Dena Zwarich

From: Matt Morris <matt@morriseng.ca>
Sent: Wednesday, November 11, 2020 11:15 AM
To: gaines@bellnet.ca
Cc: Keith Oster; Annie Griffiths; Dena Zwarich
Subject: FW: CIR Response
Attachments: Sprinker.pdf

SUBMITTAL / SHOP DRAWING REVIEW This submittal/shop drawing review is for general conformance with drawings and specifications only. Contractor is completely responsible for all dimensions, details, quantities, supply, installation and construction. This review does not in any way relieve the Contractor of responsibility for compliance with the Contract Documents.	
Client:	Larry Gaines Architect
Project:	Carleton Place Arena
Submittal:	Sprinklers
Notes:	***- Header Schematic does not indicate Municipal Water Connection – please ensure that provision is made for this.***
MORRIS ENGINEERING LTD. *68 William Street, Suite 200, Brockville, Ontario* *(613)499-2077*	

Thanks,

Matt

Matt Morris P.Eng.
MORRIS Engineering Ltd.
68 William Street, Suite 206
Brockville, ON
Bus. (613)499-2077
Cel. (613)349-0555

TRANSMITTAL

Date:	October 26th, 2020	**Tel:**	613-821-3959
To:	TAL-CO Building Innovations Ltd 4728 Bank Street, Suite A Ottawa Ontario, K1T 3W7	**Fax:**	**613-821-2938**
Attention:	**Dena Zwarich**	**Email:**	dena@tal-co.com
Subject:	Sprinkler System Shop Drawings for : **CARLETON PLACE ARENA ADDITION** **75 NEELIN STREET** **CARLETON PLACE, ON K7C 0C1**		

For ENG review/approval ☒	**For your files** ☒	**As-Built** ☐

No. of Copies	Description
1set	Hydraulic calculations, design drawings & Seismic drawings
1 set	EFP Sprinkler Material SDs

Comments:

Received by: **Date:**

SPRINKLER SYSTEM SEISMIC & HYDRAULIC CALCULATIONS

CARLETON PLACE ARENA ADDITION
75 NEELIN STREET.
CARLETON LACE, ON
K7C 0C1

805 Safari Court, Orleans Ontario K4A 1B2 Tel 613-830-4308 Fax 613-830-4091

"Fire Protection with Intelligence"

BRUCE Fire Protection

HYDRAULIC CALCULATION

Bruce Fire Protection Ltd
2680 Matheson Blvd East
Suite 102
Mississauga, ON L4W 0A5
905 267 3340

Job Name	:	PROPOSED ARENA ADDITION CALC #1
Drawing	:	20-3890-SP
Location	:	75 NEELIN St., CARLETON PLACE, ON
System	:	#1
Contract	:	
Data File	:	20-3890-1.WXF

HYDRAULIC CALCULATIONS
for

Project name: PROPOSED ARENA ADDITION CALC #1
Location: 75 NEELIN St., CARLETON PLACE, ON
Drawing no: 20-3890-SP
Contract number:
Date: OCT 2020

Design
Remote area number: #1
Remote area location: MAIN FLOOR E
Occupancy classification: OH I
Density: 0.15 - Gpm/SqFt
Area of application: 900 - SqFt
Coverage per sprinkler: 113 - SqFt
Type of sprinklers calculated: QR
No. of sprinklers calculated: 11
In-rack demand: N/A - GPM
Hose streams: 250 - GPM
Total water required (including hose streams): 446 - GPM @ 40 - Psi
Type of system: WET
Volume of dry or preaction system: N/A - Gal

Water supply information
Date: 10/01/2020
Location:
Source: ESCAPE FIRE PROTECTION

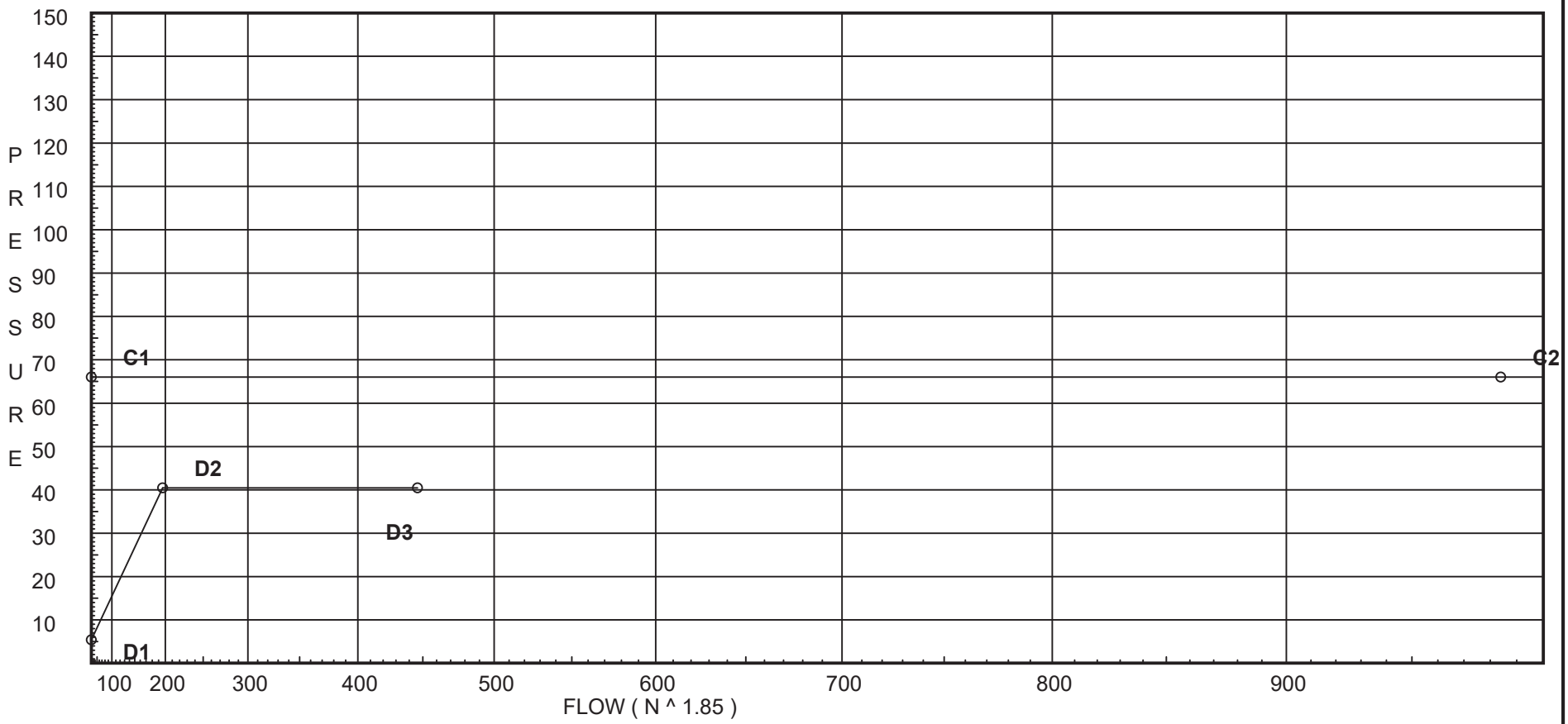
Name of contractor: ESCAPE FIRE PROTECTION
Address:
Phone number:
Name of designer:
Authority having jurisdiction:
Notes: (Include peaking information or gridded systems here.)

Water Supply Curve

Bruce Fire Protection Ltd
PROPOSED ARENA ADDITION CALC #1

City Water Supply:
- C1 - Static Pressure : 66
- C2 - Residual Pressure: 66
- C2 - Residual Flow : 984

Demand:
- D1 - Elevation : 5.414
- D2 - System Flow : 196.173
- D2 - System Pressure : 40.459
- Hose (Demand) : 250
- D3 - System Demand : 446.173
- Safety Margin : 25.541



SUPPLY ANALYSIS

Node at Source	Static Pressure	Residual Pressure	Flow	Available Pressure	Total Demand	Required Pressure
TEST	66.0	66	984.0	66.0	446.17	40.459

NODE ANALYSIS

Node Tag	Elevation	Node Type	Pressure at Node	Discharge at Node	Notes	
101	12.5	5.6	9.05	16.85	0.15	100
102	12.5	5.6	9.16	16.95	0.15	113
103	12.5	5.6	9.68	17.42	0.15	113
104	12.5	5.6	10.32	17.99	0.15	113
105	12.5	5.6	9.24	17.02	0.15	100
106	12.5	5.6	9.35	17.12	0.15	113
107	12.5	5.6	9.88	17.6	0.15	113
108	12.5	5.6	10.82	18.42	0.15	113
109	12.5	5.6	11.13	18.68	0.15	113
110	12.5	5.6	11.29	18.82	0.15	113
111	12.5	5.6	11.89	19.31	0.15	113
11U	12.5		12.14			
12U	12.5		12.18			
13U	12.5		13.45			
11	11.68		15.17			
12	11.68		15.28			
13	11.68		15.67			
14	11.68		15.68			
15	11.68		23.0			
6	11.68		23.5			
5	11.68		27.0			
1	2.0		39.36			
TEST	0.0		40.46	250.0		

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 ******
101	12.500	5.60	16.85	1.5			11.750	120	9.050	
to									0.0	
102	12.500		16.85	1.682			11.750	0.0094	0.111	Vel = 2.43
102	12.500	5.60	16.95	1.5			14.930	120	9.161	
to									0.0	
103	12.500		33.8	1.682			14.930	0.0345	0.515	Vel = 4.88
103	12.500	5.60	17.42	1.5			8.680	120	9.676	
to									0.0	
104	12.500		51.22	1.682			8.680	0.0743	0.645	Vel = 7.40
104	12.500	5.60	17.99	1.5			14.000	120	10.321	
to									0.0	
11U	12.500		69.21	1.682			14.000	0.1298	1.817	Vel = 9.99
			0.0							
11U			69.21						12.138	K Factor = 19.87
105	12.500	5.60	17.02	1.5			11.750	120	9.238	
to									0.0	
106	12.500		17.02	1.682			11.750	0.0097	0.114	Vel = 2.46
106	12.500	5.60	17.13	1.5			14.930	120	9.352	
to									0.0	
107	12.500		34.15	1.682			14.930	0.0351	0.524	Vel = 4.93
107	12.500	5.60	17.59	1.5			12.420	120	9.876	
to									0.0	
108	12.500		51.74	1.682			12.420	0.0758	0.941	Vel = 7.47
108	12.500	5.60	18.42	1.5			10.250	120	10.817	
to									0.0	
12U	12.500		70.16	1.682			10.250	0.1331	1.364	Vel = 10.13
			0.0							
12U			70.16						12.181	K Factor = 20.10
109	12.500	5.60	18.68	1.5			14.250	120	11.127	
to									0.0	
110	12.500		18.68	1.682			14.250	0.0115	0.164	Vel = 2.70
110	12.500	5.60	18.82	1.5			14.250	120	11.291	
to									0.0	
111	12.500		37.5	1.682			14.250	0.0418	0.595	Vel = 5.41
111	12.500	5.60	19.30	1.5			17.420	120	11.886	
to									0.0	
13U	12.500		56.8	1.682			17.420	0.0901	1.569	Vel = 8.20
			0.0							
13U			56.80						13.455	K Factor = 15.48
11U	12.500		69.21	1.5	2T	19.799	0.830	120	12.138	
to							19.799		0.355	
11	11.680		69.21	1.682			20.629	0.1298	2.677	Vel = 9.99
			0.0							
11			69.21						15.170	K Factor = 17.77
12U	12.500		70.16	1.5	2T	19.799	0.830	120	12.181	
to							19.799		0.355	
12	11.680		70.16	1.682			20.629	0.1331	2.746	Vel = 10.13
			0.0							

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 ******
12			70.16						15.282	K Factor = 17.95
13U	12.500		56.80	1.5	2T	19.799	0.830	120	13.455	
to							19.799		0.355	
13	11.680		56.8	1.682			20.629	0.0901	1.858	Vel = 8.20
			0.0							
13			56.80						15.668	K Factor = 14.35
11	11.680		69.21	2.5			7.680	120	15.170	
to									0.0	
12	11.680		69.21	2.635			7.680	0.0146	0.112	Vel = 4.07
12	11.680		70.16	2.5			7.500	120	15.282	
to									0.0	
14	11.680		139.37	2.635			7.500	0.0532	0.399	Vel = 8.20
			0.0							
14			139.37						15.681	K Factor = 35.20
13	11.680		56.80	2.5			1.330	120	15.668	
to									0.0	
14	11.680		56.8	2.635			1.330	0.0098	0.013	Vel = 3.34
14	11.680		139.37	3	2T	40.319	165.500	120	15.681	
to							40.319		0.0	
15	11.680		196.17	3.26			205.819	0.0355	7.314	Vel = 7.54
15	11.680		0.0	3	E	9.408	4.750	120	22.995	
to							9.408		0.0	
6	11.680		196.17	3.26			14.158	0.0355	0.503	Vel = 7.54
6	11.680		0.0	4	B	15.8	9.680	120	23.498	
to					T	26.334	42.134		3.000	* * Fixed Loss = 3
5	11.680		196.17	4.26	Fsp	0.0	51.814	0.0096	0.500	Vel = 4.42
5	11.680		0.0	4	8E	105.337	4.330	120	26.998	
to							13.167		12.192	* * Fixed Loss = 8
1	2		196.17	4.26			17.497	0.0097	0.170	Vel = 4.42
1	2		0.0	6	S	45.906	80.000	140	39.360	
to					T	43.037	113.331		0.866	
TEST	0		196.17	6.16	G	4.304	193.331	0.0012	0.233	Vel = 2.11
					E	20.084				
			250.00							Qa = 250.00
TEST			446.17						40.459	K Factor = 70.14

"Fire Protection with Intelligence"

BRUCE Fire Protection

HYDRAULIC CALCULATION

Bruce Fire Protection Ltd
2680 Matheson Blvd East
Suite 102
Mississauga, ON L4W 0A5
905 267 3340

Job Name	:	PROPOSED ARENA ADDITION CALC #2
Drawing	:	20-3890-SP
Location	:	75 NEELIN St., CARLETON PLACE, ON
System	:	#2
Contract	:	
Data File	:	20-3890-2.WXF

HYDRAULIC CALCULATIONS
for

Project name: PROPOSED ARENA ADDITION CALC #2
Location: 75 NEELIN St., CARLETON PLACE, ON
Drawing no: 20-3890-SP
Contract number:
Date: OCT 2020

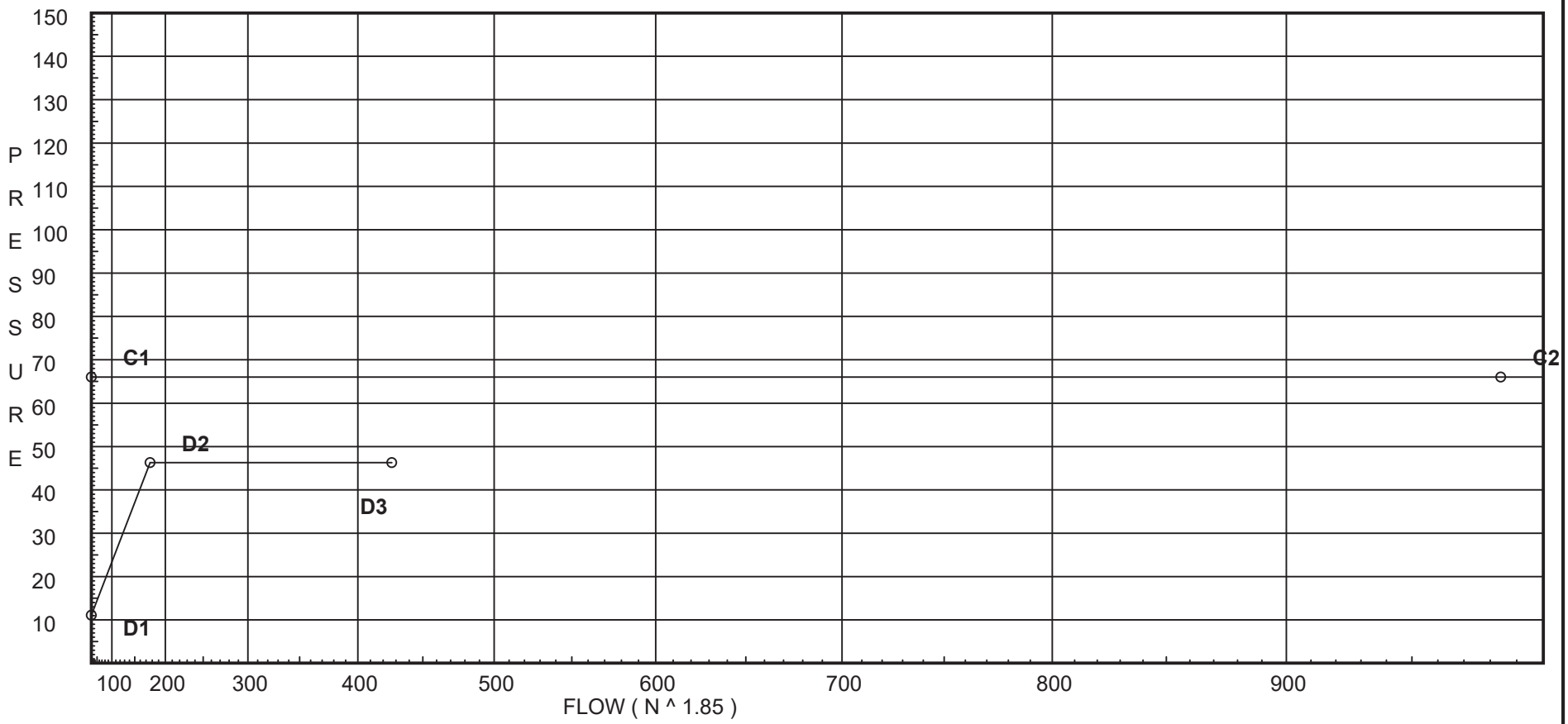
Design
Remote area number: #2
Remote area location: MAIN FLOOR E
Occupancy classification: OHI
Density: 0.15 - Gpm/SqFt
Area of application: 900 - SqFt
Coverage per sprinkler: 113 - SqFt
Type of sprinklers calculated: QR
No. of sprinklers calculated: 10
In-rack demand: N/A - GPM
Hose streams: 250 - GPM
Total water required (including hose streams): 427 - GPM @ 46 - Psi
Type of system: WET
Volume of dry or preaction system: N/A - Gal

Water supply information
Date: 10/01/2020
Location: ON SITE
Source: ESCAPE FIRE PROTECTION

Name of contractor: ESCAPE FIRE PROTECTION
Address:
Phone number:
Name of designer:
Authority having jurisdiction:
Notes: (Include peaking information or gridded systems here.)

City Water Supply:
- C1 - Static Pressure : 66
- C2 - Residual Pressure: 66
- C2 - Residual Flow : 984

Demand:
- D1 - Elevation : 11.079
- D2 - System Flow : 176.716
- D2 - System Pressure : 46.285
- Hose (Demand) : 250
- D3 - System Demand : 426.716
- Safety Margin : 19.715



SUPPLY ANALYSIS

Node at Source	Static Pressure	Residual Pressure	Flow	Available Pressure	Total Demand	Required Pressure
TEST	66.0	66	984.0	66.0	426.72	46.285

NODE ANALYSIS

Node Tag	Elevation	Node Type	Pressure at Node	Discharge at Node	Notes	
201	25.58	5.6	8.56	16.38	0.15	108
202	25.58	5.6	8.37	16.2	0.15	108
203	25.58	5.6	11.87	19.29	0.15	108
204	25.58	5.6	11.62	19.09	0.15	108
205	25.58	5.6	8.76	16.57	0.15	108
206	25.58	5.6	9.56	17.32	0.15	108
207	25.58	5.6	9.39	17.16	0.15	108
208	25.58	5.6	10.07	17.78	0.15	108
209	25.58	5.6	10.99	18.56	0.15	108
210	25.58	5.6	10.75	18.36	0.15	108
21	25.58		8.81			
22	25.58		8.88			
25	25.58		9.26			
23	25.58		12.24			
24	25.58		12.33			
26	25.58		9.81			
27	25.58		9.93			
28	25.58		10.34			
29	25.58		11.61			
30	25.58		11.03			
16U	25.58		9.99			
17U	25.58		12.2			
18U	25.58		13.31			
16	24.75		14.15			
17	24.75		14.29			
18	24.75		14.57			
19	11.68		23.29			
20	11.68		25.05			
8	11.68		28.74			
7	11.68		33.01			
1	2.0		45.23			
TEST	0.0		46.28	250.0		

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 ******
201	25.580	5.60	16.38	1	E	2.0	0.830	120	8.556	
to							2.000		0.0	
21	25.580		16.38	1.049			2.830	0.0898	0.254	Vel = 6.08
			0.0							
21			16.38						8.810	K Factor = 5.52
202	25.580	5.60	16.20	1	T	5.0	0.830	120	8.369	
to							5.000		0.0	
22	25.580		16.2	1.049			5.830	0.0880	0.513	Vel = 6.01
			0.0							
22			16.20						8.882	K Factor = 5.44
203	25.580	5.60	19.29	1	E	2.0	1.000	120	11.871	
to							2.000		0.0	
23	25.580		19.29	1.049			3.000	0.1217	0.365	Vel = 7.16
			0.0							
23			19.29						12.236	K Factor = 5.51
204	25.580	5.60	19.09	1	T	5.0	1.000	120	11.618	
to							5.000		0.0	
24	25.580		19.09	1.049			6.000	0.1193	0.716	Vel = 7.09
			0.0							
24			19.09						12.334	K Factor = 5.44
205	25.580	5.60	16.57	1	T	5.0	0.500	120	8.758	
to							5.000		0.0	
25	25.580		16.57	1.049			5.500	0.0918	0.505	Vel = 6.15
			0.0							
25			16.57						9.263	K Factor = 5.44
206	25.580	5.60	17.32	1	E	2.0	0.500	120	9.562	
to							2.000		0.0	
26	25.580		17.32	1.049			2.500	0.0996	0.249	Vel = 6.43
			0.0							
26			17.32						9.811	K Factor = 5.53
207	25.580	5.60	17.16	1	T	5.0	0.500	120	9.394	
to							5.000		0.0	
27	25.580		17.16	1.049			5.500	0.0980	0.539	Vel = 6.37
			0.0							
27			17.16						9.933	K Factor = 5.44
208	25.580	5.60	17.78	1	E	2.0	0.500	120	10.075	
to							2.000		0.0	
28	25.580		17.78	1.049			2.500	0.1048	0.262	Vel = 6.60
			0.0							
28			17.78						10.337	K Factor = 5.53
209	25.580	5.60	18.56	1	T	5.0	0.500	120	10.986	
to							5.000		0.0	
29	25.580		18.56	1.049			5.500	0.1135	0.624	Vel = 6.89
			0.0							
29			18.56						11.610	K Factor = 5.45
210	25.580	5.60	18.36	1	E	2.0	0.500	120	10.754	
to							2.000		0.0	
30	25.580		18.36	1.049			2.500	0.1112	0.278	Vel = 6.82

