Fire Sprinkler Pipe

Schedule 10 and Schedule 40

Submittal Data Sheet

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

Approvals and Specifications
Schedule 10 and Schedule 40 meet or exceed the following standards:

- ASTM A135, Type E, Grade A (Schedule 10, 1–8 NPS)
- ASTM A795, Type E, Grade A (Schedule 40, 1–2 NPS)
- ASTM A53, Type E, Grade B (Schedule 40, 2–8 NPS)
- ASTM A53, Type F, Grade A (Schedule 40, 1–4 NPS)
- NFPA® 13 and NFPA 14

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

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

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

SUBMITTAL INFORMATION

PROJECT: _____ CONTRACTOR: _____ DATE: _____

ENGINEER: _____ SPECIFICATION REFERENCE: _____ SYSTEM TYPE: _____

LOCATIONS: _____ COMMENTS: _____

☐ BLACK ☐ HOT-DIP GALVANIZED

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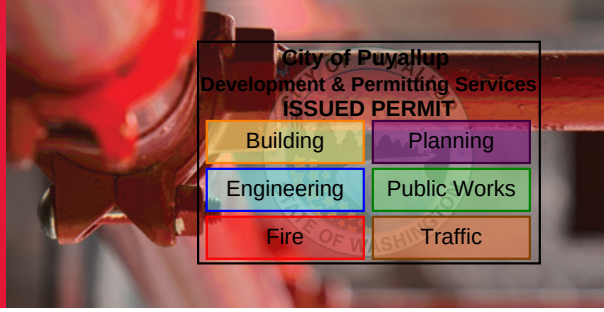
Fire Sprinkler Pipe

Schedule 10 and Schedule 40

Submittal Data Sheet



SCHEDULE 10 WEIGHTS AND DIMENSIONS

NPS	NOMINAL OD		NOMINAL ID		NOMINAL WALL		WT./FT.	WT./FT. H_2O FILLED	PCS./LIFT	WT./LIFT 21'	WT./LIFT 24'	WT./LIFT 25'	UL
	in.	mm	in.	mm	in.	mm	lbs.	lbs.		lbs.	lbs.	lbs.	CRR*
1	1.315	33.4	1.097	27.9	0.109	2.77	1.405	1.814	70	2065	2360	2459	11.4
1¼	1.660	42.2	1.442	36.6	0.109	2.77	1.807	2.514	61	2315	2645	2756	7.3
1½	1.900	48.3	1.682	42.7	0.109	2.77	2.087	3.049	61	2673	3055	3183	5.8
2	2.375	60.3	2.157	54.8	0.109	2.77	2.640	4.222	37	2051	2344	2442	4.7
2½	2.875	73.0	2.635	66.9	0.120	3.05	3.354	5.895	30	2226	2544	2651	3.5
3	3.500	88.9	3.260	82.8	0.120	3.05	4.336	7.949	19	1730	1977	2060	2.6
4	4.500	114.3	4.260	108.2	0.120	3.05	5.619	11.789	19	2242	2562	2669	1.6
5	5.563	141.3	5.295	134.5	0.134	3.40	7.780	17.309	13	2124	2427	2529	1.5
6	6.625	168.3	6.357	161.5	0.134	3.40	9.298	23.038	10	1953	2232	2325	1.0
8	8.625	219.1	8.249	209.5	0.188	4.78	16.960	40.086	7	2493	2849	2968	2.1

SCHEDULE 40 WEIGHTS AND DIMENSIONS

NPS	NOMINAL OD		NOMINAL ID		NOMINAL WALL		WT./FT.	WT./FT. H_2O FILLED	PCS./LIFT	WT./LIFT 21'	WT./LIFT 24'	WT./LIFT 25'	UL
	in.	mm	in.	mm	in.	mm	lbs.	lbs.		lbs.	lbs.	lbs.	CRR*
1	1.315	33.4	1.049	26.6	0.133	3.38	1.68	2.055	70	2470	2822	2940	1.000
1¼	1.660	42.2	1.380	35.1	0.140	3.56	2.27	2.922	51	2431	2778	2894	1.000
1½	1.900	48.3	1.610	40.9	0.145	3.68	2.72	3.602	44	2513	2872	2992	1.000
2	2.375	60.3	2.067	52.5	0.154	3.91	3.66	5.109	24	1845	2108	2196	1.000
2½	2.875	73.0	2.469	62.7	0.203	5.16	5.80	7.871	20	2436	2784	2900	1.000
3	3.500	88.9	3.068	77.9	0.216	5.49	7.58	10.783	13	2069	2365	2464	1.000
3½	4.000	101.6	3.548	90.1	0.226	5.74	9.12	13.400	10	1915	2189	2280	1.000
4	4.500	114.3	4.026	102.3	0.237	6.02	10.80	16.311	10	2268	2592	2700	1.000
5	5.563	141.3	5.047	158.2	0.258	6.55	14.63	23.262	7	2151	2458	2560	1.000
6	6.625	168.3	6.065	154.1	0.280	7.11	18.99	31.498	5	1994	2279	2374	1.000
8**	8.625	219.1	7.981	202.7	0.322	8.18	28.58	50.240	5	3001	3430	3573	1.000

** 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).*

*** 8 NPS Schedule 40 is FM Approved but not UL Listed.*

FM APPROVED

WFS-081619

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Fire Sprinkler Pipe

A53 Schedule 40

Submittal Data Sheet

FM Approved and Fully Listed Sprinkler Pipe
Wheatland's A53 Schedule 40 steel fire sprinkler pipe is UL® Listed and FM Approved, sizes 1–6 NPS, for use in fire sprinkler pipe applications, and is suitable for welding, threading and grooving. 8 NPS Schedule 40 is FM Approved but not UL Listed.

Approvals and Specifications
The product meets or exceeds the following standards:

- ASTM A53, Type F, Grade A, 1–4"
- ASTM A53, Type E, Grade B, 2–8"
- ASME B36.10M
- Federal Specification WW-P-404

Manufacturing Protocols
The weld seam of Wheatland's A53 ERW Grade B is heat-treated after welding to 1,400° F; we slowly cool the steel in order to toughen it and reduce its brittleness. Our products are subjected to the toughest possible testing protocols to ensure the highest quality and long-lasting performance.

Wheatland's SureThread™ standard steel pipe is hot-formed and heated during tube formation—not just the edges. As the coiled steel reaches 2,450° F, rollers bend the steel into a cylindrical shape, and the pressure and heat fuse the edges together. There are no flash forms in this process, allowing for a continuous weld. It all adds up to an extremely strong yet easily machinable pipe. Our 1–4" SureThread product is a full-bodied annealed product.

Finishes and Coatings
The average weight of zinc coating shall not be less than 1.8 ounces per square foot of surface (inside and outside). When galvanized pipe is bent or otherwise fabricated to a degree that causes zinc coating to stretch or compress beyond the limit of elasticity, some flaking of the coating may occur.

Wheatland's MIC SHIELD™ antimicrobial coating, when initially applied to the inner wall of the pipe, acts as a sanitizing agent to clean the contact surface. MIC SHIELD coating thereafter adheres to the pipe wall, serving as a protective coating that guards against contamination by impeding the attachment of microbes to the pipe wall. This limits the opportunities for corrosion from microbiological organisms in the water supply when the sprinkler pipe is initially installed. The integrity and benefits of this protection can be preserved through a combination of additional and routine treatment options outlined in NFPA 13. MIC SHIELD coating is available for Wheatland black steel pipe, sizes 1–6" and 8" upon request.

WEIGHTS AND DIMENSIONS CHART

NPS	NOM. OD INCHES	NOMINAL WALL	WT./FT. H_2O FILLED	WT./LBS. FT.
1	1.315	0.133	2.052	1.68
1¼	1.660	0.140	2.919	2.27
1½	1.990	0.145	3.601	2.72
2	2.375	0.154	5.109	3.66
2½	2.875	0.203	7.871	5.80
3	3.500	0.216	10.783	7.58
4	4.500	0.237	16.311	10.88
5	5.563	0.258	23.262	14.63
6	6.625	0.280	31.498	18.99
8*	8.625	0.322	50.210	28.58

**8 NPS Schedule 40 is FM Approved but not UL Listed.*

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

SUBMITTAL INFORMATION

PROJECT: _____ CONTRACTOR: _____ DATE: _____

ENGINEER: _____ SPECIFICATION REFERENCE: _____ SYSTEM TYPE: _____

LOCATIONS: _____ COMMENTS: _____

WFS-080416

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Anvil standard and extra heavy cast iron threaded fittings are manufactured in accordance with ASME-B16.4 (except plugs and bushings, ASME B16.14). Dimensions also conform to Federal Specifications, WW-P-501 (except plugs and bushings WW-P-471).

c UL us

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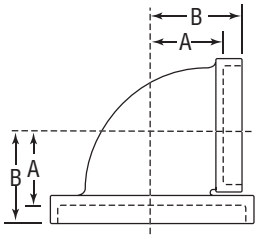
For Listings/Approval Details and Limitations, visit our website @ www.anvilintl.com or contact an Anvil/AnvilStar Sales Representative.

Cast Iron Threaded Fittings Pressure - Temperature Ratings					
Temperature		Pressure			
		Class 125		Class 250	
(°F)	*(°C)*	psi	*bar*	psi	*bar*
-20° to 150°	*-28.9 to 65.6*	175	*12.1*	400	*27.6*
200°	*93.3*	165	*11.4*	370	*25.5*
250°	*121.1*	150	*10.3*	340	*23.4*
300°	*148.9*	140	*9.7*	310	*21.4*
350°	*176.7*	125	*8.6*	300	*20.7*
400°	*204.4*	–	–	250	*17.2*

Cast Iron Threaded Fittings

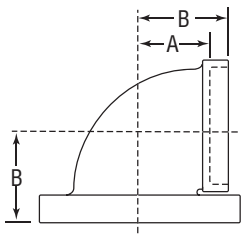
Class 125 (Standard)

FIGURE 351
90° Elbow



Size		A		B		Unit Weight Black	
NPS	*DN*	in	*mm*	in	*mm*	lbs	*kg*
1/4	*8*	1/2	*13*	13/16	*22*	0.16	*0.07*
3/8	*10*	9/16	*14*	15/16	*24*	0.25	*0.11*
1/2	*15*	11/16	*17*	1 1/8	*29*	0.40	*0.18*
3/4	*20*	13/16	*22*	1 15/16	*33*	0.60	*0.27*
1	*25*	15/16	*24*	1 1/2	*38*	0.92	*0.42*
1 1/4	*32*	1 1/8	*29*	1 3/4	*44*	1.44	*0.65*
1 1/2	*40*	1 5/16	*33*	1 15/16	*49*	1.95	*0.88*
2	*50*	1 9/16	*40*	2 1/4	*57*	3.13	*1.42*
2 1/2	*65*	1 13/16	*47*	2 11/16	*68*	4.94	*2.24*
3	*80*	2 3/16	*56*	3 1/8	*79*	7.21	*3.27*
3 1/2	*90*	2 7/16	*62*	3 7/16	*87*	9.67	*4.39*
4	*100*	2 11/16	*68*	3 13/16	*98*	12.17	*5.52*
5	*125*	3 5/16	*84*	4 1/2	*114*	21.46	*9.73*
6	*150*	3 7/8	*98*	5 1/8	*130*	31.33	*14.21*
8	*200*	5 3/16	*132*	6 9/16	*167*	64.56	*29.28*

FIGURE 371
90° Elbow,
Flange & Screw



Size		A		B		Unit Weight Black	
NPS	*DN*	in	*mm*	in	*mm*	lbs	*kg*
2 1/2	*65*	1 13/16	*47*	2 11/16	*68*	10.22	*4.63*
3	*80*	2 3/16	*56*	3 1/8	*79*	13.25	*6.01*
4	*100*	2 11/16	*68*	3 13/16	*98*	21.56	*9.78*
6	*150*	3 7/8	*98*	5 1/8	*130*	40.50	*18.37*

tNominal Pipe Sizes of 4" *(100 DN)* and larger have two holes tapped for stud or tap bolts.

Note: See page 37 for pressure-temperature ratings.

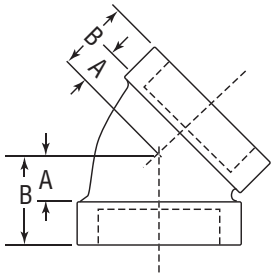
Cast Iron Threaded Fittings

Class 125 (Standard)

FIGURE 356 (Straight)
FIGURE 356R (Reducing)
45° Elbow

FIGURE 356 (Straight)

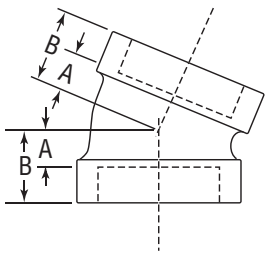
Figure 356R (Reducing)



Size		A		B		Unit Weight Black	
NPS	DN	in	mm	in	mm	lbs	kg
1/4	8	7/16	11	3/4	19	0.16	0.07
3/8	10	7/16	11	13/16	22	0.23	0.10
1/2	15	7/16	11	7/8	22	0.37	0.17
3/4	20	1/2	13	1	25	0.55	0.25
1	25	9/16	14	1 1/8	29	0.83	0.38
1 1/4	32	5/8	16	1 1/4	32	1.33	0.60
1 1/2	40	13/16	22	1 7/16	37	1.79	0.81
2	50	1	25	1 11/16	43	2.89	1.31
2 1/2	65	1 1/16	27	1 15/16	49	4.29	1.95
3	80	1 3/16	30	2 3/16	56	6.44	2.92
3 1/2	90	1 3/8	35	2 3/8	60	8.42	3.82
4	100	1 9/16	40	2 5/8	67	10.64	4.83
6	150	2 3/16	56	3 7/16	87	26.02	11.80
8	200	2 7/8	73	4 1/4	108	50.17	22.75

Size		A		B		C		D		Unit Weight Black	
NPS	DN	in	mm	in	mm	in	mm	in	mm	lbs	kg
1 x 1/2	25 x 15	1/2	15	7/8	22	1 1/16	27	1 5/16	33	0.95	0.43

FIGURE 356A
22 1/2° Elbow



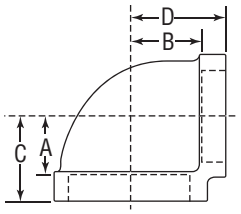
Size		A		B		Unit Weight Black	
NPS	DN	in	mm	in	mm	lbs	kg
3/4	20	3/8	10	7/8	22	0.52	0.24
1	25	7/16	11	1	25	0.80	0.36
1 1/4	32	1/2	13	1 1/8	29	1.40	0.63
1 1/2	40	5/8	16	1 1/4	32	1.64	0.74
2	50	3/4	19	1 7/16	37	2.50	1.13
2 1/2	65	3/4	19	1 5/8	41	3.95	1.79

Note: See page 37 for pressure-temperature ratings.

Cast Iron Threaded Fittings

Class 125 (Standard)

FIGURE 352
90° Elbow, Reducing



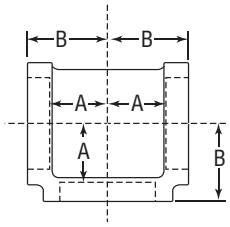
Size				A		B		C		D		Unit Weight Black	
NPS	*DN*	NPS	*DN*	in	*mm*	in	*mm*	in	*mm*	in	*mm*	lbs	*kg*
1/2	*15*	1/4	*8*	5/8	*16*	3/4	*19*	1 1/16	*27*	1 1/16	*27*	0.40	*0.18*
		3/8	*10*	5/8	*16*	11/16	*17*	1 1/16	*27*	1 1/16	*27*	0.34	*0.15*
3/4	*20*	1/2	*15*	11/16	*17*	13/16	*22*	1 1/4	*32*	1 1/4	*32*	0.51	*0.23*
1	*25*	1/2	*15*	11/16	*17*	15/16	*24*	1 3/8	*35*	1 3/8	*35*	0.67	*0.30*
		3/4	*20*	13/16	*22*	15/16	*24*	1 7/16	*37*	1 7/16	*37*	0.76	*0.34*
1 1/4	*32*	1/2	*15*	11/16	*17*	1 1/16	*27*	1 1/2	*38*	1 1/2	*38*	1.07	*0.49*
		3/4	*20*	13/16	*22*	1 1/8	*29*	1 5/8	*41*	1 5/8	*41*	1.02	*0.46*
		1	*25*	15/16	*24*	1 1/8	*29*	1 11/16	*43*	1 11/16	*43*	1.21	*0.55*
1 1/2	*40*	1/2	*15*	3/4	*19*	1 1/4	*32*	1 5/8	*41*	1 5/8	*41*	1.53	*0.69*
		3/4	*20*	7/8	*22*	1 5/16	*33*	1 13/16	*47*	1 13/16	*47*	1.55	*0.70*
		1	*25*	1	*25*	1 1/4	*32*	1 13/16	*47*	1 13/16	*47*	1.44	*0.65*
		1 1/4	*32*	1 3/16	*30*	1 1/4	*32*	1 7/8	*48*	1 7/8	*48*	1.74	*0.79*
2	*50*	1/2	*15*	1 3/16	*30*	1 7/16	*37*	1 3/8	*35*	1 3/8	*35*	2.22	*1.01*
		3/4	*20*	1 5/16	*33*	1 1/2	*38*	2	*51*	2	*51*	2.20	*1.00*
		1	*25*	1 1/16	*27*	1 7/16	*37*	2	*51*	2	*51*	2.08	*0.94*
		1 1/4	*32*	1 3/16	*30*	1 7/16	*37*	2 1/16	*52*	2 1/16	*52*	2.33	*1.06*
		1 1/2	*40*	1 5/16	*33*	1 1/2	*38*	2 1/8	*54*	2 1/8	*54*	2.59	*1.17*
2 1/2	*65*	1	*25*	1	*25*	1 3/4	*44*	2 5/16	*59*	2 5/16	*59*	2.93	*1.33*
		1 1/4	*32*	1 3/16	*30*	1 3/4	*44*	2 3/8	*60*	2 3/8	*60*	3.41	*1.55*
		1 1/2	*40*	1 5/16	*33*	1 13/16	*47*	2 7/16	*62*	2 7/16	*62*	3.68	*1.67*
		2	*50*	1 9/16	*40*	1 7/8	*48*	2 9/16	*65*	2 9/16	*65*	4.01	*1.82*
3	*80*	1 1/4	*32*	1 5/8	*41*	2 5/16	*59*	2 15/16	*75*	2 15/16	*75*	5.98	*2.71*
		1 1/2	*40*	1 5/8	*41*	2 5/16	*59*	2 15/16	*75*	2 15/16	*75*	5.65	*2.56*
		2	*50*	1 5/8	*41*	2 1/4	*57*	2 15/16	*75*	2 15/16	*75*	5.25	*2.38*
		2 1/2	*65*	1 7/8	*48*	2 3/16	*56*	3 1/16	*78*	3 1/16	*78*	6.44	*2.92*
4	*100*	2	*50*	2 3/16	*56*	2 15/16	*75*	3 5/8	*92*	3 5/8	*92*	11.89	*5.39*
		2 1/2	*65*	2 3/16	*56*	2 3/4	*70*	3 5/8	*92*	3 5/8	*92*	11.27	*5.11*
		3	*80*	2 3/16	*56*	2 11/16	*68*	3 5/8	*92*	3 5/8	*92*	10.63	*4.82*
5	*125*	4	*100*	2 13/16	*73*	3 5/16	*84*	4 3/8	*111*	4 3/8	*111*	16.47	*7.47*
6	*150*	3	*80*	2 5/16	*59*	3 13/16	*98*	4 13/16	*124*	4 13/16	*124*	19.43	*8.81*
		4	*100*	2 13/16	*73*	3 7/8	*98*	4 15/16	*125*	4 15/16	*125*	23.53	*10.67*
		5	*125*	3 3/8	*86*	3 13/16	*98*	5	*127*	5	*127*	26.66	*12.09*

Note: See page 37 for pressure-temperature ratings.

Cast Iron Threaded Fittings

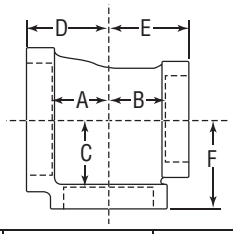
Class 125 (Standard)

FIGURE 358
Tee



Size		A		B		Unit Weight Black	
NPS	*DN*	in	*mm*	in	*mm*	lbs	*kg*
1/4	*8*	1/2	*13*	13/16	*22*	0.22	*0.10*
3/8	*10*	5/8	*16*	1	*25*	0.35	*0.16*
1/2	*15*	11/16	*17*	1 1/8	*29*	0.56	*0.25*
3/4	*20*	13/16	*22*	1 5/16	*33*	0.84	*0.38*
1	*25*	15/16	*24*	1 1/2	*38*	1.25	*0.57*
1 1/4	*32*	1 1/8	*29*	1 3/4	*44*	2.03	*0.92*
1 1/2	*40*	1 5/16	*33*	1 15/16	*49*	2.70	*1.22*
2	*50*	1 9/16	*40*	2 1/4	*57*	4.23	*1.92*
2 1/2	*65*	1 13/16	*47*	2 11/16	*68*	6.67	*3.02*
3	*80*	2 3/16	*56*	3 1/8	*79*	10.00	*4.54*
3 1/2	*90*	2 7/16	*62*	3 7/16	*87*	13.29	*6.03*
4	*100*	2 11/16	*68*	3 3/4	*95*	16.33	*7.41*
5	*125*	3 5/16	*84*	4 1/2	*114*	27.33	*12.39*
6	*150*	3 7/8	*98*	5 1/8	*130*	40.85	*18.53*
8	*200*	5 3/16	*132*	6 9/16	*167*	79.00	*35.83*

FIGURE 359
Tee Reducing



Size						A		B		C		D		E		F		Unit Weight Black	
NPS	*DN*	NPS	*DN*	NPS	*DN*	in	*mm*	in	*mm*	in	*mm*	in	*mm*	in	*mm*	in	*mm*	lbs	*kg*
1/2	*15*	1/2	*15*	1/4	*8*	1 1/16	*17*	11/16	*17*	13/16	*22*	1 1/8	*29*	1 1/8	*29*	1 1/8	*29*	0.57	*0.26*
				3/8	*10*	1 1/16	*17*	11/16	*17*	3/4	*19*	1 1/8	*29*	1 1/8	*29*	1 1/8	*29*	0.57	*0.26*
				3/4	*20*	1 3/16	*22*	13/16	*22*	11/16	*17*	1 1/4	*32*	1 1/4	*32*	13/16	*22*	0.68	*0.31*
				1	*25*	1	*25*	1	*25*	13/16	*22*	1 7/16	*37*	1 7/16	*37*	1 3/8	*35*	1.00	*0.45*
3/4	*20*	1/4	*8*	3/4	*20*	1 3/16	*22*	15/16	*24*	13/16	*22*	15/16	*24*	1 1/4	*32*	15/16	*24*	0.79	*0.36*
		1/2	*15*	1/2	*15*	1 1/16	*17*	11/16	*17*	13/16	*22*	13/16	*22*	1 1/8	*29*	1 1/4	*32*	0.64	*0.29*
				3/4	*20*	1 3/16	*22*	13/16	*22*	13/16	*22*	15/16	*24*	1 1/4	*32*	15/16	*24*	0.75	*0.34*
		3/4	*20*	1/4	*8*	9/16	*14*	9/16	*14*	7/8	*22*	11/16	*17*	11/16	*17*	13/16	*22*	0.62	*0.28*
				3/8	*10*	1 1/16	*17*	11/16	*17*	15/16	*24*	13/16	*22*	13/16	*22*	1 1/4	*32*	0.75	*0.34*
				1/2	*15*	1 1/16	*17*	11/16	*17*	13/16	*22*	13/16	*22*	13/16	*22*	1 1/4	*32*	0.76	*0.34*
				1	*25*	1 5/16	*24*	15/16	*24*	13/16	*22*	1 7/16	*37*	1 7/16	*37*	1 3/8	*35*	0.99	*0.45*
1	*25*	1/4	*8*	1	*25*	1 5/16	*24*	15/16	*24*	15/16	*24*	1 1/2	*38*	1 1/4	*32*	1 1/2	*38*	1.08	*0.49*
		1/2	*15*	1/2	*15*	1 1/16	*17*	3/4	*19*	15/16	*24*	1 1/4	*32*	13/16	*22*	1 3/8	*35*	0.90	*0.41*
				3/4	*20*	1 3/16	*22*	13/16	*22*	15/16	*24*	1 3/8	*35*	1 1/4	*32*	1 7/16	*37*	0.91	*0.41*
				1	*25*	1 5/16	*24*	15/16	*24*	15/16	*24*	1 1/2	*38*	1 3/8	*35*	1 1/2	*38*	1.08	*0.49*
		3/4	*20*	1/2	*15*	1 1/16	*17*	11/16	*17*	15/16	*24*	1 1/4	*32*	13/16	*22*	1 3/8	*35*	0.89	*0.40*
				3/4	*20*	1 3/16	*22*	13/16	*22*	15/16	*24*	1 3/8	*35*	15/16	*24*	1 7/16	*37*	1.00	*0.45*
				1	*25*	1 5/16	*24*	15/16	*24*	15/16	*24*	1 1/2	*38*	1 7/16	*37*	1 1/2	*38*	1.13	*0.51*
		1	*25*	1/4	*8*	1 1/16	*17*	11/16	*17*	1 1/8	*29*	1 1/8	*29*	1 1/4	*32*	1 3/8	*35*	1.01	*0.46*
				1/2	*15*	1 1/16	*17*	11/16	*17*	15/16	*24*	1 1/4	*32*	1 1/4	*32*	1 3/8	*35*	1.01	*0.46*
				3/4	*20*	1 3/16	*22*	13/16	*22*	15/16	*24*	1 3/8	*35*	1 3/8	*35*	1 7/16	*37*	1.11	*0.50*
				1 1/4	*32*	1 1/8	*29*	1 1/8	*29*	15/16	*24*	1 11/16	*43*	1 11/16	*43*	1 9/16	*40*	1.49	*0.68*
				1 1/2	*40*	1 1/4	*32*	1 1/4	*32*	1	*25*	1 13/16	*47*	1 13/16	*47*	1 5/8	*41*	1.84	*0.83*
				2	*50*	1 7/16	*37*	1 7/16	*37*	1	*25*	2	*50*	2	*50*	1 3/4	*44*	2.70	*1.22*

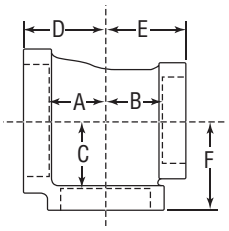
Note: See page 37 for pressure-temperature ratings.

Continued on next page.

Cast Iron Threaded Fittings

Class 125 (Standard)

FIGURE 359
Tee Reducing



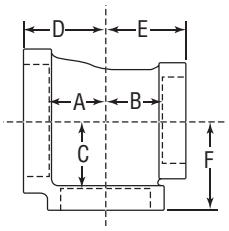
Size						A		B		C		D		E		F		Unit Weight Black	
NPS	DN	NPS	DN	NPS	DN	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lbs	kg
1¼	32	½	15	½	15	13/16	22	13/16	22	1 1/8	29	1 7/16	37	15/16	24	1 5/8	41	1.00	0.45
				1	25	1 5/16	24	15/16	24	1 1/8	29	1 9/16	40	1 3/8	35	1 11/16	43	1.38	0.63
				1¼	32	1 1/8	29	1 1/8	29	1 1/8	29	1 3/4	44	1 9/16	40	1 3/4	44	1.64	0.74
		¾	20	¾	20	13/16	22	13/16	22	1 1/8	29	1 7/16	37	15/16	24	1 5/8	41	1.27	0.58
				1	25	1 5/16	24	15/16	24	1 1/8	29	1 9/16	40	1 7/16	37	1 11/16	43	1.43	0.65
				1¼	32	1 1/8	29	1 1/8	29	1 1/8	29	1 3/4	44	1 5/8	41	1 3/4	44	1.73	0.78
		1	25	½	15	1 1/16	17	11/16	17	1 1/8	29	15/16	24	1 1/4	32	1 9/16	40	1.27	0.58
				¾	20	1 3/16	22	13/16	22	1 1/8	29	1 7/16	37	1 3/8	35	1 5/8	41	1.36	0.62
				1	25	1 5/16	24	15/16	24	1 1/8	29	1 9/16	40	1 9/16	40	1 11/16	43	1.53	0.69
				1¼	32	1 1/8	29	1 1/8	29	1 1/8	29	1 3/4	44	1 11/16	43	1 3/4	44	1.79	0.81
				1½	40	1 1/4	32	1 1/4	32	13/16	22	1 7/8	48	1 13/16	47	1 13/16	47	2.07	0.94
				2	50	1 7/16	37	1 7/16	37	13/16	22	2 1/16	52	2	50	1 7/8	48	2.66	1.21
		1¼	32	½	15	1 1/16	17	11/16	17	1 1/8	29	15/16	24	15/16	24	1 9/16	40	1.47	0.67
				¾	20	1 3/16	22	13/16	22	1 1/8	29	1 7/16	37	1 7/16	37	1 5/8	41	1.57	0.71
				1	25	1 5/16	24	15/16	24	1 1/8	29	1 9/16	40	1 9/16	40	1 11/16	43	1.73	0.78
				1½	40	1 1/4	32	1 1/4	32	13/16	22	1 7/8	48	1 7/8	48	1 13/16	47	2.29	1.04
				2	50	1 7/16	37	1 7/16	37	13/16	22	2 1/16	52	2 1/16	52	1 7/8	48	2.81	1.27
1½	40	½	15	1¼	32	13/16	22	1 1/8	29	1 1/4	32	1 13/16	47	1 9/16	40	1 7/8	48	1.93	0.88
				1½	40	15/16	24	1 1/4	32	15/16	24	1 15/16	49	1 11/16	43	1 15/16	49	2.14	0.97
		¾	20	1½	40	15/16	24	1 1/4	32	15/16	24	1 15/16	49	1 3/4	44	1 15/16	49	2.18	0.99
		1	25	½	15	13/16	22	3/4	19	1 1/4	32	1 7/16	37	15/16	24	1 11/16	43	1.75	0.79
				¾	20	7/8	22	13/16	22	1 1/4	32	1 1/2	38	1 3/8	35	1 3/4	44	1.70	0.77
				1	25	1	25	15/16	24	1 1/4	32	1 5/8	41	1 1/2	38	1 13/16	47	1.72	0.78
				1¼	32	13/16	22	1 1/8	29	1 1/4	32	1 13/16	47	1 11/16	43	1 7/8	48	2.08	0.94
				1½	40	15/16	24	1 1/4	32	15/16	24	1 15/16	49	1 13/16	47	1 15/16	49	2.29	1.04
				2	50	1 1/2	38	1 7/16	37	15/16	24	2 1/8	54	2	50	2	51	2.91	1.32
		1¼	32	½	15	13/16	22	11/16	17	1 1/4	32	1 7/16	37	15/16	24	1 11/16	43	1.67	0.76
				¾	20	7/8	22	13/16	22	1 1/4	32	1 1/2	38	1 7/16	37	1 3/4	44	1.79	0.81
				1	25	1	25	15/16	24	1 1/4	32	1 5/8	41	1 9/16	40	1 13/16	47	1.97	0.89
				1¼	32	13/16	22	1 1/8	29	1 1/4	32	1 13/16	47	1 3/4	44	17/8	48	2.28	1.03
				1½	40	15/16	24	1 1/4	32	15/16	24	1 15/16	49	1 7/8	48	1 15/16	49	2.50	1.13
				2	50	1 1/2	38	1 7/16	37	15/16	24	2 1/8	54	2 1/16	52	2	51	3.07	1.39
		1½	40	½	15	13/16	22	13/16	22	1 1/4	32	1 7/16	37	1 7/16	37	1 11/16	43	1.84	0.83
				¾	20	7/8	22	7/8	22	1 1/4	32	1 1/2	38	1 1/2	38	1 3/4	44	1.95	0.88
				1	25	1	25	1	25	1 1/4	32	1 5/8	41	1 5/8	41	1 13/16	47	2.13	0.97
				1¼	32	13/16	22	13/16	22	1 1/4	32	1 13/16	47	1 13/16	47	1 7/8	48	2.44	1.11
				2	50	1 1/2	38	1 1/2	38	15/16	24	2 1/8	54	2 1/8	54	2	51	3.23	1.46
				2½	65	1 13/16	47	1 13/16	47	15/16	24	2 7/16	62	2 7/16	62	2 3/16	56	4.15	1.88

Note: See page 37 for pressure-temperature ratings.

