RED HAWK FIRE PROTECTION, LLC

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PRFS20260537

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

Ever Vigilant®

MATERIAL SUBMITTALS

FOR

Wesley Bradley Park – Care Center
Puyallup, WA

RHFP JOB NO. 70120

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Material Notes:

Any material with the comment "Or Equal" indicates cut sheet represents an exact or similar product to what will be installed. These products generally are generic in nature and due to vender availability, price changes, or other unknowns, a similar product my be selected. All products used will meet all NFPA 13, authority having jurisdiction, and project specifications requirements.

Section 1 - Pipe & Fittings

Description	Make	Model	Comments
CPVC Piping System	Spears	FlameGuard Line	Covers Entire Line
Black Steel Sprinkler Pipe - Schedule 10 & 40	Bull Moose	N/A	Or Equal
Stainless Steel Pipe - Schedule 10 & 40	ASC - SCI	N/A	Or Equal
Weld On Outlets for Steel Pipe	ASC - Anvil	N/A	Or Equal
Threaded Fittings - Ductile Iron	ASC - Anvil	N/A	Or Equal
Grooved Rigid Coupling	Victaulic	Style 009N	
Grooved Flexible Coupling	Victaulic	Style 004N	
Grooved Reducing Coupling	Victaulic	Style 750	
Grooved Flange Adaptor	Victaulic	Style 744	
Grooved Fittings - 1¼"-1½"	Victaulic	Varies	Standard Pattern
Grooved Fittings - 2" & Larger	Victaulic	Varies	Short Pattern
Grooved End of Run Fitting	Victaulic	No. 67	
Grooved Drain Cap	GemLock	F155D	

Section 2 - Hangers & Attachments

Description	Make	Model	Comments
CPVC - Double Offset	Eaton - Tolco	Fig. 29	1" and 1¼" only
CPVC - Stand-Off Hanger (No-Block)	ASC - Anvil	Fig. 188R	Or Equal
CPVC - Side Mount Hanger	ASC - Anvil	Fig. 187	Or Equal
All Thread Rod - Plated	ASC - Anvil	N/A	Or Equal
Rod Coupling	ASC - FPPI	05-135, 05-137	Or Equal
Loop/Ring Hanger - Standard Duty	nVent - CADDY	115	Or Equal
Riser Clamp	nVent - CADDY	510 EZ	Or Equal
Vertical or Sidemount - Wood	Dewalt	Suspender	

Section 3 - Bracing & Restraints

Description	Make	Model	Comments
Ring Hanger - Surge Restraint	Eaton - Tolco	Fig. 25	For CPVC Installed on Ring Hangers
Brace Structure Attachment - Generic (EQ Ear)	nVent - CADDY	CSBU	Sized per Seismic Calculations
Brace Pipe Attachment - Longitudinal and Lateral Brace	nVent - CADDY	CSB	
Brace Pipe Attachment - Lateral Brace	nVent - CADDY	CSBQG EG	
Branch Line Restraint - Pipe Attachment	nVent - CADDY	CSBBRP	
Branch Line Restraint - Structure Attachment	nVent - CADDY	CSBBRS	

Section 4 - Valves & Accessories

Description	Make	Model	Comments
Ball Valve	Argco	600#	Or Equal
Butterfly Valve, with Tamper	Lansdale	LVBG1 (S-1)	
Check Valve - Grooved	Lansdale	LVCVGG	
Backflow - Grooved Double Check	Watts - Ames	Deringer 20	
Angled Hose Valve	Lansdale	LHV	Groove X FNPT
Angled Hose Valve - Brass Cap & Chain	Lansdale	LVCNC	Or Equal
Riser Manifold	Victaulic	Series UM	Wet System Riser
Test & Drain Valve, With Pressure Relief	Victaulic	UTD	Equipped on UM & UMC Manifolds
Flexible Drain Hose	Reliable	Streamline	
Dry Pipe Valve	Tyco	DPV-1	Standard in Dry Systems
Air Compressor - Riser Mounted	C-AIRE	S280	
Air Maintaince Device	General Air	AMD-1	

Section 5 - Alarms & Supervisory Devices

Description	***Make***	***Model***	***Comments***
Air Pressure Gauge	Wika Instrument LP	111.10SP	Or Equal
Water Flow Switch	Potter Signal	VSR	
Pressure Switch, Alarm	Potter Signal	PS10	
Pressure Switch, High/Low Supervisory	Potter Signal	PS40	Standard Pressure Dry Pipe System
Supervisory Switch, OS&Y Style	Potter Signal	OSYSU	
Alarm Bell - 24v, 10"	Lansdale	LVBBB	Provided Upon Request

Section 6 - Fire Sprinklers

Description	***Make***	***Model***	***Comments***
Standard Spray - Pendent, Concealed	Tyco	RFII (5.6K)	Reference Plans for Details
Standard Spray - Upright, Quick Response (QR)	Tyco	TY-FRB (5.6K)	Reference Plans for Details
Standard Spray - Dry Sprinkler (Pendent, Upright, & Sidewall), QR	Tyco	DS-1 (5.6K)	Reference Plans for Details
Extended Coverage - Corridor Pendent, Concealed	Tyco	RFII-C (5.6K)	Reference Plans for Details
Combustible Concealed Space Upright	Tyco	CC3	Reference Plans for Details
Residential - Pendent, Concealed	Viking	VK498 (5.8K)	

Section 7 – Miscellaneous

Description	***Make***	***Model***	***Comments***
Teflon Tape	Argco	PTFE Tape Industrial	
Pipe Dope	Argco	Tuf-Glide	
Thread Oil	ASC - FPPI	Threadfit Clear Oil	
Coupling Gasket Grease	ASC - FPPI	LubeFit	
CPVC Glue	Spears	FS-5 One Step Cement	
Fire Caulk for Fire Rated Penetrations	HILTI	FS-One	
Fire Rated Sleeves	HILTI	CP 680-P	
Sprinkler Spare Stock Box	Argco	6510150	
Sprinkler Escutcheons & Coverplates - Standard	Tyco/Reliable	Varies	

SECTION 1

Pipe & Fittings

Submittal Information for Spears® Manufacturing Company FlameGuard ® CPVC Fire Sprinkler System

GSFG-0221

Date: _____

Job Name: _____ **Location:** _____

Engineer: _____ **Contractor:** _____

Scope:
This submittal covers the Spears® FlameGuard® CPVC Fire Sprinkler System suitable for residential and light hazard occupancies in accordance with The National Fire Protection Association (NFPA). The FlameGuard® System shall be sold as a complete system which consists of pipe, fittings and a specially formulated one-step primerless cement intended for use in wet, dry and pre-action systems in residential and light hazard Applications where the operating temperature/pressure does not exceed 175psi @ 150° F. (1.2 MPa @ 66° C)

Product Specification:
All CPVC fire sprinkler fittings and pipe shall be Spears® FlameGuard®. All solvent cement shall be Spears® FS-5 One-Step, and all thread sealant shall be Spears® Blue 75™ as produced by Spears® Manufacturing Company.

All Spears® FlameGuard® CPVC fire sprinkler fittings shall be manufactured in the U.S.A. from a Chlorinated Polyvinyl Chloride (CPVC) compound having a minimum cell classification of 23447 in accordance with ASTM D1784. Fittings shall be manufactured in strict compliance to ASTM F438 or F439, as applicable. All CPVC fire sprinkler piping shall be manufactured in the U.S.A. from a Chlorinated Polyvinyl Chloride (CPVC) compound having a minimum cell classification of 23447 in accordance with ASTM D1784. Piping shall be manufactured in strict compliance to ASTM F442. All CPVC solvent cement shall be a primerless, one-step type manufactured in strict compliance to ASTM F493 and approved for use with CPVC fire sprinkler systems. All CPVC fire sprinkler fittings, pipe and solvent cement shall be listed by Underwriters Laboratories (UL®), Underwriters Laboratories Canada (ULC®) and/or Factory Mutual Research Corporation (FM Global) and/or LPCB for use in residential and light hazard wet, dry and pre-action systems and bear their authorized certification marks. Thread sealant shall be approved by the fitting manufacturer for use with CPVC fire sprinkler products. All CPVC fittings, pipe, solvent cement and thread sealant shall be certified by NSF International as applicable. Pipe and solvent cement shall be certified to UL 2818 GREENGUARD GOLD.

Product Marking:
FlameGuard® system components shall be orange in color for identification and include required markings and approvals prescribed in ASTM F442 for pipe and ASTM F438 or F439 for fittings. Pipe and cement shall have GREENGUARD GOLD marking.

Installation:
Spears® FlameGuard® CPVC Fire Sprinkler System shall carry a working pressure of 175 psi @ 150F (1.2 MPa @ 66° C) and shall be installed in accordance with Spears® Manufacturing Company FlameGuard® CPVC Fire Sprinkler Products Installation Instructions (FG-3) and Addendums. National Fire Protection Association (NFPA) Standards 13, 13D, and 13R must be referenced for design and installation requirements in conjunction with the Installation Instructions and applicable local codes. Installation practices such as pipe support spacing, bracing, allowance for thermal expansion/contraction, solvent cementing and handling and storage shall be in accordance with the manufacturer's instructions and this specification. Buried pipe shall be in accordance with NFPA 24 for supply mains. The piping system shall be joined using a chemically resistant one-step primerless solvent cement joining process conforming to ASTM F493. The system shall be protected from ultra violet (UV) light exposure from the sun or other source and protected from any chemicals that are not compatible with the CPVC materials including but not limited to fire stopping materials, plasticizers, incompatible thread sealants, etc.

NOTE: FlameGuard® CPVC piping systems can be leak tested using oil-free compressed air up to 25psi but must also be hydrostatically tested as required per NPFA standard.

Referenced Standards:
ASTM D1784 – Rigid Vinyl Compounds
ASTM F438 – CPVC Schedule 40 Fittings
ASTM F439 – CPVC Schedule 80 Fittings
ASTM F442 – CPVC SDR Pipe
ASTM F493 – Solvent Cements for CPVC Pipe & Fittings
NFPA 13, 13D, 13R – National Fire Protection Association Standards
NFPA 24 – Installation – Private Fire Service Mains
NSF International Standard 14/61 – Potable Water

Approvals:
NSF® – NSF International Standard 14/61 – Potable Water
Underwriters Laboratories – Listing Agency
FM Global –Listing Agency
UL-GREENGUARD GOLD Certified UL 2818
LPCB – Loss Prevention Council Board

SCHEDULE 10, 30, & 40 SPRINKLER PIPE SUBMITTAL DATA SHEET

APPROVALS AND SPECIFICATIONS

- ASTM A135, Grade A
- ASTM A795, Type E, Grade A
- Pressure rated to 300 psi
- Underwriters Laboratories—United States of America
- Underwriters Laboratories—Canada
- Factory Mutual
- NFPA-13
- NFPA-13R
- NFPA-14
- CIVIL DEFENSE APPROVAL—United Arab Emirates
- Made in the United States of America
- UL, ULC & FM listed for roll-groove, plain-end and welded joints for wet, dry, preaction and deluge sprinkler systems.
- LEED v4 Certified

FINISHES AND COATINGS

- Schedule 10, 30 & 40 Sprinkler Pipe receives an OD mill coating of water-based paint which has corrosion protection expected with a painted carbon steel product, i.e. it would be expected to resist corrosion for an extended and indefinite period in a clean and dry environment and, as environmental conditions deteriorate, the corrosion protection would also diminish.
- Schedule 10, 30 & 40 Sprinkler Pipe (black) receives an ID mill coating of Eddy Guard II MIC preventative coating. EG2 has been tested at independent laboratories to resist bacterial growth and maintain minimal bacterial count after multiple flushes (25) of the pipe.
- Schedule 10, 30 & 40 Sprinkler Pipe when Hot Dip Galvanized by ASTM A123 and supplied by Bull Moose Tube is UL listed and FM approved.

PRODUCT IDENTIFICATION

- Every length of Bull Moose fire sprinkler pipe features large, easy-to-read, continuous stenciling, clearly identifying the manufacturer, type of pipe, size, and length.

	Nominal Pipe Size (inches)	1	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	6"	8"†	10"
Schedule 10	O.D. (in)	1.315	1.660	1.900	2.375	2.875	3.500	4.500	6.625	8.625	10.750
	I.D. (in)	1.097	1.422	1.682	2.157	2.635	3.260	4.260	6.357	8.249	10.374
	Empty Weight (lb/ft)	1.41	1.81	2.09	2.64	3.53	4.34	5.62	9.29	16.94	21.23
	Water Filled Weight (lb/ft)	1.800	2.518	3.053	4.223	5.893	7.957	11.796	23.038	40.086	57.874
	C.R.R.*	15.270	9.910	7.760	6.270	4.920	3.540	2.500	1.158	1.805	2.410
	Pieces per Lift	91	61	61	37	30	19	19	10	7	7
Schedule 40 & 30	O.D. (in)	1.315	1.660	1.900	2.375	2.875	3.500	4.500	6.625	8.625	
	I.D. (in)	1.049	1.380	1.610	2.067	2.469	3.068	4.026	6.065	8.071	
	Empty Weight (lb/ft)	1.68	2.27	2.72	3.66	5.8	7.58	10.8	18.99	24.72	
	Water Filled Weight (lb/ft)	2.055	2.918	3.602	5.114	7.875	10.783	16.316	31.498	50.240	
	C.R.R.*	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
	Pieces per Lift	70	51	44	30	30	19	19	10	7	

*Calculated using Standard UL CRR formula, UL Fire Protection Directory, Category VIZY

SUBMITTAL INFORMATION

Project

Contractor

Engineer

Specification Reference

Date

System Type

Locations

Comments

◯ Schedule 10 - Black ◯ Schedule 10 - Hot Dip Galvanized ◯ Schedule 30 - Black ◯ Schedule 30 - Hot Dip Galvanized ◯ Schedule 40 - Black ◯ Schedule 40 - Hot Dip Galvanized

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Pipe and Tubing

Pipe Specifications

- Welded and seamless pipe material conforms to ASTM A312, ASTM A999
- Stainless pipe dimensions conform to ASTM A999, ASME B36.19, ASME B36.10, A276
- Manufacturing facility is ISO 9001:2008
- Pipe sold as single random lengths
- Cut-to-length, threading and grooving available upon request

Instrumentation Tubing Specifications

- Instrumentation tubing dimensions and materials conform to ASTM A269 and ASTM A213

Sanitary Tubing Specifications

- Sanitary tubing dimensions and materials conform to ASTM A269, ASTM A270 and 3-A Approved

Stainless Pipe - Welded Sch 10 & Sch 40

Fig. S6014WP & S6016WP - Sch 10 Welded Pipe

Diameter in	Part Number		OD in	Wall Thickness in	Pipe Length ft	Weight lb / ft
	304 / 304L	316 / 316L				
1/2	S6014WP004	S6016WP004	0.84	0.083	20	0.6
3/4	S6014WP006	S6016WP006	1.05	0.083	20	0.8
1	S6014WP010	S6016WP010	1.32	0.109	20	1.4
1-1/4	S6014WP012	S6016WP012	1.66	0.109	20	1.8
1-1/2	S6014WP014	S6016WP014	1.90	0.109	20	2.0
2	S6014WP020	S6016WP020	2.37	0.109	20	2.6
2-1/2	S6014WP024	S6016WP024	2.87	0.120	20	3.5
3	S6014WP030	S6016WP030	3.50	0.120	20	4.3
4	S6014WP040	S6016WP040	4.50	0.120	20	5.6
5	S6014WP050	S6016WP050	5.563	0.134	20	7.7
6	S6014WP060	S6016WP060	6.625	0.134	20	9.2

Fig. S6044WP & S6046WP - Sch 40 Welded Pipe

Diameter in	Part Number		OD in	Wall Thickness in	Pipe Length ft	Weight lb / ft
	304 / 304L	316 / 316L				
1/8	S6044WP001	S6046WP001	0.41	0.068	20	0.2
1/4	S6044WP002	S6046WP002	0.54	0.088	20	0.4
3/8	S6044WP003	S6046WP003	0.67	0.091	20	0.5
1/2	S6044WP004	S6046WP004	0.84	0.109	20	0.8
3/4	S6044WP006	S6046WP006	1.05	0.113	20	1.1
1	S6044WP010	S6046WP010	1.32	0.133	20	1.6
1-1/4	S6044WP012	S6046WP012	1.66	0.140	20	2.2
1-1/2	S6044WP014	S6046WP014	1.90	0.145	20	2.7
2	S6044WP020	S6046WP020	2.37	0.154	20	3.6
2-1/2	S6044WP024	S6046WP024	2.87	0.203	20	5.7
3	S6044WP030	S6046WP030	3.50	0.216	20	7.5
4	S6044WP040	S6046WP040	4.50	0.237	20	10.7
5	S6044WP050	S6046WP050	5.563	0.258	20	14.6
6	S6044WP060	S6046WP060	6.625	0.280	20	18.9

Stainless Pipe - Seamless Sch 40 & Sch 80

Fig. S6144SP & S6146SP - Sch 40 Seamless Pipe

Diameter in	Part Number		OD in	Wall Thickness in	Pipe Length ft	Weight lb / ft
	304 / 304L	316 / 316L				
1/8	S6144SP001	S6146SP001	0.41	0.068	20	0.2
1/4	S6144SP002	S6146SP002	0.54	0.088	20	0.4
3/8	S6144SP003	S6146SP003	0.67	0.091	20	0.5
1/2	S6144SP004	S6146SP004	0.84	0.109	20	0.8
3/4	S6144SP006	S6146SP006	1.05	0.113	20	1.1
1	S6144SP010	S6146SP010	1.32	0.133	20	1.6
1-1/4	S6144SP012	S6146SP012	1.66	0.140	20	2.2
1-1/2	S6144SP014	S6146SP014	1.90	0.145	20	2.7
2	S6144SP020	S6146SP020	2.37	0.154	20	3.6

Fig. S6184SP & S6186SP - Sch 80 Seamless Pipe

Diameter in	Part Number		OD in	Wall Thickness in	Pipe Length ft	Weight lb / ft
	304 / 304L	316 / 316L				
1/8	S6184SP001	S6186SP001	0.41	0.095	20	0.3
1/4	S6184SP002	S6186SP002	0.54	0.119	20	0.5
3/8	S6184SP003	S6186SP003	0.67	0.126	20	0.7
1/2	S6184SP004	S6186SP004	0.84	0.147	20	1.0
3/4	S6184SP006	S6186SP006	1.05	0.154	20	1.4
1	S6184SP010	S6186SP010	1.32	0.179	20	2.1
1-1/4	S6184SP012	S6186SP012	1.66	0.191	20	2.9
1-1/2	S6184SP014	S6186SP014	1.90	0.200	20	3.6
2	S6184SP020	S6186SP020	2.37	0.218	20	5.0

*Fig. 96BP4 Schedule 40 Seamless Brass Pipe**

Size in	Part Number 20 ft Length	OD in	Wall Thickness in	Pipe Length ft	Weight / Foot lb
1/8	96BP4001200	0.41	0.068	20	0.3
1/4	96BP4002200	0.54	0.088	20	0.4
3/8	96BP4003200	0.67	0.091	20	0.6
1/2	96BP4004200	0.84	0.109	20	0.9
3/4	96BP4006200	1.05	0.113	20	1.3
1	96BP4010200	1.32	0.133	20	1.8
1-/4	96BP4012200	1.66	0.140	20	2.6
1-1/2	96BP4014200	1.90	0.145	20	3.1
2	96BP4020200	2.37	0.154	20	4.1
2-1/2	96BP4024200	2.87	0.203	20	6.0
3	96BP4030200	3.50	0.216	20	8.7
4	96BP4040200	4.50	0.237	20	12.7

Fig. S64ST4 & S64ST6 – Seamless Instrumentation Tubing

Tube OD	Wall Thickness	Part Number		ID	Tube Length	Weight
in	in	304/L	316/L	in	ft	lb / ft
1/8	0.035	S64ST4035001	S64ST6035001	0.055	20	0.03
1/8	0.049	S64ST4049001	S64ST6049001	0.027	20	0.04
1/4	0.028	S64ST4028002	S64ST6028002	0.194	20	0.06
1/4	0.035	S64ST4035002	S64ST6035002	0.180	20	0.08
1/4	0.049	S64ST4049002	S64ST6049002	0.152	20	0.1
1/4	0.065	S64ST4065002	S64ST6065002	0.120	20	0.1
1/4	0.083	S64ST4083002	S64ST6083002	0.084	20	0.1
5/16	0.035	S64ST4035516	S64ST6035516	0.243	20	0.1
3/8	0.035	S64ST4035003	S64ST6035003	0.305	20	0.1
3/8	0.049	S64ST4049003	S64ST6049003	0.277	20	0.1
3/8	0.065	S64ST4065003	S64ST6065003	0.245	20	0.2
3/8	0.083	S64ST4083003	S64ST6083003	0.209	20	0.2
1/2	0.035	S64ST4035004	S64ST6035004	0.430	20	0.1
1/2	0.049	S64ST4049004	S64ST6049004	0.402	20	0.2
1/2	0.065	S64ST4065004	S64ST6065004	0.370	20	0.3
1/2	0.083	S64ST4083004	S64ST6083004	0.334	20	0.4
1/2	0.120	S64ST4120004	S64ST6120004	0.260	20	0.5
5/8	0.035	S64ST4035005	S64ST6035005	0.555	20	0.2
5/8	0.049	S64ST4049005	S64ST6049005	0.527	20	0.3
5/8	0.065	S64ST4065005	S64ST6065005	0.495	20	0.3
5/8	0.083	S64ST4083005	S64ST6083005	0.509	20	0.5
3/4	0.035	S64ST4035006	S64ST6035006	0.680	20	0.2
3/4	0.049	S64ST4049006	S64ST6049006	0.652	20	0.3
3/4	0.065	S64ST4065006	S64ST6065006	0.620	20	0.4
3/4	0.083	S64ST4083006	S64ST6083006	0.584	20	0.6
3/4	0.095	S64ST4095006	S64ST6095006	0.560	20	0.7
1	0.035	S64ST4035010	S64ST6035010	0.930	20	0.3
1	0.049	S64ST4049010	S64ST6049010	0.902	20	0.4
1	0.065	S64ST4065010	S64ST6065010	0.870	20	0.6
1	0.083	S64ST4083010	S64ST6083010	0.834	20	0.8
1	0.095	S64ST4095010	S64ST6095010	0.810	20	0.9
1	0.120	S64ST4120010	S64ST6120010	0.760	20	1.1
1-1/4	0.065	S64ST4065012	S64ST6065012	1.120	20	0.8

Fig. S62TP4 & S62TP6 – Sanitary Tubing

Tube OD	Part Number		Wall Thickness	I.D.	Tube Length	Weight
in	304	316	in	in	ft	lb / ft
1/2	S62TP46004	S62TP66004	0.065	0.370	20	0.3
3/4	S62TP46006	S62TP66006	0.065	0.620	20	0.5
1	S62TP46010	S62TP66010	0.065	0.870	20	0.6
1-1/2	S62TP46014	S62TP66014	0.065	1.370	20	0.9
2	S62TP46020	S62TP66020	0.065	1.870	20	1.3
2-1/2	S62TP46024	S62TP66024	0.065	2.370	20	1.6
3	S62TP46030	S62TP66030	0.065	2.870	20	2.0
4	S62TP48040	S62TP68040	0.083	3.834	20	3.4
6	S62TP49060	S62TP69060	0.109	5.782	20	5.3

Stainless Pipe/Tubing - Theoretical Internal Bursting Pressures

Pipe

Nominal IPS in	Nominal O.D. in	Schedule 5S Wall in	Schedule 5S Pressure psi	Schedule 10S Wall in	Schedule 10S Pressure psi	Schedule 40S Wall in	Schedule 40S Pressure psi	Schedule 80S Wall in	Schedule 80S Pressure psi
1/8	0.405	-	-	0.049	18150	0.068	25175	0.095	35175
1/4	0.540	-	-	0.065	18050	0.088	24450	0.119	33050
3/8	0.675	-	-	0.065	14450	0.091	20225	0.126	28000
1/2	0.840	0.065	11600	0.083	14825	0.109	19475	0.147	26250
3/4	1.050	0.065	9275	0.083	11850	0.113	16150	0.154	22000
1	1.315	0.065	7425	0.109	12450	0.133	15175	0.179	20425
1-1/4	1.660	0.065	5875	0.109	9850	0.140	12650	0.191	17250
1-1/2	1.900	0.065	5125	0.109	8600	0.145	11450	0.200	15800
2	2.375	0.065	4100	0.109	6875	0.154	9750	0.218	13775
2-1/2	2.875	0.083	4325	0.120	6250	0.203	10600	0.276	14400
3	3.500	0.083	3550	0.120	5150	0.216	9250		
3-1/2	4.000	0.083	3100	0.120	4500	0.226	8475		
4	4.500	0.083	2750	0.120	4000	0.237	7900		
5	5.563	0.109	2950	0.134	3625	0.258	6950		
6	6.625	0.109	2475	0.134	3050	0.280	6350		
8	8.625	0.109	1900	0.148	2575	0.322	5600		
10	10.750	0.134	1875	0.165	2300	0.365	5100		
12	12.750	0.156	1825	0.180	2125	0.375	4400		
14	14.000	0.156	1675	0.188	2025				
16	16.000	0.165	1550	0.188	1775				
18	18.000	0.165	1375	0.188	1575				
20	20.000	0.188	1400	0.218	1625				
24	24.000	0.218	1375	0.250	1550				
30	30.000	0.250	1250	0.312	1550				

Bursting Pressure calculated using Barlows' formula: P= 2ST/D

P = Theoretical internal bursting pressures
S = 75,000 psi fiber stress
T = Nominal wall
D = Nominal O.D.

Tubing

Tube OD in	Wall Thickness - Inches																	
	0.016	0.020	0.028	0.035	0.049	0.065	0.083	0.095	0.109	0.120	0.134	0.156	0.188	0.250	0.313	0.375	0.500	0.750
1/8	19200	24000	39000	42000	58800													
1/4		12000	16800	21000	29400	39000	49800	57000										
5/16		9600	13440	16800	23520	31200	39780	45750										
3/8		8003	11998	14003	19598	26003	33203	38003	43598	48000								
1/2		6000	8400	10500	14700	19500	24900	28500	32700	36000								
5/8		4800	6720	8400	11760	15600	19920	22888	26160	28800	32160	37440	44880					
3/4		3998	5603	6998	9803	12997	16598	18998	21803	24000	26800	31200	37403					
1		3000	4200	5250	7350	9750	12450	14250	16350	18000	20100	23400	28050	37500				
1-1/4		2400	3360	4200	5880	7800	9960	11400	13080	14400	16080	18720	22440	30000				

Working pressures for 304 and 316 A269 tubing from -20° F and 100° F

The ASME code suggests a safety factor of four
Example: 1/4" O.D. x 0.035 = 5250 psi
For higher temperatures, multiply work pressure by

	300° F	500° F	1000° F
304	0.828	0.744	0.665
316	0.900	0.853	0.746

ASC Engineered Solutions

Welded Outlet Fittings
For Fire Protection & Other Low Pressure Piping Systems

SPF Welded Outlet Fittings offer the user a high strength, low cost forged threaded and grooved line of fittings specifically designed and manufactured to be installed on proprietary thin wall flow pipe, Schedule 5, 10, and 40 standard wall pipes.

SPF Welded Outlets are forged steel welding outlet fittings. The material used in manufacture meets the chemical and physical requirements of ASTM A 53. SPF Welded Outlet Fittings employ a low weld volume design to provide either a partial or full penetration weld employing a single pass with minimum burn-through and pipe distortion. Threads comply with ANSI B1.20.1. The SPF Welded Outlets are UL Listed and FM Approved for use conforming to the requirements of NFPA 13. SPF Welded Outlet Fittings are rated for 300 psi when used in fire sprinkler system applications.

c UL us LISTED FM APPROVED

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SPF Welded Outlet Fittings

Outlet Model	Outlet Pipe Size	Header Pipe Size	Rated Pressure
	In.	In.	psig
MTM-40	½, ¾, 1	½ - 8 (Sch. 10, 40)	300
	1¼, 1½, 2, 2½, 3, 4	½ - 4 (Sch. 5, DynaFlow)	
	2	4, 6 (EZ-Flow)	
GR-40	1 - 8	1¼ - 8 (Sch. 10, 40)	300
	2½ - 8	2½ - 8 (Sch. 5, DynaFlow)	

1. Size-on size (i.e. 2 x 2) SPF Welded Outlet Fittings are not FM Approved.
2. FM rated working pressure when welded on Sch. 5 or lightwall pipe is 175 psi.
3. Refer to the UL and FM websites for the most current pressure ratings.

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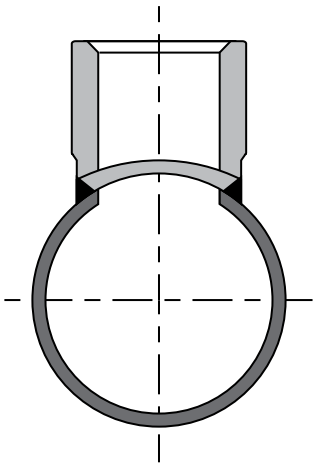
PROJECT INFORMATION	APPROVAL STAMP
Project:	☐ Approved
Address:	☐ Approved as noted
Contractor:	☐ Not approved
Engineer:	Remarks:
Submittal Date:	
Notes 1:	
Notes 2:	

ASC Engineered Solutions

Welded Outlet Fittings

SPF Welded Outlets are designed and Manufactured to reduce the amount of weld required to install the Tee-Lets on thin wall or proprietary flow pipe. Typically only one weld-pass completes the installation. SPF Welded Outlets install with less weld volume than any other brand of welding outlet fittings for fire sprinkler applications.
To accomplish this:

- The contoured end of the fittings employs a reduced outside diameter. Two major advantages are immediately apparent.
- The thinner wall on the contoured end permits welding temperatures to be matched to the thickness of the branch line or main thereby insuring complete penetration without cold welds, weld }roll-off, burn-through or excessive distortion.
- On smaller sizes a heavier section is maintained on the threaded end of the fitting. This protects the threads from damage during shipping and handling prior to installation as well as from weld distortion.
- Each outlet size 1½" and larger, whether female threaded, cut grooved or beveled requires the same hole size in the header pipe. This simplifies the installation process.



General Specifications

- Welded outlet fittings are manufactured from highly weldable steel which conforms to the chemical and physical requirements of ASTM A-53, Grades A or B, Type E. Ease of installation is assured when automatic welding equipment is used to install SPF Welded Outlets.
- Threads are cut in accordance with the requirements of ANSI B1.20.1, national standard for tapered pipe threads.
- SPF Welded Outlets threaded and grooved welding outlet fittings are UL/ULC Listed and FM Approved for use in the fire sprinkler systems installed in accordance with the requirements of NFPA 13. They are rated for 300 PSI operation in fire sprinkler systems, and higher pressures in other non-critical piping systems.
- SPF Welded Outlets are offered in a wide variety of header sizes. The consolidated header sizes shown in the following charts allow the fittings to be installed on more than one header size, permitting the first size listed to fit the header perfectly, while a small gap along the longitudinal center line of the header will appear for the second size listed.
- SPF Welded Outlets are identified by a lot number that provides full traceability.

For Your Piping Systes Specify SPF Welded Outlets

Branch Outlet Fittings shall be SPF Welded Outlets, Lightweight forged steel, employing low weld volume profile to provide for full penetration welds with minimum burn through and pipe distortion on Schedule 5 thru 10, proprietary thin wall, and standard wall pipe. Threads are to be ANSI B1.20.1 and the bore of the fittings calculated to improve flow. Welding outlets to be UL Listed, FM Approved for use conforming to NFPA 13, and pressure rated for 300 psi maximum.

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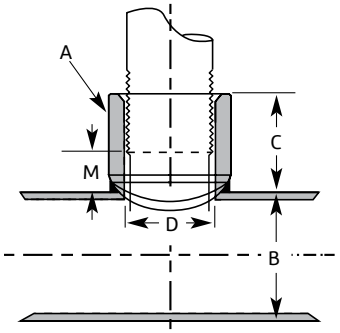
Welded Outlet Fittings

MTM-40
Female Thread



SPF Welded Outlets – MTM-40

Nominal Outlet A	Nominal Header B	Outlet Length C	Inside Diameter D	Make Up M	Weight Each
In./mm	In./mm	In./mm	In./mm	In./mm	Lbs./kg
½ x 13 x	1¼ - 1½ 32 - 40	1.063	0.700	0.500	0.171
		27.0	17.8	12.7	0.08
	1½ - 2 40 - 50	1.063	0.700	0.500	0.171
		27.0	17.8	12.7	0.08
	2 - 2½ 50 - 65	1.063	0.700	0.500	0.171
		27.0	17.8	12.7	0.08
	2½ - 8 65 - 200	1.063	0.700	0.500	0.169
		27.0	17.8	12.7	0.08
¾ x 19 x	1¼ - 1½ 32 - 40	1.125	0.900	0.500	0.260
		28.6	22.9	12.7	0.12
	1½ - 2 40 - 50	1.125	0.900	0.500	0.260
		28.6	22.9	12.7	0.12
	2 - 2½ 50 - 65	1.125	0.900	0.500	0.260
		28.6	22.9	12.7	0.12
	2½ - 8 65 - 200	1.125	0.900	0.500	0.256
		28.6	22.9	12.7	0.12
1 x 25 x	1¼ - 1½ 32 - 40	1.250	1.145	0.500	0.331
		31.8	29.1	12.7	0.15
	1½ - 2 40 - 50	1.250	1.145	0.500	0.331
		31.8	29.1	12.7	0.15
	2 - 2½ 50 - 65	1.250	1.145	0.500	0.320
		31.8	29.1	12.7	0.15
	2½ - 3 65 - 80	1.250	1.145	0.500	0.314
		31.8	29.1	12.7	0.14
	3 - 4 80 - 100	1.250	1.145	0.500	0.309
		31.8	29.1	12.7	0.14
	5 - 8 125 - 200	1.250	1.145	0.500	0.291
		31.8	29.1	12.7	0.13
1¼ x 32 x	1¼ - 1½ 32 - 40	1.375	1.490	0.500	0.432
		34.9	37.8	12.7	.019
	1½ - 2 40 - 50	1.375	1.490	0.500	0.421
		34.9	37.8	12.7	.019
	2 - 2½ 50 - 65	1.375	1.490	0.500	0.421
		34.9	37.8	12.7	.019
	2½ - 3 65 - 80	1.375	1.490	0.500	0.411
		34.9	37.8	12.7	.019
	3 - 4 80 - 100	1.375	1.490	0.500	0.389
		34.9	37.8	12.7	.018
	5 - 8 125 - 200	1.375	1.490	0.500	0.389
		34.9	37.8	12.7	.018

SPF Welded Outlets – MTM-40

Nominal Outlet A	Nominal Header B	Outlet Length C	Inside Diameter D	Make Up M	Weight Each
In./mm	In./mm	In./mm	In./mm	In./mm	Lbs./kg
1½ x 40 x	1½ 40	1.625	1.610	0.875	0.477
		41.3	40.9	22.2	.022
	2 50	1.625	1.610	0.875	0.477
		41.3	40.9	22.2	.022
	2½ 65	1.625	1.610	0.875	0.477
		41.3	40.9	22.2	.022
	3 - 4 80 - 100	1.625	1.610	0.875	0.477
		41.3	40.9	22.2	.022
	4 100	1.625	1.610	0.875	0.477
		41.3	40.9	22.2	.022
	5 - 8 125 - 200	1.625	1.610	0.875	0.477
		41.3	40.9	22.2	.022
2 x 50 x	2 50	1.750	2.067	0.875	0.857
		44.5	52.5	22.2	0.38
	2½ 65	1.750	2.067	0.875	0.829
		44.5	52.5	22.2	0.38
	3 80	1.750	2.067	0.875	0.829
		44.5	52.5	22.2	0.39
	4 100	1.750	2.067	0.875	0.800
		44.5	52.5	22.2	0.36
	6 150	1.750	2.067	0.875	0.743
		44.5	52.5	22.2	0.34
	8 200	1.750	2.067	0.875	0.743
		44.5	52.5	22.2	0.34

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

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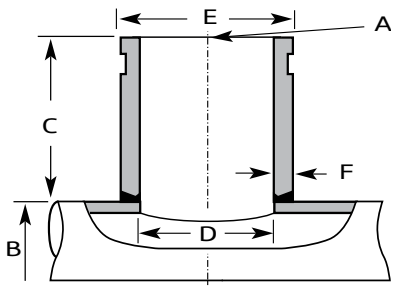
Welded Outlet Fittings

GR-40
Cut Groove
Standard Weight



SPF Welded Outlets – GR-40 (Nominal Sizes 1¼" thru 8")

Nominal Outlet A	Nominal Header B	Outlet Length C	Inside Diameter D	Outside Diameter E	Wall Thickness F
In./mm	In./mm	In./mm	In./mm	In./mm	In./mm
1¼ x 32 x	1¼ 32	3	1.368	1.660	0.140
		80	34.7	42.2	3.6
	1½ 40	3	1.368	1.660	0.140
		80	34.7	42.2	3.6
	2 - 2½ 50 - 65	3	1.368	1.660	0.140
		80	34.7	42.2	3.6
	3 - 4 80 - 100	3	1.368	1.660	0.140
		80	34.7	42.2	3.6
	5 - 8 125 - 200	3	1.368	1.660	0.140
		80	34.7	42.2	3.6
1½ x 40 x	1½ 40	3	1.610	1.900	0.145
		80	40.9	48.3	3.7
	2 50	3	1.610	1.900	0.145
		80	40.9	48.3	3.7
	2½ 65	3	1.610	1.900	0.145
		80	40.9	48.3	3.7
	3 - 4 80 - 100	3	1.610	1.900	0.145
		80	40.9	48.3	3.7
	5 - 8 125 - 200	3	1.610	1.900	0.145
		80	40.9	48.3	3.7
2 x 50 x	2 50	3	2.067	2.375	0.154
		80	52.5	60.3	3.9
	2½ 65	3	2.067	2.375	0.154
		80	52.5	60.3	3.9
	3 80	3	2.067	2.375	0.154
		80	52.5	60.3	3.9
	4 100	3	2.067	2.375	0.154
		80	52.5	60.3	3.9
	6 150	3	2.067	2.375	0.154
		80	52.5	60.3	3.9
	8 200	3	2.067	2.375	0.154
		80	52.5	60.3	3.9

SPF Welded Outlets – GR-40 (Nominal Sizes 1¼" thru 8")

Nominal Outlet A	Nominal Header B	Outlet Length C	Inside Diameter – D		Outside Diameter E	Wall Thickness – F	
			Standard Weight	Schedule 10		Standard Weight	Schedule 10
In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm
2½ x 65 x	2½ 65	3	2.469	2.635	2.875	0.203	0.120
		80	62.7	67.0	76.2	5.0	3.0
	4 100	3	2.469	2.635	2.875	0.203	0.120
		80	62.7	67.0	76.2	5.0	3.0
	6 175	3	2.469	2.635	2.875	0.203	0.120
		80	62.7	67.0	76.2	5.0	3.0
	8 200	3	2.469	2.635	2.875	0.203	0.120
		80	62.7	67.0	76.2	5.0	3.0
3 x 80 x	3 80	3	3.068	3.260	3.500	0.216	0.120
		80	78.0	83.0	88.0	5.0	3.0
	4 100	3	3.068	3.260	3.500	0.216	0.120
		80	78.0	83.0	88.0	5.0	3.0
	6 150	3	3.068	3.260	3.500	0.216	0.120
		80	78.0	83.0	88.0	5.0	3.0
	8 200	3	3.068	3.260	3.500	0.216	0.120
		80	78.0	83.0	88.0	5.0	3.0
4 x 100 x	4 100	4	4.026	4.260	4.500	0.237	0.120
		100	102.0	108.0	114.0	6.0	3.0
	6 150	4	4.026	4.260	4.500	0.237	0.120
		100	102.0	108.0	114.0	6.0	3.0
	8 200	4	4.026	4.260	4.500	0.237	0.120
		100	102.0	108.0	114.0	6.0	3.0
6 x 150 x	6 150	4	6.065	6.357	6.625	0.280	0.134
		100	155.0	161.5	168.3	7.1	3.0
	8 200	4	6.065	6.357	6.625	0.280	0.134
		100	155.0	161.5	168.3	7.1	3.0
8 x 200 x	8 200	4	7.981	8.329	8.625	0.322	0.148
		100	203.0	212.0	213.0	8.0	3.0

Note: Welded Outlets are manufactured to fit size-on-size, that is the contoured shape on a given Welded Outlet is made to fit perfectly on the first listed header size. If installed on the second header size marked on the fitting, a slight gap of approximately 1/32" will appear along the longitudinal centerline of the header. For example, a 1" x 2 – 2½" Welded Outlet, is a 1" outlet fitting manufactured to fit perfectly on the 2" header size listed, while leaving a 1/32" gap along the longitudinal centerline of the 2½" size. If a perfect fit is required for a 2½" header pipe, then a 1" x 2½ – 3" Welded Outlet would be ordered. Size consolidations are employed to reduce inventory and provide for greater flexibility.
(Additional larger sizes on next page.)

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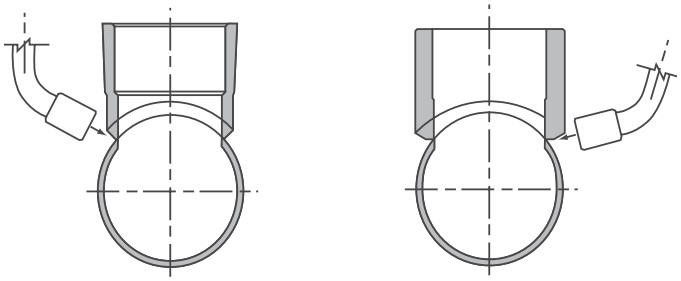
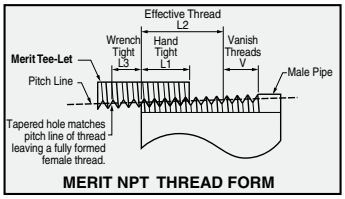
Welded Outlet Fittings

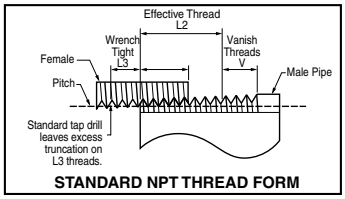
Threading Practice

SPF Welded Outlets thread form is consistent with Aeronautical National Form (ANPT) AS71051. The thread is fully formed over both the L-1 hand tight and L-3 wrench tight threads. NPT tapered threads are typically gauged only over the L-1 threads. This makes SPF Welded Outlets more forgiving of field cut threaded pipe that may only marginally conform to the specification. Fewer leaks translate into lower costs.





MERIT NPT THREAD FORM



STANDARD NPT THREAD FORM

Ease of Installation

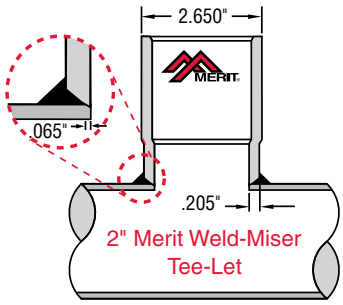
SPF Welded Outlets are designed to sit higher on the pipe, thereby requiring less weld and eliminating burn through. SPF Welded Outlets sit higher on the header or branch line pipe than competitive fittings. This allows the welding torch to remain in an optimum position for welding. In addition, 1 1/2" and larger female threaded and grooved welded outlets require the same hole size for installation. This results in fewer change overs when installed using automatic welders.

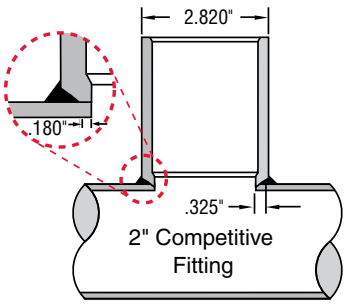
Welding Practice

When measured with respect to linear inches of weld required for installation, SPF Welded Outlets require up to 15% less weld than competitive fittings. This reduces time and savings over time are substantial. The diameter of the contoured end of Welded Outlet has been reduced so that the wall thickness more nearly matches the header or branch line pipe wall thickness. Therefore, current and voltage settings required for welding are set to provide for adequate penetration without burn through and cold shutting. Also, weld volume required for installation is lower for SPF Welded Outlets than most other fittings. Typically, SPF Welded Outlets require one-weld pass for attachment.

NPT Tapered Pipe Threads

Drop Nipple or Tee-Let Outlet Size	L1 Hand Tight		L3 Wrench Tight		Total L1 - L3 Length		L2 Effective Threads	
In./mm	In./mm	Threads	In./mm	Threads	In./mm	Threads	In./mm	Threads
1/2	0.320	4.48	0.214	3.00	0.534	7.48	0.534	7.47
15	8.1		5.4		13.6		13.6	
3/4	0.339	4.75	0.214	3.00	0.553	7.75	0.546	7.64
20	8.6		5.4		14.0		13.9	
1	0.400	4.60	0.261	3.00	0.661	7.60	0.683	7.85
25	10.2		6.6		16.8		17.3	
1 1/4	0.420	4.83	0.261	3.00	0.681	7.83	0.707	8.13
32	10.7		6.6		17.3		18.0	
1 1/2	0.420	4.83	0.261	3.00	0.697	7.83	0.724	8.32
40	10.7		6.6		17.7		18.4	
2	0.436	5.01	0.261	3.00	0.706	8.01	0.757	8.70
50	11.1		6.6		17.9		19.2	
2 1/2	0.682	5.46	0.250	2.00	0.932	7.46	1.138	9.10
65	17.3		6.4		23.7		28.9	
3	0.766	6.13	0.250	2.00	1.016	8.13	1.200	9.60
80	19.5		6.4		25.8		30.5	
4	0.844	6.75	0.250	2.00	1.094	8.75	1.300	10.40
100	21.4		6.4		27.8		33.0	



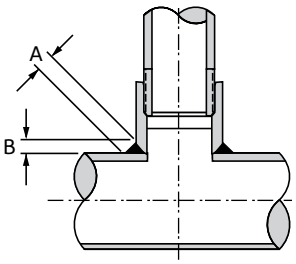


Welding Practice

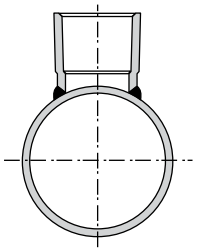
Outlet Size	SPF Welded Outlets				Competitive Fitting			
	Weld Volume*		Linear Welding		Weld Volume*		Linear Welding	
In. (mm)	Cross Sec. Area	%less	In.(mm)	%less	Cross Sec. Area	%more	In.(mm)	%less
1"	0.051 sq. in.	12%	2.48	0%	0.058 sq. in.	12%	2.48	0%
25	32.9 sq mm		62.9		37.4 sq mm		62.9	
1 1/4"	0.032"	48%	2.88	4%	0.063	48%	3.01	4%
32	20.6		73.1		40.6		76.4	
1 1/2"	0.036"	40%	3.12	10%	0.060	40%	3.46	10%
40	23.2		79.2		38.7		87.8	
2"	0.040"	62%	3.77	15%	0.106	62%	4.41	15%
50	25.8		95.7		68.3		112.0	

ASC Engineered Solutions

Welded Outlet Fittings



½, ¾ & 1 Outlet



1¼ – 2 Outlet

Recommended Installation Procedures

SPF Welded Outlet Fittings are designed and manufactured to reduce the cost of installation from both the standpoint of labor required and energy consumed. In addition, by following the recommended installation procedures, many of the problems associated with installing welding outlet fittings on standard weight or light weight pipe are eliminated, including burn through and excessive shrinkage resulting in pipe distortion.

Recommended Hole Sizes

The hole cut in the branch or header pipe can be cut prior or subsequent to attachment of the Welded Outlets. One advantage of cutting the hole after welding is that the pipe is left intact during welding, thereby, reducing shrinkage and possible distortion. If holes are cut prior to welding, as some codes require, then the following hole sizes are recommended.

Recommended Welding Procedures

SPF Welded Outlet Fittings are designed to be installed on standard weight or light weight pipe with one weld pass on sizes through 4" Moreover, the wall thickness at the weld end of the fitting approximately matches standard weight pipe.

Accordingly, heat settings can be made to optimize penetration on both the fitting and the pipe which it is being welded. Aside from reducing the likelihood of burn through and distortion resulting from excessive heat, the amount of weld required for adequate penetration is significantly reduced.

As a general rule, the weld should be only as hot as required to allow the weld to penetrate the materials being welded while concomitantly allowing gases developed in the welding process to escape. Every effort must be made to avoid welding too hot or overheating both thepipe and the Welded Outlets. Excessive heat may cause the wrench tight threads (those in the bottom of the Welded Outlets near the weld zone) to distort while also causing the branch pipe to bend. It should be noted that SPF Welded Outlet Fittings have been subjected to exhaustive testing and evaluation, and only negligibly distort when subjected to excessive heat. The threads, on the other hand, may not return to their gauged form after cooling if excessive heat causes them to expand. The following is intended only as a guide, and assumes that the welding equipment is properly calibrated and functioning normally and the operator is qualified.

Note: Please refer to www.asc-es.com or latest catalog for recommended hole size and welding practice.

Recommended Amount of Weld

Outlet Size	A	B
In./mm	In./mm	In./mm
1	1/4	3/16
25	7	5
1 1/4	1/4	3/16
31	7	5
1 1/2	5/16	1/4
38	8	7
2	5/16	1/4
50	8	7
2 1/2	5/16	1/4
63	8	7
3	3/8	5/16
75	10	8
4	3/8	5/16
100	10	8

Recommended Outlet Hole Sizes

Welded Outlet Size	Type	Recommended Hole Size
In./mm		In./mm
1/2	MTM-40	5/8
13		16
3/4	MTM-40	7/8
19		22
1	MTM-40	1 1/8
25		28
1 1/4	MTM-40	1 1/2
31		38
1 1/4	GR-40	1 3/8
31		35
1 1/2	MTM-40 or GR-40	1 5/8
38		41
2	MTM-40 or GR-40	2
50		50
2 1/2	GR-40	2 7/16
63		61
3	GR-40	3
75		75
4	GR-40	4
100		100

Note: Holes may be cut employing mechanical means – including hole sawing, mechanical flame cutting (oxy-acetylene or propane), and air plasma cutting (constricted tungsten arc) machines. Anvil offers a simple approach to cutting the hole. Hand-held templates are sized to match your plasma cutter.

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Welded Outlet Fittings

Recommended Settings For Microwire Welding Process

Header Size	Pipe Wall Thickness	Welded Outlet MTM-40 & GR-40	Electrode Size	Welding Current	Arc. Volts	Wire Feed	Travel Speed
In./mm	In./mm	In./mm		AMPS-DC	POS.	IPM	IPM
1¼ - 2 31-50	0.065 2	½ - 2 13-50	0.035	100-130	16-20	210	25-30
		2½ - 4 63-100	0.035	115-150	17-21	270	20-25
	0.109 3	½ - 2 13-50	0.035	110-140	18-22	220	25-30
		2½ - 4 63-100	0.035	120-160	19-22	290	20-25
2½ - 4 63-100	0.083 2.5	½ - 2 13-50	0.035	110-140	17-20	210	20-25
		2½ - 4 63-100	0.035	120-150	17-20	270	20-25
	0.120 3	½ - 2 13-50	0.035	120-160	19-22	290	20-25
		2½ - 4 63-100	0.035	130-160	19-22	240	20-25
5-6 125-150	0.109 3	½ - 2 13-50	0.035	120-150	17-20	210	20-25
		2½ - 4 63-100	0.035	130-150	18-20	270	15-20
	0.134 3.5	½ - 2 13-50	0.035	130-160	19-22	290	20-25
		2½ - 4 63-100	0.035	140-160	20-22	270	15-20
		2½ - 4 63-100	0.045	180-205	20-24	245	27-32
8 200	0.109 3	½ - 2 13-50	0.035	120-150	17-20	240	20-25
		2½ - 4 63-100	0.035	130-150	18-20	260	15-20
		2½ - 4 63-100	0.045	170-220	18-22	290	12-18
	0.148 3.5	½ - 2 13-50	0.035	130-160	19-22	240	20-25
		2½ - 4 63-100	0.035	140-160	20-22	260	15-20
		2½ - 4 63-100	0.045	180-225	20-24	290	12-18

Note:
Shielding Gas Flow (For all Sizes) 20-25 CFH
1) CO_2 - Deeper penetration, faster welding, low cost.
2) 25% - Argon, 75% - CO_2, Recommended for .134 wall and lighter, high welding speeds without melt through, minimum distortion and spatter, good penetration.

ASC Engineered Solutions™ assumes no liability for any consequential damages resulting from the improper use of its Welded Outlet Fittings, nor for any recommendations made with respect to installation procedures.

SPF ANVIL
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Fig. 3201 90˚ Elbow

c UL us LISTED FM APPROVED

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

Material Specifications

Dimensions: ASME B16.3

Material: ASTM A536 Grade 65-45-12

Finish: Black

Threads: NPT per ASME B1.20.1

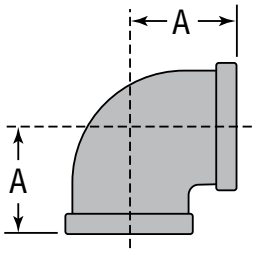
Agency Approvals: All ductile iron threaded fittings are UL/ULC Listed and FM Approved.

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

Figure 3201 90˚ Elbow

Nominal Size	Maximum Working Pressure ▲	Dimension A	Approx Wt. Each
In. (mm)	psi (kPa)	In. (mm)	Lbs. (kg)
1 20	500 3450	1.50 38.10	0.62 0.68
1¼ 32	500 3450	1.75 44.45	0.90 0.41
1½ 40	500 3450	1.94 49.276	1.20 0.54
2 50	500 3450	2.25 57.15	1.85 0.84

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



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

ASC Engineered Solutions

Reducing 90˚ Elbow
Fig. 3201R

c UL us LISTED FM APPROVED

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

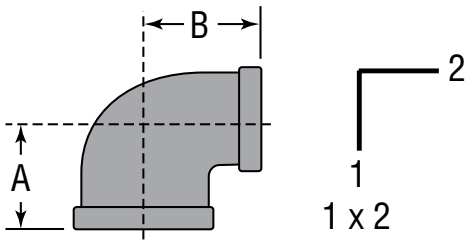
Material Specifications

- **Dimensions:** ASME B16.3
- **Material:** ASTM A536 Grade 65-45-12
- **Finish:** Black
- **Threads:** NPT per ASME B1.20.1
- **Agency Approvals:** All ductile iron threaded fittings are UL/ULC Listed and FM Approved.

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

Fig. 3201R Reducing 90˚ Elbow

Nominal Size	Max. Working Pressure ▲	Dimensions		Approx Wt. Each
1 x 2		A	B	
In. (mm)	PSI (kPa)	In. (mm)	In. (mm)	Lbs. (kg)
1 x ½ 25 x 15	500 3450	1.26 32.00	1.36 34.54	0.44 0.20
1 x ¾ 25 x 20	500 3450	1.37 34.79	1.45 36.83	0.52 0.24
1¼ x ½ 32 x 15	500 34550	1.34 34.03	1.53 38.86	0.64 0.29
1¼ x ¾ 32 x 20	500 3450	1.45 36.83	1.62 41.14	0.72 0.33
1¼ x 1 32 x 25	500 3450	1.58 40.13	1.67 42.41	0.75 0.34
1½ x ½ 40 x 15	500 3450	1.41 35.81	1.66 42.16	0.64 0.29
1½ x ¾ 40 x 20	500 3450	1.52 38.61	1.75 44.45	0.77 0.35
1½ x 1 40 x 25	500 3450	1.65 41.91	1.80 45.72	0.92 0.42
1½ x 1¼ 40 x 32	500 3450	1.82 46.22	1.88 47.75	1.08 0.49
2 x ½ 50 x 15	500 3450	1.49 37.84	1.88 47.75	1.08 0.49
2 x ¾ 50 x 20	500 3450	1.60 40.64	1.97 50.03	1.24 0.56
2 x 1 50 x 25	500 3450	1.73 43.94	2.02 51.30	1.40 0.64
2 x 1¼ 50 x 32	500 3450	1.90 48.26	2.10 53.34	1.52 0.70
2 x 1½ 50 x 40	500 3450	2.02 51.30	2.16 54.86	1.65 0.75



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▲ – Working Pressure Ratings are for reference only and based on Sch. 40 pipe. For the latest UL/ULC, and FM pressure ratings versus pipe schedule, please visit www.asc-es.com or contact your local ASC Engineered Solutions™ Representative.

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ASC Engineered Solutions

45° Elbow
Fig. 3202

c UL us LISTED FM APPROVED

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

Material Specifications

Dimensions: ASME B16.3

Material: ASTM A536 Grade 65-45-12

Finish: Black

Threads: NPT per ASME B1.20.1

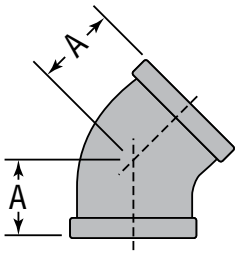
Agency Approvals: All ductile iron threaded fittings are UL/ULC Listed and FM Approved.

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

Figure 3202 45° Elbow

Nominal Size	Maximum Working Pressure ▲	Dimension A	Approx Wt. Each
In. (mm)	psi (kPa)	In. (mm)	Lbs. (kg)
1 25	500 3450	1.12 28.44	0.46 0.21
1¼ 32	500 3450	1.29 32.76	0.73 0.33
1½ 40	500 3450	1.43 36.32	0.92 0.42
2 50	500 3450	1.68 42.67	1.50 0.68

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



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ASC Engineered Solutions

Straight Tee
Fig. 3205

c UL us LISTED FM APPROVED

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

Material Specifications

Dimensions: ASME B16.3

Material: ASTM A536 Grade 65-45-12

Finish: Black

Threads: NPT per ASME B1.20.1

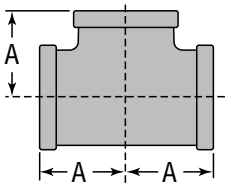
Agency Approvals: All ductile iron threaded fittings are UL/ULC Listed and FM Approved.

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

Figure 3205 Straight Tee

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

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



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Reducing Tee
Fig. 3205R

c UL us LISTED FM APPROVED

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Material Specifications

Dimensions: ASME B16.3

Material: ASTM A536 Grade 65-45-12

Finish: Black

Threads: NPT per ASME B1.20.1

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

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

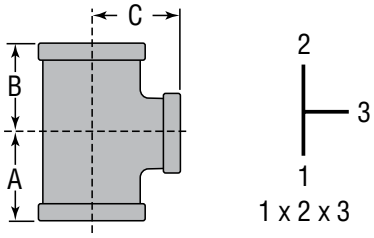

Figure 3205R Reducing Tee

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

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

*Part supplied as "Bull Head Tee".

Figure 3205R Reducing Tee

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

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ASC Engineered Solutions

Reducing Tee
Fig. 3205R

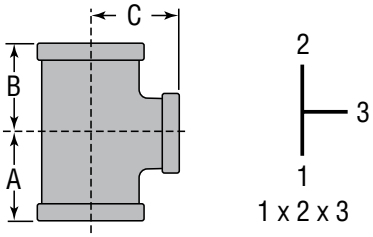


Figure 3205R Reducing Tee

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

Figure 3205R Reducing Tee

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

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

*Part supplied as "Bull Head Tee".

SCI An ASC Engineered Solution

SPF Ductile Iron Threaded Fittings

ASC Engineered Solutions

Cross
Fig. 3207

c UL us LISTED FM APPROVED

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

Material Specifications

Dimensions: ASME B16.3

Material: ASTM A536 Grade 65-45-12

Finish: Black

Threads: NPT per ASME B1.20.1

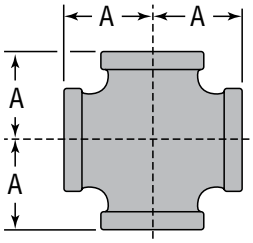
Agency Approvals: All ductile iron threaded fittings are UL/ULC Listed and FM Approved.

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

Figure 3207 Cross

Nominal Size	Maximum Working Pressure ▲	Dimension A	Approx Wt. Each
In. (mm)	psi (kPa)	In. (mm)	Lbs. (kg)
1 25	500 3450	1.50 38.10	0.98 0.44
1¼ 32	500 3450	1.75 44.45	1.50 068
1½ 40	500 3450	1.94 49.27	1.90 0.86
2 50	500 3450	2.25 57.15	2.95 1.34

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



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Contractor:	☐ Not approved
Engineer:	Remarks:
Submittal Date:	
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ASC Engineered Solutions

Reducing Coupling
Fig. 3221R

c UL us LISTED FM APPROVED

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

Material Specifications

Dimensions: ASME B16.3

Material: ASTM A536 Grade 65-45-12

Finish: Black

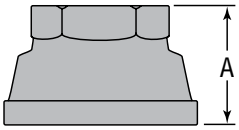
Threads: NPT per ASME B1.20.1

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

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

Figure 3221R Reducing Coupling

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



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

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Bushings
Fig. 3283

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

Material Specifications

Dimensions: ASME B16.14

Material: ASTM A536 Grade 65-45-12

Finish: Black

Threads: NPT per ASME B1.20.1

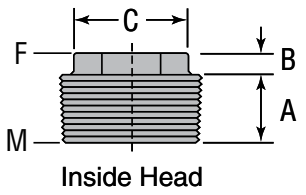
Agency Approvals: All ductile iron threaded fittings are UL/ULC Listed and FM Approved.

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

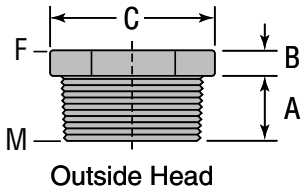
Figure 3283 Bushings

Nominal Size Male (M) x Female (F)	Maximum Working Pressure ▲	Dimensions A	Dimensions B	Dimensions C	Style	Approx Wt. Each
In. (mm)	psi (kPa)	In. (mm)	In. (mm)	In. (mm)	-	Lbs. (kg)
1 x ½ 25 x 15	500 3450	0.75 19.05	0.25 6.35	1.42 36.06	Outside	0.22 0.10
1 x ¾ 25 x 20	500 3450	0.75 19.05	0.25 6.35	1.42 36.06	Outside	0.17 0.08
1¼ x 1 32 x 25	500 3450	0.80 20.32	0.28 7.11	1.76 44.70	Outside	0.28 0.13
1½ x 1 40 x 25	500 3450	0.83 21.08	0.31 7.874	2.00 50.80	Outside	0.45 0.20
1½ x 1¼ 40 x 32	500 3450	0.83 21.08	0.31 7.874	2.00 50.80	Outside	0.30 0.14
2 x 1 50 x 25	500 3450	0.88 22.35	0.41 10.414	1.95 49.43	Inside	0.67 0.30
2 x 1¼ 50 x 32	500 3450	0.88 22.35	0.34 8.636	2.48 62.99	Outside	0.73 0.33
2 x 1½ 50 x 40	500 3450	0.88 22.35	0.34 8.636	2.48 62.99	Outside	0.61 0.28

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



Inside Head



Outside Head

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ASC Engineered Solutions

Coupling
Fig. 3221

c UL us LISTED FM APPROVED

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

Material Specifications

Dimensions: ASME B16.3

Material: ASTM A536 Grade 65-45-12

Finish: Black

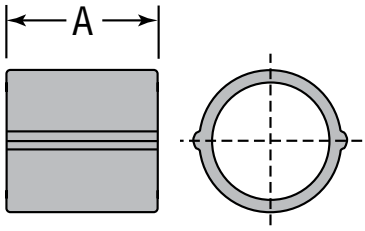
Threads: NPT per ASME B1.20.1

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

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

Figure 3221 Coupling

Nominal Size	Maximum Working Pressure ▲	Dimension A	Approx Wt. Each
In. (mm)	psi (kPa)	In. (mm)	Lbs. (kg)
1 25	500 3450	1.67 42.42	0.40 0.18
1¼ 32	500 3450	1.93 49.02	0.57 0.26
1½ 40	500 3450	2.15 54.61	0.75 0.34
2 50	500 3450	2.53 64.26	1.15 0.52



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

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Cored Plug
Fig. 3388

c UL us LISTED FM APPROVED

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Material Specifications

Dimensions: ASME B16.14

Material: ASTM A536 Grade 65-45-12

Finish: Black

Threads: NPT per ASME B1.20.1

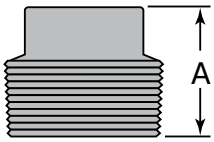
Agency Approvals: All ductile iron threaded fittings are UL/ULC Listed and FM Approved.

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

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

Figure 3388 Cored Plug

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



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

*Part supplied as Solid Plug.

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ASC Engineered Solutions

Cap
Fig. 3224

c UL us LISTED FM APPROVED

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Material Specifications

Dimensions: ASME B16.3

Material: ASTM A536 Grade 65–45–12

Finish: Black

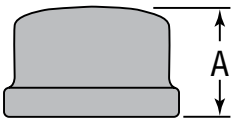
Threads: NPT per ASME B1.20.1

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

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

Figure 3224 Cap

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



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

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FireLock™ Installation-Ready™ Rigid Couplings
Style 009V, Style 009N and Style 109

10.64

Style 009V
Patented

Style 009N
Patented

Style 109
Patented

1.0 PRODUCT DESCRIPTION

Available Sizes

- Style 009V: 1 ¼ – 12"/DN32 – DN300
- Style 009N: 1 ¼ – 12"/DN32 – DN300
- Style 109: 1 ¼ – 4"/DN32 – DN100

Pipe Material

- Schedule 10, Schedule 40 or specialty carbon steel pipe listed in Section 5. For use with alternative materials and wall thicknesses please contact Victaulic
- For exceptions reference section 6.0 Notifications

Maximum Working Pressure

- Accommodates pressures ranging from full vacuum (29.9 in Hg/760 mm Hg) to 365 psi/2517 kPa
- Working pressure dependent on material, wall thickness and size of pipe

Function

- Joins carbon steel pipe with grooved ends conforming to publication 25.01
- Provides a rigid pipe joint designed to restrict axial or angular movement

Pipe Preparation

- Cut or roll grooved in accordance with publication 25.01: Victaulic Standard Groove Specifications.

2.0 CERTIFICATION/LISTINGS

LPS 1219: Issue 3.1
Cert/LPCB Ref. 104-1a/36

009N: G4090023
109: G421013

EN 10311
CPR (EU)
No. 305/2011

BS EN 10311
CPR (UK)
2019 No. 465

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

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3.0 SPECIFICATIONS – MATERIAL

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

Housing Coating: (specify choice)

- ☐ Orange coating
- ☐ Red coating (standard for EMEA-I and Asia Pacific)
- ☐ Optional for Style 009N and 009V: Galvanized per ASTM A123 (Hot Dipped) or ASTM A1059 (Thermo-Diffusion)
- ☐ Optional for Style 109: Mechanically Galvanized per ASTM B695 (available only in North America and Latin America).

Gasket: (specify choice)

- ☐ **Grade "E" EPDM (Type A) Vic-Plus™ Pre-lubricated Gasket**

  EPDM (Violet Color Code). Applicable for wet and dry (oil-free air) fire protection systems only. Listed/Approved for continuous use in wet and dry systems. Listed/Approved for dry systems at -40°F/-40°C and above. Not compatible for use with hot water services or steam services.

NOTES

- Reference should always be made to publication I-100, Victaulic Field Installation Handbook for gasket lubrication instructions.
- Services listed are General Service Guidelines only. It should be noted that there are services for which these gaskets are not compatible. Reference should always be made to publication 05.01, Victaulic Gasket Selection Guide for specific gasket service guidelines and for a listing of services which are not compatible.
- The gasket pre-lubrication will appear white to slightly amber in color. The color will not impact gasket or coupling performance.

Bolts/Nuts: (specify choice)

- ☐ Standard: Carbon steel oval neck track bolts meeting the mechanical property requirements of (imperial) ASTM A449 or (metric) ISO 898-1 Class 9.8 (M10-M16) or Class 8.8 (M20 and greater). Carbon steel hex nuts meeting the mechanical property requirements of (imperial hex nuts) ASTM A563 Grade B or (metric hex nuts) ISO 898-2 Class 10 (M12-M16) or Class 8 (M20 and greater). Track bolts and hex nuts are zinc electroplated per ASTM B633 Fe/Zn5 finish (imperial) Type III or (metric) Type II.
- ☐ Optional for Style 009N: Stainless steel oval neck track bolts meeting the requirements of ASTM F593, Group 2 (316 stainless steel), condition CW. Stainless steel Heavy Hex nuts meeting the requirements of ASTM F594, Group 2 (316 stainless steel), condition CW, with galling-resistant coating.[1]

[1] Optional bolts/nuts are available in imperial size only.

Coupling Linkage (Style 109 only): High Strength Steel with comparable physical properties to that of the Track Bolt (ASTM A449). Linkage is zinc electroplated per ASTM B633 Fe/Zn 5, Type III Finish.

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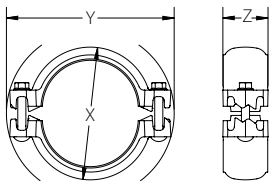
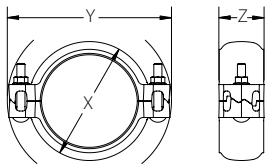
4.0 DIMENSIONS

Style 009V Two-Bolt Installation-Ready Coupling



Style 009V Pre-Assembled



Style 009V Joint Assembled

Size		Maximum Working Pressure[2]	Maximum End Load[2]	Allow. Pipe End Separation[3]	Bolt/Nut		Dimensions					Approx. Weight (Each)
							Pre-Assembled		Joint Assembled			
Nominal inches DN	Actual Outside Diameter inches mm	Lbs. N	inches mm	psi kPa	Qty.	Size inches mm	X inches mm	Y inches mm	X inches mm	Y inches mm	Z inches mm	lb kg
1 ¼ DN32	1.660 42.4	365 2517	790 3514	0.10 2.54	2	⅜ x 2 M10 x 51	3.25 82	4.81 122	2.88 74	4.75 120	2.13 54	1.7 0.8
1 ½ DN40	1.900 48.3	365 2517	1035 4604	0.10 2.54	2	⅜ x 2 M10 x 51	3.50 88	5.06 128	3.13 80	5.00 128	2.13 54	1.7 0.8
2 DN50	2.375 60.3	365 2517	1617 7192	0.12 3.05	2	⅜ x 2 ½ M10 x 63	4.06 104	5.63 142	3.63 92	5.63 142	2.13 54	2.1 1.0
2 ½	2.875 73.0	365 2517	2370 10542	0.12 3.05	2	⅜ x 2 ½	4.56 116	6.06 154	4.06 104	6.06 154	2.13 54	2.2 1.0
3 DN80	3.500 88.9	365 2517	3512 15622	0.12 3.05	2	⅜ x 2 ½ M10 x 63	5.19 132	6.81 174	4.63 118	6.69 170	2.19 56	2.6 1.2
4 DN100	4.500 114.3	365 2517	5805 25822	0.17 4.32	2	⅜ x 2 ½ M10 x 63	6.38 162	7.94 202	5.75 146	7.75 196	2.25 58	3.5 1.6
6 DN150	6.625 168.3	365 2517	12582 55968	0.17 4.32	2	½ x 3 M12 x 76	9.00 228	10.69 272	8.31 212	10.56 268	2.31 58	6.3 2.9
8 DN200	8.625 219.1	365 2517	21326 94862	0.17 4.32	2	⅝ x 3 ⅝ M16 x 92	11.31 288	13.75 350	10.56 268	13.63 346	2.81 72	13.0 5.9
10 DN250	10.750 273.0	365 2517	33127 147358	0.25 6.4	2	⅞ x 6 M22 x 152	14.13 358	17.50 444	13.25 336	17.13 434	2.94 74	25.0 11.5
12 DN300	12.750 323.9	365 2517	46600 207290	0.25 6.4	2	⅞ x 6 M22 x 152	16.38 416	19.50 496	15.63 396	19.25 488	2.94 74	30.0 13.5

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

[3] The allowable pipe separation dimension shown is for system layout purposes only. Style 009V couplings are considered rigid connections and will not accommodate expansion or contraction of the piping system.

NOTES

- When assembling Style 009V, Style 009N or Style 109 couplings onto end caps, take additional care to make certain the end cap is fully seated against the gasket end stop. For Style 009V, Style 009N couplings, use FireLock No. 006 end caps containing the "EZ" marking on the inside face or No. 60 end caps containing the "QV EZ" marking on the inside face. Non-Victaulic end cap products shall not be used with Style 009V, Style 009N or Style 109 couplings. IMPORTANT: Gaskets intended for the Style 009 or Style 009V couplings cannot be used with the Style 009N or Style 109 coupling. There is no interchanging of gaskets or housings between coupling styles.
- **Use Of FlushSeal Gaskets For Dry Pipe Systems** Style 009V, Style 009N or Style 109 couplings are supplied with Grade "E" Type A gaskets. These gaskets include an integral pipe stop, that once installed provides the similar benefits as a FlushSeal gasket for dry pipe systems. It should be noted that standard Victaulic FlushSeal gaskets cannot be used with the Style 009V, Style 009N or Style 109 couplings.
- The Allowable Pipe End Separation dimension shown is for system layout purposes only. Style 009V, Style 009N or Style 109 Installation-Ready rigid couplings are considered rigid connections and will not accommodate expansion/contraction or angular movement of the piping system. Contact Victaulic for torsional resistance information.

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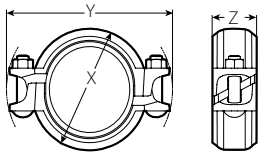
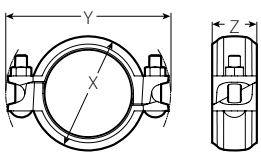
4.1 DIMENSIONS

Style 009N Two-Bolt *Installation-Ready* Coupling



Style 009N Pre-Assembled



Style 009N Joint Assembled

Size		Maximum Working Pressure[2]	Maximum End Load[2]	Allow. Pipe End Separation[3]	Bolt/Nut		Dimensions					Approx. Weight (Each)
							Pre-assembled		Joint Assembled			
Nominal inches DN	Actual Outside Diameter inches mm	psi kPa	lb N	inches mm	Qty.	Size inches mm	X inches mm	Y inches mm	X inches mm	Y inches mm	Z inches mm	lb kg
1¼ DN32	1.660 42.4	365 2517	790 3514	0.10 2.54	2	⅜ × 2 M10 x 51	3.13 79	5.00 127	2.75 70	5.00 127	2.00 51	1.4 0.6
1½ DN40	1.900 48.3	365 2517	1035 4604	0.10 2.54	2	⅜ × 2 M10 x 51	3.38 86	5.13 130	3.00 76	5.13 130	2.00 51	1.5 0.7
2 DN50	2.375 60.3	365 2517	1617 7193	0.12 3.05	2	⅜ × 2½ M10 x 63	4.00 102	5.63 143	3.50 89	5.63 143	2.00 51	1.9 0.9
2½	2.875 73.0	365 2517	2370 10542	0.12 3.05	2	⅜ × 2½ M10 x 63	4.50 114	6.13 156	4.00 102	6.13 156	2.00 51	2.1 1.0
DN65	3.000 76.1	365 2517	2580 11476	0.12 3.05	2	⅜ × 2½ M10 x 63	4.63 118	6.00 152	4.13 105	6.13 156	2.00 51	2.1 1.0
3 DN80	3.500 88.9	365 2517	3512 15622	0.12 3.05	2	⅜ × 2½ M10 x 63	5.13 130	6.75 171	4.63 117	6.75 171	2.00 51	2.3 1.0
4 DN100	4.500 114.3	365 2517	5805 25822	0.17 4.32	2	⅜ × 2½ M10 x 63	6.00 152	7.88 200	5.63 143	7.50 191	2.13 54	2.9 1.3
	4.250 108.0	365 2517	5178 23020	0.17 4.32	2	⅜ × 2½ M10 x 63	5.63 152	7.38 1.87	5.38 137	7.38 187	2.13 54	3.1 1.4
5	5.563 141.3	365 2517	8872 39456	0.17 4.32	2	½ × 3 M12 x 76	7.25 184	9.25 235	6.75 171	9.13 232	2.25 57	5.0 2.3
	5.250 133.0	365 2517	7901 35106	0.17 4.32	2	½ × 3 M12 x 76	6.63 168	9.00 229	6.38 162	9.00 229	2.25 57	4.8 2.2
DN125	5.500 139.7	365 2517	8672 38529	0.17 4.32	2	½ × 3 M12 x 76	6.88 175	9.25 235	6.75 171	9.13 232	2.25 57	4.9 2.2
6 DN150	6.625 168.3	365 2517	12582 44469	0.17 4.32	2	½ × 3¼ M12 x 83	8.38 213	10.38 264	7.88 200	10.13 257	2.25 57	6.0 2.7
	6.250 159.0	365 2517	11198 49753	0.17 4.32	2	½ × 3¼ M12 x 83	7.88 200	10.00 254	7.38 187	9.88 251	2.25 57	5.6 2.5
	6.500 165.1	365 2517	12112 53813	0.17 4.32	2	½ × 3¼ M12 x 83	8.00 203	10.25 260	7.75 197	10.13 257	2.25 57	6.0 2.7
8 DN200	8.625 219.1	365 2517	21326 94863	0.17 4.32	2	⅝ × 4 M16 x 101	10.88 276	13.38 340	10.25 260	13.13 333	2.50 64	11.4 5.2
	8.515 216.3	365 2517	20712 55968	0.17 4.32	2	⅝ × 4 M16 x 101	10.63 270	13.25 337	10.25 260	10.13 257	2.63 67	11.4 5.2
10 DN250	10.750 273.0	300 2068	27229 121121	0.25 6.4	2	⅞ × 6½ M22 x 165	13.75 349	17.00 432	13.25 337	17.13 435	2.75 70	22.6 10.3
12 DN300	12.750 323.9	300 2068	38303 170380	0.25 6.4	2	⅞ × 6½ M22 x 165	16.00 406	19.00 483	15.50 394	19.13 486	2.75 70	27.6 12.5

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

[3] The allowable pipe separation dimension shown is for system layout purposes only. Style 009N couplings are considered rigid connections and will not accommodate expansion or contraction of the piping system.

NOTES

- When assembling Style 009V, Style 009N or Style 109 couplings onto end caps, take additional care to make certain the end cap is fully seated against the gasket end stop. For Style 009V, Style 009N couplings, use FireLock No. 006 end caps containing the "EZ" marking on the inside face or No. 60 end caps containing the "QV EZ" marking on the inside face. Non-Victaulic end cap products shall not be used with Style 009V, Style 009N or Style 109 couplings. IMPORTANT: Gaskets intended for the Style 009 or Style 009V couplings cannot be used with the Style 009N or Style 109 coupling. There is no interchanging of gaskets or housings between coupling styles.
- **Use Of FlushSeal Gaskets For Dry Pipe Systems** Style 009V, Style 009N or Style 109 couplings are supplied with Grade "E" Type A gaskets. These gaskets include an integral pipe stop, that once installed provides the similar benefits as a FlushSeal gasket for dry pipe systems. It should be noted that standard Victaulic FlushSeal gaskets cannot be used with the Style 009V, Style 009N or Style 109 couplings.
- The Allowable Pipe End Separation dimension shown is for system layout purposes only. Style 009V, Style 009N or Style 109 Installation-Ready rigid couplings are considered rigid connections and will not accommodate expansion/contraction or angular movement of the piping system. Contact Victaulic for torsional resistance information.

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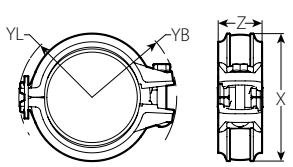
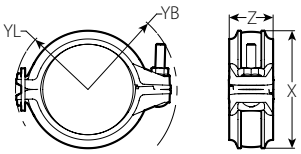
4.2 DIMENSIONS

Style 109 One-Bolt *Installation-Ready* Coupling



Style 109 Pre-Assembled



Style 109 Joint Assembled

Size		Max. Working Pressure	Max. End Load	Allow. Pipe End Sep. Maximum	Bolt/Nut		Dimensions								Weight
							Pre-Assembled				Assembled				
Nominal inches DN	Actual Outside Diameter inches mm	psi kPa	Lbs. N	inches mm	Qty.	Size inches mm	YL inches mm	YB inches mm	X inches mm	Z inches m m	YL inches mm	YB inches mm	X inches mm	Z inches mm	Approx. (Each) lb kg
1 ¼ DN32	1.660 42.4	365 2517	790 3514	0.10 2.54	1	⅜ x 2 ¼ M10 x 57	1.97 50	2.49 63	3.17 81	1.95 50	1.93 49	2.59 66	2.84 72	1.95 50	1.5 0.7
1 ½ DN40	1.900 48.3	365 2517	1035 4603	0.10 2.54	1	⅜ x 2 ¼ M10 x 57	2.13 54	2.60 66	3.41 87	1.95 50	2.1 53	2.68 68	3.07 78	1.95 50	1.6 0.7
2 DN50	2.375 60.3	365 2517	1617 7192	0.12 3.048	1	⅜ x 2 ¼ M10 x 57	2.32 59	2.85 72	3.76 96	1.98 50	2.29 58	2.95 75	3.45 88	1.98 50	1.9 0.9
2 ½	2.875 73.0	365 2517	2370 10540	0.12 3.048	1	⅜ x 2 ¼ M10 x 57	2.63 67	3.09 78	4.29 109	1.99 51	2.61 66	3.15 80	3.93 100	1.99 51	2.1 1.0
DN65	3.000 76.1	365 2517	2580 11476	0.12 3.048	1	7⁄16 x 2 ¾ M11 x 69	2.68 68	3.22 82	4.56 116	2.03 52	2.64 67	3.45 88	4.22 107	2.03 52	2.4 1.1
3 DN80	3.500 88.9	365 2517	3512 15620	0.12 3.048	1	7⁄16 x 2 ¾ M11 x 69	2.93 74	3.53 90	5.13 130	2.07 53	2.89 73	3.78 96	4.67 119	2.07 53	2.7 1.2
4 DN100	4.500 114.3	300 2068	4771 21223	0.17 4.318	1	7⁄16 x 2 ¾ M11 x 69	3.47 88	4.01 102	6.03 153	2.08 53	3.43 87	4.22 107	5.56 141	2.08 53	3.5 1.6

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

[5] The allowable pipe separation dimension shown is for system layout purposes only. Style 109 couplings are considered rigid connections and will not accommodate expansion or contraction of the piping system.

NOTES

- When assembling Style 009V, Style 009N or Style 109 couplings onto end caps, take additional care to make certain the end cap is fully seated against the gasket end stop. For Style 009V, Style 009N couplings, use FireLock No. 006 end caps containing the "EZ" marking on the inside face or No. 60 end caps containing the "QV EZ" marking on the inside face. Non-Victaulic end cap products shall not be used with Style 009V, Style 009N or Style 109 couplings. IMPORTANT: Gaskets intended for the Style 009 or Style 009V couplings cannot be used with the Style 009N or Style 109 coupling. There is no interchanging of gaskets or housings between coupling styles.
- **Use Of FlushSeal Gaskets For Dry Pipe Systems** Style 009V, Style 009N or Style 109 couplings are supplied with Grade "E" Type A gaskets. These gaskets include an integral pipe stop, that once installed provides the similar benefits as a FlushSeal gasket for dry pipe systems. It should be noted that standard Victaulic FlushSeal gaskets cannot be used with the Style 009V, Style 009N or Style 109 couplings.
- The Allowable Pipe End Separation dimension shown is for system layout purposes only. Style 009V, Style 009N or Style 109 Installation-Ready rigid couplings are considered rigid connections and will not accommodate expansion/contraction or angular movement of the piping system. Contact Victaulic for torsional resistance information.

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5.0 PERFORMANCE

Style 009V Two-Bolt Installation-Ready Coupling Listings/Approvals

Size		cULus		FM	
Nominal inches DN	Actual Outside Diameter inches mm	Sch. 10 psi kPa bar	Sch. 40 psi kPa bar	Sch. 10 psi kPa bar	Sch. 40 psi kPa bar
1 ¼ DN32	1.660 42.4	365 2516 25	365 2516 25	365 2515 25	365 2515 25
1 ½ DN40	1.900 48.3	365 2516 25	365 2516 25	365 2515 25	365 2515 25
2 DN50	2.375 60.3	365 2516 25	365 2516 25	365 2515 25	365 2515 25
2 ½	2.875 73.0	365 2516 25	365 2516 25	365 2515 25	365 2515 25
3 DN80	3.500 88.9	365 2516 25	365 2516 25	365 2515 25	365 2515 25
4 DN100	4.500 114.3	365 2516 25	365 2516 25	365 2515 25	365 2515 25
6 DN150	6.625 168.3	300 2068 20	365 2516 25	300 2065 20	365 2515 25
8 DN200	8.625 219.1	300[14] 2068[14] 20[14]	365 2516 25	300[13] 2065[13] 20[13]	365 2515 25
10 DN250	10.750 273.0	300[14] 2068[14] 20[14]	365 2516 25	300[13] 2065[13] 20[13]	365 2515 25
12 DN300	12.750 323.9	300[14] 2068[14] 20[14]	365 2516 25	300[13] 2065[13] 20[13]	365 2515 25

6 Listed/Approved for continuous use in wet and dry systems. Listed/Approved for dry systems -40° F/C and above. Please see the Victaulic InstallationManual I-009V for details concerning when supplemental lubrication is required.

8 FM approved for BS 1387 (EN 10255) Medium 3.6 mm pipe wall.

9 cULus listed for EN 10220 4.0 mm pipe wall.

10 cULus listed for EN 10255 4.5 mm pipe wall.

13 FM approved for 0.188" pipe wall.

14 cULus listed for 0.188" pipe wall.

15 cULus listed for JIS G3452 5.8mm pipe wall.

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5.1 PERFORMANCE

Specialty Pipe
Style 009V Two-Bolt Installation-Ready Coupling Listings/Approvals

Pipe Type	Size	Pressure Rating	Pressure Rating
	inches DN	UL psi kPa bar	FM psi kPa bar
EF	1 ¼ – 4 DN32 – DN100	300 2068 20	300 2065 20
EL	1 ¼ – 2 DN32 – DN50	–	300 2065 20
MF	1 ¼ – 6 DN32 – DN150	300 2068 20	300 2065 20
FF	1 ½ – 4 DN40 – DN100	300 2068 20	300 2065 20
HF	1 ¼ – 4 DN32 – DN100	–	300 2065 20
	2 – 4 DN50 – DN100	300 2068 20	– – –
ET40	1 ¼ – 2 DN32 – DN50	300 2068 20	300 2065 20
EZT	1 ¼ – 2 DN32 – DN50	300 2068 20	300 2065 20
MT	1 ¼ – 2 DN32 – DN50	300 2068 20	300 2065 20
MLT	1 ¼ – 2 DN32 – DN50	300 2068 20	300 2065 20
Easy-Flow	1 ¼ – 4 DN32 – DN100	175 1206 12	300 2065 20
WG5, WG5E, WF5, WL7	1 ¼ – 4 DN32 – DN100	175 1206 12	–
WG7, WG7E	1 ¼ – 4 DN32 – DN100	175 1206 12	300 2065 20
WLS	1 ¼ – 2 DN32 – DN50	–	300 2065 20
GL	1 ¼ – 2 DN32 – DN50	–	300 2065 20

NOTES

- Easy Flow = Steel pipe manufactured by Borusan Mannesmann Boru
- EF = EDDY FLOW steel pipe manufactured by Bull Moose Tube Co.
- EL = EDDYLITE steel pipe manufactured by Bull Moose Tube Co.
- ET40 = Eddythread 40 steel pipe manufactured by Bull Moose Tube Co.
- EZF = EZ-Flow steel pipe manufactured by Northwest Pipe Co.
- EZT = EZ-Thread steel pipe manufactured by Youngstown Tube Co.
- FF = Fire-Flo steel pipe manufactured by Youngstown Tube Co.
- GL = GL steel pipe manufactured by Wheatland Tube Co.
- HF = Hydroflow sch 7 steel pipe manufactured by Nucor Tubular Products Inc.
- MF = Mega-Flow steel pipe manufactured by Wheatland Tube Co.
- MT = Mega-Thread steel pipe manufactured by Wheatland Tube Co.
- MLT = MLT steel pipe manufactured by Wheatland Tube Co
- WG5, WG5E, WF5 = WGalweld 5, WGalweld 5E, WFlow 5 steel pipe manufactured by Wuppermann Stahl GmbH.
- WG7, WG7E, WL7 = WGalweld 7, Wgalweld 7E, WLight 7 steel pipe manufactured by Wuppermann Stahl GmbH
- WLS = WLS steel pipe manufactured by Wheatland Tube Co.

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5.2 PERFORMANCE

Style 009N Two-Bolt *Installation-Ready* Coupling Listings/Approvals[6]

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 approval agencies. Contact Victaulic for performance on other pipe and the latest listings and approvals.

Size		cULus		FM		VdS	LPCB
Nominal inches DN	Actual Outside Diameter inches mm	Sch. 10 psi kPa bar	Sch. 40 psi kPa bar	Sch. 10 psi kPa bar	Sch. 40 psi kPa bar	 psi kPa bar	 psi kPa bar
1 ¼ DN32	1.660 42.4	365 2516 25	365 2516 25	363 2503 25	363 2503 25	363 2503 25	363 2503 25
1 ½ DN40	1.900 48.3	365 2516 25	365 2516 25	363 2503 25	363 2503 25	363 2503 25	363 2503 25
2 DN50	2.375 60.3	365 2516 25	365 2516 25	363 2503 25	363 2503 25	363 2503 25	363 2503 25
2 ½	2.875 73.0	365 2516 25	365 2516 25	363 2503 25	363 2503 25	–	363 2503 25
DN65	3.000 76.1	365[7] 2516[7] 25[7]	–	363[8] 2503[8] 25[8]	–	363 2503 25	363 2503 25
3 DN80	3.500 88.9	365 2516 25	365 2516 25	363 2503 25	363 2503 25	363 2503 25	363 2503 25
4 DN100	4.500 114.3	365 2516 25	365 2516 25	363 2503 25	363 2503 25	363 2503 25	363 2503 25
	4.250 108.0	–	–	363 2503 25	363 2503 25	–	–
5	5.563 141.3	365 2516 25	365 2516 25	363 2503 25	363 2503 25	232 1600 16	363 2503 25
	5.250 133.0	–	–	363[8] 2503[8] 25[8]	–	–	–
DN125	5.500 139.7	290[9] 1999[9] 20[9]	–	363[8] 2503[8] 25[8]	–	232 1600 16	363 2503 25
6 DN150	6.625 168.3	300 2068 20	365 2516 25	300 2068 20	363 2503 25	232 1600 16	363 2503 25
	6.250 159	–	–	363[8] 2503[8] 25[8]	–	–	–

6 Listed/Approved for continuous use in wet and dry systems. Listed/Approved for dry systems -40° F/C and above. Please see the Victaulic InstallationManual I-109 for details concerning when supplemental lubrication is required.

7 cULus listed for DIN 2458 (EN 10220) 2.6 mm pipe wall.

8 FM approved for BS 1387 (EN 10255) Medium 3.6 mm pipe wall.

9 cULus listed for EN 10220 4.0 mm pipe wall.

10 cULus listed for EN 10255 4.5 mm pipe wall.

11 With optional stainless steel fasteners, cULus Listed to 175psi/1207 kPa/12 bar and FM Approved to the FM ratings shown in the above table. The stainless steel fasteners have a marking designation of "316" on the end face of the bolt.

12 cUL listed to 250 psi/1720 kPa /17 bar.

13 FM approved for 0.188" pipe wall.

14 cULus listed for 0.188" pipe wall.

15 cULus Listed for JIS G3452 pipe.

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5.2 PERFORMANCE (CONTINUED)

Style 009N Two-Bolt *Installation-Ready* Coupling Listings/Approvals[6]

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 approval agencies. Contact Victaulic for performance on other pipe and the latest listings and approvals.

Size		cULus		FM		VdS	LPCB
Nominal inches DN	Actual Outside Diameter inches mm	Sch. 10 psi kPa bar	Sch. 40 psi kPa bar	Sch. 10 psi kPa bar	Sch. 40 psi kPa bar	 psi kPa bar	 psi kPa bar
	6.500 165.1	290[10] 1999[10] 20[10]	–	363[8] 2503[8] 25[8]	–	–	363 2503 25
8 DN200	8.625 219.1	300[14] 2068[14] 20[14]	365 2516 25	300[13] 2068[13] 20[13]	363 2503 25	232 1600 16	363 2503 25
	8.515 216.3	290 1999 20	–	363[8] 2503[8] 25[8]	–	–	–
10 DN250	10.750 273.0	300[14] 2068[14] 20[14]	300 2068 20	300[13] 2068[13] 20[13]	300 2068 20	–	290 2000 20
12 DN300	12.750 323.9	300[12 14] 2068[12 14] 20[12 14]	300 2068 20	250[13] 1720[13] 17[13]	300 2068 20	–	290 2000 20

6 Listed/Approved for continuous use in wet and dry systems. Listed/Approved for dry systems -40° F/C and above. Please see the Victaulic InstallationManual I-109 for details concerning when supplemental lubrication is required.

7 cULus listed for DIN 2458 (EN 10220) 2.6 mm pipe wall.

8 FM approved for BS 1387 (EN 10255) Medium 3.6 mm pipe wall.

9 cULus listed for EN 10220 4.0 mm pipe wall.

10 cULus listed for EN 10255 4.5 mm pipe wall.

11 With optional stainless steel fasteners, cULus Listed to 175psi/1207 kPa/12 bar and FM Approved to the FM ratings shown in the above table. The stainless steel fasteners have a marking designation of "316" on the end face of the bolt.

12 cUL listed to 250 psi/1720 kPa /17 bar.

13 FM approved for 0.188" pipe wall.

14 cULus listed for 0.188" pipe wall.

15 cULus Listed for JIS G3452 pipe.

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5.3 PERFORMANCE

Specialty Pipe
Style 009N Two-Bolt *Installation-Ready* Coupling Listings/Approvals

Pipe Type	Size inches DN	Pressure Rating UL psi kPa bar	Pressure Rating FM psi kPa bar
EF	1 ¼ – 4 DN32 – DN100	300 2068 20	–
EL	1 ¼ – 2 DN32 – DN50	300 2068 20	300 2068 20
EZF	3-4 DN80 – DN100	300 2068 20	–
MF	1 ¼ – 4 DN32 – DN100	300 2068 20	300 2068 20
	6 DN150	175 1206 12	175 1207 12
FF	1 ½ – 4 DN40 – DN100	300 2068 20	–
ET40	1 ¼ – 2 DN32 – DN50	300 2068 20	–
EZT	1 ¼ – 2 DN32 – DN50	300 2068 20	300 2068 20
MT	1 ¼ – 2 DN32 – DN50	300 2068 20	300 2068 20
MLT	1 ¼ – 2 DN32 – DN50	–	300 2068 20
Easy Flow	1 ¼ – 4 DN32 – DN100	–	300 2068 20
WG5, WG5E, WF5, WG7, WG7E,WL7	1 ¼ – 4 DN32 – DN100	300 2068 24	300 2068 20
TF (Tex-Flow)	2 ½ – 4 DN65 - DN100	–	300 2068 20
WLS	1 ¼ – 2 DN32 – DN50	–	300 2068 20
GL	1 ¼ – 2 DN32 – DN50	–	300 2068 20

NOTES

- Easy Flow = Steel pipe manufactured by Borusan Mannesmann Boru
- EF = EDDY FLOW steel pipe manufactured by Bull Moose Tube Co.
- EL = EDDYLITE steel pipe manufactured by Bull Moose Tube Co.
- ET40 = Eddythread 40 steel pipe manufactured by Bull Moose Tube Co.
- EZF = EZ-Flow steel pipe manufactured by Northwest Pipe Co.
- EZT = EZ-Thread steel pipe manufactured by Youngstown Tube Co.
- FF = Fire-Flo steel pipe manufactured by Youngstown Tube Co.
- GL = GL steel pipe manufactured by Wheatland Tube Co.
- MF = Mega-Flow steel pipe manufactured by Wheatland Tube Co.
- MT = Mega-Thread steel pipe manufactured by Wheatland Tube Co.
- MLT = MLT steel pipe manufactured by Wheatland Tube Co
- TF = Tex-Flow steel pipe manufactured by Tex-Tube Co.
- WG5, WG5E, WF5 = WGalweld 5, WGalweld 5E, WFlow 5 steel pipe manufactured by Wuppermann Stahl GmbH.
- WG7, WG7E, WL7 = WGalweld 7, Wgalweld 7E, WLight 7 steel pipe manufactured by Wuppermann Stahl GmbH
- WLS = WLS steel pipe manufactured by Wheatland Tube Co.

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5.4 PERFORMANCE

Style 109 One-Bolt *Installation-Ready* Coupling Listings/Approvals[15]

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.

Size		cULus		FM		VdS	LPCB
Nominal inches DN	**Actual Outside Diameter** inches mm	**Sch. 10** psi kPa bar	**Sch. 40** psi kPa bar	**Sch. 10** psi kPa bar	**Sch. 40** psi kPa bar	 psi kPa bar	 psi kPa bar
1 ¼ DN32	1.660 42.4	365 2516 25	365 2516 25	365 2517 25	365 2517 25	232 1600 16	363 2503 25
1 ½ DN40	1.900 48.3	365 2516 25	365 2516 25	365 2517 25	365 2517 25	232 1600 16	363 2503 25
2 DN50	2.375 60.3	365 2516 25	365 2516 25	365 2517 25	365 2517 25	232 1600 16	363 2503 25
2 ½	2.875 73.0	365 2516 25	365 2516 25	365 2517 25	365 2517 25	–	–
DN65	3.000 76.1	–	–	365 2517 25	365 2517 25	232 1600 16	363 2503 25
3 DN80	3.500 88.9	365 2516 25	365 2516 25	365 2517 25	365 2517 25	232 1600 16	363 2503 25
4 DN100	4.500 114.3	300 2068 20	300 2068 20	300 2068 20	300 2068 20	–	290 2000 20

[15] Listed/Approved for continuous use in wet and dry systems. Listed/Approved for dry systems -40° F/C and above. Please see the Victaulic Installation Manual I-109 for details concerning when supplemental lubrication is required.

NOTE

- With optional stainless steel fasteners, cULus Listed to 300 psi/2068 kPa/20.6 bar and FM Approved to the FM ratings shown in the above table. The stainless steel fasteners have a marking designation of "316" on the head of the bolt.

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5.5 PERFORMANCE

Specialty Pipe
Style 109 One-Bolt *Installation-Ready* Coupling Listings/Approvals

Pipe Type	Size inches DN	Pressure Rating cULus psi kPa bar	 FM psi kPa bar
EF	1 ¼ – 2 ½ DN32 – 73.0 mm	–	300 2068 20
	1 ½ – 2 ½ DN40 – 73.0 mm	300 2068 20	–
	3 – 4 DN80 – DN100	300 2068 20	300 2068 20
Easy Flow	1 ¼ – 2 DN32 – DN50	–	300 2068 20
	3 – 4 DN80 – DN100	–	300 2068 20
EL	1 ¼ – 2 DN32 – DN50	–	300 2068 20
ET40	1 ¼ – 2 DN32 – DN50	300 2068 20	300 2068 20
EZT	1 ¼ – 2 DN32 – DN50	–	300 2068 20
	1 ½ – 2 DN40 – DN50	300 2068 20	–
FF	1 ½ – 4 DN40 – DN100	300 2068 20	300 2068 20
GL	1 ¼ – 2 DN32 – DN50	–	300 2068
MF	1 ¼ – 4 DN32 – DN100	300 2068 20	300 2068 20
MT	1 ¼ – 2 DN32 – DN50	300 2068 20	300 2068 20
MLT	1 ¼ – 2 DN32 – DN50	300 2068 20	300 2068 20

NOTES

- EF = EDDY FLOW steel pipe manufactured by Bull Moose Tube Co.
- Easy Flow = Easy Flow steel pipe manufactured by Borusan Mannesmann Boru.
- EL = EDDYLITE steel pipe manufactured by Bull Moose Tube Co.
- ET40 = Eddythread 40 steel pipe manufactured by Bull Moose Tube Co.
- EZT = EZ-Thread steel pipe manufactured by Youngstown Tube Co.
- FF = Fire-Flo steel pipe manufactured by Youngstown Tube Co.
- GL = GL steel pipe manufactured by Wheatland Tube Co.
- MF = Mega-Flow steel pipe manufactured by Wheatland Tube Co.
- MT = Mega-Thread steel pipe manufactured by Wheatland Tube Co.
- MLT = MLT steel pipe manufactured by Wheatland Tube Co.
- TF = Tex-Flow steel pipe manufactured by Tex-Tube Co.
- WG5, WG5E, WF5 = WGalweld 5, WGalweld 5E, and WFlow 5 steel pipe manufactured by Wuppermann Stahl GmbH
- WG7, WG7E, WL7 = WGalweld 7, WGalweld 7E, and WLight 7 steel pipe manufactured by Wuppermann Stahl GmbH.
- WLS = WLS steel pipe manufactured by Wheatland Tube Co.

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5.5 PERFORMANCE (CONTINUED)

Specialty Pipe
Style 109 One-Bolt *Installation-Ready* Coupling Listings/Approvals

Pipe Type	Size inches DN	Pressure Rating cULus psi kPa bar	Pressure Rating FM psi kPa bar
TF	2½ – 4 73.00 mm – DN100	–	300 2068 20
WG5, WG5E, WF5, WL7	1¼ – 4 DN32 – DN100	300 2068 20	–
WG7, WG7E	1¼ – 4 DN32 – DN100	300 2068 20	300 2068 20
WLS	1¼ – 2 DN32 – DN50	–	300 2068 20

NOTES

- EF = EDDY FLOW steel pipe manufactured by Bull Moose Tube Co.
- Easy Flow = Easy Flow steel pipe manufactured by Borusan Mannesmann Boru.
- EL = EDDYLITE steel pipe manufactured by Bull Moose Tube Co.
- ET40 = Eddythread 40 steel pipe manufactured by Bull Moose Tube Co.
- EZT = EZ-Thread steel pipe manufactured by Youngstown Tube Co.
- FF = Fire-Flo steel pipe manufactured by Youngstown Tube Co.
- GL = GL steel pipe manufactured by Wheatland Tube Co.
- MF = Mega-Flow steel pipe manufactured by Wheatland Tube Co.
- MT = Mega-Thread steel pipe manufactured by Wheatland Tube Co.
- MLT = MLT steel pipe manufactured by Wheatland Tube Co.
- TF = Tex-Flow steel pipe manufactured by Tex-Tube Co.
- WG5, WG5E, WF5 = WGalweld 5, WGalweld 5E, and WFlow 5 steel pipe manufactured by Wuppermann Stahl GmbH
- WG7, WG7E, WL7 = WGalweld 7, WGalweld 7E, and WLight 7 steel pipe manufactured by Wuppermann Stahl GmbH.
- WLS = WLS steel pipe manufactured by Wheatland Tube Co.

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6.0 NOTIFICATIONS

⚠ WARNING

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

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

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

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

NOTICE

- **Victaulic does not recommend the use of any furnace butt-welded pipe with sizes 2"/DN50 and smaller Victaulic gasketed joint products. This includes, but is not limited to, ASTM A53 Type F pipe.**

NOTE

- If using coated pipe, please refer to the installation instructions for pipe preparation details.

7.0 REFERENCE MATERIALS

05.01: Seal Selection Guide

25.01: Original Groove System (OGS) Groove Specifications

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

I-009V: Installation Instructions FireLock™ Installation-Ready™ Rigid Coupling Style 009V

I-100: Victaulic Field Installation Handbook

I-109: Installation Instructions FireLock™ One-Bolt Rigid Coupling Style 109

I-ENDCAP: Victaulic End Caps Installation Instructions

I-IMPACT: Impact Tool Usage Guidelines

User Responsibility for Product Selection and Suitability
Each user bears final responsibility for making a determination as to the suitability of Victaulic products for a particular end-use application, in accordance with industry standards and project specifications, and the applicable building codes and related regulations as well as Victaulic performance, maintenance, safety, and warning instructions. Nothing in this or any other document, nor any verbal recommendation, advice, or opinion from any Victaulic employee, shall be deemed to alter, vary, supersede, or waive any provision of Victaulic Company's standard conditions of sale, installation guide, or this disclaimer.

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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 Victaulic installation handbook or installation instructions of the product you are installing. Handbooks are included with each shipment of Victaulic products, providing 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.

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FireLock™ Installation-Ready™ Flexible Coupling Style 004N

10.63

2 – 8"/DN50 – DN200

1.0 PRODUCT DESCRIPTION

Available Sizes

- 2 – 8"/DN50 – DN200

Pipe Material

- Carbon steel
- For exceptions reference section 6.0 Notifications.

Maximum Working Pressure

- Accommodates pressures ranging from full vacuum (29.9 in Hg/760 mm Hg) up to 365 psi/2520 kPa.
- Working pressure dependent on material, wall thickness and size of pipe.

Function

- Joins roll or cut grooved pipe, grooved fittings, valves, and accessories.
- Provides a flexible pipe joint designed to accommodate a limited amount of linear and/or angular movement.

Pipe Preparation

- Cut or roll grooved in accordance with publication 25.01: Victaulic Standard Groove Specifications.

2.0 CERTIFICATION/LISTINGS

c UL us LISTED

FM APPROVED

NOTE

- See publication 10.01: Victaulic Products for Fire Protection Piping Systems - Regulatory Approval Reference Guide for details.

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

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3.0 SPECIFICATIONS – MATERIAL

Housing: Ductile iron conforming to ASTM A536, Grade 65-45-12. Ductile iron conforming to ASTM A395, Grade 65-45-15 available upon special request.

Housing Coating: (specify choice)

☐ Standard: Orange enamel.

☐ Optional: Contact Victaulic with your requirements for other coatings.

Gasket: Grade "E" EPDM (Type A) Vic-Plus™ Pre-lubricated Gasket

EPDM (Violet Color Code). Applicable for wet and dry (oil-free air) fire protection systems only. Listed/Approved for continuous use in wet and dry systems. Listed/Approved for dry systems at –40°F/–40°C and above. Not compatible for use with hot water services or steam services.

NOTES

- Victaulic reserves the right to substitute equivalent and/or higher grade elastomer products.
- Services listed are General Service Guidelines only. It should be noted that there are services for which these gaskets are not compatible. Reference should always be made to the latest Victaulic Gasket Selection Guide for specific gasket service guidelines and for a listing of services which are not compatible.
- Reference should always be made to publication I-100, Victaulic Field Installation Handbook for gasket lubrication instructions.

Bolts/Nuts: (specify choice)

☐ Standard: Carbon steel oval neck track bolts meeting the mechanical property requirements of ASTM A449 (imperial) and ISO 898-1 Class 9.8 (M10-M16) Class 8.8 (M20 and greater). Carbon steel hex nuts meeting the mechanical property requirements of ASTM A563 Grade B (imperial – heavy hex nuts) and ASTM A563M Class 9 (metric – hex nuts). Track bolts and hex nuts are zinc electroplated per ASTM B633 ZN/FE5, finish Type III (imperial) or Type II (metric).

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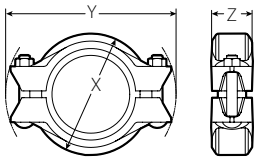
4.0 DIMENSIONS

Style 004N

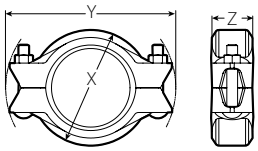
Dimensions for Determining Piping System Installation Clearances

Data in the below table is provided for system layout and installation purposes to ensure that adequate clearances are included in the piping system installation relative to other piping components or the building structure for both roll grooved and cut grooved pipe.

This is particularly important when the system is free floating, or contains no thrust anchors, and the coupling joints are installed with the pipe ends butted against the gasket[2]. If installed in this condition, when the piping is pressurized the joints will open to their full nominal pipe end separation[3]. This movement is cumulative and will be most significant in long runs of piping where multiple flexible couplings are installed in the butted condition.



Pre-Assembled
(Installation-Ready™ Condition)



Joint Assembled

Size		Nominal Range of Pipe End Separation[1]		Maximum Working Pressure[4]	Maximum End Load[4]	Bolt/Nut		Dimensions					Weight
								Pre-Assembled (Installation-Ready™ Condition)		Joint Assembled			
Nominal inches DN	Actual Outside Diameter inches mm	Pipe Ends Butted Against Gasket[2] inches mm	Full Nominal Separation[3] inches mm	psi kPa	lbs N	Qty.	Size inches mm	X inches mm	Y inches mm	X inches mm	Y inches mm	Z inches mm	Approximate (Each) lb kg
2 DN50	2.375 60.3	0.13 3.3	0.25 6.4	365 2520	1617 7190	2	½ x 3 M12 x 76	4.38 111	6.25 159	3.75 95	6.38 162	2.13 54	3.3 1.5
2½	2.875 73.0	0.13 3.3	0.25 6.4	365 2520	2370 10540	2	½ x 3 M12 x 76	4.88 124	6.88 175	4.38 111	6.88 175	2.13 54	3.8 1.7
3 DN80	3.500 88.9	0.13 3.3	0.25 6.4	365 2520	3512 15620	2	½ x 3 ¼ M12 x 83	5.63 143	7.38 187	5.00 127	7.50 191	2.13 54	4.3 2.0
4 DN100	4.500 114.3	0.18 4.6	0.38 9.5	365 2520	5805 25820	2	⅝ x 4 M16 x 101	7.13 181	9.38 238	6.38 162	9.50 241	2.38 60	7.4 3.4
5	5.5625 141.3	0.18 4.6	0.38 9.5	365 2520	8872 39460	2	¾ x 5 M20 x 127	8.03 204	11.03 280	7.31 186	11.32 288	2.25 57	10 4.5
6 DN150	6.625 168.3	0.18 4.6	0.38 9.5	365 2520	12582 55970	2	¾ x 5 M20 x 127	9.38 238	12.38 314	8.63 219	12.25 311	2.38 60	12.8 5.8
8 DN200	8.625 219.1	0.18 4.6	0.38 9.5	365 2520	21326 94860	2	⅞ x 5 ½ M22 x 139	11.00 279	15.13 384	10.00 254	15.13 384	2.63 67	20.7 9.4

1 These columns provide the nominal range of pipe end separation that may exist at the time of installation.

2 The nominal pipe end separation when the pipe ends are butted against the gasket as illustrated in Figure 1.

3 The full nominal pipe end separation when the pipe ends are separated fully as illustrated in Figure 2.

4 Working pressure and End Load are total, from all internal and external loads, based on (ANSI) steel pipe, grooved in accordance with Victaulic specifications. Contact Victaulic for performance on other pipe.

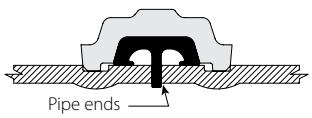


Figure 1

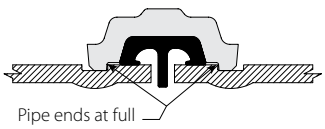


Figure 2

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4.1 DIMENSIONS

Style 004N

Design and Installation – Linear Movement and Angular Deflection

Data in the table below provides the linear movement and joint deflection capabilities of each coupling. These mechanical properties of the flexible coupling can be used in the design of the piping system to accommodate curves in the piping system, settlement of the building structure, seismic movement, or thermally induced expansion or contraction of the piping.

