		-26.50 -26.5	1.5 1.682	E T 4.95 9.9	11.208 14.850 26.058	120 -0.0220	21.419 -1.642 -0.573		Vel = 3.83	
H9 to H10	22.417 24.580	5.60	24.54 -1.96	1.5 1.682		12.958 12.958	120 -0.0002	19.204 -0.937 -0.002		Vel = 0.28	
H10 to 203	24.580 18.625	5.60	23.94 21.98	1.5 1.682	E T 4.95 9.9	35.458 14.850 50.308	120 0.0155	18.265 2.579 0.782		Vel = 3.17	
203			0.0 21.98					21.626		K Factor = 4.73	
104 to 204	18.625 18.625		7.37 7.37	1.5 1.682	2E 2T 9.9 19.799	61.625 29.699 91.324	120 0.0021	22.686 0.0 0.188		Vel = 1.06	

Final Calculations : Hazen-Williams

Crossroads Fire Protection
Antioch Baptist Church

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Date 07-09-2026

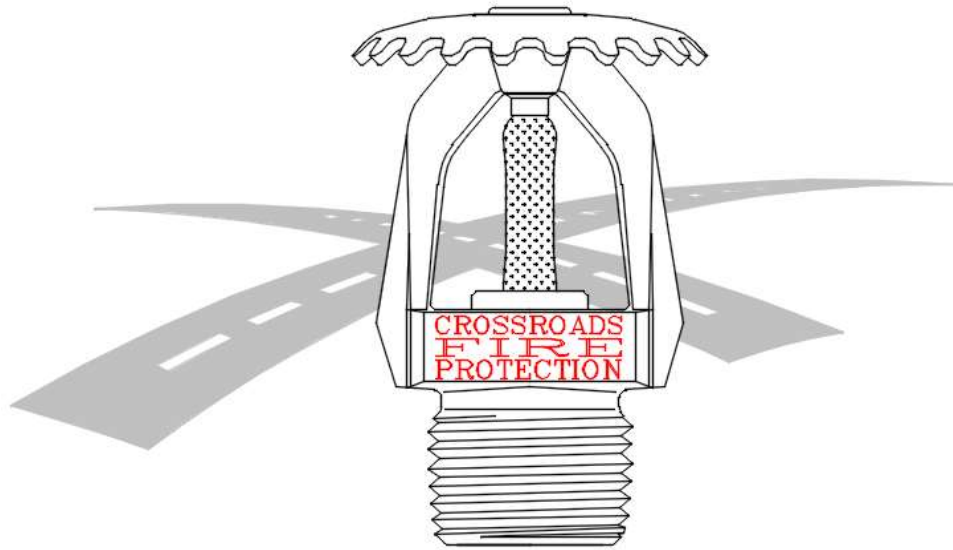
Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
204			0.0 7.37					22.874		K Factor = 1.54	
105 to 205	18.625 18.625		12.01 12.01	1.5 1.682	2E 2T 9.9 19.799	61.625 29.699 91.324	120 0.0051	23.809 0.0 0.464		Vel = 1.73	
205			0.0 12.01					24.273		K Factor = 2.44	
106 to 206	18.625 18.625		20.26 20.26	1.5 1.682	2E 2T 9.9 19.799	61.625 29.699 91.324	120 0.0134	24.714 0.0 1.221		Vel = 2.93	
206			0.0 20.26					25.935		K Factor = 3.98	
107 to 207	18.625 18.625		31.45 31.45	1.5 1.682	2E 2T 9.9 19.799	61.625 29.699 91.324	120 0.0302	25.290 0.0 2.755		Vel = 4.54	
207			0.0 31.45					28.045		K Factor = 5.94	
108 to 208	18.625 18.625		45.47 45.47	1.5 1.682	2E 2T 9.9 19.799	61.625 29.699 91.324	120 0.0597	25.503 0.0 5.449		Vel = 6.57	
208			0.0 45.47					30.952		K Factor = 8.17	
101 to 102	18.625 18.625		44.94 44.94	2 2.157		12.000 12.000	120 0.0173	20.440 0.0 0.208		Vel = 3.95	
102 to 103	18.625 18.625		45.12 90.06	2 2.157		12.250 12.250	120 0.0629	20.648 0.0 0.771		Vel = 7.91	
103 to 104	18.625 18.625		26.50 116.56	2 2.157		12.500 12.500	120 0.1014	21.419 0.0 1.267		Vel = 10.23	
104 to 105	18.625 18.625		-7.37 109.19	2 2.157		12.500 12.500	120 0.0898	22.686 0.0 1.123		Vel = 9.59	
105 to 106	18.625 18.625		-12.01 97.18	2 2.157		12.500 12.500	120 0.0724	23.809 0.0 0.905		Vel = 8.53	
106 to 107	18.625 18.625		-20.25 76.93	2 2.157		12.250 12.250	120 0.0470	24.714 0.0 0.576		Vel = 6.75	
107 to 108	18.625 18.625		-31.46 45.47	2 2.157		12.000 12.000	120 0.0177	25.290 0.0 0.213		Vel = 3.99	
108			0.0 45.47					25.503		K Factor = 9.00	
201 to 202	18.625 18.625		46.63 46.63	2 2.157		12.000 12.000	120 0.0187	20.574 0.0 0.224		Vel = 4.09	

Final Calculations : Hazen-Williams

Crossroads Fire Protection
Antioch Baptist Church

Page 7
Date 07-09-2026

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
202 to 203	18.625 18.625		47.00 93.63	2 2.157			12.250 12.250	120 0.0676	20.798 0.0 0.828		Vel = 8.22	
203 to 204	18.625 18.625		21.97 115.6	2 2.157			12.500 12.500	120 0.0998	21.626 0.0 1.248		Vel = 10.15	
204 to 205	18.625 18.625		7.37 122.97	2 2.157			12.500 12.500	120 0.1119	22.874 0.0 1.399		Vel = 10.80	
205 to 206	18.625 18.625		12.00 134.97	2 2.157			12.500 12.500	120 0.1330	24.273 0.0 1.662		Vel = 11.85	
206 to 207	18.625 18.625		20.26 155.23	2 2.157			12.250 12.250	120 0.1722	25.935 0.0 2.110		Vel = 13.63	
207 to 208	18.625 18.625		31.45 186.68	2 2.157			12.000 12.000	120 0.2422	28.045 0.0 2.907		Vel = 16.39	
208 to M2	18.625 9.625		45.48 232.16	2 2.157	2E	12.307	20.580 12.307 32.887	120 0.3627	30.952 3.898 11.927		Vel = 20.38	
M2 to TOR	9.625 9.625		0.0 232.16	3 3.26	E	9.408	2.000 9.408 11.408	120 0.0485	46.777 0.0 0.553		Vel = 8.92	
TOR to BOR	9.625 1		0.0 232.16	3 3.26	B S Fsp E	13.44 21.503 0.0 9.408	8.625 44.351 52.976	120 0.0486	47.330 6.735 2.572		* * Fixed Loss = 3 Vel = 8.92	
BOR to BF	1 1		0.0 232.16	4 4.26	E	13.167	4.042 13.167 17.209	120 0.0132	56.637 8.000 0.227		* * Fixed Loss = 8 Vel = 5.23	
BF to RI	1 1		0.0 232.16	4 4.1	E	14.534	1.000 14.534 15.534	140 0.0119	64.864 0.0 0.185		Vel = 5.64	
RI to UG1	1 -1		0.0 232.16	4 4.1	E T G	14.534 29.067 2.907	200.000 46.508 246.508	140 0.0119	65.049 0.866 2.945		Vel = 5.64	
UG1 to TEST	-1 1		0.0 232.16	8 8.27	E G	28.468 6.326	1200.000 34.794 1234.794	140 0.0004	68.860 -0.866 0.484		Vel = 1.39	
TEST			100.00 332.16						68.478		Qa = 100.00 K Factor = 40.14	



Crossroads Fire Protection
809 South Market Street
Benson, NC 27504
919-207-3855

Job Name : Antioch Baptist Church
Drawing : FP2
Location : 6670 OLD US 421, LILLINGTON, NC 27546
Remote Area : 2
Contract : CC-11974
Data File : Antioch Under Mezz Calc 2 ReDesign.WXF

HYDRAULIC CALCULATIONS
for

JOB NAME Antioch Baptist Church
Location 6670 OLD US 421, LILLINGTON, NC 27546
Drawing # FP2
Contract # CC-11974
Date 07-09-2026

DESIGN

Remote area # 2
Remote area location UNDER MEZZ. MOST DEMANDING
Occupancy classification MULTIPURPOSE
Density .1 - Gpm/SqFt
Area of application 1132 - SqFt
Coverage/sprinkler 225 - SqFt
Type of sprinkler calculated SSP QR
Sprinklers calculated 13
In-rack demand - GPM
Hose streams 100 - GPM
Total water required (including hose streams) 420.799 - GPM @ 88.0206 - Psi
Type of system WET TREE
Volume of system (dry or pre-action) - Gal

WATER SUPPLY INFORMATION

Test date 06-17-2026
Location TEST
Source of info DREW KING

CONTRACTOR INFO Crossroads Fire Protection
Address 809 South Market Street / Benson, NC 27504
Phone # 919-207-3855
Name of designer CFP
Authority having jurisdiction HARNETT COUNTY

NOTES:

Equivalent of 12' of pipe added for Flex Pipe per NFPA 13.

text1(35) - invisible

Water Supply Curve

Crossroads Fire Protection
Antioch Baptist Church

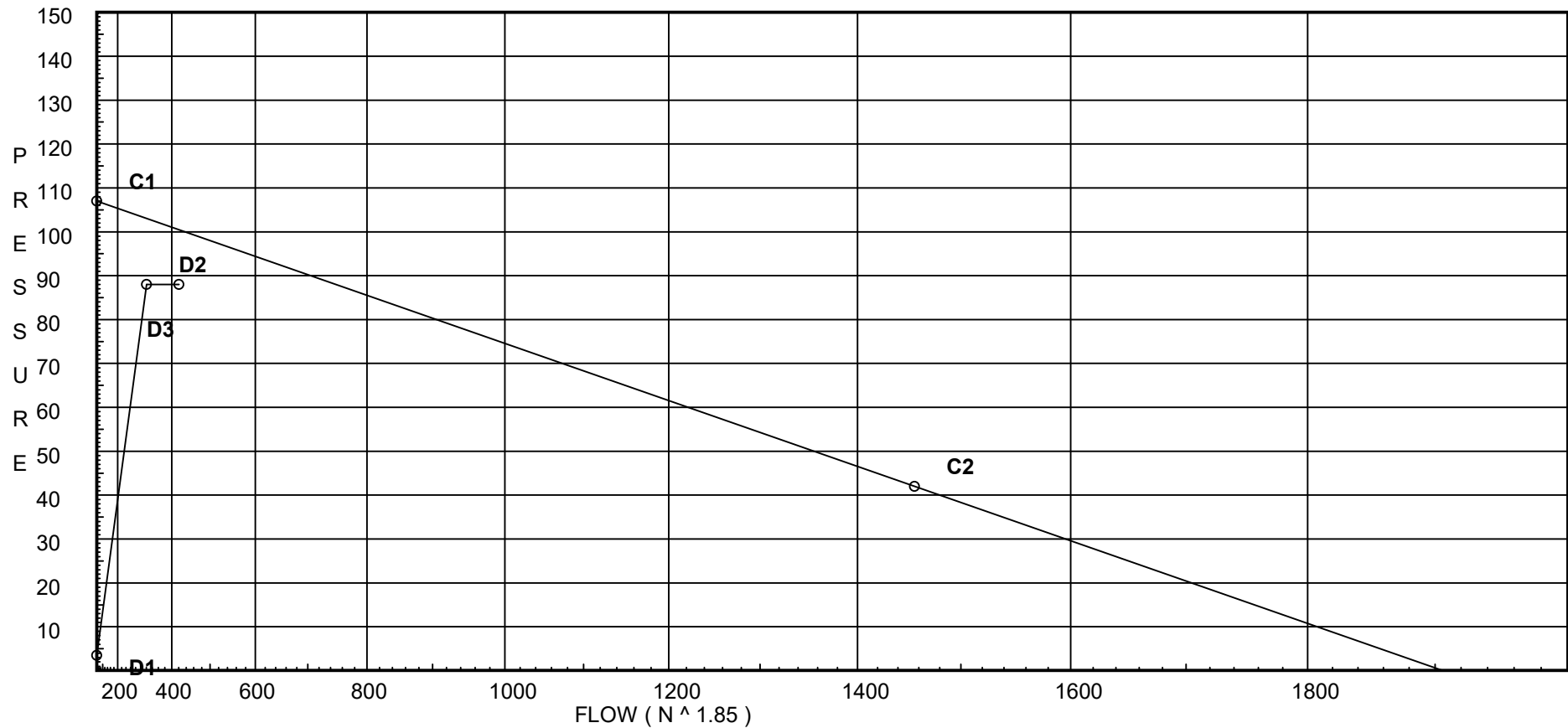
Page 2
Date 07-09-2026

City Water Supply:

C1 - Static Pressure : 107
C2 - Residual Pressure: 42
C2 - Residual Flow : 1456

Demand:

D1 - Elevation : 3.465
D2 - System Flow : 320.799
D2 - System Pressure : 88.021
Hose (Demand) : 100
D3 - System Demand : 420.799
Safety Margin : 12.439



Fittings Used Summary

Crossroads Fire Protection
Antioch Baptist Church

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Fitting Legend

Abbrev.	Name	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12	14	16	18	20	24
B	NFPA 13 Butterfly Valve	0	0	0	0	0	6	7	10	0	12	9	10	12	19	21	0	0	0	0	0
E	NFPA 13 90' Standard Elbow	0	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61
Fsp	Flow Switch Potter VSR	Fitting generates a Fixed Loss Based on Flow																			
G	NFPA 13 Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
S	NFPA 13 Swing Check	0	0	5	7	9	11	14	16	19	22	27	32	45	55	65					
T	NFPA 13 90' Flow thru Tee	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121

Units Summary

Diameter Units	Inches
Length Units	Feet
Flow Units	US Gallons per Minute
Pressure Units	Pounds per Square Inch

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with *. The fittings marked with a * show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a * will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

Flow Summary - NFPA

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SUPPLY ANALYSIS

<i>Node at Source</i>	<i>Static Pressure</i>	<i>Residual Pressure</i>	<i>Flow</i>	<i>Available Pressure</i>	<i>Total Demand</i>	<i>Required Pressure</i>
TEST	107.0	42	1456.0	100.46	420.8	88.021

NODE ANALYSIS

<i>Node Tag</i>	<i>Elevation</i>	<i>Node Type</i>	<i>Pressure at Node</i>	<i>Discharge at Node</i>	<i>Notes</i>	
H21	9.0	5.6	16.14	22.5	0.1	225
H22	9.0	5.6	17.5	23.43	0.1	225
H23	8.666	5.6	22.15	26.35	0.1	225
H24	9.0	5.6	16.31	22.62	0.1	225
H25	9.0	5.6	18.75	24.25	0.1	225
H26	8.666	5.6	23.28	27.02	0.1	225
H27	9.0	5.6	17.7	23.56	0.1	225
H28	9.0	5.6	19.18	24.53	0.1	225
H29	9.0	5.6	23.62	27.22	0.1	225
H30	9.0	5.6	17.42	23.37	0.1	225
H31	9.0	5.6	17.63	23.52	0.1	225
H32	9.0	5.6	18.75	24.25	0.1	225
H33	8.666	5.6	25.33	28.18	0.1	225
21	9.625		19.17			
22	9.625		20.79			
24	9.625		19.37			
25	9.625		21.33			
27	9.625		21.02			
28	9.625		22.78			
30	9.625		21.04			
32	9.625		21.34			
L1	8.666		23.64			
23	8.666		23.77			
L2	8.666		23.95			
26	8.666		24.99			
L3	8.666		25.85			
L4	8.666		26.19			
29	8.666		26.3			
M1	8.666		27.28			
33	9.625		26.97			
M2	9.625		58.57			
TOR	9.625		58.85			
BOR	1.0		70.26			
BF	1.0		81.45			
RI	1.0		81.78			
UG1	-1.0		88.01			
TEST	1.0		88.02	100.0		

Final Calculations : Hazen-Williams

Crossroads Fire Protection
Antioch Baptist Church

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
H21 to 21	9 9.625	5.60	22.50 22.5	1 1.049	E T Eql	2.0 5.0 12.0	1.375 19.000 20.375	120 0.1618	16.143 -0.271 3.297		Vel = 8.35	
21			0.0 22.50						19.169		K Factor = 5.14	
H22 to 22	9 9.625	5.60	23.43 23.43	1 1.049	E T Eql	2.0 5.0 12.0	1.375 19.000 20.375	120 0.1744	17.505 -0.271 3.554		Vel = 8.70	
22			0.0 23.43						20.788		K Factor = 5.14	
H23 to 23	8.666 8.666	5.60	26.35 26.35	1 1.049	E T	2.0 5.0	0.500 7.000 7.500	120 0.2167	22.148 0.0 1.625		Vel = 9.78	
23			0.0 26.35						23.773		K Factor = 5.40	
H24 to 24	9 9.625	5.60	22.62 22.62	1 1.049	E T Eql	2.0 5.0 12.0	1.375 19.000 20.375	120 0.1634	16.315 -0.271 3.330		Vel = 8.40	
24			0.0 22.62						19.374		K Factor = 5.14	
H25 to 25	9 9.625	5.60	24.25 24.25	1 1.049	E Eql	2.0 12.0	1.375 14.000 15.375	120 0.1858	18.748 -0.271 2.857		Vel = 9.00	
25			0.0 24.25						21.334		K Factor = 5.25	
H26 to 26	8.666 8.666	5.60	27.02 27.02	1 1.049	E T	2.0 5.0	0.500 7.000 7.500	120 0.2271	23.283 0.0 1.703		Vel = 10.03	
26			0.0 27.02						24.986		K Factor = 5.41	
H27 to 27	9 9.625	5.60	23.56 23.56	1 1.049	E T Eql	2.0 5.0 12.0	1.375 19.000 20.375	120 0.1762	17.698 -0.271 3.590		Vel = 8.75	
27			0.0 23.56						21.017		K Factor = 5.14	
H28 to 28	9 9.625	5.60	24.53 24.53	1 1.049	E T Eql	2.0 5.0 12.0	1.375 19.000 20.375	120 0.1898	19.182 -0.271 3.868		Vel = 9.11	
28			0.0 24.53						22.779		K Factor = 5.14	
H29 to 29	9 8.666	5.60	27.22 27.22	1 1.049	E T	2.0 5.0	4.000 7.000 11.000	120 0.2301	23.625 0.145 2.531		Vel = 10.10	
29			0.0 27.22						26.301		K Factor = 5.31	
H30 to 30	9 9.625	5.60	23.37 23.37	1 1.049	E T Eql	2.0 5.0 12.0	3.375 19.000 22.375	120 0.1736	17.421 -0.271 3.885		Vel = 8.68	

Final Calculations : Hazen-Williams

Crossroads Fire Protection
Antioch Baptist Church

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
30			0.0 23.37						21.035		K Factor = 5.10	
H31 to 30	9 9.625	5.60	23.52	1	E T Eql	2.0 5.0 12.0	1.917 19.000 20.917	120	17.633 -0.271 3.673		Vel = 8.73	
30			0.0 23.52						21.035		K Factor = 5.13	
H32 to 32	9 9.625	5.60	24.25	1	E Eql	2.0 12.0	1.375 14.000 15.375	120	18.752 -0.271 2.858		Vel = 9.00	
32			0.0 24.25						21.339		K Factor = 5.25	
H33 to 33	8.666 9.625	5.60	28.18	1	E T	2.0 5.0	1.375 7.000 8.375	120	25.330 -0.415 2.055		Vel = 10.46	
33			0.0 28.18						26.970		K Factor = 5.43	
21 to 22	9.625 9.625		22.50	1			10.000 10.000	120	19.169 0.0 1.619		Vel = 8.35	
22 to L1	9.625 8.666		23.43	1.25	E T	3.0 6.0	6.290 9.000 15.290	120	20.788 0.415 2.436		Vel = 9.85	
L1			0.0 45.93						23.639		K Factor = 9.45	
24 to 25	9.625 9.625		22.62	1			12.000 12.000	120	19.374 0.0 1.960		Vel = 8.40	
25 to L2	9.625 8.666		24.25	1.25	E T	3.0 6.0	4.290 9.000 13.290	120	21.334 0.415 2.199		Vel = 10.05	
L2			0.0 46.87						23.948		K Factor = 9.58	
27 to 28	9.625 9.625		23.56	1			10.000 10.000	120	21.017 0.0 1.762		Vel = 8.75	
28 to L3	9.625 8.666		24.53	1.25	E T	3.0 6.0	6.290 9.000 15.290	120	22.779 0.415 2.652		Vel = 10.32	
L3			0.0 48.09						25.846		K Factor = 9.46	
30 to 32	9.625 9.625		46.89	1.25			1.833 1.833	120	21.035 0.0 0.304		Vel = 10.06	
32 to L4	9.625 8.666		24.25	1.5	E T	4.0 8.0	14.250 12.000 26.250	120	21.339 0.415 4.435		Vel = 11.21	

Final Calculations : Hazen-Williams

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Antioch Baptist Church

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Date 07-09-2026

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
L4			0.0 71.14						26.189		K Factor = 13.90	
L1 to 23	8.666 8.666		45.93 45.93	2 2.157			7.417 7.417	120 0.0181	23.639 0.0 0.134		Vel = 4.03	
23 to L2	8.666 8.666		26.35 72.28	2 2.157			4.167 4.167	120 0.0420	23.773 0.0 0.175		Vel = 6.35	
L2 to 26	8.666 8.666		46.87 119.15	2 2.157			9.833 9.833	120 0.1056	23.948 0.0 1.038		Vel = 10.46	
26 to L3	8.666 8.666		27.02 146.17	2 2.157			5.580 5.580	120 0.1541	24.986 0.0 0.860		Vel = 12.83	
L3 to M1	8.666 8.666		48.09 194.26	2 2.157			5.500 5.500	120 0.2607	25.846 0.0 1.434		Vel = 17.06	
M1			0.0 194.26						27.280		K Factor = 37.19	
L4 to 29	8.666 8.666		71.14 71.14	2 2.157			2.750 2.750	120 0.0407	26.189 0.0 0.112		Vel = 6.25	
29 to M1	8.666 8.666		27.22 98.36	2 2.157	T	12.307	0.917 12.307 13.224	120 0.0740	26.301 0.0 0.979		Vel = 8.64	
M1 to 33	8.666 9.625		194.26 292.62	2.5 2.635			0.500 0.500	120 0.2100	27.280 -0.415 0.105		Vel = 17.22	
33 to M2	9.625 9.625		28.18 320.8	2.5 2.635	2E T	16.474 16.474	94.042 32.948 126.990	120 0.2489	26.970 0.0 31.605		Vel = 18.87	
M2 to TOR	9.625 9.625		0.0 320.8	3 3.26			3.083 3.083	120 0.0882	58.575 0.0 0.272		Vel = 12.33	
TOR to BOR	9.625 1		0.0 320.8	3 3.26	B S Fsp E	13.44 21.503 0.0 9.408	8.625 44.351 52.976	120 0.0883	58.847 6.735 4.677		** Fixed Loss = 3 Vel = 12.33	
BOR to BF	1 1		0.0 320.8	3 3.26	E	9.408	4.042 9.408 13.450	120 0.0883	70.259 10.000 1.187		** Fixed Loss = 10 Vel = 12.33	
BF to RI	1 1		0.0 320.8	4 4.1	E	14.534	1.000 14.534 15.534	140 0.0217	81.446 0.0 0.337		Vel = 7.80	
RI to UG1	1 -1		0.0 320.8	4 4.1	E T G	14.534 29.067 2.907	200.000 46.508 246.508	140 0.0217	81.783 0.866 5.357		Vel = 7.80	
UG1 to TEST	-1 1		0.0 320.8	8 8.27	E G	28.468 6.326	1200.000 34.794 1234.794	140 0.0007	88.006 -0.866 0.881		Vel = 1.92	

Final Calculations : Hazen-Williams

Crossroads Fire Protection
Antioch Baptist Church

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Date 07-09-2026

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
			100.00							Qa = 100.00		
TEST			420.80							88.021	K Factor = 44.85	

FIRE HYDRANT FLOW TEST RESULTS

TEST LOCATION

Address: 6677 Old US 421, Lillington

Proposed Tap Location: _____

Requested Flow Location: nearest hydrant to the proposed point of connection

APPLICANT

Name: Crossroads Fire Protection

Address: 809 S Market Street, Benson, NC 27504

Contact Person: Dennis Nelson Phone: 919.207.3855 Fax: 919.207.3856

TESTING AGENT

Firm Name: Andrew King Engineering, PLLC

Address: 5917 Shedd Drive, Raleigh, North Carolina 27603

Phone: (919) 906-5236 Email: Drew@AndrewKingEngineering.com

SYSTEM ANALYSIS

Main Size: 8"

Elevation of Test Location: 334' +/-

Nearest Elevated Tank: WC Tank 1

Time of Test: 9:10 AM

Tank Elevation: 599.8' (19.3')

Pressure Zone: 610' (29.5')

Theoretical Pressure: 115.1 psi

Calculated by: Drew King

Witnessed by: James Lowery

RESULTS

Static Pressure: 107 psi

3.05" Pitotless Nozzle Reading: 15 psi

Residual Pressure: 42 psi

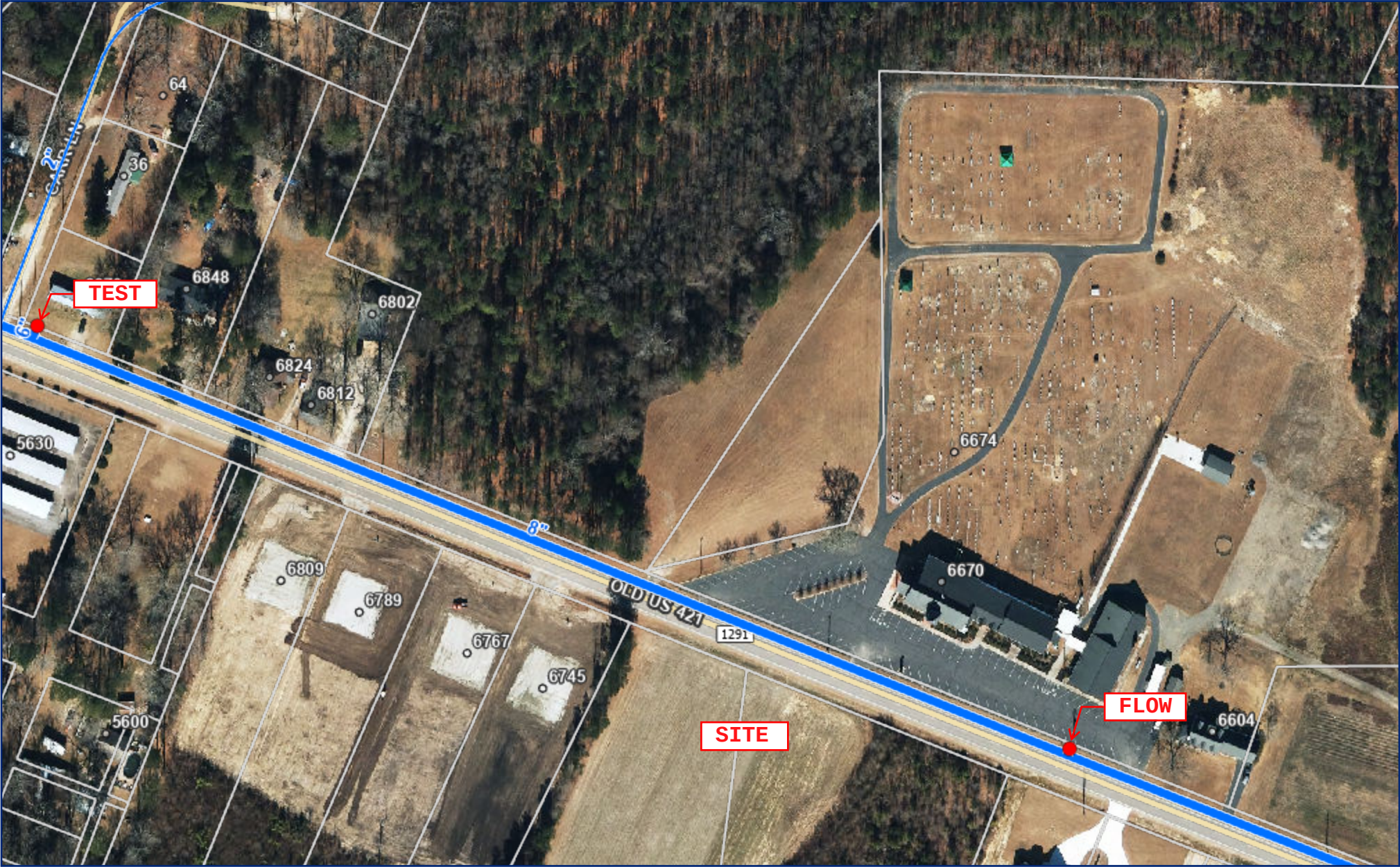
Volume: 1,456 gpm

Disclaimer: These results are an instantaneous snap-shot of the system. It is recommended that the designer allow adequate safety to include low tank level.

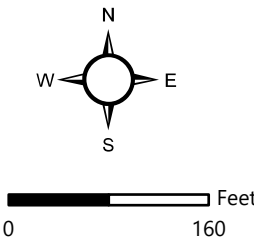
Comments: Flowed (1) BigBoy Hose Monster. C = 1.35

Completed by: Drew King

Date: 6/17/2026



County Boundary	2 - 5	Road Centerlines
Address Numbers	6 - 36	Parcels
	Fire Hydrants	



Hydrant Flow Test Report

Test Date 6/17/2026

Test Time 9:10 AM

Location

6677 Old US 421
Lillington, NC

Tested by

Andrew King Engineering, PLLC
5917 Shedd Drive
Raleigh, NC 27603
Drew@AndrewKingEngineering.com
919-906-5236

Notes

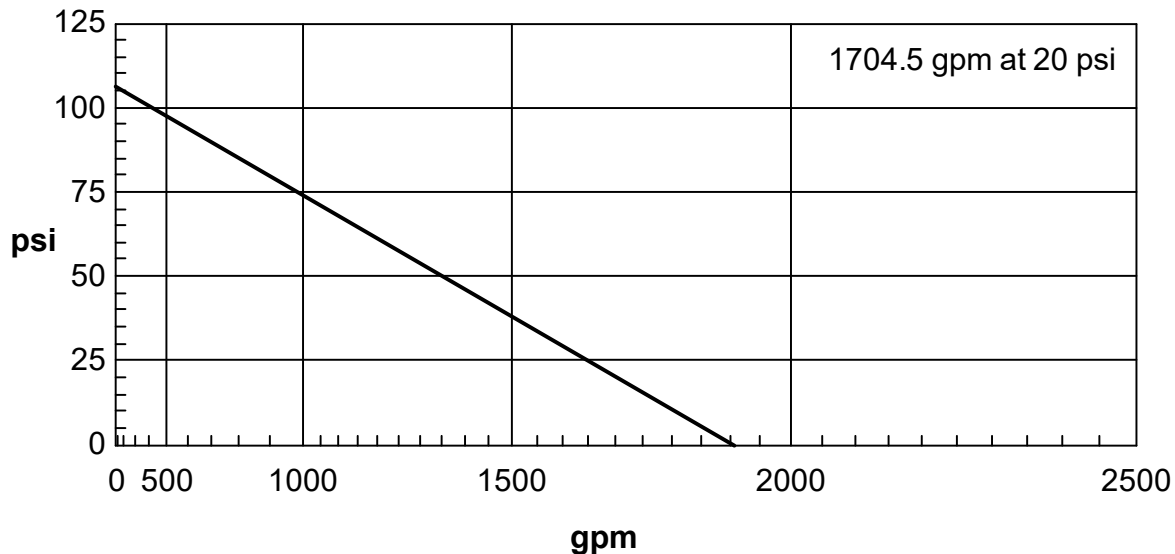
Read Hydrant

107 psi **static pressure**
42 psi **residual pressure**
334 ft **hydrant elevation**

Flow Hydrant(s)

Outlet	Elev	Size	C	Pitot Pressure	Flow
#1	331	3.05	1.35	15	1456 gpm

Flow Graph





THIS DEVICE IS FM APPROVED

The pressure vs. flow rate data developed within this flow chart is based on the average K-factor measured during laboratory testing. This data has been determined to be within the acceptable limitations for accuracy. It is the user's responsibility to verify that the correct chart and column is being used.

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FIRE PUMP TESTING SOFTWARE

Professional-grade software that helps you work better! Keep your reports clean, your results accurate, and your process streamlined with Hose Monster's FPT Software.

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PSI	GPM
5	856
6	938
7	1013
8	1083
9	1149
10	1211
11	1270
12	1303
13	1356
14	1407
15	1456
16	1504
17	1550
18	1595
19	1639
20	1682
21	1723
22	1764
23	1803
24	1842
25	1880
26	1917
27	1954
28	1990
29	2025
30	2059

PSI	GPM
31	2093
32	2127
33	2160
34	2192
35	2224
36	2256
37	2287
38	2318
39	2323
40	2353
41	2382
42	2411
43	2439
44	2468
45	2495
46	2523
47	2550
48	2577
49	2604
50	2630
51	2657
52	2683
53	2708
54	2734
55	2759

COEFFICIENT AND K-FACTOR TABLE FOR VARIOUS FLOW DEVICES

PITOTLESS NOZZLE™	K-FACTOR	COEFFICIENT	ORIFICE DIAMETER	psi RANGE	FLOW RANGE (GPM)
2" Pitotless Nozzle + Little Hose Monster	156.0	1.31	2"	10-70	493-1305
2" Pitotless Nozzle + 2 1/2" Hose Monster	164.8	1.38	2"	10-70	521-1379
2" Pitotless Nozzle + Open Atmosphere	167.2	1.40	2"	10-70	529-1399
1 3/4" Pitotless Nozzle + Little Hose Monster	104.7	1.15	1.75"	10-80	331-936
1 3/4" Pitotless Nozzle + 2 1/2" Hose Monster	106.6	1.17	1.75"	10-80	337-953
1 3/4" Pitotless Nozzle + Open Atmosphere	109.7	1.20	1.75"	10-80	347-981
1 1/8" Pitotless Nozzle + Little Hose Monster	37.2	0.98	1.125"	10-80	83-333
1 1/8" Pitotless Nozzle + 2 1/2" Hose Monster	37.4	0.99	1.125"	10-80	84-335
1 1/8" Pitotless Nozzle + Open Atmosphere	37.0	0.98	1.125"	10-80	83-331
1" Pitotless Nozzle + Little Hose Monster	27.2	0.91	1"	3-80	47-243
1" Pitotless Nozzle + 2 1/2" Hose Monster	27.6	0.93	1"	3-80	48-247
1" Pitotless Nozzle + Open Atmosphere	27.7	0.93	1"	3-80	48-248

IN-LINE PITOTLESS NOZZLE™	K-FACTOR	COEFFICIENT	ORIFICE DIAMETER	psi RANGE	FLOW RANGE (GPM)
2" In-line Pitotless Nozzle	165.3	1.38	2"	10-75	523-1432
1 3/4" In-line Pitotless Nozzle	109.9	1.20	1.75"	5-80	246-983
1 1/8" In-line Pitotless Nozzle	38.4	1.02	1.125"	5-70	86-321
1 1/2" In-line Pitotless Nozzle	31.7	1.06	1.0"	2-90	45-301

BIGBOY HOSE MONSTER™	K-FACTOR	COEFFICIENT	ORIFICE DIAMETER	psi RANGE	FLOW RANGE (GPM)
5-11psi (BigBoy Hose Monster)	382.9	1.38	3.05"	5-11	856-1270
12-38psi (BigBoy Hose Monster)	376.0	1.35	3.05"	12-38	1303-2318
39-55psi (BigBoy Hose Monster)	372.0	1.34	3.05"	39-55	2323-2759

NOTE: Due to the shape and size of the BigBoy Pitotless Nozzle, the BigBoy Hose Monster uses three different K-factors over its operating range.

2 1/2" Hose Monster®	K-FACTOR	COEFFICIENT	ORIFICE DIAMETER	psi RANGE	FLOW RANGE (GPM)
2 1/2" Hose Monster	168.67	0.906	2.5"	10-70	533-1411
1 3/4" Nozzle Insert	89.04	0.975	1.75"	10-70	282-745
1 1/8" Nozzle Insert	37.36	0.990	1.25"	10-70	118-313

4" & 4 1/2" Hose Monster®	K-FACTOR	COEFFICIENT	CONNECTION DIAMETER	psi RANGE	FLOW RANGE (GPM)
4 1/2" Hose Monster	331.07	0.548	4.5"	10-70	1047-2770
4" Hose Monster	339.65	0.712	4"	10-70	1074-2842

USING SOFTWARE

Use the table to the right if you are using software that requires the coefficient input to be less than '1.0.' Notice that the orifice diameter must be changed from its true diameter in order to accommodate the lower coefficient. This is necessary only for the 2" Pitotless Nozzle and the 3/4" Pitotless Nozzle.

DEVICE	COEFFICIENT	ORIFICE DIAMETER
--------	-------------	------------------

2" Pitotless Nozzle + Little Hose Monster	0.99	2.30"
2" Pitotless Nozzle + 2 1/2" Hose Monster	0.99	2.36"
2" Pitotless Nozzle + Open Atmosphere	0.99	2.38"
1 3/4" Pitotless Nozzle + Little Hose Monster	0.99	1.88"
1 3/4" Pitotless Nozzle + 2 1/2" Hose Monster	0.99	1.90"
1 3/4" Pitotless Nozzle + Open Atmosphere	0.99	1.93"

NOTE: If your software uses the Theoretical Discharge Formula, found in NFPA 291, 4.7.3, the coefficient of discharge can be used to produce flow rates that will match our flow charts.

