SMITH FIRE SYSTEMS, INC.

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FIRE SPRINKLER EQUIPMENT INDEX

PROJECT INFORMATION:
WA STATE FAIR - INT'L VILLAGE
110 9TH AVE SW
PUYALLUP, WA 98371

11/20/2024
SFS PROJECT NUMBER: **TC24073**

VALVES

NO.	MANUFACTURER	SIZE	MODEL	DESCRIPTION
1	RELIABLE	4"	DDX-LP	DRY PIPE VALVE W/ BUTTERFLY CONTROL VALVE
2	VICTAULIC	4"	705	BUTTERFLY CONTROL VALVE

SPRINKLERS

NO.	MANUFACTURER	SIZE	MODEL	DESCRIPTION
3	RELIABLE	5.6K	F1FR56	QUICK RESPONSE SPRINKLERS
4	RELIABLE	5.6K	F3QR56	CHROME QUICK RESPONSE DRY SPRINKLER

HANGERS AND BRACING

NO.	MANUFACTURER	SIZE	MODEL	DESCRIPTION
5	ANVIL	3/8"	92	BEAM ATTACHMENT
6	SAMMY	3/8"	XP20	METAL ATTACHMENT
7	TOLCO	1" - 4"	200	HANGER RING
8	TOLCO	2.5" - 4"	1001	EQ BRACE ATTACHMENT
9	TOLCO	2.5" - 4"	4L	EQ BRACE ATTACHMENT
10	TOLCO	1"	980	EQ BRACE ATTACHMENT

PIPE AND FITTINGS

NO.	MANUFACTURER	SIZE	MODEL	DESCRIPTION
11	TYCO GRINNELL	1.5" - 4"	705	FLEXIBLE PIPE FITTING
12	TYCO GRINNELL	1.5" - 4"	577	RIGID PIPE COUPLING
13	TYCO GRINNELL	1.5" - 4"	510	GOOVED 90 DEGREE ELBOW
14	TYCO GRINNELL	1.5" - 4"	519	GROOVED TEE
15	ANVIL	1" - 1.25"	DI	THREADED FITTINGS
16	BULL MOOSE	1.5" - 4"	SCH 7	EDDY FLOW STEEL SPRINKLER PIPE
17	STATE	1" - 1.25"	SCH 40	STEEL SPRINKLER PIPE
18	EASYFLEX	1"	48"	BRAIDED FLEXIBLE SPRINKLER HOSE

MISC. EQUIPMENT

NO.	MANUFACTURER	SIZE	MODEL	DESCRIPTION
19	POTTER ELECTRIC	N/A	PS-10	ALARM PRESSURE SWITCH
20	POTTER ELECTRIC	N/A	PS-40	HIGH / LOW PRESSURE SWITCH
21	RELIABLE	1/2"	A/2	AIR MAINTENANCE DEVICE
22	GENERAL	660 GAL	LT620100B	AIR COMPRESSOR
23	RELIABLE	6 HEAD	RHB1	SPARE HEAD CABINET
24	TYCO	1"	DD-1	DRUM DRIP

Reliable®

Model DDX-LP Low Pressure Dry Pipe Valve System

Features

- Low air or nitrogen pressure, 8 to 24 psi (0.6 to 1.7 bar)
- Lightweight ductile iron body with compact trim
- External reset reduces setup and commissioning time
- Does not require priming water
- Available fully assembled, with or without control valve

Product Description

The Reliable Model DDX-LP Dry Pipe Valve System is a hydraulically operated, mechanical latching clapper-type valve designed for use as a primary control valve in a dry pipe system. The pneumatic system pressure when using the Model DDX-LP valve can be set substantially less than conventional differential style dry valves. The following benefits are a direct result of lower pneumatic pressure:

- Smaller, less expensive pneumatic sources
- Improved water transit times following operation of valve, and in some cases, elimination of quick opening devices
- Low pressure makes the use of nitrogen more practical

In addition to these benefits, mechanical type dry pipe valves are less susceptible to accidental tripping than conventional differential dry pipe valves.

All sizes of the Model DDX-LP valve may be equipped with the Reliable Model B1 Accelerator (P/N 6501200019; ordered separately). The accelerator operates as an exhauster to hasten the operation of the dry pipe valve. Please refer to Reliable Technical Bulletin 323 for further information.

(Shown with optional Model B-1 Accelerator)

Model DDX-LP Dry Pipe Valve System Listings and Approvals — **Table A**

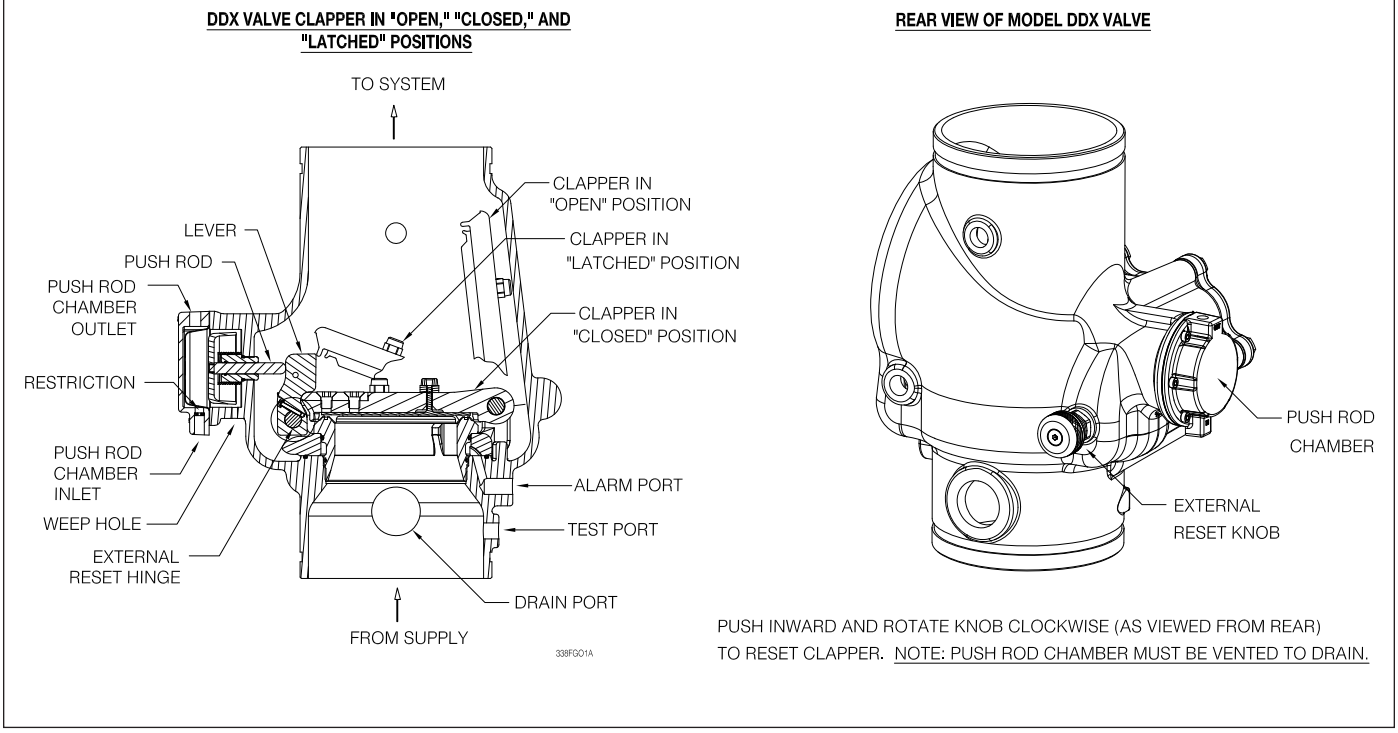
Valve Size	End Connection*	Pressure Rating	Listings & Approvals
2” (50mm), 2-1/2” (65mm), & 3” (80mm)	Groove/Groove	250 psi (17,2 bar)	cULus, FM, CE, UKCA, LPCB
76mm	Groove/Groove	250 psi (17,2 bar)	cULus, FM, CE, UKCA, LPCB
4” (100mm)	Groove/Groove	300 psi (20,7 bar)	cULus, FM, CE, LPCB, UKCA
	Flange/Groove		
	Flange/Flange		
6” (150mm)	Groove/Groove	300 psi (20,7 bar)	cULus, FM, CE, LPCB, UKCA
	Flange/Groove		
	Flange/Flange		
165mm	Groove/Groove	300 psi (20,7 bar)	cULus, FM, CE, LPCB, UKCA
8” (200mm)	Groove/Groove	250 psi (17,2 bar)	cULus, FM, CE, UKCA
	Flange/Flange		

***Note:** Grooved ends per ANSI/AWWA C606; flanged ends per ASME B16.5 Class 150 or ISO 7005-2 PN16 (specify).

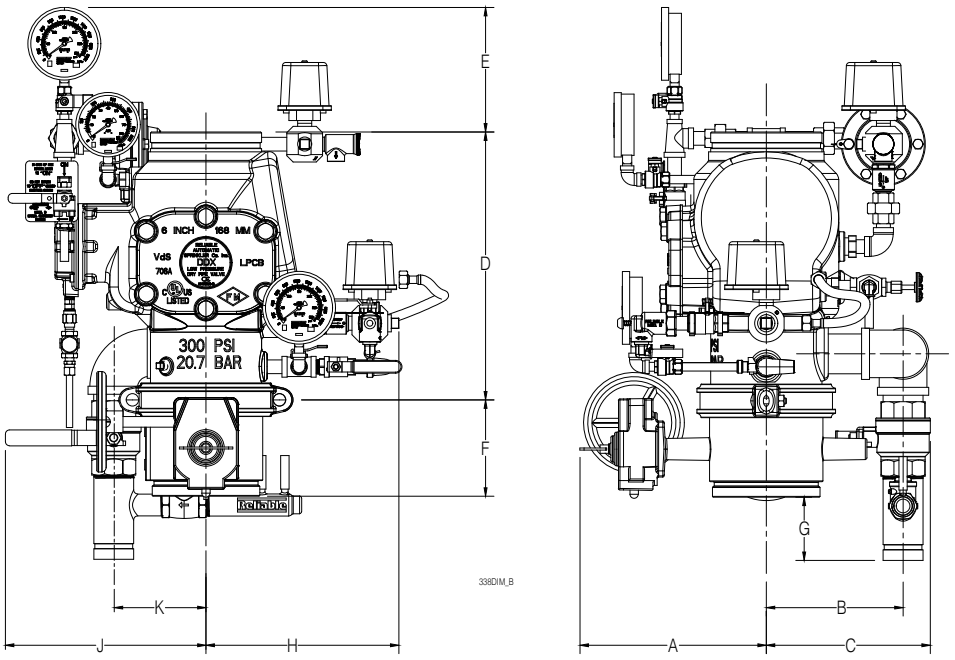
Operation

The Reliable Model DDX-LP Dry Pipe Valve System is shown in both the closed and open position in Figure 1. In the closed position, pneumatic pressure acts on the actuator preventing release of hydraulic pressure from the pushrod chamber. The supply water pressure acts simultaneously on the underside of the clapper and on the pushrod through the pushrod chamber restricted inlet. The resultant force on the pushrod is multiplied by the mechanical advantage of the lever and acts to hold the clapper closed against normal pressure surges in the water supply. When a sprinkler operates, the loss of pneumatic pressure in the sprinkler system causes the diaphragm and seal in the actuator to move away from the water seat allowing the release of water from the pushrod chamber. Since water cannot be replenished through the inlet restriction as rapidly as it is vented, the pushrod chamber pressure falls instantaneously. When the pushrod chamber pressure approaches approximately one-third of the supply pressure, the upward force of the water pressure acting beneath the clapper overcomes the force applied to the lever, opening the clapper. Water then flows through the Model DDX-LP Dry Pipe Valve into the system piping and into the alarm outlet activating the alarm device(s). Once the clapper has opened, the lever acts as a latch preventing the clapper from returning to the closed position.

Section View of Model DDX-LP Dry Valve with Clapper in Open, Closed, and Latched Positions **Figure 1**



DDX-LP Valve Dimensions **Figure 2**



Installation Dimensions in Inches (mm) (Refer to Figure 2) **Table B**

Size	A	B	C	D(1)	D(2)	E	F(3)	G	H	J	K
2" (50 mm)	8-1/2 (216)	7-3/4 (197)	9-1/8 (232)	12-1/2 (318)	NA	8-3/8 (213)	3-7/8 (98)	1-1/2 (38)	10 (254)	9-1/2 (241)	4 (102)
2-1/2" (65 mm), 3" (80 mm) & 76 mm	8-1/2 (216)	7-3/4 (197)	9-1/8 (232)	12-1/2 (318)	NA	8-3/8 (213)	3-7/8 (98)	1-3/8 (35)	9-7/8 (251)	9-1/2 (241)	3-7/8 (98)
4" (100 mm)	9-3/4 (248)	7-5/8 (194)	9-1/4 (235)	14 (356)	16 (406)	7-1/4 (184)	4-9/16 (116)	5-1/4 (133)	11 (279)	11-7/8 (301)	5-1/2 (140)
6" (150 mm) & 165 mm	11-1/8 (283)	8-1/8 (206)	9-3/4 (206)	16 (406)	19 (483)	6-7/8 (175)	5-7/8 (149)	3-3/4 (95)	11 (279)	12 (305)	5-1/2 (140)
8" (200 mm)	12-5/8 (321)	9 (229)	10-5/8 (270)	19-3/8 (492)	21-1/4 (540)	9-7/8 (251)	5-1/4 (134)	4-1/8 (105)	12-5/8 (321)	12 (305)	5-1/2 (140)

Notes:
1. End to end take out of Model DDX valve with grooved inlet.
2. End to end take out of Model DDX valve with flanged inlet where available (see page 1, table A).
3. Not applicable to 76mm or 165mm systems, or systems using a flanged inlet Model DDX valve.

Valve Shipping Weight **Table C**

Valve Size	End Connection	Weight
2" (50mm), 2½" (65mm), 76mm & 3" (80mm)	Groove/ Groove	34 lbs (15 kg)
4" (100mm)	Groove/ Groove	64 lbs (29 kg
	Flange/ Groove	79 lbs (36 kg)
	Flange/ Flange	92 lbs (42 kg)
6" (150mm) & 165mm	Groove/ Groove	95 lbs (43 kg)
	Flange/ Groove	122 lbs (56 kg)
	Flange/ Flange	138 lbs (69 kg)
8" (200mm)	Groove/ Groove	148 lbs (67 kg)
	Flange/ Flange	197 lbs (90 kg)

Trim Shipping Weight **Table D**

Valve Size	Weight
2" (50mm), 2½" (65mm), 76mm & 3" (80mm)	30 lbs (13.6 kg)
4" (100mm), 6" (150mm), 165mm & 8" (200mm)	34 lbs (15.5 kg)

Friction Loss **Table E**

Valve Size	Equivalent Length		Cv
	C = 120	C = 100	
2" (50mm)	4.4 ft (1,3 m)	3.1 ft (1,0 m)	101
2½" (65mm)	6.0 ft (1,8 m)	4.3 ft (1,3 m)	236
76mm	7.7 ft (2,3 m)	5.5 ft (1,7 m)	241
3" (80mm)	12.6 ft (3,8 m)	9.0 ft (2,7 m)	254
4" (100mm)	14 ft (4,3 m)	10 ft (3,0 m)	469
165mm	29.4 ft (9,0 m)	20.9 ft (6,4 m)	886
6" (150mm)	29.4 ft (9,0 m)	20.9 ft (6,4 m)	886
8" (200mm)	53.5 ft (16,3 m)	38.1 ft (11,6 m)	1516

Valve Trip Time Information

The actuator that operates the Model DDX-LP Low-Pressure Dry System has a variable differential trip ratio that limits the supervisory air/nitrogen pressure needed as the water supply pressure increases. The differential trip ratio is the ratio of the water supply pressure to the supervisory air/nitrogen pressure when the actuator fully opens. (Note: The actuator may partially open prior to reaching the differential trip ratio which could trip the valve; therefore, always provide the minimum supervisory pressure indicated in Table F of this bulletin, which includes an appropriate safety factor.)

For a valve without an accelerator, use the following differential ratio for valve trip time calculations:

Static Water Supply Pressure in psi (bar)	Differential Trip Ratio
50 (3.5)	7
100 (6.9)	10
175 (12.1)	14
250 (17.2)	18
300 (20.7)	21

For other static water pressures, the differential trip ratio may be calculated using the following equations:

- [psi] Differential Trip Ratio = 0.056 x Static Water Supply Pressure in PSI + 4
- [bar] Differential Trip Ratio = 0.811 x Static Water Supply Pressure in BAR + 4

For a valve using the Model B1 mechanical accelerator, use a differential trip ratio of 0 and a time delay of 10 seconds for the valve to trip.

For a valve using the Model C electronic accelerator, use a differential trip ratio of 0 and a time delay of 3 seconds for the valve to trip.

Installation

The Model DDX-LP Dry Pipe Valve System shall be installed in accordance with NFPA 13, "Standard for the Installation of Sprinkler Systems," as well as the requirements of any authorities having jurisdiction. The direction of flow shall be up through the assembly. Failure to follow installation instructions may void the warranty and/or listing of the valve. Verify compatibility of the Model DDX-LP Dry Pipe Valve System materials with the water supply and the environment where the valve will be installed prior to installation.

The Model DDX-LP Dry Pipe Valve System must be installed in a readily visible and accessible location where a minimum temperature of 40°F (4°C) or above must be maintained. Heat tracing of the Model DDX-LP Dry Pipe Valve System and trim is not permitted. Heat tracing can result in the formation of hardened mineral deposits that can prevent proper operation of the dry pipe valve.

Whenever ambient temperature conditions are high, the water temperature in the Model DDX-LP Dry Pipe Valve System pushrod chamber may rise, thereby increasing the pressure in the chamber to values exceeding the rated pressure of the system. Where normal temperature and pressure is exceeded, a pressure relief kit (P/N 6503050003; ordered separately) can be installed into the pushrod chamber release line to limit the pressure to 250 psi (17.2 bar).

The valve and trim kit has been tested, approved, and listed in accordance with UL and FM standards. Hydrostatically testing the valve and trim to pressures higher than their rating is limited to the hydrostatic test as referenced by NFPA 13. The clapper can remain in the closed position and the trim kit need not be isolated.

Normal operation and hydrostatic testing does not address the occurrence of a water hammer which may damage the valve. A water hammer can create pressure greater than the rated pressure of the equipment and should be avoided by all necessary means. Water hammer may occur from (but is not limited to) improper fire pump settings, underground construction work, or improper venting of trapped air in piping.

DO NOT use bleeder valves for testing of the low-pressure switch on the trim. Release of pneumatic pressure from the actuator trim will result in operation of the system.

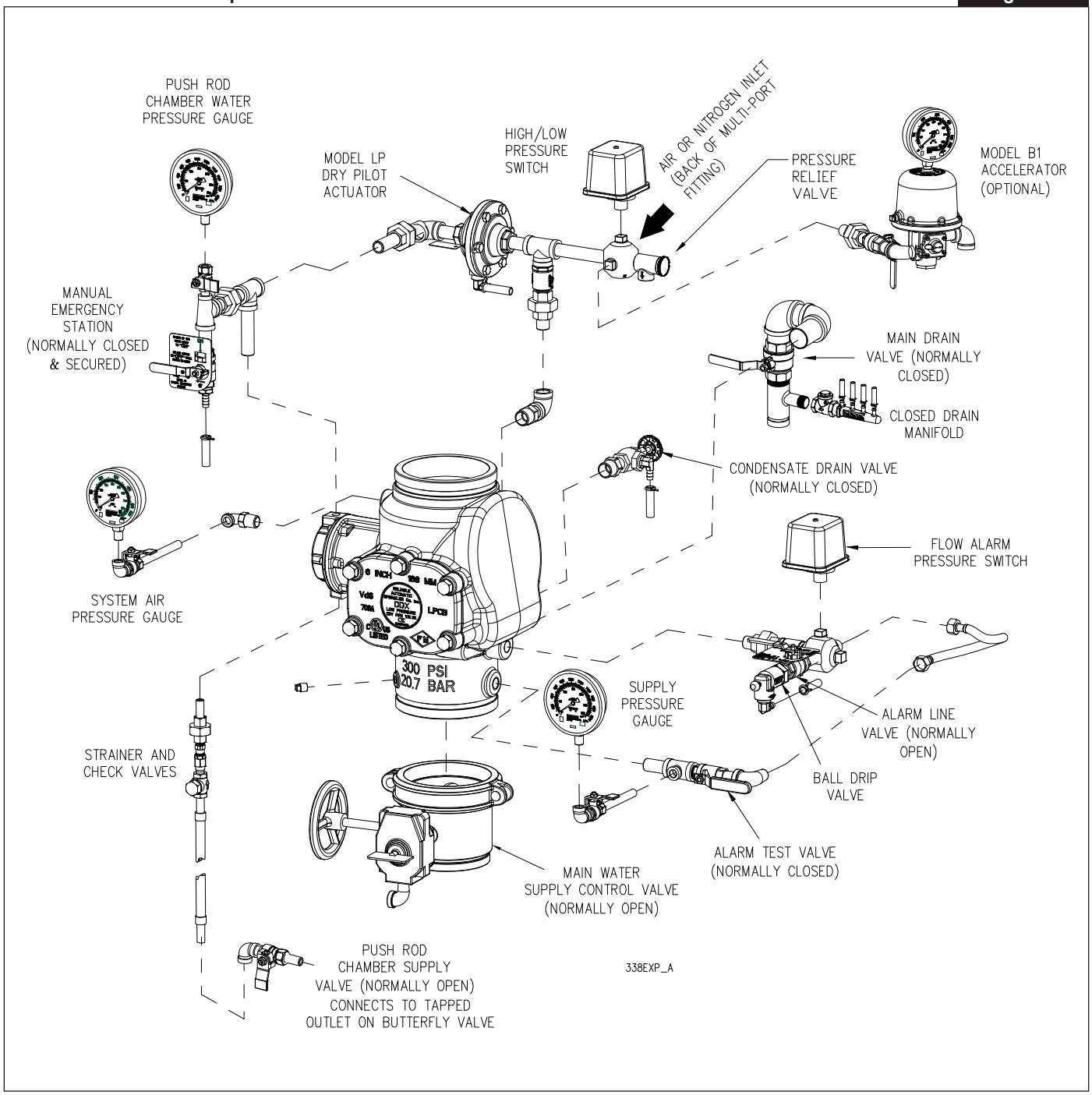
Air/Nitrogen Pressure Requirement **Table F**

Water Pressure psi (bar)	System Air or Nitrogen Pressure psi (bar)
Maximum	Not Less Than
20 (1.4)	8 (0.6)
30 (2.1)	10 (0.7)
50 (3.4)	12 (.8)
75 (5.2)	13 (.9)
100 (6.9)	15 (1.)
125 (8.6)	16 (1.1)
150 (10.3)	17 (1.2)
175 (12.1)	18 (1.2)
200 (13.8)	19 (1.3)
225 (15.5)	21 (1.4)
250 (17.2)	22 (1.5)
275 (19.0)	23 (1.6)
300 (20.7)	24 (1.7)

Notes:

1. Supervisory air or nitrogen pressure should not exceed 30 psi (2.1 bar). Excess pressure may result in damage to the actuator.
2. Fastest valve operation is achieved with supervisory air or nitrogen pressure indicated; however, pressure must never be less than the minimum specified in the table above.
3. Air maintenance devices that maintain a constant pressure are recommended; however, if a tank-less compressor is used, the "compressor on" setting of the pressure switch must never be lower than the minimum pressure in the table above.

Model DDX-LP Valve Components **Figure 3**



Valve Reset Procedure

1. Close the main water supply control valve to the DDX-LP valve.
2. Close the Pushrod Chamber Supply valve.
3. Close the valve(s) controlling air or nitrogen supply to the sprinkler system.
4. Open the Main Drain valve and allow system to fully drain. Leave Main Drain valve open.
5. Open all drain valves and vents at low points through-out the system, closing them when flow of water has stopped.
6. Inspect and replace any portion of the detection system and/or sprinkler system subjected to fire conditions.
7. Open the Model B Manual Emergency Station to relieve pressure in the pushrod chamber of the DDX-LP valve and leave open.
8. With the Alarm Line valve open, push in the plunger of Ball Drip valve, forcing the ball from its seat, and drain the alarm line. Close the Alarm Line valve.
9. Push in and rotate the external reset knob counterclockwise (when facing the valve) until you hear a distinct noise indicating that the clapper has reset. **Note:** The reset knob can be rotated only when pressure in the pushrod chamber is vented to atmospheric conditions (see step 7).
10. Open the Pushrod Chamber Supply valve and allow water to fill the pushrod chamber. Leave Pushrod Chamber Supply valve in the open position.
11. Close the Model B Manual Emergency Station valve when a steady stream of water is passing through the valve.
12. Allow water to flow through the Model LP Dry Pilot Actuator until all air is purged from the actuation piping.
13. Close the dry pilot actuator by opening the air or nitrogen supply quick fill valve. Allow the pressure to build to the level specified in Table F then set the pneumatic supply to automatic operation. **Note:** It may be necessary to temporarily close the main drain valve in order to build supervisory pressure to the recommended level.)
14. Open the Alarm Line valve and verify that the Main Drain valve is open. Slightly open the main valve controlling water supply to the Model DDX-LP Valve, closing the Main Drain valve fully when water flow is heard. Observe if air or water leaks through the Ball Drip valve. If no leak occurs, the DDX-LP clapper is sealed.
15. If there is an accelerator installed on the system, reset it now following the manufacturer's instructions. For the Reliable Model B1 Accelerator, please refer to Technical Bulletin 323. **Note:** The air or nitrogen system must be in automatic operation in order for the accelerator to set up properly.
16. Slowly open the main valve controlling water supply until fully opened, and verify that it is properly monitored.
17. Verify that the Pushrod Chamber Supply valve and Alarm Line valve are open. **Note:** The Pushrod Chamber supply valve must remain open to maintain hydraulic pressure in the pushrod chamber after the DDX-LP valve has been reset.
18. Verify that the Model B Manual Emergency Station is secured in the OFF position with the appropriate nylon tie.
19. Notify all concerned parties that the system has been placed into service.

Inspection, Testing, and Maintenance

1. Notify all concerned parties that testing will be performed on system.
2. Water supply — Confirm that valves controlling water supply to the Deluge Valve are opened fully and properly monitored.
3. Alarm line — Confirm that the alarm line valve is open and remains in this position.
4. Other trim valves — Confirm that the pushrod chamber supply valve is open, as well as all pressure gauge valves. The main drain valve, condensate drain valve, and alarm test valve should be closed.
5. Ball drip valve — Push in on the plunger to be sure ball check is off its seat. If no water appears, the Deluge Valve water seat is tight. Inspect the bleed hole on the underside of the pushrod chamber for leakage.
6. Inspect air pressure for conformance to Table A.
7. Releasing device — Check outlet of the releasing device (i.e., hydraulic manual emergency station) for leakage. Also verify that tubing drain lines from releasing devices are not pinched or crushed which could prevent proper releasing of the DDX-LP valve.
8. Testing water flow alarm — Open the alarm test valve permitting water from the supply to flow to the electric sprinkler alarm switch and to the mechanical sprinkler alarm (water motor) if installed. After testing, close this valve securely. Push in on the plunger of ball drip valve until all water has drained from the alarm line.
9. Testing of supervisory pressure switch — Close the main water supply control valve. Decrease pneumatic pressure from normal and verify operation of low pressure alarm. Increase pressure form normal and verify operation of high pressure alarm. Reset pneumatic pressure to normal.
10. Operational test — Open the Model B Manual Emergency Station. Alternatively, deplete pneumatic pressure from the sprinkler system. **Note:** AN OPERATIONAL TEST WILL CAUSE THE DELUGE VALVE TO OPEN AND FLOW WATER INTO THE SPRINKLER SYSTEM.
11. Secure the Model B Manual Emergency Station in the OFF position with nylon tie after Deluge Valve is reset.
12. Notify all concerned parties that testing is complete and system has been returned to service.

Testing System Without Operating Deluge Valve

1. Close the valve controlling water supply to the deluge valve and open the main drain valve.
2. Verify that valve supplying hydraulic pressure to the piston/pushrod chamber is open, allowing water to enter the pushrod chamber.
3. Deplete pneumatic pressure from the sprinkler system.
4. Loss of pneumatic pressure must result in a sudden drop of water pressure in the pushrod chamber, as indicated by the pressure gauge on the hydraulic release trim.
5. Reset the valve per the reset instructions.

Draining Excess/Condensate Water

1. Notify all concerned parties that maintenance is being performed on the system.
2. Close the Main Water Supply Control valve to the system.
3. Open the Main Drain valve.
4. Open the Condensate Drain valve until all water has drained.
5. Close Condensate Drain valve.
6. Allow supervisory pressure to return to normal.
7. Partially open the Main Water Supply Control valve.
8. Slowly close the Main Drain valve.
9. Fully open the Main Water Supply Control valve.
10. Notify all concerned parties that the system has been returned to service.

After fully resetting the Reliable Model DDX-LP Dry Pipe Valve System, confirm that all valves are in the correct position and properly monitored as required by NFPA 13:

- Main Water Control Valve: Open
- Push Rod Chamber Supply Valve: Open
- Accelerator Inlet Valve (if present): Open
- Air or Nitrogen Supply Valve: Open
- Alarm Line Valve: Open
- Alarm Test Valve: Closed
- Main Drain Valve: Closed
- Emergency Manual Release Valve: Closed (Secured)

Maintenance

The owner is responsible for maintaining the fire protection system in proper operating condition. Any system maintenance or testing that involves placing a control valve or detection/control system out of service may eliminate the fire protection that is provided by the fire protection system.

The Reliable Model DDX-LP valve and associated equipment shall periodically be given a thorough inspection and test. NFPA 25, "Inspection, Testing, and Maintenance of Water Based Fire Protection Systems," provides minimum maintenance requirements. System components shall be tested, operated, cleaned, and inspected at least annually, and parts replaced as required. Replace any components found to be corroded, damaged, worn, or non-operable. Increase the frequency of inspections when the valve is exposed to corrosive conditions or chemicals that could impact materials or operation of the assembly.

If face plate is removed during maintenance, torque face plate bolts to the following values during re-installation:

- 35 ft-lbs. (47 N·m) for 2" through 4" valves
- 70 ft-lbs. (95 N·m) for 6"-8" valves

Guarantee

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

Listings & Approvals

Reliable Model DDX-LP Dry Pipe Valves with trim that includes a Model LP Dry Pilot Actuator, when used as a complete system are:

- Listed by Underwriters Laboratories, Inc. and UL certified for Canada (cULus).
- FM Approved
- LPCB: 4" (100mm), 165mm, 6" (150mm) & 8" (200mm) only)
- CE
- UKCA: 0832-UKCA-S5044, -S5099, or -S5100

Ordering Information

Specify:

Valve Model DDX-LP Dry Pipe Valve System

Size (See Table A)

End Connections (See Table A)

Standard Trim

- Fully assembled with control valve
- Fully assembled without control valve
- Segmentally assembled trim
- Loose trim (**Note:** Loose trim does not include low pressure switch [P/N 6990019313] or alarm switch [P/N 6990006382]; order separately)

Options

- Model B1 Accelerator (P/N 6501200019)
- Pushrod Chamber Pressure Relief Kit (P/N 6503050001)

Service Kits

Service kits are available for routine servicing of the valve (reference Assembly Drawings on website). Service kits for the Model DDX Deluge Valve include the following components:

- Clapper Seal Assembly (item 8)
- Cover Gasket (item 9)
- Bumpstop(s) (item 10)
- Push rod chamber diaphragm (item 18)
- Grease (item 42)

2", 2-1/2", and 3" Model DDX Service Kit: PN 6501200R03
4" Model DDX Service Kit: PN 6501200R04
6" Model DDX Service Kit: PN 6501200R05
8" Model DDX Service Kit: PN 6501200R06

Note: Early generation 4" and 6" Model DDX valves utilize a drop-in brass clapper. Service kits for early Model DDX valves are as follows:

4" Early generation DDX Deluge Valve Service Kit: PN 6501200R07
6" Early generation DDX Deluge Valve Service Kit: PN 6501200R08

P/N 9999970437

FireLock® Butterfly Valve
Series 705 with Weatherproof Actuator

10.81

1.0 PRODUCT DESCRIPTION

- Available Sizes: 2 – 12"/50 – 300 mm
- cULus Listed, LPCB Listed, FM and VdS Approved for service up to 300 psi/2068 kPa /20 bar.
- Designed for fire protection services only.
- Features a weatherproof actuator housing Approved for indoor and outdoor use.
- Actuation options: Hand wheel (2 – 12"/50 – 300 mm)
- Exclusively for use with pipe and Victaulic products which feature ends formed with the Victaulic Original Groove System (OGS) groove profile (see section 7.0 for Reference Materials).

2.0 CERTIFICATION/LISTINGS

c UL us LISTED FM VdS G410001 LPCB 104j/04

NOTES

- Refer to Victaulic submittal publication 10.01 for details

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	

2.1 CERTIFICATION/LISTINGS

Size	Approval/Listing Service Pressures Series 705 Butterfly Valve			
	cULus	FM	Vds	LPCB
2 50	up to 300psi/2068kPa	n/a	up to 300psi/2068kPa	up to 300psi/2068kPa
2½ 65	up to 300psi/2068kPa	up to 300psi/2068kPa	n/a	up to 300psi/2068kPa
76.1 mm	up to 300psi/2068kPa	up to 300psi/2068kPa	up to 300psi/2068kPa	up to 300psi/2068kPa
3 80	up to 300psi/2068kPa	up to 300psi/2068kPa	up to 300psi/2068kPa	up to 300psi/2068kPa
4 100	up to 300psi/2068kPa	up to 300psi/2068kPa	up to 300psi/2068kPa	up to 300psi/2068kPa
5 125	up to 300psi/2068kPa	up to 300psi/2068kPa	n/a	up to 300psi/2068kPa
139.7 mm	up to 300psi/2068kPa	up to 300psi/2068kPa	up to 300psi/2068kPa	up to 300psi/2068kPa
6 150	up to 300psi/2068kPa	up to 300psi/2068kPa	up to 300psi/2068kPa	up to 300psi/2068kPa
165.1 mm	up to 300psi/2068kPa	up to 300psi/2068kPa	n/a	up to 300psi/2068kPa
8 200	up to 300psi/2068kPa	up to 300psi/2068kPa	up to 300psi/2068kPa	up to 300psi/2068kPa
10 250	up to 300psi/2068kPa	up to 300psi/2068kPa	n/a	up to 300psi/2068kPa
12 300	up to 300psi/2068kPa	up to 300psi/2068kPa	n/a	up to 300psi/2068kPa

3.0 SPECIFICATIONS – MATERIAL

Body: Ductile Iron conforming to ASTM A-536, Grade 65-45-12

End Face, 2 – 6"/50 – 150 mm: Ductile Iron conforming to ASTM A-536, Grade 65-45-12

Seal Retainer, 8 – 12"/200 – 300 mm: Ductile Iron conforming to ASTM A-536, Grade 65-45-12

Body Coating: Black alkyd enamel

Disc: Ductile Iron conforming to ASTM A-536, Grade 65-45-12, with electroless nickel coating conforming to ASTM B-733

Seat: Grade "E" EPDM

Stems: 416 stainless steel conforming to ASTM A-582

Stem Seal Cartridge: C36000 brass

Bearings: Stainless steel with TFE lining

Stem Seals: EPDM

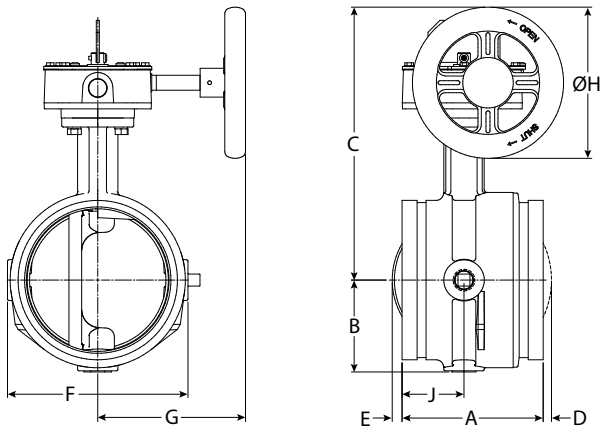
Stem Retaining Ring: Carbon steel

Actuator:

- ☐ 2 – 8"/50 – 200 mm: Brass or bronze traveling nut on a steel lead screw, in a ductile iron housing
- ☐ 10 – 12"/250 – 300 mm: Steel worm and cast iron quadrant gear, in a cast iron housing

4.0 DIMENSIONS

Series 705



Size		Dimensions								
Nominal inches mm	**Actual Outside Diameter** inches mm	**E to E A** inches mm	**B** inches mm	**C** inches mm	**D** inches mm	**E** inches mm	**F** inches mm	**G** inches mm	**DIA H** inches mm	**J** inches mm
2 60.3	2.375 60.3	4.25 108.0	2.28 57.9	6.41 162.8	–	–	4.00 101.6	4.22 107.2	4.50 114.3	2.12 53.8
2½ 73	2.875 73.0	3.77 95.8	2.28 57.9	7.54 191.5	–	–	4.00 101.6	4.22 107.2	4.50 114.3	1.77 45.0
76.1 mm	3.000 76.1	3.77 95.8	2.28 57.9	7.54 191.5	–	–	4.00 101.6	4.22 107.2	4.50 114.3	1.77 45.0
3 88.9	3.500 88.9	3.77 95.8	2.53 64.3	7.79 197.9	–	–	4.50 114.3	4.22 107.2	4.50 114.3	1.77 45.0
108 mm	4.250 108.0	4.63 117.6	2.88 73.2	8.81 223.8	–	–	5.50 139.7	4.22 107.2	4.50 114.3	2.20 55.9
4 114.3	4.500 114.3	4.63 117.6	2.88 73.2	8.81 223.8	–	–	5.50 139.7	4.22 107.2	4.50 114.3	2.20 55.9
133 mm	5.250 133.0	5.88 149.4	3.35 85.1	10.88 276.4	–	–	6.56 166.6	6.19 157.2	6.30 160.0	2.58 65.5
139.7 mm	5.500 139.7	5.88 149.4	3.35 85.1	10.88 276.4	–	–	6.56 166.6	6.19 157.2	6.30 160.0	2.58 65.6
5 141.3	5.563 141.3	5.88 149.4	3.35 85.1	10.88 276.4	–	–	6.56 166.6	6.19 157.2	6.30 160.0	2.58 65.5
159 mm	6.250 159.0	5.88 149.4	3.84 97.5	11.38 289.1	–	0.41 10.4	7.52 191.0	6.19 157.2	6.30 160.0	2.58 65.5
165.1mm	6.500 165.1	5.88 149.4	3.84 97.5	11.38 289.1	–	0.41 10.4	7.52 191.0	6.19 157.2	6.30 160.0	2.58 65.5
6 168.3	6.625 168.3	5.88 149.4	3.84 97.5	11.38 289.1	–	0.41 10.4	7.52 191.0	6.19 157.2	6.30 160.0	1.90 48.3
8 219.1	8.625 219.1	5.33 135.4	5.07 128.8	13.53 343.6	0.80 20.3	1.47 37.3	10.00 254.0	6.19 157.2	8.10 205.7	2.33 59.2
10 273	10.750 273.0	6.40 162.6	6.37 161.8	15.64 397.3	1.41 35.8	1.81 46.0	12.25 311.2	8.10 205.7	9.00 228.6	–
12 323.9	12.750 323.9	6.50 165.1	7.36 186.9	16.64 422.7	2.30 58.4	2.80 71.1	14.25 362.0	8.10 205.7	9.00 228.6	–

NOTE

- Optional ½"/15 mm tap available. Contact Victaulic for details.

5.0 PERFORMANCE

Series 705

The chart expresses the frictional resistance of Victaulic Series 705 Butterfly Valve in equivalent feet/meters of straight pipe.

Nominal Size mm inches	**Outside Diameter** mm inches	**Equivalent** Feet/m of pipe
2 50	2.375 60.3	6 1.8
2½ 65	2.875 73.0	6 1.8
76.1 mm	3.000 76.1	6 1.8
3 80	3.500 88.9	7 2.1
4 100	4.500 114.3	8 2.4
108 mm	108 mm	8 2.4
5 125	5.563 141.3	12 3.7
133 mm	133 mm	12 3.7
139.7 mm	5.500 139.7	12 3.7
6 150	6.625 168.3	14 4.2
159 mm	159 mm	14 4.3
165.1 mm	6.500 165.1	14 4.2
8 200	8.625 219.1	16 4.9
10 250	10.750 273.0	18 5.5
12 300	12.750 323.9	19 5.8

5.1 PERFORMANCE

Series 705

C_V values for flow of water at +60°F/+16°C through a fully open valve are shown in the table below.
For additional details, contact Victaulic.

Formulas for C_v values

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

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

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

Formulas for K_v values

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

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

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

Valve Size		Full Open
Nominal Size inches mm	**Actual Outside Diameter** inches mm	**Flow Coefficient** C_v
2 50	2.375 60.3	170
2½ 65	2.875 73.0	260
76.1 mm	3.000 76.1	260
3 80	3.500 88.9	440
4 100	4.500 114.3	820
108 mm	108 mm	820
5 125	5.563 141.3	1200
133 mm	133 mm	1200
139.7 mm	5.500 139.7	1200
6 150	6.625 168.3	1800
159 mm	159 mm	1800
165.1 mm	6.500 165.1	1800
8 200	8.625 219.1	3400
10 250	10.750 273.0	5800
12 300	12.750 323.9	9000

Valve Size		Full Open
Nominal Size inches mm	**Actual Outside Diameter** inches mm	**Flow Coefficient** K_v
2 50	2.375 60.3	147
2½ 65	2.875 73.0	225
76.1 mm	3.000 76.1	225
3 80	3.500 88.9	380
4 100	4.500 114.3	710
108 mm	108 mm	710
5 125	5.563 141.3	1040
133 mm	133 mm	1040
139.7 mm	5.500 139.7	1040
6 150	6.625 168.3	1560
159 mm	159 mm	1560
165.1 mm	6.500 165.1	1560
8 200	8.625 219.1	2940
10 250	10.750 273.0	5020
12 300	12.750 323.9	7790

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

Switch and Wiring

1. The supervisory switch contains two single pole, double throw, pre-wired switches.
2. Switches are rated:

   10 amps @ 125 or 250 VAC/60 Hz

   0.50 amps @ 125 VDC

   0.25 amps @ 250 VDC
3. Switches supervise the valve in the “OPEN” position.
5. One switch has two #18 insulated wires per terminal, which permit complete supervision of leads (refer to diagrams and notes below). The second switch has one #18 insulated wire per terminal. This double circuit provides flexibility to operate two electrical devices at separate locations, such as an indicating light and an audible alarm, in the area that the valve is installed.
6. A #14 insulated ground lead (green) is provided.

   Switch #1 = S1

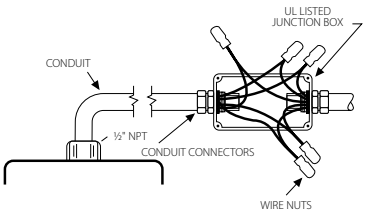
   For connection to the supervisory circuit of a UL Listed alarm control panel

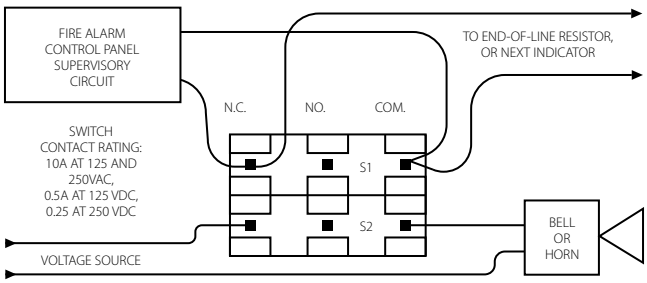
   Switch #2 = S2

   Auxiliary switch that may be connected to auxiliary devices, per the authority having jurisdiction

S1
- Normally Closed: (2) Blue
- Common: (2) Yellow

S2
- Normally Closed: Blue with Orange Stripe
- Normally Open: Brown with Orange Stripe
- Common: Yellow with Orange Stripe





Switch 1: 2 leads per terminal
Switch 2: 1 lead per terminal

NOTES

- The above diagram shows a connection between the common terminal (yellow – S1 and yellow-with-orange stripe – S2) and the normally closed terminal (blue – S1 and blue-with-orange stripe – S2). In this example, the indicator light and alarm will stay on until the valve is fully open. When the valve is fully open, the indicator light and alarm will go out. Cap off any unused wires (e.g. brown with orange stripe).
- Only S1 (two leads per terminal) may be connected to the fire alarm control panel.
- The connection of the alarm switch wiring shall be in accordance with NFPA 72 and the auxiliary switch per NFPA 70 (NEC).

7.1 REFERENCE MATERIALS

10.01: Regulatory Approval Reference Guide

29.01: Terms and Conditions/Warranty

I-100: Field Installation Handbook

Reliable®

F1FR56 Series
Quick Response Sprinklers

K-factor 5.6 (80)

Features

- Standard coverage quick-response sprinklers
- Upright, pendent, horizontal sidewall, and vertical sidewall deflectors
- Low profile, compact design
- Available in a wide variety of finishes

Product Description

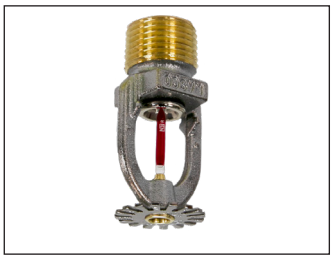
Reliable Model F1FR56 series sprinklers are quick-response standard spray automatic fire sprinklers utilizing a sensitive 3.0 mm glass bulb thermal element.

Pendent and horizontal sidewall sprinklers may be installed exposed or surface mounted using escutcheons such as the Reliable Models B, C, or HB (reference Technical Bulletin 204). When installed recessed or concealed, the Model F1FR56 series sprinklers are specifically listed with and may only be installed with listed Reliable escutcheons and cover plates. Refer to the technical information on the following pages for specific listings for recessed and concealed installations and refer to Figures 5 and 6 for dimensional information.

When fitted with an approved water shield, these sprinklers may considered intermediate sprinklers for use in racks, below grated walkways, and other areas where intermediate level sprinklers are required.

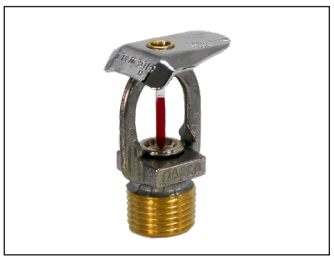
Table A provides a summary of the approvals and availability of specific Model F1FR series sprinkler configurations. Additional technical information for each sprinkler model is provided on the following pages.

Important! Reliable fire sprinklers must be handled, stored, and installed in accordance with the guidelines in Caution Sheet 310 and this bulletin. Failure to follow these instructions may result in unintended operation or nonoperation of the fire protection system.

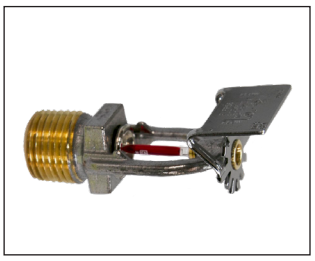


Model F1FR56 Pendent

Model F1FR56 Upright



Model F1FR56 Vertical Sidewall



Model F1FR56
Horizontal Sidewall

Note: Not all versions of the product are shown.

Note: This bulletin may contain information on New and Legacy sprinklers that reflects a dimensional change only. Sprinkler Identification Number (SIN), application, performance, and listings/approval are not otherwise affected. Sprinklers with New frames will include the suffix "N" in the order.