The linear movement[6] can be used to accommodate any axial movement of the piping caused by thermally induced expansion or contraction of the pipe. When used in this manner, thrust anchors must be installed at changes in direction, at the ends of straight runs, or to divide long runs of pipe into more manageable sections and reduce movement at branch connections. Reference should be made to Victaulic publication 26.02 for detailed instructions regarding determining thrust anchor or guide locations.

The joint deflection[7,8] can also be used to accommodate the axial change in length of the piping caused by thermally induced expansion or contraction of the piping through the controlled deflection of offsets at existing changes in direction of the piping. Again, refer to Victaulic publication 26.02 for detailed instructions.

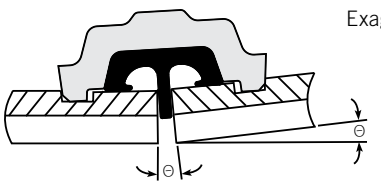
Size		Linear Movement per Coupling[5,8] inches mm	Joint Deflection[8]	
Range inches DN	**Actual Outside Diameter** inches mm		**Angle at Coupling[6]** Degrees per coupling	**Slope of Pipe[7]** in/ft mm/m
2 DN50	2.375 60.3	0.09 2.3	2.17	0.46 38.1
2½	2.875 73.0	0.09 2.3	1.79	0.38 31.5
3 DN80	3.500 88.9	0.09 2.3	1.47	0.31 25.9
4 DN100	4.500 114.3	0.18 4.6	2.29	0.48 40.3
5	5.5625 141.3	0.18 4.6	1.85	0.39 32.4
6 DN150	6.625 168.3	0.18 4.6	1.56	0.33 27.3
8 DN200	8.625 219.1	0.18 4.6	1.20	0.25 21.0

5 This is the actual net linear movement available at each coupling for design purposes as illustrated in Figures 1 and 2.

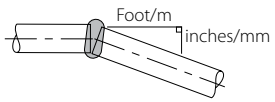
6 This is the actual net deflection angle available at each coupling listed in degrees as illustrated in Figure 3.

7 This is the actual net deflection angle available at each coupling listed as a slope of the pipe as illustrated in Figure 4.

8 These values are the net amount of linear movement or joint deflection available at the couplings. No further reduction, as detailed in Victaulic publication 26.02, is needed to allow for design and installation purposes.



Deflection Angle at Each Coupling Listed in Degrees
Figure 3



Deflection Angle at Each Coupling Listed as a Slope of the Pipe
Figure 4

NOTE

- A coupling joint cannot provide the full linear movement and full angular deflection at the same time. If both linear movement and angular deflection are needed, sufficient couplings must be installed for each purpose. Refer to Victaulic publication 26. 02 for complete details.

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5.0 PERFORMANCE

Style 004N

Size		cULus		FM	
Nominal inches DN	**Actual Outside Diameter** inches mm	**Schedule 10** psi kPa	**Schedule 40** psi kPa	**Schedule 10** psi kPa	**Schedule 40** psi kPa
2 DN50	2.375 60.3	365 2520	365 2520	365 2520	365 2520
2½	2.875 73.0	365 2520	365 2520	365 2520	365 2520
3 DN80	3.500 88.9	365 2520	365 2520	365 2520	365 2520
4 DN100	4.500 114.3	365 2520	365 2520	365 2520	365 2520
5	5.563 141.3	365 2520	365 2520	365 2520	365 2520
6 DN150	6.625 168.3	365 2520	365 2520	365 2520	365 2520
8 DN200	8.625 219.1	365[9] 2520	365 2520	365[9] 2520	365 2520

[9] UL listed and FM approved for .188" wall thickness.

NOTES

- WARNING: FOR ONE TIME FIELD TEST ONLY, the Maximum Joint Working Pressure may be increased to 1½ times the figures shown.
- Depressurize and drain the piping system before attempting to install, remove or adjust any Victaulic piping products.

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6.0 NOTIFICATIONS

⚠ WARNING

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

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

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

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

⚠ WARNING

- When assembling Style 004N Couplings onto end caps, take additional time to inspect and verify that the end cap is seated fully against the center leg of the gasket. Always read and follow the installation instructions provided with the product; these instructions can be downloaded at Victaulic.com.
- Use only Victaulic End Caps containing the “QV” or “EZ QV” marking on the inside face.
- Always read and follow the I-ENDCAP, Victaulic End Cap Installation Safety Instructions, which can be downloaded at Victaulic.com.
- Victaulic recommends the use of Victaulic fittings with Style 004N Couplings.

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

NOTICE

- Victaulic does not recommend the use of any furnace butt-welded pipe with sizes NPS 2”/DN50 and smaller Victaulic gasketed joint products. This includes, but is not limited to, ASTM A53 Type F pipe.

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7.0 REFERENCE MATERIALS

05.01: Victaulic Seal Selection Guide
10.01: Victaulic Fire Protection Certifications/Listings Reference Guide
26.01: Victaulic Design Data
29.01: Victaulic Terms and Conditions/Warranty
AN-001: Application Notification - Potential Incompatibility of Type F Pipe, Sizes NPS 2" | DN50 and Smaller
I-004N: Style 004N FireLock™ Installation-Ready™ Flexible Coupling Installation Instructions
I-100: Victaulic Field Installation Handbook
I-ENDCAP: Victaulic End Caps Installation Instructions
I-IMPACT: Victaulic Impact Tool Usage Guidelines

User Responsibility for Product Selection and Suitability
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Note
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Installation
Reference should always be made to the Victaulic installation handbook or installation instructions of the product you are installing. Handbooks are included with each shipment of Victaulic products, providing 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.

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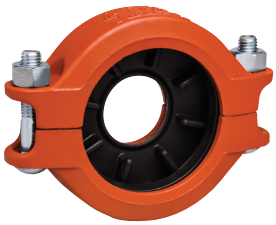
Victaulic® Reducing Coupling Style 750

06.08



1.0 PRODUCT DESCRIPTION

Available Sizes

- 2 x 1" through 10 x 8"/DN50 x DN25 through DN250 x DN200

Pipe Material

- Carbon steel
- For exceptions reference section 6.0 Notifications

NOTE

- For other pipe materials, contact Victaulic.

Maximum Working Pressure

- 500 psi/3447 kPa
- Working pressure dependent on material, wall thickness and size of pipe

Application

- Joins Original Groove System (OGS) roll grooved and cut grooved pipe, as well as OGS grooved fittings, valves and accessories
- Permits direct reduction on piping run
- Optional steel washer prevents telescoping of the smaller pipe inside the larger pipe during vertical system assembly

Pipe Preparation

- Cut or roll grooved in accordance with publication 25.01: Victaulic Standard Groove Specifications.

2.0 CERTIFICATION/LISTINGS

EN 10311
CPR (EU)
No. 305/2011

BS EN 10311
CPR (UK)
2019 No. 465

NOTE

- Download publication 10.01 for Fire Protection Certifications/Listings Reference Guide.

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

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3.0 SPECIFICATIONS – MATERIAL

Housing: Ductile iron conforming to ASTM A536, Grade 65-45-12. Ductile iron conforming to ASTM A395, Grade 65-45-15, is available upon special request.

Housing Coating: (specify choice)

☐ Standard: Orange enamel.

☐ Optional: Hot dipped galvanized conforming to ASTM A153.

☐ Optional: Contact Victaulic with your requirements.

Gasket: (specify choice[1])

☐ **Grade "E" EPDM**

EPDM (Green stripe color code). Temperature range –30°F to +230°F/–34°C to +110°C. May be specified for hot water service within the specified temperature range plus a variety of dilute acids, oil-free air and many chemical services. UL Classified in accordance with ANSI/NSF 61 for cold +73°F/+23°C and hot +180°F/+82°C potable water service and ANSI/NSF 372. **NOT COMPATIBLE FOR USE WITH PETROLEUM SERVICES OR STEAM SERVICES.**

☐ **Grade "T" Nitrile**

Nitrile (Orange stripe color code). Temperature range –20°F to +180°F/–29°C to +82°C. May be specified for oil related services, including air with oil vapor, this gasket may be specified for temperatures rated up to +180°F/+82°C. For water related services, this gasket may be specified for temperatures rated up to +150°F/+66°C. For oil free, dry air services, this gasket may be specified for temperatures rated up to +140°F/+60°C. **NOT COMPATIBLE FOR USE WITH HOT WATER SERVICES OR STEAM SERVICES.**

Others

☐ For alternate gasket selection, reference publication 05.01: Victaulic Seal Selection Guide.

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

Bolts/Nuts (specify choice[2]):

☐ Standard: Carbon steel oval neck track bolts meeting the mechanical property requirements of ASTM A449 (imperial) and ISO 898-1 Class 9.8 (M10-M16) Class 8.8 (M20 and greater). Carbon steel hex nuts meeting the mechanical property requirements of ASTM A563 Grade B (imperial – heavy hex nuts) and ASTM A563M Class 9 (metric – hex nuts). Track bolts and hex nuts are zinc electroplated per ASTM B633 ZN/FE5, finish Type III (imperial) or Type II (metric).

☐ Optional: Stainless steel oval neck track bolts meeting the mechanical property requirements of ASTM F593, Group 2 (316 stainless steel), condition CW. Stainless steel heavy nuts meeting the mechanical property requirements of ASTM F594, Group 2 (316 stainless steel), condition CW, with galling reducing coating.

Assembly Washer (optional): Galvanized carbon steel.

[2] Optional bolts/nuts are available in imperial size only

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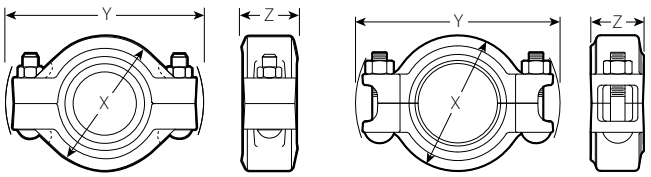
4.0 DIMENSIONS

Style 750 Reducing Coupling



Size						Pipe End Separation[3]	Deflect. From CL[3]		Bolt/Nut		Dimensions			Weight
Nominal inches DN			Actual Outside Diameter inches mm			Allowable inches mm	Per Cplg. Degrees	Pipe in/ft mm/m	Qty.	Size inches mm	X inches mm	Y inches mm	Z inches mm	Approximate (Each) lb kg
2 DN50	x	1 DN25	2.375 60.3	x	1.315 33.7	0 - 0.07 0 - 1.8	0° - 57'	0.20 17	2	⅜ x 2	3.38 85	5.28 134	1.88 48	2.7 1.2
		1 ½ DN40			1.900 48.3	0 - 0.07 0 - 1.8	0° - 57'	0.20 17	2	⅜ x 2	3.38 85	5.28 134	1.88 48	2.0 1.0
2 ½	x	2 DN50	2.875 73.0	x	2.375 60.3	0 - 0.07 0 - 1.8	0° - 47'	0.16 14	2	⅜ x 2	4.00 102	5.93 151	1.88 48	3.1 1.4
DN65	x	2 DN50	3.000 76.1	x	2.375 60.3	0 - 0.07 0 - 1.8	0° - 47'	0.16 14	2	½ x 2 ¾	4.38 111	6.63 168	1.88 48	4.6 2.1
3 DN80	x	2 DN50	3.500 88.9	x	2.375 60.3	0 - 0.07 0 - 1.8	0° - 39'	0.13 11	2	½ x 2 ¾	4.75 121	7.13 181	1.88 48	4.9 2.2
		2 ½			2.875 73.0	0 - 0.07 0 - 1.8	0° - 39'	0.13 11	2	½ x 2 ¾	4.75 121	7.13 181	1.88 48	4.3 2.0
		DN65			3.00 76.1	0 - 0.07 0 - 1.8	0° - 39'	0.13 11	2	½ x 2 ¾	4.75 121	7.13 181	1.88 48	4.2 1.9
4 DN100	x	2 DN50	4.500 114.3	x	2.375 60.3	0 - 0.13 0 - 3.2	1° - 19'	0.28 25	2	⅝ x 3 ¼	6.25 159	8.90 226	2.25 57	8.1 3.7
		2 ½			2.875 73.0	0 - 0.13 0 - 3.2	1° - 19'	0.28 25	2	⅝ x 3 ¼	6.25 159	8.90 226	2.25 57	8.6 3.9
		DN65			3.000 76.1	0 - 0.13 0 - 3.2	1° - 19'	0.28 25	2	⅝ x 3 ¼	6.25 159	8.90 226	2.25 57	6.9 3.1
		3 DN80			3.500 88.9	0 - 0.13 0 - 3.2	1° - 19'	0.28 25	2	⅝ x 3 ¼	6.00 152	8.90 226	2.25 57	6.7 3.0
5	x	4 DN100	5.563 141.3	x	4.500 114.3	0 - 0.13 0 - 3.2	1° - 3'	0.22 19	2	¾ x 4 ¼	7.18 182	10.70 272	2.13 54	11.2 5.1
165.1	x	4 DN100	6.500 165.1	x	4.500 114.3	0 - 0.13 0 - 3.2	0° - 55'	0.19 16	2	¾ x 4 ¼	8.63 219	11.90 302	2.25 57	15.2 6.9
6 DN150	x	4 DN100	6.625 168.3	x	4.500 114.3	0 - 0.13 0 - 3.2	0° - 52'	0.18 15	2	¾ x 4 ¼	8.63 219	11.90 302	2.25 57	16.7 7.6
		5			5.563 141.3	0 - 0.13 0 - 3.2	0° - 52'	0.18 15	2	¾ x 4 ¼	8.31 211	11.90 302	2.25 57	12.9 5.9
8 DN200	x	165.1	8.625 219.1	x	6.500 165.1	0 - 0.13 0 - 3.2	0° - 38'	0.13 11	2	⅞ x 5	10.75 273	14.88 378	2.50 64	23.2 10.5
		6 DN150			6.625 168.3	0 - 0.13 0 - 3.2	0° - 38'	0.13 11	2	⅞ x 5	10.81 275	14.88 378	2.50 64	22.4 10.2
10 DN250	x	8 DN200	10.750 273.0	x	8.625 219.1	0 - 0.13 0 - 3.2	0° - 25'	0.90 8	2	1 x 5 ½	13.12 333	17.26 438	2.62 67	31.4 14.2

[3] Allowable Pipe End Separation and Deflection figures show the maximum nominal range of movement available at each joint for standard roll grooved pipe. Figures for standard cut grooved pipe may be doubled. These figures are maximums; for design and installation purposes, these figures should be reduced by: 50% for ¾ – 3 ½"/DN20 – DN90; and 25% for 4"/DN100 and larger.

NOTE

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

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5.0 PERFORMANCE

Style 750 Reducing Coupling

Size						Maximum Working Pressure[4]	Maximum End Load[4]
Nominal inches DN			Actual Outside Diameter inches mm			psi kPa	lb N
2 DN50	x	1 DN25	2.375 60.3	x	1.315 33.7	350 2413	500 2225
		1 ½ DN40			1.900 48.3	350 2413	1000 4450
2 ½	x	2 DN50	2.875 73.0	x	2.375 60.3	500 3447	2215 9850
DN65	x	2 DN50	3.000 76.1	x	2.375 60.3	350 2413	1550 6900
3 DN80	x	2 DN50	3.500 88.9	x	2.375 60.3	350 2413	1550 6900
		2 ½			2.875 73.0	500 3447	3250 14460
		DN65			3.00 76.1	350 2413	2475 11010
4 DN100	x	2 DN50	4.500 114.3	x	2.375 60.3	350 2413	1550 6900
		2 ½			2.875 73.0	350 2413	2275 10125
		DN65			3.000 76.1	350 2413	2475 11014
		3 DN80			3.500 88.9	500 3447	4810 21400
5	x	4 DN100	5.563 141.3	x	4.500 114.3	350 2413	5565 24765
165.1	x	4 114.3	6.500 165.1	x	4.500 114.3	350 2413	5565 24765
6 DN150	x	4 DN100	6.625 168.3	x	4.500 114.3	350 2413	5565 24765
		5			5.563 141.3	350 2413	8500 37825
8 DN200	x	165.1	8.625 219.1	x	6.500 165.1	350 2413	11610 51645
		6 DN150			6.625 168.3	350 2413	12060 53645
10 DN250	x	8 DN200	10.750 273.0	x	8.625 219.1	350 2413	20450 90970

[4] Working Presssure 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 and material. Maximum working pressure rating based on larger pipe size. Maximum end load rating based on smaller pipe size.

NOTES

- WARNING: FOR ONE-TIME FIELD USE ONLY the Maximum Joint Working Pressure may be increased to 1 ½ times the figures shown.
- For joint pressure ratings on additional carbon steel wall thicknesses see publication 06.15.

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5.1 PERFORMANCE

Flow Data - Head Loss

Equivalent lengths of standard weight steel pipe are shown in the tables. All data is based on water flowing at +60°F/+16°C.

Flow Reducing

Size			Equivalent Pipe Length
Nominal inches DN			Small Diameter ft m
2 DN50	x	1 DN25	5.9 1.8
		1 ½ DN40	2.0 0.6
2 ½	x	2 DN50	1.9 0.6
DN65	x	2 DN50	1.9 0.6
3 DN80	x	2 DN50	5.5 1.7
		2 ½	3.8 1.2
		DN65	3.8 1.2
4 DN100	x	2 DN50	6.0 1.8
		2 ½	6.0 1.8
		DN65	6.0 1.8
		3 DN80	6.0 1.8
5	x	4 DN100	3.0 0.9
165.1	x	4 DN100	6.0 1.8
6 DN150	x	4 DN100	6.0 1.8
		5	4.5 1.4
8 DN200	x	165.1	7.3 2.2
		6 DN150	7.3 2.2
10 DN250	x	8 DN200	8.7 2.7

Flow Expanding

Size			Equivalent Pipe Length
Nominal inches DN			Small Diameter ft m
1 DN25	x	2 DN50	2.7 0.8
1 ½ DN40	x	2 DN50	1.9 0.6
2 DN50	x	2 ½	1.0 0.3
		DN65	1.0 0.3
		3 DN80	3.5 1.1
		4 DN100	3.0 0.9
2 ½	x	3 DN80	2.5 0.8
		4 DN100	3.0 0.9
DN65	x	3 DN80	2.5 0.8
		4 DN100	3.0 0.9
3 DN80	x	4 DN100	2.5 0.8
4 DN100	x	5	3.3 1.0
		165.1	4.6 1.4
		6 DN150	4.6 1.4
5	x	6 DN150	2.3 0.7
165.1	x	8 DN200	5.4 1.7
6 DN150	x	8 DN200	6.0 1.8
8 DN200	x	10 DN250	6.3 1.9

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6.0 NOTIFICATIONS

⚠ WARNING

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

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

⚠ WARNING

- **Read and understand all instructions before attempting to install, remove, adjust, or maintain any Victaulic piping products.**
- **Depressurize and drain the piping system before attempting to install, remove, adjust, or maintain any Victaulic piping products.**
- **Wear safety glasses, hardhat, and foot protection.**
- **Only No. 61 bull plugs shall be used with Style 750 reducing couplings in systems where a vacuum may develop.**

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

NOTICE

- **Victaulic does not recommend the use of any furnace butt-welded pipe with sizes NPS 2”/DN50 and smaller Victaulic gasketed joint products. This includes, but is not limited to, ASTM A53 Type F pipe.**

7.0 REFERENCE MATERIALS

05.01: Victaulic Seal Selection Guide

06.15: Victaulic Pressure Ratings and End Loads for Victaulic Couplings on Steel Pipe

10.01: Victaulic Products for Fire Protection Piping Systems - Regulatory Approval Reference Guide

25.01: Victaulic Original Groove System (OGS) Groove Specifications

26.01: Victaulic Design Data

29.01: Victaulic Terms and Conditions of Sale

I-100: Victaulic Field Installation Handbook

User Responsibility for Product Selection and Suitability
Each user bears final responsibility for making a determination as to the suitability of Victaulic products for a particular end-use application, in accordance with industry standards and project specifications, and the applicable building codes and related regulations as well as Victaulic performance, maintenance, safety, and warning instructions. Nothing in this or any other document, nor any verbal recommendation, advice, or opinion from any Victaulic employee, shall be deemed to alter, vary, supersede, or waive any provision of Victaulic Company's standard conditions of sale, installation guide, or this disclaimer.

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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 Victaulic installation handbook or installation instructions of the product you are installing. Handbooks are included with each shipment of Victaulic products, providing 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.

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FireLock™ Flange Adapter
Style 744

10.04

1.0 PRODUCT DESCRIPTION

Available Sizes

- 2 – 8" (50 – 200mm)

Maximum Working Pressure

- For maximum working pressure reference section 5.0 Perfomance

Application

- Designed for directly incorporating flanged components with ANSI CL. 125 or CL. 150 bolt hole patterns into a grooved pipe system
- Designed and recommended for use in fire protection systems only

Pipe Material

- Carbon Steel
- Stainless Steel
- For exceptions reference section 6.0 Notifications

2.0 CERTIFICATION/LISTINGS

See Victaulic publication 10.01 for details.

3.0 SPECIFICATIONS – MATERIAL

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[1]

(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.

[1] 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 rquired on pipe with raised or undercut weld seams or pipe that has voids and/or cracks at the weld seams.

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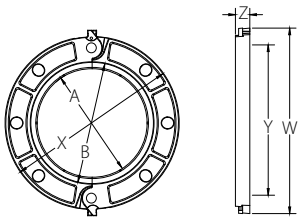
4.0 DIMENSIONS

Style 744

Sizes 2 – 8" (50 – 200 mm)

ANSI Class 125 and 150 Flange



Size		No. Bolts[2] Required	Bolt/Nut Size[2]	Dimensions						Approx. Weight (Each)
				Sealing Surface						
Nominal inches DN	Actual Outside Diameter inches mm			A Max. inches mm	B Min. inches mm	W inches mm	X inches mm	Y inches mm	Z inches mm	lb kg
2 DN50	2.375 60.3	4	⅝ x 2¾	2.38 60	3.41 87	6.75 172	6.00 153	4.75 121	0.88 20	3.5 1.6
2 ½	2.875 73.0	4	⅝ x 3	2.88 73	3.91 99	7.88 200	7.00 178	5.50 140	1.00 24	4.8 2.2
3 DN80	3.500 88.9	4	⅝ x 3	3.50 89	4.53 115	8.38 211	7.50 191	6.00 152	1.00 25	5.5 2.5
4 DN100	4.500 114.3	8	⅝ x 3	4.50 114	5.53 140	9.88 251	9.00 229	7.50 191	1.00 25	6.8 3.1
5	5.563 141.3	8	¾ x 3½	5.56 141	6.71 170	11.00 277	10.00 254	8.50 216	1.13 27	8.3 3.8
6[3] DN150	6.625 168.3	8	¾ x 3½	6.63 168	7.78 198	12.00 303	11.00 280	9.50 241	1.13 27	9.9 4.5
8[3] DN200	8.625 219.1	8	¾ x 3½	8.63 219	9.94 252	14.50 369	13.50 343	11.75 298	1.25 30	14.0 6.4

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

[3] 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 ½ 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.

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5.0 PERFORMANCE

Size		Maximum Working Pressure	Maximum End Load
Nominal inches DN	**Actual Outside Diameter** inches mm	psi kPa	lbf N
2 DN50	2.375 60.3	175 1207	775 3,448
2 ½	2.875 73.0	175 1207	1,100 4,894
3 DN80	3.500 88.9	175 1207	1,600 7,118
4 DN100	4.500 114.3	175 1207	2,700 12,010
5	5.563 141.3	175 1207	4,200 18,682
6 DN150	6.625 168.3	175 1207	6,000 26,690
8 DN200	8.625 219.1	175 1207	10,000 44,482

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6.0 NOTIFICATIONS

Important Installation Considerations

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 shall not be used on FireLock or "V" Style fittings. Prior to installation, verify that there will not be interference between the flanges and other components in the system. When wafer or lug-type valves are used adjoining a Victaulic fitting, check disc dimensions to assure proper clearance.
3. FireLock Flange adapters shall 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. The sealing surface of the mating flange face, area A-B noted in the above drawing, shall be free from gouges, undulations or deformities of any type for effective sealing.
5. FireLock Flange adapter gaskets shall 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 shall 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 A.

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.

NOTICE

- **Victaulic does not recommend the use of any furnace butt-welded pipe with sizes 2"/DN50 and smaller Victaulic gasketed joint products. This includes, but is not limited to, ASTM A53 Type F pipe.**

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7.0 REFERENCE MATERIALS

10.01: Regulatory Approval Reference Guide

I-100: Field Installation Handbook

User Responsibility for Product Selection and Suitability
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Installation
Reference should always be made to the Victaulic installation handbook or installation instructions of the product you are installing. Handbooks are included with each shipment of Victaulic products, providing complete installation and assembly data, and are available in PDF format on our website at www.victaulic.com.

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Victaulic® Grooved End Fittings

No. 20 Tee

No. 10 Elbow

1.0 PRODUCT DESCRIPTION

Available Sizes

- ¾ – 24"/DN20 – DN600

Pipe Material

- Carbon steel

Maximum Working Pressure

- Pressure ratings for Victaulic standard fittings conform to the ratings of Victaulic Style 77 couplings (refer to publication 06.04 for more information).

Application

- Connects pipe, provides change in direction and adapts sizes or components
- Supplied with Victaulic Original Groove System (OGS) grooves
- Exclusively for use with Victaulic couplings, valves, accessories and pipe which feature ends formed with the Victaulic OGS groove profile

NOTES

- For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information.
- These fittings are not intended for use with Victaulic plain end couplings. Intended for use only in grooved piping systems. When connecting wafer or lug type butterfly valves directly to Victaulic fittings using Style 741 or Style 743 flange adapters, be sure to check disc clearance dimensions with I.D. dimension of fitting.

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2.0 CERTIFICATION/LISTINGS

EN 10311
CPR (EU)
No. 305/2011

BS EN 10311
CPR (UK)
2019 No. 465

NOTES

- When supplied as “hot dip galvanized” the following fittings are UL Classified in accordance with ANSI/NSF 61 and for use on cold +86°F/+30°C potable water service and ANSI/NSF 372: No. 10 90° Elbow, No. 11 45° Elbow, No. 12 22½° Elbow, No. 13 11¼° Elbow, No. 100 90° Long Radius Elbow, No. 110 45° Long Radius Elbow, No. 20 Tee, No. 25 Tee with Grooved Branch, No. 30 45° Lateral, No. 60 Cap, No. 50 Concentric Reducers, No. 51 Eccentric Reducers.
- The following Victaulic fittings are VdS approved: No.10 90° Elbow, No.11 45° Elbow, No.20 Tee and No.60 Cap.
- The following Victaulic fittings are LPCB approved: No.10 90° Elbow, No.11 45° Elbow, No.12 22 ½ Elbow, No.13 11 ¼° Elbow, No.30 45° Lateral, No.30-R Reducing Lateral, No.100 Long Radius Elbow, No.110 Long Radius Elbow, No.20 Tee, No.35 Cross, No.60 Cap, No.25 Reducing Tee, No.33 True Wye, No.50 Concentric Reducer, No.51 Eccentric Reducer and No.29M Tee with Threaded Branch.
- The following Victaulic fittings are FM approved: No.10 90° Elbow, No.11 45° Elbow, No.12 22½ Elbow, No.13 11¼° Elbow, No.30 45° Lateral, No.100 Long Radius Elbow, No.20 Tee, No.35 Cross, No.60 Cap, No.25 Reducing Tee and No.50 Concentric Reducer.
- Download publication 10.01 for Fire Protection Certifications/Listings Reference Guide to view which sizes of the fittings listed above have active fire protection approvals.

3.0 SPECIFICATIONS – MATERIAL

Fitting: (specify choice)

- ☐ Standard: Ductile iron conforming to ASTM A536, Grade 65-45-12.
- ☐ Optional: Segmentally welded carbon steel, standard wall, conforming to ASTM A53, Type E or S, Gr. B

Nipples: (specify choice)

- ☐ ¾ – 6"/DN20 – DN150: Carbon steel, Schedule 40, conforming to ASTM A53, Type E or S, Gr. B
- ☐ 8 – 12"/DN200 – DN300: Carbon steel, standard wall, conforming to ASTM A53, Type E or S, Gr. B

Flanged Adapter Nipples: (specify choice)

- ☐ Class 125 Flange: Cast iron conforming to ANSI B16.1
- ☐ Class 150 Flange: Carbon steel conforming to ANSI B16.5, raised or flat face
- ☐ Class 300 Flange: Carbon steel conforming to ANSI B16.5, raised or flat face

Fitting Coating: (specify choice)

- ☐ Standard: Orange enamel
- ☐ Optional: Hot dip galvanized and others. Some fittings supplied electroplated as standard – see product specifications

Flanged Adapter Nipple Coating: (specify choice)

- ☐ Standard: None (Unfinished)
- ☐ Optional: Orange enamel, hot dip galvanized and others

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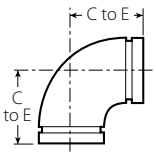
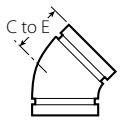
4.0 DIMENSIONS

Elbows
No. 10 90° Elbow
No. 11 45° Elbow





Size		No. 10 90° Elbow		No. 11 45° Elbow	
Nominal inches DN	Actual Outside Diameter inches mm	C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
¾ DN20	1.050 26.9	2.25 57	0.5 0.2	1.50 38	0.5 0.2
1 DN25	1.315 33.7	2.25 57	0.6 0.2	1.75 44	0.5 0.2
1 ¼ DN32	1.660 42.4	2.75 70	0.8 0.4	1.75 44	0.6 0.3
1 ½ DN40	1.900 48.3	2.75 70	1.0 0.5	1.75 44	0.8 0.4
2 DN50	2.375 60.3	3.25 83	1.8 0.8	2.00 51	1.3 0.6
2 ½	2.875 73.0	3.75 95	3.0 1.3	2.25 57	2.1 1.0
DN65	3.000 76.1	3.75 95	3.1 1.4	2.25 57	2.3 1.0
3 DN80	3.500 88.9	4.25 108	4.5 2.0	2.50 64	3.0 1.3
3 ½ DN90	4.000 101.6	4.50 114	5.6 2.5	2.75 70	4.0 1.8
	4.250 108.0	5.00 127	6.2 2.8	3.00 76	4.6 2.1
4 DN100	4.500 114.3	5.00 127	6.8 3.1	3.00 76	5.2 2.4
4 ½	5.000 127.0	5.00 127	8.6 3.9	3.13 79	5.9 2.7
	5.250 133.0	5.50 140	10.3 4.7	3.25 83	6.6 3.0
DN125	5.500 139.7	5.50 140	9.9 4.5	3.25 83	7.2 3.2
5	5.563 141.3	5.50 140	10.1 4.6	3.25 83	7.4 3.4
	6.000 152.4	6.50 (sw) 165	13.3 6.0	3.50 (sw) 89	9.5 4.3
	6.250 159.0	6.50 165	13.0 5.9	3.25 83	9.5 4.3
	6.500 165.1	6.50 165	15.5 7.0	3.50 89	9.7 4.4
6 DN150	6.625 168.3	6.50 165	15.3 6.9	3.50 89	10.2 4.6
200A	216.3	7.75 197	34.7 15.7	4.25 108	14.4 6.5

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(sw) = Carbon Steel Segmentally Welded

NOTE
- All fittings are ductile iron unless otherwise noted with an (sw).

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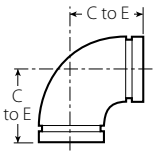
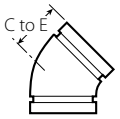
4.0 DIMENSIONS (CONTINUED)

Elbows

No. 10 90° Elbow
No. 11 45° Elbow





Size		No. 10 90° Elbow		No. 11 45° Elbow	
Nominal inches DN	Actual Outside Diameter inches mm	C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
8 DN200	8.625 219.1	7.75 197	27.5 12.5	4.25 108	18.6 8.4
250A	267.4	9.00 229	67.8 30.7	4.75 121	28.1 12.7
10 DN250	10.750 273.0	9.00 229	50.0 22.7	4.75 121	37.5 17.0
300A	318.5	10.00 254	73.5 33.3	5.25 133	41.3 18.7
12 DN300	12.750 323.9	10.00 254	79.3 36.0	5.25 133	45.0 20.4
14[1] DN350	14.000 355.6	14.00 356	146.0 66.2	5.80 147	78.0 35.4
	14.843 377.0	14.88 378	168.0 76.2	6.15 156	82.0 37.2
16[1] DN400	16.000 406.4	16.00 406	190.0 86.2	6.63 168	88.2 40.0
	16.772 426.0	16.75 425	216.0 98.0	6.95 177	98.1 44.5
18[1] DN450	18.000 457.2	18.00 457	241.0 109.3	7.46 189	123.0 55.8
	18.898 480.0	18.90 480	291.0 132.0	7.83 199	123.2 55.9
20[1] DN500	20.000 508.0	20.00 508	296.0 134.3	8.28 210	151.0 68.5
	20.866 530.0	20.88 530	355.0 161.0	8.64 219	179.0 81.2
22 DN550	22.000 558.8	25.00 635	386.0 175.1	12.11 308	210.0 95.3
24[1] DN600	24.000 609.6	24.00 610	475.0 215.5	9.94 252	240.0 108.9
	24.803 630.0	24.75 629	545.0 247.2	10.27 261	275.4 124.9
14 – 60 DN350 – DN1500	For AGS fitting information, see publication 20.05 AGS™				

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(sw) = Carbon Steel Segmentally Welded

NOTE

- All fittings are ductile iron unless otherwise noted with an (sw).

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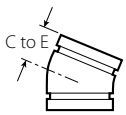
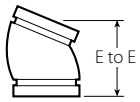
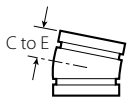
4.0 DIMENSIONS (CONTINUED)

Elbows

No. 12 22 ½° Elbow
No. 13 11 ¼° Elbow







Size		No. 12 22 ½° Elbow		No. 12G (GSNK) 22 ½° Elbow		No. 13 11 ¼° Elbow	
Nominal inches DN	Actual Outside Diameter inches mm	C to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
¾ DN20	1.050 26.9	1.63 (sw) 41	0.4 0.2	NA	NA	1.38 (sw) 35	0.4 0.2
1 DN25	1.315 33.7	1.63 (sw) 41	0.5 0.2	3.25 83	0.6 0.3	1.38 (sw) 35	0.4 0.2
1 ¼ DN32	1.660 42.4	1.75 44	0.8 0.4	NA	NA	1.38 35	0.6 0.3
1 ½ DN40	1.900 48.3	1.75 44	1.0 0.4	NA	NA	1.38 35	0.6 0.3
2 DN50	2.375 60.3	1.88 48	1.2 0.5	3.75 95	1.4 0.6	1.38 35	1.0 0.4
2 ½	2.875 73.0	2.00 (sw) 51	2.4 1.1	4.00 102	2.0 0.9	1.50 38	1.6 0.7
DN65	3.000 76.1	2.25 57	2.5 1.1	NA	NA	1.50 38	1.7 0.8
3 DN80	3.500 88.9	2.25 (sw) 57	3.1 1.4	4.50 114	3.1 1.4	1.50 38	2.0 0.9
3 ½ DN90	4.000 101.6	2.50 (sw) 64	4.0 1.8	NA	NA	1.75 (sw) 44	2.8 1.3
	4.250 108.0	2.88 (sw) 73	+	NA	NA	1.75 (sw) 44	+
4 DN100	4.500 114.3	2.88 73	4.8 2.2	5.25 133	4.8 2.2	1.75 44	3.3 1.5
4 ½	5.000 127.0	2.88 (sw) 73	+	NA	NA	1.88 (sw) 48	+
	5.250 133.0	2.88 (sw) 73	+	NA	NA	2.00 (sw) 51	+
DN125	5.500 139.7	2.88 73	6.3 2.9	NA	NA	2.00 51	4.6 2.1
5	5.563 141.3	2.88 (sw) 73	7.8 3.5	NA	NA	2.00 (sw) 51	5.0 2.3
	6.000 152.4	3.13 (sw) 79	+	NA	NA	2.00 (sw) 51	+
	6.250 159.0	3.13 (sw) 79	+	NA	NA	2.00 (sw) 51	+
	6.500 165.1	3.13 79	10.4 4.7	NA	NA	2.00 51	7.1 3.2
6 DN150	6.625 168.3	3.13 (sw) 79	12.2 5.5	6.25 159	12.2 5.5	2.00 51	6.4 2.9

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(sw) = Carbon Steel Segmentally Welded

NA = Not Available

"+" = Contact Victaulic for details

NOTE

- All fittings are ductile iron unless otherwise noted with an (sw).

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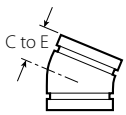
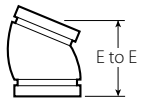
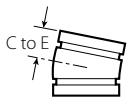
4.0 DIMENSIONS (CONTINUED)

Elbows

No. 12 22½° Elbow
No. 13 11¼° Elbow







Size		No. 12 22½° Elbow		No. 12G (GSNK) 22½° Elbow		No. 13 11¼° Elbow	
Nominal inches DN	Actual Outside Diameter inches mm	C to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
8 DN200	8.625 219.1	3.88 (sw) 98	20.0 9.1	7.75 197	18.1 8.2	2.00 51	8.2 3.7
10 DN250	10.750 273.0	4.38 111	30.0 13.6	NA	NA	2.13 54	11.8 5.3
12 DN300	12.750 323.9	4.88 124	40.0 18.1	NA	NA	2.25 57	29.3 13.3
14[1] DN350	14.000 355.6	5.00 (sw) 127	46.0 20.9	NA	NA	3.50 (sw) 89	32.0 14.5
16[1] DN400	16.000 406.4	5.00 (sw) 127	58.0 26.3	NA	NA	4.00 (sw) 102	42.0 19.1
18[1] DN450	18.000 457.2	5.50 (sw) 140	65.0 29.5	NA	NA	4.50 (sw) 114	53.0 24.0
20[1] DN500	20.000 508.0	6.00 (sw) 152	78.6 35.7	NA	NA	5.00 (sw) 127	65.0 29.5
22[1] DN550	22.000 558.8	6.50 (sw) 165	125.0 56.7	NA	NA	5.50 (sw) 140	80.0 36.3
24[1] DN600	24.000 609.6	7.00 (sw) 178	140.0 63.5	NA	NA	6.00 (sw) 152	94.5 42.9
14 – 60 DN350 – DN1500	For AGS fitting information, see publication 20.05 AGS™						

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(sw) = Carbon Steel Segmentally Welded

NA = Not Available

"+" = Contact Victaulic for details

NOTE

- All fittings are ductile iron unless otherwise noted with an (sw).

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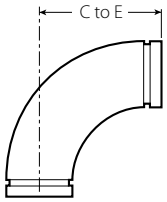
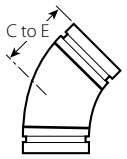
4.0 DIMENSIONS (CONTINUED)

Elbows

No. 100 90° Long Radius Elbow
No. 110 45° Long Radius Elbow





Size		No. 100 90° 1½D Long Radius Elbow		No. 110 45° 1½D Long Radius Elbow	
Nominal inches DN	Actual Outside Diameter inches mm	C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
¾ DN20	1.050 26.9	2.50 (s) 64	0.4 0.2	1.75 (s) 44	0.4 0.2
1 DN25	1.315 33.7	2.88 (s) 73	0.8 0.4	2.25 (s) 57	0.6 0.3
1¼ DN32	1.660 42.4	3.25 (s) 83	1.1 0.5	2.38 (s) 60	0.9 0.4
1½ DN40	1.900 48.3	3.63 (s) 92	2.2 1.0	2.50 (s) 64	1.1 0.5
2 DN50	2.375 60.3	4.38 111	2.6 1.2	2.75 70	1.9 0.9
2½	2.875 73.0	5.13 130	3.4 1.5	3.13 (s) 79	3.0 1.4
3 DN80	3.500 88.9	5.88 149	6.0 2.7	3.38 86	3.8 1.7
3½ DN90	4.000 101.6	6.63 (s) 168	8.7 3.9	3.63 (s) 92	5.6 2.5
4 DN100	4.500 114.3	7.50 191	10.8 4.9	4.00 102	7.4 3.4
5	5.563 141.3	9.25 235	18.0 8.2	4.25 108	14.8 6.7
	6.500 165.1	10.75 273	25.8 11.7	5.50 140	15.8 7.2
6 DN150	6.625 168.3	10.75 273	30.4 13.8	5.38 137	16.7 7.6
8 DN200	8.625 219.1	14.25 362	68.5 31.1	7.25 184	36.0 16.3
10 DN250	10.750 273.0	15.00 381	81.6 37.0	6.25 159	40.1 18.2
12 DN300	12.750 323.9	18.00 457	138.0 62.6	7.50 191	69.6 31.6
14[1] DN350	14.000 355.6	21.00 533	222.7 101.0	8.75 222	112.4 51.0
16[1] DN400	16.000 406.4	24.00 610	302.0 137.0	10.00 254	158.7 72.0
18[1] DN450	18.000 457.2	27.00 686	421.8 191.3	11.25 286	224.9 102.0
20[1] DN500	20.000 508.0	30.00 762	498.2 226.0	12.50 318	246.9 112.0
22[1] DN550	22.000 558.8	36.00 (s) 914	400.0 181.4	16.50 (s) 419	205.0 93.0
24[1] DN600	24.000 609.6	36.00 914	765.0 347.0	15.00 381	370.4 168.0
14 – 60 DN350 – DN1500	For AGS fitting information, see publication 20.05 AGS™				

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(s) = Carbon Steel

NOTE

- All fittings are ductile iron unless otherwise noted with an (s).

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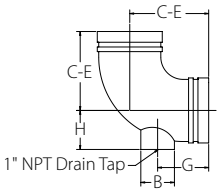
4.1 DIMENSIONS

No. 10-DR
90° Drain Elbow



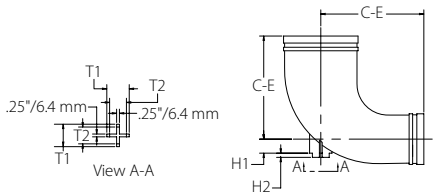
Size		No. 10-DR 90° Drain Elbow					Weight
Nominal inches DN	Actual Outside Diameter inches mm	C to E inches mm	ØB inches mm	G inches mm	H inches mm	Drain Tap NPT inches mm	Approx. (Each) lb kg
2½	2.875 73.0	3.75 95	1.81 46	2.75 70	1.68 43	1 25	3.5 1.6
3 DN80	3.500 88.9	4.25 108	1.81 46	2.75 70	2.13 54	1 25	4.8 2.2
4 DN100	4.500 114.3	5.00 127	1.81 46	2.75 70	2.63 67	1 25	7.8 3.5
6 DN150	6.625 168.3	6.50 165	1.81 46	2.75 70	3.65 93	1 25	18.1 8.2
8 DN200	8.625 219.1	7.75 197	1.81 46	2.75 70	4.50 114	1 25	29.6 13.4

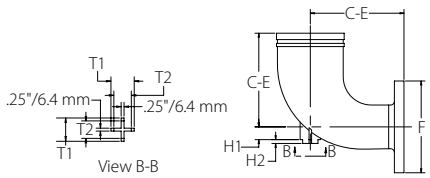
NOTE
- ISO 7-R thread options are available; contact Victaulic.

4.2 DIMENSIONS

Reducing Base Support Elbow

No. R-10G
No. R-10F





Size						No. R-10G 90° Reducing Base Support Elbow Groove x Groove						No. R-10F 90° Reducing Base Support Elbow Groove x Class 150 Flange*						
Nominal inches DN			Actual Outside Diameter inches mm			C to E inches mm	H1 inches mm	H2 inches mm	T1 inches mm	T2 inches mm	Approx. Weight (Each) lb kg	C to E inches mm	ØF inches mm	H1 inches mm	H2 inches mm	T1 inches mm	T2 inches mm	Approx. Weight (Each) lb kg
6 DN150	x	4 DN100	6.625 168.3	x	4.500 114.3	9.19 233	1.25 32	0.38 10	2.00 51	1.50 38	33.0 15.0	9.19 233	9.00 229	1.25 32	0.38 10	2.00 51	1.50 38	46.0 20.9
		5			5.563 141.3	9.00 229	1.50 38	0.38 10	2.00 51	1.50 38	37.0 16.8	9.00 229	10.00 254	1.50 38	0.38 10	2.00 51	1.50 38	52.0 23.6
8 DN200	x	6 DN150	8.625 219.1	x	6.625 168.3	10.50 267	2.13 54	0.38 10	2.00 51	1.50 38	51.0 23.1	10.50 267	11.00 279	2.13 54	0.38 10	2.00 51	1.50 38	70.0 31.8
10 DN250	x	8 DN200	10.750 273.0	x	8.625 219.1	12.00 305	2.38 60	0.38 10	2.00 51	1.50 38	88.0 39.9	12.00 305	13.50 343	2.38 60	0.38 10	2.00 51	1.50 38	118.0 53.5

* Contact Victaulic for additional flange end options.

For long radius base support elbow options, please refer to publication 07.13.

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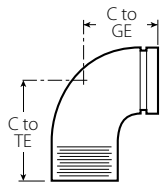
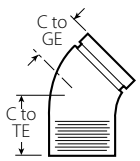
4.3 DIMENSIONS

Adapter Elbow

No. 18 90° Adapter Elbow
No. 19 45° Adapter Elbow





Size		No. 18 90° Adapter Elbow Groove x Male Thread[1]			No. 19 45° Adapter Elbow Groove x Male Thread[1]		
Nominal inches DN	Actual Outside Diameter inches mm	C to GE inches mm	C to TE inches mm	Approx. Weight (Each) inches mm	C to GE inches mm	C to TE inches mm	Approx. Weight (Each) lb kg
3/4 DN20	1.050 26.9	2.25 57	2.25 57	0.5 0.2	1.50 38	1.50 38	0.5 0.2
1 DN25	1.315 33.7	2.25 57	2.25 57	0.6 0.3	NA	NA	NA
1 ¼ DN32	1.660 42.4	2.75 70	2.75 70	1.2 0.5	NA	NA	NA
1 ½ DN40	1.900 48.3	2.75 70	2.75 70	1.4 0.7	1.75 44	1.75 44	0.9 0.4
2 DN50	2.375 60.3	3.25 83	4.25 108	2.5 1.1	2.00 51	2.00 51	1.6 0.7
2 ½	2.875 73.0	3.75 95	3.75 95	3.7 1.7	2.25 57	2.25 57	2.3 1.0
3 DN80	3.500 88.9	4.25 108	6.00 152	6.6 3.0	2.50 64	4.25 108	5.0 2.3
4 DN100	4.500 114.3	5.00 127	7.25 184	10.0 4.5	NA	NA	NA
6 DN150	6.625 168.3	6.50 165	6.50 165	19.0 8.6	3.50 89	3.50 89	10.8 4.9

[1] Available with British Standard Pipe Threads, specify "BSP" clearly on order.

NA = Not Available

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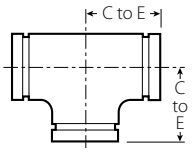
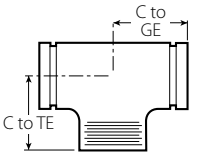
4.4 DIMENSIONS

Tees, Crosses and True Wyes
No. 20
No. 29M





Size		No. 20 Tee		No. 29M Tee Groove x Male Thread[2] Branch		
Nominal inches DN	Actual Outside Diameter inches mm	C to E inches mm	Approx. Weight (Each) lb kg	C to GE inches mm	C to TE lb kg	Approx. Weight (Each) inches mm
¾ DN20	1.050 26.9	2.25 57	0.8 0.4	2.25 (sw) 57	2.25 (sw) 57	0.6 0.3
1 DN25	1.315 33.7	2.25 57	0.9 0.4	2.25 (sw) 57	2.25 (sw) 57	0.9 0.4
1 ¼ DN32	1.660 42.4	2.75 70	1.5 0.7	2.75 70	2.75 70	1.6 0.7
1 ½ DN40	1.900 48.3	2.75 70	1.7 0.8	2.75 70	2.75 70	1.8 0.8
2 DN50	2.375 60.3	3.25 83	2.8 1.3	3.25 83	4.25 108	3.5 1.6
2 ½	2.875 73.0	3.75 95	4.8 2.2	3.75 (sw) 95	3.75 (sw) 95	4.3 2.0
DN65	3.000 76.1	3.75 95	5.3 2.4	3.75 (sw) 95	3.75 (sw) 95	5.2 2.4
3 DN80	3.500 88.9	4.25 108	6.4 2.9	4.25 (sw) 108	4.25 (sw) 108	7.2 3.3
3 ½ DN90	4.000 101.6	4.50 (sw) 114	7.9 3.6	4.50 (sw) 114	4.50 (sw) 114	7.9 3.6
	4.250 108.0	5.00 127	12.0 5.4	5.00 (sw) 127	5.00 (sw) 127	15.5 7.0
4 DN100	4.500 114.3	5.00 127	11.3 5.1	5.00 127	7.25 184	16.3 7.4
4 ½	5.000 127.0	5.25 (sw) 133	15.0 6.8	5.25 (sw) 133	5.25 (sw) 133	15.0 6.8
	5.250 133.0	5.50 140	16.2 7.3	5.50 (sw) 140	5.50 (sw) 140	17.8 8.1
DN125	5.500 139.7	5.50 140	17.8 8.1	5.50 (sw) 140	5.50 (sw) 140	17.8 8.1
5	5.563 141.3	5.50 140	17.8 8.1	5.50 (sw) 140	5.50 (sw) 140	24.0 10.9
	6.000 152.4	6.50 (sw) 165	+	6.50 (sw) 165	6.50 (sw) 165	25.7 11.7
	6.250 159.0	6.50 (sw) 165	+	6.50 (sw) 165	6.50 (sw) 165	27.1 12.3
	6.500 165.1	6.50 165	25.0 11.3	6.50 (sw) 165	6.50 (sw) 165	28.0 12.7
6 DN150	6.625 168.3	6.50 165	25.7 11.7	6.50 (sw) 165	6.50 (sw) 165	33.0 15.0
200A	216.3	7.75 197	43.3 19.6	NA	NA	NA

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

[2] Available with British Standard Pipe Threads, specify "BSP" clearly on order.

(sw) = Carbon Steel Segmentally Welded

NA = Not Available

"+" = Contact Victaulic for details

NOTES

- All fittings are ductile iron unless otherwise noted with an (sw).

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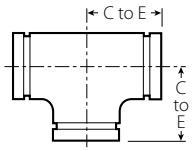
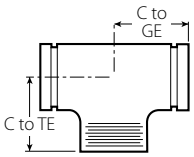
4.3 DIMENSIONS (CONTINUED)

Tees, Crosses and True Wyes

No. 20
No. 29M





Size		No. 20 Tee		No. 29M Tee Groove x Male Thread[2] Branch		
Nominal inches DN	Actual Outside Diameter inches mm	C to E inches mm	Approx. Weight (Each) lb kg	C to GE inches mm	C to TE lb kg	Approx. Weight (Each) inches mm
8 DN200	8.625 219.1	7.75 197	49.5 22.5	7.75 (sw) 197	7.75 (sw) 197	47.6 21.6
250A	267.4	9.00 229	66.0 29.9	NA	NA	NA
10 DN250	10.750 273.0	9.00 229	72.4 32.8	9.00 (sw) 229	9.00 (sw) 229	99.0 44.9
300A	318.5	10.00 254	95.0 43.1	NA	NA	NA
12 DN300	12.750 323.9	10.00 254	107.2 48.6	10.00 (sw) 254	10.00 (sw) 254	133.0 60.3
14[1] DN350	14.000 355.6	11.00 (sw) 279	150.0 68.0	11.00 (sw) 279	11.00 (sw) 279	+
	14.843 377.0	11.50 292	159.3 72.3	NA	NA	NA
16[1] DN400	16.000 406.4	12.00 (sw) 305	188.0 85.3	12.00 (sw) 305	12.00 (sw) 305	+
	16.772 426.0	13.00 330	211.6 96.0	NA	NA	NA
18[1] DN450	18.000 457.2	15.50 (sw) 394	200.0 90.7	15.50 (sw) 394	15.50 (sw) 394	+
	18.898 480.0	14.57 370	211.6 96.0	NA	NA	NA
20[1] DN500	20.000 508.0	17.25 (sw) 438	339.0 153.8	17.25 (sw) 438	17.25 (sw) 438	+
	20.866 530.0	15.39 391	382.0 173.3	NA	NA	NA
22[1] DN550	22.000 558.8	19.00 (sw) 483	468.0 212.3	19.00 (sw) 483	19.00 (sw) 483	+
24[1] DN600	24.000 609.6	20.00 (sw) 508	592.0 268.5	20.00 (sw) 508	20.00 (sw) 508	+
	24.803 630.0	17.37 441	502.0 227.7	NA	NA	NA
14 – 60 DN350 – DN1500	For AGS fitting information, see publication 20.05 AGS™					

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

[2] Available with British Standard Pipe Threads, specify "BSP" clearly on order.

(sw) = Carbon Steel Segmentally Welded

NA = Not Available

"+" = Contact Victaulic for details

NOTES

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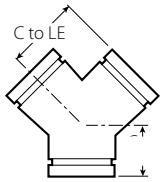
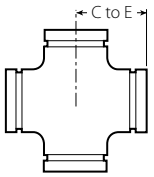
4.4 DIMENSIONS

Tees, Crosses and True Wyes

No. 33
No. 35





Size		No. 33 True Wye			No. 35 Cross	
Nominal inches DN	Actual Outside Diameter inches mm	C to LE inches mm	C to SE inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
¾ DN20	1.050 26.9	2.25 (sw) 57	2.00 (sw) 51	0.8 0.4	2.25 (sw) 57	0.9 0.4
1 DN25	1.315 33.7	2.25 (sw) 57	2.25 (sw) 57	1.1 0.5	2.25 (sw) 57	1.3 0.6
1 ¼ DN32	1.660 42.4	2.75 (sw) 70	2.50 (sw) 64	1.5 0.7	2.75 (sw) 70	2.1 1.0
1 ½ DN40	1.900 48.3	2.75 (sw) 70	2.75 (sw) 70	1.8 0.8	2.75 (sw) 70	2.5 1.1
2 DN50	2.375 60.3	3.25 (sw) 83	2.75 (sw) 70	2.5 1.1	3.25 83	4.0 1.8
2 ½	2.875 73.0	3.75 (sw) 95	3.00 (sw) 76	5.1 2.3	3.75 95	6.1 2.8
DN65	3.000 76.1	3.75 (sw) 95	3.25 (sw) 83	5.5 2.5	3.75 95	7.8 3.5
3 DN80	3.500 88.9	4.25 (sw) 108	3.25 (sw) 83	6.1 2.8	4.25 108	11.8 5.4
3 ½ DN90	4.000 101.6	4.50 (sw) 114	3.50 (sw) 89	9.6 4.4	4.50 (sw) 114	11.5 5.2
	4.250 108.0	5.00 (sw) 127	3.75 (sw) 95	9.7 4.4	5.00 127	18.4 8.3
4 DN100	4.500 114.3	5.00 127	3.75 95	10.0 4.5	5.00 127	15.8 7.2
4 ½	5.000 127.0	5.25 (sw) 133	4.00 (sw) 102	12.5 5.7	5.25 (sw) 133	18.5 8.4
	5.250 133.0	5.50 (sw) 140	4.00 (sw) 102	13.8 6.2	5.50 (sw) 140	19.0 8.6
DN125	5.500 139.7	5.50 (sw) 140	4.00 (sw) 102	15.0 6.8	5.50 (sw) 140	19.5 8.8
5	5.563 141.3	5.50 (sw) 140	4.00 (sw) 102	15.0 6.8	5.50 140	28.6 13.0
	6.000 152.4	6.50 (sw) 165	4.50 (sw) 114	17.5 7.9	6.50 (sw) 165	22.0 10.0
	6.250 159.0	6.50 (sw) 165	4.50 (sw) 114	19.9 9.0	6.50 165	41.4 18.8
	6.500 165.1	6.50 (sw) 165	4.50 (sw) 114	21.5 9.8	6.50 165	44.0 20.0
6 DN150	6.625 168.3	6.50 (sw) 165	4.50 (sw) 114	22.3 10.1	6.50 165	46.0 20.9
8 DN200	8.625 219.1	7.75 (sw) 197	6.00 (sw) 152	36.0 16.3	7.75 (sw) 197	48.0 21.8

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(sw) = Carbon Steel Segmentally Welded

NOTE

- All fittings are ductile iron unless otherwise noted with an (sw).

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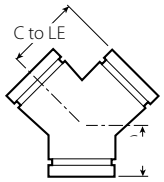
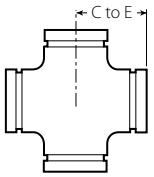
4.4 DIMENSIONS (CONTINUED)

Tees, Crosses and True Wyes

No. 33
No. 35





Size		No. 33 True Wye			No. 35 Cross	
Nominal inches DN	Actual Outside Diameter inches mm	C to LE inches mm	C to SE inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
10 DN250	10.750 273.0	9.00 (sw) 229	6.50 (sw) 165	54.5 24.7	9.00 (sw) 229	70.0 31.8
12 DN300	12.750 323.9	10.00 (sw) 254	7.00 (sw) 178	80.0 36.3	10.00 (sw) 254	110.0 49.9
14[1] DN350	14.000 355.6	11.00 (sw) 279	7.50 (sw) 191	134.2 60.9	11.00 (sw) 279	198.0 89.8
16[1] DN400	16.000 406.4	12.00 (sw) 305	8.00 (sw) 203	167.0 75.7	12.00 (sw) 305	250.0 113.4
18[1] DN450	18.000 457.2	15.50 (sw) 394	8.50 (sw) 216	180.0 81.6	15.50 (sw) 394	350.0 158.8
20[1] DN500	20.000 508.0	17.25 (sw) 438	9.00 (sw) 229	200.0 90.7	17.25 (sw) 438	452.0 205.0
22[1] DN550	22.000 558.8	19.00 (sw) 483	9.50 (sw) 241	225.0 102.1	19.00 (sw) 483	624.0 283.0
24[1] DN600	24.000 609.6	20.00 (sw) 508	10.00 (sw) 254	250.0 113.4	20.00 (sw) 508	795.0 360.6
14 – 60 DN350 – DN1500	For AGS fitting information, see publication 20.05 AGS™					

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(sw) = Carbon Steel Segmentally Welded

NOTE

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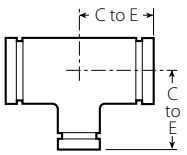
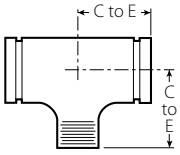
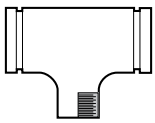
4.4 DIMENSIONS (CONTINUED)

Reducing Tee

No. 25
No. 29T
No. 29F







Size									No. 25 Grooved Branch Reducing Tee		No. 29T Reducing Tee Groove x Male Thread[2] Branch		No. 29F[2] Reducing Tee Groove x Female Thread[2] Branch	
Nominal inches DN					Actual Outside Diameter inches mm				C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
1 DN25	x	1 DN25	x	¾ DN20	1.315 33.7	x	1.315 33.7	x	1.050 26.9	2.25 (sw) 57	0.8 0.4	2.25 (sw) 57	0.8 0.4	NA	NA
1 ¼ DN32	x	1 ¼ DN32	x	¾ DN20	1.660 42.4	x	1.660 42.4	x	1.050 26.9	2.75 (sw) 70	1.0 0.5	2.75 (sw) 70	1.0 0.5	NA	NA
				1 DN25					1.315 33.7	2.75 (sw) 70	1.3 0.6	2.75 (sw) 70	1.5 0.7	NA	NA
1 ½ DN40	x	1 ½ DN40	x	¾ DN20	1.900 48.3	x	1.900 48.3	x	1.050 26.9	2.75 (sw) 70	1.5 0.7	2.75 (sw) 70	1.5 0.7	NA	NA
				1 DN25					1.315 33.7	2.75 (sw) 70	1.5 0.7	2.75 (sw) 70	1.8 0.8	NA	NA
				1 ¼ DN32					1.660 42.4	2.75 (sw) 70	2.1 1.0	2.75 (sw) 70	1.7 0.8	NA	NA
2 DN50	x	2 DN50	x	¾ DN20	2.375 60.3	x	2.375 60.3	x	1.050 26.9	3.25 83	2.5 1.1	3.25 83	2.5 1.1	NA	NA
				1 DN25					1.315 33.7	3.25 83	2.7 1.2	3.25 83	2.7 1.2	NA	NA
				1 ¼ DN32					1.660 42.4	3.25 (sw) 83	2.3 1.0	3.25 (sw) 83	2.3 1.0	NA	NA
				1 ½ DN40					1.900 48.3	3.25 83	3.2 1.5	3.25 83	3.2 1.5	NA	NA
2 ½	x	2 ½	x	¾ DN20	2.875 73.0	x	2.875 73.0	x	1.050 26.9	3.75 (sw) 95	3.9 1.8	3.75 (sw) 95	3.0 1.4	NA	NA
				1 DN25					1.315 33.7	3.75 95	3.8 1.7	3.75 95	3.8 1.7	NA	NA
				1 ¼ DN32					1.660 42.4	3.75 95	4.0 1.8	3.75 95	4.0 1.8	NA	NA
				1 ½ DN40					1.900 48.3	3.75 95	4.8 2.2	3.75 95	4.8 2.2	NA	NA
				2 DN50					2.375 60.3	3.75 95	4.5 2.0	3.75 95	4.5 2.0	NA	NA
DN65	x	DN65	x	¾ DN20	3.000 76.1	x	3.000 76.1	x	1.050 26.9	3.75 (sw) 95	+	3.75 (sw) 95	+	NA	NA
				1 DN25					1.315 33.7	3.75 (sw) 95	+	3.75 (sw) 95	+	NA	NA
				1 ¼ DN32					1.660 42.4	3.75 (sw) 95	+	3.75 (sw) 95	+	NA	NA
				1 ½ DN40					1.900 48.3	3.75 (sw) 95	+	3.75 (sw) 95	+	NA	NA
				2 DN50					2.375 60.3	3.75 95	4.6 2.1	3.75 95	4.6 2.1	NA	NA

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

[2] Available with British Standard Pipe Threads, specify "BSP" clearly on order.

(sw) = Carbon Steel Segmentally Welded

NA = Not Available

"+" = Contact Victaulic for details

NOTES

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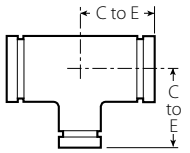
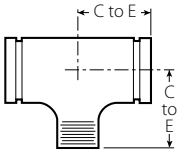
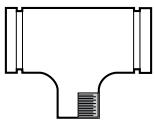
4.4 DIMENSIONS (CONTINUED)

Reducing Tee

No. 25
No. 29T
No. 29F







Size									No. 25 Grooved Branch Reducing Tee		No. 29T Reducing Tee Groove x Male Thread[2] Branch		No. 29F[2] Reducing Tee Groove x Female Thread[2] Branch	
Nominal inches DN					Actual Outside Diameter inches mm				C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
3 DN80	x	3 DN80	x	¾ DN20	3.500 88.9	x	3.500 88.9	x	1.050 26.9	4.25 (sw) 108	5.7 2.6	4.25 (sw) 108	5.7 2.6	NA	NA
				1 DN25					1.315 33.7	4.25 108	6.0 2.7	4.25 108	6.0 2.7	NA	NA
				1 ¼ DN32					1.660 42.4	4.25 108	6.0 2.7	4.25 108	6.3 2.9	NA	NA
				1 ½ DN40					1.900 48.3	4.25 108	6.6 3.0	4.25 108	6.6 3.0	NA	NA
				2 DN50					2.375 60.3	4.25 108	6.2 2.8	4.25 108	6.2 2.8	4.25 108	6.2 2.8
				2 ½					2.875 73.0	4.25 108	6.6 3.0	4.25 108	6.6 3.0	NA	NA
				DN65					3.000 76.1	4.25 108	6.8 3.1	4.25 108	11.6 5.3	NA	NA
3 ½ DN90	x	3 ½ DN90	x	¾ DN20	4.000 101.6	x	4.000 101.6	x	1.050 26.9	4.50 (sw) 114	+	4.50 (sw) 114	+	NA	NA
				1 DN25					1.315 33.7	4.50 (sw) 114	+	4.50 (sw) 114	+	NA	NA
				1 ¼ DN32					1.660 42.4	4.50 (sw) 114	+	4.50 (sw) 114	+	NA	NA
				1 ½ DN40					1.900 48.3	4.50 (sw) 114	+	4.50 (sw) 114	+	NA	NA
				2 DN50					2.375 60.3	4.50 (sw) 114	+	4.50 (sw) 114	+	NA	NA
				2 ½					2.875 73.0	4.50 (sw) 114	+	4.50 (sw) 114	+	NA	NA
				3 DN80					3.500 88.9	4.50 (sw) 114	+	4.50 (sw) 114	+	NA	NA
					4.250 108.0	x	4.250 108.0	x	1.050 26.9	5.00 (sw) 127	+	5.00 (sw) 127	+	5.00 (sw) 127	+
									1.315 33.7	5.00 (sw) 127	+	5.00 (sw) 127	+	5.00 (sw) 127	+
									1.660 42.4	5.00 (sw) 127	+	5.00 (sw) 127	+	5.00 (sw) 127	+
									1.900 48.3	5.00 (sw) 127	+	5.00 (sw) 127	+	5.00 (sw) 127	+
									2.375 60.3	5.00 (sw) 127	+	5.00 (sw) 127	+	5.00 (sw) 127	+
									3.000 76.1	5.00 (sw) 127	+	5.00 (sw) 127	+	5.00 (sw) 127	+
									3.500 88.9	5.00 127	9.5 4.3	5.00 (sw) 127	+	NA	NA

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

[2] Available with British Standard Pipe Threads, specify "BSP" clearly on order.

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NA = Not Available

"+" = Contact Victaulic for details

NOTES

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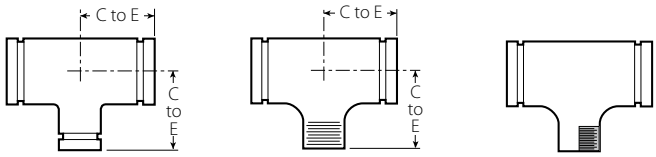
4.4 DIMENSIONS (CONTINUED)

Reducing Tee

No. 25
No. 29T
No. 29F

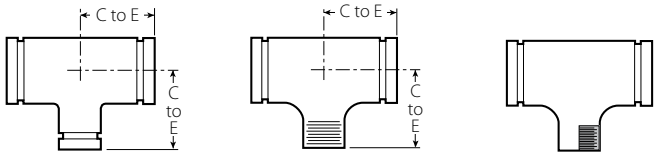


| Size | | |

4.4 DIMENSIONS (CONTINUED)

Reducing Tee

No. 25
No. 29T
No. 29F

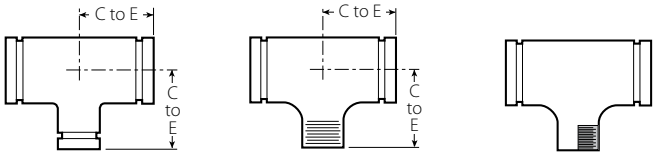


| Size | | |

4.4 DIMENSIONS (CONTINUED)

Reducing Tee

No. 25
No. 29T
No. 29F



Size				No. 25 Grooved Branch Reducing Tee		No. 29T Reducing Tee Groove x Male Thread[2] Branch		No. 29F[2] Reducing Tee Groove x Female Thread[2] Branch	
Nominal inches DN	Actual Outside Diameter inches mm			C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
	6.000 x 6.000 x 152.4 x 152.4		1.050 26.9	6.50 (sw) 165	+	6.50 (sw) 165	+	NA	NA
			1.315 33.7	6.50 (sw) 165	+	6.50 (sw) 165	+	NA	NA
			1.660 42.4	6.50 (sw) 165	+	6.50 (sw) 165	+	NA	NA
			1.900 48.3	6.50 (sw) 165	+	6.50 (sw) 165	+	NA	NA
			2.375 60.3	6.50 (sw) 165	+	6.50 (sw) 165	+	NA	NA
			3.000 76.1	6.50 (sw) 165	+	6.50 (sw) 165	+	NA	NA
			3.500 88.9	6.50 (sw) 165	+	6.50 (sw) 165	+	NA	NA
			4.250 108.0	6.50 (sw) 165	+	6.50 (sw) 165	+	NA	NA
			4.500 114.3	6.50 (sw) 165	+	6.50 (sw) 165	+	NA	NA
			5.250 133.0	6.50 (sw) 165	+	6.50 (sw) 165	+	NA	NA

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

[2] Available with British Standard Pipe Threads, specify "BSP" clearly on order.

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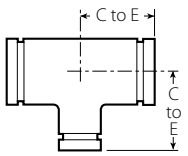
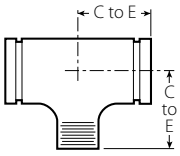
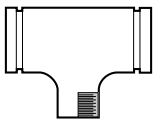
4.4 DIMENSIONS (CONTINUED)

Reducing Tee

No. 25
No. 29T
No. 29F







Size			No. 25 Grooved Branch Reducing Tee		No. 29T Reducing Tee Groove x Male Thread[2] Branch		No. 29F[2] Reducing Tee Groove x Female Thread[2] Branch	
Nominal inches DN	Actual Outside Diameter inches mm		C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
	6.250 x 6.250 x	1.050 26.9	6.50 (sw) 165	+	6.50 (sw) 165	+	6.50 (sw) 165	+
		1.315 33.7	6.50 (sw) 165	+	6.50 (sw) 165	+	6.50 (sw) 165	+
		1.660 42.4	6.50 (sw) 165	+	6.50 (sw) 165	+	6.50 (sw) 165	+
		1.900 48.3	6.50 (sw) 165	+	6.50 (sw) 165	+	6.50 (sw) 165	+
		2.375 60.3	6.50 (sw) 165	+	6.50 (sw) 165	+	6.50 (sw) 165	+
		3.000 76.1	6.50 (sw) 165	+	6.50 (sw) 165	+	6.50 (sw) 165	+
		3.500 88.9	6.50 165	18.5 8.4	6.50 (sw) 165	+	NA	NA
		4.250 108.0	6.50 165	18.5 8.4	6.50 (sw) 165	+	NA	NA
		4.500 114.3	6.50 165	12.1 5.5	6.50 (sw) 165	+	NA	NA
		5.250 133.0	6.50 165	19.0 8.6	6.50 (sw) 165	+	NA	NA
	6.500 x 6.500 x	1.050 26.9	6.50 (sw) 165	+	6.50 (sw) 165	+	NA	NA
		1.315 33.7	6.50 (sw) 165	10.8 4.9	6.50 (sw) 165	10.8 4.9	NA	NA
		1.660 42.4	6.50 (sw) 165	11.0 5.0	6.50 (sw) 165	11.0 5.0	NA	NA
		1.900 48.3	6.50 (sw) 165	11.3 5.1	6.50 (sw) 165	11.3 5.1	NA	NA
		2.375 60.3	6.50 165	18.9 8.6	6.50 165	18.9 8.6	NA	NA
		3.000 76.1	6.50 165	20.0 9.1	6.50 (sw) 165	+	NA	NA
		3.500 88.9	6.50 165	24.3 11.0	6.50 (sw) 165	+	NA	NA
		4.500 114.3	6.50 165	23.8 10.8	6.50 (sw) 165	+	NA	NA
		5.500 139.7	6.50 165	26.0 11.8	6.50 (sw) 165	+	NA	NA

1 For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

2 Available with British Standard Pipe Threads, specify "BSP" clearly on order.

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NOTES

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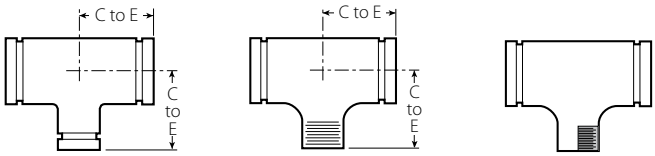
4.4 DIMENSIONS (CONTINUED)

Reducing Tee

No. 25
No. 29T
No. 29F



Size																	
Nominal inches DN					Actual Outside Diameter inches mm				No. 25 Grooved Branch Reducing Tee		No. 29T Reducing Tee Groove x Male Thread[2] Branch		No. 29F[2] Reducing Tee Groove x Female Thread[2] Branch	
									C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
6 DN150	x	6 DN150	x	¾ DN20	6.625 168.3	x	6.625 168.3	x	1.050 26.9	6.50 (sw) 165	+	6.50 (sw) 165	+	NA	NA
				1 DN25					1.315 33.7	6.50 (sw) 165	23.0 10.4	6.50 (sw) 165	23.0 10.4	NA	NA
				1 ¼ DN32					1.660 42.4	6.50 (sw) 165	25.0 11.3	6.50 (sw) 165	25.0 11.3	NA	NA
				1 ½ DN40					1.900 48.3	6.50 (sw) 165	25.0 11.3	6.50 (sw) 165	25.0 11.3	NA	NA
				2 DN50					2.375 60.3	6.50 165	22.8 10.3	6.50 165	22.8 10.3	NA	NA
				2 ½					2.875 73.0	6.50 165	23.8 10.8	6.50 165	25.2 11.4	NA	NA
				DN65					3.000 76.1	6.50 (sw) 165	+	6.50 165	+	NA	NA
				3 DN80					3.500 88.9	6.50 165	24.8 11.2	6.50 165	24.9 11.3	NA	NA
				4 DN100					4.500 114.3	6.50 165	24.8 11.2	6.50 165	22.1 10.0	NA	NA
				DN125					5.500 139.7	6.50 (sw) 165	+	6.50 (sw) 165	+	NA	NA
				5					5.563 141.3	6.50 165	26.7 12.1	6.50 (sw) 165	26.7 12.1	NA	NA
200A	x	200A	x	65A	216.3	x	216.3	x	76.3	7.75 (sw) 197	+	NA	NA	NA	NA
				100A					114.3	7.75 (sw) 197	+	NA	NA	NA	NA
				165A						7.75 197	50.0 22.7	NA	NA	NA	NA

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

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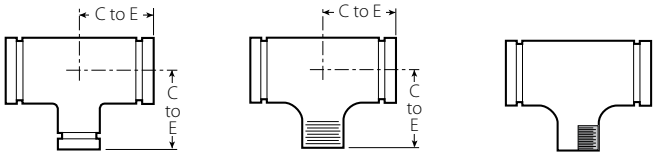
4.4 DIMENSIONS (CONTINUED)

Reducing Tee

No. 25
No. 29T
No. 29F

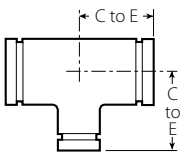


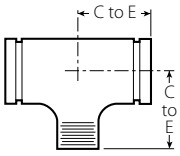
| Size | | |

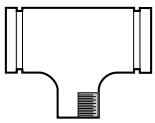
4.4 DIMENSIONS (CONTINUED)

Reducing Tee

No. 25
No. 29T
No. 29F







Size								No. 25 Grooved Branch Reducing Tee		No. 29T Reducing Tee Groove x Male Thread[2] Branch		No. 29F[2] Reducing Tee Groove x Female Thread[2] Branch	
Nominal inches DN				Actual Outside Diameter inches mm				C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
10 DN250	x	10 DN250	x	¾ DN20	10.750 273.0	x	10.750 273.0	x	1.050 26.9	9.00 (sw) 229	+	9.00 (sw) 229	+	NA	NA
				1 DN25					1.315 33.7	9.00 (sw) 229	+	9.00 (sw) 229	+	NA	NA
				1 ¼ DN32					1.660 42.4	9.00 (sw) 229	+	9.00 (sw) 229	+	NA	NA
				1 ½ DN40					1.900 48.3	9.00 (sw) 229	57.0 25.9	9.00 (sw) 229	57.0 25.9	NA	NA
				2 DN50					2.375 60.3	9.00 (sw) 229	62.0 28.1	9.00 (sw) 229	65.0 29.5	9.00 (sw) 229	+
				2 ½					2.875 73.0	9.00 229	62.5 28.3	9.00 (sw) 229	53.0 24.0	NA	NA
				DN65					3.000 76.1	9.00 (sw) 229	71.2 32.3	NA	NA	NA	NA
				3 DN80					3.500 88.9	9.00 229	62.1 28.2	9.00 (sw) 229	60.0 27.2	NA	NA
									4.250 108.0	9.02 229	77.6 35.2	9.00 (sw) 229	+	NA	NA
				4 DN100					4.500 114.3	9.00 229	61.0 27.7	9.00 (sw) 229	61.0 27.7	NA	NA
									5.250 133.0	9.02 229	84.2 38.2	9.00 (sw) 229	+	NA	NA
				DN125					5.500 139.7	9.00 (sw) 229	+	9.00 (sw) 229	+	NA	NA
									6.250 159.0	9.02 229	84.9 38.5	9.00 (sw) 229	+	NA	NA
				5					5.563 141.3	9.00 (sw) 229	52.0 23.6	9.00 (sw) 229	52.0 23.6	NA	NA
									6.250 159.0	9.00 229	61.0 27.7	9.00 (sw) 229	+	NA	NA
									6.500 165.1	9.00 229	64.2 29.1	9.00 (sw) 229	+	NA	NA
				6 DN150					6.625 168.3	9.00 229	59.0 26.8	9.00 (sw) 229	60.0 27.2	NA	NA
				8 DN200					8.625 219.1	9.00 229	64.7 29.3	9.00 (sw) 229	64.7 29.3	NA	NA
300A	x	300A	x	150A	318.5	x	318.5	x	165.2	10.00 (sw) 254	+	NA	NA	NA	NA
				200A					216.3	10.00 (sw) 254	+	NA	NA	NA	NA
				250A					267.4	10.00 254	111.0 50.3	NA	NA	NA	NA

1 For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

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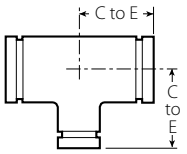
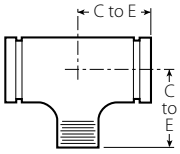
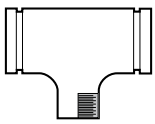
4.4 DIMENSIONS (CONTINUED)

Reducing Tee
No. 25
No. 29T
No. 29F







Size						No. 25 Grooved Branch Reducing Tee		No. 29T Reducing Tee Groove x Male Thread[2] Branch		No. 29F[2] Reducing Tee Groove x Female Thread[2] Branch	
Nominal inches DN			Actual Outside Diameter inches mm			C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
12 x 12 x ¾			12.750 x 12.750 x 1.050			10.00 (sw) 254	+	NA	NA	10.00 (sw) 254	+
DN300 x DN300 x DN20			323.9 x 323.9 x 26.9								
		1 DN25			1.315 33.7	10.00 (sw) 254	70.0 31.8	10.00 (sw) 254	77.0	10.00 (sw) 254	+
		1 ¼ DN32			1.660 42.4	10.00 (sw) 254	+	10.00 (sw) 254	+	10.00 (sw) 254	+
		1 ½ DN40			1.900 48.3	10.00 (sw) 254	+	10.00 (sw) 254	+	10.00 254	+
		2 DN50			2.375 60.3	10.00 (sw) 254	78.0 35.4	10.00 (sw) 254	78.0 35.4	10.00 (sw) 254	+
		2 ½			2.875 73.0	10.00 (sw) 254	80.0 36.3	10.00 (sw) 254	80.0 36.3	NA	NA
		DN65			3.000 76.1	10.00 (sw) 254	+	10.00 (sw) 254	+	10.00 (sw) 254	+
		3 DN80			3.500 88.9	10.00 (sw) 254	80.0 36.3	10.00 (sw) 254	86.5 39.2	NA	NA
					4.250 108.0	10.00 254	+	10.00 (sw) 254	+	NA	NA
		4 DN100			4.500 114.3	10.00 (sw) 254	86.7 39.3	10.00 (sw) 254	77.0 34.9	NA	NA
					5.250 133.0	10.00 254	130.0 59.0	10.00 (sw) 254	+	NA	NA
		DN125			5.500 139.7	10.00 (sw) 254	81.8 37.1	10.00 (sw) 254	+	NA	NA
		5			5.563 141.3	10.00 (sw) 254	75.0 34.0	10.00 (sw) 254	75.0 34.0	NA	NA
					6.250 159.0	10.00 254	125.6 57.0	10.00 (sw) 254	+	NA	NA
					6.500 165.1	10.00 (sw) 254	+	10.00 (sw) 254	+	NA	NA
		6 DN150			6.625 168.3	10.00 254	88.5 40.2	10.00 (sw) 254	75.0 34.0	NA	NA
		8 DN200			8.625 219.1	10.00 254	80.0 36.3	10.00 (sw) 254	80.0 36.3	NA	NA
		10 DN250			10.750 273.0	10.00 254	123.5 56.0	10.00 (sw) 254	84.0 38.1	NA	NA

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

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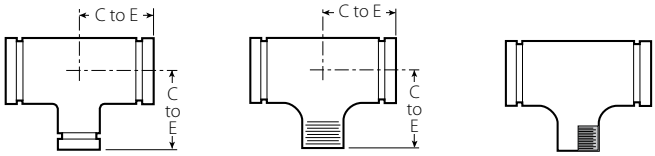
4.4 DIMENSIONS (CONTINUED)

Reducing Tee

No. 25
No. 29T
No. 29F



Size								No. 25 Grooved Branch Reducing Tee		No. 29T Reducing Tee Groove x Male Thread[2] Branch		No. 29F[2] Reducing Tee Groove x Female Thread[2] Branch	
Nominal inches DN					Actual Outside Diameter inches mm			C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
14[1] DN350	x 14 DN350	x 4 DN100			14.000 355.6	x 14.000 355.6	x 4.500 114.3	11.00 (sw) 279	102.0 46.3	11.00 (sw) 279	102.0 46.3	NA	NA
		6 DN150					6.625 168.3	11.00 (sw) 279	108.2 49.1	11.00 (sw) 279	108.2 49.1	NA	NA
		8 DN200					8.625 219.1	11.00 (sw) 279	112.0 50.8	11.00 (sw) 279	112.0 50.8	NA	NA
		10 DN250					10.750 273.0	11.00 (sw) 279	120.0 54.4	11.00 (sw) 279	120.0 54.4	NA	NA
		12 DN300					12.750 323.9	11.00 (sw) 279	129.1 58.6	11.00 (sw) 279	129.1 58.6	NA	NA
					14.843 377.0	14.843 377.0	6.500 165.1	11.00 279	142.4 64.6	NA	NA	NA	NA
							8.625 219.1	11.00 279	145.5 66.0	NA	NA	NA	NA
							10.750 273.0	11.00 279	149.9 68.0	NA	NA	NA	NA
							12.750 323.9	11.00 279	144.6 65.6	NA	NA	NA	NA
16[1] DN400	x 16 DN400	x 4 DN100			16 DN400	x 16 DN400	x 4.500 114.3	12.00 (sw) 305	130.0 59.0	12.00 (sw) 305	130.0 59.0	NA	NA
		6 DN150					6.625 168.3	12.00 (sw) 305	133.5 60.6	12.00 (sw) 305	133.5 60.6	NA	NA
		8 DN200					8.625 219.1	12.00 (sw) 305	145.0 65.8	12.00 (sw) 305	145.0 65.8	NA	NA
		10 DN250					10.750 273.0	12.00 (sw) 305	149.5 67.8	12.00 (sw) 305	149.5 67.8	NA	NA
		12 DN300					12.750 323.9	12.00 (sw) 305	154.0 69.9	12.00 (sw) 305	154.0 69.9	NA	NA
		14 DN350					14.000 355.6	12.00 (sw) 305	167.0 75.7	NA	NA	NA	NA
					16.772 426.0	x 16.772 426.0	x 6.250 159.0	12.83 326	189.6 86.0	NA	NA	NA	NA
							8.625 219.1	12.83 326	213.9 97.0	NA	NA	NA	NA
							10.750 273.0	12.83 326	224.9 102.0	NA	NA	NA	NA
							12.750 323.9	12.83 326	224.9 102.0	NA	NA	NA	NA
							14.843 377.0	12.83 326	227.1 103.0	NA	NA	NA	NA

1 For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

2 Available with British Standard Pipe Threads, specify "BSP" clearly on order.

(sw) = Carbon Steel Segmentally Welded

NA = Not Available

"+" = Contact Victaulic for details

NOTES

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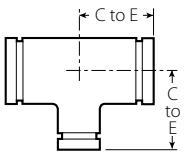
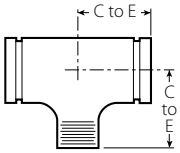
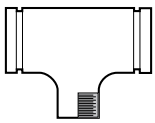
4.4 DIMENSIONS (CONTINUED)

Reducing Tee

No. 25
No. 29T
No. 29F







Size								No. 25 Grooved Branch Reducing Tee		No. 29T Reducing Tee Groove x Male Thread[2] Branch		No. 29F[2] Reducing Tee Groove x Female Thread[2] Branch	
Nominal inches DN				Actual Outside Diameter inches mm				C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
18[1] DN450	x	18 DN450	x	4 DN100	18.000 457.2	x	18.000 457.2	x 4.500 114.3	15.50 (sw) 394	194.0 88.0	15.50 (sw) 394	194.0 88.0	NA	NA
				6 DN150				6.625 168.3	15.50 (sw) 394	200.0 90.7	15.50 (sw) 394	200.0 90.7	NA	NA
				8 DN200				8.625 219.1	15.50 (sw) 394	202.6 91.9	15.50 (sw) 394	202.0 91.6	NA	NA
				10 DN250				10.750 273.0	15.50 (sw) 394	212.0 96.2	15.50 (sw) 394	212.0 96.2	NA	NA
				12 DN300				12.750 323.9	15.50 (sw) 394	222.6 101.0	15.50 (sw) 394	222.6 101.0	NA	NA
				14 DN350				14.000 355.6	15.50 (sw) 394	230.1 104.4	NA	NA	NA	NA
				16 DN400				16 DN400	15.50 (sw) 394	247.6 112.3	NA	NA	NA	NA
					18.898 480.0	x	18.898 480.0	x 4.250 108.0	14.75 375	282.4 128.1	NA	NA	NA	NA
								5.250 133.0	14.75 375	283.0 128.4	NA	NA	NA	NA
								6.250 159.0	14.75 375	283.3 128.5	NA	NA	NA	NA
								10.750 273.0	14.75 375	285.1 129.3	NA	NA	NA	NA
								14.843 377.0	14.75 375	293.8 133.2	NA	NA	NA	NA

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

[2] Available with British Standard Pipe Threads, specify "BSP" clearly on order.

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NOTES

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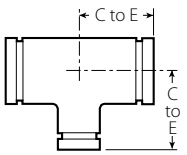
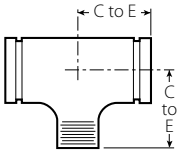
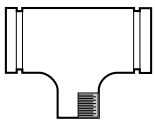
4.4 DIMENSIONS (CONTINUED)

Reducing Tee

No. 25
No. 29T
No. 29F







Size							No. 25 Grooved Branch Reducing Tee		No. 29T Reducing Tee Groove x Male Thread[2] Branch		No. 29F[2] Reducing Tee Groove x Female Thread[2] Branch	
Nominal inches DN			Actual Outside Diameter inches mm				C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
20[1] x 20 x 6 DN500 DN500 DN150			20.000 x 20.000 x 6.625 508.0 508.0 168.3				17.25 (sw) 438	240.0 108.9	17.25 (sw) 438	240.0 108.9	NA	NA
		8 DN200			8.625 219.1		17.25 (sw) 438	244.0 110.7	17.25 (sw) 438	244.0 110.7	NA	NA
		10 DN250			10.750 273.0		17.25 (sw) 438	256.0 116.1	17.25 (sw) 438	256.0 116.1	NA	NA
		12 DN300			12.750 323.9		17.25 (sw) 438	264.3 119.9	17.25 (sw) 438	264.0 119.7	NA	NA
		14 DN350			14.000 355.6		17.25 (sw) 438	275.0 124.7	NA	NA	NA	NA
		16 DN400			16.000 406.4		17.25 (sw) 438	288.6 130.9	NA	NA	NA	NA
		18 DN450			18.000 457.2		17.25 (sw) 438	297.0 134.7	NA	NA	NA	NA
			20.866 x 20.866 x 6.250 530.0 530.0 159.0				17.25 438	368.2 167.0	NA	NA	NA	NA
					8.625 219.1		17.25 438	401.3 182.0	NA	NA	NA	NA
					10.750 273.0		17.25 438	379.2 172.0	NA	NA	NA	NA
					12.750 323.9		17.25 438	401.2 182.0	NA	NA	NA	NA
					14.843 377.0		17.25 438	383.6 174.0	NA	NA	NA	NA
					16.772 426.0		17.25 438	401.2 182.0	NA	NA	NA	NA
					18.898 480.0		17.25 438	399.2 181.1	NA	NA	NA	NA

1 For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

2 Available with British Standard Pipe Threads, specify "BSP" clearly on order.

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NOTES

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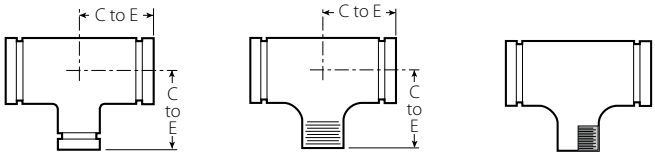
4.4 DIMENSIONS (CONTINUED)

Reducing Tee

No. 25
No. 29T
No. 29F



Size								No. 25 Grooved Branch Reducing Tee		No. 29T Reducing Tee Groove x Male Thread[2] Branch		No. 29F[2] Reducing Tee Groove x Female Thread[2] Branch	
Nominal inches DN				Actual Outside Diameter inches mm				C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg	C to E inches mm	Approx. Weight (Each) lb kg
24[1] x 24 x 8 DN600 x DN600 x DN200				24.000 x 24.000 x 8.625 609.6 x 609.6 x 219.1				20.00 (sw) 508	340.0 154.2	20.00 (sw) 508	340.0 154.2	NA	NA
		10 DN250				10.750 273.0		20.00 (sw) 508	343.9 156.0	20.00 (sw) 508	343.9 156.0	NA	NA
		12 DN300				12.750 323.9		20.00 (sw) 508	352.8 160.0	20.00 (sw) 508	352.8 160.0	NA	NA
		14 DN350				14.000 355.6		20.00 508	+	NA	NA	NA	NA
		16 DN400				16.000 406.4		20.00 (sw) 508	378.0 171.5	NA	NA	NA	NA
		18 DN450				18.000 457.2		20.00 508	+	NA	NA	NA	NA
		20 DN500				20.000 508.0		20.00 (sw) 508	400.0 181.4	NA	NA	NA	NA
				24.803 x 24.803 x 6.250 630.0 x 630.0 x 159.0				20.00 508	559.2 253.6	NA	NA	NA	NA
						8.625 219.1		20.00 508	559.2 253.6	NA	NA	NA	NA
						10.750 273.0		20.00 508	562.2 255.0	NA	NA	NA	NA
						12.750 323.9		20.00 508	562.2 255.0	NA	NA	NA	NA
						14.843 377.0		20.00 508	586.4 266.0	NA	NA	NA	NA
						16.772 426.0		20.00 508	579.8 263.0	NA	NA	NA	NA
						18.898 480.0		20.00 508	568.8 258.0	NA	NA	NA	NA
						20.866 530.0		20.00 508	574.3 260.5	NA	NA	NA	NA
14 – 60 DN350 – DN1500				For AGS fitting information, see publication 20.05 AGS™									

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

[2] Available with British Standard Pipe Threads, specify "BSP" clearly on order.

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NOTES

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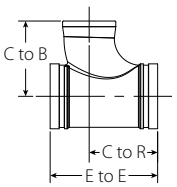
4.5 DIMENSIONS (CONTINUED)

Pitcher Tee

No. 29P



Size										No. 29P Pitcher Tee Groove x Female Thread Branch			
Nominal inches DN					Actual Outside Diameter inches mm					C to R inches mm	E to E inches mm	C to B inches mm	Approx. Weight (Each) lb kg
4 DN100	x	4 DN100	x	2½	4.500 114.3	x	4.500 114.3	x	2.875 73.0	4.75 121	7.50 191	5.25 133	10.1 4.6

NOTE

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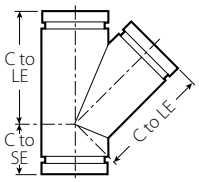
4.6 DIMENSIONS

45° Lateral

No. 30



Size		No. 30 45° Lateral		
Nominal inches DN	Actual Outside Diameter inches mm	C to LE inches mm	C to SE inches mm	Approx. Weight (Each) lb kg
¾ DN20	1.050 26.9	4.50 (sw) 114	2.00 (sw) 51	0.9 0.4
1 DN25	1.315 33.7	5.00 (sw) 127	2.25 (sw) 57	1.7 0.8
1 ¼ DN32	1.660 42.4	5.75 (sw) 146	2.50 (sw) 64	2.5 1.1
1 ½ DN40	1.900 48.3	6.25 (sw) 159	2.75 (sw) 70	3.5 1.6
2 DN50	2.375 60.3	7.00 (sw) 178	2.75 (sw) 70	5.1 2.3
2 ½	2.875 73.0	7.75 (sw) 197	3.00 (sw) 76	9.0 4.1
DN65	3.000 76.1	8.50 (sw) 216	3.25 (sw) 83	9.8 4.4
3 DN80	3.500 88.9	8.50 216	3.25 83	10.3 4.6
3 ½ DN90	4.000 101.6	10.00 (sw) 254	3.50 (sw) 89	22.0 10.0
	4.250 108.0	10.50 (sw) 267	3.75 (sw) 95	22.1 10.0
4 DN100	4.500 114.3	10.50 267	3.75 95	17.9 8.1
4 ½	5.000 127.0	12.50 (sw) 318	4.00 (sw) 102	23.8 10.8
	5.250 133.0	12.50 (sw) 318	4.00 (sw) 102	25.3 11.5
DN125	5.500 139.7	12.50 (sw) 318	4.00 (sw) 102	26.8 12.1
5	5.563 141.3	12.50 (sw) 318	4.00 (sw) 102	29.8 13.5
	6.000 152.4	14.00 (sw) 356	4.50 (sw) 114	33.8 15.3
	6.250 159.0	14.00 (sw) 356	4.50 (sw) 114	36.8 16.7
	6.500 165.1	14.00 (sw) 356	4.50 (sw) 114	43.6 19.8
6 DN150	6.625 168.3	14.00 356	4.50 114	43.6 19.8

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(sw) = Carbon Steel Segmentally Welded

NOTE

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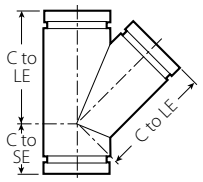
4.6 DIMENSIONS (CONTINUED)

45° Lateral

No. 30



Size		No. 30 45° Lateral		
Nominal inches DN	Actual Outside Diameter inches mm	C to LE inches mm	C to SE inches mm	Approx. Weight (Each) lb kg
8 DN200	8.625 219.1	18.00 (sw) 457	6.00 (sw) 152	73.0 33.1
10 DN250	10.750 273.0	20.50 (sw) 521	6.50 (sw) 165	105.0 47.6
12 DN300	12.750 323.9	23.00 (sw) 584	7.00 (sw) 178	165.0 74.8
14[1] DN350	14.000 355.6	26.50 (sw) 673	7.50 (sw) 191	276.0 125.2
16[1] DN400	16.000 406.4	29.00 (sw) 737	8.00 (sw) 203	344.2 156.1
18[1] DN450	18.000 457.2	32.00 (sw) 813	8.50 (sw) 216	429.0 194.6
20[1] DN500	20.000 508.0	35.00 (sw) 889	9.00 (sw) 229	500.0 226.8
22[1] DN550	22.000 558.8	38.00 (sw) 965	9.50 (sw) 241	610.0 276.7
24[1] DN600	24.000 609.6	40.00 (sw) 1016	10.00 (sw) 254	715.0 324.3

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

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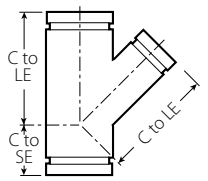
4.7 DIMENSIONS

45° Reducing Lateral

No. 30-R SWS



Size											No. 30-R SWS 45° Reducing Lateral (sw)		
Nominal inches DN					Actual Outside Diameter inches DN						C to LE inches mm	C to SE inches mm	Approx. Weight (Each) lb kg
3 DN80	x	3 DN80	x	2 DN50	3.500 88.9	x	3.500 88.9	x	2.375 60.3		8.50 216	3.25 83	9.8 4.4
				2½					2.875 73.0		8.50 216	3.25 83	9.8 4.4
4 DN100	x	4 DN100	x	2 DN50	4.500 114.3	x	4.500 114.3	x	2.375 60.3		10.50 267	3.75 95	10.0 4.5
				2½					2.875 73.0		10.50 267	3.75 95	10.0 4.5
				3 DN80					3.500 88.9		10.50 267	3.75 95	18.3 8.3
5	x	5	x	2 DN50	5	x	5	x	2.375 60.3		12.50 318	4.00 102	24.0 10.9
				3 DN80					3.500 88.9		12.50 318	4.00 102	27.0 12.2
				4 DN100					4.500 114.3		12.50 318	4.00 102	26.5 12.0
6 DN150	x	6 DN150	x	3 DN80	6.625 168.3	x	6.625 168.3	x	3.500 88.9		14.00 356	4.50 114	37.0 16.8
				4 DN100					4.500 114.3		14.00 356	4.50 114	36.0 16.3
				5					5.563 141.3		14.00 356	4.50 114	44.7 20.3
8 DN200	x	8 DN200	x	3 DN80	8.625 219.1	x	8.625 219.1	x	3.500 88.9		18.00 457	6.00 152	58.0 26.3
				4 DN100					4.500 114.3		18.00 457	6.00 152	62.0 28.1
				5					5.563 141.3		18.00 457	6.00 152	75.5 34.2
				6 DN150					6.625 168.3		18.00 457	6.00 152	82.0 37.2
10 DN250	x	10 DN250	x	4 DN100	10.750 273.0	x	10.750 273.0	x	4.500 114.3		20.50 521	6.50 165	104.8 47.5
				5					5.563 141.3		20.50 521	6.50 165	105.0 47.6
				6 DN150					6.625 168.3		20.50 521	6.50 165	105.8 48.0
				8 DN200					8.625 219.1		20.50 521	6.50 165	118.0 53.5
12 DN300	x	12 DN300	x	4 DN100	12.750 323.9	x	12.750 323.9	x	4.500 114.3		23.00 584	7.00 178	135.0 61.2
				5					5.563 141.3		23.00 584	7.00 178	122.0 55.3
				6 DN150					6.625 168.3		23.00 584	7.00 178	137.0 62.1
				8 DN200					8.625 219.1		23.00 584	7.00 178	147.0 66.7
				10 DN250					10.750 273.0		23.00 584	7.00 178	167.0 75.7

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

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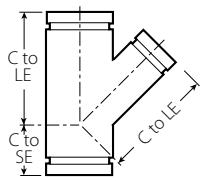
4.7 DIMENSIONS (CONTINUED)

45° Reducing Lateral

No. 30-R SWS



Size											No. 30-R SWS 45° Reducing Lateral (sw)		
Nominal inches DN					Actual Outside Diameter inches DN						C to LE inches mm	C to SE inches mm	Approx. Weight (Each) lb kg
14[1] DN350	x	14 DN350	x	4 DN100	14.000 355.6	x	14.000 355.6	x	4.500 114.3		26.50 673	7.50 191	176.0 79.8
				6 DN150					6.625 168.3		26.50 673	7.50 191	187.0 84.8
				8 DN200					8.625 219.1		26.50 673	7.50 191	210.0 95.3
				10 DN250					10.750 273.0		26.50 673	7.50 191	235.0 106.6
				12 DN300					12.750 323.9		26.50 673	7.50 191	252.0 114.3
16[1] DN400	x	16 DN400	x	6 DN150	16.000 406.4	x	16.000 406.4	x	6.625 168.3		29.00 737	8.00 203	215.0 97.5
				8 DN200					8.625 219.1		29.00 737	8.00 203	252.5 114.5
				10 DN250					10.750 273.0		29.00 737	8.00 203	265.0 120.2
				12 DN300					12.750 323.9		29.00 737	8.00 203	295.0 133.8
				14 DN350					16.000 406.4		29.00 737	8.00 203	305.0 138.3
18[1] DN450	x	18 DN450	x	6 DN150	18.000 457.2	x	18.000 457.2	x	6.625 168.3		32.00 813	8.50 216	274.0 124.3
				8 DN200					8.625 219.1		32.00 813	8.50 216	275.0 124.7
				10 DN250					10.750 273.0		32.00 813	8.50 216	285.0 129.3
				12 DN300					12.750 323.9		32.00 813	8.50 216	347.0 157.4
				14 DN350					14.000 355.6		32.00 813	8.50 216	350.0 158.8
				16 DN400					16.000 406.4		32.00 813	8.50 216	362.0 164.2
20[1] DN500	x	20 DN500	x	10 DN250	20.000 508.0	x	20.000 508.0	x	10.750 273.0		35.00 889	9.00 229	410.0 186.0
				12 DN300					12.750 323.9		35.00 889	9.00 229	415.0 188.2
				14 DN350					14.000 355.6		35.00 889	9.00 229	420.0 190.5
				16 DN400					16.000 406.4		35.00 889	9.00 229	425.0 192.8
24[1] DN600	x	24 DN600	x	16 DN400	24.000 609.6	x	24.000 609.6	x	16.000 406.4		40.00 1016	10.00 254	556.0 252.2
				20 DN500					20.000 508.0		40.00 1016	10.00 254	715.0 324.3
14 – 60 DN350 – DN1500					For AGS fitting information, see publication 20.05 AGS™								

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(sw) = Carbon Steel Segmentally Welded

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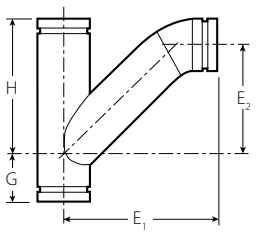
4.8 DIMENSIONS

Tee Wye

No. 32



Size										No. 32 Tee Wye (sw)				
Nominal inches DN					Actual Outside Diameter inches mm					G inches mm	H inches mm	E1 inches mm	E2 inches mm	Approx. Weight (Each) lb kg
2 DN50	x	2 DN50	x	2 DN50	2.375 60.3	x	2.375 60.3	x	2.375 60.3	2.75 70	7.00 178	9.00 229	4.63 117	6.4 2.9
2½	x	2½	x	2½	2.875 73.0	x	2.875 73.0	x	2.875 73.0	3.00 76	7.75 197	10.50 267	5.75 146	11.5 5.2
3 DN80	x	3 DN80	x	2 DN50	3.500 88.9	x	3.500 88.9	x	2.375 60.3	3.25 83	8.50 216	10.38 264	6.00 152	12.5 5.7
				3 DN80					3.500 88.9	3.25 83	8.50 216	11.50 292	6.50 165	14.3 6.5
3½ DN90	x	3½ DN90	x	3½ DN90	4.000 101.6	x	4.000 101.6	x	4.000 101.6	3.25 83	10.00 254	13.00 330	7.75 197	15.0 6.8
4 DN100	x	4 DN100	x	1 DN25	4.500 114.3	x	4.500 114.3	x	1.315 33.7	3.75 95	10.50 267	12.25 311	8.38 213	17.0 7.7
				2 DN50					2.375 60.3	3.75 95	10.50 267	11.88 302	7.50 191	20.0 9.1
				3 DN80					3.500 88.9	3.75 95	10.50 267	12.88 327	7.88 200	23.0 10.4
				4 DN100					4.500 114.3	3.75 95	10.00 254	13.63 346	8.13 206	26.0 11.8
5	x	5	x	2 DN50	5.563 141.3	x	5.563 141.3	x	2.375 60.3	4.00 102	12.50 318	13.13 333	8.75 222	29.0 13.2
				3 DN80					3.500 88.9	4.00 102	12.50 318	14.25 362	9.25 235	31.5 14.3
				4 DN100					4.500 114.3	4.00 102	12.50 318	15.13 384	9.63 244	36.7 16.6
				5					5.563 141.3	4.00 102	12.50 318	16.13 410	10.00 254	48.0 21.8
6 DN150	x	6 DN150	x	2 DN50	6.625 168.3	x	6.625 168.3	x	2.375 60.3	4.50 114	14.00 356	14.13 359	9.75 248	29.0 13.2
				3 DN80					3.500 88.9	4.50 114	14.00 356	15.31 389	10.31 262	37.3 16.9
				4 DN100					4.500 114.3	4.50 114	14.00 356	16.25 413	10.75 273	46.3 21.0
				5					5.563 141.3	4.50 114	14.00 356	17.25 438	11.13 283	55.0 25.0
				6 DN150					6.625 168.3	4.50 114	14.00 356	18.25 464	11.50 292	60.5 27.4
8 DN200	x	8 DN200	x	2 DN50	8.625 219.1	x	8.625 219.1	x	2.375 60.3	6.00 152	18.00 457	17.00 432	12.63 321	70.0 31.8
				3 DN80					3.500 88.9	6.00 152	18.00 457	18.19 462	13.19 335	76.0 34.5
				4 DN100					4.500 114.3	6.00 152	18.00 457	19.00 483	13.50 343	76.4 34.6
				5					5.563 141.3	6.00 152	18.00 457	20.00 508	13.88 352	85.6 38.8
				6 DN150					6.625 168.3	6.00 152	18.00 457	21.13 537	14.38 365	112.0 50.8
				8 DN200					8.625 219.1	6.00 152	18.00 457	23.25 591	15.25 387	127.9 58.0

(sw) = Carbon Steel Segmentally Welded

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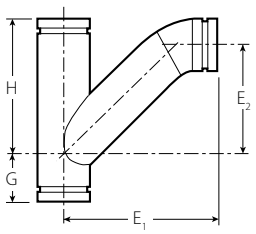
4.8 DIMENSIONS

Tee Wye

No. 32



Size									No. 32 Tee Wye (sw)				
Nominal inches DN					Actual Outside Diameter inches mm				G inches mm	H inches mm	E1 inches mm	E2 inches mm	Approx. Weight (Each) lb kg
10 DN250	x	10 DN250	x	2 DN50	10.750 273.0	x	10.750 273.0	x	2.375 60.3	6.50 165	20.50 521	18.75 476	14.38 365	90.0 40.8
				3 DN80					3.500 88.9	6.50 165	20.50 521	19.88 505	14.88 378	96.0 43.5
				4 DN100					4.500 114.3	6.50 165	20.50 521	20.75 527	15.25 387	97.4 44.2
				5					5.563 141.3	6.50 165	20.50 521	21.88 556	15.75 400	115.0 52.2
				6 DN150					6.625 168.3	6.50 165	20.50 521	22.88 581	16.13 410	133.1 60.4
				8 DN200					8.625 219.1	6.50 165	20.50 521	27.25 692	19.25 489	156.0 70.8
				10 DN250					10.750 273.0	6.50 165	20.50 521	27.25 692	18.00 457	190.0 86.2
12 DN300	x	12 DN300	x	2 DN50	12.750 323.9	x	12.750 323.9	x	2.375 60.3	7.00 178	23.00 584	20.75 527	16.38 416	120.0 54.4
				3 DN80					3.500 88.9	7.00 178	23.00 584	21.75 552	16.75 425	125.0 56.7
				4 DN100					4.500 114.3	7.00 178	23.00 584	22.63 575	17.13 435	127.0 57.6
				5					5.563 141.3	7.00 178	23.00 584	23.63 600	17.50 445	143.0 64.9
				6 DN150					6.625 168.3	7.00 178	23.00 584	24.78 629	18.03 458	165.0 74.8
				8 DN200					8.625 219.1	7.00 178	23.00 584	26.92 684	18.92 481	176.0 79.8
				10 DN250					10.750 273.0	7.00 178	23.00 584	29.00 737	19.75 502	200.0 90.7
				12 DN300					12.750 323.9	7.00 178	23.00 584	31.00 787	20.50 521	240.0 108.9

(sw) = Carbon Steel Segmentally Welded

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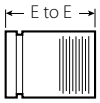
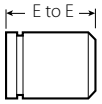
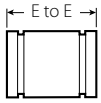
4.9 DIMENSIONS

Adapter Nipple

No. 40
No. 42
No. 43







Size		No. 40 Adapter Nipple Groove x Male Thread[2] (s)		No. 42 Adapter Nipple Groove x Bevel (s)		No. 43 Adapter Nipple Groove x Groove (s)	
Nominal inches DN	Actual Outside Diameter inches mm	E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
¾ DN20	1.050 26.9	3.00 76	0.3 0.1	3.00 76	0.3 0.1	3.00 76	0.3 0.1
1 DN25	1.315 33.7	3.00 76	0.4 0.2	3.00 76	0.4 0.2	3.00 76	0.4 0.2
1 ¼ DN32	1.660 42.4	4.00 102	0.8 0.3	4.00 102	0.8 0.3	4.00 102	0.8 0.3
1 ½ DN40	1.900 48.3	4.00 102	0.9 0.4	4.00 102	0.9 0.4	4.00 102	0.9 0.4
2 DN50	2.375 60.3	4.00 102	1.2 0.6	4.00 102	1.2 0.6	4.00 102	1.2 0.6
2 ½	2.875 73.0	4.00 102	1.9 0.9	4.00 102	1.9 0.9	4.00 102	1.9 0.9
DN65	3.000 76.1	4.00 102	2.0 0.9	4.00 102	2.0 0.9	4.00 102	2.0 0.9
3 DN80	3.500 88.9	4.00 102	2.5 1.1	4.00 102	2.5 1.1	4.00 102	2.5 1.1
3 ½ DN90	4.000 101.6	4.00 102	3.0 1.4	4.00 102	3.0 1.4	4.00 102	3.0 1.4
	4.250 108.0	6.00 152	4.9 2.2	6.00 152	4.9 2.2	6.00 152	4.9 2.2
4 DN100	4.500 114.3	6.00 152	5.4 2.5	6.00 152	5.4 2.5	6.00 152	5.4 2.5
4 ½	5.000 127.0	6.00 152	6.3 2.8	6.00 152	6.3 2.8	6.00 152	6.3 2.8
	5.250 133.0	6.00 152	6.9 3.1	6.00 152	6.9 3.1	6.00 152	6.9 3.1
DN125	5.500 139.7	6.00 152	7.2 3.3	6.00 152	7.2 3.3	6.00 152	7.2 3.3
5	5.563 141.3	6.00 152	7.3 3.3	6.00 152	7.3 3.3	6.00 152	7.3 3.3
	6.000 152.4	6.00 152	8.6 3.9	6.00 152	8.6 3.9	6.00 152	8.6 3.9
	6.250 159.0	6.00 152	9.0 4.1	6.00 152	9.0 4.1	6.00 152	9.0 4.1
	6.500 165.1	6.00 152	9.3 4.2	6.00 152	9.3 4.2	6.00 152	9.3 4.2
6 DN150	6.625 168.3	6.00 152	9.5 4.3	6.00 152	9.5 4.3	6.00 152	9.5 4.3
8 DN200	8.625 219.1	6.00 152	14.3 6.5	6.00 152	14.3 6.5	6.00 152	14.3 6.5
10 DN250	10.750 273.0	8.00 203	22.8 10.3	8.00 203	22.8 10.3	8.00 203	22.8 10.3
12 DN300	12.750 323.9	8.00 203	33.1 15.0	8.00 203	33.1 15.0	8.00 203	33.1 15.0

[1] For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

[2] Available with British Standard Pipe Threads, specify "BSP" clearly on order.

(s) = Carbon Steel Segmentally Welded

NOTE

- For pump package nipples with 1 ½"/40mm hole cut to receive Style 923 Vic-Let or Style 924 Vic-O-Well request special No. 40, 42 or 43 nipples and specify No. 40-H, 42-H or 43-H on order. Note: 4 – 12"/DN100 – N300 diameter – 8"/200mm length required.