A HAND-HELD PITOT DIRECTLY AT A HYDRANT OUTLET

OUTLET TYPE	COEFFICIENT
Outlet smooth and rounded	0.9
Outlet square and sharp	0.8
Outlet square and projecting into barrel	0.7
If a stream straightener is used	0.95

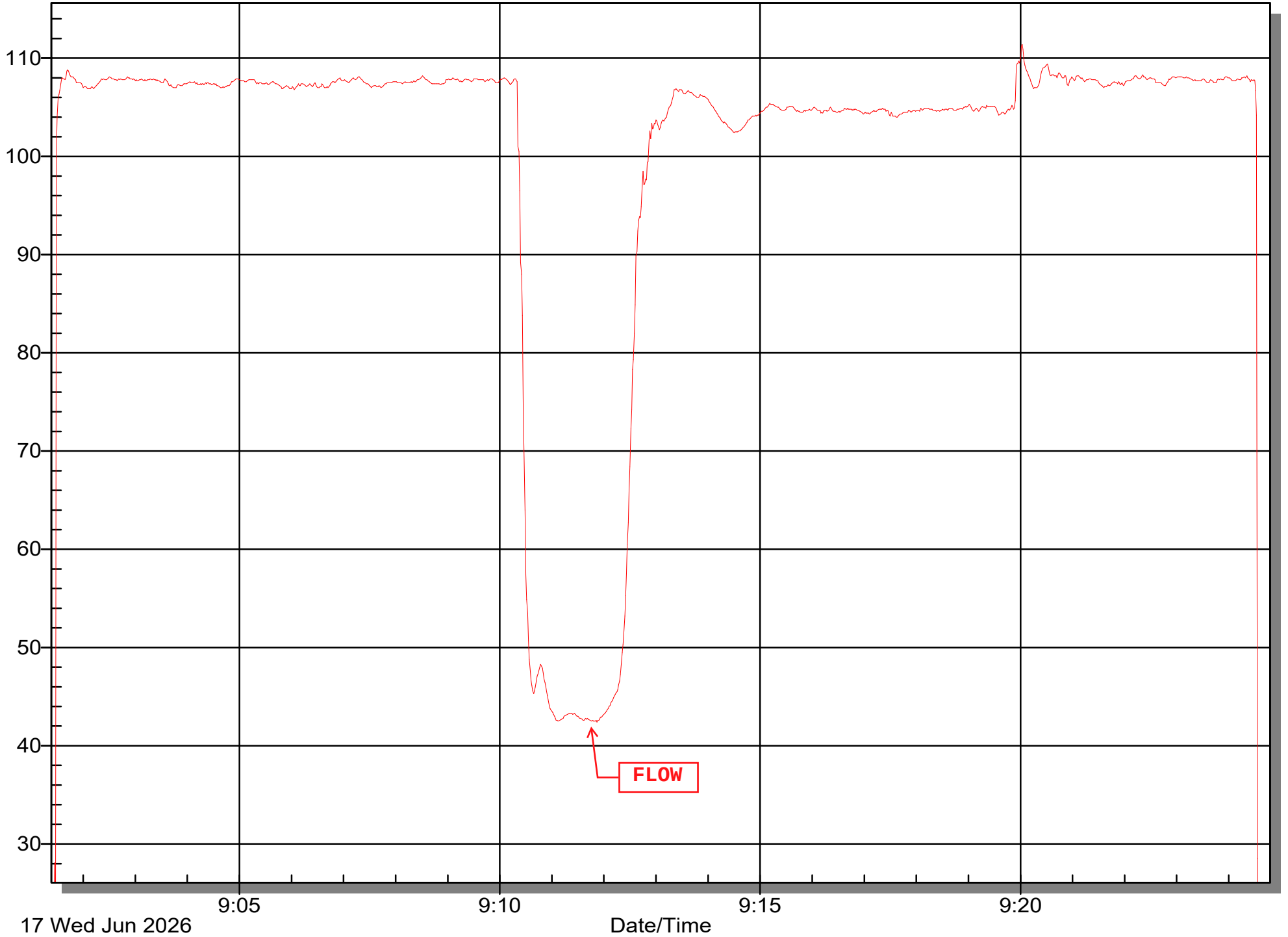
CLASSIFYING AND MARKING OF HYDRANTS

Rated Capacity at 20psi	Class	Marking Color of Hydrant Tops and Nozzles
≥1500 GPM	AA	Light Blue
1000-1499 GPM	A	Green
500-999 GPM	B	Orange
≤499 GPM	C	Red

The above are the NFPA hydrant classifications and color marking for various rated capacities. Source NFPA 291, Chapter 5 2019

6677 Old US 421, Lillington flow test - Wednesday, June 17, 2026

AKE1-Pressure/psig Min: -0.2 Max: 111.4

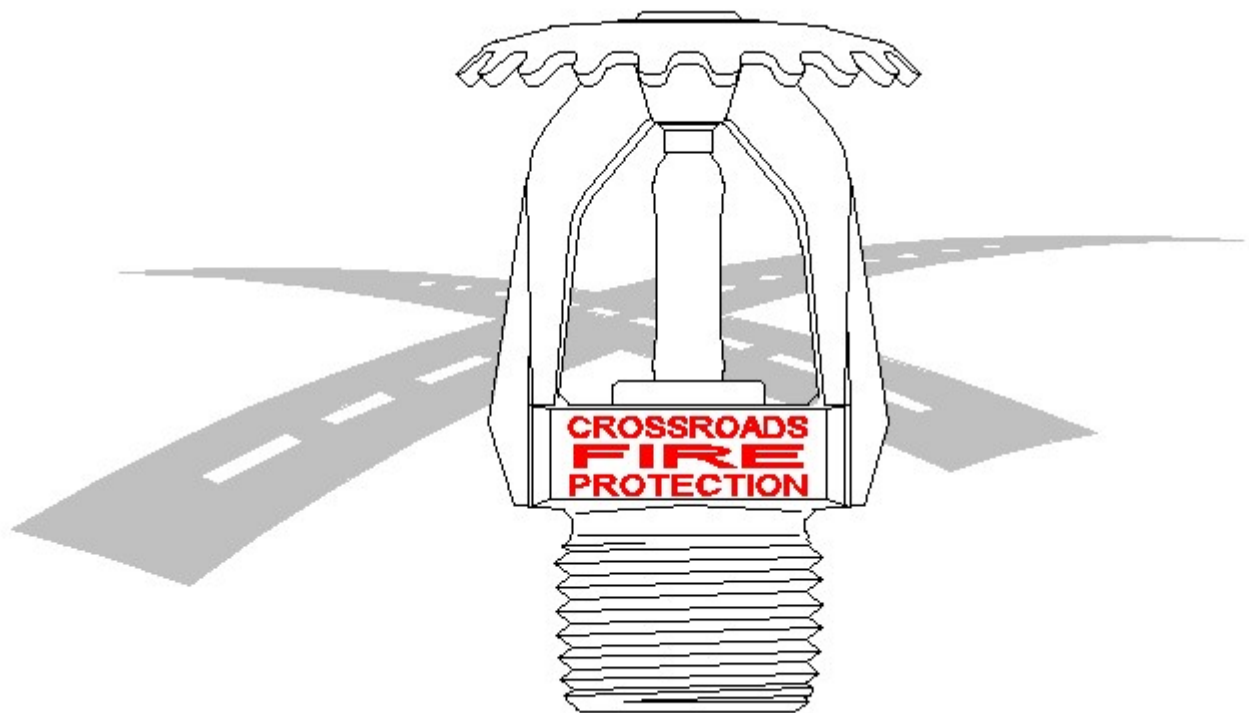


Materials Submittal Data

Antioch Baptist Church

6670 Old US 421

Lillington, NC 27546



CROSSROADS FIRE PROTECTION

BENSON, NC

919-207-3855

dnelson@crossroadsfire.net

Job Name _____

Contractor _____

Job Location _____

Approval _____

Engineer _____

Contractor's P.O. No. _____

Approval _____

Representative _____

LEAD FREE*

Deringer™ 50

Reduced Pressure Detector Assembly

Sizes: 2" – 8"

The Deringer™ 50 Reduced Pressure Detector Assembly (RPDA-II) prevents non-health hazard pollutants and hazardous contaminants entering a potable water supply system when backpressure and/or backsiphonage conditions occur. Used primarily on fire sprinkler systems when monitoring of unauthorized water use is required.

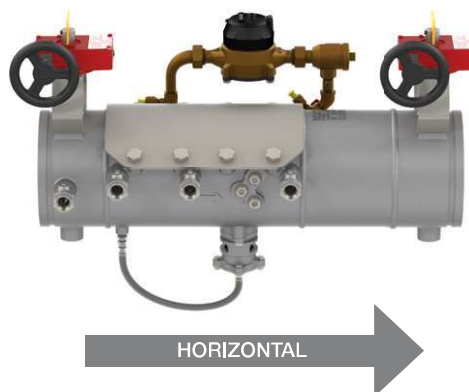
Features

- Integral shutoff valves indoor/outdoor application
- 100% stainless steel housing
- Tamper-resistant test cocks
- Stainless steel braided wire sensing line
- Patented Dual-action™ second check module
 - Poppet action at low flow
 - Swing action at high flow
- Balanced chamber Relief Valve
 - No sliding seals
- Poppet action first check for more reliable Relief Valve closure
- Lead free bronze bypass components
- CuFt or gallons bypass meter
- Single check bypass
- Prewired supervisory switches
- Flanged adapters available
- IPS grooved ends

*The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.

NOTICE

The information contained herein is not intended to replace the full product installation and safety information available or the experience of a trained product installer. You are required to thoroughly read all installation instructions and product safety information before beginning the installation of this product.



Approved for Fire Protection, Waterworks, Plumbing, and Irrigation Applications!

Specifications

The Deringer 50 Reduce Pressure Detector Assembly (RPDA) valve shall utilize two independent check modules and two integral resiliently seated shutoff valves all of which shall be contained within a single rigid valve housing constructed entirely of 304 stainless steel. Both integral shutoff valves shall include prewired supervisory tamper switches contained within a weatherproof actuator housing approved for both indoor and outdoor use. Dual-action second check module shall operate as a "poppet style" check under low flow conditions, operate as a "swing style" check under high flow conditions and utilize replaceable silicone elastomer sealing discs. Assembly test cocks shall be handle-less and operate via a tamper resistant actuator. Assembly shall have a single full access service port and cover with an "inline" replaceable elastomer seal. All bypass assembly components shall be lead free and include a meter registering either gallons or cubic feet, a single check valve and required test cocks. The Relief Valve shall operate using only static seals (zero dynamic/sliding seals). All wetted surface Relief Valve components shall be constructed of stainless steel. Assembly shall be serviceable without special tools.

Ames Fire & Waterworks product specifications in U.S. customary units and metric are approximate and are provided for reference only. For precise measurements, please contact Ames Fire & Waterworks Technical Service. Ames Fire & Waterworks reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligation to make such changes and modifications on Ames Fire & Waterworks products previously or subsequently sold.



Materials

Valve Housing:	304 Stainless Steel
Valve Cover:	304 Stainless Steel
SOV Disks:	EPDM/304SS
SOV Shafts:	304 Stainless Steel
Bypass Spring:	302 Stainless Steel
RV Spring:	302 Stainless Steel
SOV Bearings:	Teflon® fluoropolymer/Bronze
Non-wetted Bolts:	Grade 8 Zinc Plated
Check Disks:	Silicone (NSF)
Wetted Fasteners:	18-8 Stainless Steel
Bypass Components:	Lead Free Bronze
RV Housing:	304 Stainless Steel
Check Springs:	17-7 Stainless Steel
Check Pins:	17-7/18-8 Stainless Steel
Check Seats:	Noryl® Polymer (NSF)
O-rings:	Buna-N (NSF)
Bypass Internals:	ABS Polymer (NSF)
RV Hose:	Braided Stainless Steel Wire

Pressure — Temperature

Temperature Range: 33°F – 140°F

Working Pressure: 10 – 175psi

Standards

AWWA C511-07 Compliant
NSF/ANSI 372, UL CERTIFIED
LEAD FREE

End Connections

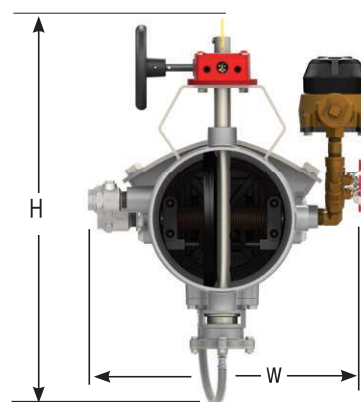
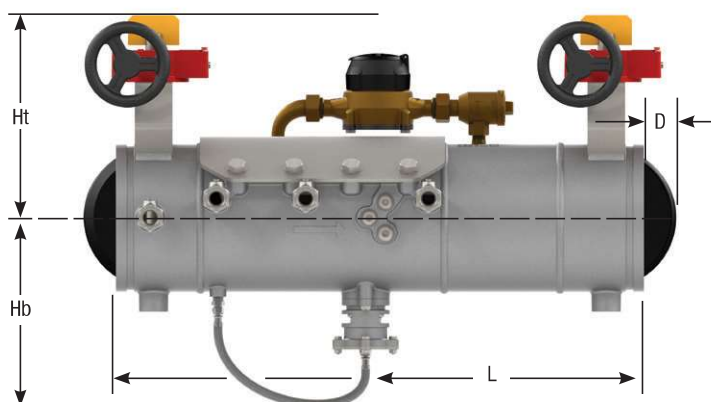
- IPS Groove for Steel Pipe:
AWWA C606

- Flange Adapters:
ANSI B16.1 Class 125



USC
APPROVED

Dimensions — Weights



Size	Model	Ht		Hb		L		D		H		W		Weight	
in.		in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs	kg
2 (2 1/2")	50	9.3	236	8.7	221	22.1	561	0.0	0	18.0	457	12.5	318	59	27
2 1/2	50	7.1	180	8.7	74	18.7	475	0.0	0	15.8	401	11.0	279	47	21
3	50	7.4	188	8.7	74	18.7	475	0.0	0	16.1	409	11.0	279	49	22
4	50	7.9	201	8.7	79	18.7	475	0.2	5	16.6	422	11.0	279	51	23
6	50X*														
8	50	10.4	264	5.4	137	31.0	787	1.8	46	21.1	536	13.8	351	150	68

**2" size utilizes a 2 1/2" assembly with 2 1/2" groove to 2" female NPT adapter and couplings. Adapter and couplings ship unassembled.

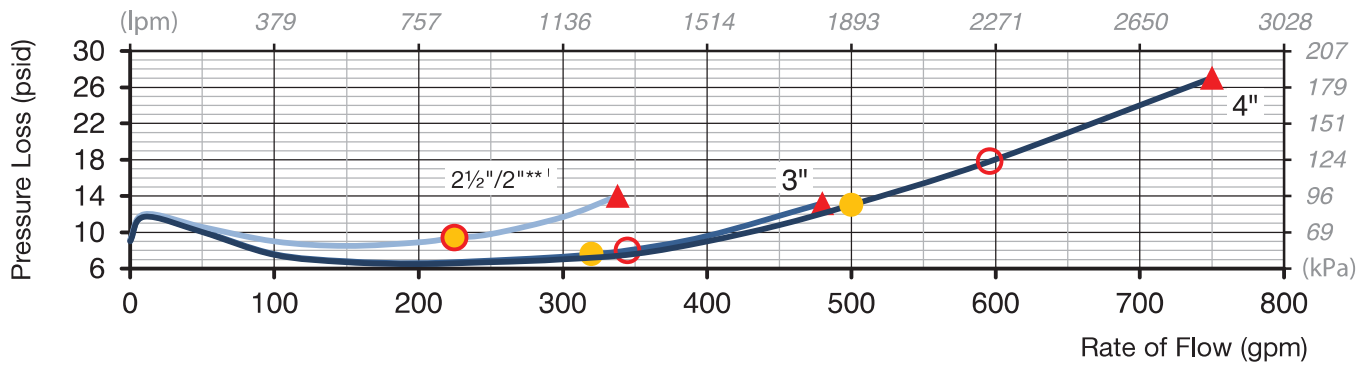
*For 6" models see Series Deringer 50X

Teflon® is a registered trademark of The Chemours Company.

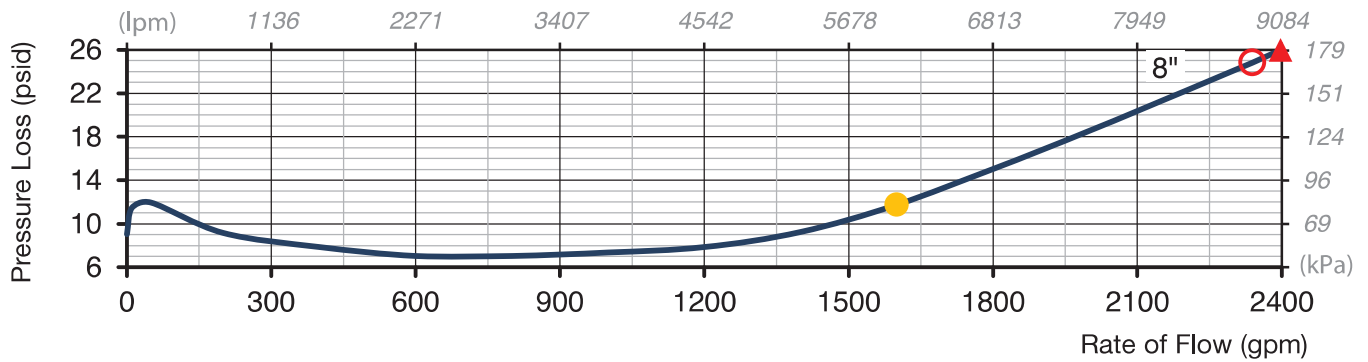
Noryl® is a registered trademark of SABIC Global Technologies B.V.

Flow Performance

● = Rated Flow ▲ = UL Tested ○ = 15 fps



* Specific orientation & agency flow characteristics available on website



* Specific orientation & agency flow characteristics available on website



A WATTS Brand

USA: Backflow T: (978) 689-6066 • F: (978) 975-8350 • AmesFireWater.com
USA: Control Valves T: (713) 943-0688 • F: (713) 944-9445 • AmesFireWater.com
Canada: T: (888) 208-8927 • F: (888) 479-2887 • AmesFireWater.ca
Latin America: T: (52) 55-4122-0138 • AmesFireWater.com



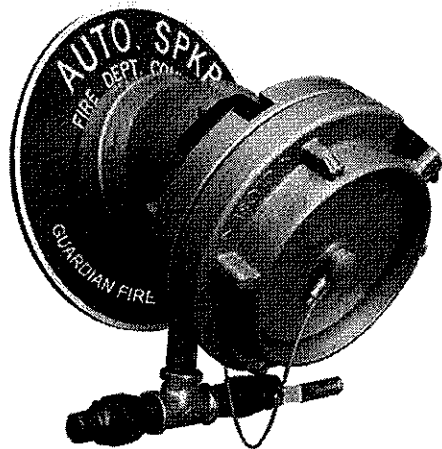
GUARDIAN

FIRE EQUIPMENT, INC.
MIAMI, FL

Ph. 800.327.6584 • Fax 800.827.3869

DETAIL AND SUBMITTAL SHEET

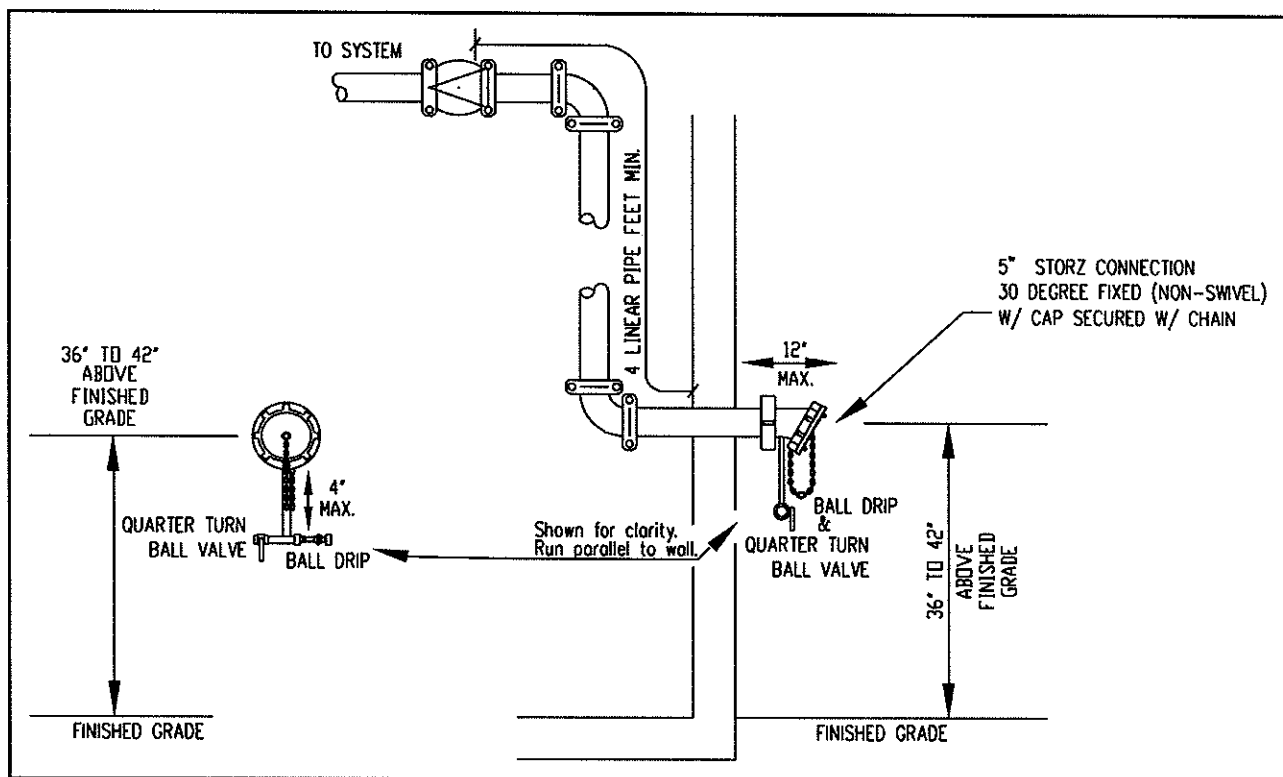
Fire Department Connection for Raleigh, N.C.



Model 6625-R Storz Assembly

Consists:

- 30° aluminum adapter, 4" F. NPT x 5" Storz
- Storz 5" cap and chain, aluminum
- Round 4" wall plate, lettered "AUTO SPKR", red enamel
- Automatic ball drip, 1/2" brass
- Ball valve, 1/2" brass



Model BFV-300/BFV-300C Butterfly Valve Grooved End

IMPORTANT

Refer to Technical Data Sheet TFP2300 for warnings pertaining to regulatory and health information.

Scan the QR code or enter the URL in a web browser to access the most up-to-date electronic version of this document. Data rates may apply.



docs.jci.com/tycofire/tfp1511

General Description

The TYCO Models BFV-300 and BFV-300C Grooved End Butterfly Valves are indicating type valves designed for use in fire protection systems where a visual indication of open or closed valve condition is required. They are used, for example, as system, sectional and pump water control valves. They have grooved inlet and outlet connections that are suitable for use with grooved end pipe couplings listed or approved for fire protection systems.

For applications requiring supervision of the open or closed state of the valve, the Gear Operators for the Model BFV-300/BFV-300C Butterfly Valves feature two sets of factory installed internal switches each having SPDT contacts, see Figure 3. The supervisory switches transfer their electrical contacts when there is movement from the open or closed disc position during the first two revolutions of the handwheel.

Note: If the butterfly valve is required in a foam system, verify the valve is compatible by referring to the foam concentrate manufacturer technical literature for information about foam compatibility, and acceptable system equipment materials of construction.

NOTICE

The Model BFV-300/BFV-300C Grooved End Butterfly Valves 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. Contact the installing contractor or product manufacturer with any questions.

Technical Data

Approvals

UL and ULC Listed
FM Approved
CE Certified
VdS Approved
EAC Approved
CNPP R1 Listed-APSA
Listed by California State Fire Marshall

For specific information about approvals, see Tables A, B, and C.

Note: All laboratory listings and approvals are for indoor and outdoor use.

Sizes

2 in. to 12 in. (DN50 to DN300)

UL/ULC/FM Maximum Working Pressure

2 in.-8 in. (DN50-DN200) . . . 300 psi (20,7 bar)
10 in.-12 in. (DN250-DN300) . . 175 psi (12,1 bar)

VdS Maximum Working Pressure

2 in.-8 in. (DN50-DN200) . . . 300 psi (20,7 bar)
10 in. (DN250) 232 psi (16,0 bar)
12 in. (DN300) 175 psi (12,1 bar)

Maximum Working Temperature

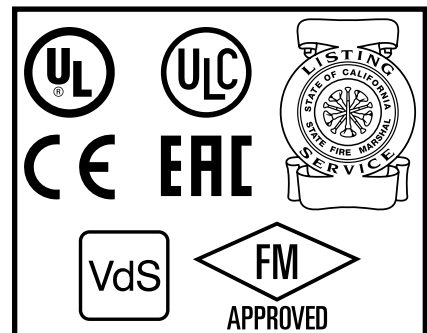
212°F (100°C) in accordance with UL 1091



MODEL BFV-300
OPEN SUPERVISORY SWITCHES



MODEL BFV-300C
CLOSED SUPERVISORY SWITCHES



Nominal Valve Size Inches (DN)	Pipe OD Inches (mm)	Nominal Dimensions Inches (mm)									Weight Lbs. (kg)
		A	B	C	D	E	F	G	H	J	
2 (DN50)	2.37 (60,3)	3.8 (96,4)	10.63 (270)	2.85 (72,5)	4.90 (124,5)	4.92 (125)	4.28 (108,6)	1.99 (50,5)	0	0	10.8 (4,9)
2-1/2 (DN65)	2.88 (73,0)	3.8 (96,4)	11.72 (297,8)	3.35 (85)	5.5 (139,8)	4.92 (125)	4.28 (108,6)	1.99 (50,5)	0	0	13.0 (5,9)
— (DN65)	3 (76,1)	3.8 (96,4)	11.72 (297,8)	3.35 (85)	5.5 (139,8)	4.92 (125)	4.28 (108,6)	1.99 (50,5)	0	0	13.0 (5,9)
3 (DN80)	3.5 (88,9)	3.8 (96,4)	12.22 (310,3)	3.58 (91)	5.76 (146,3)	4.92 (125)	4.28 (108,6)	1.99 (50,5)	0	0	13.9 (6,3)
4 (DN100)	4.5 (114,3)	4.54 (115,4)	13.92 (353,5)	4.29 (109)	6.75 (171,5)	4.92 (125)	4.28 (108,6)	1.99 (50,5)	0	0	17.64 (8,0)
— (DN125)	5.5 (139,7)	5.83 (148)	16 (406,6)	5.16 (131)	7.93 (201,5)	5.91 (150)	5.79 (147)	2.32 (58,9)	0	0	26.4 (11,9)
5 (DN125)	5.56 (141,3)	5.83 (148)	16 (406,6)	5.16 (131)	7.93 (201,5)	5.91 (150)	5.79 (147)	2.32 (58,9)	0	0	26.4 (11,9)
— (DN150)	6.5 (165,1)	5.83 (148)	17.07 (433,6)	5.71 (145)	8.44 (214,5)	5.91 (150)	5.79 (147)	2.32 (58,9)	0	0	30.42 (13,8)
6 (DN150)	6.63 (168,3)	5.83 (148)	17.07 (433,6)	5.71 (145)	8.44 (214,5)	5.91 (150)	5.79 (147)	2.32 (58,9)	0	0	30.42 (13,8)
8 (DN200)	8.63 (219,1)	5.24 (133)	19.67 (499,5)	6.69 (170)	9.29 (236)	8.86 (225)	8.19 (208)	2.76 (70)	5.66 (143,7)	1.24 (31,4)	47.18 (21,4)
10 (DN250)	10.75 (273)	6.26 (159)	22.46 (570,5)	7.68 (195)	11.1 (282)	11.14 (283)	8.19 (208)	2.91 (74)	7.21 (183,1)	1.65 (41,8)	73.41 (33,3)
12 (DN300)	12.75 (323,9)	6.5 (165)	25.39 (645)	9.5 (241,5)	12.2 (310)	11.14 (283)	8.19 (208)	2.91 (74)	9.96 (252,9)	2.7 (68,5)	89.29 (40,5)

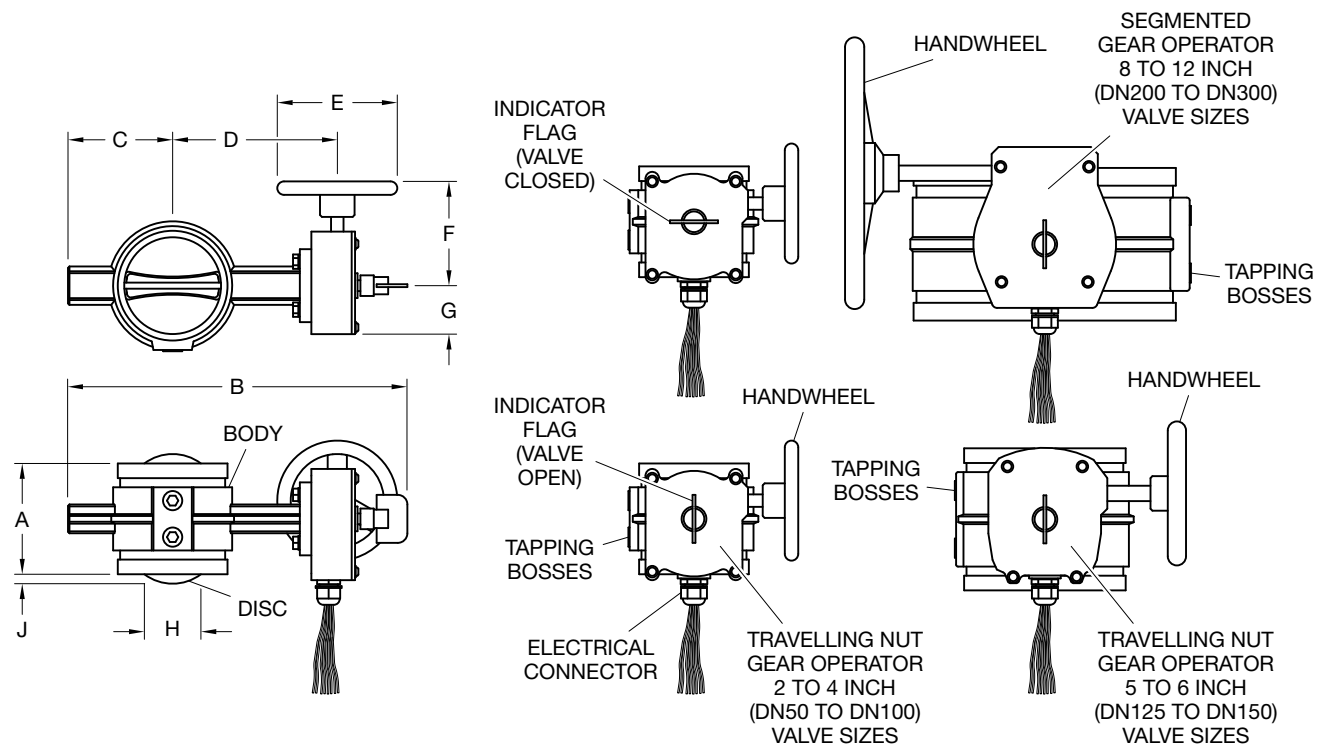
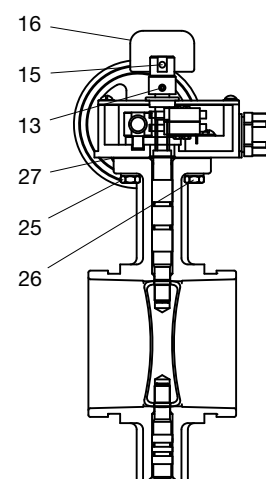
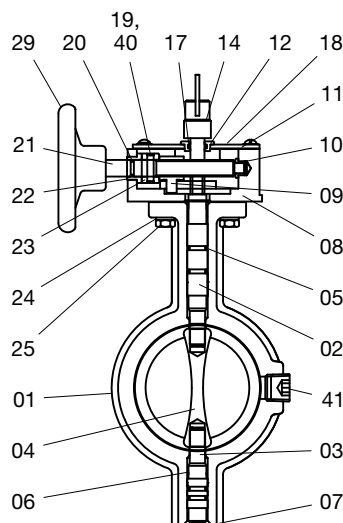
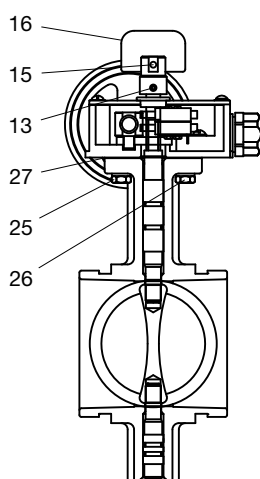
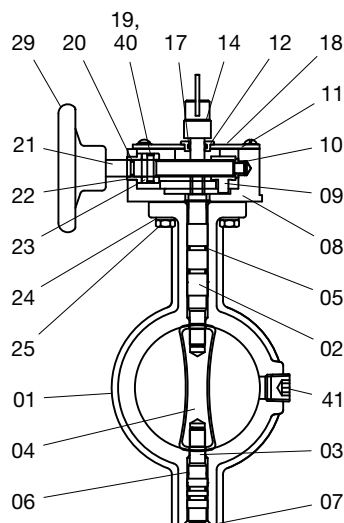
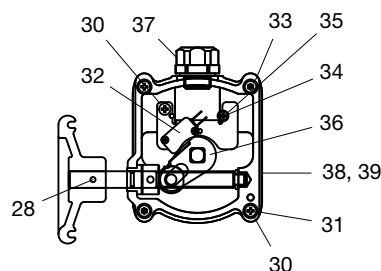
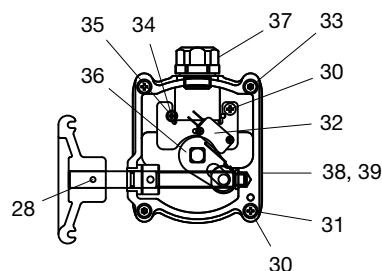


FIGURE 1
MODEL BFV-300/BFV-300C GROOVED END BUTTERFLY VALVE
NOMINAL DIMENSIONS

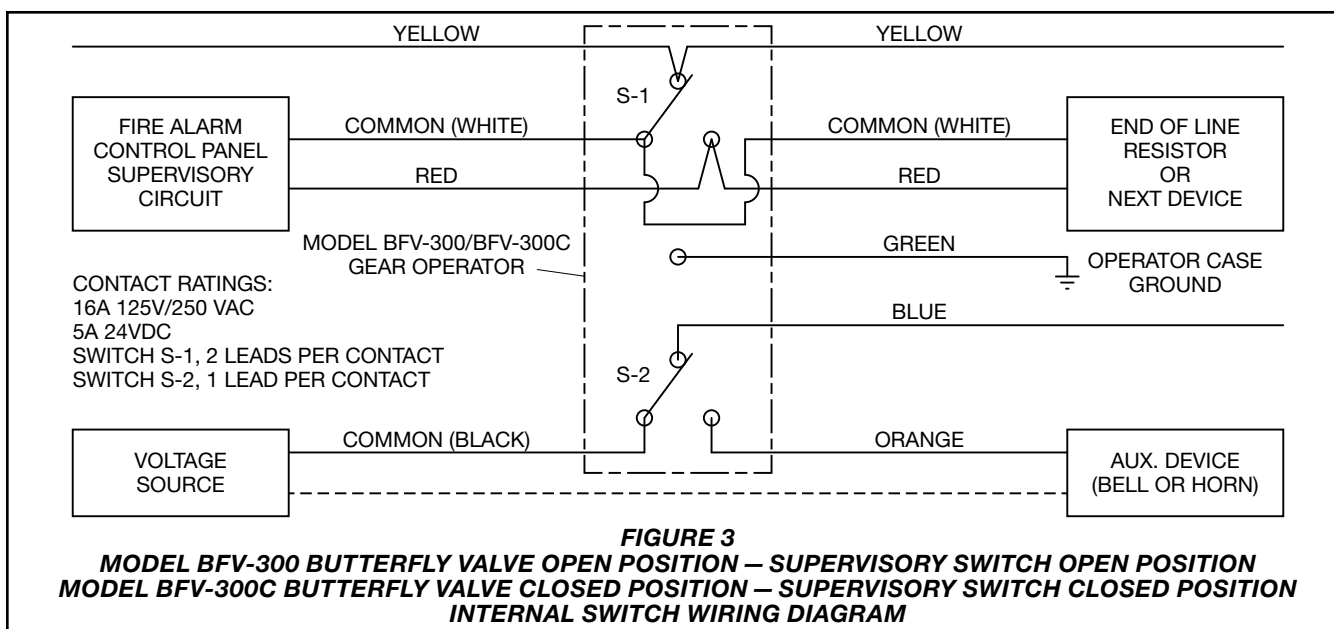
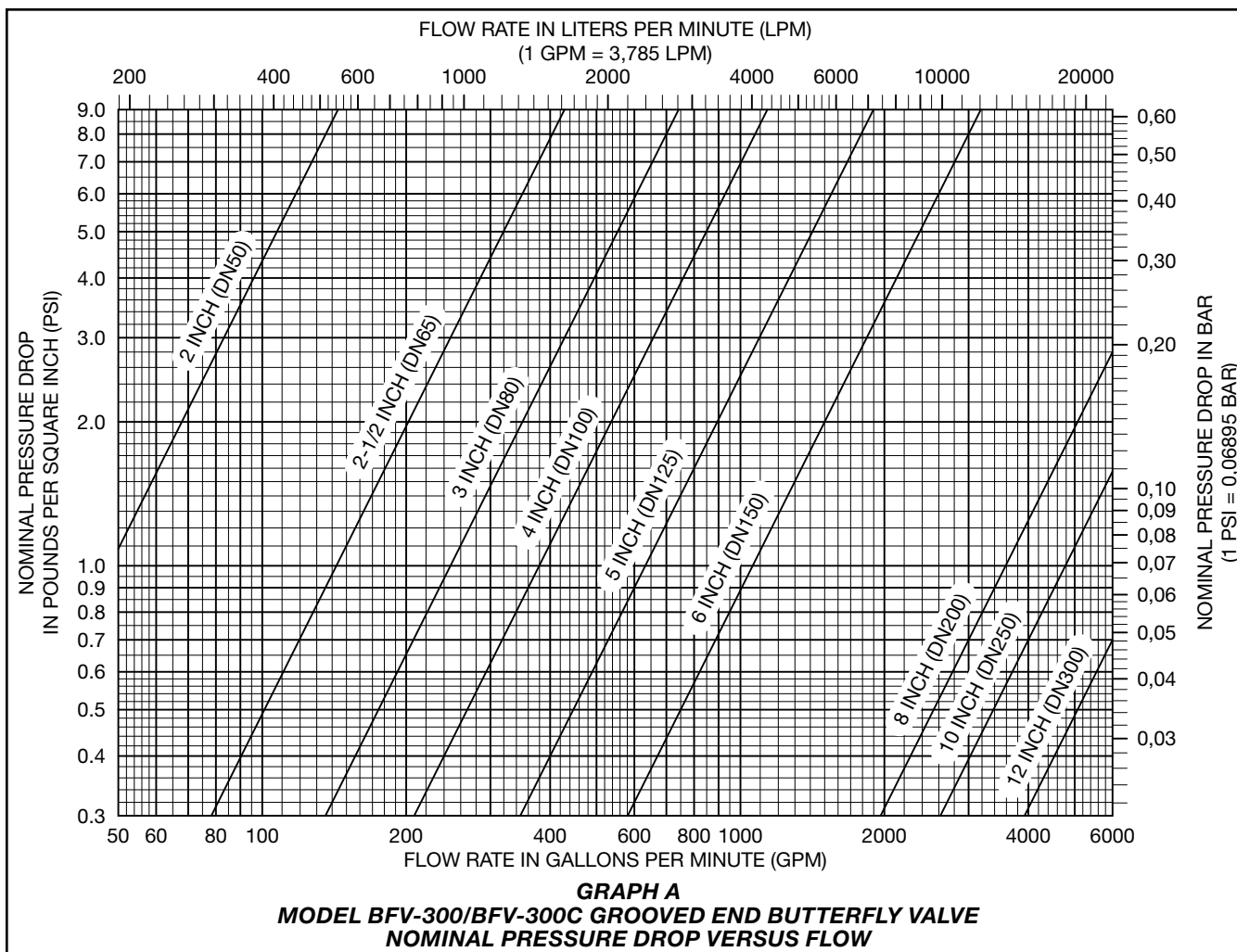
No.	Part	Material	Qty.	No.	Part	Material	Qty.	No.	Part	Material	Qty.
01	Body	ASTM A-536	1	15	Spring Pin	ASTM A-228	1	30	Bolt (Round)	ASTM A-167	3
02	Upper Stem	AISI 410	1	16	Indicator	ASTM A-619	1	31	Plate Washer	ASTM A-167	4
03	Lower Stem	AISI 410	1	17	O-Ring	NBR	1	32	Switch Assembly	—	1
04	Disc	EPDM	1	18	Cover Gasket	Paper	1	33	T/R Bolt	ASTM A-307	2
05	O-Ring (P12)	EPDM	4	19	Spring Pin Ø5x1T x25	ASTM A-228	1	34	Tapping Screw ST3.5 x 7.5	S10C	1
06	Oiless B/R (MB1410)	—	4	20	O-Ring (P10)	EPDM	1	35	Tooth Washer 4#	S10C	1
07	End Cap 2-1/2-4 Inch	EPDM	1	21	Worm Shaft	AISI 410	1	36	Lever	ASTM A-619	1
08	Gear Box	ASTM A-536	1	22	Bushing (1)	FD-0205-45	1	37	Connector	—	1
09	Traveling Nut 2-6 Inch	Bronze	1	23	Collar	FD-0205-45	1	38	Sticker	—	1
	Segment Gear 8-12 Inch	C3604BD	1	24	Spring Washer	ASTM A-167	4	39	Sticker	—	1
10	Bushing (2)	FD-0205-45	1	25	Hex Bolt M8 x 20L	ASTM A-167	2	40	Spring Pin Ø3x0.6T x25	ASTM A-228	1
11	Cover	ASTM A-619	1	26	Hex Bolt M8 x 25L	ASTM A-167	2	41	Headless Plug 3/8 NPT 2-3 Inch	ASTM A-307	2
12	Bushing	Fe	1	27	Gasket	Paper	1		Headless Plug 1/2 NPT 4-12 Inch		
13	Headless Wrench Bolt M5 x 7L	ASTM A-307	1	28	Spring Pin Ø4x0.8t x35	ASTM A-228	1				
14	Stem Housing	Fe	1	29	Handwheel	ASTM A-536	1				