F1FR Series Sprinkler Summary

Table A

Sprinkler Model	K-Factor gpm/psi$^{1/2}$ (lpm/bar$^{1/2}$)	Orientation	Listings & Approvals	Max. Working Pressure psi (bar)	Sprinkler Identification Number (SIN)
F1FR56	5.6 (80)	Upright Intermediate Upright	cULus, FM, LPCB, VdS, EC, WM, UKCA	175 (12) 250 (17) (cULus only)	RA1425
		Pendent	cULus, FM, LPCB, VdS, EC, WM, UKCA	175 (12) 250 (17) (cULus only)	RA1414
		Concealed Pendent	cULus, VdS, EC, WM, UKCA	175 (12) 250 (17) (cULus only)	RA1414
		Horizontal Sidewall	cULus, FM	175 (12)	RA1435
		Vertical Sidewall	cULus, FM, LPCB, UKCA	175 (12)	RA1485

Model F1FR56 Upright Sprinkler — SIN RA1425

Technical Specifications
Style: Upright, Intermediate Upright
Threads: 1/2" NPT or ISO 7-R1/2
Nominal K-Factor: 5.6 (80 metric)
Max. Working Pressure:
175 psi (12 bar)
250 psi (17 bar) (cULus only)

Material Specifications
Thermal Sensor: 3 mm Glass Bulb
Sprinkler Frame: Brass Alloy
Cap: Bronze Alloy
Sealing Washer: Nickel with PTFE
Load Screw: Copper Alloy
Deflector: Brass Alloy

Sprinkler Finishes
(See Table B)

Sensitivity
Quick response

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

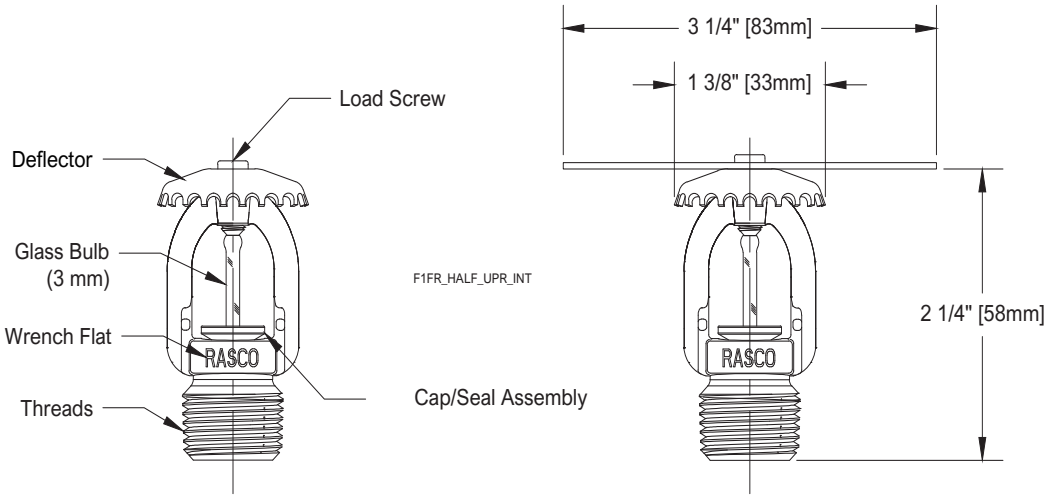
Guards & Shields (New Frames)
Factory Water Shield (cULus, FM)
F-1 Guard (cULus, FM)
F-3 Guard with Shield (cULus, FM)

Guards and Shields (Legacy Frames)
Factory Water Shield
C-1 Guard (FM)
C-3 Guard with Shield (cULus, FM)
D-1 Guard (cULus)
D-3 Guard with Shield (cULus)

Sprinkler Wrench
Model W2
Model W14 (New frame with guard installed)
Model W13 (Legacy frame with guard installed)

Listings and Approvals
cULus Listed
FM Approved
LPCB
VdS
EC
WM
UKCA: 0832-UKCA-CPR-S5045

Model F1FR56 Upright Sprinkler Components and Dimensions — **Figure 1**



Shown with Optional
Factory Installed Water Shield
(Intermediate Upright)

Model F1FR56 Pendent Sprinkler — SIN RA1414

Technical Specifications
Style:
Pendent
Recessed Pendent
Concealed Pendent
Threads: 1/2" NPT or ISO 7-R1/2
Nominal K-Factor: 5.6 (80 metric)
Max. Working Pressure:
175 psi (12 bar)
250 psi (17 bar) (cULus only)

Material Specifications
Thermal Sensor: 3 mm Glass Bulb
Sprinkler Frame: Brass Alloy
Cap: Bronze Alloy
Sealing Washer: Nickel with PTFE
Load Screw: Copper Alloy
Deflector: Brass Alloy

Sprinkler Finishes
(See Table B)

Sensitivity
Quick response

Temperature Ratings[1]
135°F (57°C)
155°F (68°C)
175°F (79°C)
200°F (93°C)
286°F (141°C)

Recessed Escutcheons
Model F1 (cULus, LPCB, VdS, CE, WM)
Model F2 (cULus, FM, LPCB, VdS, CE, WM)
Model FP (cULus, VdS, CE, WM)

Cover Plate
Model CCP (cULus, VdS[2], CE[2])

Guards & Shields (New Frames)[3]
F-1 Guard (FM)
F-5 Guard/Shield Kit (FM)
F-7 Guard (cULus)
F-8 Guard/Shield Kit (cULus)
S-1 Shield (cULus, FM)

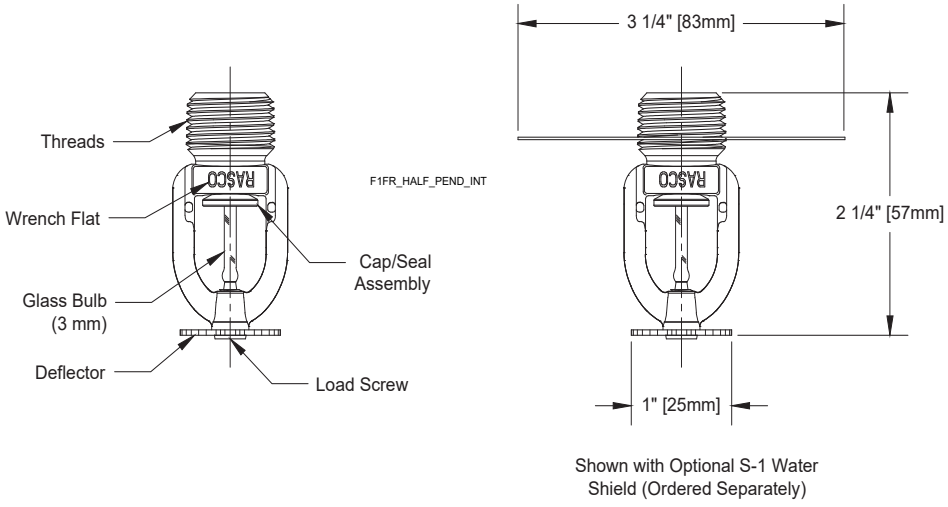
Guards & Shields (Legacy Frames)[3]
C-1 Guard (FM)
C-5 Guard/Shield Kit (FM)
D-1 Guard (cULus, FM)
D-4 Guard/Shield Kit (FM)
D-5 Guard/Shield Kit (cULus, FM)
S-1 Shield (cULus, FM)

Sprinkler Wrenches
Model W2 (pendent)
Model W4 (recessed or concealed)
Model W14 (New frame with guard installed)
Model W13 (Legacy frame with guard installed)

Listings and Approvals[4]
cULus Listed
FM Approved
LPCB
VdS
EC
WM
UKCA: 0832-UKCA-CPR-S5045, 0831-UKCA-CPR-5072 (CCP)

Notes:
1. 286°F (141°C) temperature rated sprinkler not listed for recessed or concealed use.
2. VdS and CE approval for CCP concealed use is for 155°C (68°C) sprinkler ONLY.
3. Not suitable for recessed or concealed pendent installations.
4. When used surface mounted or exposed. See Recessed Escutcheon and Cover Plate section for specific approvals when installed recessed or concealed.

Model F1FR56 Pendent Sprinkler Components and Dimensions — Figure 2



Shown with Optional S-1 Water Shield (Ordered Separately)

Note: Please refer to Figure 8 for recessed and concealed installation.

Model F1FR56 Horizontal Sidewall Sprinkler — SIN RA1435

Technical Specifications
Style:
Horizontal Sidewall
Recessed Horizontal Sidewall
Threads: 1/2" NPT or ISO 7-R1/2
Nominal K-Factor: 5.6 (80 metric)
Max. Working Pressure:
175 psi (12 bar)

Material Specifications
Thermal Sensor: 3 mm Glass Bulb
Sprinkler Frame: Brass Alloy
Cap: Bronze Alloy
Sealing Washer: Nickel with PTFE
Load Screw: Copper Alloy
Deflector: Brass Alloy

Sprinkler Finishes
(See Table B)

Sensitivity
Quick response

Temperature Ratings (1)
135°F (57°C)
155°F (68°C)
175°F (79°C)
200°F (93°C)
286°F (141°C)

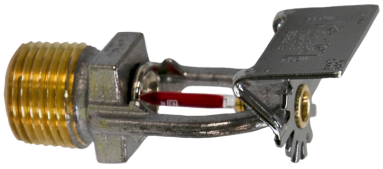
Recessed Escutcheons(2)
Model F1 (cULus)
Model F2 (cULus, FM)
Model FP (cULus)

Guards & Shields (New Frames)(3)
F-4 Guard (FM)
F-7 Guard (cULus)

Guards & Shields (Legacy Frames)(3)
C1 Guard (FM)
D1 Guard (cULus)

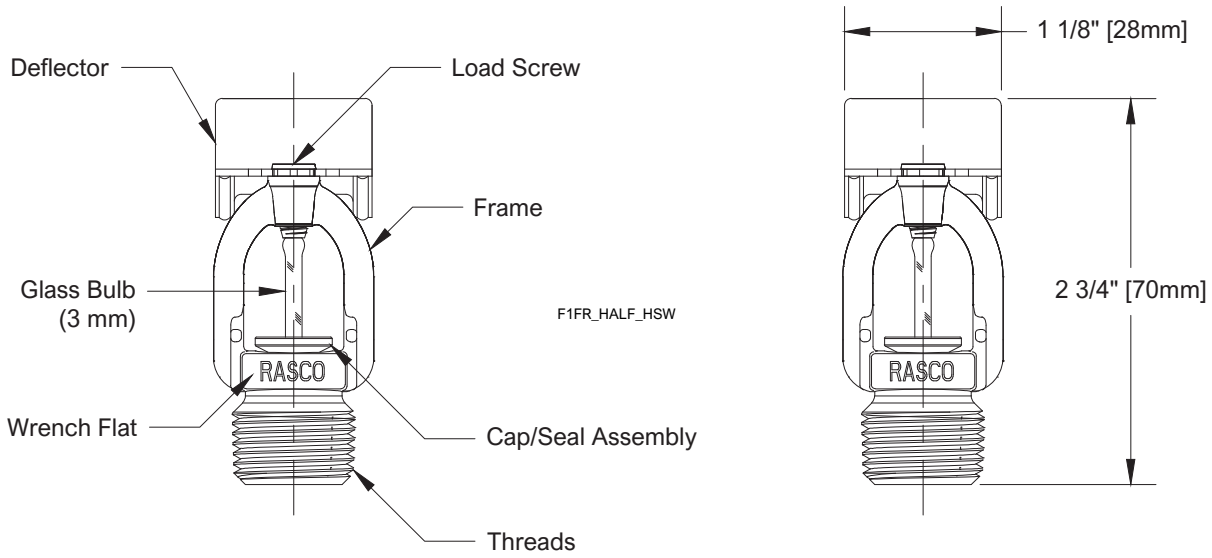
Sprinkler Wrenches
Model W2 (non-recessed)
Model W4 (recessed)
Model W14 (New frame with guard installed)
Model W13 (Legacy frame with guard installed)

Listings and Approvals
cULus Listed(4)
FM Approved(5)



Notes:
1. 286°F (141°C) temperature rated sprinkler not listed for recessed use.
2. FM approved recessed installation when used with Model F2 escutcheon ONLY.
3. Not suitable for recessed horizontal sidewall installations.
4. cULus Listed for Light and Ordinary Hazard when installed exposed or surface mounted. Listed for Light Hazard ONLY when installed recessed.
5. FM Approved for Light Hazard ONLY.

Model F1FR56 Horizontal Sidewall Sprinkler Components and Dimensions — **Figure 3**



Note: Please refer to Figure 9 for recessed installation.

Model F1FR56 Vertical Sidewall Sprinkler — SIN RA1485

Technical Specifications
Style:
Upright Vertical Sidewall
Pendent Vertical Sidewall
Threads: 1/2" NPT or ISO 7-R1/2
Nominal K-Factor: 5.6 (80 metric)
Max. Working Pressure: 175 psi (12 bar)

Material Specifications
Thermal Sensor: 3 mm Glass Bulb
Sprinkler Frame: Brass Alloy
Cap: Bronze Alloy
Sealing Washer: Nickel with PTFE
Load Screw: Copper Alloy
Deflector: Brass Alloy

Sprinkler Finishes
(See Table B)

Sensitivity
Quick response

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

Guards & Shields (New Frames)
F-2 Guard (FM)

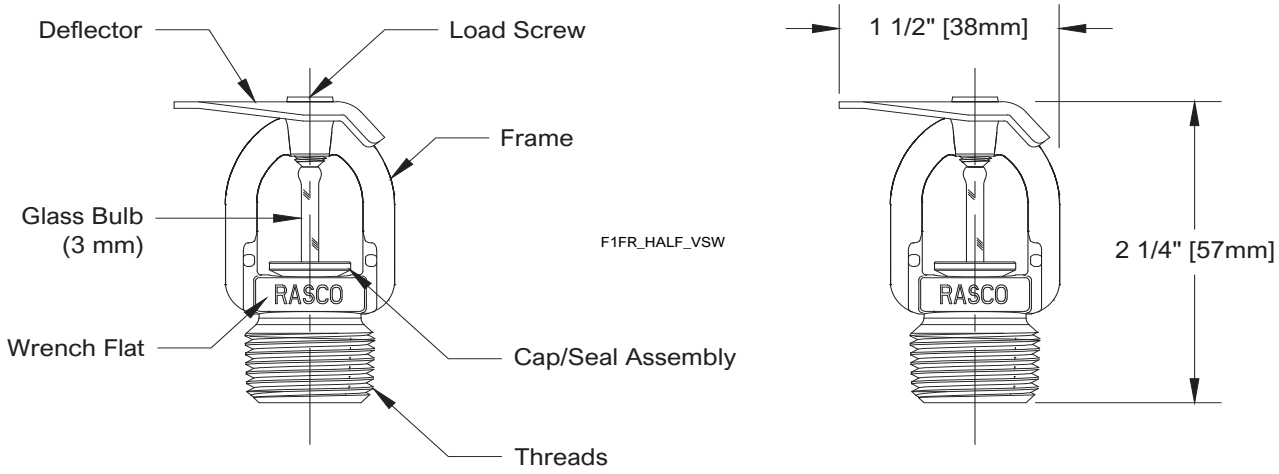
Guards & Shields (Legacy Frames)
C1 Guard (FM)

Sprinkler Wrenches
Model W2
Model W14 (New frame with guard installed)
Model W13 (Legacy frame with guard installed)

Listings and Approvals[1]
cULus Listed
FM Approved
LPCB[2]
UKCA: 0832-UKCA-CPR-S5045

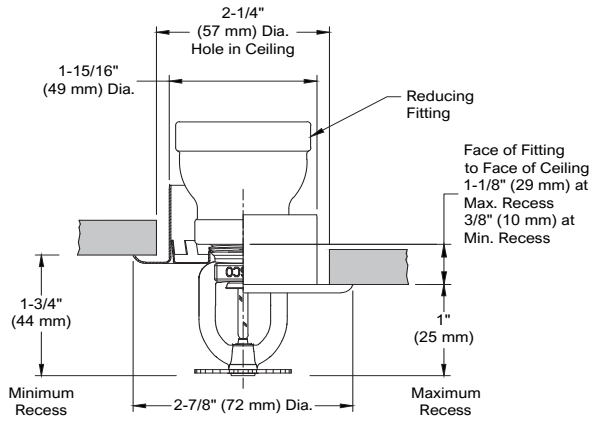
Notes:
1. Listed and approved for Light Hazard ONLY.
2. LPCB approved for use in pendent position ONLY.

Model F1FR56 Vertical Sprinkler Components and Dimensions — **Figure 4**

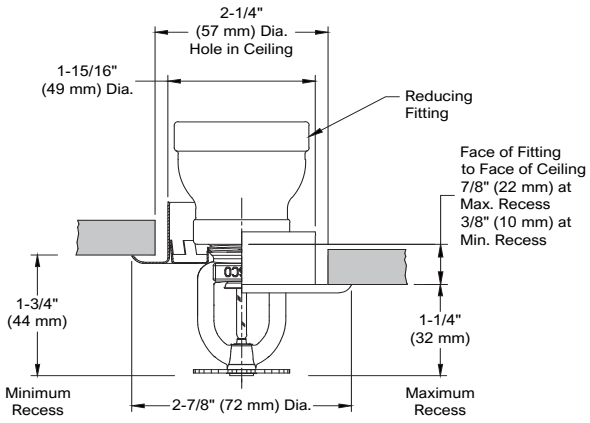


Recessed and Concealed Installation: Pendent Sprinklers

Figure 5

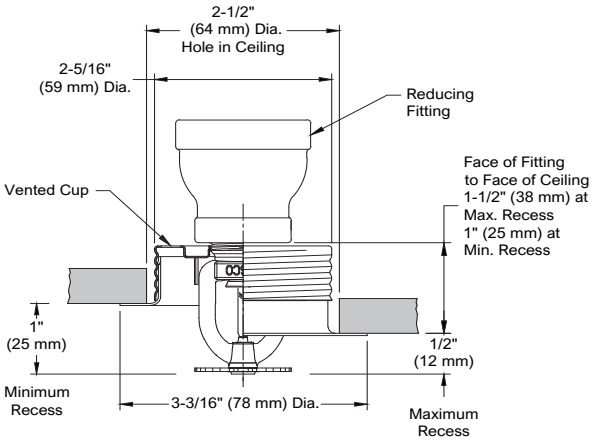


Models F1 & F1FR Pendent Sprinkler
with Model F1 Recessed Escutcheon
3/4" (19mm) Nominal Adjustment



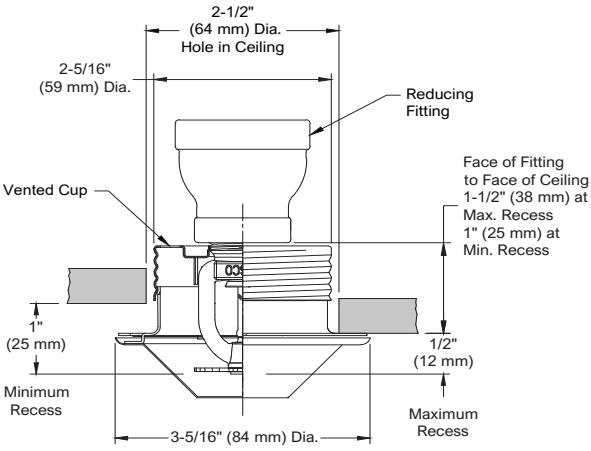
Models F1 & F1FR Pendent Sprinkler
with Model F2 Recessed Escutcheon
1/2" (13mm) Nominal Adjustment

F1_REC_PEND_CCP



Models F1 & F1FR Pendent Sprinkler
with Model FP Recessed Escutcheon
1/2" (13mm) Nominal Adjustment

Note: Model FP recessed assemblies may not be used where the pressure in the space above the ceiling is positive with respect to the protected area. Ensure that the openings in the Model FP cup are unobstructed following installation.



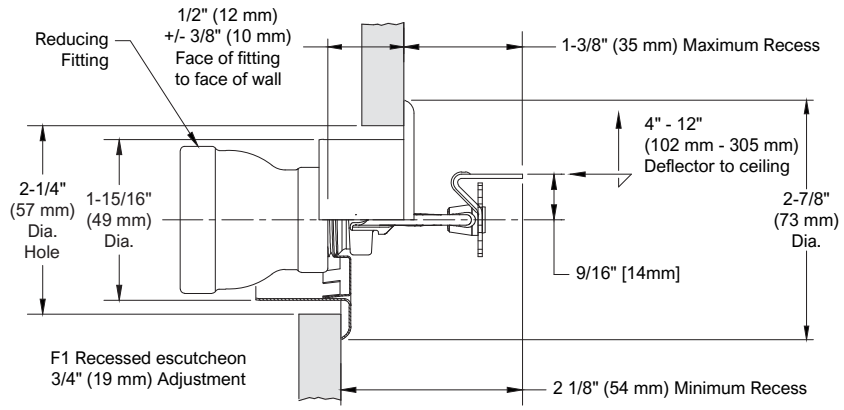
Model F1FR56 CCP Conical Concealed Sprinkler
1/2" (13mm) Nominal Adjustment
(Nominal Cover Plate Projection is 1" (25 mm))

Note: Model CCP concealed assemblies may not be used where the pressure in the space above the ceiling is positive with respect to the protected area. Ensure that the openings in the Model CCP cup are unobstructed following installation.

F1 Escutcheon
(F2 Similar)

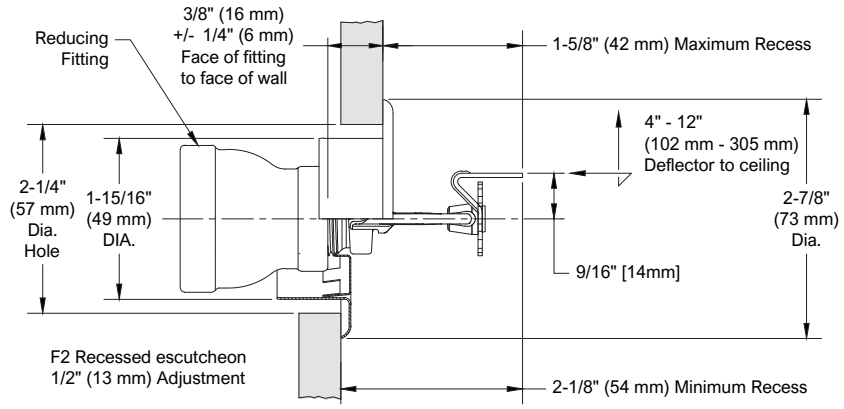
FP Escutcheon

CCP Cover Plate

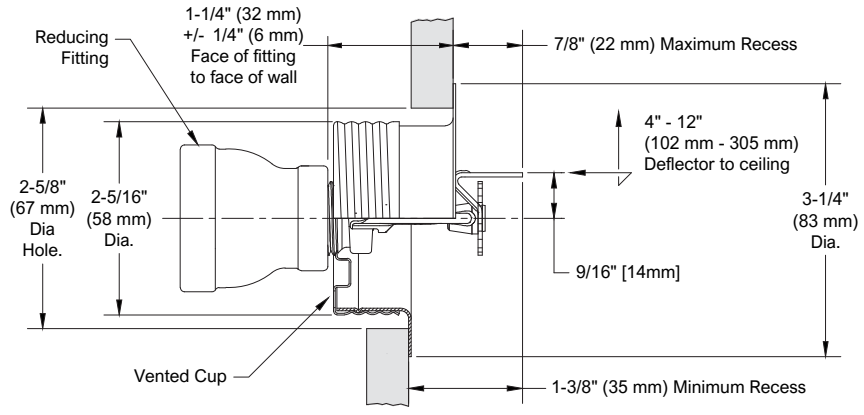


Model F1FR Horizontal Sidewall Sprinkler
with Model F1 Recessed Escutcheon
3/4" (19mm) Nominal Adjustment

F1FR_REC_HSW



Model F1FR Horizontal Sidewall Sprinkler
with Model F2 Recessed Escutcheon
1/2" (13mm) Nominal Adjustment



Model F1FR Horizontal Sidewall Sprinkler
with Model FP Recessed Escutcheon
1/2" (13mm) Nominal Adjustment

Note: Model FP recessed assemblies may not be used where the pressure in the space behind the sprinkler is positive with respect to the space in the protected area. Ensure that the openings in the Model FP cup are unobstructed following installation.

Wrenches

Model W2 (upright, pendent)

Model W13 (Legacy frame with guard installed)

Model W14 (New frame with guard installed)

Model W4
(recessed, concealed pendent)

Finishes[1]

Table B

Standard Finishes			Special Application Finishes		
Sprinkler	**F1, F2 and FP[2] Escutcheons**	**CCP Cover Plate[2]**	**Sprinkler**	**F1, F2 and FP[2] Escutcheons**	**CCP Cover Plate[2]**
Bronze	Brass	Chrome	Electroless Nickel PTFE[3][4]	Bright Brass	Bright Brass
Chrome	Chrome	White Paint	Bright Brass[5]	Satin Chrome	Satin Chrome
White Polyester[3]	White Polyester		Satin Chrome	Custom Color Polyester	Custom Color Paint
			Custom Color Polyester[3]		

Notes:
1. Paint or any other coating applied over the factory finish will void all approvals and warranties.
2. Model FP escutcheons and Model CCP sprinklers utilize a galvanized steel cup with a finished trim ring or cover plate.
3. cULus Listed as corrosion resistant.
4. FM Approved as corrosion resistant.
5. For 200°F (93°C) maximum temperature rated sprinklers only.

Installation

Model F1FR Series sprinklers must be installed in accordance with NFPA13 and the requirements of all applicable authorities having jurisdiction. Model F1FR Series sprinklers must be installed with the Reliable sprinkler installation wrench identified in this Bulletin. Any other wrench may damage the sprinkler. The Models W2 and W4 wrenches have two sets of jaws. Use the smallest set of jaws that fit on the wrench flats of the sprinkler. A leak tight sprinkler joint can be obtained with a torque of 8 to 18 lb-ft (11 to 24 N·m). Do not tighten sprinklers over the maximum recommended installation torque. Exceeding the maximum recommended installation torque may cause leakage or impairment of the sprinkler.

Glass bulb sprinklers have orange bulb protectors or protective caps to minimize bulb damage during shipping, handling and installation. Reliable sprinkler installation wrenches are designed to install sprinklers with bulb protectors in place. Remove the bulb protector at the time when the sprinkler system is placed in service for fire protection. Removal of the bulb protector before this time may leave the bulb vulnerable to damage. Remove bulb protectors by undoing the clasp by hand. Do not use tools to remove bulb protectors.

Maintenance

Reliable Model F1FR series sprinklers should be inspected and the sprinkler system maintained in accordance with NFPA 25, as well as the requirements of any Authorities Having Jurisdiction.

Prior to installation, sprinklers should remain in the original cartons and packaging until used. This will minimize the potential for damage to sprinklers that could cause improper operation or non-operation.

Do not clean sprinklers with soap and water, ammonia liquid or any other cleaning fluids. Remove dust by gentle vacuuming without touching the sprinkler.

Replace any sprinkler which has been painted (other than factory applied). A stock of spare sprinklers should be maintained to allow quick replacement of damaged or operated sprinklers. Failure to properly maintain sprinklers may result in inadvertent operation or non-operation during a fire event.

Guarantee

For the guarantee, terms, and conditions, visit www.reliablesprinkler.com.

Ordering Information

Specify the following when ordering:

Model
- F1FR56

Deflector/Orientation
- Upright
- Intermediate Upright
- Pendent
- CCP Concealed Pendent
- Horizontal Sidewall
- Vertical Sidewall

Temperature Rating
- See sprinkler technical specifications

Sprinkler Finish
- See Table B

Recessed Escutcheon[1][2]
- F1
- F2
- FP

Escutcheon Finish
- See Table B

CCP Cover Plate Temperature Rating
- 135°F (57°C) [For use with 135°F (57°C) and 155°F (68°C) sprinklers.]
- 165°F (74°C) [For use with 175°F (79°C) and 200°F (93°C) sprinklers.]

CCP Cover Plate Finish
- See Table B

Sprinkler Wrench
- Model W2
- Model W4 (recessed, concealed)
- Model W14 (New frame with guard installed)
- Model W13 (Legacy frame with guard installed)

Notes:
1. 286°F (141°C) sprinklers are not listed to be used recessed or concealed.
2. For FM, recessed sprinklers must use the Model F2 escutcheon.

P/N 9999970623

Reliable®

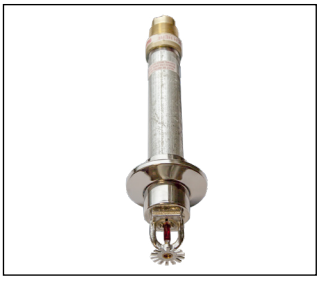
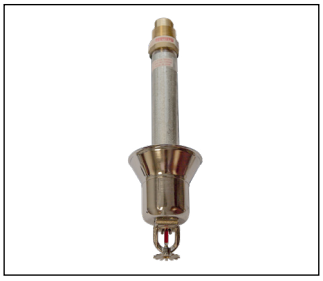
Model F3QR56 Series
Quick-Response Dry Sprinkler

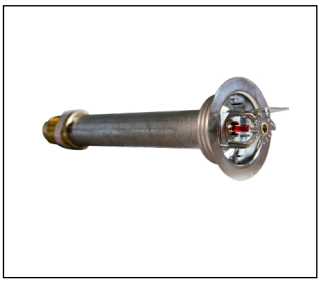
K-factor 5.6 (80 metric)

Features

- Various trim options available
- Sprinklers and trim available in a wide variety of standard and special application finishes
- Listed corrosion resistant combinations of sprinkler and trim available

Important! Reliable fire sprinklers must be handled, stored, and installed in accordance with the guidelines in Caution Sheet 310 and this bulletin. Failure to follow these instructions may result in unintended operation or nonoperation of the fire protection system.


(**Note**: not all versions of sprinkler shown, please see pages 2 through 13)

Product Description

Model F3QR56 dry sprinklers are Quick-Response, standard coverage sprinklers with a nominal K-factor of 5.6 (80 metric). Available in pendent, horizontal sidewall, and upright configurations, Model F3QR56 dry sprinklers utilize a 3mm glass bulb ordinary, intermediate, or high temperature classification operating element.

Model F3QR56 dry sprinklers are intended for installation on wet pipe, dry pipe, or preaction systems in accordance with NFPA 13, FM Property Loss Prevention Data Sheets, or other applicable installation standards.

Model F3QR56 dry sprinklers are available in a variety of trim options and finish combinations as shown on the following pages. The Reliable escutcheons and cover plates shown are the only escutcheons and cover plates listed for use with the sprinkler. The use of any other escutcheon or cover plate will void all guarantees, warranty, listing, and approvals.

Standard inlet fitting threads are 1" NPT or ISO7-R1 threads. An inlet fitting with 3/4" NPT or ISO7-R3/4 threads (cULus listed only) is also available for select sprinklers for replacement of existing sprinklers.

Table A provides a basic summary of Model F3QR56 dry sprinklers. Additional technical information is provided on the following individual sprinkler pages.

Sprinkler Summary — **Table A**

Model	K-Factor gpm/psi$^{1/2}$ (lpm/bar$^{1/2}$)	Approvals*	Max. Working Pressure psi (bar)	Sprinkler Identification Number (SIN)
F3QR56 Dry Pendent	5.6 (80)	cULus, FM	175 (12.0) cULus 250 (17.2)	R5714
F3QR56 Dry Horizontal Sidewall	5.6 (80)	cULus, FM	175 (12.0) cULus 250 (17.2)	R5734
F3QR56 Dry Upright	5.6 (80)	cULus	175 (12.0)	R5724

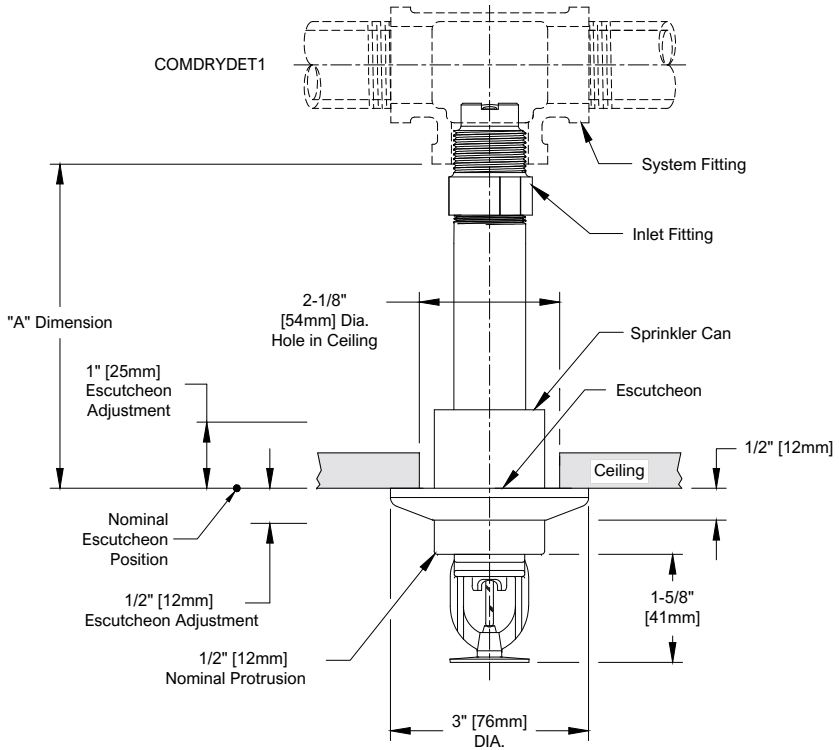
***Note:** Approvals may not apply to all trim, inlet thread, temperature, and/or finish combinations. See pages 2-11 for additional technical information.

Model F3QR56 Dry Pendent: Standard Escutcheon - SIN R5714 **Table B**

"A" Dimension in (mm)	Temperature Classification	Temperature Rating °F (°C)	Glass Bulb Color	Approvals	Sprinkler Guard
2" to 48" (51mm to 1219mm) in 1/4" (6mm) increments for 1" connections or 2" to 36" (51mm to 914mm) in 1/4" (6mm) increments for 3/4" connections	Ordinary	155°F (68°C)	Red	cULus FM	C-2
	Intermediate	175°F (79°C)	Yellow		
		200°F (93°C)	Green		
	High	286°F (141°C)	Blue		

Note: Standard inlet fitting threads are 1" NPT or ISO7-R1. Inlet fitting is also available with 3/4" NPT and ISO-R3/4 threads for replacement of existing sprinklers (cULus Listed only).

Model F3QR56 Dry Pendent Sprinkler: Standard Escutcheon **Figure 1**



Note: The sprinkler can protrudes 1/2" (12mm) when escutcheon is in nominal position. Escutcheon adjustment provides -1/2" (12mm) to +1" (25mm) "A" dimension adjustment range.

Finish Combinations: Standard Escutcheon	
Sprinkler	**Escutcheon[2][3]**
Bronze	Polished Stainless
Bronze	Laquered Brass
Chrome	Polished Stainless
White Polyester[1]	White Polyester
Black Polyester[1]	Black Polyester
Custom Color Polyester[1]	Custom Color Polyester
Electroless Nickel PTFE[1][4]	Polished Stainless

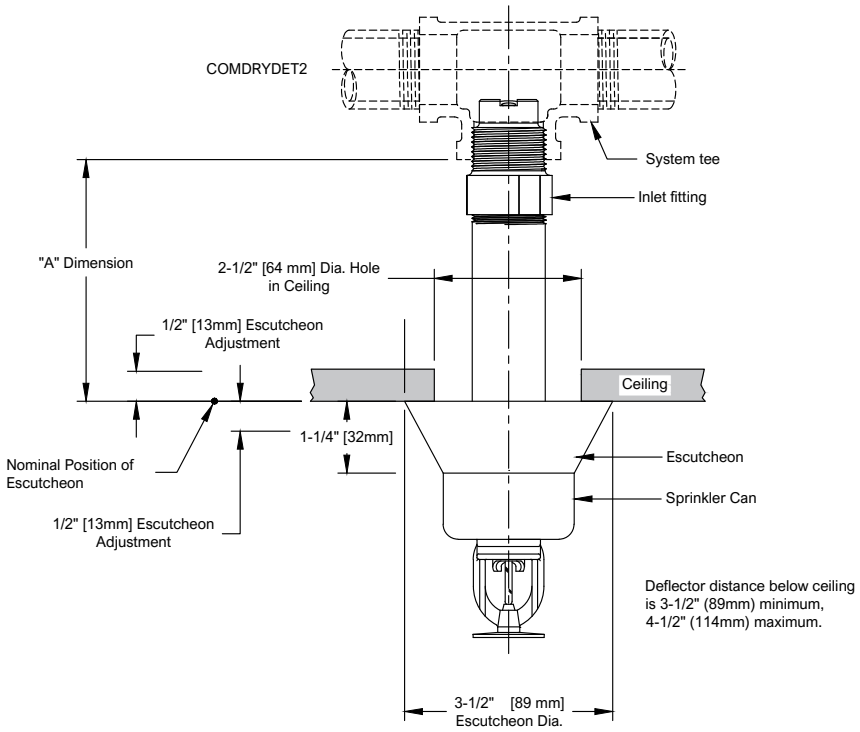
Notes:
1. UL Listed as Corrosion Resistant.
2. Escutcheons do not carry corrosion resistant listings.
3. Base material is 316 stainless steel unless noted.
4. FM Approved as Corrosion Resistant.

Model F3QR56 Dry Pendent: HB Escutcheon - SIN R5714 **Table C**

"A" Dimension in (mm)	Temperature Classification	Temperature Rating F (C)	Glass Bulb Color	Approvals	Sprinkler Guard
3½" to 48" (89mm to 1219mm) in 1/4" (6mm) increments for 1" connections or 3½" to 36" (89mm to 914mm) in 1/4" (6mm) increments for 3/4" connections	Ordinary	155°F (68°C)	Red	cULus FM	C-2
	Intermediate	175°F (79°C)	Yellow		
		200°F (93°C)	Green		
	High	286°F (141°C)	Blue		

Note: Standard inlet fitting threads are 1" NPT or ISO7-R1. Inlet fitting is also available with 3/4" NPT and ISO-R3/4 threads for replacement of existing sprinklers (cULus Listed only).

Model F3QR56 Dry Pendent Sprinkler: HB Escutcheon **Figure 2**



Finish Combinations: HB Escutcheon	
Sprinkler	**Escutcheon[2][3]**
Bronze	Chrome
Chrome	Chrome
White Polyester[1]	White Polyester
Black Polyester[1]	Black Polyester
Custom Color Polyester[1]	Custom Color Polyester
Electroless Nickel PTFE[1][4]	Stainless Steel

Notes:
1. UL Listed as Corrosion Resistant.
2. Escutcheons do not carry corrosion resistant listings.
3. Base material is cold rolled steel unless noted.
4. FM Approved as Corrosion Resistant.

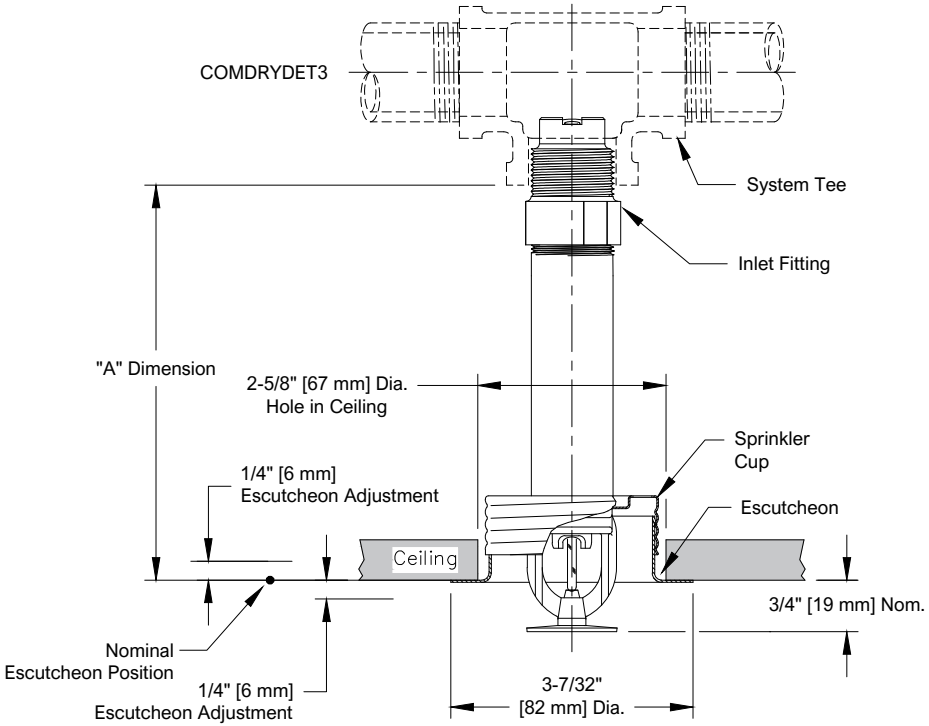
Note: The sprinkler can protrudes 1¼" when escutcheon is in nominal position. Escutcheon adjustment provides -½" (-12.7mm) to +½" (+12.7mm) "A" dimension adjustment range.

Model F3QR56 Dry Pendent: FP Escutcheon - SIN R5714 **Table D**

"A" Dimension in (mm)	Temperature Classification	Temperature Rating °F (°C)	Glass Bulb Color	Approvals	Sprinkler Guard
3½" to 48" (89mm to 1219mm) in 1/4" (6mm) increments for 1" connections or 3½" to 36" (89mm to 914mm) in 1/4" (6mm) increments for 3/4" connections	Ordinary	155°F (68°C)	Red	cULus FM	N/A
	Intermediate	175°F (79°C)	Yellow		
		200°F (93°C)	Green		
	High	286°F (141°C)	Blue	cULus	

Note: Standard inlet fitting threads are 1" NPT or ISO7-R1. Inlet fitting is also available with 3/4" NPT and ISO-R3/4 threads for replacement of existing sprinklers (cULus Listed only).

Model F3QR56 Dry Pendent Sprinkler: FP Escutcheon **Figure 3**



Note: Do not install the Model F3QR56 Dry Pendent sprinkler with the Model FP escutcheon in ceilings which have positive pressure in the space above.

Finish Combinations: FP Recessed	
Sprinkler[1]	**Escutcheon[3][4]**
Bronze	Brass
Chrome	Chrome
White Polyester[2]	White Polyester
Black Polyester[2]	Black Polyester
Custom Color Polyester[2]	Custom Color Polyester
Electroless Nickel PTFE[2][5]	Stainless Steel

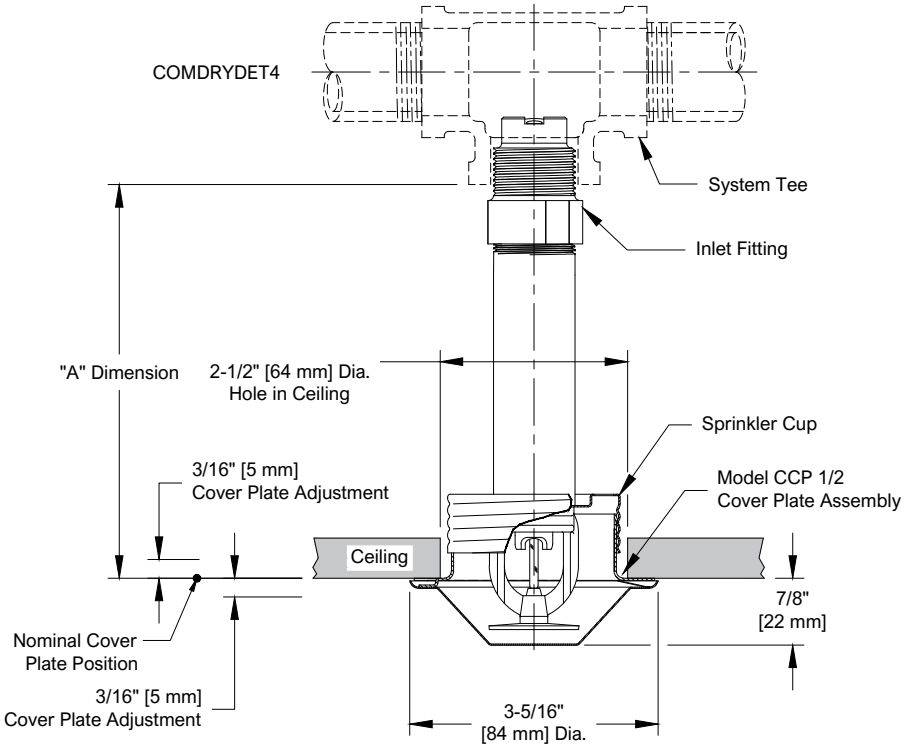
Notes:
1. Cup for FP Recessed is unfinished galvanized steel except electroless nickel PTFE sprinklers which are provided with a stainless steel cup
2. UL Listed as Corrosion Resistant.
3. Escutcheons do not carry corrosion resistant listings.
4. Base material is cold rolled steel unless noted.
5. FM Approved as Corrosion Resistant.

Model F3QR56 Dry Pendent: CCP Cover Plate - SIN R5714 **Table E**

"A" Dimension in (mm)	Temperature Classification	Temperature Rating F (C)	Glass Bulb Color	Approvals	Sprinkler Guard
3½" to 48" (89mm to 1219mm) in 1/4" (6mm) increments for 1" connections or 3½" to 36" (89mm to 914mm) in 1/4" (6mm) increments for 3/4" connections	Ordinary	155°F (68°C)	Red	cULus FM	N/A
	Intermediate	175°F (79°C)	Yellow		
		200°F (93°C)	Green		
	High (See Caution)	286°F (141°C)	Blue	cULus	

Note: Standard inlet fitting threads are 1" NPT or ISO7-R1. Inlet fitting is also available with 3/4" NPT and ISO-R3/4 threads for replacement of existing sprinklers (cULus Listed only).

Model F3QR56 Dry Pendent Sprinkler: CCP Cover Plate **Figure 4**



Note: Do not install the Model F3QR56 Dry Pendent sprinkler with the Model CCP cover plate in ceilings which have positive pressure in the space above.

Finish Combinations: CCP Concealed	
Sprinkler[1]	**Cover Plate[2]**
Bronze	White Polyester
	Chrome Bright
	Satin Chrome
	Bright Brass
	Unfinished Bronze
	Black Plate
	Custom Color

Notes:
1. Cup for CCP Concealed is unfinished galvanized steel.
2. Cover plates do not carry corrosion resistant listings.

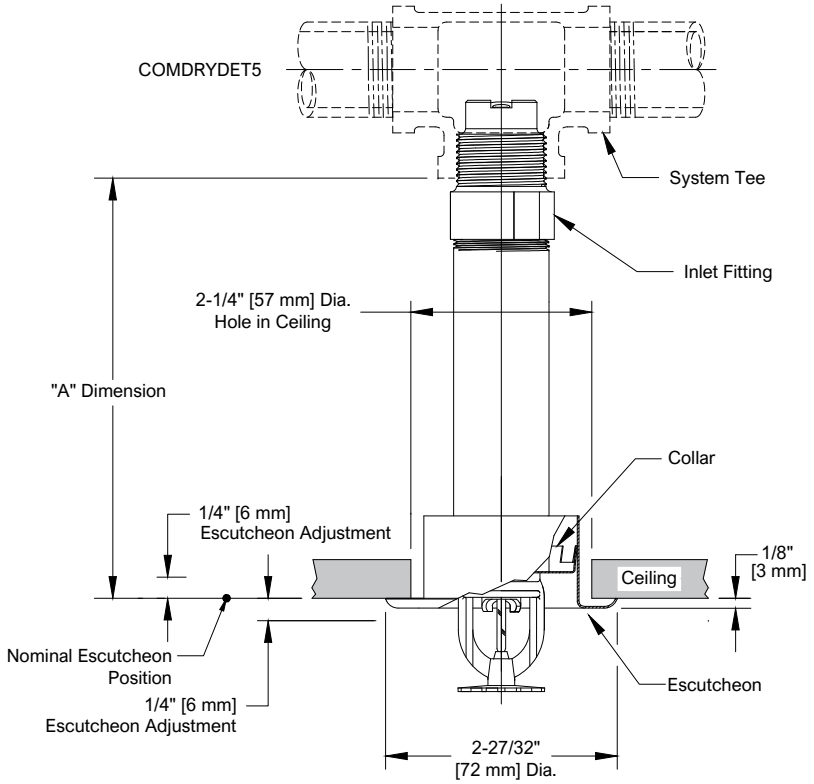
Caution: High temperature CCP sprinklers are provided with a 165°F (74°C) rated cover plate that is suitable for use where the ceiling temperature will not exceed 150°F (66°C). Do not use CCP style sprinklers where the ceiling temperature exceeds 150°F (66°C).