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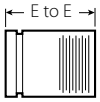
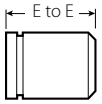
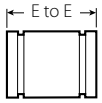
4.9 DIMENSIONS (CONTINUED)

Adapter Nipple

No. 40
No. 42
No. 43







Size		No. 40 Adapter Nipple Groove x Male Thread[2] (s)		No. 42 Adapter Nipple Groove x Bevel (s)		No. 43 Adapter Nipple Groove x Groove (s)	
Nominal inches DN	Actual Outside Diameter inches mm	E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
14[1] DN350	14.000 355.6	8.00 203	36.5 16.5	8.00 203	36.5 16.5	8.00 203	36.5 16.5
16[1] DN400	16.000 406.4	8.00 203	41.8 19.0	8.00 203	41.8 19.0	8.00 203	41.8 19.0
18[1] DN450	18.000 457.2	8.00 203	47.2 21.4	8.00 203	47.2 21.4	8.00 203	47.2 21.4
20[1] DN500	20.000 508.0	8.00 203	52.5 23.8	8.00 203	52.5 23.8	8.00 203	52.5 23.8
22[1] DN550	22.000 558.8	8.00 203	57.9 26.3	8.00 203	57.9 26.3	8.00 203	57.9 26.3
24[1] DN600	24.000 609.6	8.00 203	63.2 28.7	8.00 203	63.2 28.7	8.00 203	63.2 28.7
14 – 60 DN350 – DN1500	For AGS fitting information, see publication 20.05 AGS™						

1 For 14"/DN350 and larger roll grooved systems for carbon steel pipe, Victaulic offers fittings for the Advanced Groove System (AGS). Refer to publication 20.05 for more information. For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

2 Available with British Standard Pipe Threads, specify "BSP" clearly on order.

(s) = Carbon Steel Segmentally Welded

NOTE

- For pump package nipples with 1 ½"/40mm hole cut to receive Style 923 Vic-Let or Style 924 Vic-O-Well request special No. 40, 42 or 43 nipples and specify No. 40-H, 42-H or 43-H on order. Note: 4 – 12"/DN100 – N300 diameter – 8"/200mm length required.

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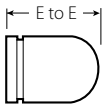
4.10 DIMENSIONS

Cap
No. 60

Bull Plug
No. 61



Size		No. 60 Cap		No. 61 Bull Plug (s)	
Nominal inches DN	Actual Outside Diameter inches mm	T inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
¾ DN20	1.050 26.9	0.91 (s) 23	0.2 0.1	NA	NA
1 DN25	1.315 33.7	0.79 20	0.2 0.1	NA	NA
1 ¼ DN32	1.660 42.4	0.79 20	0.4 0.2	NA	NA
1 ½ DN40	1.900 48.3	0.79 20	0.4 0.2	NA	NA
2 DN50	2.375 60.3	0.88 22	0.7 0.3	4.00 102	2.6 1.2
2 ½	2.875 73.0	0.88 22	1.2 0.5	5.00 127	3.0 1.4
DN65	3.000 76.1	0.88 22	1.2 0.5	NA	NA
3 DN80	3.500 88.9	0.88 22	1.7 0.7	6.00 152	4.5 2.0
3 ½ DN90	4.000 101.6	0.88 22	1.9 0.9	NA	NA
	4.250 108.0	0.92 23	2.6 1.2	NA	NA
4 DN100	4.500 114.3	0.92 23	3.1 1.4	7.00 178	7.5 3.4
4 ½	5.000 127.0	1.00 (s) 25	5.4 2.4	NA	NA
	5.250 133.0	0.92 23	3.9 1.8	NA	NA
DN125	5.500 139.7	0.92 23	4.5 2.0	NA	NA
5	5.563 141.3	0.92 23	4.9 2.2	8.00 203	11.5 5.2
	6.250 159.0	0.92 23	5.7 2.6	NA	NA
	6.500 165.1	0.92 23	6.2 2.8	NA	NA
6 DN150	6.625 168.3	0.92 23	6.4 2.9	10.00 254	18.0 8.2
200A	216.3	1.13 29	17.4 7.9	NA	NA

[1] For 14"/DN350 and larger roll grooved systems, Victaulic offers the Advanced Groove System (AGS). For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(s) = Carbon Steel

NA = Not Available

"+" = Contact Victaulic for details

NOTES

- All fittings are ductile iron unless otherwise noted with an (s).
- No. 60 cap is not suitable for use in vacuum service with Style 72 or Style 750 couplings. No. 61 bull plugs should be used.
- Steel dish caps available through 24"/DN600, contact Victaulic.
- No. 60 Caps are available with taps. Tap sizes range from ½" up to 4" maximum, depending on the diameter of the cap, and can be provided centered or offset to suit the application. Contact Victaulic for pricing and availability. All tapped caps are non-cancellable and non-returnable.

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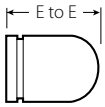
4.10 DIMENSIONS

Cap
No. 60

Bull Plug
No. 61



Size		No. 60 Cap		No. 61 Bull Plug (s)	
Nominal inches DN	Actual Outside Diameter inches mm	T inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
8 DN200	8.625 219.1	1.13 29	13.6 6.2	12.00 305	29.0 13.2
10 DN250	10.750 273.0	1.13 29	23.6 10.7	10.00 254	39.0 17.7
12 DN300	12.750 323.9	1.25 32	38.5 17.5	NA	NA
14[1] DN350	14.000 355.6	9.50 (s) 241	42.0 19.1	NA	NA
16[1] DN400	16.000 406.4	10.00 (s) 254	45.0 20.4	NA	NA
18[1] DN450	18.000 457.2	11.00 (s) 279	58.0 26.3	NA	NA
20[1] DN500	20.000 508.0	12.00 (s) 305	67.5 30.6	NA	NA
22[1] DN550	22.000 558.8	13.00 (s) 330	+	NA	NA
24[1] DN600	24.000 609.6	13.50 (s) 343	105.0 47.6	NA	NA
14 – 60 DN350 – DN1500	For AGS fitting information, see publication 20.05 AGS™				

[1] For 14"/DN350 and larger roll grooved systems, Victaulic offers the Advanced Groove System (AGS). For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(s) = Carbon Steel

NA = Not Available

"+" = Contact Victaulic for details

NOTES

- All fittings are ductile iron unless otherwise noted with an (s).
- No. 60 cap is not suitable for use in vacuum service with Style 72 or Style 750 couplings. No. 61 bull plugs should be used.
- Steel dish caps available through 24"/DN600, contact Victaulic.
- No. 60 Caps are available with taps. Tap sizes range from ½" up to 4" maximum, depending on the diameter of the cap, and can be provided centered or offset to suit the application. Contact Victaulic for pricing and availability. All tapped caps are non-cancellable and non-returnable.

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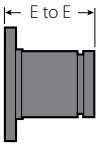
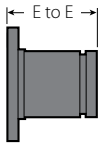
4.11 DIMENSIONS

Flanged Adapter Nipple

No. 41





Size		No. 41 ANSI Class 125 Flange Adapter Nipple Flat Face (s)		No. 41-DN PN10/16 Flange Adapter Nipple Flat Face (s)	
Nominal inches DN	**Actual Outside Diameter** inches mm	**E to E** inches mm	**Approx. Weight (Each)** lb kg	**E to E** inches mm	**Approx. Weight (Each)** lb kg
¾ DN20	1.050 26.9	3.00 76	+	NA	NA
1 DN25	1.315 33.7	3.00 76	2.0 0.9	3.00 76	2.6 1.2
1 ¼ DN32	1.660 42.4	4.00 102	3.0 1.4	3.00 76	4.1 1.9
1 ½ DN40	1.900 48.3	4.00 102	3.5 1.6	NA	NA
2 DN50	2.375 60.3	4.00 102	5.5 2.5	4.00 102	6.2 2.8
2 ½	2.875 73.0	4.00 102	8.0 3.6	NA	NA
DN65	3.000 76.1	NA	NA	4.00 102	7.1 3.2
3 DN80	3.500 88.9	4.00 102	9.5 4.3	4.00 102	9.0 4.1
3 ½ DN90	4.000 101.6	4.00 102	+	NA	NA
	4.250 108.0	NA	NA	NA	NA
4 DN100	4.500 114.3	6.00 152	16.7 7.6	6.00 152	12.8 5.8
4 ½	5.000 127.0	NA	NA	NA	NA
	5.250 133.0	NA	NA	NA	NA
DN125	5.500 139.7	NA	NA	6.00 152	16.8 7.6
5	5.563 141.3	6.00 152	21.5 9.8	NA	NA
	6.500 165.1	NA	NA	NA	NA
6 DN150	6.625 168.3	6.00 152	26.5 12.0	6.00 152	20.5 9.3
200A	216.3	NA	NA	NA	NA

[1] For 14"/DN350 and larger roll grooved systems, Victaulic offers the Advanced Groove System (AGS). For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(s) = Carbon Steel

NA = Not Available

"+" = Contact Victaulic for details

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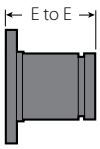
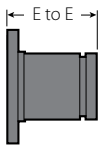
4.11 DIMENSIONS (CONTINUED)

Flanged Adapter Nipple

No. 41





Size		No. 41 ANSI Class 125 Flange Adapter Nipple Flat Face (s)		No. 41-DN PN10/16 Flange Adapter Nipple Flat Face (s)	
Nominal inches DN	**Actual Outside Diameter** inches mm	**E to E** inches mm	**Approx. Weight (Each)** lb kg	**E to E** inches mm	**Approx. Weight (Each)** lb kg
8 DN200	8.625 219.1	6.00 152	39.0 17.7	6.00 152	30.8 14.0
250A	267.4	NA	NA	NA	NA
10 DN250	10.750 273.0	8.00 203	64.2 29.1	8.00 203	46.3 21.0
300A	318.5	NA	NA	NA	NA
12 DN300	12.750 323.9	8.00 203	87.0 39.5	8.00 203	58.7 26.6

[1] For 14"/DN350 and larger roll grooved systems, Victaulic offers the Advanced Groove System (AGS). For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(s) = Carbon Steel

NA = Not Available

"+" = Contact Victaulic for details

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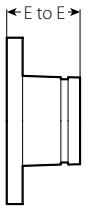
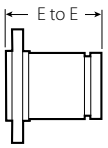
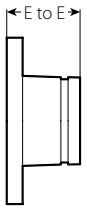
4.11 DIMENSIONS (CONTINUED)

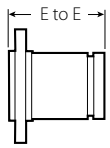
Flanged Adapter Nipple

No. 45F
No. 45R
No. 45FE
No. 45RE









Size		No. 45F ANSI Class 150 Flange Adapter Nipple Flat Face		No. 45R ANSI Class 150 Flange Adapter Nipple Raised Face		No. 45FE PN10/16 Flange Adapter Nipple Flat Face		No. 45RE PN10/16 Flange Adapter Nipple Raised Face	
Nominal inches DN	Actual Outside Diameter inches mm	E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
¾ DN20	1.050 26.9	3.00 (s) 76	2.0 0.9	3.00 (s) 76	2.0 0.9	NA	NA	NA	NA
1 DN25	1.315 33.7	3.00 (s) 76	2.7 1.2	3.00 (s) 76	2.7 1.2	NA	NA	NA	NA
1 ¼ DN32	1.660 42.4	4.00 (s) 102	3.6 1.6	4.00 (s) 102	3.6 1.6	NA	NA	NA	NA
1 ½ DN40	1.900 48.3	4.00 (s) 102	3.9 1.8	4.00 (s) 102	3.9 1.8	2.52 64	+	2.52 64	+
2 DN50	2.375 60.3	4.00 102	6.0 2.7	4.00 102	6.0 2.7	2.52 64	+	2.52 64	+
2 ½	2.875 73.0	4.00 102	9.9 4.5	4.00 102	9.9 4.5	NA	NA	NA	NA
DN65	3.000 76.1	NA	NA	NA	NA	2.52 64	+	2.52 64	+
3 DN80	3.500 88.9	4.00 102	11.7 5.3	4.00 102	11.7 5.3	2.52 64	+	2.52 64	+
3 ½ DN90	4.000 101.6	4.00 (s) 102	13.8 6.3	4.00 (s) 102	13.8 6.3	NA	NA	NA	NA
	4.250 108.0	NA	NA	NA	NA	NA	NA	NA	NA
4 DN100	4.500 114.3	6.00 152	18.5 8.4	6.00 152	18.5 8.4	2.76 70	+	2.76 70	+
DN125	5.500 139.7	NA	NA	NA	NA	2.76 70	+	2.76 70	+
5	5.563 141.3	6.00 (s) 152	21.4 9.7	6.00 (s) 152	21.4 9.7	NA	NA	NA	NA
	6.500 165.1	NA	NA	NA	NA	2.76 70	+	2.76 70	+
6 DN150	6.625 168.3	6.00 152	29.0 13.2	6.00 152	29.0 13.2	2.76 70	+	2.76 70	+
8 DN200	8.625 219.1	6.00 152	42.0 19.1	6.00 152	42.0 19.1	3.15 80	+	3.15 80	+
10 DN250	10.750 273.0	8.00 203	64.2 29.1	8.00 203	64.2 29.1	3.15 80	+	3.15 80	+
12 DN300	12.750 323.9	8.00 203	88.2 40.0	8.00 203	88.2 40.0	3.15 80	+	3.15 80	+
14[1] DN350	14.000 355.6	8.00 (s) 203	126.4 57.3	8.00 203	126.4 57.3	NA	NA	NA	NA
16[1] DN400	16.000 406.4	8.00 (s) 203	150.0 68.0	8.00 203	150.0 68.0	NA	NA	NA	NA

[1] For 14"/DN350 and larger roll grooved systems, Victaulic offers the Advanced Groove System (AGS). For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(s) = Carbon Steel

NA = Not Available

"+" = Contact Victaulic for details

NOTE

- All fittings are ductile iron unless otherwise noted with an (s).

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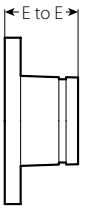
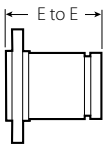
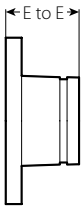
4.11 DIMENSIONS (CONTINUED)

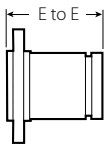
Flanged Adapter Nipple

No. 45F
No. 45R
No. 45FE
No. 45RE









Size		No. 45F ANSI Class 150 Flange Adapter Nipple Flat Face		No. 45R ANSI Class 150 Flange Adapter Nipple Raised Face		No. 45FE PN10/16 Flange Adapter Nipple Flat Face		No. 45RE PN10/16 Flange Adapter Nipple Raised Face	
Nominal inches DN	Actual Outside Diameter inches mm	E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
18[1] DN450	18.000 457.2	8.00 (s) 203	177.0 80.3	8.00 (s) 203	177.0 80.3	NA	NA	NA	NA
20[1] DN500	20.000 508.0	8.00 (s) 203	218.0 98.9	8.00 (s) 203	218.0 98.9	NA	NA	NA	NA
24[1] DN600	24.000 609.6	8.00 (s) 203	283.0 128.4	8.00 (s) 203	283.0 128.4	NA	NA	NA	NA
14 – 60 DN350 – DN1500	For AGS fitting information, see publication 20.05 AGS™								

[1] For 14"/DN350 and larger roll grooved systems, Victaulic offers the Advanced Groove System (AGS). For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(s) = Carbon Steel

NA = Not Available

"+" = Contact Victaulic for details

NOTE

- All fittings are ductile iron unless otherwise noted with an (s).

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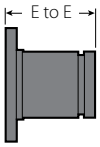
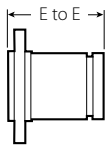
4.16 DIMENSIONS (CONTINUED)

Flange Adapter Nipple

No 46F
No 46R





Size		No. 46F ANSI Class 300 Flange Adapter Nipple Flat Face (s)		No. 46R ANSI Class 300 Flange Adapter Nipple Raised Face (s)	
Nominal inches DN	Actual Outside Diameter inches mm	E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
¾ DN20	1.050 26.9	3.00 76	3.3 1.5	3.00 76	+
1 DN25	1.315 33.7	3.00 76	3.9 1.8	3.00 76	3.9 1.8
1 ¼ DN32	1.660 42.4	4.00 102	4.8 2.2	4.00 102	4.8 2.2
1 ½ DN40	1.900 48.3	4.00 102	6.9 3.1	4.00 102	6.9 3.1
2 DN50	2.375 60.3	4.00 102	8.1 3.7	4.00 102	8.1 3.7
2 ½	2.875 73.0	4.00 102	11.9 5.4	4.00 102	11.9 5.4
3 DN80	3.500 88.9	4.00 102	16.5 7.5	4.00 102	16.5 7.5
3 ½ DN90	4.000 101.6	4.00 102	20.1 9.1	4.00 102	20.1 9.1
4 DN100	4.500 114.3	6.00 152	27.4 12.4	6.00 152	27.4 12.4
5	5.563 141.3	6.00 152	35.3 16.0	6.00 152	35.3 16.0
6 DN150	6.625 168.3	6.00 152	47.5 21.5	6.00 152	47.5 21.5
8 DN200	8.625 219.1	6.00 152	68.0 30.8	6.00 152	68.0 30.8
10 DN250	10.750 273.0	8.00 203	100.8 45.7	8.00 203	100.8 45.7
12 DN300	12.750 323.9	8.00 203	148.0 67.1	8.00 203	148.0 67.1
14[1] DN350	14.000 355.6	8.00 203	180.0 81.8	NA	NA
16[1] DN400	16.000 406.4	8.00 203	237.0 107.5	NA	NA
18[1] DN450	18.000 457.2	8.00 203	297.0 134.7	NA	NA
20[1] DN500	20.000 508.0	8.00 203	+	NA	NA
22[1] DN550	22.000 558.8	8.00 203	+	NA	NA
24[1] DN600	24.000 609.6	8.00 203	+	NA	NA
14 – 60 DN350 – DN1500	For AGS fitting information, see publication 20.05 AGS™				

[1] For 14"/DN350 and larger roll grooved systems, Victaulic offers the Advanced Groove System (AGS). For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(s) = Carbon Steel

NA = Not Available

+ = Contact Victaulic for details

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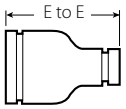
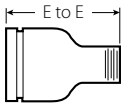
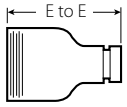
4.12 DIMENSIONS

Swaged Nipple

No. 53
No. 54
No. 55







Size						No. 53 Swage Nipple Groove x Groove (s)		No. 54 Swage Nipple Groove x Male Thread[1] (s)		No. 55 Swage Nipple Male Thread[1] x Groove (s)	
Nominal inches DN			Actual Outside Diameter inches mm			E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
2 DN50	x	¾ DN20	2.375 60.3	x	1.050 26.9	6.50 165	2.0 0.9	NA	NA	NA	NA
		1 DN25			1.315 33.7	6.50 165	2.0 0.9	6.50 165	2.0 0.9	6.50 165	2.0 0.9
		1 ¼ DN32			1.660 42.4	6.50 165	2.0 0.9	6.50 165	2.0 0.9	6.50 165	2.0 0.9
		1 ½ DN40			1.900 48.3	6.50 165	2.0 0.9	6.50 165	2.0 0.9	6.50 165	2.0 0.9
2 ½ DN65	x	1 DN25	2.875 73.0	x	1.315 33.7	7.00 178	3.0 1.4	7.00 178	3.0 1.4	7.00 178	3.0 1.4
		1 ¼ DN32			1.660 42.4	7.00 178	3.0 1.4	7.00 178	3.0 1.4	7.00 178	3.0 1.4
		1 ½ DN40			1.900 48.3	7.00 178	3.0 1.4	7.00 178	3.0 1.4	7.00 178	3.0 1.4
		2 DN50			2.375 60.3	7.00 178	3.0 1.4	7.00 178	3.0 1.4	7.00 178	3.0 1.4
	x	1 ½ DN40	3.000 76.1	x	1.900 48.3	NA	NA	8.00 203	4.0 1.8	NA	NA
		2 DN50			2.375 60.3	8.00 203	4.0 1.8	NA	NA	NA	NA
3 DN80	x	1 DN25	3.500 88.9	x	1.315 33.7	8.00 203	4.5 2.0	8.00 203	4.5 2.0	8.00 203	4.5 2.0
		1 ¼ DN32			1.660 42.4	8.00 203	4.5 2.0	8.00 203	4.5 2.0	8.00 203	4.5 2.0
		1 ½ DN40			1.900 48.3	8.00 203	4.5 2.0	8.00 203	4.5 2.0	8.00 203	4.5 2.0
		2 DN50			2.375 60.3	8.00 203	4.5 2.0	8.00 203	4.5 2.0	8.00 203	4.5 2.0
		2 ½ DN65			2.875 73.0	8.00 203	4.5 2.0	8.00 203	4.5 2.0	8.00 203	4.5 2.0
					3.000 76.1	8.00 203	4.5 2.0	8.00 203	4.5 2.0	NA	NA
3 ½ DN90	x	3 DN80	4.000 101.6	x	3.500 88.9	8.00 203	6.8 3.1	8.00 203	6.8 3.1	8.00 203	6.8 3.1
4 DN100	x	1 DN25	4.500 114.3	x	1.315 33.7	9.00 229	7.5 3.4	9.00 229	7.5 3.4	9.00 229	7.5 3.4
		1 ¼ DN32			1.660 42.4	9.00 229	7.5 3.4	9.00 229	7.5 3.4	NA	NA
		1 ½ DN40			1.900 48.3	9.00 229	7.5 3.4	9.00 229	7.5 3.4	9.00 229	7.5 3.4
		2 DN50			2.375 60.3	9.00 229	7.5 3.4	9.00 229	7.5 3.4	9.00 229	7.5 3.4
		2 ½ DN65			2.875 73.0	9.00 229	7.5 3.4	9.00 229	7.5 3.4	9.00 229	7.5 3.4
					3.000 76.1	9.00 229	7.5 3.4	NA	NA	NA	NA
		3 DN80			3.500 88.9	9.00 229	7.5 3.4	9.00 229	7.5 3.4	9.00 229	7.5 3.4
		3 ½ DN90			4.000 101.6	9.00 229	7.5 3.4	9.00 229	7.5 3.4	9.00 229	7.5 3.4

[1] Available with British Standard Pipe Threads, specify BSP clearly on order.

(s) = Carbon Steel

NA = Not Available

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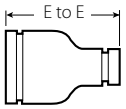
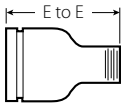
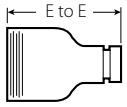
4.12 DIMENSIONS

Swaged Nipple

No. 53
No. 54
No. 55







Size						No. 53 Swage Nipple Groove x Groove (s)		No. 54 Swage Nipple Groove x Male Thread[1] (s)		No. 55 Swage Nipple Male Thread[1] x Groove (s)	
Nominal inches DN			Actual Outside Diameter inches mm			E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
5	x	2 DN50	5.563 141.3	x	2.375 60.3	11.00 279	11.5 5.2	11.00 279	11.5 5.2	11.00 279	11.5 5.2
		3 DN80			3.500 88.9	11.00 279	11.5 5.2	11.00 279	11.5 5.2	11.00 279	11.5 5.2
		4 DN100			4.500 114.3	11.00 279	11.5 5.2	11.00 279	11.5 5.2	11.00 279	11.5 5.2
6 DN150	x	1 DN25		x	1.315 33.7	12.00 305	17.0 7.7	12.00 305	17.0 7.7	12.00 305	17.0 7.7
		1¼ DN32			1.660 42.4	12.00 305	17.0 7.7	12.00 305	17.0 7.7	12.00 305	17.0 7.7
		1½ DN40			1.900 48.3	12.00 305	17.2 7.8	12.00 305	17.2 7.8	12.00 305	17.0 7.7
		2 DN50			2.375 60.3	12.00 305	17.4 7.9	12.00 305	17.4 7.9	12.00 305	17.4 7.9
		2½			2.875 73.0	12.00 305	17.4 7.9	12.00 305	17.4 7.9	12.00 305	17.4 7.9
		3 DN80			3.500 88.9	12.00 305	17.4 7.9	12.00 305	17.4 7.9	12.00 305	17.4 7.9
		3½ DN90			4.000 101.6	12.00 305	17.5 7.9	12.00 305	17.5 7.9	NA	NA
		4 DN100			4.500 114.3	12.00 305	17.5 7.9	12.00 305	17.5 7.9	12.00 305	17.5 7.9
		4½			5.000 127.0	12.00 305	17.5 7.9	12.00 305	17.5 7.9	NA	NA
		5			5.563 141.3	12.00 305	17.5 7.9	12.00 305	17.5 7.9	12.00 305	17.5 7.9
8 DN200	x	6 DN150	8.625 219.1	x	6.625 168.3	12.00 305	29.0 13.2	12.00 305	29.0 13.2	12.00 305	29.0 13.2

[1] Available with British Standard Pipe Threads, specify BSP clearly on order.

(s) = Carbon Steel

NA = Not Available

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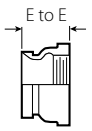
4.13 DIMENSIONS

Female Threaded Adapter

No. 80



Size		No. 80 Adapter Groove x Female Thread[1]	
Nominal inches DN	**Actual Outside Diameter** inches mm	**E to E** inches mm	**Approx. Weight (Each)** lb kg
¾ DN20	1.050 26.9	2.00 (s) 51	0.6 0.3
1 DN25	1.315 33.7	2.08 53	0.4 0.2
1 ¼ DN32	1.660 42.4	2.29 58	0.6 0.3
1 ½ DN40	1.900 48.3	2.29 58	1.0 0.5
2 DN50	2.375 60.3	2.50 64	1.5 0.7
2 ½	2.875 73.0	2.75 70	1.8 0.8
DN65	3.000 76.1	2.75 70	2.2 1.0
3 DN80	3.500 88.9	2.75 70	2.8 1.3
4 DN100	4.500 114.3	3.25 83	4.5 2.0

[1] Available with British Standard Pipe Threads, specify "BSP" clearly on order.

(s) = Carbon Steel

NOTE

- All fittings are ductile iron unless otherwise noted with an (s).

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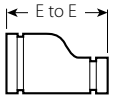
4.15 DIMENSIONS

Concentric/Eccentric Reducer

No. 50
No. 51



Size						No. 50 Concentric Reducer		No. 51 Eccentric Reducer	
Nominal inches DN			Actual Outside Diameter inches mm			E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
1 DN25	x	¾ DN20	1.315 33.7	x	1.050 26.9	8.00 (s) 203	+	8.00 (s) 203	+
1 ¼ DN32	x	¾ DN20	1.660 42.4	x	1.050 26.9	8.00 (s) 203	1.3 0.6	8.00 (s) 203	1.3 0.6
		1 DN25			1.315 33.7	2.50 64	0.6 0.3	8.00 (s) 203	1.4 0.6
1 ½ DN40	x	¾ DN20	1.900 48.3	x	1.050 26.9	8.50 (s) 216	1.5 0.7	8.50 (s) 216	1.5 0.7
		1 DN25			1.315 33.7	2.50 64	0.8 0.4	8.50 (s) 216	1.7 0.8
		1 ¼ DN32			1.660 42.4	2.50 64	0.9 0.4	8.50 (s) 216	1.8 0.8
2 DN50	x	¾ DN20	2.375 60.3	x	1.050 26.9	2.50 64	0.8 0.4	9.00 (s) 229	2.2 1.0
		1 DN25			1.315 33.7	2.50 64	0.7 0.3	9.00 (s) 229	2.3 1.0
		1 ¼ DN32			1 ¼ DN32	2.50 64	0.8 0.4	9.00 (s) 229	2.5 1.1
		1 ½ DN40			1.900 48.3	2.50 64	1.2 0.5	3.50 89	1.1 0.5
2 ½	x	¾ DN20	2.875 73.0	x	1.050 26.9	9.50 (s) 241	+	9.50 (s) 241	+
		1 DN25			1.315 33.7	2.50 64	1.4 0.6	9.50 (s) 241	3.4 1.5
		1 ¼ DN32			1 ¼ DN32	2.50 64	1.4 0.6	3.50 89	1.3 0.6
		1 ½ DN40			1.900 48.3	2.50 64	1.4 0.6	9.50 (s) 241	3.8 1.7
		2 DN50			2.375 60.3	2.50 64	1.5 0.7	3.50 89	1.6 0.7
	x	1 DN25	3.000 76.1	x	1.315 33.7	2.50 64	+	9.50 (s) 241	+
DN65		1 ¼ DN32			1.660 42.4	2.50 64	+	9.50 (s) 241	+
		1 ½ DN40			1.900 48.3	2.50 64	+	9.50 (s) 241	+
		2 DN50			2.375 60.3	2.50 64	+	9.50 (s) 241	+
		2 ½			2.875 73.0	2.50 64	+	9.50 (s) 241	+

[1] For 14"/DN350 and larger roll grooved systems, Victaulic offers the Advanced Groove System (AGS). For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(s) = Carbon Steel

NA = Not Available

"+" = Contact Victaulic for details

NOTES

- All fittings are ductile iron unless otherwise noted with an (s).
- Available with make threaded small end No. 52
- Steel eccentric reducers available through 30"/DN750, contact Victaulic for dimensions.

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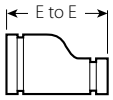
4.15 DIMENSIONS (CONTINUED)

Concentric/Eccentric Reducer

No. 50
No. 51



Size						No. 50 Concentric Reducer		No. 51 Eccentric Reducer	
Nominal inches DN			Actual Outside Diameter inches mm			E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
3 DN80	x	¾ DN20	3.500 88.9	x	1.050 26.9	9.50 (s) 241	+	9.50 (s) 241	+
		1 DN25			1.315 33.7	2.50 64	1.8 0.8	9.50 (s) 241	4.8 2.2
		1 ¼ DN32			1.660 42.4	2.50 64	1.4 0.6	9.50 (s) 241	5.0 2.3
		1 ½ DN40			1.900 48.3	2.50 64	2.0 0.9	9.50 (s) 241	5.1 2.3
		2 DN50			2.375 60.3	2.50 64	1.6 0.7	3.50 89	1.9 0.9
		2 ½			2.875 73.0	2.50 64	1.7 0.7	3.50 89	2.1 1.0
		DN65			3.000 76.1	2.50 64	2.1 1.0	9.50 (s) 241	5.4 2.4
3 ½ DN90	x	3 DN80	4.000 101.6	x	3.500 88.9	2.50 64	2.1 1.0	10.00 (s) 254	7.0 3.2
			4.250 108.0	x	2.875 73.0	3.50 89	+	NA	NA
					3.000 76.1	3.50 89	+	NA	NA
					3.500 88.9	3.50 89	+	NA	NA
4 DN100	x	1 DN25	4.500 114.3	x	1.315 33.7	3.00 76	3.0 1.4	10.00 (s) 254	6.5 2.9
		1 ¼ DN32			1.660 42.4	10.00 (s) 254	+	10.00 (s) 254	+
		1 ½ DN40			1.900 48.3	3.00 76	2.6 1.2	10.00 (s) 254	6.9 3.1
		2 DN50			2.375 60.3	3.00 76	3.4 1.5	4.00 102	2.9 1.3
		DN65			3.000 76.1	3.00 76	3.3 1.5	4.00 102	3.2 1.4
		2 ½			2.875 73.0	3.00 76	3.3 1.5	4.00 102	3.1 1.4
		3 DN80			3.500 88.9	3.00 76	3.2 1.5	4.00 102	3.4 1.5
		3 ½ DN90			4.000 101.6	3.00 76	3.0 1.4	10.00 (s) 254	8.1 3.7
			5.250 133.0	x	4.250 108.0	4.50 114	+	NA	NA

[1] For 14"/DN350 and larger roll grooved systems, Victaulic offers the Advanced Groove System (AGS). For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(s) = Carbon Steel

NA = Not Available

"+" = Contact Victaulic for details

NOTES

- All fittings are ductile iron unless otherwise noted with an (s).
- Available with make threaded small end No. 52
- Steel eccentric reducers available through 30"/DN750, contact Victaulic for dimensions.

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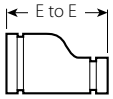
4.15 DIMENSIONS

Concentric/Eccentric Reducer
No. 50
No. 51



Size						No. 50 Concentric Reducer		No. 51 Eccentric Reducer	
Nominal inches DN			Actual Outside Diameter inches mm			E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
DN125	x	2 DN50	5.500 139.7	x	2.375 60.3	11.00 (s) 279		11.00 (s) 279	
		DN65			3.000 76.1	4.50 114	4.1 1.9	11.00 (s) 279	10.7 4.9
		3 DN80			3.500 88.9	4.50 114	5.7 2.6	11.00 (s) 279	+
		4 DN100			4.500 114.3	4.50 114	5.1 2.3	5.00 127	+
5	x	2 DN50	5.563 141.3	x	2.375 60.3	11.00 (s) 279	10.1 4.6	11.00 (s) 279	10.1 4.6
		2½			2.875 73.0	4.00 102	4.3 2.0	11.00 279	10.8 4.9
		3 DN80			3.500 88.9	4.00 102	5.7 2.6	11.00 (s) 279	11.1 5.0
		3½ DN90			4.000 101.6	11.00 (s) 279	+	11.00 (s) 279	+
		4 DN100			4.500 114.3	3.50 89	4.3 2.0	5.00 127	5.5 2.5
			6.250 159.0	x	3.500 88.9	4.50 114	+	NA	NA
					4.250 108.0	4.00 102	+	NA	NA
					4.500 114.3	4.00 102	+	NA	NA
					5.250 133.0	4.00 102	+	NA	NA
			6.500 165.1	x	2.375 60.3	4.00 102	6.1 2.8	11.50 (s) 292	NA
					3.000 76.1	4.00 102	5.9 2.7	10.50 (s) 292	18.1 8.2
					3.500 88.9	4.00 102	6.2 2.8	5.50 140	6.1 2.8
					4.500 114.3	4.00 102	6.2 2.8	5.50 140	6.8 3.1
					5.500 139.7	4.00 102	5.6 2.5	5.50 140	8.0 3.6
					5.563 141.3	4.00 102	6.4 2.9	5.50 140	7.5 3.4
					6.250 159.0	4.00 102	6.6 3.0	NA	NA

[1] For 14"/DN350 and larger roll grooved systems, Victaulic offers the Advanced Groove System (AGS). For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(s) = Carbon Steel

NA = Not Available

"+" = Contact Victaulic for details

NOTES

- All fittings are ductile iron unless otherwise noted with an (s).
- Available with make threaded small end No. 52
- Steel eccentric reducers available through 30"/DN750, contact Victaulic for dimensions.

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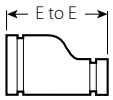
4.15 DIMENSIONS

Concentric/Eccentric Reducer
No. 50
No. 51



Size						No. 50 Concentric Reducer		No. 51 Eccentric Reducer	
Nominal inches DN			Actual Outside Diameter inches mm			E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
6 DN150	x	1 DN25	6.625 168.3	x	1.315 33.7	4.00 102	6.2 2.8	11.50 (s) 292	+
		1½ DN40			1.900 48.3	11.50 (s) 292	+	11.50 (s) 292	+
		2 DN50			2.375 60.3	4.00 102	6.6 3.0	11.50 (s) 292	14.2 6.4
		2½			2.875 73.0	4.00 102	6.4 2.9	11.50 (s) 292	14.2 6.4
		DN65			3.000 76.1	11.50 (s) 292	+	11.50 (s) 292	+
		3 DN80			3.500 88.9	4.00 102	6.4 2.9	5.50 140	7.4 3.4
		4 DN100			4.500 114.3	4.00 102	5.8 2.6	5.50 140	7.8 3.5
		DN125			5.500 139.7	4.00 102	6.4 2.9	5.50 140	8.1 3.7
		5			5.563 141.3	4.00 102	6.4 2.9	5.50 140	8.1 3.7
					6.500 165.1	4.00 102	7.2 3.3	11.50 (s) 292	+
			8.515 216.3	x	3.500 88.9	5.00 127	+	NA	NA
					4.500 114.3	5.00 127	+	NA	NA
					5.500 139.7	4.50 114	+	NA	NA
200A	x	165A	216.3	x	6.500 165.1	5.00 127	9.5 4.3	NA	NA

[1] For 14"/DN350 and larger roll grooved systems, Victaulic offers the Advanced Groove System (AGS). For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(s) = Carbon Steel

NA = Not Available

"+" = Contact Victaulic for details

NOTES

- All fittings are ductile iron unless otherwise noted with an (s).
- Available with make threaded small end No. 52
- Steel eccentric reducers available through 30"/DN750, contact Victaulic for dimensions.

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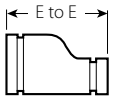
4.15 DIMENSIONS

Concentric/Eccentric Reducer
No. 50
No. 51



Size						No. 50 Concentric Reducer		No. 51 Eccentric Reducer	
Nominal inches DN			Actual Outside Diameter inches mm			E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
8 DN200	x	2½	8.625 219.1	x	2.875 73.0	12.00 (s) 305	+	12.00 (s) 305	+
		76.1 mm			76.1	12.00 (s) 305	+	12.00 (s) 305	+
		3 DN80			3.500 88.9	5.00 127	9.3 4.2	12.00 (s) 305	22.0 10.0
					4.250 108.0	5.00 127	11.5 5.2	NA	NA
		4 DN100			4.500 114.3	5.00 127	10.4 4.7	6.00 152	10.5 4.8
		DN125			5.500 139.7	5.00 127	11.7 5.3	12.00 (s) 305	24.5 11.1
		5			5.563 141.3	5.00 127	11.6 5.3	12.00 (s) 305	23.8 10.8
					6.250 159.0	4.50 114	11.9 5.4	NA	NA
					6.500 165.1	4.50 114	12.6 5.7	6.00 152	12.8 5.8
		6 DN150			6.625 168.3	5.00 127	11.9 5.4	6.00 152	13.2 6.0
10 DN250	x	4 DN100	10.750 273.0	x	4.500 114.3	6.25 159	20.1 9.1	13.00 (s) 330	33.8 15.3
		DN125			5.500 139.7	13.00 (s) 330	+	13.00 (s) 330	35.7 16.2
		5			5.563 141.3	13.00 (s) 330	35.8 16.2	13.00 (s) 330	35.8 16.2
					6.500 165.1	6.00 152	+	13.00 (s) 330	+
		6 DN150			6.625 168.3	6.00 152	22.0 10.0	13.00 (s) 330	36.9 16.7
		8 DN200			8.625 219.1	6.00 152	23.0 10.4	7.00 178	37.0 16.8
250A	x	200A	267.4	x	216.3	6.00 152	23.0 10.4	NA	NA
12 DN300	x	4 DN100	12.750 323.9	x	4.500 114.3	14.00 (s) 356	48.0 21.8	14.00 (s) 356	48.0 21.8
					6.500 165.1	14.00 (s) 356	+	14.00 (s) 356	+
		6 DN150			6.625 168.3	7.00 178	25.0 11.3	14.00 (s) 356	50.2 22.8
		8 DN200			8.625 219.1	7.00 178	38.0 17.2	14.00 (s) 356	53.5 24.3
		10 DN200			10.750 273.0	7.00 178	38.0 17.2	14.00 (s) 356	56.5 25.6

[1] For 14"/DN350 and larger roll grooved systems, Victaulic offers the Advanced Groove System (AGS). For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(s) = Carbon Steel

NA = Not Available

"+" = Contact Victaulic for details

NOTES

- All fittings are ductile iron unless otherwise noted with an (s).
- Available with make threaded small end No. 52
- Steel eccentric reducers available through 30"/DN750, contact Victaulic for dimensions.

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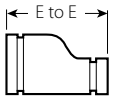
4.15 DIMENSIONS

Concentric/Eccentric Reducer
No. 50
No. 51



Size						No. 50 Concentric Reducer		No. 51 Eccentric Reducer	
Nominal inches DN			Actual Outside Diameter inches mm			E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
300A	x	250A	318.5	x	216.3	7.00 178	38.0 17.2	NA	NA
14[1] DN350	x	6 DN150	14.000 355.6	x	6.625 168.3	13.00 330	63.1 28.6	13.00 330	77.2 35.0
		8 DN200			8.625 219.1	13.00 330	72.7 33.0	13.00 330	81.6 37.0
					10.528 267.4	13.00 330	80.5 36.5	13.00 330	88.2 40.0
		10 DN200			10.750 273.0	13.00 330	80.5 36.5	13.00 330	88.2 40.0
					12.539 318.5	13.00 330	81.6 37.0	13.00 330	90.4 41.0
		12 DN300			12.750 323.9	13.00 330	81.6 37.0	13.00 330	90.4 41.0
16[1] DN400	x	8 DN200	16.000 406.4	x	8.625 219.1	14.00 356	80.5 36.5	14.00 356	99.2 45.0
		250A			267.4	14.00 356	93.0 42.2	NA	NA
		10 DN200			10.750 273.0	14.00 356	93.0 42.2	14.00 356	99.2 45.0
					12.539 318.5	14.00 356	100.3 45.5	14.00 356	103.6 47.0
		12 DN300			12.750 323.9	14.00 356	100.3 45.5	14.00 356	103.6 47.0
		14 DN350			14.000 355.6	14.00 356	100.3 45.5	14.00 356	108.0 49.0
18[1] DN450	x	10 DN200	18.000 457.2	x	10.750 273.0	15.00 381	112.4 51.0	15.00 381	125.7 57.0
		12 DN300			12.750 323.9	15.00 381	122.4 55.5	15.00 381	134.5 61.0
		14 DN350			14.000 355.6	15.00 381	122.4 55.5	15.00 381	136.7 62.0
		16 DN400			16.000 406.4	15.00 381	126.8 57.5	15.00 381	143.3 65.0

[1] For 14"/DN350 and larger roll grooved systems, Victaulic offers the Advanced Groove System (AGS). For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(s) = Carbon Steel

NA = Not Available

"+" = Contact Victaulic for details

NOTES

- All fittings are ductile iron unless otherwise noted with an (s).
- Available with make threaded small end No. 52
- Steel eccentric reducers available through 30"/DN750, contact Victaulic for dimensions.

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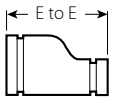
4.15 DIMENSIONS

Concentric/Eccentric Reducer

No. 50
No. 51



Size						No. 50 Concentric Reducer		No. 51 Eccentric Reducer	
Nominal inches DN			Actual Outside Diameter inches mm			E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
20[1] DN500	x	10 DN200	20.000 508.0	x	10.750 273.0	20.00 508	160.0 72.6	20.00 508	172.0 78.0
		300A			318.5	20.00 508	162.3 73.6	NA	NA
		12 DN300			12.750 323.9	20.00 508	162.3 73.6	20.00 508	183.0 83.0
		14 DN350			14.000 355.6	20.00 508	177.5 80.5	20.00 508	191.8 87.0
		16 DN400			16.000 406.4	20.00 508	176.4 80.0	20.00 508	200.6 91.0
		18 DN450			18.000 457.2	20.00 508	205.0 93.0	20.00 508	209.4 95.0
24[1] DN600	x	10 DN200	24.000 609.6	x	10.750 273.0	20.00 508	222.7 101.0	20.00 508	222.7 101.0
		12 DN300			12.750 323.9	20.00 508	209.4 95.0	20.00 508	238.1 108.0
		14 DN350			14.000 355.6	20.00 508	213.8 97.0	20.00 508	246.9 112.0
		16 DN400			16.000 406.4	20.00 508	215.8 97.9	20.00 508	251.3 114.0
		18 DN450			18.000 457.2	20.00 508	229.3 104.0	20.00 508	244.7 111.0
		20 DN500			20.000 508.0	20.00 508	+	20.00 508	275.6 125.0
14 – 60 DN350 – DN1500			For AGS fitting information, see publication 20.05 AGS™						

[1] For 14"/DN350 and larger roll grooved systems, Victaulic offers the Advanced Groove System (AGS). For pricing and availability of cut groove fittings in this size, contact your nearest Victaulic sales representative.

(s) = Carbon Steel

NA = Not Available

"+" = Contact Victaulic for details

NOTES

- All fittings are ductile iron unless otherwise noted with an (s).
- Available with make threaded small end No. 52
- Steel eccentric reducers available through 30"/DN750, contact Victaulic for dimensions.

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4.16 DIMENSIONS

Small Threaded Reducer
No. 52
No. 52F

Size						No. 52 Concentric Reducer Groove x Male Thread[1]		No. 52F Concentric Reducer Groove x Female BSPT Thread	
Nominal inches DN			Actual Outside Diameter inches mm			E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
1¼ DN32	x	1 DN25	1.660 42.4	x	1.315 33.7	NA	NA	2.50 64	0.4 0.2
1½ DN40	x	1 DN25	1.900 48.3	x	1.315 33.7	2.50 64	0.8 0.4	NA	NA
		1¼ DN32			1.660 42.4	2.50 64	0.9 0.4	NA	NA
2 DN50	x	¾ DN20	2.375 60.3	x	1.050 26.9	2.56 65	0.8 0.4	NA	NA
		1 DN25			1.315 33.7	2.50 64	0.9 0.4	NA	NA
		1¼ DN32			1.660 42.4	2.50 64	0.9 0.4	NA	NA
		1½ DN40			1.900 48.3	2.50 64	1.0 0.5	NA	NA
2½	x	1 DN25	2.875 73.0	x	1.315 33.7	2.50 64	1.1 0.5	NA	NA
		1¼ DN32			1.660 42.4	2.50 64	1.6 0.7	NA	NA
		1½ DN40			1.900 48.3	2.50 64	1.6 0.7	NA	NA
		2 DN50			2.375 60.3	2.50 64	1.8 0.8	NA	NA
DN65	x	1 DN25	3.000 76.1	x	1.315 33.7	2.50 64	1.8 0.8	NA	NA
		1¼ DN32			1.660 42.4	2.50 64	1.8 0.8	NA	NA
		1½ DN40			1.900 48.3	2.50 64	1.8 0.8	2.50 64	1.8 0.8
		2 DN50			2.375 60.3	2.50 64	1.8 0.8	2.50 64	2.0 0.9

[1] Available with British Standard Pipe Threads, specify "BSP" clearly on order.

(s) = Carbon Steel

NA = Not Available

"+" = Contact Victaulic for details

NOTE

- All fittings are ductile iron unless otherwise noted with an (s).

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4.16 DIMENSIONS

Small Threaded Reducer
No. 52
No. 52F

Size						No. 52 Concentric Reducer Groove x Male Thread[1]		No. 52F Concentric Reducer Groove x Female BSPT Thread	
Nominal inches DN			Actual Outside Diameter inches mm			E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
3 DN80	x	¾ DN25	3.500 88.9	x	1.050 26.9	9.50 (s) 241	+	NA	NA
		1 DN25			1.315 33.7	2.50 64	1.8 0.8	NA	NA
		1 ¼ DN32			1.660 42.4	2.50 64	1.5 0.7	2.50 64	2.0 0.9
		1 ½ DN40			1.900 48.3	2.50 64	2.2 1.0	2.50 64	2.0 0.9
		2 DN50			2.375 60.3	2.50 64	2.0 0.9	2.50 64	2.0 0.9
		2 ½			2.875 73.0	2.50 64	2.4 1.1	NA	NA
		DN65			3.000 76.1	2.50 64	2.4 1.1	2.50 64	2.0 0.9
			4.250 108.0	x	1.660 42.4	NA	NA	3.00 76	2.9 1.3
					1.900 48.3	NA	NA	3.00 76	3.1 1.4
					2.375 60.3	3.00 76	1.3 0.6	3.00 76	3.1 1.4
					2.875 73.0	3.00 76	1.3 0.6	NA	NA
					3.000 76.1	3.00 76	1.3 0.6	NA	NA
					3.500 88.9	3.50 89	3.4 1.5	NA	NA
4 DN100	x	1 DN25	4.500 114.3	x	1.315 33.7	3.00 76	3.0 1.4	NA	NA
		1 ¼ DN32			1.660 42.4	NA	NA	3.00 76	3.3 1.5
		1 ½ DN40			1.900 48.3	3.00 76	2.7 1.2	3.00 76	3.3 1.5
		2 DN50			2.375 60.3	3.00 76	3.5 1.6	3.00 76	3.5 1.6
		2 ½			2.875 73.0	3.00 76	3.5 1.6	NA	NA
		DN65			3.000 76.1	3.00 76	2.9 1.3	NA	NA
		3 DN80			3.500 88.9	3.00 76	3.5 1.6	NA	NA

[1] Available with British Standard Pipe Threads, specify "BSP" clearly on order.

(s) = Carbon Steel

NA = Not Available

"+" = Contact Victaulic for details

NOTE

- All fittings are ductile iron unless otherwise noted with an (s).

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4.16 DIMENSIONS

Small Threaded Reducer
No. 52
No. 52F

Size						No. 52 Concentric Reducer Groove x Male Thread[1]		No. 52F Concentric Reducer Groove x Female BSPT Thread	
Nominal inches DN			Actual Outside Diameter inches mm			E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
			5.250 133.0	x	3.500 88.9	4.50 114	4.6 2.1	NA	NA
DN125	x	DN65	5.500 139.7	x	3.000 76.1	4.50 114	4.4 2.0	NA	NA
		3 DN80			3.500 88.9	4.50 114	4.4 2.0	NA	NA
5	x	2 DN50	5.563 141.3	x	2.375 60.3	11.00 (s) 279	3.5 1.6	NA	NA
		3 DN80			3.500 88.9	11.00 (s) 279	3.6 1.6	NA	NA
		4 DN100			4.500 114.3	11.00 (s) 279	11.9 5.4	NA	NA
			6.250 159.0	x	1.660 42.4	NA	NA	4.50 114	5.5 2.5
					1.900 48.3	NA	NA	4.50 114	5.5 2.5
					2.375 60.3	NA	NA	4.50 114	5.5 2.5
					3.000 76.1	4.50 114	5.1 2.3	NA	NA
					3.500 88.9	4.75 121	5.5 2.5	NA	NA
			6.500 165.1	x	1.660 42.4	NA	NA	4.00 102	6.4 2.9
					1.900 48.3	NA	NA	4.00 102	6.6 3.0
					2.375 60.3	4.00 102	5.5 2.5	4.00 102	6.6 3.0
					3.000 76.1	4.00 102	5.9 2.7	NA	NA
					3.500 88.9	4.00 102	6.6 3.0	NA	NA

[1] Available with British Standard Pipe Threads, specify "BSP" clearly on order.

(s) = Carbon Steel

NA = Not Available

"+" = Contact Victaulic for details

NOTE

- All fittings are ductile iron unless otherwise noted with an (s).

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4.16 DIMENSIONS

Small Threaded Reducer
No. 52
No. 52F

Size						No. 52 Concentric Reducer Groove x Male Thread[1]		No. 52F Concentric Reducer Groove x Female BSPT Thread	
Nominal inches DN			Actual Outside Diameter inches mm			E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Approx. Weight (Each) lb kg
6 DN150	x	1 DN25	6.625 168.3	x	1.315 33.7	4.00 102	5.5 2.5	NA	NA
		2 DN50			2.375 60.3	4.00 102	6.7 3.0	NA	NA
		2½			2.875 73.0	4.00 102	5.8 2.6	NA	NA
		3 DN80			3.500 88.9	4.00 102	8.0 3.6	NA	NA
		4 DN100			4.500 114.3	11.50 (s) 292	15.9 7.2	NA	NA
		5			5.563 141.3	11.50 (s) 292	20.0 9.1	NA	NA
8 DN200	x	4 DN100			4.500 114.3	12.00 (s) 305	22.9 10.4	NA	NA
		6 DN150			6.625 168.3	12.00 (s) 305	25.0 11.3	NA	NA

[1] Available with British Standard Pipe Threads, specify "BSP" clearly on order.

(s) = Carbon Steel

NA = Not Available

"+" = Contact Victaulic for details

NOTE

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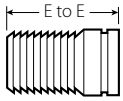
4.16 DIMENSIONS (CONTINUED)

Hose Nipple
No. 48



Size		No. 48 Hose Nipple (s)	
Nominal inches DN	**Actual Outside Diameter** inches mm	**E to E** inches mm	**Approx. Weight (Each)** lb kg
¾ DN20	1.050 26.9	3.13 79	0.3 0.1
1 DN25	1.315 33.7	3.38 86	0.4 0.2
1 ¼ DN32	1.660 42.4	3.88 98	0.6 0.3
1 ½ DN40	1.900 48.3	3.88 98	0.8 0.4
2 DN50	2.375 60.3	4.50 114	1.0 0.4
2 ½	2.875 73.0	5.38 137	2.0 0.9
3 DN80	3.500 88.9	5.75 146	3.1 1.4
4 DN100	4.500 114.3	7.00 178	4.9 2.2
5	5.563 141.3	8.75 222	8.0 3.6
6 DN150	6.625 168.3	10.13 257	14.3 6.5
8 DN200	8.625 219.1	11.88 302	24.7 11.2
10 DN250	10.750 273.0	12.50 318	41.0 18.6
12 DN300	12.750 323.9	14.50 368	62.0 28.1

(s) = Carbon Steel

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5.0 PERFORMANCE

Flow Data

(Frictional Resistance)

The chart expresses the frictional resistance of various Victaulic fittings as equivalent feet of straight pipe. Fittings not listed can be estimated from the data given, for example, a 22½° elbow is approximately one-half the resistance of a 45° elbow. Values of mid-sizes can be interpolated.

Size		90° Elbows		45° Elbows		Tees	
Nominal inches DN	**Actual Outside Diameter** inches mm	**No. 10 Std. Radius** feet meters	**No. 100 1 ½ D Long Radius** inches mm	**No. 11 Std. Radius** feet meters	**No. 110 1 ½ D Long Radius** inches mm	**Branch** feet meters	**Run** feet meters
¾ DN20	1.050 26.9	1.4 0.4	–	0.7 0.2	–	3.3 1.0	1.4 0.4
1 DN25	1.315 33.7	1.7 0.5	–	0.8 0.2	–	4.2 1.3	1.7 0.5
1 ¼ DN32	1.660 42.4	3.8 1.1	–	4.5 1.4	–	6.1 1.9	1.5 0.5
1 ½ DN40	1.900 48.3	5.5 1.7	–	3.7 1.1	–	6.1 1.9	1.2 0.4
2 DN50	2.375 60.3	3.6 1.1	2.5 0.8	1.8 0.5	1.1 0.3	8.5 2.6	3.6 1.1
	3.000 76.1	4.3 1.3	–	2.3 0.7	–	10.8 3.3	4.3 1.3
3 DN80	3.500 88.9	5.0 1.5	3.8 1.2	2.6 0.8	1.6 0.5	13.0 4.0	5.0 1.5
	4.250 108.0	6.4 2.0	–	3.2 1.0	–	15.3 4.7	6.4 2.0
4 DN100	4.500 114.3	6.8 2.1	5.0 1.5	3.4 1.0	2.1 0.6	16.0 4.9	6.8 2.1
	5.250 133.0	8.1 2.5	–	4.1 1.3	–	20.0 6.1	8.1 2.5
DN125	5.500 139.7	8.5 2.6	–	4.2 1.3	–	21.0 6.4	8.5 2.6
5	5.563 141.3	8.5 2.6	–	4.2 1.3	–	21.0 6.4	8.5 2.6
	6.250 159.0	9.4 2.9	–	4.9 1.5	–	25.0 7.6	9.6 2.9
	6.500 165.1	9.6 2.9	–	5.0 1.5	–	25.0 7.6	10.0 3.0
6 DN150	6.625 168.3	10.0 3.0	7.5 2.3	5.0 1.5	3.0 0.9	25.0 7.6	10.0 3.0
8 DN200	8.625 219.1	13.1 4.0	9.8 3.0	6.5 2.0	4.0 1.2	33.1 10.1	13.1 4.0
10 DN250	10.750 273.0	17.0 5.2	12.0 3.7	8.3 2.5	5.0 1.5	41.0 12.5	17.0 5.2
12 DN300	12.750 323.9	20.0 6.1	14.5 4.4	10.0 3.0	6.0 1.8	50.0 15.2	20.0 6.1
14 DN350	14.000 355.6	24.5[1] 7.5	15.8 4.8	18.5[1] 5.6	11.0 3.4	70.0 21.3	23.0 7.0
16 DN400	16.000 406.4	28.0[1] 8.5	18.0 5.5	21.0[1] 6.4	13.0 4.0	80.0 24.4	27.0 8.2
18 DN450	18.000 457.2	31.0[1] 9.4	20.0 6.1	23.5[1] 7.2	14.0 4.3	90.0 27.4	30.0 9.1
20 DN500	20.000 508.0	34.0[1] 10.4	22.5 6.9	25.5[1] 7.8	16.0 4.9	100.0 30.5	33.0 10.1
24 DN600	24.000 609.6	42.0[1] 12.8	27.0 8.2	29.5[1] 9.0	19.0 5.8	120.0 36.6	40.0 12.2

[1] Fitting flow data for 14-24/DN350-DN600 size No. 10 and No. 11 Elbows is based on fittings for Style 07 and Style 77 couplings. For flow data on AGS fittings (No. W10 and No. W11 Elbows), refer to publication 20.05.

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6.0 NOTIFICATIONS

⚠ WARNING

- **Read and understand all instructions before attempting to install any Victaulic products.**
- **Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**
- **Confirm that any equipment, branch lines, or sections of piping that may have been isolated for/during testing or due to valve closures/positioning are identified, depressurized, and drained immediately prior to installation, removal, adjustment, or maitenance of any Victaulic products.**
- **The installer shall understand the use of this product and why it was specified for the particular application.**
- **The installer shall understand common industry safety standards and potential consequences of improper product installation.**
- **Wear safety glasses, hardhat, and foot protection.**

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

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7.0 REFERENCE MATERIALS

Galvanized
Publication 07.01 for Original Groove Fittings
Publication 20.05 for AGS Fittings

Extra Heavy EndSeal “ES”
Publication 07.03

Fabricated Steel Fittings
Publication 07.04

Shouldered Ends
Publication 07.06

xL fittings for abrasive services
Publication 07.07

Victaulic Base Support Elbows
Publication 07.13

Plain End
Publication 14.04

Stainless Steel
Publication 17.16

AGS - Advanced Groove System
from 14 – 60"/DN350 – DN1500
Publication 20.05

Aluminum
Publication 21.03

Copper
Publication 22.04

Ductile Iron for AWWA size pipe
Publication 23.05

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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 Victaulic installation handbook or installation instructions of the product you are installing. Handbooks are included with each shipment of Victaulic products, providing 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.

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FireLock™ Fittings

1.0 PRODUCT DESCRIPTION

Available Sizes

- 1 ¼ – 12"/DN32 – DN300

Maximum Working Pressure

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

Application

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

Pipe Materials

- Carbon steel

2.0 CERTIFICATION/LISTINGS

EN 10311
CPR (EU)
No. 305/2011

BS EN 10311
CPR (UK)
2019 No. 465

3.0 SPECIFICATIONS – MATERIAL

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

Fitting Coating: (specify choice)

- ☐ Orange coating.
- ☐ Red coating (standard for EMEA-I and Asia Pacific).
- ☐ Optional: Hot dipped galvanized.

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

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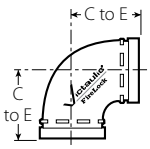
4.0 DIMENSIONS



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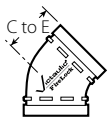

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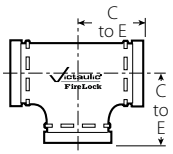

No. 002

No. 006

Nominal Size inches DN	Actual Outside Diameter inches mm	No. 001 90° Elbow C to E inches mm	No. 001 90° Elbow Approximate Weight Each lb kg	No. 003 45° Elbow C to E inches mm	No. 003 45° Elbow Approximate Weight Each lb kg	No. 002 Straight Tee C to E inches mm	No. 002 Straight Tee Approximate Weight Each lb kg	No. 006 Cap T inches mm	No. 006 Cap Approximate Weight Each lb kg
1 ¼ DN32	1.660 42.4	2.75 70	1.0 0.5	1.75 45	0.7 0.3	2.75 70	1.4 0.6	0.82 21	0.3 0.1
1 ½ DN40	1.900 48.3	2.75 70	1.2 0.5	1.75 45	0.8 0.4	2.75 70	1.8 0.8	0.82 21	0.4 0.2
2 DN50	2.375 60.3	2.75 70	1.6 0.7	2.00 51	1.4 0.6	2.75 70	2.4 1.1	0.88 22	0.6 0.3
2 ½	2.875 73.0	3.00 76	2.1 1.0	2.25 57	2.2 1.0	3.00 76	3.4 1.5	0.88 22	1.0 0.5
 DN65	3.000 76.1	3.00 76	2.5 1.1	2.25 57	2.4 1.1	3.00 76	3.8 1.7	–	–
3 DN80	3.500 88.9	3.38 86	3.4 1.5	2.50 64	3.1 1.4	3.38 86	5.1 2.3	0.88 22	1.2 0.5
	4.250 108.0	4.00 102	5.7 2.6	3.00 76	5.1 2.3	4.00 102	7.5 3.4	–	–
4 DN100	4.500 114.3	4.00 102	5.9 2.7	3.00 76	4.9 2.2	4.00 102	6.8 3.1	1.00 25	2.4 1.1
 DN125	5.500 139.7	4.88 124	12.4 5.6	3.25 83	8.2 3.7	4.88 124	15.4 7.0	–	–
5	5.563 141.3	4.88 124	7.8 3.5	3.25 83	8.3 3.8	4.88 124	15.3 6.9	1.00 25	4.1 1.9
	6.250 159.0	5.50 140	12.6 5.7	3.50 89	9.2 4.2	5.50 140	17.9 8.1	–	–
	6.500 165.1	5.43 138	13.0 5.9	3.50 89	9.4 4.2	5.50 140	19.7 8.9	–	–
6 DN150	6.625 168.3	5.50 140	13.7 6.2	3.50 89	10.4 4.7	5.50 140	20.2 9.2	1.00 25	5.9 2.7
	8.515 216.3	6.81 173	23.1 10.5	–	–	6.94 176	33.6 15.0	–	–
8 DN200	8.625 219.1	6.81 173	25.4 11.5	4.25 108	18.9 8.6	6.94 176	36.9 16.8	1.13 29	12.7 5.8
10 DN250	10.750 273.0	8.25 210	43.2 19.6	4.00 102	25.0 11.3	8.25 210	63.6 28.9	1.06 27	14.2 6.4
12 DN300	12.750 323.9	9.38 238	66.7 30.3	4.50 114	36.1 16.4	9.38 238	80.7 36.6	1.06 27	22.6 10.3

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5.0 PERFORMANCE

Flow Data

Size		Flow Data Frictional Resistance			
Nominal inches DN	**Actual Outside Diameter** inches mm	**No. 001 90° Elbow** feet meters	**No. 003 45° Elbow** feet meters	**No. 002 Straight Tee Branch** feet meters	**No. 002 Straight Tee Run** feet meters
1 ¼ DN32	1.660 42.4	2.00 0.6	2.13 0.6	7.50 2.3	0.50 0.2
1 ½ DN40	1.900 48.3	2.63 0.8	2.75 0.8	6.63 2.0	1.00 0.3
2 DN50	2.375 60.3	3.50 1.1	1.88 0.6	8.50 2.6	3.50 1.1
2 ½	2.875 73.0	4.38 1.3	2.25 0.7	10.88 3.3	4.38 1.3
DN65	3.000 76.1	4.50 1.4	2.38 0.7	11.00 3.4	4.50 1.4
3 DN80	3.500 88.9	5.00 1.5	2.63 0.8	13.00 4.0	5.00 1.5
	4.250 108.0	6.50 2.0	3.25 1.0	15.38 4.7	6.50 2.0
4 DN100	4.500 114.3	6.88 2.1	3.50 1.1	16.00 4.9	6.88 2.1
DN125	5.500 139.7	8.38 2.6	4.13 1.3	20.63 6.3	8.38 2.6
5	5.563 141.3	8.50 2.6	4.25 1.3	21.00 6.4	8.50 2.6
	6.250 159.0	9.50 2.9	5.00 1.5	25.00 7.6	9.63 2.9
	6.500 165.1	9.88 3.0	5.00 1.5	24.50 7.5	9.88 3.0
6 DN150	6.625 168.3	10.00 3.0	5.00 1.5	25.00 7.6	10.00 3.0
216 DN200	8.515 216.3	13.00 4.0	-	33.00 10.1	13.00 4.0
8 DN200	8.625 219.1	13.00 4.0	6.50 2.0	33.00 12.5	13.00 5.2
10 DN250	10.750 273.0	17.00 5.2	8.30 2.50	41.00 12.5	17.00 5.2
12 DN300	12.750 323.9	20.00 6.1	10.00 3.0	50.00 15.2	20.00 6.1

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

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6.0 NOTIFICATIONS

General Notes

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

7.0 REFERENCE MATERIALS

10.64: Victaulic® FireLock™ Rigid Coupling Style 009N

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

29.01: Victaulic® Terms and Conditions of Sale

User Responsibility for Product Selection and Suitability
Each user bears final responsibility for making a determination as to the suitability of Victaulic products for a particular end-use application, in accordance with industry standards and project specifications, and the applicable building codes and related regulations as well as Victaulic performance, maintenance, safety, and warning instructions. Nothing in this or any other document, nor any verbal recommendation, advice, or opinion from any Victaulic employee, shall be deemed to alter, vary, supersede, or waive any provision of Victaulic Company's standard conditions of sale, installation guide, or this disclaimer.

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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 Victaulic installation handbook or installation instructions of the product you are installing. Handbooks are included with each shipment of Victaulic products, providing 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.

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Vic®-End II End of Run Fitting
No. 67

10.21

1.0 PRODUCT DESCRIPTION

Available Sizes

- 1 ¼ – 3"/DN32 – DN80 with ½/DN15, ¾"/DN20 or 1"/DN25 female threaded NPT or BSPT outlet.

Pipe Material

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

Maximum Working Pressure

- Up to 365 psi/2500 kPa.

Function

- End of branchline elbow fitting for sprinkler connection.

2.0 CERTIFICATION/LISTINGS

FM c UL us LISTED

3.0 SPECIFICATIONS – MATERIAL

Housing:

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

☐ Optional: Hot dipped galvanized.

Outlet: NPT

☐ Optional: BSPT

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

System No.		Location	
Submitted By		Date	

Spec Section		Paragraph	
Approved		Date	

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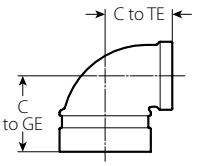
4.0 DIMENSIONS

No.67



Nominal Size inches DN			C to GE inches mm	C to TE inches mm	Approximate Weight (Each) lb kg
1¼ DN32	x	½ DN15	1.875 48	1.38 35	0.6 0.3
		¾ DN20	1.875 48	1.38 35	0.5 0.2
		1 DN25	2 51	1.75 44	0.6 0.3
1½ DN40	x	½ DN15	1.875 48	1.5 38	0.7 0.3
		¾ DN20	1.875 48	1.5 38	0.7 0.3
		1 DN25	2 51	1.625 41	0.7 0.3
2 DN50	x	½ DN15	1.875 48	1.75 44	0.7 0.3
		¾ DN20	1.875 48	1.75 44	0.7 0.3
		1 DN25	2 51	1.75 44	0.9 0.4
2½ DN65	x	½ DN15	1.875 48	2 51	1.3 0.6
		¾ DN20	1.875 48	2 51	1.2 0.6
		1 DN25	2 51	2 51	1.3 0.6
3 DN80	x	¾ DN20	2 51	2.375 60	2.0 0.9
		1 DN25	2 51	2.375 60	1.9 0.9

5.0 PERFORMANCE

Please see applicable coupling publication for performance, or contact Victaulic for more information.

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6.0 NOTIFICATIONS

⚠ WARNING

- **This product must be installed by an experienced, trained installer, in accordance with the instructions provided with each valve. These instructions contain important information.**

Failure to follow these instructions may result in serious personal injury, property damage, or valve leakage.

If you need additional copies of this product literature or the valve installation instructions, or if you have any questions about the safe installation and use of this device, contact Victaulic Company, P.O. Box 31, Easton, PA 18044-0031 U SA, Telephone: 001-610-559-3300.

7.0 REFERENCE MATERIALS

10.64: FireLock EZ™ Style 009N Rigid Coupling

User Responsibility for Product Selection and Suitability
Each user bears final responsibility for making a determination as to the suitability of Victaulic products for a particular end-use application, in accordance with industry standards and project specifications, and the applicable building codes and related regulations as well as Victaulic performance, maintenance, safety, and warning instructions. Nothing in this or any other document, nor any verbal recommendation, advice, or opinion from any Victaulic employee, shall be deemed to alter, vary, supersede, or waive any provision of Victaulic Company's standard conditions of sale, installation guide, or this disclaimer.

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

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60 Cohoes Ave. Green Island, NY 12183 • www.gemlockgrooved.com • Ph: (518) 270-2159 • Fax: (518) 270-8384

GROOVED FITTINGS - SHORT PATTERN

STYLES F105, F106, F107, F135 & F155

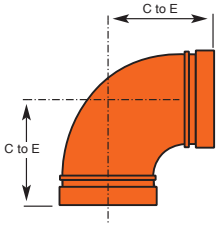
UL Listed
Under File No. EX15591

- Sized to improve flow
- Designed to Fire Protection Industry Standards for short pattern fittings
- Lighter and more cost effective than standard fittings
- Rated for 300 psi
- Made of durable, high-strength ductile iron conforming to ASTM A536; every lot is metallurgically tested for compliance
- Available with hot dipped galvanized coating

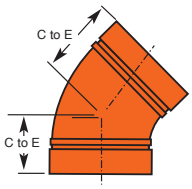
FLOW DATA
Frictional Resistance (Expressed as equivalent Straight Pipe in Ft.)

Nominal Size (In)	90° Elbow		45° Elbow		Tee			
					Branch		Run	
	STD	F105	STD	F106	STD	F107	STD	F107
1	1.7	1.4	0.9	0.9	4.4	4.0	1.7	1.4
1-1/4	2.3	1.8	1.2	1.0	5.8	4.2	2.3	1.8
1-1/2	2.7	2.5	1.3	1.3	6.7	5.5	2.7	2.5
2	3.4	3.2	1.7	1.6	8.6	8.2	3.4	2.5
2-1/2	4.1	3.9	2.1	2.0	10.3	10.1	4.1	3.9
3	5.1	4.8	2.6	2.4	12.8	12.5	5.1	4.8
4	6.7	6.5	3.4	3.2	16.8	16.0	6.7	6.5

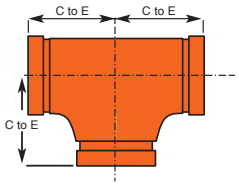
Flow data is based upon the pressure drop of Sch. 40 pipe



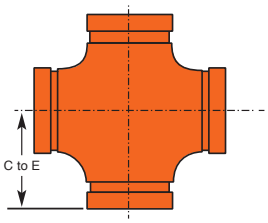
Style F105



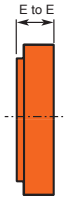
Style F106



Style F107



Style F135



Style F155

Pipe		90° Elbow No. F105		45° Elbow No. F106		Equal Tee No. F107		Cross No. F135		End Cap No. F155	
Nominal Size (In.)	Actual Size (In.)	C to E (In.)	Approx. Wgt. Ea. (Lb.)	C to E (In.)	Approx. Wgt. Ea. (Lb.)	C to E (In.)	Approx. Wgt. Ea. (Lb.)	C to E (In.)	Approx. Wgt. Ea. (Lb.)	E to E (In.)	Approx. Wgt. Ea. (Lb.)
1	1.315	2.24	0.80	1.50	.70	2.24	1.10	—	—	0.96	.33
1-1/4	1.66	2.36	0.96	1.73	0.88	2.36	1.18	—	—	0.96	0.40
1-1/2	1.9	2.362	1.01	1.73	.78	2.362	1.34	2.75	2.5	0.96	0.44
2	2.375	2.755	1.24	2.00	1.20	2.755	1.98	2.75	2.49	0.96	0.61
2-1/2	2.875	2.992	2.03	2.24	1.63	2.992	2.82	2.99	3.19	0.96	0.85
3	3.5	3.368	2.53	2.52	2.38	3.386	3.90	3.38	5.09	0.99	1.01
4	4.5	3.996	3.74	3.00	3.84	3.996	5.72	3.99	7.22	0.99	1.42
5	5.563	4.803	7.20	3.28	5.74	4.803	9.52	4.80	7.23	0.99	2.80
6	6.625	5.61	9.06	3.51	8.11	5.5	14.13	5.5	15.97	0.99	4.40
8	8.625	6.889	20.52	4.25	14.27	6.889	27.07	6.88	28.66	1.181	9.30

PROJECT	APPROVAL STAMP
PROJECT:	☐ APPROVED
ADDRESS:	☐ APPROVED AS NOTED
ENGINEER:	☐ NOT APPROVED
SUBMITTAL DATA:	REMARKS:
NOTES 1:	
NOTES 2:	

SECTION 2

Hangers & Attachments

TOLCO Fig. 29 - double offset hanger & restrainer for CPVC plastic pipe & IPS steel pipe

Size Range: Available in 3/4" (20mm) and 1" (25mm) pipe sizes

Material: Pre-Galvanized Steel

Function: Intended to perform as a hanger and restrainer for CPVC, plastic fire sprinkler pipe. Provides double offset 1 1/2" (20mm) x 1 1/2" (20mm) from mounting surface. This design will ease installation by eliminating the need for wood block extension and allow retro-fit attachment of hanger to sprinkler pipe.

Features:

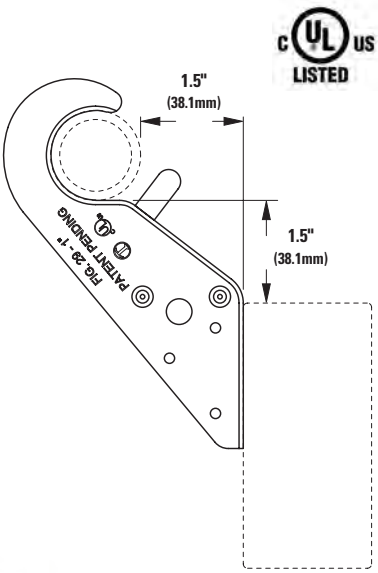
- Thumb tab provides protection to restrain pipe in rough job site conditions. Tab is not required to be bent for listed installation.
- Offset edge eliminates abrasion.
- Attaches easily to wood structure with two special #10 x 1" hex head self-threading screws furnished with product.
- Can be used as a single offset hanger by aligning "dimples" with top of mounting surface and utilizing two fasteners in two of the three holes provided.

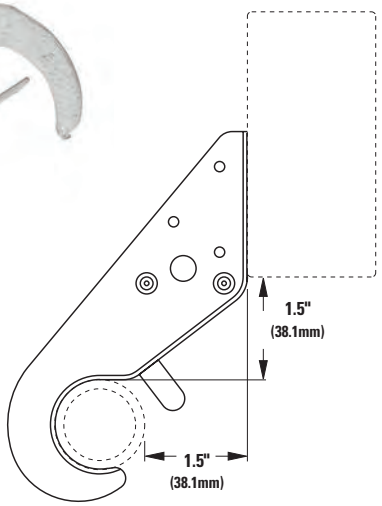
Approvals: Underwriters Laboratories Listed in the USA **(UL)** and Canada **(cUL)** as a hanger and restrainer to support fire sprinkler systems. Meets and exceeds requirements of NFPA 13, 13R and 13D.

Finish: Pre-Galvanized

Order By: Figure number and pipe size.

Patent # US2008/0129040A1

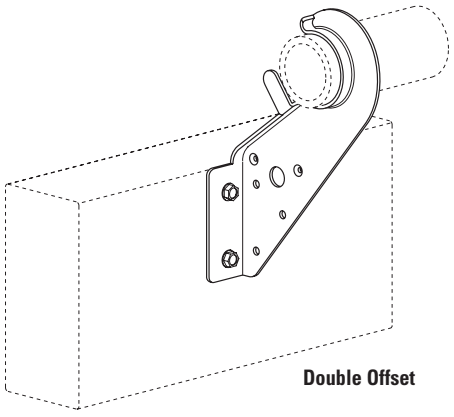




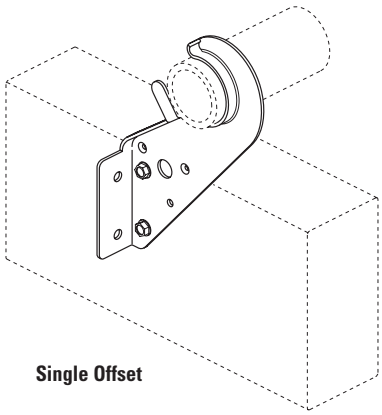
Part No.	CPVC Pipe size in.	(mm)	Max Hanger Spacing Ft.	(m)	Approx. Wt./100 lbs.	(kg)
29-3/4	3/4"	(20)	5'-6"	(1.67)	18	(8.1)
29-1	1"	(25)	6'-0"	(1.83)	19	(8.6)

Reduced Spacing For IPS Pipe

Part No.	IPS Pipe Size in.	(mm)	Max. Hanger Spacing Ft.	(m)
29-3/4	3/4"	(20)	1'-9"	(1.67)
29-1	1"	(25)	1'-10"	(1.83)



Double Offset



Single Offset

Install using a rechargeable electric drill fitted with a 5/16" (7.9mm) socket attachment with the special hex head self-tapping screws provided. Install screws until they bottom out. Pipe can be "snapped" into hanger before or after installation of the screws to the mounting surface. "Thumb tab" may be bent up to provide additional protection to the pipe, but is not required for performance of the hanger / restrainer function.

ASC Engineered Solutions

Two Hole Standoff Hanger and Restrainer
Fig. 188R (Formerly Afcon Fig. 514)

Size Range: 3/4" through 2"
Material: Carbon Steel
Finish: Pre-Galvanized per ASTM A653
Service:

- Hanger and surge restraint for horizontal CPVC, steel, and copper piping when installed on the top, bottom, and side of the supporting structure.
- Guide for vertical CPVC, steel, and copper piping when installed on the side of the supporting structure.
- Horizontal and vertical seismic restraint per NFPA 13–2016 requirements.
- May be installed with concrete, steel structural members, and other structural members with fasteners which comply with the requirements of NFPA 13.

c UL us LISTED

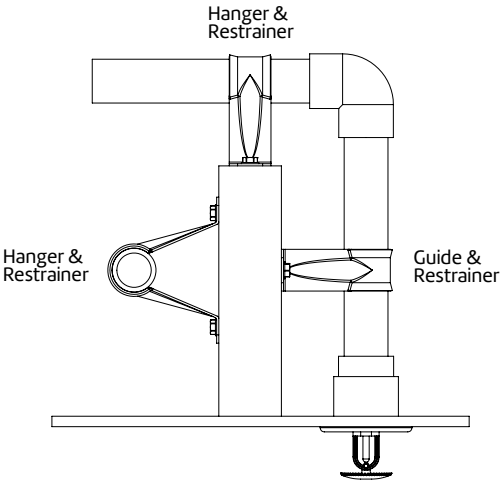
Approvals: cULus Listed
Patents: No. 6,648,278
Installation:

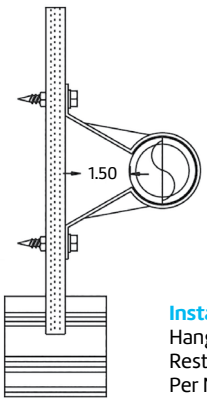
- Snap hanger over pipe. If needed, squeeze strap back around pipe.
- CPVC pipe must be allowed to slide freely through the Fig. 188R.
- Secure hanger to mounting surface with screws provided or with listed fasteners.

Features:

- Beveled edge design helps protect the CPVC pipe from any rough surface and eliminates pipe abrasion.
- Easily attaches to wood structure with #10 x 1" hex washer head self-threading screw supplied with product. No pre-drilling required.
- Bottom of pipe is offset 1 1/2" from the structure. Eliminates wooden spacer blocks.

Ordering: Specify CPVC pipe size, figure number and description.



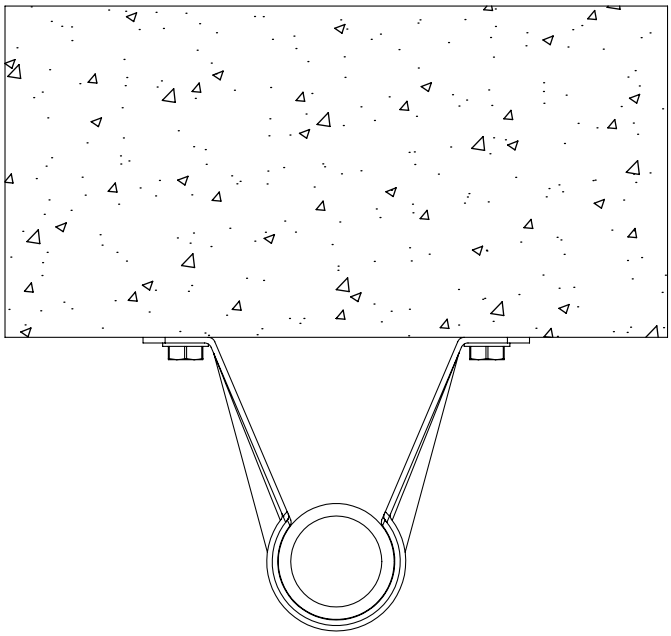


Installation – Backing Nut
Hanger = 1 – At top fastener
Restraint = 2 – On each fastener
Per NFPA-13D and NFPA-13R

ANVIL
An ASC Engineered Solution

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

Two Hole Standoff Hanger and Restrainer (cont.)
Fig. 188R (Formerly Afcon Fig. 514)



Hanger and Restrainer

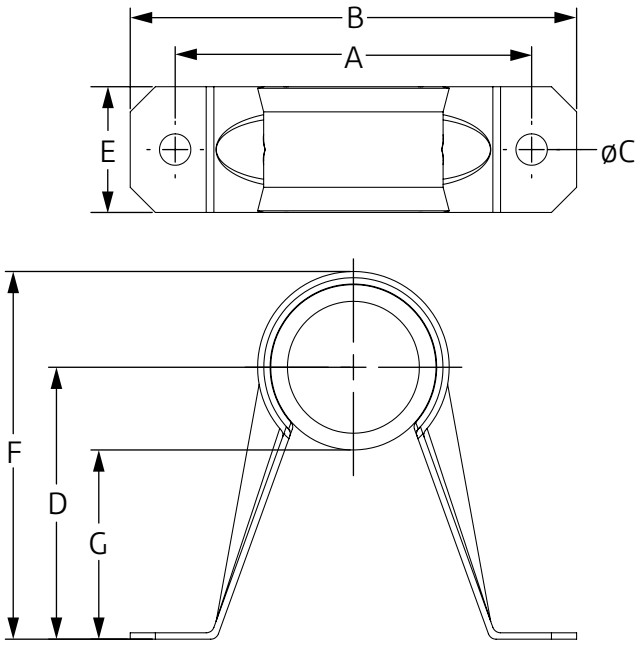


Fig. 188R: Dimensions (in) • **Weight** (lbs)

CPVC Pipe Size	A	B	øC	D	E	F	G	Max. Hanger Spacing (ft)	Approx. Weight/100 (lbs)
¾	2¾	3½	¼	2	1	2⅝	1½	5½	11
1	2 13/16	3½	¼	2 3/16	1	2 15/16	1½	6	12
1¼	2 13/16	3½	¼	2 5/16	1	3¼	1½	6½	13
1½	3⅝	4¼	¼	2 7/16	1	3½	1½	7	14
2	3 11/16	4⅜	¼	2 11/16	1	4	1½	8	16

Fig. 188R: Listed Fasteners

Pipe	Wood and Composite Beams	Steel (18ga. Minimum)
CPVC	Screw Supplied or #10 x 1" TEK Screw	#14 x 1" TEK Screw or ¼" x 1" TEK Screw
Steel & Copper	#14 x 1" TEK Screw or ¼" x 1½" Lag Screw	#14 x 1" TEK Screw or ¼" x 1" TEK Screw

ASC Engineered Solutions

Two Hole 90° Side Mount Strap
Fig. 187 (Formerly Afcon Fig. 511)

Size Range: ¾" through 2"
Material: Carbon Steel
Finish: Pre-Galvanized per ASTM A653
Service: Hanger for CPVC pipe in the horizontal position on the bottom of structural wood beams and Steel 20 Ga. (min.) (Fig. A). Can be used as a restrainer, only in Steel 20 Ga. (min) (Fig. B). During installation, adjust hanger mounting flanges such that pipe contacts both mounting surface and hanger, minimizing vertical pipe movement.
Approvals: UL and ULC Listed.
Installation:

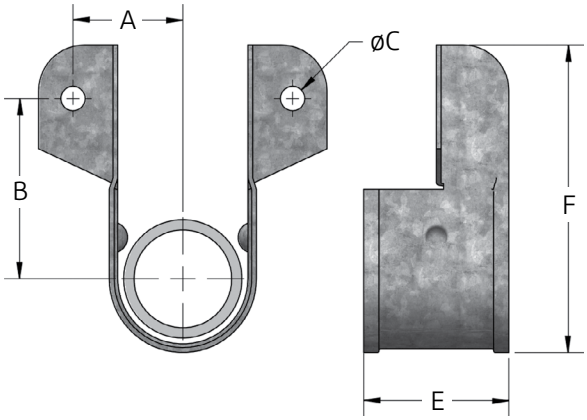
- Snap hanger over pipe.
- Secure hanger to mounting surface with screws provided.
- Do not anchor tightly to mounting surface. Pipe must be allowed to move freely through hanger.
- Steel applications require two (2) #14 x 1" hex washer head self-drilling TEK screws. Not Supplied. Part Number STD-0090.

c UL us LISTED

Features:

- Beveled edge design helps protect the CPVC pipe from any rough surface.
- Easily attaches to wood structure with #10 x 1" hex washer head self threading screw supplied with product. No pre-drilling required.

Ordering: Specify CPVC pipe size, figure number and description.



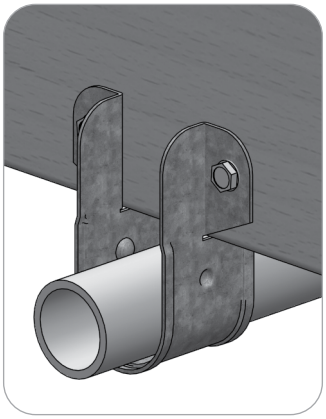


Fig. A

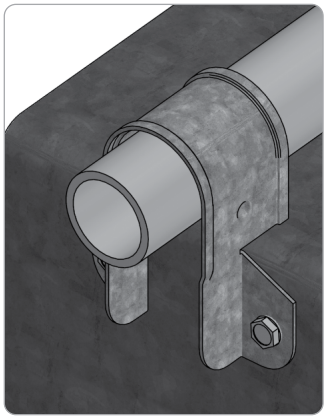


Fig. B

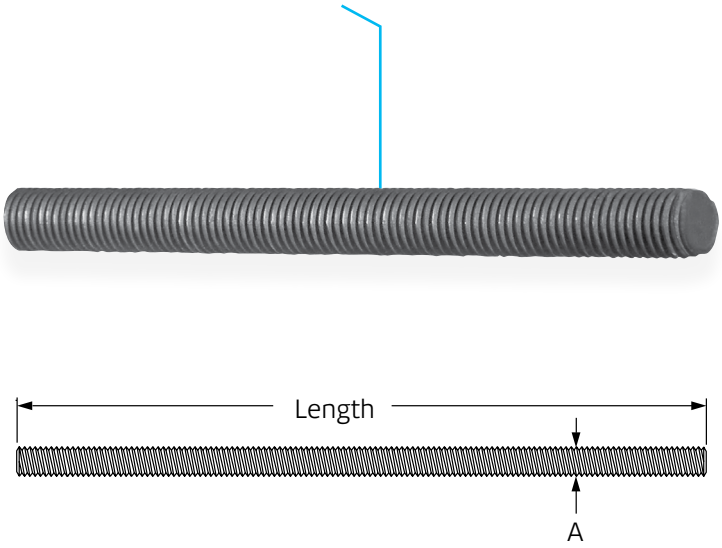
Fig. 187: Dimensions (in) • **Weight** (lbs)

CPVC Pipe Size	A	B	øC	E	F	Max. Hanger Spacing (ft.)	Approx. Weight/100 (lbs)
¾	15/16	1½	3/16	1 3/16	2½	5½	5
1	1	1 9/16	3/16	1 3/16	2¾	6	6
1¼	1 3/16	1¾	3/16	1 3/16	3¼	6½	7
1½	1 5/16	1 11/16	3/16	1 3/16	3½	7	8
2	1 9/16	2⅛	3/16	1 3/16	3 13/16	8	9

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

ASC Engineered Solutions

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



Size Range: ¼" through 1½" 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.

ANVIL
An ASC Engineered Solution

Fig. 146: Dimensions (in) • **Loads** (lbs) • **Weight** (lbs)

Rod Size A	Threads per Inch	Max Load 650˚ F	Weight per Ft.
¼	20	240	0.12
⅜	16	730	0.30
½	13	1,350	0.53
⅝	11	2,160	0.84
¾	10	3,230	1.20
⅞	9	4,480	1.70
1	8	5,900	2.30
1¼	7	9,500	3.60
1½	6	13,800	5.10

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

ASC Engineered Solutions

Rod Couplings
Fig. 05-135

Description

FPPI rod couplings are zinc plated for corrosion resistance.

FPPI
An ASC Engineered Solution

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

115 STANDARD DUTY LOOP HANGER

The 115 Standard Duty Loop Hanger is ideal for suspending stationary, non-insulated pipe lines, including CPVC pipes, in fire sprinkler systems. A knurled insert nut helps simplify vertical adjustments and flared edges on the base (1/2" to 4" sizes) help protect pipes from coming into contact with any sharp edges of the hanger.

CERTIFICATIONS

FEATURES

- Flared edges help prevent any sharp surfaces from coming into contact with the pipe (1/2" to 4" sizes)
- Retained insert nut helps ensure the loop hanger and insert nut stay together
- Recommended for the suspension of stationary non-insulated pipe lines
- Manufactured to use the minimum rod size permitted by NFPA® for fire sprinkler piping
- Conforms with Federal Specification WW-H-171 (Type 10), Manufacturers Standardization Society (MSS) SP-58 (Type 10)

SPECIFICATIONS

Finish: Pregalvanized

Material: Steel

Table 1/2

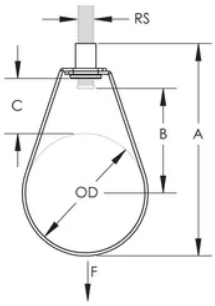
Catalog Number	Pipe Size	Outer Diameter (OD)	Rod Size (RS)	A	B	C
1150050EG	1/2"	0.84"	3/8"	2 13/16"	1 1/8"	1"
1150075EG	3/4"	1.05"	3/8"	3"	1 3/16"	15/16"
1150100EG	1"	1.31"	3/8"	3 1/4"	1 3/8"	15/16"
1150125EG	1 1/4"	1.66"	3/8"	3 9/16"	1 1/2"	15/16"

Catalog Number	Pipe Size	Outer Diameter (OD)	Rod Size(RS)	A	B	C
1150150EG	1 1/2"	1.9"	3/8"	3 13/16"	1 5/8"	15/16"
1150200EG	2"	2 3/8"	3/8"	4 1/4"	1 7/8"	15/16"
1150250EG	2 1/2"	2 7/8"	3/8"	5 15/16"	3 7/16"	2"
1150300EG	3"	3 1/2"	3/8"	6 9/16"	3 1/2"	1 15/16"
1150350EG	3 1/2"	4"	3/8"	7 1/16"	3 3/4"	1 15/16"
1150400EG	4"	4 1/2"	3/8"	7 9/16"	4"	1 15/16"
1150500EG	5"	5 9/16"	1/2"	9 13/16"	4 3/4"	2 1/4"
1150600EG	6"	6 5/8"	1/2"	11 5/16"	6 5/16"	3 5/16"
1150800EG	8"	8 5/8"	1/2"	12 7/8"	6 7/8"	2 7/8"

Table 2/2

Catalog Number	Static Load (F)	Certifications
1150050EG	300lb	cUL, UL
1150075EG	300lb	cUL, FM Approved, Pipe Hanger Components, UL
1150100EG	300lb	cUL, FM Approved, Pipe Hanger Components, UL
1150125EG	300lb	cUL, FM Approved, Pipe Hanger Components, UL
1150150EG	300lb	cUL, FM Approved, Pipe Hanger Components, UL
1150200EG	300lb	cUL, FM Approved, Pipe Hanger Components, UL
1150250EG	525lb	cUL, FM Approved, Pipe Hanger Components, UL
1150300EG	525lb	cUL, FM Approved, Pipe Hanger Components, UL
1150350EG	585lb	cUL, FM Approved, Pipe Hanger Components, UL
1150400EG	650lb	cUL, FM Approved, Pipe Hanger Components, UL
1150500EG	1000lb	cUL, FM Approved, Pipe Hanger Components, UL
1150600EG	1000lb	cUL, FM Approved, Pipe Hanger Components, UL
1150800EG	1000lb	cUL, FM Approved, Pipe Hanger Components, UL

DIAGRAMS



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510 NVENT CADDY EZ RISER

CERTIFICATIONS

FEATURES

- Recommended for suspending vertical steel pipe risers
- Slotted holes make assembly easy, eliminating loose hardware
- Serrated flange-head bolts eliminate need for wrenches on both bolt and nut
- Conforms with Federal Specification WW-H-171 (Type 8), Manufacturers Standardization Society (MSS) SP-58 (Type 8)

SPECIFICATIONS

Finish: Electrogalvanized

Material: Steel

Table 1/2

Catalog Number	Pipe Size	Outer Diameter (OD)	Hole Size (HS)	A	B	Static Load (F)
5100050EG	1/2"	0.84"	7/16"	8 1/2"	1"	255lb
5100075EG	3/4"	1.05"	7/16"	9"	1"	255lb
5100100EG	1"	1.31"	7/16"	9"	1"	255lb
5100125EG	1 1/4"	1.66"	7/16"	9 7/16"	1"	255lb
5100150EG	1 1/2"	1.9"	7/16"	9 7/8"	1"	255lb

Catalog Number	Pipe Size	Outer Diameter (OD)	Hole Size (HS)	A	B	Static Load (F)
5100200EG	2"	2 3/8"	7/16"	10 1/4"	1 3/16"	255lb
5100250EG	2 1/2"	2 7/8"	7/16"	11"	1 3/16"	390lb
5100300EG	3"	3 1/2"	7/16"	11 3/4"	1 3/16"	530lb
5100400EG	4"	4 1/2"	9/16"	13"	1 1/2"	810lb
5100500EG	5"	5 9/16"	9/16"	14 1/2"	1 1/2"	1160lb
5100600EG	6"	6 5/8"	9/16"	16"	2"	1570lb
5100800EG	8"	8 5/8"	11/16"	18 1/4"	2"	2500lb
5101000EG	10"	10 3/4"	11/16"	20 5/8"	2"	2500lb
5101200EG	12"	12 3/4"	11/16"	22 3/8"	2"	2700lb
5101400EG	14"	14"	11/16"	24 1/8"	2"	2700lb
5101600EG	16"	16"	13/16"	27 7/8"	2 1/2"	2900lb

Table 2/2

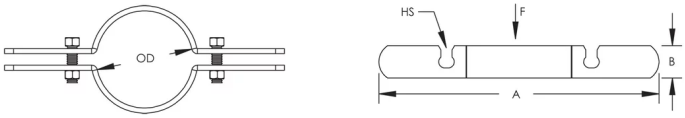
Catalog Number	Certifications
5100050EG	
5100075EG	
5100100EG	
5100125EG	
5100150EG	
5100200EG	cUL, ITB, UL
5100250EG	cUL, ITB, UL
5100300EG	cUL, ITB, UL
5100400EG	cUL, ITB, UL
5100500EG	cUL, UL
5100600EG	cUL, UL
5100800EG	cUL, UL
5101000EG	
5101200EG	
5101400EG	
5101600EG	

ADDITIONAL PRODUCT DETAILS

Clamp is fitted for steel pipe and should be installed below a coupling or shear lug, with bolts torqued to recommended value.

Slotted holes and bolts for pipe sizes up to 12" only.

DIAGRAMS



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GENERAL INFORMATION

SUSPENDER®

Rod Hanging Anchors

PRODUCT DESCRIPTION

Suspender threaded rod anchors are a next step in the evolution of threaded rod anchoring. These one-piece anchors feature heads that are both end-tapped and cross-tapped to permit both in-line mounting and side-mounting of threaded rod systems, eye rings and more.

Suspender anchors feature a universal driver for all anchor sizes. Only the Suspender drive socket is needed with the self-drilling anchors for wood and steel, or in pre-drilled applications. This unique system allows users to consolidate inventory to complete a project and reduces downtime required to retrieve the correct part.

GENERAL APPLICATIONS AND USES

- Hanging Pipe and Sprinkler Systems
- Suspending Conduit and Cable Trays
- Lighting Systems and Overhead Utilities
- HVAC Ductwork and Strut Channels
- Suspended Ceilings
- Electrical Systems

FEATURES AND BENEFITS

+ Ease and speed in overhead installation
+ Lower in-place cost, when compared to beam clamps, lag bolts and dropins
+ Solid, one-piece, cold formed and machined anchor
+ Coupler head is both end and cross drilled to accept vertical (in-line) and horizontal (side-mount) applications
+ Entire system requires only one driver
+ 3/8" to 1/2" thread adapter allows installation of 1/2"-13 threaded rod components

APPROVALS AND LISTINGS

- FM Approvals (FM) - see listing for applicable sizes and types
  Pipe Hangers components for automatic sprinkler systems
- Underwriters Laboratory (UL) - see listing for applicable sizes and types
  Pipe Hangers - File No. EX1289 and VFXT7.EX1289

GUIDE SPECIFICATIONS

CSI Divisions: 03 16 00 - Concrete Anchors, 05 05 23 - Metal Fastenings and 06 05 23 - Wood, Plastic, and Composite Fastenings. Rod Hangers shall be Suspender anchors as supplied by DEWALT, Towson, MD. Anchors shall be installed in accordance with published instruction and the Authority Having Jurisdiction.

SECTION CONTENTS

General Information.....1
Material Specifications.....2
Installation Specifications.....2
Performance Data.....3
Ordering Information.....4

STEEL SUSPENDER

WOOD SUSPENDER

CONCRETE SUSPENDER

ANCHOR MATERIALS

- Zinc Plated Carbon Steel

ANCHOR SIZE RANGE (TYP.)

- 3/8" for Steel
- 3/8" for Wood
- 3/8" for Concrete
  (Threaded Coupler Heads)

THREAD VERSION

- Unified Coarse Thread (UNC)

SUITABLE BASE MATERIALS

- Steel Purlins and Beams
- Wood and Timber
- Concrete Members

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MATERIAL SPECIFICATIONS

Component	Component Material
Screw Body	Case hardened carbon steel
Coupling (UNC thread)	Case hardened carbon steel
Zinc Plating	ASTM B633, SC1, Type III (Fe/Zn5)

INSTALLATION SPECIFICATIONS

Steel Suspender

Rod Coupler Size	3/8"
Coupling Thread Size (UNC)	3/8-16
Coupling Thread Depth (in.)	3/8
Coupling Height (in.)	1
Socket Driver Size (in.)	1/2

Note: the side mount couplings have full thread depth (through head).

Wood Suspender

Rod Coupler Size	3/8"
Coupling Thread Size (UNC)	3/8-16
Coupling Thread Depth (in.)	3/8
Coupling Height (in.)	1
Socket Driver Size (in.)	1/2

Note: the side mount couplings have full thread depth (through head).

Concrete Suspender

Rod Coupler Size	3/8"
ANSI Drill Bit (in.)	1/4
Overall Screw Shank Length	2-1/4
Anchor Thread Length (in.)	2
Coupling Thread Size (UNC)	3/8-16
Coupling Thread Depth (in.)	1/2
Coupling Height (in.)	1
Socket Driver Size (in.)	1/2

Note: the side mount couplings have full thread depth (through head).

Installation Guidelines

1. If pre-drilling is required (certain types of wood truss/wood joist and all concrete base materials), select the recommended drill bit type and diameter.

For concrete, drill a hole to the appropriate embedment depth, adding at least 1/4" to the drilling depth to prevent the tip of the fastener from running into the back of the anchor hole during installation.

2. Select the appropriate socket driver for the anchor size and type to be installed and mount into chuck of installation tool. Insert the coupling head into the socket driver, and install perpendicular to the base material surface. Drive the fastener with a smooth steady motion until the driver and coupling is seated against the surface of the base material.

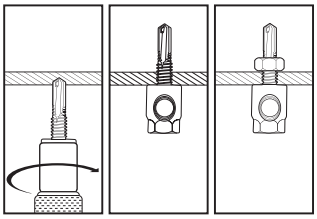
3. Thread the appropriate diameter steel threaded rod or threaded bolt into the coupling. The threaded rod or bolt should fully engage the thread length of the coupling on a vertical mount fastener. The threaded rod or threaded portion of the bolt can pass through coupling of a side mount attachment.

When installing Suspender, eye protection should be worn as a safety precaution.

UL and/or FM listings for Steel Suspender require installations with a retaining nut (see performance data and listings as applicable).

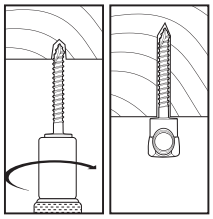
Suggested drill speed for Steel Suspender installations is 1200 to 1800 rpm.

Steel



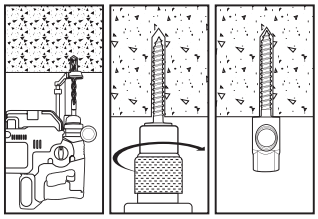
Install with universal socket driver.

Wood



Install with universal socket driver.

Concrete



Install with universal socket driver.

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PERFORMANCE DATA

Suspender for Steel - Dual Direction

Cat. No.	Screw Description	Mount Direction	Rod Size	Driver No.	Min. Thick. in.	Max. Thick. in.	Load Direction	UL		FM	
								Pipe Size	Thick.	Pipe Size	Thick.
PFM227110N	1/4-20 x 1" #3/nut	Vert. & Horiz.	3/8"	PFM2201300	0.060	0.188	V	4"	0.060"	4"	16 ga.
							H	4"	0.060"	4"	16 ga.
PFM227120N	1/4-20 x 1-1/2" #3/nut	Vert. & Horiz.	3/8"	PFM2201300	0.060	0.188	V	4"	0.060"	4"	16 ga.
							H	4"	0.060"	4"	16 ga.
PFM227130N	1/4-20 x 1-1/2" #5/nut	Vert. & Horiz.	3/8"	PFM2201300	0.125	0.500	V	4"	0.060"	4"	16 ga.
							H	4"	0.060"	4"	16 ga.

Suspender for Steel - Ultimate Load Capacities when Installed in Steel[1]

Cat. No.	Screw Description	Mount Direction	Rod Coupler Size	Steel Gage | Thickness						
				16 | 0.060 lbs.	14 | 0.075 lbs.	12 | 0.105 lbs.	1/8 | 0.125 lbs.	3/16 | 0.187 lbs.	1/4 | 0.250 lbs.	1/2 | 0.500 lbs.
Suspender For Steel - Vertical										
PFM227110N	1/4-20 x 1" #3	Vertical	3/8	785	1,140	1,740	2,375	4,695	-	-
	1/4-20 x 1" #3/nut	Vertical	3/8	3,435	4,025	4,280	4,690	5,810	-	-
PFM227120N	1/4-20 x 1-1/2" #3	Vertical	3/8	785	1,140	1,740	2,375	4,695	-	-
	1/4-20 x 1-1/2" #3/nut	Vertical	3/8	3,435	4,025	4,280	4,690	4,695	-	-
PFM227130N	1/4 -20 x 1-1/2" #5	Vertical	3/8	-	-	-	-	3,675	5,205	5,205
	1/4-20 x 1-1/2" #5/nut	Vertical	3/8	3,435	4,025	4,280	4,690	5,810	5,810	5,810
Suspender For Steel - Horizontal										
PFM227110N	1/4-20 x 1" #3	Side	3/8	1,740	1,945	2,420	2,570	2,810	-	-
	1/4-20 x 1" #3/nut	Side	3/8	2,755	2,810	2,570	2,810	2,810	-	-
PFM227120N	1/4-20 x 1-1/2" #3	Side	3/8	1,740	1,945	2,420	2,570	2,810	-	-
	1/4-20 x 1-1/2" #3/nut	Side	3/8	2,755	2,810	2,570	2,810	2,810	-	-
PFM227130N	1/4-20 x 1-1/2" #5	Side	3/8	-	-	-	-	2,205	2,810	2,810
	1/4-20 x 1-1/2" #5/nut	Side	3/8	2,755	2,810	2,570	2,810	2,810	2,810	2,810

1. The values listed above are ultimate load capacities which should be reduced by a minimum safety factor of 3.0 or greater to determine the allowable working load.
2. The strength of the threaded rod used with the Suspender anchors must be considered when determining the controlling load capacity of the assembly.

Suspender for Wood - Ultimate Load Capacities when Installed in Wood[1,2]

Cat. No.	Screw Description	Mount Direction	Rod Coupler Size	Driver No.	Ultimate Tension Load lbs*	UL	FM
						Max. Pipe Size	Max. Pipe Size
Suspender For Wood - Vertical							
PFM2271000	5/16" x 2-1/2"	Vert.	3/8"	PFM2201300	2,670	4"	4"
Suspender For Wood - Horizontal							
PFM2271000	5/16" x 2-1/2"	Side	3/8"	PFM2201300	1,450	4"	-

*Ultimate Loads In Douglas Fir, Pine and Spruce

1. Truss/joist manufacturers may require pre-drilled holes with wood depending on the location of the anchor installation. Consult with the truss/joist manufacturer for details.
2. The values listed above are ultimate load capacities that must be reduced by a minimum safety factor of 3.0 or greater to determine the allowable working load.

Suspender for Concrete – Ultimate Load Capacities when Installed in Normal-Weight Concrete[1,2]

Cat No.	Rod Coupler Size in.	Screw Description	Mount Direction	ANSI Drill Bit Diameter in.	Embed. Depth in.	Minimum Concrete Compressive Strength (f´c)					
						2,000 psi		4,000 psi		6,000 psi	
						Tension lbs.	Shear lbs.	Tension lbs.	Shear lbs.	Tension lbs.	Shear lbs.
PFM2271050	3/8	5/16" x 2-1/4"	Vertical	1/4	2-1/4	1,760	2,580	2,595	2,640	2,770	2,700

1. The values listed above are ultimate load capacities which must be reduced by a minimum safety factor of 4.0 or greater to determine the allowable working load.
2. Linear interpolation may be used to determine load capacities for intermediate compressive strengths.

Suspender for Concrete – Factory Mutual (FM Global) Listings for Pipe Hangers

Cat. No.	Rod Coupler Size in.	Screw Description	Mount Direction	ANSI Drill Bit Diameter in.	Embedment Depth in.	FM Max. Pipe Size
PFM2271050	3/8	5/16" x 2-1/4"	Vertical	1/4	2-1/4	4"

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ORDERING INFORMATION

Suspender for Steel - Dual Direction

Cat. No.	Description	Driver	Rod Size	Pack Qty.	Carton Qty.
PFM227110N	1/4-20 x 1" #3/nut	PFM2201300	3/8"	25	125
PFM227120N	1/4-20 x 1-1/2" #3/nut	PFM2201300	3/8"	25	125
PFM227130N	1/4-20 x 1-1/2" #5/nut	PFM2201300	3/8"	25	125

Suspender for Wood - Dual Direction

Cat. No.	Description	Driver #	Rod Size	Pack Qty.	Carton Qty.
PFM2271000	5/16" x 2-1/2"	PFM2201300	3/8"	25	125

Suspender for Concrete - Dual Direction

Cat. No.	Description	Driver	Rod Size	Pack Qty.	Carton Qty.
PFM2271050	5/16" x 2-1/4"	PFM2201300	3/8"	25	125

Concrete Installation Accessories and Tool Guide

Cat. No.	Description	Drilling	
		Rotary Hammer	SDS+ Bit
PFM2271050	3/8" Hanger 5/16" x 2-1/4"	DCH273P2DH	DW5517 (1/4")

Steel and Wood Installation Accessories

Cat. No.	Description	Pack Qty.
PFM2201100	Hangermate/Suspender Pole Tool Kit	1
The pole tool kit is designed for use with standard 1/2" steel conduit tubing (conduit not included) and can be customized to various lengths and ceiling heights.		

Universal Installation Accessories

Cat. No.	Description	Pack Qty.
PFM2201300	Universal Socket Driver	1
PFM2201050	3/8" to 1/2" Adapter	1
The 3/8" to 1/2" adaptor has a 3/8-16 external thread and a 1/2-13 internal thread.		

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SECTION 3

Bracing & Restraints

TOLCO Fig. 1CBS - Clevis Bolt Spacer

OPM

Size Range: Size 1" (25mm) thru 20" (500mm) clevis hanger

Material: Steel

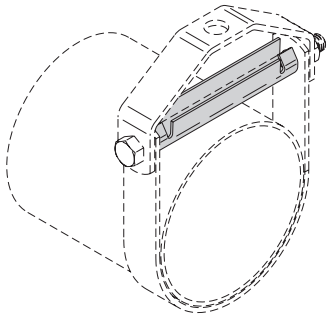
Function: Used as a spacer at a seismic brace location to keep clevis hanger from collapsing during seismic event.

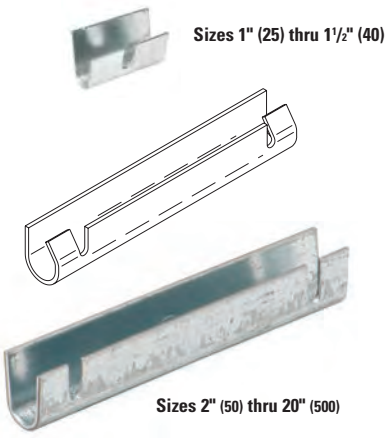
Approvals: Included in our Seismic Engineering Guidelines approved by the State of California Office of Statewide Health Planning and Development **(OSHPD)**. For additional load, spacing and placement information relating to OSHPD projects, please refer to our Seismic Engineering Guidelines OPM-0052-13, for 2½" - 8" (B3100) only

Installation Note: Fig. 1CBS fits easily over the cross bolt and attaches by pinching tabs down.

Finish: Pre-Galvanized. Contact customer service for alternative finishes and materials.

Order By: Figure number and finish.





Part No.	Pipe Size in.	(mm)	Approx. Wt./100 lbs.	(kg)
1CBS-1	1"	(25)	3.2	(1.4)
1CBS-1¼	1¼"	(32)	4.1	(1.8)
1CBS-1½	1½"	(40)	4.8	(2.2)
1CBS-2	2"	(50)	9.4	(4.2)
1CBS-2½	2½"	(65)	11.4	(5.2)
1CBS-3	3"	(75)	13.9	(6.8)
1CBS-3½	3½"	(90)	16.0	(7.2)
1CBS-4	4"	(100)	18.0	(8.1)
1CBS-5	5"	(125)	27.3	(12.4)
1CBS-6	6"	(150)	32.5	(14.7)
1CBS-8	8"	(200)	42.5	(19.2)
1CBS-10	10"	(250)	72.7	(32.9)
1CBS-12	12"	(300)	86.3	(39.1)
1CBS-14	14"	(350)	157.6	(71.5)
1CBS-16	16"	(400)	183.7	(83.3)
1CBS-18	18"	(450)	224.6	(101.9)
1CBS-20	20"	(500)	254.0	(115.2)

TOLCO Fig. 25 - Surge Restrainer

Size Range: — One size fits ¾" (20mm) thru 2" (40mm) pipe.