Cast Iron Threaded Fittings

Class 125 (Standard)

FIGURE 359
Tee Reducing



Size						A		B		C		D		E		F		Unit Weight Black	
NPS	*DN*	NPS	*DN*	NPS	*DN*	in	*mm*	in	*mm*	in	*mm*	in	*mm*	in	*mm*	in	*mm*	lbs	*kg*
2	50	1/2	15	1 1/2	40	15/16	24	1 3/8	35	1 1/2	38	2	51	1 13/16	47	2 1/8	54	2.95	1.34
				2	50	1 9/16	40	1 7/16	37	1 9/16	40	2 1/4	57	1 7/8	48	2 1/4	57	3.30	1.50
		3/4	20	1 1/4	32	1 3/16	22	1 1/8	29	1 7/16	37	1 7/8	48	1 3/4	44	2 1/16	52	2.50	1.13
				1 1/2	40	1 5/16	24	15/16	24	1 1/2	38	2	51	1 13/16	47	2 1/8	54	3.40	1.54
				2	50	1 9/16	40	1 7/16	37	1 9/16	40	2 1/4	57	1 15/16	49	2 1/4	57	3.31	1.50
		1	25	1	25	11/16	17	11/16	17	1 7/16	37	1 3/4	44	1 5/8	41	2	51	2.70	1.22
				1 1/4	32	13/16	22	1 1/8	29	1 1/2	38	1 7/8	48	1 3/4	44	2 1/16	52	2.94	1.33
				1 1/2	40	15/16	24	1 1/4	32	1 1/2	38	2	51	1 13/16	47	2 1/8	54	2.85	1.29
				2	50	1 9/16	40	1 7/16	37	1 9/16	40	2 1/4	57	2	51	2 1/4	57	3.46	1.57
				2 1/2	65	1 7/8	48	1 13/16	47	1 9/16	40	2 9/16	65	2 3/8	60	2 7/16	62	4.88	2.21
		1 1/4	32	1/2	15	11/16	17	1	25	1 7/16	37	1 3/4	44	1 5/8	41	2	51	2.48	1.12
				3/4	20	7/8	22	7/8	22	1 7/16	37	1 9/16	40	1 1/2	38	1 15/16	49	2.50	1.13
				1	25	11/16	17	1	25	1 7/16	37	1 3/4	44	1 5/8	41	2	51	2.73	1.24
				1 1/4	32	13/16	22	1 1/8	29	1 7/16	37	1 7/8	48	1 3/4	44	2 1/16	52	2.90	1.32
				1 1/2	40	15/16	24	1 1/4	32	1 1/2	38	2	51	1 7/8	48	2 1/8	54	3.13	1.42
				2	50	1 9/16	40	1 7/16	37	1 9/16	40	2 1/4	57	2 1/16	52	2 1/4	57	3.71	1.68
				2 1/2	65	1 7/8	48	1 3/4	44	1 9/16	40	2 9/16	65	2 3/8	60	2 7/16	62	4.54	2.06
		1 1/2	40	1/2	15	13/16	22	13/16	22	1 7/16	37	1 1/2	38	1 7/16	37	1 7/8	48	2.34	1.06
				3/4	20	7/8	22	7/8	22	1 7/16	37	1 9/16	40	1 1/2	38	1 15/16	49	2.46	1.12
				1	25	11/16	17	1	25	1 7/16	37	1 3/4	44	1 5/8	41	2	51	2.66	1.21
				1 1/4	32	13/16	22	13/16	22	1 7/16	37	1 7/8	48	1 13/16	47	2 1/16	52	2.98	1.35
				1 1/2	40	15/16	24	15/16	24	1 1/2	38	2	51	1 15/16	49	2 1/8	54	3.24	1.47
				2	50	1 9/16	40	1 1/2	38	1 9/16	40	2 1/4	57	2 1/8	54	2 1/4	57	3.70	1.68
				2 1/2	65	1 7/8	48	1 15/16	49	1 9/16	40	2 9/16	65	2 9/16	65	2 7/16	62	5.46	2.48
		2	50	1/2	15	13/16	22	13/16	22	1 7/16	37	1 1/2	38	1 1/2	38	1 7/8	48	2.74	1.24
				3/4	20	7/8	22	7/8	22	1 7/16	37	1 9/16	40	1 9/16	40	1 15/16	49	2.86	1.30
				1	25	11/16	17	11/16	17	1 7/16	37	1 3/4	44	1 3/4	44	2	51	3.05	1.38
				1 1/4	32	13/16	22	13/16	22	1 7/16	37	1 7/8	48	1 7/8	48	2 1/16	52	3.38	1.53
				1 1/2	40	15/16	24	15/16	24	1 1/2	38	2	51	2	51	2 1/8	54	3.59	1.63
				2 1/2	65	1 7/8	48	1 7/8	48	1 9/16	40	2 9/16	65	2 9/16	65	2 7/16	62	5.17	2.34
				3	100	3	76	3	76	2 7/16	62	3 11/16	94	3 11/16	94	3 1/2	89	7.87	3.57

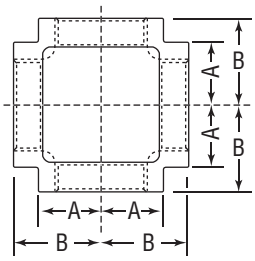
Continued on next page.

Note: See page 37 for pressure-temperature ratings.

Cast Iron Threaded Fittings

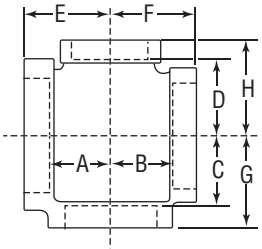
Class 125 (Standard)

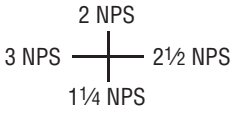
FIGURE 360
Cross



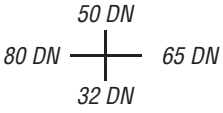
Size		A		B		Unit Weight Black	
NPS	DN	in	mm	in	mm	lbs	kg
1/2	15	13/16	22	9/16	14	2.80	1.27
3/4	20	1 5/16	33	13/16	22	1.03	0.47
1	25	1 1/2	38	15/16	24	1.59	0.72
1 1/4	32	1 3/4	44	1 1/8	29	2.42	1.10
1 1/2	40	1 15/16	49	1 5/16	33	3.21	1.46
2	50	2 1/4	57	1 9/16	40	5.28	2.39
2 1/2	65	2 11/16	68	1 13/16	47	8.07	3.66
3	80	3 1/8	79	2 3/16	56	11.84	5.37
4	100	3 13/16	98	2 3/4	70	19.63	8.90
6	150	5 1/8	130	3 7/8	98	47.67	21.62

FIGURE 361
Cross Reducing





Read as:
3 x 2½ x 2 x 1¼



Read as:
80 x 65 x 50 x 32

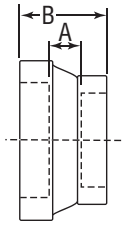
Size								A		B		C		D		E, F		G, H		Unit Weight	
NPS	DN	NPS	DN	NPS	DN	NPS	DN	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lbs	kg
1	25	1	25	3/4	20	3/4	20	13/16	22	13/16	22	15/16	24	15/16	24	1 3/8	35	1 7/16	37	1.30	0.59
1 1/4	32	1 1/4	32	1	25	1	25	15/16	24	15/16	24	1 1/8	29	1 1/8	29	1 9/16	40	1 11/16	43	2.04	0.93
1 1/2	40	1	25	1	25	1	25	1	25	1 1/8	29	1 1/4	32	1 1/4	32	1 5/8	41	1 13/16	47	2.74	1.24
		1 1/4	32	1	25	1	25	1	25	1	25	1 1/4	32	1 1/4	32	1 5/8	41	1 13/16	47	2.67	1.21
		1 1/2	40	1	25	1	25	1	25	1	25	1 1/4	32	1 1/4	32	1 5/8	41	1 13/16	47	2.51	1.14
				1 1/4	32	1	25	1 1/8	29	1 1/8	29	13/16	22	15/16	24	1 13/16	47	1 7/8	48	3.90	1.77
						1 1/4	32	1 1/8	29	1 1/8	29	1 3/8	35	1 3/8	35	1 13/16	47	1 7/8	48	3.95	1.79
2	50	1 1/2	40	1	25	1	25	11/16	17	1 1/8	29	1 7/16	37	1 7/16	37	1 3/4	44	2	51	3.57	1.62
				1 1/4	32	1	25	1 1/8	29	13/16	22	1 1/2	38	1 7/16	37	1 7/8	48	2 1/8	54	4.25	1.93
						1 1/4	32	13/16	22	13/16	22	1 1/2	38	1 1/2	38	1 7/8	48	2 1/16	52	4.18	1.90
		2	50	1	25	1	25	11/16	17	11/16	17	1 7/16	37	1 7/16	37	1 3/4	44	2	51	3.22	1.46
				1 1/4	32	1 1/4	32	1 1/8	29	1 1/8	29	1 7/16	37	1 7/16	37	1 7/8	48	2 1/8	54	4.00	1.81
				1 1/2	40	1 1/2	40	1 1/4	32	1 1/4	32	1 7/16	37	1 7/16	37	2	51	2 1/8	54	4.08	1.85
2 1/2	65	2	50	1	25	1	25	1	25	11/16	17	1 13/16	47	1 13/16	47	1 15/16	49	2 5/16	59	5.11	2.32
				1 1/2	40	1 1/2	40	1 1/4	32	15/16	24	1 7/8	48	1 7/8	48	2 3/16	56	2 7/16	62	6.13	2.78
				2	50	2	50	1 1/2	38	1 3/4	44	1 7/8	48	1 7/8	48	2 7/16	62	2 9/16	65	7.23	3.28
		2 1/2	65	1 1/4	32	1	25	13/16	22	13/16	22	1 3/4	44	1 13/16	47	2 1/16	52	2 3/8	60	5.39	2.44
						1 1/4	32	1 1/8	29	1 1/8	29	1 13/16	47	1 13/16	47	2 1/16	52	2 3/8	60	5.26	2.39
				1 1/2	40	1 1/2	40	1 1/4	32	1 1/4	32	1 7/8	48	1 7/8	48	2 3/16	56	2 7/16	62	5.68	2.58
				2	50	2	50	1 9/16	40	1 9/16	40	1 15/16	49	1 15/16	49	2 7/16	62	2 9/16	65	6.82	3.09
3	80	3	80	1 1/2	40	1 1/2	40	1 3/8	35	1 3/8	35	2 3/16	56	2 3/16	56	2 5/16	59	2 13/16	73	7.91	3.59
				2	50	2	50	1 5/8	41	1 5/8	41	2 3/16	56	2 3/16	56	2 9/16	65	2 15/16	75	8.85	4.01
4	100	4	100	2	50	2	50	2	50	2	50	2 11/16	68	2 11/16	68	2 3/4	70	3 7/16	87	12.00	5.44

Note: See page 37 for pressure-temperature ratings.

Cast Iron Threaded Fittings

Class 125 (Standard)

FIGURE 367
Concentric Reducer



Size				A		B		Unit Weight Black	
NPS	*DN*	NPS	*DN*	in	*mm*	in	*mm*	lbs	*kg*
3/4	*20*	1/2	*15*	5/8	*16*	1 9/16	*40*	0.40	*0.18*
1	*25*	1/2 (Hex)	*15*	11/16	*17*	1 11/16	*43*	0.54	*0.24*
		3/4 (Hex)	*20*	7/16	*11*	1 1/2	*38*	0.63	*0.29*
1 1/4	*32*	1/2	*15*	9/16	*14*	1 5/8	*41*	0.84	*0.38*
		3/4	*20*	1	*25*	2 1/8	*54*	0.90	*0.41*
		1	*25*	15/16	*24*	2 1/8	*54*	1.07	*0.49*
1 1/2	*40*	1/2	*15*	1/2	*13*	1 5/8	*41*	1.00	*0.45*
		3/4	*20*	1/2	*13*	1 5/8	*41*	1.20	*0.54*
		1	*25*	1/2	*13*	1 3/4	*44*	1.50	*0.68*
		1 1/4	*32*	1	*25*	2 1/4	*57*	1.45	*0.66*
2	*50*	1/2	*15*	5/8	*16*	2	*51*	2.00	*0.91*
		3/4	*20*	3/4	*19*	2	*51*	1.90	*0.86*
		1	*25*	3/4	*19*	2	*51*	1.83	*0.83*
		1 1/4	*32*	13/16	*22*	2 1/8	*54*	1.78	*0.81*
		1 1/2	*40*	7/8	*22*	2 3/16	*56*	1.98	*0.90*
2 1/2	*65*	1 1/2	*40*	3/4	*19*	2	*51*	3.10	*1.41*
		2	*50*	1	*25*	2 9/16	*65*	2.98	*1.35*
3	*80*	3/4	*20*	15/16	*24*	2 1/2	*64*	4.31	*1.95*
		2	*50*	1 1/16	*27*	2 3/4	*70*	3.96	*1.80*
		2 1/2	*65*	15/16	*24*	2 13/16	*73*	4.40	*2.00*
4	*100*	2	*50*	1 3/16	*30*	2 15/16	*75*	6.50	*2.95*
		2 1/2	*65*	1 3/16	*30*	3 1/8	*79*	7.78	*3.53*
		3	*80*	1 1/16	*27*	3 1/8	*79*	7.01	*3.18*
5	*125*	4	*100*	1 1/16	*27*	3 5/16	*84*	10.48	*4.75*
6	*150*	4	*100*	1 1/8	*29*	3 7/16	*87*	13.83	*6.27*
		5	*125*	1 1/8	*29*	3 9/16	*90*	15.53	*7.04*
8	*200*	6	*150*	1 1/4	*32*	3 7/8	*98*	29.10	*13.20*

Note: See page 37 for pressure-temperature ratings.

Cast Iron Threaded Fittings

Class 125 (Standard)

FIGURE 387 Square Head Plugs, Cored

Size		Unit Weight			
		Black		Galv.	
NPS	DN	lbs	kg	lbs	kg
3/4	20	0.13	0.06	0.13	0.06
1	25	0.25	0.11	0.25	0.11
1 1/4	32	0.39	0.18	0.39	0.18
1 1/2	40	0.50	0.23	0.50	0.23
2	50	0.82	0.37	0.82	0.37
2 1/2	65	1.32	0.60	1.32	0.60
3	80	1.87	0.85	1.87	0.85
3 1/2	90	2.50	1.13	2.50	1.13
4	100	4.00	1.81	4.00	1.81

FIGURE 388 Square Head Plugs, Solid

Size		Unit Weight			
		Black		Galv.	
NPS	DN	lbs	kg	lbs	kg
1/2	15	0.10	0.05	0.10	0.05
3/4	20	0.17	0.08	0.17	0.08
1	25	0.32	0.15	0.32	0.15
1 1/4	32	0.53	0.24	0.53	0.24
1 1/2	40	0.76	0.34	0.76	0.34
2	50	1.23	0.56	1.23	0.56
2 1/2	65	2.00	0.91	2.00	0.91
3	80	3.18	1.44	3.18	1.44
3 1/2	90	4.38	1.99	–	–

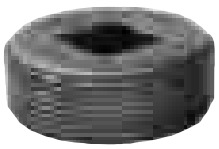
FIGURE 389 Bar Plugs, Cored

Size		Unit Weight			
		Black		Galv.	
NPS	DN	lbs	kg	lbs	kg
4	100	3.82	1.73	3.82	1.73
5	125	6.50	2.95	6.50	2.95
6	150	9.94	4.51	9.94	4.51
8	200	20.26	9.19	20.26	9.19

FIGURE 380 Bar Plugs, Solid

Size		Unit Weight	
		Black	
NPS	DN	lbs	kg
4	100	5.68	2.58
5	125	9.60	4.35
6	150	14.78	6.70

FIGURE 390 Countersunk Plugs



Size		Unit Weight			
		Black		Galv.	
NPS	DN	lbs	kg	lbs	kg
1	25	0.20	0.09	0.20	0.09
1 1/4	32	0.32	0.15	0.32	0.15
1 1/2	40	0.47	0.21	0.47	0.21
2	50	0.84	0.38	0.84	0.38
2 1/2	65	1.40	0.63	–	–
3	80	2.25	1.02	–	–
3 1/2	90	3.02	1.37	–	–
4	100	3.76	1.71	–	–

See page 32 (Malleable Iron) for other available sizes.

FIGURE 381 Cap

Size		Unit Weight			
		Black		Galv.	
NPS	DN	lbs	kg	lbs	kg
2 1/2	65	2.55	1.16	–	–
3	80	4.10	1.86	–	–
4	100	6.40	2.90	–	–
5	125	10.70	4.85	–	–
6	150	14.20	6.44	14.20	6.44
8	200	27.23	12.35	27.23	12.35

According to specifications, hex bushings and cored plugs should be used with 150# malleable iron and 125# cast iron. Solid plugs and face bushings are recommended for use with 250# and 300# fittings.

Note: See page 37 for pressure-temperature ratings.

Series ELO-231FRB – 11.2 K-factor Upright and Pendent Sprinklers Quick Response, Standard Coverage

IMPORTANT

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

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

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General Description

TYCO Series ELO-231FRB 11.2K Quick Response, Standard Coverage, Upright and Pendent Sprinklers (see Figure 1) are automatic sprinklers of the frangible bulb type. They are quick response spray sprinklers that produce a hemispherical water distribution pattern below the deflector.

The 11.2K ELO-231FRB Upright and Pendent Sprinklers were subjected to full scale, high-piled storage fire tests to qualify their use in lieu of 5.6 or 8.0 K-factor standard spray sprinklers for the protection of high-piled storage.

Higher flow rates can be achieved at much lower pressures with the 11.2K ELO-231FRB Sprinklers, making their use highly advantageous in high density applications, such as the protection of high-piled storage.

For in-rack applications, an upright intermediate level version of the Series ELO-231FRB Sprinklers can be obtained by utilizing the Series ELO-231FRB Upright Sprinkler with the WSG-2 Guard & Shield, and a pendent intermediate level version of the Series ELO-231FRB Sprinklers can be obtained by utilizing the Series ELO-231FRB Pendent Sprinkler with the WS-2 Shield. If there is a possibility of the pendent intermediate level version being exposed to mechanical damage, a G-2 Guard can be added.

NOTICE

The Series ELO-231FRB Sprinklers described herein must be installed and maintained in compliance with this document, as well as with the applicable standards of the National Fire Protection Association (NFPA), in addition to the standards of any other authorities having jurisdiction. Failure to do so may impair the performance of these devices.

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

Installation of Series ELO-231FRB Pendent Sprinklers in recessed escutcheons will void all sprinkler warranties, as well as possibly void the sprinkler's Approvals and/or Listings.

NFPA 13 prohibits the installation of 1/2 in. NPT sprinklers with a K-factor greater than 5.6K in new installations. They are intended for use in retrofit applications only.

Sprinkler Identification Numbers (SINs)

See Table A

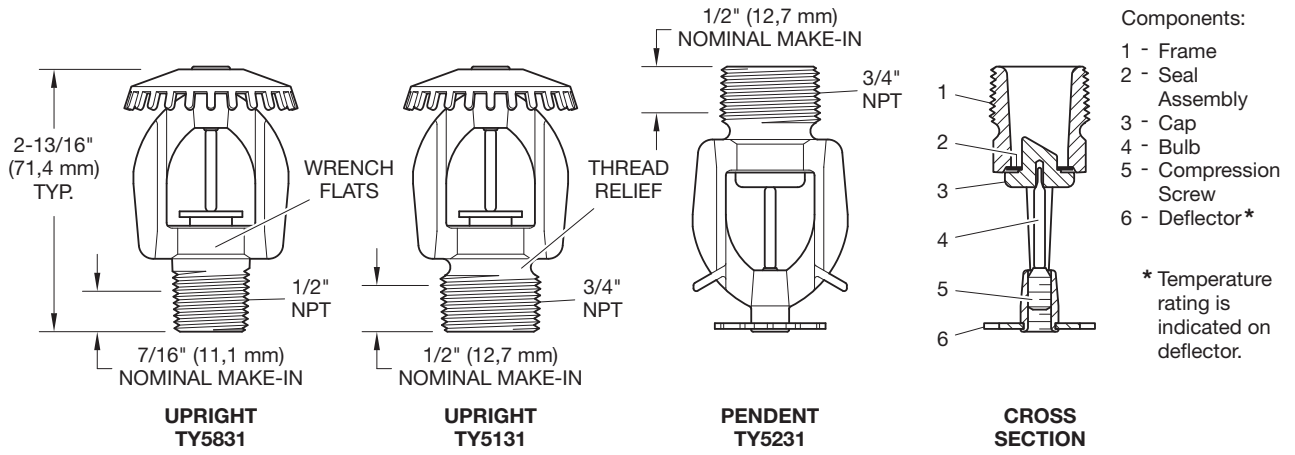

FIGURE 1
SERIES ELO-231FRB 11.2K UPRIGHT - 3/4 IN. NPT (TY5131), UPRIGHT - 1/2 IN. NPT (TY5831), AND PENDENT - 3/4 IN. NPT (TY5231) SPRINKLERS

Technical Data

Approvals
UL and C-UL Listed
FM Approved
NYC Approved
VdS Approved
LPCB Approved
EAC Approved

Note: *For complete approval information, see Table C. UL and C-UL Listings and FM Approval apply to the service conditions described in the Design Criteria section.*

Finishes
Sprinkler: See Table C

Physical Characteristics

Frame	Bronze
Cap	Bronze
Sealing Assembly	Beryllium Nickel w/TEFLON
Bulb (3mm dia.)	Glass
Compression Screw	Bronze
Deflector	Bronze

Additional Technical Data
See Table A

Item	Description
Sprinkler Identification Number (SIN)	TY5131 – Upright 3/4 in. NPT TY5231 – Pendent 3/4 in. NPT TY5831 - Upright 1/2 in. NPT TY5131 is a re-designation for Central SIN C5131. TY5231 is a re-designation for Central SIN C5231, G1870, and S2551.
K-factor, (gpm/psi) (lpm/bar)	K=11.2 GPM/psi½ (161,4 LPM/bar½)
Temperature Rating °F (°C)[1]	155°F (68°C)[1] 200°F (93°C) 286°F (141°C)
Thread Size	3/4 in. NPT or 1/2 in. NPT
Sprinkler Orientation	Upright/Pendent
Maximum Working Pressure, psi (bar)	175 psi (12,1 bar)

Notes:
1. For laboratory listings and approvals, see Table C.

TABLE A
SERIES ELO-231FRB 11.2K UPRIGHT AND PENDENT SPRINKLERS TECHNICAL DATA

Operation

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

Design Criteria

UL and C-UL Listings Requirements
The 11.2K Model ELO-231FRB (TY5131, TY5231, and TY5831) Sprinklers are to be installed in accordance with NFPA 13 standard sprinkler position and area/density flow calculation requirements for light or ordinary occupancies, as well as high-piled storage occupancies (solid-piled, palletized, rack storage, bin box, and shelf storage including but not limited to Class I-IV and Group A plastics) with a minimum residual (flowing) pressure of 7 psi (0,5 bar) for wet pipe systems only. For additional information, see Table B.

FM Approval Requirements
The 11.2K Model ELO-231FRB (TY5131 and TY5231) Sprinklers are to be installed in accordance with the applicable control mode density/area guidelines provided by FM Approvals for wet systems only.

Note: *FM Approvals guidelines may differ from UL and C-UL Listings criteria.*

Storage Type	NFPA	FM Global
Sprinkler Type	Standard Coverage	Storage
Response Type	QR	QR
System Type	Wet	Wet
Temperature Rating ºF (ºC)[1]	155°F (68°C)[1] 200°F (93°C) 286°F (141°C)	155°F (68°C)[1] 200°F (93°C) 286°F (141°C)
Open Frame (i.e., no solid shelves) Single, Double, Multiple-Row, or Portable Rack Storage of Class I-IV and Group A or B Plastics	Refer to NFPA 13	Refer to FM 2-0 and 8-9
Solid Pile or Palletized Storage of Class I-IV and Group A or B Plastics	Refer to NFPA 13	Refer to FM 2-0 and 8-9
Idle Pallet Storage	Refer to NFPA 13	Refer to FM 2-0, 8-9, and 8-24
Rubber Tire Storage	Refer to NFPA 13	Refer to FM 2-0 and 8-3
Roll Paper Storage (Refer to the Standard)	Refer to NFPA 13	Refer to FM 8-21
Flammable/Ignitable Liquid Storage (Refer to the Standard)	Refer to NFPA 30	Refer to FM 7-29
Aerosol Storage (Refer to the Standard)	Refer to NFPA 30B	Refer to FM 7-31
Automotive Components in Portable Racks (Control mode only; refer to the Standard)	Refer to NFPA 13	N/A

Notes:
1. For laboratory listings and approvals, see Table C.

N/A – Not Applicable

TABLE B
SERIES ELO-231FRB 11.2K UPRIGHT AND PENDENT SPRINKLERS
COMMODITY SELECTION AND DESIGN CRITERIA OVERVIEW

Sprinkler Type	Temperature Rating	Bulb Liquid Color	Sprinkler Finish	
			Natural Brass	Chrome Plated
Upright (TY5131) & Pendent (TY5231)	155°F (68°C)	Red	1, 2, 3, 4, 5, 6, 7	1, 2, 3, 4, 5, 6, 7
	200°F (93°C)	Green		
	286°F (141°C)	Blue		
Upright (TY5831)	155°F (68°C)	Red	1	N/A
	200°F (93°C)	Green		

Notes:
1. UL Listed
2. C-UL Listed
3. FM Approved
4. NYC Approved under MEA 291-04-E
5. VdS Approved, TY5131 Ref. No. G410022 and TY5231 Ref. No. G410023
6. LPCB Approved, TY5131 Ref. No. 094c/01 and TY5231 Ref. No. 094c/02
7. EAC Approved

N/A - Not Available

TABLE C
SERIES ELO-231FRB UPRIGHT AND PENDENT 11.2K SPRINKLERS, QUICK RESPONSE
LABORATORY LISTINGS AND APPROVALS
(See the Design Criteria Section)

P/N 50 — XXX — X — XXX

		SIN
500	11.2K UPRIGHT (3/4 in. NPT)	TY5131
502	11.2K PENDENT (3/4 in. NPT)	TY5231
503	11.2K UPRIGHT (1/2 in. NPT)	TY5831[b]

	SPRINKLER FINISH
1	NATURAL BRASS
9	CHROME PLATED[b]

	TEMPERATURE RATING
155	155°F (68°C)
200	200°F (93°C)
286	286°F (141°C)[b]

a. For TY5131 and TY5231 sprinklers only.
b. For retrofit applications only.