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 ******
			0.0							
30			18.36						11.032	K Factor = 5.53
21	25.580		16.38	1.5			8.000	120	8.810	
to									0.0	
22	25.580		16.38	1.682			8.000	0.0090	0.072	Vel = 2.37
22	25.580		16.20	1.5			11.830	120	8.882	
to									0.0	
25	25.580		32.58	1.682			11.830	0.0322	0.381	Vel = 4.70
25	25.580		16.57	1.5			10.500	120	9.263	
to									0.0	
16U	25.580		49.15	1.682			10.500	0.0690	0.724	Vel = 7.10
			0.0							
16U			49.15						9.987	K Factor = 15.55
23	25.580		19.29	1.5			8.000	120	12.236	
to									0.0	
24	25.580		19.29	1.682			8.000	0.0122	0.098	Vel = 2.79
24	25.580		19.09	1.5			22.330	120	12.334	
to									0.0	
18U	25.580		38.38	1.682			22.330	0.0436	0.974	Vel = 5.54
			0.0							
18U			38.38						13.308	K Factor = 10.52
26	25.580		17.32	1.5			12.170	120	9.811	
to									0.0	
27	25.580		17.32	1.682			12.170	0.0100	0.122	Vel = 2.50
27	25.580		17.16	1.5			1.500	120	9.933	
to									0.0	
16U	25.580		34.48	1.682			1.500	0.0360	0.054	Vel = 4.98
			0.0							
16U			34.48						9.987	K Factor = 10.91
28	25.580		17.78	1			12.170	120	10.337	
to									0.0	
29	25.580		17.78	1.049			12.170	0.1046	1.273	Vel = 6.60
29	25.580		18.56	1			1.500	120	11.610	
to									0.0	
17U	25.580		36.34	1.049			1.500	0.3927	0.589	Vel = 13.49
			0.0							
17U			36.34						12.199	K Factor = 10.40
30	25.580		18.36	1			10.500	120	11.032	
to									0.0	
17U	25.580		18.36	1.049			10.500	0.1111	1.167	Vel = 6.82
			0.0							
17U			18.36						12.199	K Factor = 5.26
16U	25.580		83.63	1.5	2T	19.799	0.830	120	9.987	
to							19.799		0.359	
16	24.750		83.63	1.682			20.629	0.1842	3.800	Vel = 12.08
			0.0							
16			83.63						14.146	K Factor = 22.24
17U	25.580		54.70	1.5	2T	19.799	0.830	120	12.199	
to							19.799		0.359	
17	24.750		54.7	1.682			20.629	0.0840	1.733	Vel = 7.90

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 ******
			0.0							
17			54.70						14.291	K Factor = 14.47
18U	25.580		38.38	1.5	2T	19.799	0.830	120	13.308	
to							19.799		0.359	
18	24.750		38.38	1.682			20.629	0.0436	0.899	Vel = 5.54
			0.0							
18			38.38						14.566	K Factor = 10.06
16	24.750		83.63	2.5			7.000	120	14.146	
to									0.0	
17	24.750		83.63	2.635			7.000	0.0207	0.145	Vel = 4.92
17	24.750		54.70	2.5			5.250	120	14.291	
to									0.0	
18	24.750		138.33	2.635			5.250	0.0524	0.275	Vel = 8.14
18	24.750		38.39	2.5	2E	16.474	20.580	120	14.566	
to							16.474		5.661	
19	11.680		176.72	2.635			37.054	0.0826	3.060	Vel = 10.40
19	11.680		0.0	2.5	E	8.237	13.070	120	23.287	
to							8.237		0.0	
20	11.680		176.72	2.635			21.307	0.0826	1.760	Vel = 10.40
20	11.680		0.0	2.5	3E	24.711	20.000	120	25.047	
to							24.711		0.0	
8	11.680		176.72	2.635			44.711	0.0826	3.693	Vel = 10.40
8	11.680		0.0	3	B	13.44	9.680	120	28.740	
to					T	20.159	33.599		3.000	* * Fixed Loss = 3
7	11.680		176.72	3.26	Fsp	0.0	43.279	0.0293	1.267	Vel = 6.79
7	11.680		0.0	6	8E	140.822	6.330	120	33.007	
to							17.603		12.192	* * Fixed Loss = 8
1	2		176.72	6.357			23.933	0.0012	0.028	Vel = 1.79
1	2		0.0	6	S	45.906	80.000	140	45.227	
to					T	43.037	113.331		0.866	
TEST	0		176.72	6.16	G	4.304	193.331	0.0010	0.192	Vel = 1.90
					E	20.084				
			250.00							Qa = 250.00
TEST			426.72						46.285	K Factor = 62.72

NFPA 13 2013 Seismic Bracing Calculations

Project Name:	CARLETON PLACE ARENA ADDITION	Brace Design:	SB1
Address:	75 NEELIN ST.	Contractor Name:	ESCAPE FIRE PROTECTION
City, State, Zip:	CARLETON PLACE, ON #######	Address:	
Prepared By:	Matthew, P.Eng, Margaret	City, State, Zip:	,
Date: 22-Oct-2020	Fax:		Phone:

Brace Information Per Table 9.3.5.11.8(a)

Maximum Length of Brace: 3'-6"
Size of Brace (in): 1" -
Type of Brace: Sch 40 Pipe
Brace Angle Range: 45-59 Degrees
Maximum Brace Spacing (ft): 40.00
Least Radius of Gyration* (in): 0.421
*kl/r Value:** 100
Maximum Horizontal Load (lbs): 4455

Seismic Brace Attachments

Structure Attachment Fitting: Universal Structural Attachment, 9/16" Hole
Make: CADDY Model: CSBUNIV050EG
UL Load Rating (lbs): 3000 Adjusted Per 9.3.5.2.3 (lbs): 2122

Structure Attachment Adapter: Bar Joist Attachment, 1/4"–1/2" Flange
Make: CADDY Model: CSBBARJEG
UL Load Rating (lbs): 3740 Adjusted Per 9.3.5.2.3 (lbs): 2645

Sway Brace Fitting: Universal Sway Brace, EG, 3" Pipe
Make: CADDY Model: CSB0300
UL Load Rating (lbs): 2765 Adjusted Per 9.3.5.2.3 (lbs): 1955

Fastener Information

Fastener Orientation: B
Structure: Bar Joist

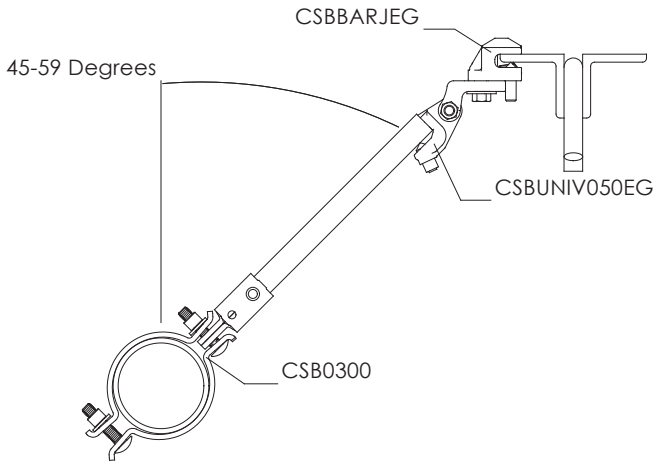
Fastener Qty: n/a

Fastener Type: n/a

Fastener Size: n/a
Fastener Embedment: n/a
Fastener Max. Load (lbs): n/a

Brace Orientation: Lateral

Brace I.D. (on plan): XXX



Sprinkler System Zone of Influence (ZOI) Load Calculation (*Fpw = Cp x Wp*)

Pipe Size	Pipe Description	Wt/ft (lbs)	15% for Fittings	Total Wt/ft	Length (ft)	Total Wt
3"	Sch 10	7.94	1.19	9.13	40.00	365.24
1 1/2"	Sch 10	3.04	0.46	3.50	132.00	461.47
1"	Sch 40	2.05	0.31	2.36	12.00	28.29
	Weight of Misc. ZOI Valves and Fittings					0.00
	Total Zone of Influence (ZOI) Weight (Wp)					855.00
	Max Fpw per NFPA 13 2013, Section 9.3.5.5.2					454 lbs

Cp = 0.38 per NFPA 13 2013 None

Sway Brace Attached to 3" Sch10 Pipe

Horizontal Earthquake Load

Fpw = Cp x Wp
Fpw = 0.38 x 855.00
***Fpw* = 325.00 lbs**

LICENSED PROFESSIONAL ENGINEER
Oct 22, 2020
M. MATTHEW
100084762
PROVINCE OF ONTARIO

*Excludes tension-only bracing systems

NFPA 13 2013 Seismic Bracing Calculations

Project Name:	CARLETON PLACE ARENA ADDITION	Brace Design:	SB2
Address:	75 NEELIN ST.	Contractor Name:	ESCAPE FIRE PROTECTION
City, State, Zip:	CARLETON PLACE, ON #######	Address:	
Prepared By:	Matthew, P.Eng, Margaret	City, State, Zip:	,
Date: 22-Oct-2020	Fax:		Phone:

Brace Information Per Table 9.3.5.11.8(a)

Maximum Length of Brace: 3'-6"
Size of Brace (in): 1" -
Type of Brace: Sch 40 Pipe
Brace Angle Range: 45-59 Degrees
Maximum Brace Spacing (ft): 80.00
Least Radius of Gyration* (in): 0.421
*kl/r Value:** 100
Maximum Horizontal Load (lbs): 4455

Seismic Brace Attachments

Structure Attachment Fitting: Universal Structural Attachment, 9/16" Hole
Make: CADDY Model: CSBUNIV050EG
UL Load Rating (lbs): 3000 Adjusted Per 9.3.5.2.3 (lbs): 2122

Structure Attachment Adapter: Bar Joist Attachment, 1/4"–1/2" Flange
Make: CADDY Model: CSBBARJEG
UL Load Rating (lbs): 3740 Adjusted Per 9.3.5.2.3 (lbs): 2645

Sway Brace Fitting: Universal Sway Brace, EG, 3" Pipe
Make: CADDY Model: CSB0300
UL Load Rating (lbs): 2100 Adjusted Per 9.3.5.2.3 (lbs): 1485

Fastener Information

Fastener Orientation: B
Structure: Bar Joist

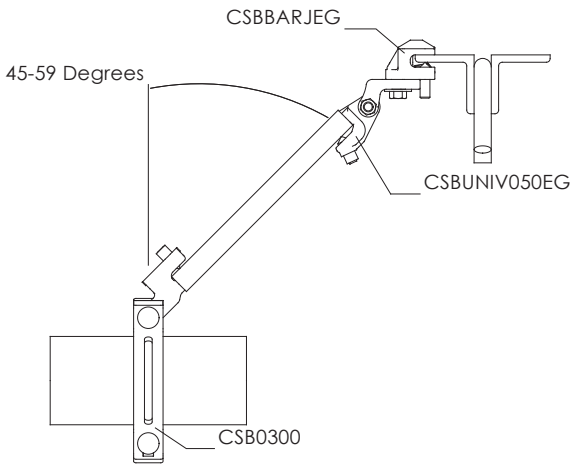
Fastener Qty: n/a

Fastener Type: n/a

Fastener Size: n/a
Fastener Embedment: n/a
Fastener Max. Load (lbs): n/a

Brace Orientation: Longitudinal

Brace I.D. (on plan): New Design 2



Sprinkler System Zone of Influence (ZOI) Load Calculation (*Fpw = Cp x Wp*)

Pipe Size	Pipe Description	Wt/ft (lbs)	15% for Fittings	Total Wt/ft	Length (ft)	Total Wt
3"	Sch 10	7.94	1.19	9.13	80.00	730.48
1 1/2"	Sch 10	3.04	0.46	3.50	264.00	922.94
1"	Sch 40	2.05	0.31	2.36	80.00	188.60
	Weight of Misc. ZOI Valves and Fittings					0.00
	Total Zone of Influence (ZOI) Weight (Wp)					1,842.02

Cp = 0.38 per NFPA 13 2013 None

Sway Brace Attached to 3" Sch10 Pipe

Horizontal Earthquake Load

Fpw = Cp x Wp
Fpw = 0.38 x 1,842.02
***Fpw* = 700.00 lbs**

LICENSED PROFESSIONAL ENGINEER
Oct 22, 2020
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100084762
PROVINCE OF ONTARIO

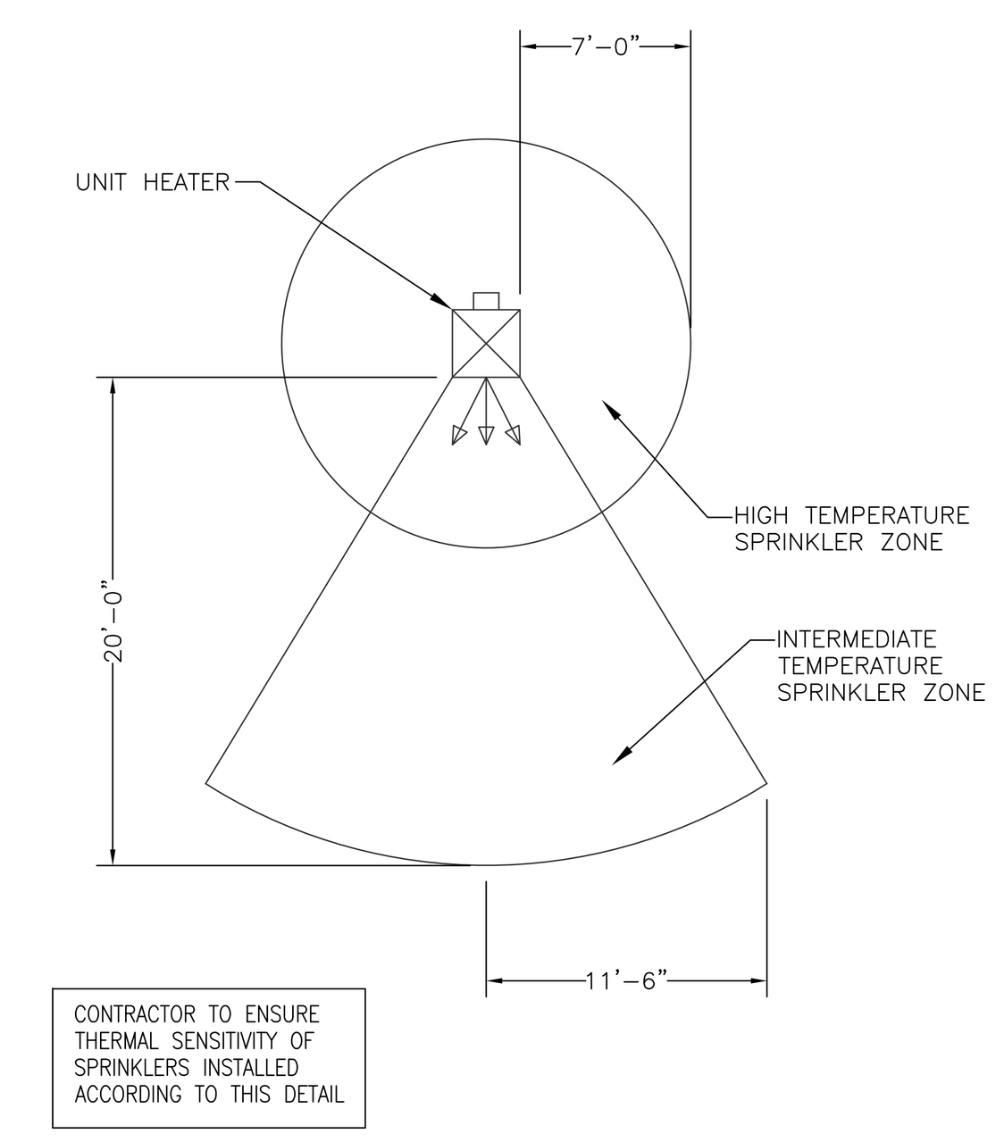
*Excludes tension-only bracing systems

MAXIMUM DISTANCE BETWEEN HANGERS (ft)								
PIPE	NOMINAL SIZE							
	1"	1¼"	1½	2"	2½"	3"	4"	6"
STEEL	12'–0"	12'–0"	15'–0"	15'–0"	15'–0"	15'–0"	15'–0"	15'–0"
CPVC	6'–0"	6'–6"	7'–0"	8'–0"	9'–0"	10'–0"	––	––

HANGER POSITIONING RULES:

1. MINIMUM NUMBER OF HANGERS SHALL NOT BE LESS THAN ONE HANGER FOR EACH SECTION OF PIPE.
2. THE DISTANCE BETWEEN A HANGER & CENTERLINE OF AN UPRIGHT SPRINKLER HEAD SHALL NOT BE LESS THAN 3".
3. THE UNSUPPORTED LENGTH BETWEEN THE END SPRINKLER & THE LAST HANGER ON THE LINE SHALL NOT BE GREATER THAN 36" FOR 1" PIPE & 60" FOR 1½" OR LARGER PIPE.
4. THE UNSUPPORTED LENGTH BETWEEN THE END SPRINKLER IN PENDENT POSITION OR DROP NIPPLE & THE LAST HANGER ON THE BRANCH LINE SHALL NOT BE GREATER THAN 12".
5. THE CUMULATIVE HORIZONTAL LENGTH OF AN UNSUPPORTED ARM OVER TO AN UPRIGHT SPRINKLER SHALL NOT EXCEED 24"OR 12" TO PENDENT SPRINKLER.
6. HANGERS FOR MAINS SHALL BE IN ACCORDANCE WITH TABLE 9.2.2.1 (a), BETWEEN EACH BRANCH LINE, OR ON EACH SECTION OF PIPE, WHICHEVER IS LESSER DIMENSION.
7. RISERS SHALL BE SUPPORTED BY RISER CLAMPS OR BY HANGERS LOCATED ON THE HORIZONTAL CONNECTIONS WITHIN 24" OF THE CENTER LINE OF THE RISER.

HANGERS NOT SHOWN FOR CLARITY PURPOSES



SPRINKLERS AT UNIT HEATERS
NOT TO SCALE

NOTES:

SB1 – DENOTES LATERAL SEISMIC BRACE

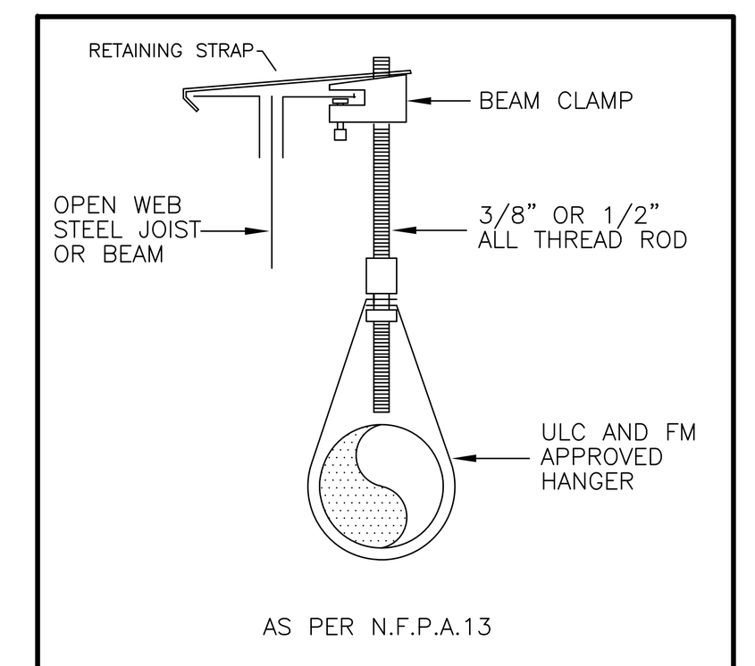
SB2 – DENOTES LONGITUDIAL SEISMIC BRACE

SB3 – DENOTES 4–WAY SEISMIC BRACE (SB3 – CONSIST OF 2 SB1 BRACES)

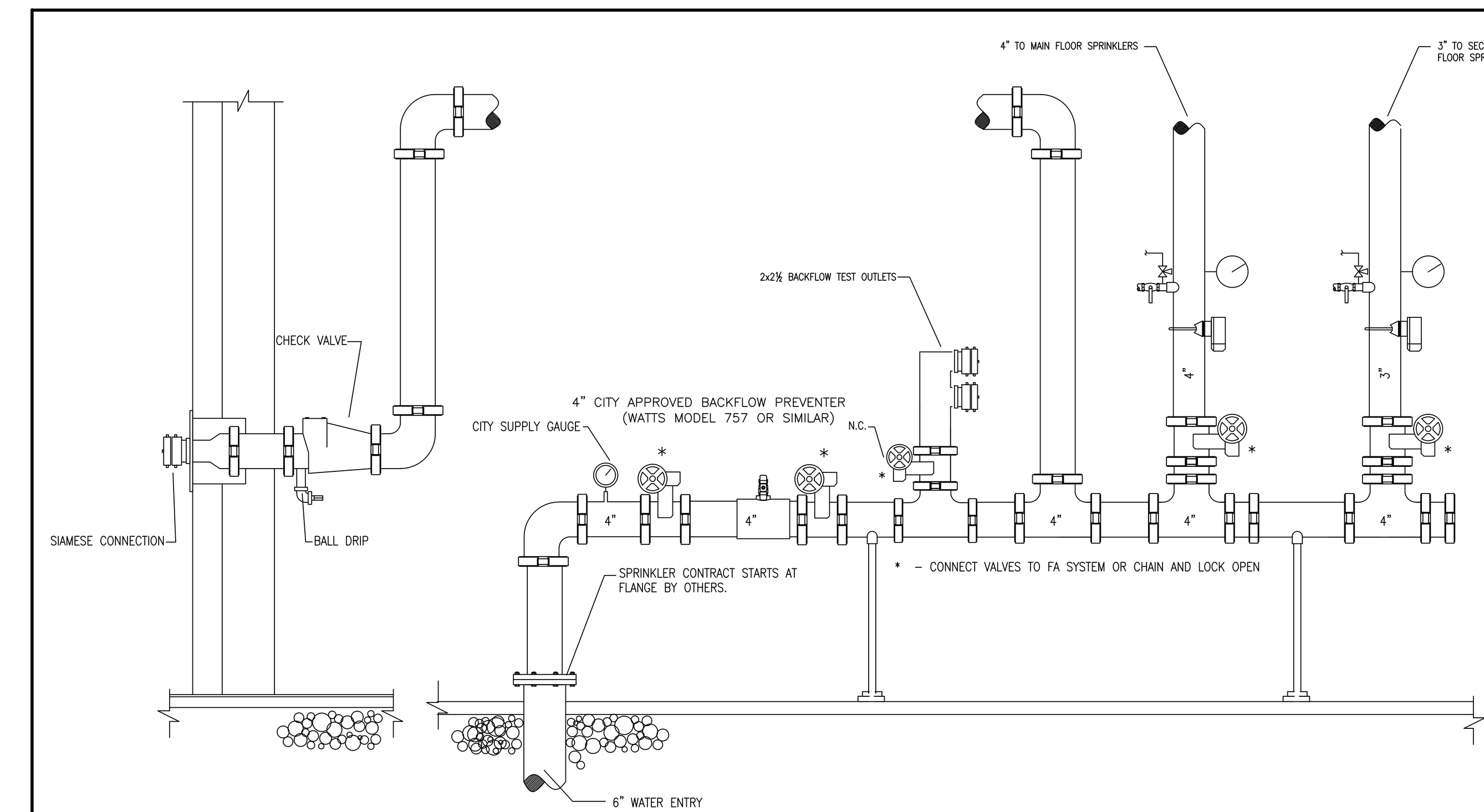
(LOCATE ON VERTICAL RISER NOT MORE THAT 24" FROM TOP OF THE RISER)

(SEE ENCLOSED SEISMIC CALCULATIONS FOR DETAILS)