**BFV-300 Normally Open Valve
Supervisory Switch Arrangement**

**BFV-300C Normally Closed Valve
Supervisory Switch Arrangement**

**FIGURE 2
MODEL BFV-300/BFV-300C GROOVED END BUTTERFLY VALVE
ASSEMBLY**



Nominal Valve Size Inches (DN)	Pipe O.D. Inches (mm)	Max. PSI (bar)	Part Number		Agency Listing/Approval								
			BFV-300 Supv. Switch OPEN	BFV-300C Supv. Switch CLOSED	CE	UL	ULC	FM	VdS	CA Fire Marshall	CNPP	PAVUS	EAC Approved
2 (DN50)	2.38 (60,3)	300 (20,7)	59300G020WS	59300G020WSC	✓	✓	✓		✓			✓	✓
2-1/2 (DN65)	2.88 (73,0)	300 (20,7)	59300G025WS	59300G025WSC	✓	✓	✓	✓	✓	✓		✓	✓
— DN65	3 76,1	300 (20,7)	59300G026WS	59300G026WSC	✓	✓	✓	✓	✓			✓	✓
3 (DN80)	3.5 (88,9)	300 (20,7)	59300G030WS	59300G030WSC	✓	✓	✓	✓	✓	✓		✓	✓
4 (DN100)	4.5 (114,3)	300 (20,7)	59300G040WS	59300G040WSC	✓	✓	✓	✓	✓	✓		✓	✓
— DN125	5.5 (139,7)	300 (20,7)	59300G056WS	59300G056WSC	✓	✓	✓	✓	✓			✓	✓
5 (DN125)	5.56 (141,3)	300 (20,7)	59300G050WS	59300G050WSC	✓	✓	✓	✓	✓	✓		✓	✓
— DN150	6.5 (165,1)	300 (20,7)	59300G066WS	59300G066WSC	✓	✓	✓	✓	✓			✓	✓
6 (DN150)	6.63 (168,3)	300 (20,7)	59300G060WS	59300G060WSC	✓	✓	✓	✓	✓	✓		✓	✓
8 (DN200)	8.63 (219,1)	300 (20,7)	59300G080WS	59300G080WSC	✓	✓	✓	✓	✓	✓		✓	✓
10 (DN250)	10.75 (273)	175 (12,1)	59300G100WS	59300G100WSC	✓	✓	✓	✓	✓	✓		✓	✓
12 (DN300)	12.75 323.9	175 (12,1)	59300G120WS	59300G120WSC	✓	✓	✓		✓			✓	✓

TABLE A
MODEL BFV-300/BFV-300C GROOVED END BUTTERFLY VALVE
WITH INTERNAL SUPERVISORY SWITCHES
PART NUMBER SELECTION AND AGENCY LISTINGS/APPROVALS

Nominal Valve Size Inches (DN)	Pipe O.D. Inches (mm)	Max. PSI (bar)	Part Number		Agency Listing/Approval		
			BFV-300 Supv. Switch OPEN	BFV-300C Supv. Switch CLOSED	CE	VdS	CNPP
2 (DN50)	2.38 (60,3)	300 (20,7)	59300G020AWS	59300G020AWSC	✓	✓	✓
2-1/2 (DN65)	2.88 (73,0)	300 (20,7)	59300G025AWS	59300G025AWSC	✓	✓	✓
— DN65	3 76,1	300 (20,7)	59300G026AWS	59300G026AWSC	✓	✓	✓
3 (DN80)	3,5 (88,9)	300 (20,7)	59300G030AWS	59300G030AWSC	✓	✓	✓
4 (DN100)	4,5 (114,3)	300 (20,7)	59300G040AWS	59300G040AWSC	✓	✓	✓
— DN125	5,5 (139,7)	300 (20,7)	59300G056AWS	59300G056AWSC	✓	✓	✓
5 (DN125)	5,56 (141,3)	300 (20,7)	59300G050AWS	59300G050AWSC	✓	✓	✓
— DN150	6,5 (165,1)	300 (20,7)	59300G066AWS	59300G066AWSC	✓	✓	✓
6 (DN150)	6,63 (168,3)	300 (20,7)	59300G060AWS	59300G060AWSC	✓	✓	✓
8 (DN200)	8,63 (219,1)	300 (20,7)	59300G080AWS	59300G080AWSC	✓	✓	✓
10 (DN250)	10,75 (273)	175 (12,1)	59300G100AWS	59300G100AWSC	✓	✓	✓
12 (DN300)	12,75 323,9	175 (12,1)	59300G120AWS	59300G120AWSC	✓	✓	✓

TABLE B
MODEL BFV-300/BFV-300C GROOVED END BUTTERFLY VALVE
WITH CNPP-APSD LARGE 100 X 100 MM FLAG AND INTERNAL SUPERVISORY SWITCHES
PART NUMBER SELECTION AND AGENCY LISTINGS/APPROVALS

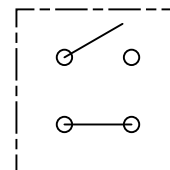
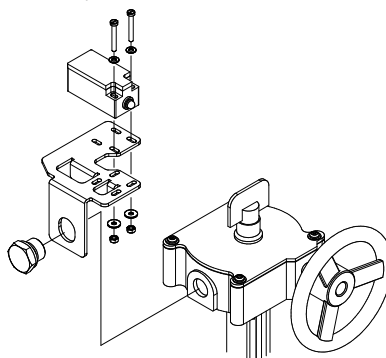
Nominal Valve Size Inches (DN)	Pipe O.D. Inches (mm)	Max. PSI (bar)	Part Number	Agency Listing/Approval								
				CE	UL	ULC	FM	VdS	CA Fire Marshall	CNPP	PAVUS	EAC Approved
2 (DN50)	2.38 (60,3)	300 (20,7)	59300G020NS	✓	✓	✓		✓			✓	✓
2-1/2 (DN65)	2.88 (73,0)	300 (20,7)	59300G025NS	✓	✓	✓	✓	✓	✓		✓	✓
— DN65	3 76,1	300 (20,7)	59300G026NS	✓	✓	✓	✓	✓			✓	✓
3 (DN80)	3,5 (88,9)	300 (20,7)	59300G030NS	✓	✓	✓	✓	✓	✓		✓	✓
4 (DN100)	4.5 (114,3)	300 (20,7)	59300G040NS	✓	✓	✓	✓	✓	✓		✓	✓
— DN125	5.5 (139,7)	300 (20,7)	59300G056NS	✓	✓	✓	✓	✓			✓	✓
5 (DN125)	5.56 (141,3)	300 (20,7)	59300G050NS	✓	✓	✓	✓	✓	✓		✓	✓
— DN150	6.5 (165,1)	300 (20,7)	59300G066NS	✓	✓	✓	✓	✓			✓	✓
6 (DN150)	6.63 (168,3)	300 (20,7)	59300G060NS	✓	✓	✓	✓	✓	✓		✓	✓
8 (DN200)	8.63 (219,1)	300 (20,7)	59300G080NS	✓	✓	✓	✓	✓	✓		✓	✓
10 (DN250)	10.75 (273)	175 (12,1)	59300G100NS	✓	✓	✓	✓	✓	✓		✓	✓
12 (DN300)	12.75 323.9 (12,1)	175 (12,1)	59300G120NS	✓	✓	✓		✓			✓	✓

TABLE C
MODEL BFV-300 GROOVED END BUTTERFLY VALVE
WITHOUT INTERNAL SUPERVISORY SWITCHES
PART NUMBER SELECTION AND AGENCY LISTINGS/APPROVALS

Nominal Valve Size Inches (DN)	Gear Operator Type	Part Number			
		Mounting Bracket with Mounting Bolts	Bernstein i88-IP65 Regular Switch	Bernstein i88-IP65 LED Switch 24V	Bernstein GC-SU1Z Ex IP-66/67 ATEX (Ex II2G Ex dIIC T6 Gb) Switch
2-4 (DN50-DN100)	Travelling Nut	59300SPBRACKET10	59300SPSW	59300SPSWLED	59300SPSWATEX
5-6 (DN125-DN200)		59300SPBRACKET20			
8 (DN200)	Segmented Gear	59300SPBRACKET25			
10-12 (DN250-DN300)		59300SPBRACKET30			

Notes:

1. Install a single switch in either bracket mounting position to monitor Open or Closed valve condition



Bernstein Switch
Wiring Diagram

TABLE D
MODEL BFV-300 GROOVED END BUTTERFLY VALVE WITHOUT INTERNAL SUPERVISORY SWITCHES
ACCESSORY EXTERNAL SUPERVISORY SWITCHES AND MOUNTING BRACKETS
PART NUMBER SELECTION

Materials of Construction

Body Ductile Iron
Body Coating RILSAN PA11 Black
Disc Ductile Iron
Disc Seal EPDM Encapsulated
Upper & Lower Stem Stainless Steel
Handwheel Ductile Iron
(BFV-300 red painted; BFV-300C black painted)
Actuator, 2 in.–6 in. (DN50–DN150):
• IP65, bronze traveling nut gearbox, ductile iron housing
Actuator, 8 in.–12 in. (DN200–DN300):
• IP65, brass segmented gearbox, ductile iron housing

Silicone Free Model Availability

Silicone free models are available. Contact TYCO sales for information.

Tapping Bosses

Two factory-plugged NPT threaded tapping bosses in the valve body are located on the up- and downstream sides of the disc for connection to valve trim. Tapping boss sizes:

2 in.–3 in. (DN50–DN80) 3/8 NPT
4 in.–12 in. (DN100–DN300) 1/2 NPT

Control Valve Seat Leakage

Class IEC 60534-4

CLASS VI (Type C) Control Valve Seat Leakage according to ANSI/FCI 70-2-2006 (ASME B16.104)

Installation

The Model BFV-300/BFV-300C Grooved End Butterfly Valves may be installed with flow in either direction and can be positioned either horizontally or vertically.

The grooved end pipe couplings used with the Model BFV-300/BFV-300C must be listed or approved for fire protection service and installed in accordance with the manufacturers instructions.

The Model BFV-300/BFV-300C Butterfly Valve may be installed with any schedule of pressure class of pipe or tubing that is listed or approved for fire protection.

Conduit and electrical connections are to be made in accordance with the authority having jurisdiction and/or the National Electrical Code. With reference to Figure 3, the supervisory switch is intended for connection to the supervisory circuit of a fire alarm control panel in accordance with NFPA 72. The auxiliary switch is intended for the unsupervised connection to auxiliary equipment in accordance with NFPA 70, National Electric Code.

Note: For outdoor applications with internal supervisory switches, it is recommended that wiring connections be made at a temperature above 15°F (-9°C), in order to insure sufficient flexibility of the wire lead insulation.

Nominal Valve Size Inches (DN)	Part Number	
	BFV-300, Red Painted	BFV-300C, Black Painted
2–4 (DN50–DN100)	59300SPHWHEEL10	59300SPHWHEEL10B
5–6 (DN125–DN150)	59300SPHWHEEL20	59300SPHWHEEL20B
8 (DN200)	59300SPHWHEEL30	59300SPHWHEEL30B
10–12 (DN250–DN300)	59300SPHWHEEL40	59300SPHWHEEL40B

TABLE E
BFV-300/BFV-300C GROOVED END BUTTERFLY VALVE
REPLACEMENT HANDWHEEL
PART NUMBER SELECTION

Nominal Valve Size Inches (DN)	Part Number
2–4 (DN50–DN100)	59300SPFLAG10
5–6 (DN125–DN150)	59300SPFLAG20
8–12 (DN200–DN300)	59300SPFLAG30

TABLE F
BFV-300 WAFER STYLE BUTTERFLY VALVE
INDICATOR FLAG
PART NUMBER SELECTION

Care and Maintenance

Before closing a fire protection system control valve for maintenance or inspection work on either the valve or fire protection system which it controls, permission to shut down the affected fire protection systems must be obtained from the proper authorities and all personnel who may be affected by this decision must be notified.

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in accordance with the applicable standards of the NATIONAL FIRE PROTECTION ASSOCIATION, for example, NFPA 25, in addition to the standards of any authority having jurisdiction. Contact the installing contractor or product manufacturer with any questions. Any impairment must be immediately corrected.

It is recommended that automatic sprinkler systems be inspected, tested, and maintained by a qualified inspection service.

Limited Warranty

For warranty terms and conditions, visit www.tyco-fire.com.

Ordering Procedure

Contact your local distributor for availability. When placing an order, indicate the full product name and Part Number (P/N).

Butterfly Valves

Model BFV-300 with Internal Open Supervisory Switches

Specify: (specify size) Model BFV-300 Grooved End Butterfly Valve, Internal Open Supervisory Switches, P/N (specify per Table A)

Model BFV-300C with Internal Closed Supervisory Switches

Specify: (specify size) Model BFV-300C Grooved End Butterfly Valve, Internal Closed Supervisory Switches, P/N (specify per Table A)

Model BFV-300 with Internal Open Supervisory Switches, APSAD Approved

Specify: (specify size) Model BFV-300 Grooved End Butterfly Valve, Internal Open Supervisory Switches, APSAD Approved, P/N (specify per Table B)

Model BFV-300C with Internal Closed Supervisory Switches, APSAD Approved

Specify: (specify size) Model BFV-300C Grooved End Butterfly Valve, Internal Closed Supervisory Switches, APSAD Approved, P/N (specify per Table B)

Model BFV-300 without Internal Supervisory Switches

Specify: (specify size) Model BFV-300 Grooved End Butterfly Valve, P/N (specify per Table C)

Accessories

External Supervisory Switch and Mounting Bracket

Note: Accessory external supervisory switches and mounting brackets are applicable only to valves without factory-installed internal supervisory switches.

See Table D for switch models and part numbers.

Specify: (specify size) Model BFV-300 Grooved End Butterfly Valve External Switch Mounting Bracket, P/N (specify), with (specify quantity) Bernstein External Switch (specify model), P/N (specify)

Replacement Parts

Note: Only items described in this section are offered as replacement parts.

Handwheel

Replacement handwheel includes pin. See Table E for part numbers.

Model BFV-300, Red Painted

Specify: Handwheel, (specify size) Model BFV-300 Grooved End Butterfly Valve, P/N (specify)

Model BFV-300C, Black Painted

Specify: Handwheel, (specify size) Model BFV-300C Grooved End Butterfly Valve, P/N (specify)

Indicator Flag

Specify: Indicator Flag, (specify size) Model BFV-300, P/N (specify per Table F)

Model CV-1FR Riser Check Valves 2 to 12 Inch (DN50 to DN300)

General Description

The TYCO Model CV-1FR Riser Check Valve is a compact and rugged swing-type unit that allows water flow in one direction and prevents flow in the opposite direction. A resilient elastomer seal facing on the spring-loaded clapper ensures a leak-tight seal and non-sticking operation. The Model CV-1FR Check Valves are designed to minimize water hammer caused by flow reversal.

The Model CV-1FR Riser Check Valve is furnished with grooved ends and can be installed using GRINNELL Grooved Couplings or GRINNELL Figure 71 Flange Adapters. The Model CV-1FR Valves have been designed with a removable cover for ease of field maintenance. These valves can be installed horizontally (with cover in the upward position) or vertically with the flow in the upward direction. Refer to Figure 6.

To facilitate their use in wet-type automatic sprinkler system risers, the Model CV-1FR Riser Check Valves are provided with threaded outlets for pressure gauges and a drain connection. They provide a more compact and economical alternative to an alarm check valve where a water motor alarm is not required. Provisions must be made for a local alarm using an approved flow switch (not included).

The Model CV-1FR Riser Check Valve is also Listed for use in conjunction with the TYCO Model DV-5 Deluge Valve in Preaction Systems under air pressure without the use of prime water.

The Model CV-1FR Riser Check Valves are a redesign for the Central Figure 590FR and GRINNELL Figure 590FR.

NOTICE

Never remove any piping component nor correct or modify any piping deficiencies without first de-pressurizing and draining the system. Failure to do so may result in serious personal injury, property damage, and/or impaired device performance.

The Model CV-1FR Riser Check Valve described herein must be installed and maintained in compliance with this document and with the applicable standards of the National Fire Protection Association, in addition to the standards of any authorities having jurisdiction. Failure to do so may impair the performance of this device.

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

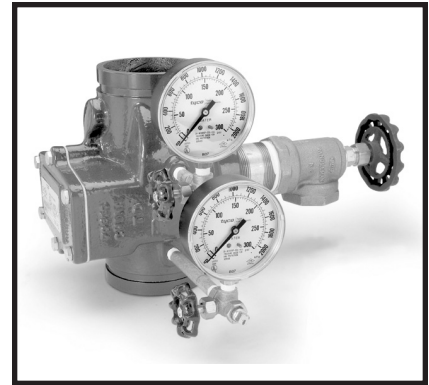
Technical Data

Approvals
UL, C-UL, and FM

Sizes
2 to 12 Inch (DN50 to DN300)

Maximum Working Pressure
300 psi (20,7 bar)

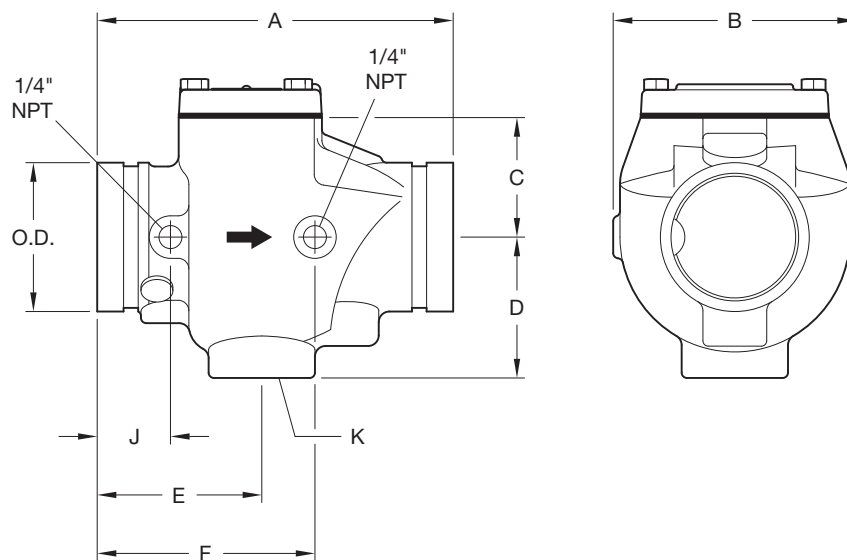
Valve Assembly Finish
Red, non-lead paint



Installation

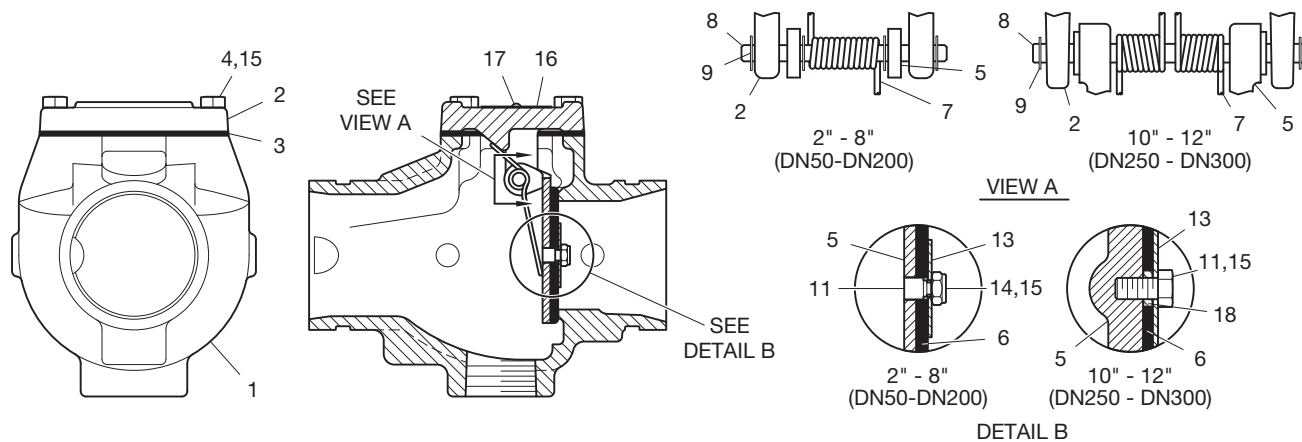
The Model CV-1FR Riser Check Valves are to be installed in accordance with the following instructions:

1. The arrow cast on the Body must point in the direction of the flow.
2. Valves installed vertically must be positioned with the flow in the upward direction.
3. Valves installed horizontally must be positioned with the Cover facing up. Refer to Figure 6.
4. Grooved end pipe couplings used with the Model CV-1FR Riser Check Valve must be installed in accordance with manufacturer's instructions.



Nominal Pipe Size		Nominal Dimensions Inches (mm)								Cover Bolt Torq. Lbs.-ft. (Nm)	Approx. Weight Lbs. (kg)
ANSI Inches DN	O.D. Inches (mm)	A	B	C	D	E	F	J	K NPT		
2 DN50	2.375 (60,3)	6.75 (171,5)	4.38 (111,3)	2.55 (64,8)	2.57 (65,3)	3.25 (82,3)	15 (21)	9.0 (4,5)	1	18 (25)	9.0 (4,5)
2-1/2 DN65	2.875 (73,0)	8.00 (203,2)	5.42 (136,7)	3.41 (86,6)	3.09 (78,5)	3.88 (98,6)	39 (54)	10.0 (4,5)	1-1/4	39 (54)	10.0 (4,5)
76,1 DN65	- (76,1)	8.00 (203,2)	5.42 (136,7)	3.41 (86,6)	3.09 (78,5)	3.88 (98,6)	39 (54)	10.0 (4,5)	1-1/4	39 (54)	10.0 (4,5)
3 DN80	3.500 (88,9)	8.38 (212,9)	5.76 (146,3)	3.60 (91,4)	3.31 (84,1)	3.88 (98,6)	39 (54)	11.0 (5,0)	1-1/4	39 (54)	11.0 (5,0)
4 DN100	4.500 (114,3)	9.63 (245,6)	6.74 (171,2)	4.61 (117,1)	3.63 (92,2)	4.53 (115,4)	39 (54)	25.0 (11,3)	2	50 (69)	25.0 (11,3)
139.7 DN125	- (139,7)	10.50 (266,7)	7.50 (190,5)	5.29 (134,4)	4.13 (104,9)	4.90 (124,5)	39 (54)	29.0 (13,2)	2	39 (54)	29.0 (13,2)
5 DN125	5.563 (141,3)	10.50 (266,7)	7.50 (190,5)	5.29 (134,4)	4.13 (104,9)	4.90 (124,5)	39 (54)	29.0 (13,2)	2	39 (54)	29.0 (13,2)
165.1 DN150	- (165,1)	11.50 (292,1)	8.05 (204,4)	5.75 (146,1)	4.50 (114,3)	5.00 (127,0)	60 (82)	47.0 (21,3)	2	60 (82)	47.0 (21,3)
6 DN150	6.625 (168,3)	11.50 (292,1)	8.05 (204,4)	5.75 (146,1)	4.50 (114,3)	5.00 (127,0)	60 (82)	47.0 (21,3)	2	60 (82)	47.0 (21,3)
8 DN200	8.625 (219,1)	14.00 (355,6)	10.25 (260,4)	7.75 (196,9)	5.62 (142,7)	5.45 (138,4)	120 (164)	66.0 (30,0)	2	120 (164)	66.0 (30,0)
10 DN250	10.750 (273,1)	18.00 (457,2)	13.00 (330,2)	10.21 (259,3)	6.38 (162,1)	7.50 (190,5)	120 (164)	109.7 (49,4)	2	130 (178)	109.7 (49,4)
12 DN300	12.750 (323,9)	21.0 (533,4)	14.28 (362,7)	11.31 (287,2)	7.26 (184,4)	7.62 (193,5)	120 (164)	151.0 (68,0)	2	130 (178)	151.0 (68,0)

FIGURE 1
MODEL CV-1FR RISER CHECK VALVES
NOMINAL DIMENSIONS



Detail	Part	Material	Qty.	Detail	Part	Material	Qty.	Detail	Part	Material	Qty.
1	Body	Ductile Iron	1	6	Clapper Facing	EPDM Grade "E"	1	14	Locknut	Stainless Steel	1
2	Cover	Ductile Iron	1	7	Spring	Stainless Steel	1	15	Adhesive	Thread Sealer	AR
3	Cover Gasket	Nitrile Rubber	1	8	Hinge Shaft	Stainless Steel	1	16	Nameplate	Aluminum	1
4	Hex Cap Screw	Steel, Zinc Plated	AR	9	Retaining Ring	Stainless Steel	AR	17	Rivet	Steel	2
5	Clapper 2" - 8" (DN50-200)	Stainless Steel	1	11	Retention Bolt	Stainless Steel	1	18	Spacer	Stainless Steel	1
	Clapper 10" - 12" (DN250-300)	Ductile Iron		13	Retaining Disc	Stainless Steel	1				

FIGURE 2
MODEL CV-1FR RISER CHECK VALVES
ASSEMBLY

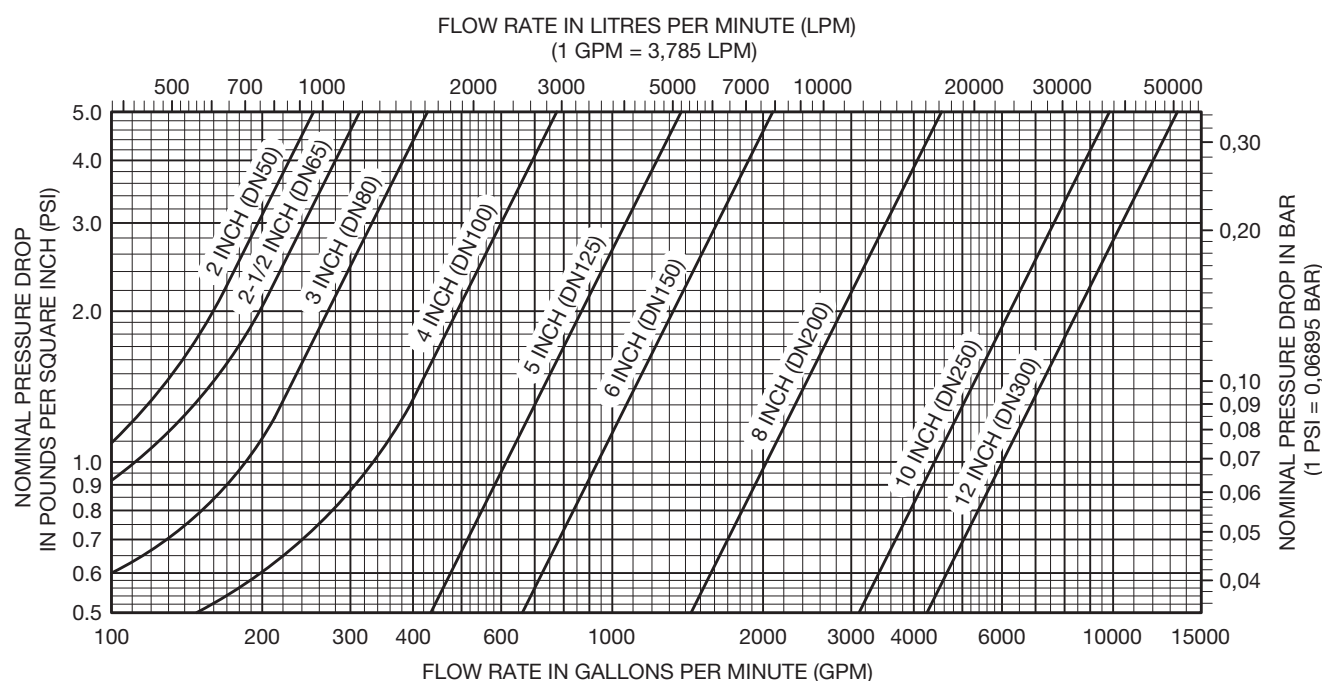
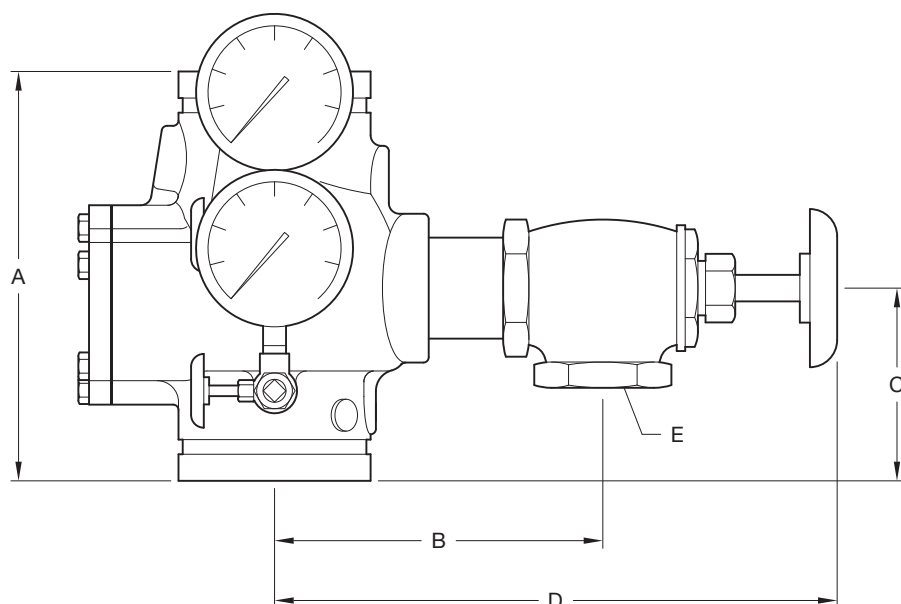


FIGURE 3
MODEL CV-1FR RISER CHECK VALVES
PRESSURE LOSS DATA



Nominal Pipe Size		Nominal Dimensions Inches (mm)				
ANSI Inches DN	O.D. Inches (mm)	A	B	C	D	E Inches NPT
2 DN50	2.375 (60,3)	6.75 (171,5)	6.50 (165,1)	3.25 (82,6)	10.13 (257,2)	1
2-1/2 DN65	2.875 (73,0)	8.00 (203,2)	6.56 (166,7)	3.88 (98,6)	11.13 (282,6)	1-1/4
76,1 DN65	— (76,1)	8.00 (203,2)	6.56 (166,7)	3.88 (98,6)	11.13 (282,6)	1-1/4
3 DN80	3.500 (88,9)	8.37 (212,6)	6.81 (173,0)	3.88 (98,6)	11.13 (282,6)	1-1/4
4 DN100	4.500 (114,3)	9.63 (244,6)	7.75 (196,9)	3.88 (98,6)	13.25 (336,6)	2
139,7 DN125	— (139,7)	10.50 (266,7)	8.25 (209,6)	5.00 (127,0)	13.81 (350,8)	2
5 DN125	5.563 (141,3)	10.50 (266,7)	8.25 (209,6)	5.00 (127,0)	13.81 (350,8)	2
165,1 DN150	— (165,1)	11.50 (292,1)	8.56 (217,5)	5.00 (127,0)	14.13 (358,8)	2
6 DN150	6.625 (168,3)	11.50 (292,1)	8.56 (217,5)	5.00 (127,0)	14.13 (358,8)	2
8 DN200	8.625 (219,1)	14.00 (355,6)	9.75 (247,7)	5.50 (139,7)	15.25 (387,4)	2
10 DN250	10.750 (273,1)	18.00 (457,2)	10.70 (271,8)	7.50 (190,5)	16.25 (412,8)	2
12 DN300	12.750 (323,9)	21.00 (533,4)	11.50 (292,1)	7.65 (194,3)	17.00 (431,8)	2

FIGURE 4
MODEL CV-1FR RISER CHECK VALVE WITH TRIM COMPONENTS
NOMINAL DIMENSIONS

P/N 59-591-1-020
2 Inch (DN50)

NO.	DESCRIPTION	QTY.	P/N
1	300 psi/ 2000 kPa Water Pressure Gauge . . . 2	92-343-1-005	
2	1/4" Gauge Test Valve . . . 2	46-005-1-002	
3	1/4" Plug 2	CH	
4	1" Angle Valve 1	46-048-1-006	
5	1/4" x 2" Nipple 1	CH	
6	1/4" x 5" Nipple 1	CH	
7	1" x 3" Nipple 1	CH	

P/N 59-591-1-030

2-1/2 Inch (DN65) through 3 Inch (DN80)

NO.	DESCRIPTION	QTY.	P/N
1	300 psi/ 2000 kPa Water Pressure Gauge . . . 2	92-343-1-005	
2	1/4" Gauge Test Valve . . . 2	46-005-1-002	
3	1/4" Plug 2	CH	
4	1-1/4" Angle Valve 1	46-048-1-007	
5	1/4" x 2" Nipple 1	CH	
6	1/4" x 5" Nipple 1	CH	
7	1-1/4" x 3" Nipple 1	CH	

P/N 59-591-1-080

4 Inch (DN100) through 12 Inch (DN300)

NO.	DESCRIPTION	QTY.	P/N
1	300 psi/ 2000 kPa Water Pressure Gauge . . . 2	92-343-1-005	
2	1/4" Gauge Test Valve . . . 2	46-005-1-002	
3	1/4" Plug 2	CH	
4	2" Angle Valve 1	46-048-1-009	
5	1/4" x 2" Nipple 1	CH	
6	1/4" x 5" Nipple 1	CH	
7	2" x 3" Nipple 1	CH	

NOTES:

1. All Fittings and Nipples are galvanized (Standard Order).
2. CH: Common Hardware.

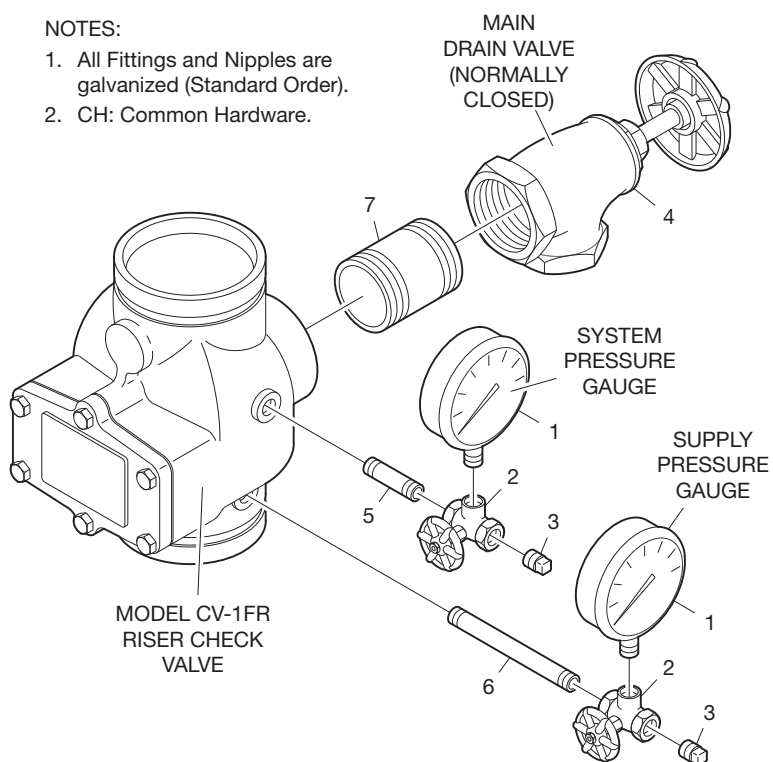


FIGURE 5
MODEL CV-1FR RISER CHECK VALVES
TRIM PARTS LIST

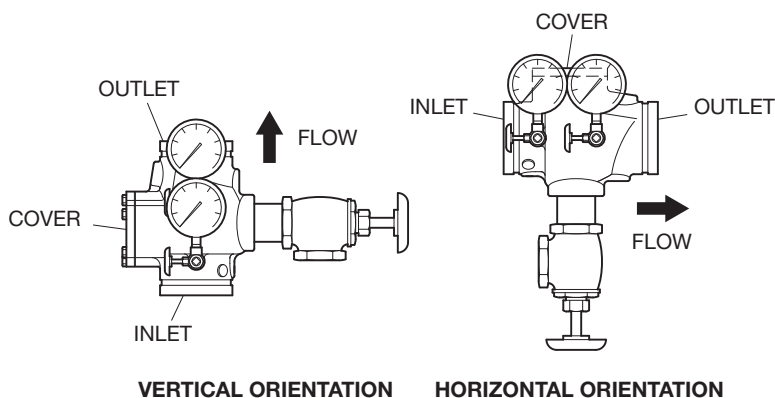


FIGURE 6
MODEL CV-1FR RISER CHECK VALVES
INSTALLATION

Care and Maintenance

NOTICE

Before closing a fire protection system main control valve for maintenance work on the fire protection system that it controls, obtain permission to shut down the affected fire protection system from the proper authorities and notify all personnel who may be affected by this decision.

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

Owners are 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 (for example, 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. Any impairments must be immediately corrected.

Automatic sprinkler systems are recommended to be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

Limited Warranty

Products manufactured by Tyco Fire Suppression & Building Products (TFSBP) 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 TFSBP. No warranty is given for products or components manufactured by companies not affiliated by ownership with TFSBP 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 TFSBP to be defective shall be either repaired or replaced, at TFSBP's sole option. TFSBP neither assumes, nor authorizes any person to assume for it, any other obligation in connection with the sale of products or parts of products. TFSBP 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 TFSBP 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 TFSBP was informed about the possibility of such damages, and in no event shall TFSBP'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

Contact your local distributor for availability. When placing an order, indicate the full product name and Part Number (P/N).

Model CV-1FR Check Valves

Specify: Size and P/N (below).

2" (DN50)	P/N 59-590-1-020
2-1/2" (DN65)	P/N 59-590-1-025
76,1 mm (DN65)	P/N 59-590-1-076
3" (DN80)	P/N 59-590-1-030
4" (DN100)	P/N 59-590-1-040
139,7 mm (DN125)	P/N 59-590-1-139
5" (DN125)	P/N 59-590-1-050
165,1 mm (DN150)	P/N 59-590-1-165
6" (DN150)	P/N 59-590-1-060
8" (DN200)	P/N 59-590-1-080
10" (DN250)	P/N 59-590-1-100
12" (DN300)	P/N 59-590-1-120

Model CV-1FR

Riser Check Valve Trim Assembly

Specify: Size and P/N (below).

2" (DN50)	P/N 59-591-1-020
2-1/2" (DN65)	P/N 59-591-1-030
76,1 mm (DN65)	P/N 59-591-1-030
3" (DN80)	P/N 59-591-1-030
4" (DN100)	P/N 59-591-1-080
139,7 mm (DN125)	P/N 59-591-1-080
5" (DN125)	P/N 59-591-1-080
165,1 mm (DN150)	P/N 59-591-1-080
6" (DN150)	P/N 59-591-1-080
8" (DN200)	P/N 59-591-1-080
10" (DN250)	P/N 59-591-1-080
12" (DN300)	P/N 59-591-1-080

Model CV-1F Grooved End Swing Check Valves 2 to 12 Inch (DN50 to DN300)

General Description

The TYCO Model CV-1F Grooved End Swing Check Valve is a compact and rugged swing-type unit that allows water flow in one direction and prevents flow in the opposite direction. A resilient elastomer seal facing on the spring-loaded clapper ensures a leak-tight seal and non-sticking operation. The Model CV-1F Check Valves are designed to minimize water hammer caused by flow reversal.

The Model CV-1F Grooved End Swing Check Valve is furnished with grooved ends and can be installed using Grinnell Grooved Couplings or GRINNELL Figure 71 Flange Adapters. The Model CV-1F Check Valves have been designed with a removable cover for ease of field maintenance. These valves can be installed horizontally (with cover in the upward position) or vertically with the flow in the upward direction. Refer to Figure 4.

A Maintenance Check Valve Kit (TFP1555) is available to allow the maintenance procedure of back-flushing through the fire department connection without removing the Model CV-1F Grooved End Swing Check Valve from the pipe line.

The Model CV-1F Grooved End Swing Check Valves are a redesign for the Central Figure 590F and GRINNELL Figure 590F.

NOTICE

The TYCO Model CV-1F Grooved End Swing Check Valves described herein must be installed and maintained in compliance with this document and with the applicable standards of the National Fire Protection Association, in addition to the standards of any authorities having jurisdiction. Failure to do so may impair the performance of this device.

Never remove any piping component nor correct or modify any piping deficiencies without first de-pressurizing and draining the system. Failure to do so may result in serious personal injury, property damage, and/or impaired device performance.