TABLE D
SERIES ELO-231FRB UPRIGHT & PENDENT 11.2K SPRINKLERS, QUICK RESPONSE PART NUMBER SELECTION

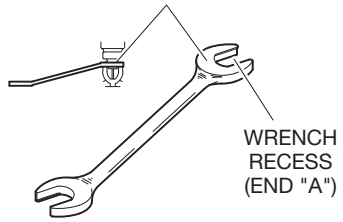

FIGURE 2
W-TYPE 3
SPRINKLER WRENCH

Installation

TYCO Series ELO-231FRB 11.2K Quick Response, Standard Coverage, Upright and Pendent Sprinklers must be installed in accordance with this section.

General Instructions

NOTICE

Do not install any bulb-type sprinkler if the bulb is cracked or there is a loss of liquid from the bulb. With the sprinkler held horizontally, a small air bubble should be present. The diameter of the air bubble is approximately 1/16 in. (1,6 mm) for the 155°F (68°C) to 3/32 in. (2,4 mm) for the 286°F (141°C) temperature ratings.

A leak tight 1/2 in. NPT sprinkler joint should be obtained by applying a minimum-to-maximum torque of 7 ft-lb to 14 ft-lb (9,5 N·m to 19,0 N·m). A leak-tight 3/4 in. NPT sprinkler joint should be obtained by applying a minimum-to-maximum torque of 10 ft-lb to 20 ft-lb(13,4 N·m to 26,8 N·m). Higher levels of torque can distort the sprinkler inlet with consequent leakage or impairment of the sprinkler.

Do not attempt to make up for insufficient adjustment in the escutcheon plate by under- or over-tightening the sprinkler. Readjust the position of the sprinkler fitting to suit.

The Series ELO-231FRB Upright and Pendent Sprinklers must be installed in accordance with the following instructions:

Step 1. Upright sprinklers are to be installed in the upright position; pendent sprinklers are to be installed in the pendent position.

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

Step 3. Tighten the sprinkler into the sprinkler fitting using only the W-Type 3 Sprinkler Wrench shown in Figure 2. Apply the sprinkler wrench to the wrench flats shown in Figure 1.

Care and Maintenance

TYCO Series ELO-231FRB 11.2K Quick Response, Standard Coverage, Upright and Pendent Sprinklers must be maintained and serviced in accordance with this section.

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

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

Automatic sprinklers must never be painted, plated, coated or otherwise altered after leaving the factory. Modified sprinklers must be replaced. Sprinklers that have been exposed to corrosive products of combustion, but have not operated, should be replaced if they cannot be completely cleaned by wiping the sprinkler with a cloth or by brushing it with a soft bristle brush.

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

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the National Fire Protection Association such as NFPA 25, in addition to the standards of any other authorities having jurisdiction. Contact the installing contractor or product manufacturer with any questions.

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

Limited Warranty

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

Ordering Procedure

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

Sprinkler
Specify: Series ELO-231FRB 11.2K Quick Response (specify Pendent or Upright) Sprinkler, (specify SIN), (specify) temperature rating, (specify) finish, P/N (specify from Table D)

Sprinkler Wrench
Specify: W-Type 3 Sprinkler Wrench, P/N 56-895-1-001

1467 Elmwood Avenue, Cranston, RI 02910 | Telephone +1-401-781-8220

Johnson Controls

Series TY-FRB – 2.8, 4.2, 5.6, and 8.0 K-Factor Upright, Pendent, and Recessed Pendent Sprinklers Quick Response, Standard Coverage

IMPORTANT

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

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

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General Description

The TYCO Series TY-FRB 2.8, 4.2, 5.6, and 8.0 K-factor Upright, Pendent, and Recessed Pendent Sprinklers described in herein are quick response, standard coverage, decorative 3 mm glass bulb-type spray sprinklers. They are designed for use in light or ordinary hazard, commercial occupancies such as banks, hotels, and shopping malls.

The sprinkler, where applicable, is intended for use in areas with a finished ceiling. This recessed pendent sprinkler uses one of the following recessed escutcheons:

- Two-piece Style 10 (1/2 in. NPT) or Style 40 (3/4 in. NPT) Recessed Escutcheon with 1/2 in. (12,7 mm) of recessed adjustment or up to 3/4 in. (19,1 mm) of total adjustment from the flush pendent position.
- Two-piece Style 20 (1/2 in. NPT) or Style 30 (3/4 in. NPT) Recessed Escutcheon with 1/4 in. (6,4 mm) of recessed adjustment or up to 1/2 in. (12,7 mm) of total adjustment from the flush pendent position.

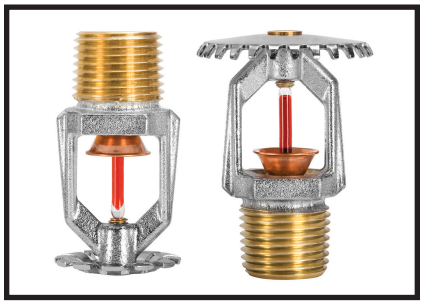
The adjustment provided by the recessed escutcheon reduces the accuracy to which the fixed pipe drops to the sprinklers must be cut.

Corrosion-resistant coatings, where applicable, are utilized to extend the life of copper alloy sprinklers beyond what would be obtained when exposed to corrosive atmospheres. Although corrosion-resistant coated sprinklers have passed the standard corrosion tests of the applicable approval agencies, the testing is not representative of all possible corrosive atmospheres. Consequently, it is recommended that the end user be consulted with respect to the suitability of these coatings for any given corrosive environment. The effects of ambient temperature, concentration of chemicals, and gas/chemical velocity, should be considered, as a minimum, along with the corrosive nature of the chemical to which the sprinklers will be exposed.

An intermediate level version of the Series TY-FRB Pendent Sprinklers is detailed in technical data sheet TFP356. Sprinkler guards are detailed in technical data sheet TFP780.

NOTICE

The Series TY-FRB 2.8, 4.2, 5.6, and 8.0 K-factor Upright, Pendent, and Recessed Pendent Sprinklers described herein must be installed and maintained in compliance with this document and with the applicable standards of the National Fire Protection Association (NFPA), in addition to the standards of any authorities having jurisdiction. Failure to do so may impair the performance of these devices.



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

NFPA 13 prohibits installation of 1/2 in. NPT sprinklers with K-factors greater than 5.6 in new construction. They are intended for retrofit in existing sprinkler systems only.

Sprinkler Identification Number (SIN)

TY1131 . . . Upright 2.8K, 1/2 in. NPT
TY1231 . . Pendent 2.8K, 1/2 in. NPT
TY2131 . . . Upright 4.2K, 1/2 in. NPT
TY2231 . . Pendent 4.2K, 1/2 in. NPT
TY3131 . . . Upright 5.6K, 1/2 in. NPT
TY3231 . . Pendent 5.6K, 1/2 in. NPT
TY4131 . . . Upright 8.0K, 3/4 in. NPT
TY4231 . . Pendent 8.0K, 3/4 in. NPT
TY4831 . . . Upright 8.0K, 1/2 in. NPT
TY4931 . . Pendent 8.0K, 1/2 in. NPT

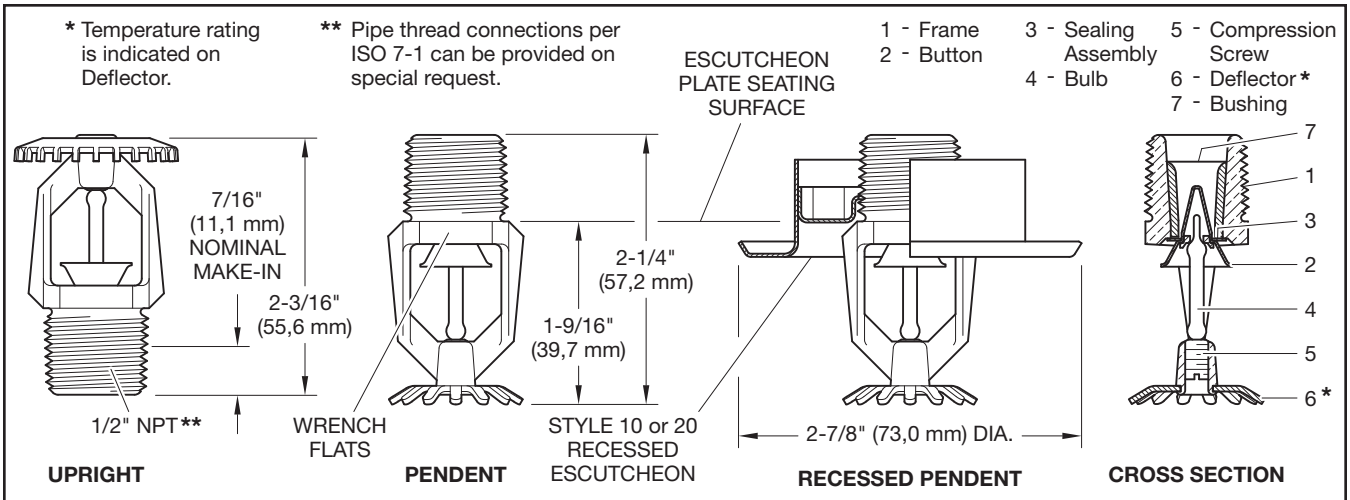


FIGURE 1
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY1131) AND PENDENT (TY1231) SPRINKLERS
2.8 K-FACTOR, 1/2 IN. NPT

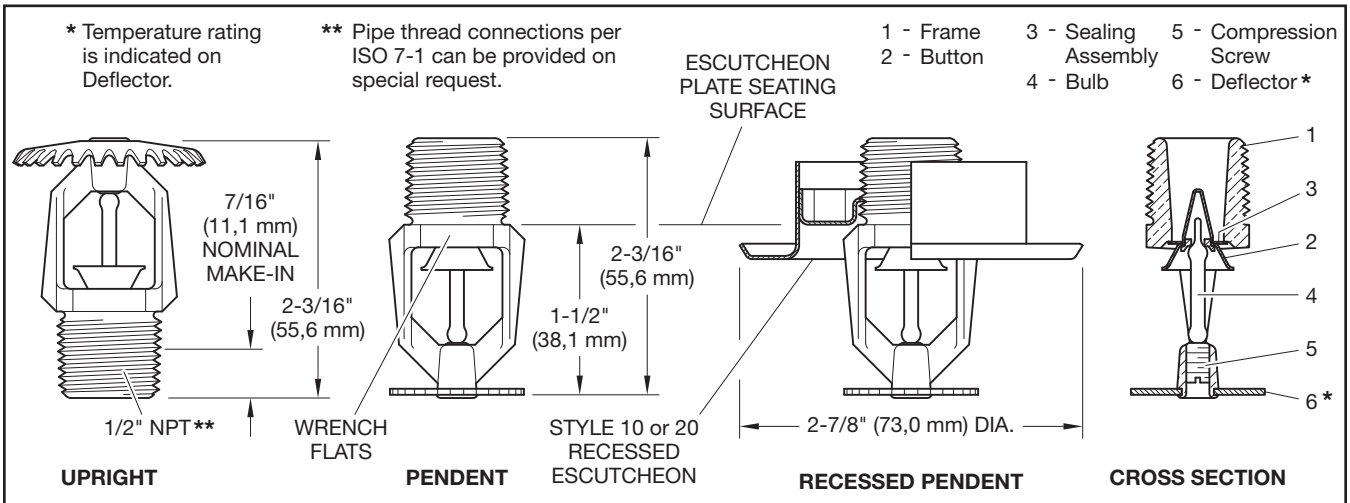


FIGURE 2
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY2131) AND PENDENT (TY2231) SPRINKLERS
4.2 K-FACTOR, 1/2 IN. NPT

Technical Data

Approvals
UL and C-UL Listed
FM, LPCB, and NYC Approved
EAC Approved

Note: *For complete approval information, including corrosion-resistant status, see Tables A, B, C and D.*

Maximum Working Pressure
See Table E

Discharge Coefficient
K=2.8 gpm/psi½ (40,3 Lpm/bar½)
K=4.2 gpm/psi½ (60,5 Lpm/bar½)
K=5.6 gpm/psi½ (80,6 Lpm/bar½)
K=8.0 gpm/psi½ (115,2 Lpm/bar½)

Temperature Rating
See Tables A and B

Finishes
Sprinkler: See Table D

Recessed Escutcheon: Signal or Pure White, Grey Aluminum, Jet Black, Chrome Plated, or Natural Brass

Physical Characteristics

Frame	Bronze
Button	Brass/Copper
Sealing Assembly	Beryllium Nickel w/TEFLON
Bulb	Glass
Compression Screw	Bronze
Deflector	Copper/Bronze
Bushing (K=2.8)	Bronze

Operation

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

Design Criteria

The TYCO Series TY-FRB 2.8, 4.2, 5.6, and 8.0 K-factor Upright, Pendent, and Recessed Pendent Sprinklers are intended for fire protection systems designed in accordance with the standard installation rules recognized by the applicable Listing or Approval agency, such as UL Listing based on the requirements of NFPA 13 and FM Approval based on the requirements of the FM Global Loss Prevention Data Sheets. Use only the style 10, 20, 30, or 40 recessed escutcheon, as applicable, for recessed pendent installations.

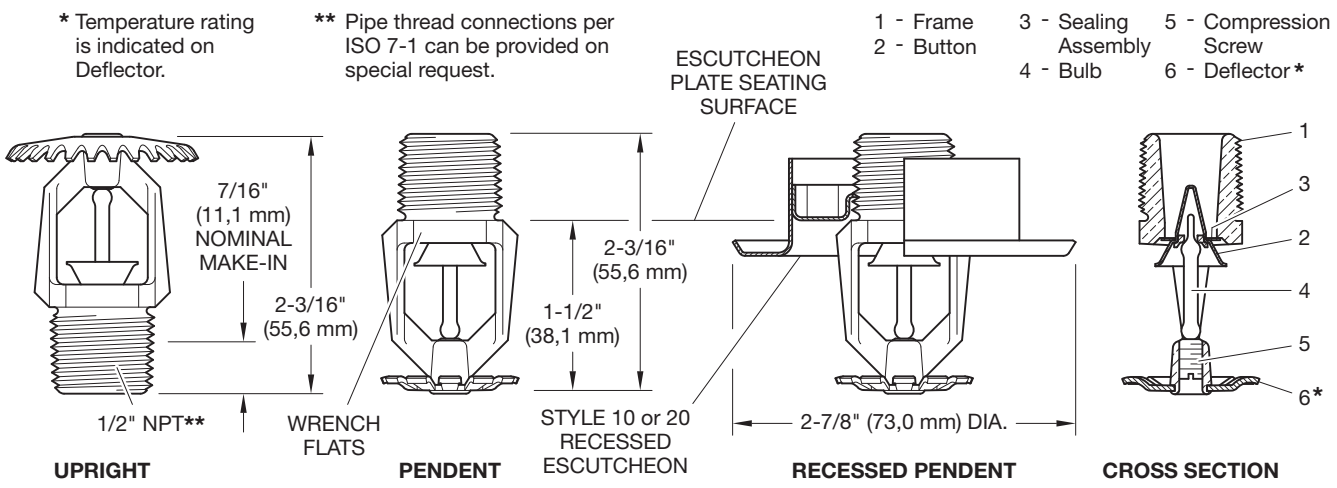


FIGURE 3
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY3131) AND PENDENT (TY3231) SPRINKLERS
5.6 K-FACTOR, 1/2 IN. NPT

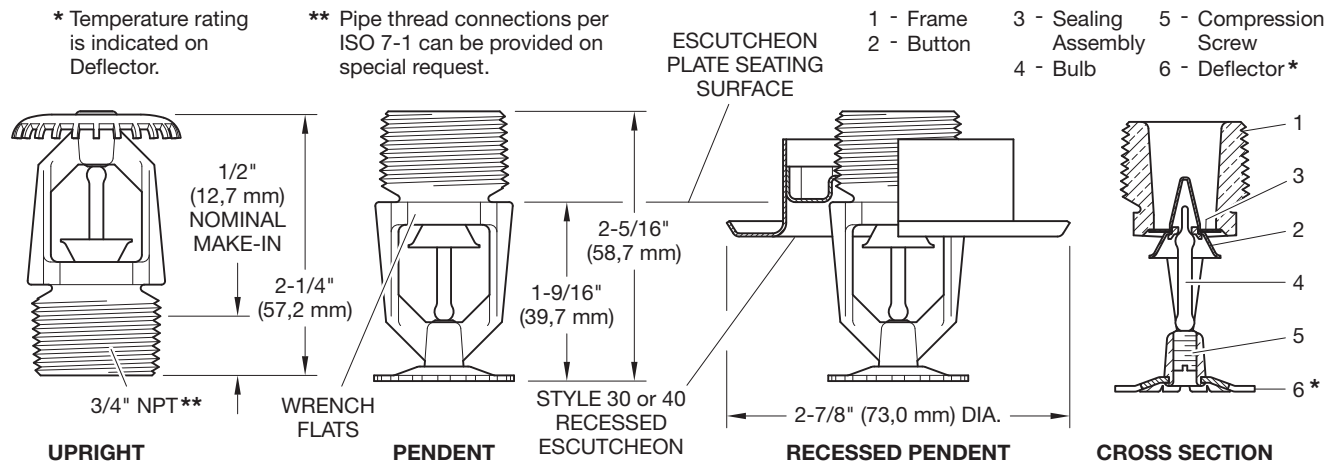


FIGURE 4
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY4131) AND PENDENT (TY4231) SPRINKLERS
8.0 K-FACTOR, 3/4 IN. NPT

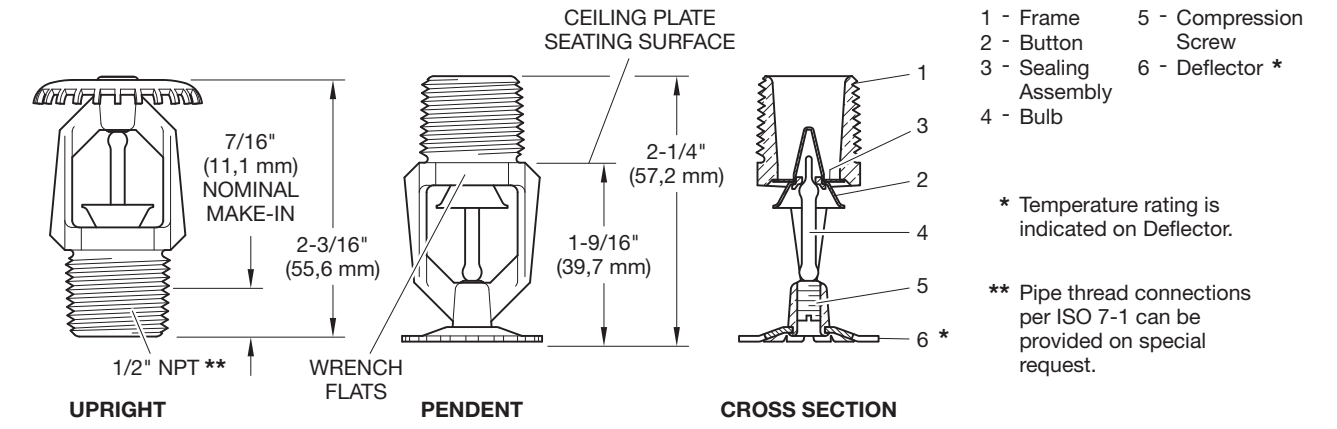


FIGURE 5
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY4831) AND PENDENT (TY4931) SPRINKLERS
8.0 K-FACTOR, 1/2 IN. NPT

Installation

The TYCO Series TY-FRB 2.8, 4.2, 5.6, and 8.0 K-factor Upright, Pendent, and Recessed Pendent Sprinklers must be installed in accordance with this section.

General Instructions
Do not install any bulb type sprinkler if the bulb is cracked or there is a loss of liquid from the bulb. With the sprinkler held horizontally, a small air bubble should be present. The diameter of the air bubble is approximately 1/16 in. (1,6 mm) for the 135°F (57°C) and 3/32 in. (2,4 mm) for the 286°F (141°C) temperature ratings. A leak-tight 1/2 in. NPT sprinkler joint should be obtained by applying a minimum-to-maximum torque of 7 ft-lb to 14 ft-lb (9,5 N·m to 19,0 N·m). A leak tight 3/4 in. NPT sprinkler joint should be obtained with a torque of 10 ft-lb to 20 ft-lb (13,4 N·m to 26,8 N·m). Higher levels of torque can distort the sprinkler inlet and cause leakage or impairment of the sprinkler. Do not attempt to compensate for insufficient adjustment in the escutcheon plate by under or over-tightening the sprinkler. Re-adjust the position of the sprinkler fitting to suit.

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

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

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

Step 3. Tighten the sprinkler into the sprinkler fitting using only the W-Type 6 Sprinkler Wrench as shown in Figure 14. Apply the sprinkler wrench to the sprinkler wrench flats as shown in Figure 1 to Figure 5.

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

Step 1. After installing the Style 10, 20, 30, or 40 Mounting Plate, as applicable, over the sprinkler threads and with pipe-thread sealant applied to the pipe threads, hand-tighten the sprinkler into the sprinkler fitting.

Step 2. Tighten the sprinkler into the sprinkler fitting using only the W-Type 7 Recessed Sprinkler Wrench as shown in Figure 15. Apply the sprinkler wrench to the sprinkler wrench flats as shown in Figure 1 to 4.

Step 3. After the ceiling is installed or the finish coat is applied, slide on the Style 10, 20, 30, or 40 closure over the Series TY-FRB Recessed Pendent Sprinkler and push the closure over the mounting plate until its flange comes in contact with the ceiling.

Care and Maintenance

The TYCO Series TY-FRB 2.8, 4.2, 5.6, and 8.0 K-factor Upright, Pendent, and Recessed Pendent Sprinklers must be maintained and serviced in accordance with this section. Before closing a fire protection system main control valve for maintenance work on the fire protection system that it controls, obtain permission to shut down the affected fire protection systems from the proper authorities and notify all personnel who may be affected by this action.

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

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

Automatic sprinklers must never be painted, plated, coated, or otherwise altered after leaving the factory. Modified sprinklers must be replaced. Sprinklers that have been exposed to corrosive products of combustion, but have not operated, should be replaced if they cannot be completely cleaned by wiping the sprinkler with a cloth or by brushing it with a soft bristle brush.

Care must be taken to avoid damage to the sprinklers before, during, and after installation. Sprinklers damaged by dropping, striking, wrench twist/slippage, or the like, must be replaced. Also, replace any sprinkler that has a cracked bulb or that has lost liquid from its bulb. For more information, see Installation section.

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the National Fire Protection Association such as NFPA 25, in addition to the standards of any other authorities having jurisdiction. Contact the installing contractor or sprinkler manufacturer regarding any questions.

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

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

Initial and frequent visual inspections of random samples are recommended for corrosion-resistant sprinklers to verify the integrity of the corrosion-resistant material of construction. Thereafter, annual inspections according to NFPA 25 should suffice. Inspections of corrosion-resistant sprinklers are recommended at close range, instead of from the floor level per NFPA. Inspection at close range can better determine the exact sprinkler condition and the long-term integrity of the corrosion-resistant material, which can be affected by the corrosive conditions present.

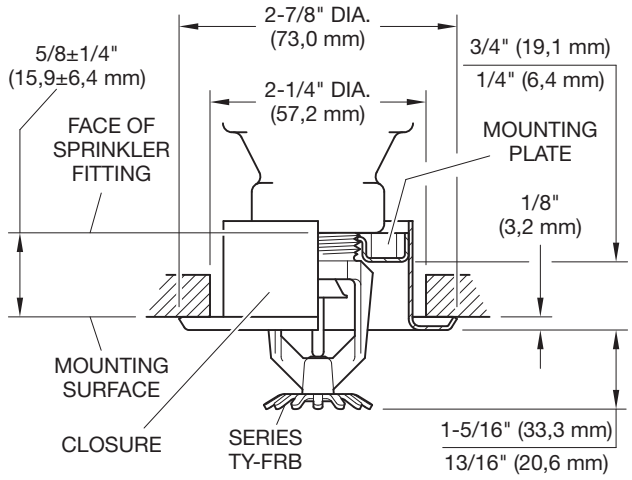


FIGURE 6
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 10 RECESSED ESCUTCHEON
2.8 K-FACTOR, 1/2 IN. NPT

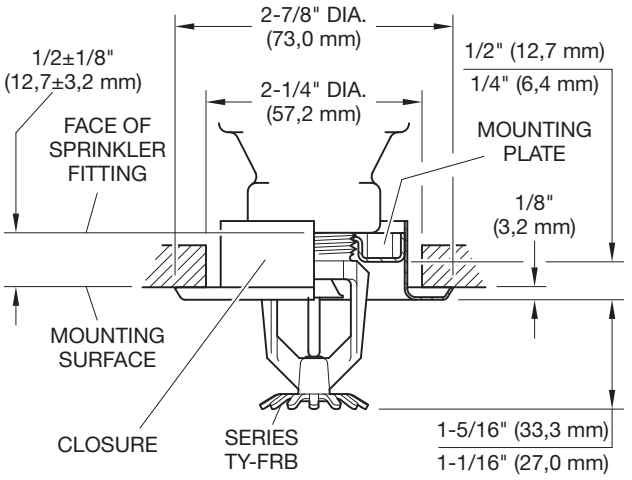


FIGURE 7
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 20 RECESSED ESCUTCHEON
2.8 K-FACTOR, 1/2 IN. NPT

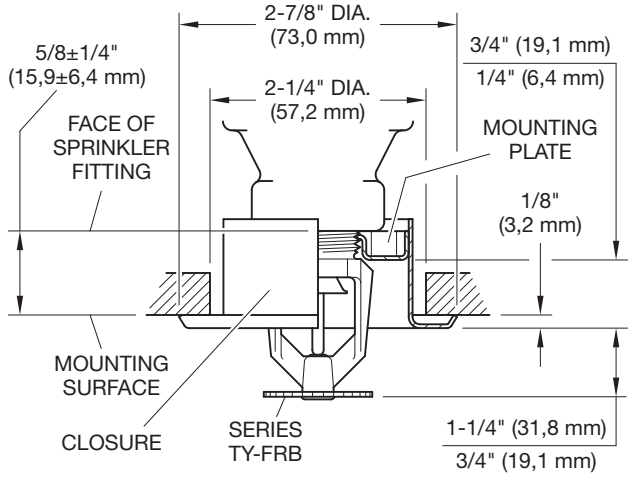


FIGURE 8
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 10 RECESSED ESCUTCHEON
4.2 K-FACTOR, 1/2 IN. NPT

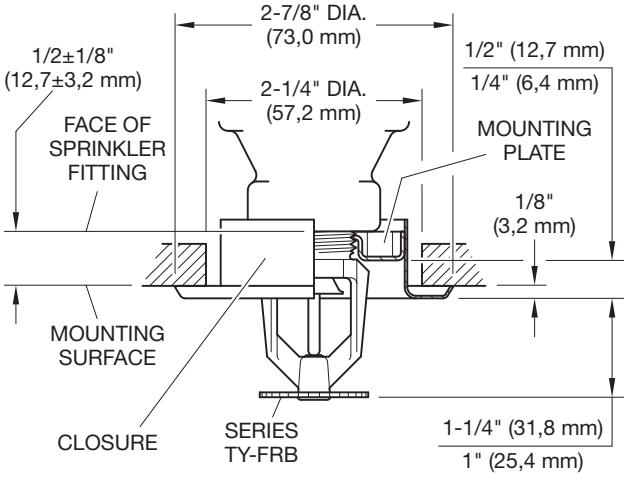


FIGURE 9
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 20 RECESSED ESCUTCHEON
4.2 K-FACTOR, 1/2 IN. NPT

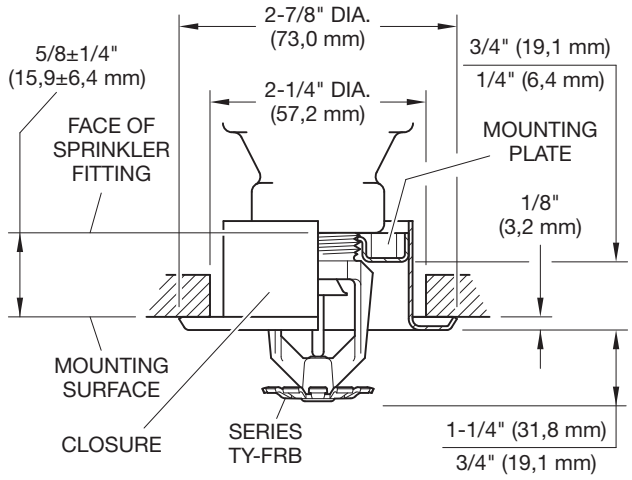


FIGURE 10
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 10 RECESSED ESCUTCHEON
5.6 K-FACTOR, 1/2 IN. NPT

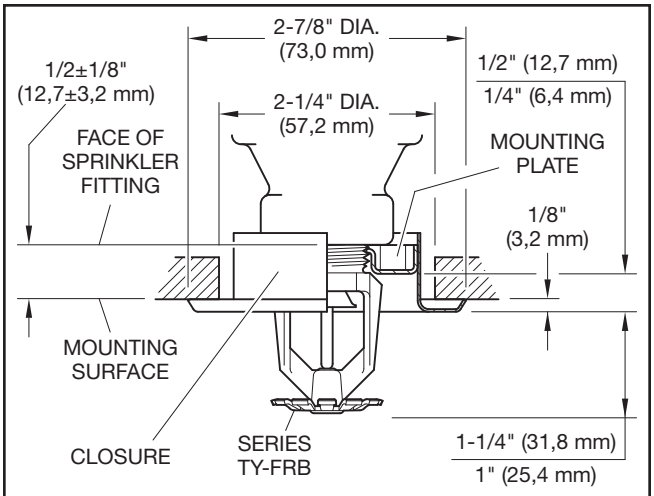


FIGURE 11
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 20 RECESSED ESCUTCHEON
5.6 K-FACTOR, 1/2 IN. NPT

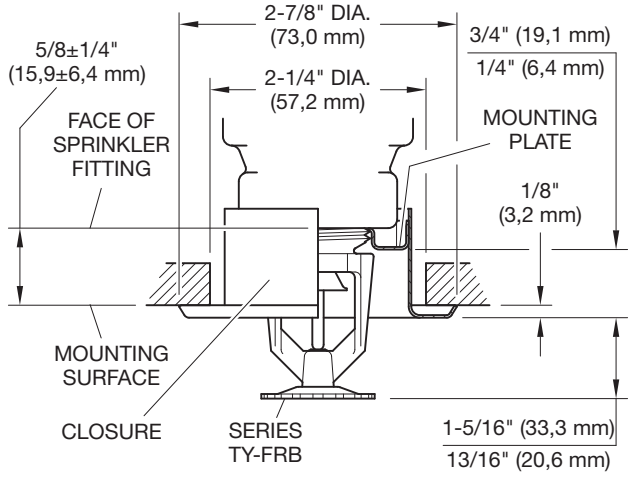


FIGURE 12
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 40 RECESSED ESCUTCHEON
8.0 K-FACTOR, 3/4 IN. NPT

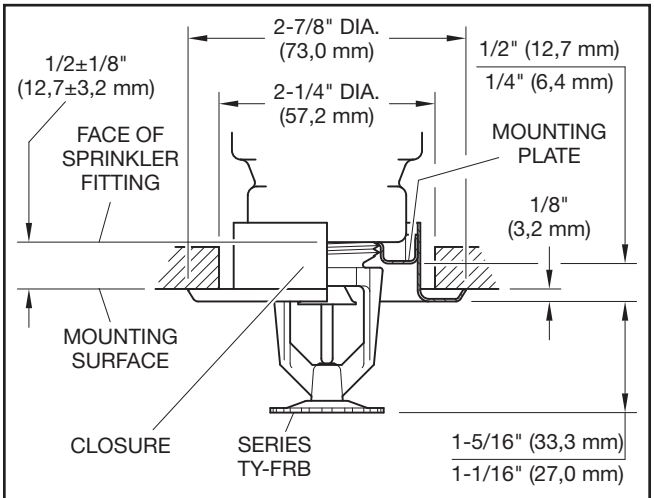


FIGURE 13
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 30 RECESSED ESCUTCHEON
8.0 K-FACTOR, 3/4 IN. NPT

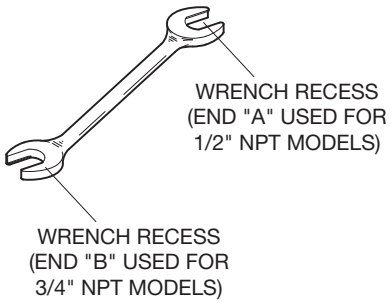


FIGURE 14
W-TYPE 6 SPRINKLER
WRENCH

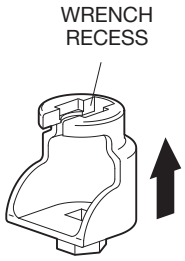


FIGURE 15
W-TYPE 7 RECESSED
SPRINKLER WRENCH

K-Factor	Type	Temperature	Bulb Liquid Color	Sprinkler Finish[5]		
				Natural Brass	Chrome Plated	Polyester[c]
2.8 1/2 in. NPT	Pendent (TY1231)	135°F (57°C)	Orange	1, 2, 3, 4		
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
		286°F (141°C)	Blue			
	Upright (TY1131)	135°F (57°C)	Orange			
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
		286°F (141°C)	Blue			
	Recessed Pendent (TY1231)[a] Figure 6	135°F (57°C)	Orange	1, 2, 4		
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
	Recessed Pendent (TY1231)[b] Figure 7	135°F (57°C)	Orange			
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			