Material: — Pre-Galvanized Steel

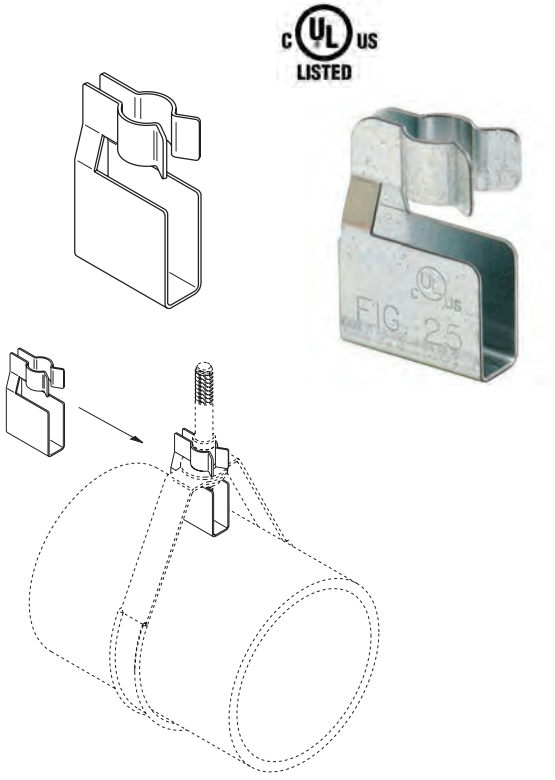
Function: — Designed to be used in conjunction with Fig. 200 band hangers to restrict the upward movement of piping as it occurs during sprinkler head activation or earthquake type activity. The surge restrainer is easily and efficiently installed by snapping into a locking position on the band hanger. This product is intended to satisfy the requirements as indicated in the National Fire Protection Association NFPA 13, 2016 edition, 9.2.3.4.4.1 and 9.2.3.4.4.4 Can be used to restrain either steel pipe or CPVC plastic Pipe.

Approvals: — Underwriters Laboratories Listed only when used with band hanger Fig. 200, in the USA **(UL)** and Canada **(cUL)**.

Finish: Pre-Galvanized

Order By: Figure number and band hanger, size from ¾" (20mm) thru 2" (40mm).

Patent #5,344,108



Part No.	Approx. Wt./100 lbs.	(kg)
25	4.8	(2.2)

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

UNIVERSAL STRUCTURAL BRACKET

CERTIFICATIONS

FEATURES

- Universal design allows one product to attach directly to concrete, wood, bar joist or I-beam adapters
- Integrated angle gauge easily displays brace member angle of installation
- Snap-off bolt head helps enable easy installation and inspection of seismic sway braces
- Works with 1" through 2" brace pipes to reduce inventory
- Low profile minimizes prying effect on concrete fasteners
- Meets NFPA® 13 as pre-qualified for seismic applications
- FM® Specification Tested
- FM Approved with 12 gauge or thicker Type A solid strut as brace member

SPECIFICATIONS

Finish: Electrogalvanized

Material: Steel

Table 1/2

Catalog Number	Hole Size (HS)	Width (W)	Thickness (T)	A	B	C
CSBU1	9/16"	1 15/16"	3/16"	2 1/16"	1 5/16"	1 3/8"
CSBU2	13/16"	1 15/16"	3/16"	2 1/16"	1 5/16"	1 3/8"

Catalog Number	Hole Size (HS)	Width (W)	Thickness(T)	A	B	C
CSBU58	11/16"	1 15/16"	3/16"	2 1/16"	1 5/16"	1 3/8"

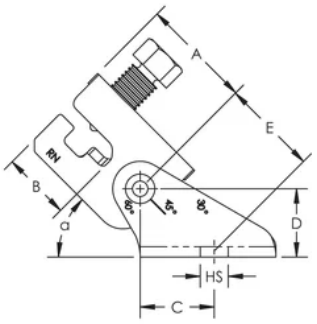
Table 2/2

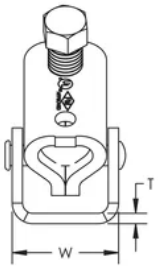
Catalog Number	D	E	UL Listed Load	Certifications
CSBU1	1 1/4"	1 3/4"	2000lb	cUL, UL, OSHPD/HCAI, FM Approved, Seismic
CSBU2	1 1/4"	1 3/4"	2000lb	cUL, UL, OSHPD/HCAI, FM Approved, Seismic
CSBU58	1 1/4"	1 3/4"	2000lb	FM Approved, Seismic

FM Loads

Part Number	Brace Member	Horizontal Capacity per Installation Angle from Vertical			
		30°- 44°	45°- 59°	60°- 74°	75°- 90°
CSBU1xx	Schedule 40 Pipe	1,690 lb	2,210 lb	2,660 lb	3,090 lb
	1" EMT Conduit	530 lb	911 lb	1108 lb	1223 lb
	1" Rigid Conduit	1,690 lb	2,210 lb	2,660 lb	3,090 lb
CSBU2xx	Schedule 40 Pipe	1,480 lb	2,290 lb	2,860 lb	3,090 lb
	1" EMT Conduit	530 lb	911 lb	1108 lb	1223 lb
	1" Rigid Conduit	1,480 lb	2,290 lb	2,860 lb	3,090 lb

DIAGRAMS





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Our powerful portfolio of brands:
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UNIVERSAL SWAY BRACE

The nVent CADDY Universal Sway Brace is an innovative, versatile solution providing seismic bracing for suspended pipes. Featuring a unique slotted hole pattern for easy slip-on installation, installers can eliminate the risk and inconvenience of loose hardware, making it an ideal choice for ensuring safety and compliance on the job.

CERTIFICATIONS

FEATURES

- Used for both lateral and longitudinal sway brace applications
- Snap-off bolt head helps enable easy installation and inspection
- Works with 1-2 in brace pipes to reduce inventory
- Works with 12 gauge or thicker Type A solid strut as brace member
- Meets NFPA®-13 and CEN/TS 1755:2021 requirements for seismic sway bracing
- FM® Specification Tested

SPECIFICATIONS

Finish: Electrogalvanized

Material: Steel

Table 1/2

Catalog Number	Pipe Size, Nominal (Ø)	Cast Iron	Brace Pipe Size	Width (W)	A	B
CSB0100	1"		1" - 2"	1 1/2"	3 9/16"	1 5/16"
CSB0125	1 1/4"		1" - 2"	1 1/2"	3 9/16"	1 5/16"
CSB0400	4"	4"	1" - 2"	1 1/2"	3 9/16"	1 5/16"
CSB0150	1 1/2"	1 1/2"	1" - 2"	1 1/2"	3 9/16"	1 5/16"

Catalog Number	Pipe Size, Nominal (Ø)	Cast Iron	Brace Pipe Size	Width (W)	A	B
CSB0200	2"	2"	1" - 2"	1 1/2"	3 9/16"	1 5/16"
CSB0250	2 1/2"	2 1/2"	1" - 2"	1 1/2"	3 9/16"	1 5/16"
CSB0300	3"	3"	1" - 2"	1 1/2"	3 9/16"	1 5/16"
CSB0500	5"		1" - 2"	1 1/2"	3 9/16"	1 5/16"
CSB1000	10"	10"	1" - 2"	1 1/2"	3 9/16"	1 5/16"
CSB1200	12"	12"	1" - 2"	1 1/2"	3 9/16"	1 5/16"
CSB0600	6"		1" - 2"	1 1/2"	3 9/16"	1 5/16"
CSB0800	8"	8"	1" - 2"	1 1/2"	3 9/16"	1 5/16"

Table 2/2

Catalog Number	C	D	Certifications
CSB0100	5/8"	5"	cUL, UL, OSHPD/HCAI, FM Approved, Seismic
CSB0125	11/16"	5 1/2"	cUL, UL, OSHPD/HCAI, FM Approved, Seismic
CSB0400	11/16"	8 1/2"	cUL, UL, OSHPD/HCAI, FM Approved, Seismic
CSB0150	3/4"	5 3/8"	cUL, UL, OSHPD/HCAI, FM Approved, Seismic
CSB0200	13/16"	6"	cUL, UL, OSHPD/HCAI, FM Approved, Seismic
CSB0250	15/16"	6 3/4"	cUL, UL, OSHPD/HCAI, FM Approved, Seismic
CSB0300	1"	7 3/8"	cUL, UL, OSHPD/HCAI, FM Approved, Seismic
CSB0500	1"	10 5/8"	cUL, UL, OSHPD/HCAI, FM Approved, Seismic
CSB1000	1"	15 3/16"	cUL, UL, OSHPD/HCAI, FM Approved, Seismic
CSB1200	1"	16 7/8"	OSHPD/HCAI, FM Approved, Seismic
CSB0600	1 1/8"	10 7/8"	cUL, UL, OSHPD/HCAI, FM Approved, Seismic
CSB0800	1 1/4"	13"	cUL, UL, OSHPD/HCAI, FM Approved, Seismic

ADDITIONAL PRODUCT DETAILS

FM® Specification Tested for 1-1/2" to 4" pipe sizes using no hub cast iron pipe.

Load ratings for Sch 10 may also be applied to AS 1074 Medium, GB/T 3091, EN 10255 (Medium or Heavy), and JIS G3452 pipe.

Load ratings for Sch 40 may also be applied to AS 1074 Heavy, GB/T 3091, EN 10255 (Heavy), and JIS G3454 pipe.

Load ratings for FM approved lightwall may also be applied to AS 1074 Lightwall, EN 10255 L, EN 10220, and GB/T 8163 pipe.

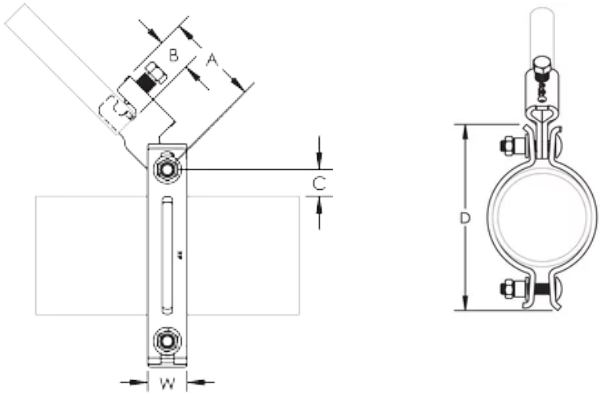
FM Approved with 12 gauge or thicker Type A solid strut as brace member

UL Loads								
Part Number	Lateral				Longitudinal			
	Sch 10/Sch 40 Service Pipe	Bull Moose Eddy Flow Service Pipe	Wheatland Mega-Flow Service Pipe	Youngstown Fire-Flo Service Pipe	Sch 10/Sch 40 Service Pipe	Bull Moose Eddy Flow Service Pipe	Wheatland Mega-Flow Service Pipe	Youngstown Fire-Flo Service Pipe
CSB0100xx	1800 lb	N/A	N/A	N/A	1000 lb	N/A	N/A	N/A
CSB0125xx	1800 lb	1800 lb	1800 lb	N/A	680 lb	680 lb	680 lb	N/A
CSB0150xx	1800 lb	1800 lb	1800 lb	1800 lb	1000 lb	1000 lb	1000 lb	1000 lb
CSB0200xx	1800 lb	1800 lb	1800 lb	1800 lb	1300 lb	1300 lb	1300 lb	1300 lb
CSB0250xx	1800 lb	1800 lb	1800 lb	1800 lb	1300 lb	1300 lb	1300 lb	1300 lb
CSB0300xx	1800 lb	1800 lb	1800 lb	1800 lb	1400 lb	1400 lb	1400 lb	1400 lb
CSB0400xx	1800 lb	1800 lb	1800 lb	1800 lb	1700 lb	1700 lb	1700 lb	1700 lb
CSB0500xx	1800 lb	N/A	N/A	N/A	1700 lb	N/A	N/A	N/A
CSB0600xx	1800 lb	N/A	1800 lb	N/A	1700 lb	N/A	1700 lb	N/A
CSB0800xx	1800 lb	N/A	N/A	N/A	1700 lb	N/A	N/A	N/A
CSB1000xx	1900 lb	N/A	N/A	N/A	1900 lb	N/A	N/A	N/A
CSB1200xx	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

FM Loads								
Part Number	Horizontal Capacity per Installation Angle from Vertical							
	Lateral				Longitudinal			
	30° - 44°	45° - 59°	60° - 74°	75° - 90°	30° - 44°	45° - 59°	60° - 74°	75° - 90°
FM Approved Lightwall, Sch 10 and Sch 40 Service Pipes								
CSB0100xx	1,490 lb	2,110 lb	2,580 lb	2,900 lb	1,290 lb	1,240 lb	1,260 lb	1,400 lb
CSB0125xx	1,380 lb	1,960 lb	2,400 lb	2,690 lb	1,290 lb	1,240 lb	1,260 lb	1,400 lb
CSB0150xx	1,380 lb	1,960 lb	2,400 lb	2,690 lb	1,200 lb	1,860 lb	2,180 lb	2,250 lb
CSB0200xx	1,380 lb	1,960 lb	2,400 lb	2,690 lb	1,200 lb	1,820 lb	2,180 lb	2,250 lb
CSB0250xx	1,440 lb	2,030 lb	2,490 lb	2,790 lb	1,320 lb	1,820 lb	2,190 lb	2,500 lb
CSB0300xx	1,390 lb	1,970 lb	2,420 lb	2,710 lb	1,300 lb	1,790 lb	2,190 lb	2,500 lb
CSB0400xx	1,390 lb	1,970 lb	2,420 lb	2,710 lb	1,300 lb	1,790 lb	2,190 lb	2,500 lb
CSB0500xx	1,390 lb	1,970 lb	2,420 lb	2,710 lb	1,300 lb	1,790 lb	2,190 lb	2,500 lb
CSB0600xx	1,460 lb	2,060 lb	2,520 lb	2,830 lb	1,410 lb	1,950 lb	2,350 lb	2,680 lb
0.188" Wall and Sch 40 Service Pipes								
CSB0800xx	1,330 lb	1,880 lb	2,300 lb	2,580 lb	1,400 lb	1,920 lb	2,350 lb	2,640 lb
CSB1000xx	1,330 lb	1,880 lb	2,300 lb	2,580 lb	1,400 lb	1,920 lb	2,350 lb	2,640 lb
CSB1200xx	1,680 lb	2,370 lb	2,910 lb	3,260 lb	1,600 lb	1,860 lb	2,240 lb	2,590 lb

FM Loads with 12 Gauge or Thicker Type A Strut as Brace Member								
Part Number	Horizontal Capacity per Installation Angle from Vertical							
	Lateral				Longitudinal			
	30° - 44°	45° - 59°	60° - 74°	75° - 90°	30° - 44°	45° - 59°	60° - 74°	75° - 90°
FM Approved Lightwall, Sch 10 and Sch 40 Service Pipes								
CSB0100xx	1040 lb	1470 lb	1800 lb	2010 lb	660 lb	580 lb	640 lb	-
CSB0125xx	1040 lb	1470 lb	1800 lb	2010 lb	660 lb	580 lb	640 lb	-
CSB0150xx	1580 lb	2240 lb	2740 lb	3070 lb	1320 lb	1340 lb	1620 lb	-
CSB0200xx	1580 lb	2240 lb	2740 lb	3070 lb	890 lb	1220 lb	1830 lb	-
CSB0250xx	1620 lb	2300 lb	2820 lb	3160 lb	890 lb	1220 lb	1830 lb	-
CSB0300xx	1520 lb	2160 lb	2640 lb	2960 lb	890 lb	1220 lb	1830 lb	-
CSB0400xx	1520 lb	2160 lb	2640 lb	2960 lb	1340 lb	1850 lb	2350 lb	-
CSB0500xx	1520 lb	2160 lb	2640 lb	2960 lb	1340 lb	1850 lb	2350 lb	-
CSB0600xx	1570 lb	2220 lb	2720 lb	3050 lb	1540 lb	1850 lb	2230 lb	-
0.188" Wall and Sch 40 Service Pipes								
CSB0800xx	1570 lb	2220 lb	2720 lb	3050 lb	1270 lb	1750 lb	2160 lb	-
CSB1000xx	1410 lb	2000 lb	2450 lb	2740 lb	1270 lb	1750 lb	2160 lb	-
CSB1200xx	1460 lb	2070 lb	2530 lb	2840 lb	1390 lb	1750 lb	2110 lb	-

DIAGRAMS



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QUICK GRIP LATERAL SWAY BRACE

The Quick Grip Lateral Brace, part of the nVent CADDY line of fire sprinkler bracing systems from nVent, is designed to help simplify installations when bracing service pipe for seismic or other catastrophic events. It features an innovative design for quick attachment of brace pipe to service pipe saving time and money.

CERTIFICATIONS

FEATURES

- Easy two-step installation eliminates extra trips between structure and service pipe
- Works with 1" and 1 1/4" (25 mm and 32 mm) brace pipes to reduce inventory
- Yellow tips provide a visual indicator that the bolts have been properly torqued
- Easy installation with an impact wrench from the bottom side of the clamp
- Meets NFPA®-13 requirements for seismic sway bracing
- Meets CEN/TS 17551:2021 requirements for Seismic Sway Bracing

SPECIFICATIONS

Finish: Electrogalvanized

Material: Steel

Table 1/1

Catalog Number	Pipe Size	Width (W)	Height (H)	Certifications
CSBQG0250EG	2 1/2"	6 3/4"	5 7/16" - 5 7/8"	cUL, UL, OSHPD/HCAI, FM Approved, Seismic
CSBQG0300EG	3"	7 1/2"	6 1/8" - 6 1/2"	AON Fire Protection, Rigid Seismic, cUL, UL, OSHPD/HCAI, FM Approved, Seismic

Catalog Number	Pipe Size	Width (W)	Height (H)	Certifications
CSBQG0400EG	4"	8 3/4"	7 1/8" - 7 1/2"	AON Fire Protection, Rigid Seismic, cUL, UL, OSHPD/HCAI, FM Approved, Seismic
CSBQG0600EG	6"	11 3/4"	9 1/4" - 9 5/8"	AON Fire Protection, Rigid Seismic, cUL, UL, OSHPD/HCAI, FM Approved, Seismic
CSBQG0800EG	8"	13 7/8"	11 3/8" - 11 13/16"	AON Fire Protection, Rigid Seismic, cUL, UL, OSHPD/HCAI, FM Approved, Seismic

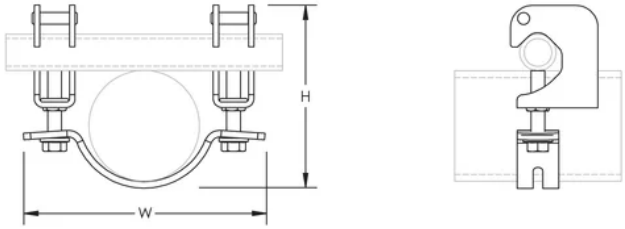
UL Loads

Part Number	Lateral			
	Sch 10/Sch 40 Service Pipe	Bull Moose Eddy Flow Service Pipe	Wheatland Mega-Flow Service Pipe	Youngstown Fire-Flo Service Pipe
CSBQG0250	1500 lb	1500 lb	1500 lb	1500 lb
CSBQG0300	1300 lb	1300 lb	1300 lb	1300 lb
CSBQG0400	1500 lb	1500 lb	1500 lb	1500 lb
CSBQG0500	N/A	N/A	N/A	N/A
CSBQG0600	1400 lb	N/A	1400 lb	N/A
CSBQG0800	1400 lb	N/A	N/A	N/A

FM Loads

Part Number	Service Pipe Schedule	Lateral			
		Horizontal Capacity per Installation Angle from Vertical			
		30°- 44°	45°- 59°	60°- 74°	75°- 90°
CSBQG0250EG	Lightwall	1,410 lb	2,000 lb	2,450 lb	2,740 lb
	10	1,410 lb	2,000 lb	2,450 lb	2,740 lb
	40	1,410 lb	2,000 lb	2,450 lb	2,740 lb
CSBQG0300EG	Lightwall	1,190 lb	1,680 lb	2,060 lb	2,300 lb
	10	1,190 lb	1,680 lb	2,060 lb	2,300 lb
	40	1,190 lb	1,680 lb	2,060 lb	2,300 lb
CSBQG0400EG	Lightwall	1,190 lb	1,680 lb	2,060 lb	2,300 lb
	10	1,190 lb	1,680 lb	2,060 lb	2,300 lb
	40	1,190 lb	1,680 lb	2,060 lb	2,300 lb
CSBQG0600EG	Lightwall	870 lb	1,230 lb	1,510 lb	1,690 lb
	10	870 lb	1,230 lb	1,510 lb	1,690 lb
	40	970 lb	1,370 lb	1,680 lb	1,870 lb
CSBQG0800EG	0.188" (Wall Thickness)	790 lb	1,110 lb	1,360 lb	1,520 lb
	40	790 lb	1,110 lb	1,360 lb	1,520 lb

DIAGRAMS



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BRANCH LINE RESTRAINT PIPE ATTACHMENT

CERTIFICATIONS

FEATURES

- Accepts 3/8" or 1/2" (M10 or M12) threaded rod
- Quick grip clamp simplifies measuring and cutting of threaded rod
- Eliminates need to cut threaded rod to exact dimensions
- Works with rough-cut threaded rod and eliminates pipe-side deburring
- Can be installed with threaded rod above or below the service pipe
- Shear-off head helps ensure correct torque and simplifies inspection

SPECIFICATIONS

Finish: Electrogalvanized

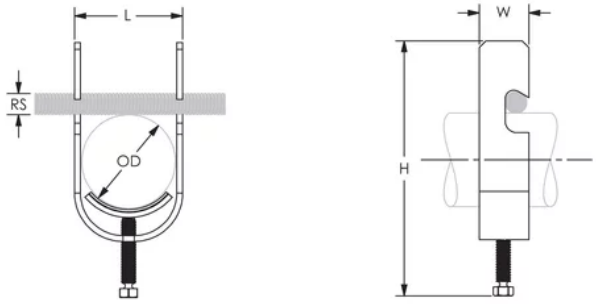
Material: Steel

Table 1/1

Catalog Number	Pipe Size	Outer Diameter (OD)	Rod Size (RS)	Width (W)	Height (H)	Length (L)
CSBBRP0100EG	1"	1.32"	3/8", 1/2"	0.88"	2.9"	1.63"
CSBBRP0125EG	1 1/4"	1.66"	3/8", 1/2"	0.88"	3 1/4"	1.97"
CSBBRP0150EG	1 1/2"	1.9"	3/8", 1/2"	0.88"	3 1/2"	2.21"

Catalog Number	Pipe Size	Outer Diameter (OD)	Rod Size(RS)	Width (W)	Height (H)	Length (L)
CSBBRP0200EG	2"	2.38"	3/8", 1/2"	0.88"	3.95"	2.69"

DIAGRAMS



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BRANCH LINE RESTRAINT STRUCTURE ATTACHMENT TO STEEL

CERTIFICATIONS

FEATURES

- Swivel barrel nut accepts 3/8" or 1/2" (M10 or M12) threaded rod
- Attaches to steel members with self-drilling/tapping screw

SPECIFICATIONS

Table 1/2

Catalog Number	Material	Finish	Rod Size (RS)	Flange Thickness (FT)	Width (W)	Height (H)
CSBBRS1EG	Steel	Electrogalvanized	3/8", 1/2"	0.1000" - 1/2"	1.06"	1.11"

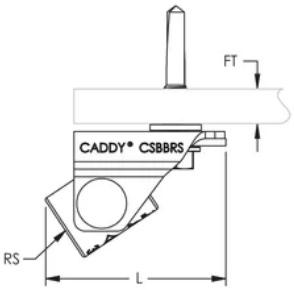
Table 2/2

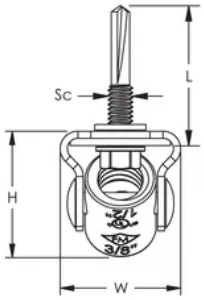
Catalog Number	Length (L)	Screw Diameter (Sc)	Screw Length (L)
CSBBRS1EG	1.59"	12"	1 1/4"

ADDITIONAL PRODUCT DETAILS

Branch line structural attachments are for restraint only and not for the hanging of fire sprinkler piping.

DIAGRAMS





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BRANCH LINE RESTRAINT STRUCTURE ATTACHMENT TO WOOD/CONCRETE

CERTIFICATIONS

FEATURES

- Swivel barrel nut accepts 3/8" or 1/2" (M10 or M12) threaded rod
- Attaches to wood or concrete where cracked concrete approval is not needed

SPECIFICATIONS

Table 1/2

Catalog Number	Material	Finish	Rod Size (RS)	Width (W)	Height (H)	Length (L)
CSBBRS2EG	Steel	Electrogalvanized	3/8", 1/2"	1.06"	1.11"	1.59"

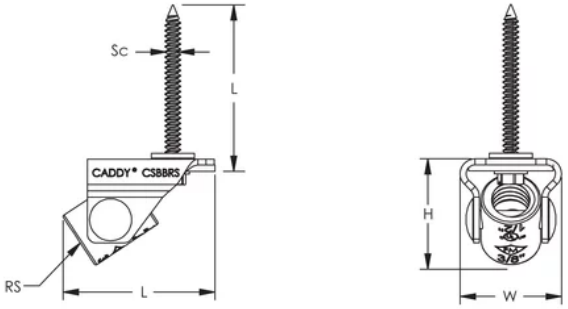
Table 2/2

Catalog Number	Screw Diameter (Sc)	Screw Length (L)	Drill Bit Diameter
CSBBRS2EG	1/4"	1 3/4"	3/16"

ADDITIONAL PRODUCT DETAILS

Branch line structural attachments are for restraint only and not for the hanging of fire sprinkler piping.

DIAGRAMS



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BRANCH LINE RESTRAINT STRUCTURE ATTACHMENT TO THREADED HOLE

CERTIFICATIONS

FEATURES

- Swivel barrel nut accepts 3/8" or 1/2" (M10 or M12) threaded rod
- Attaches to concrete anchors or structural attachments with female threads
- Can be used for bolting through steel

SPECIFICATIONS

Table 1/2

Catalog Number	Material	Finish	Rod Size (RS)	Width (W)	Height (H)	Length (L)
CSBBRS3EG	Steel	Electrogalvanized	3/8", 1/2"	1.06"	1.11"	1.59"

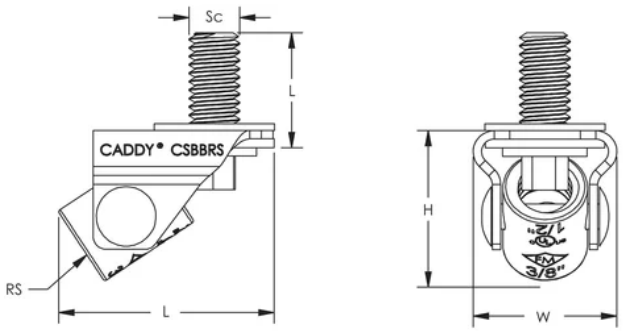
Table 2/2

Catalog Number	Screw Diameter (Sc)	Screw Length (L)
CSBBRS3EG	3/8"	3/4"

ADDITIONAL PRODUCT DETAILS

Branch line structural attachments are for restraint only and not for the hanging of fire sprinkler piping.

DIAGRAMS



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SECTION 4

Valves & Accessories

BRASS BALL VALVES
600# THREADED FULL PORT

Function:
Used in the trim assembly of alarm check, dry pipe and automatic water control valves. Used to manually control the flow of water to small, open-head extinguishing systems and as a zone control valve.

Regularly Furnished:
Forged brass body. Cadmium plated vinyl insulated handle. Chrome plated brass ball with nylon seat. Female NPT inlet and outlet.
Size as selected by item number.

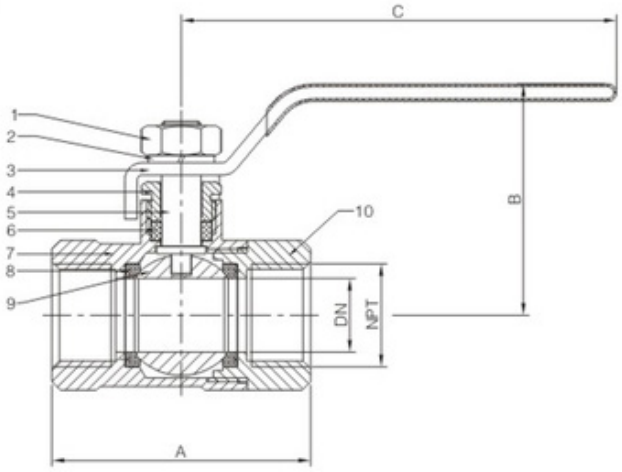
Material: Forged Brass

Maximum Working Pressure: 600 psi

Available Sizes: 1/4" through 4"

Threaded Female IPS
Threads comply with ANSIB1.20.1

CERTIFICATIONS/LISTINGS



ITEM #	Nominal Size	A	B	C	Inner Box	Master Box
6520400UL	1/4"	1.70"	1.71"	3.46"	15	120
6520401UL	3/8"	1.70"	1.71"	3.46"	15	20
6520402UL	1/2"	2.07"	1.85"	3.46"	15	120
6520403UL	3/4"	2.38"	2.13"	4.33"	10	60
6520404UL	1"	2.89"	2.28"	5.51"	8	48
6520405UL	1-1/4"	3.27"	2.80"	5.51"	4	24
6520406UL	1-1/2"	3.62"	2.99"	5.51"	2	24
6520407UL	2"	4.01"	3.27"	5.51"	2	12
6520408	2-1/2"	5.35"	4.59"	9.06"	2	6
6520409	3"	5.83"	4.86"	9.06"	2	4
6520410	4"	7.28"	5.67"	10.0"	1	2

NO.	PART	SPECIFICATION
1	Nut	Steel
2	Lock Washer	Steel
3	Handle	Steel
4	Gland Nut	ASTM B124
5	Stem	ASTM B124
6	Stem Packing	PTFE
7	Body	ASTM B124
8	Seat Ring	PTFE
9	Ball	ASTM Chrome Plated
10	Bonnet	ASTM B124

Call Argco for current listings and approvals. Dimensions are subject to manufacturer's tolerance and may change without notice.
Argco assumes no responsibility for use of void or superceded data.
Please visit argco.com for most current specifications.

System No.		Location	
Submitted By		Date	

Spec Section		Paragraph	
Approved		Date	

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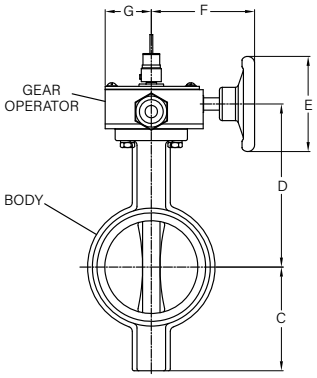
LANSDALE® VALVE
MANUFACTURING CORP.

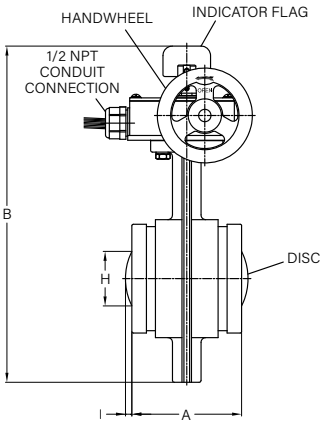
GROOVED BUTTERFLY VALVE

MODEL LVBG1 2” – 8”
MODEL LVBG3 10” – 12”

EX15837

LISTING No. 7770-2326:0500





DESCRIPTION:

The Lansdale grooved butterfly valve is an NFPA compliant valve designed and manufactured for the Fire Protection industry and used as a control or isolation valve within the fire protection system.

FEATURES:

- Model LVBG1 Rated 300 PSI
- Model LVBG3 Rated 175 PSI
- Indoor/Outdoor use
- Prewired double tamper switches/Normally Open
- Available Normally Closed
- Eliminates water hammer
- Slow open/slow close
- Flag type position indicator
- DI body encapsulated with a resistant durable polymer coating to ensure a long service life
- Disc is EPDM coated with SS stem

INSTALLATION:

See Lansdale’s Installation & Maintenance Manual for electrical schematics.

DIMENSIONAL DATA (In.)

NOMINAL VALVE SIZE (In.) (DN)	PIPE OD	A	B	C	D	E	F	G	H	I	WT (Lbs.)
2	2.37	3.8	10.63	2.85	4.90	4.92	4.28	1.99	0	0	9.6
2-1/2	2.88	3.8	11.72	3.35	5.5	4.92	4.28	1.99	0	0	11.24
3	3.5	3.8	12.22	3.58	5.76	4.92	4.28	1.99	0	0	12.57
4	4.5	4.54	13.92	4.29	6.75	4.92	4.28	1.99	0	0	15.65
5	5.56	5.21	16.0	5.16	7.93	5.91	5.79	2.44	0	0	25.8
6	6.63	5.21	17.01	5.71	8.44	5.91	5.79	2.44	0	0	29.32
8	8.63	5.8	19.02	6.69	9.29	8.86	5.79	2.44	5.07	0.95	49.6
10	10.75	6.26	22.46	7.68	11.1	8.86	8.19	2.91	7.21	1.65	73.41
12	12.75	6.5	25.39	9.5	12.2	8.86	8.19	2.91	9.96	2.7	89.29

MATERIAL LIST

NO.	DESCRIPTION	MATERIAL	SPECIFICATION
1	Body	Nylon-11 Coated	ASTM A536
2	Disc	EPDM Encapasulated	ASTM A536
3	Stem	Ductile Iron	ASTM A536
4	Signal & Gearbox	Ductile Iron	AISI410
5	Handwheel	Ductile Iron	ASTM A536
6	O-ring	EPDM	ASTM A536

PROJECT	APPROVAL STAMP
PROJECT:	☐ APPROVED
ADDRESS:	☐ APPROVED AS NOTED
ENGINEER:	☐ NOT APPROVED
SUBMITTAL DATA:	REMARKS:
NOTES 1:	
NOTES 2:	

LANSDALE® VALVE MANUFACTURING CORP.

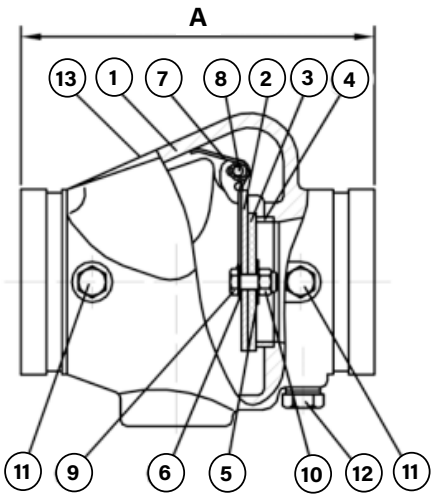
GROOVED SWING CHECK VALVE

MODEL LVCVGG

c UL us LISTED EXZ6984 FM APPROVED

FEATURES:

- Installed in both Horizontal or Vertical Line with upward Flow
- Easier and faster to maintain and install
- Low pressure drop
- EPDM non-stick leak tight sealing
- All stainless steel wetted parts to provide superior corrosion resistance
- Fusion bonded coating of interior and exterior meet or exceed all applicable AWWA C550 standard
- 350 PSI 1¼", 1½", 2", 2½", 3", 4", 6", 8"
- 300 PSI 5", 10", 12"
- UL/ULC Listed / FM Approved



MATERIAL SPECIFICATION		
PART NUMBER	PART	SPECIFICATION
1	Body	Ductile Iron ASTM A395
2	Clapper	Stainless Steel 304
3	Facing Seal	EPDM Rubber
4	Seat	Bronze
5	Clamping Ring	Stainless Steel 304
6	Gasket	EPDM Rubber
7	Spring	Stainless Steel 304
8	Hinge Pin	Stainless Steel 304
9	Bolt	Stainless Steel 304
10	Locknut	Stainless Steel 304
11	Plug 1/4" NPT	Carbon Steel
12	Plug 1/2" NPT	Carbon Steel
13	Nameplate	Stainless Steel

DIMENSIONS											
SIZE (IN)	1-1/4	1-1/2	2	2.5	3	4	5	6	8	10	12
L	6.3	6.3	6.7	7.2	7.8	8.6	10.5	10.6	12.8	17.0	19.5
H	2.5	2.5	2.5	3.0	3.5	4.0	4.5	5.5	6.5	8.0	8.5

PROJECT	APPROVAL STAMP
PROJECT:	☐ APPROVED
ADDRESS:	☐ APPROVED AS NOTED
ENGINEER:	☐ NOT APPROVED
SUBMITTAL DATA:	REMARKS:
NOTES 1:	
NOTES 2:	

Engineering Specification

Job Name _____ Contractor _____

Job Location _____ Approval _____

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

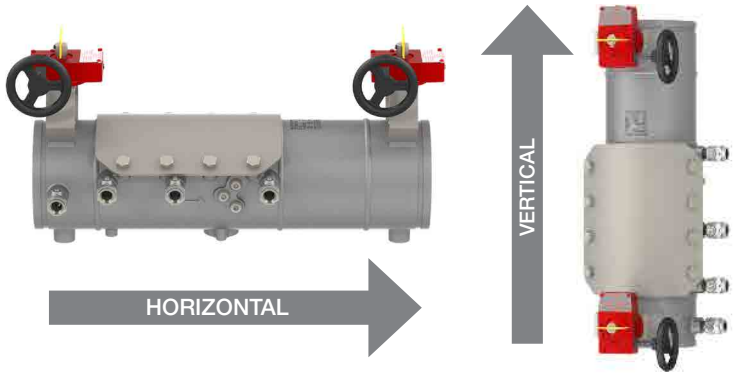
Approval _____ Representative _____

LEAD FREE*

Deringer™ 20

Double Check Valve Assembly

2"– 8"



The Deringer™ 20 Double Check Valve assembly is designed to prevent non-health hazard pollutants from entering the potable water supply system caused by backpressure and/or backsiphonage conditions.

Features

- Integral shutoff valves designed for indoor or outdoor application
- 100% stainless steel housing
- Tamper-resistant test cocks
- Patented Dual-action™ check modules
  - Poppet action at low flow
  - Swing action at high flow
- Silicone elastomer check discs
- Prewired supervisory switches
- Flange adapters available
- IPS grooved ends

Specification

Deringer 20 Double Check valve shall use two independent Dual-action check modules and two integral resiliently seated shut-off valves, all of which shall be contained within a single rigid valve housing constructed entirely of 304 stainless steel. Both integral shutoff valves shall include pre-wired supervisory tamper switches contained within a weatherproof actuator housing approved for both indoor and outdoor use. Dual-action check modules shall operate as a "poppet style" check under low flow conditions, operate as a "swing style" check under high flow conditions, and use replaceable silicone elastomer sealing discs. Assembly test cocks shall be handle-less and operate through a tamper resistant actuator. The assembly shall have a single full access service port and cover with an in-line replaceable elastomer seal. The assembly shall be serviceable without special tools and approved for both horizontal and vertical applications.

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

Materials

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

Pressure — Temperature

Temperature Range: 33°F – 140°F

Working Pressure: 10 – 175 psi

NOTICE

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

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

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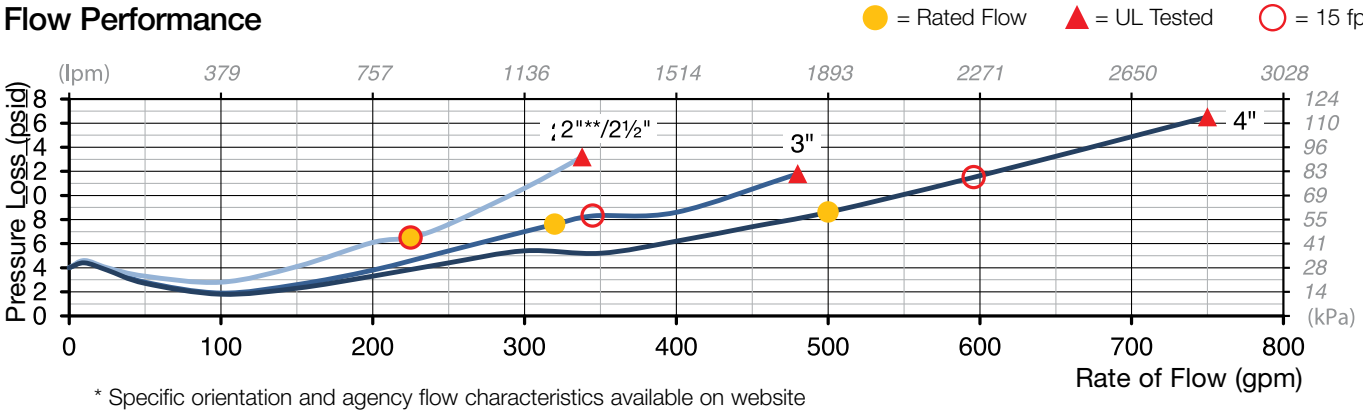
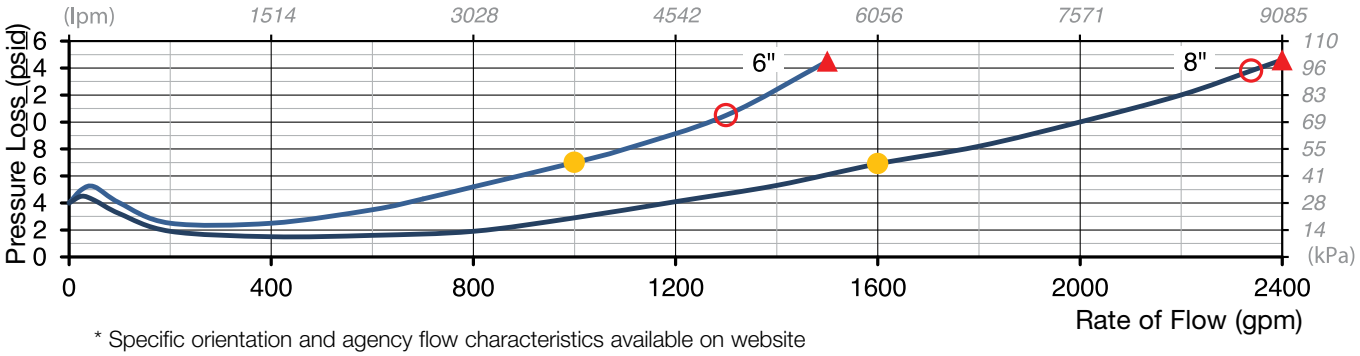
Flow Performance



* Specific orientation and agency flow characteristics available on website



* Specific orientation and agency flow characteristics available on website

Standards

AWWA C510-07 Compliant

ANSI/NSF/CAN 61
UL Certified Health Effects

UL Certified to ANSI/NSF/CAN 372
LEAD FREE

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

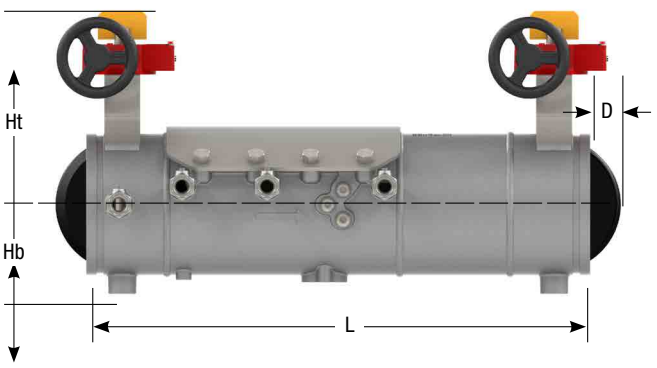
CLASSIFIED c UL us
WATER QUALITY
[MH64212]
ANSI/NSF/CAN 61
ANSI/NSF/CAN 372
5NS5

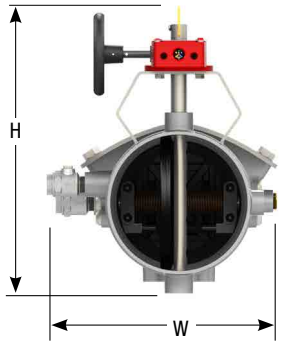
FM APPROVED

USC APPROVED

ASSE 1015

Dimensions — Weights





Size	Model	Ht		Hb		L		D		H		W		Weight	
in.		*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lb*	*kg*
2 (2½)**	20	7.1	180	2.9	74	22.3	566	0.0	0	10.0	254	11.0	279	52	24
2½	20	7.1	180	2.9	74	18.7	475	0.0	0	10.0	254	11.0	279	38	17
3	20	7.4	188	2.9	74	18.7	475	0.0	0	10.3	262	11.0	279	40	18
4	20	7.9	201	2.9	74	18.7	475	0.2	5	10.3	262	11.0	279	42	19
6	20	10.1	257	4.5	114	25	726	1.0	25	14.6	370	13.8	351	90	41
8	20	10.4	264	5.4	137	30.7	780	1.8	46	15.8	401	13.8	351	141	64

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

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USA: Backflow T: (978) 689-6066 • F: (978) 975-8350 • AmesFireWater.com
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LANSDALE® VALVE MANUFACTURING CORP.

ANGLE HOSE VALVE

MODEL LHV

EX27402

a/af*

2-1/2 GROOVED INLET x NST; NYCC; FDNY

b/bf*

2-1/2 NPT x MNST, NYCC, NDNY, FNST, MPHX, MTEMPE

c/cf*

1-1/2 NPT x MNST, or FNST

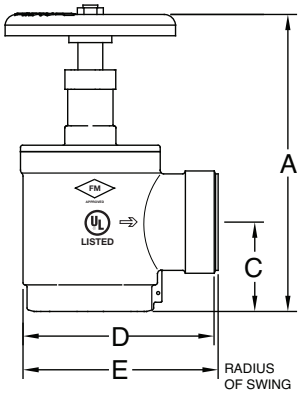
Lansdale Angle Hose Valves feature all brass construction with cast bodies for rigidity and light weight. Rated to 300 lbs. These valves can be used with a Fire Hose Rack Assembly or as a Fire Department Connection outlet.

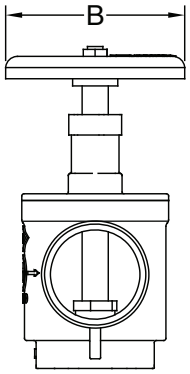
FEATURES:

- **Sizes:** 1-1/2", 2-1/2"
- **Maximum Inlet Pressure:** 300 psi
- **Inlet Connection:** FNPT or Grooved
- **Outlet Connection:** Male Hose, FNPT, Special Thread (optional)

MATERIAL

- **Valve Body:** Brass C37700
- **O-Rings:** EPDM (A70)
- **Handwheel:** Aluminum A03600
- **Handwheel Bolt:** Brass C37700
- **Handwheel Washer:** 304 Stainless Steel





*female outlet

DIMENSIONS & WEIGHTS							
TYPE	A OPEN	A CLOSED	B (IN)	C (IN)	D (IN)	E (IN)	WEIGHT (LBS)
a	11-1/2	9-7/8	5	3-5/8	3-1/8	na	9
af*	11-1/2	9-7/8	5	3-5/8	3-3/8	na	9
b	10-5/8	8-7/8	5	2-3/4	3-1/8	3-1/2	8
bf*	10-5/8	8-7/8	5	2-3/4	3-3/8	3-3/4	8
c	7-3/4	6-3/4	4	2	2-1/2	2-3/4	4
cf*	7-3/4	6-3/4	4-1/8	2	2-5/8	2-7/8	4

PROJECT	APPROVAL STAMP
PROJECT:	☐ APPROVED
ADDRESS:	☐ APPROVED AS NOTED
ENGINEER:	☐ NOT APPROVED
SUBMITTAL DATA:	REMARKS:
NOTES 1:	
NOTES 2:	

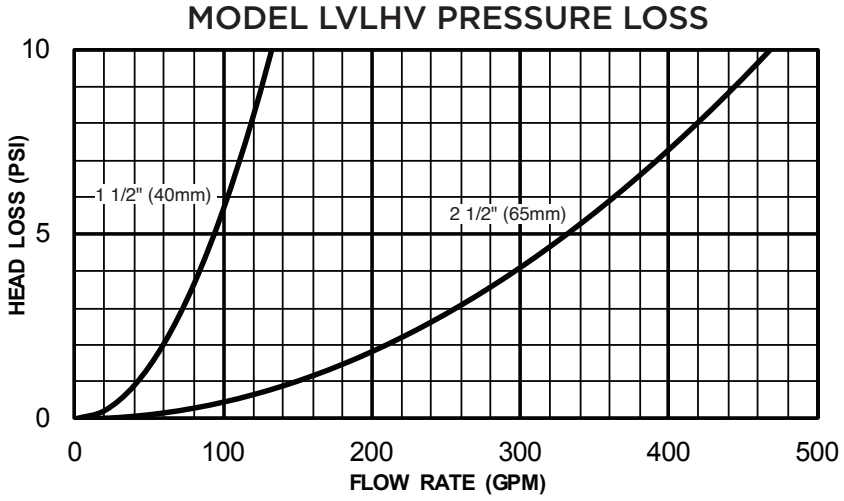
LANSDALE® VALVE MANUFACTURING CORP.

ANGLE HOSE VALVE

MODEL LVLHV

EX7402

Flow Characteristic



PROJECT	APPROVAL STAMP
PROJECT:	☐ APPROVED
ADDRESS:	☐ APPROVED AS NOTED
ENGINEER:	☐ NOT APPROVED
SUBMITTAL DATA:	REMARKS:
NOTES 1:	
NOTES 2:	

LANSDALE
VALVE & MANUFACTURING

www.LansdaleValve.com

CAP & CHAIN

MODEL LVCNC

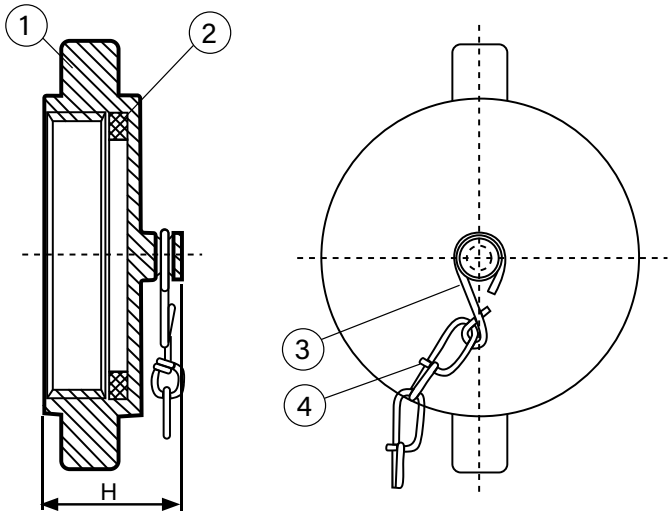
FEATURES:

Used to protect male outlet threads on valves and hydrants.

OPTIONAL FINISHES:

- RB-Rough Brass
- PB-Polished Brass
- RC-Rough Chrome Plated
- PC-Polished Chrome Plated
- Specify Thread

DIMENSIONS			
SIZE	1½″	2½″	3″
H	1.38″	1.51″	1.72″



MATERIAL LIST		
NUMBER	**DESCRIPTION**	**MATERIAL**
1	Cap	1½″: ASTM B584 C85700 2½″, 3″: ASTM B124 C37700
2	Rubber Facing	Vulcanized Rubber
3	Snap Ring	Brass
4	Chain	Brass

PROJECT	APPROVAL STAMP
PROJECT:	☐ APPROVED
ADDRESS:	☐ APPROVED AS NOTED
ENGINEER:	☐ NOT APPROVED
SUBMITTAL DATA:	REMARKS:
NOTES 1:	
NOTES 2:	

Victaulic® Series UM
Universal Manifold Assembly

1.0 PRODUCT DESCRIPTION

Available Sizes

- 1 ¼ – 8"/DN32 – DN200

Maximum Working Pressure

- Up to 300 psi/2068 kPa/21 Bar

Application

- Fire protection system control module includes test and drain valve, waterflow detector, pressure gauge, flexible drain connection and adjustable pressure relief valve (175 – 310 psi/1206 – 2137 kPa/12.1 – 21.4 Bar adjustable set pressure).

Configurations

- Optional control valve: Series 728 FireLock™ Ball Valve for 1 ¼ – 1 ½"/DN32 – DN40 Series UM Sizes
- Optional control valve: Series 705 FireLock™ Butterfly Valve for 2 – 8"/DN50 – DN200 Series UM Sizes
- Optional auto test flow switch

Included Components

- Series UTD (Universal Test Drain) with integrated Series ARV (Adjustable Relief Valve)
- Quick-drain hose
- Vane type flow switch
  - 1 ¼ – 2"/DN32 – DN50 Series UM sizes use a 2" vane type flow switch with retard
  - 2 ½ – 8"/DN80 – DN200 Series UM sizes use a corresponding size vane type flow switch with retard
- 1 ¼ – 8"/DN32 – DN200 system-side pressure gauge 400 psi/2750 kPa/27.5 Bar

Available End Connections

- Victaulic Original Groove System (OGS)

2.0 CERTIFICATION/LISTINGS

c UL us LISTED FM APPROVED CE

3.0 SPECIFICATIONS – MATERIAL

Valve Body: Cast ductile iron conforming to ASTM A536, Grade 65-45-12.

Waterflow Detector: Vane type waterflow detector with sealed retard, and mechanical delay adjustment. Cover includes tamper resistant security screws and tool.

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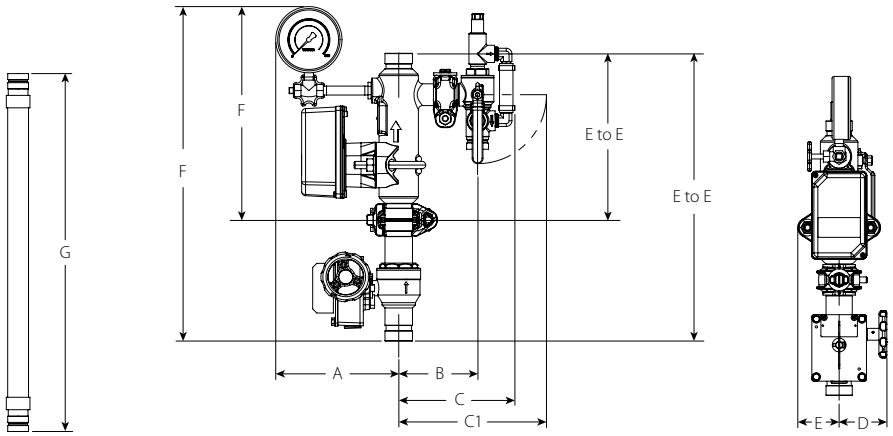
4.0 DIMENSIONS



Size		Dimensions													Weight Approx. (Each)	
Nominal inches DN	**Actual Outside Diameter** inches mm	**E to E with control valve** inches mm	**E to E without control valve** inches mm	**A** inches mm	**B** inches mm	**C** inches mm	**C1** inches mm	**D** inches mm	**E** inches mm	**F with control valve** inches mm	**F without control valve** inches mm	**G** inches mm	**Series UTD Drain Size (Nominal)** inches DN	**Series UTD Test Orifice** K-Factor S.I.	**with control valve** lb kg	**without control valve** lb kg
1 ¼ DN32	1.660 42.4	17.38 441	10.00 254	7.38 187	4.75 121	7.00 178	8.88 225	3.00 76	2.63 67	20.25 514	12.88 327	24.00 610	1.00 25	2.8 4.0	22 9.98	13 5.90
1 ½ DN40	1.900 48.3	17.38 441	10.00 254	7.38 187	4.75 121	7.00 178	8.88 225	3.00 76	2.63 67	20.25 514	12.88 327	24.00 610	1.00 25	2.8 4.0	22 9.98	13 5.90

NOTE

- When Series UTD Valve Size (Nominal) is 1"/25 mm, flexible drain hose connection utilizes FireLock IGS™ groove profile.

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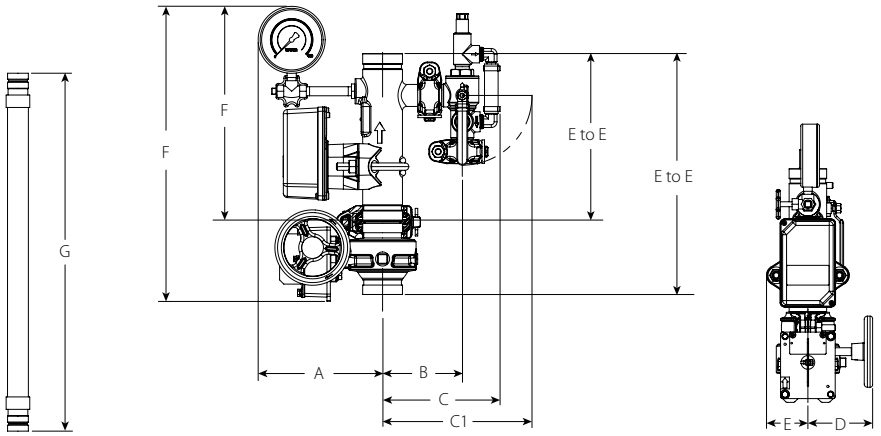
4.0 DIMENSIONS (CONTINUED)



Size		Dimensions													Weight Approx. (Each)	
Nominal inches DN	**Actual Outside Diameter** inches mm	**E to E with control valve** inches mm	**E to E without control valve** inches mm	**A** inches mm	**B** inches mm	**C** inches mm	**C1** inches mm	**D** inches mm	**E** inches mm	**F with control valve** inches mm	**F without control valve** inches mm	**G** inches mm	**Series UTD Drain Size (Nominal)** inches DN	**Series UTD Test Orifice** K-Factor S.I.	**with control valve** lb kg	**without control valve** lb kg
2 DN50	2.375 60.3	14.38 365	10.00 254	7.38 187	4.75 121	7.00 178	8.88 225	4.13 105	2.63 67	17.63 448	12.88 327	24.00 610	1.00 25	2.8 4.0	24 10.89	13 5.90
2½	2.875 73.0	13.88 352	10.00 254	7.63 194	5.88 149	8.38 213	10.75 273	4.13 105	2.63 67	17.50 445	12.88 327	24.00 610	1.25 32	4.2 6.1	29 13.15	17 7.71
	3.000 76.1	13.88 352	10.00 254	7.63 194	5.88 149	8.38 213	10.75 273	4.13 105	2.63 67	17.50 445	12.88 327	24.00 610	1.25 32	4.2 6.1	29 13.15	17 7.71
3 DN80	3.500 88.9	14.88 378	11.00 279	8.00 203	6.13 156	8.63 219	11.00 279	4.13 105	2.88 73	18.50 470	13.88 352	24.00 610	1.25 32	4.2 6.1	33 14.97	20 9.07

NOTE

- When Series UTD Valve Size (Nominal) is 1"/25 mm, flexible drain hose connection utilizes FireLock IGS™ groove profile.

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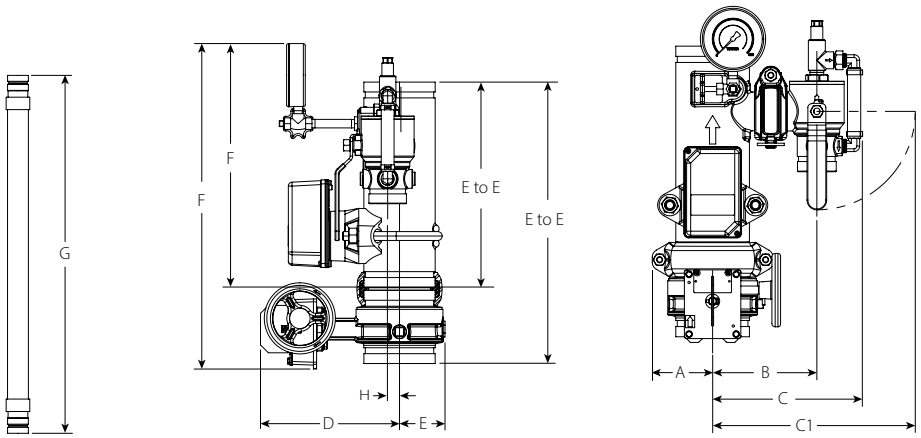
4.0 DIMENSIONS (CONTINUED)



Size		Dimensions														Weight Approx. (Each)	
Nominal inches DN	**Actual Outside Dia.** inches mm	**E to E with control valve** inches mm	**E to E without control valve** inches mm	**A** inches mm	**B** inches mm	**C** inches mm	**C1** inches mm	**D** inches mm	**E** inches mm	**F with control valve** inches mm	**F without control valve** inches mm	**G** inches mm	**H** inches mm	**Series UTD Drain Size (Nominal)** inches DN	**Series UTD Test Orifice** K-Factor S.I.	**with control valve** lb kg	**without control valve** lb kg
4 DN100	4.500 114.3	17.88 454	13.00 330	3.75 95	6.38 162	9.25 235	12.38 314	8.75 222	2.88 73	20.63 524	15.50 394	36.00 914	0.75 19	2.00 51	5.6 8.1	44 19.96	17 7.71
	6.500 165.1	19.00 483	13.00 330	5.13 130	7.38 187	10.25 260	13.38 340	11.38 289	4.25 108	21.50 546	15.50 394	36.00 914	1.50 38	2.00 51	5.6 8.1	66 29.94	34 15.42
6 DN150	6.625 168.3	19.00 483	13.00 330	5.13 130	7.38 187	10.25 260	13.38 340	11.38 289	4.25 108	21.50 546	15.50 394	36.00 914	1.50 38	2.00 51	5.6 8.1	66 29.94	34 15.42

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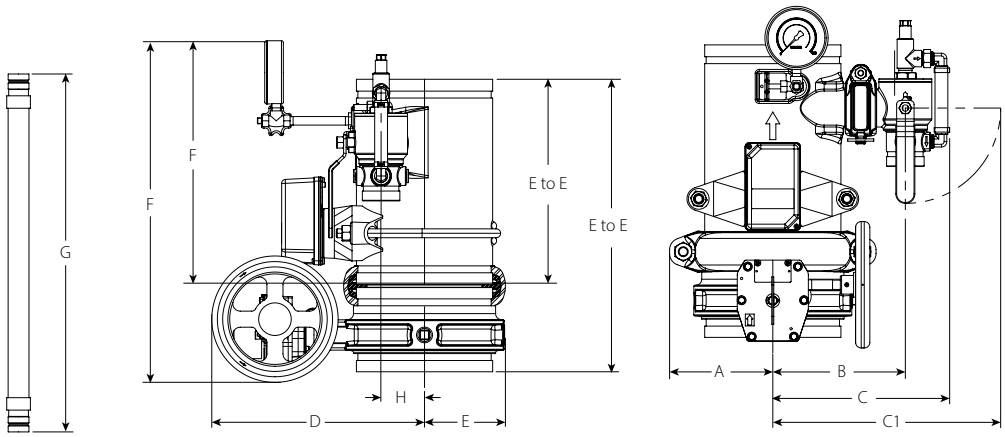
4.0 DIMENSIONS (CONTINUED)



Size		Dimensions														Weight Approx. (Each)	
Nominal inches DN	**Actual Outside Dia.** inches mm	**E to E with control valve** inches mm	**E to E without control valve** inches mm	**A** inches mm	**B** inches mm	**C** inches mm	**C1** inches mm	**D** inches mm	**E** inches mm	**F with control valve** inches mm	**F without control valve** inches mm	**G** inches mm	**H** inches mm	**Series UTD Drain Size (Nominal)** inches DN	**Series UTD Test Orifice** K-Factor S.I.	**with control valve** lb kg	**without control valve** lb kg
8 DN200	8.625 219.1	18.50 470	13.00 330	6.50 165	8.38 213	11.25 286	14.38 365	13.50 343	5.13 130	21.63 549	15.50 394	36.00 914	2.75 70	2.00 51	5.6 8.1	91 41.28	54 24.49

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5.0 PERFORMANCE

Size		Equivalent Length of Sch. 40 Pipe[1]		Flow Characteristics		Performance
Nominal inches DN	**Actual Outside Diameter** inches mm	**with control valve** feet meters	**without control valve** feet meters	**C_v/K_v Values with control valve** Full Open	**C_v/K_v Values without control valve** Full Open	**Maximum Working Pressure** psi kPa
1 ¼ DN32	1.660 42.4	5.75 1.8	5.25 1.6	47.65 41	49.33 43	300 2068
1 ½ DN40	1.900 48.3	6 1.8	5.875 1.8	70.66 61	72.53 63	300 2068
2 DN50	2.375 60.3	12.25 3.7	6.625 2.0	95.39 83	130.61 113	300 2068
2 ½	2.875 73.0	9.875 3.0	5.25 1.6	149.98 130	218.87 189	300 2068
DN65	3.000 76.1	9.875 3.0	5.25 1.6	149.98 130	218.87 189	300 2068
3 DN80	3.500 88.9	9 2.7	4.125 1.3	298 258	433.2 375	300 2068
4 DN100	4.500 114.3	8.5 2.6	3 0.9	594.94 515	964.95 835	300 2068
	6.500 165.1	12 3.7	4.5 1.4	1472.2 1273	2256.53 1952	300 2068
6 DN150	6.625 168.3	12 3.7	4.5 1.4	1472.2 1273	2256.53 1952	300 2068
8 DN200	8.625 219.1	17.5 5.3	4.125 1.3	2500.92 2163	5035.24 4355	300 2068

[1] Equivalent length of Sch. 40 pipe calculated using the hazen-williams formula with a roughness constant of c=120.

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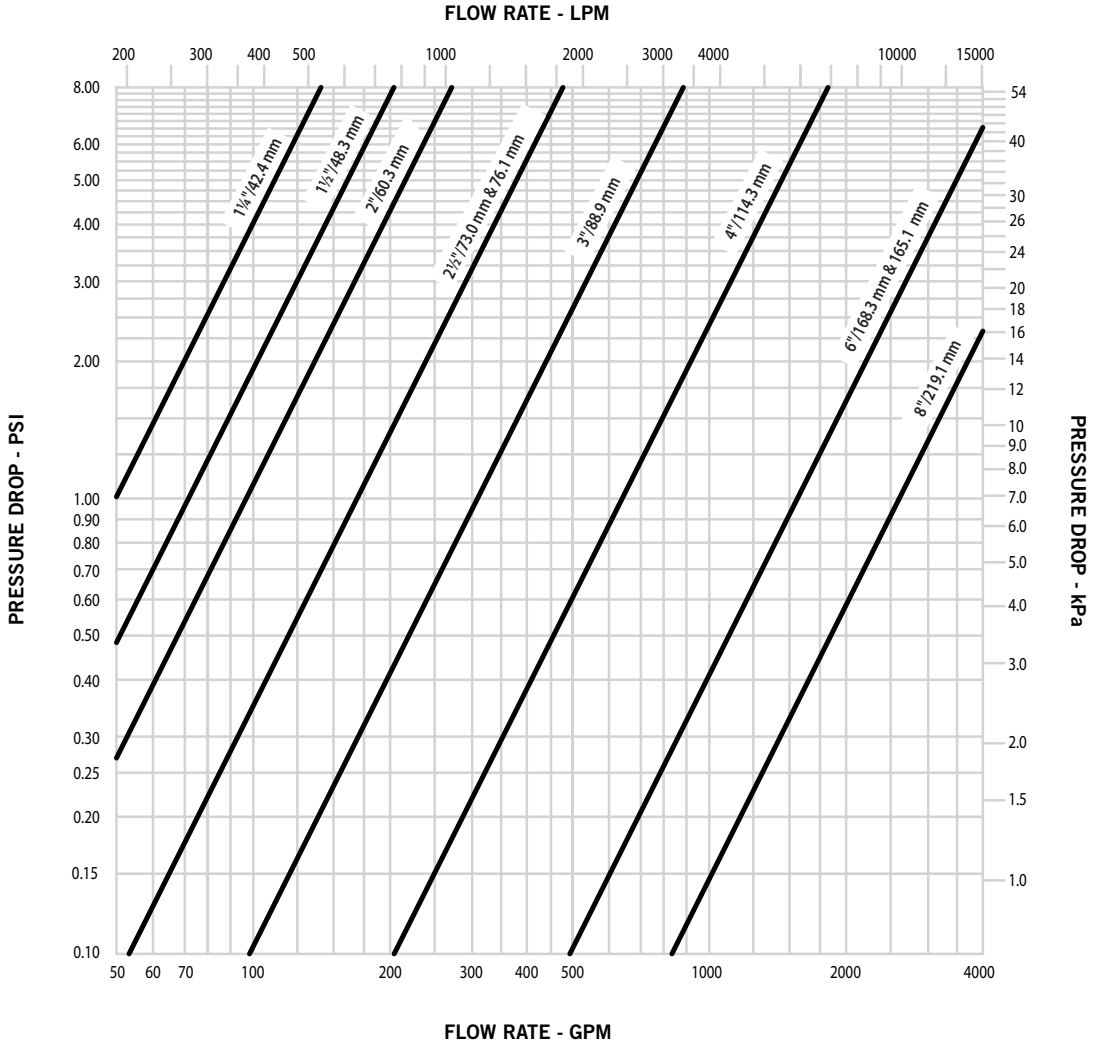
5.0 PERFORMANCE

Series UM Friction Loss with Control Valve (including water flow switch)



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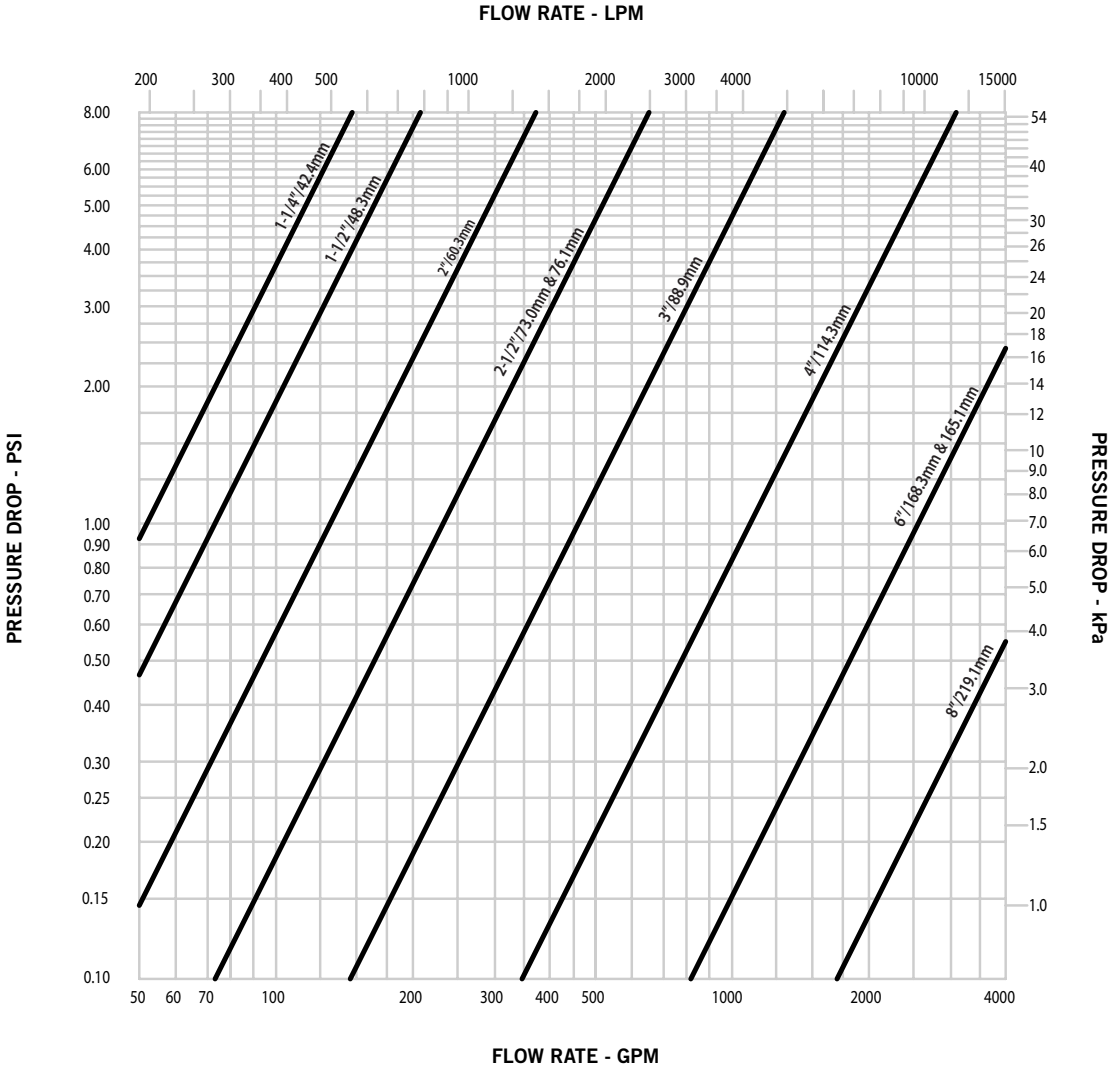
5.0 PERFORMANCE (CONTINUED)

Series UM Friction Loss without Control Valve (including water flow switch)



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6.0 NOTIFICATIONS

⚠ WARNING

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

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

- **These products shall be used only in fire protection systems that are designed and installed in accordance with current, applicable National Fire Protection Association (NFPA) standards, or equivalent standards, and in accordance with applicable building and fire codes. These standards and codes contain important information regarding protection of systems from freezing temperatures, corrosion, mechanical damage, etc.**
- **The installer shall understand the use of this product and why it was specified for the particular application.**
- **The installer shall understand common industry safety standards and potential consequences of improper product installation.**

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

7.0 REFERENCE MATERIALS

10.17: Series 728 FireLock™ Ball Valve
10.54: FireLock™ Innovative Groove System I IGS™
10:64: FireLock™ Installation-Ready™ Rigid Couplings Style 009N and Style 109
10.80: Series 765 FireLock™ High Pressure Butterfly Valve
10.81: Series 705 FireLock™ Butterfly Valve
30.73: Series UTD Universal Test and Drain
30.74: Series ARV Adjustable Relief Valve
30.75: Series FTV Flow Test Valve
I-UM: Series UM Universal Manifold Assembly Installation Manual

User Responsibility for Product Selection and Suitability
Each user bears final responsibility for determining the suitability of Victaulic products for their end-use application, in accordance with industry standards, project specifications, and Victaulic's published performance, maintenance, and safety data, as well as all warnings and installation instructions. Nothing in this or any other document, nor any verbal recommendation, advice, or opinion from any Victaulic employee, shall be deemed to alter, vary, supersede, or waive any provision of Victaulic Company's standard conditions of sale, warranty, installation instructions, or this disclaimer.

Installation
Always refer to and follow the Victaulic Installation Handbook or installation instructions for the product you are installing. Handbooks are included with each shipment of Victaulic products, providing complete installation and assembly data, and are available in PDF format on our website at victaulic.com.

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

Intellectual Property Rights
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Victaulic® Series UTD
Universal Test and Drain

30.73

1.0 PRODUCT DESCRIPTION

Available Sizes

- 1 – 2"/DN25 – DN50

Pressure Class

- Up to 300 psi/2068 kPa/21 Bar

Test Orifice K-Factor

- 1"/DN25 - K2.8 (4.0)
- 1 ¼"/DN32 – K4.2 (6.0)
- 2"/DN50 – K5.6 (8.1)

Available Connections

- 1"/DN25 – NPT/IGS
- 1 ¼"/DN32 – NPT/OGS
- 2"/DN50 – NPT/OGS

Ports

- (2) Integrated ports with clear Polycarbonate plugs, allowing for a visual indication water is flowing

Standard

- Preinstalled Series ARV (refer to publication 30.74) and plastic tubing.

2.0 CERTIFICATION/LISTINGS

c UL us LISTED FM APPROVED

3.0 SPECIFICATIONS – MATERIAL

3 Way Test and Drain Body: Brass
UTD Test and Drain Ball: Chrome-plated brass
UTD Test and Drain Handle Stem: Stainless Steel
3-Way Test and Drain Stem O-Ring: EPDM
UTD Test and Drain Seal: PTFE
Sight Glass: Polycarbonate
3-Way Red Handle: EPDM
Retaining Nut: Stainless Steel

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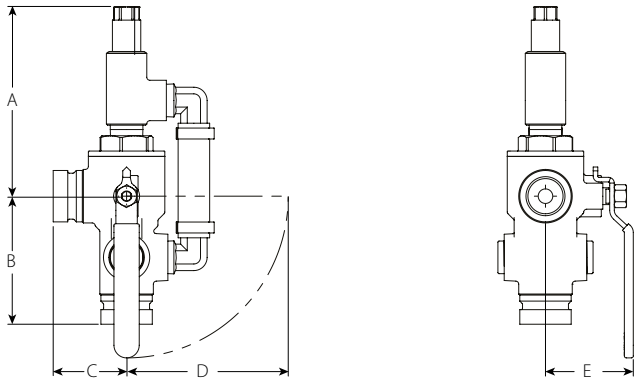
4.0 DIMENSIONS



Size		Dimensions					Weight
Nominal inches DN	**Actual Outside Diameter** inches mm	**A** inches mm	**B** inches mm	**C** inches mm	**D** inches mm	**E** inches mm	**Approximate (Each)** lb kg
1 DN25	1.315 33.7	4.88 124	3.25 83	1.88 48	4.13 105	2.13 54	3.3 1.5
1 ¼ DN32	1.660 42.4	5.00 127	3.38 86	2.25 57	4.88 124	2.63 67	4.6 2.1
2 DN50	2.375 60.3	5.50 140	3.75 95	2.75 70	6.00 152	3.38 86	8.2 3.7

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5.0 PERFORMANCE

Size		Maximum Working Pressure
Nominal inches DN	Actual Outside Diameter inches mm	psi kPa
1 DN25	1.315 33.7	300 2068
1 ¼ DN32	1.660 42.4	300 2068
2 DN50	2.375 60.3	300 2068

6.0 NOTIFICATIONS

⚠ WARNING

- **Read and understand all instructions before attempting to install, remove, adjust, or maintain any Victaulic piping products.**
- **Depressurize and drain the piping system before attempting to install, remove, adjust, or maintain any Victaulic piping products.**
- **Wear safety glasses, hardhat, and foot protection.**

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

7.0 REFERENCE MATERIALS

30.71: Series UM Universal Manifold Assembly

30.72: Series UMC Universal Manifold Control Assembly

10.54: FireLock™ Innovative Groove System | IGS™

10.64: FireLock™ Installation-Ready™ Rigid Couplings Style 009N and Style 109

30.74: Series ARV Adjustable Relief Valve

User Responsibility for Product Selection and Suitability
Each user bears final responsibility for making a determination as to the suitability of Victaulic products for a particular end-use application, in accordance with industry standards and project specifications, as well as Victaulic performance, maintenance, safety, and warning instructions. Nothing in this or any other document, nor any verbal recommendation, advice, or opinion from any Victaulic employee, shall be deemed to alter, vary, supersede, or waive any provision of Victaulic Company's standard conditions of sale, installation guide, or this disclaimer.

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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 Victaulic installation handbook or installation instructions of the product you are installing. Handbooks are included with each shipment of Victaulic products, providing 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.

Trademarks
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Reliable®

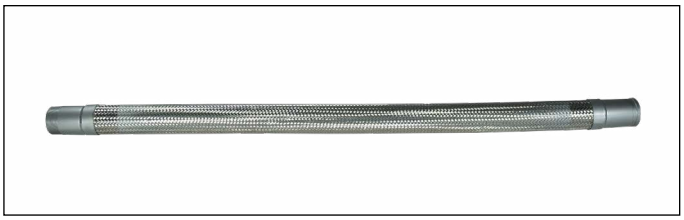
Streamline™ Drain Hoses

Product Description

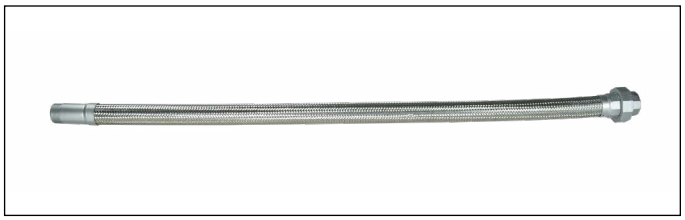
Reliable Streamline™ Drain Hoses are intended for making fire protection system drain connections, and are available in the following nominal sizes and end configurations:

- 1” x 24” MNPT x FNPT Union
- 1-1/4” x 24” MNPT x FNPT Union
- 1-1/4” x 36” MNPT x FNPT Union
- 1-1/4” x 48” MNPT x FNPT Union
- 2” x 48” MNPT x AWWA C606 Groove

The hoses are intended for use in fire protection system drains only, and are not for use in supply piping or pressurized parts of systems.



2” x 48” MNPT x Groove



1-1/4” x 48” MNPT x FNPT Union

Note: Not all versions of the product are shown.

Installation

Connect one end of the Reliable Streamline™ Drain Hose to the system main drain valve, and the opposite end of the drain piping or manifold and tighten. Avoid kinking the hose. Installation practices should be in accordance with the requirements of NFPA 13 and other applicable standards.

Maintenance

The owner is responsible for maintaining the fire protection system in proper operating condition. The Reliable Streamline™ Drain Hose shall periodically be given a thorough inspection. NFPA 25, “Inspection, Testing and Maintenance of Water Based Fire Protection Systems,” provides minimum inspection and maintenance requirements.

Materials **Table A**

Component	Material
Union (1-1/4”)	Carbon Steel FCMB
Gasket (1-1/4”)	Teflon
Corrugated Tube	STS304
Braid	STS304
Sleeve	STS304
Threaded or Grooved End Connection	Carbon Steel SPP

Guarantee

For Reliable Automatic Sprinkler Co., Inc. guarantee, terms, and conditions, visit www.reliablesprinkler.com.

Ordering Information

Specify:

Reliable Streamline™ Drain Hose

- 1” x 24” MNPT x FNPT Union
- 1-1/4” x 24” MNPT x FNPT Union
- 1-1/4” x 36” MNPT x FNPT Union
- 1-1/4” x 48” MNPT x FNPT Union
- 2” x 48” MNPT x AWWA C606 Groove

P/N 9999970582

Model DPV-1 Dry Pipe Valve External Resetting

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

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

docs.jci.com/tycofire/tfp1020

Available Sizes and End Connections				
End Connection	Nominal Valve Size			
	2-1/2 in. (DN65)	3 in. (DN80)	4 in. (DN100)	6 in. (DN150)
Flange x Flange	N/A	N/A	•	•
Flange x Groove	N/A	N/A	•	•
Groove x Groove	•	•	•	•

• = Available
N/A = Not Available

General Description

The TYCO Model DPV-1 Dry Pipe Valves are differential valves used to automatically control the flow of water into dry pipe fire protection sprinkler systems upon operation of one or more automatic sprinklers. The DPV-1 also provides for actuation of fire alarms upon system operation. The Model DPV-1 features are as follows:

- External reset.
- 250 psi (17,2 bar) pressure rating.
- Unique offset single clapper design enabling a simple compact valve to minimize installation labor.
- Ductile iron construction to ensure a lightweight valve to minimize shipping cost.
- A variety of inlet and outlet connections.
- Compact, Pre-Trimmed, and Semi-Assembled, easy to operate valve trim.
- Simple reset procedure through the elimination of priming water.

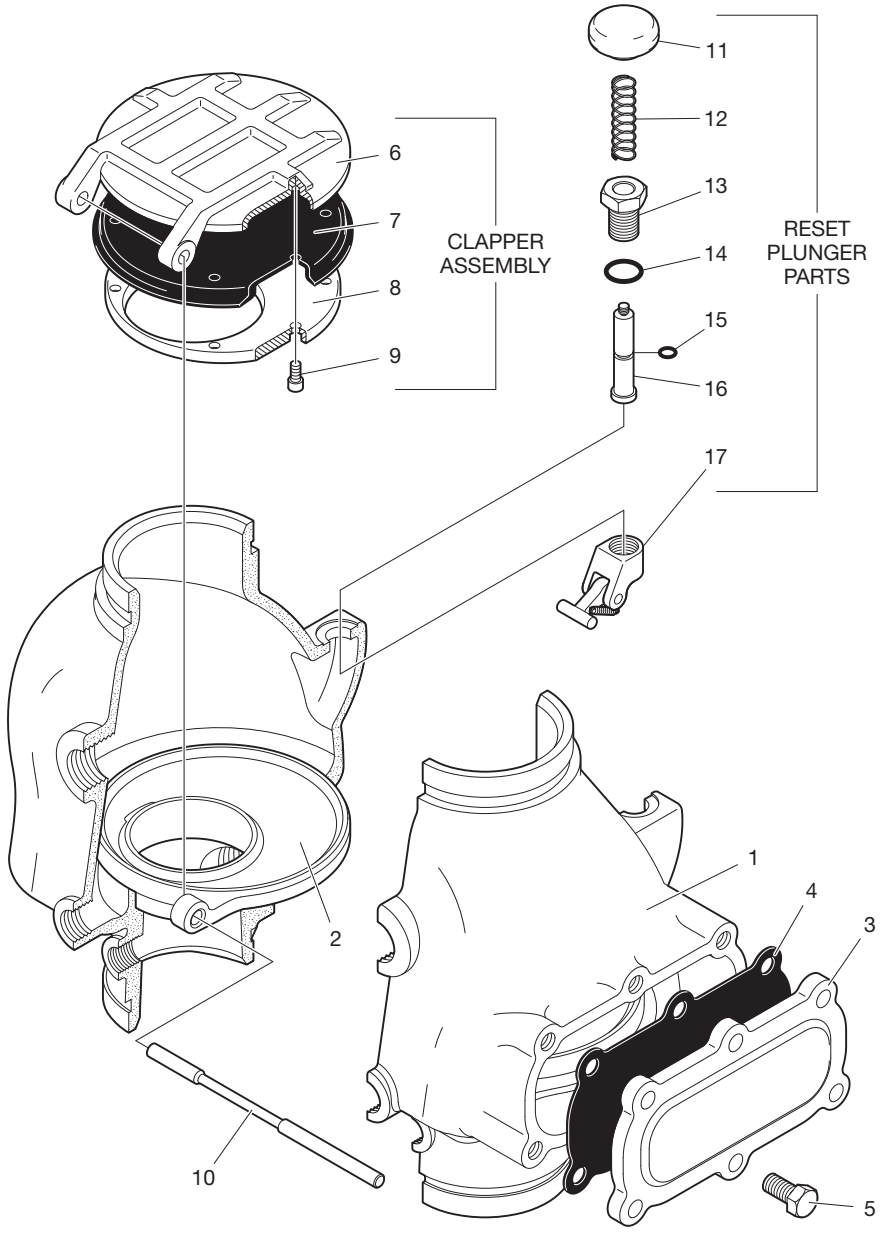
Dry pipe sprinkler systems are used in unheated warehouses, parking garages, store windows, attic spaces, loading docks, and other areas exposed to freezing temperatures, where water filled pipe cannot be utilized. When set for service, the dry pipe sprinkler system is pressurized with air (or nitrogen). The loss of pressure through an operated automatic sprinkler in response to heat from a fire permits the DPV-1 Dry Pipe Valve to open and allow a flow of water into the sprinkler system piping. Table B establishes the minimum required system air pressure that includes a safety factor to help prevent false operations that might occur due to water supply fluctuations.

NOTICE

The Model DPV-1 Dry Pipe Valves described herein must be installed and maintained in compliance with this document, as well as with the applicable standards of the NATIONAL FIRE PROTECTION ASSOCIATION (NFPA), in addition to the standards of any authorities having jurisdiction, such as FM Global. 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.

In all cases, the appropriate NFPA or FM Global installation standard, or other applicable standard, must be referenced to ensure applicability and to obtain complete installation guidelines. The general guidelines in this data sheet are not intended to provide complete installation criteria.



NO.	DESCRIPTION	QTY.	REF.
1	Valve Body	1	NR[1]
2	Air and Water Seat	1	NR[1]
3	Handhole Cover	1	NR[1]
4	Handhole Cover Gasket	1	(b)
5	1/2-13 UNC x 1" Hex Head Cap Screw:		
	2-1/2, 3 Inch Valves	5	CH[2]
	4 Inch Valve	6	CH[2]
6	Clapper	1	(a)
7	Clapper Facing	1	(a) or (b)
8	Clapper Facing Retaining Plate	1	(a)
9	2-1/2, 3 Inch Valves: 1/4" x 3/8" Long #10-32 Shoulder Screw	5	(a)
	4 Inch Valve: 1/4-20 UNC x 1/2" Socket Head Cap Screw	7	(a)
10	Clapper Hinge Pin	1	(a)
11	Reset Knob	1	(c) or (d)
12	Reset Spring	1	(c)
13	Reset Bushing	1	(c)
14	Reset Bushing O-Ring	1	(b), (c) or (e)
15	Reset Plunger O-Ring[3]	1	(b) or (c)
16	Reset Plunger	1	(c)
17	Reset Latch Subassembly	1	(c)

NOTES:
1. NR = Not Replaceable
2. CH = Common Hardware
3. Dow Corning FS3452 Flourosilicone Grease factory-applied to Reset Plunger O-Ring; Do not remove grease when reassembling valve.

REPLACEMENT PARTS

NO.	DESCRIPTION	P/N
(a)	Clapper Assembly Includes Items 6-10:	
	2-1/2, 3 Inch Valves	92-312-2-203
	4 Inch Valve	92-312-2-403
(b)	Repair Parts Kit Includes Items 4, 7, 14, 15	
	2-1/2, 3 Inch Valves	92-312-1-204
	4 Inch Valve	92-312-1-404
(c)	Reset Plunger Parts Kit Includes Items 11-17	92-312-1-405
(d)	Reset Knob, Item 11	92-312-1-406
(e)	Reset Plunger O-Ring, Item 15	92-312-1-407

FIGURE 1 - PART 1 OF 2
MODEL DPV-1 DRY PIPE VALVE
2-1/2, 3, AND 4 INCH (DN65, DN80, DN100) ASSEMBLIES

NO.	DESCRIPTION	QTY.	REF.
1	Valve Body	1	NR[1]
2	Air and Water Seat	1	NR[1]
3	Water Seal O-Ring	1	NR[1]
4	Air Seal O-Ring	1	NR[1]

NO.	DESCRIPTION	QTY.	REF.
5	3/8-16 UNC x 1" Socket Head Cap Screw	8	NR[1]
6	Handhole Cover	1	NR[1]
7	Handhole Cover Gasket	1	(b)

NO.	DESCRIPTION	QTY.	REF.
8	5/8-11 UNC x 1" Hex Head Cap Screw	6	CH[2]
9	Clapper	1	(a)
10	Clapper Facing	1	(a) or (b)
11	Clapper Facing Retaining Plate	1	(a)
12	1/4-20 UNC x 1/2" Socket Head Cap Screw	9	(a)
13	Clapper Hinge Pin	1	(a)
14	Reset Knob	1	(c) or (d)
15	Reset Spring	1	(c)
16	Reset Bushing	1	(c)
17	Reset Bushing O-Ring	1	(b), (c) or (e)
18	Reset Plunger O-Ring[3]	1	(b) or (c)
19	Reset Plunger	1	(c)
20	Reset Latch Subassembly	1	(c)

NOTES:
1. NR = Not Replaceable
2. CH = Common Hardware
3. Dow Corning FS3452 Flourosilicone Grease factory-applied to Reset Plunger O-Ring; Do not remove grease when reassembling valve.

REPLACEMENT PARTS

NO.	DESCRIPTION	P/N
(a)	Clapper Assembly Includes Items 9-13	92-312-2-603
(b)	Repair Parts Kit Includes Items 7, 10, 17, 18	92-312-1-604
(c)	Reset Plunger Parts Kit Includes Items 14-20	92-312-1-405
(d)	Reset Knob, Item 14.	92-312-1-406
(e)	Reset Plunger O-Ring, Item 18	92-312-1-407

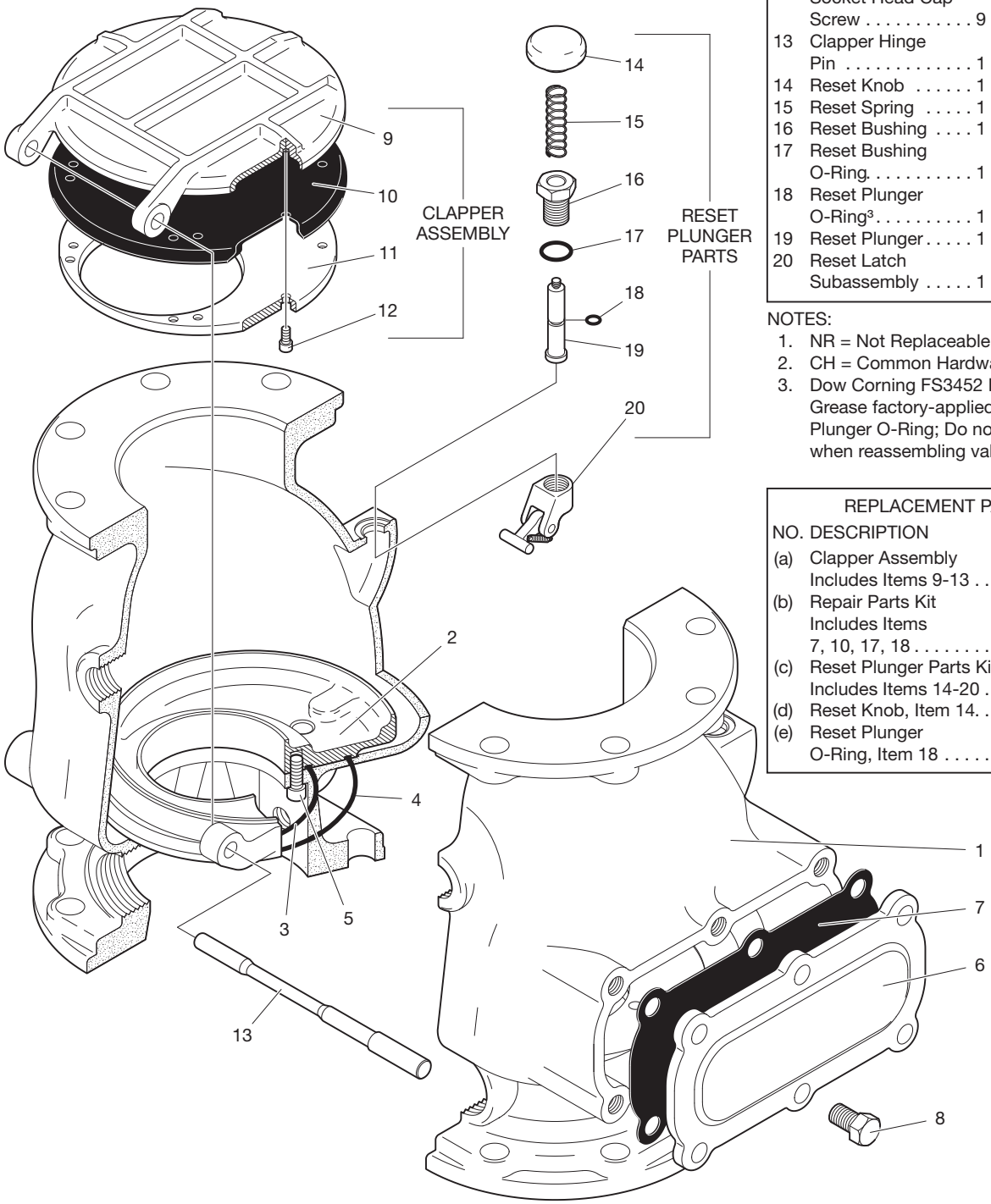


FIGURE 1 - PART 2 OF 2
MODEL DPV-1 DRY PIPE VALVE
6 INCH (DN150) ASSEMBLY

Technical Data

Approvals
UL and C-UL Listed
FM Approved

Dry Pipe Valve
The TYCO Model DPV-1 Dry Pipe Valves shall be installed in the vertical orientation only (supply at bottom flowing upward) and are rated for use at a maximum service pressure of 250 psi (17,2 bar). Valve and trim dimensions are shown in Figure 6.

Flanged connections are available and drilled per ANSI, ISO, AS, and JIS specifications as shown in Table A. The grooved outlet connections, as applicable, are cut in accordance with standard groove specifications for steel pipe. They are suitable for use with grooved end pipe couplings that are listed or approved for fire protection system service. Available combinations of inlet and outlet connections are described in the Ordering Procedure section and in the Available End Connection and Sizes table on page 1.

Trim port connections of valves having flanges drilled to ANSI, AS, or JIS specifications are NPT threaded per ANSI Standard B1.20.1. Trim port connections of valves having flanges drilled to ISO are available either threaded per ISO 7-1 or NPT threaded per ANSI Standard B1.20.1. Valves with NPT threaded ports will readily accept the trim arrangements shown in Parts 2 and 3 of Figures 3, 4, and 5.

Model DPV-1 Valve assemblies are shown in Figure 1. The body and handhole cover are ductile iron. The handhole cover gasket is neoprene, and the clapper facing is EPDM. The air/water seat ring is brass, the clapper is bronze or aluminum bronze, and both the clapper retaining plate and latch are bronze. The hinge pin is aluminum bronze, and the fasteners for the handhole cover are carbon steel.

Valve Trim
Installation dimensions are provided in Figure 6, and valve trim and pre-trimmed valve assemblies are shown in Figures 3, 4, and 5.

The valve trim, ordered separately or as a pre-trimmed valve assembly, forms a part of the laboratory listings and approvals of the DPV-1 valve and is necessary for the proper operation of the DPV-1 valve.

Trim packages or pre-trimmed valve assemblies include the following equipment:

- Water Supply Pressure Gauge
- System Air Pressure Gauge
- Air Supply Connections
- Main Drain Valve
- Low Body Drain Valve
- Alarm Test Valve
- Automatic Drain Valve
- Drip Funnel
- Connections For Optional Quick Opening Device (Accelerator)

Pre-trimmed valve assemblies also include the following equipment:

- Model BFV-300 Butterfly Valve
- Figure 577 Grooved Coupling
- PS10-2 Waterflow Alarm Switch
- PS40-2 Low Air Pressure Alarm Switch

Order the above equipment separately when ordering trim packages separately.

Note: *When the system pressure is greater than 175 psi (12,1 bar), provision shall be made to replace the standard order 300 psi (20,7 bar) water pressure gauge with a separately ordered 600 psi (41,4 bar) water pressure gauge.*

Weights
The following are the nominal weights for pre-trimmed valve assemblies, semi-assembled trim, and DPV-1 valves without trim.

Pre-Trimmed DPV-1 Valve Assemblies:

2-1/2 in. (DN65) G x G	87 lb (40 kg)
3 in. (DN80) G x G	90 lb (42 kg)
4 in. (DN100) G x G	121 lb (56 kg)
4 in. (DN100) F x G	135 lb (64 kg)
4 in. (DN100) F x F	145 lb (69 kg)
6 in. (DN150) G x G	175 lb (81 kg)
6 in. (DN150) F x G	195 lb (90 kg)
6 in. (DN150) F x F	208 lb (96 kg)

Standard Galvanized Semi-Assembled DPV-1 Trim:

2-1/2 in. (DN65)	23 lb (11 kg)
3 in. (DN80)	23 lb (11 kg)
4 in. (DN100)	30 lb (14 kg)
6 in. (DN150)	30 lb (14 kg)

DPV-1 Valve (Without Trim):

2-1/2 in. (DN65) G x G	37 lb (17 kg)
3 in. (DN80) G x G	.38 lb(18 kg)
4 in. (DN100) G x G	57 lb (26 kg)
4 in. (DN100) F x G	67 lb (31 kg)
4 in. (DN100) F x F	77 lb (36 kg)
6 in. (DN150) G x G	95 lb (44 kg)
6 in. (DN150) F x G	108 lb (50 kg)
6 in.(DN150) F x F	121 lb (56 kg)

Air Supply
Table B shows the system air pressure requirements as a function of the water supply pressure. The air (or nitrogen) pressure in the sprinkler system is recommended to be automatically maintained by using one of the following pressure maintenance devices, as appropriate:

- Model AMD-1 Air Maintenance Device (pressure reducing type)
- Model AMD-2 Air Maintenance Device (compressor control type)
- Model AMD-3 Nitrogen Maintenance Device (high pressure reducing type)

The pressure relief valve provided with the valve trim is factory set to relieve at a pressure of approximately 45 psi (3,1 bar). If the normal system air pressure is less than or exceeds 40 psi (2,8 bar), then the pressure relief valve must be reset to relieve at a pressure that is in accordance with the authority having jurisdiction.

Quick Opening Device
The Model DPV-1 Dry Pipe Valve may optionally be equipped with an electronic or mechanical dry pipe valve accelerator. Select the VIZOR Electronic Dry Pipe Valve Accelerator (4 and 6 in. sizes only) as described in Technical Data Sheet TFP1105, or the Model ACC-1 Mechanical Dry Pipe Valve Accelerator (2-1/2 through 6 in. sizes) as described in Technical Data Sheet TFP1112.

The VIZOR or the ACC-1 is used to reduce the time to valve actuation following the operation of one or more automatic sprinklers. In some cases the use of a quick opening device such as the VIZOR or the ACC-1 may be required to meet the requirements of the NFPA to meet water delivery times.

Nominal Valve Size	Flange Drilling Specification											
	Nominal Dimensions in Inches and (mm)											
	ANSI B16.42[1] (Class 150)			ISO 7005-2 (PN16)[2]			JIS B 2210 (10K)			AS 2129 (Table E)		
	Dim. A	Dim. B	Qty. N	Dim. A	Dim. B	Qty. N	Dim. A	Dim. B	Qty. N	Dim. A	Dim. B	Qty. N
4 in. (DN100)	7.50 (190,5)	0.75 (19,0)	8	7.09 (180,0)	0.75 (19,0)	8	6.89 (175,0)	0.59 (15,0)	8	7.00 (178,0)	0.71 (18,0)	8
6 in. (DN150)	9.50 (241,3)	0.88 (22,2)	8	9.45 (240,0)	0.91 (23,0)	8	9.45 (240,0)	0.75 (19,0)	8	9.25 (235,0)	0.87 (22,0)	8

1. Drilling same as ANSI B16.1 (Class 125).
2. Drilling same as BS 4504 Section 3.2 (PN16) and DIN 2532 (PN16).

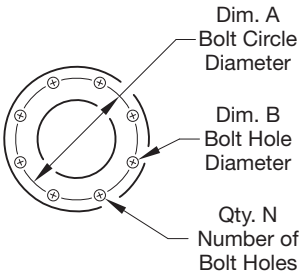
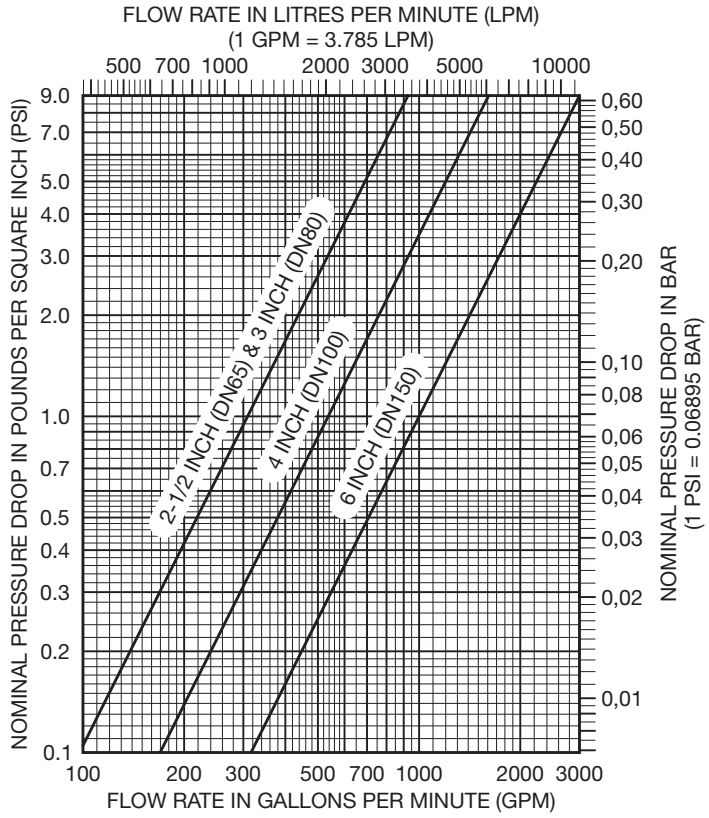


TABLE A
SELECTION OF FLANGE DRILLING SPECIFICATIONS

Maximum Water Supply Pressure psi	System Air Pressure Range psi
20	10
60	15 - 23
80	20 - 28
100	25 - 33
120	30 - 38
145	35 - 43
165	40 - 48
185	45 - 53
205	50 - 58
225	55 - 63
250	60 - 68

TABLE B
SYSTEM AIR PRESSURE REQUIREMENTS



The approximate friction losses, based on the Hazen and Williams formula and expressed in equivalent length of Schedule 40 pipe with C=100 and flowing at typical flow rates, are as follows:

2-1/2 in. valve at 250 GPM flow = 2.2 ft
3 in. valve at 350 GPM flow = 4.9 ft
4 in. valve at 600 GPM flow = 8.9 ft
6 in. valve at 1500 GPM flow = 22.0 ft

GRAPH A
MODEL DPV-1 DRY PIPE VALVES
NOMINAL PRESSURE LOSS VS. FLOW

Operation

The TYCO Model DPV-1 Dry Pipe Valve is a differential type valve that utilizes a substantially lower system (air or nitrogen) pressure than the supply (water) pressure, to maintain the set position shown in Figure 2A. The differential nature of the DPV-1 is based on the area difference between the air seat and the water seat in combination with the ratio of the radial difference from the hinge pin to the center of the water seat and the hinge pin to the center of the air seat. The difference is such that 1 psi (0,07 bar) of system air pressure can hold approximately 5.5 psi (0,38 bar) of water supply pressure.

Table B establishes the minimum required system air pressure that includes a safety factor to help prevent false operations that occur due to water supply fluctuations.

The intermediate chamber of the DPV-1 is formed by the area between the air seat and water seat as shown in Figure 2B. The intermediate chamber normally remains at atmospheric pressure through the alarm port connection and the valve trim to the normally open automatic drain valve, see Fig. 3, 4, or 5. Having the intermediate chamber, as shown in Figure 2B, open to atmosphere is critical to the DPV-1 valve remaining set, otherwise the full resulting pressure of the system air pressure on top of the clapper assembly cannot be realized.

For example, and assuming a water supply pressure of 100 psi (6,9 bar), if the system air pressure is 25 psi (1,7 bar) and there was 15 psi (1,0 bar) pressure trapped in the intermediate chamber, the resulting pressure across the top of the clapper would only be 10 psi (0,7 bar). This pressure would be insufficient to hold the clapper assembly closed against a water supply pressure of 100 psi (6,9 bar). It is for this reason that the plunger of the automatic drain valve must be depressed during several of the resetting steps, as well as during inspections, making certain that the automatic drain valve is open.

When one or more automatic sprinklers operate in response to a fire, air pressure within the system piping is relieved through the open sprinklers. When the air pressure is sufficiently reduced, the water pressure overcomes the differential holding the clapper assembly closed and the clapper assembly swings clear of the water seat, as shown in Figure 2C, This action permits water flow into the system piping and subsequently to be discharged from any open sprinklers. Also, with the clapper assembly open, the intermediate chamber is pressurized and water flows through the alarm port as shown in Figure 2B at the rear of the DPV-1 valve to actuate system water flow alarms. The flow from the alarm port is also sufficient to close the otherwise normally open automatic drain valve in the valve trim.

After a valve actuation and upon subsequent closing of a system main control valve to stop water flow, the clapper assembly will latch open as shown in Figure 3D. Latching open of the DPV-1 will permit complete draining of the system (including any loose scale) through the main drain port.

During the valve resetting procedure and after the system is completely drained, the external reset knob can be easily depressed to externally unlatch the clapper assembly as shown in Figure 2E. As such, the clapper assembly is returned to its normal set position to facilitate setting of the dry pipe sprinkler system, without having to remove the handhole cover.

Installation

General Instructions

Proper operation of the Model DPV-1 Dry Pipe Valve depends upon its trim being installed in accordance with the instructions given in this Technical Data Sheet. Failure to follow the appropriate trim diagram may prevent the DPV-1 valve from functioning properly, as well as void listings, approvals, and the manufacturer warranties.

Failure to latch open the clapper assembly prior to a system hydrostatic test may result in damage to the clapper assembly.

The DPV-1 valve must be installed in a readily visible and accessible location.

The DPV-1 valve and associated trim must be maintained at a minimum temperature of 40°F (4°C).

Heat tracing of the DPV-1 valve or its associated trim is not permitted. Heat tracing can result in the formation of hardened mineral deposits that are capable of preventing proper operation.

The Model DPV-1 Dry Pipe Valve is to be installed in accordance with the following criteria:

- All nipples, fittings, and devices must be clean and free of scale and burrs before installation. Use pipe thread sealant sparingly on male pipe threads only.
- The DPV-1 valve must be trimmed in accordance with Figures 3, 4, or 5, as applicable. If the DPV-1 is to be equipped with a dry pipe valve accelerator, refer to the Technical Data Sheet TFP1105 for the VIZOR Electronic Dry Pipe Valve Accelerator or TFP1112 for the Model ACC-1 Mechanical Dry Pipe Valve Accelerator.
- Care must be taken to make sure that components such check valves, strainers, and globe valves are installed with the flow arrows in the proper direction.
- Drain tubing to the drip funnel must be installed with smooth bends that will not restrict flow.
- The main drain and drip funnel drain may be interconnected provided a check valve is located at least 12 in. (300 mm) below the drip funnel. The low body drain valve, as shown in Fig. 3, 4, or 5, may be piped so as to discharge into the Drip Funnel or to a separate drain.
- Suitable provision must be made for disposal of drain water. Drainage water must be directed such that it will not cause accidental damage to property or danger to persons.
- Unused pressure alarm switch and/or water motor alarm connections must be plugged.
- The pressure relief valve provided with the valve trim is factory set to relieve at a pressure of approximately 45 psi (3,1 bar), which can typically be used for a maximum normal system air pressure of 40 psi (2,8 bar). The pressure relief valve may be reset to a lower or higher pressure; however, it must be reset to relieve at a pressure which is in accordance with the requirements of the authority having jurisdiction.

  To reset the pressure relief valve, first loosen the jam nut and then adjust the cap accordingly — clockwise for a higher pressure setting or counter-clockwise for a lower pressure setting. After verifying the desired pressure setting, tighten the jam nut.
- It is best practice to install an appropriately rated and listed relief valve upstream of the Model DPV-1 Dry Pipe Valve, between the inlet of the DPV-1 valve and any check valves or back flow preventers, to ensure transient increases in water pressure do not cause unintended operation of the DPV-1 valve.
- Installation of an air maintenance device, as described in the Technical Data Section, is recommended.
- An inspector's test connection as required By NFPA 13 must be provided on the system piping at the most remote location from the Model DPV-1 Valve.
- Conduit and electrical connections are to be made in accordance with the requirements of the authority having jurisdiction and/or the National Electric Code.
- Before a system hydrostatic test is performed in accordance with NFPA 13 system acceptance test requirements, the clapper assembly is to be manually latched open as shown in Figure 2D; the automatic drain valve as shown in Figures 3, 4, or 5 is to be temporarily replaced with a 1/2 in. NPT plug, the 3/32 in. vent fitting (Item 13, Figure 3; Item 15, Figure 4; or Item 15, Figure 5) is to be temporarily replaced with a 1/4 in. NPT plug, and the handhole cover bolts are to be tightened using a cross-draw sequence.