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

Technical Data

Approvals

UL, C-UL, and FM

Sizes

2 to 12 Inch (DN50 to DN300)

Maximum Working Pressure

300 psi (20,7 bar)

Valve Assembly Finish

Red, non-lead paint



Installation

The Model CV-1F Grooved End Swing Check Valves are to be installed in accordance with this section:

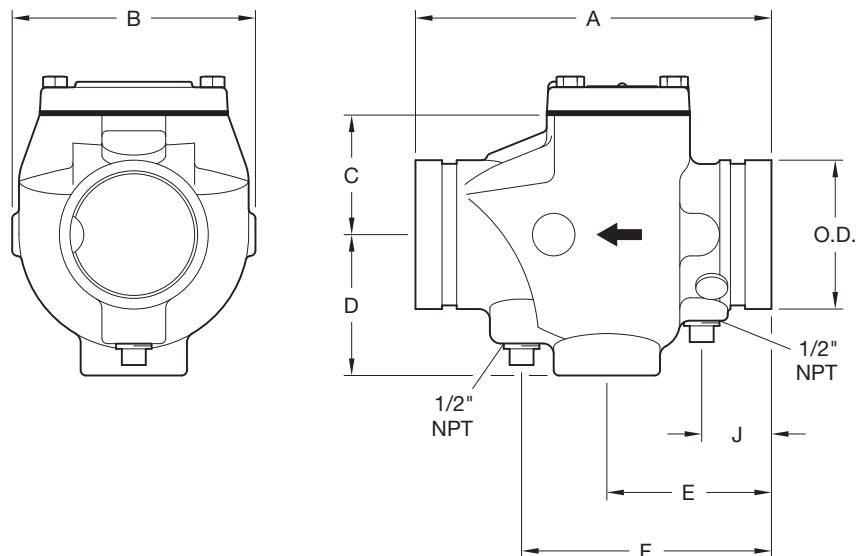
Step 1. The arrow cast on the Body must point in the direction of the flow.

Step 2. Valves installed vertically must be positioned with the flow in the upward direction.

Step 3. Valves installed horizontally must be positioned with the Cover facing up. Refer to Figure 4.

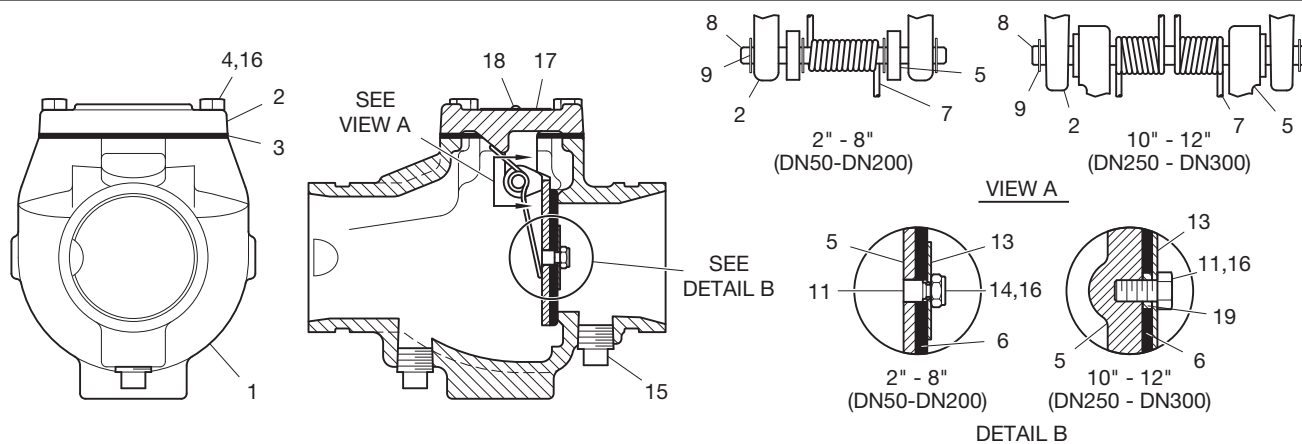
Step 4. Grooved end pipe couplings used with the Model CV-1F Grooved End Swing Check Valve must be installed in accordance with manufacturer's instructions.

NOTE: Valves installed too close to sources of unstable flow will shorten the life of the valve and may potentially damage the system. Valves should be installed a reasonable distance downstream from pumps, elbows, expanders, reducers, or other similar devices to extend the valve life. Standard piping practices call for a minimum of five (5) times the pipe diameter for general use.



Nominal Pipe Size		Nominal Dimensions Inches (mm)							Cover Bolt Torq. Lbs.-ft. (Nm)	Approx. Weight Lbs. (kg)
ANSI Inches DN	O.D. Inches (mm)	A	B	C	D	E	F	J		
2 DN50	2.375 (60,3)	6.75 (171,5)	4.38 (111,3)	1.96 (49,8)	2.57 (65,3)	3.25 (82,3)	4.75 (120,7)	1.62 (41,5)	18 (25)	9.0 (4,5)
2-1/2 DN65	2.875 (73,0)	8.00 (203,2)	5.38 (136,7)	2.63 (66,7)	3.09 (78,5)	3.87 (98,3)	5.87 (149,1)	1.64 (41,7)	39 (54)	10.0 (4,5)
76,1 DN65	- (76,1)	8.00 (203,2)	5.38 (136,7)	2.63 (66,7)	3.09 (78,5)	3.87 (98,3)	5.87 (149,1)	1.64 (41,7)	39 (54)	10.0 (4,5)
3 DN80	3.500 (88,9)	8.37 (212,6)	5.72 (145,3)	2.81 (71,4)	3.31 (84,1)	3.87 (98,3)	5.87 (149,1)	1.64 (41,7)	39 (54)	11.0 (5,0)
4 DN100	4.500 (114,3)	9.63 (244,6)	6.68 (169,7)	3.80 (96,5)	3.63 (92,2)	4.53 (115,4)	7.13 (181,1)	1.84 (46,7)	50 (69)	25.0 (11,3)
139.7 DN125	- (139,7)	10.50 (266,7)	7.40 (188,0)	4.46 (113,3)	4.13 (104,9)	4.90 (124,5)	7.50 (190,5)	1.75 (44,5)	39 (54)	29.0 (13,2)
5 DN125	5.563 (141,3)	10.50 (266,7)	7.40 (188,0)	4.46 (113,3)	4.13 (104,9)	4.90 (124,5)	7.50 (190,5)	1.75 (44,5)	39 (54)	29.0 (13,2)
165.1 DN150	- (165,1)	11.50 (292,1)	8.00 (203,2)	4.62 (117,3)	4.50 (114,3)	5.00 (127,0)	7.60 (193,0)	1.85 (47,0)	60 (82)	47.0 (21,3)
6 DN150	6.625 (168,3)	11.50 (292,1)	8.00 (203,2)	4.62 (117,3)	4.50 (114,3)	5.00 (127,0)	7.60 (193,0)	1.85 (47,0)	60 (82)	47.0 (21,3)
8 DN200	8.625 (219,1)	14.00 (355,6)	10.15 (257,8)	6.67 (169,4)	5.52 (140,2)	5.46 (138,7)	8.46 (214,9)	2.13 (54,1)	120 (164)	66.0 (29,9)
10 DN250	10.750 (273,1)	18.00 (457,2)	12.38 (314,5)	8.62 (218,9)	6.41 (162,8)	7.50 (190,5)	10.50 (266,7)	3.00 (76,2)	130 (178)	109.7 (49,4)
12 DN300	12.750 (323,9)	21.00 (533,4)	14.28 (362,7)	9.93 (252,2)	7.27 (184,7)	7.62 (193,5)	10.62 (269,7)	2.75 (69,9)	130 (178)	151.0 (68,0)

FIGURE 1
MODEL CV-1F CHECK VALVES
NOMINAL DIMENSIONS



Detail	Part	Material	Qty.	Detail	Part	Material	Qty.	Detail	Part	Material	Qty.
1	Body	Ductile Iron	1	6	Clapper Facing	EPDM Grade "E"	1	14	Locknut	Stainless Steel	1
2	Cover	Ductile Iron	1	7	Spring	Stainless Steel	1	15	Plug-1/2"-14 NPT	Cast Iron	2
3	Cover Gasket	Nitrile Rubber	1	8	Hinge Shaft	Stainless Steel	1	16	Adhesive	Thread Sealer	AR
4	Hex Cap Screw	Steel, Zinc Plated	AR	9	Retaining Ring	Stainless Steel	AR	17	Nameplate	Aluminum	1
5	Clapper 2" - 8" (DN50-200)	Stainless Steel	1	11	Retention Bolt	Stainless Steel	1	18	Rivet	Steel	2
	Clapper 10" - 12" (DN250-300)	Ductile Iron		13	Retaining Disc	Stainless Steel	1	19	Spacer	Stainless Steel	1

FIGURE 2
MODEL CV-1F CHECK VALVES
ASSEMBLY

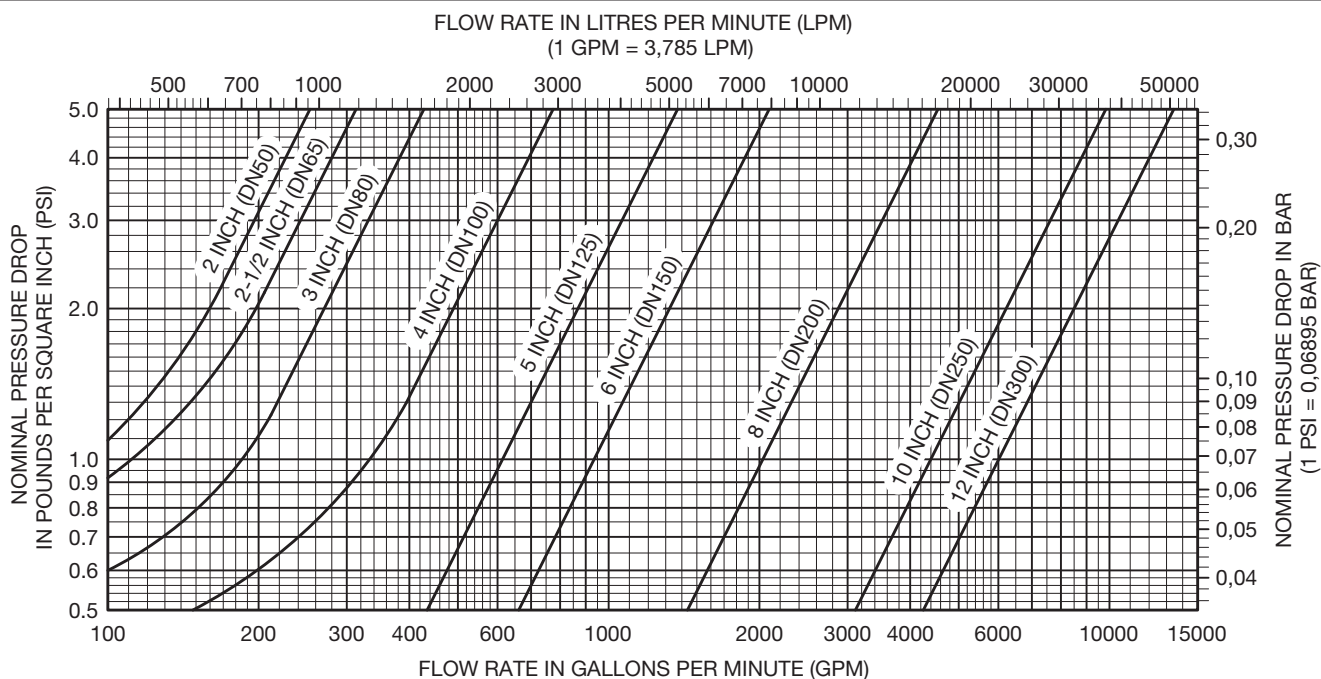
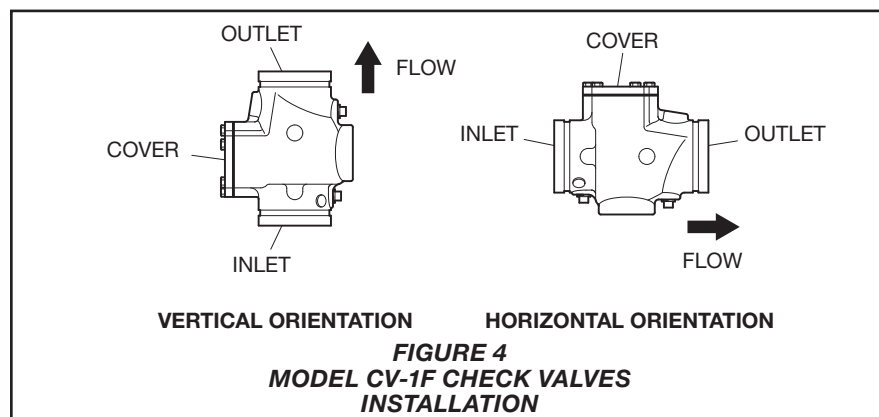


FIGURE 3
MODEL CV-1F CHECK VALVES
PRESSURE LOSS DATA



Care and Maintenance

Before closing a fire protection system main control valve for maintenance work on the fire protection system that it controls, obtain permission to shut down the affected fire protection system from the proper authorities and notify all personnel who may be affected by this decision.

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

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. Any impairments must be immediately corrected.

Automatic sprinkler systems are recommended to be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

Limited Warranty

For warranty terms and conditions, visit www.tyco-fire.com.

Ordering Procedure

Contact your local distributor for availability. When placing an order, indicate the full product name and Part Number (P/N).

Model CV-1F Check Valves

Specify: size and P/N (below).

2" (DN50).....	P/N 59-590-0-020
2-1/2" (DN65).....	P/N 59-590-0-025
76,1 mm (DN65)	P/N 59-590-0-076
3" (DN80).....	P/N 59-590-0-030
4" (DN100).....	P/N 59-590-0-040
139,7 mm (DN125)	P/N 59-590-0-139
5" (DN125).....	P/N 59-590-0-050
165,1 mm (DN150)	P/N 59-590-0-165
6" (DN150).....	P/N 59-590-0-060
8" (DN200).....	P/N 59-590-0-080
10" (DN250).....	P/N 59-590-0-100
12" (DN300).....	P/N 59-590-0-120



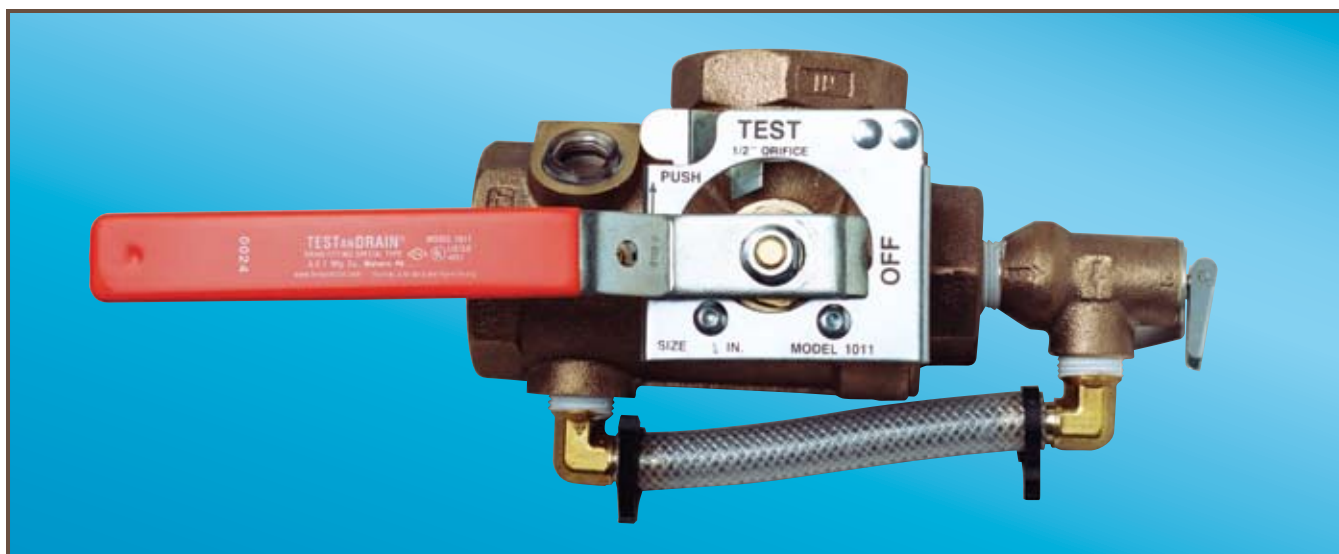
Model 1011A

TEST^{AN}DRAIN[®]

Sectional Floor Control Test and Drain Valve
for Systems Requiring Pressure Relief Valve



3/4" 1" 1 1/4" 1 1/2" 2"



- The AGF Manufacturing Inc. **Model 1011A TEST^{AN}DRAIN[®]** matches all the features and benefits of our **Model 1000** by providing both the test function and the express drain function in a multistory installation for a wet fire sprinkler system, with the added feature of an integral **Model 7000 Pressure Relief Valve** with drainage piping.
- The **Model 1011A** complies with the requirements of NFPA-13 that stipulate a pressure relief valve be installed on all gridded systems and downstream of all pressure reducing valves (see reverse).
- The **Model 1011A TEST^{AN}DRAIN[®]** is a compact single handle ball valve which includes a tamper resistant test orifice and integral tamper resistant sight glasses, and is 300 PSI rated.
- Available in a full range of sizes from 3/4" to 2" NPT and BSPT, with all specifiable orifice sizes 3/8" (2.8K), 7/16" (4.2K), 1/2" (5.6K), 17/32" (8.0K), 5/8" (11.2K, ELO), 3/4" (14.0K, ESFR), and K25 as required by NFPA 13, 2007 Edition (see reverse).
- The included UL/FM **Model 7000 Pressure Relief Valve** features a flushing handle and is factory rated for 175 PSI. Other pressure settings are available and may be substituted.
- Designed to relieve excess system pressure caused by surges or temperature changes as well as solve the difficult problem of providing the relief valve with a convenient drainage-piping outlet.
- Shipped with relief valve and bypass drain ports plugged to expedite pressure testing the system.
- A locking kit is available and can be ordered with the valve to provide vandal resistance or prevent unintentional alarm activation.
- Repair kits including (1) adapter gasket, (1) ball, (2) valve seats, (1) stem packing, and (1) stem washer are available for all **TEST^{AN}DRAIN[®]** valves. Valve and orifice size must be specified when ordering.

NOTE: It is important to note that the pressure rating of the relief valve indicates an operating range of pressure for both opening and closing of the valve. Standard relief valves are required to OPEN in a range of pressure between 90% and 105% of their rating. The valves are required to CLOSE at a pressure above 80% of that rating. 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.

Reliability, Versatility, Code Compatibility



TEST AND DRAIN®

Model 1011A 300 PSI Bronze Ball Valve, Model 7000 Pressure Relief Valve
Factory Rated at 175 PSI with other settings available

Model 1011A

DIMENSIONS

Orifice Size Available: 3/8", 7/16", 1/2", 17/32", ELO (5/8")*, ESFR (3/4")*, & K25**

SIZE	A	B	C	D	E	F	G	H
3/4"	7 9/16" (191 mm)	1 1/2" (37.5 mm)	2 3/16" (57 mm)	3 5/8" (93 mm)	3 3/8" (86 mm)	1 13/16" (46 mm)	4 9/16" (117 mm)	6 3/8" (162.5 mm)
1"	7 9/16" (191 mm)	1 1/2" (37.5 mm)	2 3/16" (57 mm)	3 5/8" (93 mm)	3 3/8" (86 mm)	1 13/16" (46 mm)	4 9/16" (117 mm)	6 3/8" (162.5 mm)
1 1/4"	7 15/16" (201 mm)	1 11/16" (43 mm)	2 9/16" (65 mm)	4 1/4" (108 mm)	3 5/8" (91 mm)	1 15/16" (51 mm)	5 9/16" (141 mm)	5 1/2" (139.7 mm)
1 1/2"	8 15/16" (227 mm)	1 13/16" (45 mm)	3 1/4" (81.5 mm)	5 1/16" (127 mm)	3 7/8" (99 mm)	2 5/8" (67 mm)	8 1/4" (207 mm)	10 7/8" (274 mm)
2"	8 15/16" (227 mm)	1 13/16" (45 mm)	3 1/4" (81.5 mm)	5 1/16" (127 mm)	3 7/8" (99 mm)	2 5/8" (67 mm)	8 1/4" (207 mm)	10 7/8" (274 mm)

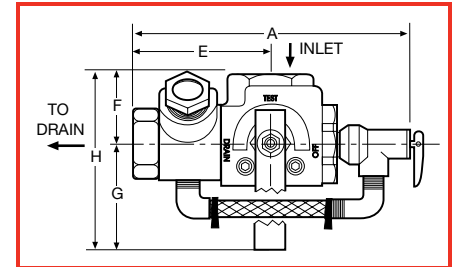
* Available on 1 1/4" to 2" size units only ** Available on 1 1/2" and 2" size units only

THE MODEL 1011A PROVIDES ALL OF THE FOLLOWING...

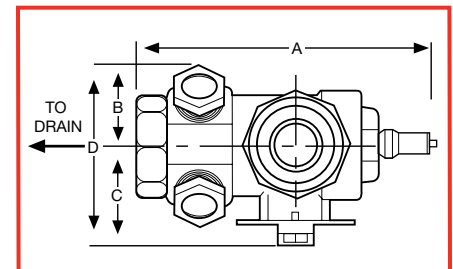
From the 2007 Edition of NFPA 13

- Chapter 8.16.2.4.1* Provisions shall be made to properly drain all parts of the system.
- Chapter 8.16.2.4.2 Drain connections, interior sectional or floor control valve(s) –
- & 8.16.2.4.3 shall be provided with a drain connection having a minimum size as shown in Table 8.16.2.4.2.
- Chapter 8.16.2.4.4 Drains shall discharge outside or to a drain capable of handling the flow of the drain.
- Chapter A.8.17.4.2 (Wet Pipe System) test connection is permitted to terminate into a drain capable of accepting full flow... using an approved sight test connection containing a smooth bore corrosion-resistant orifice giving a flow equivalent to one sprinkler...
- Chapter 8.17.4.2.2 The test connection valve shall be readily accessible.
- Chapter 8.17.4.2.4 shall be permitted to be installed in any location... downstream of the waterflow alarm.
- Chapter 8.17.4.3.1 (Dry Pipe System) a trip test connection not less than 1" in diameter, terminating in a smooth bore corrosion-resistant orifice, to provide a flow equivalent to one sprinkler...
- Chapter 8.17.4.3.2 The trip test connection... with a shutoff valve and plug not less than 1", at least one of which shall be brass.
- Chapter 7.1.2 - a gridded wet pipe system shall be provided with a relief valve set to operate at 175 PSI or 10 PSI in excess of the maximum system pressure, whichever is greater.
- Chapter 8.16.1.2.3* A relief valve of not less than 1/2" in size shall be provided on the discharge side of the pressure-reducing valve set to operate at a pressure not exceeding 175 PSI.
- Chapter A.8.16.1.2.3 - consideration should be given to piping the discharge from the (pressure relief) valve

MODEL 1011A - FRONT VIEW



MODEL 1011A - PLAN VIEW



MATERIALS

Handle: Steel
Stem: Rod Brass
Ball: C.P. Brass
Body: Bronze
Valve Seat: Impregnated Teflon®
Indicator Plate: Steel
Relief Valve: Bronze
Bypass Fittings: Brass
Bypass Tubing: Nylobraid

APPROVALS

UL and ULC Listed: (EX4019 & EX4533)
FM Approved
NYC-BSA No. 720-87-SM



USA Patent # 4741361 and Other Patents Pending



AGF Manufacturing Inc.
100 Quaker Lane, Malvern, PA 19355
Phone: 610-240-4900
Fax: 610-240-4906
www.testandrain.com

Job Name: _____
Architect: _____
Engineer: _____
Contractor: _____



Specifications subject to change without notice.

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

Optional: Cover Tamper Switch Kit, stock no. 0090148

Replaceable Components: Retard/Switch Assembly, stock no. 1029030

UL, CUL and CSFM Listed, FM Approved, LPCBA Approved, For CE Marked (EN12259-5) / VdS Approved model use VSR-EU

Service Pressure: 450 PSI (31 BAR) - UL

Flow Sensitivity Range for Signal:

4-10 GPM (15-38 LPM) - UL

Maximum Surge: 18 FPS (5.5 m/s)

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

Conduit Entrances: Two knockouts provided for 1/2" conduit.
Individual switch compartments suitable for dissimilar voltages.

Environmental Specifications:

- NEMA 4/IP54 Rated Enclosure suitable for indoor or outdoor use with factory installed gasket and die-cast housing 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.

Service Use:

Automatic Sprinkler

NFPA-13

One or two family dwelling

NFPA-13D

Residential occupancy up to four stories

NFPA-13R

National Fire Alarm Code

NFPA-72

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.

General Information

The Model VSR is a vane type waterflow switch for use on wet sprinkler systems. It 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 general purpose, die-cast housing. 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.

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.

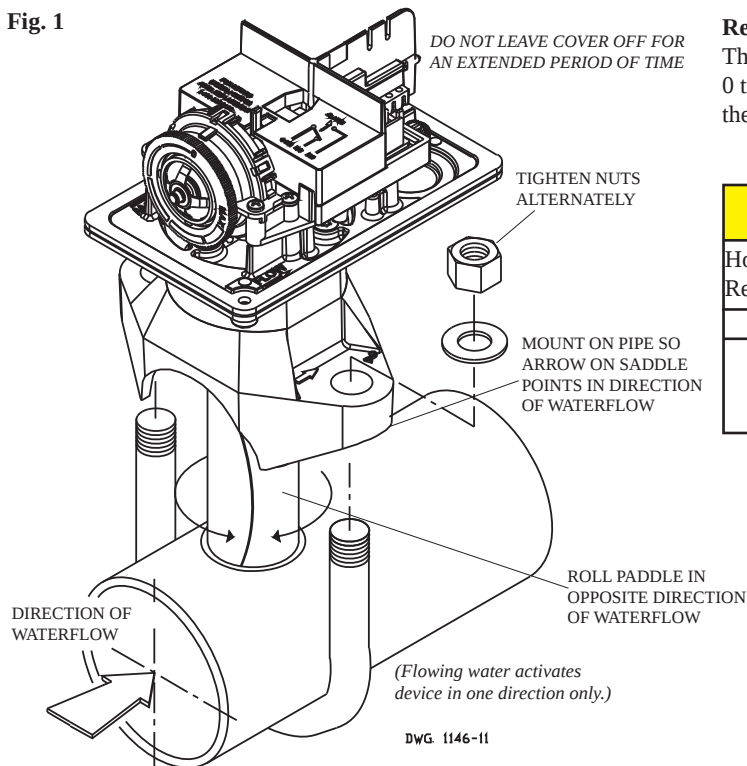
NOTE: Do not leave cover off for an extended period of time.

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.

Fig. 1

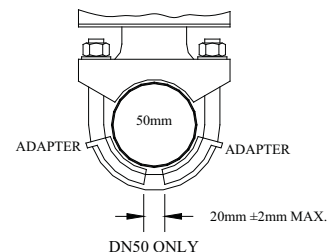
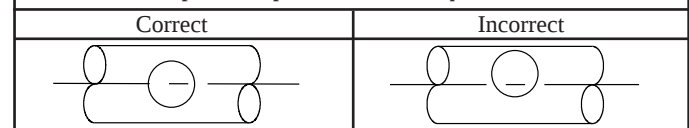


Retard Adjustment

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.



DWG# 1146-1F

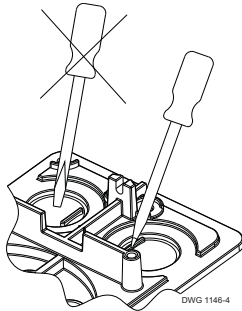
Compatible Pipe/ Installation Requirements

Model	Nominal Pipe Size		Nominal Pipe O.D.		Pipe Wall Thickness								Hole Size		U-Bolt Nuts Torque	
					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	ft-lb	n-m
VSR-2	2	DN50	2.375	60.3	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	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	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	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	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				

NOTE: For copper or plastic pipe use Model VSR-CF.

Fig. 2

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



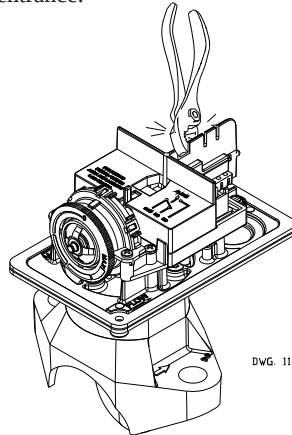
DWG. 1146-4

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.

Fig. 3

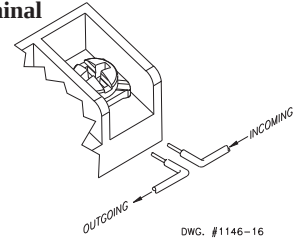
Break out thin section of cover when wiring both switches from one conduit entrance.



DWG. 1146-13

Fig. 4

Switch Terminal Connections Clamping Plate Terminal



DWG. #1146-16

WARNING

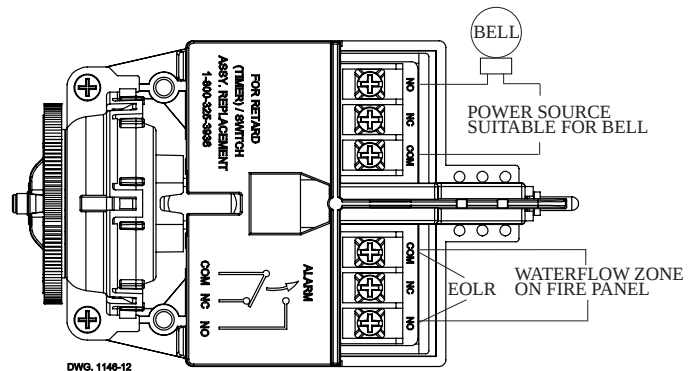
An uninsulated section of a single conductor should not be looped around the terminal and serve as two separate connections. The wire must be severed, thereby providing supervision of the connection in the event that the wire become dislodged from under the terminal. Failure to sever the wire may render the device inoperable risking severe property damage and loss of life.

Do not strip wire beyond 3/8" of length or expose an uninsulated conductor beyond the edge of the terminal block. When using stranded wire, capture all strands under the clamping plate.

Fig. 5 Typical Electrical Connections

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. A condition of LPC Approval of this product is that the electrical entry must be sealed to exclude moisture.
3. For supervised circuits, see "Switch Terminal Connections" drawing and warning note (Fig. 4).



DWG. 1146-12

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).

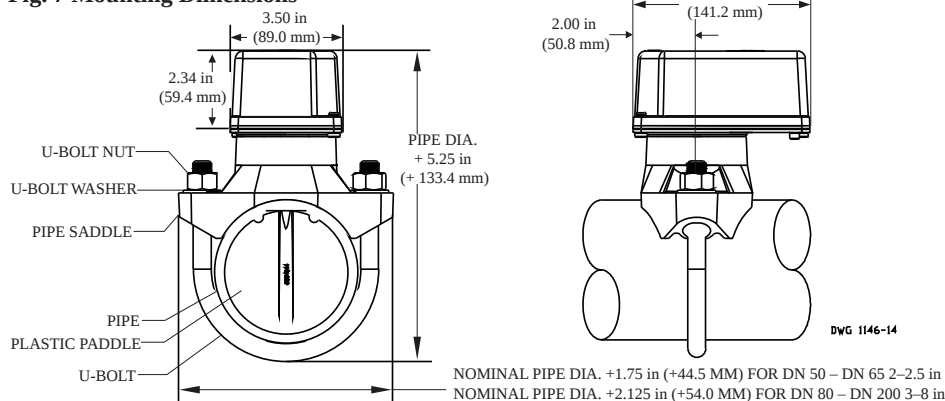
If provided, the inspector's test valve shall always be used for test purposes. If there are no provisions for testing the operation of the flow detection device on the system, application of the VSR is not recommended or advisable.

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

NOTICE

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

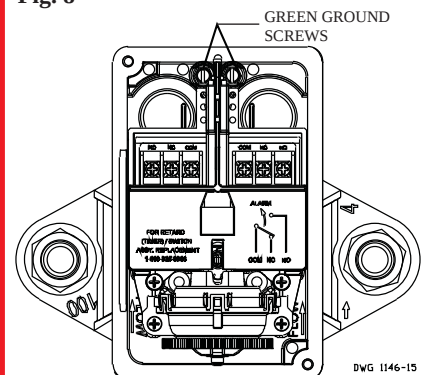
Fig. 7 Mounting Dimensions



NOMINAL PIPE DIA. +1.75 in (+44.5 MM) FOR DN 50 - DN 65 2-2.5 in
NOMINAL PIPE DIA. +2.125 in (+54.0 MM) FOR DN 80 - DN 200 3-8 in

DWG 1146-14

Fig. 8



DWG 1146-15

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. 6). There is no maintenance required, only periodic testing and inspection.

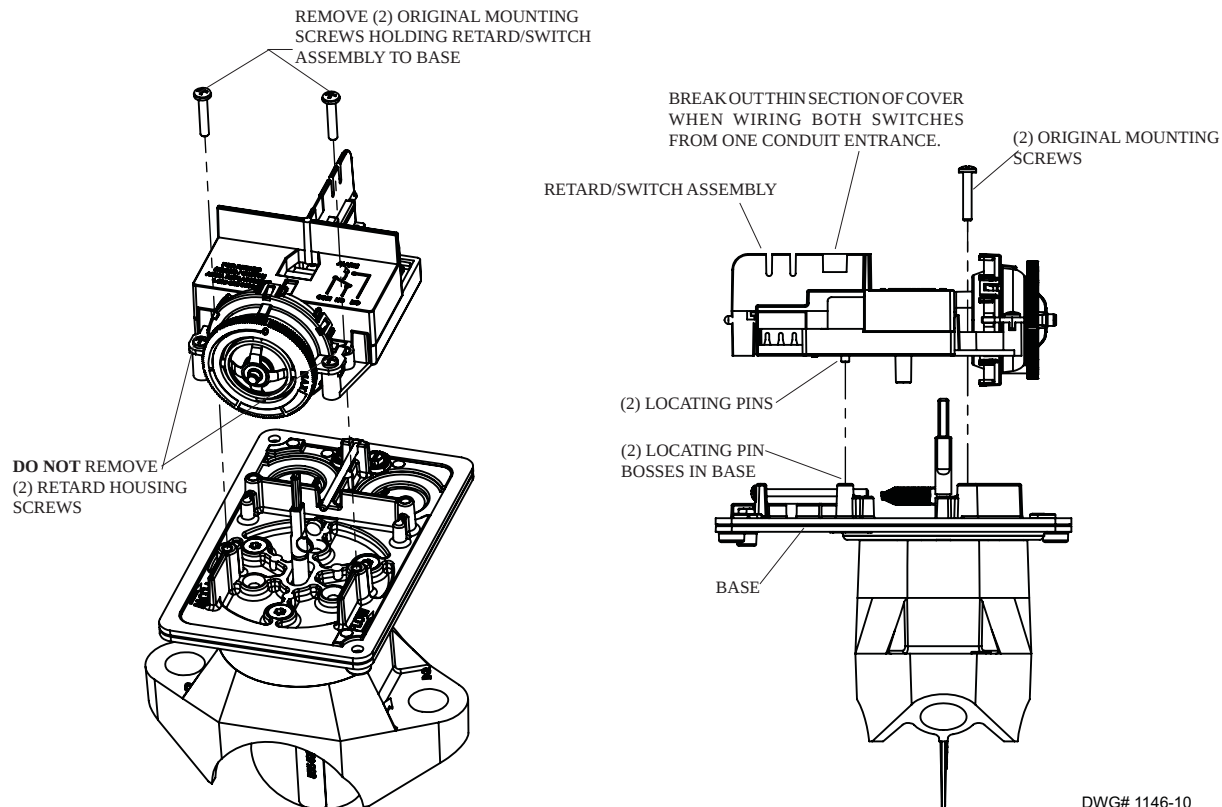
Retard/Switch Assembly Replacement (See Fig. 6)

NOTICE

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

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.

Fig. 6



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.



TECHNICAL DATA

MICROFAST® QUICK RESPONSE UPRIGHT SPRINKLER VK300 (K5.6)

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

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

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

1. DESCRIPTION

The Viking Microfast® Quick Response Upright Sprinkler VK300 is a small, thermosensitive, glass-bulb spray sprinkler available in several different finishes and temperature ratings to meet design requirements. The special Polyester and Electroless Nickel PTFE (ENT) coatings can be used in decorative applications where colors are desired. In addition, these coatings have been investigated for installation in corrosive atmospheres and are listed/approved as corrosion resistant as indicated in the Approval Charts.

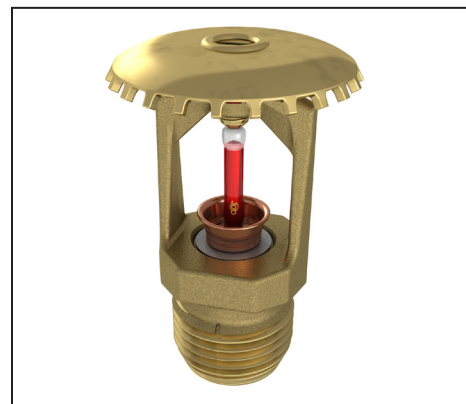
2. LISTINGS AND APPROVALS



cULus Listed: Category VNIV

FM Approved: Classes 2002 and 2020

Refer to Approval Charts and Design Criteria for listing and approval requirements that must be followed.



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

3. TECHNICAL DATA

Specifications:

Minimum Operating Pressure: 7 psi (0.5 bar)*

Maximum Working Pressure: 175 psi (12 bar) wwp.

Factory tested hydrostatically to 500 psi (34.5 bar)

Testing: U.S.A. Patent No. 4,831,870

Thread size: 1/2" NPT, 15 mm BSP

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

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

Overall Length: 2-3/16" (56 mm)

*cULus Listing, FM Approval, and NFPA 13 installs require a minimum of 7 psi (0.5 bar). The minimum operating pressure for LPCB and CE Approvals ONLY is 5 psi (0.35 bar).

Material Standards:

Frame Casting: Brass UNS-C84400 or QM Brass

Deflector: Brass UNS-C23000 or Phosphor Bronze UNS-C51000

Bulb: Glass, nominal 3 mm diameter

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

Screw: Brass UNS-C36000

Pip Cap and Insert Assembly: Copper UNS-C11000 and Stainless Steel UNS-S30400

For Polyester Coated Sprinklers: Belleville Spring-Exposed

For ENT Coated Sprinklers: Belleville Spring-Exposed, Screw and Pipcap - ENT plated

Ordering Information: (Also refer to the current Viking price list.)

Order Viking Microfast® Quick Response Upright Sprinkler VK300 by first adding the appropriate suffix for the sprinkler finish and then the appropriate suffix for the temperature rating to the sprinkler base part number.

Finish Suffix: Brass = A, Chrome = F, White Polyester = M-/W, Black Polyester = M-/B, and ENT = JN

Temperature Suffix (°F/°C): 135°/57° = A, 155°/68° = B, 175°/79° = D, 200°/93° = E, and 286°/141° = G

For example, sprinkler VK300 with a 1/2" NPT thread, Brass finish and a 155 °F/68 °C temperature rating = Part No. 12978AB

Available Finishes And Temperature Ratings: Refer to Table 1.

Accessories: (Also refer to the Viking website.)

Sprinkler Wrench: Standard Wrench: Part No. 21475M/B (available since 2017)

Sprinkler Cabinets:

A. Six-head capacity: Part No. 01724A (available since 1971)

B. Twelve-head capacity: Part No. 01725A (available since 1971)

4. INSTALLATION

Refer to appropriate NFPA Installation Standards.



TECHNICAL DATA

MICROFAST® QUICK RESPONSE UPRIGHT SPRINKLER VK300 (K5.6)

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5. OPERATION

During fire conditions, the heat-sensitive liquid in the glass bulb expands, causing the glass to shatter, releasing the pip cap and sealing spring assembly. Water flowing through the sprinkler orifice strikes the sprinkler deflector, forming a uniform spray pattern to extinguish or control the fire.

6. INSPECTIONS, TESTS AND MAINTENANCE

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

7. AVAILABILITY

The Viking Microfast® Quick Response Upright Sprinkler VK300 is available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

8. GUARANTEE

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

TABLE 1: AVAILABLE SPRINKLER TEMPERATURE RATINGS AND FINISHES

Sprinkler Temperature Classification	Sprinkler Nominal Temperature Rating ¹	Maximum Ambient Ceiling Temperature ²	Bulb Color
Ordinary	135 °F (57 °C)	100 °F (38 °C)	Orange
Ordinary	155 °F (68 °C)	100 °F (38 °C)	Red
Intermediate	175 °F (79 °C)	150 °F (65 °C)	Yellow
Intermediate	200 °F (93 °C)	150 °F (65 °C)	Green
High	286 °F (141 °C)	225 °F (107 °C)	Blue

Sprinkler Finishes: Brass, Chrome, White Polyester, Black Polyester, and ENT

Corrosion-Resistant Coatings³: White Polyester, Black Polyester, and Black PTFE. ENT in all temperature ratings except 135 °F (57 °C)

Footnotes

¹ The sprinkler temperature rating is stamped on the deflector.

