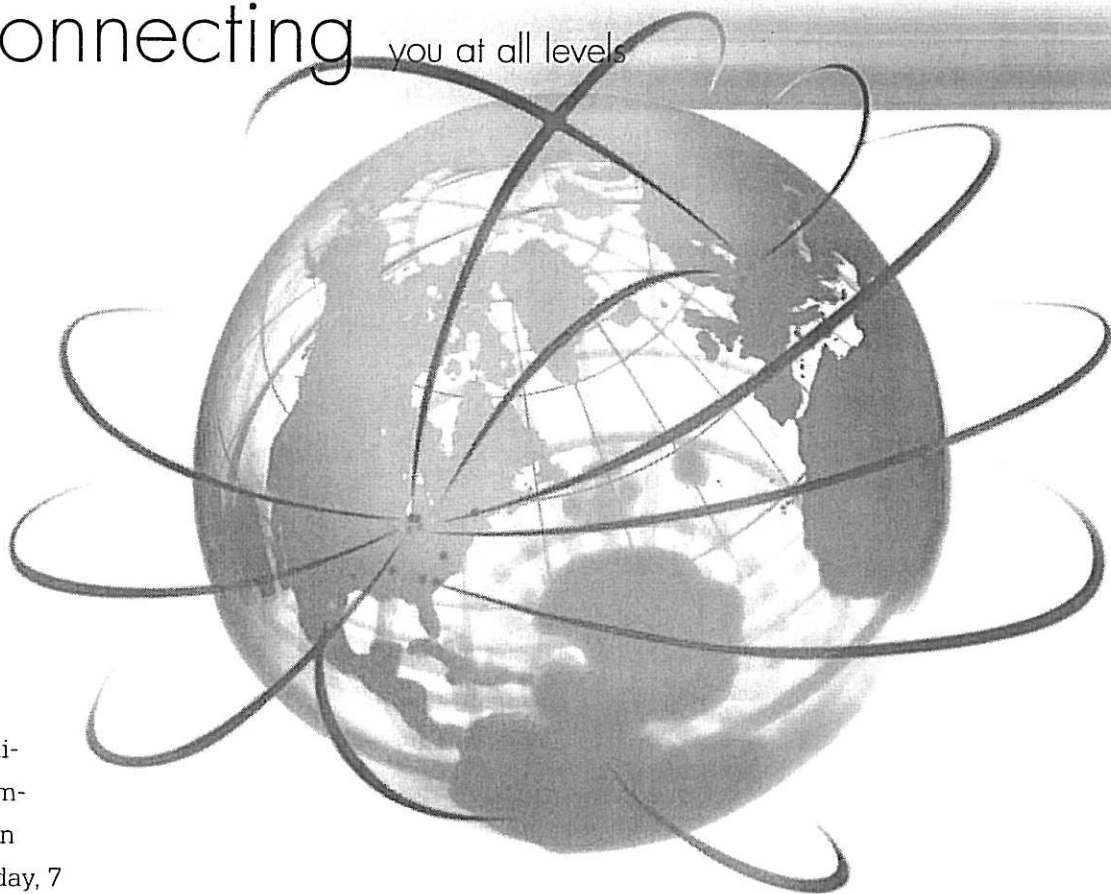


globally connecting you at all levels



It's a new age of business, and a new way at NIBCO. From Elkhart, Indiana to Lodz, Poland, and points beyond, our company has integrated manufacturing, distribution, and networked communications to provide a seamless source of information and service, 24 hours a day, 7 days a week. But this integration hasn't happened overnight. It's been part of a long-term strategic process that has pushed us to reconsider every aspect of our business. The result? We're a vertically integrated manufacturer with the products and systems in place to deliver low cost and high quality. NIBCO's products are manufactured under a Quality Management System conforming to the current revision of ISO-9001 International Standards. We know the flow control industry is only going to get more demanding, and we are more than ready. We will continue to lead. That's what NIBCO is all about.

World Headquarters

Elkhart, Indiana

MANUFACTURING

Metal Valves and Fittings

Blytheville, Arkansas

McAllen, Texas

Nacogdoches, Texas

Stuarts Draft, Virginia

Plastic Pipe, Valves, and Fittings

Greensboro, Georgia

Goshen, Indiana

Franklin, Ohio

Lebanon, Ohio

Denmark, South Carolina

Industrial Plastics

Charlestown, Indiana

Pipe Hangers & Support Systems

Corona, California

DISTRIBUTION

International

Reynosa, Mexico

Lodz, Poland

INTERNATIONAL

U.S. & International Distribution Centers

Los Angeles, California

Atlanta, Georgia

Charlestown, Indiana

Franklin, Ohio

Lebanon, Ohio

Lodz, Poland

Global Offices

Elkhart, Indiana

Vilnius, Lithuania

Lodz, Poland

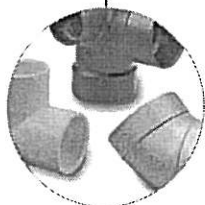
NIBCO

FEATURING NIBCO® SYSTEMS

C-BLZM-0207

NIBCO® PEX Piping Systems • NIBCO® Press System™

FITTINGS

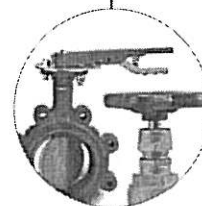


Wrot and cast copper pressure and drainage fittings • Cast copper alloy flanges • Wrot and cast press fittings • ABS and PVC DWV fittings • Schedule 40 PVC pressure fittings • CPVC CTS fittings • CPVC CTS-to-metal transition fittings • Schedule 80 PVC and CPVC systems • CPVC metric piping systems • CPVC BlazeMaster® fire protection fittings

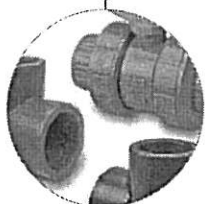
BlazeMaster® is a registered trademark of The Lubrizol Corporation

VALVES & ACTUATION

Pressure-rated bronze, iron and alloy-iron gate, globe and check valves • Pressure-rated bronze ball valves • Boiler specialty valves • Commercial and industrial butterfly valves • Circuit balancing valves • Carbon and stainless steel ball valves • ANSI flanged steel ball valves • Pneumatic and electric actuators and controls • Grooved ball and butterfly valves • High performance butterfly valves • UL/FM fire protection valves • MSS specification valves • Bronze specialty valves • Low pressure gate, globe, check and ball valves • Frostproof sillcocks • Quarter-turn supply stops • Quarter-turn low pressure valves • PVC ball valves • CPVC CTS ball valves • Just Right® recirculating valves



CHEMTROL®

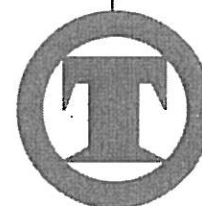


Thermoplastic pipe, valves and fittings in PVC, Corzan® CPVC, polypropylene and PVDF Kynar® • Chem-Aire® thermoplastic compressed air piping systems • Pneumatic and electric actuation systems

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TOLCO™

Pipe attachments • Structural attachments • Pipe rollers • Threaded products and accessories • Seismic components • Standard and specialty supports • TOL-Strut® channel and components • Markets served include commercial, industrial & fire protection



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AHEAD OF THE FLOW®

NIBCO INC.
WORLD HEADQUARTERS
WEB: www.nibco.com

1516 MIDDLEBURY STREET
ELKHART, IN 46516-4740
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DOMESTIC CUSTOMER SERVICE
PHONE: 800.234.0227
FAX: 800.234.0557

TECHNICAL SERVICE
PHONE: 888.446.4226
FAX: 888.336.4226

INTERNATIONAL OFFICE
PHONE: +1/574.295.3327
FAX: +1/574.295.3455

90° ELBOW



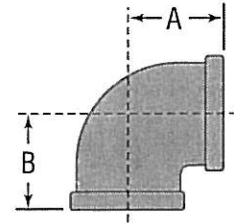
Ductile Iron

ANVILStar™
Fire Products Division of Anvil® International

Submittal Sheet



90° ELBOW						
Nominal Size	Anvil Item Number	Universal Number	Max. Working Pressure	Dimensions- In.(mm)		Approx. Wt. Each
				A	B	
In. (mm)			PSI (kPa)	In. (mm)	In. (mm)	Lbs. (kg)
1	840000004	DB90033	500	1.50	1.50	0.62
20			3450	38.10	38.10	0.28
1 1/4	840000012	DB90044	500	1.75	1.75	0.90
32			3450	44.45	44.45	0.41
1 1/2	840000020	DB90055	500	1.94	1.94	1.20
40			3450	49.276	49.276	0.54
2	840000038	DB90066	500	2.25	2.25	1.85
50			3450	57.15	57.15	0.84



MATERIAL SPECIFICATIONS

Ductile iron threaded fittings are UL & ULC Listed & Dimensions conform to ASME B16.3 Class 150.
Factory Mutual Approved for 500 psi service. Threads are NPT per ANSI/ASME B1.20.1.
Ductile iron per ASTM A536 Class 65-45-12.

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



PROJECT INFORMATION:

APPROVAL STAMP:

Project:

Date:

Phone:

Architect / Engineer:

Contractor:

Address:

Notes 1:

Notes 2:

45° ELBOW



Ductile Iron

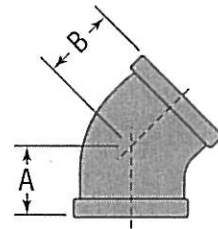
ANVILStar™
Fire Products Division of Anvil® International

Submittal Sheet



45° ELBOW

Nominal Size	Anvil Item Number	Universal Number	Max. Working Pressure	Dimensions-		Approx. Wt. Each
				A	B	
In. (mm)			PSI (kPa)	In. (mm)	In. (mm)	Lbs. (kg)
1	840002133	DB45033	500	1.12	1.12	0.46
25			3450	28.44	28.44	0.21
1 1/4	840002141	DB45044	500	1.29	1.29	0.73
32			3450	32.76	32.76	0.33
1 1/2	840002158	DB45055	500	1.43	1.43	0.92
40			3450	36.32	36.32	0.42
2	840002166	DB45066	500	1.68	1.68	1.50
50			3450	42.67	42.67	0.68



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APPROVED
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PROJECT INFORMATION:

APPROVAL STAMP:

Project:

Date:

Phone:

Architect / Engineer:

Contractor:

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Notes 1:

Notes 2:

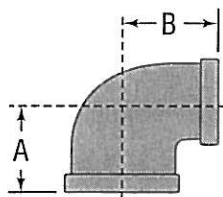
REDUCING 90° ELBOW



Ductile Iron

AnvilStar™
Fire Products Division of Anvil® International

Submittal Sheet



REDUCING 90° ELBOW

Nominal Size	Anvil Item Number	Universal Number	Max. Working Pressure	Dimensions		Approx. Wt. Each
				A	B	
<i>in. (mm)</i>			<i>PSI (kPa)</i>	<i>in. (mm)</i>	<i>in. (mm)</i>	<i>Lbs. (kg)</i>
1 x 1/2 25 x 15	840001036	DB90031	500 3450	1.26 32.00	1.36 34.54	0.44 0.20
1 x 3/4 25 x 20	840001044	DB90032	500 3450	1.37 34.79	1.45 36.83	0.52 0.24
1 1/4 x 1/2 32 x 15	840001051	DB90041	500 34550	1.34 34.03	1.53 38.86	0.64 0.29
1 1/4 x 3/4 32 x 20	840001069	DB90042	500 3450	1.45 36.83	1.62 41.14	0.72 0.33
1 1/4 x 1 32 x 25	840001077	DB90043	500 3450	1.58 40.13	1.67 42.41	0.75 0.34
1 1/2 x 1 40 x 25	840001085	DB90053	500 3450	1.65 41.91	1.80 45.72	0.92 0.42
1 1/2 x 1 1/4 40 x 32	840001093	DB90054	500 3450	1.82 46.22	1.88 47.75	1.08 0.49
2 x 1/2 50 x 15	840001101	DB90061	500 3450	1.49 37.84	1.88 47.75	1.08 0.49
2 x 3/4 50 x 20	840001119	DB90062	500 3450	1.60 40.64	1.97 50.03	1.24 0.56
2 x 1 50 x 25	840001127	DB90063	500 3450	1.73 43.94	2.02 51.30	1.40 0.64
2 x 1 1/4 50 x 32	840001135	DB90064	500 3450	1.90 48.26	2.10 53.34	1.52 0.70
2 x 1 1/2 50 x 40	840001143	DB90065	500 3450	2.02 51.30	2.16 54.86	1.65 0.75

MATERIAL SPECIFICATIONS

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Factory Mutual Approved for 500 psi service. Threads are NPT per ANSI/ASME B1.20.1.
Ductile iron per ASTM A536 Class 65-45-12.