NOTES
a. Installed with Style 10 (1/2 in. NPT) or Style 40 (3/4 in. NPT) 3/4 in. Total Adjustment Recessed Escutcheon, as applicable.
b. Installed with Style 20 (1/2 in. NPT) or Style 30 (3/4 in. NPT) 1/2 in. Total Adjustment Recessed Escutcheon, as applicable.
c. Frame and Deflector only.
1. Listed by Underwriters Laboratories, Inc., (UL) as Quick Response Sprinklers.
2. Listed by Underwriters Laboratories, Inc., for use in Canada (C-UL) as Quick Response Sprinklers.
3. Approved by Factory Mutual Research Corporation (FM) as Quick Response Sprinklers.
4. Approved by the City of New York under MEA 354-01-E.
5. Where Polyester Coated Sprinklers are noted to be UL and C-UL Listed, the sprinklers are UL and C-UL Listed, the sprinklers are UL and C-UL Listed as corrosion-resistant sprinklers.

TABLE A
LABORATORY LISTINGS AND APPROVALS FOR
2.8 K-FACTOR SPRINKLERS

K-Factor	Type	Temperature	Bulb Liquid Color	Sprinkler Finish[3]		
				Natural Brass	Chrome Plated	Polyester[c]
4.2 1/2 in. NPT	Pendent (TY2231)	135°F (57°C)	Orange	1, 2		
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
		286°F (141°C)	Blue			
	Upright (TY2131)	135°F (57°C)	Orange			
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
		286°F (141°C)	Blue			
	Recessed Pendent (TY2231)[a] Figure 8	135°F (57°C)	Orange			
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
	Recessed Pendent (TY2231)[b] Figure 9	135°F (57°C)	Orange			
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			

NOTES
a. Installed with Style 10 (1/2 in. NPT) or Style 40 (3/4 in. NPT) 3/4 in. Total Adjustment Recessed Escutcheon, as applicable.
b. Installed with Style 20 (1/2 in. NPT) or Style 30 (3/4 in. NPT) 1/2 in. Total Adjustment Recessed Escutcheon, as applicable.
c. Frame and Deflector only.
1. Listed by Underwriters Laboratories, Inc., (UL) as Quick Response Sprinklers.
2. Listed by Underwriters Laboratories, Inc., for use in Canada (C-UL) as Quick Response Sprinklers.
3. Where Polyester Coated Sprinklers are noted to be UL and C-UL Listed, the sprinklers are UL and C-UL Listed, the sprinklers are UL and C-UL Listed as corrosion-resistant sprinklers.

TABLE B
LABORATORY LISTINGS AND APPROVALS FOR
4.2 K-FACTOR SPRINKLERS

K-Factor	Type	Temperature	Bulb Liquid Color	Sprinkler Finish[8]			
				Natural Brass	Chrome Plated	Polyester[c]	Lead Coated
5.6 1/2 in. NPT	Pendent (TY3231)	135°F (57°C)	Orange	1, 2, 3, 4, 5, 6, 7			1, 2, 3, 5, 7
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	Upright (TY3131)	135°F (57°C)	Orange	1, 2, 3, 5, 6, 7			1, 2, 3, 5, 7
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	Recessed Pendent (TY3231)[a] Figure 10	135°F (57°C)	Orange	1, 2, 4, 5, 7			N/A[d]
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	Recessed Pendent (TY3231)[b] Figure 11	135°F (57°C)	Orange	1, 2, 3, 4, 5, 7			N/A
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				

NOTES

a. Installed with Style 10 (1/2 in. NPT) or Style 40 (3/4 in. NPT) 3/4 in. Total Adjustment Recessed Escutcheon, as applicable.
b. Installed with Style 20 (1/2 in. NPT) or Style 30 (3/4 in. NPT) 1/2 in. Total Adjustment Recessed Escutcheon, as applicable.
c. Frame and Deflector only.
d. Not available (N/A).
1. Listed by Underwriters Laboratories, Inc., (UL) as Quick Response Sprinklers.
2. Listed by Underwriters Laboratories, Inc., for use in Canada (C-UL) as Quick Response Sprinklers.
3. Approved by Factory Mutual Research Corporation (FM) as Quick Response Sprinklers.
4. Approved by the Loss Prevention Certification Board (LPCB Ref. No. 007k/04) as Quick Response Sprinklers. Note the following exceptions:
   - LPCB does not rate the thermal sensitivity of recessed sprinklers.
   - The recessed pendent (TY3231) sprinklers with a 286°F (141°C) temperature rating are not LPCB Approved.
5. Approved by the City of New York under MEA 354-01-E.
6. VdS Approved (For details, contact Johnson Controls, Enschede, Netherlands, Tel. 31-53-428-4444/Fax 31-53-428-3377.)
7. EAC Approved.
8. Where Polyester Coated and Lead-Coated Sprinklers are noted to be UL and C-UL Listed, the sprinklers are UL and C-UL Listed as Corrosion-Resistant Sprinklers. Where Lead-Coated Sprinklers are noted to be FM Approved, the sprinklers are FM Approved as a Corrosion-Resistant Sprinklers.

TABLE C
LABORATORY LISTINGS AND APPROVALS FOR
5.6 K-FACTOR SPRINKLERS

K-Factor	Type	Temperature	Bulb Liquid Color	Sprinkler Finish[9]			
				Natural Brass	Chrome Plated	Polyester[c]	Lead Coated
8.0 3/4 in. NPT	Pendent (TY4231)	135°F (57°C)	Orange	1, 2, 3, 4, 5, 6, 7, 8			1, 2, 5, 8
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	Upright (TY4131)	135°F (57°C)	Orange				
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	Recessed Pendent (TY4231)[a] Figure 12	135°F (57°C)	Orange	1, 2, 5, 8			N/A[d]
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	Recessed Pendent (TY4231)[b] Figure 13	135°F (57°C)	Orange	1, 2, 3, 5, 8			N/A
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
8.0 1/2 in. NPT	Pendent (TY4931)	135°F (57°C)	Orange	1, 2, 4, 5, 6, 8			1, 2, 5, 8
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	Upright (TY4831)	135°F (57°C)	Orange				
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				

NOTES

a. Installed with Style 10 (1/2 in. NPT) or Style 40 (3/4 in. NPT) 3/4 in. Total Adjustment Recessed Escutcheon, as applicable.
b. Installed with Style 20 (1/2 in. NPT) or Style 30 (3/4 in. NPT) 1/2 in. Total Adjustment Recessed Escutcheon, as applicable.
c. Frame and Deflector only.
d. Not available (N/A).
1. Listed by Underwriters Laboratories, Inc., (UL) as Quick Response Sprinklers.
2. Listed by Underwriters Laboratories, Inc., for use in Canada (C-UL) as Quick Response Sprinklers.
3. Approved by Factory Mutual Research Corporation (FM) as Quick Response Sprinklers.
4. Approved by the Loss Prevention Certification Board (LPCB Ref. No. 007k/04) as Quick Response Sprinklers. However, LPCB does not rate the thermal sensitivity of recessed sprinklers.
5. Approved by the City of New York under MEA 354-01-E.
6. VdS Approved (For details, contact Johnson Controls, Enschede, Netherlands, Tel. 31-53-428-4444/Fax 31-53-428-3377.)
7. Approved by the Loss Prevention Certification Board (LPCB Ref. No. 094a/06) as Quick Response Sprinklers.
8. EAC Approved.
9. Where Polyester Coated and Lead-Coated Sprinklers are noted to be UL and C-UL Listed, the sprinklers are UL and C-UL Listed as Corrosion-Resistant Sprinklers. Where Lead-Coated Sprinklers are noted to be FM Approved, the sprinklers are FM Approved as a Corrosion-Resistant Sprinklers.

TABLE D
LABORATORY LISTINGS AND APPROVALS FOR
8.0 K-FACTOR SPRINKLERS

K-Factor	Type	Sprinkler Finish			
		Natural Brass	Chrome Plated	Polyester	Lead Coated
2.8 1/2 in. NPT	Pendent (TY1231) and Upright (TY1131)	175 psi (12,1 bar)			N/A[2]
	Recessed Pendent (TY1231)				
4.2 1/2 in. NPT	Pendent (TY2231) and Upright (TY2131)	175 psi (12,1 bar)			N/A
	Recessed Pendent (TY2231)				
5.6 1/2 in. NPT	Pendent (TY3231) and Upright (TY3131)	250 psi (17,2 bar) or 175 psi (12,1 bar)[1]			
	Recessed Pendent (TY3231)				
8.0 3/4 in. NPT	Pendent (TY4231) and Upright (TY4131)	175 psi (12,1 bar)			175 psi (12,1 bar)
	Recessed Pendent(TY4231)				N/A
8.0 1/2 in. NPT	Pendent (TY4931) and Upright (TY4831)	175 psi (12,1 bar)			175 psi (12,1 bar)

NOTES
1. The maximum working pressure of 250 psi (17,2 bar) only applies to the Listing by Underwriters Laboratories Inc. (UL); the Listing by Underwriters Laboratories, Inc. for use in Canada (C-UL); and, the Approval by the City of New York.
2. Not available (N/A).

TABLE E
MAXIMUM WORKING PRESSURE

P/N 57 – XXX – X – XXX

		SIN
330	2.8K UPRIGHT (1/2 in. NPT)	TY1131
331	2.8K PENDENT (1/2 in. NPT)	TY1231
340	4.2K UPRIGHT (1/2 in. NPT)	TY2131
341	4.2K PENDENT (1/2 in. NPT)	TY2231
370	5.6K UPRIGHT (1/2 in. NPT)	TY3131
371	5.6K PENDENT (1/2 in. NPT)	TY3231
390	8.0K UPRIGHT (3/4 in. NPT)	TY4131
391	8.0K PENDENT (3/4 in. NPT)	TY4231
360	8.0K UPRIGHT (1/2 in. NPT)	TY4831
361	8.0K PENDENT (1/2 in. NPT)	TY4931

	SPRINKLER FINISH
1	NATURAL BRASS
3	PURE WHITE POLYESTER (RAL9010)[1]
4	SIGNAL WHITE POLYESTER (RAL9003)
5	JET BLACK POLYESTER (RAL9005)[2]
7	LEAD COATED
9	CHROME PLATED

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

NOTES
1. Eastern Hemisphere sales only.
2. Available in only 2.8K, 4.2K, and 8.0K, 155°F (68°C) and 200°F (93°C); requires longer lead time to manufacture.

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

Limited Warranty

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

Ordering Procedure

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

Sprinkler Assemblies with NPT Thread Connections
Specify: Series TY-FRB (Specify SIN), (specify K-factor), (specify Pendent or Upright) Sprinkler (specify) temperature rating, (specify) finish or coating, P/N (specify from Table F)

Recessed Escutcheon
Specify: Style (10, 20, 30, or 40) Recessed Escutcheon with (specify*) finish, P/N (specify*)

* Refer to technical data sheet TFP770

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

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

1467 Elmwood Avenue, Cranston, RI 02910 | Telephone +1-401-781-8220

Worldwide Contacts | www.tyco-fire.com

Model TY7158 — 16.8 K-factor Standard Coverage Upright Storage Sprinkler — Specific Use

IMPORTANT

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

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

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

docs.jci.com/tycofire/tfp336

General Description

The TYCO 16.8 K-factor Model TY7158 Standard Coverage Upright Storage Sprinkler is an automatic, standard response, standard coverage sprinkler intended for a specific end use retrofit application.

The TYCO Model TY7158 Sprinkler has been subjected to full-scale fire testing at UL LLC using test parameters specified by TYCO that are considered representative of the specific end use. The fire test performance results of the large scale testing have been verified by UL. Details of the tests performed and results obtained may be found in UL Test Report, *Report of a Special Services Investigation Involving K16.8 gpm/(psi)½ Upright and Pendent Sprinkler Protection of a Shelf Display and Rack Storage Arrangement of Cartoned Group A Plastic (Report Number NC27954)*.

The Design Criteria is in accordance with NFPA 13 (2022) section 24.1.7. For Design Criteria see Table A.

The specific parameters for commodity classification limits, allowable storage arrangement, maximum ceiling and storage height are based on limits established by UL tested configurations. The minimum operating pressures match those utilized during the UL testing with the number of operating sprinklers being determined in accordance with NFPA 13 (2022), 24.1.8.

For further details, contact Johnson Controls Technical Services.

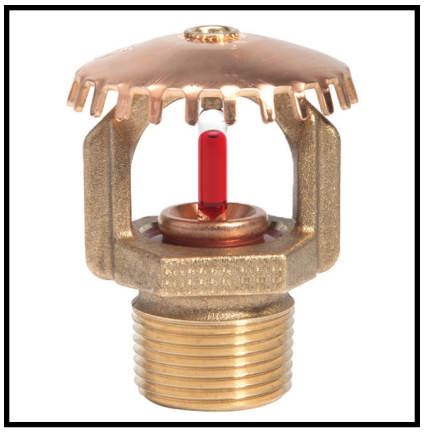
NOTICE

The Model TY7158 Standard Coverage Upright Storage Sprinkler described herein must be installed and maintained in compliance with this document, as well as with the applicable standards of the National Fire Protection Association, in addition to the standards of any other authorities having jurisdiction. Failure to do so may impair the performance of these devices.

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

Sprinkler Identification Number (SIN)

TY7158



Technical Data

Approvals

Fire Test Performance Characteristics Verified

UL VERIFIED verifyUL.com A826244

For complete details refer to:
https://verify.ul.com/verifications/105

Maximum Working Pressure
175 psi (12,1 bar)

Pipe Thread Connection
3/4 in. NPT

Minimum Spacing
6 ft (1,83 m)

Discharge Coefficient
K=16.8 gpm/psi½ (241,9 Lpm/bar½)

Temperature Ratings
155°F (68°C)
200°F (93°C)*
286°F (141°C)*

* Fire testing of the TYCO Model TY7158 Sprinkler was completed only in the 155°F (68°C) temperature rating. The results of such fire testing is outlined in UL test report number NC27954.

Finish
Natural Brass

Description	Specification Based on Fire Test Results[1]
Sprinkler Type	Upright
Temperature Rating	155°F (68°C) 200°F (93°C) 286°F (141°C)
Response Type	SR
System Type	Wet
Maximum Area of Coverage	100 ft^2 (9,3 m^2)
Maximum Ceiling Slope	2 in. rise for 12 in. run (16.7%)
Maximum Spacing	12 ft (3,7 m)
Minimum Spacing	6 ft (1,8 m)
Deflector Distance from Walls	Minimum 4 in. (100 mm) from walls but not more than 1/2 the allowable distance permitted between sprinklers
Deflector to Top of Storage	18 in. (450 mm)
Deflector the Ceiling Distance	Refer to NFPA 13 Rules for Standard Spray Sprinklers
Maximum Ceiling Height	22 ft (6,7 m)
Maximum Storage Height[1]	15 ft (4,6 m) for Palletized/Solid Piled/SRR/DRR 12 ft (3,7 m) for MRR
Storage Arrangement[1]	Palletized/Solid Piled/SRR/DRR/MRR
Required Flue Space[1]	3 in. (76 mm) transverse flue spaced provided by rack upright width for SRR/DRR 6 in. (152 mm) longitudinal flue spaces between racks for DRR 6 in. (152 mm) longitudinal and transverse flue spaces between loads for MRR
Commodity	Class I-IV, Cartoned nonexpanded plastic (Refer to NFPA 13)
Sprinkler System Design	Calculate to two separate design points: 1) 2 sprinklers (2 on 1 branch line) @ 12 psi (0,8 bar) 2) 12 sprinklers (4 on 3 branch lines) @ 7 psi (0,5 bar)
Minimum Design Area	768 ft^2 (71,4 m^2)
Obstruction Criteria	Refer to NFPA 13 Obstruction Rules for Standard Spray Sprinklers
Minimum Aisle Width[1]	4 ft (1,2 m) for SRR/DRR[2] N/A for MRR
Hose Stream allowance and Water Supply Duration	250 gpm for 60 minutes (95 Lpm for 60 minutes)

Notes:
1. For complete details, refer to test results documented in UL test report number NC27954.
2. Pallet storage is permitted in the aisles.

TABLE A
MODEL TY7158 – 16.8 K-FACTOR SPECIFIC USE UPRIGHT STORAGE SPRINKLER OVERVIEW

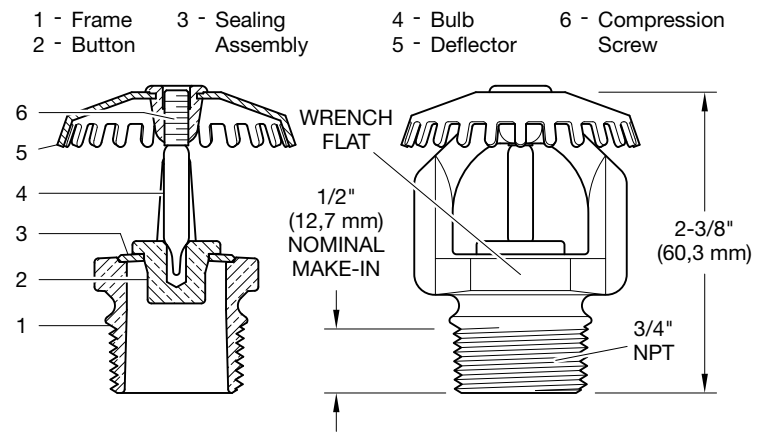


FIGURE 1
MODEL TY7158 STANDARD COVERAGE, UPRIGHT STORAGE SPRINKLER, 16.8 K-FACTOR

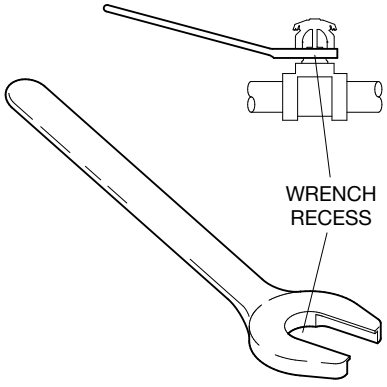


FIGURE 2
W-TYPE 8 SPRINKLER WRENCH

Physical Characteristics

Frame	Brass
Deflector	Commercial Bronze
Compression Screw	Brass
Bulb (5 mm)	Glass
Button	Brass
Sealing Assembly	Beryllium Nickel w/TEFLON

Operation

When the glass bulb reaches its rated temperature of 155°F (68°C), 200°F (93°C), or 286°F (141°C) the glass bulb bursts allowing the sprinkler to activate and flow water.

Installation

Install the TYCO Model TY7158 Standard Coverage Upright Sprinkler in accordance with this section.

General Instructions
Do not install any bulb type sprinkler if the bulb is cracked or there is a loss of liquid from the bulb. With the sprinkler held horizontal, a small air bubble should be present. For the Model TY7158 Sprinkler, the diameter of the air bubble is approximately 1/16 in. (1,6 mm).

A leak tight 3/4 in. NPT sprinkler joint should be obtained by applying a minimum-to-maximum torque or 10 ft-lb to 20 ft-lb (13,4 N·m to 26,8 N·m). Higher levels of torque may distort the sprinkler inlet with consequent leakage or impairment of the sprinkler. Only the W-Type 8 Sprinkler Wrench shown in Figure 2 shall be used during installation.

Sprinkler Installation
Install the Model TY7158 Upright Sprinkler only in the upright position as follows:

Step 1. Apply pipe-thread sealant to sprinkler threads.

Step 2. Hand-tighten sprinkler into sprinkler fitting. Do not apply force to glass bulb, grasp only by wrench flats while hand-tightening.

Step 3. Wrench tighten the Model TY7158 sprinkler 1-1/4 to 1-1/2 turns beyond hand-tightening or by applying a minimum-to-maximum torque of 10 ft-lb to 20 ft-lb (13,4 N·m to 26,8 N·m) by fully engaging (seating) the wrench on the sprinkler flats shown in Figure 1 using only the W-Type 8 Sprinkler Wrench shown in Figure 2.

NOTICE

Higher levels of torque may distort sprinkler inlet with consequent leakage or impairment of sprinkler.

Care and Maintenance

The TYCO Model TY7158 Standard Coverage Upright Sprinkler must be maintained and serviced in accordance with this section.

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

Inspection, testing, and maintenance must be performed as indicated below and in accordance with the local requirements and/or national codes. Any impairment must be immediately corrected.

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of any authorities having jurisdiction. Contact the installing contractor or product manufacturer regarding any questions.

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

Limited Warranty

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

Ordering Procedure

When placing an order, indicate the full product description and Part Number (P/N).

Sprinkler Assembly
Specify: Model TY7158 Standard Coverage Upright Sprinkler, SIN TY7158, temperature rating (specify), P/N (specify):

155°F (68°C)	51-901-1-155
200°F (93°C)*	51-901-1-200
286°F (141°C)*	51-901-1-286

* Fire testing of the TYCO Model TY7158 Sprinkler was completed only in the 155°F (68°C) temperature rating. The results of such fire testing is outlined in UL Test Report Number NC27954.

Sprinkler Wrench
Specify: W-Type 8 Sprinkler Wrench, P/N 56-892-1-001

1467 Elmwood Avenue, Cranston, RI 02910 | Telephone +1-401-781-8220

Johnson Controls

Model TY7258 — 16.8 K-factor Standard Response Sprinklers Pendent and Recessed Pendent — Specific Use

IMPORTANT

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

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

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

docs.jci.com/tycofire/tfp337

General Description

The TYCO 16.8 K-factor Model TY7258 Pendent and Recessed Pendent Sprinkler is an automatic, standard response sprinkler intended for a specific end use retrofit application.

The TYCO Model TY7258 Pendent and Recessed Pendent Sprinkler has been subjected to full-scale fire testing at UL LLC using test parameters specified by TYCO that are considered representative of the specific end use. The fire test performance results of the large scale testing have been verified by UL. Details of the tests performed and results obtained may be found in UL Test Report, *Report of a Special Services Investigation Involving K16.8 gpm/(psi)½ Upright and Pendent Sprinkler Protection of a Shelf Display and Rack Storage Arrangement of Cartoned Group A Plastic (Report Number NC27954)*.

The Design Criteria is in accordance with NFPA 13 (2022) section 24.1.7. For Design Criteria see Table A.

The specific parameters for commodity classification limits, allowable storage arrangement, maximum ceiling and storage height are based on limits established by UL tested configurations. The minimum operating pressures match those utilized during the UL testing with the number of operating sprinklers being determined in accordance with NFPA 13 (2022), 24.1.8.

For further details, contact the Technical Services Department.

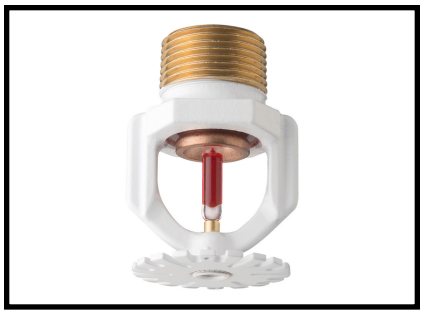
NOTICE

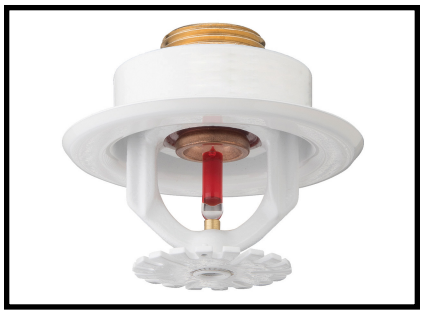
The Model TY7258 Pendent Sprinkler described herein must be installed and maintained in compliance with this document, as well as with the applicable standards of the National Fire Protection Association, in addition to the standards of any other authorities having jurisdiction. Failure to do so may impair the performance of these devices.

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

Sprinkler Identification Number (SIN)

TY7258





Description	Specification Based on Fire Test Results[1]
Sprinkler Type	Pendent
Temperature Rating	155°F (68°C) 200°F (93°C)
Response Type	SR
System Type	Wet
Maximum Area of Coverage	140 ft² (13,0 m²)
Maximum Ceiling Slope	2 in. rise for 12 in. run (16.7%)
Maximum Spacing	15 ft (4,6 m)
Minimum Spacing	7 ft (3,7 m)
Deflector Distance from Walls	Minimum 4 in. (100 mm) from walls but not more than 1/2 the allowable distance permitted between sprinklers
Deflector to Top of Storage	18 in. (450 mm)
Maximum Ceiling Height	14 ft (4,3 m)
Maximum Storage Height[1]	12 ft (3,7 m)
Storage Arrangement[1]	Back-to-Back Gondola Shelving
Commodity	Class I-IV, Cartoned nonexpanded plastic (Refer to NFPA 13)
Sprinkler System Design	Calculate to two separate design points: 1) 4 sprinklers (2 on 2 branch lines) @ 11 psi (0,8 bar) 2) 9 sprinklers (4 on 2 branch lines + 1 on 1 branchline) @ 8 psi (0,6 bar)
Minimum Design Area	768 ft² (71,4 m²)
Obstruction Criteria	Refer to NFPA 13 Obstruction Rules for Extended Coverage Sprinklers
Minimum Aisle Width[1]	5 ft (1,5 m)
Hose Stream allowance and Water Supply Duration	250 gpm for 60 minutes (95 Lpm for 60 minutes)

Notes:
1. For complete details, refer to test results documented in UL test report number NC27954.