Valve Setting Procedure

Steps 1 through 11 are to be performed when initially setting the Model DPV-1 Dry Pipe Valve; after an operational test of the fire protection system; or, after system operation due to a fire.

NOTES: *If the DPV-1 is equipped with a dry pipe valve accelerator, refer to its resetting instructions before resetting the DPV-1. Refer to TFP1105 for the VIZOR or TFP1112 for the ACC-1.*

Based on the instructions provided, reset the Accelerator at the appropriate time during the resetting of the DPV-1.

Unless otherwise noted, see Figure 3, 4, or 5 to identify functional trim components.

Step 1. Close the main control valve, and close the air supply control valve. If the DPV-1 is equipped with a dry pipe valve accelerator, remove the dry pipe valve accelerator from service in accordance with the Technical Data Sheet (TDS) instructions, refer to TDS TFP1105 for the VIZOR or TDS TFP1112 for the ACC-1.

Step 2. Open the main drain valve and all auxiliary drains in the system. Close the auxiliary drain valves after water ceases to discharge. Leave the main drain valve open.

Step 3. Depress the plunger of the automatic drain valve to verify that it is open and that the DPV-1 valve is completely drained.

Step 4. Open the optional alarm control valve, as applicable, if it was closed to silence local alarms.

Step 5. As necessary, replace all sprinklers that have operated. Replacement sprinklers must be of the same type and temperature rating as those which have operated.

NOTICE

In order to prevent the possibility of a subsequent operation of an overheated solder type sprinkler, any solder type sprinklers which were possibly exposed to a temperature greater than their maximum rated ambient must be replaced.

Step 6. Push down on the reset knob as shown in Figure 2E to allow the clapper assembly to re-seat.

Step 7. Pressurize the system with air (or nitrogen) to 10 psi (0,7 bar), and then individually open all auxiliary drain valves in the system piping to drain any remaining water in trapped sections. Close each drain valve as soon as water ceases to discharge.

Also partially open the low body drain valve to assure that the riser is completely drained. Close the low body drain valve as soon as water ceases to discharge.

Step 8. Refer to Table B and then restore the system to the normal system air pressure as necessary to hold the DPV-1 valve closed.

Step 9. Depress the plunger on the automatic drain valve to make sure it is open and that there is no air discharging.

The absence of air discharging from the automatic drain valve is an indication of a properly set air seat within the DPV-1 valve. If air is discharging, refer to the Care and Maintenance section under Automatic Drain Valve Inspection to determine/correct the cause of the leakage problem.

Step 10. Partially open the main control valve. Slowly close the main drain valve as soon as water discharges from the drain connection.

Depress the plunger on the automatic drain valve to make sure that it is open and that there is no water discharging. The absence of water discharging from the automatic drain valve is an indication of a properly set water seat within the DPV-1 valve. If water is discharging, refer to the Care and Maintenance section under the Automatic Drain Valve Inspection to determine/correct the cause of the leakage problem.

If there are no leaks, the DPV-1 valve is ready to be placed in service and the main control valve must then be fully opened.

Note: *After setting a fire protection system, notify the proper authorities and advise those responsible for monitoring proprietary and/or central station alarms.*

Step 11. Once a week after a valve is reset following an operational test or system operation, the low body drain valve (and any low point drain valves) should be partially opened (and then subsequently closed) to relieve drain-back water. Continue this procedure until drain-back water is no longer present.

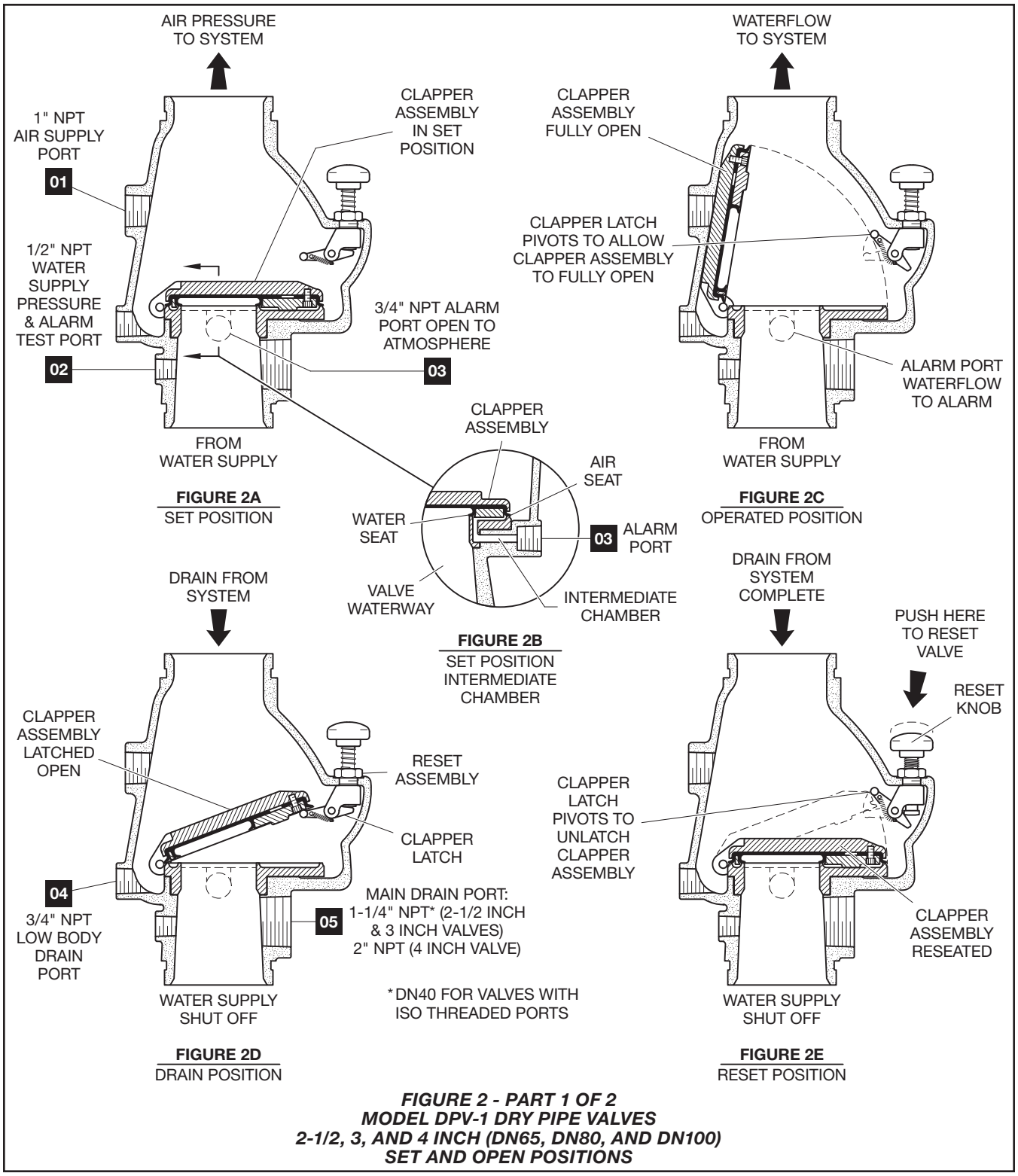


FIGURE 2 - PART 1 OF 2
MODEL DPV-1 DRY PIPE VALVES
2-1/2, 3, AND 4 INCH (DN65, DN80, AND DN100)
SET AND OPEN POSITIONS

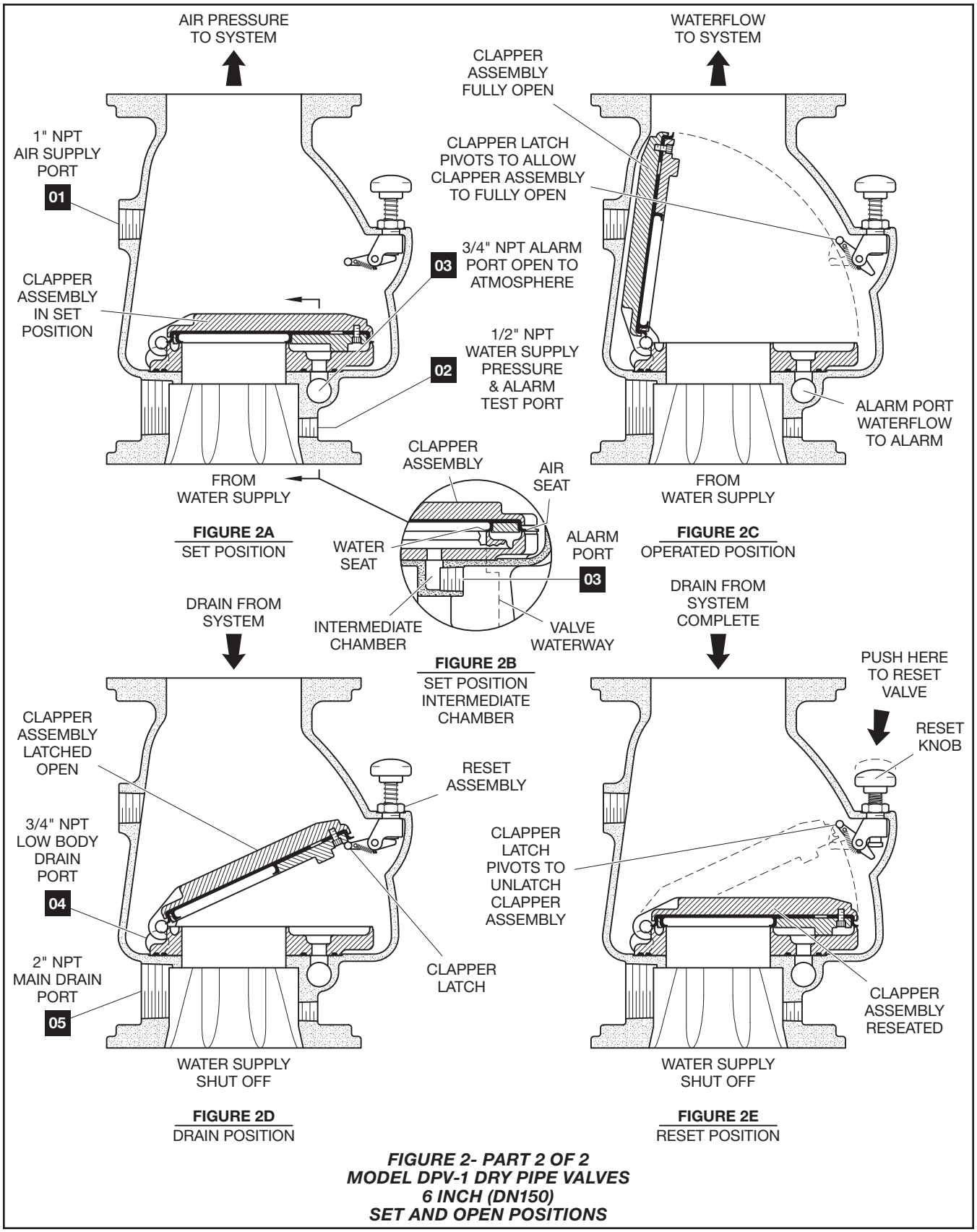


FIGURE 2- PART 2 OF 2
MODEL DPV-1 DRY PIPE VALVES
6 INCH (DN150)
SET AND OPEN POSITIONS

NOTES:

1. SEE FIGURE 3 PART 3 FOR TRIM ARRANGEMENT WITH BILL OF MATERIALS AND COMPONENT PART NUMBERS.
2. TRIM SHOWN FULLY ASSEMBLED; COMPONENTS SUCH AS GAUGES AND SWITCHES MAY REQUIRE ASSEMBLY IN TRIM AT INSTALLATION.

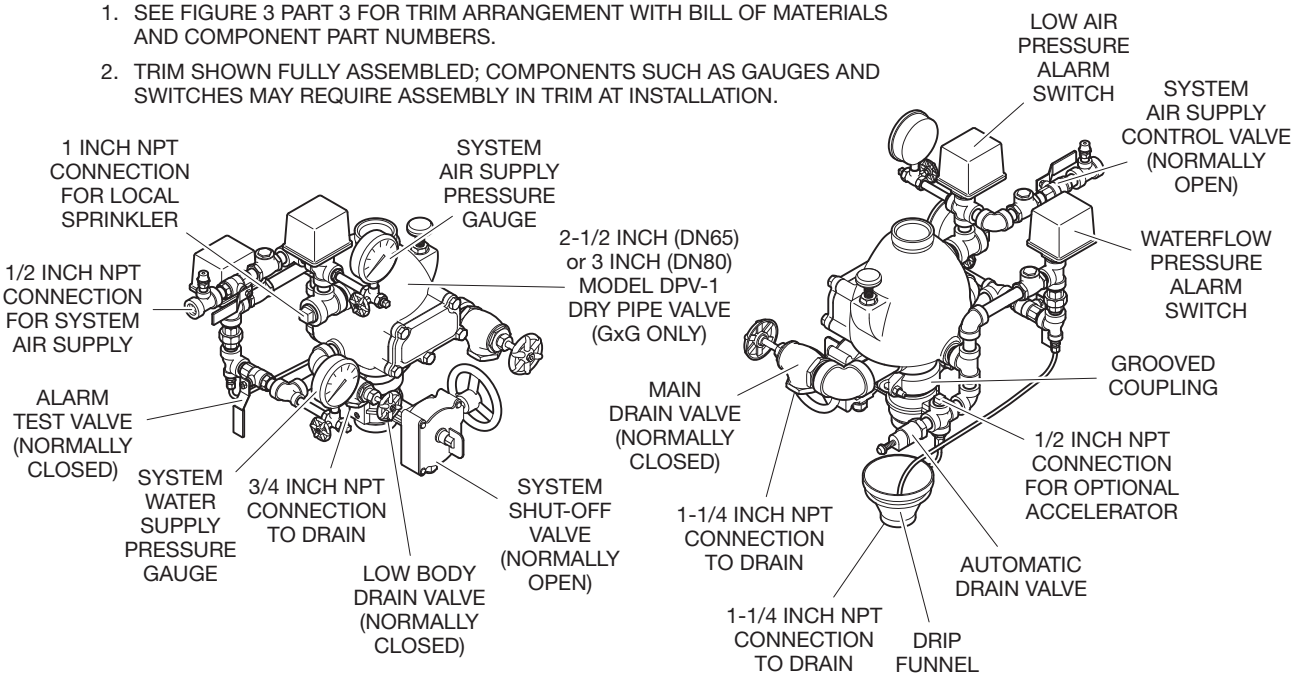


FIGURE 3 - PART 1 OF 3
2-1/2 AND 3 INCH (DN65 AND DN80) MODEL DPV-1 DRY PIPE VALVE
PRE-TRIMMED ASSEMBLY

NOTES:

1. INSTALL TRIM ASSEMBLIES IN ALPHABETICAL ORDER.
2. SEE FIGURE 2 FOR VALVE PORT IDENTIFICATION.
3. ROUTE 1/4" TUBING TO DRIP FUNNEL.

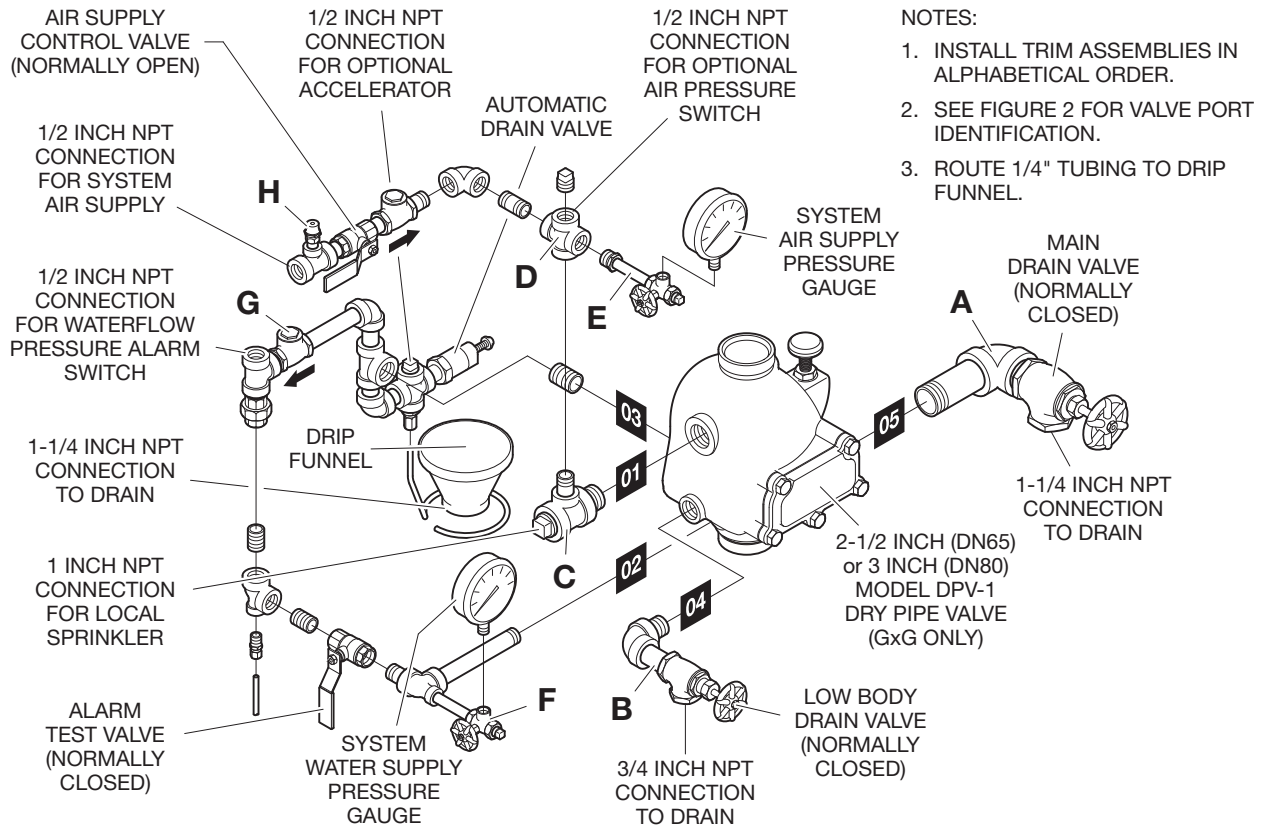


FIGURE 3 - PART 2 OF 3
2-1/2 AND 3 INCH (DN65 AND DN80) MODEL DPV-1 DRY PIPE VALVE
EXPLODED ARRANGEMENT OF SEMI-ASSEMBLED TRIM

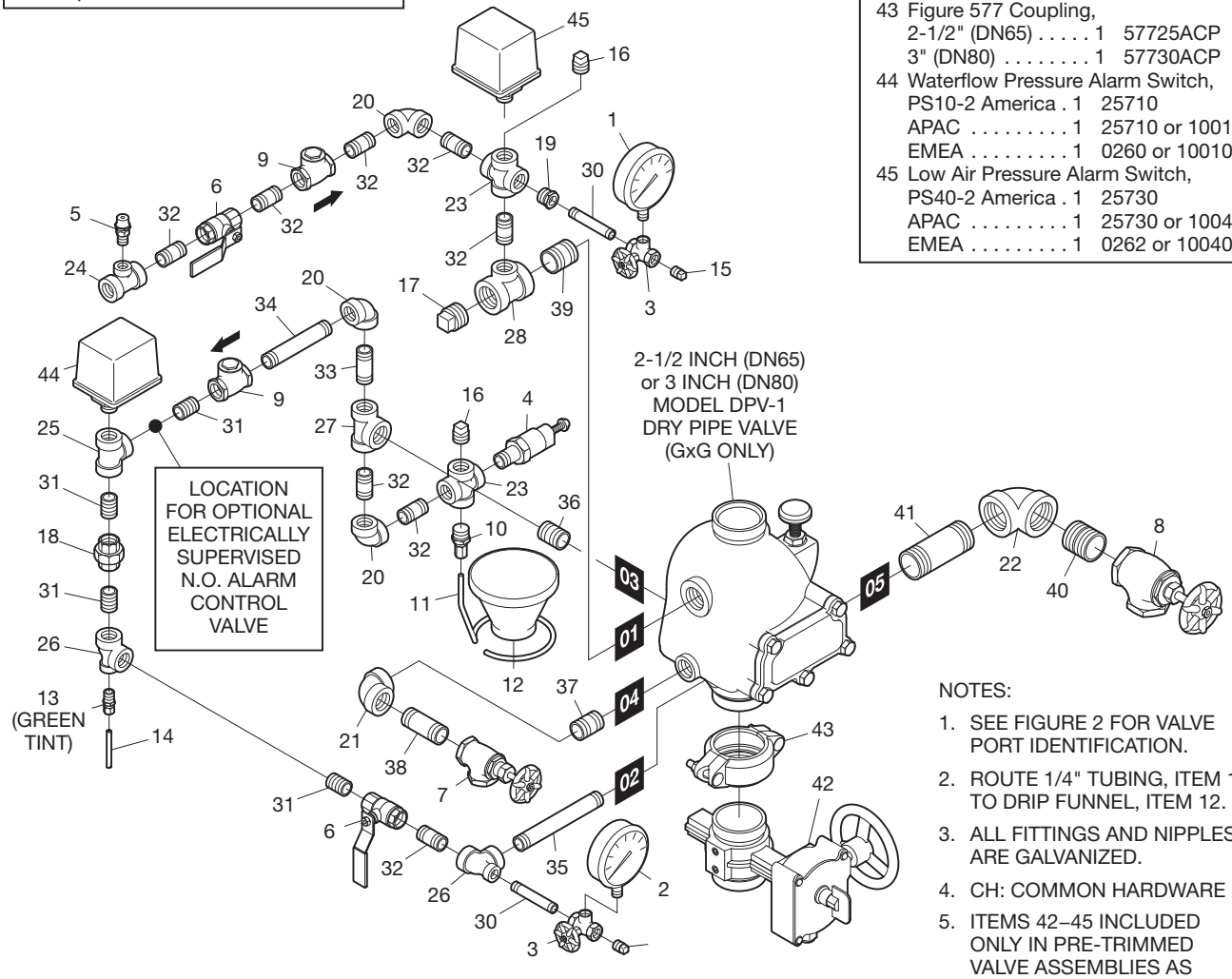
NO.	DESCRIPTION	QTY	P/N
1	250 psi/ 1750 kPa Air Pressure Gauge	1	92-343-1-012
2	300 psi/ 2000 kPa Water Pressure Gauge	1	92-343-1-005
3	1/4" Gauge Test Valve	2	46-005-1-002
4	Model AD-1 Automatic Drain Valve	1	52-793-2-004
5	1/4" Pressure Relief Valve	1	92-343-1-020
6	1/2" Ball Valve	2	46-050-1-004
7	3/4" Angle Valve	1	46-048-1-005
8	1-1/4" Angle Valve	1	46-048-1-007
9	1/2" Swing Check Valve	2	46-049-1-004
10	Drip Funnel Connector	1	92-211-1-005
11	Drip Funnel Bracket	1	92-211-1-003
12	Drip Funnel	1	92-343-1-007

NO.	DESCRIPTION	QTY	P/N
13	3/32" Vent Fitting	1	92-032-1-002
14	1/4" Tube, 18" Long	1	CH
15	1/4" Plug	2	CH
16	1/2" Plug	2	CH
17	1" Plug	1	CH
18	1/2" Union	1	CH
19	1/2" x 1/4" Reducing Bushing	1	CH
20	1/2" 90° Elbow	3	CH
21	3/4" 90° Elbow	1	CH
22	1-1/4" 90° Elbow	1	CH
23	1/2" Cross	2	CH
24	1/2" x 1/2" x 1/4" Reducing Tee	1	CH
25	1/2" Tee	1	CH
26	1/2" x 1/4" x 1/2" Reducing Tee	2	CH
27	1/2" x 1/2" x 3/4" Reducing Tee	1	CH

NO.	DESCRIPTION	QTY	P/N
28	1" x 1" x 1/2" Reducing Tee	1	CH
29	Not Used		
PIPE NIPPLES:			
30	1/4" x 3"	2	CH
31	1/2" x Close	4	CH
32	1/2" x 1-1/2"	8	CH
33	1/2" x 2"	1	CH
34	1/2" x 4-1/2"	1	CH
35	1/2" x 6"	1	CH
36	3/4" x Close	1	CH
37	3/4" x 1-1/2"	1	CH
38	3/4" x 2-1/2"	1	CH
39	1" x Close	1	CH
40	1-1/4" x Close	1	CH
41	1-1/4" x 4"	1	CH

COMPONENTS INCLUDED ONLY IN PRE-TRIMMED VALVE ASSEMBLIES:

42	Model BFV-300 Butterfly Valve, 2-1/2" (DN65)	1	59300G025WS
	3" (DN80)	1	59300G030WS
43	Figure 577 Coupling, 2-1/2" (DN65)	1	57725ACP
	3" (DN80)	1	57730ACP
44	Waterflow Pressure Alarm Switch, PS10-2 America	1	25710
	APAC	1	25710 or 100102
	EMEA	1	0260 or 100101
45	Low Air Pressure Alarm Switch, PS40-2 America	1	25730
	APAC	1	25730 or 100402
	EMEA	1	0262 or 100401



NOTES:

1. SEE FIGURE 2 FOR VALVE PORT IDENTIFICATION.
2. ROUTE 1/4" TUBING, ITEM 14, TO DRIP FUNNEL, ITEM 12.
3. ALL FITTINGS AND NIPPLES ARE GALVANIZED.
4. CH: COMMON HARDWARE
5. ITEMS 42–45 INCLUDED ONLY IN PRE-TRIMMED VALVE ASSEMBLIES AS APPLICABLE; OTHERWISE SEPARATELY ORDERED.

FIGURE 3 - PART 3 OF 3
2-1/2 AND 3 INCH (DN65 AND DN80) MODEL DPV-1 DRY PIPE VALVE
EXPLODED ARRANGEMENT OF VALVE TRIM

1. SEE FIGURE 4 PART 3 FOR TRIM ARRANGEMENT WITH BILL OF MATERIALS AND COMPONENT PART NUMBERS.
2. TRIM SHOWN FULLY ASSEMBLED; COMPONENTS SUCH AS GAUGES AND SWITCHES MAY REQUIRE ASSEMBLY IN TRIM AT INSTALLATION.

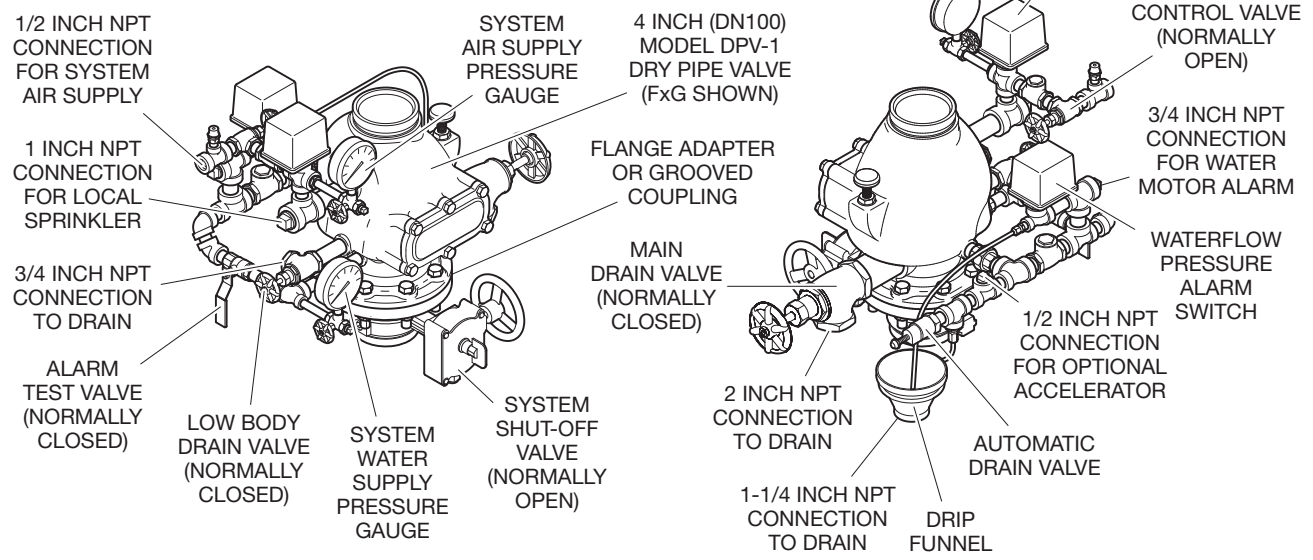
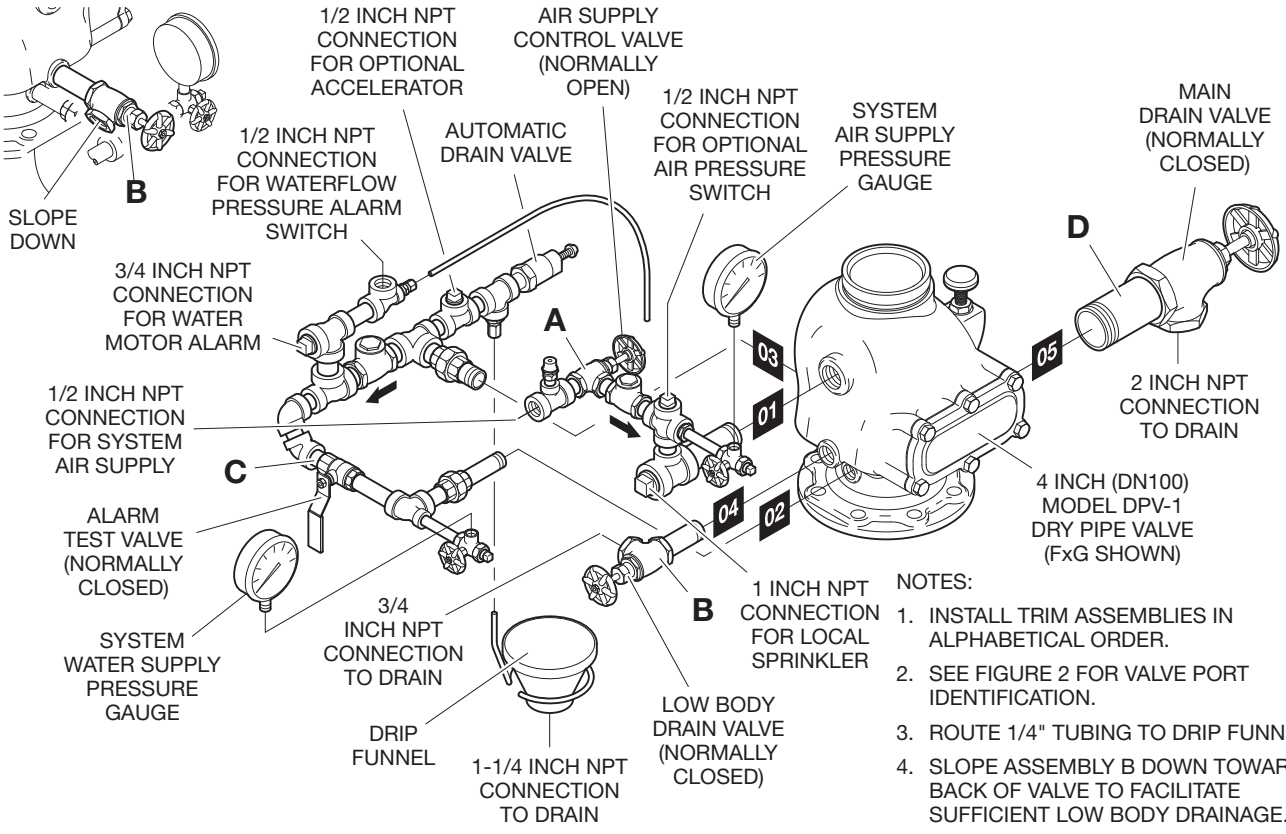


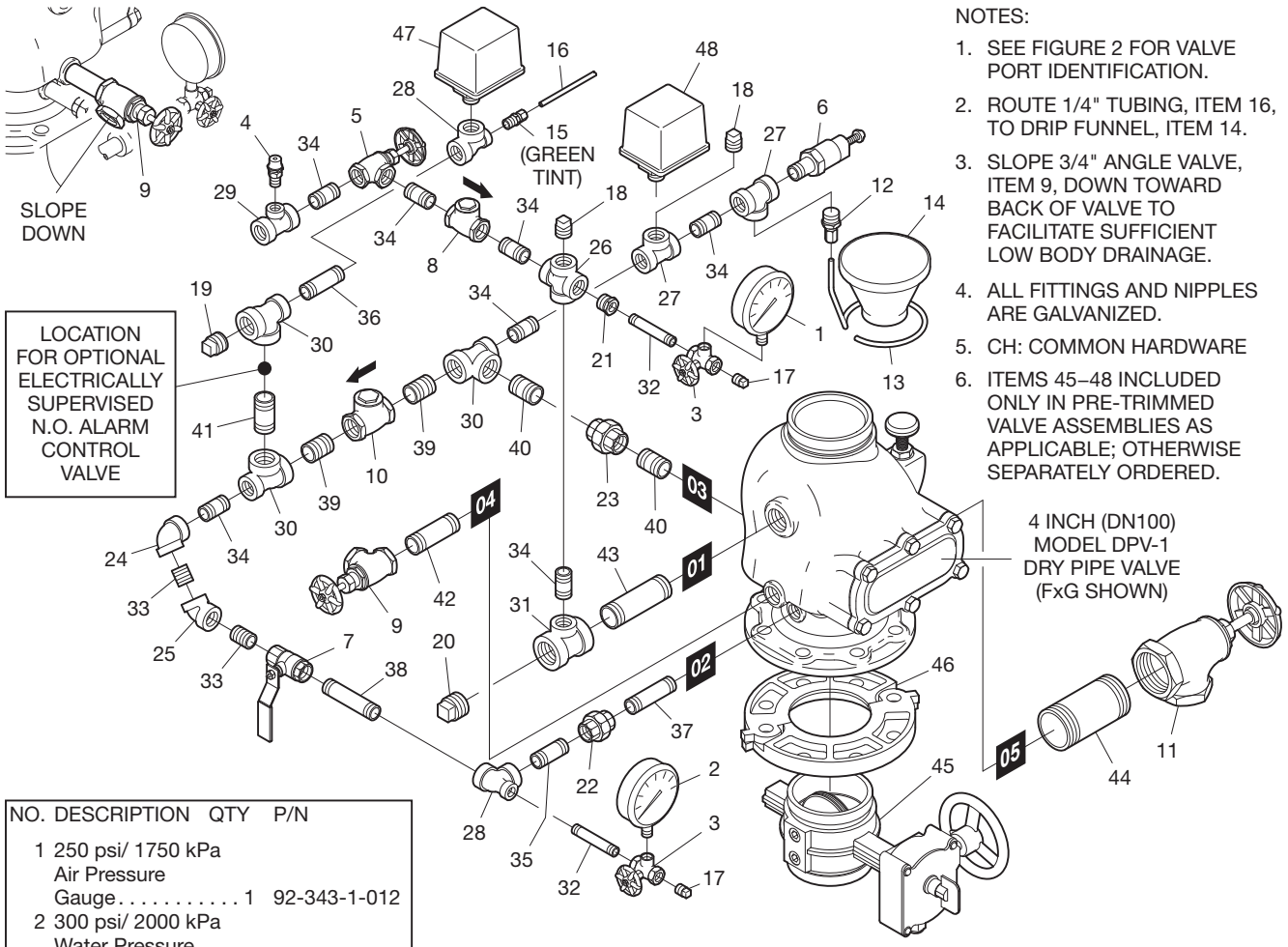
FIGURE 4 - PART 1 OF 3
4 INCH (DN100) MODEL DPV-1 DRY PIPE VALVE
PRE-TRIMMED ASSEMBLY



NOTES:

1. INSTALL TRIM ASSEMBLIES IN ALPHABETICAL ORDER.
2. SEE FIGURE 2 FOR VALVE PORT IDENTIFICATION.
3. ROUTE 1/4" TUBING TO DRIP FUNNEL.
4. SLOPE ASSEMBLY B DOWN TOWARD BACK OF VALVE TO FACILITATE SUFFICIENT LOW BODY DRAINAGE.

FIGURE 4 - PART 2 OF 3
4 INCH (DN100) MODEL DPV-1 DRY PIPE VALVE
EXPLODED ARRANGEMENT OF SEMI-ASSEMBLED TRIM



NOTES:

1. SEE FIGURE 2 FOR VALVE PORT IDENTIFICATION.
2. ROUTE 1/4" TUBING, ITEM 16, TO DRIP FUNNEL, ITEM 14.
3. SLOPE 3/4" ANGLE VALVE, ITEM 9, DOWN TOWARD BACK OF VALVE TO FACILITATE SUFFICIENT LOW BODY DRAINAGE.
4. ALL FITTINGS AND NIPPLES ARE GALVANIZED.
5. CH: COMMON HARDWARE
6. ITEMS 45–48 INCLUDED ONLY IN PRE-TRIMMED VALVE ASSEMBLIES AS APPLICABLE; OTHERWISE SEPARATELY ORDERED.

NO.	DESCRIPTION	QTY	P/N
1	250 psi/ 1750 kPa Air Pressure Gauge	1	92-343-1-012
2	300 psi/ 2000 kPa Water Pressure Gauge	1	92-343-1-005
3	1/4" Gauge Test Valve	2	46-005-1-002
4	1/4" Pressure Relief Valve	1	92-343-1-020
5	1/2" Angle Valve	1	46-048-1-004
6	Model AD-1 Automatic Drain Valve	1	52-793-2-004
7	1/2" Ball Valve	1	46-050-1-004
8	1/2" Swing Check Valve	1	46-049-1-004
9	3/4" Angle Valve	1	46-048-1-005
10	3/4" Swing Check Valve	1	46-049-1-005
11	2" Angle Valve	1	46-048-1-009
12	Drip Funnel Connector	1	92-211-1-005
13	Drip Funnel Bracket	1	92-211-1-003
14	Drip Funnel	1	92-343-1-007
15	3/32" Vent Fitting	1	92-032-1-002
16	1/4" Tube, 24" Long	1	CH
17	1/4" Plug	2	CH
18	1/2" Plug	2	CH
19	3/4" Plug	1	CH

NO.	DESCRIPTION	QTY	P/N
20	1" Plug	1	CH
21	1/2" x 1/4" Reducing Bushing	1	CH
22	1/2" Union	1	CH
23	3/4" Union	1	CH
24	1/2" 90° Elbow	1	CH
25	1/2" 45° Elbow	1	CH
26	1/2" Cross	1	CH
27	1/2" Tee	2	CH
28	1/2" x 1/4" x 1/2" Reducing Tee	2	CH
29	1/2" x 1/2" x 1/4" Reducing Tee	1	CH
30	3/4" x 1/2" x 3/4" Reducing Tee	3	CH
31	1" x 1" x 1/2" Reducing Tee	1	CH
PIPE NIPPLES:			
32	1/4" x 3"	2	CH
33	1/2" x Close	2	CH
34	1/2" x 1-1/2"	7	CH
35	1/2" x 2"	1	CH
36	1/2" x 2-1/2"	1	CH
37	1/2" x 3"	1	CH
38	1/2" x 3-1/2"	1	CH
39	3/4" x Close	2	CH

NO.	DESCRIPTION	QTY	P/N
40	3/4" x 1-1/2"	2	CH
41	3/4" x 2"	1	CH
42	3/4" x 3"	1	CH
43	1" x 4"	1	CH
44	2" x 4-1/2"	1	CH

COMPONENTS INCLUDED ONLY IN PRE-TRIMMED VALVE ASSEMBLIES:

NO.	DESCRIPTION	QTY	P/N
45	Model BFV-300 Butterfly Valve, 4" (DN100)	1	59300G040WS
46	Butterfy Valve Assembly Component: GxG DPV-1 Valves, Figure 577 Coupling, 4" (DN100)	1	57740ACP
	FxF, FxG DPV-1 Valves, Figure 71 Flange Adapter, 4" (DN100)	1	7140S
47	Waterflow Pressure Alarm Switch, PS10-2 America	1	25710
	APAC	1	25710 or 100102
	EMEA	1	0260 or 100101
48	Low Air Pressure Alarm Switch, PS40-2 America	1	25730
	APAC	1	25730 or 100402
	EMEA	1	0262 or 100401

FIGURE 4 - PART 3 OF 3
4 INCH (DN100) MODEL DPV-1 DRY PIPE VALVE
EXPLODED ARRANGEMENT OF VALVE TRIM

NOTES:

1. SEE FIGURE 5 PART 3 FOR TRIM ARRANGEMENT WITH BILL OF MATERIALS AND COMPONENT PART NUMBERS.
2. TRIM SHOWN FULLY ASSEMBLED; COMPONENTS SUCH AS GAUGES AND SWITCHES MAY REQUIRE ASSEMBLY IN TRIM AT INSTALLATION.

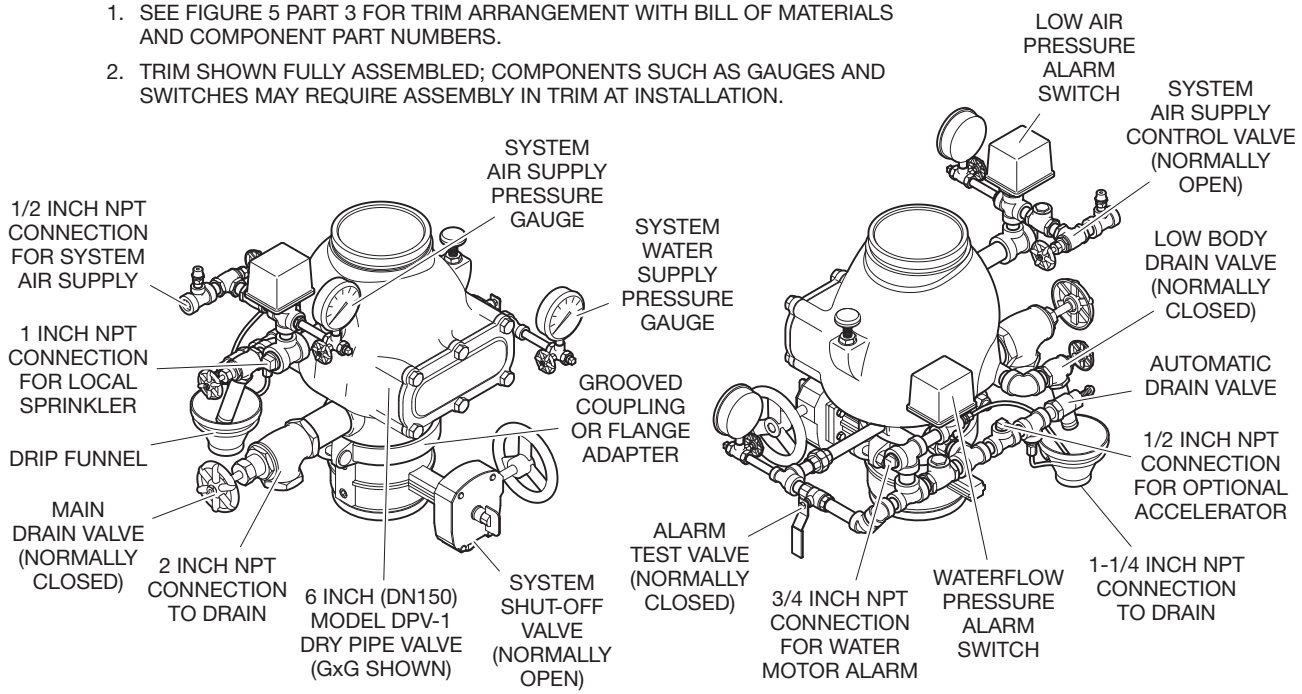
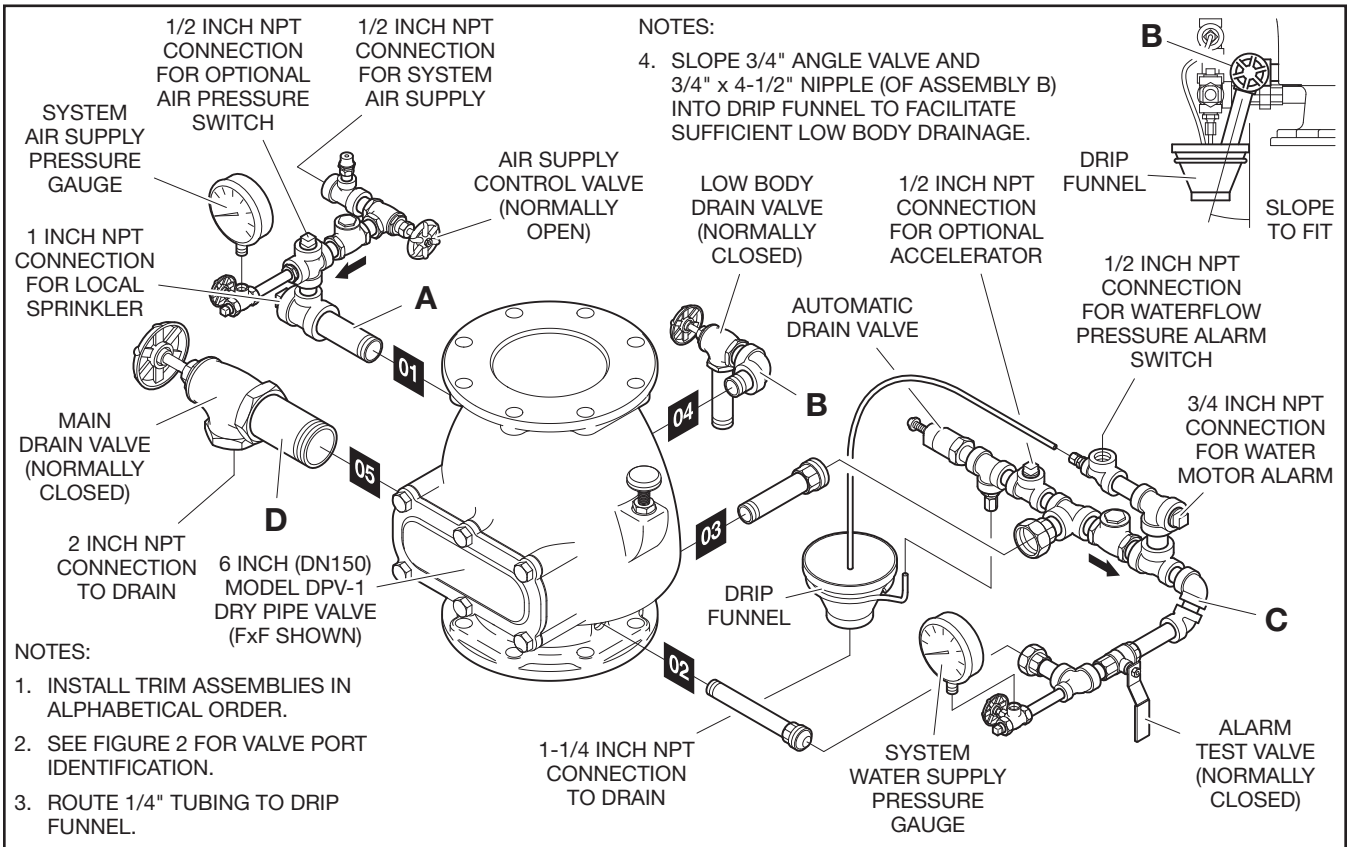


FIGURE 5 - PART 1 OF 3
6 INCH (DN150) MODEL DPV-1 DRY PIPE VALVE
PRE-TRIMMED ASSEMBLY

NOTES:

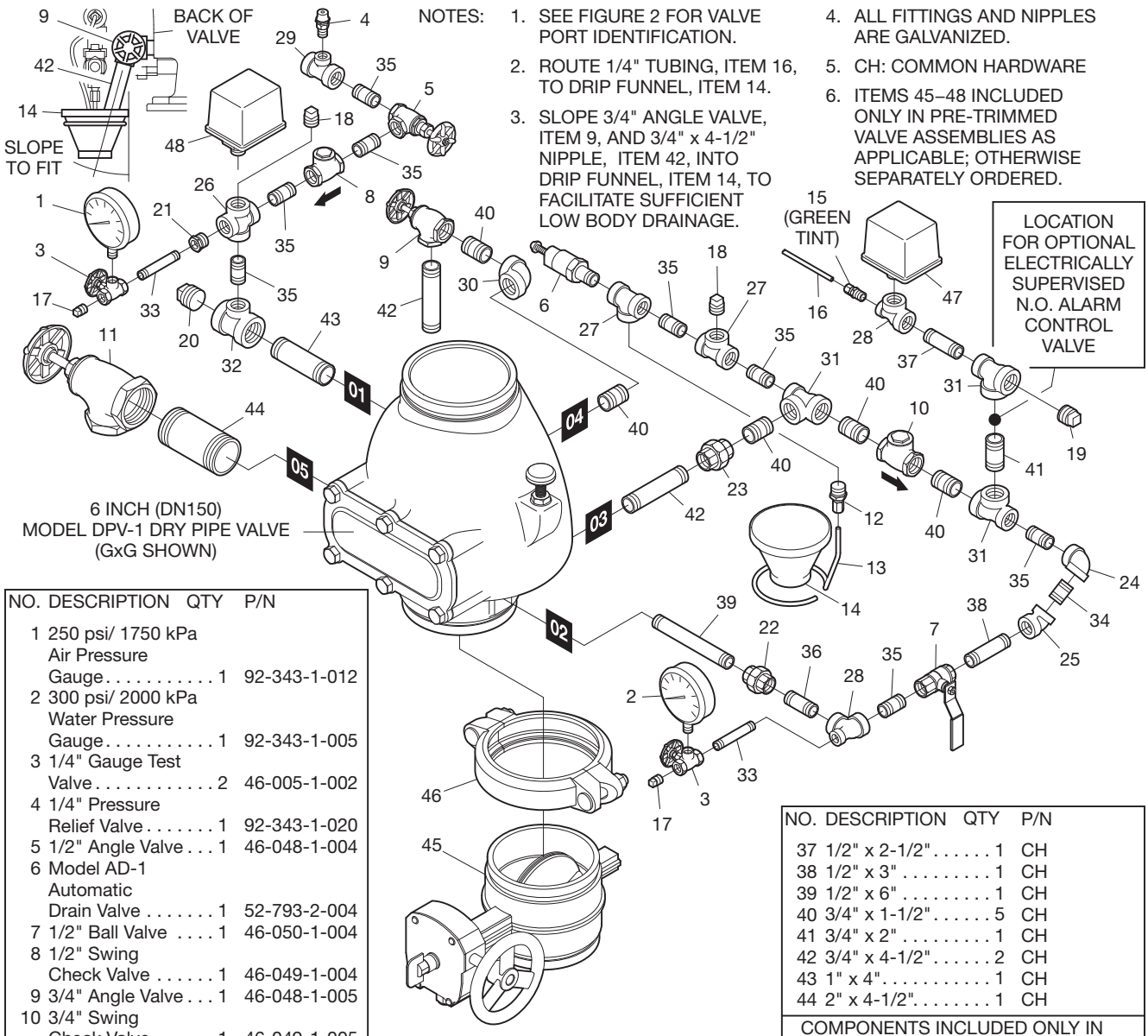
4. SLOPE 3/4" ANGLE VALVE AND 3/4" x 4-1/2" NIPPLE (OF ASSEMBLY B) INTO DRIP FUNNEL TO FACILITATE SUFFICIENT LOW BODY DRAINAGE.



NOTES:

1. INSTALL TRIM ASSEMBLIES IN ALPHABETICAL ORDER.
2. SEE FIGURE 2 FOR VALVE PORT IDENTIFICATION.
3. ROUTE 1/4" TUBING TO DRIP FUNNEL.

FIGURE 5 - PART 2 OF 3
6 INCH (DN150) MODEL DPV-1 DRY PIPE VALVE
EXPLODED ARRANGEMENT OF SEMI-ASSEMBLED TRIM



NOTES:

1. SEE FIGURE 2 FOR VALVE PORT IDENTIFICATION.
2. ROUTE 1/4" TUBING, ITEM 16, TO DRIP FUNNEL, ITEM 14.
3. SLOPE 3/4" ANGLE VALVE, ITEM 9, AND 3/4" x 4-1/2" NIPPLE, ITEM 42, INTO DRIP FUNNEL, ITEM 14, TO FACILITATE SUFFICIENT LOW BODY DRAINAGE.
4. ALL FITTINGS AND NIPPLES ARE GALVANIZED.
5. CH: COMMON HARDWARE
6. ITEMS 45–48 INCLUDED ONLY IN PRE-TRIMMED VALVE ASSEMBLIES AS APPLICABLE; OTHERWISE SEPARATELY ORDERED.

NO.	DESCRIPTION	QTY	P/N
1	250 psi/ 1750 kPa Air Pressure Gauge	1	92-343-1-012
2	300 psi/ 2000 kPa Water Pressure Gauge	1	92-343-1-005
3	1/4" Gauge Test Valve	2	46-005-1-002
4	1/4" Pressure Relief Valve	1	92-343-1-020
5	1/2" Angle Valve	1	46-048-1-004
6	Model AD-1 Automatic Drain Valve	1	52-793-2-004
7	1/2" Ball Valve	1	46-050-1-004
8	1/2" Swing Check Valve	1	46-049-1-004
9	3/4" Angle Valve	1	46-048-1-005
10	3/4" Swing Check Valve	1	46-049-1-005
11	2" Angle Valve	1	46-048-1-009
12	Drip Funnel Connector	1	92-211-1-005
13	Drip Funnel Bracket	1	92-211-1-003
14	Drip Funnel	1	92-343-1-007
15	3/32" Vent Fitting	1	92-032-1-002
16	1/4" Tube, 24" Long	1	CH
17	1/4" Plug	2	CH
18	1/2" Plug	2	CH
19	3/4" Plug	1	CH
20	1" Plug	1	CH
21	1/2" x 1/4" Reducing Bushing	1	CH
22	1/2" Union	1	CH
23	3/4" Union	1	CH
24	1/2" 90° Elbow	1	CH

NO.	DESCRIPTION	QTY	P/N
25	1/2" 45° Elbow	1	CH
26	1/2" Cross	1	CH
27	1/2" Tee	2	CH
28	1/2" x 1/4" x 1/2" Reducing Tee	2	CH
29	1/2" x 1/2" x 1/4" Reducing Tee	1	CH
30	3/4" 90° Elbow	1	CH
31	3/4" x 1/2" x 3/4" Reducing Tee	3	CH
32	1" x 1" x 1/2" Reducing Tee	1	CH
PIPE NIPPLES:			
33	1/4" x 3"	2	CH
34	1/2" x Close	1	CH
35	1/2" x 1-1/2"	8	CH
36	1/2" x 2"	1	CH

NO.	DESCRIPTION	QTY	P/N
37	1/2" x 2-1/2"	1	CH
38	1/2" x 3"	1	CH
39	1/2" x 6"	1	CH
40	3/4" x 1-1/2"	5	CH
41	3/4" x 2"	1	CH
42	3/4" x 4-1/2"	2	CH
43	1" x 4"	1	CH
44	2" x 4-1/2"	1	CH

COMPONENTS INCLUDED ONLY IN PRE-TRIMMED VALVE ASSEMBLIES:

NO.	DESCRIPTION	QTY	P/N
45	Model BFV-300 Butterfly Valve, 6" (DN150)	1	59300G060WS
46	Butterfy Valve Assembly Component: GxG DPV-1 Valves, Figure 577 Coupling, 6" (DN150)	1	57760ACP
	FxF, FxG DPV-1 Valves, Figure 71 Flange Adapter, 6" (DN150)	1	7160S
47	Waterflow Pressure Alarm Switch, PS10-2 America	1	25710
	APAC	1	25710 or 100102
	EMEA	1	0260 or 100101
48	Low Air Pressure Alarm Switch, PS40-2 America	1	25730
	APAC	1	25730 or 100402
	EMEA	1	0262 or 100401

FIGURE 5 - PART 3 OF 3
6 INCH (DN150) MODEL DPV-1 DRY PIPE VALVE
EXPLODED ARRANGEMENT OF VALVE TRIM

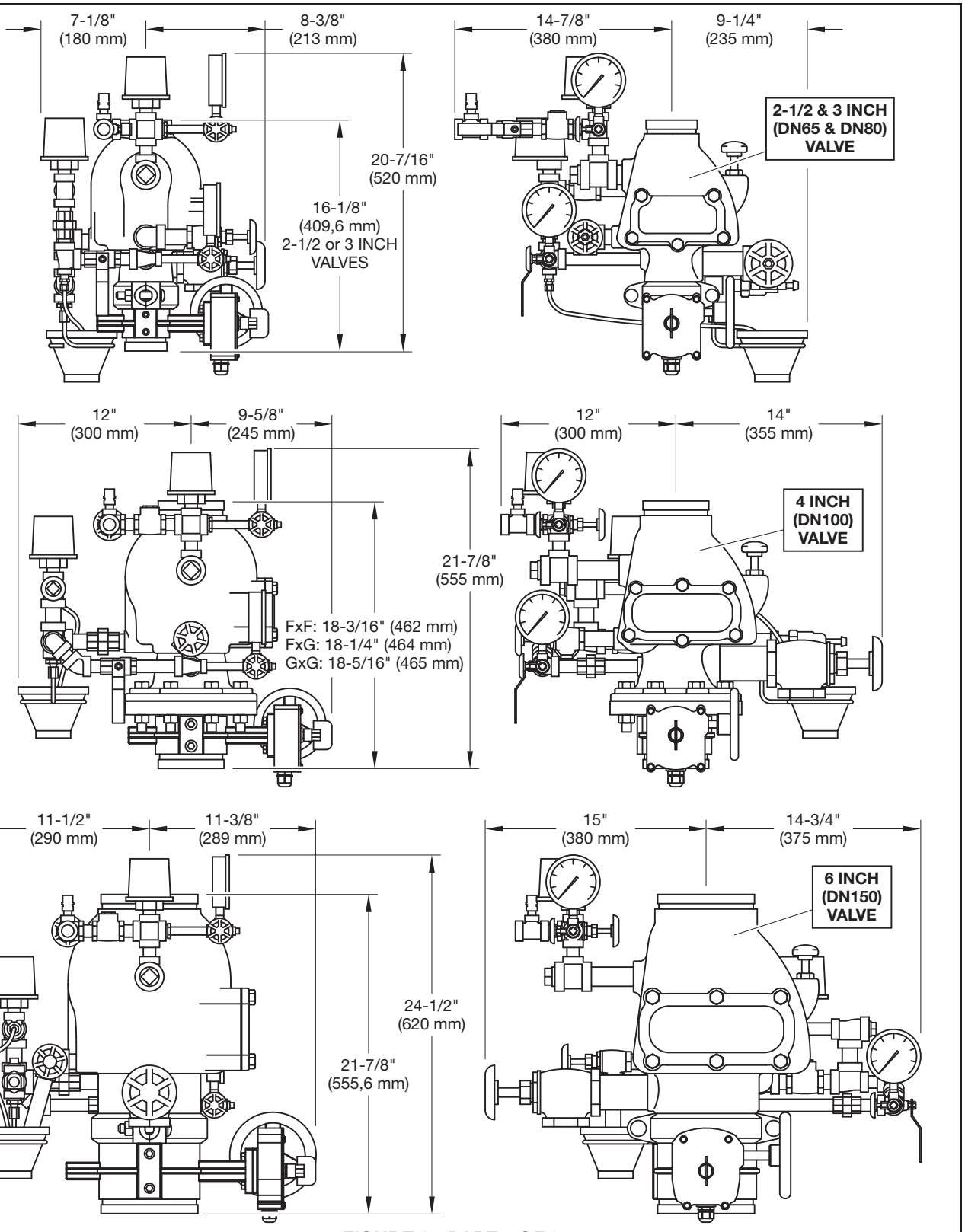


FIGURE 6 - PART 1 OF 2
MODEL DPV-1 DRY PIPE VALVE
INSTALLATION DIMENSIONS, PRE-TRIMMED VALVE

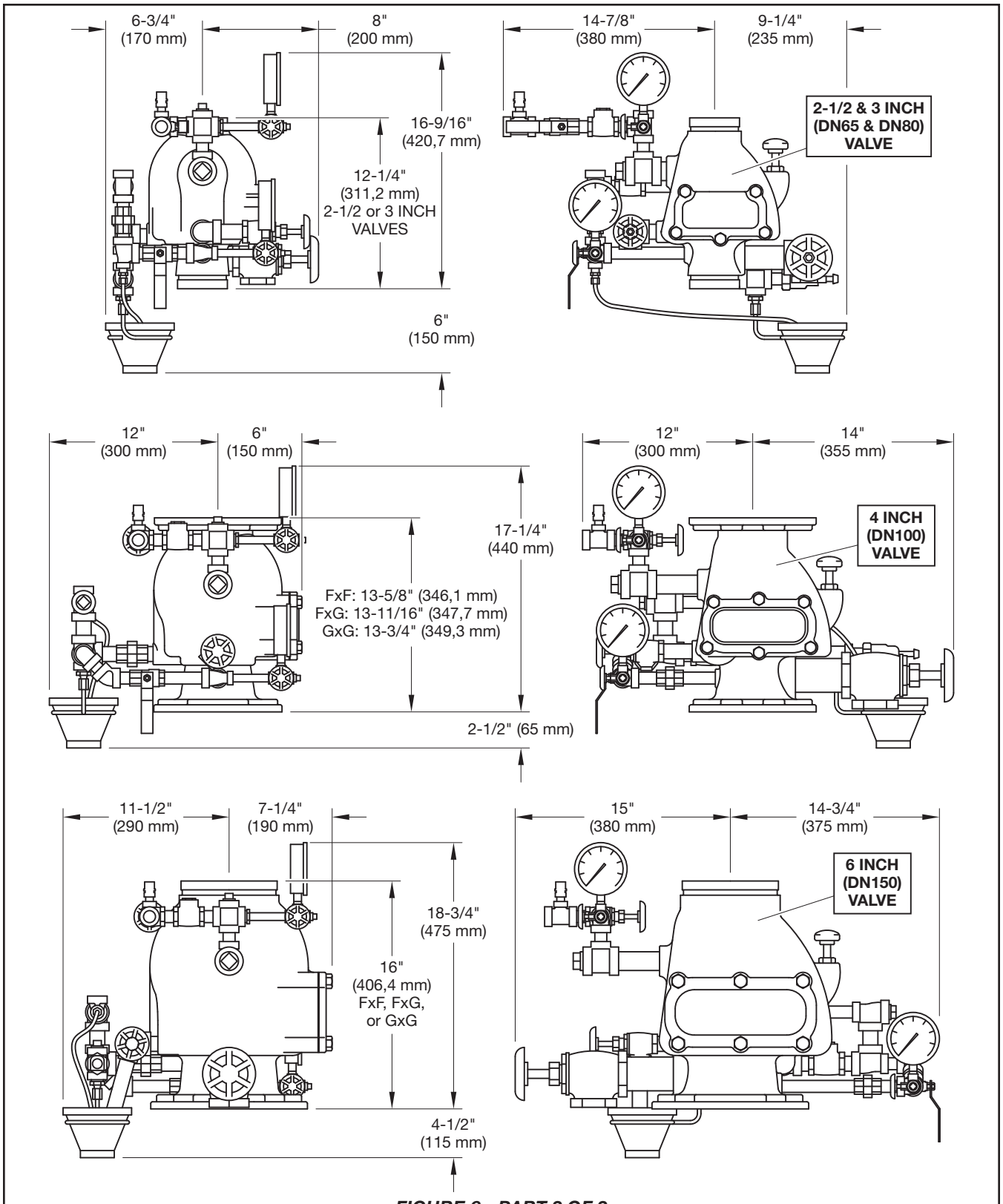


FIGURE 6 - PART 2 OF 2
MODEL DPV-1 DRY PIPE VALVE
INSTALLATION DIMENSIONS, VALVE AND SEMI-ASSEMBLED TRIM

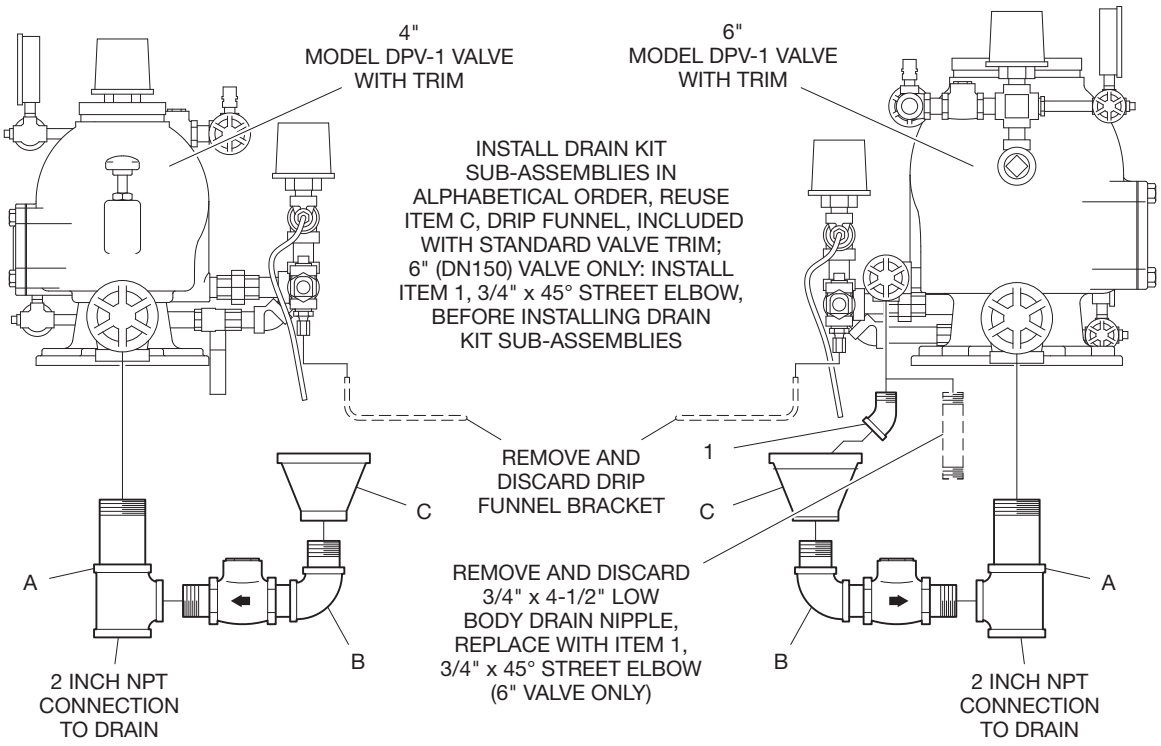


FIGURE 7
OPTIONAL DRAIN KIT INSTALLATION

Care and Maintenance

The following procedures and inspections should be performed as indicated, in addition to any specific requirements of the NFPA, and any impairment must be immediately corrected.

Before closing a fire protection system main 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 notify all personnel who may be affected by action.

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 NFPA such as NFPA 25, in addition to the standards of any authority 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.

The operational test procedure and waterflow pressure alarm test procedure will result in operation of the associated alarms. Consequently, notification must first be given to the owner and the fire department, central station, or other signal station to which the alarms are connected.

Annual Operation Test Procedure
Note: *Unless otherwise noted, see Figure 3, 4, or 5 to identify functional trim components.*

Proper operation of the DPV-1 valve — for example, opening of the DPV-1 valve during a fire condition — should be verified at least once a year as follows:

Step 1. If necessary, prevent water from flowing beyond the riser by performing the following steps:

- **a.** Close the main control valve.
- **b.** Open the main drain valve.
- **c.** Open the main control valve one turn beyond the position at which water just begins to flow from the main drain valve.
- **d.** Close the main drain valve.

Step 2. Open the system inspector's test connection.

Step 3. Verify that the DPV-1 valve has operated, as indicated by the flow of water into the system and that all waterflow alarms operate properly.

Step 4. Close the system main control valve.

Step 5. Reset the DPV-1 valve in accordance with the Valve Setting Procedure.

Note: *It is recommended that the requirement of NFPA 25 to annually inspect the inside of the valve be performed at this time and prior to resetting the DPV-1 valve. Refer to the Automatic Drain Valve Inspection subsection Steps 2 through 5 for instructions with regard to the inspection of the clapper facing.*

Quarterly Waterflow Alarm Test Procedure
Testing of the system waterflow alarms should be performed quarterly. To test the waterflow alarm, open the alarm test valve, which will allow a flow of water to the waterflow pressure alarm switch and/or water motor alarm. Upon satisfactory completion of the test, close the alarm test valve.

Nominal Valve Sizes in. (DN)	Handhole Cover Bolt Torque lb-ft (N·m)
2-1/2 (DN65)	20 (27)
3 (DN80)	20 (27)
4 (DN100)	20 (27)
6 (DN150)	45 (61)

TABLE C
HANDHOLE COVER BOLTS
RECOMMENDED TORQUE

Water Pressure Inspection
The water pressure gauge is to be inspected monthly (per NFPA 25) to ensure that normal system water pressure is being maintained.

Air Pressure Inspection
The air pressure gauge is to be inspected monthly (per NFPA 25) to ensure that normal system air pressure is being maintained.

Automatic Drain Valve Inspection
The automatic drain valve should be inspected monthly (per NFPA 25) by depressing the plunger and checking to ensure that the automatic drain valve is not discharging water and/or air. A discharge of water and/or air is an indication that the air and/or water seats are leaking, which could subsequently cause a false operation should the intermediate chamber become inadvertently pressurized.

If leakage is present, take the DPV-1 valve out of service (for example, close the main control valve, open the main drain valve, close the air supply control valve, remove the dry pipe valve accelerator from service, as applicable, in accordance with the Technical Data Sheet (TDS) instructions, (refer to TDS TFP1105 for the VIZOR or TDS TFP1112 for the ACC-1), and open the inspector's test connection to relieve the system air pressure to 0 psi (0 bar) as indicated on the system air pressure gauge), and then after removing the handhole cover, perform the following steps:

Step 1. Make sure that the seat ring is clean and free of any nicks or significant scratches.

Step 2. Remove the clapper assembly from the valve by first pulling out the hinge pin.

Step 3. Disassemble the clapper facing retainer from the clapper so that the clapper facing can be removed and inspected. Make sure that the clapper facing does not show signs of compression set, damage, etc. Replace the clapper facing if there is any signs of wear.

Step 4. Clean the clapper facing, clapper, and clapper facing retainer, and then reassemble the clapper assembly.

Step 5. Reinstall the clapper assembly with its hinge pin.

Step 6. Install the handhole cover:

- **a.** Align the handhole cover gasket and handhole cover in the proper orientation with the valve body as shown in Figure 1, and hold in place.
- **b.** Apply LOCTITE No. 242 or equivalent to the Hex Bolt threads.
- **c.** Insert the Hex Bolts through the handhole cover gasket and handhole cover, and hand-tighten into the valve body.
- **d.** Using a crossdraw sequence to assure uniformity, wrench-tighten the hex bolts to the recommended torque values as shown in Table C.
- **e.** Inspect to assure all the hex bolts are securely tightened.

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).

Standard DPV-1 Dry Pipe Valve
ANSI standard outside diameter (O.D.) pipe size with grooved or ANSI drilled flange end connections and NPT threaded ports.

Specify: (specify size) Model DPV-1 Dry Pipe Valve with (specify) End Connections, P/N (specify):

Groove x Groove,
ANSI 2.88 in. (73,1 mm) O.D. Grooves:
2-1/2 in. (DN65) G x G 52-312-1-925
Groove x Groove,
ANSI 3.50 in. (88,9 mm) O.D. Grooves:
3 in. (DN80) G x G 52-312-1-930
Groove x Groove,
ANSI 4.50 in. (114,3 mm) O.D. Grooves:
4 in. (DN100) G x G 52-312-1-940
Flange x Groove,
ANSI Flange x ANSI 4.50 in. (114,3 mm) O.D. Groove:
4 in. (DN100) F x G. 52-312-1-440
Flange x Flange,
ANSI Flanges:
4 in. (DN100) F x F 52-312-1-040
Groove x Groove,
ANSI 6.62 in. (168,3 mm) O.D. Grooves:
6 in. (DN150) G x G. 52-312-1-960
Flange x Groove,
ANSI Flange x ANSI 6.62 in. (168,3 mm) O.D. Groove:
6 in. (DN150) F x G. 52-312-1-460
Flange x Flange,
ANSI Flanges:
6 in. (DN150) F x F 52-312-1-060

Pre-Trimmed DPV-1 Assemblies with Butterfly Valve
Specify: 2-1/2 in. DPV-1 Pre-Trimmed Valve Assembly, Grooved End Connections, P/N 52-310-3-925

Specify: 3 in. DPV-1 Pre-Trimmed Valve Assembly, Grooved End Connections, P/N 52-310-3-930

Specify: 4 in. DPV-1 Pre-Trimmed Valve Assembly, (specify) End Connection, P/N (specify):

Flange x Flange 52-310-3-040
Flange x Groove. 52-310-3-440
Groove x Groove 52-310-3-940

Specify: 6 in. DPV-1 Pre-Trimmed Valve Assembly, (specify) End Connection, P/N (specify):

Flange x Flange 52-310-3-060
Flange x Groove. 52-310-3-460
Groove x Groove 52-310-3-960

Pre-Trimmed DPV-1 Assemblies without Butterfly Valve
Specify: 4 in. DPV-1 Pre-Trimmed Valve Assembly without Butterfly, (specify) End Connection, P/N (specify):

Flange x Flange 52-310-4-040
Flange x Groove. 52-310-4-440

Specify: 6 in. DPV-1 Pre-Trimmed Valve Assembly without Butterfly, (specify) End Connection, P/N (specify):

Flange x Flange 52-310-4-060
Flange x Groove. 52-310-4-460

Standard Galvanized Semi-Assembled DPV-1 Trim
Note: *Valves with NPT threaded ports are intended for use with the Standard Galvanized Semi-Assembled DPV-1 Valve Trim as described in Figures 3, 4 and 5 of this document.*

Specify: 2-1/2 and 3 in. DPV-1 Semi-Assembled Galvanized Trim, P/N 52-309-2-005

Specify: 4 in. DPV-1 Semi-Assembled Galvanized Trim, P/N 52-309-2-001

Specify: 6 in. DPV-1 Semi-Assembled Galvanized Trim, P/N 52-309-2-002

Optional Drain Kit
Includes swing check valve, fittings and pipe nipples to connect the drip funnel directly to the main drain in 4 and 6 in. valve trim assemblies as shown in Figure 7.

Specify: Universal Model DPV-1 Dry Pipe Valve Drain Kit, 4 in. and 6 in. Valves, P/N 52-309-2-106

Drain Kit Replacement Check Valve
Specify: Swing Check Valve, 1-1/4 in., P/N 46-049-1-006

Optional Electronic Accelerator: VIZOR Electronic Dry Pipe Accelerator (with Trim)
Refer to Technical Data Sheet TFP1105.

Specify: VIZOR Electronic Dry Pipe Accelerator for use with the 4 or 6 in. TYCO Model DPV-1 Dry Pipe Valve Trim, P/N 52-312-3-001

Optional Mechanical Accelerator: Model ACC-1 Dry Pipe Accelerator
Refer to Technical Data Sheet TFP1112.

Specify: Model ACC-1 Dry Pipe Accelerator, P/N 52-311-1-001, and Galvanized Accelerator Trim for Model DPV-1 Dry Pipe Valve, P/N 52-311-2-010

Optional 600 PSI Water Pressure Gauge:
Specify: 600 PSI Water Pressure Gauge, P/N 92-343-1-004

Accessories
Refer to Technical data Sheets describing the following accessories, as applicable.

Specify: Description, P/N (specify):

Waterflow Pressure Alarm Switch
PS10-2 (America). 25710
(APAC) . . . . . 25710 or 100102
(EMEA) . . . . . 0260 or 100101
Low Air Pressure Alaram Switch
PS40-2 25730
(APAC) . . . . . 25730 or 100402
(EMEA) . . . . . 0262 or 100401
Model WMA-1
Water Motor Alarm. 52-630-1-001
(Refer to Technical Data Sheet TFP921)
Model AMD-1
Air Maintenance Device. 52-324-2-002
(Refer to Technical Data Sheet TFP1221)
Model AMD-2
Air Maintenance Device. 52-326-2-001
(Refer to Technical Data Sheet TFP1231)
Model AMD-3
Nitrogen Maintenance Device. . . .52-328-2-001
(Refer to Technical Data Sheet TFP1241)

Replacement Valve Parts
Specify: (description) for use with (specify size) Model DPV-1 Dry Pipe Valve, P/N, see Figure 1.

Replacement Trim Parts
Specify: (description) for use with (specify size) Model DPV-1 Dry Pipe Valve, P/N, see Figures 3, 4, or 5.

Other DPV-1 Dry Pipe Valves
Notes: *Other DPV-1 Dry Pipe Valves are valves ordered with any combination of flange drilling, pipe groove outside diameter (O.D.), or port thread specification not offered as Standard DPV-1 Dry Pipe Valves.*

Valves with NPT threaded ports are intended for use with the Standard Galvanized Semi-Assembled DPV-1 Valve Trim described in Figures 3, 4 and 5. Valves with ISO threaded ports are intended for use with special order trim that is provided by local distributors to meet the specific needs of certain localities. Please contact your local distributor regarding valves and valve trim for specific localities.

Specify: (specify size) Model DPV-1 Dry Pipe Valve with (specify) End Connections and (specify NPT or ISO) threaded ports

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

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LOCTITE is a registered trademark of Henkel Corporation; TEFLON is a trademark of The Chemours Company FC, LLC

Johnson Controls

C-AIRE® COMPRESSORS

WHISPER QUIET SERIES

S280R - LD1 - 115P

MOUNTING OPTIONS	PHASE	VOLTAGE	STANDARD OPTION
R: Riser Mount	**1:** Single Phase	115	**P:** Prewired Power Cord

- ✓ Appropriate for single and multi-valve systems
- ✓ Whisper quiet
- ✓ Compact design
- ✓ Oil-free and low maintenance
- ✓ Low vibration
- ✓ 5-minute installation
- ✓ 1-year warranty
- ✓ Add a new automatic air maintenance device from C-Aire
- ✓ Versatile mounting to riser, wall, or floor
- ✓ CAD & Revit files available
- ✓ ETL Listed for Fire Protection (UL 1450 & CSA C22.2 No. 68-92)

SYSTEM SIZE	PSI	GAL.
PRE-ACTION	10	1253
LOW PRESSURE	18	696
STANDARD PRESSURE	40	313

IDEAL FOR QUIET SETTINGS

NURSING HOMES | CHURCHES | APARTMENT BUILDINGS

TECHNICAL SPECIFICATIONS

HORSEPOWER	1
PRESSURE SWITCH	On @ 50 PSI, Off @ 100 PSI
CFM	3.8 @ 10 PSI
PUMP	2 Cylinder, Oil-Free
NOISE LEVEL	56 dBA
OUTLET	1/2" NPT
DIMENSIONS (LxDxH)	14" x 13" x 14"
SHIPPING WEIGHT	58 lbs.

ELECTRICAL SPECIFICATIONS

PHASE/ VOLTS	FULL LOAD AMPS	BREAKER SIZE (A)	WIRE SIZE (AWG)		
			25'	50'	75'
1/115	8.5	15	12	10	8

ACCESSORIES INCLUDED

- **Mounting bracket w/hose clamps and mounting hardware**
- **1/2" x 30" flexible hose**
- **Power cord for installation and testing purposes.** Refer to the authority having jurisdiction regarding hard wiring requirements.

ACCESSORIES AVAILABLE

- **Automatic Air Maintenance Device**
  Part: CAMD1
  Pack of 16: CAMD1-16PK
- **Floor Mounting Kit**
  Part: INSTALL-S28
- **1/2" x 30" stainless steel flexible hose**
  Part: DT 3005 H-1PK
  Pack of 5: PART DT 3005 H-5PK
- **1/2" x 36" flexible hose**
  Part: DT 3605 H
  Pack of 5: PART DT 3605 H-5PK
- **1/2" x 48" flexible hose**
  Part: DT 4805 H
  Pack of 5: PART DT 4805 H-5PK
- **1/2" x 72" flexible hose**
  Part: DT 7205 H
  Pack of 5: PART DT 7205 H-5PK

S280R.0

380 WEST 1ST STREET, DRESSER, WI 54009 | 800-762-2247 | 651-462-3440 cairecompressors.com

Air Maintenance Device

For Dry Pipe Sprinkler Systems,
Air Supervised Pre-Action Systems,
& Dry Pilot Actuated Deluge Systems

UL Listed and FM Approved

Manufactured by: General Air Products, Inc.
118 Summit Drive, Exton, PA 19341

Call
1-800-345-8207
for assistance
or visit our website for information on these and all of our products
www.GENERALAIRPRODUCTS.com

Product Description

The enclosed Automatic Air Maintenance Device is a UL Listed and FM Approved assembly of valves, nipples, fittings, and actuators to automatically control the air pressure in the piping of dry pipe sprinkler systems, preaction sprinkler systems, or dry pilot actuated deluge systems.

The Air Maintenance Device is designed to automatically feed air into the system piping at the required volume and pressure from an air source such as:

1. An air compressor
2. An air receiver tank
3. A plant air system (owner's air)

When an air receiver tank or plant air is utilized as the air supply source, the pressure regulator in the Air Maintenance Device AMD-1 and AMD-1ALT automatically regulates the air pressure to the designated level. The outlet pressure of the regulator is field adjustable.

When an electrically-driven air compressor is utilized as the air supply source, the pressure switch in the Air Maintenance Device AMD-2, AMD-2ALT and AMD-3 automatically causes the air compressor to cut-in or cut-out at the minimum and maximum air pressures desired, respectively. The cut-in and cut-out pressures are field adjustable.

The automatic air supply is directed through a restricted orifice in the air maintenance device so that upon activation of a sprinkler, the air supply will not interfere with the operation of the dry pipe valve, by continuing to supply high volumes of pressurized air to the piping system.

It is a recommended safeguard that a low pressure switch and alarm be installed on dry pipe systems or other air supervised piping systems. This will cause an alarm to sound if the pressure falls below a predetermined level.

Operation

The Air Maintenance Device provides a continuous but restricted air supply to the piping system.

The activation of only one sprinkler in a dry pipe system, will cause the system pressure to diminish to the point where the dry pipe valve will “trip”, thereby filling the system piping with water.

Small piping system air leaks will be compensated for by the automatic air feed provided the air leaks do not exceed the restricted air supply.

Technical Data

Model: AMD-1, AMD-1ALT; AMD-2, AMD-2ALT; AMD-3
Style: With Air Regulator (AMD-1, AMD-1ALT)
With Air Pressure Switch (AMD-2, AMD-2ALT, AMD3)
Approvals: UL, FM
Factory Operation Test:
100% at 35 psi air (AMD-1, AMD-1ALT)
100% at 30 & 40 psi air (AMD-2, AMD-2ALT, AMD-3)

Ordering Information

Mfgr. Source: General Air Products, Inc.
Weight: 7 lbs. (AMD-1, AMD-1ALT)
11 lbs. (AMD-2, AMD-2ALT, AMD-3)
When placing an order, indicate the full product name. Please specify the quantity, model and style.

Guarantee

General Air Products, Inc. will repair and/or replace any products found to be defective in material or workmanship within a period of one year from the date of shipment. Please refer to the current price list for further details of the warranty.

Design Data

An Air Maintenance Device should be permanently connected to all dry pipe sprinkler systems to avoid the possibility of false valve “trips” which may result from small piping leaks gradually lowering system air pressure.

An Air Maintenance Device may also be utilized to automatically control the air supply to the piping system of an air supervised preaction system or to the pilot lines of a dry pilot actuated deluge valve.

There are several methods of providing a constant and controlled supply of air to a sprinkler system as follows:

Air Compressor and Air Maintenance Device Model (AMD-2)

The air compressor is connected electrically and mechanically to the trim of the dry pipe valve, through an Air Maintenance Device equipped with a pressure switch. The air pressure switch continuously senses the air pressure in the piping system and turns the compressor on if the pressure drops below the cut-in setting and turns the compressor off if the pressure rises above the cut-out setting. The cut-in pressure is usually set at the design air pressure for maintaining the dry pipe valve in the closed position. The cut-out pressure should be set approximately 10 psi above the cut-in pressure.

Note: If the dry pipe valve is equipped with an accelerator, this method of air maintenance is not recommended. The accelerator is sensitive to a 3 to 5 psi air pressure drop at a rate of approximately 1 psi in 10 seconds - see AMD-1.

Air Compressor with Air Receiver Tank and Air Maintenance Device (Model AMD-1)

The compressor-tank unit is equipped with an integral pressure switch that controls the pressure in the tank, maintaining the tank pressure at a level 10 to 15 psi above the designed air pressure demand of any dry pipe system supplied by the air compressor tank unit. The compressor-tank unit is mechanically connected to the trim of the dry pipe valve, through an Air Maintenance Device equipped with an air pressure regulator. The pressure regulator continuously regulates the incoming air (from the air receiver tank) and maintains the outgoing air pressure at the pressure setting of the regulator, usually within an accuracy of 1 psi. The outgoing air pressure setting is field adjustable from 5 to 75 psi. If the dry pipe valve is equipped with an accelerator, this method of air-maintenance is recommended.

AMD-1 Includes Non-Listed Pressure Gauge

The AMD-1 includes a non-listed pressure gauge for use with the regulator. Gauge ships uninstalled. To install, remove the 1/8” plug on the regulator and install the pressure gauge into the open port.

Plant Air Supply and Air Maintenance Device (AMD-1)

The plant air supply is mechanically connected to the trim of the dry pipe valve through an Air Maintenance Device equipped with an air pressure regulator. The pressure regulator continuously regulates the incoming air and maintains the outgoing air pressure at the pressure setting of the regulator, usually within and accuracy of 1 psi. The outgoing air pressure setting is field adjustable from 5 to 75 psi. The minimum pressure in the plant air supply must be greater than the design air pressure required by the dry pipe system since the air pressure regulator will only regulate pressure downward.

Installation

General

The Air Maintenance Device must be installed in the air supply line leading to the dry pipe valve trim, preaction system piping or dry pilot system piping. The air flow through the Device must be in the direction shown by the arrows on the units.

Note: The minimum pipe size is 1/2” diameter.

Note: In particularly humid environments, a manual desiccant air dryer (P/N AD3400) should be properly installed between the compressor and the dry pipe valve to remove moisture from the compressed air supply. Condensed moisture that is allowed to back up into the compressor cylinder may cause compressor damage. Cold room / freezer room installations must have a pre-packaged *Dry Air Pac* ™ which includes an AMD-1. Consult factory for correct installation procedures.

Model AMD-1 (Pressure Regulator) (see Fig. 1)

Step 1. Close the 1/4” ball valves (#8) and open the bypass valve (#7) in the Air Maintenance Device and open the air supply valve in the dry pipe valve trim.

Step 2. Open the air supply control valve from the plant air system or air receiver tank to pressurize the system.

Step 3. When the system is pressurized, check the air pressure gauge to verify the the pressure is at the design pressure requirement for the system.

(Continued)

UL Listed and FM Approved

GENERAL AIR PRODUCTS

Manufactured by: General Air Products, Inc.
118 Summit Drive, Exton, PA 19341

Installation (continued)

Model AMD-1 (Pressure Regulator)

Caution: Care must be taken NOT to overpressure the system above the regulator setting when using the quick fill line.

Note: If necessary, to adjust the system pressure ensure the pressure gauge is installed in the regulator port. Pull the adjustment knob away from the body of the regulator and then turn it IN to increase the system pressure and OUT to reduce system pressure (see Fig. 1).

When reducing from a higher to a lower setting, first reduce to some pressure less than desired, then bring up to the desired point.

After achieving the desired pressure setting, lock the pressure setting by pushing the adjustment knob in towards the body of the regulator.

Step 4. Close the bypass valve (#7) and open the two 1/4" ball valves (#8). The Air Maintenance Device is now in service.

Model AMD-2 (Pressure Switch) (see Fig. 2)

Step 1. An electrical power circuit should be installed using the pressure switch to control the compressor motor in accordance with the National Electric Code and/or the requirements of the local Authority Having Jurisdiction. Consult factory for specific recommendations.

Step 2. Close the 1/4" ball valves (#18) and open the bypass valve (#17) in the Air Maintenance Device and open the air supply valve in the dry pipe valve trim.

Step 3. Energize the branch circuit to the pressure switch to start the compressor and pressurize the system.

Step 4. When the system is pressurized, the pressure switch will cut-out and stop the compressor. Note the cut-out pressure.

Step 5. Open any valve connected to the piping system (such as the three-way valve for the air gauge on the dry pipe valve trim) just enough to slowly reduce the air pressure. Close it immediately when the pressure switch cuts-in and note the cut-in pressure. Verify the the cut-in and cut out pressures meet the minimum design requirements for the system air pressures.

Note: If necessary, adjust the cut-in or the cut-out pressure. Loosen the hex-nut on the cover of the pressure switch and remove the cover. Adjust the cut-in pressure by turning the Pressure Adjustment Screw in the proper direction. Adjust the pressure differential (difference between cut-in and cut-out pressure) by turning the Pressure Differential Screw. Consult Factory if in any doubt.

Step 6. Close the bypass valve (#17) and open the two 1/4" ball valves (#18). The Air Maintenance Device is now in service.

Care and Maintenance

The Air Maintenance Device does not require any regularly scheduled maintenance. However, it is recommended that proper operation and condition be periodically verified as follows:

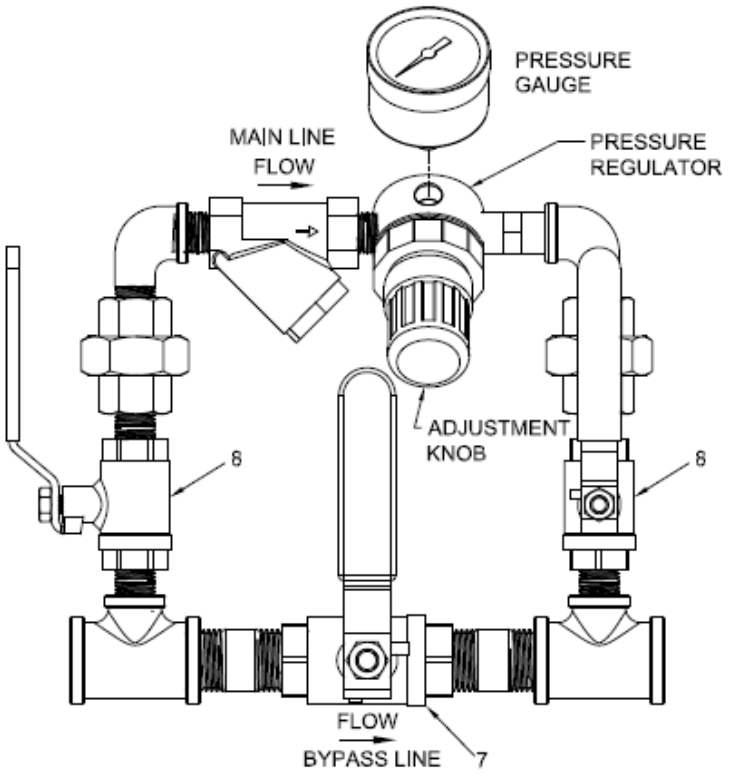
1. Verify that the 1/2" bypass valve is closed, the two 1/4" ball valves are open, and the air supply control valve in the dry pipe valve trim is open.

2. Verify that the cut-in and cut-out pressures are at the proper setting, if applicable.

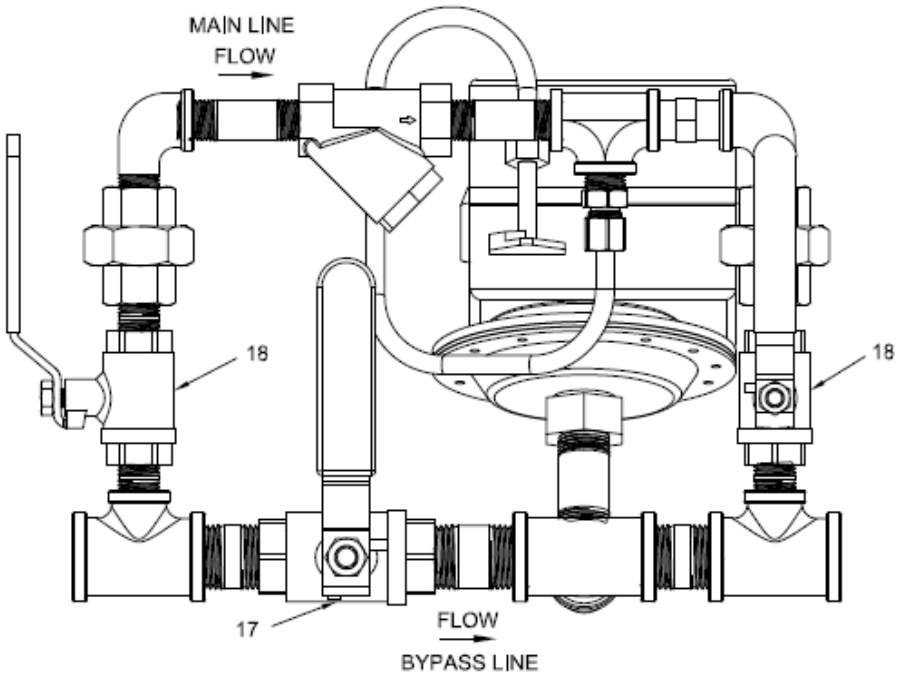
3. Verify that the regulated pressure is at the proper setting, if applicable.

4. Accumulated moisture should be removed from the drip leg on the air supply line and the desiccant in the air dryer should be replaced, if applicable.

5. The strainer should be cleaned.



AMD1
FIGURE 1



AMD2
FIGURE 2

SECTION 5

Alarms & Supervisory Devices

Bourdon Tube Pressure Gauges
Standard Series
Type 111.10SP

Applications

- Fire sprinkler systems
- Suitable for all media that will not obstruct the pressure system or attack copper alloy parts

Product Features

- UL-listed (UL-393), United States and Canada
- Factory Mutual (FM) approved
- Reliable and economical

Bourdon Tube Pressure Gauge Type 111.10SP

Specifications

Design
EN 837-1 & ASME B40.100

Sizes
4” (100 mm)

Accuracy class
± 3/2/3% of span (ASME B40.100 Grade B)

Ranges
0/80 psi (5,5 bar), retard to 250 psi (17 bar), air
0/300 psi (20 bar), water
0/400 psi (28 bar), water
0/600 psi (40 bar), water

Working pressure
Steady: 3/4 of full scale value
Fluctuating: 2/3 of full scale value
Short time: full scale value

Operating temperature
Ambient: -40°F to 140°F (-40°C to 60°C)
Media: 140°F (+60°C) maximum

Temperature error
Additional error when temperature changes from reference temperature of 68°F (20°C) ±0.4% of span for every 18°F (10°K) rising or falling.

Bourdon tube
Material: copper alloy
C-shape

Pressure connection
Material: copper alloy
1/4“ NPT lower mount (LM)

Movement
Copper alloy

Dial
White aluminum with stop pin; black and red lettering

Pointer
Black aluminum

Case
Black polycarbonate

Window
Snap-in clear polycarbonate

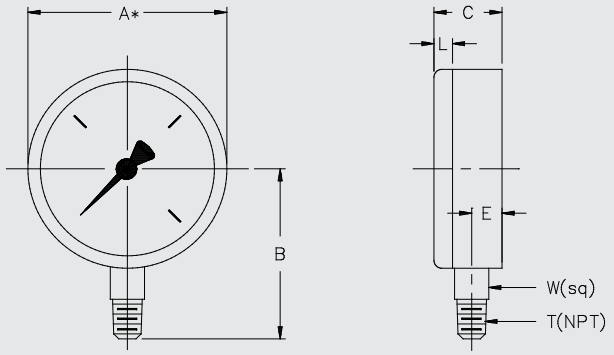
Approvals
UL listed (UL-393)
Factory Mutual

Optional Extras

(not all options are UL or FM approved)

- Brass restrictor
- Black-painted steel case
- Custom dial layout
- Other dual scales in combination with psi are available: bar, kPa, MPa, kg/cm²

Dimensions



Size		A	B	C	E	L	T	W	Weight
4”	mm	100	71	30	11.5	3.75		14	
	in	4.0	2.79	1.18	0.45	0.15	1/4”	0.55	0.35 lb.

Ordering information
Pressure gauge model / Nominal size / Scale range / Size of connection / Optional extras required
Specifications and dimensions given in this leaflet represent the state of engineering at the time of printing.
Modifications may take place and materials specified may be replaced by others without prior notice.

WIKA Instrument Corporation
1000 Wiegand Boulevard
Lawrenceville, GA 30043-5868
Tel: 888-WIKA-USA • 770-513-8200
Fax: 770-338-5118
E-Mail: info@wika.com
www.wika.com

VSR

Vane Type Waterflow Alarm Switch W/ Retard

Features

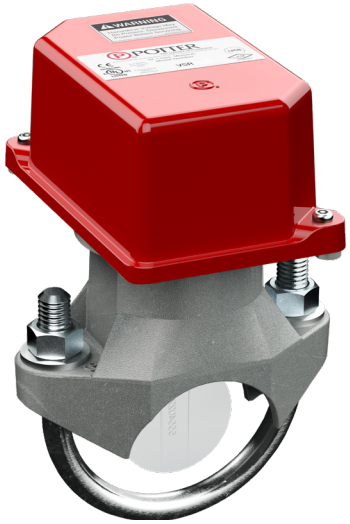
- Assembled in USA
- 0-90 second field replaceable time delay retard
- Easy to read retard time delay adjustment knob
- UL Listed models for 2"-6" steel pipe schedules 5 through 40
- UL Listed and FM approved models for 2"-8" steel pipe schedules 10 through 40
- Two SPDT (form C) contacts
- Weatherproof
- Easy to read wire terminal designations

⚠ WARNING

- Installation must be performed by qualified personnel and in accordance with all national and local codes and ordinances.
- Shock hazard. Disconnect power source before servicing. Serious injury or death could result.
- Risk of explosion. Not for use in hazardous locations. Serious injury or death could result.

CAUTION

Waterflow switches that are monitoring wet pipe sprinkler systems shall not be used as the sole initiating device to discharge AFFF, deluge, or chemical suppression systems. Waterflow switches used for this application may result in unintended discharges caused by surges, trapped air, or short retard times.



Description

The Model VSR is a vane type waterflow switch for use on wet sprinkler systems. It is UL Listed for use on a steel pipe; schedules 5 through 40, sizes 2" - 6" and is UL Listed and FM Approved for use on steel pipe; schedules 10 through 40, sizes 2" thru 8" (50 mm thru 200 mm). LPC approved sizes are 2" thru 8" (50 mm thru 200 mm). See Ordering Information chart.

The VSR may also be used as a sectional waterflow detector on large systems. The VSR contains two single pole, double throw, snap action switches and an adjustable, instantly recycling pneumatic retard. The switches are actuated when a flow of 10 GPM (38 LPM) or more occurs downstream of the device. The flow condition must exist for a period of time necessary to overcome the selected retard period.

Enclosure

The VSR switches and retard device are enclosed in a weather/UV/flame resistant high impact composite plastic. The cover is held in place with two tamper resistant screws which require a special key for removal. A field installable cover tamper switch is available as an option which may be used to indicate unauthorized removal of the cover. See bulletin number 5401103 for installation instructions of this switch.

NOTICE

This document contains important information on the installation and operation of the VSR. Please read all instructions carefully and notify the building owner or their authorized representative before any work is done on the fire sprinkler or fire alarm system. A copy of this document is required by NFPA 72 to be maintained on site.

Technical Specifications

Conduit Entrances	Two knockouts provided for 1/2" conduit. Individual switch compartments suitable for dissimilar voltages
Contact Ratings	Two sets of SPDT (Form C) 10.0 Amps at 125/250VAC 2.0 Amps at 30VDC Resistive 10 mAmps min. at 24VDC
Enclosure	Cover - Weather/UV/Flame Resistant High Impact Composite Base - Die-cast aluminum
Environmental Specifications	NEMA 4/IP54 Rated Enclosure suitable for indoor or outdoor use with factory installed gasket when used with appropriate conduit fitting. Temperature Range: 40°F - 120°F, (4.5°C - 49°C) - UL Non-corrosive sleeve factory installed in saddle.
Flow Sensitivity Range for Signal	4-10 GPM (15-38 LPM) - UL
Maximum Surge	18 FPS (5.5 m/s)
Service Pressure	450 PSI (31 BAR) - UL
Service Use	Automatic Sprinkler NFPA-13 One or two family dwelling NFPA-13D Residential occupancy up to four stories NFPA-13R National Fire Alarm Code NFPA-72

Specifications subject to change without notice.

VSR

Vane Type Waterflow Alarm Switch W/ Retard

Installation (see Fig. 1)

These devices may be mounted on horizontal or vertical pipe. On horizontal pipe they shall be installed on the top side of the pipe where they will be accessible. The device should not be installed within 6" (15 cm) of a fitting which changes the direction of the waterflow or within 24" (60 cm) of a valve or drain.

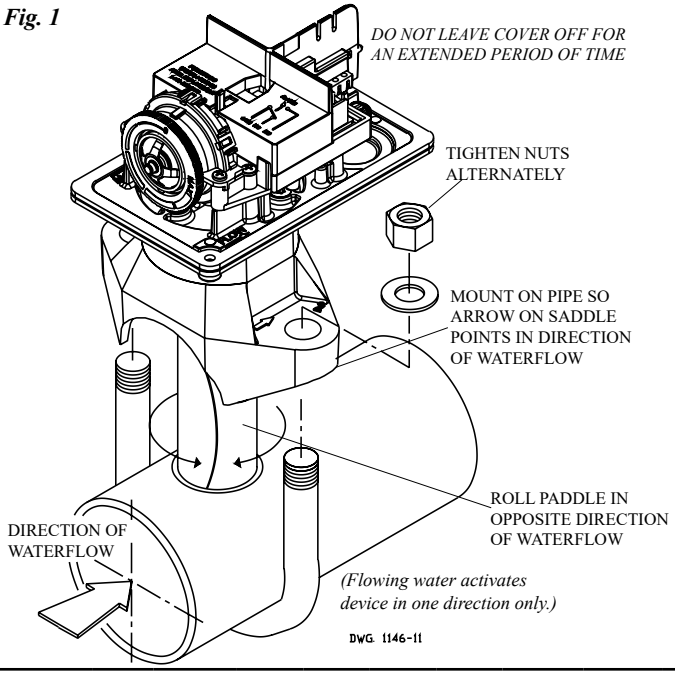
NOTE: Do not leave cover off for an extended period of time.

Drain the system and drill a hole in the pipe using a hole saw in a slow speed drill (see Fig. 1). Clean the inside pipe of all growth or other material for a distance equal to the pipe diameter on either side of the hole. Roll the vane so that it may be inserted into the hole; do not bend or crease it. Insert the vane so that the arrow on the saddle points in the direction of the waterflow. Take care not to damage the non-corrosive bushing in the saddle. The bushing should fit inside the hole in the pipe. Install the saddle strap and tighten nuts alternately to required torque (see the chart in Fig. 1). The vane must not rub the inside of the pipe or bind in any way.

⚠ CAUTION

Do not trim the paddle. Failure to follow these instructions may prevent the device from operating and will void the warranty. Do not obstruct or otherwise prevent the trip stem of the flow switch from moving when water flows as this could damage the flow switch and prevent an alarm. If an alarm is not desired, a qualified technician should disable the alarm system.

Fig. 1

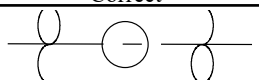
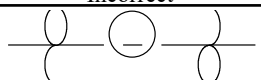


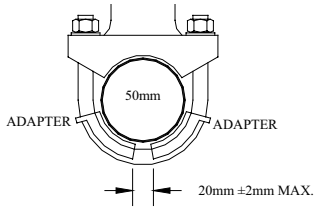
Retard Adjustment

The delay can be adjusted by rotating the retard adjustment knob from 0 to the max setting (60-90 seconds). The time delay should be set at the minimum required to prevent false alarms

CAUTION

Hole must be drilled perpendicular to the pipe and vertically centered Refer to the Compatible Pipe/Installation Requirements chart for size.

Correct	Incorrect
	

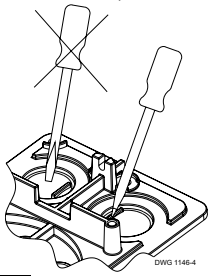


USE (2) 5180162 ADAPTERS AS SHOWN ABOVE

Compatible Pipe/ Installation Requirements

Model	Nominal Pipe Size		Nominal Pipe O.D.		Pipe Wall Thickness										Hole Size		U-Bolt Nuts Torque	
					Lightwall		Schedule 10 (UL)		Schedule 40 (UL)		BS-1387 (LPC)		DN (VDS)					
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	ft-lb	n-m
VSR-2	2	DN50	2.375	60.3	.065	1.651	0.109	2.77	0.154	3.91	0.142	3.6	0.091	2.3	1.25 + .125/-.062	33.0 ± 2.0	20	27
VSR-2 1/2	2.5	-	2.875	73.0	.084	2.134	0.120	3.05	0.203	5.16	-	-	-	-				
VSR-2 1/2	-	DN65	3.000	76.1	-	-	-	-	-	-	0.142	3.6	0.102	2.6				
VSR-3	3	DN80	3.500	88.9	.083	2.108	0.120	3.05	0.216	5.49	0.157	4.0	0.114	2.9	2.00 ± .125	50.8 ± 2.0		
VSR-3 1/2	3.5	-	4.000	101.6	-	-	0.120	3.05	0.226	5.74	-	-	-	-				
VSR-4	4	DN100	4.500	114.3	.084	2.134	0.120	3.05	0.237	6.02	0.177	4.5	0.126	3.2				
VSR-5	5	-	5.563	141.3	-	-	0.134	3.40	0.258	6.55	-	-	-	-				
VSR-6	6	DN150	6.625	168.3	.115	2.921	0.134	3.40	0.280	7.11	0.197	5.0	0.157	4.0				
VSR-8	8	DN200	8.625	219.1	-	-	0.148	3.76	0.322	8.18	0.248	6.3	0.177	4.5				

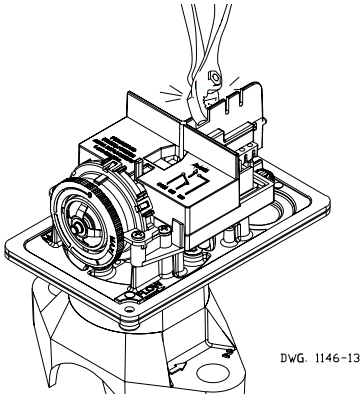
Fig. 2
To remove knockouts: Place screwdriver at inside edge of knockouts, not in the center.



NOTICE

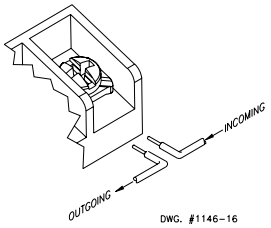
Do not drill into the base as this creates metal shavings which can create electrical hazards and damage the device. Drilling voids the warranty.

Fig. 3
Break out thin section of cover when wiring both switches from one conduit entrance.



Switch Terminal Connections Clamping Plate Terminal

Fig. 4



⚠ WARNING

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

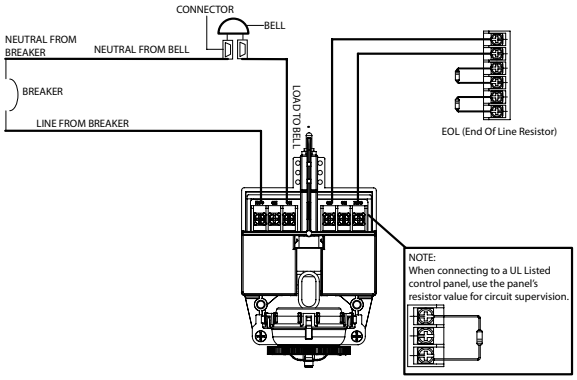
Do not strip wire beyond 3/8" of length or expose an uninsulated conductor beyond the edge of the terminal block. When using stranded wire, capture all strands under the clamping plate.

Typical Electrical Connections

Fig. 5

Notes:

1. The Model VSR has two switches, one can be used to operate a central station, proprietary or remote signaling unit, while the other contact is used to operate a local audible or visual annunciator.
2. For supervised circuits, see "Switch Terminal Connections" drawing and warning note (Fig. 4).

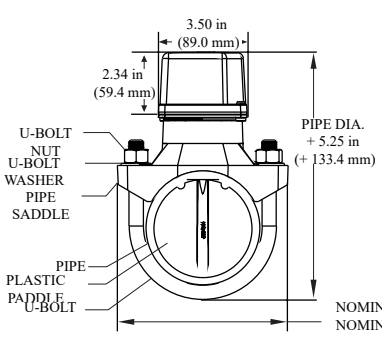


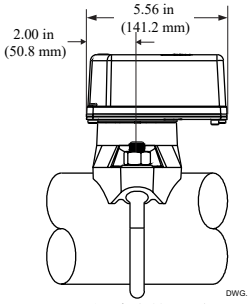
Testing

The frequency of inspection and testing for the Model VSR and its associated protective monitoring system shall be in accordance with applicable NFPA Codes and Standards and/or the authority having jurisdiction (manufacturer recommends quarterly or more frequently).

If provided, the inspector's test valve shall always be used for test purposes. If there are no provisions for testing the operation of the flow detection device on the system, application of the VSR is not recommended or advisable.
A minimum flow of 10 GPM (38 LPM) is required to activate this device.

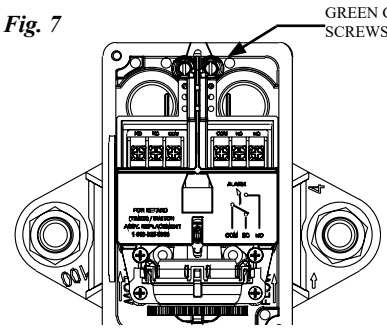
Fig. 6 Mounting Dimensions





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

Fig. 7



NOTICE

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

Maintenance

Inspect detectors monthly. If leaks are found, replace the detector. The VSR waterflow switch should provide years of trouble-free service. The retard and switch assembly are easily field replaceable. In the unlikely event that either component does not perform properly, please order replacement retard switch assembly stock #1029030 (see Fig. 8). There is no maintenance required, only periodic testing and inspection.

