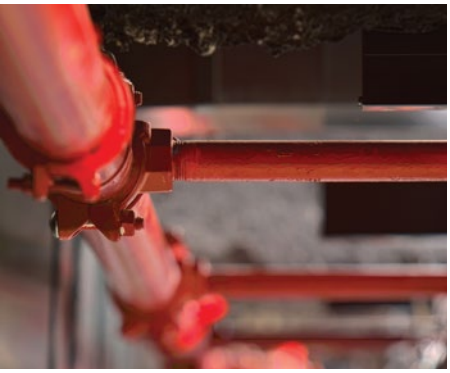
MCDONALDS PUYALLUP REMODEL

Fire Suppression
Material Submittal

Fire Sprinkler System
Reliance Fire Protection, Inc.

Schedule 10 and Schedule 40



Proprietary mill coating ensures clean, corrosion-resistant surface

Outperforms and outlasts standard lacquer-coated pipe

Easily painted, without special preparation

Available with hot-dip galvanizing

Also available in black

High quality, high performance

Wheatland's Schedule 10 and Schedule 40 steel fire sprinkler pipe are subjected to the toughest possible testing to ensure the highest possible quality — not to mention reliable, long-lasting performance.

TECHNICAL DATA CHART

NPS	NOM ID	WT./FT. LBS.	WT./FT. H_2O FILLED	PCS./LIFT	WT./LIFT 21'	WT./LIFT 24'	WT./LIFT 25'
1¼	1.442	1.807	2.514	61	2315	2645	2756
1½	1.682	2.087	3.049	61	2673	3055	3183
2	2.157	2.640	4.222	37	2051	2344	2442
2½	2.635	3.534	5.895	30	2226	2544	2651
3	3.260	4.336	7.949	19	1730	1977	2060
4	4.260	5.619	11.789	19	2242	2562	2669
5	5.295	7.780	17.309	13	2124	2427	2529
6	6.357	9.298	23.038	10	1953	2232	2325
8	8.249	16.96	40.086	7	2493	2849	2968

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).*

WEIGHTS AND DIMENSIONS CHART

NOMINAL SIZE	OD	SCHEDULE 40		
	in.	Wall Inches	Wt. lbs./ft.	Wt./Ft. H_2O Filled
1	1.315	.133	1.68	2.055
1¼	1.660	.140	2.27	2.922
1½	1.900	.145	2.72	3.602
2	2.375	.154	3.66	5.109
2½	2.875	.203	5.80	7.871
3	3.500	.216	7.58	10.783
3½	4.000	.226	9.12	—
4	4.500	.237	10.80	16.311
5	5.563	.258	14.63	23.262
6	6.625	.280	18.99	31.498

Schedule 10 and Schedule 40 Meet or Exceed These Standards:

- UL, C-UL and FM Listed
- FM Approved
- ASTM A135, Type E, Grade A (Schedule 10)
- ASTM A53, Type E, Grade B (Schedule 40 5–6)
- ASTM A795, Type E, Grade A (Schedule 40)
- NFPA 13

FIG. 3201

90° Elbow

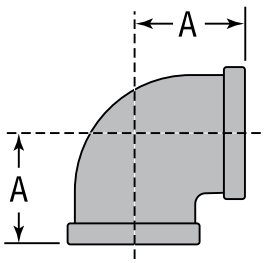


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FIGURE 3201 - 90° ELBOW

Nominal Size	Maximum Working Pressure▲	Dimension A	Approx. Wt. Each
In. (mm)	*PSI (kPa)*	*In. (mm)*	*Lbs. (kg)*
1 *20*	500 *3450*	1.50 *38.10*	0.62 *0.28*
1¼ *32*	500 *3450*	1.75 *44.45*	0.90 *0.41*
1½ *40*	500 *3450*	1.94 *49.276*	1.20 *0.54*
2 *50*	500 *3450*	2.25 *57.15*	1.85 *0.84*

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

MATERIAL SPECIFICATIONS

Dimensions: ASME B16.3

Material: ASTM A536 Grade 65-45-12

Finish: Black

Threads: NPT per ASME B1.20.1

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

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

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

FIG. 3201R

Reducing 90° Elbow

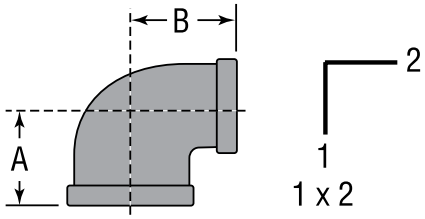

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FIGURE 3201R - REDUCING 90° ELBOW

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

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

MATERIAL SPECIFICATIONS

Dimensions: ASME B16.3

Material: ASTM A536 Grade 65-45-12

Finish: Black

Threads: NPT per ASME B1.20.1

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

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

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Engineer:	**Remarks:**
Submittal Date:	
Notes 1:	
Notes 2:	

FIG. 3205

Straight Tee

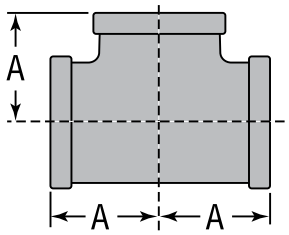

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FIGURE 3205 - STRAIGHT TEE

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

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

MATERIAL SPECIFICATIONS

Dimensions: ASME B16.3

Material: ASTM A536 Grade 65-45-12

Finish: Black

Threads: NPT per ASME B1.20.1

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

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

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Address:	☐ **Approved as noted**
Contractor:	☐ **Not approved**
Engineer:	**Remarks:**
Submittal Date:	
Notes 1:	
Notes 2:	

FIG. 3205R

Reducing Tee

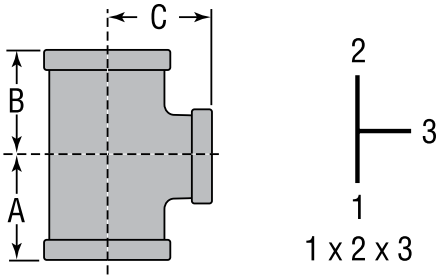

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FIGURE 3205R - REDUCING TEE

Nominal Size 1 x 2 x 3	Max. Working Pressure▲	Dimensions A	B	C	Approx. Wt. Each
In. (mm)	*PSI (kPa)*	*In. (mm)*	*In. (mm)*	*In. (mm)*	*Lbs. (kg)*
1 x ½ x 1 *25 x 15 x 25*	500 *3450*	1.50 *38.10*	1.36 *34.54*	1.50 *38.10*	0.64 *0.29*
1 x ¾ x 1 *25 x 20 x 25*	500 *3450*	1.50 *38.10*	1.45 *36.83*	1.50 *38.10*	0.73 *0.33*
1 x 1 x ½ *25 x 25 x 15*	500 *3450*	1.26 *32.00*	1.26 *32.00*	1.36 *34.54*	0.71 *0.32*
1 x 1 x ¾ *25 x 25 x 20*	500 *3450*	1.37 *34.80*	1.37 *34.80*	1.45 *36.83*	0.76 *0.34*
1 x 1 x 1¼* *25 x 25 x 32*	500 *3450*	1.67 *42.41*	1.67 *42.41*	1.58 *40.13*	0.98 *0.44*
1 x 1 x 1½* *25 x 25 x 40*	500 *3450*	1.80 *45.72*	1.80 *45.72*	1.65 *41.91*	1.16 *0.53*
1¼ x 1 x ½* *32 x 25 x 15*	500 *3450*	1.34 *34.04*	1.26 *32.00*	1.53 *38.86*	0.82 *0.37*
1¼ x 1 x ¾ *32 x 25 x 20*	500 *3450*	1.45 *36.83*	1.37 *34.80*	1.62 *41.15*	0.90 *0.41*
1¼ x 1 x 1 *32 x 25 x 25*	500 *3450*	1.58 *40.13*	1.50 *38.10*	1.67 *42.42*	1.00 *0.45*
1¼ x 1 x 1¼ *32 x 25 x 32*	500 *3450*	1.75 *44.45*	1.67 *42.42*	1.75 *44.45*	1.08 *0.49*
1¼ x 1 x 1½ *32 x 25 x 40*	500 *3450*	1.88 *47.75*	1.80 *45.72*	1.82 *46.22*	1.42 *0.64*
1¼ x 1¼ x ½ *32 x 32 x 15*	500 *3450*	1.34 *34.04*	1.34 *34.04*	1.53 *38.86*	0.86 *0.39*

MATERIAL SPECIFICATIONS

Dimensions: ASME B16.3

Material: ASTM A536 Grade 65-45-12

Finish: Black

Threads: NPT per ASME B1.20.1

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

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

FIGURE 3205R - REDUCING TEE

Nominal Size 1 x 2 x 3	Max. Working Pressure▲	Dimensions A	B	C	Approx. Wt. Each
In. (mm)	*PSI (kPa)*	*In. (mm)*	*In. (mm)*	*In. (mm)*	*Lbs. (kg)*
1¼ x 1¼ x ¾ *32 x 32 x 20*	500 *3450*	1.45 *36.83*	1.45 *36.83*	1.62 *41.15*	0.92 *0.42*
1¼ x 1¼ x 1 *32 x 32 x 25*	500 *3450*	1.58 *40.13*	1.58 *40.13*	1.67 *42.42*	0.95 *0.43*
1¼ x 1¼ x 1½* *32 x 32 x 40*	500 *3450*	1.88 *47.75*	1.88 *47.75*	1.82 *46.22*	1.45 *0.66*

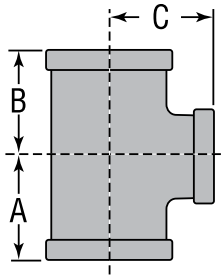
▲ Working Pressure Ratings are for reference only and based on Sch. 40 pipe. For the latest UL/ULC, and FM pressure ratings versus pipe schedule, please visit anvilintl.com or contact your local Anvil Representative.

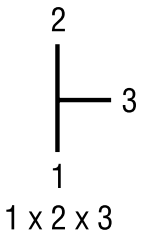
* Part supplied as "Bull Head Tee".

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

FIG. 3205R

Reducing Tee





1 x 2 x 3

FIGURE 3205R - REDUCING TEE					
Nominal Size	Max. Working Pressure▲	Dimensions			Approx. Wt. Each
1 x 2 x 3		A	B	C	
In. (mm)	*PSI (kPa)*	*In. (mm)*	*In. (mm)*	*In. (mm)*	*Lbs. (kg)*
1¼ x 1¼ x 2* *32 x 32 x 50*	500 *3450*	2.10 *53.34*	2.10 *53.34*	1.90 *48.26*	1.75 *0.79*
1½ x 1 x ½ *40 x 25 x 15*	500 *3450*	1.41 *35.81*	1.34 *34.04*	1.66 *42.16*	0.95 *0.43*
1½ x 1 x ¾ *40 x 25 x 20*	500 *3450*	1.52 *38.61*	1.37 *34.80*	1.75 *44.45*	1.14 *0.52*
1½ x 1 x 1 *40 x 25 x 25*	500 *3450*	1.65 *41.91*	1.50 *38.10*	1.80 *45.72*	1.17 *0.53*
1½ x 1 x 1¼ *40 x 25 x 32*	500 *3450*	1.82 *46.23*	1.67 *42.42*	1.88 *47.75*	1.34 *0.61*
1½ x 1 x 1½ *40 x 25 x 40*	500 *3450*	1.94 *49.28*	1.80 *45.72*	1.94 *49.28*	1.45 *0.66*
1½ x1¼ x ½ *40 x 32 x 15*	500 *3450*	1.41 *35.81*	1.34 *34.04*	1.66 *42.16*	1.05 *0.48*
1½ x1¼ x ¾ *40 x 32 x 20*	500 *3450*	1.52 *38.61*	1.45 *36.83*	1.75 *44.45*	1.15 *0.5*
1½ x 1¼ x 1 *40 x 32 x 25*	500 *3450*	1.65 *41.91*	1.58 *40.13*	1.80 *45.72*	1.25 *0.57*
1½ x 1¼ x 2* *40 x 32 x 50*	500 *3450*	2.16 *54.86*	2.10 *53.34*	2.02 *51.30*	1.90 *0.86*
1½ x 1½ x ½ *40 x 40 x 15*	500 *3450*	1.41 *35.81*	1.41 *35.81*	1.16 *29.46*	1.15 *0.52*
1½ x 1½ x ¾ *40 x 40 x 20*	500 *3450*	1.52 *38.61*	1.52 *38.61*	1.75 *44.45*	1.24 *0.56*
1½ x 1½ x 1 *40 x 40 x 25*	500 *3450*	1.65 *41.91*	1.65 *41.91*	1.80 *45.72*	1.30 *0.59*
1½ x 1½ x 1¼ *40 x 40 x 32*	500 *3450*	1.82 *46.23*	1.82 *46.23*	1.88 *47.75*	1.48 *0.67*

FIGURE 3205R - REDUCING TEE					
Nominal Size	Max. Working Pressure▲	Dimensions			Approx. Wt. Each
1 x 2 x 3		A	B	C	
In. (mm)	*PSI (kPa)*	*In. (mm)*	*In. (mm)*	*In. (mm)*	*Lbs. (kg)*
1½ x 1½ x 2* *40 x 40 x 50*	500 *3450*	2.16 *54.86*	2.16 *54.86*	2.02 *51.30*	1.98 *0.90*
2 x 1 x 2 *50 x 25 x 50*	500 *3450*	2.25 *57.15*	2.02 *51.31*	2.25 *57.15*	2.15 *0.98*
2 x 1¼ x 2 *50 x 32 x 50*	500 *3450*	2.25 *57.15*	2.10 *53.34*	2.25 *57.15*	2.30 *1.04*
2 x 1½ x ½ *50 x 40 x 15*	500 *3450*	1.49 *37.85*	1.41 *35.81*	1.88 *47.75*	1.50 *0.68*
2 x 1½ x ¾ *50 x 40 x 20*	500 *3450*	1.60 *40.64*	1.52 *38.61*	1.97 *50.04*	1.62 *0.73*
2 x 1½ x 1 *50 x 40 x 25*	500 *3450*	1.73 *43.94*	1.65 *41.91*	2.02 *51.31*	1.64 *0.74*
2 x 1½ x 1¼ *50 x 40 x 32*	500 *3450*	1.90 *48.26*	1.82 *46.23*	2.10 *53.34*	1.80 *0.82*
2 x 1½ x 1½ *50 x 40 x 40*	500 *3450*	2.02 *51.31*	1.94 *49.28*	2.16 *54.86*	2.00 *0.91*
2 x 1½ x 2 *50 x 40 x 50*	500 *3450*	2.25 *57.15*	2.16 *54.86*	2.25 *57.15*	2.35 *1.07*
2 x 2 x ½ *50 x 50 x 15*	500 *3450*	1.49 *37.85*	1.49 *37.85*	1.88 *47.75*	1.60 *0.73*
2 x 2 x ¾ *50 x 50 x 20*	500 *3450*	1.60 *40.64*	1.60 *40.64*	1.97 *50.04*	1.68 *0.76*
2 x 2 x 1 *50 x 50 x 25*	500 *3450*	1.73 *43.94*	1.73 *43.94*	2.02 *51.31*	1.85 *0.84*
2 x 2 x 1¼ *50 x 50 x 32*	500 *3450*	1.90 *44.45*	1.90 *42.42*	2.10 *44.45*	2.04 *0.93*
2 x 2 x 1½ *50 x 50 x 40*	500 *3450*	2.02 *44.45*	2.02 *42.42*	2.16 *44.45*	2.18 *0.99*

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

* Part supplied as "Bull Head Tee".

FIG. 3221R

Reducing Coupling

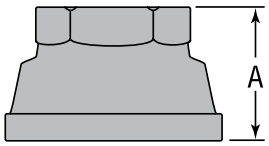


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FIGURE 3221R - REDUCING COUPLING

Nominal Size	Maximum Working Pressure▲	Dimension A	Approx. Wt. Each
In. (mm)	*PSI (kPa)*	*In. (mm)*	*Lbs. (kg)*
1 x ½ *25 x 15*	500 *3450*	1.69 *42.92*	0.39 *0.18*
1 x ¾ *25 x 20*	500 *3450*	1.69 *42.92*	0.53 *0.24*
1¼ x ¾ *32 x 20*	500 *3450*	2.06 *52.32*	0.64 *0.29*

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

MATERIAL SPECIFICATIONS

Dimensions: ASME B16.3

Material: ASTM A536 Grade 65-45-12

Finish: Black

Threads: NPT per ASME B1.20.1

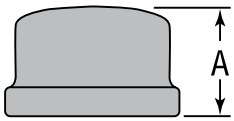
Agency Approvals: All ductile iron threaded fittings are UL/ULC Listed and FM Approved.

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

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

FIG. 3224

Cap



c UL us LISTED FM APPROVED

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

FIGURE 3224 - CAP

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

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

MATERIAL SPECIFICATIONS

Dimensions: ASME B16.3

Material: ASTM A536 Grade 65-45-12

Finish: Black

Threads: NPT per ASME B1.20.1

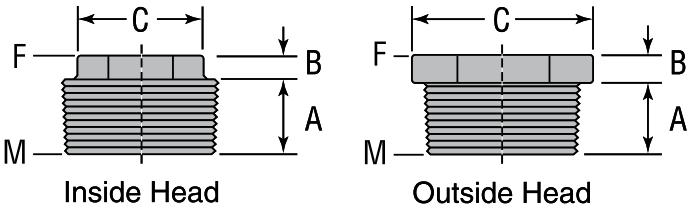
Agency Approvals: All ductile iron threaded fittings are UL/ULC Listed and FM Approved.

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

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

FIG. 3283

Bushings



c UL us LISTED FM APPROVED

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

FIGURE 3283 - BUSHINGS

Nominal Size Male (M) x Female (F)	Max. Working Pressure▲	Dimensions A	Dimensions B	Dimensions C	Style	Approx. Wt. Each
In. (mm)	*PSI (kPa)*	*In. (mm)*	*In. (mm)*	*In. (mm)*		*Lbs. (kg)*
1 x ½ *25 x 15*	500 *3450*	0.75 *19.05*	0.25 *6.35*	1.42 *36.06*	Outside	0.22 *0.10*
1 x ¾ *25 x 20*	500 *3450*	0.75 *19.05*	0.25 *6.35*	1.42 *36.06*	Outside	0.17 *0.08*
1¼ x 1 *32 x 25*	500 *3450*	0.80 *20.32*	0.28 *7.11*	1.76 *44.70*	Outside	0.28 *0.13*
1½ x 1 *40 x 25*	500 *3450*	0.83 *21.08*	0.31 *7.874*	2.00 *50.80*	Outside	0.45 *0.20*
1½ x 1¼ *40 x 32*	500 *3450*	0.83 *21.08*	0.31 *7.874*	2.00 *50.80*	Outside	0.30 *0.14*
2 x 1 *50 x 25*	500 *3450*	0.88 *22.35*	0.41 *10.414*	1.95 *49.53*	Inside	0.67 *0.30*
2 x 1¼ *50 x 32*	500 *3450*	0.88 *22.35*	0.34 *8.636*	2.48 *62.99*	Outside	0.73 *0.33*
2 x 1½ *50 x 40*	500 *3450*	0.88 *22.35*	0.34 *8.636*	2.48 *62.99*	Outside	0.61 *0.28*

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

MATERIAL SPECIFICATIONS

Dimensions: ASME B16.14

Material: ASTM A536 Grade 65-45-12

Finish: Black

Threads: NPT per ASME B1.20.1

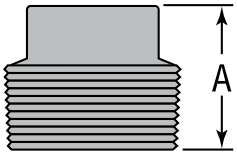
Agency Approvals: All ductile iron threaded fittings are UL/ULC Listed and FM Approved.

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

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

FIG. 3388

Cored Plug



c UL us LISTED FM APPROVED

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

FIGURE 3388 - CORED PLUG

Nominal Size	Maximum Working Pressure▲	Dimension A	Approx. Wt. Each
In. (mm)	*PSI (kPa)*	*In. (mm)*	*Lbs. (kg)*
½* 15	500 3450	0.94 23.87	0.10 0.05
¾ 20	500 3450	1.07 27.17	0.17 0.08
1 25	500 3450	1.25 31.75	0.28 0.13
1¼ 32	500 3450	1.36 34.54	0.44 0.20
1½ 40	500 3450	1.45 36.83	0.62 0.28
2 50	500 3450	1.56 39.62	0.91 0.41

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

* Part supplied as Solid Plug.

MATERIAL SPECIFICATIONS

Dimensions: ASME B16.14

Material: ASTM A536 Grade 65-45-12

Finish: Black

Threads: NPT per ASME B1.20.1

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

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

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

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

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:

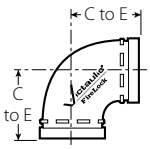
☑ Orange enamel.
☐ Red enamel in Europe, Middle East, Africa, and India.
☐ Optional: Hot dipped galvanized.

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

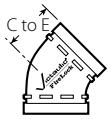
System No.		Location	
Submitted By		Date	

Spec Section		Paragraph	
Approved		Date	

4.0 DIMENSIONS



No. 001



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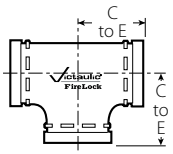


No. 002

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

Victaulic® Firelock™ Rigid Coupling
Style 009N

10.64

Patented

1.0 CERTIFICATION/LISTINGS

C104-1a/36

2.0 PRODUCT DESCRIPTION

- The FireLock EZ™ Style 009N Installation-ReadyTM Rigid Coupling is for use in the fire protection market.
- The coupling's unique design eliminates loose parts, promotes consistent installation and provides substantial gains in productivity.
- **IMPORTANT:** FireLock EZ™ Style 009N couplings are recommended for use ONLY on fire protection systems.

3.0 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: (specify choice)

☑ Orange enamel (North America, Asia Pacific)

☐ Red enamel (Europe)

☐ Hot dipped galvanized

Gasket: (specify choice[1])

☐ **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.

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

Bolts/Nuts: Zinc electroplated carbon steel, trackhead meeting the physical and chemical requirements of ASTM A 449 and physical requirements of ASTM A 183.

System No.		Location	
Submitted By		Date	

Spec Section		Paragraph	
Approved		Date	

4.0 LISTINGS/APPROVAL [2]

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.

Nominal Size	cULus			FM			Vds	LPCB
inches mm	Sch. 5 psi kPa	Sch. 10 psi kPa	Sch. 40 psi kPa	Sch. 5 psi kPa	Sch. 10 psi kPa	Sch. 40 psi kPa	psi kPa	psi kPa
1 ¼ 32	232 1600	365 2517	365 2517	175 1205	363 2502	363 2502	363 2500	363 2500
1 ½ 40	232 1600	365 2517	365 2517	175 1205	363 2502	363 2502	363 2500	363 2500
2 50	363 2502	365 2517	365 2517	175 1205	363 2502	363 2502	363 2500	363 2500
2 ½ 65	N/A	365 2517	365 2517	175 1205	363 2502	363 2502	363 2500	363 2500
76.1 mm	N/A	365 [3] 2517 [3]	N/A	N/A	363 [4] 2502 [4]	N/A	363 2500	363 2500
3 80	N/A	365 2517	365 2517	175 1205	363 2502	363 2502	363 2500	363 2500
4 100	N/A	365 2517	365 2517	175 1205	363 2502	363 2502	363 2500	363 2500
108.0 mm	N/A	N/A	N/A	175 1205	363 2502	363 2502	N/A	N/A
5 125	N/A	290 2000	365 2517	N/A	363 2502	363 2502	232 1600	N/A
133.0 mm	N/A	N/A	N/A	N/A	363 [4] 2502 [4]	N/A	N/A	N/A
139.7 mm	N/A	290 [5] 2000 [5]	N/A	N/A	363 [4] 2502 [4]	N/A	232 1600	N/A
159.0 mm	N/A	N/A	N/A	N/A	363 [4] 2502 [4]	N/A	N/A	N/A
165.1 mm	N/A	290 [6] 2000 [6]	N/A	N/A	363 [4] 2502 [4]	N/A	N/A	N/A
6 150	N/A	290 2000	365 2517	N/A	363 2502	363 2502	232 1600	N/A
216.0 mm	N/A	N/A	N/A	N/A	363 [4] 2502 [4]	N/A	N/A	N/A
8 200	N/A	290 2000	365 2517	N/A	363 2502	363 2502	232 1600	N/A

2 Listed/Approved for wet and dry pipe systems (> –40°F/–40°C) for continuous use in freezing conditions, use of Style 005H Coupling with Silicone Gasket is recommended.
Please see the Victaulic Installation Manual I-009N/009H for details concerning when supplemental lubrication is required.

3 cULus listed for DIN 2458 2.6 mm pipe wall.

4 FM approved for BS 1387 Medium 3.6 mm pipe wall.

5 cULus listed for EN 10220 4.0 mm pipe wall.

6 cULus listed for EN 10255 4.5 mm pipe wall.

4.1 LISTINGS/APPROVAL

Speciality Pipe

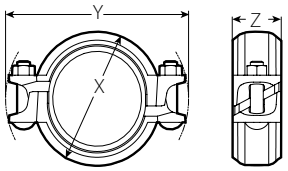
Pipe	Size	Pressure Rating		Pipe	Size	Pressure Rating		Pipe	Size	Pressure Rating	
	inches	**cULus** psi kPa	**FM** psi kPa		inches	**cULus** psi kPa	**FM** psi kPa		inches	**cULus** psi kPa	**FM** psi kPa
BLT	1 ¼ – 2	300 2068	365 2517	EZT	1 ¼ – 2	300 2068	365 2517	MT	1 ¼ – 2	300 2068	365 2517
DF	1 ¼ – 4	300 2068	365 2517	FF	1 ¼ – 4	300 2068	365 2517	MLT	1 ¼ – 2	N/A	365 2517
DT	1 ¼ – 2	300 2068	365 2517	FLF	1 ¼ – 4	N/A	365 2517	ST	1 ¼ – 2	N/A	365 2517
EF	1 ¼ – 4	175 1206	175 1206	FLT	1 ¼ – 2	N/A	365 2517	STF	1 ¼ – 4	N/A	365 2517
EL	1 ¼ – 2	300 2068	365 2517	FLTL	1 ¼ – 2	N/A	365 2517	TF	2 ¼ – 4	N/A	365 2517
ET40	1 ¼ – 2	300 2068	365 2517	GL	1 ¼ – 2	300 2068	365 2517	WLS	1 ¼ – 2	300 2068	365 2517
EZF	3 – 4	300 2068	365 2517	MF	1 ¼ – 4	300 2068	365 2517	WST	1 ¼ – 2	N/A	365 2517
								XL	1 ¼ – 2	300 2068	365 2517

NOTES

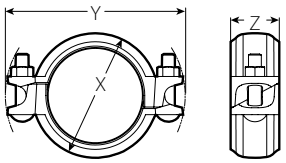
- BLT = BLT steel pipe manufactured by Allied Tube & Conduit Corp.
- DF = DYNA-FLOW steel pipe manufactured by Allied Tube & Conduit Corp.
- DT = DYNA-FLOW steel pipe manufactured by Allied Tube & Conduit Corp.
- EF = EDDY FLOW steel pipe manufactured by Bull Moose Tube Co.
- EL = EDDYLITE steel pipe manufactured by Bull Moose Tube Co.
- ET40 = Eddythread 40 steel pipe manufactured by Bull Moose Tube Co.
- EZF = EZ-Flow steel pipe manufactured by Northwest Pipe Co.
- EZT = EZ-Thread steel pipe manufactured by Youngstown Tube Co.
- FF = Fire-Flo steel pipe manufactured by Youngstown Tube Co.
- FLF = Fire-Line Flow steel pipe manufactured by Western International Forest Products Inc.
- FLT = Fire-Line Threadable steel pipe manufactured by Western International Forest Products Inc.
- FLTL = Fire-Line Threadable Light steel pipe manufactured by Western International Forest Products Inc.
- GL = GL steel pipe manufactured by Wheatland Tube Co.
- MF = Mega-Flow steel pipe manufactured by Wheatland Tube Co.
- MT = Mega-Thread steel pipe manufactured by Wheatland Tube Co.
- MLT = MLT steel pipe manufactured by Wheatland Tube Co
- ST = STD wall pipe in accordance with ASTM A53.
- STF = Steady Flow steel pipe manufactured by AMS Tube Corp.
- TF = Tex-Flow steel pipe manufactured by Tex-Tube Co.
- WLS = WLS steel pipe manufactured by Wheatland Tube Co.
- WST = WST steel pipe manufactured by Wheatland Tube Company.
- XL = XL steel pipe manufactured by Allied Tube & Conduit Corp.