Model F3QR56 Dry Pendent: F1 Escutcheon - SIN R5714 **Table F**

"A" Dimension in (mm)	Temperature Classification	Temperature Rating °F (°C)	Glass Bulb Color	Approvals	Sprinkler Guard
3½" to 48" (89mm to 1219mm) in 1/4" (6mm) increments for 1" connections or 3½" to 36" (89mm to 914mm) in 1/4" (6mm) increments for 3/4" connections.	Ordinary	155°F (68°C)	Red	cULus FM	N/A
	Intermediate	175°F (79°C)	Yellow		
		200°F (93°C)	Green		
	High	286°F (141°C)	Blue	cULus	

Note: Standard inlet fitting threads are 1" NPT or ISO7-R1. Inlet fitting is also available with 3/4" NPT and ISO-R3/4 threads for replacement of existing sprinklers (cULus Listed only).

Model F3QR56 Dry Pendent Sprinkler: F1 Escutcheon **Figure 5**



Finish Combinations: F1 Recessed	
Sprinkler	**Escutcheon[2][3]**
Bronze	Brass
Chrome	Chrome
White Polyester[1]	White Polyester
Black Polyester[1]	Black Polyester
Custom Color Polyester[1]	Custom Color Polyester
Electroless Nickel PTFE[1][4]	Stainless Steel

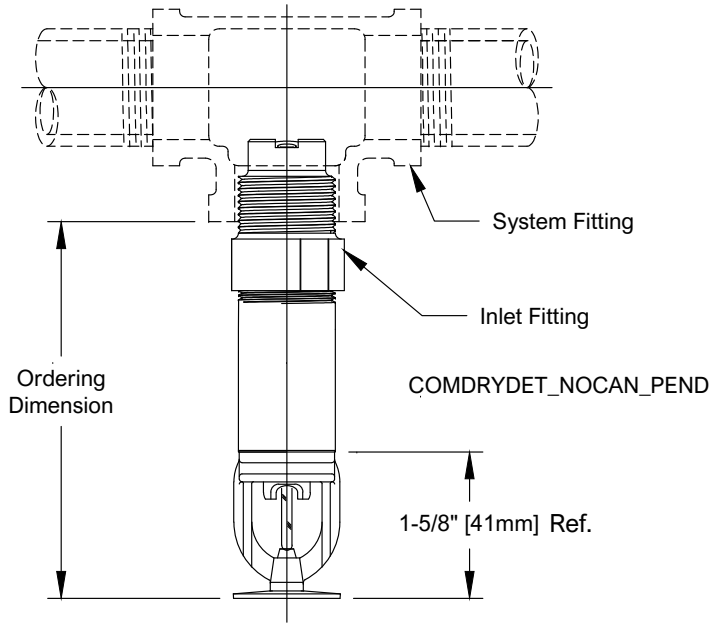
Notes:
1. UL Listed as Corrosion Resistant.
2. Escutcheons do not carry corrosion resistant listings.
3. Base material is cold rolled steel unless noted.
4. FM Approved as Corrosion Resistant.

Model F3QR56 Dry Pendent: No Escutcheon - SIN R5714 **Table G**

Order Dimension in (mm)	Temperature Classification	Temperature Rating °F (°C)	Glass Bulb Color	Approvals	Sprinkler Guard
5" to 48" (127mm to 1219mm) in 1/4" (6mm) increments for 1" connections or 5" to 36" (127mm to 914mm) in 1/4" (6mm) increments for 3/4" connections.	Ordinary	155°F (68°C)	Red	cULus FM	N/A
	Intermediate	175°F (79°C)	Yellow		
		200°F (93°C)	Green		
	High	286°F (141°C)	Blue		

Note: Standard inlet fitting threads are 1" NPT or ISO7-R1. Inlet fitting is also available with 3/4" NPT and ISO-R3/4 threads for replacement of existing sprinklers (cULus Listed only).

Model F3QR56 Dry Pendent Sprinkler: No Escutcheon **Figure 6**



Note: Customer is responsible for determining the correct deflector distance from the ceiling or structure above.

Available Finishes: No Escutcheon
Sprinkler
Bronze
Chrome
White Polyester(1)
Black Polyester(1)
Custom Color Polyester(1)
Electroless Nickel PTFE(1)(2)

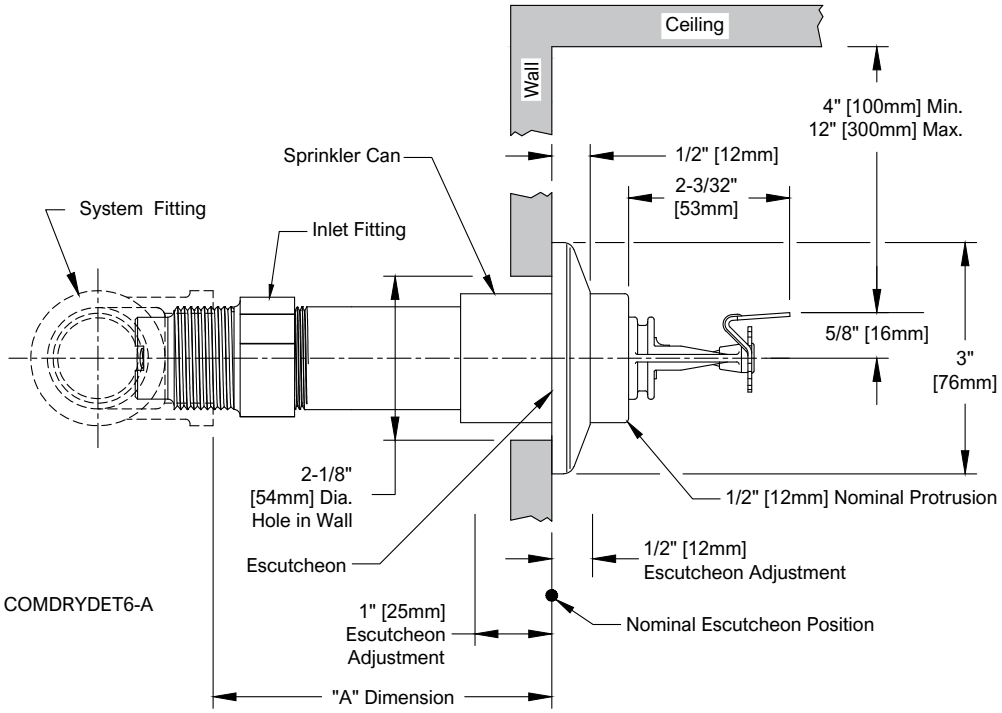
Notes:
1. UL Listed as Corrosion Resistant.
2. FM Approved as Corrosion Resistant.

Model F3QR56 Dry Horizontal Sidewall: Standard Escutcheon - SIN R5734 **Table H**

"A" Dimension in (mm)	Temperature Classification	Temperature Rating °F (°C)	Glass Bulb Color	Approvals	Sprinkler Guard
2" to 48" (51mm to 1219mm) in 1/4" (6mm) increments for 1" connections or 2" to 36" (51mm to 914mm) in 1/4" (6mm) increments for 3/4" connections	Ordinary	155°F (68°C)	Red	cULus (Light Hazard Only) FM (HC-1 Only)	C-2 (FM Only)
	Intermediate	175°F (79°C)	Yellow		
		200°F (93°C)	Green		
	High	286°F (141°C)	Blue		

Note: Standard inlet fitting threads are 1" NPT or ISO7-R1. Inlet fitting is also available with 3/4" NPT and ISO-R3/4 threads for replacement of existing sprinklers (cULus Listed only).

Model F3QR56 Dry Horizontal Sidewall: Standard Escutcheon **Figure 7**



Note: The sprinkler can protrude 1/2" when escutcheon is in nominal position. Escutcheon adjustment provides -1/2" (-12mm) to +1" (25mm) "A" dimension adjustment range.

Finish Combinations: Standard Escutcheon	
Sprinkler	**Escutcheon[2][3]**
Bronze	Polished Stainless
Bronze	Laquered Brass
Chrome	Polished Stainless
White Polyester[1]	White Polyester
Black Polyester[1]	Black Polyester
Custom Color Polyester[1]	Custom Color Polyester
Electroless Nickel PTFE[1][4]	Polished Stainless

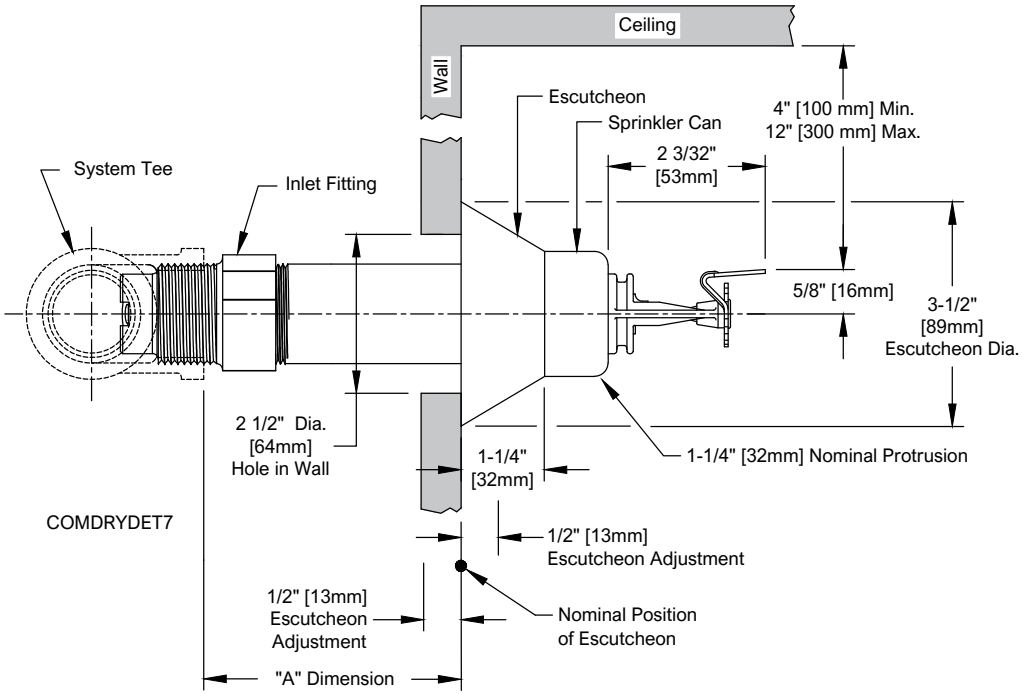
Notes:
1. UL Listed as Corrosion Resistant.
2. Escutcheons do not carry corrosion resistant listings.
3. Base material is 316 stainless steel unless noted.
4. FM Approved as Corrosion Resistant.

Model F3QR56 Dry Horizontal Sidewall: HB Escutcheon - SIN R5734 **Table I**

"A" Dimension in (mm)	Temperature Classification	Temperature Rating °F (°C)	Glass Bulb Color	Approvals	Sprinkler Guard
3½" to 48" (89mm to 1219mm) in 1/4" (6mm) increments for 1" connections or 3½" to 36" (89mm to 914mm) in 1/4" (6mm) increments for 3/4" connections	Ordinary	155°F (68°C)	Red	cULus (Light Hazard Only) FM (HC-1 Only)	C-2 (FM Only)
	Intermediate	175°F (79°C)	Yellow		
		200°F (93°C)	Green		
	High	286°F (141°C)	Blue		

Note: Standard inlet fitting threads are 1" NPT or ISO7-R1. Inlet fitting is also available with 3/4" NPT and ISO-R3/4 threads for replacement of existing sprinklers (cULus Listed only).

Model F3QR56 Dry Horizontal Sidewall: HB Escutcheon **Figure 8**



Finish Combinations: HB Escutcheon	
Sprinkler	**Escutcheon[2][3]**
Bronze	Chrome
Chrome	Chrome
White Polyester[1]	White Polyester
Black Polyester[1]	Black Polyester
Custom Color Polyester[1]	Custom Color Polyester
Electroless Nickel PTFE[1][4]	Stainless Steel

Notes:
1. UL Listed as Corrosion Resistant.
2. Escutcheons do not carry corrosion resistant listings.
3. Base material is cold rolled steel unless noted.
4. FM Approved as Corrosion Resistant.

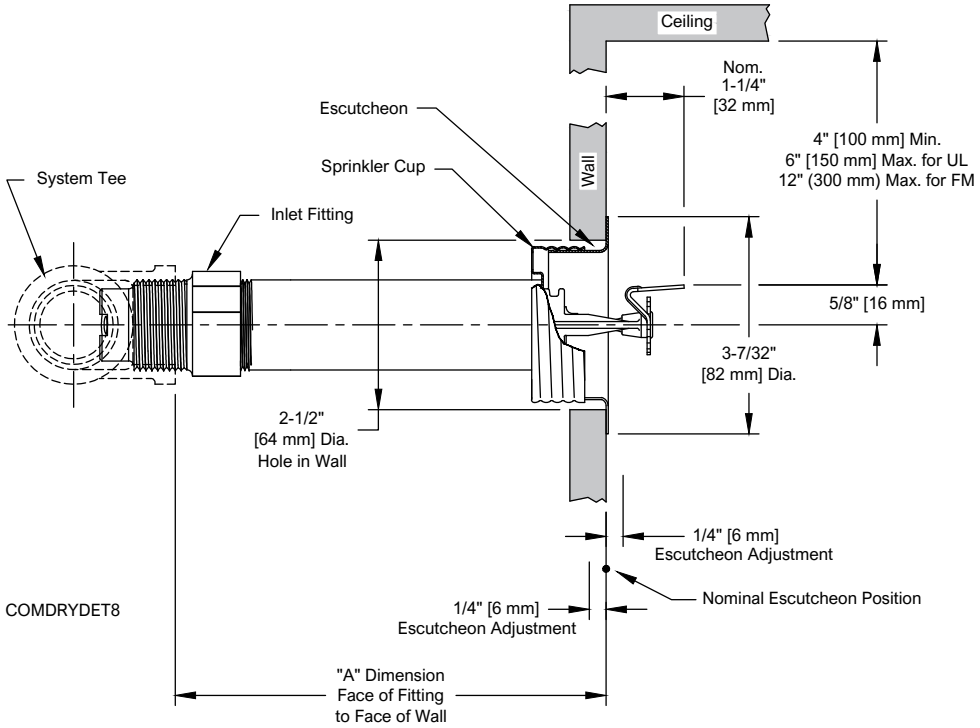
Note: The sprinkler can protrudes 1¼" when escutcheon is in nominal position. Escutcheon adjustment provides -½" (-12.7mm) to +½" (+12.7mm) "A" dimension adjustment range.

Model F3QR56 Dry Horizontal Sidewall: FP Escutcheon - SIN R5734 **Table J**

"A" Dimension in (mm)	Temperature Classification	Temperature Rating °F (°C)	Glass Bulb Color	Approvals	Sprinkler Guard
3½" to 48" (89mm to 1219mm) in 1/4" (6mm) increments for 1" connections or 3½" to 36" (89mm to 914mm) in 1/4" (6mm) increments for 3/4" connections	Ordinary	155°F (68°C)	Red	cULus (Light Hazard Only) FM (HC-1 Only)	N/A
	Intermediate	175°F (79°C)	Yellow		
		200°F (93°C)	Green		
	High	286°F (141°C)	Blue		

Note: Standard inlet fitting threads are 1" NPT or ISO7-R1. Inlet fitting is also available with 3/4" NPT and ISO-R3/4 threads for replacement of existing sprinklers (cULus Listed only).

Model F3QR56 Dry Horizontal Sidewall: FP Escutcheon **Figure 9**



Finish Combinations: FP Recessed	
Sprinkler[1]	**Escutcheon[3][4]**
Bronze	Brass
Chrome	Chrome
White Polyester[2]	White Polyester
Black Polyester[2]	Black Polyester
Custom Color Polyester[2]	Custom Color Polyester
Electroless Nickel PTFE[2][5]	Stainless Steel

Notes:
1. Cup for FP Recessed is unfinished galvanized steel except electroless nickel PTFE sprinklers which are provided with a stainless steel cup
2. UL Listed as Corrosion Resistant.
3. Escutcheons do not carry corrosion resistant listings.
4. Base material is cold rolled steel unless noted.
5. FM Approved as Corrosion Resistant.

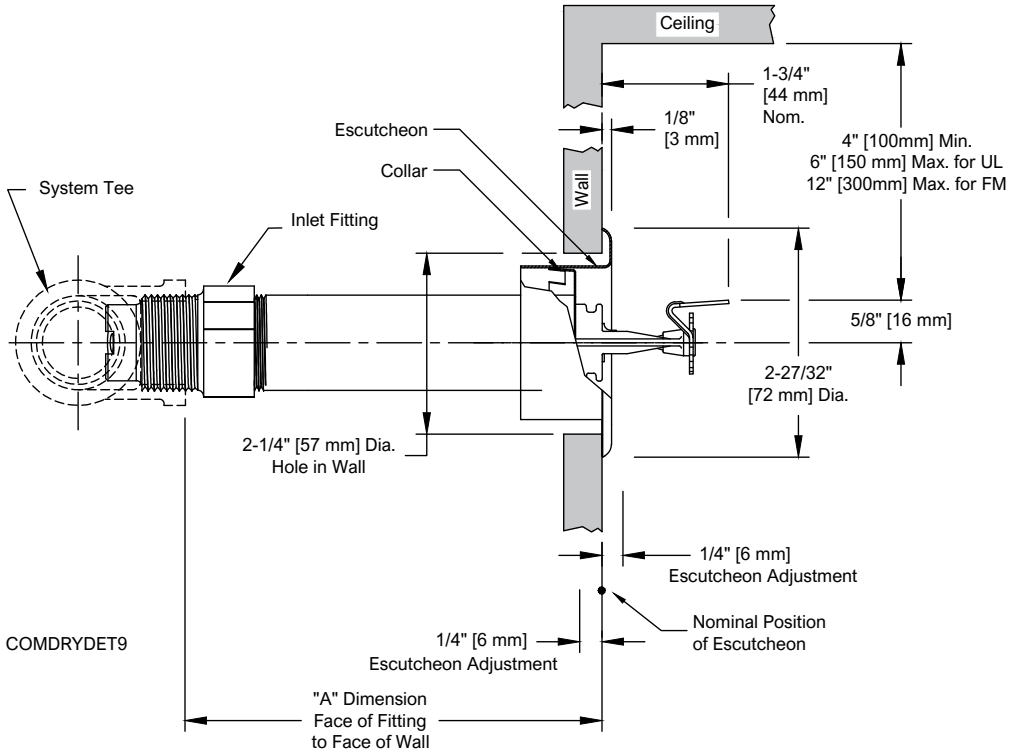
Note: Do not install the Model F3QR56 Dry Horizontal Sidewall sprinkler with the Model FP escutcheon in walls which are positively pressurized with respect to the protected space.

Model F3QR56 Dry Horizontal Sidewall: F1 Escutcheon - SIN R5734 **Table K**

"A" Dimension in (mm)	Temperature Classification	Temperature Rating °F (°C)	Glass Bulb Color	Approvals	Sprinkler Guard
3½" to 48" (89mm to 1219mm) in 1/4" (6mm) increments for 1" connections or 3½" to 36" (89mm to 914mm) in 1/4" (6mm) increments for 3/4" connections	Ordinary	155°F (68°C)	Red	cULus (Light Hazard Only) FM (HC-1 Only)	N/A
	Intermediate	175°F (79°C)	Yellow		
		200°F (93°C)	Green		
	High	286°F (141°C)	Blue		

Note: Standard inlet fitting threads are 1" NPT or ISO7-R1. Inlet fitting is also available with 3/4" NPT and ISO-R3/4 threads for replacement of existing sprinklers (cULus Listed only).

Model F3QR56 Dry Horizontal Sidewall: F1 Escutcheon **Figure 10**



Finish Combinations: F1 Recessed	
Sprinkler	**Escutcheon[2][3]**
Bronze	Brass
Chrome	Chrome
White Polyester[1]	White Polyester
Black Polyester[1]	Black Polyester
Custom Color Polyester[1]	Custom Color Polyester
Electroless Nickel PTFE[1][4]	Stainless Steel

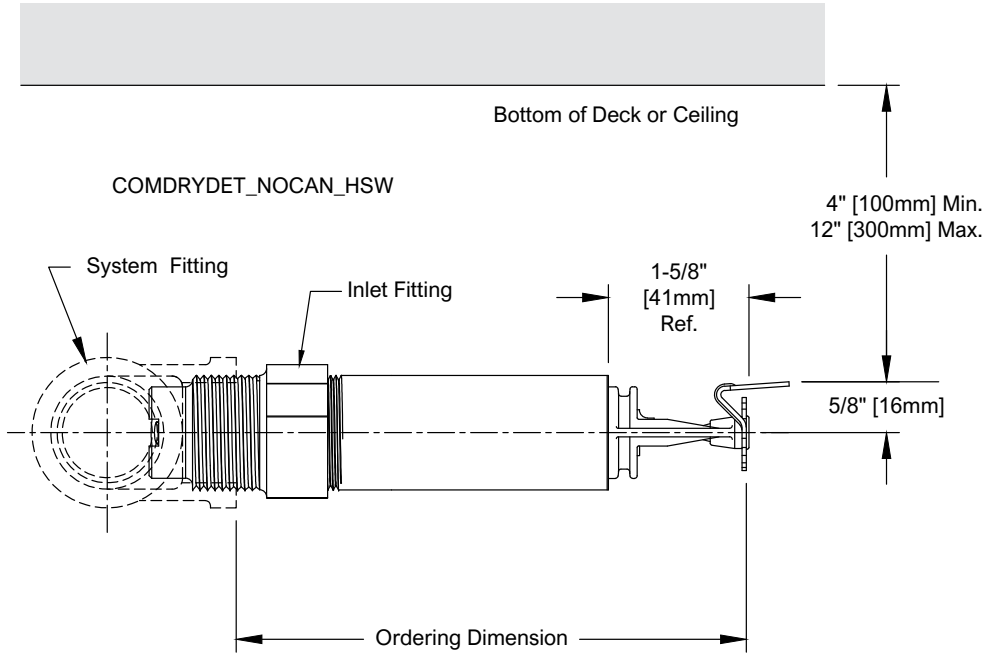
Notes:
1. UL Listed as Corrosion Resistant.
2. Escutcheons do not carry corrosion resistant listings.
3. Base material is cold rolled steel unless noted.
4. FM Approved as Corrosion Resistant.

Model F3QR56 Dry Horizontal Sidewall: No Escutcheon - SIN R5734 **Table L**

Order Dimension in (mm)	Temperature Classification	Temperature Rating °F (°C)	Glass Bulb Color	Approvals	Sprinkler Guard
5" to 48" (127mm to 1219mm) in 1/4" (6mm) increments for 1" connections or 5" to 36" (127mm to 914mm) in 1/4" (6mm) increments for 3/4" connections	Ordinary	155°F (68°C)	Red	cULus (Light Hazard Only) FM (HC-1 Only)	N/A
	Intermediate	175°F (79°C)	Yellow		
		200°F (93°C)	Green		
	High	286°F (141°C)	Blue		

Note: Standard inlet fitting threads are 1" NPT or ISO7-R1. Inlet fitting is also available with 3/4" NPT and ISO-R3/4 threads for replacement of existing sprinklers (cULus Listed only).

Model F3QR56 Dry Horizontal Sidewall: No Escutcheon **Figure 11**



Note: Customer is responsible for determining the correct distance from the wall to the sprinkler deflector.

Available Finishes: No Escutcheon
Sprinkler
Bronze
Chrome
White Polyester(1)
Black Polyester(1)
Custom Color Polyester(1)
Electroless Nickel PTFE(1)(2)

Notes:
1. UL Listed as Corrosion Resistant.
2. FM Approved as Corrosion Resistant.

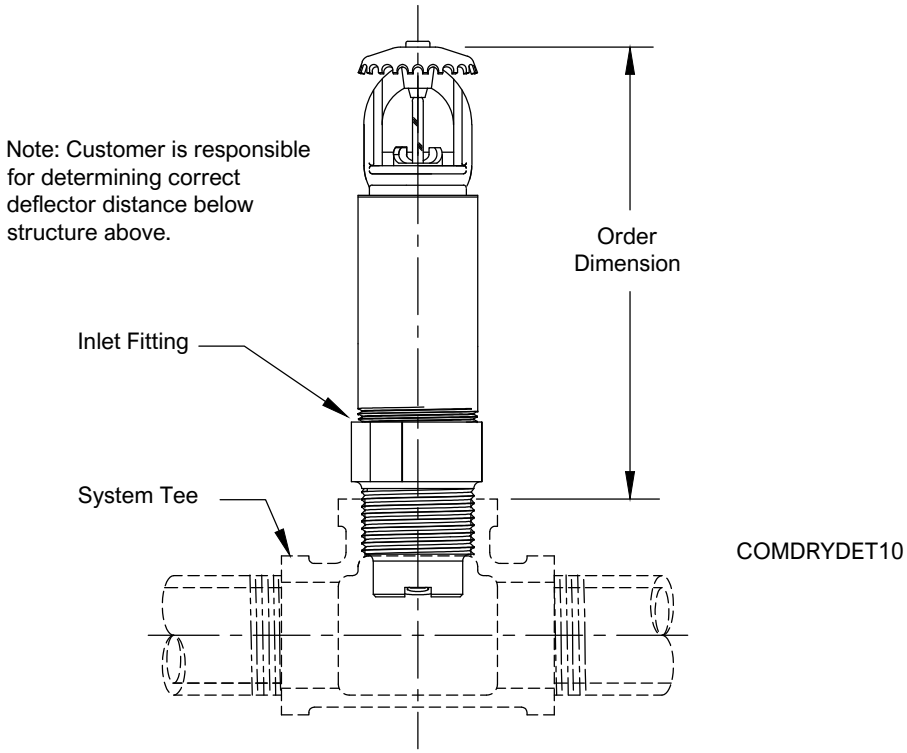
Model F3QR56 Dry Upright - SIN R5724

Table M

Order Dimension in (mm)	Temperature Classification	Temperature Rating °F (°C)	Glass Bulb Color	Approvals	Sprinkler Guard
5” to 48” (127 mm to 1219 mm)	Ordinary	155°F (68°C)	Red	cULus	N/A
	Intermediate	175°F (79°C)	Yellow		
		200°F (93°C)	Green		
	High	286°F (141°C)	Blue		

Model F3QR56 Dry Upright Sprinkler

Figure 12



Finish Combinations: Upright	
Sprinkler	**Escutcheon**
Bronze	NA
Electroless Nickel PTFE(1)	NA

Notes:

1. UL Listed as Corrosion Resistant.

Installation (General)

Dry sprinklers connected to wet pipe systems must be installed as indicated in Figure 14 and as required by NFPA 13 with the Exposed Minimum Barrel Length located in a heated area.

Reliable Model F3QR56 dry sidewall sprinklers may be installed in ductile or malleable cast iron threaded tees, or CPVC tees and adapters upon verification that the sprinkler inlet fitting does not interfere with the interior of the fitting (see Figure 15).

DO NOT install Reliable Model F3QR56 dry sidewall sprinklers into elbows or couplings, welded outlets, mechanical tees, or gasket sealed CPVC fittings.

See Figure 16 for acceptable and unacceptable installation practices.

F3QR56 with Standard Escutcheon

Cut a 2-1/8" (54mm) diameter hole in the wall as shown in Fig. 1. Apply a PTFE based sealant to the sprinkler threads before installing into the fitting. Use the Model F3R installation wrench on the square boss to tighten the sprinkler until it is secured in the sprinkler fitting. Installation is completed by removing the orange glass bulb protector and sliding the escutcheon over the finished sleeve until tight to the finished surface.

F3QR56 with HB Escutcheon

Cut a 2-1/2" (64mm) diameter hole in the wall as shown in Fig. 2. Apply a PTFE based sealant to the sprinkler threads before installing into the fitting. Use the Model F3R installation wrench on the square boss to tighten the sprinkler until it is secured in the sprinkler fitting. Installation is completed by removing the orange glass bulb protector and sliding the skirt over the finished sleeve until tight to the finished suface.

F3QR56 with FP Recessed Escutcheon

Cut a 2-5/8" (67mm) diameter hole in the wall as shown in Fig. 3. Apply a PTFE based sealant to the sprinkler threads before installing into the fitting. Use the Model XLO2 installation wrench (see Fig. 13) on the square boss to tighten the sprinkler until it is secured in the sprinkler fitting. Installation is completed by removing the orange glass bulb protector and pushing (or threading) the FP escutcheon into the threaded cup. Final adjustment is made by turning the FP escutcheon clockwise until the flange makes full contact with the wall surface.

F3QR56 CCP Concealed Cover Plate

Cut a 2-5/8" (67mm) diameter hole in the wall as shown in Fig. 4. Apply a PTFE based sealant to the sprinkler threads before installing into the fitting. Use the Model XLO2 installation wrench (see Fig. 13) on the square boss to tighten the sprinkler until it is secured in the sprinkler fitting. Installation is completed by removing the orange glass bulb protector and pushing (or threading) the SWC cover plate into the threaded cup. Final adjustment is made by turning the cover plate clockwise until the cover plate flange makes full contact with the finished surface.

Note:

1. The Model XLO2 installation wrench for recessed and concealed installations has a open side to accommodate the sprinkler deflector and can only be inserted in one way (see Figure 13). Care must be taken not to damage the deflector during installation.
2. Do not over-tighten sprinklers into fittings. It is recommended that Reliable dry sprinklers be installed using the wrench referenced in this bulletin. A pipe wrench may also be used to install dry sprinklers provided that it only engages the outer tube (steel pipe) of the assembly. Note that a pipe wrench will impart a large amount of torque into the final assembly. This torque will need to be matched or exceeded to remove the sprinkler at a later date. A leak free joint can normally be obtained by installing the sprinkler to a minimum torque of 22 ft-lb (30 N·m) after applying an appropriate thread sealant.
3. Glass bulb sprinklers have orange bulb protectors to minimize bulb damage during shipping, handling, and installation. Reliable installation wrenches are designed to install sprinklers while bulb protectors are in place. REMOVE THE PROTECTORS AT THE TIME THE SPRINKLER SYSTEM IS PLACED INTO SERVICE. Removal of the protectors before this time may leave the glass bulb vulnerable to damage. Remove protectors by undoing the clasp by hand. DO NOT USE TOOLS TO REMOVE THE PROTECTORS.
4. Do not remove the wax fillet in the gap between the cup that supports the bulb and the wrenching boss.

XLO2 Installation Procedure **Figure 13**

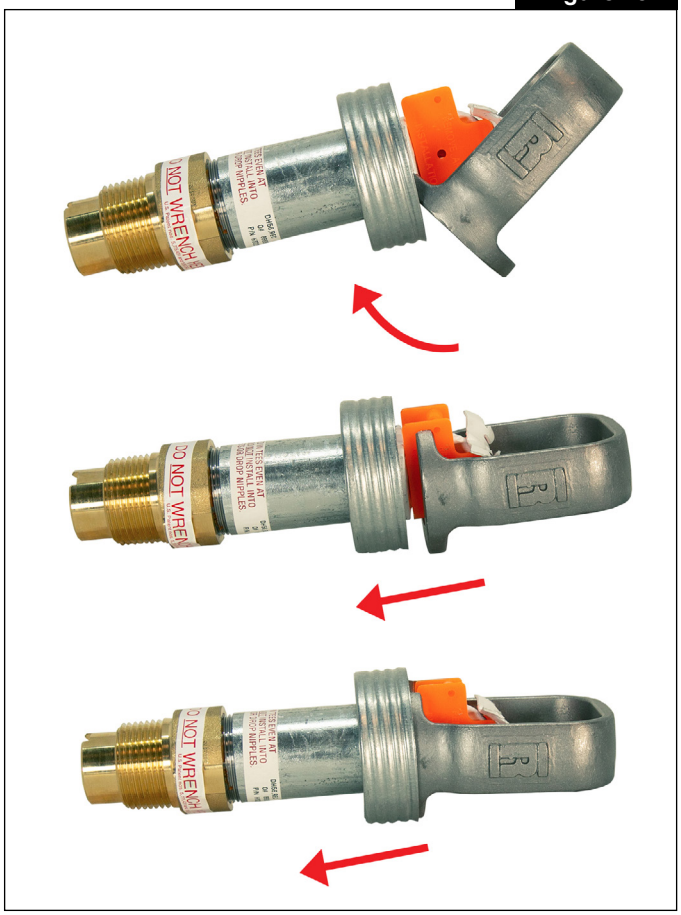


Figure 14

MINIMUM EXPOSED BARREL LENGTH WHEN CONNECTED TO WET PIPE SPRINKLER SYSTEM

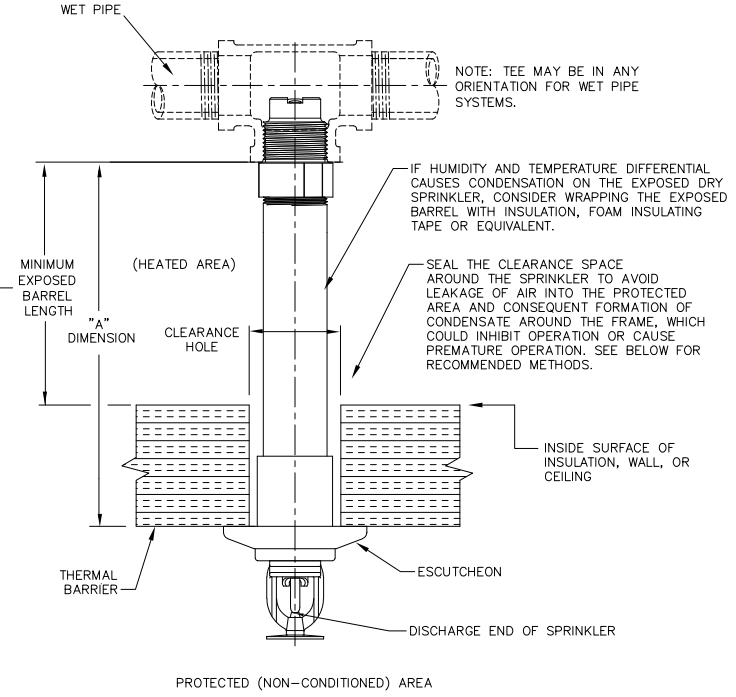
NOTE: STANDARD DRY PENDENT IS SHOWN, HOWEVER, MINIMUM EXPOSED BARREL LENGTH APPLIES TO ALL STYLES OF DRY SPRINKLERS CONNECTED TO A WET PIPE SYSTEM.

AMBIENT TEMPERATURE EXPOSED TO DISCHARGE END OF SPRINKLER*	EXPOSED BARREL AMBIENT TEMPERATURE		
	40°F/4°C	50°F/10°C	60°F/16°C
	EXPOSED MINIMUM BARREL LENGTH** (FACE OF FITTING TO TOP OF CEILING)***		
	IN. (MM)	IN. (MM)	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 (300)	3 (75)	0
−10°F (−23°C)	14 (350)	4 (100)	1 (25)
−20°F (−29°C)	14 (350)	6 (150)	3 (75)
−30°F (−34°C)	16 (400)	8 (200)	4 (100)
−40°F (−40°C)	18 (450)	8 (200)	4 (100)
−50°F (−46°C)	20 (500)	10 (250)	6 (150)
−60°F (−51°C)	20 (500)	10 (250)	6 (150)

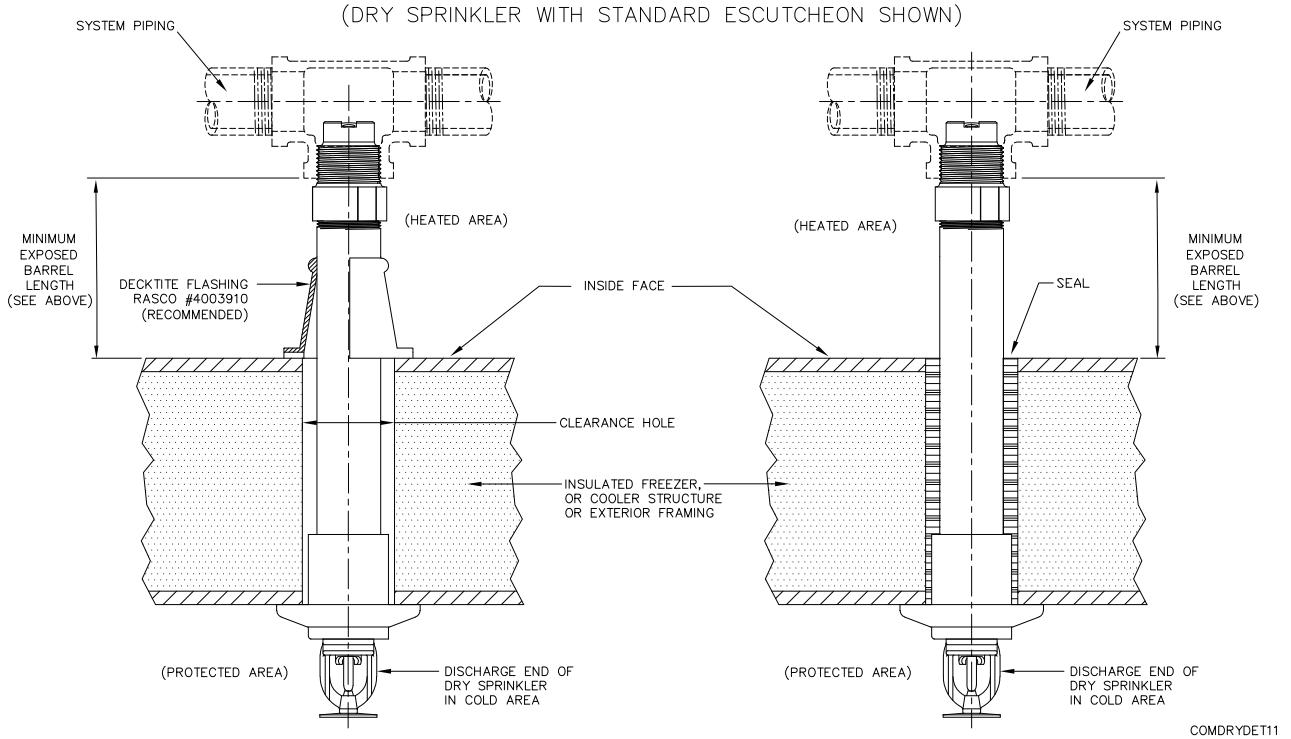
* FOR AMBIENT TEMPERATURES EXPOSED TO THE DISCHARGE END OF THE SPRINKLER THAT OCCUR BETWEEN THE VALUES LISTED, USE THE NEXT COOLER TEMPERATURE.

** THE MINIMUM EXPOSED BARREL LENGTH IS NOT THE SAME AS THE "A" DIMENSION. THE MINIMUM EXPOSED BARREL LENGTH IS BASED ON A PROPERLY SEALED PENETRATION WITH A MAXIMUM WIND VELOCITY ON THE EXPOSED SPRINKLER OF 30 MPH (48 KM/H). LONGER EXPOSED BARREL LENGTHS WILL HELP AVOID FREEZING OF THE WET PIPING WHERE HIGHER WIND VELOCITY IS EXPECTED.

*** THE MINIMUM EXPOSED BARREL LENGTH IS MEASURED FROM THE FACE OF THE FITTING TO THE INSIDE FACE OF THE INSULATION, WALL, OR CEILING LEADING TO THE COLD SPACE, WHICHEVER IS CLOSEST TO THE FITTING.



RECOMMENDED DRY SPRINKLER SEAL ARRANGEMENTS
(DRY SPRINKLER WITH STANDARD ESCUTCHEON SHOWN)



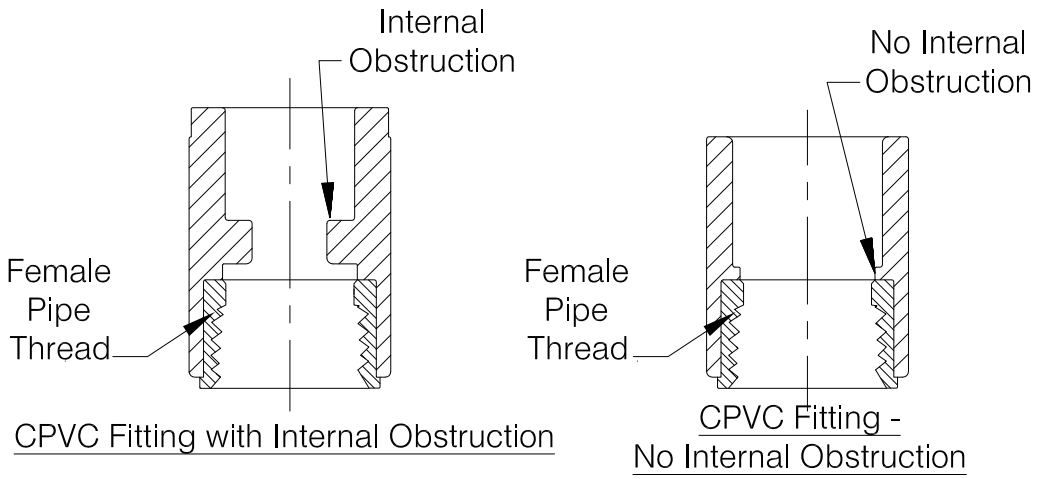
CAUTION

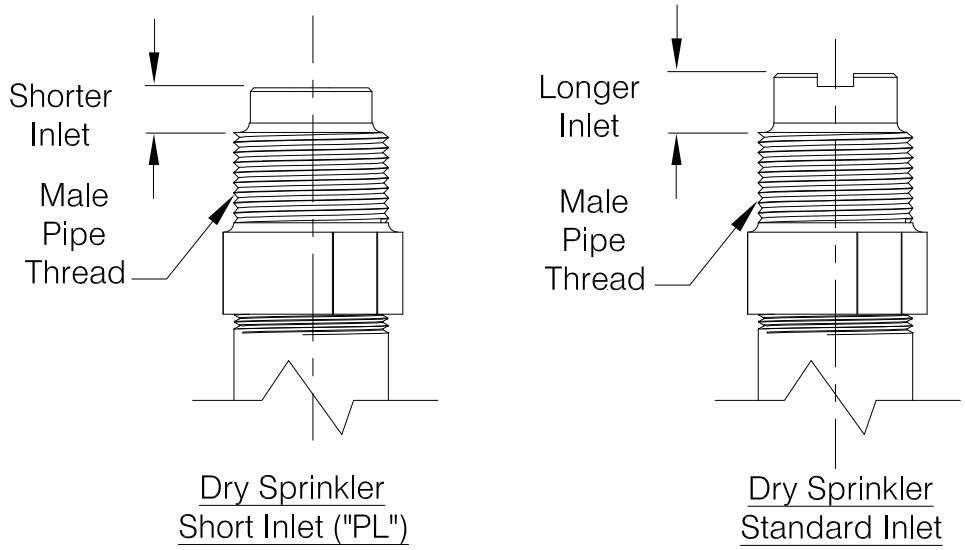
RELIABLE DRY SPRINKLERS MAY BE INSTALLED IN A LISTED CPVC SPRINKLER FITTING, ONLY UPON VERIFICATION THAT THE FITTING DOES NOT INTERFERE WITH THE SPRINKLER'S INLET.

Do not install dry sprinklers with standard inlets into CPVC fittings that have an internal obstruction; this will damage the sprinkler, the fitting, or both.

Short inlet ("PL") versions of Reliable dry sprinklers are available that may or may not be compatible with fittings having internal obstructions in existing installations. Sprinklers with the short inlet ("PL") should only be installed in CPVC fittings of wet-pipe systems.

In all cases, verify sprinkler and fitting dimensions prior to installation to avoid interference.





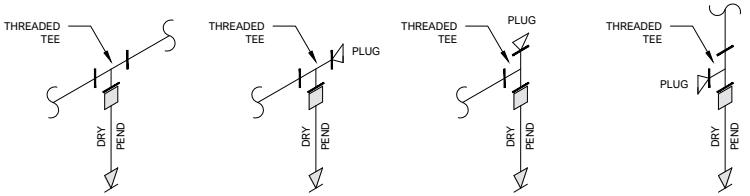
BE SURE TO ORDER THE CORRECT SPRINKLERS FOR YOUR APPLICATION

COMDRYDET2

Acceptable and Unacceptable Installation Practices for Steel Pipe Fittings

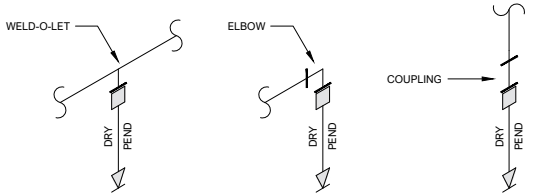
Figure 16

ACCEPTABLE INSTALLATIONS FOR DRY PENDENT SPRINKLERS



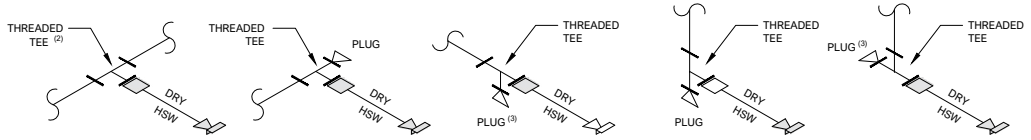
NOTES:
1. EXPOSED LENGTH OF DRY BARREL INSIDE OF CONDITIONED SPACE TO BE IN ACCORDANCE WITH THIS BULLETIN AND NFPA 13.

UNACCEPTABLE INSTALLATIONS FOR DRY PENDENT SPRINKLERS



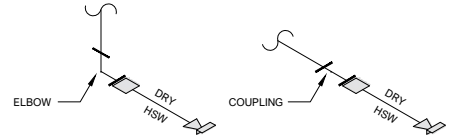
NOTES:
1. IN ADDITION TO THE UNACCEPTABLE INSTALLATIONS ABOVE, DRY PENDENT SPRINKLERS SHALL NOT BE INSTALLED INTO MECHANICAL TEES (SADDLE OR U-BOLT STYLE), OR INTERNALLY GASKETED CPVC FITTINGS.

ACCEPTABLE INSTALLATIONS FOR DRY SIDEWALL SPRINKLERS



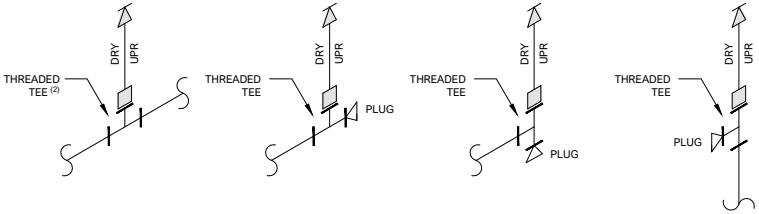
NOTES:
1. EXPOSED LENGTH OF DRY BARREL INSIDE OF CONDITIONED SPACE TO BE IN ACCORDANCE WITH THIS BULLETIN AND NFPA 13.
2. WELD-O-LETS IN COMPLIANCE WITH NFPA 13 REQUIREMENTS ALSO ACCEPTABLE FOR DRY SIDEWALL SPRINKLERS.
3. PREFERRED ORIENTATION OF PLUG IS DOWN.

UNACCEPTABLE INSTALLATIONS FOR DRY SIDEWALL SPRINKLERS



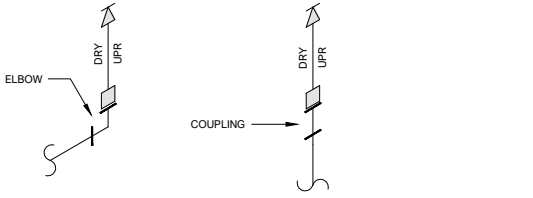
NOTES:
1. IN ADDITION TO THE UNACCEPTABLE INSTALLATIONS ABOVE, DRY SIDEWALL SPRINKLERS SHALL NOT BE INSTALLED INTO MECHANICAL TEES (SADDLE OR U-BOLT STYLE), OR INTERNALLY GASKETED CPVC FITTINGS.