TABLE A
MODEL TY7258 – 16.8 K-FACTOR SPECIFIC USE PENDENT AND RECESSED PENDENT STORAGE SPRINKLER OVERVIEW

Technical Data

Approvals

Fire Test Performance Characteristics Verified

UL VERIFIED verifyUL.com A826244

For complete details refer to:
https://verify.ul.com/verifications/105

Maximum Working Pressure
175 psi (12,1 bar)

Pipe Thread Connection
3/4 in. NPT

Minimum Spacing
7 ft (2,13 m)

Recessed Installation
Maximum 1/2 in. (12,7 mm) Recess

Discharge Coefficient
K=16.8 gpm/psi$^{1/2}$ (241,9 Lpm/bar$^{1/2}$)

Temperature Ratings
155°F (68°C), 200°F (93°C)

Finish
Sprinkler: Natural Brass, Signal White, Bright Chrome

Separately Ordered Escutcheon: Brass Plated, Signal White, Chrome Plated

Physical Characteristics
Frame . . . . . Brass
Deflector . . . . . Bronze
Compression Screw . . . . . Brass
Bulb (5 mm) . . . . . Glass
Button . . . . . Brass
Sealing Assembly . . Beryllium Nickel w/TEFLON

Operation

When the glass bulb reaches its rated temperature of 155°F (68°C) or 200°F (93°C), the glass bulb bursts allowing the sprinkler to activate and flow water.

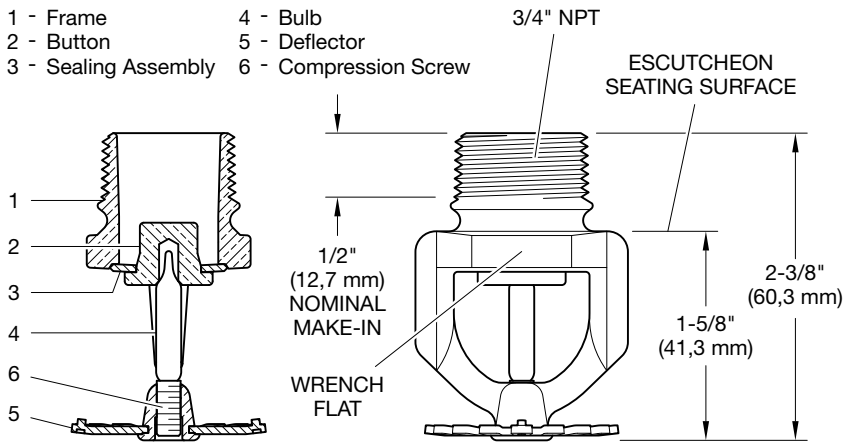


FIGURE 1
MODEL TY7258 STANDARD RESPONSE PENDENT AND RECESSED PENDENT SPRINKLERS

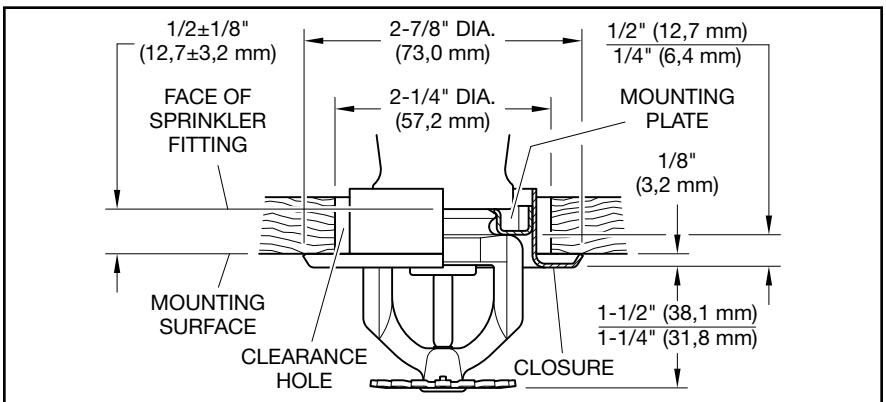


FIGURE 4
MODEL TY7258 RECESSED PENDENT SPRINKLER WITH STYLE 30 RECESSED ESCUTCHEON

Installation

Install the TYCO Model TY7258 Pendent Sprinkler in accordance with this section.

General Instructions
Do not install any bulb type sprinkler if the bulb is cracked or there is a loss of liquid from the bulb. With the sprinkler held horizontal, a small air bubble should be present. For the Model TY7258 Sprinkler, the diameter of the air bubble is approximately 1/16 in. (7,0 mm).

A leak tight 3/4 in. NPT sprinkler joint should be obtained with a torque of 10 ft-lb to 20 ft-lb (13,4 N·m to 26,8 N·m). Higher levels of torque can distort the sprinkler inlet with consequent leakage or impairment of the sprinkler.

Model TY7258 Pendent Sprinkler
The Model TY7258 Pendent Sprinklers must be installed in accordance with the following instructions:

Step 1. Apply pipe-thread sealant to sprinkler threads.

Step 2. Hand-tighten the sprinkler into the sprinkler fitting. Do not apply force to the glass bulb, grasp only by wrench flats while hand-tightening.

Step 3. Wrench tighten the Model TY7258 Sprinkler using only the W-Type 8 Sprinkler Wrench shown in Figure 2 and by fully engaging (seating) the wrench on the sprinkler wrench flats.

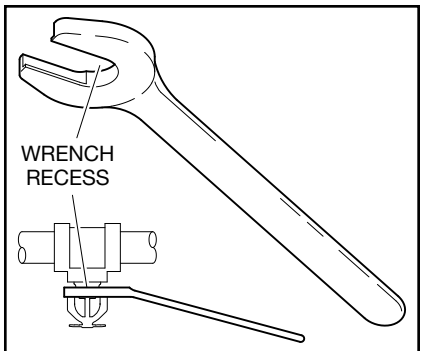


FIGURE 2
W-TYPE 8
SPRINKLER WRENCH

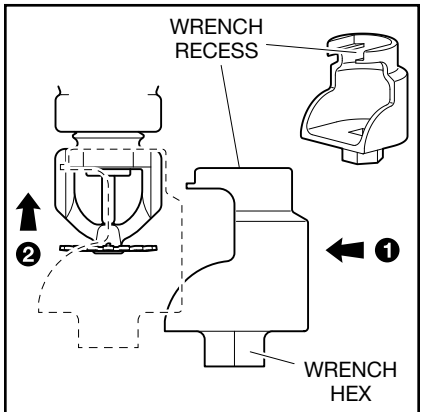


FIGURE 3
W-TYPE 38 RECESSED
SPRINKLER WRENCH

Model TY7258 Recessed Pendent Sprinkler with Style 30 Escutcheon
The Model TY7258 Recessed Pendent Sprinklers must be installed in accordance with the following instructions.

Step 1. After installing the style 30 escutcheon mounting plate over the sprinkler threads, and with pipe thread sealant applied to the pipe threads, hand tighten the sprinkler into the sprinkler fitting.

Step 2. Tighten the sprinkler into the sprinkler fitting using only the W-Type 38 Sprinkler Wrench shown in Figure 3. With reference to Figure 4, apply the W-Type 38 Recessed Sprinkler Wrench to the sprinkler wrench flats.

Step 3. After the ceiling is installed, slide the style 30 escutcheon closure over the Model TY7258 Sprinkler and push the closure over the mounting plate until its flange comes in contact with the ceiling.

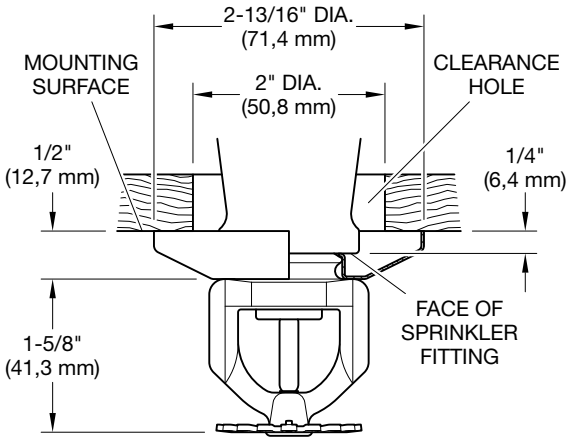


FIGURE 5
MODEL TY7258 PENDENT SPRINKLER
WITH STYLE 65 FLUSH ESCUTCHEON

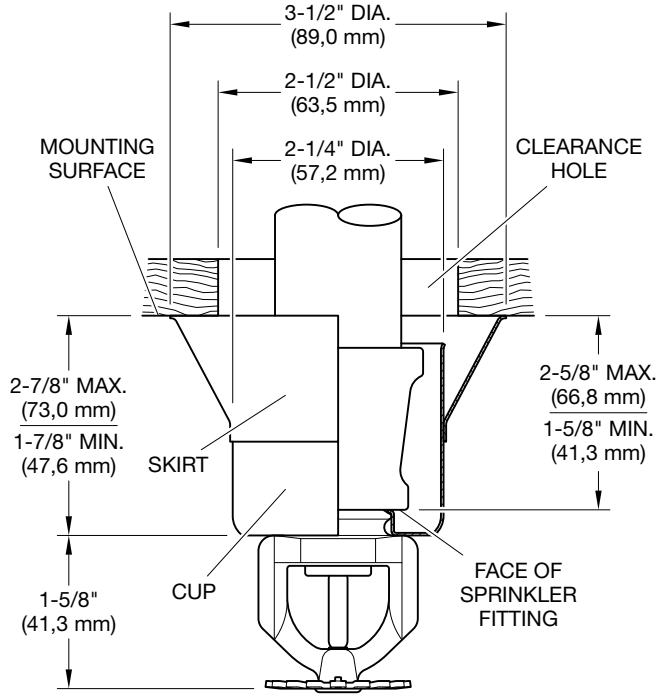


FIGURE 6
MODEL TY7258 PENDENT SPRINKLER
WITH STYLE 401 DEEP ESCUTCHEON

Model TY7258 Pendent Sprinkler with Style 65 Escutcheon

The pipe connected to the sprinkler fitting must be cut to locate the escutcheon plate seating surface at the proper nominal distance in front of the wall or below the ceiling. Manufacturing variations in the take-out of the fittings as well as the make-in of the sprinklers (as permitted by ANSI B1.20.1) may require that trial cuts of the connecting pipe be made.

Step 1. After installation of the style 65 escutcheon plate over the sprinkler threads, and with pipe thread sealant applied to the pipe threads, hand tighten the sprinkler into the sprinkler fitting.

Step 2. Wrench tighten the sprinkler into the sprinkler fitting using only the W-Type 8 Sprinkler Wrench shown in Figure 2. With reference to Figure 5, apply the W-Type 8 Sprinkler Wrench to the sprinkler wrench flats.

Model TY7258 Pendent Sprinkler with Style 401 Escutcheon

Step 1. After installation of the style 401 escutcheon cup over the sprinkler threads, and with pipe thread sealant applied to the pipe threads, hand tighten the sprinkler into the sprinkler fitting.

Step 2. Wrench tighten the sprinkler into the sprinkler fitting using only the W-Type 8 Sprinkler Wrench shown in Figure 2. With reference to Figure 6, apply the W-Type 8 Sprinkler Wrench to the sprinkler wrench flats.

Step 3. After the ceiling is installed, align the detents in the escutcheon skirt over those in the cup and then slide the skirt over the cup until it comes in contact with the mounting surface. Do not push the skirt such that it lifts a ceiling tile out of its normal position. Holding the skirt in contact with the mounting surface, rotate approximately 1/8-turn relative to the cup, creating a friction fit between skirt detents and cup surface to hold the style 401 escutcheon firmly together.

P/N* 51 – XXX – X – XXX

	SPRINKLER DESCRIPTION	SIN
900	16.8K PENDENT (3/4˝ NPT)	TY7258

	SPRINKLER FINISH
1	NATURAL BRASS
4	SIGNAL WHITE (RAL9003) POLYESTER
9	BRIGHT CHROME

	TEMPERATURE RATINGS
155	155°F (68°C)
200	200°F (93°C)

TABLE B
MODEL TY7258 16.8K PENDENT SPRINKLERS
PART NUMBER SELECTION

Care and Maintenance

The TYCO Model TY7258 Pendent Sprinkler must be maintained and serviced in accordance with this section.

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

Inspection, testing, and maintenance must be performed as indicated below and in accordance with the local requirements and/or national codes. Any impairment must be immediately corrected.

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of any authorities having jurisdiction. Contact the installing contractor or product manufacturer regarding any questions.

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

Limited Warranty

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

Ordering Procedure

When placing an order, indicate the full product description and Part Number (P/N).

Sprinkler Assembly
Specify: Model TY7258 Pendent Sprinkler, SIN TY7258, (specify temperature rating), with (specify) finish, P/N (specify from Table B)

Separately Ordered Style 30 Recessed Escutcheon
Specify: Style 30 Recessed Escutcheon, 3/4 in. NPT, 1/2 in. total adjustment, (specify finish, P/N (specify):

Brass Plated. 56-705-2-011
Signal White (RAL9003). 56-705-4-011
Chrome Plated 56-705-9-011

Separately Ordered Style 65 One-Piece Flush Escutcheon
Specify: Style 65 One-Piece Flush Escutcheon, 3/4 in. NPT, (specify finish), P/N (specify):

Chrome Plated 1152
Signal White (RAL9003). 1175
Brass Plated. 1184

Separately Ordered Style 401 Two-Piece Deep Escutcheon
The Style 401 Two-Piece Deep Escutcheon is comprised of separately ordered Cup and Skirt components.

Specify: Style 401 Two-Piece Deep Escutcheon Cup, 3/4" NPT (specify finish) 1/2" total adjustment, (specify finish), P/N (specify):

Chrome Plated 1193
Signal White (RAL9003). 1197
Brass Plated. 1195

Specify: Style 401 Two-Piece Deep Escutcheon Skirt (specify finish), P/N (specify):

Chrome Plated 1198
Signal White (RAL9003). 1200
Brass 1199

Sprinkler Wrenches
Specify: W Type 8 Sprinkler Wrench, P/N 56-892-1-001

Specify: W Type 38 Sprinkler Wrench, P/N 56-100-1-607

1467 Elmwood Avenue, Cranston, RI 02910 | Telephone +1-401-781-8220

Johnson Controls

Mechanical-T® Bolted Branch Outlets

SEE VICTAULIC PUBLICATION 10.01 FOR DETAILS

STYLES 920 AND 920N

STYLES 920 AND 920N

STYLE 920 CROSS

PATENTED

Victaulic Mechanical-T® Outlet provides a direct branch connection at any location a hole can be cut in pipe. The hole is cut oversize to receive a "holefinder" locating collar which secures the outlet in position permanently. A pressure responsive gasket seals on the pipe O.D.

Cross-type connections can be achieved by utilizing two upper housings of the same style and size, with the same or differing branch size connections. NOTE: Style 920 and Style 920N housings cannot be mated to each other to achieve a cross connection.

Style 920 and Style 920N Mechanical-T outlets are available with grooved or female threaded outlet. Specify choice on order. Units are supplied painted with plated bolts. Galvanized housings are available, supplied with plated bolts.

All sizes of Style 920 and 920N are rated at 500 psi/3450 kPa working pressure on Schedule 10 and 40 carbon steel pipe. They may also be used on high density polyethylene or polybutylene (HDPE) pipe. Pressure ratings on HDPE are dependent on the pipe rating. Contact Victaulic for ratings on other pipe. **Style 920 and 920N are not recommended for use on PVC plastic pipe.**

Standard piping practices dictate that the Mechanical-T Styles 920 and 920N must be installed so that the main and branch connections are a true 90° angle when permanently attached to the pipeline surface.

Additionally, the Vic-Tap II® hole cutting tool, which allows for hole cutting capabilities on pressurized systems, utilizes the Style 920 Mechanical-T in conjunction with the Series 726 Vic-Ball Valve to create the Style 931 Vic-Tap II Mechanical-T unit. See page 8 for further information.

MATERIAL SPECIFICATIONS

Housing/Coating: Ductile iron conforming to ASTM A-536, grade 65-45-12, with orange enamel coating. Ductile iron conforming to ASTM A-395, grade 65-45-15, is available upon special request.

- **Optional:** Hot dipped galvanized

Gasket: (Specify choice*)

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

- **Grade "T" nitrile**
  Nitrile (Orange color code). Temperature range –20°F to +180°F/–29°C to +82°C. Recommended for petroleum products, air with oil vapors, vegetable and mineral oils within the specified temperature range. Not recommended for hot water services over +150°F/+66°C or for hot dry air over +140°F/+60°C.

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

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

JOB/OWNER

System No. _____

Location _____

CONTRACTOR

Submitted By _____

Date _____

ENGINEER

Spec Sect _____ Para _____

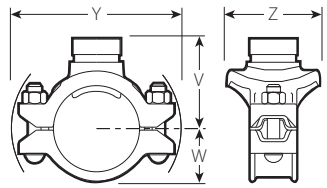
Approved _____

Date _____

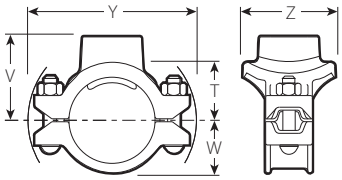
Mechanical-T® Bolted Branch Outlets

STYLES 920 AND 920N

DIMENSIONS



GROOVED OUTLET



FEMALE THREADED OUTLET

- Provides a direct branch connection at any location where a hole can be cut in the pipe
- A pressure responsive gasket provides the seal
- Request Publication 11.03 for Mechanical-T cross assemblies
- Pressure rated up to 500 psi/3450 kPa on steel pipe; also available for use with HDPE pipe
- Sizes from 2 × ½"/50 × 15 mm through 8 × 4"/200 × 100 mm

Size		Style No.	Max. Work Pressure@	Dimensions							Approx. Weight Each	
Run × Branch Nominal Size Inches mm		920 or 920N	psi kPa	Hole Diameter +0.13 -0.00	T** Inches mm	V ‡ # Thd. Inches mm	V ‡ Grv. Inches mm	W Inches mm	Y Inches mm	Z Inches mm	Female Thd. Lbs. kg	Grv. Lbs. kg
2 50	× ½ (a) ¤ 15	920N	500 3450	1.50 38.1	2.00 51	2.53 64	—	1.61 41	5.35 136	2.75 70	3.1 1.5	—
	¾ (a) ¤ 20	920N	500 3450	1.50 38.1	1.97 50	2.53 64	—	1.61 41	5.35 136	2.75 70	3.1 1.5	—
	1 (a) ¤ 25	920N	500 3450	1.50 38.1	1.85 47	2.53 64	—	1.61 41	5.35 136	2.75 70	3.0 1.4	—
	1 ¼ (a) †¤ 32	920N	500 3450	1.75 44.5	2.05 52	2.75 70	3.00 76	1.61 41	5.35 136	3.00 76	3.5 1.7	3.2 1.5
	1 ½ (a) †¤ 40	920N	500 3450	1.75 44.5	2.03 52	2.75 70	3.12 79	1.61 41	5.35 136	3.25 83	3.6 1.7	3.2 1.5
2 ½ 65	× ½ (a) §¤ 15	920N	500 3450	1.50 38.1	2.21 56	2.74 70	—	1.82 46	5.64 143	2.75 70	3.0 1.4	—
	¾ (a) §¤ 20	920N	500 3450	1.50 38.1	2.18 55	2.74 70	—	1.82 46	5.64 143	2.75 70	3.0 1.4	—
	1 (a) §¤ 25	920N	500 3450	1.50 38.1	2.06 52	2.74 70	—	1.82 46	5.64 143	2.75 70	2.9 1.4	—
	1 ¼ † (a) ¤ 32	920N	500 3450	1.75 44.5	2.30 58	3.00 76	3.25 83	1.82 46	6.29 160	3.00 76	3.5 1.7	3.2 1.5
	1 ½ † (a) ¤ 40	920N	500 3450	2.00 50.8	2.28 58	3.00 76	3.25 83	1.82 46	6.26 159	3.25 83	3.6 1.7	3.3 1.6
76.1	× ½ (a) 15	920N	300 2065	1.50 38.1	2.22 56	2.75 70	—	2.25 57	6.46 164	3.18 81	3.9 1.8	—
	¾ (a) 20	920N	300 2065	1.50 38.1	2.19 56	2.75 70	—	2.25 57	6.46 164	3.18 81	3.9 1.8	—
	1 (a) 25	920N	300 2065	1.50 38.1	2.07 53	2.75 70	—	2.25 57	6.46 164	3.18 81	3.8 1.7	—
	1 ¼ (a) ¤ 32	920N	500 3450	1.75 44.5	2.30 58	3.00 76	3.31 84	1.92 49	6.29 160	3.00 76	3.5 1.6	3.2 1.5
	1 ½ (a) ¤ 40	920N	500 3450	2.00 50.8	2.28 58	3.00 76	3.31 84	1.92 49	6.29 160	3.25 83	3.5 1.6	3.3 1.5
3 80	× ½ (a) ¤ 15	920N	500 3450	1.50 38.1	2.52 64	3.05 78	—	2.28 58	6.15 156	2.75 70	3.4 1.6	—
	¾ (a) ¤ 20	920N	500 3450	1.50 38.1	2.49 63	3.05 78	—	2.28 58	6.15 156	2.75 70	3.4 1.6	—
	1 (a) 25	920N	500 3450	1.50 38.1	2.38 61	3.06 78	—	2.28 58	6.15 156	2.75 70	3.3 1.6	—
	1 ¼ (a) †¤ 32 (b)	920N	500 3450	1.75 44.5	2.55 65	3.25 83	3.56 90	2.28 58	6.15 156	3.00 76	3.8 1.8	3.7 1.8
	1 ½ (a) †¤ 40 (b)	920N	500 3450	2.00 50.8	2.78 71	3.50 89	3.56 90	2.28 58	6.15 156	3.25 83	4.1 1.9	3.8 1.8
	2 (a) ¤ 50	920N	500 3450	2.50 63.5	2.75 70	3.50 89	3.56 90	2.28 58	6.75 172	3.88 99	4.9 2.3	4.6 2.1
3 ½ 90	× 2 50	920N	500 3450	2.50 63.5	3.00 76	—	3.75 95	2.44 62	6.72 171	3.88 99	—	3.8 1.8

TABLE CONTINUED ON PG. 3

** Center of run to engaged pipe end, female threaded outlet only (dimensions approximate).

† Available with grooved or female threaded outlet. Specify choice on order.

‡ Center of run to end of fitting.

Female threaded outlets are available to NPT and BSPT specifications.

@ See page 7 for Fire Protection approvals and pressure ratings.

(a) British Standard female pipe threaded outlet is available as listed. Specify "BSPT" clearly on order.

(b) For 76.1 mm threaded outlet, specify 2½" BSPT clearly on order.

§ Vds approved for fire protection services

¤ LPCB approved for fire protection services

Ø Approved for use in China by Tianjin Approvals Company.

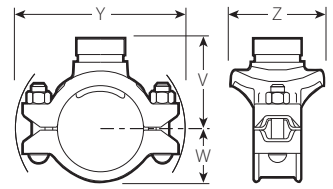
IMPORTANT NOTES:

Style 920 and Style 920N housings cannot be mated to one another to achieve cross connections.

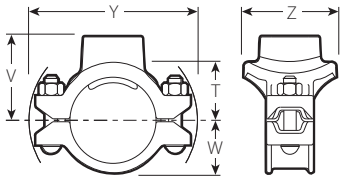
Mechanical-T® Bolted Branch Outlets

STYLES 920 AND 920N

DIMENSIONS



GROOVED OUTLET



FEMALE THREADED OUTLET

- Provides a direct branch connection at any location where a hole can be cut in the pipe
- A pressure responsive gasket provides the seal
- Request Publication 11.03 for Mechanical-T cross assemblies
- Pressure rated up to 500 psi/3450 kPa on steel pipe; also available for use with HDPE pipe
- Sizes from 2 × ½"/50 × 15 mm through 8 × 4"/200 × 100 mm

Size		Style No.	Max. Work Pressure@	Dimensions							Approx. Weight Each	
Run × Branch Nominal Size Inches mm		920 or 920N	psi kPa	Hole Diameter +0.13 -0.00	T** Inches mm	V ‡ # Thd. Inches mm	V ‡ Grv. Inches mm	W Inches mm	Y Inches mm	Z Inches mm	Female Thd. Lbs. kg	Grv. Lbs. kg
TABLE CONTINUED FROM PAGE 2												
4 100 ×	½ (a) ¤ 15	920N	500 3450	1.50 38.1	3.03 77	3.56 90	—	2.69 68	7.01 178	2.75 70	3.7 1.8	—
	¾ (a) ¤ 20	920N	500 3450	1.50 38.1	3.00 76	3.56 90	—	2.69 68	7.01 178	2.75 70	3.7 1.8	—
	1 (a) ¤ 25	920N	500 3450	1.50 38.1	2.88 73	3.56 90	—	2.69 68	7.01 178	2.75 70	3.6 1.8	—
	1 ¼ (a) †¤ 32 (b)	920N	500 3450	1.75 44.5	3.08 78	3.78 96	4.00 102	2.69 68	7.01 178	3.00 76	4.0 1.9	3.6 1.8
	1 ½ (a) †¤ 40 (b)	920N	500 3450	2.00 50.8	3.28 83	4.00 102	4.00 102	2.69 68	7.01 178	3.25 83	4.2 2.0	3.9 1.9
	2 (a) †¤ 50	920N	500 3450	2.50 63.5	3.25 83	4.00 102	4.00 102	2.69 68	7.01 178	3.88 99	5.0 2.3	4.6 2.1
	2 ½ (a) † 65	920	500 3450	2.75 69.9	2.88 73	4.00 102	4.00 102	2.69 68	7.34 186	4.63 118	5.8 2.6	5.0 2.3
	76.1 mm	920	500 3450	2.75 69.9	2.88 73	—	4.00 102	2.69 68	7.34 186	4.63 118	—	6.4 2.9
	3 (a) † 80	920	500 3450	3.50 88.9	3.31 84	4.50 114	4.12 105	2.69 68	7.73 196	5.12 130	8.4 3.8	6.4 2.9
108.0 ×	1 ¼ (a)¤ 32	920N	500 3450	1.75 44.5	3.08 78	3.78 96	—	2.63 67	7.64 194	3.05 78	5.0 2.3	—
	1 ½ (a)¤ 40	920N	500 3450	2.00 50.8	3.28 83	4.00 102	—	2.63 67	7.64 194	3.25 83	5.0 2.3	—
	2 (a) 50	920N	500 3450	2.50 63.5	3.25 83	4.00 102	—	2.63 67	7.64 194	4.00 102	4.0 1.9	—
	76.1 mm	920	500 3450	2.75 69.9	2.88 73	4.00 102	4.00 102	2.63 67	7.64 194	4.29 109	8.0 3.6	7.8 3.5
	3 (a) 80	920	500 3450	3.50 88.9	3.31 84	4.50 114	4.50 114	2.63 67	7.63 194	4.88 124	6.8 3.1	6.5 3.0
5 125 ×	1 ½ (a) † 40	920	500 3450	2.00 50.8	4.03 102	4.75 121	4.75 121	3.16 80	9.70 246	3.69 94	7.4 3.4	7.6 3.4
	2 (a) † 50	920	500 3450	2.50 63.5	4.00 102	4.75 121	4.75 121	3.16 80	9.70 246	4.38 111	8.2 3.7	8.0 3.6
	2 ½ (a) † 65	920	500 3450	2.75 69.9	3.63 92	4.75 121	4.75 121	3.16 80	9.70 246	4.63 118	8.3 3.8	7.9 3.6
	76.1 mm ¤	920	500 3450	2.75 69.9	3.75 95	—	4.75 121	3.16 80	9.70 246	4.63 118	—	8.0 3.6
	3 (a) † 80	920	500 3450	3.50 88.9	3.81 97	5.00 127	4.63 118	3.16 80	9.70 246	5.31 135	8.4 3.8	8.8 4.0
133.0 ×	2 50	920N	500 3450	2.50 63.5	3.75 95	4.50 114	—	3.17 81	8.00 203	3.88 99	8.0 3.6	—
	3 80	920	500 3450	3.50 88.9	3.81 97	5.00 127	—	3.00 76	9.46 240	5.31 135	8.0 3.6	—
TABLE CONTINUED ON PG. 4												

IMPORTANT NOTES:

Style 920 and Style 920N housings cannot be mated to one another to achieve cross connections.

** Center of run to engaged pipe end, female threaded outlet only (dimensions approximate).

† Available with grooved or female threaded outlet. Specify choice on order.

‡ Center of run to end of fitting.

Female threaded outlets are available to NPT and BSPT specifications.

@ See page 7 for Fire Protection approvals and pressure ratings.

(a) British Standard female pipe threaded outlet is available as listed. Specify "BSPT" clearly on order.

(b) For 76.1 mm threaded outlet, specify 2½" BSPT clearly on order.

§ Vds approved for fire protection services

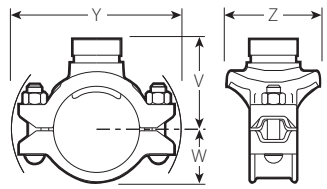
¤ LPCB approved for fire protection services

Ø Approved for use in China by Tianjin Approvals Company.

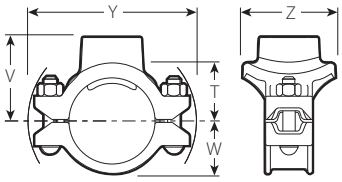
Mechanical-T® Bolted Branch Outlets

STYLES 920 AND 920N

DIMENSIONS



GROOVED OUTLET



FEMALE THREADED OUTLET

- Provides a direct branch connection at any location where a hole can be cut in the pipe
- A pressure responsive gasket provides the seal
- Request Publication 11.03 for Mechanical-T cross assemblies
- Pressure rated up to 500 psi/3450 kPa on steel pipe; also available for use with HDPE pipe
- Sizes from 2 × ½"/50 × 15 mm through 8 × 4"/200 × 100 mm

IMPORTANT NOTES:

Style 920 and Style 920N housings cannot be mated to one another to achieve cross connections.