5.0 DIMENSIONS

Style 009N



Style 009N Pre-Assembled
(Push On Condition)



Style 009N Joint Assembled

Nominal Size	Actual Outside Diameter	Maximum Working Pressure [7]	Maximum End Load [7]	Allow. Pipe End Separation [8]	Bolt/Nut [9] Size		Dimensions					Approx. Weight Each
							Pre-assembled (Push On Condition)		Joint Assembled			
							X	Y	X	Y	Z	
inches mm	inches mm	psi kPa	lbs. N	inches mm	No.	inches mm	inches mm	inches mm	inches mm	inches mm	inches mm	lbs. kg
1 ¼ 32	1.660 42.4	365 2517	790 3514	0.10 2.54	2	⅜ × 2 M10 x 2	3.13 79	5.00 127	2.75 70	5.00 127	2.00 51	1.4 0.6
1 ½ 40	1.900 48.3	365 2517	1035 4604	0.10 2.54	2	⅜ × 2 M10 x 2	3.38 86	5.13 130	3.00 76	5.13 130	2.00 51	1.5 0.7
2 50	2.375 60.3	365 2517	1616 7193	0.12 3.05	2	⅜ ×2 ½ M10 x 2 ½	4.00 102	5.63 143	3.50 89	5.63 143	2.00 51	1.9 0.9
2 ½ 65	2.875 73.0	365 2517	2370 10542	0.12 3.05	2	⅜ × 2 ½ M10 x 2 ½	4.50 114	6.13 156	4.00 102	6.13 156	2.00 51	2.1 1.0
76.1 mm	3.000 76.1	365 2517	2580 11476	0.12 3.05	2	⅜ × 2 ½ M10 x 2 ½	4.63 118	6.00 152	4.13 105	6.13 156	2.00 51	2.1 1.0
3 80	3.500 88.9	365 2517	3512 15622	0.12 3.05	2	⅜ × 2 ½ M10 x 2 ½	5.13 130	6.75 171	4.63 117	6.75 171	2.00 51	2.3 1.0
4 100	4.500 114.3	365 2517	5805 25822	0.17 4.32	2	⅜ × 2 ½ M10 x 2 ½	6.00 152	7.88 200	5.63 143	7.50 191	2.13 54	2.9 1.3
108.0 mm	4.250 108.0	365 2517	5175 23020	0.17 4.32	2	⅜ × 2 ½ M10 x 2 ½	5.63 152	7.38 1.87	5.38 137	7.38 187	2.13 54	3.1 1.4
5 125	5.563 141.3	365 2000	8870 39456	0.17 4.32	2	½ × 3 M12 x 3	7.25 184	9.25 235	6.75 171	9.13 232	2.25 57	5.0 2.3
133.0 mm	5.250 133.0	365 2517	7897 35106	0.17 4.32	2	½ × 3 M12 x 3	6.63 168	9.00 229	6.38 162	9.00 229	2.25 57	4.8 2.2
139.7 mm	5.500 139.7	365 2517	8667 38529	0.17 4.32	2	½ × 3 M12 x 3	6.88 175	9.25 235	6.75 171	9.13 232	2.25 57	4.9 2.2
159.0 mm	6.250 159.0	365 2517	11192 49753	0.17 4.32	2	½ × 3 ¼ M12 x 3 ¼	7.88 200	10.00 254	7.38 187	9.88 251	2.25 57	5.6 2.5
165.1 mm	6.500 165.1	365 2517	12105 53813	0.17 4.32	2	½ × 3 ¼ M12 x 3 ¼	8.00 203	10.25 260	7.75 197	10.13 257	2.25 57	6.0 2.7
6 150	6.625 168.3	365 2000	12582 44469	0.17 4.32	2	½ × 3 ¼ M12 x 3 ¼	8.38 213	10.38 264	7.88 200	10.13 257	2.25 57	6.0 2.7
216.0 mm	8.500 216.0	365 2517	20712 55968	0.17 4.32	2	⅝ × 4 M16 x 4	10.63 270	13.25 337	10.25 260	10.13 257	2.63 67	11.4 5.2
8 200	8.625 219.1	365 1620	21326 94863	0.17 4.32	2	⅝ × 4 M16 x 4	10.88 276	13.38 340	10.25 260	13.13 333	2.50 64	11.4 5.2

7 Working Pressure and End Load are total, from all internal and external loads, based on standard weight (ANSI) steel pipe, standard roll or cut grooved in accordance with Victaulic specifications. See the Listings/Approvals section of this publication for ratings on other pipe.

8 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.

9 Number of bolts required equals number of housing segments.

NOTES

- 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 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 009N couplings. IMPORTANT: Gaskets intended for the Style 009 or Style 009V couplings cannot be used with the Style 009N 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 similar benefits as a FlushSeal gasket for dry pipe systems. It should be noted that standard Victaulic Flush-Seal™ gaskets are not compatible and cannot be used with the FireLock EZ™ couplings.

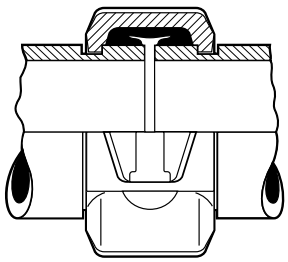
6.0 REFERENCE MATERIALS

Publication 05.01: Seal Selection Guide

I-009N/009H: Installation Instructions FireLock EZ™ Rigid Coupling

Victaulic® Flexible Coupling Style 75

06.05



Exaggerated for clarity

Approvals/Listings

See Victaulic publication 10.01 for details

See Victaulic publication 02.06 for portable water approvals if applicable.

Product Description

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

The Victaulic standard flexible coupling offering for grade "EHP" or "T" gaskets is the Style 177 installation-ready flexible coupling. For all available sizes, the Style 177 is the standard flexible coupling Victaulic supplies in North America for piping systems using Grade "EHP" or "T" gaskets. Contact Victaulic for further details.

Performance data presented in this document is based on use with standard wall, carbon steel pipe. For use with stainless steel pipe, please reference publication 17.09 for pressure ratings and end loads. When used on light wall stainless steel pipe, the Victaulic RX roll set must be used to roll groove the pipe. For further information regarding roll grooving stainless steel, refer to publication 17.01.

WARNING

- **Victaulic RX roll sets must be used when grooving light-wall/thin-wall stainless steel pipe for use with Victaulic Couplings.**

Failure to use Victaulic RX roll sets when grooving light-wall/thin-wall stainless steel pipe may cause joint failure, resulting in serious personal injury and/or property damage.

NOTICE

- **Victaulic RX grooving rolls must be ordered separately. They are identified by a silver color and the designation RX on the front of the roll sets.**

Job/Owner

System No.	
Location	

Contractor

Submitted By	
Date	

Engineer

Spec Section	
Paragraph	
Approved	
Date	

06.05 1470 Rev O Updated 09/2014

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: (specify choice)

- ☑ Standard: Orange enamel.
- ☐ Optional: Hot dipped galvanized and others.

Gasket: (specify choice[1])

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

- ☐ **Grade "E" EPDM**
  EPDM (Green stripe color code). Temperature range –30°F to +230°F/–34°C to +110°C. May be specified for cold and hot water service within the specified temperature range plus a variety of dilute acids, oil-free air and many chemical services. UL Classified in accordance with ANSI/NSF 61 for cold +73°F/+23°C and hot +180°F/+82°C potable water service and ANSI/NSF 372. NOT COMPATIBLE FOR PETROLEUM SERVICES.
- ☐ **Grade "T" Nitrile**
  Nitrile (Orange stripe color code). Temperature range 20°F to +180°F/29°C to +82°C. May be specified for petroleum products, air with oil vapors, vegetable and mineral oils within the specified temperature range. Not compatible for hot water services over +150°F/+66°C or for hot dry air over +140°F/+60°C.

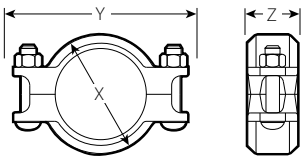
1 Services listed are General Service Guidelines only. It should be noted that there are services for which these gaskets are not compatible. Reference should always be made to the latest Victaulic Gasket Selection Guide for specific gasket service guidelines and for a listing of services which are not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

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

Dimensions

Style 75



Nominal Size	Actual Outside Diameter	Maximum Working Pressure [2]	Maximum End Load [2]	Allow. Pipe End Separation[3]	Deflection from Centerline[3]		Bolt/Nut[4]	Dimensions			Approx. Weight Each
					Per Cplg. Degrees	Pipe inches/ft. mm/m		X	Y	Z	
inches mm	inches mm	psi kPa	lbs. N	inches mm			(No.) size inches	inches mm	inches mm	inches mm	lbs. kg
1 25	1.315 33.4	500 3450	680 3025	0–0.06 0–1.6	2°–43′	0.57 48	2– ⅜ x 2	2.38 61	4.27 108	1.77 45	1.3 0.6
1 ¼ 32	1.660 42.2	500 3450	1080 4805	0–0.06 0–1.6	2°–10′	0.45 38	2– ⅜ x 2	2.68 68	4.61 117	1.77 45	1.4 0.6
1 ½ 40	1.900 48.3	500 3450	1420 6320	0–0.06 0–1.6	1°–56′	0.40 33	2– ⅜ x 2	2.91 74	4.82 122	1.77 45	1.5 0.6
2 50	2.375 60.3	500 3450	2215 9860	0–0.06 0–1.6	1°–31′	0.32 26	2– ⅜ x 2	3.43 87	5.22 133	1.88 48	1.7 0.8
2 ½ 65	2.875 73.0	500 3450	3245 14440	0–0.06 0–1.6	1°–15′	0.26 22	2– ⅜ x 2	3.88 98	5.68 144	1.88 48	1.9 0.9
76.1 mm	3.000 76.1	500 3450	3535 15730	0–0.06 0–1.6	1°–12′	0.26 22	2– ⅜ x 2	4.00 102	5.90 150	1.88 48	1.9 0.9
3 80	3.500 88.9	500 3450	4800 21360	0–0.06 0–1.6	1°–2′	0.22 18	2– ½ x 2 ¾	4.50 114	7.00 178	1.88 48	2.9 1.3
3 ½ 90	4.000 101.6	500 3450	6300 28035	0–0.06 0–1.6	0°-54′	0.19 16	2– ½ x 2 ¾	5.00 127	7.50 191	1.88 48	2.9 1.3
4 100	4.500 114.3	500 3450	7950 35380	0–0.13 0–3.2	1°–36′	0.34 28	2– ½ x 2 ¾	5.80 147	8.03 204	2.13 54	4.1 1.9
108.0 mm	4.250 108.0	450 3100	6380 28395	0–0.13 0–3.2	1°–41′	0.35 29	2– 12 x 70	5.55 141	7.79 198	2.13 54	3.7 1.7
4 ½ 120	5.000 127.0	450 3100	8820 39250	0–0.13 0–3.2	1°–26′	0.25 21	2– ⅝ x 3 ¼	6.13 156	9.43 240	2.13 54	5.5 2.5
5 125	5.563 141.3	450 3100	10935 48660	0–0.13 0–3.2	1°–18′	0.27 23	2– ⅝ x 3 ¼	6.88 175	10.07 256	2.13 54	5.8 2.6
133.0 mm	5.250 133.0	450 3100	9735 43325	0–0.13 0–3.2	1°–21′	0.28 24	2– 16 x 82.5	6.55 166	9.37 238	2.13 54	6.0 2.7
139.7 mm	5.500 139.7	450 3100	10665 47460	0–0.13 0–3.2	1°–18′	0.28 24	2– ⅝ x 3 ¼	6.80 173	9.59 244	2.13 54	6.3 2.9
152.4 mm	6.000 152.4	450 3100	12735 56670	0–0.13 0–3.2	1°–12′	0.21 18	2– ⅝ x 3 ¼	7.38 187	10.48 266	1.88 48	6.2 2.8
6 150	6.625 168.3	450 3100	15525 69085	0–0.13 0–3.2	1°–5′	0.23 18	2– ⅝ x 3 ¼	8.00 203	11.07 281	2.13 54	7.0 3.2
159.0 mm	6.250 159.0	450 3100	13800 61405	0–0.13 0–3.2	1°–9′	0.24 20	2– 16 x 82.5	7.63 194	10.49 266	2.13 54	6.8 3.1
8 200	8.625 219.1	450 3100	26280 116945	0–0.13 0–3.2	0°–50′	0.18 14	2– ¾ x 4 ¼	10.34 263	13.97 355	2.13 59	12.4 5.6

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

3 Allowable Pipe End Separation and Deflection figures show the maximum nominal range of movement available at each joint for standard **roll** grooved pipe. Figures for standard **cut** grooved pipe may be doubled. These figures are maximums; for design and installation purposes these figures should be reduced by: 50% for ¾ – 3 ½"/20 – 90 mm; 25% for 4"/100 mm and larger.

4 Number of bolts required equals number of housing segments.

General Notes

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

WARNING: FOR ONE TIME FIELD TEST ONLY, the Maximum Joint Working Pressure may be increased to 1½ times the figures shown.

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.

Trademarks
Victaulic® is a registered trademark of Victaulic Company.

Engineering Specification

Job Name _____ Contractor _____

Job Location _____ Approval _____

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

Approval _____ Representative _____

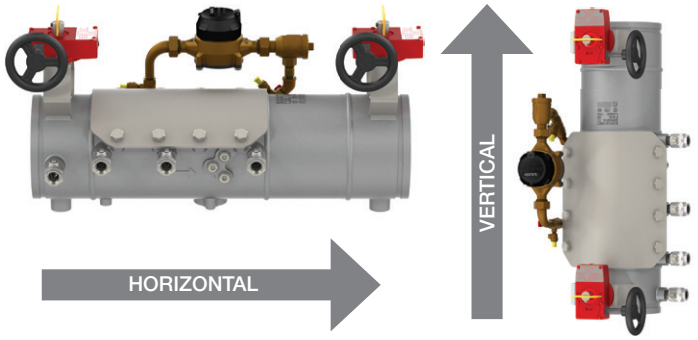
LEAD FREE*

Deringer™ 30

Double Check Detector Assembly DCDA-II

2" – 8"

The DeringerTM 30 Double Check Detector assembly prevents non-health hazard pollutants from entering a potable water supply system when backpressure and/or backsiphonage conditions occur. Used primarily on fire sprinkler systems when monitoring of unauthorized water use is required.



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

Features

- Integral shutoff valves for indoor or outdoor application
- 100% stainless steel housing
- Tamper-resistant test cocks
- Patented Dual-action™ check modules
  - Poppet action at low flow
  - Swing action at high flow
- Lead Free* Bronze bypass components
- CuFt or gallons bypass meter
- DCDA-II single check bypass
- Silicone elastomer check discs
- Prewired supervisory switches
- Flange adapters available
- IPS grooved ends

Specification

The Deringer 30 Double Check Detector assembly shall use two independent Dual-action check modules and two integral resiliently seated shutoff valves, all of which shall be contained within a single rigid valve housing constructed entirely of 304 stainless steel. Both integral shutoff valves shall include prewired supervisory tamper switches contained within a weatherproof actuator housing approved for both indoor and outdoor use. The Dual-action check modules shall operate as a "poppet style" check under low flow conditions, operate as a "swing style" check under high flow conditions, and use replaceable silicone elastomer sealing discs. The assembly test cocks shall be handle-less and operate by a tamper resistant actuator. The assembly shall have a single full access service port and cover with an in-line replaceable elastomer seal. The bypass assembly shall include a meter registering either gallons or cubic feet, a single check valve, and required test cocks. The assembly shall be serviceable without special tools and approved for both horizontal and vertical applications.

Materials

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

Pressure — Temperature

Temperature Range: 33°F – 140°F

Working Pressure: 10 – 175 psi

NOTICE

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

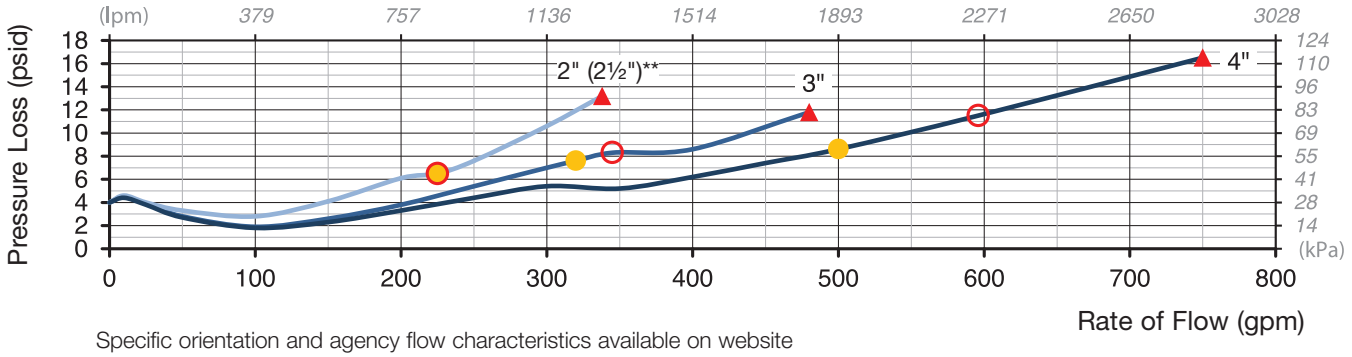
*The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.

Noryl is a registered trademark of SHPP Global Technologies B.V.

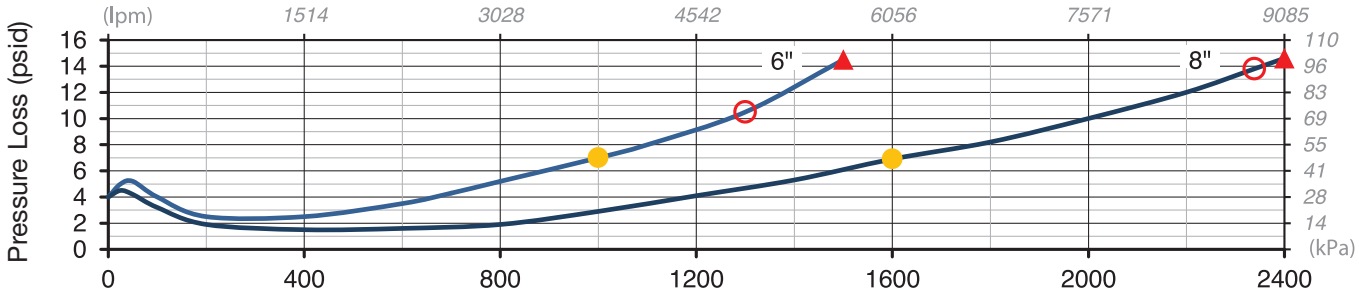
AMES FIRE & WATERWORKS

A WATTS Brand

Flow Performance



Specific orientation and agency flow characteristics available on website



Specific orientation and agency flow characteristics available on website

Standards

AWWA C510-07 Compliant

NSF/ANSI/CAN 61
UL Certified Health Effects

UL Certified to NSF/ANSI/CAN 372
LEAD FREE

End Connections

- IPS Groove for Steel Pipe: AWWA C606
- Flange Adapters: ANSI B16.1 Class 125

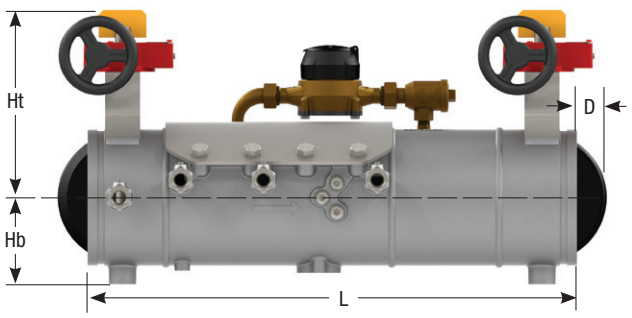
CLASSIFIED C UL US WATER QUALITY [MH64212] ANSI/NSF/CAN 61 ANSI/NSF/CAN 372 5NS5

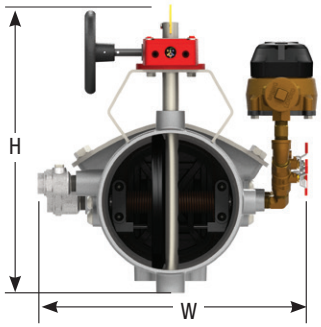
FM APPROVED

ASSE 1048

USC APPROVED

Dimensions — Weights





Size	Model	Ht		Hb		L		D		H		W		Weight	
in.		*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lb*	*kg*
2 (2½)**	30	7.1	180	2.9	74	22.3	566	0.0	0	10.0	254	11.0	279	52	24
2½	30	7.1	180	2.9	74	18.7	475	0.0	0	10.0	254	11.0	279	47	21
3	30	7.4	188	2.9	74	18.7	475	0.0	0	10.3	262	11.0	279	49	22
4	30	7.9	201	3.1	79	18.7	475	0.2	5	11.0	279	11.0	279	51	23
6	30	10.1	257	4.5	114	25	726	1.0	25	14.6	370	16.9	429	99	45
8	30	10.4	264	5.4	137	31.0	787	1.8	46	15.8	401	13.8	351	150	68

**2" size uses a 2½" assembly with 2½" groove to 2" female NPT adapter and couplings. Adapter and couplings ship unassembled.

AMES FIRE & WATERWORKS

A WATTS Brand

USA: Backflow T: (978) 689-6066 • F: (978) 975-8350 • AmesFireWater.com
USA: Control Valves T: (713) 943-0688 • F: (713) 944-9445 • AmesFireWater.com
Canada: T: (905) 332-4090 • F: (905) 332-7068 • AmesFireWater.ca
Latin America: T: (52) 55-4122-0138 • AmesFireWater.com

FireLock™ Check Valves

Series 717 Check Valve

Series 717H High Pressure Check Valve

10.08

Series 717H
High-Pressure Check Valve
(2 – 3"/DN50 – DN80)

Series 717
(2 ½ – 3"/73 mm – DN80)

Series 717
(4 – 12"/DN100 – DN300)

1.0 PRODUCT DESCRIPTION

Available Sizes

- 2 – 3"/DN50 – DN80 (Series 717H)
- 2 ½ – 12"/73 mm – DN300 (Series 717)

Pipe Material

- Carbon Steel, Schedule 10, Schedule 40. For use with alternative materials, please contact Victaulic.

Maximum Working Pressure

- Up to 365 psi/2517 kPa/25 bar
- Working pressure dependent on pipe size, valve size, and approval requirements.

Application

- Designed for use in fire protection systems.
- Prevents backflow.
- Single-disc mechanism incorporates a spring-assisted feature for non-slamming operation.
- Can be installed either vertically (flow upwards only) or horizontally.
- Valve body cast with arrow indicator to assist with proper valve orientation.
- Optional upstream and downstream pressure taps included on select sizes. See Section 3.0.
- Provided with grooved ends.
- Rated for ambient temperature use in fire protection systems.

Available End Connections

- Victaulic Original Groove System (OGS) groove

2.0 CERTIFICATION/LISTINGS

c UL us LISTED · FM APPROVED · VdS · LPCB LPS 1186: Issue 3.1 Cert/LPCB Ref. 104h/01 · CCC · CE · UKCA

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

2.0 CERTIFICATION/LISTINGS

Approvals/Listings

Series 717H

Size		Approval/Listing Service Pressures				
Nominal inches DN	**Actual Outside Diameter** inches mm	**cULus** psi kPa	**FM** psi kPa	**LPCB** psi kPa	**VdS** psi kPa	**CCC** psi kPa
2 DN50	2.375 60.3	365 2517	365 2517	365 2517	363 2500	N/A
2½	2.875 73.0	365 2517	365 2517	365 2517	N/A	363 2500
DN65	3.000 76.1	365 2517	365 2517	365 2517	363 2500	363 2500
3 DN80	3.500 88.9	365 2517	365 2517	365 2517	363 2500	363 2500

Series 717

Size		Approval/Listing Service Pressures				
Nominal inches DN	**Actual Outside Diameter** inches mm	**cULus** psi kPa	**FM** psi kPa	**LPCB** psi kPa	**VdS** psi kPa	**CCC** psi kPa
2½	2.875 73.0	250 1725	N/A	N/A	N/A	N/A
DN65	3.000 76.1	250 1725	N/A	N/A	232 1600	N/A
3 DN80	3.500 88.9	250 1725	N/A	N/A	232 1600	N/A
4 DN100	4.500 114.3	365 2517	365 2517	365 2517	363 2500	363 2500
DN125	5.500 139.7	365 2517	365 2517	365 2517	363 2500	363 2500
5	5.563 141.3	365 2517	365 2517	365 2517	N/A	N/A
	6.500 165.1	365 2517	365 2517	365 2517	N/A	363 2500
6 DN150	6.625 168.3	365 2517	365 2517	365 2517	363 2500	N/A
8 DN200	8.625 219.1	365 2517	365 2517	348 2400	247 1700	363 2500
10 DN250	10.750 273.0	250 1725	250 1725	250 1725	N/A	232 1600
12 DN300	12.750 323.9	250 1725	250 1725	250 1725	N/A	N/A

3.0 SPECIFICATIONS – MATERIAL

Body:

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

Body Coating:

☐ Series 717H Body: Black Paint
☐ Series 717H Endface: Electroless Nickel conforming to ASTM B733
☐ Series 717 (2 ½ – 3"/73mm – DN80): PPS Coating
☐ Standard: Series 717 (4 – 12"/DN100 – DN300): Black Paint
☐ Optional: Series 717 (4 – 12"/DN100 – DN300): PPS Coating

Body Seat:

☐ Series 717H: Nitrile O-ring installed into an Electroless Nickel plating conforming to ASTM B733
☐ Series 717 (2 ½" – 3"/73 mm – DN80): PPS Coated Ductile Iron
☐ Series 717 (4 – 12"/DN100 – DN300): Ductile Iron with Electroless Nickel plating conforming to ASTM B733

Disc Seal or Coating: (specify choice[1])

☐ **Nitrile (Series 717H only)**
☐ **EPDM**
NOT COMPATIBLE FOR PETROLEUM SERVICES.

Discs:

☐ Series 717H: CF8M Cast Stainless Steel
☐ Series 717 (2 ½ – 3"/73 mm – DN80): Aluminum bronze with elastomer seal
☐ Series 717 (4 – 12"/DN100 – DN300): Elastomer encapsulated disc.