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APPROVED
For Listing / Approval
details contact your
AnvilStar™ Representative.

PROJECT INFORMATION:

Project:	
Date:	Phone:
Architect / Engineer:	
Contractor:	
Address:	
Notes 1:	
Notes 2:	

APPROVAL STAMP:

STRAIGHT TEE



Ductile Iron

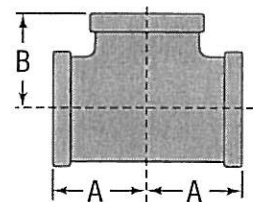
ANVILStar™
Fire Products Division of Anvil® International

Submittal Sheet



STRAIGHT TEE

Nominal Size	Anvil Item Number	Universal Number	Max. Working Pressure	Dimensions		Approx. Wt. Each
				A	B	
In. (mm)			PSI (kPa)	In. (mm)	In. (mm)	Lbs. (kg)
1	840003164	DT333	500	1.50	1.50	0.85
25			3450	38.10	38.10	0.39
1 1/4	840003172	DT444	500	1.75	1.75	1.22
32			3450	44.45	44.45	0.55
1 1/2	840003180	DT555	500	1.94	1.94	1.55
40			3450	49.27	49.27	0.70
2	840003198	DT666	500	2.25	2.25	2.45
50			3450	57.15	57.15	1.11



MATERIAL SPECIFICATIONS

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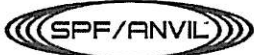
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PROJECT INFORMATION:

APPROVAL STAMP:

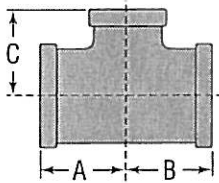
Project:		
Date:	Phone:	
Architect / Engineer:		
Contractor:		
Address:		
Notes 1:		
Notes 2:		

REDUCING TEE



Ductile Iron

Submittal Sheet



REDUCING TEE							
Nominal Size	Anvil Item Number	Universal Number	Max. Working Pressure	Dimensions			Approx. Wt. Each
In. (mm)			PSI (kPa)	A In. (mm)	B In. (mm)	C In. (mm)	Lbs. (kg)
1 x 1/2 x 1	840004196	DT313	500	1.50	1.36	1.50	0.64
25 x 15 x 25			3450	38.10	34.54	38.10	0.29
1 x 3/4 x 1	840004204	DT323	500	1.50	1.45	1.50	0.73
25 x 20 x 25			3450	38.10	36.83	38.10	0.33
1 x 1 x 1/2	840004212	DT331	500	1.26	1.26	1.36	0.71
25 x 25 x 15			3450	32.00	32.00	34.54	0.32
1 x 1 x 3/4	840004220	DT332	500	1.37	1.37	1.45	0.76
25 x 25 x 20			3450	34.80	34.80	36.83	0.34
1 x 1 x 1 1/4	840004238	DT334	500	1.67	1.67	1.58	0.98
25 x 25 x 32			3450	42.41	42.41	40.13	0.44
1 x 1 x 1 1/2	840004246	DT335	500	1.80	1.80	1.65	1.16
25 x 25 x 40			3450	45.72	45.72	41.91	0.53
1 1/4 x 1 x 1/2	840004253	DT431	500	1.34	1.26	1.53	0.82
32 x 25 x 15			3450	34.04	32.00	38.86	0.37
1 1/4 x 1 x 3/4	840004261	DT432	500	1.45	1.37	1.62	0.90
32 x 25 x 20			3450	36.83	34.80	41.15	0.41
1 1/4 x 1 x 1	840004279	DT433	500	1.58	1.50	1.67	1.00
32 x 25 x 25			3450	40.13	38.10	42.42	0.45
1 1/4 x 1 x 1 1/4	840004287	DT434	500	1.75	1.67	1.75	1.08
32 x 25 x 32			3450	44.45	42.42	44.45	0.49
1 1/4 x 1 x 1 1/2	840004295	DT435	500	1.88	1.80	1.82	1.42
32 x 25 x 40			3450	47.75	45.72	46.22	0.64
1 1/4 x 1 1/4 x 1/2	840004303	DT441	500	1.34	1.34	1.53	0.86
32 x 32 x 15			3450	34.04	34.04	38.86	0.39
1 1/4 x 1 1/4 x 3/4	840004311	DT442	500	1.45	1.45	1.62	0.92
32 x 32 x 20			3450	36.83	36.83	41.15	0.42
1 1/4 x 1 1/4 x 1	840004329	DT443	500	1.58	1.58	1.67	0.95
32 x 32 x 25			3450	40.13	40.13	42.42	0.43
1 1/4 x 1 1/4 x 1 1/2	840004337	DT445	500	1.88	1.88	1.82	1.45
32 x 32 x 40			3450	47.75	47.75	46.22	0.66
1 1/4 x 1 1/4 x 2	840004345	DT446	500	2.10	2.10	1.90	1.75
32 x 32 x 50			3450	53.34	53.34	48.26	0.79
1 1/2 x 1 x 1/2	840004352	DT531	500	1.41	1.34	1.66	0.95
40 x 25 x 15			3450	35.81	34.04	42.16	0.43
1 1/2 x 1 x 3/4	840004360	DT532	500	1.52	1.37	1.75	1.14
40 x 25 x 20			3450	38.61	34.80	44.45	0.52
1 1/2 x 1 x 1	840004378	DT533	500	1.65	1.50	1.80	1.17
40 x 25 x 25			3450	41.91	38.10	45.72	0.53
1 1/2 x 1 x 1 1/4	840004386	DT534	500	1.82	1.67	1.88	1.34
40 x 25 x 32			3450	46.23	42.42	47.75	0.61
1 1/2 x 1 x 1 1/2	840004394	DT535	500	1.94	1.80	1.94	1.45
40 x 25 x 40			3450	49.28	45.72	49.28	0.66
1 1/2 x 1 1/4 x 1/2	840004402	DT541	500	1.41	1.34	1.66	1.05
40 x 32 x 15			3450	35.81	34.04	42.16	0.48
1 1/2 x 1 1/4 x 3/4	840004410	DT542	500	1.52	1.45	1.75	1.15
40 x 32 x 20			3450	38.61	36.83	44.45	0.52

REDUCING TEE							
Nominal Size	Anvil Item Number	Universal Number	Max. Working Pressure	Dimensions			Approx. Wt. Each
In. (mm)			PSI (kPa)	A In. (mm)	B In. (mm)	C In. (mm)	Lbs. (kg)
1 1/2 x 1 1/4 x 1	840004428	DT543	500	1.65	1.58	1.80	1.25
40 x 32 x 25			3450	41.91	40.13	45.72	0.57
1 1/2 x 1 1/4 x 2	840004436	DT546	500	2.16	2.10	2.02	1.90
40 x 32 x 50			3450	54.86	53.34	51.30	0.86
1 1/2 x 1 1/2 x 1/2	840004444	DT551	500	1.41	1.41	1.16	1.15
40 x 40 x 15			3450	35.81	35.81	29.46	0.52
1 1/2 x 1 1/2 x 3/4	840004451	DT552	500	1.52	1.52	1.75	1.24
40 x 40 x 20			3450	38.61	38.61	44.45	0.56
1 1/2 x 1 1/2 x 1	840004469	DT553	500	1.65	1.65	1.80	1.30
40 x 40 x 25			3450	41.91	41.91	45.72	0.59
1 1/2 x 1 1/2 x 1 1/4	840004477	DT554	500	1.82	1.82	1.88	1.48
40 x 40 x 32			3450	46.23	46.23	47.75	0.67
1 1/2 x 1 1/2 x 2	840004485	DT556	500	2.16	2.16	2.02	1.98
40 x 40 x 50			3450	54.86	54.86	51.30	0.90
2 x 1 x 2	840004493	DT636	500	2.25	2.02	2.25	2.15
50 x 25 x 50			3450	57.15	51.31	57.15	0.98
2 x 1 1/4 x 2	840004501	DT646	500	2.25	2.10	2.25	2.30
50 x 32 x 50			3450	57.15	53.34	57.15	1.04
2 x 1 1/2 x 1/2	840004519	DT651	500	1.49	1.41	1.88	1.50
50 x 40 x 15			3450	37.85	35.81	47.75	0.68
2 x 1 1/2 x 3/4	840004527	DT652	500	1.60	1.52	1.97	1.62
50 x 40 x 20			3450	40.64	38.61	50.04	0.73
2 x 1 1/2 x 1	840004535	DT653	500	1.73	1.65	2.02	1.64
50 x 40 x 25			3450	43.94	41.91	51.31	0.74
2 x 1 1/2 x 1 1/4	840004543	DT654	500	1.90	1.82	2.10	1.80
50 x 40 x 32			3450	48.26	46.23	53.34	0.82
2 x 1 1/2 x 1 1/2	840004550	DT655	500	2.02	1.94	2.16	2.00
50 x 40 x 40			3450	51.31	49.28	54.86	0.91
2 x 1 1/2 x 2	840004568	DT656	500	2.25	2.16	2.25	2.35
50 x 40 x 50			3450	57.15	54.86	57.15	1.07
2 x 2 x 1/2	840004576	DT661	500	1.49	1.49	1.88	1.60
50 x 50 x 15			3450	37.85	37.85	47.75	0.73
2 x 2 x 3/4	840004584	DT662	500	1.60	1.60	1.97	1.68
50 x 50 x 20			3450	40.64	40.64	50.04	0.76
2 x 2 x 1	840004592	DT663	500	1.73	1.73	2.02	1.85
50 x 50 x 25			3450	43.94	43.94	51.31	0.84
2 x 2 x 1 1/4	840004600	DT664	500	1.90	1.90	2.10	2.04
50 x 50 x 32			3450	44.45	42.42	44.45	0.93
2 x 2 x 1 1/2	840004618	DT665	500	2.02	2.02	2.16	2.18
50 x 50 x 40			3450	44.45	42.42	44.45	0.99
2 x 2 x 2 1/2	-	DT667	500	2.60	2.60	2.39	3.61
50 x 50 x 65			3450	44.45	42.42	44.45	1.64
2 1/2 x 2 x 3/4	-	DT762	500	1.74	1.60	2.32	2.28
65 x 50 x 20			3450	44.45	42.42	44.45	1.03

MATERIAL SPECIFICATIONS

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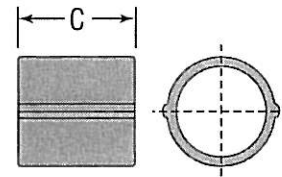
PROJECT INFORMATION:

APPROVAL STAMP:

Project:	
Date:	Phone:
Architect / Engineer:	
Contractor:	
Address:	
Notes 1:	
Notes 2:	



COUPLING				
Nominal Size	Anvil Item Number	Universal Number	Dimensions A	Approx. Wt. Each
In. (mm)			In. (mm)	Lbs. (kg)
1	840008692	DCL033	1.67	0.40
25			42.42	0.18
1 1/4	840008700	DCL044	1.93	0.57
32			49.02	0.26
1 1/2	840008718	DCL055	2.15	0.75
40			54.61	0.34
2	840008726	DCL066	2.53	1.15
50			64.26	0.52



MATERIAL SPECIFICATIONS

Ductile iron threaded fittings are UL & ULC Listed & Factory Mutual Approved for 500 psi service. Dimensions conform to ASME B16.3 Class 150.
Ductile iron per ASTM A536 Class 65-45-12. Threads are NPT per ANSI/ASME B1.20.1.