ACCEPTABLE INSTALLATIONS FOR DRY UPRIGHT SPRINKLERS

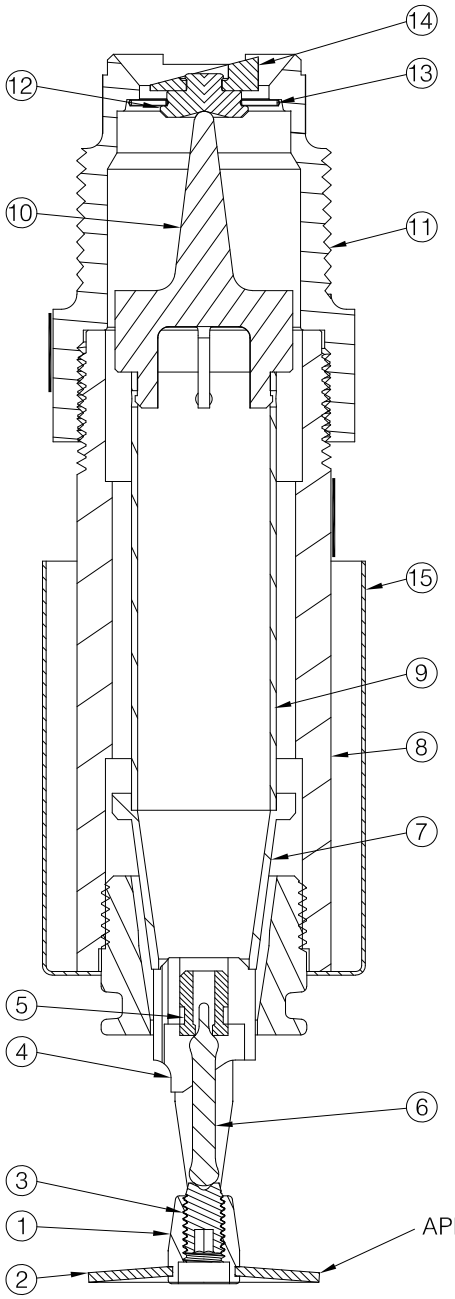


NOTES:
1. EXPOSED LENGTH OF DRY BARREL INSIDE OF CONDITIONED SPACE TO BE IN ACCORDANCE WITH THIS BULLETIN AND NFPA 13.
2. WELD-O-LETS IN COMPLIANCE WITH NFPA 13 REQUIREMENTS ALSO ACCEPTABLE FOR DRY UPRIGHT SPRINKLERS.

UNACCEPTABLE INSTALLATIONS FOR DRY UPRIGHT SPRINKLERS



NOTES:
1. IN ADDITION TO THE UNACCEPTABLE INSTALLATIONS ABOVE, DRY UPRIGHT SPRINKLERS SHALL NOT BE INSTALLED INTO MECHANICAL TEES (SADDLE OR U-BOLT STYLE), OR INTERNALLY GASKETED CPVC FITTINGS.



Item	Description	Material
1	Frame	UNS C83600 Brass
2	Deflector	UNS C51000 Bronze
3	Load Screw	UNS C22000 Brass
4	Seat Adapter	UNS C36000 Brass
5	Bulb Insert	UNS C31400 Copper
6	Glass Bulb	Glass/Glycerin Solution
7	Orifice Adapater	UNS C36000 Brass
8	Outer Tube	Galvanized Steel
9	Inner Tube	UNS C23000 Brass
10	Yoke	UNS C38000 Brass
11	Inlet	UNS C35330 Brass
12	Cap	UNS C54400 Brass
13	Spring Washer/Seal	PTFE Coated Beryllium Nickel
14	Flip Disk	UNS C54400 Brass
15	Can/Escutcheon	Varies (Not used on all models)

NOTE: PIPE WRENCH MAY ONLY BE USED ON OUTER STEEL BARREL OF SPRINKLER

COMDRYDET13

APPEARANCE OF DEFLECTOR WILL VARY DEPENDING ON MODEL

Wrench Options

F3R Wrench
(Standard, HB, and No Escutcheon trims)

XLO2 Wrench
(FP Recessed, F1 Recessed, and CCP trims)

Maintenance

Reliable Model F3QR56 series sprinklers should be inspected and the sprinkler system maintained in accordance with NFPA 25, as well as the requirements of any Authorities Having Jurisdiction. Prior to installation, sprinklers should remain in the original cartons and packaging until used. This will minimize the potential for damage to sprinklers that could cause improper operation or non-operation.

Do not clean sprinklers with soap and water, ammonia liquid or any other cleaning fluids. Remove dust by gentle vacuuming without touching the sprinkler.

Replace any sprinkler which has been painted (other than factory applied). A stock of spare sprinklers should be maintained to allow quick replacement of damaged or operated sprinklers. Failure to properly maintain sprinklers may result in inadvertent operation or non-operation during a fire event.

Guarantee

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

Patents

US Patent No. 7,841,418

Ordering Information

Specify:

Model F3QR56 Dry Sprinkler
- Upright
- Pendent
- Horizontal Sidewall

Trim Style
- Standard Escutcheon
- HB Escutcheon
- FP Recessed Escutcheon
- F1 Recessed Escutcheon
- CCP Cover Plate (Pendent only)
- No Escutcheon

Temperature Rating
- See available temperatures (depending on trim style and approvals) on pages 2-13

Finish
- See available finish combinations (depending on trim style and approvals) on pages 2-13

Length
- For dry pendent and sidewall sprinklers with trim, “A” dimension is measured from face of fitting to face of finished ceiling or wall in 1/4” (6mm) increments.
- For dry upright sprinklers and sprinklers with no trim, order dimension is from face of fitting to deflector in 1/4” (6mm) increments.

Notes:
1. Lengths are based upon a normally gauged pipe thread “make-up” of .60 inch (15mm) per ANSI B2.1 (approximately 7-1/2 threads).

Installation Wrench
- Model F3R (Standard, HB, and No Escutcheon trims)
- Model XLO2 (FP Recessed, F1 Recessed & CCP trims)

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

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

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

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

c UL us LISTED FM APPROVED

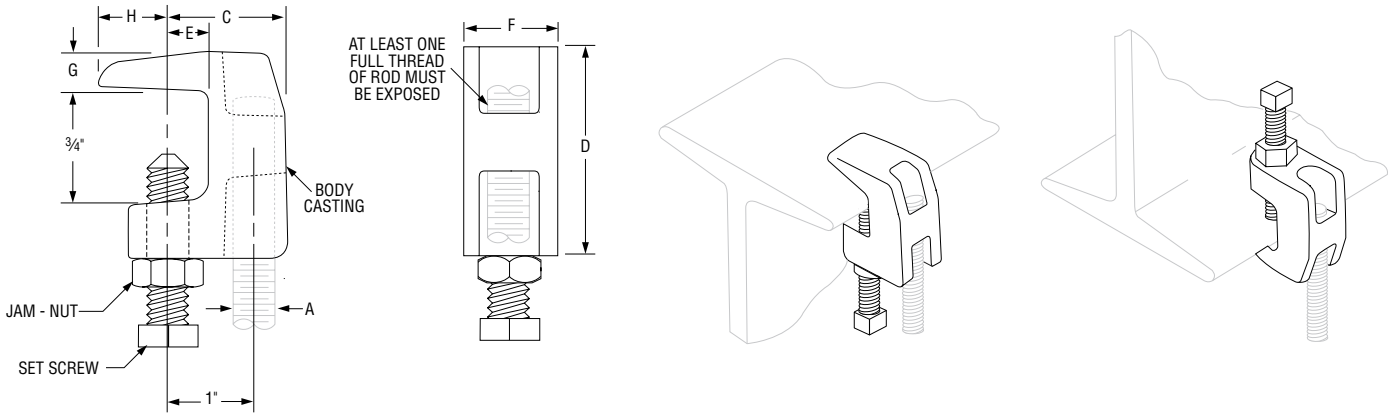


FIG. 92: DIMENSIONS (IN) • LOAD (LBS) • TORQUE (IN-LBS) • WEIGHT (LBS)											
Rod Size A	Set Screw Size	Torque Value	Max Loads ■		Weight	C	D	E	F	G	H
			Top	Bottom							
3/8	3/8	60	500	250	0.34	1 5/16	1 9/16	9/16	1 3/16	3/8	1/2
1/2	1/2	125	950	760	0.63	1 3/8	1 13/16	1/2	1 1/16	7/16	23/32

■ Maximum temperature of 450° F

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

SAMMY XPRESS® SWIVEL

NEW LOWER COST UNIVERSAL INSTALLATION TOOL

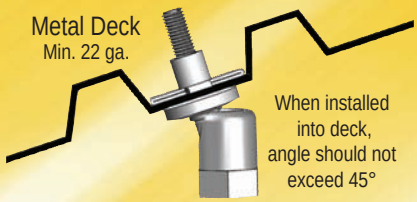
PART No. 8194910

OR RETRO-SOCKET PART No. 8195910

Patent Pending

c UL us LISTED Pipe Hanger

DRILL, DRIVE, DONE!!



Part No.	Model	Description	Rod Size	Pipe Size	Steel Thickness	Test Load	Box Qty	Ctn Qty
8294922	SXP 20	Swivel X-Press 20	3/8 - 16	3/4" - 2"	22 - 20 Ga.	750 lbs.	25	125
8295922	SXP 35	Swivel X-Press 35	3/8 - 16	3/4" - 3.5"	16 - 12 Ga.	1250 lbs.	25	125
8194910	UXPIT	Universal X-Press It Tool includes: Bit Receiver, Hex Wrench, and 25/64" Drill Bit						
8195910	RXPIT	Retro Socket For 8151910						
8152910	XPDB	25/64" Drill Bit						

- Pipe Hanger for X-Treme Roof Pitches.
  - 89° in purlin
  - 45° in metal deck for 12/12 pitch
- Installs in seconds, saves time & installation costs.
- Use in applications where easy access to the back of the installed fastener is prohibited.
- No retaining nut required.

UL Tested to comply with NFPA 13 Standards

ITW Buildex

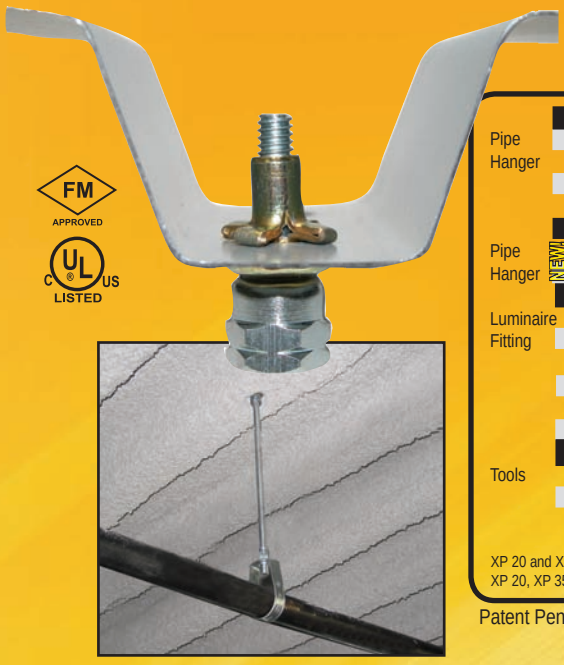
800-BUILDEX www.itwbuildex.com

SAMMYS®

ITW Buildex

Sammy X-Press®

Expands to provide direct attachment in Metal Deck (22-20 ga.) and Purlin or Metal Deck (18-16 ga.)



	Approvals	Steel Ga.	Part #	Model	Screw Description	Rod Size	Max Pipe Size	Application
Pipe Hanger	FM	12 ga	8150922	XP 20	Sammy X-Press 20	3/8-16	4"	Metal Deck
	FM	12 ga	8153922	XP 35	Sammy X-Press 35	3/8-16	4"	Purlin
	UL	22-12 ga	8150922	XP 20	Sammy X-Press 20	3/8-16	2.5"	Metal Deck
	UL	18-12 ga	8153922	XP 35	Sammy X-Press 35	3/8-16	3.5"	Purlin

	Approvals	Concrete	Part #	Model	Screw Description	Rod Size	Max Pipe Size	Thickness
Pipe Hanger	UL	Structural	8150922	XP 20	Sammy X-Press 20	3/8-16	2.5"	3000 PSI
NEW	UL	Lightweight Concrete	8150922	XP 20	Sammy X-Press 20	3/8-16	2.5"	≤ 35 PCF

	Approvals	Steel Ga.	Part #	Model	Screw Description	Load Rating
Luminaire Fitting	UL	Min. 22 ga	8150922	XP 20	Sammy X-Press 20	187 Lbs.
	UL	Min. 22 ga	8153922	XP 35	Sammy X-Press 35	187 Lbs.
	UL	Min. 22 ga	8181922	XP 200	Sammy X-Press 200	187 Lbs.
	UL	Min 16 ga	8150922	XP 20	Sammy X-Press 20	250 Lbs.
	UL	Min 16 ga	8153922	XP 35	Sammy X-Press 35	250 Lbs.
	UL	Min 16 ga	8181922	XP 200	Sammy X-Press 200	250 Lbs.

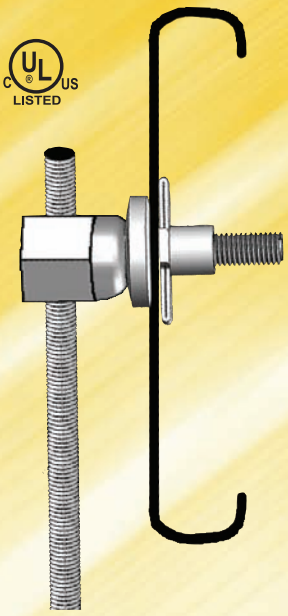
	Part #	Model	Description
Tools	8194910	UXPIT	Universal X-Press It Installation Tool
	8195910	RXPIT	Retrofit X-Press It Installation Tool
	8152910	XPDB	25/64" Drill Bit

XP 20 and XP 35 tested in accordance with NFPA 13 standards.
XP 20, XP 35, and XP 200 are tested in accordance with NEC standards.

Patent Pending

Sammy X-Press® Sidewinder

Expands to provide horizontal attachment in Purlin (16-12 ga.)



	Approvals	Steel Ga.	Part #	Model	Screw Description	Rod Size	Max Pipe Size	Application
Pipe Hanger	UL	16-12 ga	8293957	SWXP 35	Sidewinder X-Press 35	3/8-16	3.5"	Purlin

	Part #	Model	Description
Tools	8194910	UXPIT	Universal X-Press It Installation Tool
	8195910	RXPIT	Retrofit X-Press It Installation Tool
	8152910	XPDB	25/64" Drill Bit

SWXP 35 tested in accordance with NFPA 13 standards.

Patent Pending

SSS36

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Fig. 200 - "Trimline" Adjustable Band Hanger

Size Range — 1/2" thru 8" pipe

Material — Carbon Steel, Mil. Galvanized to G90 specifications

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

Features —

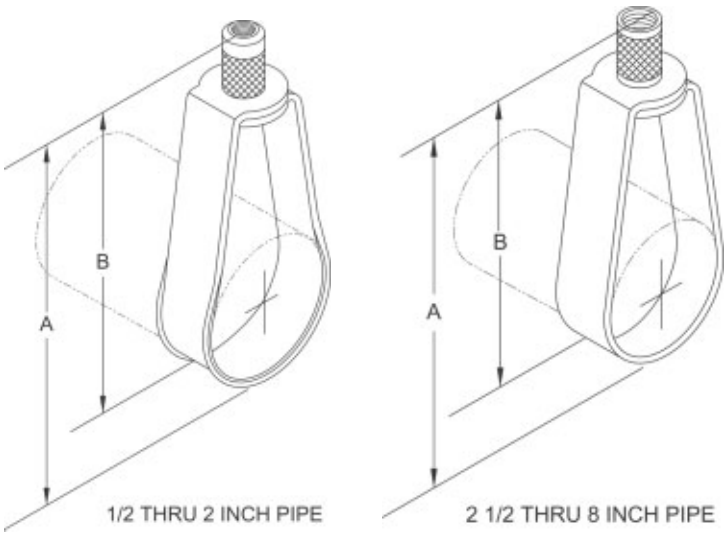
- (1/2" thru 2") Flared edges ease installation for all pipe types and protect CPVC plastic pipe from abrasion. Captured design keeps adjusting nut from separating with hanger. Hanger is easily installed around pipe.
- ($2^1/_2$" thru 8" Spring tension on nut holds it securely in hanger before installation. Adjusting nut is easily removed.

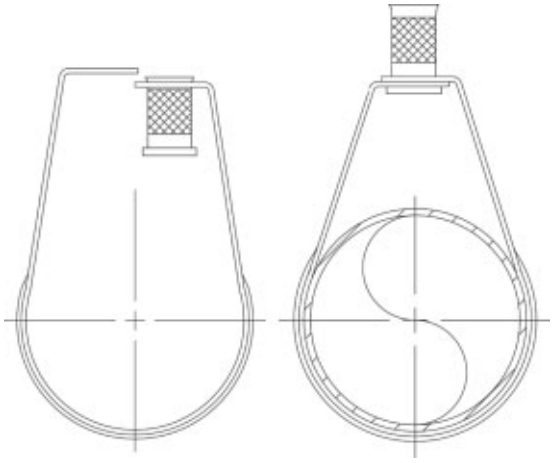
Approvals — Underwriters' Laboratories listed (1/2" thru 8") in the USA **(UL)** and Canada **(cUL)** for steel and CPVC plastic pipe and Factory Mutual Engineering Approved (3/4" thru 8"). Conforms to Federal Specifications WW-H-171E, Type 10 and Manufacturers Standardization Society SP-69, Type 10.

Maximum Temperature — 650°F

Finish — Mil. Galvanized. For Stainless Steel materials, order TOLCO™ Fig. 200WON.

Order By — Figure number and pipe size





Dimensions • Weights

Pipe Size	Rod Size Inch	Rod Size Metric	A	B	Max. Rec. Load Lbs.	Approx. Length
1/2	3/8	8mm or 10mm	$3^1/_8$	$2^5/_8$	400	11
3/4	3/8	8mm or 10mm	$3^1/_8$	$2^1/_2$	400	11
1	3/8	8mm or 10mm	$3^3/_8$	$2^5/_8$	400	12
$1^1/_4$	3/8	8mm or 10mm	$3^3/_4$	$2^7/_8$	400	13
$1^1/_2$	3/8	8mm or 10mm	$3^7/_8$	$2^7/_8$	400	14
2	3/8	8mm or 10mm	$4^1/_2$	3	400	15
$2^1/_2$	3/8	10mm	$5^5/_8$	$4^1/_8$	600	27
3	3/8	10mm	$5^7/_8$	4	600	29
$3^1/_2$	3/8	10mm	$7^3/_8$	$5^1/_4$	600	34
4	3/8	10mm	$7^3/_8$	5	1000	35
5	1/2	12mm	$9^1/_8$	$6^1/_4$	1250	66
6	1/2	12mm	$10^1/_8$	$6^3/_4$	1250	73
8	1/2	12mm	$13^1/_8$	$8^3/_4$	1250	136

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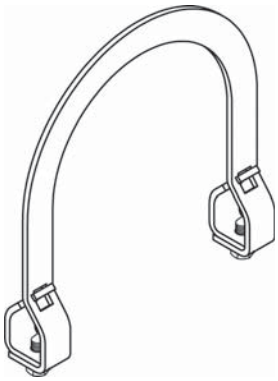
Fig. 1001 - Sway Brace Attachment

Component of State of California OSHPD Approved Seismic Restraints System

c UL US LISTED

FM APPROVED



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

Material — Carbon Steel

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

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

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

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

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

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

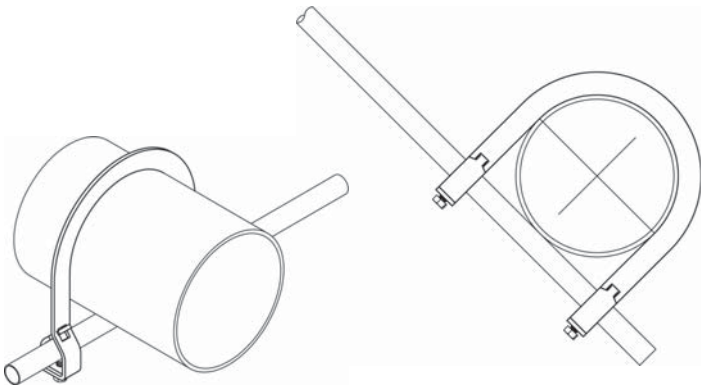
Finish — Plain

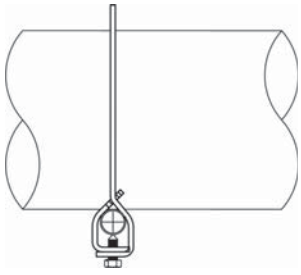
Note — Available in Electro-Galvanized and HDG finish.

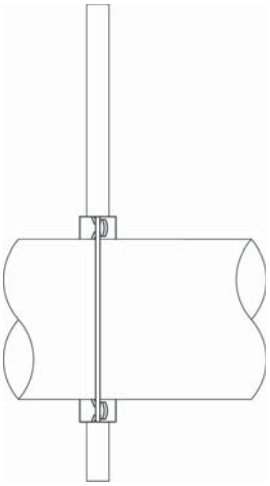
Order By — Indicate pipe size to be braced followed by pipe size used for bracing, figure number and finish.

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

US AND INTERNATIONAL PATENT APPLICATION IN PROCESS







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TOLCO Fig. 4L - sway brace attachment (UL listed)

Size Range: 1" (25mm) through 8" (200mm) IPS. 10" (250mm) and 12" (300mm) not UL listed

Material: Steel and stainless steel.

Function: For bracing pipe against sway and seismic disturbance.

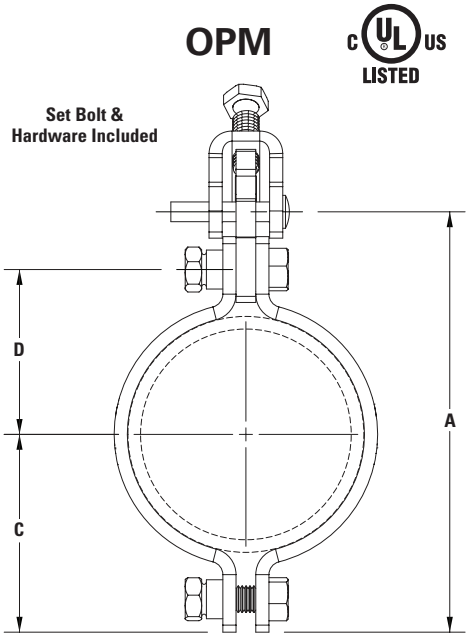
Approvals: Underwriters Laboratories Listed in the USA **(UL)** and Canada **(cUL)** 1" (25mm) through 8" (200mm) pipe. UL Listed for the following sprinkler type pipes: Sch. 40, Sch. 10, Bull Moose Eddy Flow, Wheatland Mega Flow, DIN 2448, KSD 3562, KSD 3507. Ask the factory for additional information as it may vary by product size. For FM Approval information refer to FM Approved page 75. 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.

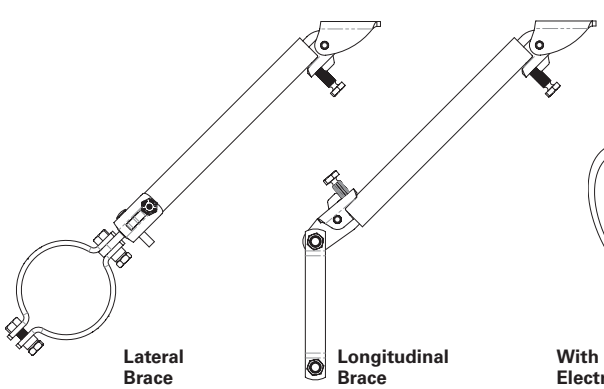
Installation Instructions: Fig. 4L is the "braced pipe" attachment component of a longitudinal and lateral sway brace assembly. It is intended to be combined with the "bracing pipe" and TOLCO structural attachment component to form a complete bracing assembly. NFPA 13 guidelines should be followed.

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

Finish: Plain, Electrogalvanized, Hot Dip Galvanized or Stainless Steel (only for 4" & 6" sizes).

Order By: Figure number, pipe size and finish.





Lateral Brace

Longitudinal Brace

With Plain & Electrogalvanized Finish

With Hot Dip Galvanized & Stainless Steel Finish

Part No.	Nom Pipe Size in.	Nom Pipe Size (mm)	A (Max) in.	C in.	D in.	Bolt Size in.	UL Max. Rec. Load Logitudinal lbs.	UL Max. Rec. Load Lateral lbs.	PLN & EG. Approx. Wt./100 lbs.
4L-1	1	(25)	5	2	1 3/8	1/2-13	1000	1000	176
4L-1 1/4	1 1/4	(32)	5 2/7	2 1/16	1 5/9	1/2-13	1000	1000	182
4L-1 1/2	1 1/2	(40)	5 1/2	2 1/3	1 2/3	1/2-13	1000	1000	187
4L-2	2	(50)	6 2/7	2 2/3	2	1/2-13	1000	1000	204
4L-2 1/2	2 1/2	—	6 7/9	3	2 1/3	1/2-13	2000	1000	217
4L-65mm	—	(65)	6 7/9	3	2 1/3	1/2-13	700	1000	214
4L-3	3	(80)	7 3/7	3 1/4	2 5/8	1/2-13	2000	1000	323
4L-3 1/2	3 1/2	(90)	8	3 1/2	2 7/8	1/2-13	2000	1000	343
4L-4***	4	(100)	8 3/7	3 3/4	3 1/8	1/2-13	2000	1000	253
4L-5	5	—	9 5/9	4 3/8	3 5/8	1/2-13	2000	1200*	314
4L-125mm	—	(125)	9 5/9	4 3/8	3 5/8	1/2-13	1200	1200**	314
4L-6***	6	—	11 3/7	5 1/3	4 4/7	1/2-13	2000	1200*	540
4L-150mm	—	(150)	11 3/7	5 1/3	4 4/7	1/2-13	1200	1200**	538
4L-8	8	—	13 3/5	6 2/5	5 2/3	1/2-13	2000	1600*	645
4L-200mm	—	(200)	13 3/5	6 2/5	5 2/3	1/2-13	1400	1600**	643
4L-10	10	(254)	17 3/5	8 1/4	7 1/4	1/2-13	NA	NA	1349
4L-12	12	(300)	19 3/5	9 1/4	8 1/4	1/2-13	NA	NA	1526

* Only UL listed as a lateral brace for use with a 1" pipe as the brace member.
** Only UL listed as a lateral brace for use with a 25mm pipe as the brace member.
*** Fig 4L-4 and Fig 4L-6 are only sizes available in stainless steel 316.

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

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

TOLCO Fig. 4L - sway brace attachment (FM approved)

OPM

FM APPROVED

Size Range: 1" (25mm) through 12" (300mm) IPS.

Material: Steel.

Function: For bracing pipe against sway and seismic disturbance.

Approvals: Approved by Factory Mutual Engineering **(FM)**, 1" (25mm) through 12" (300mm) pipe. For UL Listed information refer to UL Listed page 74. 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.

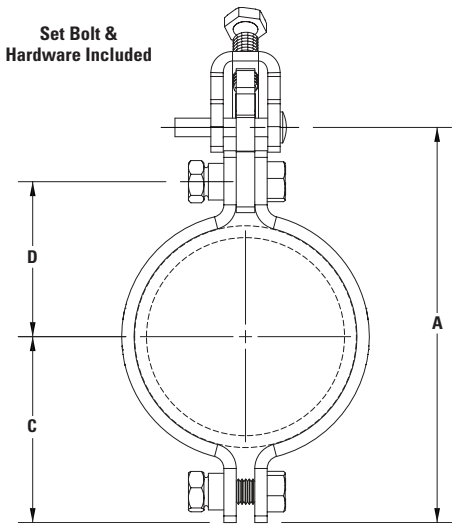
Installation Instructions: Fig. 4L is the "braced pipe" attachment component of a longitudinal and lateral sway brace assembly. It is intended to be combined with the "bracing pipe" and TOLCO™ structural attachment component to form a complete bracing assembly. NFPA 13 and/or FM guidelines should be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

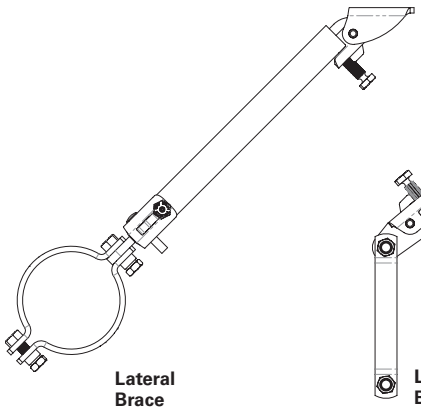
To Install: Place the Fig. 4L over the pipe to be braced and tighten bolts. Then engage "bracing pipe" into jaw opening and tighten set bolt until head snaps off. Jaw attachment can pivot for adjustment to proper brace angle.

Finish: Plain, Electrogalvanized.

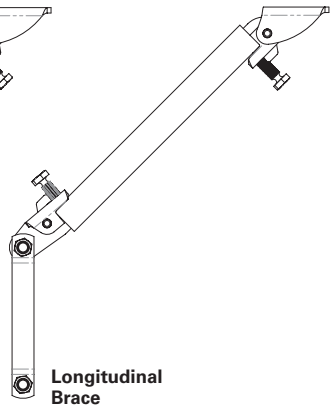
Order By: Figure number, pipe size and finish.

Designed to meet or exceed requirements of FM DS 2-8.

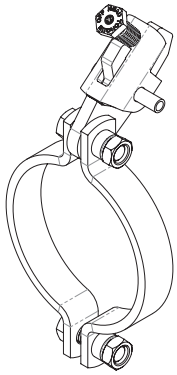




Lateral Brace



Longitudinal Brace



With Plain & Electrogalvanized Finish

Part No.	Nom Pipe Size in.	(mm)	A (Max) in.	C in.	D in.	Bolt Size in.	FM Max. Rec. Load Logitudinal lbs.	Lateral lbs.	PLN & EG Approx. Wt./100 lbs.
4L-1	1	(25)	5	2	1 3/8	1/2-13	1500	2650	176
4L-1 1/4	1 1/4	(32)	5 2/7	2 1/16	1 5/9	1/2-13	1500	2650	182
4L-1 1/2	1 1/2	(40)	5 1/2	2 1/3	1 2/3	1/2-13	1250	2650	187
4L-2	2	(50)	6 2/7	2 2/3	2	1/2-13	1250	2740	204
4L-2 1/2	2 1/2	(65)	6 7/9	3	2 1/3	1/2-13	1040	2720	220
4L-65mm	—	(65)	6 7/9	3	2 1/3	1/2-13	1040	2720	218
4L-3	3	(80)	7 3/7	3 1/4	2 5/8	1/2-13	1040	2720	323
4L-3 1/2	3 1/2	(90)	8	3 1/2	2 7/8	1/2-13	1040	2720	343
4L-4	4	(100)	8 3/7	3 3/4	3 1/8	1/2-13	1040	2720	253
4L-5	5	(125)	9 5/9	4 3/8	3 5/8	1/2-13	1040	2720	317
4L-125mm	—	(125)	9 5/9	4 3/8	3 5/8	1/2-13	1040	2720	317
4L-6	6	(150)	11 3/7	5 1/3	4 4/7	1/2-13	1630	3020	540
4L-150mm	—	(150)	11 3/7	5 1/3	4 4/7	1/2-13	1630	3020	540
4L-8	8	(200)	13 3/5	6 2/5	5 2/3	1/2-13	1750	3020	645
4L-200mm	—	(200)	13 3/5	6 2/5	5 2/3	1/2-13	1750	3020	645
4L-10	10	(254)	17 3/5	8 1/4	7 1/4	1/2-13	1750	3020	1349
4L-12	12	(300)	19 3/5	9 1/4	8 1/4	1/2-13	1750	3020	1526

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

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

Fig. 980 - TOLCO Universal swivel sway brace attachment -3/8"-16 to 3/4"-10 rods
Fig. 980H - TOLCO Universal swivel sway brace attachment -7/8"-9 to 1 1/4"-7

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

Material: Carbon steel

Function: The Fig. 980 is the structural or transitional attachment component of a longitudinal or lateral sway brace assembly. It is intended to be combined with the a 1" through 2" "bracing pipe" and TOLCO "brace pipe" attachment to form a complete bracing assembly. Sway brace assemblies are intended to be installed in accordance with NFPA 13 and the manufacturer's installation instructions.

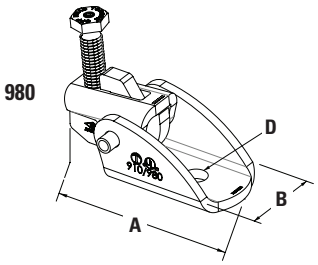
Features: A concentric attachment opening which is critical to the performance of structural seismic connections. NFPA 13 (2010) 9.3.5.8.4 indicates clearly that fastener table load values are based only on concentric loading. Mounts to any surface angle. Break-off bolt head helps assure verification of proper installation.

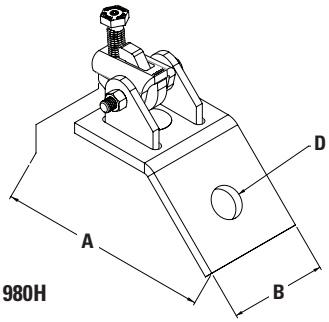
To install: Place the Fig. 980 onto the "bracing pipe" so that there is no more than an 1/8" gap between the end of the bracing pipe and the back of the jaw. Tighten the set screw until the head breaks off (hint: apply between 36-40 lb. ft. of torque). When using in combination with a Fig. 825A, Fig. 825, Fig. 828, or Fig. 906, refer to those instruction sheets, otherwise select an anchor that is sized appropriately for the intended use and follow anchor manufacturer's instructions regarding structural thickness and embedment requirements. The required type, number and size of fasteners used for the structure attachment fitting shall be in accordance with NFPA 13. Once the anchor is installed per manufacturer's direction, secure the Fig. 980 to the anchor. Attachment can pivot to allow for proper brace angle adjustment.

Finish: Plain, electro-galvanized or stainless steel.

Component of State of California OSHPD Approved Seismec Restraints System

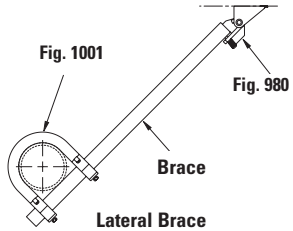
c UL us LISTED FM APPROVED OPM



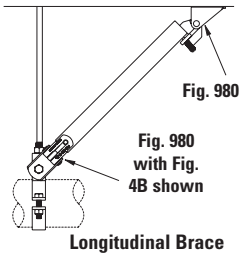


Catalog #	A in.	A (mm)	B in.	B (mm)	D** in.	D** (mm)	Max. Design Load (cULus) lbs./(kN)	Max. Design Load*** (FM) 30°-44° lbs./(kN)	45°-59° lbs./(kN)	60°-74° lbs./(kN)	75°-90° lbs./(kN)	Approx.Wt./100 lbs.	(kg)
*980-3/8	4 9/16	(114.9)	2 1/16	(52.4)	7/16	(11.1)	1600 (7.12)	2370 (10.54)	2790 (12.41)	3360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

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



Lateral Brace



Longitudinal Brace

Powering Business Worldwide

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Publication No. IL309006EN
September 2020 B-Line Division

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G-FIRE Figure 705 Grooved Flexible Coupling 1 Inch to 12 Inch (DN25 to DN300)

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

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General Description

The GRINNELL G-FIRE Figure 705 Grooved Flexible Couplings, when properly installed, provide a dependable method of joining pipe, allowing for angular and linear deflection, thermal expansion and contraction, and misalignments of the pipe.

Figure 705 couplings are rated at pressures up to 300 psi (20,7 bar) depending on pipe size and wall thickness when used in fire protection service applications. (See Table A.)

NOTICE

The GRINNELL G-FIRE Figure 705 Grooved Flexible Coupling 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.

Never remove any piping component nor correct or modify any piping deficiencies without first de-pressurizing and draining the system. Failure to do so may result in serious personal injury, property damage, and/or impaired device performance.

It is the designer's responsibility to select products suitable for the intended service and to ensure that pressure ratings and performance data are not exceeded. Material and gasket selection should be verified to be compatible for the specific application. Always read and understand the installation instructions.

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

LPS 1219 Cert/LPCB ref. 921a/01

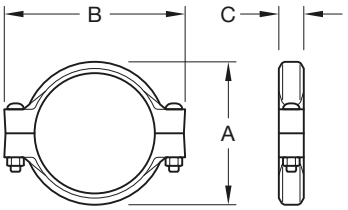
Technical Data

Approvals
UL and ULC Listed
FM Approved
VdS Approved
LPCB (Cert. Nos. 669a and 673a)
See Table A for details.

Sizes
1 in. to 12 in. (DN25 to DN300)

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

Finish
- Orange, non-lead paint
- Red, non-lead paint
- Hot-dipped, Galvanized conforming to ASTM A153



Nominal Pipe Size		Max.[b] Pressures psi (bar)	Max.[b] End Load Lbs. (kN)	Max.[a, d] End Gap Inches (mm)	Deflection[d]		Nominal Dimensions			Coupling Bolts		Approx. Weight Lbs. (kg)
ANSI Inches (DN)	O.D. Inches (mm)				Degrees per Coupling	Inches/ Foot (mm/m)	A Inches (mm)	B Inches (mm)	C Inches (mm)	Qty.	Size[c] Inches (metric)	
1 (25)	1.315 (33,7)	300 (20,7)	407 (1,81)	0.13 (3,3)	5°30'	1.16 (96,7)	2.24 (56,9)	3.94 (100,1)	1.81 (46,0)	2	3/8 x 2-1/4 (M10 x 57)	1.3 (0,6)
1-1/4 (32)	1.660 (42,4)	300 (20,7)	649 (2,88)	0.13 (3,3)	4°19'	0.90 (75,0)	2.56 (65,0)	4.19 (106,4)	1.81 (46,0)	2	3/8 x 2-1/4 (M10 x 57)	1.5 (0,7)
1-1/2 (40)	1.900 (48,3)	300 (20,7)	850 (3,78)	0.13 (3,3)	3°46'	0.79 (65,8)	2.75 (69,9)	4.44 (112,8)	1.81 (46,0)	2	3/8 x 2-1/4 (M10 x 57)	1.6 (0,7)
2 (50)	2.375 (60,3)	300 (20,7)	1,328 (5,90)	0.13 (3,3)	3°1'	0.63 (52,5)	3.25 (82,6)	4.88 (124,0)	1.88 (47,8)	2	3/8 x 2-1/4 (M10 x 57)	1.7 (0,8)
2-1/2 (65)	2.875 (73,0)	300 (20,7)	1,947 (8,66)	0.13 (3,3)	2°29'	0.52 (43,3)	3.69 (93,7)	5.50 (139,7)	1.88 (47,8)	2	3/8 x 2-1/4 (M10 x 57)	2.0 (0,9)
76,1mm (65)	3.000 (76,1)	300 (20,7)	2,120 (9,43)	0.13 (3,3)	2°23'	0.50 (41,7)	4.00 (101,6)	5.75 (146,10)	1.88 (47,8)	2	(M12 x 76)	3.1 (1,4)
3 (80)	3.500 (88,9)	300 (20,7)	2,885 (12,83)	0.13 (3,3)	2°3'	0.43 (35,8)	4.38 (111,3)	6.50 (165,1)	1.88 (47,8)	2	1/2 x 3 (M12 x 76)	3.1 (1,4)
108,0mm (100)	4.250 (108,0)	300 (20,7)	4,256 (18,93)	0.25 (6,4)	3°22'	0.70 (58,3)	5.50 (139,7)	7.50 (190,5)	2.06 (52,3)	2	(M12 x 76)	4.2 (1,9)
4 (100)	4.500 (114,3)	300 (20,7)	4,769 (21,21)	0.25 (6,4)	3°11'	0.67 (55,8)	5.69 (144,5)	7.75 (196,9)	2.06 (52,3)	2	1/2 x 3 (M12 x 76)	4.0 (1,8)
133,0mm (125)	5.250 (133,0)	300 (20,7)	6,494 (28,88)	0.25 (6,4)	2°44'	0.56 (46,7)	6.56 (166,6)	9.50 (241,3)	2.06 (52,3)	2	(M16 x 83)	7.2 (3,3)
139,7mm (125)	5.500 (139,7)	300 (20,7)	7,127 (31,70)	0.25 (6,4)	2°36'	0.55 (45,5)	6.81 (173,0)	9.75 (247,7)	2.06 (52,3)	2	(M16 x 83)	7.2 (3,3)
5 (125)	5.563 (141,3)	300 (20,7)	7,288 (32,41)	0.25 (6,4)	2°35'	0.54 (45,0)	6.88 (174,8)	9.75 (247,7)	2.06 (52,3)	2	5/8 x 3-1/4 (M16 x 83)	7.1 (3,2)
159,0mm (150)	6.250 (159,0)	300 (20,7)	9,204 (40,93)	0.25 (6,4)	2°17'	0.48 (40,0)	7.56 (192,0)	10.31 (261,9)	2.06 (52,3)	2	(M16 x 83)	7.4 (3,4)
165,1mm (150)	6.500 (165,1)	300 (20,7)	9,950 (44,25)	0.25 (6,4)	2°12'	0.46 (38,3)	7.75 (196,9)	10.69 (271,5)	2.06 (52,3)	2	(M16 x 83)	7.1 (3,2)
6 (150)	6.625 (168,3)	300 (20,7)	10,336 (45,97)	0.25 (6,4)	2°10'	0.45 (37,5)	7.94 (201,7)	10.69 (271,5)	2.06 (52,3)	2	5/8 x 3-1/4 (M16 x 83)	7.1 (3,2)
8 (200)	8.625 (219,1)	300 (20,7)	17,519 (77,92)	0.25 (6,4)	1°40'	0.35 (29,2)	10.19 (258,8)	13.56 (344,4)	2.50 (63,5)	2	3/4 x 4-3/4 (M20 x 121)	14.5 (6,6)
267,4mm (250)	10.528 (267,4)	300 (20,7)	26,102 (116,1)	0.25 (6,4)	1°22'	0.29 (7,4)	12.36 (313,9)	16.18 (410,9)	2.7 (68,6)	2	1 x 6-1/2	27.1 (12,3)
10[e] (250)	10.750 (273,0)	250 (17,2)	22,679 (100,8)	0.25 (6,4)	1°20'	0.28 (23,3)	12.69 (322,3)	16.38 (416,1)	2.63 (66,8)	2	1 x 6-1/2 (M24 x 165)	28.0 (12,7)
318,5mm (300)	12.539 (318,5)	300 (20,7)	37,033 (164,7)	0.25 (6,4)	1°8'	0.24 (6,1)	14.64 (371,9)	18.64 (473,4)	2.6 (66,0)	2	1 x 6-1/2	34.9 (15,8)
12[e] (300)	12.750 (323,9)	250 (17,2)	31,903 (141,9)	0.25 (6,4)	1°7'	0.23 (19,2)	14.94 (379,5)	18.88 (479,6)	2.63 (66,8)	2	1 x 6-1/2 (M24 x 165)	36.5 (16,6)

a. Maximum available gap between pipe ends. Minimum gap = 0.
b. Maximum pressure and end load are total from all loads based on standard weight steel pipe. Pressure ratings and end loads may differ for other pipe materials and/or wall thickness. Contact your TYCO Representative for details.
c. Gold color coded metric bolts and nuts are available upon request.
d. Max End Gap and Deflection is for cut grooved standard weight pipe. Values for roll grooved pipe will be 1⁄2 that of cut grooved.
e. For 10 in. and 12 in. sizes where VdS Approval or LPCB Certification is required, refer to Figure 707, Technical Data Sheet TFP1840.

FIGURE 1
G-FIRE FIGURE 705 GROOVED FLEXIBLE COUPLING, 1 INCH TO 12 INCH (DN25 TO DN300)
NOMINAL DIMENSIONS

Pipe Sizes Nominal ANSI Inches (O.D. mm)	Pipe Schedule[c]	Pressure Rating psi (bar)		
		UL	ULC	FM
1 (33,7); 1-1/4 (42,4); 1-1/2 (48,3); 2 (60,3); 2-1/2 (73,0); 3 (88,9); 4 (114,3); 5 (141,3); 6 (168,3); 8 (219,1)[a]	10	300 (20,7)	300 (20,7)	300 (20,7)
	40	300 (20,7)	300 (20,7)	300 (20,7)
10 (273,0)[a]	10	250 (17,2)	250 (17,2)	300 (20,7)
	40	250 (17,2)	250 (17,2)	300 (20,7)
12 (323,9)[b]	10	250 (17,2)	250 (17,2)	250 (17,2)
	40	250 (17,2)	250 (17,2)	250 (17,2)

Pipe O.D. mm	Pipe Specification[c]	Pressure Rating psi (bar)	
		UL	FM
76,1	ISO 4200 Type D and E	300 (20,7)	-
	EN 10255 Heavy	-	300 (20,7)
	EN 10255 Medium	-	300 (20,7)
108,0; 133,0; 139,7; 159,0	ISO 4200 Type E	300 (20,7)	-
	EN 10255 Heavy	-	300 (20,7)
	EN 10255 Medium	-	300 (20,7)
165,1	2.5 mm Wall Thickness	300 (20,7)	-
	EN 10255 Heavy	-	300 (20,7)
	EN 10255 Medium	-	300 (20,7)
267,4; 318,5	JIS G3452	-	300 (20,7)

Pipe Sizes Nominal ANSI Inches (O.D. mm)	Pipe Specification[d]	Pressure Rating psi (bar)	
		LPCB	VdS
1-1/4 (42,4); 1-1/2 (48,3); 2 (60,3); — (76,1); 3 (88,9); 4 (114,3); — (165,1)	ISO 65 Medium	290 (20)	-
6 (168,3); 8 (219,1)	ISO 4200 Wall Thickness 5,4 mm	290 (20)	-
1-1/4 (42,4); 1-1/2 (48,3); 2 (60,3); — (76,1); 3 (88,9); 4 (114,3); — (139,7); 6 (168,3); 8 (219,1)	DIN 2448 or 2548	-	232 (16)

a. For 8 in. and 10 in. sizes, minimum allowed pipe wall thickness is 0.188 in.
b. For 12 in., Schedule 30 is minimum allowed pipe wall thickness by UL and ULC. 0.250 in. wall thickness is the minimum allowed by FM
c. See Agency website for Listing/Approvals of other pipe specifications:
UL Website - see Online Certificate Directory, www.ul.com
FM Global Website - www.approvalguide.com
d. See Agency website for Listing/Approvals of other pipe specifications:
LPCB Website - see Search Our Listings - Automatic Sprinklers, Water Spray and Deluge Systems, www.redbooklive.com
VdS Website - see certifications, www.vds.de

TABLE A
LISTED/APPROVED PRESSURE RATINGS

Bolts/Nuts

- ANSI:
  Carbon Steel oval neck track head bolts are heat-treated and conform to the physical properties of ASTM A183 Grade 2 and SAE J429 Grade 5 with a minimum tensile strength of 110,000 psi.

  Carbon Steel heavy hex nuts conform to the physical properties of ASTM A183 Grade 2 and SAE J995 Grade 5. Bolts and nuts are zinc-electroplated conforming to ASTM B633.

  Stainless Steel Bolts and Nuts are available upon request.

- Metric**:**
  Carbon Steel oval neck track head bolts (Gold color coded) are heat-treated and conform to the physical properties of ASTM F568M with a minimum tensile strength of 760 MPa.

  Carbon Steel heavy hex nuts conform to the physical properties of ASTM A563 M Class 9. Bolts and nuts are zinc-electroplated conforming to ASTM B633.