Shaft:

☐ Series 717H: Brass
☐ Series 717 (2 ½ – 3"/73 mm – DN80): Type 416 Stainless Steel
☐ Series 717 (4 – 12"/DN100 – DN300): Type 316 Stainless Steel

Spring:

☐ Type 302/304 Stainless Steel

Shaft Plug:

☐ Series 717H: Carbon Steel Zinc Plated
☐ Series 717: Carbon Steel Zinc Plated

Pipe Plug:

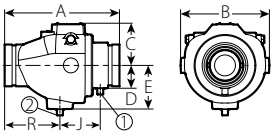
☐ Series 717H: Carbon Steel Zinc Plated
☐ Series 717: Carbon Steel Zinc Plated

Optional Pressure Taps:

☐ Series 717H: Available on all sizes
☐ Series 717: Available on sizes 4 – 12"/DN100 – DN300

4.0 DIMENSIONS

Series 717H



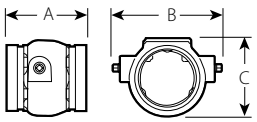
①½" NPT or ½" BSPT Upstream Drain
②½" NPT or ½" BSPT Downstream Drain

Typical 2 – 3"/50 – 80 mm

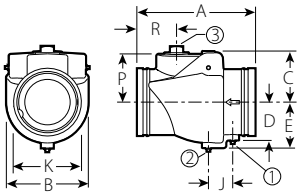
Size		Dimensions						Weight
Nominal inches DN	**Actual Outside Diameter** inches mm	**E to E** **A** inches mm	**B** inches mm	**C** inches mm	**E** inches mm	**J** inches mm	**R** inches mm	**Approx. (Each)** lb kg
2 DN50	2.375 60.3	8.66 220	6.46 165	3.23 83	3.02 77	2.80 72	4.25 108	10.7 4.9
2½	2.875 73.0	9.37 238	6.94 177	3.31 85	3.40 87	3.38 86	4.38 112	13.8 6.3
 DN65	3.000 76.1	9.37 238	6.94 177	3.31 85	3.40 87	3.38 86	4.38 112	13.8 6.3
3 DN80	3.500 88.9	9.62 244	7.44 189	3.53 90	3.65 93	3.38 86	4.63 118	20.0 9.1

4.1 DIMENSIONS

Series 717

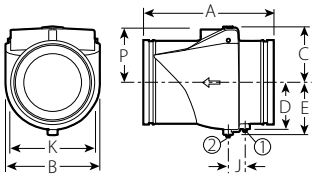


Typical 2 ½ – 3"/73 mm – DN80



①½" NPT or ½" BSPT Upstream Drain
②½" NPT or ½" BSPT Downstream Drain
③2" NPT or 2" BSPT (Drain Optional)

Typical 4 – 8"/DN100 – DN200



①½" NPT or ½" BSPT Upstream Drain
②½" NPT or ½" BSPT Downstream Drain

Typical 10 – 12"/DN250 – DN300

Size		Dimensions								Weight
Nominal inches DN	**Actual Outside Diameter** inches mm	**E to E** **A** inches mm	**B** inches mm	**C** inches mm	**E** inches mm	**J** inches mm	**K** inches mm	**P** inches mm	**R** inches mm	**Approx. (Each)** lb kg
2½	2.875 73.0	3.88 99	4.26 109	3.57 91	– –	– –	– –	– –	– –	3.6 1.6
DN65	3.000 76.1	3.88 99	4.26 108	3.57 91	– –	– –	– –	– –	– –	3.6 1.6
3 DN80	3.500 88.9	4.25 108	5.06 129	4.17 106	– –	– –	– –	– –	– –	4.5 2.0
4 DN100	4.500 114.3	9.63 245	6.00 152	3.88 99	3.50 89	2.00 51	4.50 114	3.50 89	3.35 85	20.0 9.1
DN125	5.500 139.7	10.50 267	6.80 173	4.50 114	4.17 106	2.15 55	5.88 149	4.08 104	3.98 101	27.0 12.2
5	5.563 141.3	10.50 267	6.80 173	4.50 114	4.17 106	2.15 55	5.88 149	4.08 104	3.98 101	27.0 12.2
	6.500 165.1	11.50 292	8.00 203	5.00 127	4.50 114	2.38 60	6.67 169	4.73 120	3.89 99	38.0 17.2
6 DN150	6.625 168.3	11.50 292	8.00 203	5.00 127	4.50 114	2.38 60	6.67 169	4.73 120	3.89 99	38.0 17.2
8 DN200	8.625 219.1	14.00 356	9.88 251	6.06 154	5.65 144	2.15 55	8.85 225	5.65 144	5.75 146	64.0 29.0
10 DN250	10.750 273.0	17.00 432	12.00 305	7.09 180	6.69 170	2.15 55	10.92 277	6.73 171	– –	100.0 45.4
12 DN300	12.750 323.9	19.50 495	14.00 356	8.06 205	7.64 194	2.51 64	12.81 325	7.73 196	– –	140.0 63.5

5.0 PERFORMANCE

Flow Characteristics

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

Formulas for C_v/K_v values:

$$\Delta P = \frac{Q^2}{C_v^2}$$

$$Q = C_v \times \sqrt{\Delta P}$$

Where:
Q = Flow (GPM)
ΔP = Pressure Drop (psi)
C_v = Flow Coefficient

$$\Delta P = \frac{Q^2}{K_v^2}$$

$$Q = K_v \times \sqrt{\Delta P}$$

Where:
Q = Flow (m^3/hr)
ΔP = Pressure Drop (Bar)
K_v = Flow Coefficient

Series 717H

Size		Flow Characteristics
Nominal inches DN	**Actual Outside Diameter** inches mm	**Full Open** C_v K_v
2 DN50	2.375 60.3	160 138
2½	2.875 73.0	215 186
 DN65	3.000 76.1	215 186
3 DN80	3.500 88.9	315 272

Series 717

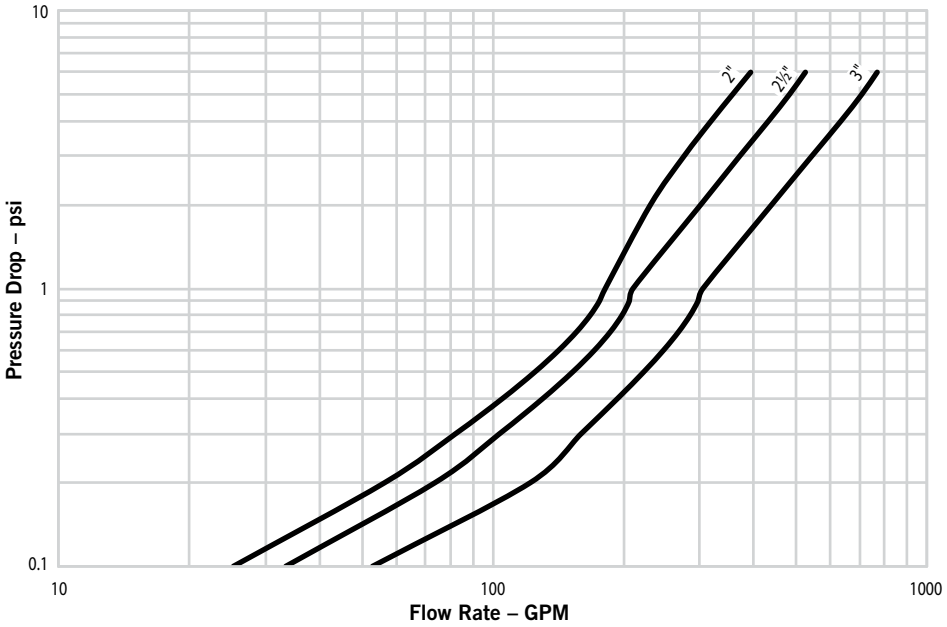
Size		Flow Characteristics
Nominal inches DN	**Actual Outside Diameter** inches mm	**Full Open** C_v K_v
2½	2.875 73.0	140 121
 DN65	3.000 76.1	140 121
3 DN80	3.500 88.9	250 216
4 DN100	4.500 114.3	390 337
 DN125	5.500 139.7	700 606
5	5.563 141.3	700 606
	6.500 165.1	1000 865
6 DN150	6.625 168.3	1000 865
8 DN200	8.625 219.1	1800 1557
10 DN250	10.750 273.0	3000 2595
12 DN300	12.750 323.9	4200 3633

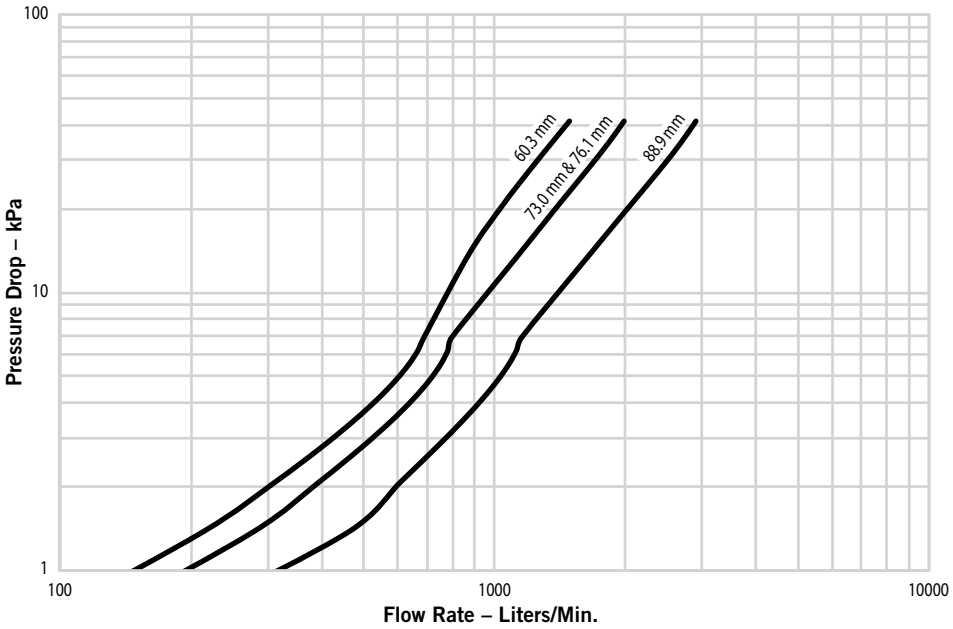
5.0 PERFORMANCE (CONTINUED)

Flow Characteristics

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

S717H



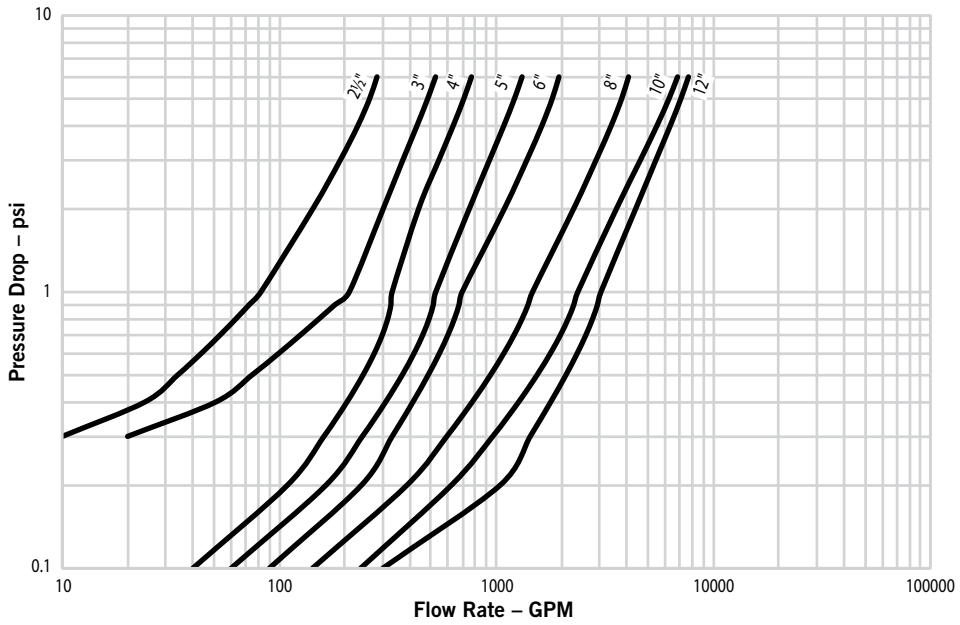


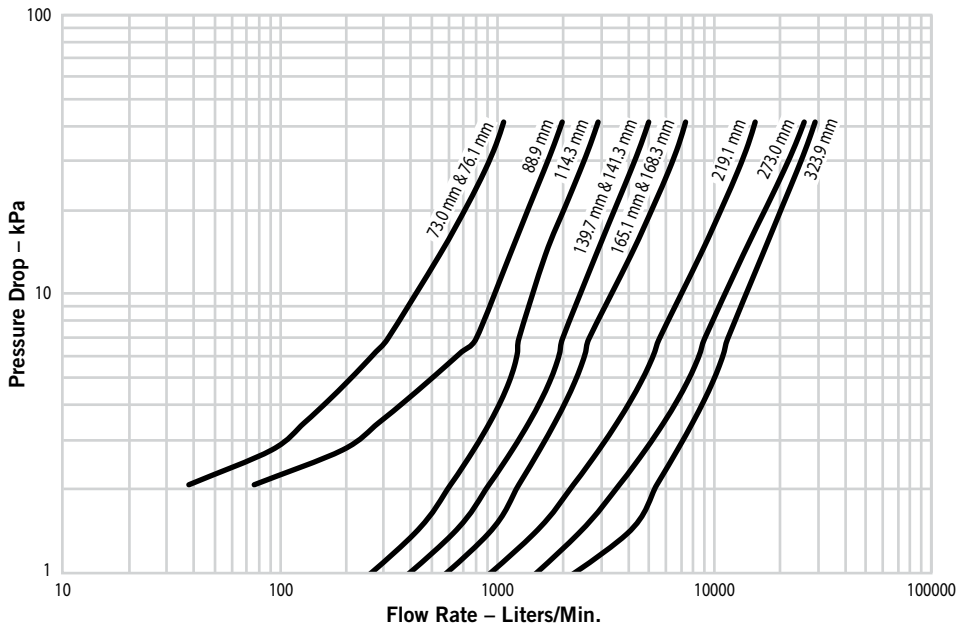
5.1 PERFORMANCE

Flow Characteristics

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

S717





6.0 NOTIFICATIONS

⚠ WARNING

- **Read and understand all instructions before attempting to install any Victaulic products.**
- **Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**
- **Confirm that any equipment, branch lines, or sections of piping that may have been isolated for/during testing or due to valve closures/positioning are identified, depressurized, and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**
- **Wear safety glasses, hardhat, and foot protection.**

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

- **These products shall be used only in fire protection systems that are designed and installed in accordance with current, applicable National Fire Protection Association (NFPA) standards, or equivalent standards, and in accordance with applicable building and fire codes. These standards and codes contain important information regarding protection of systems from freezing temperatures, corrosion, mechanical damage, etc.**
- **The installer shall understand the use of this product and why it was specified for the particular application.**
- **The installer shall understand common industry safety standards and potential consequences of improper product installation.**
- **It is the system designer's responsibility to verify suitability of materials for use with the intended fluid media within the piping system and external environment.**
- **The material specifier shall evaluate the effect of chemical composition, pH level, operating temperature, chloride level, oxygen level, and flow rate on materials to confirm system life will be acceptable for the intended service.**

Failure to follow installation requirements and local and national codes and standards could compromise system integrity or cause system failure, resulting in death or serious personal injury and property damage.

7.0 REFERENCE MATERIALS

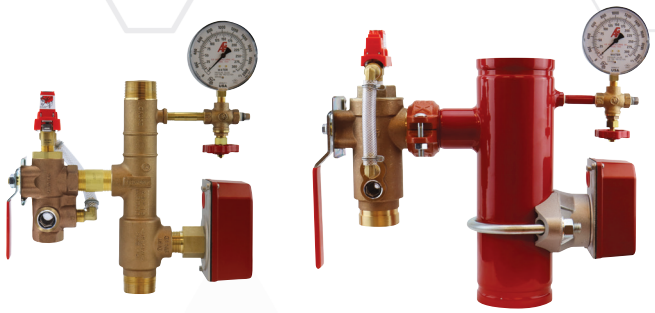
05.01: Seal Selection Guide
10.01: Regulatory Approval Reference Guide
29.01: Terms and Conditions/Warranty
I-100: Field Installation Handbook

RiserPACK®

Commercial Model 8000/8011

QUALITY COMPONENTS FOR FIRE SPRINKLER SYSTEMS

Model 8011
Includes Pressure Relief Valve and Drain Trim



Model 8000

Commercial TESTanDRAIN Risers

AGF Commercial RiserPACK Model 8000 and Model 8011 are 300 PSI rated, pre-assembled risers and floor control assemblies designed for NFPA 13 wet pipe fire sprinkler systems.

RiserPACK models come in a full range of sizes (1¼"-8"). 1¼" to 2" manifolds are cast bronze with THD x THD, THD x GRV, or GRV x GRV connections. 2"-8" manifolds are powder coated, schedule 10 steel with rolled grooves (schedule 40 steel manifolds with cut grooves are also available). Both models include a standard water flow switch, pressure gauge with 3-way universal gauge valve, and a Model 2500 or 2511 TESTanDRAIN valve. TESTanDRAIN valves allow system access for integrity testing, and offer a full-range of orifice sizes (K2.8-K25.2).

8011 models include a UL listed/FM approved, 175 PSI rated Model 7000L pressure relief valve with drain trim (200, 225, and 300 PSI ratings are also available). The Model 7000L pressure relief valve features a temporary system lock-out, which allows it to be closed with a hex wrench or lock-out tag during hydrostatic testing so it does not have to be removed from the system.

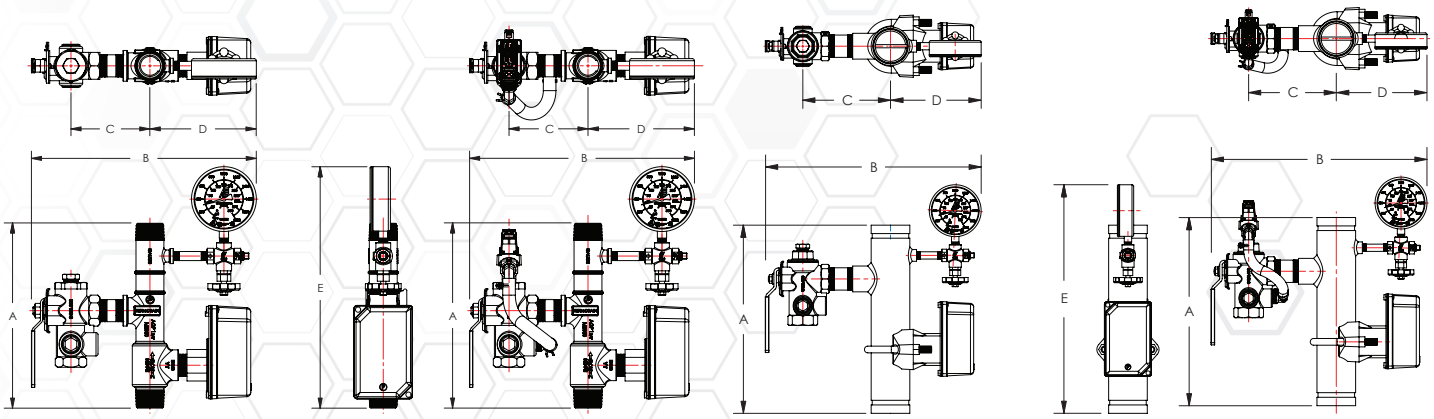
Models

Commercial RiserPACK Part Numbers																													
Orifice Size		BRONZE														STEEL													
		1¼"		1½"						2"						2"		2½"		3"		4"		6"		8"			
K-Factor	Fractional	Thd		Thd		Thd x Grv		Grv		Thd		Thd x Grv		Grv		Grv													
		8000	8011	8000	8011	8000	8011	8000	8011	8000	8011	8000	8011	8000	8011	8000	8011	8000	8011	8000	8011	8000	8011	8000	8011	8000	8011	8000	8011
2.8	3/8"	8310A	8410A	8320A	8420A	8325A	8425A	8330A	8430A	8340A	8440A	8345A	8445A	8350A	8450A	8355A	8455A	8360A	8460A	8370A	8470A	8380A	8480A	8390A	8490A	8398A-28	8498A-28		
4.2	7/16"	8311A	8411A	8321A	8421A	8326A	8426A	8331A	8431A	8341A	8441A	8346A	8446A	8351A	8451A	8356A	8456A	8361A	8461A	8371A	8471A	8381A	8481A	8391A	8491A	8398A-42	8498A-42		
5.6	1/2"	8312A	8412A	8322A	8422A	8327A	8427A	8332A	8432A	8342A	8442A	8347A	8447A	8352A	8452A	8357A	8457A	8362A	8462A	8372A	8472A	8382A	8482A	8392A	8492A	8396A-56	8496A-56		
8.0	17/32"	8313A	8413A	8323A	8423A	8328A	8428A	8333A	8433A	8343A	8443A	8348A	8448A	8353A	8453A	8358A	8458A	8363A	8463A	8373A	8473A	8383A	8483A	8393A	8493A	8398A-80	8498A-80		
11.2 (ELO)	5/8"	8314A	8414A	8324A	8424A	8329A	8429A	8334A	8434A	8344A	8444A	8349A	8449A	8354A	8454A	8359A	8459A	8364A	8464A	8374A	8474A	8384A	8484A	8394A	8494A	8398A-112	8498A-112		
14.0 (ESFR)	3/4"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8365A	8465A	8375A	8475A	8385A	8485A	8395A	8495A	8398A-140	8498A-140		
25.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8386A	8486A	8396A	8496A	8398-252	8498-252		

Most Popular Models

Dimensions

Model 8000 | Model 8011 | Model 8000 | Model 8011



	Size	A	B	C	D	E
Bronze	1¼"	11" (279 mm)	14" (356 mm)	4¾" (120 mm)	6½" (165 mm)	14½" (369 mm)
	1½"	12" (305 mm)	14¼" (362 mm)	4¾" (120 mm)	6¾" (171 mm)	15½" (394 mm)
	2"	12" (305 mm)	14¾" (374 mm)	5" (127 mm)	7" (178 mm)	15½" (394 mm)
Steel	2"	14" (356 mm)	12½" (318 mm)	5⅝" (143 mm)	6" (152 mm)	17" (432 mm)
	2½"	14" (356 mm)	14¼" (362 mm)	5⅝" (143 mm)	6" (152 mm)	17⅛" (435 mm)
	3"	14" (356 mm)	15" (381 mm)	5⅞" (149 mm)	6⅜" (162 mm)	17⅛" (435 mm)
	4"	14" (356 mm)	19" (483 mm)	8" (203 mm)	6⅞" (175 mm)	17⅛" (435 mm)
	6"	14" (356 mm)	21⅛" (537 mm)	9⅛" (232 mm)	7⅞" (200 mm)	17⅛" (435 mm)
	8"	14" (356 mm)	23⅛" (587 mm)	10⅛" (257 mm)	8⅞" (225 mm)	17⅛" (435 mm)

Sizes have been rounded to the highest millimeter

- 1¼", 1½", and 2" RiserPACK models feature a TESTanDRAIN model 2500/2511 with 1" THD x THD inlet and oulet.
- 2½" and 3" RiserPACK models feature a TESTanDRAIN model 2500/2511 with 1¼" THD x THD inlet and outlet.
- 4"-8" RiserPACK models feature a TESTanDRAIN model 2500/2511 with 2" GRV x GRV inlet and outlet.

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

USA Patent and Other Patents Pending

For use on wet fire sprinkler systems.

Manifold Sizes
1¼", 1½", 2", 2½", 3", 4", 6", and 8"

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

Connections
Inlet.....THD, GRV, or THD x GRV
Outlet.....THD, GRV, or THD x GRV

Installation Orientation
Horizontal
Vertical

Rating
300 PSI

Compliance
NFPA 13
NYC-BSA No. 720-87-SM

Approvals
UL/ULC (EX27218, EX4019, EX4533 & EX6266)
FM

UL LISTED
FM APPROVED

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

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

Victaulic® FireLock™ Series FL-QR
Standard Coverage, Quick Response
Upright, Pendent and Recessed Pendent Sprinklers
K2.8 (4.0), K4.2 (6.1), K5.6 (8.1), K8.0 (11.5)

41.01




1.0 PRODUCT DESCRIPTION

QUICK RESPONSE UPRIGHT SPRINKLERS				
SIN	**V2815**	**V4215**	**V2704**	**V3402**
ORIENTATION	UPRIGHT	UPRIGHT	UPRIGHT	UPRIGHT
K-FACTOR[1]	2.8 Imp./4.0 S.I.	4.2 Imp./6.1 S.I.	5.6 Imp./8.1 S.I.	8.0 Imp./11.5 S.I.
CONNECTION	½" NPT/15mm BSPT	½" NPT/15mm BSPT	½" NPT/15mm BSPT/IGS	¾" NPT/20mm BSPT/IGS
MAX. WORKING PRESSURE	175 psi/1200 kPa	175 psi/1200 kPa	175 psi/1200 kPa cULus 250 psi /1725 kPa	175 psi/1200 kPa
GLOBE RE-DESIGNATION	GL2815	GL4215	–	–
GLOBE EQUIVALENT	–	–	GL5615	GL8118

QUICK RESPONSE PENDENT SPRINKLERS				
SIN	**V2801**	**V4201**	**V2708**	**V3406**
ORIENTATION	PENDENT	PENDENT	PENDENT	PENDENT
K-FACTOR[1]	2.8 Imp./4.0 S.I.	4.2 Imp./6.1 S.I.	5.6 Imp./8.1 S.I.	8.0 Imp./11.5 S.I.
CONNECTION	½" NPT/15mm BSPT	½" NPT/15mm BSPT	½" NPT/15mm BSPT/IGS	¾" NPT/20mm BSPT/IGS
MAX. WORKING PRESSURE	175 psi /1200 kPa	175 psi /1200 kPa	175 psi /1200 kPa cULus 250 psi/1725 kPa	175 psi/1200 kPa
GLOBE RE-DESIGNATION	GL2801	GL4201	–	–
GLOBE EQUIVALENT	–	–	GL5601	GL8101

QUICK RESPONSE RECESSED PENDENT SPRINKLERS				
SIN	**V2801**	**V4201**	**V2708**	**V3406**
ORIENTATION	PENDENT	PENDENT	PENDENT	PENDENT
K-FACTOR[1]	2.8 Imp./4.0 S.I.	4.2 Imp./6.1 S.I.	5.6 Imp./8.1 S.I.	8.0 Imp./11.5 S.I.
CONNECTION	½" NPT/15mm BSPT	½" NPT/15mm BSPT	½" NPT/15mm BSPT/IGS	¾" NPT/20mm BSPT/IGS
MAX. WORKING PRESSURE	175 psi/1200 kPa	175 psi/1200 kPa	175 psi/1200 kPa cULus 250 psi/1725 kPa	175 psi/1200 kPa
ESCUTCHEON	Recessed	Recessed	Recessed	Recessed
GLOBE RE-DESIGNATION	GL2801	GL4201	–	–
GLOBE EQUIVALENT	–	–	GL5601	GL8101

AVAILABLE GUARDS/SHIELDS				
SPRINKLER	**V28**	**V42**	**V27**	**V34**
Upright			■	■
Pendent			■	■

AVAILABLE WRENCHES							
SPRINKLER	**V56-2 Recessed**	**V56 Open End**	**V27-2 Recessed**	**V27 Open End**	**V34-2 Recessed**	**V34 Open End**	**3/16 Hex-Bit**
V2815 and V4215		■					
V2707 and V2704				■			■
V3402						■	■
V2801, and V4201	■	■					
V2706 and V2708			■	■			■
V3406					■	■	■

[1] For K-Factor when pressure is measured in Bar, multiply S.I. units by 10.0.

Factory Hydrostatic Test: 100% @ 500 psi/3447 kPa/34 Bar
Min. Operating Pressure: UL/FM: 7 psi/48 kPa/.5 Bar
VdS: 5 psi/35 kPa/.35 Bar (Upright only)
Temperature Rating: See tables in section 2.0

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

2.0 CERTIFICATIONS/LISTINGS

0786 0832

UPRIGHT APPROVALS/LISTINGS				
SIN	**V2815**	**V4215**	**V2704**	**V3402**
Nominal K Factor Imperial	2.8	4.2	5.6	8.0
Nominal K Factor S.I.[2]	4.0	6.1	8.1	11.5
Orientation	UPRIGHT	UPRIGHT	UPRIGHT	UPRIGHT
	Approved Temperature Ratings F°/C°			
cULus	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C
FM	–	–	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C
LPCB/UKCA	–	–	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C
VdS/CE	–	–	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C
CCC K-ZSTZ	–	–	155°F/68°C 175°F/79°C 286°F/141°C	155°F/68°C 286°F/141°C

[2] For K-Factor when pressure is measured in Bar, multiply S.I. units by 10.

PENDENT APPROVALS/LISTINGS				
SIN	**V2801**	**V4201**	**V2708**	**V3406**
Nominal K Factor Imperial	2.8	4.2	5.6	8.0
Nominal K Factor S.I.[2]	4.0	6.1	8.1	11.5
Orientation	PENDENT	PENDENT	PENDENT	PENDENT
Escutcheon	Flush/Extended	Flush/Extended	Flush/Extended	Flush/Extended
	Approved Temperature Ratings F°/C°			
cULus	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C
FM	–	–	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C
CCC K-ZSTX	–	–	155°F/68°C 200°F/93°C 286°F/141°C	155°F/68°C 286°F/141°C

[2] For K-Factor when pressure is measured in Bar, multiply S.I. units by 10.

NOTES

- Reference the specific agency website listings for the most up-to-date certification information.
- Where cULus Listed, Polyester and VC-250 Coatings Listed as Corrosion Resistant (V3402 with VC-250 Only)
- Where FM Approved, VC-250 Coating Approved as Corrosion Resistant
- New York City Acceptance - All UL Listed and/or FM Approved sprinklers acceptable to NYC per section 28-113 of the Administrative Code and the OTCR Rule.