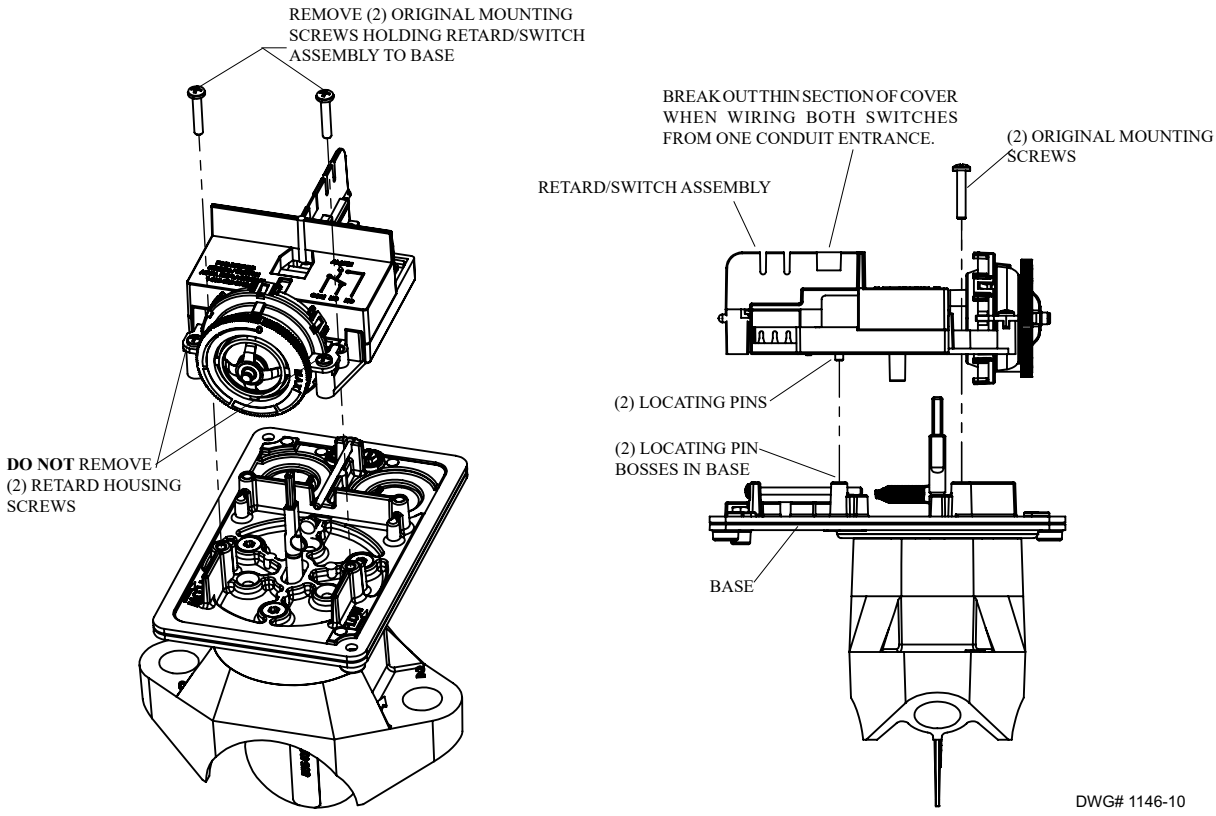
Retard/Switch Assembly Replacement (See Fig. 8)

1. Make sure the fire alarm zone or circuit connected to the waterflow switch is bypassed or otherwise taken out of service.
2. Disconnect the power source for local bell (if applicable).
3. Identify and remove all wires from the waterflow switch.
4. Remove the (2) mounting screws holding retard/switch assembly to the base. **Do not** remove the (2) retard housing screws.
5. Remove the retard assembly by lifting it straight up over the tripstem.
6. Install the new retard assembly. Make sure the locating pins on the retard/switch assembly fit into the locating pin bosses on the base.
7. Re-install the (2) original mounting screws.
8. Reconnect all wires. Perform a flow test and place the system back in service.

NOTICE

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

Fig. 8



Removal of Waterflow Switch

- To prevent accidental water damage, all control valves should be shut tight and the system completely drained before waterflow detectors are removed or replaced.
- Turn off electrical power to the detector, then disconnect wiring.
- Loosen nuts and remove U-bolts.
- Gently lift the saddle far enough to get your fingers under it. With your fingers, roll the vane so it will fit through the hole while continuing to lift the waterflow detector saddle.
- Lift detector clear of pipe.

NOTICE

Flow switches have a normal service life of 10-15 years. However, the service life may be significantly reduced by local environmental conditions.

Ordering Information

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

Optional: Cover Tamper Switch Kit, stock no. 0090148
FSBS-FLOWSWITCH BYPASS SWITCH, stock no. 3001006

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

PS10 Series

Pressure Switch

Features

- One or two switch models available
- Independent switch adjustment on two switch models, no tools needed
- Two 1/2” conduit/cable entrances
- Separate isolated wiring chambers
- Non-corrosive pressure connection
- VdS version available
- Non-Conductive enclosure

NOTICE

This document contains important information on the installation and operation of PS10 pressure switches. Please read all instructions carefully before beginning installation. A copy of this document is required by NFPA 72 to be maintained on site.

Installation

The Potter PS10 Series Pressure Actuated Switches are designed for the detection of a waterflow condition in automatic fire sprinkler systems of particular designs such as wet pipe systems with alarm check valves, dry pipe, preaction, or deluge valves. The PS10 is also suitable to provide a low pressure supervisory signal; adjustable between 4 and 15 psi (0,27 and 1,03 bar).

1. Apply Teflon tape to the threaded male connection on the device. (Do not use pipe dope)
2. Device should be mounted in the upright position (threaded connection down).
3. Tighten the device using a wrench on the flats on the device.

Wiring Instructions

1. Remove the tamper resistant screw with the special key provided.
2. Carefully place a screwdriver on the edge of the knockout and sharply apply a force sufficient to dislodge the knockout plug. See Fig 9.
3. Run wires through an approved conduit connector and affix the connector to the device. NEMA 4 rated conduit and fittings are required for outdoor use.
4. Connect the wires to the appropriate terminal connections for the service intended. See Figures 2,4,5, and 6. See Fig. 7 for two switch, one conduit wiring.

Technical Specifications

Conduit Entrances	Two knockouts for 1/2” conduit provided. Individual switch compartments and ground screw suitable for dissimilar voltages
Contact Ratings	SPDT (Form C) 10.1 Amps at 125/250VAC, 2.0 Amps at 30VDC One SPDT in PS10-1, Two SPDT in PS10-2
Cover Tamper	Cover incorporates tamper resistant fastener that requires a special key for removal. One key is supplied with each device.
Differential	2 psi (0,13 bar) typical
Dimensions	3.78”(9,6cm)Wx3.20”(8,1cm)Dx4.22”(10,7cm)H
Enclosure	Cover: Weather/UV/Flame Resistant High Impact Composite Base: Die Cast All parts have corrosion resistant finishes
Environmental Limitations	-40º F to 140ºF (-40ºC to 60ºC) NEMA 4/IP66 Rated Enclosure indoor or outdoor when used with NEMA 4 conduit fittings
Factory Adjustment	4 - 8 psi (0,27 - 0,55 bar)
Maximum System Pressure	300 psi (20,68 bar)
Pressure Connection	Nylon 1/2” NPT male
Pressure Range	4-15 psi (0,27 - 1,03 bar)
Service Use	NFPA 13, 13D, 13R, 72

*Specifications subject to change without notice.

Testing and Adjustment

NOTE: Testing the PS10 may activate other system connected devices. The operation of the pressure alarm switch should be tested upon completion of installation and periodically thereafter in accordance with the applicable NFPA codes and standards and/or the authority having jurisdiction (manufacturer recommends quarterly or more frequently). There should be no need to adjust the PS10 when it is used as a pressure type waterflow indicator. It is factory set to comply with UL and FM standards.

Wet System

Method 1: When using PS10 and control unit with retard - connect PS10 into alarm port piping on the input side of retard chamber and electrically connect PS10 to control unit that provides a retard to compensate for surges. Insure that no unsupervised shut-off valves are present between the alarm check valve and PS10.

Method 2: When using the PS10 for local bell application or with a control that does not provide a retard feature - the PS10 must be installed on the alarm outlet side of the retard chamber of the sprinkler system.

Testing: Accomplished by opening the inspector's end-of-line test valve. Allow time to compensate for system or control retard.

NOTE: Method 2 is not applicable for remote station service use, if there is an unsupervised shut-off valve between the alarm check valve and the PS10.

Wet System With Excess Pressure

Connect PS10 into alarm port piping extending from alarm check valve. Retard provisions are not required. Insure that no unsupervised shut-off valves are present between the alarm check valve and the PS10.

Testing: Accomplished by opening the water by-pass test valve or the inspector's end-of-line test valve. When using end-of-line test, allow time for excess pressure to bleed off.

Dry System

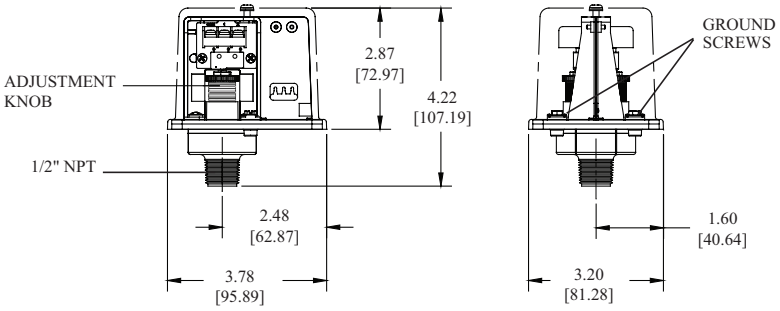
Connect PS10 into alarm port piping that extends from the intermediate chamber of the alarm check valve. Install on the outlet side of the in-line check valve of the alarm port piping. Insure that no unsupervised shut-off valves are present between the alarm check valve and the PS10.

Testing: Accomplished by opening the water by-pass test valve.

NOTE: The above tests may also activate any other circuit closer or water motor gongs that are present on the system.

Dimensions

Fig 1

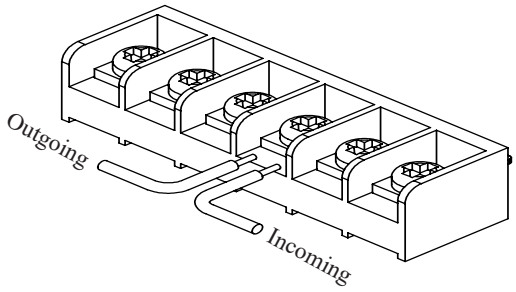


NOTE: To prevent leakage, apply Teflon tape sealant to male threads only.

DWG# 930-1

Switch Clamping Plate Terminal

Fig 2

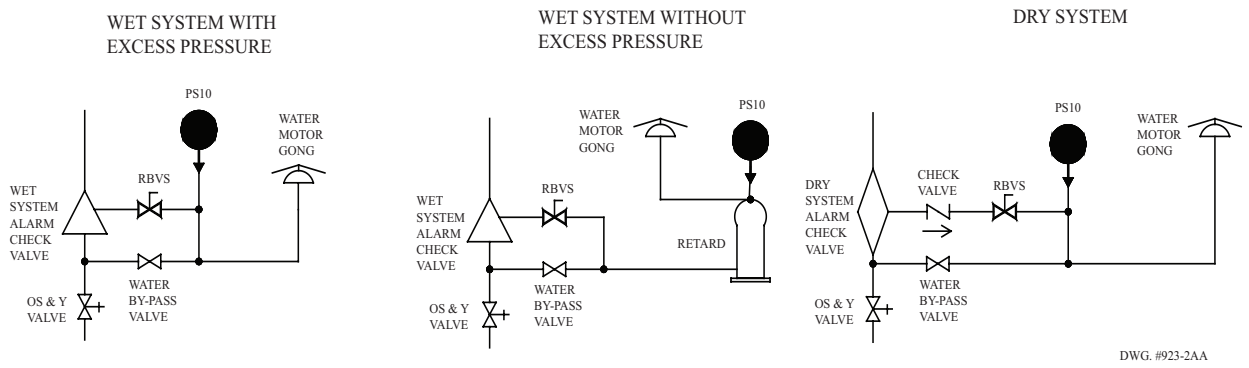


⚠ WARNING

An uninsulated section of a single conductor should not be looped around the terminal and serve as two separate connections. The wire must be severed, thereby providing supervision of the connection in the event that the wire becomes dislodged from under the terminal.

Typical Sprinkler Applications

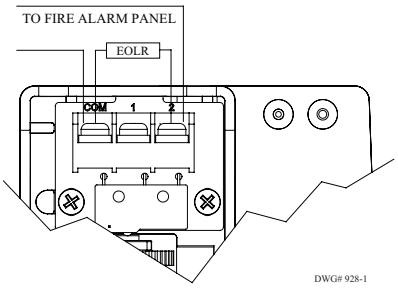
Fig 3



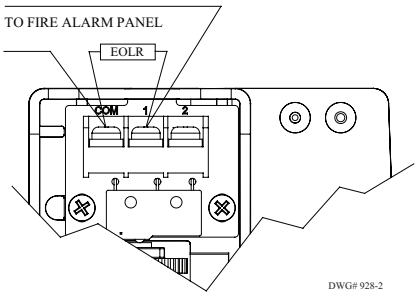
⚠ CAUTION

Closing of any shutoff valves between the alarm check valve and the PS10 will render the PS10 inoperative. To comply with NFPA-72 any such valve shall be electrically supervised with a supervisory switch such as Potter Model RBVS.

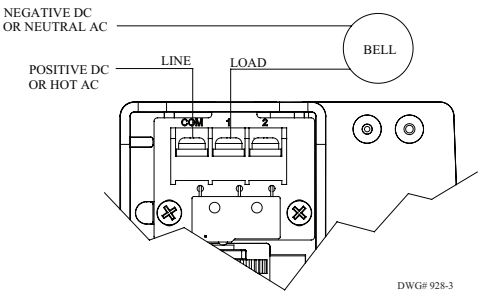
Low Pressure Signal Connection
Fig 4



Waterflow Signal Connection
Fig 5



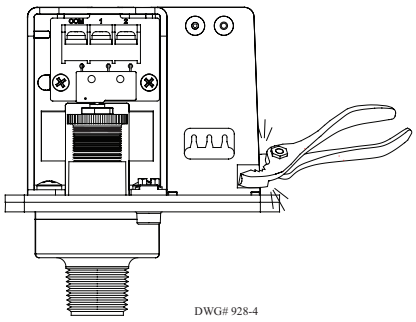
Local Bell For Waterflow Connection
Fig 6



One Conduit Wiring

Fig 7

Break out thin section of divider to provide path for wires when wiring both switches from one conduit entrance.

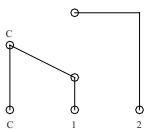


Switch Operation

Fig 8

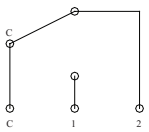
Terminal
C: Common
1: Closed when installed under normal system pressure.
2: Open when installed under normal system pressure. Closes on pressure drop. Use for low pressure supervision.

W/ PRESSURE APPLIED



Terminal
1: Open with no pressure supplied. Closes upon detection of pressure. Use for waterflow indication.
2: Closed with no pressure applied.

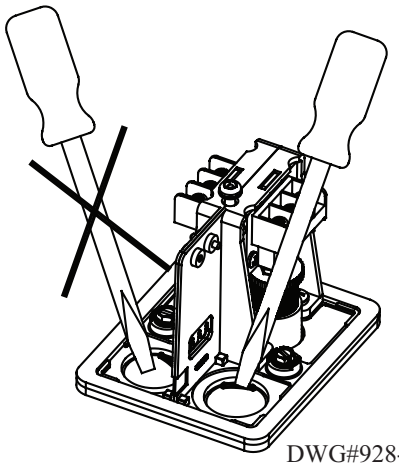
W/O PRESSURE APPLIED



DWG#928-6

Removing Knockouts

Fig 9



DWG#928-5

Engineer/Architect Specifications Pressure Type Waterflow Switch

Pressure type waterflow switches; shall be a Model PS10 as manufactured by Potter Electric Signal Company, St Louis MO., and shall be installed on the fire sprinkler system as shown and or specified herein.

Switches shall be provided with a ½" NPT male pressure connection and shall be connected to the alarm port outlet of; Wet Pipe Alarm Valves, Dry Pipe Valves, Pre-Action Valves, or Deluge Valves. The pressure switch shall be actuated when the alarm line pressure reaches 4 - 8 psi (0,27 - 0,55 bar).

Pressure type waterflow switches shall have a maximum service pressure rating of 300 psi (20,68 bar) and shall be factory adjusted to operate on a pressure increase of 4 - 8 psi (0,27 - 0,55 bar)

Pressure switch shall have one or two form C contacts, switch contact rating 10.1 Amps at 125/250 VAC, 2.0 Amps at 30 VDC.

Pressure type waterflow switches shall have two conduit entrances one for each individual switch compartment to facilitate the use of dissimilar voltages for each individual switch.

The cover of the pressure type waterflow switch shall be Weather/UV/ Flame Resistant High Impact Composite with rain lip and shall attach with one tamper resistant screw. The Pressure type waterflow switch shall be suitable for indoor or outdoor service with a NEMA 4/IP66 rating.

The pressure type waterflow switch shall be UL Ulc and CSFM listed, FM and LPC approved and NYMEA accepted.

⚠ WARNING

- Installation must be performed by qualified personnel and in accordance with all national and local codes and ordinances.
- Shock hazard. Disconnect power source before servicing. Serious injury or death could result.
- Read all instructions carefully and understand them before starting installation. Save instructions for future use. Failure to read and understand instructions could result in improper operation of device resulting in serious injury or death.
- Risk of explosion. Not for use is hazardous locations. Serious injury or death could result.

⚠ CAUTION

- Do not tighten by grasping the switch enclosure. Use wrenching flats on the bushing only. Failure to install properly could damage the switch and cause improper operation resulting in damage to equipment and property.
- To seal threads, apply Teflon tape to male threads only. Using joint compounds or cement can obstruct the pressure port inlet and result in improper device operation and damage to equipment.
- Do not over tighten the device, standard piping practices apply.

Ordering Information

Model	Description	Part Number
PS10-1	Pressure switch with one set SPDT contacts	1340103
PS10-2	Pressure switch with two sets SPDT contacts	1340104
Hex Key		5250062
Cover Tamper Switch Kit		0090200

Tamper

Cover incorporates tamper resistant fastener that requires a special key for removal. One key is supplied with each device. For optional cover tamper switch kit, order Stock No. 0090200. See bulletin #5401200 PSCTSK.

NOTICE

Pressure switches have a normal service life of 10-15 years. However, the service life may be significantly reduced by local environmental conditions.

PS40 Series

Supervisory Pressure Switch

Features

- One or two switch models available
- Independent switch adjustment on two switch models, no tools needed
- Two 1/2” conduit/cable entrances
- Separate isolated wiring chambers
- Non-corrosive pressure connection
- Non-Conductive Enclosure
- Vds version available

NOTICE

This document contains important information on the installation and operation of PS40 pressure switches. Please read all instructions carefully before beginning installation. A copy of this document is required by NFPA 72 to be maintained on site.

Installation

The Potter PS40 Series Supervisory Pressure Actuated Switches are designed primarily to detect an increase and/or decrease from normal system pressure in automatic fire sprinkler systems. Typical applications are: air/nitrogen supervision in dry pipe and pre-action systems, pressure tanks, air supplies, and water supplies. The PS40-1 has one switch and is factory set to activate at approximately 30 psi (2,1 bar) on a decrease in pressure. The PS40-2 has two switches. The Low switch is factory set to activate at approximately 30 psi (2,1 bar) on a decrease in pressure. The High switch is factory set to activate at approximately 50 psi (3,5 bar) on an increase in pressure. NFPA 72 requires a supervisory signal if the pressure increases or decreases by 10 psi from normal. The PS40 is factory set for a normal air pressure of 40 psi. See section heading Adjustments and Testing if other than factory set point is required.

1. Connect the PS40 to the system side of any shutoff or check valve.
2. Apply Teflon tape to the threaded male connection on the device. (Do not use pipe dope)
3. Device should be mounted in the upright position. (Threaded connection down)
4. Tighten the device using a wrench on the flats on the device.

Technical Specifications

Conduit Entrances	Two knockouts for 1/2” conduit provided. Individual switch compartments and ground screw suitable for dissimilar voltages
Contact Ratings	SPDT (Form C) 10.1 Amps at 125/250 VAC, 2.0 Amps at 30 VDC One SPDT in PS40-1, Two SPDT in PS40-2
Cover Tamper	Cover incorporates tamper resistant fastener that requires a special key for removal. One key is supplied with each device.
Differential	Typical 1 lb. at 10 psi (,07 at ,7 bar) 4 lbs at 60 psi (,28 at 4,1 bar)
Dimensions	3.78”(9,6cm)Wx3.20”(8,1cm)Dx4.22”(10,7cm)H
Enclosure	Cover: Weather/UV/Flame Resistant High Impact Composite Base: Die Cast All parts have corrosion resistant finishes
Environmental Limitations	-40º F to 140ºF (-40ºC to 60ºC) NEMA 4/IP66 Rated Enclosure indoor or outdoor when used with NEMA 4 conduit fittings
Factory Adjustment	PS40-1 operates on decrease at 30 psi (2,1 bar) PS40-2 operates on increase at 50 psi (3,5 bar) and on decrease at 30 psi (2,1 bar)
Maximum System Pressure	300 psi (20,68 bar)
Pressure Connection	Nylon 1/2” NPT male
Pressure Range	10-60 psi (,7-4,1 bar)
Service Use	NFPA 13, 13D, 13R, 72

*Specifications subject to change without notice.

Wiring Instructions

1. Remove the tamper resistant screw with the special key provided.
2. If it is necessary to remove the sealed knockouts, carefully place a screwdriver on the edge of the knockout and sharply apply a force sufficient to dislodge the knockout plug. See Fig. 9.
3. Run wires through an approved conduit connector and affix the connector to the device. A NEMA-4 rated conduit fitting is required for outdoor use.
4. Connect the wires to the appropriate terminal connections for the service intended. See Figures 2,4,5 and 6. See Fig. 7 for two switch one conduit wiring.

Adjustment and Testing

NOTE: Testing the PS40 may activate other system connected devices. The operation of the pressure supervisory switch should be tested upon completion of installation and periodically thereafter in accordance with the applicable local, national and NFPA codes and standards and/or the authority having jurisdiction (manufacturer recommends quarterly or more frequently).

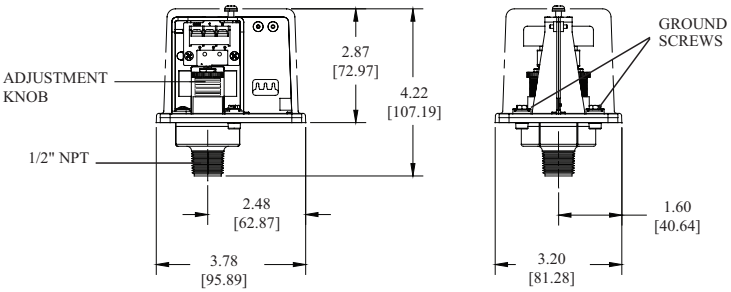
The use of a Potter BVL (see product bulletin 5400799 for details) is recommended to facilitate setting and testing of the PS40 pressure switch. When a BVL (bleeder valve) is used, the pressure to the switch can be isolated and bled from the exhaust port on the BVL without affecting the supervisory pressure of the entire system. See Fig. 3.

The operation point of the PS40 Pressure Switch can be adjusted to any point between 10 and 60 psi (0,7 - 4,11 bar) by turning the adjustment knob(s) clockwise to raise the actuation point and counter clockwise to lower the actuation point. In the case of the PS40-2, both switches operate independent of each other. Each switch may be independently adjusted to actuate at any point across the switch adjustment range. If the pressure needs to be adjusted from the factory settings, adjust the system pressure to the desired trip point. Use an ohmmeter on the appropriate contact (COM and 2 for pressure decrease and COM and 1 for pressure increase). Adjust the knurled knob until the meter changes state. At that point the switch is set for that particular pressure. Final adjustments should be verified with a pressure gauge.

The position of the top of the adjustment knob across to the printed scale on the switch bracket can be used to provide an approximate visual reference of the pressure switch setting.

Dimensions

Fig 1

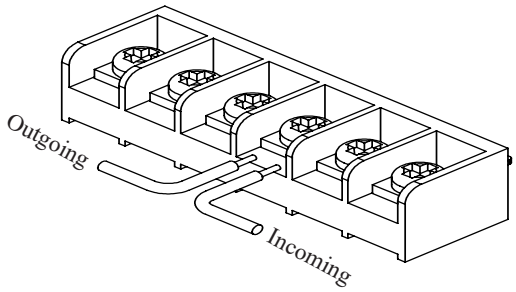


NOTE: To prevent leakage, apply Teflon tape sealant to male threads only.

DWG# 930-1

Switch Clamping Plate Terminal

Fig 2

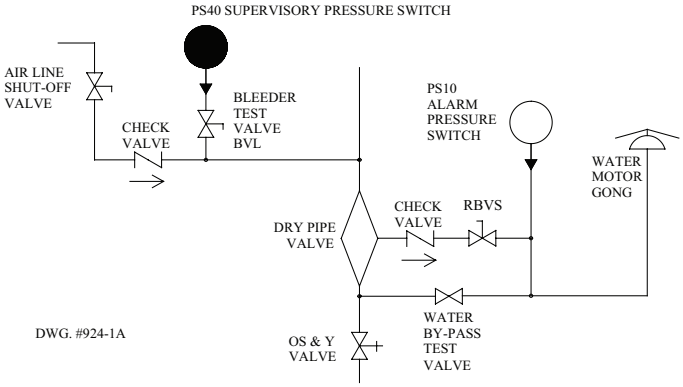


⚠ WARNING

An uninsulated section of a single conductor should not be looped around the terminal and serve as two separate connections. The wire must be severed, thereby providing supervision of the connection in the event that the wire becomes dislodged from under the terminal.

Typical Sprinkler Applications

Fig 3

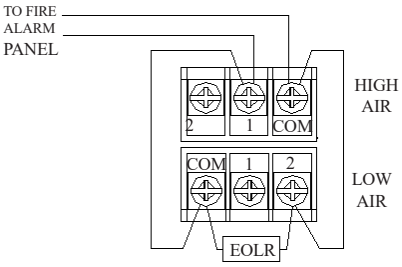


⚠ CAUTION

Closing of any shutoff valves between the alarm check valve and the PS10 will render the PS10 inoperative. To comply with IBC, IFC, and NFPA-13, any such valve shall be electrically supervised with a supervisory switch such as Potter Model RBVS.

Typical Electrical Connections

Fig 4

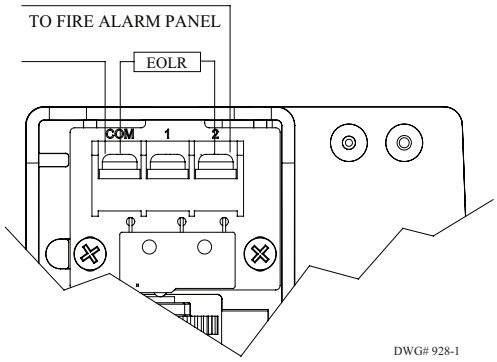


WITH NORMAL SYSTEM PRESSURE APPLIED HIGH - TERMINAL 1 WILL CLOSE ON PRESSURE INCREASE.

WITH NORMAL SYSTEM PRESSURE APPLIED LOW -TERMINAL 2 CLOSES ON PRESSURE DROP.

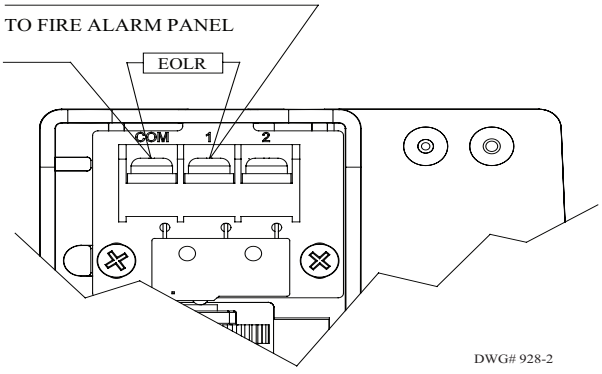
Low Pressure Signal Connection

Fig 5



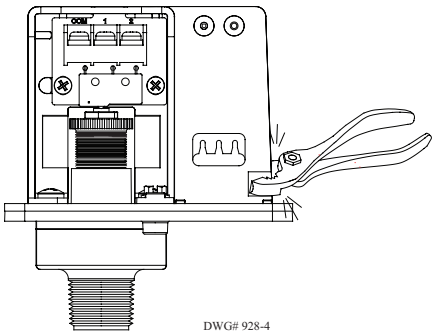
High Pressure Signal Connection

Fig 6



One Conduit Wiring

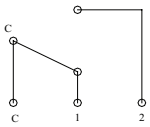
Fig 7



Changing Pressure

Fig 8

Low Pressure Switch

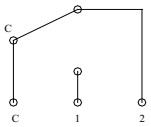


Terminal

C: Common

1. Closed when installed under normal system Pressure.
2. Open when installed under normal system pressure. Closes on pressure drop. Use for low air signal.

High Pressure Switch

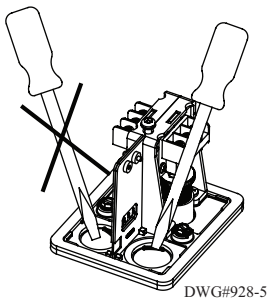


Terminal

1. Open when installed under normal system pressure. Closes on increase in pressure. Use for high air signal.
2. Closed under normal system pressure.

Removing Knockouts

Fig 9



Engineer/Architect Specifications Pressure Type Waterflow Switch

Pressure type supervisory switches; shall be a Model PS40 as manufactured by Potter Electric Signal Company, St. Louis, MO., and shall be installed on the fire sprinkler system as shown and or specified herein.

Switches shall be provided with a 1/2" NPT male pressure connection to be connected into the air supply line on the system side of any shut-off valve. A Model BVL bleeder valve as supplied by Potter Electric Signal Company of St. Louis, MO., or equivalent shall be connected in line with the PS40 to provide a means of testing the operation of the supervisory switch. (See Fig. 3)

The switch unit shall contain SPDT (Form C) switch(es). One switch shall be set to operate at 30 psi (2,1 bar) on a pressure decrease. If two switches are provided, the second switch shall be set to operate at a 50 psi (3,5 bar) on a pressure increase.

Switch contacts shall be rated at 10.1 Amps at 125/250VAC and 2.0 Amps at 30VDC. The units shall have a maximum pressure rating of 300 psi (20,68 bar) and shall be adjustable from 10 to 60 psi (0,7 to 4,1 bar).

Pressure switches shall have two conduit entrances, one for each individual switch compartment to facilitate the use of dissimilar voltages for each individual switch.

The cover of the pressure switch shall be Weather/UV/Flame Resistant High Impact Composite with rain lip and shall attach with one tamper resistant screw. The pressure switch shall be suitable for indoor or outdoor service with a NEMA-4/IP66 rating.

The pressure switch shall be UL, ULC, and CSFM listed, FM and LPC approved and NYMEA accepted.

⚠ WARNING

- Installation must be performed by qualified personnel and in accordance with all national and local codes and ordinances.
- Shock hazard. Disconnect power source before servicing. Serious injury or death could result.
- Read all instructions carefully and understand them before starting installation. Save instructions for future use. Failure to read and understand instructions could result in improper operation of device resulting in serious injury or death.
- Risk of explosion. Not for use is hazardous locations. Serious injury or death could result.

⚠ CAUTION

- Do not tighten by grasping the switch enclosure. Use wrenching flats on the bushing only. Failure to install properly could damage the switch and cause improper operation resulting in damage to equipment and property.
- To seal threads, apply Teflon tape to male threads only. Using joint compounds or cement can obstruct the pressure port inlet and result in improper device operation and damage to equipment.
- Do not over tighten the device, standard piping practices apply.
- Do not apply any lubricant to any component of the pressure switch.

Ordering Information

Model	Description	Stock No.
PS40-1	Pressure Switch with one set SPDT contacts	1340403
PS40-2	Pressure Switch with two sets SPDT contacts	1340404
	Hex Key	5250062
BVL	Bleeder Valve	1000018
	Optional Cover Tamper Switch Kit	0090200

NOTICE

Pressure switches have a normal service life of 10-15 years. However, the service life may be significantly reduced by local environmental conditions.

OSYSU Series

Outside Screw and Yoke Valve Supervisory Switch

Features

- NEMA 4X* (IP 65) and 6P (IP 67)

  **Enclosure is 4X. For additional corrosion protection of mounting hardware, use model OSYSU-2 CRH*
- -40º to 140º (-40ºC to 60ºC) operating temperature range
- Visual switch indicators
- Two conduit entrances
- Adjustable length trip rod
- Accomodates up to 12AWG wire
- Three position switch detects tampering and valve closure
- Knurled mounting bracket prevents slipping
- Fine adjustment feature for fast, easy installation
- RoHS compliant
- One or two SPDT contact models (-1,-2)

NOTICE

Before any work is done on the fire sprinkler or fire alarm system, the building owner or their authorized representative shall be notified. Before opening any closed valve, ensure that opening the valve will not cause any damage from water flow due to open or missing sprinklers, piping, etc.

Important: This document contains important information on the installation and operation of OS&Y valve supervisory switches. Please read all instructions carefully before beginning installation. A copy of this document is required by NFPA 72 to be maintained on site.

Description

The OSYSU is used to monitor the open position of an OS&Y (outside screw and yoke) type gate valve. This device is available in two models; the OSYSU-1, containing one set of SPDT (Form C) contacts and the OSYSU-2, containing two sets of SPDT (Form C) contacts. These switches mount conveniently to most OS&Y valves ranging in size from 2" to 12" (50mm to 300mm). They will mount on some valves as small as ½" (12,5mm).

The cover is held in place by two tamper resistant screws that require a special tool to remove. The tool is furnished with each device.

Testing

The operation of the OSYSU and its associated protective monitoring system shall be inspected, tested, and maintained in accordance with all applicable local and national codes and standards and/or the Authority Having Jurisdiction (manufacturer recommends quarterly or more frequently). A minimum test shall consist of turning the valve wheel towards the closed position. The OSYSU shall operate within the first two revolutions of the wheel. Fully close the valve and ensure that the OSYSU does not restore. Fully open the valve and ensure that the OSYSU restores to normal only when the valve is fully opened.

⚠ CAUTION

Close the valve fully to determine that the stem threads do not activate the switch. The switch being activated by the stem threads could result in a ***false valve open*** indication.

Technical Specifications

Dimensions	See Fig 8
Weight	1.6 lbs (0,73 kg)
Enclosure	Cover: Die Cast Finish: Red Powder Coat Base: Die Cast Finish: Black Powder Coat All parts have corrosion resistant finishes
Cover Tamper	Tamper Resistant Screws Optional Cover Tamper Switch Available
Contact Ratings	OSYSU-1: One Set of SPDT (Form C) OSYSU-2: Two Sets of SPDT (Form C) 10.0 Amps at 125/250 VAC 2.0 Amps at 30VDC Resistive 10 mAmps minimum at 24 VDC
Environmental Limitations	-40º F to 140ºF (-40ºC to 60ºC) NEMA 4X (IP 65) and NEMA 6P (IP 67) Enclosure (Use suitably rated conduit and connector) Indoor or Outdoor Use (See OSYSU-EX Bulletin 5400705 for Hazardous locations)
Conduit Entrances	Two Knockouts for 1/2" conduit provided (See Notice on Page 6 and Fig. 9 on Page 5)
Service Use	NFPA 13, 13D, 13R, 72

Specifications subject to change without notice

Theory of Operation

The OSYSU is a 3 position switch. The center position is the normal installation position. Normal is when the switch is installed on the OS&Y valve, the valve is fully open and the trip rod of the OSYSU is in the groove of the valve stem. Closing the valve causes the trip rod to ride up out of the groove and activates the switches. Removing the OSYSU from the valve causes the spring to pull the trip rod in the other direction and activates the switches.

Visual Switch Status Indication

There are 3 visual indicators to determine the status of the switches.

Fig 1; the actuator button of the micro switches are on the raised section of the switch actuator.

Fig 2; the trip rod is perpendicular to the base and lined up with the alignment mark on the mounting bracket.

Fig 3; the white visual indicator is visible through the window on the back of the switch actuator.

A final test is to meter the contacts marked COM and N.O. to ensure they are an open circuit when the valve is open and that they close and have continuity within 2 revolutions of turning the valve handwheel towards the closed position and the contacts remain closed as the valve is completely closed and until the valve is completely opened when the trip rod drops back into the groove in the valve stem.

Fig 1

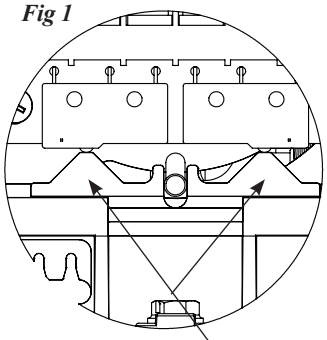


Fig 2

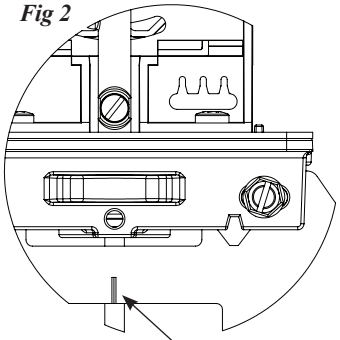


Fig 3

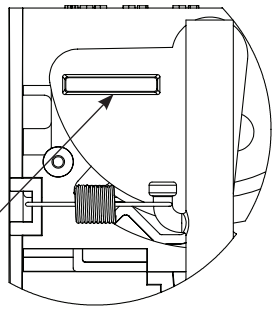


Fig 4

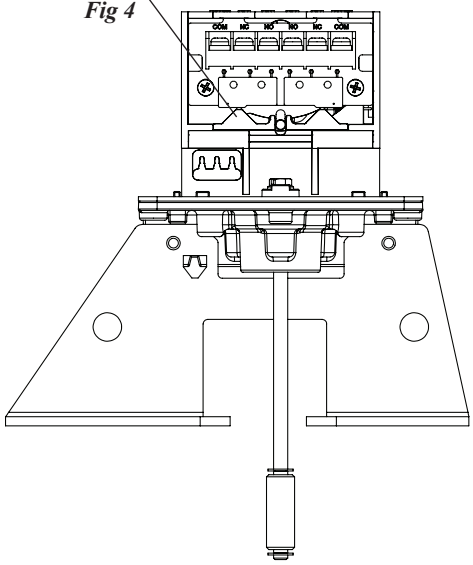


Fig 5

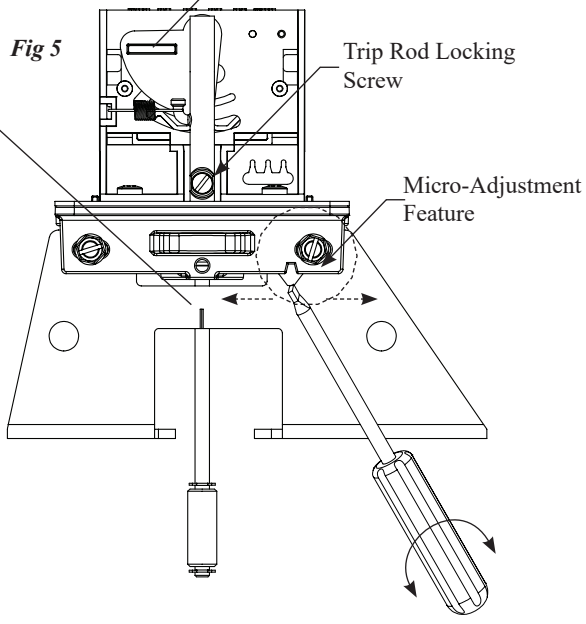
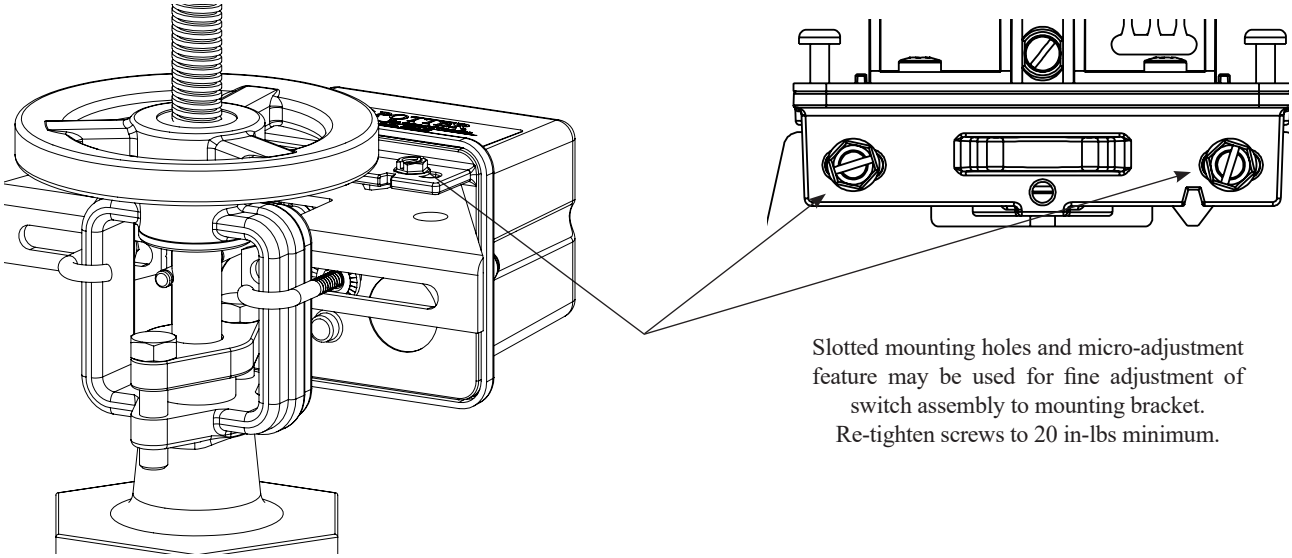


Fig 6

Small Valve Installation - 1/2" Through 2 1/2" Sizes



Slotted mounting holes and micro-adjustment feature may be used for fine adjustment of switch assembly to mounting bracket. Re-tighten screws to 20 in-lbs minimum.

Small Valve Installation

NOTE: If the valve stem is pre-grooved at 1/8" minimum depth; proceed to step 7.

1. Remove and discard "E" ring and roller from the trip rod.
2. With the valve in the FULL OPEN position, locate the OSYSU across the valve yoke as far as possible from the valve gland so that the spring loaded trip rod of the OSYSU is pulled against the non threaded portion of the valve stem. Position the OSYSU with the bracket near the handwheel as shown in Fig. 6 if possible to avoid creating a pinch point between the wheel and the OSYSU.
3. Loosen the locking screw that holds the trip rod in place and adjust the rod length (see Fig. 5). When adjusted properly, the rod should extend past the valve screw, but not so far that it contacts the clamp bar. Tighten the locking screw to 5 in-lbs minimum to hold the trip rod in place and properly seal the enclosure.

   NOTE: If trip rod length is excessive, loosen the locking screw and remove the trip rod from the trip lever. Using pliers, break off the one (1) inch long notched section (see Fig. 10). Reinstall trip rod and repeat Step 3 procedure.
4. Mount the OSYSU loosely with the carriage bolts and clamp bar supplied. On valves with limited clearance use J-hooks supplied instead of the carriage bolts and clamp bar to mount the OSYSU.
5. Mark the valve stem at the center of the trip rod.
6. Remove the OSYSU. Utilizing a 3/16" or 1/4" diameter straight file, file a 1/8" minimum depth groove centered on the mark on the valve stem. Deburr and smooth the edges of the groove to prevent damage to the valve packing and to allow the trip rod to move easily in and out of the groove as the valve is operated.

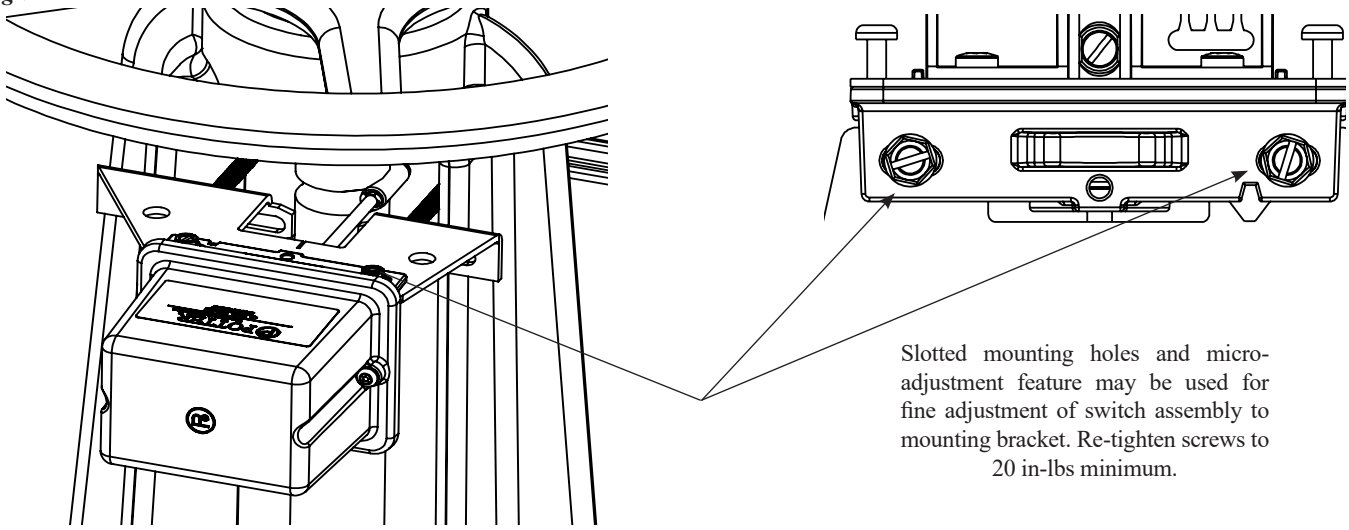
   NOTE: A groove depth of up to approximately 3/16" can make it easier to install the OSYSU so that it does not restore as it rolls over by the threads of the valve stem.
7. Mount the OSYSU on the valve yoke with the spring loaded trip rod of the OSYSU pulled against the valve stem and centered in the groove of the stem. If possible, position the OSYSU with the flat side of the bracket toward the hand wheel, as shown in Fig. 6, to help avoid creating a pinch point between the wheel and OSYSU. When in this preferred mounting position, it is usually best to use the white indicator visible through the window, as illustrated in Fig. 3, to aid in initially locating the OSYSU in the correct position on the yoke. If the unit must be installed inverted with the white indicator no longer easily visible, use the visual indicators of the actuator buttons on the micro-switches, as illustrated in Fig. 1, or the trip rod alignment mark on the bracket, as illustrated in Fig. 2 , to aid in initially locating the OSYSU.
8. Final adjustment can be made by slightly loosening the two screws on the bracket and using the fine adjustment feature (see Fig. 5). The adjustment is correct when the plungers on the switches are depressed by the actuator and there is no continuity between the COM and NO terminals on the switches.
9. Tighten the adjustment screws and all mounting hardware securely (20 in-lbs minimum). Check to insure that the rod moves out of the groove easily and that the switches activate within two turns when the valve is operated from the FULL OPEN towards the CLOSED position.
10. Reinstall the cover and tighten the cover screws to 15 in-lbs minimum to properly seal the enclosure.

⚠ CAUTION

Close the valve fully to determine that the stem threads do not activate the switch. The switch being activated by the stem threads could result in a ***false valve open*** indication.

Large Valve Installation - 3" Through 12" Sizes

Fig 7



Slotted mounting holes and micro-adjustment feature may be used for fine adjustment of switch assembly to mounting bracket. Re-tighten screws to 20 in-lbs minimum.

Large Valve Installation

NOTE: If the valve stem is pre-grooved at 1/8" minimum depth; proceed to step 6.

1. With the valve in the FULL OPEN position, locate the OSYSU across the valve yoke as far from the valve gland as possible so that the spring loaded trip rod of the OSYSU is pulled against the non threaded portion of the valve stem. Position the OSYSU with the bracket near the handwheel as shown in Fig. 7 if possible to avoid creating a pinch point between the wheel and the OSYSU.
2. Mount the OSYSU loosely with the carriage bolts and clamp bar supplied.
3. Loosen the locking screw that holds the trip rod in place and adjust the rod length (see Fig. 5). When adjusted properly, the rod should extend past the valve screw, but not so far that it contacts the clamp bar. Tighten the locking screw to 5 in-lbs minimum to hold the trip rod in place and properly seal the enclosure.

   NOTE: If trip rod length is excessive, loosen the locking screw and remove the trip rod from the trip lever. Using pliers, break off the one (1) inch long notched section (see Fig. 10). Reinstall trip rod and repeat Step 3 procedure.
4. Mark the valve stem at the center of the trip rod.
5. Remove the OSYSU. Utilizing a 3/8" or ½" diameter straight file, file a 1/8" minimum depth groove centered on the mark on the valve stem. Deburr and smooth the edges of the groove to prevent damage to the valve packing and to allow the trip rod to move easily in and out of the groove as the valve is operated.

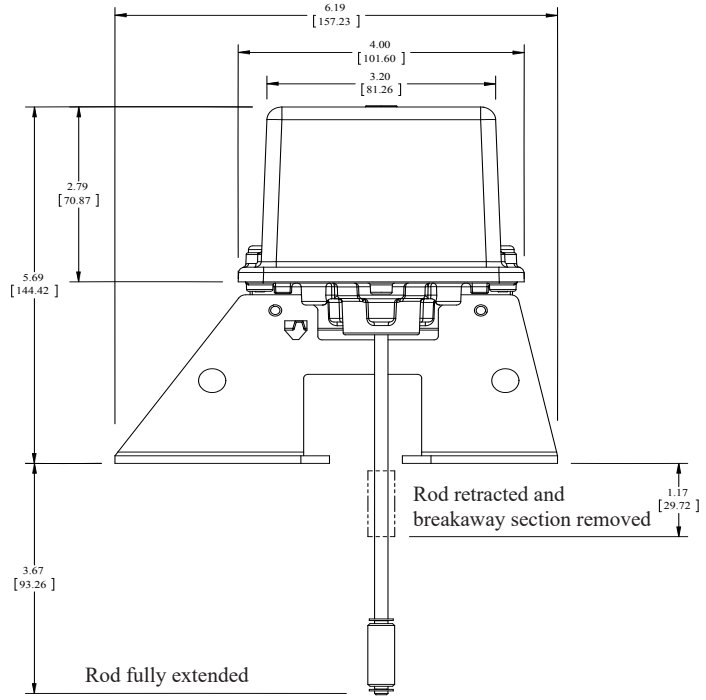
   NOTE: A groove depth of up to approximately 3/16" can make it easier to install the OSYSU so that it does not restore as it rolls over by the threads of the valve stem.
6. Mount the OSYSU on the valve yoke with the spring loaded trip rod of the OSYSU pulled against the valve stem and centered in the groove of the stem. If possible, position the OSYSU with the flat side of the bracket toward the hand wheel, as shown in Fig. 7, to help avoid creating a pinch point between the wheel and OSYSU. When in this preferred mounting position, it is usually best to use the white indicator visible through the window, as illustrated in Fig. 3, to aid in initially locating the OSYSU in the correct position on the yoke. If the unit must be installed inverted with the white indicator no longer easily visible, use the visual indicators of the actuator buttons on the micro-switches, as illustrated in Fig. 1, or the trip rod alignment mark on the bracket, as illustrated in Fig. 2 , to aid in initially locating the OSYSU.
7. Final adjustment can be made by slightly loosening the two screws on the bracket and using the fine adjustment feature (see Fig. 5). The adjustment is correct when the plungers on the switches are depressed by the actuator and there is no continuity between the COM and NO terminals on the switches.
8. Tighten the adjustment screws and mounting hardware securely (minimum 20 in-lbs). Check to insure that the rod moves out of the groove easily and that the switches activate within two turns when the valve is operated from the FULL OPEN towards the CLOSED position.
9. Reinstall the cover and tighten the cover screws to 15 in-lbs minimum to properly seal the enclosure.

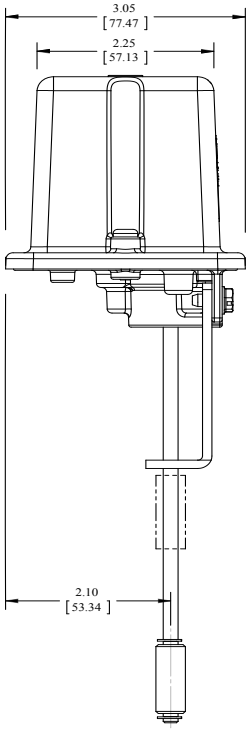
⚠ CAUTION

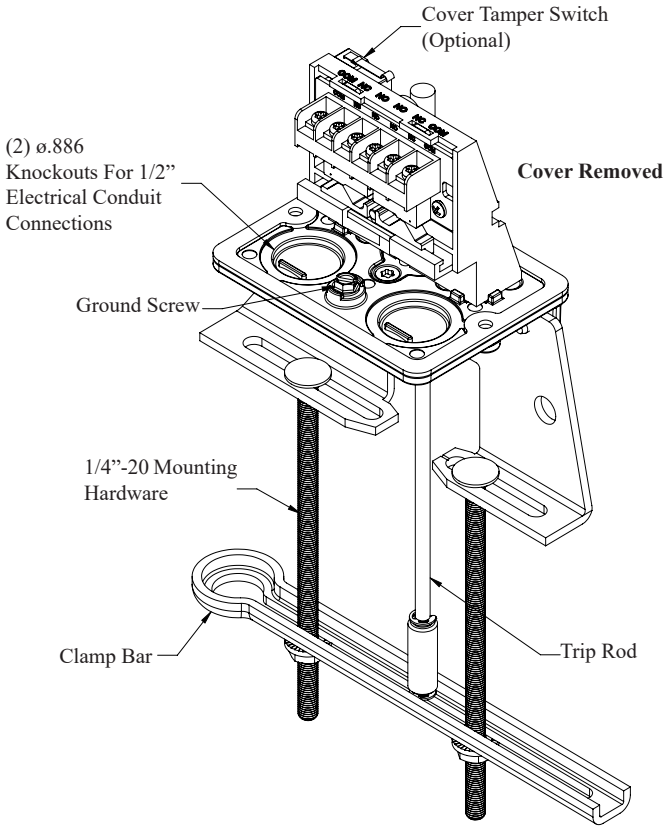
Close the valve fully to determine that the stem threads do not activate the switch. The switch being activated by the stem threads could result in a ***false valve open*** indication.

Dimensions

Fig 8



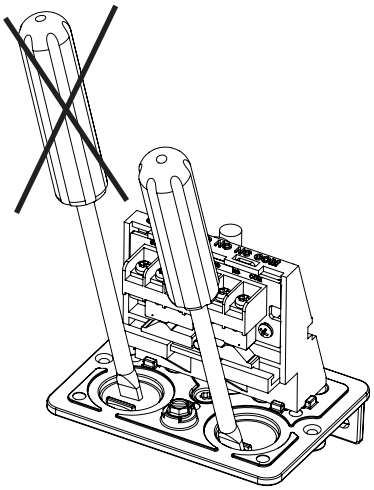




Knockout Removal

Fig 9

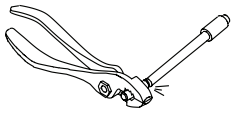
To remove knockouts: Place screwdriver at inside edge of knockouts, not in the center.



NOTE: Do not drill into the base as this creates metal shavings which can create electrical hazards and damage the device. Drilling voids the warranty.

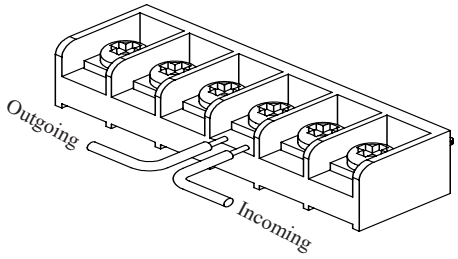
Breaking Excessive Rod Length

Fig 10



Switch Terminal Connections Clamping Plate Terminal

Fig 11



⚠ WARNING

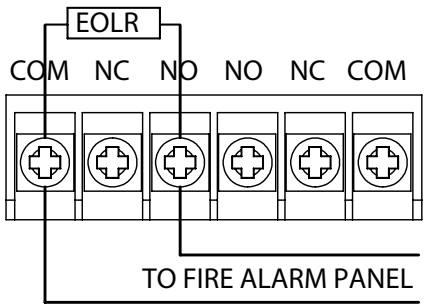
An uninsulated section of a single conductor should not be looped around the terminal and serve as two separate connections. The wire must be severed, thereby providing supervision of the connection in the event that the wire become dislodged from under the terminal. Failure to sever the wire may render the device inoperable risking severe property damage and loss of life. Do not strip wire beyond 3/8" of length or expose an uninsulated conductor beyond the edge of the terminal block. When using stranded wire, capture all strands under the clamping plate.

NOTICE

All conduit and connectors selected for the installation of this product shall be suitable for the environment for which it is to be used and shall be installed to the manufacturer's installation instructions. For NEMA 4, 4X, 6, 6P installations, the cover screws are recommended to be tightened to 15 in-lbs minimum and the trip rod locking screw tightened to 5 in-lbs minimum to properly seal the enclosure.

Typical Electrical Connections

Fig 12



Ordering Information

Model	Description	Stock No.
OSYSU-1	Outside Screw & Yoke Supervisory Switch (Single switch)	1010102
OSYSU-2	Outside Screw & Yoke Supervisory Switch (Double switch)	1010202
OSYSU-2 CRH	Outside Screw & Yoke Supervisory Switch (Double Switch). Corrosion resistant hardware of 316 stainless steel	1010210
	Cover Screw	5490424
	Hex Key for Cover Screws and Installation Adjustments	5250062
	Optional Cover Tamper Switch Kit	0090200

Engineering Specifications: OS&Y Valves

UL, CUL Listed / FM Approved and CE Marked valve supervisory switches shall be furnished and installed on all OS&Y type valves that can be used to shut off the flow of water to any portion of the fire sprinkler system, where indicated on the drawings and plans and as required by applicable local and national codes and standards. The supervisory switch shall be NEMA 4X and 6P rated and capable of being mounted in any position indoors or out and be completely submerged without allowing water to enter the enclosure.. The enclosure shall be held captive by tamper resistant screws. The device shall contain two ½" conduit entrances and one or two Single Pole Double Throw (SPDT) switches. There shall be a visual indicator to display the status of the switches. To aid in installation, it shall be possible to make fine adjustments to the position of the switch on the valve without loosening the mounting bracket from the valve. The device shall contain an adjustable length trip rod and roller, the trip rod shall be held captive by a set screw accessible upon removal of the cover. The switch contacts shall be rated at 10A, 125/250VAC and 2A, 30VDC. OS&Y Valve supervisory switch shall be model OSYSU-1 for the single switch model and OSYSU-2 for the two switch model manufactured by Potter Electric Signal Company LLC

NOTICE

Supervisory switches have a normal service life of 10-15 years. However, the service life may be significantly reduced by local environmental conditions.

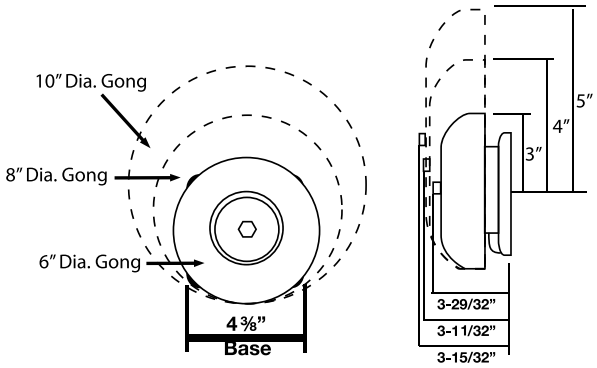
LANSDALE® VALVE MANUFACTURING CORP.

ELECTRIC ALARM BELL

UL LISTED
AUDIBLE-SIGNAL APPLIANCES
FILE# S35937

DESCRIPTION:

- 120 VAC: 6", 8", 10"
- 24 DC: 6", 8", 10"
- Four wire, 120 and 24 volt
- Specify voltage when ordering
- Indoor and outdoor Installation

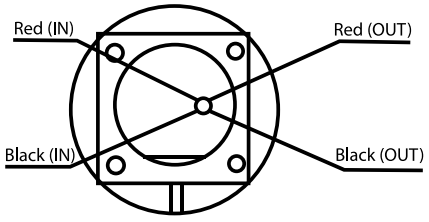


VOLTAGE 24 VAC					
6" GONG SIZE - LV-AB0624		8" GONG SIZE - LV-AB0824		10" GONG SIZE - LV-AB1024	
RATED CURRENT	SOUND LEVEL AT 1 METER	RATED CURRENT	SOUND LEVEL AT 1 METER	RATED CURRENT	SOUND LEVEL AT 1 METER
100mA	95dB	100mA	95dB	100mA	95dB

VOLTAGE 120 VAC					
6" GONG SIZE - AB-12006		8" GONG SIZE - AB-12008		10" GONG SIZE - AB-12010	
RATED CURRENT	SOUND LEVEL AT 1 METER	RATED CURRENT	SOUND LEVEL AT 1 METER	RATED CURRENT	SOUND LEVEL AT 1 METER
46mA	95dB	46mA	95dB	46mA	95dB

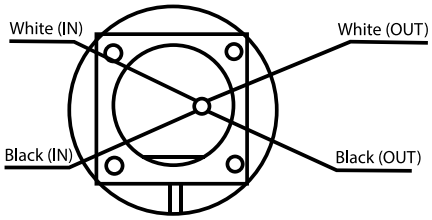
WIRING INSTRUCTIONS

D.C. BELLS (observe polarity)



When electrical supervisor is required use in and out leads as shown·
1. Observe polarity to ring DC Bells
2. Red wires positive(+)
3. Black wires negative (–)

A.C. BELLS



When electrical supervisor is required use in and out leads as shown.
1. When using AC bells, terminate each extra wire separately after last bell.
2. End-of-line resistor is not required on AC Bells

PROJECT	APPROVAL STAMP
PROJECT:	☐ APPROVED
ADDRESS:	☐ APPROVED AS NOTED
ENGINEER:	☐ NOT APPROVED
SUBMITTAL DATA:	REMARKS:
NOTES 1:	
NOTES 2:	

SECTION 6

Fire Sprinklers

Series RFII — 5.6 K-factor "Royal Flush II" Concealed Pendent Sprinklers Quick & Standard 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.

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/tfp181

General Description

The TYCO Series RFII 5.6 K-factor, "Royal Flush II" Concealed Pendent Sprinklers Quick Response (3-mm bulb) and Standard Response (5-mm bulb), are decorative sprinklers featuring a flat cover plate designed to conceal the sprinkler. These sprinklers are optimal for architecturally sensitive areas such as hotel lobbies, office buildings, churches, and restaurants.

Each sprinkler includes a cover plate/retainer assembly and a sprinkler/support cup assembly. The separable, two-piece assembly design provides the following benefits:

- Allows installation of the sprinklers and pressure testing of the fire protection system prior to installation of a suspended ceiling or application of the finish coating to a fixed ceiling.
- Permits the removal of suspended ceiling panels for access to building service equipment without having to first shut down the fire protection system and remove sprinklers.
- Provides for 1/2 in. (12,7 mm) of vertical adjustment to allow a measure of flexibility in determining the length of fixed piping to cut for the sprinkler drops.

The Series RFII Sprinklers are shipped with a disposable protective cap. The protective cap is temporarily removed during installation and replaced to help protect the sprinkler during ceiling installation or finish. The tip of the protective cap can be used to mark the center of the ceiling hole into plaster board or ceiling tiles by gently pushing the ceiling product against the protective cap. When ceiling installation is complete, the protective cap is removed and the cover plate/retainer assembly is installed.

As an option, the Series RFII Standard Response (5-mm bulb) "Royal Flush II" Concealed Pendent Sprinklers can be fitted with a silicone air and dust seal as shown in Figure 5. The air and dust-seal is intended for sensitive areas where it is desirable to prevent air and dust from the area above the ceiling to pass through the cover plate.

NOTICE

The Series RFII Concealed 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.

Sprinkler Identification Number (SIN)

TY3531 — 3 mm bulb
TY3551 — 5 mm bulb

Technical Data

Sprinkler Approvals

Approvals apply only to the service conditions indicated in the Design Criteria section.

- TY3531 (3 mm Bulb) is UL Listed, C-UL Listed and NYC Approved (MEA 353-01-E) as Quick Response.
- TY3531 (3 mm Bulb) is EAC Approved and VdS Approved (Certificate No. G4090007).
- TY3531 (3 mm Bulb) is FM and LPCB Approved (Ref. No. 094a/10) as Standard Response.

  Note: *FM and LPCB do not approve concealed sprinklers for quick response.*

- TY3551 (5 mm Bulb) is UL Listed, C-UL Listed, EAC Approved, FM Approved, LPCB Approved (Ref. No. 094a/9), and NYC Approved (MEA 353-01-E) as Standard Response.

Approvals for Air and Dust Seal

UL and C-UL Listed for use with the RFII Standard Response Concealed Sprinkler (TY3551)

Maximum Working Pressure
Maximum 250 psi (17,3 bar) by UL, C-UL, and NYC

Maximum 175 psi (12,1 bar) by FM, VdS, and LPCB

Temperature Rating
155°F (68°C) Sprinkler with 139°F (59°C) Cover Plate

200°F (93°C) Sprinkler with 165°F (74°C) Cover Plate

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

Adjustment
1/2 in. (12,7 mm)

Finishes
See the Ordering Procedure section.

Physical Characteristics

Frame	Bronze
Support Cup	Plated Steel
Guide Pins	Stainless Steel
Deflector	Bronze
Compression Screw	Brass
Bulb	Glass
Cap	Bronze or Copper
Sealing Assembly	Beryllium Nickel w/TEFLON
Cover Plate	Brass
Retainer	Brass
Ejection Spring	Stainless Steel

Design Criteria

The TYCO Series RFII 5.6 K-factor, "Royal Flush II" Concealed Pendent Sprinklers are intended for fire protection systems designed in accordance with the standard installation rules recognized by the applicable Listing or Approval agency; for example, UL Listing is based on NFPA 13 and VdS Approval is based on the CEA 4001.

For more information on LPCB and VdS Approvals, contact Johnson Controls at the following office:

Enschede, Netherlands
Telephone: 31-53-428-4444
Fax: 31-53-428-3377

The Series RFII Concealed Pendent Sprinklers are only listed and approved with the Series RFII Concealed Cover Plates having a factory applied finish.

NOTICE

Do not use the Series RFII in applications where the air pressure above the ceiling is greater than that below. Down drafts through the sprinkler/support cup assembly can delay sprinkler operation in a fire situation.

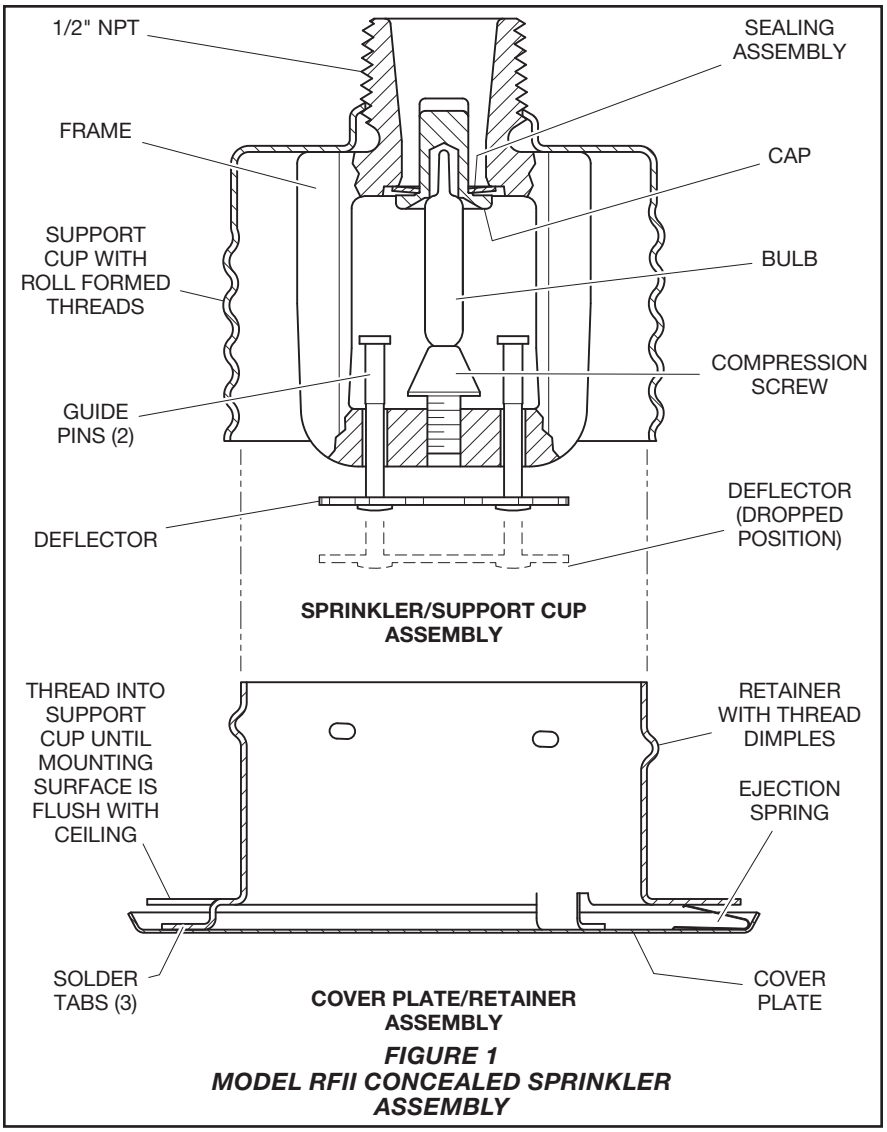


FIGURE 1
MODEL RFII CONCEALED SPRINKLER ASSEMBLY

Operation

When exposed to heat from a fire, the cover plate, normally soldered to the retainer at three points, falls away to expose the sprinkler/support cup assembly.

The deflector — supported by the guide pins — then drops down to its operational position.

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, activating the sprinkler and allowing water to flow.

Installation

The TYCO Series RFII 5.6 K-factor, "Royal Flush II" Concealed 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 155°F (68°C) and 3/32 in. (2,4 mm) for the 200°F (93°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). Higher levels of torque can distort the sprinkler Inlet with consequent leakage or impairment of the sprinkler.

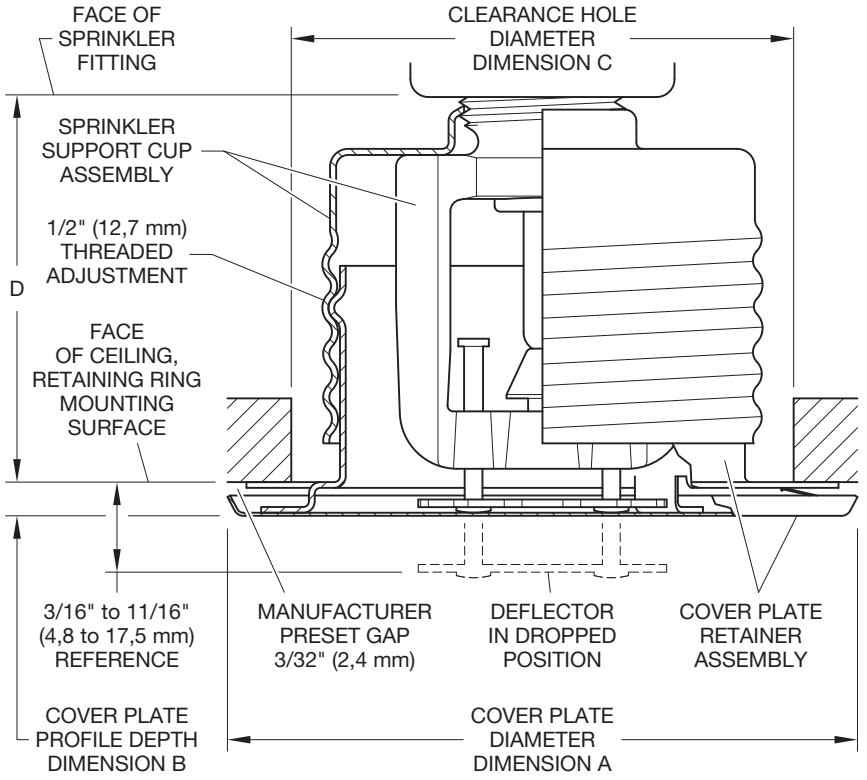


FIGURE 2
SERIES CONCEALED SPRINKLER INSTALLATION DIMENSIONS

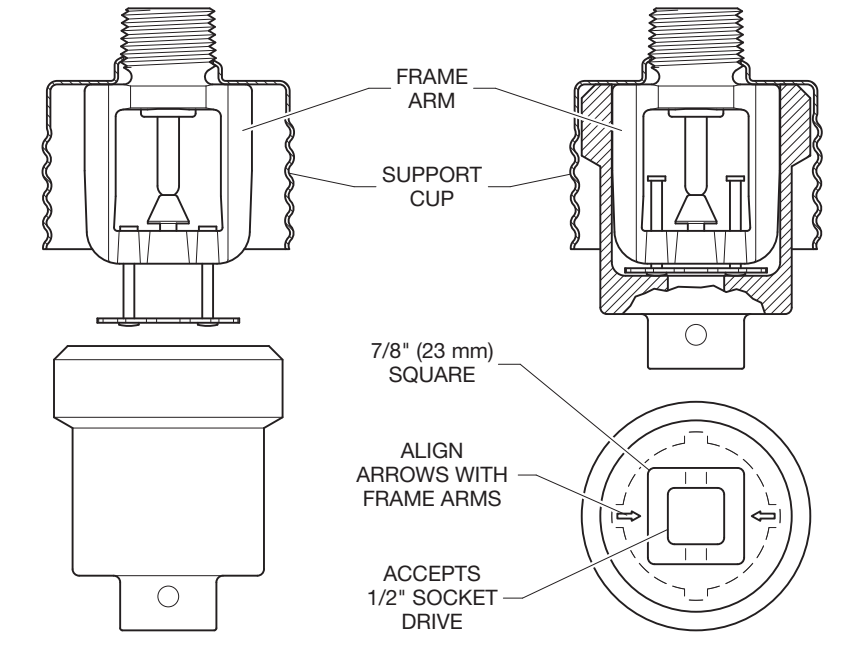


FIGURE 3
RFII SPRINKLER WRENCH

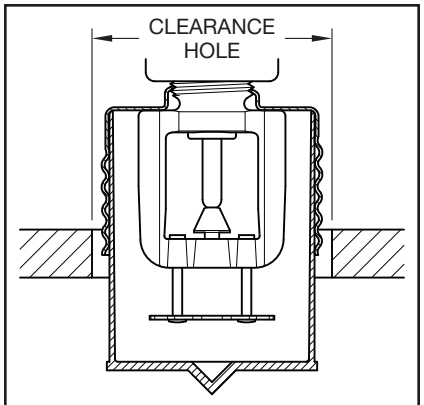


FIGURE 4
DISPOSABLE PROTECTIVE CAP

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

Step 1. Install the sprinkler only in the pendent position with the center-line of the sprinkler perpendicular to the mounting surface.

Step 2. Remove the protective cap.

Step 3. With pipe thread sealant applied to the pipe threads, hand-tighten the sprinkler into the sprinkler fitting.

Step 4. Wrench-tighten the sprinkler using only the RFII Sprinkler Wrench. as shown in Figure 3. Apply the wrench to the sprinkler as shown in Figure 3.

Step 5. Replace the protective cap by pushing it upwards until it bottoms out against the support cup as shown in Figure 4. The protective cap helps prevent damage to the deflector and arms during ceiling installation and/or finish. You can also use the protective cap to locate the center of the clearance hole by gently pushing the ceiling material up against the center point of the protective cap.

NOTICE

As long as the protective cap remains in place, the system is considered "Out of Service".

Step 6. After the ceiling has been completed with the 2-1/2 in. (63,5 mm) diameter clearance hole and in preparation for installing the cover plate/retainer assembly, remove and discard the protective cap. Verify that the deflector moves up and down freely.

If the sprinkler is damaged and the deflector does not move up and down freely, replace the entire sprinkler. Do not attempt to modify or repair a damaged sprinkler.

Step 7. When installing an air and dust Seal, see Figure 5 for reference and

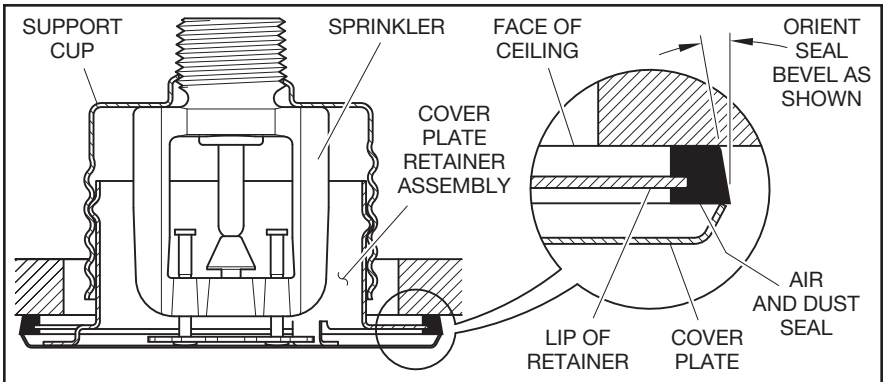


FIGURE 5
OPTIONAL AIR AND DUST SEAL FOR SERIES RFII (TY3551)

follow this step; otherwise, proceed to Step 8. To attach the air and dust seal, verify the angle of the outside edge of the seal is oriented according to Figure 5. Start the edge of the retainer in the grooved slot of the air and dust seal and continue around the retainer until the entire air and dust seal is engaged.

Step 8. Screw on the cover plate/retainer assembly until the retainer, shown in Figure 2, or the air and dust seal, shown in Figure 5, contacts the ceiling. Do not continue to screw on the cover plate/retainer assembly so that it lifts a ceiling panel out of its normal position. If you cannot engage the cover plate/retainer assembly with the support cup or you cannot engage the cover plate/retainer assembly sufficiently to contact the ceiling, you must reposition the sprinkler fitting.

Care and Maintenance

The TYCO Series RFII 5.6 K-factor, "Royal Flush II" Concealed 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 system from the proper authorities and notify all personnel who may be affected by this action.

Absence of the cover plate/retainer assembly can delay sprinkler operation in a fire situation.

When properly installed, there is a nominal 3/32 in. (2,4 mm) air gap between the lip of the cover plate and the ceiling, as shown in Figure 2.

This air gap is necessary for proper operation of the sprinkler. If the ceiling requires repainting after sprinkler installation, ensure that the new paint does not seal off any of the air gap.

Do not pull the cover plate relative to the enclosure. separation may result.

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

Automatic sprinklers must never be painted, plated, coated, or otherwise altered after leaving the factory. 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 information about replacing a sprinkler, see the Installation Section.

Exercise care to avoid damage to sprinklers before, during, and after installation. Replace sprinklers damaged by dropping, striking, wrench twisting, wrench slipping, or the like. Also, replace any sprinkler that has a cracked bulb or that has lost liquid from its bulb. For information about replacing a sprinkler, see the Installation section.

If you must remove a sprinkler, do not reinstall it or a replacement without reinstalling the cover plate/retainer assembly. If a cover plate/retainer assembly becomes dislodged during service, replace it immediately.

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 should be inspected, tested, and maintained by a qualified inspection service in accordance with local requirements and/or national code.

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.

Sprinkler/Support Cup Assembly
Specify: Series RFII (specify SIN), K=5.6, "Royal Flush II" Pendent Sprinklers (specify) temperature rating, P/N* (specify):

	155°F (68°C)	200°F (93°C)
TY3531	51-792-1-155	51-792-1-200
TY3551	51-790-1-155	51-790-1-200

* Use Suffix "I" for ISO 7-1 connection; for example, 51-792-1-155-I

Separately Ordered Cover Plate/ Retainer Assembly:
Specify: (temperature rating from below) Series RFII Concealed Cover Plate with (finish), P/N (specify).

	139°F (59°C)(a)	165°F (74°C)(b)
Grey White (RAL9002)	56-792-0-135	56-792-0-165
Brushed Brass	56-792-1-135	56-792-1-165
Brass	56-792-2-135	56-792-2-165
Pure White (c) (RAL9010)	56-792-3-135	56-792-3-165
Signal White (RAL9003)	56-792-4-135	56-792-4-165
Jet Black (RAL9005)	56-792-6-135	56-792-6-165
Terra Brown (RAL8028)	56-792-7-135	56-792-7-165
Brushed Chrome	56-792-8-135	56-792-8-165
Chrome	56-792-9-135	56-792-9-165
Custom	56-792-X-135	56-792-X-165

NOTES
a. For use with 155°F (68°C) sprinklers.
b. For use with 200°F (93°C) sprinklers.
c. Eastern Hemisphere sales only.

Sprinkler Wrench
Specify: RFII Sprinkler Wrench, P/N 56-000-1-075

Air and Dust Seal
Specify: Air and Dust Seal, P/N 56-908-1-001

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

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Johnson Controls

Series TY-FRB, 5.6 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.

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/tfp172

General Description

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

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

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

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

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

NOTICE

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

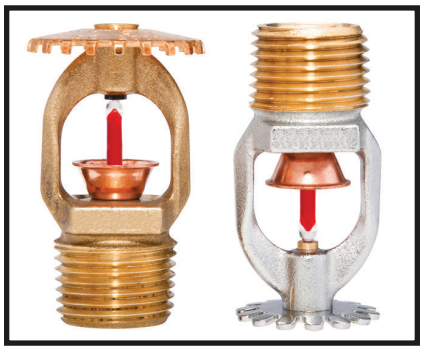
The owner is responsible for maintaining their fire protection system and devices in proper operating condition. Contact the installing contractor or product manufacturer with any questions.

Sprinkler Identification Number (SIN)

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

Technical Data

Approvals
See Table A



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

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

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

Temperature Rating
See Table A

Finishes
Sprinkler: See Table B

Recessed Escutcheon: White Coated, Black Coated, Chrome Plated, or Brass Plated

Physical Characteristics

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

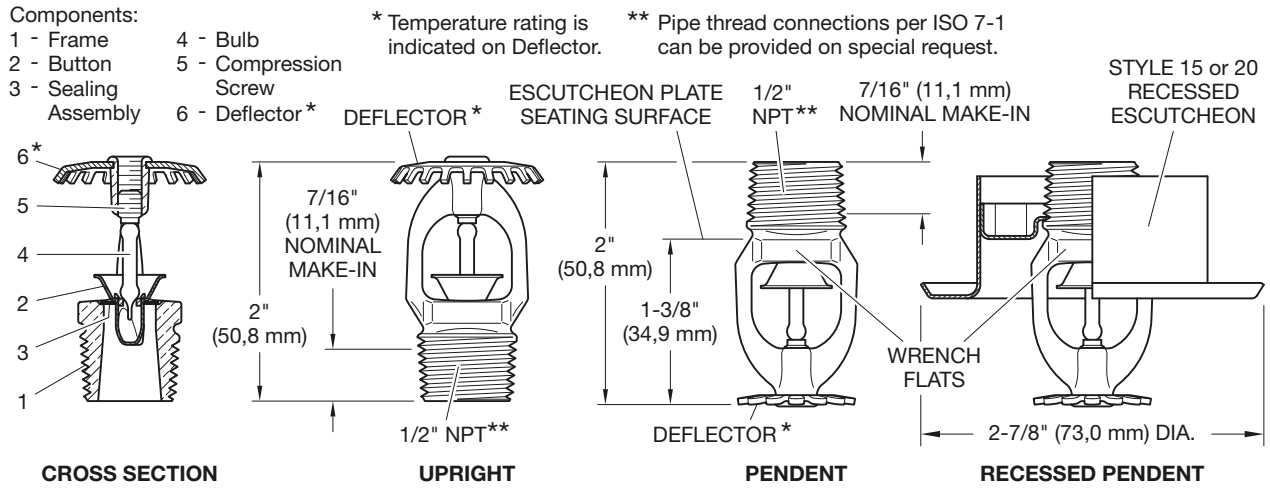


FIGURE 1
SERIES TY-FRB UPRIGHT (TY313) AND PENDENT (TY323) SPRINKLERS
5.6 K-FACTOR, 1/2 INCH NPT, QUICK RESPONSE

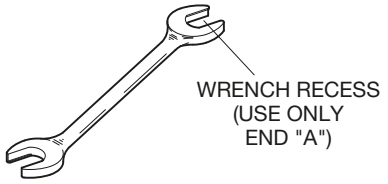


FIGURE 2
W-TYPE 6
SPRINKLER WRENCH

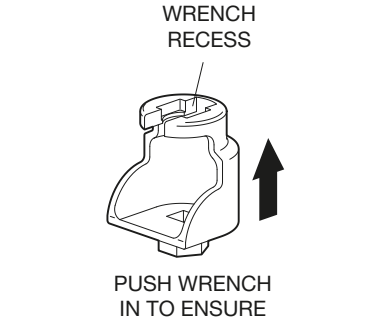


FIGURE 3
W-TYPE 7 RECESSED
SPRINKLER WRENCH

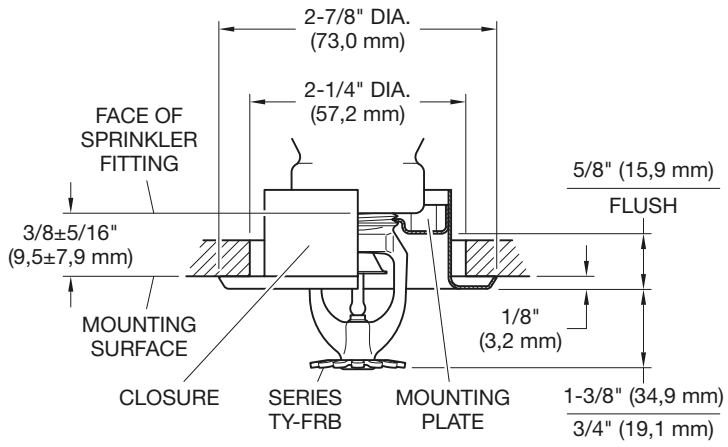


FIGURE 4
SERIES TY-FRB RECESSED PENDENT SPRINKLER ASSEMBLY (TY323)
WITH TWO PIECE 5/8 INCH TOTAL ADJUSTMENT STYLE 15
RECESSED ESCUTCHEON

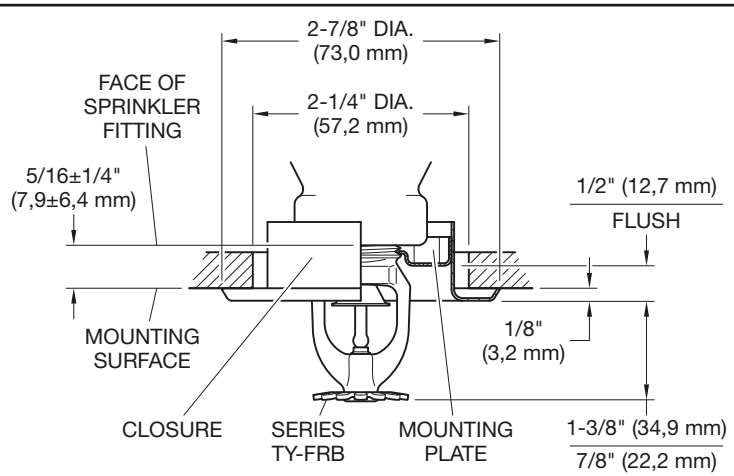


FIGURE 5
SERIES TY-FRB RECESSED PENDENT SPRINKLER ASSEMBLY (TY323)
WITH TWO PIECE 1/2 INCH TOTAL ADJUSTMENT STYLE 20
RECESSED ESCUTCHEON

K-Factor	Type	Temperature	Sprinkler Finish[8]			
			Bulb Liquid Color	Natural Brass	Chrome Plated	Polyester[c]
5.6 1/2 in. NPT	UPRIGHT (TY313) and PENDENT (TY323)	135°F (57°C)	Orange	1, 2, 3, 4, 5, 6, 7		
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
		286°F (141°C)	Blue			
	RECESSED PENDENT (TY323) Figures 4[a] and 5[b]	135°F (57°C)	Orange	1, 2, 3, 4, 7		
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			

Notes:
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. VdS Approved (For details, contact Johnson Controls, Enschede, Netherlands, Tel. 31-53-428-4444/Fax 31-54-428-3377.)
6. Approved by the Loss Prevention Certification Board (LPCB Ref. No. 094a/06) as Quick Response Sprinklers.
7. EAC Approved.
8. Where Polyester Coated Sprinklers are noted to be UL and C-UL Listed, the sprinklers are UL and C-UL Listed as Corrosion-Resistant Sprinklers.

a. Installed with Style 15 (1/2 in. NPT) 5/8 in. Total Adjustment Recessed Escutcheon, as applicable.
b. Installed with Style 20 (1/2 in. NPT) 1/2 in. Total Adjustment Recessed Escutcheon, as applicable.
c. Frame and Deflector only. Listings and approvals apply to color (Special Order).

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

Operation

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

Design Criteria

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

Installation

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

General Instructions
Do not install any bulb-type sprinkler if the bulb is cracked or there is a loss of liquid from the bulb. With the sprinkler held horizontally, a small air bubble should be present. The diameter of the air bubble is approximately 1/16 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 to 14 lb-ft (9,5 to 19,0 N·m). Higher levels of torque can distort the sprinkler Inlet with consequent leakage or impairment of the sprinkler.

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

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

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

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

Step 3. Tighten the sprinkler into the sprinkler fitting using only the W-Type 6 Sprinkler Wrench as shown in Figure 2. Apply the W-Type 6 Sprinkler Wrench to the wrench flats as shown in Figure 1. Torque sprinklers 7 to 14 lb-ft (9,5 to 19,0 N·m).

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

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

Step B. Tighten the sprinkler into the sprinkler fitting using only the W-Type 7 Recessed Sprinkler Wrench as shown in Figure 3. Apply the W-Type 7 Recessed Sprinkler Wrench to the sprinkler wrench flats as shown in Figure 1. Torque sprinklers 7 to 14 lb-ft (9,5 to 19,0 N·m).

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

P/N[a] 77 – XXX – X – XXX

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

Notes:
a. Use suffix "I" for ISO 7-1 connection; for example, 77-370-4-175-I

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

Notes:
a. Eastern Hemisphere sales only

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

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

Care and Maintenance

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

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

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

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

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

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

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

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the National Fire Protection Association 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.

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

Limited Warranty

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

Ordering Procedure

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

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

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

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

* Refer to Technical Data Sheet TFP770

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

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

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

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TEFLON is a trademark of The Chemours Company FC, LLC

Johnson Controls

Series DS-1 Dry-Type Sprinklers 5.6K Pendent, Upright, and Horizontal Sidewall 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.

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/tfp510

General Description

TYCO Series DS-1 Dry-Type Sprinklers, 5.6K Pendent, Upright, and Horizontal Sidewall, Quick Response (3 mm bulb) and Standard Coverage are decorative glass bulb automatic sprinklers designed for commercial use. Dry-type sprinklers are typically used where:

- Pendent sprinklers are required on dry pipe systems that are exposed to freezing temperatures; for example, sprinkler drops from unheated portions of buildings
- Sprinklers and/or a portion of the connecting piping are exposed to freezing temperatures; for example, sprinkler drops from wet systems into freezers, sprinkler sprigs from wet systems into unheated attics, or horizontal piping extensions through a wall to protect an unheated areas such as loading docks, overhangs, and building exteriors
- Sprinklers are used on systems that are seasonally drained to avoid freezing for example, vacation areas

NOTICE

The Series DS-1 Dry-Type 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 authorities having jurisdiction. Failure to do so may impair the performance of these devices.

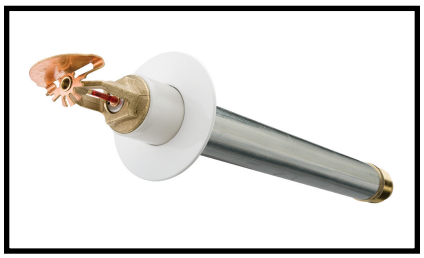
The owner is responsible for maintaining their fire protection system and devices in proper operating condition. Contact the installing contractor or product manufacturer with any questions.

The Series DS-1 Dry-Type Sprinklers must only be installed in fittings that meet the requirements of the Design Criteria section.

Sprinkler Identification Numbers (SINs)

3/4 in. NPT:
TY3935 – Pendent
TY3735 – Horizontal Sidewall

1 in. NPT:
TY3235 – Pendent
TY3135 – Upright
TY3335 – Horizontal Sidewall



Technical Data

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

Note: *For Approvals details, see Tables A and B.*

Maximum Working Pressure
175 psi (12,1 bar)

Inlet Thread Connections
3/4 in. NPT
1 in. NPT or ISO 7-R 1

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

Temperature Ratings
See Table A and Table B

Finishes
Sprinkler and Escutcheon see Table D

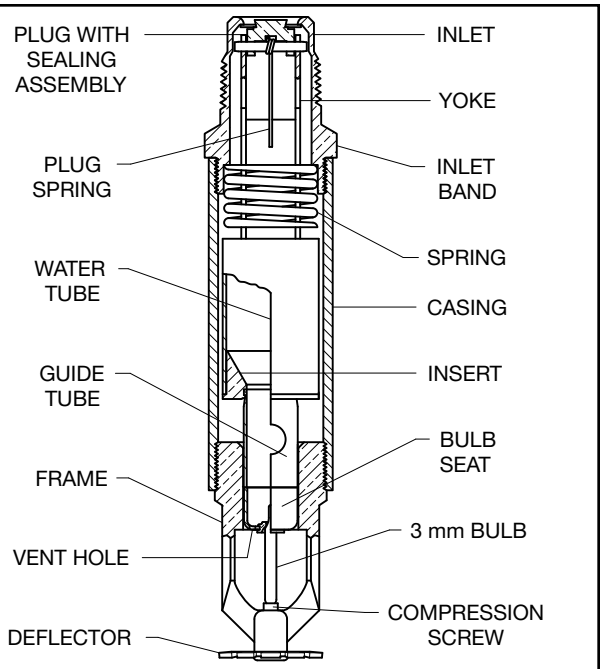


FIGURE 1
SERIES DS-1, 3/4 IN. NPT, DRY-TYPE SPRINKLER ASSEMBLY

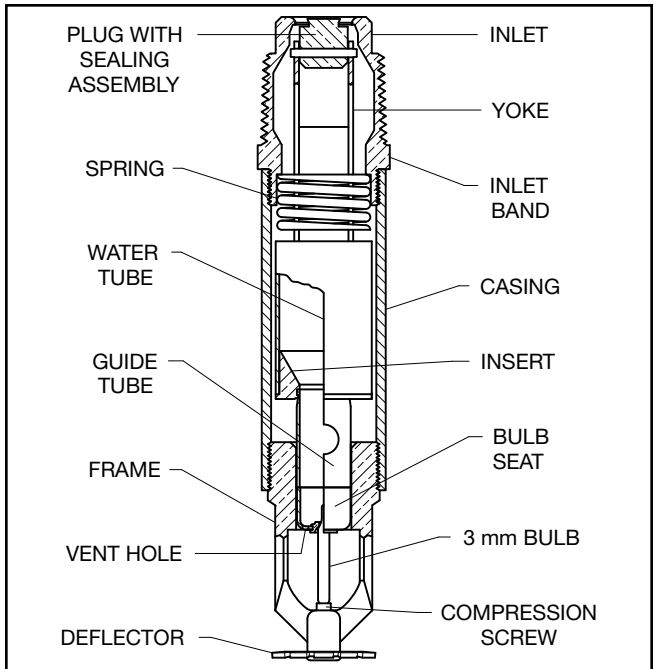


FIGURE 2
SERIES DS-1, 1 IN. NPT AND ISO 7-R 1 DRY-TYPE SPRINKLER ASSEMBLY

Physical Characteristics

Inlet	Copper
Plug	Copper
Yoke	Stainless Steel
Casing	Galvanized Carbon Steel
Insert	Bronze
Bulb Seat	Stainless Steel
Bulb	Glass
Compression Screw	Bronze
Deflector	Bronze
Frame	Bronze
Guide Tube	Stainless Steel
Water Tube	Stainless Steel
Spring	Stainless Steel
Plug Spring*	Stainless Steel
Sealing Assembly	Beryllium Nickel w/TEFLON
Escutcheon	Carbon Steel or Stainless Steel

* For 3/4 in. NPT only

Operation

When the TYCO Series DS-1 Dry-Type Sprinklers, 5.6K Pendent, Upright, and Horizontal Sidewall, Quick Response (3 mm bulb) and Standard Coverage are in service, water is prevented from entering the assembly by the plug with sealing assembly in the inlet of the sprinkler. See Figure 1 and Figure 2.

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, and the bulb seat is released.

The compressed spring is then able to expand and push the water tube as well as the guide tube outward. This action simultaneously pulls inward on the yoke, withdrawing the plug with sealing assembly from the inlet and allowing the sprinkler to activate and flow water.

Design Criteria

The TYCO Series DS-1 Dry-Type Sprinklers, 5.6K Pendent, Upright, and Horizontal Sidewall, Quick Response (3 mm bulb) and Standard Coverage are intended for use in fire sprinkler systems designed in accordance with the standard installation rules recognized by the applicable Listing or Approval agency; for example, UL Listing is based on NFPA 13 requirements.

Sprinkler Fittings

Install the 3/4 or 1 in. NPT Series DS-1 Dry-Type Sprinklers in the 3/4 or 1 in. NPT outlet or run of the following fittings:

- Malleable or ductile iron threaded tee fittings that meet the dimensional requirements of ANSI B16.3 (Class 150)
- Cast iron threaded tee fittings that meet the dimensional requirements of ANSI B16.4 (Class 125)

Do not install the DS-1 Sprinklers into an elbow fittings. The inlet of the sprinkler can contact the interior of the elbow, potentially damaging the Inlet seal.

The unused outlet of the threaded tee is plugged as shown in Figure 13.

You can also install the Series DS-1 Dry-Type Sprinklers in the 3/4 or 1 in. NPT outlet of a GRINNELL Figure 730 Mechanical Tee. However, the use of the Figure 730 Tee for this arrangement is limited to wet pipe systems.

The configuration shown in Figure 12 is only applicable for wet pipe systems where the sprinkler fitting and water-filled pipe above the sprinkler fitting are not subject to freezing and where the length of the dry-type sprinkler has the minimum exposure length depicted in Figure 11. See the Exposure Length section.

For wet pipe system installations of the 1 in. NPT Series DS-1 Dry-Type Sprinklers connected to CPVC piping, use the following CPVC fittings:

- 1 in. x 1 in. NPT female adapter
- 1 in. x 1 in. x 1 in. NPT sprinkler head adapter tee

Note: *For more information on specific CPVC fitting design and installation criteria, refer to CPVC manufacturer.*

For wet pipe system installations of the the 3/4 in. NPT Series DS-1 Sprinklers connected to CPVC piping, use in the 3/4 in. x 3/4 in. NPT female adapter.

For dry pipe system installations, use only the side outlet of maximum 2 1/2 in. reducing tee when locating the Series DS-1 Sprinklers directly below the branch line. Otherwise, use the configuration shown in Figure 13 to assure complete water drainage from above the Series DS-1 Dry-Type Sprinklers and the branch line. Failure to do so may result in pipe freezing and water damage.

Temperature Rating	Bulb Liquid Color	3/4 in. NPT								
		TY3935 Pendent with Recessed Escutcheon (Figure 4)			**TY3935 Pendent** with Standard Escutcheon (Figure 3) with Deep Escutcheon (Figure 5) without Escutcheon (Figure 6)			**TY3735 Horizontal Sidewall** with Top of Deflector-to-Ceiling Distance of 4 to 12 in. (100 to 300 mm) with Standard Escutcheon (Figure 8) with Deep Escutcheon (Figure 9) without Escutcheon (Figure 10)		
		Finish								
		Natural Brass	**Chrome Plated**	**White Polyester**	**Natural Brass**	**Chrome Plated**	**White Polyester**	**Natural Brass**	**Chrome Plated**	**White Polyester**
155°F (68°C)	Red	1, 2			1, 2			1*, 2*		
175°F (79°C)	Yellow									
200°F (93°C)	Green									
286°F (141°C)	Blue									

NOTES
1. Listed by Underwriters Laboratories, Inc. (maximum order length of 48 in.)
2. Listed by Underwriters Laboratories for use in Canada (maximum order length of 48 in.)
* Light and Ordinary Hazard occupancies only

TABLE A
3/4 IN. NPT SERIES DS-1 QUICK RESPONSE, STANDARD COVERAGE DRY-TYPE SPRINKLERS LABORATORY LISTINGS AND APPROVALS

Temperature Rating	Bulb Liquid Color	1 in. NPT (and ISO 7-R 1)								
		TY3235 Pendent with Recessed Escutcheon (Figure 4)			**TY3235 Pendent** with Standard Escutcheon (Figure 3) with Deep Escutcheon (Figure 5) without Escutcheon (Figure 6)			**TY3335 Horizontal Sidewall** with Top of Deflector-to-Ceiling Distance of 4 to 12 in. (100 to 300 mm) with Standard Escutcheon (Figure 8) with Deep Escutcheon (Figure 9) without Escutcheon (Figure 10)		
					TY3135 Upright without Escutcheon[4] (Figure 7)					
		Finish								
		Natural Brass	**Chrome Plated**	**White Polyester**	**Natural Brass**	**Chrome Plated**	**White Polyester**	**Natural Brass**	**Chrome Plated**	**White Polyester**
155°F (68°C)	Red	1, 2, 3, 5, 6		1, 2, 5, 6	1, 2, 3, 5, 6		1, 2, 5, 6	1*, 2*, 3**, 5*, 6*		1*, 2*, 5*, 6*
175°F (79°C)	Yellow	1, 2, 3		1, 2	1, 2, 3		1, 2	1*, 2*, 3**		1*, 2*
200°F (93°C)	Green	1, 2, 3, 5, 6		1, 2, 5, 6	1, 2, 3, 5, 6		1, 2, 5, 6	1*, 2*, 3**, 5*, 6*		1*, 2*, 5*, 6*
286°F (141°C)	Blue	1, 2								

NOTES
1. Listed by Underwriters Laboratories, Inc. (maximum order length of 48 in.)
2. Listed by Underwriters Laboratories for use in Canada (maximum order length of 48 in.)
3. Approved by Factory Mutual Research Corporation (maximum order length of48 in.)
4. The Upright Sprinkler without an Escutcheon (TY3135) is available in 1 in. NPT only
5. Loss Prevention Certification Board (LPCB)
6. CE Certified
* Light and Ordinary Hazard occupancies only
** Light Hazard occupancies only

TABLE B
1 IN. NPT (AND ISO 7-R 1) SERIES DS-1 QUICK RESPONSE, STANDARD COVERAGE DRY-TYPE SPRINKLERS LABORATORY LISTINGS AND APPROVALS

NOTICE

Do not install the Series DS-1 Dry-Type Sprinkler into any other type fitting. Failure to use the appropriate fitting may result in one of the following:

- *Failure of the sprinkler to operate properly due to formation of ice over the inlet plug or binding of the inlet plug*
- *Insufficient engagement of the Inlet pipe threads with consequent leakage*

Drainage

In accordance with the minimum requirements of the NATIONAL FIRE PROTECTION ASSOCIATION for dry pipe sprinkler systems, branch, cross, and feed-main piping connected to dry sprinklers and subject to freezing temperatures must be pitched for proper drainage.

Exposure Length

When using dry sprinklers in wet pipe sprinkler systems to protect areas subject to freezing temperatures, use Table C to determine a sprinkler's appropriate exposed barrel length to prevent water from freezing in the connecting pipes due to conduction. The exposed barrel length measurement must be taken from the face of the sprinkler fitting to the surface of the structure or insulation that is exposed to the heated area. For example, see Figure 11.

Clearance Space

In accordance with NFPA 13, when connecting an area subject to freezing and an area containing a wet pipe sprinkler system, the clearance space around the sprinkler barrel of dry-type sprinklers must be sealed. Due to tem-

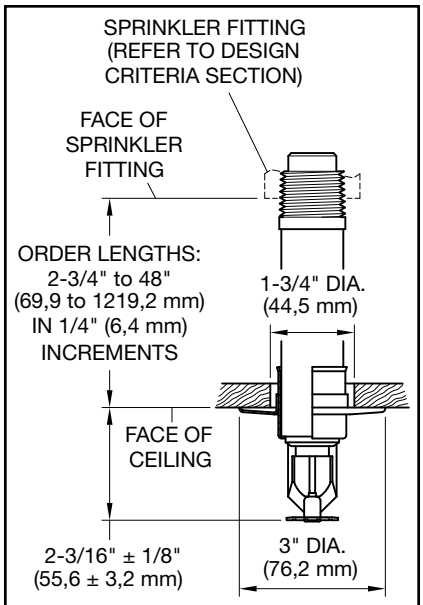


FIGURE 3
PENDENT TY3235 AND TY3935 WITH STANDARD ESCUTCHEON

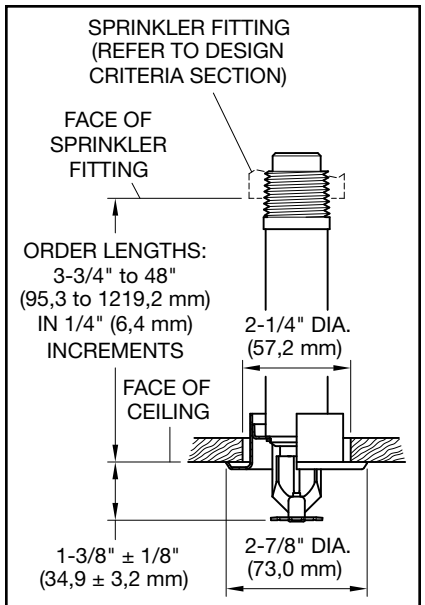


FIGURE 4
PENDENT TY3235 AND TY3935 WITH RECESSED ESCUTCHEON

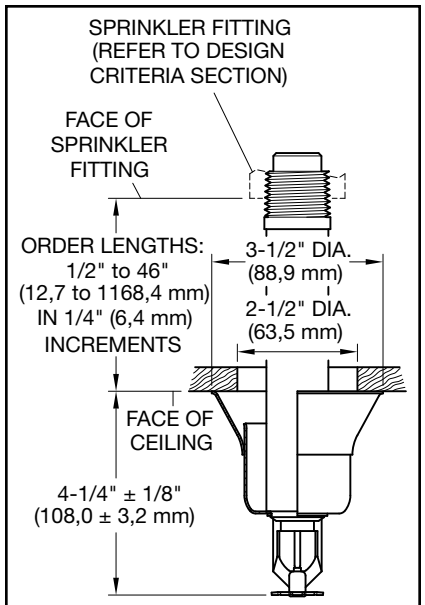


FIGURE 5
PENDENT TY3235 AND TY3935 WITH DEEP ESCUTCHEON

perature differences between two areas, the potential for the formation of condensation in the sprinkler and subsequent ice build-up is increased. If this condensation is not controlled, ice build-up can occur that might damage the dry-type sprinkler and/or prevent proper operation in a fire situation.

Model DSB-2 Dry Sprinkler Boot (Technical Data Sheet TFP591), as shown in Figure 14 and Figure 15, can provide the recommended seal.

Installation

The TYCO Series DS-1 Dry-Type Sprinklers, 5.6K Pendent, Upright, and Horizontal Sidewall, Quick Response (3 mm bulb) and Standard Coverage must be installed in accordance with this section.

General Instructions
The Series DS-1 Dry-Type Sprinklers must only be installed in fittings that meet the requirements of the Design Criteria section. See the Design Criteria section for other important requirements regarding piping design and sealing of the clearance space around the sprinkler casing.

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) rating to 1/8 in. (3,2 mm) for the 286°F (141°C) rating.

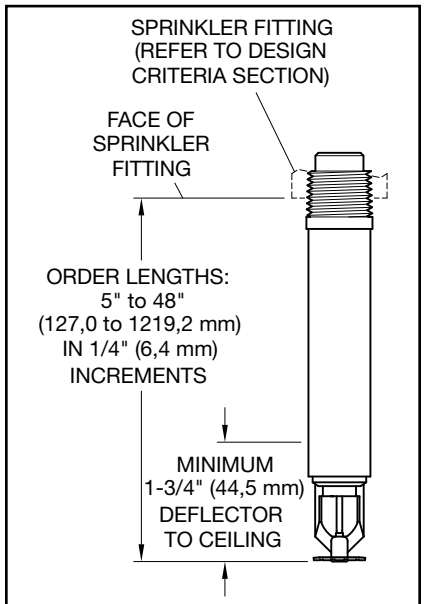


FIGURE 6
PENDENT TY3235 AND TY3935 WITHOUT ESCUTCHEON

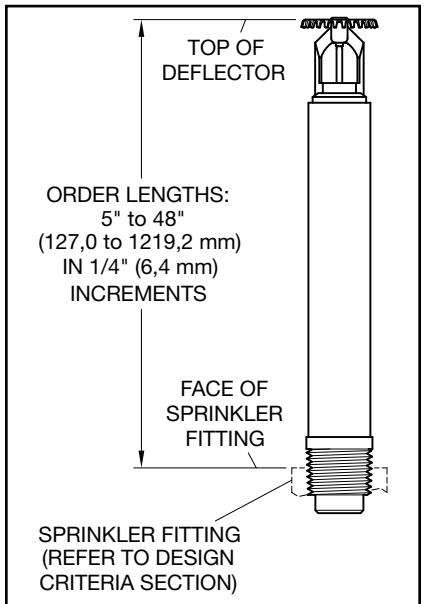


FIGURE 7
UPRIGHT TY3135 WITHOUT ESCUTCHEON, 1 IN. NPT ONLY

- 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).
- A leak-tight 1 in. NPT sprinkler joint should be obtained by applying a minimum-to-maximum torque of 20 ft-lb to 30 ft-lb (26,8 N·m to 40,2 N·m).

Higher levels of torque can distort the sprinkler Inlet with consequent leakage or impairment of the sprinkler.

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

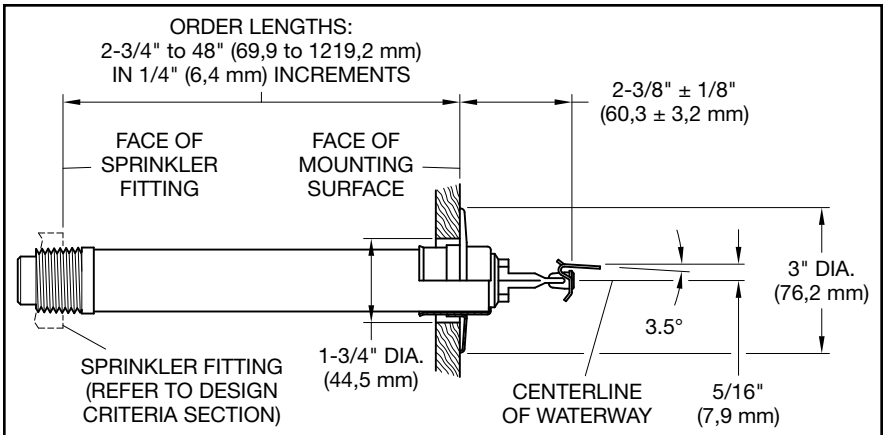


FIGURE 8
TY3335 AND TY3735 HORIZONAL SIDEWALL WITH STANDARD ESCUTCHEON

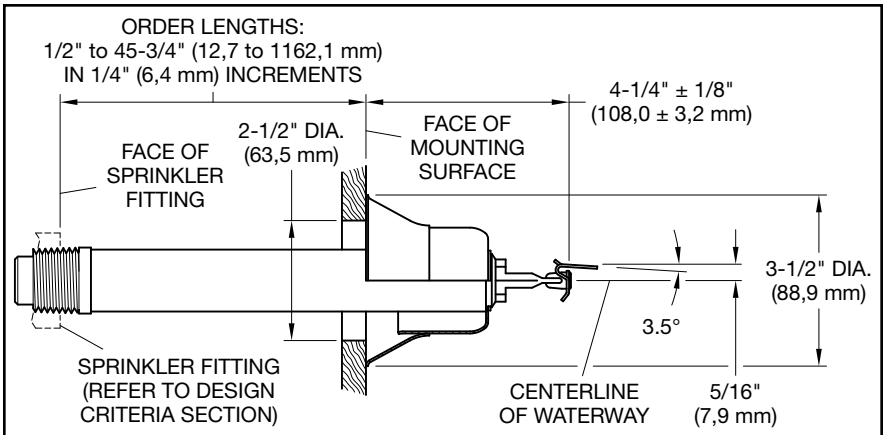


FIGURE 9
TY3335 AND TY3735 HORIZONAL SIDEWALL WITH DEEP ESCUTCHEON

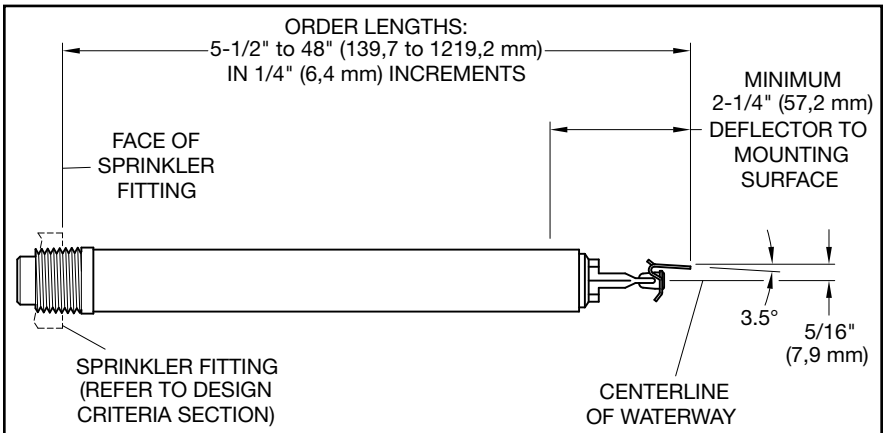


FIGURE 10
TY3335 AND TY3735 HORIZONAL SIDEWALL WITHOUT ESCUTCHEON

Step 1. Install pendent sprinklers only in the pendent position, and install upright sprinklers only in the upright position. The deflector of a pendent or upright sprinkler must be parallel to the ceiling.