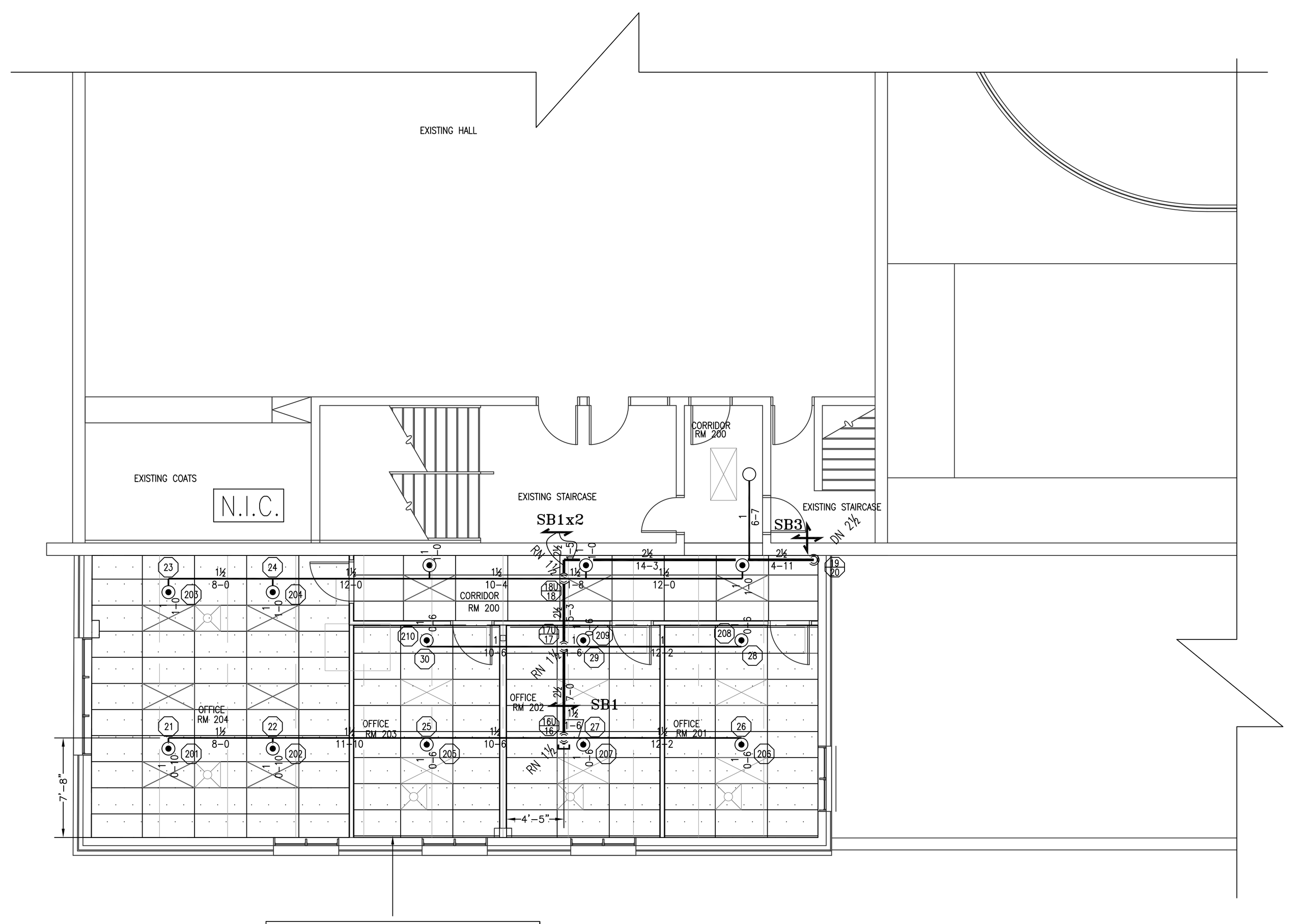
SEISMIC BRACING NOTES:
1. SPRINKLER PIPING AND SEISMIC BRACING TO BE INSTALLED ACCORDING TO SECTION 9.3 NFPA 13.
2. FLEXIBLE COUPLINGS
2.1 PROVIDE LISTED FLEXIBLE PIPE COUPLINGS FOR PIPES 2½" (50MM) AND LARGER.
2.2 FLEXIBLE COUPLINGS SHALL BE INSTALLED AS FOLLOWS:
A) WITHIN 24" (610MM) OF TOP AND BOTTOM OF ALL RISERS MORE THAT 3' (75MM) IN LENGTH, IN RISERS BETWEEN 3'(914MM) AND 7'(2133MM) IN LENGTH ONE FLEXIBLE COUPLING IS ADEQUATE.
B) WITHIN 12" (300MM) ABOVE AND 24" (610MM) BELOW THE FLOOR IN MULTISTORY BUILDINGS.
C) ON BOTH SIDES OF CONCRETE OR MASONRY WALLS WITHIN 1' (300MM) OF THE WALL SURFACE, UNLESS CLEARANCE PROVIDED.
D) ABOVE AND BELOW ANY INTERMEDIATE POINTS OF SUPPORT FOR A RISERS.
3. CLEARANCE:
3.1 CLEARANCE SHALL BE PROVIDED AROUND ALL PIPING EXTENDED THROUGH WALLS, FLOORS, INCLUDING DRAINS, FIRE DEPARTMENT CONNECTIONS AND OTHER AUXILIARY PIPING.
3.2 THE CLEARANCE HOLES SHALL BE SIZED 2"(50MM) LARGER THAN NOMINAL PIPE DIAMETER FOR PIPES 1"(25MM) TO 3"(75MM) AND 4"(100MM) LARGER FOR PIPES 4"(100MM) AND LARGER.
3.3 NO CLEARANCE REQUIRED:
A) FOR PIPES PASSING THROUGH GYPSUM BOARD OR EQUAL MATERIAL THAT DOES NOT HAVE FIRE RESISTANCE RATIO.
B) IF FLEXIBLE COUPLINGS ARE LOCATED WITHIN 1"(25MM) OF EACH SIDE OF WALL OR FLOOR.
C) IF PIPE PASSES PERPENDICULARLY THROUGH STUDS OR JOISTS THAT FORM A WALL/CEILING ASSEMBLY.
3.4 WHERE REQUIRED, THE CLEARANCE SHALL BE FILLED WITH FLEXIBLE MATERIAL THAT IS COMPATIBLE WITH THE PIPING MATERIAL.
3.5 CLEARANCE FROM STRUCTURAL MEMBERS SHALL BE AT LEAST 2" (50MM)



HANGER DETAIL
N.T.S.

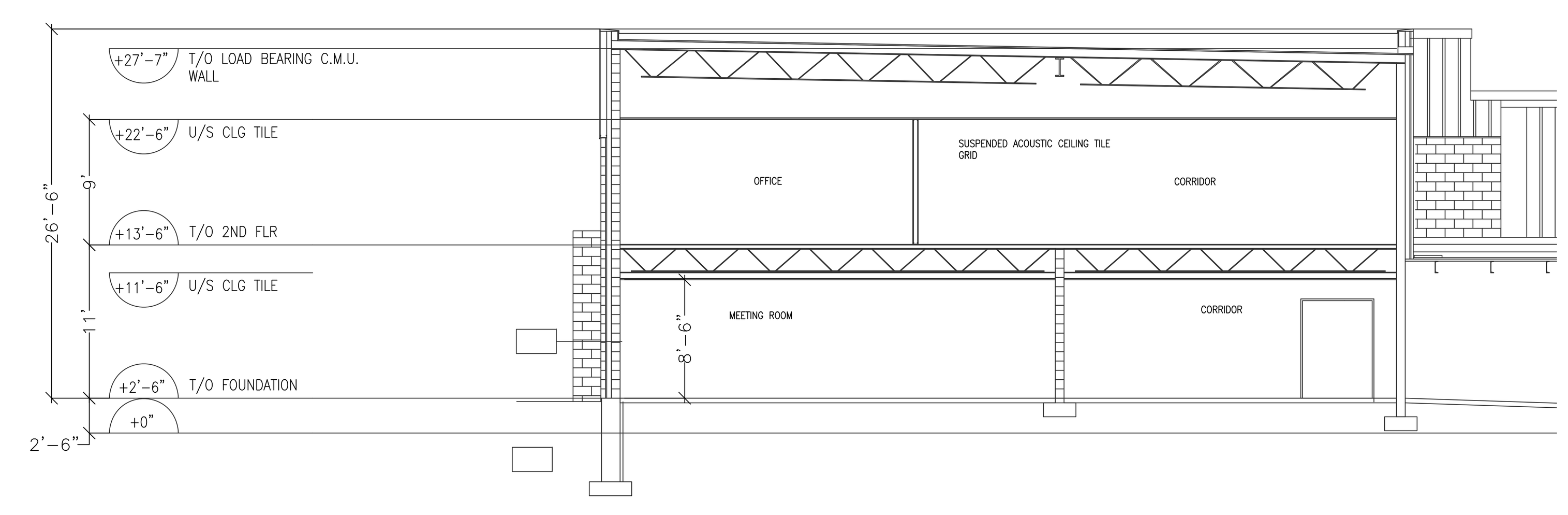


HEADER SCHEMATIC
N.T.S.



Design Area No. 2 – OH I
Density 0.15 Area 1000
Flow 427 gpm @ 46 psi
Includes 250 gpm Hose allowance

② SECOND FLOOR ADDITION
Scale: 1/8"=1'0"

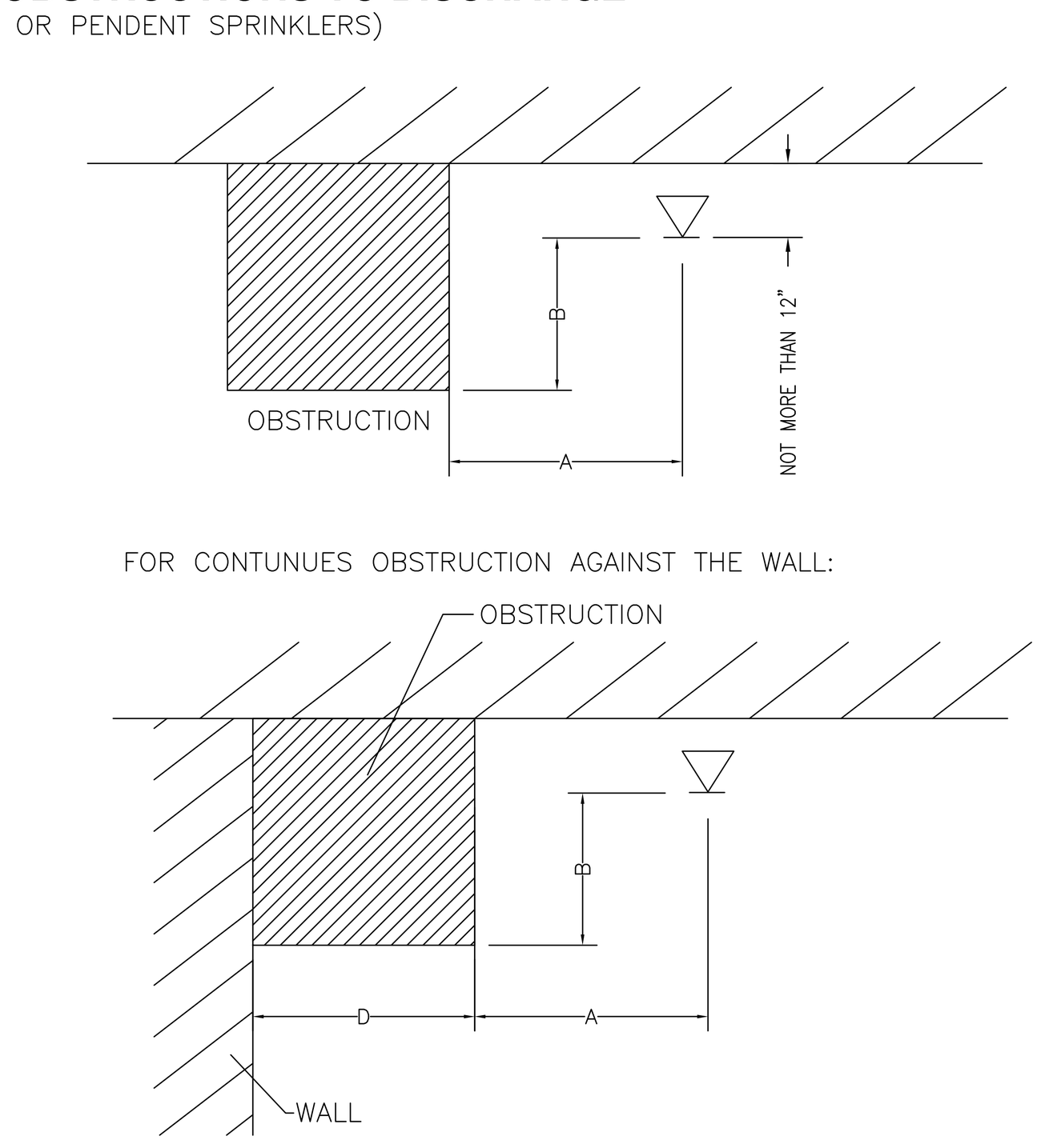


③ BUILDING SECTION
N.T.S.

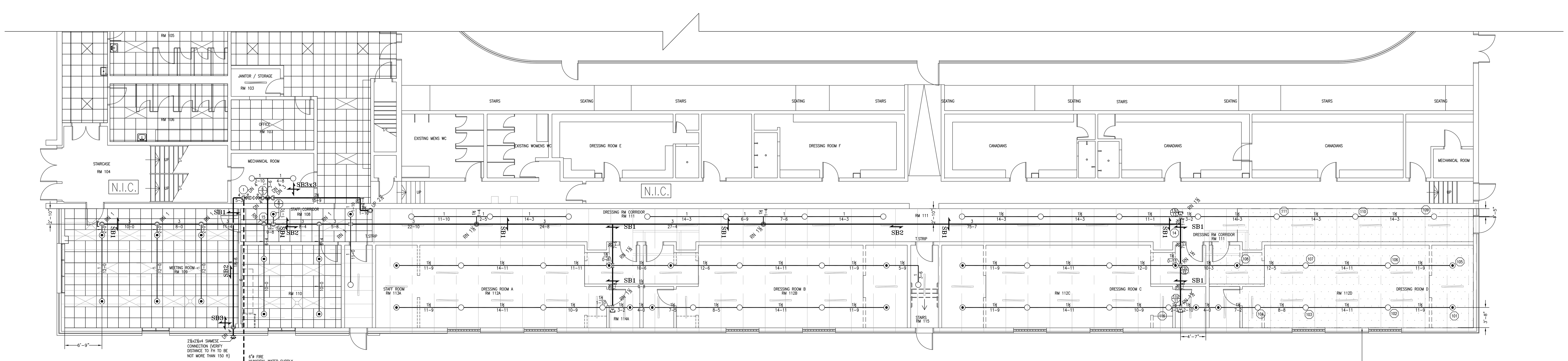
POSITIONING OF SPRINKLERS TO AVOID OBSTRUCTIONS TO DISCHARGE

(STANDARD SPRAY UPRIGHT OR PENDENT SPRINKLERS)

DISTANCE FROM SPRINKLER TO SIDE OF OBSTRUCTION (A)	MAXIMUM ALLOWABLE DISTANCE OF DEFLECTOR ABOVE BOTTOM OF OBSTRUCTION (in) (B)
LESS THAN 1 FT	0
1 FT TO LESS THAN 1FT 6 IN	2½
1FT 6 IN TO LESS THAN 2 FT	3½
2 FT TO LESS THAN 2 FT 6 IN	5½
2 FT 6 IN TO LESS THAN 3 FT	7½
3 FT TO LESS THAN 3 FT 6 IN	9½
3 FT 6 IN TO LESS THAN 4 FT	12
4 FT TO LESS THAN 4 FT 6 IN	14
4 FT 6 IN TO LESS THAN 5 FT	16½
5 FT TO LESS THAN 5 FT 6 IN	16½
5 FT 6 IN TO LESS THAN 6 FT	20
6 FT TO LESS THAN 6 FT 6 IN	24
6 FT 6 IN TO LESS THAN 7 FT	30
7 FT TO LESS THAN 7 FT 6 IN	35



A > (D–8 in) + B
D < 30 in.



Design Area No. 1 – OH I
Density 0.15 Area 980
Flow 446 gpm @ 40 psi
Includes 250 gpm Hose allowance

① GROUND FLOOR ADDITION
Scale: 1/8"=1'-0"

NOTE:

ALL PIPING IS SCH 10 GROOVED, EXCEPT 1" – SCH 40.
RUN ALL SPRINKLER PIPING IN JOIST SPACE

SCALE 1/8"=1'–0"

REVISIONS

NOTES

–– THIS DRAWING, ASSOCIATED CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF BRUCE FIRE PROTECTION LTD. AND MUST BE RETURNED AT THE COMPLETION OF THE WORK OR UPON REQUEST.
–– DIMENSIONS TAKE PRECEDENT OVER SCALE.
–– THE SPRINKLER SYSTEM IS TO BE INSTALLED AS PER N.F.P.A. AND BUILDING CODE STANDARDS.
–– CONTRACTOR TO INCLUDE FOR OFFSETS IN BRANCH LINES AND MAINS WHERE REQUIRED.
–– ALL MATERIALS TO BE U.L.C. LISTED AND APPROVED BY LOCAL AUTHORITIES.
–– CONTRACTOR TO ENSURE THAT PROPER HEAT IS PROVIDED IN ALL AREAS WITH WET PIPING, THAT SUBJECT TO FREEZING TEMPERATURES. REPORT TO ENGINEER IS DISCREPANCY IS DISCOVERED.
–– ALL PIPING MEASUREMENTS ARE GIVEN AS CENTER LINE TO CENTER LINE DIMENSIONS.
–– "RN" DENOTES RISER NIPPLE.
"DN" DENOTES DOWN.
–– ALL SUPERVISED VALVES, FLOW (PRESSURE) SWITCHES AND LOW PRESSURE MONITORING SWITCHES TO BE CONNECTED TO FIRE ALARM SYSTEM. (IF F.A.S. IS INSTALLED)
–– CONTRACTOR TO VISIT SITE TO VERIFY ALL DIMENSIONS AND CONDITIONS AS INDICATED ON DRAWINGS. ANY MAJOR DISCREPANCIES TO BE REPORTED TO BRUCE FIRE PROTECTION PRIOR TO FABRICATION AND INSTALLATION
–– CONTRACTOR TO ENSURE THAT PERMIT FOR INSTALLATION HAVE BEEN RECEIVED BEFORE COMMENCING ANY WORK ON SITE
–– BRUCE FIRE PROTECTION LTD.'S LIABILITY, DIRECT OR INDIRECT, IS LIMITED TO THE FEE PAID TO IT.

PERMIT

THE UNDERSIGNED HAS REVIEWED AND TAKES RESPONSIBILITY FOR THE DESIGN, AND HAS THE QUALIFICATIONS AND MEETS THE REQUIREMENTS SET OUT IN THE ONTARIO BUILDING CODE TO DESIGN THE WORK SHOWN ON THE ATTACHED DOCUMENT.

QUALIFICATION INFORMATION
REQUIRED UNLESS DESIGN IS EXEMPT UNDER 2.17.5.1 OF THE ONTARIO BUILDING CODE.

M. MATTHEW, P.Eng — 32049
NAME — SIGNATURE — BCIN

REGISTRATION INFORMATION
REQUIRED UNLESS DESIGN IS EXEMPT UNDER 2.17.5.1 OF THE ONTARIO BUILDING CODE.

BRUCE FIRE PROTECTION LTD. — 36466
FIRM NAME — FIRM BCIN

DESIGN CRITERIA

DESIGN AREA # 1 & 2: SPRINKLER SYSTEM DESIGNED FOR ORDINARY HAZARD GROUP 1. PLUS 250 GPM FOR HOSES CALCULATED AS PER NFPA 13 (2013).

WATER SUPPLY INFORMATION
Static Pressure: 66 psi
Res. Pressure 61 psi @ 984 gpm
Flow Test Date: October 1, 2020

SPRINKLER SPECIFICATION

Sprinkler Head Schedule				
Symbol	Count	Thread	K–Factor	Description
◉	41	1/2"	5.6	PENDENT, SEMI–RESESSED, 155F, QR
○	39	1/2"	5.6	UPRIGHT, 155F, QR
80 = Total Number of Heads				

Escape FIRE PROTECTION
805 Safari Court, Orleans Ontario K4A 1B2
Tel 613-830-4308 Fax 613-830-4091

NORTH

STAMP
LICENSED PROFESSIONAL ENGINEER
Oct. 21, 2020
M. MATTHEW
100084762
PROVINCE OF ONTARIO
BCIN 32049

"Fire Sprinkler Design with Intelligence"
BRUCE Fire Protection
Bruce Fire Protection Ltd
2680 Matheson Blvd. E
Suite 102.
Mississauga, ON,
L4W 0A5
Tel: 905 267 3340
Fax: 905 581 3203
Toll Free: 1 800 260 0187
email: info1@brucefire.ca
www.brucefire.ca

PROJECT
CARLETON PLACE ARENA ADDITION
75 NEELIN St.,
CARLETON PLACE ONTARIO

DWG TITLE
PROPOSED AUTOMATIC FIRE SPRINKLER SYSTEM

DATE: OCTOBER 2020
PROJECT NO.: 20–3890
SCALE: 1/8"=1'–0"
DWN BY: IM
VERIFIED BY: MM
ISSUED FOR REVISION NO.
DWG NO.: SP1
OF 1

SPRINKLER SYSTEM
MATERIAL SHOP DRAWINGS

CARLETON PLACE ARENA ADDITION
75 NEELIN STREET
CARLETON PLACE, ON
K7C 0C1

805 Safari Court, Orleans Ontario K4A 1B2 Tel 613-830-4308 Fax 613-830-4091

CARLETON PLACE ARENA ADDITION
75 NEELIN STREET
CARLETON PLACE, ON
K7C 0C1

Material Shop Drawings – List of Contents

- 5.6K Upright/Pendant QR 155°F
- Head guard
- Watts Backflow Preventer
- Butterfly Control Valves N/O & N/C
- Water Flow Switch
- Piping
- Fittings
- Couplings
- Beam Clamps
- Swivel Hangers
- Seismic Bracing
- Fire Extinguisher
- Siamese Connection Package
- Check Valve

805 Safari Court, Orleans, ON K4A 1B2 Tel: 613-830-4308 Fax: 613-830-4091

Series TY-FRB, 5.6 K-factor Upright, Pendent, and Recessed Pendent Sprinklers Quick Response, Standard Coverage

General Description

The TYCO Series TY-FRB, 5.6 K-factor, Upright (TY313) and Pendent (TY323) Sprinklers described in this data sheet are quick response, standard coverage, decorative 3 mm glass bulb-type spray sprinklers designed for use in light or ordinary hazard, commercial occupancies such as banks, hotels, and shopping malls.

The recessed version of the Series TY-FRB Pendent Sprinkler, where applicable, is intended for use in areas with a finished ceiling. This recessed pendent sprinkler uses one of the following:

- A two-piece Style 15 Recessed Escutcheon with recessed adjustment up to 5/8 inch (15,9 mm) from the flush pendent position.
- A two-piece Style 20 Recessed Escutcheon with recessed adjustment up to 1/2 inch (12,7 mm) from the flush pendent position.

The adjustment provided by the Recessed Escutcheon reduces the accuracy to which the fixed pipe drops to the sprinklers must be cut.

Intermediate level versions of Series TY-FRB Sprinklers are described in Technical Data Sheet TFP357. Sprinkler guards and shields are described in Technical Data Sheet TFP780.

IMPORTANT

Always refer to Technical Data Sheet TFP700 for the "INSTALLER WARNING" that provides cautions with respect to handling and installation of sprinkler systems and components. Improper handling and installation can permanently damage a sprinkler system or its components and cause the sprinkler to fail to operate in a fire situation or cause it to operate prematurely.