2.0 CERTIFICATIONS/LISTINGS (CONTINUED)

RECESSED PENDENT APPROVALS/LISTINGS				
SIN	**V2801**	**V4201**	**V2708**	**V3406**
Nominal K Factor Imperial	2.8	4.2	5.6	8.0
Nominal K Factor S.I.[2]	4.0	6.1	8.1	11.5
Orientation	PENDENT	PENDENT	PENDENT	PENDENT
Escutcheon	Recessed	Recessed	Recessed	Recessed
Approved Temperature Ratings F°/C°				
cULus	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C
FM WITH ½" ADJUSTMENT ESCUTCHEON ONLY	–	–	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C
CCC K-ZSTX	–	–	155°F/68°C 200°F/93°C 286°F/141°C	155°F/68°C 286°F/141°C

[2] For K-Factor when pressure is measured in Bar, multiply S.I. units by 10.

NOTES

- Reference the specific agency website listings for the most up-to-date certification information.
- Where cULus Listed, Polyester and VC-250 Coatings Listed as Corrosion Resistant (V3402 with VC-250 Only)
- Where FM Approved, VC-250 Coating Approved as Corrosion Resistant
- New York City Acceptance - All UL Listed and/or FM Approved sprinklers acceptable to NYC per section 28-113 of the Administrative Code and the OTCR Rule.

3.0 SPECIFICATIONS – MATERIAL

Deflector: Bronze

Bulb Nominal Diameter: 3.0 mm

Load Screw: Bronze

Pip Cap: Bronze

Spring Seal: PTFE coated Beryllium nickel alloy

Frame: Brass

Lodgement Spring: Stainless steel

Installation Wrench: Ductile iron

Sprinkler Frame Finishes:

- Plain brass
- Chrome plated
- White polyester painted[3, 4]
- Flat black polyester painted[3, 4]
- Custom polyester painted[3, 4]
- VC-250[5]

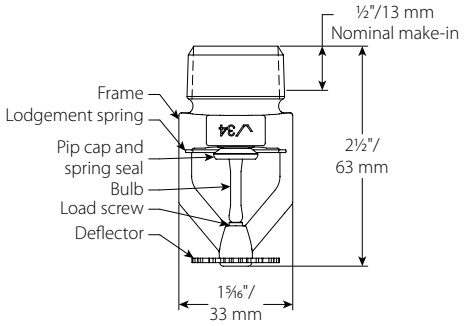
[3] Not available on the Intermediate Level Style Pendent.

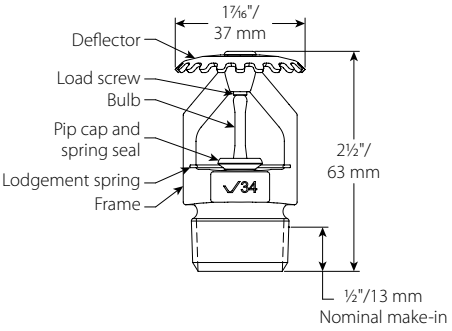
[4] UL Listed for corrosion resistance.

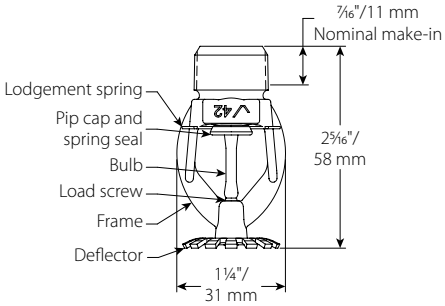
[5] UL Listed and FM Approved for corrosion resistance.

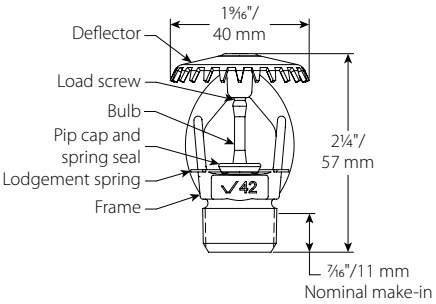
NOTE

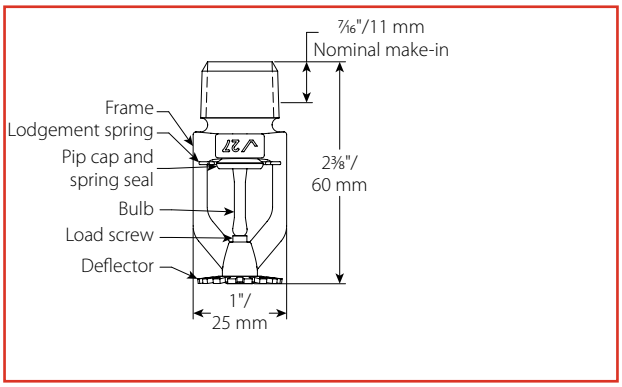
- For cabinets and other accessories, refer to separate sheet.

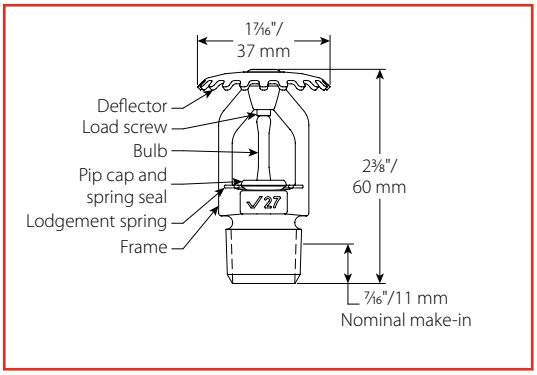




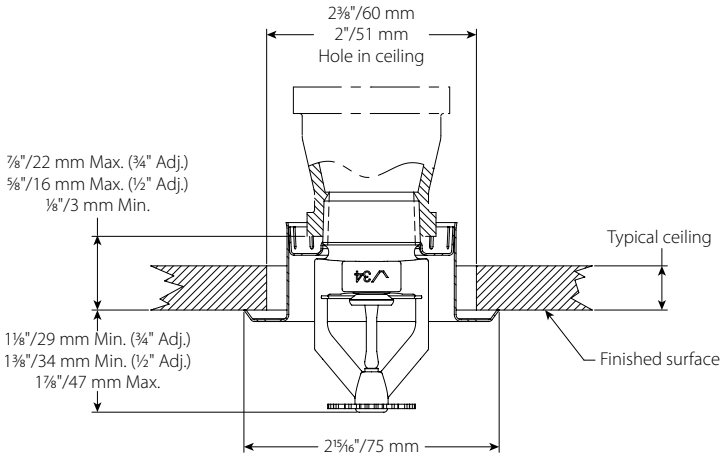


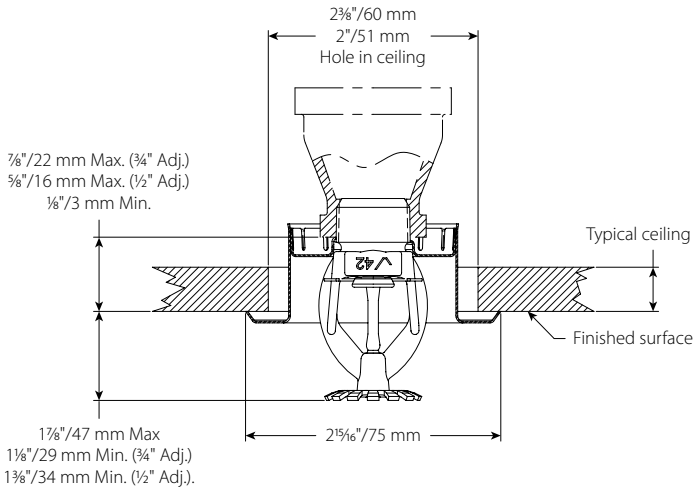


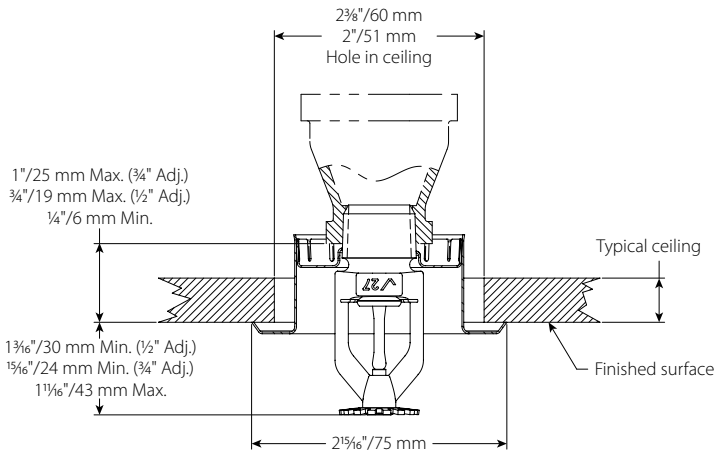




4.0 DIMENSIONS







5.0 PERFORMANCE

Sprinkler systems are to be designed to and installed per NFPA, FM Datasheets, and any local standards.

6.0 NOTIFICATIONS

⚠ WARNING

- **Read and understand all instructions before attempting to install any Victaulic products.**
- **Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**
- **Wear safety glasses, hardhat, and foot protection.**

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

- **These products shall be used only in fire protection systems that are designed and installed in accordance with current, applicable National Fire Protection Association (NFPA) standards, or equivalent standards, and in accordance with applicable building and fire codes. These standards and codes contain important information regarding protection of systems from freezing temperatures, corrosion, mechanical damage, etc.**
- **The installer shall understand the use of this product and why it was specified for the particular application.**
- **The installer shall understand common industry safety standards and potential consequences of improper product installation.**
- **It is the system designer's responsibility to verify suitability of materials for use with the intended fluid media within the piping system and external environment.**
- **The material specifier shall evaluate the effect of chemical composition, pH level, operating temperature, chloride level, oxygen level, and flow rate on materials to confirm system life will be acceptable for the intended service.**

Failure to follow installation requirements and local and national codes and standards could compromise system integrity or cause system failure, resulting in death or serious personal injury and property damage.

7.0 REFERENCE MATERIALS

Ratings: All glass bulbs are rated for temperatures from -67°F/-55°C.

I-40: Victaulic FireLock™ Automatic Sprinklers Installation and Maintenance Instructions

I-V9: Style V9 Victaulic FireLock™ IGS™ Installation-Ready™ Sprinkler Coupling Installation Instructions

5.0 PERFORMANCE

Sprinkler is to be installed and designed as per NFPA, FM Datasheets, or any local standards.

6.0 NOTIFICATIONS

⚠ WARNING

- **Read and understand all instructions before attempting to install any Victaulic products.**
- **Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**
- **Wear safety glasses, hardhat, and foot protection.**

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

- **These products shall be used only in fire protection systems that are designed and installed in accordance with current, applicable National Fire Protection Association (NFPA 13, 13D, 13R, etc.) standards, or equivalent standards, and in accordance with applicable building and fire codes. These standards and codes contain important information regarding protection of systems from freezing temperatures, corrosion, mechanical damage, etc.**
- **The installer shall understand the use of this product and why it was specified for the particular application.**
- **The installer shall understand common industry safety standards and potential consequences of improper product installation.**
- **It is the system designer's responsibility to verify suitability of materials for use with the intended fluid media within the piping system and external environment.**
- **The material specifier shall evaluate the effect of chemical composition, pH level, operating temperature, chloride level, oxygen level, and flow rate on materials to confirm system life will be acceptable for the intended service.**

Failure to follow installation requirements and local and national codes and standards could compromise system integrity or cause system failure, resulting in death or serious personal injury and property damage.

7.0 REFERENCE MATERIALS

Ratings: All glass bulbs are rated for temperatures from -67°F/-55°C.

1-40: Victaulic FireLock™ Automatic Sprinklers Installation and Maintenance Instructions

I-V9: Style V9 Victaulic FireLock™ IGS™ Installation-Ready™ Sprinkler Coupling Installation Instructions

FireLock™ Series FL-QR/DRY
Standard Coverage, Quick Response Dry, Upright, Pendent and Recessed Pendent Sprinklers K5.6 (8.1), K8.0 (11.5)

45.01

1.0 PRODUCT DESCRIPTION

UPRIGHT QUICK RESPONSE DRY SPRINKLERS		
SIN	**V3602**	**V3604**
ORIENTATION	UPRIGHT	UPRIGHT
K-FACTOR[1]	5.6 Imp./8.1 S.I.	8.0 Imp./11.5 S.I.
CONNECTION	1" NPT/25mm BSPT/1" IGS	1" NPT/25mm BSPT/1" IGS
MAX WORKING PRESSURE	175 psi (1200 kPa)	175 psi (1200 kPa)
ESCUTCHEON	Plain	Plain
GLOBE EQUIVALENT	GL5639	GL8139

PENDENT QUICK RESPONSE DRY SPRINKLERS		
SIN	**V3606**	**V3616**
ORIENTATION	PENDENT	PENDENT
K-FACTOR[1]	5.6 Imp./8.1 S.I.	8.0 Imp./11.5 S.I.
CONNECTION	1" NPT/25mm BSPT/1" IGS	1" NPT/25mm BSPT/1" IGS
MAX WORKING PRESSURE	175 psi (1200 kPa)	175 psi (1200 kPa)
ESCUTCHEON	Plain/Flush/Sleeve and Skirt/Extended	Plain/Flush/Sleeve and Skirt/Extended
GLOBE EQUIVALENT	GL5635	GL8135

RECESSED PENDENT QUICK RESPONSE DRY SPRINKLERS		
SIN	**V3606**	**V3616**
ORIENTATION	PENDENT	PENDENT
K-FACTOR[1]	5.6 Imp./8.1 S.I.	8.0 Imp./11.5 S.I.
CONNECTION	1" NPT/25mm BSPT/1" IGS	1" NPT/25mm BSPT/1" IGS
MAX WORKING PRESSURE	175 psi (1200 kPa)	175 psi (1200 kPa)
ESCUTCHEON	Recessed	Recessed
GLOBE EQUIVALENT	GL5635	GL8135

AVAILABLE GUARDS/SHIELDS			
SPRINKLER	**V34/V36**	**V34/V36 Intermediate Shield**	**V34/V36 Int. Shield/Guard**
Upright	■		■
Pendent	■	■	

AVAILABLE WRENCHES			
Sprinkler	**V36 Recessed**	**V36 Open End**	**3/16 Hex Bit (V9)**
Upright		■	■
Pendent	■	■	■

Factory Hydrostatic Test: 100% @ 500 psi/3447 kPa/34 bar

Min. Operating Pressure: Pendent: 7 psi/48 kPa/.5 bar
Upright: 12 psi/83 kPa/0.8 bar

Temperature Rating: See tables in section 2.0

[1] For K-Factor when pressure is measured in bar, multiply S.I. units by 10.0.

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

2.0 CERTIFICATION/LISTINGS

APPROVALS/LISTINGS		
SIN	**V3602**	**V3604**
Nominal K Factor Imperial	5.6	8.0
Nominal K Factor S.I.[2]	8.1	11.5
Orientation	Upright	Upright
Escutcheon	Plain	Plain
	Approved Temperature Ratings F°/C°	
cULus	135°F/57°C 155°F/68°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 200°F/93°C 286°F/141°C
FM	135°F/57°C 155°F/68°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 200°F/93°C
CCC	155°F/68°C	–

APPROVALS/LISTINGS				
SIN	**V3606**	**V3616**	**V3606**	**V3616**
Nominal K Factor Imperial	5.6	8.0	5.6	8.0
Nominal K Factor S.I.[2]	8.1	11.5	8.1	11.5
Orientation	Pendent	Pendent	Pendent	Pendent
Escutcheon	Plain, Flush, Slv & Skt, Ext	Plain, Flush, Slv & Skt, Ext	Recessed	Recessed
	Approved Temperature Ratings F°/C°			
cULus	135°F/57°C 155°F/68°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 200°F/93°C 286°F/141°C
FM	135°F/57°C 155°F/68°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 200°F/93°C	135°F/57°C 155°F/68°C 200°F/93°C
CCC	155°F/68°C	155°F/68°C	155°F/68°C	155°F/68°C
CE	N/A	135°F/57°C 155°F/68°C 200°F/93°C 286°F/141°C	N/A	135°F/57°C 155°F/68°C 200°F/93°C

[2] For K-Factor when pressure is measured in Bar, multiply S.I. units by 10.

NOTES

- Listings and approval as of printing.
- Temperatures are UL Listed for ordinary hazards for V3606 and V3616 dry sprinklers up to 48"/1219mm length.
- CCCf approved for V3606 and V3616 dry sprinklers 79 to 1304 mm/3.1 – 51.3" in length.
- V3616 dry sprinklers are FM-Approved and CE-certified from 5" (127mm) to 30" (762mm) length.

3.0 SPECIFICATIONS – MATERIAL

Deflector: Stainless Steel

Bulb Nominal Diameter: 3.0mm

Split Spacer: Stainless Steel

Load Screw: Brass

Pip Cap: Stainless Steel

Spring Seal Assembly: PTFE coated Beryllium nickel alloy and stainless steel

Frame: Brass

Inlet Fitting: Brass

Outer Tube: Galvanized steel pipe

Inner Tube: Stainless Steel

Orifice Insert: Stainless Steel

Escutcheon/Plate: 1010 - 1018 mild steel and stainless steel

Torsion Spring: SST wire

Installation Wrench: Ductile iron

Sprinkler Frame Finishes:

- Plain brass
- Chrome plated
- White painted[3, 4]
- Bright White painted[3, 4]
- Flat black painted[3, 4]
- Custom painted[3, 4]
- VC-250[5]

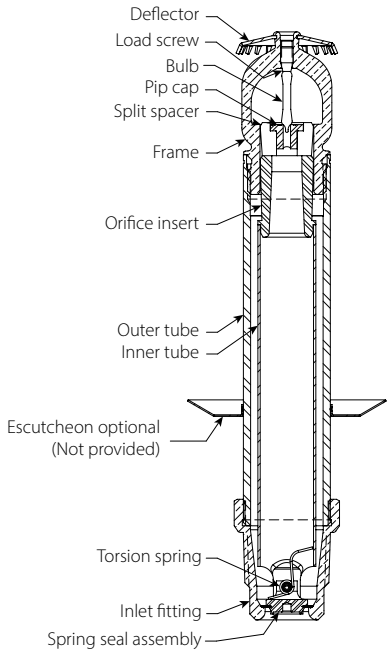
[3] Not available on the Intermediate Level Style Pendent.

[4] UL Listed for corrosion resistance.

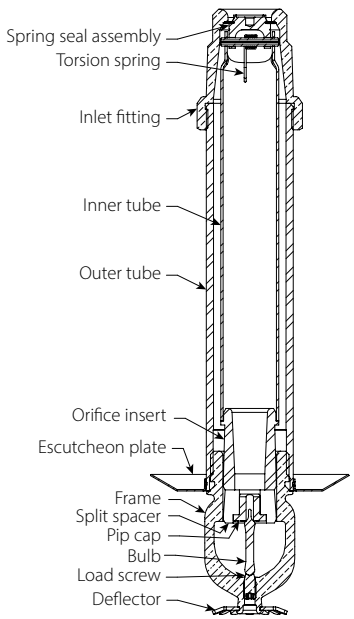
[5] UL Listed, FM Approved, and CE-certified for corrosion resistance.

NOTES

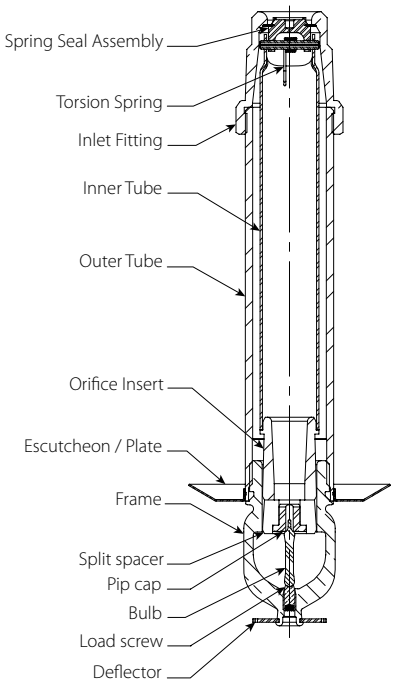
- Weather resistant escutcheon available upon request.
- For cabinets and other accessories refer to separate sheet.



Material Specifications
V3602, V3604



Material Specifications
V3606

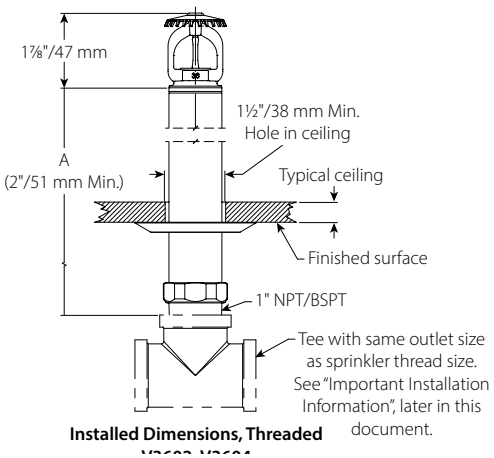


Material Specifications
V3616

4.0 DIMENSIONS

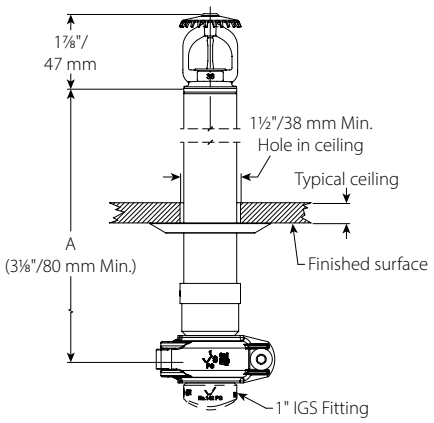
Standard offering includes made-on escutcheon with "A" dimension shown above. Use the "Adjustments for Optional Interchangeable Escutcheons" table when making optional field adjustments to the standard ordered escutcheon.

Adjustments for Interchangeable Escutcheons	
Escutcheon	**"A" Dimension Adjustment**
Plain Barrel	A=A
Flush	A=-¼"/6mm
Recessed	A=+¼"/6mm
Slv/Skrt	A=-1⅜"/35mm



Installed Dimensions, Threaded

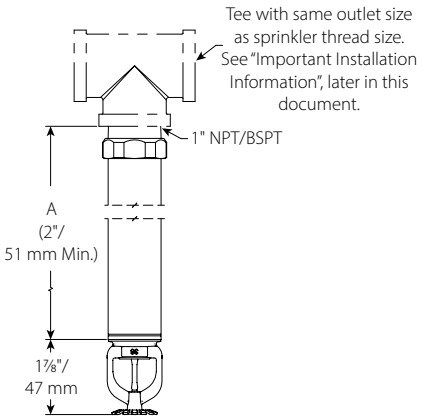
Installed Dimensions, Threaded
V3602, V3604



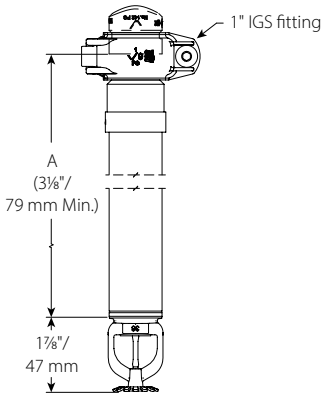
For wet system installation or dry/preaction systems installed in areas above 40˚F/5˚C

Installed Dimensions, Threaded
V3602, V3604

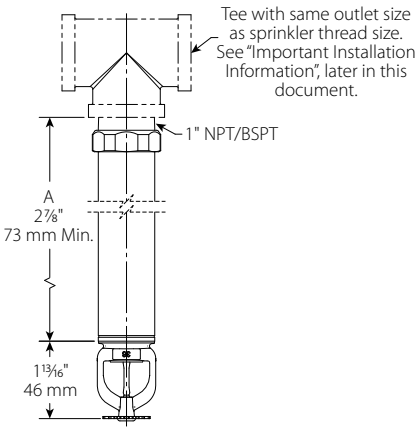
4.0 DIMENSIONS



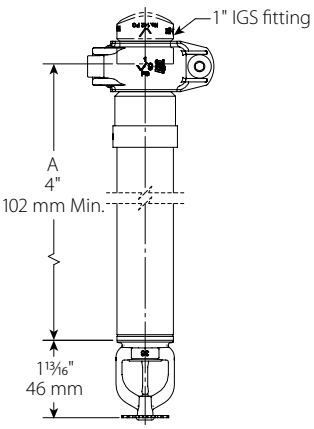
Plain Barrel, Threaded
V3606



For wet system installation or dry/preaction systems installed in areas above 40˚F/5˚C
Plain Barrel, Grooved
V3606

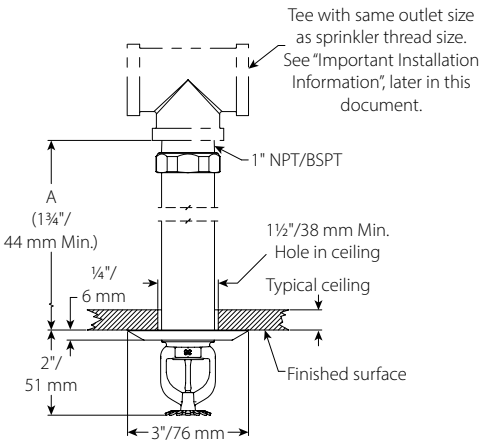


Plain Barrel, Threaded
V3616

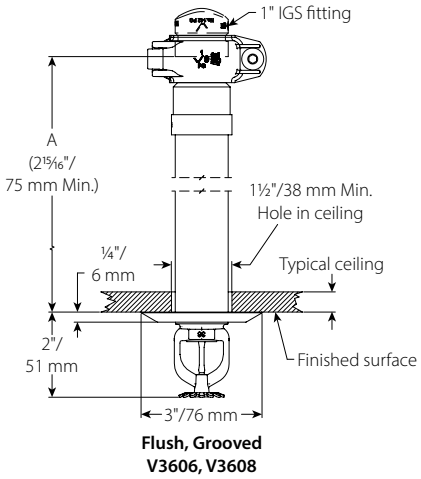


Plain Barrel, Grooved
V3616

4.0 DIMENSIONS

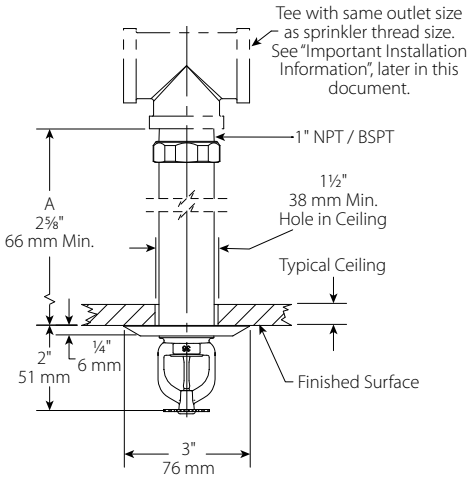


Flush, Threaded
V3606

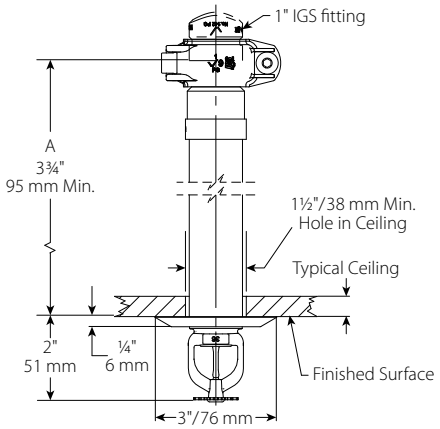


Flush, Grooved
V3606, V3608

For wet system installation or dry/preaction systems installed in areas above 40˚F/5˚C
Flush, Grooved
V3606