Gaskets

- Pre-lubricated Grade “A” EPDM,
  Violet color code,
  -30°F to 150°F (-34°C to 66°C)

  For dry and freezer systems, lubrication is required. Refer to Installation Manual IH-1000FP for details.

- Tri-Seal Grade “E” EPDM,
  Green color code,
  -30°F to 230°F (-34°C to 110°C)

For proper gasket selection, refer to Technical Data Sheet TFP1895.

Care and Maintenance

The GRINNELL G-FIRE Figure 705 Grooved Flexible Coupling must be maintained in accordance with this section.

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

After placing a fire protection system in service, notify the proper authorities and advise those responsible for monitoring proprietary and/or central station alarms.

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 authority having jurisdiction. Contact the installing contractor or product manufacturer with any questions. Any impairments must be immediately corrected.

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

GRINNELL Products are available globally through a network of distribution centers. For the nearest distributor, visit www.tyco-fire.com. When placing an order, indicate the full product name.

Specify: G-FIRE Figure 705 Grooved Flexible Coupling, quantity, pipe size (Nominal ANSI or O.D.), finish (Orange, Red, or Galvanized), and type of gasket:

- Pre-lubricated Grade “A” EPDM
- Tri-Seal Grade “E” EPDM

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G-FIRE Figure 577 Grooved Rigid Coupling 1 Inch to 12 Inch (DN25 to DN300)

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/tfp1854

General Description

The GRINNELL G-FIRE Figure 577 Grooved Rigid Couplings provide a rigid joint by firmly gripping along the full circumference of the pipe grooves. Figure 577 couplings are a proven dependable method of joining pipe and are an economical alternative to welding, threading, or using flanges.

Figure 577 couplings are rated at pressures up to 350 psi (24, 1 bar) depending on pipe size and wall thickness when used in fire protection service applications. For more information, see Table A.

NOTICE

The GRINNELL G-FIRE Figure 577 Grooved Rigid Coupling described herein must be installed and maintained in compliance with this document, as well as with the applicable standards of the Approval agency, in addition to the standards of any other authorities having jurisdiction. Failure to do so may result in serious personal injury or impair the performance of these devices.

Never remove any piping component nor correct or modify any piping deficiencies without first de-pressurizing and draining the system. Failure to do so may result in serious personal injury, property damage, and/or impaired device performance.

It is the designer's responsibility to select products suitable for the intended service and to ensure that pressure ratings and performance data are not exceeded. Material and gasket selection should be verified to be compatible for the specific application. Always read and understand the installation instructions.

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

LPS 1219 Cert/LPCB ref. 921a/02

Technical Data

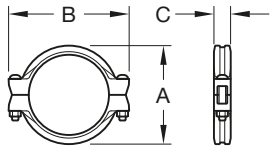
Approvals
UL and ULC Listed
FM Approved
VdS Approved
LPCB (Cert. Nos. 669a and 673a)

See Table A for details.

Sizes
1 in. to 12 in. (DN25 to DN300)

Housing
Ductile iron conforming to ASTM A536, Grade 65-45-12

Finish
- Orange non-lead paint
- Red non-lead paint
- Hot-dipped, Galvanized conforming to ASTM A153



Pipe Size		Max.[b] Pressures psi (bar)	Max.[b] End Load Lbs. (kN)	Max.[a, d] End Gap Inches (mm)	Nominal Dimensions			Coupling Bolts		Approx. Weight Lbs. (kg)
Nominal ANSI Inches DN	O.D. Inches (mm)				A Inches (mm)	B Inches (mm)	C Inches (mm)	Qty.	Size[c] Inches (mm)	
1 DN25	1.315 (33,7)	350 (24,1)	475 (2,11)	0.06 (1,5)	1.63 (41)	3.92 (100)	1.65 (42)	2	3/8 x 2-1/4 M10 x 57	1.2 (0,55)
1-1/4 DN32	1.660 (42,4)	350 (24,1)	757 (3,37)	0.06 (1,5)	2.66 (68)	4.40 (112)	1.64 (42)	2	3/8 x 2-1/4 M10 x 57	1.3 (0,59)
1-1/2 DN40	1.900 (48,3)	350 (24,1)	992 (4,41)	0.06 (1,5)	2.90 (74)	4.66 (118)	1.66 (42)	2	3/8 x 2-1/4 M10 x 57	1.5 (0,68)
2 DN50	2.375 (60,3)	350 (24,1)	1,551 (6,90)	0.06 (1,5)	3.38 (86)	5.20 (132)	1.70 (43)	2	3/8 x 2-1/4 M10 x 57	1.8 (0,82)
2-1/2 DN65	2.875 (73,0)	350 (24,1)	2,272 (10,11)	0.06 (1,5)	3.88 (99)	5.64 (143)	1.75 (44)	2	3/8 x 2-1/4 M10 x 57	2.0 (0,91)
– DN65	3.000 (76,1)	350 (24,1)	2,474 (11,01)	0.06 (1,5)	4.00 (102)	5.78 (147)	1.75 (44)	2	— M10 x 57	2.0 (0,91)
3 DN80	3.500 (88,9)	350 (24,1)	3,367 (14,98)	0.06 (1,5)	4.50 (114)	6.33 (161)	1.75 (44)	2	3/8 x 2-1/4 M10 x 57	2.7 (1,22)
4 DN100	4.500 (114,3)	300 (20,7)	4,771 (21,22)	0.06 (1,5)	5.70 (145)	7.50 (191)	1.83 (46)	2	3/8 x 2-1/4 M10 x 57	3.3 (1,50)
– DN125	5.500 (139,7)	300 (20,7)	7,127 (31,71)	0.125 (3,2)	6.80 (173)	8.75 (222)	1.91 (49)	2	— M12 x 76	5.3 (2,41)
5 DN125	5.563 (141,3)	300 (20,7)	7,290 (32,43)	0.125 (3,2)	6.86 (174)	8.82 (224)	1.91 (49)	2	1/2 x 3 M12 x 76	5.3 (2,41)
– DN150	6.500 (165,1)	300 (20,7)	9,955 (44,28)	0.125 (3,2)	7.80 (198)	9.75 (248)	1.91 (49)	2	— M12 x 76	5.7 (2,59)
6 DN150	6.625 (168,3)	300 (20,7)	10,341 (46,00)	0.125 (3,2)	8.47 (215)	9.88 (251)	1.91 (49)	2	1/2 x 3 M12 x 76	5.9 (2,68)
– DN200	8.516 (216,3)	300 (20,7)	17,079 (76,0)	0.22 (5,6)	10.14 (257,5)	12.68 (322,1)	2.4 (61,0)	2	5/8 x 3-1/4 M16 x 83	11.4 (5,2)
8 DN200	8.625 (219,1)	300 (20,7)	17,528 (77,97)	0.125 (3,2)	10.25 (260)	12.78 (325)	2.40 (61)	2	5/8 x 3-1/4 M16 x 83	11.7 (5,32)
– DN250	10.528 (267,4)	300 (20,7)	26,102 (116,10)	0.22 (5,6)	12.52 318,1)	15.81 (401,6)	2.4 (61,0)	2	3/4 x 4-3/4 M20 x 121	20.4 (9,3)
10[e] DN250	10.750 (273,0)	300 (20,7)	27,229 (121,0)	0.25 (6,4)	12.50 (318)	16.50 (419)	2.56 (65)	2	3/4 x 4-3/4 M20 x 121	19.5 (8,86)
– DN300	12.539 (318,5)	300 (20,7)	37,033 (164,70)	0.22 (5,6)	14.60 (370,7)	18.06 (458,7)	2.4 (61,0)	2	3/4 x 4-3/4 M20 x 121	24.6 (11,2)
12[e] DN300	12.750 (323,9)	300 (20,7)	38,303 (170,0)	0.25 (6,4)	14.50 (368)	18.50 (470)	2.56 (65)	2	3/4 x 4-3/4 M20 x 121	22.0 (10,00)

a. Maximum available gap between pipe ends. Minimum gap = 0.
b. Maximum Pressure and End Load are total from all loads based on standard weight steel pipe. Pressure ratings and end loads may differ for other pipe materials and/or wall thickness. Contact your TYCO Representative.
c. Gold color coded metric bolts and nuts are available upon request.
d. Max End Gap is for cut grooved standard weight pipe.
e. For 10 in. and 12 in. sizes where VdS Approval is required, refer to Figure 772, Technical Data Sheet G140.

FIGURE 1
G-FIRE FIGURE 577 GROOVED RIGID COUPLING, 1 TO 12 INCH (DN25 TO DN300)
NOMINAL DIMENSIONS

Pipe Sizes Nominal ANSI Inches (O.D. mm)	Pipe Schedule[c]	Pressure Rating psi (bar)		
		UL	ULC	FM
1 (33,7)	10	300 (20,7)	300 (20,7)	350 (24,1)
	40	350 (24,1)	350 (24,1)	350 (24,1)
1-1/4 (42,4); 1-1/2 (48,3); 2 (60,3); 2-1/2 (73,0)	10	350 (24,1)	350 (24,1)	350 (24,1)
	40	350 (24,1)	350 (24,1)	350 (24,1)
3 (88,9); 4 (114,3)	10	300 (20,7)	300 (20,7)	350 (24,1)
	40	300 (20,7)	300 (20,7)	350 (24,1)
5 (141,3); 6 (168,3); 8 (219,1)[a]; 10 (273,0)[a]; 12 (323,9)[b]	10	300 (20,7)	300 (20,7)	300 (20,7)
	40	300 (20,7)	300 (20,7)	300 (20,7)

Pipe O.D. mm	Pipe Specification[c]	Pressure Rating psi (bar)	
		UL	FM
76,1	ISO 4200 Type F	300 (20,7)	350 (24,1)
	ISO 4200 Type D and E	300 (20,7)	300 (20,7)
	EN 10255 Heavy	300 (20,7)	300 (20,7)
	EN 10255 Medium	300 (20,7)	300 (20,7)
139,7	ISO 4200 Type D, E, and F	300 (20,7)	300 (20,7)
	EN 10255 Heavy	300 (20,7)	300 (20,7)
	EN 10255 Medium	300 (20,7)	300 (20,7)
165,1	EN 10255 Heavy	300 (20,7)	300 (20,7)
	EN 10255 Medium	300 (20,7)	300 (20,7)
216,3; 267,4; 318,5	JIS G3452	300 (20,7)	300 (20,7)

Pipe Sizes Nominal ANSI Inches (O.D. mm)	Pipe Specification[d]	Pressure Rating psi (bar)	
		LPCB	VdS
1 (33,7); 1-1/4 (42,4); 1-1/2 (48,3); 2 (60,3); — (76,1); 3 (88,9); 4 (114,3); — (165,1)	ISO 65 Medium	290 (20)	—
6 (168,3); 8 (219,1); 10 (273,0); 12 (323,9)	ISO 4200 Wall Thickness 5,4 mm	290 (20)	—
1 (33,7); 1-1/4 (42,4); 1-1/2 (48,3); 2 (60,3); — (76,1); 3 (88,9); 4 (114,3); — (139,7); 6 (168,3); 8 (219,1)	DIN 2448 or 2458	—	232 (16)

a. For 8 in. and 10 in. sizes, minimum allowed pipe wall thickness is 0.188 in.
b. For 12 in., Schedule 30 is minimum allowed pipe wall thickness by UL and ULC. 0.250 inch wall thickness is the minimum allowed by FM
c. See Agency website for Listing/Approvals of other pipe specifications:
UL website - see Online Certificate Directory, www.ul.com
FM Global website - www.approvalguide.com
d. See Agency website for Listing/Approvals of other pipe specifications:
LPCB website - see Search Our Listings - Automatic Sprinklers, Water Spray and Deluge Systems, www.redbooklive.com
VdS website - see certifications, www.vds.de

TABLE A
LISTED/APPROVED PRESSURE RATINGS

Bolts/Nuts

- ANSI:
  Carbon Steel oval neck track head bolts are heat-treated and conform to the physical properties of ASTM A183 Grade 2 and SAE J429 Grade 5 with a minimum tensile strength of 110,000 psi.

  Carbon Steel heavy hex nuts conform to the physical properties of ASTM A183 Grade 2 and SAE J995 Grade 5. Bolts and nuts are zinc-electroplated conforming to ASTM B633.

  Stainless Steel bolts and nuts are available upon request.

- Metric**:**
  Carbon Steel oval neck track head bolts (Gold color coded) are heat-treated and conform to the physical properties of ASTM F568M with a minimum tensile strength of 760 MPa.

  Carbon Steel heavy hex nuts conform to the physical properties of ASTM A563M Class 9. Bolts and nuts are zinc-electroplated conforming to ASTM B633.

Gaskets

- Pre-lubricated Grade “A” EPDM,
  Violet color code,
  -30°F to 150°F (-34°C to 66°C)

  For dry and freezer systems, lubrication is required. Refer to Installation Manual IH-1000FP for details.

- Tri-Seal Grade “E” EPDM,
  Green color code,
  -30°F to 230°F (-34°C to 110°C)

For proper gasket selection, refer to Technical Data Sheet TFP1895.

Care and Maintenance

The GRINNELL G-FIRE Figure 577 Grooved Rigid Coupling must be maintained in accordance with this section.

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

After placing a fire protection system in service, notify the proper authorities and advise those responsible for monitoring proprietary and/or central station alarms.

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 authority having jurisdiction. Contact the installing contractor or product manufacturer with any questions. Any impairments must be immediately corrected.

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

GRINNELL Products are available globally through a network of distribution centers. For the nearest distributor, visit www.tyco-fire.com. When placing an order, indicate the full product name.

Specify: G-FIRE Figure 577 Grooved Rigid Coupling, quantity, pipe size (Nominal ANSI or O.D.), finish (Orange, Red, or Galvanized), and type of gasket:

- Pre-lubricated Grade “A” EPDM
- Tri-Seal Grade “E” EPDM

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

Johnson Controls

Grinnell®

Worldwide Contacts | www.tyco-fire.com

G-FIRE Grooved Fittings
Ductile Iron and Fabricated Steel Ductile

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/tfp1815

General Description

GRINNELL G-FIRE Grooved Fittings provide an economical and efficient method of changing direction, adding an outlet, reducing, or capping piping systems. The G-FIRE grooved fittings are available in ductile iron or fabricated steel as indicated.

Note: *Figure 510S and 519S fittings are special short radius fittings with smaller center to end dimensions than standard grooved fittings. Depending on the size and coupling used, there may be interferences at the bolt pads that require repositioning of the coupling orientation. The use of flange adapters is not recommended with Figures 510S and 519S fittings. Contact Johnson Controls for details.*

NOTICE

Never remove any piping component nor correct or modify any piping deficiencies without first de-pressurizing and draining the system. Failure to do so may result in serious personal injury, property damage, and/or impaired device performance.

It is the designer's responsibility to select products suitable for the intended service and to ensure that pressure ratings and performance data are not exceeded. Material and gasket selection should be verified to be compatible for the specific application. Always read and understand the installation instructions.

The GRINNELL G-FIRE Grooved Fittings described herein must be installed and maintained in compliance with this document, as well as with the applicable standards of the approval agency, in addition to the standards of any other authorities having jurisdiction. Failure to do so may result in serious personal injury or impair the performance of these devices.

Internal fitting coatings serving as protection during storage and transport can become separated after installation and during system operation, potentially causing blockage of strainers or other filtering equipment. If strainers are installed in the piping system the manufacturer recommends they feature a minimum 5/32 in. (4 mm) mesh size and, to prevent blockages, that they are regularly serviced at intervals to be determined by the system designer.

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

LPS 1219 Cert/LPCB ref. 669a and 921a

Technical Data

Approvals
UL and ULC Listed
FM Approved
VdS Approved
LPCB Certified

Note: *LPCB Certification applies to Figures 211, 212, 221, 250, 260, 501, 510, 511, 512, 519, 550, 510S, and 519S.*

Material
Cast: Ductile iron conforming to ASTM A536, Grade 65-45-12

Fabricated Steel: Carbon Steel conforming to ASTM A53, ASTM A135, and ASTM A795

Protective Coatings
- Non-lead orange paint (USA)
- RAL red or non-lead paint (EMEA and APAC)
- Hot dipped galvanized conforming to ASTM A153

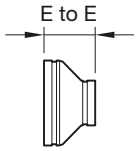


FIGURE 250
CAST CONCENTRIC REDUCER

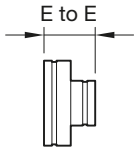


FIGURE 350
FABRICATED CONCENTRIC REDUCER

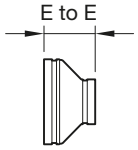


FIGURE 550[a]
CAST CONCENTRIC REDUCER

Nominal Pipe Size		Figure 250 Cast		Figure 350 Fabricated		Figure 550[(a)] Cast	
ANSI Inches (DN)	O.D. Inches (mm)	Nominal E to E Inches (mm)	Approx. Weight Lbs. (kg)	Nominal E to E Inches (mm)	Approx. Weight Lbs. (kg)	Nominal E to E Inches (mm)	Approx. Weight Lbs. (kg)
1-1/4 x 1 (32 x 25)	1.66 x 1.31 (42,4 x 33,4)	2.50 (63,5)	0.7 (0,3)	—	—	2.50 (63,5)	0.7 (0,3)
1-1/2 x 1 (40 x 25)	1.90 x 1.31 (48,3 x 33,4)	—	—	2.50 (63,5)	0.7 (0,3)	—	—
1-1/2 x 1-1/4 (40 x 32)	1.90 x 1.66 (48,3 x 42,4)	2.50 (63,5)	0.8 (0,3)	—	—	2.50 (63,5)	0.8 (0,3)
2 x 1 (50 x 25)	2.37 x 1.31 (60,3 x 33,4)	—	—	2.50 (63,5)	0.9 (0,4)	—	—
2 x 1-1/4 (50 x 32)	2.37 x 1.66 (60,3 x 42,4)	—	—	—	—	2.50 (63,5)	0.9 (0,4)
2 x 1-1/2 (50 x 40)	2.37 x 1.90 (60,3 x 48,3)	—	—	—	—	2.50 (63,5)	1.0 (0,5)
2-1/2 x 1 (65 x 25)	2.87 x 1.31 (73,0 x 33,4)	—	—	2.50 (63,5)	1.2 (0,5)	—	—
2-1/2 x 1-1/4 (65 x 32)	2.87 x 1.66 (73,0 x 42,4)	2.50 (63,5)	1.4 (0,6)	—	—	2.50 (63,5)	1.4 (0,6)
2-1/2 x 1-1/2 (65 x 40)	2.87 x 1.90 (73,0 x 48,3)	2.50 (63,5)	1.4 (0,6)	—	—	2.50 (63,5)	1.4 (0,6)
2-1/2 x 2 (65 x 50)	2.87 x 2.37 (73,0 x 60,3)	2.50 (63,5)	1.3 (0,6)	—	—	2.50 (63,5)	1.3 (0,6)
76,1mm x 1-1/4 (65 x 32)	3.00 x 1.66 (76,1 x 42,4)	2.50 (63,5)	1.4 (0,6)	—	—	2.50 (63,5)	1.4 (0,6)
76,1mm x 1-1/2 (65 x 40)	3.00 x 1.90 (76,1 x 48,3)	2.50 (63,5)	1.4 (0,6)	—	—	2.50 (63,5)	1.4 (0,6)
76,1mm x 2 (65 x 50)	3.00 x 2.37 (76,1 x 60,3)	2.50 (63,5)	1.5 (0,7)	—	—	2.50 (63,5)	1.5 (0,7)
3 x 1 (80 x 25)	3.50 x 1.31 (88,9 x 33,4)	—	—	2.50 (63,5)	1.3 (0,6)	—	—
3 x 1-1/4 (80 x 32)	3.50 x 1.66 (88,9 x 42,4)	—	—	2.50 (63,5)	1.3 (0,6)	—	—
3 x 1-1/2 (80 x 40)	3.50 x 1.90 (88,9 x 48,3)	2.50 (63,5)	1.8 (0,8)	—	—	2.50 (63,5)	1.8 (0,8)
3 x 2 (80 x 50)	3.50 x 2.37 (88,9 x 60,3)	2.50 (63,5)	1.7 (0,8)	—	—	2.50 (63,5)	1.7 (0,8)
3 x 2-1/2 (80 x 65)	3.50 x 2.87 (88,9 x 70,3)	2.50 (63,5)	1.7 (0,8)	—	—	2.50 (63,5)	1.7 (0,8)
3 x 76,1mm (80 x 65)	3.50 x 3.00 (88,9 x 76,1)	2.50 (63,5)	2.0 (0,9)	—	—	2.50 (63,5)	2.0 (0,9)
4 x 1 (100 x 25)	4.50 x 1.31 (114,3 x 33,4)	—	—	3.00 (76,2)	2.9 (1,1)	—	—
4 x 1-1/4 (100 x 32)	4.50 x 1.66 (114,3 x 42,4)	—	—	3.00 (76,2)	2.2 (1,0)	—	—
4 x 1-1/2 (100 x 40)	4.50 x 1.90 (114,3 x 48,3)	—	—	3.00 (76,2)	2.3 (1,0)	—	—
4 x 2 (100 x 50)	4.50 x 2.37 (114,3 x 60,3)	3.00 (76,2)	2.4 (1,1)	—	—	3.00 (76,2)	2.4 (1,1)
4 x 2-1/2 (100 x 65)	4.50 x 2.87 (114,3 x 73,0)	3.00 (76,2)	2.7 (1,2)	—	—	3.00 (76,2)	2.7 (1,2)

NOTES
a. Figure 550 is available for the Americas market only.

FIGURE 1 (1 OF 3)
FIGURES 250, 350, AND 550 CONCENTRIC REDUCERS
NOMINAL DIMENSIONS

Nominal Pipe Size		Figure 250 Cast		Figure 350 Fabricated		Figure 550[a] Cast	
ANSI Inches (DN)	O.D. Inches (mm)	Nominal E to E Inches (mm)	Approx. Weight Lbs. (kg)	Nominal E to E Inches (mm)	Approx. Weight Lbs. (kg)	Nominal E to E Inches (mm)	Approx. Weight Lbs. (kg)
4 x 76,1mm (100 x 65)	4.50 x 3.00 (114,3 x 76,1)	3.00 (76,2)	3.2 (1,5)	—	—	3.00 (76,2)	3.2 (1,5)
4 x 3 (100 x 80)	4.50 x 3.50 (114,3 x 88,9)	3.00 (76,2)	2.8 (1,3)	—	—	3.00 (76,2)	2.8 (1,3)
139,7mm x 3 (125 x 80)	5.50 x 3.50 (139,7 x 88,9)	3.50 (88,9)	4.2 (1,9)	—	—	3.50 (88,9)	4.2 (1,9)
139,7mm x 4 (125 x 100)	5.50 x 4.50 (139,7 x 114,3)	3.50 (88,9)	4.4 (2,0)	—	—	3.50 (88,9)	4.4 (2,0)
5 x 2 (125 x 50)	5.56 x 2.37 (141,3 x 60,3)	—	—	3.50 (88,9)	4.6 (2,1)	—	—
5 x 2-1/2 (125 x 65)	5.56 x 2.87 (141,3 x 73,0)	—	—	3.50 (88,9)	4.5 (2,0)	—	—
5 x 3 (125 x 80)	5.56 x 3.50 (141,3 x 88,9)	3.50 (88,9)	4.2 1,9)	—	—	3.50 (88,9)	4.2 1,9)
5 x 4 (125 x 100)	5.56 x 4.50 (141,3 x 114,3)	3.50 (88,9)	4.4 (2,0)	—	—	3.50 (88,9)	4.4 (2,0)
165,1mm x 3 (150 x 80)	6.50 x 3.50 (165,1 x 88,9)	4.00 (101,6)	5.5 (2,5)	—	—	4.00 (101,6)	5.5 (2,5)
165,1mm x 4 (150 x 100)	6.50 x 4.50 (165,1 x 114,3)	4.00 (101,6)	6.0. (2,7)	—	—	4.00 (101,6)	6.0. (2,7)
165,1mm x 139,7mm (150 x 125)	6.50 x 5.50 (165,1 x 139,7)	4.00 (101,6)	5.6 (2,5)	—	—	4.00 (101,6)	5.6 (2,5)
6 x 1 (150 x 25)	6.63 x 1.31 (168.3 x 33.7)	4.00 (101,6)	4.7 (2,1)	—	—	4.00 (101,6)	4.7 (2,1)
6 x 1-1/2 (150 x 40)	6.63 x 1.90 (168.3 x 48.3)	4.00 (101,6)	5.0 (2,3)	—	—	4.00 (101,6)	5.0 (2,3)
6 x 2 (150 x 50)	6.63 x 2.37 (168,3 x 60,3)	4.00 (101,6)	5.3 (2,4)	—	—	4.00 (101,6)	5.3 (2,4)
6 x 2-1/2 (150 x 65)	6.63 x 2.87 (168,3 x 73,0)	4.00 (101,6)	5.7 (2,6)	—	—	4.00 (101,6)	5.7 (2,6)
6 x 76,1mm (150 x 65)	6.63 x 3.00 (168,3 x 76,1)	4.00 (101,6)	6.1 (2,7)	—	—	4.00 (101,6)	6.1 (2,7)
6 x 3 (150 x 80)	6.63 x 3.50 (168,3 x 88,9)	4.00 (101,6)	5.8 (2,6)	—	—	4.00 (101,6)	5.8 (2,6)
6 x 108,0mm (150 x 100)	6.63 x 4.25 (168,3 x 108,0)	—	—	4.00 (101,6)	6.0 (2,7)	—	—
6 x 4 (150 x 100)	6.63 x 4.50 (168,3 x 114,3)	4.00 (101,6)	6.0 (2,7)	—	—	4.00 (101,6)	6.0 (2,7)
6 x 139,7mm (150 x 100)	6.63 x 5.50 (168,3 x 139,7)	4.00 (101,6)	6.3 (2,3)	—	—	4.00 (101,6)	6.3 (2,3)
6 x 5 (150 x 125)	6.63 x 5.56 (168,3 x 141,3)	4.00 (101,6)	6.2 (2,8)	—	—	4.00 (101,6)	6.2 (2,8)
216,3mm x 2-1/2 (200 x 65)	8.52 x 2.87 (216,3 x 73,0)	—	—	5.00 (127,0)	12.1 (5,5)	—	—
8 x 3 (200 x 80)	8.63 x 3.50 (219,1 x 88,9)	5.00 (127,0)	11.5 (5,2)	—	—	5.00 (127,0)	11.5 (5,2)
8 x 4 (200 x 100)	8.63 x 4.50 (219,1 x 114,3)	5.00 (127,0)	10.7 (4,9)	—	—	5.00 (127,0)	10.7 (4,9)

NOTES
a. Figure 550 is available for the Americas market only.

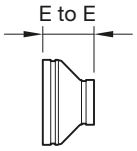


FIGURE 250
CAST CONCENTRIC REDUCER

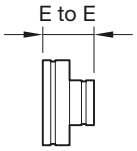


FIGURE 350
FABRICATED CONCENTRIC REDUCER

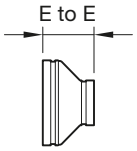


FIGURE 550[a]
CAST CONCENTRIC REDUCER

FIGURE 1 (2 OF 3)
FIGURES 250, 350, AND 550 CONCENTRIC REDUCERS
NOMINAL DIMENSIONS

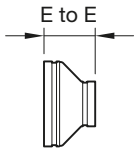


FIGURE 250
CAST CONCENTRIC REDUCER

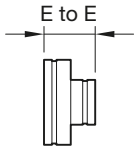


FIGURE 350
FABRICATED CONCENTRIC REDUCER

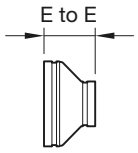


FIGURE 550[a]
CAST CONCENTRIC REDUCER

Nominal Pipe Size		Figure 250 Cast		Figure 350 Fabricated		Figure 550[(a)] Cast	
ANSI Inches (DN)	O.D. Inches (mm)	Nominal E to E Inches (mm)	Approx. Weight Lbs. (kg)	Nominal E to E Inches (mm)	Approx. Weight Lbs. (kg)	Nominal E to E Inches (mm)	Approx. Weight Lbs. (kg)
8 x 139,7mm (200 x 125)	8.63 x 5.50 (219,1 x 139.7)	5.00 (127,0)	10.0 (4,5)	—	—	5.00 (127,0)	10.0 (4,5)
8 x 5 (200 x 125)	8.63 x 5.56 (219,1 x 141,3)	5.00 (127,0)	10.8 (4,9)	—	—	5.00 (127,0)	10.8 (4,9)
8 x 165,1mm (200 x 150)	8.63 x 6.50 (219,1 x 165.1)	5.00 (127,0)	11.0 (5,0)	—	—	5.00 (127,0)	11.0 (5,0)
8 x 6 (200 x 150)	8.63 x 6.63 (219,1 x 168,3)	5.00 (127,0)	11.3 (5,1)	—	—	5.00 (127,0)	11.3 (5,1)
10 x 4 (250 x 100)	10.75 x 4.50 (273,0 x 114,3)	—	—	6.00 (152,4)	20.5 (9,3)	—	—
10 x 5 (250 x 125)	10.75 x 5.56 (273,0 x 141,3)	—	—	6.00 (152,4)	20.1 (9,1)	—	—
10 x 165,1mm (250 x 150)	10.75 x 6.50 (273,0 x 165,1)	6.00 (152,4)	17.8 (8,0)	—	—	6.00 (152,4)	17.8 (8,0)
10 x 6 (250 x 150)	10.75 x 6.63 (273,0 x 168,3)	6.00 (152,4)	16.3 (7,4)	—	—	6.00 (152,4)	16.3 (7,4)
267,4mm x 216,3mm (250 x 200)	10.52 x 8.52 (267,4 x 216,3)	6.00 (152,4)	17.40 (7,89)	—	—	—	—
10 x 8 (250 x 200)	10.75 x 8.63 (273,0 x 219,1)	6.00 (152,4)	18.3 (8,3)	—	—	6.00 (152,4)	18.3 (8,3)
12 x 4 (300 x 100)	12.75 x 4.50 (323,9 x 114,3)	7.00 (177,8)	22.7 (10,3)	—	—	7.00 (177,8)	22.7 (10,3)
12 x 6 (300 x 150)	12.75 x 6.63 (323,9 x 168,3)	7.00 (177,8)	23.6 (10,7)	—	—	7.00 (177,8)	24.2 (11,0)
318,5mm x 216,3mm (300 x 200)	12.54 x 8.52 (318,5 x 216,3)	7.00 (177,8)	23.12 (10,48)	—	—	—	—
12 x 8 (300 x 200)	12.75 x 8.63 (323,9 x 219,1)	7.00 (177,8)	25.2 (11,4)	—	—	7.00 (177,8)	25.8 (11,7)
318,5mm x 267,4mm (300 x 250)	12.54 x 10.52 (318,5 x 267,4)	7.00 (177,8)	25.42 (11,53)	—	—	—	—
12 x 10 (300 x 250)	12.75 x 10.75 (323,9 x 273,0)	7.00 (177,8)	28.2 (12,8)	7.00 (177,8)	28.2 (12,8)	7.00 (177,8)	28.2 (12,8)

NOTES
a. Figure 550 is available for the Americas market only.

FIGURE 1 (3 OF 3)
FIGURES 250, 350, AND 550 CONCENTRIC REDUCERS
NOMINAL DIMENSIONS

Nominal Pipe Size		Figure 501 Cast 45° Elbow		Figure 510 Cast 90° Elbow	
ANSI Inches (DN)	O.D. Inches (mm)	Nominal C to E Inches (mm)	Approx. Weight Lbs. (kg)	Nominal C to E Inches (mm)	Approx. Weight Lbs. (kg)
1 (25)	1.0 (33,7)	1.7 (43,2)	0.6 (0,3)	2.25 (57,2)	0.8 (0,4)
1-1/4 (32)	1.7 (42,4)	1.8 (44,5)	0.8 (0,4)	2.8 (69,9)	1.1 (0,5)
1-1/2 (40)	1.9 (48,3)	1.8 (44,5)	1.0 (0,5)	2.8 (69,9)	1.4 (0,6)
2 (50)	2.4 (60,3)	2.0 (50,8)	1.3 (0,6)	3.3 (82,6)	2.0 (0,9)
2-1/2 (65)	2.9 (73,0)	2.3 (57,2)	2.1 (1,0)	3.8 (95,3)	2.8 (1,3)
76,1mm (65)	3.0 (76,1)	2.3 (57,2)	2.2 (1,0)	3.8 (95,3)	3.0 (1,3)
3 (80)	3.5 (88,9)	2.5 (63,5)	3.4 (1,5)	4.3 (108,0)	4.1 (1,9)
4 (100)	4.5 (114,3)	3.0 (76,2)	5.5 (2,5)	5.0 (127,0)	7.0 (3,2)
139,7mm (125)	5.5 (139,7)	3.3 (82,6)	7.2 (3,3)	5.5 (139,7)	10.3 (4,7)
165,1mm (150)	6.5 (165,1)	3.5 (88,9)	9.2 (4,2)	6.5 (165,1)	13.9 (6,3)
6 (150)	6.6 (168,3)	3.5 (88,9)	11.2 (5,1)	6.5 (165,1)	15.2 (6,9)
8 (200)	8.6 (219,1)	4.25 (108,0)	20.6 (9,3)	7.8 (196,9)	29.6 (13,4)
267,4mm (250)	10.52 (267,4)	—	—	9.00 (228,6)	45.69 (20,72)
10 (250)	10.750 (273,0)	4.75 (120,7)	30.1 (13,7)	9.00 (228,6)	52.0 (23,6)
318,5mm (300)	12.54 (318,5)	—	—	10.00 (254,0)	61.86 (21,86)
12 (300)	12.750 (323,9)	5.25 (133,4)	48.0 (22,0)	10.00 (254,0)	66.4 (30,1)

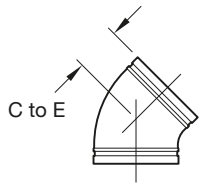


FIGURE 501
CAST 45° ELBOW

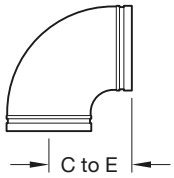


FIGURE 510
CAST 90° ELBOW

FIGURE 2
FIGURES 501 AND 510 ELBOWS
NOMINAL DIMENSIONS

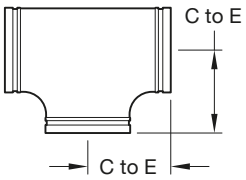


FIGURE 519
CAST TEE

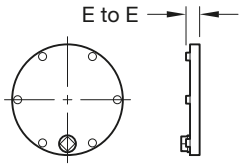


FIGURE 260[a]
CAST END CAP

Nominal Pipe Size		Figure 519 Cast Tee		Figure 260[(a)] Cast End Cap	
ANSI Inches (DN)	O.D. Inches (mm)	Nominal C to E Inches (mm)	Approx. Weight Lbs. (kg)	Nominal E to E Inches (mm)	Approx. Weight Lbs. (kg)
1 (25)	1.3 (33,4)	2.25 (57,2)	1.1 (0,5)	0.8 (21,1)	0.2 (0,1)
1-1/4 (32)	1.7 (42,4)	2.8 (69,9)	1.7 (0,8)	0.8 (21,1)	0.3 (0,1)
1-1/2 (40)	1.9 (48,3)	2.8 (69,9)	2.1 (1,00)	0.8 (21,1)	0.4 (0,2)
2 (50)	2.4 (60,3)	3.3 (82,6)	2.8 (1,3)	0.9 (23,4)	0.7 (0,3)
2-1/2 (65)	2.9 (73,0)	3.8 (95,3)	4.4 (2,0)	0.9 (23,4)	1.0 (0,5)
76,1mm (65)	3.0 (76,1)	3.8 (95,3)	4.5 (2,0)	0.9 (21,8)	1.3 (0,6)
3 (80)	3.5 (88,9)	4.3 (108,0)	6.5 (3,0)	0.9 (23,4)	1.4 (0,6)
4 (100)	4.5 (114,3)	5.0 (127,0)	9.5 (4,3)	1.0 (25,4)	2.6 (1,2)
139,7mm (125)	5.5 (139,7)	5.5 (139,7)	13.9 (6,3)	0.9 (23,4)	4.7 (2,1)
5 (125)	5.6 (141,3)	5.0 (127,0)	14.2 (6,4)	1.0 (25,4)	5.0 (2,3)
165,1mm (150)	6.5 (165,1)	6.5 (165,1)	19.7 (8,9)	0.9 (23,4)	6.4 (2,9)
6 (150)	6.6 (168,3)	6.5 (165,1)	22.4 (10,2)	1.0 (25,4)	6.2 (2,8)
216,3mm (200)	8.52 (216,3)	—	—	1.06 (27,0)	11.02 (4,99)
8 (200)	8.6 (219,1)	7.8 (196,9)	39.8 (18,1)	1.1 (27,0)	7.1 (3,2)
267,4mm (250)	10.52 (267,4)	9.00 (228,6)	62.58 (28,39)	1.02 (25,78)	19.05 (8,64)
10 (250)	10.8 (273,0)	9.00 (228,6)	64.2 (29,1)	1.0 (25,8)	24.5 (11,1)
318,5mm (300)	12.54 (318,5)	10.00 (254,0)	82.79 (37,55)	1.02 (25,8)	28.82 (13,07)
12 (300)	12.8 (323,9)	10.00 (254,0)	110.0 (49,9)	1.02 (25,8)	31.0 (14,1)

NOTES
a. Available with tapped plugs. Contact Johnson Controls.

FIGURE 3
FIGURES 519 TEE AND FIGURE 260 END CAP
NOMINAL DIMENSIONS

Nominal Pipe Size		Figure 510S 90° Elbow		Figure 519S Tee	
ANSI Inches (DN)	O.D. Inches (mm)	Nominal C to E Inches (mm)	Approx. Weight Lbs. (kg)	Nominal C to E Inches (mm)	Approx. Weight Lbs. (kg)
2 (50)	2.4 (60,3)	2.8 (69,9)	1.5 (0,7)	2.8 (69,9)	2.6 (1,2)
2-1/2 (65)	2.9 (73,0)	3.0 (76,2)	2.1 (1,0)	3.0 (76,2)	4.4 (2,0)
76,1mm (65)	3.0 (76,1)	3.0 (76,2)	2.3 (1,0)	3.0 (76,2)	3.1 (1,4)
3 (80)	3.5 (88,9)	3.4 (85,9)	3.0 (1,4)	3.8 (85,9)	6.5 (3,0)
4 (100)	4.5 (114,3)	4.0 (101,6)	5.0 (2,3)	4.0 (101,6)	10.7 (4,9)
139,7mm (125)	5.5 (139,7)	4.9 (124,0)	8.7 (3,9)	4.9 (124,0)	10.9 (5,0)
5 (125)	5.6 (141,3)	4.8 (123,0)	9.4 (4,3)	4.8 (123,0)	11.6 (5,3)
165,1mm (150)	6.5 (165,1)	5.5 (139,7)	11.4 (5,2)	5.5 (139,7)	14.8 (6,7)
6 (150)	6.6 (168,3)	5.5 (139,7)	12.1 (5,5)	5.5 (139,7)	15.0 (6,8)
8 (200)	8.6 (219,1)	6.9 (174,8)	22.2 (10,1)	6.9 (174,8)	39.8 (18,1)

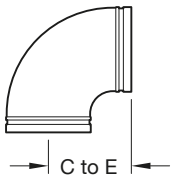


FIGURE 510S
90° ELBOW
SHORT PATTERN

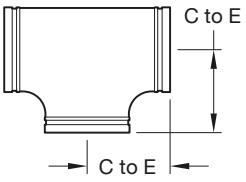
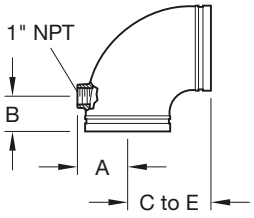


FIGURE 519S
TEE
SHORT PATTERN

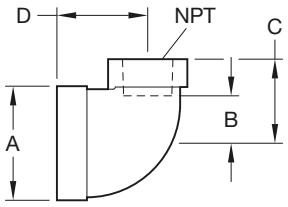
FIGURE 4
FIGURES 510S ELBOW AND FIGURE 519S TEE
NOMINAL DIMENSIONS



Nominal Pipe Size		Figure 510DE[a] 90° Drain Elbow			
ANSI Inches (DN)	O.D. Inches (mm)	Nominal C to E Inches (mm)	Nominal A Inches (mm)	Nominal B Inches (mm)	Approx. Weight Lbs. (kg)
2 (50)	2.4 (60,3)	3.8 (95,3)	2.0 (50,8)	2.8 (69,9)	3.1 (1,4)
2-1/2 (65)	2.9 (73,0)	3.8 (95,3)	2.0 (50,8)	2.8 (69,9)	2.2 (1,0)
3 (80)	3.5 (88,9)	4.3 (108,0)	2.3 (59,4)	2.8 (69,9)	6.0 (2,7)
4 (100)	4.5 (114,3)	5.0 (127,0)	2.9 (72,4)	2.8 (69,9)	8.6 (3,9)
6 (150)	6.6 (168,3)	6.5 (165,1)	3.9 (99,6)	2.8 (69,9)	18.0 (8,2)
8 (200)	8.6 (219,1)	7.8 (196,9)	5.00 (125,7)	2.8 (69,9)	31.0 (14,1)

NOTES
a. Figure 510DE not available for the EMEA market.

FIGURE 5
FIGURE 510DE 90° DRAIN ELBOW
NOMINAL DIMENSIONS

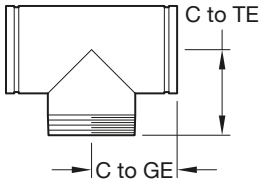


Nominal Pipe Size		Dimensions- Inches (mm)				Approx. Weight Lbs. (kg)
ANSI Inches (DN)	Outlet NPT[1]	A O.D.	B Takeout	C	D	
1-1/2 (40)	1/2	1.9 (48,3)	1.3 (31,8)	1.8 (44,5)	1.9 (48,0)	0.8 (0,4)
	3/4		1.3 (31,8)	1.8 (44,5)	1.9 (48,0)	0.8 (0,4)
	1		1.4 (34,8)	2.0 (50,8)	2.0 (51,3)	0.9 (0,4)
2 (50)	1/2	2.4 (60,3)	1.3 (31,8)	1.8 (44,5)	1.9 (48,0)	0.9 (0,4)
	3/4		1.3 (31,8)	1.8 (44,5)	1.9 (48,0)	0.8 (0,4)
	1		1.4 (34,8)	2.0 (50,8)	2.0 (51,3)	1.1 (0,5)
2-1/2 (65)	1/2	2.9 (73,0)	1.5 (37,3)	2.0 (50,0)	1.9 (48,0)	1.8 (0,8)
	3/4		1.5 (37,3)	2.0 (50,0)	1.9 (48,0)	1.1 (0,5)
	1		1.4 (34,8)	2.0 (50,8)	2.0 (51,3)	1.1 (0,5)

NOTES
a. ISO threaded outlets are available upon request.
b. ADACAP not available for the EMEA market.
c. Rated pressure 300 psi (20,7 bar).

FIGURE 6
ADACAP
NOMINAL DIMENSIONS

Nominal Pipe Size		Figure 320 Fabricated Thread Tee		
ANSI Inches (DN)	**O.D. Inches (mm)**	**Nominal C to GE Inches (mm)**	**Nominal C to TE Inches (mm)**	**Approx. Weight Lbs. (kg)**
1 (25)	1.31 (33,4)	2.25 (57,2)	2.25 (57,2)	1.3 (0,6)
1-1/4 (32)	1.66 (42,4)	2.75 (69,9)	2.75 (69,9)	1.5 (0,7)
1-1/2 (40)	1.90 (48,3)	2.75 (69,9)	2.75 (69,9)	1.9 (0,9)
2 (50)	2.37 (60,3)	3.25 (82,6)	4.25 (108,0)	3.2 (1,5)
2-1/2 (65)	2.87 (73,0)	3.75 (95,3)	3.75 (95,3)	4.0 (1,8)
76,1mm (65)	3.00 (76,1)	3.75 (95,3)	3.75 (95,3)	4.5 (2,0)
3 (80)	3.50 (88,9)	4.25 (108,0)	6.00 (152,4)	6.0 (2,7)
4 (100)	4.50 (114,3)	5.00 (127,0)	7.25 (184,2)	11.0 (5,0)
139,7mm (125)	5.50 (139,7)	5.50 (139,7)	5.50 (139,7)	21.0 (9,5)
5 (125)	5.56 (141,3)	5.50 (139,7)	5.50 (139,7)	23.0 (10,5)
165,1mm (150)	6.50 (165,1)	6.50 (165,1)	6.50 (165,1)	25 (11,3)
6 (150)	6.63 (168,3)	6.50 (165,1)	6.50 (165,1)	28.0 (12,7)
8 (200)	8.63 (219,1)	7.75 (196,9)	7.75 (196,9)	38.7 (17,6)
10 (250)	10.75 (273,0)	9.00 (228,6)	9.00 (228,6)	72.1 (32,8)
12 (300)	12.75 (323,9)	10.00 (254,0)	10.00 (254,0)	92.5 (42,0)



NOTES
a. Figure 320 not available for the EMEA market.