Size		Style No.	Max. Work Pressure@	Dimensions							Approx. Weight Each	
Run × Branch Nominal Size Inches mm		920 or 920N	psi kPa	Hole Diameter +0.13 -0.00	T** Inches mm	V ‡ # Thd. Inches mm	V ‡ Grv. Inches mm	W Inches mm	Y Inches mm	Z Inches mm	Female Thd. Lbs. kg	Grv. Lbs. kg
TABLE CONTINUED FROM PAGE 3												
139.7 ×	1 ½ † 40	920N	500 3450	2.00 50.8	3.78 96	4.50 114	—	3.30 84	8.23 209	3.25 83	7.0 3.2	—
	2 † 50	920N	500 3450	2.50 63.5	3.75 95	4.50 114	—	3.30 84	8.23 209	3.88 99	9.0 4.1	—
6 150 ×	1 ¼ (a) 32 (b)	920N	500 3450	1.75 44.5	4.43 112	5.13 130	5.13 130	3.79 96	9.15 232	3.25 83	5.1 2.3	4.8 2.2
	1 ½ (a) †¤ 40 (b)	920N	500 3450	2.00 50.8	4.40 112	5.13 130	5.13 130	3.79 96	9.15 232	3.25 83	5.4 2.4	5.1 2.3
	2 (a) †¤ 50	920N	500 3450	2.50 63.5	4.38 111	5.13 130	5.13 130	3.79 96	9.15 232	3.88 99	6.0 2.7	5.6 2.5
	2 ½ 65	920	500 3450	2.75 69.9	4.01 110	5.13 130	5.12 130	3.69 94	10.51 267	4.63 118	8.3 3.8	7.6 3.4
	76.1 mm ¤	920	500 3450	2.75 69.9	4.15 105	—	5.21 132	3.69 94	10.51 267	4.63 118	—	8.4 3.8
	3 (a) † 80	920	500 3450	3.50 88.9	4.31 110	5.50 140	5.13 130	3.69 94	10.51 267	5.31 135	9.9 4.5	8.4 3.8
	4 (a) †¤ 100	920	500 3450	4.50 114.3	3.81 97	5.75 146	5.38 137	3.69 94	10.51 267	6.25 159	10.1 4.6	10.1 4.6
159.0 ×	1 ½ (a) 40	920N	500 3450	2.00 50.8	4.41 112	5.13 130	—	3.63 92	9.40 239	3.25 83	7.8 3.5	—
	2 (a) 50	920N	500 3450	2.50 63.5	4.38 111	5.13 130	—	3.63 92	9.40 239	3.88 99	8.0 3.6	—
	76.1 mm	920	500 3450	2.75 69.9	4.38 111	5.50 140	5.13 130	3.63 92	9.40 239	4.63 118	9.5 4.3	9.5 4.3
	3 80	920	500 3450	3.50 88.9	4.31 110	5.50 140	5.13 130	3.63 92	9.40 239	5.31 135	8.1 3.7	14.0 6.4
	108.0 mm	920	500 3450	4.50 114.3	4.45 113	—	5.38 137	3.63 92	9.40 239	6.12 155	—	10.0 4.5
	4 100	920	500 3450	4.50 114.3	3.81 96.80	5.75 146	—	3.63 92	9.40 239	6.25 159	18.0 8.2	—
TABLE CONTINUED ON PG. 5												

** Center of run to engaged pipe end, female threaded outlet only (dimensions approximate).

† Available with grooved or female threaded outlet. Specify choice on order.

‡ Center of run to end of fitting.

Female threaded outlets are available to NPT and BSPT specifications.

@ See page 7 for Fire Protection approvals and pressure ratings.

(a) British Standard female pipe threaded outlet is available as listed. Specify "BSPT" clearly on order.

(b) For 76.1 mm threaded outlet, specify 2½" BSPT clearly on order.

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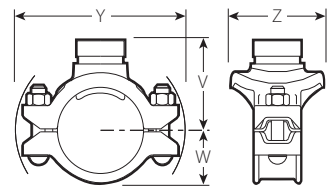
Ø Approved for use in China by Tianjin Approvals Company.

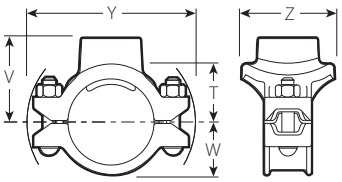
Mechanical-T® Bolted Branch Outlets

STYLES 920 AND 920N

DIMENSIONS



GROOVED OUTLET



FEMALE THREADED OUTLET

- Provides a direct branch connection at any location where a hole can be cut in the pipe
- A pressure responsive gasket provides the seal
- Request Publication 11.03 for Mechanical-T cross assemblies
- Pressure rated up to 500 psi/3450 kPa on steel pipe; also available for use with HDPE pipe
- Sizes from 2 × ½"/50 × 15 mm through 8 × 4"/200 × 100 mm

Size Run × Branch Nominal Size Inches mm		Style No. 920 or 920N	Max. Work Pressure@ psi kPa	Dimensions Hole Diameter +0.13 -0.00 Inches mm	T** Inches mm	V ‡ # Thd. Inches mm	V ‡ Grv. Inches mm	W Inches mm	Y Inches mm	Z Inches mm	Approx. Weight Each Female Thd. Lbs. kg	Grv. Lbs. kg
TABLE CONTINUED FROM PAGE 4												
165.1 ×	1 25	920N	500 3450	1.50 38.1	3.88 99	4.56 116	—	3.79 96	9.34 237	2.75 70	8.0 3.6	—
	1 ¼¤ 32	920N	500 3450	1.75 44.5	4.43 113	5.13 130	—	3.79 96	9.34 237	3.25 83	8.4 3.8	—
	1 ½ (a) †¤ 40	920N	500 3450	2.00 50.8	4.41 112	5.13 130	5.13 130	3.79 96	9.34 237	3.25 83	8.4 3.8	5.4 2.4
	2 (a) † 50	920N	500 3450	2.50 63.5	4.38 111	5.13 130	5.13 130	3.79 96	9.34 237	3.88 99	8.5 3.9	6.0 2.7
	76.1 mm	920	500 3450	2.75 69.9	4.01 110	5.13 130	5.21 132	3.63 92	10.51 267	4.63 118	8.6 3.9	7.6 3.4
	3 (a) † ø 80	920	500 3450	3.50 88.9	4.31 110	5.50 140	5.13 130	3.63 92	10.51 267	5.31 135	10.2 4.6	8.4 3.8
	4 (a) †¤ 100	920	500 3450	4.50 114.3	3.81 97	5.75 146	5.38 137	3.63 92	10.51 267	6.25 159	10.5 4.8	8.4 3.8
8 200 ×	2 (a) † 50	920	500 3450	2.75 69.9	5.44 138	6.19 157	6.25 159	4.81 122	12.42 316	4.50 114	11.6 5.3	11.6 5.3
	2 ½ (a) † 65	920	500 3450	2.75 69.9	5.07 129	6.19 157	6.19 157	4.81 122	12.42 316	4.50 114	11.6 5.3	11.6 5.3
	76.1 mm ¤	920	500 3450	2.75 69.9	5.25 133	—	6.25 159	4.81 122	12.42 316	4.56 116	—	11.6 5.3
	3 (a) †¤ 80	920	500 3450	3.50 88.9	5.31 135	6.50 165	6.50 165	4.81 122	12.42 316	5.31 135	12.6 5.7	11.6 5.3
	4 (a) †¤ 100	920	500 3450	4.50 114.3	4.81 122	6.75 171	6.38 162	4.81 122	12.42 316	6.25 159	15.3 6.9	12.5 5.7

** Center of run to engaged pipe end, female threaded outlet only (dimensions approximate).

† Available with grooved or female threaded outlet. Specify choice on order.

‡ Center of run to end of fitting.

Female threaded outlets are available to NPT and BSPT specifications.

@ See page 7 for Fire Protection approvals and pressure ratings.`

(a) British Standard female pipe threaded outlet is available as listed. Specify "BSPT" clearly on order.

(b) For 76.1 mm threaded outlet, specify 2½" BSPT clearly on order.

§ Vds approved for fire protection services

¤ LPCB approved for fire protection services

Ø Approved for use in China by Tianjin Approvals Company.

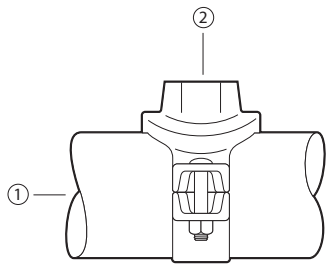
IMPORTANT NOTES:

Style 920 and Style 920N housings cannot be mated to each other to achieve cross connections.

Mechanical-T® Bolted Branch Outlets

STYLES 920 AND 920N

FLOW DATA



Exaggerated for clarity

Flow test data has shown that the total head loss between point (1) and (2) for the Style 920, 920N and 929 Mechanical-T® fittings can best be expressed in terms of the pressure difference across the inlet and branch. The pressure difference can be obtained from the relationship below.

C_V and Kv Values

Values for flow of water at +60°F/+16°C are shown in the table below.

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

OUTLET SIZE		Equivalent Length of Outlet Size Schedule 40 Carbon Steel Pipe (per UL 213, Sec. 16) (C = 120)ŧ FT		C_V/K_V Values	
NOMINAL DIAMETER In/mm	ACTUAL O.D. In/mm	GROOVED	THREADED	GROOVED	THREADED
½ 15	0.840 21.3	-	2	-	11 9.4
¾ 20	1.050 26.7	-	4	-	16 13.7
1 25	1.315 33.7	3**	8	-	21 1.8
1 ¼ 32	1.660 42.7	5 ½	6	50 42.9	48 41.1
1 ½ 40	1.900 48.3	11	11	53 45.4	53 45.4
2 50	2.375 60.3	9	10 ½	112 96	104 89.1
2 ½ 65	2.875 73.0	20	12 ½	119 102	150 128.5
76.1 mm	3.000 76.1	16*	-	161 138.1	-
3 80	3.500 88.9	14	15 ½	249 213.4	237 203.1
4 100	4.500 114.3	20	22	421 360.8	401 343.6

ŧ Hazen-Williams coefficient of friction is 120.
* Pipe with a wall thickness of 0.165in./4.2mm.
** 1" FireLock™ Innovative Groove System (IGS) outlet

Mechanical-T® Bolted Branch Outlets

STYLES 920 AND 920N

FIRE PROTECTION APPROVALS AND PRESSURE RATINGS

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.

Run Size		Outlet Size	Pipe	Approval Agency Rated Working Pressures – psi/kPa					
Nominal Size Inches/mm	Actual Outside Diameter Inches/mm	Inches/mm	Schedule	UL	ULC	FM	LPCB	Vds (Style 920)	Vds (Style 920N)
21/2 - 6 65 - 150	2.875 - 6.625 73.0 - 168.3	All	10, 40	400 2755	400 2755	400 2755	290 1999	232 1599	362 2496
21/2 - 4 65 - 100	2.875 - 4.500 73.0 - 114.3	All	DF	300 2065	300 2065	300 2065	290 1999	232 1599	362 2496
21/2 - 4 65 - 100	2.875 - 4.500 73.0 - 114.3	All	SF	300 2065	300 2065	300 2065	290 1999	232 1599	362 2496
6 150	6.625 168.3	3, 4	10	300 2065	300 2065	250 1724	290 1999	232 1599	362 2496
6 150	6.625 168.3	3,4	30, 40	300 2065	300 2065	300 2065	290 1999	232 1599	362 2496
8 200	8.625 219.1	21/2	10, 40	400 2755	—	—	—	145 1000	—
8 200	8.625 219.1	3,4	10	300 2065	—	250 1724	—	145 1000	—
8 200	8.625 219.1	3,4	30, 40	300 2065	—	300 2065	—	145 1000	—

NOTES:

10 refers to Listed/Approved Schedule 10 steel sprinkler pipe.

40 refers to Listed/Approved Schedule 40 steel sprinkler pipe.

DF refers to Listed/Approved Dyna-Flow steel sprinkler pipe manufactured by American Tube Company.

SF refers to Listed/Approved Super-Flo steel sprinkler pipe manufactured by Allied Tube and Conduit Corporation.

VIC-TAP II HOLE CUTTING TOOL FOR 4 - 8"/100 - 200 MM CARBON STEEL PIPE

The Vic-Tap II hole cutting tool is designed for use with the Style 931 Vic-Tap II Mechanical-T unit, which is a combination of the Style 920 Mechanical-T and Series 726 Vic-Ball Valve. The Vic-Tap II is capable of tapping into carbon steel pipe systems under pressures up to 500 psi/3450 kPa.

The Style 931 Vic-Tap II Mechanical-T unit is a full port ball valve which can be mounted on 4"/100 mm, 5"/125 mm, 6"/150 mm and 8"/200 mm diameter pipe. The Style 931 comes with a 2½"/65 mm grooved outlet.

The drill motor is an electric motor with ground fault circuit interrupter (GFCI) in accordance with safety codes.

For more information, refer to publication 24.01.

Mechanical-T® Bolted Branch Outlets

STYLES 920 AND 920N

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

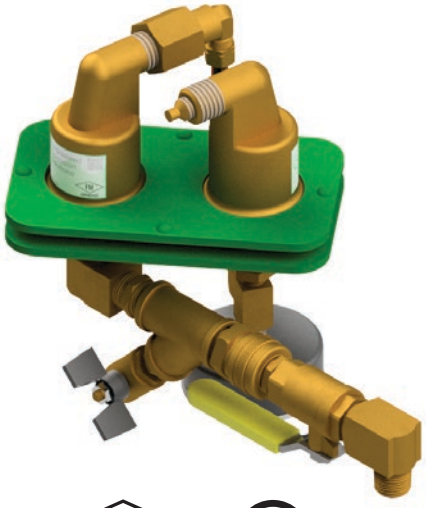
This product shall be manufactured by Victaulic or to Victaulic specifications. All products to be installed in accordance with current Victaulic installation/assembly instructions. Victaulic reserves the right to change product specifications, designs and standard equipment without notice and without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

PAV-W

ECS EJECTOR AUTOMATIC AIR VENT

Engineered Corrosion Solutions

Complete Corrosion Control.



FM APPROVED

UL LISTED

U.S. Patents No. 8,636,023

Specifications

Stock Number:	PAV-W
	PAV-WS (Supervised)
Service Pressure:	Up to 175 PSIG (12 Bar)
System Connection:	1/2" NPT Male
Temperature Range:	40°F - 120°F (4.5°C - 49°C)
Dimensions:	14"(L) X 7"(D) X 7"(H)
	(368mm(W) X 191mm(D) X 203mm(H))
Weight:	8 Lbs (3.6 Kg)
Clear Height:	5" (127mm)

- Patented redundant float design eliminates piping to a drain
- Support Hanger Not Required

General Description

The ECS Ejector Automatic Air Vent (PAV-W/WS) is a device that provides automatic venting of trapped air in wet pipe fire sprinkler systems. As a fire sprinkler system is filled with water, trapped air migrates to the high point of the system near the vent installation location which allows for trapped air to be vented. Trapped air contains oxygen which is the primary cause of corrosion in fire sprinkler systems. Corrosion in wet pipe fire sprinkler systems is directly proportional to the amount of oxygen trapped within the system piping, so a reduction in trapped air will in turn reduce the internal corrosion activity of the fire sprinkler system. Venting the trapped air in a wet pipe sprinkler system can also decrease water delivery time and reduce false water flow alarms.

The ECS Ejector Automatic Air Vent must be installed as shown on the engineering design documents, if a location is not provided install the vent at an accessible high point on the fire sprinkler system remote from the system riser where gas can be vented and at a location that the pressure gauge provided for visual monitoring can be viewed from directly below. The PAV-W/WS is also equipped with brass components that allows the device to be installed in areas subject to external corrosion. The float mechanism on the ECS Ejector Automatic Air Vent will automatically close when water reaches the vent and the redundant design eliminates the need to plumb the PAV-W/WS to drain. If the primary air vent valve allows any significant amount of water to leak past the second air vent valve will close preventing water from discharging and provide a system pressure reading on the pressure gauge. This condition will be an indication that the primary automatic gas vent valve has failed and requires service or replacement. The pressure gauge is designed to be visible from the floor below the ECS Ejector Automatic Air Vent from a distance of approximately 30 feet.

There are two available models of the ECS Ejector Automatic Air Vent: PAV-W and PAV-WS. The units both operate as described previously, but the PAV-WS includes a wiring connection to a monitoring circuit. A single contact rated 24VAC/DC @ 2A for electronic monitoring with an end of line resistor (EOLR) must be installed according to the wiring diagram in Figure 1 to electronically monitor the PAV-WS.

Engineered Corrosion Solutions • 11336 Lackland Road St. Louis, MO 63146 • Phone: 314.432.1377 • www.ecscorrosion.com

A notification from the PAV-WS indicates that the pressure switch on the bottom of the vent assembly has a system pressure reading due to a failure of the primary float valve which renders the ECS Ejector Automatic Air Vent inoperable.

Installation Instructions

1. The ECS Ejector Automatic Air Vent is equipped with an isolation ball valve to be connected to the fire sprinkler system. Once the PAV-W/WS has been assembled at the provided quick connect (see Figure 2), the contractor must install a 1/2" outlet (welded or mechanical) to connect the vent assembly to the sprinkler system.
2. Install the PAV-W/WS vent assembly at the location provided by the engineering design documents in a level position at an accessible high point on the sprinkler system where trapped gas can be vented.
   NOTE: Piping to the vent assembly cannot be installed in a configuration that would trap water and prevent drainage to the sprinkler system; a water trap impedes the ability of the vent to remove gas from the fire sprinkler system.
3. When electronic supervision is specified the PAV-WS must be utilized instead of the PAV-W (see Figure 1) and an addressable monitor module with an end of line resistor must be provided in accordance with NFPA 72.
4. Inspection of the vent assembly should be performed after installation and hydrostatic testing of the fire sprinkler system. Inspection should be performed periodically thereafter in accordance with the applicable NFPA codes and standards and/or the authority having jurisdiction.
   NOTE: Patented redundant float design eliminates piping the PAV-W/WS to a drain.

Operating Instructions

1. Once the fire sprinkler system has been hydrostatically tested, open the isolation ball valve on the PAV-W/WS. Trapped gas should be expected to immediately vent from the device if the system has been re-filled with water.
2. The isolation ball valve must remain in the open position to allow for venting of any additional trapped gas remaining in the system that may migrate to the vent location.
3. Plumbing the PAV-W/WS to drain is not required. Occasionally during venting operations a small amount of water may leak past the primary gas vent valve and collect in the intermediate plumbing. This is considered normal and not a failure of the valve.
4. Water traps that would restrict operation of the ECS Ejector Automatic Air Vent can be cleared by closing the isolation ball valve and removing the "Y" strainer plug. Once the water trap has been removed, replace the "Y" strainer plug and reopen the isolation ball valve.

Maintenance Instructions

1. The ECS Ejector Automatic Air Vent must be inspected annually at minimum.
   a. Check the pressure gauge on the bottom of the vent assembly for a system pressure reading.
2. If a system pressure reading is detected the primary vent valve may require service or replacement.
   a. While isolation ball valve is in the open position check for air/water leaks.
   b. Close isolation ball valve to perform maintenance on the ECS Ejector Automatic Air Vent.
   c. While isolation ball valve is in the closed position, inspection the "Y" strainer blockage, clean as necessary.
   d. If replacement is required, contact Engineered Corrosion Solutions for replacement parts and instructions.

FIGURE 1 - Wiring Diagram

INSTALLATION NOTES:

1. If Monitored By The Building Fire Alarm System, Provide One Addressable Monitoring Module To Monitor The Ejector Automatic Air Vent.
2. Connect The Ejector Automatic Air Vent To The Addressable Monitoring Module.
3. Supervise The Circuit Using An End-Of-Line (E.O.L.) Resistor In

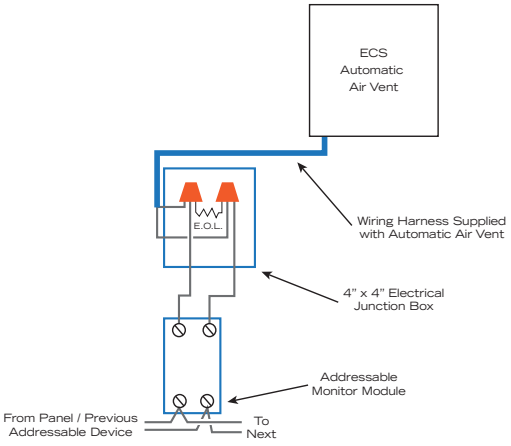


FIGURE 2 - ECS Ejector Automatic Air Vent Outline Drawing

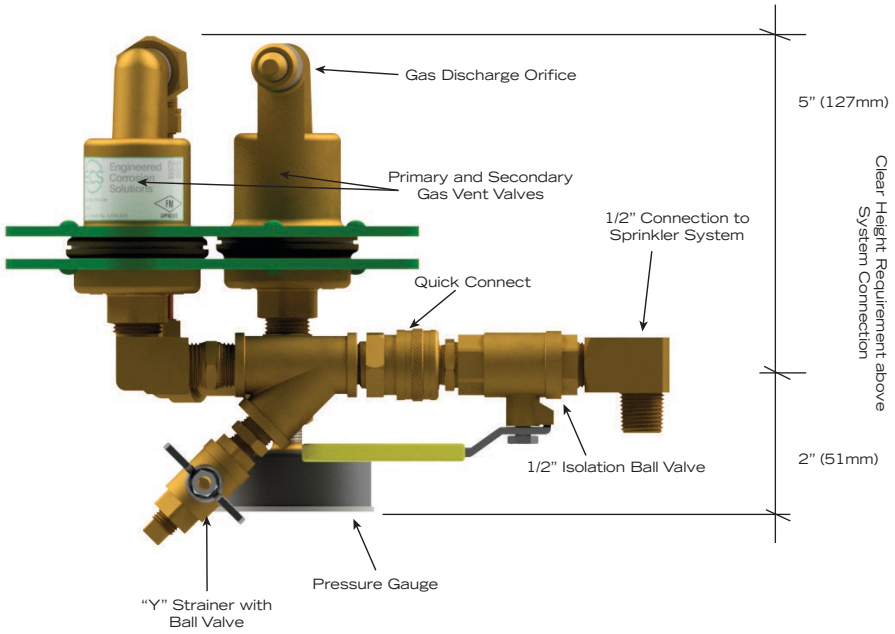
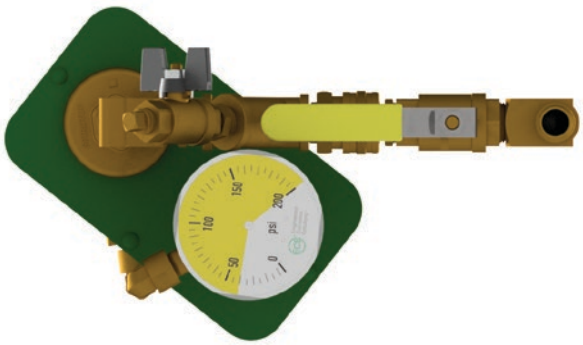
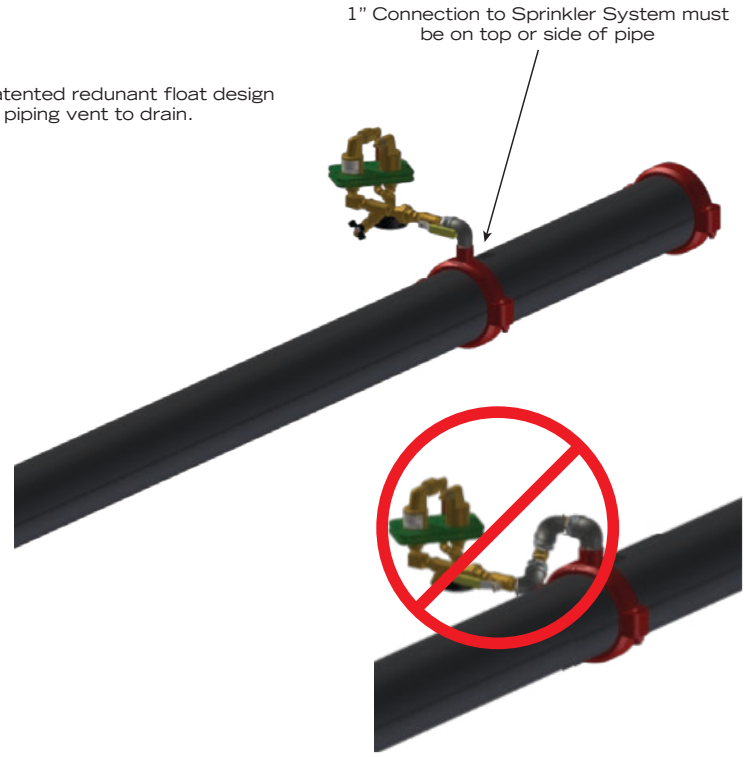


FIGURE 3 - ECS Ejector Automatic Air Vent Installed on Sprinkler System



NOTE: Piping to the vent assembly cannot be installed in a configuration that would trap water and prevent drainage to the sprinkler system; a water trap impedes the ability of the vent to remove gas from the fire sprinkler system.

NOTE: Patented redunant float design eliminates piping vent to drain.



OUR PRODUCTS. YOUR SYSTEMS.

Solutions for every environment

DRY PIPE SYSTEMS

Corrosion control technology located in the riser room.

WET PIPE SYSTEMS

Automatic air venting and nitrogen corrosion control.

MONITORING SOLUTIONS

Ensure effective corrosion control with real time corrosion monitoring solutions.

SERVICES

Corrosion assesments, pipe analysis, and long term corrosion control programs to mitigate future risk.

Dry Pipe System Nitrogen Generators

Corrosion control technology located in the riser room

	WALL MOUNT			SKID MOUNT	STAND ALONE W/ SEPARATE AIR COMPRESSOR			
	PGEN-3	PGEN-5	PGEN-10	PGEN-20	PGEN-30	PGEN-40	PGEN-50	PGEN-60
Total System Capacity	675 gal	950 gal	2,000 gal	3,200 gal	6,500 gal	11,000 gal	18,500 gal	22,500 gal
Single System Capacity @ 40 psi(1)	215 gal	265 gal	560 gal	950 gal	1,150 gal	1,440 gal	2,025 gal	2,900 gal
Single System Capacity @ 20 psi(1)	540 gal	590 gal	1,120 gal	1,800 gal	2,300 gal	2,880 gal	4,050 gal	5,800 gal
Air Compressor	Integral	Integral	Integral	Integral	Separate	Separate	Separate	Separate
Size (H x W x D)	36x24x9	36x24x9	38x29x11	57x32x40	53x24x9(2)	76x24x12(2)	76x24x12(2)	76x24x12(2)
Weight	115 lbs	125 lbs	175 lbs	420 lbs	152 lbs(2)	264 lbs(2)	300 lbs(2)	300 lbs(2)

NOTES:

(1) Single system capacity based on 30 min. fill requirement of largest single sprinkler system; a secondary air compressor with normally closed isolation valve can be used to meet fill requirement for larger individual systems

(2) Size and weight of nitrogen generator only, does not include separate air compressor

(3) All nitrogen generators include one (1) year manufacturer's warranty per ECS terms and conditions

Fig. 92 (Formerly Afcon Fig. 100) Universal C-type Clamp (Standard Throat)

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

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

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

c UL us LISTED FM APPROVED

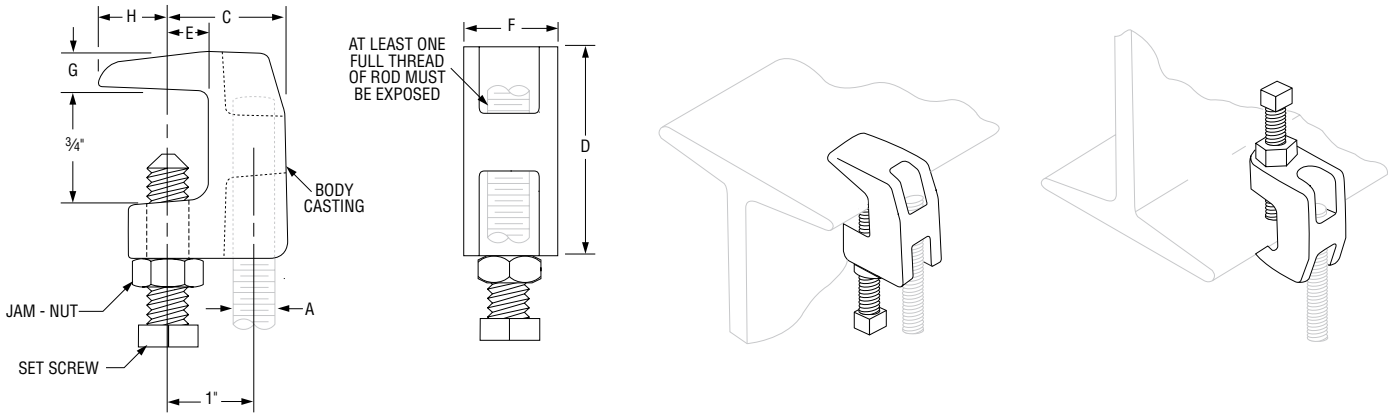


FIG. 92: DIMENSIONS (IN) • LOAD (LBS) • TORQUE (IN-LBS) • WEIGHT (LBS)											
Rod Size A	Set Screw Size	Torque Value	Max Loads ■		Weight	C	D	E	F	G	H
			Top	Bottom							
3/8	3/8	60	500	250	0.34	1 5/16	1 9/16	9/16	1 3/16	3/8	1/2
1/2	1/2	125	950	760	0.63	1 3/8	1 13/16	1/2	1 1/16	7/16	23/32

■ Maximum temperature of 450° F

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

Fig. AF090 (Formerly Anvil Fig. 89X & Afcon Fig. 160) Restraining Strap

Size Range: 3/8" through 3/4" Threaded Rod
Material: Carbon Steel
Finish: Pre-Galvanized per ASTM A653
Service: Secures beam clamps to the beam where building movement is expected due to seismic activity. NFPA 13 requires the use of restraining straps in seismic areas. For use with Anvil Fig. 86, 88, 92, 93, 94, and 95 beam clamps.
Approvals: cULus Listed. Complies with the hanging and bracing requirements listed in NFPA 13.
Features:

- Dual hole design allows for one part to be installed with 3/8" and 1/2" rod.
- Unique hook design allows for easy installation on existing piping systems.