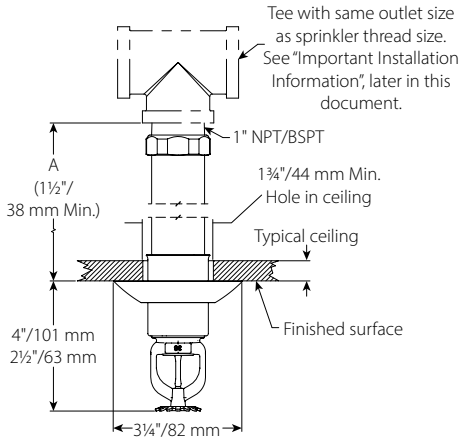


Flush, Threaded
V3616

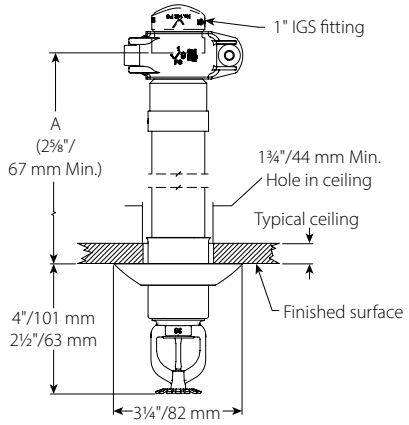


Flush, Grooved
V3616

4.0 DIMENSIONS (CONTINUED)

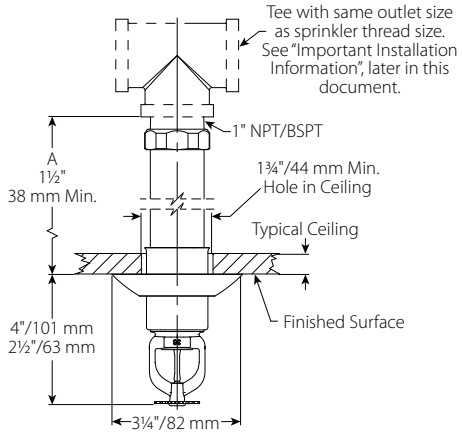


Sleeve and Skirt, Threaded
V3606

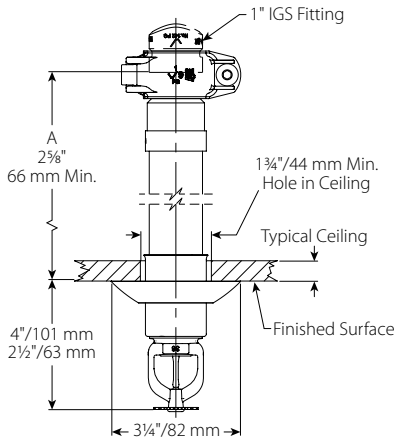


For wet system installation or dry/preaction systems installed in areas above 40˚F/5˚C

Sleeve and Skirt, Grooved
V3606

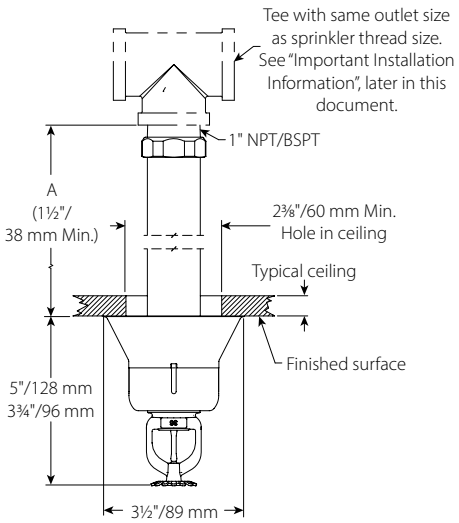


Sleeve and Skirt, Threaded
V3616

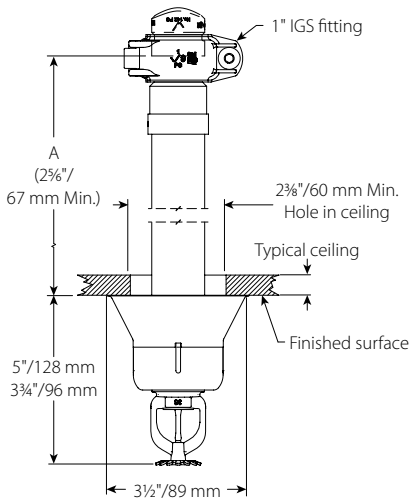


Sleeve and Skirt, Grooved
V3616

4.0 DIMENSIONS (CONTINUED)

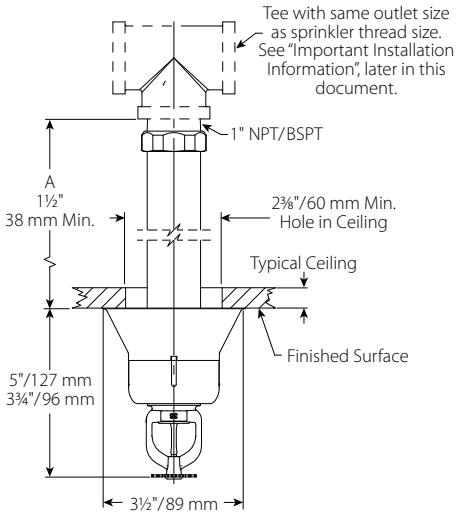


Extended
Sleeve and Skirt, Threaded
V3606

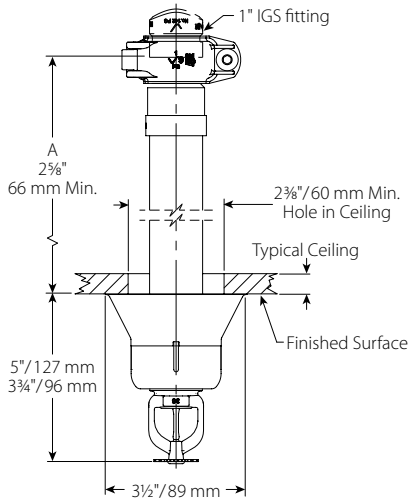


For wet system installation or dry/preaction systems installed in areas above 40˚F/5˚C

Extended
Sleeve and Skirt, Grooved
V3606

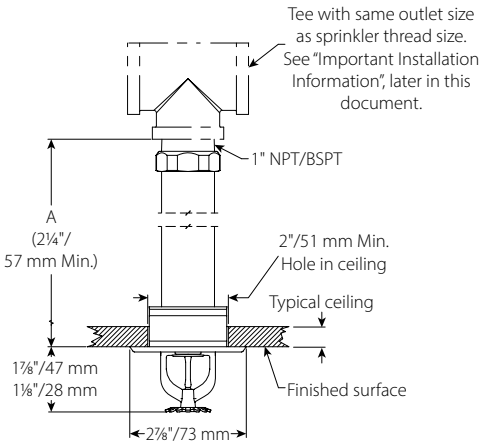


Extended
Sleeve and Skirt, Threaded
V3616

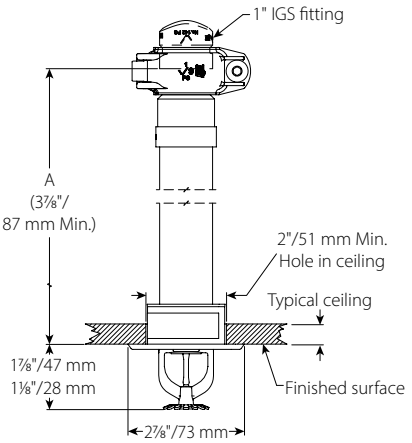


Extended
Sleeve and Skirt, Grooved
V3616

4.0 DIMENSIONS (CONTINUED)

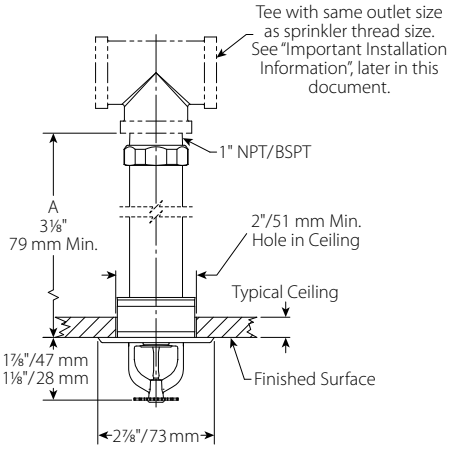


Recessed, Threaded
V3606

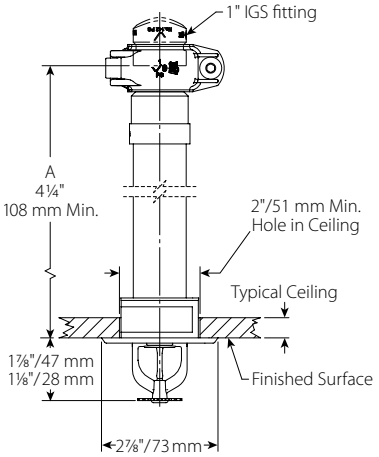


For wet system installation or dry/preaction systems installed in areas above 40˚F/5˚C

Recessed, Grooved
V3606

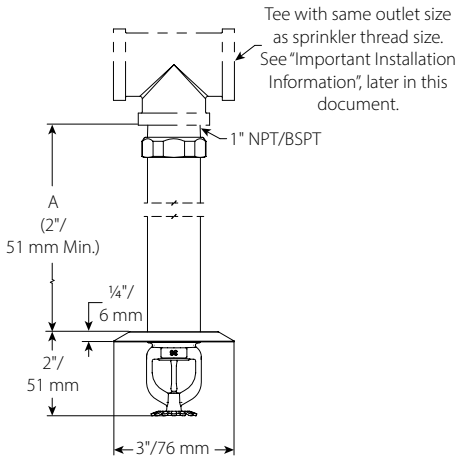


Recessed, Threaded
V3616

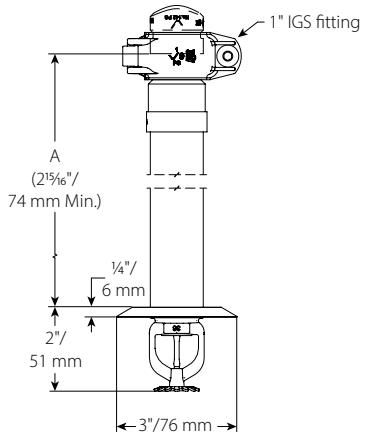


Recessed, Grooved
V3616

4.0 DIMENSIONS (CONTINUED)

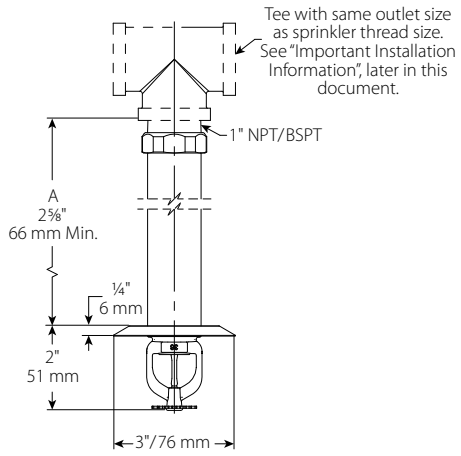


Intermediate, Threaded
V3606

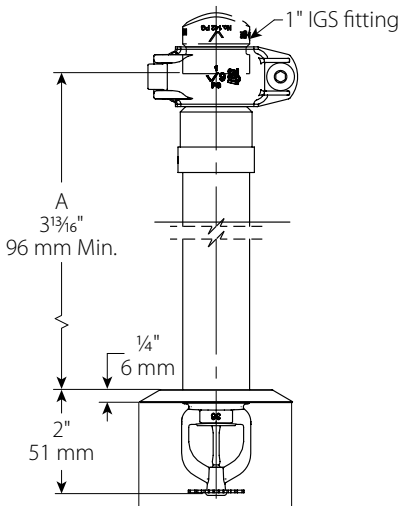


For wet system installation or dry/preaction systems installed in areas above 40˚F/5˚C

Intermediate, Grooved
V3606



Intermediate, Threaded
V3616



Intermediate, Grooved
V3616

5.0 PERFORMANCE

Sprinkler is to be installed and designed as per NFPA, FM Datasheets, or any local standards.

6.0 NOTIFICATIONS

⚠ WARNING

- **Read and understand all instructions before attempting to install any Victaulic products.**
- **Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**
- **Wear safety glasses, hardhat, and foot protection.**

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

- **These products shall be used only in fire protection systems that are designed and installed in accordance with current, applicable National Fire Protection Association (NFPA 13, 13D, 13R, etc.) standards, or equivalent standards, and in accordance with applicable building and fire codes. These standards and codes contain important information regarding protection of systems from freezing temperatures, corrosion, mechanical damage, etc.**
- **The installer shall understand the use of this product and why it was specified for the particular application.**
- **The installer shall understand common industry safety standards and potential consequences of improper product installation.**
- **It is the system designer's responsibility to verify suitability of materials for use with the intended fluid media within the piping system and external environment.**
- **The material specifier shall evaluate the effect of chemical composition, pH level, operating temperature, chloride level, oxygen level, and flow rate on materials to confirm system life will be acceptable for the intended service.**

Failure to follow installation requirements and local and national codes and standards could compromise system integrity or cause system failure, resulting in death or serious personal injury and property damage.

7.0 REFERENCE MATERIALS

Ratings: All glass bulbs are rated for temperatures from –67°F/–55°C.

1-40: Victaulic FireLock™ Automatic Sprinklers Installation and Maintenance Instructions

I-V9: Style V9 Victaulic FireLock™ IGS™ Installation-Ready™ Sprinkler Coupling Installation Instructions

FlexHead commercial fire sprinkler connections

1 9 8 7
25+
YEARS OF
EXCELLENCE
2 0 1 2

Submittal Package

FLEXHEAD® INDUSTRIES

The pioneers in flexible fire protection

www.flexhead.com

FBC SYSTEM COMPATIBLE · FM APPROVED · c UL us LISTED · LPCB

N.Y.C. MEA #261-99-E
CA: OPA-0672

The FlexHead Advantage

FlexHead QUALITY

- **Best corrosion resistance**
  Made from 100% 304 stainless steel
- **Excellent friction loss values**
  One-inch true-bore ID reducing the need to upsize mains and branch lines
- **Pressure surge protection**
  Fully braided connection improves pressure capability and prevents hose damage
- **Highest maximum working pressure**
  Rated up to 300 psig
- **No o-rings or gaskets**
  Welded connections reduce potential leak points at the inlet and outlet fitting
- **Tightest thread tolerances**
  Outlet fitting threads are machined from solid bar stock reducing potential leaks at the sprinkler head fit-up
- **Extra stability**
  Bracket has a full 6 inch base to stabilize the sprinkler head during installation, pressurization or activation

FlexHead FEATURES

- Is **seismically qualified** for use, eliminating the need for an oversized ring around the sprinkler head in seismic areas
- Has the same product design that is **dual listed** by both UL and FM
- Can be **produced domestically** to meet all your project requirements
- Has **serial identification** with complete audit tracking of finished goods
- Has a **comprehensive limited warranty** backed by an A++ insurance company

FBC SYSTEM COMPATIBLE · FM APPROVED · c UL us LISTED · LPCB

FLEXHEAD® INDUSTRIES

The pioneers in flexible fire protection

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FlexHead commercial fire sprinkler connections

Index

Whether your application is commercial, industrial, clean room, or institutional, FlexHead flexible sprinkler systems can save you time and money by offering reliable, highly efficient, seismically qualified, and environmentally responsible products.

Installation Instructions

Tools Required

Standard pipe wrench
Safety glasses
Adjustable wrench
Screwdriver

Materials Required

Sprinkler pipe thread sealant
Teflon® tape

1. Mounting Bracket Assembly M#: MP-24-BKT-2

Remove one (1) 3/8" bolt and one (1) 1/4" bolt from hardware bag in box. Remove (1) universal hub and one (1) mounting bracket from box. Thread the 3/8" bolt through side of universal hub. Select one (1) of the four (4) sprinkler port locations on mounting bracket.

A. Insert tab of universal hub into slot on mounting bracket as shown. (*Photo 1a*)

B. Flip bracket over and insert and tighten 1/4" attachment bolt thru pre-punched hole in bracket until tight as shown. *(Photo 1b)*

B. Thread the 3/8" bolt through side of universal hub.

2. Attach Mounting Bracket to T-bar Suspended Ceiling Grid

Note: These products are designed for use with Intermediate or Heavy Duty ceiling grids manufactured to ASTM C 635 *(Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings)* and ASTM C 636 *(Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels)* Designation.

A. From above the ceiling, position FlexHead Mounting Bracket ends on to T-bar grid so that the center hole in support bracket aligns directly above the sprinkler hole prepared in ceiling tile. Be sure the center section of the bracket end is on the outside of grid and base section is on the inside. Position the ends of the support bracket on the T-bar grid and push each of the two (2) ends of the bracket down to snap in place as shown. *(Photo 2)*

3. Anchor Bracket to T-bar Grid

A. Anchor bracket to t-bar grid with self tapping screw through bottom hole in bracket end into grid. Be sure to install self taping screw in lower hole of bracket end with attachment clip as shown. Repeat process on opposite end of bracket. Both ends of bracket should be anchored as shown. *(Photo 3)*

4. Connect FlexHead to Sprinkler Branch-line

Apply teflon tape and pipe sealant to one inch (1") threaded end of FlexHead Sprinkler Drop per NFPA guidelines. Attach one inch (1") threaded end of FlexHead Sprinkler Drop to branch-line per NFPA, State and local code guidelines.

The flexible hose with fitting is only intended to be installed with bends.

Do not use welded or braided hose section of FlexHead Sprinkler Drop for a wrenching surface. **Attach FlexHead Sprinkler Drop using rigid pipe end of units as wrenching surface as shown**. *(Photo 4)*

5. Secure FlexHead Sprinkler Drop to Mounting Bracket and Install Sprinkler Head

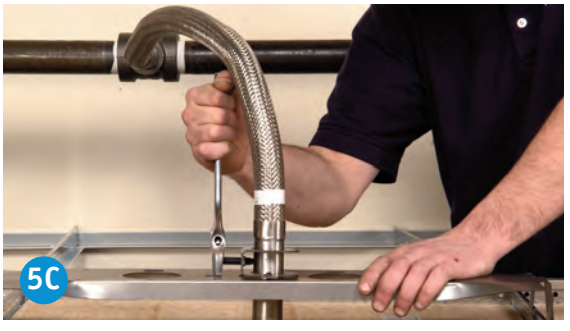
A. Bend the Flexhead to hold its desired position. **Do not overbend the flexible hose. FlexHead has a 3" (75mm) minimum bend radius per UL guidelines and 8" per FM guidelines.** Insert reducing coupling end of FlexHead Sprinkler Drop through center hole in previously installed support bracket and hole in ceiling tile. Make sure the hose is bent sufficiently so that the reducing coupling sits perfectly vertical in center hole of support bracket. Do not torque or twist FlexHead during installation process. *(Photo 5a)*

B. Attach sprinkler head, properly prepared with teflon tape and sealant to FlexHead Sprinkler Drop according to NFPA and sprinkler head manufacturer's guidelines. *(Photo 5b)*

WARNING!

These installation instructions are for qualified and/or licensed technicians in the Fire Protection field **ONLY.** Consult NFPA, FM, UL, state and local code guidelines prior to installation.

Failure to follow these specific instructions may cause personal injury. Installation technicians must read the entire manual prior to attempting installation of product. During maintenance or inspection of FlexHead product, facility fire protection system **MUST BE INACTIVE. DO NOT ATTEMPT RELOCATION OR MAINTENANCE WHEN FIRE PROTECTION SYSTEM IS "LIVE."**



C. Adjust FlexHead Sprinkler height to accommodate type of sprinkler head. When sprinkler head is in desired location, tighten the fastening bolt on center hub of support bracket by turning clockwise hand tight plus 1 turn (100 inch lbs) with wrench as shown. After tightening the bolt, tighten the nut hand tight plus 1 turn (100 inch lbs) with wrench. *(Photo 5c)*

6. Installation of the FlexHead Ceiling Sprinkler System Is Complete

- Test installation of sprinkler system for any leaks per NFPA Guidelines.
- Install sprinkler escutcheon from below ceiling per manufacturers guidelines.

NFPA 13 Code Language and Seismic Qualification

NFPA 13 Standard for Installation of Sprinkler Systems 2007 Edition

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9.2.1.3.3* Flexible Sprinkler Hose Fittings.

A. 9.2.1.3.3 Examples of areas of use include clean rooms, suspended ceilings, and exhaust ducts.

9.2.1.3.3.1 Listed flexible sprinkler hose fittings and its anchoring components, intended for use in installations connecting the sprinkler piping to sprinklers, shall be installed in accordance with the requirements of the listing including any installation instructions.

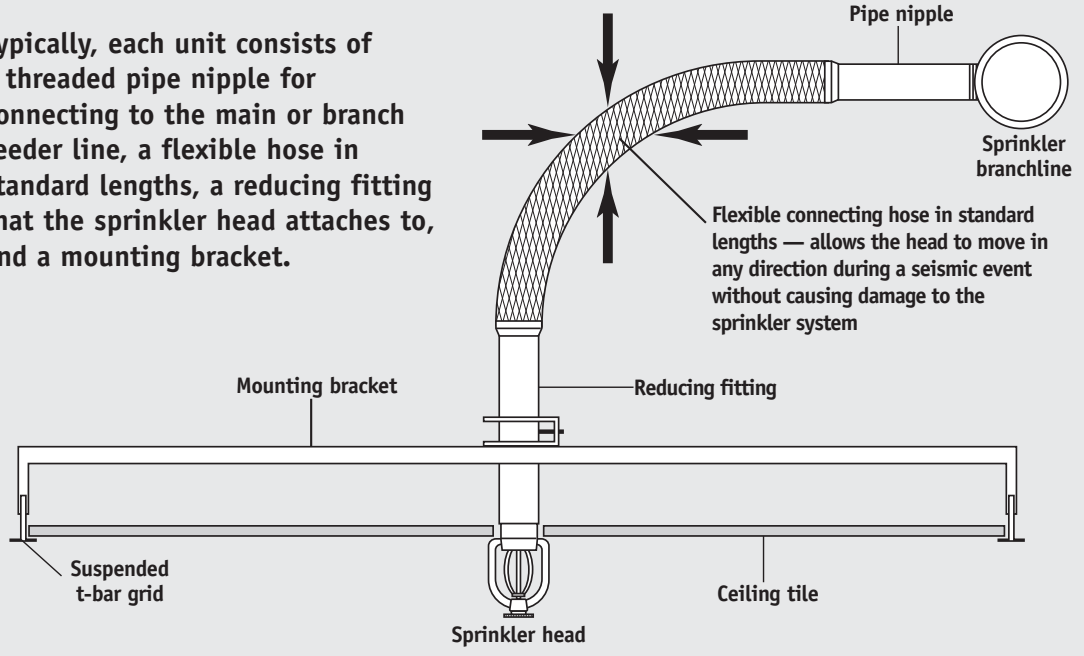
9.2.1.3.3.2 When installed and supported by suspended ceilings, the ceiling shall meet ASTM C-635 and shall be installed in accordance with ASTM C-636.

9.2.1.3.3.3* When flexible sprinkler hose fittings exceed 6 ft in length and are supported by a suspended ceiling a hanger(s) attached to the structure shall be required to ensure that the maximum unsupported length does not exceed 6 ft.

A. 9.2.1.3.3.3 The committee evaluation of flexible sprinkler hose fittings supported by suspended ceilings was based upon a comparison of the weight of a 6 ft, 1 in diameter sch 40 water-filled flexible hose fitting weighing approximately 9 lbs. The information provided to the committee showed that the maximum load shed to the suspended ceiling by the flexible hose fitting was approximately 6 lbs and that a suspended ceiling meeting ASTM C-635, *Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension of Acoustical Tile and Lay-In Panel Ceilings,* and installed in accordance with ASTM C-636, *Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels,* can substantially support the load. In addition, the supporting material showed that the flexible hose connection can be attached to the suspended ceilings because it allows the necessary deflections under seismic conditions.

FlexHead® Satisfies New Seismic Code Requirements

Typically, each unit consists of a threaded pipe nipple for connecting to the main or branch feeder line, a flexible hose in standard lengths, a reducing fitting that the sprinkler head attaches to, and a mounting bracket.



FlexHead Industries recently satisfactorily completed full-scale seismic qualification testing at the Structural Engineering Earthquake Simulation Laboratory located at the State University of New York at Buffalo. Tests were conducted using the International Code Council (ICC) acceptance criteria "ICC-ES AC-156 Seismic Qualification Testing of Nonstructural Components". This is the first time a sprinkler component has been seismically certified using test criteria accepted by the ICC.

- More than 90% of the states in the U.S. are adopting the International Building Code (IBC) that address, among other things, the installation of fire sprinkler systems in seismic zones.
- The latest version of the IBC defers to ASCE 7 for the sprinkler/ceiling design in Seismic Design Categories (SDC) C and D, E & F.
- In Seismic Design Category C, suspended ceilings are to be designed and installed in accordance with Ceilings & Interior Systems Construction Association (CISCA) recommendations for Zones 0-2; and sprinkler heads and other penetrations shall have a minimum of 1/4-inch clearance on all sides.
- In Seismic Design Categories D, E & F, suspended ceilings are to be designed and installed in accordance with CISCA recommendations for seismic Zones 3 and 4 with some additional requirements. Except where rigid braces are used to limit lateral deflections, sprinkler heads and other penetrations shall have a 2-inch oversized ring, sleeve, or adapter through the ceiling to allow for free movement of at least 1 inch of ceiling movement in all horizontal directions.
- Flexible sprinkler connection provide characteristics that exceed the most stringent seismic code requirements. The flexibility of the hose allows the head to move with the ceiling in any direction during a seismic event without causing damage to the sprinkler system.
- FlexHead Industries recently satisfactorily completed full-scale seismic qualification testing at the Structural engineering Earthquake Simulation Laboratory located at the State University of New York at Buffalo using the International Code Council (ICC) testing standard "ICC AC-156 Seismic Qualification Testing of Nonstructural Components".

FLEXHEAD FRICTION LOSS DATA AND SPECIFICATIONS

FlexHead Model #	Internal I.D. in	Outlet Orifice Size in (cm)	Hose Assembly Length ft (cm)	Maximum Number of 90-degree Bends	Maximum Equivalent Length of Schedule 40, Nominal 1in. Diameter Pipe, ft		Maximum Ambient Temperature Rating F (C)	Maximum Rated Pressure psi (kPa) / psi (kPa)		Maximum K-factor
					FM	UL		Standard	H-Series	
2024, 2024H	1	1/2 (1.27)	2 (0.6)	3	18.4	11	300º (148º)	175 (1205) / 300 (2068)		5.62
2036, 2036H	1	1/2 (1.27)	3 (0.9)	3	26.6	16	300º (148º)	175 (1205) / 300 (2068)		5.62
2048, 2048H	1	1/2 (1.27)	4 (1.2)	4	30.3	24	300º (148º)	175 (1205) / 300 (2068)		5.62
2060, 2060H	1	1/2 (1.27)	5 (1.5)	4	35.8	29	300º (148º)	175 (1205) / 300 (2068)		5.62
2072, 2072H	1	1/2 (1.27)	6 (1.8)	4	45.6	35	300º (148º)	175 (1205) / 300 (2068)		5.62
2024 75, 2024H 75	1	3/4 (1.90)	2 (0.6)	3	14.7	12	300º (148º)	175 (1205) / 300 (2068)		14.0
2036 75, 2036H 75	1	3/4 (1.90)	3 (0.9)	3	21.8	18	300º (148º)	175 (1205) / 300 (2068)		14.0
2048 75, 2048H 75	1	3/4 (1.90)	4 (1.2)	4	29.0	23	300º (148º)	175 (1205) / 300 (2068)		14.0
2060 75, 2060H 75	1	3/4 (1.90)	5 (1.5)	4	36.1	29	300º (148º)	175 (1205) / 300 (2068)		14.0
2072 75, 2072H 75	1	3/4 (1.90)	6 (1.8)	4	43.2	32	300º (148º)	175 (1205) / 300 (2068)		14.0
					175psi, 300psi					
2024E, 2024HE	1	1/2 (1.27)	2 (0.6)	3	26.4, 14.7	19	300º (148º)	175 (1205) / 300 (2068)		5.62
2036E, 2036HE	1	1/2 (1.27)	3 (0.9)	3	30.1, 21.8	23	300º (148º)	175 (1205) / 300 (2068)		5.62
2048E, 2048HE	1	1/2 (1.27)	4 (1.2)	4	33.8, 29.0	27	300º (148º)	175 (1205) / 300 (2068)		5.62
2060E, 2060HE	1	1/2 (1.27)	5 (1.5)	4	37.5, 36.1	32	300º (148º)	175 (1205) / 300 (2068)		5.62
2072E, 2072HE	1	1/2 (1.27)	6 (1.8)	4	41.2, 43.2	35	300º (148º)	175 (1205) / 300 (2068)		5.62
2024E 75, 2024HE 75	1	3/4 (1.90)	2 (0.6)	3	14.7	18	300º (148º)	175 (1205) / 300 (2068)		14.0
2036E 75, 2036HE 75	1	3/4 (1.90)	3 (0.9)	3	21.8	23	300º (148º)	175 (1205) / 300 (2068)		14.0
2048E 75, 2048HE 75	1	3/4 (1.90)	4 (1.2)	4	29.0	23	300º (148º)	175 (1205) / 300 (2068)		14.0
2060E 75, 2060HE 75	1	3/4 (1.90)	5 (1.5)	4	36.1	29	300º (148º)	175 (1205) / 300 (2068)		14.0
2072E 75, 2072HE 75	1	3/4 (1.90)	6 (1.8)	4	43.2	32	300º (148º)	175 (1205) / 300 (2068)		14.0
2036F	1.25	1/2 (5.6)	3 (0.9)	3	16.0		300º (148º)	175 (1205) / 300 (2068)		5.62
2048F	1.25	1/2 (5.6)	4 (1.2)	4	19.6		300º (148º)	175 (1205) / 300 (2068)		5.62
2072F	1.25	1/2 (5.6)	6 (1.8)	4	22.8		300º (148º)	175 (1205) / 300 (2068)		5.62
2036F75	1.25	3/4 (14)	3 (0.9)	3	9.3		300º (148º)	175 (1205)		14.0
2048F75	1.25	3/4 (14)	4 (1.2)	4	11.4		300º (148º)	175 (1205)		14.0
2072F75	1.25	3/4 (14)	6 (1.8)	4	15		300º (148º)	175 (1205)		14.0
2036F100	1.25	1 (14)	3 (0.9)	3	7.1		300º (148º)	175 (1205)		22.4
2048F100	1.25	1 (14)	4 (1.2)	4	8.3		300º (148º)	175 (1205)		22.4
2072F100	1.25	1 (14)	6 (1.8)	4	10.1		300º (148º)	175 (1205)		22.4

Model Numbers: The "H" designates high pressure unit rated to 300 psig and the "E" designates elbow style unit. The "F" designates high flow rate using 1 1/4" internal hose diameter.