FIGURE 7
FIGURE 320 FABRICATED GROOVE X GROOVE X MALE THREAD TEES (SEGMENT WELDED)
NOMINAL DIMENSIONS

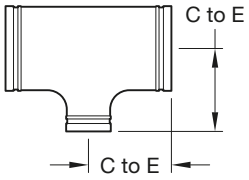


FIGURE 221
CAST TEE REDUCING
GROOVED
(SEGMENT WELDED)

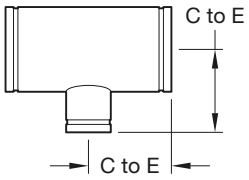


FIGURE 321
FABRICATED TEE REDUCING
GROOVED
(SEGMENT WELDED)

Nominal Pipe Size		Figure 221 Cast Reducing Tee		Figure 321 Fabricated Reducing Tee	
ANSI Inches (DN)	O.D. Inches (mm)	Nominal C to E Inches (mm)	Approx. Weight Lbs. (kg)	Nominal C to E Inches (mm)	Approx. Weight Lbs. (kg)
1-1/4 x 1-1/4 x 1 (32 x 32 x 25)	1.66 x 1.66 x 1.31 (42,4 x 42,4 x 33,4)	—	—	2.75 (69,9)	1.3 (0,6)
1-1/2 x 1-1/2 x 1 (40 x 40 x 25)	1.90 x 1.90 x 1.31 (48,3 x 48,3 x 33,4)	—	—	2.75 (69,9)	1.4 (0,6)
1-1/2 x 1-1/2 x 1-1/4 (40 x 40 x 32)	1.90 x 1.90 x 1.66 (48,3 x 48,3 x 42,4)	—	—	2.75 (69,9)	1.5 (0,7)
2 x 2 x 1 (50 x 50 x 25)	2.37 x 2.37 x 1.32 (60,3 x 60,3 x 33,4)	—	—	3.25 (82,6)	1.6 (0,7)
2 x 2 x 1-1/2 (50 x 50 x 40)	2.37 x 2.37 x 1.90 (60,3 x 60,3 x 48,3)	3.25 (82,6)	2.7 (1,2)	3.25 (82,6)	2.0 (0,9)
2-1/2 x 2-1/2 x 1 (65 x 65 x 25)	2.87 x 2.87 x 1.32 (73,0 x 73,0 x 33,4)	—	—	3.75 (95,3)	2.3 (1,1)
2-1/2 x 2-1/2 x 1-1/4 (65 x 65 x 32)	2.87 x 2.87 x 1.66 (73,0 x 73,0 x 42,4)	—	—	3.75 (95,3)	4.2 (1,9)
2-1/2 x 2-1/2 x 1-1/2 (65 x 65 x 40)	2.87 x 2.87 x 1.90 (73,0 x 73,0 x 48,3)	—	—	3.75 (95,3)	4.2 (1,9)
2-1/2 x 2-1/2 x 2 (65 x 65 x 50)	2.87 x 2.87 x 2.37 (73,0 x 73,0 x 60,3)	3.75 (95,3)	4.2 (1,9)	3.75 (95,3)	4.5 (2,0)
76,1mm x 76,1mm x 1 (65 x 65 x 25)	3.00 x 3.00 x 1.32 (76,1 x 76,1 x 33,4)	—	—	3.75 (95,3)	2.4 (1,1)
76,1mm x 76,1mm x 1-1/4 (65 x 65 x 32)	3.00 x 3.00 x 1.66 (76,1 x 76,1 x 42,4)	—	—	3.75 (95,3)	4.3 (2,0)
76,1mm x 76,1mm x 1-1/2 (65 x 65 x 40)	3.00 x 3.00 x 1.90 (76,1 x 76,1 x 48,3)	3.75 (95,3)	4.5 (2,0)	3.75 (95,3)	4.2 (1,9)
76,1mm x 76,1mm x 2 (65 x 65 x 50)	3.00 x 3.00 x 2.37 (76,1 x 76,1 x 60,3)	3.75 (95,3)	4.3 (2,0)	3.75 (95,3)	4.6 (2,1)
3 x 3 x 1 (80 x 80 x 25	3.50 x 3.50 x 1.32 (88,9 x 88,9 x 33,4)	4.25 (108,0)	5.6 (2,5)	4.25 (108,0)	6.0 (2,7)
3 x 3 x 1-1/4 (80 x 80 x 32)	3.50 x 3.50 x 1.66 (88,9 x 88,9 x 42,4)	—	—	4.25 (108,0)	6.1 (2,8)
3 x 3 x 1-1/2 (80 x 80 x 40)	3.50 x 3.50 x 1.90 (88,9 x 88,9 x 48,3)	4.25 (108,0)	5.9 (2,7)	4.25 (108,0)	6.2 (2,8)
3 x 3 x 2 (80 x 80 x 50)	3.50 x 3.50 x 2.37 (88,9 x 88,9 x 60,3)	4.25 (108,0)	6.0 (2,7)	4.25 (108,0)	6.4 (2,9)
3 x 3 x 2-1/2 (80 x 80 x 65)	3.50 x 3.50 x 2.87 (88,9 x 88,9 x 73,0)	4.25 (108,0)	6.2 (2,8)	4.25 (108,0)	6.5 (2,9)
3 x 3 x 76,1mm (80 x 80 x 65)	3.50 x 3.50 x 3.00 (88,9 x 88,9 x 76,1)	4.25 (108,0)	6.0 (2,7)	4.25 (108,0)	6.7 (3,0)
4 x 4 x 1 (100 x 100 x 25)	4.50 x 4.50 x 1.32 (114,3 x 114,3 x 33,4)	—	—	5.00 (127,0)	8.0 (3,7)
4 x 4 x 1-1/4 (100 x 100 x 32)	4.50 x 4.50 x 1.66 (114,3 x 114,3 x 42,4)	—	—	5.00 (127,0)	9.8 (4,4)
4 x 4 x 1-1/2 (100 x 100 x 40)	4.50 x 4.50 x 1.90 (114,3 x 114,3 x 48,3)	—	—	5.00 (127,0)	9.9 (4,5)
4 x 4 x 2 (100 x 100 x 50)	4.50 x 4.50 x 2.37 (114,3 x 114,3 x 60,3)	5.00 (127,0)	9.1 (4,1)	5.00 (127,0)	11.0 (5,0)
4 x 4 x 2-1/2 (100 x 100 x 65)	4.50 x 4.50 x 2.88 (114,3 x 114,3 x 73,0)	5.00 (127,0)	9.5 (4,3)	5.00 (127,0)	11.2 (5,1)
4 x 4 x 76,1mm (125 x 125 x 65)	4.50 x 4.50 x 3.00 (114,3 x 114,3 x 76,1)	5.00 (127,0)	9.5 (4,3)	5.00 (127,0	11.4 (5,2)

FIGURE 8 (1 OF 3)
FIGURES 221 AND 321 REDUCING TEES
NOMINAL DIMENSIONS

Nominal Pipe Size		Figure 221 Cast Reducing Tee		Figure 321 Fabricated Reducing Tee	
ANSI Inches (DN)	O.D. Inches (mm)	Nominal C to E Inches (mm)	Approx. Weight Lbs. (kg)	Nominal C to E Inches (mm)	Approx. Weight Lbs. (kg)
4 x 4 x 3 (100 x 100 x 80)	4.50 x 4.50 x 3.50 (114,3 x 114,3 x 88,9)	5.00 (127,0)	9.7 (4,4)	5.00 (127,0	11.6 (5,3)
139,7mm x 139,7mm x 3 (125 x 125 x 80)	5.50 x 5.50 x 3.50 (139,7 x 139,7 x 88,9)	5.50 (139,7)	12.7 (5,8)	5.50 (139,7)	12.2 (5,5)
139,7mm x 139,7mm x 4 (125 x 125 x 100)	5.50 x 5.50 x 4.50 (139,7 x 139,7 x 114,3)	5.50 (139,7)	13.4 (6,1)	5.50 (139,7)	12.5 (5,7)
5 x 5 x 1 (125 x 125 x 25)	5.56 x 5.56 x 1.31 (141,3 x 141,3 x 33,4)	—	—	5.50 (139,7)	13.0 (5,9)
5 x 5 x 1-1/2 (125 x 125 x 40)	5.56 x 5.56 x 1.90 (141,3 x 141,3 x 48,3)	—	—	5.50 (139,7)	13.4 (6,1)
5 x 5 x 2 (125 x 125 x 50)	5.56 x 5.56 x 2.37 (141,3 x 141,3 x 60,3)	—	—	5.50 (139,7)	14.1 (6,4)
5 x 5 x 2-1/2 (125 x 125 x 65)	5.56 x 5.56 x 2.87 (141,3 x 141,3 x 73,0)	5.50 (139,7)	18.0 (8,2)	5.50 (139,7)	14.8 (6,7)
5 x 5 x 76,1mm (125 x 125 x 65)	5.56 x 5.56 x 3.00 (141,3 x 141,3 x 76,1)	—	—	5.50 (139,7)	15.3 (6,9)
5 x 5 x 3 (125 x 125 x 80)	5.56 x 5.56 x 3.50 (141,3 x 141,3 x 88,9)	5.50 (139,7)	14.0 (6,4)	5.50 (139,7)	16.0 (7,3)
5 x 5 x 4 (125 x 125 x 100)	5.56 x 5.56 x 4.50 (141,3 x 141,3 x 114,3)	5.50 (139,7)	13.9 (6,3)	5.50 (139,7)	16.4 (7,4)
165,1mm x 165,1mm x 3 (150 x 150 x 80)	6.50 x 6.50 x 3.50 (165,1 x 165,1 x 88,9)	6.50 (165,1)	18.0 8,2	6.50 (165,1)	22.0 (10,0)
165,1mm x 165,1mm x 4 (150 x 150 x 100)	6.50 x 6.50 x 4.50 (165,1 x 165,1 x 114,3)	6.50 (165,1)	19.5 8,9	6.50 (165,1)	22.6 (10,3)
165,1mm x 165,1mm x 5 (150 x 150 x 125)	6.50 x 6.50 x 5.50 (165,1 x 165,1 x 139,7)	—	—	6.50 (165,1)	23.2 (10,5)
165,1mm x 165,1mm x 139,7mm (150 x 150 x 125)	6.50 x 6.50 x 5.50 (165,1 x 165,1 x 141,3)	—	—	6.50 (165,1)	22.9 (10,4)
6 x 6 x 1 (150 x 150 x 25)	6.63 x 6.63 x 1.31 (168,3 x 168,3 x 33,4)	—	—	6.50 (165,1)	22.8 (10,3)
6 x 6 x 1-1/2 (150 x 150 x 40)	6.63 x 6.63 x 1.90 (168,3 x 168,3 x 48,3)	—	—	6.50 (165,1)	22.9 (10,4)
6 x 6 x 2 (150 x 150 x 50)	6.63 x 6.63 x 2.37 (168,3 x 168,3 x 60,3)	6.50 (165,1)	19.4 (8,8)	6.50 (165,1)	23.0 (10,4)
6 x 6 x 2-1/2 (150 x 150 x 65)	6.63 x 6.63 x 2.87 (168,3 x 168,3 x 73,0)	6.50 (165,1)	21.2 (9,8)	6.50 (165,1)	23.4 (10,6)
6 x 6 x 76,1mm (150 x 150 x 65)	6.63 x 6.63 x 3.00 (168,3 x 168,3 x 76,1)	6.50 (165,1)	21.2 9,8	6.50 (165,1)	23.5 (10,7)
6 x 6 x 3 (150 x 150 x 80)	6.63 x 6.63 x 3.50 (168,3 x 168,3 x 88,9)	6.50 (165,1)	21.0 (9,5)	6.50 (165,1)	23.7 (10,7)
6 x 6 x 4 (150 x 150 x 100)	6.63 x 6.63 x 4.50 (168,3 x 168,3 x 114,3)	6.50 (165,1)	21.8 (9,9)	6.50 (165,1)	23.9 (10,8)
6 x 6 x 139,7mm (150 x 150 x 125)	6.63 x 6.63 x 5.50 (168,3 x 168,3 x 139,7)	6.50 (165,1)	23.0 10,4	6.50 (165,1)	24.0 (10,9)
6 x 6 x 5 (150 x 150 x 125)	6.63 x 6.63 x 5.56 (168,3 x 168,3 x 141,3)	—	—	6.50 (165,1)	27.0 12,2
8 x 8 x 1-1/2 (200 x 200 x 40)	8.63 x 8.63 x 1.90 (219,1 x 219,1 x 48,3)	—	—	7.75 (196,9	36.0 (16,3)
8 x 8 x 2 (200 x 200 x 50)	8.63 x 8.63 x 2.375 (219,1 x 219,1 x 60,3)	—	—	7.75 (196,9)	36.2 (16,4)

FIGURE 8 (2 OF 3)
FIGURES 221 AND 321 REDUCING TEES
NOMINAL DIMENSIONS

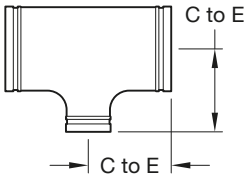


FIGURE 221
CAST TEE REDUCING
GROOVED
(SEGMENT WELDED)

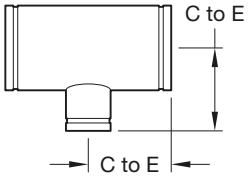


FIGURE 321
FABRICATED TEE REDUCING
GROOVED
(SEGMENT WELDED)

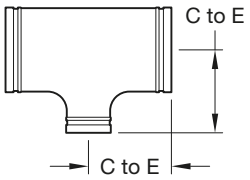


FIGURE 221
CAST TEE REDUCING
GROOVED
(SEGMENT WELDED)

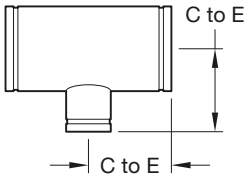


FIGURE 321
FABRICATED TEE REDUCING
GROOVED
(SEGMENT WELDED)

Nominal Pipe Size		Figure 221 Cast Reducing Tee		Figure 321 Fabricated Reducing Tee	
ANSI Inches (DN)	O.D. Inches (mm)	Nominal C to E Inches (mm)	Approx. Weight Lbs. (kg)	Nominal C to E Inches (mm)	Approx. Weight Lbs. (kg)
8 x 8 x 2-1/2 (200 x 200 x 65)	8.63 x 8.63 x 2.88 (219,1 x 219,1 x 73,0)	—	—	7.75 (196,9)	36.4 (16,5)
216mm x 216mm x 165,1mm (200 x 200 x 150)	8.52 x 8.52 x 6.50 (216,3 x 216,3 x 165,1)	—	—	7.75 (196,9)	37.9 (17,2)
8 x 8 x 76,1mm (200 x 200 x 65)	8.63 x 8.63 x 3.00 (216,1 x 219,1 x 76.1)	—	—	7.75 (196,9)	36.4 (16,5)
8 x 8 x 3 (200 x 200 x 80)	8.63 x 8.63 x 3.50 (219,1 x 219,1 x 88,9)	—	—	7.75 (196,9)	36.5 (16,6)
8 x 8 x 4 (200 x 200 x 100)	8.63 x 8.63 x 4.50 (219,1 x 219,1 x 114,1)	7.75 (196,9)	37.2 (16,9)	7.75 (196,9)	36.4 (16,5)
8 x 8 x 139,7mm (200 x 200 x 125)	8.63 x 8.63 x 5.56 (219,1 x 219,1 x 139,7)	7.75 (196,9)	37.7 (17,1)	7.75 (196,9)	36.7 (16,6)
8 x 8 x 5 (200 x 200 x 125)	8.63 x 8.63 x 5.50 (219,1 x 219,1 x 141,3)	—	—	7.75 (196,9)	36.8 (16,7)
8 x 8 x 165,1mm (200 x 200 x 150)	8.63 x 8.63 x 6.50 (219,1 x 219,1 x 165,1)	7.75 (196,9)	37.7 (17,1)	7.75 (196,9)	39.0 (17,7)
10 x 10 x 1-1/2 (250 x 250 x 40)	10.75 x 10.75 x 1.90 (273,0 x 273,0 x 48,3)	—	—	9.00 (228,6)	57.0 (25,8)
10 x 10 x 2 (250 x 250 x 50)	10.75 x 10.75 x 2.37 (273,0 x 273,0 x 60,3)	—	—	9.00 (228,6)	57.1 (25,9)
10 x 10 x 2-1/2 (250 x 250 x 65)	10.75 x 10.75 x 2.87 (273,0 x 273,0 x 73,0)	—	—	9.00 (228,6)	57.3 (26,0)
10 x 10 x 3 (250 x 250 x 80)	10.75 x 10.75 x 3.50 (273,0 x 273,0 x 88,9)	—	—	9.00 (228,6)	57.4 (26,0)
10 x 10 x 4 (250 x 250 x 100)	10.75 x 10.75 x 4.50 (273,0 x 273,0 x 114,3)	—	—	9.00 (228,6)	57.8 (26,2)
10 x 10 x 5 (250 x 250 x 125)	10.75 x 10.75 x 5.56 (273,0 x 273,0 x 141,3)	—	—	9.00 (228,6)	58.0 (26,3)
10 x 10 x 6 (250 x 250 x 150)	10.75 x 10.75 x 6.63 (273,0 x 273,0 x 168,3)	—	—	9.00 (228,6)	62.0 (28,1)
10 x 10 x 8 (250 x 250 x 200)	10.75 x 10.75 x 8.63 (273,0 x 273,0 x 219,1)	—	—	9.00 (228,6)	63.0 (28,6)
12 x 12 x 1 (300 x 300 x 25)	12.75 x 12.75 x 1.31 (323,9 x 323,9 x 33,4)	—	—	10.00 (254,0)	64.0 (29,0)
12 x 12 x 2 (300 x 300 x 50)	12.75 x 12.75 x 2.37 (323,9 x 323,9 x 60,3)	—	—	10.00 (254,0)	69.5 (31,5)
12 x 12 x 2-1/2 (300 x 300 x 65)	12.75 x 12.75 x 2.87 (323,9 x 323,9 x 73,0)	—	—	10.00 (254,0)	75.6 (34,3)
12 x 12 x 3 (300 x 300 x 80)	12.75 x 12.75 x 3.50 (323,9 x 323,9 x 88,9)	—	—	10.00 (254,0)	80.2 (36,4)
12 x 12 x 4 (300 x 300 x 100)	12.75 x 12.75 x 4.50 (323,9 x 323,9 x 114,3)	—	—	10.00 (254,0)	80.5 (36,5)
12 x 12 x 5 (300 x 300 x 125)	12.75 x 12.75 x 5.56 (323,9 x 323,9 x 141,3)	—	—	10.00 (254,0)	80.7 (36,6)
12 x 12 x 6 (300 x 300 x 150)	12.75 x 12.75 x 6.63 (323,9 x 323,9 x 168,3)	—	—	10.00 (254,0)	80.9 (36,7)
12 x 12 x 165,1mm (300 x 300 x 150)	12.75 x 12.75 x 6.50 (323,9 x 323,9 x 165,1)	—	—	10.00 (254,0)	79.9 (36,2)
12 x 12 x 8 (300 x 300 x 200)	12.75 x 12.75 x 8.63 (323,9 x 323,9 x 219,1)	—	—	10.00 (254,0)	76.3 (34,6)
12 x 12 x 10 (300 x 300 x 250)	12.75 x 12.75 x 10.75 (323,9 x 323,9 x 273,0)	—	—	10.00 (254,0)	77.6 (35,2)

FIGURE 8 (3 OF 3)
FIGURES 221 AND 321 REDUCING TEES
NOMINAL DIMENSIONS

Nominal Pipe Size		Figure 327[(a)]		Figure 341[(a)]			Figure 342[(a)]		
ANSI Inches (DN)	O.D. Inches (mm)	Nominal C to E Inches (mm)	Approx. Weight Lbs. (kg)	Nominal E to E Inches (mm)	Mating Flange Bolt Qty.	Approx. Weight Lbs. (kg)	Nominal E to E Inches (mm)	Mating Flange Bolt Qty.	Approx. Weight Lbs. (kg)
1 (25)	1.31 (33,4)	2.25 (57,2)	2.2 (1,0)	3.00 (76,2)	4	2.3 (1,0)	3.00 (76,2)	4	4.0 (1,8)
1-1/4 (32)	1.66 (42,4)	2.75 (69,9)	2.2 (1,0)	4.00 (101,6)	4	2.8 (1,3)	4.00 (101,6)	4	4.6 (2,1)
1-1/2 (40)	1.90 (48,3)	2.75 (69,9)	2.5 (1,1)	4.00 (101,6)	4	3.2 (1,5)	4.00 (101,6)	4	7.1 (3,2)
2 (50)	2.37 (60,3)	3.25 (82,6)[b]	3.7 (1,7)[b]	4.00 (101,6)	4	5.2 (2,4)	4.00 (101,6)	8	8.2 (3,7)
2-1/2 (65)	2.87 (73,0)	3.75 (95,3)[b]	5.8 (2,6)[b]	4.00 (101,6)	4	8.0 (3,6)	4.00 (101,6)	8	11.9 (5,4)
76,1mm (65)	3.00 (76,1)	3.75 (95,3)	6.0 (2,7)	4.00 (101,6)	4	8.8 (4,0)	4.00 (101,6)	8	12.5 (5,7)
3 (80)	3.50 (88,9)	4.25 (108,0)	8.6 (3,9)	4.00 (101,6)	4	10.2 (4,6)	4.00 (101,6)	8	15.5 (7,0)
4 (100)	4.50 (114,3)	5.00 (127,0)[b]	20.7 (9,4)[b]	6.00 (152,4)	8	17.2 (7,8)	6.00 (152,4)	8	28.0 (12,7)
139,7mm (125)	5.50 (139,7)	5.50 (139,7)	18.3 (8,3)	6.00 (152,4)	8	18.5 (8,4)	6.00 (152,4)	8	32.5 (14,7)
5 (125)	5.56 (141,3)	5.50 (139,7)	18.5 (8,4)	6.00 (152,4)	8	21.4 (9,7)	6.00 (152,4)	8	37.0 (16,8)
165,1mm (150)	6.50 (165,1)	6.50 (165,1)	26.2 (11,9)	6.00 (152,4)	8	22.0 (10,0)	6.00 (152,4)	12	42.5 (19,3)
6 (150)	6.63 (168,3)	6.50 (165,1)	27.3 (12,4)	6.00 (152,4)	8	26.0 (11,8)	6.00 (152,4)	12	48.0 (21,8)
216,3mm (200)	8.52 (216,3)	7.75 (196,9)	44.0 (20,0)	6.00 (152,4)	8	34.5 (15,6)	6.00 (152,4)	12	72.5 (32,9)
8 (200)	8.63 (219,1)	7.75 (196,9)	48.0 (21,7)	6.00 (152,4)	8	38.4 (17,4)	6.00 (152,4)	12	79.0 (35,8)
10 (250)	10.75 (273,0)	9.00 (228,6)	75.0 (34,0)	8.00 (203,2)	12	65.0 (29,5)	8.00 (203,2)	16	122.0 (55,3)
12 (300)	12.75 (323,9)	10.00 (254,0)	95.8 (43,4)	8.00 (203,2)	12	91.0 (41,3)	8.00 (203,2)	16	183.0 (83,0)

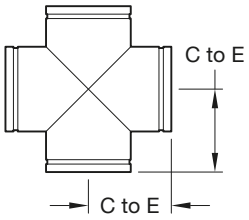


FIGURE 327[a] FABRICATED CROSS GROOVED (SEGMENT WELDED)

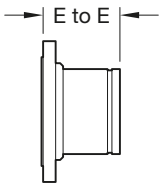
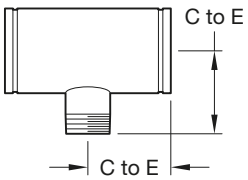


FIGURE 341[a] FABRICATED FLANGE ADAPTER ANSI CLASS 150 LBS. GROOVED

FIGURE 342[a] FABRICATED FLANGE ADAPTER ANSI CLASS 300 LBS. GROOVED

NOTES
a. Figure 327, Figure 341, and Figure 342 are not available for the EMEA market.
b. Figure 227

FIGURE 9
FIGURE 327 CROSS AND FIGURE 341 AND FIGURE 342 FLANGE ADAPTERS NOMINAL DIMENSIONS

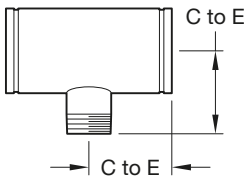


Nominal Pipe Size		Nominal C to E Inches (mm)	Approx. Weight Lbs. (kg)
ANSI Inches (DN)	O.D. Inches (mm)		
2 x 2 x 3/4 (50 x 50 x 20)	2.37 x 2.37 x 1.05 (60,3 x 60,3 x 26,7)	3.25 (82,6)	2.0 (0,9)
2 x 2 x 1 (50 x 50 x 25)	2.37 x 2.37 x 1.31 (60,3 x 60,3 x 33,4)	3.25 (82,6)	2.2 (1,0)
2 x 2 x 1-1/4 (50 x 50 x 32)	2.37 x 2.37 x 1.66 (60,3 x 60,3 x 42,4)	3.25 (82,6)	2.3 (1,0)
2 x 2 x 1-1/2 (50 x 50 x 40)	2.37 x 2.37 x 1.90 (60,3 x 60,3 x 48,3)	3.25 (82,6)	1.4 (1,1)
2-1/2 x 2-1/2 x 1 (65 x 65 x 25)	2.875 x 2.875 x 1.315 (73,0 x 73,0 x 33,4)	3.75 (95,3)	3.6 (1,6)
2-1/2 x 2-1/2 x 1-1/4 (65 x 65 x 32)	2.875 x 2.875 x 1.660 (73,0 x 73,0 x 42,4)	3.75 (95,3)	3.8 (1,7)
2-1/2 x 2-1/2 x 1-1/2 (65 x 65 x 40)	2.875 x 2.875 x 1.900 (73,0 x 73,0 x 48,3)	3.75 (95,3)	4.0 (1,8)
2-1/2 x 2-1/2 x 2 (65 x 65 x 50)	2.875 x 2.875 x 2.375 (73,0 x 73,0 x 60,3)	3.75 (95,3)	4.2 (1,9)
76,1mm x 76,1mm x 1 (65 x 65 x 25)	3.00 x 3.00 x 1.31 (76,1 x 76,1 x 33,4)	3.75 (95,3)	3.8 (1,7)
76,1mm x 76,1mm x 1-1/4 (65 x 65 x 32)	3.00 x 3.00 x 1.66 (76,1 x 76,1 x 42,4)	3.75 (95,3)	4.0 (1,8)
76,1mm x 76,1mm x 1-1/2 (65 x 65 x 40)	3.00 x 3.00 x 1.90 (76,1 x 76,1 x 48,3)	3.75 (95,3)	4.2 (1,9)
3 x 3 x 3/4 (80 x 80 x 20)	3.50 x 3.50 x 1.05 (88,9 x 88,9 x 26,7)	4.25 (108,0)	5.2 (2,4)
3 x 3 x 1 (80 x 80 x 25)	3.50 x 3.50 x 1.31 (88,9 x 88,9 x 33,4)	4.25 (108,0)	5.7 (2,6)
3 x 3 x 1-1/2 (80 x 80 x 40)	3.50 x 3.50 x 1.90 (88,9 x 88,9 x 48,3)	4.25 (108,0)	5.8 (2,6)
3 x 3 x 2 (80 x 80 x 50)	3.50 x 3.50 x 2.37 (88,9 x 88,9 x 60,3)	4.25 (108,0)	5.9 (2,7)
3 x 3 x 2-1/2 (80 x 80 x 65)	3.50 x 3.50 x 2.87 (88,9 x 88,9 x 73,0)	4.25 (108,0)	6.3 (2,9)
3 x 3 x 76,1mm (80 x 80 x 65)	3.50 x 3.50 x 3.00 (88,9 x 88,9 x 76,1)	4.25 (108,0)	6.5 (2,9)
4 x 4 x 3/4 (100 x 100 x 20)	4.50 x 4.50 x 1.05 (114,3 x 114,3 x 26,7)	3.75 (95,3)	6.4 (2,9)
4 x 4 x 1 (100 x 100 x 25)	4.50 x 4.50 x 1.31 (114,3 x 114,3 x 33,4)	5.00 (127,0)	6.9 (3,1)
4 x 4 x 1-1/4 (100 x 100 x 32)	4.50 x 4.50 x 1.66 (114,3 x 114,3 x 42,4)	5.00 (127,0)	7.6 (3,4)
4 x 4 x 1-1/2 (100 x 100 x 40)	4.50 x 4.50 x 1.90 (114,3 x 114,3 x 48,3)	5.00 (127,0)	8.3 (3,8)
4 x 4 x 2 (100 x 100 x 50)	4.50 x 4.50 x 2.37 (114,3 x 114,3 x 60,3)	5.00 (127,0)	9.6 (4,4)
4 x 4 x 2-1/2 (100 x 100 x 65)	4.500 x 4.500 x 2.875 (114,3 x 114,3 x 73,0)	5.00 (127,0)	10.0 (4,5)
4 x 4 x 76,1mm (100 x 100 x 65)	4.500 x 4.500 x 3.00 (114,3 x 114,3 x 76,1)	5.00 (127,0)	10.5 (4,8)

NOTES
a. Figure 323 not available for the EMEA market.

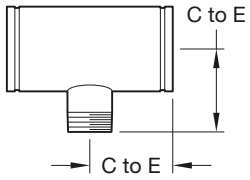
FIGURE 10 (1 OF 3)
FIGURE 323 FABRICATED GROOVE X GROOVE X MALE THREAD REDUCING TEES (SEGMENT WELDED) NOMINAL DIMENSIONS

Nominal Pipe Size		Nominal C to E Inches (mm)	Approx. Weight Lbs. (kg)
ANSI Inches (DN)	O.D. Inches (mm)		
4 x 4 x 3 (100 x 100 x 80)	4.50 x 4.50 x 3.50 (114,3 x 114,3 x 88,9)	5.00 (127,0)	10.3 (4,7)
5 x 5 x 2 (125 x 125 x 50)	5.56 x 5.56 x 2.37 (141,3 x 141,3 x 60,3)	5.50 (139,7)	14.0 (6,4)
5 x 5 x 2-1/2 (125 x 125 x 65)	5.56 x 5.56 x 2.87 (141,3 x 141,3 x 73,0)	5.50 (139,7)	14.3 (6,5)
5 x 5 x 76,1mm (125 x 125 x 65)	5.56 x 5.56 x 3.00 (141,3 x 141,3 x 76,1)	5.50 (139,7)	14.5 (6,6)
5 x 5 x 3 (125 x 125 x 80)	5.56 x 5.56 x 3.50 (141,3 x 141,3 x 88,9)	5.50 (139,7)	14.6 (6,6)
5 x 5 x 4 (125 x 125 x 100)	5.56 x 5.56 x 4.50 (141,3 x 141,3 x 114,3)	5.50 (139,7)	15.1 (6,8)
165,1mm x 165,1mm x 2 (150 x 150 x 50)	6.50 x 6.50 x 2.37 (165,1 x 165,1 x 60,3)	6.50 (165,1)	9.5 (4,3)
165,1mm x 165,1mm x 2-1/2 (150 x 150 x 65)	6.50 x 6.50 x 2.875 (165,1 x 165,1 x 73,0)	6.50 (165,1)	9.7 (4,4)
165,1mm x 165,1mm x 76,1mm (150 x 150 x 65)	6.50 x 6.50 x 3.00 (165,1 x 165,1 x 76,1)	6.50 (165,1)	9.7 (4,4)
165,1mm x 165,1mm x 3 (150 x 150 x 80)	6.50 x 6.50 x 3.50 (165,1 x 165,1 x 88,9)	6.50 (165,1)	9.8 (4,4)
165,1mm x 165,1mm x 4 (150 x 150 x 100)	6.50 x 6.50 x 4.50 (165,1 x 165,1 x 114,3)	6.50 (165,1)	10.0 (4,5)
165,1mm x 165,1mm x 5 (150 x 150 x 125)	6.50 x 6.50 x 5.563 (165,1 x 165,1 x 141,3)	6.50 (165,1)	10.2 (4,6)
6 x 6 x 1-1/2 (150 x 150 x 40)	6.625 x 6.625 x 1.90 (168,3 x 168,3 x 48,3)	6.50 (165,1)	19.0 (8,6)
6 x 6 x 2 (150 x 150 x 50)	6.625 x 6.625 x 2.375 (168,3 x 168,3 x 60,3)	6.50 (165,1)	21.3 (9,7)
6 x 6 x 2-1/2 (150 x 150 x 65)	6.625 x 6.625 x 2.875 (168,3 x 168,3 x 73,0)	6.50 (165,1)	21.7 (9,8)
6 x 6 x 76,1mm (150 x 150 x 65)	6.625 x 6.625 x 3.00 (168,3 x 168,3 x 76,1)	6.50 (165,1)	14.5 (6,6)
6 x 6 x 3 (150 x 150 x 80)	6.625 x 6.625 x 3.500 (168,3 x 168,3 x 88,9)	6.50 (165,1)	22.0 (10,0)
6 x 6 x 4 (150 x 150 x 100)	6.625 x 6.625 x 4.500 (168,3 x 168,3 x 114,3)	6.50 (165,1)	22.5 (10.2)
6 x 6 x 5 (150 x 150 x 125)	6.625 x 6.625 x 5.563 (168,3 x 168,3 x 141,3)	6.50 (165,1)	23.1 10,5
8 x 8 x 2 (200 x 200 x 50)	8.63 x 8.63 x 2.37 (219,1 x 219,1 x 60,3)	7.75 (196,9)	32.7 (14,8)
8 x 8 x 3 (200 x 200 x 80)	8.63 x 8.63 x 3.50 (219,1 x 219,1 x 88,9)	7.75 (196,9)	33.5 (15,2)
8 x 8 x 4 (200 x 200 x 100)	8.63 x 8.63 x 4.50 (219,1 x 219,1 x 114,1)	7.75 (196,9)	34.5 (15,6)
8 x 8 x 5 (200 x 200 x 125)	8.63 x 8.63 x 5.56 (219,1 x 219,1 x 141,3)	7.75 (196,9)	34.7 (15,7)



NOTES
a. Figure 323 not available for the EMEA market.

FIGURE 10 (2 OF 3)
FIGURE 323 FABRICATED GROOVE X GROOVE X MALE THREAD REDUCING TEES (SEGMENT WELDED) NOMINAL DIMENSIONS

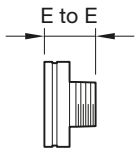


Nominal Pipe Size		Nominal C to E Inches (mm)	Approx. Weight Lbs. (kg)
ANSI Inches (DN)	O.D. Inches (mm)		
8 x 8 x 165,1mm (200 x 200 x 150)	8.63 x 8.63 x 6.50 (219,1 x 219,1 x 165,1)	7.75 (196,9)	35.0 (15,9)
8 x 8 x 6 (200 x 200 x 150)	8.63 x 8.63 x 6.63 (219,1 x 219,1 x 168,3)	7.75 (196,9)	35.6 (16,1)
10 x 10 x 2 (250 x 250 x 50)	10.75 x 10.75 x 2.37 (273,0 x 273,0 x 60,3)	9.00 (228,6)	52.2 (23,7)
10 x 10 x 3 (250 x 250 x 80)	10.75 x 10.75 x 3.50 (273,0 x 273,0 x 88,9)	9.00 (228,6)	53.0 (24,0)
10 x 10 x 4 (250 x 250 x 100)	10.75 x 10.75 x 4.50 (273,0 x 273,0 x 114,3)	9.00 (228,6)	53.6 (24,3)
10 x 10 x 5 (250 x 250 x 125)	10.75 x 10.75 x 5.56 (273,0 x 273,0 x 141,3)	9.00 (228,6)	54.2 (24,6)
10 x 10 x 165,1mm (250 x 250 x 150)	10.75 x 10.75 x 6.50 (273,0 x 273,0 x 165,1)	9.00 (228,6)	55.5 (25,2)
10 x 10 x 6 (250 x 250 x 150)	10.75 x 10.75 x 6.63 (273,0 x 273,0 x 168,3)	9.00 (228,6)	54.9 (24,9)
10 x 10 x 8 (250 x 250 x 200)	10.75 x 10.75 x 8.63 (273,0 x 273,0 x 219,1)	9.00 (228,6)	55.3 (25,1)
12 x 12 x 3 (300 x 300 x 80)	12.75 x 12.75 x 3.50 (323,9 x 323,9 x 88,9)	10.00 (254,0)	74.6 (33,8)
12 x 12 x 4 (300 x 300 x 100)	12.75 x 12.75 x 4.50 (323,9 x 323,9 x 141,3)	10.00 (254,0)	75.1 (34,1)
12 x 12 x 5 (300 x 300 x 125)	12.75 x 12.75 x 5.563 (323,9 x 323,9 x 114,3)	10.00 (254,0)	75.6 (34,3)
12 x 12 x 165,1mm (300 x 300 x 150)	12.75 x 12.75 x 6.50 (323,9 x 323,9 x 165,1)	10.00 (254,0)	76.2 (34,6)
12 x 12 x 6 (300 x 300 x 150)	12.75 x 12.75 x 6.625 (323,9 x 323,9 x 168,3)	10.00 (254,0)	76.2 (34,6)
12 x 12 x 8 (300 x 300 x 200)	12.750 x 12.750 x 8.625 (323,9 x 323,9 x 219,1)	10.00 (254,0)	76.3 (34,6)
12 x 12 x 10 (300 x 300 x 250)	12.750 x 12.750 x 10.750 (323,9 x 323,9 x 273,0)	10.00 (254,0)	77.6 (35,2)

NOTES
a. Figure 323 not available for the EMEA market.

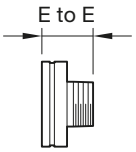
FIGURE 10 (3 OF 3)
FIGURE 323 FABRICATED GROOVE X GROOVE X MALE THREAD REDUCING TEES (SEGMENT WELDED)
NOMINAL DIMENSIONS

Nominal Pipe Size		E to E Inches (mm)	Approx. Weight Lbs. (kg)
ANSI Inches (DN)	Pipe O.D. Inches (mm)		
1-1/2 x 1 (40 x 25)	1.90 x 1.31 (48,3 x 33,7)	2.50 (63,5)	0.6 (0,3)
2 x 3/4 (50 x 20)	2.37 x 1.05 (60,3 x 26,7)	2.50 (63,5)	1.0 (0,5)
2 x 1 (50 x 25)	2.37 x 1.31 (60,3 x 33,4)	2.50 (63,5)	0.8 (0,4)
2 x 1-1/4 (50 x 32)	2.37 x 1.66 (60,3 x 42,4)	2.50 (63,5)	0.8 (0,4)
2 x 1-1/2 (50 x 40)	2.37 x 1.90 (60,3 x 48,3)	2.50 (63,5)	0.8 (0,4)
2-1/2 x 1 (65 x 25)	2.87 x 1.31 (73,0 x 33,4)	2.50 (63,5)	0.9 (0,4)
2-1/2 x 1-1/4 (65 x 32)	2.87 x 1.66 (73,0 x 42,4)	2.50 (63,5)	1.0 (0,5)
2-1/2 x 1-1/2 (65 x 40)	2.87 x 1.90 (73,0 x 48,3)	2.50 (63,5)	1.3 (0,6)
2-1/2 x 2 (65 x 50)	2.87 x 2.37 (73,0 x 60,3)	2.50 (63,5)	1.2 (0,5)
76,1mm x 1-1/4 (65 x 32)	3.00 x 1.66 (76,1 x 42,4)	2.50 (63,5)	1.0 (0,5)
76,1mm x 1-1/2 (65 x 40)	3.00 x 1.90 (76,1 x 48,3)	2.50 (63,5)	1.1 (0,5)
76,1mm x 2 (65 x 50)	3.00 x 2.37 (76,1 x 60,3)	2.50 (63,5)	1.2 (0,5)
3 x 3/4 (80 x 20)	3.50 x 1.05 (88,9 x 26,7)	2.50 (63,5)	1.1 (0,5)
3 x 1 (80 x 25)	3.50 x 1.31 (88,9 x 33,4)	2.50 (63,5)	1.3 (0,6)
3 x 1-1/4 (80 x 32)	3.50 x 1.66 (88,9 x 42,4)	2.5 (63,5)	1.3 (0,6)
3 x 1-1/2 (80 x 40)	3.50 x 1.90 (88,9 x 48,3)	2.50 (63.5)	1.3 (0,6)
3 x 2 (80 x 50)	3.50 x 2.37 (88,9 x 60,3)	2.50 (63.5)	1.3 (0,6)
3 x 2-1/2 (80 x 65)	3.50 x 2.87 (88,9 x 73,0)	2.50 (63.5)	1.5 (0,7)
3 x 76,1mm (80 x 65)	3.50 x 3.00 (88,9 x 76,1)	2.50 (63.5)	1.5 (0,7)
4 x 1 (100 x 25)	4.50 x 1.31 (114,3 x 33,4)	3.00 (76,2)	1.8 (0,8)
4 x 1-1/4 (100 x 32)	4.50 x 1.66 (114,3 x 42,4)	3.00 (76,2)	2.0 (0,9)
4 x 1-1/2 (100 x 40)	4.50 x 1.90 (114,3 x 48,3)	3.00 (76,2)	2.3 (1,0)
4 x 2 (100 x 50)	4.50 x 2.37 (114,3 x 60,3)	3.00 (76,2)	2.3 (1,0)
4 x 2-1/2 (100 x 65)	4.50 x 2.87 (114,3 x 73,0)	3.00 (76,2)	2.3 (1,0)



NOTES
a. Figure 372 not available for the EMEA market.

FIGURE 11 (1 OF 2)
FIGURE 372 FABRICATED CONCENTRIC REDUCER GROOVE X MALE THREAD (MPT)
NOMINAL DIMENSIONS

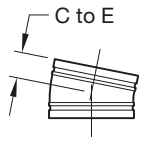


Nominal Pipe Size		E to E Inches (mm)	Approx. Weight Lbs. (kg)
ANSI Inches (DN)	Pipe O.D. Inches (mm)		
4 x 3 (100 x 80)	4.50 x 3.50 (114,3 x 88,9)	3.00 (76,2)	2.6 (1,2)
5 x 4 (125 x 100)	5.56 x 4.50 (141,3 x 114,3)	3.50 (88,9)	4.5 (2,0)
165,1mm x 1 (150 x 25)	6.50 x 1.31 (165,1 x 33,4)	4.00 (101,6)	1.2 (0,5)
165,1mm x 2 (150 x 50)	6.50 x 2.37 (165,1 x 60,3)	4.00 (101,6)	5.5 (2,5)
165,1mm x 76,1mm (150 x 65)	6.50 x 3.00 (165,1 x 76,1)	4.00 (101,6)	5.7 (2,6)
165,1mm x 3 (150 x 50)	6.50 x 3.50 (165,1 x 88,9)	4.00 (101,6)	5.8 (2,6)
165,1mm x 4 (150 x 50)	6.50 x 4.50 (165,1 x 114,3)	4.00 (101,6)	5.8 (2,6)
165,1mm x 5 (150 x 50)	6.50 x 5.563 (165,1 x 141,3)	4.00 (101,6)	5.8 (2,6)
6 x 1 (150 x 25)	6.63 x 1.31 (168,3 x 33,4)	4.00 (101,6)	5.2 (2,4)
6 x 2 (150 x 50)	6.63 x 2.37 (168,3 x 60,3)	4.00 (101,6)	5.4 (2,4)
6 x 2-1/2 (150 x 65)	6.63 x 2.87 (168,3 x 73,0)	4.00 (101,6)	5.6 (2,5)
6 x 76,1mm (150 x 65)	6.63 x 3.00 (168,3 x 76,1)	4.00 (101,6)	5.8 (2,6)
6 x 3 (150 x 80)	6.63 x 3.50 (168,3 x 88,9)	4.00 (101,6)	6.0 (2,7)
6 x 4 (150 x 100)	6.63 x 4.50 (168,3 x 114,3)	4.00 (101,6)	6.2 (2,8)
6 x 5 (150 x 125)	6.63 x 5.56 (168,3 x 141,3)	4.00 (101,6)	6.7 (3,0)

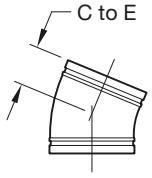
NOTES
a. Figure 372 not available for the EMEA market.

FIGURE 11 (2 OF 2)
FIGURE 372 FABRICATED CONCENTRIC REDUCER GROOVE X MALE THREAD (MPT)
NOMINAL DIMENSIONS

Nominal Pipe Size		Figures 211, 311, & 511		Figures 212, 312, & 512	
ANSI Inches (DN)	O.D. Inches (mm)	Nominal C to E Inches (mm)	Approx. Weight Lbs. (kg)	Nominal C to E Inches (mm)	Approx. Weight Lbs. (kg)
1-1/4 (32)	1.660 (42,4)	1.38 (35,1)	0.4 (0,2)	1.75 (44,5)	0.4 (0,2)
1-1/2 (40)	1.900 (48,3)	1.38 (35,1)	0.5 (0,2)	1.75 (44,5)	0.5 (0,2)
2 (50)	2.375 (60,3)	1.38 (35,1)	0.6 (0,3)	1.88 (47,8)	0.6 (0,3)
2-1/2[a] (65)[b]	2.875 (73,0)	1.50 (38,1)	1.1 (0,5)	2.00 (50,8)	0.7 (0.3)
76,1mm (65)	3.000 (76,1)	1.50 (38,1)	1.1 (0,5)	2.00 (50,8)	1.2 (0,5)
3 (80)	3.500 (88,9)	1.50 (38,1)	1.2 (0,5)	2.25 (57,2)	1.4 (0,6)
4 (100)	4.500 (114,3)	1.75 (44,5)	2.2 (1,0)	2.63 (66,8)	2.4 (1,1)
139,7mm (125)	5.500 (139,7)	2.00 (50,8)	2.3 (1,0)	2.88 (73,2)	2.5 (1,1)
5 (125)	5.563 (141,3)	2.00 (50,8)	3.3 (1,5)	2.88 (73,2)	4.1 (1,9)
165,1mm (150)	6.500 (165,1)	2.00 (50.8)	3.5 (1,6)	3.13 (79,5)	4.3 (2,0)
6 (150)	6.625 (168,3)	2.00 (50.8)	4.6 (2,1)	3.13 (79,5)	5.6 (2,5)
8 (200)	8.625 (219,1)	2.00 (50,8)	8.7 (3,9)	3.88 (98,6)	11.1 (5,0)
10 (250)	10.750 (273,0)	2.13 (54,1)	9.1 (4,1)	4.38 (111,3)	14.0 (6,4)
12 (300)	12.750 (323,9)	2.25 (57,2)	16.7 (7,6)	4.88 (124,0)	22.0 (10,0)



FIGURES 211, 311, & 511 FABRICATED 11¼° ELBOW (SEGMENT WELDED)



FIGURES 212, 312, & 512 FABRICATED 22½° ELBOW (SEGMENT WELDED)

NOTES
a. Nominal Pipe Size 2-1/2 in. no longer Figure 311.
b. Nominal Pipe Size 2-1/2 in. no longer Figure 312.

FIGURE 12
FIGURES 211, 311, AND 511 FABRICATED ELBOWS AND FIGURES 212, 312, AND 512 FABRICATED ELBOWS NOMINAL DIMENSIONS

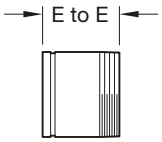


FIGURE 391[a] FABRICATED ADAPTER NIPPLE GROOVE X MALE THREAD (MA)

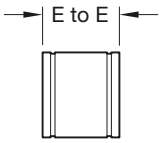


FIGURE 392[a] FABRICATED ADAPTER NIPPLE GROOVE X GROOVE

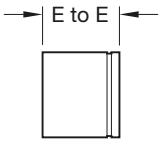


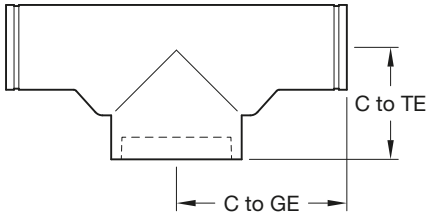
FIGURE 393[a] FABRICATED ADAPTER NIPPLE GROOVE X PLAIN

Nominal Pipe Size		Figures 391, 392 & 393[a]	
ANSI Inches (DN)	O.D. Inches (mm)	Nominal E to E Inches (mm)	Approx. Weight Lbs. (kg)
1-1/4 (32)	1.660 (42,4)	4.00 (101,6)	0.8 (0,4)
1-1/2 (40)	1.900 (48,3)	4.00 (101,6)	0.9 (0,4)
2[b] (50)	2.375 (60,3)	4.00 (101,6)	1.2 (0,5)
2-1/2[b] (65)	2.875 (73,0)	4.00 (101,6)	1.9 (0,9)
76,1mm (65)	3.000 (76,1)	4.00 (101,6)	1.9 (0,9)
3 (80)	3.500 (88,9)	4.00 (101,6)	2.5 (1,1)
4 (100)	4.500 (114,3)	6.00 (154,4)	5.5 (2,5)
139,7mm (125)	5.500 (139,7)	6.00 (154,4)	5.6 (2,5)
5 (125)	5.563 (141,3)	6.00 (154,4)	7.4 (3,4)
165,1mm (150)	6.500 (165,1)	6.00 (154,4)	7.6 (3,4)
6 (150)	6.625 (168,3)	6.00 (154,4)	9.5 (4,3)
8 (200)	8.625 (219,1)	6.00 (154,4)	14.2 (6,4)
10 (250)	10.750 (273,0)	8.00 (203,2)	27.0 (12,2)
12 (300)	12.750 (323,9)	8.00 (203,2)	33.0 (15,0)

NOTES
a. Figure 391, Figure 392, and Figure 393 are not available for the EMEA market.
b. Figure 391 2 in. x 4 in. (DN50 x DN100) and 2-1/2 in. x 4 in. (DN65 x DN100) are cast.

FIGURE 13
FIGURES 391, 392, AND 393 FABRICATED ADAPTER NIPPLES
NOMINAL DIMENSIONS

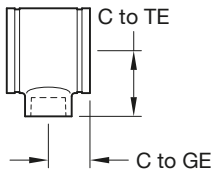
ANSI Inches (DN)	O.D. Inches (mm)	Nominal C to GE Inches (mm)	Nominal C to TE Inches (mm)	Approx. Weight Lbs. (kg
5 x 5 x 8 (125 X 125 X 200)	5.563 x 5.563 x 8.625 (141,3 x 141,3 x 219,1)	13.313 (388,14)	9.313 (236,55)	27.8 (12,6)
6 x 6 x 8 (150 X 150 X 200)	6.625 x 6.625 x 8.625 (168,3 x 168,3 x 219,1)	13.313 (388,14)	8.750 (222,25)	36.7 (16,4)



NOTES
a. Figure 507/50L not available for the EMEA market.