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



APPROVED
For Listing / Approval
details contact your
AnvilStar™ Representative.

PROJECT INFORMATION:

APPROVAL STAMP:

Project:

Date:

Phone:

Architect / Engineer:

Contractor:

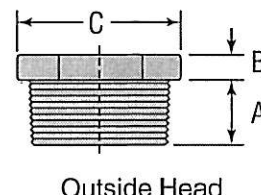
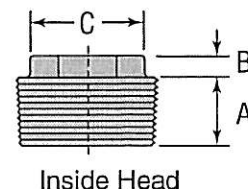
Address:

Notes 1:

Notes 2:



BUSHINGS							
Nominal Size	Anvil Item Number	Universal Number	Dimensions			Style	Approx. Wt. Each
In. (mm)			A	B	C		Lbs. (kg)
In. (mm)			In. (mm)	In. (mm)	In. (mm)		
1 x 1/2 25 x 15	840600001	DBUSH31	0.75 19.05	0.25 6.35	1.42 36.06	Outside	0.22 0.10
1 x 3/4 25 x 20	840600019	DBUSH32	0.75 19.05	0.25 6.35	1.42 36.06	Outside	0.17 0.08
1 1/4 x 1 32 x 25	840600027	DBUSH43	0.80 20.32	0.28 7.11	1.76 44.70	Outside	0.28 0.13
1 1/2 x 1 40 x 25	840600035	DBUSH53	0.83 21.08	0.31 7.874	2.00 50.80	Outside	0.45 0.20
1 1/2 x 1 1/4 40 x 32	840600043	DBUSH54	0.83 21.08	0.31 7.874	2.00 50.80	Outside	0.30 0.14
2 x 1 50 x 25	840600050	DBUSH63	0.88 22.35	0.41 10.414	1.95 49.53	Inside	0.67 0.30
2 x 1 1/4 50 x 32	840600068	DBUSH64	0.88 22.35	0.34 8.636	2.48 62.99	Outside	0.73 0.33
2 x 1 1/2 50 x 40	840600076	DBUSH65	0.88 22.35	0.34 8.636	2.48 62.99	Outside	0.61 0.28



MATERIAL SPECIFICATIONS

Ductile iron threaded fittings are UL & ULC Listed & Dimensions conform to ASME B16.3 Class 150.
 Factory Mutual Approved for 500 psi service. Threads are NPT per ANSI/ASME B1.20.1.
 Ductile iron per ASTM A536 Class 65-45-12.

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



APPROVED
 For Listing / Approval
 details contact your
 AnvilStar™ Representative.

PROJECT INFORMATION:

APPROVAL STAMP:

Project:	
Date:	Phone:
Architect / Engineer:	
Contractor:	
Address:	
Notes 1:	
Notes 2:	



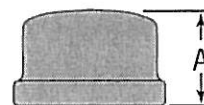
Ductile Iron

Submittal Sheet



CAPS

Nominal Size	Anvil Item Number	Universal Number	Max. Working Pressure	Dimensions A	Approx. Wt. Each
In. (mm)			PSI (kPa)	In. (mm)	Lbs. (kg)
1	840005615	DCP003	500	1.16	0.32
25			3450	29.46	0.15
1 1/4	840005623	DCP004	500	1.28	0.43
32			3450	32.51	0.20
1 1/2	840005631	DCP005	500	1.33	0.60
40			3450	33.78	0.27
2	840005649	DCP006	500	1.45	0.91
50			3450	36.83	0.41



MATERIAL SPECIFICATIONS

Ductile iron threaded fittings are UL & ULC Listed & Factory Mutual Approved for 500 psi service. Dimensions conform to ASME B16.3 Class 150. Threads are NPT per ANSI/ASME B1.20.1.

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

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



PROJECT INFORMATION:

APPROVAL STAMP:

Project:	
Date:	Phone:
Architect / Engineer:	
Contractor:	
Address:	
Notes 1:	
Notes 2:	

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FireLock® Rigid Coupling

STYLE 005

WITH VIC-PLUS™ GASKET SYSTEM (NORTH AMERICA ONLY)

FireLock® Style 005 rigid coupling has a unique, patented angle-pad design which allows the housings to offset while clamping the grooves. By permitting the housings to slide on the angled bolt pads, rigidity is obtained.

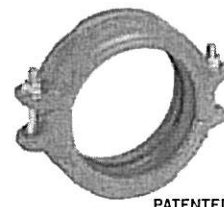
Support and hanging requirements correspond to NFPA 13 Sprinkler Systems. Angle-pad design permits assembly by removing one nut/bolt and swinging the housing over the gasket. This reduces components to handle during assembly.

Style 005 FireLock coupling are designed and recommended for use **ONLY** on fire protection systems.

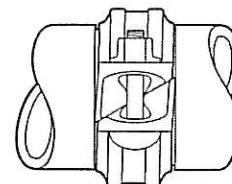
Vic-Plus™ Gasket System:

In North America, Victaulic® offers a gasket system which requires no field lubrication on wet pipe systems that are hydrostatically tested. The Vic-Plus™ System (patented) is dry, clean, and non-toxic. It reduces assembly time substantially and eliminates the mess and chance of over-lubrication. Please refer to the latest copy of the Victaulic Field Installation Handbook (I-100) for supplemental lubrication requirements and dry pipe fire protection system notes.

UL FM ULC LPC VdS 5 LPC and VdS Approved, see notes on page 4
SEE VICTAULIC PUBLICATION 10.01 FOR DETAILS



PATENTED



Exaggerated for clarity

LISTING/APPROVALS

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

Related Working Pressure – psi					Related Working Pressure – psi					Related Working Pressure – psi				
Pipe Sch.	Size Inches	UL	ULC	FM	Pipe Sch.	Size Inches	UL	ULC	FM	Pipe Sch.	Size Inches	UL	ULC	FM
5	1 ¼ – 3	175	175	175	EL	1 ¼ – 2	300	N/A	N/A	MT	1 ¼ – 2	300	N/A	N/A
10, 40	1 ¼ – 4	350	350	350	ET	1 ¼ – 2	300	N/A	N/A	STF	1 ¼ – 4	N/A	N/A	300
	5 – 8	300	300	300	EZ	4 – 6	300#	N/A	300	Steady Thd.	1 ¼ – 2	N/A	N/A	300
	BLT	1 ¼ – 2	300	300	N/A	FF	1 ¼ – 4	N/A	N/A	300	TF	3 – 8	N/A	N/A
DF	1 ¼ – 4	300	300	300	GAL - 7	1 ¼ – 2	300	N/A	N/A	WLS	1 ¼ – 2	300	300	N/A
DT	1 ¼ – 2	300	300	N/A	MLT	1 ¼ – 2	300	N/A	N/A	XL	1 ¼ – 3	300	300	300
EF	1 ½ – 4	175@	N/A	175	MT	1 ¼ – 4	300	N/A	300*					

* FM approved for service in 1 1/2 – 4" pipe.

UL Listed for service up to 4" pipe only.

@ UL Listed for service up to 3" only.

JOB/OWNER

System No. _____

Location _____

CONTRACTOR

Submitted By _____

Date _____

ENGINEER

Spec Sect _____ Para _____

Approved _____

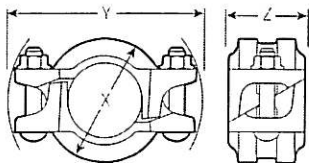
Date _____

FireLock® Rigid Coupling

STYLE 005

WITH VIC-PLUSTM GASKET SYSTEM (NORTH AMERICA ONLY)

DIMENSIONS



Rated for wet and dry sprinkler systems at 350 psi/2413 kPa for 1 1/4" - 4 1/2" - 100 mm sizes and 300 psi/2068 kPa for 4 1/2" - 8" / 108 - 200 mm sizes; Schedule 10 roll grooved or Schedule 40 cut or roll grooved steel pipe. Style 005 is rigid and does not accommodate expansion, contraction or angular deflection.

Size		Max. Work Pressure § *	Max. End Load *	Allow. Pipe End Sep. †	Bolt/Nut@ No - Size	Dimensions - Inches/mm			Approx. Wgt. Each
Nominal Size Inches/mm	Actual Outside Diameter Inches/mm	PSI kPa	Lbs. N	Inches mm	Inches mm	X	Y	Z	Lbs. kg
1 1/4 32	1.660 42.4	350 2413	755 3370	0.05 1.2	2 - 3/8 x 2 1/2	2.75 70	4.50 114	1.88 148	1.2 0.5
1 1/2 40	1.900 48.3	350 2413	990 4415	0.05 1.2	2 - 3/8 x 2 1/2	3.00 76	4.75 121	1.88 148	1.2 0.5
2 50	2.375 60.3	350 2413	1550 6900	0.07 1.7	2 - 3/8 x 2 1/2	3.50 89	5.25 133	1.88 148	1.6 0.7
2 1/2 65	2.875 73.0	350 2413	2270 10110	0.07 1.7	2 - 3/8 x 2 1/2	4.00 102	5.75 146	1.88 148	1.9 0.9
76.1 mm	3.000 76.1	350 2413	2475 11010	0.07 1.7	2 - 3/8 x 2 1/2	4.13 105	5.75 146	1.88 148	1.9 0.9
3 80	3.500 88.9	350 2413	3365 14985	0.07 1.7	2 - 3/8 x 2 1/2	4.63 118	6.13 156	1.88 148	2.1 1.0
4 100	4.500 114.3	350 2413	5565 24770	0.16 4.1	2 - 3/8 x 2 1/2	5.75 146	7.25 184	2.13 54	3.1 1.4
108.0 mm	4.250 108.0	300 2068	4255 18940	0.16 4.1	2 - 3/8 x 2 1/2	5.63 143	7.25 184	2.13 54	3.1 1.4
5 125	5.563 141.3	300 2068	7290 32445	0.16 4.1	2 - 1/2 x 3	6.88 175	9.00 229	2.13 54	4.5 2.0
133.0 mm	5.250 133.0	300 2068	6495 28900	0.16 4.1	2 - 1/2 x 2 3/4	6.63 168	9.00 229	2.13 54	4.5 2.0
139.7 mm	5.500 139.7	300 2068	7125 31715	0.16 4.1	2 - 1/2 x 2 3/4	6.88 175	9.00 229	2.13 54	4.8 2.2
6 150	6.625 168.3	300 2068	10340 46020	0.16 4.1	2 - 1/2 x 3	8.00 203	10.00 254	2.13 53	5.0 2.3
159.0 mm	6.250 159.0	300 2068	9200 40955	0.16 4.1	2 - 1/2 x 2 3/4	7.63 194	10.00 254	2.13 54	5.5 2.5
165.1 mm	6.500 165.1	300 2068	9955 44295	0.16 4.1	2 - 1/2 x 3	8.15 207	10.00 254	2.13 54	5.5 2.5
8 200	8.625 219.1	300 2068	17525 78000	0.19 4.8	2 - 3/4 x 4 1/4	10.50 267	13.14 334	2.63 67	11.3 5.1

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

WARNING: FOR ONE TIME FIELD TEST ONLY, the Maximum Joint Working Pressure may be increased to 1 1/2 times the figures shown.

† The allowable pipe separation dimension shown is for system layout purposes only. Style 005 couplings are considered rigid connections and will not accommodate expansion or contraction of the piping system.

@ Number of bolts required equals number of housing segments. Metric thread size bolts are available (color coded gold) for all coupling sizes upon request. Contact Victaulic for details.