FlexHead products are intended for use in hydraulically designed wet, pre-action, deluge or dry pipe sprinkler connections per NFPA 13, 13R, and 13D guidelines. The hydraulic loss of the FlexHead connector needs to be included in the hydraulic design calculations the same as a valve or fitting. *Each FlexHead sprinkler drop has a **3" minimum bend radius per UL guidelines, and a 8" minimum bend radius per FM guidelines.***

****FM Equivalent Length Numbers include maximum "K" factor sprinkler head that is listed.****

* Equivalent lengths are shown with maximum number of 90 degree bends at the minimum bend-radius. Different values were obtained by FM and UL due to the differences in minimum bend radius, testing protocol and calculation methods. Please see individual testing standards for more information relative to friction loss (Equivalent Length of Pipe).

FLEXHEAD® INDUSTRIES

A PART OF atkore INTERNATIONAL

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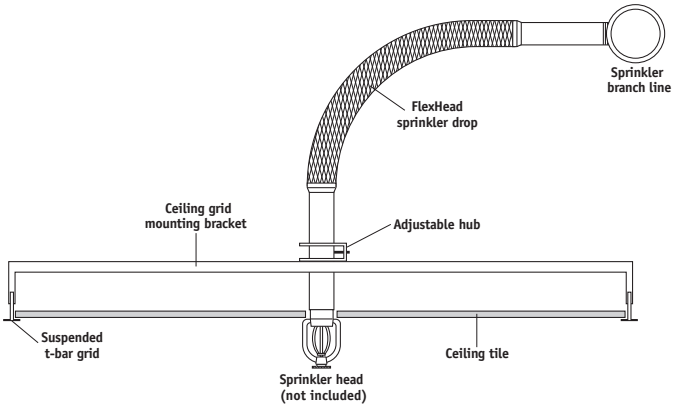
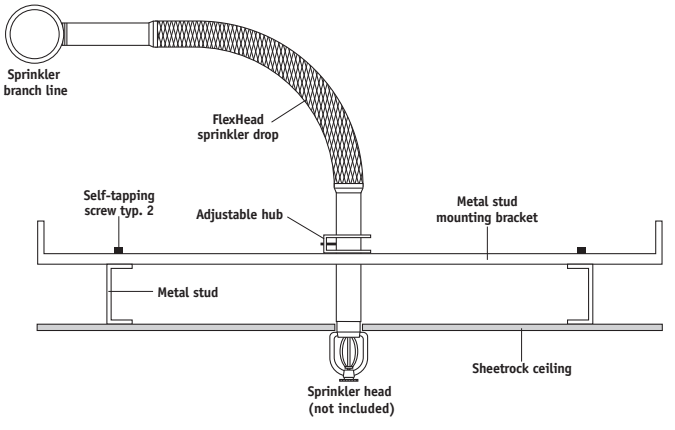
FlexHead Suspended Ceiling Detail

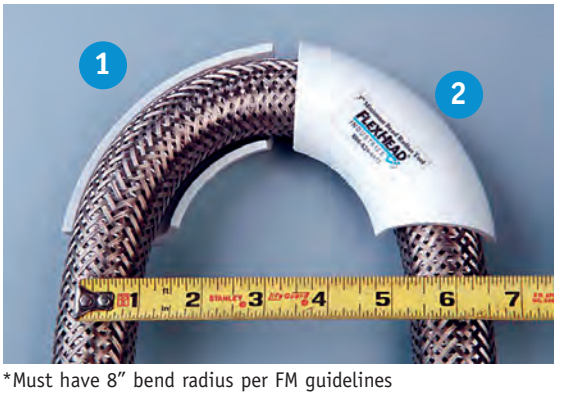


Each FM approved and UL listed unit is ready to install, pressure- and leak-tested, and comes complete with a flexible stainless steel hose and mounting bracket with adjustable hub.

FlexHead Sheetrock Ceiling Detail

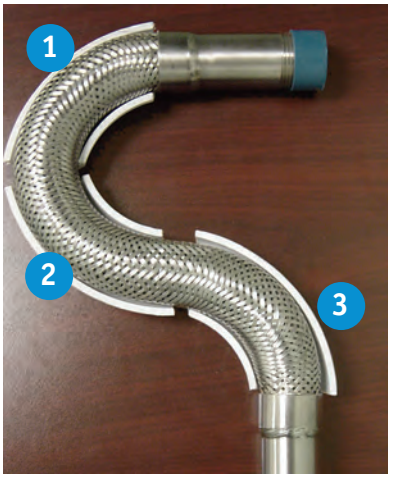


FlexHead 3" Bend Radius per UL Guidelines (2 Bends Shown)

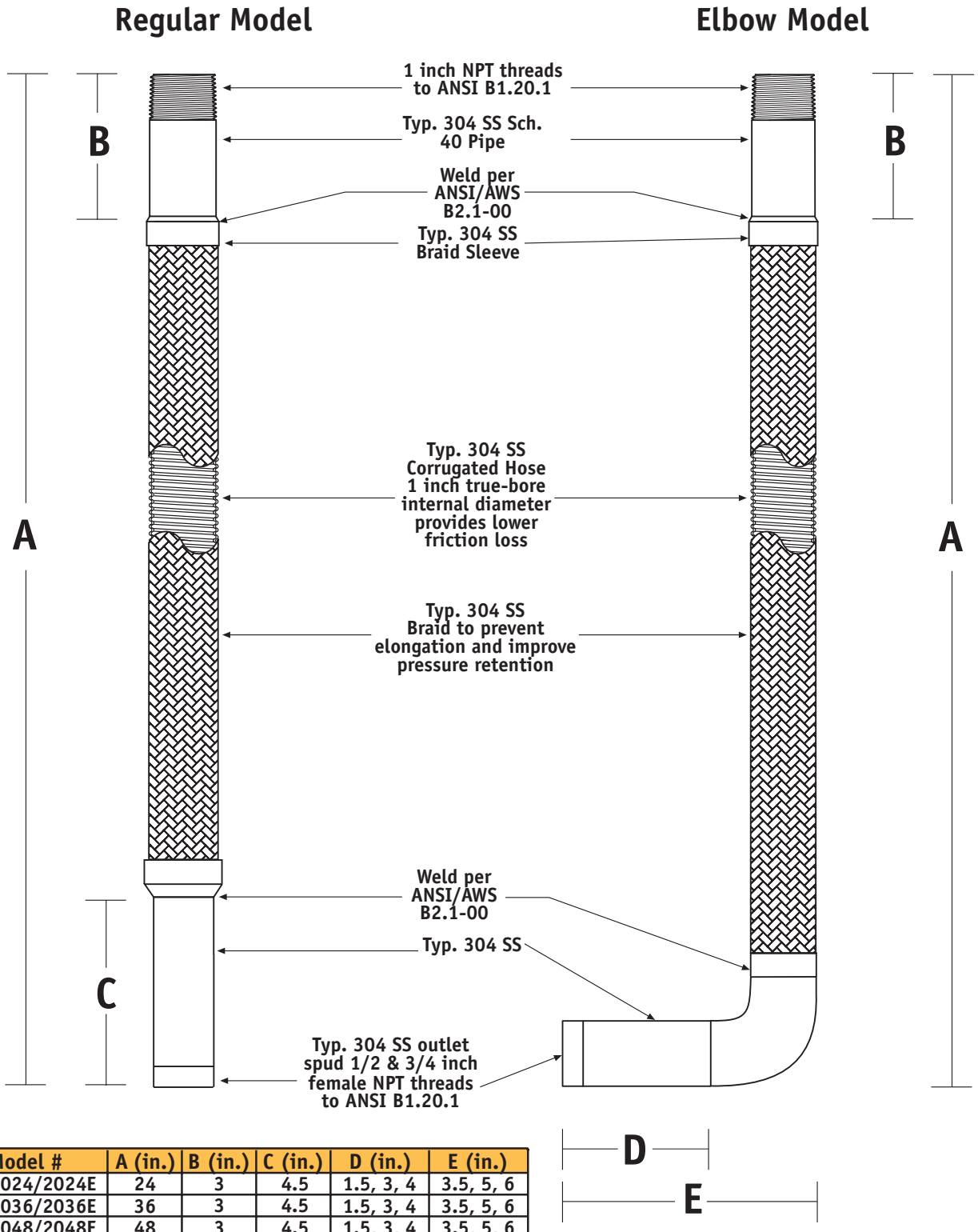


*Must have 8" bend radius per FM guidelines

FlexHead Shown with 3 Bends



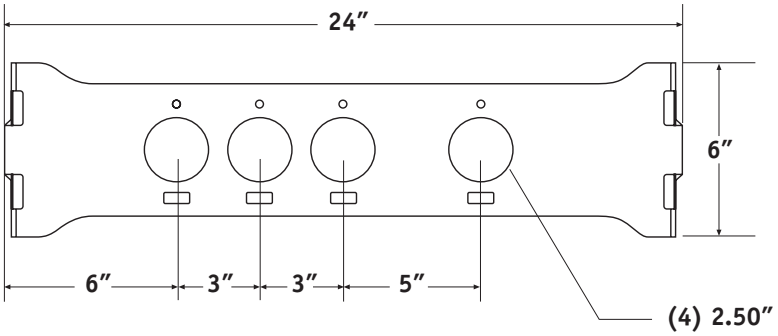
Hose Specification Sheet



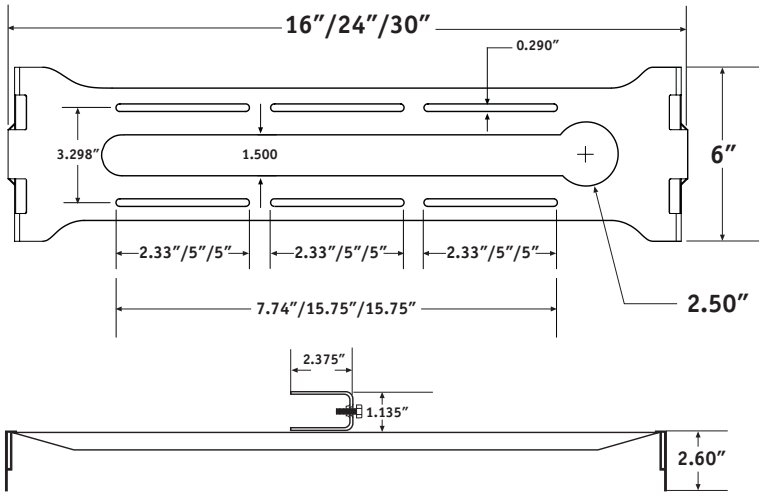
Model #	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)
2024/2024E	24	3	4.5	1.5, 3, 4	3.5, 5, 6
2036/2036E	36	3	4.5	1.5, 3, 4	3.5, 5, 6
2048/2048E	48	3	4.5	1.5, 3, 4	3.5, 5, 6
2060/2060E	60	3	4.5	1.5, 3, 4	3.5, 5, 6
2072/2072E	72	3	4.5	1.5, 3, 4	3.5, 5, 6

Bracket Specification Sheet

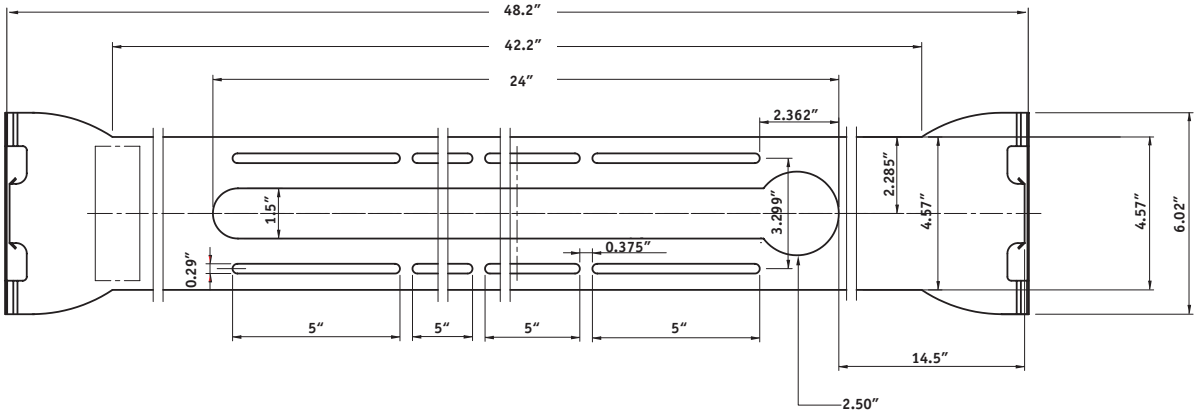
Multiport Design (For use with T-bar and Metal Stud applications)
Model #: MP24BKT2



Adjustable Design (For use with T-bar, Metal Stud, and Chicago Grid applications): standard sizes are 16″, 24″ and 30″ long
Model #s: AD16BKT2/AD24BKT2/AD30BKT2



Adjustable Design (for use with T-bar, Metal Stud, and Chicago Grid applications): standard size 48″ long
Model #s: AD48BKT2



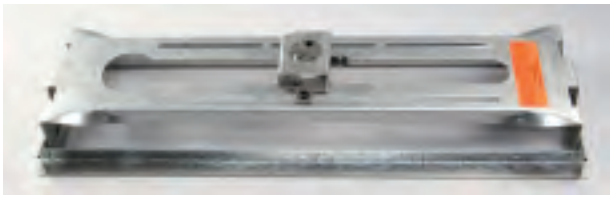
FlexHead Commercial Products

24", 36", 48", 60", 72" hose lengths,
Rated working pressure 175psi, optional 300psi.
Straight model,
Standard 1" I.D., optional 1¼" I.D.
Model #s: see page 5.

24", 36", 48", 60", 72" hose lengths.
Rated working pressure 175psi, optional 300psi.
Elbow model.
Standard 1" I.D., optional 1¼" I.D.
Model #s: see page 5.

24" Multiport Bracket for T-bar Grid or Metal Stud applications.
Model #: MP24BKT2 (standard bracket).

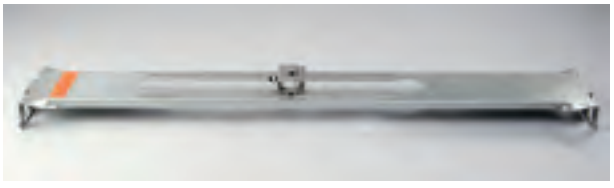
16"/24"/30" Adjustable Bracket for T-bar Grid, Chicago Grid or Metal Stud applications.
Model #s: AD16BKT2/AD24BKT2/AD30BKT2.



Hat Channel Bracket System for Metal Stud or Hat Channel applications.
Model #: AD24BKT2 with BKT-HTA.

Armstrong® TechZone Ceiling Bracket for use with Armstrong TechZone Ceiling systems. Available in both 4" and 6" long.
Model #s: SP04BKT2/SP06BKT2.

Bracket for Confined Space applications having a concrete deck above the ceiling.
Model #: UH-2.



48" Adjustable Bracket for T-bar Grid or Metal Stud applications.
Model #: AD48BKT2.

Examples where Flexible Sprinkler Hose Fittings are used:

Suspended Ceilings

Exhaust Ducts

Institutional

Cleanroom Ceilings

Flexible Sprinkler Hose Fittings were developed to satisfy specific needs of the industry, save the industry millions in losses, provide superior seismic protection and promote the installation of sprinklers. They have been evaluated for use by both Underwriters Laboratory and FM approvals and are tested to approval standards that were independently developed by the testing laboratories. The first listing for a Flexible Sprinkler Hose Fitting was in 1990.

Testing and Approvals

FM Global Testing — Approval Standard FM1637*

FlexHead® series 2000 stainless steel sprinkler connections

Hydrostatic Strength Test

A sample FlexHead was subjected to a hydrostatic pressure of four (4) times the rated working pressure of 175 psi (1205 kpa) to 700 psi (4825 kpa) for a period of five minutes. The assembly showed no signs of rupture, cracking, permanent distortion, or deterioration of performance characteristics. *The FlexHead successfully passed this test.*

Vibration Test

A sample FlexHead was secured to a vibration table. The FlexHead hose was bent in a 90° angle and pressurized to 90 psi (620 kpa) and the mounting bracket and hose were then subjected to a total of 25 hours of severe vibration conditions. After the successful completion of the vibration tests the sample was subjected to the hydrostatic pressure test at 700 psi and showed no signs of deterioration. *The FlexHead successfully passed this test.*

Friction Loss (Equivalent length of pipe)

To determine the effect of the FlexHead to the discharge coefficient of the sprinkler, the average friction loss through the FlexHead shall be equated to the theoretical length of nominal 1" diameter schedule 40 sprinkler pipe which would produce the same amount of friction loss. *Please see friction loss table.*

Vacuum Test

A sample FlexHead was subjected to a vacuum of 25 inHG for a period of five minutes. After the successful completion of the Vacuum Test the sample was subjected to the hydrostatic pressure test at 700 psi and showed no signs of deterioration. *The FlexHead successfully passed this test.*

Pressure Cycling Test

A sample FlexHead was filled with water and bent at a 90° angle and subjected to 20,000 cycles of pressure varying from 0 psi (0 kpa) to 175 psi (1205 kpa) at a rate of approximately 6 cycles per minute. After the successful completion of the pressure cycling tests the sample was subjected to the hydrostatic pressure test at 700 psi and showed no signs of deterioration. *The FlexHead successfully passed this test.*

Fatigue Test

A sample FlexHead was subjected to 50,000 cycles of repeated flexing at a rate of 5 to 30 cycles per minute per section 8.3 of ISO standard 10380. After the successful completion of the fatigue test the sample was subjected to the hydrostatic pressure test at 700 psi and showed no signs of deterioration. *The FlexHead successfully passed this test.*

Head Deployment

A sample FlexHead installed in a suspended ceiling was fitted with a sprinkler head and pressurized to 26–175 psi. The sprinkler head was then activated by a heat source at various pressures, and the sprinkler head deployed. The assembly showed no signs of distortion or deterioration of performance on the assembly or sprinkler head. *The FlexHead successfully passed this test.*

* Condensed Summary — Please see approval standard for full testing and approval criteria.

FM APPROVED

FLEXIBLE SPRINKLER HOSE WITH FITTINGS FOR COMMERCIAL SUSPENDED CEILINGS

Flexible sprinkler hose with threaded end fittings are for use in commercial suspended ceilings. The flexible hoses are to be installed according to the manufacturer's directives. Unless indicated, the hoses have a rated working pressure of 175 (1205 kPa).
Flexhead Industries, Inc. 56 Lowland St, Holliston MA 01746

Model	NPT in.	Hose Assembly length ft (m)
2024/2024 75	1/2 / 3/4	2 (0.6)
2036/2036 75	1/2 / 3/4	3 (0.9)
2048/2048 75	1/2 / 3/4	4 (1.2)
2060/2060 75	1/2 / 3/4	5 (1.5)
2072/2072 75	1/2 / 3/4	6 (1.8)

This is a standard flexible hose with a pressure rating of 175 psi (1205 kPa). Approval on these models of flexible metal sprinkler hose is limited for use in commercial suspended ceilings, with a ceiling bracket system manufactured by FlexHead Industries Inc. The brackets are identified below.

Model	NPT in.	Hose Assembly length ft (m)
2024E	1/2	2 (0.6)
2036E	1/2	3 (0.9)
2048E	1/2	4 (1.2)
2060E	1/2	5 (1.5)
2072E	1/2	6 (1.8)

This is a standard flexible hose with a pressure rating of 175 psi (1205 kPa). Approval on these models of flexible metal sprinkler hose incorporates a stainless steel elbow welded on the outlet end of hose and are limited for use in commercial suspended ceilings, with a ceiling bracket system manufactured by FlexHead Industries Inc. The brackets are identified below.

Model	NPT in.	Hose Assembly length ft (m)
2024H	1/2	2 (0.6)
2036H	1/2	3 (0.9)
2048H	1/2	4 (1.2)
2060H	1/2	5 (1.5)
2072H	1/2	6 (1.8)

The "H" designation indicates a pressure rating of 300 psi (2070 kPa). Approval on these models of flexible metal sprinkler hose is limited for use in commercial suspended ceilings, with a ceiling bracket system manufactured by FlexHead Industries Inc. The brackets are identified below.

Model	NPT in.	Hose Assembly length ft (m)
2024I	1/2	2 (0.5)
2036I	1/2	3 (0.9)
2048I	1/2	4 (1.2)
2060I	1/2	5 (1.5)
2072I	1/2	6 (1.8)

The "I" designation indicates and "Institutional" flexible hose with a pressure rating of 175 psi (1205 kPa). Approval of these models of flexible metal sprinkler hose is limited for use with pendant and horizontal sidewall applications with a UH-1 ceiling/wall bracket manufactured by FlexHead Industries.

The different FlexHead Industries, Inc. Brackets are identified as follows:

Part Number		
MP-24-BKT-2		
SP-06-TZ-BKT	TZ = Tech Zone	06 = Length in inches of bracket
AD-16-BKT-2	AD = Adjustable	16 = Length in inches of bracket
AD-24-BKT-2		24 = Length in inches of bracket
AD-30-BKT-2	BKT = Bracket	30 = Length in inches of bracket
AD-48-BKT-2		48 = Length in inches of bracket

Testing and Listings

Underwriters Laboratory Testing — Listing Standard UL2443*

FlexHead® series 2000 stainless steel sprinkler connections

Hydrostatic Pressure Test

The sample length is to be measured and then the hydrostatic pressure increased to 1.5 times the rated working pressure and held for 1 minute. The sample length is then to be measured again and the length shall not change by more than 0.1 inch/foot of hose length.

Mechanical Strength Test

A flexible sprinkler hose with fittings installed in its intended position using the anchoring components referenced in the installation instructions shall withstand a torque of 60 pound-feet (81 Nm) applied to the outlet without movement of the fitting outlet, deformation, or fracture.

High Temperature Exposure Test

Two samples are to be prepared and subjected to a hydrostatic pressure of twice the rated working pressure. The samples are then to be allowed to dry and then exposed to an ambient temperature in accordance with Table 10.1 for 90 days. Following this exposure, the samples are to be individually subjected to a hydrostatic pressure of twice the rated working pressure for 1 minute.

Vibration Test

Samples are to be vibrated for a period of 30 hours at frequencies ranging from 18 to 37 Hz. During and after being subjected to the required vibration, the samples are to be examined for signs of leakage, rupture, or movement of the outlet fitting affecting the performance of the flexible hose assembly.

Equivalent Length Determination

A sample of each length shall be tested in straight lengths and with the maximum number of minimum radii bends referenced in the installation instructions. The calculated pressure loss from the piezometers, corrected for the inlet and outlet velocities, are to be subtracted from the test sample results to obtain a pressure drop for the fitting. Using the Hazen-Williams coefficient of friction of 120, the equivalent length, in feet (m) of pipe, is to be calculated.

Salt Spray Corrosion Test

Ferrous flexible sprinkler hose with fittings and ferrous anchoring components not protected with a coating shall withstand an exposure to a salt spray atmosphere for 10 days without exhibiting any incipient corrosion.

Stress-Corrosion Cracking of Stainless Steel Parts Test

Austenitic stainless steel parts shall show no evidence of cracking, delamination, or degradation after being subjected to boiling magnesium chloride solution. The exposure is to last for 150 hours. The test samples are to be examined using a microscope having a magnification of 25X for any cracking, delamination, or other degradation as a result of the test exposure.

Low Temperature Test for Dry Pipe Systems

Each sample is to be gradually pressurized with air to a pressure of 40 psig (276 kPa) and then sealed. The pressurized assembly is then to be placed horizontally in air maintained at a temperature of minus 40°F (minus 40°C) for a period of 24 hours. Following the 24 hour low temperature exposure, the assembly is to be place in room ambient temperature of 73 ±5°F (23 ±3°C) for an additional 24 hour period. There shall be no decrease in the pressure in the assembly from the pressure measured before the low temperature exposure.

Pressure Cycling Test

The samples are to be connected to a pressure cycling apparatus, filled with water and vented of all air. The internal pressure is to be cycled 3,000 times from 0 psig (0 kPa) to twice the rated working pressure to 0 psig (0 kPA) at an approximate rate of 10 cycles per minute. During the pressure cycling, observations are to be made for evidence of leakage or physical damage.

Vacuum Test

Flexible sprinkler hose with fittings shall withstand a vacuum of minus 8.84 psi (minus 61 kPa) without collapse, leakage, or other deterioration of the flexible sprinkler hose and fitting performance characteristics.

High Pressure Flow Test

Flexible sprinkler hose with fittings and its anchoring components shall maintain the attached sprinkler in the intended operating position while the sprinkler discharges water at 90 percent of the rated pressure of the flexible sprinkler hose.

Fatigue Test (Limited Flexibility)

Flexible hose with fittings shall withstand without leakage or damage repeated flexing in a direction parallel to the axis of the end fittings. The number of flexing cycles shall be 100 cycles.

* Condensed Summary — Please see approval standard for full testing and approval criteria.

Testing and Listings

Underwriters Laboratory Testing — VENF.EX5269

Flexible Sprinkler Hose with Fittings

See General Information for Flexible Sprinkler Hose with Fittings

FLEXHEAD INDUSTRIES EX5269
LOWLAND IND PARK
56 LOWLAND ST
HOLLISTON, MA 01746 USA

Model	Rated Pressure psig	Max Ambient Temp, °F	Nom Inlet by Outlet Size, in.	Assembly Length ft (mm)	Max No. of 90° Bends	Min Bend Radius, in.	Equivalent Length of 1 in. Schedule 40 Steel Pipe (C=120), ft	Flexibility Type
2024	175	300	1 by 1/2	2	3	3	11	Limited
2036	175	300	1 by 1/2	3	3	3	16	Limited
2048	175	300	1 by 1/2	4	4	3	24	Limited
2060	175	300	1 by 1/2	5	4	3	29	Limited
2072	175	300	1 by 1/2	6	4	3	35	Limited
2024	175	300	1 by 3/4	2	3	3	12	Limited
2036	175	300	1 by 3/4	3	3	3	18	Limited
2048	175	300	1 by 3/4	4	4	3	23	Limited
2060	175	300	1 by 3/4	5	4	3	29	Limited
2072	175	300	1 by 3/4	6	4	3	32	Limited
2024H	300	300	1 by 1/2	2	3	3	11	Limited
2036H	300	300	1 by 1/2	3	3	3	16	Limited
2048H	300	300	1 by 1/2	4	4	3	24	Limited
2060H	300	300	1 by 1/2	5	4	3	29	Limited
2072H	300	300	1 by 1/2	6	4	3	35	Limited
2024H	300	300	1 by 3/4	2	3	3	12	Limited
2036H	300	300	1 by 3/4	3	3	3	18	Limited
2048H	300	300	1 by 3/4	4	4	3	23	Limited
2060H	300	300	1 by 3/4	5	4	3	29	Limited
2072H	300	300	1 by 3/4	6	4	3	32	Limited
2024E	175	300	1 by 1/2	2	3	3	19	Limited
2036E	175	300	1 by 1/2	3	3	3	23	Limited
2048E	175	300	1 by 1/2	4	4	3	27	Limited
2060E	175	300	1 by 1/2	5	4	3	32	Limited
2072E	175	300	1 by 1/2	6	4	3	35	Limited
2024E	175	300	1 by 3/4	2	3	3	18	Limited
2036E	175	300	1 by 3/4	3	3	3	23	Limited
2048E	175	300	1 by 3/4	4	4	3	23	Limited
2060E	175	300	1 by 3/4	5	4	3	29	Limited
2072E	175	300	1 by 3/4	6	4	3	32	Limited
2024HE	300	300	1 by 1/2	2	3	3	19	Limited
2036HE	300	300	1 by 1/2	3	3	3	23	Limited
2048HE	300	300	1 by 1/2	4	4	3	27	Limited
2060HE	300	300	1 by 1/2	5	4	3	32	Limited
2072HE	300	300	1 by 1/2	6	4	3	35	Limited
2024HE	300	300	1 by 3/4	2	3	3	18	Limited
2036HE	300	300	1 by 3/4	3	3	3	23	Limited
2048HE	300	300	1 by 3/4	4	4	3	23	Limited
2060HE	300	300	1 by 3/4	5	4	3	29	Limited
2072HE	300	300	1 by 3/4	6	4	3	32	Limited

These flexible sprinkler hose with fittings are intended to be installed in accordance with the manufacturer's installation instructions.