NOTICE

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

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

Sprinkler Identification Number (SIN)

TY313 . . . . . Upright 5.6K, 1/2˝ NPT
TY323 . . . . . Pendent 5.6K, 1/2˝ NPT

Technical Data

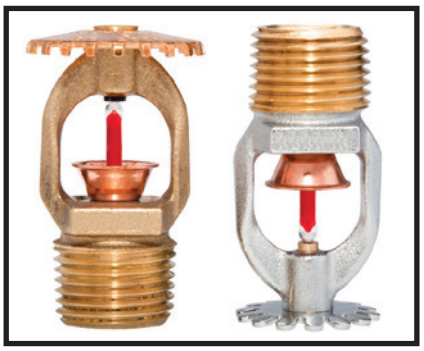
Approvals
UL and C-UL Listed
FM and VdS Approved
CE Certified

Maximum Working Pressure
175 psi (12.1 bar)
250 psi (17.2 bar)*

* The maximum working pressure of 250 psi (17.2 bar) only applies to the listing by Underwriters Laboratories, Inc. (UL).

Discharge Coefficient
K=5.6 GPM/psi$^{1/2}$ (80,6 LPM/bar$^{1/2}$)

Temperature Rating
135°F (57°C)
155°F (68°C)
175°F (79°C)
200°F (93°C)
286°F (141°C)



Finishes
Sprinkler: Natural Brass, Chrome Plated, Pure White (RAL 9010) and Signal White (RAL 9003).
Recessed Escutcheon: White Coated, Chrome Plated, or Brass Plated

Physical Characteristics

Frame	Bronze
Button	Brass/Copper
Sealing Assembly	Stainless Steel w/TEFLON
Bulb	Glass
Compression Screw	Bronze
Deflector	Bronze

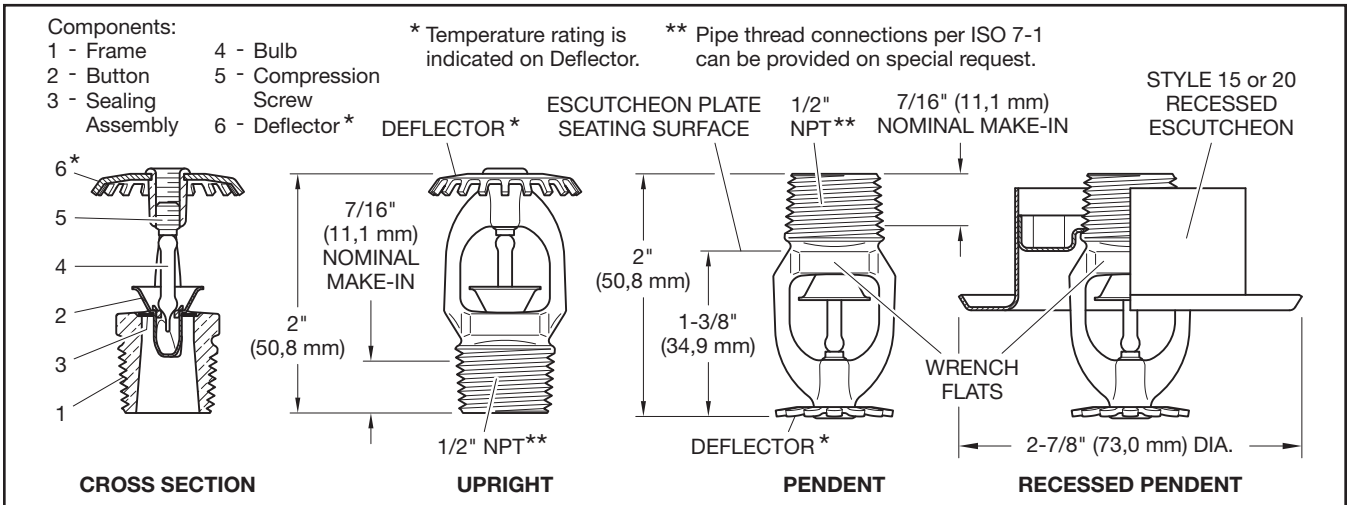


FIGURE 1
SERIES TY-FRB UPRIGHT (TY313) AND PENDENT (TY323) SPRINKLERS
5.6 K-FACTOR, 1/2 INCH NPT, QUICK RESPONSE

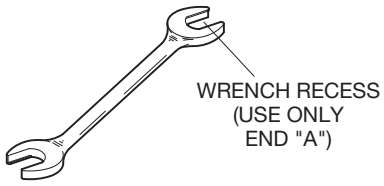


FIGURE 2
W-TYPE 6
SPRINKLER WRENCH

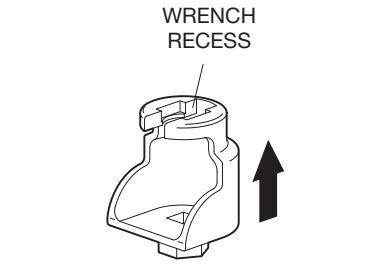


FIGURE 3
W-TYPE 7 RECESSED
SPRINKLER WRENCH

Operation

The glass bulb contains a fluid which expands when exposed to heat. When the rated temperature is reached, the fluid expands sufficiently to shatter the glass bulb, allowing the sprinkler to activate and water to flow.

Design Criteria

The TYCO Series TY-FRB, 5.6 K-factor, Upright (TY313) and Pendent (TY323) Sprinklers are intended for fire protection systems designed in accordance with the standard installation rules recognized by the applicable Listing or Approval agency (such as, UL Listing is based on the requirements of NFPA 13, and FM Approval is based on the requirements of FM's Loss Prevention Data Sheets). Only the Style 15 or Style 20 Recessed Escutcheon is to be used for recessed pendent installations.

Installation

The TYCO Series TY-FRB, 5.6 K-factor, Upright (TY313) and Pendent (TY323) Sprinklers must be installed in accordance with this section.

General Instructions
Do not install any bulb-type sprinkler if the bulb is cracked or there is a loss of liquid from the bulb. With the sprinkler held horizontally, a small air bubble should be present. The diameter of the air bubble is approximately 1/16 inch (1,6 mm) for the 135°F (57°C) and 3/32 inch (2,4 mm) for the 286°F (141°C) temperature ratings.

A leak-tight 1/2 inch NPT sprinkler joint should be obtained by applying a minimum to maximum torque of 7 to 14 ft.-lbs. (9,5 to 19,0 Nm). Higher levels of torque can distort the sprinkler Inlet with consequent leakage or impairment of the sprinkler.

Do not attempt to compensate for insufficient adjustment in the Escutcheon Plate by under- or over-tightening the sprinkler. Re-adjust the position of the sprinkler fitting to suit.

Upright and Pendent Sprinklers
The Series TY-FRB Upright and Pendent Sprinklers must be installed in accordance with the following instructions.

Step 1. Install Pendent sprinklers in the pendent position. Install upright sprinklers in the upright position.

Step 2. With pipe-thread sealant applied to the pipe threads, hand-tighten the sprinkler into the sprinkler fitting.

Step 3. Tighten the sprinkler into the sprinkler fitting using only the W-Type 6 Sprinkler Wrench (Figure 2). With reference to Figure 1, apply the W-Type 6 Sprinkler Wrench to the wrench flats. Torque sprinklers 7 to 14 ft.-lbs. (9,5 to 19,0 Nm).

Recessed Pendent Sprinklers
The Series TY-FRB Recessed Pendent Sprinklers must be installed in accordance with the following instructions.

Step A. After installing the Style 15 or Style 20 Mounting Plate over the sprinkler threads, and with pipe-thread sealant applied to the pipe threads, hand-tighten the sprinkler into the sprinkler fitting.

Step B. Tighten the sprinkler into the sprinkler fitting using only the W-Type 7 Recessed Sprinkler Wrench (Figure 3). With reference to Figure 1, apply the W-Type 7 Recessed Sprinkler Wrench to the sprinkler wrench flats. Torque sprinklers 7 to 14 ft.-lbs. (9,5 to 19,0 Nm).

Step C. After ceiling installation and finishing, slide on the Style 15 or Style 20 Closure over the Series TY-FRB Sprinkler and push the Closure over the Mounting Plate until its flange comes in contact with the ceiling.

Care and Maintenance

The TYCO Series TY-FRB, 5.6 K-factor, Upright (TY313) and Pendent (TY323) Sprinklers must be maintained and serviced in accordance with this section.

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 systems from the proper authorities and notify all personnel who may be affected by this action.

Absence of the outer piece of an escutcheon, which is used to cover a clearance hole, can delay sprinkler operation in a fire situation.

The owner must assure that the sprinklers are not used for hanging any objects and that the sprinklers are only cleaned by means of gently dusting with a feather duster; otherwise, non-operation in the event of a fire or inadvertent operation may result.

Sprinklers which are found to be leaking or exhibiting visible signs of corrosion must be replaced.

Automatic sprinklers must never be painted, plated, coated, or otherwise altered after leaving the factory.

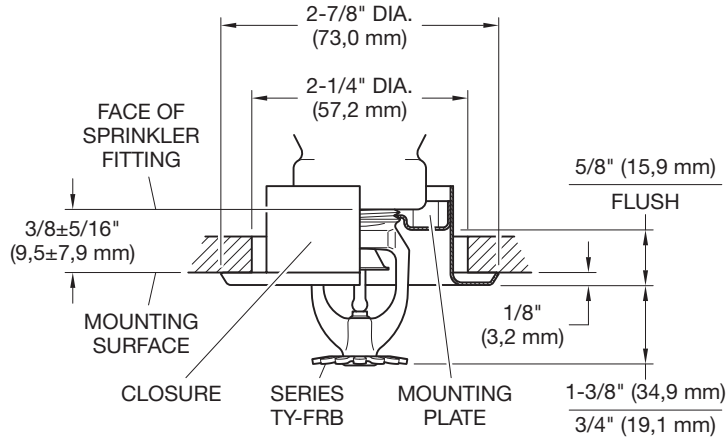


FIGURE 4
SERIES TY-FRB RECESSED PENDENT SPRINKLER ASSEMBLY (TY323) WITH TWO PIECE 5/8 INCH TOTAL ADJUSTMENT STYLE 15 RECESSED ESCUTCHEON

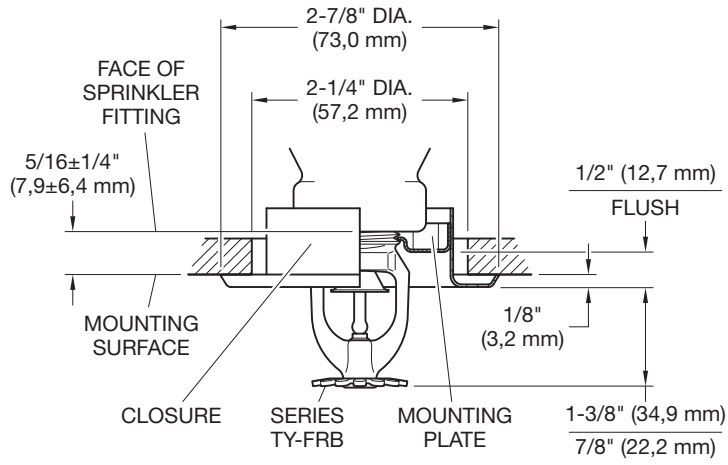


FIGURE 5
SERIES TY-FRB RECESSED PENDENT SPRINKLER ASSEMBLY (TY323) WITH TWO PIECE 1/2 INCH TOTAL ADJUSTMENT STYLE 20 RECESSED ESCUTCHEON

Modified sprinklers must be replaced. Sprinklers that have been exposed to corrosive products of combustion, but have not operated, should be replaced if they cannot be completely cleaned by wiping the sprinkler with a cloth or by brushing it with a soft bristle brush.

Care must be exercised to avoid damage to the sprinklers - before, during, and after installation. Sprinklers damaged by dropping, striking, wrench twist/slippage, or the like, must be replaced. Also, replace any sprinkler that has a cracked bulb or that has lost liquid from its bulb. (Ref. Installation Section.)

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 other authorities having jurisdiction. Contact the installing contractor or sprinkler manufacturer regarding any questions.

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.

P/N* 77 – XXX – X – XXX

SIN		
370	5.6K UPRIGHT (1/2˝ NPT)	TY313
371	5.6K PENDENT (1/2˝ NPT)	TY323

* Use suffix "I" for ISO 7-1 connection; for example, 77-370-4-175-I

SPRINKLER FINISH	
1	NATURAL BRASS
4	SIGNAL WHITE (RAL 9003)
3	PURE WHITE (RAL 9010)**
9	CHROME PLATED

** Eastern Hemisphere sales only

TEMPERATURE RATINGS	
135	135°F (57°C)
155	155°F (68°C)
175	175°F (79°C)
200	200°F (93°C)
286	286°F (141°C)

TABLE A
SERIES TY-FRB UPRIGHT AND PENDENT SPRINKLERS
— PART NUMBER SELECTION —

Ordering Procedure

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

Sprinkler Assemblies with NPT Thread Connections
Specify: Series TY-FRB (SIN), K=5.6, (Upright or Pendent) Sprinkler Quick Response, (specify) temperature rating, (specify) finish, P/N (Table A).

Recessed Escutcheon
Specify: Style 15 Recessed Escutcheon with (specify*) finish, P/N (specify*)

Specify: Style 20 Recessed Escutcheon with (specify*) finish, P/N (specify*)

* Refer to Technical Data Sheet TFP770.

Sprinkler Wrench
Specify: W-Type 6 Sprinkler Wrench, P/N 56-000-6-387

Specify: W-Type 7 Sprinkler Wrench, P/N 56-850-4-001

For Non-Health Hazard Applications

Job Name _____ Contractor _____

Job Location _____ Approval _____

Engineer _____ Contractor's P.O. No. _____

Approval _____ Representative _____

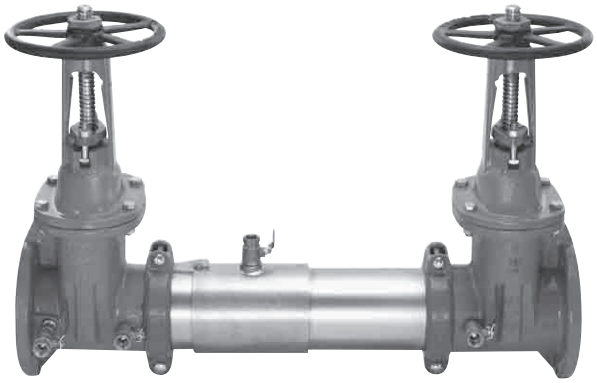
LEAD FREE*

Series 757, 757N

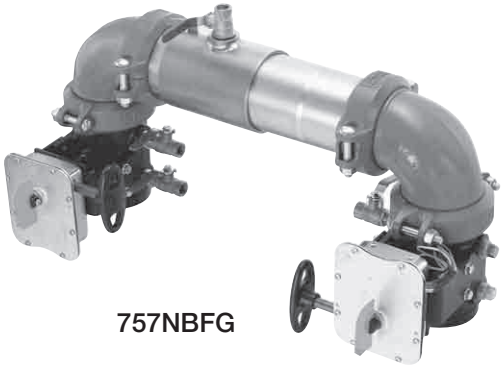
Double Check Valve Assemblies

Sizes: 2½" – 10" (65 to 250mm)

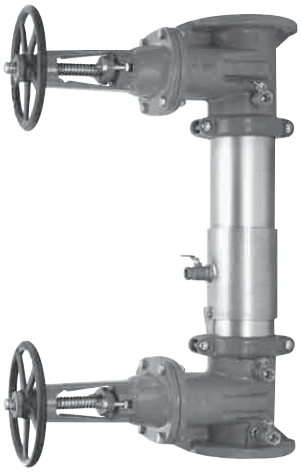
Series 757, 757N Double Check Valve Assemblies are used to prevent backflow of non-health hazard pollutants that are objectionable but not toxic, from entering the potable water supply system. Series 757, 757N may be installed under continuous pressure service and may be subjected to backpressure and backsiphonage. Series 757, 757N consists of two independently operating check valves, two shutoff valves, and four test cocks.



757OSY



757NBFG



757OSY (Vertical)

Features

- Extremely compact design
- 70% Lighter than traditional designs
- 304 (Schedule 40) Stainless steel housing & sleeve
- Groove fittings allow integral pipeline adjustment
- Patented tri-link check provides lowest pressure loss
- Unmatched ease of serviceability
- Available with grooved butterfly valve shutoffs
- Available for horizontal, vertical or N pattern installations
- Replaceable check disc rubber
- Sizes 2½", 3" and 4" (65, 80 and 100mm) available with quarter-turn ball valve shutoffs

Specifications

The Double Check Valve Assembly shall consist of two independent tri-link check modules within a single housing, sleeve access port, four test cocks and two drip tight shut-off valves. Tri-link checks shall be removable and serviceable, without the use of special tools. The housing shall be constructed of 304 Schedule 40 stainless steel pipe with groove end connections. Tri-link checks shall have reversible elastomer discs and in operation shall produce drip tight closure against reverse flow caused by backpressure or backsiphonage. Assembly shall be a Watts Regulator Company Series 757, 757N.

***The wetted surface of this product contacted by consumable water contains less than one quarter of one percent (0.25%) of lead by weight.**

WATTS®

Available Models

Suffix:

NRS –	non-rising stem resilient seated gate valves
OSY –	UL/FM outside stem and yoke, resilient seated gate valves
BFG –	UL/FM grooved gear operated butterfly valves with tamper switch
QT –	2½", 3" and 4" (65, 80 and 100mm) quarter-turn ball valves
**OSY FxG –	Flanged inlet gate connection and grooved outlet gate connection
**OSY GxF –	Grooved inlet gate connection and flanged outlet gate connection
**OSY GxG –	Grooved inlet gate connection and grooved outlet gate connection

Available with grooved NRS gate valves - consult factory**
Post indicator plate and operating nut available - consult factory**
**Consult factory for dimensions

Materials

Housing & Sleeve: 304 (Schedule 40) Stainless Steel
Elastomers: EPDM, Silicone and Buna-N
Tri-link Checks: Noryl®, Stainless Steel
Check Discs: Reversible Silicone or EPDM
Test Cocks: Bronze Body Nickel Plated
Pins & Fasteners: 300 Series Stainless Steel
Springs: Stainless Steel

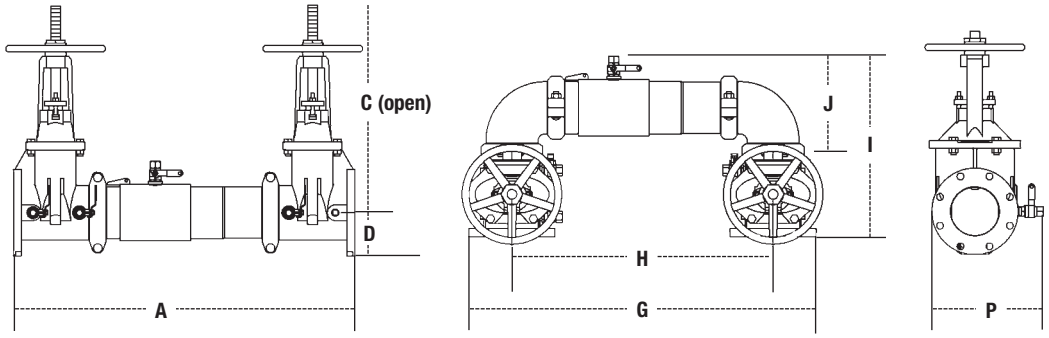
Pressure — Temperature

Temperature Range: 33°F – 140°F (0.5°C – 60°C)
Maximum Working Pressure: 175psi (12.1 bar)

Approvals

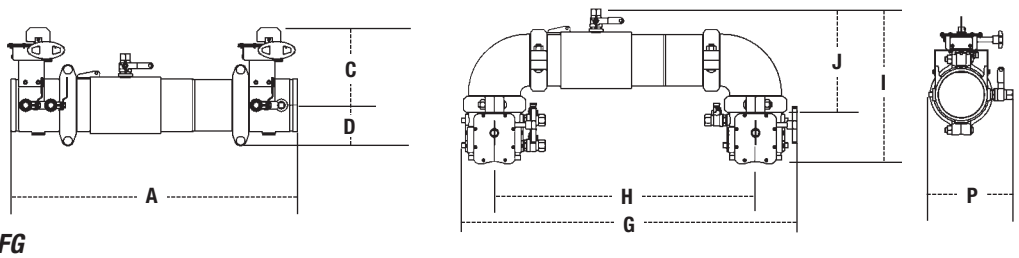
ASSE 1015 · CSA B64.5 · FM Approved (BFG & OSY only) · cULus Classified

Dimensions — Weight



757, 757N

SIZE (DN)		DIMENSIONS																WEIGHT							
		A		C (OSY)		C (NRS)		D		G		H		I		J		P		757NRS		757OSY		757N NRS		757N OSY	
in.	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*	*lbs.*	*kgs.*	*lbs.*	*kgs.*	*lbs.*	*kgs.*
2½	65	30½	775	16⅜	416	9⅜	238	3½	89	29 1/16	738	21½	546	15½	393	8 13/16	223	9 3/16	234	115	52	125	57	123	56	133	60
3	80	31⅜	797	18⅞	479	10¼	260	3 11/16	94	30¼	768	22¼	565	17⅛	435	9 3/16	233	10½	267	131	59	145	66	144	65	158	72
4	100	33½	851	22¾	578	12 3/16	310	4	102	33	838	23½	597	18½	470	9 15/16	252	11 3/16	284	161	73	161	73	184	83	184	83
6	150	44	1118	30⅛	765	16	406	5½	140	44¾	1137	33¾	857	23 3/16	589	13 1/16	332	15	381	273	124	295	134	314	142	336	152
8	200	50	1270	37¾	959	19 5/16	506	6 1/16	170	54⅛	1375	40⅝	1032	27 7/16	697	15 11/16	399	17 3/16	437	438	199	480	218	513	233	555	252
10	250	56½	1435	45¾	1162	23 13/16	605	8 3/16	208	66	1676	50	1270	32½	826	17 5/16	440	20	508	721	327	781	354	891	404	951	431

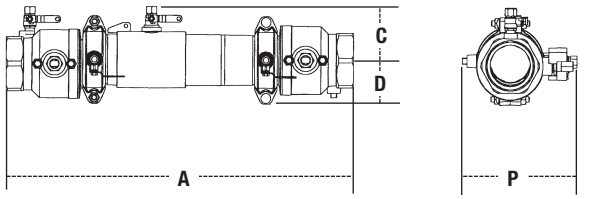


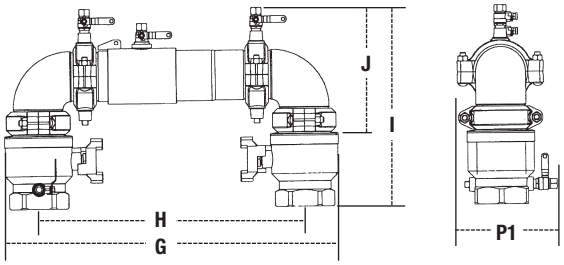
757BFG, 757NBFG

SIZE (DN)		DIMENSIONS																WEIGHT			
		A		C		D		G		H		I		J		P		757BFG		757N BFG	
in.	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*	*lbs.*	*kgs.*
2½	65	27½	698	8	203	3½	89	29⅞	759	21½	546	14 15/16	379	8 13/16	223	9	229	56	25	64	29
3	80	28	711	8 5/16	211	3 11/16	94	30 11/16	779	22¼	565	15 7/16	392	9 3/16	233	9½	241	54	24	67	30
4	100	28¾	730	8 15/16	227	3 11/16	94	31 15/16	811	23½	597	16¼	412	9 15/16	252	10	254	61	28	84	38
6	150	37	940	10	254	5	127	43 3/16	1097	33¾	857	19 11/16	500	13 1/16	332	10½	267	117	53	157	71
8	200	43½	1105	12¼	311	6½	165	51 1/16	1297	40⅝	1032	23 5/16	592	15 11/16	399	14 3/16	361	261	118	337	153

Noryl® is a registered trademark of SABIC Innovative Plastics™.