² Based on NFPA-13. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.

³ The corrosion-resistant coatings have passed the standard corrosion test required by the approving agencies indicated in the Approval Charts. These tests cannot and do not represent all possible corrosive environments. Prior to installation, verify through the end-user that the coatings are compatible with or suitable for the proposed environment. For automatic sprinklers, the coatings indicated are applied to the exposed exterior surfaces only. Note that the spring is exposed on sprinklers with Polyester, ENT, and PTFE coatings. For ENT coated automatic sprinklers, the waterway is coated.

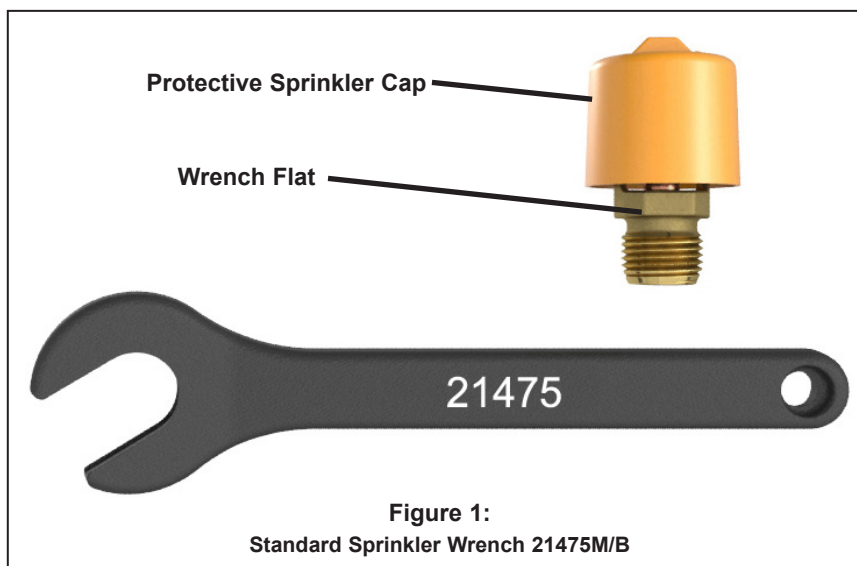


Figure 1:
Standard Sprinkler Wrench 21475M/B



TECHNICAL DATA

MICROFAST® QUICK RESPONSE UPRIGHT SPRINKLER VK300 (K5.6)

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Approval Chart 1 (UL)

Microfast® Quick Response
Upright Sprinkler VK300
Maximum 175 PSI (12 bar) WWP

	Temperature	KEY
↓	Finish	
A1X ←	Escutcheon (if applicable)	

Base Part Number ¹	SIN	Thread Size		Nominal K-Factor		Overall Length		Listings and Approvals ³				
		NPT	BSP	U.S.	metric ²	Inches	mm	cULus	VdS	LPCB	NYC ⁸	CE
12978	VK300	1/2"	15 mm	5.6	80.6	2-3/16	56	A1, B2	--	--	See footnote 7.	--

NOTICE - Product Below - Limited Availability (Contact Local Viking Office)

06661B	VK300	1/2"	15 mm	5.6	80.6	2-3/16	56	A1, B2	--	--	See footnote 7.	--
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Approved Temperature Ratings

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)

Approved Finishes

1 - Brass, Chrome, White Polyester^{5,6}, and Black Polyester^{5,6}
2 - ENT⁶

Footnotes

¹ Base part number is shown. For complete part number, refer to Viking's current price schedule.

² Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

³ This table shows the listings and approvals available at the time of printing. Check with the manufacturer for any additional approvals.

⁴ Listed by Underwriters Laboratories Inc. for us in the U.S. and Canada

⁵ Other colors are available on request with the same Listings and Approvals as the standard colors.

⁶ cULus Listed as corrosion resistant.

⁷ Meets New York City requirements, effective July 1, 2008

⁸ Accepted for use, City of New York Board of Standards and Appeals, Calendar Number 219-76-SA and City of New York Department of Buildings, MEA 89-92-E, Vol. 16.

DESIGN CRITERIA - UL

(Also refer to Approval Chart 1 above.)

cULus Listing Requirements:

The Viking Microfast® Quick Response Upright Sprinkler VK300 is cULus Listed as indicated in Approval Chart 1 for installation in accordance with the latest edition of NFPA 13 for standard spray sprinklers.

- Designed for use in Light and Ordinary Hazard occupancies.
- The sprinkler installation rules contained in NFPA 13 for standard spray upright sprinklers must be followed.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to Form No. F_080614 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, FM Global, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.



TECHNICAL DATA

MICROFAST® QUICK RESPONSE UPRIGHT SPRINKLER VK300 (K5.6)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
 Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com
 Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com

Approval Chart 2 (FM)

Microfast® Quick Response
 Upright Sprinkler VK300
 Maximum 175 PSI (12 bar) WWP

KEY	
Temperature	Finish
A1X	Escutcheon (if applicable)

Base Part Number ¹	SIN	Thread Size		Nominal K-Factor		Overall Length		FM Approvals ³ (Refer also to Design Criteria below.)
		NPT	BSP	U.S.	metric ²	Inches	mm	
12978	VK300	1/2"	15 mm	5.6	80.6	2-3/16	56	A1, B2
NOTICE - Product Below - Limited Availability (Contact Local Viking Office)								
06661B	VK300	1/2"	15 mm	5.6	80.6	2-3/16	56	A1, B2
Approved Temperature Ratings 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)							Approved Finishes 1 - Brass, Chrome, White Polyester ⁵ , and Black Polyester ⁵ 2 - ENT ⁶	
Footnotes ¹ Base part number is shown. For complete part number, refer to Viking's current price schedule. ² Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0. ³ This table shows the FM Approvals available at the time of printing. Check with the manufacturer for any additional approvals. ⁵ Other colors are available on request with the same Approvals as the standard colors. ⁶ FM approved as corrosion resistant.								

DESIGN CRITERIA - FM

(Also refer to Approval Chart 2 above.)

FM Approval Requirements:

The Microfast® Quick Response Upright Sprinkler VK300 is FM Approved as a quick response **Non-Storage** upright 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, FM Global, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.



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)

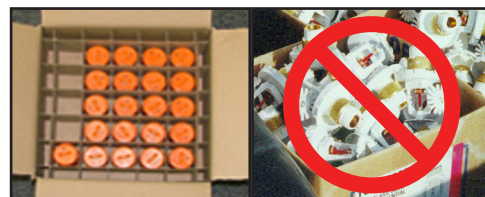
3/4" NPT: 20 ft-lbs. (27.1 N-m)

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!

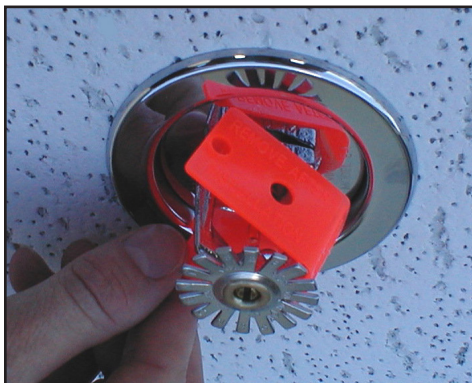


Figure 1: Sprinkler shield being removed from a pendent sprinkler.



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.

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.



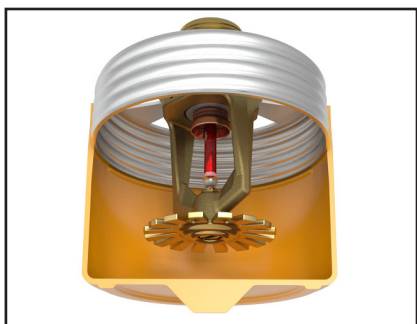
BULLETIN

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OF SPRINKLERS

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



Concealed Sprinkler and Adapter
 Assembly with Protective Cap



Concealed Sprinkler and Adapter
 Assembly (Protective Cap Removed)



Cover Plate Assembly
 (Pendent Cover 12381 shown)

GENERAL HANDLING AND STORAGE INSTRUCTIONS:

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

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



BULLETIN

CARE AND HANDLING
OF SPRINKLERS

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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.

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

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

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

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

1. DESCRIPTION

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

⚠ WARNING**STATE OF CALIFORNIA, USA**

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

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

2. WARRANTY TERMS AND CONDITIONS

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



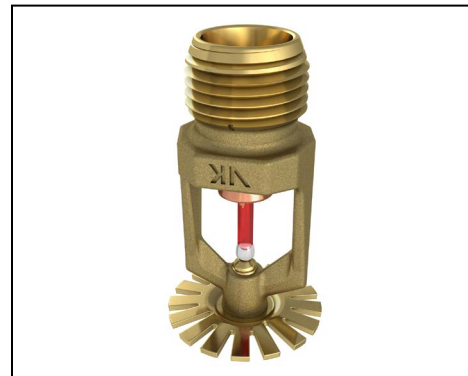
TECHNICAL DATA

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

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
 Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com
 Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com

1. DESCRIPTION

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



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

2. LISTINGS AND APPROVALS



cULus Listed: Category VNIV



FM Approved: Class Series 2000



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



LPCB Approved: Certificate 096e/06



CE: Standard EN 12259-1, Declaration of Performance DOP_Sprinklers_LPCB_5-2-19, DOP_VK302ENT_29-1-20 & DOP_VK302-57C_30-9-20

China Approval: Approved according to China GB standard



MED Certified: Standard EN 12259-1, EC-certificate of conformity 0832-MED-1003



UKCA Approved: Standard EN 12259-1; Certificate Number 0832-UKCA-CPR-S5029; UKCA DOC_S5029; 2021.

Refer to Approval Chart 1 and Design Criteria cULus Listing requirements, and refer to Approval Chart 2 and Design Criteria for FM Approval requirements that must be followed.

3. TECHNICAL DATA

Specifications:

Minimum Operating Pressure: 7 PSI (0.5 bar)
 Rated to 175 PSI (12 bar) water working pressure
 Factory-tested hydrostatically to 500 PSI (34.5 bar)
 Thread size: 1/2" NPT, 15 mm BSP
 Nominal K-Factor: 5.6 U.S. (80.6 metric**)
 Glass-bulb fluid temperature rated to -65 °F (-55 °C)
 Overall Length: 2-1/4" (58 mm)

*cULus Listing, FM Approval, and NFPA 13 installs require a minimum of 7 PSI (0.5 bar). The minimum operating pressure for LPCB and CE Approvals ONLY is 5 PSI (0.35 bar).

Material Standards:

Frame Casting: Brass UNS-C84400 or QM brass
 Deflector: Phosphor bronze UNS-C51000 or copper UNS-C19500
 Bulb: Glass, nominal 3 mm diameter
 Belleville Spring Sealing Assembly: Nickel alloy, coated on both sides with PTFE tape
 Screw: Brass UNS-C36000
 Pip Cap and Insert Assembly: Copper UNS-C11000 and stainless steel UNS-S30400
For Polyester Coated Sprinklers: Belleville spring-exposed
For ENT Coated Sprinklers: Belleville spring-exposed, screw and pipcap - ENT-plated.



TECHNICAL DATA

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

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

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Ordering Information: (Also refer to the current Viking price list.)

Order quick response pendent sprinklers by first adding the appropriate suffix for the sprinkler finish. Then, add the appropriate temperature rating suffix to the sprinkler base part number.

Finish Suffix: Brass = A, chrome = F, white polyester = M-/W, black polyester = M-/B, and ENT = JN

Temperature Suffix: 135 °F (57 °C) = A, 155 °F (68 °C) = B, 175 °F (79 °C) = D, 200 °F (93 °C) = E, 286 °F (141 °C) = G

For example, sprinkler VK302 with a brass finish and a 155 °F (68 °C) temperature rating = Part No. 12979AB

Available Finishes And Temperature Ratings: Refer to Table 1.

Accessories: (Also refer to the current Viking price list.)

Sprinkler Wrenches:

A. Standard wrench: Part No. 21475M/B.

B. Wrench for recessed pendent sprinklers: Part No. 13655W/B** (available since 2006)

C. Optional protective sprinkler cap remover/escutcheon installer tool*** Part No. 15915 (available since 2010)

**A ½" ratchet is required (not available from Viking).

***Allows use from the floor by attaching a length of 1" diameter CPVC tubing to the tool. Ideal for sprinkler cabinets. Refer to Bulletin F_051808.

Sprinkler Cabinets:

A. Six-head capacity: Part No. 01724A (available since 1971)

B. Twelve-head capacity: Part No. 01725A (available since 1971)

4. INSTALLATION

Refer to appropriate NFPA Installation Standards.

5. OPERATION

During fire conditions, the heat-sensitive liquid in the glass bulb expands, causing the glass to shatter, releasing the pip cap and sealing spring assembly. Water flowing through the sprinkler orifice strikes the sprinkler deflector, forming a uniform spray pattern to extinguish or control the fire.

6. INSPECTIONS, TESTS AND MAINTENANCE

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

7. AVAILABILITY

The Viking Microfast® Quick Response Pendent Sprinkler VK302 is available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

8. GUARANTEE

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

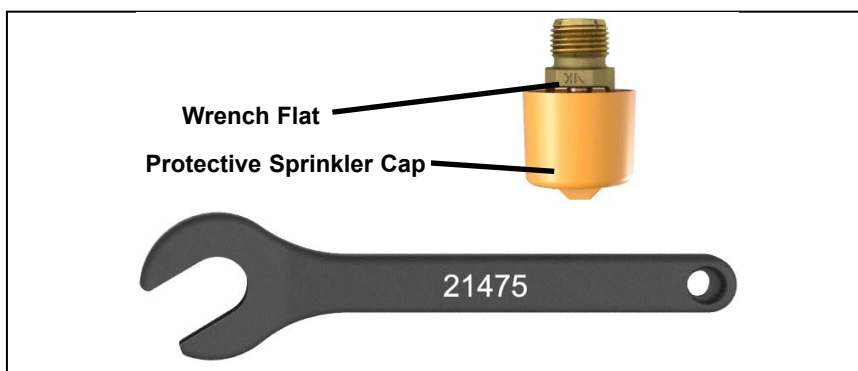


Figure 1:
Standard Sprinkler Wrench 21475M/B



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TABLE 1: AVAILABLE SPRINKLER TEMPERATURE RATINGS AND FINISHES

Sprinkler Temperature Classification	Sprinkler Nominal Temperature Rating ¹	Maximum Ambient Ceiling Temperature ²	Bulb Color
Ordinary	135 °F (57 °C)	100 °F (38 °C)	Orange
Ordinary	155 °F (68 °C)	100 °F (38 °C)	Red
Intermediate	175 °F (79 °C)	150 °F (65 °C)	Yellow
Intermediate	200 °F (93 °C)	150 °F (65 °C)	Green
High	286 °F (141 °C)	225 °F (107 °C)	Blue

Sprinkler Finishes: Brass, Chrome, White polyester, black polyester, and ENT

Corrosion-Resistant Coatings³: White polyester, and black polyester. ENT in all temperature ratings except 135 °F (57 °C)

Footnotes

¹ The sprinkler temperature rating is stamped on the deflector.

² Based on NFPA-13. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.

³ The corrosion-resistant coatings have passed the standard corrosion test required by the approving agencies indicated in the Approval Charts. These tests cannot and do not represent all possible corrosive environments. Prior to installation, verify through the end-user that the coatings are compatible with or suitable for the proposed environment. For automatic sprinklers, the coatings indicated are applied to the exposed exterior surfaces only. Note that the spring is exposed on sprinklers with polyester and ENT coatings. For ENT coated automatic sprinklers, the waterway is coated.

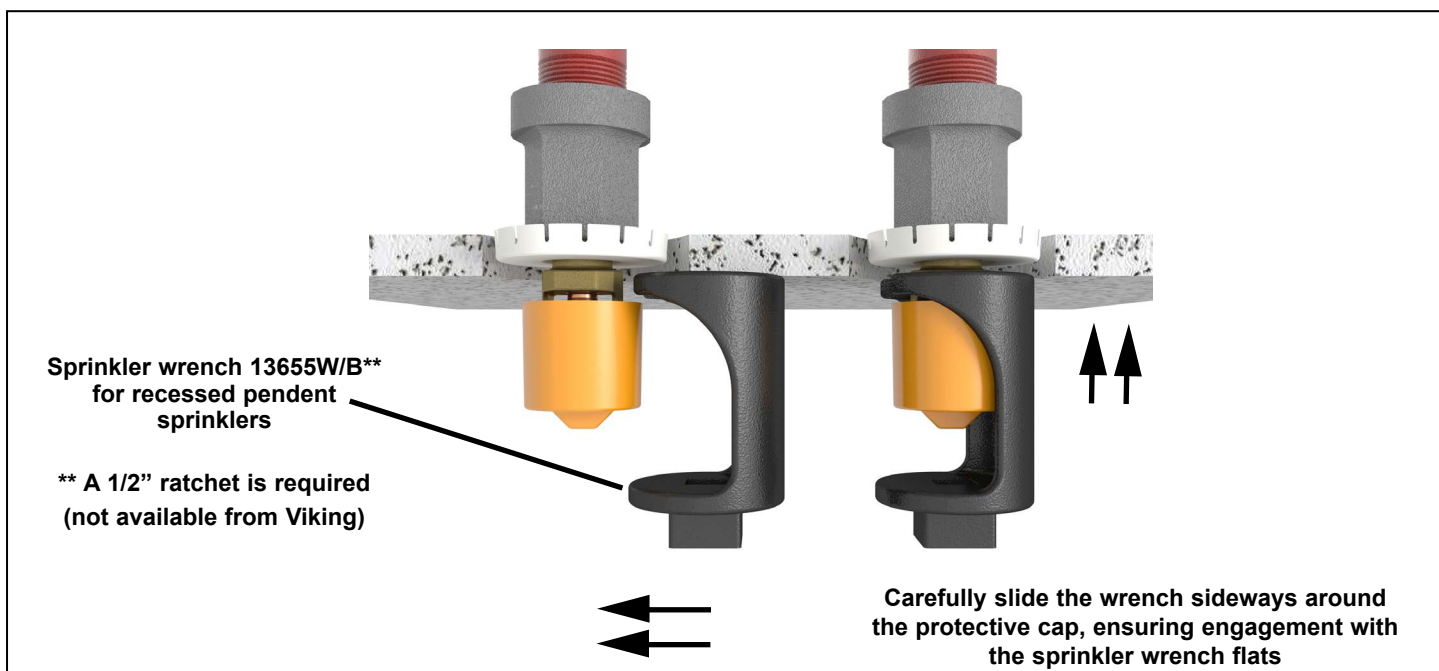


Figure 2: Wrench 13655W/B for Recessed Pendent Sprinklers



TECHNICAL DATA

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

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Approval Chart 1 (UL) The Viking Microfast® Quick Response Pendent Sprinkler VK302 Maximum 175 PSI (12 Bar) WWP																Temperature Finish Escutcheon (if applicable) KEY A1X
Base Part Number ¹	SIN	Sprinkler Style	Thread Size		Nominal K-Factor		Overall Length		Listings and Approvals ³ (Refer also to Design Criteria.)							
			NPT	BSP	U.S.	met-ric ²	Inches	mm	cULus ⁴	VdS	LPCB	CE ⁷	MED ⁸	CCCF	UKCA	
12979	VK302	Pendent	1/2"	15 mm	5.6	80.6	2-1/4	58	A1Z, B1Y, D2, C2X	A1	A1Z, B1Y	D1Z, C1Y, D2, A1Z, B1Y	D1	--	A1Z, B1Y	
21354 ⁹	VK302	Pendent	--	15 mm	5.6	80.6	2-1/4	58	D3	--	--	--	--	D3	--	
Approved Temperature Ratings A - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), 286 °F (141 °C) B - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C) C - 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C) D - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), 286 °F (141 °C)				Approved Finishes 1 - Brass, chrome, white polyester ^{5,6} , black polyester ^{5,6} 2 - ENT ⁵ 3 - Chrome				Approved Escutcheons X - Standard surface-mounted escutcheon or the Viking Micromatic® Model E-1 recessed escutcheon Y - Standard surface-mounted escutcheon or recessed with the Viking Micromatic® Model E-1, E-2, or E-3 recessed escutcheon Z - Standard surface-mounted escutcheon								
Footnotes ¹ Base part number shown. For complete part number, refer to Viking's current price schedule. ² Metric K-factor measurement shown is when pressure is measured in bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0. ³ This table shows the listings and approvals available at the time of printing. Other approvals may be in process. ⁴ Listed by Underwriters Laboratories Inc. for use in the U.S. and Canada. ⁵ cULus Listed as corrosion-resistant. ⁶ Other colors are available on request with the same Listings and Approvals as the standard colors. ⁷ CE: Standard EN 12259-1, Declaration of Performance DOP_Sprinklers_LPCB_5-2-19, DOP_VK302ENT_29-1-20 & DOP_VK302-57C_30-9-20. ⁸ MED Certified, Standard EN 12259-1, EC-0832-MED-1003. ⁹ Approved according to China GB Standard.																

DESIGN CRITERIA - UL

(Also refer to Approval Chart 1 above.)

cULus Listing Requirements:

The Viking Microfast® Quick Response Pendent Sprinkler VK302 is cULus Listed, as indicated in the Approval Chart for installation in accordance with the latest edition of NFPA 13 for standard spray sprinklers.

- Designed for use in Light and Ordinary occupancies.
- The sprinkler installation rules contained in NFPA 13 for standard spray pendent sprinklers must be followed.
- Venting is not required.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to Form No. F_080614 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.



TECHNICAL DATA

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

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Approval Chart 2 (FM) The Viking Microfast® Quick Response Pendent Sprinkler VK302 Maximum 175 PSI (12 Bar) WWP

KEY	
Temperature	→
Finish	→
A1X ← Escutcheon (if applicable)	

Base Part Number ¹	SIN	Sprinkler Style	Thread Size		Nominal K-Factor		Overall Length		FM Approvals ³ (Refer also to Design Criteria.)	
			NPT	BSP	U.S.	metric ²	Inches	mm		
12979	VK302	Pendent	1/2"	15 mm	5.6	80.6	2-1/4	58	A1Z, B1Y, D2X, C2	
21354 ⁶	VK302	Pendent	--	15 mm	5.6	80.6	2-1/4	58	C3	
Approved Temperature Ratings				Approved Finishes 1 - Brass, chrome, white polyester ⁴ , and black polyester ⁴ 2 - ENT ⁵ 3 - Chrome			Approved Escutcheons			
A - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), 286 °F (141 °C)							X - Standard surface-mounted escutcheon or the Viking Micromatic® Model E-1 recessed escutcheon			
B - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C)							Y - Standard surface-mounted escutcheon or recessed with the Viking Micromatic® Model E-1 or E-2 recessed escutcheon			
C - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), 286 °F (141 °C)							Z - Standard surface-mounted escutcheon			
D - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C)										
Footnotes										
¹ Base part number shown. For complete part number, refer to Viking's current price schedule.										
² Metric K-factor measurement shown is when pressure is measured in bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.										
³ This table shows the FM Approvals available at the time of printing. Other approvals may be in process.										
⁴ Other colors are available on request with the same Approvals as the standard colors.										
⁵ FM approved as corrosion-resistant.										
⁶ Approved according to China GB Standard.										

DESIGN CRITERIA - FM

(Also refer to Approval Chart 2 above.)

FM Approval Requirements:

The Viking Microfast® Quick Response Pendent Sprinkler VK302 is FM Approved as quick response **Non-storage** pendent sprinklers, as indicated in the FM Approval Guide. For specific application and installation requirements, reference the latest applicable FM Loss Prevention Data Sheets (including Data Sheet 2-0). FM Global Loss Prevention Data Sheets contain guidelines relating to, but not limited to: minimum water supply requirements, hydraulic design, ceiling slope and obstructions, minimum and maximum allowable spacing, and deflector distance below the ceiling.

NOTE: The FM installation guidelines may differ from cULus and/or NFPA criteria.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to Form No. F_080614 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, FM Global, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.



TECHNICAL DATA

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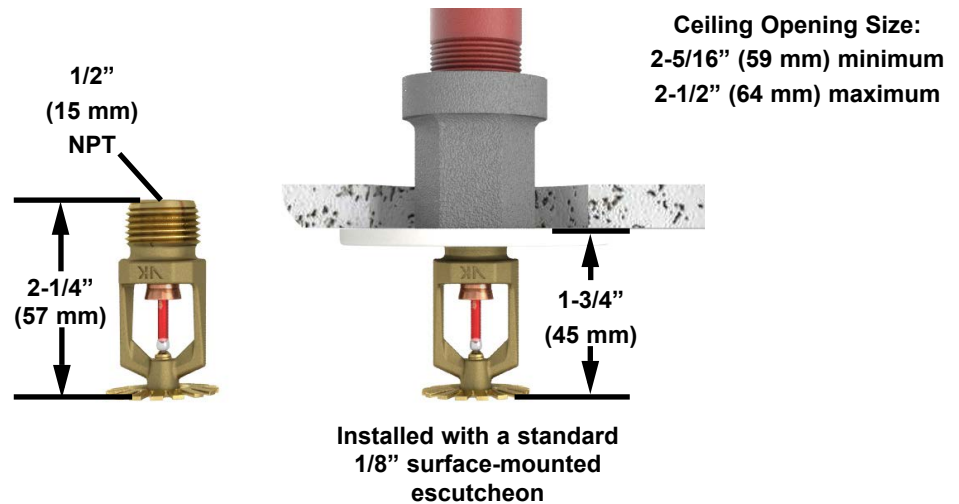


Figure 3: Sprinkler Dimensions with a Standard Escutcheon

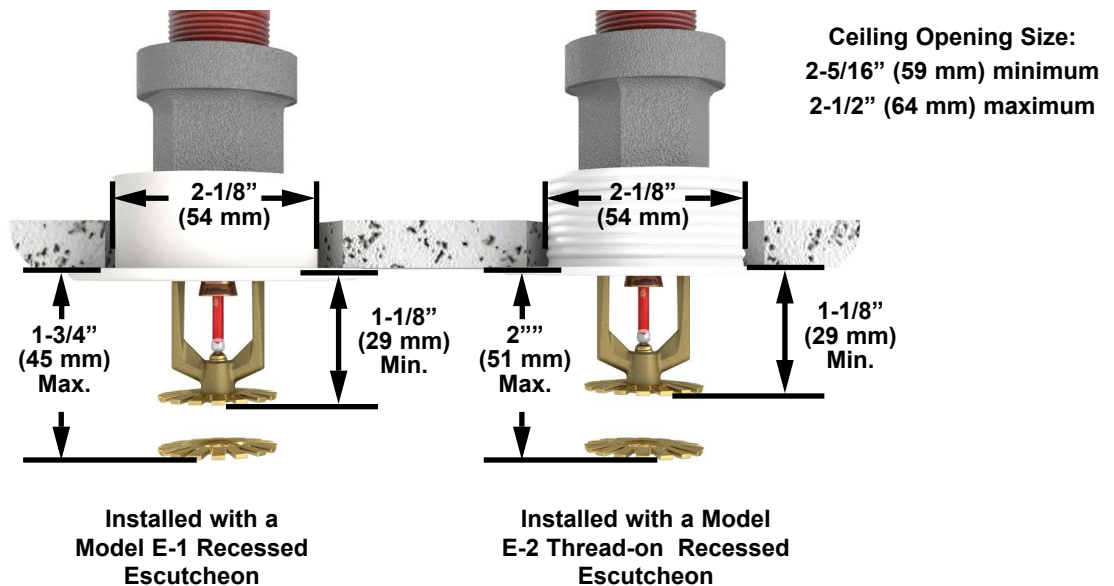


Figure 4: Sprinkler Dimensions with the Model E-1 and E-2 Recessed Escutcheons



BULLETIN

CARE AND HANDLING
OF SPRINKLERS

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SPRINKLERS ARE FRAGILE - HANDLE WITH CARE!**General Handling and Storage:**

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

For Pre-Assembled Drops:

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

Sprinklers with Protective Shields or Caps:

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

Sprinkler Installation:

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

Maximum Torque:

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

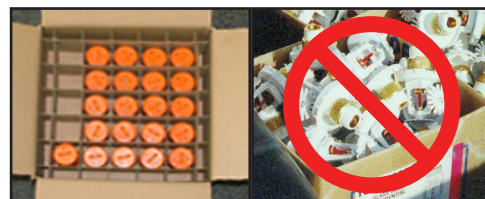
3/4" NPT: 20 ft-lbs. (27.1 N-m)

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



CORRECT
(Original container used)

INCORRECT
(Placed loose in box)



CORRECT
(Protected with caps)

INCORRECT
(Protective caps not used)



CORRECT
(Piping is in place at the ceiling)

INCORRECT
(Sprinkler at floor level)



CORRECT
(Special installation wrenches)

INCORRECT
(Designated wrench not used)



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

! WARNING

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

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



BULLETIN

CARE AND HANDLING
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PROTECTIVE SPRINKLER SHIELDS AND CAPS

General Handling and Storage:

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

WHEN TO REMOVE THE SHIELDS AND CAPS:

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

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

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

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

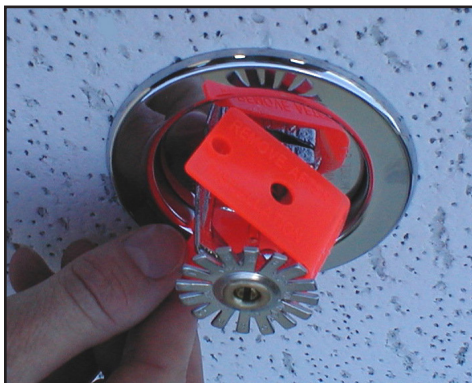


Figure 1: Sprinkler shield being removed from a pendent sprinkler.



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



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

HOW TO REMOVE SHIELDS AND CAPS:

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

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

NOTICE

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



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

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



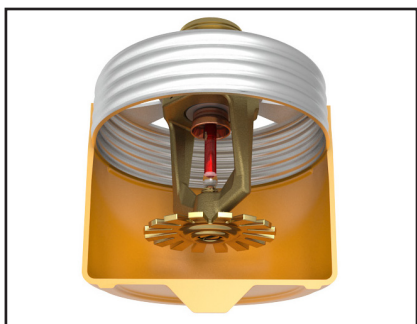
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CONCEALED COVER ASSEMBLIES ARE FRAGILE!
TO ASSURE SATISFACTORY PERFORMANCE OF THE PRODUCT, HANDLE WITH CARE.



Concealed Sprinkler and Adapter
 Assembly with Protective Cap



Concealed Sprinkler and Adapter
 Assembly (Protective Cap Removed)



Cover Plate Assembly
 (Pendent Cover 12381 shown)

GENERAL HANDLING AND STORAGE INSTRUCTIONS:

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

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



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USE THE FOLLOWING PRECAUTIONS WHEN HANDLING WAX-COATED SPRINKLERS

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

General Handling and Storage of Wax-Coated Sprinklers:

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

Installation of Wax-Coated Sprinklers:

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

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

TABLE 1

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

¹ Based on NFPA-13. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.



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.

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

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

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

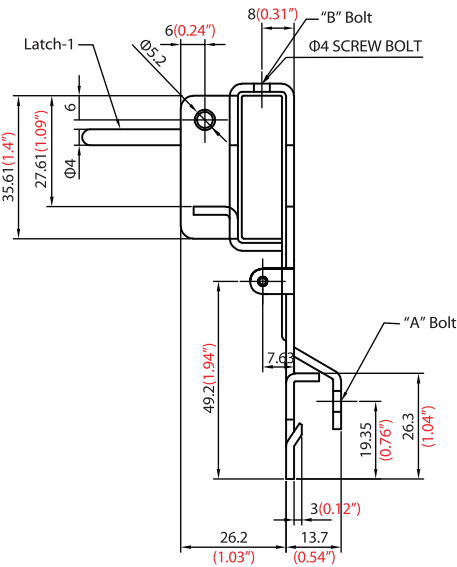
For details of warranty, refer to Viking's current list price schedule at www.vikinggroupinc.com or contact Viking directly.

PRODUCT DETAILS

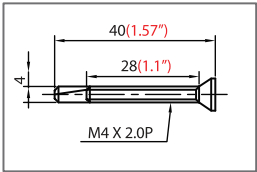
EASYFLEX®

TBS BRACKET FOR SUSPENDED AND HARD-LID CEILINGS

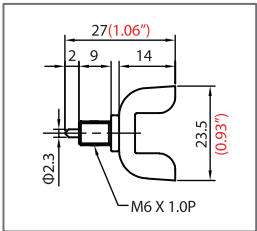
Scale	NS
Material	ASTM A-366
Tolerance	±0.3
Thickness	2.0 mm, ±0.05 mm
Specification	Zinc plated
Coating Durability	No indication of peeling
Anti-Corrosion	No indication of corrosion with salt spray test



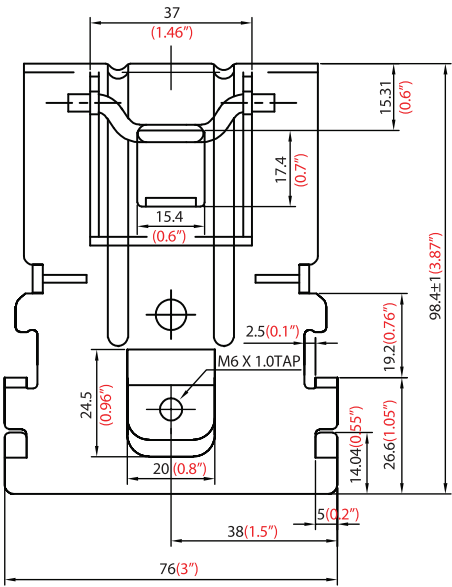
"A" BOLT MATERIAL: ASTM A-36
"B" BOLT MATERIAL: ANSI 1010
LATCH-1 MATERIAL: ASTM A-603



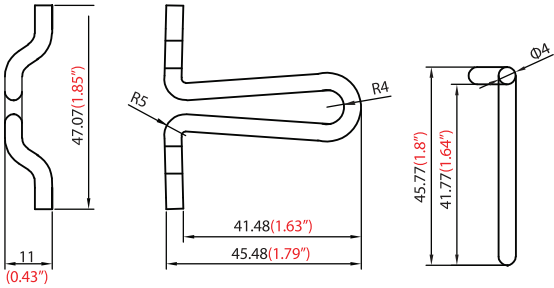
"B" Bolt



"A" Bolt



Scale	NS
Material	ASTM A-603
Tolerance	±1.0



TECHNICAL SPECIFICATIONS

EASYFLEX[®]

ULTRA PERFORMANCE BRAIDED FLEXIBLE SPRINKLER CONNECTION

Easyflex Ultra Performance Braided Flex Drops are designed to optimize installation efficiency and hydraulic performance. Available in 2'-6' lengths with a front-loading bracket for suspended and hard-lid ceilings, the UP series delivers lower friction loss than NPS 1 Schedule 40 pipe. Improved flow allows many AHJs to approve tenant improvements without hydraulic calculations. It is ideal for systems with limited pressure and for downsizing the main pipe in new construction, reducing overall job costs while optimizing system performance.



Applicable Standards and Compliance

National Fire Protection Association (NFPA):

- NFPA 13: Standard for installation of sprinkler systems
- NFPA 13D: Standard for the installation of sprinkler systems in one and two-family dwellings and manufactured homes
- NFPA 13R: Standard for installation of sprinkler systems in residential occupancies up to and including four stories in height
- NFPA 13 Section 17.4.1.3.3.3: Hangers are not required for flexible connections as long as the length does not exceed 6 ft.

American Society of Testing and Methods (ASTM):

- ASTM C635: Standard specifications for the manufacture, performance, and testing of metal suspension systems for acoustical tile and lay-in panel ceilings
- ASTM C636: Standard practice for installation of metal ceiling suspension systems for acoustical tile and lay-in panels

Factory Mutual (FM), FM Class No.1637:

- Approved standard for flexible sprinkler hose with threaded end fittings

Underwriters Laboratories, Inc. (UL), UL 2443:

- Standard for flexible sprinkler hose with fittings for fire protection service

IBC-ASCE/ SEI 7

- Flexible sprinkler connections are the alternative solution to install without seismic escutcheons (Oops Ring)

Buy American Act (BAA) Compliant

- Manufactured in Korea

Job Name:

Engineer/Architect:

Job Location:

Wholesaler:

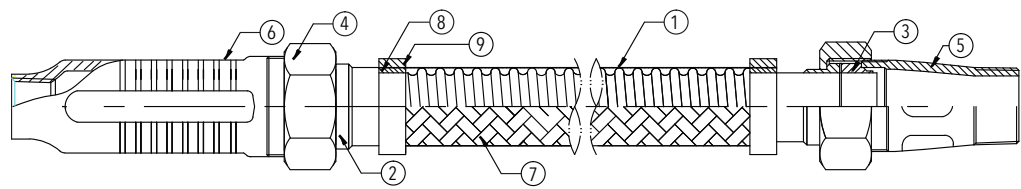
Submittal Date:

Contractor:

TECHNICAL SPECIFICATIONS



BRAIDED FLEXIBLE HOSE Ultra Performance 1-1/4" Flex Drop



- 1. Tube
- 2. Isolation Ring
- 3. Sealing Gasket
- 4. Nut
- 5. Nipple (1")
- 6. Reducer
- 7. Braid
- 8. Press Ring (Inner)
- 9. Press Ring (Outer)

SPECIFICATIONS

Flex Hose ID	1-1/4"
Hose Type	Braided
Lengths Available	24", 36", 48", 60", and 72"
Connection	Inlet 1"NPT
	Outlet 1/2" or 3/4"NPT
Minimum Bend Radius	2.5"
	DO NOT bend within 2.52" from connection nuts
Maximum K-Factor	1/2" K8.0
	3/4" K14.0

Max. Ambient Temperature Rating	300°F
Max. Working Pressure Rating	300 psig
Hose	Stainless Steel 304
Nut & Nipple	Zinc-Plated Steel
Sealing Gasket	Silicon
Isolation Ring	Nylon 66 + GF 30%

* Intended system type: wet, deluge, pre-action and dry.
Intended for direct connection to fire sprinklers.
No hangers and seismic escutcheons required.