5 Style 005 couplings are VdS and LPC Approved to 12 Bar/175 psi.

FireLock® Rigid Coupling

STYLE 005

WITH VIC-PLUS™ GASKET SYSTEM (NORTH AMERICA ONLY)

MATERIAL SPECIFICATIONS

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

Housing Coating: Orange enamel (North America); red enamel (Europe)

- **Optional:** Hot dipped galvanized

Gasket:

- **Grade "E" EPDM – Type A Vic-Plus™ Gasket System Δ**
(Violet color code). FireLock products have been Listed by Underwriters Laboratories Inc. and Approved by Factory Mutual Research for wet and dry (oil free air) sprinkler services up to the rated working pressure using the Grade "E" Type A Vic-Plus™ Gasket System, requiring no field lubrication for most installation conditions.
- **Grade "L" Silicone**
Recommended for dry heat, air without hydrocarbons to +350°F and certain chemical services.

For dry services, Victaulic continues to recommend the use of Grade "E" Type A FlushSeal® Gasket. Contact Victaulic for details.

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.

Δ Standard gasket and FlushSeal gasket approved for dry pipe systems to –40°F/–40°C. Based on "typical" pipe surface conditions, supplemental lubricant is recommended for services installed below 0°F/–18°C and for all dry pipe systems or systems to be subjected to air tests prior to being filled with water. Supplemental lubrication may also be required on pipe with raised or undercut weld seams or pipe that has voids and/or cracks at the weld seams. Victaulic continues to recommend the use of FlushSeal gaskets for dry services.

FireLock® Rigid Coupling

STYLE 005

WITH VIC-PLUS™ GASKET SYSTEM (NORTH AMERICA ONLY)

GENERAL NOTES

WARNING: Depressurize and drain the piping system before attempting to install, remove, or adjust any Victaulic piping products.

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.

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.



WCAS-697KR4

For complete contact information, visit www.victaulic.com

10.02 1538 REV I UPDATED 9/2006

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10.02



Style 744 FireLock® Flange Adapter

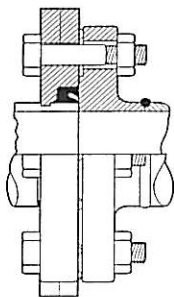
with Vic-Plus™ Gasket System



PRODUCT DESCRIPTION



2 - 8" Sizes



(Exaggerated for clarity)

Style 744 FireLock Flange adapter is designed for directly incorporating flanged components with ANSI CL. 125 or CL. 150 bolt hole patterns into a grooved pipe system. Sizes 2 - 8" (50 - 200 mm) are hinged for easy handling with integral end tabs which facilitate assembly.

The design incorporates small teeth inside the key shoulder I.D. to prevent rotation.

Because of the outside flange dimension, FireLock Flange adapters should not be used on FireLock fittings. When wafer or lug-type valves are used adjoining a Victaulic fitting, check disc dimensions to assure proper clearance.

FireLock Flange adapters should not be used as anchor points for tie-rods across nonrestrained joints. Mating rubber faced flanges, valves, etc., require the use of a FireLock Flange washer.

FireLock Flange adapters with Vic-Plus gaskets do not require lubrication. The gasket must always be assembled with the color coded lip on the pipe and the other lip facing the mating flange.

Style 744 FireLock Flange Adapters with the Vic-Plus™ Gasket System are designed and recommended for use ONLY on fire protection systems.

Vic-Plus Gasket System:

Victaulic® now offers a gasket system which requires no field lubrication on wet pipe systems. The Vic-Plus™ System (patented) is dry, clean, and non-toxic. It reduces assembly time substantially and eliminates the mess and chance of over-lubrication. Please refer to the latest copy of the Victaulic Field Installation Handbook (I-100) for supplemental lubrication requirements.

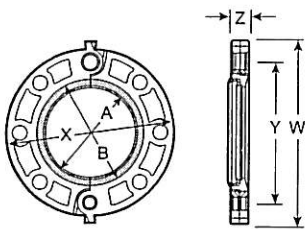


See Victaulic publication 10.01 for details.

DIMENSIONS

Style 744

Sizes 2 - 8" (50 - 200 mm)
ANSI Class 125 and 150 Flange



Note: Gray area of mating face must be free from gouges, undulations or deformities of any type for effective sealing.

Pipe Size		Max. Work Press.* PSI kPa	Max. End Load* Lbs. N	No. Bolts † Req'd.	Bolt Size † Inches	Sealing Surface Inches/mm		Dimensions Inches/millimeters				Aprx. Wgt. Each Lbs. kg
Nominal Diameter In./mm	Actual Outside Diameter In./mm					"A" Max.	"B" Min.	W	X	Y	Z	
2 50	2.375 60.3	175 1200	775 3450	4	5/8 X 2 3/4	2.38 60	3.41 87	6.75 172	6.00 152	4.75 121	0.75 19	2.7 1.2
2 1/2 65	2.875 73.0	175 1200	1135 5050	4	5/8 X 3	2.88 73	3.91 99	7.88 200	7.00 178	5.50 140	0.88 22	4.2 1.9
3 80	3.500 88.9	175 1200	1685 7500	4	5/8 X 3	3.50 89	4.53 115	8.44 214	7.50 191	6.00 152	0.94 24	4.8 2.2
4 100	4.500 114.3	175 1200	2780 11045	8	5/8 X 3	4.50 114	5.53 141	9.94 252	9.00 229	7.50 191	0.94 24	7.1 3.2
5 125	5.563 141.3	175 1200	4250 18920	8	3/4 X 3 1/2	5.56 141	6.71 171	11.00 279	10.00 254	8.50 216	1.00 25	8.3 3.8
6# 150	6.625 168.3	175 1200	6030 26840	8	3/4 X 3 1/2	6.63 168	7.78 198	12.00 305	11.00 279	9.50 241	1.00 25	9.3 4.2
8# 200	8.625 219.1	175 1200	10219 45475	8	3/4 X 3 1/2	8.63 219	9.94 252	14.63 372	13.50 343	11.75 298	1.13 29	13.9 6.3

*Refer to notes below.

† Total bolts required to be supplied by installer. Bolt sizes for conventional flange-to-flange connection. Larger bolts are required when Vic-Flange adapter is utilized with wafer-type valves.

Not available with Vic-Plus gasket system. Lubrication is required.

NOTES

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

WARNING: FOR ONE TIME FIELD TEST ONLY, the Maximum Joint Working Pressure may be increased to 1 1/2 times the figures shown.

Style 744 FireLock Flange adapters provide rigid joints when used on pipe with standard roll or cut groove dimensions and consequently allow no linear or angular movement at the joint.

WARNING: Depressurize and drain the piping system before attempting to install, remove, or adjust any Victaulic piping products.

VIC-FLANGE ADAPTER NOTES

- 1 The Style 744 (2 - 8"/50 - 200 mm) design incorporates small teeth inside the key shoulder I.D. to prevent rotation.
- 2 FireLock Flange adapter should not be used on FireLock fittings. When wafer or lug-type valves are used adjoining a Victaulic fitting, check disc dimensions to assure proper clearance.
- 3 FireLock Flange adapters should not be used as anchor points for tie-rods across nonrestrained joints. Mating rubber faced flanges, valves, etc. require the use of a FireLock Flange washer.
- 4 Area A-B noted in the above drawing must be free from gouges, undulations or deformities of any type for effective sealing.
- 5 FireLock Flange adapter gaskets must always be assembled with the color coded lip on the pipe and the other lip facing the mating flange.
- 6 Flange Washers: FireLock Flange adapters require a smooth hard surface at the mating flange face for effective sealing. Some applications for which the Vic-Flange adapter is otherwise well suited do not provide an adequate mating surface. In such cases, it is recommended that a metal Flange Washer be inserted between the FireLock Flange adapter and the mating flange to provide the necessary sealing surface.

Typical applications where a Flange Washer should be used are:

- A When mating to a serrated flange: a standard flat flange gasket should be used adjacent to the serrated flange and then the Flange Washer is inserted between the FireLock Flange adapter and the flange gasket.
- B When mating to a wafer valve: where typical valves are rubber lined and partially rubber faced (smooth or not), the Flange Washer is placed between the valve and the FireLock Flange adapter.
- C When mating a rubber faced flange: the Flange Washer is placed between the FireLock Flange adapters and the rubber faced flange.
- D When mating AWWA cast flanges to IPS flanges: the Flange Washer is placed between two FireLock Flanges. The hinge points must be oriented approximately 90° to each other. If one flange is not a FireLock Flange adapter (e.g. flanged valve), then a standard flat flange gasket must be placed adjacent to that flange and the Flange Washer inserted between the flange gasket and the FireLock Flange adapter.
- E When mating to components (valves, strainers, etc.) where the component flange face has an insert: follow the same arrangement as in Application 1.
- F When mating to a Series 705-W Butterfly valve, Style 744 may only be used on one side of the connection.

When ordering Flange Washers, always specify product style (Style 744) and size to assure proper Flange Washer is supplied.

MATERIAL SPECIFICATIONS

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

Coating: Black enamel

- **Optional:** Hot dipped galvanized

Bolts/Nuts: Supplied by installer

Gasket:

- **Grade "E" EPDM - Type A Vic-Plus Gasket System Δ**
(Violet color code). FireLock products have been Listed by Underwriters Laboratories Inc. and Approved by Factory Mutual Research for wet and dry (oil free air) sprinkler services up to the rated working pressure using the Grade "E" Type A Vic-Plus Gasket System, requiring no field lubrication for most installation conditions.

Δ Standard gasket approved for dry pipe systems to -40°F (-40°C). Based on "typical" pipe surface conditions, supplemental lubricant is recommended for services installed below 0°F (-18°C) and for all dry pipe systems or systems to be subjected to air tests prior to being filled with water. Supplemental lubrication may also be required on pipe with raised or undercut weld seams or pipe that has voids and/or cracks at the weld seams.

FireLock® Fittings



FireLock® products comprise a unique system specifically designed for fire protection services. FireLock full-flow elbows and tees are a CAD-developed, hydrodynamic design that has a shorter center-to-end dimension than standard fittings. A noticeable bulge allows the water to make a smoother turn to maintain similar flow characteristics as standard full flow fittings.

FireLock fittings are designed for use exclusively with Style 005 and Style 009 FireLock couplings. Use of other couplings or flange adapters may result in bolt pad interference.

Victaulic FireLock fittings pressure ratings conform to the ratings of Victaulic FireLock Style 005 couplings.



MATERIAL SPECIFICATIONS

Fitting: Ductile iron conforming to ASTM A-536, grade 65-45-12.

Fitting Coating: Orange enamel.

- **Optional:** Hot dipped galvanized.