Install horizontal sidewall sprinklers in the horizontal position with their centerline of waterway perpendicular to the back wall and parallel to the ceiling. Ensure the word "TOP" on the deflector faces the ceiling.

Step 2. With a non-hardening pipe-thread sealant such as TEFLON tape applied to the inlet threads, hand-tighten the sprinkler into the sprinkler fitting.

Step 3. Wrench-tighten the sprinkler using either of the following tools:

- Pipe wrench on the inlet band or the casing, see Figures 1 and 2
- W-Type 7 Sprinkler Wrench on the wrench flat, see Figure 16

Apply the wrench recess of the W-Type 7 Sprinkler Wrench to the wrench flat.

Note: *If sprinkler removal becomes necessary, remove the sprinkler using the same wrenching method noted above. Sprinkler removal is easier when a non-hardening sealant was used and torque guidelines were followed. After removal, inspect the sprinkler for damage.*

Step 4. After installing the ceiling or wall and applying a ceiling finish, slide on the outer piece of the escutcheon until it comes in contact with the ceiling or wall. Do not lift the ceiling panel out of its normal position.

When using the deep escutcheon, hold the outer piece in contact with the mounting surface (ceiling or wall). Then rotate the inner piece approximately 1/4 turn with respect to the outer piece, to hold the deep escutcheon firmly together.

Ambient Temperature Exposed to Discharge End of Sprinkler	Temperatures for Heated Area[1]		
	40°F (4°C)	50°F (10°C)	60°F (16°C)
	Minimum Exposed Barrel Length[2], in. (mm)		
40°F (4°C)	0	0	0
30°F (-1°C)	0	0	0
20°F (-7°C)	4 (100)	0	0
10°F (-12°C)	8 (200)	1 (25)	0
0°F (-18°C)	12 (305)	3 (75)	0
-10°F (-23°C)	14 (355)	4 (100)	1 (25)
-20°F (-29°C)	14 (355)	6 (150)	3 (75)
-30°F (-34°C)	16 (405)	8 (200)	4 (100)
-40°F (-40°C)	18 (455)	8 (200)	4 (100)
-50°F (-46°C)	20 (510)	10 (255)	6 (150)
-60°F (-51°C)	20 (510)	10 (255)	6 (150)

Notes:
1. For protected area temperatures that occur between values listed above, use the next cooler temperature.
2. These lengths are inclusive of wind velocities up to 30 mph (18,6 kph).

TABLE C
EXPOSED SPRINKLER BARRELS IN WET PIPE SYSTEMS MINIMUM RECOMMENDED LENGTHS

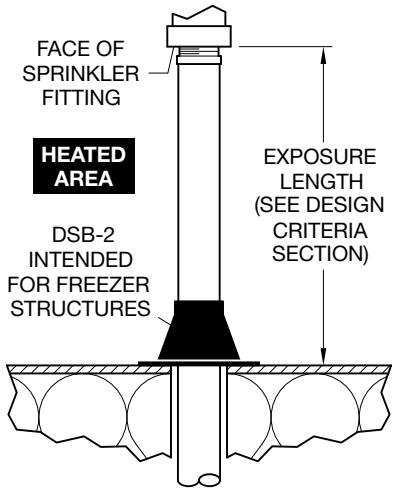


FIGURE 11
EXPOSURE LENGTH

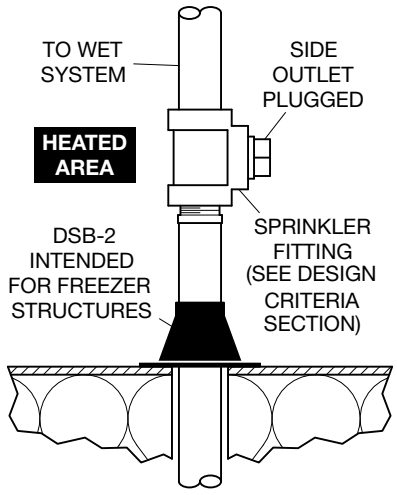


FIGURE 12
SPRINKLER FITTING UNHEATED AREA

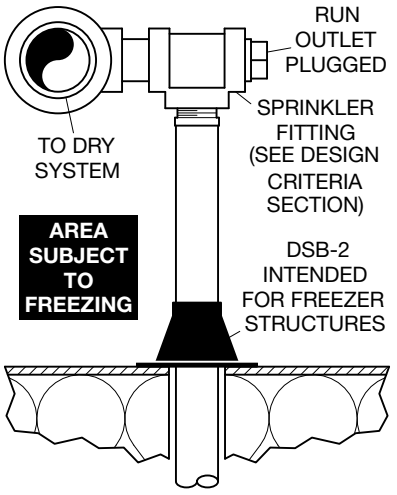


FIGURE 13
SPRINKLER FITTING HEATED AREA

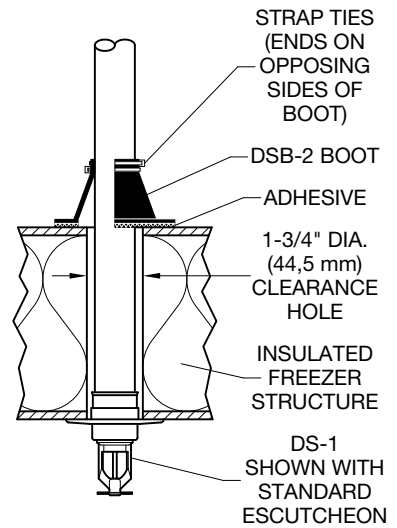


FIGURE 14
MODEL DSB-2 DRY SPRINKLER BOOT WITH PENDENT SERIES DS-1 DRY-TYPE SPRINKLER

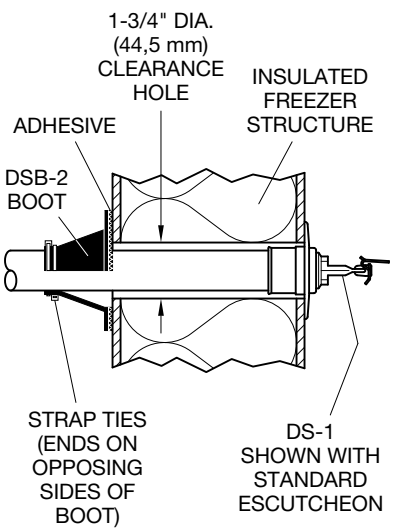


FIGURE 15
MODEL DSB-2 DRY SPRINKLER BOOT WITH SIDEWALL SERIES DS-1 DRY-TYPE SPRINKLER

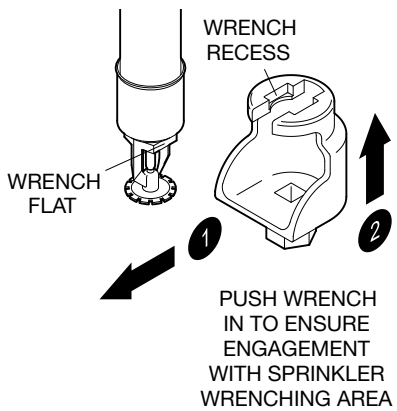


FIGURE 16
W-TYPE 7 SPRINKLER WRENCH

Care and Maintenance

The TYCO Series DS-1 Dry-Type Sprinklers, 5.6K Pendent, Upright, and Horizontal Sidewall, Quick Response (3 mm bulb) and Standard Coverage 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 the time to sprinkler operation in a fire situation.

A vent hole is provided in the bulb seat (see Figures 1 and 2) to indicate if the dry-type sprinkler is remaining dry. Evidence of leakage from the vent hole indicates potential leakage past the Inlet seal and the need to remove the sprinkler to determine the cause of leakage for example, an improper installation or an ice plug. Close the fire protection system control valve and drain the system before removing the sprinkler.

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 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. See 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.

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

Limited Warranty

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

Ordering Procedure

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

DS-1 Dry-Type Sprinklers
When ordering TYCO Series DS-1 Dry-Type Sprinklers, 5.6K Pendent, Upright, and Horizontal Sidewall, Quick Response (3 mm bulb) and Standard Coverage, specify the following information:

- SIN:
  Pendent – TY3935 or TY3235
  Sidewall – TY3735 or TY3335
  Upright – TY3135
- 5.6 K-factor
- Deflector style: Upright, Pendent, or Horizontal Sidewall
- Quick Response, Standard Coverage, Dry-Type Sprinkler
- Order length: Dry-Type Sprinklers are furnished based upon order length as measured acording to Figures 3 through 10. After taking the measurement, round it to the nearest 1/4 in. increment.
- Inlet connections: 3/4 in. NPT, 1 in. NPT, or ISO 7-R 1
- Temperature rating
- Sprinkler finish
- Escutcheon style and finish, as applicable
- Part Number (P/N) from Table D

  The upright sprinkler without an escutcheon (TY3135) is available in 1 in. NPT only.

  Part Numbers are for 3/4 in. and 1 in. NPT standard order sprinklers. Orders for all other sprinkler assemblies must be accompanied by a complete description. Refer to the price list for a complete listing of part numbers.

Replacement Escutcheons
Order replacement escutcheons separately.

Note: *Style 10 recessed escutcheons are shipped as assemblies comprised of closure ring and mounting plate. The included mounting plate is not used for dry type sprinkler applications, discard accordingly.*

Specify: (specify type), (specify) finish, P/N (specify):

Recessed (Style 10)	
Brass Plated	56-701-2-010
Signal White (RAL9003)	56-701-4-010
Chrome Plated	56-701-9-010
Standard (Push-On)	
White Color	91-106-0-007
Brass Plated	91-106-2-007
Chrome Plated	91-106-9-007
Deep	
Brass Plated	91-107-2-010
White	91-107-4-007
Chrome Plated	91-107-9-007

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

Model DSB-2 Dry Sprinkler Boot
Model DSB-2 Dry Sprinkler Boot includes one boot, two strap ties, and 1/3 oz of adhesive, quantity of adhesive is sufficient for one boot installation.

Specify: Model DSB-2 Dry Sprinkler Boot, P/N 63-000-0-002

P/N* 60–XXX–X–XXX

		SIN
01	Pendent with Standard Escutcheon (3/4 in. NPT)	TY3935 (Figure 3)
02	Pendent with Deep Escutcheon (3/4 in. NPT)	TY3935 (Figure 5)
03	Pendent with Recessed Escutcheon (3/4 in. NPT)	TY3935 (Figure 4)
04	Pendent without Escutcheon (3/4 in. NPT)	TY3935 (Figure 6)
05	Sidewall with Standard Escutcheon (3/4 in. NPT)	TY3735 (Figure 8)
06	Sidewall with Deep Escutcheon (3/4 in. NPT)	TY3735 (Figure 9)
07	Sidewall without Escutcheon (3/4 in. NPT)	TY3735 (Figure 10)
36	Pendent with Standard Escutcheon (1 in. NPT)	TY3235 (Figure 3)
33	Pendent with Deep Escutcheon (1 in. NPT)	TY3235 (Figure 5)
37	Pendent with Recessed Escutcheon (1 in. NPT)	TY3235 (Figure 4)
32	Pendent without Escutcheon (1 in. NPT)	TY3235 (Figure 6)
34	Sidewall with Standard Escutcheon (1 in. NPT)	TY3335 (Figure 8)
43	Sidewall with Deep Escutcheon (1 in. NPT)	TY3335 (Figure 9)
44	Sidewall without Escutcheon (1 in. NPT)	TY3335 (Figure 10)
38	Upright without Escutcheon (1 in. NPT)	TY3135 (Figure 7)

	Sprinkler Finish	Escutcheon Finish[1]
0	Chrome Plated	Signal White (RAL9003) Polyester
1	Natural Brass	Signal White (RAL9003) Polyester
2	Natural Brass	Brass Plated
4	Signal White (RAL9003) Polyester	Signal White (RAL9003) Polyester
8	Chrome Plated	Stainless Steel
9	Chrome Plated	Chrome Plated

	Sample Order Length[2]
055	5.50 in.
082	8.25 in.
180	18.00 in.
187	18.75 in.
372	37.25 in.
480	48.00 in.

	Temperature Rating
1	155°F (68°C)
2	175°F (79°C)

	Temperature Rating
3	200°F (93°C)
4	286°F (141°C)

NOTES
1. Escutcheon Finish applies to sprinklers provided with escutcheons.
2. Dry-Type Sprinklers are furnished based upon "Order Length" as measured per Figures 3 through 10, as applicable, and for each individual sprinkler where it is to be installed. After the measurement is taken, round it to the nearest 1/4 in. increment.

* Use Prefix "I" for ISO 7-R 1 Connection (for example, I-60-360-4-055).

TABLE D
SERIES DS-1 DRY-TYPE SPRINKLERS
PART NUMBER SELECTION

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

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Johnson Controls

Series RFII-C — 5.6 K-factor Special Application Royal Flush II Quick Response Concealed Pendent Sprinklers for Corridors and Hallways

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/tfp263

General Description

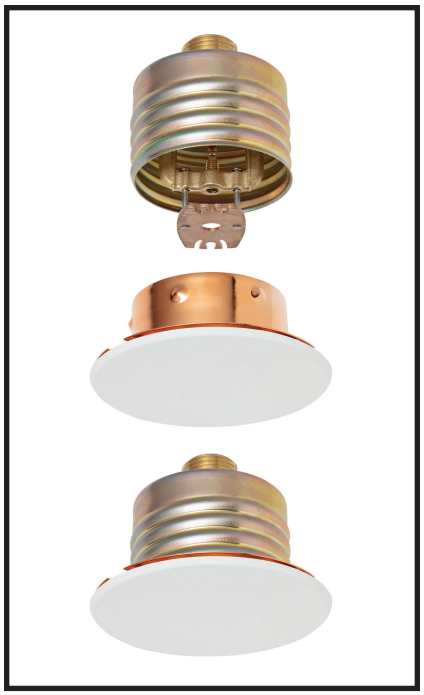
The TYCO Series RFII-C, 5.6 K-factor Special Application Royal Flush II Quick Response Concealed Pendent Sprinklers for corridors and hallways of light hazard occupancies are decorative, 3 mm bulb-type sprinklers featuring a flat cover plate designed to conceal the sprinkler. These sprinklers are specifically designed for use in long, narrow spaces such as corridors or hallways with a maximum coverage area of 28 ft by 10 ft (8,5 m x 3,1 m). Fewer sprinklers and lower system pressure demands are required as compared to the traditional extended coverage sprinklers.

The Series RFII-C sprinklers are intended for use in automatic sprinkler systems designed in accordance with standard installation rules such as NFPA 13. The fast-response thermal sensitivity rating of the Series RFII-C sprinkler provides for a Quick Response, Extended Coverage (QREC) rating up to a 28 ft x 10 ft (8,5 m x 3,1 m) maximum coverage area.

Each sprinkler includes a cover plate/retainer assembly and a sprinkler/support cup assembly. The separable, two-piece assembly design provides the following benefits:

- Allows installation of the sprinklers and pressure testing of the fire protection system prior to installation of a suspended ceiling or application of the finish coating to a fixed ceiling.
- Permits the removal of suspended ceiling panels for access to building service equipment without having to first shut down the fire protection system and remove sprinklers.
- Provides for 1/2 in. (12,7 mm) of vertical adjustment to allow a measure of flexibility in determining the length of fixed piping to cut for the sprinkler drops.

The Series RFII-C sprinklers are shipped with a disposable protective cap. The protective cap is temporarily removed during installation and replaced to help protect the sprinkler during ceiling installation or finish. The tip of the protective cap can be used to mark the center of the ceiling hole into plaster board or ceiling tiles by gently pushing the ceiling product against the protective cap. When ceiling installation is complete, the protective cap is removed and the cover plate/retainer assembly is installed.



NOTICE

The TYCO Series RFII-C, 5.6 K-factor Special Application Royal Flush II Quick Response Concealed 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. Contact the installing contractor or product manufacturer with any questions.

Sprinkler Identification Number (SIN)

TY3582

Technical Data

Approvals
UL Listed

Maximum Working Pressure
250 psi (17,2 bar)

Discharge Coefficient
K = 5.6 gpm/psi½ (80 Lpm/bar½)

Temperature Rating
155°F (68°C) Sprinkler; 139°F (59°C) Plate

200°F (93°C) Sprinkler; 165°F (74°C) Plate

Adjustment
1/2 in. (12,7 mm)

Finishes
See the Ordering Procedure section

Physical Characteristics

Frame	Bronze
Support Cup	Plated Steel
Guide Pins	Stainless Steel
Deflector	Brass
Compression Screw	Brass
Bulb	Glass
Cap	Bronze or Copper
Sealing Assembly	Beryllium Nickel w/TEFLON
Cover Plate	Brass
Retainer	Brass
Ejection Spring	Stainless Steel

Design Criteria

The TYCO Series RFII-C, 5.6 K-factor Special Application Royal Flush II Quick Response Concealed Pendent Sprinklers are UL Listed for use in light hazard occupancies, using the design criteria in Table A and UL requirements in this section, in addition to the requirements specified in NFPA 13 for extended coverage pendent sprinklers.

UL Listing Requirements

1. The Series RFII-C sprinklers may be used for the coverage areas shown in Table A, based on maintaining the minimum specified flow rate as a function of coverage area for all of the sprinklers in the design area.
2. With respect to heat sensitivity, the Series RFII-C sprinklers can be used with unobstructed construction consisting of flat, smooth ceilings (including bar joists) with a maximum pitch of one in six as defined and permitted by NFPA 13.
3. The minimum allowable spacing between the Series RFII-C sprinklers, to prevent cold soldering, is 12 ft (3,7 m) in the 28 ft (8,5 m) long spray direction.
4. The Series RFII-C sprinklers must not be installed with the short spray direction, 8 ft (2,4 m) or 10 ft (3,1 m), oriented towards another Series RFII-C sprinkler or a Series EC-8C pendent sprinkler's short spray direction. For more information, see Figure 3.
5. The Series RFII-C sprinklers must be installed in accordance with all other requirements of NFPA 13 for extended coverage pendent sprinklers.

Note: *The Series RFII-C sprinklers are only listed and approved with the Series RFII concealed cover plates with a factory-applied finish.*

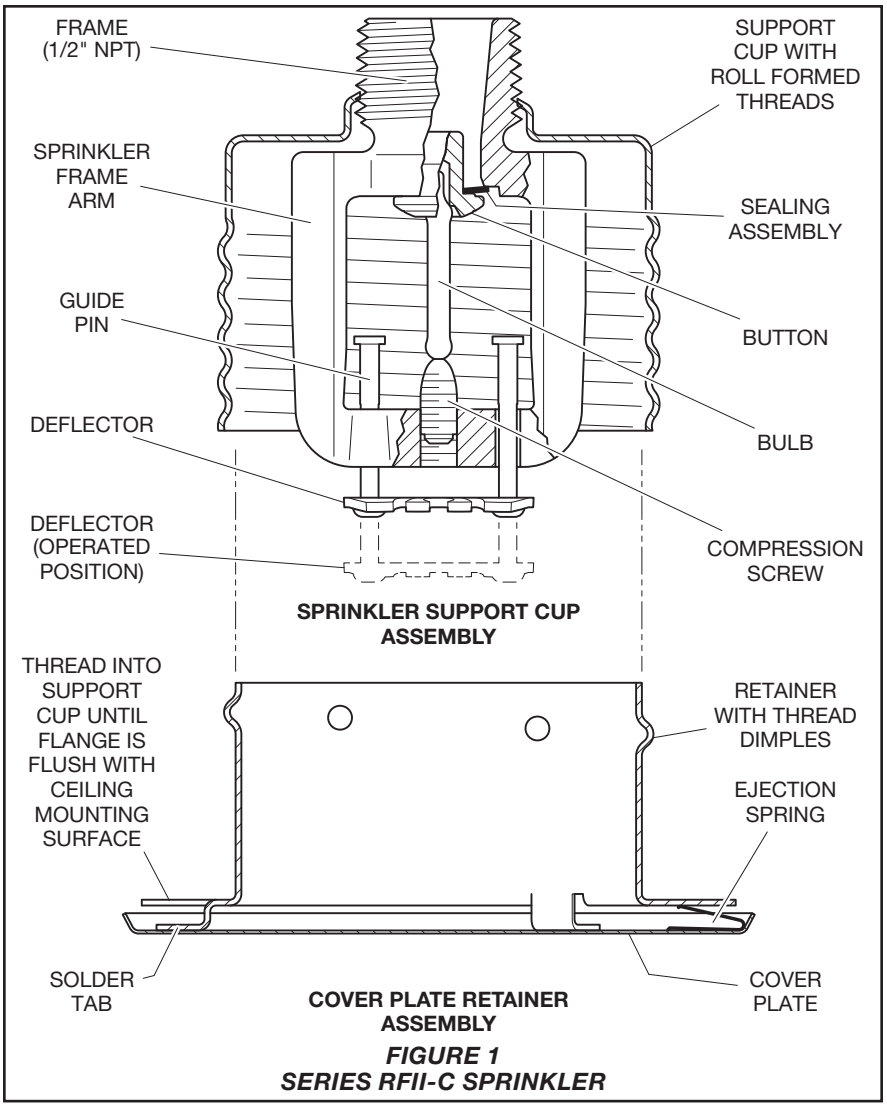


FIGURE 1
SERIES RFII-C SPRINKLER

Description	Coverage Area	Flow Rate	Pressure
TY3582 (K=5.6) Concealed Sprinkler	28 ft x 8 ft (8,5 m x 2,4 m)	23 gpm (87,1 Lpm)	16.9 psi (1,2 bar)
	28 ft x 10 ft (8,5 m x 3,1 m)	28 gpm (106 Lpm)	25 psi (1,7 bar)

Note: For coverage area dimensions less than or between those listed, use the minimum flow required for the next highest coverage area.

TABLE A
SERIES RFII-C (TY3582)
FLOW CRITERIA FOR UL LISTING

NOTICE

Do not use the TYCO Series RFII-C, 5.6 K-factor Special Application Royal Flush II Quick Response Concealed Pendent Sprinklers in applications where the air pressure above the ceiling is greater than that below. Down drafts through the sprinkler/support cup assembly can delay sprinkler operation in a fire situation.

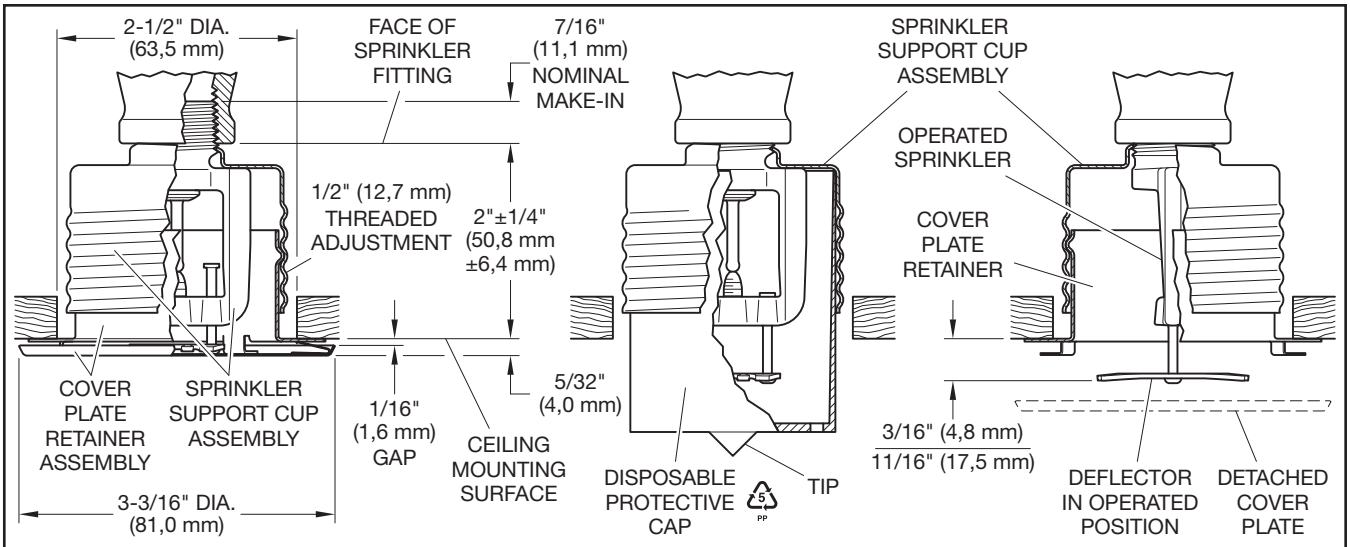


FIGURE 2
SERIES RFII-C SPRINKLER INSTALLATION DIMENSIONS

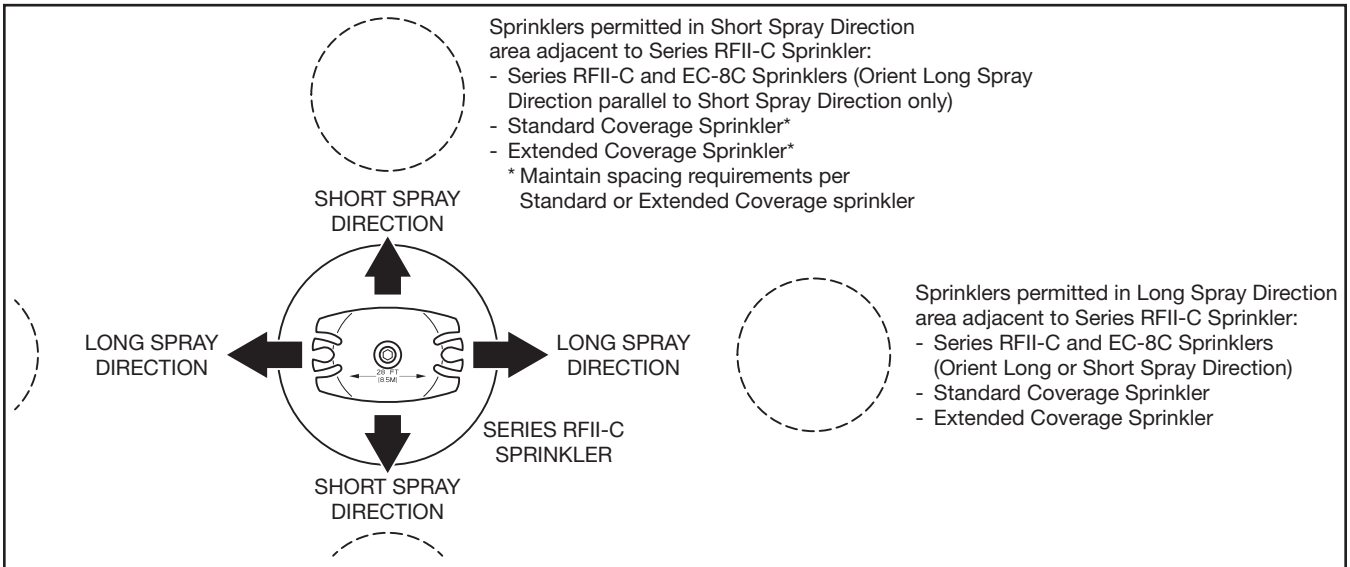


FIGURE 3
SPRINKLERS ADJACENT TO
SERIES RFII-C SPRINKLER

Operation

When exposed to heat from a fire, the cover plate, which is normally soldered to the retainer at three points, falls away to expose the sprinkler/support cup assembly.

The deflector, supported by the guide pins, then drops down to its operational position.

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, activating the sprinkler and allowing water to flow.

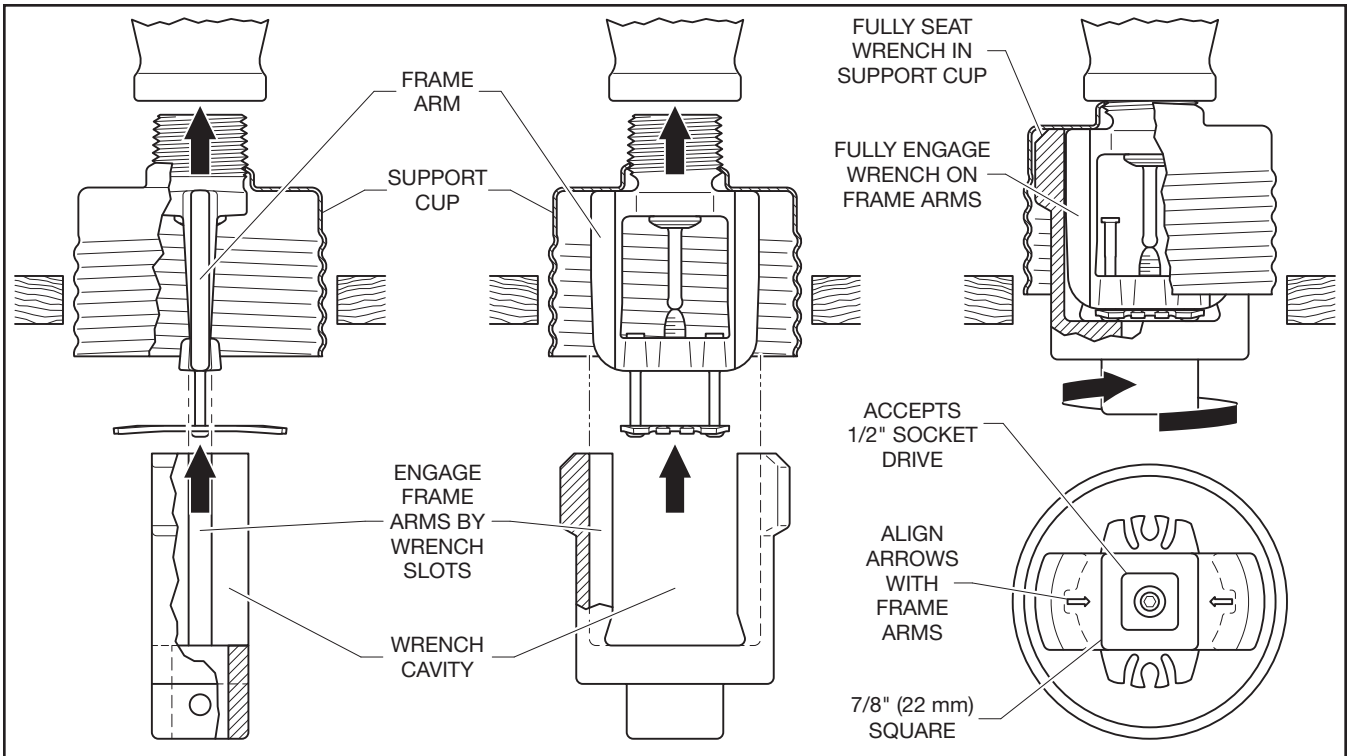


FIGURE 4
RFII-C W-TYPE 40 SPRINKLER WRENCH

Installation

The TYCO Series RFII-C, 5.6 K-factor Special Application Royal Flush II Quick Response Concealed 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 155°F (68°C) and 3/32 in. (2,4 mm) for the 200°F (93°C) temperature ratings.

Obtain a 1/2 in. NPT sprinkler joint by applying a minimum to maximum torque of 7 ft-lb to 14 ft-lb (9,5 N·m to 19,0 N·m). Higher levels of torque can distort the sprinkler inlet with consequent leakage or impairment of the sprinkler.

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

Step 1. Install the sprinkler only in the pendent position with the centerline of the sprinkler perpendicular to the mounting surface.

Note: *The sprinkler must be installed with the deflector parallel to the mounting surface. The deflector is marked with <-28 FT (8,5 M)-> to indicate the direction of the 28 ft (8,5 m) coverage length. The frame arms do not need to be aligned parallel to the sprinkler pipe.*

Step 2. Remove the protective cap.

Step 3. Apply pipe thread sealant to the pipe threads, and hand-tighten the sprinkler into the sprinkler fitting.

Step 4. Wrench tighten the deflector using only the W-Type 40 Sprinkler Wrench shown in Figure 4 so that the marking <-28 FT (8,5 M)-> on the deflector is in the direction of the 28 ft (8,5 m) coverage length. The frame arms do not need to be aligned parallel to the sprinkler pipe. Apply the wrench to the sprinkler as shown in Figure 4.

Step 5. Replace the protective cap by pushing it upwards until it bottoms out against the support cup as shown in Figure 4.

The protective cap helps prevent damage to the deflector and frame arms when installing or finishing the ceiling. You can also use it to locate the center of the clearance hole by gently pushing the ceiling material up against the center point of the protective cap.

NOTICE

As long as the protective cap remains in place, the system is considered "Out of Service".

Step 6. When the ceiling is complete with the 2-1/2 in. (63,5 mm) diameter clearance hole; to prepare for installing the cover plate/retainer assembly, remove and discard the protective cap.

Verify that the deflector moves up and down freely. If the sprinkler is damaged and the deflector does not move up and down freely, replace the entire sprinkler. Do not attempt to modify or repair a damaged sprinkler.

Step 7. Screw on the cover plate/retainer assembly until its flange makes contact with the ceiling. Do not continue to screw on the cover plate/retainer assembly so that it lifts a ceiling panel out of its normal position. If you cannot engage the cover plate/retainer assembly with the support cup or you cannot engage the cover plate/retainer assembly sufficiently to contact the ceiling, you must reposition the sprinkler fitting.

Care and Maintenance

The TYCO Series RFII-C, 5.6 K-factor Special Application Royal Flush II Quick Response Concealed 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 system from the proper authorities and notify all personnel who may be affected by this action.

Absence of the cover plate/retainer assembly can delay sprinkler operation in a fire situation.

When properly installed, there is a nominal 3/32 in. (2,4 mm) air gap between the lip of the cover plate and the ceiling, as shown in Figure 2. This air gap is necessary for proper operation of the sprinkler. If the ceiling requires repainting after sprinkler installation, ensure that the new paint does not seal off any of the air gap.

Do not pull the cover plate relative to the enclosure. Separation may result.

Replace sprinklers that are leaking or exhibiting visible signs of corrosion.

Never repaint, plate, coat, or otherwise alter automatic sprinklers after they leave the factory. Never repaint factory-painted cover plates. If necessary, replace them with factory-painted units. Non-factory applied paint can adversely delay or prevent sprinkler operation in the event of a fire.

Replace modified or over-heated sprinklers.

Exercise care to avoid damage to the sprinklers before, during, and after installation. Replace sprinklers damaged by dropping, striking, wrench twisting, wrench slipping, or the like. Also, replace any sprinkler that has a cracked bulb or that has lost liquid from its bulb. Refer to the Installation Section.

If you must remove a sprinkler, do not reinstall it or a replacement without reinstalling the cover plate/retainer assembly. If a cover plate/retainer assembly becomes dislodged during service, replace it immediately.

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.

Automatic sprinkler systems should be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national code.

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/Support Cup Assembly
Specify: Series RFII-C Special Application Royal Flush Concealed Pendent Sprinkler, TY3582, for Corridor or Hallway Applications, (specify) temperature rating, P/N (specify):

155°F (68°C)
TY3582 51-734-1-155

200°F (93°C)
TY3582 51-734-1-200

Separately Ordered Cover Plate/ Retainer Assembly
Specify: (temperature rating, listed below) Series RFII Concealed Cover Plate with (finish), P/N (specify):

139°F (59°C)[a]

Grey White (RAL9002)	56-792-0-135
Brass	56-792-1-135
Pure White[c] (RAL9010)	56-792-3-135
Signal White (RAL9003)	56-792-4-135
Jet Black (RAL9005)	56-792-6-135
Chrome	56-792-9-135
Custom	56-792-X-135

165°F (74°C)[b]

Grey White (RAL9002)	56-792-0-165
Brass	56-792-1-165
Pure White[c] (RAL9010)	56-792-3-165
Signal White (RAL9003)	56-792-4-165
Jet Black (RAL9005)	56-792-6-165
Chrome	56-792-9-165
Custom	58-792-X-165

NOTES
a. For use with 155°F (68°C) sprinklers
b. For use with 200°F (93°C) sprinklers
c. Eastern Hemisphere sales only

Sprinkler Wrench
Specify: W-Type 40 Sprinkler Wrench, P/N 56-000-1-076

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

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Johnson Controls

Worldwide Contacts | www.tyco-fire.com

Model CC3—4.2 and 5.6 K-factor Combustible Concealed Space Sprinklers Specific Application, Upright

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/tfp633

General Description

The Model CC3 Combustible Concealed Sprinklers are quick response, upright, specific application sprinklers designed to provide protection of specific light hazard combustible, as well as non-combustible, concealed spaces requiring sprinkler protection. The Model CC3 Sprinklers comply with the criteria for the protection of combustible concealed spaces as described in NFPA 13.

The Model CC3 Sprinklers are designed for installation on BLAZEMASTER CPVC wet pipe systems, other UL Listed CPVC pipe products, and steel wet pipe or dry pipe sprinkler systems (see the respective Design Criteria sections). The Model CC3 Sprinklers are designed to be installed in the following arrangements for both wet CPVC and steel:

- 4.2K
  14 ft (4,3 m) maximum between sprinklers

  196 ft² (18,2 m²) maximum coverage area
- 5.6K
  16 ft (4,9 m) maximum between sprinklers

  256 ft² (23,8 m²) maximum coverage area
- 6 in. (152,4 mm) minimum height for joist with steel pipe or CPVC when insulation filled. 12 in. (305 mm) minimum height for all other arrangements and sizes
- 60 in. (1524 mm) maximum height from joist to joist and 84 in. (2134 mm) from floor to ceiling
- 60 in. (1524 mm) maximum height for truss and bar joist

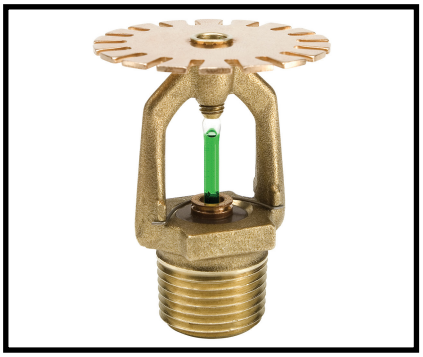
NOTICE

The Model CC3 Combustible Concealed 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.

Sprinkler Identification Number

TY2199 – Upright, 4.2K
TY3199 – Upright, 5.6K



Technical Data

Approvals
UL Listed

Note: *Listings and approvals only apply to the service conditions indicated in the Design Criteria sections.*

Note: *Refer to CPVC manufacturer for information on specific Listings and Approvals where CPVC pipe and fittings are specified.*

Antifreeze Compatibility
Model CC3 TY2199 4.2K and TY3199 5.6K Sprinklers can be used with:

- LFP® Antifreeze in accordance with Technical Data Sheet TFP1680, *LFP® Antifreeze Agency Listed Solution for Fire Sprinkler Systems*
- LFP® Antifreeze+ in accordance with Technical Data Sheet TFP1682, *LFP® Antifreeze+ Agency Listed Solution for Fire Sprinkler Systems*

Maximum Working Pressure
175 psi (12,1 bar)

Pipe Thread Connection
½ in. NPT

Discharge Coefficient
K = 4.2 GPM/psi^{½} (60,5 LPM/bar^{½})
K = 5.6 GPM/psi^{½} (80,6 LPM/bar^{½})

Temperature Rating
200°F (93°C)

Finish
Natural Brass

Physical Characteristics

Frame	Brass
Button	Bronze
Sealing Assembly	Beryllium Nickel w/TEFLON
Bulb	Glass (3 mm)
Compression Screw	Brass
Deflector	Bronze

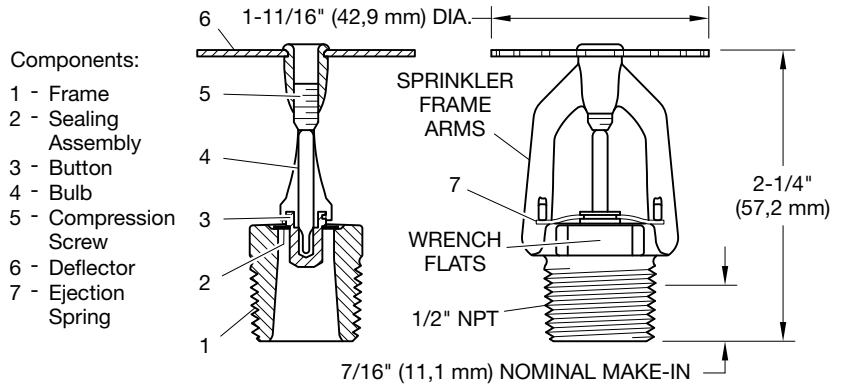


FIGURE 1
MODEL CC3 SPRINKLER

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 flow water.

Design Criteria

Design criteria is provided as follows:

1. 200°F (93°C), Model CC3 Combustible Concealed Sprinklers with CPVC pipe and horizontal slope above sprinklers not exceeding 2:12, see Area of Use (CPVC Pipe)
2. 200°F (93°C), Model CC3 Combustible Concealed Sprinklers with steel pipe and horizontal slope above sprinklers not exceeding 2:12, see Area of Use (Steel Pipe)
3. For the installation of Model CC3 Combustible Concealed Sprinklers installed with baffles at 2000 ft² (186 m²), the design of the system should be 6 sprinklers or 1000 ft² (93 m²), whichever is greater.
4. For the installation of 5.6K Model CC3 Combustible Concealed Sprinklers installed without the use of draft curtains for unobstructed solid wood truss construction on edge or on face or unobstructed bar joist construction, the design of the system should be 9 sprinklers or 1000 ft² (93 m²), whichever is greater.
5. Sprinklers may not be installed such that the deflector is above the bottom of the top chord of trusses or joists.
6. Gusset plates, truss members, or bar joist members (other than top chords) shall not be considered obstructions provided a minimum 4-1/2 in. (114 mm) lateral distance from the edge of the member to the centerline of the sprinkler (required by the specific application listing) is maintained.
7. Where the Tyco Model CC3 sprinkler is spaced over 225 ft² (20,9 m²), apply the obstruction rules found in NFPA 13 for extended coverage sprinklers, except as noted in Item 6 above.
8. Where the Tyco Model CC3 sprinkler is spaced 225 ft² (20,9 m²) or less, apply the obstruction rules found in NFPA 13 for standard spray sprinklers, except as noted in Item 6 above.

Design Criteria, CPVC Pipe

Area of Use (CPVC Pipe)
Horizontal (slope not exceeding 2:12) combustible concealed spaces of:

- Unobstructed wood truss construction or unobstructed bar joist construction, see Figure 2
- Non-combustible, insulation-filled solid wood or composite wood joist construction, see Figures 3 and 4

NOTE: *In order to be considered "non-combustible insulation-filled solid wood or composite wood joist construction," the insulation (including insulation provided with a combustible vapor barrier), must completely fill the pockets between the joists to the bottom of the joists, and the insulation must be secured in place with metal wire netting. The metal wire netting is intended to hold the insulation in place should the insulation become wetted by the operation of the Model CC3 Sprinklers in the event of a fire.*

Concealed Space Area (CPVC Pipe)
The area of the concealed space is not limited.

The 4.2K sprinkler is UL listed for a 1000 ft² (93 m²) draft curtain area as shown in Figures 2, 3, and 4.

The 5.6K sprinkler is UL Listed for a 2000 ft² (186 m²) draft curtain area as shown in Figures 3 and 4. In addition, it may be used without draft curtains as shown in Figure 2 for unobstructed wood truss construction, on edge or on face, or for unobstructed bar joist construction.

This draft curtain shall be at least 1/3 the depth of the concealed space or 8 in. (200 mm), whichever is greater, and be constructed using a material that will not allow heat to escape through or above the draft curtain.

For information about the use of anti-freeze see the Technical Data section.

Concealed Space Size (CPVC Pipe)
The depth of the concealed space is 60 in. (1524 mm) maximum to 6 in. (152 mm) minimum.

System Type (CPVC Pipe)
Light hazard, wet pipe system

Maximum Distance Between Model CC3 Sprinklers (CPVC Pipe)
TY2199 4.2K. . . . . .14 ft (4,3 m)
TY3199 5.6K. . . . . 16 ft (4,9 m)

Maximum Coverage Area (CPVC Pipe)
TY2199 4.2K. . . . . 196 ft² (18,2 m²)
TY3199 5.6K. . . . . 256 ft² (23,8 m²)

Minimum Distance Between Model CC3 Sprinklers (CPVC Pipe)
Minimum sprinkler spacing is 7 ft (2,1 m)

NOTE: *Minimum spacing does not apply to any additional sprinklers required for protection of CPVC pipe that is offset over an obstruction.*

Deflector Position (CPVC Pipe)

- 1-1/2 in. to 4 in. (40 to 100 mm) below upper deck for wood truss construction or bar joist construction, see Figure 2
- 1-1/2 in. to 4 in. (40 to 100 mm) below solid wood or composite wood joists, see Figures 3 and 4

Minimum Distance Away From Trusses (CPVC Pipe)
4-1/2 in. (114 mm)

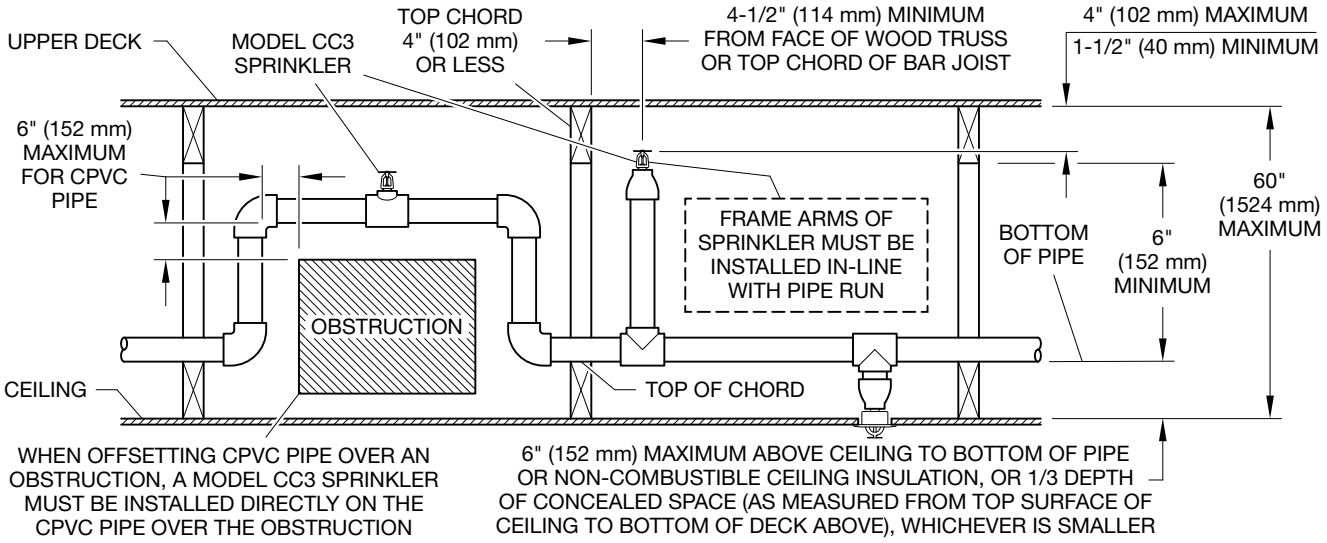


FIGURE 2
UNOBSTRUCTED WOOD TRUSS OR
UNOBSTRUCTED BAR JOIST CONSTRUCTION
CROSS SECTION ELEVATION VIEW
CPVC PIPE

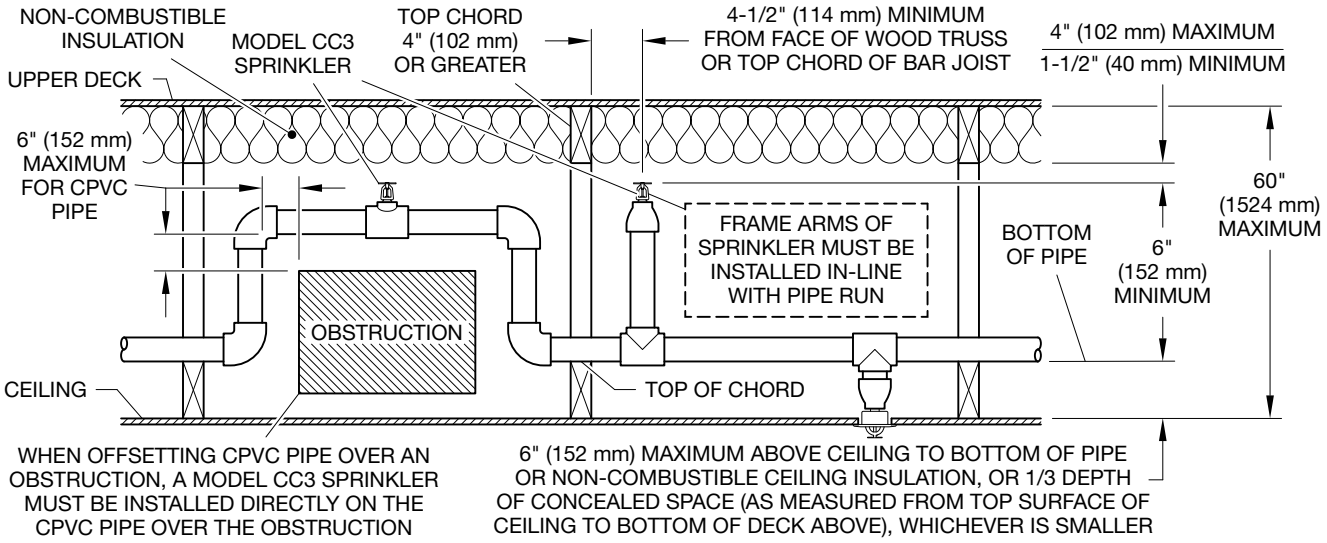


FIGURE 3
NON-COMBUSTIBLE INSULATION-FILLED UPPER DECK
OPEN WOOD TRUSS OR OPEN WEB STEEL JOIST CONSTRUCTION
CROSS SECTION ELEVATION VIEW
CPVC PIPE

Remote Area (CPVC Pipe)
The remote area is 1000 ft² (93 m²)

The remote area for unobstructed solid wood truss construction or unobstructed bar joist construction without the use of draft curtains is 9 sprinklers or 1000 ft² (93 m²), whichever is greater.

NOTE: *The remote area does not include any additional sprinklers required for protection of CPVC pipe that is offset over an obstruction.*

Required Minimum Density (CPVC Pipe)
0.10 gpm/ft² (4,1 mm/min)

Minimum Operating Pressure (CPVC Pipe)
7 psi (0,48 bar)

Use of UL Listed CPVC Pipe with Model CC3 Sprinklers
CPVC product may be used in concealed spaces requiring automatic sprinklers, when used in conjunction with Model CC3 Sprinklers. In order to use the CPVC product for wood truss or bar joist construction, the horizontal run of pipe must be a maximum of 6 in. (150 mm) above the ceiling or noncombustible ceiling insulation, or 1/3 the depth of concealed space (as measured from the top surface of the

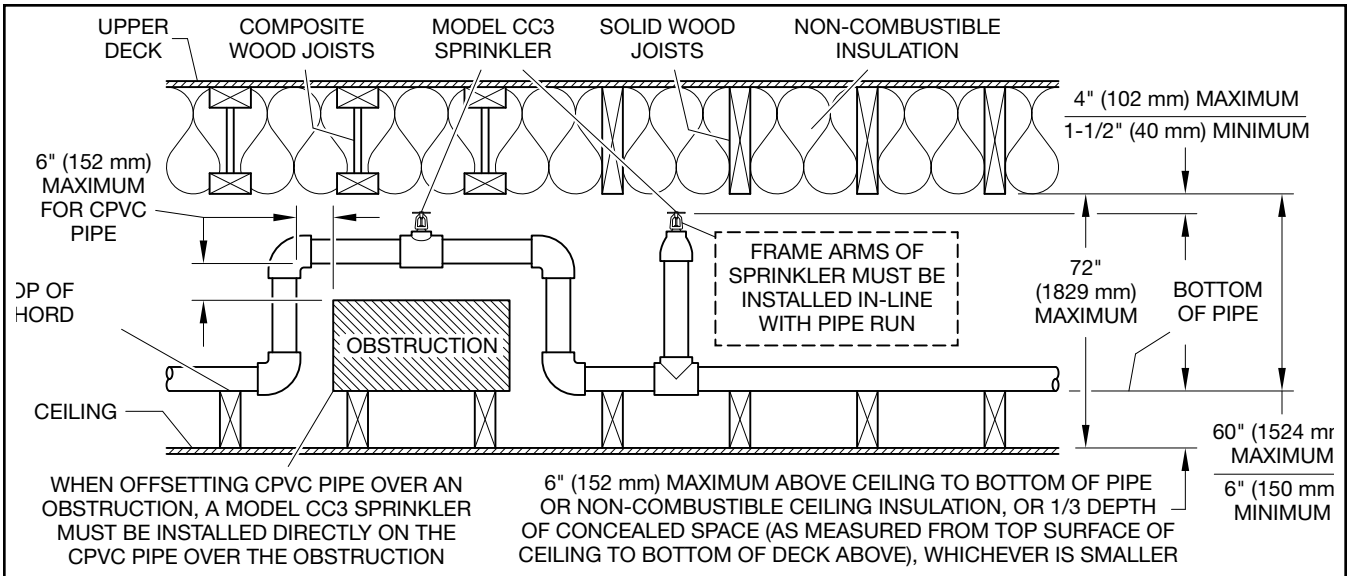


FIGURE 4
NON-COMBUSTIBLE INSULATION-FILLED UPPER DECK
SOLID WOOD OR COMPOSITE WOOD JOIST CONSTRUCTION
CROSS SECTION ELEVATION VIEW
CPVC PIPE

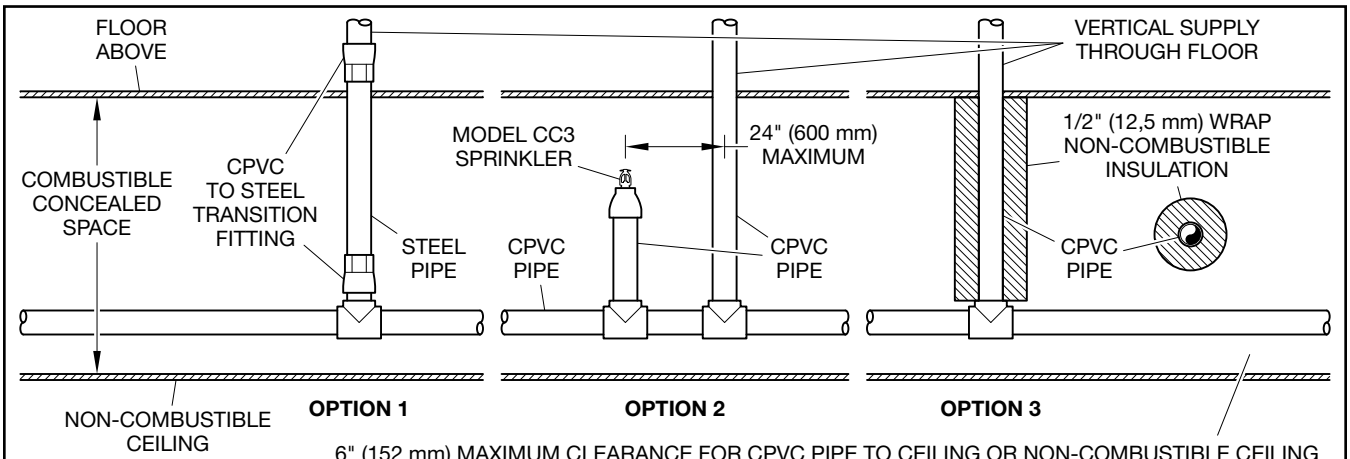


FIGURE 5
VERTICAL RISERS IN COMBUSTIBLE CONCEALED SPACE
THROUGH FLOOR ABOVE INSTALLATION OPTIONS
CROSS SECTION ELEVATION VIEW
CPVC PIPE

ceiling to the bottom of the deck above), whichever is smaller, see Figure 2. For insulation-filled solid wood or composite wood joist construction, the horizontal run of pipe must be a maximum of 6 in. (150 mm) above ceiling or non-combustible ceiling insulation, or 1/3 the depth of concealed space (as measured from the top surface of the ceiling to the bottom surface of the joist insulation above), whichever is smaller, see Figures 3 and 4. The CPVC pipe can then be used to supply the Model CC3 Sprinklers, as well as the sprinklers below the ceiling. Unless modified by this technical data sheet, all other guidelines of the CPVC manufacturer intructions must be met. When using 1 in. (DN25) or larger pipe, a hanger must be located at the truss nearest a sprig for purposes of restraint. If using 3/4 in. (DN20) piping, all sprigs over 12 inches (305 mm) must be laterally braced using methods described in the NFPA standards.

Where the CPVC must be offset up and over an obstruction and the pipe exceeds the allowed horizontal positioning requirements specified above as well as shown in Figures 2, 3, and 4 additional Model CC3 Sprinklers are to be installed as shown in Figures 2, 3, and 4 to protect the CPVC pipe and fittings.

A minimum lateral distance of 18 in. (460 mm) must be maintained between the CPVC pipe and heat pumps, fan motors, and heat lamps.

Where CPVC piping is installed as a vertical riser to the next floor above, see Figure 5 for installation options.

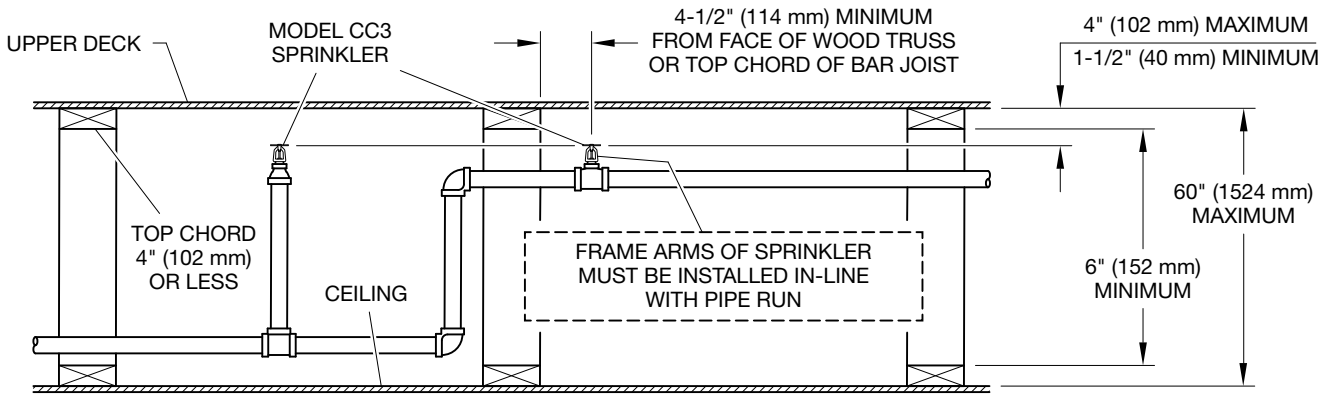


FIGURE 6
UNOBSTRUCTED WOOD TRUSS OR
UNOBSTRUCTED BAR JOIST CONSTRUCTION
CROSS SECTION ELEVATION VIEW
STEEL PIPE

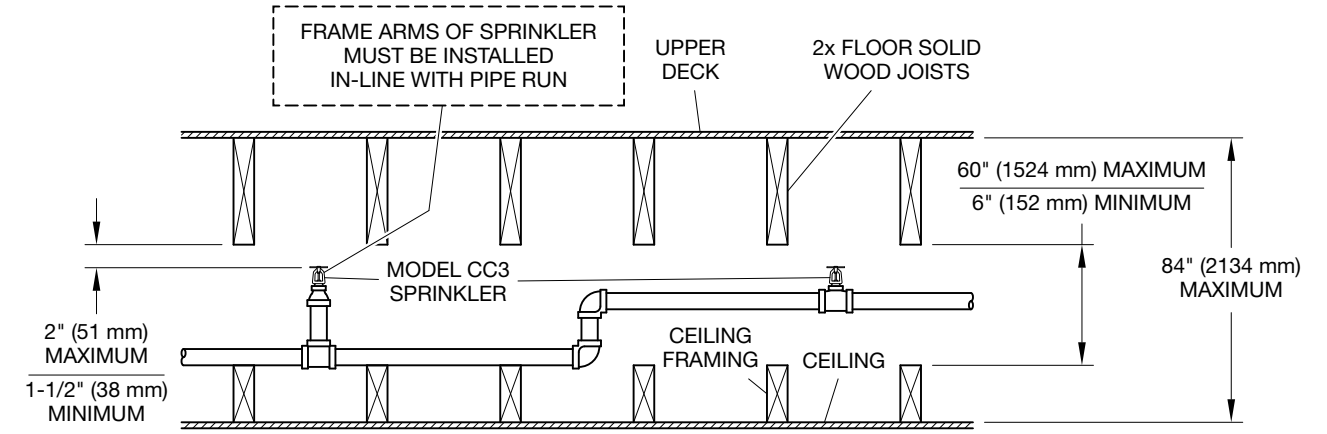


FIGURE 7
SOLID WOOD JOIST CONSTRUCTION
CROSS SECTION ELEVATION VIEW
STEEL PIPE

Design Criteria, Steel Pipe

Area of Use (Steel Pipe)
Horizontal (slope not exceeding 2:12) combustible concealed spaces of:

- unobstructed wood truss construction or unobstructed bar joist construction, see Figure 6
- solid wood joist construction, see Figure 7, where the upper deck and ceiling joists may have a maximum depth of 12 inches (300 mm) and typical on center joist spacing of minimum 16 inches (400 mm).
- non-combustible insulation-filled solid wood joist or wood composite joist construction, see Figure 8
- Obstructed wood truss construction, see Figure 9

NOTE: *In order to be considered "non-combustible insulation-filled solid wood joist or composite wood joist construction", the insulation (including insulation provided with a combustible vapor barrier), must completely fill the pockets between the joists to the bottom of the joists, and the insulation must be secured in place with metal wire netting. The metal wire netting is intended to hold the insulation in place should the insulation become wetted by the operation of the Model CC3 Sprinklers in the event of a fire.*

Concealed Space Area (Steel Pipe)
The area of the concealed space is not limited; however,

- For unobstructed wood truss construction or concealed spaces of non-combustible, unobstructed bar joist construction, see Figure 6, draft curtains or full height walls must be provided at 1000 ft² (93 m²) areas. In addition, the 5.6K sprinkler is UL Listed for a 2000 ft² (186 m²) draft curtain area as well as without draft curtains for unobstructed solid wood truss construction on edge or on face or unobstructed bar joist construction.

  This draft curtain shall be at least 1/3 the depth of the concealed space or 8 in. (200 mm), whichever is greater, and be constructed using a material that will not allow heat to escape through or above the draft curtain.

- For solid wood joist construction, see Figure 7, and obstructed wood truss construction, see Figure 9:

  Blocking must be provided in each upper deck and ceiling joist channel at a maximum 32 ft (9,75 m) intervals. This blocking shall be installed to the full depth of the joists and be installed so as to not allow heat to escape through or above the blocking. The blocking must be constructed using a non-combustible material or the joist construction material.

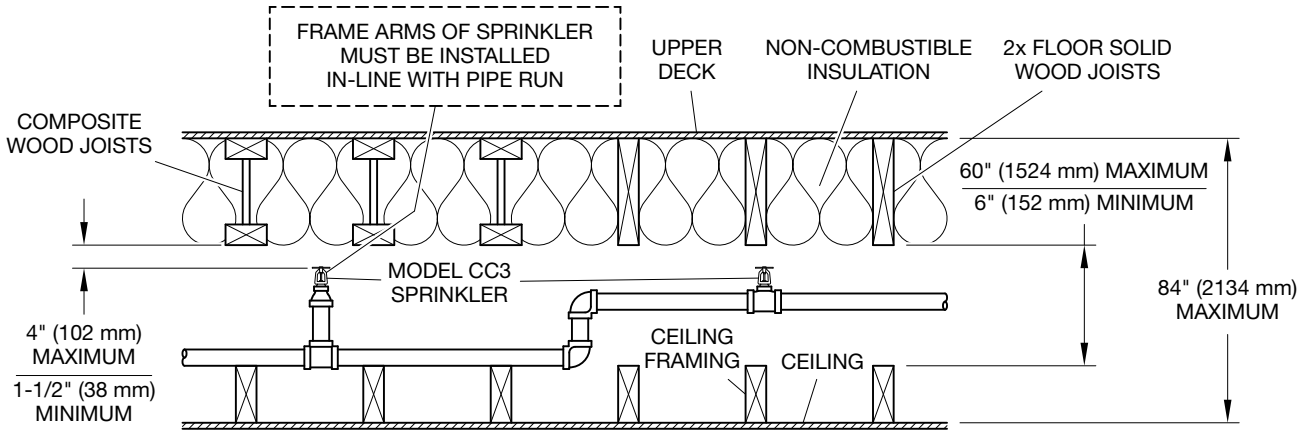


FIGURE 8
NON-COMBUSTIBLE INSULATION-FILLED UPPER DECK
SOLID WOOD OR COMPOSITE WOOD JOIST CONSTRUCTION
CROSS SECTION ELEVATION VIEW
STEEL PIPE

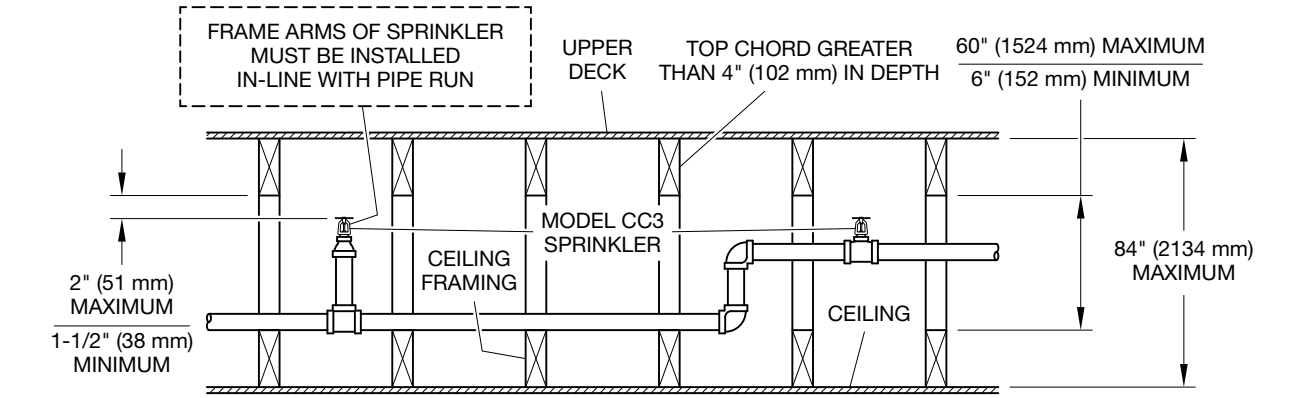


FIGURE 9
OBSTRUCTED WOOD TRUSS CONSTRUCTION
CROSS SECTION ELEVATION VIEW
STEEL PIPE

Draft curtains must protrude below the joist a minimum of 6 inches (150 mm) or 1/3 the depth of the concealed space, whichever is greater, and run parallel with the joist spaced at 31 ft (9,4 m) width maximum to limit the area to a maximum of 1000 ft² (93 m²). For information about the use of antifreeze see the Technical Data section.

The draft curtains are to be constructed using a material that will not allow heat to escape through or above the draft curtain.

- For non-combustible, insulation-filled solid wood joist or composite wood joist construction, see Figure 8, the requirement for draft curtains and blocking does not apply.
- For information about the use of antifreeze see the Technical Data section.

Concealed Space Size (Steel Pipe)
The minimum and maximum concealed space depth is as follows:

For unobstructed wood truss construction or concealed spaces of unobstructed bar joist construction, see Figure 6, the maximum depth of the concealed space is 60 in. (1524 mm) from bottom of upper deck to top of ceiling, and the minimum depth is 6 in. (152 mm) from the bottom of the upper chords to the top of the lower chords.

For solid wood joist construction, see Figure 7, and solid wood or composite wood joist construction the maximum depth of the concealed space is 84 in. (2134 mm) from bottom of upper deck to top of ceiling, and the minimum depth is 6 in. (152 mm) from the bottom of the upper deck joists to the top of the ceiling joists. If joist construction is filled with non-combustible insulation the maximum height of the space is 84 in. (2134 mm). See Figure 7.

For obstructed wood truss construction, see Figure 9, the maximum depth of the concealed space is 84 in. (2134 mm) from bottom of upper deck to top of ceiling, and the minimum depth is 6 in. (152 mm) from the bottom of the upper chord to the top of the lower chord.

System Type (Steel Pipe)
Light hazard, wet or dry pipe system

NOTES: *Use of the 4.2K sprinklers in dry pipe systems is permitted by section 8.3.4.4 of NFPA 13 (2013 edition) where piping is corrosion resistant or internally galvanized.*

Maximum Distance Between Model CC3 Sprinklers (Steel Pipe)
TY2199 4.2K. . . . . .14 ft (4,3 m)
TY3199 5.6K. . . . . 16 ft (4,9 m)

Maximum Coverage Area (Steel Pipe)
TY2199 4.2K. . . . . 196 ft² (18,2 m²)
TY3199 5.6K. . . . . 256 ft² (23,8 m²)

Minimum Distance Between Model CC3 Sprinklers (Steel Pipe)
Minimum sprinkler spacing is 7 ft (2,1 m)

Deflector Position (Steel Pipe)
1-1/2 in. to 4 in. (40 mm to 100 mm) below upper deck for wood truss construction or concealed spaces of non-combustible bar joist construction, see Figure 6.

1-1/2 in. to 2 in. (40 to 50 mm) below solid wood joist, see Figure 6, or top chord of a wood truss that has a depth greater than 4 in, see Figure 9.

1-1/2 in. to 4 in. (40 to 100 mm) below non-combustible insulation-filled solid wood joists or composite wood joists, see Figure 8.

Remote Area (Steel Pipe)
The remote area for wood truss construction or bar joist construction, see Figure 6, solid wood joist construction, see Figure 7, or obstructed wood truss construction, see Figure 9, is 1000 ft² (93 m²) for wet pipe or dry pipe systems.

The remote area for unobstructed solid wood truss construction or unobstructed bar joist construction without the use of draft curtains is 9 sprinklers or 1000 ft² (93 m²), whichever is greater, for both wet pipe or dry pipe systems.

The remote area for non-combustible insulation-filled solid wood joist or wood composite joist construction, see Figure 8, without draft curtains is to be calculated per the requirements of NFPA 13.

Required Minimum Density (Steel Pipe)
0.10 gpm/ft² (4,1 mm/min)

Minimum Operating Pressure (Steel Pipe)
7 psi (0,48 bar)

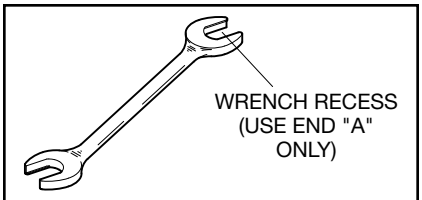


FIGURE 10
W-TYPE 6 SPRINKLER WRENCH

Installation

The Model CC3 Sprinklers must be installed in accordance with this section.

General Instructions
The Model CC3 Sprinklers are to be installed upright and with their frame arms, see Figure 1, in-line with the pipe run. See Figures 2 through 9, as applicable.

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 200°F (93°C) temperature rating.

A leak-tight 1/2 in. NPT sprinkler joint should be obtained with a torque of 7 to 14 lb-ft (9,5 to 19,0 N·m). Higher levels of torque may distort the sprinkler inlet with consequent leakage or impairment of the sprinkler.

The Model CC3 Sprinklers must only be installed in the upright position with the deflector parallel to the upper deck. With pipe thread sealant applied to the pipe threads, use only the W-Type 6 (End A) Sprinkler Wrench, see Figure 10, for installation of the Model CC3 Sprinklers by applying the wrench to the sprinkler wrench flats only.

Care and Maintenance

The Model CC3 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, permission to shut down the affected fire protection systems must be obtained from the proper authorities and all personnel who may be affected by this 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. See 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, for example, 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 Assemblies with NPT Thread Connections
Specify: SIN (specify), K-factor (specify), Model CC3 Combustible Concealed Space Sprinkler, Specific Application, Upright, 200°F (93°C), P/N (specify):

TY2199, 4.2K 51-311-1-200
TY3199, 5.6K 51-301-1-200

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

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TEFLON is a trademark of The Chemours Company FC, LLC

Johnson Controls

FREEDOM® RESIDENTIAL CONCEALED PENDENT SPRINKLER VK498 (K5.8)

TECHNICAL DATA

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

1. DESCRIPTION

Viking Freedom® Residential Concealed Pendent Sprinkler VK498 is a small thermosensitive, glass-bulb residential sprinkler designed for installation on concealed pipe systems where the appearance of a smooth ceiling is desired. The orifice design allows the sprinkler's efficient use of available water supplies for the hydraulically designed fire-protection system. The glass bulb operating element and special deflector characteristics meet the challenges of residential sprinkler standards.

Features:

- K5.8 (83.6 metric)
- Fast response glass bulb operating element.
- Integral threaded adapter cup accepts push-on or thread-on cover plates.
- Low-profile, small diameter, removeable cover plates offer almost flush appearance upon installation and allow ease of maintenance.
- Protective cap prevents damage during installation and ceiling finishing and keeps errant overspray from coating internal parts.
- Various finishes available to meet design requirements.
- Optional Electroless Nickel PTFE (ENT) coating provides corrosion resistance (see Approval Chart).

2. LISTINGS AND APPROVALS

cULusEU Listed: Category VKKW
Refer to the Approval Charts and Design Criteria for cULusEU Listing requirements that must be followed.

3. TECHNICAL DATA

Available since 2017
Specifications:
Minimum Operating Pressure: Refer to the Approval Chart.
Maximum Working Pressure: 175 psi (12 bar). Factory-tested hydrostatically to 500 psi (34.5 bar).
Thread size: 1/2" (15 mm) NPT
Nominal K-factor: 5.8 U.S. (83.6 metric*)
Glass-bulb fluid temperature rated to -65 °F (-55 °C)

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

Material Standards:
Sprinkler Body: Brass UNS-C84400, QM brass, or DZR brass
Deflector: Phosphor bronze UNS-C51000
Deflector Pins: Stainless steel UNS-S30200
Button: Brass UNS-C36000
Pip Cap and Insert Assembly: Copper UNS-C11000 and stainless steel UNS-S30400
Compression Screw: 18-8 stainless steel
Yoke: Phosphor Bronze UNS-C51000
Belleville Spring Sealing Assembly: Beryllium nickel alloy, coated on both sides with PTFE tape
Cover Adapter: Cold rolled steel JIS G3141 and carbon steel UNS-G10100 (per JIS G3141)
Shipping Cap: High-density Polyethylene
Vibration damper ring: Buna-N Rubber SAE AS-568-017
Cover Plate Materials:
Cover Plate Assembly: Copper UNS-C11000 and brass UNS-C26800
Spring: Beryllium nickel
Solder: Eutectic

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

4. INSTALLATION

Refer to appropriate NFPA Installation Standards.

5. OPERATION

During fire conditions, when the temperature around the sprinkler approaches its operating temperature, the cover plate detaches, releasing the deflector. Continued heating of the exposed sprinkler causes the heat-sensitive liquid in the glass bulb to expand, causing the glass to shatter, releasing the yoke and pip cap and sealing spring assembly. Water flowing through the sprinkler orifice strikes the deflector, forming a uniform spray pattern over a specific area of coverage determined by the water supply pressure at the sprinkler to extinguish or control the fire.

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6. INSPECTIONS, TESTS AND MAINTENANCE

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

7. AVAILABILITY

Viking Sprinkler Model VK498 is available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

8. GUARANTEE

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

TABLE 1: SPRINKLER ORDERING INFORMATION

Ordering Instructions:
(1) Select a sprinkler base part number
(2) Add the suffix for the desired finish
(3) Add the suffix for the desired sprinkler temperature rating
(4) Order a cover plate (Must be ordered separately; refer to Table 2)

Example:
23764AE = 200 °F (93 °C) Temperature rated sprinkler with a standard brass finish.

Sprinkler Base Part Number[1]	Size	1: Finishes		2: Temperature Ratings[5]			
	NPT Inch	Description	Suffix	Nominal Rating	Bulb Color	Max. Ambient Ceiling Temperature[2]	Suffix
23764	1/2	Brass	A	155 °F (68 °C)	Red	100 °F (38 °C)	B
		ENT[3,4]	JN	200 °F (93 °C)	Green	150 °F (65 °C)	E

Accessories

Part Number	Description
22978M/B	Heavy-duty wrench[6]
23143	Light-duty wrench[6, 7]
14412	Small concealed cover plate installer tool; requires a piece of 1" PVC pipe or similar to attach (available since 2007).
14867	Large concealed cover plate installer tool; requires a piece of 1" PVC pipe or similar to attach (available since 2007).
01731A	Sprinkler cabinet; holds up to 6 sprinklers (available since 1971).

Footnotes

1. Part number shown is the base part number. For complete part number, refer to the current Viking price list schedule.
2. Based on NFPA 13, NFPA 13R, and NFPA 13D. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.
3. cULusEU listed as corrsion-resistant.
4. The corrosion-resistant coatings have passed the standard corrosion test required by the approving agencies indicated in the Approval Charts. These tests cannot and do not represent all possible corrosive environments. Prior to installation, verify through the end-user that the coatings are compatible with or suitable for the proposed environment. For automatic sprinklers, the ENT coating is applied to all exposed exterior surfaces, including the waterway. For ENT coated sprinklers, the Belleville spring is exposed.
5. The sprinkler temperature rating is stamped on the deflector.
6. Requires a 1/2" ratchet (not available from Viking)
7. The installation wrench is intended to be used for a maximum of 500 sprinkler installations at a maximum torque of 14 ft-lbs (19 Nm).

TECHNICAL DATA

FREEDOM® RESIDENTIAL CONCEALED PENDENT SPRINKLER VK498 (K5.8)

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Figure 1: Installation Wrenches

TABLE 2: COVER PLATE ORDERING INFORMATION

Instructions:
(1) Select a Cover Plate Base Part Number
(2) Add the suffix for the desired Finish
(3) Add the suffix for the required Cover Plate Nominal Rating.

Example:
23190MC/W = 165 °F (74 °C) Temperature Rated, 2-3/4" (70 mm) diameter, Thread-On style, round cover plate with a painted white finish

1: Select a Cover Plate Base Part Number[3]						2: Select a Finish	
Thread-On Style			Push-On Style				
Base Part Number[1]	Size Inch (mm)	Type	Base Part Number	Size Inch (mm)	Type	Description	Suffix[5]
23190	2-3/4 (70)	Round	23447	2-3/4 (70)	Round	Polished Chrome	F
23174	3-5/16 (84)	Round	23463	3-5/16 (84)	Round	Brushed Chrome	F-/B
23179	3-5/16 (84)	Square	23482	3-5/16 (84)	Square	Bright Brass	B
						Antique Brass	B-/A
						Brushed Brass	B-/B
						Brushed Copper	E-/B
						Painted White	M-/W
						Painted Ivory	M-/I
						Painted Black	M-/B

3: Temperature Rating Matrix[1,2]				
Cover Plate Nominal Rating (Required)	Temperature Classification	Sprinkler Nominal Rating	Sprinkler Maximum Ambient Ceiling Temperature[2]	Suffix
139 °F (59 °C)	Ordinary	155 °F (68 °C)	100 °F (38 °C)	**A**
165 °F (74 °C)	Intermediate	200 °F (93 °C)	150 °F (65 °C)	**C**

Footnotes

1. Part number shown is the base part number. For complete part number, refer to the current Viking price list schedule.
2. The sprinkler temperature rating is stamped on the deflector.
3. Based on NFPA-13, NFPA 13R, and NFPA 13D. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.
4. Where a dash (-) is shown in the Finish suffix designation, insert the desired Temperature Rating suffix. See example above.

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TECHNICAL DATA

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APPROVAL CHART

Viking VK498, 5.8 K-Factor Residential Concealed Pendent Sprinkler
For systems designed to NFPA 13D or NFPA 13R. For systems designed to NFPA 13, refer to the design criteria. For Ceiling types refer to current editions of NFPA 13, 13R or 13D

Sprinkler Base Part Number [1]	SIN	NPT Thread Size		Nominal K-factor		Maximum Water Working Pressure
		Inches	mm	U.S.	metric [2]	
23764	VK498	1/2	15	5.8	83.6	175 psi (12 bar)

Max. Coverage Area [5] Ft. X Ft. (m X m)	All Temperature Ratings		Deflector to Ceiling	Installation Type	Listings and Approvals[3]	Minimum Spacing Ft. (m)
	Flow GPM (LPM)	Pressure PSI (bar)			cULusEU[4]	
12 X 12 (3.7 X 3.7)	16 (60.6)	7.6 (0.52)	Refer to Figure 4	Concealed with Cover Plate Assembly. See footnote 6.	See footnotes 6 and 7	8 (2.4)
14 X 14 (4.3 X 4.3)	17 (64.4)	8.6 (0.59)				
16 X 16 (4.9 X 4.9)	17 (64.4)	8.6 (0.59)				
18 X 18 (5.5 X 5.5)	17 (64.4)	8.6 (0.59)				
20 X 20 (6.1 X 6.1)	20 (75.7)	11.9 (0.82)				

Footnotes

1. For complete part number, refer to current Viking price schedule.
2. Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.
3. This chart shows the listings and approvals available at the time of printing. Other approvals may be in process. Check with the manufacturer for any additional approvals. Refer also to Design Criteria.
4. Listed by Underwriter's Laboratories, Inc. for use in the U.S., Canada, and European Union.
5. For areas of coverage smaller than shown, use the "Flow" and "Pressure" for the next larger area listed. Flows and pressures listed are per sprinkler. The distance from sprinklers to walls shall not exceed one-half the sprinkler spacing indicated for the minimum "Flow" and "Pressure" used.
6. Accepted cover plate finishes are: Polished chrome, brushed chrome, bright brass, antique brass, brushed brass, brushed copper, painted white, painted ivory, or painted black. Other paint colors are available on request with the same listings as the standard finish colors. Listings and approvals apply for any paint manufacturer. Contact Viking for additional information. Custom colors are indicated on a label inside the cover assembly. Refer to Figure 1
7. cULusEU Listed as corrosion-resistant - Electroless Nickel PTFE (ENT)

DESIGN CRITERIA

(Also refer to the Approval Chart above.)

UL Listing Requirements (cULusEU):

When using Viking Residential Concealed Pendent Sprinkler VK498 for systems designed to NFPA 13D or NFPA 13R, apply the listed areas of coverage and minimum water supply requirements shown in the Approval Chart.

For systems designed to NFPA 13: The number of design sprinklers is to be the four contiguous most hydraulically demanding sprinklers. The minimum required discharge from each of the four sprinklers is to be the greater of the following:

- The flow rates given in the Approval Chart for NFPA 13D and NFPA 13R applications for each listed area of coverage, **or**
- Calculated based on a minimum discharge of 0.1 gpm/sq. ft. over the "design area" in accordance with sections 8.5.2.1 or 8.6.2.1.2 of NFPA 13.
- Minimum distance between residential sprinklers: 8 ft. (2.4 m).

NOTE: Concealed sprinklers must be installed in neutral or n egative pressure plenums only.

IMPORTANT: Always refer to Bulletin Form No. F_080415 - Best Practices for Residential Sprinkler Handling and Installation. Also refer to Form No. F_080614 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA and any other similar Authorities Having Jurisdiction, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable. Final approval and acceptance of all residential sprinkler installations must be obtained from the Authorities Having Jurisdiction.

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TECHNICAL DATA

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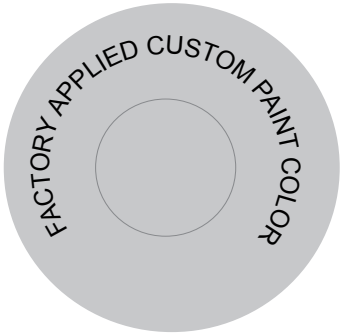
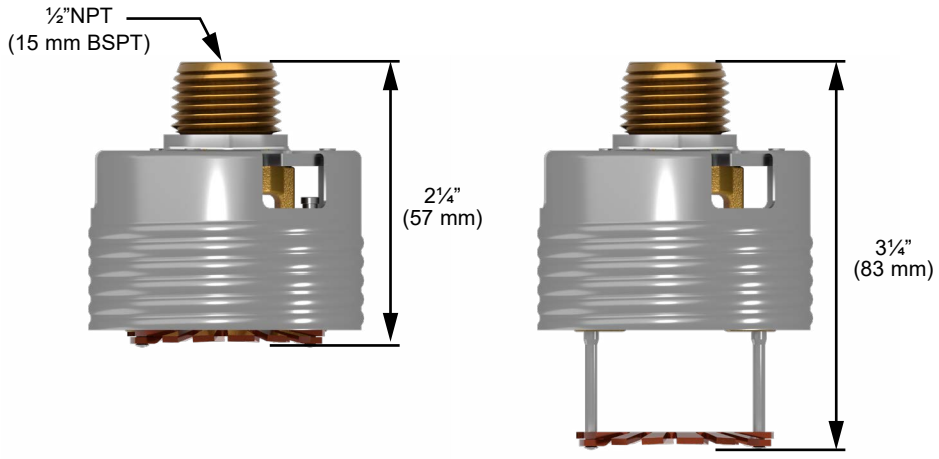


All custom color painted cover plates will have an identifying label affixed to the inside of the cover that indicates the custom color and will have a representative sample (a paint dot) of the paint on the label.

Figure 2: Identification of Custom Paint

Figure 3: Square Cover Assembly



NOTE: *Image is representative only. Actual product may vary.*

Figure 4: Sprinkler Dimensions

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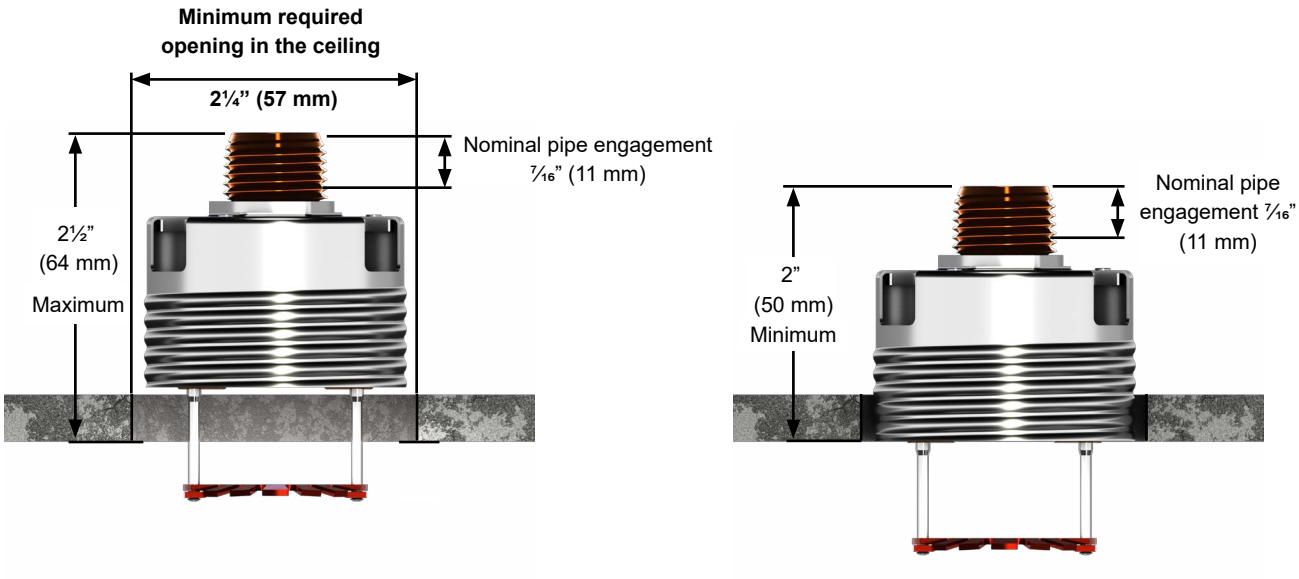

NOTE: *Image is representative only. Actual product may vary.*

Figure 5: Sprinkler Installation Dimensions

TECHNICAL DATA

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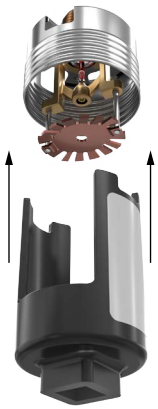
NOTICE: USE ONLY the designated sprinkler wrenches shown in this document. Permanent damage to the sprinkler assembly can occur if the proper wrench is not used. Other sprinkler wrenches available from Viking may fit into the sprinkler adapter cup; however, only the wrenches shown here are designed to properly install this sprinkler.

Step 1:

Remove the protective cap.

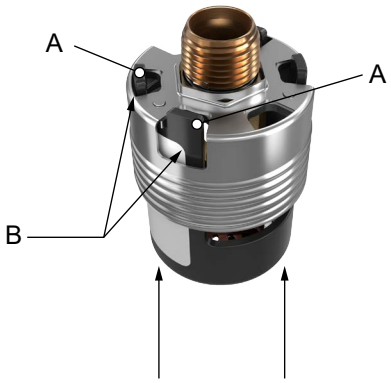
Step 2:

Insert the wrench into the sprinkler adapter.



Step 3:

Rotate the wrench slightly in either direction until the tines on the wrench (A) line up with the vent openings (B) on the adapter cup and lock into place. (Note: A leak-tight seal must be achieved. Turn the sprinkler clock-wise 1 to 1-1/2 turns passed finger-tight.

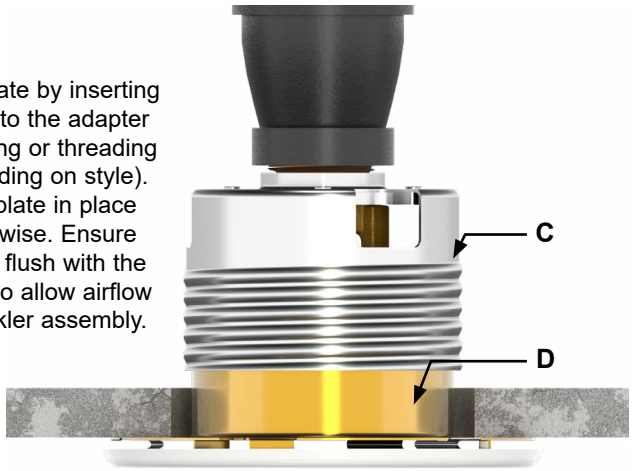


NOTE: *Image is representative only. Actual product may vary*.

Figure 6: Using the Sprinkler Wrench

Install the cover plate by inserting the adpater (D) into the adapter cup (C) and pushing or threading into place (depending on style). Snug the cover plate in place by rotating clockwise. Ensure the cover plate is flush with the ceiling as shown to allow airflow through the sprinkler assembly.

Minimum



Maximum

NOTE: *Image is representative only. Actual product may vary*.

Figure 7: Installing the Cover Plate

BULLETIN

CARE AND HANDLING OF SPRINKLERS

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SPRINKLERS ARE FRAGILE - HANDLE WITH CARE!

General Handling and Storage:

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

For Pre-Assembled Drops:

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

Sprinklers with Protective Shields or Caps:

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

Sprinkler Installation:

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

  Maximum Torque:

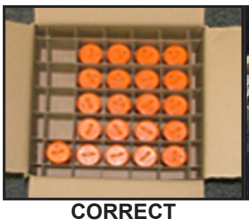
  1/2" NPT: 14 ft-lbs. (19.0 N-m)

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

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

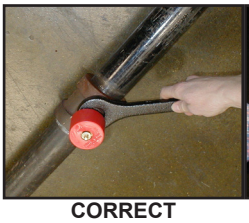
CORRECT
(Original container used)

INCORRECT
(Placed loose in box)



CORRECT
(Protected with caps)

INCORRECT
(Protective caps not used)



CORRECT
(Piping is in place at the ceiling)

INCORRECT
(Sprinkler at floor level)

CORRECT
(Special installation wrenches)

INCORRECT
(Designated wrench not used)

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

⚠ WARNING

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

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

VIKING | BULLETIN | CARE AND HANDLING OF SPRINKLERS

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PROTECTIVE SPRINKLER SHIELDS AND CAPS

General Handling and Storage:

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

WHEN TO REMOVE THE SHIELDS AND CAPS:

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

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

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

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

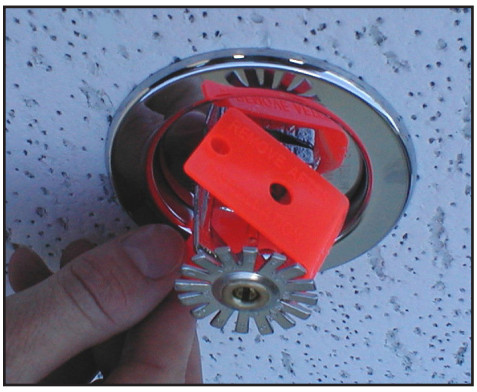

Figure 1: Sprinkler shield being removed from a pendent sprinkler.

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

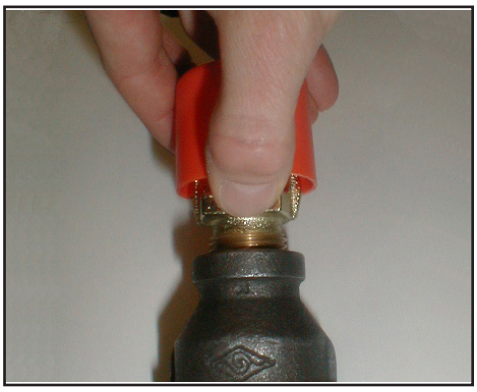

Figure 3: Sprinkler cap being removed from and upright sprinkler.

HOW TO REMOVE SHIELDS AND CAPS:

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

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

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

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

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

BULLETIN

CARE AND HANDLING OF SPRINKLERS

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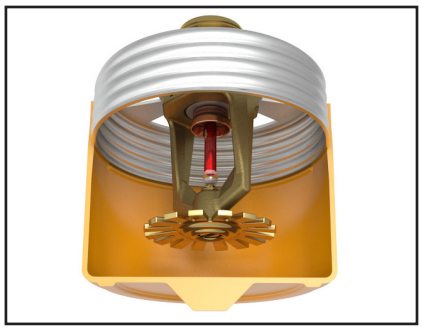
⚠CAUTION CONCEALED COVER ASSEMBLIES ARE FRAGILE!
TO ASSURE SATISFACTORY PERFORMANCE OF THE PRODUCT, HANDLE WITH CARE.



Concealed Sprinkler and Adapter Assembly with Protective Cap

Concealed Sprinkler and Adapter Assembly (Protective Cap Removed)

Cover Plate Assembly (Pendent Cover 12381 shown)

GENERAL HANDLING AND STORAGE INSTRUCTIONS:

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

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

VIKING

BULLETIN

CARE AND HANDLING OF SPRINKLERS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

USE THE FOLLOWING PRECAUTIONS WHEN HANDLING WAX-COATED SPRINKLERS

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

General Handling and Storage of Wax-Coated Sprinklers:

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

Installation of Wax-Coated Sprinklers:

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

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

TABLE 1

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

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

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

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

Viking Residential Sprinkler Installation Guide

October 25, 2018

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

Trusted Above All™

www.vikinggroupinc.com

VIKING	TECHNICAL DATA	FREEDOM® RESIDENTIAL SPRINKLER INSTALLATION GUIDE

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1. DESCRIPTION

Viking residential automatic sprinklers are equipped with a “fast response” heat-sensitive operating element designed to respond individually and quickly to a specific high temperature. Viking residential sprinklers are designed to combine speed of operation with water distribution characteristics to help in the control of residential fires and to improve life safety by prolonging the time available for occupants to escape or be evacuated.

2. LISTINGS AND APPROVALS

Refer to the Approval Charts on the appropriate sprinkler technical data page(s) and/or approval agency listings.

A. Viking residential sprinklers are intended for use in the following occupancies: one- and two-family dwellings and mobile homes with the fire protection sprinkler system installed in accordance with NFPA 13D; residential occupancies up to four stories in height with the fire protection system installed in accordance with NFPA 13R; or residential portions of any occupancy with the fire protection system installed in accordance with NFPA 13. Information contained in this guide is based on NFPA 13, “Standard for the Installation of Sprinkler Systems”.

B. The design criteria for residential sprinklers contained in the NFPA installation standards must be followed except as modified by the individual UL 1626 listing information provided in the technical data pages and this Residential Sprinkler Installation Guide. For listed areas of coverage, technical data, and specific design and installation instructions, refer to the appropriate Viking technical data page for the sprinkler model used.

C. Viking residential sprinklers listed by Underwriters Laboratories, Inc. (UL) have passed fire tests designed to represent fire conditions for the sprinkler’s listed area of coverage. The standards for residential sprinkler performance and spray patterns are printed in Underwriters Laboratories Publication UL 1626, “Standard for Residential Sprinklers for Fire Protection Service”. All listed Viking residential sprinklers meet or exceed UL 1626 performance requirements and spray pattern criteria for their listed areas of coverage.

D. NFPA standards allow use of residential sprinklers with rates, design areas, areas of coverage, and minimum design pressures other than those specified in the standards when they have been listed for such specific residential installation conditions.

3. TECHNICAL DATA

Specifications:

Refer to the appropriate sprinkler technical data sheet.

Material Standards:

Refer to the appropriate sprinkler technical data sheet.

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.

4. INSTALLATION

NOTE:Take care not to over-tighten the sprinkler and/or damage its operating parts!

Maximum Torque: 1/2” NPT: 14 ft-lbs. (19.0 N-m) 3/4” NPT: 20 ft-lbs. (27.1 N-m)

A. Care and Handling (also refer to Bulletin - Care and Handling of Sprinklers, Form No. F_091699.)

Sprinklers must be handled with care and protected from mechanical damage during storage, transport, handling, and after installation. Store sprinklers in a cool, dry place in their original container.

Use care when locating sprinklers near fixtures that can generate heat.

Never install sprinklers that have been dropped, damaged in any way, or exposed to temperatures exceeding the maximum ambient temperature allowed (refer to Table 1.)

Never install any glass-bulb sprinkler if the bulb is cracked or if there is a loss of liquid from the bulb. A small air bubble should be present in the glass bulb. Any sprinkler with a loss of liquid from the glass bulb or damage to the fusible element should be destroyed immediately. (Note: Installing glass bulb sprinklers in direct sunlight (ultraviolet light) may affect the color of the dye used to color code the bulb. This color change does not affect the integrity of the bulb.)

Viking residential sprinklers are intended for use on wet pipe residential systems only. Adequate heat must be provided for wet-pipe systems. DO NOT use Viking residential sprinklers on dry systems unless specifically allowed by recognized installation standards or the Authority Having Jurisdiction.

Residential concealed sprinklers must be installed in neutral or negative pressure plenums only!

Corrosion-resistant sprinklers must be installed when subject to corrosive atmospheres. **NOTE:** Viking residential sprinklers are not intended for use in corrosive environments.

TECHNICAL DATA

FREEDOM® RESIDENTIAL SPRINKLER INSTALLATION GUIDE

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TABLE 1: RESIDENTIAL SPRINKLER TEMPERATURE RATINGS

Sprinkler Temperature Classification	Sprinkler Nominal Temperature Rating[1]	Maximum Ambient Ceiling Temperature[3]	Bulb Color
Residential Glass Bulb Style Sprinklers			
Ordinary	155 °F (68 °C)	100 °F (38 °C)	Red
Intermediate	175 °F (79 °C)	150 °F (65 °C)	Yellow
Sprinkler Temperature Classification	**Sprinkler Nominal Temperature Rating (Fusing Point)[1]**	**Maximum Ambient Ceiling Temperature[3]**	
Residential Fusible Element Style Sprinklers			
Ordinary	165 °F (74 °C)	100 °F (38 °C)	
Sprinkler Temperature Classification	**Sprinkler Nominal Temperature Rating (Fusing Point)**	**Maximum Ambient Ceiling Temperature[3]**	**Temperature Identification Stamp**
Residential Flush Style Sprinklers			
Ordinary	165 °F (74 °C)	100 °F (38 °C)	On Cover or Sprinkler Inlet (VK476)
Intermediate	220 °F (104 °C)	150 °F (65 °C)	On Cover
Sprinkler Temperature Classification	**Sprinkler Nominal Temperature Rating (Fusing Point)**	**Maximum Ambient Ceiling Temperature[3]**	**Cover Plate Temperature Rating**
Residential Concealed Style Sprinklers			
Ordinary	135 °F (57 °C)[1], 140 °F (60 °C)[2], 155 °F (68 °C)[1], or 165 °F (74 °C)[1]	100 °F (38 °C)	135 °F (57 °C)

Footnotes

[1] The sprinkler temperature rating is stamped on the deflector or flow shaper.

[2] The temperature rating is stamped on the sprinkler.

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

B. Installation Instructions

Viking sprinklers are manufactured and tested to meet the rigid requirements of approving agencies. They are designed to be installed in accordance with recognized installation standards NFPA 13, NFPA 13R, and NFPA 13D, and any associated TIAs.

Deviation from the standards or any alteration to the sprinklers or cover plate assemblies after they leave the factory including, but not limited to: painting, plating, coating, or modification, may render the sprinklers inoperative and will automatically nullify the approval and any guarantee made by Viking.

The use of residential sprinklers may be limited due to occupancy and hazard. Residential fire protection systems must be designed and installed only by those who are completely familiar with the appropriate standards and codes, and thoroughly experienced in fire protection design, hydraulic calculations, and sprinkler system installation.

Before installation, be sure to have the appropriate sprinkler model and style, with the correct K-Factor, temperature rating, and response characteristics. Viking residential sprinklers must be installed after the piping is in place to prevent mechanical damage. Keep sprinklers with protective caps or bulb shields contained within the caps or shields during installation and testing, and any time the sprinkler is shipped or handled.

1a. For frame-style sprinklers, install escutcheon (if used), which is designed to thread onto the external threads of the sprinkler*.

*Refer to the appropriate sprinkler technical data page to determine approved escutcheons for use with specific sprinkler models.

1b. For flush and concealed style sprinklers: Cut the sprinkler nipple so that the ½" or 3/4" (15 mm or 20 mm) NPT** outlet of the reducing coupling is at the desired location and centered in the opening** in the ceiling or wall.

**Size depends on the sprinkler model used. Refer to appropriate sprinkler data page.

TECHNICAL DATA

FREEDOM® RESIDENTIAL SPRINKLER INSTALLATION GUIDE

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DESIGN CRITERIA

For Systems Designed to NFPA 13D or NFPA 13R: Apply the listed areas of coverage and minimum water supply requirements shown in the approval charts on the residential sprinkler data pages. The sprinkler flow rate is the minimum required discharge from each of the total number of design sprinklers as specified in NFPA 13D or NFPA 13R.

For Systems Designed to the latest edition of NFPA 13: The number of design sprinklers is to be the four most hydraulically demanding sprinklers. The minimum required discharge from each of the four sprinklers is to be the greater of the following:

- **The flow rates given in the approval charts on the data pages for NFPA 13D and NFPA13R for each area of coverage listed, or**
- **Calculated based on a minimum discharge of 0.1 gpm/sq. ft. over the "design area" in accordance with sections 8.5.2.1 or 8.6.2.1.2 of NFPA 13. The greatest dimension of the coverage area cannot be any greater than the maximum areas of coverage shown on the data pages.**

Flow Rates

All residential sprinklers manufactured on or after July 12, 2002 are listed with a single minimum flow rate. Where rooms have more than one sprinkler, multiple-sprinkler calculations are still required, but the first sprinkler and any additional sprinkler or sprinklers must be calculated flowing at identical minimum flow rates, based on the area of sprinkler coverage, using the minimum flow and pressure listed for the sprinkler model used.

Consult the appropriate standards and the Authorities Having Jurisdiction to determine the number of sprinklers to hydraulically calculate to verify adequate water supply for multiple-sprinkler operation.

Operating Pressure: The minimum operating pressure of any sprinkler shall be the minimum operating pressure specified by the listing, or 7 psi (0.5 bar), whichever is greater. The maximum allowable operating pressure is 175 psi (12 bar).

Areas of Coverage

If the actual area of coverage is less than the listed area of coverage, use the minimum water supply for the next larger area of coverage listed. DO NOT interpolate. Residential sprinkler systems must be hydraulically calculated according to NFPA standards to verify that the water supply is adequate for proper operation of the sprinklers. Hydraulic calculations are required to verify adequate water supply at the hydraulically most remote single sprinkler when it is operating at the minimum gpm and psi listed for single-sprinkler operation for the sprinkler model used.

Viking residential sprinklers may be listed for more than one area of coverage. Suggested practice in selecting area of coverage is to select the one that can be adequately supplied by the available water supply and still allow for the installation of as few sprinklers in a compartment as possible while observing all guidelines pertaining to obstructions and spacing. This maximizes the use of the available water supply, which is often limited on residential fire protection systems. After selecting an appropriate area of coverage, sprinklers must be spaced according to guidelines set forth in the installation standards.

Definition of "COMPARTMENT": A space completely enclosed by walls and a ceiling. Openings to an adjoining space are allowed, provided the openings have a minimum lintel depth of 8 in. (203.2 mm) from the ceiling.

Spacing Guidelines

For guidelines concerning spacing of Viking residential sprinklers near beams, obstructions, heat sources, and sloped ceilings [slopes more than a 2/12 (9.5°) pitch], refer to the Viking residential sprinkler data pages and installation guide, the appropriate NFPA standard, and the Authority Having Jurisdiction. NOTE: Sloped, beamed, and pitched ceilings could require special design features such as larger flow, or a design for more sprinklers to operate in the compartment, or both.

Distance from Walls: Install not more than one-half the listed sprinkler spacing nor less than 4" (102 mm) from walls, partitions, or obstructions as defined in the standards.

Minimum Sprinkler Spacing: The minimum distance between residential sprinklers to prevent cold soldering (i.e., the spray from one operating sprinkler onto an adjacent sprinkler that could prevent its proper activation) is 8 ft. (2.4 m).

Maximum Sprinkler Spacing: Locate adjacent sprinklers no farther apart than the listed spacing.

Deflector Position: Install frame style residential *pendent* sprinklers with the deflector between 1" and 4" (25.4 mm to 102 mm) below smooth ceilings, unless the sprinkler data page indicates otherwise. Install pendent sprinklers in the pendent position only, with the deflector oriented parallel with the ceiling or roof.

Refer to the individual listings in the residential sprinkler data pages for horizontal sidewall sprinkler deflector or sprinkler centerline distance below the ceiling. Install horizontal sidewall sprinklers in the horizontal position only below smooth ceilings, with the leading edge of the deflector or element assembly oriented parallel with the ceiling.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to the appropriate sprinkler data page. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA and any other similar Authorities Having Jurisdiction, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable. Final approval and acceptance of all residential sprinkler installations must be obtained from the Authorities Having Jurisdiction.

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2. Apply a small amount of pipe-joint compound or tape to the external threads of the sprinkler only, taking care not to allow a build-up of compound in the sprinkler inlet. **NOTE:** Sprinklers with protective caps or bulb shields must be contained within the caps or shields before applying pipe-joint compound or tape. *Exception: For concealed sprinklers (i.e., VK457, VK458, VK468, VK474, and VK4570) the protective cap is removed for installation.*
3. Care must be taken when installing sprinklers on CPVC and copper piping systems. Never install the sprinkler into the reducing fitting before attaching the reducing fitting to the piping. Sprinklers must be installed on CPVC systems after the reducing fitting has been installed and the primer and/or cement manufacturer's recommended curing time has elapsed. When installing sprinklers on copper piping systems, take care to brush the inside of the sprinkler supply piping and reducing fitting to ensure that no flux accumulates in the sprinkler orifice. Excess flux can cause corrosion and may impair the ability of the sprinkler to operate properly.
4. Refer to the appropriate sprinkler technical data page to determine the correct sprinkler wrench for the model of sprinkler used. DO NOT use the sprinkler deflector or fusible element to start or thread the sprinkler into a fitting.
   a. Install the sprinkler onto the piping using the special sprinkler wrench only, while taking care not to over-tighten or damage the sprinkler operating parts.
   b. Thread the flush or concealed sprinkler into the ½" or 3/4" (15 mm or 20 mm) NPT** *outlet of the coupling by turning it clockwise with the special sprinkler wrench. NOTE: For flush and concealed sprinklers with protective shells, the internal diameter of the special flush and concealed sprinkler installation wrench is designed for use with the sprinkler contained within the shell. Exception: For concealed sprinklers VK457, VK458, VK468, VK474, and VK4570 the protective cap is removed for installation, and then placed back on the sprinkler temporarily.*
5. After installation, the entire sprinkler system must be tested. The test must be conducted to comply with the installation standards.
   a. Make sure the sprinkler has been properly tightened. If a thread leak occurs, normally the unit must be removed, new pipe-joint compound or tape applied, and then reinstalled. This is due to the fact that when the joint seal leaks, the sealing compound is washed out of the joint.
   b. **Remove plastic protective sprinkler caps or bulb shields AFTER the wall or ceiling finish work is completed where the sprinkler is installed and there no longer is a potential for mechanical damage to the sprinkler operating elements.** To remove the bulb shields, simply pull the ends of the shields apart where they are snapped together. To remove caps from frame style sprinklers, turn the caps slightly and pull them off the sprinklers. **SPRINKLER CAPS OR BULB SHIELDS MUST BE REMOVED FROM SPRINKLERS <u>BEFORE</u> PLACING THE SYSTEM IN SERVICE!** Retain a protective cap or shield in the spare sprinkler cabinet.
6. For residential flush sprinklers, the ceiling ring can now be installed onto the sprinkler body. Align the ceiling ring with the sprinkler body and thread on or push it on until the flange touches the ceiling. Note the maximum vertical adjustment is ½" (12,7 mm) for sprinkler VK420 and 5/8" for VK476. DO NOT MODIFY THE UNIT. If necessary, re-cut the sprinkler drop nipples as required.
7. For residential concealed sprinklers, the cover plate assembly can now be attached.
   a. Remove the cover plate assembly from the protective box, taking care not to damage the assembly.
   b. From below the ceiling, gently place the base of the cover plate assembly over the sprinkler protruding through the opening in the ceiling or wall.
   c. Carefully push the cover plate assembly onto the sprinkler, using even pressure with the palm of the hand, until the unfinished brass flange of the cover plate base touches the ceiling or wall.
   d. The maximum adjustment available for residential concealed sprinklers is ½" (12.7 mm) [1/4" (6.4 mm) for sprinkler VK480]. DO NOT MODIFY THE UNIT. If necessary, re-cut the sprinkler nipples.