FRICTION LOSS DATA

EFB UP Series Braided Hose OGSB-02, OTBSL-PA, OHCB-PA, and OWMSB-PA Bracket Systems



Length (in.)	Outlet Connection	Max. Number of 90° Bends	Equivalent Length of 1 in. Schedule 40 Pipe, ft.
24"	1/2"	2	3
	3/4"	2	10
36"	1/2"	5	12
	3/4"	5	22
48"	1/2"	8	19
	3/4"	8	34
60"	1/2"	10	26
	3/4"	10	40
72"	1/2"	12	37
	3/4"	12	46

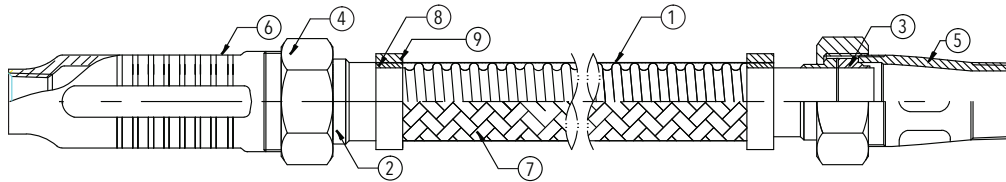
- UL: 2.5" minimum bend radius, where C = 120
FlexibilityType: Limited



TECHNICAL SPECIFICATIONS

EASYFLEX®

BRAIDED FLEXIBLE HOSE Ultra Performance 1-1/4" Flex Drop



1. Tube
2. Isolation Ring
3. Sealing Gasket
4. Nut
5. Nipple (1")
6. Reducer
7. Braid
8. Press Ring (Inner)
9. Press Ring (Outer)

SPECIFICATIONS

Flex Hose ID	1-1/4"
Hose Type	Braided
Lengths Available	24", 36", 48", 60", and 72"
Connection	Inlet 1"NPT or 1-1/4" Grooved
	Outlet 1/2" or 3/4"NPT
Minimum Bend Radius	6.5"
	DO NOT bend within 2.52" from connection nuts
Maximum K-Factor	1/2" K8.0
	3/4" K14.0

Max. Ambient Temperature Rating	225°F
Max. Working Pressure Rating	225 psig
Hose	Stainless Steel 304
Nut & Nipple	Zinc-Plated Steel
Sealing Gasket	Silicon
Isolation Ring	Nylon 66 + GF 30%

*No Hangers and seismic escutcheons required

FRICTION LOSS DATA

EFB UP Series Braided Hose OGSB-02, OTBSL-PA-24, OTBS-PA-24, OTBSS-PA-24, OWMSB-PA, OHCB-PA, OSSBW, and OSSBJ Bracket Systems



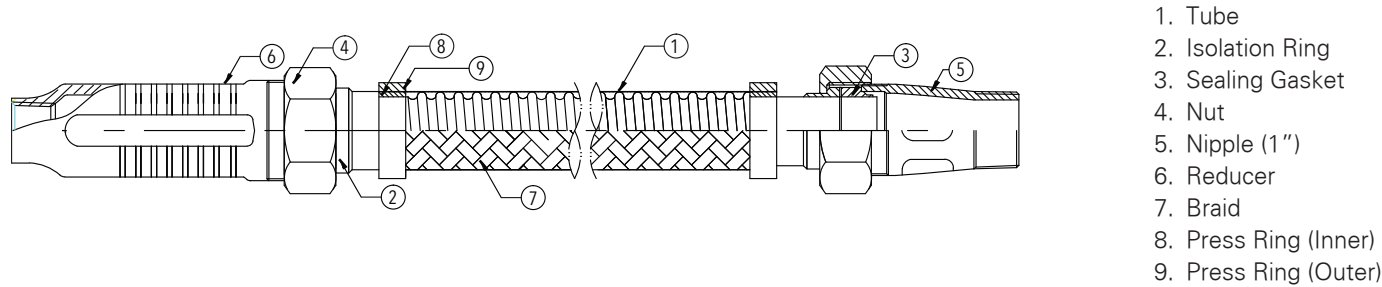
Length (in.)	Outlet Connection (Straight)	K-Factor	Max. Number of 90° Bends	Equivalent Length of 1 in. Schedule 40 Pipe, ft.
24"	1/2"	5.6 / 8.0	2	2.1 / 3.6
	3/4"	8.0 / 14.0	2	3.6 / 3.8
36"	1/2"	5.6 / 8.0	4	4.5 / 5.1
	3/4"	8.0 / 14.0	4	6.0 / 6.0
48"	1/2"	5.6 / 8.0	4	6.9 / 6.6
	3/4"	8.0 / 14.0	4	8.4 / 8.3
60"	1/2"	5.6 / 8.0	4	9.4 / 8.1
	3/4"	8.0 / 14.0	4	10.9 / 10.6
72"	1/2"	5.6 / 8.0	4	11.9 / 9.7
	3/4"	8.0 / 14.0	4	13.4 / 12.9

• FM: 6.5" minimum bend radius, where C = 120

TECHNICAL SPECIFICATIONS

EASYFLEX®

BRAIDED FLEXIBLE HOSE Ultra Performance 1-1/4" Flex Drop



SPECIFICATIONS

Flex Hose ID	1-1/4"	Max. Ambient Temperature Rating	225°F
Hose Type	Braided	Max. Working Pressure Rating	225 psig
Lengths Available	24", 36", 48", 60", and 72"	Hose	Stainless Steel 304
Connection	Inlet 1"NPT or 1-1/4" Grooved	Nut & Nipple	Zinc-Plated Steel
	Outlet 1/2" or 3/4"NPT	Sealing Gasket	Silicon
Minimum Bend Radius	6.5"	Isolation Ring	Nylon 66 + GF 30%
	DO NOT bend within 2.52" from connection nuts	*No Hangers and seismic escutcheons required	
Maximum K-Factor	1/2" K8.0		
	3/4" K14.0		

FRICTION LOSS DATA

EFB UP Series Braided Hose OGSB-02, OTBSL-PA-24, OTBS-PA-24, OTBSS-PA-24, OWMSB-PA, OHCB-PA, OSSBW, and OSSBJ Bracket Systems



Length (in.)	Outlet Connection (With 90° Elbow)	K-Factor	Max. Number of 90° Bends	Equivalent Length of 1 in. Schedule 40 Pipe, ft
24"	1/2"	5.6 / 8.0	2	7.9 / 7.9
	3/4"	8.0 / 14.0	2	8.8 / 8.5
36"	1/2"	5.6 / 8.0	4	9.9 / 9.9
	3/4"	8.0 / 14.0	4	10.6 / 10.8
48"	1/2"	5.6 / 8.0	4	11.9 / 11.9
	3/4"	8.0 / 14.0	4	12.4 / 13.2
60"	1/2"	5.6 / 8.0	4	13.9 / 14
	3/4"	8.0 / 14.0	4	14.3 / 15.5
72"	1/2"	5.6 / 8.0	4	16 / 16.1
	3/4"	8.0 / 14.0	4	16.2 / 17.9

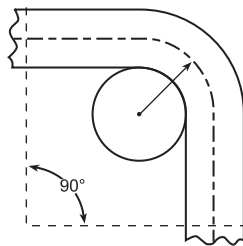
• FM: 6.5" minimum bend radius, where C = 120

TECHNICAL SPECIFICATIONS

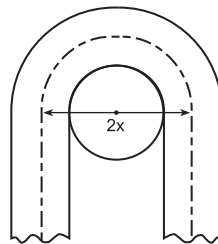
EASYFLEX[®]

BEND CHARACTERISTICS

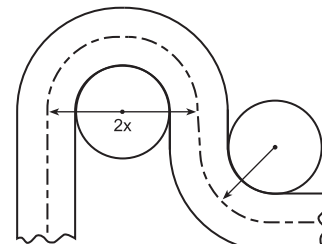
BEND EXAMPLE



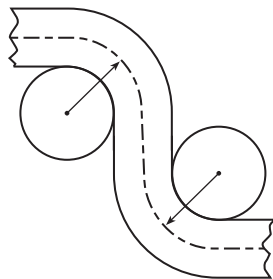
One 90° Bend



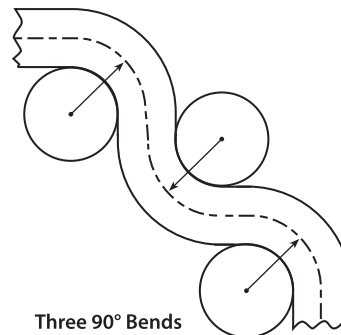
Two 90° Bends



Three 90° Bends



Two 90° Bends



Three 90° Bends

A higher number of bends may be permitted, provided the sum of degrees is equal to or less than the total maximum allowable degrees of bend (e.g. Two 90° bends equal 180°. Three 90° bends equal 270°)

EXAMPLE: A 48 in. hose installed with two 30° bends and two 90° bends at 4 in. bend radius is permitted and considered equivalent to the data shown above. In this example, the total number of degrees is 240°, which is less than the allowable 270°.

SlideLOK® Ready for Installation Coupling Fig. 74FP



*Patented

The patented SlideLOK coupling is the most rigid ready for installation coupling designed to reduce installation time. The slide action eases assembly and reduces installation time. The patented gasket provides four separate sealing surfaces for added protection.

The SlideLOK coupling is designed to be used with roll, cut or swage grooved steel pipe, Gruvlok and SPF® grooved-end fittings, and valves.

The SlideLOK coupling allows for a maximum working pressure of 450 psi on roll or cut grooved carbon steel standard wall pipe. The SlideLOK coupling provides a rigid connection allowing pipe hanging practices per ASME B31 Pipe Codes.

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

* Patents: 8282136; 8550502; 8615865; 9039046; 9168585; 9194516; 9297482; 9297484; 9500307; 9534715; 9631746; D680629; D680630; D696751

Material Specifications

Housing

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

Bolts

SAE J429, Grade 5, Zinc Electroplated (standard)
SAE J429, Grade 5, Thermo-Diffusion Coated (special order)

Heavy Hex Nuts

ASTM A563, Grade A, Zinc Electroplated, Violet Dyed (standard)
ASTM A563, Grade A, Thermo-Diffusion Coated (special order)

Hardware Kits

304 Stainless Steel (available in sizes up to 3/4")
Kit includes:
(2) Bolts per ASTM A193, Grade B8
(2) Heavy Hex Nuts per ASTM A194, Grade 8

Coatings

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

Gasket Material

Properties as designated in accordance with ASTM D2000

Pre-Lubricated Grade "E" EPDM, Type A 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) pipe fire protection sprinkler systems. For dry pipe systems and freezer applications, Gruvlok Xtreme Lubricant is required.

Gasket Material

SlideLOK (1" - 8")

Lubrication

Gruvlok Xtreme



SlideLOK Pressure Responsive Gasket



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

SlideLOK® Ready for Installation Coupling Fig. 74FP

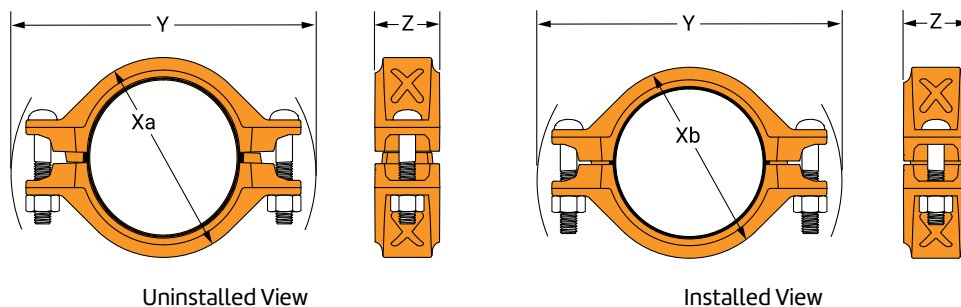


Figure Number	Nominal Size	Pipe O.D.	Max. Working Pressure ▲	Max. End Load	Range of Pipe End Separation	Coupling Dimensions				Coupling Bolts		Approx. Wt. Ea.
						Xa	Xb	Y	Z	Qty.	Size	
	In./DN(mm)	In./mm	PSI/bar	Lbs./kN	In./mm	In./mm	In./mm	In./mm	In./mm		In./mm	Lbs./kg
74FP	1 25	1.315 33.4	450 31.0	611 2.72	0-3/16 0-4.8	2 11/16 68	2 1/2 64	5 127	2 51	2	3/8 x 2 1/4 M10 x 57	1.5 0.7
74FP	1 1/4 32	1.660 42.2	450 31.0	973 4.33	0-3/16 0-4.8	2 29/32 74	2 1/2 64	5 17/32 140	2 51	2	1/2 x 2 3/4 M12 x 70	1.9 0.9
74FP	1 1/2 40	1.900 48.3	450 31.0	1,275 5.67	0-3/16 0-4.8	3 5/32 80	2 3/4 70	5 11/16 144	2 51	2	1/2 x 2 3/4 M12 x 70	2.1 1.0
74FP	2 50	2.375 60.3	450 31.0	1,993 8.87	0-3/16 0-4.8	4 13/32 112	4 102	6 15/32 164	2 51	2	1/2 x 2 3/4 M12 x 70	2.5 1.1
74FP	2 1/2 65	2.875 73.0	450 31.0	2,921 12.99	0-3/16 0-4.8	4 3/16 106	3 11/16 94	6 11/16 170	2 51	2	1/2 x 2 3/4 M12 x 70	2.6 1.2
74FP	3 80	3.500 88.9	450 31.0	4,329 19.26	0-3/16 0-4.8	4 29/32 125	4 13/32 112	7 3/8 187	2 51	2	1/2 x 3 M12 x 76	3.1 1.4
74FP	4 100	4.500 114.3	400 27.6	6,361 28.30	0-1/4 0-6.3	5 31/32 152	5 13/32 137	8 11/16 221	2 51	2	1/2 x 3 1/2 M12 x 89	3.1 1.4
74*	5 125	5.563 141.3	300 20.7	7,291 32.43	0-5/16 0-7.9	7 1/4 184	6 3/4 171	10 1/2 267	2 51	2	5/8 x 3 1/2 M16 x 89	5.5 2.5
74*	6 150	6.625 168.3	300 20.7	10,341 46.00	0-5/16 0-7.9	8 5/16 211	7 3/4 197	11 279	2 51	2	5/8 x 3 1/2 M16 x 89	6.3 2.9
74*	8 200	8.625 219.1	300 20.7	17,527 77.96	0-5/16 0-7.9	10 3/4 273	10 1/8 273	14 356	2 1/2 64	2	3/4 x 4 1/2 M20 x 115	14.3 6.5

Note:

Range of Pipe End Separation values are for system layout reference only. Actual installation spacing may vary based on pipe condition.

*When ordering, refer to product as FP74.

▲ – Maximum Working Pressure Rating is for Schedule 40 pipe.

For use in Dry Pipe Systems: The SlideLOK pressure responsive gasket is featured with four sealing surfaces to increase protection in low temperature applications. Once the SlideLOK gasket is installed, the performance of the gasket is equivalent to the Gruvlok Flush Gap Gasket. Note: The Flush Gap Gasket is not interchangeable with the SlideLOK gasket.

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™

SlideLOK® Ready for Installation Coupling Fig. 74FP

Listings and Approvals

Manufacturer	Pipe	Groove	NPS Size Range	Pressure Rating	
				cULus	FM
			In./DN(mm)	PSI/bar	PSI/bar
Schedule 40*		Roll, Cut	1-4 25-100	450 31.0	450 31.0
			5-6 125-150	300 20.7	300 20.7
			8 200	400 27.6	400 27.6
			8 200	400 27.6	400 27.6
Schedule 30*		Roll	1-4 25-100	365 25.2	365 25.2
			5-6 125-150	300 20.7	300 20.7
			8 200	400 27.6	NR —
			8 200	NR —	400 27.6
Schedule 10*		Roll	1-4 25-100	365 25.2	365 25.2
			5-6 125-150	300 20.7	300 20.7
			8 200	400 27.6	NR —
			8 200	NR —	400 27.6
0.188 in. Wall		Roll	1-4 25-100	365 25.2	365 25.2
			5-6 125-150	300 20.7	300 20.7
			8 200	400 27.6	NR —
			8 200	NR —	400 27.6
Wheatland Tube	Schedule 10	Swage	1 1/4-4 32 - 100	365 25.2	300 20.7
	Mega-Flow	Swage	1 1/4-4 32 - 100	NR —	300 20.7
		Roll	1 1/4-4, 6 32-100, 150	300 20.7	300 20.7
	Mega-Thread	Roll	1-2 25-50	300 20.7	300 20.7
	GL	Roll	1-2 25-50	300 20.7	300 20.7
	MLT	Roll	1-2 25-50	300 20.7	300 20.7
	WLS	Roll	1-2 25-50	300 20.7	NR —
	Fire-Flow	Roll	1 1/2 - 4 40-100	300 20.7	300 20.7
	EZ-Thread	Roll	1-2 25-50	300 20.7	300 20.7
	Eddy-Flow	Roll	1 1/4-4 32-100	300 20.7	300 20.7
Bull Moose Tube	Eddy-Thread 40	Roll	1-2 25-50	300 20.7	300 20.7

Note:

For the latest cULus pressure ratings, FM pressure ratings, and pipe approvals, please visit asc-es.com or contact your local ASC Engineered Solutions Representative.

* Schedule 40/30 pipe to ASTM A795/A53/ASME B36.10 in accordance with NFPA-13.

* Schedule 10 pipe to ASTM A135/A795/A53 in accordance with NFPA-13.



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Building connections that last™

Fig. 74FP SlideLOK® Ready for Installation 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.

1 Pipe Preparation

Pipe ends are to be cut, rolled or swage grooved according to ASC Engineered Solutions™ specifications. Not for use on "EG" grooved pipe ends. The pipe end must be smooth and free from metal burrs, sharp edges or projections.

2 Gasket Preparation

Ensure the gasket is suitable for the intended application by referring to the ASC gasket compatibility chart.

SlideLOK pre-lubricated gasket does not require lubrication.

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

3 Assembly

The SlideLOK Fig. 74FP may be installed by one of two methods. The preferred method depends on the type of pipe components being joined and their orientation. Please review both methods before installing.

Step 3 – Method No. 1

Slide the SlideLOK coupling completely over the grooved pipe end. This will allow a clear and un-obstructed view of the pipe for correct alignment.

A. Slide the coupling on the pipe past the groove. The bolts and nuts can be hand tightened to position the coupling in place.

B. Align the mating pipe end. Align the two adjoining pipes together.

C. Slide the coupling back over the grooves so that the coupling keys are located over the respective grooves on both pipe ends.

D. Follow the instructions on fastening the coupling as shown in Step 4.



Step 3 – Method No. 2

Slide the SlideLOK coupling half way onto the pipe end or fitting. This will better accommodate fitting, and valve accessories during installation.

A. Slide the coupling on the fitting so that the groove and keys are aligned.

B. Bring the pipe end or fitting towards the

coupling and insert so that the groove and coupling keys are aligned.

C. Hand tighten the nuts to correctly position the couplings keys over the respective grooved ends.

D. Follow the instructions on fastening the coupling as shown in Step 4.



Correct



Incorrect

READY FOR INSTALLATION – RIGHT OUT OF THE BOX

Do not disassemble the SlideLOK Coupling. The 74FP coupling is ready for installation. The bolt and gasket do not need to be removed.

4 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	40-50
1/2	7/8	80-100
5/8	1 1/16	100-130
3/4	1 1/4	130-180

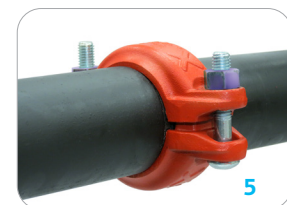
* Non-lubricated bolt torque



5 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.



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Building connections that last™

Fig. 74FP SlideLOK® Ready for Installation 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.

1 De-Pressurize the System

De-pressurize the system before removing the SlideLOK Coupling. Dis-assemble the couplings by removing the nuts, bolts and gasket from the housing halves. A wrench is required to overcome the epoxy used to secure the nuts on the bolts.

2 Pipe Preparation

Pipe ends are to be cut, rolled or swage grooved according to ASC Engineered Solutions™ specifications. Not for use on "EG" grooved pipe ends. The pipe end must be smooth and free from metal burrs or projections.

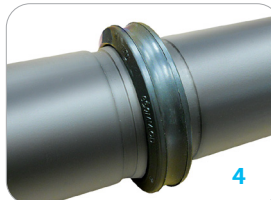
3 Gasket Preparation

Ensure the gasket is suitable for the intended application by referring to the ASC gasket compatibility chart. A light coating of Gruvlok XTreme lubricant must be applied to the gasket prior to installation.



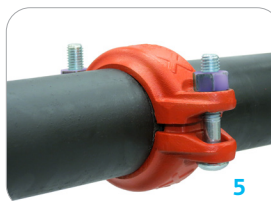
4 Pipe Alignment and Gasket Installation

Slide the gasket onto the pipe then align the two pipe ends together. Pull the gasket into position, centering it between the grooves on each pipe. Gasket should not extend into the groove on either pipe.



5 Housing Assembly

Place each of the housing halves on the pipe making sure the housing key fits into the groove. Be sure that the tongue and recess portions of the housing mate properly. Insert the bolts.



6 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	40-50
1/2	7/8	80-100
5/8	1 1/16	100-130
3/4	1 1/4	130-180

* Non-lubricated bolt torque



REINSTALLATION OF THE 74FP SLIDELOK COUPLING

The SlideLOK coupling is designed to be installed in the ready for installation assembly position once. After the initial assemble the following steps are to be taken to re-install the 74FP SlideLOK coupling.

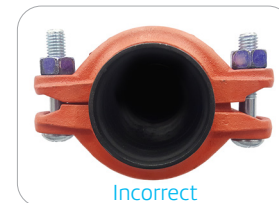
7 Assembly is complete

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.



Correct



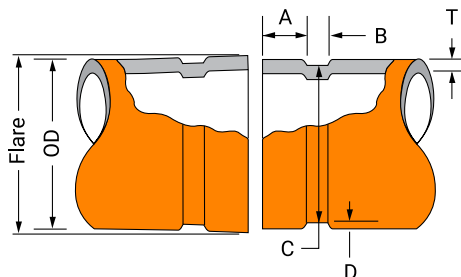
Incorrect



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Building connections that last™

SlideLOK® Ready for Installation Coupling Fig. 74FP



Swage Groove Specification

-1-	-2-			-3-	-4-	-5-		-6-	-7-	-8-
Nominal Pipe Size	O.D.			"A"	"B"	"C"	"C" Tol.	"D"	"T" Min. Allow.	Max. Flare
	Actual	Tolerance		$\pm 0.030 / \pm 0.76$	$\pm 0.030 / \pm 0.76$	Actual	$+0.000$	(Ref. Only)	Wall Thick	Diameter
In./DN(mm)	In./mm	+In./mm	-In./mm	In./mm	In./mm	In./mm	-In./mm	In./mm	In./mm	In./mm
1 1/4 32	1.660 42.2	+0.016 +0.41	-0.016 -0.41	0.625 15.88	0.281 7.14	1.535 38.99	-0.015 -0.38	0.063 1.60	0.065 1.7	1.770 45.0
1 1/2 40	1.900 48.3	+0.019 +0.48	-0.019 -0.48	0.625 15.88	0.281 7.14	1.775 45.09	-0.015 -0.38	0.063 1.60	0.065 1.7	2.010 51.1
2 50	2.375 60.3	+0.024 +0.61	-0.024 -0.61	0.625 15.88	0.344 8.74	2.250 57.15	-0.015 -0.38	0.063 1.60	0.065 1.7	2.480 63.0
2 1/2 65	2.875 73.0	+0.029 +0.74	-0.029 -0.74	0.625 15.88	0.344 8.74	2.720 69.09	-0.018 -0.46	0.078 1.98	0.083 2.1	2.980 75.7
3 80	3.500 88.9	+0.035 +0.89	-0.031 -0.79	0.625 15.88	0.344 8.74	3.344 84.94	-0.018 -0.46	0.078 1.98	0.083 2.1	3.600 91.4
4 100	4.500 114.3	+0.045 +1.14	-0.031 -0.79	0.625 15.88	0.344 8.74	4.334 110.08	-0.020 -0.51	0.083 2.11	0.083 2.1	4.600 116.8

Note:

COLUMN 1 – Nominal IPS Pipe size.

COLUMN 2 – IPS outside diameter.

COLUMN 3 – Gasket seat must be free from scores, seams, chips, rust or scale which may interfere with proper sealing of the gasket. Gasket seat width (Dimension A) is to be measured from the pipe end to the vertical flank in the groove wall.

COLUMN 4 – Groove width (Dimension B) is to be measured between vertical flank of the groove size walls.

COLUMN 5 – The groove must be of uniform depth around the entire pipe circumference. (See column 6).

COLUMN 6 – Groove depth: for reference only. Groove must conform to the groove diameter "C" listed in column 5.

COLUMN 7 – Minimum allowable wall thickness which may be roll grooved.

COLUMN 8 – Maximum allowable pipe end flare diameter. Measured at the most extreme pipe end diameter of the gasket seat area.

Out of roundness: Difference between maximum O.D. and minimum O.D. measured at 90° must not exceed total O.D. tolerance listed (reference column 2).

For IPS pipe, the maximum allowable tolerance from square cut ends is 0.03" for 1" thru 3 1/2"; and 0.045" for 4".

Weld Seams must be ground flush with the pipe O.D. and ID prior to roll grooving. Failure to do so may result in damage to the roll grooving machine and unacceptable roll grooves may be produced.

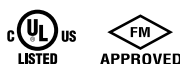
▼ "A" tolerance $+0.030" / -0.060"$ ($+0.77 / -1.54$ mm)



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Building connections that last™

Fire-Rite® Short Pattern 90° Elbow Fig. 7450*



☞ - Available galvanized

Material Specifications

Fabricated Fittings

Ductile Iron conforming to ASTM A536

Coatings

Rust inhibiting paint - Color: ORANGE (Standard) or

Hot Dipped Zinc Galvanized conforming to ASTM A153 (Optional)

Other available options - Example: RAL3000 or RAL9000 Series

The Gruvlok® Fire-Rite® short pattern fitting system incorporates 90° elbows and tees in 2" to 8" size range with a 300 psi pressure rating.

Fire-Rite fittings are painted to industry specification and are available galvanized for more corrosive environments.

CAD design increases internal diameters and provides superior flow capability.

Fire-Rite fittings are cast from ASTM A536 Ductile Iron to Grade 65-45-12.

Fire-Rite: Light Weight - Heavy Value!

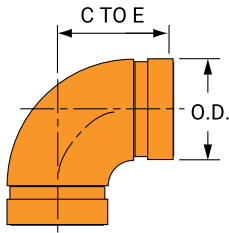
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*When ordering, refer to product as FP7450.



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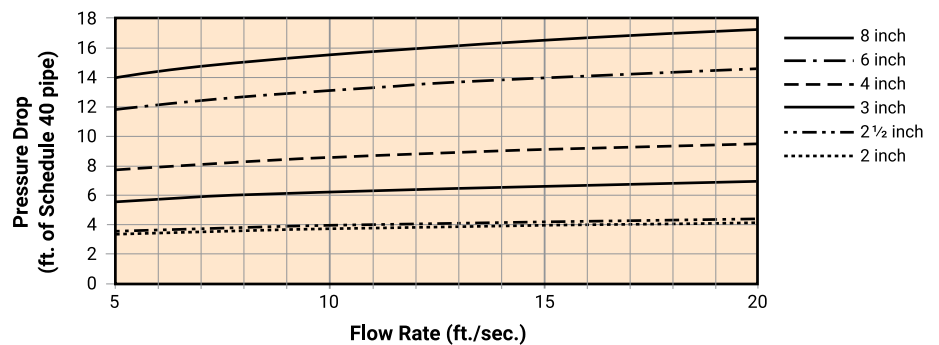
Fire-Rite® Short Pattern 90° Elbow Fig. 7450*



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	1.7 0.8
2½ 65	2.875 73.0	3 76	2.6 1.2
3 80	3.500 88.9	3⅝ 86	3.5 1.6
4 100	4.500 114.3	4 102	6.5 3.0
6 150	6.625 168.3	5½ 140	14.8 6.7
8 200	8.625 219.1	6⅞ 175	25.6 11.6

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

Fig. 7450 90° Elbow Short Pattern Fitting - Pressure Drop



Note:
Gruvlok short pattern fittings exceed the headloss requirements of NFPA 13.
For Fig. 7450 90° grooved end elbows use the value shown.
Note: Above values are shown for Schedule 40 pipe to be consistent with industry practices.



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Building connections that last™

Fire-Rite® Short Pattern Tee Fig. 7460*



 - Available galvanized

Material Specifications

Fabricated 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)

The Gruvlok® Fire-Rite® short pattern fitting system incorporates 90° elbows and tees in 2" to 8" size range with a 300 psi pressure rating.

Fire-Rite fittings are painted to industry specification and are available galvanized for more corrosive environments.

CAD design increases internal diameters and provides superior flow capability.

Fire-Rite fittings are cast from ASTM A536 Ductile Iron to Grade 65-45-12.

Fire-Rite – Light Weight – Heavy Value!

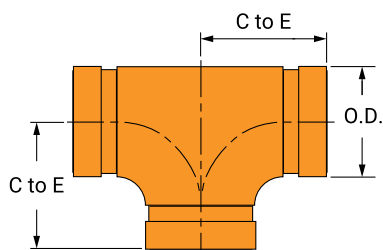
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*When ordering, refer to product as FP7460.



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Fire-Rite® Short Pattern Tee Fig. 7460*

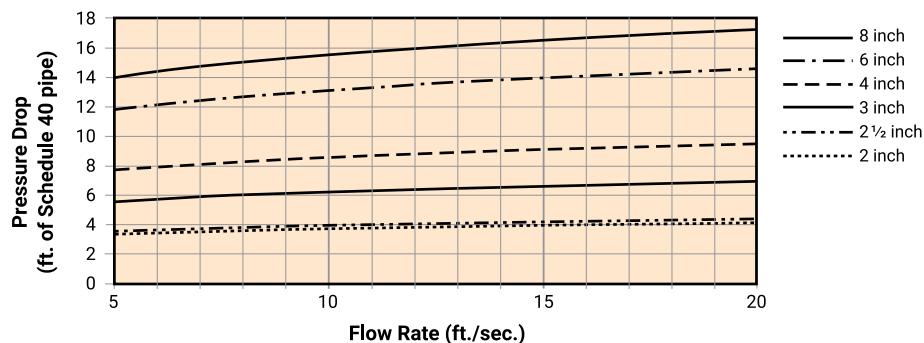


Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	In./mm	In./mm	Lbs./kg
2 50	2.375 60.3	2¾ 70	2.5 1.1
2½ 65	2.875 73.0	3 76	3.5 1.6
3 80	3.500 88.9	3⅝ 86	4.8 2.2
4 100	4.500 114.3	4 102	8.1 3.7
6 150	6.625 168.3	5½ 140	19.1 8.7
8 200	8.625 219.1	6⅞ 175	35.2 16.0

Note:

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

Fig. 7460 Tee Short Pattern Fitting - Pressure Drop



Note:

Gruvlok short pattern fittings exceed the headloss requirements of NFPA 13.

For Fig. 7460 Tee branch use 2½ times the value shown.

For Fig. 7460 Tee run use the value shown.

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



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Drain Elbow
Fig. E-9



Material Specifications

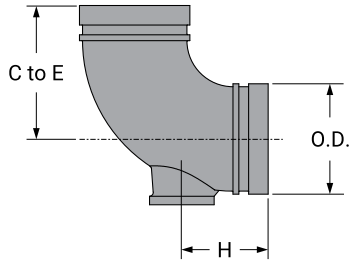
- Cast Fittings**
2"-8" Ductile Iron conforming to ASTM A536, Grade 65-45-12
- Fabricated Fittings**
1 1/4"-6" Carbon Steel, A135 Schedule 10
8"-12" Carbon Steel, A795/A135/.188 Wall
- Coatings**
Rust inhibiting paint
Color: Orange (standard)
Hot Dipped Zinc Galvanized conforming to ASTM A153 (optional)
Other colors available
Example: RAL3000 or RAL9000 Series
- Drain elbow comes standard with 1" female NPT Outlet per ASME B1.20.1.

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



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Drain Elbow Fig. E-9



Nominal Size	O.D.	Max. Working Pressure ▲	Center to End	H	Approx. Wt. Ea.
In./DN(mm)	In./mm	PSI/bar	In./mm	In./mm	Lbs./kg
1 1/4 32	1.660 42.2	300 20.7	2 3/4 69	1 3/4 44	0.7 0.3
1 1/2 40	1.900 48.3	300 20.7	2 3/4 69	1 3/4 44	1.7 0.8
2C 50	2.375 60.3	300 20.7	3 1/4 83	2 1/4 57	2.1 1.0
2 1/2 C 65	2.875 73.0	300 20.7	3 3/4 95	2 3/4 69	2.9 1.3
3C 80	3.500 88.9	300 20.7	4 1/4 108	2 3/4 69	4.0 1.8
4C 100	4.500 114.3	300 20.7	5 127	2 3/4 69	7.5 3.4
5 125	5.563 141.3	300 20.7	5 1/2 140	2 3/8 60	11.5 5.2
6C 150	6.625 168.3	300 20.7	6 1/2 165	2 3/4 69	16.5 7.5
8C 200	8.625 219.1	300 20.7	7 3/4 197	2 3/4 69	29.0 13.2
10 250	10.750 273.1	300 20.7	9 229	2 3/4 69	48.5 22.0
12 300	12.750 323.9	300 20.7	10 254	2 3/4 69	66.0 29.0

Note:

C – Cast ductile iron, all others are fabricated steel.

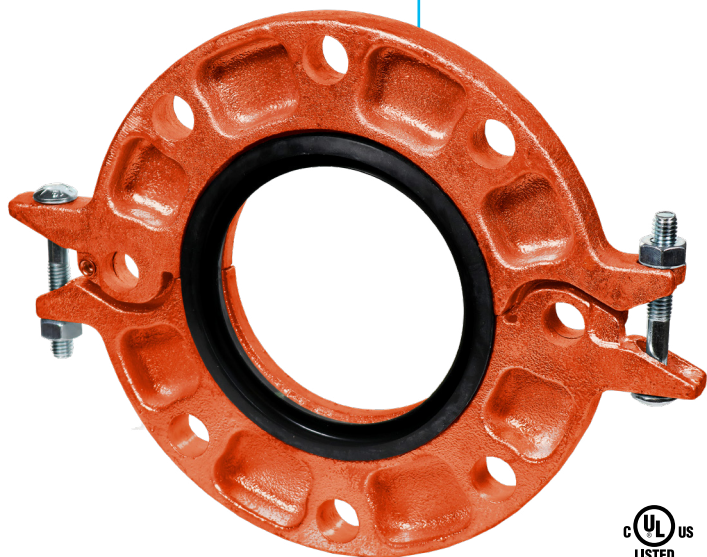
▲ – Working Pressure Ratings are for reference only. For the latest UL/ULC and FM ratings, please visit asc-es.com or contact your local ASC Engineered Solutions™ Representative.



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Building connections that last™

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)

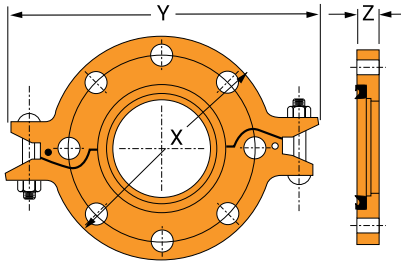
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many chemical services.

NOT FOR USE IN PETROLEUM APPLICATIONS.



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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 2¾ M10 x 70	30 40	45 60	6¼ 159	8¾ 213	¾ 19	2⅜ 60	3⅞ 87	4 4	5⁄8 x 2¾ M16 x 70	110 149	140 190	4.2 1.9
2½ 65	2.875 73.0	300 20.7	1,948 8.66	3⁄8 x 2¾ M10 x 70	30 40	45 60	7 178	9½ 241	¾ 19	2⅞ 73	4 102	4 —	5⁄8 x 2¾ 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	7¼ 184	9¾ 248	¾ 19	3 76	4⅛ 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 2¾ M10 x 70	30 40	45 60	7⅞ 200	10½ 267	¾ 19	3½ 89	4⅞ 116	4 8	5⁄8 x 2¾ 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 2¾ M10 x 70	30 40	45 60	9 229	11½ 292	¾ 19	4½ 114	5⅞ 141	8 8	5⁄8 x 2¾ M16 x 70	110 149	140 190	6.3 2.9
5½ O.D. 139.7	5.500 139.7	300 20.7	7,127 31.70	— M10 x 70	30 40	45 60	9⅞ 251	12⅞ 327	⅞ 22	5⅞ 141	6¾ 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 2¾ M10 x 70	30 40	45 60	10 254	12½ 318	⅞ 22	5⅞ 141	6¾ 171	8 —	¾ x 2⅞ —	220 298	250 339	8.8 4.0
6½ O.D. 165.1	6.500 165.1	300 20.7	9,955 44.28	— M10 x 70	30 40	45 60	11¼ 286	14 356	⅞ 22	6⅞ 168	7⅞ 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 2¾ M10 x 70	30 40	45 60	11 279	14 356	⅞ 22	6⅞ 168	7⅞ 198	8 8	¾ x 3⅛ 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 2¾ M10 x 70	30 40	45 60	13½ 343	16½ 419	1 25	8⅞ 219	10 254	8 8 (12)	¾ x 3¼ 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 2¾ M10 x 70	30 40	45 60	16 406	19 483	1 25	10¾ 273	12⅞ 308	12 12	⅞ x 3½ 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 2¾ M10 x 70	30 40	45 60	19 483	21¾ 552	1¼ 32	12¾ 324	14⅞ 359	12 12	⅞ x 3¾ —	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	18⅞ 460	21¼ 540	1 25	12¾ 324	14⅞ 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.

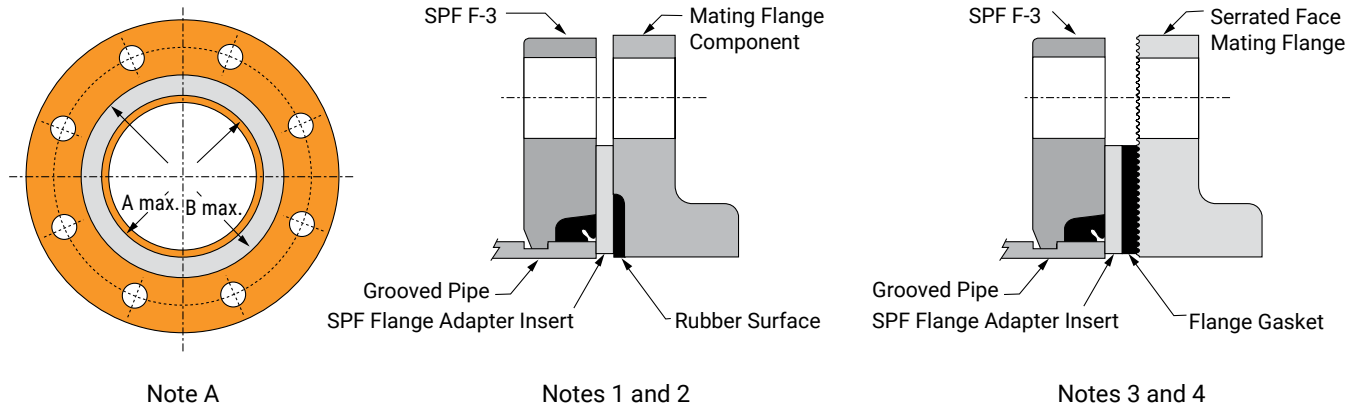
Warning: For dry pipe systems and freezer applications lubrication of the gasket is required, Gruvlok Xtreme Lubricant is required.



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Building connections that last™

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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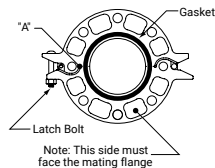
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Fig. F-3 Grooved Flange Adapter

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.

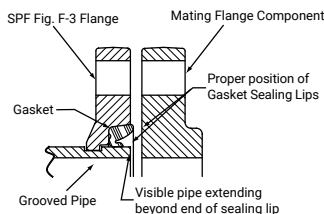
- 2 Place the latch bolt back into the slotted hole. Tighten the nut until there is a $\frac{1}{16}$ " gap between the flange halves at location "A". (See Figure on the right)



- 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.

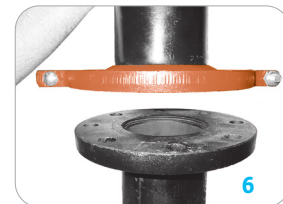


Fig. F-3 Grooved Flange Adapter

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.

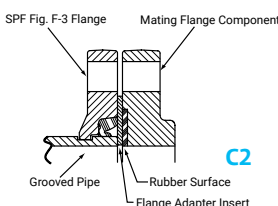
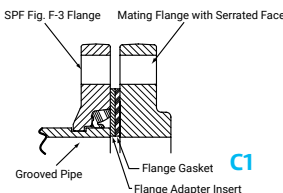
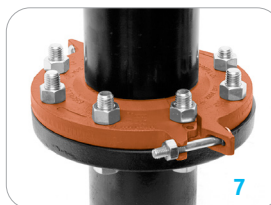
Note: The Fig. F-3 Flange requires the use of a Flange Adapter Insert when used against rubber surfaces (Figure C1), serrated flange surfaces or mating flanges with inserts (Figure C2). The Flange Adapter Insert will be exposed to the fluids in the system. Ensure that the Insert is compatible with the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

Fig. 146

Continuous Threaded Rod

Size Range: 1/4" through 1 1/2" 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 ☐ Galvanized.

Maximum Temperature: 650° F.

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.