EASE EQUIPMENT ANCHORAGE & SEISMIC ENGINEERING
www.equipmentanchorage.com

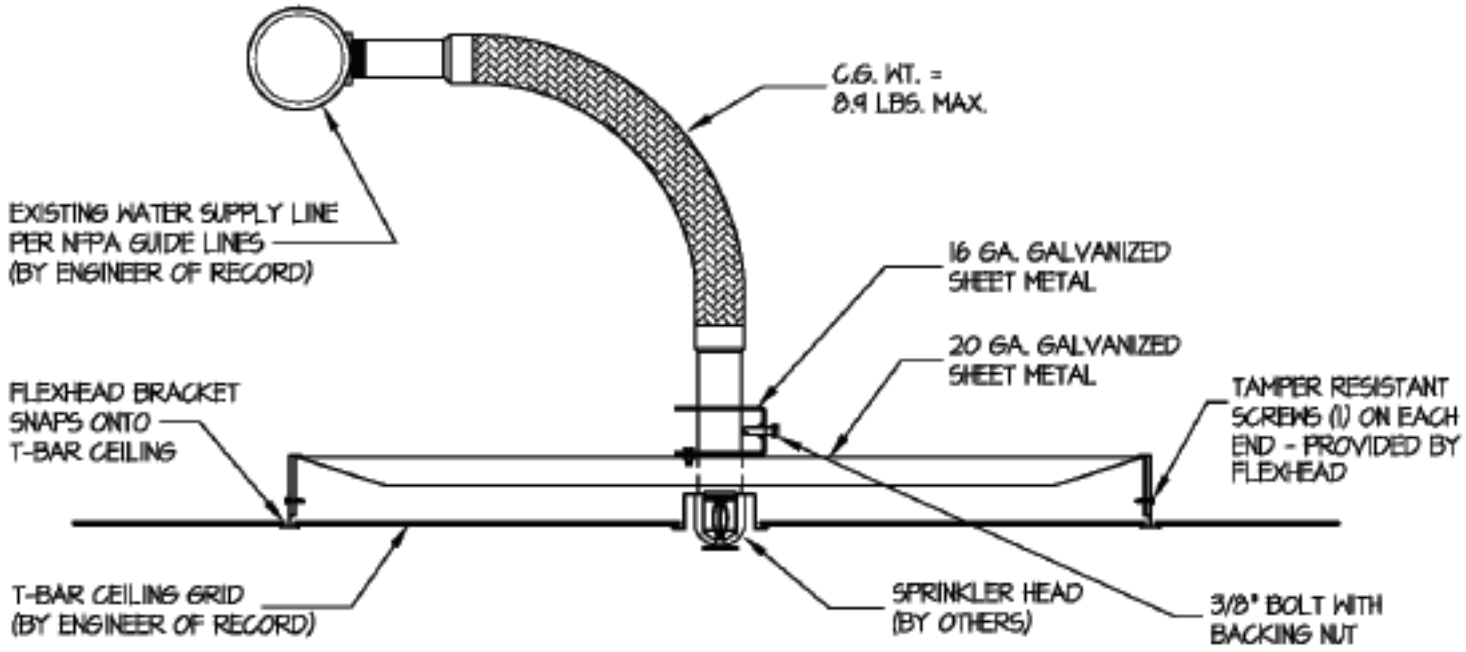
FLEXHEAD INDUSTRIES

FLEXHEAD SPRINKLER CONNECTIONS MODEL # 2024, 2036, 2048, 2060, 2072

DES. R. LA BRIE
JOB NO. 11-0788
DATE 9/24/09
SHEET 1 OF 2 SHEETS

SEISMIC ANCHORAGE PRE-APPROVED DETAIL — CEILING MOUNT

Office of Statewide Health Planning and Development
ANCHORAGE PRE-APPROVAL



ELEVATION

GENERAL NOTES:

1. ANCHORAGE DESIGN PER 2007 CALIFORNIA BUILDING CODE - SECTION 1613A AND ASCE 7-05 SECTIONS 12 AND 13. ALLOWABLE STRESS DESIGN IS USED.
   HORIZONTAL FORCE (E_h) = 2.43 W_p (S_{DS} = 1.93, I_p = 1.5, a_p = 2.5, R_p = 2.5)
   VERTICAL FORCE (E_v) = 0.21 W_p
2. ENGINEER OF RECORD FOR THE BUILDING SHALL PROVIDE SUPPORT STRUCTURE DESIGNED TO SUPPORT WEIGHTS AND FORCES SHOWN.
3. ENGINEER OF RECORD TO VERIFY CONNECTION WILL PERMIT ADEQUATE DISPLACEMENT IN ALL DIRECTIONS.

REGISTERED PROFESSIONAL ENGINEER
JOSEPH LaBRIE
No. 3566
EXP. 3-31-2010
STRUCTURAL
9/24/09
STATE OF CALIFORNIA

NOT STRUCTURE APPROVED

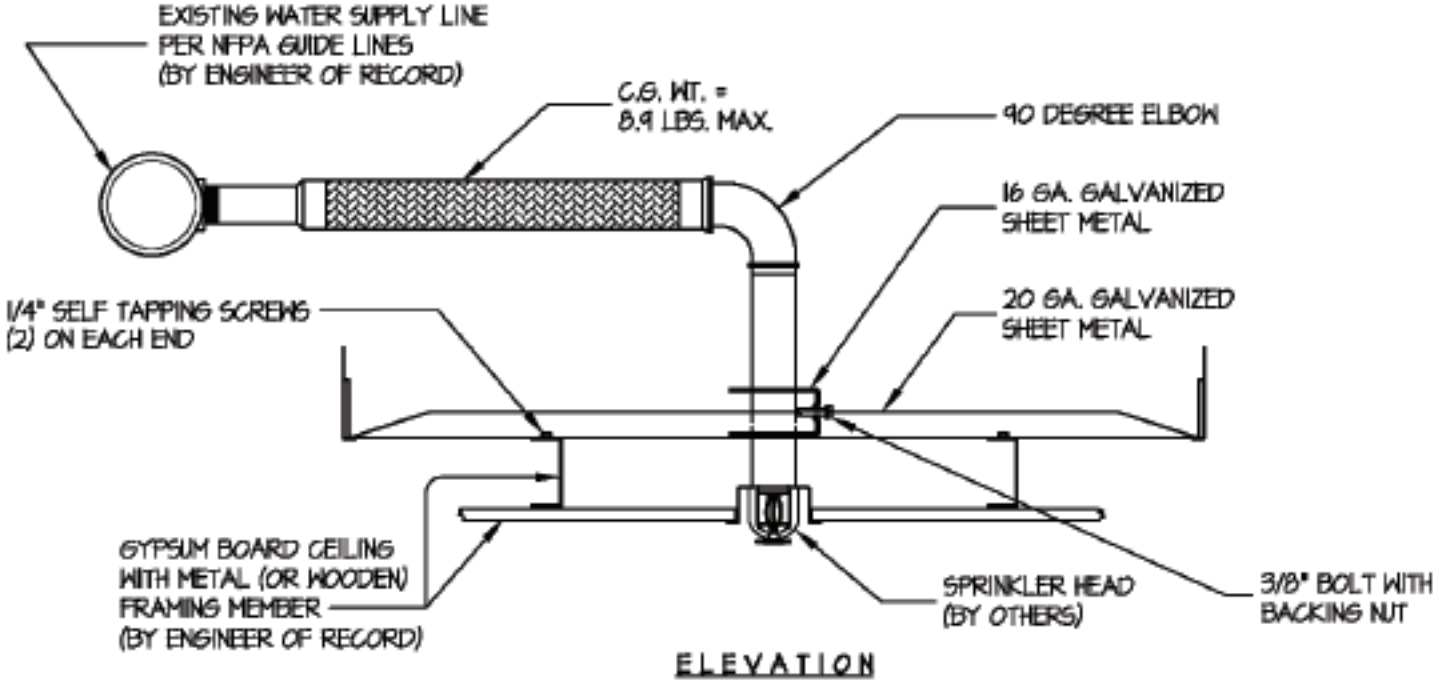
APPROVED
Fixed Equipment Anchorage
Office of Statewide Health Planning and Development
OPA-0672-07
Pre-approval Program Manager:
Anthony R. Pike
(916) 440-8470
Reviewed By: Anthony R. Pike 8/24/09

EASE EQUIPMENT ANCHORAGE & SEISMIC ENGINEERING www.equipmentanchorage.com		
FLEXHEAD INDUSTRIES	DES. R. LA BRIE	SHEET 2
FLEXHEAD SPRINKLER CONNECTIONS MODEL # 2024E, 2036E, 2048E, 2060E, 2072E	JOB NO. 11-0788	
	DATE 9/24/09	OF 2 SHEETS

SEISMIC ANCHORAGE PRE-APPROVED DETAIL | AT SHEETROCK CEILING | CEILING MOUNT

Office of Statewide Health Planning and Development

ANCHORAGE PRE-APPROVAL



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   HORIZONTAL FORCE (E_h) = 2.43 W_p (S_{DS} = 1.93, I_p = 1.5, a_p = 2.5, R_p = 2.5)
   VERTICAL FORCE (E_v) = 0.2T W_p
2. ENGINEER OF RECORD FOR THE BUILDING SHALL PROVIDE SUPPORT STRUCTURE DESIGNED TO SUPPORT WEIGHTS AND FORCES SHOWN.
3. ENGINEER OF RECORD TO VERIFY CONNECTION WILL PERMIT ADEQUATE DISPLACEMENT IN ALL DIRECTIONS.

REGISTERED PROFESSIONAL ENGINEER
JOSEPH LaBRIE
No. 3566
EXP. 3-31-2010
9/24/09
STRUCTURAL
STATE OF CALIFORNIA

NOT STRUCTURALLY CERTIFIED

APPROVED
Fixed Equipment Anchorage
Office of Statewide Health Planning and Development
OPA-0676-07
Pre-approval Program Manager:
Anthony R. Pike
(916) 449-8470
Reviewed By: Anthony R. Pike 9/24/09

Note: OSHPD does not currently enforce expiration dates. All pre-approvals are valid regardless of expiration.

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http://www.ul.com

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100 a century of public safety 1894-1994

June 21, 2001

FlexHead Industries
Mr. Norm MacDonald
56 Lowland St.
Holliston, MA 01746

Our Reference: File EX5269

Subject: FlexHead Flexible Sprinkler Hose Fittings Installed Onto Dry Wall Ceiling Grid

Dear Mr. MacDonald:

This letter is in regard to the subject.

Base upon review of the FlexHead UL Listed flexible sprinkler hose fitting system, installation onto a dry wall ceiling grid is acceptable when the ceiling-mounted bracket is screwed to a rigid surface. Self-tapping screws are used to affix the FlexHead mounting bracket to the surface, using the four ports provided which are pre-drilled onto the mounting bracket.

Very truly yours,

EMIL W. MISICHKO (Ext. 42036)
Engineering Group Leader
Conformity Assessment Services
Department 3011CNBK
Emil W. Misichko@us.ul.com

National Fire Protection Association
1 Batterymarch Park, Quincy, MA 02169-7471
Phone: 617-770-3000 • Fax: 617-770-0700 • www.nfpa.org

November 15, 2006

Mr. Norman MacDonald
President
FlexHead Industries, Inc.
56 Lowland Street
Holliston, MA 01746

Fax: 508-893-6020

Dear Mr. MacDonald,

This letter is in response to your email dated November 13, 2006 which discussed listed flexible sprinkler hoses, specifically FlexHead. Your question relates to the acceptability of listed technology which was not specifically addressed in previous editions of NFPA 13, including the 1999 and 2002 editions.

NFPA 13, 1999 Section 1-2 and NFPA 13, 2002 Section 1.6 provide specific text that addresses new technology. It is the intent of the current and previous editions of NFPA 13 to allow the use of listed technologies where they are not specifically addressed in NFPA 13. The base requirement is that they be installed in compliance with all of the listing requirements and manufacturers' instructions. These statements have been provided by the technical committees to address the very situation that you have described. In essence, where a new technology is developed, tested and listed as acceptable for automatic fire sprinkler use it can be utilized in accordance with NFPA 13 with no additional requirements other than those in the listing and manufacturers' instructions.

In summary it is the intent of NFPA 13 to permit the use of technologies, equipment and materials not specifically addressed in NFPA 13 where they are specifically listed for fire sprinkler use and where they have been installed in accordance with the listing requirements and the manufacturers' instructions.

Please be aware that this response does not constitute a Formal Interpretation as explained in the Important Notice below.

Respectfully,

11/15/2006

Christian Dubay, P.E.
Principal Fire Protection Engineer
NFPA 13 Staff Liaison

File: NFPA 13

Important Notice: This correspondence is not a Formal Interpretation issued pursuant to NFPA regulations. Any opinion expressed is the personal opinion of the author, and does not necessarily represent the official position of the NFPA or its Technical Committees. In addition, this correspondence is neither intended, nor should be relied upon, to provide professional consultation or services.

NYC BUILDINGS
NYC Department of Buildings
280 Broadway, New York, NY 10007

Patricia Lancaster, FAIA, Commissioner

Donald Gottfried, P.E.
Director

Materials and Equipment Acceptance
Phone: (212) 566-3282
Fax: (212) 566-3848
E-mail: donaldg@buildings.nyc.gov

July 17, 2007

Mr. Peter M. MacDonald
FlexHead Industries
56 Lowland Street
Holliston, MA 01746

Dear Mr. MacDonald:

Enclosed is a final official signed copy of MEA acceptance of your product, **MEA 261-99-E Vol. 3**, which you may use as proof of your product acceptance in New York City.

This document, together with proper labeling and installation in accordance with New York City Building Code, will enable the inspector to know that the product installed is legal.

All shipments and deliveries of accepted materials to the job site are required to be labeled or tagged in accordance with the format below:

Accepted For Use
City of New York
Department of Buildings
MEA 261-99-E Vol. 3
Company Name

Sincerely,

Donald Gottfried, P.E.

C: Deborah F. Taylor, AIA, LEED AP
Executive Director, Special Projects and MEA

Limited Warranty

FlexHead Industries, Inc. warrants that its products will be free from defects in materials and workmanship under normal conditions of use and service for a period of one year from date of sale. Our obligation under this warranty is limited to repairing or replacing any product that is returned to us with transportation charges prepaid within one year after the date of original sale and that our examination shows to our satisfaction to have been defective in materials or workmanship under normal conditions of use and service. The decision as to whether to repair or to replace any product shall be made by us, and any repair shall be made at our facility.

Notwithstanding the foregoing, the following are specifically excluded from the coverage of this warranty: (a) the sprinkler head of any FlexHead Industries, Inc. product, but FlexHead Industries, Inc. hereby assigns to the original purchaser of any such product the right to enforce the warranty, if any, issued by the manufacturer of such sprinkler head; (b) defects resulting from ordinary wear and tear, including, without limitation, the replacement of the so called poly bag components of any FlexHead Industries, Inc. product; (c) products that have been altered in any manner by the buyer or by anyone other than FlexHead Industries, Inc.; (d) products that have been subjected to misuse, abusive use, or damage by accident or casualty; (e) products that have been installed or used in a manner contrary to our specifications, instructions or recommendations, (f) products that have been installed or used in a manner that is not in compliance with all applicable requirements of any code, law, regulation or rule of any federal, state or local governmental or industry authority; and (g) products that have not been inspected and maintained in accordance with our specifications, instructions or recommendations, including, without limitation, our recommendations as to following the inspection and maintenance standards published by Factory Mutual Research Corporation (FMRC) and the National Fire Protection Association (NFPA); and (h) products that have been affected by Microbiologically Influenced Corrosion (MIC). This warranty is not assignable and shall benefit only the original purchaser of a FlexHead Industries, Inc. product. If any provision hereof or any portion of any provision shall be held invalid, the remainder of this Limited Warranty shall not be affected thereby, and all provisions of this Limited Warranty shall remain valid and in full force and effect to the fullest extent permitted by law. THIS WARRANTY IS IN LIEU OF ALL IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, WARRANTIES OF MERCHANTABILITY AND WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE. NOTWITHSTANDING ANY PROVISION TO THE CONTRARY HEREIN OR ANY APPLICABLE LAW TO THE CONTRARY, IN NO EVENT SHALL FLEXHEAD INDUSTRIES, INC. BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES UNDER ANY CIRCUMSTANCES WHATSOEVER, WHETHER ARISING FROM ANY BREACH OF THIS LIMITED WARRANTY OR OTHERWISE ARISING FROM OR IN CONNECTION WITH THE USE OR OPERATION OF, OR ANY DEFECT IN, ANY FLEXHEAD INDUSTRIES, INC. PRODUCT, OR OTHERWISE. The risk of damages from any breach of warranty with respect to injury to any person will be born by the purchaser of FlexHead Industries, Inc. product.

FlexHead commercial fire sprinkler connections

Your security is our business.

FlexHead Industries was founded in 1992 to help engineers, builders and owners increase the safety of their buildings. Our patented sprinkler connection technologies show that it's possible to comply with codes cost-effectively. We're proud to help reduce the risks of property damage and loss of life in a wide variety of buildings, domestically and world-wide.

FlexHead manufactures sprinkler connections for all types of applications including:

Commercial
- Government
- Hospitals
- Offices
- Restaurants
- Retail
- Schools

Cleanrooms
- Biotechnology
- Electronics
- High-end commercial ceilings
- Pharmaceuticals
- Semiconductors

Exhaust ducts
- Aerospace
- Automotive
- Biotechnology
- Electronics
- Forest products/ paper pulp
- Laboratories
- Petrochemical
- Pharmaceuticals
- Restaurants
- Semiconductors
- Steel manufacturers

Institutions
- Concrete penetrations for sidewall and pendant applications
- Correctional centers
- Mental health facilities

Seismically qualified.

FlexHead connections allow for independent movement between sub-mains and ceilings. They're the only flexible sprinkler connection to be qualified for use in Seismic Design Categories C, D, E and F.

FLEXHEAD® INDUSTRIES

The pioneers in flexible fire protection

FBC SYSTEM COMPATIBLE · FM APPROVED · c UL us LISTED · LPCB

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fax (508) 893-6020
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www.flexhead.com

SDP/03-02-12

Fig. 200 - "Trimline" Adjustable Band Hanger
Fig. 200R (Import) - "Trimline" Adjustable Band Hanger w/Retainer Ring

c UL US LISTED
FM APPROVED

Size Range — 1/2" thru 8" pipe

Material — Carbon Steel, Mil. Galvanized to G90 specifications

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

Features —

- (1/2" thru 2") Flared edges ease installation for all pipe types and protect CPVC plastic pipe from abrasion. Captured design keeps adjusting nut from separating with hanger. Hanger is easily installed around pipe.
- (2½" thru 8") Spring tension on nut holds it securely in hanger before installation. Adjusting nut is easily removed.

Approvals — Underwriters' Laboratories listed (1/2" thru 8") in the USA **(UL)** and Canada **(cUL)** for steel and CPVC plastic pipe and Factory Mutual Engineering Approved (3/4" thru 8"). Conforms to Federal Specifications WW-H-171E, Type 10 and Manufacturers Standardization Society SP-69, Type 10.

Maximum Temperature — 650°F

Finish — Mil. Galvanized. Stainless Steel materials will be supplied with (2) hex nuts in place of a knurl nub.

Order By — Figure number and pipe size

Note — Figure 200R (import) with retainer ring and non-captured knurl nut.

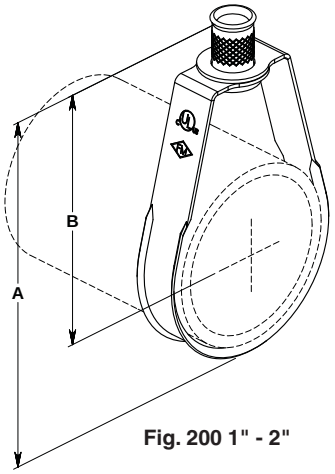


Fig. 200 1" - 2"

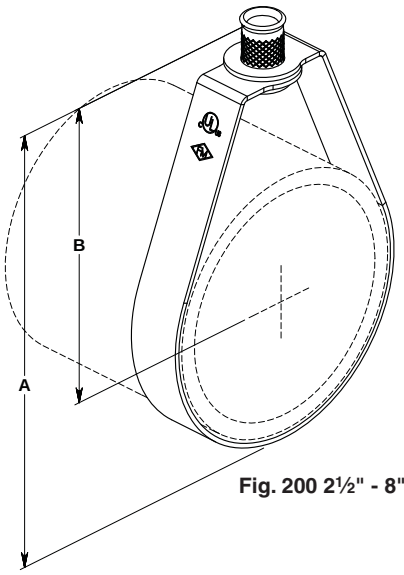


Fig. 200 2½" - 8"

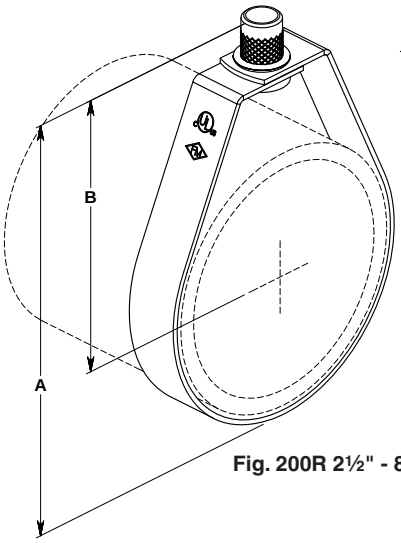


Fig. 200R 2½" - 8"

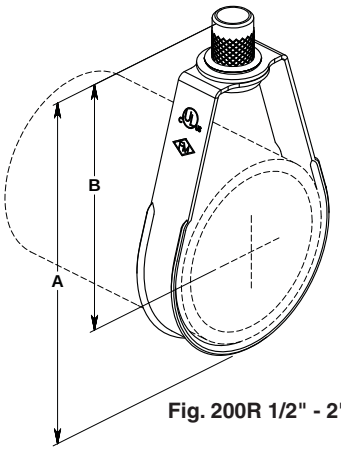


Fig. 200R 1/2" - 2"

Dimensions • Weights

Pipe Size	Rod Size Inch	Rod Size Metric	A	B	Max. Rec. Load Lbs.	Approx. Wt./100
1/2	3/8	8mm or 10mm	3⅛	2⅝	400	11
3/4	3/8	8mm or 10mm	3⅛	2½	400	11
1	3/8	8mm or 10mm	3⅜	2⅝	400	12
1¼	3/8	8mm or 10mm	3¾	2⅞	400	13
1½	3/8	8mm or 10mm	3⅞	2⅞	400	14
2	3/8	8mm or 10mm	4½	3	400	15
2½	3/8	10mm	5⅝	4⅛	600	27
3	3/8	10mm	5⅞	4	600	29
3½	3/8	10mm	7⅜	5¼	600	34
4	3/8	10mm	7⅜	5	1000	35
5	1/2	12mm	9⅛	6¼	1250	66
6	1/2	12mm	10⅛	6¾	1250	73
8	1/2	12mm	13⅛	8¾	1250	136

Fig. 98 - Rod Stiffener
Fig. 98B - Rod Stiffener w/Break-off Bolt Head

Component of State of California OSHPD Approved Seismic Restraints System

Size Range — Secures 3/8" thru 7/8" hanger rod

Material — Carbon Steel

Function — Secures channel to hanger rod for vertical seismic bracing.

Approvals — Included in our Seismic Restraints Catalog approved by the State of California Office of Statewide Health Planning and Development (**OSHPD**). For additional load, spacing and placement information relating to OSHPD projects, please refer to the TOLCO Seismic Restraint Systems Guidelines

Finish — Electro Galvanized

Note — Available in HDG finish or Stainless Steel materials.

Order By — Figure number

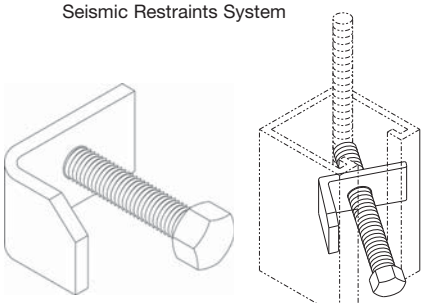


FIG. 98

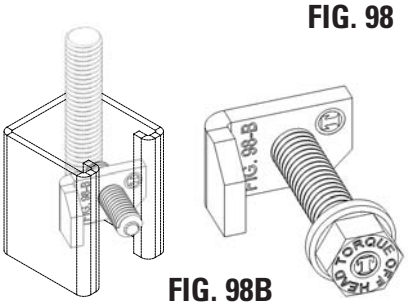


FIG. 98B

Fig. 99 - All Thread Rod Cut to Length

Size Range — Secures 3/8" thru 7/8" rod in 1" increments

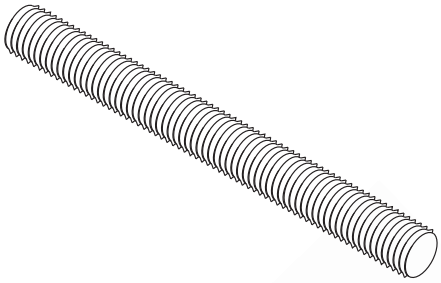
Material — Carbon Steel

Maximum Temperature — 750°F

Finish — Plain

Note — Available in Electro-Galvanized and HDG finish or Stainless Steel materials.

Order By — Figure number, rod diameter, rod length and finish



Dimensions	
Rod Size	**Max. Rec. Load Lbs. For Service Temp 650°F**
3/8	730
1/2	1350
5/8	2160
3/4	3230
7/8	4480

Fig. 100 - All Thread Rod Full Length

Size Range — Secures 3/8" thru 1½" rod in 10' lengths

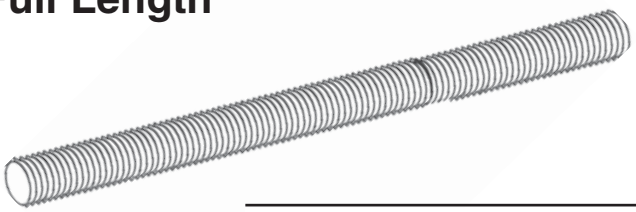
Material — Carbon Steel

Maximum Temperature — 750°F

Finish — Plain

Note — Available in Electro-Galvanized and HDG finish or Stainless Steel materials.

Order By — Figure number, rod diameter and finish



Dimensions • Weights		
Rod Size	**Max Rec. Load Lbs. For Service Temps 650°F**	**Approx. Wt./100**
1/4	240	12
3/8	730	29
1/2	1350	53
5/8	2160	84
3/4	3230	123
7/8	4480	169
1	5900	222
1¼	9500	360
1½	13800	510

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TOLCO Fig. 980 - Universal swivel sway brace attachment - 3/8" to 3/4" mounting hardware
~~TOLCO Fig. 980H - Universal swivel sway brace attachment - 7/8" to 1 1/4" mounting hardware~~

OPM

c UL us LISTED

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

Material: Carbon steel

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

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

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

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

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

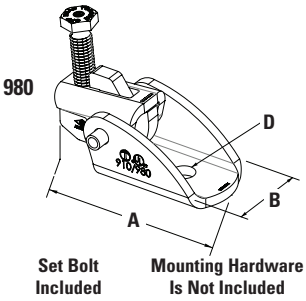
Note: Fig. 980 Swivel Attachment and Fig. 1001, 2002, 3000, 4L, or approved attachment to pipe make up a sway brace system of UL Listed attachments and bracing materials which satisfies the requirements of Underwriters Laboratories and the National Fire Protection Association **(NFPA)**

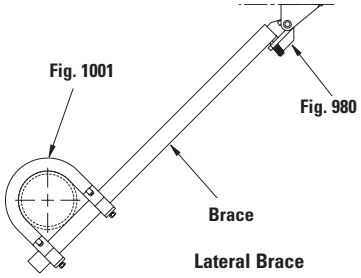
Finish: Plain, Electro-Galvanized or Stainless Steel.