JOB/OWNER

System No. _____

Location _____

CONTRACTOR

Submitted By _____

Date _____

ENGINEER

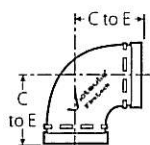
Spec Sect _____ Para _____

Approved _____

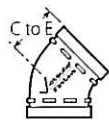
Date _____

FireLock® Fittings

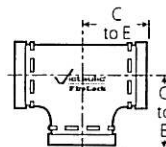
DIMENSIONS



NO. 001



NO. 003



NO. 002



NO. 006

Size		No. 001 90° Elbow		No. 003 45° Elbow		No. 002 Straight Tee		No. 006 Cap	
Nominal Size Inches mm	Actual Outside Diameter Inches mm	C to E Inches mm	Approx. Weight Each Lbs. kg	C to E Inches mm	Approx. Weight Each Lbs. kg	C to E Inches mm	Approx. Weight Each Lbs. kg	Thickness "T" Inches mm	Approx. Weight Each Lbs. kg
1 ¼ 32	1.660 42.4	—	—	—	—	—	—	0.8 21	0.3 0.1
1 ½ 40	1.900 48.3	—	—	—	—	—	—	0.82 21	0.4 0.2
2 50	2.375 60.3	2.75 70	1.7 0.8	2.00 51	1.8 0.8	2.75 70	2.4 1.1	0.88 22	0.6 0.3
2 ½ 65	2.875 73.0	3.00 76	3.1 1.4	2.25 57	2.2 1.0	3.00 76	3.6 1.6	0.88 22	1.0 0.5
76.1 mm	3.000 76.1	3.00 76	3.30 1.5	2.25 57	2.4 1.1	—	—	—	—
3 80	3.500 88.9	3.38 86	4.0 1.8	2.50 64	3.1 1.4	3.38 86	5.3 2.4	0.88 22	1.2 0.5
108 mm	4.250 108.0	4.00 102	5.7 2.6	3.00 76	5.1 2.3	4.00 102	7.5 3.4	—	—
4 100	4.500 114.3	4.00 102	6.7 3.0	3.00 76	5.6 2.5	4.00 102	8.7 3.9	1.00 25	2.4 1.1
5 125	5.563 141.3	4.88 124	12.6 5.7	3.25 83	8.3 3.8	4.88 124	15.7 7.1	1.00 25	4.1 1.9
159 mm	6.250 158.8	5.50 140	12.6 5.7	3.50 89	9.2 4.2	3.50 140	17.9 8.0	—	—
6 150	6.625 168.3	5.50 140	18.3 8.3	3.50 89	11.7 5.3	5.50 140	22.7 10.3	1.00 25	5.9 2.7
8 200	8.625 219.1	6.81 173	25.5 11.6	4.25 108	20.4 9.3	6.94 176	38.7 17.6	1.13 29	12.7 5.8

FireLock® Fittings

FLOW DATA

Size		Frictional Resistance Equivalent Feet/meters of Straight Pipe †			
Nominal Size Inches mm	Actual Outside Diameter Inches mm	Elbows		No. 002 Straight Tee	
		No. 001 90° Elbow	No. 003 45° Elbow	Branch	Run
1 ¼	1.660	1.5	0.8	3.7	1.5
32	42.4	0.5	0.2	1.1	0.5
1 ½	1.900	2.2	1.1	5.5	2.2
40	48.3	0.7	0.3	1.7	0.7
2	2.375	3.5	1.8	8.5	3.5
50	60.3	1.1	0.5	2.6	1.1
2 ½	2.875	4.3	2.2	10.8	4.3
65	73.0	1.3	0.7	3.3	1.3
76.1 mm	3.000	4.5	2.3	11.0	4.5
	76.1	1.4	0.7	3.4	1.4
3	3.500	5.0	2.6	13.0	5.0
80	88.9	1.5	0.8	4.0	1.5
108 mm	4.250	6.4	3.2	15.3	6.4
	108.0	2.0	0.9	4.7	2.0
4	4.500	6.8	3.4	16.0	6.8
100	114.3	2.1	1.0	4.9	2.1
5	5.563	8.5	4.2	21.0	8.5
125	141.3	2.6	1.3	6.4	2.6
159 mm	6.250	9.4	4.9	25.0	9.6
	158.8	2.9	1.5	7.6	2.9
6	6.625	10.0	5.0	25.0	10.0
150	168.3	3.0	1.5	7.6	3.0
8	8.625	13.0	5.0	33.0	13.0
200	219.1	4.0	1.5	10.1	4.0

† The flow data listed is based upon the pressure drop of Schedule 40 pipe.

FireLock® Fittings

GENERAL NOTES

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

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.



WCAS-6QAQS9

No. 10-DR Drain Elbow

PRODUCT DESCRIPTION



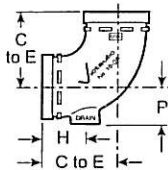
See Victaulic
publication 10.01
for details.

No. 10-DR drain elbows are specifically designed for use on fire protection standpipes. The drain is drilled and tapped for a 1" (25 mm) NPT outlet.

Constructed of durable ductile iron all sizes conform to the ratings of Style 77 couplings. No.10-DR elbows are supplied with grooves or shoulders. These fittings are not intended for use with Victaulic Plain End couplings.

When connecting wafer or lug-type butterfly valves directly to Victaulic drain elbows with Style 741 or 743 Vic-Flange® adapters or Style 744 FireLock® Flange adapters, check disc clearance dimensions with the I.D. dimension of the fitting.

DIMENSIONS



Fitting Size		Dimensions Inches/millimeters			Approximate Weight Each Lbs./kg
Nominal Outside Diameter Inches/mm	Actual Outside Diameter Inches/mm	C - E	H	P	
2 1/2 65	2.875 73.0	3.75 95	2.75 70	1.68 43	5.2 2.4
3 80	3.500 88.9	4.25 108	2.75 70	2.10 53	5.3 2.4
4 100	4.500 114.3	5.00 127	2.75 70	2.60 66	8.8 4.0
6 150	6.625 168.3	6.50 165	2.75 70	3.65 93	18.7 8.5

MATERIAL SPECIFICATIONS

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

Fitting Coatings: Orange enamel

- **Optional:** Hot dip galvanized and others.

This product shall be manufactured by Victaulic Company. 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.



TECHNICAL DATA

DRY VALVE MODEL F-1

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

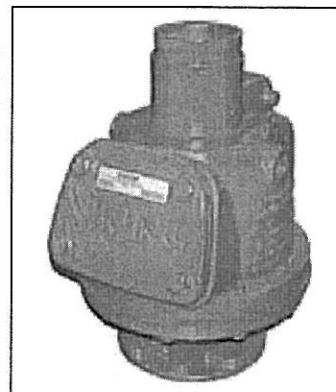
Telephone: 269-945-9501 Technical Services 877-384-5464 Fax: 269-945-4495 Email: techsvcs@vikingcorp.com

1. DESCRIPTION

The Viking Model F-1 Dry Pipe Valve is a latching differential valve used to separate the water supply from the dry pipe sprinkler system. The valve combines a positive latching clapper and air plate assembly, with a differential air to water seat design. The latching clapper and air plate assembly provides a positive mechanical seal for the air pressure in the dry pipe system. The differential design allows an air supply of moderate pressure to control a higher water supply pressure. When the air pressure in the dry pipe system is lowered sufficiently to destroy the pressure differential, the valve opens allowing water to enter the dry pipe system.

The valve is also designed to operate a water motor alarm and/or an electric pressure alarm switch.

The Viking accelerator Model D-2 or E-1 can be used to speed the operation of the valve on large capacity systems or where faster action is required.



2. LISTINGS AND APPROVALS

UL Listed - VPZV

ULC Listed - VPZVC (4" & 6" only)

FM Approved - Dry Pipe Valves

NYC Department of Buildings - MEA 89-92-E, Vol. 22

3. TECHNICAL DATA

Specifications:

Rated to - 175 PSI (12.1 bar) Water Working Pressure.

Factory tested hydrostatically - 350 PSI (24.1 bar) with the clapper open.

Air pressure to water pressure area differential: Approximately 6 to 1.

Color - Red

Material Specifications:

Refer to Figure 3

Ordering Information:

Available Since 1993

Part Numbers - Refer to Table 1

Viking Technical Data may be found on
The Viking Corporation's Web site at
<http://www.vikinggroupinc.com>.
The Web site may include a more recent
edition of this Technical Data Page.

Table 1

DESCRIPTION	NOMINAL SIZE	PART NUMBER	FRICTION LOSS	CV FACTOR*	SHIPPING WEIGHT
FLANGE/FLANGE					
Flange Drilling					
ANSI	3"	09441	3 ft. (0,91 m)	800	130 lbs. (59 kg)
ANSI	4"	07628	5 ft. (1,52 m)	821	130 lbs. (59 kg)
ANSI	6"	08464	49 ft. (14,9 m)	780	197 lbs. (89 kg)
PN10/16	DN80	09969	3 ft. (0,91 m)	800	130 lbs. (59 kg)
PN10/16	DN100	08841	5 ft. (1,52 m)	821	130 lbs. (59 kg)
PN10/16	DN150	08464	49 ft. (14,9 m)	780	197 lbs. (89 kg)

* Expressed in equivalent length of Schedule 40 pipe based on Hazen & Williams formula: C=120

DESCRIPTION	NOMINAL SIZE	PART NUMBER	FRICTION LOSS	CV FACTOR*	SHIPPING WEIGHT
FLANGE/GROOVE					
Flange Drilling / Pipe O.D.					
ANSI / 89mm	3"	09446	3 ft. (0,91 m)	800	125 lbs. (57 kg)
ANSI / 114mm	4"	07627	5 ft. (1,52 m)	821	125 lbs. (57 kg)
ANSI / 165mm	6"	12654	49 ft. (14,9 m)	780	184 lbs. (84 kg)
ANSI / 168mm	6"	08491	49 ft. (14,9 m)	780	184 lbs. (84 kg)
PN10/16 / 89mm	DN80	09970	3 ft. (0,91 m)	800	125 lbs. (57 kg)
PN10/16 / 114mm	DN100	09538	5 ft. (1,52 m)	821	125 lbs. (57 kg)
PN10/16 / 165mm	DN150	12653	49 ft. (14,9 m)	780	184 lbs. (84 kg)
PN10/16 / 168mm	DN150	08491	49 ft. (14,9 m)	780	184 lbs. (84 kg)

* Expressed in equivalent length of Schedule 40 pipe based on Hazen & Williams formula: C=120

$$Q = C_v \sqrt{\frac{\Delta P}{S}}$$

Q = Flow

Cv = Flow Factor (GPM/1 PSI ΔP)

ΔP = Pressure Loss through Valve

S = Specific Gravity of Fluid

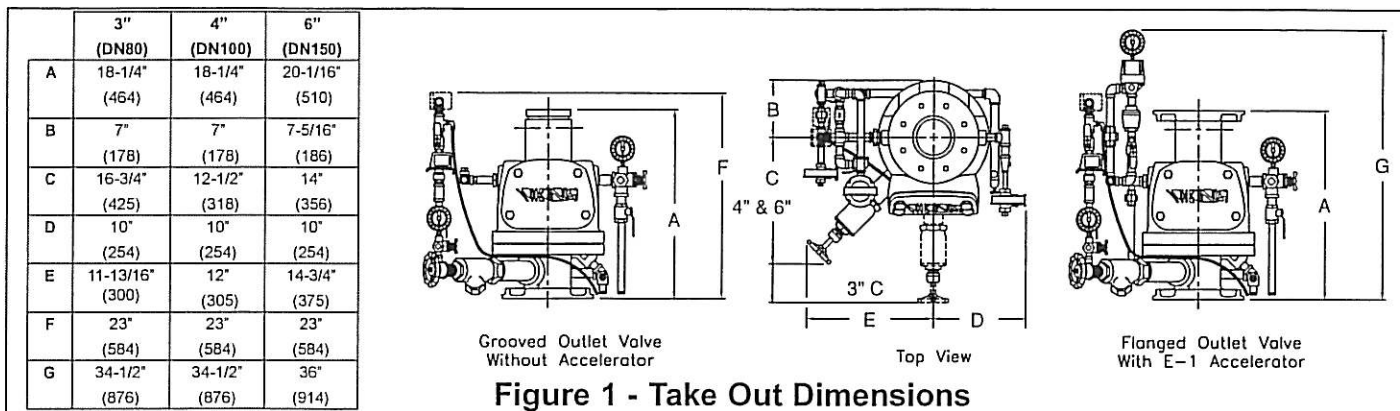


TECHNICAL DATA

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Accessories: Note: When viewing this Page online, blue text represents hyper links and will open the desired data page.