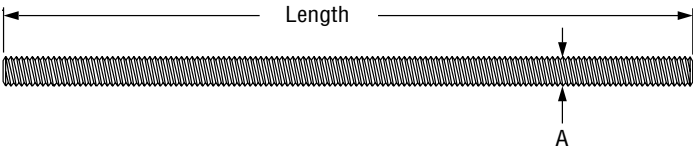
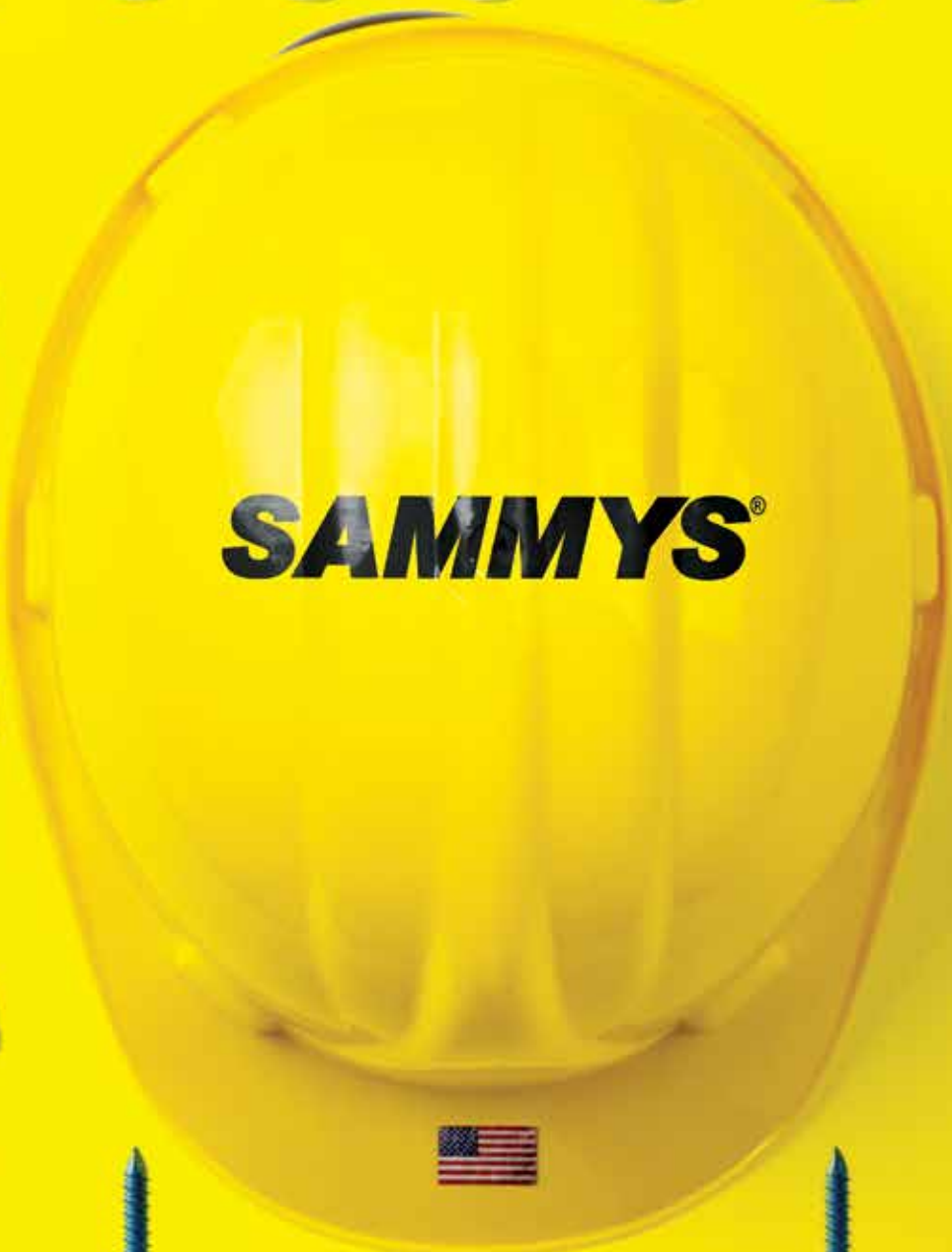


FIG. 146: LOADS (LBS) • WEIGHTS (LBS) • DIMENSIONS (IN)			
Rod Size A	Threads per Inch	Max Load 650° F	Weight per Ft.
1/4	20	240	0.12
3/8	16	730	0.30
1/2	13	1,350	0.53
5/8	11	2,160	0.84
3/4	10	3,230	1.20
7/8	9	4,480	1.70
1	8	5,900	2.30
1 1/4	7	9,500	3.60
1 1/2	6	13,800	5.10

Note: Other rod sizes available upon request. Class 2 fit is available upon request.

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



SAMMYS®

**2018-2019
Product Catalog**

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Warranty • Disclaimer of Warranty

Proper fastener connection design takes in to account where and how fasteners are used. Allowance for special characteristics in materials, differences in materials, differences in types of materials being joined, unique or unusual environmental service or installation conditions and the safety factors required by anticipating normal or short term loading conditions must be considered. Due to possible differences in specifications, applications, and interpretation of results, purchasers and specifiers must make their own evaluation of the products, to determine the suitability of these products for intended use. All warranties of Buildex products, expressed or implied, including the warranties of merchantability and fitness for particular purposes are specifically excluded except for the following: Buildex will repair or replace any product which, within twelve months after sale by Buildex or its distributors, is found by Buildex to be defective in material or workmanship - normal wear and tear accepted. This is the sole warranty of Buildex and the sole remedy available to distributor or buyer. Buildex shall not be liable for any injury, loss or damage, direct, indirect, or consequential, arising out of the use of, or the inability to use, any Buildex product.

INSTALLATION INSTRUCTIONS FOR WOOD & STEEL

INSTALLATION STEPS - VERTICAL INTO WOOD & STEEL:

1. Insert the appropriate nut driver into a 3/8" or 1/2" portable drill.
2. Insert the SAMMYS® into the #14 (black) nut driver (p/n 8113910). Drill should be in a vertical position.
3. Push the face of the nut driver tight to the member. Begin installation when the nut driver spins freely on the SAMMYS, stop drill and remove.
4. The SAMMYS is now ready to receive 1/4", 3/8", 1/2" or metric all thread rod, bolt stock. (The 1/2" requires the #14SW red nut driver)

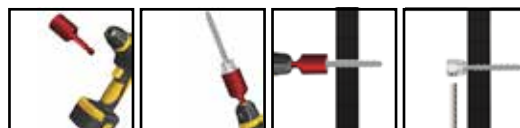
Note: When installing DSTR, follow the above instructions, then add retainer nut and torque to 20 inch lbs. for maximum pullout in purlin steel.



INSTALLATION STEPS - HORIZONTAL INTO WOOD & STEEL:

1. Insert the appropriate nut driver into a 3/8" or 1/2" portable drill.
2. Insert the SAMMYS into the #14SW (red) nut driver (p/n 8114910). With drill unit in a horizontal position and at a right angle to the structural member, begin installation.
3. When the nut driver spins freely on the SAMMYS, stop the drill and remove.
4. The unit is now ready to receive 1/4", 3/8", M10, M8 or metric all thread rod or bolt stock.

Note: When installing SWDR, follow the above instructions, then add retainer nut and torque to 20 inch lbs. for maximum pullout in purlin steel.



INSTALLATION INSTRUCTIONS FOR CONCRETE

INSTALLATION STEPS - VERTICAL INTO CONCRETE:

1. Using an SDS 250 carbide tip bit or a HEX RECEIVER with a #250 carbide tip bit, pre-drill the concrete member to a depth of 2" with a hammer/rotary hammer drill set on impact mode.
2. After pre-drilling has been completed, install the SLEEVE TOOL over the bit (the bit should remain in the drill), and insert the #14 (black) nut driver (p/n 8113910) into the opposite end (see Vertical Installation note above).
3. Insert the CST screw into the nut driver.
4. Place tip of screw into the pre-drilled hole, turn impact/drill unit to drill mode and begin insertion. When the nut driver spins freely on the CST screw, installation is complete. Stop and remove drill.
5. The concrete screw is ready to receive 1/4", 3/8", 1/2", or metric all thread rod or bolt stock. (#14SW red nut driver used with 1/2" screw)

Note: Use a 1200 maximum RPM drill for installation.

Note: Do not install concrete screws while the drill unit is in impact mode — doing so will destroy the pullout factor of the screw.



INSTALLATION STEPS - HORIZONTAL INTO CONCRETE:

1. Using an SDS 250 carbide tip bit or a HEX RECEIVER with a #250 carbide tip bit, pre-drill the concrete member to a depth of 2" with a hammer/rotary hammer drill set on impact mode.
2. After pre-drilling has been completed, install the SLEEVE TOOL over the bit (the bit should remain in the drill), and insert the #14SW (red) nut driver (p/n 8114910) into the opposite end.
3. Insert the SWC screw into the nut driver.
4. Place tip of screw into the pre-drilled hole, turn impact/drill unit to drill mode and begin insertion. When the nut driver spins free on the SWC screw, installation is complete. Stop and remove drill.
5. The SWC screw is ready to receive 1/4", 3/8" or metric all thread rod or bolt stock.

Note: Use a 1200 maximum RPM drill for installation.

Note: Do not install concrete screws while the drill unit is in impact mode — doing so will destroy the pullout factor of the fastener.

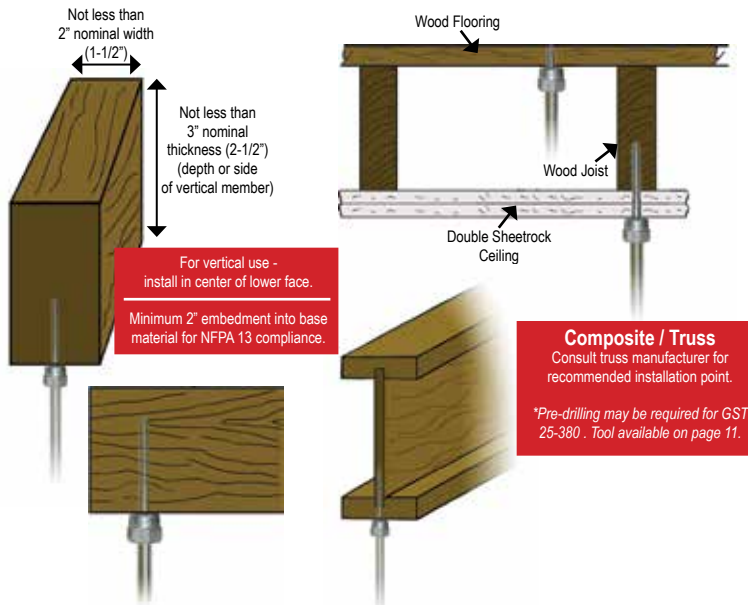


SPECIAL NUT DRIVER SYSTEM: The nut drivers were designed with a unique spin-off feature which provides a fast and safe installation each time. When the face of the driver comes into contact with the material you are installing into, continue drilling until nut driver spins free. Installation is then complete. Warranty requires the use of the appropriate nut driver for installations.

SAMMYS® FOR WOOD - Vertical Application



Application



Product Features

- No pre-drilling required.
- Quick to install using the Sammy Nut Driver with an 18V cordless drill.
- Saves time from traditional methods.
- Reduces installation costs.
- Assembled in the U.S.A.

View our
installation videos!
 YouTube



Approvals	Rod Size	Part Number	Model	Screw Descriptions	Ultimate Pullout (lbs)	UL Test Load (lbs)	FM Test Load (lbs)	Box Qty	Case Qty
VERTICAL MOUNT									
	1/4"	8002957	GST 100	1/4 x 1"	210 (7/16" OSB) 670 (3/4" Ply)			25	125
	1/4"	8003957	GST 200	1/4 x 2"	1760 (Fir)			25	125
	3/8"	8007957	GST 10	1/4 x 1"	210 (7/16" OSB) 670 (3/4" Ply)	300		25	125
	3/8"	8008957	GST 20	1/4 x 2"	1760 (Fir)	850	1475	25	125
	3/8"	8068925	GST 20-SS	1/4 x 2"	1760 (Fir)	850		25	125
	3/8"	8009925	GST 25-380	3/8 x 2-1/2"	2113 (Fir)	1500		25	125
	3/8"	8010957	GST 30	1/4 x 3"	2060 (Fir)	1500	1475	25	125
	1/2"	8013925	GST 2	1/4 x 2"	1760 (Fir)			25	125
	1/2"	8015925	GST 3	1/4 x 3"	2275 (Fir)			25	125



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SPECIAL NUT DRIVER SYSTEM: The nut drivers were designed with a unique spin-off feature which provides a fast and safe installation each time. When the face of the driver comes into contact with the material you are installing into, continue drilling until nut driver spins free. Installation is then complete. Warranty requires the use of the appropriate nut driver for installations.

SIDEWINDER® FOR WOOD - Horizontal Application



Application

Not less than 2" nominal width (1-1/2" up to 3-1/2" pipe; not less than 3" (2-1/2") nominal width 4" & 5" pipe

Minimum 2-1/2" from bottom for branch lines. Minimum 3" from bottom for main lines. Exception: This requirement shall not apply to 2" or thicker nailing strips resting on top of steel beams.

Floor Joist

Product Features

- No pre-drilling required.
- Quick to install using the Sammy Nut Driver with an 18V cordless drill/driver.
- Saves time from traditional methods.
- Reduces installation costs.
- Assembled in the U.S.A.

Composite / Truss

Consult truss manufacturer for recommended installation point.

*Pre-drilling may be required for Model SWG 25-380. Tool available on page 11.

View our installation videos!



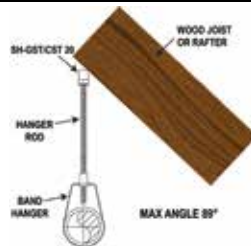
#14 SW Red
Nut Driver
Part # 8114910

Approvals	Rod Size	Part Number	Model	Screw Descriptions	Ultimate Shear (lbs)	UL Test Load (lbs)	Box Qty	Case Qty
HORIZONTAL MOUNT								
	3/8"	8020957	SWG 10	1/4 x 1"	622 (Fir)	300	25	125
	3/8"	8021957	SWG 20	1/4 x 2"	1725 (Fir)	1050	25	125
	3/8"	8022925	SWG 25-380	3/8 x 2-1/2"	2249 (Fir)	1500	25	125
	3/8**	8023925	SWG 30	1/4 x 3"	1884 (Fir)		25	125

SAMMYS SWIVEL HEAD™ FOR WOOD - Swivel Application



Application



Product Features

- Eliminates distortion of threaded rod.
- Accommodates up to 3 1/2" x 12 pitch roof.
- Allows 17° deflection from vertical.
- Saves time from traditional methods.
- Reduces installation costs.
- Assembled in the U.S.A.

#14 Black
Nut Driver
Part # 8113910



#14 SH Orange
Nut Driver
Part # 8273910

Approvals	Rod Size	Part Number	Model	Screw Descriptions	Ultimate Pullout (lbs)	UL Test Load (lbs)	FM Test Load (lbs)	Min Thickness	Box Qty	Case Qty
SWIVEL MOUNT										
	3/8"	8139957	SH-GST 20	1/4 x 2"	1257 (Fir)	1050	1475		25	125
	3/8**	8269957	SH-GST/CST 20	5/16 x 1-3/4"	1903 Dim. Lumber 1406 @ 45° off vertical Dim. Lumber	1500 850 @ 45°			25	125

* May require pre-drilling; consult joist manufacturer.

** Will not swivel until installed with black nut driver.

SAMMYS® FOR STEEL

SAMMYS® FOR STEEL - Vertical Application



Application



Product Features

- Made with Tek® self-drilling fasteners - no pre-drilling required.
- Installs into steel range from 20 gauge - 1/2" thicknesses.
- Saves time from traditional methods.
- Reduces installation costs.
- Quick to install using the Sammys Nut Driver with an 18V cordless drill/driver.
- A standard screwgun with a depth sensitive nosepiece should be used to install Tek®. For optimal fastener performance, the screwgun should be a minimum of 6 amps and have an RPM range of 0-2500.
- Assembled in the U.S.A.

View our installation videos!
 YouTube

Approvals	Rod Size	Part Number	Model	Screw Descriptions	Ultimate Pullout (lbs)	UL Test Load (lbs)	FM Test Load (lbs)	Min Thick	Max Thick	Box Qty	Case Qty
VERTICAL MOUNT											
	1/4"	8024957	DSTR 100 *	1/4-20 x 1" TEKS 3	1510 (20 ga.)			.036"-20 ga	3/16"	25	125
	1/4"	8025957	DST 100	1/4-14 x 1" TEKS 3	446 (20 ga.)			.036"-20 ga	3/16"	25	125
	1/4"	8026957	DST 150	1/4-14 x 1-1/2" TEKS 3	970 (16 ga.)			.036"-20 ga	3/16"	25	125
	1/4"	8027957	DST 200	1/4-14 x 2" TEKS 3	446 (20 ga.)			.036"-20 ga	3/16"	25	125
	3/8"	8038957	DSTR 1 *	1/4-20 x 1" TEKS 3	1510 (20 ga.)	1500	1475	.036"-20 ga	3/16"	25	125
	3/8"	8037957	DSTR 1-1/2 *	12-24 x 1-1/2" TEKS 5	1510 (3/16")	1500	1475	.060"-16 ga.	1/2"	25	125
	3/8"	8039957	DSTR 516 *	5/16-18 x 1-1/4" TEKS 3	2200 (20 ga.)	1500	1475	.036"-20 ga	3/16"	25	125
	3/8"	8040957	DST 10	1/4-14 x 1" TEKS 3	446 (20 ga.) 970 (16 ga.)			.036"-20 ga	3/16"	25	125
	3/8"	8041957	DST 15	1/4-14 x 1-1/2" TEKS 3	446 (20 ga.) 970 (16 ga.)			.036"-20 ga	3/16"	25	125
	3/8"	8044957	DST 30	1/4-14 x 3" TEKS 3	446 (20 ga.) 970 (16 ga.)			.036"-20 ga	3/16"	25	125
	3/8"	8045957	DST 516	5/16-18 x 1-1/4" TEKS 3	1500 (3/16")	1500	1475	.125"-1/8"	3/16"	25	125
	3/8"	8046957	TEK 50	12-24 x 1-1/2" TEKS 5	3125 (3/16")	1500	1475	.250"-1/4"	1/2"	25	125
	1/2"	8031925	DST 2.0	1/4-14 x 2" TEKS 3	446 (20 ga.) 970 (16 ga.)			.188"-3/16"	1/4"	25	125
	1/2"	8036925	TEK 5.0	12-24 x 1-1/2" TEKS 5	3125 (3/16")			.188"-3/16"	1/2"	25	125



#14 Black Nut Driver
Part # 8113910



#14 SW Red Nut Driver
Part # 8114910

*Includes retaining nut



ASSEMBLED U.S.A.



SPECIAL NUT DRIVER SYSTEM: The nut drivers were designed with a unique spin-off feature which provides a fast and safe installation each time. When the face of the driver comes into contact with the material you are installing into, continue drilling until nut driver spins free. Installation is then complete. Warranty requires the use of the appropriate nut driver for installations.

SIDEWINDER® FOR STEEL - Horizontal Application



Application	Product Features
NO PRE-DRILLING REQUIRED	- Made with Tek® self-drilling fasteners - no pre-drilling required. - Installs into steel range from 20 gauge – 1/2" thicknesses. - A standard screwgun with a depth sensitive nosepiece should be used to install Tek®. For optimal fastener performance, the screwgun should be a minimum of 6 amps and have an RPM range of 0-2500. - Saves time from traditional methods. - Reduces installation costs. - Quick to install using the Sammys Nut Driver with an 18V cordless drill/driver. - Assembled in the U.S.A. View our installation videos!

Approvals	Rod Size	Part Number	Model	Screw Descriptions	Ultimate Shear (lbs)	UL Test Load (lbs)	FM Test Load (lbs)	Min Thickness	Max Thickness	Box Qty	Case Qty
HORIZONTAL MOUNT											
	3/8"	8050957	SWD 10	1/4-14 x 1" TEKS 3	1477 (16 ga.)			.060"-16 ga	3/16"	25	125
	3/8"	8052957	SWD 20	1/4-14 x 2" TEKS 3	1477 (16 ga.)			.060"-16 ga	3/16"	25	125
	3/8"	8055957	SWDR 1 *	1/4-20 x 1" TEKS 3	1900 (20 ga.)	1500	1475	.036"-20 ga	3/16"	25	125
	3/8"	8054957	SWDR 1-1/2 *	12-24 x 1-1/2" TEKS 5	2375 (3/16")	1500	1475	.188"-3/16"	1/2"	25	125
	3/8"	8056957	SWDR 516 *	5/16-18 x 1-1/4" TEKS 3	2480 (20 ga.)	1500	1475	.036"-20 ga	3/16"	25	125

*Includes retaining nut

SAMMYS SWIVEL HEAD™ FOR STEEL - Swivel Application



Application	Product Features
	- Eliminates distortion of threaded rod in sloped roof applications. - Accommodates 3-1/2 x 12 pitch. - Installs into angled z-purlin; allows threaded rod to hang plumb. - Allows 17° deflection from vertical. - Assembled in the U.S.A. View our installation videos!

Approvals	Rod Size	Part Number	Model	Screw Descriptions	Ultimate Pullout (lbs)	UL Test Load (lbs)	FM Test Load (lbs)	Min Thick	Max Thick	Box Qty	Case Qty
SWIVEL MOUNT											
	3/8"	8137957	SH-DSTR 1*	1/4-20 X 1" TEKS 3	3220 (3/16")	1500	1475	.035"	3/16"	25	125
	3/8"	8268957	SH-TEK 50	12-24 x 1-5/8" TEKS 5	2368 (1/2" steel Vertical) 1306 (45° off Vertical) 2281 (3/16" HSS) 1585 (3/16" HSS 45° off Vertical)	1500 (Vertical) 850 (45° off Vertical)	4" 2-1/2"	3/16"	1/2"	25	125

*Does not comply with ROHS requirements / Includes retaining nut

SAMMY X-PRESS® - Vertical Application



Application



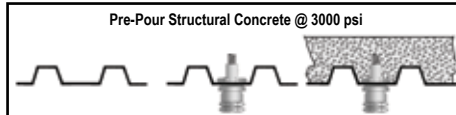
Product Features

- The **Sammy X-Press** expands to provide direct vertical attachment in:
 - light gauge steel deck or purlin (22 ga. - 1/8").
- Installs in seconds with Sammy X-Press It® Tool, saving time & installation costs.
- Use in applications where access to the back of the installed fastener is prohibited. ie. metal roof deck, tubular steel, or vapor barrier fabric.
- Less jobsite material needed.
- No retaining nut required.
- Provides design flexibility.
- Assembled in the U.S.A.

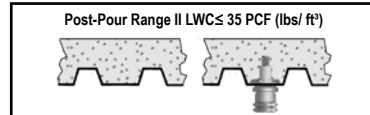
View our installation videos!
 YouTube

Approvals	Rod Size	Part Number	Model	Description	Ultimate Pullout (lbs)	UL Test Load (lbs)	UL Min Thick	FM Test Load (lbs)	FM Min Thick	Max Thick	Box Qty	Case Qty	Application
VERTICAL MOUNT													
	1/4"	8181922	XP 200	Sammy X-Press 200	1146 (22 ga)	185 (Luminaire) 250 (Luminaire)	.027" .056"			.125"	25	125	Metal Deck
	3/8"	8150922	XP 20	Sammy X-Press 20	1146 (22 ga)	850 (2 1/2" Pipe) 185 (Luminaire) 250 (Luminaire) 283 (Conduit & Cable)	.027" .027" .056" .029"	940 (2" Pipe) 1475 (4" Pipe)	.029" .104"	.125"	25	125	Metal Deck
	3/8"	8153922	XP 35	Sammy X-Press 35	1783 (16 ga)	1500 (4" Pipe) 185 (Luminaire) 250 (Luminaire) 416 (Conduit & Cable)	.060" .029" .056" .059"	940 (2" Pipe) 1475 (4" Pipe)	.029" .104"	.125"	25	125	Purlin
	3/8"	8150922	XP 20	Sammy X-Press 20	1146 (22 ga)	850 (2 1/2" Pipe)		Pre-Pour Structural Concrete @ 3000 psi			25	125	Metal Deck (Pre-Pour)
								Post-Pour Range II LWC ≤ 35 PCF (lbs/ft³)					Metal Deck (Post-Pour)

Pre-Pour Structural Concrete @ 3000 psi



Post-Pour Range II LWC ≤ 35 PCF (lbs/ft³)



SAMMY X-PRESS SIDEWINDER™ - Horizontal Application

Application



Product Features

- The **Sammy X-Press Sidewinder** expands to provide horizontal attachment in:
 - 16 ga - 3/16" steel - purlin, tubular steel.
- Installs in seconds with Sammy X-Press It® Tool, saving time & installation costs.
- Use in applications where access to the back of the installed fastener is prohibited; ie. metal roof deck, tubular steel, or vapor barrier fabric.
- Less jobsite material needed.
- No retaining nut required.
- Provides design flexibility.
- Assembled in U.S.A. of Canadian Steel

View our installation videos!
 YouTube

Approvals	Rod Size	Part Number	Model	Description	Ultimate Shear (lbs)	UL Test Load (lbs)	UL Min Thick	FM Test Load (lbs)	Max Thick	Box Qty	Case Qty	Application
HORIZONTAL MOUNT												
	3/8"	8293957	SWXP 35	Sidewinder X-Press 35	1798 (16 ga)	1250 (3 1/2" Pipe) 80 (Luminaire) 416 (Conduit & Cable)	.059"		.125"	25	125	Metal Deck/ Purlin



SAMMY X-PRESS SWIVEL™ - Swivel Application



Application	Product Features
FOR EXTREME OR VARIANT ROOF PITCHES	- The Sammy X-Press Swivel allows you to hang plumb in extreme roof pitches: - 89° in z-purlin - 45° in metal deck for 12/12 pitch - Installs in seconds with Sammy X-Press It® Tool, saving time & installation costs. - Use in applications where access to the back of the installed fastener is prohibited. ie. metal roof deck, tubular steel, or vapor barrier fabric. - Less jobsite material needed. - No retaining nut required. - Provides design flexibility. - Assembled in the U.S.A. View our installation videos! YouTube

Approvals	Rod Size	Part Number	Model	Description	Ultimate Pullout (lbs)	UL Test Load (lbs)	UL Min Thick	FM Test Load (lbs)	FM Min Thick	Max Thick	Box Qty	Case Qty	Application
SWIVEL MOUNT													
	3/8"	8294922	SXP 20	Swivel X-Press 20	1061 (22 ga Vert) 829 (45° Off Vert)	750 (2" Pipe) 170 Vertical (Luminaire) 80 @ 45° (Luminaire) 283 Vertical (Conduit & Cable) 233 @ 45° (Conduit & Cable)	.029"	635 (2" Pipe)	.029"	.125"	25	125	Metal Deck/ Purlin
	3/8"	8295922	SXP 35	Swivel X-Press 35	1675 (16 ga Vert) 1558 (89° Off Vert)	1250 (3-1/2" Pipe) 250 Vertical (Luminaire) 80 @ 90° (Luminaire) 500 Vertical (Conduit & Cable) 333 @ 89° (Conduit & Cable)	.059"	635 (2" Pipe)	.029"	.125"	25	125	Metal Deck/ Purlin
	1/2"	8272957	SXP 2.0	Swivel X-Press 2.0	1061 (22 ga Vert) 829 (45° Off Vert)		.027"	.125"			25	125	Metal Deck/ Purlin
	1/2"	8271957	SXP 3.5	Swivel X-Press 3.5	1675 (16 ga Vert) 1558 (89° Off Vert)		.060"	.125"			25	125	Metal Deck/ Purlin

SAMMY X-PRESS IT® Installation Tool

Application	Product Features
	- The Sammy X-Press expands to provide direct vertical attachment in: - metal deck (22-16 gauge) - z-purlin (18-16 gauge) - Assembled in the U.S.A. View our installation videos! YouTube



Part Number	Model	Description	Qty
8194910	UXPIT*	Universal X-Press It Tool	1
8152910	XPDB	25/64" Drill Bit	1

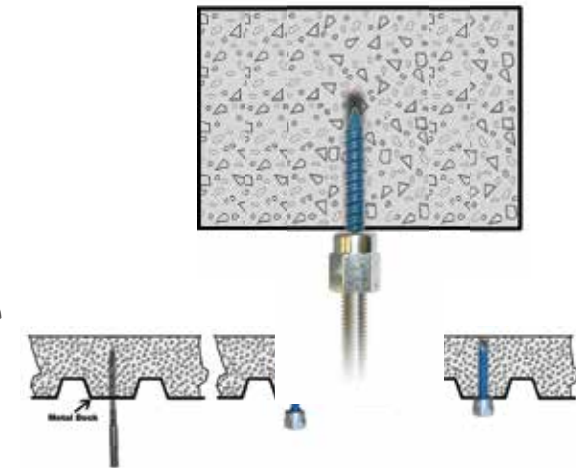
*Tool Includes: Sleeve, Bit Receiver, Hex Wrench, and 25/64" Drill Bit.

SAMMYS® FOR CONCRETE

SAMMYS® FOR CONCRETE - Vertical Application



Application



Product Features

- Easy two step process (Drill hole & drive Sammys concrete anchor).
- 1/4" pre-drilled pilot hole required.
- Concrete Installation Tool available for a one tool installation process.
- Assembled in the U.S.A.

View our
installation videos!
 YouTube

#14 Black
Nut Driver
Part # 8113910
#14SW Red
Nut Driver
Part # 8114910

Approvals	Rod Size	Part Number	Model	Screw Descriptions	Ultimate Pullout (lbs)*	FM Test Load (lbs)	Box Qty	Case Qty
VERTICAL MOUNT								
	1/4"	8058957	CST 200	5/16 x 1-3/4"	2400		25	125
	3/8"	8059957	CST 20	5/16 x 1-3/4"	2400	1475	25	125
	1/2"	8060925	CST 2	5/16 x 1-3/4"	2400		25	125
	3/8"	8306957	CCST 516	5/16-14 x 2-1/2"	857**		25	125

For complete performance data see ICC Report ESR-3699

* Tested in 3000 PSI concrete ** Pullout strength for Cracked Concrete and Seismic Zones A-F

SIDEWINDER® FOR CONCRETE - Horizontal Application



Application



Product Features

- Easy two step process (Drill hole & drive Sammys concrete anchor).
- 1/4" pre-drilled pilot hole required.
- Concrete Installation Tool available for a one tool installation process.
- Assembled in the U.S.A.

View our
installation videos!
 YouTube

#14SW Red
Nut Driver
Part # 8114910

Approvals	Rod Size	Part Number	Model	Screw Descriptions	Ultimate Shear (lbs)*	FM Test Load (lbs)	Box Qty	Case Qty
HORIZONTAL MOUNT								
	3/8"	8061957	SWC 20	5/16 x 1-3/4"	2450	1475	25	125
	3/8"	8307957	SW-CCST 516	5/16-14 x 2-1/2"	857**		25	125

* Tested in 3000 PSI concrete ** Pullout strength for cracked concrete and Seismic Zones A-F



SPECIAL NUT DRIVER SYSTEM: The nut drivers were designed with a unique spin-off feature which provides a fast and safe installation each time. When the face of the driver comes into contact with the material you are installing into, continue drilling until nut driver spins free. Installation is then complete. Warranty requires the use of the appropriate nut driver for installations.

SAMMYS SWIVEL HEAD™ FOR CONCRETE - Swivel Application



#14 SH Orange
Nut Driver
Part # 8273910

Application



Product Features

- Installs vertically and swivels up to 89° in wood & concrete structures.
- Eliminates distortion of threaded rod.
- 1/4" pre-drilled pilot hole required.
- Concrete installation tool available for a one piece installation process.
- Assembled in the U.S.A.

Approvals	Rod Size	Part Number	Model	Screw Descriptions	Ultimate Shear (lbs)*	Box Qty	Case Qty
SWIVEL MOUNT							
	3/8"	8269957	SH-GST/CST 20	5/16 x 1-3/4"	2537 in 3000 psi concrete 1459 @ 45° off vertical in 3000 psi concrete 2852 in 6000 psi concrete 1636 @ 45° off vertical in 6000 psi concrete	25	125
	3/8"	8308957	SH-CCST 516	5/16-14 x 2-1/2"	857**	25	125

Note: UL Listed for wood - see page 5

* Tested in 3000 PSI concrete ** Pullout strength for cracked concrete and Seismic Zones A-F

CONCRETE / WOOD INSTALLATION KIT

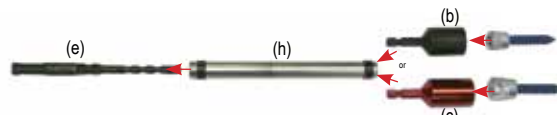


Application

Rotary Hammer Drill into concrete



Hammer Drill into concrete



Part Number	Description	Each Qty
8122910	Concrete Installation Kit (a)	1

Kit includes the following items:

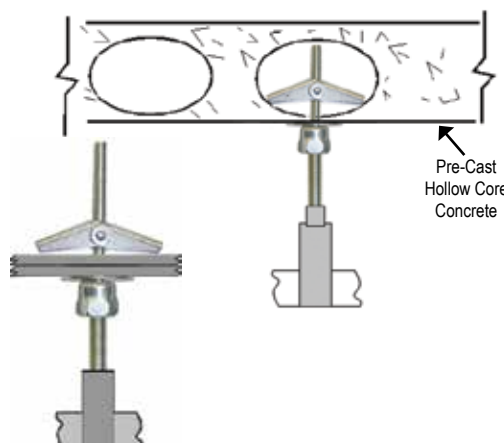
8113910	#14 Black Nut Driver (b)	1
8114910	#14 SW Red Nut Driver (c)	1
8116910c	#250 Bit (1/4") (d)	1
8117910	SDS Bit (1/4") (e)	1
8118910	7/32 Wood Bit (f)	1
8120910	HEX 250 Bit Receiver (1/4") (g)	1
8098910	SL 250 Sleeve (h)	1

ACCESSORIES

SAMMYS TOGGLE™



Application



Installation Steps

1. Pre-drill a 5/8" hole with a regular drill or hole saw.
2. Insert SST screw into #14 black nut driver. With wing nut and washer on bolt, insert wing nut through surface, and begin installation.
3. When bolt is secure and nut driver spins free, stop drill motor and remove.
4. SST screw is now ready to receive 1/4", 3/8", or Metric all thread rod or bolt stock.



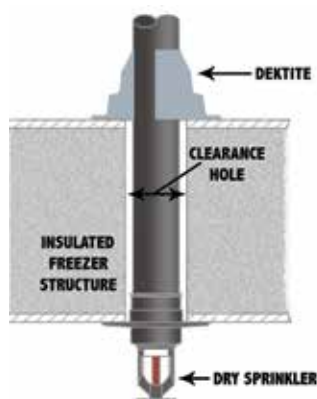
#14 Black
Nut Driver
Part # 8113910

Rod Size	Part Number	Model	Screw Descriptions	Ultimate Pullout (lbs)	Box Qty	Case Qty
3/8"	8064925	SST 30	1/4 x 3"	450 (Lath & Plaster) 404 (2 Layers 5/8 Rock)	25	125

DEKTITE® PIPE FLASHING



Application



**STAY UP TO
CODE!**
with a quicker,
more efficient way
to flash your
refrigeration/freezer units.

Product Features

- Complies with NFPA 13 Code Changes.
- Flashing for dry pendant sprinklers subject to extreme temperature changes.
- One piece construction is easy to install.
- Pipe diameter markings ensure accurate fit.
- EPDM temperature range of -65°F to +250°F.

Part Number	Description	Pipe Outside Diameter	Dektite Base Diameter	Dektite Height	Box Qty
4003910	1	1/4" - 2"	4-3/4"	3"	10
4004910	2	1-3/4" - 3-1/4"	6-1/4"	4"	10

SAMMY X-PRESS POLE TOOL KIT™



Application



For use installing
Sammy X-Press anchors
from the ground up!

Product Features

- Speed your labor by 25%
- Work from the ground up
- No scaffolding, ladders, or lifts
- Perfect for working in tight spaces, through ceiling grid, and high vaulted ceilings
- Works with any Sammy X-Press product

View our
installation videos!
 YouTube

Part Number

XPKIT*

Model

XPKIT

Description

Sammy X-Press Pole Tool Kit

Box Qty

1

* 3/4" electrical conduit needed for pole tool assembly

SAMMYS POLE TOOL™



Installation Instructions



Adjust the Pole Tool to length. The adjusting pin must be 18" below the base or the pin may interfere with the rod.



Load rod and Sammys into Pole Tool.



The socket will spin free when the screw is completely installed. Pull down to remove the Pole Tool.

Product Features

- Speed your labor by 25%
- Work from the ground up
- No scaffolding, ladders, or lifts
- Perfect for working in tight spaces, through ceiling grid, and high vaulted ceilings
- Works with any Vertical SAMMYS: Wood, Steel, or Concrete

Part Number

SP6

Description

Speedy Pole 6'-18'

Box Qty

1

WOOD

STEEL

STEEL

CONCRETE

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APPROVALS

Part Number	Model	Rod Size	Mount Direction	UL Max Pipe Size	UL Test Load (lbs)	UL Min Wood Thickness	FM Max Pipe Size	FM Test Load (lbs)	FM Min Wood Thickness	
SAMMYS FOR WOOD - PIPE HANGER										
8007957	GST 10	3/8"	Vertical	CPVC 1-1/2"	300	1-1/2"				
8020957	SWG 10	3/8"	Horizontal	CPVC 1-1/2"	300	1-1/2"				
8008957	GST 20	3/8"	Vertical	2-1/2"	850	1-1/2"	4"	1475	1-1/2"	
8068925	GST 20-SS	3/8"	Vertical	2-1/2"	850	1-1/2"				
8010957	GST 30	3/8"	Vertical	4"	1500	1-1/2"	4"	1475	1-1/2"	
8009925	GST 25-380	3/8"	Vertical	4"	1500	1-1/2"				
8022925	SWG 25-380	3/8"	Horizontal	3-1/2" - 4"	1500	1-1/2"				
8021957	SWG 20	3/8"	Horizontal	2-1/2" - 3"	1050	1-1/2"				
8073925	SWG 20-SS	3/8"	Horizontal	2-1/2"	850	1-1/2"				
8269957	SH-GST/CST 20	3/8"	45° Angle off Vertical	2-1/2"	850	1-1/2"				
8269957	SH-GST/CST 20	3/8"	45° Angle off Vertical	4"	1500	1-1/2"				
8139957	SH-GST 20	3/8"	17° Angle off Vertical	3"	1050	1-1/2"	4"	1475	1-1/2"	
SAMMYS FOR STEEL - PIPE HANGER						Min Steel Thick			Max Steel Thick	
8038957	DSTR 1	3/8"	Vertical	4"	1500	.035"	4"	1475	.105"	
8037957	DSTR 1-1/2	3/8"	Vertical	4"	1500	.035"	4"	1475	.105"	
8039957	DSTR 516	3/8"	Vertical	4"	1500	.037"	4"	1475	.105"	
8045957	DST 516	3/8"	Vertical	4"	1500	.188"	4"	1475	.188"	
8046957	TEK 50	3/8"	Vertical	4"	1500	.250"	4"	1475	.188"	
8055957	SWDR 1	3/8"	Horizontal	4"	1500	.037"	4"	1475	.060"	
8056957	SWDR 516	3/8"	Horizontal	4"	1500	.037"	4"	1475	.060"	
8054957	SWDR 1-1/2	3/8"	Horizontal	4"	1500	.037"	4"	1475	.060"	
8137957	SH-DSTR 1	3/8"	17° Angle off Vertical	4"	1500	.035"	4"	1475	.105"	
8268957	SH-TEK 50	3/8"	Vertical	2-1/2"	850					
			70° Angle off Vertical	4"	1500					
8150922	XP 20	3/8"	Vertical	2-1/2"	850	.027"	2"	940	.029"	
							4"	1475	.105"	
8153922	XP 35	3/8"	Vertical	4"	1500	.060"	2"	940	.029"	
							4"	1475	.125"	
8294922	SXP 20	3/8"	Vertical or up to 45°	2"	750	.027"	2"	635	.029"	
8295922	SXP 35	3/8"	Vertical or up to 89°	3-1/2"	1250	.060"	2"	635	.029"	
8293957	SWXP 35	3/8"	Horizontal	3-1/2"	1250	.060"				
SAMMYS FOR CONCRETE - PIPE HANGER										
8059957	CST 20	3/8"	Vertical				4"	1475	3000	
8061957	SWC 20	3/8"	Horizontal				4"	1475	3000	
8150922	XP 20	3/8"	Vertical	2-1/2"	850	Pre-Pour Structural @ 3000psi				
8150922	XP 20	3/8"	Vertical	2-1/2"	850	Post-Pour Range II LWC ≤ 35 PCF (lbs/ft³)				
Part Number	Model	Rod Size	Mount Direction			UL Load Rating (lbs)			UL Min Steel Thickness	
SAMMYS FOR STEEL - LUMINAIRE FITTING										
8150922	XP 20	3/8"	Vertical			185			.027"	
						250			.035"	
8153922	XP 35	3/8"	Vertical			185			.027"	
						250			.035"	
8181922	XP 200	1/4"	Vertical			185			.027"	
						250			.035"	
8294922	SXP 20	3/8"	Vertical			170			.027"	
						45°	80		.027"	
8295922	SXP 35	3/8"	Vertical			250			.060"	
						90°	80		.060"	
8293957	SWXP 35	3/8"	Horizontal			80			.060"	
Part Number	Model	Rod Size	Mount Direction	UL Load Rating (lbs)	UL Min. Steel Thickness	Listed Application				
SAMMYS FOR STEEL - CONDUIT, TUBING, AND CABLE										
8150922	XP 20	3/8"	Vertical	283	.027"	Max 4 trade size EMT, RMC, and IMC & 5 trade size rigid PVC conduit				
8153922	XP 35	3/8"	Vertical	500	.060"	Max 4 trade size EMT & 6 trade size RMC, IMC, and rigid PVC conduit				
8294922	SXP 20	3/8"	Vertical	283	.027"	Max 4 trade size EMT, RMC, and IMC & 5 trade size rigid PVC conduit				
8295922	SXP 35	3/8"	Vertical	500	.060"	Max 4 trade size EMT & 6 trade size RMC, IMC, and rigid PVC conduit				
8293957	SWXP 35	3/8"	Horizontal	500	.060"	Max 4 trade size EMT & 6 trade size RMC, IMC, and rigid PVC conduit				
8149957	CZ2000	1/4" or 3/8"	Onto Vertical Rod			UL Listed 4S16 - Cable Hanger, Cat. No. C-Z2000 Plenum Rated, Complies w/ NEC Standards				
Sheet Steel Gauges										
Gauge No.		22 ga.	20 ga.	18 ga.	16 ga.	14 ga.	12 ga.	1/8"	3/16"	1/4"
Nominal Decimal Equivalent		.030"	.036"	.048"	.060"	.075"	.105"	.125"	.188"	.250"
*SWG 25-380 Maximum pipe size in composite wood joist allowed by UL is 3-1/2"										
*SWG 25-380 Maximum pipe size in wood timber or joist allowed by UL is 4"										
**SWG 20 Maximum pipe size in composite wood joist allowed by UL is 2-1/2"										
**SWG 20 Maximum pipe size in wood timber or joist allowed by UL is 3"										
						UL compliance with NEC Standards.				
						UL and FM tests were performed in compliance with NFPA 13 Standards.				
						Fastening requirement: 5 times weight of water-filled schedule 40 pipe plus 250 pounds.				