NOTE: If it is necessary to remove the entire sprinkler unit, the system must be taken out of service. See Maintenance instructions below and follow all warnings and instructions.

5. OPERATION

During fire conditions, the operating element fuses or shatters (depending on the type of sprinkler), releasing the pip cap and sealing assembly. Water flowing through the sprinkler orifice strikes the sprinkler deflector or flow shaper, forming a uniform, high-wall wetting spray pattern to extinguish or control the fire.

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6. INSPECTIONS, TESTS AND MAINTENANCE

Refer to NFPA 25 for Inspection, Testing and Maintenance requirements. **NOTICE:** The owner is responsible for having the fire-protection system and devices inspected, tested, and maintained in proper operating condition in accordance with this guide, and applicable NFPA standards. In addition, the Authority Having Jurisdiction may have additional maintenance, testing, and inspection requirements that must be followed.

A. Sprinklers must be inspected on a regular basis for signs of corrosion, mechanical damage, obstructions, paint, etc. Frequency of the inspections may vary due to corrosive atmospheres, water supplies, and activity around the device.

B. Sprinklers or cover plate assemblies that have been field painted, caulked, or mechanically damaged must be replaced immediately. Sprinklers showing signs of corrosion shall be tested and/or replaced immediately as required. Installation standards require sprinklers to be tested and, if necessary, replaced immediately after a specified term of service. Refer to NFPA 25 and the Authorities Having Jurisdiction for the specified period of time after which testing and/or replacement of residential sprinklers is required. Never attempt to repair or reassemble a sprinkler. Sprinklers and cover assemblies that have operated cannot be reassembled or re-used, but must be replaced. When replacement is necessary, use only new sprinklers and cover assemblies with identical performance characteristics.

C. The sprinkler discharge pattern is critical for proper fire protection. Nothing should be hung from, attached to, or otherwise obstruct the discharge pattern of the sprinkler. All obstructions must be immediately removed or, if necessary, additional sprinklers installed.

D. When replacing existing sprinklers, the system must be removed from service. Refer to the appropriate system description and/or valve instructions. Prior to removing the system from service, notify all Authorities Having Jurisdiction. Consideration should be given to employment of a fire patrol in the effected area.

1. Remove the system from service, drain all water, and relieve all pressure on the piping.

2a. For frame-style sprinklers, use the special sprinkler wrench and remove the old sprinkler by turning it counterclockwise to unthread it from the piping.

2b. For residential flush pendent and concealed style sprinklers: Remove the ceiling ring or cover plate assembly before unthreading the sprinkler body from the piping. To remove a ceiling ring, grasp it from below the ceiling and gently turn it counterclockwise. Cover plates can be removed either by gently unthreading them or pulling them off the sprinkler body (depends on the sprinkler model used). After the ceiling ring or cover plate assembly has been removed from the sprinkler, use the sprinkler wrench to unthread the sprinkler from the piping. NOTE: For flush and concealed sprinklers with protective shells, the internal diameter of the special flush and concealed sprinkler installation wrench is designed for use with the sprinkler contained within the shell. Place a plastic protective shell (from the spare sprinkler cabinet) over the sprinkler to be removed and then fit the sprinkler wrench over the shell. Exception: Concealed sprinklers VK457, VK458, VK468, VK474, and VK4570 are removed without the plastic cap.

3. Follow instructions in section 4B. Installation Instructions to install the new unit. Be sure the replacement sprinkler is the correct model and style, with the appropriate K-Factor, temperature rating, and response characteristics. A fully stocked sprinkler cabinet should be provided for this purpose. *(For flush or concealed style sprinklers, stock of spare ceiling rings or cover plates should also be available in the spare sprinkler cabinet.)*

4. Place the system back in service and secure all valves. Check for and repair all leaks.

E. Sprinkler systems that have been subjected to a fire must be returned to service as soon as possible. The entire system must be inspected for damage, and repaired or replaced as necessary. Sprinklers that have been exposed to corrosive products of combustion or high ambient temperatures, but have not operated, should be replaced. Refer to the Authority Having Jurisdiction for minimum replacement requirements.

7. AVAILABILITY

Viking Residential Sprinklers are available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

8. GUARANTEE

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

TECHNICAL DATA

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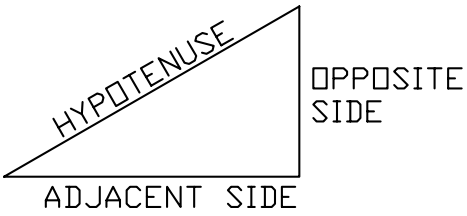
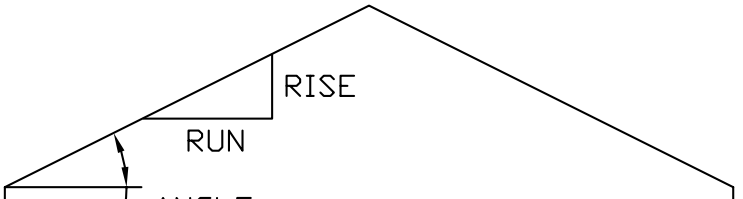


TANGENT =
OPPOSITE SIDE (RISE)
ADJACENT SIDE (RUN)

$$\frac{\text{RISE}}{\text{RUN}} = \text{TANGENT}$$

$$\text{ANGLE} = \text{TAN}^{-1}\left(\frac{\text{RISE}}{\text{RUN}}\right)$$

$$\text{SLOPE DISTANCE} = \sqrt{(\text{RISE})^2 + (\text{RUN})^2}$$



RISE	RUN	TANGENT	ANGLE	SLOPE DISTANCE
2	12	.1666	9.45°	12.1
3	12	.2500	14°	12.3
4	12	.3333	18.4°	12.6
5	12	.4166	22.6°	13
6	12	.5000	26.5°	13.4
7	12	.5833	30.2°	13.8
8	12	.6666	33.6°	14.4
9	12	.7500	36.8°	15
10	12	.8333	39.8°	15.6
11	12	.9166	42.5°	16.2
12	12	1	45°	16.97

Table 2
Rise Over Run Conversion to Degrees of Slope

TECHNICAL DATA

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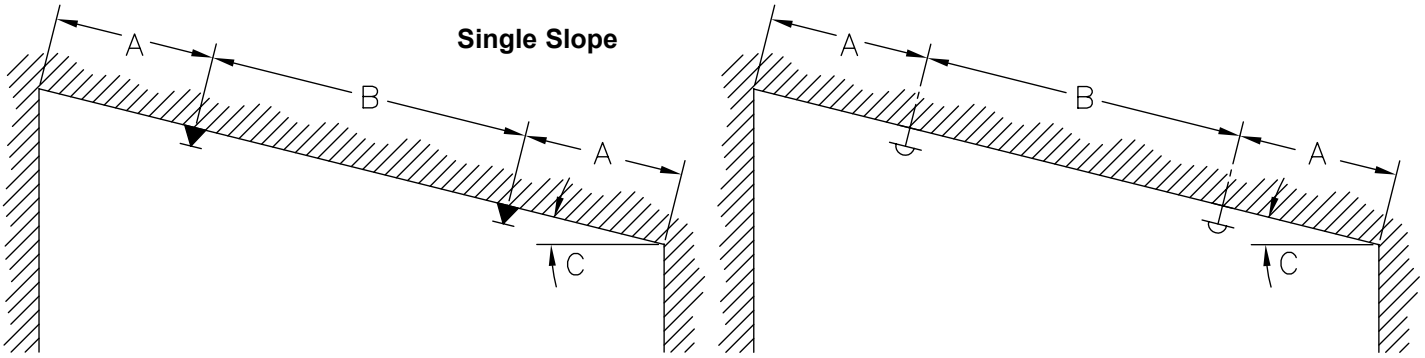
SPACING OF RESIDENTIAL SPRINKLERS LISTED FOR USE BELOW SLOPED CEILINGS UP TO AN 8/12 (33.7°) PITCH

(Refer to the appropriate residential sprinkler technical data page for listings.)



Pendent Sprinklers

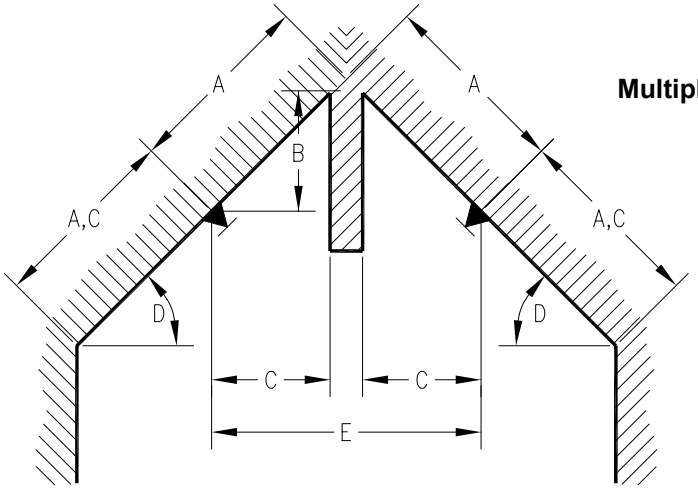
Horizontal Sidewall Sprinklers (Spray Across the Slope)

Figure 1

(A) One-half listed spacing of sprinkler maximum, 0'-4" (0-102 mm) minimum.
(B) Listed spacing of sprinkler, maximum, 8'-0" (2.4 m) minimum.
(C) Where angle "C" is greater than an 8/12 (33.7°) pitch, see Figure 2 below.

SPACING OF RESIDENTIAL SPRINKLERS BELOW SLOPED CEILINGS WITH GREATER THAN 8/12 (33.7°) PITCH

(NOTE: Refer to NFPA 13D or NFPA 13R, and the Authority Having Jurisdiction.)



Multiple Slope

Figure 2

(A) One-half listed spacing of sprinkler, maximum.
(B) 3'-0" (.91 m) maximum.
(C) 0'-4" (0-102 mm) minimum.
(D) Slopes greater than an 8/12 (33.7°) pitch.
(E) For distance less than 8'-0" (2.4 m), baffle required.

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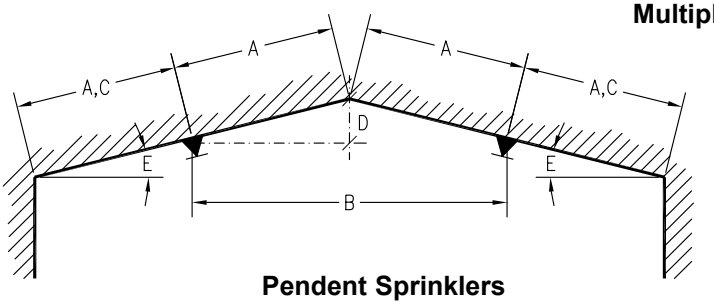
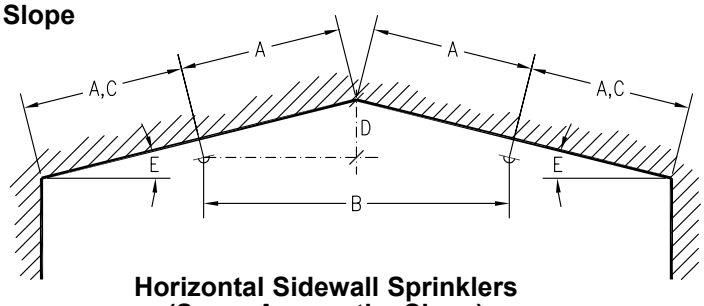
SPACING OF RESIDENTIAL SPRINKLERS LISTED FOR USE BELOW SLOPED CEILINGS UP TO AN 8/12 (33.7°) PITCH

(Refer to the appropriate residential sprinkler technical data page for listings.)

Multiple Slope



Pendent Sprinklers



Horizontal Sidewall Sprinklers (Spray Across the Slope)

Figure 3

(A) One-half listed spacing of sprinkler, maximum.
(B) 8’-0” (2.4 m) minimum.
(C) 0’-4” (0-102 mm) minimum.
(D) 3’-0” (.91 m) maximum.
(E) Acceptable for slopes of 0/12 to 8/12 (0° to 33.7°) pitch.

SPACING OF RESIDENTIAL PENDENT SPRINKLERS AT PEAK OF SLOPED CEILINGS WITH PITCH LESS THAN 8/12 (33.7°)

(Refer to the appropriate residential sprinkler technical data page for listings.)

Multiple Slope

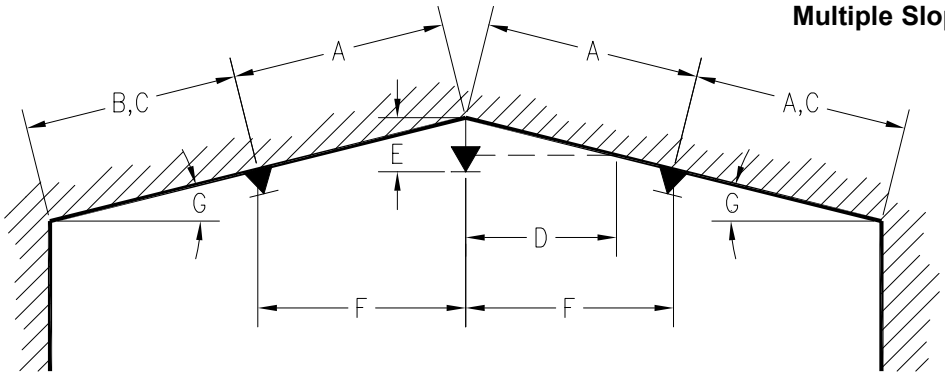


Figure 4

(A) Listed spacing of sprinkler, maximum.
(B) One-half listed spacing of sprinkler, maximum.
(C) 0’-4” minimum.
(D) Refer to page 10 for minimum distance between sprinkler and intersecting sloped ceiling.
(E) Refer to the appropriate residential sprinkler technical data page for deflector distance below ceiling.
(F) 8’-0” minimum.
(G) Reference: 4/12 (18.0°) pitch maximum for 12’ (3.7 m) spacing.
2.5/12 (12.0°) pitch maximum for 14’ (4.3 m) spacing.
2/12 (10.0°) pitch maximum for 16’ (4.9 m) spacing.
2/12 (10.0°) pitch maximum for 18’ (5.5 m) spacing.
1.9/12 (9.0°) pitch maximum for 20’ (6.1 m) spacing.
Angles based on sprinklers installed 0’-4” (0-102 mm) from peak.

NOTE: Whenever possible, utilize design as shown in Figure 3 above.

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SPACING OF RESIDENTIAL SPRINKLERS BELOW SLOPED CEILINGS WITH GREATER THAN 8/12 (33.7°) PITCH WITH NO BAFFLE AND A MAXIMUM OF 2 SPRINKLERS IN THE ROOM

(NOTE: Refer to NFPA 13D or NFPA 13R, and the Authority Having Jurisdiction.)

Multiple Slope

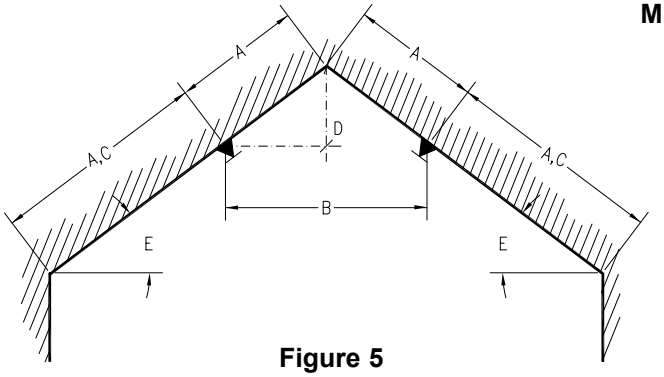

Figure 5

(A) One-half listed spacing of sprinkler, maximum.

(B) 8’-0” (2.4 m) minimum.

(C) 0’-4” (0-102 mm) minimum.

(D) 3’-0” (.91 m) maximum.

(E) Acceptable for slopes greater than an 8/12 (33.7°) pitch.

(F) When this design is used, refer to the appendices of NFPA 13D or NFPA 13R, and the Authority Having Jurisdiction regarding the number of design sprinklers to hydraulically calculate.

SPACING OF RESIDENTIAL SPRINKLERS BELOW CEILINGS WITH SLOPES EXCEEDING 8/12 (33.7°) PITCH WITH NO BAFFLE AND A MAXIMUM OF 3 SPRINKLERS IN THE ROOM

(NOTE: Refer to NFPA 13D or NFPA 13R, and the Authority Having Jurisdiction.)

Multiple Slope

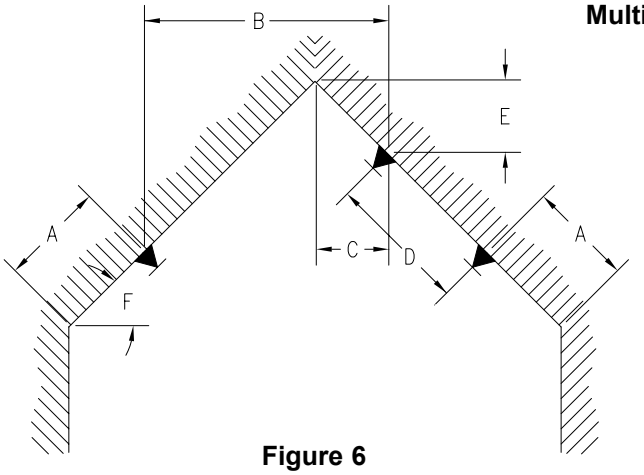

Figure 6

(A) 0’-4” (0-102 mm) minimum, to one-half listed spacing, maximum.

(B) One-half listed spacing, maximum, 8’-0” (2.4 m) minimum.

(C) 0’-4” (0-102 mm) minimum.

(D) Listed spacing maximum, 8’-0” (2.4 m) minimum.

(E) 3’-0” (.91 m) maximum.

(F) Slopes greater than 8/12 up to a 21/12 (33.7° up to 60°) pitch.

NOTES: In addition to the above limits, rooms requiring this type of installation must be hydraulically calculated to supply a minimum of three operating sprinklers. Layout similar for horizontal sidewall sprinklers with throw across slope. Refer to the appropriate residential sprinkler technical data sheets.

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SPACING OF RESIDENTIAL SPRINKLERS BELOW CEILINGS WITH SLOPES EXCEEDING 8/12 (33.7°) PITCH WITH NO BAFFLE AND A MAXIMUM OF 2 SPRINKLERS IN THE ROOM

(NOTE: Refer to NFPA 13D or NFPA 13R, and the Authority Having Jurisdiction.)

Multiple Slope

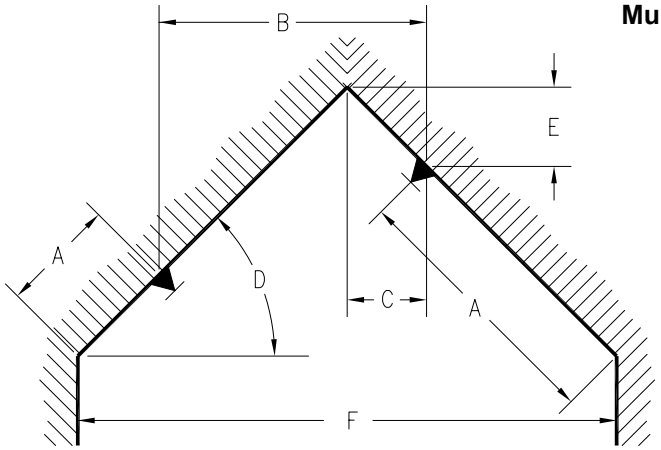


Figure 7

(A) 0'-4" (0-102 mm) minimum, to one-half listed spacing, maximum.

(B) One-half listed spacing, maximum, 8'-0" (2.4 m) minimum.

(C) 0'-4" (0-102 mm) minimum.

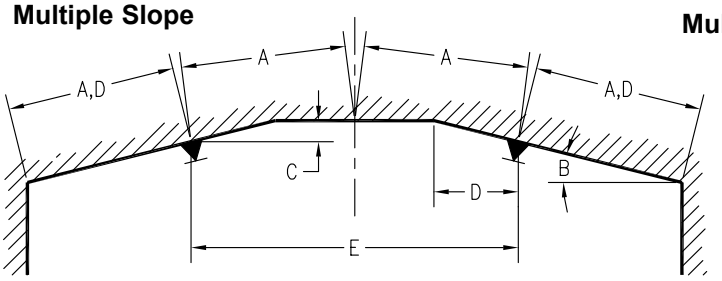
(D) Slopes greater than 8/12 pitch up to a 21/12 (33.7° up to a 60°) pitch.

(E) 3'-0" (.91 m) maximum.

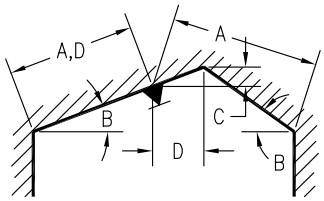
(F) When dimension "F" exceeds 16' (4.9 m), utilize design configuration shown in Figure 6.

NOTES: Layout similar for horizontal sidewall sprinklers with throw across slope. Refer to the appropriate residential sprinkler technical data sheets.

Multiple Slope



Multiple Slope



Single Slope

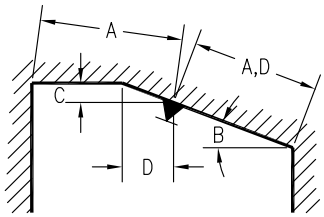


Figure 8

(A) One-half listed spacing, maximum.

(B) Refer to the appropriate residential sprinkler technical data pages for listings of sprinklers for use below slopes up to and including a 8/12 (33.7°) pitch.

(C) 3'-0" (.91 m) maximum.

(D) 0'-4" (0-102 mm) minimum.

(E) 8'-0" (2.4 m) minimum without baffle.

NOTES: Layout similar for horizontal sidewall sprinklers with throw across slope. Refer to the appropriate residential sprinkler technical data sheets.

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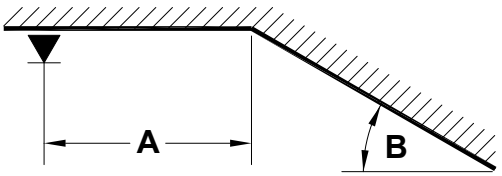
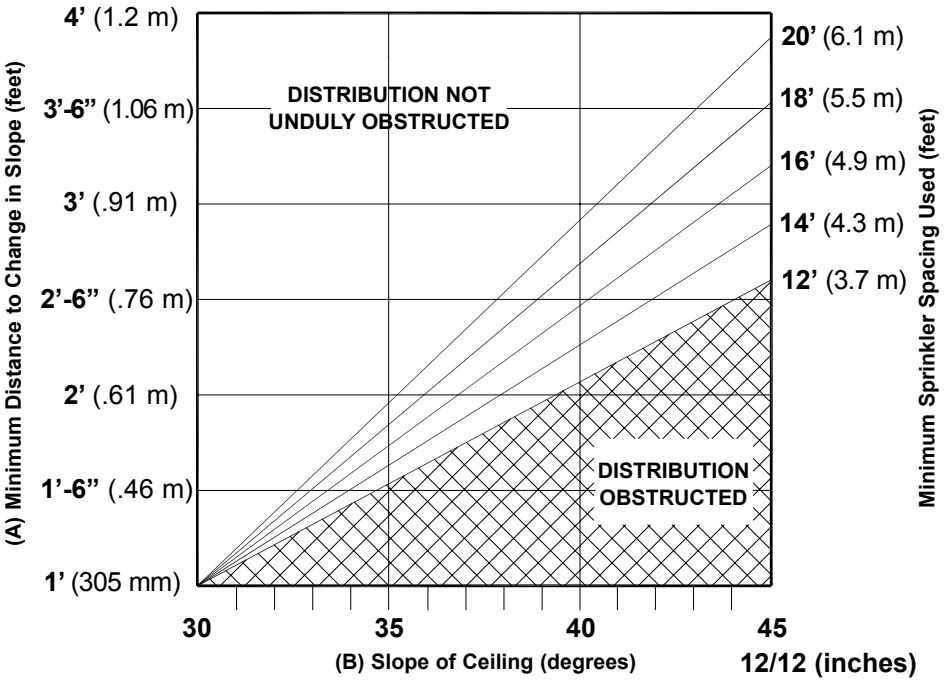
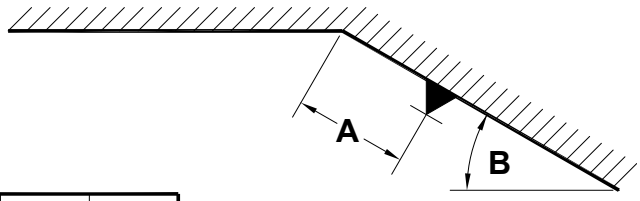
MINIMUM DISTANCE BETWEEN SPRINKLER AND INTERSECTING SLOPED CEILINGS

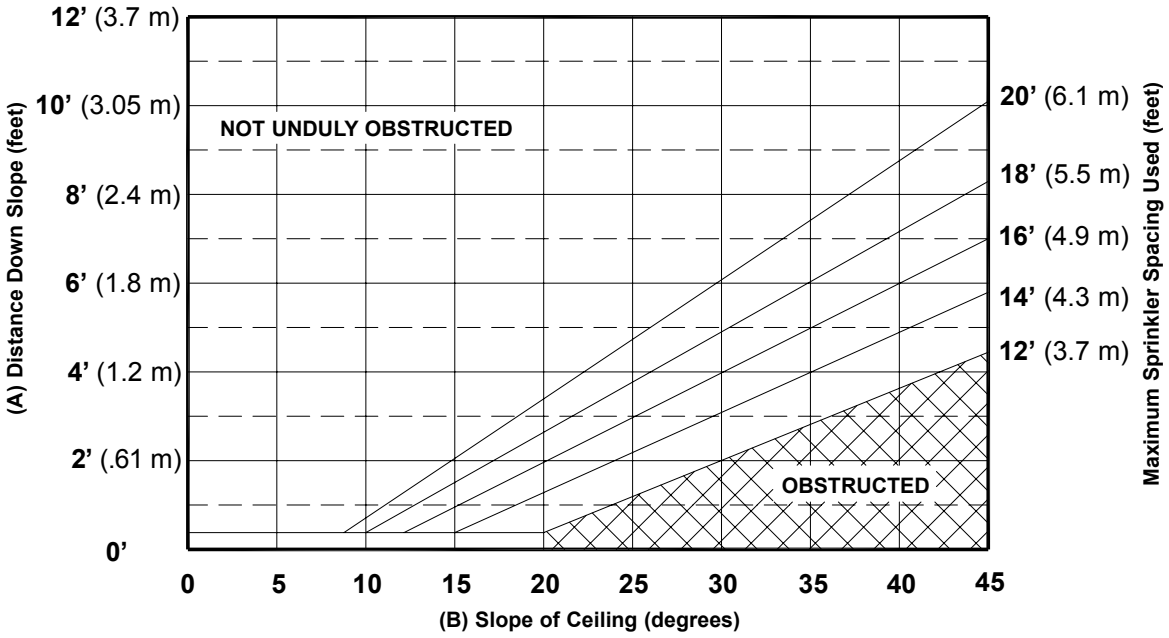


NOTES: For any ceiling slope under 7/12 (30°), distribution is considered Not Unduly Obstructed.



MAXIMUM DISTANCE DOWN SLOPE TO AVOID OBSTRUCTION TO SPRINKLER DISCHARGE





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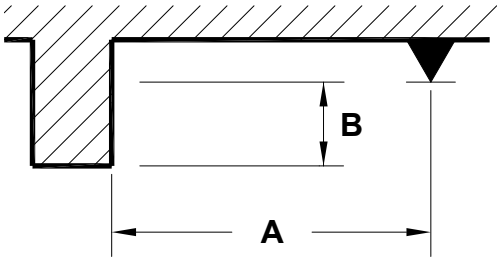
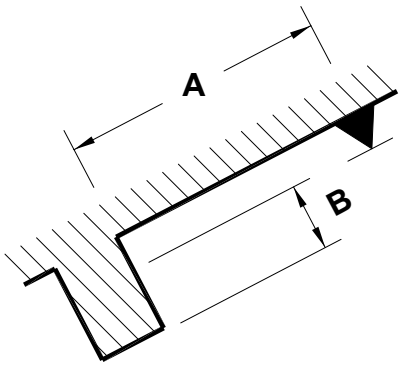
AVOIDING OBSTRUCTIONS TO SPRINKLER DISCHARGE

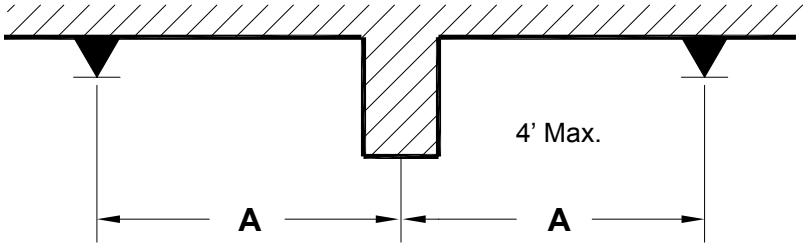
(Obstruction rules for residential sprinklers are found in section 8.10 of the 2010 edition of NFPA 13.)

Positioning Residential Pendent Sprinklers - Obstructions at the Ceiling



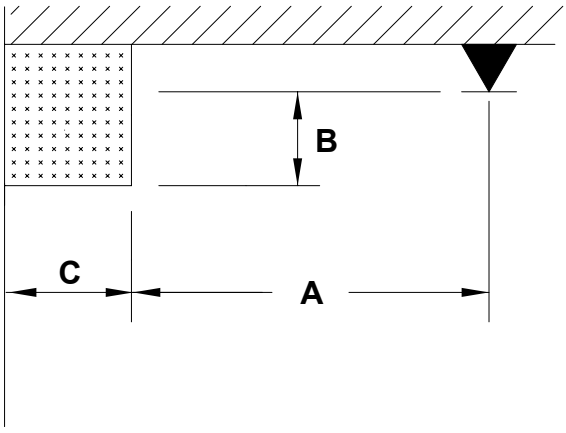


Distance from Sprinkler to Side of Ceiling Obstruction (Dimension A)	Maximum Distance from Deflector to Bottom of Ceiling Obstruction (Dimension B)	
	Inches	mm
Less than 1 ft. 6 in. (Less than 457 mm)	0	0
1 ft. 6 in. to less than 3 ft. (457 mm to less than .94 m)	1	25.4
3 ft. to less than 4 ft. (.91 m to less than 1.2 m)	3	76
4 ft. to less than 4 ft. 6 in. (1.2 m to less than 1.37 m)	5	127
4 ft. 6 in. to less than 6 ft. (1.37 m to less than 1.8 m)	7	178
6 ft. to less than 6 ft. 6 in. (1.8 m to less than 2 m)	9	229
6 ft. 6 in. to less than 7 ft. (2 m to less than 2.1 m)	11	279
7 ft. or greater (2.1 m or greater)	14	356



Residential pendent sprinklers may be located on opposite sides of continuous obstructions up to 4 ft. (1.2 m) wide at the ceiling, as long as the distance from the centerline of the obstruction to the sprinklers (A) does not exceed one-half the maximum spacing allowed between sprinklers.

Positioning Residential Pendent Sprinklers - Obstructions Along Walls



(A) Distance from centerline of sprinkler to side of obstruction.
(B) Distance from deflector to bottom of obstruction.
(C) Width of the obstruction.

Obstructions up to 30 in. (.8 m) wide (C) located against the wall are permitted to be protected when (A) is greater than or equal to (C) minus 8 in. (.2 m) plus (B).

$C \leq 30$ in. $\quad A \geq (C - 8 \text{ in.}) + B$

for metric $C \leq .8$ m $\quad A \geq (C - .2 \text{ m}) + B$

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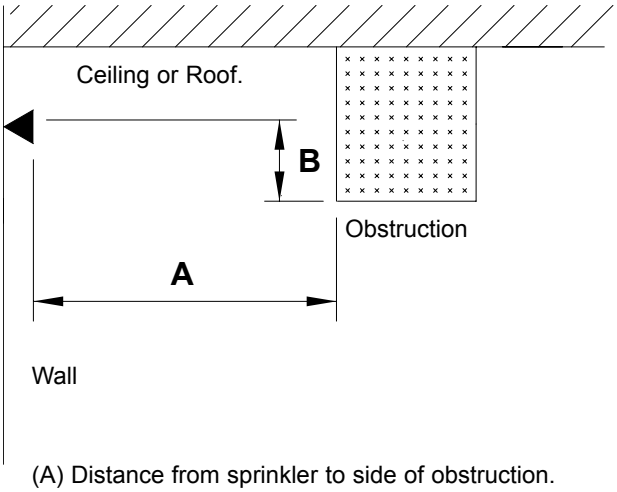
AVOIDING OBSTRUCTIONS TO SPRINKLER DISCHARGE

(Obstruction rules for residential sprinklers are found in section 8.10 of the 2010 edition of NFPA 13.)

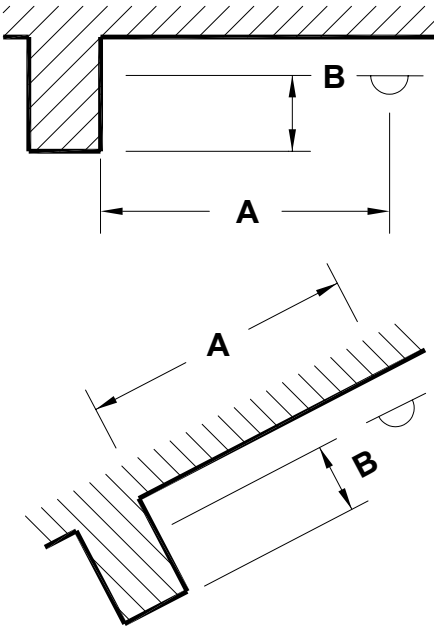
Positioning Residential Horizontal Sidewall Sprinklers - Obstructions at the Ceiling



(A) Distance from sprinkler to side of obstruction.
(B) Distance from deflector to bottom of obstruction.

Distance from Sprinkler to Side of Ceiling Obstruction (Dimension A)	Maximum Distance from Deflector to Bottom of Ceiling Obstruction (Dimension B)	
	Inches	mm
Less than 8 ft. (Less than 2.4 m)	No Obstructions Allowed	
8 ft. to less than 10 ft. (2.4 m to less than 3.05 m)	1	25.4
10 ft. to less than 11 ft. (3.05 m to less than 3.35 m)	2	50.8
11 ft. to less than 12 ft. (3.35 m to less than 3.7 m)	3	76
12 ft. to less than 13 ft. (3.7 m to less than 4 m)	4	102
13 ft. to less than 14 ft. (4 m to less than 4.3 m)	6	152
14 ft. to less than 15 ft. (4.3 m to less than 4.6 m)	7	178
15 ft. to less than 16 ft. (4.6 m to less than 4.9 m)	9	229
16 ft. to less than 17 ft. (4.9 m to less than 5.2 m)	11	279
17 ft. or greater (5.2 m or greater)	14	356

Positioning Residential Horizontal Sidewall Sprinklers - Obstructions Along Walls



Distance from Sprinkler to Side of Obstruction Along Wall (Dimension A)	Maximum Distance from Deflector to Bottom of Obstruction (Dimension B)	
	Inches	mm
Less than 1 ft. 6 in. (Less than 457 mm)	0	0
1 ft. 6 in. to less than 3 ft. (457 mm to less than .94 m)	1	25.4
3 ft. to less than 4 ft. (.91 m to less than 1.2 m)	3	76
4 ft. to less than 4 ft. 6 in. (1.2 m to less than 1.37 m)	5	127
4 ft. 6 in. to less than 6 ft. (1.37 m to less than 1.8 m)	7	178
6 ft. to less than 6 ft. 6 in. (1.8 m to less than 2 m)	9	229
6 ft. 6 in. to less than 7 ft. (2 m to less than 2.1 m)	11	279
7 ft. or greater (2.1 m or greater)	14	356

(A) Distance from sprinkler to side of obstruction.
(B) Distance from deflector to bottom of obstruction.

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LOCATING RESIDENTIAL SPRINKLERS NEAR HEAT SOURCES

Ordinary temperature rated residential sprinklers (135 °F to 170 °F rated) are only to be installed where the maximum ambient ceiling temperature will not exceed 100 °F. Where the maximum ambient ceiling temperature will be from 101 °F to 150 °F, use intermediate temperature rated residential sprinklers (175 °F to 225 °F rated).

Residential sprinklers must be positioned a sufficient distance away from heat sources that include fireplaces, stoves, kitchen ranges, wall ovens, hot water pipes, water heaters, furnaces and associated flues and ducts, and light fixtures. The following minimum distances must be maintained for both ordinary and intermediate temperature rated residential sprinklers as indicated.

Heat Source	Minimum Distance from Edge of Source to Ordinary Temperature Rated Sprinkler		Minimum Distance from Edge of Source to Intermediate Temperature Rated Sprinkler	
	Inches	metric	Inches	metric
Side of open or recessed fireplace	36	.91 m	12	305 mm
Front of recessed fire place	60	1.5 m	36	.91 m
Coal- or wood-burning stove	42	1.1 m	12	305 mm
Kitchen range	18	457 mm	9	229 mm
Wall oven	18	457 mm	9	229 mm
Hot air flues	18	457 mm	9	229 mm
Uninsulated heat ducts	18	457 mm	9	229 mm
Uninsulated hot water pipes	12	305 mm	6	152 mm
Side of ceiling- or wall-mounted hot air diffusers	24	.61 m	12	305 mm
Front of wall-mounted hot air diffusers	36	.91 m	18	457 mm
Hot water heater or furnace	6	152 mm	3	76 mm
Light fixture less than 250W	6	152 mm	3	76 mm
Light fixture 250W to 499W	12	305 mm	6	152 mm
Where residential sprinklers will be exposed to the rays of the sun passing through glass or plastic skylights, use intermediate temperature rated sprinklers.				
When locating residential sprinklers in an unventilated concealed compartment, under an unventilated attic or uninsulated roof, where the maximum ambient temperature does not exceed 150 °F, use intermediate temperature rated sprinklers.				

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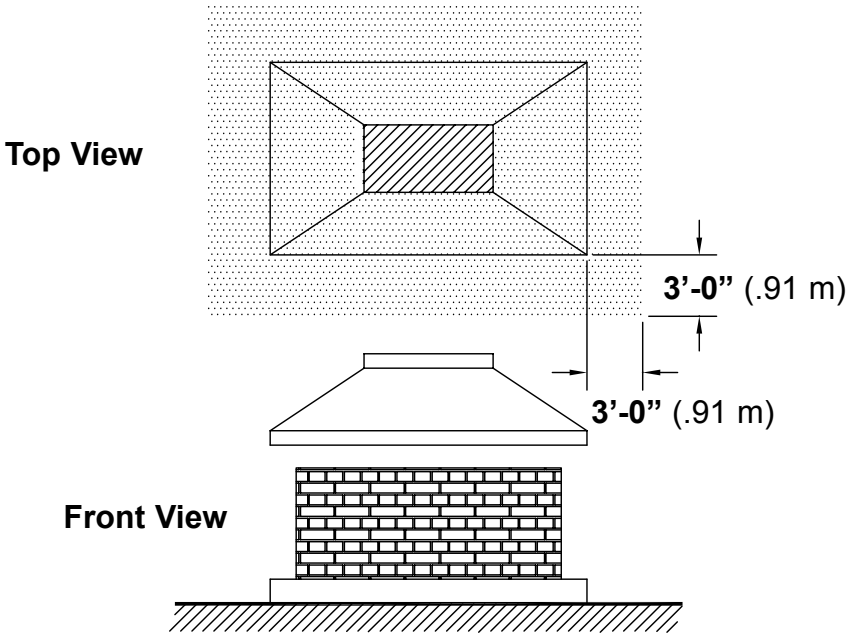
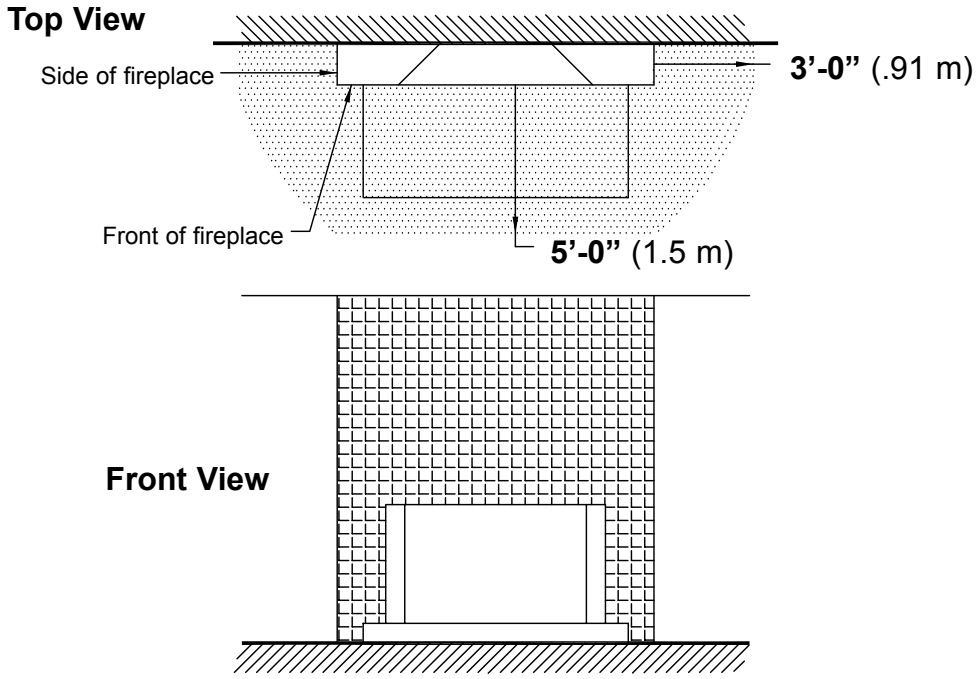
NOTE: The dimensions shown are intended to apply to residential sprinklers installed in ceilings above fireplaces used to burn products that cause elevated temperatures at or near the ceiling in areas surrounding the fireplace. The recommendations should not be construed to apply to decorative non-opening fireplaces such as gas fire units that will not cause elevated temperatures at the ceiling.



Sprinklers near an open hearth fireplace must be located outside of the shaded area or be intermediate degree rated.



Sprinklers near a recessed hearth fireplace must be located outside of the shaded area [at least 3'-0" (.91 m)] from the side of a recessed fireplace and at least 5'-0" (1.5 m) from the front) or be intermediate degree rated.

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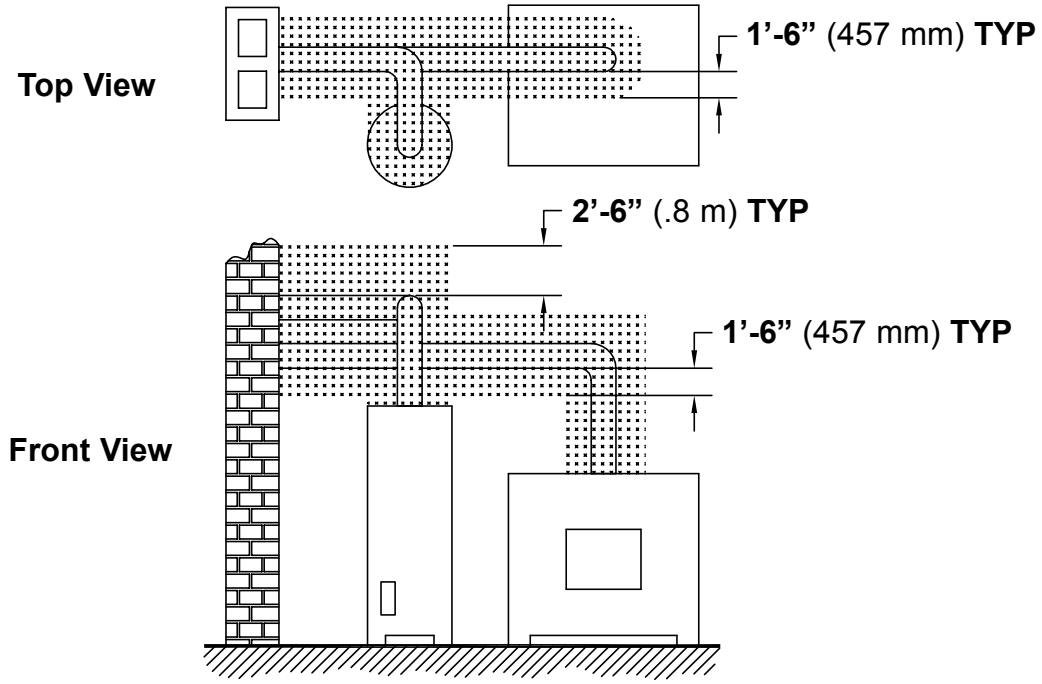
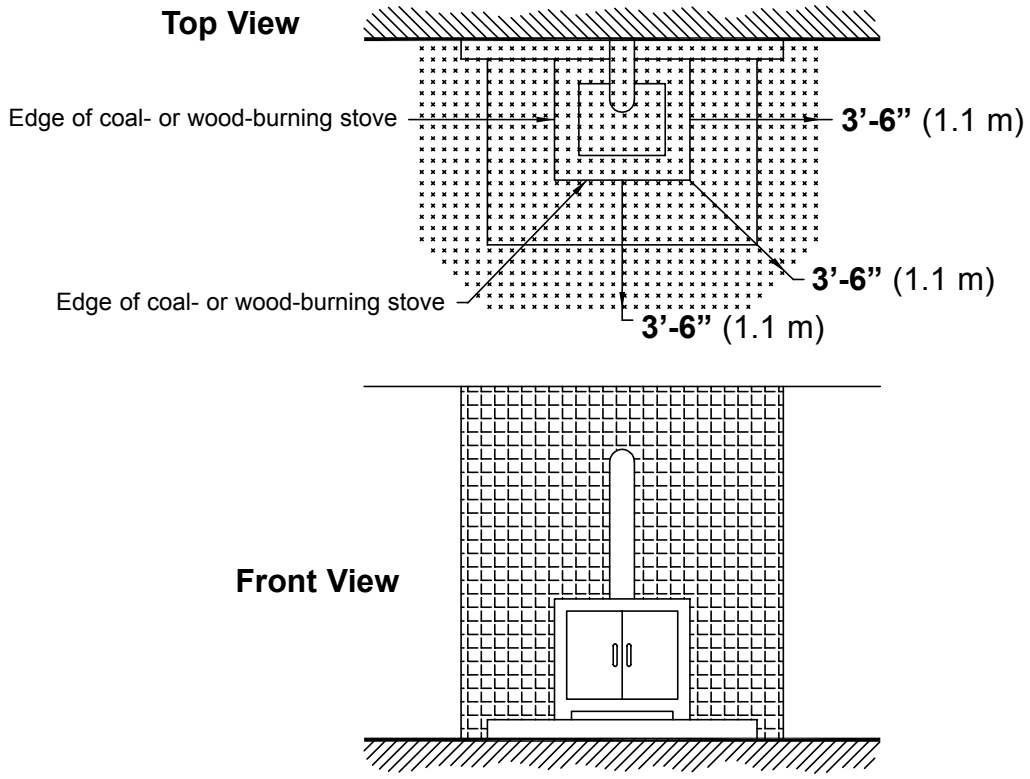


Sprinklers near a furnace or water heater must be located outside of the shaded area or be intermediate degree rated.



Sprinklers near a coal- or wood-burning stove must be located outside of shaded area or be intermediate degree rated.

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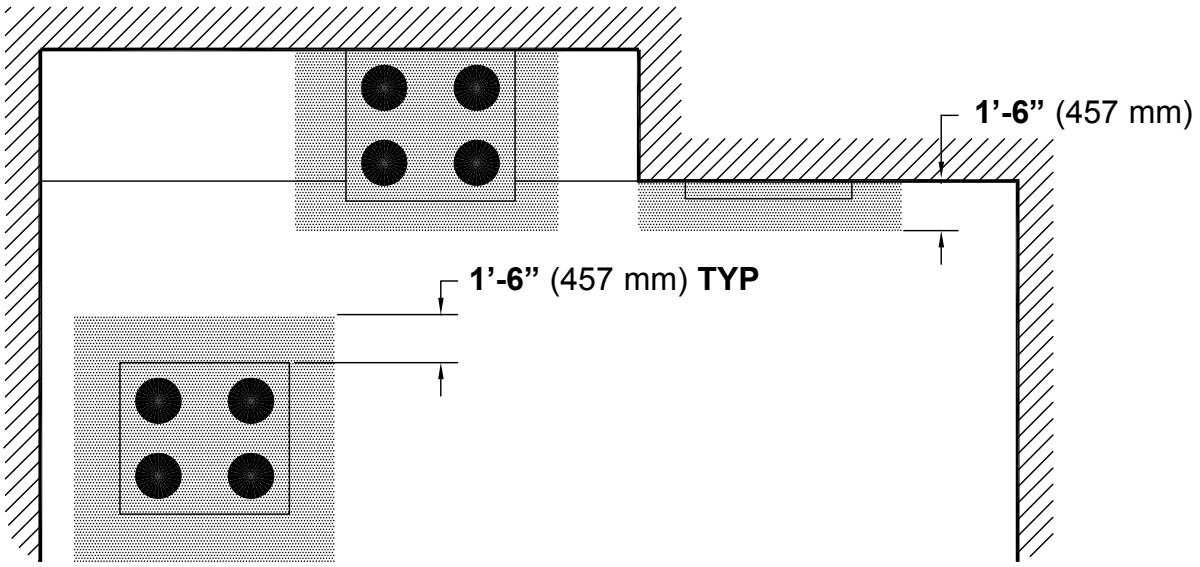
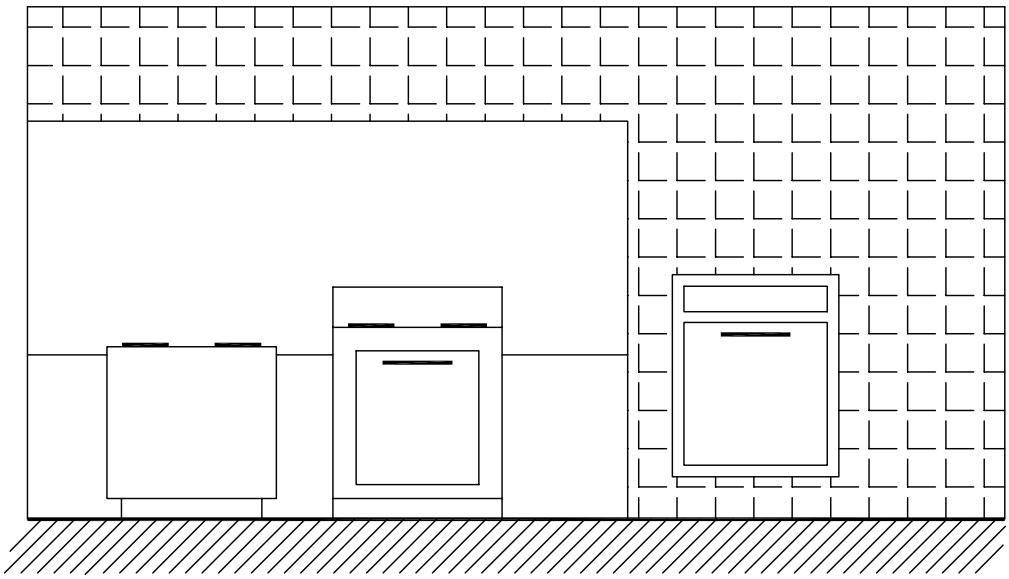
Top View



Front View



Sprinklers near a range or wall oven must be located outside of shaded areas or be intermediate degree rated.

Replaces pages 1-17, dated December 1, 2016.
(Added P65 Warning.)

Form No. F_080190 18.10.25 Rev 16.1.P65

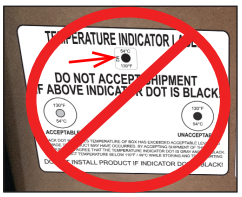
BULLETIN

BEST PRACTICES FOR RESIDENTIAL SPRINKLER HANDLING & INSTALLATION

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

SPRINKLERS ARE FRAGILE - HANDLE WITH CARE!

- Always keep sprinklers in a cool dry place.
- Protect sprinklers during storage, transport and handling as well as before, during and after installation. Refer to Viking's Care and Handling of Sprinklers Bulletin Form No. F_091699[2].
- Proper transit, storage and installation of sprinklers in a high-heat environment is a must. Care should be taken to prevent sprinklers from being exposed to ambient heat conditions in excess of those referenced in installation standards.
- Do not stage or store sprinklers on the job site in advance in a non-conditioned space prior to installation.
- Keep sprinklers in the original packaging and check temperature indicators on box label prior to installation. If the indicator has turned black, DO NOT install any product contained in the box. Refer to Viking product return policies.
- Temperatures exceeding the maximum ambient temperature of the sprinkler temperature-rating during storage, transport, handling and installation must be avoided.
- Per NFPA standards 13, 13R, and 13D, sprinklers installed where maximum ambient temperatures are at or over 101 °F (38 °C) through 150 °F (66 °C) shall be intermediate temperature-rated sprinklers. Additionally, if sprinklers are installed in an unventilated concealed space under an uninsulated roof or in an unventilated attic, they shall be of intermediate temperature classification.
- Sprinklers installed where ambient temperatures are at or below 100 °F (38 °C) may be either ordinary or intermediate temperature-rated sprinklers. Refer to NFPA standards 13R 6.2.3.1 and 13D 7.5.6.1.
- Rough-in of sprinkler piping during hot weather conditions should not include the installation of sprinklers unless reasonable ambient temperatures can be maintained. Ambient temperatures that are considered when choosing the temperature rating for a sprinkler should take into account the range of ambient temperatures that are expected from installation through establishment and maintenance of temperature in a conditioned space. Appropriate insulation may be considered. **Example**: An ordinary temperature sprinkler should not be exposed to maximum ambient temperature higher than 100 °F (38 °C) or more. Refer to NFPA 13, Table 6.2.5.1, NFPA 13R, 6.2.3.1 and NFPA 13D, 7.5.6.1.
- CPVC fire sprinkler products exposed to high ambient temperatures (e.g. installed in unventilated, concealed spaces such as attics) should be insulated to maintain a cooler environment. Refer to Viking Plastics Installation and Design Manual, Form No. F_080712[2], for care and handling procedures.
- Protect all sprinklers and connecting CPVC piping in attic spaces and unvented concealed spaces from excessive heat exposure above 100 °F (38 °C). To separate excessive attic heat, properly tent and fully insulate all pipe in unconditioned spaces.
- Pressure relief valves should be installed on wet sprinkler systems where there is a risk of over-pressurization of a checked water supply, due to thermal expansion. Refer to NFPA 13, 7.1.2.1 and NFPA 13D, A.5.2.2.2.
- Fire sprinkler systems should be installed per current referenced editions of building codes and installation standards adopted in the jurisdiction where work is being performed.



INCORRECT
(Heat exposure)

INCORRECT
(Unconditioned at rough-in)

INCORRECT
(Exposed piping)

INCORRECT
(No pressure relief valve)

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

[1]Hot weather condition is defined as temperatures that can reach the maximum ambient temperature-rating of the sprinkler.
[2]Clicking on blue hyperlink will open referenced document.

⚠ WARNING

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

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

TECHNICAL DATA — SPRINKLER OVERVIEW

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

1. DESCRIPTION

Viking fire sprinklers consist of a threaded frame with a specific waterway or orifice size and a deflector for distributing water in a specified pattern. A closed or sealed sprinkler refers to a complete assembly, including the thermosensitive operating element. An open sprinkler does not use an operating element and is open at all times. The distribution of water is intended to extinguish a fire or to control its spread.

Viking sprinklers are available in several models and styles. Refer to specific sprinkler technical data pages for available styles, finishes, temperature ratings, thread sizes, and nominal K-Factors for the particular model selected.

2. LISTINGS AND APPROVALS

Refer to the Approval Charts on the appropriate sprinkler technical data page(s) and/or approval agency listings.

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

3. TECHNICAL DATA

Pressure Ratings:

Maximum allowable water working pressure is 175 psig (12 Bar) unless rated and specified for high water working pressure [250 psig (17.2 bar)].

Sprinkler Identification:

Viking sprinklers are identified and marked with the word “Viking”, the sprinkler identification number (SIN) consisting of “VK” plus a three digit number*, the model letter, and the year of manufacture.

Available Finishes:

Viking sprinklers are available in several decorative finishes. Some models are available with corrosion-resistant coatings or are fabricated from non-corrosive material. Refer to the sprinkler technical data page for additional information.

Available Temperature Ratings:

Viking sprinklers are available in several temperature ratings that relate to a specific temperature classification. Applicable installation rules mandate the use and limitations of each temperature classification. In selecting the appropriate temperature classification, the maximum expected ceiling temperature must be known. When there is doubt as to the maximum temperature at the sprinkler location, a maximum-reading thermometer should be used to determine the temperature under conditions that would show the highest readings to be expected. In addition, recognized installation rules may require a higher temperature classification, depending upon sprinkler location, occupancy classification, commodity classification, storage height, and other hazards. In all cases, the maximum expected ceiling temperature dictates the lowest allowable temperature classification. Sprinklers located immediately adjacent to a heat source may require a higher temperature rating.

K-Factors:

Viking sprinklers are available in several orifice sizes with related K-Factors. The orifice is a tapered waterway and, therefore, the K-Factor given is nominal. Nominal U.S. K-Factors are provided in accordance with the 1999 edition of NFPA 13, Section 3-2.3. Refer to the specific data page for appropriate K-Factor information.

Available Styles:

Viking sprinklers are available for installation in several positions as indicated by a stamping on the deflector. The deflector style dictates the appropriate installation position of the sprinkler; it breaks the solid stream of water issuing from the sprinkler orifice to form a specific spray pattern. The following list indicates the various styles and identification of Viking sprinklers.

UPRIGHT SPRINKLER: A sprinkler intended to be installed with the deflector above the frame so water flows upward through the orifice, striking the deflector and forming an umbrella-shaped spray pattern downward. Marked “SSU” (Standard Sprinkler Upright) or “UPRIGHT” on the deflector.

PENDENT SPRINKLER: A sprinkler intended to be oriented with the deflector below the frame so water flows downward through the orifice, striking the deflector and forming an umbrella-shaped spray pattern downward. Marked “SSP” (Standard Sprinkler Pendent) or “PENDENT” on the deflector.

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.

CONVENTIONAL SPRINKLER: An “old style” sprinkler intended to be installed with the deflector in either the upright or pendent position. The deflector provides a spherical type pattern with 40 to 60 percent of the water initially directed downward and a proportion directed upward. Must be installed in accordance with installation rules for conventional or old style sprinklers. DO NOT USE AS A REPLACEMENT FOR STANDARD SPRAY SPRINKLERS. Marked “C U/P” (Conventional Upright/Pendent) on the deflector.

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VERTICAL SIDEWALL (VSW) SPRINKLER: A sprinkler intended for installation near the wall and ceiling. The deflector provides a water spray pattern outward in a quarter-spherical pattern and can be installed in the upright or pendent position with the flow arrow in the direction of discharge. Marked “SIDEWALL” on the deflector with an arrow and the word “FLOW”. (Note: Some vertical sidewall sprinklers can only be installed in the upright or pendent position—in this case, the sprinkler will also be marked “UPRIGHT” or “PENDENT”.)

HORIZONTAL SIDEWALL (HSW) SPRINKLER: A sprinkler intended for installation near the wall and ceiling. The special deflector provides a water spray pattern outward in a quarter-spherical pattern. Most of the water is directed away from the nearby wall with a small portion directed at the wall behind the sprinkler. The top of the deflector is oriented parallel with the ceiling or roof. The flow arrows point in the direction of discharge. Marked “SIDEWALL” and “TOP” with an arrow and the word “FLOW”.

EXTENDED COVERAGE (EC) SPRINKLER: A spray sprinkler designed to discharge water over an area having the maximum dimensions indicated in the individual listings. Maximum area of coverage, minimum flow rate, orifice size, and nominal K-Factor are specified in the individual listings. EC sprinklers are intended for Light-Hazard occupancies with smooth, flat, horizontal ceilings unless otherwise specified. In addition to the above markings, the sprinkler is marked “EC”.

QUICK RESPONSE (QR) SPRINKLER: A spray sprinkler with a fast- actuating operating element. The use of quick response sprinklers may be limited due to occupancy and hazard. Refer to the Authority Having Jurisdiction (AHJ) prior to installing.

QUICK RESPONSE EXTENDED COVERAGE (QREC) SPRINKLER: A spray sprinkler designed to discharge water over an area having the maximum dimensions indicated in the individual listing. This is a sprinkler with an operating element that meets the criteria for quick response. QREC sprinklers are only intended for Light Hazard occupancies. The sprinkler is marked “QREC”.

FLUSH SPRINKLER: A decorative spray sprinkler intended for installation with a concealed piping system. The unit is mounted flush with the ceiling or wall, with the fusible link exposed. Upon actuation, the deflector extends beyond the ceiling or wall to distribute water discharge. The sprinkler is marked “SSP”, “PEND”, or “SIDEWALL” and “TOP”.

CONCEALED SPRINKLER: A decorative spray sprinkler intended for installation with a concealed piping system. The sprinkler is hidden from view by a cover plate installed flush with the ceiling or wall. During fire conditions, the cover plate detaches, and upon sprinkler actuation, the deflector extends beyond the ceiling or wall to distribute water discharge. The sprinkler is marked “SSP”, “PEND”, or “SIDEWALL” and “TOP”.

RECESSED SPRINKLER: A spray sprinkler assembly intended for installation with a concealed piping system. The assembly consists of a sprinkler installed in a decorative adjustable recessed escutcheon that minimizes the protrusion of the sprinkler beyond the ceiling or wall without adversely affecting the sprinkler distribution or sensitivity. Refer to the appropriate technical data page for allowable sprinkler models, temperature ratings, and occupancy classifications. DO NOT RECESS ANY SPRINKLER NOT LISTED FOR USE WITH THE ESCUTCHEON.

CORROSION-RESISTANT SPRINKLER: A special service sprinkler with non-corrosive protective coatings, or that is fabricated from non-corrosive material, for use in atmospheres that would normally corrode sprinklers.

DRY SPRINKLER: A special-service sprinkler intended for installation on dry pipe systems or wet pipe systems where the sprinkler is subject to freezing temperatures. The unit consists of a sprinkler permanently secured to an extension nipple with a sealed inlet end to prevent water from entering the nipple until the sprinkler operates. The unit MUST be installed in a tee fitting. Dry upright sprinklers are marked with the “B” dimension [distance from the face of the fitting (tee) to the top of the deflector]. Dry pendent and sidewall sprinklers are marked with the “A” dimension [the distance from the face of fitting (tee) to the finished surface of the ceiling or wall].

LARGE DROP SPRINKLER: A type of special application sprinkler used to provide fire control of specific high-challenge fire hazards. Large drop sprinklers are designed to produce an umbrella-shaped spray pattern downward with a higher percentage of “large” water droplets than standard spray sprinklers. The sprinkler has an extra-large orifice with a nominal K-Factor of 11.2. Marked “HIGH CHALLENGE” and “UPRIGHT”.

EARLY SUPPRESSION FAST-RESPONSE (ESFR) SPRINKLER: A sprinkler intended to provide fire suppression of specific high-challenge fire hazards through the use of a fast response fusible link, 14.0, 16.8, or 25.2 nominal K-Factor, and special deflector. ESFR sprinklers are designed to produce high-momentum water droplets in a hemispherical pattern below the deflector. This permits penetration of the fire plume and direct wetting of the burning fuel surface while cooling the atmosphere early in the development of a high-challenge fire. Marked “ESFR” and “UPRIGHT” or “PEND”.

INTERMEDIATE LEVEL/RACK STORAGE SPRINKLER: A standard spray sprinkler assembly designed to protect its operating element from the spray of sprinklers installed at higher elevations. The assembly consists of a standard or large orifice upright or pendent sprinkler with an integral upright or pendent water shield and guard assembly. Use only those sprinklers that have been tested and listed for use with the assembly. Refer to the technical data page for allowable sprinkler models.

RESIDENTIAL SPRINKLER: A sprinkler intended for use in the following occupancies: one- and two-family dwellings with the fire protection sprinkler system installed in accordance with NFPA 13D; residential occupancies up to four stories in height with the fire protection system installed in accordance with NFPA 13R; and where allowed by the Authority Having Jurisdiction in residential portions of any occupancy with the fire protection system installed in accordance with NFPA 13.

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
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Residential sprinklers have a unique distribution pattern and utilize a “fast response” heat sensitive operating element. They enhance survivability in the room of fire origin and are designed to provide a life safety environment for a minimum of ten minutes. For this reason, residential sprinklers must not be used to replace standard sprinklers unless tested for and approved by the Authority Having Jurisdiction. In addition to standard markings, the unit is identified as “RESIDENTIAL SPRINKLER” or “RES”.

4. INSTALLATION

Refer to appropriate NFPA Installation Standards.

5. OPERATION

Refer to the appropriate sprinkler technical data page(s).

6. INSPECTIONS, TESTS AND MAINTENANCE

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

7. AVAILABILITY

Viking sprinklers are available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

8. GUARANTEE

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

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers and the appropriate sprinkler general care, installation, and maintenance guide. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, FM Global, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable. The sprinkler technical data page may contain installation requirements specific for the sprinkler model selected. The use of certain types of sprinklers may be limited due to occupancy and hazard. Refer to the Authority Having Jurisdiction prior to installation.

VIKING®

BULLETIN

REGULATORY AND HEALTH WARNINGS

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

1. DESCRIPTION

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

⚠ WARNING

STATE OF CALIFORNIA, USA

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

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

2. WARRANTY TERMS AND CONDITIONS

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

SECTION 7

Miscellaneous

PTFE THREAD SEAL TAPE (INDUSTRIAL)

Meets MIL Spec T-27730A

- For all industrial applications.
- Made from 100% virgin PTFE.
- No pigments, no additives.
- Exceeds MILSpec T-27730A.
- Temperature range of -450F to +550F.
- VOC's (Volatile Organic Compounds): Minimal. 1.5% or less
- May be used on all applicationsincluding water, oil, chemical, medical, and food processing where non-contamination standards are high.

60-10-260	1/2" x 260" STANDARD 0.4 DENSITY INDUSTRIAL GRADE
60-10-262	1/2" x 520" STANDARD 0.4 DENSITY INDUSTRIAL GRADE
60-10-264	1/2" x 1296" STANDARD 0.4 DENSITY INDUSTRIAL GRADE
60-10-262	3/4" x 260" STANDARD 0.4 DENSITY INDUSTRIAL GRADE
60-10-267	3/4" x 520" STANDARD 0.4 DENSITY INDUSTRIAL GRADE
60-10-269	3/4" x 1296" STANDARD 0.4 DENSITY INDUSTRIAL GRADE
60-10-270	1" x 260" STANDARD 0.4 DENSITY INDUSTRIAL GRADE
60-10-271	1" x 520" STANDARD 0.4 DENSITY INDUSTRIAL GRADE
60-10-272	1" x 1296" STANDARD 0.4 DENSITY INDUSTRIAL GRADE

System No.		Location		Spec Section		Paragraph	
Submitted By		Date		Approved		Date	

TUF-GLIDE
Thread Sealant with PTFE

Tuf-Glide® is the #1 selling PTFE paste in the fire sprinkler industry.
It has replaced it's competitors as the pipefitters choice.

APPLICATIONS:
Tuf-Glide may be used on steel, aluminum, brass, copper, iron, reinforced fiberglass, CPVC, PVC and ABS threaded connections. Not for use with Stainless Steel Pipe.

Tuf-Glide thread sealant is a non hardening, safe to use sealant containing PTFE for sealing and protecting threaded connections. Its low coefficient of friction allows tight makeup with low torque and breaks out easily without damaging threads.

Tuf-Glide contains no lead or other harmful metals and is perfectly safe for use on potable water lines.
Contains no silicone.
NOT FOR USE ON OXYGEN LINES.

Tuf-Glide is recommended for threaded pipe carrying:

Acids, Dilute	Helium Gases
Air	Hydraulic Oil
Ammonia	Inert Gases
Aliphatic Solvents	Kerosene
Brine	LP Gases
CO2	Mineral Oils
Caustic, Dilute	Natural Gas
Cold Tar Naphtha	Nitrogen, Gaseous
Cutting Oils	Petroleum Solvents
Fatty Acids	Steam
Heating Oils	Vegetable Oils
Freon	Water

Tuf-Glide is listed under the Uniform Plumbing Code (IAPMO), File No. 1282.
Conforms to Federal Specification TT-S-1732 and the requirements
of British Standard 6920: Parts 1 & 2.
TFW is recommended for Plumbing, HVAC, Industrial Piping, Chemical Processing Plants, Manufacturing Plants, Gas Utilities and Fire Sprinkler Piping. Meets U.S. Federal Specification TT-S-1732.

VOC Content: Zero Grams per Liter

ITEM #	DESCRIPTION
1010005	1/2 PINT with BRUSHTOP
1010006	1 PINT with BRUSHTOP
1010007	1 QUART FLAT TOP
1010008	1 QUART with BRUSHTOP
1010009	1 GALLON PAIL
1010010	5 GALLON PAIL
1010011	55 GALLON DRUM

FBC SYSTEM COMPATIBLE

FBC™ System Compatible indicates that this product has been tested, and is monitored on an ongoing basis, to assure its chemical compatibility with FlowGuard Gold®, BlazeMaster® and Corzan® piping systems and products made with TempRite® Technology."
"The FBC System Compatible Logo, FBC™, FlowGuard Gold®, BlazeMaster®, Corzan®, and TempRite® are trademarks of Lubrizol Advanced Materials, Inc. or its affiliates.

Service Rating: -35° F (-37° C) to 500° F (260° C)
Pressures: to 10,000 psi for liquids, 2,000 psi for gases
Shelf Life: Indefinite
V.O.C. Content: None
Fluid Type: Synthetic
Color/Appearance: White Grainy Paste
Dropping Point: (ASTM D-566) Not Applicable
Specific Gravity: 1.20
Density (lb/gal): 10.0
Oil Separation: <5.0
WT. % LOSS @ 212°F (100°C)
Flash Point: (ASTM D-92) >350°F (177°C)
Nonvolatile Content: 100%
Viscosity, Brookfield (ASTM D-2196)
#7 Spindle, 5 rpm @ 77°F (25°C) 160,000-260,000 cps
Brushable To: 0°F (-18°C)
Copper Strip Corrosion: 1A
(ASTM D-4048)

System No.		Location		Spec Section		Paragraph	
Submitted By		Date		Approved		Date	

TUF-GLIDE
Thread Sealant with PTFE

California Proposition 65 requirements are that any material produced after October 31st be labeled with the statement below. The only product considered hazardous in ARGCO TUF-GLIDE is Titanium dioxide which is still food grade allowable. Additionally titanium dioxide is only a respirable cancer substance when in a submicron size. Since it is encapsulated in a paste and greater than 1 micron particle size for the largest percentage it is debatable it even needs to be reported as there is no exposure mode.

WARNING: This product can expose you to Titanium dioxide, which is known to the State of California to cause cancer.
For more information go to www.P65Warnings.ca.gov.

Below is the formula chemical list for ARGCO TUFGLIDE with CAS Numbers.

INGREDIENT	CAS #
Polybutenes	9003-29-6
Calcium sulfonate	61789-86-4
Potassium aluminum silicate	12001-26-2
Kaolin Clay	1332-58-7
Polyethylene	9002-88-4
Talc	14807-96-6
PTFE	9002-84-0
Titanium dioxide (1.2%)	13463-67-7
Organophyllic clay	68953-58-2

System No.		Location		Spec Section		Paragraph	
Submitted By		Date		Approved		Date	

ThreadFit® CLEAR Thread Cutting Oil
Fig. 03-16A

Description

ThreadFit® CLEAR Thread Cutting Oil for Sprinkler Pipe is an excellent heavy duty, light colored cutting oil for all types of ferrous metal. It's special combination of anti-wear and anti-weld additives provides all the necessary lubricity and cooling modern pipe threading operations require. This balanced combination of additives will help improve die life and thread quality over other cutting oils and is Chlorine free. ThreadFit Clear's low smoke/ low odor formulation makes it ideal for use in high speed threading applications.

Features

- Heavy Duty Cutting Oil
- Excellent Tool Life
- Chlorine Free
- All types of ferrous metal or pipe
- Improved Surface Finish
- Low Odor
- Low Smoke

Installation

ThreadFit® can be used in automatic and hand held applicators. Fill oil reservoir according to equipment manufacturers specifications. Mixing of different types of threading oils is not recommended. DO NOT ALTER THE CONSISTENCY OF THIS PRODUCT. Use as is directly from the container. Change oil regularly for optimum performance. Contains petroleum oil. Avoid breathing mists or vapors. Avoid eye contact and prolonged or repeated contact with skin. Wear safety glasses or goggles. Use good personal hygeine. Dispose of used oil in accordance with all local, State and Federal ordinances and regulations. Consult Material Safety Data Sheets for additional safety and handling information. DO NOT MIX WITH OTHER THREAD CUTTING OILS OR CONTAMINANTS.

Specifications

Appearance:
Clear amber liquid.
Packaging:
1 gl. (6/case)
5 gl. Pail
55-gl drum
275-gl tote

Caution:
Skin contact: wash thoroughly with soap and water. Eye contact: flush eyes with water for at least 15 minutes and seek medical attention. Ingestion: consult a physician immediately. Inhalation: move affected person(s) to fresh air and seek medical attention. See SDS for first aid instructions.

Spill or Leak:
Soak up with an oil absorbent compound. Follow all state, local, Federal regulations for disposal. Don't pollute. Conserve our resources-Please recycle this container.

See Safety Data Sheet for additional safety and disposal information at www.fppi.com

This product is registered with CHEMTREC, a 24-hour emergency hotline. They may be reached at 1 800 424-9300.

FBC SYSTEM COMPATIBLE

FBC™ System Compatible indicates that this product has been tested, and is monitored on an ongoing basis, to assure its chemical compatibility with FlowGuard Gold®, BlazeMaster® and Corzan® pipe fittings. FBC™, FlowGuard Gold®, BlazeMaster® and Corzan® are licensed trademarks of The Lubrizol Corporation or its affiliates.

SPEARS COMPATIBLE

Spears® Compatible indicates that ThreadFit® CLEAR Thread Cutting Oil has been tested by Spears® Manufacturing to be compatible with Flameguard® pipe and futtings.

FPPI
An ASC Engineered Solution

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

LubeFit® Gasket Lubricant

INSIST ON FPPI®

Description

LubeFit® is a vegetable fiber based lubricant for all gasketed fittings, including grooved couplings for fire sprinkler systems and all grades of EDPM gaskets. It is non staining* and does not support bacterial growth. LubeFit® can be easily applied in temperatures from -10°F to 150°F. LubeFit® is non-toxic and water soluble. Under normal conditions, LubeFit® is not harmful to the skin.

Design Criteria/Data

- Water dispersible
- Applies equally well to wet or dry surfaces
- Suitable for all types of pipe lines, including potable water
- Excellent working range -10° to 150°
- Will not support bacteria
- Will not deteriorate natural or Synthetic rubber, plastic gaskets or caston iron pipe
- Certified to NSF/ANS/Std 61-G

FBC SYSTEM COMPATIBLE™

FBC™ System Compatible indicates that this product has been tested, and is monitored on an ongoing basis, to assure its chemical compatibility with FlowGuard Gold®, BlazeMaster® and Corzan® pipe and fittings. FBC™, FlowGuard Gold®, BlazeMaster® and Corzan® are licensed trademarks of The Lubrizol Corporation or its affiliates.

SMITH COOPER
COMMERCE, CA 90040
+ 1 (800) 766-0076
+ 1 (323) 890-4456 FAX

Application

LubeFit® should be applied in an even and thin amount over the parts to be lubricated. Avoid applying excessive amounts. The best applicaion is achieved when applying by hand. Clean all dirt, burrs and foreign matter from the joint surfaces. Make certain the gasket is properly located. Apply an even coating of lubricant to all fitting surfaces and gasket. Assemble the joint according to the pipe fitting manufacturer's directions.

Disclaimer

DO NOT ALTER THE CONSISTENCY OF THIS PRODUCT. Use as is directly from the container. Keep away from your mouth and eyes. If eye contact occurs, flush with water for 5 minutes. If discomfort persists get medical attention. *Will stain untreated porous surfaces such as concrete if not cleaned from the surface immediately.

The information contained herein is produced in good faith and is believed to be reliable but is provided for guidance and information purposes only. FPPI and its agents cannot assume liability or responsibility for results obtained in the use or misuse of its product by persons whose methods and qualifications are outside and beyond our control. It is the user's responsibility to determine the suitability of, methods of use, preparation prior to use, and appropriate installation for all products purchased from FPPI. It is the user's sole responsibility to observe and adapt such precautions as may be advisable or necessary for the protection of personnel and property in the handling and use of any of our products.

Specifications

Appearance:
Dense, paste like consistency and is light brown or tan in color.

Contains:
Potassium Oleate, Propylene Glycol and Mica. Contains NO PETROLEUM. LubeFit® is not manufactured with silicone in its formula.

Packaging:
2lb (1-quart approx.)
55-gl drum
(400 lbs. approx.)

See Safety Data Sheet for additional safety and disposal information at www.fppi.com

CAUTION: Eye irritant.
Avoid contact with eyes.
Wash thoroughly after use.

MADE IN U.S.A.

NSF

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SPEARS® MANUFACTURING COMPANY

FS-5 RED

TECHNICAL SPECIFICATIONS
Low VOC CPVC Solvent Cement

PRODUCT:

Spears® FlameGuard® FS-5 RED One-Step (no primer required) CPVC cement specifically formulated and approved for use with Spears® FlameGuard® and other approved CPVC Fire Sprinkler Products with interference fit through 3".

INTENDED USE:

Spears® FS-5 is approved for use with Spears® FlameGuard® and other approved CPVC Fire Sprinkler Products. See publication FG-3, FlameGuard® Installation Instructions for additional application details.

GENERAL PRODUCT SPECIFICATIONS:

COLOR:	Red
RESIN:	CPVC
SPECIFIC GRAVITY:	0.985 ± 0.04
BROOKFIELD VISCOSITY	Heavy Body - Minimum 1600 cP@ 73 ± 2°F (23°C +1° C)
RELATIVE SET:	Fast
MAX VOC EMISSIONS:	490 g/L per SCAQMD Rule 1168/316A
SHELF LIFE:	2 years from date stamped on the bottom of container.

Note: Product usability is limited by the evaporation of the solvents when the container is opened and can cause the cement to thicken and reduce its usefulness. Always seal the can tightly between uses to prevent the solvent from becoming thickened, stringy or jelled. Do not add thinners to change viscosity of thickened cement. Significant changes in cement properties can result.

CONFORMANCE STANDARDS AND APPROVALS:

- NSF®/ANSI Standard 14 Listed and Certified for compliance to ASTM F493
- NSF®/ANSI Standards 14/61 Listed and Certified for Potable Water, Drain Waste and Vent, and Sewer service use (NSF®-PW, DWV, SW) NSF® Listed and Certified to requirements of the Uniform Plumbing Code (NSF® U.P. Code); NSF® Certified Lead-Free.
- FM® and UL® approved for use with Spears® FlameGuard® and other approved CPVC Fire Sprinkler Products.
- Meets SCAQMD Rule 1168/316A for Compliance with LEED® (Leadership in Energy and Environmental Design). Low VOC product credit can be claimed for LEED Green Building Rating System - Indoor Environmental Quality.

PACKAGING, SHIPPING & TRANSPORTATION INFORMATION:

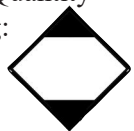
Can Size	Standard Case Quantity
Pint	12
Quart	12

The following is general information for ground shipping, see SDS FS5-6 for additional detail.

Proper Shipping Name: Adhesive
Hazard Class: 3
Identification Number: UN 1133
Packing Group: II
Label Required: Class 3 Flammable Liquid

Exceptions for Quantities < 1 liter

Classification: Limited Quantity
49CFR172.315 Marking:



Note: Purchasers who may repackage this product must also conform to all local, state and federal labeling, safety and other regulations.

SAFETY & USE PRECAUTIONS:

WARNING: CAN CAUSE SERIOUS EYE IRRITATION. HARMFUL IF INHALED. MAY CAUSE DROWSINESS OR DIZZINESS. MAY CAUSE RESPIRATORY IRRITATION. REPEATED EXPOSURE MAY CAUSE SKIN DRYNESS OR CRACKING. KEEP OUT OF REACH OF CHILDREN.

Do not take internally. Keep away from heat, spark, open flame, other sources of ignition. Vapors may ignite explosively. Use only in well ventilated area; if not well ventilated, use forced ventilation or NIOSH approved respirator. Avoid breathing vapors. Do not smoke, eat or drink while using. Avoid contact with skin and eyes. Use skin and eye protection. Eye contact may cause injury. Keep container closed when not in use. Contains Tetrahydrofuran (CAS#109-99-9); Methyl Ethyl Ketone (CAS# 78-93-3); Cyclohexanone (CAS# 108-94-1); Acetone (CAS# 67-64-1); CPVC Resin (CAS# 68648-82-8).

FIRST AID

Contact with eyes: Flush eyes immediately with plenty of water for 15 minutes and seek medical advice immediately.

Skin contact: Remove contaminated clothing and shoes. Wash skin thoroughly with soap and water. If irritation develops, seek medical advice.

Inhalation: Remove to fresh air. If breathing is stopped, give artificial respiration. If breathing is difficult, give oxygen. Seek medical advice.

Ingestion: Rinse mouth with water. Give 1 or 2 glasses of water or milk to dilute. Do not induce vomiting. Seek medical advice immediately.

INSTALLATION & INSTALLER TRAINING

FS-5 is specialty cement; see Spears® publication FG-3, FlameGuard® Installation Instructions, for specific details and limitations. Installation instructions are printed on the can label and instructional information is available on Spears® website at www.spearsmfg.com. Certified Installers Training for FlameGuard® CPVC Fire Sprinkler Systems is also available. Contact Spears® for additional instructional information or formal training.

AVOID USE AROUND DRY GRANULATED CALCIUM HYPOCHLORITE

While CPVC Fire Sprinkler Systems typically are not disinfected, a fire or explosion may result if dry granular calcium hypochlorite is used to disinfect plastic piping systems that are exposed to organic vapors found in solvent cements, cleaners or primers when a water solution is not used. Calcium hypochlorite is a strong oxidizer and common in Pool & Spa chemicals such as “pool-shock”. If required, it is recommended to purify lines by pumping nonvolatile chlorinated water into the piping system. Do not store or use dry granular calcium hypochlorite near solvent cements, cleaners and primers.

Refer to Safety Data Sheet (SDS), Spears® publication FS5-6, for more information.

LIMITED LIFETIME WARRANTY:

Spears® Manufacturing Company warrants all new Solvent Cement and Primer products shall be free from defects in material and workmanship for the specified product shelf life based on the assigned manufactured date on the original product container. If any such product becomes defective under normal use and storage conditions during this warranty period, Spears® will replace the nonconforming solvent cement or primer product without charge. Spears® liability will be limited, without exception, to product replacement. Spears® further warrants properly made solvent cement joints using this product for the life of the system. See Spears® standard Limited Lifetime Warranty for additional detailed information and exclusions.

Progressive Products From Spears® Innovation & Technology

SPEARS® MANUFACTURING COMPANY
15853 Olden St, Sylmar, CA 91342 • PO Box 9203, Sylmar, CA 91392
(818) 364-1611 • www.spearsmfg.com

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HIGH-PERFORMANCE INTUMESCENT FIRESTOP SEALANT FS-ONE MAX

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

Applications for use

- For effectively sealing most common through penetrations in a variety of base materials
- For use on concrete, masonry and drywall
- Mixed and multiple penetrations
- Metal pipe penetrations: copper, steel and EMT
- Insulated metal pipe penetrations: steel and copper
- Plastic pipe penetrations: closed or vented

Advantages

- One product for a variety of common through penetrations
- Cost-effective, easy-to-use solution
- Water-based and paintable
- Industry-leading VOC results
- Ethylene glycol-free

Installation instructions

- See Hilti literature or third-party listings for complete application and installation details

Technical Data*

Chemical basis	Water-based acrylic dispersion
Approx. Density	84.3 lb/ft^3
Color	Red
Approx. cure time[1)]	2mm / 3 days
Application temperature range[2)]	35°F to 104° (1.5C to 40°C)
Temperature resistance range	-4°F to 212°F (-20°C to 100°C)
Storage Temperature	35°F to 77F (1.5°C to 25°C)
Tack free time	20mins (@ 73°F / 50% rel. humidity)
Shelf life	18 months
Temperature resistance range	-4°F to 212°F
Mold and mildew performance	Class 0 (ASTM G21-13)
Mold and mildew resistant	Yes
Expansion ratio (unrestricted, up to)	1:5
Paintable	Yes
Chemical resistance	Yes
Electrical resistance	Yes
FBC compatible (Lubrizol)	Yes
Intumescent	Yes
W-rating	Yes
M-rated	Yes
LEED VOC (input)	9 g/L
LEED V4 Compliant	Yes (CDPH v1.2-2017)
STC rating (ASTM E90)	62 (relates to specific construction)
Movement	±7.5%
Surface burning characteristics (ASTM E 84-14)	Flame Spread: 0 Smoke Development: 10
California State Fire Marshal approval	CSFM Listing 4485-1200:0108 for FS-ONE MAX Intumescent Firestop Sealant
Tested in accordance with	ASTM G21, ASTM E 90, CAN/ULC-S115, UL 1479, ASTM E 814 , ASTM E84

Order Information

Designation	Qty per package	Item number
FS-ONE MAX 10oz tube (1 case)	12x Firestop sealant FS-ONE MAX 10 oz cartridge	3530249
FS-ONE MAX 20oz foil (1 case)	25x Firestop sealant FS-ONE MAX 20 oz foil	3530250
FS-ONE MAX 10 oz cartridge	1x Firestop sealant FS-ONE MAX 10 oz cartridge	2101531
FS-ONE MAX 5 gallon pail	1x Firestop sealant FS-ONE MAX 5 gallon pail	2101533

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

Intertek

FM APPROVED

FBC SYSTEM COMPATIBLE
Visit fbcsystemcompatible.com.
FBC™ is a trademark of the Lubrizol Corporation.

Chemical resistant

Mold and mildew resistant

W rated SYSTEMS AVAILABLE

Volume per unit:
- Caulk tube = 10.5 fl. oz (18.9in^3)
- Foil = 600ml (36.4in^3)
- Pail = 5gal (1,155in^3)

1) At 75°F (24°C) and 50% relative humidity

2) For ambient and surface temperatures between 10°F (-12°C) and 35°F (1.5°C), the following conditions must apply:
- Substrate surfaces are clean and dry (e.g. free of dust, rust, grease, oil, dew, frost, ice, moisture, etc);
- Product maintained above 50°F (10°C) for a minimum of 24 hours prior to application;
- Product will not cure at ambient temperatures below 32°F / 0°C

Hilti Firestop
Saving lives through innovation and education

CAST-IN FIRESTOP DEVICES (CP 680-P, CP 680-PX, AND CP 680-M)

For use in

- Dust and fiber free environments such as hospitals, computer centers and laboratories
- Concrete floor assemblies rated up to 4 hours

Product description

- A one-step cast-in firestop device for a variety of pipe materials and diameters
- Helps reduce labor costs and increase productivity
- Ready-to-use out of the package
- Internationally tested and approved by UL and FM
- Helps reduce the chance of project delays due to failed inspections

Product features

- Quicker and simpler installation
- SpeedLine Alignment system promotes faster layout
- QuickTurn System creates faster, simpler vertical connections
- Integrated moisture and smoke seal
- Innovative adapter for metal deck applications

Installation and applications

- Concrete floors from 2.5" (63 mm) thickness for either flat concrete or concrete over metal deck

  CP 680-M:
  - Insulated and non-insulated metal pipes
  - EMT and electrical conduits
  - Cable bundles
  - Multiple pipes

  CP 680-P:
  Addresses all applications for CP 680-M as well as the following:
  - Plastic pipes such as PVC, CPVC, ABS, ENT and FRPP
  - Fresh and waste water pipes

  CP 680-PX:
  Addresses all applications for CP 680-M as well as the following:
  - XFR pipes

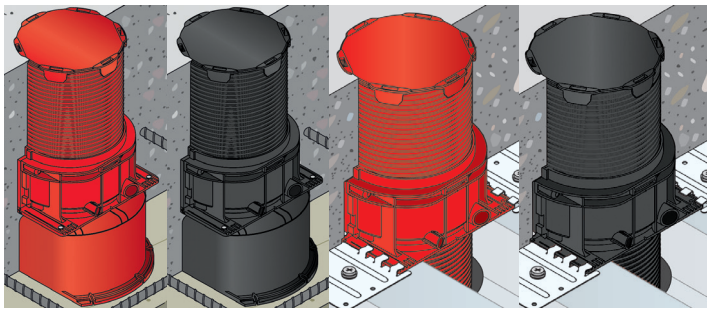
Not suited for

- Areas with high condensation
- Outdoor areas
- Wall applications

Installation and applications

Notice
- Before handling, read Material Safety Data Sheet and product label for safe usage and health information.
- Instructions below are general guidelines — always refer to the applicable drawing in the UL Fire Resistance Directory or Hilti Firestop Systems Guide for installation information

Instructions for use
- Before pouring concrete, secure the cover cap in place, thereby preventing the flow of concrete into the cast-in device
- Do not use for wall applications



CP 680-P and CP 680-PX in concrete over wood forms | CP 680-M in concrete over wood forms | CP 680-P and CP 680-PX over metal deck | CP 680-M over metal deck

Technical Data		CP 680-P, CP 680-PX, and CP 680-M
ID	**Footprint**	**Opening required thru metal deck**
2"	3-3/4" x 4-1/2"	3-1/2" diameter
3"	4-3/4" x 5-5/8"	4-1/2" diameter
4"	6-3/8" x 6-3/4"	5-1/2" diameter
6"	9" x 9-1/2"	7-1/2" diameter
Application temperature range		23°F to 122°F (-5°C to 50°C)
Expansion temperature		392°F (200°C)
Expansion rate		1:50 (unrestrained) 1:30 (Load expansion, Load = 20g/cm^3)
Standard height		8"
Temperature resistance		Maximum 212°F (100°C)
Color		CP 680-P: red CP 680-M: black
Tested in accordance with • UL 1479 • ASTM E 814 • ASTM G21 • CAN/ULC-S115		

Internationally tested and approved

FIRESTOP DEVICE
FOR USE IN THROUGH-PENETRATION FIRESTOP SYSTEMS
SEE UL FIRE RESISTANCE DIRECTORY 5N76

FM APPROVED

FBC SYSTEM COMPATIBLE

FBC™ System Compatible indicates that this product has been tested, and is monitored on an ongoing basis, to assure its chemical compatibility with FlowGuard Gold®, BlazeMaster® and Corzan® piping systems and products made with TempRite® Technology." "The FBC System Compatible Logo, FBC™, FlowGuard Gold®, BlazeMaster®, Corzan®, and TempRite® are trademarks of Lubrizol Advanced Materials, Inc. or its affiliates."

GKL • 03/23

Hilti Firestop
Saving lives through innovation and education

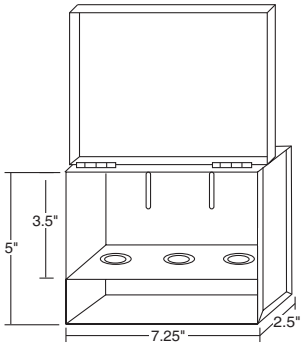
Hilti, Inc.
1-800-879-8000 | en español 1-800-879-5000
www.hilti.com

FIRE SPRINKLER SPARE HEAD BOXES

- Heavy duty 20 gauge steel construction
- Red powder coated finish
- Knockouts and shelf to accommodate any 1/2” or 3/4” sprinkler head
- Shelf is positioned to allow for a typical sprinkler head wrench
- All-welded construction and full length hinge
- Slotted for easy mounting with screws, rivets or strapping

  (Not intended for exposed or harsh environments)

3 Head Box



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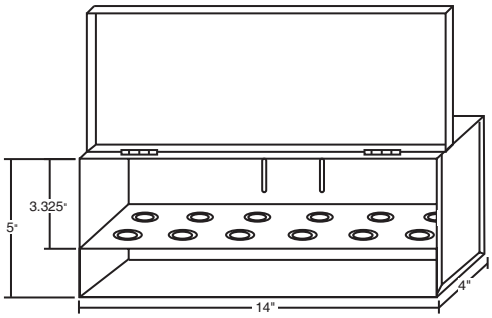
12 Head Box



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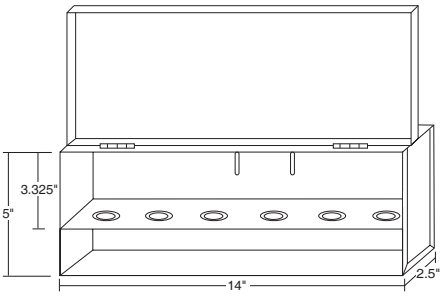
6 Head



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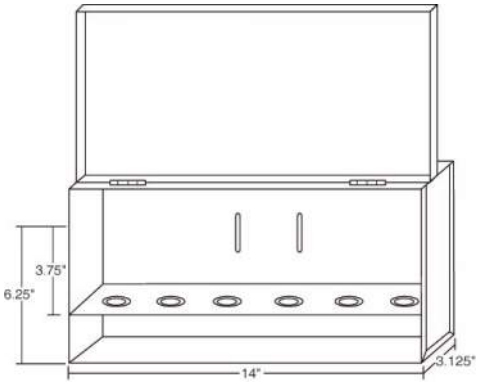
6 Large Head Box



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System No.		Location	
Submitted By		Date	

Spec Section		Paragraph	
Approved		Date	

Two-Piece Recessed Escutcheons and Protective Paint Caps for Automatic Sprinkler Recessed Installation

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/tfp770

General Description

The TYCO Style 10, 15, 20, 30, 40, 50, and 70 Recessed Escutcheons are designed for recessed installation with certain pendent and horizontal sidewall sprinklers. They are intended for use in areas with finished ceilings or walls, and the adjustment provided by these escutcheons reduces the accuracy to which fixed piping to the sprinklers must be cut, while providing a decorative recessed sprinkler installation.

Each two-piece escutcheon style provides for recessed sprinkler installations having total adjustments from the flush position as follows:

Style	Thread Size Inch NPT	Total Adjustment Inch (mm)
10	1/2	3/4 (19,1)
15	1/2	5/8 (15,9)
20	1/2	1/2 (12,7)
30	3/4	1/2 (12,7)
40	3/4	3/4 (19,1)
50	1/2	3/8 (9,5)
70*	3/8	3/4 (19,1)

* Use with Series TY-B and TY-FRB 10 mm orifice sprinklers only, refer to technical data sheet TFP670

The Style 10, 20, 30, 40, and 50 Recessed Escutcheons are redesignations for Central, Gem, and Star brands as follows:

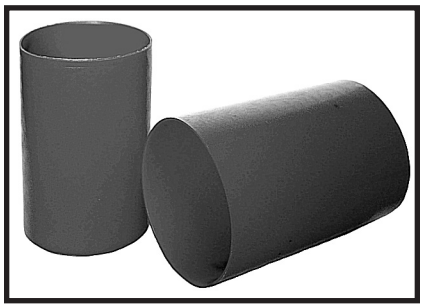
Style	Central	Gem	Star
10	3211	F700 (1/2 in.)	2085
20	3221	F705 (1/2 in.)	2084
30	4221	F705 (3/4 in.)	2086
40	4211	F700 (3/4 in.)	2088
50	307X	-	-

Note: *The Style 15 and 70 Recessed Escutcheons are not redesignated from any of the brands listed.*

Install Protective Paint Caps to help protect the sprinklers while finishing ceilings or walls as seen in Figures 8 and 9. Protective Paint Caps are ordered separately. The Model Z-392 is suitable for use with the Style 10, 15, 20, 30, 40, or 70 Recessed Escutcheons. The Model Z-84 is suitable for use with Style 50 Recessed Escutcheon only.

NOTICE

The Recessed Escutcheons 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 authorities having jurisdiction, such as FM Global. 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.

In all cases, the appropriate NFPA or FM Global installation standard, or other applicable standard, must be referenced to ensure applicability and to obtain complete installation guidelines. The general guidelines in this data sheet are not intended to provide complete installation criteria.

Technical Data

Approvals

Approval information, as applicable, for the Style 10, 15, 20, 30, 40, 50, and 70 Recessed Escutcheons is detailed in individual pendent and horizontal sidewall sprinkler data sheets that include details of recessed installation.

Materials and Finishes

Carbon steel chrome plated, white or black coated, or brass plated. Series 300 stainless steel white coated or plain unpolished. Other colors are available on special request.

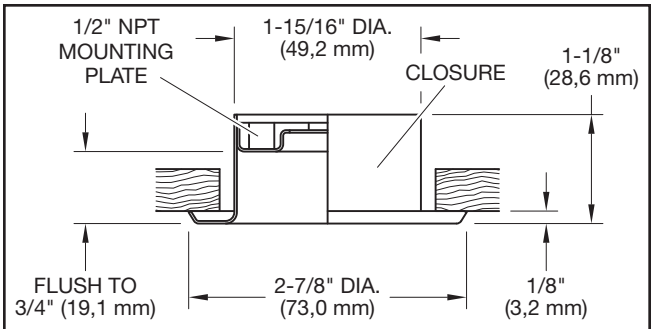


FIGURE 1
STYLE 10 RECESSED ESCUTCHEON,
1/2 IN. NPT - 3/4 IN. ADJUSTMENT

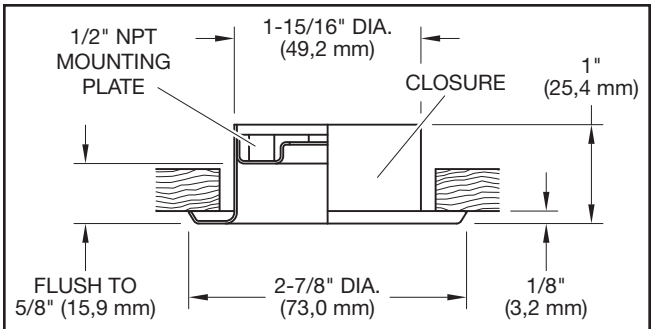


FIGURE 2
STYLE 15 RECESSED ESCUTCHEON
1/2 IN. NPT - 5/8 IN. ADJUSTMENT

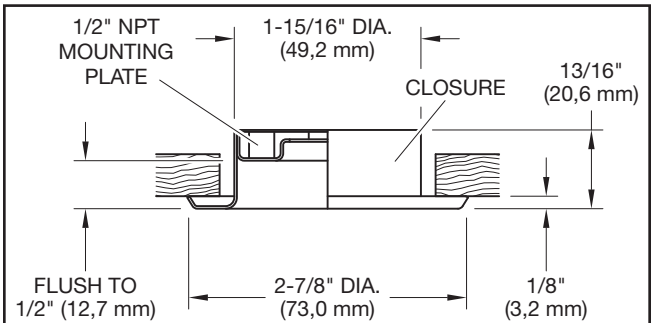


FIGURE 3
STYLE 20 RECESSED ESCUTCHEON
1/2 IN. NPT - 1/2 IN. ADJUSTMENT

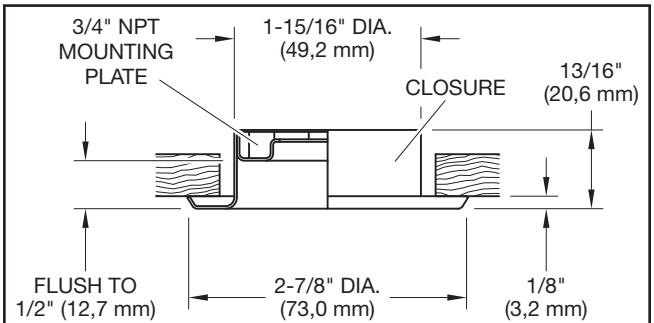


FIGURE 4
STYLE 30 RECESSED ESCUTCHEON
3/4 IN. NPT - 1/2 IN. ADJUSTMENT

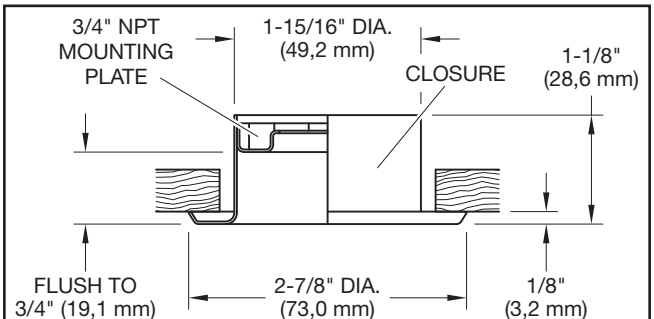


FIGURE 5
STYLE 40 RECESSED ESCUTCHEON
3/4 IN. NPT - 3/4 IN. ADJUSTMENT

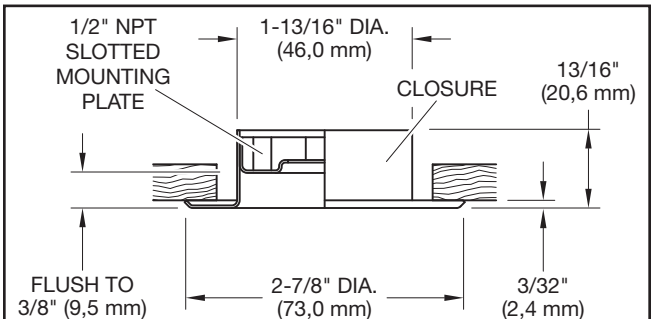


FIGURE 6
STYLE 50 RECESSED ESCUTCHEON
1/2 IN. NPT - 3/8 IN. ADJUSTMENT

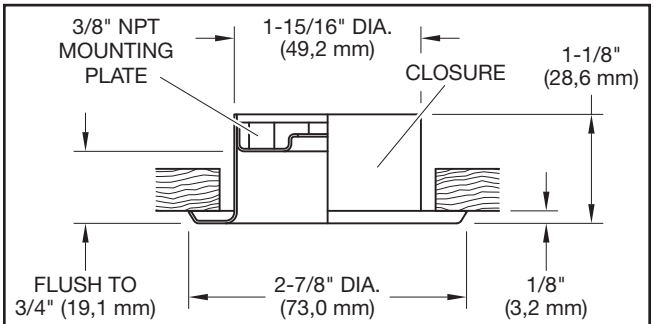


FIGURE 7
STYLE 70 RECESSED ESCUTCHEON
3/8 IN. NPT - 3/4 IN. ADJUSTMENT

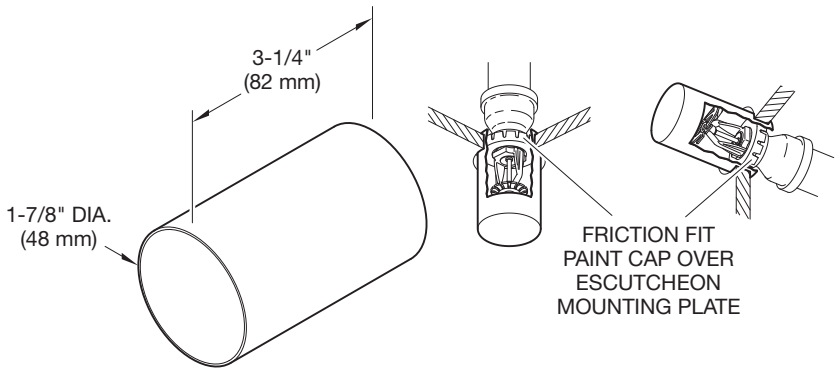


FIGURE 8
MODEL Z-392 PROTECTIVE PAINT CAP
FOR USE WITH STYLE 10, 15, 20, 30, 40, OR 70
RECESSED ESCUTCHEON

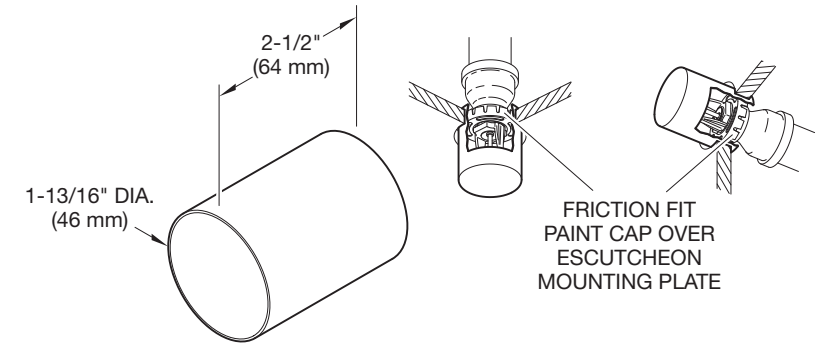


FIGURE 9
MODEL Z-84 PROTECTIVE PAINT CAP
FOR USE WITH STYLE 50 RECESSED ESCUTCHEON

Recessed Escutcheon Installation

Installation information for the Style 10, 15, 20, 30, 40, 50, and 70 Recessed Escutcheons is provided in individual pendent and horizontal sidewall sprinkler data sheets, as applicable. These data sheets also include details of recessed sprinkler installations.

Note: *The Style 10, 15, 20, 30, 40, 50, and 70 Recessed Escutcheons must only be used with the sprinklers for which they have been specifically laboratory approved by UL, C-UL, ULC, or FM.*

Protective Paint Cap Installation

With reference to Figures 8 and 9, push the Protective Paint Cap over the Mounting Plate of the Recessed Escutcheon in lieu of the Closure.

After the ceiling or wall finish is complete, remove the Protective Paint Cap and install the Closure.

The Protective Paint Cap may be discarded as a plastic commodity or Low Density Polyethylene Recycling Category 4, in conformance with local regulations. Alternatively, the Protective Paint Cap may be reused.

Note: *The sprinkler cannot operate properly with the Protective Paint Cap in place.*

Care and Maintenance

Specific requirements of the NFPA must be performed, and any impairment must be immediately corrected.

Absence of an escutcheon to cover a clearance hole can delay the sprinkler operation in a fire situation.

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 NFPA, such as NFPA 25, in addition to the standards of any authority having jurisdiction. Contact the installing contractor or product manufacturer with any questions.

Automatic sprinkler systems should 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).

Protective Paint Cap
Specify: Model (specify) Protective Paint Cap, P/N (specify):

Model Z-84. 56-711-1-084
Model Z-392. 92-000-0-412

Recessed Escutcheon
Specify: Style (specify) Recessed Escutcheon, (specify Carbon Steel or Stainless Steel), (specify) finish, P/N (specify):

Carbon Steel

Style 10
1/2 in. NPT (15 mm), 3/4 in. (19,1 mm) total adjustment

Brass Plated. 56-701-2-010
Pure White (RAL9010)*. 56-701-3-010
Signal White (RAL9003). 56-701-4-010
Jet Black (RAL9005) 56-701-6-010
Chrome Plated 56-701-9-010

Style 15
1/2 in. NPT (15 mm), 5/8 in. (15,9 mm) total adjustment

Brass Plated. 56-715-2-010
Pure White (RAL9010)*. 56-715-3-010
Signal White (RAL9003). 56-715-4-010
Jet Black (RAL9005) 56-715-6-010
Chrome plated 56-715-9-010

Style 20
1/2 in. NPT (15 mm), 1/2 in. (12,7 mm) total adjustment

Brass Plated. 56-705-2-010
Pure White (RAL9010)*. 56-705-3-010
Signal White (RAL9003). 56-705-4-010
Jet Black (RAL9005) 56-705-6-010
Chrome Plated 56-705-9-010

Style 30
3/4 in. NPT (20 mm), 1/2 in. (12,7 mm) total adjustment

Brass Plated. 56-705-2-011
Pure White (RAL9010)*. 56-705-3-011
Signal White (RAL9003). 56-705-4-011
Jet Black (RAL9005) 56-705-6-011
Chrome Plated 56-705-9-011

Style 40
3/4 in. NPT (20 mm), 3/4 in. (19,1 mm) total adjustment

Brass Plated. 56-700-2-010
Pure White (RAL9010)*. 56-700-3-010
Signal White (RAL9003). 56-700-4-010
Jet Black (RAL9005) 56-700-6-010
Chrome Plated 56-700-9-010

Style 50
1/2 in. NPT (15 mm), 3/8 in. (9,5 mm) total adjustment

Brass Plated. 56-711-2-010
Pure White (RAL9010)*. 56-711-3-010
Signal White (RAL9003). 56-711-4-010
Chrome Plated 56-711-9-010

Style 70
For use with TY-B and TY-FRB 10 mm orifice sprinklers only. Refer to data sheet TFP670

3/8 in. NPT (10 mm), 3/4 in. (9,1 mm) total adjustment

ANZ only:

Signal White (RAL9003). ECPL2PW10
Chrome Plated ECPL2PC10
Brass ECPL2PB10
Jet Black (RAL9005) ECPL2PBL10

EMEA only:

Pure White (RAL9010)*. ESCSTDRA10
Signal White (RAL9003). ESCSTDWH10
Chrome Plated ESCSTDCH10
Brass ESCSTDBR10
Jet Black (RAL9005) ESCSTDJB10

* Eastern Hemisphere sales only

Stainless Steel

Style 10
1/2 in. NPT (15 mm), 3/4 in. (19,1 mm) total adjustment

Signal White (RAL9003). 56-701-0-010
Plain Unpolished 56-701-1-010
Grey Aluminum (RAL9007) 56-701-7-010

Style 15
1/2 in. NPT (15 mm), 5/8 in. (15,9 mm) total adjustment

Signal White (RAL9003). 56-715-0-010

Style 20
1/2 in. NPT (15 mm), 1/2 in. (12,7 mm) total adjustment

Signal White (RAL9003). 56-705-0-010
Plain Unpolished 56-705-1-010

Style 30
3/4 in. NPT (20 mm), 1/2 in. (12,7 mm) total adjustment

Signal White (RAL9003). 56-705-0-011
Plain Unpolished 56-705-1-011

Style 40
3/4 in. NPT (20 mm), 3/4 in. (19,1 mm) total adjustment

Signal White (RAL9003). 56-700-0-010
Plain Unpolished 56-700-1-010
Grey Aluminum (RAL9007) 56-700-7-010

Style 50
1/2 in. NPT (15 mm), 3/8 in. (9,5 mm) total adjustment

Signal White (RAL9003). 56-711-0-010
Plain Unpolished 56-711-1-010

Style 70
For use with TY-B and TY-FRB 10 mm orifice sprinklers only, refer to data sheet TFP670

3/8 in. NPT (10 mm), 3/4 in. (9,1 mm) total adjustment

ANZ only:

Plain Unpolished ECPL2PS10

EMEA only:

Plain Unpolished ESCSTDSS10

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