FIGURE 14
FIGURE 507/50L FABRICATED BULLHEAD TEE
NOMINAL DIMENSIONS

ANSI Inches (DN)	O.D. Inches (mm)	Nominal C to GE Inches (mm)	Nominal C to TE Inches (mm)	Approx. Weight Lbs. (kg)
4 x 4 x 2-1/2 (100 X 100 X 65)	5.563 x 5.563 x 8.625 (141,3 x 141,3 x 219,1)	13.313 (388,14)	9.313 (236,55)	8.7 (3,9)
6 x 6 x 2-1/2 (150 X 50 X 65)	6.625 x 6.625 x 8.625 (168,3 x 168,3 x 219,1)	13.313 (388,14)	8.750 (222,25)	13.7 (6,2)



NOTES
a. Figure 328 not available for the EMEA and APAC market.

FIGURE 15
FIGURE 328 FABRICATED STANDPIPE TEE
NOMINAL DIMENSIONS

Friction Resistance					
Nominal Pipe Size		Elbows 90° Feet (m)	Elbows 45° Feet (m)	Tee[1] Branch Feet (m)	Tee Run Feet (m)
ANSI Inches (DN)	O.D. Inches (mm)				
1 (25)	1.31 (33,4)	1.3 (0,4)	0.8 (0.3)	3.7 (1,1)	1.3 (0.6)
1-1/4 (32)	1.7 (42,4)	1.9 (0,6)	1.0 (0,3)	4.8 (1,5)	1.9 (0,6)
1-1/2 (40)	1.9 (48,3)	2.3 (0,7)	1.2 (0,4)	5.8 (1,8)	2.3 (0,7)
2 (50)	2.4 (60,3)	3.2 (1,0)	1.6 (0,5)	8.0 (2,5)	3.2 (1,0)
2-1/2 (65)	2.9 (73,0)	3.9 (1,2)	2.0 (0,6)	9.8 (3,0)	3.9 (1,2)
– (65)	3.0 (76,1)	4.1 (1,2)	2.1 (0,6)	10.3 (3,1)	4.1 (1,2)
3 (80)	3.5 (88,9)	4.9 (1,5)	2.4 (0,7)	12.2 (3,7)	4.9 (1,5)
4 (100)	4.5 (114,3)	6.5 (2,0)	3.3 (1,0)	16.3 (5,0)	6.5 (2,0)
– (125)	5.5 (139,7)	8.0 (2,4)	4.1 (1,3)	20.0 (6,1)	8.0 (2,4)
5 (125)	5.6 (141,3)	8.2 (2,5)	4.1 (1,3)	20.5 (6,3)	8.2 (2,5)
– (150)	6.5 (165,1)	9.5 (2,9)	4.8 (1,4)	23.8 (7,2)	9.5 (2,9)
6 (150)	6.6 (168,3)	9.9 (3,0)	5.0 (1,5)	24.8 (7,6)	9.9 (3,0)
8 (200)	8.6 (219,1)	13.1 (4,0)	6.6 (2,0)	32.8 (10,0)	13.1 (4,0)
10 (250)	10.8 (273,0)	16.5 (5,0)	8.3 (2,5)	41.3 (12,6)	16.5 (5,0)
12 (300)	12.8 (323,9)	19.9 (6,1)	9.9 (3,0)	49.7 (15,1)	19.9 (6,1)

NOTES

a. For the reducing tee branches, use the value that is corresponding to the branch size.
Example:
For 8 in. x 8 in. x 2 in. tee, the branch value of 2 in. is 8.0 feet.
For sizes not listed interpolate from the values shown.

TABLE A
FRICTION RESISTANCE FOR
FIGURES 501, 510, 510DE AND 519
(EXPRESSED AS EQUIVALENT STRAIGHT PIPE)

Friction Resistance					
Nominal Pipe Size		Elbows 90° Feet (m)	Elbows 45° Feet (m)	Tee* Branch Feet (m)	Tee Run Feet (m)
ANSI Inches (DN)	O.D. Inches (mm)				
2 (50)	2.4 (60,3)	3.5 (1,1)	1.6 (0,5)	8.0 (2,4)	3.2 (1,0)
2-1/2 (65)	2.9 (73,0)	4.3 (1,3)	2.0 (0,6)	9.8 (3,0)	3.9 (1,2)
– (65)	3.0 (76,1)	4.3 (1,3)	2.1 (0,6)	10.3 (3,1)	4.1 (1,2)
3 (80)	3.5 (88,9)	5.0 (1,5)	2.4 (0,7)	12.2 (3,7)	4.9 (1,5)
4 (100)	4.5 (114,3)	6.7 (2,0)	3.3 (1,0)	16.3 (5,0)	6.5 (2,0)
– (125)	5.5 (139,7)	8.3 (2,5)	4.1 (1,2)	20.0 (6,1)	8.0 (2,4)
5 (125)	5.6 (141,3)	8.5 (2,5)	4.3 (1,3)	21.5 (6,5)	8.6 (2,6)
– (150)	6.5 (165,1)	9.6 (2,9)	4.8 (1,5)	23.8 (7,3)	9.5 (2,9)
6 (150)	6.6 (168,3)	10.0 (3,0)	5.0 (1,5)	24.8 (7,6)	9.9 (3,0)
8 (200)	8.6 (219,1)	13.1 (4,0)	6.6 (2,0)	32.8 (10,0)	13.0 (4,0)

TABLE B
FRICTION RESISTANCE FOR FIGURES 510S AND 519S
(EXPRESSED AS EQUIVALENT LENGTH OF STRAIGHT SCHEDULE 40 STEEL PIPE)

Nominal Pipe Size		Figure 501 Cast 45° Elbow psi bar				Figure 510 Cast 90° Elbow psi bar				Figure 519 Cast Tee psi bar			
Ansi Inches (DN)	O.D. Inches mm	UL	FM	VdS	LPCB	UL	FM	VdS	LPCB	UL	FM	VdS	LPCB
1 (25)	1.31 (33,4)	—	—	—	—	—	—	—	—	—	—	—	—
1-1/4 (32)	1.66 (42,4)	—	—	—	—	365 (25,2)	365 (25,2)	232 (16,0)	290 (20,0)	—	365 (25,2)	232 (16,0)	290 (20,0)
1-1/2 (40)	1.90 (48,3)	—	—	—	—	365 (25,2)	365 (25,2)	232 (16,0)	290 (20,0)	—	365 (25,2)	232 (16,0)	290 (20,0)
2 (50)	2.37 (60,3)	365 (25,2)	365 (25,2)	232 (16,0)	290 (20,0)	365 (25,2)	365 (25,2)	232 (16,0)	290 (20,0)	365 (25,2)	365 (25,2)	232 (16,0)	290 (20,0)
2-1/2 (65)	2.87 (73,0)	365 (25,2)	365 (25,2)	—	—	365 (25,2)	365 (25,2)	—	—	365 (25,2)	365 (25,2)	—	—
76,1mm (65)	3.00 (76,1)	365 (25,2)	365 (25,2)	232 (16,0)	290 (20,0)	365 (25,2)	365 (25,2)	232 (16,0)	290 (20,0)	365 (25,2)	365 (25,2)	232 (16,0)	290 (20,0)
3 (80)	3.50 (88,9)	365 (25,2)	365 (25,2)	232 (16,0)	290 (20,0)	365 (25,2)	365 (25,2)	232 (16,0)	290 (20,0)	365 (25,2)	365 (25,2)	232 (16,0)	290 (20,0)
4 (100)	4.50 (114,3)	365 (25,2)	365 (25,2)	232 (16,0)	290 (20,0)	365 (25,2)	365 (25,2)	232 (16,0)	290 (20,0)	365 (25,2)	365 (25,2)	232 (16,0)	290 (20,0)
139,7mm (125)	5.50 (139,7)	365 (25,2)	365 (25,2)	232 (16,0)	—	365 (25,2)	365 (25,2)	232 (16,0)	—	365 (25,2)	365 (25,2)	232 (16,0)	—
5 (125)	5.56 (141,3)	—	365 (25,2)	—	—	—	365 (25,2)	—	—	—	365 (25,2)	—	—
165,1mm (150)	6.50 (165,1)	365 (25,2)	365 (25,2)	—	290 (20,0)	365 (25,2)	365 (25,2)	—	290 (20,0)	365 (25,2)	365 (25,2)	—	290 (20,0)
6 (150)	6.63 (168,3)	365 (25,2)	365 (25,2)	232 (16,0)	290 (20,0)	365 (25,2)	365 (25,2)	232 (16,0)	290 (20,0)	365 (25,2)	365 (25,2)	232 (16,0)	290 (20,0)
8 (200)	8.63 (219,1)	365 (25,2)	365 (25,2)	232 (16,0)	290 (20,0)	365 (25,2)	365 (25,2)	232 (16,0)	290 (20,0)	365 (25,2)	365 (25,2)	232 (16,0)	290 (20,0)
10 (250)[a]	10.75 (273,0)	450 (31,0)	—	232 (16,0)	290 (20,0)	450 (31,0)	—	232 (16,0)	290 (20,0)	450 (31,0)	—	232 (16,0)	290 (20,0)
12 (300)[a]	12.75 (323,9)	450 (31,0)	—	232 (16,0)	290 (20,0)	450 (31,0)	—	232 (16,0)	290 (20,0)	450 (31,0)	—	232 (16,0)	290 (20,0)

NOTES
a. Marked as Grinnell.

TABLE C
FIGURE 501 AND FIGURE 510 CAST ELBOWS, AND 519 CAST TEE
LISTED/APPROVED PRESSURE RATING

Nominal Pipe Size		Figure 260 Cast End Cap psi bar				Figure 510S Cast 90° Elbow psi bar				Figure 519S Cast Tee psi bar			
Ansi Inches (DN)	**O.D. Inches (mm)**	**UL**	**FM**	**VdS**	**LPCB**	**UL**	**FM**	**VdS**	**LPCB**	**UL**	**FM**	**VdS**	**LPCB**
1 (25)	1.31 (33,4)	500 (34,5)	—	—	—	—	—	—	—	—	—	—	—
1-1/4 (32)	1.66 (42,4)	500 (34,5)	500 (34,5)	—	—	—	—	—	—	—	—	—	—
1-1/2 (40)	1.90 (48,3)	500 (34,5)	500 (34,5)	—	—	—	—	—	—	—	—	—	—
2 (50)	2.37 (60,3)	500 (34,5)	500 (34,5)	—	—	365 (25,2)	365 (25,2)	232 (16,0)	290 (20,0)	365 (25,2)	365 (25,2)	232 (16,0)	290 (20,0)
2-1/2 (65)	2.87 (73,0)	500 (34,5)	500 (34,5)	—	—	365 (25,2)	365 (25,2)	—	—	365 (25,2)	365 (25,2)	—	—
76,1mm (65)	3.00 (76,1)	500 (34,5)	500 (34,5)	—	—	365 (25,2)	365 (25,2)	232 (16,0)	290 (20,0)	365 (25,2)	365 (25,2)	—	290 (20,0)
3 (80)	3.50 (88,9)	500 (34,5)	500 (34,5)	—	—	365 (25,2)	365 (25,2)	232 (16,0)	290 (20,0)	365 (25,2)	365 (25,2)	232 (16,0)	290 (20,0)
4 (100)	4.50 (114,3)	500 (34,5)	500 (34,5)	—	—	365 (25,2)	365 (25,2)	232 (16,0)	290 (20,0)	365 (25,2)	365 (25,2)	232 (16,0)	290 (20,0)
139,7mm (125)	5.50 (139,7)	500 (34,5)	500 (34,5)	—	—	365 (25,2)	365 (25,2)	232 (16,0)	—	365 (25,2)	365 (25,2)	232 (16,0)	—
5 (125)	5.56 (141,3)	500 (34,5)	500 (34,5)	—	—	—	365 (25,2)	—	—	—	365 (25,2)	—	—
165,1mm (150)	6.50 (165,1)	500 (34,5)	500 (34,5)	—	—	365 (25,2)	365 (25,2)	—	—	365 (25,2)	365 (25,2)	—	—
6 (150)	6.63 (168,3)	500 (34,5)	500 (34,5)	—	—	365 (25,2)	365 (25,2)	232 (16,0)	290 (20,0)	365 (25,2)	365 (25,2)	232 (16,0)	290 (20,0)
8 (200)	8.63 (219,1)	500 (34,5)	500 (34,5)	—	—	365 (25,2)	365 (25,2)	232 (16,0)	290 (20,0)	365 (25,2)	365 (25,2)	232 (16,0)	290 (20,0)
10 (250)	10.75 (273,0)	500 (34,5)	500 (34,5)	—	—	—	—	—	—	—	—	—	—
12 (300)	12.75 (323,9)	500 (34,5)	500 (34,5)	—	—	—	—	—	—	—	—	—	—

TABLE D
FIGURE 260 CAST END CAP, FIGURE 510S CAST ELBOW, AND FIGURE 519S CAST TEE LISTED/APPROVED PRESSURE RATING

Nominal Pipe Size	ADACAP psi bar			
Inches x NPT (DN)	UL	FM	VdS	LPCB
1-1/2 x 1/2 (40)	300 (20,7)	300 (20,7)	—	—
1-1/2 x 3/4 (40)	300 (20,7)	300 (20,7)	—	—
1-1/2 x 1 (40)	300 (20,7)	300 (20,7)	—	—
2 x 1/2 (50)	300 (20,7)	300 (20,7)	—	—
2 x 3/4 (50)	300 (20,7)	300 (20,7)	—	—
2 x 1 (50)	300 (20,7)	300 (20,7)	—	—
2-1/2 x 1/2 (65)	300 (20,7)	300 (20,7)	—	—
2-1/2 x 3/4 (65)	300 (20,7)	300 (20,7)	—	—
2-1/2 x 1 (65)	300 (20,7)	300 (20,7)	—	—

TABLE E
ADACAP
LISTED/APPROVED PRESSURE RATING

Care and Maintenance

The following inspection procedure must be performed as indicated, in addition to any specific requirements of the NFPA. Any impairments must be immediately corrected.

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

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 authority 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.

After placing a fire protection system in service, notify the proper authorities and advise those responsible for monitoring proprietary and/or central station alarms.

Limited Warranty

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

Ordering Procedure

GRINNELL Products are available globally through a network of distribution centers. For the nearest distributor, visit www.grinnell.com.

When placing an order, indicate the full product name. Specify the quantity, figure number, wall thickness, and size.

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

Johnson Controls

Anvil® Cast Iron & Malleable Iron Threaded Fittings

Manufactured in Columbia, PA USA, Anvil offers the most complete line of Cast Iron and Malleable Iron Threaded Fittings in the industry. Our versatile range of fittings is designed to provide connection options for different applications and environments.

Cast Iron (Gray Iron) Threaded Fittings are manufactured in accordance with ASME/ANSI B14.4 and are UL/ULC listed and FM approved.

Malleable Iron Fittings are manufactured in accordance with ASME/ANSI B16.3 and Unions ASME/ANSI B16.39 and are available in Class 150, Class 250, and Class 300 UL/ULC listed and FM approved. In both classes, all Elbows and Tees ⅜" and larger are 100% air tested at a minimum of 100 psi (6.9 bar).

Cast Iron Flanged Fittings are manufactured in accordance with ASME B16.1 and are available in both Class 125 and Class 250.

Anvil® Steel Pipe Nipples & Steel Pipe Couplings

Anvil offers a variety of Steel Pipe Nipples and Steel Pipe Couplings for the fire protection industry.

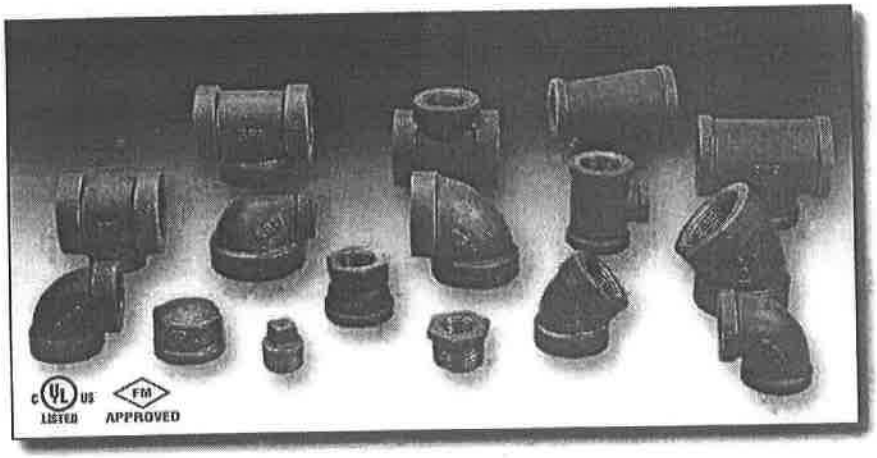
Anvil's Steel Pipe Nipples are manufactured in accordance with ASTM/ANSI A 733 welded and seamless carbon steel pipe nipples. Materials include black and hot-dipped galvanized finishes. Anvil manufactures a wide range of stock pipe nipples in ⅛" diameter through 8" diameter close through 72" inch length in half-inch increments. We also offer standard nipple packs ranging from one each (close to 6") and standard six packs which offer multiple counts of each. Cartons are packed with handles for easy carrying.

Steel Pipe Couplings are manufactured in accordance with ASTM specification A 865. Straight-tapped couplings range in size from ⅛" NPS through 2" NPS, while 2½" NPS and larger are taper tapped.

SPF™ Ductile Iron & Cast Iron Threaded Fittings

SPF Ductile Iron Threaded Fittings are UL/ULC Listed and FM Approved for 500 psi service. These fittings provide a dependable threaded connection and are available in a range of styles and specifications. All SPF Ductile Iron Threaded Fittings dimensions conform to ANSI B16.3 Class 150 requirements, and threads are NPT per ANSI/ASME B1.20.1.

SPF Cast Iron Threaded Fittings are UL/ULC Listed and FM Approved for 300 psi service. These fittings are available in a range of styles and specifications. All SPF Cast Iron Threaded Fittings dimensions conform to ANSI B16.4 requirements, and threads are NPT per ANSI/ASME B1.20.1.



REDUCING COUPLLING

SPF/ANVIL

AnvilStar™
Fire Products Division of Anvil® International

Ductile Iron

MATERIAL SPECIFICATIONS

Ductile iron threaded fittings are UL & ULC Listed & Factory Mutual Approved for 500 psi service.

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

Dimensions conform to ASME B16.3 Class 150.

Threads are NPT per ANSI/ASME B1.20.1.

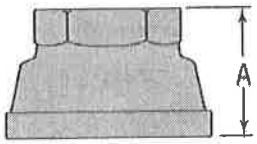
NOTICE: Ductile iron fittings have higher tensile strength than that of steel pipe. Therefore, over tightening can cause damage to pipe threads which may cause leakage. Ductile iron fittings should be tightened three turns beyond hand tight, but no more than four turns.

UL FM ULC
APPROVED

For Listing/Approval Details and Limitations visit our Web Site *www.anvilintl.com* or contact an Anvil®/AnvilStar™ Sales Representative.

REDUCING COUPLING

Nominal Size	Anvil Item Number	Universal Number	Max. Working Pressure *	Dimensions A	Approx. Wt. Each
In. (mm)			*PSI (kPa)*	*In. (mm)*	*Lbs. (kg)*
1 x ½ *25 x 15*	840010755	DRC031	500 *3450*	1.69 *42.92*	0.39 *0.18*
1 x ¾ *25 x 20*	840010763	DRC032	500 *3450*	1.69 *42.92*	0.53 *0.24*



* UL, ULC & FM Pressure Ratings

For additional listings and approvals, see the technical data section.

COUPLING

SPF/ANVIL

AnvilStar™
Fire Products Division of Anvil® International

Ductile Iron

MATERIAL SPECIFICATIONS

Ductile iron threaded fittings are UL & ULC Listed & Factory Mutual Approved for 500 psi service.

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

Dimensions conform to ASME B16.3 Class 150.

Threads are NPT per ANSI/ASME B1.20.1.

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

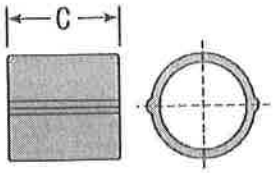
UL FM ULC
APPROVED

For Listing/Approval Details and Limitations visit our Web Site *www.anvilintl.com* or contact an Anvil®/AnvilStar™ Sales Representative.

COUPLING

Nominal Size	Anvil Item Number	Universal Number	Dimensions A	Approx. Wt. Each
In. (mm)			*In. (mm)*	*Lbs. (kg)*
1 *25*	840008692	DCL033	1.67 *42.42*	0.40 *0.18*
1¼ *32*	840008700	DCL044	1.93 *49.02*	0.57 *0.26*
1½ *40*	840008718	DCL055	2.15 *54.61*	0.75 *0.34*
2 *50*	840008726	DCL066	2.53 *64.26*	1.15 *0.52*

For additional listings and approvals, see the technical data section.



90° ELBOW

SPF/ANVIL

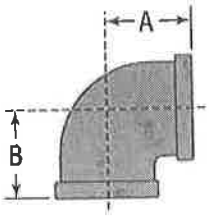
Ductile Iron

AnvilStar™
Fire Products Division of Anvil® International

Submittal Sheet

90° ELBOW

Nominal Size	Anvil Item Number	Universal Number	Max. Working Pressure	Dimensions- In.(mm)		Approx. Wt. Each
				A	B	
In. (mm)			PSI (kPa)	In. (mm)	In. (mm)	Lbs. (kg)
1 20	840000004	DB90033	500 3450	1.50 38.10	1.50 38.10	0.62 0.28
1¼ 32	840000012	DB90044	500 3450	1.75 44.45	1.75 44.45	0.90 0.41
1½ 40	840000020	DB90055	500 3450	1.94 49.276	1.94 49.276	1.20 0.54
2 50	840000038	DB90066	500 3450	2.25 57.15	2.25 57.15	1.85 0.84



MATERIAL SPECIFICATIONS

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

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

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

PROJECT INFORMATION:		APPROVAL STAMP:
Project:		
Date:	Phone:	
Architect / Engineer:		
Contractor:		
Address:		
Notes 1:		
Notes 2:		

For the latest UL/ULC Listed and FM Approved pressure ratings, versus pipe schedule, go to **www.anvilstar.com** or contact your local AnvilStar representative

ANVIL INTERNATIONAL, INC.

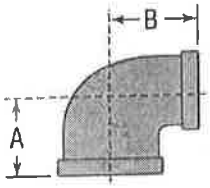
REDUCING 90° ELBOW

SPF/ANVIL

Ductile Iron

AnvilStar™
Fire Products Division of Anvil® International

Submittal Sheet



REDUCING 90° ELBOW

Nominal Size	Anvil Item Number	Universal Number	Max. Working Pressure	Dimensions		Approx. Wt. Each
				A	B	
In. (mm)			PSI (kPa)	In. (mm)	In. (mm)	Lbs. (kg)
1 x ½ 25 x 15	840001036	DB90031	500 3450	1.26 32.00	1.36 34.54	0.44 0.20
1 x ¾ 25 x 20	840001044	DB90032	500 3450	1.37 34.79	1.45 36.83	0.52 0.24
1¼ x ½ 32 x 15	840001051	DB90041	500 34550	1.34 34.03	1.53 38.86	0.64 0.29
1¼ x ¾ 32 x 20	840001069	DB90042	500 3450	1.45 36.83	1.62 41.14	0.72 0.33
1¼ x 1 32 x 25	840001077	DB90043	500 3450	1.58 40.13	1.67 42.41	0.75 0.34
1½ x 1 40 x 25	840001085	DB90053	500 3450	1.65 41.91	1.80 45.72	0.92 0.42
1½ x 1¼ 40 x 32	840001093	DB90054	500 3450	1.82 46.22	1.88 47.75	1.08 0.49
2 x ½ 50 x 15	840001101	DB90061	500 3450	1.49 37.84	1.88 47.75	1.08 0.49
2 x ¾ 50 x 20	840001119	DB90062	500 3450	1.60 40.64	1.97 50.03	1.24 0.56
2 x 1 50 x 25	840001127	DB90063	500 3450	1.73 43.94	2.02 51.30	1.40 0.64
2 x 1¼ 50 x 32	840001135	DB90064	500 3450	1.90 48.26	2.10 53.34	1.52 0.70
2 x 1½ 50 x 40	840001143	DB90065	500 3450	2.02 51.30	2.16 54.86	1.65 0.75

MATERIAL SPECIFICATIONS

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

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

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

PROJECT INFORMATION:		APPROVAL STAMP:
Project:		
Date:	**Phone:**	
Architect / Engineer:		
Contractor:		
Address:		
Notes 1:		
Notes 2:		

For the latest UL/ULC Listed and FM Approved pressure ratings, versus pipe schedule, go to **www.anvilstar.com** or contact your local AnvilStar representative

ANVIL

45° ELBOW

SPF/ANVIL

Ductile Iron

AnvilStar™
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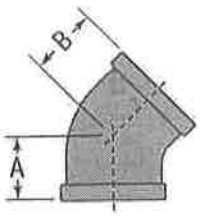
Submittal Sheet

45° ELBOW

Nominal Size	Anvil Item Number	Universal Number	Max. Working Pressure	Dimensions-		Approx. Wt. Each
				A	B	
In. (mm)			*PSI (kPa)*	*In. (mm)*	*In. (mm)*	*Lbs. (kg)*
1 *25*	840002133	DB45033	500 *3450*	1.12 *28.44*	1.12 *28.44*	0.46 *0.21*
1¼ *32*	840002141	DB45044	500 *3450*	1.29 *32.76*	1.29 *32.76*	0.73 *0.33*
1½ *40*	840002158	DB45055	500 *3450*	1.43 *36.32*	1.43 *36.32*	0.92 *0.42*
2 *50*	840002166	DB45066	500 *3450*	1.68 *42.67*	1.68 *42.67*	1.50 *0.68*



MATERIAL SPECIFICATIONS

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

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

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

PROJECT INFORMATION:		APPROVAL STAMP:
Project:		
Date:	**Phone:**	
Architect / Engineer:		
Contractor:		
Address:		
Notes 1:		
Notes 2:		

For the latest UL/ULC Listed and FM Approved pressure ratings, versus pipe schedule, go to **www.anvilstar.com** or contact your local AnvilStar representative

ANVIL INTERNATIONAL, INC.

CAP

SPF/ANVIL

Ductile Iron

AnvilStar™
Fire Products Division of Anvil® International

Submittal Sheet

CAPS

Nominal Size	Anvil Item Number	Universal Number	Max. Working Pressure	Dimensions A	Approx. Wt. Each
In. (mm)			PSI (kPa)	In. (mm)	Lbs. (kg)
1 25	840005615	DCP003	500 3450	1.16 29.46	0.32 0.15
1¼ 32	840005623	DCP004	500 3450	1.28 32.51	0.43 0.20
1½ 40	840005631	DCP005	500 3450	1.33 33.78	0.60 0.27
2 50	840005649	DCP006	500 3450	1.45 36.83	0.91 0.41

MATERIAL SPECIFICATIONS

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Threads are NPT per ANSI/ASME B1.20.1.

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ANVIL INTERNATIONAL, INC.

STRAIGHT TEE

AnvilStar™
Fire Products Division of Anvil® International

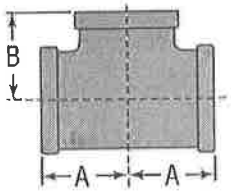
SPF/ANVIL

Ductile Iron

Submittal Sheet

STRAIGHT TEE

Nominal Size	Anvil Item Number	Universal Number	Max. Working Pressure	Dimensions		Approx. Wt. Each
				A	B	
In. (mm)			PSI (kPa)	In. (mm)	In. (mm)	Lbs. (kg)
1 25	840003164	DT333	500 3450	1.50 38.10	1.50 38.10	0.85 0.39
1¼ 32	840003172	DT444	500 3450	1.75 44.45	1.75 44.45	1.22 0.55
1½ 40	840003180	DT555	500 3450	1.94 49.27	1.94 49.27	1.55 0.70
2 50	840003198	DT666	500 3450	2.25 57.15	2.25 57.15	2.45 1.11



MATERIAL SPECIFICATIONS

Ductile iron threaded fittings are UL & ULC Listed & Factory Mutual Approved for 500 psi service. Ductile iron per ASTM A536 Class 65-45-12.

Dimensions conform to ASME B16.3 Class 150. Threads are NPT per ANSI/ASME B1.20.1.

UL FM ULC
APPROVED
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Architect / Engineer:		
Contractor:		
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Notes 2:		

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ANVIL INTERNATIONAL, INC.

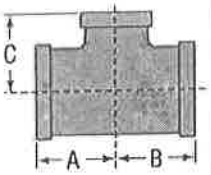
REDUCING TEE

AnvilStar™
Fire Products Division of Anvil® International

SPF/ANVIL

Ductile Iron

Submittal Sheet



REDUCING TEE

Nominal Size	Anvil Item Number	Universal Number	Max. Working Pressure	Dimensions			Approx. Wt. Each
				A	B	C	
In. (mm)			PSI (kPa)	In. (mm)	In. (mm)	In. (mm)	Lbs.(kg)
1 x ½ x 1 25 x 15 x 25	840004196	DT313	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	840004204	DT323	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	840004212	DT331	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	840004220	DT332	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	840004238	DT334	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	840004246	DT335	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	840004253	DT431	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	840004261	DT432	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	840004279	DT433	500 3450	1.58 40.13	1.50 38.10	1.67 42.42	1.00 0.45
1¼ x 1 x 1¼ 32 x 25 x 32	840004287	DT434	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	840004295	DT435	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	840004303	DT441	500 3450	1.34 34.04	1.34 34.04	1.53 38.86	0.86 0.39
1¼ x 1¼ x ¾ 32 x 32 x 20	840004311	DT442	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	840004329	DT443	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	840004337	DT445	500 3450	1.88 47.75	1.88 47.75	1.82 46.22	1.45 0.66
1¼ x 1¼ x 2 32 x 32 x 50	840004345	DT446	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	840004352	DT531	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	840004360	DT532	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	840004378	DT533	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	840004386	DT534	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	840004394	DT535	500 3450	1.94 49.28	1.80 45.72	1.94 49.28	1.45 0.66
1½ x 1¼ x ½ 40 x 32 x 15	840004402	DT541	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	840004410	DT542	500 3450	1.52 38.61	1.45 36.83	1.75 44.45	1.15 0.52

REDUCING TEE

Nominal Size	Anvil Item Number	Universal Number	Max. Working Pressure	Dimensions			Approx. Wt. Each
				A	B	C	
In. (mm)			PSI (kPa)	In. (mm)	In. (mm)	In. (mm)	Lbs.(kg)
1½ x 1¼ x 1 40 x 32 x 25	840004428	DT543	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	840004436	DT546	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	840004444	DT551	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	840004451	DT552	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	840004469	DT553	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	840004477	DT554	500 3450	1.82 46.23	1.82 46.23	1.88 47.75	1.48 0.67
1½ x 1½ x 2 40 x 40 x 50	840004485	DT556	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	840004493	DT636	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	840004501	DT646	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	840004519	DT651	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	840004527	DT652	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	840004535	DT653	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	840004543	DT654	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	840004550	DT655	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	840004568	DT656	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	840004576	DT661	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	840004584	DT662	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	840004592	DT663	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	840004600	DT664	500 3450	1.90 48.26	1.90 48.26	2.10 53.34	2.04 0.93
2 x 2 x 1½ 50 x 50 x 40	840004618	DT665	500 3450	2.02 51.31	2.02 51.31	2.16 54.86	2.18 0.99
2 x 2 x 2½ 50 x 50 x 65	-	DT667	500 3450	2.60 66.04	2.60 66.04	2.39 60.71	3.61 1.64
2½ x 2 x ¾ 65 x 50 x 20	-	DT762	500 3450	1.74 44.20	1.60 40.64	2.32 58.93	2.28 1.03

MATERIAL SPECIFICATIONS

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Threads are NPT per ANSI/ASME B1.20.1.

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Project:		
Date:	Phone:	
Architect / Engineer:		
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ANVIL INTERNATIONAL

BUSHINGS

SPF/ANVIL

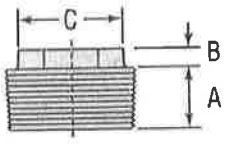
Ductile Iron

AnvilStar™
Fire Products Division of Anvil® International

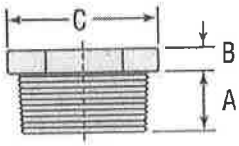
Submittal Sheet

BUSHINGS

Nominal Size	Anvil Item Number	Universal Number	Dimensions			Style	Approx. Wt. Each
			A	B	C		
In. (mm)			In. (mm)	In. (mm)	In. (mm)		Lbs. (kg)
1 x ½ 25 x 15	840600001	DBUSH31	0.75 19.05	0.25 6.35	1.42 36.06	Outside	0.22 0.10
1 x ¾ 25 x 20	840600019	DBUSH32	0.75 19.05	0.25 6.35	1.42 36.06	Outside	0.17 0.08
1¼ x 1 32 x 25	840600027	DBUSH43	0.80 20.32	0.28 7.11	1.76 44.70	Outside	0.28 0.13
1½ x 1 40 x 25	840600035	DBUSH53	0.83 21.08	0.31 7.874	2.00 50.80	Outside	0.45 0.20
1½ x 1¼ 40 x 32	840600043	DBUSH54	0.83 21.08	0.31 7.874	2.00 50.80	Outside	0.30 0.14
2 x 1 50 x 25	840600050	DBUSH63	0.88 22.35	0.41 10.414	1.95 49.53	Inside	0.67 0.30
2 x 1¼ 50 x 32	840600068	DBUSH64	0.88 22.35	0.34 8.636	2.48 62.99	Outside	0.73 0.33
2 x 1½ 50 x 40	840600076	DBUSH65	0.88 22.35	0.34 8.636	2.48 62.99	Outside	0.61 0.28



Inside Head



Outside Head

MATERIAL SPECIFICATIONS

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ANVIL INTERNATIONAL, INC.

CROSS

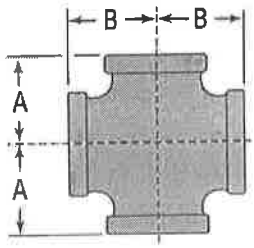
SPF/ANVIL

Ductile Iron

AnvilStar™
Fire Products Division of Anvil® International

Submittal Sheet

CROSS						
Nominal Size	Anvil Item Number	Universal Number	Max. Working Pressure	Dimensions		Approx. Wt. Each
				A	B	
In. (mm)	In. (mm)	PSI (kPa)	PSI (kPa)	In. (mm)	In. (mm)	Lbs. (kg)
1 25	840006647	DX033	500 3450	1.50 38.10	1.50 38.10	0.98 0.44
1¼ 32	840006654	DX044	500 3450	1.75 44.45	1.75 44.45	1.50 0.68
1½ 40	840006662	DX055	500 3450	1.94 49.27	1.94 49.27	1.90 0.86
2 50	840006670	DX066	500 3450	2.25 57.15	2.25 57.15	2.95 1.34
1¼ x 1 32 x 25	840007678	DX043	500 3450	1.58 40.13	1.67 42.41	1.27 0.58
1½ x 1 40 x 25	840007686	DX053	500 3450	1.65 41.91	1.80 45.72	1.48 0.67
2 x 1 50 x 25	840007694	DX063	500 3450	1.73 43.94	2.02 51.30	2.10 0.95



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ANVIL INTERNATIONAL, INC.

EDDY FLOW

Always ready to protect your most valuable assets.

As the leading supplier of steel sprinkler pipe, we understand that there are no second chances in fire suppression. You need products of enduring quality and exceptional strength–plus reliable service. You need Bull Moose.

Bull Moose Fire Sprinkler Pipe Product Information

	Nominal Pipe Size (Inches)	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	6"	8"
EDDY FLOW	O.D. (in)		1.660	1.900	2.375	2.875	3.500	4.500		
	I.D. (in)		1.530	1.728	2.203	2.705	3.334	4.310		
	Empty Weight (lb/ft)		1.222	1.844	2.330	2.809	3.361	4.968		
	Water Filled Weight (lb/ft)		2.019	2.860	3.982	5.299	7.144	11.290		
	C.R.R.		1.98	3.44	2.78	1.66	1.00	1.00		
	Pieces per Lift		61	61	37	30	19	19		
	Lift Weight (lbs) 21' lengths		1,565	2,362	1,810	1,770	1,341	1,982		
	Lift Weight (lbs) 24' lengths		1,789	2,700	2,069	2,022	1,533	2,265		
	Lift Weight (lbs) 25' lengths		1,864	2,812	2,155	2,107	1,596	2,360		

EDDY FLOW ADVANTAGES:

- UL listed (US & Canada) and FM approved
- ASTM A135 and A795 Type E, Grade A Certified
- Complies with NFPA-13, 13R and 14
- Industry-leading hydraulic characteristics
- CRR of 1.0 and greater
- All pipe NDT weld tested

OTHER BENEFITS/SERVICES:

- We have the most stocking locations in the industry, for best delivery and availability
- Plain end or roll groove
- Eddy Guard II™ bacterial-resistant internal coating
- Custom length options
- Hot dipped galvanization
- Reddi-Pipe® red or black pipe eliminates field painting
- Compatible for use in wet, dry, preaction and deluge sprinkler systems
- The only maker with EPDs (to help earn LEED points).

Exclusive maker of Reddi-Pipe®
RED OR BLACK PAINTED PIPE.

CERTIFIED ENVIRONMENTAL PRODUCT DECLARATION UL.COM/EPD

cULus LISTED

FM APPROVED

NFPA

AFSA American Fire Sprinkler Association

NFSA The Voice of the Fire Sprinkler Industry

BULL MOOSE® TUBE

800.325.4467
sales@BullMooseIndustries.com
BullMooseTube.com

State Pipe & Supply, Inc.

THIS INFORMATION PROVIDED IS BASED ON ASTM GUIDELINES FOR WELDED PIPE SPECIFICATIONS AND ASTM REQUIREMENTS. ACTUAL PIPE AND MATERIAL TEST REPORTS PROVIDED WOULD MEET OR EXCEED THESE GUIDELINES.

TEST REPORTS WOULD PROVIDE SPECIFIC AND ACTUAL DETAILS CONCERNING THE MECHANICAL AND CHEMICAL PROPERTIES OF THE ACTUAL PIPE, AS WELL AS ADDITIONAL TESTS RESULTS REQUIRED BY ASTM.

SCHEDULE 40 Black and Galvanized Steel ERW Pipe

Pipe Size Nominal	O.D.	I.D.	Weight / Foot	CRR Values Threaded	Test Pressure psi
1"	1.315	1.049	1.680	1.0	700
1-1/4"	1.660	1.380	2.270	1.0	1200
1-1/2"	1.900	1.610	2.720	1.0	1200
2"	2.375	2.067	3.660	1.0	2300
2-1/2"	2.875	2.469	5.800	1.0	2500
3"	3.500	3.068	7.580	1.0	2220
4"	4.500	4.026	10.800	1.0	1900
5"	5.563	5.047	14.630	1.0	1670
6"	6.625	6.065	18.990	1.0	1520
8"	8.625	7.981	28.580	1.0	1340

COMPOSITION AND PROPERTIES

Chemical and mechanical properties requirements are as prescribed by applicable ASTM standards edition January 2006.

Chemical Requirements, Percent (Product)

		C	Mn	P	S	Other
Specification	Grade	max	max	max	max	
ASTM A53	A	0.250	0.950	0.05	0.045	-

1 Residual elements max: Cu-0.40, Ni-0.40, Cr-0.40, Mo-0.15 and V-.08. These live elements combined shall not exceed 1%.

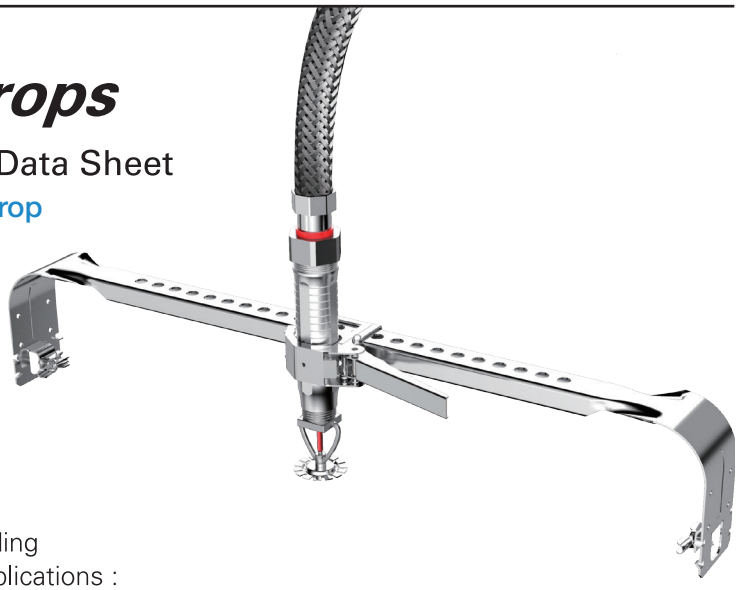
Mechanical Properties-Tensile Requirements

		Strength-psi.			
		Yield		Tensile	
Specification	Grade	Min	Max	Min	Max
ASTM A53	A	30,000	-	48,000	-

NOTE: Elongation requirements vary with nominal area of test specimen and specified minimum tensile strength of the steel grade.

Flexible Sprinkler Drops

Braided Flexible Sprinkler Connection Data Sheet **(Ultra Performance)** 1-1/4" Braided Flex Drop



EASYFLEX Flexible Sprinkler Drops are designed to significantly reduce labor and installation costs. By eliminating the need for pipe cutting and midline connections, you save valuable time and money.

Easyflex flexible sprinkler connections offer braided and unbraided flexible hoses in 2',3',4',5' and 6' with top loading or front loading brackets for variety of ceiling and wall applications : T-Bars, metal studs, hat channels, wood beams, concrete sidewalls and more. The system is qualified to be installed at commercial, hotel, retail, restaurants, cultural, entertainment, educational, government, healthcare and religious buildings.

EASYFLEX Flexible Sprinkler Drops Appliance Standards

National Fire Protection Association (NFPA) :

- NFPA 13: Standard for the Installation of Sprinkler Systems
- NFPA 13D: Standard for the Installation of Sprinkler Systems in One and Two-Family Dwellings and Manufactured Homes
- NFPA 13R: Standard for Installation of Sprinkler Systems in residential Occupancies up to and including four stories in height
- NFPA 13 Section 9.2.1.3.3.3: No hangers are required for flexible connections as long as the length does not exceed 6ft.

American Society for Testing and Methods (ASTM) :

- ASTM C635: Standard specifications for the manufacture, performance, and testing of metal suspension systems for acoustical tile and lay-in panel ceilings
- ASTM C636: Standard practice for installation of metal ceiling suspension systems for acoustical tile and lay-in panels

Factory Mutual (FM), FM Class No, 1637 :

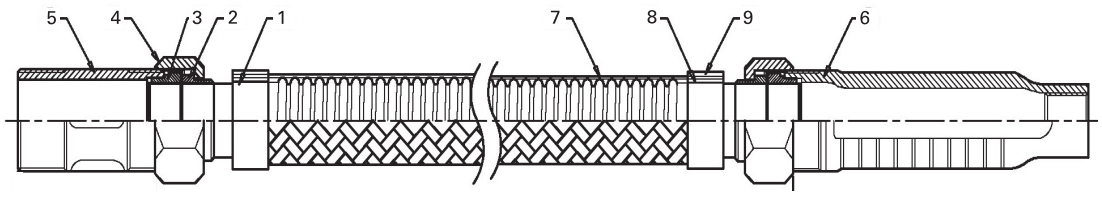
- Approved standard for flexible sprinkler hose with threaded end fittings

International Building Code (IBC) Section 1621 / American Society of Civil Engineers (ASCE) 7 9.6.2.6.2 & 9.6.2.6.2.2 :

- Flexible Sprinkler Connections are the alternative Solution to install without Seismic Escutcheons(Oops Ring)

Job Name :	**Engineer / Architect :**
Job Location :	**Wholesaler :**
Submittal Date :	**Contractor :**

BRAIDED FLEXIBLE HOSE (Ultra Perfomance) 1-1/4" Braided Flex Drop



1. TUBE
2. ISOLATION RING
3. SEALING GASKET
4. NUT
5. NIPPLE (1")
6. REDUCER
7. BRAID
8. PRESS RING (INNER)
9. PRESS RING (OUTER)

SPECIFICATIONS

Lengths Available	24", 36", 48", 60" and 72"
Outlet	1/2" or 3/4"
Hose Type	Braided

Hose	Stainless Steel 304
Nut & Nipple	Zinc-Plated Steel
Sealing Gasket / Isolation Ring	EPDM/ NYLON

Max. Ambient Temperature Rating	225˚F
Max. Working Pressure Rating	225 psig

* No hangers and seismic escutcheons required
* Required torque to assemble reducer and nipple with the flexible hose : 50 ft-lb

Minimum Bend Radius	6.5" (FM) * DO NOT bend within 2.52 inches from connection nuts	
Connection	Inlet	1"NPT
	Outlet	1/2" or 3/4"NPT

FRICTION LOSS DATA EFB UP Series Braided Hose OGSB, TBS Bracket Systems.

FM APPROVED

Length (in.)	Outlet Connection	K-Factor	Max. Number of 90˚ Bends	Equivalent Length of 1 in. Schedule 40 Pipe, ft.
24"	1/2"	5.6 / 8.0	1	2.1 / 3.6
	3/4"	8.0 / 14.0	1	3.6 / 3.8
36"	1/2"	5.6 / 8.0	2	4.5 / 5.1
	3/4"	8.0 / 14.0	2	6 / 6
48"	1/2"	5.6 / 8.0	3	6.9 / 6.6
	3/4"	8.0 / 14.0	3	8.4 / 8.3
60"	1/2"	5.6 / 8.0	4	9.4 / 8.1
	3/4"	8.0 / 14.0	4	10.9 / 10.6
72"	1/2"	5.6 / 8.0	4	11.9 / 9.7
	3/4"	8.0 / 14.0	4	13.4 / 12.9

* FM : 6.5" minimum bend radius, where C=120

PS10 SERIES
PRESSURE SWITCH

Patent Pending

(UL, cUL, and CSFM Listed, FM and LPC Approved, NYMEA Accepted, CE Marked Pending)

Dimensions: 3.78" (9,6cm)W x 3.20" (8,1cm)D x 4.22" (10,7cm)H

Conduit Entrance: Two knockouts provided for 1/2" conduit. Individual switch compartments and ground screws suitable for dissimilar voltages.

Enclosure: Cover - Die-cast with textured red powdercoat finish, single cover screw and rain lip.

Base - Die-cast

Pressure Connection: Nylon 1/2" NPT Male

Factory Adjustment: 4 - 8 PSI (0,27 - 0,55 BAR)
Differential: 2 PSI (0,13 BAR) typical

Maximum System Pressure: 300 PSI (20,68 BAR)

Switch Contacts: SPDT (Form C)
10.1 Amps at 125/250VAC, 2.0 Amps at 30VDC
One SPDT in PS10-1, Two SPDT in PS10-2

Environmental Specifications:
NEMA 4/IP55 Rated Enclosure - indoor or outdoor when used with NEMA 4 conduit fittings.
Temperature range: -40°F to 140°F (-40°C to 60°C)

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

Ordering Information

Model	Description	Stock No.
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.

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.
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.

Testing
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).