- Model F Dry Valve Conventional Trim Package:** For use when the Dry Valve is used on systems with fresh water supplies.
 - 3" Part No. 10158 (galvanized steel)
 - 4" & 6" Part No. 08395 (galvanized steel)
- Model F Dry Valve Accessory Package:** This package is needed when Viking Trim Packages are not used.
 - Part No. 08397
- D-2 Accelerator:**
 - Part No. 09881
- D-2 Accelerator Trim Kit:** Package includes trim components and air gauge required to install the Viking Model D-2 Accelerator
 - Part No. 09730
- E-1 Accelerator and B-1 Anti-Flood Assembly Package:** Includes: Model E-1 Accelerator and Model B-1 Anti-flood Device.
 - Part No. 08116
- E-1 Accelerator Trim Kit:** Package includes trim components and air gauge required to install the Viking Model E-1 Accelerator and B-1 Anti-flood Device.
 - Part No. 08264 (galvanized steel)

Additional accessories are available and may be required for operation or supervision. Refer to the system description for complete operating trim requirements.

4. INSTALLATION

For proper operation and approval, the valve must be trimmed in accordance with Viking Model F-1 Dry Valve Trim Charts.

The Model F-1 Dry Valve must be installed in the vertical position as shown in Figure 1.

Air or nitrogen supply to the dry pipe system must be clean, dry, and oil free.

Automatic air supplies must be regulated, restricted, and from a continuous source. A Viking Air Maintenance Device should be installed on each system equipped with an automatic air supply. Never exceed 60 PSI (4.1 bar) pressure in the system piping with the dry valve clapper closed.

The dry valve must be installed in an area not subject to freezing temperatures or physical damage. If required, provide a valve house (enclosure) with adequate heat around the dry valve and trim. Freezing temperatures and/or excessive pressure will damage the dry valve member assembly.

When corrosive atmospheres and/or contaminated water supplies are present, it is the owner's responsibility to verify compatibility with the Model F-1 Dry Valve and associated equipment.

Consider installation of the Viking Accelerator and Anti-flood Device. An accelerator (quick opening device) is recommended on all differential dry pipe valves and is required on dry pipe systems of certain capacities. Refer to Installation Standards and Authorities Having Jurisdiction. If an accelerator is to be installed, verify that the appropriate Trim Chart is used. Prior to installing the valve, thoroughly flush the water supply piping to verify that no foreign matter is present.

A. General Installation Instructions

- Verify that necessary Trim Charts and Technical Data for the dry valve and associated equipment are available.
- Remove all plastic thread protectors from the openings of the dry valve.
- Apply a small amount of pipe-joint compound or tape to the external threads of all pipe connections required. Take care not to allow any compound, tape, or other foreign matter inside any of the nipples or openings of the dry valve or trim components.



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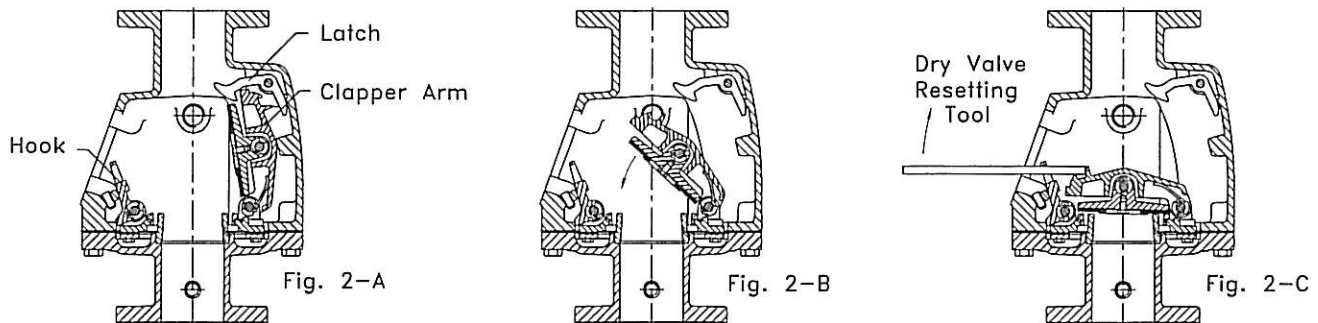


Figure 2

4. Install the Model F-1 Dry Valve and trim piping according to the current Model F-1 Dry Valve Trim Chart provided with the Trim Package and the Viking Engineering and Design Data book. The Model F-1 Dry Valve must be installed in the vertical position.
5. When installing a Viking Accelerator and Anti-flood Device in conjunction with the Model F-1 Dry Valve, refer to the appropriate Viking E-1 Accelerator Trim Chart provided with the Accelerator Trim Package and the Viking Engineering and Design Data book.
 - a. When a Viking Accelerator is installed on the Model F-1 Dry Valve, the dry system air supply must be connected as shown on the Model E-1 Accelerator Trim Chart.
 - b. The Viking external Anti-flood Device is required when a Viking Model E-1 Accelerator is installed on a Dry Valve according to the Model E-1 Accelerator Trim Chart.

Hydrostatic Test:

CAUTION: THE DRY VALVE CLAPPER MUST BE LATCHED OPEN DURING PERFORMANCE OF THE HYDROSTATIC TEST (SEE FIG. 2-A)

Do not perform a 200 PSI (13.8 bar) hydrostatic system test with the dry valve clapper in the closed (set) position. (See Fig. 2-C) Never exceed 60 PSI (4.1 bar) air pressure in the system piping with the dry valve clapper closed.

DO NOT expose the Viking Accelerator to the hydrostatic test. For warnings and considerations regarding hydrostatic testing of the Viking Accelerator and other system components, refer to Technical Data for the equipment used.

B. Placing the Valve in Service (Refer to Figure 2)

When the dry pipe system is ready to be placed in service, verify that all equipment is adequately heated and protected to prevent freezing and physical damage.

1. Verify that the water supply main control valve supplying the dry valve is closed.
2. Open the main drain valve (located on the inlet of the dry valve).
3. Drain all water from the dry pipe system. If the system has operated, or if water has entered the system, open all auxiliary drains and the system test valve. Allow enough time to completely drain the system. Perform steps 4 through 10 to set the dry valve and/or inspect the internal operating parts of the dry valve.
4. Verify that the dry pipe system is not pressurized.
5. Use a 15/16" wrench to loosen and remove hand-hole cover bolts (21). Remove hand-hole cover (24).

CAUTION: CLAPPER ARM ASSEMBLY (8) AND CLAPPER ASSEMBLY (5) ARE SPRING LOADED TO OPEN. NEVER PLACE HANDS INSIDE THE DRY VALVE IF THE CLAPPER ASSEMBLY IS LATCHED CLOSED.

To release a latched clapper assembly for service:

- a. Insert the re-setting tool through the hole in hook assembly (15), across the fulcrum cast on top of clapper arm assembly (8) until the re-setting tool contacts the stopping boss on top of clapper arm assembly (8) (see Figure 3).
- b. Apply a downward force on the end (outside the valve) of the re-setting tool. Hook assembly (15) will slide toward the hand-hole and off clapper arm assembly (8). Clapper arm assembly (8) and clapper assembly (5) will forcefully open, impact against latch (2), and latch in the open position.

NOTE: INSPECTION AND CLEANING PROCEDURE STEP 6 BELOW IS CONSIDERED PART OF THE ANNUAL TRIP TEST.

6. Inspect and clean the internal parts of the valve. Give special consideration to the water seat (16), air seat (20) and clapper rubber (19). Wipe away all contaminants, dirt, and mineral deposits. Do not use solvents or abrasives. Operate all parts to test freedom of movement. Renew or replace damaged or worn parts as required.



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CAUTION: NEVER APPLY ANY LUBRICANT TO SEATS, GASKETS, OR ANY INTERNAL OPERATING PARTS OF THE DRY VALVE. PETROLEUM BASED GREASE OR OIL WILL DAMAGE RUBBER COMPONENTS AND MAY PREVENT PROPER OPERATION OF THE DRY VALVE.

7. To set the dry valve clapper. (Refer to Figures 2 & 3)
 - a. Raise the latch (2) to release spring loaded clapper arm assembly (8) from the latched open position.
 - b. Move the clapper arm assembly (8) down toward the horizontal position (see Figure 2-B).
 - c. While holding spring loaded clapper arm assembly (8) down, insert the re-setting tool through the hole in hook assembly (15), across the fulcrum cast on top of clapper arm assembly (8) until the re-setting tool contacts the stopping boss as shown in Figure 2-C.
 - d. Apply a sharp upward force at the end of the re-setting tool. Hook assembly (15) will slide forward on the re-setting bar and latch the clapper closed with a positive setting action (see Figure 2-C).
8. Priming water is not required and may not be desirable where clean, good quality fresh water is not available. If priming water is desired, fill the dry valve with water to the bottom of the hand-hole.
 - a. Verify that the intermediate chamber of the dry valve is free of water. No water should flow from the drip check when the plunger is pushed.
9. Visually inspect hand-hole cover gasket (25). Verify that it is in good condition.
10. Re-install hand-hole cover (24), gasket (25), and hand-hole cover bolts (21). Tighten bolts to 90 ft-lb dry torque.
11. Close all auxiliary drains, the system test valve, and the priming water level test valve on the dry valve trim. The main drain (located on the inlet of the dry valve) should remain open.
12. If equipped with a Viking Accelerator and external Anti-flood Device:
 - a. Close the ½" (15 mm) anti-flood isolation valve.
 - b. Observe the air pressure gauge on top of the accelerator. The gauge must read zero before the accelerator will automatically reset. It may be necessary to loosen, remove, and re-install (use the appropriate wrench) the air gauge to vent trapped air pressure from the upper chamber.
13. Open the dry system air supply and establish desired system pressure. See Table 2 for suggested air pressure to water pressure settings. NEVER EXCEED 60 PSI (4.1 bar) AIR PRESSURE.
14. Verify that the intermediate chamber of the dry valve is free of water. No water should flow from the drip check when the plunger is pushed.
15. If equipped with a Viking Accelerator and external Anti-flood Device: When pressure on the accelerator air pressure gauge equals the system set pressure, OPEN and secure the ½" (15 mm) anti-flood isolation valve.
16. Slowly open the water supply main control valve.
17. When flow is developed from the main drain, CLOSE the main drain valve.
18. Fully open the water supply main control valve.
19. Secure all valves in their normal operating position.
20. Notify Authorities Having Jurisdiction and those in the affected area that the system is in service.

5. OPERATION (Refer to Figure 3)

The clapper (5) and air plate (11) assemblies combine to form a floating member assembly. With the clapper assembly (5) latched closed, system air pressure forces the member assembly down, sealing the water seat (16) from the intermediate chamber. When a sprinkler operates, the system air pressure is reduced. When system air pressure is reduced to the differential tripping point of the valve, water supply pressure in the inlet chamber lifts the member assembly off the water seat (16) and flows into the intermediate chamber. As the member assembly continues to rise, the hook assembly (15) is forced against socket set screw (23), which causes the hook assembly (15) to pivot on hook rod (6b) and unlatch the clapper. The clapper is spring loaded and swings to a full-open locked position (See Figure 2-A).

When using the optional accelerator, the accelerator senses the system air pressure drop and trips. Upon tripping the accelerator allows the system air pressure to enter the dry valve intermediate chamber. This immediately destroys the differential causing the member assembly to rise faster.

The intermediate chamber is normally at atmospheric pressure and is connected to the alarm line. When the valve trips, the intermediate chamber and alarm line are pressurized with system water pressure, activating alarms connected to the dry valve trim.

6. INSPECTIONS, TESTS AND MAINTENANCE

NOTICE: THE OWNER IS RESPONSIBLE FOR MAINTAINING THE FIRE PROTECTION SYSTEM AND DEVICES IN PROPER OPERATING CONDITION.

The Viking Model F-1 Dry Valve and trim must be kept free of foreign matter, freezing conditions, corrosive atmospheres, contaminated water supplies, and any condition that could impair its operation or damage the device.



TECHNICAL DATA

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It is imperative that the system be inspected and tested on a regular basis. The frequency of the inspections may vary due to contaminated water supplies, corrosive water supplies, corrosive atmospheres, as well as the condition of the air supply to the system. For minimum maintenance and inspection requirements, refer to NFPA 25. In addition, the Authority Having Jurisdiction may have additional maintenance, testing, and inspection requirements that must be followed.