Dimensions — Weight continued





757QT

SIZE (DN)		DIMENSIONS																WEIGHT			
		A		C		D		G		H		I		J		P		P1		QT		QTN	
in.	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*	*lbs.*	*kgs.*
2½	65	27¼	692	4⅞	124	6⅞	175	30¼	768	24½	622	16 1/16	407	11⅜	289	11 5/16	287	11 5/16	287	40	18	50	23
3	80	28¼	718	4⅞	124	6⅞	175	30¼	768	24½	622	16 9/16	420	11⅜	289	11 5/16	287	11 5/16	287	50	23	60	27
4	100	31½	800	4⅞	124	6⅞	175	30¼	768	24½	622	18 5/16	465	11⅜	289	11 5/16	287	11 5/16	287	70	32	80	36

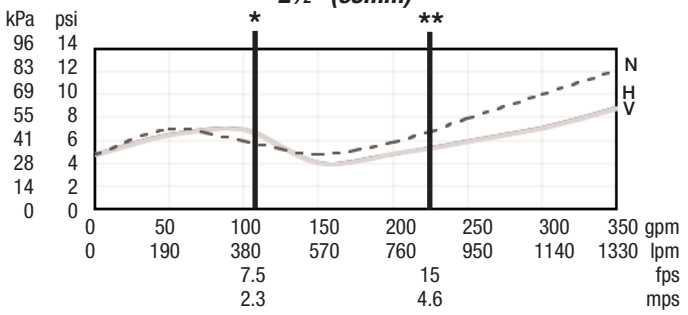
Capacity

Series 757, 757N flow curves as tested by Underwriters Laboratory per UL 1469, 1996.
Flow characteristics collected using butterfly shutoff valves

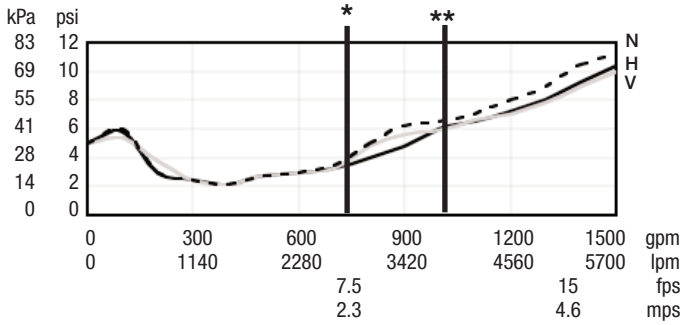
*** = Rated flow ** = UL Rated flow**

——— Horizontal ——— Vertical - - - - - - N - Pattern

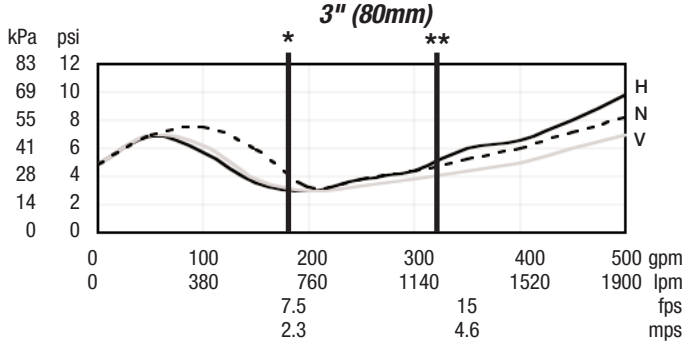
2½" (65mm)



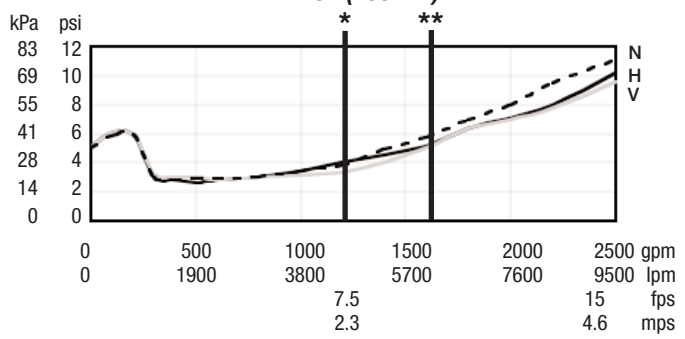
6" (150mm)



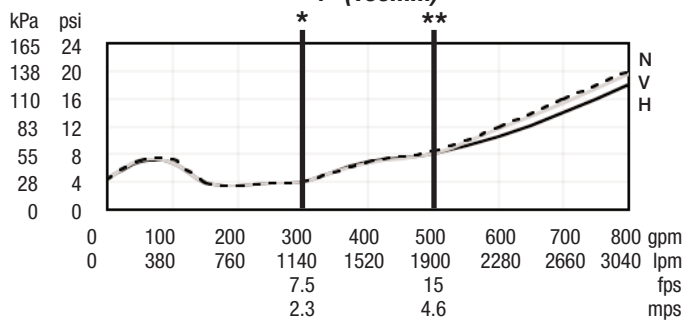
3" (80mm)



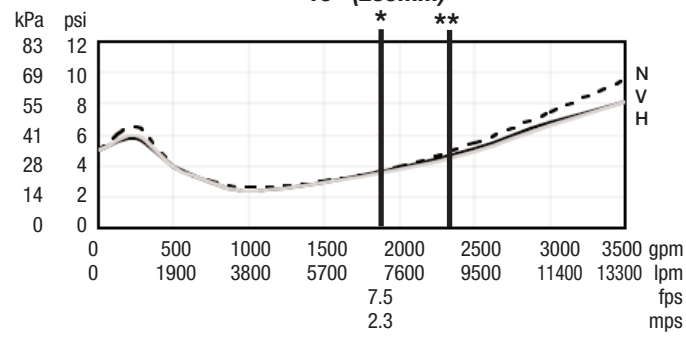
8" (200mm)



4" (100mm)



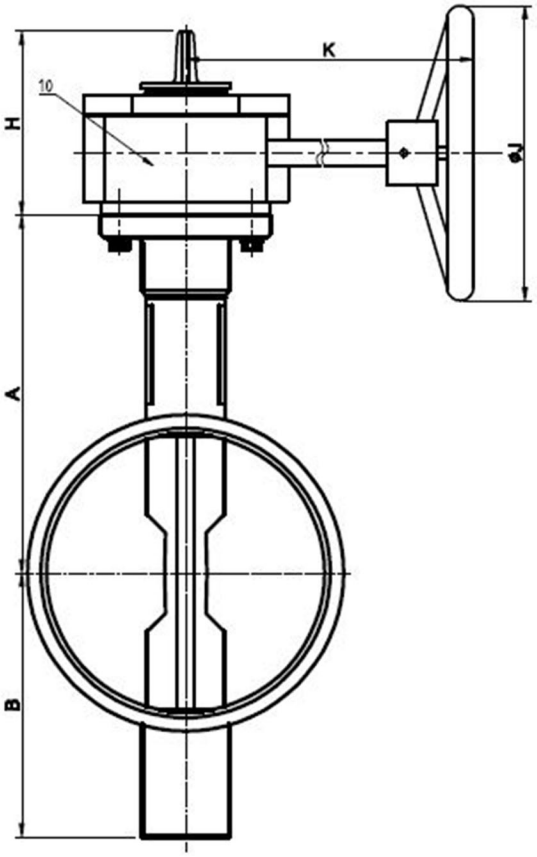
10" (250mm)

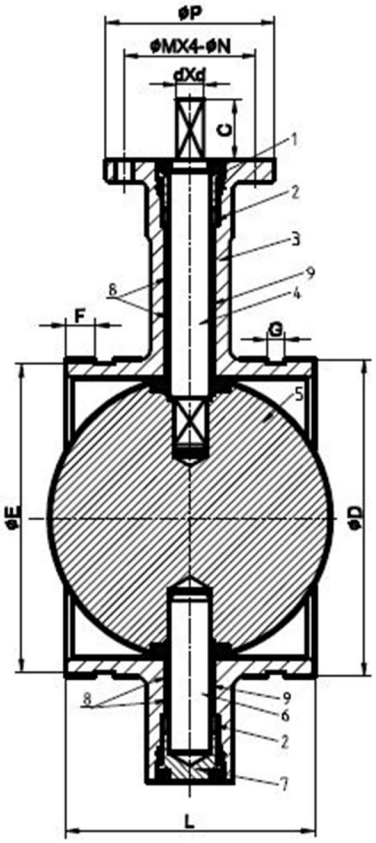


USA: No. Andover, MA • Tel. (978) 688-1811 • Fax: (978) 794-1848 • www.watts.com
Canada: Burlington, ON • Tel. (905) 332-4090 • Fax: (905) 332-7068 • www.wattscanada.ca

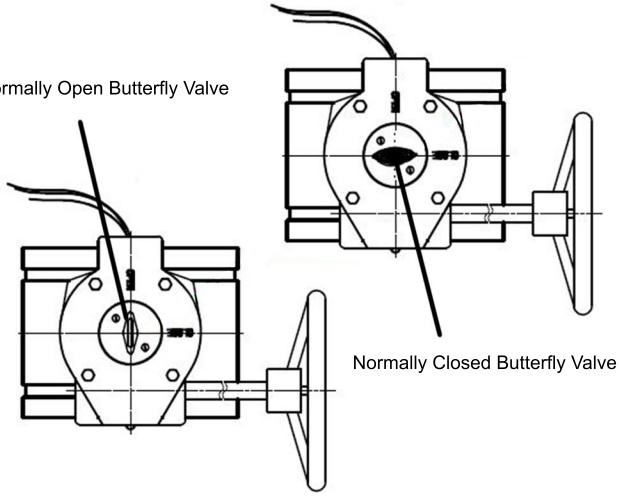
National Fire Equipment Ltd.

Model BFGO & BFGC Groove Supervised Butterfly Valve 2.5” - 8” (300PSI) (Normally Open & Closed)





Normally Open Butterfly Valve



Normally Closed Butterfly Valve

Valve **Dimension Chart in mm** Take Out

Size	A	B	C	D	E	F	G	H	K		J	P	M	N	d	L
2.5"	125	95	32	73	69.1	15.9	7.9	111	153	218	152	90	70	9	10	96.4
				76.1	72.3											
3"	140	100	32	88.9	84.9	15.9	7.9	111	153	218	152	90	70	9	11	97
4"	160	100	32	114.3	110.1	15.9	9.5	111	153	218	152	90	70	9	14	115.1
5"	170	125	32	139.7	135.5	15.9	9.5	111	153	218	152	90	70	9	14	132.4
				141.3	137											
6"	190	140	32	165.1	160.9	15.9	9.5	111	153	218	200	90	70	9	16	132.4
				168.3	164											
8"	230	175	32	219.1	214.4	19	11.1	126	210	232	300	125	102	12	19	147.4
				216.3	211.6											

All valves are UL/ULC listed and F.M. approved.

NO	Name	Material	Remark
10	Gear Box		
9	O-ring	EPDM	
8	Stem Bushing	PTFE/C954	
7	Lower Shaft Sealing Nut	WCB	ASTM A216
6	Lower Shaft	SS416	ASTM A582
5	Disc	DI+EPDM	
4	Upper Shaft	SS416	ASTM582
3	Body	DI	ASTM 536
2	Shaft Seal	EPDM	ASTM D2000
1	Upper Shaft Sealing Nut	WCB	ASTM A216

Disc Standard	API 609
Groove Class	ASI/AWWA C 606
Flange Standard	ISO5211
Test Standard	API 598

Electrical Contact information

3. Rating: IBC IP40
4. Type: RV-162-1C25

National Fire Equipment Ltd.

TORONTO: (905) 761-6355
Toll Free: (800) 267-8508

OTTAWA: (613) 723-6071

VANCOUVER: (604) 420-1131
Toll Free: (800)-667-2138

BURNABY: (604)-299-4498

EDMONTON: (780) 455-3870
Toll Free: (888)-891-1008

CALGARY: (403) 236-5661

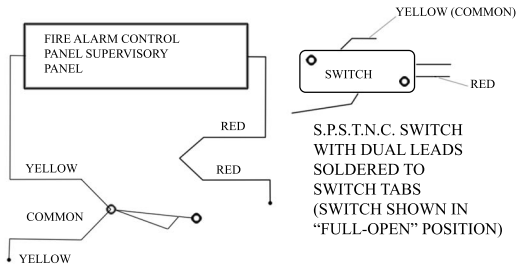
MONCTON: (506) 859-7277
Toll Free: (877) 816-3473

MISSISSAUGA: (905) 565-1385

www.nationalfire.com

FULLY OPEN

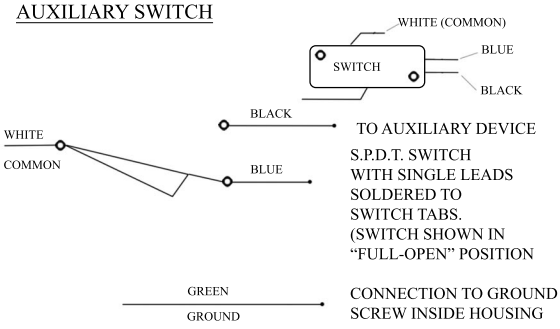
SUPERVISORY SWITCH



S.P.S.T.N.C. SWITCH WITH DUAL LEADS SOLDERED TO SWITCH TABS (SWITCH SHOWN IN "FULL-OPEN" POSITION)

TO END OF LINE RESISTER OR NEXT SUPERVISORY SWITCH

AUXILIARY SWITCH



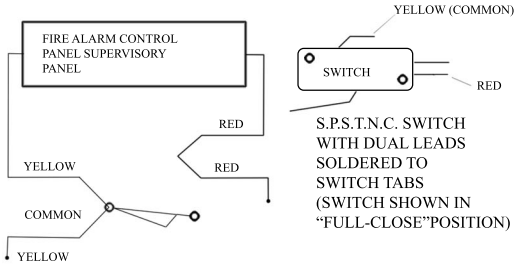
TO AUXILIARY DEVICE

S.P.D.T. SWITCH WITH SINGLE LEADS SOLDERED TO SWITCH TABS. (SWITCH SHOWN IN "FULL-OPEN" POSITION

CONNECTION TO GROUND SCREW INSIDE HOUSING

FULLY CLOSE

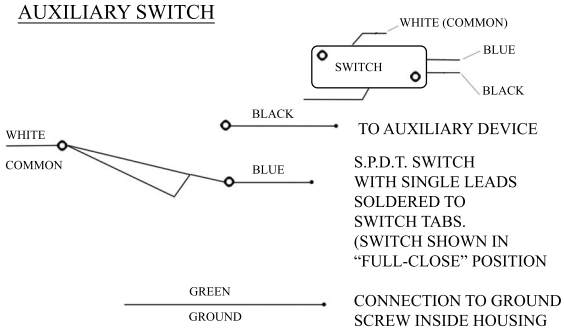
SUPERVISORY SWITCH



S.P.S.T.N.C. SWITCH WITH DUAL LEADS SOLDERED TO SWITCH TABS (SWITCH SHOWN IN "FULL-CLOSE"POSITION)

TO END OF LINE RESISTER OR NEXT SUPERVISORY SWITCH

AUXILIARY SWITCH

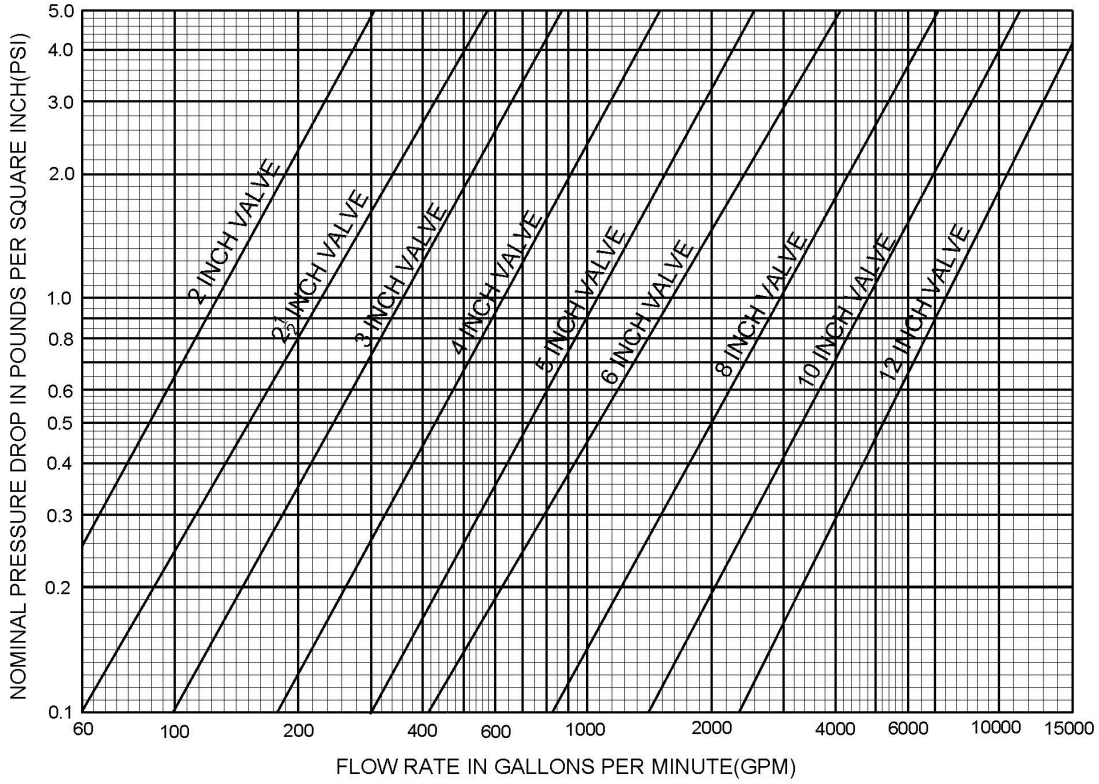


TO AUXILIARY DEVICE

S.P.D.T. SWITCH WITH SINGLE LEADS SOLDERED TO SWITCH TABS. (SWITCH SHOWN IN "FULL-CLOSE" POSITION

CONNECTION TO GROUND SCREW INSIDE HOUSING

PRESSURE DROP (PSI) VS. (GPM)



National Fire Equipment Ltd.

TORONTO: (905) 761-6355
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Toll Free: (888)-891-1008

CALGARY: (403) 236-5661

MONCTON: (506) 859-7277
Toll Free: (877) 816-3473

MISSISSAUGA: (905) 565-1385

www.nationalfire.com

VSR
VANE TYPE WATERFLOW ALARM SWITCH WITH RETARD

UL, CUL and CSFM Listed, FM Approved, LPCB 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

Optional: Cover Tamper Switch Kit, stock no. 0090148

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

⚠ 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.

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 should 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.

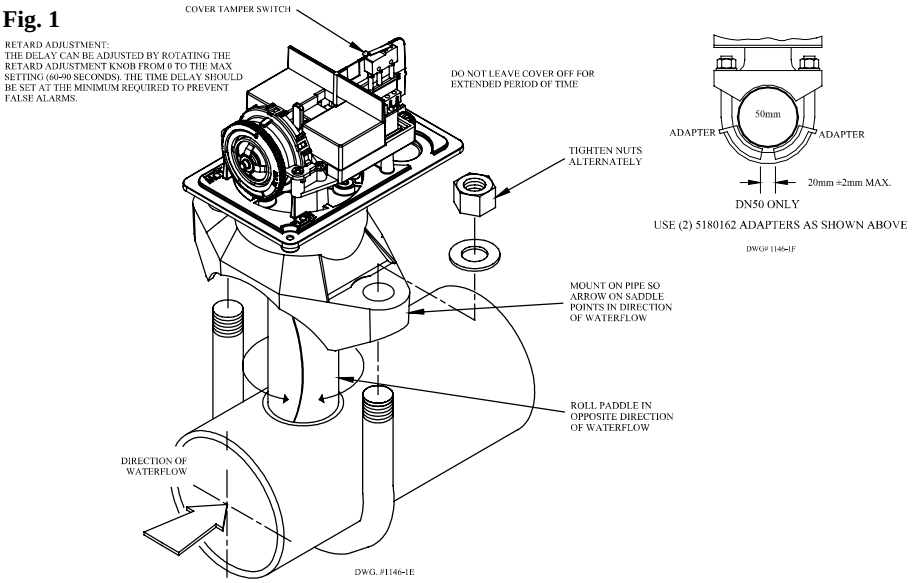
Roll the vane so that it may be inserted into the hole; do not bend or crease it. Insert the vane so that the arrow on the saddle points in the direction of the waterflow. Install the saddle strap and tighten nuts alternately to required torque. (see Fig. 1). The vane must not rub the inside of the pipe or bind in any way.

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

VSR
VANE TYPE WATERFLOW ALARM SWITCH WITH RETARD

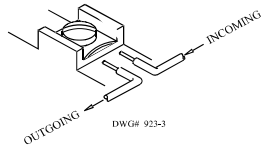
Fig. 1



(Flowing water activates device in one direction only.)

Installation Requirements								
Model	Nominal Pipe Size		Nominal Pipe O.D.		Hole Size		U-Bolt Nuts Torque	
	inch	mm	inch	mm	inch	mm	ft-lb	n-m
VSR-2	2	DN50	2.375	60.3	1.25 + .125/-.062	33.0 ± 2.0	20	27
VSR-2 1/2	2 1/2		2.875	73.0				
VSR-2 1/2	2 1/2	DN65	3.000	76.1				
VSR-3	3	DN80	3.500	88.9	2.00 ± .125	50.8 ± 2.0		
VSR-3 1/2	3 1/2		4.000	101.6				
VSR-4	4	DN100	4.500	114.3				
VSR-5	5		5.563	141.3				
VSR-6	6	DN150	6.625	168.3				
VSR-8	8	DN200	8.625	219.1				

Fig. 2 Switch Terminal Connections Clamping Plate Terminal



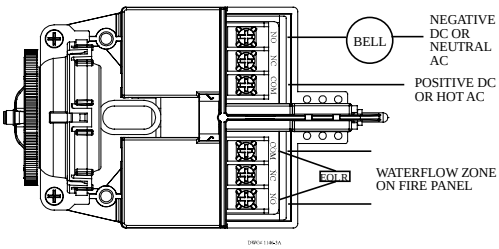
⚠ WARNING

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.

⚠ 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.

Fig. 3 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 caution note (Fig. 2).

Fig. 4

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

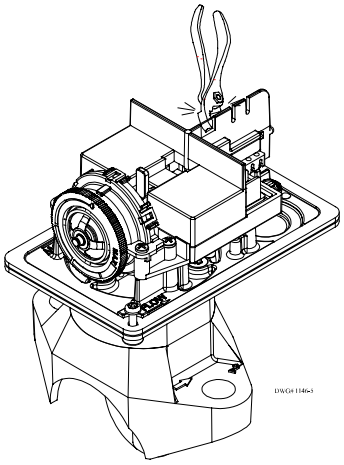
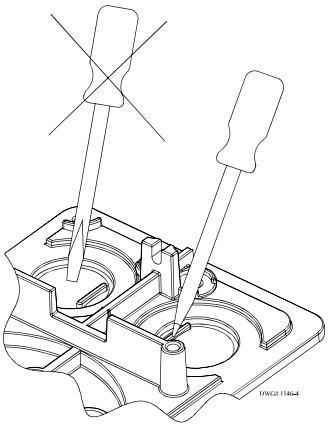


Fig. 5

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



VSR
VANE TYPE WATERFLOW ALARM SWITCH WITH RETARD

Compatible Pipe												
Model	Nominal Pipe Size		Nominal Pipe O.D.		Pipe Wall Thickness							
					Schedule 10 (UL)		Schedule 40 (UL)		BS-1387 (LPC)		DN (VDS)	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
VSR-2	2	DN50	2.375	60.3	0.109	2.77	0.154	3.91	0.142	3.6	0.091	2.3
VSR-2 1/2	2 1/2		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
VSR-3 1/2	3 1/2		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.