SPECIAL NOTES

Engineering Note

In 1996, the anchors listed by UL were tested in plate steel that measured .188" and .118". Subsequent testing was done for z-purlin applications in May 1997 using (.037") or 20 gauge steel. Most recently in 2008, testing with the new Sammy X-Press® was completed using (.030") or 22 gauge steel metal deck.

Sammys® Nut Drivers

Special nut drivers were designed to be used with Sammys. When the appropriate nut drivers are used for installation, the driver spins freely on the screw after installation is complete and eliminates the expected wrist snap, reduces over-torque, and prevents screw failure.

Steel Screws

Due to variations in hardness of certain metals, it should be noted that our self-drilling screws for steel will experience different drill speeds. 500-1500 RPM drill speed should be used.

Metric Products

Metric versions of the Sammy anchors are available at www.itwbuildex.com

Sammys for Seismic

Please visit www.itwbuildex.com for our current Seismic product offering.

Vibratory Environments

For attaching or anchoring in high vibratory environments, special care should be taken not just for building attachments but also for the hangers or assemblies being supported. Consult local code authorities for accepted anchoring devices.

Composite Joist/Truss

Truss manufacturers vary installation recommendations for composite joist. UL testing was completed to validate that Sammys and Sidewinders SWG 20 and SWG 25-380 can be installed into the top cord of a truss. Sammy GST 20 can be installed into the center of the lower cord of a composite joist. Penetration of the upright center web is permitted by some joist manufacturers. Consult truss manufacturer for recommended installation point.

Pre-drilling may be required by joist manufacturers. If so, pre-drill pilot hole 1/8" smaller than root diameter of fastener.

Consult the table below:

Model	Root Diameter	Hole Size
GST 20	.182"	1/8"
GST 25-380	.280"	7/32"
SWG 20	.182"	1/8"
SWG 25-380	.280"	7/32"

To increase efficiency of the installation process, sleeve tools, bit receivers, and wood bits are available for pre-drilling.

NFPA/NEC Standards

All UL and FM testing complies with NFPA 13 and NEC standards. Check with your local (AHJ) Authority Having Jurisdiction to confirm application and usage.

UL Listings / FM Approvals

UL and FM reports are available at www.itwbuildex.com



Technical Drawings

Technical drawings are available and can be downloaded at www.itwbuildex.com in the following formats: .dwg, .dxf, and .igs.

Assembled in the U.S.A. Products



Contact Information

Technical Assistance: (800) 848-5611 Option #6 (x 3259)

Customer Service: (800) 848-5611 Option #1

WOOD

STEEL

STEEL

CONCRETE

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Fig. 69 Adjustable Swivel Ring, Tapped Per NFPA Standards

Size Range: 1/2" through 8"

Material: Carbon steel

Finish: Galvanized

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

Maximum Temperature: 650° F

Approvals: Complies with Federal Specification A-A-1192A (Type 10), WW-H-171-E (Type 10), ANSI/MSS SP-69 and MSS SP-58 (Type 10). UL Listed and FM Approved (Sizes 3/4" - 8").

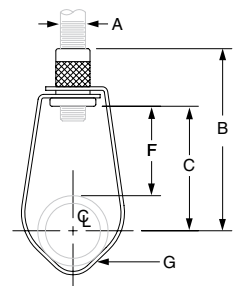
Features:

- 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.

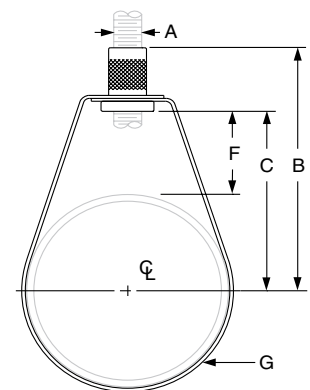
Ordering: Specify size, figure number and name.

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

Metric nut available upon request. Non-captured nut also available upon request.



1/2" through 1" pipe



1 1/4" through 8" pipe

FIG. 69: LOADS (LBS) • WEIGHT (LBS) • DIMENSIONS (IN)

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	3/4	3 1/4	2 3/8	1 1/8	3/4
2 1/2		0.20		4	2 3/4	1 5/16	
3	650	0.20	1/2	3 13/16	2 15/16	1 3/16	1
4		0.30		4 1 1/16	3 13/16	1 9/16	
5	1,000	0.54	1/2	5 5/16	4 3/8		1
6		0.65		6 1 1/16	5 9/16	2 1/4	
8		1.00		8	7	2 1 1/16	

Note: Reflects changes in rod diameter from previously published data per recent revisions in MSS-SP-58 & 69

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

MINIMUM SIZE ANVIL-STRUT CHANNEL

(To Comply with NFPA 13 Table 2-6.1 5(a) 1996 Edition)

	Channel Size	Section Mod. (in. ³)
	AS-200 1 ⁵ / ₈ " x 1 ⁵ / ₈ " x 12 ga.	.202
	AS-150 1 ⁵ / ₈ " x 2 ⁷ / ₁₆ " x 12 ga.	.391
	AS-100 1 ⁵ / ₈ " x 3 ¹ / ₄ " x 12 ga.	.698

	Channel Size	Section Mod. (in. ³)
	AS-150 BTB 1 ⁵ / ₈ " x 4 ⁷ / ₈ " x 12 ga.	1.153
	AS-100 BTB 1 ⁵ / ₈ " x 6 ¹ / ₂ " x 12 ga.	1.716

Section Modulus Required for Trapeze Members (in.³)

Span of Trapeze	Pipe Size											
	1"	1 ¹ / ₄ "	1 ¹ / ₂ "	2"	2 ¹ / ₂ "	3"	3 ¹ / ₂ "	4"	5"	6"	8"	10"
1 ft. 6 in.	.08	.09	.09	.09	.10	.11	.12	.13	.15	.18	.24	.32
	.08	.09	.09	.10	.11	.12	.13	.15	.18	.22	.30	.41
2 ft. 0 in.	.11	.12	.12	.13	.13	.15	.16	.17	.20	.24	.32	.43
	.11	.12	.12	.13	.15	.16	.18	.20	.24	.29	.40	.55
2 ft. 6 in.	.14	.14	.15	.16	.17	.18	.20	.21	.25	.30	.40	.54
	.14	.15	.15	.16	.18	.21	.22	.25	.30	.36	.50	.68
3 ft. 0 in.	.17	.17	.18	.19	.20	.22	.24	.26	.31	.36	.48	.65
	.17	.18	.18	.20	.22	.25	.27	.30	.36	.43	.60	.82
4 ft. 0 in.	.22	.23	.24	.25	.27	.29	.32	.34	.41	.48	.64	.87
	.22	.24	.24	.26	.29	.33	.36	.40	.48	.58	.80	1.09
5 ft. 0 in.	.28	.29	.30	.31	.34	.37	.40	.43	.51	.59	.80	1.08
	.28	.29	.30	.33	.37	.41	.45	.49	.60	.72	1.00	1.37
6 ft. 0 in.	.33	.35	.36	.38	.41	.44	.48	.51	.61	.71	.97	1.30
	.34	.35	.36	.39	.44	.49	.54	.59	.72	.87	1.20	1.64
7 ft. 0 in.	.39	.40	.41	.44	.47	.52	.55	.60	.71	.83	1.13	1.52
	.39	.41	.43	.46	.51	.58	.63	.69	.84	1.01	1.41	1.92
8 ft. 0 in.	.44	.46	.47	.50	.54	.59	.63	.68	.81	.95	1.29	1.73
	.45	.47	.49	.52	.59	.66	.72	.79	.96	1.16	1.61	
9 ft. 0 in.	.50	.52	.53	.56	.61	.66	.71	.77	.92	1.07	1.45	
	.50	.53	.55	.59	.66	.74	.81	.89	1.08	1.30		
10 ft. 0 in.	.56	.58	.59	.63	.69	.74	.79	.85	1.02	1.19	1.61	
	.56	.59	.61	.65	.74	.82	.90	.99	1.20	1.44		

Top values are for Schedule 10 pipe; bottom values are for Schedule 40 pipe.

SCHEDULE 10 & 40



Always ready to protect your most valuable assets.

As the leading supplier of steel sprinkler pipe, we understand that there are no second chances in fire suppression. You need products of enduring quality and exceptional strength—plus reliable service. You need Bull Moose.

Bull Moose Fire Sprinkler Pipe Product Information

Nominal Pipe Size (Inches)		1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	6"	8"	NPS (In.)		1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
SCHEDULE 10	O.D. (in)	1.315	1.660	1.900	2.375	2.875	3.500	4.500	6.625	8.625	SCHEDULE 40		1.315	1.660	1.900	2.375	2.875	3.500	4.500
	I.D. (in)	1.097	1.442	1.682	2.157	2.635	3.260	4.260	6.357	8.249			1.049	1.380	1.610	2.067	2.469	3.068	4.026
	Empty Weight (lb/ft)	1.410	1.810	2.090	2.640	3.530	4.340	5.620	9.290	16.940			1.680	2.270	2.720	3.660	5.800	7.580	10.800
	Water Filled Weight (lb/ft)	1.820	2.518	3.053	4.223	5.893	7.957	11.796	23.038	40.086			2.055	2.918	3.602	5.114	7.875	10.783	16.316
	C.R.R.	15.27	9.91	7.76	6.27	4.92	3.54	2.50	1.158	1.805			1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Pieces per Lift	91	61	61	37	30	19	19	10	7			70	51	44	30	30	19	19
	Lift Weight (lbs) 21' lengths	2,695	2,319	2,677	2,051	2,224	1,732	2,242	1,951	2,490			2,470	2,431	2,513	2,306	3,654	3,024	4,309
	Lift Weight (lbs) 24' lengths	3,079	2,650	3,060	2,344	2,542	1,979	2,563	2,230	2,848			2,822	2,778	2,872	2,635	4,176	3,456	4,925
	Lift Weight (lbs) 25' lengths	3,208	2,760	3,187	2,442	2,648	2,062	2,670					2,940	2,894	2,992	2,745	4,350	3,601	5,130

SCHEDULE 10 & 40 ADVANTAGES:

- UL listed (US & Canada) and FM approved
- ASTM A135 and A795 Type E, Grade A Certified
- Complies with NFPA-13, 13R and 14
- Industry-leading hydraulic characteristics
- CRR of 1.0 and greater
- All pipe NDT weld tested

OTHER BENEFITS/SERVICES:

- We have the most stocking locations in the industry, for best delivery and availability
- Plain end or roll groove
- Eddy Guard II™ bacterial-resistant internal coating
- Custom length options
- Hot dipped galvanization
- Reddi-Pipe® red or black pipe eliminates field painting
- Compatible for use in wet, dry, preaction and deluge sprinkler systems
- The only maker with EPDs (to help earn LEED points).

Exclusive maker of Reddi-Pipe®
RED OR BLACK PAINTED PIPE.



cULus LISTED



BULL MOOSE
TUBE

800.325.4467
sales@BullMooseIndustries.com
BullMooseTube.com

90° ELBOW



Ductile Iron



MATERIAL SPECIFICATIONS

Ductile iron threaded fittings are UL & ULC Listed & FM Approved for 500 psi service.

Ductile iron per ASTM A536 Class 65-45-12.

Dimensions conform to ASME B16.3

Threads are NPT per ANSI/ASME B1.20.1.

NOTICE: 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 three turns beyond hand tight, but no more than four turns.

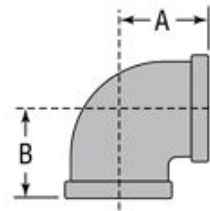


For Listings/Approval Details and Limitations, visit our website at www.anvilintl.com or contact an Anvil® Sales Representative.

90° ELBOW

Nominal Size	Max. Working Pressure▲	Dimensions		Approx. Wt. Each
		A	B	
In. (mm)	PSI (kPa)	In. (mm)	In. (mm)	Lbs. (kg)
1 20	500 3450	1.50 38.10	1.50 38.10	0.62 0.28
1¼ 32	500 3450	1.75 44.45	1.75 44.45	0.90 0.41
1½ 40	500 3450	1.94 49.276	1.94 49.276	1.20 0.54
2 50	500 3450	2.25 57.15	2.25 57.15	1.85 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 anvilintl.com or contact your local Anvil Representative.



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REV. 4.5.12 - 10



MATERIAL SPECIFICATIONS

Ductile iron threaded fittings are UL & ULC Listed & FM Approved for 500 psi service.

Ductile iron per ASTM A536 Class 65-45-12.

Dimensions conform to ASME B16.14

Threads are NPT per ANSI/ASME B1.20.1.

NOTICE: 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 three turns beyond hand tight, but no more than four turns.



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CAP			
Nominal Size	Max. Working Pressure▲	Dimensions	Approx. Wt. Each
In. (mm)	PSI (kPa)	In. (mm)	Lbs. (kg)
1 25	500 3450	1.16 29.46	0.32 0.15
1¼ 32	500 3450	1.28 32.51	0.43 0.20
1½ 40	500 3450	1.33 33.78	0.60 0.27
2 50	500 3450	1.45 36.83	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 anvilintl.com or contact your local Anvil Representative.

REDUCING 90° ELBOW



Ductile Iron



MATERIAL SPECIFICATIONS

Ductile iron threaded fittings are UL & ULC Listed & FM Approved for 500 psi service.

Ductile iron per ASTM A536 Class 65-45-12.

Dimensions conform to ASME B16.3

Threads are NPT per ANSI/ASME B1.20.1.

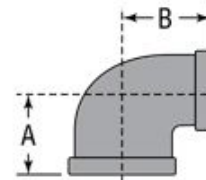
NOTICE: Ductile iron fittings have higher tensile strength than that of steel pipe. Therefore, over tightening can cause damage to pipe threads which may cause leakage. Ductile iron fittings should be tightened three turns beyond hand tight, but no more than four turns.



For Listings/Approval Details and Limitations, visit our website at www.anvilintl.com or contact an Anvil® Sales Representative.

REDUCING 90° ELBOW

Nominal Size	Max. Working Pressure [▲]	Dimensions		Approx. Wt. Each
		A	B	
In. (mm)	PSI (kPa)	In. (mm)	In. (mm)	Lbs. (kg)
1 x 1/2	500	1.26	1.36	0.44
25 x 15	3450	32.00	34.54	0.20
1 x 3/4	500	1.37	1.45	0.52
25 x 20	3450	34.79	36.83	0.24
1 1/4 x 1/2	500	1.34	1.53	0.64
32 x 15	34550	34.03	38.86	0.29
1 1/4 x 3/4	500	1.45	1.62	0.72
32 x 20	3450	36.83	41.14	0.33
1 1/4 x 1	500	1.58	1.67	0.75
32 x 25	3450	40.13	42.41	0.34
1 1/2 x 1	500	1.65	1.80	0.92
40 x 25	3450	41.91	45.72	0.42
1 1/2 x 1 1/4	500	1.82	1.88	1.08
40 x 32	3450	46.22	47.75	0.49
2 x 1/2	500	1.49	1.88	1.08
50 x 15	3450	37.84	47.75	0.49
2 x 3/4	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 1 1/4	500	1.90	2.10	1.52
50 x 32	3450	48.26	53.34	0.70
2 x 1 1/2	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 anvilintl.com or contact your local Anvil Representative.



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REV. 4.5.12 - 12

REDUCING COUPLING



Ductile Iron



MATERIAL SPECIFICATIONS

Ductile iron threaded fittings are UL & ULC Listed & FM Approved for 500 psi service.

Ductile iron per ASTM A536 Class 65-45-12.

Dimensions conform to ASME B16.3

Threads are NPT per ANSI/ASME B1.20.1.

NOTICE: 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 three turns beyond hand tight, but no more than four turns.



For Listings/Approval Details and Limitations, visit our website at www.anvilintl.com or contact an Anvil® Sales Representative.

REDUCING COUPLING

Nominal Size	Max. Working Pressure▲	Dimensions	Approx. Wt. Each
		A	
In. (mm)	PSI (kPa)	In. (mm)	Lbs. (kg)
1 x 1/2	500	1.69	0.39
25 x 15	3450	42.92	0.18
1 x 3/4	500	1.69	0.53
25 x 20	3450	42.92	0.24



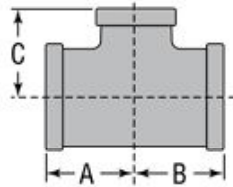
▲ – Working Pressure Ratings are for reference only and based on Sch. 40 pipe. For the latest UL/ULC, and FM pressure ratings versus pipe schedule, please visit anvilintl.com or contact your local Anvil Representative.



REDUCING TEE



Ductile Iron



MATERIAL SPECIFICATIONS

Ductile iron threaded fittings are UL & ULC Listed & FM Approved for 500 psi service.

Ductile iron per ASTM A536 Class 65-45-12.

Dimensions conform to ASME B16.3

Threads are NPT per ANSI/ASME B1.20.1.

NOTICE: 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 three turns beyond hand tight, but no more than four turns.



For Listings/Approval Details and Limitations, visit our website at www.anvilintl.com or contact an Anvil® Sales Representative.

REDUCING TEE

Nominal Size	Max. Working Pressure▲	Dimensions			Approx. Wt. Each
		A	B	C	
In. (mm)	PSI (kPa)	In. (mm)	In. (mm)	In. (mm)	Lbs. (kg)
1 x 1/2 x 1/2	500	1.50	1.36	1.50	0.64
25 x 15 x 25	3450	38.10	34.54	38.10	0.29
1 x 3/4 x 1	500	1.50	1.45	1.50	0.73
25 x 20 x 25	3450	38.10	36.83	38.10	0.33
1 x 1 x 1/2	500	1.26	1.26	1.36	0.71
25 x 25 x 15	3450	32.00	32.00	34.54	0.32
1 x 1 x 3/4	500	1.37	1.37	1.45	0.76
25 x 25 x 20	3450	34.80	34.80	36.83	0.34
1 x 1 x 1 1/4	500	1.67	1.67	1.58	0.98
25 x 25 x 32	3450	42.41	42.41	40.13	0.44
1 x 1 x 1 1/2	500	1.80	1.80	1.65	1.16
25 x 25 x 40	3450	45.72	45.72	41.91	0.53
1 1/4 x 1 x 1/2	500	1.34	1.26	1.53	0.82
32 x 25 x 15	3450	34.04	32.00	38.86	0.37
1 1/4 x 1 x 3/4	500	1.45	1.37	1.62	0.90
32 x 25 x 20	3450	36.83	34.80	41.15	0.41
1 1/4 x 1 x 1	500	1.58	1.50	1.67	1.00
32 x 25 x 25	3450	40.13	38.10	42.42	0.45
1 1/4 x 1 x 1 1/4	500	1.75	1.67	1.75	1.08
32 x 25 x 32	3450	44.45	42.42	44.45	0.49
1 1/4 x 1 x 1 1/2	500	1.88	1.80	1.82	1.42
32 x 25 x 40	3450	47.75	45.72	46.22	0.64
1 1/4 x 1 1/4 x 1/2	500	1.34	1.34	1.53	0.86
32 x 32 x 15	3450	34.04	34.04	38.86	0.39
1 1/4 x 1 1/4 x 3/4	500	1.45	1.45	1.62	0.92
32 x 32 x 20	3450	36.83	36.83	41.15	0.42
1 1/4 x 1 1/4 x 1	500	1.58	1.58	1.67	0.95
32 x 32 x 25	3450	40.13	40.13	42.42	0.43
1 1/4 x 1 1/4 x 1 1/2	500	1.88	1.88	1.82	1.45
32 x 32 x 40	3450	47.75	47.75	46.22	0.66
1 1/4 x 1 1/4 x 2	500	2.10	2.10	1.90	1.75
32 x 32 x 50	3450	53.34	53.34	48.26	0.79
1 1/2 x 1 x 1/2	500	1.41	1.34	1.66	0.95
40 x 25 x 15	3450	35.81	34.04	42.16	0.43
1 1/2 x 1 x 3/4	500	1.52	1.37	1.75	1.14
40 x 25 x 20	3450	38.61	34.80	44.45	0.52
1 1/2 x 1 x 1	500	1.65	1.50	1.80	1.17
40 x 25 x 25	3450	41.91	38.10	45.72	0.53
1 1/2 x 1 x 1 1/4	500	1.82	1.67	1.88	1.34
40 x 25 x 32	3450	46.23	42.42	47.75	0.61
1 1/2 x 1 x 1 1/2	500	1.94	1.80	1.94	1.45
40 x 25 x 40	3450	49.28	45.72	49.28	0.66
1 1/2 x 1 1/4 x 1/2	500	1.41	1.34	1.66	1.05
40 x 32 x 15	3450	35.81	34.04	42.16	0.48
1 1/2 x 1 1/4 x 3/4	500	1.52	1.45	1.75	1.15
40 x 32 x 20	3450	38.61	36.83	44.45	0.5
1 1/2 x 1 1/4 x 1	500	1.65	1.58	1.80	1.25
40 x 32 x 25	3450	41.91	40.13	45.72	0.57
1 1/2 x 1 1/4 x 2	500	2.16	2.10	2.02	1.90
40 x 32 x 50	3450	54.86	53.34	51.30	0.86
1 1/2 x 1 1/2 x 1/2	500	1.41	1.41	1.16	1.15
40 x 40 x 15	3450	35.81	35.81	29.46	0.52

REDUCING TEE

Nominal Size	Max. Working Pressure▲	Dimensions			Approx. Wt. Each
		A	B	C	
In. (mm)	PSI (kPa)	In. (mm)	In. (mm)	In. (mm)	Lbs. (kg)
1 1/2 x 1 1/2 x 3/4	500	1.52	1.52	1.75	1.24
40 x 40 x 20	3450	38.61	38.61	44.45	0.56
1 1/2 x 1 1/2 x 1	500	1.65	1.65	1.80	1.30
40 x 40 x 25	3450	41.91	41.91	45.72	0.59
1 1/2 x 1 1/2 x 1 1/4	500	1.82	1.82	1.88	1.48
40 x 40 x 32	3450	46.23	46.23	47.75	0.67
1 1/2 x 1 1/2 x 2	500	2.16	2.16	2.02	1.98
40 x 40 x 50	3450	54.86	54.86	51.30	0.90
2 x 1 x 2	500	2.25	2.02	2.25	2.15
50 x 25 x 50	3450	57.15	51.31	57.15	0.98
2 x 1 1/4 x 2	500	2.25	2.10	2.25	2.30
50 x 32 x 50	3450	57.15	53.34	57.15	1.04
2 x 1 1/2 x 1 1/2	500	1.49	1.41	1.88	1.50
50 x 40 x 15	3450	37.85	35.81	47.75	0.68
2 x 1 1/2 x 3/4	500	1.60	1.52	1.97	1.62
50 x 40 x 20	3450	40.64	38.61	50.04	0.73
2 x 1 1/2 x 1	500	1.73	1.65	2.02	1.64
50 x 40 x 25	3450	43.94	41.91	51.31	0.74
2 x 1 1/2 x 1 1/4	500	1.90	1.82	2.10	1.80
50 x 40 x 32	3450	48.26	46.23	53.34	0.82
2 x 1 1/2 x 1 1/2	500	2.02	1.94	2.16	2.00
50 x 40 x 40	3450	51.31	49.28	54.86	0.91
2 x 1 1/2 x 2	500	2.25	2.16	2.25	2.35
50 x 40 x 50	3450	57.15	54.86	57.15	1.07
2 x 2 x 1 1/2	500	1.49	1.49	1.88	1.60
50 x 50 x 15	3450	37.85	37.85	47.75	0.73
2 x 2 x 3/4	500	1.60	1.60	1.97	1.68
50 x 50 x 20	3450	40.64	40.64	50.04	0.76
2 x 2 x 1	500	1.73	1.73	2.02	1.85
50 x 50 x 25	3450	43.94	43.94	51.31	0.84
2 x 2 x 1 1/4	500	1.90	1.90	2.10	2.04
50 x 50 x 32	3450	44.45	42.42	44.45	0.93
2 x 2 x 1 1/2	500	2.02	2.02	2.16	2.18
50 x 50 x 40	3450	44.45	42.42	44.45	0.99
2 x 2 x 2 1/2	500	2.60	2.60	2.39	3.61
50 x 50 x 65	3450	44.45	42.42	44.45	1.64
2 1/2 x 2 x 3/4	500	1.74	1.60	2.32	2.28
65 x 50 x 20	3450	44.45	42.42	44.45	1.03

▲ - 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 anvilintl.com or contact your local Anvil Representative.



www.anvilintl.com

REV. 4.5.12 - 14

STRAIGHT TEE



Ductile Iron



MATERIAL SPECIFICATIONS

Ductile iron threaded fittings are UL & ULC Listed & FM Approved for 500 psi service.

Ductile iron per ASTM A536 Class 65-45-12.

Dimensions conform to ASME B16.3

Threads are NPT per ANSI/ASME B1.20.1.

NOTICE: 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 three turns beyond hand tight, but no more than four turns.

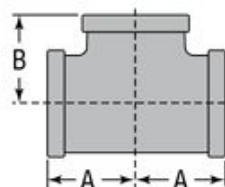


For Listings/Approval Details and Limitations, visit our website at www.anvilintl.com or contact an Anvil® Sales Representative.

STRAIGHT TEE

Nominal Size	Max. Working Pressure▲	Dimensions		Approx. Wt. Each
		A	B	
In. (mm)	PSI (kPa)	In. (mm)	In. (mm)	Lbs. (kg)
1 25	500 3450	1.50 38.10	1.50 38.10	0.85 0.39
1¼ 32	500 3450	1.75 44.45	1.75 44.45	1.22 0.55
1½ 40	500 3450	1.94 49.27	1.94 49.27	1.55 0.70
2 50	500 3450	2.25 57.15	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 anvilintl.com or contact your local Anvil Representative.





UNITED BRASS WORKS, INC.
 714 S. Main St. Randleman, N.C. 27317
 Tel: 800-334-3035 Fax: 800-498-4696 www.ubw.com



Model 125MM Globe Valve

Metal to Metal Seat & Disc

125 lbs. WSP @ 350 ° Max

200 lbs. WOG

100% Pressure Tested

Threaded Ends

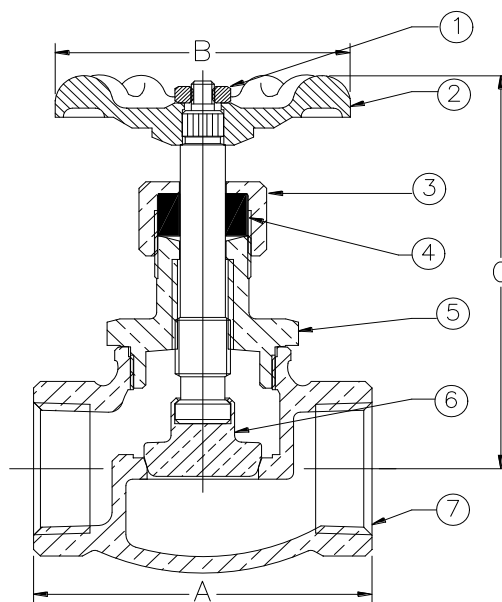
Rising Stem

Swivel Disc Holder

Contains Lead. Not Intended for Use in Potable Water Svstems

MATERIAL LIST

NO.	DESCRIPTION	MATERIAL
1	Hex Nut	Steel
2	Hand Wheel	Zinc or Ductile Iron
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	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

PRODUCT DATA SHEET

Metacaulk® 1000 Firestopping Sealant

Classified System Numbers TRC/PV 60-03, TRC/PV 120-13, TRC/PV 120-15, TRC/PV 120-17, TRC/PHV 120-09, CAJ1320, CAJ 2112, CAJ 2113, CAJ 3086, CAJ 3087, CAJ5134, CAJ 5070, CAJ 5077, CAJ 5078, CAJ 1221, CAJ 2120, CAJ 2119, CAJ 2122, CAJ 5085, CAJ8047, CAJ 8050, CAJ 2134, CAJ1260, CAJ1261, CAJ1263, CAJ1296, CAJ1263, CAJ5136, CAJ1329, CAJ1327, CAJ2245, CAJ2247, CAJ6025, WL 5057, WL 5059, WL 5061, WL 5063, WL5084, WL5092, WL 2102, WL 2104, WL 2106, WL 1099, WL1159, WL1199, WL 1104, WL 1102, WL 1108, WL 1106, WL 2108, WL2238, WL2192, WL2190, WL2201, WL2209, WL3155, WL3152, WL5075, WL1120, WL1110, WL1116, WL1114, WL1161, WL1177, WL1179, WL1181, WL5127, WL7034, WL7036, WL6008, WJ 5016, WJ 5018, WJ 5020, WJ 5022, WJ 2023, WJ 2025, WJ 2027, WJ2065, WJ2063, WJ2073, WJ 1036, WJ 1038, WJ3056, WJ3058, WJ5029, WJ5033, WJ1045, WJ1043, WJ1081, WJ1059, WJ1061, WJ1079, WJ 5059, WJ7016, WJ7014, WJ5039, FC 1030, FC 1032, FC 2065, FC 5020, FC 5022, FC 2077, FC 2075, FC 2076, FC2190, FC2192, FC2132, FC2130, FC1055, FC1041, FC2148, FC1061, FC3035, FC1065, FC1063, FC3051, HWD 0014, HWD 0179, HWD0056



September 2013



1. Product Description

Metacaulk® 1000 is a one component, general purpose fire rated sealant and smoke seal for construction joints and through-penetrations. Metacaulk® 1000 is a water based, extremely intumescent, non-sag caulking grade sealant that is easy to apply as well as to retrofit. It cures to an elastomeric seal that is suitable where dynamic movement is expected. In the event of a fire, Metacaulk® 1000 will prevent the spread of flames, smoke, hot gases and water through joint openings and through-penetrations. No dilution or mixing is required for use. No special skills are necessary for installation. Metacaulk® 1000 is applied with a conventional caulking gun, bulk loading gun or can be troweled from the pail. For large applications, it can be pumped directly from the pail. Metacaulk® 1000 systems are rated for 1, 2, 3 and 4 hours in accordance with the ASTM E814 (UL1479), UL 2079 and ULC-S115-95 test standards. **Metacaulk® 1000 is protected in a wet stage as well as in a dry stage against mold growth with a combination of biocides.**

Use Metacaulk® 1000 for various applications:

Top of the Wall Construction Joints
Deflection Track Wall Systems
Up to 2" (51 mm) PVC/CPVC (Open)
Up to 3" (76 mm) PVC/CPVC & ABS (Closed)
Crosslinked Polyethylene (PEX) tubing
Steel, Copper, Cast Iron and EMT Pipe
Flexible Conduit
Fiberglass Insulated Pipe
Armaflex Insulated Pipe
Telephone, Communication and Power Cables
HVAC Ductwork

For a complete list of product applications or for additional technical information, call RECTORSEAL for the latest updated information.

Metacaulk® 1000 Features

- Water Based
- Excellent Freeze-Thaw
- Flexible Set
- Highly Intumescent
- Paintable
- VOC Compliant
- Safe and Easy to Use
- Minimum 3 Year Shelf Life

2. Material Properties

Asbestos Fillers None
Solvents None
Hazardous Ingredients None

Application Caulking
Gun or
Trowel

Activation of Intumescence:

Expansion Begins 375° F (190°C)
Expansion Greatest 575° (302°C) to
1100° F (593° C)

Color	Red
Cure Time weeks	3 to 4 (at 77°F/ 25°C)
Density	10.5 +/- 0.5 lbs./gal. 1.25 kg/L
Elastomeric	Yes
Freeze-Thaw	Excellent
Skin Over Time	30 min. (at 77° F/ 25°C)
pH Value	6.5 to 7
Volume Coverage:	
for 10.3 oz. tube	(304ml) 18 cu. in. (295 cc)
for 5 gallon (18.9 liter)	1155 cu. in. (5000 cu. cm/L)
VOC	Negligible

ASTM E 84, UL 723 Tunnel Test

Flame Spread	5
Smoke Index	10

Sound Transmission Class
STC 62*

*Tested in a UL 411 wall assembly/section to ASTM E90.

3. Applications

Metacaulk® 1000 can be used in interior applications as a general purpose fire rated sealant and smoke seal for construction joints on both vertical and horizontal surfaces. Metacaulk® 1000 is also an excellent fire rated acoustical sealant and can be used in areas under constant



vibration or movement. Metacaulk® 1000 can also be used on various penetrations such as EMT, telephone & power cables, insulated pipes, etc. in concrete floors and walls, gypsum walls as well as wood floors. Use Metacaulk® 1000 to prevent the spread of fire and smoke through joints in fire rated gypsum wallboard partitions, concrete block or concrete walls and/or concrete or corrugated steel deck floor/ceiling assemblies.

4. Installation Data

Install Metacaulk® 1000 using standard caulking techniques or trowel from pails. Metacaulk® 1000 may also be pumped from the pails. When damming materials are needed, use only materials approved for the specific application.

TYPICAL TOP OF WALL INSTALLATION

Step 1)

Cut and fit the gypsum wallboard to the contour of the steel decking leaving a maximum 3/4" (19 mm) relief gap.

Step 2)

Pack the flute openings and relief gap with required amount of fiberglass insulation and recess to required depth.

Step 3)

Gun, trowel or pump the sealant as required to the specified depth. Properly tool sealant surface flush with the wall. Consult UL Directory for complete instructions and system listings.

5. Testing Data

For specific test criteria, refer to the UL's Fire Resistance Directory or Warnock Hersey International Listing Directory or call RECTORSEAL

Metacaulk® 1000 was tested at positive pressure with a minimum 0.01 (2.5 Pa)

10. LIMITED WARRANTY

RectorSeal makes the Limited Express Warranty that when the instructions for storage and handling of our products are followed we warrant our products to be free from defects. THIS LIMITED EXPRESS WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER EXPRESS OR IMPLIED WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND OF ANY OTHER OBLIGATION ON THE PART OF RECTORSEAL. The sole remedy for breach of the Limited Express Warranty shall be the refund of the purchase price. All other liability is negated and disclaimed, and RectorSeal shall not be liable for incidental or consequential damages.

Suggestions and recommendations covering the use of our products are based on our past experience and laboratory findings. However, as we have no control as to the methods and conditions of application, we only assume responsibility for the uniformity of our products within manufacturing tolerances.

inches water and in accordance with ASTM E814 (UL 1479), UL 2079 and ULC-S115-95.

Complies to Required Environmental Exposure Testing of Accelerated Aging and High Humidity as per UL 1479 Fire Test of Through-Penetration Firestops.



FBC System Compatible indicates that this product has been tested, and is monitored on an ongoing basis, to assure its chemical compatibility with FlowGuard Gold®, BlazeMaster® and Corzan® pipe and fittings.

FBC, FlowGuard Gold®, BlazeMaster® and Corzan® are licensed trademarks of the Lubrizol corporation.

6. Storage & Handling

Metacaulk® 1000 should be stored between 35°F (2°C) and 120°F (49°C) to obtain a minimum 3 year shelf life. NOTE: Do not dilute, no mixing is required. Best if protected from freezing. If freezing occurs, thaw completely before using. Keep products stored under protective cover in original containers.

7. Availability

Metacaulk® 1000 is available in 10.3 oz. (304 ml), 30 oz. (887 ml) caulking tubes and 20.2 oz. (597 ml) sausage pack and in 5 gallon (18.9 L) pails.

8. Limitations

Metacaulk® 1000 is not designed to be used in areas under continuous immersion or in areas which would be continuously wet. Metacaulk® 1000 should not be used against hot uninsulated surfaces above 300° F (149° C).

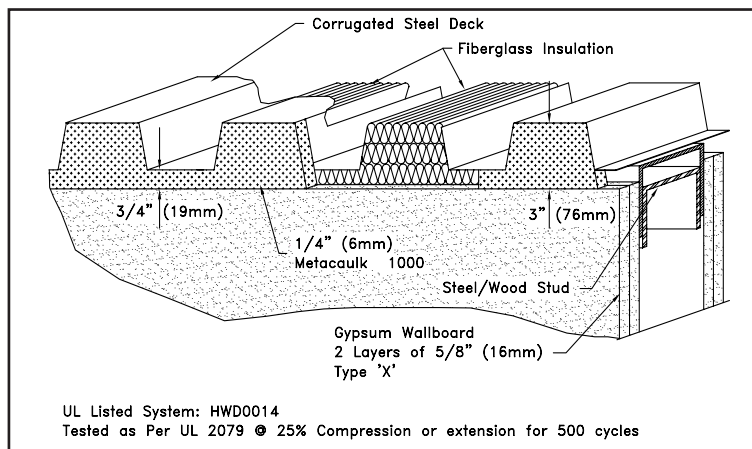
9. Cautions

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CALL CHEMTREC-DAY OR NIGHT 1-800-424-9300.

PRECAUTIONS: Do not take internally. May be harmful if swallowed. May cause eye and skin irritation if prolonged or repeated contact occurs. Wash after handling. **FIRST AID:** For any overexposure, get immediate medical attention after first aid is given. **Eyes-** Flush 15 minutes with clean water. **Skin-** Wash with soap and water. **Inhalation-** Remove to fresh air. **Ingestion-** Only if conscious, give large amounts of water and INDUCE VOMITING. **FIRE AND SPILLS:** Use water fog, CO₂, foam, or dry chemicals. Wipe up spills to prevent footing hazard. Clean up with scrapers and water. **STORAGE AND HANDLING:** Store away from heat sources. Keep container closed. Do not reuse empty container. **KEEP OUT OF REACH OF CHILDREN.**

For additional information, refer to Material Safety Data Sheet.

**For additional technical service,
call: 1-800-231-3345
fax: 1-800-452-2824
www.rectorseal.com
www.metacaulk.com**



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



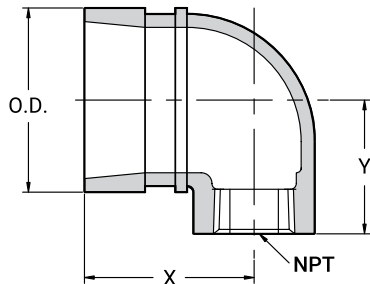
- SE-5 ductile iron fittings are grooved on the large end and reduced size female NPT threaded on the small end. The SE-5 fittings are ideal for all types of applications where transition from grooved to female thread is required.
- SE-5 fittings allow for convenient connection of drains, vents, pressure 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™



Application for Fire Marshal Plan Review

Type of Review Requested:

☐ Site Plan Review

☐ Building Plan Review

Project Information

Project Name:

Project Physical Address:

PIN #:

Plan Information

Plans Submitted by:

Contact Person:

Contact Phone #:

Contact Email:

Contractor Information

Contractor/Company Name:

Company Mailing Address:

Primary Contact Name:

Contact 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 eTrakit portal, or by calling the Harnett County Central Permitting Department (910-893-7525, Option #1) or the Harnett County Fire Marshal's Office (910-893-7580).
- Approved plans must be obtained through Central Permitting (via centralpermitting@harnett.org email) at the time of payment; payment can be made over the phone (910-893-7525, Option #1) or at the Central Permitting Office (420 McKinney Parkway Lillington, NC 27546).
- All fees must be paid before any required inspections can be conducted.