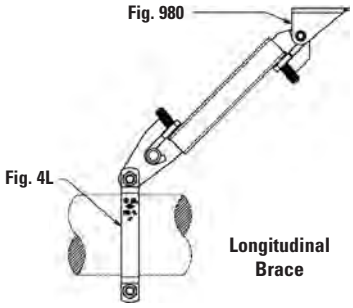
Contact customer service for alternative finishes.

Order By: Figure number and finish.

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







Catalog #	A in.	A (mm)	B in.	B (mm)	D** in.	D** (mm)	Max. Design Load (cULus) lbs./(kN)	Max. Design Load*** (FM) 30°-44° lbs./(kN)	45°-59° lbs./(kN)	60°-74° lbs./(kN)	75°-90° lbs./(kN)	Approx.Wt./100 lbs.	(kg)
980-3/8	4 9/16	(114.9)	2 1/16	(52.4)	7/16	(11.1)	1600 (7.12)	2370 (10.54)	2790 (12.41)	3360 (14.94)	3750 (16.68)	149	(67.6)
980-1/2					9/16	(14.3)	2100 (9.34)					148	(67.1)
980-5/8					11/16	(17.5)	2100 (9.34)					147	(66.7)
980-3/4					13/16	(20.6)	2100 (9.34)					146	(66.2)
980H-7/8	6 3/4	(171.4)	3 1/2	(88.9)	15/16	(23.8)	Fig. 980H is not UL Listed or FM Approved	Fig. 980H is not UL Listed or FM Approved				402	(182.3)
980H-1					1 1/16	(27.0)						400	(181.4)
980H-1 1/8					1 3/16	(30.2)						397	(180.1)
980H-1 1/4					1 5/16	(33.3)						390	(176.9)

* Sizes available in stainless steel (980S-3/8, 980S-1/2, 980S-5/8, and 980S-3/4) and have the same UL rating as what is listed.
** Mounting attachment hole size.
*** Installed with 1" or 1 1/4 "schedule 40 brace pipe.

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

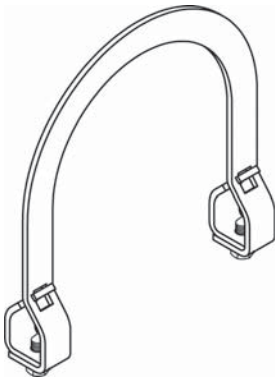
All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

Fig. 1001 - Sway Brace Attachment

Component of State of California OSHPD Approved Seismic Restraints System

c UL US LISTED

FM APPROVED



Size Range — Pipe size to be braced: 2½" thru 8" IPS.* Pipe size used for bracing: 1" and 1¼" Schedule 40 IPS.

Material — Carbon Steel

Function — For bracing pipe against sway and seismic disturbance. The pipe attachment component of a sway brace system: The Fig. 1001 is used in conjunction with a TOLCO 900 Series fitting and joined together with bracing pipe per NFPA 13, forming a complete sway brace assembly.

Features — Can be used to brace schedules 7 through 40 IPS. Field adjustable, making critical pre-engineering of bracing pipe length unnecessary. Unique design requires no threading of bracing pipe. Can be used as a component of a four-way riser brace. Comes assembled and ready for installation. Fig. 1001 has built-in visual verification of correct installation. See installation note below.

Installation Note — Position Fig. 1001 over the pipe to be braced and tighten two hex head cone point set bolts until heads bottom out. A minimum of 1" pipe extension is recommended. Brace pipe can be installed on top or bottom of pipe to be braced.

Approvals — Underwriters Laboratories Listed in the USA **(UL)** and Canada **(cUL)**. Approved by Factory Mutual Engineering **(FM)**. Included in our Seismic Restraints Catalog approved by the State of California Office of Statewide Health Planning and Development **(OSHPD)**. For additional load, spacing and placement information relating to OSHPD projects, please refer to the TOLCO Seismic Restraint Systems Guidelines.

Maximum Design Load
Sch. 7 - 1600 lbs.
Sch. 10 & 40 w/1" Brace Pipe - 2015 lbs.
Sch. 10 & 40 w/1¼" Brace Pipe - 2765 lbs.

FM Approved Design Loads*
2½" - 2400 lbs.
3" - 4" - 2500 lbs.
5" - 8" - 1500 lbs.

Finish — Plain

Note — Available in Electro-Galvanized and HDG finish.

Order By — Indicate pipe size to be braced followed by pipe size used for bracing, figure number and finish.

Important Note — The Fig. 1001 is precision manufactured to perform its function as a critical component of a complete bracing assembly. **To ensure performance, the UL Listing requires that the Fig. 1001 must be used only with other TOLCO bracing products. The Fig 1001 is not intended for use with the Fig. 907 4-Way Longitudinal Brace Attachment.**

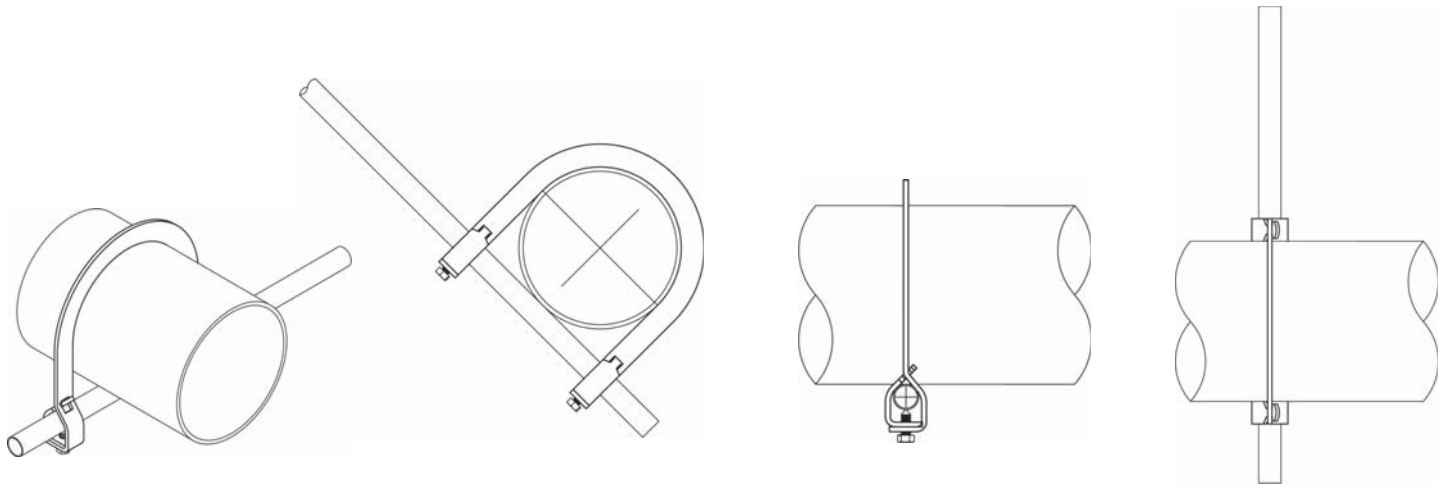


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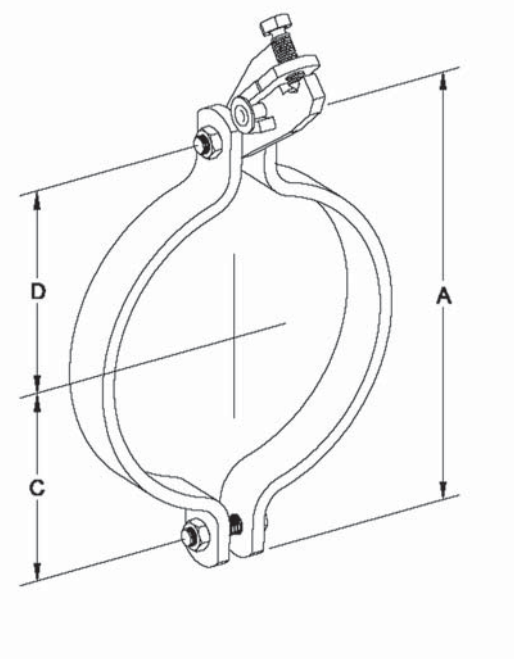
Fig. 4L
Longitudinal "In-Line" Sway Brace Attachment

c UL US LISTED
FM APPROVED



Size Range — 2" through 8" IPS.

Material — Carbon Steel

Function — For bracing pipe against sway and seismic disturbance.

Approvals — Underwriter's Laboratories Listed in the USA **(UL)** and Canada **(cUL)** 2" - 8". Approved by Factory Mutual Engineering **(FM)**, 2" - 8" pipe.

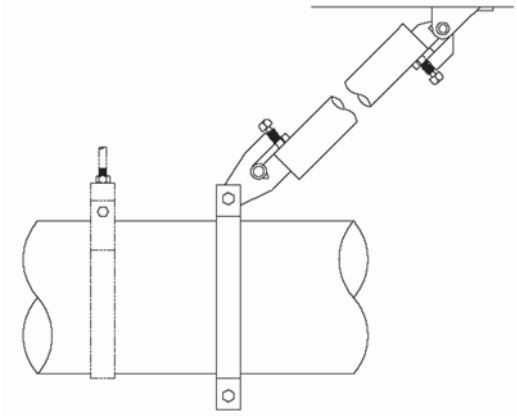
Installation Instructions — The Fig. 4L is the "braced pipe" attachment component of a longitudinal sway brace assembly. It is intended to be combined with the "bracing pipe" and TOLCO structural attachment component to form a complete bracing assembly. NFPA 13 and/or OSHPD guidelines should be followed.

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

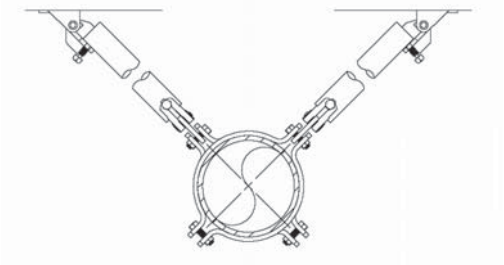
Finish — Plain

Note — Available in Electro-Galvanized and HDG finish.

Order By — Figure number, pipe size and finish.



Longitudinal Brace



4-Way Riser Brace
(Plan view)

Dimensions • Weights

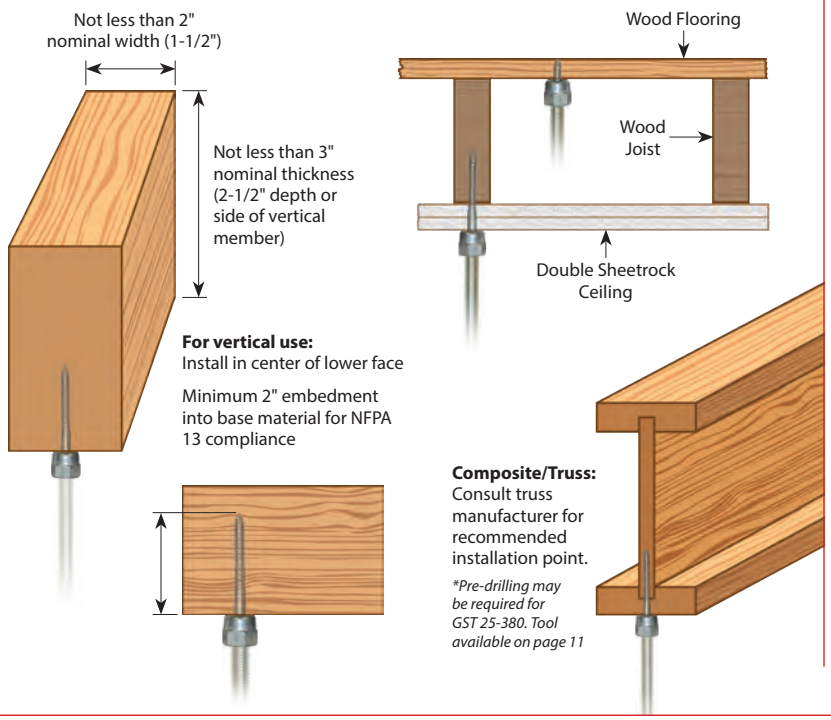
Sizes	A	C	D	Bolt Size	Max. Rec. Load Lbs. (cULus)	*Max Rec. Load Lbs. (FM)	Approx. Wt./100
2½	6 7/16	2½	2¾	1/2	2015	3000	253
3	7	2¾	3 1/16	1/2	2015	1550	268
4	8½	3⅜	3 11/16	1/2	2015	1550	348
5	9¾	3⅞	4⅜	1/2	2015	1450	380
6	11½	5	5⅛	1/2	2015	1450	640
8	13¼	6 11/16	6⅛	1/2	2015	1450	728

* Load shown is allowable with brace installed, between 30° - 90°. No reduction of load based on brace angle is required.

FM approved when used with 1", 1¼", 1½" or 2" Sch. 40 brace pipe.

TOLCO® brand bracing components are designed to be compatible **ONLY** with other TOLCO® brand bracing components, resulting in a Listed seismic bracing assembly. **DISCLAIMER** — NIBCO does **NOT** warrant against the failure of TOLCO® brand bracing components, in the instance that such TOLCO® brand bracing components are used in combination with products, parts or systems which are not manufactured or sold under the TOLCO® brand. NIBCO shall **NOT** be liable under any circumstance for any direct or indirect, incidental or consequential damages of any kind, including but not limited to loss of business or profit, where non-TOLCO brand bracing components have been, or are used.

SAMMYS FOR WOOD – Vertical Application



PRODUCT FEATURES

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

View our installation videos:
www.sammysanchors.com/install

VERTICAL MOUNT

Approvals	Rod Size	Part Number	Model	Screw Description	Ultimate Pullout (lbs)	UL Test Load (lbs)	FM Test Load (lbs)	Box Qty	Case Qty	Nut Driver
	1/4"	8002957	GST 100	1/4 x 1"	210 (7/16" OSB) 760 (3/4" Ply)			25	125	#14 Black Part # 8113910
	1/4"	8003957	GST 200	1/4 x 2"	1760 (Fir)			25	125	#14 Black Part # 8113910
UL	3/8"	8007957	GST 10	1/4 x 1"	210 (7/16" OSB) 760 (3/4" Ply)	300		25	125	#14 Black Part # 8113910
UL FM	3/8"	8008957	GST 20	1/4 x 2"	1760 (Fir)	850	1475	25	125	#14 Black Part # 8113910
UL	3/8"	8068925	GST 20-SS*	1/4 x 2"	1760 (Fir)	850		25	125	#14 Black Part # 8113910
UL	3/8"	8009925	GST 25-380	3/8 x 2-1/2"	2113 (Fir)	1500		25	125	#14 Black Part # 8113910
UL FM	3/8"	8010957	GST 30	1/4 x 3"	2060 (Fir)	1500	1475	25	125	#14 Black Part # 8113910
	1/2"	8013925	GST 2	1/4 x 2"	1760 (Fir)			25	125	#14 SW Red Part # 8114910
	1/2"	8015925	GST 3	1/4 x 3"	2275 (Fir)			25	125	#14 SW Red Part # 8114910

* GST-20-SS is Stainless Steel

SAMMYS NUT DRIVERS

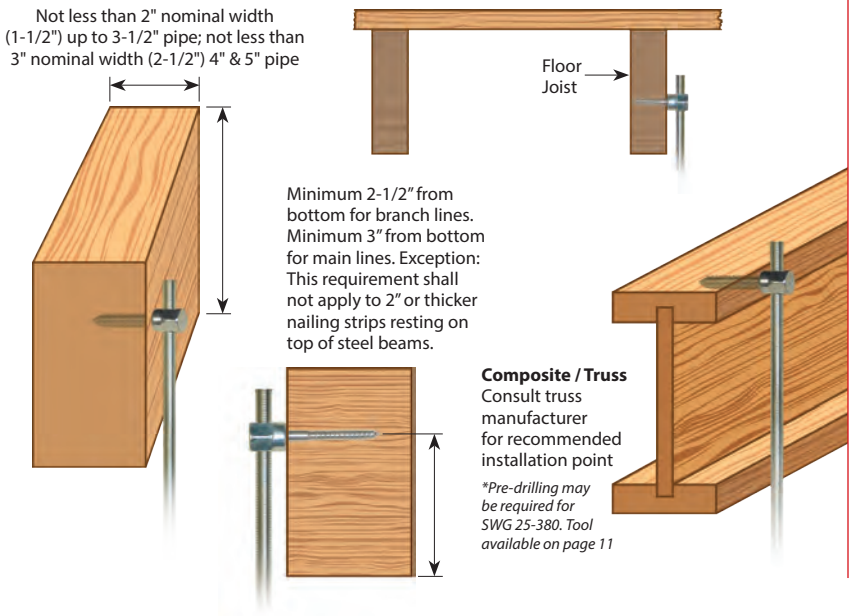

#14 Black Nut Driver
Part # 8113910


#14 SW Red Nut Driver
Part # 8114910


#14 SH Orange Nut Driver
Part # 8273910

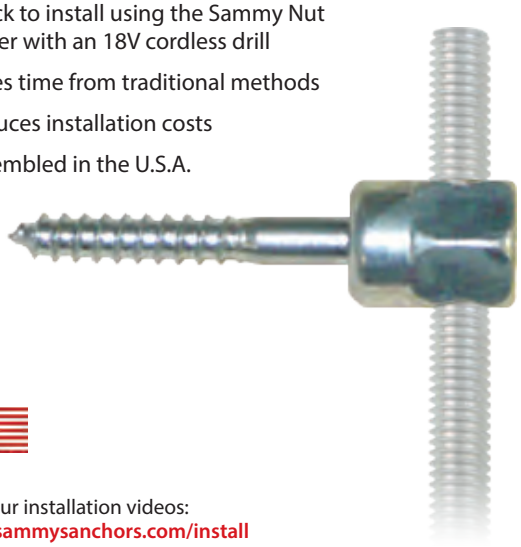
SPECIAL NUT DRIVER SYSTEM: The nut drivers were designed with a unique spin-off feature which provides a fast and safe installation each time. When the face of the driver comes into contact with the material you are installing into, continue drilling until nut driver spins free. Installation is then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

SIDEWINDER® FOR WOOD – Horizontal Application



PRODUCT FEATURES

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

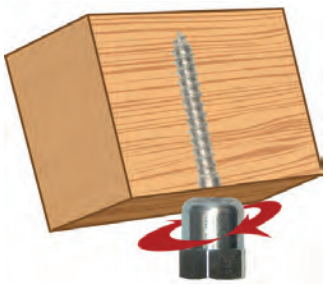


View our installation videos:
www.sammysanchors.com/install

HORIZONTAL MOUNT

Approvals	Rod Size	Part Number	Model	Screw Description	Ultimate Shear (lbs)	UL Test Load (lbs)	Box Qty	Case Qty	Nut Driver
cULus	3/8"	8020957	SWG 10	1/4 x 1"	622 (Fir)	300	25	125	#14 SW Red Part # 8114910
cULus	3/8"	8021957	SWG 20	1/4 x 2"	1725 (Fir)	1050	25	125	#14 SW Red Part # 8114910
cULus	3/8"	8022925	SWG 25-380	3/8 x 2-1/2"	2249 (Fir)	1500	25	125	#14 SW Red Part # 8114910
	3/8"	8023925	SWG 30	1/4 x 3"	1884 (Fir)	1500	25	125	#14 SW Red Part # 8114910

SAMMYS SWIVEL HEAD™ FOR WOOD – Swivel Application



PRODUCT FEATURES

- Eliminates distortion of threaded rod
- Accomodates up to 3½" x 12 pitch roof
- Saves time from traditional methods
- Reduces installation costs
- Assembled in the U.S.A.

View our installation videos:
www.sammysanchors.com/install

SWIVEL MOUNT

Approvals	Rod Size	Part Number	Model	Screw Description	Ultimate Pullout (lbs)	UL Test Load (lbs)	FM Test Load (lbs)	Max. Deflection	Box Qty	Case Qty	Nut Driver
cULus FM	3/8"	8139957	SH-GST 20	1/4 x 2"	1257 (Fir)	1050	1475	17°	25	125	#14 Black Part # 8113910
cULus	3/8"	8269957	SH-GST/CST 20	5/16 x 1-3/4"	1903 Dim. Lumber 1406 @ 45° off vertical Dim. Lumber	1500 850 @ 45°		89°	25	125	#14 SH Orange Part 8273910

*May require pre-drilling; consult joist manufacturer / **Will not swivel until installed with black nut driver

Part Number	Model	Rod Size	Mount Direction	UL Max Pipe Size	UL Test Load (lbs)	UL Min Thickness	FM Max Pipe Size	FM Test Load (lbs)	FM Min Thickness
SAMMYS FOR WOOD – PIPE HANGER						**Min Wood Thickness**			**Min Wood Thickness**
8007957	GST 10	3/8"	Vertical	CPVC 1-1/2"	300	1-1/2"			
8020957	SWG 10	3/8"	Horizontal	CPVC 1-1/2"	300	1-1/2"			
8008957	GST 20	3/8"	Vertical	2-1/2"	850	1-1/2"	4"	1475	1-1/2"
8068925	GST 20-SS	3/8"	Vertical	2-1/2"	850	1-1/2"			
8010957	GST 30	3/8"	Vertical	4"	1500	1-1/2"	4"	1475	1-1/2"
8009925	GST 25-380	3/8"	Vertical	4"	1500	1-1/2"			
8022925	SWG 25-380	3/8"	Horizontal	3-1/2" - 4"*	1500	1-1/2"			
8021957	SWG 20	3/8"	Horizontal	2-1/2" - 3"**	1050	1-1/2"			
8073925	SWG 20-SS	3/8"	Horizontal	2-1/2"	850	1-1/2"			
8269957	SH-GST/CST 20	3/8"	45° Angle off Vertical	2-1/2"	850	1-1/2"			
8269957	SH-GST/CST 20	3/8"	45° Angle off Vertical	4"	1500	1-1/2"			
8139957	SH-GST 20	3/8"	17° Angle Off Vertical	3"	1050	1-1/2"	4"	1475	1-1/2"
SAMMYS FOR STEEL – PIPE HANGER						**Min Steel Thickness**			**Min Steel Thickness**
8038957	DSTR 1	3/8"	Vertical	4"	1500	.035"	4"	1475	.105"
8037957	DSTR 1-1/2	3/8"	Vertical	4"	1500	.035"	4"	1475	.105"
8039957	DSTR 516	3/8"	Vertical	4"	1500	.037"	4"	1475	.105"
8045957	DST 516	3/8"	Vertical	4"	1500	.188"	4"	1475	.188"
8046957	TEK 50	3/8"	Vertical	4"	1500	.250"	4"	1475	.188"
8055957	SWDR 1	3/8"	Horizontal	4"	1500	.037"	4"	1475	.060"
8056957	SWDR 516	3/8"	Horizontal	4"	1500	.037"	4"	1475	.060"
8054957	SWDR 1-1/2	3/8"	Horizontal	4"	1500	.037"	4"	1475	.060"
8137957	SH-DSTR 1	3/8"	17° Angle off Vertical	4"	1500	.035"	4"	1475	.105"
8268957	SH-TEK 50	3/8"	Vertical 70° Angle off Vertical	2-1/2" 4"	850 1500				
8150922	XP 20	3/8"	Vertical	2-1/2"	850	.027"	2" 4"	940 1475	.029" .105"
8153922	XP 35	3/8"	Vertical	4"	1500	.060"	2″ 4″	940 1475	.029" .125"
8294922	SXP 20	3/8"	Vertical or up to 45°	2"	750	.027"	2″	635	.029"
8295922	SXP 35	3/8"	Vertical or up to 89°	3-1/2"	1250	.060"	2″	635	.029"
8293957	SWXP 35	3/8"	Horizontal	3-1/2"	1250	.060"			
SAMMYS FOR CONCRETE – PIPE HANGER									
8059957	CST 20	3/8″	Vertical				4"	1475	3000psi
8061957	SWC 20	3/8″	Horizontal				4"	1475	3000psi
8150922	XP 20	3/8″	Vertical	2-1/2″	850	Pre-Pour Structural @ 3000psi			
8150922	XP 20	3/8″	Vertical	2-1/2″	850	Post-Pour Range II LWC ≤ 35 PCF (lbs/ft³)			

Part Number	Model	Rod Size	Mount Direction	UL Load Rating (lbs)	UL Min Steel Thickness
SAMMYS FOR STEEL – LUMINAIRE FITTING					
8150922	XP 20	3/8″	Vertical	185 250	.027″ .035″
8153922	XP 35	3/8″	Vertical	185 250	.027″ .035″
8181922	XP 200	1/4″	Vertical	185 250	.027″ .035″
8294922	SXP 20	3/8″	Vertical 45°	170 80	.027″ .027″
8295922	SXP 35	3/8″	Vertical 90°	250 80	.060″ .060″
8293957	SWXP 35	3/8″	Horizontal	80	.060″

Part Number	Model	Rod Size	Mount Direction	UL Load Rating (lbs)	UL Min Steel Thickness	Listed Application
SAMMYS FOR STEEL – CONDUIT, TUBING, AND CABLE						
8150922	XP 20	3/8″	Vertical	283	.027″	Max 4 trade size EMT, RMC, and IMC & 5 trade size rigid PVC conduit
8153922	XP 35	3/8″	Vertical	500	.060″	Max 4 trade size EMT & 6 trade sze RMC, IMC, and rigid PVC conduit
8294922	SXP 20	3/8″	Vertical	283	.027″	Max 4 trade size EMT, RMC, and IMC & 5 trade size rigid PVC conduit
8295922	SXP 35	3/8″	Vertical	500	.060″	Max 4 trade size EMT & 6 trade sze RMC, IMC, and rigid PVC conduit
8293957	SWXP 35	3/8″	Horizontal	500	.060″	Max 4 trade size EMT & 6 trade sze RMC, IMC, and rigid PVC conduit
8149957	CZ2000	1/4″ or 3/8″	Onto Vertical Rod			UL Listed 4S16 - Cable Hanger, Cat. No. C-Z2000 Plenum Rated, Complies w/ NEC Standards

SHEET STEEL GAUGES									
Gauge No.	22 ga	20 ga	18 ga	16 ga	14 ga	12 ga	1/8"	3/16"	1/4"
Nominal Decimal Equivalent	.030"	.036"	.048"	.060"	.075"	.105"	.125"	.188"	.25"

* SWG 25-380 Maximum pipe size in composite wood joist allowed by UL is 3-1/2″

* SWG 25-380 Maximum pipe size in wood timber or joist allowed by UL is 4″

** SWG 20 Maximum pipe size in composite wood joist allowed by UL is 2-1/2″

** SWG 20 Maximum pipe size in wood timber or joist allowed by UL is 3″

UL compliance with NEC Standards.

UL and FM tests were performed in compliance with NFPA 13 Standards.

Fastening requirement: 5 times weight of water-filled schedule 40 pipe plus 250 pounds

SPECIAL NOTES

ENGINEERING NOTE
The anchors listed by UL were tested in plate steel that measured .188" and .118". Subsequent testing was done for z-purlin applications using (.037") or 20 gauge steel. Testing with the new Sammy X-Press® was completed using (.030") or 22 gauge steel metal deck.

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

STEEL SCREWS
Due to variations in hardness of certain metals, it should be noted that our self-drilling screws for steel will experience different drill speeds, with an RPM range of 0-2500 for Teks 3 and 1-1800 for Teks 5.

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

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

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

Consult the table below:

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

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

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

UL LISTINGS / FM APPROVALS
UL and FM reports are available at www.itwbuildex.com

c UL us LISTED
PIPE HANGER
ALSO LISTED AS CONDUIT AND CABLE HARDWARE
ALSO LISTED AS ANCHOR FOR LUMINAIRE
9R21

FM APPROVED

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

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CONTACT INFORMATION
Technical Assistance: (800) 848-5611 Option #2
Customer Service: (800) 848-5611 Option #1