Installation Instructions:

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

Ordering: Specify size, length, figure number and description.

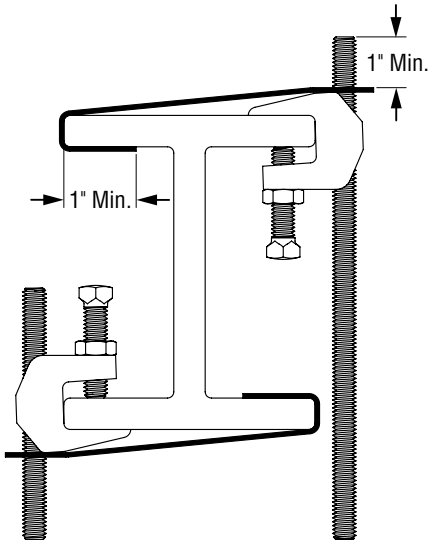
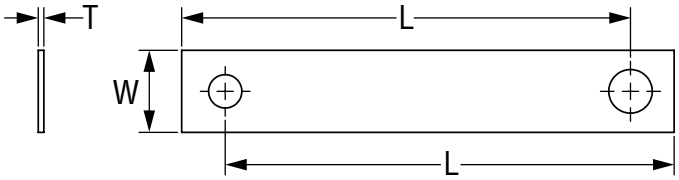
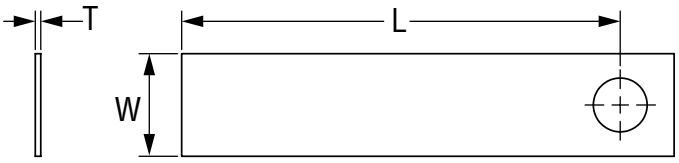


FIG. AF090: DIMENSIONS (IN)			
Rod Size	L Length	W Width	T Thickness
3/8 & 1/2	6, 8, 10, 12	1	15 ga.
5/8		1 1/4	14 ga.
3/4			



3/8" and 1/2" Combo Restraining Strap



5/8" and 3/4" Restraining Strap

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

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

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

Fig. 69 (Formerly Afcon Fig. 300) Adjustable Swivel Ring, Tapped Per NFPA Standards

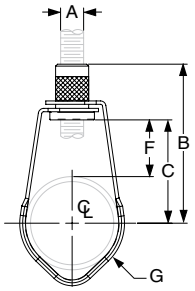
Size Range: 1/2" through 8"
Material: Carbon steel
Finish: Strap is Pre-Galvanized Zinc Material. Nut is Zinc Plated.
Service: Recommended for suspension of non-insulated **stationary** pipe line.
Maximum Temperature: 450° F
Approvals: Complies with Federal Specification A-A-1192A (Type 10), *WW-H-171-E (Type 10)*, and ANSI/MSS SP-58 (Type 10). UL Listed and FM Approved (Sizes 3/4" - 8").
Features:

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

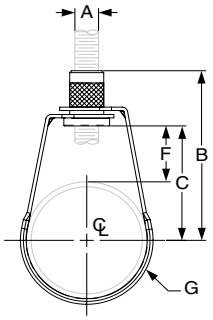
Ordering: Specify size, figure number and name.
Non-captured nut also available upon request.

1/2" through 2" Size
Rounded Edge Design

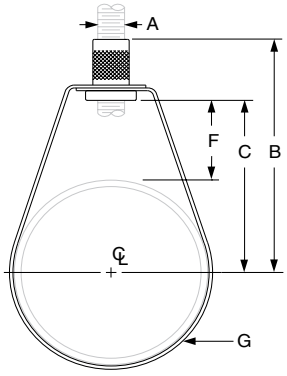
c UL us LISTED FM APPROVED



1/2" through 1" pipe



1 1/4" through 2" pipe



2 1/2" through 8" pipe

2 1/2" through 8" Size

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

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

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Fig. 207 (Formerly Afcon Fig. 553/555) Threaded Steel Side Beam Bracket

Size Range: 3/8" and 1/2"
Material: Carbon steel
Finish: ☐ Plain or ☐ Zinc Plated
Service: Recommended for attachment to steel or wooden beams, etc.
Approvals: Complies with Federal Specification A-A-1192A (Type 34), *WW-H-171-E (Type 35),* ANSI/MSS SP-69 and MSS SP-58 (Type 34). UL Listed (Sizes 3/8" and 1/2").
FM Approved (Size 3/8" for use on steel beam only)
Features: Threaded mounting bracket provides an economical, practical, and adjustable means of securing hangers to beams.
Ordering: Specify rod size, figure number, name and finish.

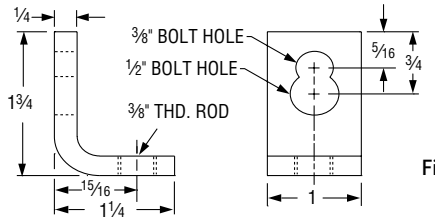

Fig. 207 3/8"

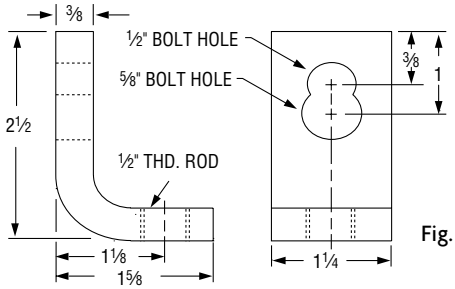

Fig. 207 1/2"

FIG. 207: DIMENSIONS (IN) • LOADS (LBS) • WEIGHT (LBS)

Rod Size A	Bolt Size	Max Load		Weight
		With Lag Screw	With Bolt to Steel	
3/8	3/8	400	620	0.17
	1/2	560		
1/2	1/2	650	1,150	0.42
	5/8	850		

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Fig. 146 (Formerly Afcon Fig. 650) Continuous Threaded Rod

Size Range: 1/4" through 1 1/2" Stocked in six, ten, and twelve foot lengths. Other even foot lengths can be furnished to order.
Material: Carbon steel or Stainless Steel Gr 304
Threads: National Coarse (USS), rod threaded complete length.
Finish: ☐ Plain or ☐ Zinc Plated (Hot-Dip Galvanized optional)
Maximum Temperature: Zinc Plated 450°F, Stainless Steel 650° F
Approvals: Complies with MSS SP-58.
Ordering: Specify rod diameter and length, figure number, name and finish.
Note: The acceptability of galvanized coatings at temperatures above 450°F is at the discretion of the end user.

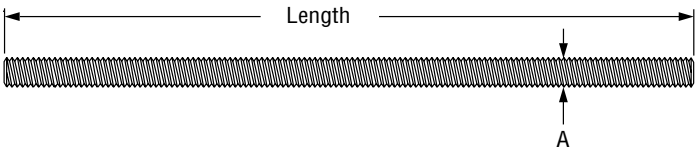

FIG. 146:
DIMENSIONS (IN) • LOADS (LBS) • WEIGHTS (LBS)

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

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Fig. AF035 (Formerly Afcon Fig. 035) Model K Brace Clamp

Size Range: Service Pipe: 1" through 12", Carbon Steel: 1" through 3" CPVC
Brace Pipe: 1" through 2" Sch. 40

Material: Carbon Steel Strap and Ductile Iron Cast Hoop Ends

Finish: ☐ Plain or ☐ Electro-Galvanized per ASTM B633

Service: Designed to rigidly brace piping systems subjected to lateral seismic loads.

Approvals: cULus Listed (UL 203a) and FM Approved (FM 1950-10 & FM 1950-13). Complies with the hanging and bracing requirements listed in NFPA 13.

Features:

- Unique design provides solutions for carbon steel and CPVC pipe.
- Beveled edge design helps protect the CPVC pipe from any rough surface and eliminates pipe abrasion.
- Large installation hole in the cast hoop ends allows the brace pipe to pass through easily without interference.
- Visual indication of proper assembly when the head of the set screw bottoms out on the cast hoop ends.

Installation Instructions:

- Place the Model K Brace Clamp over the service pipe to be braced and slide the Sch. 40 brace pipe through the cast hoop ends. The end of the brace pipe must extend at least 1" past the cast hoop ends.
- Note: The brace pipe may be installed above or below the service pipe.
- Ensure brace pipe is set to the desired installation brace angle.
- Torque the set screws alternately and equally until the head of the set screw bottoms out on the cast hoop ends.
- For riser/4-way brace installations, two Model K Brace Clamps must be installed within 6" of each other.
- For CPVC installation, ensure the legs of the Model K Brace Clamp strap are parallel to each other and perpendicular to the brace pipe prior to installation.
- Fire Protection applications shall also be installed per the requirements of NFPA 13 and local codes.

Patents: No. 7,516,922, No. 7,523,895

Ordering: Specify service pipe size, brace pipe size, figure number, finish and description.

Notes: Anvil International® brand bracing components are designed to be compatible ONLY with other Anvil International® brand bracing components, resulting in a Listed seismic bracing assembly. Updated UL listing information may be viewed at www.ul.com and updated FM approval information may be viewed at www.approvalguide.com.

SeisBrace® Seismic Fire Protection Design Tool may be accessed at www.seisbrace.com

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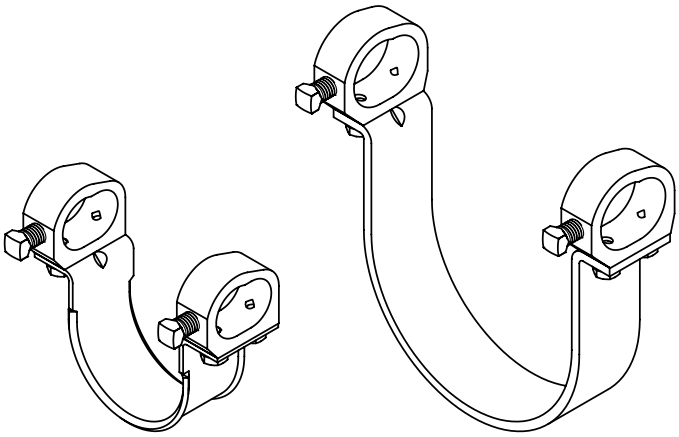
Fig. AF035 (Formerly Afcon Fig. 035) Model K Brace Clamp (cont.)

FIG. AF035: DIMENSIONS (IN) • WEIGHT (LBS)				
Service Pipe Size	1" Brace Pipe Weight	1 1/4" Brace Pipe Weight	1 1/2" Brace Pipe Weight	2" Brace Pipe Weight
1	1.60	1.80	2.00	2.28
1 1/4	1.68	1.88	2.08	2.36
1 1/2	1.64	1.84	2.04	2.32
2	1.88	2.08	2.28	2.56
2 1/2	1.90	2.10	2.30	2.58
3	2.10	2.30	2.50	2.78
4	2.20	2.40	2.60	2.88
5	3.40	3.60	3.80	4.08
6	3.90	4.10	4.30	4.58
8	4.80	5.00	5.20	5.48
10	5.60	5.80	6.00	6.28
12	–	6.36	6.56	6.84



1" - 4" 5" - 12"

FIG. AF035 cULus MAX SEISMIC LATERAL LOADS: DIMENSIONS (IN) • LOADS (LBS)				
Service Pipe Size	Brace Pipe Size	Max Seismic Brace Load		
		Specialty*	Schedule 10	Schedule 40
1 - 4	1 - 2	2765	2765	2765
5 - 10		–		
12	1 1/4 - 2		3740	3740

* Specialty pipes are commonly referred to as Sch. 7 and Flow Pipe. Please visit the UL listing on the UL website for a complete list of listed specialty pipes.

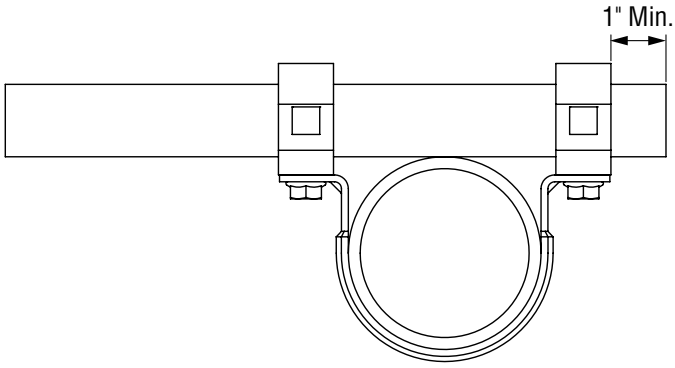
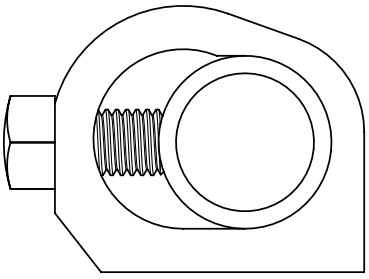


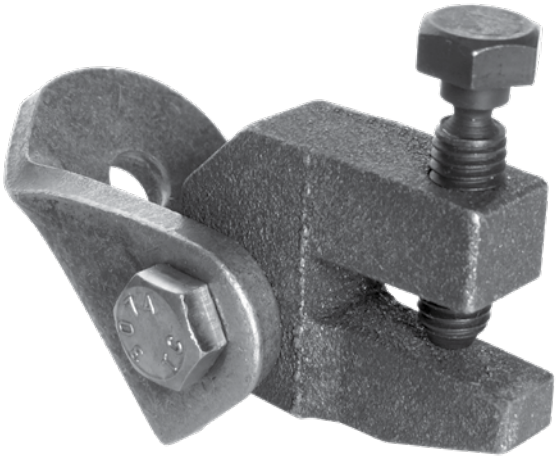
FIG. AF035 FM MAX SEISMIC LATERAL ASD LOADS***: DIMENSIONS (IN) • LOADS (LBS) • ANGLES (DEGREES)						
Service Pipe Size	Brace Pipe Size	Pipe Schedule	Max Seismic Brace Load at Brace Pipe Angle**			
			30 - 44	45 - 59	60 - 74	75 - 90
1 - 1 1/2	1 - 2	LW* – Sch. 40	1680	2380	2920	3250
2 - 3		LW* – Sch. 40	1800	2550	3120	3490
4		LW* – Sch. 40	1370	1930	2370	2640
5 - 8		Sch. 10 – Sch. 40	730	1040	1270	1420

* Load Rating for LW above refers to FM Approved Lightwall pipe, commonly referred to as Sch. 7 and Flow Pipe. See FM Approval Guide for approved Lightwall pipe.
** Brace Pipe Angles are determined from vertical.
*** The allowable FM approved capacity of brace subassemblies are listed in Allowable Stress Design (ASD). For Load Resistance Factor Design (LRFD) capacities, the above values will need to be mulitplied by 1.5.



Set Screw Installation

Fig. AF076 (Formerly Afcon Fig. 076) Sway Brace Swivel Attachment



Size Range: Brace Pipe: 1" through 2" Sch. 40; Anchor Size: 1/2"
Material: Ductile Iron Jaw with Carbon Steel Baseplate and Hardware
Finish: ☐ Plain or ☐ Electro-Galvanized per ASTM B633
Service: A seismic swivel attachment designed to connect brace pipe to the building structure or to a seismic structural attachment. The Sway Brace Swivel Attachment rigidly braces piping systems subjected to lateral seismic loads.
Approvals: cULus Listed (UL 203a) and FM Approved (FM 1950-10 & FM 1950-13). Complies with the hanging and bracing requirements listed in NFPA 13.
Features:

- One universal jaw allows for attachment to multiple brace pipe sizes.
- Field adjustable design requires no threading of the brace pipe.
- Shear off set screw provides a visual indication that the desired torque value has been achieved.

Installation Instructions:

- Insert anchor through the mounting hole and into the structure or seismic structural attachment.
- For connection to Fig. AF085, AF086, AF087, and AF779 seismic structural attachments, the bolt and nuts shall be installed wrench tight (typically finger tight plus 1/4 to 1/2 turns).
- For connection to concrete, wood, timber, steel, and other structures, install fasteners per the fastener manufacturer's installation instructions.
- Insert Sch. 40 brace pipe into the brace jaw until the brace pipe bottoms out.
- Torque shear off bolt until head shears off.
- Check the cross bolt and nut and ensure the nut is wrench tight.
- Fire Protection applications shall also be installed per the requirements of NFPA 13 and local codes.

Ordering: Specify figure number, finish and description.

Notes: Anvil International® brand bracing components are designed to be compatible ONLY with other Anvil International® brand bracing components, resulting in a Listed seismic bracing assembly. Updated UL listing information may be viewed at www.ul.com and updated FM approval information may be viewed at www.approvalguide.com.

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SeisBrace® Seismic Fire Protection Design Tool may be accessed at www.seisbrace.com

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Notes 1:	
Notes 2:	

Fig. AF076 (Formerly Afcon Fig. 076) Sway Brace Swivel Attachment (cont.)

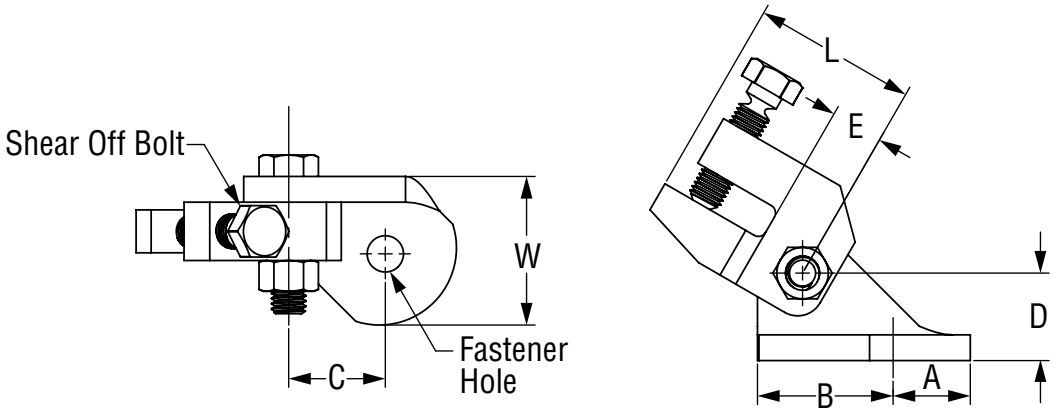


FIG. AF076: DIMENSIONS (IN) • WEIGHT (LBS)								
Fastener Size	A	B	C	D	E	L	W	Weight
½	1.00	1.83	1.25	1.38	¾	2⅜	2⅛	1.68

FIG. AF076 cULus MAX SEISMIC HORIZONTAL LOADS: DIMENSIONS (IN) • LOADS (LBS)			
Brace Pipe Size	Fastener Size	Max Seismic Brace Load	Max Service Pipe Size
1 - 2	½	2765	10

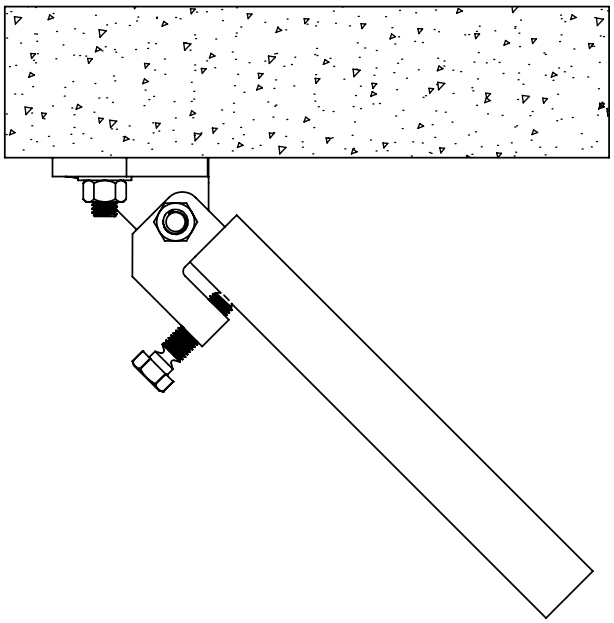


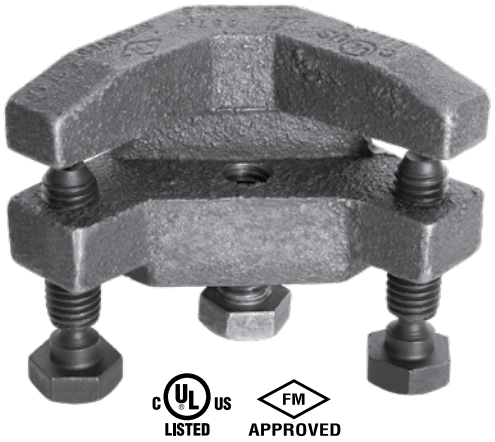
FIG. AF076 FM MAX SEISMIC HORIZONTAL ASD LOADS**: DIMENSIONS (IN) • LOADS (LBS)					
Brace Pipe Size	Fastener Size	Max Seismic Brace Load at Brace Pipe Angle*			
		30-44	45-59	60-74	75-90
1 - 2	½	1310	1810	2630	2930

* Brace Pipe Angles are determined from vertical.
**The allowable FM approved capacity of brace subassemblies are listed in Allowable Stress Design (ASD). For Load Resistance Factor Design (LRFD) capacities, the above values will need to be multiplied by 1.5.

FIG. AF076 HORIZONTAL PRYING FACTORS (Pr) PER NFPA: ANGLES (DEG)									
Brace Orientation*	A	B	C	D	E	F	G	H	I
Brace Angle**	30-44	45-59	60-90	30-44	45-59	60-90	30-44	45-59	60-90
Prying Factor (Pr)	3.724	2.150	1.375	2.150	2.150	2.250	2.750	1.945	1.588

* Brace Orientation per NFPA 13-2016 Figure 9.3.5.12.1.
** Brace Pipe Angles are determined from vertical.

Fig. AF087 (Formerly Afcon Fig. 087) Structural Brace Attachment



Size Range: Flange Thickness: Up to 1/2" thick (UL), Up to 3/8" thick (FM)
Material: Ductile Iron with Carbon Steel Hardware
Finish: ☐ Plain or ☐ Electro-Galvanized per ASTM B633
Service: A seismic structural attachment designed to attach to steel I-beams, flanges, and joists. The Structural Brace Attachment rigidly braces piping systems subjected to horizontal seismic loads.
Approvals: cULus Listed (UL 203a) and FM Approved (FM 1950-10 & FM 1950-13). Complies with the hanging and bracing requirements listed in NFPA 13.
Features: Shear off bolt provides a visual indication that the desired torque value has been achieved.
Installation Instructions:

- Place structural brace attachment on a horizontal or vertical steel flange.
- Torque shear off bolts evenly and equally until the head shears off.
- Install the 1/2" mounting bolt through the 1/2" AF075, AF076, or AF077 mounting hole. The mounting bolt shall be installed wrench tight (typically finger tight plus 1/4 to 1/2 turns).
- Installation angle determined by the brace angle of the brace pipe and the AF075, AF076, or AF077.
- Fire Protection applications shall also be installed per the requirements of NFPA 13 and local codes.

Patent: No. 6,629,678
Ordering: Specify figure number, finish and description.

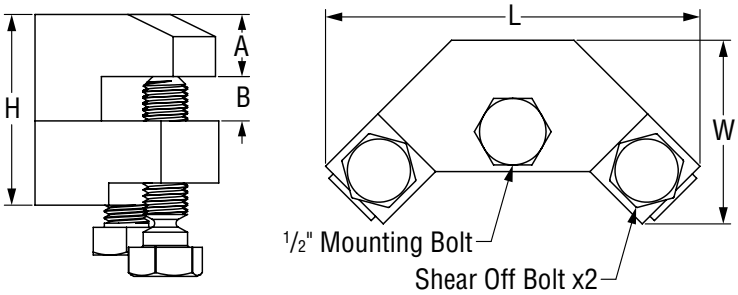


FIG. AF087: DIMENSIONS (IN) • WEIGHT (LBS)						
Mounting Bolt	L	W	H	A	B	Weight
½	4¼	2	2⅛	¾	½	2.00

Notes: Anvil International® brand bracing components are designed to be compatible ONLY with other Anvil International® brand bracing components, resulting in a Listed seismic bracing assembly. Updated UL listing information may be viewed at www.ul.com and updated FM approval information may be viewed at www.approvalguide.com.

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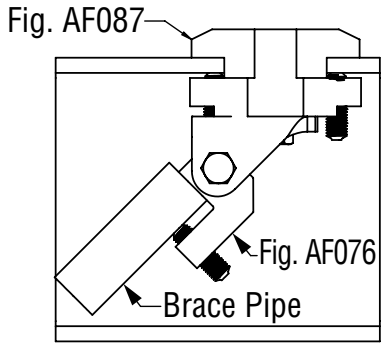
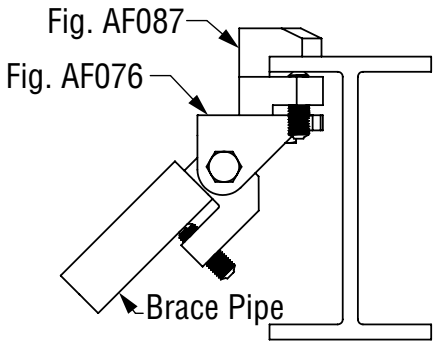
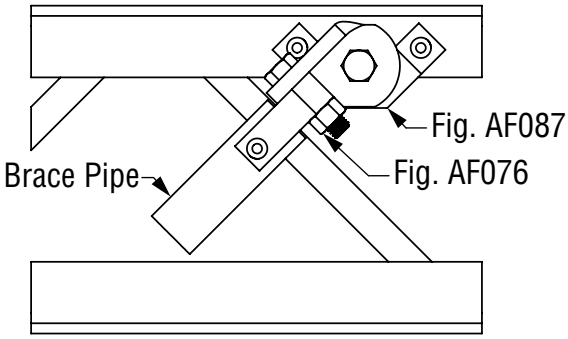
Fig. AF087 (Formerly Afcon Fig. 087) Structural Brace Attachment (cont.)



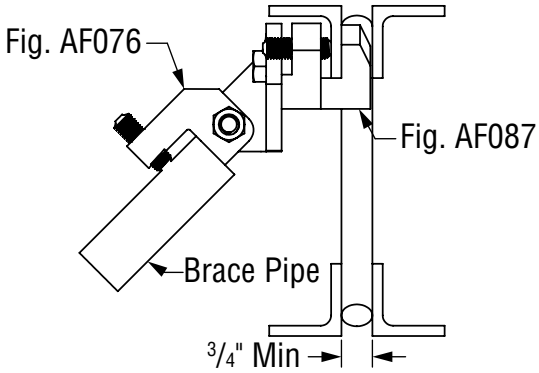
Horizontal Steel Flange
Seismic Load Parallel to Flange



Horizontal Steel Flange
Seismic Load Perpendicular to Flange



Vertical Steel Flange
Seismic Load Parallel to Flange



Vertical Steel Flange
Seismic Load Perpendicular to Flange

FIG. AF087 cULus MAX SEISMIC HORIZONTAL LOADS: DIMENSIONS (IN) • LOADS (LBS)				
Structure	Seismic Load Orientation	Max Flange Thickness	Max Seismic Brace Load	Max Service Pipe Size
Horizontal Steel Flange and Vertical Steel Flange	Parallel to Flange	1/2	1400	4
	Perpendicular to Flange			

FIG. AF087 FM MAX SEISMIC HORIZONTAL ASD LOADS**: DIMENSIONS (IN) • LOADS (LBS) • ANGLES (DEG)						
Structure	Seismic Load Orientation	Min Flange Thickness	Max Seismic Brace Load at Brace Pipe Angle*			
			30-44	45-59	60-74	75-90
Vertical Steel Flange	Parallel to Flange	3/8	1270	1740	2140	2380
	Perpendicular to Flange		1150	1630	3230	3610

* Brace Pipe Angles are determined from vertical.
**The allowable FM approved capacity of brace subassemblies are listed in Allowable Stress Design (ASD). For Load Resistance Factor Design (LRFD) capacities, the above values will need to be multiplied by 1.5.

☐ Fig. AF411 (Formerly Afcon Fig. 411) Longitudinal Seismic Clamp
☐ Fig. AF074 (Formerly Afcon Fig. 074) Brace Attachment Fitting
☐ Fig. AF078 (Formerly Afcon Fig. 078) Brace Attachment Fitting

Size Range: Service Pipe: 1" through 10" Carbon Steel
Brace Pipe: 1" through 2" Sch. 40

Material: Carbon Steel (AF074 Only: Ductile Iron Brace Socket)

Finish: ☐ Plain or ☐ Electro-Galvanized per ASTM B633

Service: Designed to rigidly brace piping systems subjected to longitudinal seismic loads. The Fig. AF411 may be installed with Fig. AF074 or AF078 Brace Attachment Fittings.

Approvals: cULus Listed (UL 203a) and FM Approved (FM 1950-10 & FM 1950-13). Complies with the hanging and bracing requirements listed in NFPA 13.

Features: Visual indication of assembly when the clamp ears make metal-to-metal contact.