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

I. INSPECTION

Weekly inspection is recommended. If the system is equipped with a low air (or nitrogen) alarm, monthly inspections may be adequate.

1. Check pressure gauges located on the supply side and system side of the dry valve. Verify that the proper ratio of air (or nitrogen) pressure to water supply pressure is being maintained. Refer to Table 2.
2. Verify that the intermediate chamber of the dry valve is free of water. No water should flow from the drip check when the plunger is pushed.
3. If equipped with a Viking Accelerator:
 - a. Check the air pressure gauge located on the top of the Accelerator. Air pressure in the upper chamber of the accelerator should equal the pneumatic pressure maintained in the system.

NOTE: STANDARD TOLERANCE ALLOWANCE IN PRESSURE GAUGE CALIBRATION MAY RESULT IN A SLIGHT VARIATION WHEN PRESSURE READINGS FROM ANY TWO GAUGES ARE COMPARED. A DIFFERENCE IN PRESSURES OTHER THAN SLIGHT VARIATION DUE TO GAUGE CALIBRATION TOLERANCE MAY INDICATE MAINTENANCE IS REQUIRED. REFER TO TECHNICAL DATA FOR THE ACCELERATOR USED.

- b. or dry systems with Viking Accelerators installed according to the Viking Model E-1 Accelerator Trim Chart, verify that the 1/2" (15 mm) anti-flood isolation valve is OPEN and secured.
4. Verify that the water supply main control valve is open and all trim valves are in their normal operating position.
 5. Check for signs of mechanical damage and/or corrosive activity. If detected, perform maintenance as required or, if necessary, replace the device.
 6. Verify that dry valve and trim are adequately heated and protected from freezing and physical damage.

II. TESTS

Quarterly Tests

A. Water Flow Alarm Test

Quarterly testing of water flow alarms is recommended and may be required by the Authority Having Jurisdiction.

1. Notify the Authority Having Jurisdiction and those in the area affected by the test.

NOTE: VIKING CONVENTIONAL TRIM PROVIDES A CONNECTION FOR INSTALLATION OF A NON-INTERRUPTIBLE PRESSURE SWITCH. ALARMS AND/OR ELECTRIC PANELS CONTROLLED BY AN ALARM PRESSURE SWITCH INSTALLED IN THAT CONNECTION CANNOT BE INTERRUPTED.

(See Dry Valve Trim Chart.)

2. Fully open the main drain (located on the base of the dry valve) to flush away any accumulation of foreign material.
3. Close the main drain.
4. To test the local electric alarm (if provided) and/or mechanical water motor gong (if provided), OPEN the alarm test valve in the dry valve trim.
 - a. Electric alarm pressure switches (if provided) should activate.
 - b. Electric local alarms should be audible.
 - c. The local water motor gong should be audible.
 - d. Verify that (if provided) remote station alarm signals were received.
5. When testing is complete, close the alarm test valve.
6. Verify:
 - a. All local alarms stop sounding and alarm panels (if provided) reset.
 - b. All remote station alarms reset.
 - c. All supply piping to water motor properly drains.

Table 2

Maximum Water Pressure		Air Pressure Setting			
		Minimum		Maximum	
PSI	kPa	PSI	kPa	PSI	kPa
50	345	15	103	25	172
75	517	20	138	30	207
100	690	25	172	35	241
125	862	30	207	45	310
150	1034	35	241	50	345
175	1207	45	310	60	414



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7. Verify that the alarm shut-off valve in the dry valve trim is OPEN, and the alarm test valve is CLOSED.
8. Verify that the intermediate chamber of the dry valve is free of water. No water should flow from the drip check when the plunger is pushed.
9. Notify the Authority Having Jurisdiction and those in the affected area that testing is complete.

B. Main Drain Test

Quarterly performance of the Main Drain Test is recommended and may be required by Authorities Having Jurisdiction to verify integrity of the water supply.

1. Notify the Authority Having Jurisdiction and those in the area affected by the test.
2. Record pressure reading from the water supply pressure gauge.
3. Verify that the intermediate chamber of the dry valve is free of water. No water should flow from the drip check when the plunger is pushed.
4. Verify that the dry pipe system is pressurized at or above the minimum pressure recommended in Table 2 for the water supply pressure available.
5. Fully OPEN the main drain located on the base of the dry valve.
6. When a full flow is developed from the main drain, record the residual pressure from the water supply pressure gauge.
7. When the test is complete, SLOWLY CLOSE the main drain.
8. Compare test results with previous flow information. If deterioration of the water supply is detected, take appropriate steps to restore adequate water supply.
9. Verify that normal water supply pressure and system pneumatic pressure have been restored, and that all alarm devices and valves are secured in normal operating position.
10. Notify the Authority Having Jurisdiction that the test is complete. Record and/or provide notification of test results as required by the Authority Having Jurisdiction.

C. Priming Water Level, and Low Air Alarm Test

Quarterly testing is recommended to verify that water is not present above the Priming Level Test Valve in the dry valve trim.

Quarterly testing of low air alarms is recommended.

1. Notify the Authority Having Jurisdiction and those in the area affected by the test.
2. Close the water supply Main Control Valve supplying the dry valve.
3. Open the Main Drain Valve (located on the inlet of the dry valve).

If the dry valve being tested is equipped with a Viking Accelerator and external Anti-flood Device installed according to Viking Model E-1 Accelerator Trim Charts, performing steps 6 or 7 of this test will cause the accelerator to operate. A burst of air from the vent in the bottom of the accelerator will indicate operation of the accelerator. However, with the water supply Main Control Valve CLOSED and the Main Drain Valve OPEN, operation of the accelerator should not trip the dry valve.

6. Dry Valve Priming Water Level Test:
 - a. Verify that the water supply main control valve is closed and the main drain valve is open.
 - b. Fully open the Priming Level Test Valve in the dry valve trim to check for the presence of water. If an accelerator is installed, this may cause the dry valve to trip. If the presence of water is detected, the system may not have been properly drained. Perform steps 1 through 3, and 11 through 15 of section 4-B PLACING DRY VALVE IN SERVICE, and repeat this Dry Valve Priming Water Level Test.
 - c. If/when no water is detected and the test is complete, continue to step 8.
7. Low Air Alarm Test:
 - a. Verify that the water supply main control valve is closed and the main drain valve is open.
 - b. Gradually open the Priming Level Test Valve in the trim of the dry valve to simulate operation of the Dry System. Observe and record the pressure at which the low air alarm operates.
8. Close the Priming Level Test Valve.
9. If the dry valve being tested is equipped with a Viking Accelerator and external Anti-flood Device:
 - a. Close the ½" (15 mm) NPT Anti-flood Isolation Valve.

NOTE: AIR WILL CONTINUE TO FLOW FROM THE ACCELERATOR AFTER IT HAS OPERATED UNTIL STEP "B" BELOW IS PERFORMED.

- b. Loosen (use the appropriate wrench), and remove the Accelerator Air Gauge to release pressure from the upper chamber of the accelerator. When the accelerator re-sets, re-install the accelerator air gauge.
10. Perform steps 13 through 20 of section 4-B PLACING DRY VALVE IN SERVICE.

TRIP TESTS

Partial Flow Trip Tests are conducted with the water supply main control valve partially closed to minimize the amount of water entering the system during the test. Performance of a Partial Flow Trip Test is recommended during warm weather at least annually except



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when a Full Flow Trip Test is conducted. Partial Flow Trip Tests may verify operation of equipment and devices but do not simulate operation of the system in fire conditions.

Full Flow Trip Tests are conducted with the water supply main control valve fully open. The dry valve is operated by opening the system test valve to simulate the opening of a sprinkler in fire conditions. When the dry valve operates, the sprinkler piping will be flooded with water.

Performance of a Full Flow Trip Test is recommended during warm weather at least once every three years. More frequent testing may be required by the Authority Having Jurisdiction.

A. Full Flow Trip Test

1. Notify the Authority Having Jurisdiction and those in the area affected by the test.

NOTE: ALARMS AND ELECTRIC PANELS CONTROLLED BY AN ALARM PRESSURE SWITCH INSTALLED IN THE "ELECTRIC ALARM PANEL CONNECTION", CANNOT BE INTERRUPTED (SEE DRY VALVE TRIM CART).

2. Fully open the main drain (located on the base of the dry valve) to flush away any accumulation of foreign material.
3. Close the main drain.
4. Record water supply pressure and system pneumatic pressure.
5. Open the remote system test valve to simulate operation of the dry system. Record:
 - a. Elapsed time from opening of the test valve to operation of the dry valve.
 - b. System pressure when the dry valve operated.
 - c. Elapsed time from opening of the test valve to development of full flow of water from the system test connection.
 - d. Any other information required by the Authority Having Jurisdiction.
6. Verify that alarms operate properly.
7. Allow water to flow from the system test connection until it appears clear and clean.
8. When test is complete, close the water supply main control valve.
9. Perform steps 1 through 20 of section 4-B PLACING DRY VALVE IN SERVICE.
10. Verify that the water supply main control valve is open, and all other valves are in their normal operating position. If equipped with an external Anti-flood Device, the ½" Anti-flood Isolation Valve must be OPEN and secured.

B. Partial Flow Trip Test

1. Notify the Authority Having Jurisdiction and those in the area affected by the test.

NOTE: VIKING CONVENTIONAL TRIM PROVIDES A CONNECTION FOR INSTALLATION OF A NON-INTERRUPTIBLE PRESSURE SWITCH. ALARMS AND ELECTRIC PANELS CONTROLLED BY AN ALARM PRESSURE SWITCH INSTALLED IN THE "ELECTRIC ALARM PANEL CONNECTION", CANNOT BE INTERRUPTED (SEE DRY VALVE TRIM CHART).

2. Record water supply pressure and system pneumatic pressure.
3. Fully open the main drain (located on the base of the dry valve) to flush away any accumulation of foreign material.
4. CLOSE the water supply main control valve as far as possible while maintaining full flow from the main drain. CLOSE the main drain.
5. Open the priming level test valve to simulate operation of the system.
6. Note (for records) water supply pressure and system pneumatic pressure when the dry valve operates.
7. CLOSE the water supply main control valve and OPEN the main drain IMMEDIATELY, when test is complete.
8. Perform steps 1 through 20 of paragraph 4-B PLACING DRY VALVE IN SERVICE.
9. Verify that the water supply main control valve is open, all other valves are in their normal operating position. If equipped with an external Anti-flood Device, the ½" anti-flood isolation valve must be OPEN and secured.

III. MAINTENANCE (See Figure 3)

WARNING: PRIOR TO SERVICING INTERNAL OPERATING PARTS OF THE DRY VALVE, TAKE THE FOLLOWING PRECAUTIONS.

1. Close the water supply main control valve, placing the system out of service.
2. Open the main drain located in the base of the dry valve.
3. Close the air (or nitrogen) supply to the dry system piping.
4. Relieve all pressure from the dry system piping. If the system has operated, open all auxiliary drains and the system Test Valve to allow the system to drain completely.
5. Use a 15/16 wrench to loosen and remove hand-hole cover bolts (21) and remove hand-hole cover (24).

CAUTION: CLAPPER ARM ASSEMBLY (8) AND CLAPPER ASSEMBLY (5) IS SPRING LOADED TO OPEN. NEVER PLACE HANDS INSIDE THE DRY VALVE IF THE CLAPPER ASSEMBLY IS LATCHED CLOSED.

6. Release latched (set) clapper assembly for service:
 - a. Insert the re-setting tool through the hole in hook assembly (15), across the cast fulcrum on top of clapper arm assembly (8) until the re-setting tool contacts the stopping boss on top of clapper arm assembly (8).