Testing

The frequency of inspection and testing for the Model VSR and its associated protective monitoring system should 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, that is usually located at the end of the most remote branch line, should 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.

Maintenance

Inspect detectors monthly for leaks. 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. There is no maintenance required, only periodic testing and inspection.

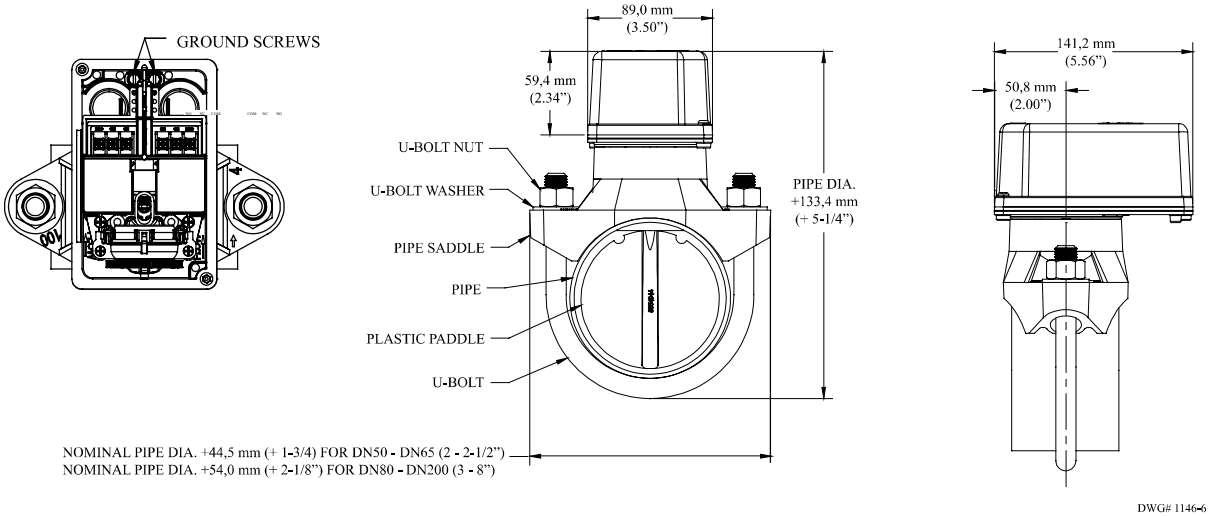
Removal

- 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.

Important Notice

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

Mounting Dimensions



Fire Sprinkler Pipe

Schedule 10 and Schedule 40

Submittal Data Sheet

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

Approvals and Specifications
Both products meet or exceed the following standards:

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

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

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

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

SCHEDULE 10 SPECIFICATIONS

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

** Calculated using Standard UL CRR formula, UL Fire Protection Directory, Category VIZY.*
** The CRR is a ratio value used to measure the ability of a pipe to withstand corrosion. Threaded Schedule 40 steel pipe is used as the benchmark (value of 1.0).*

SCHEDULE 40 SPECIFICATIONS

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

** Calculated using Standard UL CRR formula, UL Fire Protection Directory, Category VIZY.*
** The CRR is a ratio value used to measure the ability of a pipe to withstand corrosion. Threaded Schedule 40 steel pipe is used as the benchmark (value of 1.0).*

SUBMITTAL INFORMATION

PROJECT: _____

CONTRACTOR: _____

DATE: _____

ENGINEER: _____

SPECIFICATION REFERENCE: _____

SYSTEM TYPE: _____

LOCATIONS: _____

COMMENTS: _____

☐ BLACK

☐ HOT-DIP GALVANIZED

Wheatland Tube 700 South Dock Street Sharon, PA 16146
P 800.257.8182 | **F** 724.346.7260 | info@wheatland.com | wheatland.com

Wheatland Tube
JMC STEEL GROUP

Victaulic® FireLock™ Fittings

10.03

1.0 PRODUCT DESCRIPTION

Available Sizes

- 1 ¼ – 8"/DN32 – DN200

Maximum Working Pressure

- Pressure ratings for Victaulic FireLock™ Fittings conform to the ratings of Victaulic FireLock EZ™ Style 009N couplings (refer to publication 10.64 for more information).

Application

- FireLock™ fittings are designed for use exclusively with Victaulic couplings that have been Listed or Approved for Fire Protection Services. Use of other couplings or flange adapters may result in bolt pad interference.
- Connects pipe, provides change in direction and adapts sizes or components

Pipe Materials

- Carbon steel

2.0 CERTIFICATION/LISTINGS

EN 10311
Regulation (EU)
No. 305/2011

3.0 SPECIFICATIONS – MATERIAL

Fitting: Ductile iron conforming to ASTM A536, Grade 65-45-12.

Fitting Coating:

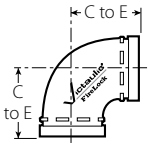
- ☐ Orange enamel.
- ☐ Red enamel in Europe, Middle East, Africa, and India.
- ☐ Optional: Hot dipped galvanized.

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

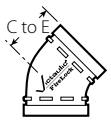
System No.		Location	
Submitted By		Date	

Spec Section		Paragraph	
Approved		Date	

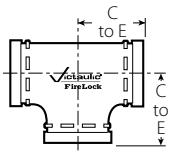
4.0 DIMENSIONS



No. 001



No. 003



No. 002

No. 006

Nominal Size inches DN	Actual Outside Diameter inches mm	No. 001 90° Elbow C to E inches mm	No. 001 90° Elbow Approximate Weight Each lb kg	No. 003 45° Elbow C to E inches mm	No. 003 45° Elbow Approximate Weight Each lb kg	No. 002 Straight Tee C to E inches mm	No. 002 Straight Tee Approximate Weight Each lb kg	No. 006 Cap T inches mm	No. 006 Cap Approximate Weight Each lb kg
1 ¼ DN32	1.660 42.4	— —	— —	— —	— —	— —	— —	0.82 21	0.3 0.1
1 ½ DN40	1.900 48.3	— —	— —	— —	— —	— —	— —	0.82 21	0.4 0.2
2 DN50	2.375 60.3	2.75 70	1.7 0.8	2.00 51	1.8 0.8	2.75 70	2.4 1.1	0.88 22	0.6 0.3
2 ½	2.875 73.0	3.00 76	3.1 1.4	2.25 57	2.2 1.0	3.00 76	3.6 1.6	0.88 22	1.0 0.5
DN65	3.000 76.1	3.00 76	3.30 1.5	2.25 57	2.4 1.1	3.00 76	3.8 1.7	—	—
3 DN80	3.500 88.9	3.38 86	4.0 1.8	2.50 64	3.1 1.4	3.38 86	5.3 2.4	0.88 22	1.2 0.5
	4.250 108.0	4.00 102	5.7 2.6	3.00 76	5.1 2.3	4.00 102	7.5 3.4	—	—
4 DN100	4.500 114.3	4.00 102	6.7 3.0	3.00 76	5.6 2.5	4.00 102	8.7 3.9	1.00 25	2.4 1.1
5	5.563 141.3	4.88 124	12.6 5.7	3.25 83	8.3 3.8	4.88 124	15.7 7.1	1.00 25	4.1 1.9
DN125	5.500 139.7	4.88 124	12.4 5.6	3.25 82.6	8.2 3.7	4.88 124	15.4 6.9	—	—
	6.250 158.8	5.50 140	12.6 5.7	3.50 89	9.2 4.2	5.50 140	17.9 8.0	—	—
6 DN150	6.625 168.3	5.50 140	18.3 8.3	3.50 89	11.7 5.3	5.50 140	22.7 10.3	1.00 25	5.9 2.7
	6.500 165.1	5.43 140	17.6 7.9	3.50 89	11.4 5.2	5.50 140	22.0 9.9	—	—
8 DN200	8.625 219.1	6.81 173	25.5 11.6	4.25 108	20.4 9.3	6.94 176	38.7 17.6	1.13 29	12.7 5.8
	8.515 216.3	6.81 173	23.1 10.5	— —	— —	6.94 176	33.6 15.2	— —	— —

5.0 PERFORMANCE

Flow Data

Size		Frictional Resistance Equivalent of Straight Pipe[1]			
		Elbows		No. 002 Straight Tee	
Nominal Size inches DN	Actual Outside Diameter inches mm	No. 001 90° Elbow feet meters	No. 003 45° Elbow feet meters	Branch feet meters	Run feet meters
1 ¼ DN32	1.660 42.4	— —	— —	— —	— —
1 ½ DN40	1.900 48.3	— —	— —	— —	— —
2 DN50	2.375 60.3	3.5 1.1	1.8 0.5	8.5 2.6	3.5 1.1
2 ½	2.875 73.0	4.3 1.3	2.2 0.7	10.8 3.3	4.3 1.3
DN65	3.000 76.1	4.5 1.4	2.3 0.7	11.0 3.4	4.5 1.4
3 DN80	3.500 88.9	5.0 1.5	2.6 0.8	13.0 4.0	5.0 1.5
	4.250 108.0	6.4 2.0	3.2 0.9	15.3 4.7	6.4 2.0
4 DN100	4.500 114.3	6.8 2.1	3.4 1.0	16.0 4.9	6.8 2.1
5	5.563 141.3	8.5 2.6	4.2 1.3	21.0 6.4	8.5 2.6
DN125	5.500 139.7	8.3 2.5	4.1 1.3	20.6 6.3	8.3 2.5
	6.250 158.8	9.4 2.9	4.9 1.5	25.0 7.6	9.6 2.9
6 DN150	6.625 168.3	10.0 3.0	5.0 1.5	25.0 7.6	10.0 3.0
	6.500 165.1	9.8 3.0	4.9 1.5	24.5 7.5	9.8 3.0
8 DN200	8.625 219.1	13.0 4.0	5.0 1.5	33.0 10.1	13.0 4.0
	8.515 216.3	13.0 4.0	— —	33.0 10.1	13.0 4.0

[1] The flow data listed is based upon the pressure drop of Schedule 40 pipe.

6.0 NOTIFICATIONS

General Notes

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

7.0 REFERENCE MATERIALS

10.64: Victaulic® FireLock™ Rigid Coupling Style 009N

10.02: Victaulic® FireLock™ Rigid Coupling Style 005H with Vic-Plus™ Gasket System

29.01: Victaulic® Terms and Conditions of Sale

FireLock EZ® Rigid Coupling

SEE VICTAULIC PUBLICATION 10.01 FOR DETAILS

STYLE 009H

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

IMPORTANT

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

PATENTED

LISTINGS/APPROVALS *

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

Standard Pipe

Size	cULus/FM			VdS	LPCB
Nominal Size Inches/ mm	Sch. 5 psi/KPa	Sch.10 psi/kPa	Sch. 40 psi/KPa	psi/kPa	psi/kPa
1¼ 32	175 1206	365 2517	365 2517	365 2517	365 2517
1½ 40	175 1206	365 2517	365 2517	365 2517	365 2517
2 50	175 1206	365 2517	365 2517	365 2517	365 2517
2½ 65	N/A	365 2517	365 2517	365 2517	365 2517
76.1mm	N/A	N/A	365** 2517**	365 2517	365 2517
3 80	N/A	365 2517	365 2517	365 2517	365 2517
4 100	N/A	365 2517	365 2517	365 2517	365 2517
165.1mm	N/A	N/A	290** 1999**	232 1600	300 2068
6# 150#	N/A	290 1999	365 2517	232 1600	365 2517

* Listed/Approved for wet and dry pipe systems (> –40°F/–40°C).
Please refer to the Victaulic Installation Manual (I-009H_009_009V.pdf) for details concerning when supplemental lubrication is required.

** EN-10219(L) for 76.1mm size; EN-10255(M) for 165.1mm size

Regional availability only

Speciality Pipe

Pipe	Size	Pressure Rating – psi/kPa		Pipe	Size	Pressure Rating – psi/kPa		Pipe	Size	Pressure Rating – psi/kPa	
Sch.	Inches	cULus	FM	Sch.	Inches	cULus	FM	Sch.	Inches	cULus	FM
BLT	1 ¼ – 2	300 2068	300 2068	EZT	1 ¼ – 2	300 2068	300 2068	MT	1 ¼ – 2	300 2068	300 2068
DF	1 ¼ – 4	300 2068	300 2068	FF	1 ¼ – 4	300 2068	300 2068	MLT	1 ¼ – 2	N/A	300 2068
DT	1 ¼ – 2	300 2068	300 2068	FLF	1 ¼ – 4	N/A	300 2068	ST	1 ¼ – 2	N/A	300 2068
EF	1 ¼ – 4	175 1206	175 1206	FLT	1 ¼ – 2	N/A	300 2068	STF	1 ¼ – 4	N/A	300 2068
EL	1 ¼ – 2	300 2068	300 2068	FLTL	1 ¼ – 2	N/A	300 2068	TF	2 ¼ – 4	N/A	300 2068
ET40	1 ¼ – 2	300 2068	300 2068	GL	1 ¼ – 2	300 2068	300 2068	WLS	1 ¼ – 2	300 2068	300 2068
EZF	3 – 4	300 2068	300 2068	MF	1 ¼ – 4	300 2068	300 2068	WST	1 ¼ – 2	N/A	175 1206
								XL	1 ¼ – 2	300 2068	300 2068

JOB/OWNER

System No. _____

Location _____

CONTRACTOR

Submitted By _____

Date _____

ENGINEER

Spec Sect _____ Para _____

Approved _____

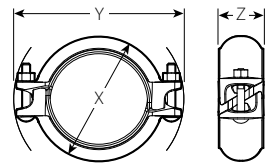
Date _____

www.victaulic.com

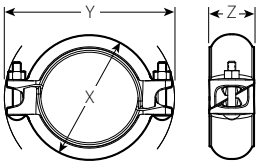
FireLock EZ® Rigid Coupling

STYLE 009H

STYLE 009H DIMENSIONS



STYLE 009H PRE-ASSEMBLED (PUSH ON CONDITION)



STYLE 009H JOINT ASSEMBLED

Size		Max. Work. Press. *	Max. End Load *	Allow. Pipe End Sep. †	@ Bolt/Nut No. – Size	Dimensions – Inches/mm					Aprx. Wgt. Ea.
Nominal Size Inches mm	Actual Outside Dia. Inches mm	psi kPa	Lbs. N	Inches mm	Inches	Pre-assembled (Stab in condition)		Joint Assembled			Lbs. kg
						X	Y	X	Y	Z	
1 ¼ 32	1.660 42.4	365 2517	790 3514	0.10 2.54	2 - ⅜ x 2 - M10 x 2	2.95 75	4.77 121	2.70 69	4.63 118	1.93 49	1.4 0.7
1 ½ 40	1.900 48.3	365 2517	1035 4604	0.10 2.54	2 - ⅜ x 2 - M10 x 2	3.19 81	4.97 126	2.94 75	4.79 122	1.93 49	1.5 0.7
2 50	2.375 60.3	365 2517	1616 7193	0.12 3.05	2 - ⅜ x 2 - M10 x 2	3.79 96	5.53 140	3.45 88	5.42 138	1.93 49	1.9 0.9
2 ½ 65	2.875 73.0	365 2517	2370 10542	0.12 3.05	2 - ⅜ x 2 ½ - M10 x 2 ½	4.29 109	6.09 155	3.92 100	5.85 149	1.93 49	2.1 1.0
76.1 mm	3.000 76.1	365 2517	2580 11476	0.12 3.05	2 - ⅜ x 2 ½ - M10 x 2 ½	4.40 112	6.31 160	4.05 103	5.90 150	1.93 49	2.1 1.0
3 80	3.500 88.9	365 2517	3512 15622	0.12 3.05	2 - ⅜ x 2 ½ - M10 x 2 ½	4.91 125	6.70 170	4.55 116	6.46 164	1.93 49	2.3 1.0
4 100	4.500 114.3	365 2517	5805 25822	0.17 4.32	2 - ⅜ x 2 ½ - M10 x 2 ½	5.95 151	7.82 199	5.54 141	7.47 190	2.14 55	2.9 1.3
165.1 mm	6.500 165.1	290 1999	9623 42805	0.17 4.32	2 - ⅝ x 3 ¼ - M16 x 3 ¼	7.84 199	10.93 278	7.55 192	10.85 276	2.11 54	5.69 2.6
6 150	6.625 168.3	290 1999	9997 44469	0.17 4.32	2 - ⅝ x 3 ¼ - M16 x 3 ¼	7.96 202	11.08 281	7.67 195	11.99 305	2.11 54	5.92 2.69

* Working Pressure and End Load are total, from all internal and external loads, based on standard weight (ANSI) steel pipe, standard roll or cut grooved in accordance with Victaulic specifications. See page 1 of this document for Listed/Approved ratings on other pipe.

WARNING: FOR ONE TIME FIELD TEST ONLY, the Maximum Joint Working Pressure may be increased to 1 ½ times the figures shown in the chart on page 1, specific to pipe schedule and size.

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

@ Number of bolts required equals number of housing segments.

MATERIAL SPECIFICATIONS

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

Housing Coating:
- Orange enamel (North America, Asia Pacific)
- Red enamel (Europe)

Optional Coatings:
- Hot dipped galvanized

Gasket:
- **Grade "E" EPDM (Type A)**
  FireLock EZ products have been Listed by Underwriters Laboratories Inc., Underwriters Laboratories of Canada Limited, and Approved by Factory Mutual Research for wet and dry (oil free air) sprinkler services within the rated working pressure.

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

FireLock EZ® Rigid Coupling

STYLE 009H

GENERAL NOTES

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

IMPORTANT: Gaskets intended for the Style 009 or Style 009V couplings cannot be used with the Style 009H coupling. There is no interchanging of gaskets or housings between coupling styles.

USE OF FLUSHSEAL GASKETS FOR DRY PIPE SYSTEMS

FireLock EZ couplings are supplied with FireLock EZ Grade "E" Type A gaskets. These gaskets include an integral pipe stop, that once installed provides the same benefits as a FlushSeal gasket for dry pipe systems. It should be noted that standard FlushSeal gaskets are not compatible and cannot be used with the FireLock EZ couplings.

INSTALLATION

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

WARRANTY

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

NOTE

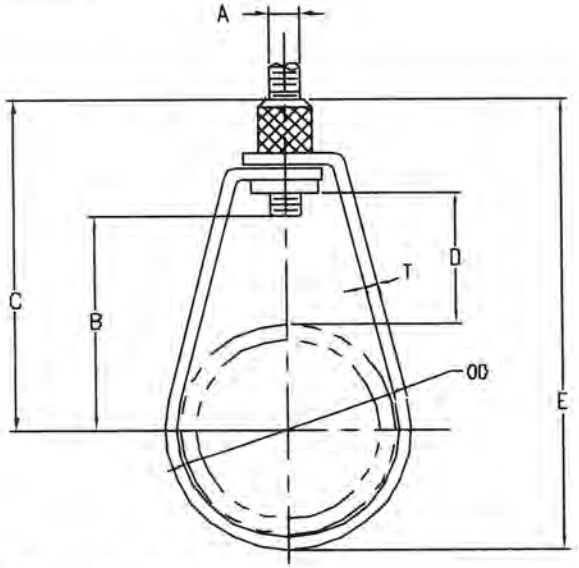
This product shall be manufactured by Victaulic or to Victaulic specifications. All products to be installed in accordance with current Victaulic installation/assembly instructions. Victaulic reserves the right to change product specifications, designs and standard equipment without notice and without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

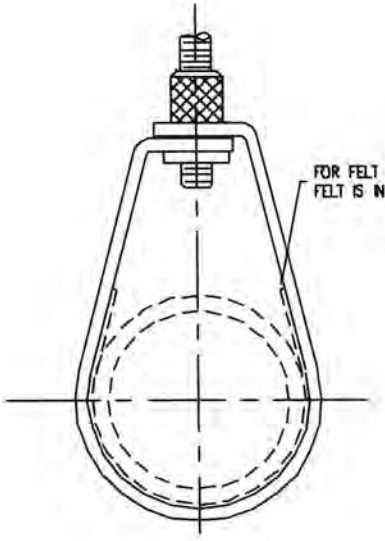
SWIVEL LOOP HANGER 115

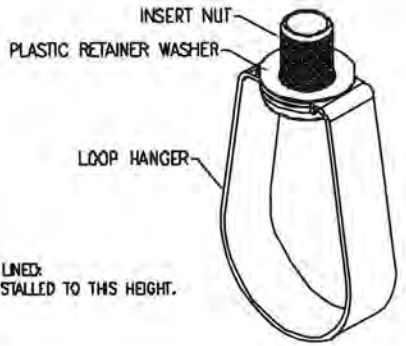
PART NUMBER US	PART NUMBER EUROPE	NOMINAL PIPE SIZE INCH	NOMINAL PIPE SIZE DN	OD EU PIPE	OD (HANGER) INCH	OD (HANGER) MM	A INCH	A MM	B INCH	B MM	C INCH	C MM	D INCH	D MM	E INCH	E MM	T INCH/ MM	MAX. REC. LOAD LBS/ N
1150250EG	597920	2-1/2	65	76.1	3	76.2	3/8	M10	2-13/16	71.4	3-7/8	98.4	1-1/2	38.1	5-1/2	139.7	0.083-0.090/ 2.1-2.3	525/ 2335.3
1150300EG	597930	3	80	88.9	3-5/8	92.1	3/8	M10	3-1/2	88.9	4-9/16	115.9	1-7/8	47.6	6-1/2	165.1		
1150350EG	--	3-1/2	--	101.6	4-1/8	104.8	3/8	M10	3-3/4	95.3	4-13/16	122.2	1-7/8	47.6	7	177.8		585/ 2602.2
1150400EG	597940	4	100	114.3	4-11/16	119.0	3/8	M10	4	101.6	5-1/16	128.6	1-7/8	47.6	7-1/2	190.5		650/ 2891.3
1150500EG	597950	5	125	139.7	5-3/4	146.0	1/2	M12	4-13/16	122.2	6-1/8	155.6	2-3/16	71.4	9-1/8	231.8	0.097-0.110/ 2.5-2.8	1000/ 4448.2
1150600EG	597960	6	150	168.3	6-13/16	173.0	1/2	M12	6-7/16	163.5	7-3/4	196.9	3-1/4	82.5	11-1/4	285.8		
1150800EG	597970	8	200	219.1	8-13/16	223.8	1/2	M12	7	177.8	8-5/16	211.1	2-13/16	71.4	12-13/16	325.4	0.114-0.127/ 2.9-3.2	

FM APPROVED c UL us

UL is a registered trademark of Underwriter's Laboratories, Inc.







Adjustable Band Hanger with NFPA Rod Sizes
Size Range: 2-1/2" through 8"
Surface Finish: Electro-zinc plated.

Recommended for the suspension of stationary non-insulated pipe lines
Manufactured to use the minimum rod size permitted by NFPA for fire sprinkler piping
Conforms with Federal Specification WW-H-171 (Type 10).
Manufacturers Standardization Society (MSS) SP-58 and SP-69 (Type 10)

Felt lined loop hangers are also available.