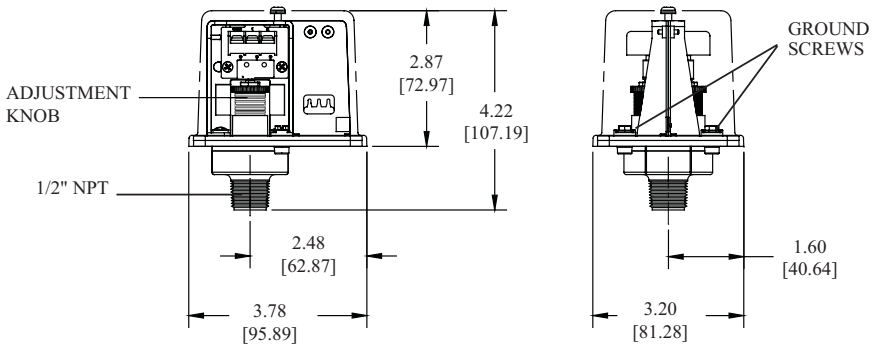
Wet System
Method 1: When using PS10 and control unit with retard - connect PS10 into alarm port piping on the input side of retard chamber and electrically connect PS10 to control unit that provides a retard to compensate for surges. Insure that no unsupervised shut-off valves are present between the 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

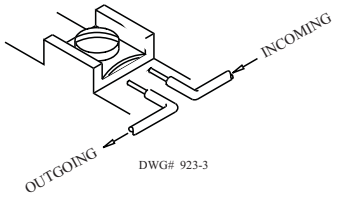


NOTE: To prevent leakage, apply Teflon tape sealant to male threads only.

DWG# 930-1

Switch Clamping Plate Terminal

Fig. 2

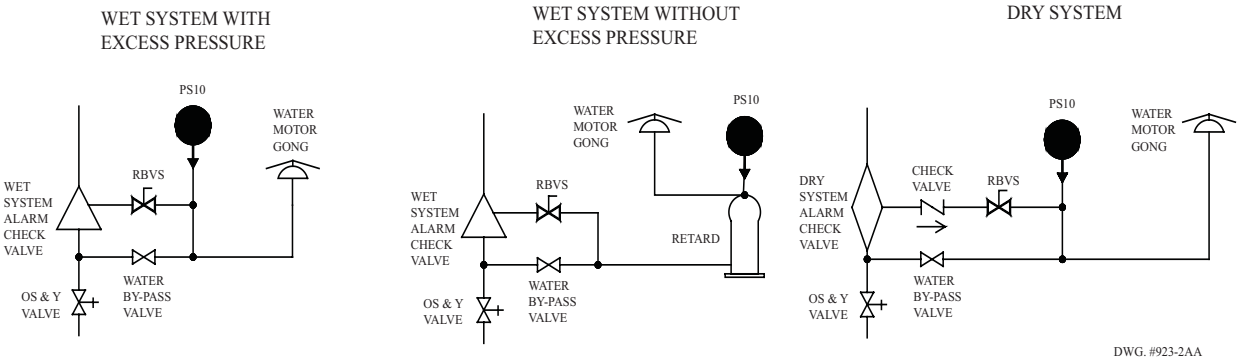


⚠ WARNING

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

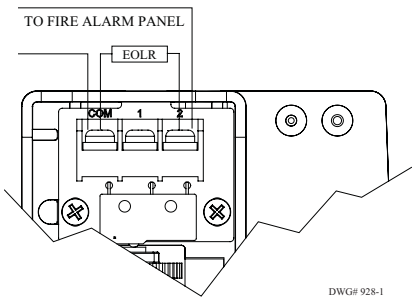


⚠ CAUTION

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.

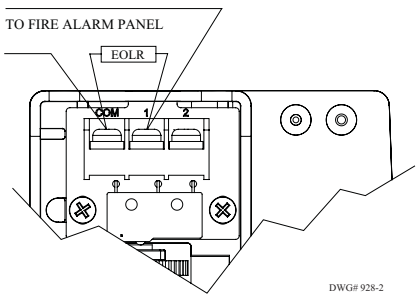
Low Pressure Signal Connection

Fig. 4



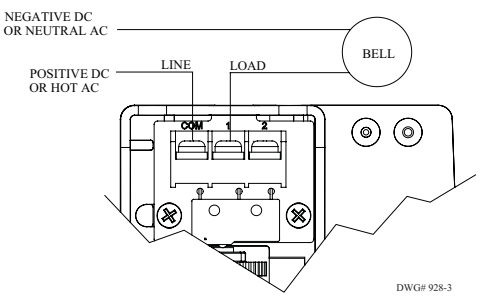
Waterflow Signal Connection

Fig. 5



Local Bell For Waterflow Connection

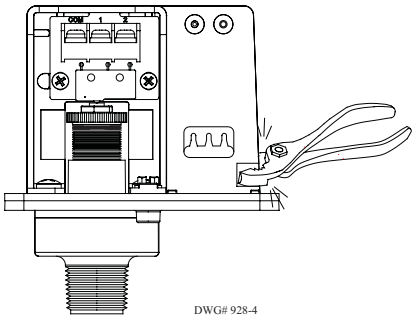
Fig. 6



One Conduit Wiring

Fig. 7

Break out thin section of divider to provide path for wires when wiring both switches from one conduit entrance.



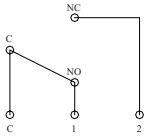
DWG# 928-4

Switch Operation

Fig. 8

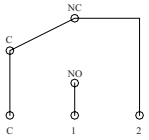
Terminal
C: Common
1: Closed when installed under normal system pressure.
2: Open when installed under normal system pressure. Closes on pressure drop. Use for low pressure supervision.

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.

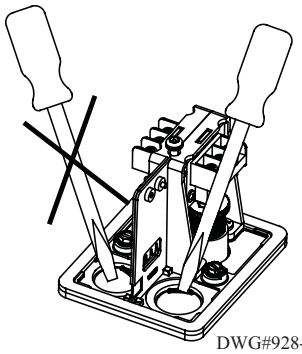
W/O PRESSURE APPLIED



DWG#928-6

Removing Knockouts

Fig. 9



DWG#928-5

⚠ 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.

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 Zinc die-cast 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/IP55 rating.

The pressure type waterflow switch shall be UL Ulc and CSFM listed, FM and LPC approved and NYMEA accepted.

PS40 SERIES
PRESSURE SWITCH

(UL, cUL, and CSFM Listed, FM and LPC Approved, NYMEA Accepted, CE Marked Pending)

Dimensions: 3.78" (9,6cm)W x 3.20" (8,1cm)D x 4.22" (10,7cm)H

Conduit Entrance: Two knockouts provided for 1/2" conduit. Individual switch compartments and ground screw suitable for dissimilar voltages

Enclosure: Cover- Die-cast with textured red powdercoat finish, single cover screw and rain lip.
Base- Die-cast

Pressure Connection: Nylon 1/2" NPT male

Factory Adjustment: PS40-1 operates on decrease at 30 PSI (2,1 BAR)
PS40-2 operates in increase at 50 PSI (3,5 BAR) and on decrease at 30 PSI (2,1 BAR)

Pressure Range: 10-60 PSI (,7 - 4,1 BAR)

Differential: Typical 1 lb. at 10 PSI (,07 at ,7 BAR)
4 lbs at 60 PSI (,28 at 4,1 BAR)

Maximum System Pressure: 300 PSI (20,68 BAR)

Switch Contacts: SPDT (Form C)
10.1 Amps at 125/250VAC, 2.0 Amps at 30VDC
One SPDT in PS40-1, Two SPDT in PS40-2

Environmental Specifications:
NEMA 4/IP55 Rated Enclosure - indoor or outdoor when used with NEMA 4 conduit fittings.
Temperature range: -40°F to 140°F (-40°C to 60°C)

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.

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

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
	Cover Tamper Switch Kit	0090200
BVL	Bleeder valve	1000018

Installation

The Potter PS40 Series 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: Dry pipe system, pre-action air/nitrogen supervision, pressure tanks, air supplies, and water supplies. The PS40 switch is factory set for 40 PSI (2,8 BAR) normal system pressure. The switch marked with the word LOW is set to operate at a pressure decrease of 10 PSI (,7 BAR) at 30 PSI (2,1 BAR). The switch marked with the word HIGH is set to operate at a pressure increase of 10 PSI (,7 BAR) at 50 PSI (3,5 BAR). 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.

Wiring Instructions

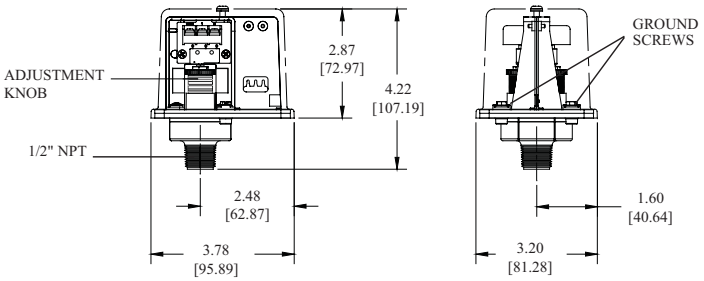
1. Remove the tamper resistant screw with the special key provided.
2. Carefully place a screwdriver on the edge of the knockout and sharply apply a force sufficient to dislodge the knockout plug. See Fig. 9
3. Run wires through an approved conduit connector and affix the connector to the device. A NEMA-4 rated conduit fitting is required for outdoor use.
4. Connect the wires to the appropriate terminal connections for the service intended. See Figures 2,4,5,6, and 8

Adjustment And Testing

The operation of the pressure supervisory 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).
Note: Testing the PS40 may activate other system connected devices.
The use of a Potter BVL (see product bulletin 8900067 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 effecting 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 acrosss the switch adjustment range. Initial adjustment can be made with a visual reference from the top of the adjustment knob across to the printed scale on the switch bracket. Final adjustments should be verified with a pressure gauge.

Dimensions

Fig. 1

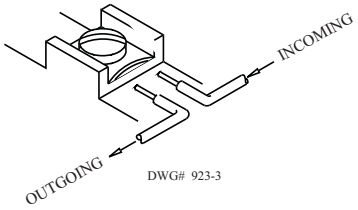


NOTE: To prevent leakage, apply Teflon tape sealant to male threads only.

DWG# 930-1

Switch Clamping Plate Terminal

Fig. 2



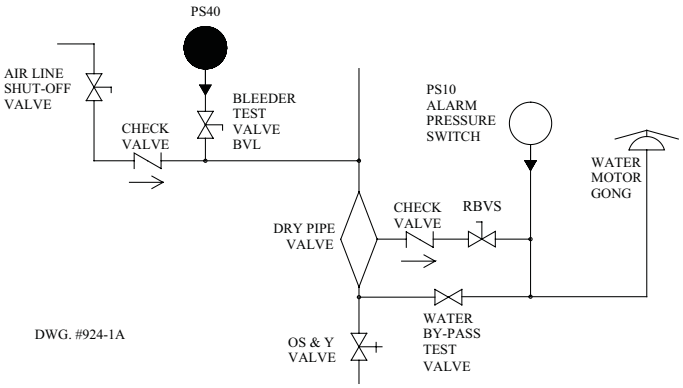
DWG# 923-3

⚠ 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



DWG. #924-1A

⚠ CAUTION

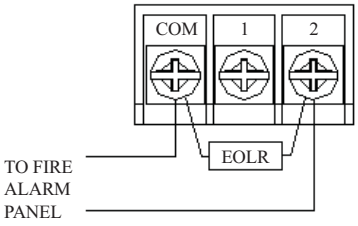
Closing of any shutoff valves between the alarm check valve and the PS10 will render the PS10 inoperative. To comply with NFPA-72 any such valve shall be electrically supervised with a supervisory switch such as Potter Model RBVS.

Typical Connections

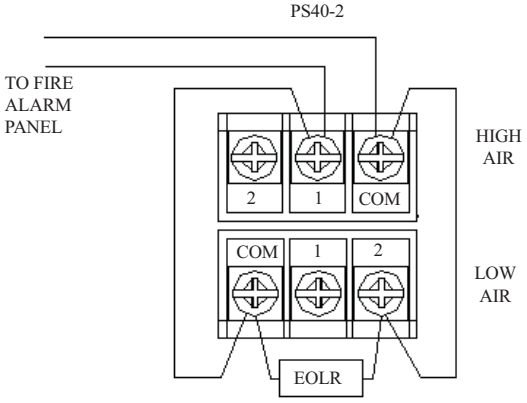
Fig. 4

WITH NORMAL SYSTEM PRESSURE APPLIED LOW -TERMINAL 2 CLOSES ON PRESSURE DROP.

PS40-1



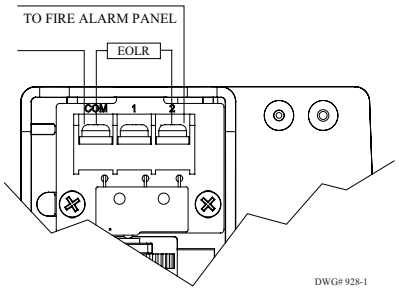
PS40-2



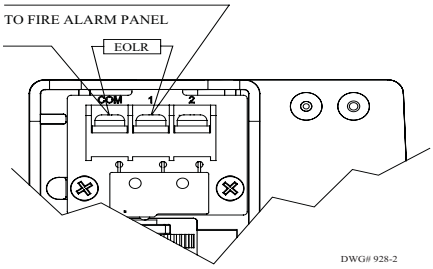
WITH NORMAL SYSTEM PRESSURE APPLIED HIGH - TERMINAL 1 WILL CLOSE ON PRESSURE INCREASE.

DWG# 930-2

Low Pressure Signal Connection
Fig. 5

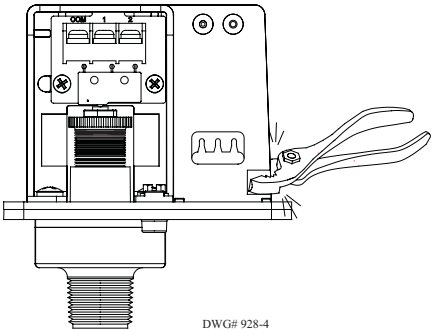


High Pressure Signal Connection
Fig. 6



One Conduit Wiring
Fig. 7

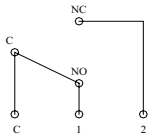
Break out thin section of divider to provide path for wires when wiring both switches from one conduit entrance.



Changing Pressure
(With normal system pressure)
Fig. 8

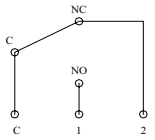
Terminal
C: Common
1: Closed when installed under normal system pressure.
2: Open when installed under normal system pressure. Closes on pressure drop. Use for low air signal.

LOW PRESSURE SWITCH



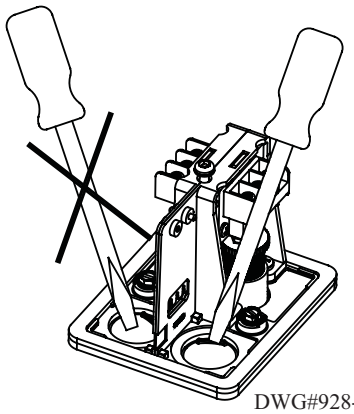
Terminal
1: Open when installed under normal system pressure. Closes on increase in pressure. Use for high air signal.
2: Closed under normal system pressure.

HIGH PRESSURE SWITCH



DWG# 930-3

Removing Knockouts
Fig. 9



DWG#928-5

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 a pressure decrease of 10 PSI (0,7 BAR) from normal. If two switches are provided, the second switch shall be set to operate at a pressure increase of 10 PSI (0,7 BAR) from normal.

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 zinc die-cast 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/IP55 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.

Reliable

Models A, A-2, B, & B-1 Automatic Pressure Maintenance Devices

cULus Listed
FM Approved

Product Description

Models A/A-2 Pressure Maintenance Device

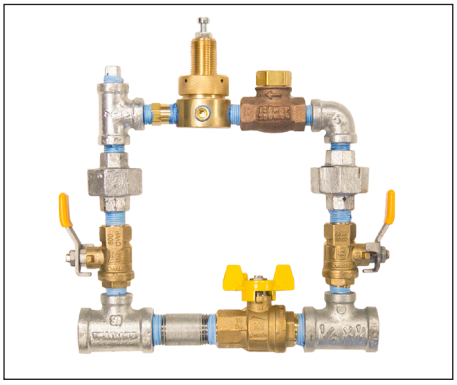
The Model A/A-2 Pressure Maintenance Device (PMD) is designed for use where a source of compressed air (plant air system, tank-mounted compressor with a pressure control, etc.) or nitrogen cylinder (equipped with a regulating device) is available. The regulator in the Model A/A-2 PMD reduces higher pressure air or nitrogen to a level required by a dry pipe valve, dry pilot line, or a deluge valve based preaction system. The Model A/A-2 PMD will maintain a constant pressure in the system regardless of any pressure fluctuations from the compressed air or nitrogen source.

Basic functionality of components (refer to Fig. 1): The strainer's function is to prevent any foreign matter that may be present in the air supply, from traveling to the regulator and the check valve, thereby ensuring their normal operation. The check valve's function is to prevent the reverse flow of water resulting from a dry pipe or deluge valve's operation, from reaching the regulator. Two 1/4" valves allow for the servicing (if needed) of the strainer and regulator without having to shut down the sprinkler system. The 1/2" ball valve permits the rapid restoration (quick-fill) of the required system air pressure during commissioning, or after service or operation. The 1/2" ball valve must be closed and the 1/4" valves must be open for proper automatic operation.

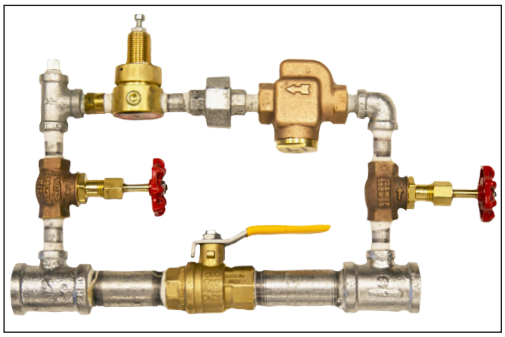
Models B/B-1 Pressure Maintenance Device

The Model B/B-1 Pressure Maintenance Device (PMD) is designed for use in conjunction with a tankless air compressor without a pressure control switch to maintain the correct air pressure in a dry pipe valve, dry pilot line, or a deluge valve based preaction system.

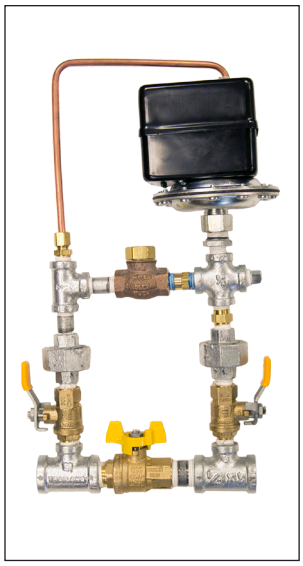
Basic functionality of components (refer to Figure 2): A drop in the sprinkler system's air pressure causes the contacts of the pressure switch to close, thereby activating the air compressor. When the pre-adjusted level of air pressure is restored, the pressure switch's contacts re-open, thereby deactivating the air compressor. The pressure switch is also equipped with an unloader valve that automatically bleeds off the air compressor's outlet pressure each time the contacts of the pressure switch open. This protects the air compressor's motor from overloading during startup. Like the Model A/A-2 PMD, the Model B/B-1 has a strainer for contamination control and a check valve to prevent reverse water flow. The 1/2" ball valve and 1/4" valves are also identical in configuration and function as with the Model A/A-2 PMD. Likewise, the 1/2" ball valve must be closed and the 1/4" valves must be open for proper automatic operation.



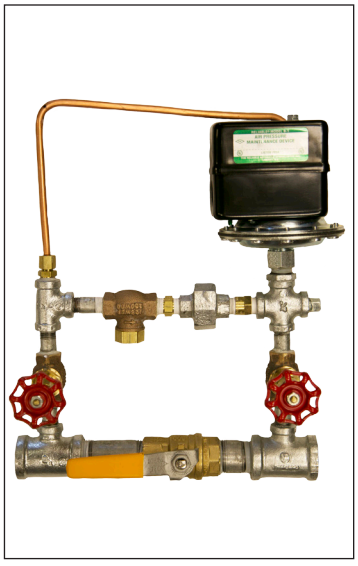
Model A Pressure Maintenance Device



Model A-2 Pressure Maintenance Device



Model B Pressure Maintenance Device



Model B-1 Pressure Maintenance Device

Outlet Pressure Range: 5 – 100 psi (0,34 – 6,9 bar)
Maximum Inlet Pressure: 175 psi (12 bar)
Inlet/Outlet Threads: 1/2" NPT (A); 3/4" NPT (A-2)

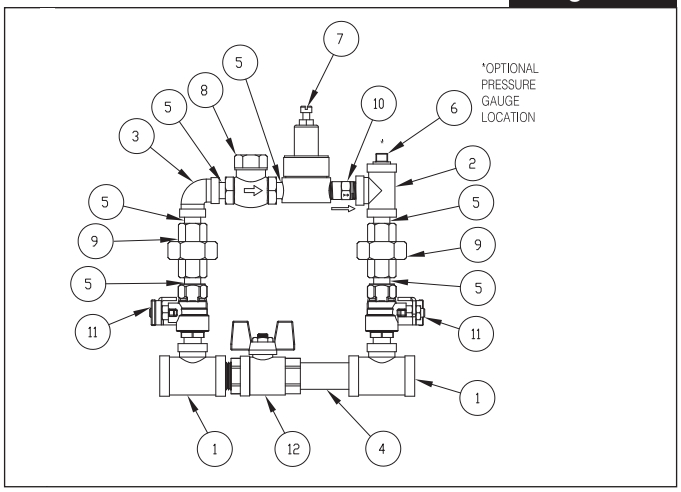
The pressure regulator is factory set to maintain a nominal system air or nitrogen pressure of 23 psi (1,6 bar). In order to change the outlet pressure, loosen the locknut at the top of regulator and turn the adjustment screw clockwise to increase pressure. To decrease the pressure, turn the adjusting screw counter clockwise. The resulting pressure can be determined at the sprinkler system air gauge, or the optional gauge location provided on the device, once the flow or air or nitrogen through the device has ceased.

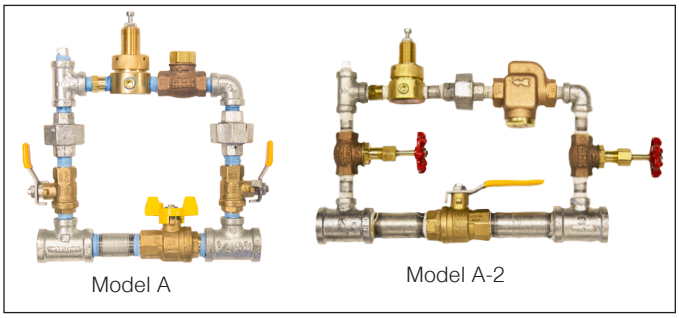
Note: The locknut of the regulator must be tightened after adjusting in order to prevent an accidental change in the pressure setting.

Installation

Install the pressure maintenance device in the line between the compressed air or nitrogen supply and the dry pipe system, preaction system, or dry pilot line detection system. The supply for the Model A/A-2 Pressure Maintenance Device can be a tank-mounted compressor (dedicated or plant air), a nitrogen generator with a tank, or bottled nitrogen with a high pressure regulator. Install the Model A/A-2 as close to the dry pipe valve, deluge valve, or preaction system technical bulletins for additional information.

Model A Pressure Maintenance Device **Figure 1**





Model A/A-2 Pressure Maintenance Device

Note: It is imperative that the entire air or nitrogen supply system be tested and made leak-free. Leaks in the supply system will result in excessive compressor operation, depletion of bottled nitrogen, and possible unintended release of the fire protection system.

Model A Pressure Maintenance Device
P/N 6304001123 (23psi), (All steel pipe fittings are galvanized)

Item No.	Part No.	Description	Qty.
1	96606607	TEE, 1/2" X 1/2" X 1/4"	2
2	96606608	TEE, 1/4" X 1/4" X 1/4"	1
3	98174404	ELL, 1/4"	1
4	98543210	NIPPLE, 1/2" X 2-1/2"	1
5	98543227	NIPPLE, 1/4" X CLO	6
6	98614403	SQ. HEAD PLUG, 1/4"	1
7	98681630	REGULATOR, 1/4", 5 - 100 PSI	1
8	98727607	STRAINER, 1/4"	1
9	98815201	G.J. UNION, 1/4"	2
10	98840147	CHECK VALVE, 1/4" INLINE POPPET	1
11	98840237	BALL VALVE, 1/4" NPTM X NPTF	2
12	9884011E	BALL VALVE, 1/2" NPTM X NPTF	1

Pressure Switch Adjustment Range: 14 – 60 psi (1,0 – 4,1 bar)
Maximum Inlet Pressure: 175 psi (12 bar)
Inlet/Outlet Threads: 1/2" NPT (B); 3/4" NPT (B-1)

WARNING: Disconnect power to the Model B/B-1 Pressure Maintenance Device prior to opening the pressure switch cover.

The pressure switch is factory set to start the compressor at 27 psi (1,9 bar) and stop the compressor at 35 psi (2,4 bar).
In order to change the setting, remove the pressure switch's cover and follow the directions contained within the switch. Verify the start and stop pressures at the sprinkler system air gauge, or at the optional gauge location provided on the device.

Note: Adjustment of the differential between the start and stop pressures of the compressor is not recommended.

Electrical Rating:

Single Phase: 120 Volts AC; 2 hp
240 Volts AC; 3 hp
600 Volts AC; 5 hp

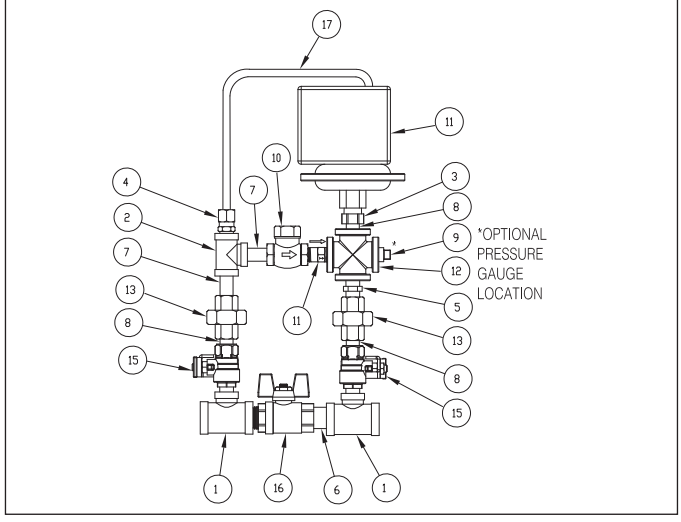
Three Phase: 240 Volts AC; 5 hp
600 Volts AC; 5 hp
115-230 Volts DC; 3 hp

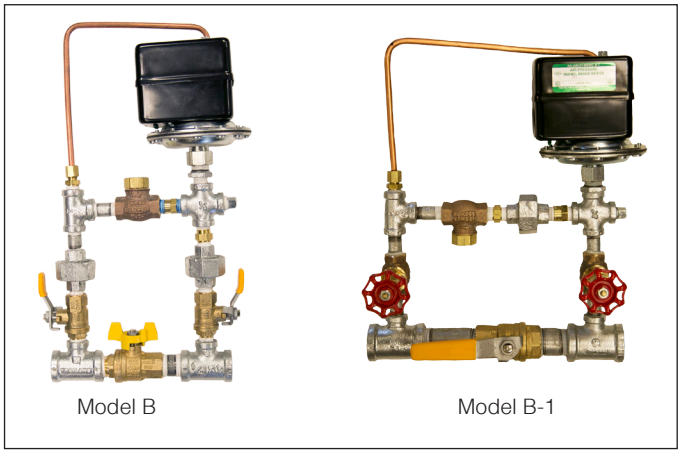
Installation

Install the pressure maintenance device in the line between the compressed air or nitrogen supply and the dry pipe system, preaction system, or dry pilot line detection system. The supply for the Model B/B-1 Pressure Maintenance Device is a tank-less compressor without a pressure switch. Install the Model B/B-1 as close to the dry pipe valve, deluge valve, or preaction system technical bulletins for additional information.

Note: It is imperative that the entire air or nitrogen supply system be tested and made leak-free. Leaks in the supply system will result in excessive compressor operation, depletion of bottled nitrogen, and possible unintended release of the fire protection system.

Model B Pressure Maintenance Device **Figure 2**





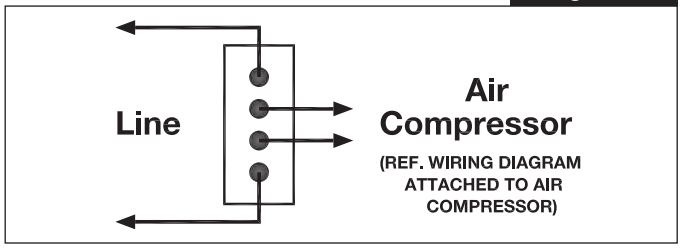
Model B/B-1 Pressure Maintenance Device

Model B/B-1 Pressure Maintenance Device Wiring:

Remove the pressure switch's cover and connect the wiring in accordance with the National Electric Code or other appropriate standards. The connections should be as shown in Figure 3 for single phase wiring of thermally protected compressor motors.

For 3-phase wiring, a listed and/or approved, properly sized magnetic motor starter with appropriate NEMA enclosure must be provided. The wiring of the pressure switch, motor starter, and air compressor must be in accordance with the National Electrical Code, or other appropriate standards.

Model B/B-1 PMD Electrical Connections **Figure 3**



Model B Pressure Maintenance Device
P/N 6304012100 (All steel pipe fittings are galvanized)

Item No.	Part No.	Description	Qty.
1	96606607	TEE, 1/2" X 1/2" X 1/4"	2
2	96606608	TEE, 1/4" X 1/4" X 1/4"	1
3	98048034	BUSHING, 3/8" X 1/4"	1
4	98085630	CONNECTOR, 1/4" TUBING X 1/4" NPT	1
5	98523100	RESTRICTION ORIFICE	1
6	98543223	NIPPLE, 1/2" X 1-1/2"	1
7	98543226	NIPPLE, 1/4" X 1-1/2"	2
8	98543227	NIPPLE, 1/4" X CLO	3
9	98614403	SQ. HEAD PLUG, 1/4"	1
10	98727607	STRAINER, 1/4"	1
11	98728801	PRESSURE SWITCH; 14 PSI TO 60 PSI	1
12	98750004	CROSS, 1/4"	1
13	98815201	G.J. UNION, 1/4"	2
14	98840147	CHECK VALVE, 1/4" INLINE POPPET	1
15	98840237	BALL VALVE, 1/4" NPTM X NPTF	2
16	9884011E	BALL VALVE, 1/2" NPTM X NPTF	1
17	98768000	COPPER TUBING, 1/4"	18"

Maintenance

Refer to Figures 1 & 2.

1. Review the latest NFPA 13 and NFPA 25 Standards, any appropriate dry pipe or deluge valve installation bulletins, and the section in this bulletin titled “Installation” to ensure that the pressure maintenance device is installed properly.
2. Make sure that both 1/4” valves are open and that the 1/2” ball valve is closed.
3. Check the gas pressure in the dry pipe, deluge or preaction system at the pressure gauge located on those devices. See the section titled “Adjustment” if any are required.
4. If maintenance is to be performed on the strainer, regulator, or pressure switch of the pressure maintenance device, make sure that both 1/4” valves are closed and that pressure has been relieved from the section through the union. These 1/4” valves must be opened again in order to restore proper automatic operation.
5. The strainer should be cleaned periodically to prevent contamination from blocking air flow. This can be done by removing the strainer’s cap and wiping or blowing off any collected debris.
6. Make sure the check valve is installed according to the schematic with the arrow on its hexagonal side pointing in the required direction of air flow.
7. If the regulator in the Model A/A-2 Pressure Maintenance Device is constantly leaking at the adjusting screw, the regulator may contain dirt keeping the poppet open and should be cleaned or replaced.
8. Check the inside housing of pressure switch of the Model B/B-1 Pressure Maintenance Device for dirt or foreign matter and verify that the wiring is fastened securely and is wiring insulation is in good condition.

Listings and Approvals

- Listed by Underwriters Laboratories, Inc. and Underwriters Laboratories of Canada. (cULus)
- FM Approved

Guarantee

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

Ordering Information

Specify:

Model: [A Pressure Maintenance Device]
[A-2 Pressure Maintenance Device]
[B Pressure Maintenance Device]
[B-1 Pressure Maintenance Device]

P/N 999970040

Electrical specs on page 2

GENERAL AIR PRODUCTS

LT Plus Series - Single Phase Tank Mounted Air Compressors for Dry Pipe Sprinkler Systems

LT Plus Series

This tank mounted air compressor is specifically designed to fill systems to 40 PSI in 30 minutes as per NFPA 13

- A.S.M.E. Coded Industrial Receiver
- A.S.M.E. Coded Safety Valve
- Single Stage Air Cooled Pump
- Fan Type Flywheel
- Integral Air Filter
- NEMA Standard Multi-Voltage Motors
- UL Listed Unloading Pressure Switch
- **Pressure Switch Prewired to Motor (NEW)**
- **30" Stainless Steel Flex Hose (NEW)**
- **Vibration Isolation Pads (NEW)**

System Capacity (gal) +	Model Number	Average CFM *	Motor HP	Recommended Wire Size ++	Dimensions			Weight (lbs)	Tank Capacity (gal)	Pressure Switch Prewired **
					L	W	H			
200	LT20033A	2.43	1/3	10	33	13	28	115	10	YES
290	LT29050A	3.52	1/2	8	33	13	28	115	10	YES
365	LT36575A	4.43	3/4	8	33	13	28	124	10	YES
425	LT425100A	5.15	1	6	33	13	28	130	10	YES
660	LT620100A	7.91	1	6	36	15	30	170	20	YES
900	LT900150A	10.91	1½	6	36	15	30	181	20	YES
1050	LT1220200A	12.70	2	4	36	15	30	190	20	NO
1300	LT1300300A	15.76	3	4	36	15	30	190	20	NO
1400	LT1600300A	16.98	3	2	40	18	44	310	30	NO
2000	LT2000500A	24.25	5	2	40	18	44	319	30	NO
2500	LT2500500A	30.32	5	2	40	18	44	336	30	NO

Accessories:

Air Maintenance Device - *Part # AMD-1*
The AMD-1 is **required** for supplying air to a dry pipe system when using a tank mounted unit. The AMD-1 regulates the volume of air being delivered to the system.

Motor Line Starters - *Thermal Overload Protection*

Single Phase

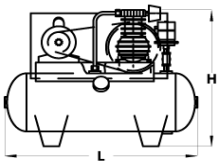
Maximum HP	115V	208/230V	Size	Model
	1/3 HP	1 HP	00	MG00A
	1 HP	2 HP	0	MGX0A
	2 HP	3 HP	1	MG01A
	3 HP	5 HP	1P	MG15A

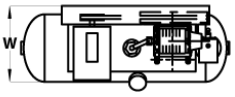
When Ordering a Motor Starter you must specify HP, Voltage and Phase that is supplied to the motor.

Notes:

+ System Capacity based on 70°F system temperature.
* Average CFM is the average free air delivery from 0 to 40 PSIG
++ Recommended Wire Sizes based on 100ft run. consult factory for longer or shorter runs.
** Only Units With Internal Overload Protection Prewired.

VOLTAGE - All Single Phase Units:
Up to 2 HP: 115/208-230 VAC / 3 to 5 HP: 208-230 VAC





⚠ WARNING: Cancer and Reproductive Harm - www.p65warnings.ca.gov

LT Plus Series - Single Phase Tank Mounted Fire Protection Air Compressor Electrical Cut Sheet

LT Plus Series

This tank mounted air compressor is specifically designed to fill systems to 40 PSI in 30 minutes as per NFPA 13

Only Units With Internal Overload Protection Prewired

Model Number	Nominal HP	Factory Wired Voltage	Amperage (amps)			Recommended Wire Size Based on Run Length (gage)			Motor Protection Included
			Voltage	FLA	Start Up	25 FT	50 FT	100 FT	
LT20033A	1/3	115	115	6.4	44.8	12	12	10	YES
			208	3	21	12	12	10	
			230	3.2	22.4	12	12	12	
LT29050A	1/2	115	115	8.6	60.2	12	12	8	YES
			208	4.1	28.7	12	10	8	
			230	4.3	30.1	12	12	12	
LT36575A	3/4	115	115	11	77	12	10	8	YES
			208	5.5	38.5	12	10	8	
			230	5.5	38.5	12	12	12	
LT425100A	1	115	115	13.6	95.2	12	10	6	YES
			208	6.9	48.3	12	10	6	
			230	6.8	47.6	12	12	12	
LT620100A	1	115	115	14.7	102.9	12	10	8	YES
			208	7.1	49.7	12	8	6	
			230	7.3	51.4	12	12	12	
LT900150A	1 1/2	115	115	14.7	102.9	12	10	8	YES
			208	7.1	49.7	12	8	6	
			230	7.3	51.4	12	12	12	
LT1220200A	2	230	115	21	147	10	8	4	NO
			208	11.3	79.1	10	8	4	
			230	10.5	73.5	12	12	10	
LT1300300A	3	230	208	14	98	10	6	4	NO
			230	12.6	88.2	12	12	10	
LT1600300A	3	230	208	17.4	121.8	8	4	2	NO
			230	16.8	117.6	12	12	10	
LT2000500A	5	230	208	23	161	8	4	2	NO
			230	21	147	12	12	8	
LT2500500A	5	230	208	23	161	8	4	2	NO
			230	21	147	12	12	8	

Note:
Wire sizes are based on maintaining 90% of the nominal voltage at starting amps. Starting amps are assumed to be 6 times the SFA.

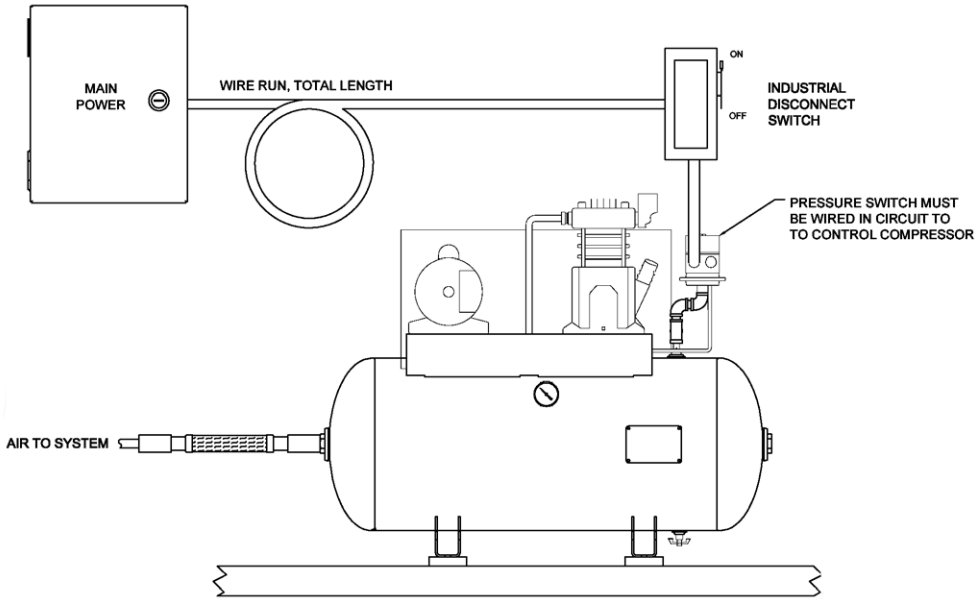
Warning:
Failure to consult with a licensed electrical professional can result in serious personal injury or death. Disconnect all power before servicing. Undersized wire between the motor and the power source will limit the starting and load carrying abilities of the motor causing motor overheating and permanent damage to the motor. Wire sizes listed are recommendations only - consult the National Electric Code (NEC) and any applicable local electrical safety codes. The NEC and GAP recommends a maximum voltage drop of 3%. Install motors and related equipment in accordance with the National Electrical Code (NEC) local electrical safety codes and practices. **It is always the electrician's responsibility to determine and install a wire size that ensures motors can start and run well.**

LT Plus Series - Connection Diagram

LT Plus Series

This tank mounted air compressor is specifically designed to fill systems to 40 PSI in 30 minutes as per NFPA 13

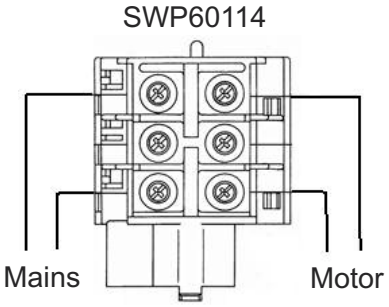
System Layout



Pressure Switch Connection (Single Phase Only)

PRESSURE SWITCH Diagram

Note: Location of pressure switch varies based on model. This is a general diagram of components. For help specific to your switch please contact General Air Products.



Warning:

Failure to consult with a licensed electrical professional can result in serious personal injury or death. Disconnect all power before servicing. Undersized wire between the motor and the power source will limit the starting and load carrying abilities of the motor causing motor overheating and permanent damage to the motor. Wire sizes listed are recommendations only - consult the National Electric Code (NEC) and any applicable local electrical safety codes. The NEC and GAP recommends a maximum voltage drop of 3%. Install motors and related equipment in accordance with the National Electrical Code (NEC) local electrical safety codes and practices. **It is always the electrician's responsibility to determine and install a wire size that ensures motors can start and run well.**

Model RHB1 Spare Sprinkler Storage Cabinet

Product Description

Reliable spare sprinkler storage cabinets are designed to allow for storage of spare sprinklers as required by NFPA guidelines. The cabinets are available in six sizes:

All styles of spare sprinkler storage cabinets are manufactured with knockouts to facilitate storage of the most common size sprinklers. Shelves within each storage cabinet are positioned to enable storage of a sprinkler wrench. Each sprinkler storage cabinet is manufactured from 22-gauge steel and finished with red enamel paint. Each sprinkler storage cabinet features holes on the back panel to facilitate easy installation to existing structure of the building. Reliable spare sprinkler storage cabinets are not intended for harsh environments and are not recommended for outdoor exposure.

Ordering Information

Specify the following when ordering:

Model
- RHB1 Sprinkler Cabinet

Size
- 3 Sprinkler
- 6 Sprinkler
- 6 ESFR Sprinkler
- 12 Sprinkler
- 24 Sprinkler
- 36 Sprinkler

Guarantee

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

Spare Sprinkler Storage Cabinet

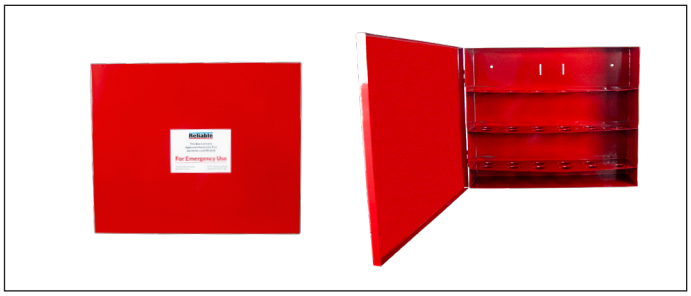
Technical Specifications
Material: Steel
Finish: Red High Gloss Epoxy

3 Sprinkler Cabinet

6 Sprinkler Cabinet

12 Sprinkler Cabinet

24 Sprinkler Cabinet



36 Sprinkler Cabinet

Dimensions with door closed in. (mm) **Table A**

Cabinet Size	Width	Depth	Height
3 Sprinkler	7-3/8 (187)	2-3/8 (60)	5-1/4 (133)
6 Sprinkler	14-1/4 (362)	2-3/8 (60)	5-1/4 (133)
6 ESFR Sprinkler	14-1/4 (362)	3-1/8 (79)	6-1/2 (165)
12 Sprinkler	14 (356)	4 (100)	5-1/4 (133)
24 Sprinkler	14-1/4 (362)	4 (100)	8-3/8 (213)
36 Sprinkler	14-1/4 (362)	4 (100)	11-5/8 (295)

Installation

Installation is performed by using appropriate fasteners to securely mount the sprinkler storage cabinet to the wall using the holes in the back surface of the cabinet, ensuring that the door can freely open and close and that there are no obstructions that reasonably prevent access to the sprinkler storage cabinet or its contents. After installation of the sprinkler storage cabinet, the appropriate number and type of sprinklers shall be inserted into the cabinet in accordance with applicable requirements. Close the door to the sprinkler storage cabinet.

P/N 999970705

Close

tyco

Fire Products

MODEL DD-1

Wiliag™ Condensate Drain

Features and Benefits

- ***Ready to Install***
- ***No Power Machine for Repair***
- ***Eliminates Searching for Materials***
- ***Eliminates Potential Leaks***
- ***Eliminates Labor of Fabrication***
- ***Classic Look of a Professional Job***
- ***Net Weight Only 6.25 lbs.***
- ***Overall Length 24" (615 mm)***
- ***Turning Radius 2.5" (64 mm)***

General Description

The DD-1 Condensate Drain is a pre-manufactured drum drip for installation in Dry-Pipe, Deluge and Pre-Action Automatic Sprinkler Systems.

The DD-1 Condensate Drain is made from Electric-Resistance-Welded Carbon and Alloy Steel Mechanical Tubing, ASTM A513. After the machining process is complete, the 1" male outlets shall have a wall thickness greater than or equal to 0.133 inches and an O.D. of 1.315 inches.

Other drains are usually constructed from various parts that must be assembled at the time of installation.

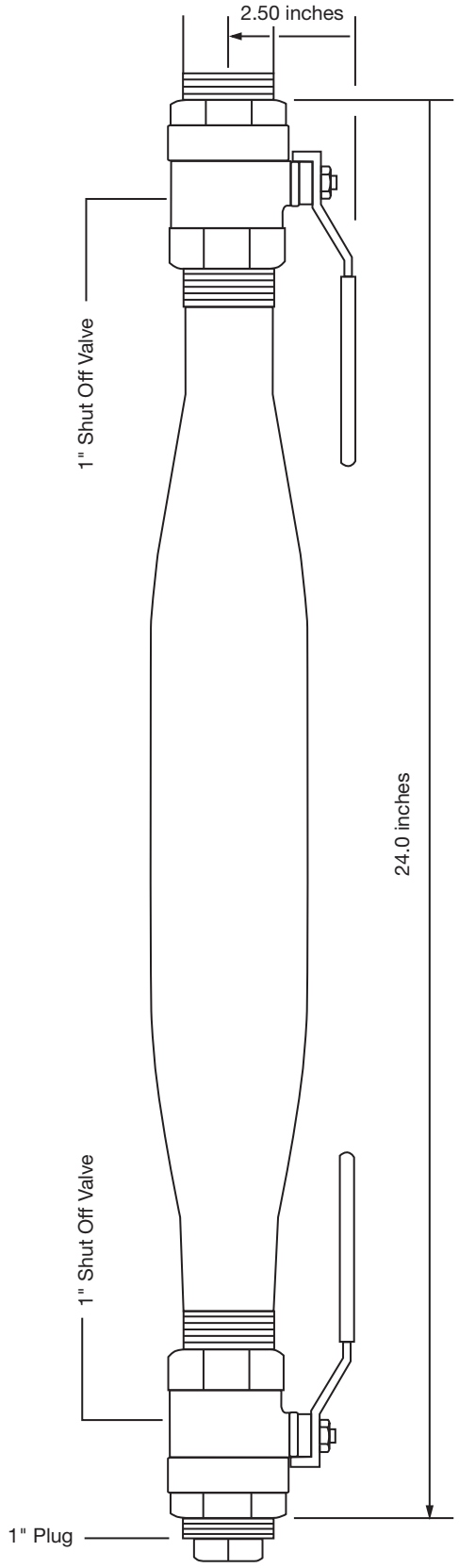
There is no comparison in the quality and look of the DD-1 Condensate Drain and it is quick and easy to install.

Technical Data

- Volume: 0.1875 gallons
- Standard Working Pressure of 175 psi
- Valve type and manufacturer may vary
- Length: 24" (615 mm)
- Turning radius 2.5" (64 mm)
- Shipping weight: 6.26 pounds
- U.S. Patent number 6,102,066

(Always refer to Technical Data Sheet for complete description of all Listing criteria, design parameters, installation instructions, care and maintenance guidelines, and our Limited Warranty.)

MODEL DD-1



The Wiliag™ Condensate Drain includes:

- One condensate barrel
- Two 1" shut off valves (valve manufacturer may vary)
- One 1" plug

Ordering Procedure

Contact your local distributor for availability.

Model DD-1:
Specify: Model DD-1
Condensate Drain
P/N 52-380-1-001

Traditional Field Generated Drum-Drip

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Fire Products

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Technical Services
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