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- b. Apply a downward force on the end (outside the valve) of the re-setting tool. Hook assembly (15) will slide toward the hand-hole and off clapper arm assembly (8). The clapper arm assembly (8) and clapper assembly (5) will forcefully open, impact against latch (2), and be trapped in the open position.

CAUTION: NEVER APPLY ANY LUBRICANT TO SEATS, GASKETS, OR ANY INTERNAL OPERATING PARTS OF THE DRY VALVE. PETROLEUM-BASED GREASE OR OIL WILL DAMAGE RUBBER COMPONENTS AND MAY PREVENT PROPER OPERATION OF THE DRY VALVE.

Recommended practice: When performing maintenance inside the dry valve with the clapper in the open position, cover the opening to prevent tools or parts from dropping onto the seat or into the waterway.

7. To Remove Clapper Rubber (19):
 - a. Use a 9/16" wrench to remove hex-head screw (17) and rubber retainer (18).
 - b. Remove clapper rubber (19) for inspection. If the clapper rubber shows signs of wear, such as cracking, cuts, or excessively deep grooves where the rubber contacts the air or water seat, replace the rubber.
8. To Re-install Clapper Rubber (19):
 - a. Place a new clapper rubber (19), over the center hub of rubber retainer (18).
 - b. Position retainer (18) (with rubber in place) against clapper assembly (5) as shown in figure 2.
 - c. Replace and tighten hex-head screw (17). Do not over-tighten.
9. To Remove Clapper Assembly (5):
 - a. While holding spring loaded clapper arm assembly (8) down, remove a retaining ring (7) from one end of clapper rod (6a).
 - b. Release spring loaded clapper arm assembly (8) and allow it to latch in the open position.
 - c. Slide rod (6a) out of clapper arm assembly (8) to free clapper assembly (5).
 - d. Remove clapper assembly (5) for inspection or replacement.
10. To Re-install Clapper Assembly (5):
 - a. Reverse disassembly procedures a through d in step 9 above.
11. To Remove Latch (2):
 - a. Remove 1/2" NPT pipe plug (4) (outside of valve) to expose latch pin (3).
 - b. While holding latch (2) with one hand, remove latch pin (3).
 - c. Remove latch (2).
12. To Re-install Latch (2) and Latch Pin (3), reverse disassembly procedures a through c in step 11 above.

The internal member assembly of the dry valve consists of several sub-assemblies. To service these sub-assemblies, it is necessary to disassemble the dry valve.

13. To Disassemble The Dry Valve:
 - a. Disconnect the trim and remove the valve from the system piping.
 - b. Use a 15/16" wrench to remove hex-head screws (21) from base (22).
 - c. Remove housing (1) from base (22). Member assembly components (5-15), and (17-19, 21, 25) are accessible for replacement.
 - d. When inspection and/or replacement of member assembly components is complete, re-assemble the dry valve.
14. To Re-assemble the dry valve:
 - a. Reverse disassembly procedures a through c in step 13 above.
 - b. Socket-set screw (23) will need adjustment. After the valve has been completely reassembled, latch the clapper in place. With a 1/4" (6,35 mm) Allen wrench, turn the screw clockwise until it contacts the hook assembly (15). Then, turn the screw one complete turn counter-clockwise. Set the system and trip test the valve to verify proper operation of the valve.
15. To Remove Hook Assembly (15):
 - a. Remove a retaining ring (7) from one end of hook rod (6b).
 - b. Slide rod (6b) out of the bushings in air plate assembly (11) to free hook assembly (15).
 - c. Remove hook assembly (15).
16. To Re-install Hook Assembly (15):
 - a. Reverse disassembly procedures a through c in step 15 above.
17. To Remove Clapper Arm Assembly (8) and Spring (9):
 - a. Remove a retaining ring (7) from one end of clapper arm rod (10).
 - b. Slide clapper arm rod (10) out of the bushings in air plate assembly (11) to free clapper arm assembly (8) taking care to retrieve spring (9).
 - c. Remove clapper arm assembly (8), and spring (9).
18. To Re-install Clapper Arm Assembly (8):
 - a. Reverse disassembly procedures a through c in step 17 above.

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19. To remove Diaphragm (12) and Diaphragm Retainer (13):
 - a. Use a 9/16" wrench to remove hex-head screws (14).
 - b. Remove diaphragm retainer (13) and diaphragm (12) for replacement. If the diaphragm rubber shows signs of wear, such as cracking or cuts, replace the rubber diaphragm.
20. To Re-install Diaphragm (12) and Diaphragm Retainer (13):
 - a. Reverse disassembly procedures a and b in step 19 above.
 - b. When re-installing diaphragm retainer (13), cross tighten hex-head screws (14) to 20 ft. lbs. of torque for even compression of diaphragm (12).
 - c. When assembling base (22) to housing (1):
 - i. Invert housing (1) on work bench so holes for hex-head screws (21) are facing up.
 - ii. Position complete member sub-assembly (5-15 & 17-19, 21, 25) with screw holes in diaphragm (12), aligned with screw holes in inverted housing (1). Use care to align screw holes so hook assembly (15) properly aligns with set screw (23).
 - iii. Position base (22) over inverted housing (1) with member assembly (5-15 & 17-19, 21, 25). Align screw holes so 1/2" (15 mm) NPT trim connection in base (22) aligns with 1/2" (15 mm) NPT trim connection in housing (1).
 - iv. Install hex-head screws (21) finger tight only.
 - v. Cross-tighten all hex-head screws (21), to 90 ft. lbs. of torque to evenly compress diaphragm (12) and maintain proper alignment of member sub-assembly (5-15 & 17-19, 21, 25).

7. AVAILABILITY

The Viking Model F-1 Dry Pipe Valve is available through a network of domestic and international distributors. See the Viking Corp. Web site for closest distributor or contact The Viking Corporation.

8. GUARANTEES

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



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Table 3 - Troubleshooting Guide

Condition:	Possible causes:	Suggested action:
The valve trips when no sprinkler has fused	Loss of air pressure in the system	Check the system for leaks and check for proper air supply. A Viking Air Maintenance Device should be installed on each system equipped with an automatic air supply. Consider adding a maintenance air compressor.
	An extreme pressure surge in the water supply	Increase the air pressure on the system. The maximum limit is 60 PSI (4.1 bar). Note: Increasing system pressure may increase trip time of the dry valve.
Water constantly passing through the drip check when the valve is in the SET position	Water leaking over the water seat into the intermediate chamber	Inspect and clean the water seat and clapper rubber (see paragraph 4-B Placing the Valve in Service). Consider replacing the clapper rubber. If the water seat has been pitted or damaged by debris, it may be necessary to replace the base assembly.
	Alarm test valve in the bypass connection of the dry valve trim not tightly closed	Verify that water is not getting past alarm test valve.
Air constantly passing through the drip check when the valve is in the SET position	Air leaking over the air seat into the intermediate chamber	Inspect and clean the air seat and clapper rubber (see paragraph 4-B Placing the Valve in Service). Consider replacing the clapper rubber. If the air seat has been pitted or damaged by debris, it may be necessary to replace the air plate assembly.
	Air leaking past the rubber diaphragm	Inspect the rubber diaphragm for deterioration. If necessary, replace the diaphragm.
Clapper will not latch	Incorrect resetting tool	Verify that the re-setting tool used is smooth and of the proper strength and diameter* to provide the required force at the appropriate angle to cause the latching hook to slide over the clapper arm when setting the dry valve. <i>*The Viking Re-setting tool is a 3/4" (19mm) diameter cold rolled steel bar 15" (381 mm) long, chamfered at both ends.</i>
	The hook not sliding on the re-setting tool	File or grind the re-setting tool. Remove any rough spots to provide a smooth sliding surface and proper clearance.
	Clapper rubber worn	Replace the clapper rubber.
	Internal parts damaged by accidental application of high pressure	Replace the valve member assembly.
The valve latches but will not remain set	Improper resetting procedure	See paragraph 4-B Placing the Valve in Service
	Inadequate air supply	See paragraph 4-B Placing the Valve in Service.
	Air pressure and priming water passing through the intermediate chamber and out of the drip check	Clean the air seat and the clapper rubber. Replace the clapper rubber, if worn.



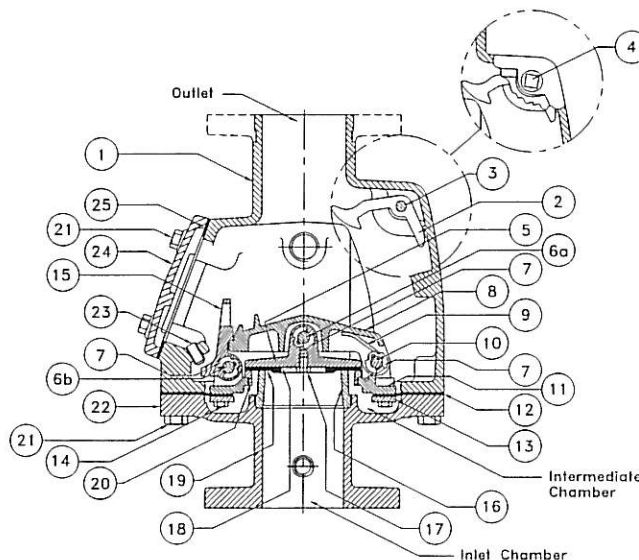
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Figure 3



ITEM NO.	3" & 4"	6"	DESCRIPTION	MATERIAL	NO. REQ'D	
					3" & 4"	6"
1	--	--	Housing	Ductile Iron 65-45-12	1	1
2	07641	07641	Latch	Brass UNS-C84400	1	1
3	08449	08449	Latch Pin	Brass UNS-C36000	1	1
4	--	--	1/2" NPT Pipe Plug	Steel	1	1
5	*	*	Clapper Assembly (includes bushings)	Ductile Iron 65-45-12	1	1
6a	*	*	Clapper Rod	Teflon® Coated Steel	2	2
6b	*	*	Hook Rod	Brass UNS-C36000	1	1
7	*	*	Retaining Ring	Brass UNS-C36000	1	1
8	*	*	Clapper Arm Assembly (includes bushings)	Stainless Steel UNS-S15700	6	6
9	*	*	Spring	Ductile Iron 65-45-12	1	1
10	*	*	Clapper Arm Rod	Teflon® Coated Steel	4	4
11	*	*	Air Plate Assembly (includes bushings)	Type 302 Stn. Stl. Wire	1	1
12	*	*	Diaphragm	Brass: UNS-C36000	1	1
13	*	*	Diaphragm Retainer	Ductile Iron 65-45-12	1	1
14	*	*	3/8"-16 x 3/4" (19,1 mm) lg. Hex Head Cap Screw	Ductile Iron 65-45-12	1	1
15	*	*	Hook Assembly (includes bushings)	Zinc Plated Steel	10	12
16	--	--	Water Seat	Ductile Iron 65-45-12	1	1
17	07932	07932	3/8"-16 x 1/2" (12,7 mm) lg. Hex Head Cap Screw	Teflon® Coated Steel	2	2
18	07659	07659	Rubber Retainer	Brass NS-C84400	1	1
19	07651	08487	Clapper Rubber	Stainless Steel UNS-S30400	1	1
20	*	*	Air Seat	Stainless Steel UNS-S30400	1	1
21	02079A	02079A	5/8"-11 x 2" (50,8 mm) lg. Hex Head Cap Screw	Ethylene Propylene	1	1
22	--	--	Base	Brass UNS-C84400	1	1
23	08056	08056	1/2"-13 x 1" (25,4 mm) lg. Socket Set Screw	Brass UNS-C36000	1	1
24	05436C	05436C	Cover	Ductile Iron 65-45-12	1	1
25	04187B	04187B	Cover Gasket	SBR Garlock 181	1	1

--Indicates replacement part not available

* Indicates replacement part only available in a Sub-Assembly listed below.

SUB-ASSEMBLIES

5-15, 17-21, 25	14027	14028	Member Assembly Kit
5, 17-19	08324	08490	Clapper Assembly