TECHNICAL SUPPORT:
www.erico.com

WARNING
ERICO products shall be installed and used only as indicated in ERICO's product instruction sheets and training materials. Instruction sheets are available at www.erico.com and from your ERICO customer service representative. Improper installation, misuse, misapplication or other failure to completely follow ERICO's instructions and warnings may cause product malfunction, property damage, serious bodily injury and death.

CRSM115_C

ERICO®

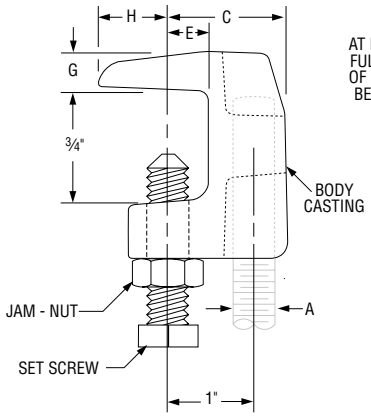
Fig. 92

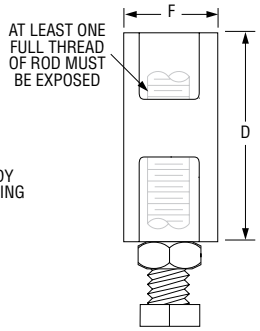
Universal C-type Clamp (Standard Throat)

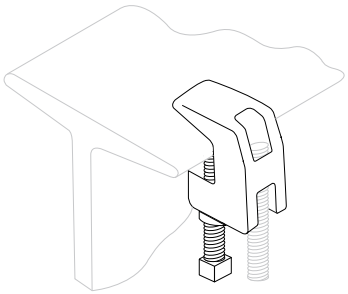
Size Range: 3/8" and 1/2"
Material: Ductile iron, hardened steel cup point set screw and locknut.
Finish: ☐ Plain or ☐ Galvanized
Service: Recommended for use under roof installations with bar joist type construction, or for attachment to the top or bottom flange of structural shapes where the vertical hanger rod is required to be offset from the edge of the flange and where the thickness of joist or flange does not exceed 3/4".
Approvals: Complies with Federal Specification A-A-1192A (Type 19 & 23) *WW-H-171-E (Type 23)*, ANSI/MSS SP-69 and MSS SP-58 (Type 19 & 23).
UL, ULC Listed and FM Approved.
How to size: Size of clamp is determined by size of rod to be used.
Installation: Follow recommended set screw torque values per MSS-SP-69
(See table on page 233)
Features:

- They may be attached to horizontal flanges of structural members in either the top beam or bottom beam positions.
- Secured in place by a cup-pointed Set Screw tightened against the flange. A Jam Nut is provided for tightening the Set Screw against the Body Casting.
- Thru tapping of the body casting permits extended adjustment of the threaded rod.
- Can be used with Fig 89X retaining clip for seismic applications.

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







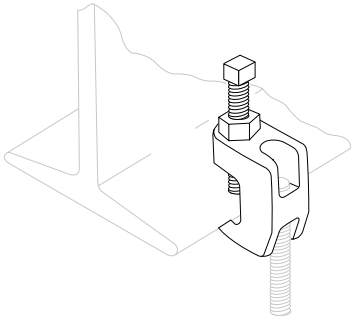


FIG. 92: LOAD (LBS) • WEIGHT (LBS) • DIMENSIONS (IN) • TORQUE (IN-LBS)											
Rod Size A	Set Screw Size	Torque Value	Max Loads ■		Weight	C	D	E	F	G	H
			Top	Bottom							
3/8	3/8	60	500	250	0.34	1 5/16	1 9/16	9/16	1 3/16	3/8	1/2
1/2	1/2	125	950	760	0.63	1 3/8	1 13/16	1/2	1 1/16	7/16	23/32

■ Maximum temperature of 450° F

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

CADDY®

Easy Universal Sway Brace

Features

- Innovative design simplifies installation to save time and money
- Unique slotted holes provide for easy slip-on installation – no more loose hardware
- Snap-off bolt head helps enable easy installation and inspection of seismic sway braces
- Entire range works with 1" through 2" brace pipes and 1/4" angle iron helping to reduce inventory
- Slotted design grabs service pipe for robust gripping strength

Product Listings

- Meets NFPA®-13 requirements for seismic sway bracing
- UL® Listed for SCH 7, SCH 10 and SCH 40 service pipes
- UL Listed load up to 1,265 lbs (5,627 N) in longitudinal direction and 3,000 lbs (13,345 N) in lateral direction
- FM Approved for SCH 7, SCH 10, SCH 40, GB/T 3091, GB/T 3092 and GB/T 8163 service pipes

Easy Universal Sway Brace

The Easy Universal Sway Brace from ERICO® is the latest innovation designed to simplify installations when bracing service pipe for seismic or other catastrophic events. This innovative brace installs in a fraction of the time of a standard sway brace. It features slotted holes to allow for easy installation without requiring hardware removal, meaning no time is lost going up and down the ladder looking for dropped nuts and bolts.

The special serrated flange-head bolts eliminate the need to use a wrench on both the bolt and nut. Just hold the bolt in place with your finger and tighten the nut from the front side.

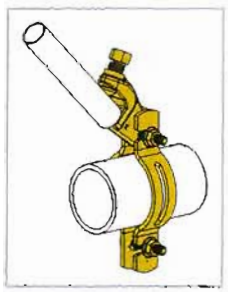
Installation is easy...

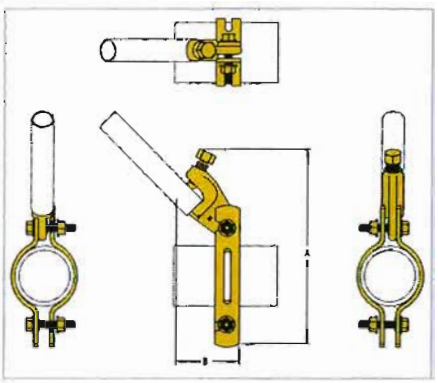
Step 1:
Separate clamp and place around the pipe. Slide slotted component over bolt and tighten. Secure brace pipe by sliding clamp into pipe and snapping off bolt head

Step 2:
Tighten nuts on the Easy Universal Sway Brace until securely locked in place

ERICO®

CADDY® Easy Universal Sway Brace





- For use in lateral and longitudinal sway bracing applications
- Standard electro-galvanized finish provides superior corrosion protection
- Hot-dipped galvanized finish is also available as special order

Specifications

Part Number	Description	Service Pipe Size in (mm)	UL Listed Load SCH 7 Lateral Bracing lbs (N)	UL Listed Load SCH 10/40 Lateral Bracing lbs (N)	UL Listed Load SCH 7 Longitudinal Bracing lbs (N)	UL Listed Load SCH 10/40 Longitudinal Bracing lbs (N)	FM Approved Design Load SCH 7/10/40 Lateral Bracing lbs (N)	FM Approved Design Load SCH 7/10/40 Longi-tudinal Bracing lbs (N)	A in (mm)	B in (mm)
CSBEZU0100EG	1" (25 mm) Easy Universal Sway Brace EG	1 (25)	N/A	655 (2,913)	N/A	655 (2,913)	2,400*** (10,675)	1,000*** (4,448)	6-7/8 (174.6)	1 (25.4)
CSBEZU0125EG	1-1/4" (32 mm) Easy Universal Sway Brace EG	1-1/4 (32)	655 (2,913)	655 (2,913)	655 (2,913)	655 (2,913)	2,400 (10,675)	1,000 (4,448)	7-3/8 (187.4)	1 (25.4)
CSBEZU0150EG	1-1/2" (40 mm) Easy Universal Sway Brace EG	1-1/2 (40)	655 (2,913)	655 (2,913)	655 (2,913)	655 (2,913)	2,400 (10,675)	1,000 (4,448)	7-3/4 (196.9)	1 (25.4)
CSBEZU0200EG	2" (50mm) Easy Universal Sway Brace EG	2 (50)	3,000** (13,344)	3,000** (13,344)	655 (2,913)	655 (2,913)	3,300 (14,679)	1,200 (5,337)	8-1/8 (206.4)	1-3/16 (30.2)
CSBEZU0250EG	2-1/2" (65 mm) Easy Universal Sway Brace EG	2-1/2 (65)	3,000** (13,344)	3,000** (13,344)	1,265 (5,267)	1,265 (5,267)	3,300 (14,679)	1,200 (5,337)	8-7/8 (225.4)	1-3/16 (30.2)
CSBEZU0300EG	3" (80 mm) Easy Universal Sway Brace EG	3 (80)	3,000** (13,344)	3,000** (13,344)	1,265 (5,267)	1,265 (5,267)	3,300 (14,679)	1,200 (5,337)	9-3/8 (238.1)	1-3/16 (30.2)
CSBEZU0400EG	4" (100 mm) Easy Universal Sway Brace EG	4 (100)	3,000** (13,344)	3,000** (13,344)	1,265 (5,267)	1,265 (5,267)	4,500 (20,016)	1,500 (6,672)	10-5/8 (269.9)	1-1/2 (38.1)
CSBEZU0500EG	5" (125 mm) Easy Universal Sway Brace EG	5 (125)	3,000** (13,344)	3,000** (13,344)	1,265 (5,267)	1,265 (5,267)	4,500 (20,016)	1,500 (6,672)	12-1/8 (308.0)	1-1/2 (38.1)
CSBEZU0600EG	6" (150 mm) Easy Universal Sway Brace EG	6 (150)	3,000** (13,344)	3,000** (13,344)	1,265 (5,267)	1,265 (5,267)	4,500 (20,016)	1,700 (7,561)	13-5/8 (346.1)	2 (50.8)
CSBSTU0800EG*	8" (200 mm) Easy Universal Sway Brace EG	8 (200)	N/A	3,000** (13,344)	N/A	2,015 (8,963)	5,500*** (24,465)	4,250*** (8,904)	15-3/4 (400.1)	2 (50.8)
CSBSTU1000EG*	10" (250 mm) Easy Universal Sway Brace EG	10 (250)	N/A	3,000** (13,344)	N/A	3,000** (13,344)	5,500*** (24,465)	4,250*** (8,904)	18 (457.2)	2 (50.8)

* CSBSTU0800EG and CSBSTU1000EG do not include slotted holes. Refer to Standard Universal Sway Brace brochure for additional details.
** When using angle iron instead of brace pipe load ratings reduced to 2,015 lbs (8,963 N).
*** Not applicable for SCH 7

Phone: 800-333-0852
Fax: 800-677-5403
www.erico.com

CADDY®

Quick Grip Lateral Sway Brace

Features

- Innovative design simplifies installation to save time and money
- Easy two-step install eliminates extra trips up and down the ladder
- Clamps slip easily over both sprinkler and brace pipes
- One product works with both 1" and 1-1/4" brace pipes to reduce inventory
- For use in lateral sway bracing applications
- Standard electro-galvanized finish provides superior corrosion protection
- Hot-dipped galvanized finish is also available as special order

Product Listings

- Meets NFPA®-13 requirements for seismic sway bracing
- UL® Listed for SCH 7, SCH 10 and SCH 40 service pipes
- FM Approved for SCH 7, SCH 10, SCH 40, GB/T 3091, GB/T 3092 and GB/T 8163 service pipes

The Quick Grip Lateral Sway Brace from ERICO® is the latest innovation designed to simplify installations when bracing service pipe for seismic or other catastrophic events. It fits easily around the service pipe for quick attachment to the brace pipe.

Yellow tips on the Quick Grip Lateral Sway Brace (4" - 8" or 100 - 200 mm size) provide a visual indicator that the product has been properly installed. Similarly, the Quick Grip Jr. Sway Brace (1" - 4" or 25 - 100 mm size) is properly installed when the bolt heads have sheared off.

Installation is easy...

Quick Grip Jr. Quick Grip

Step 1:
Once brace pipe has been attached to structural attachment, simply raise the Quick Grip or Quick Grip Jr. into place, hooking both claws around the brace pipe.

Quick Grip Jr.

Step 2:
Tighten bolts until bolt heads shear off

Quick Grip

Step 2:
Tighten bolts. Product is properly installed when there is no yellow visible on the tips of the claw

ERICO®

CADDY® Quick Grip Lateral Sway Brace

Fig. 1 Quick Grip Jr.

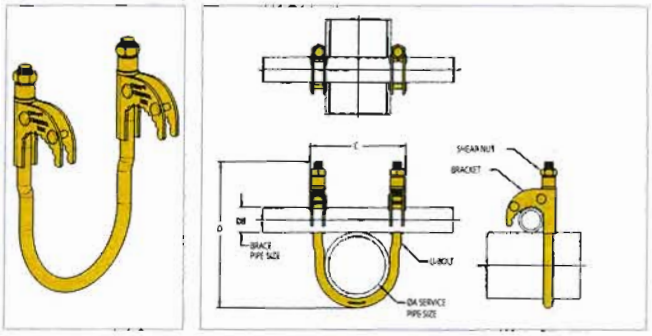
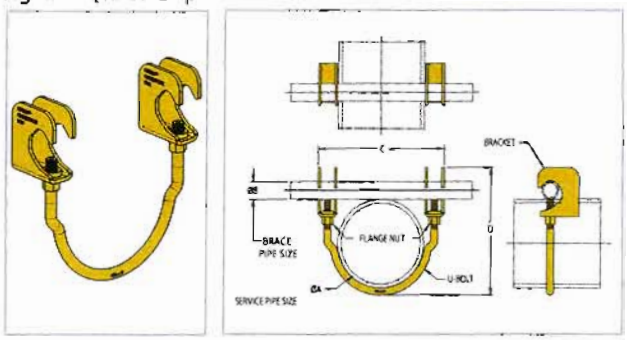


Fig. 2 Quick Grip



Quick Grip Jr. Lateral Sway Brace (Fig. 1)

Part Number	Description	A - Service Pipe Size in (mm)	B - Brace Pipe Size in (mm)	UL Listed Load SCH 7 with 1" Brace Pipe lbs (N)	UL Listed Load SCH 7 with 1-1/4" Brace Pipe lbs (N)	UL Listed Load SCH 10/40 with 1" Brace Pipe lbs (N)	UL Listed Load SCH 10/40 with 1-1/4" Brace Pipe lbs (N)	Min. FM Approved Design Load lbs (N)*	C in (mm)	D in (mm)
CSBQIKCL0100EG	1" (25 mm) LATERAL SWAY BRACE EG	1 (25)	1 or 1-1/4 (25.4 or 31.8)	N/A	N/A	655 (2910)	655 (2910)	800 (3,558)	2-5/8 (65 3)	5-1/8 (130.2)
CSBQIKCL0125EG	1-1/4" (32 mm) LATERAL SWAY BRACE EG	1-1/4 (32)	1 or 1-1/4 (25.4 or 31.8)	655 (2910)	540 (2400)	655 (2910)	540 (2400)	800 (3,558)	3 (74.1)	5-3/8 (136 5)
CSBQIKCL0150EG	1-1/2" (40 mm) LATERAL SWAY BRACE EG	1-1/2 (40)	1 or 1-1/4 (25.4 or 31.8)	750 (3335)	655 (2910)	750 (3335)	655 (2910)	800 (3,558)	3-1/4 (80.2)	5-5/8 (142 9)
CSBQIKCL0200EG	2" (50 mm) LATERAL SWAY BRACE EG	2 (50)	1 or 1-1/4 (25.4 or 31.8)	750 (3335)	540 (2400)	750 (3335)	540 (2400)	800 (3,558)	3-5/8 (92 3)	6-3/8 (161 9)
CSBQIKCL0250EG	2-1/2" (65 mm) LATERAL SWAY BRACE EG	2-1/2 (65)	1 or 1-1/4 (25.4 or 31.8)	655 (2910)	655 (2910)	655 (2910)	655 (2910)	800 (3,558)	4-3/8 (110.7)	7 (177.8)
CSBQIKCL0300EG	3" (80 mm) LATERAL SWAY BRACE EG	3 (80)	1 or 1-1/4 (25 4 or 31 8)	935 (4155)	750 (3335)	935 (4155)	750 (3335)	800 (3,558)	5 (126 6)	7-3/4 (196 9)
CSBQIKCL0350EG	3-1/2" (90 mm) LATERAL SWAY BRACE EG	3-1/2 (90)	1 or 1-1/4 (25 4 or 31 8)	N/A	N/A	750 (3335)	655 (2910)	800 (3,558)	5-1/2 (139.3)	8-1/4 (209 6)
CSBQIKCL0400EG	4" (100 mm) LATERAL SWAY BRACE EG	4 (100)	1 or 1-1/4 (25 4 or 31 8)	750 (3335)	750 (3335)	750 (3335)	750 (3335)	1,300 (5,782)	6 (152.0)	8-3/4 (222 3)

Quick Grip Lateral Sway Brace (Fig. 2)

Part Number	Description	A- Service Pipe Size in (mm)	B - Brace Pipe Size in (mm)	UL Listed Load SCH 7 with 1" & 1-1/4" Brace Pipe lbs (N)	UL Listed Load SCH 10/40 with 1" & 1-1/4" Brace Pipe lbs (N)	Min. FM Approved Design Load lbs (N)*	C (in)	D (1" Brace Pipe) in (mm)	D (1-1/4" Brace Pipe) in (mm)
CSBQIKCSE0400EG	4" (101 6 mm) LATERAL SWAY BRACE EG	4 (100)	1 or 1-1/4 (25 4 or 31.8)	2,015 (8,963)	2,015 (8,963)	3,000 (13,344)	7-1/2 (191.5)	7-1/2 (189.7)	7-3/4 (199 0)
CSBQIKCSE0500EG	5" (127 mm) LATERAL SWAY BRACE EG	5 (125)	1 or 1-1/4 (25.4 or 31.8)	N/A	2,015 (8,963)	2,100 (9,341)	8-5/8 (218.6)	8-1/2 (216.7)	9 (225.9)
CSBQIKCSE0600EG	6" (152.4 mm) LATERAL SWAY BRACE EG	6 (150)	1 or 1-1/4 (25 4 or 31.8)	2,015 (8,963)	2,015 (8,963)	2,100 (9,341)	9-3/4 (246.0)	9-5/8 (243.8)	10 (253 1)
CSBQIKCSE0800EG	8" (203.2 mm) LATERAL SWAY BRACE EG	8 (200)	1 or 1-1/4 (25 4 or 31.8)	N/A	2,015 (8,963)	2,200 (9,786)	11-5/8 (295.4)	11-1/2 (292 9)	12 (302 1)

* For more detailed information on FM load ratings visit www.erico.com or contact your local sales representative

FM is a registered certification mark of FM Approvals LLC. NFPA is a registered trademark of the National Fire Protection Association.
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M848S-EUNAEN M1082LT09EUNAEN 0085M9

CADDY®

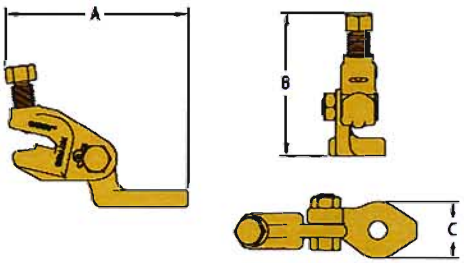
Universal Structural Attachment

Features

- Innovative design simplifies installation to save time and money
- Universal design: one product can be attached to concrete, bar joists, I-Beams and respective adaptors
- Snap-off bolt head helps enable easy installation and inspection of seismic sway braces and eliminates torque wrench use
- For use in lateral and longitudinal sway bracing applications with 1" - 2" SCH 40 brace pipe
- Standard electro-galvanized finish provides superior corrosion protection
- Hot-dipped galvanized finish is also available as special order

Step 1:
Mount Universal Structural Attachment to chosen structural attachment (concrete, Bar Joist Adaptor, I-Beam Adaptor or other structural element).

Step 2:
Insert brace pipe and tighten shear bolt until head snaps off.



- UL Listed load up to 3,000 lbs-force (13,345 N) for 10" (250 mm) water-filled pipe
- Meets NFPA®-13 requirements for seismic sway bracing
- FM Approved for design loads up to 3,900 lbs (17,348 N)

Part Number	Description	UL Listed Load lbs (N)	FM Approved Design Load lbs (N)	A in (mm)	B in (mm)	C in (mm)
CSBUNIV050EG	1/2" (12.7 mm) Mounting Hole, EG	3,000* (13,345)	3,900 (17,348)	2-1/2 (63.5)	3 (76.2)	2-3/8 (60.3)
CSBUNIV075EG	3/4" (19.1 mm) Mounting Hole, EG	3,000* (13,345)	3,900 (17,348)	2-1/2 (63.5)	3 (76.2)	2-3/8 (60.3)

* When using angle iron instead of brace pipe load ratings reduced to 2,015 lbs (8,963 N)

ERICO®

CADDY®

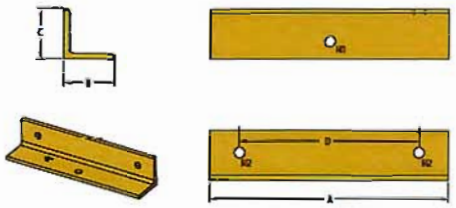
Multi-Attachment

Products meet NFPA requirements for seismic applications!

c UL us

Features

- Allows for easy attachment to the structure
- Provides multiple attachment points for optimal flexibility; minimizes the number of installed braces needed for concrete structures
- Ideal for deck & concrete installations
- For use in lateral and longitudinal sway bracing applications
- Standard electro-galvanized finish provides superior corrosion protection
- Hot-dipped galvanized finish is also available as special order



- UL Listed load up to 3,740 lbs-force (16,636 N) for 12" (305 mm) water-filled pipe
- Meets NFPA®-13 requirements for seismic sway bracing

Part Number	Description	UL Listed Load lbs (N)	H1 - Mounting Hole in (mm)	H2 Mounting Holes for Attachment to Structure in (mm)	A in (mm)	B in (mm)	C in (mm)	D in (mm)
CSBMA050050EG	1/2" (12.7 mm) Mounting Hole to structure, EG	3,740 (16,636)	1/2 (12.7)	1/2 (12.7)	12 (304.8)	2-1/2 (63.5)	2-1/2 (63.5)	9 (228.6)
CSBMA050075EG	3/4" (19.1 mm) Mounting Hole to structure, EG	3,740 (16,636)	1/2 (12.7)	3/4 (19.1)	12 (304.8)	2-1/2 (63.5)	2-1/2 (63.5)	9 (228.6)

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ERICO®

SEISMIC SWAY BRACING

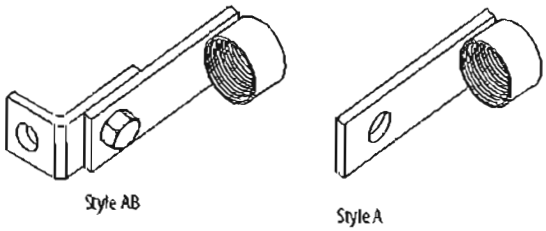
SWAY BRACE TP280

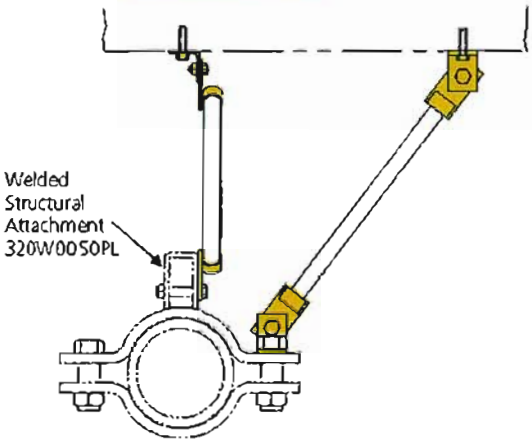
Threaded Sway Brace Fitting

- Size Range: 1" pipe
- Used with Models: #400, #450, #610, and any length of 1" pipe to restrain pipe from swaying during an earthquake
- Finish: Electro-zinc plated (EG)

NOTE: Plain (PL) finish available by special order

№	Pipe Size (in)	Style
TP2800100EG	1	AB
TP280P0100EG	1	A





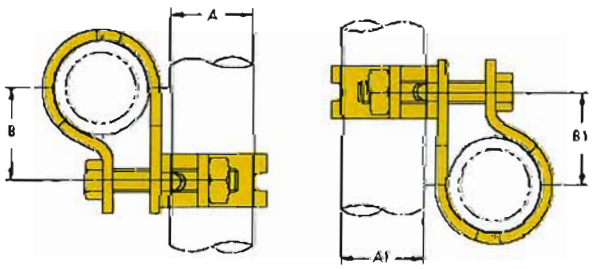
SWAY BRACE TP240

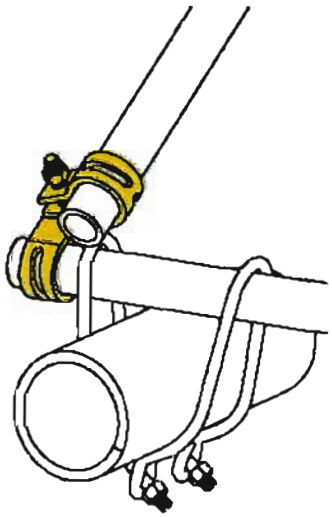
Quick 4-way Longitudinal Sway Brace Clamp

- Size Range: 1" and 1-1/4" bracing pipe
- Used for longitudinally bracing lateral sway bracing against sway disturbance
- Complies with NFPA® 13
- Also used for riser bracing
- Finish: Electro-zinc plated (EG)

NOTE: Also available in Plain (PL) finish

№	A (Brace Pipe Size) (in) A x A1	B (in)	B1 (in)
TP2401000100EG	1 x 1	1-3/8	1-3/8
TP2401250125EG	1-1/4 x 1-1/4	1-3/8	1-5/8





CADDY®

Bar Joist Adaptor

Features

- Innovative design simplifies installation to save time and money
- Unique thumb spring retainer allows for ease of positioning on bar joist
- Snap-off bolt head helps enable easy installation and inspection of seismic sway braces

Product Listings

- Meets NFPA®-13 requirements for seismic sway bracing
- Exceeds 10" (250 mm) UL load rating in all directions
- FM Approved for design loads up to 4,200 lbs. (18,682 N) in all directions

Products meet NFPA requirements for seismic applications!

c UL us

FM APPROVED

Installation is easy...