Installation Instructions:

- Mount the Fig. AF074 or AF078 on the outside of the outside of the Fig. AF411 clamps ears.
- Position the clamp at the desired location on the service pipe and hand tighten the hex bolts.
- Insert brace pipe into the AF074 or AF078 socket and torque the set screw until the head bottoms out on the AF074 or AF078. Brace pipe must extend 1/2" past the end of the brace socket.
- Ensure the brace pipe is set to the desired installation brace angle.
- Tighten the clamp bolts and nuts equally and alternately until metal-to-metal contact is achieved and the nuts are wrench tight.
- Fire Protection applications shall also be installed per the requirements of NFPA 13 and local codes.

Ordering: AF411: Specify service pipe size, figure number, finish, and description.
AF074 & AF078: Specify brace pipe size, figure number, finish, and description.
AF411, AF074, & AF078 all sold separately.

Fig. AF411

Fig. AF074

Fig. AF078

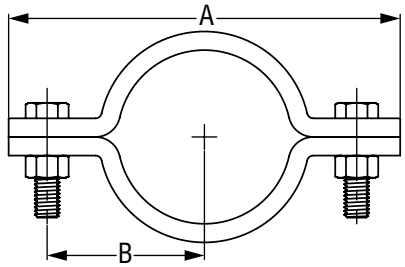
Notes: Anvil International® brand bracing components are designed to be compatible ONLY with other Anvil International® brand bracing components, resulting in a Listed seismic bracing assembly. Updated UL listing information may be viewed at www.ul.com and updated FM approval information may be viewed at www.approvalguide.com.

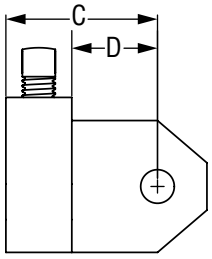
Disclaimer: Anvil International ("Anvil") does not provide any warranties and specifically disclaims any liability whatsoever with respect to Anvil bracing products and components that are used in combination with products, parts or systems not manufactured or sold by Anvil. In no event shall Anvil be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

SeisBrace® Seismic Fire Protection Design Tool may be accessed at www.seisbrace.com

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

Fig. AF411 (Formerly Afcon Fig. 411) Longitudinal Seismic Clamp
Fig. AF074 (Formerly Afcon Fig. 074) Brace Attachment Fitting
Fig. AF078 (Formerly Afcon Fig. 078) Brace Attachment Fitting





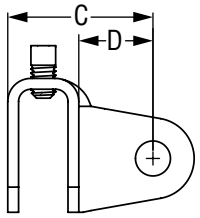


FIG. AF411: DIMENSIONS (IN) • WEIGHT (LBS)

Service Pipe Size	A	B	Weight
1	5⅝	2⅛	1.75
1¼	6	2¼	1.90
1½	6⅛	2¼	2.00
2	6¾	2½	2.15
2½	7⅜	2⅞	2.40
3	7⅞	3⅛	2.60
4	9	3⅞	3.10
6	11½	4⅞	4.50
8	13½	5⅞	5.50

FIG. AF074 & AF078: DIMENSIONS (IN) • WEIGHT (LBS)

Brace Pipe	AF074			AF078		
	C	D	Weight	C	D	Weight
1	2³⁄₁₆	1⁷⁄₁₆	0.97	2⁵⁄₁₆	1⅛	0.38
1¼			1.07			0.54
1½			1.17			
2			1.31			

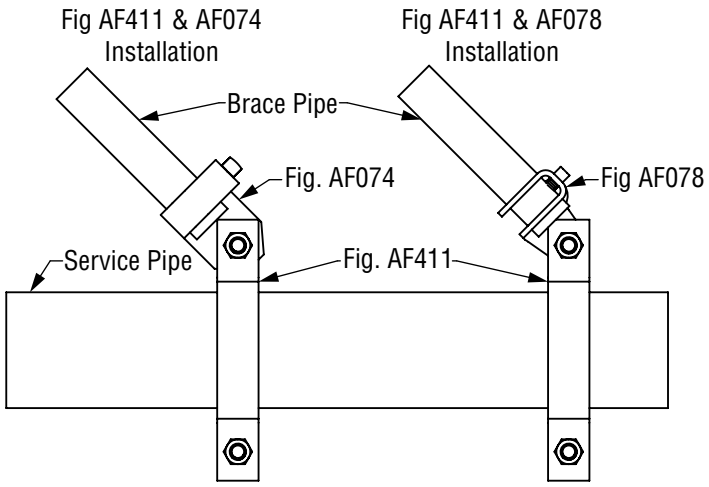


FIG. AF411 cULus MAX SEISMIC LONGITUDINAL LOADS: DIMENSIONS (IN) • LOADS (LBS)

Service Pipe size	Brace Attachment Fitting	Brace Pipe Size	Max Seismic Brace Load	
			Sch. 10	Sch. 40
1	AF074	1 – 2	—	2015
	AF078	1 – 1¼	—	1000
1¼ – 4	AF074	1 – 2	2015	2015
	AF078	1 – 1¼	1000	1000
6 – 8	AF074	1 – 2	2015	2015

Fig. AF411 (Formerly Afcon Fig. 411) Longitudinal Seismic Clamp
Fig. AF074 (Formerly Afcon Fig. 074) Brace Attachment Fitting
Fig. AF078 (Formerly Afcon Fig. 078) Brace Attachment Fitting

FIG. AF411 FM MAX SEISMIC LONGITUDINAL ASD LOADS*: DIMENSIONS (IN) • LOADS (LBS) • ANGLES (DEG)**

Service Pipe Size	Pipe Schedules	Brace Attachment Fitting	Brace Pipe Size	Max Seismic Brace Load at Brace Pipe Angle**			
				30-44	45-59	60-74	75-90
1 – 1 1/2	Sch. 10 – Sch. 40	AF074	1 – 2	1070	420	510	570
		AF078	1 – 1 1/4	430	420	510	570
2	LW – Sch. 40	AF074	1 – 2	1410	1900	1730	1930
		AF078	1 – 1 1/4	430	620	760	840
2 1/2 – 3	LW – Sch. 40	AF074	1 – 2	1000	860	1030	1150
		AF078	1 – 1 1/4	430	620	760	840
4	LW	AF074	1 – 2	1000	860	1030	1150
		AF078	1 – 1 1/4	430	620	760	840
	Sch. 10 – Sch. 40	AF074	1 – 2	1000	950	1150	1280
		AF078	1 – 1 1/4	430	620	760	840
6	LW – Sch. 40	AF074	1 – 2	1410	2000	2450	2740
		AF078	1 – 1 1/4	430	620	760	840
8	Sch. 10 – Sch. 40	AF074	1 – 2	1410	1250	1510	1690
		AF078	1 – 1 1/4	430	620	760	840

* Load rating for LW above refers to FM Approved Lightwall pipe, commonly referred to as Sch.7 and Flow Pipe. See FM Approval Guide for approved Lightwall pipe.
** Brace Pipe Angles are determined from vertical.
*** The allowable FM approved capacity of brace subassemblies are listed in Allowable Stress Design (ASD). For Load Resistance Factor Design (LRFD) capacities, the above values will need to be multiplied by 1.5.

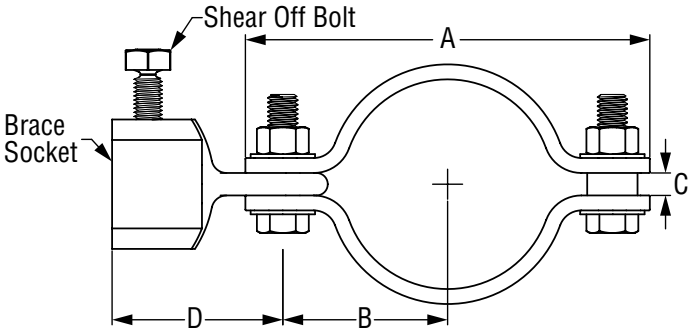
Fig. AF775 (Formerly Anvil Fig. 775) Longitudinal & Lateral Seismic Clamp

OPM-0351-13

Size Range: Service Pipe: 2 1/2" through 8" Carbon Steel
Brace Pipe: 1" or 1 1/4" Sch. 40 IPS
Material: Carbon Steel Clamp and Ductile Iron Brace Socket
Finish: ☐ Plain or ☐ Galvanized (Brace Socket Electro-Galvanized per ASTM B633 and Clamps Hot-Dip Galvanized per ASTM A153).
Service: Designed to rigidly brace piping systems subjected to longitudinal and lateral seismic loads. May also be installed to brace piping systems subjected to vertical seismic loads. For vertical load capacities, reference OSHPD OPM-0351-13.
Approvals: cULus Listed (UL 203a) and FM Approved (FM 1950-10 & FM 1950-13). OSHPD Pre-Approved (OPM-0351-13 and OPA-2804-10). Complies with the hanging and bracing requirements listed in NFPA 13.
Features: For use in either longitudinal or lateral seismic brace applications.
Installation Instructions:

- Position the clamp at the desired location on the service pipe and hand tighten the hex bolts. Ensure the spacer and the brace socket attachment are positioned on the bolt between the pipe clamps ears.
- Insert brace pipe into the socket until the brace pipe bottoms out.
- Torque shear off bolt until the bolt head breaks off.
- Ensure the brace pipe is set to the desired installation brace angle.
- Tighten the clamp bolts and nuts equally and alternately until metal to metal contact is achieved with the proper torque value.
- Fire Protection applications shall also be installed per the requirements of NFPA 13 and local codes.

Ordering: Specify service pipe size, brace pipe size, figure number, finish and description.



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SeisBrace® Seismic Fire Protection Design Tool may be accessed at www.seisbrace.com

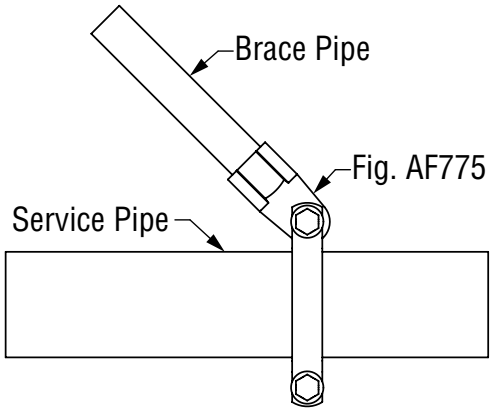
FIG. AF775: WEIGHT (LBS) • DIMENSIONS (IN) • WEIGHT (LBS) • TORQUE (FT-LBS)

Service Pipe Size	A	B	C	D 1" Brace	D 1 1/4" Brace	Socket Depth	1" Brace Pipe Weight	1 1/4" Brace Pipe Weight	Installation Torque
2 1/2	6	2 3/8	3/8	2 7/8	3	1 3/8	2.19	2.54	80
3	6 3/4	2 3/4					2.36	2.71	
4	8 1/2	3 1/2					2.62	2.97	100
5	9 1/2	4					3.74	4.09	
6	11 1/2	4 7/8	7/8				6.32	6.67	120
8	13 3/4	6					7.42	7.77	140

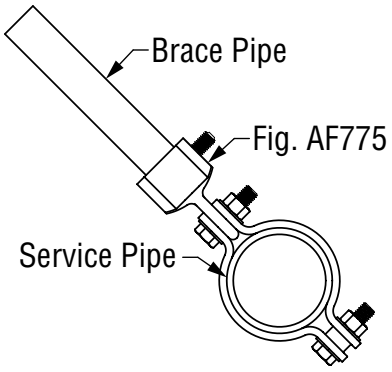
PROJECT INFORMATION	APPROVAL STAMP
Project:	☐ Approved
Address:	☐ Approved as noted
Contractor:	☐ Not approved
Engineer:	**Remarks:**
Submittal Date:	
Notes 1:	
Notes 2:	

Fig. AF775 (Formerly Anvil Fig. 775)

Longitudinal & Lateral Seismic Clamp (cont.)



Longitudinal Brace



Lateral Brace

FIG. AF775 FM MAX SEISMIC LATERAL ASD LOADS***: DIMENSIONS (IN) • LOADS (LBS) • ANGLES (DEG)						
Service Pipe Size	Pipe Schedules	Brace Pipe Size	Max Seismic Brace Load at Brace Pipe Angle**			
			30-44	45-59	60-74	75-90
2 1/2 – 3	LW*	1 – 1 1/4	1570	2220	1690	1870
4			1520	1060	910	1000
5			1570	2220	1690	1870
6			1570	2220	910	1040
2 1/2 – 3	Sch. 10 – Sch. 40		1370	2150	2390	2640
4			1280	1810	1680	1870
5			1370	2150	2390	2640
6			1520	2150	2570	2830
8			1570	2220	2720	3140

* Load rating for LW above refers to FM Approved Lightwall pipe, commonly referred to as Sch.7 and Flow Pipe. See FM Approval Guide for approved Lightwall pipe.
** Brace Pipe Angles are determined from vertical.
*** The allowable FM approved capacity of brace subassemblies are listed in Allowable Stress Design (ASD). For Load Resistance Factor Design (LRFD) capacities, the above values will need to be multiplied by 1.5.

FIG. AF775 cULus MAX SEISMIC LATERAL LOADS: DIMENSIONS (IN) • LOADS (LBS)			
Service Pipe Size	Brace Pipe Size	Max Seismic Brace Load	
		Sch. 10	Sch. 40
2 1/2 – 4	1 – 1 1/4	1000	1000
5 – 6		1600	1600
8		2015	2015

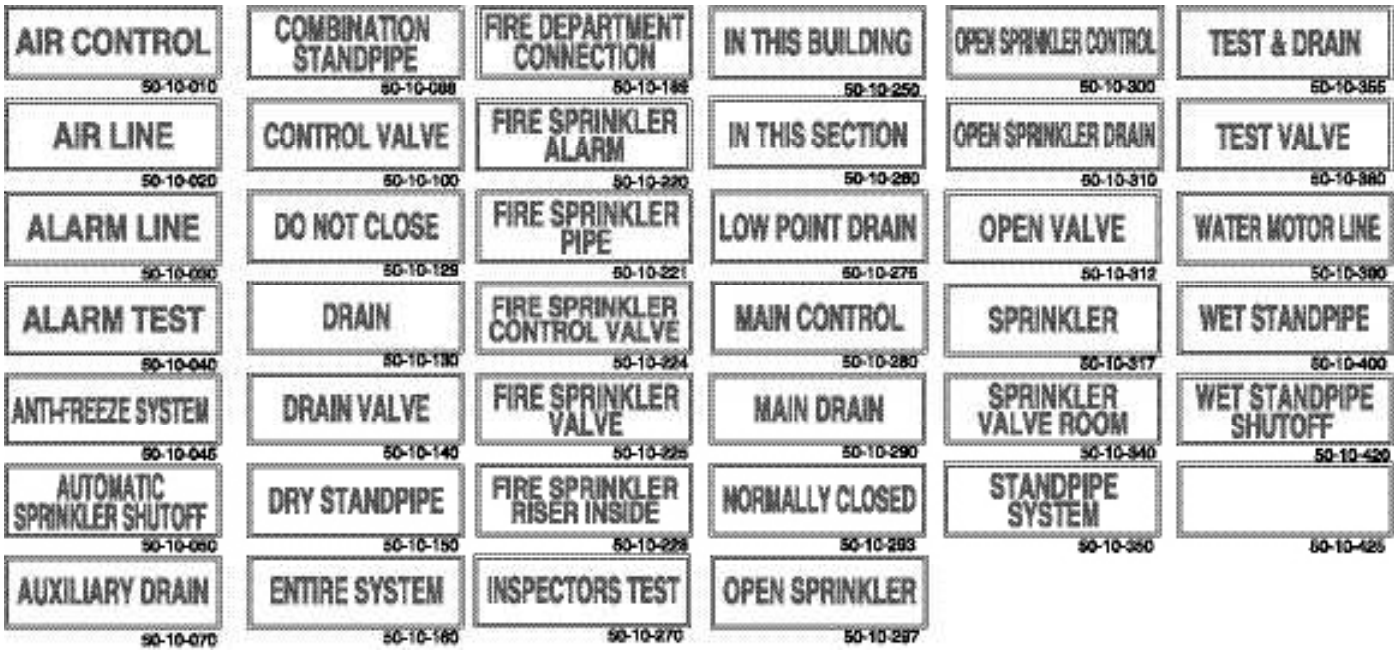
data sheet

ARGCO

GUARANTEED

6” x 2”
ALUMINUM SPRINKLER IDENTIFICATION SIGNS

SPECIFICATIONS:
Manufactured from 21 gage (.0285" thick) Aluminum
Powder Coated White printed with fade resistant red Ink
4 Holes Drilled in corners for easy installation & plastic coated for shipping
Designed in accordance with NFPA-13
Available as generic signs or personalized



Many other generic signs in stock. Call for details.

FOR MORE INFORMATION CALL ARGCO AT 1-800-854-1015
OR LOG ONTO WWW.ARGCO.COM

FS-ONE
Technical Data

At 73°F (23°C) and 50% relative humidity

Chemical basis
Water-based intumescent acrylic dispersion

Density
Approx. 1.5 g/cm³

Color
Red

Working time
Approx. 20-30 min.

Curing time
Approx. 14-21 days

Shore A Hardness
Approx. 35

Movement capability
Approx. 5%

Intumescent Activation
Approx 250°F (121°C)
Expansion rate (unrestricted):
Up to 3-5 times original volume

Temperature resistance (cured)
–40°F to 212°F (–40°C to 100°C)

Application temperature
35°F to 100°F (2°C to 38°C)

Surface burning characteristics (ASTM E 84-96)
Flame Spread: 0
Smoke Development: 5

Sound transmission classification
ASTM E 90-97: 56

Approvals

ICBO Evaluation Service, Inc.
Report No. 5071

California State Fire Marshal
Listing No. 4485-1200:108

City of New York
MEA 326-96-M Vol. IV

Tested in accordance with
- UL 1479
- ASTM E 814
- ASTM E 84

Internationally tested and approved

c UL us CLASSIFIED
FILL, VOID OR CAVITY MATERIAL
FOR USE IN THROUGH-PENETRATION
FIRESTOP SYSTEMS
SEE UL FIRE RESISTANCE DIRECTORY
66Y7

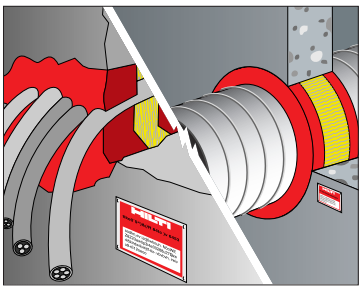
FM APPROVED

FCG =BM= SYSTEM COMPATIBLE

latest product information : www.us.hilti.com

ordering information see page: 30

FS-ONE
High Performance Intumescent Firestop Sealant



System Advantage / Customer Benefits
- Protects most typical firestop penetration applications
- Easy to work with and fast cleanup
- Can be repenetrated when laying new cables
- Can be painted

Product description
- Intumescent (expands when exposed to fire) firestop sealant that helps protect combustible and non-combustible penetrations for up to 4 hours fire rating

Product features
- Smoke, gas and water resistant
- Contains no halogen, solvents or asbestos
- High fire rating properties
- Water based, easy to clean

Areas of application
- Steel, copper and EMT pipes
- Insulated steel and copper pipes
- Cable bundles
- Closed or vented plastic pipes
- HVAC penetrations

For use with
- Concrete, masonry, drywall and wood floor assemblies
- Wall and floor assemblies rated up to 4 hours

Examples
- Sealing around plastic pipe penetrations in fire rated construction
- Sealing around combustible and non-combustible penetrations in fire rated construction

Installation instructions for FS-ONE

Opening

1. Clean the opening. Surfaces to which FS-ONE will be applied should be cleaned of loose debris, dirt, oil, moisture, frost and wax. Structures supporting penetrating items must be installed in compliance with local building and electrical standards.

Application of firestop sealant

2. Install the prescribed backfilling material type and depth to obtain the desired rating (if required). Leave sufficient depth for applying FS-ONE.
3. Application of firestop sealant: Apply FS-ONE to the required depth in order to obtain the desired fire rating. Make sure FS-ONE contacts all surfaces to provide maximum adhesion. For application of FS-ONE use a standard caulking gun, foil pack gun, bulk loader and bulk gun. With FS-ONE buckets, Graco type sealant pumps may be used. (Contact pump manufacturer for proper selection).
4. Smoothing of firestop sealant: To complete the seal, tool immediately to give a smooth appearance. Excess sealant, prior to curing, can be cleaned away from adjacent surfaces and tools with water.
5. Leave completed seal undisturbed for 48 hours.
6. For maintenance reasons, a penetration seal could be permanently marked with an identification plate. In such a case, mark the identification plate and fasten it in a visible position next to the seal.

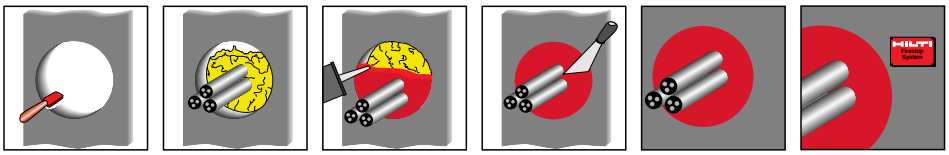
Notice about approvals
- Check that the penetration has been sealed according to the specified drawing in the UL Fire Resistance Directory or Hilti Firestop Manual. For further advice, please contact Hilti customer service. Refer to Hilti product literature and UL fire resistance directory for specific application details.

Not for use...
- High movement expansion joints
- Underwater
- On materials where oil, plasticizers or solvents may bleed i.e. impregnated wood, oil based seals, green or partially vulcanized rubber
- In any penetration other than those specifically described in this manual or the test reports

Safety precautions
- Before handling, read the product and Material Safety Data Sheet for detailed use and health information
- Keep out of reach of children
- Wear suitable gloves and eye protection

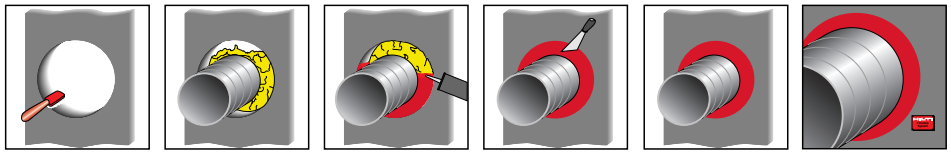
Storage
- Store only in the original packaging in a location protected from moisture at temperatures between 40°F (5°C) and 86°F (30°C)
- Observe expiration date on the packaging

CABLE



1. Clean opening. 2. Pack mineral wool. (If required) 3. Apply FS-ONE. 4. Smooth FS-ONE. 5. Leave completed seal undisturbed for 48 hours. 6. Fasten identification plate (if required).

PIPE



1. Clean opening. 2. Pack mineral wool. (If required) 3. Apply FS-ONE. 4. Smooth FS-ONE. 5. Leave completed seal undisturbed for 48 hours. 6. Fasten identification plate (if required).

SPEC SHEET #S00043/44
March 2002

Cutting Oil

Oils and Lubricants

DESCRIPTION

Application specific lubricants for both manual and machine metal working operations. Used for sawing, drilling, turning or thread cutting with all types of metals. These are superior quality cutting oils formulated to produce consistent results under all weather conditions. **Hercules Cutting Oils** contain activated sulfur to provide anti-weld properties, reduce friction and prevent excessive heat generation, thus minimizing material expansion resulting in ill-fitting joints. The high film strength of **Hercules Cutting Oils** maintains a continuous contact of the lubricant with the work assuring quick, accurate and high quality cuts with minimal tool wear. Lubricants contain no nitrosamine forming compounds or chlorinated oils.

Clear Cutting Oil
A blend of high quality mineral oils with sulfur base. Used for cutting clean, unbroken threads during manual or low rpm threading machine operations on small sizes of steel and brass pipe. Also applicable for hacksawing and light drilling. Will not stain copper or brass materials.

Dark Cutting Oil
Extra heavy blend of high quality mineral oils with sulfur-lard base. Compounded to keep tooling and work cool when used on high speed threading machines. Enables operators to cut clean, sharp threads on steel or brass pipe. Ideal for thread cutting, tapping, broaching, drilling or any application where high speeds and quality finishes are required. A superior quality product that significantly extends tool life and reduces labor time.

SIZES AND PACKING

STOCK NO.	SIZE	PACKING	WEIGHT/CASE
Clear			
40-110	1 pt.	24	28.6 lbs.
40-115	1 qt.	12	28.0 lbs.
40-120	1 gal.	6	49.4 lbs.
40-125	5 gal.	1	40.2 lbs.
40-140	55 gal.	1	452.0 lbs.
Dark			
40-210	1 pt.	24	28.6 lbs.
40-215	1 qt.	12	28.0 lbs.
40-220	1 gal.	6	49.4 lbs.
40-225	5 gal.	1	40.2 lbs.
40-240	55 gal.	1	452.0 lbs.

HERCULES®

specifications

Cutting Oil

Cutting Oil
Oils and Lubricants

APPROVALS AND LISTINGS

USDA Listed

SPECIFIC USES

Use **Clear Cutting Oil** for the cutting of clean, unbroken threads during manual or low rpm threading machine operations. Also for hack sawing or light drilling. Use **Dark Cutting Oil** for high-speed tapping/threading, broaching, turning or drilling applications.

SPECIFIC APPLICATIONS*

Hercules Cutting Oils are designed to improve quality and through-put of work, reduce friction, be an effective coolant and significantly increase tool life.

PHYSICAL PROPERTIES

	Clear	Dark
Specific Gravity:	at 25°C .906	at 25°C .906
Solubility in water:	Insoluble	Insoluble
Boiling Point:	465-900°F	465-900°F
Appearance/color:	Light amber liquid	Dark brownish amber liquid
Odor:	Petroleum odor	Petroleum odor
Viscosity:	30-35 centipoises	45-50 centipoises

WARNINGS OR CAUTIONS

- Read all cautions and directions carefully before using this product.
- **KEEP OUT OF REACH OF CHILDREN.**
- Avoid contact with eyes or skin. Prolonged or repeated skin contact may cause irritation.
- Avoid breathing vapor, mist or fumes. Use with adequate ventilation.
- Wash thoroughly after handling.

DIRECTIONS FOR USE

1. Wear safety glasses with side shields to protect eyes from metal shavings.
2. Be sure to start the flow of oil before tooling is in contact with the work.
3. Oil flow should hit the point of friction for best results.
4. Always use properly ground chasers and dies with this quality cooling lubricant to obtain sharp, clean threads without burrs.

MATERIAL SAFETY INFORMATION

FOR MORE INFORMATION ON THIS PRODUCT, REQUEST
MATERIAL SAFETY DATA SHEET- Clear (MSDS) #43
MATERIAL SAFETY DATA SHEET- Dark (MSDS) #44

For Delivery by Fax	Call 1-800-942-4636
Internet	See MSDS section of **www.herchem.com**
Mail	Contact Hercules at address below or any Hercules representative

HMIS Hazard Warning 1-1-0-A

CLEAR INGREDIENTS	**CAS#**
Petroleum-Based Lubricating Oil	64742-53-6
or	64742-52-5
Sulfurized Aliphatic Hydrocarbon	67762-55-4

DARK INGREDIENTS	**CAS#**
Petroleum-Based Lubricating Oil	64742-53-6
or	64742-52-5
Sulfurized Aliphatic Hydrocarbon	67762-55-4
Sulfurized Fatty Oil Esters	n/a

* For special applications which may not be covered on this or other Hercules literature, please contact Hercules Technical Services Department by phone at 1-800-221-9330 or send a fax to 1-800-333-3456.

HERCULES®

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HERCULES®
AN EMPLOYEE OWNERSHIP CORPORATION

LA-CO®

Proven Every Day // Proven Everywhere®

Slic-tite® Paste with PTFE

Premium Thread Sealant

USDA approved for use in federally inspected meat and poultry plants.

FEATURES:

- Slic-tite® contains more PTFE than other national brands. The higher concentration of PTFE particles provides greater sealing power on all tapered pipe threads including those that are damaged.
- Brushes easily on wet or oily threads.
- Sticks to hot, oily threads, will not run off. Ideal for use on production lines using high speed pipe threading machines.
- The non-toxic, non-drying formula will not harden or crack in the pipe joint. Provides easy disassembly and break out.
- Seals to high pressures: 10,000 PSI for Liquids, 3,000 PSI for Gases.
- Sealing temperature range: -50˚ to 500˚F (-46˚C to 260˚C).
- Meets Fed. Spec. TT-S-1732
- Slic-tite contains a product made from PTFE and other PTFE resins to assure high performance.

TYPICAL APPLICATIONS:

- Slic-tite seals all types of pipe threads: steel, stainless steel, brass, aluminum, iron, and PVC, CPVC and ABS plastic.
- Recommended Services: water, natural gas, LP gases, steam, air, gasoline, kerosene, Refrigerants, ammonia, caustics, and acids. Contact factory for specific use recommendations. NOT RECOMMENDED FOR USE WITH OXYGEN SERVICE. Use OXY-TITE®.

NSF · CLASSIFIED C UL US · UPC · CSA US · FGG/BM=/CZ SYSTEM COMPATIBLE

RECOMMENDED INDUSTRIES:

- Plumbing
- AC/R
- Industrial Piping
- Chemical Processing Plants
- Manufacturing Plants
- Gas Utilities
- Fire Sprinkler Piping
- Irrigation Systems

ORDERING INFORMATION

Part No.	Size	QTY/Case
41209	1/4 pt. BIC	12
42009	1/4 pt. BIC	24
41219	1/2 pt. BIC	12
42019	1/2 pt. BIC	24
42012	1 pt. Flat Top	24
42029	1 pt. BIC	24

Part No.	Size	QTY/Case
42013	1 qt. Flat Top	12
42049	1 qt. BIC	12
42014	1 gal.	4
42015	5 gal.	1
42069	55 gal.	1

BIC = Brush in Cap

LP97R00010 • CG 10/08 5M • LA-CO Industries, Inc. • Printed in U.S.A.

LA-CO®

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