Step 1:
Pull back thumb spring and select spot on bar joist to mount adaptor

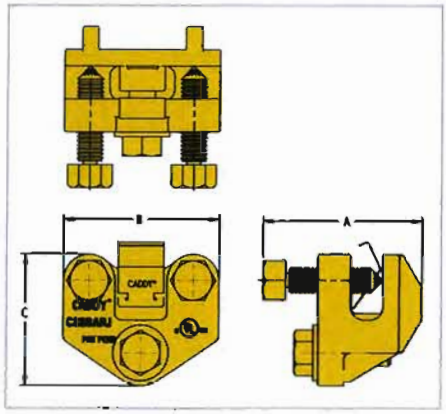
Step 2:
Release thumb spring, allowing it to grip bar joist. Finger tighten the bolts to keep adaptor firmly in place.

Step 3:
Tighten bolts until bolt heads shear off

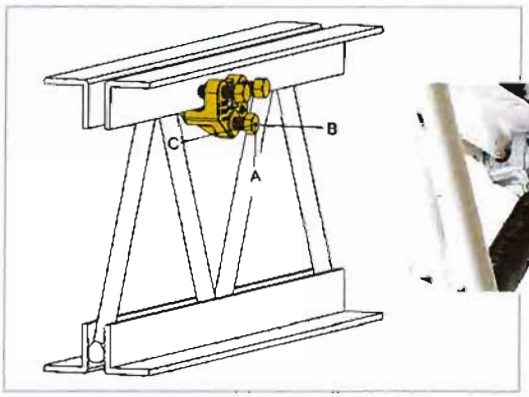
ERICO®

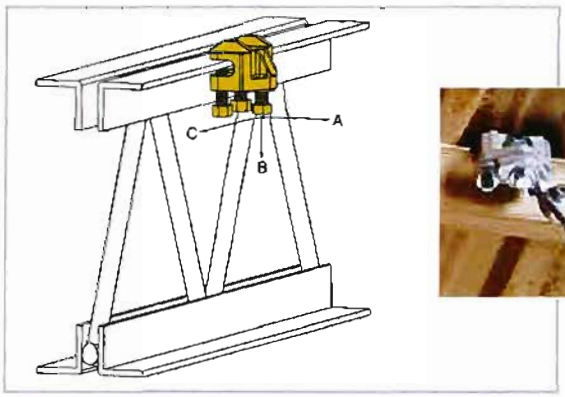
CADDY®

Bar Joist Adaptor



- For use in lateral and longitudinal sway bracing applications
- Standard electro-galvanized finish provides superior corrosion protection
- Hot-dipped galvanized finish is also available as special order





Specifications

Part Number	Description	UL Listed Load Direction A/B lbs (N)	UL Listed Load Direction C lbs (N)	FM Approved Load Direction A/B/C lbs (N)	Flange Thickness in (mm)	A in (mm)	B in (mm)	C in (mm)
CSBBARJEG	Bar Joist Adaptor EG	3,740 (16,636)	3,000 (13,344)	4,200 (18,682)	1/4 - 1/2 (6 4 - 15 9)	2 (50 8)	3 (76.2)	2-1/2 (63 5)

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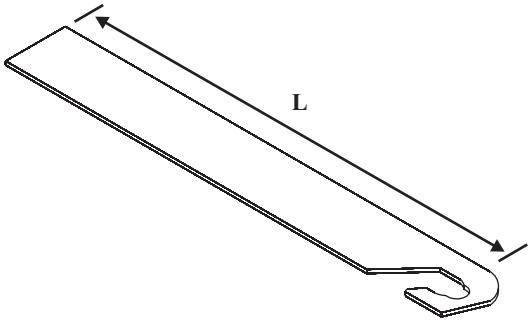
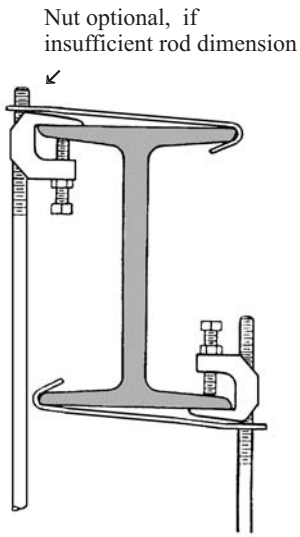
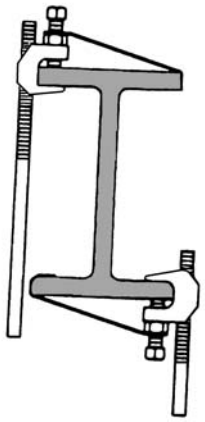
162

UNIVERSAL RESTRAINING STRAP





SIZE- One size fits both 3/8" and 1/2" rod or set screw.
Available lengths 4" and longer.
MATERIAL - Carbon Steel.
FINISH - Mil. Galvanized.
LISTINGS -
c UL us **EX 2551**
PATENT - No. 5,897,088
FUNCTION - To enhance hanger attachment in areas subject to Earthquakes.
INSTALLATION - Install tight to structure and component parts
Minimum return on strap: 1”
L-dimension is measured from hanger rod center to the strap end.
FEATURES
* Fast installation for new construction or retrofit.
* Requires no hanger disassembly to install.
IMPORTANT NOTE: **“No Nut Is Required”**
When installed tight to structure and component parts. (See drawings provided)
ORDERING - Part # and L-dimension.



CAD

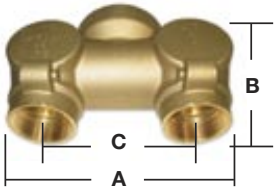
National Fire Equipment Ltd.

FIRE DEPARTMENT CONNECTONS FLUSH MOUNTED

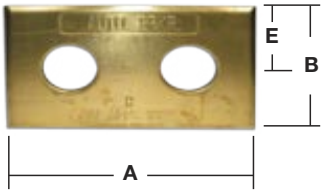
Model 229, Flush mounted Fire Department Connection

Complete 229 Flush Connection with "Standpipe" Plate.

A104 Bushing 6" x 4"



A101NB Straight Body



A103 Plate

A90 Snoots

A81 Plugs

Application: Flush design when appearance is a factor. Double Inlet Fire Department connection with 500 GPM inlet capacity used to supplement water supply in standpipe or fire sprinkler systems. (REF. NFPA No. 14)

The body is complete with two drop clappers. The clappers ensure that if one of the servicing hoses bursts, the flow of water will not be interrupted. The clappers also allow for a single hose connection from the Fire Department pumper.

Comes complete with:

- Model A101NB Straight Body or A102NB Angel Body. The A102NB Angle body permits for top or bottom main pipe feed connection. Clappers must be changed for top or bottom connection.
- A103 Polished Rectangular Escutcheon Plate
- (2) A90 2½"(65mm) Brass Swivel Connections (Snoots)
- (2) A81 2½" (65mm) Brass Plugs
- Addition if required. Model A104 6" x 4" Bushing For 6" (152mm) pipe connections.
- **Option:** Available with Grooved end 4" (100mm) or 6" (152mm) connect.

Construction: Cast Brass Body, Brass Plate, Brass Swivel Adapters (Snoots) and Brass Plugs. All exposed services standard with polished finish.

Rated Pressure: 300 PSI /2068.50 kpa

Options: Plate and Plugs Only. Standard is Polished Brass. Optional Polished Chrome. Plate also available in Stainless Steel with Polished or Satin Finish with engraved lettering. Custom plates available. See section on special plates.

Approvals: ULC & UL

STYLE	SIZE (Inches)	A	B	C	D		
STRAIGHT WAY BODY	4" x 2 ½"x 2 ½"	11	6	7	5		
	6" x 2 ½"x 2 ½"	11	7 7/8	7	7		
	SIZE (Millimeters)						
	101.6 x 63.5 x 63.5	279.4	152.4	177.8	127.0		
	152.4 x 63.5 x 63.5	279.4	200.0	177.8	177.8		
ANGLE BODY	SIZE (Inches)						
	4" x 2 ½"x 2 ½"	11	5 3/4	7	5 1/2		
	6" x 2 ½"x 2 ½"	11	7 3/4	7	7 1/2		
	SIZE (Millimeters)						
	101.6 x 63.5 x 63.5	279.4	146.1	177.8	139.7		
	152.4 x 63.5 x 63.5	279.4	196.9	177.8	190.5		
WALL PLATE		A	B	C		E	F
	SIZE (Inches)	15	9	7		4 1/2	
	SIZE (Millimeters)	381.0	228.6	177.8		114.3	
WALL	SIZE (Inches)						3 1/2
	SIZE (Millimeters)						88.9

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website: www.nationalfire.com

National Fire Equipment Ltd.

Model CVG01 Standard Swing Check Valve – GXG

Description

Style CVG01 Grooved-end Swing Check Valve. Developed using innovative engineering experience. CVG01 is an UL/cUL listed and FM approved non-return valve which permits water flow in one direction and prevents flow in reverse direction. This function is realized by a spring loaded stainless steel clapper with an EPDM rubber facing and a broadened bronze seat, to provide a long service life and leak-free sealing. It is widely used with various configurations in fire sprinkler systems, fire department connections, gravity pressure tank or by-pass connections etc.

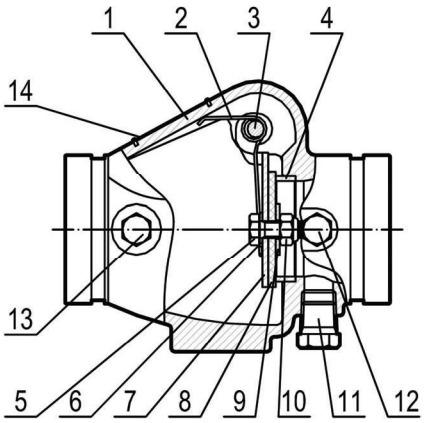
c UL us LISTED

FM APPROVED

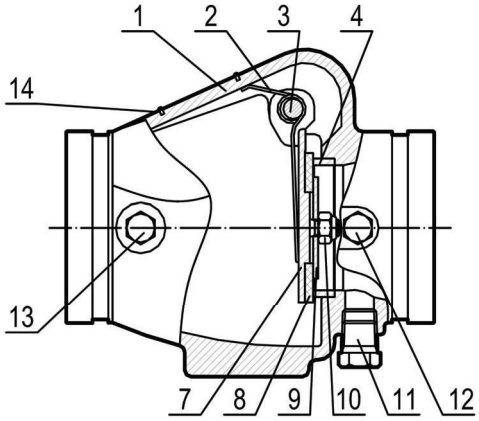
Product features

- Rated working pressure 365psi/25bars by UL/CUL listing and FM approval;
- Can be installed in both vertical (upward flow only) and horizontal positions;
- One design with “Shotgun” arrangement;
- Drains can be optionally provided both upstream and downstream of the clapper;
- Innovative hydro-dynamically efficient profile lowers pressure drop;
- Sealing achieved by a low head pressure of 2psi/0.15bar;
- All wetted parts made of anti-corrosion material to provide superior service time;
- Grooved end confirming to AWWA C606 for easy installation and maintenance.

PART	SPECIFICATION
1. Body	Ductile Iron ASTM A 536
2. Spring	Stainless Steel 304
3. Hinge Pin	Stainless Steel 304
4. Seat	Bronze
5. Bolt	Stainless Steel 304 (2”~3”)
6. Gasket	EPDM Rubber (2”~3”)
7. Clapper	CF8 (Stainless Steel 304)
8. Facing Seal	EPDM Rubber
9. Clamping Ring	Stainless Steel 304
10. Locknut	Stainless Steel 304
11. Plug 1/2” NPT	Carbon Steel
12. Plug 1/4” NPT	Carbon Steel
13. Plug 1/4” NPT	Carbon Steel
14. Name Plate	Stainless Steel 304



2”~3”



4”~8”

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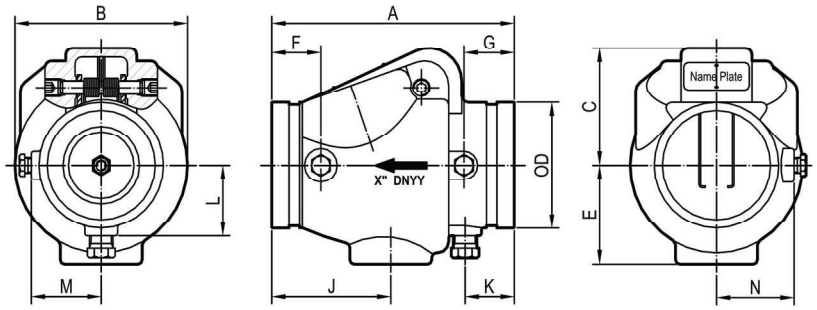

Dimension

Product No.	SIZE	OD	A	B	C	E	F	G	J	K	L	M	N	Wt.
	DN	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	Lbs.
CKVAG200	50	60.3	170	100	72	60	43	44	79	43	38	38	47	2.5
	2	2.375	6.70	3.94	2.83	2.36	1.70	1.73	3.11	1.70	1.50	1.50	1.85	5.5
CKVAG250	65	73.0	184	114	78	67	43	44	85	43	45	45	51	3.8
	21/2	2.875	7.25	4.50	3.07	2.64	1.70	1.73	3.35	1.70	1.77	1.77	2.00	8.4
CKVAG300	80	88.9	196	128	88	73	43	44	94	43	51	51	57	5.2
	3	3.500	7.72	5.04	3.46	2.87	1.70	1.73	3.70	1.70	2.00	2.00	2.25	11.5
CKVAG400	100	114.3	222	158	106	89	45	46	109	45	64	64	71	8.6
	4	4.500	8.75	6.22	4.17	3.50	1.77	1.81	4.29	1.77	2.52	2.52	2.80	18.9
CKVAG600	150	168.3	270	220	129	119	45	46	144	45	91	91	96	17.4
	6	6.625	10.63	8.66	5.08	4.69	1.77	1.81	5.67	1.77	3.58	3.58	3.78	38.3
CKVAG800	200	219.1	330	274	152	146	51	54	182	52	116	116	120	32.0
	8	8.625	13.00	10.80	6.00	5.75	2.00	2.13	7.17	2.05	4.57	4.57	4.72	70.5

Check Valve Performance Data

Formulas for Kv Values

$$\Delta P = \frac{Q^2}{K_V^2} \qquad Q = K_V \times \sqrt{\Delta P}$$

Where: Q = Flow rate (gallons per minute: M3/h)
ΔP = Pressure drop across valve (bar)
K_V = Flow coefficient

Nominal Size	Pipe O.D.	(Full Open)
DN	mm	Kv
In.	In.	Cv
50	60.3	95
2	2.375	110
65	73.0	138
21/2	2.875	160
80	88.9	216
3	3.500	250

Nominal Size	Pipe O.D.	(Full Open)
DN	mm	Kv
In.	In.	Cv
100	114.3	380
4	4.500	440

Formulas for Cv Values

$$\Delta P = \frac{Q^2}{C_V^2} \qquad Q = C_V \times \sqrt{\Delta P}$$

Where: Q = Flow rate (gallons per minute: M3/h)
ΔP = Pressure drop across valve (psi)
C_V = Flow coefficient

Nominal Size	Pipe O.D.	(Full Open)
DN	mm	Kv
In.	In.	Cv
150	168.3	864
6	6.625	1000
200	219.1	1555
8	8.625	1800

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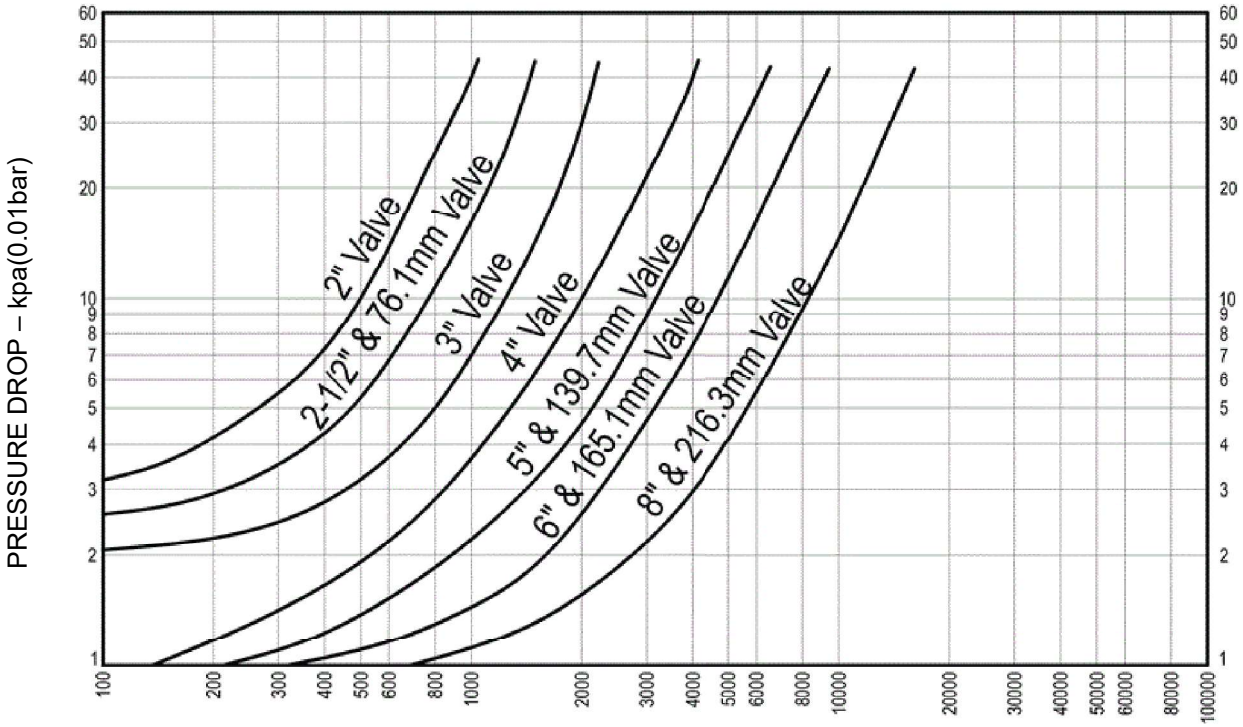
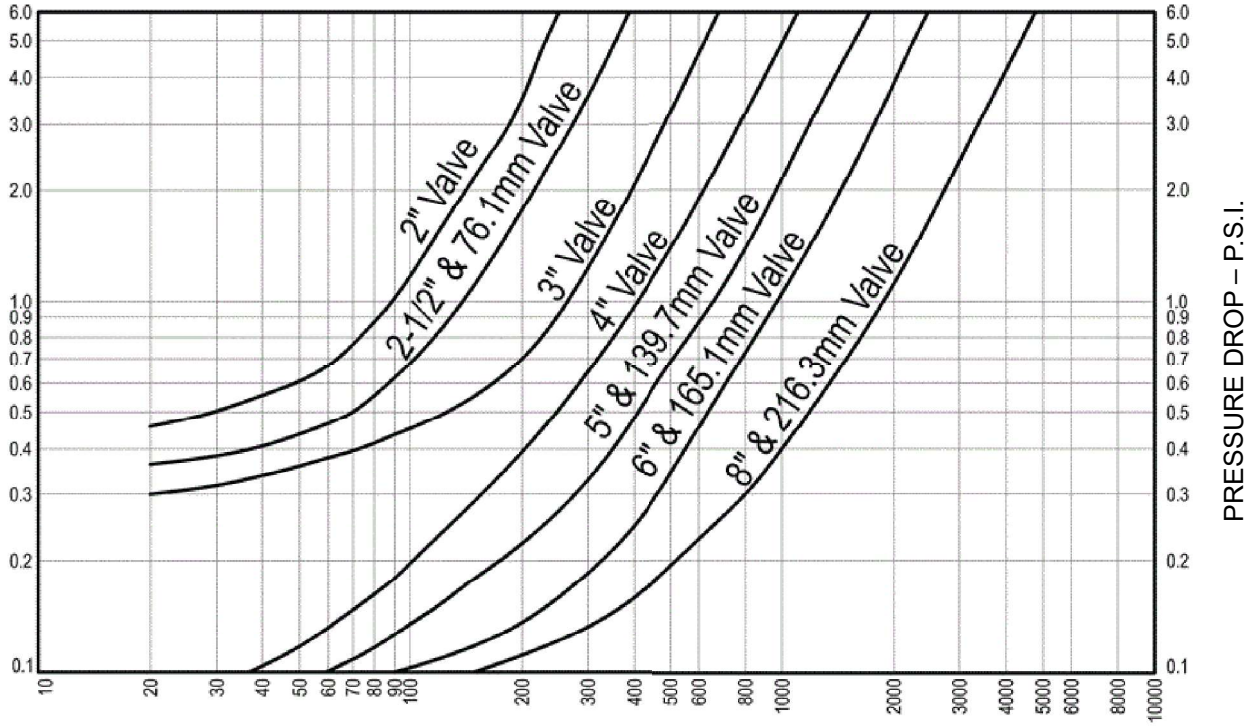
The chart below expresses the flow of water at 16 °C /60°F through valve.





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